

# FCC PART 15.247 TEST REPORT

For

# Telecell Mobile (H.K) Ltd.

RM801 Metro Ctr II, 21 Lam Hing Street. KIn Bay. HK

FCC ID: 2ADX3M405B

Report Type: Product Type: 3G Smartphone Original Report Allen Dious Test Engineer: Allen Qiao Report Number: RSZ150928003-00A **Report Date:** 2015-10-30 Sono Hugel Sula Huang Reviewed By: RF Leader Bay Area Compliance Laboratories Corp. (Dongguan) **Test Laboratory:** No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan). This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

# TABLE OF CONTENTS

GENERAL INFORMATION	4
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
Objective	4
RELATED SUBMITTAL(S)/GRANT(S)	
TEST METHODOLOGY	
TEST FACILITY	4
SYSTEM TEST CONFIGURATION	5
DESCRIPTION OF TEST CONFIGURATION	5
EUT Exercise Software	
EQUIPMENT MODIFICATIONS	
SUPPORT EQUIPMENT LIST AND DETAILS	5
EXTERNAL CABLE	
BLOCK DIAGRAM OF TEST SETUP	
SUMMARY OF TEST RESULTS	
FCC §15.247 (i) & §1.1310 & §2.1093- RF EXPOSURE	8
APPLICABLE STANDARD	
FCC §15.203 - ANTENNA REQUIREMENT	9
APPLICABLE STANDARD	
ANTENNA CONNECTOR CONSTRUCTION	
FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS	10
APPLICABLE STANDARD	
MEASUREMENT UNCERTAINTY.	
EUT SETUP.	
EMI TEST RECEIVER SETUP.	
TEST PROCEDURE	
CORRECTED AMPLITUDE & MARGIN CALCULATION	
TEST EQUIPMENT LIST AND DETAILS	
TEST RESULTS SUMMARY	
TEST DATA	
FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS	
APPLICABLE STANDARD	
MEASUREMENT UNCERTAINTY	
EUT SETUP	15
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	
TEST PROCEDURE	
TEST EQUIPMENT LIST AND DETAILS	
TEST RESULTS SUMMARY	
TEST DATA	
FCC §15.247(a) (1) - CHANNEL SEPARATION TEST	26
APPLICABLE STANDARD	
TEST EQUIPMENT LIST AND DETAILS.	
TEST PROCEDURE	
Test Data	26

FCC §15.247(a) (1) – 20 dB BANDWIDTH TESTING	32
APPLICABLE STANDARD	32
Test Procedure	
TEST EQUIPMENT LIST AND DETAILS.	
Test Data	
FCC §15.247(a) (1) (iii) - QUANTITY OF HOPPING CHANNEL TEST	38
APPLICABLE STANDARD	38
TEST PROCEDURE	
TEST EQUIPMENT LIST AND DETAILS.	38
TEST DATA	
FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME)	42
APPLICABLE STANDARD	42
TEST PROCEDURE	
TEST EQUIPMENT LIST AND DETAILS.	42
TEST DATA	42
FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT	58
APPLICABLE STANDARD	
TEST PROCEDURE	
TEST EQUIPMENT LIST AND DETAILS.	
Test Data	58
FCC §15.247(d) - BAND EDGES TESTING	64
APPLICABLE STANDARD	64
TEST PROCEDURE	64
TEST EQUIPMENT LIST AND DETAILS.	
TEST DATA	
DECLADATION LETTED	69

### **GENERAL INFORMATION**

### **Product Description for Equipment under Test (EUT)**

The *Telecell Mobile (H.K) Ltd.*'s product, model number: *VIRTURE 4.0 (FCC ID: 2ADX3M405B)* (the "EUT") in this report was a *3G Smartphone*, which was measured approximately: 12.4 cm (L) x 6.1 cm (W) x 1.0 cm (H), rated input voltage: DC3.7V rechargeable Li-ion battery or DC5.0V charging from adapter.

Report No.: RSZ150928003-00A

Adapter information:

Model: Figo

Input: AC100-240V, 50/60 Hz, 150mA

Output: DC 5V, 500mA

Note: The series product, model VIRTURE 4.0, M405B are electrically identical, the difference between them is just the model name, we selected VIRTURE 4.0 for fully testing, the details was explained in the attached declaration letter.

All measurement and test data in this report was gathered from production sample serial number: 150928003 (Assigned by BACL, Dongguan). The EUT was received on 2015-09-30.

# **Objective**

This report is prepared on behalf of *Telecell Mobile (H.K) Ltd.*. in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communications Commission's rules

The tests were performed in order to determine the Bluetooth BDR and EDR mode of EUT compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

#### **Related Submittal(s)/Grant(s)**

FCC Part 15B JBP submissions with FCC ID: 2ADX3M405B.

FCC Part 15C DTS submissions with FCC ID: 2ADX3M405B.

FCC Part 22H, 24E, 27 PCE submissions with FCC ID: 2ADX3M405B.

## **Test Methodology**

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan).

#### **Test Facility**

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 06, 2015.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

FCC Part 15.247 Page 4 of 68

# **SYSTEM TEST CONFIGURATION**

# **Description of Test Configuration**

The system was configured for testing in engineering mode.

## **EUT Exercise Software**

Test Software Version		Enginnering Mode-TX			
Test Frequency		2402MHz 2441MHz 2480MHz			
D 1 1	GFSK	N/A	N/A	N/A	
Power Level Setting	π/4-DQPSK	N/A	N/A	N/A	
Setting	8DPSK	N/A	N/A	N/A	

Report No.: RSZ150928003-00A

# **Equipment Modifications**

No modification was made to the EUT.

# **Support Equipment List and Details**

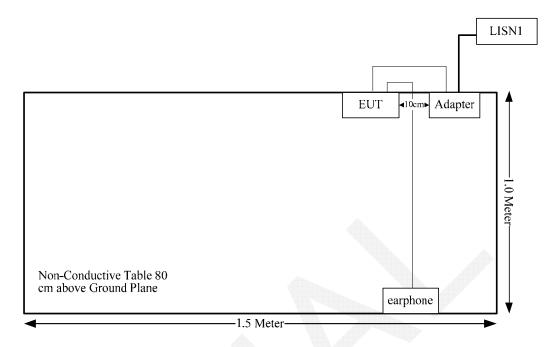
Manufacturer	Manufacturer Description		Serial Number	
/	1	/	/	

## **External Cable**

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	yes	no	0.85	USB Port of Adapter	EUT
Earphone Cable	no	no	1.2	Audio Port of EUT	Earphone

FCC Part 15.247 Page 5 of 68

# **Block Diagram of Test Setup**



FCC Part 15.247 Page 6 of 68

# SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & \$1.1310 & \$2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247 (a)(1)	20 dB Bandwidth	Compliance
§15.247(a)(1)	Channel Separation Test	Compliance
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliance
§15.247(a)(1)(iii)	Quantity of hopping channel Test	Compliance
§15.247(b)(1)	Peak Output Power Measurement	Compliance
§15.247(d)	Band Edges	Compliance

Report No.: RSZ150928003-00A

FCC Part 15.247 Page 7 of 68

# FCC §15.247 (i) & §1.1310 & §2.1093- RF EXPOSURE

## **Applicable Standard**

According to §15.247(i) and §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

Report No.: RSZ150928003-00A

According to KDB447498 D01 General RF Exposure Guidance v05r02:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq$  50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]  $\cdot [\sqrt{f(GHz)}] \le 3.0$  for 1-g SAR and  $\le 7.5$  for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $\leq 5$  mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

#### **Measurement Result**

The maximum target peak output power= 4.90 dBm (3.09 mW) at 2480 MHz [(max. power of channel, mW)/(min. test separation distance, mm)][ $\sqrt{f(GHz)}$ ] = 3.09/5\*( $\sqrt{2.48}$ ) = 0.97 < 3.0

So the stand-alone SAR evaluation is not necessary.

FCC Part 15.247 Page 8 of 68

# FCC §15.203 - ANTENNA REQUIREMENT

### **Applicable Standard**

According to FCC § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Report No.: RSZ150928003-00A

#### **Antenna Connector Construction**

The EUT has one integral antenna arrangement for WiFi/BT, which was permanently attached and the antenna gain is 0 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliance.

FCC Part 15.247 Page 9 of 68

## **Applicable Standard**

FCC§15.207

## **Measurement Uncertainty**

Compliance or non- compliance with a disturbance limit shall be determined in the following manner:

Report No.: RSZ150928003-00A

If  $U_{\text{lab}}$  is less than or equal to  $U_{\text{cispr}}$  of Table 1, then:

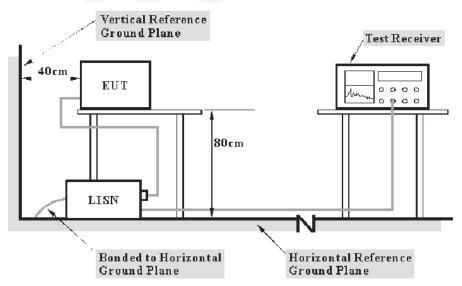
- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit. If  $U_{\text{lab}}$  is greater than  $U_{\text{cispr}}$  of Table 1, then:
- compliance is deemed to occur if no measured disturbance level, increased by  $(U_{lab} U_{cispr})$ , exceeds the disturbance limit;
- non compliance is deemed to occur if any measured disturbance level, increased by  $(U_{\text{lab}} U_{\text{cispr}})$ , exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of 
$$U_{\text{cispr}}$$

Measurement	$U_{ m cispr}$
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

# **EUT Setup**



Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

FCC Part 15.247 Page 10 of 68

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

Report No.: RSZ150928003-00A

The spacing between the peripherals was 10 cm.

The adapter was connected to a 120 VAC/60 Hz power source.

### **EMI Test Receiver Setup**

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W	
150 kHz – 30 MHz	9 kHz	

#### **Test Procedure**

During the conducted emission test, the adapter was connected to the outlet of the first LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

## **Corrected Amplitude & Margin Calculation**

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

Herein,

 $V_C$ : corrected voltage amplitude  $V_R$ : reading voltage amplitude  $A_c$ : attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

The "Margin" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

FCC Part 15.247 Page 11 of 68

## **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2014-10-20	2015-10-20
R&S	L.I.S.N	ESH2-Z5	892107/021	2015-07-16	2016-07-15
R&S	Two-line V-network	ENV 216	3560.6550.12	2014-12-11	2015-12-11
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

Report No.: RSZ150928003-00A

## **Test Results Summary**

According to the recorded data in following table, the EUT complied with the <u>FCC Part 15.207</u>, with the worst margin reading of:

6.3 dB at 0.372042 MHz in the Line conducted mode

#### **Test Data**

#### **Environmental Conditions**

Temperature:	26.8°C
Relative Humidity:	53 %
ATM Pressure:	101.1 kPa

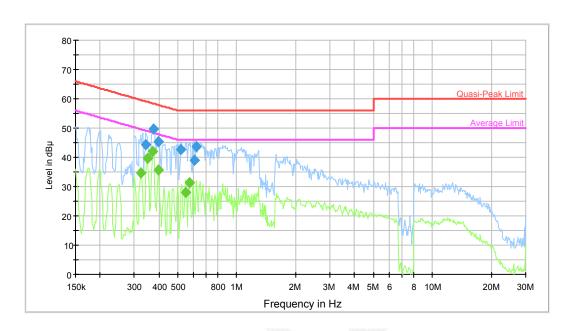
The testing was performed by Allen Qiao on 2015-10-14.

