EMC
TEST REPORT

Report No.: 161100290TWN-001

Model No.: RB8762G-a-G, RB8762J-a-G, RB8762R-a-G, RB8762K-a-G, RB8762G-c-G, RB8762J-c-G, RB8762R-c-G, RB8762K-c-G, RB8762G-a, R8762J-a, RB8762R-a, RB8762K-a, RB8762G-c, RB8762J-c, RB8762R-c, RB8762K-c, RB-8762-a-HM, RB-8762-c-HM, RB-8762-a-HMG, RB-8762-c-HMG

Issued Date: Jan. 10, 2017

Applicant: Radicom Research, Inc.
2148 Bering Drive San Jose, CA 95131, USA

Test Method/ Standard: 47 CFR FCC Part 15.247 & ANSI C63.10 2013
KDB 558074 D01 v03r05

Test Site: 93910

Test By: Intertek Testing Services Taiwan Ltd.,
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Revision History

Report No.	Issue Date	Revision Summary
161100290TWN-001	Jan. 10 , 2017	Original report

Table of Contents

1. Summary of Test Data

Test Requirement	Applicable Rule (Section 15.247)	Result
Minimum 6 dB Bandwidth	15.247(a)(2) KDB 558074 D01 v03r05	Pass
Maximum Peak Conducted Output Power	15.247(b)(3) KDB 558074 D01 v03r05	Pass
Power Spectral Density	15.247(e)	Pass
Emissions In Non-Restricted Frequency Bands	15.247(d)	Pass
Emissions In Restricted Frequency Bands (Radiated emission measurements)	15.247(d), 15.205, 15.209	Pass
Emission On The Band Edge	15.247(d), 15.205	Pass
AC Power Line Conducted Emission	15.207	Pass
Antenna Requirement	15.203	Pass

2. General Information

2.1 Identification of the EUT

Product:	BT4.2 module
Model No:	RB8762-c-HM
Operating Frequency:	2402 MHz ~ 2480 MHz
Channel Number:	40 channels
Frequency of Each Channel:	2402+2 k MHz, k＝0~39
Access scheme:	GFSK
Rated Power:	2.35-3.6 V
Power Cord:	N/A
Sample Received:	Nov. 08, 2016
Sample condition:	Workable
Test Date(s):	Nov. 10, 2016 ~ Jan. 05, 2017

Note 1: The test report only allows to be revised within three years from its original issued date unless further standard or the requirement was noticed.
Note 2: When determining the test conclusion, the Measurement Uncertainty of test has been considered.
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2.2 Description of EUT

The EUT is a BT4.2 module, and was defined as information technology equipment.

Explanation of model designation RB8762

G: general	J: joystick	R: remote controller	K: keyboard
a: print antenna	c: IPEX connector		
G: with G sensor	Null: w/o G sensor	HM: Dual-in-line	

Model Numbers	Description
RB8762G-a-G , RB8762J-a-G , RB8762R-a-G , RB8762K-a-G , RB8762G-a , RB8762J-a , RB8762R-a , RB8762K-a 	Surface mount RB8762 Bluetooth module with on-board antenna.
RB8762G-c-G , RB8762J-c-G , RB8762R-c-G , RB8762G-c-G RB8762K-c-G , RB8762G-c , RB8762J-c , RB8762R-c , RB8762K-c 	Surface mount RB8762 Bluetooth module with on-board U.FL connector for external antenna. Models: RB8762-c-S with Slave Code RB8762-c-M with Master Code
RB8762-(a/c)-HM/HMG 	Dual-in-line, through-hole Bluetooth module. RB8762 mounted on Half Inch PCB for DIP (through-hole) interface.

For more detail features, please refer to user's Manual.

2.3 Antenna description

(1) The antenna is affixed to the EUT using a unique connector, which allows for replacement of a broken antenna, but DOES NOT use a standard antenna jack or electrical connector.

Antenna Gain	: 2.0 dBi
Antenna Type	: Dipole Antenna
Connector Type	: IPEX

(2) The EUT uses a permanently connected antenna.

Antenna Gain	: 2.0 dBi
Antenna Type	: PIFA Antenna
Connector Type	: Fixed

2.4 Operation mode

TX-MODE is based on the program “BeeMpTool” and the program can select different frequency and modulation.

The difference between main model and series model are antenna type, after engineer judgment, the Emissions In Non-Restricted Frequency Bands and Emission On The Band Edge tests were considered necessary.

For RB8762-c-HM

The signal is maximized through rotation and placement in the three orthogonal axes.


X axis


Y axis


Z axis

After verifying three axes, we found the maximum electromagnetic field was occurred at Y axis. The final test data was executed under this configuration.

For RB8762-a-HM

The signal is maximized through rotation and placement in the three orthogonal axes.


X axis


Y axis


Z axis

After verifying three axes, we found the maximum electromagnetic field was occurred at Y axis. The final test data was executed under this configuration.

For RB8762-a-HMG

The signal is maximized through rotation and placement in the three orthogonal axes.

X axis

Y axis

Z axis

After verifying three axes, we found the maximum electromagnetic field was occurred at Y axis. The final test data was executed under this configuration.

2.5 Peripherals equipment

Peripherals	Manufacturer	Product No.	Serial No.	Description of Data Cable
Notebook PC	DELL	Latitude D610	1YWZKIS	Mini USB cable 0.5 meter

2.5 Applied test modes and channels

Test items	Mode	Channel	Antenna
Minimum 6 dB Bandwidth	BT4.2	Low, Middle , High	Chain0
Maximum peak conducted output power	BT4.2	Low, Middle , High	Chain0
Power Spectral Density	BT4.2	Low, Middle , High	Chain0
RF Antenna Conducted Spurious	BT4.2	Low, Middle , High	Chain0
Radiated spurious Emission 9kHz~1GHz	BT4.2	Low	Chain0
Radiated Spurious Emission 10GHz~10th Harmonic	BT4.2	Low, Middle , High	Chain0
Emission on the Band Edge	BT4.2	Low, Middle , High	Chain0
AC Power Line Conducted Emission	Normal Link		

3. Minimum 6 dB Bandwidth

3.1 Operating environment

Temperature:	25	℃
Relative Humidity:	50	%
Atmospheric Pressure	1008	hPa
Requirement & Test method	15.247(a)(2) KDB 558074 D01 v03r05	

3.2 Limit for minimum 6dB bandwidth

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

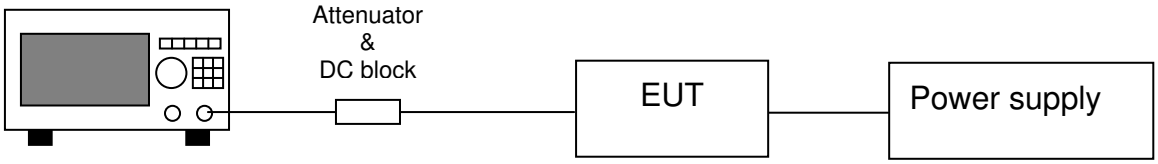
3.3 Measuring instrument setting

Spectrum analyzer settings	
Spectrum Analyzer function	**Setting**
Detector	Peak
RBW	100kHz
VBW	≧3 x RBW
Sweep	Auto couple
Trace	Allow the trace to stabilize.
Span	Between two times and five times the occupied bandwidth
Attenuation	Auto

3.4 Test procedure

1. The transmitter output was connected to the spectrum analyzer.
2. Test was performed in accordance with clause 8.1 option1 of KDB 558074 D01
3. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

3.5 Test diagram

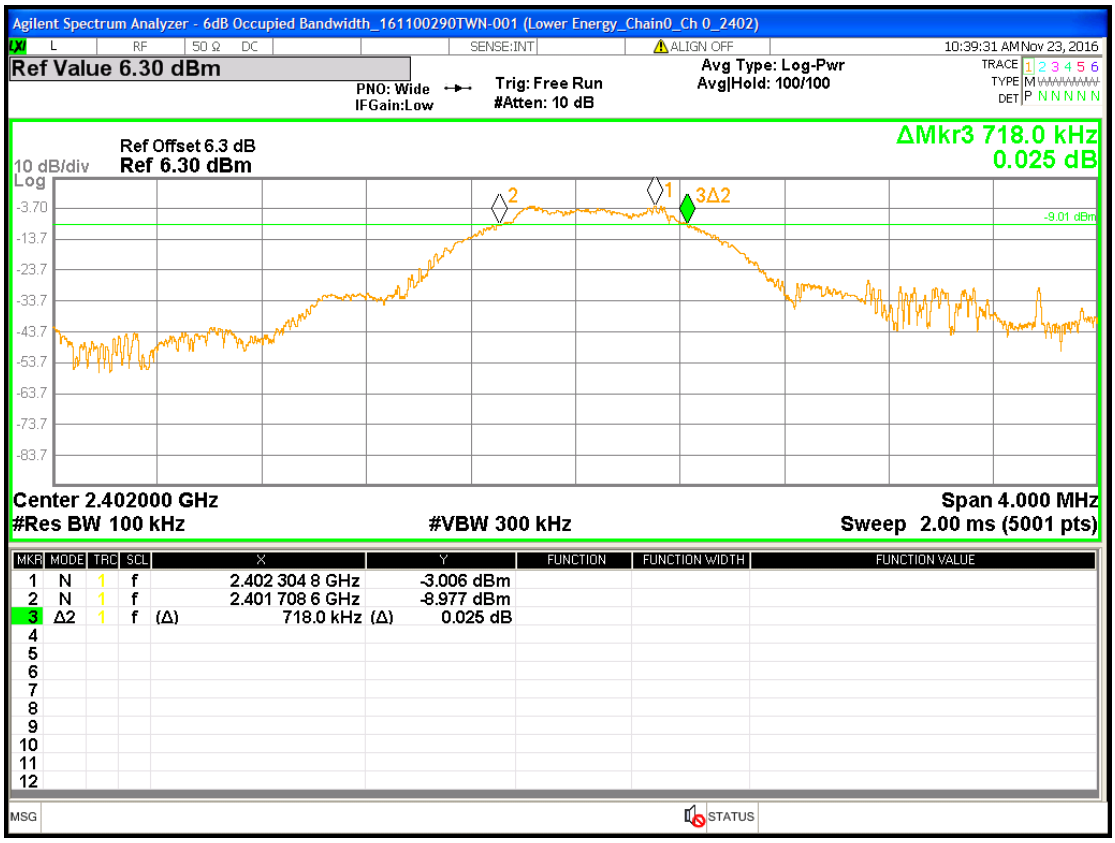


Spectrum Analyzer

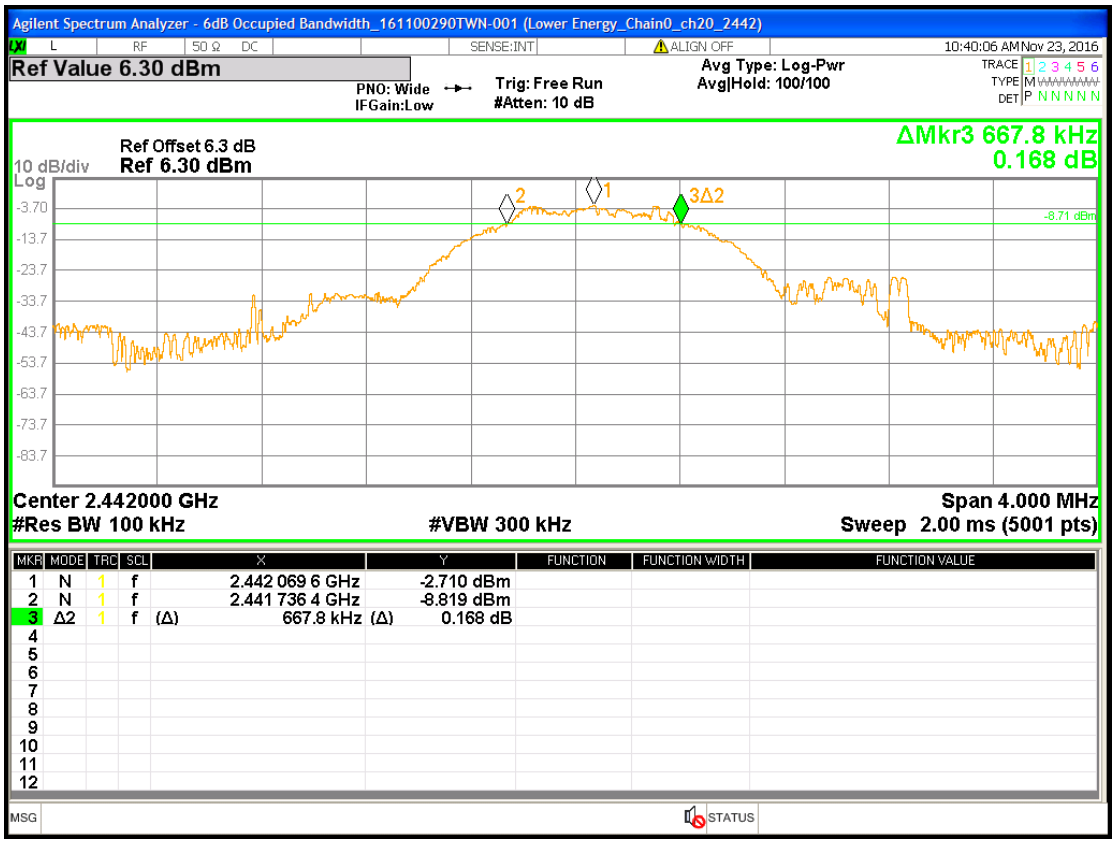
3.6 Test results

Mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Pass/Fail
BT 4.2	Low	2402	0.7180	0.5	Pass
	Middle	2442	0.6678	0.5	Pass
	High	2480	0.7269	0.5	Pass

