FCC Test Report

for

Wi-Fi module

Model Number	**:**	**Home Extender Family**
FCC ID	**:**	**TFJHE7620**
Report Number	**:**	**RF-U010-1503-046**
Date of Receipt	**:**	**March 10, 2015**
Date of Report	**:**	**May 15, 2015**

Prepared for

Uniform Industrial Corp.

47436 Fremont Blvd., Fremont, CA 94538-6512, USA.

Prepared by

Central Research Technology Co.

EMC Test Laboratory

No.11, Lane41, Fushuen St., Jungshan Chiu, Taipei, Taiwan, 104, R.O.C.

NVLAP LAB CODE 200575-0

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Verification of Compliance

Equipment under Test	**:** Wi-Fi module
Model No.	**:** Home Extender Family
FCC ID	**:** TFJHE7620
Manufacturer	**:** Uniform Industrial Corp.
Applicant	**:** Uniform Industrial Corp.
Address	**:** 47436 Fremont Blvd., Fremont, CA 94538-6512, USA
Applicable Standards	**:** 47 CFR part 15, Subpart C ANSI 63.10:2009
Date of Testing	**:** March 12~ 23, 2015
Deviation	**:** N/A
Condition of Test Sample	**:** Mass Production

We, **Central Research Technology Co**., hereby certify that one sample of the designated product was tested in our facility during the period mentioned above. The test records, data evaluation and Equipment Under Test (EUT) configurations shown in the present report are true and accurate representation of the measurements of the sample's RF characteristics under the conditions herein specified.

The test results show that the EUT as described in the present report is in compliance with the requirements set forth in the standards mentioned above and apply to the tested sample identified in the present report only. The test report shall not be reproduced, except in its entirety, without the written approval of Central Research Technology Co.

PREPARED BY : _____ , **DATE :** May 15, 2015
(Cathy Chen/ Technical Manager)

APPROVED BY : _____ , **DATE :** May 15, 2015
(Tsun-Yu Shih/General Manager)

Contents

1 General Description

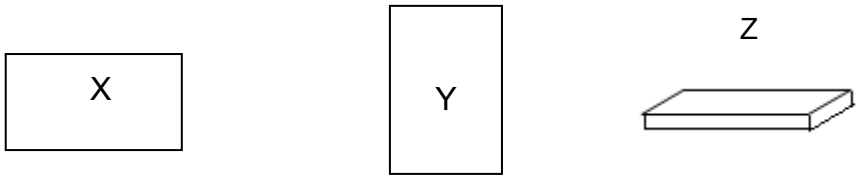
1.1 General Description of EUT

Equipment under Test	:	Wi-Fi module
Model No.	:	Home Extender Family
Power in	:	5Vdc
Test Voltage	:	120Vac/60Hz to the power supply
Manufacturer	:	Uniform Industrial Corp.
Channel Numbers	:	11
Frequency Range	:	2412~2462MHz
Function Modulation	:	OFDM
Modular Function	:	IEEE 802.11n HT20
Antenna Spec	:	Antenna Gain : 5dBi
Function Description	:	

The EUT is used to transmit and receive data both. Please refer to the user's manual for the details.

Perform the functions of EUT continuously by executing the test program supplied by manufacturer.

Since the transmitter is considered a portable unit, it was pre-tested on the positioned in each of 3 axis. Therefor only the test data of the worse case - X axiz was used for Radiated test.



1.2 Test Methodology

IEEE 802.11 HT20

Low Channel (MHz)	Middle Channel (MHz)	Hingh Channel (MHz)
2412	2437	2462

Pretest frequency: 2412MHz

MCS Index	Test Data Rate(Mbps) / output power(dBm)			
	Long GI		Short GI	
0	6.5	18.92	7.2	18.78
1	13	18.93	14.4	18.92
2	19.5	18.75	21.7	18.76
3	26	18.87	28.9	18.74
4	39	18.92	43.3	18.79
5	52	18.92	57.8	18.55
6	58.5	18.83	65	18.66
7	65	18.75	72.2	18.53

According to the preliminary test form peak output power, it to find the data rate 13Mbps for the worst test result. It was taken as the representative condition for test and their data are recorded in the present document.

1.3 Applied standards

(1) Conduction Emission Requirement

For intentional device, according to §15.207(a) line conduction emission limit is as below table.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 - 5	56	46
5 - 30	60	50

* Decreases with the logarithm of the frequency.

(2) Radiated Emission Requirement

For intentional device, according to §15.209, the general requirement of field strength of radiated emissions from intentional radiator at a distance of 3 meters shall not exceed the below table.

Frequency (MHz)	Measurement Distance (m)	Field Strength (uV/m)	Field Strength (dBuV/m)
30 – 88	3	100	40.0
88 – 216	3	150	43.5
216 – 960	3	200	46.0
960 – 1610	3	500	54.0
above 1610	3	500	54.0

Note 1- The lower limit shall apply at the transition frequency.

(3) 6dB Bandwidth

According to 15.247(a)(2), Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

(4) Maximun Peak Output Power

According to 15.247(b)(3), For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

(5) 100kHz Bandedge

According to 15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

(6) Power spectral density

According to 15.247(e),for digitally modulated systems,the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

(7) Restricted Band

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
[2]1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(2)
13.36 - 13.41			

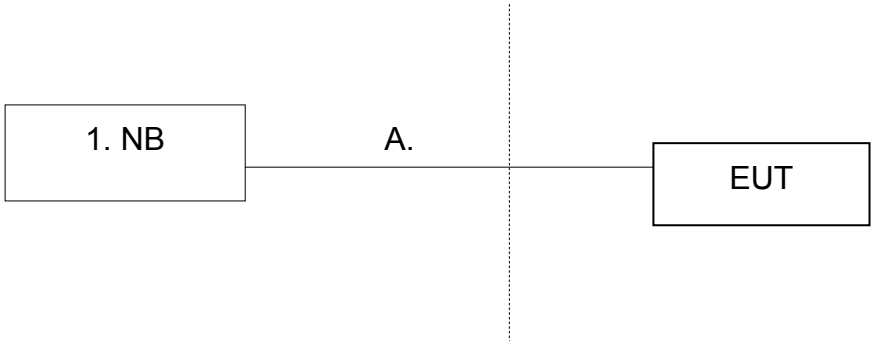
[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

1.4 The Support Units

No.	Unit	Model No./ Serial No.	Trade Name	Power Code	Supported by lab.
1.	NB	6520s	Compaq	N/A	

1.5 Layout of Setup



Connecting Cables :

No.	Cable	Length	Shielded	Core	Shielded Backshell	Supported by lab.	Note
A.	RJ45 Cable	1.1m				✓	

1.6 Test Capability

Test Facility

The test facility used for evaluating the conformance of the EUT with each standard in the present report meets what required in CISPR16-1-4, CISPR16-2-3 and ANSI C63.10:2009.

Test Room	Type of Test Room	Descriptions
TR1	10m semi-anechoic chamber (23m×14m×9m)	Complying with the NSA requirements in documents CISPR 22 and ANSI C63.10:2009. For the radiated emission measurement.
TR11	3m semi-anechoic chamber (9m × 6m × 6m)	
TR13	Test Site	For the RF conducted emission measurement.
TR5	Shielding Room (8m×5m×4m)	For the conducted emission measurement.

Test Laboratory Competence Information

Central Research Technology Co. has been accredited / filed / authorized by the agencies listed in the following table.

Certificate	Nation	Agency	Code	Mark
Accreditation Certificate	USA	NVLAP	200575-0	ISO/IEC 17025
	R.O.C. (Taiwan)	TAF	0905	ISO/IEC 17025
	R.O.C. (Taiwan)	BSMI	SL2-IN-E-0033, SL2-IS-E-0033, SL2-R1/R2-E-0033, SL2-A1-E-0033 SL2-L1-E-0033	ISO/IEC 17025
Site Filing Document	USA	FCC	474046, TW1053	Test facility list & NSA/SVSWR Data
	Canada	IC	4699A-1,-3	Test facility list & NSA Data
	Japan	VCCI	R-1527,C-1609,T-1441, G-10, C-4400, G-614, T-1334	Test facility list & NSA/SVSWR Data
Authorization Certificate	Germany	TUV	UA50235497	ISO/IEC 17025
	Norway	Nemko	ELA212	ISO/IEC 17025

The copy of each certificate can be downloaded from our web site: www.crc-lab.com

1.7 Measurement Uncertainty

The assessed measurement uncertainty with a suitable coverage factor K to ensure 95% confidence level for the normal distribution are shown as below, the values are less than U_{cispr} in table 1 of CISPR 16-4-2.

Test Item	Measurement Uncertainty	
Radiated Emission: (30MHz~200MHz)	Horizontal 3.9dB；Vertical 4.2dB	
Radiated Emission: (200MHz~1GHz)	Horizontal 4.5dB；Vertical 5.7dB	
Radiated Emission: (1GHz~6GHz)	Horizontal 4.3dB；Vertical 4.5dB	
Radiated Emission: (6GHz~18GHz)	Horizontal 4.3dB；Vertical 4.4dB	
Line Conducted Emission	ESH2-Z5	3.3dB
	ENV 4200	3.1dB

2 Conducted Emission Measurement

Test Result : PASS

2.1 Applied Standard

For intentional device, according to §15.207(a) line conduction emission limit is as below table.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 - 5	56	46
5 - 30	60	50

* Decreases with the logarithm of the frequency.

Note:

For a device with a permanent antenna operating at or below 30 MHz, the FCC will accept measurements done with a suitable dummy load, in lieu of the permanent antenna under the following conditions: (1) perform the AC line conducted tests with the permanent antenna to determine compliance with the Section 15.207 limits outside the transmitter's fundamental emission band; (2) retest with a dummy load in lieu of the permanent antenna to determine compliance with the Section 15.207 limits within the transmitter's fundamental emission band.

2.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Test Receiver	R&S	ESCS 30/ 836858/021	Jan. 16, 2015	Jan. 16, 2016
LISN	R&S	ESH2-Z5/ 880669/039	March 15, 2014	March 15, 2015
2nd LISN	R&S	ENV4200/ 833209/010	April 2, 2014	April 2, 2015
50Ω terminator	R&S	N/A/ 001	Aug. 19, 2014	Aug. 19, 2015
RF Switch	R&S	RSU28/ 338965/002	Feb. 6, 2015	Aug. 6, 2015
RF Cable	N/A	N/A/ C0052 ~ 56	Feb. 6, 2015	Aug. 6, 2015
Dummy Load	N/A	50Ω 1/4W Resistance	NCR	NCR
Test Software	Audix	e3/ Ver. 5.2004-2-19k	NCR	NCR
TR5 shielded room	ETS LINDGREN	TR5/ 15353-F	NCR	NCR

Note:
1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.

Instrument Setting

IF BW	Measurement Time	Detector	Trace	Comment
9kHz	1 second	Quasi-Peak / Average	Maxhold	

Climatic Condition

Ambient Temperature：26°C; Relative Humidity : 67%

2.3 Test Procedures

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. If the EUT is tabletop equipment, it was placed on a non-conducted table with a height of 0.8 meters above the reference ground plane and 0.4 meters from the conducting wall of the shielded room. Also if the EUT is floor-standing equipment, it was placed on a non-conducted support with a height of 12 millimeters above the reference ground plane.

c. Connect the EUT's power source to the appropriate power mains through the LISN.

d. All the other peripherals are connected to the 2nd LISN, if any.

e. The LISN was placed 0.8 meters from the EUT and at least 0.8 meters from other units and other metal planes.

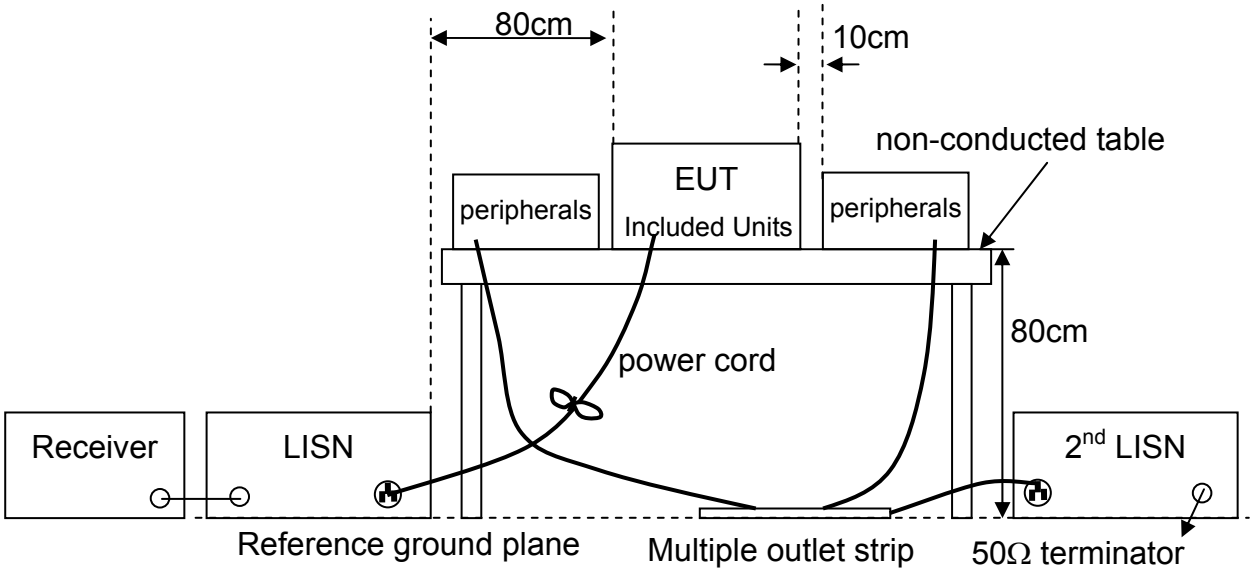
f. Measure the conducted emissions on each power line (Neutral Line and Line 1 – Hot side) of the EUT's power source by using the test receiver connected to the coupling RF output port of LISN.

g. Rapidly scan the signal from 150kHz to 30MHz by using the receiver through the Maximum-Peak detector to determine those frequencies associated with higher emission levels for each measured line.

h. Then measure the maximum level of conducted disturbance for each frequency found from step g. by using the receiver through the Quasi-Peak and Average detectors per CISPR 16-1.

i. Record the level for each frequency and compare with the required limit.