FCC Part 15.247 Page 12 of 68

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Mode: Transmitting

# AC120 V, 60 Hz, Line:



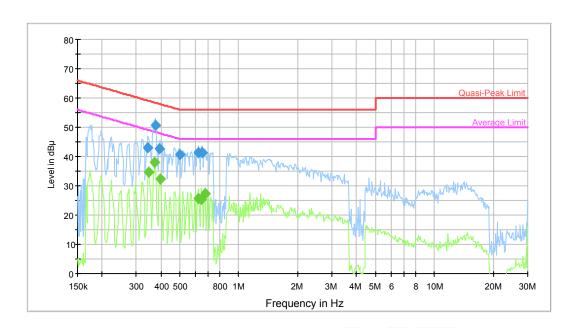
Report No.: RSZ150928003-00A

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.343548	44.2	9.000	N	9.8	14.9	59.1	Compliance
0.375019	49.5	9.000	N	9.8	8.9	58.4	Compliance
0.399703	45.4	9.000	N	9.8	12.5	57.9	Compliance
0.519918	42.7	9.000	N	9.8	13.3	56.0	Compliance
0.609741	39.0	9.000	N	9.8	17.0	56.0	Compliance
0.624492	43.6	9.000	N	9.8	12.4	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.324910	34.5	9.000	N	9.8	15.1	49.6	Compliance
0.349066	39.6	9.000	N	9.8	9.4	49.0	Compliance
0.372042	42.2	9.000	N	9.8	6.3	48.5	Compliance
0.399703	35.5	9.000	N	9.8	12.3	47.9	Compliance
0.545378	27.9	9.000	N	9.8	18.1	46.0	Compliance
0.576662	31.2	9.000	N	9.8	14.8	46.0	Compliance

FCC Part 15.247 Page 13 of 68

# AC120 V, 60 Hz, Neutral:



Report No.: RSZ150928003-00A

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.343548	42.9	9.000	L1	9.8	16.2	59.1	Compliance
0.375019	50.7	9.000	L1	9.8	7.7	58.4	Compliance
0.393383	42.6	9.000	L1	9.8	15.4	58.0	Compliance
0.499611	40.5	9.000	L1	9.8	15.5	56.0	Compliance
0.624492	41.3	9.000	L1	9.8	14.7	56.0	Compliance
0.649874	41.3	9.000	L1	9.8	14.7	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.346296	34.6	9.000	L1	9.8	14.4	49.1	Compliance
0.372042	38.1	9.000	L1	9.8	10.4	48.5	Compliance
0.399703	32.3	9.000	L1	9.8	15.6	47.9	Compliance
0.619536	25.6	9.000	L1	9.8	20.4	46.0	Compliance
0.644717	25.4	9.000	L1	9.8	20.6	46.0	Compliance
0.670921	27.5	9.000	L1	9.8	18.5	46.0	Compliance

FCC Part 15.247 Page 14 of 68

#### **Applicable Standard**

FCC §15.247 (d); §15.209; §15.205;

# **Measurement Uncertainty**

Compliance or non-compliance with a disturbance limit shall be determined in the following manner:

Report No.: RSZ150928003-00A

If  $U_{\text{lab}}$  is less than or equal to  $U_{\text{cispr}}$  of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit. If  $U_{\text{lab}}$  is greater than  $U_{\text{cispr}}$  of Table 1, then:
- compliance is deemed to occur if no measured disturbance level, increased by  $(U_{lab} U_{cispr})$ , exceeds the disturbance limit;
- non compliance is deemed to occur if any measured disturbance level, increased by  $(U_{\text{lab}} U_{\text{cispr}})$ , exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:

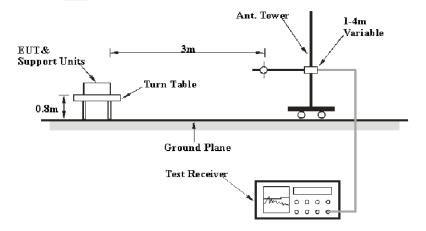
30M~200MHz: 5.0 dB 200M~1GHz: 6.2 dB 1G~6GHz: 4.45 dB 6G~18GHz: 5.23 dB

Table 1 – Values of  $U_{\rm cispr}$ 

Measurement					
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB				
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB				
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB				

#### **EUT Setup**

#### **Below 1GHz:**



FCC Part 15.247 Page 15 of 68

#### **Above 1GHz:**



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

### **EMI Test Receiver & Spectrum Analyzer Setup**

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 CHz	1MHz	3 MHz	/	PK
Above 1 GHz	1MHz	10 Hz	/	Ave.

## **Test Procedure**

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz - 1 GHz, peak and average detection modes for frequencies above 1 GHz.

FCC Part 15.247 Page 16 of 68

### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2015-08-03	2016-08-02
Sunol Sciences	Antenna	JB3	A060611-3	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2015-09-01	2016-09-01
Agilent	Spectrum Analyzer	E4440A	SG43360054	2014-12-04	2015-12-04
ETS-Lindgren	Horn Antenna	3115	9808-5557	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2015-02-19	2016-02-19
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2014-06-16	2017-06-15
Quinstar	Amplifier	QLW- 18405536-JO	15964001001	2015-09-06	2016-09-06

Report No.: RSZ150928003-00A

## **Corrected Amplitude & Margin Calculation**

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

## **Test Results Summary**

According to the recorded data in following table, the EUT complied with the <u>FCC Title 47, Part 15, Subpart C, and section 15.205, 15.209 and 15.247</u>, with the worst margin reading of:

#### 7.69 dB at 2483.5 MHz in the Vertical polarization

#### **Test Data**

#### **Environmental Conditions**

Temperature:	27.1°C
Relative Humidity:	50 %
ATM Pressure:	100.3 kPa

<sup>\*</sup> The testing was performed by Allen Qiao on 2015-10-08.

Test Mode: Transmitting

FCC Part 15.247 Page 17 of 68

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

RDR Mode (GFSK):

BDR Mode								_	
Frequency	Re	eceiver	Rx A	ntenna	Cable	Amplifier	Corrected	FCC 1	5.247
(MHz)	Reading	Detector	Polar	Factor	loss	Gain	Amplitude	Limit	Margin
(MITIZ)	(dBµV)	(PK/QP/AV)	(H/V)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
	-		]	Low Chann	el: 2402 N	ИHz	_		
2402	55.26	PK	Н	28.46	3.66	0.00	87.38	N/A	N/A
2402	44.59	AV	Н	28.46	3.66	0.00	76.71	N/A	N/A
2402	59.35	PK	V	28.46	3.66	0.00	91.47	N/A	N/A
2402	48.52	AV	V	28.46	3.66	0.00	80.64	N/A	N/A
2390	26.33	PK	V	28.44	3.63	0.00	58.40	74.00	15.60
2390	13.4	AV	V	28.44	3.63	0.00	45.47	54.00	8.53
4804	31.39	PK	V	33.13	5.06	27.41	42.17	74.00	31.83
4804	18.23	AV	V	33.13	5.06	27.41	29.01	54.00	24.99
7206	31.78	PK	V	36.37	6.61	25.91	48.85	74.00	25.15
7206	18.43	AV	V	36.37	6.61	25.91	35.50	54.00	18.50
9608	30.89	PK	V	38.38	8.53	27.55	50.25	74.00	23.75
9608	17.8	AV	V	38.38	8.53	27.55	37.16	54.00	16.84
3085	33.44	PK	V	31.12	6.78	27.46	43.88	74.00	30.12
3085	20.6	AV	V	31.12	6.78	27.46	31.04	54.00	22.96
275.35	40.29	QP	V	13.75	2.00	21.51	34.53	46.00	11.47
				iddle Chan		MHz			
2441	55.61	PK	Н	28.56	3.76	0.00	87.93	N/A	N/A
2441	44.73	AV	Н	28.56	3.76	0.00	77.05	N/A	N/A
2441	59.62	PK	V	28.56	3.76	0.00	91.94	N/A	N/A
2441	48.64	AV	V	28.56	3.76	0.00	80.96	N/A	N/A
4882	31.47	PK	V	33.40	5.19	27.42	42.64	74.00	31.36
4882	18.19	AV	V	33.40	5.19	27.42	29.36	54.00	24.64
7323	31.69	PK	V	36.58	6.75	25.88	49.14	74.00	24.86
7323	18.52	AV	V	36.58	6.75	25.88	35.97	54.00	18.03
9764	30.81	PK	V	38.35	8.62	27.20	50.58	74.00	23.42
9764	17.75	AV	V	38.35	8.62	27.20	37.52	54.00	16.48
3085	33.37	PK	V	31.12	6.78	27.46	43.81	74.00	30.19
3085	20.54	AV	V	31.12	6.78	27.46	30.98	54.00	23.02
3805	32.87	PK	V	32.33	4.66	27.38	42.48	74.00	31.52
3805	20.13	AV	V	32.33	4.66	27.38	29.74	54.00	24.26
275.35	40.31	QP	V	13.75	2.00	21.51	34.55	46.00	11.45
	4			ligh Chann			T	T	
2480	56.28	PK	H	28.65	3.68	0.00	88.61	N/A	N/A
2480	46.06	AV	Н	28.65	3.68	0.00	78.39	N/A	N/A
2480	59.97	PK	V	28.65	3.68	0.00	92.30	N/A	N/A
2480	49.47	AV	V	28.65	3.68	0.00	81.80	N/A	N/A
2483.5	25.4	PK	V	28.66	3.67	0.00	57.73	74.00	16.27
2483.5	13.98	AV	V	28.66	3.67	0.00	46.31	54.00	7.69
4960	31.67	PK	V	33.66	5.34	27.43	43.24	74.00	30.76
4960	18.66	AV	V	33.66	5.34	27.43	30.23	54.00	23.77
7440	32.1	PK	V	36.79	6.89	25.97	49.81	74.00	24.19
7440	18.82	AV	V	36.79	6.89	25.97	36.53	54.00	17.47
9920	31.3	PK	V	38.32	8.71	26.66	51.67	74.00	22.33
9920	18.19	AV	V	38.32	8.71	26.66	38.56	54.00	15.44
3085	33.79	PK	V	31.12	6.78	27.46	44.23	74.00	29.77
3085	20.93	AV	V	31.12	6.78	27.46	31.37	54.00	22.63
275.35	39.54	QP	V	13.75	2.00	21.51	33.78	46.00	12.22