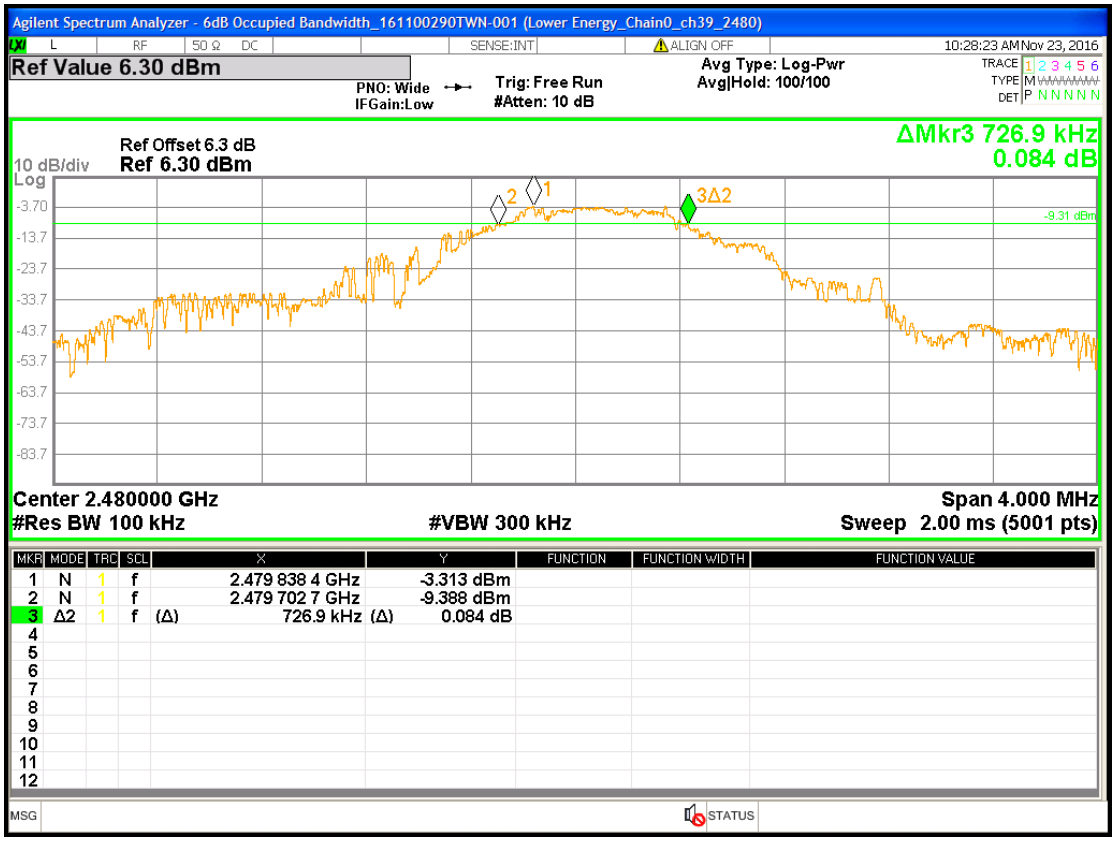
Chain0 : 6dB Bandwidth @ Lower Energy mode Ch low



Chain0 : 6dB Bandwidth @ Lower Energy mode Ch middle



Chain0 : 6dB Bandwidth @ Lower Energy mode Ch high



4. Maximum Peak Conducted Output Power

4.1 Operating environment

Temperature:	25	℃
Relative Humidity:	50	%
Atmospheric Pressure	1008	hPa
Requirement & Test method	15.247(b)(3) KDB 558074 D01 v03r05	

4.2 Limit for maximum peak conducted output power

For systems using digital modulation in the 2400-2483.5 MHz: 1 Watt (30dBm)

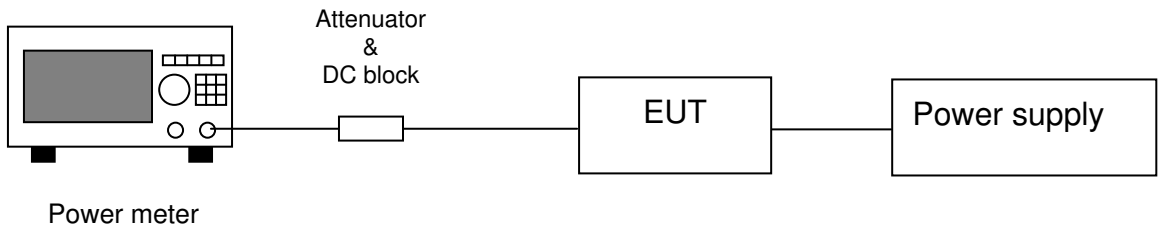
4.3 Measuring instrument setting

Power meter	
Power meter	**Setting**
Bandwidth	65MHz bandwidth is greater than the EUT emission bandwidth
Detector	Peak & Average

4.4 Test procedure

Test procedures refer to clause 9.1.3 peak power meter method and clause 9.2.3.2 measurement using a gated RF average power meter of KDB 558074 D01.

4.5 Test diagram



4.6 Test result

Mode	Channel	Frequency (MHz)	Maximum (PK) (dBm)	Maximum (PK) (mW)	Limit (dBm)	Margin (dB)
BT 4.2	Low	2402	-2.44	0.57	30	-32.44
	Middle	2442	-2.75	0.53	30	-32.75
	High	2480	-2.73	0.53	30	-32.73

5. Power Spectral Density

5.1 Operating environment

Temperature:	25	℃
Relative Humidity:	50	%
Atmospheric Pressure	1008	hPa
Requirement & Test method	15.247(e) KDB 558074 D01 v03r05	

5.2 Limit for power spectrum density

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

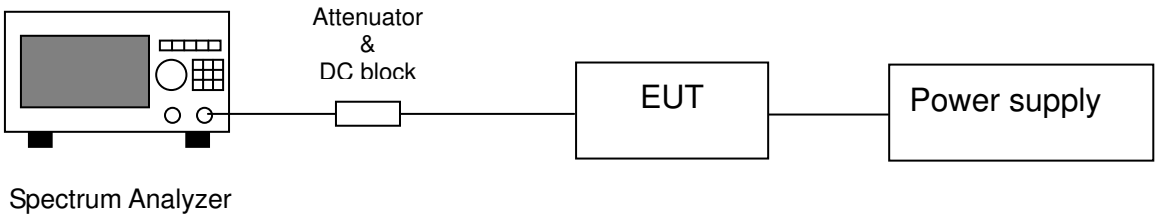
5.3 Measuring instrument setting

Spectrum analyzer settings	
Spectrum Analyzer function	**Setting**
Detector	Peak
RBW	≧3 kHz
VBW	≧3 x RBW
Sweep	Auto couple
Trace	Max hold
Span	1.5 times x 6dB bandwidth
Attenuation	Auto

5.4 Test procedure

1. Test procedure refer to clause 10.2 method PKPSD (peak PSD) of KDB 558074 D01 and clause E) 2) b) measure.
2. Using the maximum conducted output power in the fundamental emission demonstrates compliance. The EUT must be configured to transmit continuously at full power over the measurement duration.
3. Use the peak marker function to determine the maximum amplitude level within the RBW.

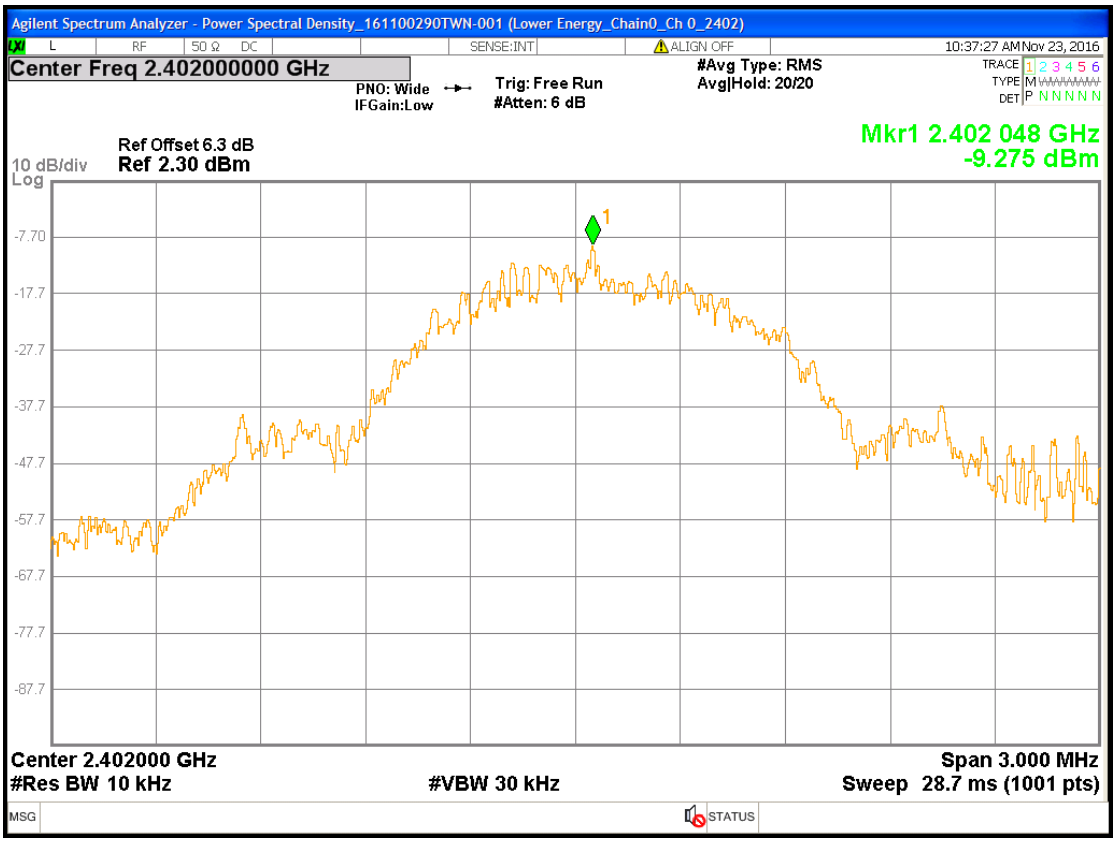
5.5 Test diagram



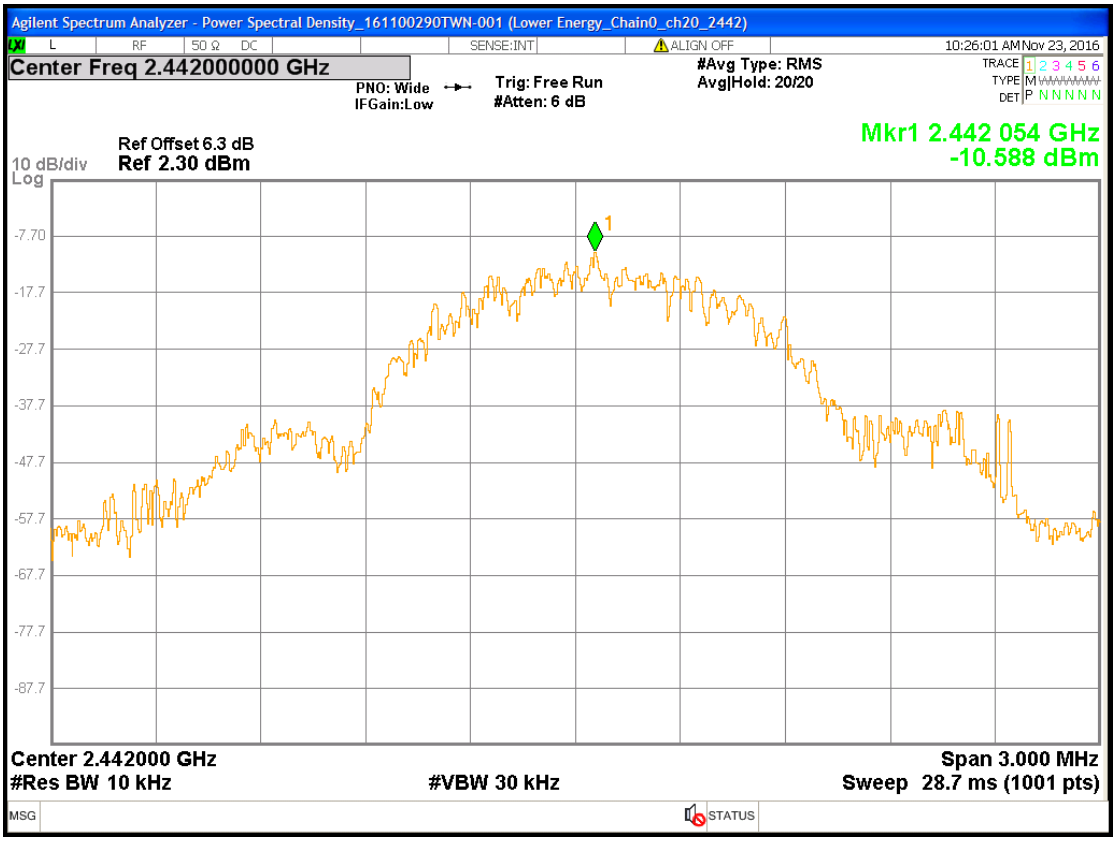
5.6 Test results

Mode	Channel	Frequency (MHz)	RBW factor	PSD in 10kHz	PSD in 3kHz		Limit (dBm)	Margin (dB)
					(dBm)	(mW)		
BT 4.2	Low	2402	5.23	-9.28	-14.50	0.04	8	-22.50
	Middle	2442	5.23	-10.59	-15.82	0.03	8	-23.82
	High	2480	5.23	-11.29	-16.51	0.02	8	-24.51

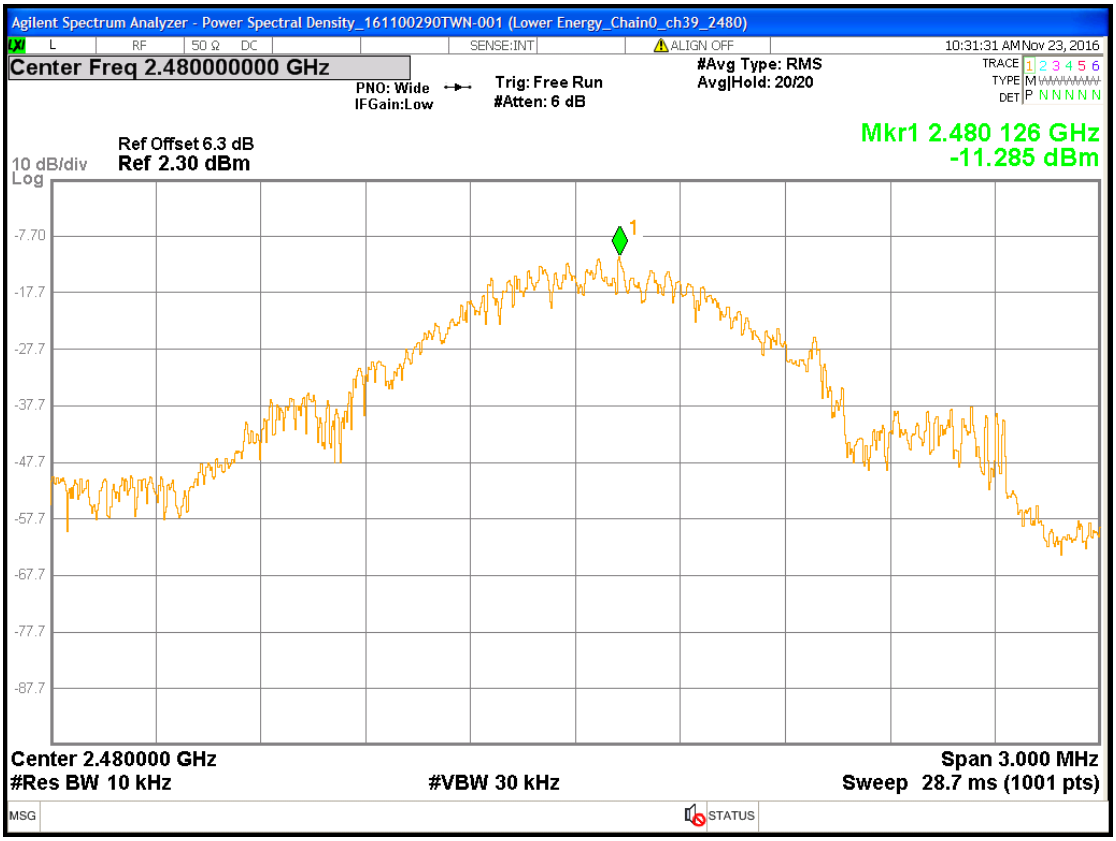
Chain0 : Power Spectral Density @ Lower Energy mode Ch low



