TEST REPORT

Reference No.	:	WTS13S1210322E
FCC ID	:	SJ8-M922
Applicant	:	RDI Technology (Shenzhen) Co., Ltd.
Address	:	Building C1, Xintang Industrial Park East Baishixia, Fuyong, Baoan, Shenzhen, PRC.
Manufacturer	:	The same as above
Address	:	The same as above
Product Name	:	SD Pro 9" Monitor
Model No.	:	LW2962H
Standards	:	FCC CFR47 Part 15 Section 15.247:2012
Date of Receipt sample	:	Dec.24, 2013
Date of Test	:	Dec.26, 2013~Jan.27, 2014
Date of Issue	:	Mar.03, 2014
Test Result	:	**Pass ***

*Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:
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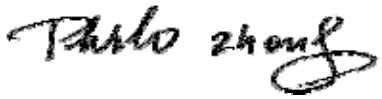
Compiled by:

Zero Zhou / Project Engineer

Approved by:



Philo Zhong / Manager

2 Test Summary

Test Items	Test Requirement	Result
Radiated Spurious Emissions	15.205(a) 15.209 15.247(d)	PASS
Band edge	15.247(d) 15.205(a)	PASS
Conduct Emission	15.207	PASS
20dB Bandwidth	15.247(a)(1)	PASS
Maximum Peak Output Power	15.247(b)(1)	PASS
Frequency Separation	15.247(a)(1)	PASS
Number of Hopping Frequency	15.247(a)(1)(iii)	PASS
Dwell time	15.247(a)(1)(iii)	PASS
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	PASS

3 Contents

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4 General Information

4.1 General Description of E.U.T.

Product Name	: SD Pro 9" Monitor
Model No.	: LW2962H
Operation Frequency	: 2408MHz ~ 2468MHz, 16 channels in total
Type of Modulation	: GFSK
The Lowest Oscillator	: Crystal 32.768KHz
Antenna installation	: Monopole antenna
Antenna Gain	: 2dBi

4.2 Details of E.U.T.

Technical Data	: (1)DC 5V, 2A powered by adapter (Input: 100-240V~50/60Hz, 500mA) (2)DC 3.7V powered by battery(Capacity: 3000mAh)
Adapter	: Manufacturer: Csec M/N:CS12B050200FUF

4.3 Channel List

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2408	2	2412	3	2416	4	2420
5	2424	6	2428	7	2432	8	2436
9	2440	10	2444	11	2448	12	2452
13	2456	14	2460	15	2464	16	2468

4.4 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A-1**

  Waltek Services(Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration 7760A-1, July 12, 2012.

- **FCC – Registration No.: 880581**

  Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory `has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, May 26, 2011.

4.5 Test Location

All the tests were performed at:
Waltek Services (Shenzhen) Co., Ltd. at 1/F, Fukangtai Building, West Baima Rd.,Songgang Street, Baoan District, Shenzhen, China

5 Equipment Used during Test

5.1 Equipments List

Conducted Emissions						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMI Test Receiver	R&S	ESCI	101155	Sep.18,2013	Sep.17,2014
2.	LISN	SCHWARZBECK	NSLK 8128	8128-289	Sep.18,2013	Sep.17,2014
3.	Limiter	York	MTS-IMP-136	261115-001-0024	Sep.18,2013	Sep.17,2014
4.	Cable	LARGE	RF300	-	Sep.18,2013	Sep.17,2014
3m Semi-anechoic Chamber for Radiation Emissions						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	EMC Analyzer	Agilent	E7405A	MY45114943	Sep.18,2013	Sep.17,2014
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Sep.18,2013	Sep.17,2014
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Apr.20,2013	Apr.19,2014
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	Sep.18,2013	Sep.17,2014
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Apr.20,2013	Apr.19,2014
6	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Apr.07,2013	Apr.06,2014
7	Coaxial Cable (above 1GHz)	Top	1000MHz-25GHz	EW02014-7	Apr.20,2013	Apr.19,2014
8	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	Apr.20,2013	Apr.19,2014

5.2 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	± 1 x 10^{-6}
RF Power	± 1.0 dB
RF Power Density	± 2.2 dB
Radiated Spurious Emissions test	± 5.03 dB (Bilog antenna 30M~1000MHz)
	± 5.47 dB (Horn antenna 1000M~25000MHz)
Conducted Spurious Emissions test	± 3.64 dB (AC mains 150KHz~30MHz)

5.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

6 Conducted Emission

Test Requirement:	FCC CFR 47 Part 15 Section 15.207
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class:	Class B
Limit:	66-56 dBμV between 0.15MHz & 0.5MHz 56 dBμV between 0.5MHz & 5MHz 60 dBμV between 5MHz & 30MHz
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

6.1 E.U.T. Operation

Operating Environment:

Temperature: 22.3 °C

Humidity: 53.1 % RH

Atmospheric Pressure: 101.6kPa

EUT Operation:

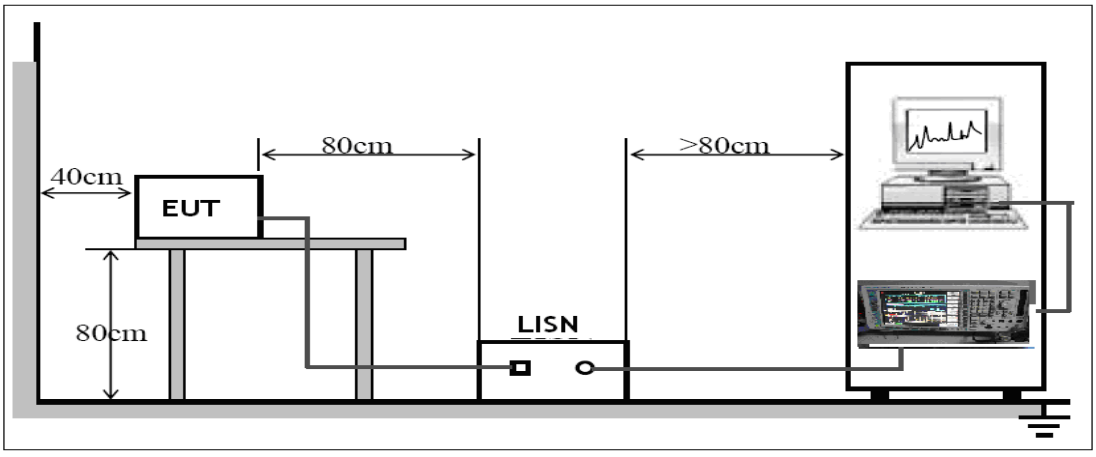
The test was performed in transmitting mode, and the test data were shown in the report.

The EUT was tested according to ANSI C63.4:2003. The frequency spectrum from 150kHz to 30MHz was investigated.

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

6.2 EUT Setup

The EUT was placed on the test table in shielding room.

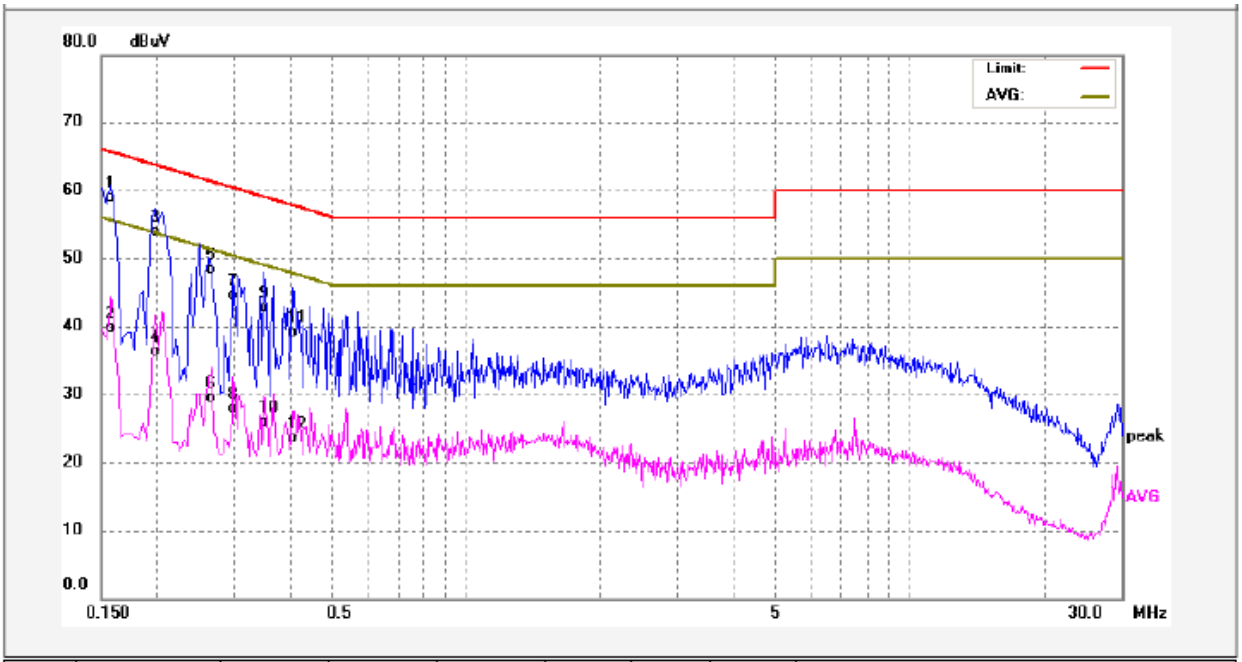


6.3 Conducted Emission Test Result

An initial pre-scan was performed on the live and neutral lines.

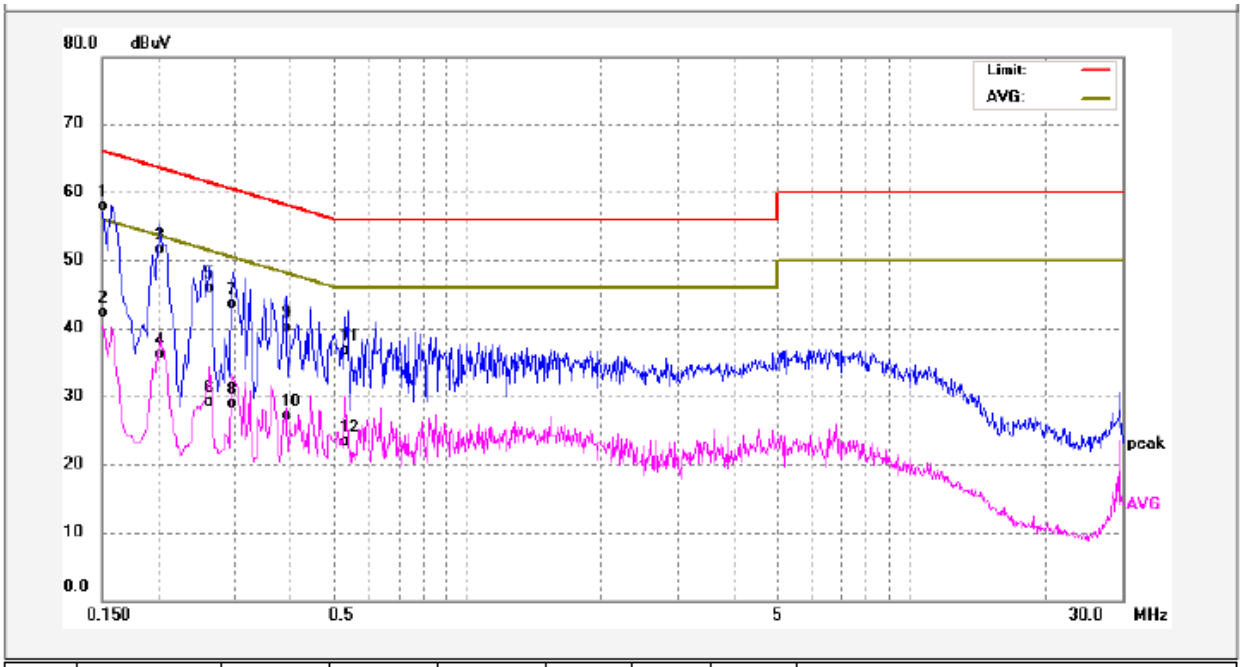
Test mode: Transmitting mode

Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1580	47.62	11.19	58.81	65.56	-6.75	QP	
2	0.1580	28.61	11.19	39.80	55.56	-15.76	AVG	
3	0.1980	42.52	11.29	53.81	63.69	-9.88	QP	
4	0.1980	25.05	11.29	36.34	53.69	-17.35	AVG	
5	0.2620	36.92	11.30	48.22	61.36	-13.14	QP	
6	0.2620	18.21	11.30	29.51	51.36	-21.85	AVG	
7	0.2980	33.23	11.30	44.53	60.30	-15.77	QP	
8	0.2980	16.62	11.30	27.92	50.30	-22.38	AVG	
9	0.3500	31.47	11.30	42.77	58.96	-16.19	QP	
10	0.3500	14.63	11.30	25.93	48.96	-23.03	AVG	
11	0.4060	27.87	11.31	39.18	57.73	-18.55	QP	
12	0.4060	12.15	11.31	23.46	47.73	-24.27	AVG	

Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1500	46.64	11.17	57.81	65.99	-8.18	QP	
2	0.1500	31.15	11.17	42.32	55.99	-13.67	AVG	
3	0.2020	40.21	11.30	51.51	63.52	-12.01	QP	
4	0.2020	24.71	11.30	36.01	53.52	-17.51	AVG	
5	0.2620	34.59	11.30	45.89	61.36	-15.47	QP	
6	0.2620	17.77	11.30	29.07	51.36	-22.29	AVG	
7	0.2980	32.23	11.30	43.53	60.30	-16.77	QP	
8	0.2980	17.65	11.30	28.95	50.30	-21.35	AVG	
9	0.3899	28.77	11.31	40.08	58.06	-17.98	QP	
10	0.3899	15.73	11.31	27.04	48.06	-21.02	AVG	
11	0.5380	25.34	11.32	36.66	56.00	-19.34	QP	
12	0.5380	12.05	11.32	23.37	46.00	-22.63	AVG	

7 Radiated Spurious Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: DA 00-705

Test Result: PASS

Measurement Distance: 3m

Limit:

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

7.1 EUT Operation :

Operating Environment:

Temperature: 23.5 °C

Humidity: 51.6 % RH

Atmospheric Pressure:101.9kPa

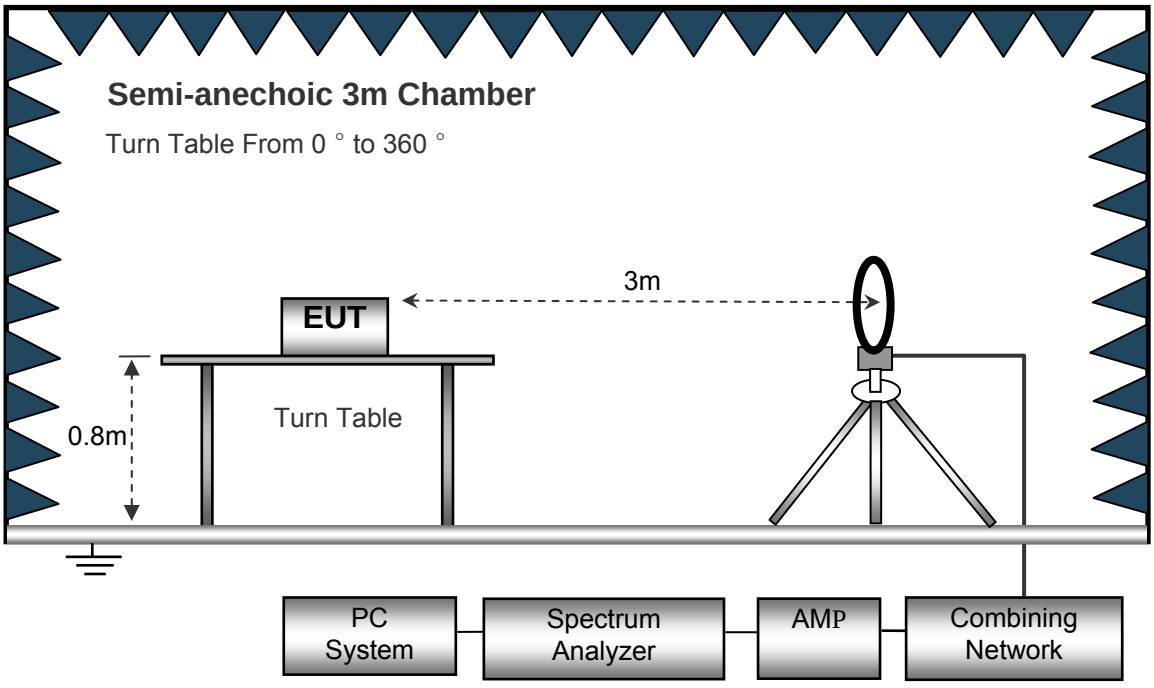
Operation Mode:

The test was performed in transmitting mode (battery operation/adapter operation), and the worst test data were shown in the report.

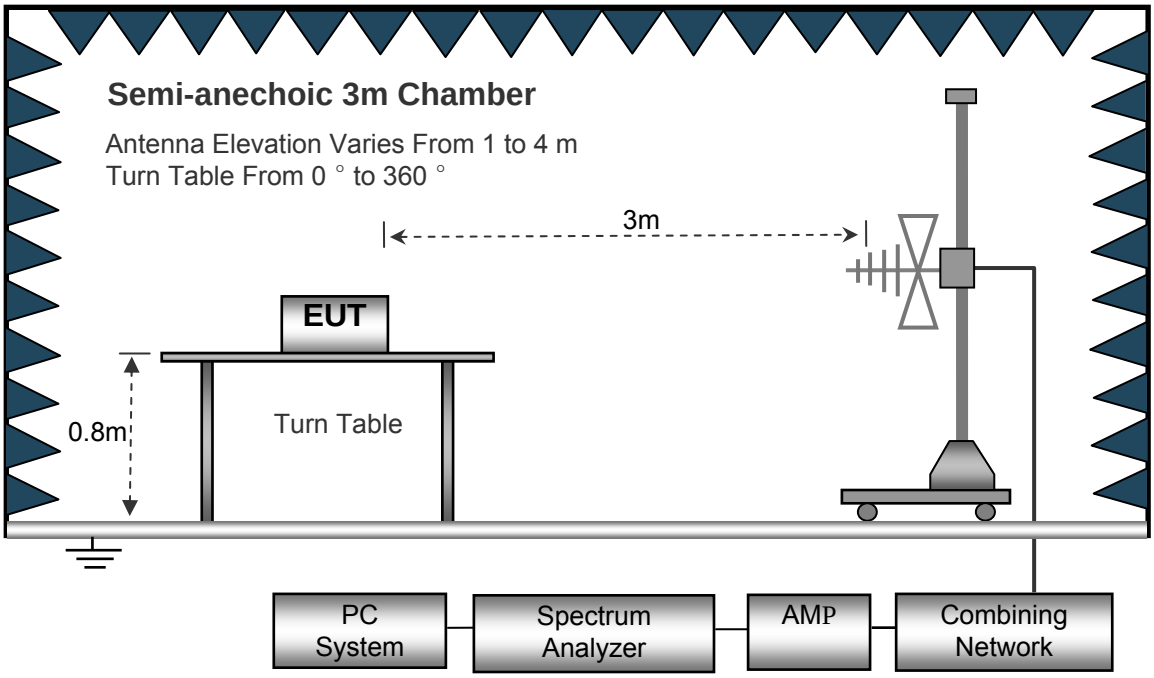
7.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4: 2003.

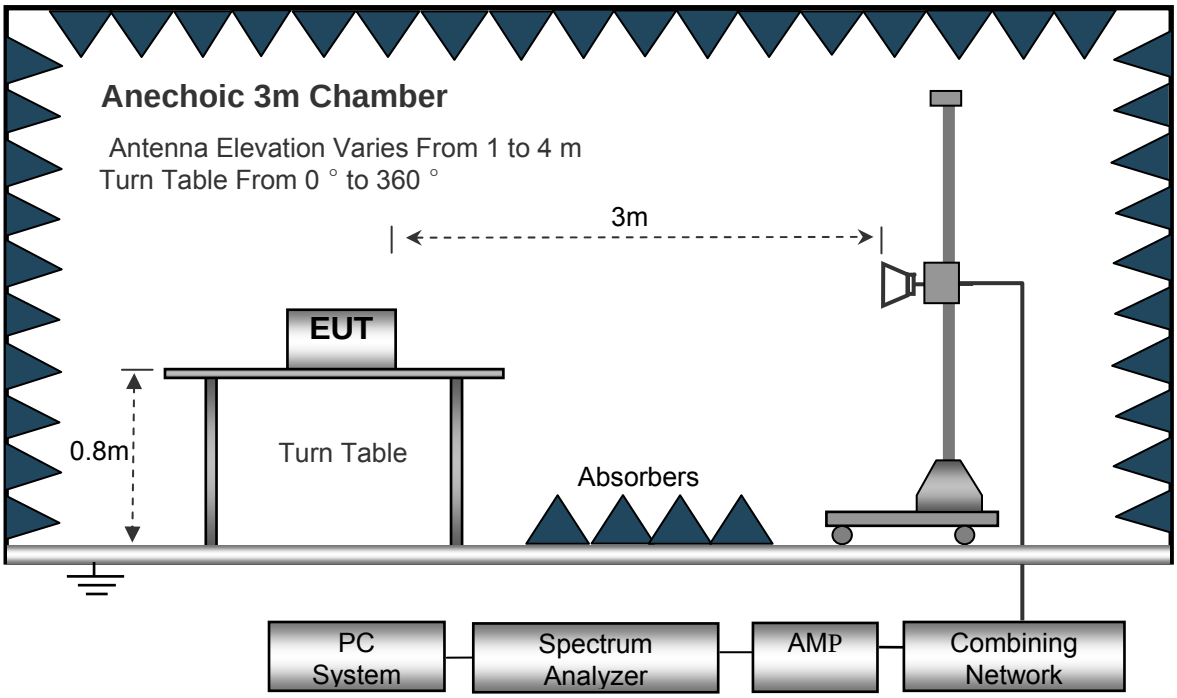
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



7.3 Spectrum Analyzer Setup

According to FCC Part15 Rules, the system was tested 32.768KHz to 25000MHz.

Below 30MHz

Sweep Speed ..... Auto
IF Bandwidth..... 10kHz
Video Bandwidth..... 10kHz

Resolution Bandwidth..... 10kHz

30MHz ~ 1GHz

Sweep Speed ..... Auto
Detector ..... PK
Resolution Bandwidth..... 100kHz
Video Bandwidth..... 300kHz

Above 1GHz

Sweep Speed ..... Auto
Detector ..... PK
Resolution Bandwidth..... 1MHz
Video Bandwidth..... 3MHz
Detector ..... Ave.
Resolution Bandwidth..... 1MHz
Video Bandwidth..... 10Hz

7.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

7.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Limit

7.6 Summary of Test Results

Test Frequency: Below 30MHz

The measurements were more than 20 dB below the limit and not reported.