2.4 Test Configurations



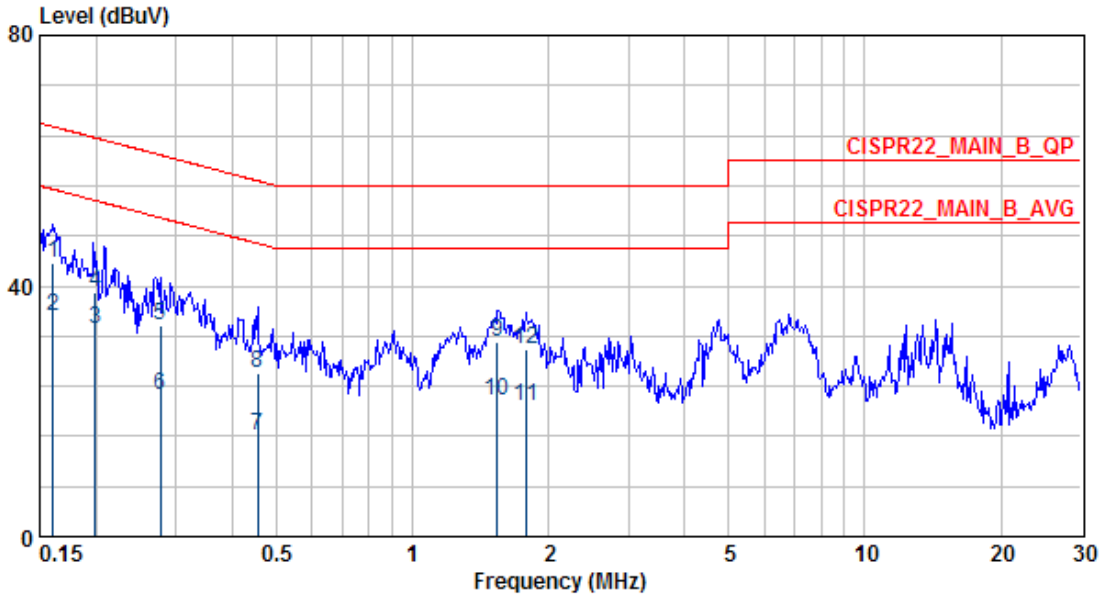
2.5 Test Results

Test Mode : **2437MHz, Continuous Transmitting**

Tester : DER-JAN KEN

Frequency Range : 150kHz~30MHz

Phase : **Line**



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB		
1 @	0.161	43.63	0.31	43.32	65.43	-21.80	LINE	QP
2 @	0.161	35.24	0.31	34.93	55.43	-20.19	LINE	AVERAGE
3 @	0.199	33.11	0.31	32.80	53.64	-20.53	LINE	AVERAGE
4	0.199	39.10	0.31	38.79	63.64	-24.54	LINE	QP
5	0.277	33.71	0.32	33.39	60.90	-27.19	LINE	QP
6	0.277	22.68	0.32	22.36	50.90	-28.22	LINE	AVERAGE
7	0.454	16.03	0.33	15.70	46.80	-30.77	LINE	AVERAGE
8	0.454	26.21	0.33	25.88	56.80	-30.59	LINE	QP
9	1.544	30.99	0.41	30.58	56.00	-25.01	LINE	QP
10	1.544	21.69	0.41	21.28	46.00	-24.31	LINE	AVERAGE
11	1.781	20.93	0.43	20.50	46.00	-25.07	LINE	AVERAGE
12	1.781	29.98	0.43	29.55	56.00	-26.02	LINE	QP

Note:

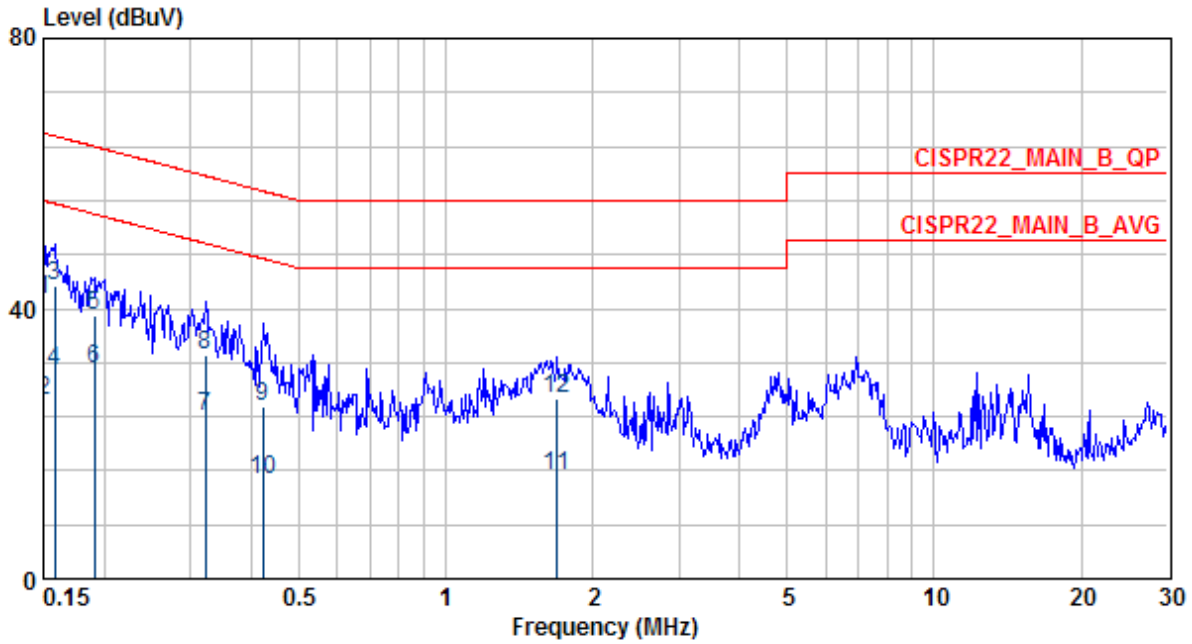
1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + insertion loss of LISN.
3. Q.P. is abbreviation of quasi-peak.

Test Mode : **2437MHz, Continuous Transmitting**

Tester : DER-JAN KEN

Frequency Range : 150kHz~30MHz

Phase : **Neutral**



	Freq	Level	Factor	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.150	41.43	0.34	41.09	66.00	-24.57	NEUTRAL	QP
2	0.150	26.29	0.34	25.95	56.00	-29.71	NEUTRAL	AVERAGE
3 @	0.158	43.23	0.34	42.89	65.56	-22.33	NEUTRAL	QP
4	0.158	30.70	0.34	30.36	55.56	-24.86	NEUTRAL	AVERAGE
5	0.190	38.92	0.34	38.58	64.02	-25.10	NEUTRAL	QP
6	0.190	31.14	0.34	30.80	54.02	-22.88	NEUTRAL	AVERAGE
7	0.322	23.89	0.35	23.54	49.66	-25.78	NEUTRAL	AVERAGE
8	0.322	33.14	0.35	32.79	59.66	-26.53	NEUTRAL	QP
9	0.421	25.60	0.35	25.25	57.42	-31.82	NEUTRAL	QP
10	0.421	14.59	0.35	14.24	47.42	-32.83	NEUTRAL	AVERAGE
11	1.689	15.30	0.44	14.86	46.00	-30.70	NEUTRAL	AVERAGE
12	1.689	26.68	0.44	26.24	56.00	-29.32	NEUTRAL	QP

Note:
1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + insertion loss of LISN.
3. Q.P. is abbreviation of quasi-peak.

3 6dB Bandwidth

Result: Pass

3.1 Applied standard

According to 15.247(a)(2), Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

3.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No. /Serial No.	Last Calibration Date	Calibration Due Date
Spectrum Analyzer	Agilent	E4405B/ MY45106706	May 23, 2014	May 23, 2015
Test Site	N.A.	TR13	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR:No Calibration Required.

Instrument Setting

RBW	VBW	Detector	Trace	Comment
100kHz	300kHz	Peak	Maxhold	

Climatic Condition

Ambient Temperature：25℃ Relative Humidity :60%

3.3 Measurement Procedure

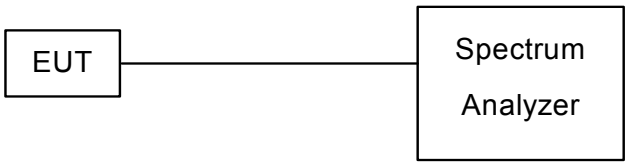
a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. A software provided by client enabled the EUT to transmit data at low, middle and high channel frequencies individually.

c. Test procedures follow KDB 558074 D01 DTS Measurement Guidance v03r02 Section 8.0 option 1.

d. Measure the 6dB bandwidth and compare with the required limit.

3.4 Test configuration

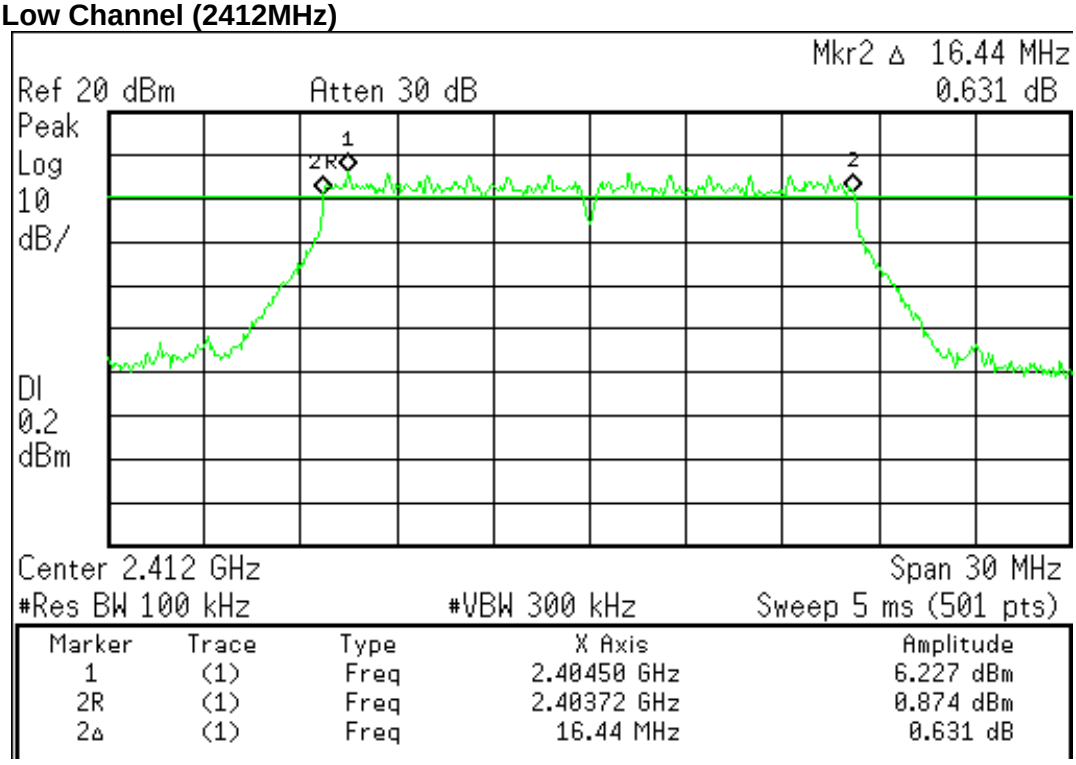


3.5 Test Data

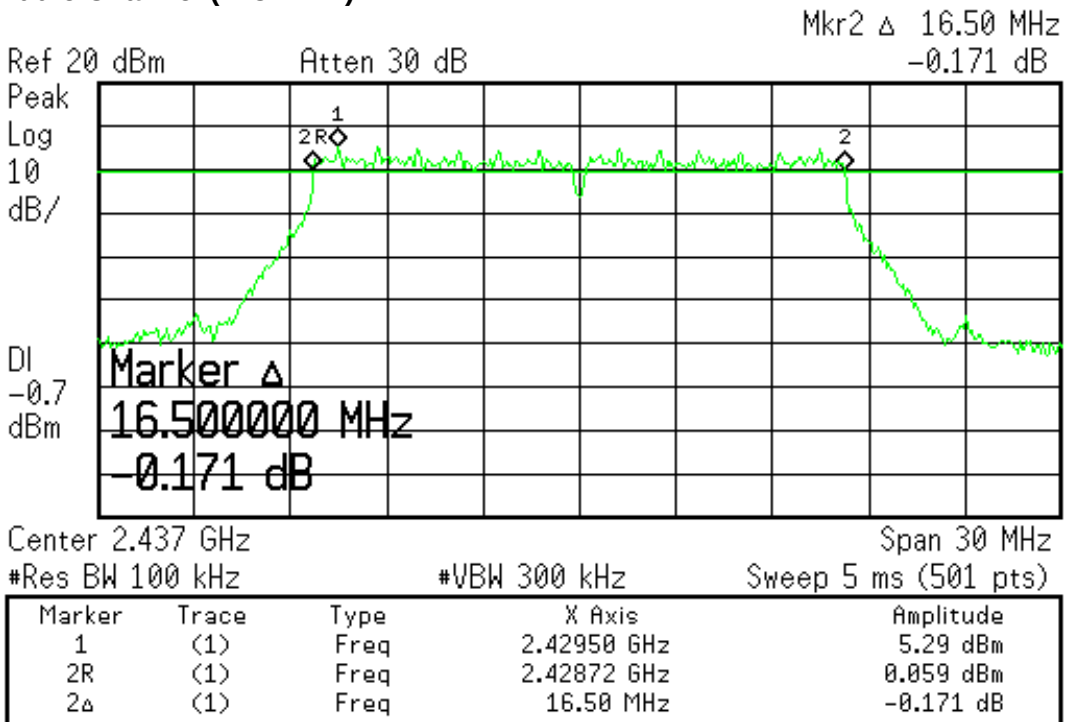
Test Mode : Continuous Transmitting **Tester :** Gary

Operating Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (kHz)
2412	16.44	500
2437	16.50	500
2462	16.50	500

Low Channel (2412MHz)

