FCC RF TEST REPORT

APPLICANT	:	Vensi,Inc.
PRODUCT NAME	:	Gateway
MODEL NAME	:	VCG001
TRADE NAME	:	Gateway
BRAND NAME	:	Vensi Connect
FCC ID	:	2ADYQ-VCG001
STANDARD(S)	:	47 CFR Part 15 Subpart C
ISSUE DATE	:	2015-03-12

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Change History		
Issue	Date	Reason for change
1.0	2015-03-12	First edition

Test Report Declaration

Applicant	Vensi,Inc.
Applicant Address	750 W Lake Cook Rd, Suite 490, Buffalo Grove, IL, USA, 60089
Manufacturer	Moko Technology Ltd
Manufacturer Address	4F,Buidling2,Guanghui Technology Park, MinQing Rd, Longhua, SZ, China 518109
Product Name	Gateway
Model Name	VCG001
Brand Name	Vensi Connect
HW Version	0.2
SW Version	1.0
Test Standards	47 CFR Part 15 Subpart C
Test Date	2015-01-07 to 2015-01-21
Test Result	PASS

Tested by : *Shen Senping*

Shen Senping

Reviewed by : *Qiu Xiaojun*

Qiu Xiaojun

Approved by : *Zeng Dexin*

Zeng Dexin

1. **Technical Information**

Note： Provide by applicant.

1.1. Equipment under Test (EUT) Description

Frequency Range:	The frequency range used is 2402MHz – 2480MHz (79 channels, at intervals of 1MHz); The frequency block is 2400MHz to 2483.5MHz.
Modulation Type:	Bluetooth: FHSS (GFSK(1Mbps), ∏/4-DQPSK(EDR 2Mbps), 8-DPSK(EDR 3Mbps))
Bluetooth Version:	3.0
Antenna Type:	Dedicated Antenna
Antenna Gain:	5dBi

NOTE:

The EUT is a Gateway, it contains Bluetooth Module operating at 2.4GHz ISM band; the frequencies allocated for the Bluetooth Module is F(MHz)=2402+1*n (0<=n<=78). The lowest, middle, highest channel numbers of the Bluetooth Module used and tested in this report are separately 0 (2402MHz), 39 (2441MHz) and 78 (2480MHz).

For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.2. Test Standards and Results

The objective of the report is to perform testing 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 (10-1-13 Edition)	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section in CFR 47	Description	Result
1	15.203	Antenna Requirement	**PASS**
2	15.247(a)	Number of Hopping Frequency	**PASS**
3	15.247(b)	Peak Output Power	**PASS**
4	15.247(a)	20dB Bandwidth	**PASS**
5	15.247(a)	Carrier Frequency Separation	**PASS**
6	15.247(a)	Time of Occupancy (Dwell time)	**PASS**
7	15.247(d)	Conducted Spurious Emission	**PASS**
8	15.247(d)	Restricted Frequency Bands	**PASS**
9	15.207	Conducted Emission	**PASS**
10	15.209 15.247(d)	Radiated Emission	**PASS**
11	15.247(i),1.1307& 2.1093	RF exposure evaluation	**PASS**

NOTE: The tests were performed according to the method of measurements prescribed in DA-00-705, ANSI C63.4-2003 and ANSI C63.10-2009.

1.2.1. Test Environment Conditions

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

Temperature (°C):	15 - 35
Relative Humidity (%):	30 -60
Atmospheric Pressure (kPa):	86-106

2. 47 CFR Part 15C Requirements

2.1. Antenna requirement

2.1.1. 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.

2.1.2. Result: Compliant

The EUT has a permanently and irreplaceable attached antenna. Please refer to the EUT internal photos.

2.2. Number of Hopping Frequency

2.2.1. Requirement

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

2.2.2. Test Description
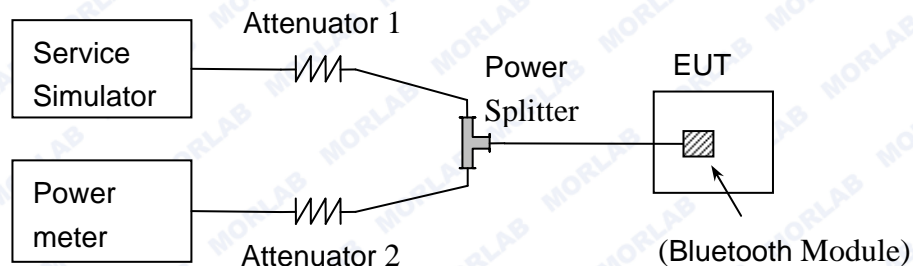
A. Test Setup:

(Bluetooth Module)

The Bluetooth Module of the EUT 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.

B. Equipments List:
Please reference ANNEX A(1.4).

2.2.3. Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:
Span = the frequency band of operation
RBW ≥ 1% of the span
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Allow the trace to stabilize

2.2.4. 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.

A. Test Verdict:

Test Mode	Frequency Block (MHz)	Measured Channel Numbers	Min. Limit	Refer to Plot	Verdict
GFSK	2400 - 2483.5	79	15	Plot A	PASS
∏/4-DQPSK	2400 - 2483.5	79	15	Plot B	PASS
8-DPSK	2400 - 2483.5	79	15	Plot C	PASS

B. Test Plots:

(Plot A: GFSK)

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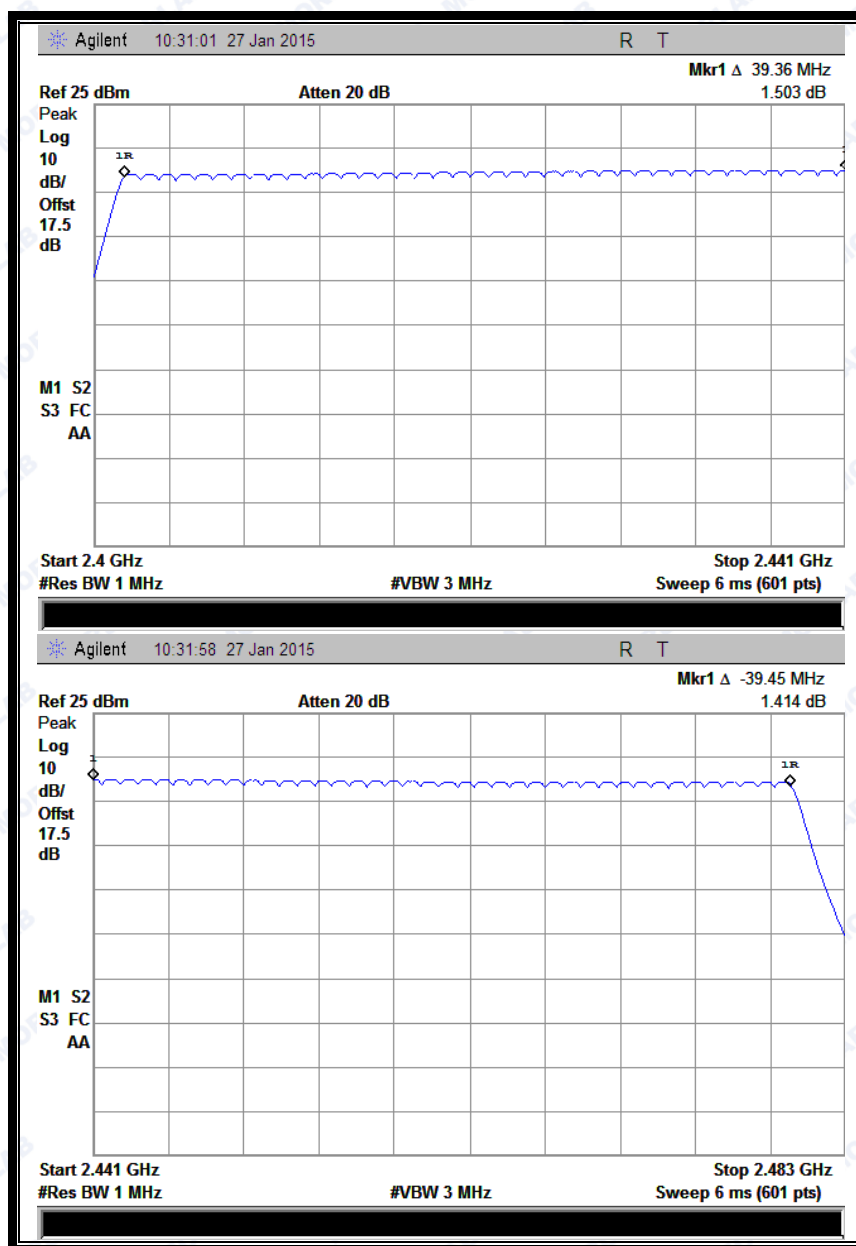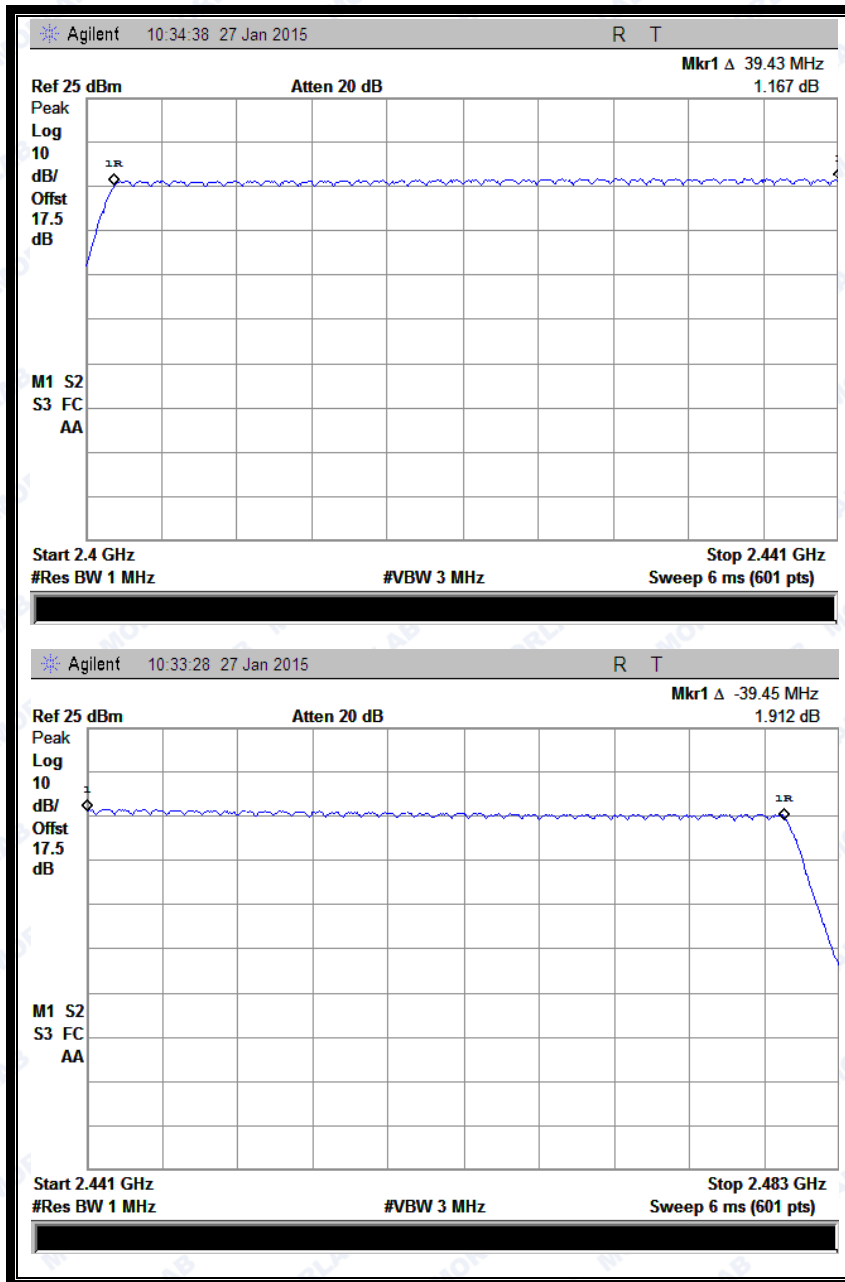
(Plot B: ∏/4-DQPSK)
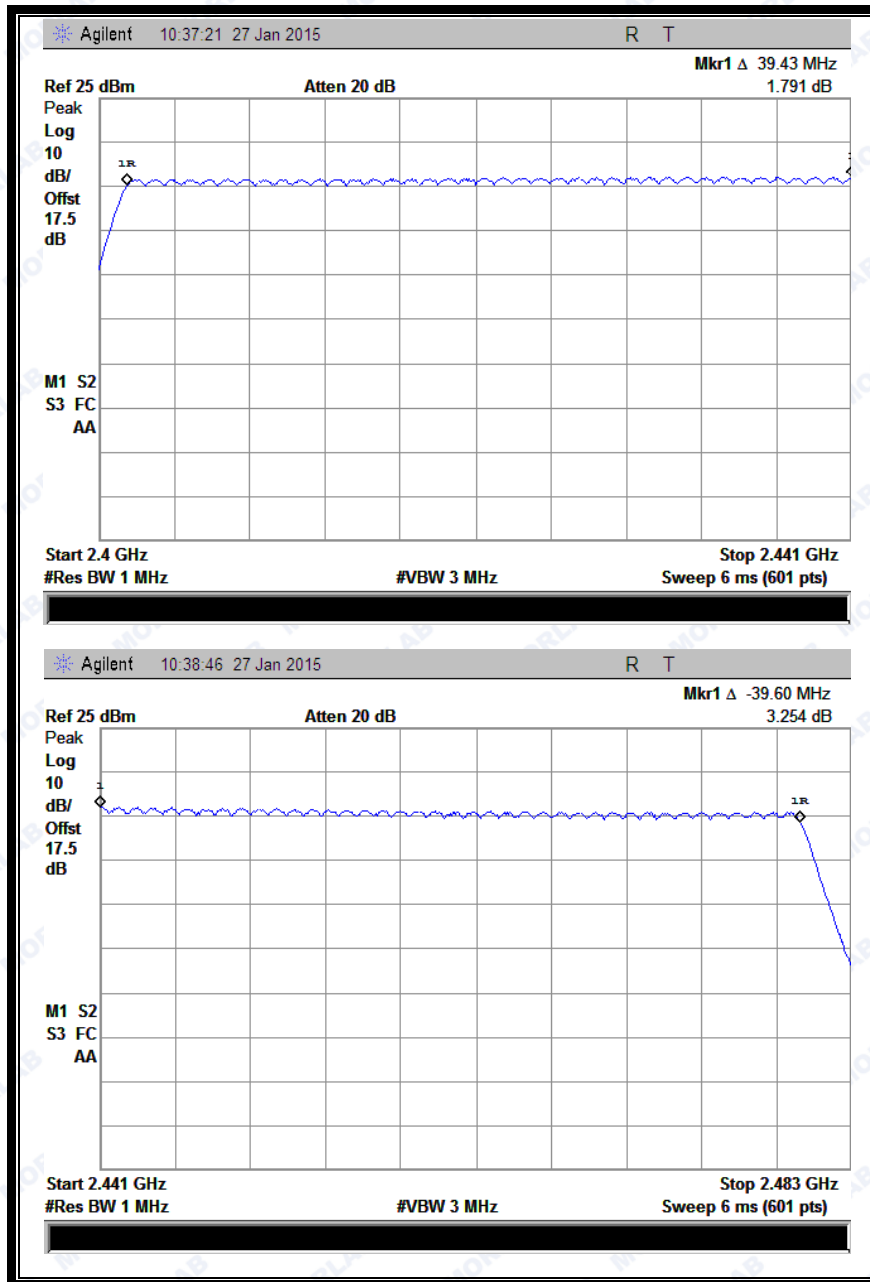
(Plot C: 8- DPSK)

2.3. Peak Output Power

2.3.1. Requirement

According to FCC §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.

2.3.2. Test Description

A. Test Setup:
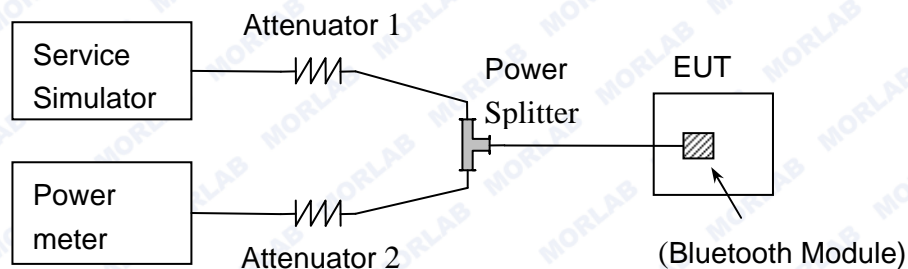
The Bluetooth Module of the EUT is coupled to the Power meter and the Bluetooth Service Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm;the path loss as the factor is calibrated to correct the reading. During the measurement, the Bluetooth 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.

B. Equipments List:

Please reference ANNEX A(1.4).

2.3.3. Test Result

The Bluetooth Module 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 of the Module.The lowest, middle and highest channel were tested by Power meter.

2.3.3.1. GFSK Mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
0	2402	9.084	0.008098			PASS
39	2441	10.02	0.010046	20.97	0.125	PASS
78	2480	9.506	0.008920			PASS

2.3.3.2. ∏/4-DQPSK Mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
0	2402	6.662	0.004637			PASS
39	2441	6.844	0.004835	20.97	0.125	PASS
78	2480	5.517	0.003562			PASS

2.3.3.3. 8-DPSK Mode

A. Test Verdict:

Channel	Frequency (MHz)	Measured Output Peak Power		Limit		Verdict
		dBm	W	dBm	W	
0	2402	6.595	0.004566			PASS
39	2441	7.185	0.005230	20.97	0.125	PASS
78	2480	5.488	0.003540			PASS

2.4. 20dB Bandwidth

2.4.1. Definition

According to FCC §15.247(a)(1), the 20dB bandwidth is known as the 99% emission bandwidth, or 20dB bandwidth (10*log1% = 20dB) taking the total RF output power.

2.4.2. Test Description
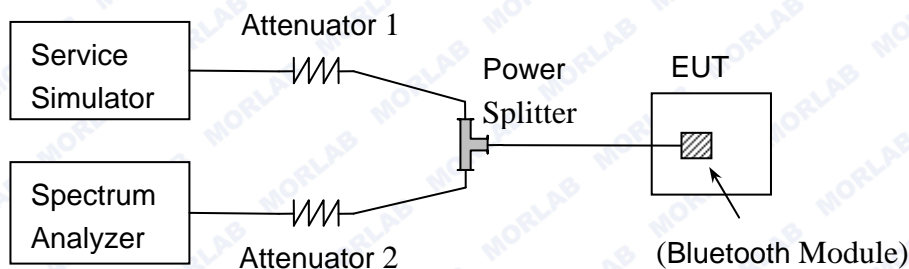
A. Test Setup:

The Bluetooth Module of the EUT 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.

B. Equipments List:

Please reference ANNEX A(1.4).

2.4.3. Test Procedure

Use the following spectrum analyzer settings:
Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
RBW ≥ 1% of the 20 dB bandwidth

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

2.4.4. Test Result

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

2.4.4.1. GFSK Mode

A. Test Verdict:

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Refer to Plot
0	2402	0.952	Plot A
39	2441	0.922	Plot B
78	2480	0.862	Plot C

B. Test Plots:
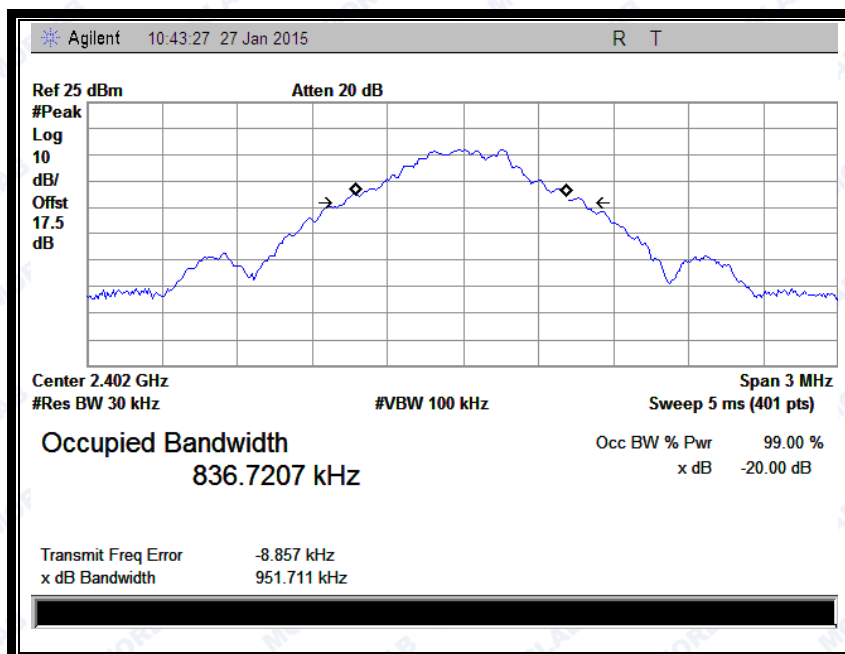
(Plot A: Channel = 2402 @ GFSK)
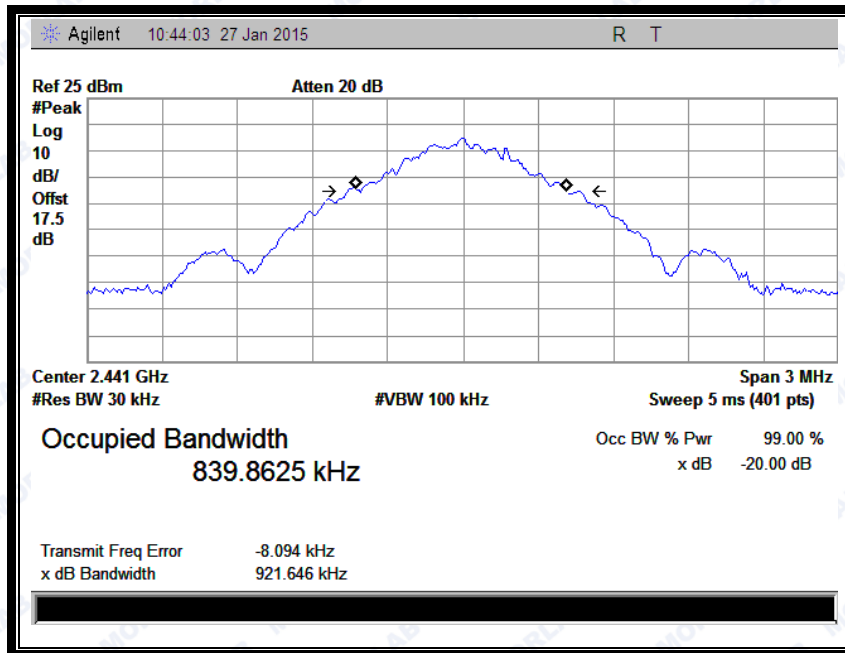
(Plot B: Channel = 2441 @ GFSK)
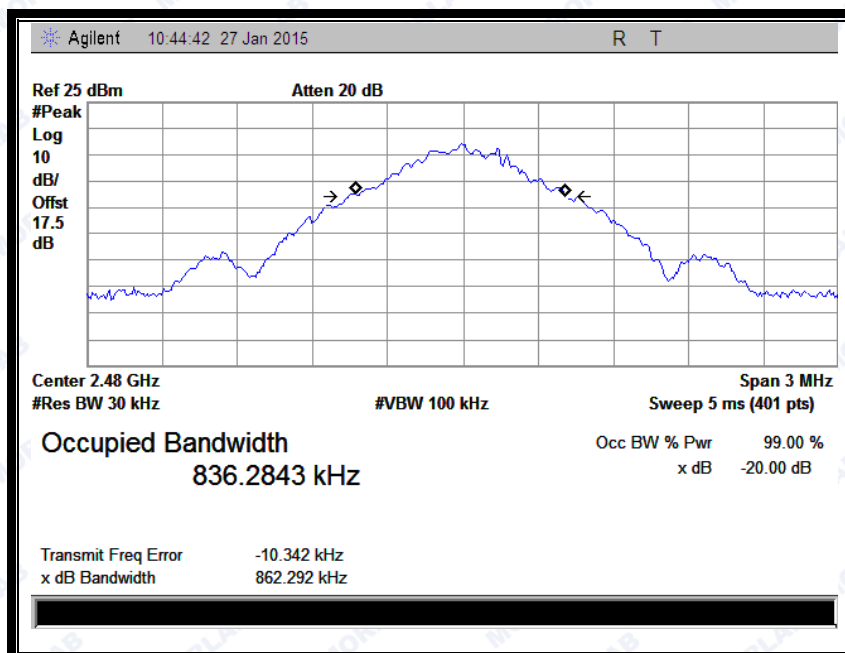
(Plot C: Channel = 2480 @ GFSK)

2.4.4.2. ∏/4-DQPSK Mode

A. Test Verdict:

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Refer to Plot
0	2402	1.359	Plot D
39	2441	1.281	Plot E
78	2480	1.273	Plot F

B. Test Plots:
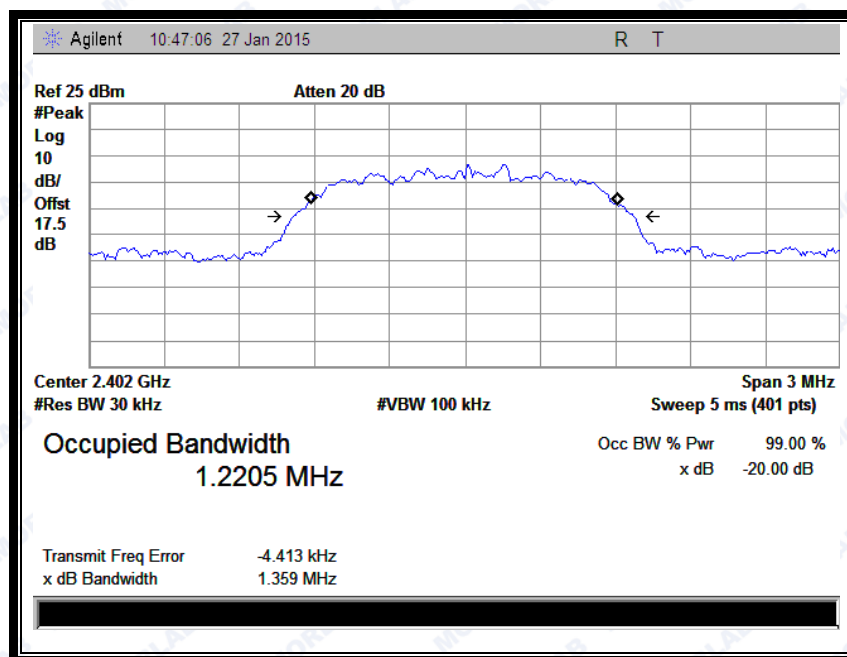
(Plot D: Channel = 2402 @ ∏/4-DQPSK)
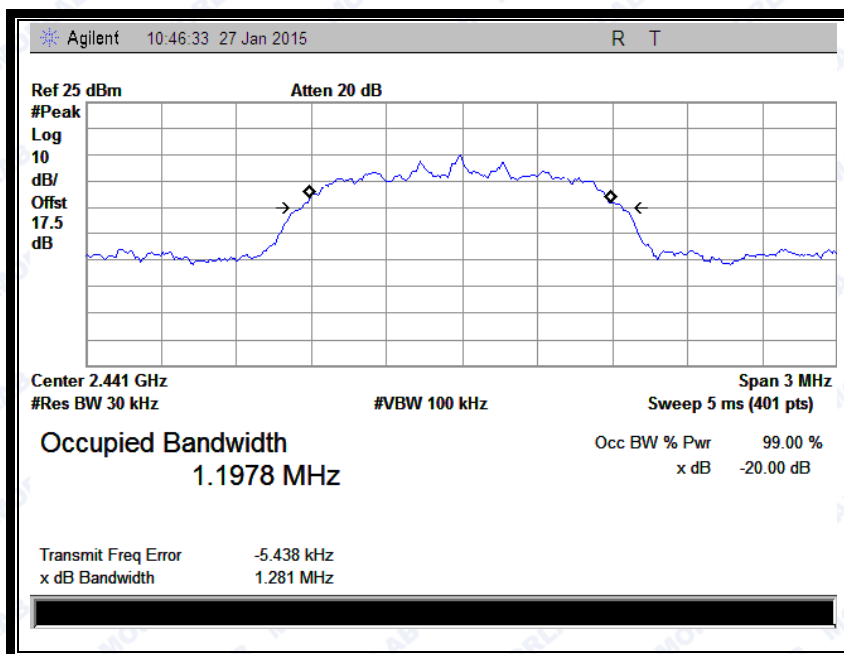
(Plot E: Channel = 2441 @ ∏/4-DQPSK)
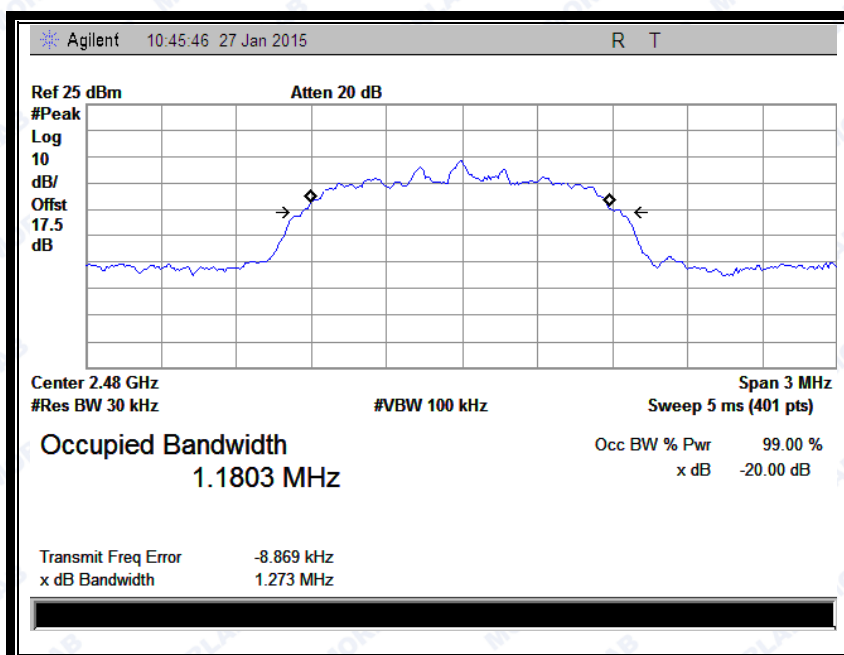
(Plot F: Channel = 2480 @ ∏/4-DQPSK)

