FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Applicant :	**TeleEpoch Limited**
Address :	**2/F, R2-A North Gate, Shenzhen High-Tech Industria Nanshan District, Shenzhen, Guang Dong, China**
Product Name :	**GSM Mobile Phone**
Model Name :	**ZMAM120, A05, L10**
Brand Name :	**Zonda**
FCC ID :	**U46-ZMAM120**
Report No. :	**SZSTS090619F4**
Date of Issue :	**July 02, 2009**

Issued by :	**Shenzhen Super Test Service Technology Co., Ltd.**
Address :	**No. 813 Unit A, HuaMeiJu Business Center, Xinhu Road, Bao'an District, Shenzhen, China**
Tel :	**86-755-2795 8522**
Fax :	**86-755-2795 8022**

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1. VERIFICATION OF CONFORMITY

Equipment Under Test:	GSM MOBILE PHONE
Brand Name:	Zonda
Model Number:	ZMAM120, A05, L10
FCC ID:	U46-ZMAM120
Applicant:	TeleEpoch Limited 2/F, R2-A North Gate, Shenzhen High-Tech Industria Nanshan District, Shenzhen, Guang Dong, China
Manufacturer:	TeleEpoch Limited 2/F, R2-A North Gate, Shenzhen High-Tech Industria Nanshan District, Shenzhen, Guang Dong, China
Technical Standards:	47 CFR Part 15 Subpart C
File Number:	SZSTS090616F4
Date of test:	June.29 – July.02, 2009
Deviation:	None
Condition of Test Sample:	Normal
Test Result:	PASS

The above equipment was tested by Shenzhen Super Test Service Technology Co., Ltd. for compliance with the requirements set forth in FCC rules and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

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

Tested By Petter Ping 2009.7.2

Petter Ping (STS Test Engineer) July.02, 2009

Checked By 2009.7.2

July Wen (STS Quality Engineer) July.02, 2009

Authorized By 2009.7.2

Terry Yang (STS General Manager) July.02, 2009

2. GENERAL INFORMATION

2.1 Product Information

EUT1- Mobile Phone	
Description:	GSM MOBILE PHONE
Model Name:	ZMAM120, A05, L10
Model Difference description:	Model name displaying on the lens is different.
IMEI No.:	N/A
Serial No.:	N/A
Hardware Version:	ME3 V0.3
Software Version:	ME3.MEXICO.4512.T.501.ES.V001
Frequency:	Tx: 824.2-848.8 MHz 1850.2-1909.8 MHz Rx: 849.2-893.8 MHz 1930.2-1989.8 MHz
Ancillary Equipment – Power Supply	
Description:	AC/DC Adapter
Model Name:	WYS-07
Brand Name:	ORION
Manufacturer:	WYS electronics corp.
Rated Input:	AC 100-240V,50/60HZ,0.15A
Rated Output:	DC 5.0V,550mA
Length DC cable:	200 cm

NOTE:

1. *Please refer to Appendix I for the photographs of the EUT. For a more detailed features description about the EUT, please refer to User's Manual.*

2.2 Objective

The objective of the report is to perform tests according to 47 CFR Part 15 Subpart C (Bluetooth, 2.4GHz ISM band radiators) for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15 (10-1-05 Edition)	Radio Frequency Devices

2.3 Test Standards and Results

Test items and the results are as bellow:

No.	Section	Description	Result	Date of Test
1	15.247(a)	Number of Hopping Frequency	PASS	2009-6-30
2	15.247(b)	Peak Output Power	PASS	2009-6-30
3	15.247(a)	20dB Bandwidth	PASS	2009-6-30
4	15.247(d)	Peak Power Spectral Density	PASS	2009-6-30
5	15.247(a)	Carrier Frequency Separation	PASS	2009-6-30
6	15.247(a)	Time of Occupancy (Dwell time)	PASS	2009-6-30
7	15.247(c)	Conducted Spurious Emission	PASS	2009-6-30
8	15.247(c)	Band Edge	PASS	2009-6-30
9	15.207	Conducted Emission	PASS	2009-6-30
10	15.209 15.247(c)	Radiated Emission	PASS	2009-6-30

Note: 1. The test result judgment is decided by the limit of measurement standard
2. The information of measurement uncertainty is available upon the customer's request.

2.4 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35ºC
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

3. TEST FACILITY

Test Site:	Shenzhen Most Technology Service Co.,ltd
Location:	Add: No.5, Nangshan 2nd Rd., North Hi-Tech Industrial park , Nanshan Shenzhen, Guangdong ,China
Description:	There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4 and CISPR 16 requirements. The FCC Registration Number is **490827.**
Site Filing:	The site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.
Instrument Tolerance:	All measuring equipment is in accord with ANSI C63.4 and CISPR 16 requirements that meet industry regulatory agency and accreditation agency requirement.
Ground Plane:	Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna. It has no holes or gaps having longitudinal dimensions larger than one-tenth of a wavelength at the highest frequency of measurement up to 1GHz.

4. TEST EQUIPMENT LIST

Instrumentation: The following list contains equipment used at Most for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.2 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10 kHz to 1.0 GHz or above.

No.	Equipment	Manufacturer	Model No.	S/N	Calculator due date
1	Test Receiver	Rohde & Schwarz	ESCI	100492	2010/03/14
2	L.I.S.N.	Rohde & Schwarz	ENV216	100093	2010/03/14
3	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2010/03/14
4	Terminator	Hubersuhner	50Ω	No.1	2010/03/14
5	RF Cable	SchwarzBeck	N/A	No.1	2010/03/14
6	Test Receiver	Rohde & Schwarz	ESPI	101202	2010/03/14
7	Bilog Antenna	Sunol	JB3	A121206	2010/03/14
8	Cable	Resenberger	N/A	NO.1	2010/03/14
9	Cable	SchwarzBeck	N/A	NO.2	2010/03/14
10	Cable	SchwarzBeck	N/A	NO.3	2010/03/14
11	DC Power Filter	DuoJi	DL2×30B	N/A	2010/03/14
12	Single Phase Power Line Filter	DuoJi	FNF 202B30	N/A	2010/03/14
13	3 Phase Power Line Filter	DuoJi	FNF 402B30	N/A	2010/03/14
14	Test Receiver	Rohde & Schwarz	ESCI	100492	2010/03/14
15	Absorbing Clamp	Luthi	MDS21	3635	2010/03/14
16	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2010/03/14
17	AC Power Source	Kikusui	AC40MA	LM003232	2010/03/14
18	Test Analyzer	Kikusui	KHA1000	LM003720	2010/03/14
19	Line Impendence Network	Kikusui	LIN40MA-PCR-L	LM002352	2010/03/14
20	ESD Tester	Kikusui	KES4021	LM003537	2010/03/14
21	EMCPRO System	EM Test	UCS-500-M4	V0648102026	2010/03/14
22	Signal Generator	IFR	2032	203002/100	2010/03/14
23	Amplifier	A&R	150W1000	301584	2010/03/14
24	CDN	FCC	FCC-801-M2-25	47	2010/03/14
25	CDN	FCC	FCC-801-M3-25	107	2010/03/14
26	EM Injection Clamp	FCC	F-203I-23mm	403	2010/03/14
27	RF Cable	MIYAZAKI	N/A	No.1/No.2	2010/03/14
28	Universal Radio Communication Tester	ROHDE&SCHWARZ	CMU200	0304789	2010/03/14
29	Telecommunication Antenna	European Antennas	PSA 75301R/170	0304213	2010/03/14

NOTE: *Equipments listed above have been calibrated and are in the period of validation.*

5. 47 CFR Part 15C Requirements

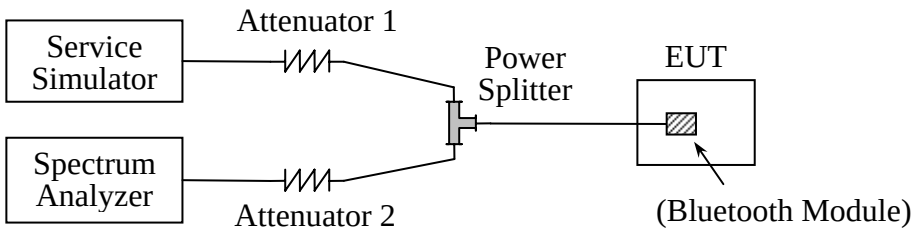
5.1 Number of Hopping Frequency

5.1.1 Requirement

According to FCC section 15.247(a) (1) (iii), frequency hopping systems operating in the 2400MHz to 2483.5MHz bands shall use at least 15 hopping frequencies.

5.1.2 Test Description

A. Test Setup:



The EUT, which is powered by the Battery, is coupled to the Spectrum Analyzer (SA) and the Bluetooth Service Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. During the measurement, the Bluetooth Module of the EUT is activated and controlled by the SS, and is set to operate under test mode transmitting 339 bytes DH5 packages at maximum power.

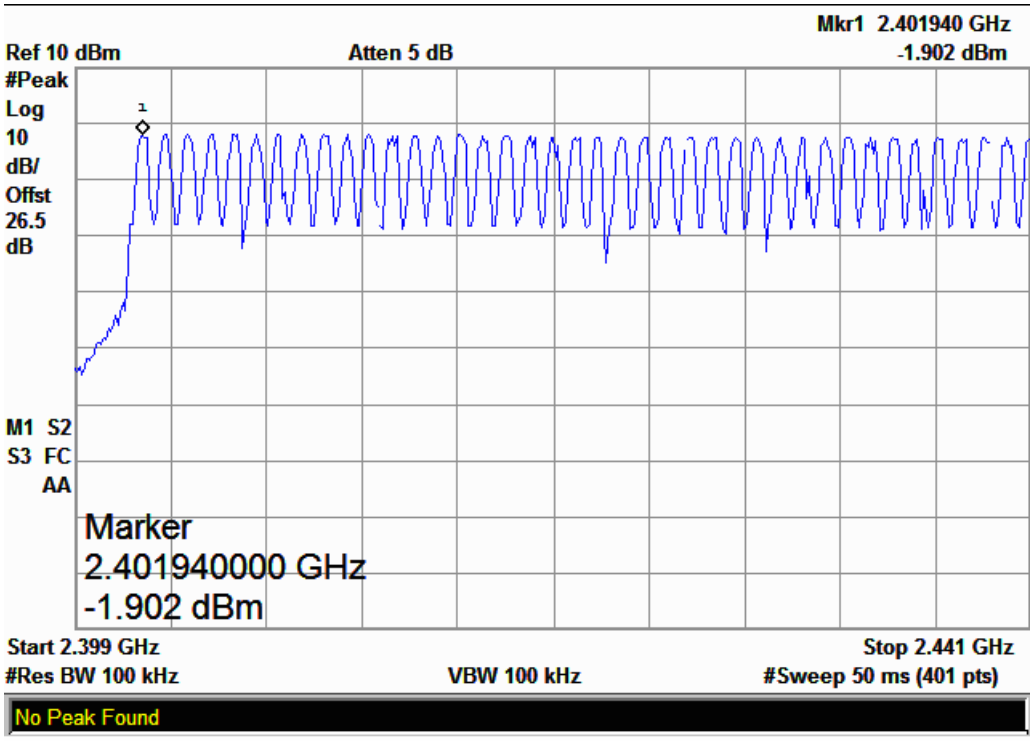
5.1.3 Test Result

The Bluetooth Module operates at hopping-on test mode; the frequencies number employed is counted to verify the Module's using the number of hopping frequency.

