

FCC TEST REPORT

FCC ID : Z3M-GCM10
Applicant : Greenwave Reality Pte Ltd
Address : 41 Science Park Road, #03-01, The Gemini, Science Park II, Singapore
Manufacturer : the same as above
Address : the same as above

Equipment Under Test (EUT) :

Product Name : Lighting Controller,JN,Button,4ch
Model No. : CM1UV-Y-XX("U" stands for "0-9/A-Z"; "V" stands for "0-9"; "Y" stands for "0-9/A-Z"; "XX" stands for "00-99/AA-ZZ")
Rules : FCC CFR47 Part 15 Section 15.249: 2010,
Date of Test : January 8~22,2013
Date of Issue : January 23,2013

Test Result	: PASS*
<p>Remark:</p> <p>* The sample described above has been tested to be in compliance with the requirements of the rules listed above. 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.</p>	

PERPARED BY:

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Shenzhen, China

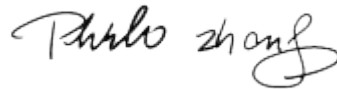
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Compiled by:



Zero Zhou / Project Engineer

Approved by:



Philo Zhong / Manager

2 Test Summary

Test Items	Test Requirement	Result
Restricted Band	15.205	PASS
Occupied Bandwidth	15.215c	PASS
Conducted Emissions	15.207	N/A
Radiated Emission	15.205(a) 15.209 15.249(a) 15:249(d)	PASS
Antenna Requirement	15.203	PASS

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4 General Information

4.1 General Description of E.U.T.

Product Name	: Lighting Controller,JN,Button,4ch
Model No.	: CM1UV-Y-XX("U" stands for "0-9/A-Z"; "V" stands for "0-9"; "Y" stands for "0-9/A-Z"; "XX" stands for "00-99/AA-ZZ") U=hardware revision, V=colour code, Y=software revision, XX=brand logo Two kinds of PCB, one with 10 pins connector and the other without it. Refer to internal photos for more details.
Model Description	: N/A
Frequency Range	: 2405-2480 MHz,16 channels in total,separated by 5MHz
Type of Modulation	: O-QPSK
System	: DSSS
Oscillator	: Crystal 32MHz
Antenna installation	: PCB Printed Antenna
Antenna Gain	: 3dBi
Antenna Power	: 0 dBm

4.2 Details of E.U.T.

Technical Data	: Batteries AAA DC1.5V*2
Adapter manufacturer	: N/A
M/N	: N/A

4.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **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.

- **IC – Registration No.:7760A**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory 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 number 7760A, July 12, 2012.

4.4 Test Location

All Emissions testswere performed at:-

1/F, Fukangtai Building,West Baima Rd.,Songgang Street, Baoan District, Shenzhen

Waltek Services (Shenzhen) Co.,Ltd.

<http://www.waltek.com.cn>

518105, Guangdong, China.

4.5 General condition

Ambient Condition: 25.5 °C 58 %RH

4.5.1 Environmental condition of test site

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

The follow condition is not applicable

Test Voltage	Input voltage
Rated voltage-15%	N/A
normal	N/A
Rated voltage+15%	N/A

The follow condition is applicable.

Test voltage	Test Voltage From Action Camcorder
Rated voltage	New Battery DC 3V

4.5.2 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Test mode	Lower channel	Middle channel	Upper channel
Transmitting	2405MHz	2440MHz	2480MHz

5 Equipment Used during Test

5.1 Equipments List

3m Semi-anechoic Chamber for Radiation Emissions and Spurious Emission						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMC Analyzer	Agilent	E7405A	MY45114943	Aug. 13,2012	Aug. 13,2013
2.	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Aug. 13,2012	Aug. 13,2013
3.	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Aug. 13,2012	Aug. 13,2013
4.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Aug. 13,2012	Aug. 13,2013
5.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	399	Aug. 13,2012	Aug. 13,2013
6.	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Feb .23,2012	Feb .23,2013
7.	Broadband Preamplifier	SCHWARZBECK	BBV 9718	9718-148	Aug. 13,2012	Aug. 13,2013
8.	10m Coaxial Cable with N- plug	SCHWARZBECK	AK 9515 H	-	Aug. 13,2012	Aug. 13,2013
9.	10m 50 Ohm Coaxial Cable with N-plug	SCHWARZBECK	AK 9513	-	Aug. 13,2012	Aug. 13,2013
10.	Positioning Controller	C&C LAB	CC-C-IF	-	Aug. 13,2012	Aug. 13,2013
11.	Color Monitor	SUNSP0	SP-14C	-	Aug. 13,2012	Aug. 13,2013