2.4.4.3. 8-DPSK Mode

A. Test Verdict:

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Refer to Plot
0	2402	1.312	Plot G
39	2441	1.318	Plot H
78	2480	1.292	Plot I

B. Test Plots:
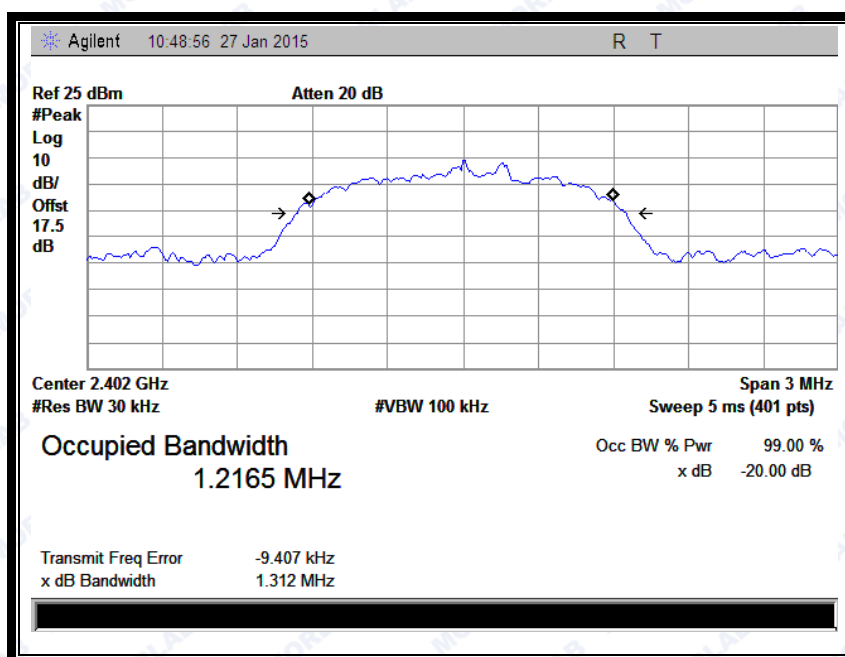
(Plot G: Channel = 2402 @ 8-DPSK)

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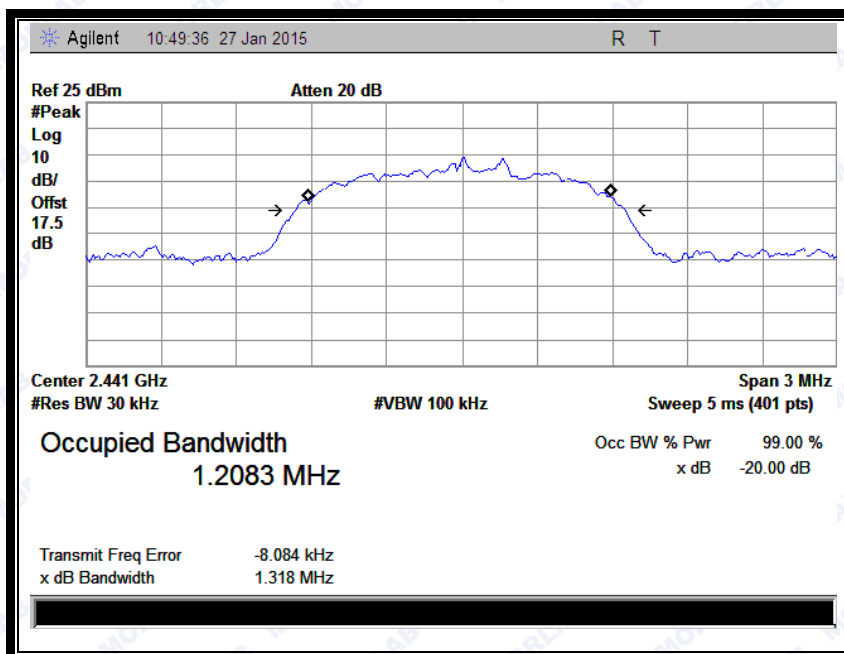
(Plot H: Channel = 2441 @ 8-DPSK)
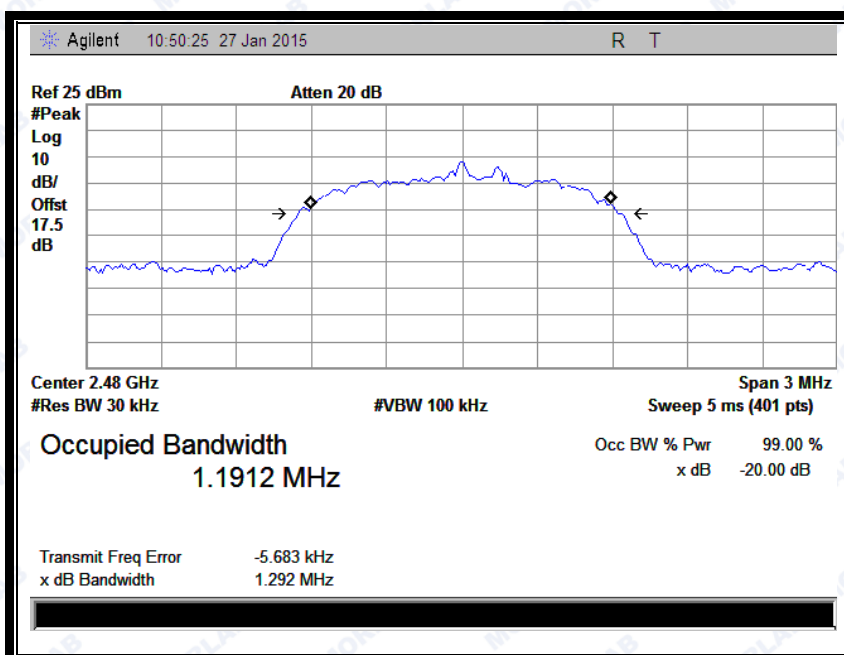
(Plot I: Channel = 2480 @ 8-DPSK)

2.5. Carried Frequency Separation

2.5.1. Definition

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

2.5.2. Test Description
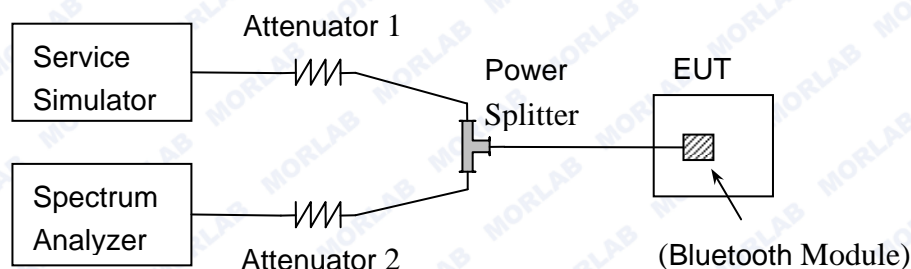
A. Test Setup:

The Bluetooth Module of the EUT 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.

B. Equipments List:

Please reference ANNEX A(1.4).

2.5.3. Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:
Span = wide enough to capture the peaks of two adjacent channels
Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span
Video (or Average) Bandwidth (VBW) ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

2.5.4. Test Result

The Bluetooth Module operates at hopping-on test mode.

For any adjacent channels (e.g. the channel 39 and 40 as showed in the Plot A), the Module does have hopping channel carrier frequencies separated by a minimum of 25kHz or two-thirds of the 20dB bandwidth of the hopping channel (refer to section 0), whichever is greater. So, the verdict is PASSING

(Plot A: GFSK)

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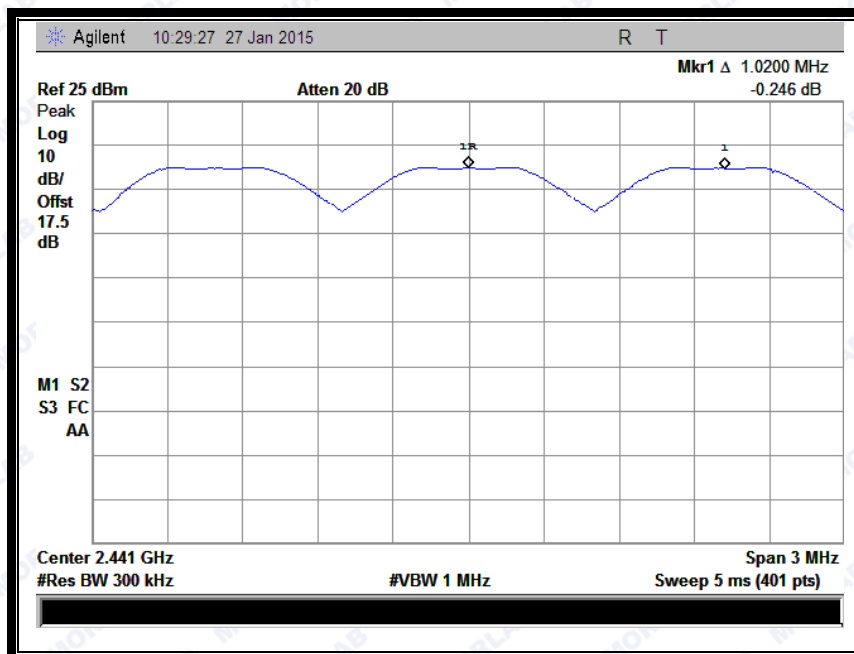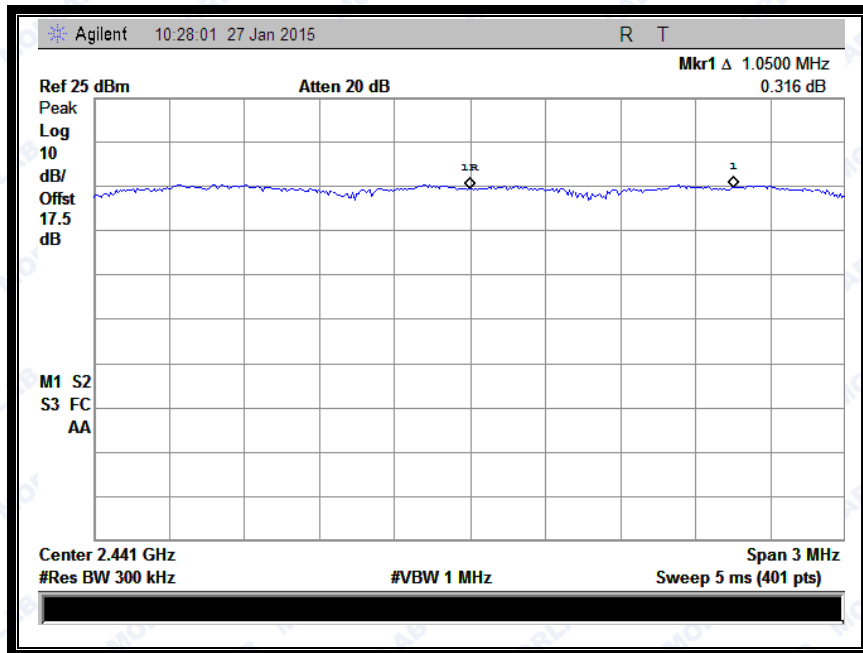
(Plot B: ∏/4-DQPSK)
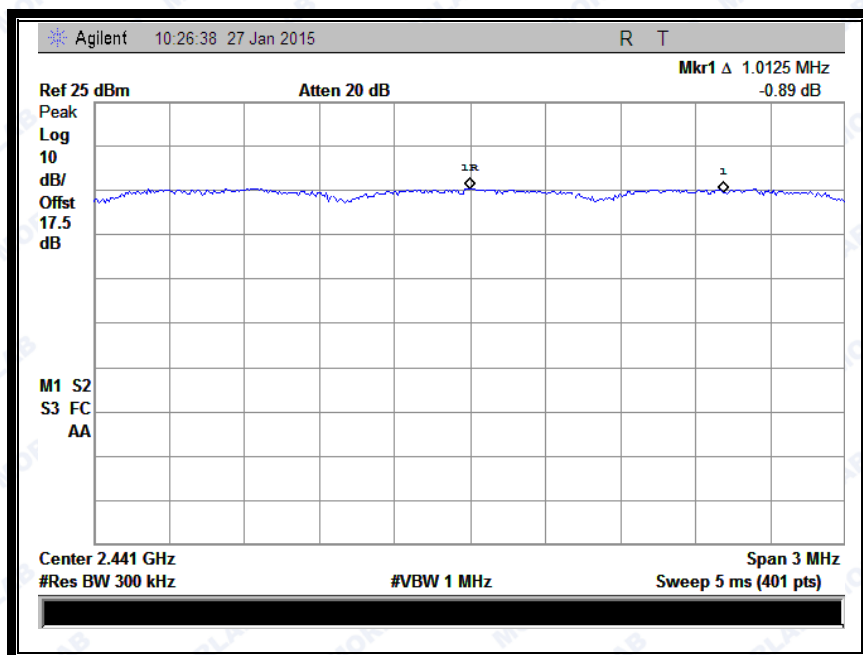
(Plot C: 8-DPSK)

2.6. Time of Occupancy (Dwell time)

2.6.1. Requirement

According to FCC §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.

2.6.2. Test Description
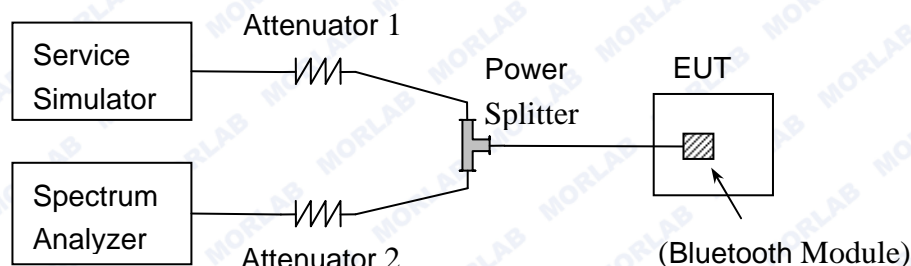
A. Test Setup:

The Bluetooth Module of the EUT 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.

B. Equipments List:

Please reference ANNEX A(1.4).

2.6.3. Test Procedure

The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The

number of pulses is measured in a 3.16 second scan, to enable resolution of each occurrence.

The average time of occupancy in the specified 31.6 second period (79 channel * 0.4 s) is equal to 10 * (# of pulses in 3.16 s) * pulse width.

2.6.4. Test Result

2.6.4.1. GFSK Mode

A. Test Verdict:

DH Packet	Pulse Width (msec)	Number of pulse in 3.16 seconds	Refer to Plot	Average Time of Occupancy (sec)	Limit (sec)	Verdict
DH1	0.400	32	Plot A	0.128		PASS
DH3	1.633	16	Plot B	0.261	0.4	PASS
DH5	2.867	11	Plot C	0.315		PASS

B. Test Plots:
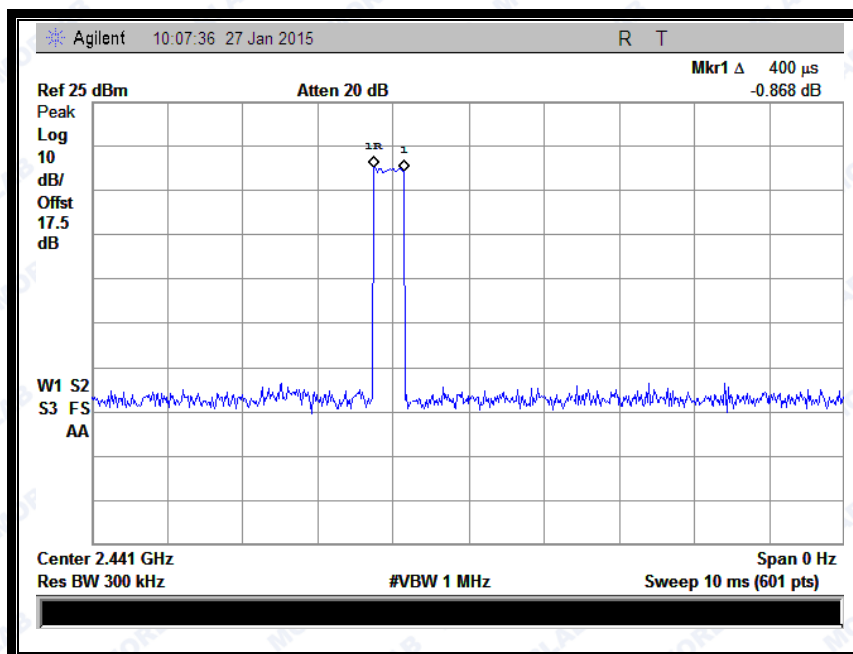
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(Plot A: DH1 @ GFSK)

(Plot B: DH3 @ GFSK)

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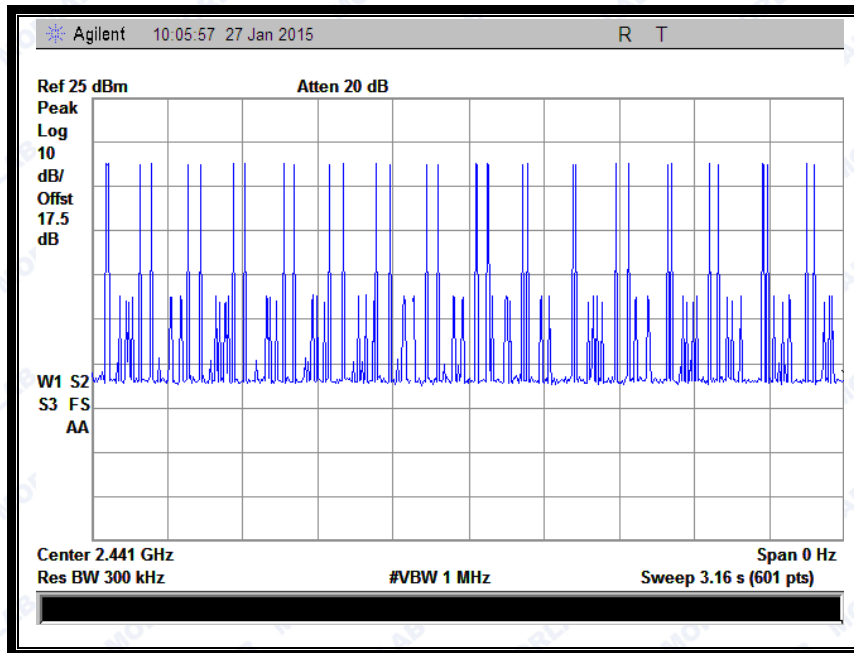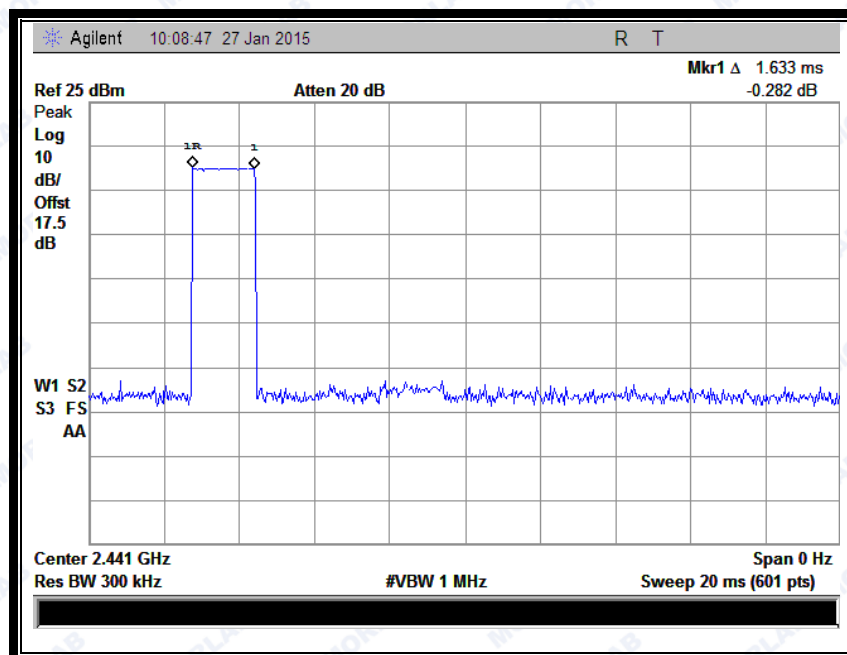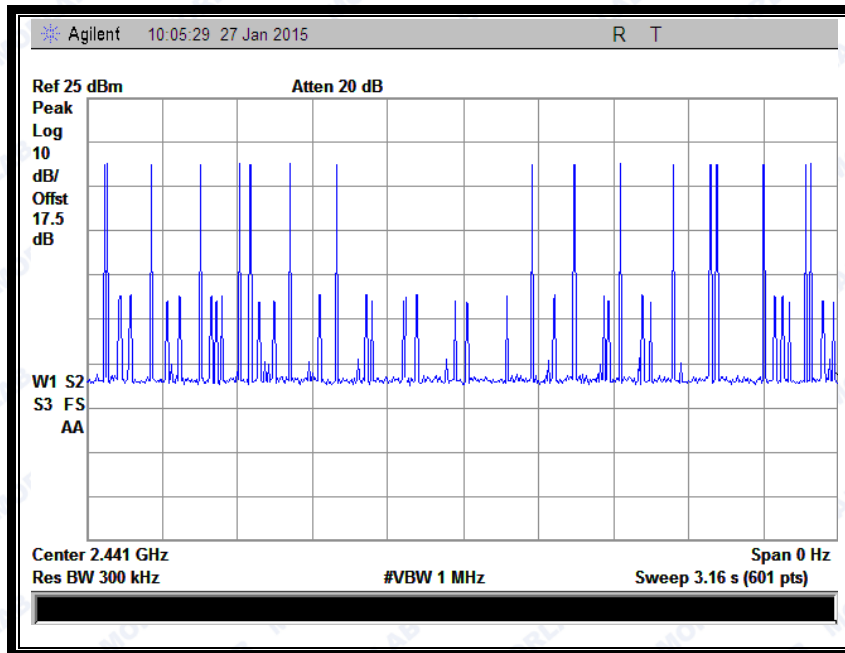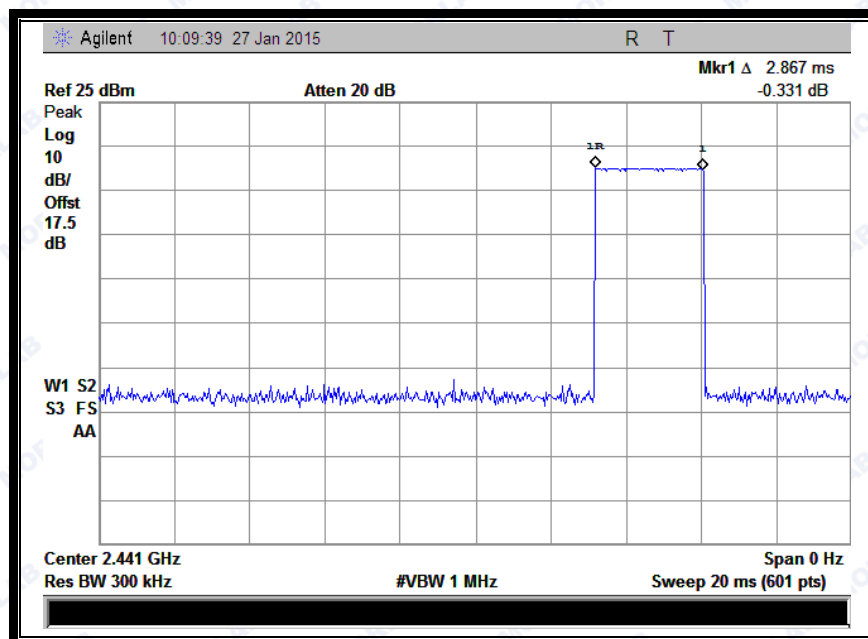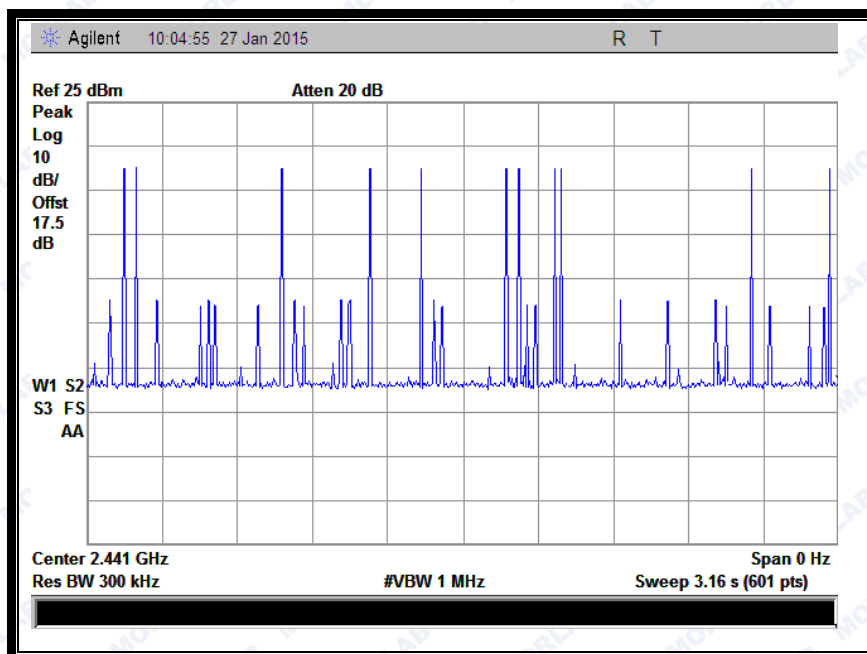
(Plot C: DH5 @ GFSK)