Chain0 : Power Spectral Density @ Lower Energy mode Ch middle



Chain0 : Power Spectral Density @ Lower Energy mode Ch high



6. Emissions In Non-Restricted Frequency Bands

6.1 Operating environment

Temperature:	20	℃
Relative Humidity:	55	%
Atmospheric Pressure	1008	hPa
Requirement	15.247(d)	

6.2 Limit for emissions in non-restricted frequency bands

The peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz

6.3 Measuring instruments setting

Reference level measurement

Spectrum analyzer settings	
Spectrum Analyzer function	**Setting**
Detector	Peak
RBW	≧100 kHz
VBW	≧3 x RBW
Sweep	Auto couple
Trace	Max hold
Span	≧1.5 time 6dB bandwidth
Attenuation	Auto

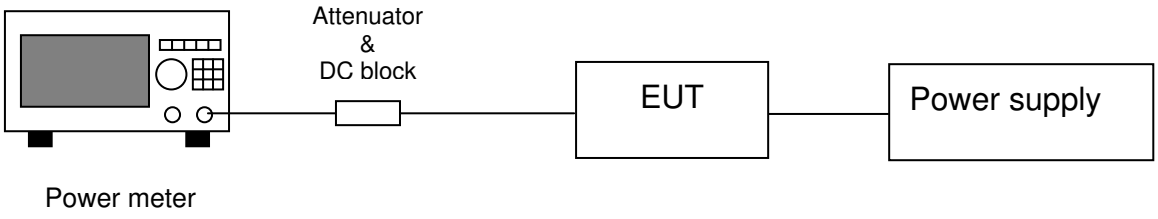
Emission level measurement

Spectrum analyzer settings	
Spectrum Analyzer function	**Setting**
Detector	Peak
RBW	≧100 kHz
VBW	≧3 x RBW
Sweep	Auto couple
Trace	Max hold
Attenuation	Auto

6.4 Test procedure

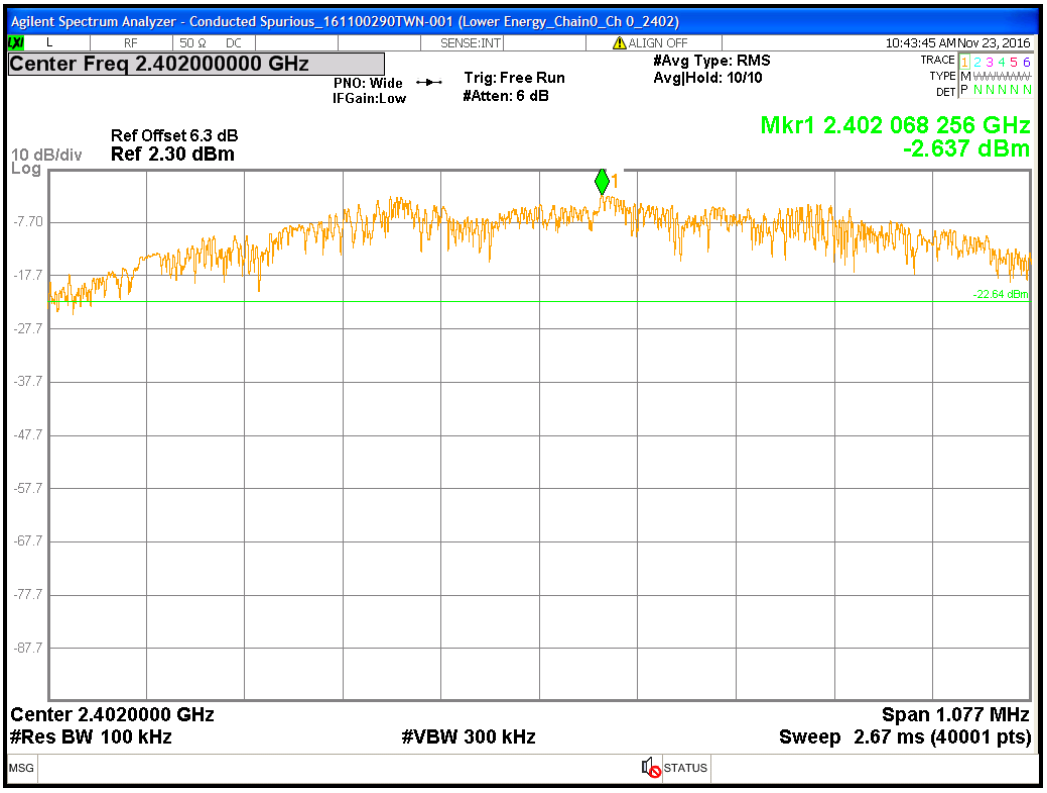
1. The procedure was used in antenna-port conducted and connected to the spectrum analyzer.
2. Set instrument center frequency to center frequency
3. Use the parameter configured in clause 6.3 to measure
4. Use the peak marker function to determine the maximum amplitude level.

6.5 Test diagram

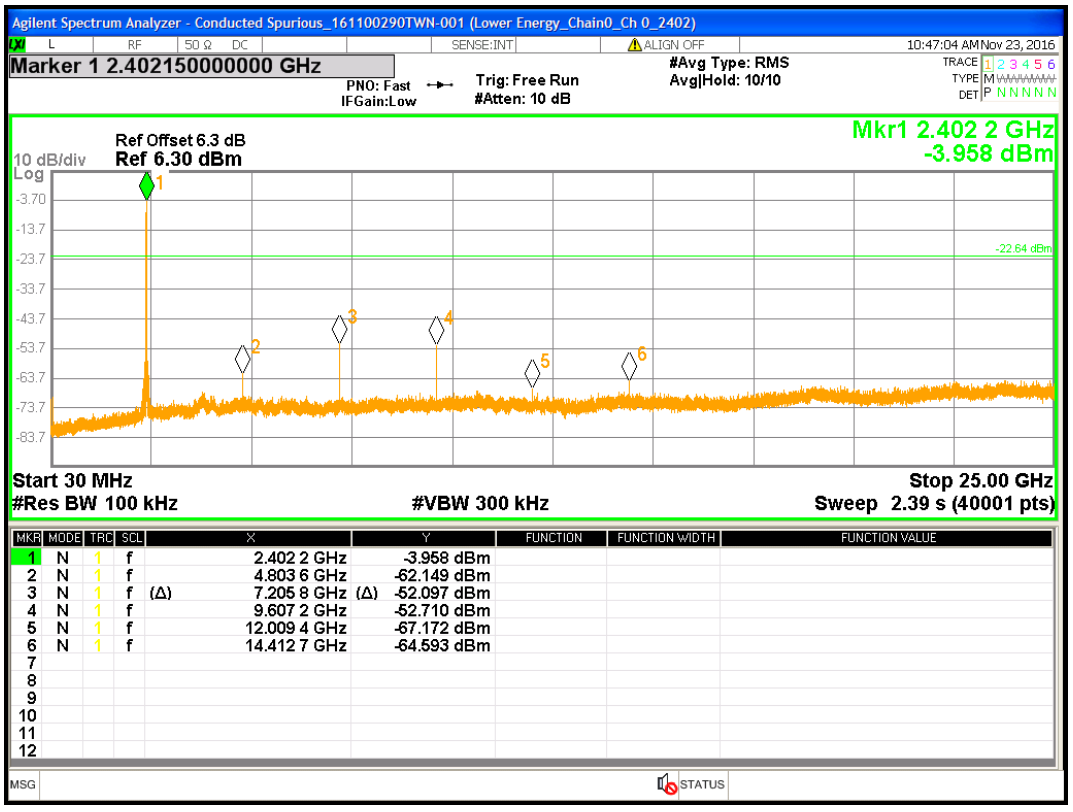


6.6 Test results

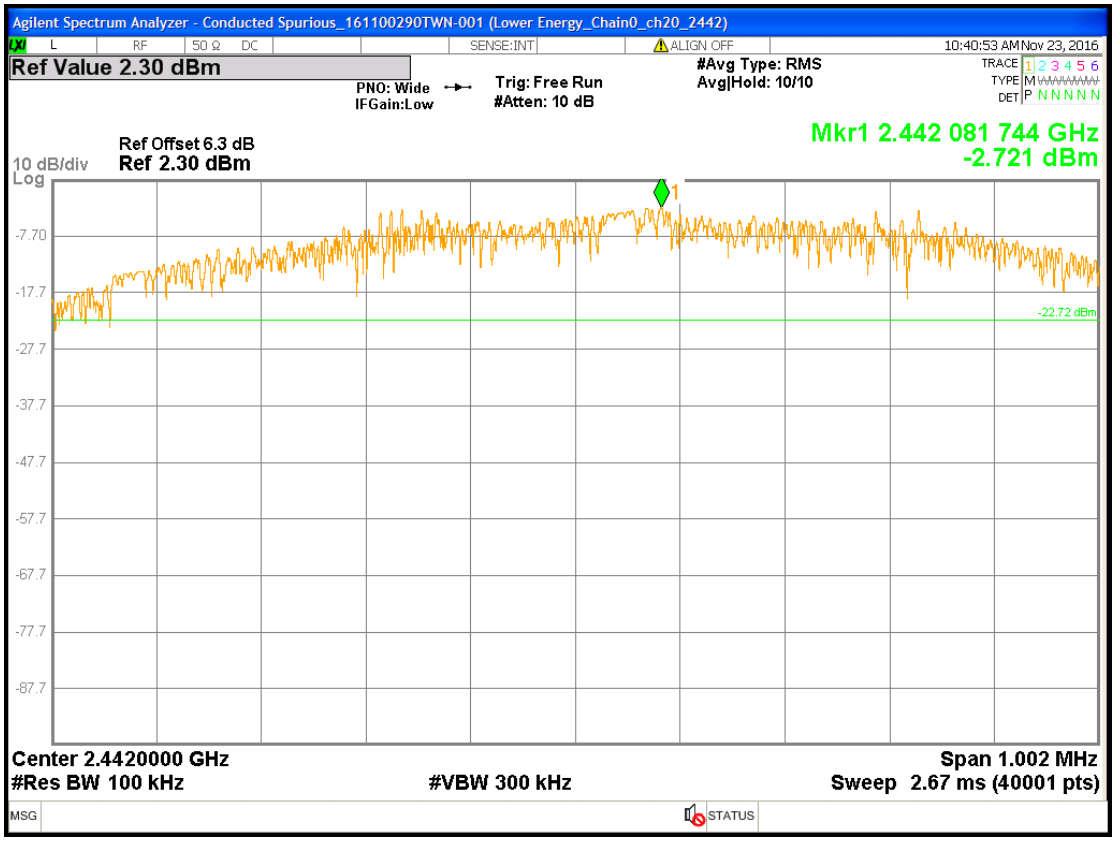
Chain0 : Conducted Spurious @ Lower Energy mode Ch low



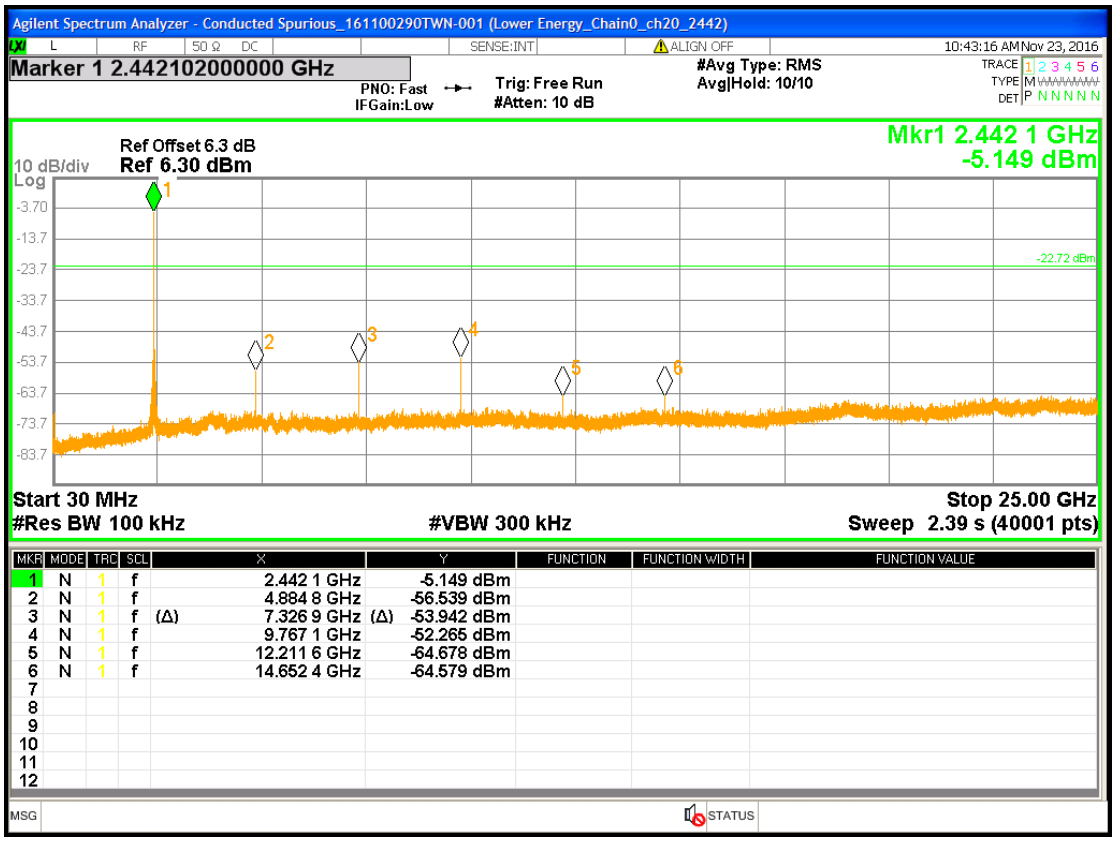
Chain0 : Conducted Spurious @ Lower Energy mode Ch low