5.2 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-6}$
RF Power	± 1.0 dB
RF Power Density	± 2.2 dB
Radiated Spurious Emissions test	± 5.03 dB (Bilog antenna 30M~1000MHz)
	± 4.74 dB (Horn antenna 1000M~25000MHz)

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

Test Requirement:	FCC Part15 Paragraph 15.207
Test Method:	ANSI C63.4 :2003
Frequency Range:	150kHz to 30MHz
Class:	Class B
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average
Test Result:	N/A

Remark: The EUT powered by battery, this item do not be required.

7 Radiation Emission Test

Test Requirement: FCC Part15 Paragraph 15.249
Test Method: ANSI 63.4:2003
Frequency Range: 32MHz to 25GHz
Measurement Distance: 3m
Detector: Peak for pre-scan (120kHz resolution bandwidth)
 Quasi-Peak if maximised peak within 6dB of limit
Test Result: PASS

15.247(a)Limit:

Fundamental frequency	Field strength of fundamental		Field strength of harmonics	
	mV/m	dBuV/m	uV/m	dBuV/m
902-928 MHz	50	94	500	54
2400-2483.5 MHz	50	94	500	54
5725-5875 MHz	50	94	500	54
24.0-24.25 GHz	250	108	2500	68

15.209 Limit:

Frequency(MHZ)	Distance(m)	Field strength	
		uV/m	dBuV/m
30-88	3	100	40.0
88-216	3	150	43.5
216-960	3	200	46.0
Above 960	3	500	54.0

Note: RF Voltage(dBuV)=20 log₁₀ RF Voltage(uV)

7.1 EUT Operation:

Operating Environment:

Temperature: 25.5 °C
Humidity: 51 % RH
Atmospheric Pressure: 1012 mbar

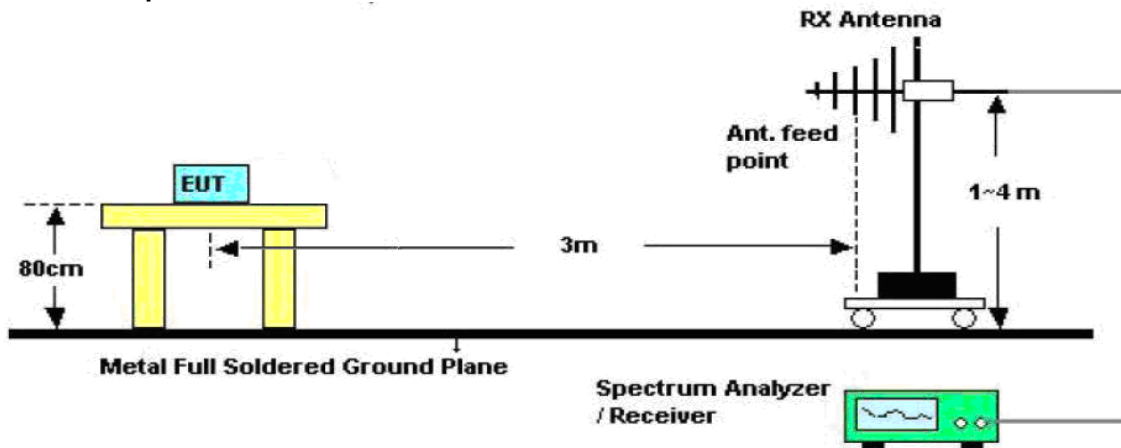
Operation Mode:

The EUT was tested in Normal working mode. The worst data were shown as follow.