2.6.4.2. ∏/4-DQPSK Mode

A. Test Verdict:

DH Packet	Pulse Width (msec)	Number of pulse in 3.16 seconds	Refer to Plot	Average Time of Occupancy (sec)	Limit (sec)	Verdict
DH1	0.418	31	Plot A	0.130		PASS
DH3	1.633	15	Plot B	0.245	0.4	PASS
DH5	2.900	8	Plot C	0.232		PASS

B. Test Plots:

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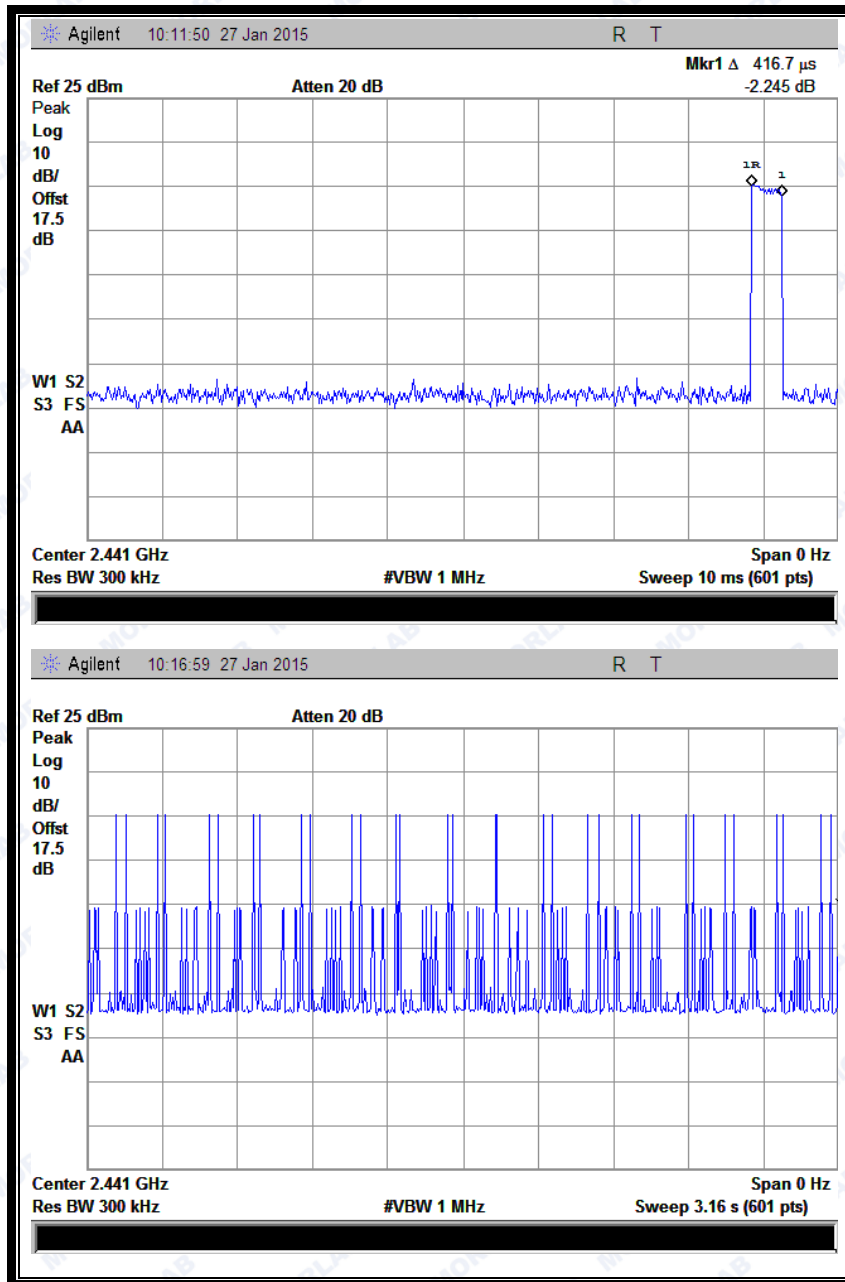
(Plot D: DH1 @ ∏/4-DQPSK)
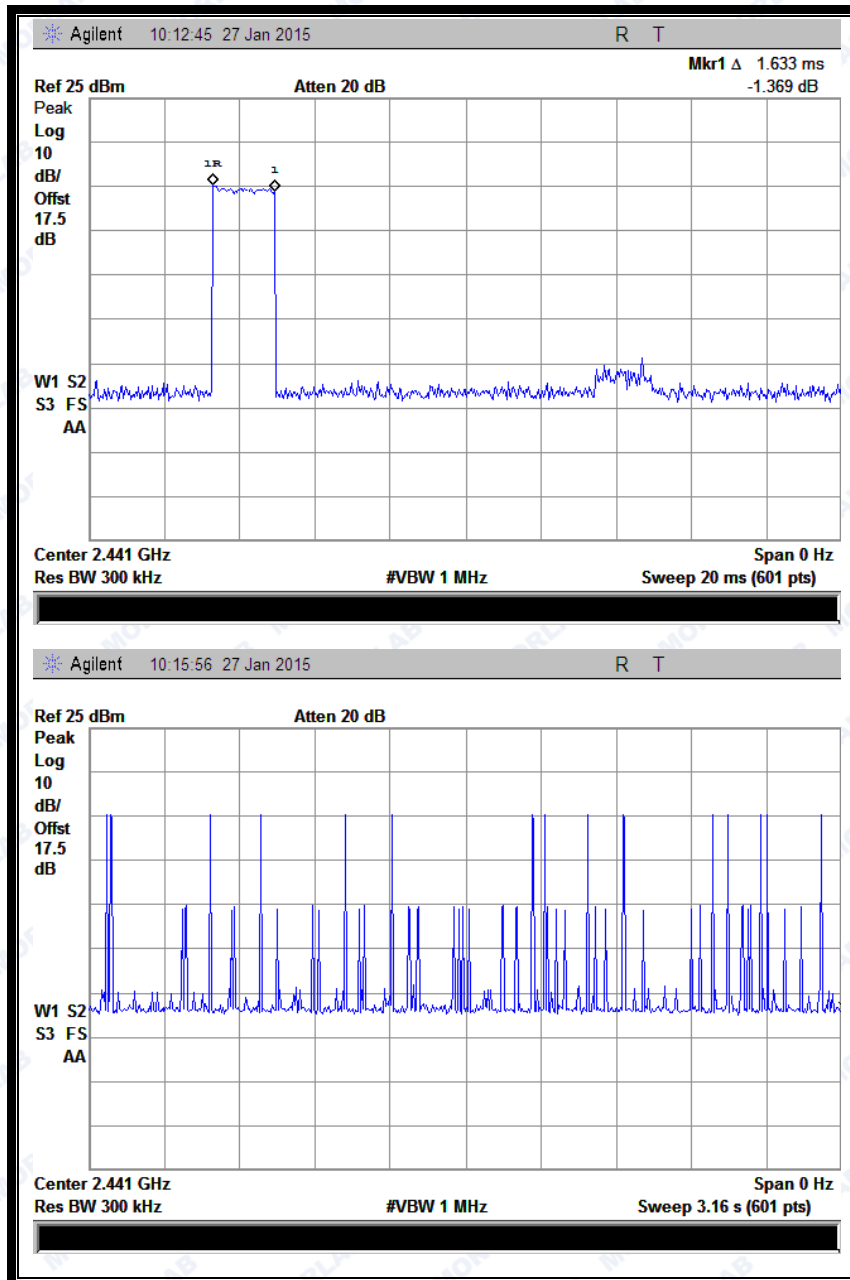
(Plot E: DH3 @ ∏/4-DQPSK)
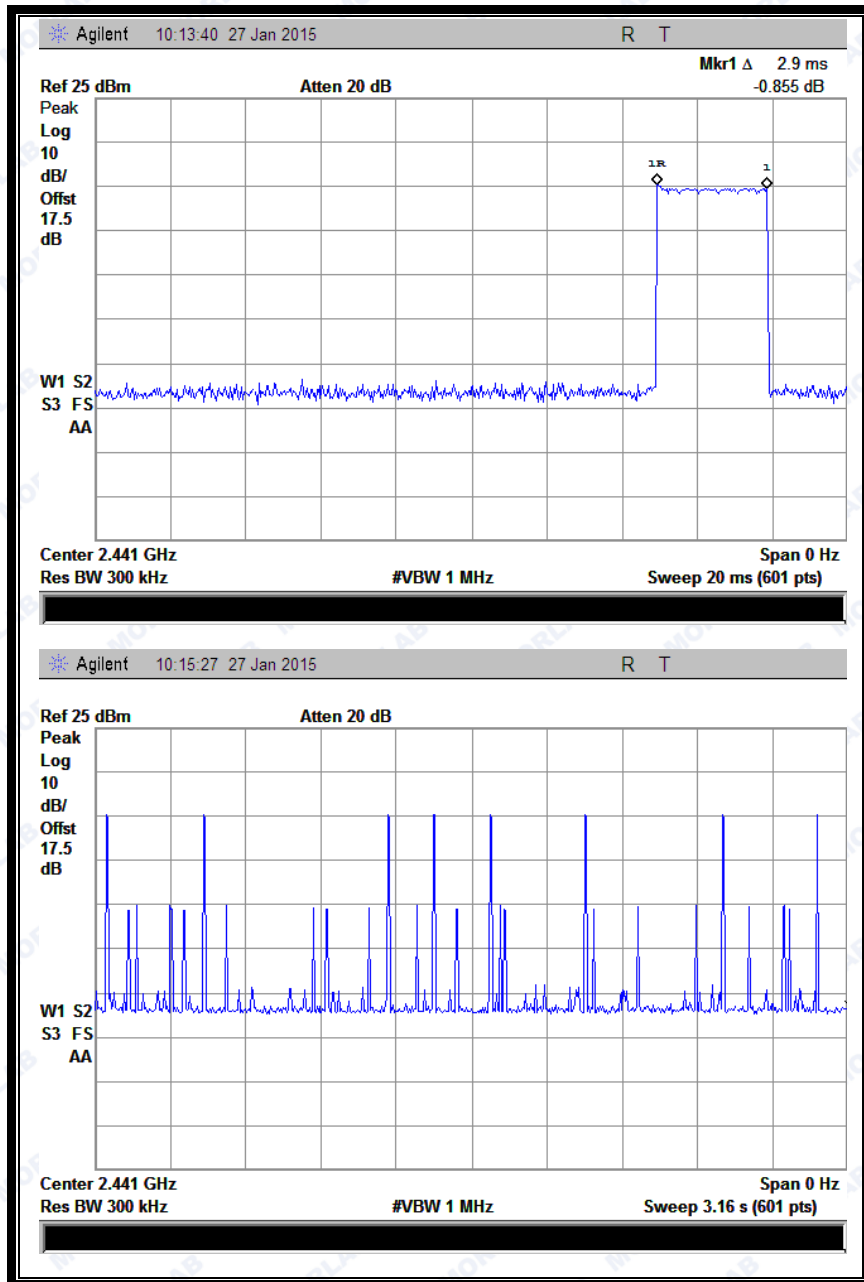
(Plot F: DH5 @ ∏/4-DQPSK)

2.6.4.3. 8-DPSK mode

A. Test Verdict:

DH Packet	Pulse Width (msec)	Number of pulse in 3.16 seconds	Refer to Plot	Average Time of Occupancy (sec)	Limit (sec)	Verdict
DH1	0.400	32	Plot A	0.128		PASS
DH3	1.667	13	Plot B	0.217	0.4	PASS
DH5	2.933	11	Plot C	0.323		PASS

B. Test Plots:

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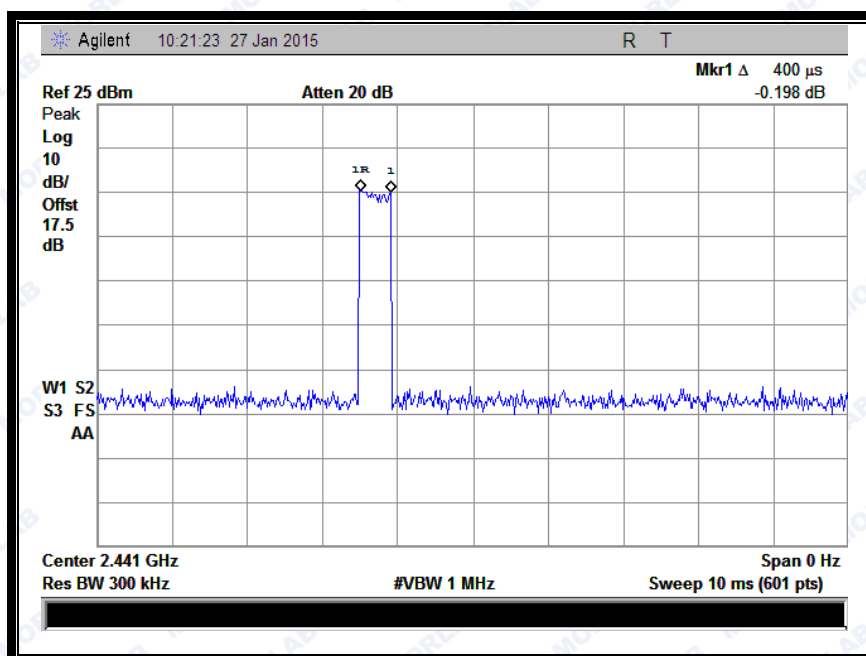
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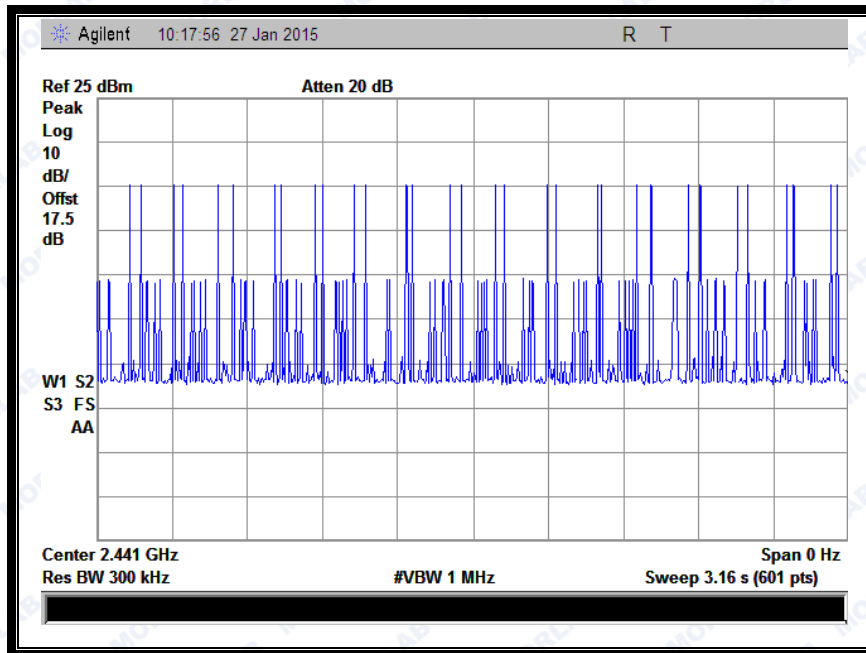
(Plot G: DH1 @ 8-DPSK)

(Plot H: DH3 @ 8-DPSK)

(Plot I: DH5 @ 8-DPSK)

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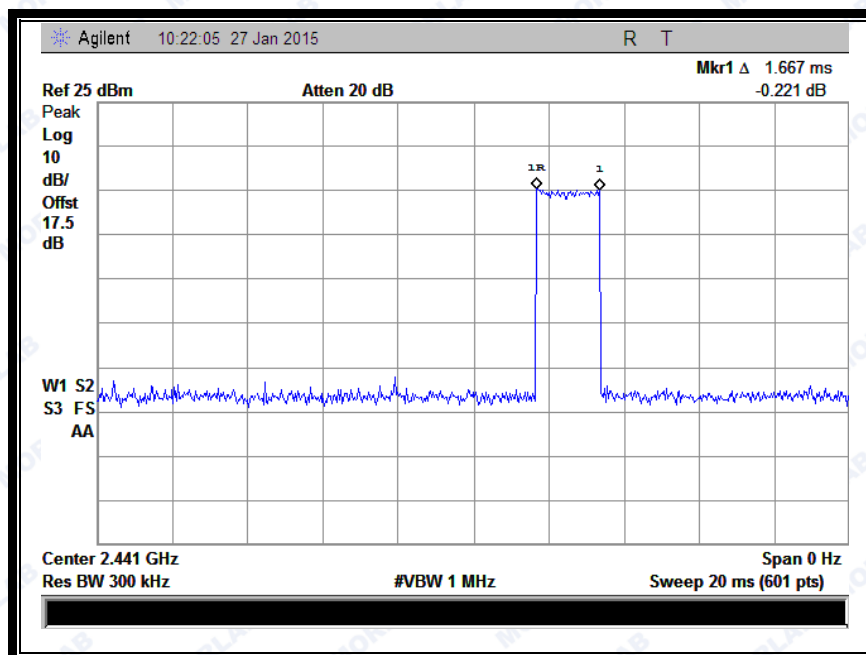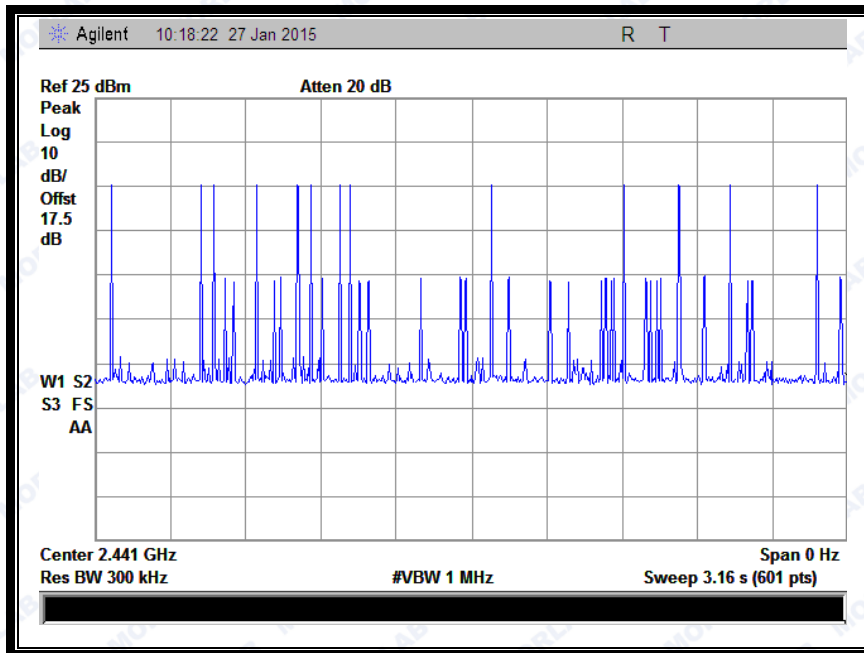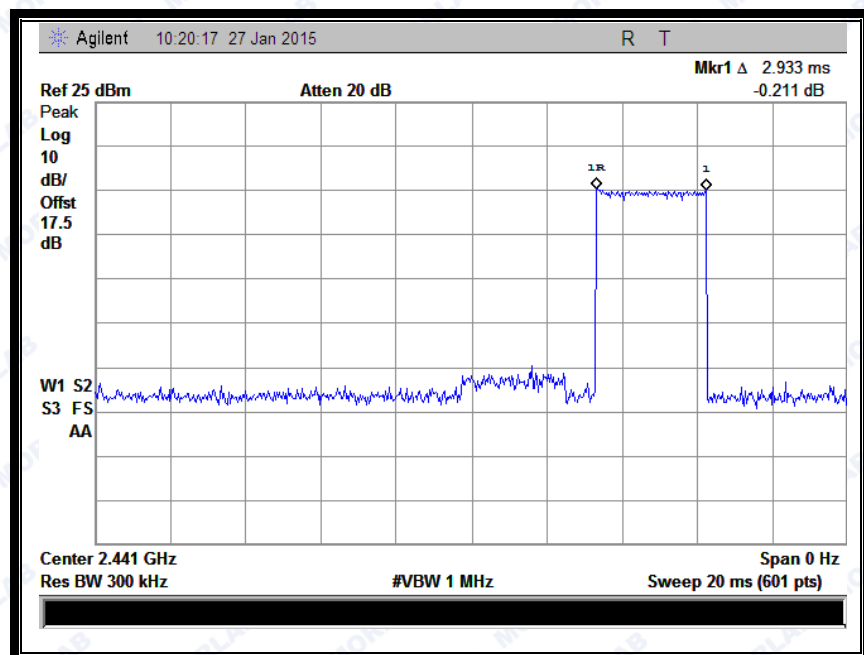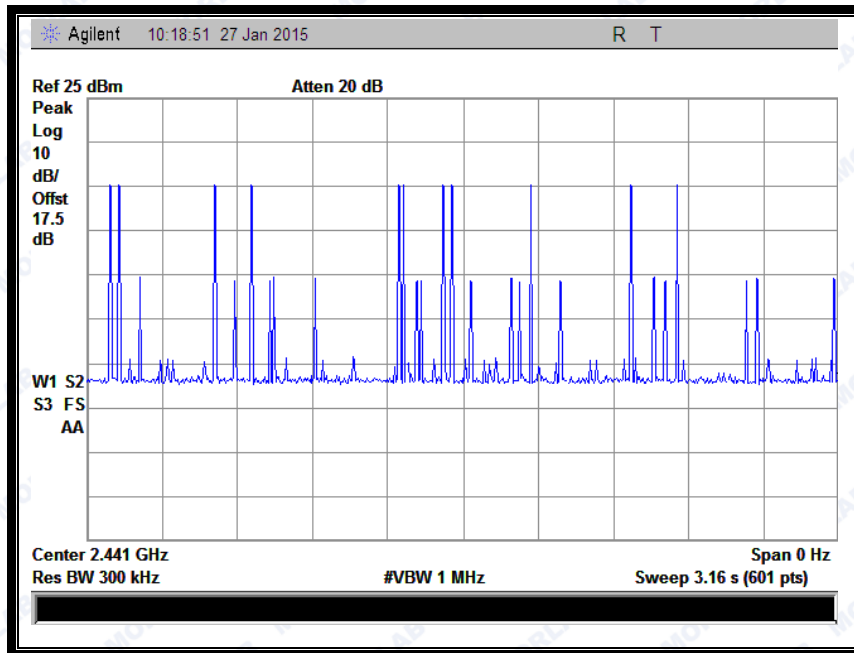
2.7. Conducted Spurious Emissions

2.7.1. Requirement

According to FCC §15.247(d), 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.

2.7.2. Test Description
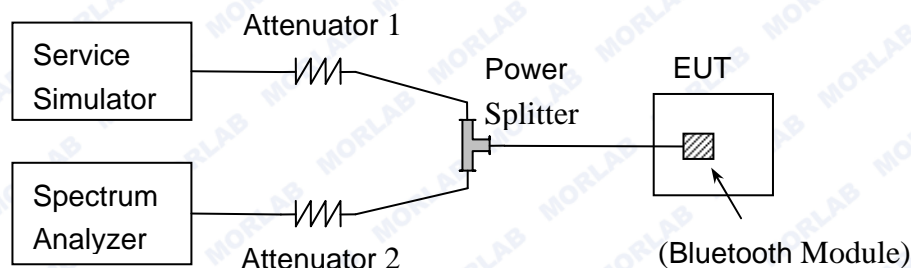
A. Test Setup:

The Bluetooth Module of the EUT 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.

B. Equipments List:

Please reference ANNEX A(1.4).

2.7.3. Test Procedure

Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious emissions

(e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

RBW = 100 kHz

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize.

2.7.4. Test Result

The Bluetooth Module operates at hopping-off test mode. The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions.