Chain0 : Conducted Spurious @ Lower Energy mode Ch middle

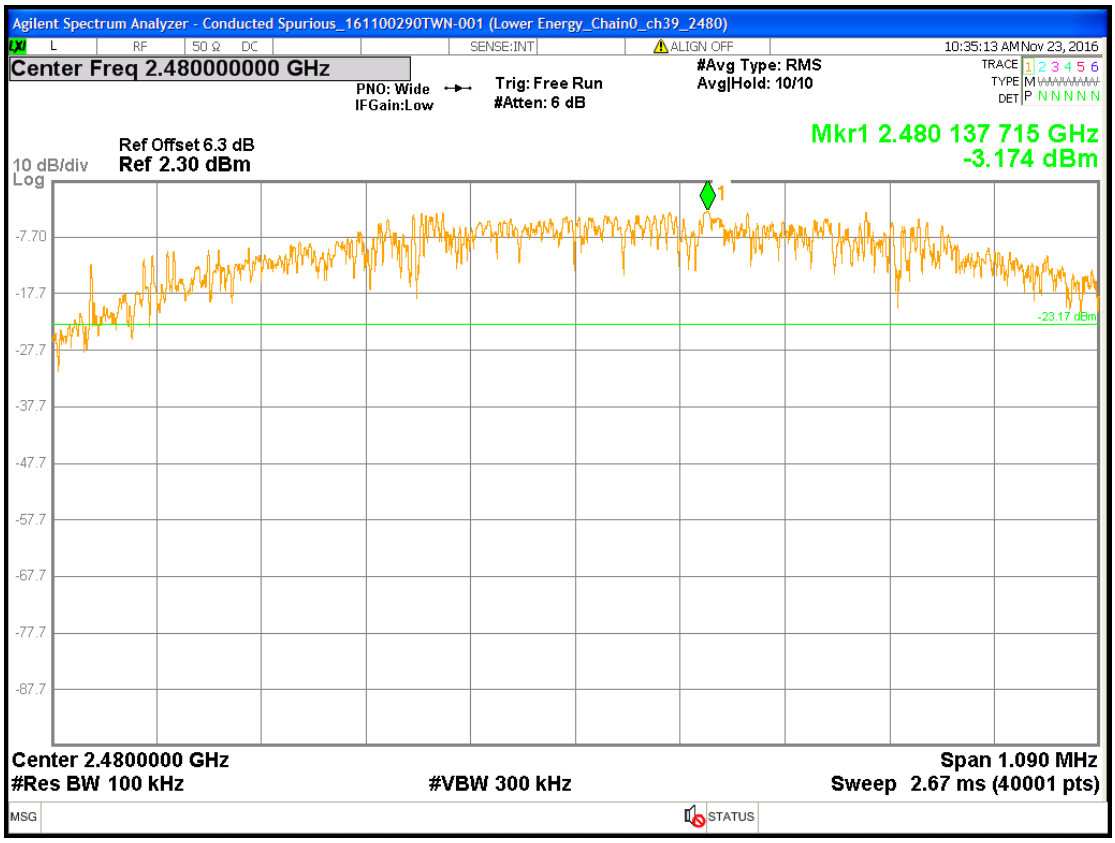


Chain0 : Conducted Spurious @ Lower Energy mode Ch middle

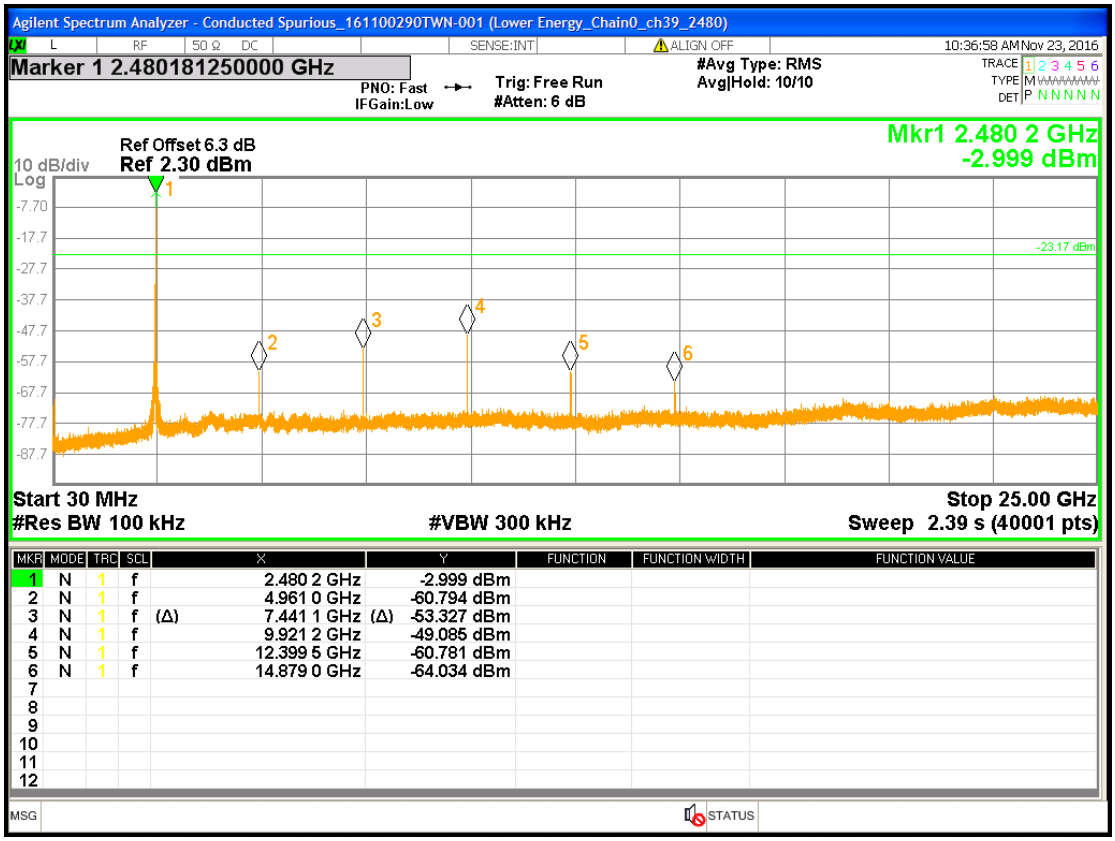


MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.442 1 GHz	-5.149 dBm			
2	N	1	f	4.884 8 GHz	-56.539 dBm			
3	N	1	f	(Δ) 7.326 9 GHz	(Δ) -53.942 dBm			
4	N	1	f	9.767 1 GHz	-52.265 dBm			
5	N	1	f	12.211 6 GHz	-64.678 dBm			
6	N	1	f	14.652 4 GHz	-64.579 dBm			
7								
8								
9								
10								
11								
12								

Chain0 : Conducted Spurious @ Lower Energy mode Ch high



Chain0 : Conducted Spurious @ Lower Energy mode Ch high



MKR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	N	1	f	2.480 2 GHz	-2.999 dBm			
2	N	1	f	4.961 0 GHz	-60.794 dBm			
3	N	1	f	(Δ) 7.441 1 GHz	(Δ) -53.327 dBm			
4	N	1	f	9.921 2 GHz	-49.085 dBm			
5	N	1	f	12.399 5 GHz	-60.781 dBm			
6	N	1	f	14.879 0 GHz	-64.034 dBm			
7								
8								
9								
10								
11								
12								

7. Emissions In Restricted Frequency Bands (Radiated emission measurements)

7.1 Operating environment

Temperature:	20	℃
Relative Humidity:	55	%
Atmospheric Pressure	1008	hPa
Requirement	15.247(d), 15.205, 15.209	

7.2 Limit for emission in restricted frequency bands (Radiated emission measurement)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	2400/F(kHz)	30
1.705~30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark:

1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

7.3 Measuring instrument setting

Below 1GHz measurement

Receiver settings	
Receiver function	**Setting**
Detector	QP
RBW	9-150 kHz ; 200-300 Hz 0.15-30 MHz; 9-10 kHz 30-1000 MHz; 100-120 kHz
VBW	≧3 x RBW
Sweep	Auto couple
Attenuation	Auto

Above 1GHz measurement

Spectrum analyzer settings	
Spectrum Analyzer function	**Setting**
Detector	Peak
RBW	1MHz
VBW	3MHz for Peak and Average
Sweep	Auto couple
Start Frequency	1GHz
Stop Frequency	Tenth harmonic
Attenuation	Auto

7.4 Test procedure

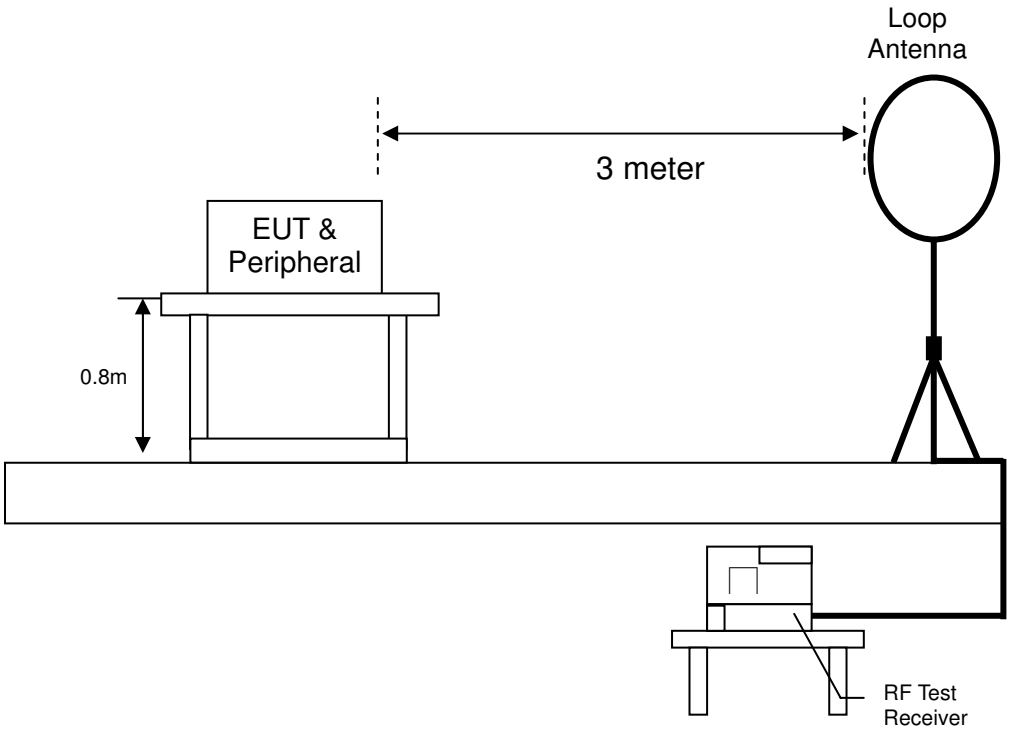
Radiated emissions were invested cover the frequency range from 30MHz to 1000MHz using a receiver RBW of 120kHz record QP reading, and the frequency over 1GHz using a spectrum analyzer RBW of 1MHz and 3MHz VBW record Peak and Average reading (15.209 paragraph) on the report.

The EUT for testing is arranged on a turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter.

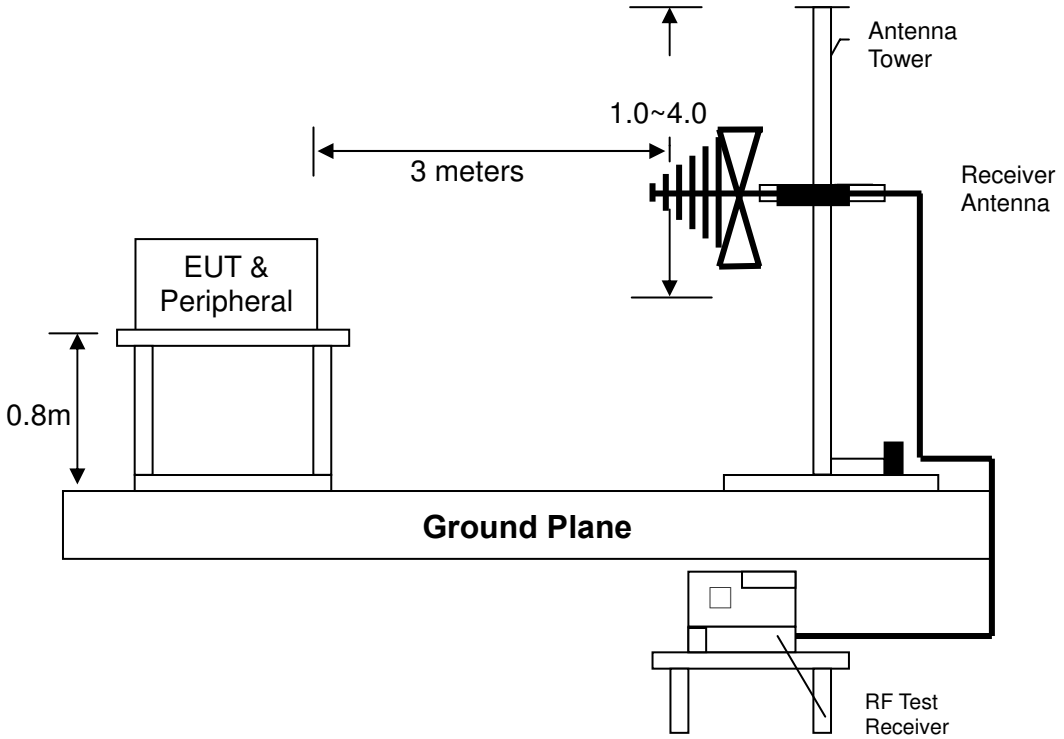
The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.

