

Page 1 of 77

## ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

## INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C AND RSS 247 REQUIREMENT

OF

**Product Name: Smart Watch** 

**Brand Name:** GC

Model No.: T3300

**Model Difference:** N/A

FCC ID: **2AFSYT3300** 

IC: 20610-T3300

ER/2017/40435 **Report No.:** 

**Issue Date:** Jun. 09, 2017

**FCC Rule Part:** §15.247, Cat: DSS

IC Rule: RSS-247 issue 2 Feb. 2017

Sequel AG

**Prepared for:** General-Guisan- Strasse 8, 5th Floor, Zug.

> Switzerland 6300 SGS Taiwan Ltd.

**Electronics & Communication Laboratory** 

Prepared by: No.134, Wu Kung Road, New Taipei Industrial

Park, Wuku District, New Taipei City, Taiwan

Note: This report shall not be reproduced except in full,

24803





0513

without the written approval of SGS Taiwan Ltd. This document may be altered or revised by SGS Taiwan Ltd. personnel only, and shall be noted in the revision section

of the document.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions for Electronic Documents at <a href="https://www Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

t (886-2) 2299-3279

SGS Taiwan Ltd.

f (886-2) 2298-0488



Page 2 of 77

## VERIFICATION OF COMPLIANCE

Sequel AG **Applicant:** 

General-Guisan- Strasse 8, 5th Floor, Zug, Switzerland 6300

**Product Name:** Smart Watch

GC **Brand Name:** 

Model No.: T3300

**Model Difference:** N/A

FCC ID: 2AFSYT3300

IC: 20610-T3300

**Report Number:** ER/2017/40435

Date of test: Apr. 20, 2017 ~ May 08, 2017

Date of EUT Received: Apr. 20, 2017

## We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

The test results of this report relate only to the tested sample identified in this report.

Jun. 09, 2017 Test By: Date: Tin Lin / Engineer Prepared By: Jun. 09, 2017 Date: Violetta Tang / Clerk Approved By: Date: Jun. 09, 2017 Jim Chang / Asst. Manager

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留卽天。本報告未經本公司書面許可,不可都份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 台灣檢驗科技股份有限公司 t (886-2) 2299-3279

f (886-2) 2298-0488

www.tw.sqs.com



Page 3 of 77

# **Revision History**

Report Number	Revision	Description	Issue Date
ER/2017/40435	Rev.00	Initial creation of document	Jun. 09, 2017

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.

台灣檢驗科技股份有限公司

f (886-2) 2298-0488

www.tw.sqs.com





# **Table of Contents**

1	GENERAL INFORMATION	5
2	SYSTEM TEST CONFIGURATION	7
3	UMMARY OF TEST RESULTS	9
4	DESCRIPTION OF TEST MODES	. 10
5	MEASUREMENT UNCERTAINTY	. 13
6	CONDUCTED EMISSION TEST	. 14
7	PEAK OUTPUT POWER MEASUREMENT	. 18
8	20dB & 99% BANDWIDTH MEASUREMENT	. 21
9	CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT	. 27
10	RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT	. 33
11	FREQUENCY SEPARATION	. 66
12	NUMBER OF HOPPING FREQUENCY	. 68
13	TIME OF OCCUPANCY (DWELL TIME)	. 70
11	ANTENNA RECIIIREMENT	77

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Page 5 of 77

## **GENERAL INFORMATION**

## 1.1 Product description

### General:

criciai.			
Product Name:	Smart Watch		
Brand Name:	GC		
Model No.:	T3300		
Model Difference:	N/A		
Product SW/HW version:	GLOWLIGHT.00020.328386.17181.CERT / 1000		
Radio SW/HW version:	N/A / N/A		
Test SW Version:	N/A		
RF power setting in TEST SW:	N/A		
Cradle w/ cable:	Model No.: SS-0473-02M-CA01, Supplier: GC		
Power Supply:	3.8Vdc Rechargeable Li-ion Battery or 5Vdc from USB Port		
Fower Suppry.	Battery:	Model No.: APP00237, Supplier: APACK TECHNOLOGY CO LTD	

## Bluetooth\_BR+EDR:

Bluetooth Version:	Bluetooth V4.1 (dual mode)
Channel number:	79 channels
Modulation type:	GFSK + π/4DQPSK + 8DPSK
Transmit Power:	11.81dBm
Frequency Range:	2.402GHz – 2.480GHz
Dwell Time:	<= 0.4s
Antenna Designation:	Loop Antenna, Gain: -9.56dBi

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488

SGS Taiwan Ltd.



Page 6 of 77

## 1.2 Test Methodology of Applied Standards

Canada RSS-247 issue 2 Feb. 2017

RSS-Gen issue 4 Nov. 2014

FCC Part 15, Subpart C §15.247

FCC Public Notice DA 00-705 Measurement Guidelines

ANSI C63.10:2013

**Note:** All test items have been performed and record as per the above standards.

## 1.3 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803 (TAF code 0513)

FCC Registration Numbers are: 509634

Canada Registration Number: 4620A-5.

## 1.4 Special Accessories

There is no special accessory used while test was conducted.

## 1.5 Equipment Modifications

There was no modification incorporated into the EUT.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

台灣檢驗科技股份有限公司 t (886-2) 2299-3279

SGS Taiwan Ltd.

f (886-2) 2298-0488



Page 7 of 77

## SYSTEM TEST CONFIGURATION

## 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

#### 2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

#### 2.3 Test Procedure

#### 2.3.1 **Conducted Emissions**

The EUT is a placed on as turn table which is 0.8 m above ground plan. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz,. The CISPR Quasi-Peak and Average detector mode is employed according to §15.207. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

#### 2.3.2 **Radiated Emissions**

The EUT is a placed on as turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plan. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated

emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

### 2.4 Measurement Results Explanation Example

## For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

#### Note:

The spectrum analyzer offset is derived from RF cable loss 4.2dB

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law





# 2.5 Configuration of Tested System Fig. 2-1 Radiated Emission Configuration



Fig 2-3 Conducted (AC power line) Configuration



Fig.2-2 Conducted (Antenna Port) Configuration

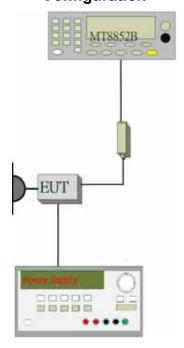


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	<b>Power Cord</b>
1.	Bluetooth Test Software	N/A	N/A	N/A	N/A	N/A
2.	DC Power Supply	Agilent	E3640A	MY53140006	N/A	Un-Shielded
3.	Bluetooth Test Set	Anritsu	MT8852B	6k00006107	N/A	Un-shield
4.	Notebook	Lenovo	L420	LR-7HXZA	Shielded	Unshielded

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.

t (886-2) 2299-3279

f (886-2) 2298-0488



Page 9 of 77

## **UMMARY OF TEST RESULTS**

FCC Rules	IC Rules	Description Of Test	Result
§15.207(a)	RSS-Gen §8.8	AC Power Line Conducted Emission	Compliant
§15.247(b)(1)	RSS-247 §5.4 (2)	Peak Output Power	Compliant
§15.247(a)(1)	RSS-247 §5.1 (1) RSS-Gen §6.6	20dB & 99% Bandwidth	Compliant
§15.247(d)	RSS-247 §5.5	Conducted Band Edge and Spurious Emission	Compliant
§15.247(d)	RSS-247 §5.5	Radiated Band Edge and Spurious Emission	Compliant
§15.247(a)(1)	RSS-247 §5.1 (2)	Frequency Separation	Compliant
§15.247(a)(1)(iii)	RSS-247 §5.1 (4)	Number of hopping frequency	Compliant
§15.247(a)(1)(iii)	RSS-247 §5.1 (4)	Time of Occupancy	Compliant
§15.203 §15.247(b)	RSS- Gen §8.3	Antenna Requirement	Compliant

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd. f (886-2) 2298-0488



Page 10 of 77

## **DESCRIPTION OF TEST MODES**

## 4.1 Operated in 2400 ~ 2483.5MHz Band

79 channels are provided for Bluetooth

To charmole and provided for Elacteon.							
CH	FREQUENCY	CH	FREQUENCY	CH	FREQUENCY	CH	FREQUENCY
0	2402 MHz	20	2422 MHz	40	2442 MHz	70	2462 MHz
1	2403 MHz	21	2423 MHz	41	2443 MHz	71	2463 MHz
2	2404 MHz	22	2424 MHz	42	2444 MHz	72	2464 MHz
3	2405 MHz	23	2425 MHz	43	2445 MHz	73	2465 MHz
4	2406 MHz	24	2426 MHz	44	2446 MHz	74	2466 MHz
5	2407 MHz	25	2427 MHz	45	2447 MHz	75	2467 MHz
6	2408 MHz	26	2428 MHz	46	2448 MHz	76	2468 MHz
7	2409 MHz	27	2429 MHz	47	2449 MHz	77	2469 MHz
8	2410 MHz	28	2430 MHz	48	2450 MHz	78	2470 MHz
9	2411 MHz	29	2431 MHz	49	2451 MHz	79	2471 MHz
10	2412 MHz	30	2432 MHz	50	2452 MHz	70	2472 MHz
11	2413 MHz	31	2433 MHz	51	2453 MHz	71	2473 MHz
12	2414 MHz	32	2434 MHz	52	2454 MHz	72	2474 MHz
13	2415 MHz	33	2435 MHz	53	2455 MHz	73	2475 MHz
14	2416 MHz	34	2436 MHz	54	2456 MHz	74	2476 MHz
15	2417 MHz	35	2437 MHz	55	2457 MHz	75	2477 MHz
16	2418 MHz	36	2438 MHz	56	2458 MHz	76	2478 MHz
17	2419 MHz	37	2439 MHz	57	2459 MHz	77	2479 MHz
18	2420 MHz	38	2440 MHz	58	2460 MHz	78	2480 MHz
19	2421 MHz	39	2441 MHz	59	2461 MHz		
	•		•		•	•	<u>.                                      </u>

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Page 11 of 77

#### 4.2 The Worst Test Modes and Channel Details

- The EUT has been tested under operating condition.
- Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
- Investigation has been done on all the possible configurations for searching the worst case.

## RADIATED EMISSION TEST

	NADIATED EMIGOION TEOT.					
	RADIATED TEST					
	Radiated Emission Test (BELOW 1 GHz) (Worst case)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	PACKET TYPE		
Bluetooth	0 to 78	39	8-DPSK	3DH5		
	Radiated Emission Test (ABOVE 1 GHz) (Worst case)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	PACKET TYPE		
Bluetooth 0 to 78 0,39,78 8-DPSK 3D		3DH5				
Band Edge						
Bluetooth	0 to 78	0,78	GFSK	DH5		
Bluetooth	0 to 78	0,78	8-DPSK	3DH5		

#### Note:

The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for Bluetooth BR+EDR Transmitter for channel Low, Mid and High, the worst case H position was reported.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留卯天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sqs.com/terms">www.sqs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sqs.com/terms">www.sqs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of the company is the company of the company is the company in the company is the company in the results of the company is the property of the company is the property in the property is the company in the property is the property in the property is the property in the property in the property in the property is the property in the property in the property is the property in the pr Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

f (886-2) 2298-0488 www.tw.sqs.com



Page 12 of 77



#### ANTENNA PORT CONDUCTED MEASUREMENT:

ANTENN	CONDUCTED TEST					
	Peak Output Power, 20dB Band Width					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	PACKET TYPE		
	0 to 78	0,39,78	GFSK	DH5		
Bluetooth	0 to 78	0,39,78	π/4-DQPSK	DH5		
	0 to 78	0,39,78	8-DQPK	DH5		
		Band Edge & C	onducted Emission			
Bluetooth	0 to 78	0,39,78	GFSK	DH5		
Bluetooth	0 to 78	0,78 8-DQPK 3E		3DH5		
		Frequen	cy Separation			
Bluetooth	0 to 78	0,1,2	8-DQPK	3DH5		
		Number of h	opping frequency			
Bluetooth	0 to 78	0 to 78	8-DQPK	3DH5		
Time of Occupancy (Dwell time)						
Bluetooth	0 to 78	0,39,78	GFSK	DH1/DH3/DH5		
Bluetooth	0 to 78	39	π/4-DQPSK	DH1/DH3/DH5		
Bluetooth	0 to 78	39	8-DPSK	DH1/DH3/DH5		

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.