Report No.: RSZ150928003-00A

FCC Part 15.247 Page 18 of 68

Report No.: RSZ150928003-00A

EDR Mode ( $\pi/4$ -DQPSK):

Frequency	R <sub>0</sub> (π/4-DQPS	eceiver	Rx A	ntenna	Cable	Amplifier	Corrected	FCC 1	5.247
	Reading	Detector	Polar	Factor	loss	Gain	Amplitude	Limit	Margin
(MHz)	(dBµV)	(PK/QP/AV)	(H/V)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)
	(	(	` /	Low Chann	el: 2402 N	ЛН <sub>2</sub>	* * *	(3-1-1-1-1	()
2402	54.97	PK	Н	28.46	3.66	0.00	87.09	N/A	N/A
2402	43.46	AV	Н	28.46	3.66	0.00	75.58	N/A	N/A
2402	58.45	PK	V	28.46	3.66	0.00	90.57	N/A	N/A
2402	46.97	AV	V	28.46	3.66	0.00	79.09	N/A	N/A
2390	26.66	PK	V	28.44	3.63	0.00	58.73	74.00	15.27
2390	13.39	AV	V	28.44	3.63	0.00	45.46	54.00	8.54
4804	31.54	PK	V	33.13	5.06	27.41	42.32	74.00	31.68
4804	18.29	AV	V	33.13	5.06	27.41	29.07	54.00	24.93
7206	31.73	PK	V	36.37	6.61	25.91	48.80	74.00	25.20
7206	18.46	AV	V	36.37	6.61	25.91	35.53	54.00	18.47
9608	30.87	PK	V	38.38	8.53	27.55	50.23	74.00	23.77
9608	17.73	AV	V	38.38	8.53	27.55	37.09	54.00	16.91
3085	33.38	PK	V	31.12	6.78	27.46	43.82	74.00	30.18
3085	20.45	AV	V	31.12	6.78	27.46	30.89	54.00	23.11
275.35	40.66	OP	V	13.75	2.00	21.51	34.90	46.00	11.10
			M	iddle Chan					
2441	55.38	PK	Н	28.56	3.76	0.00	87.70	N/A	N/A
2441	43.56	AV	Н	28.56	3.76	0.00	75.88	N/A	N/A
2441	58.55	PK	V	28.56	3.76	0.00	90.87	N/A	N/A
2441	47.08	AV	V	28.56	3.76	0.00	79.40	N/A	N/A
4882	31.55	PK	V	33.40	5.19	27.42	42.72	74.00	31.28
4882	18.21	AV	V	33.40	5.19	27.42	29.38	54.00	24.62
7323	31.63	PK	V	36.58	6.75	25.88	49.08	74.00	24.92
7323	18.32	AV	V	36.58	6.75	25.88	35.77	54.00	18.23
9764	30.89	PK	V	38.35	8.62	27.20	50.66	74.00	23.34
9764	17.76	AV	V	38.35	8.62	27.20	37.53	54.00	16.47
3085	33.41	PK	V	31.12	6.78	27.46	43.85	74.00	30.15
3085	20.62	AV	V	31.12	6.78	27.46	31.06	54.00	22.94
3805	32.66	PK	V	32.33	4.66	27.38	42.27	74.00	31.73
3805	20.08	AV	V	32.33	4.66	27.38	29.69	54.00	24.31
275.35	40.27	QP	V	13.75	2.00	21.51	34.51	46.00	11.49
				High Chann		MHz			
2480	55.89	PK	Н	28.65	3.68	0.00	88.22	N/A	N/A
2480	44.28	AV	Н	28.65	3.68	0.00	76.61	N/A	N/A
2480	58.82	PK	V	28.65	3.68	0.00	91.15	N/A	N/A
2480	47.61	AV	V	28.65	3.68	0.00	79.94	N/A	N/A
2483.5	25.64	PK	V	28.66	3.67	0.00	57.97	74.00	16.03
2483.5	13.96	AV	V	28.66	3.67	0.00	46.29	54.00	7.71
4960	31.46	PK	V	33.66	5.34	27.43	43.03	74.00	30.97
4960	18.31	AV	V	33.66	5.34	27.43	29.88	54.00	24.12
7440	31.7	PK	V	36.79	6.89	25.97	49.41	74.00	24.59
7440	18.33	AV	V	36.79	6.89	25.97	36.04	54.00	17.96
9920	30.97	PK	V	38.32	8.71	26.66	51.34	74.00	22.66
9920	17.75	AV	V	38.32	8.71	26.66	38.12	54.00	15.88
3085	33.3	PK	V	31.12	6.78	27.46	43.74	74.00	30.26
3085	20.55	AV	V	31.12	6.78	27.46	30.99	54.00	23.01
275.35	40.1	QP	V	13.75	2.00	21.51	34.34	46.00	11.66

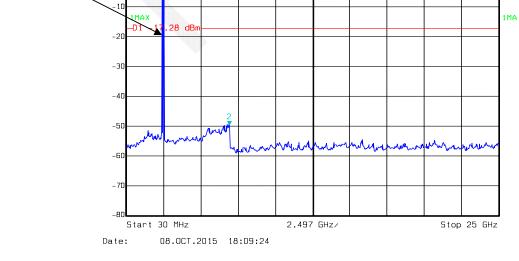
FCC Part 15.247 Page 19 of 68

Report No.: RSZ150928003-00A

EDR Mode (8-DPSK):

Frequency	Re	eceiver	Rx A	ntenna	Cable	Amplifier	Corrected	FCC 1	5.247
(MHz)	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)	loss (dB)	Gain (dB)	Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
			]	Low Chann	el: 2402 M	MHz	•		
2402	55	PK	Н	28.46	3.66	0.00	87.12	N/A	N/A
2402	43.51	AV	Н	28.46	3.66	0.00	75.63	N/A	N/A
2402	58.4	PK	V	28.46	3.66	0.00	90.52	N/A	N/A
2402	46.77	AV	V	28.46	3.66	0.00	78.89	N/A	N/A
2390	26.18	PK	V	28.44	3.63	0.00	58.25	74.00	15.75
2390	13.39	AV	V	28.44	3.63	0.00	45.46	54.00	8.54
4804	31.48	PK	V	33.13	5.06	27.41	42.26	74.00	31.74
4804	18.26	AV	V	33.13	5.06	27.41	29.04	54.00	24.96
7206	31.36	PK	V	36.37	6.61	25.91	48.43	74.00	25.57
7206	18.52	AV	V	36.37	6.61	25.91	35.59	54.00	18.41
9608	30.35	PK	V	38.38	8.53	27.55	49.71	74.00	24.29
9608	17.48	AV	V	38.38	8.53	27.55	36.84	54.00	17.16
3085	33.04	PK	V	31.12	6.78	27.46	43.48	74.00	30.52
3085	20.46	AV	V	31.12	6.78	27.46	30.90	54.00	23.10
275.35	39.86	QP	V	13.75	2.00	21.51	34.10	46.00	11.90
				iddle Chan				1 27/1	
2441	55.39	PK	Н	28.56	3.76	0.00	87.71	N/A	N/A
2441	43.68	AV	Н	28.56	3.76	0.00	76.00	N/A	N/A
2441	58.57	PK	V	28.56	3.76	0.00	90.89	N/A	N/A
2441	46.81	AV	V	28.56	3.76	0.00	79.13	N/A	N/A
4882	31.46	PK	V	33.40	5.19	27.42	42.63	74.00	31.37
4882	18.25	AV	V	33.40	5.19	27.42	29.42	54.00	24.58
7323	31.41	PK	V	36.58	6.75	25.88	48.86	74.00	25.14
7323	18.43	AV	V	36.58	6.75	25.88	35.88	54.00	18.12
9764	30.21	PK	V	38.35	8.62	27.20	49.98	74.00	24.02
9764	17.51 33.12	AV PK	V	38.35 31.12	8.62	27.20	37.28	54.00	16.72
3085 3085			V		6.78 6.78	27.46	43.56	74.00	30.44 23.20
3805	20.36 32.53	AV PK	V	31.12 32.33		27.46	30.80 42.14	54.00 74.00	
3805	20.04	AV	V	32.33	4.66	27.38 27.38	29.65	54.00	31.86 24.35
275.35	40.24	QP	V	13.75	2.00	21.51	34.48	46.00	11.52
213.33	40.24	Qr		High Chann			34.46	40.00	11.32
2480	55.78	PK	Н	28.65	3.68	0.00	88.11	N/A	N/A
2480	44.45	AV	Н	28.65	3.68	0.00	76.78	N/A	N/A
2480	58.85	PK	V	28.65	3.68	0.00	91.18	N/A	N/A
2480	47.69	AV	V	28.65	3.68	0.00	80.02	N/A	N/A
2483.5	25.54	PK	V	28.66	3.67	0.00	57.87	74.00	16.13
2483.5	13.96	AV	V	28.66	3.67	0.00	46.29	54.00	7.71
4960	31.74	PK	V	33.66	5.34	27.43	43.31	74.00	30.69
4960	18.72	AV	V	33.66	5.34	27.43	30.29	54.00	23.71
7440	31.78	PK	V	36.79	6.89	25.97	49.49	74.00	24.51
7440	18.85	AV	V	36.79	6.89	25.97	36.56	54.00	17.44
9920	30.66	PK	V	38.32	8.71	26.66	51.03	74.00	22.97
9920	17.81	AV	V	38.32	8.71	26.66	38.18	54.00	15.82
3085	33.46	PK	V	31.12	6.78	27.46	43.90	74.00	30.10
3085	20.82	AV	V	31.12	6.78	27.46	31.26	54.00	22.74
275.35	39.92	QP	V	13.75	2.00	21.51	34.16	46.00	11.84