7.5 Test configuration

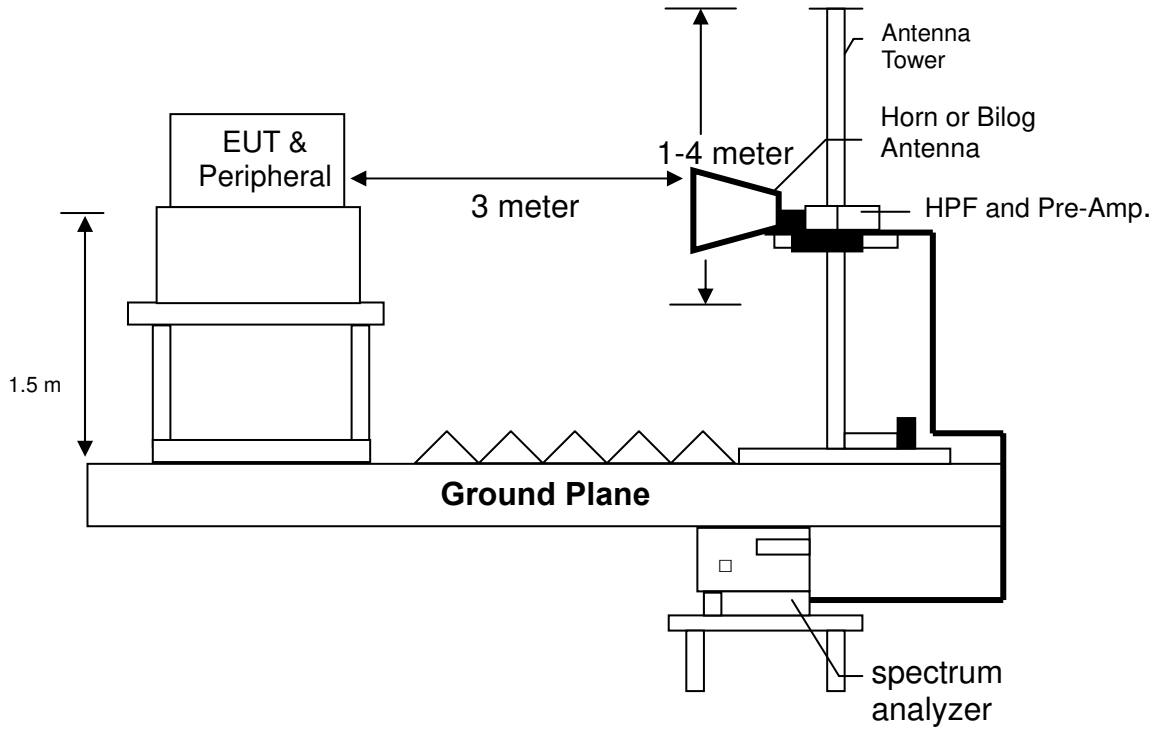
7.5.1 Radiated emission from 9kHz to 30MHz uses Loop Antenna:



7.5.2 Radiated emission below 1GHz using Bilog Antenna



7.5.3 Radiated emission above 1GHz using Horn Antenna



7.6 Test result

7.6.1 Measurement results: frequencies 9kHz to 30MHz

The test was performed on EUT under GFSK continuously transmitting mode. The worst case occurred at Tx Low channel

Test mode : TX mode Low channel

RB8762-a-HM

Polarity (circle)	Frequency (MHz)	Detection value	Factor (dB/m)	Reading (dBμV)	Value (dBμV/m)	Limit @ 3m (dBμV/m)	Tolerance (dB)
Plane	0.02	QP	20.92	53.83	74.74	121.58	-46.84
Plane	0.03	QP	20.86	44.21	65.07	118.06	-52.99
Plane	0.05	QP	20.83	35.70	56.53	113.62	-57.09
Plane	0.07	QP	20.81	32.29	53.10	110.70	-57.60
Plane	0.09	QP	20.78	30.91	51.69	108.52	-56.83
Plane	0.21	QP	20.76	28.28	49.04	101.16	-52.12
Plane	0.93	QP	21.27	23.88	45.15	68.23	-23.08

Remark: Corr. Factor = Antenna Factor + Cable Loss

RB8762-c-HM

Polarity (circle)	Frequency (MHz)	Detection value	Factor (dB/m)	Reading (dBμV)	Value (dBμV/m)	Limit @ 3m (dBμV/m)	Tolerance (dB)
Plane	0.01	QP	20.97	53.26	74.23	127.60	-53.37
Plane	0.03	QP	20.86	49.31	70.17	118.06	-47.89
Plane	0.04	QP	20.85	41.84	62.68	115.56	-52.88
Plane	0.05	QP	20.83	41.64	62.47	113.62	-51.15
Plane	0.09	QP	20.78	34.84	55.62	108.52	-52.90
Plane	0.27	QP	20.76	30.17	50.93	98.98	-48.05
Plane	0.99	QP	21.30	26.54	47.84	67.69	-19.85

Remark: Corr. Factor = Antenna Factor + Cable Loss

RB8762-a-HMG

Polarity (circle)	Frequency (MHz)	Detection value	Factor (dB/m)	Reading (dBµV)	Value (dBµV/m)	Limit @ 3m (dBµV/m)	Tolerance (dB)
Plane	0.02	QP	20.92	37.82	58.73	121.58	-62.85
Plane	0.03	QP	20.86	39.49	60.35	118.06	-57.71
Plane	0.04	QP	20.85	38.04	58.88	115.56	-56.68
Plane	0.07	QP	20.81	26.88	47.69	110.70	-63.01
Plane	0.12	QP	20.77	25.17	45.94	106.02	-60.08
Plane	0.45	QP	20.95	16.93	37.88	94.54	-56.66
Plane	23.67	QP	22.19	1.86	24.05	69.54	-45.49

Remark: Corr. Factor = Antenna Factor + Cable Loss

7.6.2 Measurement results: frequencies below 1 GHz

The test was performed on EUT under GFSK continuously transmitting mode. The worst case occurred at Tx Low channel

Worst Case : GFSK at Tx Low channel

RB8762-a-HM

Polarization (circle)	Frequency (MHz)	Detector	Corr. Factor (dB/m)	Reading (dBµV)	Calculated level (dBµV/m)	Limit @ 3m (dBµV/m)	Margin (dB)
Vertical	45.52	QP	14.49	12.74	29.96	40.00	-10.04
Vertical	152.22	QP	13.75	24.76	30.63	43.50	-12.87
Vertical	299.66	QP	13.83	20.92	33.66	46.00	-12.34
Vertical	338.46	QP	15.52	10.49	35.41	46.00	-10.59
Vertical	505.30	QP	20.94	10.68	36.48	46.00	-9.52
Vertical	666.62	QP	26.45	6.62	43.32	46.00	-2.68
Horizontal	128.94	QP	13.53	26.11	31.43	43.50	-12.07
Horizontal	225.94	QP	12.54	21.72	33.01	46.00	-12.99
Horizontal	299.66	QP	14.17	27.10	37.19	46.00	-8.81
Horizontal	309.36	QP	15.36	18.13	37.18	46.00	-8.82
Horizontal	322.94	QP	18.30	9.41	39.12	46.00	-6.88
Horizontal	350.10	QP	26.89	5.30	37.96	46.00	-8.04

Remark: Corr. Factor = Antenna Factor + Cable Loss

RB8762-c-HM

Polarization (circle)	Frequency (MHz)	Detector	Corr. Factor (dB/m)	Reading (dBµV)	Calculated level (dBµV/m)	Limit @ 3m (dBµV/m)	Margin (dB)
Vertical	45.52	QP	14.49	12.74	34.95	40.00	-5.05
Vertical	127.00	QP	13.75	24.76	33.63	43.50	-9.87
Vertical	148.34	QP	13.83	20.92	33.37	43.50	-10.13
Vertical	299.66	QP	15.52	10.49	36.22	46.00	-9.78
Vertical	398.60	QP	20.94	10.68	34.21	46.00	-11.79
Vertical	480.08	QP	26.45	6.62	35.61	46.00	-10.39
Horizontal	130.88	QP	13.53	26.11	29.72	43.50	-13.78
Horizontal	224.00	QP	12.54	21.72	30.15	46.00	-15.85
Horizontal	299.66	QP	14.17	27.10	35.76	46.00	-10.24
Horizontal	322.94	QP	15.36	18.13	38.24	46.00	-7.76
Horizontal	351.10	QP	18.30	9.41	36.17	46.00	-9.83
Horizontal	577.08	QP	26.89	5.30	36.24	46.00	-9.76

Remark: Corr. Factor = Antenna Factor + Cable Loss

RB8762-a-HMG

Polarization (circle)	Frequency (MHz)	Detector	Corr. Factor (dB/m)	Reading (dBµV)	Calculated level (dBµV/m)	Limit @ 3m (dBµV/m)	Margin (dB)
Vertical	30.00	QP	14.49	12.74	27.01	40.00	-12.99
Vertical	53.28	QP	13.75	24.76	29.90	40.00	-10.10
Vertical	99.84	QP	13.83	20.92	33.60	43.50	-9.90
Vertical	173.56	QP	15.52	10.49	22.95	43.50	-20.55
Vertical	239.52	QP	20.94	10.68	24.51	46.00	-21.49
Vertical	322.94	QP	26.45	6.62	31.06	46.00	-14.94
Horizontal	97.90	QP	13.53	26.11	29.25	43.50	-14.25
Horizontal	198.78	QP	12.54	21.72	36.41	43.50	-7.09
Horizontal	297.72	QP	14.17	27.10	35.91	46.00	-10.09
Horizontal	322.94	QP	15.36	18.13	36.83	46.00	-9.17
Horizontal	408.30	QP	18.30	9.41	36.81	46.00	-9.19
Horizontal	456.80	QP	26.89	5.30	37.11	46.00	-8.89

Remark: Corr. Factor = Antenna Factor + Cable Loss

7.6.3 Measurement results: frequency above 1GHz

RB8762-a-HM

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)
BT 4.2 Ch_0	4804	PK	V	40.13	-0.10	51.56	51.46	74.00	-22.54
	4980	PK	V	39.81	0.48	53.73	54.21	74.00	-19.79
	4980	AV	V	39.81	0.48	41.83	42.31	54.00	-11.69
	7206	PK	V	38.11	8.10	49.25	57.35	74.00	-16.65
	7206	AV	V	38.11	8.10	39.83	47.93	54.00	-6.07
	9608	PK	V	38.13	11.38	42.87	54.25	74.00	-19.75
	9608	AV	V	38.13	11.38	34.01	45.39	54.00	-8.61
	4804	PK	H	40.13	-0.10	50.45	50.35	74.00	-23.65
	4980	PK	H	39.81	0.48	50.00	50.48	74.00	-23.52
	7206	PK	H	38.11	8.10	50.25	58.35	74.00	-15.65
	7206	AV	H	38.11	8.10	42.15	50.25	54.00	-3.75
BT 4.2 Ch_20	4884	PK	V	39.99	0.16	51.34	51.50	74.00	-22.50
	4980	PK	V	39.81	0.48	51.64	52.12	74.00	-21.88
	7326	PK	V	38.01	8.47	51.21	59.68	74.00	-14.32
	7326	AV	V	38.01	8.47	40.52	48.99	54.00	-5.01
	9768	PK	V	38.36	11.22	43.62	54.84	74.00	-19.16
	9768	AV	V	38.36	11.22	34.40	45.62	54.00	-8.38
	4884	PK	H	39.99	0.16	50.06	50.22	74.00	-23.78
	4980	PK	H	39.81	0.48	50.20	50.68	74.00	-23.32
	7326	PK	H	38.01	8.47	49.60	58.07	74.00	-15.93
	7326	AV	H	38.01	8.47	41.60	50.07	54.00	-3.93
	9768	PK	H	38.36	11.22	41.48	52.70	74.00	-21.30
BT 4.2 Ch_39	4960	PK	V	39.84	0.41	47.95	48.36	74.00	-25.64
	4980	PK	V	39.81	0.48	53.08	53.56	74.00	-20.44
	7440	PK	V	37.91	8.82	51.86	60.68	74.00	-13.32
	7440	AV	V	37.91	8.82	41.05	49.87	54.00	-4.13
	4960	PK	H	39.84	0.41	48.37	48.78	74.00	-25.22
	4980	PK	H	39.81	0.48	47.00	47.48	74.00	-26.52
	7440	PK	H	37.91	8.82	50.34	59.16	74.00	-14.84
	7440	AV	H	37.91	8.82	41.61	50.43	54.00	-3.57

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

RB8762-c-HM

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBµV)	Corrected Reading (dBµV/m)	Limit @ 3 m (dBµV/m)	Margin (dB)
BT 4.2 Ch_0	4804	PK	V	40.13	-0.10	49.84	49.74	74.00	-24.26
	7206	PK	V	38.11	8.10	43.01	51.11	74.00	-22.89
	9608	PK	V	38.13	11.38	43.14	54.52	74.00	-19.48
	9608	AV	V	38.13	11.38	32.99	44.37	54.00	-9.63
	4804	PK	H	40.13	-0.10	50.16	50.06	74.00	-23.94
	7206	PK	H	38.11	8.10	44.91	53.01	74.00	-20.99
	9608	PK	H	38.13	11.38	44.93	56.31	74.00	-17.69
	9608	AV	H	38.13	11.38	34.91	46.29	54.00	-7.71
BT 4.2 Ch_20	4884	PK	V	39.99	0.16	51.49	51.65	74.00	-22.35
	7326	PK	V	38.01	8.47	45.44	53.91	74.00	-20.09
	7326	AV	V	38.01	8.47	34.79	43.26	54.00	-10.74
	9768	PK	V	38.36	11.22	45.31	56.53	74.00	-17.47
	9768	AV	V	38.36	11.22	35.37	46.59	54.00	-7.41
	4884	PK	H	39.99	0.16	51.81	51.97	74.00	-22.03
	7326	PK	H	38.01	8.47	47.92	56.39	74.00	-17.61
	7326	AV	H	38.01	8.47	38.05	46.52	54.00	-7.48
	9768	PK	H	38.36	11.22	43.23	54.45	74.00	-19.55
	9768	AV	H	38.36	11.22	33.15	44.37	54.00	-9.63
BT 4.2 Ch_39	4960	PK	V	39.84	0.41	50.36	50.77	74.00	-23.23
	7440	PK	V	37.91	8.82	45.66	54.48	74.00	-19.52
	7440	AV	V	37.91	8.82	35.90	44.72	54.00	-9.28
	9920	PK	V	38.57	11.07	43.29	54.36	74.00	-19.64
	9920	AV	V	38.57	11.07	33.30	44.37	54.00	-9.63
	4960	PK	H	39.84	0.41	50.35	50.76	74.00	-23.24
	7440	PK	H	37.91	8.82	48.56	57.38	74.00	-16.62
	7440	AV	H	37.91	8.82	38.87	47.69	54.00	-6.31
	9920	PK	H	38.57	11.07	42.31	53.38	74.00	-20.62