Page 13 of 77

### MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.586 dB
Peak Output Power	+/- 0.84 dB
20dB Bandwidth	+/- 51.33 Hz
100 KHz Bandwidth Of Frequency Band Edges	+/- 0.84 dB
Frequency Separation	+/- 51.33 Hz
Number of hopping frequency	+/- 51.33 Hz
Time of Occupancy	+/- 51.33 Hz
Temperature	+/- 0.65 °C
Humidity	+/- 4.6 %
DC / AC Power Source	DC= +/- 0.13%, AC= +/- 0.2%

## Radiated Spurious Emission:

	9kHz – 30MHz: +/- 2.87 dB
	30MHz - 180MHz: +/- 3.37dB
Measurement uncertainty	180MHz -417MHz: +/- 3.19dB
(Polarization : <b>Vertical</b> )	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB
	18GHz - 40GHz: +/- 4.04dB

	9kHz – 30MHz: +/- 2.87 dB
	30MHz - 167MHz: +/- 4.22dB
Measurement uncertainty	167MHz -500MHz: +/- 3.44dB
(Polarization : <b>Horizontal</b> )	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Page 14 of 77



### **CONDUCTED EMISSION TEST**

## 6.1 Standard Applicable

Frequency within 150 kHz to 30MHz shall not exceed the limit table as below.

Frequency range	Limits dB(uV)		
MHz	Quasi-peak	Average	
0.15 to 0.50	66 to 56	56 to 46	
0.50 to 5	56	46	
5 to 30	60	50	

#### Note

- 1. The lower limit shall apply at the transition frequencies
- 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

## 6.2 Measurement Equipment Used

Conducted Emission Test Site								
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.			
TYPE		NUMBER	<b>NUMBER</b>	CAL.				
<b>EMI Test Receiver</b>	R&S	ESCI7	100760	05/10/2016	05/09/2017			
LISN	SCHWARZBECK	NSLK 8127	8127-649	05/16/2016	05/15/2017			
LISN	MESS TEC	FCC-LISN-50/250-25 -2-01	4034	05/16/2016	05/15/2017			
Coaxial Cables	N/A	WK CE Cable	N/A	11/26/2016	11/25/2017			

### 6.3 EUT Setup

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI 63.10:2013.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
- 3. The LISN was connected with 120Vac/60Hz power source.

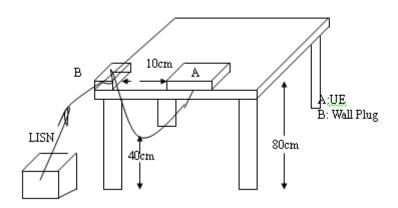
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions for Electronic Documents at <a href="https://www Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

SGS Taiwan Ltd.

Page 15 of 77

## 6.4 Test SET-UP (Block Diagram of Configuration)



## 6.5 Measurement Procedure

- 1. The EUT was placed on a table which is 0.8m above ground plan.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. Repeat above procedures until all frequency measured were complete.

#### 6.6 Measurement Result

Note: Refer to next page for measurement data and plots.

Note2: The \* reveals the worst-case results that closet to the limit

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions for Electronic Documents at <a href="https://www Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

台灣檢驗科技股份有限公司

SGS Taiwan Ltd.

t (886-2) 2299-3279

f (886-2) 2298-0488





## AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode: Operation mode Test By: Tin

Temperature: 20 % Site Conduction Room Phase: Limit: FCC Class B Conduction(QP) Humidity: Power: AC 120V/60Hz Mode: Operation mode Note: Conducted Emission File: TYEGW1 Data :#3 Date: 2017/5/2 Time: 上午 11:35:59 100.0 dBuV FCC Class B Conduction(QP) 0.0 0.150 (MHz) 5 30.000 Reading Correct Measure-No. Freq. Limit Over Factor Level ment MHz dBuV dB dBuV dBuV dB Detector Comment 1 . 0.1820 50.04 0.10 50.14 64.39 -14.25peak 0.2380 46 64 0.10 46.74 62 17 -15.432 peak 3 0.3220 42.37 0.11 42.48 59.66 -17.18 peak

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

Offices otherwise stated title results shown in this test report refer only to the sample(s) tested and such an arripe(s) are retained for 90 days only. 
Pk 非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留的人。本報告未經本公司書面好可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sqs.com/terms">www.sqs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sqs.com/terms">www.sqs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or approximate of this document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or approximate of this document.

pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law SGS Taiwan Ltd.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

4

5

6

0.5220

5.4140

18.9380

40.81

34.05

34.72

0.12

0.32

0.44

40.93

34.37

35.16

56.00

60.00

60.00

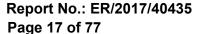
-15.07

-25.63

-24.84

peak

peak



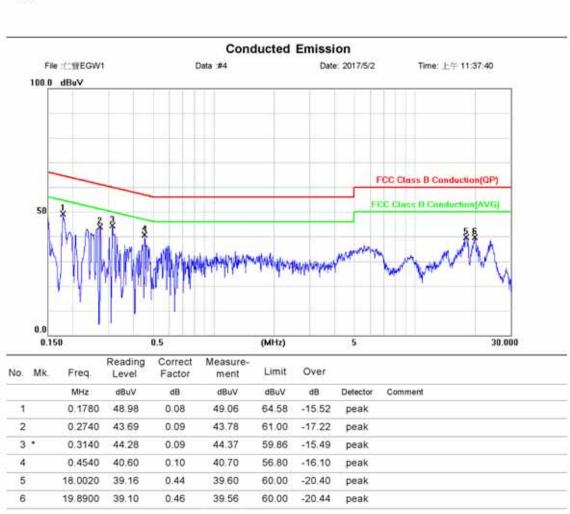
20 T



Site Conduction Room Phase: Temperature: Limit: FCC Class B Conduction(QP) AC 120V/60Hz Humidity: Power:

Mode: Operation mode

Note:



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law SGS Taiwan Ltd.





PEAK OUTPUT POWER MEASUREMENT

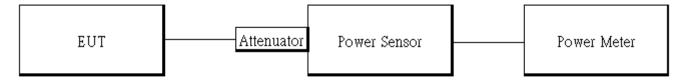
## 7.1 Standard Applicable

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 hopping channels, The Limit: 1Watt. For all other frequency hopping systems in the 2400 -2483.5MHz band: The Limit: 0.125 Watts. The power limit for 1Mbps is 1watt, and 2Mbps, 3Mbps and AFH mode are 0.125 watts and the e.i.r.p. shall not exceed 0.5 W if the hopset uses less than 75 hopping channels.

## 7.2 Measurement Equipment Used

	Conducted Emission Test Site								
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.				
Power Meter	Anritsu	ML2495A	1005007	12/15/2016	12/14/2017				
Power Sensor	Anritsu	MA2411B	917032	12/15/2016	12/14/2017				
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018				
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018				
Coaxial Cable	HUBER+SUHNER	SUCOFLEX 102	23670/2	01/05/2017	01/04/2018				
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018				
Splitter	Agilent	11636B	N/A	01/05/2017	01/04/2018				
DC Power Supply	Agilent	E3640A	MY52410006	11/21/2016	11/20/2017				

### 7.3 Test Set-up:



#### 7.4 Measurement Procedure:

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter or spectrum. (Max Hold, Detector = Peak, RBW >=20dB bandwidth)
- 4. Record the max. reading.
- 5. Repeat above procedures until all default test channel is completed.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



Page 19 of 77



### 7.5 Measurement Result

### 1M BR mode (Peak):

## 1M BR mode (Average):

( )					
СН	Freq. (MHz)	Peak Output Power (dBm)	Output Power (mW)	Limit (mW)	
0	2402	11.45	13.964	125	
39	2441	11.10	12.882	125	
78	2480	10.87	12.218	125	

СН	Freq. (MHz)	Avg. Output Power (dBm)	Output Power (mW)	Limit (mW)
0	2402	10.11	10.257	125
39	2441	9.81	9.572	125
78	2480	9.50	8.913	125

## 2M EDR mode (Peak):

## 2M EDR mode (Average):

СН	Freq. (MHz)	Peak Output Power (dBm)	Output Power (mW)	Limit (mW)
0	2402	11.53	14.223	125
39	2441	11.20	13.183	125
78	2480	10.96	12.474	125

С	Н	Freq. (MHz)	Avg. Output Power (dBm)	Output Power (mW)	Limit (mW)
(	)	2402	7.92	6.194	125
3	9	2441	7.65	5.821	125
7	8	2480	7.45	5.559	125

## 3M EDR mode (Peak):

## 3M EDR mode (Average):

СН	Freq. (MHz)	Peak Output Power (dBm)	Output Power (mW)	Limit (mW)
0	2402	11.81	15.171	125
39	2441	11.48	14.060	125
78	2480	11.24	13.305	125

СН	Freq. (MHz)	Avg. Output Power (dBm)	Output Power (mW)	Limit (mW)
0	2402	7.82	6.053	125
39	2441	7.54	5.675	125
78	2480	7.40	5.495	125

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and thin the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the full lest extent of the law pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law



#### 1M BR mode EIRP

Channel	Frequency (MHz)	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	Limit (mW)
0	2402	10.11	-9.56	1.135	500
39	2441	9.81	-9.56	1.059	500
78	2480	9.50	-9.56	0.986	500

#### 2M EDR mode EIRP

Channel	Frequency (MHz)	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	Limit (mW)
0	2402	7.92	-9.56	0.685	500
39	2441	7.65	-9.56	0.644	500
78	2480	7.45	-9.56	0.615	500

#### 3M EDR mode EIRP

Channel	Frequency (MHz)	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	Limit (mW)
0	2402	7.82	-9.56	0.670	500
39	2441	7.54	-9.56	0.628	500
78	2480	7.40	-9.56	0.608	500

<sup>\*</sup> Note: EIRP = Average Power + Gain

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and thin the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the full lest extent of the law pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 f (886-2) 2298-0488 www.tw.sqs.com

SGS Taiwan Ltd.





Page 21 of 77

## 20dB & 99% BANDWIDTH MEASUREMENT

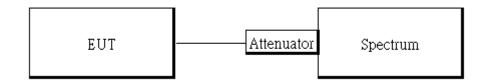
## 8.1 Standard Applicable

For frequency hopping systems operating in the 2400MHz-2483.5 MHz no limit for 20dB bandwidth.

## 8.2 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT MFR MODEL SERIAL LAST CAL DU					
TYPE		NUMBER	NUMBER	CAL.	
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018

## 8.3 Test Set-up



## 8.4 Measurement Procedure

- Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. Set the spectrum analyzer as RBW=10 kHz (1 % of 20 dB Bandwidth.), VBW = 30 kHz, Span= 3MHz, Sweep=auto, Detector = Peak, and Max hold for 20dB Bandwidth test.
- 5. Mark the peak frequency and -20dB (upper and lower) frequency
- 6. Turn on the 99% bandwidth function, max reading.
- 7. Repeat above procedures until all test default channel is completed

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279

www.tw.sqs.com



8.5 Measurement Result

#### **GFSK**

GI SIN					
	20 dB	2/3			
СН	BW	BW			
	(MHz)	(MHz)			
Low	0.92434	0.62			
Mid	0.92388	0.62			
High	0.92412	0.62			

### -/4 DODEK

T/4-DQPSK				
СН	20 dB BW	2/3 BW		
	(MHz)	(MHz)		
Low	1.314	0.88		
Mid	1.313	0.88		
High	1.313	0.88		

### 8-DPSK

0 2 : 0 : 0				
	20 dB	2/3		
СН	BW	BW		
	(MHz)	(MHz)		
Low	1.266	0.84		
Mid	1.267	0.84		
High	1.266	0.84		

#### **GFSK**

<u> </u>			
	99%		
СН	Bandwidth		
	(MHz)		
Low	0.87993		
Mid	0.87821		
High	0.87787		

#### π/4-DQPSK

	=		
	99%		
СН	Bandwidth		
	(MHz)		
Low	1.1658		
Mid	1.1646		
High	1.1651		

## 8-DPSK

	99%		
СН	Bandwidth		
	(MHz)		
Low	1.1686		
Mid	1.1694		
Hiah	1.1685		

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.





