

Report No.: ER/2015/70110 Issue Date: Sep. 18, 2015

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## ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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

0F

Smart phone **Product Name:** 

BLU **Brand Name:** 

Studio Selfie LTE Model No.:

N/A **Model Difference:** 

**YHLBLUSTSEELTE** FCC ID:

11492A-STSEELTE IC:

ER/2015/70110 **Report No.:** 

Sep. 18, 2015 **Issue Date:** 

§15.247, Cat: DTS **FCC Rule Part:** 

RSS-247 issue 1:2015 IC Rule Part:

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**Electronics & Communication Laboratory** 

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Testing Laboratory 0513

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#### **VERIFICATION OF COMPLIANCE**

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CT ASIA (HK) Ltd

Prepared for: (IC) Unit 1309-11, 13/F, 9 Wing Hong Street, Cheung Sha Wan, Kowloon, Hong

**Product Name:** Smart phone

**Brand Name: BLU** 

Model No.: Studio Selfie LTE

**Model Difference:** N/A

FCC ID: YHLBLUSTSEELTE

IC: 11492A-STSEELTE

**Report Number:** ER/2015/70110

Date of test: Aug. 18, 2015 ~ Sep. 17, 2015

Date of EUT Received: Aug. 18, 2015

## 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.

Test By:	Marcus Iseng	Date	Sep. 18, 2015
Prepared By:	Marcus Tseng / Engineer Tiffany Kao	Date	Sep. 18, 2015
Approved By:	Tiffany Kao / Clerk  Jim Ch ang	Date	Sep. 18, 2015

Jim Chang / Asst. Manager

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# **Revision History**

Report Number	Revision	Description	Issue Date
ER/2015/70110	Rev.00	Initial creation of document	Sep. 18, 2015

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### **GENERAL INFORMATION**

## 1.1 Product Description

#### General:

General.					
Product Name:	Smart phone				
Brand Name:	BLU	BLU			
Type No.:	Studio Selfie LTE				
Model Difference:	N/A				
Data Cable (USB):	Model No.: PCB0-	42100307-4, Supplier: Jess-Link			
Headset:	Model No.: HF-AC04D-03, Supplier: Dongguan Galien Electron Co., Ltd				
Product SW/HW version:	BLU_S0070UU-V09_TMOBILE / OB				
Radio SW/HW version:	N/A				
Test SW Version:	N/A				
RF power setting in TEST SW:	N/A				
	3.8V from Rechargeable Li-polymer battery or 5.0Vdc from AC/DC adapter				
Power Supply:	Battery:	Model No.: C635944200P, Supplier: APACK			
	Adapter :	Model No.: DSA-SPF02-05 FUS 050100, Supplier: DVE.			

Bluetooth Low Energy:

Frequency Range:	2402 – 2480MHz
Bluetooth Version:	V4.0 dual mode
Channel number:	40 channels
Modulation type:	GFSK
Transmit Power:	0.16 dBm -1.46 dBm (EIRP)
Type of Emission:	1M06D1D
Antenna Designation:	PIFA Antenna, Gain: 0.75dBi

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## 1.2 Product Feature of Equipment Under Test

The equipment under Test (Hereafter Called: EUT) is Smart phone supporting, GSM / WCDMA / LTF Wi-Fi 802 11han Bluetooth features, and below is details of information

	Product Feature			
Product Name:	Smart phone			
Brand Name:	BLU			
Model No.:	Studio Selfie LTE			
Model Difference:	N/A			
FCC ID	YHLBLUSTSEELTE			
IC ID	11492A-STSEELTE			
GSM Operating Band(s)	GSM 850/1900MHz			
GPRS / EGPRS Multi Slot Class	GPRS Class 33			
WCDMA Operating Band(s)	FDD Band II / IV / V			
WCDMA Rel. Version	Rel.8			
LTE Operating Band(s)	FCC Band 2 / 4 / 7 / 12 / 17			
LTE Rel. Version	Rel.9			
Wi-Fi Specification	802.11b/g/n			
Bluetooth Version	V4.1 dual mode + HS			

Note: The above EUT information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

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## Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.247

FCC KDB 558074 D01 DTS Meas. Guidance V03r03

ANSI C63.10:2013

Canada RSS-247 issue 1: 2015

Canada RSS-Gen issue 4: 2014

#### Note:

- 1. All test items have been performed and record as per the above standards.
- 2. The composite system is compliance with FCC Subpart B is authorized under a DoC procedure.
- The EUT was placed 1.5m height for frequency above 1GHz in accordance with ANSI C63, 10:2013

## 1.4 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: 990257

Canada Registration Number: 4620A-4.

### 1.5 Special Accessories

There are no special accessories used while test was conducted.

## **Equipment Modifications**

There was no modification incorporated into the EUT.

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### SYSTEM TEST CONFIGURATION

## **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.

#### **Test Procedure** 2.3

### 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 hand-held 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 and attenuator factor. Following shows an offset computation example with cable loss 0.8dB and splitter 0dB splitter. Offset = RF cable loss (dB)+ splitter(dB) = 0.8 + 0 = 0.8(dB)

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## 2.5 Configuration of Tested System

Fig. 2-1 Radiated Emission



Fig. 2-2 Conducted (Antenna Port) Configuration

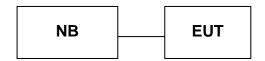
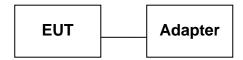


Fig. 2-3 AC Power Line Conducted Emission



**Table 2-1 Equipment Used in Tested System** 

Item	Equipment	Mfr/Brand	Model/Model No.	Series No.	Data Cable	Power Cord
1.	BT Test Software	N/A	N/A	N/A	N/A	N/A
2.	NB	Lenovo	D505	3704625136	N/A	N/A

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### SUMMARY 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) (3) RSS-247 §5.4(4)	Peak Output Power	Compliant
§15.247(a)(2) RSS-247 §5.2 (1) RSS-Gen §6.6	6dB Bandwidth and 99% Power Emission 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(e) RSS-247 §5.2(2)	Peak Power Density	Compliant
§15.203 §15.247(b) RSS- Gen §6.7 RSS- Gen §8.3	Antenna Requirement	Compliant

### **DESCRIPTION OF TEST MODES**

## Operated in 2400 ~ 2483.5MHz Band

40 channels are provided for Bluetooth LE

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
0	2402 MHz	14	2430 MHz	28	2458 MHz
1	2404 MHz	15	2432 MHz	29	2460 MHz
2	2406 MHz	16	2434 MHz	30	2462 MHz
3	2408 MHz	17	2436 MHz	31	2464 MHz
4	2410 MHz	18	2438 MHz	32	2466 MHz
5	2412 MHz	19	2440 MHz	33	2468 MHz
6	2414 MHz	20	2442 MHz	34	2470 MHz
7	2416MHz	21	2444 MHz	35	2472 MHz
8	2418 MHz	22	2446 MHz	36	2474 MHz
9	2420 MHz	23	2448 MHz	37	2476 MHz
10	2422 MHz	24	2450 MHz	38	2478 MHz
11	2424 MHz	25	2452 MHz	39	2480 MHz
12	2426 MHz	26	2454 MHz		
13	2428 MHz	27	2456 MHz		

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### 4.2 The Worst Test Modes and Channel Details

- 1. The EUT has been tested under operating condition.
- 2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

### **RADIATED EMISSION TEST:**

RADIATED EMISSION TEST (BELOW 1 GHz)						
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT	
Bluetooth LE	0 to 39	0,20,39	GFSK	1.0	MAIN	
	RADIATED	EMISSION TES	ST (ABOVE 1 GH	z)		
MODE AVAILABLE TESTED MODULATION RATE (Mbps) ORT						
Bluetooth LE	0 to 39	0,20,39	GFSK	1.0	MAIN	

#### 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 LE Transmitter for channel Low, Mid and High, the worst case E2 position was reported.

#### ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST						
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT	
Bluetooth LE	0 to 39	0,20,39	GFSK	1.0	MAIN	

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### **MEASUREMENT UNCERTAINTY**

Test Items	Uncertainty	
AC Power Line Conducted Emission	+/- 2.586 dB	
Peak Output Power	+/- 0.84 dB	
6dB Bandwidth	+/- 51.33 Hz	
100 KHz Bandwidth Of Frequency Band Edges	+/- 0.84 dB	
Peak Power Density	+/- 1.3 dB	
Temperature	+/- 0.65 °C	
Humidity	+/- 4.6 %	
DC / AC Power Source	DC= +/- 0.13%, AC= +/- 0.2%	

## Radiated Spurious Emission:

	30MHz - 180MHz: +/- 3.37dB
Magaziramant un cartainti	180MHz -417MHz: +/- 3.19dB
Measurement uncertainty (Polarization : <b>Vertical</b> )	0.417GHz-1GHz: +/- 3.19dB
	1GHz - 18GHz: +/- 4.04dB

	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.

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### **CONDUCTED EMISSION TEST**

## **Standard Applicable:**

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

Frequency range	Limits  dB(uV)  Quasi-peak  Average		
MHz			
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	NUMBER	CAL.				
EMI Test Receiver	R&S	ESCI 7	100950	12/12/2014	12/11/2015			
Coaxial Cables	N/A	N30N30-1042-150 cm	N/A	01/06/2015	01/07/2016			
LISN	Schwarzbeck	NSLK 8127	8127-648	06/09/2015	06/08/2016			
LISN	Rolf-Heine	NNB-2/16Z	99012	03/04/2015	03/03/2016			
Test Software	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.			

## 6.3 EUT Setup:

- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
- 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.

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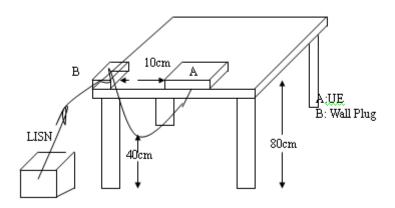
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## 6.4 Test SET-UP (Block Diagram of Configuration)



#### 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 phases of power being supplied by given UE are completed

#### 6.6 Measurement Result:

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

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

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

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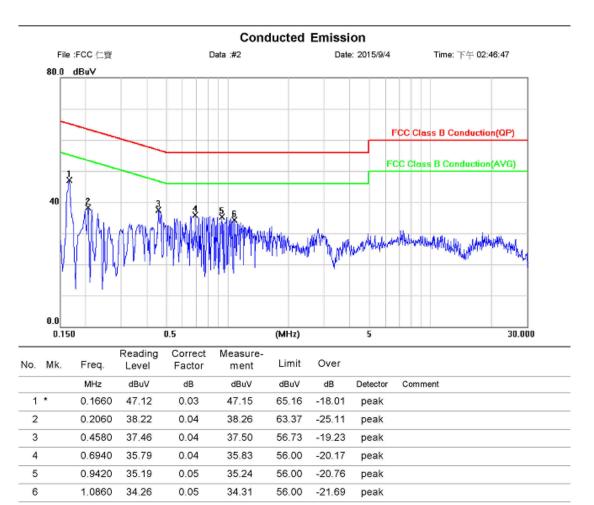
### AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation mode			Test Date:	Sep. 04, 2015
Temperature:	26	Humidity:	54 %	Test By:	Ashton
Model No.:	Adapter: DSA-SPF02-05 FUS 050100, Supplier: DVE		Phase:	L1	

Site Conduction Room Phase: L1 Temperature: 25 °C AC 120V/60Hz Humidity: Limit: FCC Class B Conduction(QP) Power:

Mode: Operation Mode

Note: Adapter Model:DSA-5PF02-05 FUS 050100



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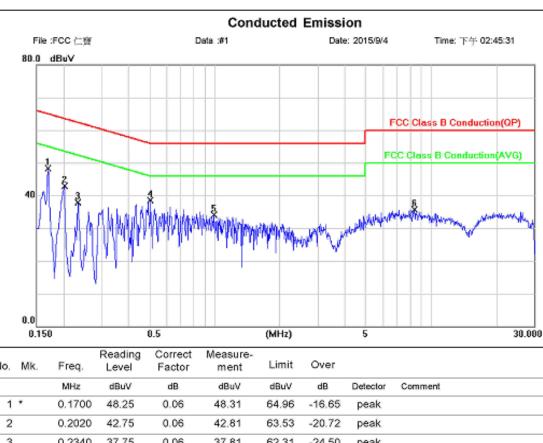
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Operation Mode:	Operation mode			Test Date:	Sep. 04, 2015
Temperature:	26 Humidity: 54 %			Test By:	Ashton
IMDUGEL INO	Adapter: DSA-SPF02-05 FUS 050100, Supplier: DVE			Phase:	N

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

Mode: Operation Mode

Note: Adapter Model:DSA-5PF02-05 FUS 050100



No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment	
1 *	0.1700	48.25	0.06	48.31	64.96	-16.65	peak		
2	0.2020	42.75	0.06	42.81	63.53	-20.72	peak		
3	0.2340	37.75	0.06	37.81	62.31	-24.50	peak		
4	0.5060	38.48	0.06	38.54	56.00	-17.46	peak		
5	0.9900	34.03	0.07	34.10	56.00	-21.90	peak		
6	8.3740	35.39	0.25	35.64	60.00	-24.36	peak		

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### PEAK OUTPUT POWER MEASUREMENT

## **Standard Applicable:**

For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt.

If the transmitting antenna of directional gain greater than 6dBi are used the peak output power form the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6dBi.

In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

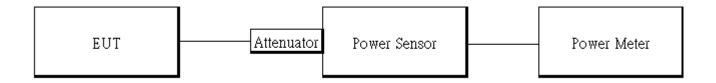
According to RSS-247 §5.4(4)

For DTSs employing digital modulation techniques operating in the bands 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1W and the e.i.r.p. shall not exceed 4 W.

7.2 Measurement Equipment Used:

Conducted Emission Test Site								
EQUIPMENT	LAST	CAL DUE.						
TYPE		NUMBER	NUMBER	CAL.				
Power Meter	Anritsu	ML2496A	1326001	06/23/2015	06/22/2016			
Power Sensor	Anritsu	MA2411B	1315048	06/23/2015	06/22/2016			
Spectrum Analyzer	Agilent	N9010A	MY53400256	10/15/2014	10/14/2015			
DC Block	PASTERNACK	PE8210	RF29	12/19/2014	12/18/2015			
Splitter	RF-LAMBAD	RFLT2W1G18 G	RF35	12/19/2014	12/18/2015			
Attenuator	WOKEN	218FS-10	RF23	12/19/2014	12/18/2015			

#### 7.3 Test Set-up:



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#### 7.4 Measurement Procedure:

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r03.
- Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.