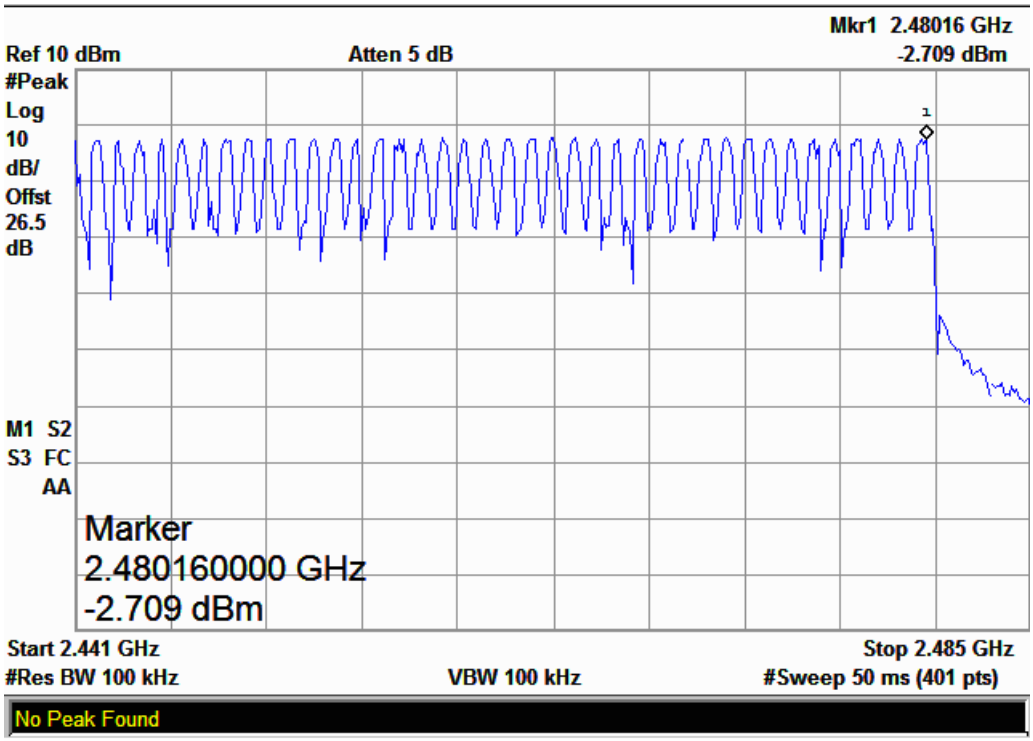
B. Test Verdict:

Frequency Block (MHz)	Measured Channel Numbers	Min. Limit	Refer to Plot	Verdict
2400 - 2483.5	79	15	Plot 1/ 2	PASS

C. Test Plot:



(Plot 1: 2402MHz to 2441MHz)



(Plot 2: 2441MHz to 2483.5MHz)

5.2 Peak Output Power

5.2.1Requirement

According to FCC section 15.247(b)(1), for frequency hopping systems that operates in the 2400MHz to 2483.5MHz band employing at least 75 hopping channels, the maximum peak output power of the intentional radiator shall not exceed 1Watt. For all other frequency hopping systems in the 2400MHz to 2483.5MHz band, it is 0.125Watts.

5.2.2 Test Description

See section 0 of this report.

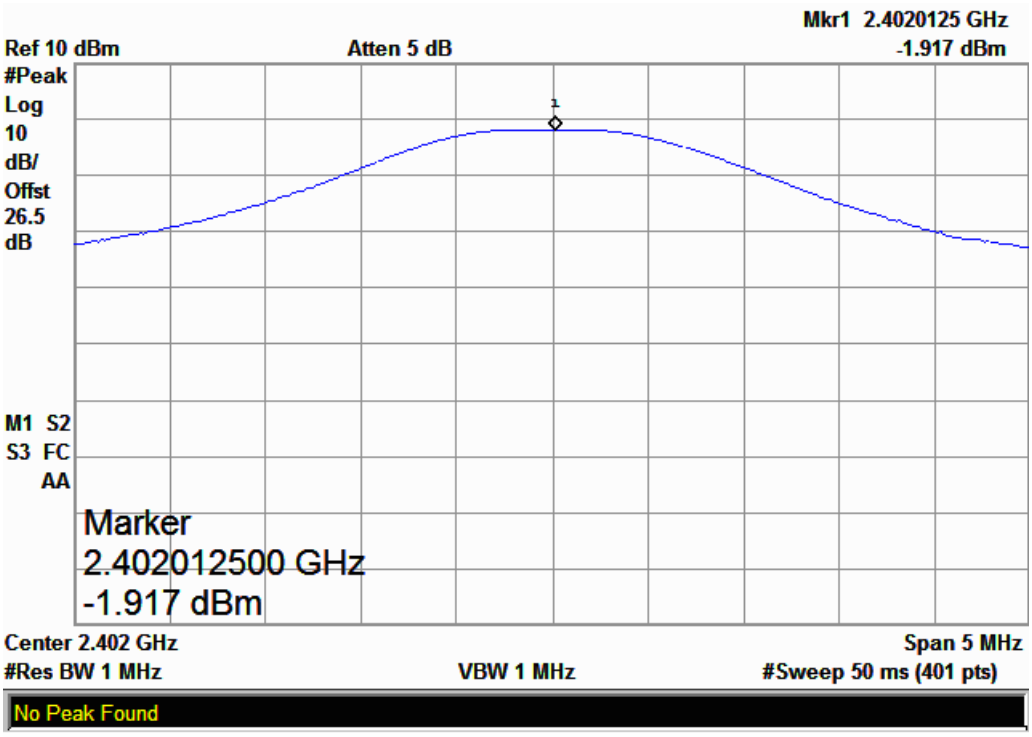
5.2.3 Test Result

The EUT operates at hopping-off test mode. The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power.

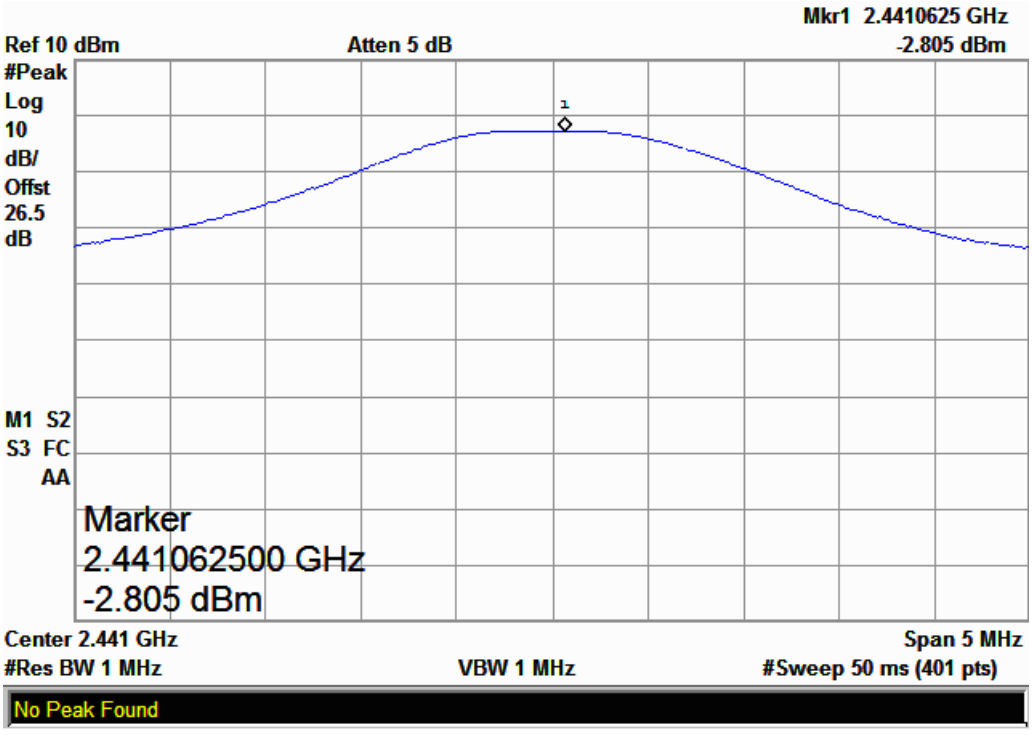
A. Test Verdict:

Channel	Frequency (MHz)	Measured Output Peak Power			Limit		Verdict
		dBm	W	Refer to Plot	dBm	W	
0	2402	-1.917	< 1 mW	Plot 3	30	1	PASS
39	2441	-2.805	< 1mW	Plot 4			PASS
78	2480	-2.604	< 1mW	Plot 5			PASS