## 20dB BW CH-Low (GFSK mode)



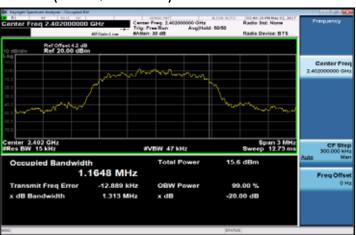
## CH-Mid (GFSK mode)



## CH-High (GFSK mode)



## CH-Low (π/4-DQPSK mode)



## CH-Mid (π/4-DQPSK mode)



## CH-High (π/4-DQPSK mode)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

Unless otherwise stated title results shown in this test report tere only to the sample(s) tested and such as a feet and so the sample shade shade and so the sample shade shade and so the shade shade and so the shade shad may be prosecuted to the fullest extent of the law.

SGS Taiwan Ltd.



Page 24 of 77

## CH-Low (8-DPSK mode)



## CH-Mid (8-DPSK mode)



## CH-High (8-DPSK mode)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be preserved to the fulled extent of the cytest of the may be prosecuted to the fullest extent of the law.

SGS Taiwan Ltd.





## 99% BW CH-Low (GFSK mode)



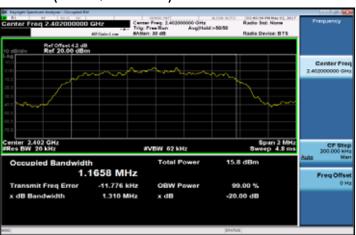
## CH-Mid (GFSK mode)



## CH-High (GFSK mode)



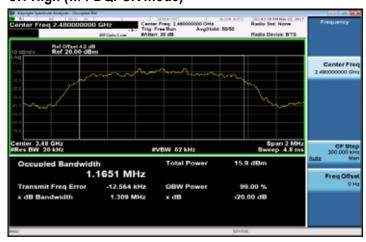
## CH-Low (π/4-DQPSK mode)



## CH-Mid (π/4-DQPSK mode)



## CH-High (π/4-DQPSK mode)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

Unless otherwise stated title results shown in this test report tere only to the sample(s) tested and such as a feet and so the sample shade shade and so the sample shade shade and so the shade shade and so the shade shad may be prosecuted to the fullest extent of the law.

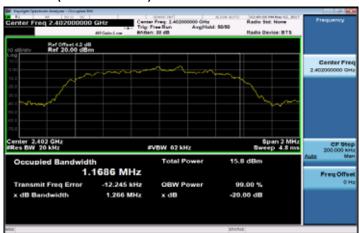
SGS Taiwan Ltd.



Page 26 of 77



## CH-Low (8-DPSK mode)



## CH-Mid (8-DPSK mode)



## CH-High (8-DPSK mode)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be preserved to the fulled extent of the cytest of the may be prosecuted to the fullest extent of the law.

SGS Taiwan Ltd.



Page 27 of 77

## CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT

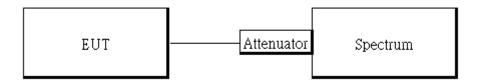
## 9.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) & RSS-Gen §8.9 limit.

## 9.2 Measurement Equipment Used

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018

#### 9.3 Test SET-UP



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

SGS Taiwan Ltd.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

f (886-2) 2298-0488





Page 28 of 77

#### 9.4 Measurement Procedure

## **Conducted Band Edge:**

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. Set center frequency of spectrum analyzer = operating frequency.
- 5. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Sweep = auto
- 6. Mark Peak, 2.3999GHz and 2.4836GHz and record the max. level.
- 7. Repeat above procedures until all frequency measured were complete.

## **Conducted Spurious Emission:**

- 1. To connect Antenna Port of EUT to Spectrum.
- 2. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
- 3. Set RBW = 100 kHz & VBW = 300 kHz, Detector = Peak, Sweep = Auto
- Allow trace to fully stabilize.
- 5. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
- 6. Repeat above procedures until all default test channel measured were complete.

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where	•	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

### 9.5 Measurement Result

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

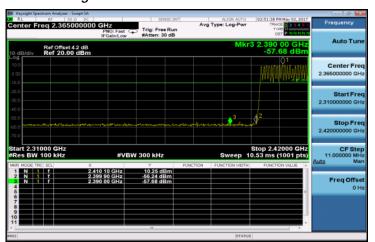
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司 t (886-2) 2299-3279

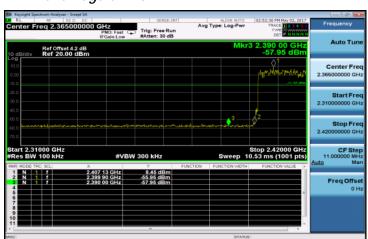




## Hopping mode BR Band Edge CH-Low



## EDR Band Edge CH-Low



## BR Band Edge CH-High



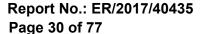
## EDR Band Edge CH-High



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留卯天。本報告未經本公司書面許可,不可部份複製。

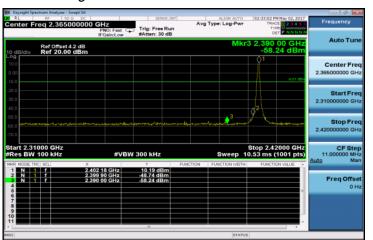
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sqs.com/terms">www.sqs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sqs.com/terms">www.sqs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction is suese defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

<mark>SGS Taiwan Ltd. N</mark>o.134,WuKungRoad,NewTaipeilndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

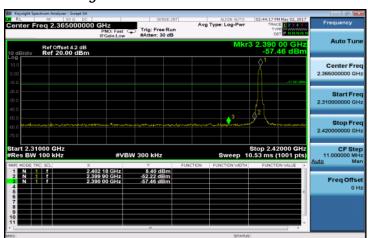




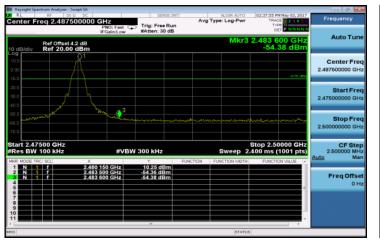
# Non-Hopping BR Band Edge CH-Low



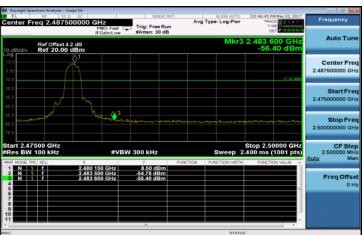
## EDR Band Edge CH-Low



## BR Band Edge CH-High



## EDR Band Edge CH-High



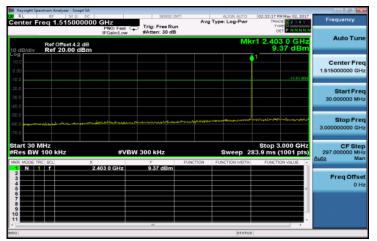
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留卯天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sqs.com/terms">www.sqs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sqs.com/terms">www.sqs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

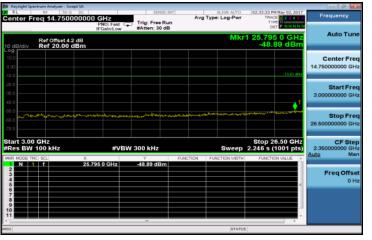
<mark>SGS Taiwan Ltd. N</mark>o.134,WuKungRoad,NewTaipeilndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號



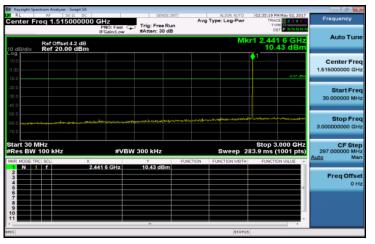
## **Conducted Spurious Emission Measurement Result** Ch Low 30MHz - 3GHz (BR Mode)



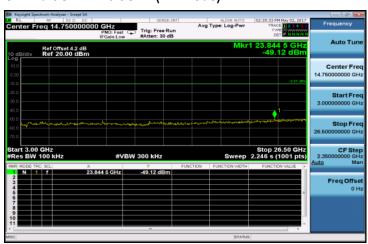
## Ch Low 3GHz – 26.5GHz (BR Mode)



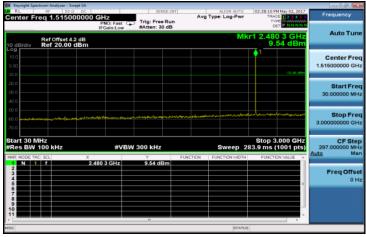
## Ch Mid 30MHz - 3GHz (BR Mode)



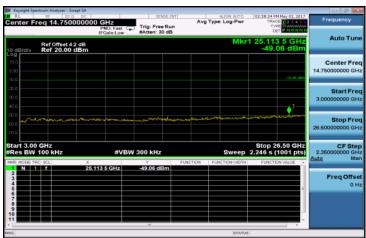
## Ch Mid 3GHz - 26.5GHz (BR Mode)



## Ch High 30MHz - 3GHz (BR Mode)



## Ch High 3GHz - 26.5GHz (BR Mode)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

Offices otherwise stated the results shown in this test report reter only to the sample(s) tested and such sample(s) tested and sample(s) t pany's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

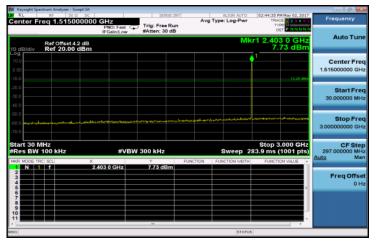
SGS Taiwan Ltd.



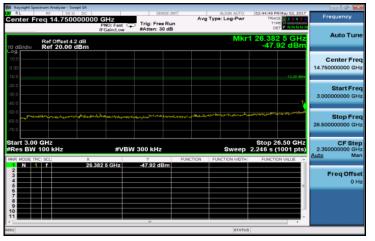
Page 32 of 77



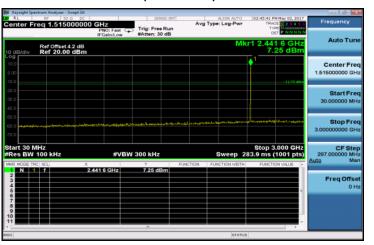
## Ch Low 30MHz - 3GHz (EDR Mode)



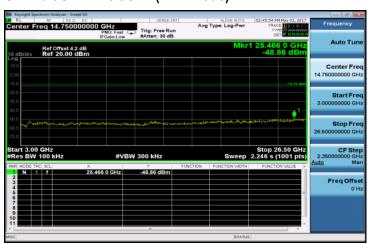
## Ch Low 3GHz - 26.5GHz (EDR Mode)



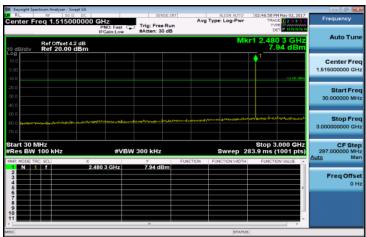
## Ch Mid 30MHz - 3GHz (EDR Mode)



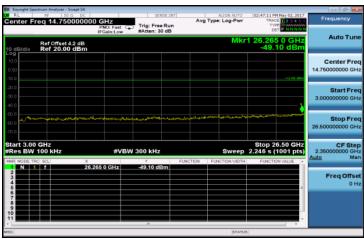
### Ch Mid 3GHz - 26.5GHz (EDR Mode)



## Ch High 30MHz - 3GHz (EDR Mode)



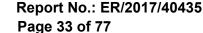
## Ch High 3GHz - 26.5GHz (EDR Mode)



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

Offices otherwise stated the results shown in this test report reter only to the sample(s) tested and such sample(s) tested and sample(s) t pany's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

<mark>SGS Taiwan Ltd. N</mark>o.134,WuKungRoad,NewTaipeilndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號



### 10 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

## 10.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, must also comply with the §15.209 & RSS-Gen §8.10 Table 6 limit.