Test Frequency: 30MHz ~ 18GHz

Test worst mode: transmitting mode (Adapter Operation)

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Low Channel 2408MHz									
70.33	31.49	PK	91	1.3	H	9.96	41.45	46.00	-4.55
70.33	32.02	PK	337	1.2	V	9.96	41.98	46.00	-4.02
4816.00	53.02	PK	64	1.7	V	-1.06	51.96	74.00	-22.04
4816.00	48.56	Ave	64	1.7	V	-1.06	47.50	54.00	-6.50
7224.00	49.35	PK	346	1.2	V	1.33	50.68	74.00	-23.32
7224.00	45.04	Ave	346	1.2	V	1.33	46.37	54.00	-7.63
2322.40	48.45	PK	181	1.7	V	-13.19	35.26	74.00	-38.74
2322.40	44.60	Ave	181	1.7	V	-13.19	31.41	54.00	-22.59
2357.15	45.42	PK	170	1.9	V	-13.14	32.28	74.00	-41.72
2357.15	40.91	Ave	170	1.9	V	-13.14	27.77	54.00	-26.23
2490.68	47.09	PK	293	1.9	H	-13.08	34.01	74.00	-39.99
2490.68	44.10	Ave	293	1.9	H	-13.08	31.02	54.00	-22.98

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
Middle Channel 2440MHz									
70.33	32.59	PK	124	1.3	H	9.96	42.55	46.00	-3.45
70.33	31.35	PK	324	1.4	V	9.96	41.31	46.00	-4.69
4880.00	52.50	PK	197	1.4	V	-0.62	51.88	74.00	-22.12
4880.00	46.53	Ave	197	1.4	V	-0.62	45.91	54.00	-8.09
7320.00	49.58	PK	136	1.5	V	2.21	51.79	74.00	-22.21
7320.00	46.94	Ave	136	1.5	V	2.21	49.15	54.00	-4.85
2322.87	48.47	PK	334	1.0	H	-13.19	35.28	74.00	-38.72
2322.87	42.45	Ave	334	1.0	H	-13.19	29.26	54.00	-24.74
2370.46	45.49	PK	212	2.0	V	-13.14	32.35	74.00	-41.65
2370.46	42.66	Ave	212	2.0	V	-13.14	29.52	54.00	-24.48
2496.03	48.78	PK	24	1.8	V	-13.08	35.70	74.00	-38.30
2496.03	44.53	Ave	24	1.8	V	-13.08	31.45	54.00	-22.55

Frequency	Receiver Reading	Detector	Turn table Angle	RX Antenna		Corrected Factor	Corrected Amplitude	Limit	Margin
				Height	Polar				
(MHz)	(dBμV)	(PK/QP/Ave)	Degree	(m)	(H/V)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
High Channel 2468MHz									
70.33	32.78	PK	35	1.7	H	9.96	42.74	46.00	-3.26
70.33	30.71	PK	146	1.0	V	9.96	40.67	46.00	-5.33
4936.00	54.80	PK	191	1.3	V	-0.24	54.56	74.00	-19.44
4936.00	48.33	Ave	191	1.3	V	-0.24	48.09	54.00	-5.91
7404.00	50.46	PK	72	1.1	V	2.84	53.30	74.00	-20.70
7404.00	44.68	Ave	72	1.1	V	2.84	47.52	54.00	-6.48
2331.09	48.98	PK	288	1.5	H	-13.19	35.79	74.00	-38.21
2331.09	42.61	Ave	288	1.5	H	-13.19	29.42	54.00	-24.58
2366.85	44.59	PK	153	1.1	V	-13.14	31.45	74.00	-42.55
2366.85	42.54	Ave	153	1.1	V	-13.14	29.40	54.00	-24.60
2497.74	47.70	PK	19	1.3	H	-13.08	34.62	74.00	-39.38
2497.74	44.74	Ave	19	1.3	H	-13.08	31.66	54.00	-22.34

Test Frequency : Above 18GHz

The measurements were more than 20 dB below the limit and not reported

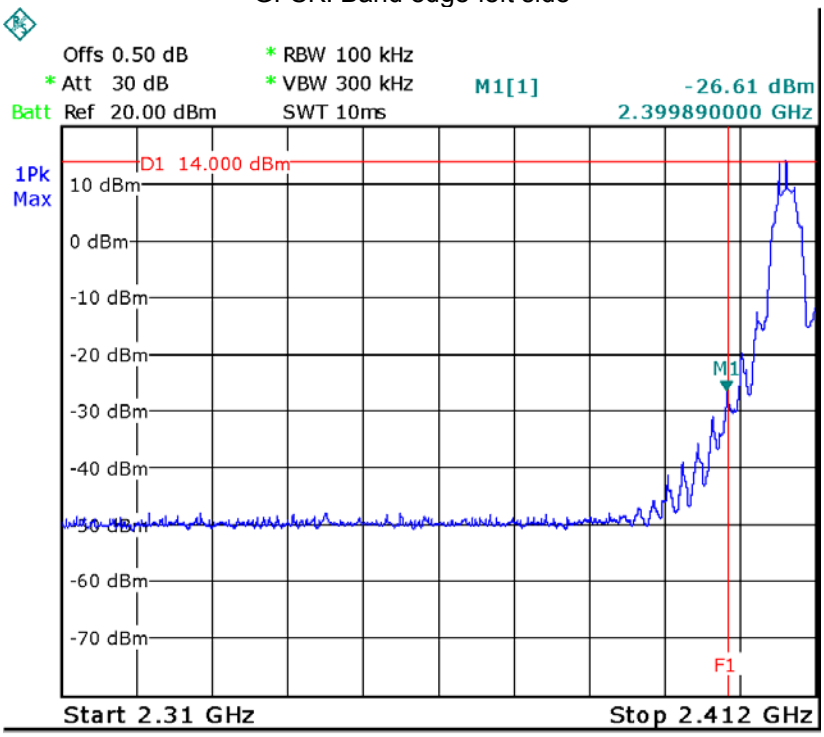
8 Band Edge Measurement

Test Requirement:	Section 15.247(d) 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) (see Section 15.205(c)).
Test Method:	DA 00-705
Measurement Distance:	3m
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.
Detector:	For Peak value: RBW = 100kHz for f ≥ 1 GHz VBW=300kHz; Sweep = auto Detector function = peak Trace = max hold
Test Mode:	Transmitting

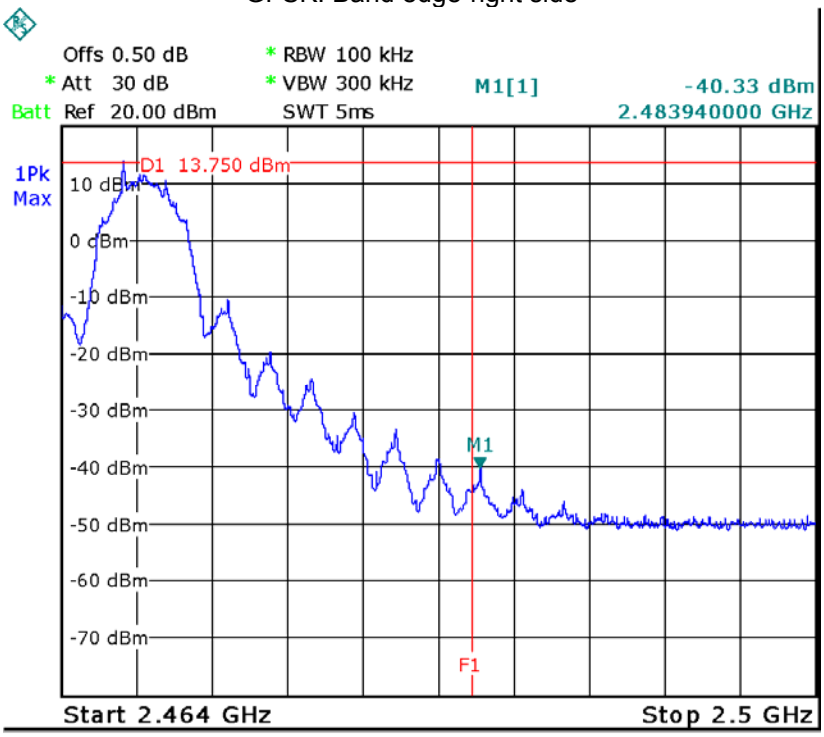
8.1 Test Result:

Test result plots shown as follows:

GFSK: Band edge-left side



GFSK: Band edge-right side



9 20 dB Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: DA 00-705

Test Mode: Test in fixing operating frequency at low, Middle, high channel.

9.1 Test Procedure:

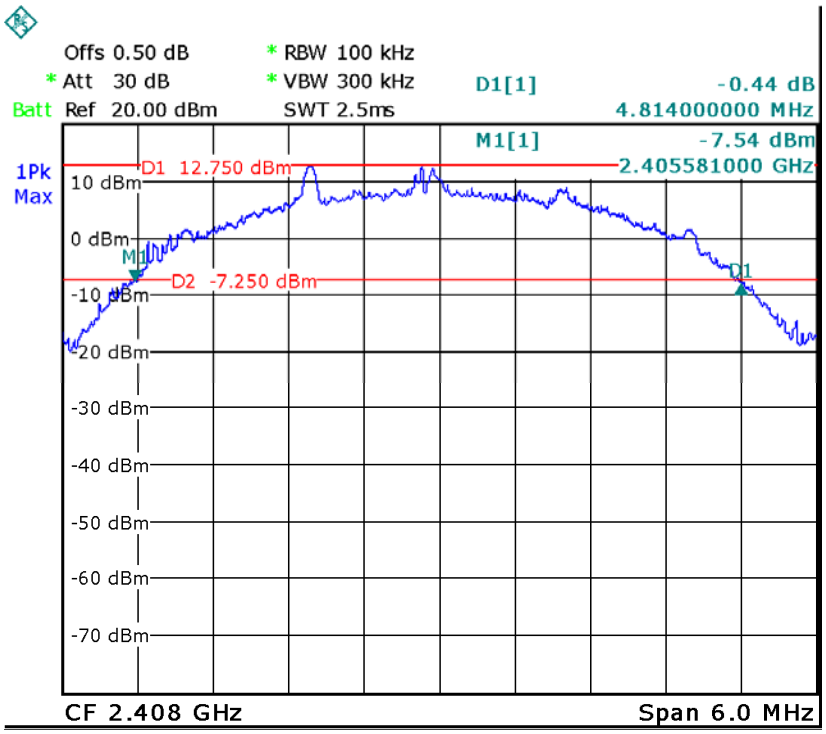
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

9.2 Test Result:

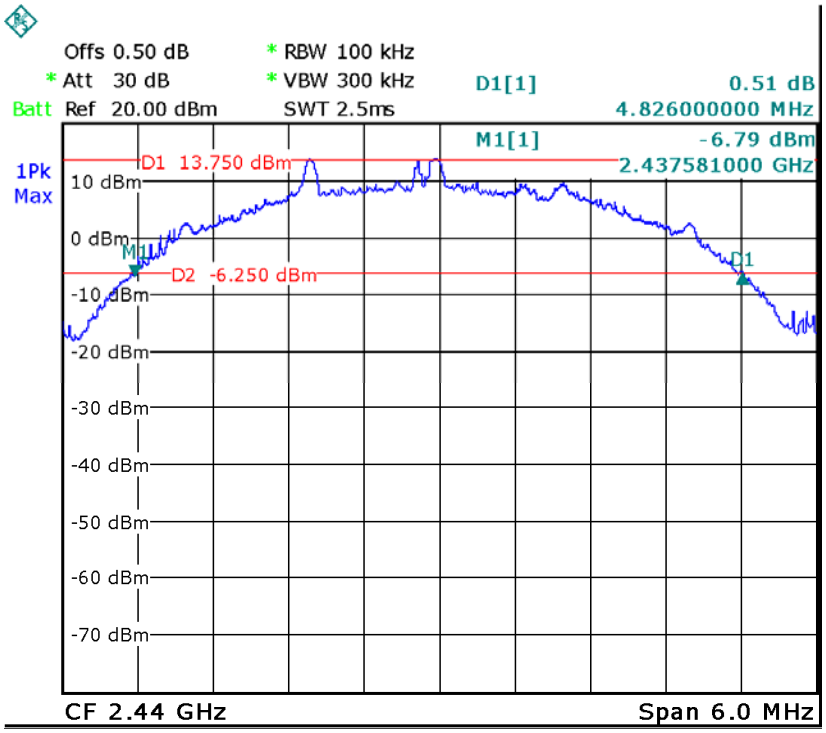
Test Channel	Bandwidth
Low	4.814MHz
Middle	4.826MHz
High	4.934MHz

Test result plot as follows:

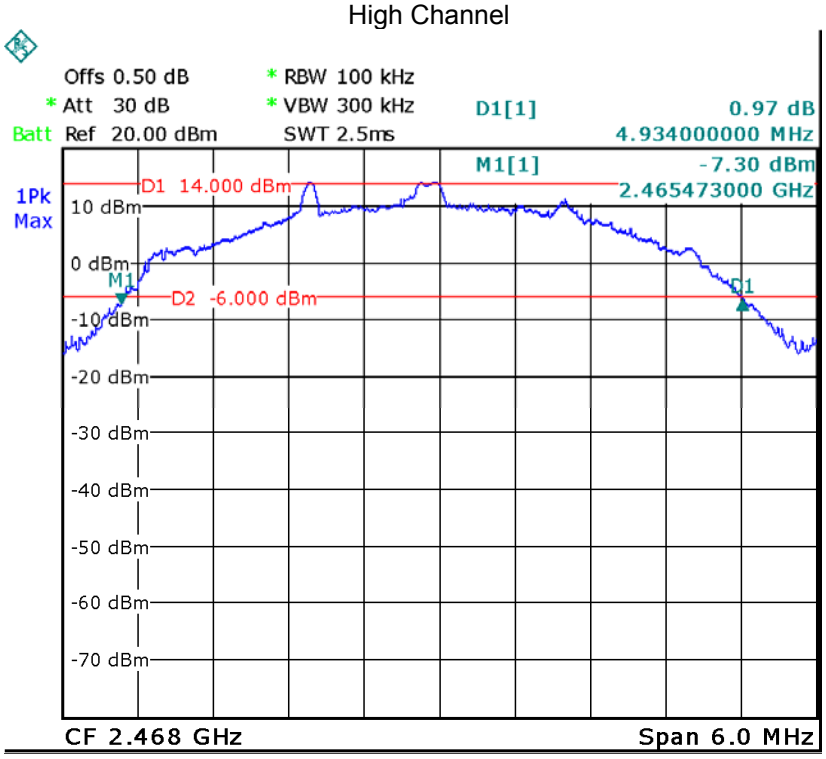
Low Channel



Middle Channel



High Channel



10 Maximum Peak Output Power

Test Requirement:	FCC CFR47 Part 15 Section 15.247
Test Method:	DA 00-705
Test Limit:	Regulation 15.247 (b)(1), For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts. Refer to the result “Number of Hopping Frequency” of this document. The 0.125watts (20.97 dBm) limit applies.
Test mode:	Test in fixing frequency transmitting mode.