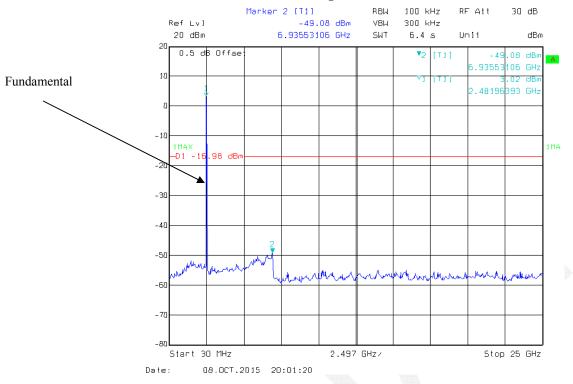
FCC Part 15.247 Page 20 of 68



FCC Part 15.247 Page 21 of 68

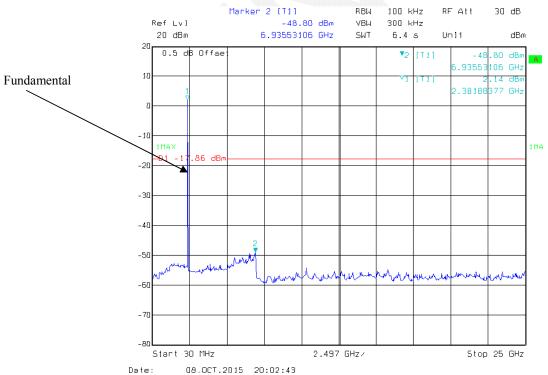




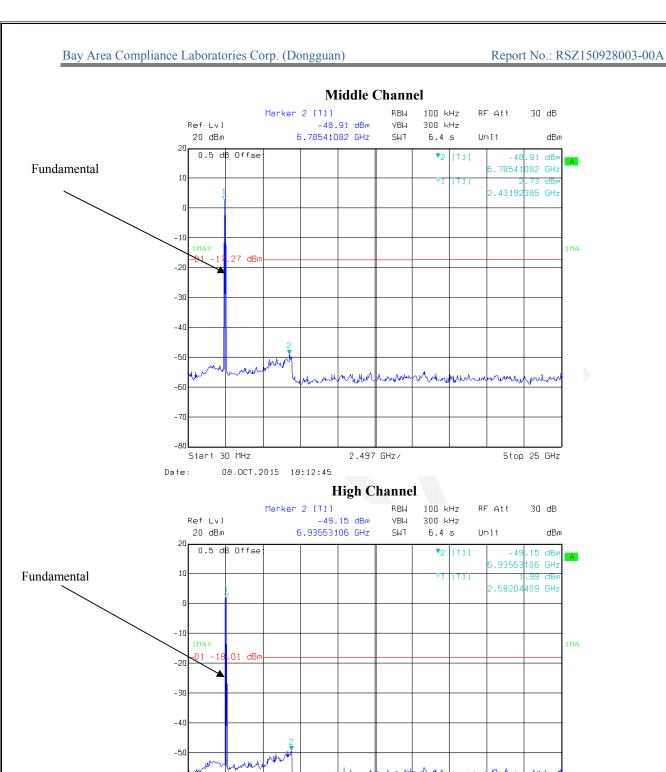


#### EDR Mode ( $\pi/4$ -DQPSK):

### **Low Channel**



FCC Part 15.247 Page 22 of 68



-68

- 78

Start 30 MHz

08.0CT.2D15 20:03:59

FCC Part 15.247 Page 23 of 68

2.497 GHz/

Stop 25 GHz

- 78

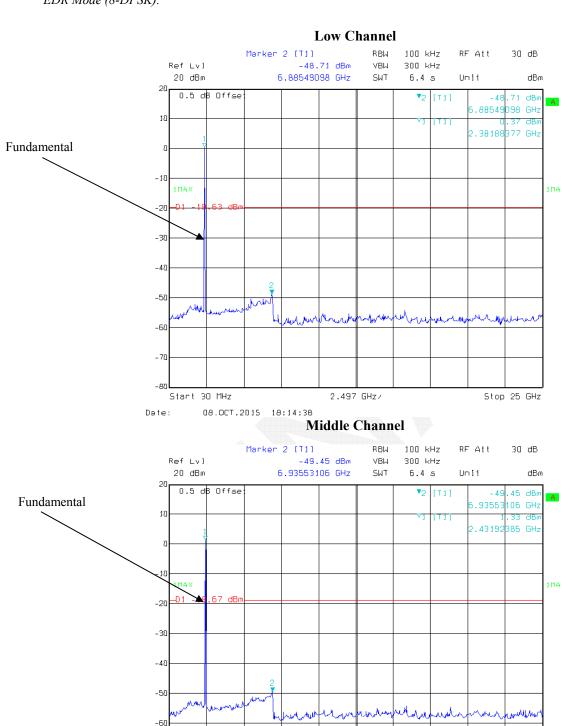
-80

Date:

Start 30 MHz

08.OCT.2D15 18:15:27

EDR Mode (8-DPSK):



Report No.: RSZ150928003-00A

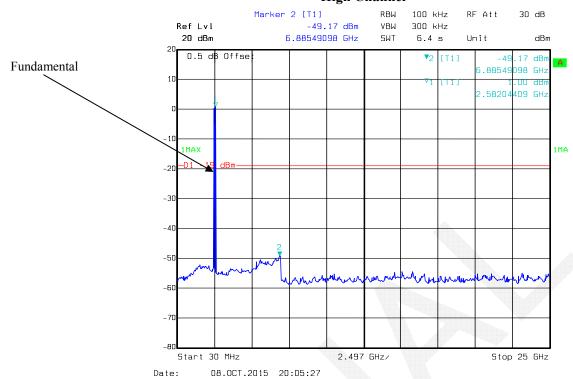
FCC Part 15.247 Page 24 of 68

2.497 GHz/

Stop 25 GHz

# **High Channel**

Report No.: RSZ150928003-00A



FCC Part 15.247 Page 25 of 68

# FCC §15.247(a) (1) - CHANNEL SEPARATION TEST

#### **Applicable Standard**

Frequency hopping systems shall have hoping channel carrier frequencies separated by a minimum of 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.50 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater provided the systems operate with an output power no greater than 125 mW.

Report No.: RSZ150928003-00A

### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### **Test Procedure**

- 1. Set the EUT in transmitting mode, spectrum Bandwidth was set at 30 kHz, maxhold the channel.
- 2. Set the adjacent channel of the EUT maxhold another trace.
- 3. Measure the channel separation.

#### **Test Data**

#### **Environmental Conditions**

Temperature:	27.3°C
Relative Humidity:	51 %
ATM Pressure:	100.3 kPa

<sup>\*</sup> The testing was performed by Allen Qiao on 2015-10-08.

Test Result: Compliance.

Please refer to following tables and plots

FCC Part 15.247 Page 26 of 68

Report No.: RSZ150928003-00A

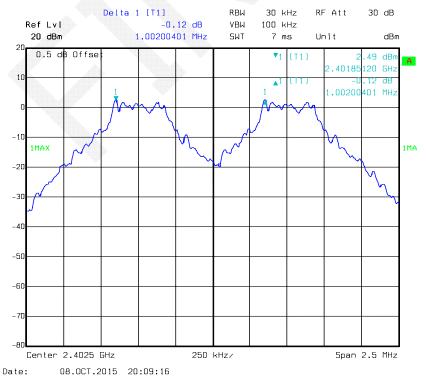
Test Mode: Transmitting

Mode	Channel	Frequency	Channel Seperation	Limit	Result	
		MHz	MHz	MHz		
	Low	2402	1.002			
	Adjacent	2403	1.002			
BDR	Middle	2441	1.002	0.625	Compliance	
(GFSK)	Adjacent	2442	1.002	0.023	Compilance	
	High	2480	1.002			
	Adjacent	2479	1.002			
	Low	2402	1.002			
	Adjacent	2403	1.002			
EDR	Middle	2441	1.002	0.842	Compliance	
$(\pi/4\text{-DQPSK})$	Adjacent	2442	1.002	0.842	Compliance	
	High	2480	1.002			
	Adjacent	2479	1.002			
	Low	2402	1.002			
	Adjacent	2403	1.002			
EDR	Middle	2441	1 002	0.950	Compliance	
(8DPSK)	Adjacent	2442	1.002	0.850	Compliance	
	High	2480	1.002			
	Adjacent	2479	1.002			