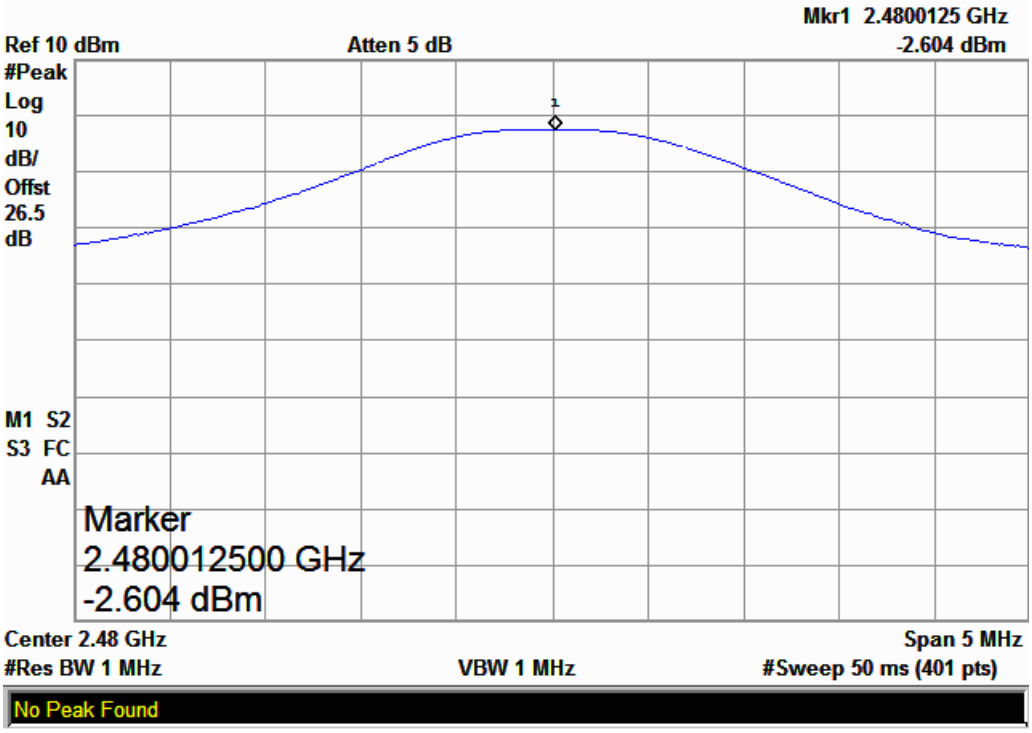
B. Test Plot:



(Plot 3: Channel = 0)



(Plot 4: Channel = 39)



(Plot 5: Channel = 78)

5.3 20dB Bandwidth

5.3.1 Definition

The 20dB bandwidth is known as the 99% emission bandwidth, or 20dB bandwidth (10*log1% = 20dB) taking the total RF output power.

5.3.2 Test Description

See section 0 of this report.

5.3.3 Test Result

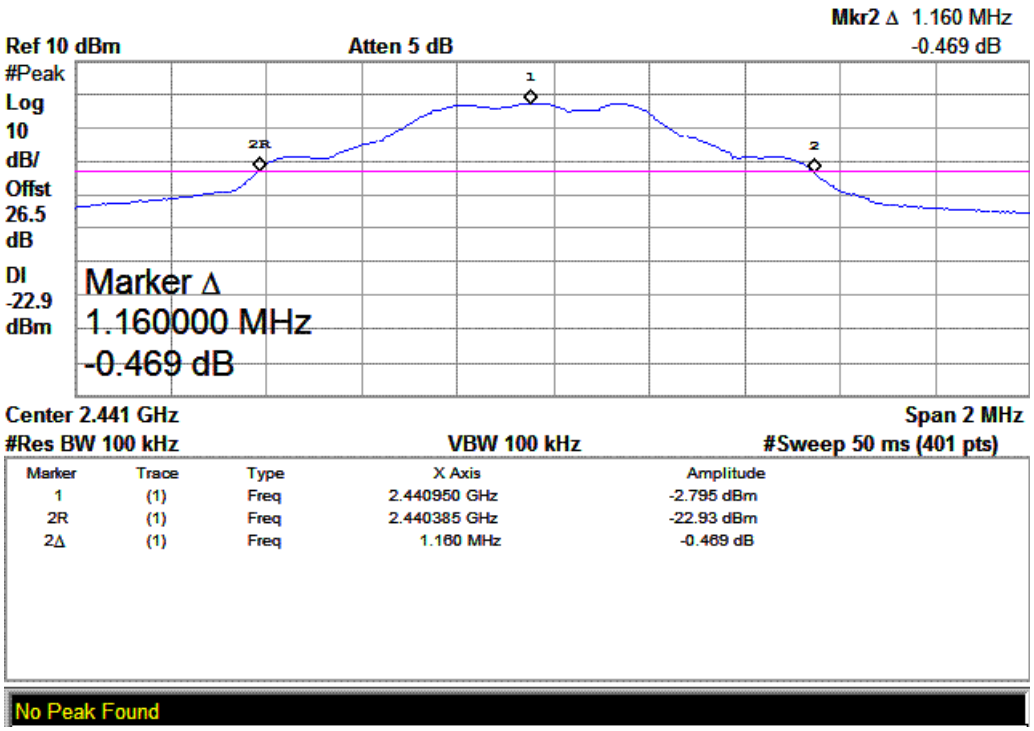
The EUT operates at hopping-off test mode. The lowest, middle and highest channels are selected to perform testing to record the 20dB bandwidth.

A. Test Verdict:

The maximum 20dB bandwidth measured is 1.02MHz according to the table below.

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Refer to Plot
39	2441	1.160	Plot 6

B. Test Plot:



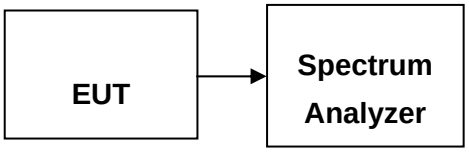
(Plot 6: Channel = 39)

5.4 Peak Power Spectral Density

5.4.1 Definition

1. For direct sequence systems, the peak 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.
2. The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

5.4.2 Test Configuration



5.4.3 Test procedure

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 300kHz, Sweep=100s
4. Record the max reading.
5. Repeat the above procedure until the measurements for all frequencies are completed.

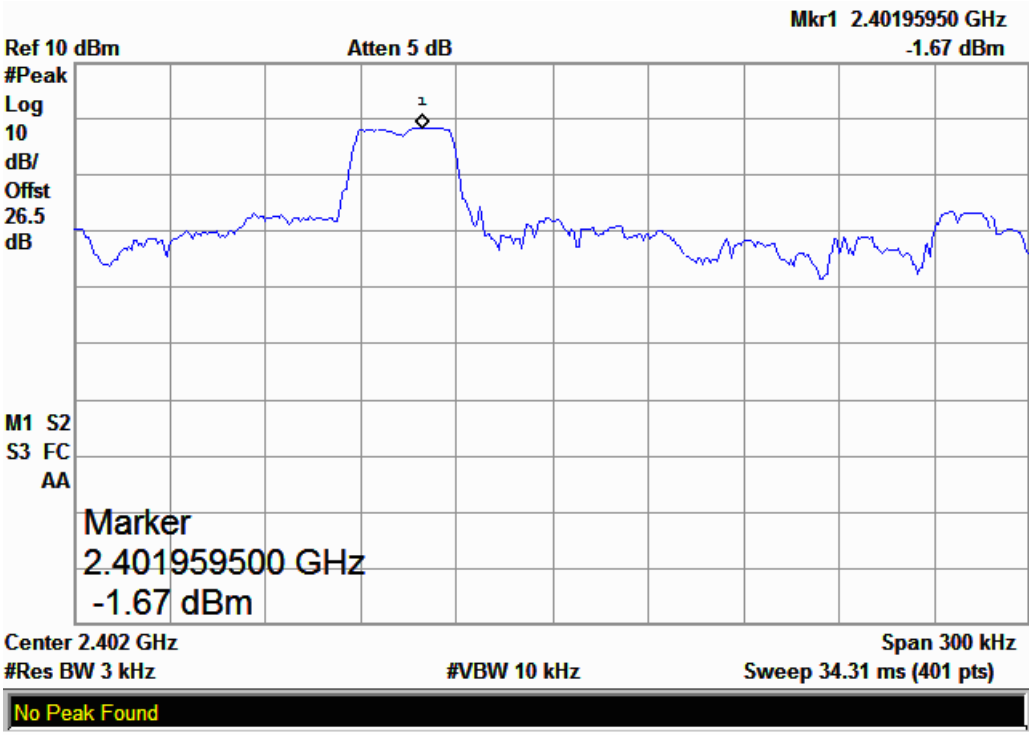
5.4.4 Test results

No non-compliance noted

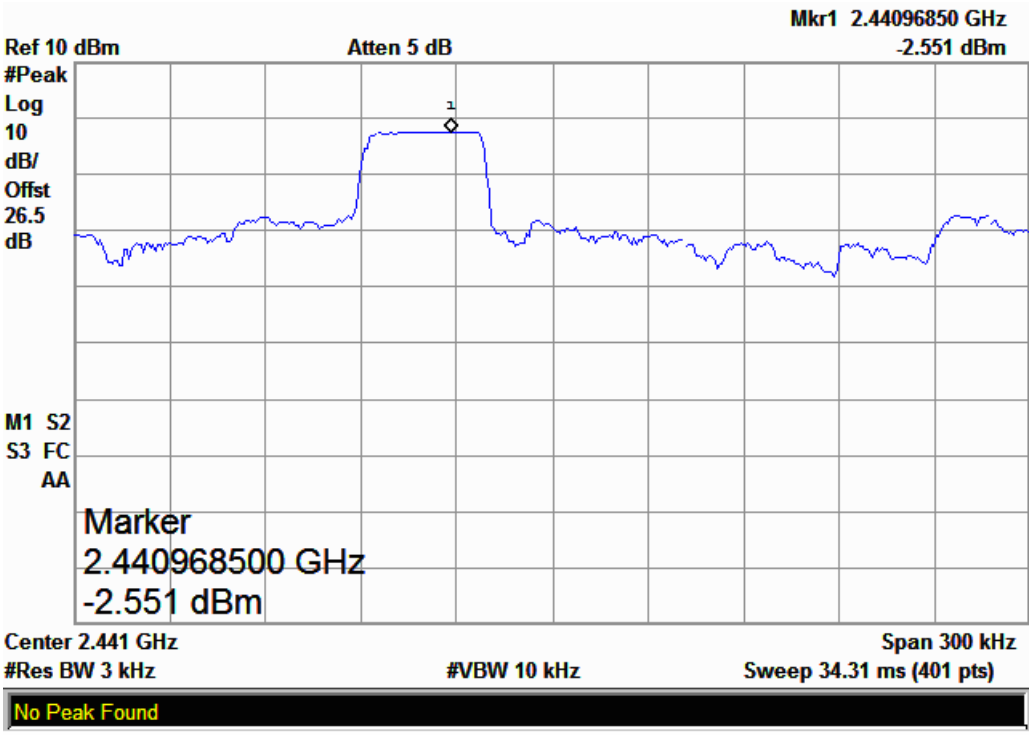
Test Data

Channel	Frequency (MHz)	Measured Peak Power Density		Limit	Verdict
		dBm	Refer to Plot	dBm	
0	2402	-1.670	Plot 7	8	PASS
39	2441	-2.551	Plot 8		PASS
78	2480	-2.467	Plot 9		PASS