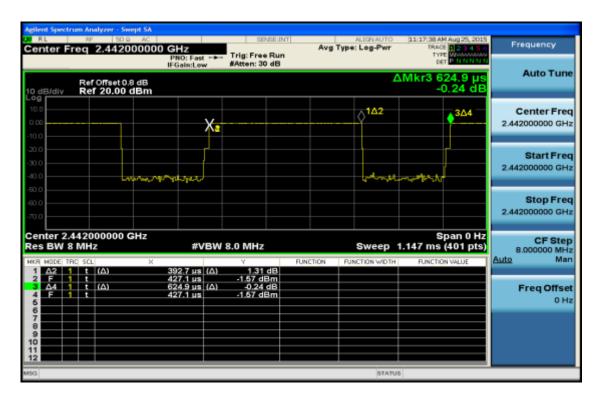
#### **Power Meter:**

It is used as the auxiliary test equipment to conduct the output power measurement.

- 4. Record the max. Reading as observed from Power Meter.
- 5. Repeat above procedures until all test default channel measured was complete.

## **Duty Factor:**

	Duty Cycle	Duty Fator (dB)
Bluetooth LE	62.80%	2.02



Duty Cycle Factor:  $10 * \log(1/0.628) = 2.02$ 

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#### Measurement Result:

#### BT4.0 mode:

СН	Frequency (MHz)	Peak Power Output(dBm)	Required Limit
0 2402		-1.81	1 Watt = 30 dBm
20	2442	0.16	1 Watt = 30 dBm
39	2480	-2.47	1 Watt = 30 dBm

СН	Frequency (MHz)	Average Power Output(dBm)	Required Limit
0	2402	-4.07	1 Watt = 30 dBm
20	2442	-2.21	1 Watt = 30 dBm
39	2480	-4.71	1 Watt = 30 dBm

\*Note: Measured by power meter, as cable loss+ Duty cycle factor that offsets on the power meter

### **EIRP Measurement:**

СН	Frequenc y (MHz)	Avg. Output Power				REQUIRED	
		TOTAL POWER (dBm)	TOTAL POWER (mW)	GAIN (dBi)	EIRP	LIMIT (dBm)	RESULT
0	2402	-4.07	0.392	0.75	-3.32	36	PASS
20	2442	-2.21	0.601	0.75	-1.46	36	PASS
39	2480	-4.71	0.338	0.75	-3.96	36	PASS

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### 6dB & 99% BANDWIDTH MEASUREMENT

## 8.1 Standard Applicable

The minimum 6 dB bandwidth shall be at least 500 kHz.

The emission bandwidth (x dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated x dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth.

### Measurement Equipment Used

mode a chieff Equipment Good						
Conducted Emission Test Site						
EQUIPMENT	EQUIPMENT MFR MODEL SERIAL LAST				CAL DUE.	
TYPE		NUMBER	NUMBER	CAL.		
Spectrum Analyzer	Agilent	N9010A	MY53400256	10/15/2014	10/14/2015	
DC Block	PASTERNACK	PE8210	RF29	12/19/2014	12/18/2015	
Splitter	RF-LAMBAD	RFLT2W1G18 G	RF35	12/19/2014	12/18/2015	
Attenuator	WOKEN	218FS-10	RF23	12/19/2014	12/18/2015	

### 8.3 Test Set-up:



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#### 8.4 Measurement Procedure:

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r03.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. For 6dB Bandwidth:
  - Set the spectrum analyzer as RBW=100 kHz, VBW= 3\*RBW, Span = 5MHz, Detector=Peak, Sweep=auto.
- 5. Mark the peak frequency and –6dB (upper and lower) frequency.
- 6. For 99% Bandwidth:
  - Set the spectrum analyzer as RBW=1%, VBW=3\*RBW, Span = 2MHz, Detector=Sample, Sweep=auto.
- 7. Turn on the 99% bandwidth function, max reading.
- 8. Repeat above procedures until all test default channel is completed

#### **Measurement Result:** 8.5

BT4.0 mode

Frequency (MHz)	6dB Bandwidth (kHz)	99%Bandwidth (kHz)	Bandwidth (kHz)	Result
2402	671.4	1.0270	> 500	PASS
2442	713.8	1.0553	> 500	PASS
2480	670.2	1.0579	> 500	PASS

Note: Refer to next page for plots.

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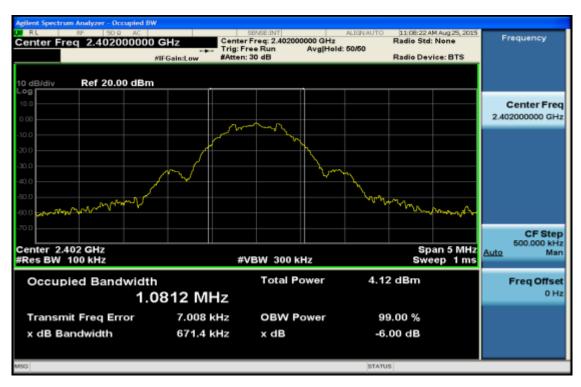
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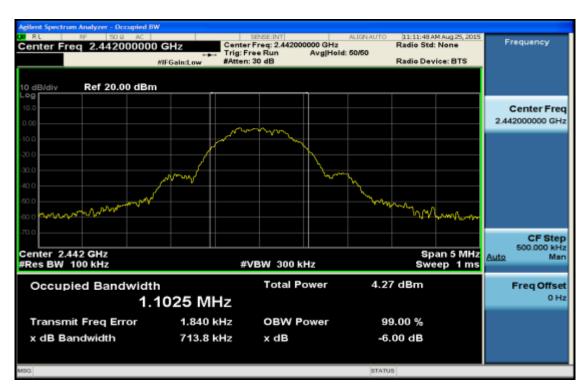
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## BT4.0 mode 6dB Band Width Test Data CH-Low



#### 6dB Band Width Test Data CH-Mid



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## 6dB Band Width Test Data CH-High



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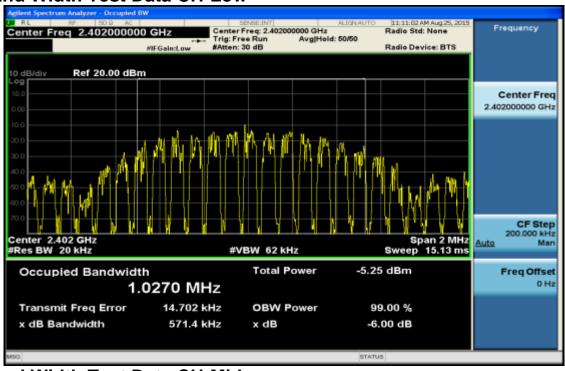
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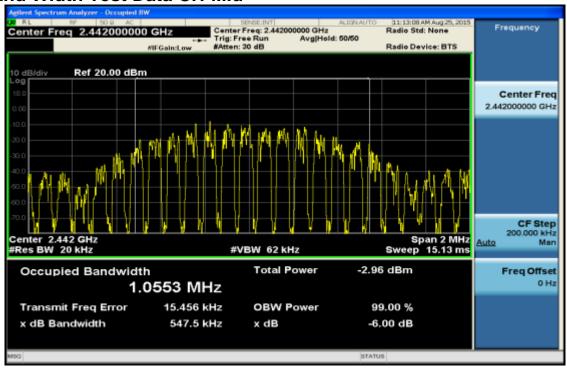
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# 99% Band Width Test Data CH-Low



## 99% Band Width Test Data CH-Mid



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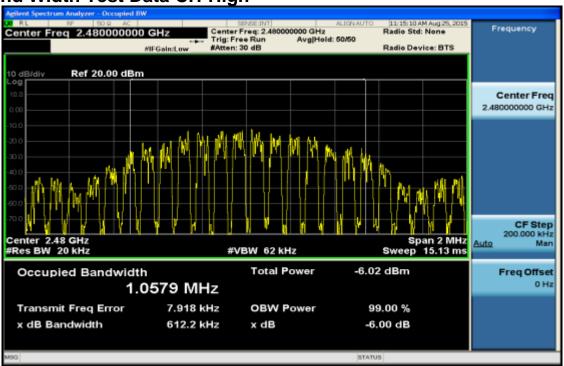
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99% Band Width Test Data CH-High



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### CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT

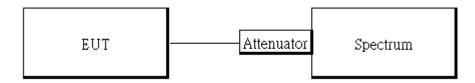
## Standard Applicable

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).