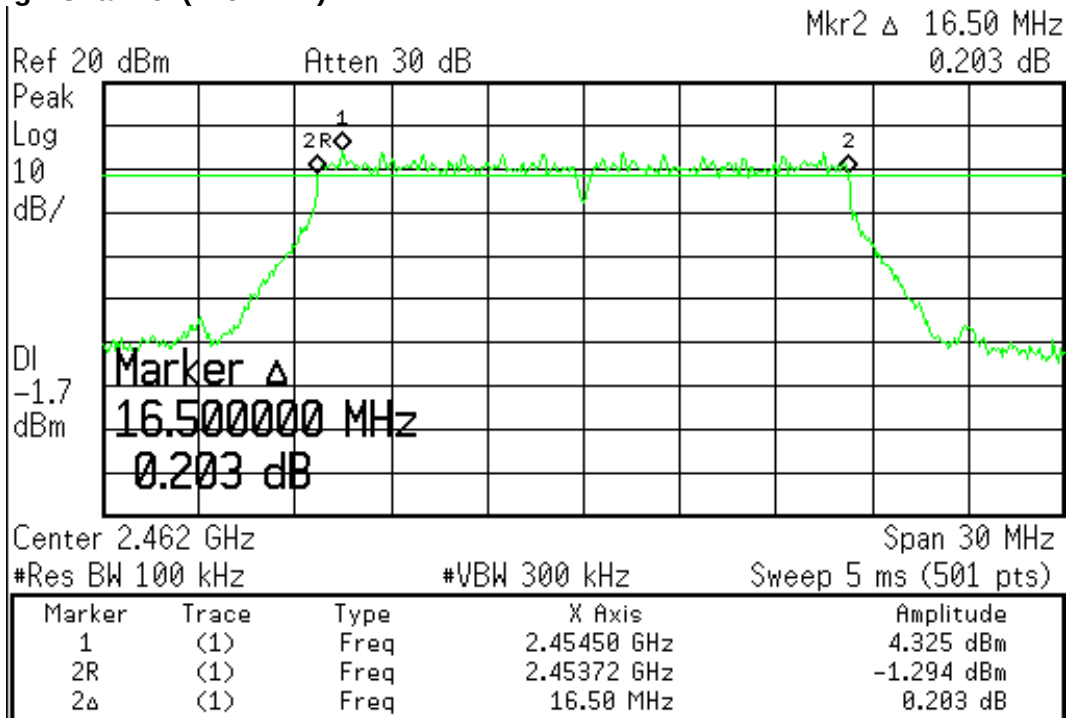


Middle Channel (2437MHz)



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.42950 GHz	5.29 dBm
2R	(1)	Freq	2.42872 GHz	0.059 dBm
2Δ	(1)	Freq	16.50 MHz	-0.171 dB

High Channel (2462MHz)



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.45450 GHz	4.325 dBm
2R	(1)	Freq	2.45372 GHz	-1.294 dBm
2Δ	(1)	Freq	16.50 MHz	0.203 dB

4 Maximum Peak Output Power

Result: Pass

4.1 Applied standard

According to 15.247(b)(3), For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

4.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Spectrum Analyzer	Agilent	E4405B/ MY45106706	May 23, 2014	May 23, 2015
Test Site	N.A.	TR13	NCR	NCR

Note:

1.The calibrations are traceable to NML/ROC.

2.NCR : No Calibration Required.

Instrument Setting

RBW	VBW	Detector	Trace	Comment
300kHz	1MHz	Average	Maxhold	

Climatic Condition

Ambient Temperature：25℃ Relative Humidity :60%

4.3 Measurement Procedure

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. The software provided by client enabled the EUT to transmit data at lowest, middle and highest channel frequencies individually.

c. Test procedures follow KDB 558074 D01 DTS Measurement Guidance v03r02 section 9.2.2.2.

d. Measurement the maximum peak output and compare with the required limit.

4.4 Test configuration

4.5 Test Data

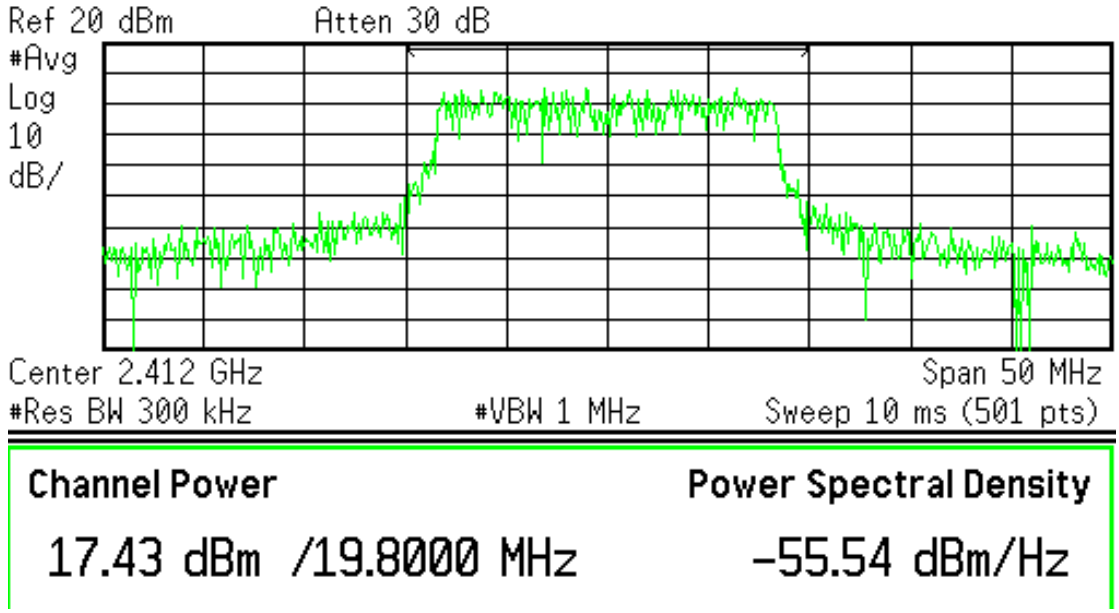
Test Mode : Continuous Transmitting **Tester :** Gary

Operating Frequency (MHz)	Reading Data (dBm)	Correction Factor (dB)	Emission (dBm)	Limit (dBm)	Margin (dB)
2412	17.43	1.5	18.93	30	11.07
2437	16.49	1.5	17.99	30	12.01
2462	15.54	1.5	17.04	30	12.96

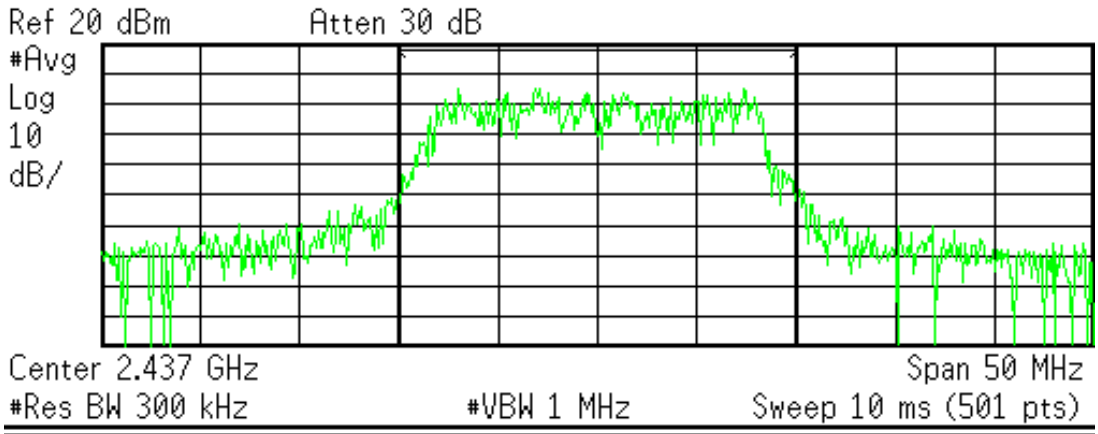
Note:

1. Correction Factor (dB) = Cable Loss + Attenuator
2. Emission (dBm) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission

Low Channel (2412MHz)

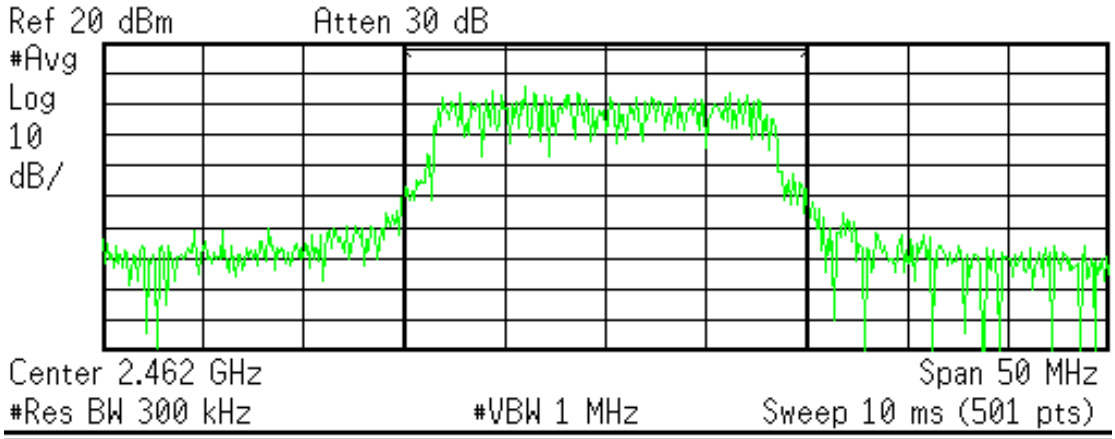


MiddleChannel (2437MHz)



Channel Power	Power Spectral Density
16.49 dBm /20.0000 MHz	-56.52 dBm/Hz

High Channel (2462MHz)



Channel Power	Power Spectral Density
15.54 dBm /20.0000 MHz	-57.47 dBm/Hz

5 Peak Power Spectral Density

Result: Pass

5.1 Applied standard

According to 15.247(e),for digitally modulated systems,the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

5.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No. /Serial No.	Last Calibration Date	Calibration Due Date
Spectrum Analyzer	Agilent	E4405B/ MY45106706	May 23, 2014	May 23, 2015
Test Site	N.A.	TR13	NCR	NCR

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR:No Calibration Required.

Instrument Setting

RBW	VBW	Detector	Trace	Comment
30kHz	100kHz	Peak	Maxhold	

Climatic Condition

Ambient Temperature：25℃ Relative Humidity :60%

5.3 Measurement Procedure

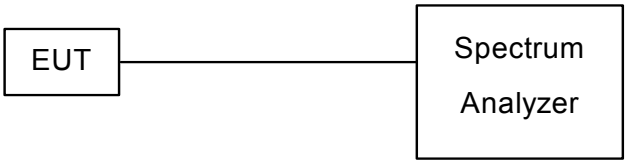
a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. A software provided by client enabled the EUT to transmit data at low, middle and high channel frequencies individually.

c. Test procedures follow KDB 558074 D01 DTS Measurement Guidance v03r02 section 10.3.

d. Measure the peak power spectrum density and compare with the required limit.

5.4 Test configuration



5.5 Test Data

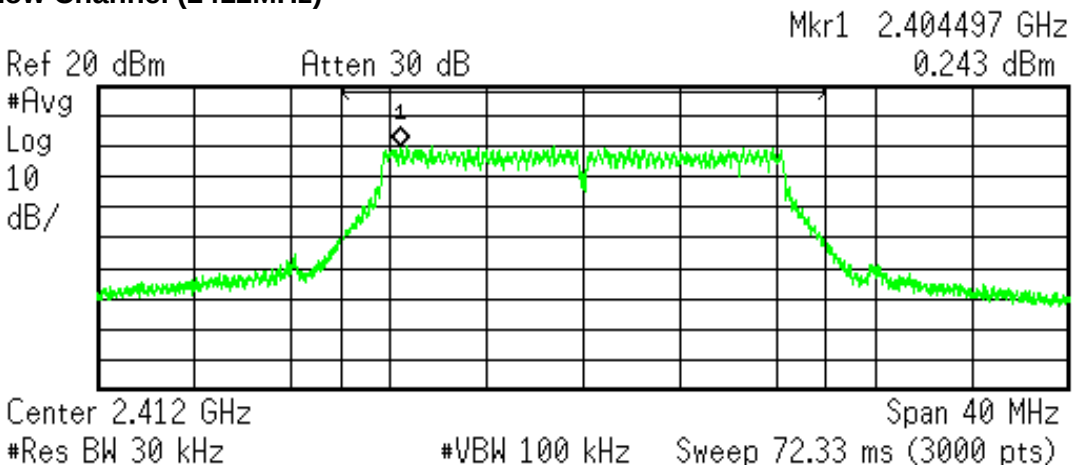
Test Mode : Continuous Transmitting **Tester** : Gary

Operating Frequency (MHz)	Reading Data (dBm)	Correction Factor (dB)	Emission (dBm)	Limit (dBm)	Margin (dB)
2412	0.243	1.5	1.743	8	6.257
2437	-0.741	1.5	0.759	8	7.241
2462	-1.275	1.5	0.225	8	7.775

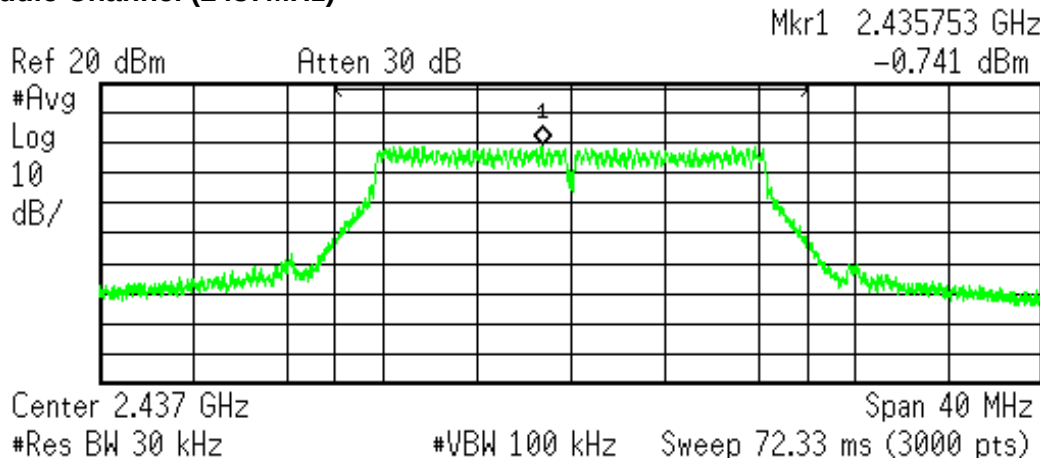
Note:

1. Correction Factor (dB) = Cable Loss + Attenuator
2. Emission (dBm) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission

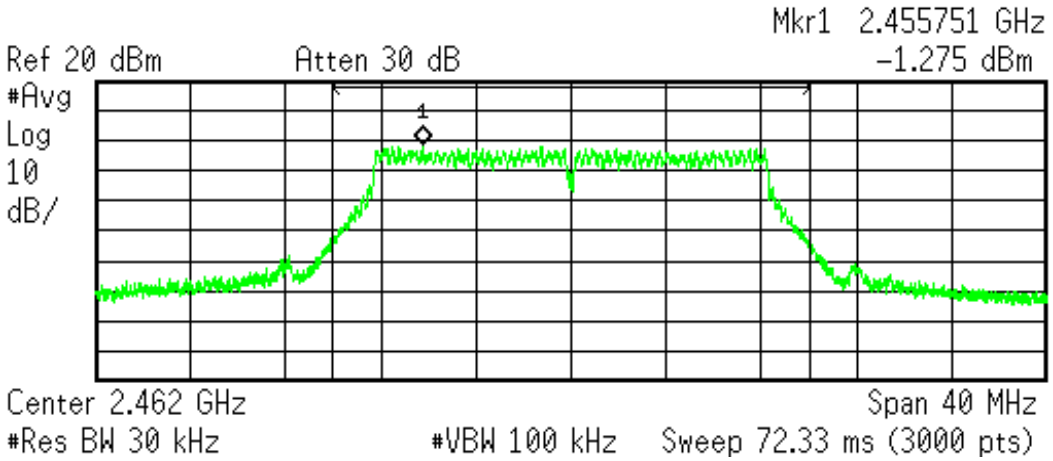
Low Channel (2412MHz)



Middle Channel (2437MHz)



High Channel (2462MHz)



6 RF Antenna Conducted spurious

Result: Pass

6.1 Applied standard

According to 15.247(c),in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

6.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Spectrum Analyzer	Agilent	E4405B/ MY45106706	May 23, 2014	May 23, 2015
Test Site	N.A.	TR13	NCR	NCR

Note:

1.The calibrations are traceable to NML/ROC.