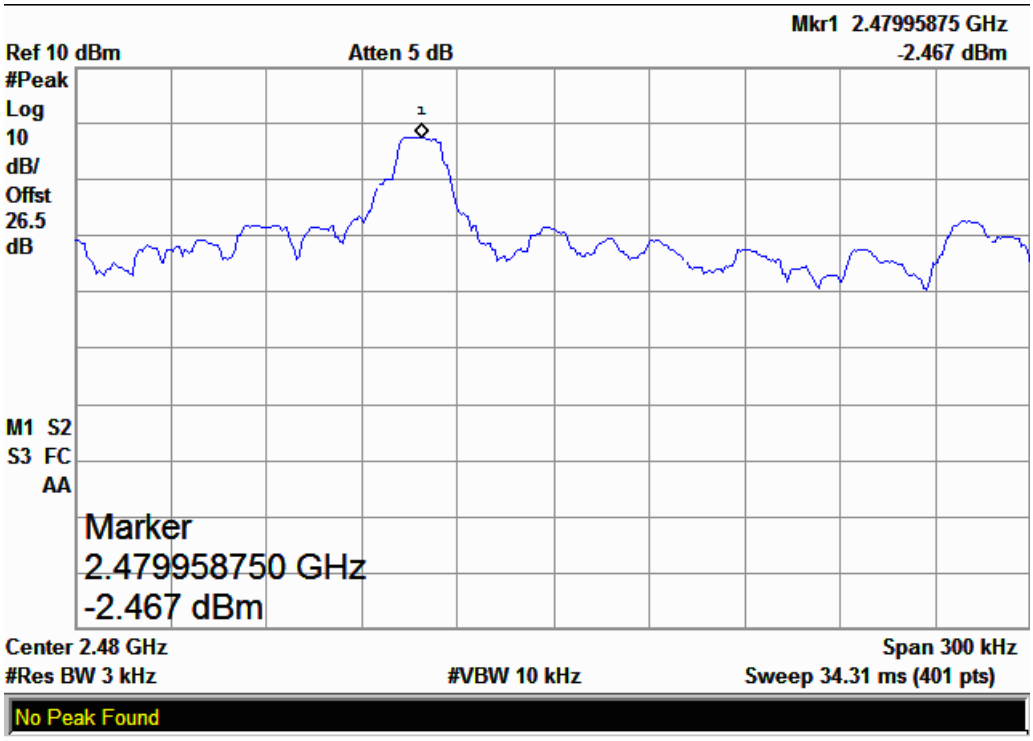
Test Plot:



Plot 7: (Channel = 0)



Plot 8: (Channel = 39)



Plot 9: (Channel = 78)

5.5 Carried Frequency Separation

5.5.1 Definition

According to FCC section 15.247(a)(1), frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater.

5.5.2 Test Description

See section 0 of this report.

5.5.3 Test Result

The EUT operates at hopping-on test mode.

For any adjacent channels, the Module does have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel (1.02MHz, refer to section 0), whichever is greater. So, the verdict is PASSING.

5.6 Time of Occupancy (Dwell time)

5.6.1 Requirement

According to FCC section 15.247(a) (1) (iii), frequency hopping systems in the 2400 - 2483.5MHz band shall use at least 15 non-overlapping 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.

5.6.2 Test Description

See section 0 of this report.

5.6.3 Test Result

A. Test Verdict:

DH 1

CH Low: 0.386 * (1600/2)/79 * 30 = 115.44(ms)

CH Mid: 0.386 * (1600/2)/79 * 30 = 115.44 (ms)

CH High: 0.380 * (1600/2)/79 * 30 = 115.44 (ms)

CH	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
Low	0.386	117.27	30.00	400.00	PASS
Mid	0.386	117.27	30.00		PASS
High	0.380	115.44	30.00		PASS

DH 3

CH Low: 1.620 * (1600/4)/79 * 30 = 246.83 (ms)

CH Mid: 1.625 * (1600/4)/79 * 30 = 246.83 (ms)

CH High: 1.520 * (1600/4)/79 * 30 = 246.83 (ms)

CH	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
Low	1.620	246.08	30.00	400.00	PASS
Mid	1.625	246.83	30.00		PASS
High	1.520	230.89	30.00		PASS

DH 5

CH Low: 2.905 * (1600/6)/79 * 30 = 293.67 (ms)

CH Mid: 2.902 * (1600/6)/79 * 30 = 293.67 (ms)

CH High: 2.902 * (1600/6)/79 * 30 = 293.67 (ms)

CH	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
Low	2.905	294.18	30.00	400.00	PASS
Mid	2.902	293.87	30.00		PASS
High	2.902	293.87	30.00		PASS

5.7 Conducted Spurious Emissions

5.7.1 Requirement

According to FCC section 15.247(c), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

5.7.2 Test Description

See section 0 of this report.

5.7.3 Test Result

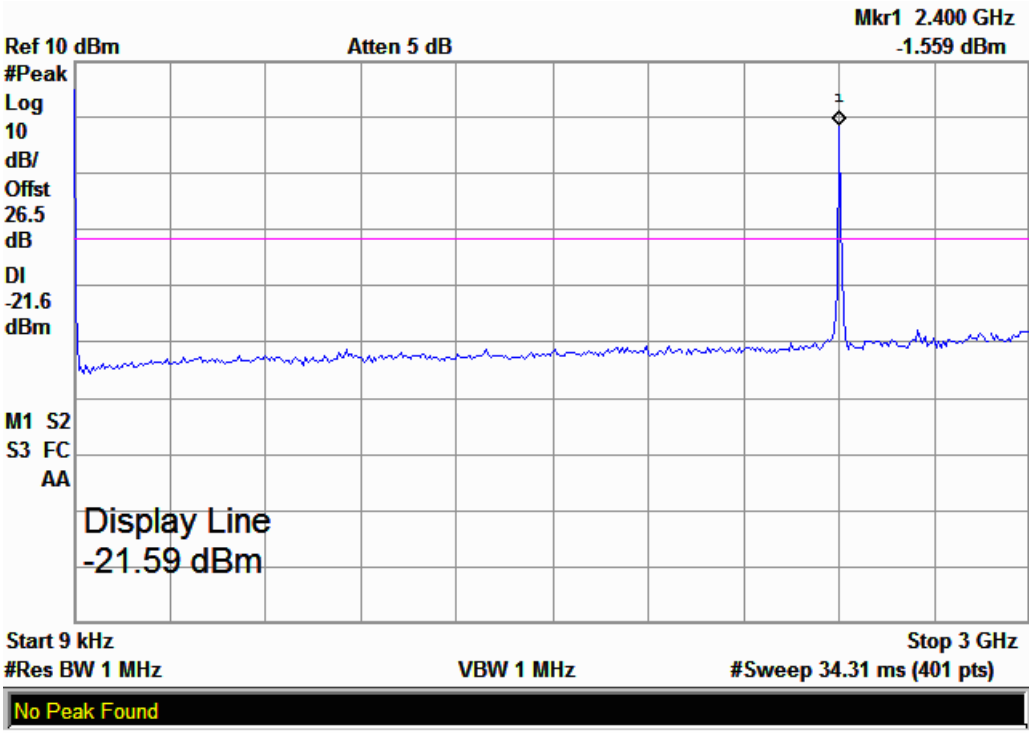
The EUT operates at hopping-off test mode. The measurement frequency range is from 9 KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions.

A. Test Verdict:

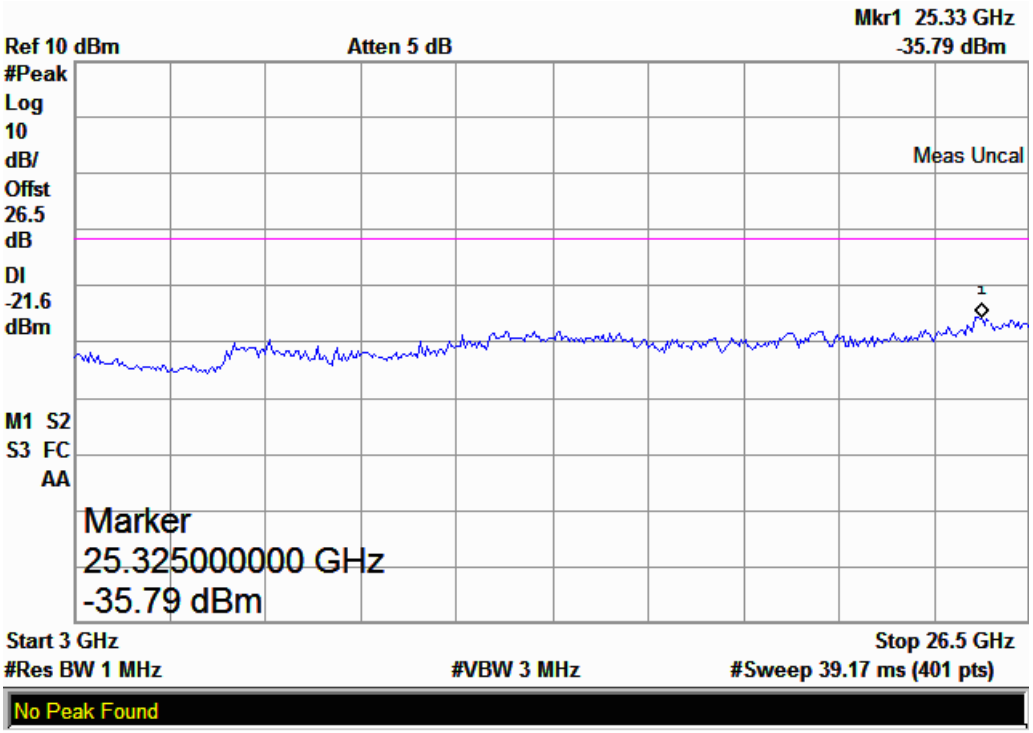
Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Refer to Plot	Limit (dBm)		Verdict
				Carrier Level	Calculated -20dBc Limit	
0	2402	-35.79	Plot 20/21	-1.559	-21.559	PASS
39	2441	-36.84	Plot 22/23	-2.301	-23.001	PASS
78	2480	-37.48	Plot 24/25	-2.170	-22.170	PASS