Note: Limit= (2/3) x 20dB bandwidth

## BDR Mode (GFSK):

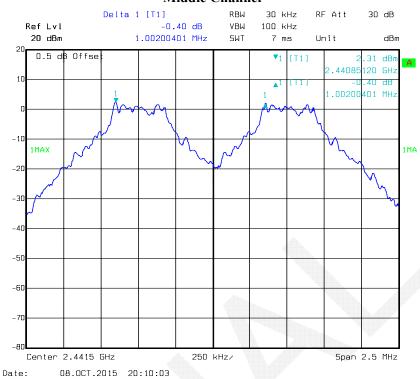
#### **Low Channel**



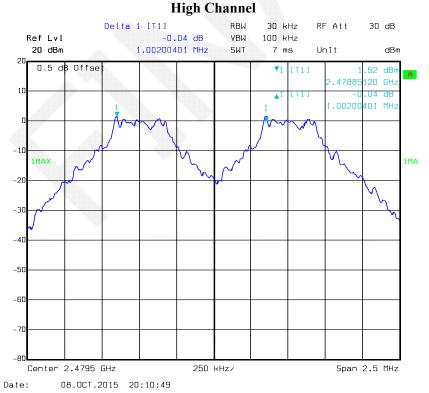
FCC Part 15.247 Page 27 of 68

## **Middle Channel**

Report No.: RSZ150928003-00A



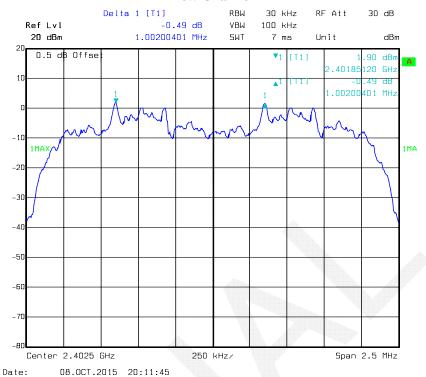
#### TT: 1 C1



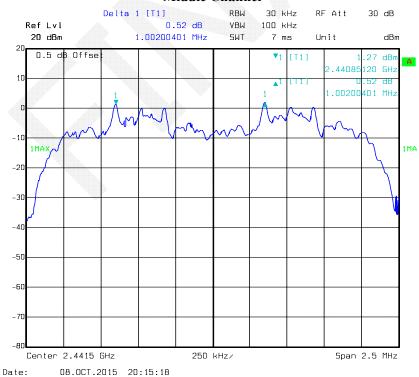
FCC Part 15.247 Page 28 of 68



Report No.: RSZ150928003-00A



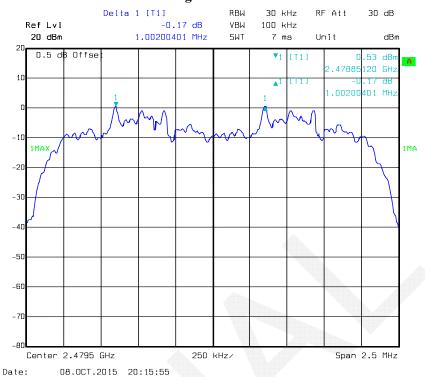
#### **Middle Channel**



FCC Part 15.247 Page 29 of 68

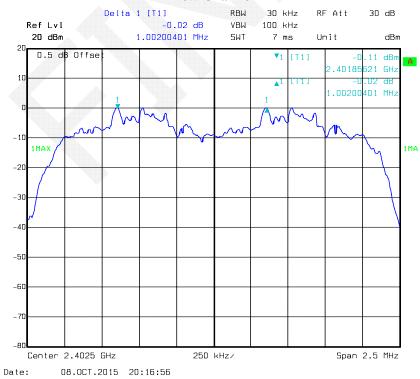
## **High Channel**

Report No.: RSZ150928003-00A



#### EDR Mode (8-DPSK):

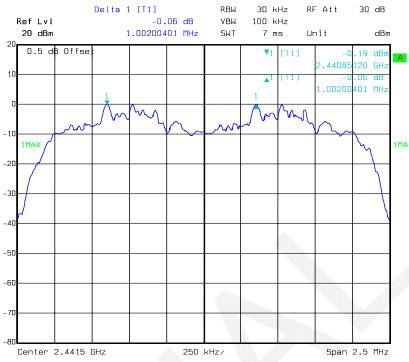
#### **Low Channel**



FCC Part 15.247 Page 30 of 68

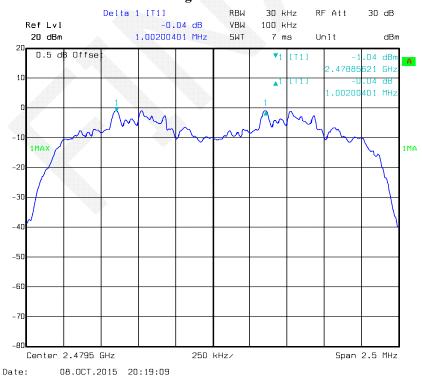
#### **Middle Channel**

Report No.: RSZ150928003-00A



#### Date: 08.0CT.2015 20:17:44

## **High Channel**



FCC Part 15.247 Page 31 of 68

# FCC $\S15.247(a)$ (1) – 20 dB BANDWIDTH TESTING

### **Applicable Standard**

Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Report No.: RSZ150928003-00A

#### **Test Procedure**

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Position the EUT on the test table without connection to measurement instrument. Turn on the EUT. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- 3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
- 4. Repeat above procedures until all frequencies measured were complete.

### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### **Test Data**

#### **Environmental Conditions**

	An indicated	
Temperature:	27.3°C	
Relative Humidity:	51 %	
ATM Pressure:	100.3 kPa	

<sup>\*</sup> The testing was performed by Allen Qiao on 2015-10-08.

Test Result: Compliance.

Please refer to following tables and plots

FCC Part 15.247 Page 32 of 68

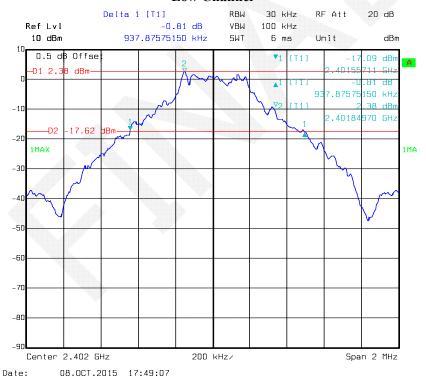
Test Mode: Transmitting

Mode	Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
DDD 14 1	Low	2402	0.938
BDR Mode (GFSK)	Middle	2441	0.934
(OI SIC)	High	2480	0.938
EDDAG	Low	2402	1.263
EDR Mode (π/4-DQPSK):	Middle	2441	1.263
(M/T-DQI SIK).	High	2480	1.257
	Low	2402	1.269
EDR Mode (8-DPSK):	Middle	2441	1.275
(0-D1 5K).	High	2480	1.269

Report No.: RSZ150928003-00A

## BDR Mode (GFSK):

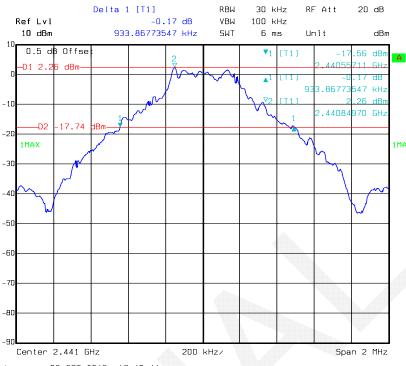
#### **Low Channel**



FCC Part 15.247 Page 33 of 68

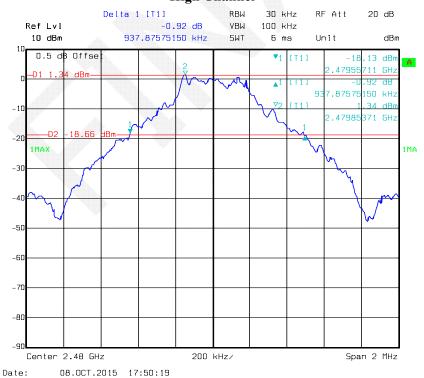
# **Middle Channel**

Report No.: RSZ150928003-00A



Date: 08.0CT.2015 17:49:44

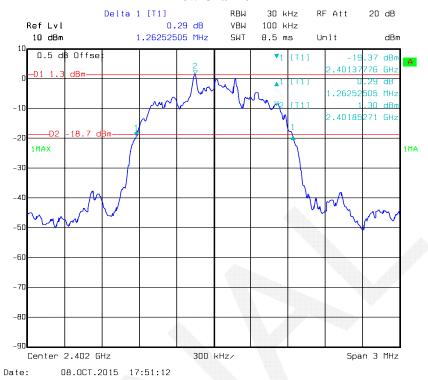
### **High Channel**



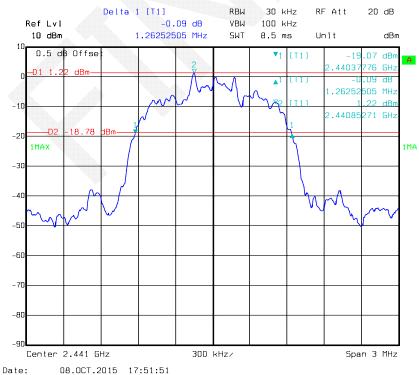
FCC Part 15.247 Page 34 of 68

#### **Low Channel**

Report No.: RSZ150928003-00A



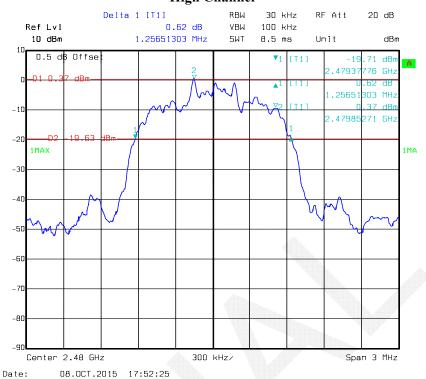
#### Middle Channel



FCC Part 15.247 Page 35 of 68

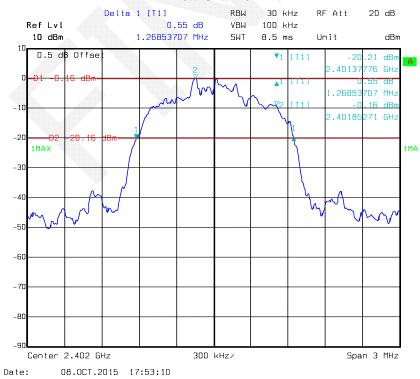


Report No.: RSZ150928003-00A



#### EDR Mode (8-DPSK):

#### **Low Channel**



FCC Part 15.247 Page 36 of 68

#### **Middle Channel**

Report No.: RSZ150928003-00A



#### High Chann

#### **High Channel**



FCC Part 15.247 Page 37 of 68

# FCC §15.247(a) (1) (iii) - QUANTITY OF HOPPING CHANNEL TEST

#### **Applicable Standard**

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Report No.: RSZ150928003-00A

#### **Test Procedure**

- 1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- 2. Set the EUT in hopping mode from first channel to last.
- 3. By using the Max-Hold function record the Quantity of the channel.

#### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### **Test Data**

#### **Environmental Conditions**

Temperature:	26.3°C
Relative Humidity:	49 %
ATM Pressure:	100.5 kPa

<sup>\*</sup> The testing was performed by Allen Qiao on 2015-10-09.

Test Result: Compliance.

Please refer to following tables and plots

FCC Part 15.247 Page 38 of 68

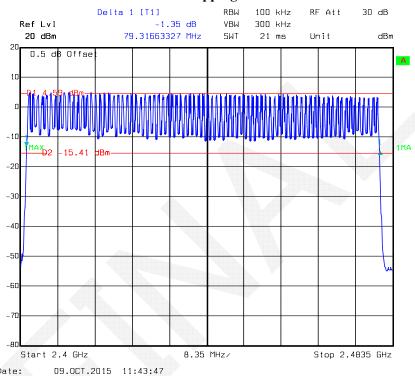
Test Mode: Transmitting

BDR Mode (GFSK):

Frequency Range (MHz)	Number of Hopping Channel	Limit
2400-2483.5	79	15

Report No.: RSZ150928003-00A

### **Number of Hopping Channels**



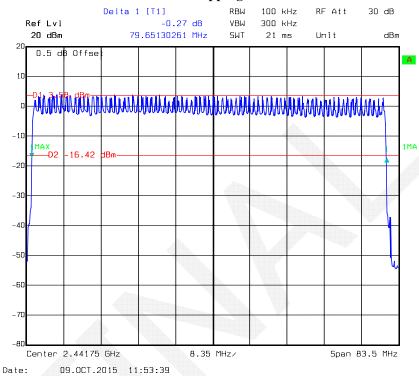
FCC Part 15.247 Page 39 of 68

#### *EDR Mode (\pi/4-DQPSK):*

Frequency Range (MHz)	Number of Hopping Channel	Limit
2400-2483.5	79	15

Report No.: RSZ150928003-00A

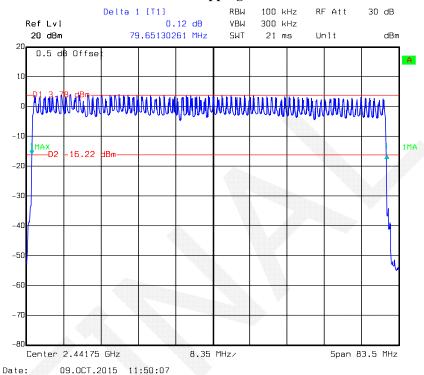
# **Number of Hopping Channels**



FCC Part 15.247 Page 40 of 68

Frequency Range (MHz)	Number of Hopping Channel	Limit
2400-2483.5	79	15

#### **Number of Hopping Channels**



FCC Part 15.247 Page 41 of 68

# FCC §15.247(a) (1) (iii) - TIME OF OCCUPANCY (DWELL TIME)

#### **Applicable Standard**

Frequency hopping systems in the 2400-2483.5 MHz shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

Report No.: RSZ150928003-00A

#### **Test Procedure**

The EUT was worked in channel hopping; Spectrum SPAN was set as 0. Sweep was set as 0.4 \* channel no. (s), the quantity of pulse was get from single sweep. In addition, the time of single pulses was tested.