10.1 Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 10 MHz. VBW = 10 MHz. Sweep = auto; Detector Function =Peak.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.
4. The EUT has two RF ports. Power from both ports was measured and combined using the measure-and-sum method stated in FCC KDB 662911 D01.
5. The combined cable and attenuator loss was measured prior to performing the measurements and the loss compensation incorporated into the measurement results.
6. The Customer declared that the transmit signals from both ports are correlated. The Customer stated that 2 antennas used have equal antenna gains:G1=G2=2dBi.The directional gain was calculated in accordance with FCC KDB 662911 D01 Directional Gain Calculations:

$$10 \log[(10^{G1/20}+10^{G2/20})_2/2]$$

The total array gain was calculated as:

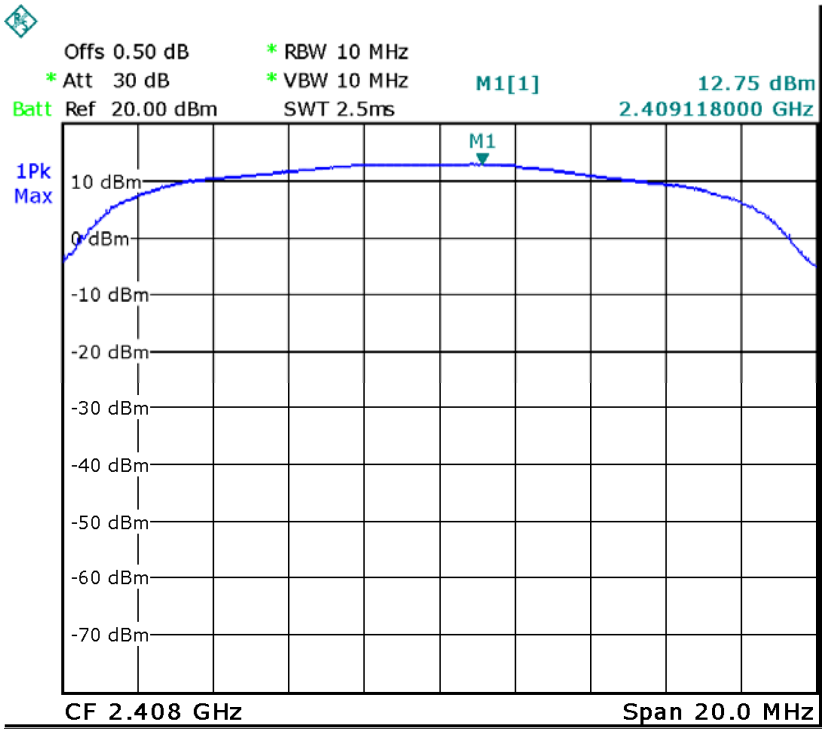
$$10 \log[(102/20+102/20)2/2]=5.0\text{dBi}$$

10.2 Test Result:

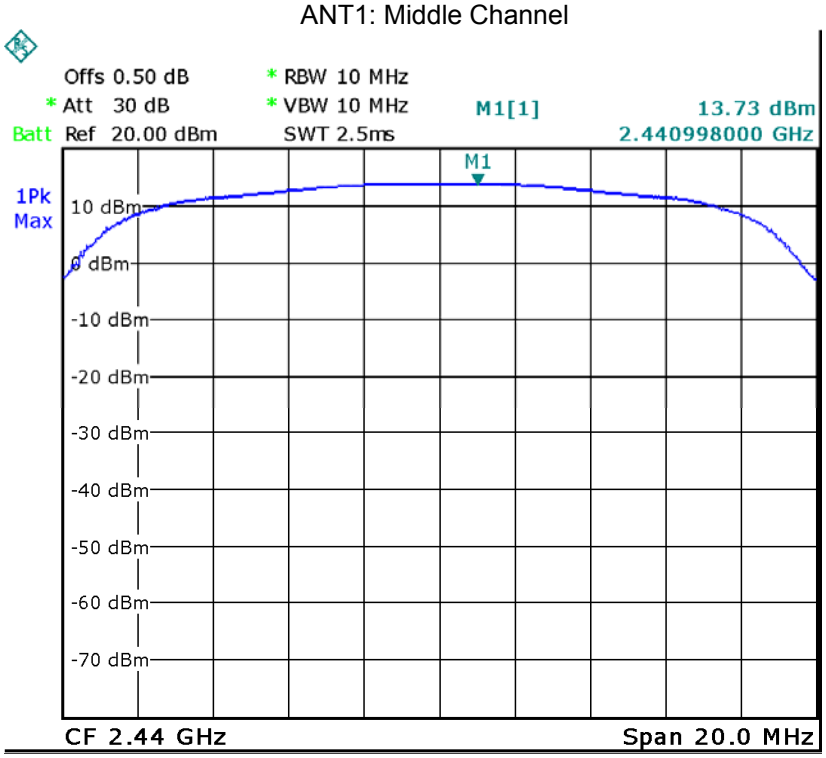
Channel	ANT1 Conducted Peak Power(dBm)	ANT2 Conducted Peak Power(dBm)	Combined Peak Power(dBm)	Limit(dBm)
Low	12.75	12.89	15.83	20.97
Middle	13.73	13.71	16.73	20.97
High	14.05	14.12	17.10	20.97

Test result plot as follows:

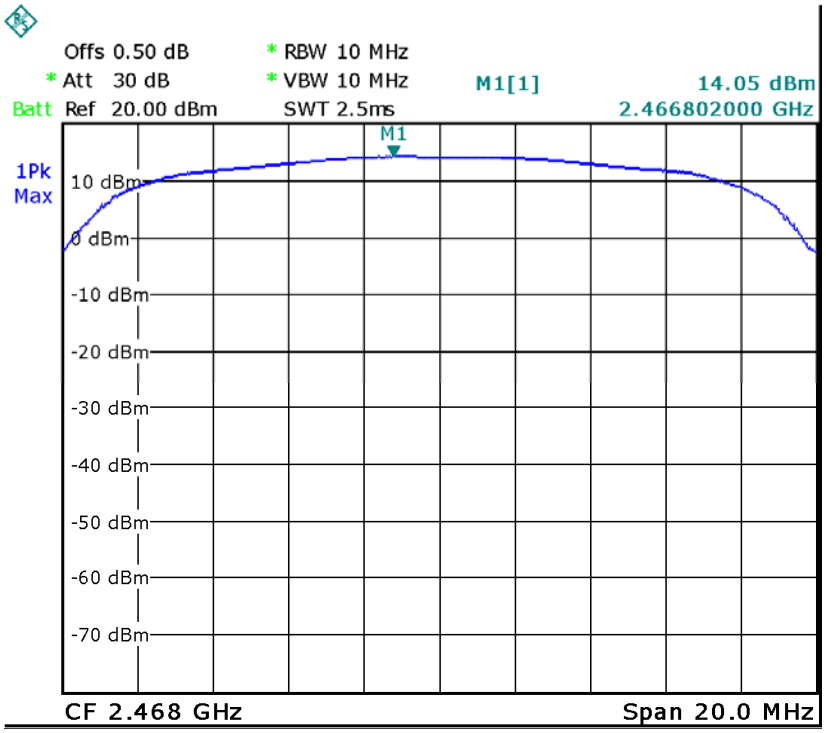
ANT1: Low Channel



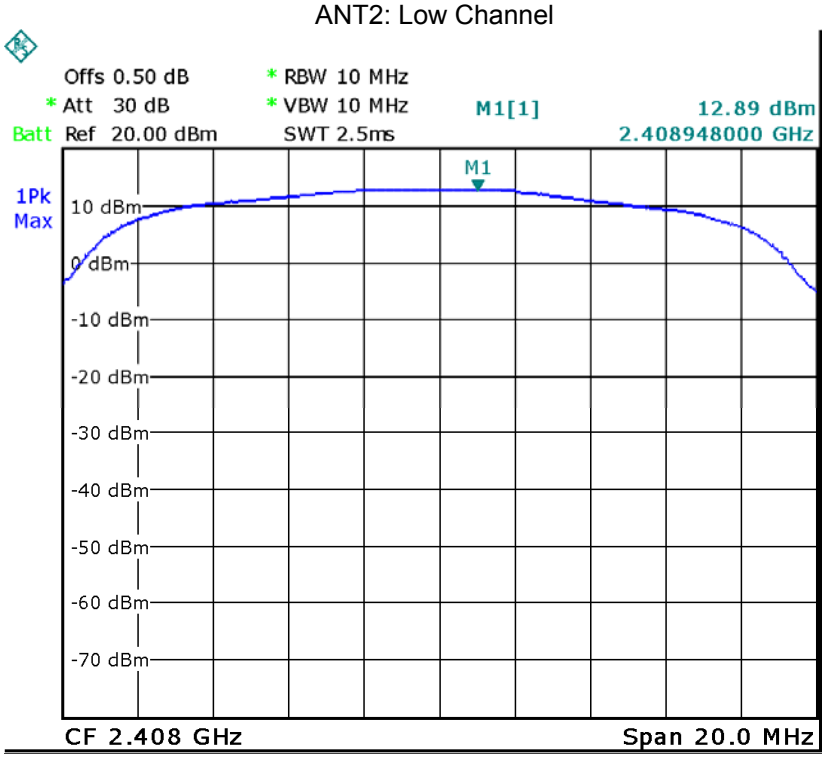
ANT1: Middle Channel



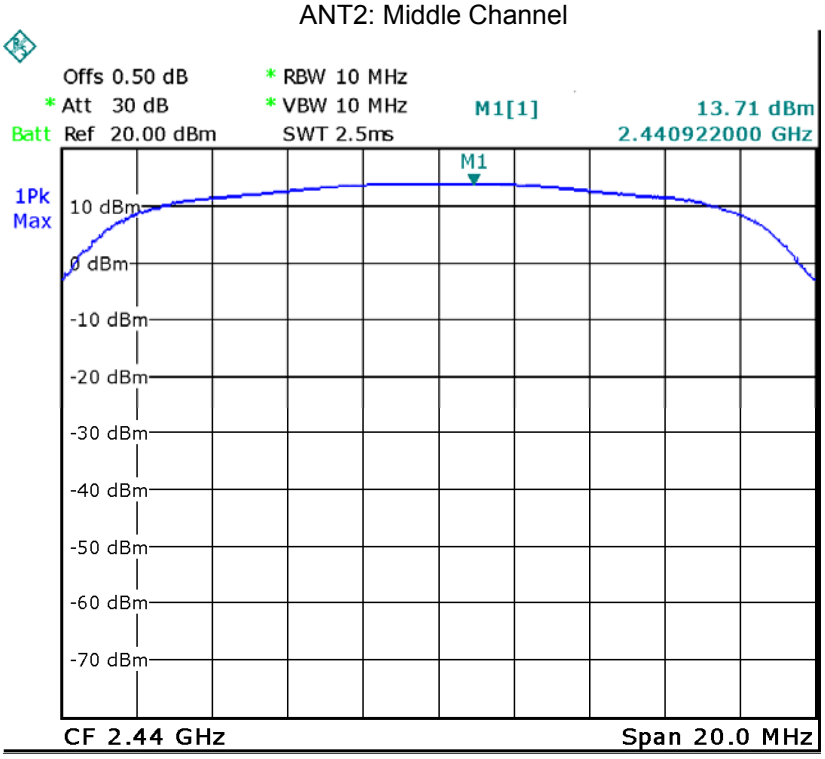
ANT1: High Channel



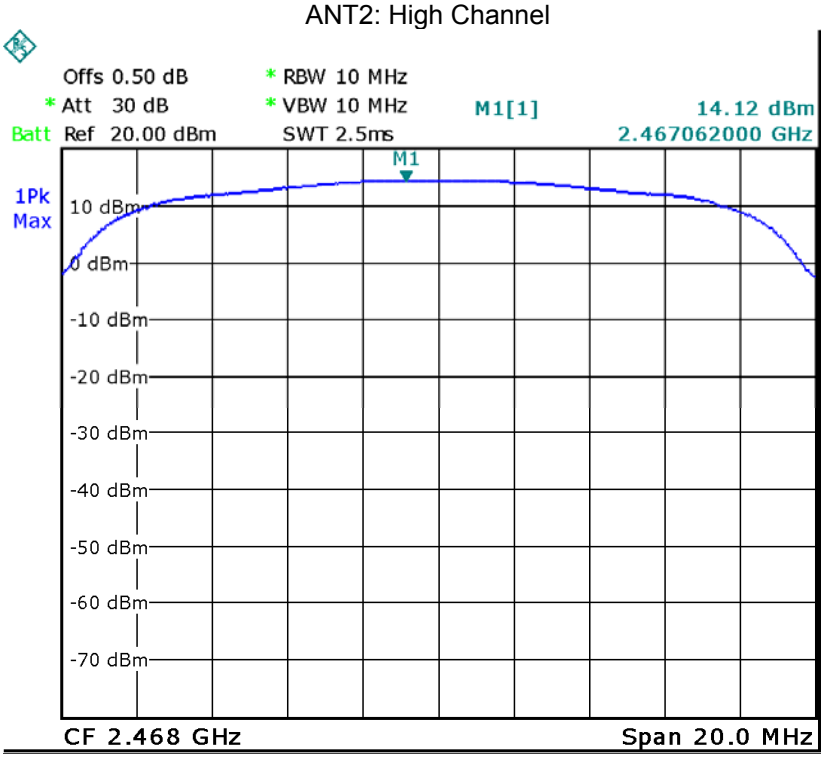
ANT2: Low Channel



ANT2: Middle Channel



ANT2: High Channel



11 Hopping Channel Separation

Test Requirement:	FCC CFR47 Part 15 Section 15.247
Test Method:	DA 00-705
Test Limit:	Regulation 15.247(a)(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 1W.
Test Mode:	Test in hopping transmitting operating mode.

11.1 Test Procedure:

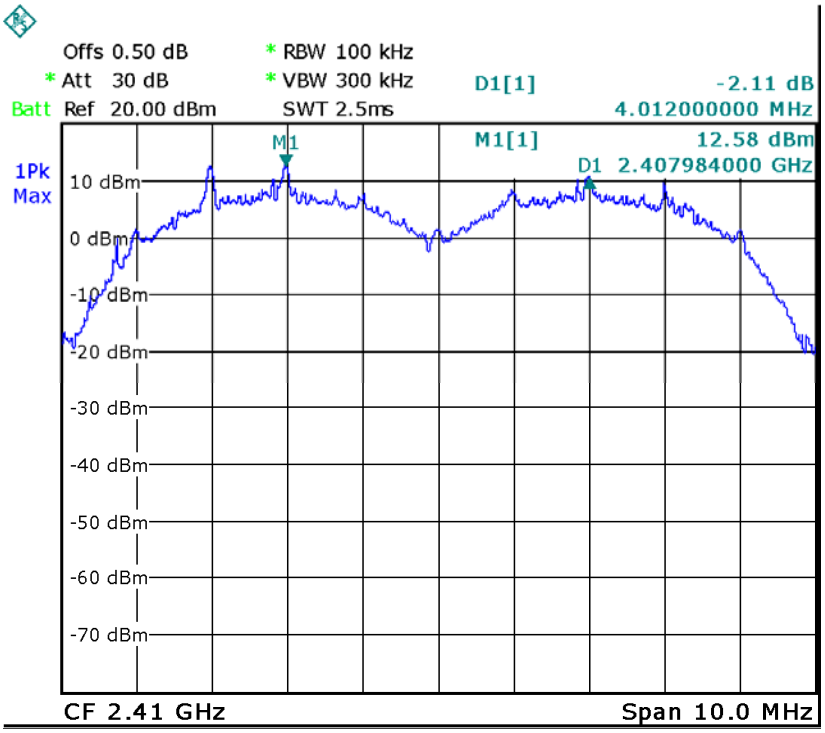
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 100kHz. VBW = 300kHz , Span = 6.0MHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

11.2 Test Result:

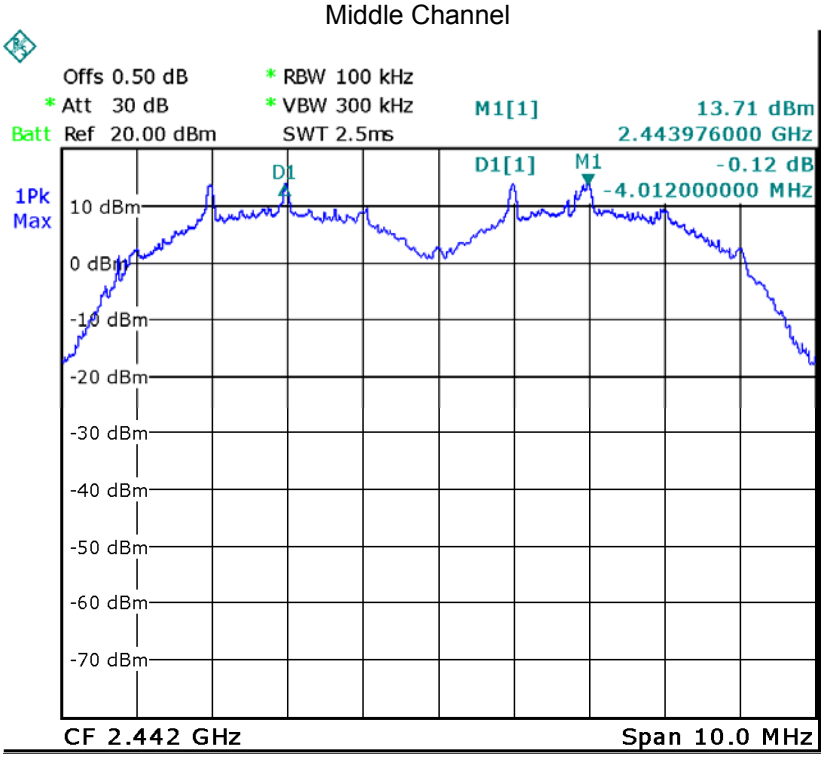
Test Channel	Separation (MHz)	Result
Low	4.012	PASS
Middle	4.012	PASS
High	4.012	PASS

Test result plot as follows:

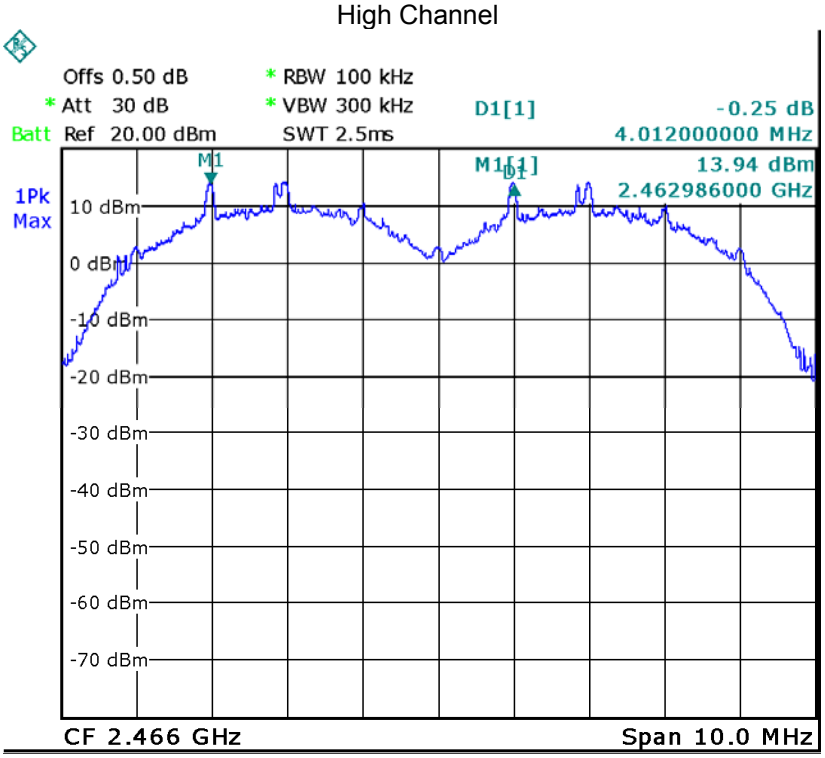
Low Channel



Middle Channel



High Channel



12 Number of Hopping Frequency

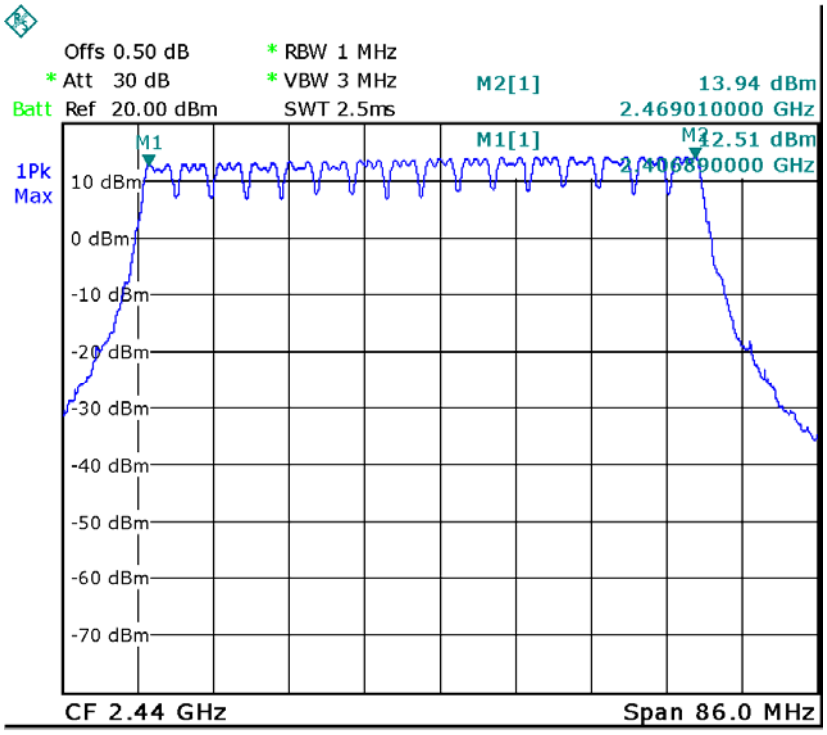
Test Requirement:	FCC CFR47 Part 15 Section 15.247
Test Method:	DA 00-705
Test Limit:	Regulation 15.247 (a)(1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.
Test Mode:	Test in hopping transmitting operating mode.

12.1 Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 1MHz. VBW = 3MHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. It may prove necessary to break the span up to sections. in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section.
4. Set the spectrum analyzer: Start Frequency = 2.4GHz, Stop Frequency = 2.483GHz. Sweep=auto;

12.2 Test Result:

Total Channels are 16 Channels.



13 Dwell Time

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: DA 00-705

Test Limit: Regulation 15.247(a)(1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 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.

Test Mode: Test in hopping transmitting operating mode.