And according to §15.33(a) (1) & RSS-Gen §8.9 Table 4 & 5, for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

#### Note:

- 1. The lower limit shall apply at the transition frequencies.
- 2. Emission level  $(dB\mu V/m) = 20 \log Emission level (dB\mu V/m)$

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

www.tw.sqs.com



**Measurement Equipment Used** 

966 Chamber						
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.	
EMI Test Receiver	R&S	ESCI7	100760	05/10/2016	05/09/2017	
Spectrum Analyzer	Agilent	E4446A	MY51100003	04/25/2017	04/24/2018	
Loop Antenna	ETS-Lindgren	6502	148045	09/20/2016	09/19/2017	
Bilog Antenna	SCHWAZBECK	VULB9168	378	12/19/2016	12/18/2017	
Horn Antenna	Schwarzbeck	BBHA9120D	1441	08/01/2016	07/31/2017	
Pre-Amplifier	Agilent	8447D	2944A07676	01/05/2017	01/04/2018	
Pre-Amplifier	EMC Instruments Corp.	EMC0126530	980038	01/05/2017	01/04/2018	
Turn Table	HD	DT420	N/A	N.C.R	N.C.R	
Antenna Tower	ChamPro	AM-BS-4500-B	060776-ABS	N.C.R	N.C.R	
Controller	ChamPro	EM1000	60776	N.C.R	N.C.R	
Low Loss Cable	Huber Suhner	966_RX	9	01/05/2017	01/04/2018	
3m Site NSA	SGS	966 chamber	N/A	07/01/2016	06/30/2017	
Low Loss Cable	Huber Suhner	966 TX	1	01/05/2017	01/04/2018	
Horn Antenna	Schwarzbeck	BBHA9170	184	12/12/2016	12/11/2017	
Pre-Amplifier	EMC Instruments Corp.	EMC184045	980135	01/05/2017	01/04/2018	

NOTE: N.C.R refers to Not Calibrated Required.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and thin the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the full lest extent of the law pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

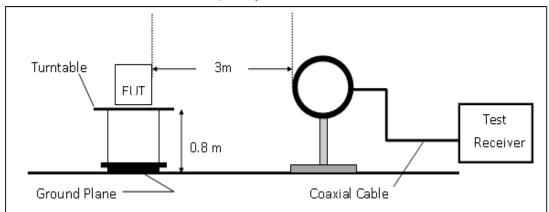
台灣檢驗科技股份有限公司 t (886-2) 2299-3279

f (886-2) 2298-0488

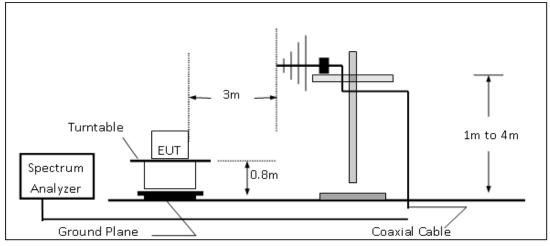


### 10.3 Test SET-UP

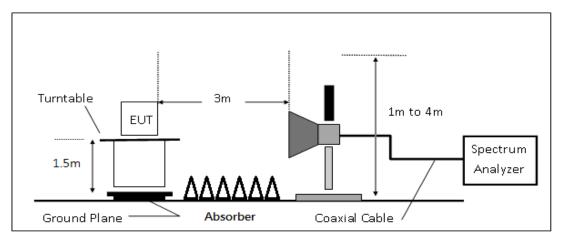
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



(B) Radiated Emission Test Set-Up, Frequency form 30MHz to 1000MHz



(C) Radiated Emission Test Set-UP Frequency Over 1 GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

t (886-2) 2299-3279

www.tw.sqs.com





#### 10.4 Measurement Procedure

#### **Radiated Emission**

- 1. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
- 2. The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 0.8m for frequency> 1GHz above ground plan.
- 3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 5. Use the follow spectrum analyzer setting:
  - (1) Span = wide enough to fully capture the emission being measured
  - (2) RBW = 1 MHz for  $f \ge 1$  GHz, 100 kHz for f < 1 GHz, VBW  $\ge$  RBW, Sweep = auto, Detector function = peak, Trace = max hold
  - (3) For average measurement: use duty cycle correction factor method per 15.35(c)

Duty Cycle = On time/100 milliseconds

On time = N1\*L1=N2\*L2+...+N(n-1)\*LN(n-1)+N(n)\*L(n)

Where N1 is number of type 1 pulses, L1 is length of type 1 pulses, etc.

Average Emission Level = Peak Emission Level + 20\*log (duty Cycle)

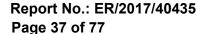
- 6. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.
- 7. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 8. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 9. Repeat above procedures until all frequency of the interest measured were complete.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留卽天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms\_and\_conditions.htm</u> and, for elec-

tronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

> 台灣檢驗科技股份有限公司 t (886-2) 2299-3279

f (886-2) 2298-0488





10.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where	•	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

The limit of the emission level is expressed in dBuV/m, which converts 20\*log(uV/m)

Actual FS(dB $\mu$ V/m) = SPA. Reading level(dB $\mu$ V) + Factor(dB)

Factor(dB) = Antenna Factor(dB $\mu$ V/m) + Cable Loss(dB) – Pre Amplifier Gain(dB)

## Note:

"F": denotes Fundamental Frequency.; "H": denotes Harmonic Frequency.

"E": denotes Band Edge Frequency.; "S": denotes Spurious Frequency.

## 10.6 Test Results of Radiated Spurious Emissions form 9 kHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

#### 10.7 **Measurement Result**

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

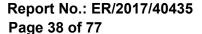
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions for Electronic Documents at <a href="https://www Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

台灣檢驗科技股份有限公司 t (886-2) 2299-3279

SGS Taiwan Ltd.

f (886-2) 2298-0488

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 www.tw.sqs.com





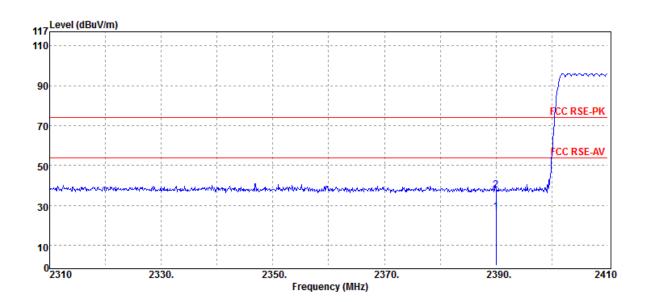
Radiated Band Edge Measurement Result: (Hopping Mode)

**Operation Band** :BR Hopping **Test Date** :2017-05-03

Fundamental Frequency :2402 MHz Temp./Humi. :23 deg\_C / 62 RH

**Operation Mode** :Bandedge CH LOW Engineer :Mike

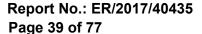
EUT Pol. :H Plane :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	@3m	-
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dΒμV/m	dB
2390.00	Е	Average	28.46	-1.74	26.72	54.00	-27.28
2390.00	E	Peak	39.56	-1.74	37.82	74.00	-36.18

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279





**Operation Band** Fundamental Frequency

**Operation Mode** 

EUT Pol.

:BR Hopping :2402 MHz

:Bandedge CH LOW

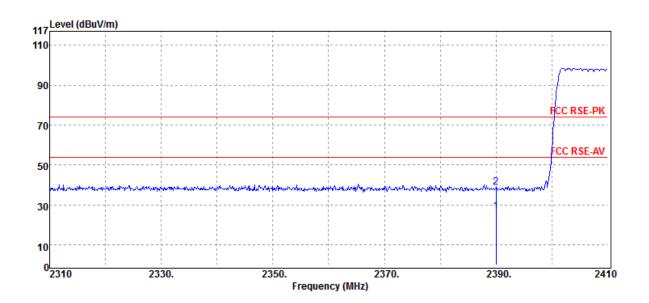
:H Plane

**Test Date** :2017-05-03

Temp./Humi. :23 deg\_C / 62 RH

Engineer :Mike

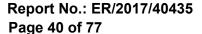
Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2390.00	Е	Average	28.34	-1.74	26.60	54.00	-27.40
2390.00	E	Peak	40.58	-1.74	38.84	74.00	-35.16

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sqs.com





EUT Pol.

:BR Hopping :2480 MHz

:Bandedge CH HIGH

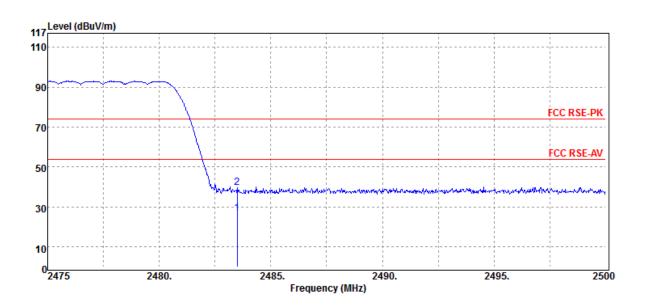
:H Plane

**Test Date** :2017-05-03

Temp./Humi. :23 deg\_C / 62 RH

Engineer :Mike

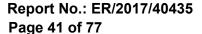
Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2483.50	E	Average	28.16	-1.62	26.54	54.00	-27.46
2483.50	E	Peak	41.25	-1.62	39.63	74.00	-34.37

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 www.tw.sqs.com





EUT Pol.

:BR Hopping :2480 MHz

:Bandedge CH HIGH

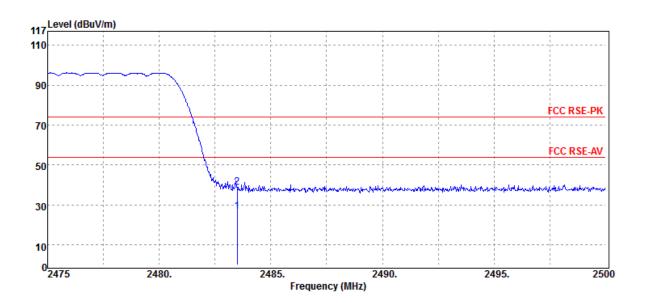
:H Plane

**Test Date** :2017-05-03

Temp./Humi. :23 deg\_C / 62 RH

Engineer :Mike

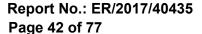
Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2483.50	E	Average	28.45	-1.62	26.83	54.00	-27.17
2483.50	E	Peak	40.57	-1.62	38.95	74.00	-35.05

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 www.tw.sqs.com





EUT Pol.

:EDR Hopping :2402 MHz

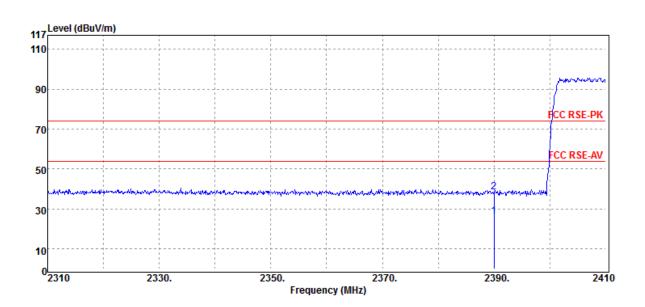
:Bandedge CH LOW

:H Plane

**Test Date** :2017-05-03

Temp./Humi. :23 deg\_C / 62 RH Engineer :Mike

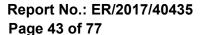
Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBμV/m	dBμV/m	dB
2390.00	Е	Average	28.26	-1.74	26.52	54.00	-27.48
2390.00	E	Peak	40.23	-1.74	38.49	74.00	-35.51

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488





:EDR Hopping :2402 MHz

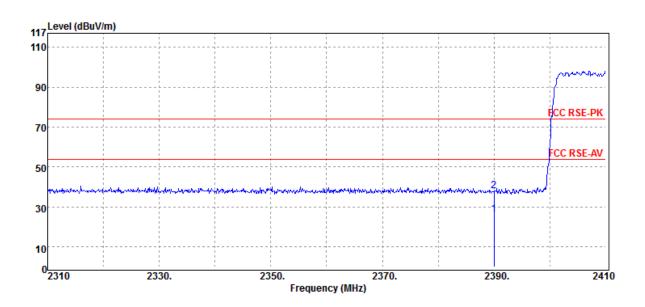
:Bandedge CH LOW

:H Plane

**Test Date** :2017-05-03

Temp./Humi. :23 deg\_C / 62 RH Engineer :Mike

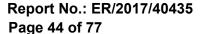
Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2390.00	E	Average	28.22	-1.74	26.48	54.00	-27.52
2390.00	E	Peak	39.78	-1.74	38.04	74.00	-35.96

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488





EUT Pol.