Dwell Time= time slot length \* hope rate/ number of hopping channels \* 31.6s Hop rate=1600/s

#### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

### **Test Data**

#### **Environmental Conditions**

Control of the Contro	
Temperature:	25.9°C
Relative Humidity:	54 %
ATM Pressure:	100.5 kPa

<sup>\*</sup> The testing was performed by Allen Qiao on 2015-10-09.

Test Result: Compliance.

Please refer to following tables and plots

FCC Part 15.247 Page 42 of 68

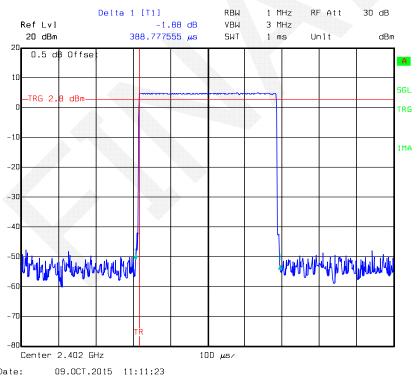
Test Mode: Transmitting

BDR Mode (GFSK):

Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result	
	Low	0.389	0.124	0.4	Compliance	
DH1	Middle	0.389	0.124	0.4	Compliance	
DIII	High	0.389	0.124	0.4	Compliance	
	Note: Dwell time=Pulse time (ms) × (1600/2/79) ×31.6 s					
	Low	1.665	0.266	0.4	Compliance	
DH3	Middle	1.665	0.266	0.4	Compliance	
<i>D</i> 113	High	1.665	0.266	0.4	Compliance	
	Note: Dwell time=Pulse time (ms) $\times$ (1600/4/79) $\times$ 31.6 s					
	Low	2.916	0.311	0.4	Compliance	
DH5	Middle	2.916	0.311	0.4	Compliance	
DIIS	High	2.916	0.311	0.4	Compliance	
	Note: Dwell tin	ne=Pulse time (	ms) $\times$ (1600/	(6/79) ×31.	6 s	

Report No.: RSZ150928003-00A

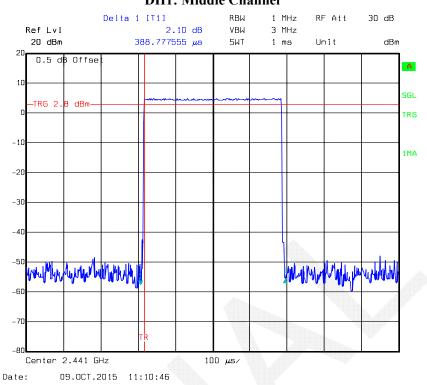
#### **DH1: Low Channel**



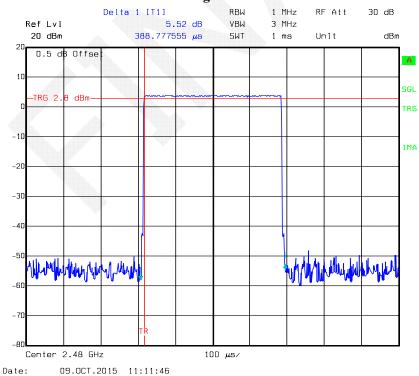
FCC Part 15.247 Page 43 of 68

# DH1: Middle Channel

Report No.: RSZ150928003-00A



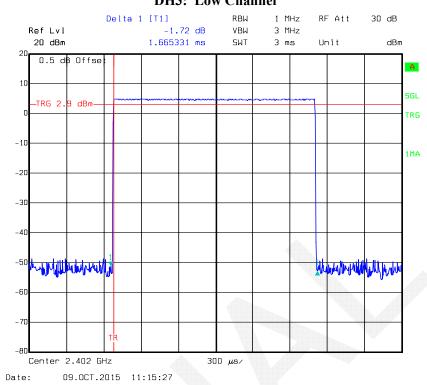
#### **DH1: High Channel**



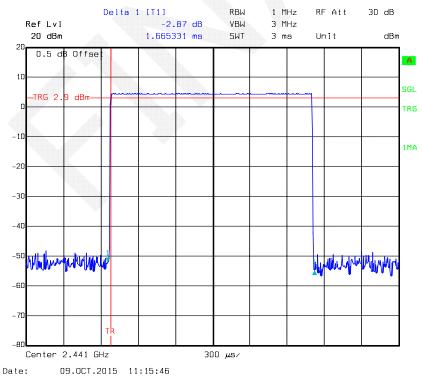
FCC Part 15.247 Page 44 of 68

# DH3: Low Channel

Report No.: RSZ150928003-00A



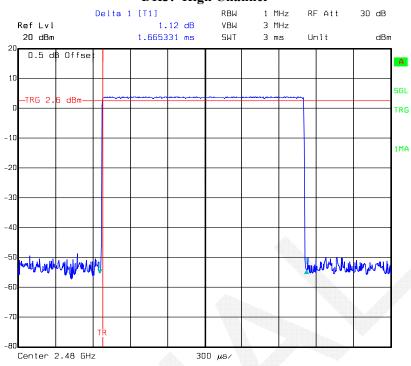
#### **DH3: Middle Channel**



FCC Part 15.247 Page 45 of 68

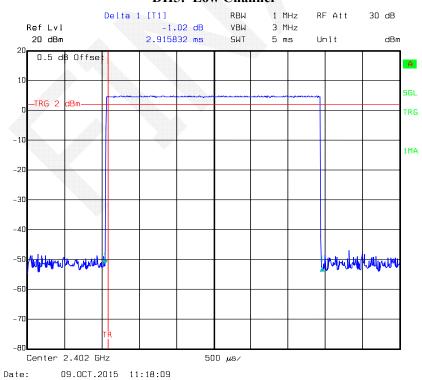
# DH3: High Channel

Report No.: RSZ150928003-00A



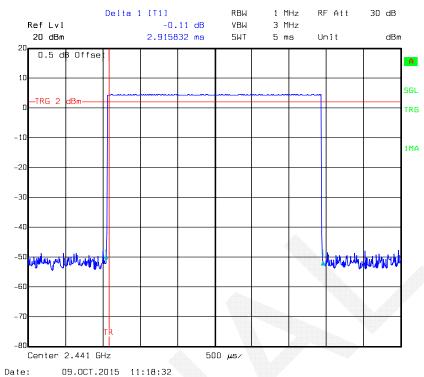
#### Date: 09.0CT.2015 11:16:08

#### **DH5: Low Channel**

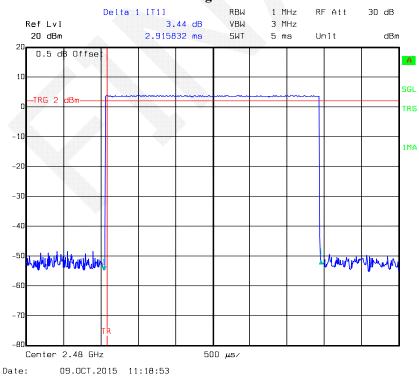


FCC Part 15.247 Page 46 of 68

#### **DH5: Middle Channel**



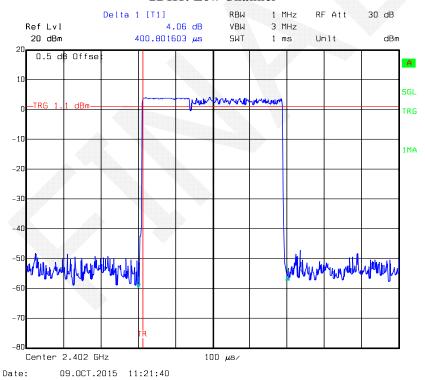
#### **DH5: High Channel**



FCC Part 15.247 Page 47 of 68

Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result	
	Low	0.401	0.128	0.4	Compliance	
2DH1	Middle	0.401	0.128	0.4	Compliance	
2ДП1	High	0.401	0.128	0.4	Compliance	
	Note: Dwell time=Pulse time (ms) $\times$ (1600/2/79) $\times$ 31.6 s					
	Low	1.653	0.264	0.4	Compliance	
2DH3	Middle	1.653	0.264	0.4	Compliance	
20113	High	1.653	0.264	0.4	Compliance	
	Note: Dwell tin	ne=Pulse time (	$(ms) \times (1600)$	/4/79) ×31.	.6 s	
	Low	2.916	0.311	0.4	Compliance	
2DH5	Middle	2.916	0.311	0.4	Compliance	
20113	High	2.916	0.311	0.4	Compliance	
	Note: Dwell time=Pulse time (ms) $\times$ (1600/6/79) $\times$ 31.6 s					