2.7.4.1. GFSK Mode

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	-34.25	Plot A.1	8.723	-11.277	PASS
39	2441	-35.43	Plot B.1	9.589	-10.411	PASS
78	2480	-36.98	Plot C.1	8.888	-11.112	PASS

B. Test Plots:

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

(Plot A.1:   Channel = 0, 30MHz to 25GHz @ GFSK Mode)
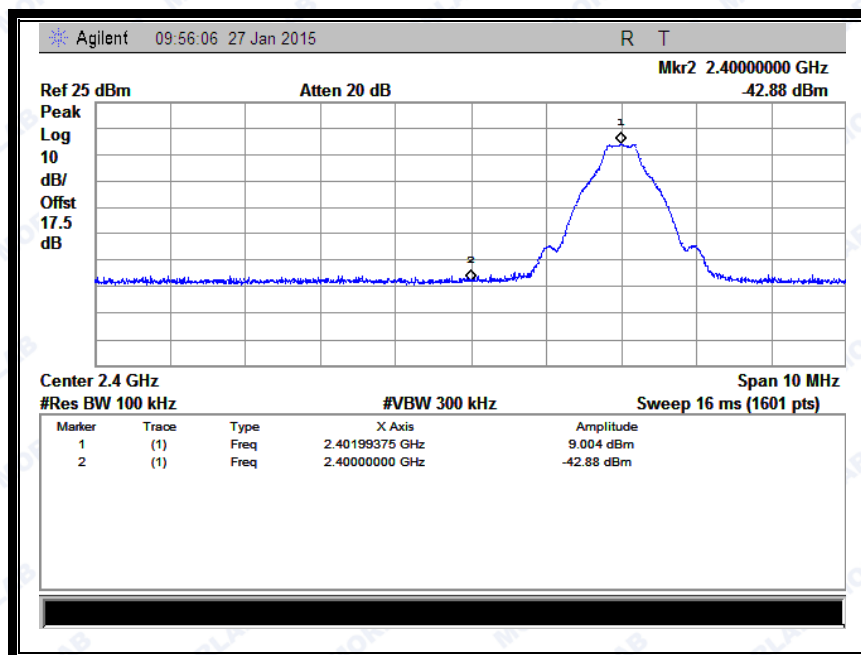
(Channel = 0, Band edge @ GFSK Mode)

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(Channel = 0, Band edge with hopping on @ GFSK Mode)

(Plot B.1:   Channel = 39, 30MHz to 25GHz @ GFSK Mode)

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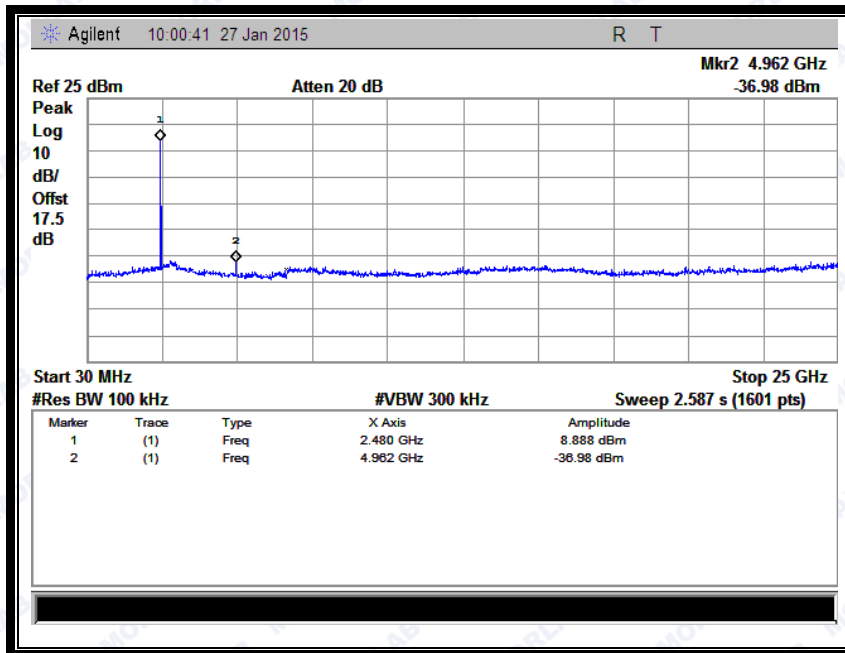
(Plot C.1:   Channel = 78, 30MHz to 25GHz @ GFSK Mode)
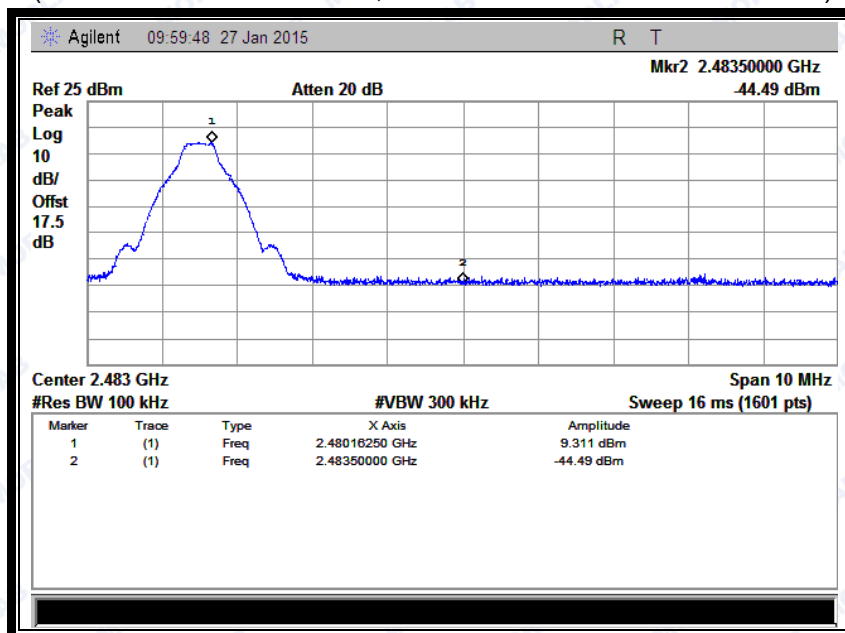
(Channel = 78, Band edge @ GFSK Mode)
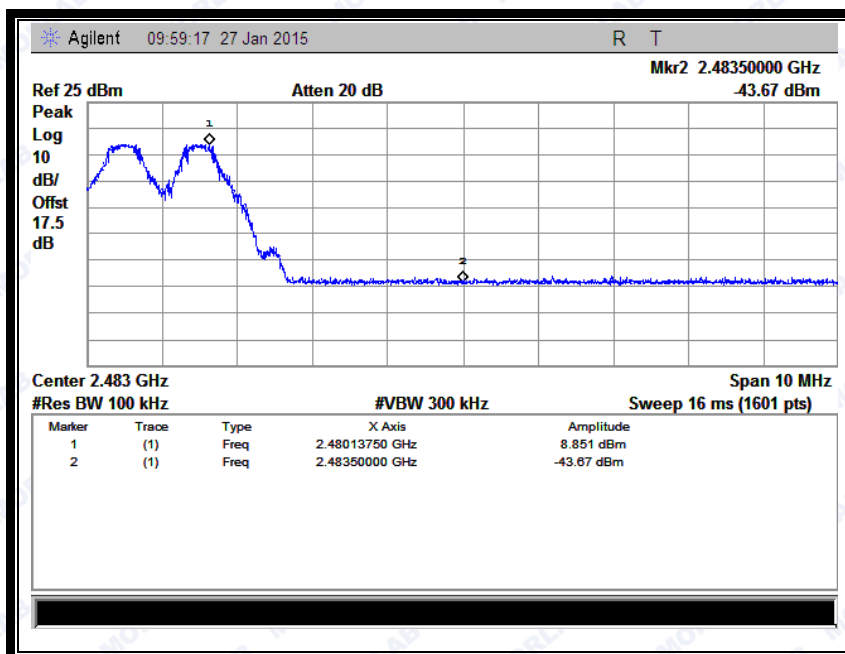
(Channel = 78, Band edge with hopping on @ GFSK Mode)

2.7.4.2. ∏/4-DQPSK Mode

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	-36.52	Plot D.1	2.805	-17.195	PASS
39	2441	-36.46	Plot E.1	2.268	-17.732	PASS
78	2480	-37.39	Plot F.1	2.953	-17.047	PASS

B. Test Plots:

Note: the power of the Module transmitting frequency should be ignored.
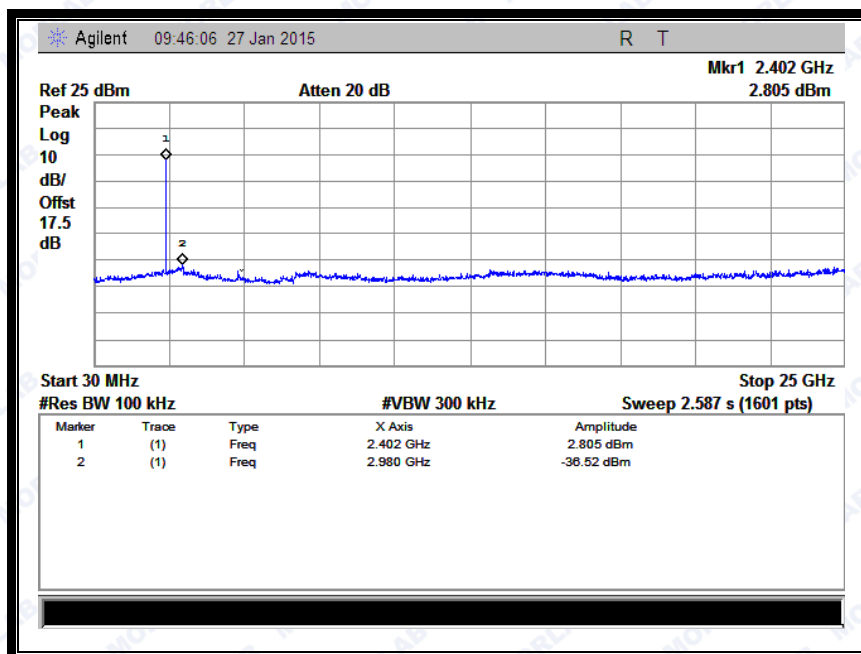
(Plot D.1:   Channel = 0, 30MHz to 25GHz @ ∏/4-DQPSK)
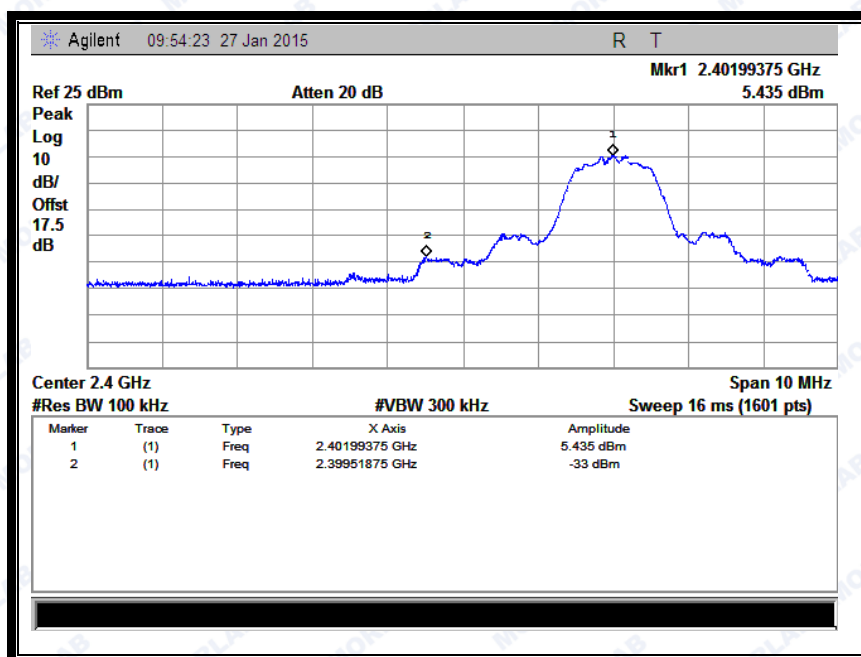
(Channel = 0, Band edge @ ∏/4-DQPSK)

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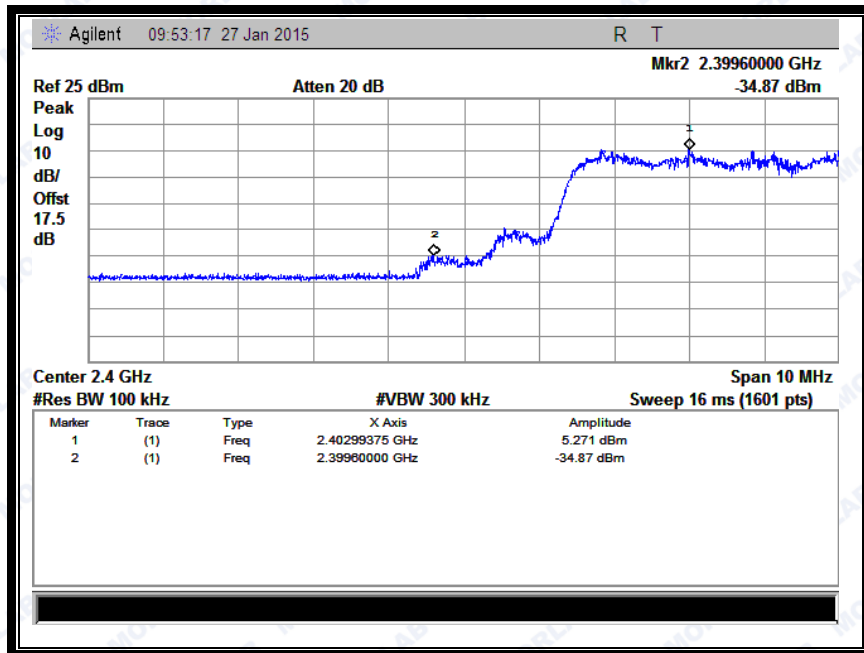
(Channel = 0, Band edge with hopping on @ ∏/4-DQPSK)

(Plot E.1:   Channel = 39, 30MHz to 25GHz @ ∏/4-DQPSK)

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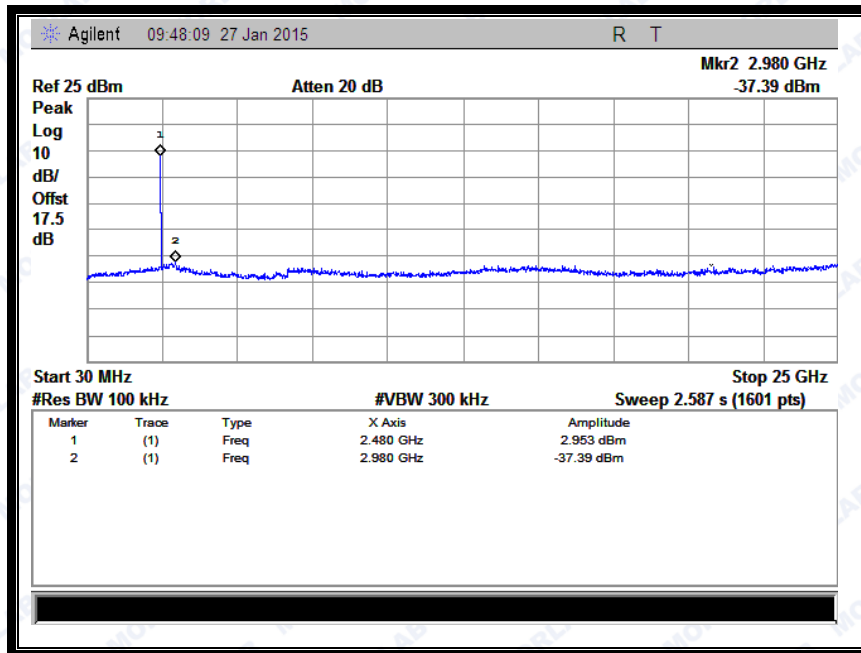
(Plot F.1:   Channel = 78, 30MHz to 25GHz @ ∏/4-DQPSK)
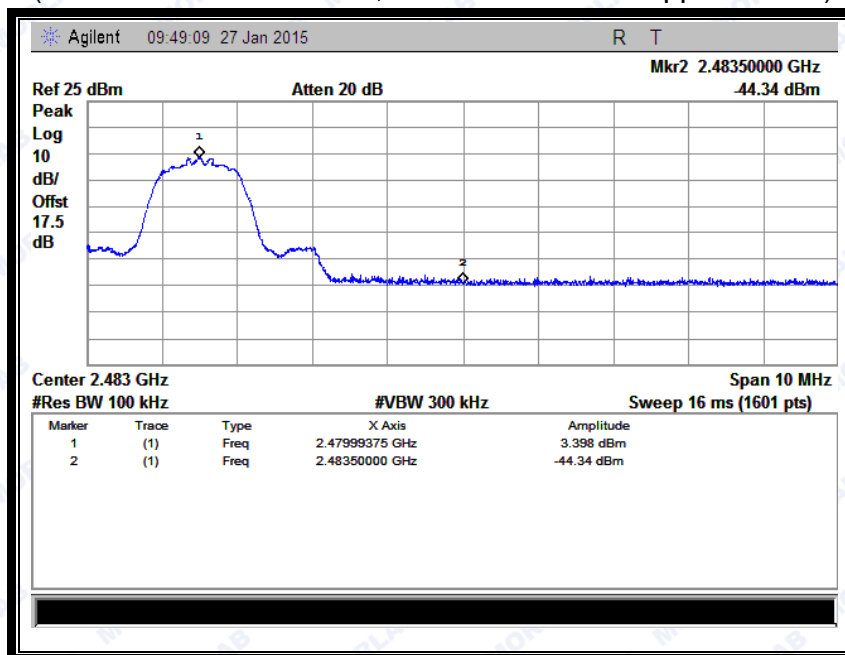
(Channel = 78, Band edge @ ∏/4-DQPSK)
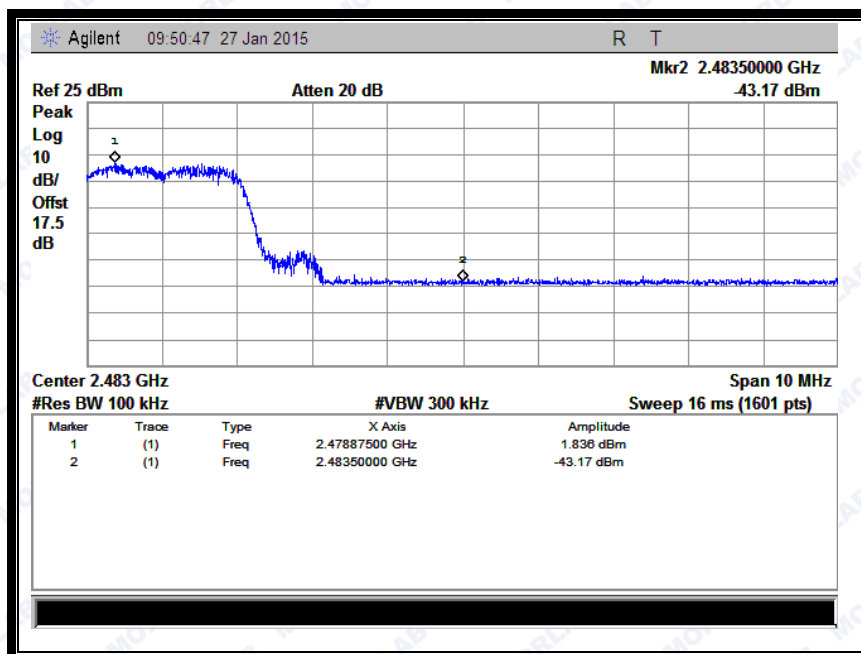
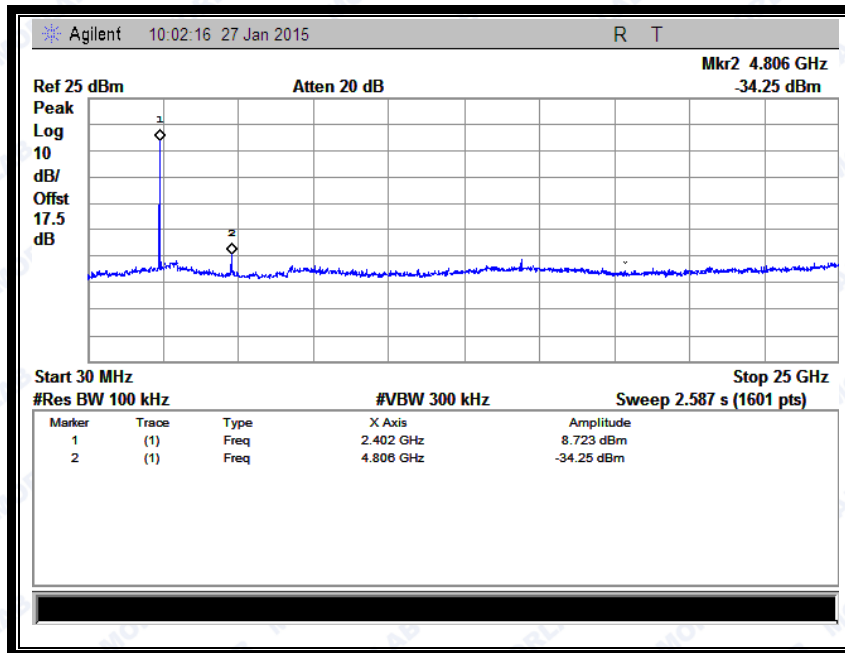(Channel = 78, Band edge with hopping on @ ∏/4-DQPSK)

2.7.4.3. 8-DPSK Mode

A. Test Verdict:

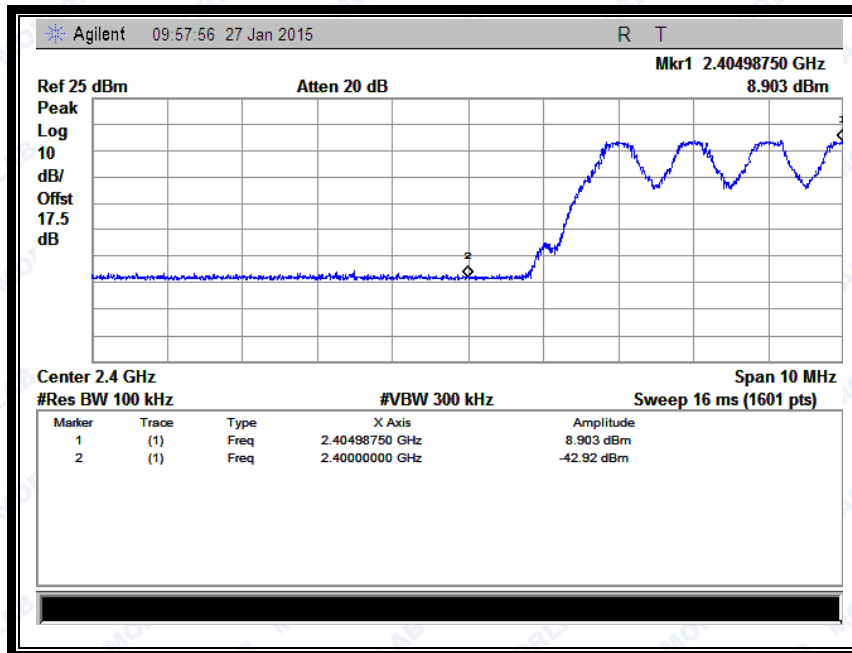| Channel	Frequency (MHz)	Measured Max. Out of Band Emission (dBm)	Refer to Plot	Limit (dBm)		Verdict
				Carrier Level	Calculated -20dBc Limit	
0	2402	-35.66	Plot G.1	3.808	-16.192	PASS
39	2441	-39.43	Plot H.1	5.482	-14.518	PASS
78	2480	-36.06	Plot I.1	3.608	-16.392	PASS

B. Test Plots:

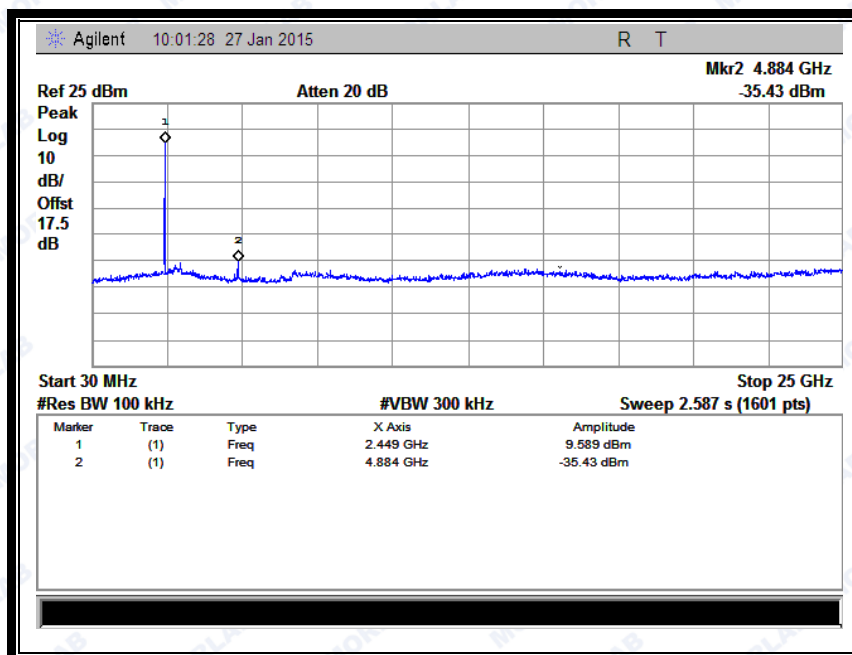**Note:** the power of the Module transmitting frequency should be ignored.
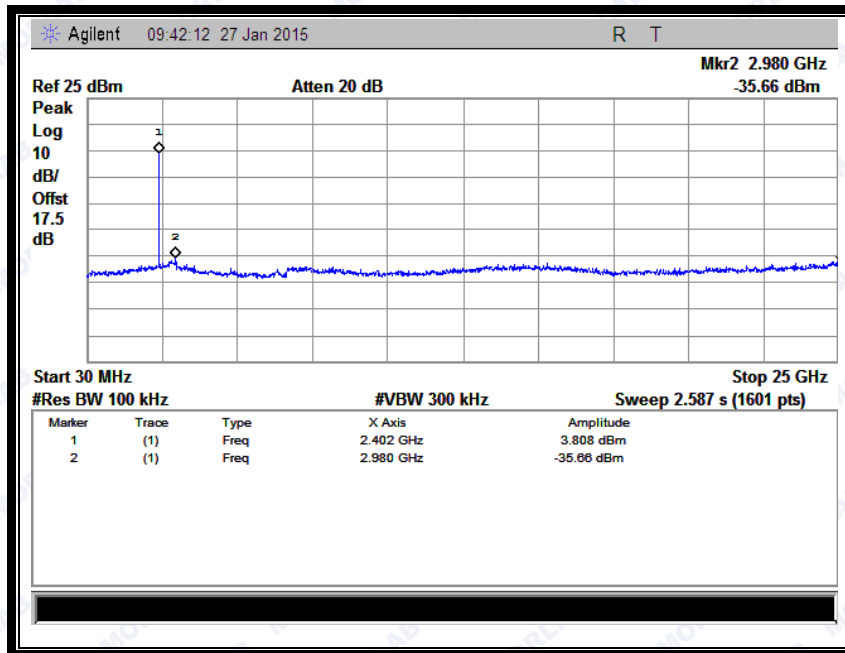
(Plot G.1:   Channel = 0, 30MHz to 25GHz @ 8-DPSK)
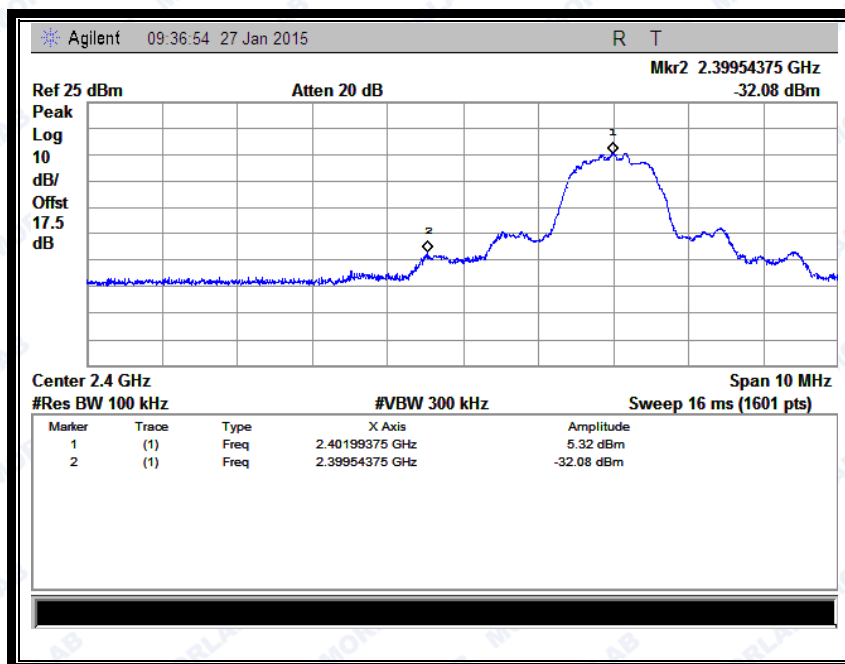
(Channel = 0, Band edge @ 8-DPSK)
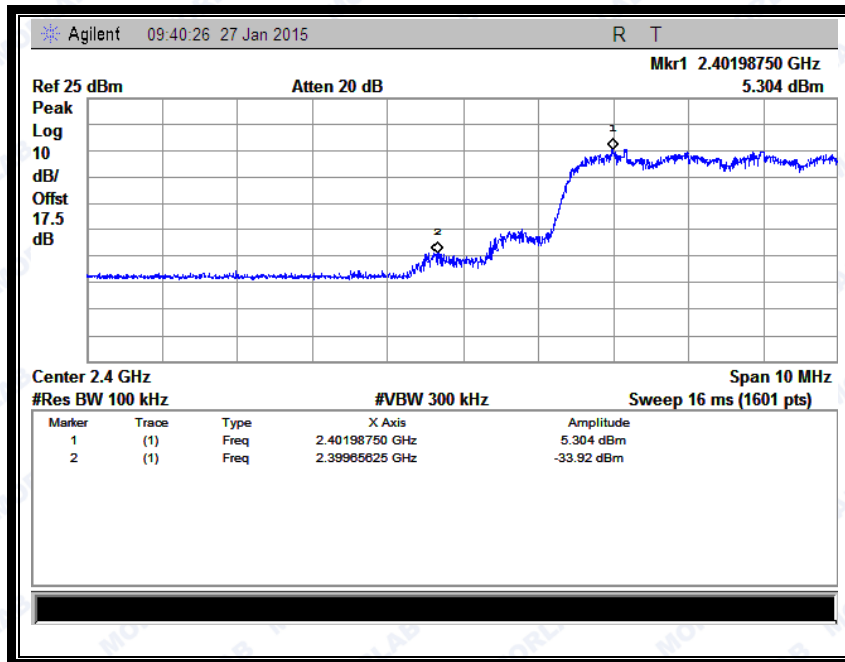
(Channel = 0, Band edge with hopping on @ 8-DPSK)
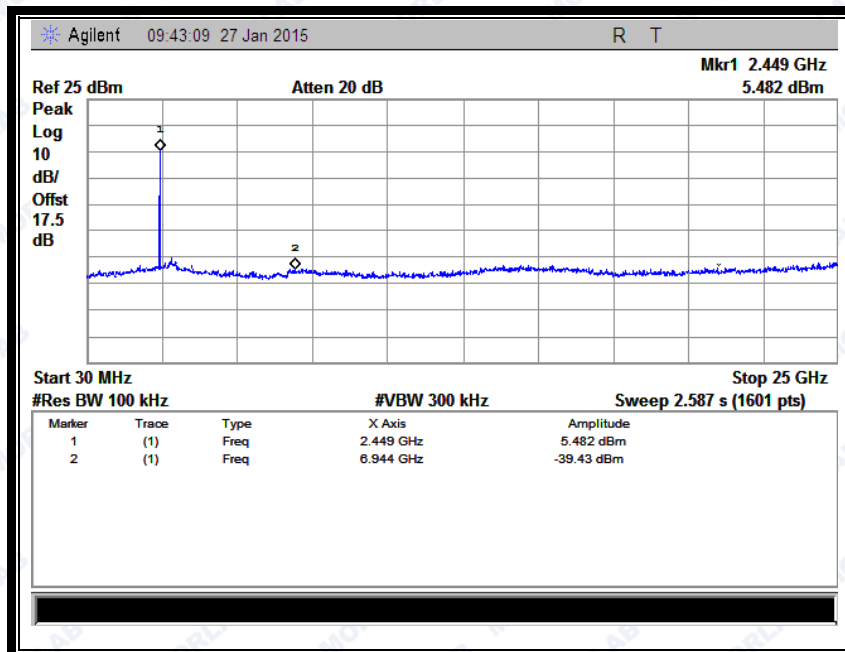
(Plot H.1:   Channel = 39, 30MHz to 25GHz @ 8-DPSK)