9.2 **Measurement Equipment Used:** 

mode a chieff Equipment Good.						
Conducted Emission Test Site						
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.	
TYPE		NUMBER	NUMBER	CAL.		
Spectrum Analyzer	Agilent	N9010A	MY53400256	10/15/2014	10/14/2015	
DC Block	PASTERNACK	PE8210	RF29	12/19/2014	12/18/2015	
Splitter	RF-LAMBAD	RFLT2W1G18 G	RF35	12/19/2014	12/18/2015	
Attenuator	WOKEN	218FS-10	RF23	12/19/2014	12/18/2015	

#### Test SET-UP:



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#### 9.4 Measurement Procedure

## **Conducted Band Edge:**

- To connect Antenna Port of EUT to Spectrum.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r03.
- Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. Set start to edge frequency, and stop frequency of spectrum analyzer so as to encompass the spectrum to be examined.
- 5. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Detector = Peak, Sweep = auto
- 6. Mark the highest reading of the emission as the reference level measurement.
- 7. Set DL as the limit = reading on marker 1 20dBm
- 8. Marker on frequency, 2.3999GHz and 2.4836GHz, and examine shall 100 kHz immediately outside the authorized (2400~2483.5) be attenuated by 20dB at least relative to the maximum emission of power.
- 9. Repeat above procedures until all default test channel (low, middle, and high) was complete.

## **Conducted Spurious Emission:**

- To connect Antenna Port of EUT to Spectrum.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r03.
- 3. Set RBW = 100 kHz & VBW=300 kHz, Detector = Peak, Sweep = Auto
- 4. 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.

#### 9.5 Measurement Result

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

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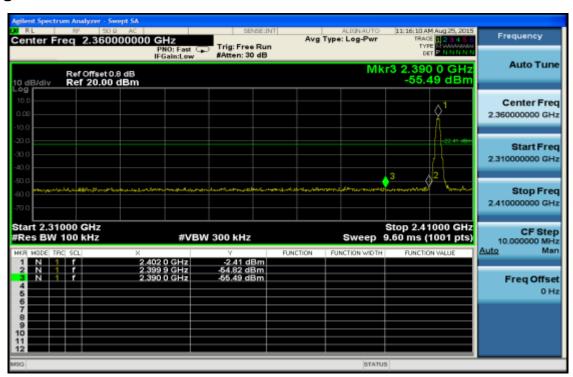
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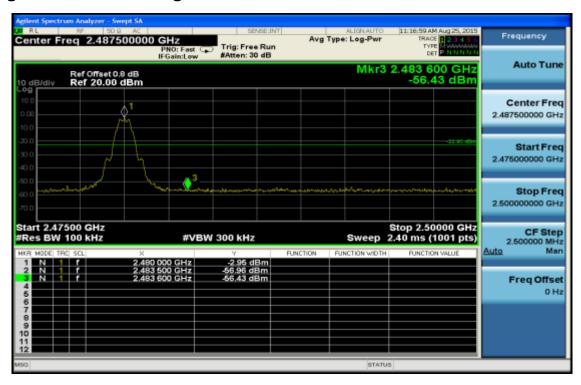
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## BT4.0 mode **Band Edges Test Data CH-Low**



## **Band Edges Test Data CH-High**



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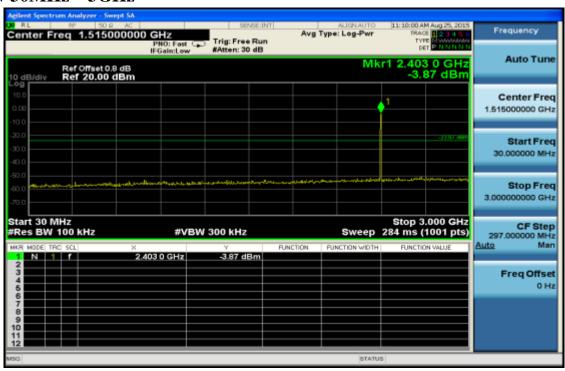
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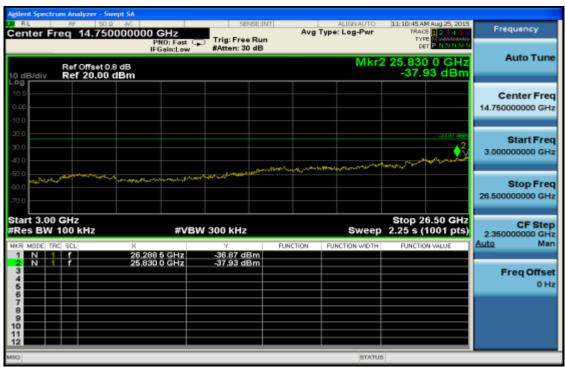
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## **Conducted Spurious Emission Measurement Result** CH-Low 30MHz - 3GHz



### CH-Low 3GHz – 26.5GHz



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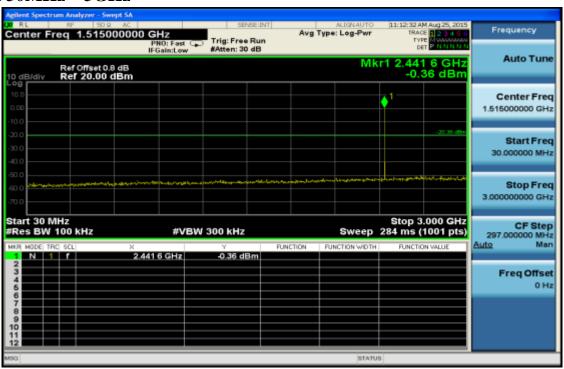
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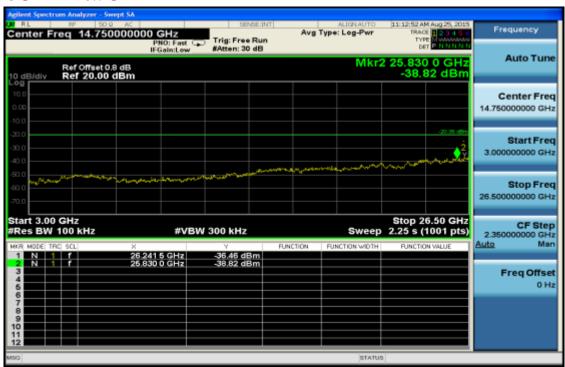
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### CH-Mid 30MHz – 3GHz