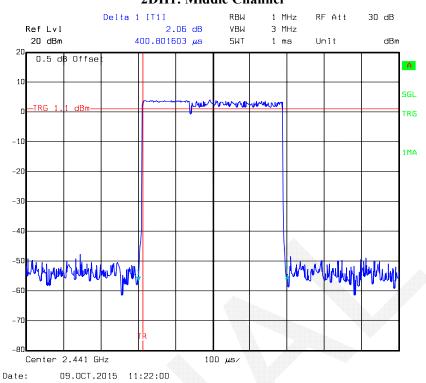
#### 2DH1: Low Channel



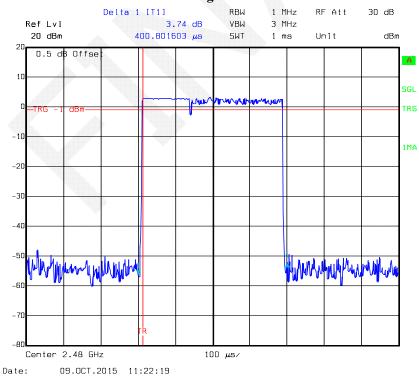
FCC Part 15.247 Page 48 of 68

# **2DH1: Middle Channel**

Report No.: RSZ150928003-00A

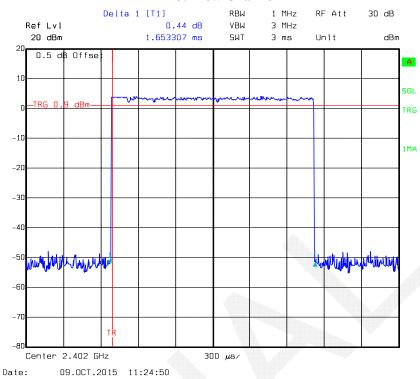


#### 2DH1: High Channel

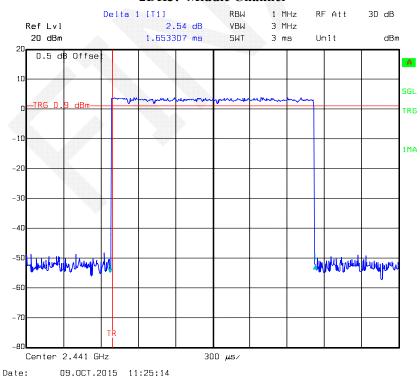


FCC Part 15.247 Page 49 of 68

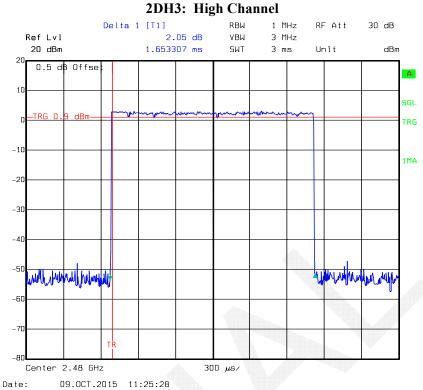
#### 2DH3: Low Channel



# 2DH3: Middle Channel

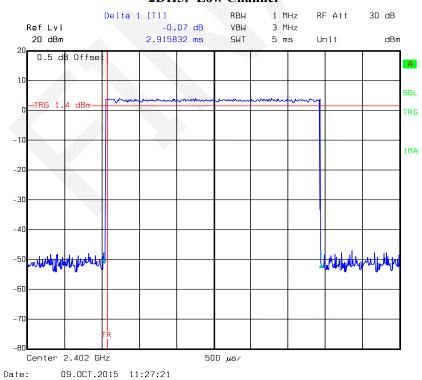


FCC Part 15.247 Page 50 of 68



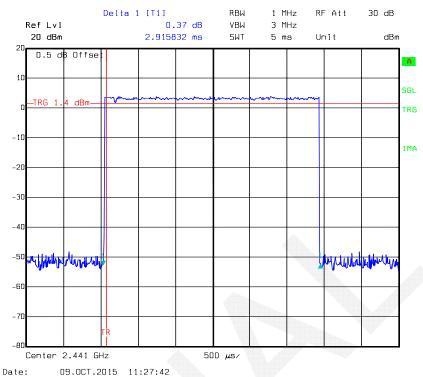
#### . ......

#### 2DH5: Low Channel

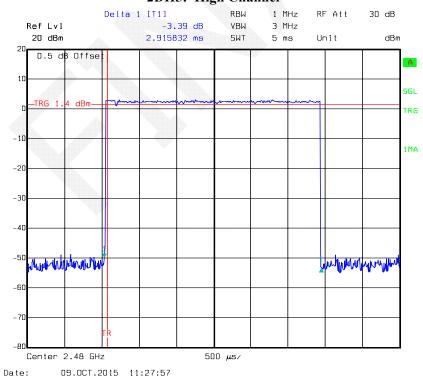


FCC Part 15.247 Page 51 of 68

#### **2DH5: Middle Channel**



#### 2DH5: High Channel

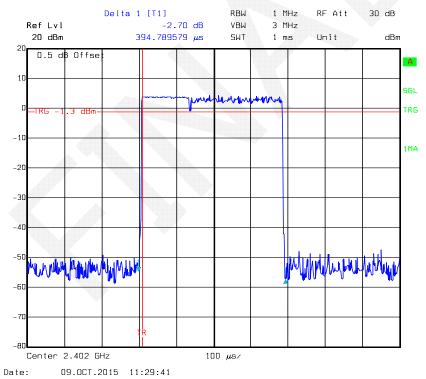


FCC Part 15.247 Page 52 of 68

# EDR Mode (8-DPSK):

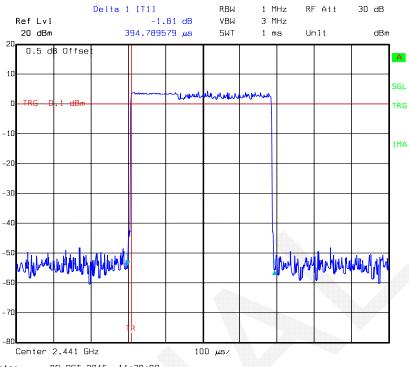
Mode	Channel	Pulse Width (ms)	Dwell Time (s)	Limit (s)	Result	
	Low	0.395	0.126	0.4	Compliance	
3DH1	Middle	0.395	0.126	0.4	Compliance	
SDIII	High	0.395	0.126	0.4	Compliance	
	Note: Dwell time=Pulse time (ms) × (1600/2/79) ×31.6 s					
	Low	1.653	0.264	0.4	Compliance	
3DH3	Middle	1.653	0.264	0.4	Compliance	
3D113	High	1.653	0.264	0.4	Compliance	
	Note: Dwell tin	ne=Pulse time (	ms) × (1600/4	4/79) ×31.6	S	
	Low	2.916	0.311	0.4	Compliance	
3DH5	Middle	2.916	0.311	0.4	Compliance	
зинз	High	2.916	0.311	0.4	Compliance	
	Note: Dwell tin	ne=Pulse time (	ms) × (1600/	6/79) ×31.6	S	

#### 3DH1: Low Channel



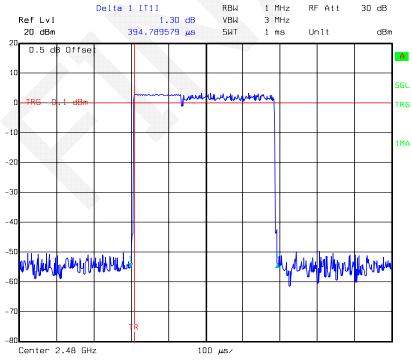
FCC Part 15.247 Page 53 of 68

#### **3DH1: Middle Channel**



Date: 09.0CT.2015 11:30:09

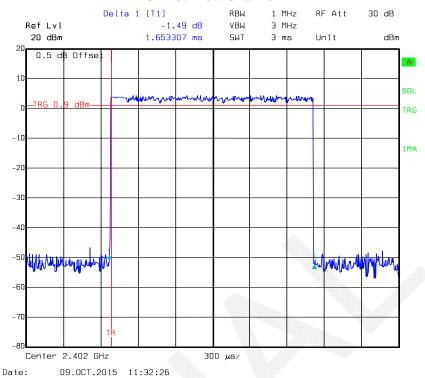
#### 3DH1: High Channel



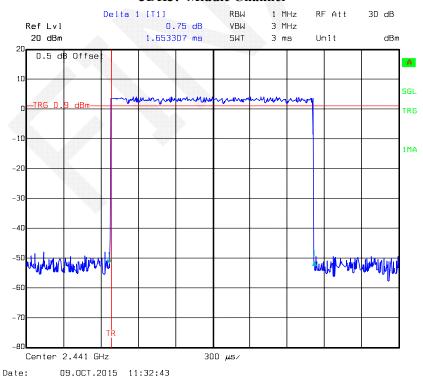
Date: 09.0CT.2015 11:30:24

FCC Part 15.247 Page 54 of 68

#### 3DH3: Low Channel

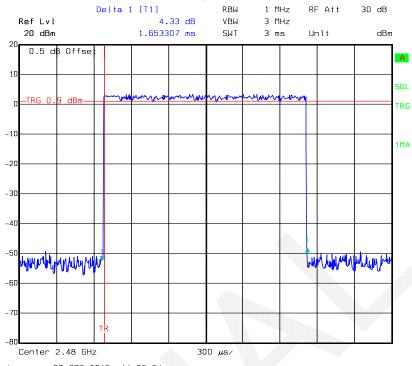


# 3DH3: Middle Channel



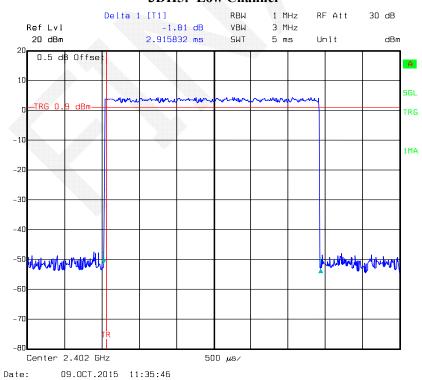
FCC Part 15.247 Page 55 of 68

#### 3DH3: High Channel

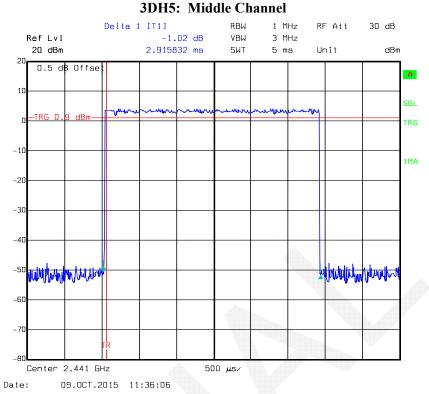


#### Date: 09.0CT.2015 11:33:54

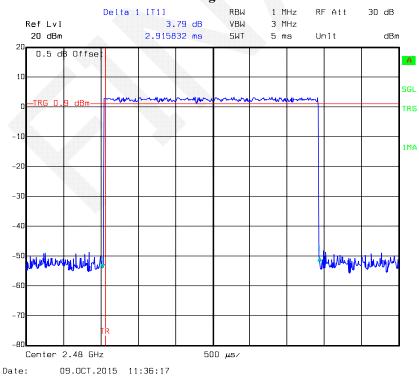
#### 3DH5: Low Channel



FCC Part 15.247 Page 56 of 68



#### **3DH5: High Channel**



FCC Part 15.247 Page 57 of 68

# FCC §15.247(b) (1) - PEAK OUTPUT POWER MEASUREMENT

#### **Applicable Standard**

According to §15.247(b) (1), for frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts

Report No.: RSZ150928003-00A

#### **Test Procedure**

- 1. Place the EUT on a bench and set in transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
- 3. Add a correction factor to the display.

#### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### **Test Data**

#### **Environmental Conditions**

Temperature:	26.8 °C
Relative Humidity:	50 %
ATM Pressure:	1003 kPa

<sup>\*</sup> The testing was performed by Allen Qiao on 2015-10-08.

Test Result: Compliance.

FCC Part 15.247 Page 58 of 68

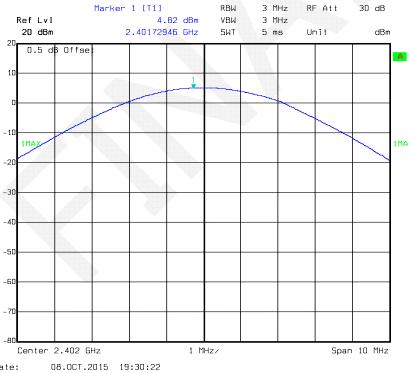
Test Mode: Transmitting

Mode	Frequency (MHz)	Peak Output power (dBm)	Limit (dBm)
BDR Mode (GFSK)	2402	4.82	30
	2441	4.65	30
	2480	3.74	30
EDR Mode (π/4-DQPSK)	2402	4.50	30
	2441	4.30	30
	2480	3.48	30
EDR Mode (8-DPSK)	2402	4.28	30
	2441	4.15	30
	2480	3.29	30

Note: The data above was tested in conducted mode.