:EDR Hopping :2480 MHz

:Bandedge CH HIGH

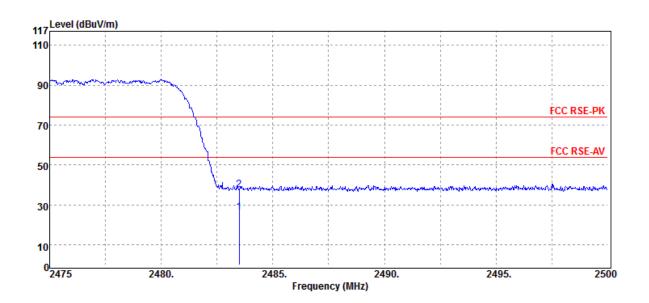
:H Plane

**Test Date** :2017-05-03

Temp./Humi. :23 deg\_C / 62 RH

Engineer :Mike

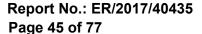
Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
2483.50	E	Average	27.85	-1.62	26.23	54.00	-27.77
2483.50	E	Peak	39.32	-1.62	37.70	74.00	-36.30

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sqs.com





EUT Pol.

:EDR Hopping :2480 MHz

:Bandedge CH HIGH

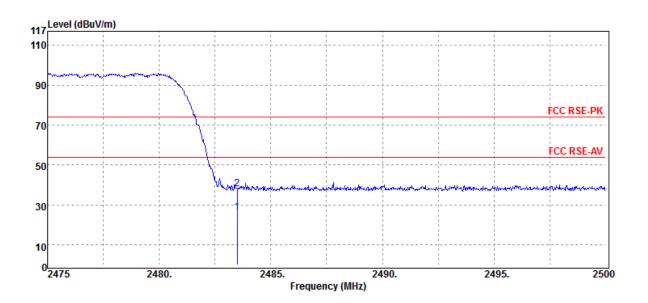
:H Plane

**Test Date** :2017-05-03

Temp./Humi. :23 deg\_C / 62 RH

Engineer :Mike

Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
2483.50	E	Average	28.00	-1.62	26.38	54.00	-27.62
2483.50	E	Peak	39.87	-1.62	38.25	74.00	-35.75

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sqs.com





Page 46 of 77

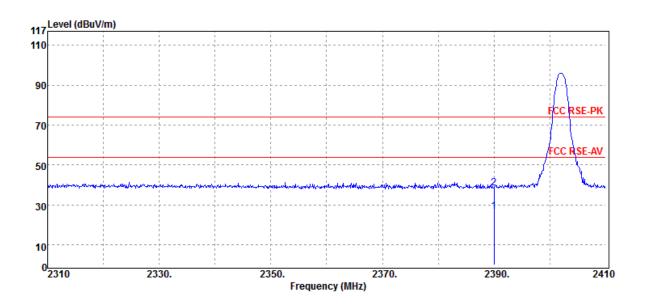
# Radiated Emission – Band Edge (Non-Hopping Mode):

**Test Date Operation Band** :BR(1M) :2017-05-03

Fundamental Frequency :2402 MHz Temp./Humi. :23 deg\_C / 62 RH

**Operation Mode** :Bandedge CH LOW Engineer :Mike

EUT Pol. :H Plane Measurement Antenna Pol. :VERTICAL

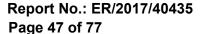


Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
2390.00	Е	Average	28.35	-1.74	26.61	54.00	-27.39
2390.00	E	Peak	40.23	-1.74	38.49	74.00	-35.51

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留卯天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sqs.com/terms">www.sqs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sqs.com/terms">www.sqs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of contained hereon reflects the Company's findings at the time of its intervention only and within the limits of contained hereon reflects the company's findings at the time of its intervention only and within the limits of contained hereon reflects the company's findings at the time of its intervention only and within the limits of contained hereon reflects the company's findings at the time of its intervention only and within the limits of contained hereon reflects the company's findings at the time of its intervention only and within the limits of contained hereon reflects the contained Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 www.tw.sqs.com





Fundamental Frequency

**Operation Mode** 

EUT Pol.

:BR(1M) :2402 MHz

:Bandedge CH LOW

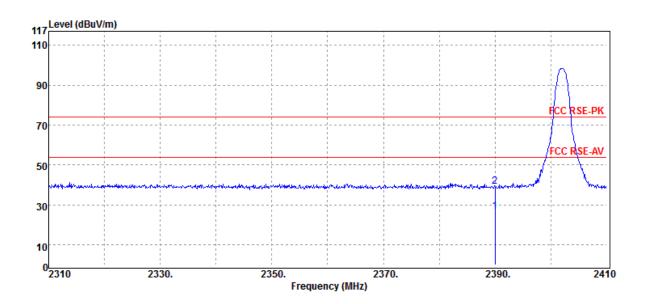
:H Plane

**Test Date** :2017-05-03

Temp./Humi. :23 deg\_C / 62 RH

Engineer :Mike

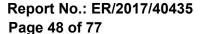
Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2390.00	Е	Average	28.29	-1.74	26.55	54.00	-27.45
2390.00	E	Peak	40.83	-1.74	39.09	74.00	-34.91

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 f (886-2) 2298-0488 www.tw.sqs.com





Fundamental Frequency

**Operation Mode** 

EUT Pol.

:BR(1M) :2480 MHz

:Bandedge CH HIGH

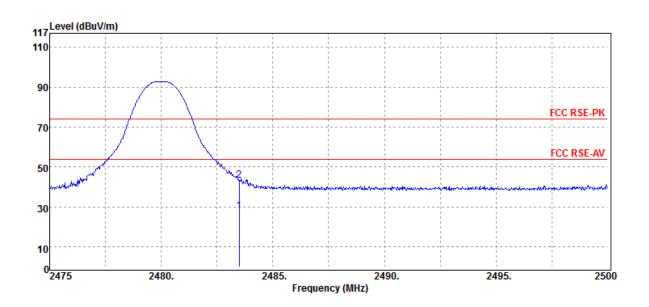
:H Plane

**Test Date** :2017-05-03

Temp./Humi. :23 deg\_C / 62 RH

Engineer :Mike

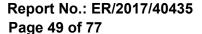
Measurement Antenna Pol. :VERTICAL



	Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin	
			Mode	Reading Level		FS	@3m		
_	MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dΒμV/m	dB	
_	2483.50	E	Average	29.56	-1.62	27.94	54.00	-26.06	
	2483.50	E	Peak	44.89	-1.62	43.27	74.00	-30.73	

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sqs.com





Fundamental Frequency **Operation Mode** 

EUT Pol.

:BR(1M) :2480 MHz

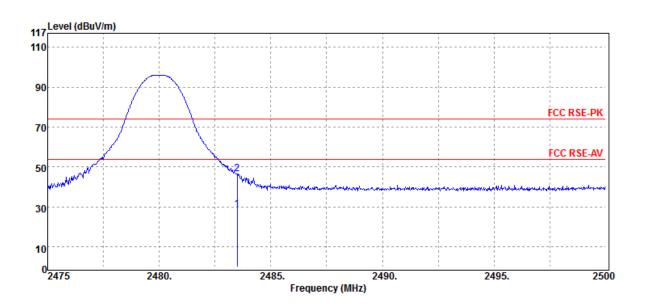
:Bandedge CH HIGH

:H Plane

**Test Date** :2017-05-03

Temp./Humi. :23 deg\_C / 62 RH Engineer :Mike

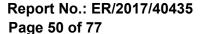
Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
2483.50	Е	Average	30.56	-1.62	28.94	54.00	-25.06
2483.50	Ε	Peak	48.22	-1.62	46.60	74.00	-27.40

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 f (886-2) 2298-0488





Fundamental Frequency

**Operation Mode** 

EUT Pol.

:EDR(3M) :2402 MHz

:Bandedge CH LOW

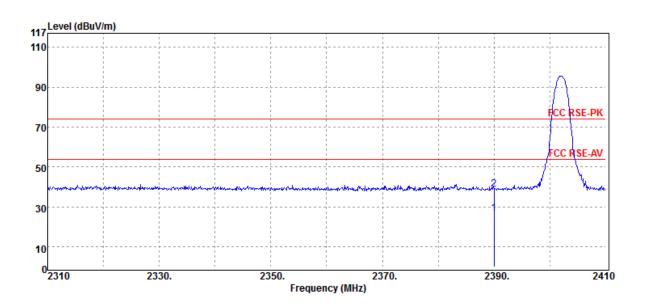
:H Plane

**Test Date** :2017-05-03

Temp./Humi. :23 deg\_C / 62 RH

Engineer :Mike

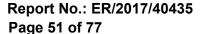
Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
2390.00	Е	Average	28.36	-1.74	26.62	54.00	-27.38
2390.00	E	Peak	40.57	-1.74	38.83	74.00	-35.17

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 www.tw.sqs.com

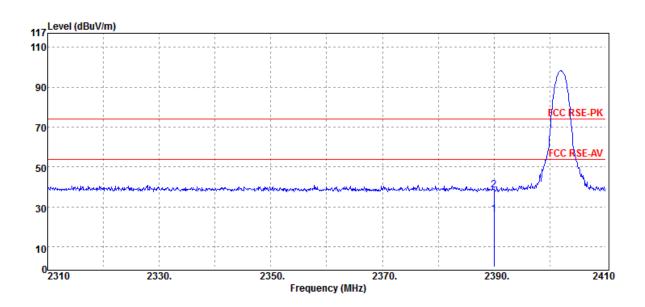




Fundamental Frequency :2402 MHz Temp./Humi. :23 deg\_C / 62 RH

**Operation Mode** :Bandedge CH LOW Engineer :Mike

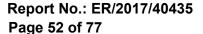
EUT Pol. :H Plane Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
2390.00	Е	Average	28.20	-1.74	26.46	54.00	-27.54
2390.00	E	Peak	40.08	-1.74	38.34	74.00	-35.66

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sqs.com





Fundamental Frequency

**Operation Mode** EUT Pol.

:EDR(3M) :2480 MHz

:Bandedge CH HIGH

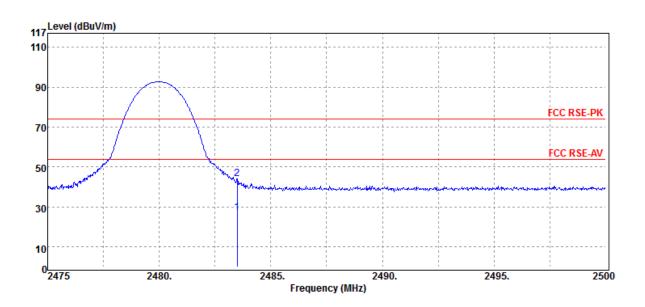
:H Plane

**Test Date** :2017-05-03

Temp./Humi. :23 deg\_C / 62 RH

Engineer :Mike

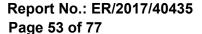
Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
2483.50	Е	Average	28.92	-1.62	27.30	54.00	-26.70
2483.50	E	Peak	45.72	-1.62	44.10	74.00	-29.90

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 www.tw.sqs.com





Fundamental Frequency

**Operation Mode** EUT Pol.

:EDR(3M) :2480 MHz

:Bandedge CH HIGH

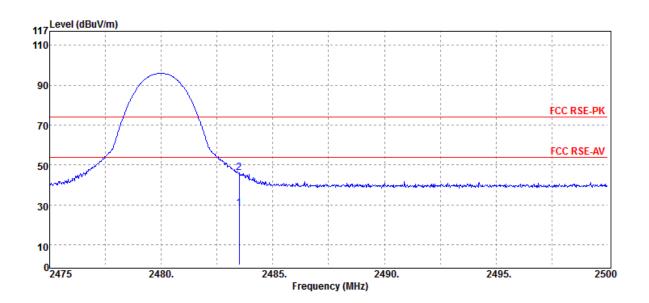
:H Plane

**Test Date** :2017-05-03

Temp./Humi. :23 deg\_C / 62 RH

Engineer :Mike

Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
2483.50	E	Average	29.99	-1.62	28.37	54.00	-25.63
2483.50	E	Peak	47.84	-1.62	46.22	74.00	-27.78