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

RB8762-a-HMG

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBµV)	Corrected Reading (dBµV/m)	Limit @ 3 m (dBµV/m)	Margin (dB)
BT 4.2 Ch_0	4804	PK	V	40.13	-0.10	50.88	50.78	74.00	-23.22
	7206	PK	V	38.11	8.10	48.69	56.79	74.00	-17.21
	7206	AV	V	38.11	8.10	41.63	49.73	54.00	-4.27
	9608	PK	V	38.13	11.38	44.61	55.99	74.00	-18.01
	9608	AV	V	38.13	11.38	37.04	48.42	54.00	-5.58
	4804	PK	H	40.13	-0.10	51.02	50.92	74.00	-23.08
	7206	PK	H	38.11	8.10	44.51	52.61	74.00	-21.39
	9608	PK	H	38.13	11.38	39.53	50.91	74.00	-23.09
BT 4.2 Ch_20	4884	PK	V	39.99	0.16	53.54	53.70	74.00	-20.30
	4884	AV	V	39.99	0.16	46.08	46.24	54.00	-7.76
	7326	PK	V	38.01	8.47	47.50	55.97	74.00	-18.03
	7326	AV	V	38.01	8.47	39.92	48.39	54.00	-5.61
	9768	PK	V	38.36	11.22	46.44	57.66	74.00	-16.34
	9768	AV	V	38.36	11.22	38.91	50.13	54.00	-3.87
	4884	PK	H	39.99	0.16	49.18	49.34	74.00	-24.66
	7326	PK	H	38.01	8.47	44.70	53.17	74.00	-20.83
	9768	PK	H	38.36	11.22	41.01	52.23	74.00	-21.77
BT 4.2 Ch_39	4960	PK	V	39.84	0.41	50.84	51.25	74.00	-22.75
	7440	PK	V	37.91	8.82	44.74	53.56	74.00	-20.44
	9920	PK	V	38.57	11.07	45.91	56.98	74.00	-17.02
	9920	AV	V	38.57	11.07	38.39	49.46	54.00	-4.54
	4960	PK	H	39.84	0.41	47.90	48.31	74.00	-25.69
	7440	PK	H	37.91	8.82	45.12	53.94	74.00	-20.06
	7440	AV	H	37.91	8.82	37.70	46.52	54.00	-7.48
	9920	PK	H	38.57	11.07	41.39	52.46	74.00	-21.54

Remark: Correction Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Pre_Amplifier Gain

8. Emission On Band Edge

8.1 Operating environment

Temperature:	25	℃
Relative Humidity:	50	%
Atmospheric Pressure	1008	hPa
Requirement	15.247(d), 15.205,	

8.2 Measuring instrument setting

Spectrum analyzer settings	
Spectrum Analyzer function	**Setting**
Detector	Peak
RBW	1MHz
VBW	3MHz for Peak and Average
Sweep	Auto couple
Restrict bands	2310~2390MHz
	2483.5 ~2500MHz
Attenuation	Auto

8.3 Test procedure

The test procedure is the same as clause 7.4

8.4 Test results

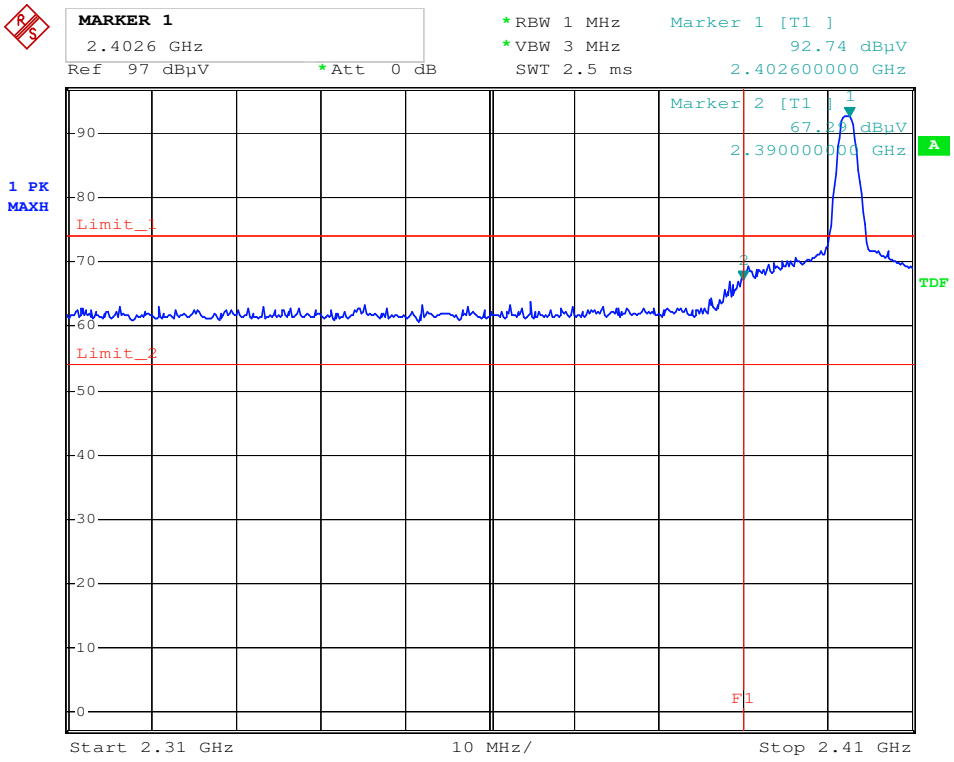
EUT :RB8762-a-HM

Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)	Restricted band (MHz)
BT 4.2	2390.00	PK	V	33.85	33.44	67.29	74	-6.71	2310~2390
	2390.00	AV	V	33.85	17.34	51.19	54	-2.81	
	2483.50	PK	V	34.30	36.14	70.44	74	-3.56	2483.5~2500
	2483.50	AV	V	34.30	16.20	50.50	54	-3.50	
Remark: Correction Factor = Antenna Factor + Cable Loss									

EUT :RB8762-c-HM

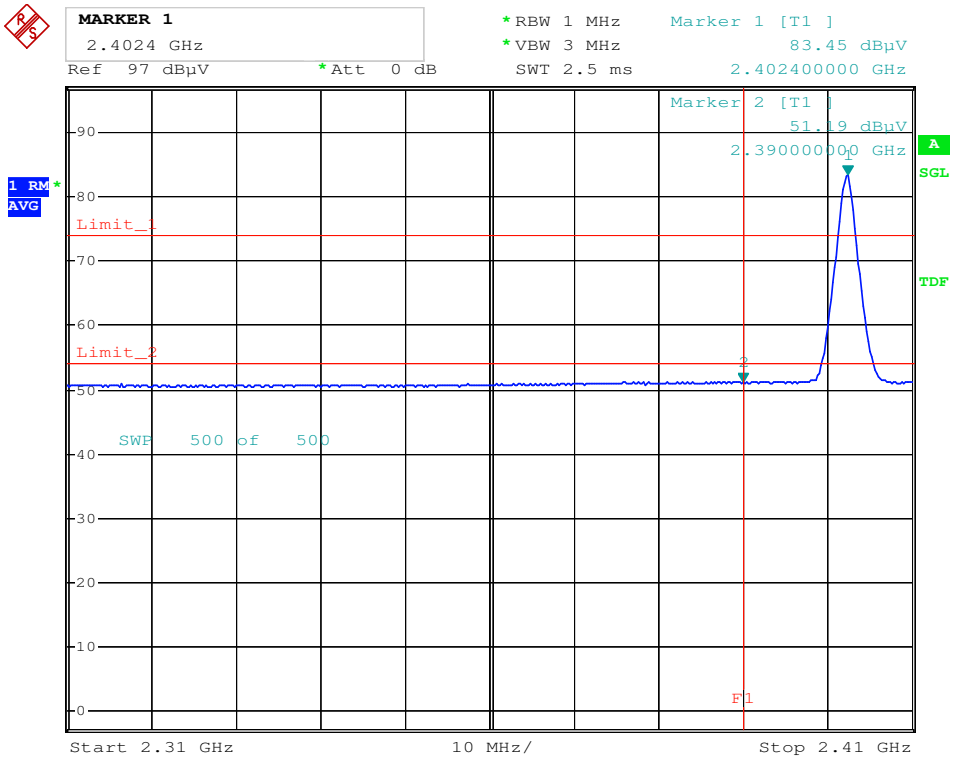
Mode	Frequency (MHz)	Spectrum Analyzer Detector	Ant. Pol. (H/V)	Correction Factor (dB/m)	Reading (dBμV)	Corrected Reading (dBμV/m)	Limit @ 3 m (dBμV/m)	Margin (dB)	Restricted band (MHz)
BT 4.2	2390.00	PK	V	33.85	38.67	72.52	74	-1.48	2310~2390
	2390.00	AV	V	33.85	17.63	51.48	54	-2.52	
	2483.50	PK	V	34.30	33.33	67.63	74	-6.37	2483.5~2500
	2483.50	AV	V	34.30	19.10	53.40	54	-0.60	
Remark: Correction Factor = Antenna Factor + Cable Loss									