2.NCR : No Calibration Required.

Instrument Setting

RBW	VBW	Detector	Trace	Comment
100kHz	300kHz	Peak	Maxhold	

Climatic Condition

Ambient Temperature：25℃ Relative Humidity :60%

6.3 Measurement Procedure

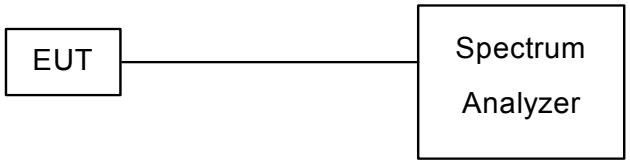
a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. The software provided by client enabled the EUT to transmit data at low and high channel frequencies individually.

c. Test procedures follow KDB 558074 D01 DTS Measurement Guidance v03r02 section 11.

d. Measurement the conducted spurious and compare with the required limit.

6.4 Test configuration

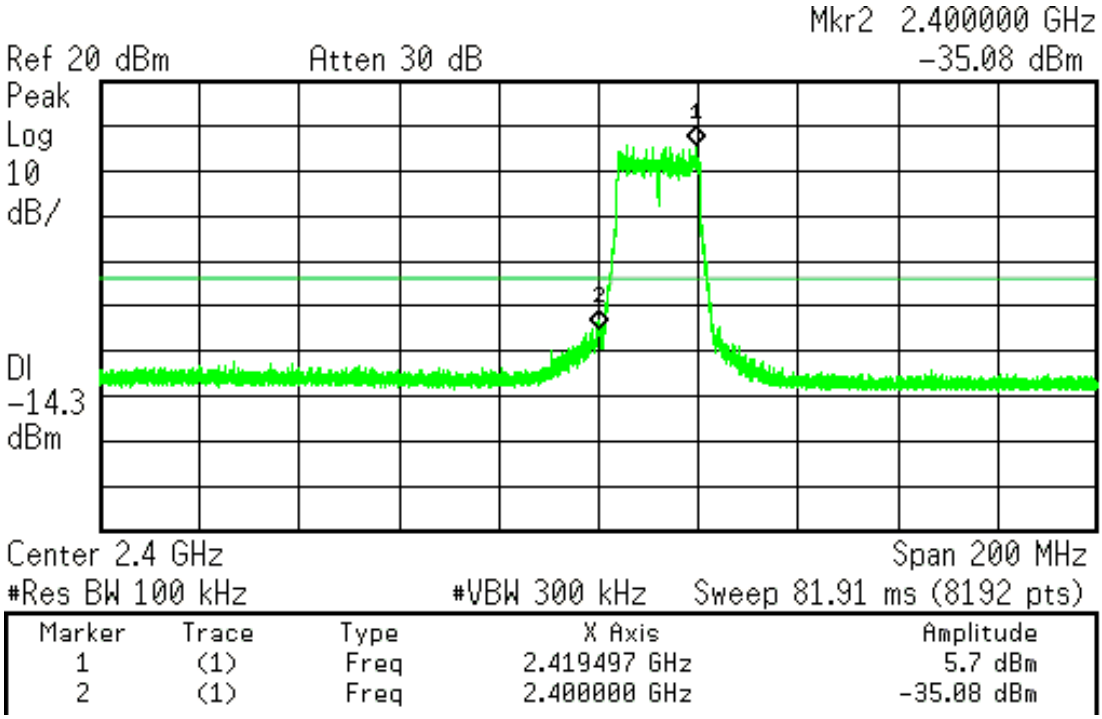


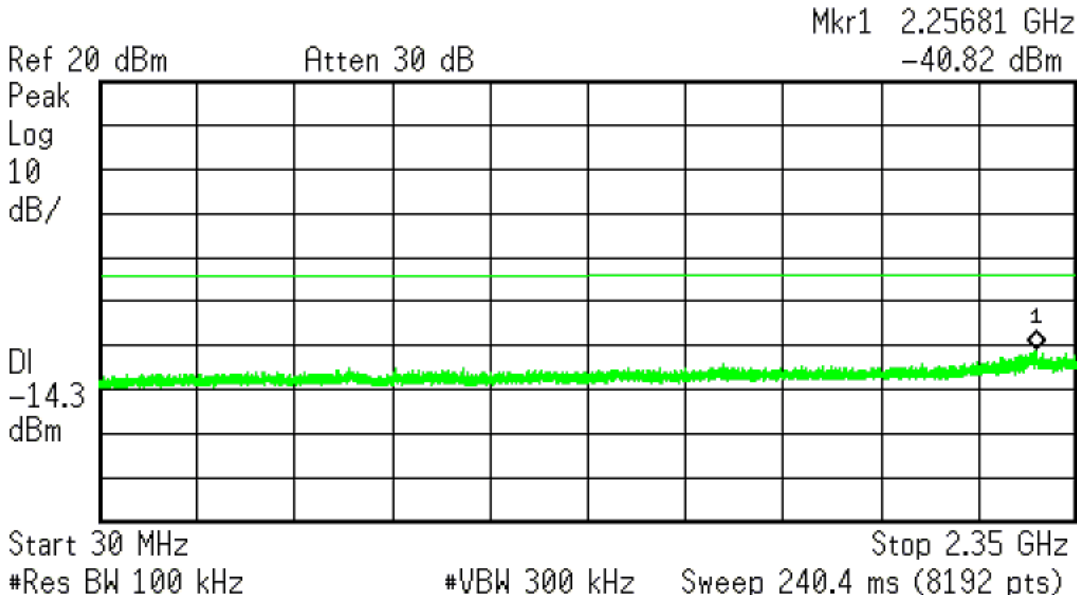
6.5 Test Data

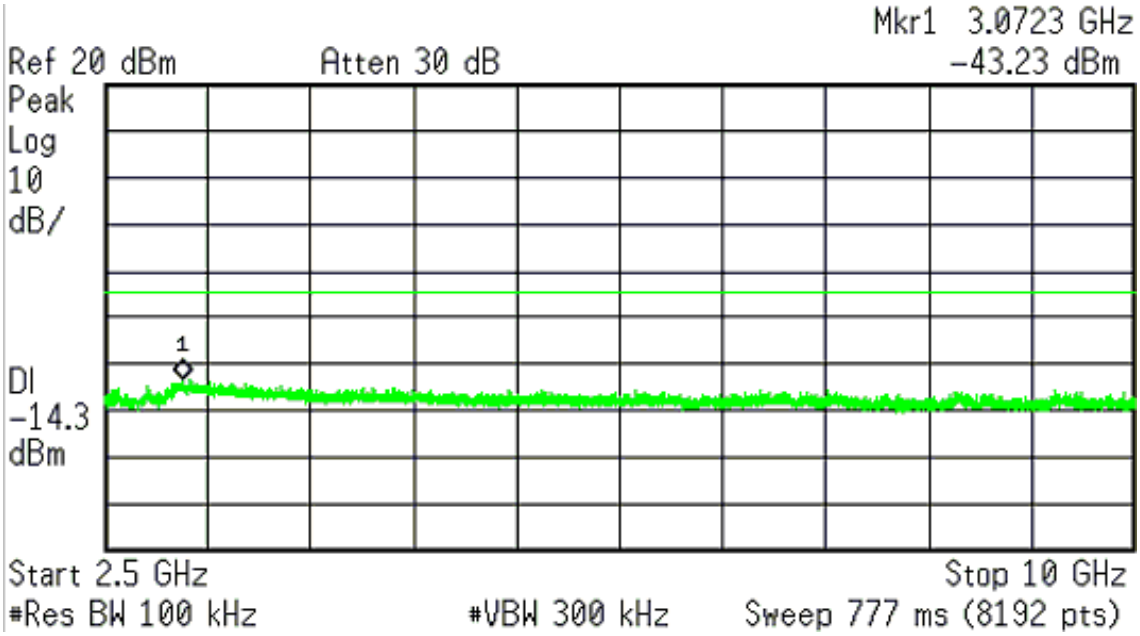
Test Mode : Continuous Transmitting **Tester : Gary**

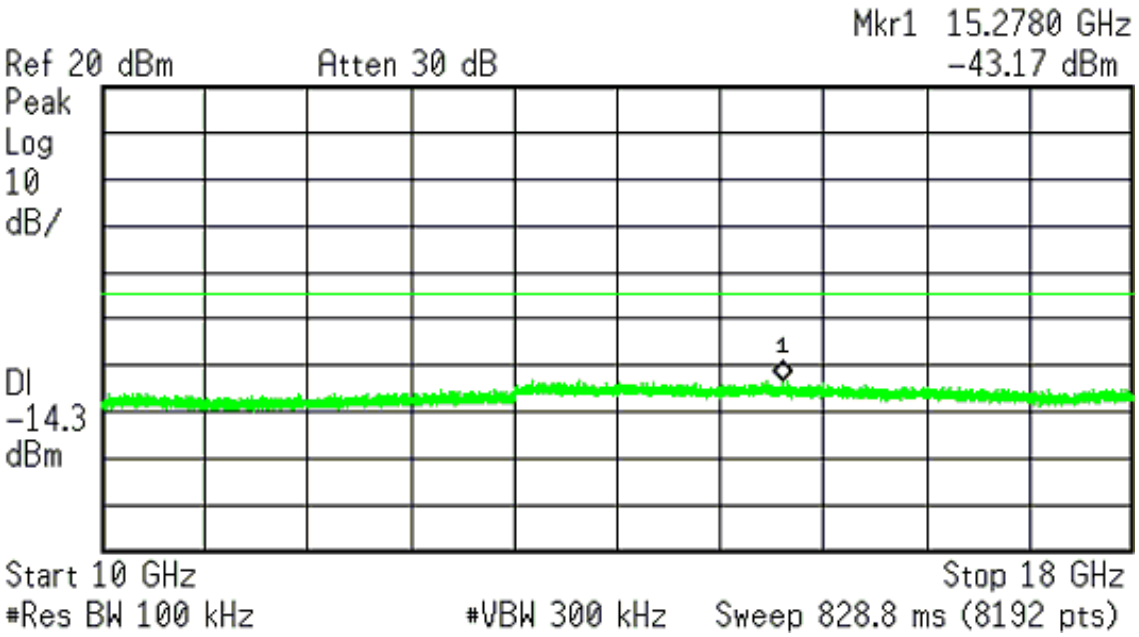
Test Frequency: Channel 1 (2412MHz) **Frequency Rang : 30MHz~25GHz**

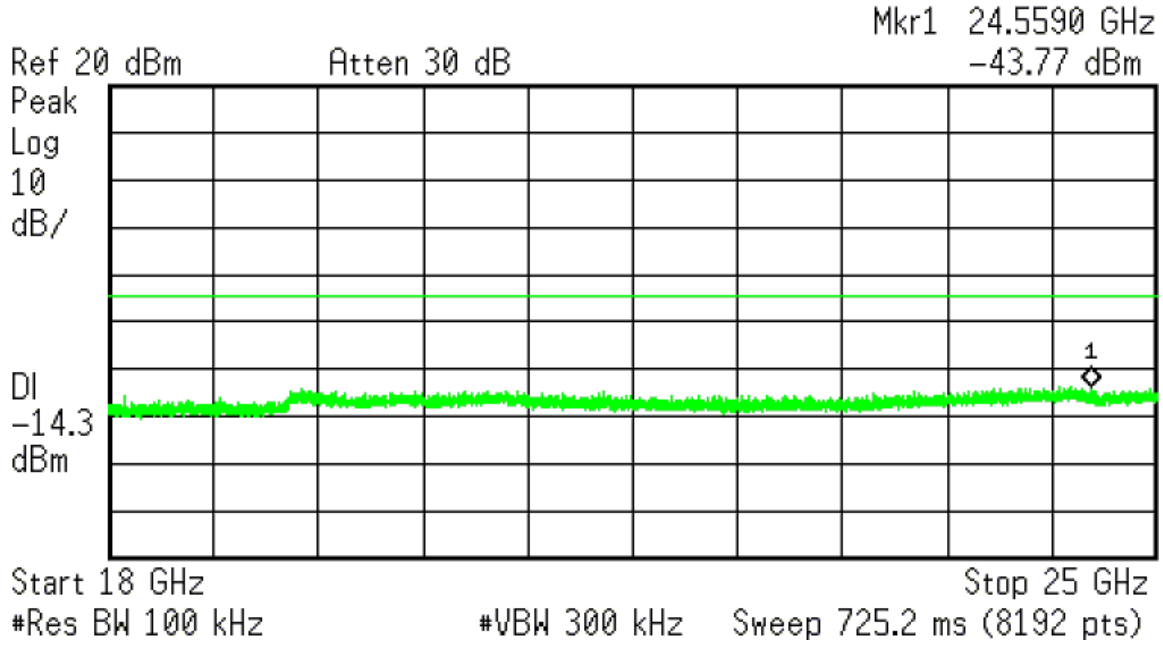
Limit Line : -24.3dBm






Mkr1 3.0723 GHz
Ref 20 dBm
Atten 30 dB
-43.23 dBm
Peak
Log
10
dB/
1
Dl
-14.3
dBm
Start 2.5 GHz
Stop 10 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 777 ms (8192 pts)