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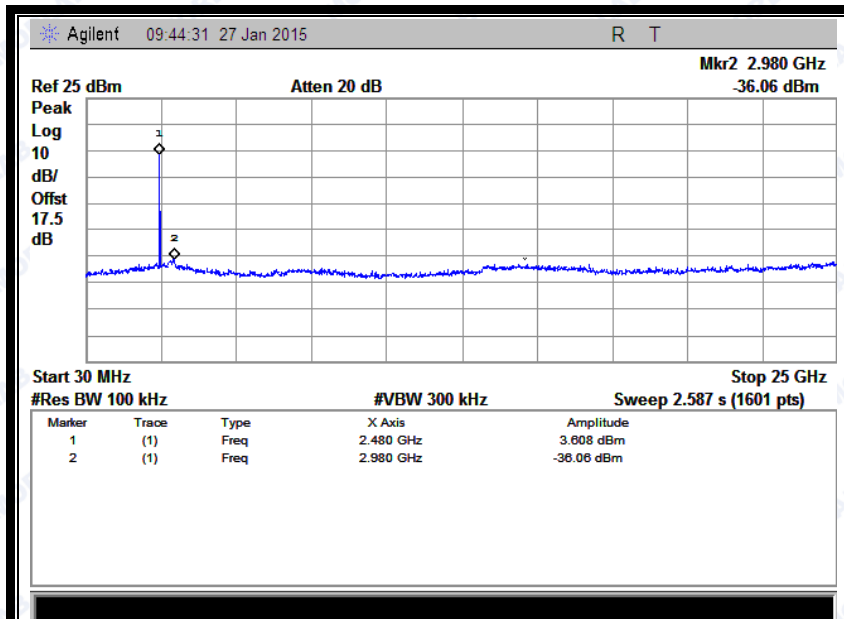
(Plot I.1:Channel = 78, 30MHz to 25GHz @ 8-DPSK)
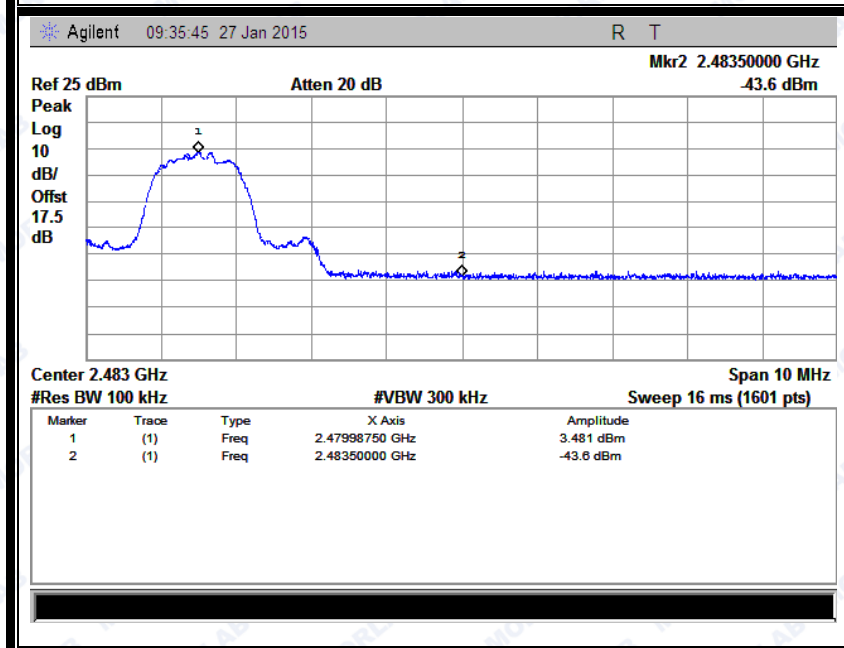
(Plot I.1:Channel = 78, Band edge @ 8-DPSK)

(Plot I.1: Channel = 78, Band edge with hopping on @ 8-DPSK)

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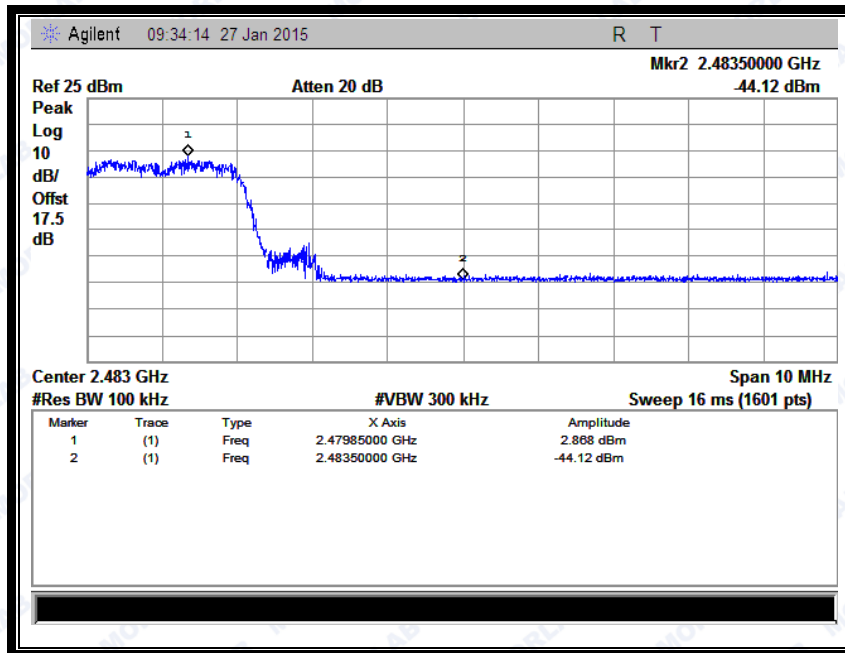
2.8. Restricted Frequency Bands

2.8.1. Requirement

According to FCC section 15.247(d), 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, 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).

2.8.2. Test Description

A. Test Setup:
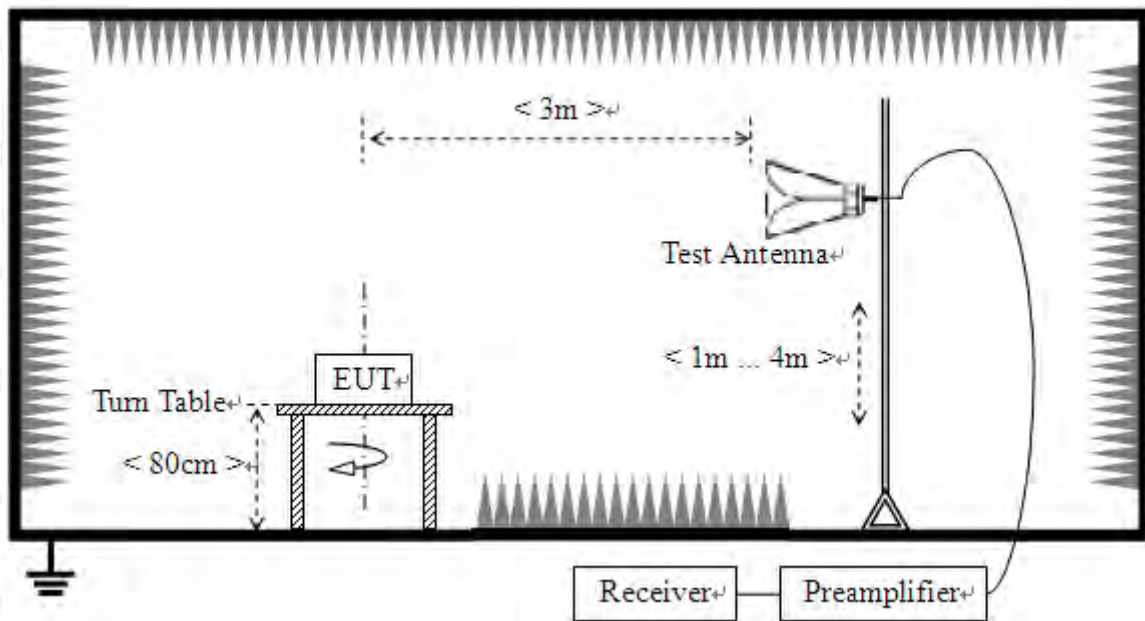
The Module is located in a 3m Semi-Anechoic Chamber; the antenna factors, cable loss and so on of the site as factors are calculated to correct the reading. During the measurement, the Bluetooth Module is activated and controlled by the Bluetooth Service Supplier (SS) via a Common Antenna, and is set to operate under hopping-on test mode transmitting 339 bytes DH5 packages at maximum power.

For the Test Antenna:

Horn 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.

B. Equipments List:

Please reference ANNEX A(1.4).

2.8.3. Test Procedure

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1GHz, 100 KHz for f < 1GHz
VBW = 3 MHz for peak and 10Hz for average
Sweep = auto
Detector function = peak
Trace = max hold
Allow the trace to stabilize.

2.8.4. Test Result

The lowest and highest channels are tested to verify Restricted Frequency Bands.
The measurement results are obtained as below:
E [dBμV/m] =UR + AT + AFactor [dB]; AT =LCable loss [dB]-Gpreamp [dB]
AT: Total correction Factor except Antenna
UR: Receiver Reading
Gpreamp: Preamplifier Gain
AFactor: Antenna Factor at 3m
Note: Restricted Frequency Bands were performed when antenna was at vertical and horizontal polarity, and only the worse test condition (vertical) was recorded in this test report.

2.8.4.1. GFSK Mode

A. Test Verdict:

Channel	Frequency (MHz)	Detector PK/ AV	Receiver Reading UR (dBuV)	AT (dB)	AFactor (dB@3m)	Max. Emission E (dBµV/m)	Limit (dBµV/m)	Verdict
0	2386.32	PK	53.08	-24.63	32.56	61.01	74	Pass
0	2390.00	AV	38.80	-24.63	32.56	46.73	54	Pass
78	2485.54	PK	51.79	-24.18	32.5	60.11	74	Pass
78	2483.50	AV	39.79	-24.18	32.5	48.11	54	Pass

B. Test Plots:
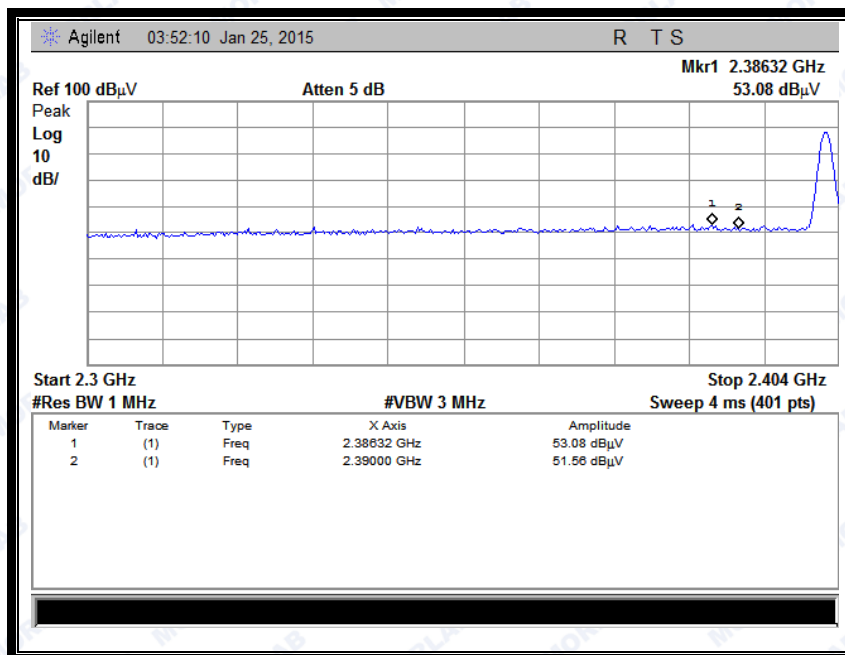
(Plot A1:Channel = 0 PEAK @ GFSK)

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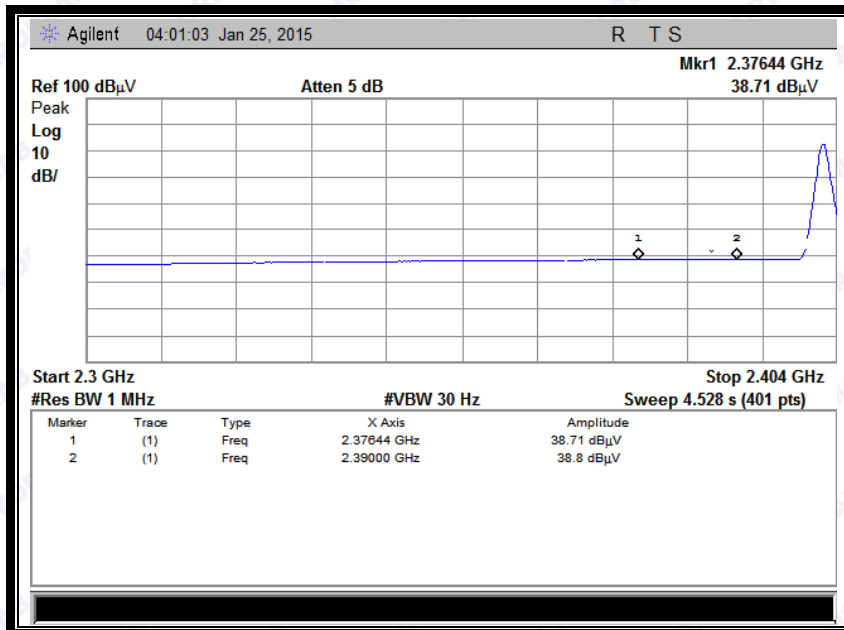
(Plot A2:Channel = 0 AVERAGE @ GFSK)
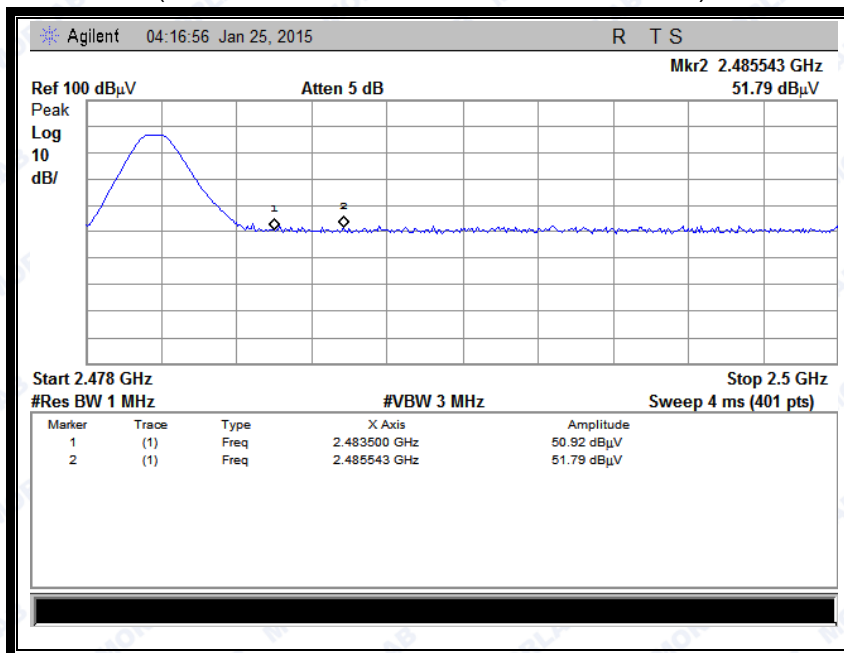
(Plot B1:Channel = 78 PEAK @ GFSK)
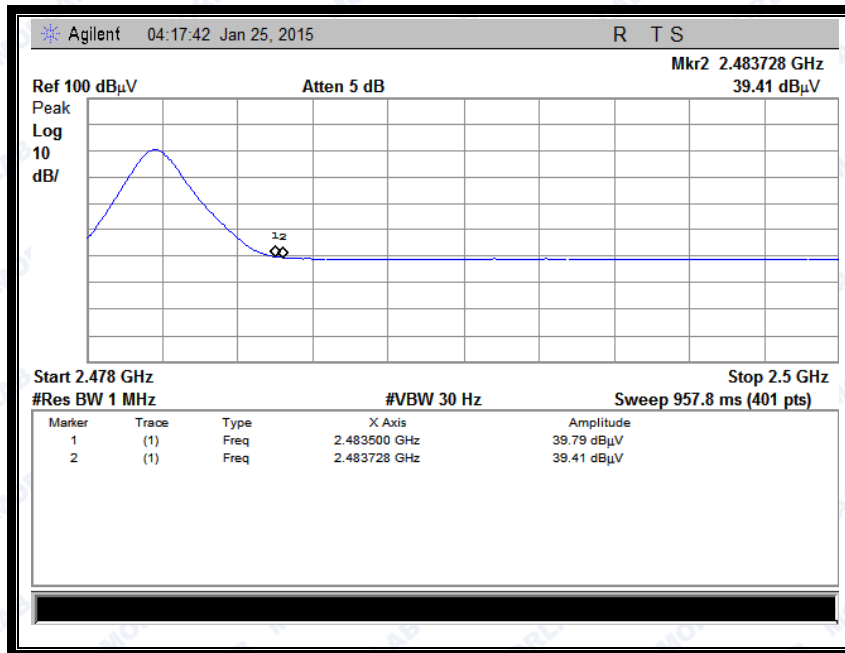
(Plot B2: Channel = 78 AVERAGE @ GFSK)

2.8.4.2. ∏/4-DQPSK Mode

A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading UR	AT (dB)	AFactor (dB@3m)	Max. Emission E	Limit (dBµV/m)	Verdict
		PK/ AV	(dBuV)			(dBµV/m)		
0	2387.36	PK	51.77	-24.63	32.56	59.70	74	Pass
0	2387.36	AV	38.72	-24.63	32.56	46.65	54	Pass
78	2489.28	PK	52.89	-24.18	32.5	61.21	74	Pass
78	2483.50	AV	39.51	-24.18	32.5	47.83	54	Pass

B. Test Plots:
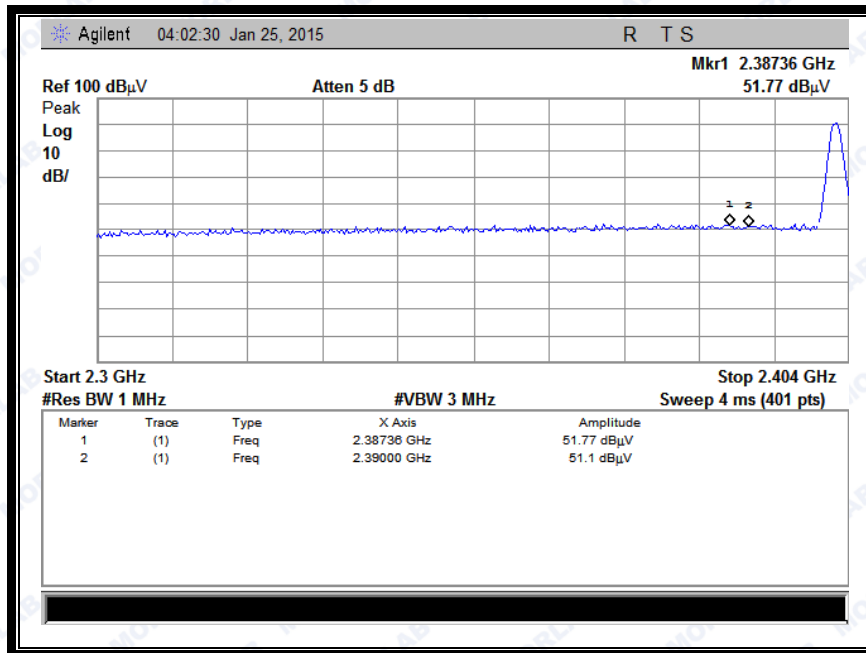
(Plot C1:　　Channel = 0 PEAK @ ∏/4-DQPSK)
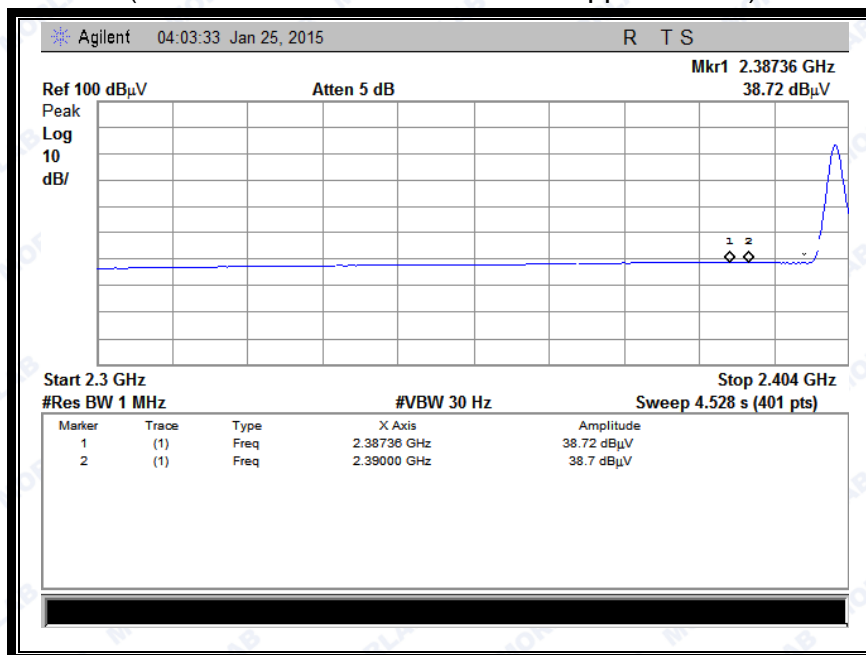
(Plot C2:　　Channel = 0 AVERAGE @ ∏/4-DQPSK)

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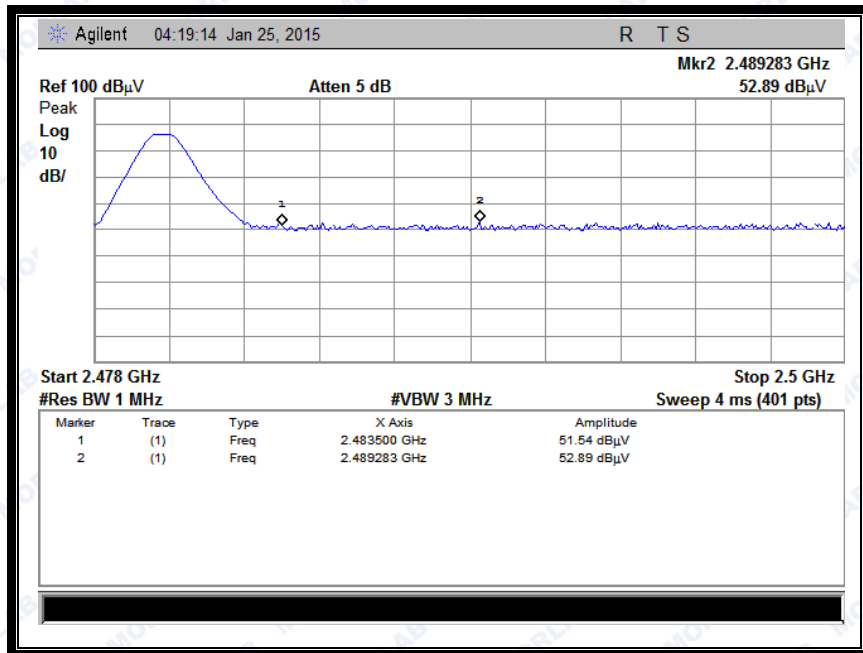
(Plot D1:   Channel = 78 PEAK @ ∏/4-DQPSK)
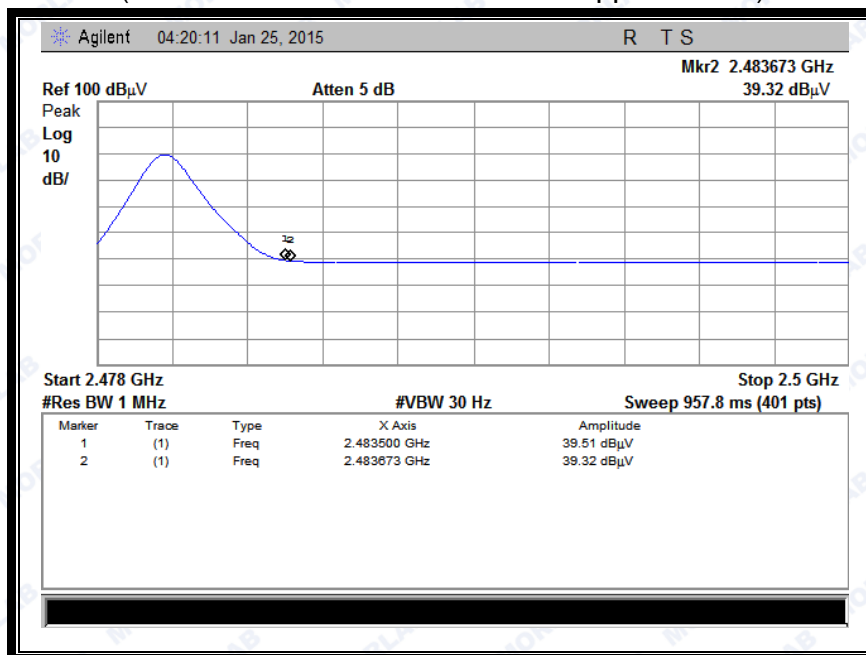
(Plot D2:   Channel = 78 AVERAGE@ ∏/4-DQPSK)

2.8.4.3. 8-DPSK Mode

A. Test Verdict:

Channel	Frequency (MHz)	Detector	Receiver Reading UR	AT (dB)	AFactor (dB@3m)	Max. Emission E	Limit (dBµV/m)	Verdict
		PK/ AV	(dBuV)			(dBµV/m)		
0	2374.88	PK	52.07	-24.63	32.56	60.00	74	Pass
0	2382.94	AV	38.64	-24.63	32.56	46.57	54	Pass
78	2485.93	PK	52.69	-24.18	32.5	61.01	74	Pass
78	2483.50	AV	39.55	-24.18	32.5	47.87	54	Pass