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sqs.com





**Radiated Spurious Emission Measurement Result:** 

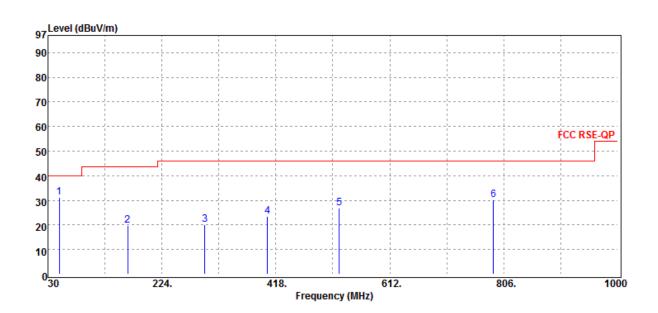
# For Frequency form 30MHz to 1000MHz

**Operation Band** :EDR(3M) **Test Date** :2017-04-28

Fundamental Frequency Temp./Humi. :2402 MHz :23 deg\_C / 62 RH

Operation Mode :Tx CH LOW Engineer :Mike

EUT Pol. :H Plane :VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dBµV	dB	dBμV/m	dBμV/m	dB
49.40	S	Peak	39.03	-7.74	31.29	40.00	-8.71
165.80	S	Peak	27.26	-7.40	19.86	43.50	-23.64
296.75	S	Peak	26.20	-5.98	20.22	46.00	-25.78
403.45	S	Peak	27.59	-3.93	23.66	46.00	-22.34
525.67	S	Peak	28.54	-1.59	26.95	46.00	-19.05
788.54	S	Peak	27.39	2.75	30.14	46.00	-15.86

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留卯天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sqs.com/terms">www.sqs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sqs.com/terms">www.sqs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of contained hereon reflects the Company's findings at the time of its intervention only and within the limits of contained hereon reflects the company's findings at the time of its intervention only and within the limits of contained hereon reflects the company's findings at the time of its intervention only and within the limits of contained hereon reflects the company's findings at the time of its intervention only and within the limits of contained hereon reflects the company's findings at the time of its intervention only and within the limits of contained hereon reflects the contained Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 www.tw.sqs.com

台灣檢驗科技股份有限公司

SGS Taiwan Ltd.

f (886-2) 2298-0488



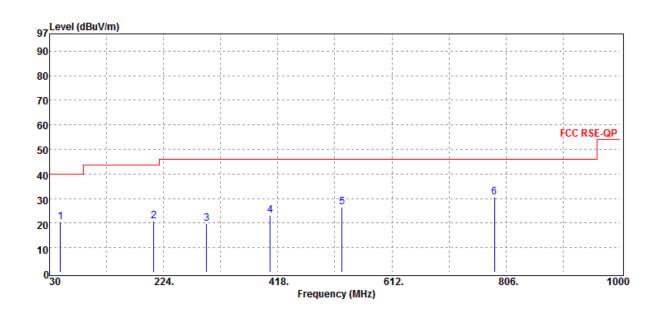


Page 55 of 77

**Operation Band** :EDR(3M) **Test Date** :2017-04-28 Fundamental Frequency :2402 MHz Temp./Humi. :23 deg\_C / 62 RH

**Operation Mode** :Tx CH LOW Engineer :Mike

EUT Pol. :H Plane Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
48.43	S	Peak	28.15	-7.80	20.35	40.00	-19.65
207.51	S	Peak	30.55	-9.73	20.82	43.50	-22.68
296.75	S	Peak	25.80	-5.98	19.82	46.00	-26.18
405.39	S	Peak	26.88	-3.70	23.18	46.00	-22.82
527.61	S	Peak	27.79	-1.32	26.47	46.00	-19.53
786.60	S	Peak	28.00	2.60	30.60	46.00	-15.40

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279

SGS Taiwan Ltd.

f (886-2) 2298-0488



Page 56 of 77



**Operation Band** Fundamental Frequency

**Operation Mode** 

EUT Pol.

:EDR(3M) :2441 MHz :Tx CH MID

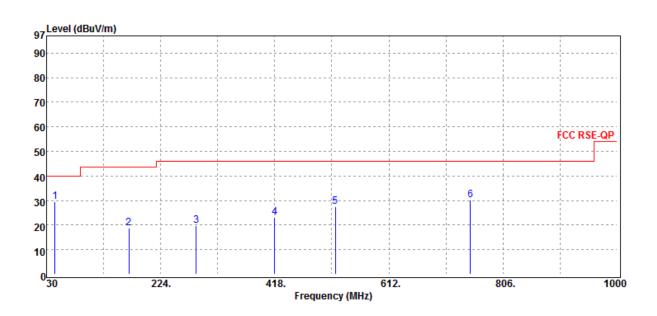
:H Plane

**Test Date** :2017-04-28

Temp./Humi. :23 deg\_C / 62 RH

Engineer :Mike

Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
							_
44.55	S	Peak	37.76	-8.09	29.67	40.00	-10.33
169.68	S	Peak	26.52	-7.57	18.95	43.50	-24.55
284.14	S	Peak	26.14	-6.22	19.92	46.00	-26.08
418.00	S	Peak	26.61	-3.37	23.24	46.00	-22.76
520.82	S	Peak	29.05	-1.58	27.47	46.00	-18.53
750.71	S	Peak	27.39	2.76	30.15	46.00	-15.85

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488

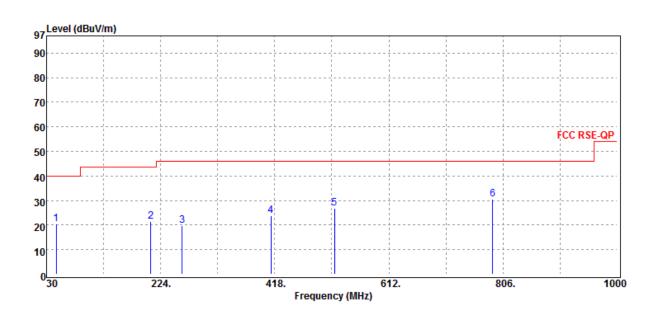




Fundamental Frequency :2441 MHz Temp./Humi. :23 deg\_C / 62 RH

**Operation Mode** :Tx CH MID Engineer :Mike

EUT Pol. :H Plane Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
							_
46.49	S	Peak	28.25	-7.91	20.34	40.00	-19.66
207.51	S	Peak	31.11	-9.73	21.38	43.50	-22.12
260.86	S	Peak	26.93	-7.24	19.69	46.00	-26.31
411.21	S	Peak	27.33	-3.63	23.70	46.00	-22.30
519.85	S	Peak	28.49	-1.62	26.87	46.00	-19.13
788.54	S	Peak	27.83	2.75	30.58	46.00	-15.42

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

t (886-2) 2299-3279

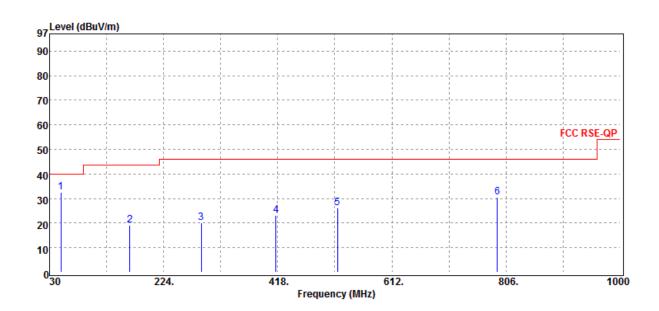




Fundamental Frequency :2480 MHz Temp./Humi. :23 deg\_C / 62 RH

**Operation Mode** :Tx CH HIGH Engineer :Mike

EUT Pol. :H Plane Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
49.40	S	Peak	40.44	-7.74	32.70	40.00	-7.30
166.77	S	Peak	26.46	-7.42	19.04	43.50	-24.46
288.02	S	Peak	26.16	-6.14	20.02	46.00	-25.98
415.09	S	Peak	26.31	-3.21	23.10	46.00	-22.90
519.85	S	Peak	27.73	-1.62	26.11	46.00	-19.89
791.45	S	Peak	27.69	2.89	30.58	46.00	-15.42

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

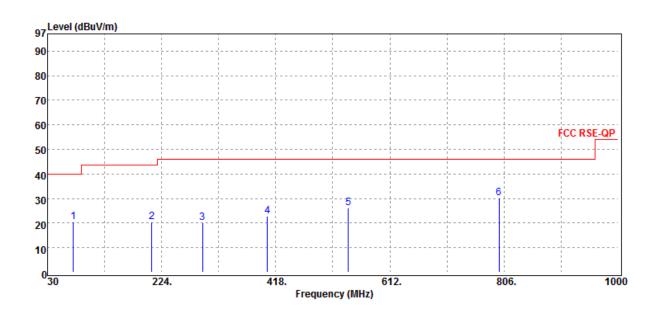




Fundamental Frequency :2480 MHz Temp./Humi. :23 deg\_C / 62 RH

**Operation Mode** :Tx CH HIGH Engineer :Mike

EUT Pol. :H Plane Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
73.65	S	Peak	31.55	-11.02	20.53	40.00	-19.47
207.51	S	Peak	30.30	-9.73	20.57	43.50	-22.93
293.84	S	Peak	26.17	-6.04	20.13	46.00	-25.87
403.45	S	Peak	26.84	-3.93	22.91	46.00	-23.09
541.19	S	Peak	27.95	-1.78	26.17	46.00	-19.83
797.27	S	Peak	27.14	3.07	30.21	46.00	-15.79

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sqs.com



Report No.: ER/2017/40435

Page 60 of 77

# **Radiated Spurious Emission Measurement Result:**

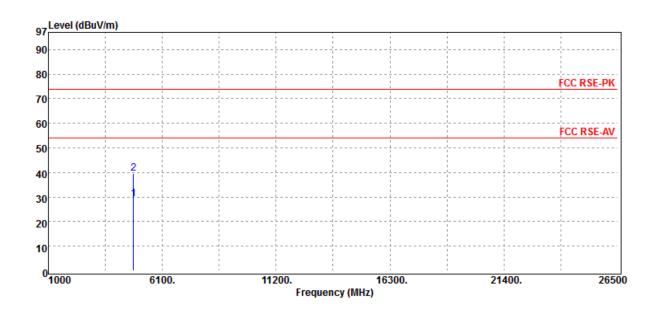
# For Frequency above 1 GHz

**Operation Band** :EDR(3M) **Test Date** :2017-05-03

Fundamental Frequency Temp./Humi. :2402 MHz :23 deg\_C / 62 RH

Operation Mode :Tx CH LOW Engineer :Mike

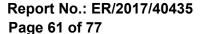
EUT Pol. :VERTICAL :H Plane Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Safe
MHz	F/H/E/S	Mode PK/QP/AV	Reading Level dBµV	dB	FS dBµV/m	@3m dBµV/m	Margin dB
			•			•	
4804.00	Н	Average	24.37	4.92	29.29	54.00	-24.71
4804.00	Н	Peak	34.62	4.92	39.54	74.00	-34.46

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sqs.com

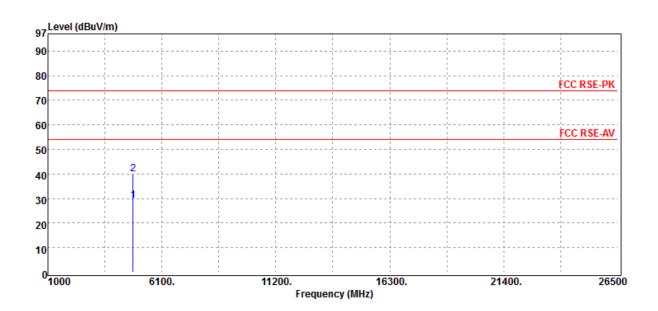




Fundamental Frequency :2402 MHz Temp./Humi. :23 deg\_C / 62 RH

**Operation Mode** :Tx CH LOW Engineer :Mike

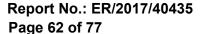
EUT Pol. :H Plane Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
							_
4804.00	Н	Average	24.12	4.92	29.04	54.00	-24.96
4804.00	Н	Peak	35.04	4.92	39.96	74.00	-34.04

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sqs.com





Fundamental Frequency

:EDR(3M)

:2441 MHz

:Tx CH MID

:H Plane

**Operation Band** 

**Operation Mode** 

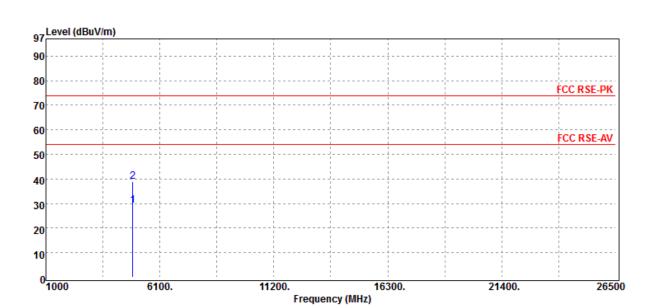
EUT Pol.