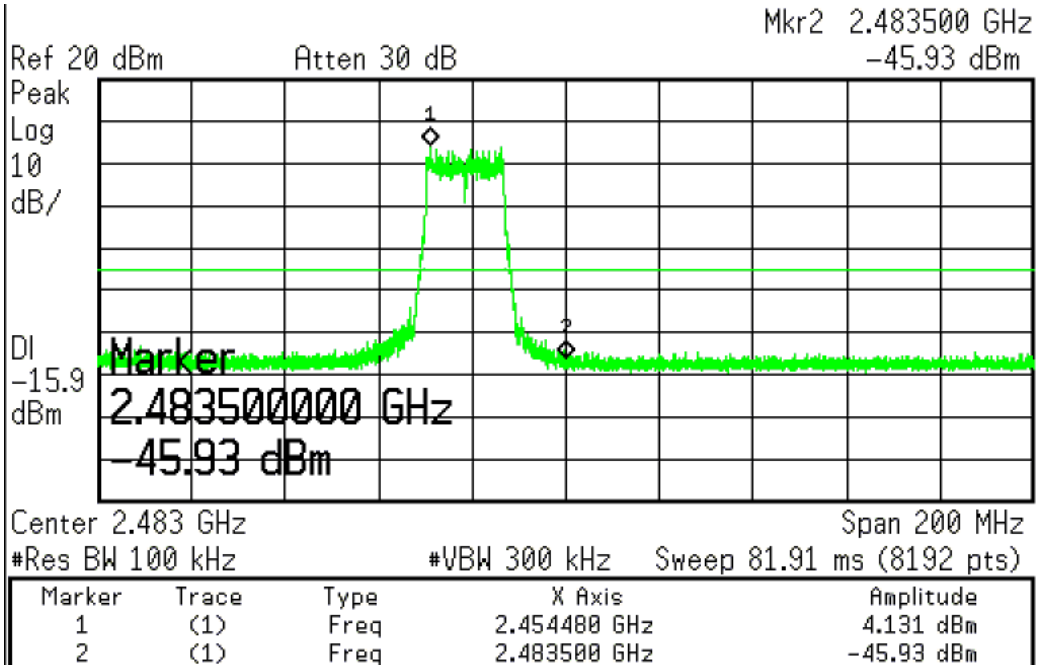

Mkr1 15.2780 GHz
Ref 20 dBm
Atten 30 dB
-43.17 dBm
Peak
Log
10
dB/
1
Dl
-14.3
dBm
Start 10 GHz
Stop 18 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 828.8 ms (8192 pts)

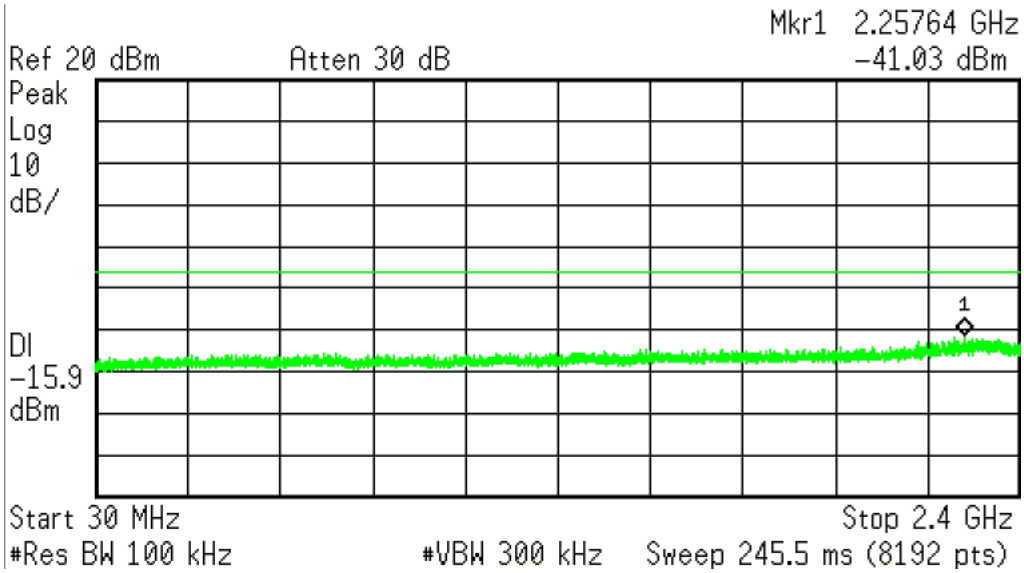

Mkr1 24.5590 GHz
Ref 20 dBm
Atten 30 dB
-43.77 dBm
Peak
Log
10
dB/
1
Dl
-14.3
dBm
Start 18 GHz
Stop 25 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 725.2 ms (8192 pts)

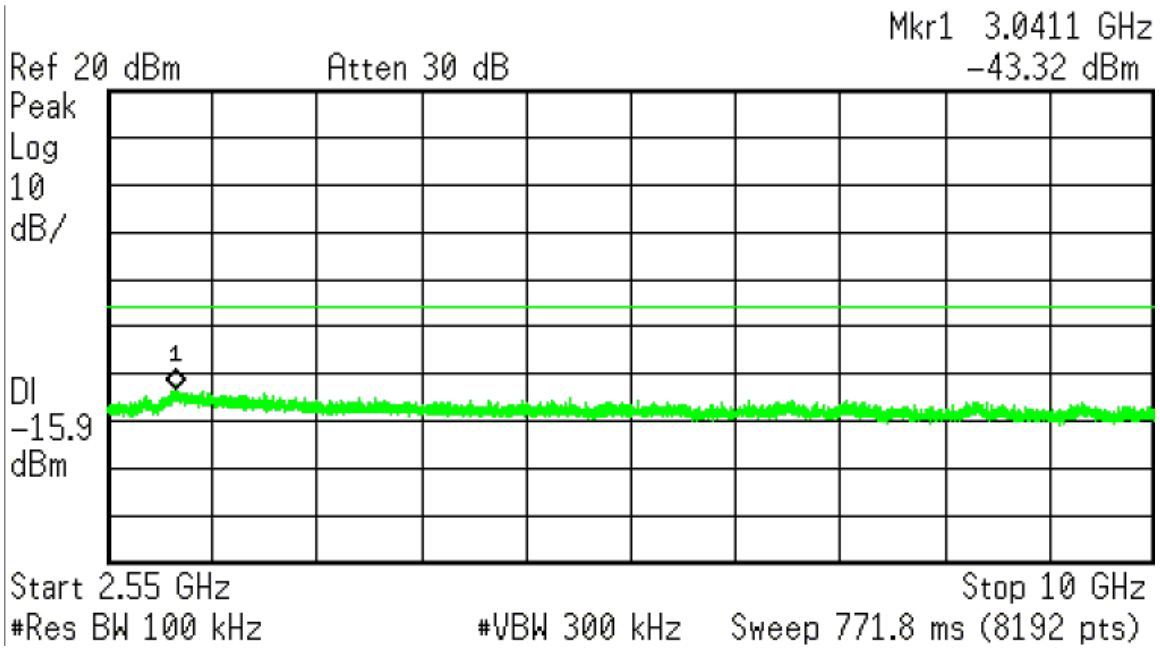
Test Mode : Continuous Transmitting **Tester : Gary**

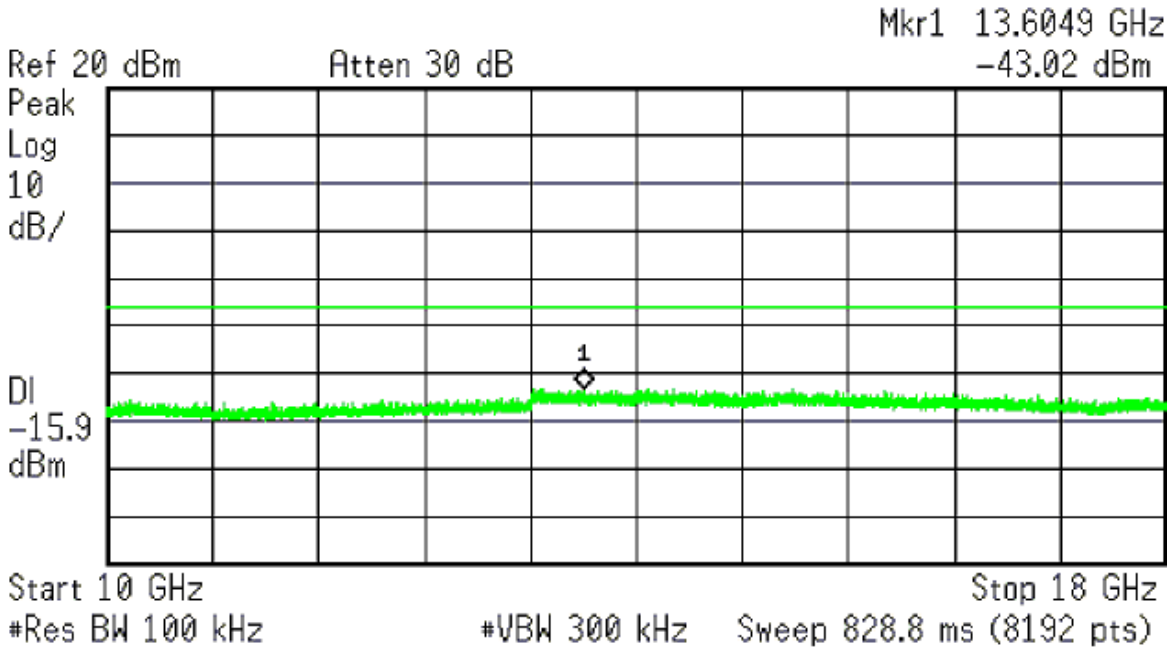
Test Frequency: Channel 11 (2462MHz) **Frequency Rang : 30MHz~25GHz**

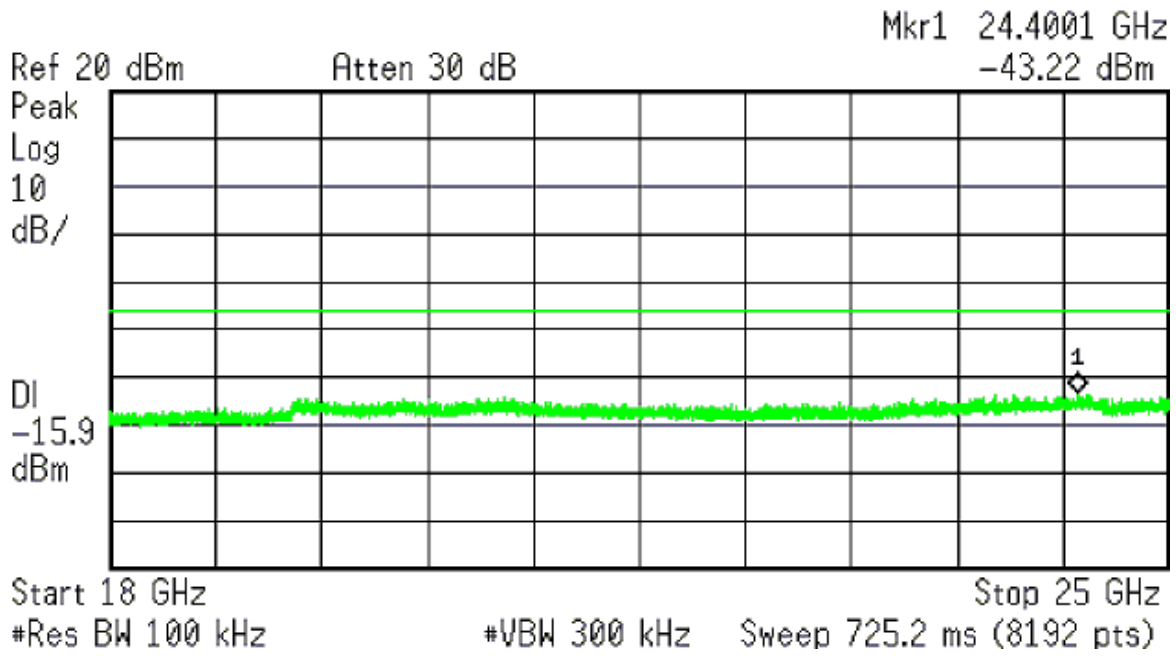
Limit Line : -25.86dBm






Mkr1 3.0411 GHz
-43.32 dBm
Ref 20 dBm
Atten 30 dB
Peak
Log
10
dB/
1
Dl
-15.9
dBm
Start 2.55 GHz
Stop 10 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 771.8 ms (8192 pts)


Mkr1 13.6049 GHz
-43.02 dBm
Ref 20 dBm
Atten 30 dB
Peak
Log
10
dB/
1
Dl
-15.9
dBm
Start 10 GHz
Stop 18 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 828.8 ms (8192 pts)


Mkr1 24.4001 GHz
Ref 20 dBm
Atten 30 dB
−43.22 dBm
Peak
Log
10
dB/
Dl
−15.9
dBm
1
Start 18 GHz
Stop 25 GHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 725.2 ms (8192 pts)

7 Band Edge

Result: Pass

7.1 Applied standard

According to 15.247(c), radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

7.2 Test Instruments

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Spectrum Analyzer	Agilent	FSP40/ 100031	July 25, 2014	July 25, 2015
Antenna	EMCO	3117/ 00082847	Nov. 21, 2014	Nov. 21, 2015
PRE-AMPLIFIER	MITEQ	TTA1800-30-HG-N-M	Dec. 1, 2014	Dec. 1, 2015
Semi - anechoic Chamber	ETS. LINDGREN	TR1/ 17627-B	April 12, 2014	April 12, 2015

Note:

1.The calibrations are traceable to NML/ROC.

2.NCR : No Calibration Required.