B. Test Plots:
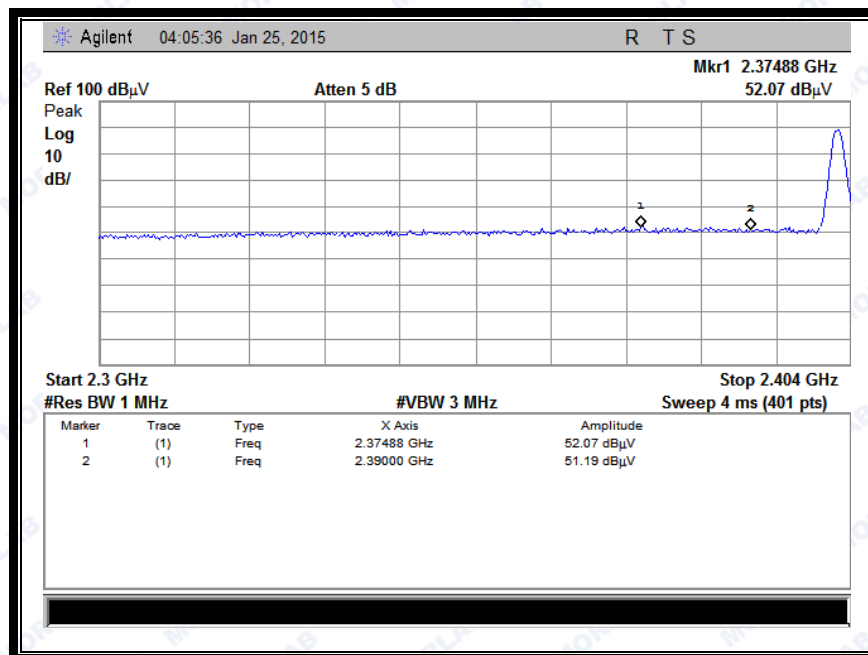
(Plot E1: Channel = 0 PEAK @ 8-DPSK Mode)
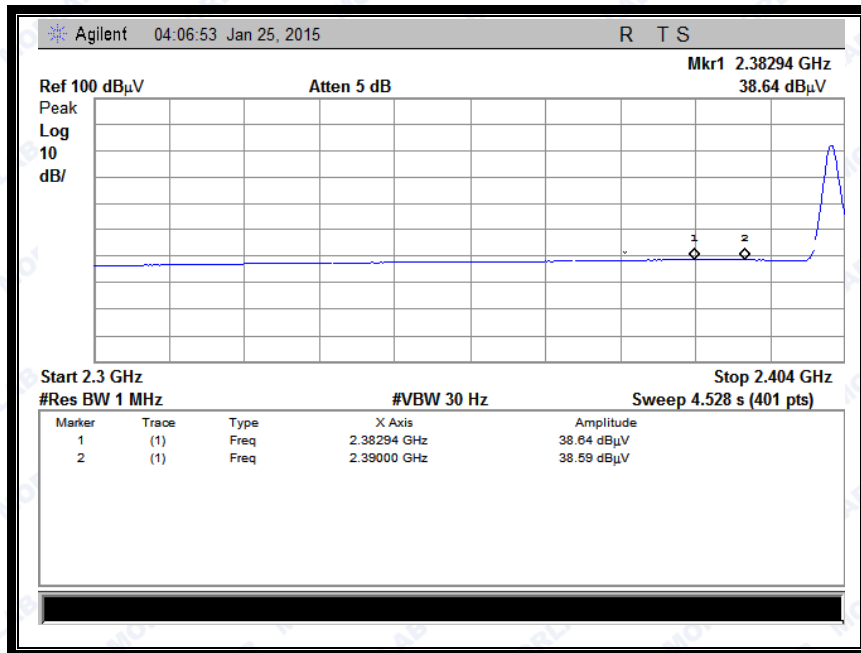
(Plot E2: Channel = 0 AVERAGE @ 8-DPSK Mode)
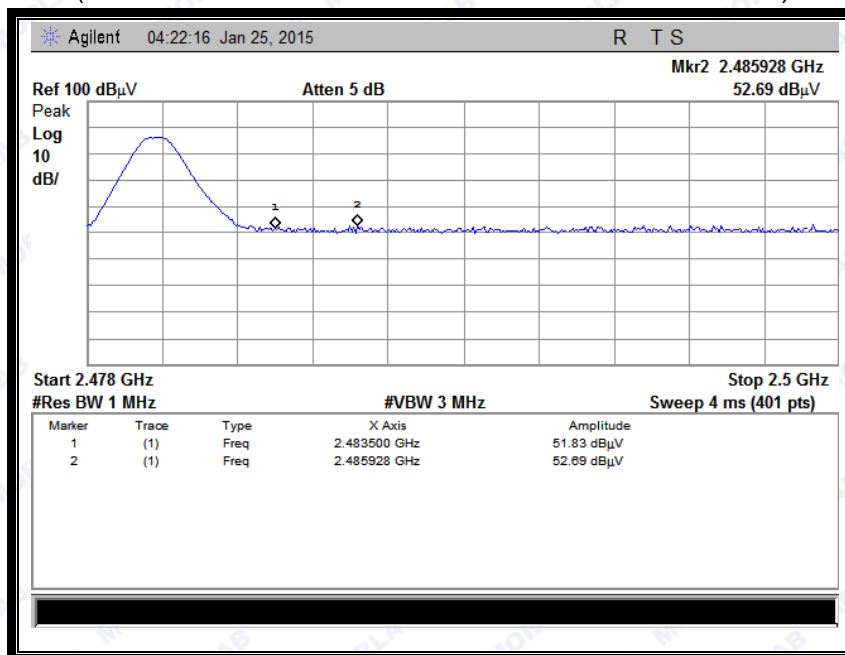
(Plot F1:Channel = 78 PEAK @ 8-DPSK Mode)

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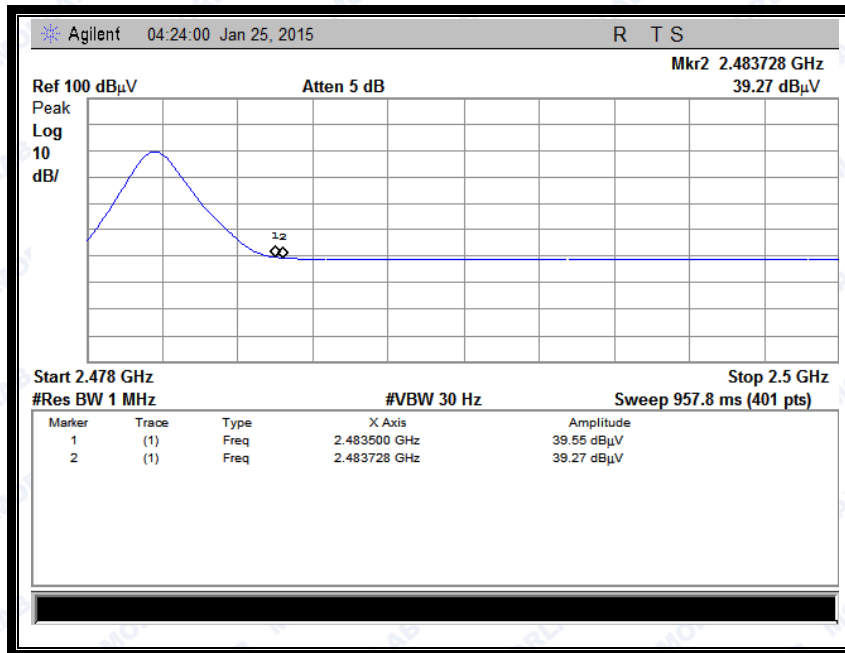
(Plot F2:Channel = 78 AVERAGE @ 8-DPSK Mode)

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2.9. Conducted Emission

2.9.1. Requirement

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency range	Conducted Limit (dBμV)	
(MHz)	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5- 30	60	50

NOTE：

(a) The lower limit shall apply at the band edges.

(b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

2.9.2. Test Description

A. Test Setup:
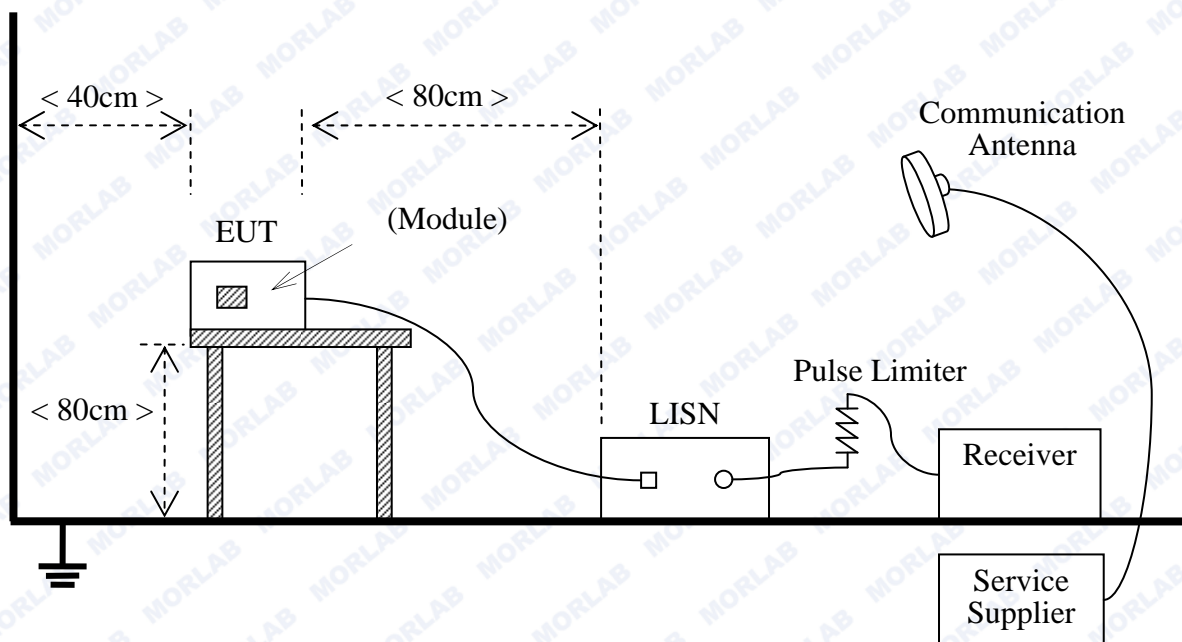
The Table-top EUT was placed upon a non-metallic table 0.8m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.4:2009

The factors of the site are calibrated to correct the reading. During the measurement, the Bluetooth Module is activated and controlled by the Bluetooth Service Supplier (SS) via a Common Antenna, and is set to operate under hopping-on test mode transmitting 339 bytes DH5 packages at maximum power.

B. Equipments List:

Please reference ANNEX A(1.4).

2.9.3. Test Result

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

A. Test setup:

The EUT configuration of the emission tests is <u>EUT + Link.</u>

B. Test Plots:
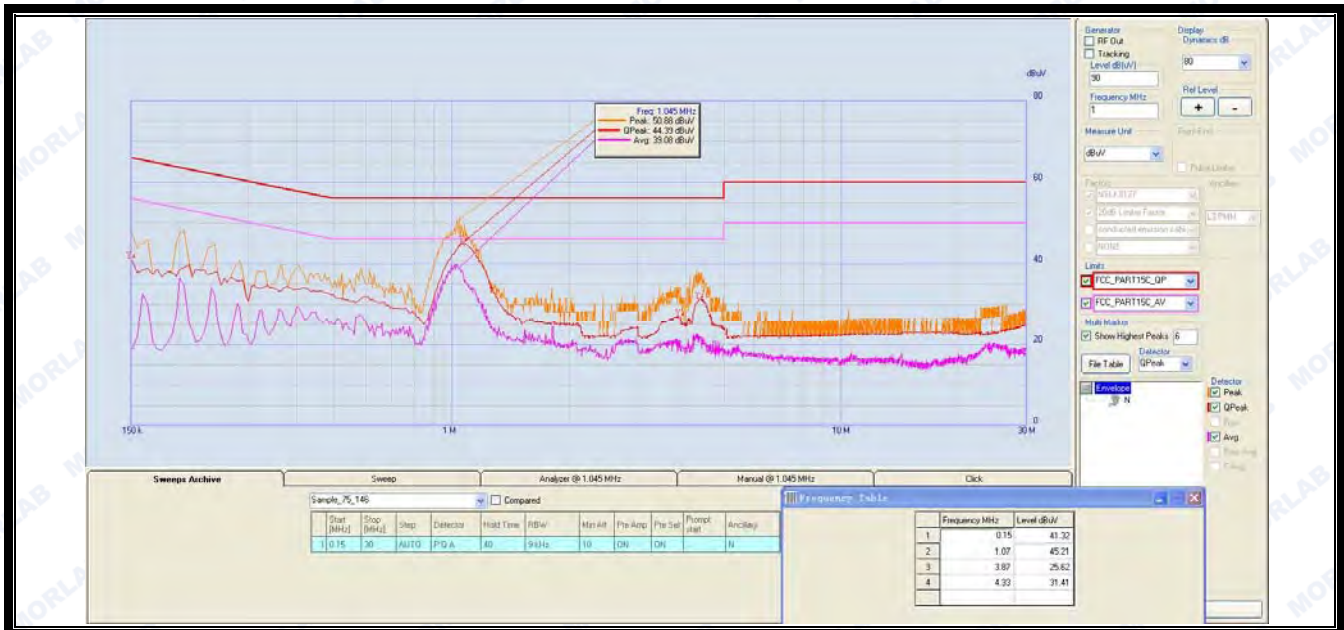
(Plot A: L Phase)
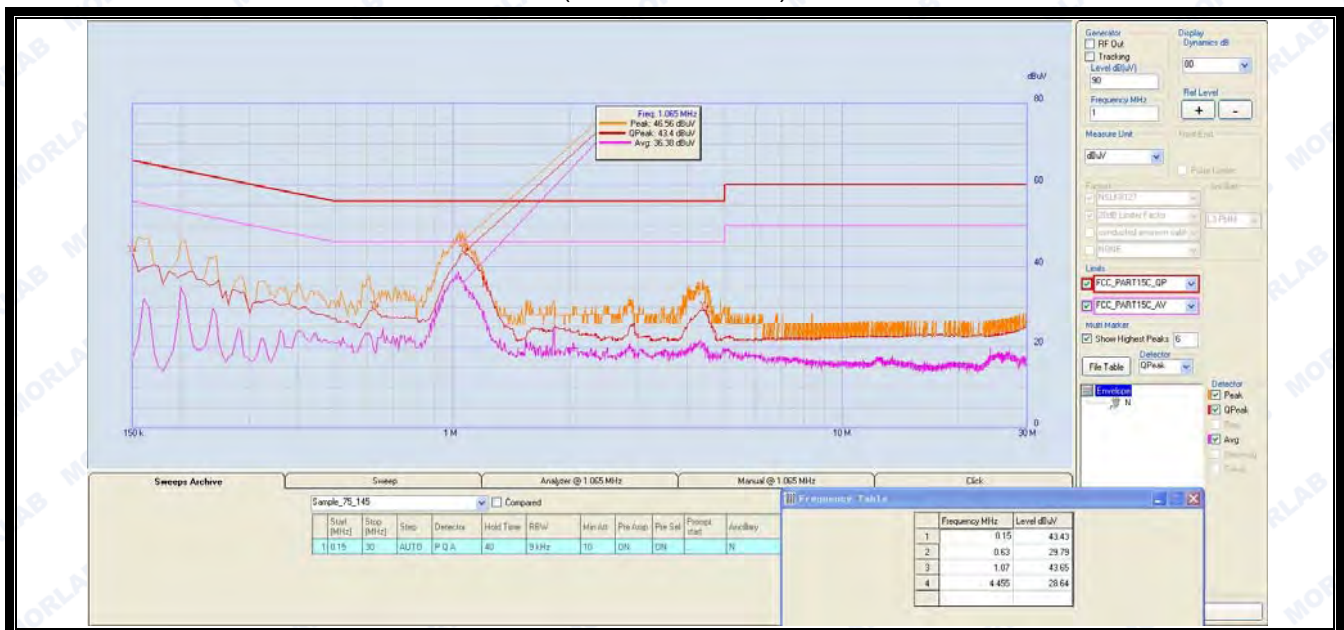
(Plot B: N Phase)

2.10. Radiated Emission

2.10.1. Requirement

According to FCC section 15.247(d) and RSS-A8.5, 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

Note:

1. For Above 1000MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

2. For above 1000MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK)

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table)

2.10.2. Test Description

A. Test Setup:

1) For radiated emissions from 9kHz to 30MHz
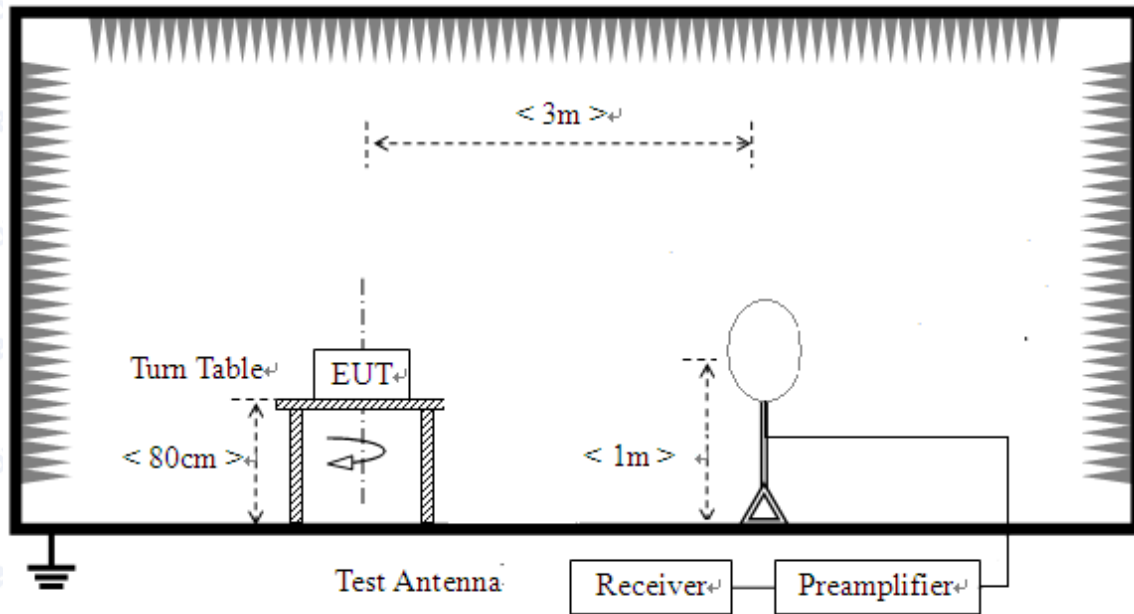
2) For radiated emissions from 30MHz to1GHz

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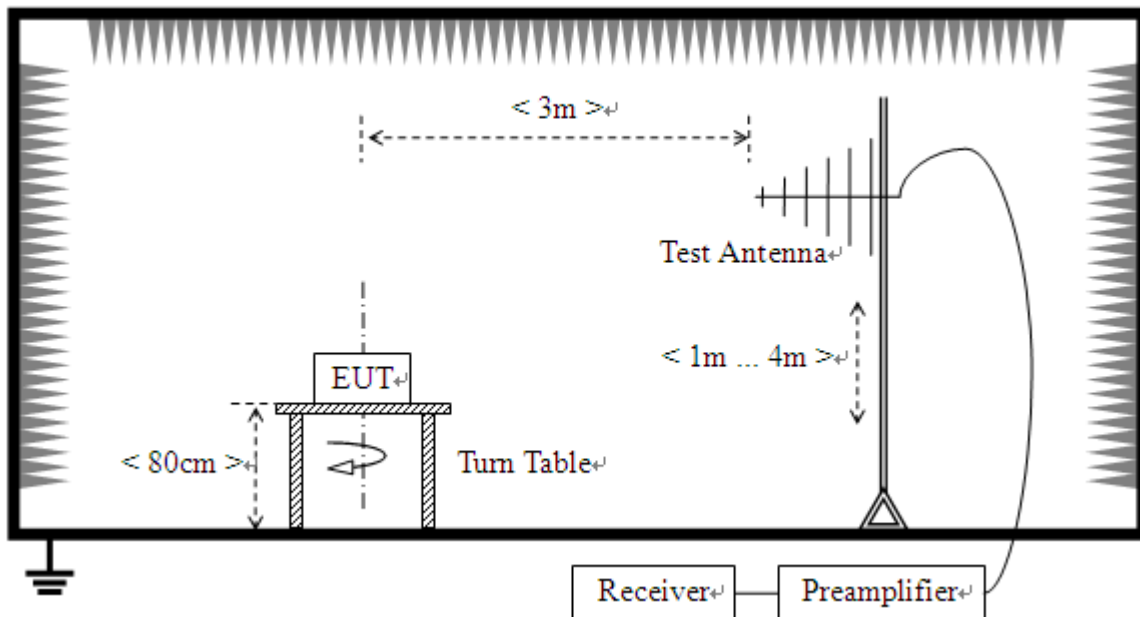
3) For radiated emissions above 1GHz
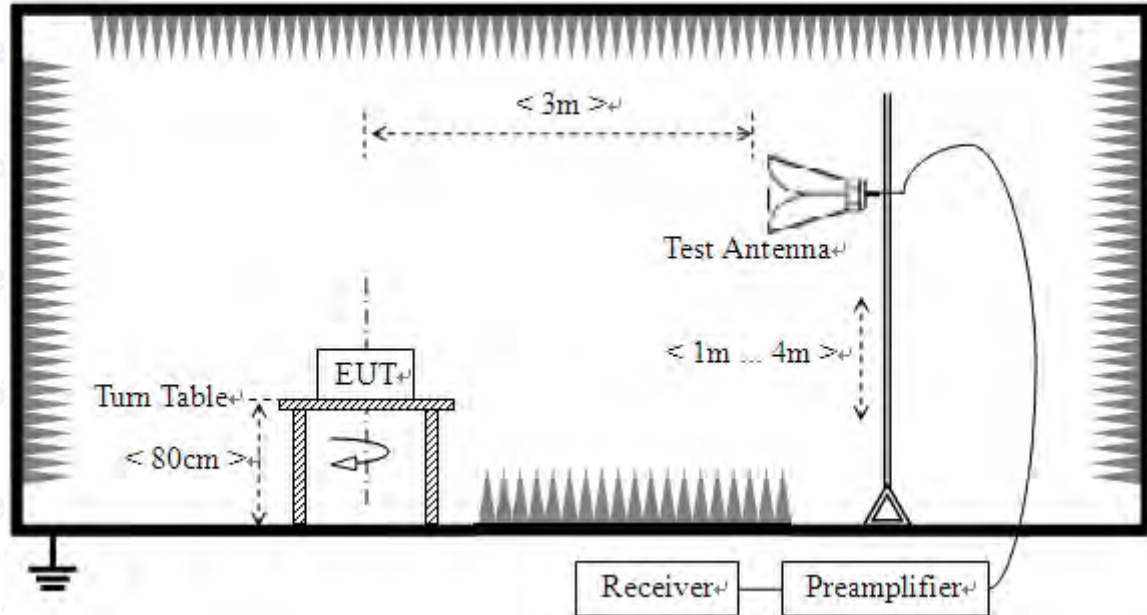
The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.4 (2009). The EUT was set-up on insulator 80cm above the Ground Plane. The set-up and test methods were according to ANSI C63.4.

The EUT 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 Bluetooth Module is activated and controlled by the Bluetooth Service Supplier (SS) via a Common Antenna, and is set to operate under hopping-on test mode transmitting 339 bytes DH5 packages at maximum power.

For the Test Antenna:

(a) In the frequency range of 9kHz 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.

B. Equipments List:

Please reference ANNEX A(1.4).

2.10.3. Test Procedure

Use the following spectrum analyzer settings:
Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

2.10.4. Test Result

According to ANSI C63.4 selection 4.2.2, because of peak detection will yield amplitudes equal to or greater than amplitudes measured with the quasi-peak (or average) detector, the measurement data from a spectrum analyzer peak detector will represent the worst-case results, if the peak measured value complies with the quasi-peak limit, it is unnecessary to perform an quasi-peak measurement.

The measurement results are obtained as below:

E [dBµV/m] $= U_R + A_T + A_{Factor}$ [dB]; $A_T = L_{Cable\ loss}$ [dB]$-G_{preamp}$ [dB]

A_T: Total correction Factor except Antenna

U_R: Receiver Reading

G_{preamp}: Preamplifier Gain

A_{Factor}: Antenna Factor at 3m

During the test, the total correction Factor AT and A_{Factor} were built in test software.