B. Test Plot:

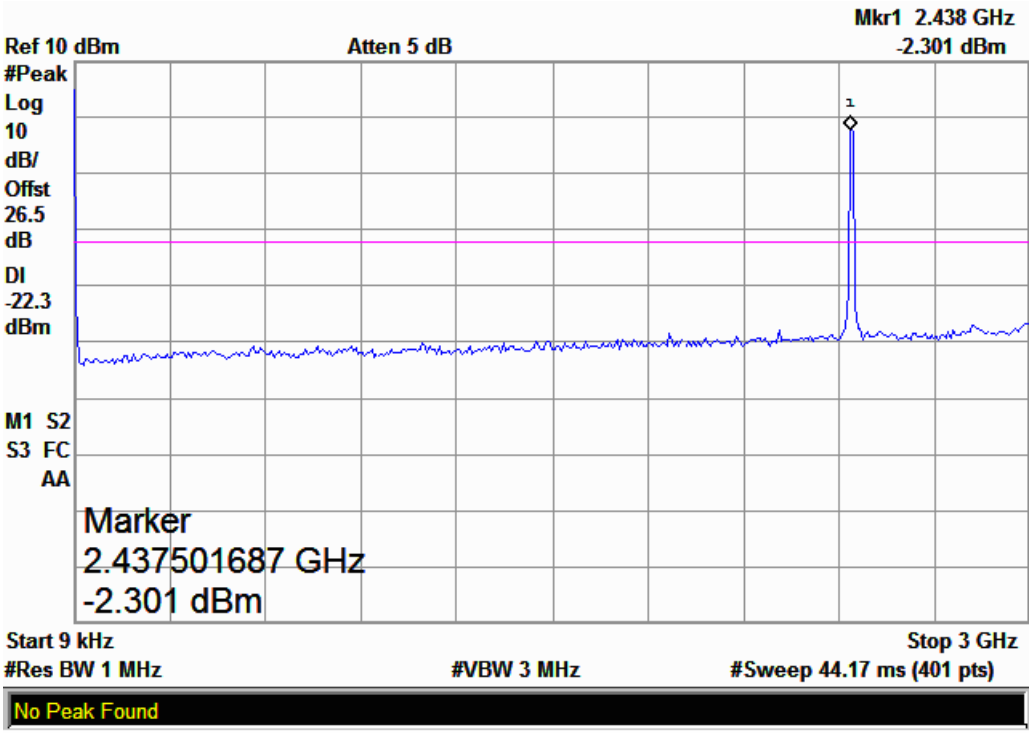
Note: the power of the Module transmitting frequency should be ignored.



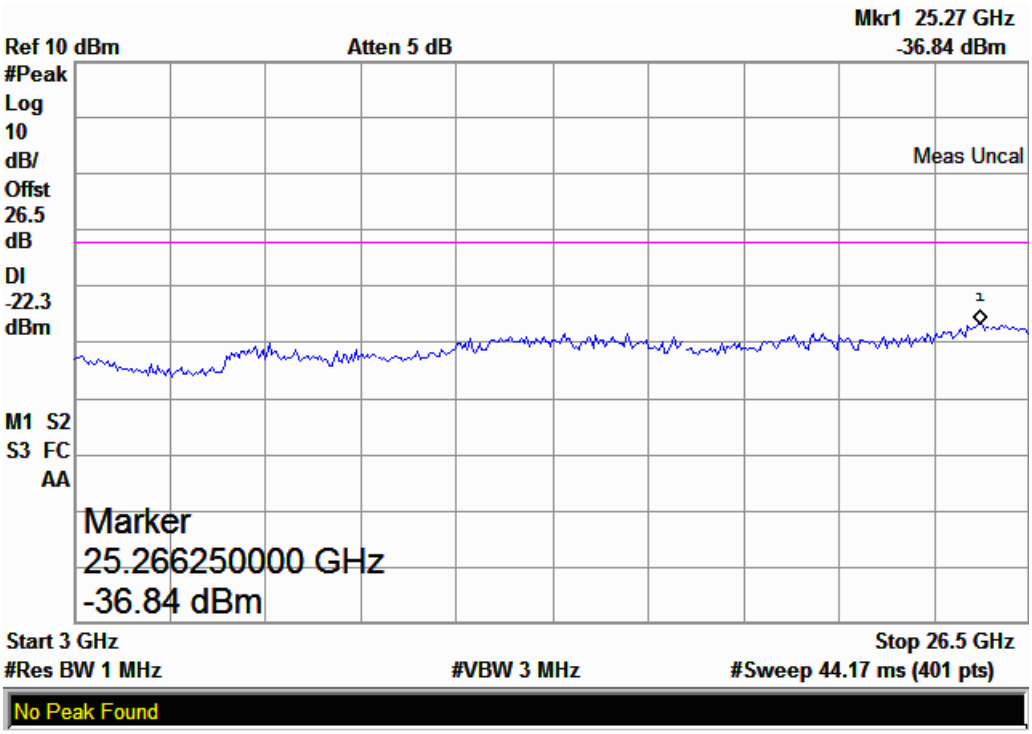
(Plot 20: Channel = 0, 9 KHz to 3GHz)



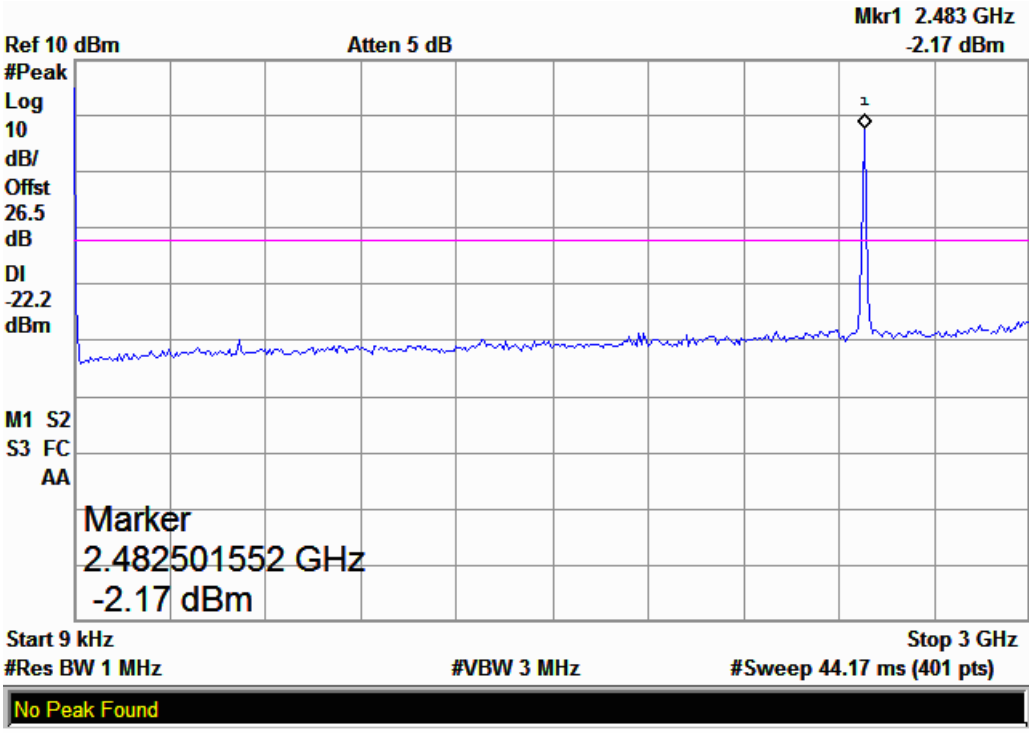
(Plot 21: Channel = 0, 3GHz to 26.5GHz)



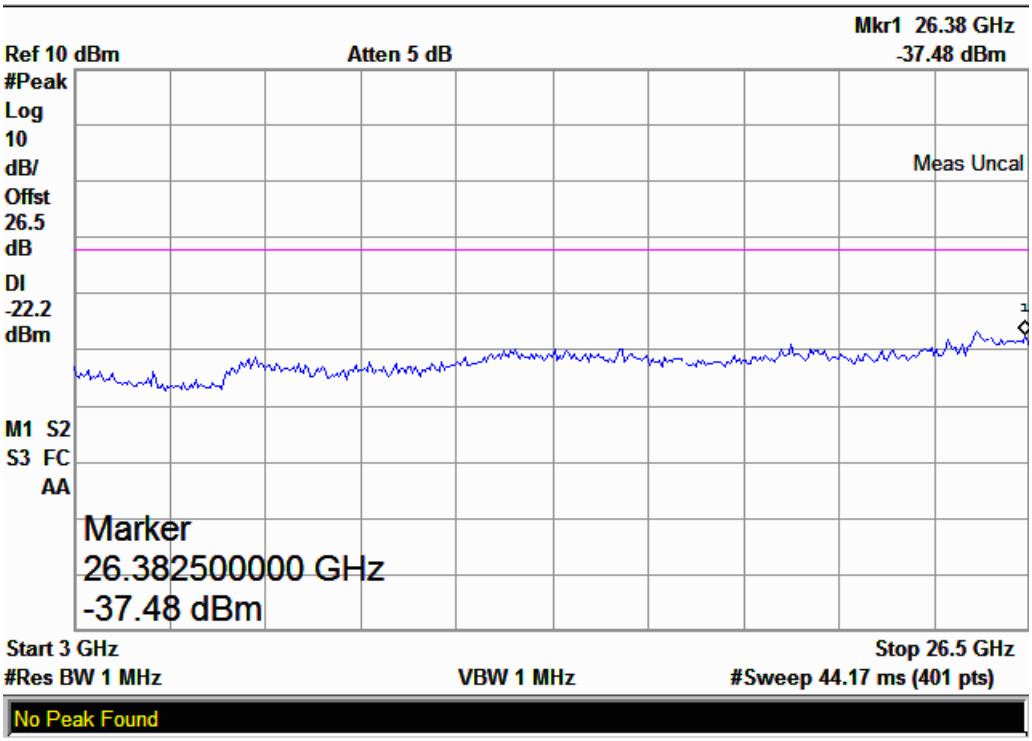
(Plot 22: Channel = 39, 9 KHz to 3GHz)



(Plot 23: Channel = 39, 3GHz to 26.5GHz)



(Plot 24: Channel = 78, 9 KHz to 3GHz)