Instrument Setting

RBW	VBW	Detector	Trace	Comment
1MHz	3MHz	Peak	Maxhold	Peak
1MHz	10Hz	Peak	Maxhold	Average

Climatic Condition

Ambient Temperature：26℃ Relative Humidity : 54%

7.3 Measurement Procedure

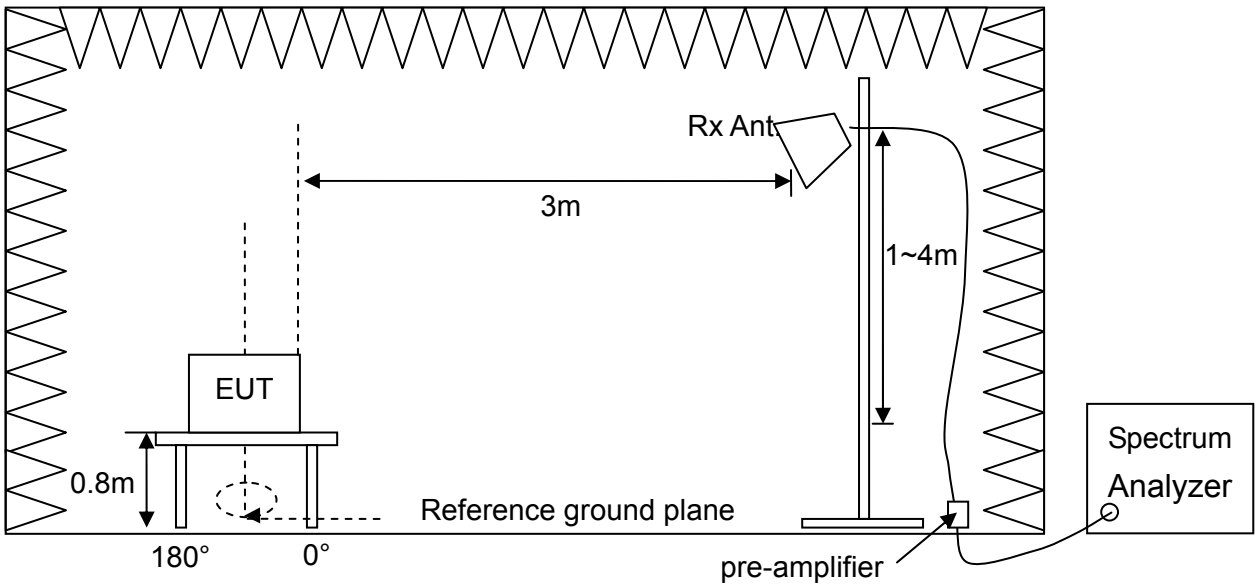
a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. The software provided by client enabled the EUT to transmit data at lowest and highest channel frequencies individually.

c. Test procedures follow KDB 558074 D01 DTS Measurement Guidance v03r02 section 12.

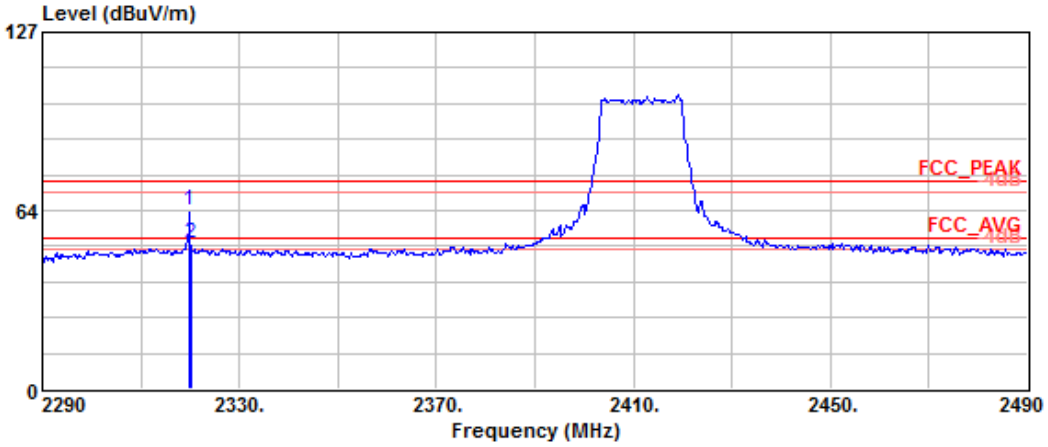
d. Measurement the band edge and compare with the required limit.

7.4 Test configuration



7.5 Test Data

Test Mode : Continuous Transmitting **Tester : Gary**
Test Frequency: Channel 1 (2412MHz)



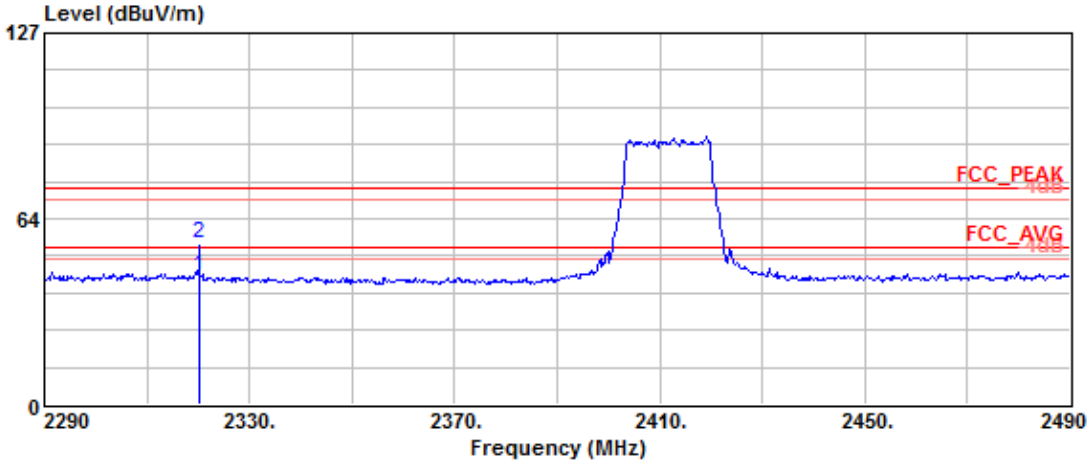
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2319.955	63.19	28.10	35.09	74.00	-10.81	165	172	HORIZONTAL	Peak
2 !	2320.075	51.88	16.79	35.09	54.00	-2.12	157	180	HORIZONTAL	Average

Note:

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Pre-amplifier
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

Test Mode : Continuous Transmitting **Tester : Gary**

Test Frequency: Channel 1 (2412MHz)

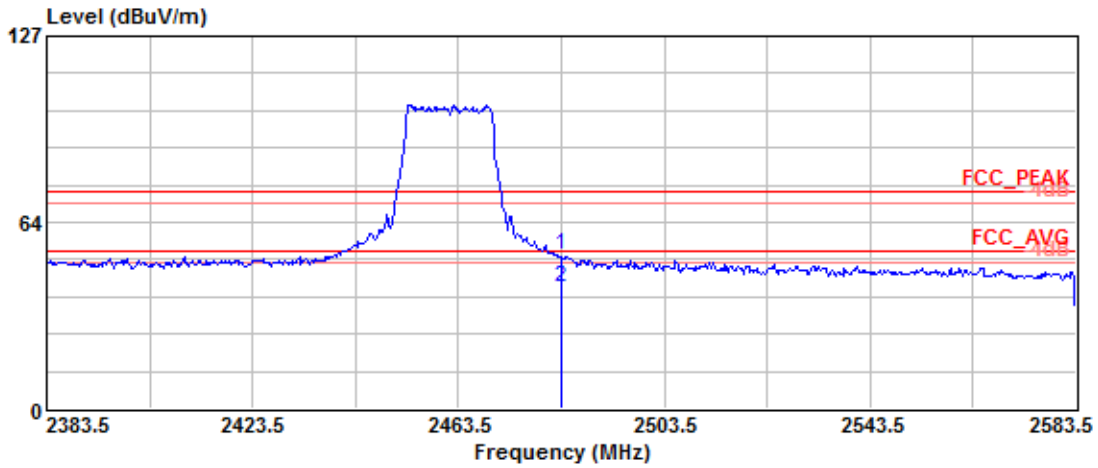


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2320.075	44.18	9.09	35.09	54.00	-9.82	322	90	VERTICAL	Average
2	2320.085	54.95	19.86	35.09	74.00	-19.05	321	240	VERTICAL	Peak

Note:

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Pre-amplifier
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

Test Mode : Continuous Transmitting **Tester : Gary**
Test Frequency: Channel 11 (2462MHz)

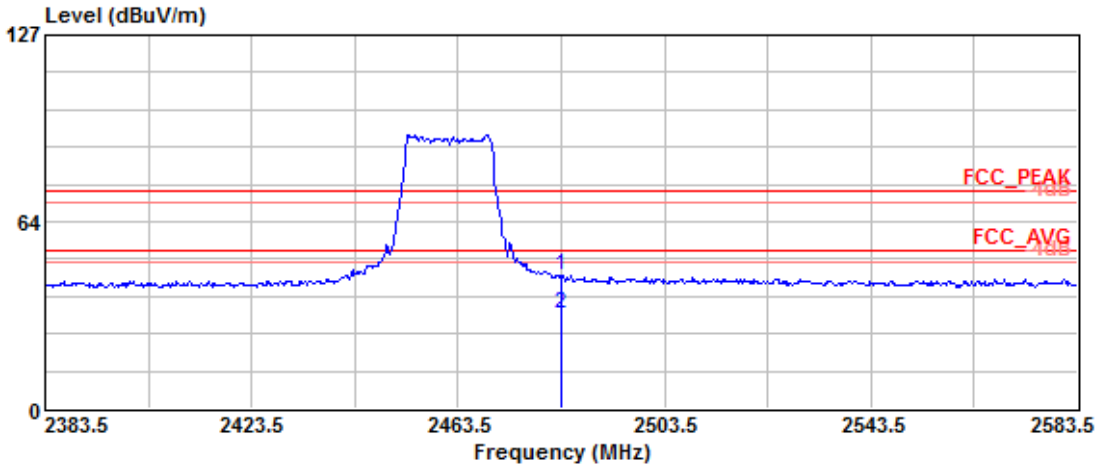


	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2483.680	52.23	16.76	35.47	74.00	-21.77	259	0	HORIZONTAL	Peak
2	2483.680	41.11	5.64	35.47	54.00	-12.89	259	0	HORIZONTAL	Average

Note:

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Pre-amplifier
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

Test Mode : Continuous Transmitting **Tester : Gary**
Test Frequency: Channel 11 (2462MHz)



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2483.500	44.95	9.48	35.47	74.00	-29.05	181	236	VERTICAL	Peak
2	2483.500	32.23	-3.24	35.47	54.00	-21.77	181	236	VERTICAL	Average

Note:

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Pre-amplifier
2. Emission (dBuV/m) = Reading Data + Correction Factor
3. Margin(dB) = Limit – Emission

8 Radiated Emission

Result: Pass

8.1 Applied standard

According to 15.247(c), radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

8.2 Test Instruments

☑ For Measurement below 1000MHz

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESCI/ 100019	June 12, 2014	June 12, 2015
Spectrum Analyzer	Agilent	E4407B/ MY45106795	May 29, 2014	May 29, 2015
Bi-Log Antenna	EMCO	3142C/ 52088	May 14, 2014	May 14, 2015
Pre-Amplifier	Mini-circuit	ZKL-2/ 004	Feb. 10, 2015	Aug. 10, 2015
RF Cable	N/A	N/A/ C0080	Feb. 10, 2015	Aug. 10, 2015
TR11 Semi - anechoic Chamber	ETS. LINDGREN	TR11/ 906-A	May 2, 2014	May 2, 2015

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.
3. The calibration date of the semi-anechoic chamber listed above is the date of NSA measurement.

☑ For Measurement above 1000MHz

Test Site and Equipment	Manufacturer	Model No./ Serial No.	Last Calibration Date	Calibration Due Date
Horn Antenna	EMCO	3117/ 0082847	Nov. 21, 2014	Nov. 21, 2015
Bore-sight Antenna Mast	Sunol	TLT2/ 051110-5	NCR	NCR
Pre-Amplifier	MITEQ	TTA1800-30-HG-N-M/ 1904295	Dec. 1, 2014	Dec. 1, 2015
EMI TEST RECEIVER	R&S	ESI 26/ 837491/015	July 9, 2014	July 9, 2015
RF Cable	Suhner	Sucoflex 104/ C0093	Sept. 25, 2014	March 25, 2015
Test Software	Audix	e3/ Ver. 4.3.714.e	NCR	NCR
TR1 Fully -anechoic Chamber	ETS. LINDGREN	TR1/ 17627-B	March 15, 2014	March 15, 2015

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR : No Calibration Required.
3. The calibration date of the chamber TR1 listed above is the date of site VSWR measurement.

Instrument Setting

RBW	VBW	Detector	Trace	Comment
120kHz	N/A	Quasi-Peak	Maxhold	Below 1GHz
1MHz	3MHz	Peak	Maxhold	Above 1GHz, Peak
1MHz	10Hz	Peak	Maxhold	Above 1GHz, Average

Climatic Condition

Ambient Temperature：20℃ Relative Humidity :23%

8.3 Measurement Procedure

a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.

b. A software provided by client enabled the EUT to transmit and receive data at operating frequency.(if necessary)

c. If the EUT is tabletop equipment, it should be placed on a wooden table with a height of 0.8 meters above the reference ground plane in the semi-anechoic chamber. If the EUT is floor-standing equipment, it should be placed on a non-conducted support with a height of 12 millimeters above the reference ground plane in the semi-anechoic chamber.

d. The EUT is set 3m away from the interference receiving antenna.

e. Rapidly sweep the signal in the test frequency range by using the spectrum through the Maximum-peak detector.

f. Rotate the EUT from 0° to 360° and position the receiving antenna at heights from 1 to 4 meters above the reference ground plane continuously to determine at least six frequencies associated with higher emission levels and record them.

g. Then measure each frequency found from step f. by using the spectrum with rotating the EUT and positioning the receiving antenna height to determine the maximum level.

h. For measurement of frequency below 1000MHz, set the receiver detector to be Quasi-Peak per CISPR 16-1 to find out the maximum level occurred.

i. For measurement of frequency above 1000MHz, set the spectrum detector to be Peak or Average to find out the maximum level occurred, if any.

j. Record frequency, azimuth angle of the turntable, height, and polarization of the receiving antenna and compare the maximum level with the required limit.