Note: All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

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

2.10.4.1.   GFSK Mode：

A.   Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 0
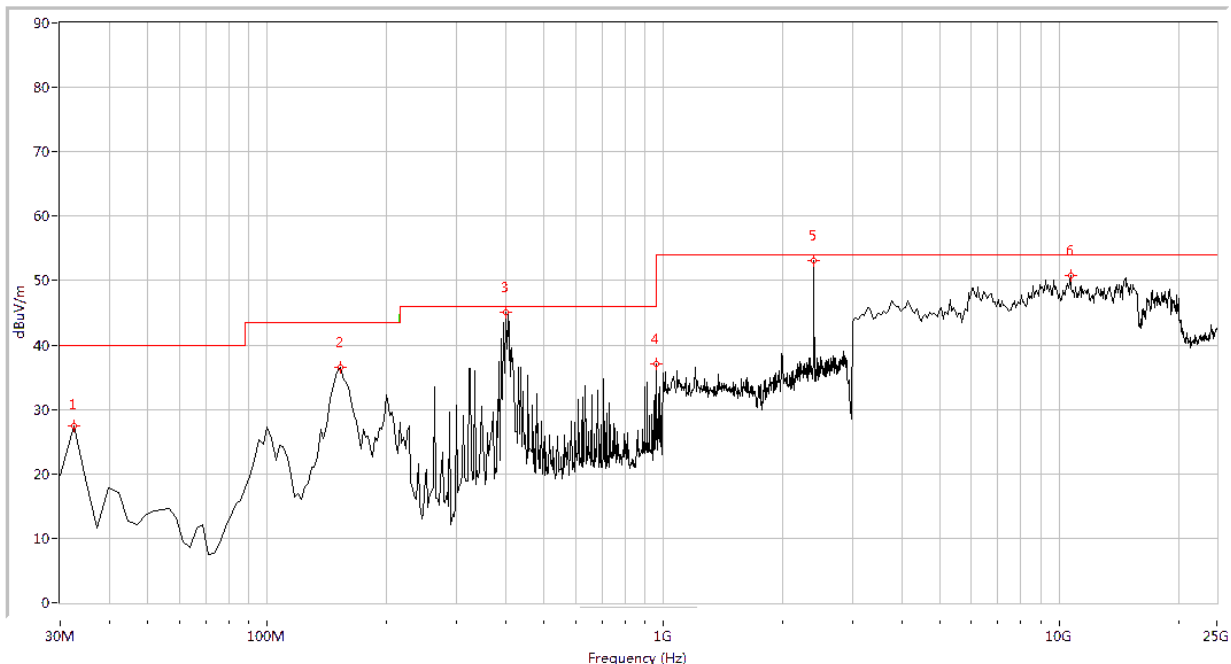
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
32.419	27.47	N.A	N.A	N.A	40.0	N.A	Horizontal	PASS
153.367	36.48	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
400.100	45.09	42.26	N.A	N.A	46.0	N.A	Horizontal	PASS
958.878	37.15	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
2402.000	53.05	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
10680.798	50.86	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

(30MHz to 25GHz, Antenna Horizontal @ GFSK, channel 0)
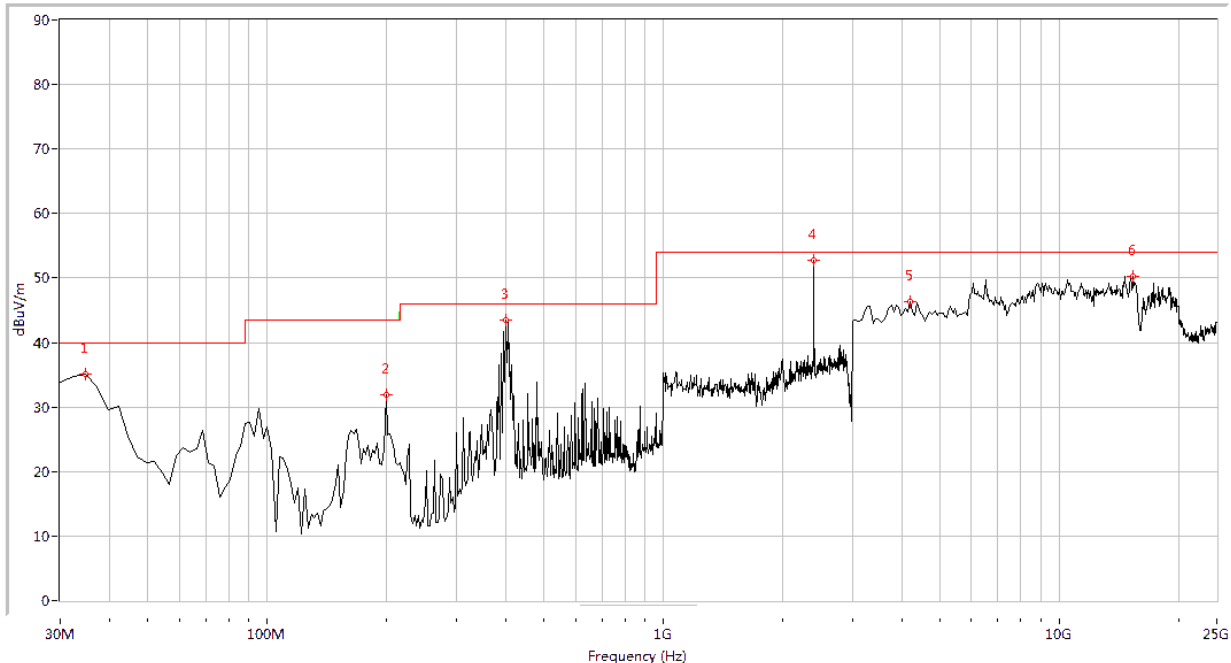
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.838	35.04	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
199.327	31.87	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
400.100	43.44	41.07	N.A	N.A	46.0	N.A	Vertical	PASS
2402.000	52.80	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
4206.983	46.38	N.A	N.A	74.0	N.A	54.0	Vertical	PASS
15399.002	50.31	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(30MHz to 25GHz, Antenna Vertical @ GFSK, channel 0)

Plot for Channel = 39
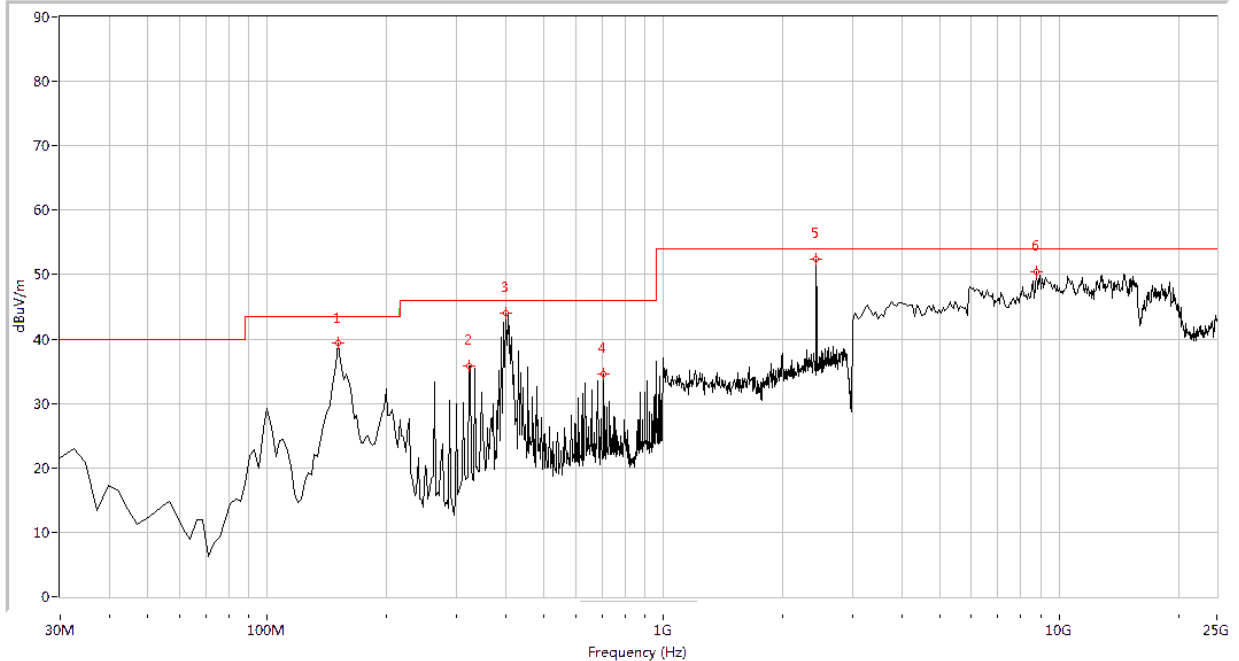
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
150.948	39.41	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
322.693	35.77	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
400.100	44.00	42.05	N.A	N.A	46.0	N.A	Horizontal	PASS
707.307	34.56	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
2441.000	52.36	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
8760.599	50.49	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

(30MHz to 25GHz, Antenna Horizontal @ GFSK, channel 39)

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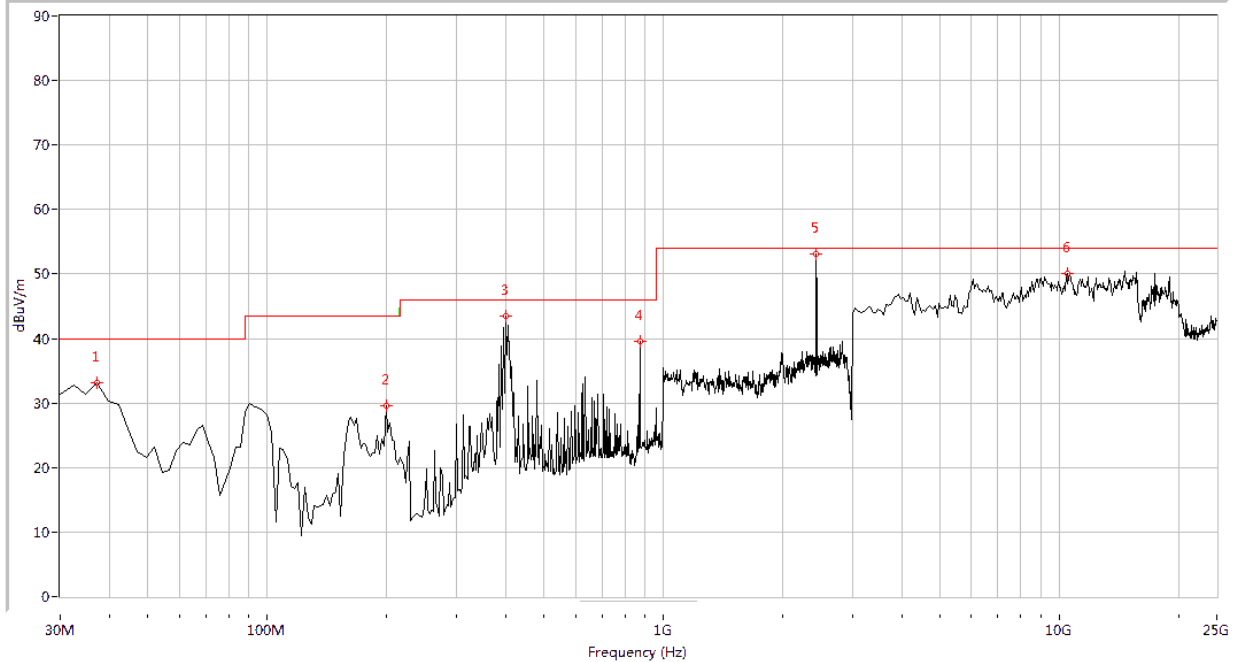
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
37.257	33.17	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
199.327	29.66	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
400.100	43.47	41.52	N.A	N.A	46.0	N.A	Vertical	PASS
874.214	39.55	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
2441.000	53.18	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
10516.209	50.16	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(30MHz to 25GHz, Antenna Vertical @ GFSK, channel 39)

Plot for Channel = 78
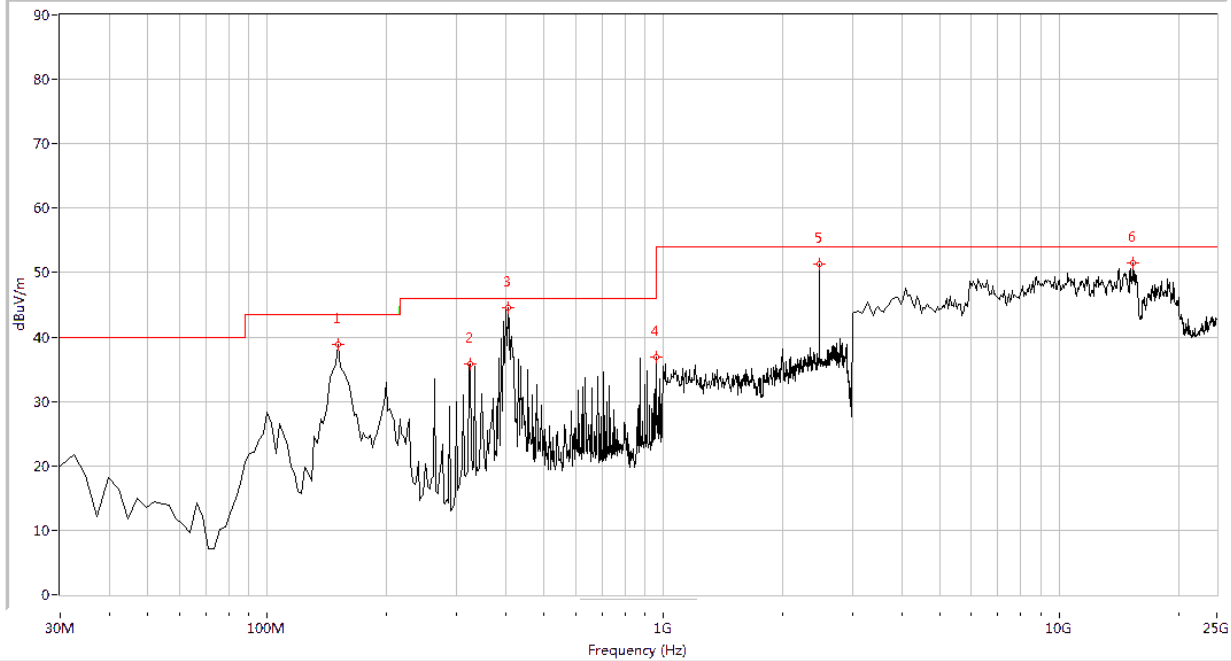
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
150.948	38.82	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
325.112	35.78	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
404.938	44.51	42.59	N.A	N.A	46.0	N.A	Horizontal	PASS
958.878	36.90	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
2480.000	51.32	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
15399.002	51.45	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

(30MHz to 25GHz, Antenna Horizontal @ GFSK, channel 78)
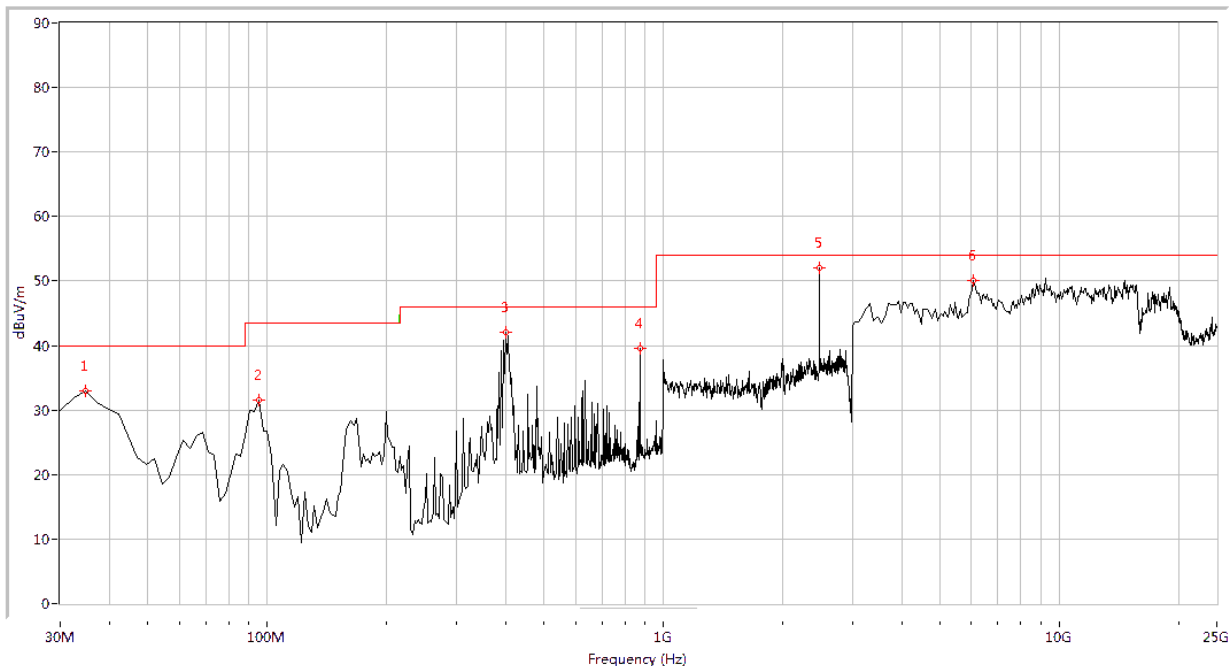
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.838	32.90	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
95.312	31.55	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
400.100	42.10	40.96	N.A	N.A	46.0	N.A	Vertical	PASS
874.214	39.63	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
2480.000	52.06	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
6072.319	50.07	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(30MHz to 25GHz, Antenna Vertical @ GFSK, channel 78)

2.10.4.2. ∏/4-DQPSK Mode：

A. Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 0
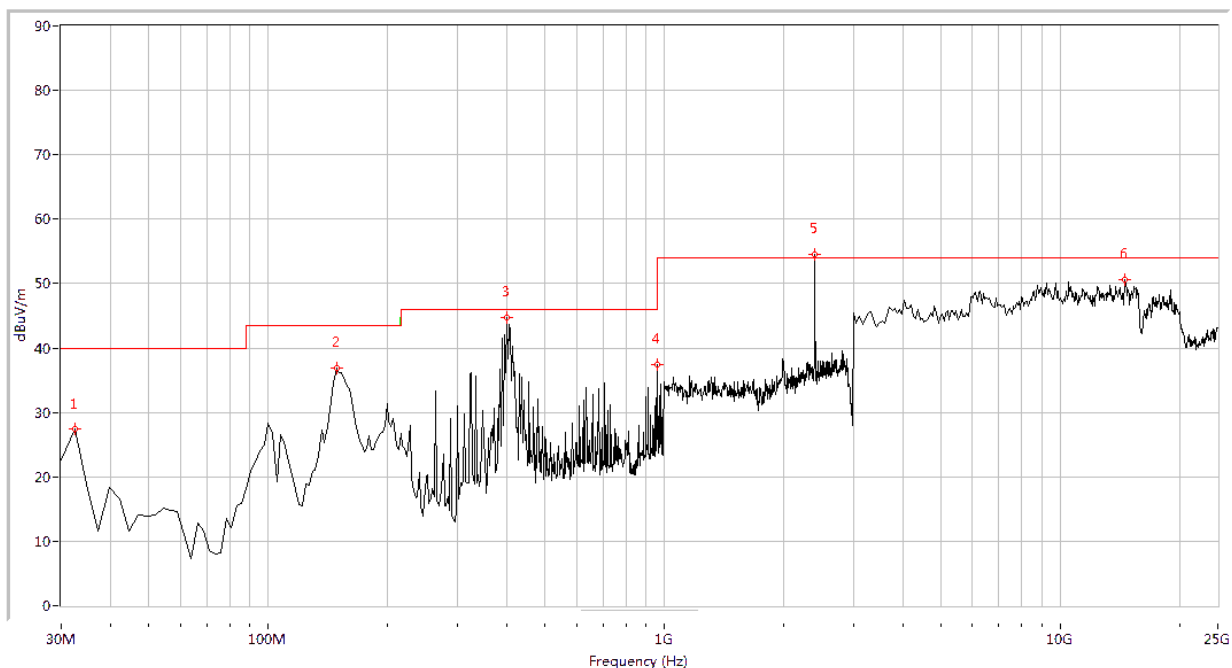
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
32.419	27.42	N.A	N.A	N.A	40.0	N.A	Horizontal	PASS
148.529	36.85	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
400.100	44.81	42.19	N.A	N.A	46.0	N.A	Horizontal	PASS
958.878	37.35	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
2402.000	54.58	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
14576.060	50.55	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

(30MHz to 25GHz, Antenna Horizontal @ ∏/4-DQPSK, channel 0)

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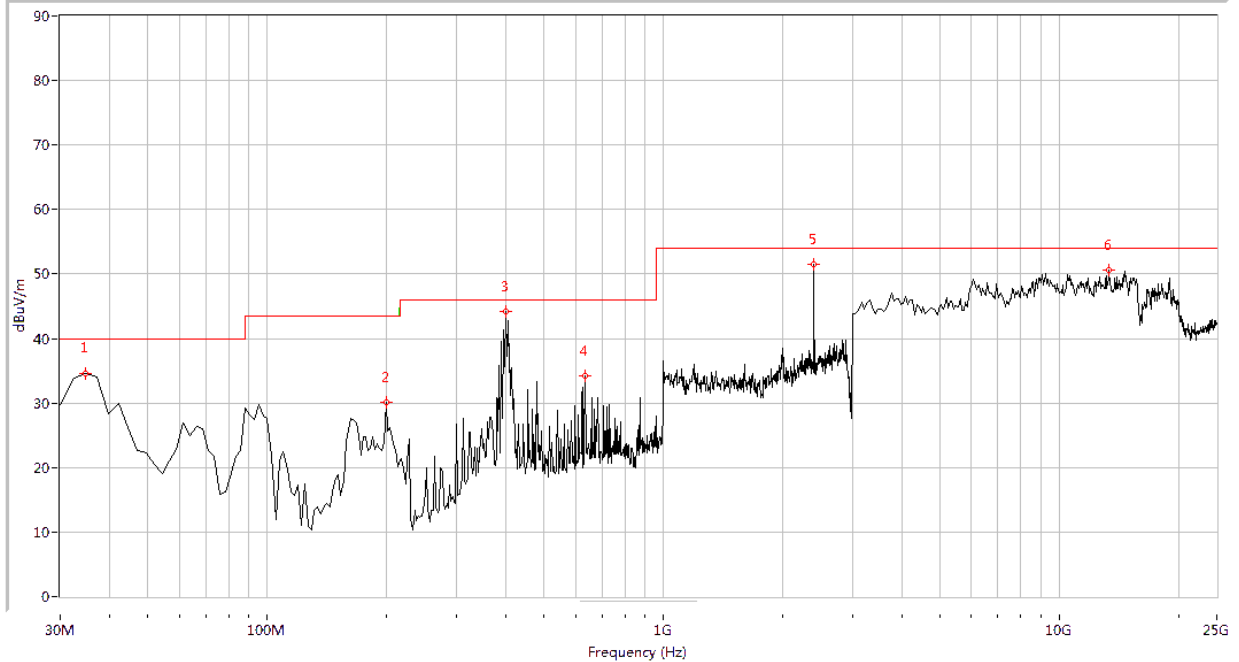
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.838	34.50	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
199.327	30.11	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
400.100	44.13	42.62	N.A	N.A	46.0	N.A	Vertical	PASS
634.738	34.22	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
2402.000	51.52	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
13369.077	50.57	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(30MHz to 25GHz, Antenna Vertical @ ∏/4-DQPSK, channel 0)

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Plot for Channel = 39
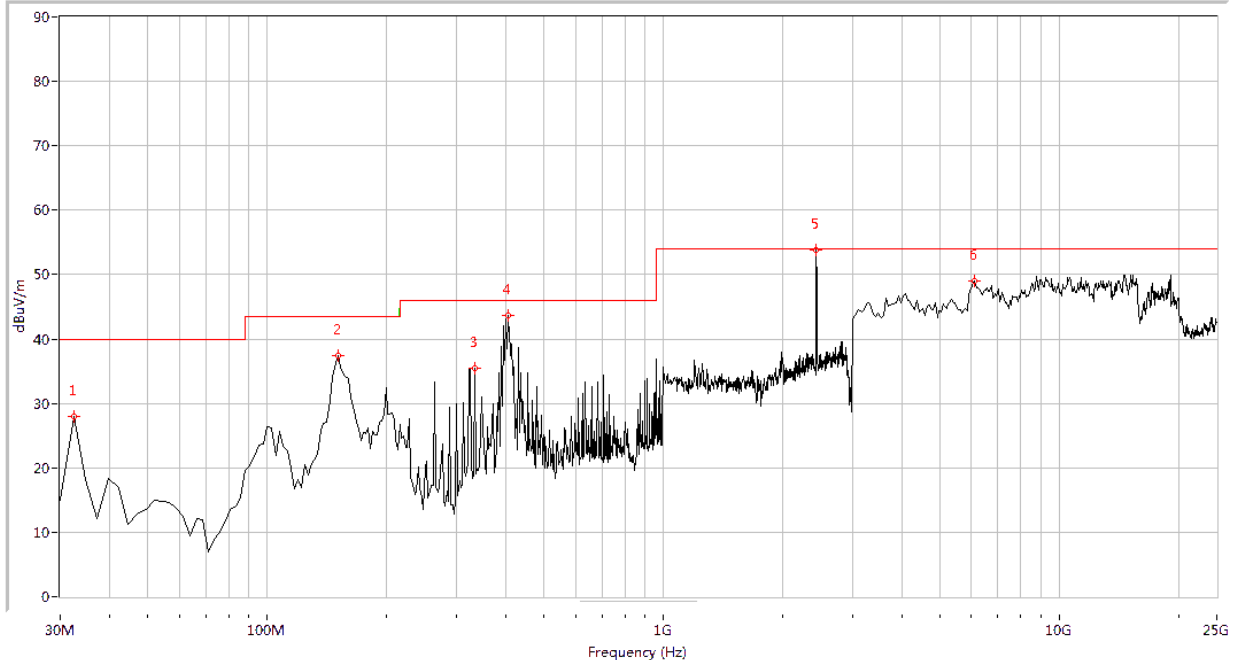
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
32.419	27.90	N.A	N.A	N.A	40.0	N.A	Horizontal	PASS
150.948	37.38	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
334.788	35.55	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
404.938	43.62	41.96	N.A	N.A	46.0	N.A	Horizontal	PASS
2441.000	53.76	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
6127.182	48.93	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

(30MHz to 25GHz, Antenna Horizontal @ ∏/4-DQPSK, channel 39)
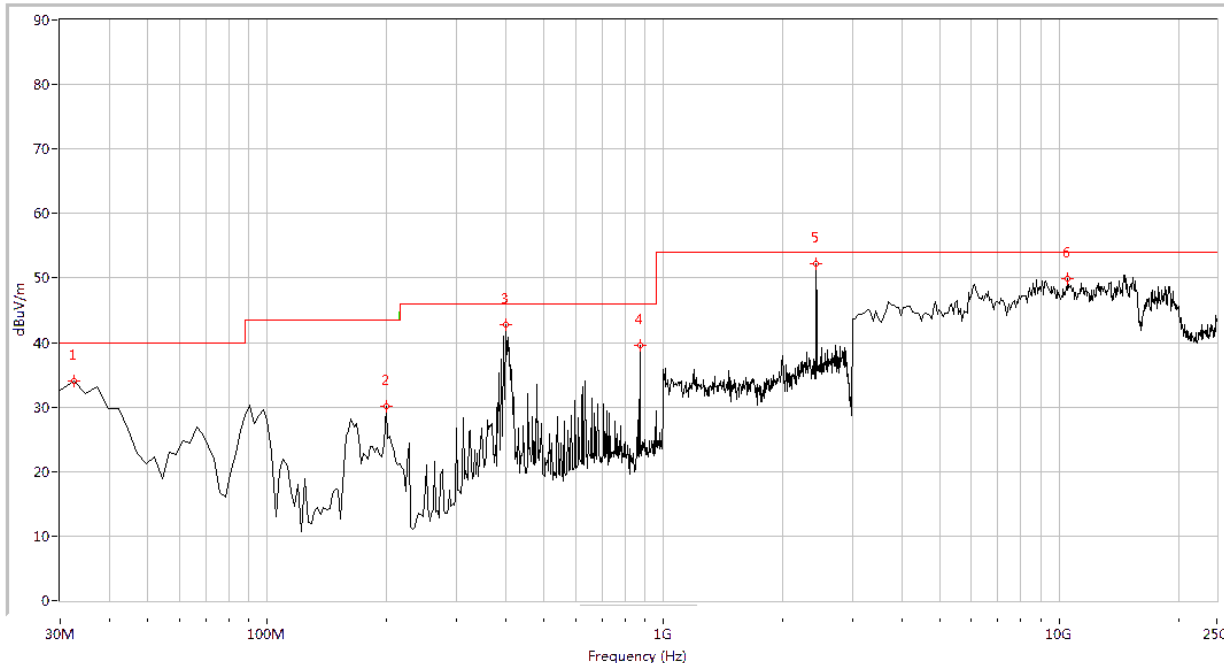
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
32.419	34.08	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
199.327	30.20	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
400.100	42.72	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
874.214	39.62	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
2441.000	52.28	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
10516.209	49.93	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(30MHz to 25GHz, Antenna Vertical @ ∏/4-DQPSK, channel 39)

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Plot for Channel = 78
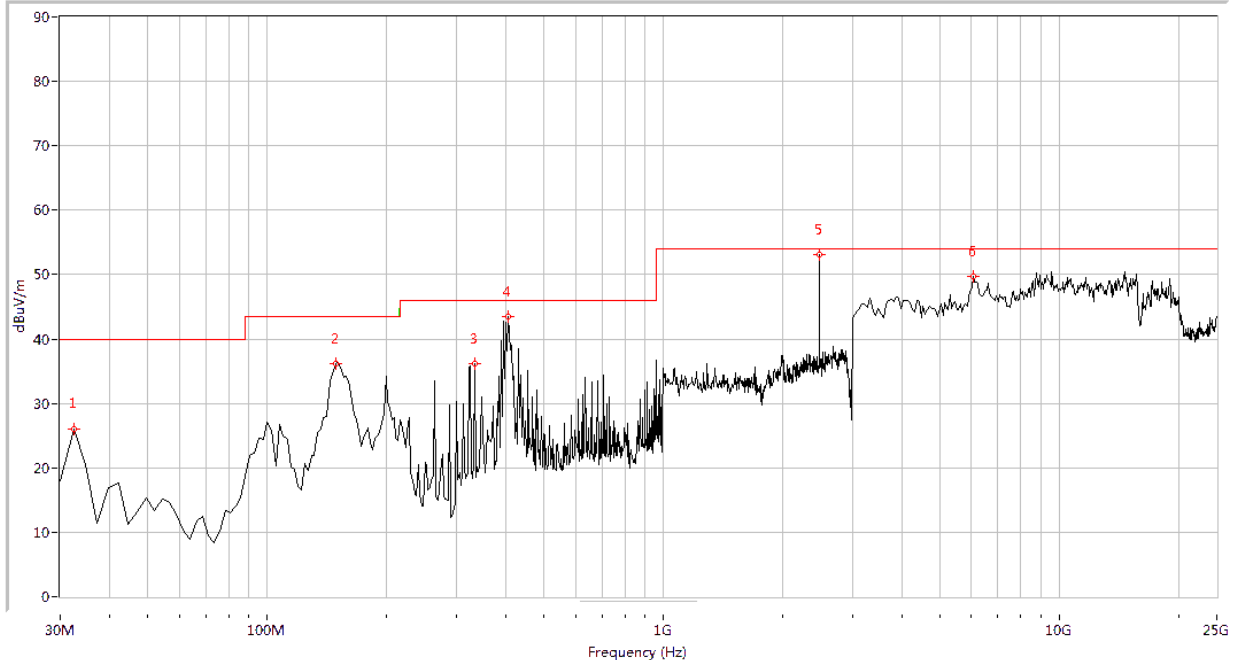
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
32.419	26.06	N.A	N.A	N.A	40.0	N.A	Horizontal	PASS
148.529	36.19	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
334.788	36.12	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
404.938	43.57	41.94	N.A	N.A	46.0	N.A	Horizontal	PASS
2480.000	53.17	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
6072.319	49.66	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