13.1 Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

2. Set spectrum analyzer span = 0. Centred on a hopping channel;

3. Set RBW = 1MHz and VBW = 3MHz.Sweep = as necessary to capture the entire dwell time per hopping channel.

4. Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g.. data rate. modulation format. etc.). repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

13.2 Test Result:

The test period: T= 0.4(s) * 16 = 6.4 (s)

So, the Dwell Time can be calculated as follows:

Low channel: Dwell Time =1(times)/0.810(s)*40.0(ms)*6.4(s)=0.316(s)

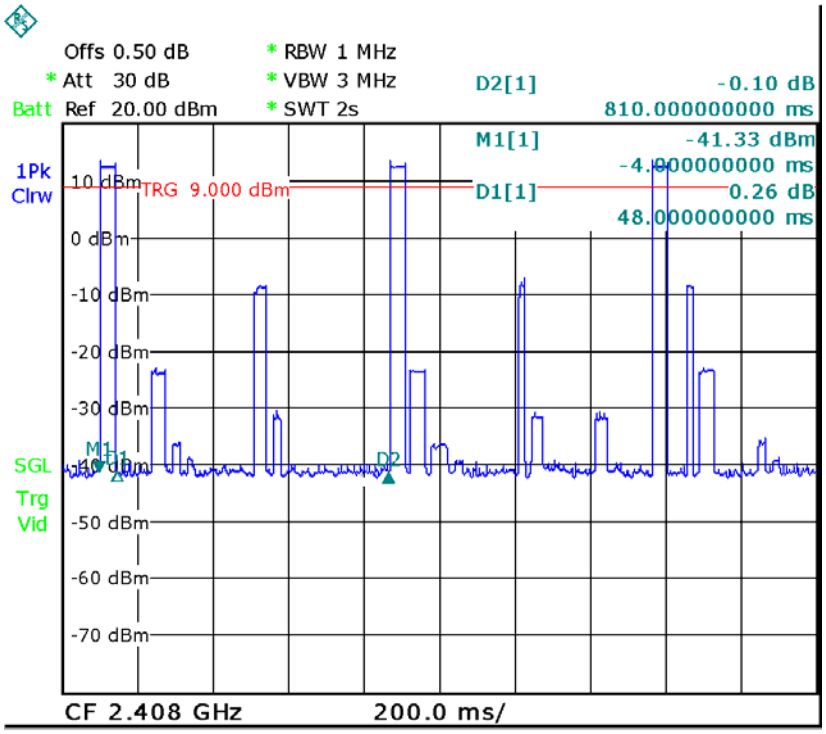
Middle Channel: Dwell Time =1(times)/0.812(s)*40.0(ms)*6.4(s)=0.315(s)

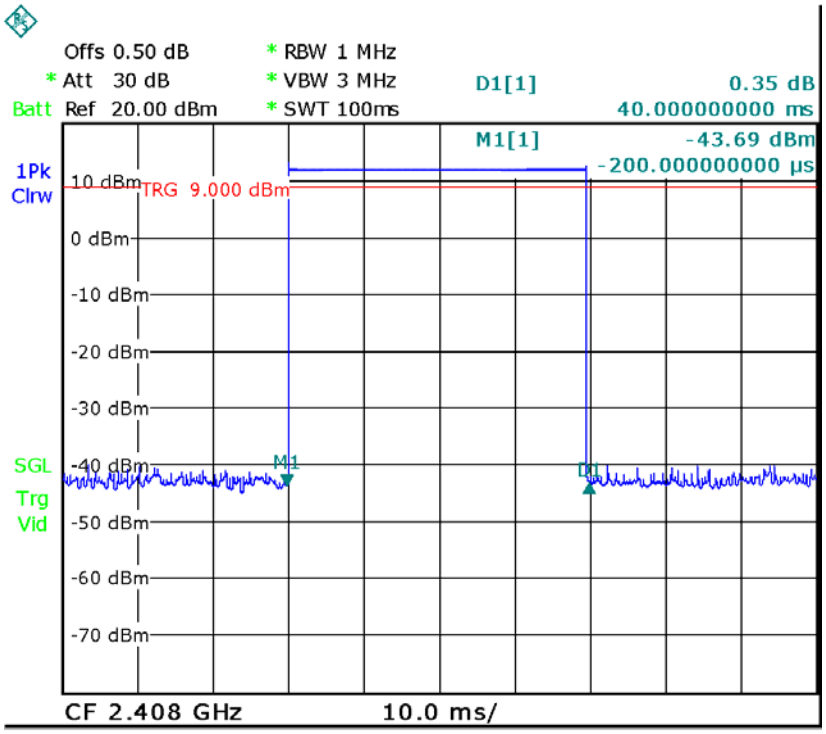
High Channel: Dwell Time =1(times)/0.841(s)*40.0(ms)*6.4(s)=0.304(s)

Frequency	Mkr Delta(ms)	Dwell Time(s)	Limits(s)	Result
2408MHz	40.0	0.316	0.400	Pass
2440 MHz	40.0	0.315	0.400	Pass
2468MHz	40.0	0.304	0.400	Pass

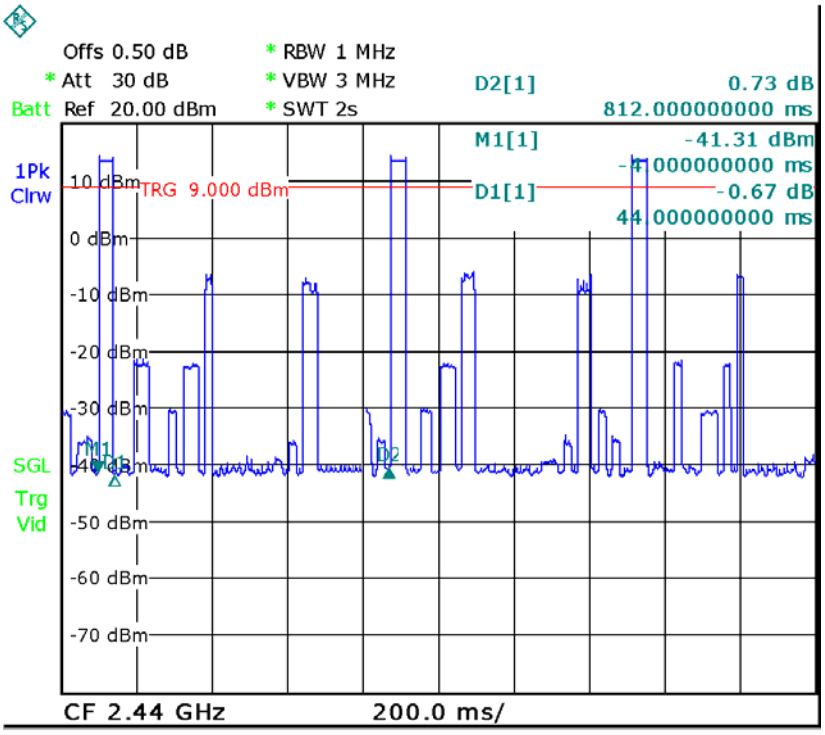
The test Mkr Delta is once pulse time.

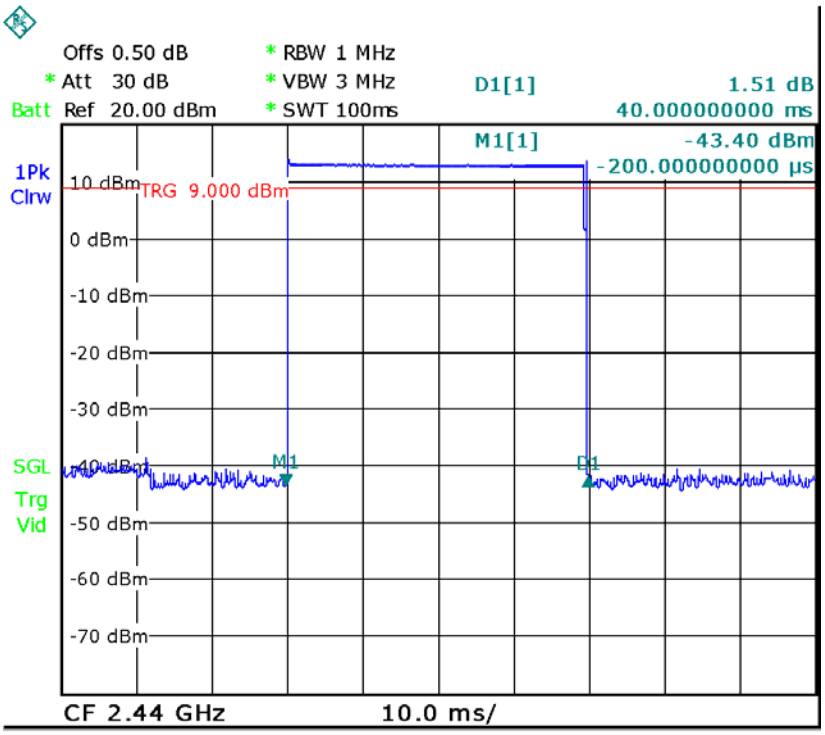
Low Channel



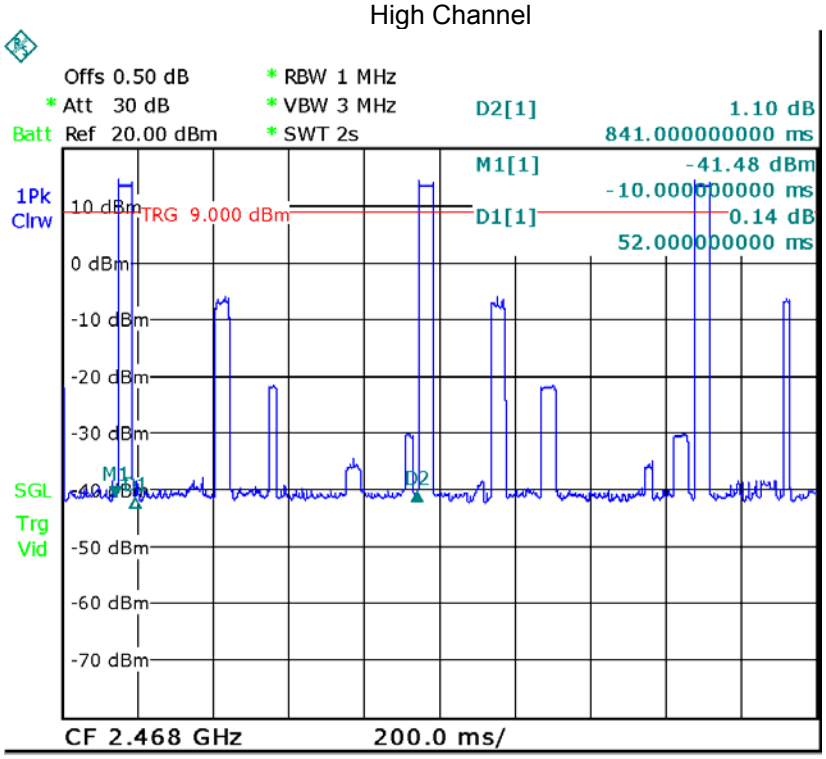


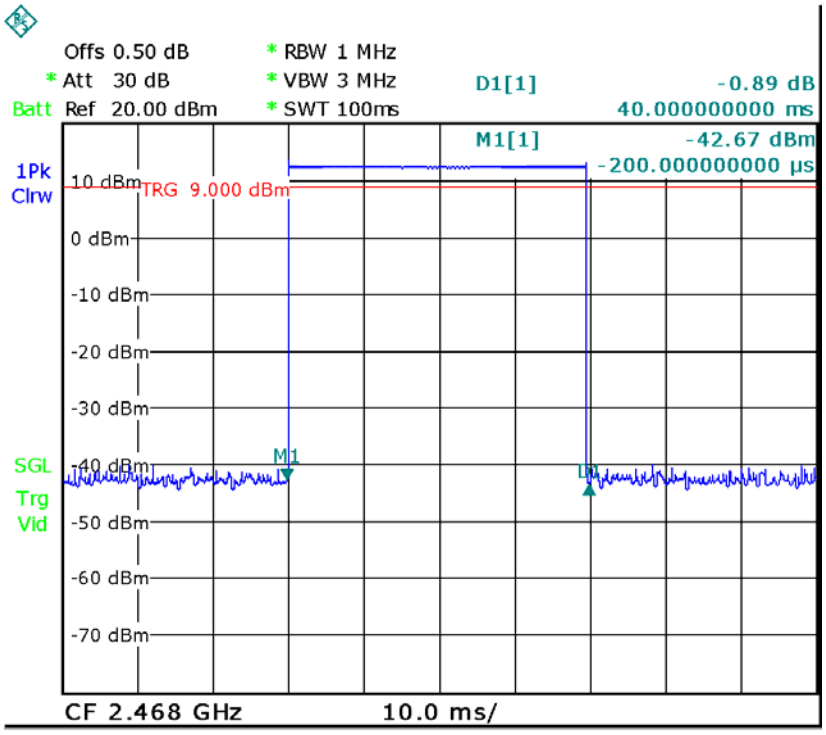
Middle Channel





High Channel





14 Antenna Requirement

According to the FCC Part 15 Paragraph 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. This product has a Monopole antenna, fulfil the requirement of this section.