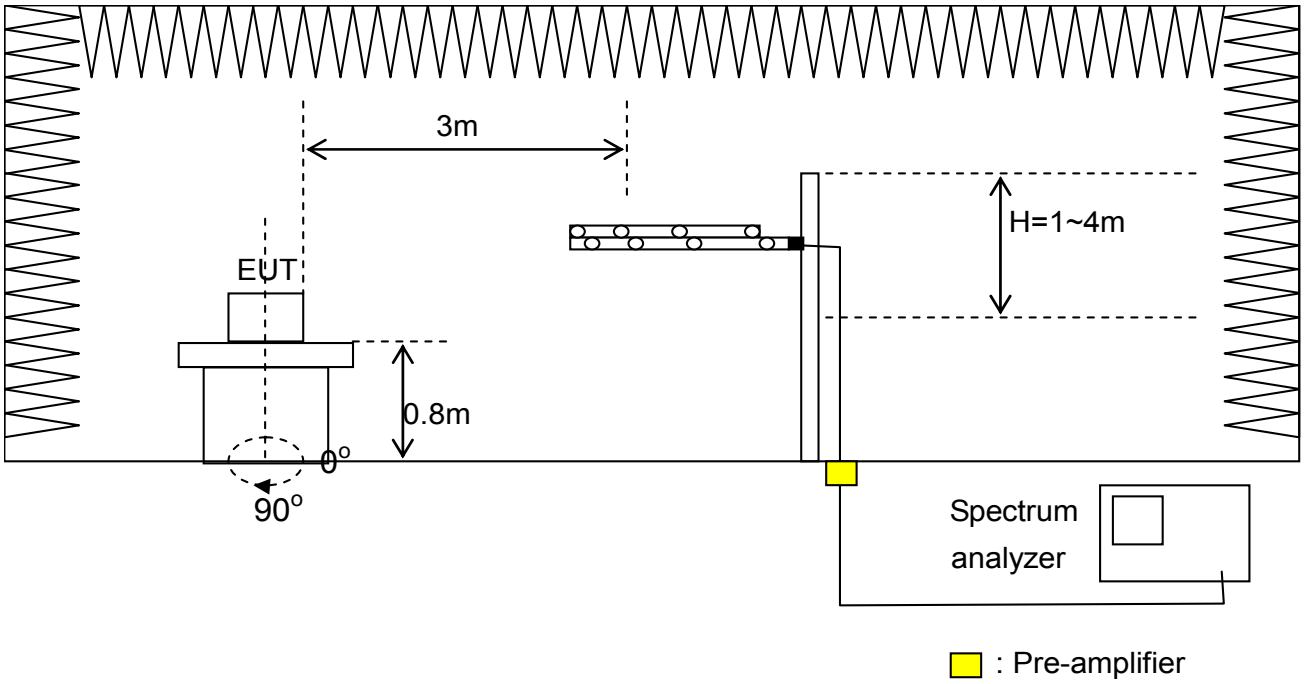
k. Change the receiving antenna to another polarization to measure radiated emission by following step e. to j. again.

l. If the peak emission level below 1000MHz measured from step f. is 4dB lower than the limit specified, then the emission values presented will be the peak value only. Otherwise, accurate Q.P. value will be measured and presented.

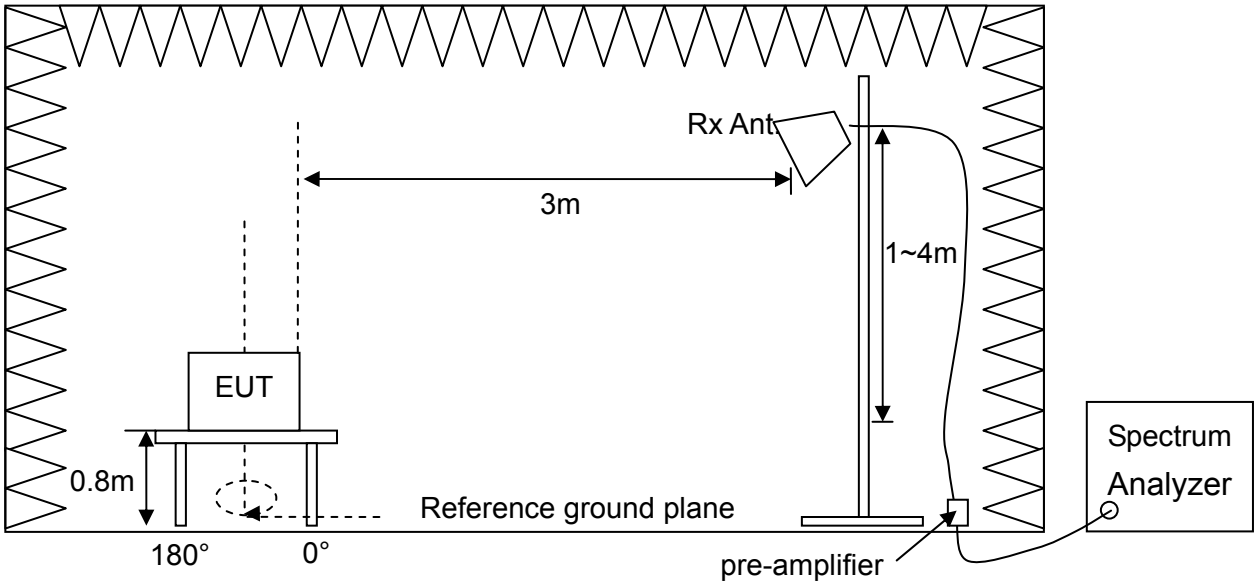
m. If the peak emission level above 1000MHz measured from step f. is 20dB lower than the limit specified, then the emission values presented will be the peak value only. Otherwise, accurate A.V. value will be measured and presented.

8.4 Test configuration

Below 1GHz



Above 1GHz



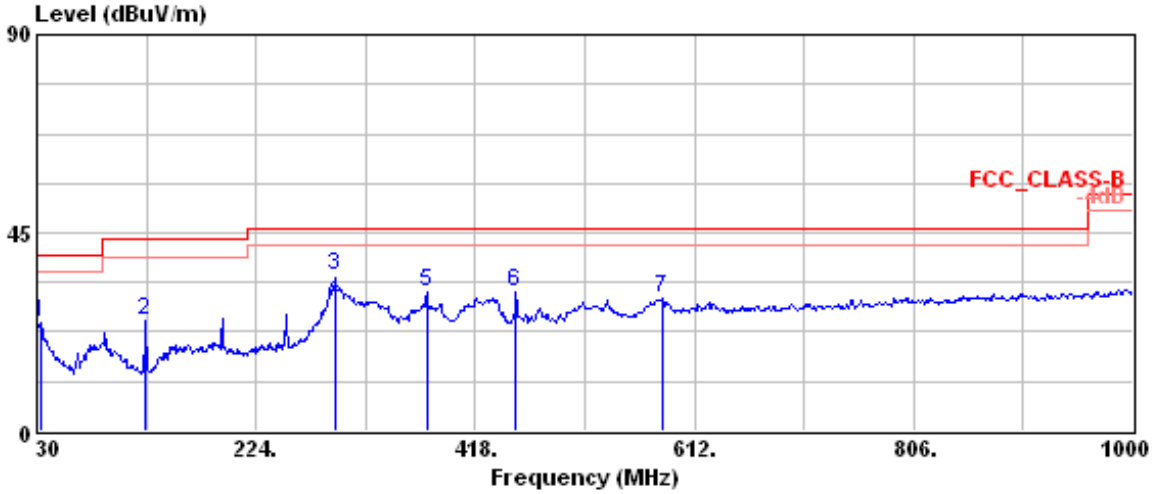
8.5 Test Data

Radiated Emission Measurement below 1000MHz

Test Mode : **2412MHz, Continuous Transmitting**

Test Distance : 3m **Tester** : Gary

Polarization : Horizontal **Frequency Range** : 30MHz~1000MHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	33.880	24.39	35.02	-10.63	40.00	-15.61	---	---	HORIZONTAL	Peak
2	126.030	24.85	44.10	-19.25	43.50	-18.65	---	---	HORIZONTAL	Peak
3	293.730	35.24	47.60	-12.36	46.00	-10.76	134	219	HORIZONTAL	Peak
4	293.730	29.33	41.69	-12.36	46.00	-16.67	134	219	HORIZONTAL	QP
5	375.320	31.37	40.84	-9.47	46.00	-14.63	---	---	HORIZONTAL	Peak
6	453.890	31.39	38.98	-7.59	46.00	-14.61	---	---	HORIZONTAL	Peak
7	583.870	30.26	34.97	-4.71	46.00	-15.74	---	---	HORIZONTAL	Peak

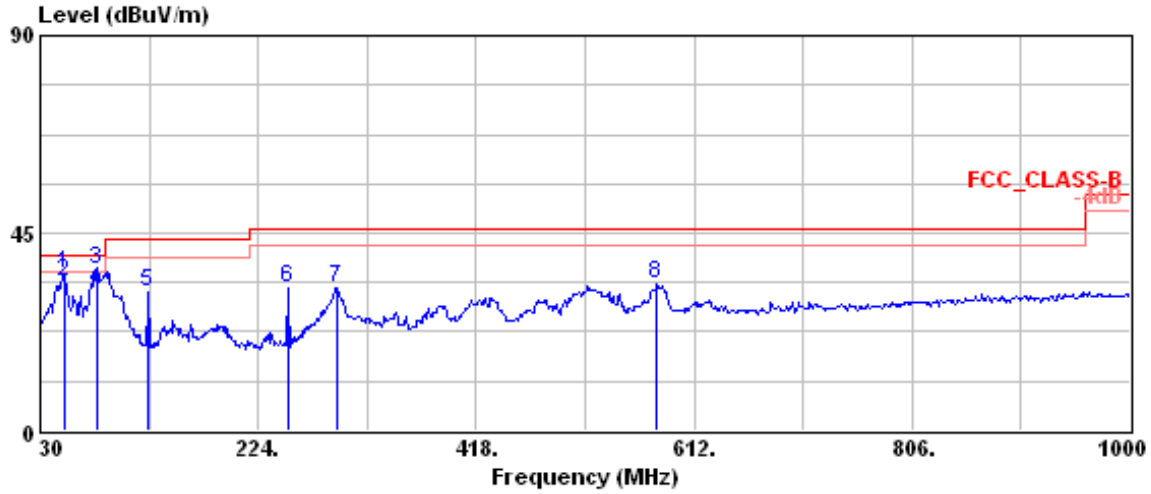
Note：

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

Test Mode : **2412MHz, Continuous Transmitting**

Test Distance : 3m **Tester** : Gary

Polarization : Vertical **Frequency Range** : 30MHz~1000MHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	51.330	35.59	53.60	-18.01	40.00	-4.41	100	106	VERTICAL	Peak
2	51.330	33.68	51.69	-18.01	40.00	-6.32	100	106	VERTICAL	QP
3 @	80.490	36.51	56.31	-19.80	40.00	-3.49	100	209	VERTICAL	Peak
4	80.490	32.07	51.87	-19.80	40.00	-7.93	100	209	VERTICAL	QP
5	126.030	31.60	50.85	-19.25	43.50	-11.90	---	---	VERTICAL	Peak
6	250.190	32.40	46.05	-13.65	46.00	-13.60	---	---	VERTICAL	Peak
7	294.810	32.41	44.68	-12.27	46.00	-13.59	---	---	VERTICAL	Peak
8	579.020	33.18	38.01	-4.83	46.00	-12.82	---	---	VERTICAL	Peak

Note：

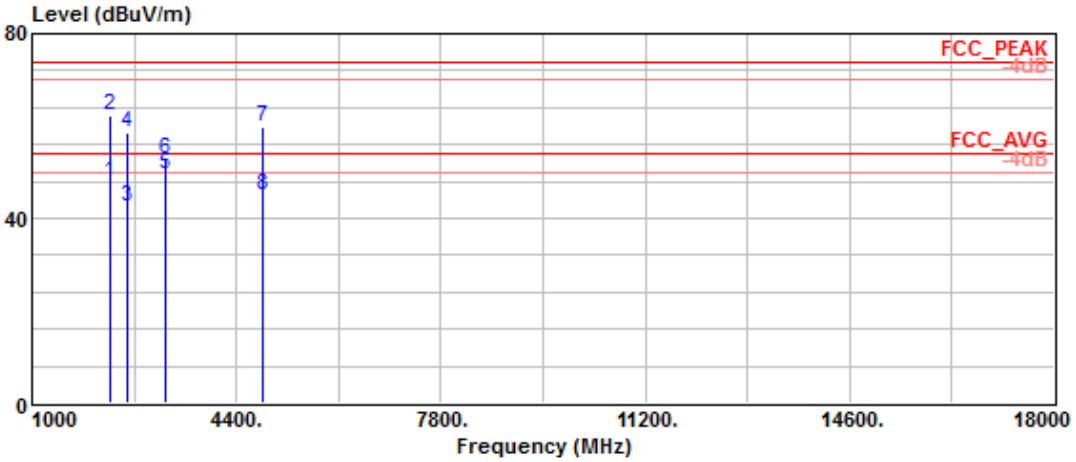
1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBuV/m) = Reading Data + Correction Factor

Radiated Emission Measurement above 1000MHz

Test Model **: 2412MHz, Continuous Transmitting**

Test Distance **:** 3m **Tester** **:** Gary

Antenna Polarization **:** Horizontal **Frequency Range :**1GHz~25GHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2289.068	47.80	62.80	-15.00	54.00	-6.20	226	179	HORIZONTAL	Average
2	2290.856	62.47	77.45	-14.98	74.00	-11.53	237	182	HORIZONTAL	Peak
3	2580.187	42.28	56.75	-14.47	54.00	-11.72	223	185	HORIZONTAL	Average
4	2580.717	58.65	73.12	-14.47	74.00	-15.35	228	184	HORIZONTAL	Peak
5 @	3216.019	49.61	63.72	-14.11	54.00	-4.39	246	316	HORIZONTAL	Average
6	3216.028	52.65	66.76	-14.11	74.00	-21.35	254	322	HORIZONTAL	Peak
7	4823.827	59.68	72.65	-12.97	74.00	-14.32	238	30	HORIZONTAL	Peak
8	4824.202	45.08	58.05	-12.97	54.00	-8.92	234	28	HORIZONTAL	Average

Note:

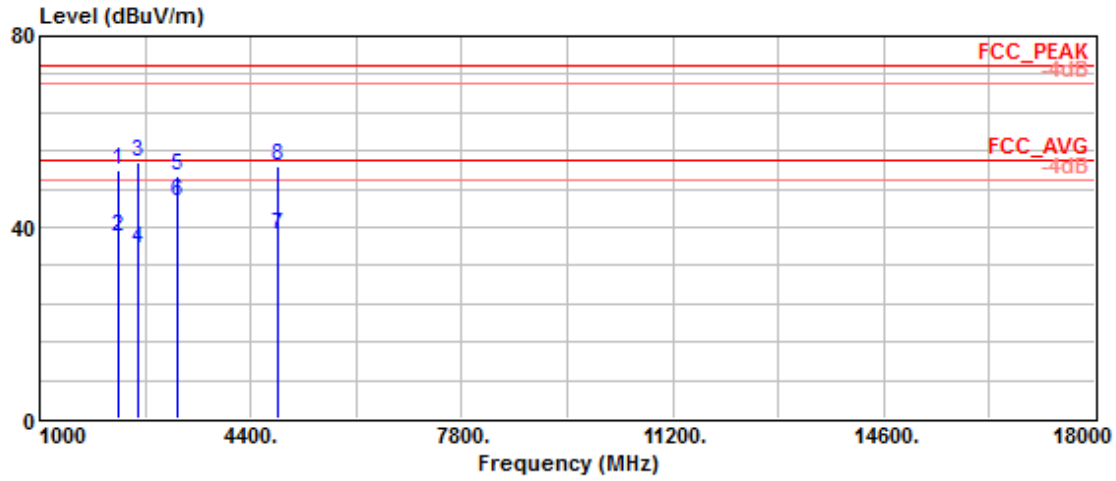
1. Emission Level (dBuV/m) = Reading Value + Correction Factor.
2. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2412MHz, Continuous Transmitting**

Test Distance **:** 3m **Tester** **:** Gary

Antenna Polarization **:** Vertical **Frequency Range :**1GHz~25GHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2265.337	51.89	66.93	-15.04	74.00	-22.11	221	294	VERTICAL	Peak
2	2265.990	38.12	53.16	-15.04	54.00	-15.88	215	291	VERTICAL	Average
3	2584.255	53.51	67.99	-14.48	74.00	-20.49	103	231	VERTICAL	Peak
4	2584.541	35.63	50.11	-14.48	54.00	-18.37	103	274	VERTICAL	Average
5	3215.815	50.84	64.95	-14.11	74.00	-23.16	274	340	VERTICAL	Peak
6	3216.041	45.37	59.48	-14.11	54.00	-8.63	270	335	VERTICAL	Average
7	4823.452	38.53	51.50	-12.97	54.00	-15.47	240	257	VERTICAL	Average
8	4823.715	52.64	65.61	-12.97	74.00	-21.36	246	261	VERTICAL	Peak

Note:

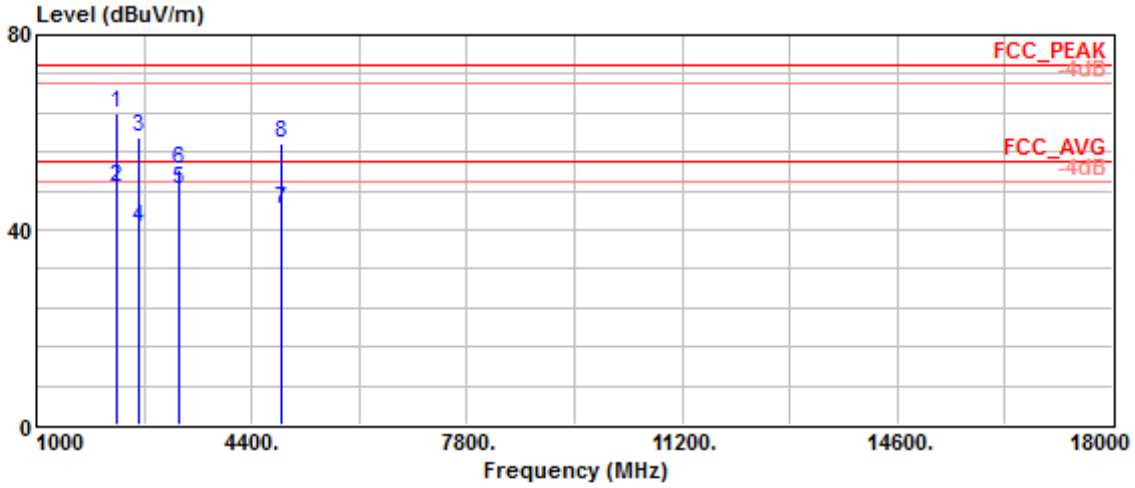
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2437MHz, Continuous Transmitting**

Test Distance **:** 3m **Tester** **:** Gary

Antenna Polarization **:** Horizontal **Frequency Range :**1GHz~25GHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2274.965	64.06	79.08	-15.02	74.00	-9.94	225	179	HORIZONTAL	Peak
2 @	2274.966	48.78	63.80	-15.02	54.00	-5.22	240	180	HORIZONTAL	Average
3	2604.350	58.85	73.32	-14.47	74.00	-15.15	216	181	HORIZONTAL	Peak
4	2604.479	40.60	55.07	-14.47	54.00	-13.40	222	184	HORIZONTAL	Average
5	3249.375	48.36	62.49	-14.13	54.00	-5.64	207	327	HORIZONTAL	Average
6	3249.417	52.38	66.51	-14.13	74.00	-21.62	249	335	HORIZONTAL	Peak
7	4873.509	44.15	57.13	-12.98	54.00	-9.85	159	44	HORIZONTAL	Average
8	4873.982	57.89	70.87	-12.98	74.00	-16.11	160	47	HORIZONTAL	Peak

Note:

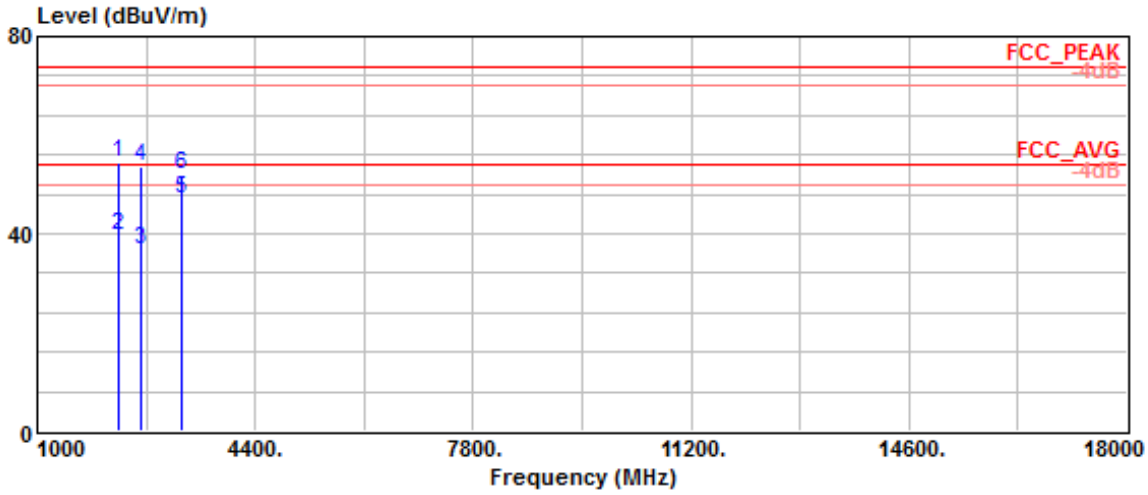
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2437MHz, Continuous Transmitting**

Test Distance **:** 3m **Tester** **:** Gary

Antenna Polarization **:** Vertical **Frequency Range :**1GHz~25GHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2273.710	54.27	69.29	-15.02	74.00	-19.73	100	271	VERTICAL	Peak
2	2273.879	39.49	54.51	-15.02	54.00	-14.51	102	274	VERTICAL	Average
3	2607.454	36.63	51.08	-14.45	54.00	-17.37	119	259	VERTICAL	Average
4	2607.932	53.70	68.15	-14.45	74.00	-20.30	107	226	VERTICAL	Peak
5	3249.348	46.83	60.96	-14.13	54.00	-7.17	273	0	VERTICAL	Average
6	3249.442	52.11	66.24	-14.13	74.00	-21.89	283	0	VERTICAL	Peak

Note:

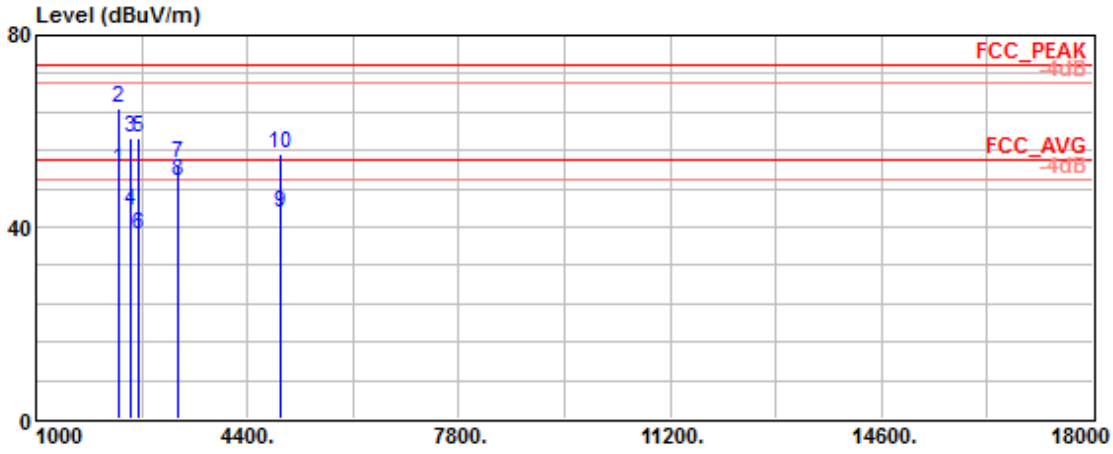
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2462MHz, Continuous Transmitting**

Test Distance **:** 3m **Tester** **:** Gary

Antenna Polarization **:** Horizontal **Frequency Range :**1GHz~25GHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1 @	2320.076	51.90	66.82	-14.92	54.00	-2.10	157	182	HORIZONTAL	Average
2	2320.874	64.72	79.64	-14.92	74.00	-9.28	168	179	HORIZONTAL	Peak
3	2530.030	58.56	73.07	-14.51	74.00	-15.44	256	362	HORIZONTAL	Peak
4	2530.278	43.47	57.98	-14.51	54.00	-10.53	254	0	HORIZONTAL	Average
5	2643.217	58.53	72.95	-14.42	74.00	-15.47	285	186	HORIZONTAL	Peak
6	2643.217	38.30	52.72	-14.42	54.00	-15.70	278	185	HORIZONTAL	Average
7	3282.655	53.17	67.32	-14.15	74.00	-20.83	246	334	HORIZONTAL	Peak
8	3282.685	49.64	63.79	-14.15	54.00	-4.36	204	333	HORIZONTAL	Average
9	4923.896	43.09	56.09	-13.00	54.00	-10.91	218	316	HORIZONTAL	Average
10	4927.810	55.07	68.05	-12.98	74.00	-18.93	187	48	HORIZONTAL	Peak

Note:

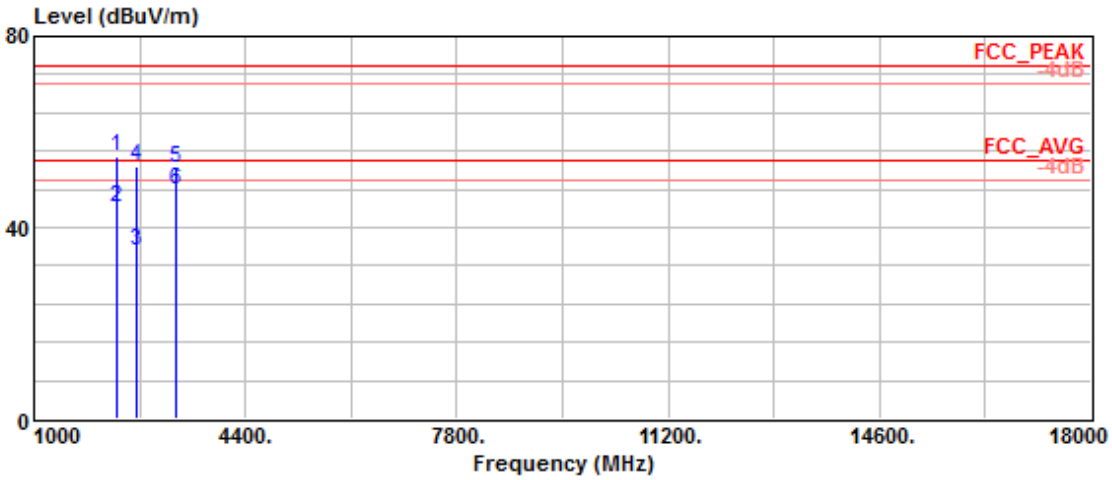
1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Model **: 2462MHz, Continuous Transmitting**

Test Distance **:** 3m **Tester** **:** Gary

Antenna Polarization **:** Vertical **Frequency Range :**1GHz~25GHz



	Freq	Level	Read Level	Factor	Limit Line	Over Limit	Ant Pos	Table Pos	Pol/Phase	Remark
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg		
1	2320.053	54.99	69.91	-14.92	74.00	-19.01	321	243	VERTICAL	Peak
2	2320.103	44.23	59.15	-14.92	54.00	-9.77	322	93	VERTICAL	Average
3	2640.182	35.23	49.65	-14.42	54.00	-18.77	301	263	VERTICAL	Average
4	2643.436	52.68	67.10	-14.42	74.00	-21.32	201	100	VERTICAL	Peak
5	3282.550	52.49	66.64	-14.15	74.00	-21.51	277	354	VERTICAL	Peak
6	3282.708	47.74	61.89	-14.15	54.00	-6.26	272	355	VERTICAL	Average

Note:

1. Level (dBuV/m) = Read level + Factor.
2. Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier.
3. Over Limit (dB) = Level – Limit line
4. PK. and AV. are abbreviation of peak and average respectively.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

9 Antenna Requirement

9.1 Applied standard

According to 15.247(4), The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi

9.2 Antenna Information

This antenna's relative information as follow:

Brand	Model	Frequency Range (MHz)	Gain (dBi)	Comment
Brito	ANT DIPOLE	2.4GHz~2.5GHz	5	

9.3 Result

Gain of the antenna is less than 6dBi.