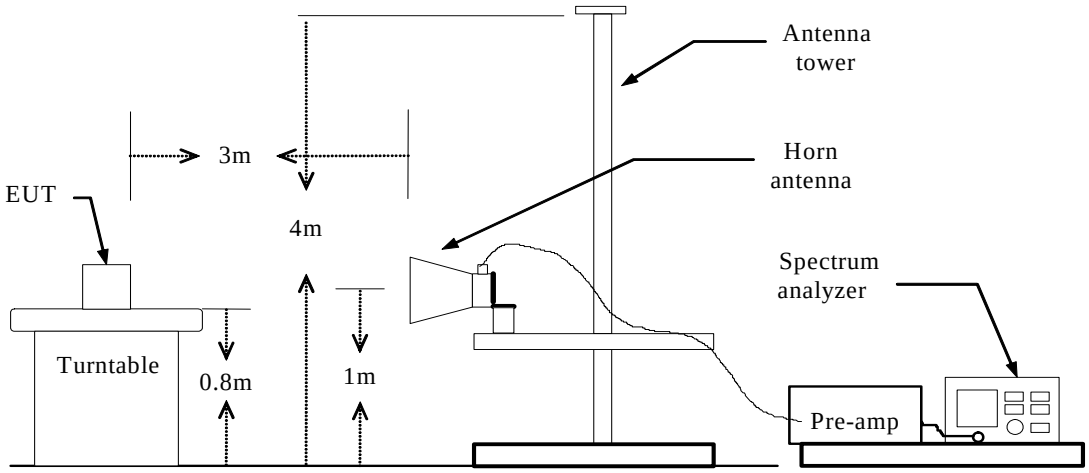
(Plot 25: Channel = 78, 3GHz to 26.5GHz)

5.8 Band Edge

5.8.1 Requirement

According to FCC section 15.247(c), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

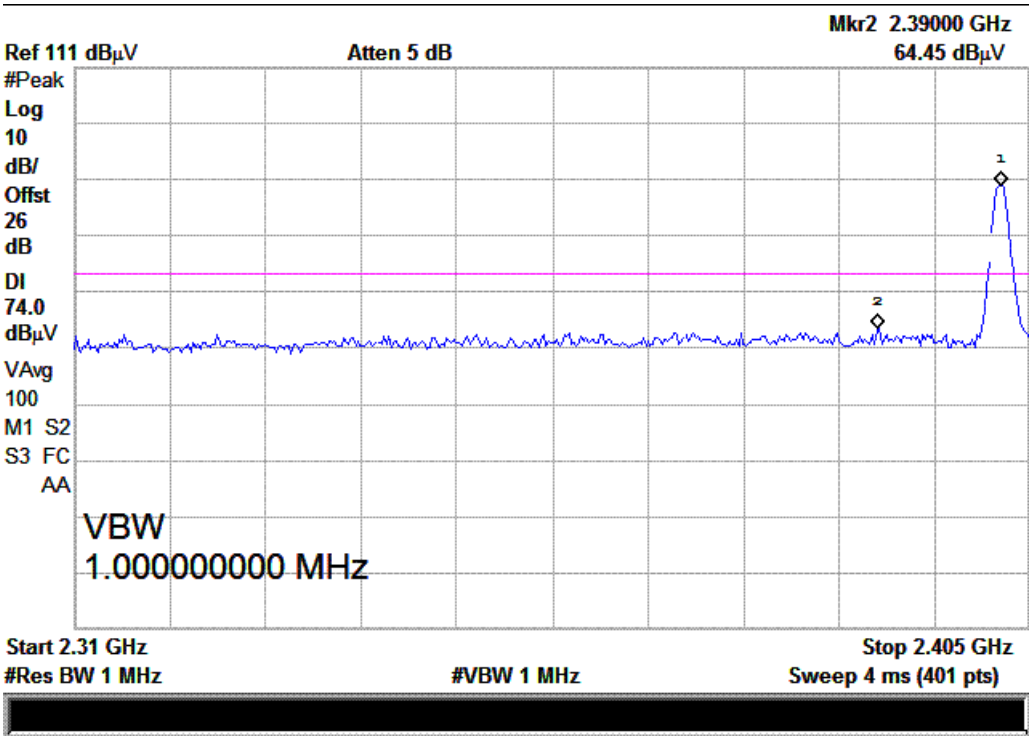
5.8.2 Test Description



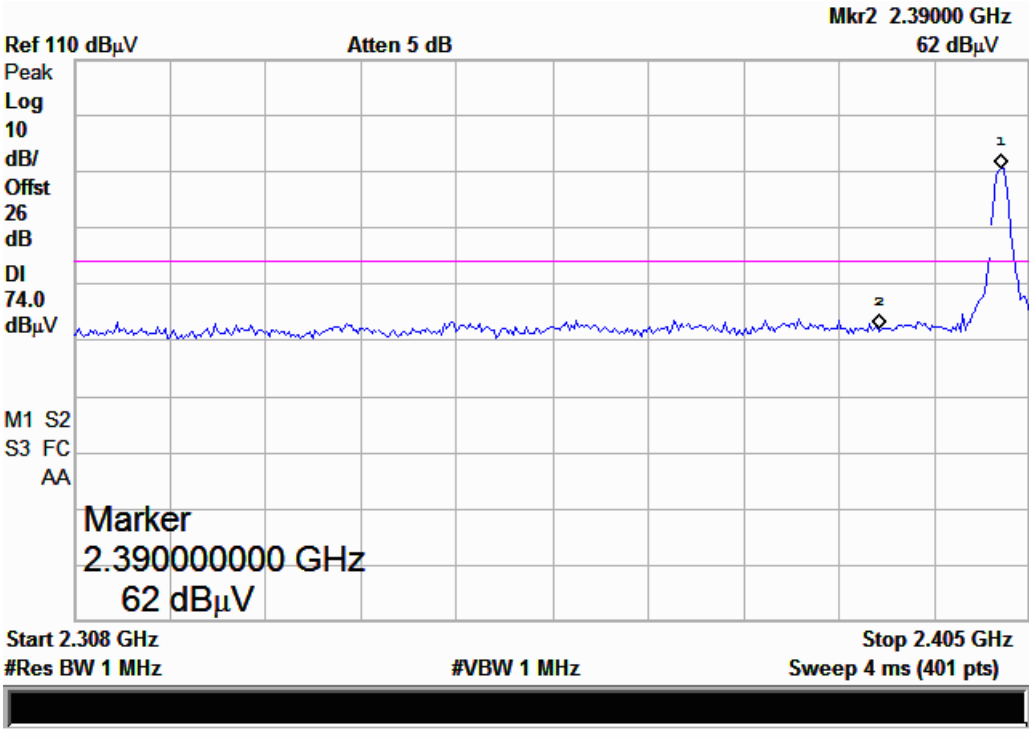
5.8.3Test Result

The EUT operates at hopping-off test mode. The lowest and highest channels are tested to verify the band edge emissions.

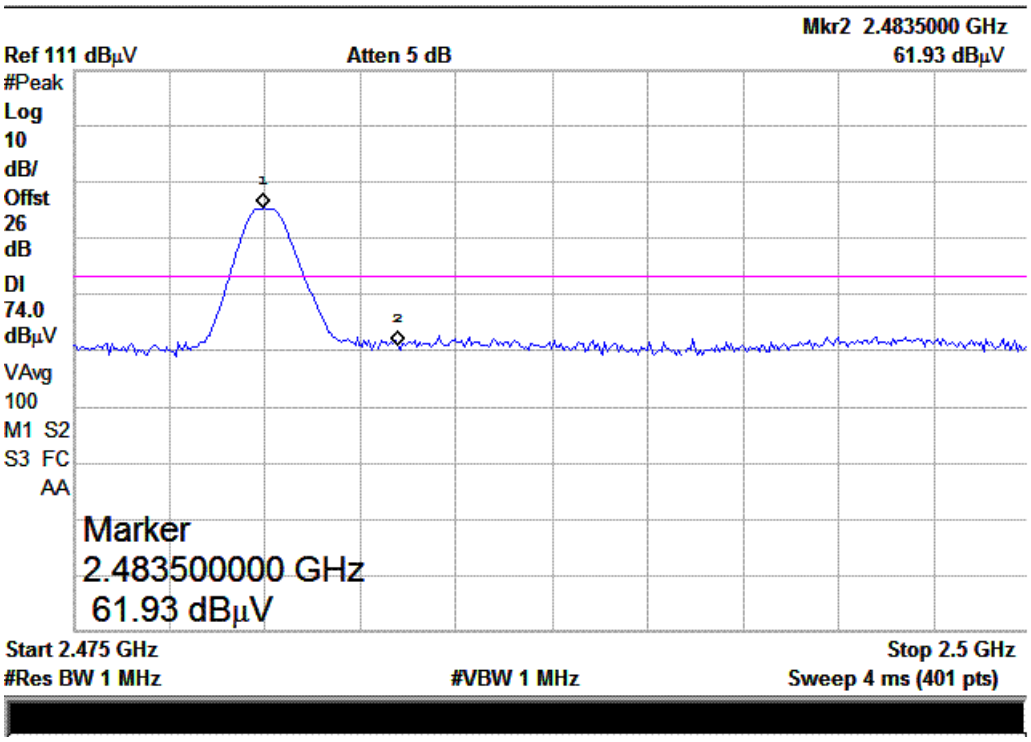
Test Plot:



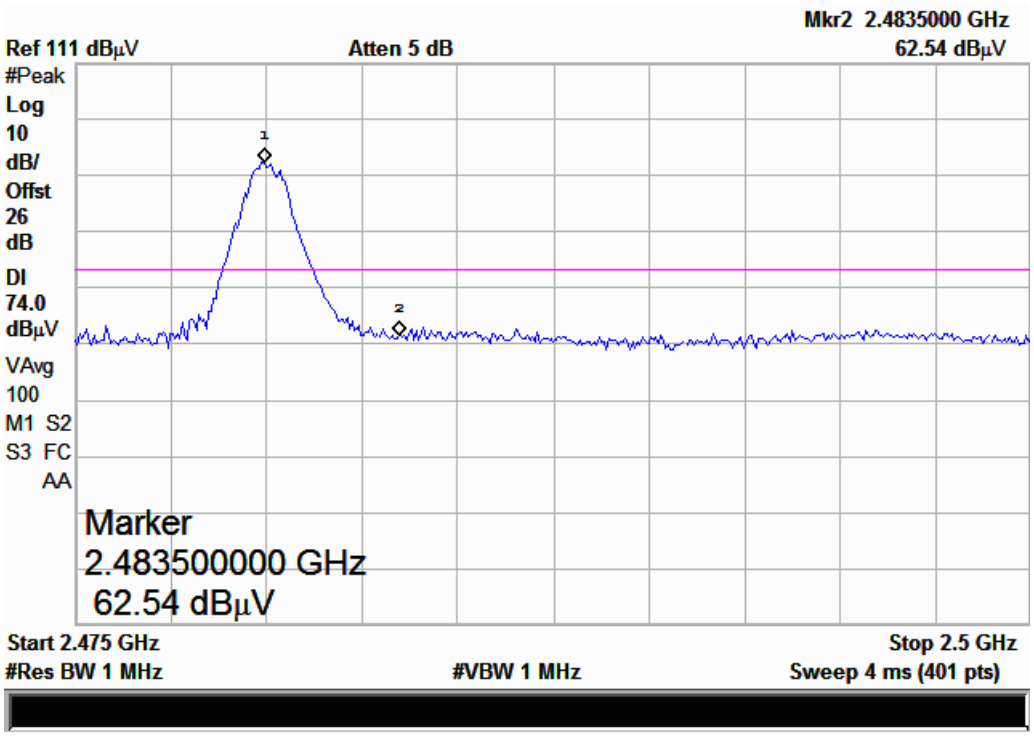
(Plot 26: Channel = 0, Detector Mode: Peak, Polarity: Horizontal)