## CH-Mid 3GHz – 26.5GHz



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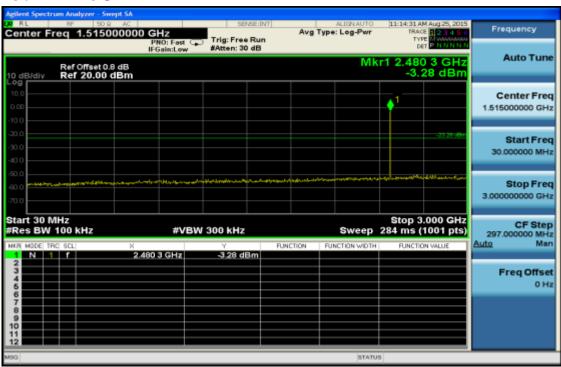
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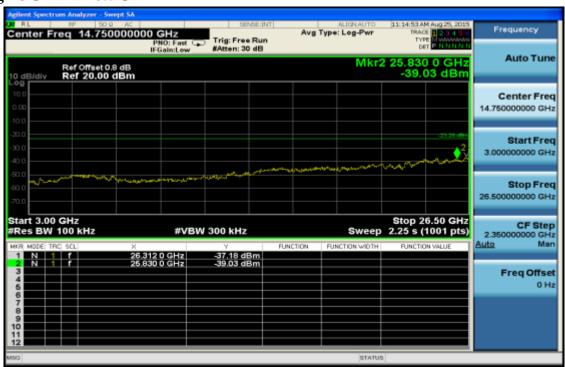
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## CH-High 30MHz – 3GHz



# CH- High 3GHz – 26.5GHz



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## 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 limit as below.

And according to §15.33(a) (1), 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  $(dB\mu V/m) = 20 \log Emission level (dB\mu V/m)$

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## 10.2 Measurement Equipment Used

966 Chamber						
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.	
TYPE		NUMBER	NUMBER	CAL.		
EMI Test Receiver	R&S	ESU 40	100363	04/09/2015	04/08/2016	
Loop Antenna	ETS-Lindgren	6502	00143303	12/09/2014	12/08/2015	
Broadband Antenna	TESEQ	CBL 6112D	35240	12/05/2014	12/04/2015	
Horn Antenna	ETS-Lindgren	3117	00143272	12/08/2014	12/07/2015	
Horn Antenna	ETS-Lindgren	3160-09	00117911	11/13/2014	11/12/2015	
Horn Antenna	ETS-Lindgren	3160-10	00117783	11/13/2014	11/12/2015	
Pre Amplifier	EMC Instruments	EMC330	980096	12/19/2014	12/18/2015	
Pre Amplifier	EMC Instruments	EMC001183 0	980199	12/19/2014	12/18/2015	
Pre Amplifier	R&S	SCU-18	10204	12/19/2014	12/18/2015	
Pre Amplifier	R&S	SCU-26	100780	12/19/2014	12/18/2015	
Coaxial Cable	Huber+Suhner	RG 214/U	966Rx 9K-30M	12/19/2014	12/18/2015	
Coaxial Cable	Huber+Suhner	RG 214/U SUCOFLEX 104	966Rx 30M-3G	12/19/2014	12/18/2015	
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Rx 1G-18G	12/19/2014	12/18/2015	
Coaxial Cable	Huber+Suhner	mini 141-12 SUCOFLEX 104	966Rx 18G-40G	12/19/2014	12/18/2015	
Coaxial Cable	Huber+Suhner	SUCOFLEX 104	966Tx 30M-18G	12/19/2014	12/18/2015	
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	966Tx 18G-40G	12/19/2014	12/18/2015	
Attenuator	WOKEN	218FS-10	RF27	12/19/2014	12/18/2015	
Site NSA	SGS	966 Cham- ber C	SAC-C	03/04/2015	03/03/2016	
Site VSWR	SGS	966 Cham- ber C	SAC-C	03/04/2015	03/03/2016	
DC Power Supply	HOLA	DP-3003	D7070035	05/04/2015	05/03/2016	
Controller	MF	MF-7802	N/A	N.C.R.	N.C.R.	
Antenna Master	MF	N/A	N/A	N.C.R.	N.C.R.	
Turn Table	MF	N/A	N/A	N.C.R.	N.C.R.	
Test Software	World-Pallas	Dr. E	V 3.0 Lite	N.C.R.	N.C.R.	

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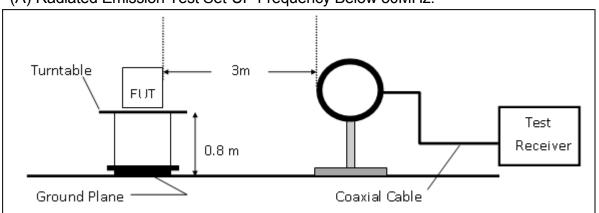


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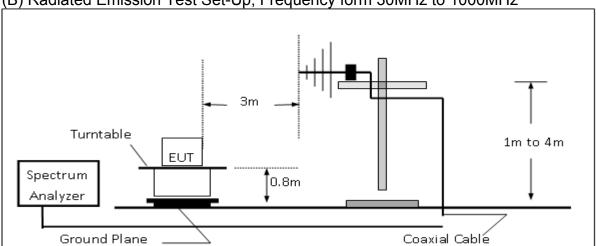
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### 10.3 Test SET-UP

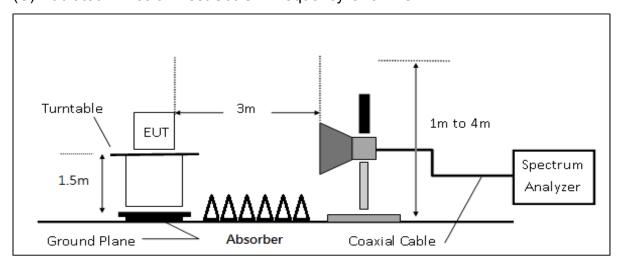
(A) Radiated Emission Test Set-UP Frequency Below 30MHz.



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



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



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#### 10.4 Measurement Procedure

- 1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r03.
- The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 0.8m for frequen-2. cy> 1GHz above ground plan.
- The turn table shall rotate 360 degrees to determine the position of maximum emission level. 3.
- EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the 4. highest emissions.
- 5. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
- 6. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
- 7. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
- 8. 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.
- Maximum procedure was performed on the six highest emissions to ensure EUT compli-9.
- 10. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. On spectrum, change spectrum mode in linear display mode, and reduce VBW = 10Hz if average reading is measured.
- 11. Repeat above procedures until all default test channel measured were complete.

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# 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	

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

Factor(dB) = Antenna Factor(dBµV/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.

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Radiated Band Edge Measurement Result (BT4.0 mode)

**Operation Band** :2015-08-26 **Test Date** :BT4.0

Fundamental Frequency :2402 MHz Temp./Humi. :26 deg\_C / 60 RH **Operation Mode** :Band Edge LOW Engineer :Burly

EUT Pol. :E1 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	dBµV/m	dB
2390.00	E	Average	27.72	5.16	32.88	54.00	-21.12
2390.00	E	Peak	39.40	5.16	44.56	74.00	-29.44

:2015-08-26 **Operation Band** :BT4.0 Test Date

Fundamental Frequency :2402 MHz Temp./Humi. :26 deg C / 60 RH

Operation Mode :Band Edge LOW Engineer :Burly

EUT Pol. :E1 Plane :HORIZONTAL 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	dBµV/m	dB
2390.00	Е	Average	27.74	5.16	32.90	54.00	-21.10
2390.00	Ε	Peak	39.75	5.16	44.91	74.00	-29.09

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**Operation Band** :BT4.0 **Test Date** :2015-08-26

Fundamental Frequency :2480 MHz Temp./Humi. :26 deg\_C / 60 RH

Operation Mode :Band Edge HIGH Engineer :Burly

EUT Pol. :E1 Plane :VERTICAL Measurement Antenna Pol.

Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	<b>@</b> 3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBµV/m	dBμV/m	dB
2483.50	Е	Average	28.49	6.01	34.50	54.00	-19.50
2483.50	Е	Peak	43.43	6.01	49.44	74.00	-24.56

:2015-08-26 **Operation Band** :BT4.0 Test Date

Fundamental Frequency Temp./Humi. :2480 MHz :26 deg C / 60 RH

Operation Mode :Band Edge HIGH Engineer :Burly

EUT Pol. :E1 Plane :HORIZONTAL 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	dBµV/m	dB	
2483.50	Е	Average	28.37	6.01	34.38	54.00	-19.62	
2483.50	Е	Peak	41.62	6.01	47.63	74.00	-26.37	

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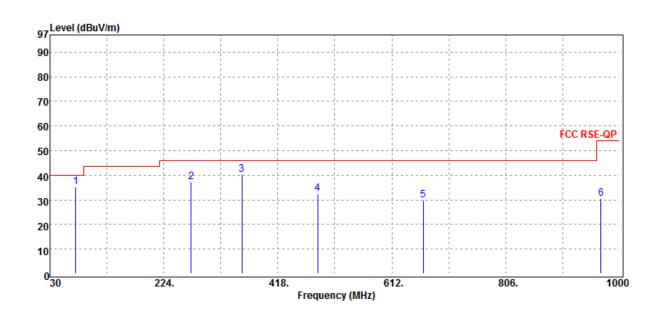
# Radiated Spurious Emission Measurement Result (BT4.0 mode) For Frequency form 30MHz to 1000MHz

**Operation Band Test Date** :BT4.0 :2015-08-27

Fundamental Frequency :2402 MHz Temp./Humi. :26 deg\_C / 60 RH

**Operation Mode** :TX LOW Engineer :Burly

EUT Pol. :E1 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	dBµV/m	dB
73.65	S	Peak	47.56	-12.28	35.28	40.00	-4.72
270.56	S	Peak	46.24	-8.95	37.29	46.00	-8.71
356.89	S	Peak	47.44	-7.07	40.37	46.00	-5.63
485.90	S	Peak	36.87	-4.37	32.50	46.00	-13.50
665.35	S	Peak	30.94	-1.18	29.76	46.00	-16.24
967.99	S	Peak	26.84	3.66	30.50	54.00	-23.50

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EUT Pol.

**FCC ID: YHLBLUSTSEELTE** IC: 11492A-STSEELTE

Report No.: ER/2015/70110 Issue Date: Sep. 18, 2015

:2015-08-27

:Burly

:26 deg\_C / 60 RH

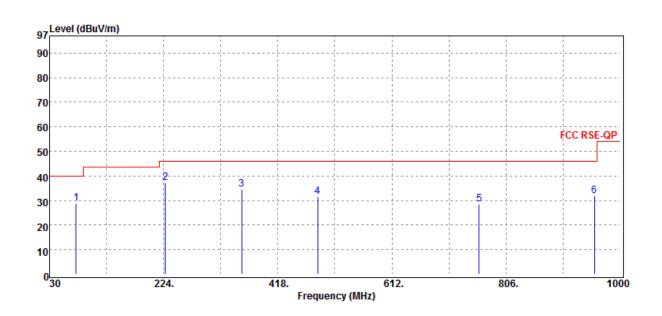
Page: 41 of 56

**Operation Band** :BT4.0 Fundamental Frequency :2402 MHz **Operation Mode** :TX LOW

:E1 Plane

**Test Date** Temp./Humi. Engineer

> :HORIZONTAL Measurement Antenna Pol.



F	req.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
			Mode	Reading Level		FS	@3m	
N	1Hz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
7	5.59	S	Peak	41.45	-12.60	28.85	40.00	-11.15
22	6.91	S	Peak	48.31	-11.05	37.26	46.00	-8.74
35	6.89	S	Peak	41.70	-7.07	34.63	46.00	-11.37
48	5.90	S	Peak	35.92	-4.37	31.55	46.00	-14.45
76	0.41	S	Peak	27.48	1.11	28.59	46.00	-17.41
95	6.35	S	Peak	28.16	3.56	31.72	46.00	-14.28

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EUT Pol.

**FCC ID: YHLBLUSTSEELTE** IC: 11492A-STSEELTE

Report No.: ER/2015/70110 Issue Date: Sep. 18, 2015

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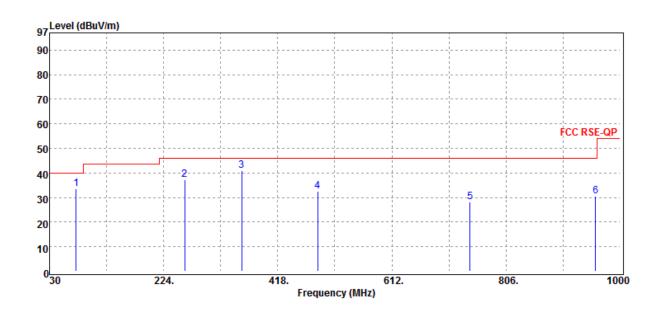
**Operation Band** :BT4.0 Fundamental Frequency :2442 MHz **Operation Mode** 

:TX MID :E1 Plane **Test Date** Temp./Humi. :2015-08-27

:26 deg\_C / 60 RH

Engineer :Burly

: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	dBµV/m	dB
75.59	S	Peak	46.09	-12.60	33.49	40.00	-6.51
259.89	S	Peak	46.97	-9.58	37.39	46.00	-8.61
356.89	S	Peak	48.18	-7.07	41.11	46.00	-4.89
485.90	S	Peak	36.82	-4.37	32.45	46.00	-13.55
744.89	S	Peak	28.35	-0.11	28.24	46.00	-17.76
958.29	S	Peak	26.78	3.62	30.40	46.00	-15.60

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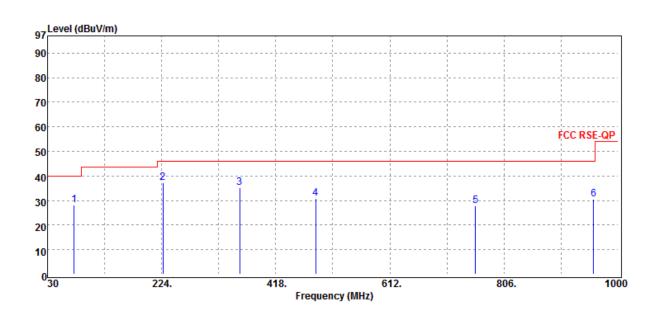
Page: 43 of 56

**Operation Band** :BT4.0 Fundamental Frequency :2442 MHz **Operation Mode** :TX MID

EUT Pol. :E1 Plane **Test Date** :2015-08-27 Temp./Humi. :26 deg\_C / 60 RH

Engineer :Burly

:HORIZONTAL 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	dBµV/m	dB
75.59	S	Peak	40.88	-12.60	28.28	40.00	-11.72
225.94	S	Peak	48.46	-11.08	37.38	46.00	-8.62
356.89	S	Peak	42.45	-7.07	35.38	46.00	-10.62
485.90	S	Peak	35.38	-4.37	31.01	46.00	-14.99
757.50	S	Peak	26.74	0.97	27.71	46.00	-18.29
958.29	S	Peak	26.95	3.62	30.57	46.00	-15.43

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**Operation Band** :BT4.0 Fundamental Frequency **Operation Mode** 

EUT Pol.