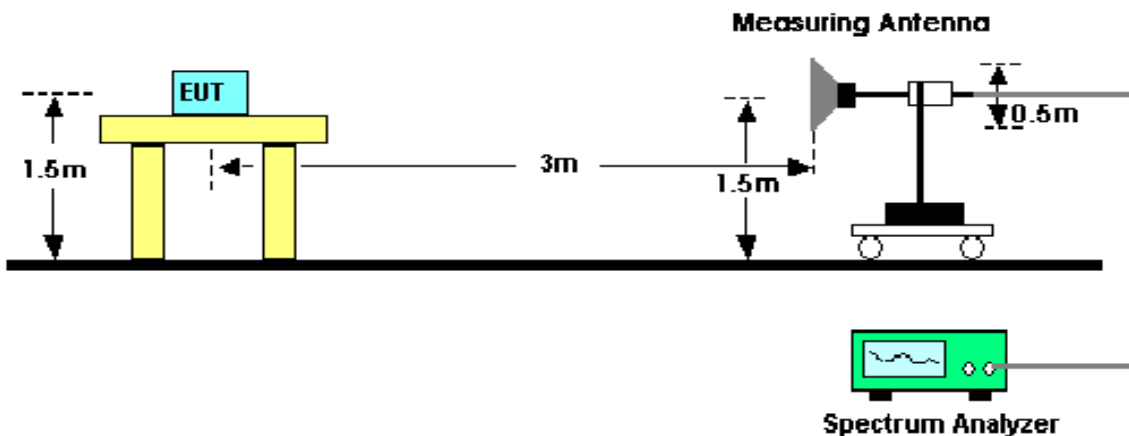
7.2 Test Setup

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 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 from 32 MHz to 25 GHz.

30MHz ~ 1GHz

- Sweep SpeedAuto
- IF Bandwidth120 KHz
- Video Bandwidth100KHz
- Quasi-Peak Adapter Bandwidth.....120 KHz
- Quasi-Peak Adapter Mode.....Normal
- Resolution Bandwidth.....100KHz

Above 1GHz

- Sweep SpeedAuto
- IF Bandwidth120 KHz
- Video Bandwidth3MHz
- Quasi-Peak Adapter Bandwidth.....120 KHz
- Quasi-Peak Adapter Mode.....Normal
- Resolution Bandwidth.....1MHz

7.4 Test Procedure

1. The new battery was used under test for radiated emissions test.
2. This is a handheld device, The radiation emission should be 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.
3. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.
4. All data was recorded in the peak and average detection mode.
5. The EUT was under working mode during the final qualification test and the configuration was used to represent the worst case results.

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:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

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

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

7.6 Radiated Emissions Test Result

Formula of conversion factors: the field strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dB μ V/m) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the preselector was accounted for in the spectrum analyzer meter reading.

Example:

Freq(MHz) Meter Reading +ACF=FS

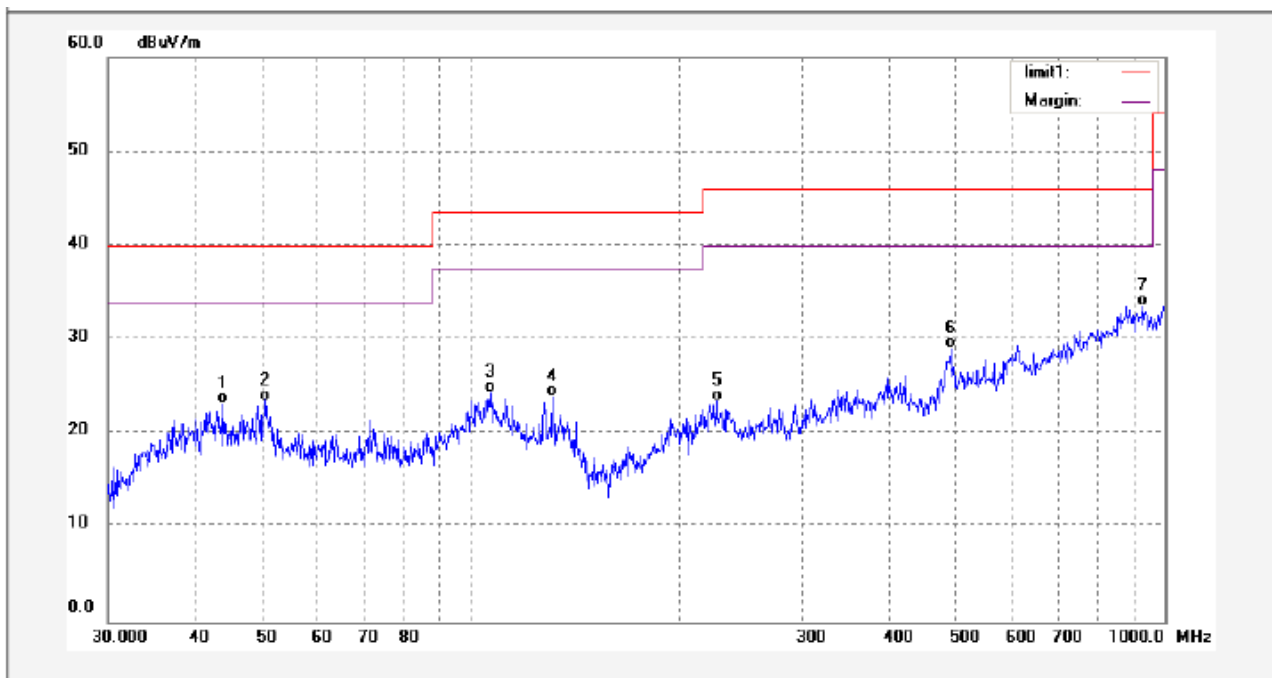
33 20dB μ V+10.36dB=30.36dB μ V/m @3m

7.7 Radiated Emission Data

Test Frequency Range: 30MHz~1000MHz

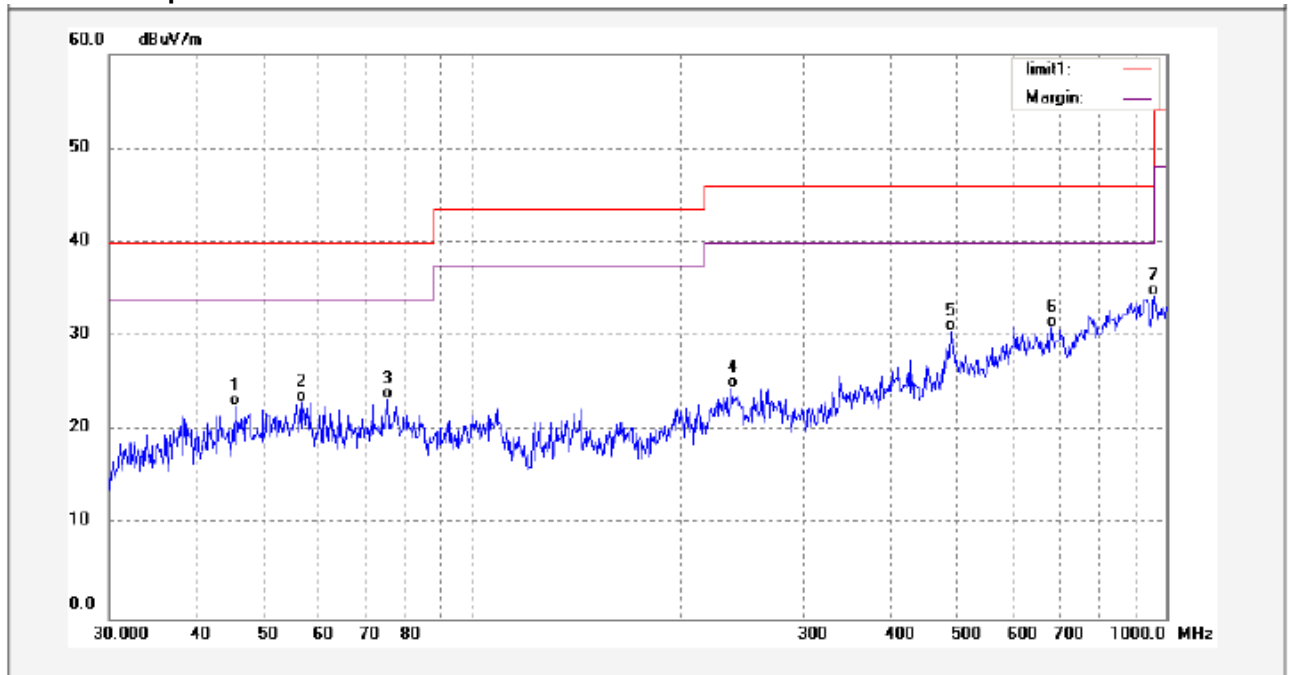
Operating Condition: Lower channel

Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	43.8452	8.08	15.04	23.12	40.00	-16.88	QP	
2	50.6389	8.99	14.56	23.55	40.00	-16.45	QP	
3	106.6552	10.28	14.09	24.37	43.50	-19.13	QP	
4	131.2235	11.98	12.01	23.99	43.50	-19.51	QP	
5	226.2202	7.14	16.31	23.45	46.00	-22.55	QP	