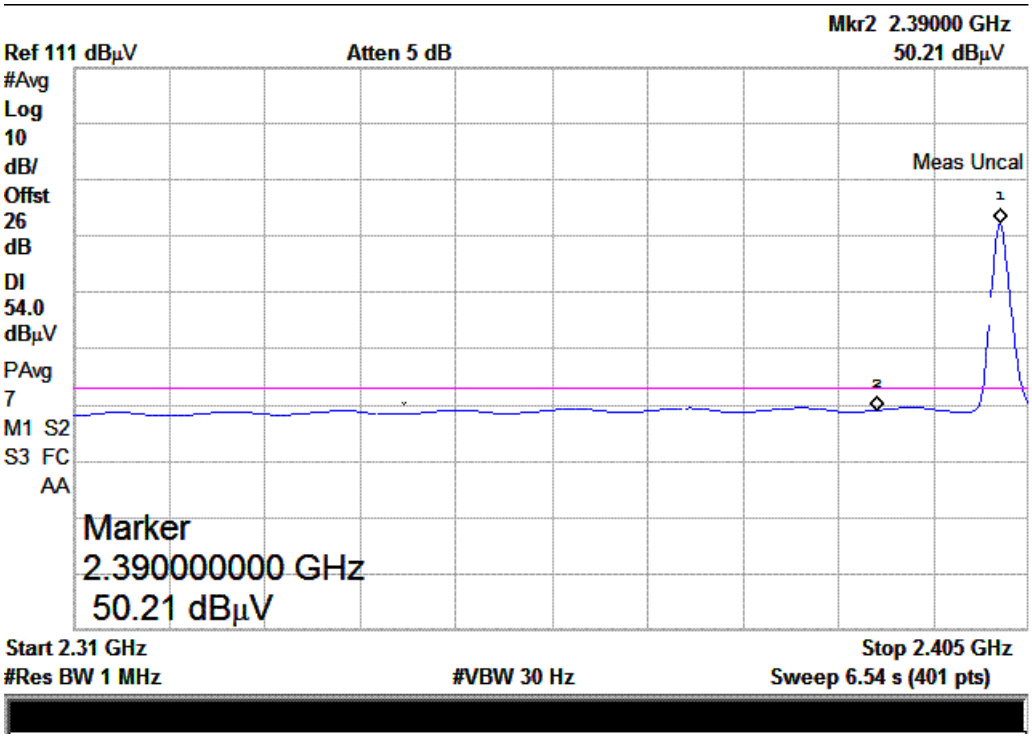
(Plot 27: Channel = 0, Detector Mode: Peak, Polarity: Vertical)



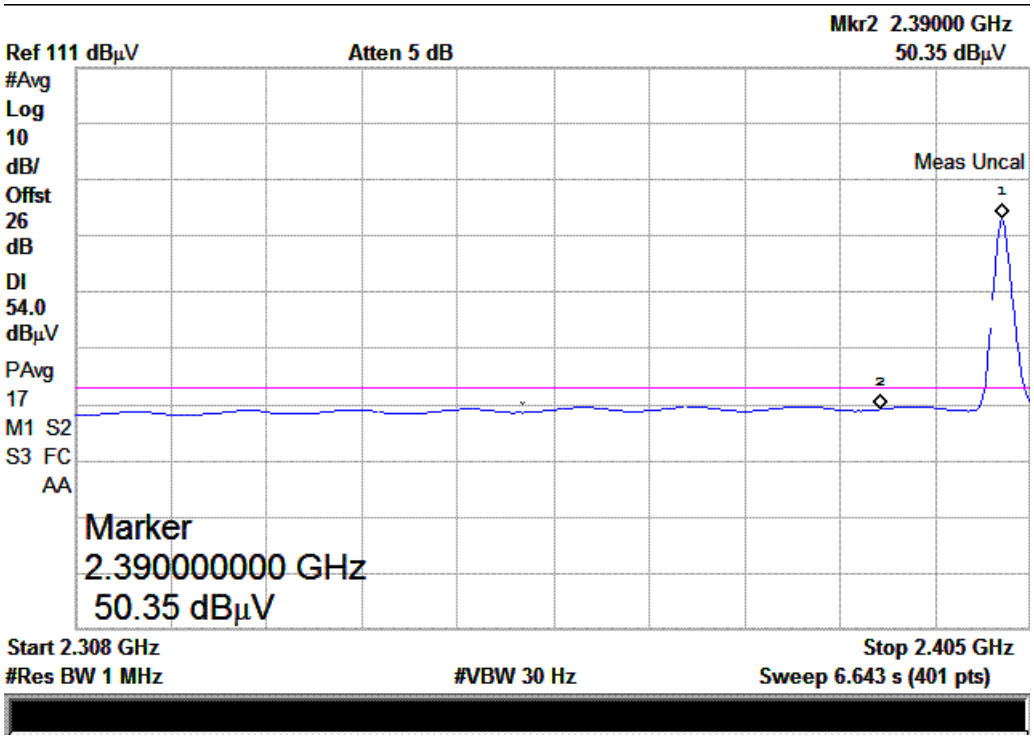
(Plot 28: Channel = 78, Detector Mode: Peak, Polarity: Horizontal)



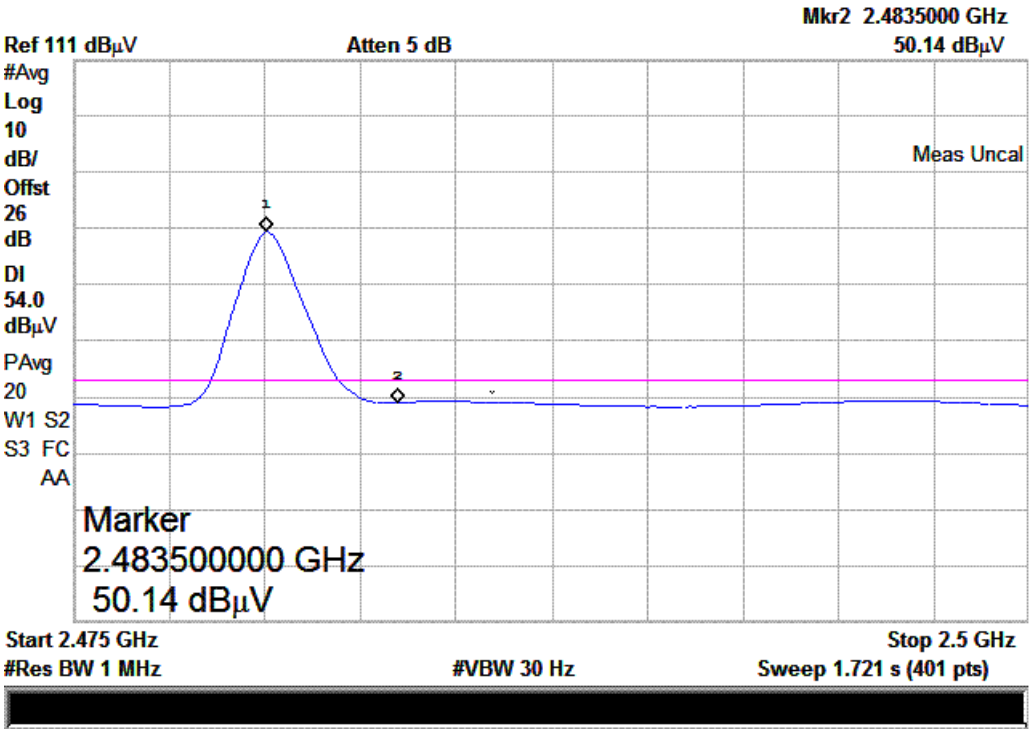
(Plot 29: Channel = 78, Detector Mode: Peak, Polarity: Vertical)



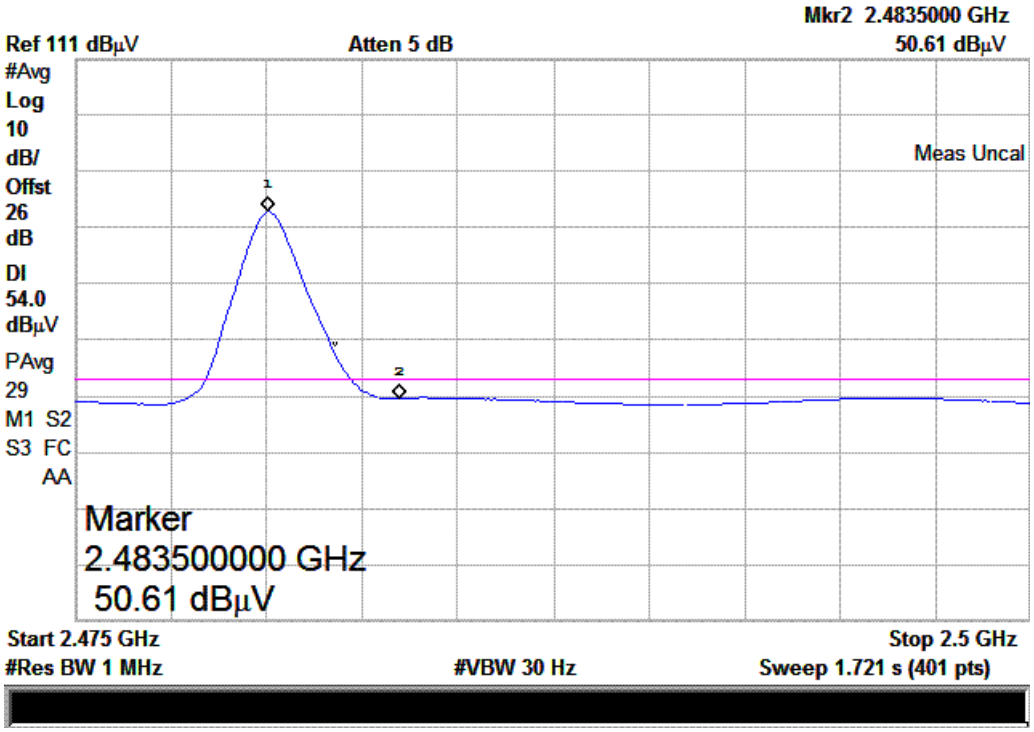
(Plot 30: Channel = 0, Detector Mode: Average, Polarity: Horizontal)