:2480 MHz :TX HIGH

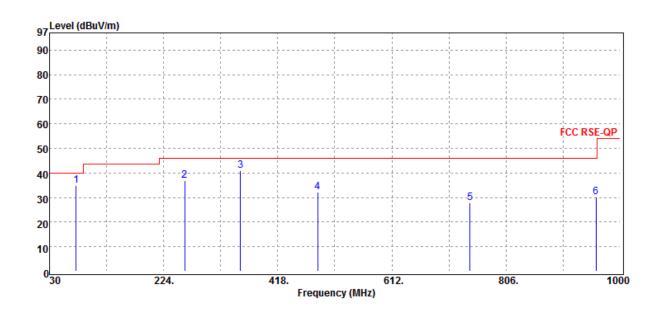
:E1 Plane

**Test Date** Temp./Humi. :2015-08-27

:26 deg\_C / 60 RH

Engineer :Burly

:VERTICAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	<b>@</b> 3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
75.59	S	Peak	47.40	-12.60	34.80	40.00	-5.20
259.89	S	Peak	46.40	-9.58	36.82	46.00	-9.18
354.95	S	Peak	48.06	-7.09	40.97	46.00	-5.03
485.90	S	Peak	36.70	-4.37	32.33	46.00	-13.67
744.89	S	Peak	28.06	-0.11	27.95	46.00	-18.05
959.26	S	Peak	26.63	3.65	30.28	46.00	-15.72

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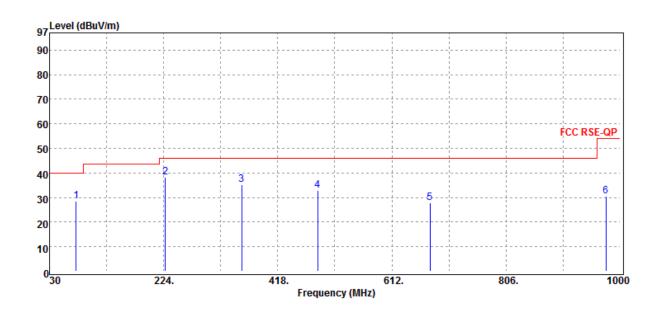
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**Operation Band** :BT4.0 Fundamental Frequency :2480 MHz **Operation Mode** :TX HIGH EUT Pol. :E1 Plane

**Test Date** :2015-08-27 Temp./Humi. :26 deg\_C / 60 RH

Engineer :Burly

:HORIZONTAL Measurement Antenna Pol.



Freq.	Note	Detector	Spectrum	Factor	Actual	Limit	Margin
		Mode	Reading Level		FS	<b>@</b> 3m	
MHz	F/H/E/S	PK/QP/AV	dΒμV	dB	dBμV/m	dBµV/m	dB
75.59	S	Peak	41.08	-12.60	28.48	40.00	-11.52
226.91	S	Peak	49.43	-11.05	38.38	46.00	-7.62
356.89	S	Peak	42.44	-7.07	35.37	46.00	-10.63
485.90	S	Peak	37.12	-4.37	32.75	46.00	-13.25
676.99	S	Peak	28.91	-1.11	27.80	46.00	-18.20
975.75	S	Peak	26.98	3.48	30.46	54.00	-23.54

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:2015-08-26

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# Radiated Spurious Emission Measurement Result (BT4.0 mode) For Frequency above 1GHz

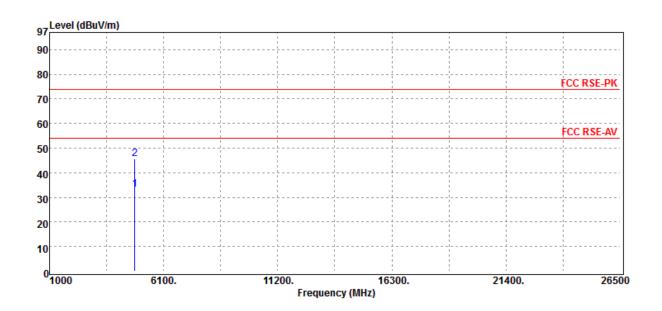
**Operation Band** :BT4.0

Fundamental Frequency Temp./Humi. :26 deg\_C / 60 RH :2402 MHz

**Test Date** 

**Operation Mode** :TX LOW Engineer :Burly

EUT Pol. :VERTICAL :E1 Plane 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	dBμV/m	dB	
4804.00	Н	Average	23.59	9.56	33.15	54.00	-20.85	
4804.00	Н	Peak	36.18	9.56	45.74	74.00	-28.26	

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EUT Pol.

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**Operation Band** :BT4.0 Fundamental Frequency :2402 MHz **Operation Mode** :TX LOW

:E1 Plane

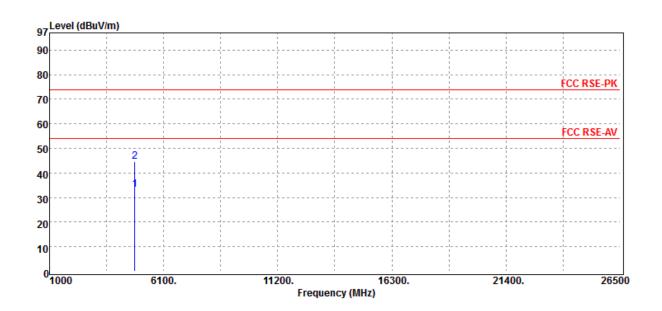
**Test Date** Temp./Humi. Engineer

:2015-08-26

:26 deg\_C / 60 RH :Burly

:HORIZONTAL

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	dBµV/m	dB	
4804.00	Н	Average	23.62	9.56	33.18	54.00	-20.82	
4804.00	Н	Peak	35.24	9.56	44.80	74.00	-29.20	

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**Operation Band** :BT4.0 Fundamental Frequency :2442 MHz

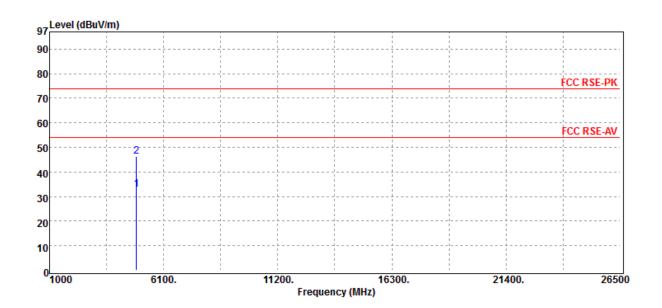
**Operation Mode** EUT Pol.