#### BDR Mode (GFSK):

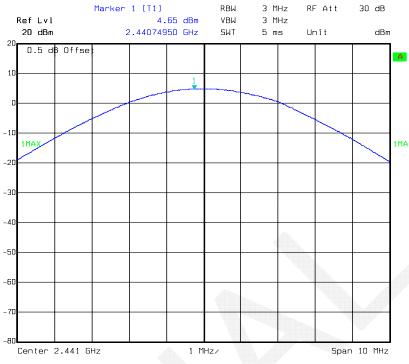
#### **Output Power, 2402MHz**



Date:

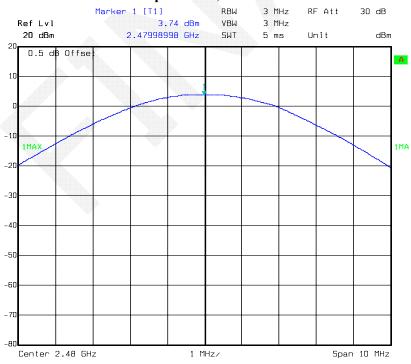
FCC Part 15.247 Page 59 of 68

#### **Output Power, 2441MHz**



Date: 08.0CT.2015 19:30:55

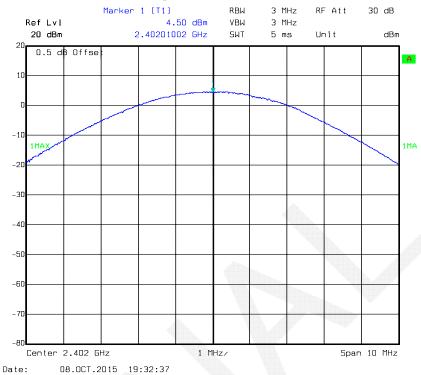
#### **Output Power, 2480MHz**



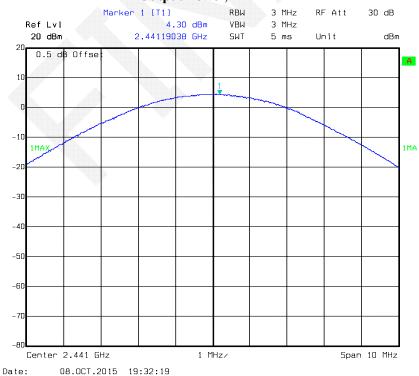
Date: 08.0CT.2015 19:31:24

FCC Part 15.247 Page 60 of 68



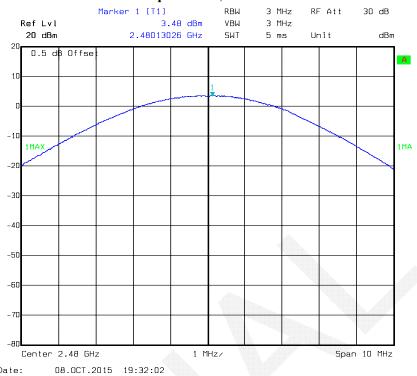


#### **Output Power, 2441MHz**



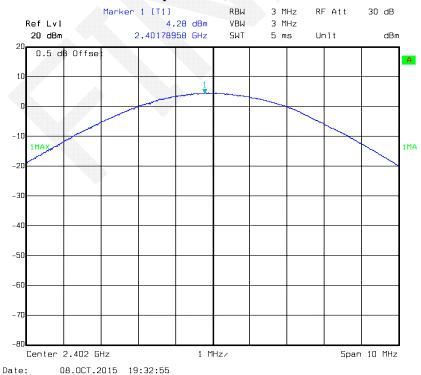
FCC Part 15.247 Page 61 of 68

#### **Output Power, 2480MHz**



# EDR Mode (8-DPSK):

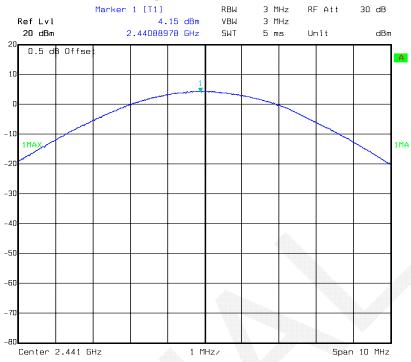
#### **Output Power, 2402MHz**



FCC Part 15.247 Page 62 of 68

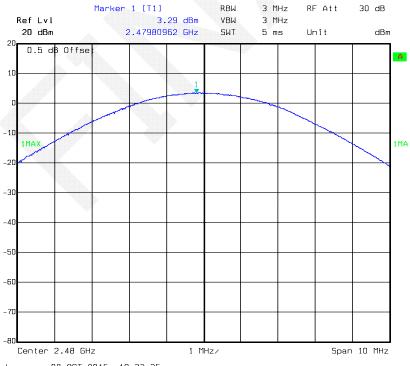
# Output Power, 2441MHz

Report No.: RSZ150928003-00A



Date: 08.0CT.2015 19:33:14

#### **Output Power, 2480MHz**



Date: 08.0CT.2015 19:33:35

FCC Part 15.247 Page 63 of 68

# FCC §15.247(d) - BAND EDGES TESTING

#### **Applicable Standard**

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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. 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) (see §15.205(c)).

Report No.: RSZ150928003-00A

#### **Test Procedure**

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
- 3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
- 4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- 5. Repeat above procedures until all measured frequencies were complete.

#### **Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2015-05-09	2016-05-09

<sup>\*</sup> Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

#### **Test Data**

#### **Environmental Conditions**

Temperature:	26.8°C	
Relative Humidity:	51 %	
ATM Pressure:	100.3 kPa	

<sup>\*</sup> The testing was performed by Allen Qiao on 2015-10-08.

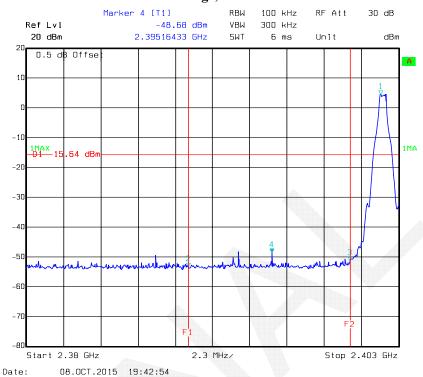
FCC Part 15.247 Page 64 of 68

#### **Test Result:** Compliance

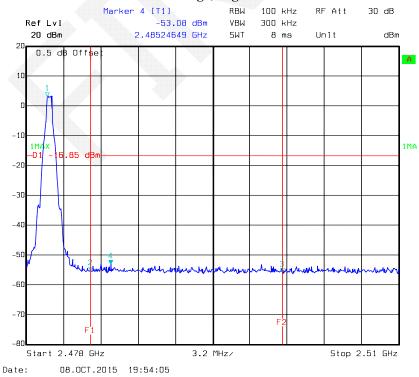
#### BDR Mode (GFSK):

#### Band Edge, Left Side

Report No.: RSZ150928003-00A



#### Band Edge, Right Side

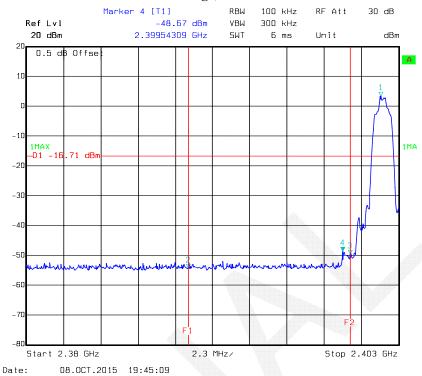


FCC Part 15.247 Page 65 of 68

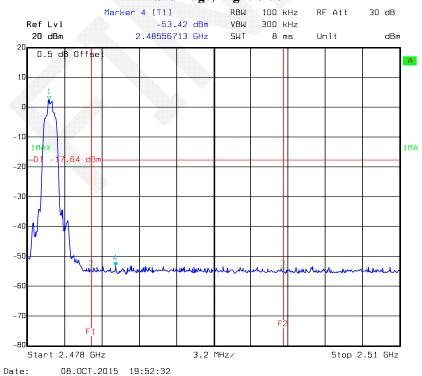
#### EDR Mode ( $\pi/4$ -DQPSK):

#### Band Edge, Left Side

Report No.: RSZ150928003-00A

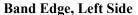


#### Band Edge, Right Side

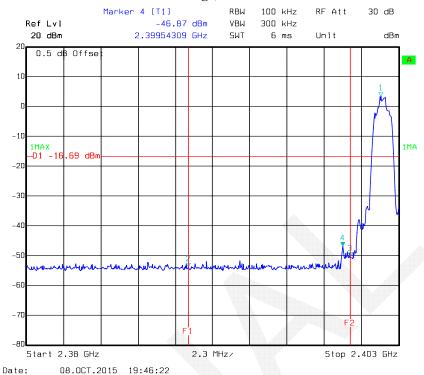


FCC Part 15.247 Page 66 of 68

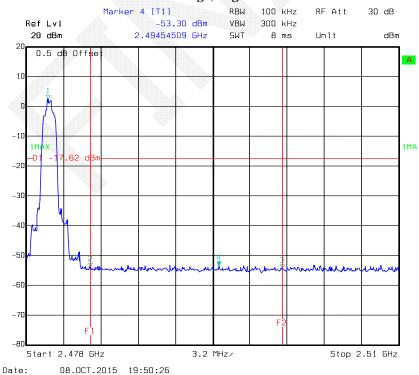
#### EDR Mode (8-DPSK):



Report No.: RSZ150928003-00A



#### Band Edge, Right Side



FCC Part 15.247 Page 67 of 68

#### **DECLARATIION LETTER**

Telecell Mobile (H.K) Ltd. RM 801 Metro Ctr II, 21 Lam Hing Street. Kln Bay. HK Tel: (852) 2759 9963 Fax: (852) 2759 9711

2015-11-2

# **Product Similarity Declaration**

To Whom It May Concern,

We, Telecell Mobile (H.K) Ltd., hereby declare that we have a product named as 3G Smartphone (Model number: VIRTURE 4.0) was tested by BACL, meanwhile, for our marketing purpose, we would like to list a series models (M405B) on reports and certificate, only the model name are difference. No other changes are made to them.

We confirm that all information above is true, and we'll be responsible for all the consequences. Please contact me if you have any question.

Report No.: RSZ150928003-00A

Signature:
Regina Wong

Manager

\*\*\*\*\*END OF REPORT\*\*\*\*

FCC Part 15.247 Page 68 of 68