**Test Date** :2017-05-03

Temp./Humi. :23 deg\_C / 62 RH

Engineer :Mike

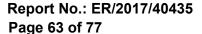
Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBµV/m	dB
							_
4882.00	Н	Average	24.08	5.18	29.26	54.00	-24.74
4882.00	Н	Peak	33.69	5.18	38.87	74.00	-35.13

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law SGS Taiwan Ltd.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

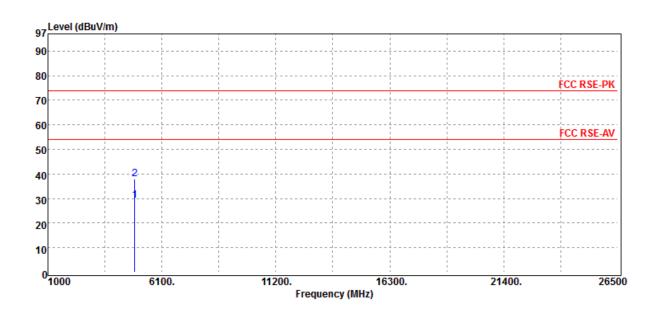




Fundamental Frequency :2441 MHz Temp./Humi. :23 deg\_C / 62 RH

**Operation Mode** :Tx CH MID Engineer :Mike

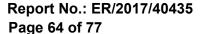
EUT Pol. :H Plane Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
4882.00	Н	Average	24.15	5.18	29.33	54.00	-24.67
4882.00	Н	Peak	32.72	5.18	37.90	74.00	-36.10

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sqs.com

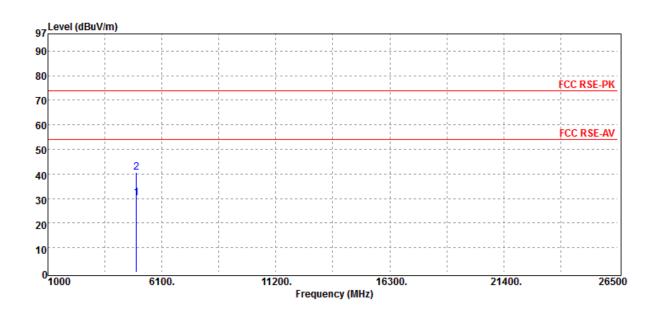




Fundamental Frequency :2480 MHz Temp./Humi. :23 deg\_C / 62 RH

**Operation Mode** :Tx CH HIGH Engineer :Mike

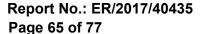
EUT Pol. :H Plane Measurement Antenna Pol. :VERTICAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
4960.00	Н	Average	25.04	5.29	30.33	54.00	-23.67
4960.00	Н	Peak	35.29	5.29	40.58	74.00	-33.42

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 www.tw.sqs.com

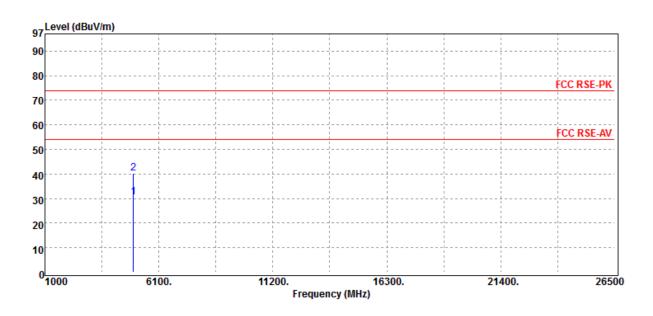




Fundamental Frequency :2480 MHz Temp./Humi. :23 deg\_C / 62 RH

**Operation Mode** :Tx CH HIGH Engineer :Mike

EUT Pol. :H Plane Measurement Antenna Pol. :HORIZONTAL



Freq.	Note	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Safe Margin
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBμV/m	dB
							_
4960.00	Н	Average	25.36	5.29	30.65	54.00	-23.35
4960.00	Н	Peak	34.83	5.29	40.12	74.00	-33.88

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488





Page 66 of 77

## 11 FREQUENCY SEPARATION

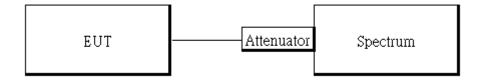
## **Standard Applicable**

Frequency hopping systems shall have hopping channel carrier frequencies separated by minimum of 25 kHz or the 2/3\*20dB bandwidth of the hopping channel, whichever is greater.

## **Measurement Equipment Used**

Conducted Emission Test Site									
EQUIPMENT	EQUIPMENT MFR MODEL SERIAL LAST CAL DUE.								
TYPE		NUMBER	NUMBER	CAL.					
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018				
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018				
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018				

## 11.3 Test Set-up



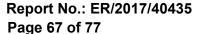
## 11.4 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. Set center frequency of spectrum analyzer = middle of hopping channel.
- 5. Set the spectrum analyzer as RBW, VBW=100 kHz, Adjust Span to 5MHz, Sweep = auto.
- 6. Max hold. Mark 3 Peaks of hopping channel and record the 3 peaks frequency.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions for Electronic Documents at <a href="https://www Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 f (886-2) 2298-0488 www.tw.sqs.com

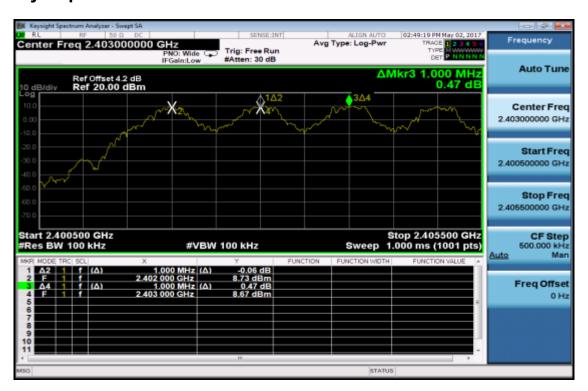




**Measurement Result** 

Channel separation (MHz)	Limit	Result
1	>=25 kHz or 2/3 times 20dB bandwidth	PASS

# **Frequency Separation Test Data**



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is undertile and effective members are reconstructed to the full per vertical to the full per ve pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

t (886-2) 2299-3279

f (886-2) 2298-0488





Page 68 of 77

## 12 NUMBER OF HOPPING FREQUENCY

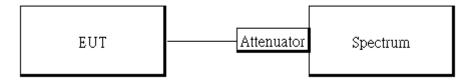
## 12.1 Standard Applicable

Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands shall use at least 15 hopping frequencies.

## 12.2 Measurement Equipment Used

Conducted Emission Test Site									
EQUIPMENT	EQUIPMENT MFR MODEL SERIAL LAST CAL DUE.								
TYPE		NUMBER	NUMBER	CAL.					
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018				
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018				
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018				

## 12.3 Test Set-up



## 12.4 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
- Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. Set spectrum analyzer Start=2400MHz, Stop = 2483.5MHz, Sweep = auto.
- 5. Set the spectrum analyzer as RBW=430 kHz, VBW=1.5MHz., Detector = Peak
- 6. Max hold, view and count how many channel in the band.

## 12.5 Measurement Result

## **Tabular Data of Total Channel Number**

	Channel Number	Limit
2.4 GHz – 2.441GHz	40	
2.441 GHz – 2.4835GHz	39	>15
2.4GHz ~2.4835GHz	(40+39) = 79	

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms\_and\_conditions.htm">www.sgs.com/terms\_and\_conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

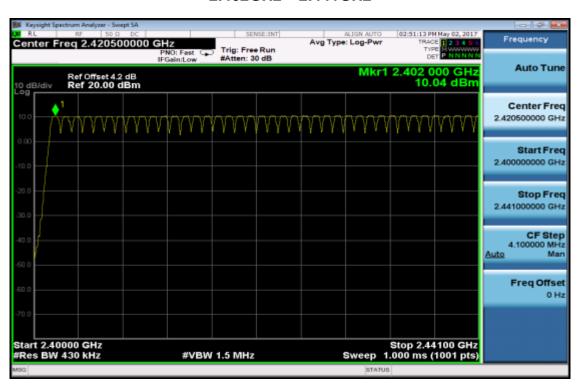
SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

t (886-2) 2299-3279 www.tw.sqs.com

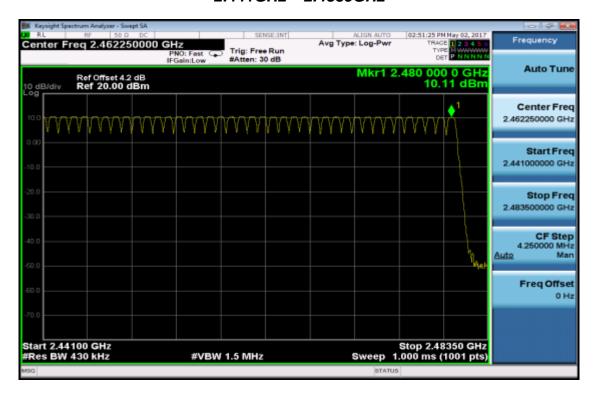


## **Channel Number**

## 2.402GHz - 2.441GHz



## 2.441GHz - 2.4835GHz



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

t (886-2) 2299-3279

Offices otherwise stated title results shown in this test report refer only to the sample(s) tested and such an arripe(s) are retained for 90 days only. 
Pk 非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留的人。本報告未經本公司書面好可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sqs.com/terms">www.sqs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sqs.com/terms">www.sqs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or approximate of this document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or approximate of this document. pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

f (886-2) 2298-0488





Page 70 of 77

# 13 TIME OF OCCUPANCY (DWELL TIME)

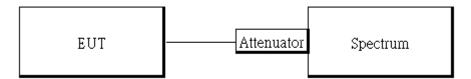
## Standard Applicable

Frequency hopping systems operating in the 2400MHz-2483.5MHz. The average time of occupancy on any frequency shall not greater than 0.4 s within period of 0.4 seconds multiplied by the number of hopping channel employed.

#### 13.2 Measurement Equipment Used

Conducted Emission Test Site									
EQUIPMENT TYPE	T MFR MODEL SERIAL LAST CAL DUE.  NUMBER NUMBER CAL.								
EXA Spectrum Analyzer	Agilent	N9030A	MY53120760	03/21/2017	03/20/2018				
DC Block	Mini-Circuits	BLK-18-S+	1	01/05/2017	01/04/2018				
Attenuator	Mini-Circuit	BW-S10W2+	2	01/05/2017	01/04/2018				

## 13.3 Test Set-up



## 13.4 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows FCC Public Notice DA 00-705 Measurement Guidelines.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. Set center frequency of spectrum analyzer = operating frequency.
- 5. Set the spectrum analyzer as RBW, VBW=1MHz, 3MHz, Span = 0Hz, Detector = Peak, Adjust Sweep = 2~8ms.
- 6. Repeat above procedures until all frequency of the interest measured were complete.