Chain0 : Restricted-Band Band edge @ BLE Ch low Peak for RB8762-a-HM



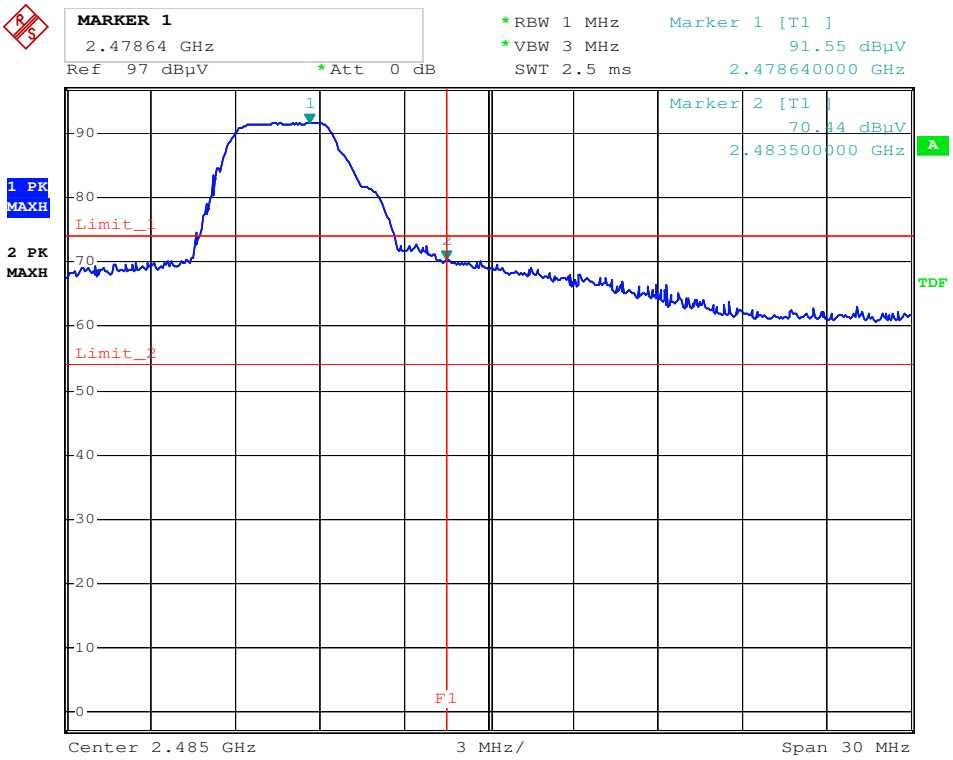
Date: 10.NOV.2016 16:11:44

Chain0 : Restricted-Band Band edge @ BLE Ch low Average for RB8762-a-HM



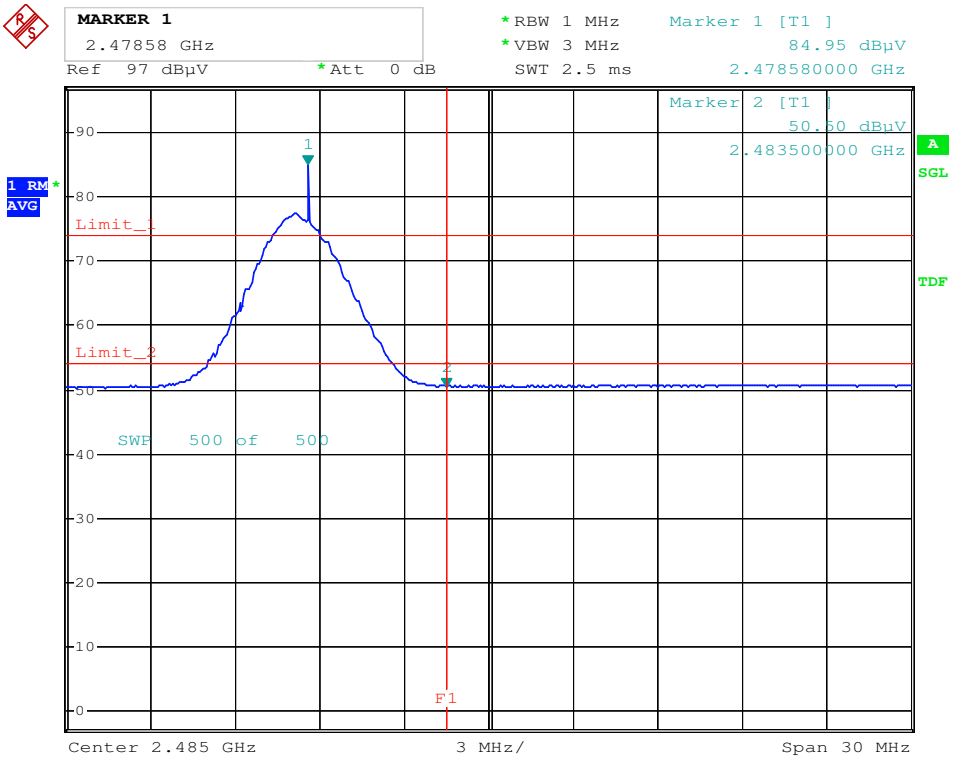
Date: 10.NOV.2016 16:13:37

Chain0 : Restricted-Band Band edge @ BLE Ch high Peak for RB8762-a-HM



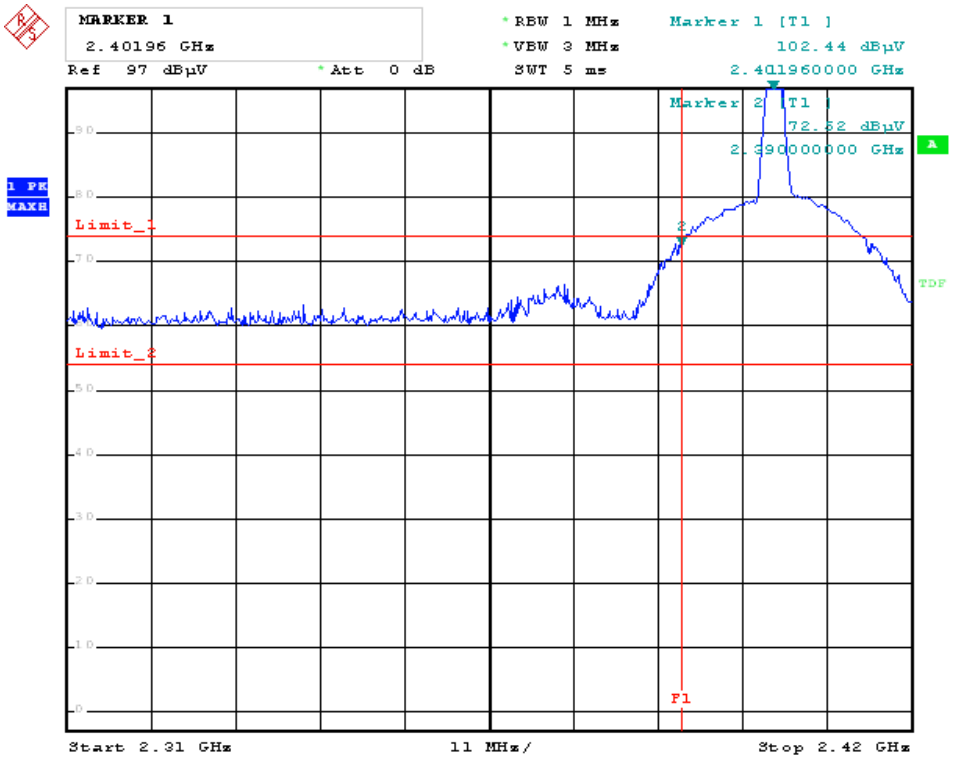
Date: 10.NOV.2016 16:36:00

Chain0 : Restricted-Band Band edge @ BLE Ch high Average for RB8762-a-HM

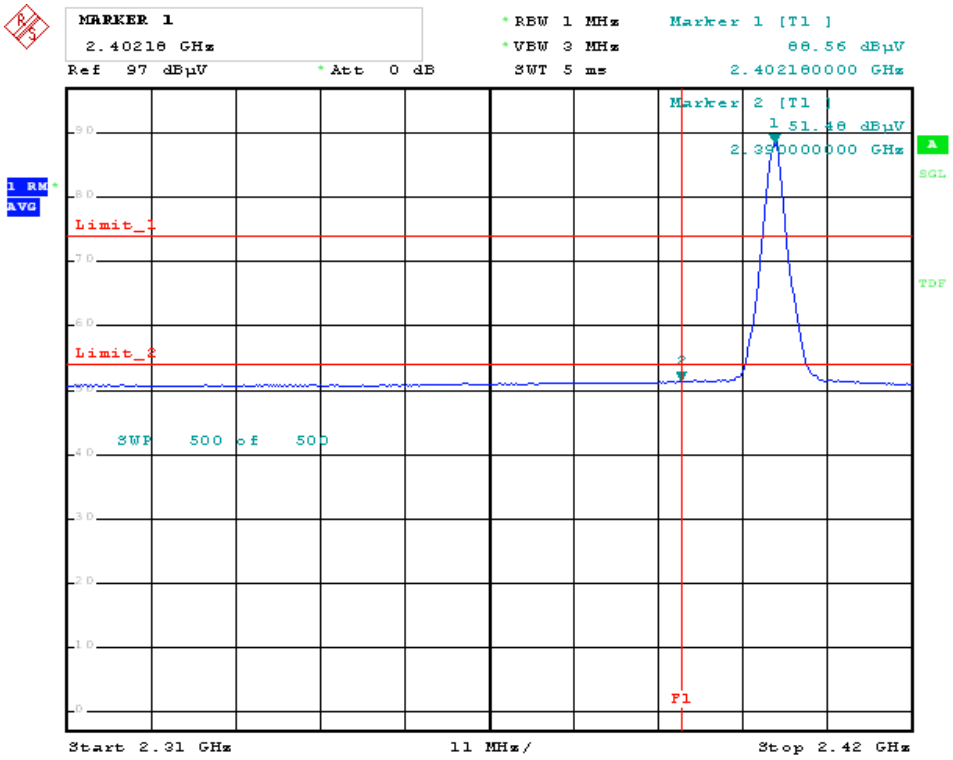


Date: 10.NOV.2016 16:36:58

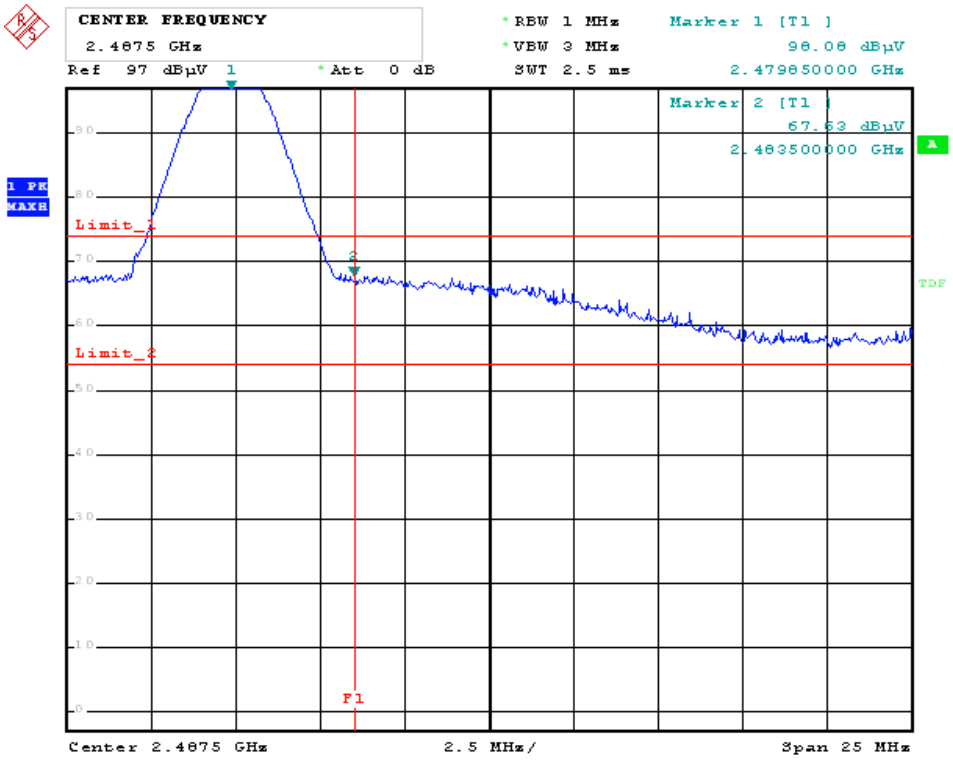
Chain0 : Restricted-Band Band edge @ BLE Ch low Peak for RB8762-c-HM



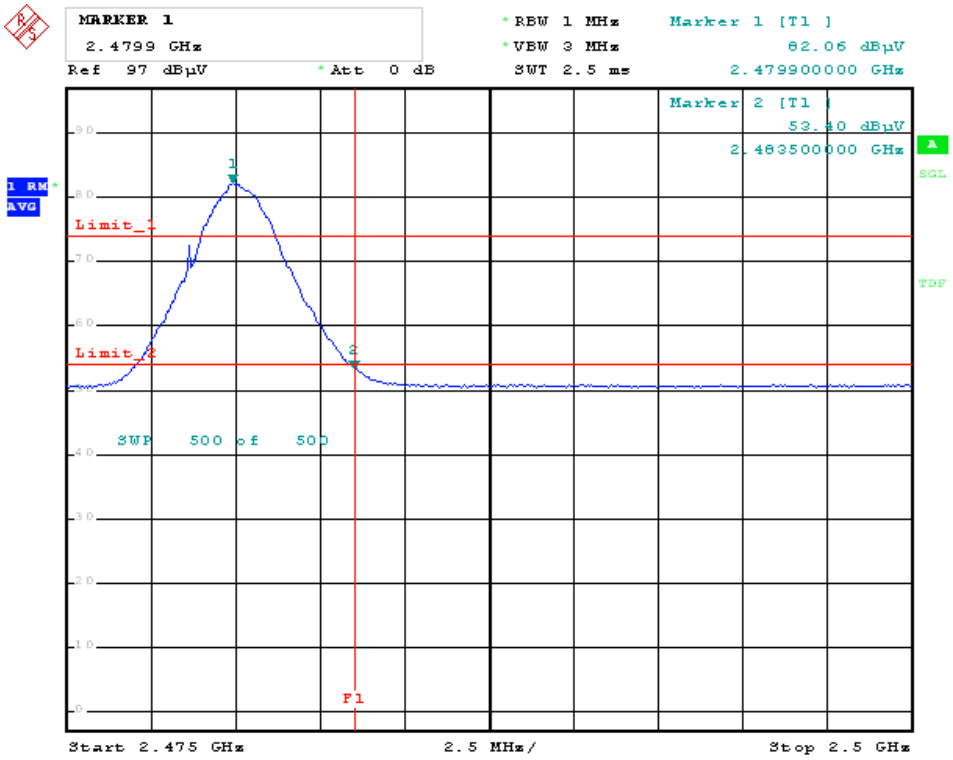
Chain0 : Restricted-Band Band edge @ BLE Ch low Average for RB8762-c-HM



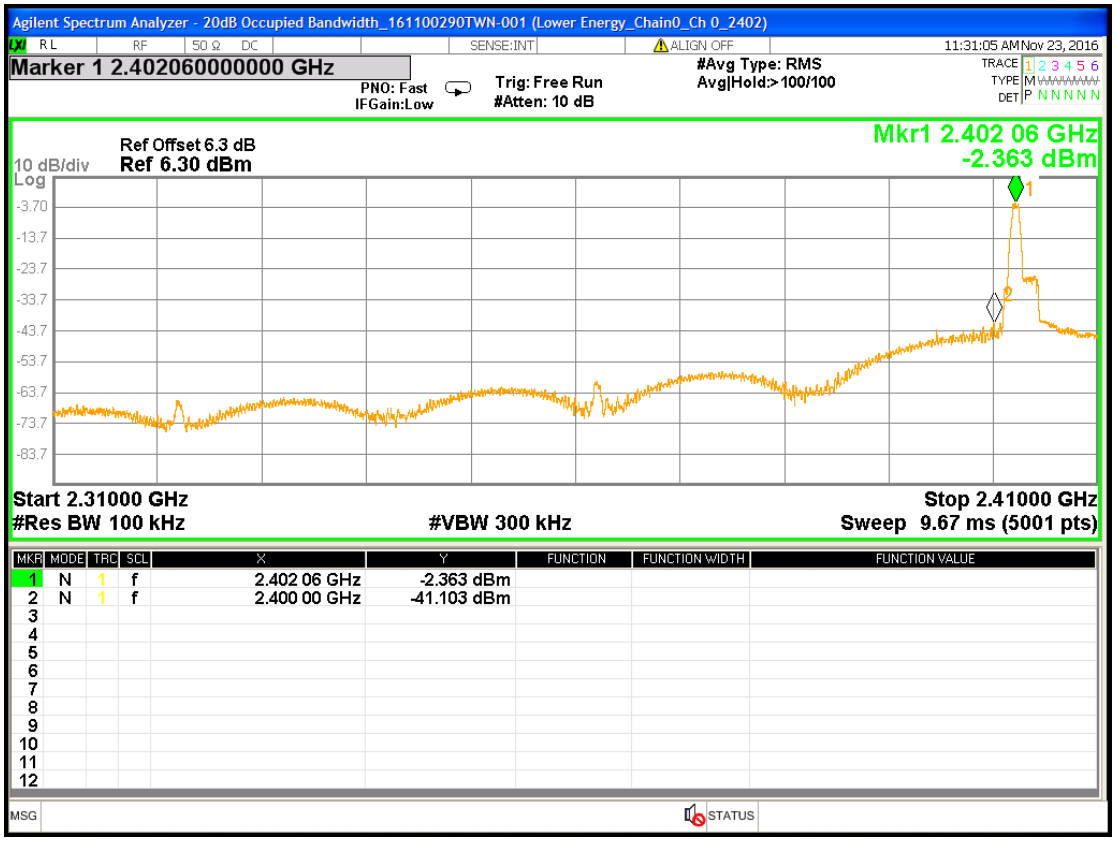
Chain0 : Restricted-Band Band edge @ BLE Ch high Peak for RB8762-c-HM



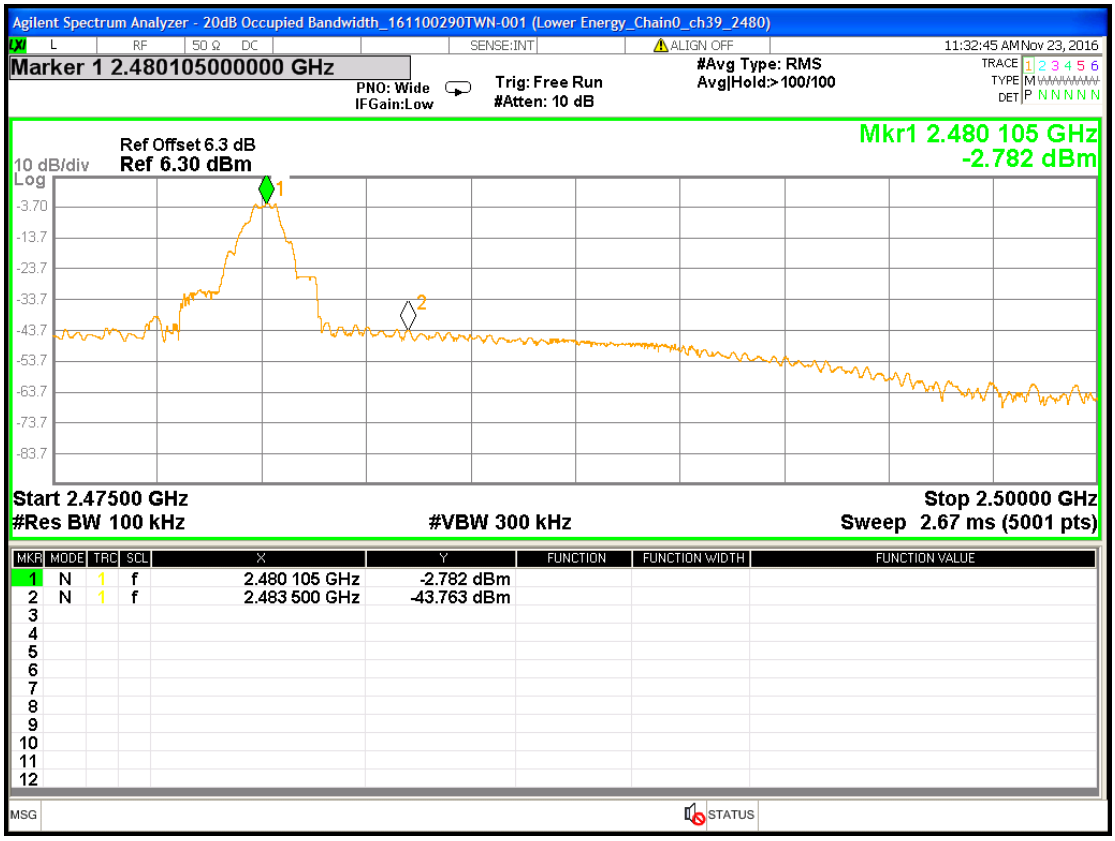
Chain0 : Restricted-Band Band edge @ BLE Ch high Average for RB8762-c-HM