:TX MID :E1 Plane **Test Date** :2015-08-26

Temp./Humi. :26 deg\_C / 60 RH

Engineer :Burly

: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	dBµV/m	dB	
4884.0	00 H	Average	23.17	9.85	33.02	54.00	-20.98	
4884.0	00 H	Peak	36.34	9.85	46.19	74.00	-27.81	

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**Operation Band** :BT4.0 Fundamental Frequency :2442 MHz **Operation Mode** :TX MID

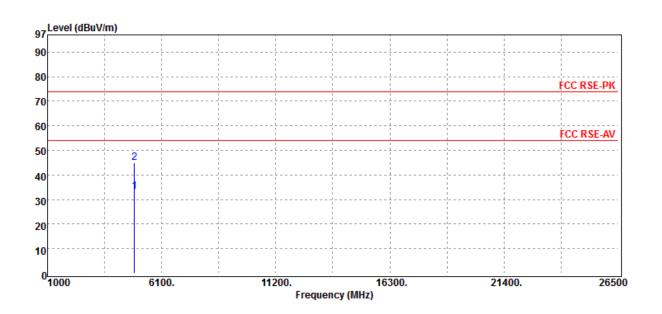
EUT Pol.

:E1 Plane

**Test Date** :2015-08-26 Temp./Humi. :26 deg\_C / 60 RH

Engineer :Burly

:HORIZONTAL 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	dBμV/m	dB	
4884.00	Н	Average	23.23	9.85	33.08	54.00	-20.92	
4884.00	Н	Peak	35.10	9.85	44.95	74.00	-29.05	

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Report No.: ER/2015/70110 Issue Date: Sep. 18, 2015

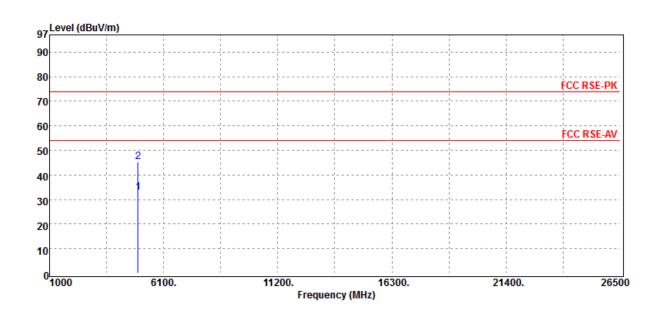
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**Operation Band** :BT4.0 **Test Date** :2015-08-26

Fundamental Frequency :2480 MHz Temp./Humi. :26 deg\_C / 60 RH

**Operation Mode** :TX HIGH Engineer :Burly

EUT Pol. :E1 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	dBµV/m	dB	
4960.00	Н	Average	22.98	9.86	32.84	54.00	-21.16	
4960.00	Н	Peak	35.60	9.86	45.46	74.00	-28.54	

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**Operation Band** :BT4.0 Fundamental Frequency :2480 MHz **Operation Mode** 

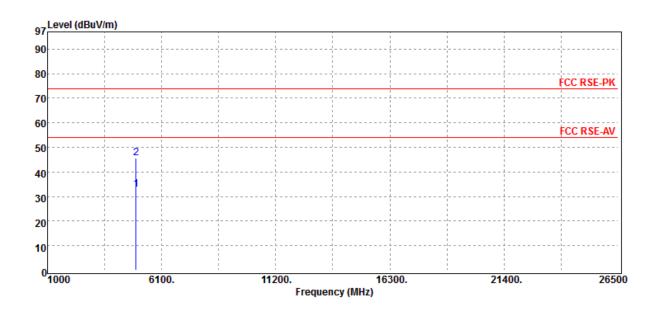
:TX HIGH

EUT Pol. :E1 Plane **Test Date** :2015-08-26

Temp./Humi. :26 deg\_C / 60 RH

Engineer :Burly

:HORIZONTAL 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	dBµV/m	dB
4960.00	Н	Average	23.06	9.86	32.92	54.00	-21.08
4960.00	Н	Peak	35.64	9.86	45.50	74.00	-28.50

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## 11 PEAK POWER SPECTRAL DENSITY

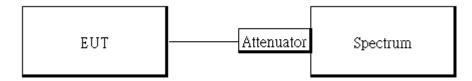
## 11.1 Standard Applicable:

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

## 11.2 Measurement Equipment Used:

Conducted Emission Test Site								
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.			
TYPE		NUMBER	NUMBER	CAL.				
Spectrum Analyzer	Agilent	N9010A	MY53400256	10/15/2014	10/14/2015			
DC Block	PASTERNACK	PE8210	RF29	12/19/2014	12/18/2015			
Splitter	RF-LAMBAD	RFLT2W1G18 G	RF35	12/19/2014	12/18/2015			
Attenuator	WOKEN	218FS-10	RF23	12/19/2014	12/18/2015			

## 11.3 Test Set-up:



#### 11.4 Measurement Procedure:

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance V03r03.
- 3. Set the span to 1.5 times the DTS channel bandwidth.
- 4. Set the RBW = 3 kHz.
- 5. Set the VBW = 10 kHz.
- 6. Detector = peak.
- 7. Sweep time = auto couple.
- 8. Trace mode = max hold.
- 9. Allow trace to fully stabilize.
- 10. Use the peak marker function to determine the maximum amplitude level.

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#### 11.5 Measurement Result:

### BT4.0 mode

Frequency MHz	RF Power Density (dBm)	Limit (dBm)	Result
2402	-16.22	8	PASS
2442	-15.54	8	PASS
2480	-18.21	8	PASS

Note: Refer to next page for plots.

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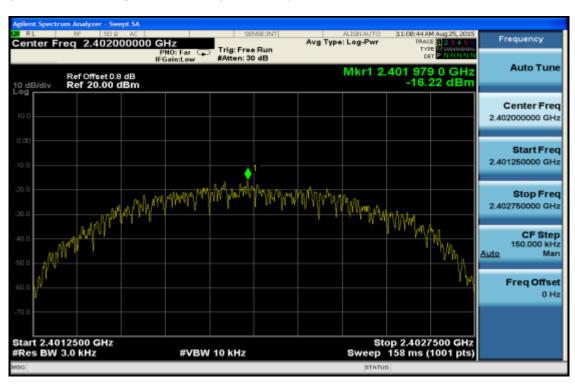
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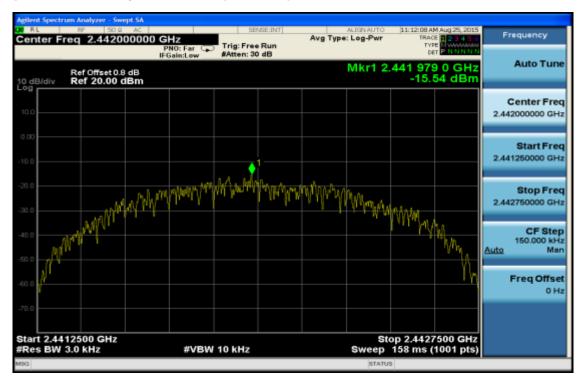
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# BT4.0 mode **Power Spectral Density Test Plot (CH-Low)**



# **Power Spectral Density Test Plot (CH-Mid)**



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# **Power Spectral Density Test Plot (CH-High)**



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### 12 ANTENNA REQUIREMENT

## 12.1 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.

In case of point-to-point operation, the power shall be reduced by the one dB for every 3 dB that the directional gain of antenna exceeds 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.

### **12.2 Antenna Connected Construction:**

An embedded-in antenna design is used.

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

The antenna gain is less than 6dBi. Therefore, it is not necessary to reduce maximum output power limit.

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