6	491.7700	3.73	25.29	29.02	46.00	-16.98	QP	
7	928.8711	1.62	31.85	33.47	46.00	-12.53	QP	

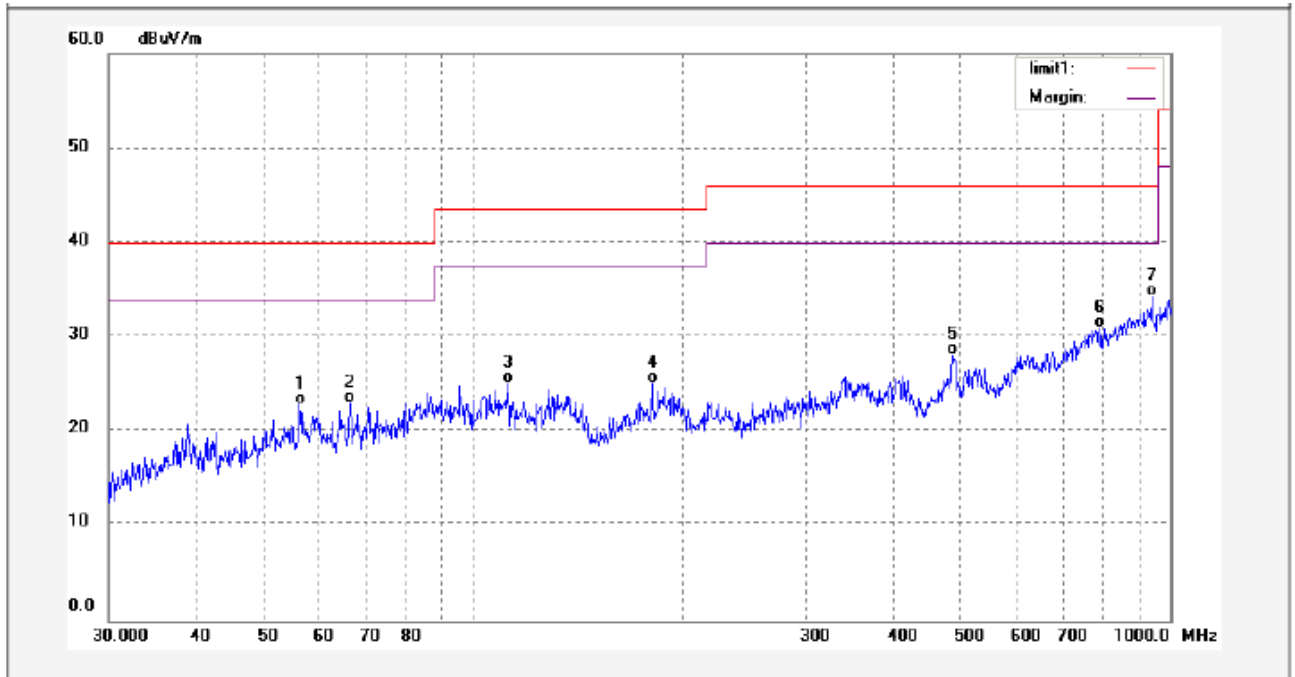
Antenna polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	45.5729	7.95	14.62	22.57	40.00	-17.43	QP	
2	56.6650	9.64	13.36	23.00	40.00	-17.00	QP	
3	75.5859	14.09	9.18	23.27	40.00	-16.73	QP	
4	236.7928	8.89	15.66	24.55	46.00	-21.45	QP	
5	490.0451	4.75	25.75	30.50	46.00	-15.50	QP	
6	684.2259	4.73	26.29	31.02	46.00	-14.98	QP	
7	962.0879	2.62	31.65	34.27	54.00	-19.73	QP	