(30MHz to 25GHz, Antenna Horizontal @ ∏/4-DQPSK, channel 78)
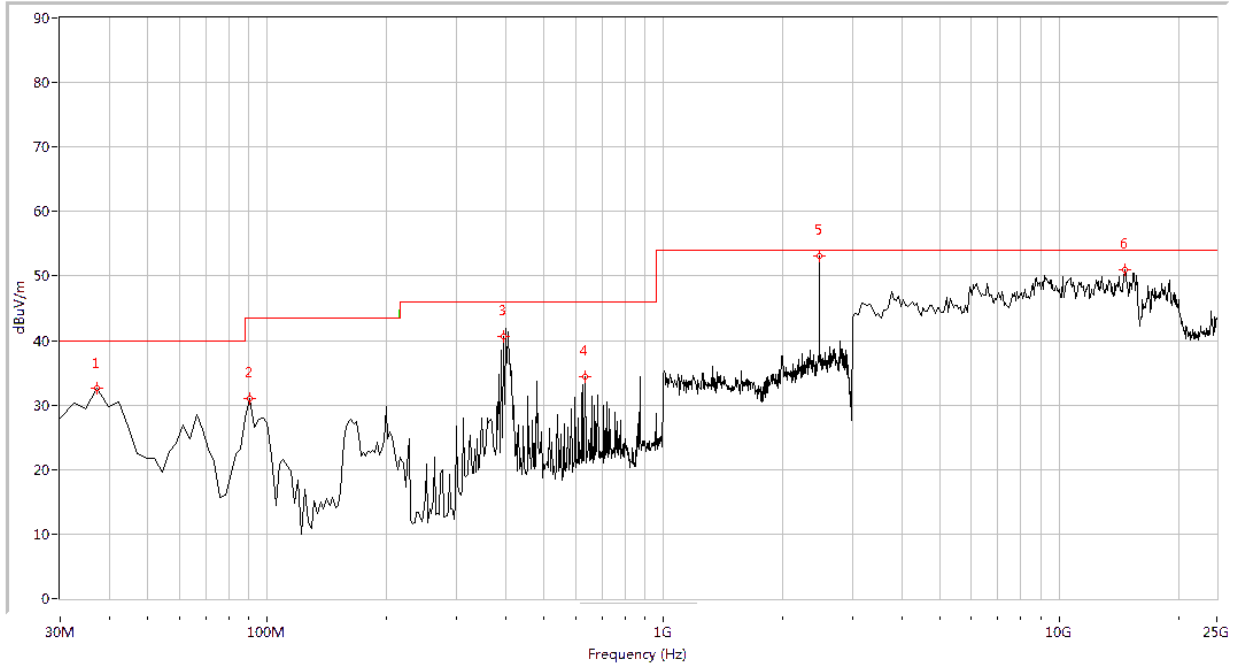
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
37.257	32.63	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
90.474	30.98	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
395.262	40.57	39.25	N.A	N.A	46.0	N.A	Vertical	PASS
634.738	34.32	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
2480.000	53.19	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
14685.786	51.04	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(30MHz to 25GHz, Antenna Vertical @ ∏/4-DQPSK, channel 78)

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2.10.4.3.　8-DPSK Mode：

A. Test Plots for the Whole Measurement Frequency Range:

Plots for Channel = 0
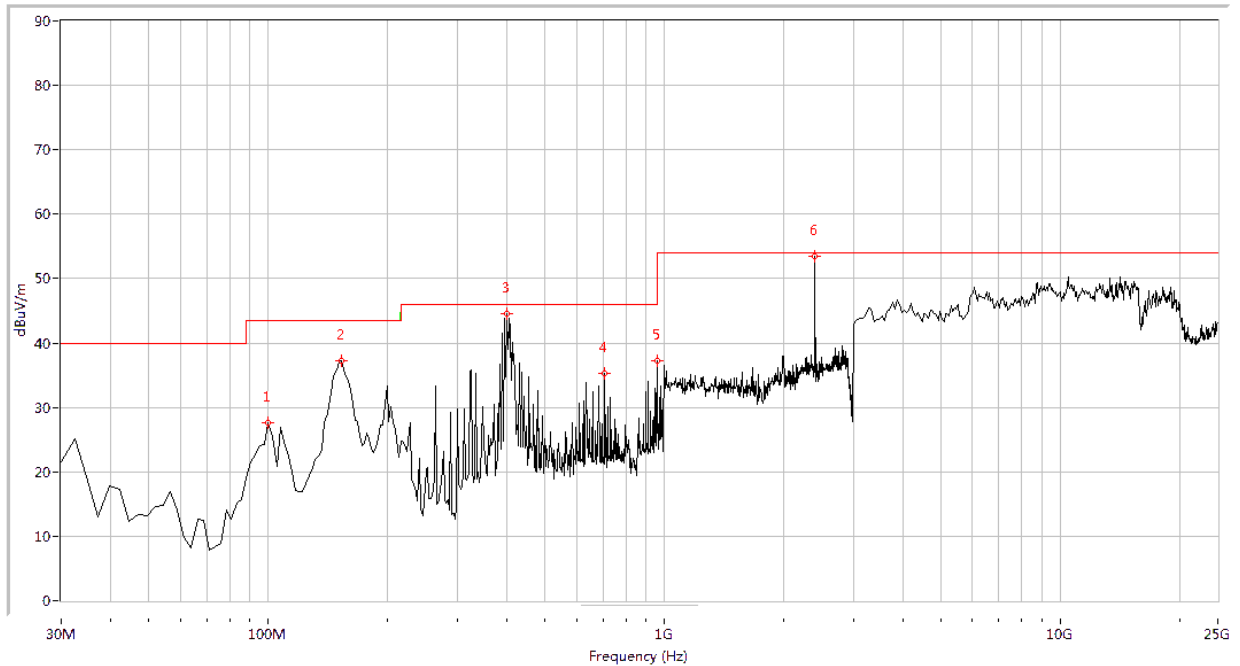
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
100.150	27.68	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
153.367	37.27	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
400.100	44.58	42.51	N.A	N.A	46.0	N.A	Horizontal	PASS
707.307	35.31	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
958.878	37.22	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
2402.000	53.41	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A

(30MHz to 25GHz, Antenna Horizontal @8-DPSK, channel 0)
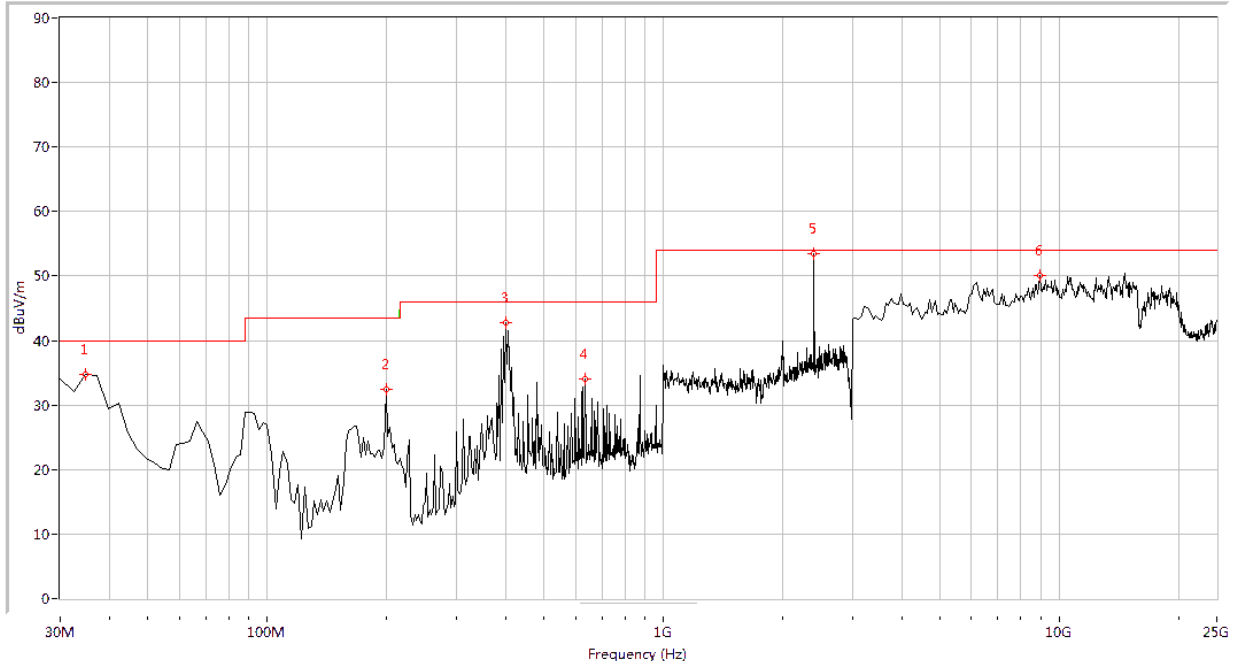
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.838	34.72	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
199.327	32.49	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
400.100	42.76	40.96	N.A	N.A	46.0	N.A	Vertical	PASS
634.738	34.04	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
2402.000	53.47	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
8925.187	50.04	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(30MHz to 25GHz, Antenna Vertical @8-DPSK, channel 0)

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Plot for Channel = 39
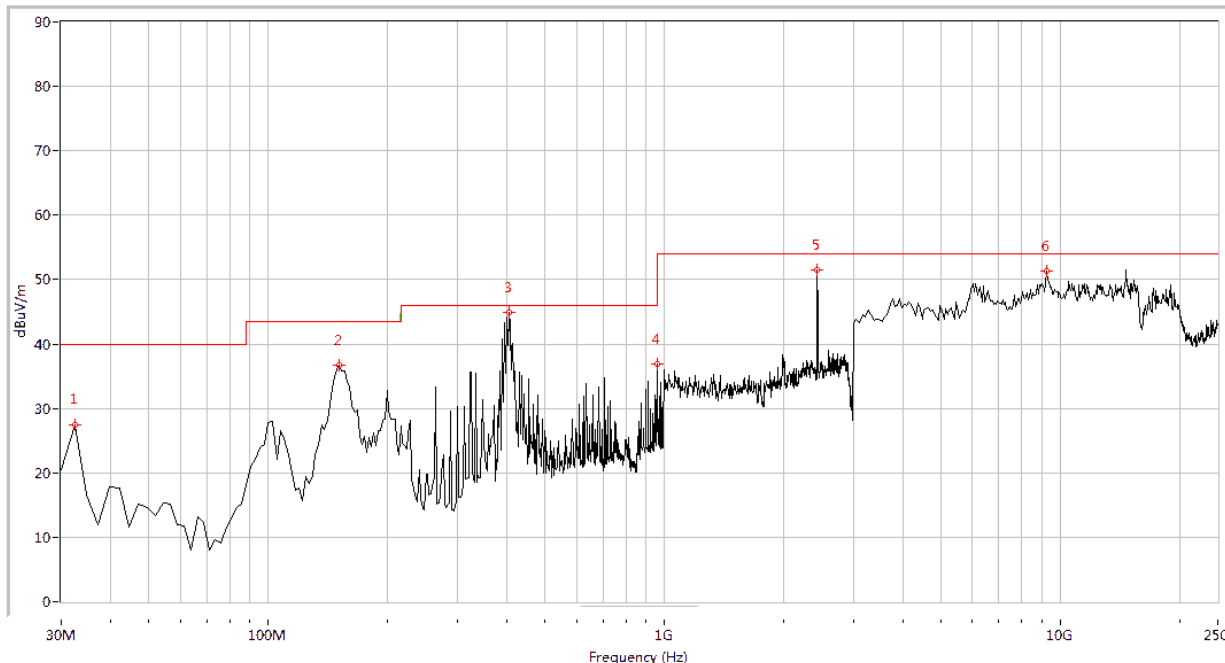
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
32.419	27.48	N.A	N.A	N.A	40.0	N.A	Horizontal	PASS
150.948	36.62	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
404.938	44.82	42.33	N.A	N.A	46.0	N.A	Horizontal	PASS
958.878	36.96	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
2441.000	51.50	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
9254.364	51.30	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

(30MHz to 25GHz, Antenna Horizontal @8-DPSK, channel 39)

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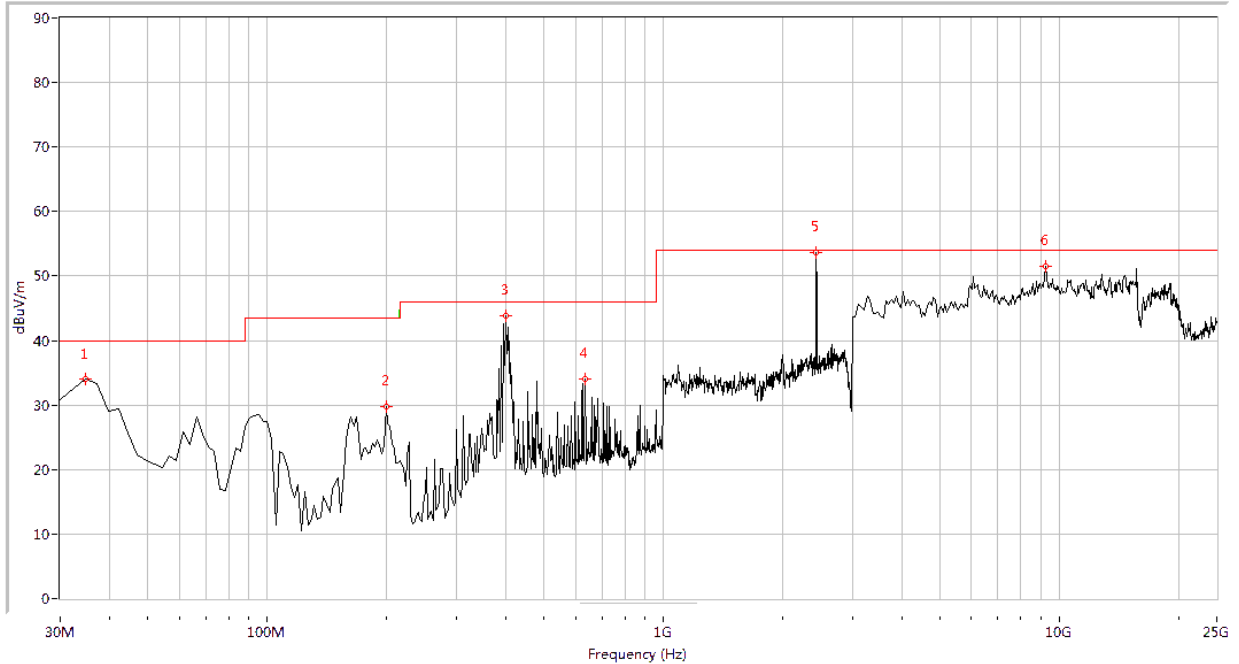
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.838	34.07	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
199.327	29.72	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
400.100	43.76	41.97	N.A	N.A	46.0	N.A	Vertical	PASS
634.738	34.01	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
2441.000	53.61	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
9254.364	51.42	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(30MHz to 25GHz, Antenna Vertical @8-DPSK, channel 39)

Plot for Channel = 78
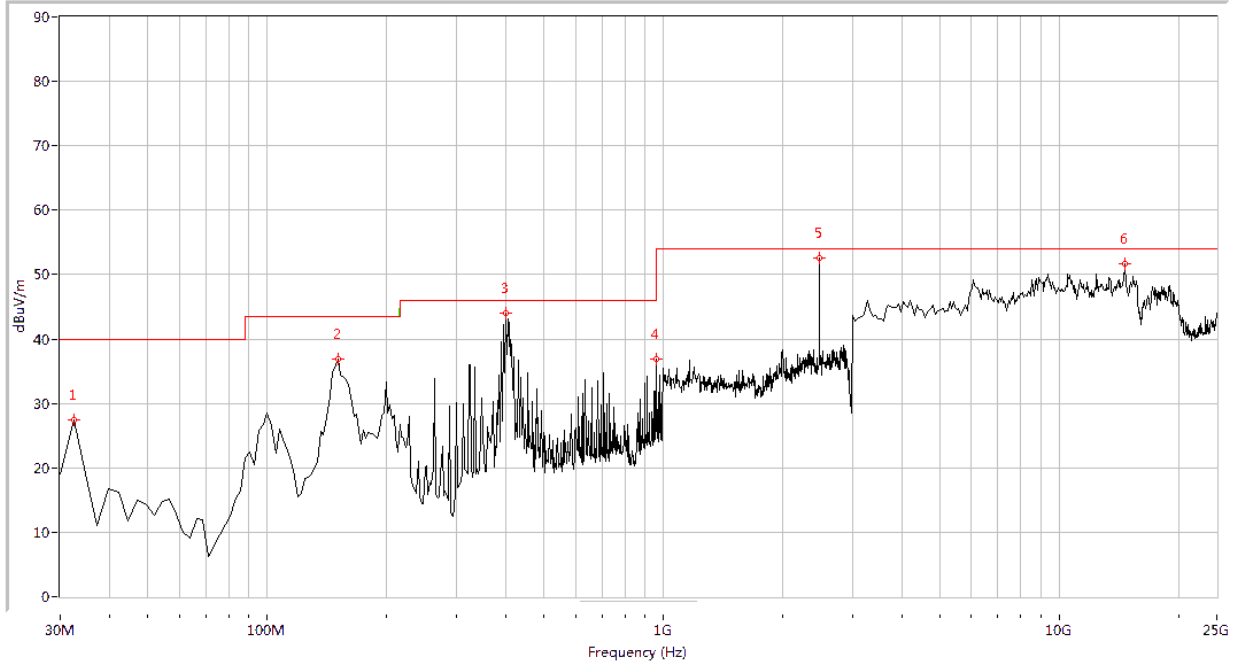
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
32.419	27.39	N.A	N.A	N.A	40.0	N.A	Horizontal	PASS
150.948	36.95	N.A	N.A	N.A	43.5	N.A	Horizontal	PASS
400.100	43.98	41.84	N.A	N.A	46.0	N.A	Horizontal	PASS
958.878	36.89	N.A	N.A	N.A	46.0	N.A	Horizontal	PASS
2480.000	52.59	N.A	N.A	N.A	N.A	N.A	Horizontal	N.A
14630.923	51.59	N.A	N.A	74.0	N.A	54.0	Horizontal	PASS

(30MHz to 25GHz, Antenna Horizontal @8-DPSK, channel 78)
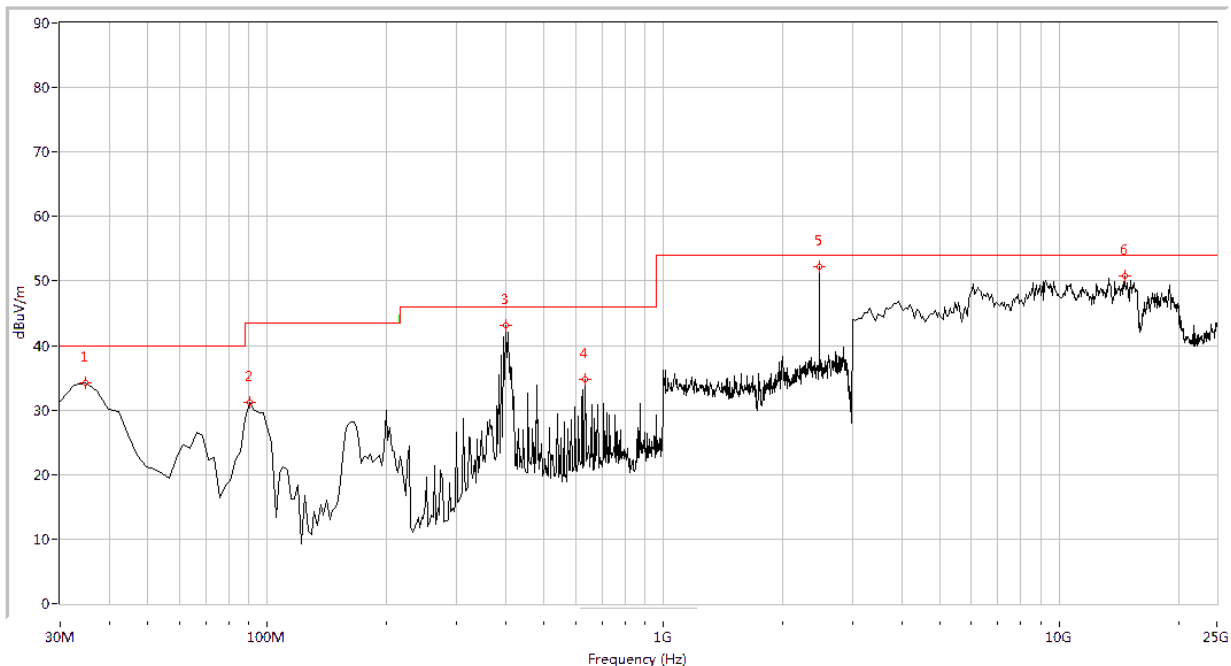
Fre. (MHz)	Pk	QP	AV	Limit-PK	Limit-QP	Limit-AV	Antenna	Verdict
34.838	34.30	N.A	N.A	N.A	40.0	N.A	Vertical	PASS
90.474	31.12	N.A	N.A	N.A	43.5	N.A	Vertical	PASS
400.100	43.10	41.53	N.A	N.A	46.0	N.A	Vertical	PASS
634.738	34.74	N.A	N.A	N.A	46.0	N.A	Vertical	PASS
2480.000	52.28	N.A	N.A	N.A	N.A	N.A	Vertical	N.A
14630.923	50.73	N.A	N.A	74.0	N.A	54.0	Vertical	PASS

(30MHz to 25GHz, Antenna Vertical @8-DPSK, channel 78)

MORLAB GROUP FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road,   Tel: 86-755-36698555   Fax: 86-755-36698525

Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China   Http://www.morlab.com   E-mail: service@morlab.cn

2.11. RF exposure evaluation

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4 \pi R^2}$$

Where:

S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

2.1.1 Limits for Maximum Permissible Exposure

According to FCC Part 1.1307, systems operating under the provisions of this section shall be operated in a manner the ensures that the public is not exposed to radio frequency energy level in excess of the commission's guidelines.

According to FCC Part 1.1310 RF exposure is calculated.

Limits for General Population/ Uncontrolled Exposure			
Frequency Range (MHz)	Electric Field Strength(E)(V/m)	Magnetic Field Strength (H)(A/m)	Power Density (S)(mW/cm^2)
0.3-1.34	614	1.63	(100)*
1.34-30	824/f	2.19/f	(180/f2)*
30-300	27.5	0.073	0.2
300-1500			f/1500
1500-100,000			1.0

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2.1.2 Test result

Maximum peak output power at antenna input terminal(dBm):	10.02
Maximum peak output power at antenna input terminal(mW):	10.04616
Source-based time-averaged output power:	--
Prediction distance(cm):	20
Predication frequency(MHz):	2441
Antenna Gain (typical) (dBi):	5
Power density at predication frequency at 20 cm(mW/cm^2):	0.00632
MPE limit for RF exposure at prediction frequency(mW/cm^2):	1.0

2.1.3 Conclusion

Since the test result is passed, the SAR measurement is not required.

3. General Information

1.1 Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

1.2 Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

1.3 Facilities and Accreditations

All measurement facilities used to collect the measurement data are located at FL.1, Building A, FeiYang Science Park, Block 67, BaoAn District, Shenzhen, 518101 P. R. China. The test site is constructed in conformance with the requirements of ANSI C63.10 2009, ANSI C63.4 2009 and CISPR Publication 22; the FCC registration number is 695796.

The IC registration number is 7183A-2.

1.4 Test Equipments Utilized

1.4.1 Conducted Test Equipments

Conducted Test Equipment						
No.	Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal. Due
1	System Simulator	6K00006210	MT8852B	Anritsu	2014.02.26	2015.02.25
2	Spectrum Analyzer	MY45101810	E4407B	Agilent	2014.02.26	2015.02.25
3	Power Splitter	NW521	1506A	Weinschel	2014.02.26	2015.02.25
4	Attenuator 1	(n.a.)	10dB	Resnet	2014.02.26	2015.02.25
5	Attenuator 2	(n.a.)	3dB	Resnet	2014.02.26	2015.02.25
6	EXA Signal Analzyer	MY51440152	N9010A	Agilent	2014.02.26	2015.02.25
7	RF cable	CB01	RF01	Morlab	N/A	N/A
8	Coaxial cable	CB02	RF02	Morlab	N/A	N/A
9	SMA connector	CN01	RF03	HUBER-SUHNER	N/A	N/A

1.4.2 Conducted Emission Test Equipments

Conducted Emission Test Equipments						
No.	Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal. Due
1	Receiver	US44210471	E7405A	Agilent	2014.02.26	2015.02.25
2	LISN	812744	NSLK 8127	Schwarzbeck	2014.02.26	2015.02.25
3	Service Supplier	100448	CMU200	R&S	2014.02.26	2015.02.25
4	Pulse Limiter (20dB)	9391	VTSD 9561-D	Schwarzbeck	2014.02.26	2015.02.25
5	Coaxial cable(BNC)	CB01	EMC01	Morlab	N/A	N/A

1.4.3 Radiated Test Equipments

Radiated Test Equipments

No.	Equipment Name	Serial No.	Type	Manufacturer	Cal. Date	Cal.Due Date
1	System Simulator	100448	CMU200	R&S	2014.02.26	2015.02.25
2	Receiver	US44210471	E7405A	Agilent	2014.02.26	2015.02.25
3	Test Antenna - Bi-Log	9163-274	9m*6m*6m	Albatross	2014.02.26	2015.02.25
4	Test Antenna - Horn	9120D-963	VULB 9163	Schwarzbeck	2014.02.26	2015.02.25
5	Test Antenna - Horn	71688	BBHA 9120D	Schwarzbeck	2014.02.26	2015.02.25
6	Test Antenna - Loop	1519-022	HL050S7	R&S	2014.02.26	2015.02.25
7	Reject Filter	(n.a.)	BRM50702	Micro-Tronics	2014.02.26	2015.02.25
8	Coaxial cable (N male)	CB02	EMC02	Morlab	N/A	N/A
9	Coaxial cable (N male)	CB03	EMC03	Morlab	N/A	N/A

1.4.4 Climate Chamber

Climate Chamber

No.	Equipment Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	Climate Chamber	2004012	HL4003T	Yinhe	2014.02.26	2015.02.25

1.4.5 Vibration Table

Vibration Table

No.	Equipment Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	Vibration Table	N/A	ACT2000-S015L	CMI-COM	2014.02.26	2015.02.25

1.4.6Anechoic Chamber

Anechoic Chamber

No.	Equipment Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	Anechoic Chamber	N/A	9m*6m*6m	Albatross	2014.02.26	2015.02.25

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