(Plot 31: Channel = 0, Detector Mode: Average, Polarity: Vertical)



(Plot 32: Channel = 78, Detector Mode: Average, Polarity: Horizontal)



(Plot 33: Channel = 78, Detector Mode: Average, Polarity: Vertical)

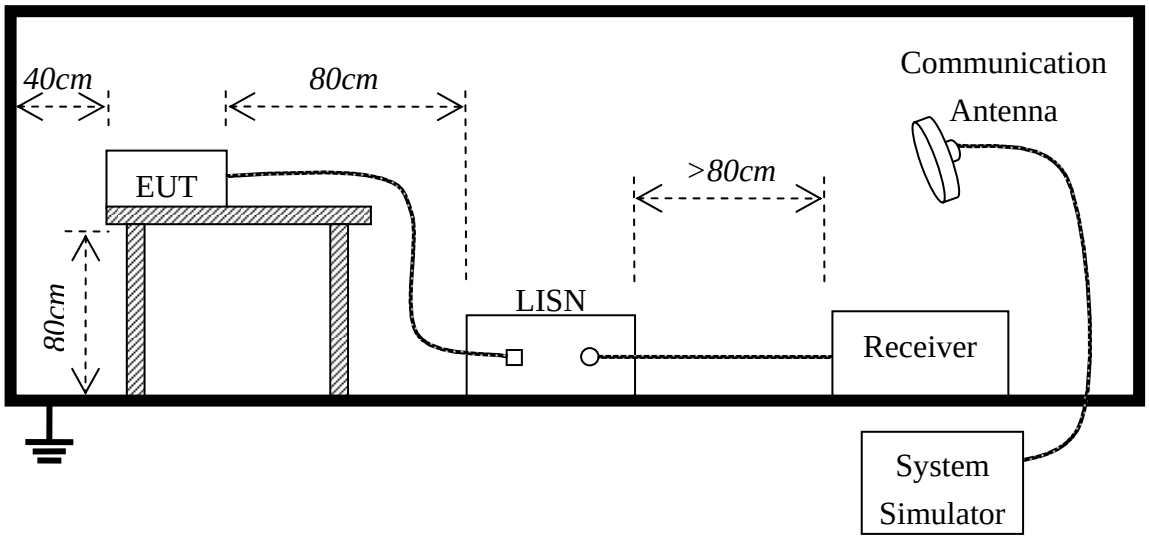
5.9 Conducted Emission

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz-500kHz	66-56	56-46
500kHz-5MHz	56	46
5MHz-30MHz	60	50

***Note:** 1. the lower limit shall apply at the transition frequency.*

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

5.9. 1 Block Diagram of Test Setup



5.9. 2 Preliminary Procedure of Line Conducted Emission Test

1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per FCC Part 15 (see Test Facility for the dimensions of the ground plane used). When the EUT is floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2) Support equipment, if needed, was placed as per FCC Part 15.
3) All I/O cables were positioned to simulate typical actual usage as per FCC Part 15.
4) The EUT received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5) All support equipments received power from a second LISN supplying power of AC 120V/60Hz, if any.
6) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7) Analyzer / Receiver scanned from 150 kHz to 30 MHz for emissions in each of the test modes.
8) During the above scans, the emissions were maximized by cable manipulation.
9) The following test mode(s) were scanned during the preliminary test:

Preliminary Conducted Emission Test				
Frequency Range Investigated		**150KHz TO 30 MHz**		
Mode of operation	**Date**	**Report No.**	**Data#**	**Worst Mode**
Bluetooth Mode	2009-06-30	SZSTS090619F4	ZMAM_11(L,N)	☒

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

5.9.3 Final Procedure Of Line Conducted Emission Test

EUT and support equipment was set up on the test bench as per step 9 of the preliminary test.

A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.

The test data of the worst case condition(s) was reported on the Summary Data page.

5.9.4 Test Result of Line Conducted Emission Test

EUT	**:**	GSM Mobile Phone	**Power**	**:**	AC 120V
M/N	**:**	ZMAM120	**Temperature**	**:**	27 ^{o}C
Mode	**:**	Bluetooth Mode	**Humidity**	**:**	60%

FREQ	PEAK	Q.P.	AVG	Q.P.	AVG	Q.P.	AVG	NOTE
MHz	RAW	RAW	RAW	Limit	Limit	Margin	Margin	
	dBuV	dBuV	dBuV	dBuV	dBuV	dB	dB	
0.176	57.19	54.11	44.31	64.76	54.76	-10.65	-10.45	L
0.525	43.21	40.69	31.58	56.00	46.00	-15.31	-14.42	L
0.586	42.15	39.79	31.62	56.00	46.00	-16.21	-14.38	L
0.235	55.69	53.28	44.11	62.29	52.29	-9.01	-8.18	N
0.505	46.21	44.79	34.11	56.00	46.00	-11.21	-11.89	N
0.553	45.19	41.89	31.26	56.00	46.00	-14.11	-14.74	N

Freq.	= Emission frequency in MHz
Reading level	= Uncorrected Analyzer/Receiver reading
Factor	= Cable loss + LISN inserting loss
Emission level	= Reading level + Factor
Limit	= Limit stated in standard
Margin	= Reading in reference to limit
"---"	= The emission level complied with the Average limits, with at least 2 dB margin, so no further recheck.

5.10 Radiated Emission Test

5.10.1 Requirement

According to FCC section 15.247(c), radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

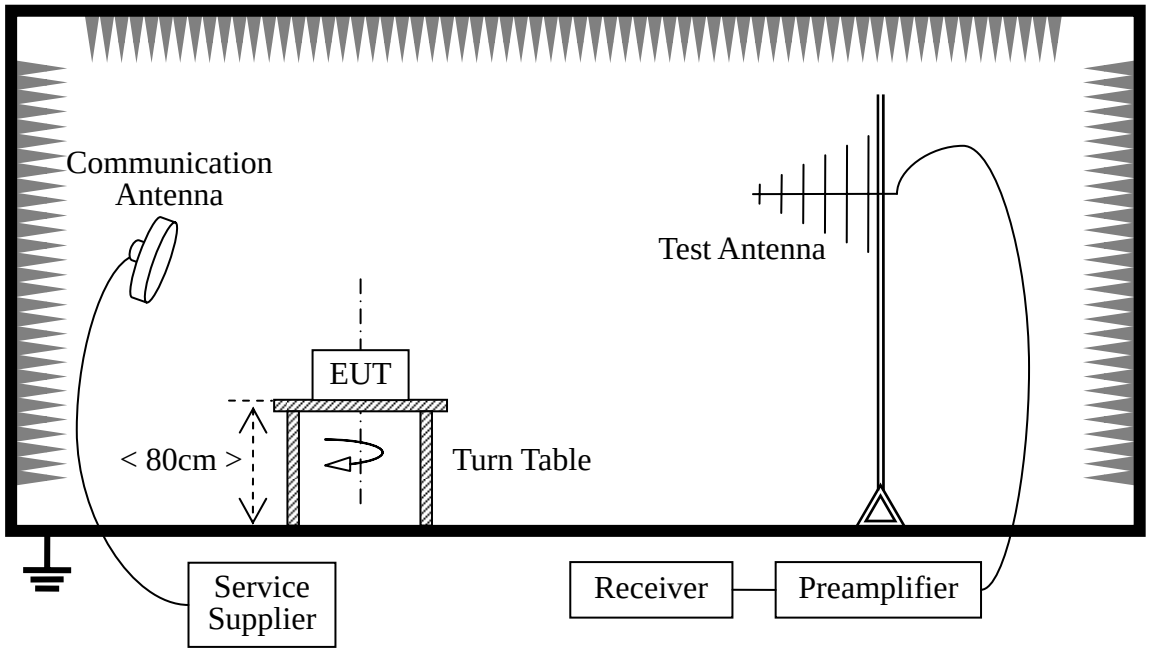
According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

5.10.2 Test Description

Test Setup:



The EUT is powered by the Battery charged with the AC Adapter which is powered by 120V, 60Hz AC mains supply. The Module is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading. During the measurement, the EUT is activated and transmitting with the other Bluetooth device (Supply by the Applicant) during the test.

For the Test Antenna:

(a) In the frequency range of 9 kHz to 30MHz, magnetic field is measured with Loop Test Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.

(b) In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

5.10.3 Test Result

The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors.

Test Verdict for Harmonics:

The Fundamental Emissions

The field strength of {Fundamental Emission} listed below is recorded, and used in the next table.

Channel	Frequency (MHz)	Fundamental Emission (dBμV/m)		Antenna Polarization	Note
		PK	AV		
0	2402	83.11	67.56	Horizontal	
		85.22	72.28	Vertical	
39	2441	81.06	65.62	Horizontal	
		86.53	73.96	Vertical	
78	2480	82.15	65.72	Horizontal	
		87.08	74.31	Vertical	

Band Edge Emissions Fall in the Restricted Bands

The field strength of band edge emission falling in adjacent restricted bands (2310MHz - 2390MHz, and 2483.5MHz - 2500MHz) per FCC section 15.205(a) is calculated via the "Marker-Delta" method:

{Max. Band Edge Emission} = {Fundamental Emission} - {Marker Delta}

In the formula above, refer to section 0 for the {Marker Delta}. The calculation results in the table below show the compliance with the radiated emission limits specified in FCC section 15.209(a).

CH	Freq. (MHz)	Fundamental Emission		Max. Band Edge			Limit (dBμV/m)	Verdict
		dBμV/m	Detector	Freq. (MHz)	Marker Delta (dB)	Emission (dBμV/m)		
0	2402	85.22	PK	2439.80	40.15	43.28	74	PASS
		72.28	AV			30.15	54	PASS
78	2480	87.08	PK	2484.10	52.67	32.16	74	PASS
		74.31	AV			26.63	54	PASS

The Radiated Emissions Fall in the Restricted Bands

Channel	Frequency (MHz)	Antenna Polarization	Max. Emission in the Restricted Bands (dBμV/m)		Limit (dBμV/m)		Verdict
			PK	AV	PK	AV	
0	2402	Vertical	---	---	74	54	PASS
		Horizontal	---	---	74	54	PASS
39	2441	Vertical	---	---	74	54	PASS
		Horizontal	---	---	74	54	PASS
78	2480	Vertical	---	---	74	54	PASS
		Horizontal	---	---	74	54	PASS