Chain0 : Authorized-Band Band edge @ Lower Energy mode Ch low for RB8762-c-HM



Chain0 : Authorized-Band Band edgeh @ Lower Energy mode Ch high for RB8762-c-HM



9. AC Power Line Conducted Emission

9.1 Operating environment

Temperature:	20	℃
Relative Humidity:	58	%
Atmospheric Pressure	1009	hPa
Requirement	15.207	

9.2 Limit for AC power line conducted emission

Freq. (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56*	56 – 46*
0.50~5.00	56	46
5.00~30.0	60	50

9.3 Measuring instrument setting

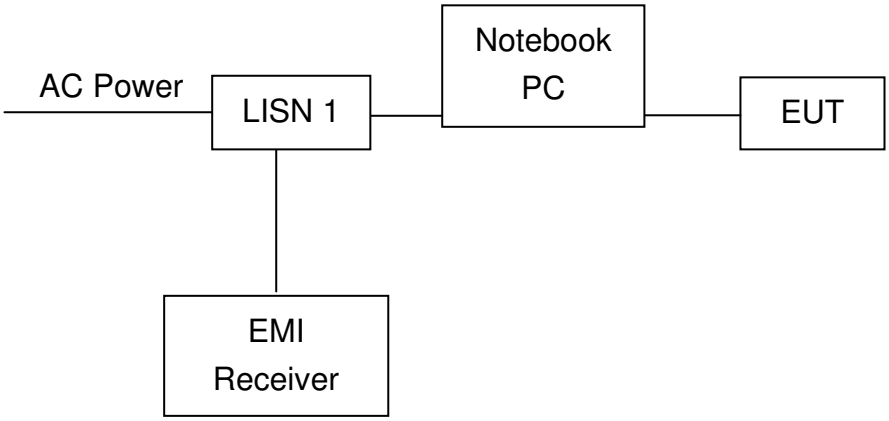
Receiver settings	
Receiver function	**Setting**
Detector	QP
Start frequency	0.15MHz
Stop frequency	30MHz
IF bandwidth	9 kHz
Attenuation	10dB

9.4 Test procedure

1. Configure the EUT according to ANSI C63.10:2013. The EUT or host of EHT has to be placed 0.4 meter far from the conducting wall of the shielding room and at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT or host of EUT to the power mains through a line impedance stabilization network.

3. All the companion devices are connected to the other LISN. The LISN should provide 50Uh/50ohms coupling impedance.
4. The frequency range from 150 kHz to 30MHz was searched
5. Set the test-receiver system to peak detector and specified bandwidth with maximum hold mode.
6. The measurement has to be done between each power line and ground at the power terminal.

9.5 Test diagram



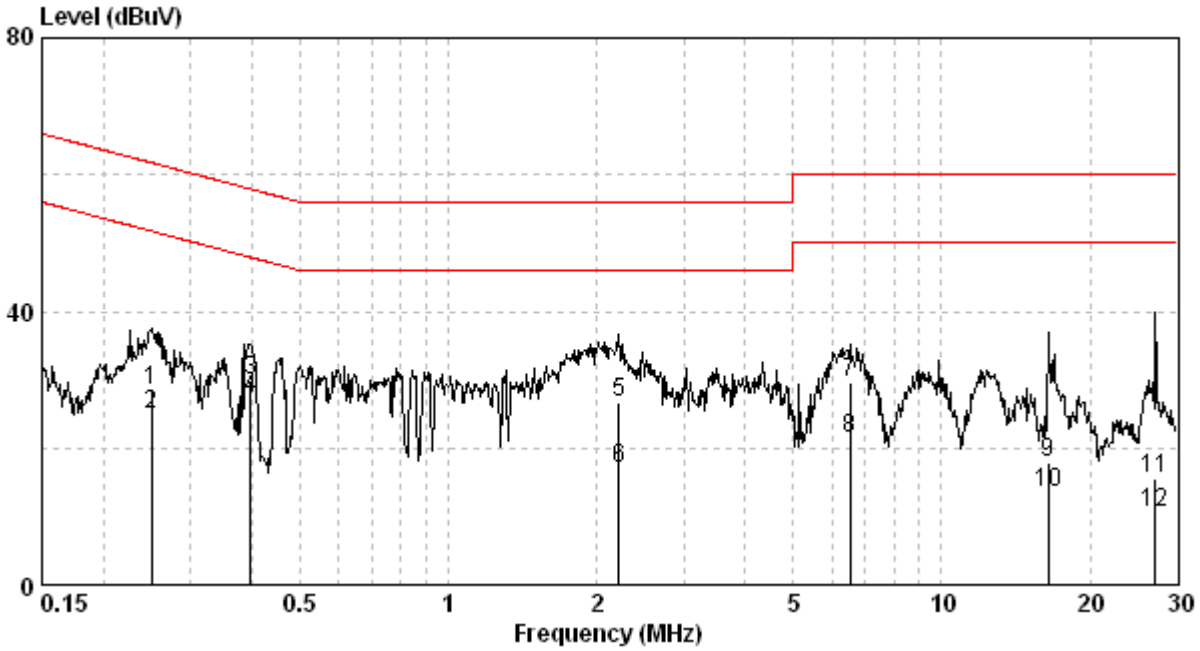
Note: The EUT was tested while in normal communication mode.

9.6 Test results

Phase: Live Line
Model No.: RB8762-c-HM
Test Condition: Normal communication

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Av
0.251	9.75	28.49	61.73	25.01	51.73	-33.24	-26.72
0.398	9.77	29.90	57.90	27.24	47.90	-28.00	-20.66
2.213	9.89	26.60	56.00	16.92	46.00	-29.40	-29.08
6.523	9.95	29.49	60.00	21.37	50.00	-30.51	-28.63
16.486	10.01	17.96	60.00	13.41	50.00	-42.04	-36.59
27.127	10.03	15.52	60.00	10.61	50.00	-44.48	-39.39

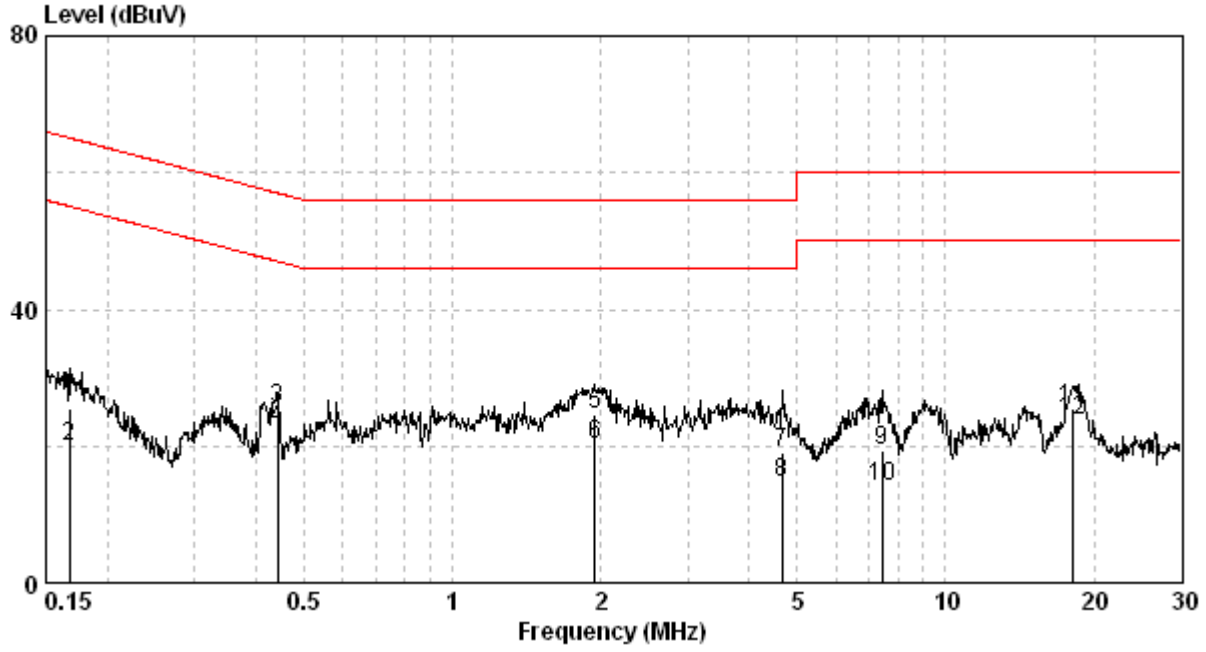
Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)



Phase: Neutral Line
Model No.: RB8762-c-HM
Test Condition: Normal communication

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level AV (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Av
0.168	9.74	25.50	65.08	19.88	55.08	-39.58	-35.20
0.442	9.78	25.60	57.02	22.65	47.02	-31.43	-24.38
1.949	9.89	24.72	56.00	20.08	46.00	-31.28	-25.92
4.672	9.94	19.08	56.00	14.53	46.00	-36.92	-31.47
7.446	9.98	19.40	60.00	14.09	50.00	-40.60	-35.91
18.135	10.07	25.40	60.00	23.64	50.00	-34.60	-26.36

Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)



Appendix A: Test equipment list

Equipment	Brand	Model No.	Serial No.	Calibration Date	Next Calibration Date
ESCI EMI Test Receiver	Rohde & Schwarz	ESCI	100018	2016/11/30	2017/11/29
Spectrum Analyzer	Rohde & Schwarz	FSP30	100137	2016/08/16	2017/08/15
Horn Antenna (1-18G)	SHWARZBECK	BBHA 9120 D	9120D-456	2014/08/29	2017/08/27
Horn Antenna (14-42G)	SHWARZBECK	BBHA 9170	BBHA9170159	2014/09/16	2017/09/14
Broadband Antenna	SHWARZBECK	VULB 9168	9168-172	2016/03/22	2017/03/21
Pre-Amplifier	EMC Co.	EMC12635SE	980205	2016/10/08	2017/10/07
Pre-Amplifier	MITEQ	JS4-26004000--27-8A	828825	2016/09/12	2017/09/11
Power Meter	Anritsu	ML2495A	0844001	2016/11/09	2017/11/08
Power Sensor	Anritsu	MA2411B	0738452	2016/11/09	2017/11/08
Signal Analyzer	Agilent	N9030A	MY51380492	2016/09/13	2017/09/12
966-2(A) Cable 9kHz~26.5GHz	SUHNER	SMA / EX 100	N/A	2016/05/05	2017/05/04
966-2(B) Cable 9kHz~26.5GHz	SUHNER	SUCOFLEX 104P	CB0005	2016/05/04	2017/05/03
RF Cable 9kHz~26.5GHz	SUHNER	SUCOFLEX 102	CB0006	2016/05/05	2017/05/04
966-2_3m Semi-Anechoic Chamber	966_2	CEM-966_2	N/A	2016/02/24	2017/02/22
High Pass Filter	Reactel	7HS-3G/18G-S 11	N/A	2016/06/03	2017/06/02
Active Loop Antenna	SCHWARZBECK MESS-ELEKTRONIC	FMZB1519	1519-067	2016/03/03	2017/03/02
Attenuator	PASTERNACK	N/A	PA7001-20	2016/05/06	2017/05/05
Attenuator	EMCI	N/A	AT-N0619	2016/05/06	2017/05/05

Equipment	Brand	Model No.	Serial No.	Calibration Date	Next Calibration
EMI Receiver	R&S	ESCI	100059	2016/11/21	2017/11/20
Two-Line V-Network	R&S	ENV216	101159	2016/06/02	2017/06/01
Artificial Mains Network (LISN)	SCHAFFNER	MN2050D	1586	2016/05/25	2017/05/24
CON-1 Shielded Room	N/A	N/A	N/A	NCR	NCR
CON-1 Cable	SUHNER	SUCOFLEX-104	26438414	2016/05/05	2017/05/04
Test software	Audix	e3	4.2004-1-12k	NCR	NCR

Note: No Calibration Required (NCR).

Appendix B: Measurement Uncertainty

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of *k*=2.

Item	Uncertainty
Vertically polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	5.14 dB
Horizontally polarized radiated disturbances from 30MHz~1GHz in a semi-anechoic chamber at a distance of 3m	5.22 dB
Vertically polarized Radiated disturbances from 1GHz~18GHz in a semi-anechoic chamber at a distance of 3m	3.64 dB
Horizontally polarized Radiated disturbances from 1GHz~18GHz in a semi-anechoic chamber at a distance of 3m	3.64 dB
Vertically polarized Radiated disturbances from 18GHz~40GHz in a semi-anechoic chamber at a distance of 3m	2.7 dB
Horizontally polarized Radiated disturbances from 18GHz~40GHz in a semi-anechoic chamber at a distance of 3m	2.7 dB
Radiated disturbances from 9kHz~30MHz in a semi-anechoic chamber at a distance of 3m	3.53 dB
Emission on the Band Edge Test	3.64 dB
RF Antenna Conducted Spurious Test	0.85 dB
Maximum Output Power Test	0.42 dB
20dB Bandwidth Test	0.85 dB
Carrier Frequency Separation Test	0.85 dB
Number of Hopping Frequencies Test	0.85 dB
Time of Occupancy (Dwell Time) Test	0.85 dB
AC Power Line Conducted Emission	2.47 dB