15 RF Exposure

Test Requirement: FCC Part 1.1307

Test Mode: The EUT work in test mode(Tx).

15.1 Requirements:

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

15.2 The procedures / limit

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm^2)	Averaging Time $\|E\|^2$,$\|H\|^2$or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) 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)	Averaging Time $\|E\|^2$,$\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

15.3 MPE Calculation Method

$$\text{E (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd \text{ (W/m²)} = \frac{E^2}{377}$$

E = Electric field (V/m)
P = Peak RF output power (W)
G = EUT Antenna numeric gain (numeric)
d = Separation distance between radiator and human body (m)
The formula can be changed to

$$\boldsymbol{Pd} = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (mW/cm2)	Limit of Power Density (mW/cm2)
1.585	17.10	51.286	0.0162	1

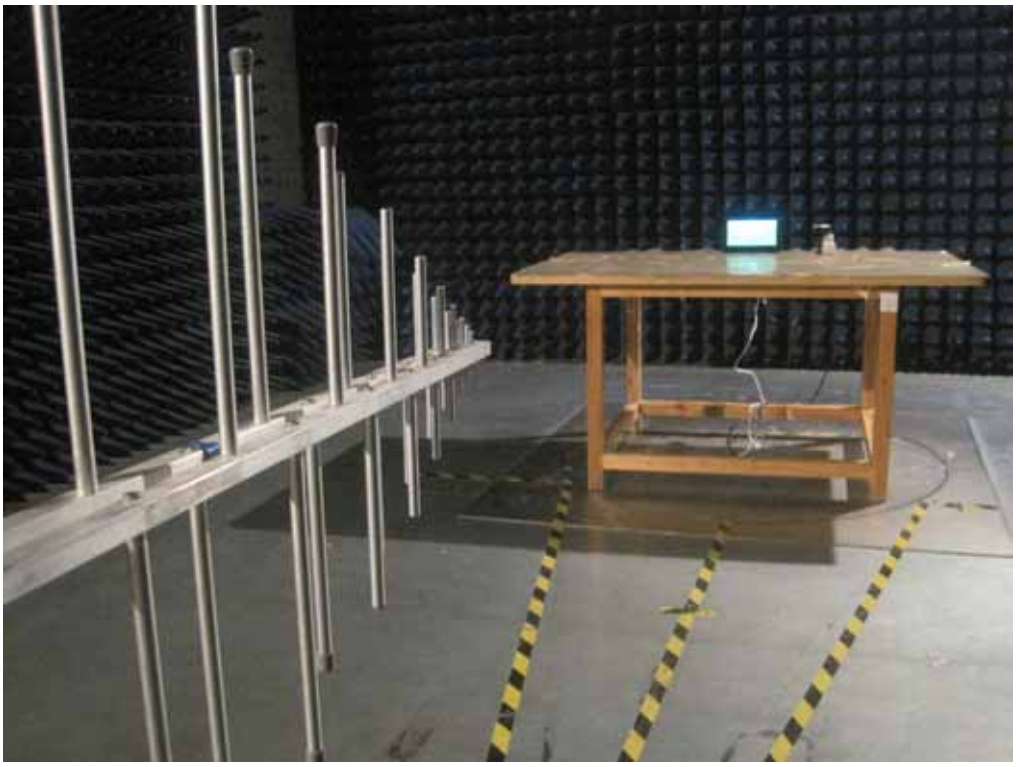
16 Photographs – Test Setup

16.1 Photograph – Conducted Emission Test Setup

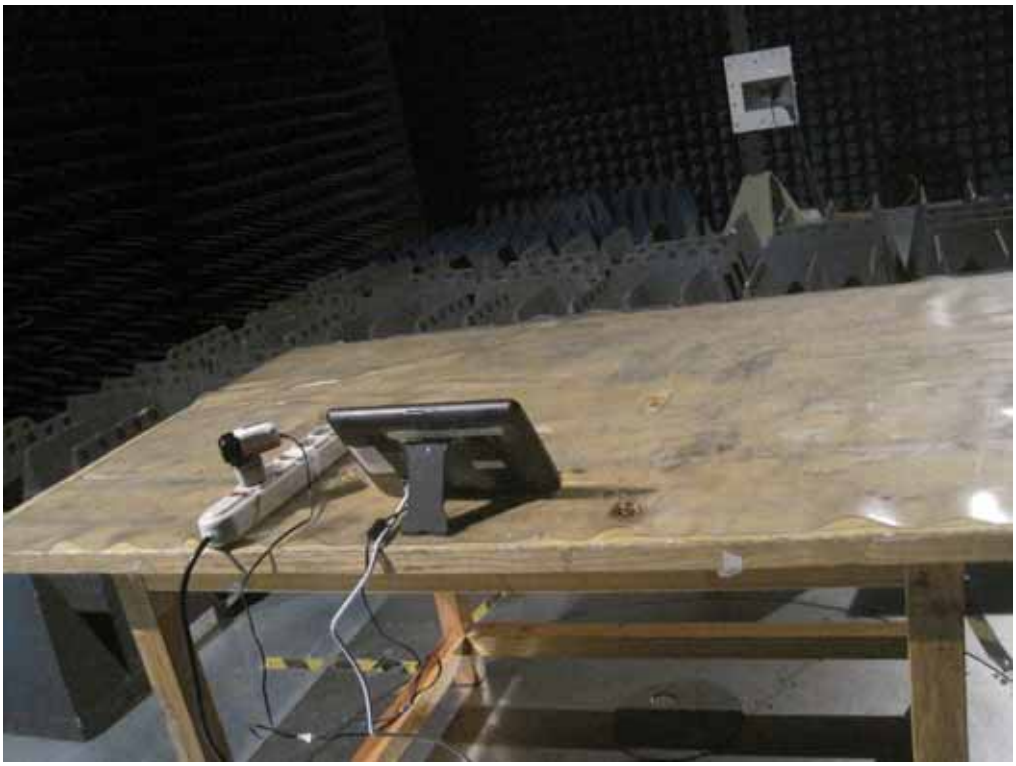
16.2 Photograph – Radiation Spurious Emission Test Setup