Formula Deduced: time occupancy of one time slot X Hopping rate / total slot in one channel / total channel that hops X period of working channels.

Where, standard hopping rate is 1600 hops/s, slot in one channel for DH1, DH3, and DH5 is 2, 4, and 6, respectively.

DH1 consists of single time slot of the uplink, and one slot of the downlink Total Slot: 2

DH3 consists of three time slot of the uplink, and one slot of the downlink. Total Slot: 4

DH5 consists of five time slot of the uplink, and one slot of the downlink. Total Slot: 6

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms\_and\_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279





Page 71 of 77

In AFH mode, hopping rate is 800 hop/s with 6 slots in 20 hopping channels with channel hopping rate (800 / 6 / 20) in Occupancy Time Limit (0.4 \* 20 ) (S), Hop Over Occupancy Time comes to (800 / 6 / 20 )\*(0.4 \*20 ) =53.33

Note: the result of the complete test default channel at 1Mbps is recorded on the test report, 2Mbps, and 3Mbps only records the measurement result at middle channel that reveals no much deviation.

#### Tabular Result of the Measurement 13.5

GESK (1Mbps)

GFSK (TWIDPS)	•	1	
Channel	PACKET TYPE	Measurement Result	Limit
Griannon	17totter in e	(ms)	(ms)
	DH1	116.80	400ms
0	DH3	256.32	400ms
	DH5	302.61	400ms
	DH1	115.84	400ms
39	DH3	256.32	400ms
	DH5	302.61	400ms
	DH1	116.80	400ms
78	DH3	256.32	400ms
	DH5	302.61	400ms

## π/4 DQPSK (2Mbps)

Channel	PACKET TYPE	Measurement Result (ms)	Limit (ms)
	DH1	118.72	400ms
39	DH3	256.32	400ms
	DH5	302.61	400ms

8-DPSK (3Mbps)

Channel	PACKET TYPE	Measurement Result (ms)	Limit (ms)
39	DH1	118.72	400ms
	DH3	256.32	400ms
	DH5	302.61	400ms

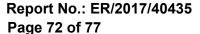
A period time = 0.4 (s) \* 79 = 31.6 (s)

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

> f (886-2) 2298-0488 www.tw.sqs.com

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號



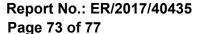


## GFSK (1Mbps):

(	- 1 /							
CH Low	DH1 time slot =	0.365 *	(1600/2/79) *	31.6 =	116.80	(ms)		
	DH3 time slot =	1.602 *	(1600/4/79) *	31.6 =	256.32	(ms)		
	DH5 time slot =	2.837 *	(1600/6/79) *	31.6 =	302.61	(ms)		
CH Mid	DH1 time slot =	0.362 *	(1600/2/79) *	31.6 =	115.84	(ms)		
	DH3 time slot =	1.602 *	(1600/4/79) *	31.6 =	256.32	(ms)		
	DH5 time slot =	2.837 *	(1600/6/79) *	31.6 =	302.61	(ms)		
CH High	DH1 time slot =	0.365 *	(1600/2/79) *	31.6 =	116.80	(ms)		
		1.602 *	(1600/4/79) *		256.32	(ms)		
	DH5 time slot =	2.837 *	(1600/6/79) *	31.6 =	302.61	(ms)		
π/4 -DQPSK (2Mbps):								
CH Mid	2DH1 time slo =	0.371 *	(1600/2/79) *	31.6 =	118.72	(ms)		
		1.602 *	(1600/4/79) *		256.32	` '		
	2DH5 time slo =	2.837 *	(1600/6/79) *	31.6 =	302.61	(ms)		
8-DPSK (3Mbps):								
CH Mid	3DH1 time slo =	0.371 *	(1600/2/79) *	31.6 =	118.72	(ms)		
		1.602 *	(1600/4/79) *	31.6 =	256.32	` ,		
	3DH5 time slo =	2.837 *	(1600/6/79) *	31.6 =	302.61	(ms)		

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sgs.com/terms">www.sgs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and thin the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the full lest extent of the law pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 SGS Taiwan Ltd.





GFSK (1Mbps) for AFH Mode Hopping Measurement Limit **PACKET TYPE** Channel Number Result (ms) (ms) DH<sub>5</sub> 20 151.31 400ms  $\pi/4$  DQPSK (2Mbps) for Mode **Hopping** Limit Measurement **PACKET TYPE Channel Number** Result (ms) (ms) DH5 400ms 20 151.31 8-DPSK (3Mbps) for AFH Mode Hopping Measurement Limit **PACKET TYPE** Channel Number Result (ms) (ms) DH5 151.31 20 400ms

# GFSK (1Mbps):

DH5 time s = (800/6/20\*8 =2.837 (ms) \* 151.31 (ms)

π/4 -DQPSK (2Mbps

2DH5 time =2.837 (800/6/20\*8 =(ms) \* 151.31 (ms)

8-DPSK (3Mbps):

3DH5 time =2.837 (ms) \* (800/6/20 \* 8 = 151.31

#### 13.6 **Measurement Result**

Note: Refer to next page for plots.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only

Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

t (886-2) 2299-3279

f (886-2) 2298-0488

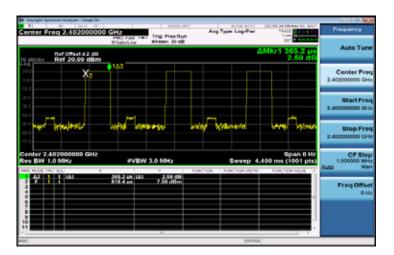
No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號



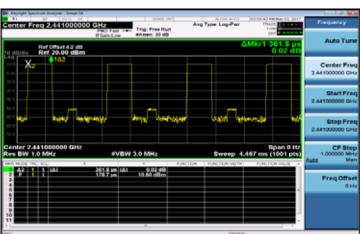
Page 74 of 77

# SGS

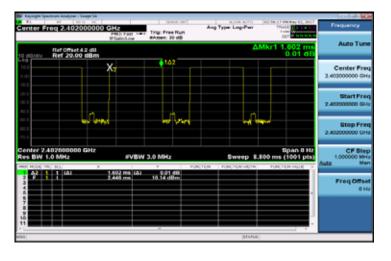
# **CH-Low DH1**



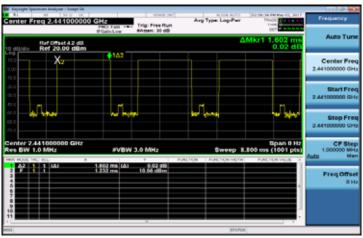
# CH-Mid DH1



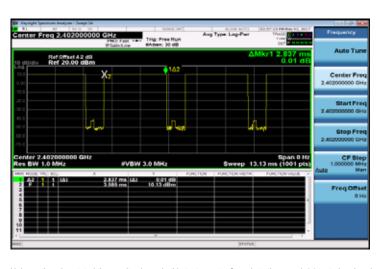
## **CH-Low DH3**



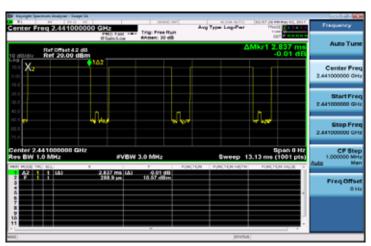
**CH-Mid DH3** 



## **CH-Low DH5**



## **CH-Mid DH5**



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留卯天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sqs.com/terms">www.sqs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sqs.com/terms">www.sqs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction is suese defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

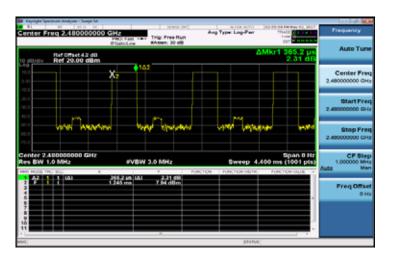
<mark>SGS Taiwan Ltd.</mark> No.134,WuKungRoad,NewTaipeilndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號



Page 75 of 77



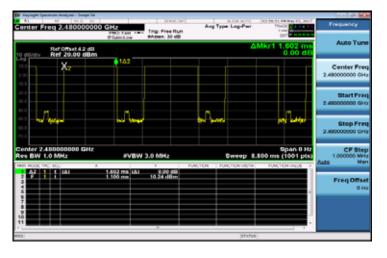
# **CH-High DH1**



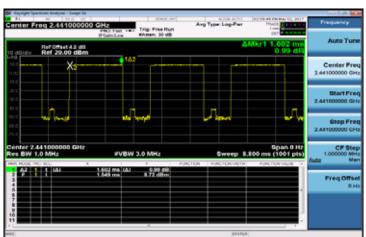
## CH-Mid 2DH1



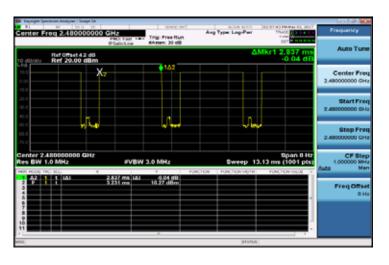
# **CH-High DH3**



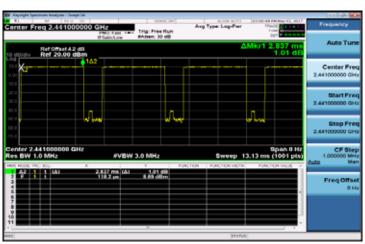
CH-Mid 2DH3



# **CH-High DH5**



# CH-Mid 2DH5



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留卯天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sqs.com/terms">www.sqs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sqs.com/terms">www.sqs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

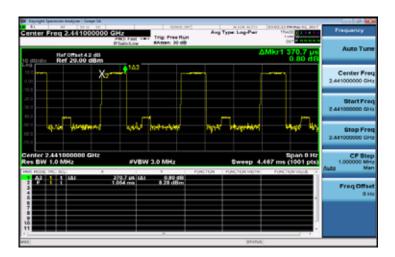
SGS Taiwan Ltd.

| No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

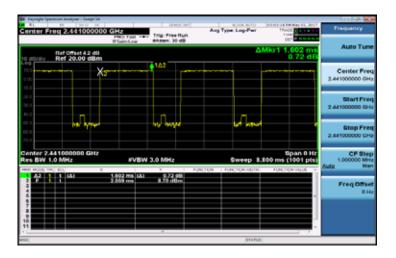


Page 76 of 77

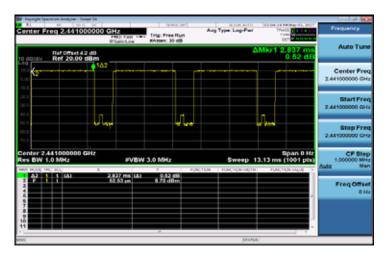
# CH-Mid 3DH1



## CH-Mid 3DH3



## CH-Mid 3DH5



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留卯天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="www.sqs.com/terms">www.sqs.com/terms</a> and conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sqs.com/terms">www.sqs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號



Report No.: ER/2017/40435

Page 77 of 77

## 14 ANTENNA REQUIREMENT

# 14.1 Standard Applicable

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device.

If the transmitting antenna is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

## According to RSS-GEN 8.3

The applicant for equipment certification, as per RSP-100, must provide a list of all antenna types that may be used with the licence-exempt transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna.

Licence-exempt transmitters that have received equipment certification may operate with different types of antennas. However, it is not permissible to exceed the maximum equivalent isotropically radiated power (e.i.r.p.) limits specified in the applicable standard (RSS) for the licence-exempt apparatus.

Testing shall be performed using the highest gain antenna of each combination of licence-exempt transmitter and antenna type, with the transmitter output power set at the maximum level.9 When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna manufacturer.

## 14.2 Antenna Connected Construction

An embedded-in antenna design is used.

The antenna is designed with unique type RF connector and has no consideration of replacement. Please see EUT photo and antenna spec. for details.

~ End of Report ~

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <a href="https://www.sgs.com/terms">www.sgs.com/terms</a> and <a href="https://www.sgs.com/terms">conditions.htm</a> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <a href="www.sgs.com/terms">www.sgs.com/terms</a> e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law

SGS Taiwan Ltd.

No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488