Below 30MHz

30MHz-1GHz



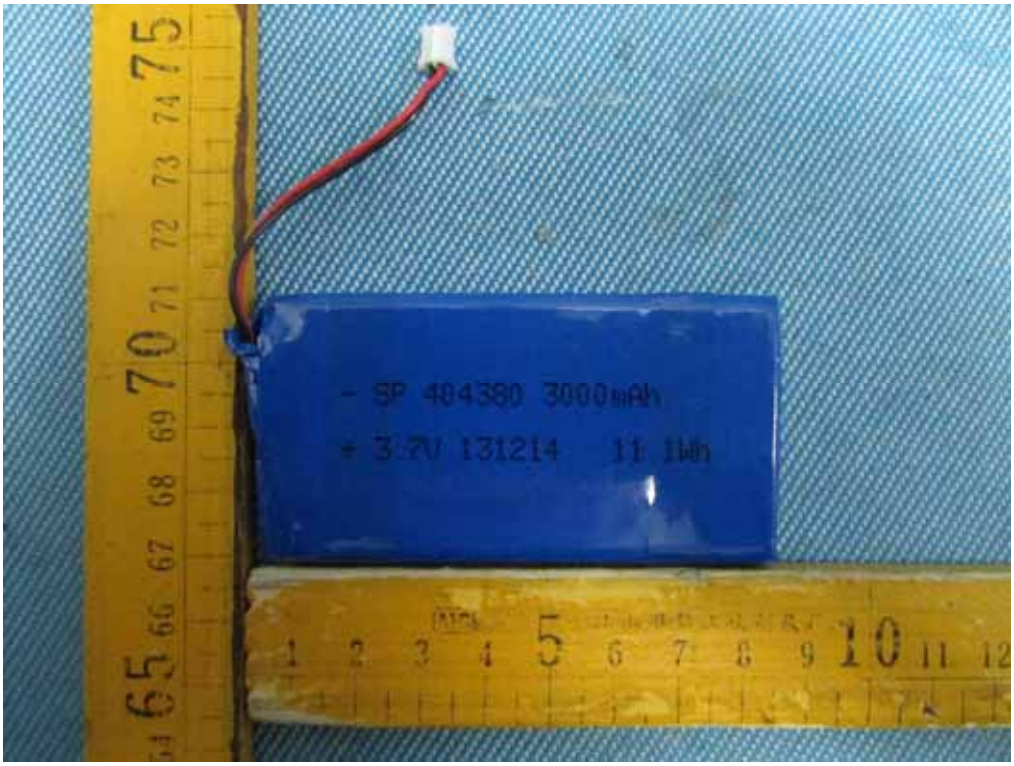
Above 1GHz

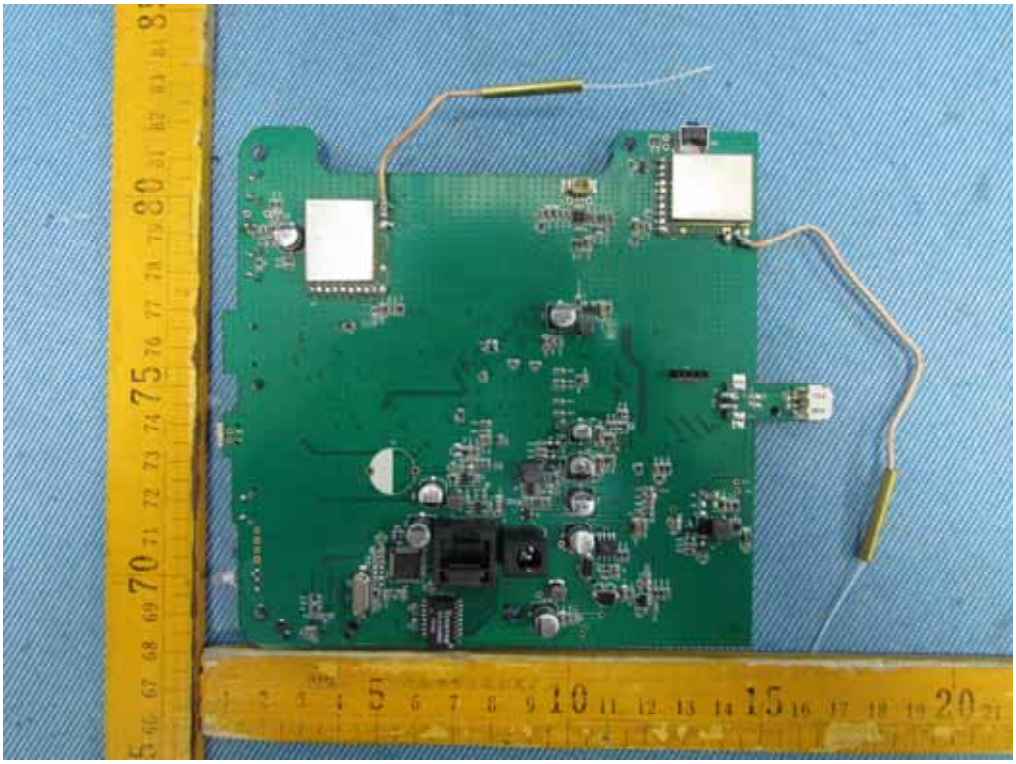


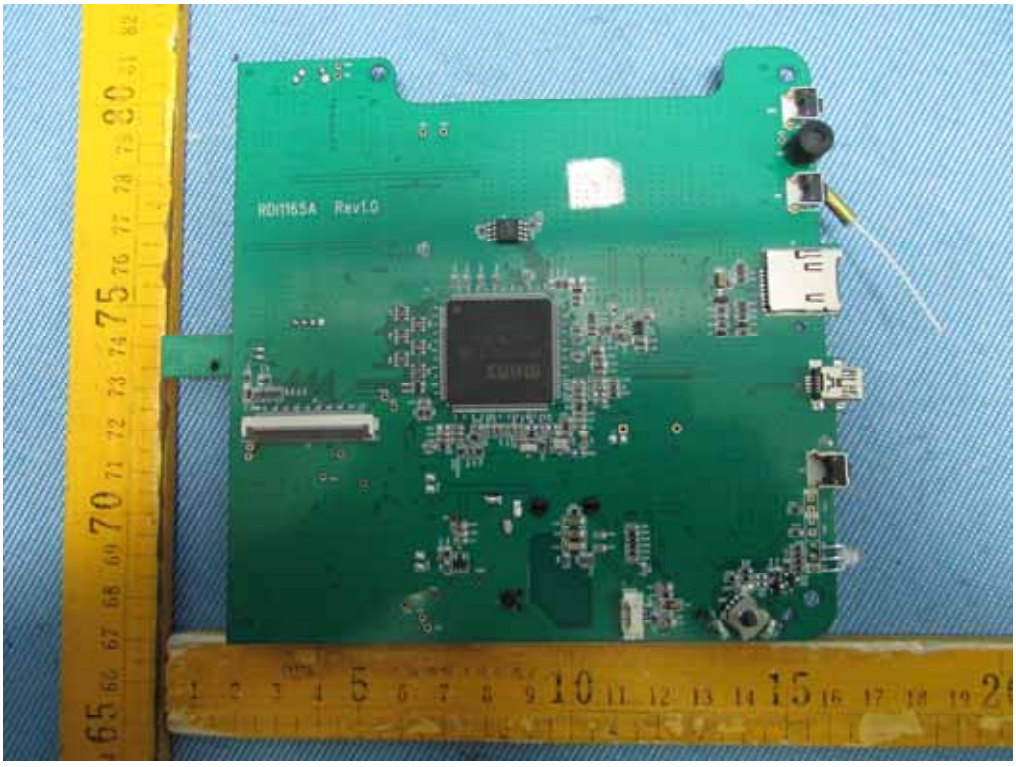
17 Photographs - Constructional Details

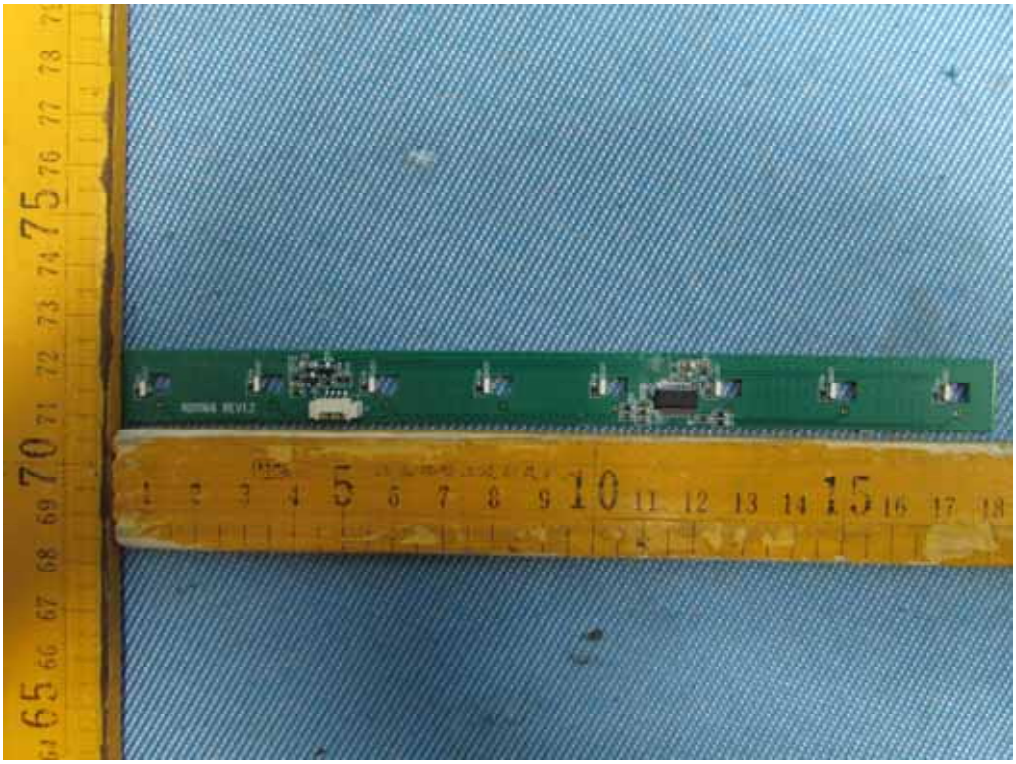
17.1 External View

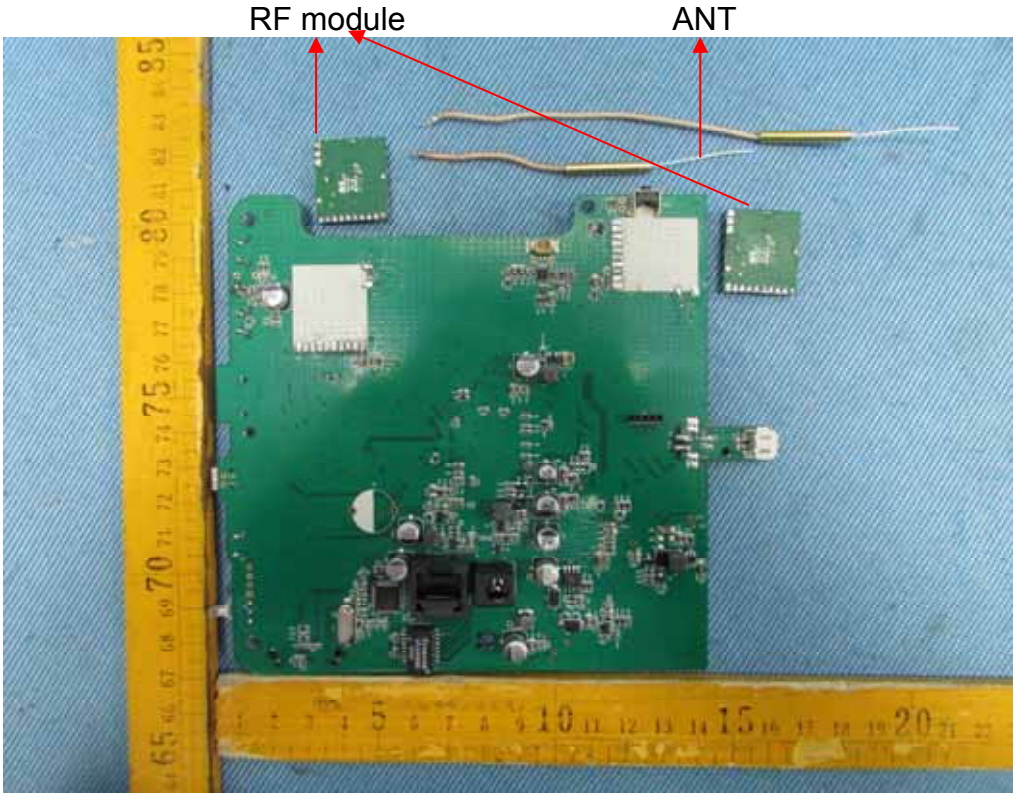
17.2 EUT - Internal View

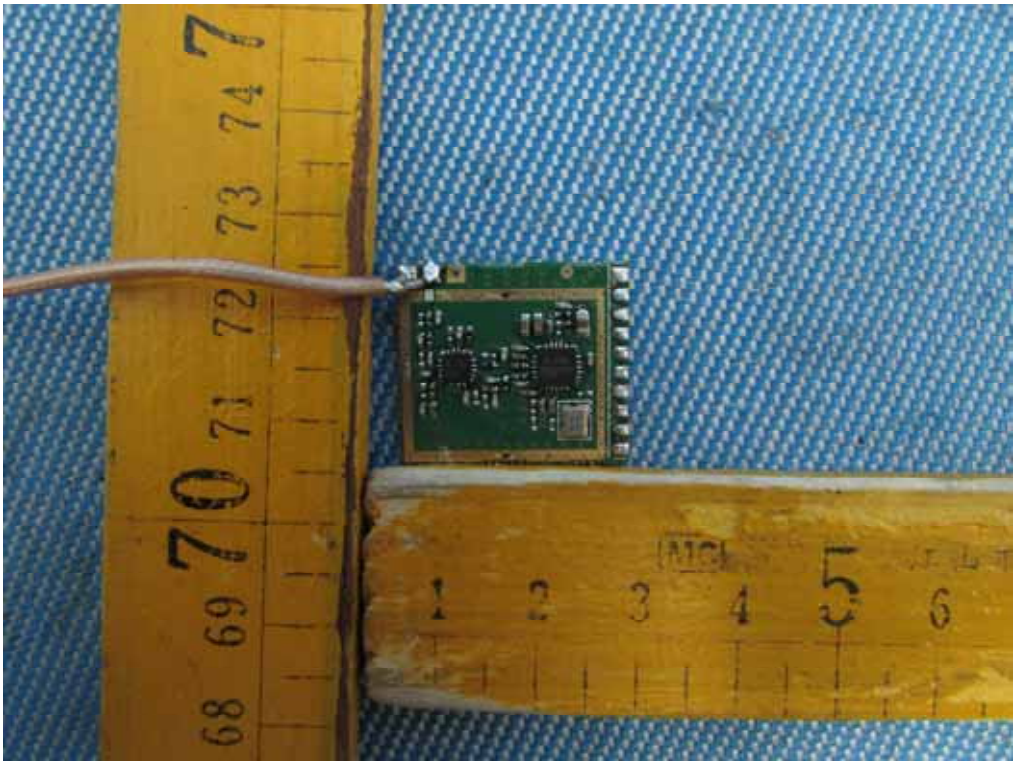

- SP 404380 3000mAh
+ 3.7V 131214 11.1Wh

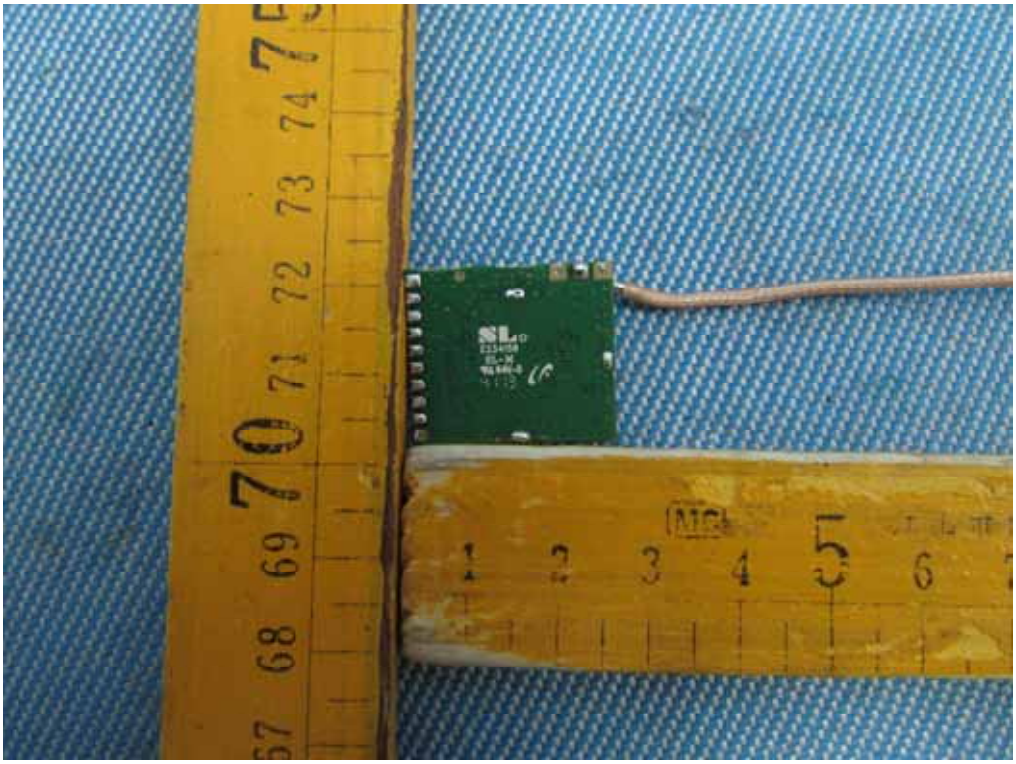



WDH1165A Rev1.0




RF module
ANT





====== End of Report ======