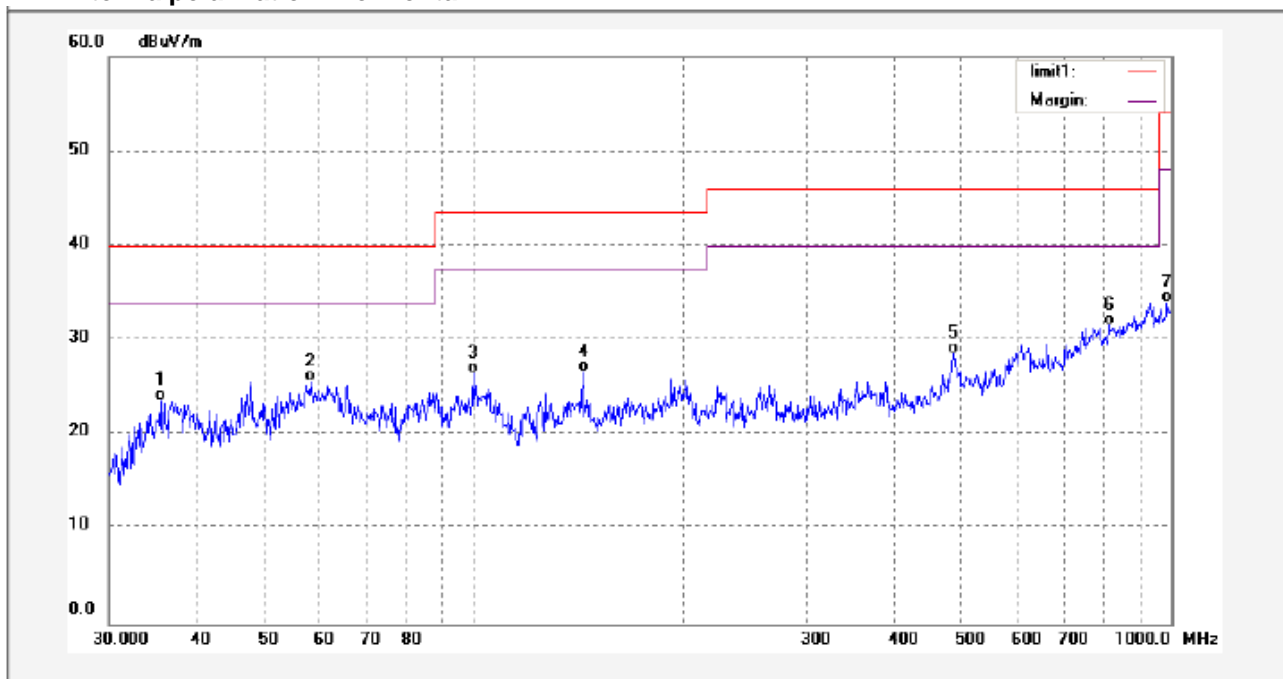
Operating Condition: Middle channel

Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	56.2682	9.46	13.47	22.93	40.00	-17.07	QP	
2	66.6051	12.39	10.67	23.06	40.00	-16.94	QP	
3	112.4271	11.98	13.19	25.17	43.50	-18.33	QP	
4	180.6641	12.01	13.19	25.20	43.50	-18.30	QP	
5	488.3263	2.89	25.25	28.14	46.00	-17.86	QP	
6	793.0281	1.85	29.10	30.95	46.00	-15.05	QP	
7	942.0180	2.49	31.77	34.26	46.00	-11.74	QP	

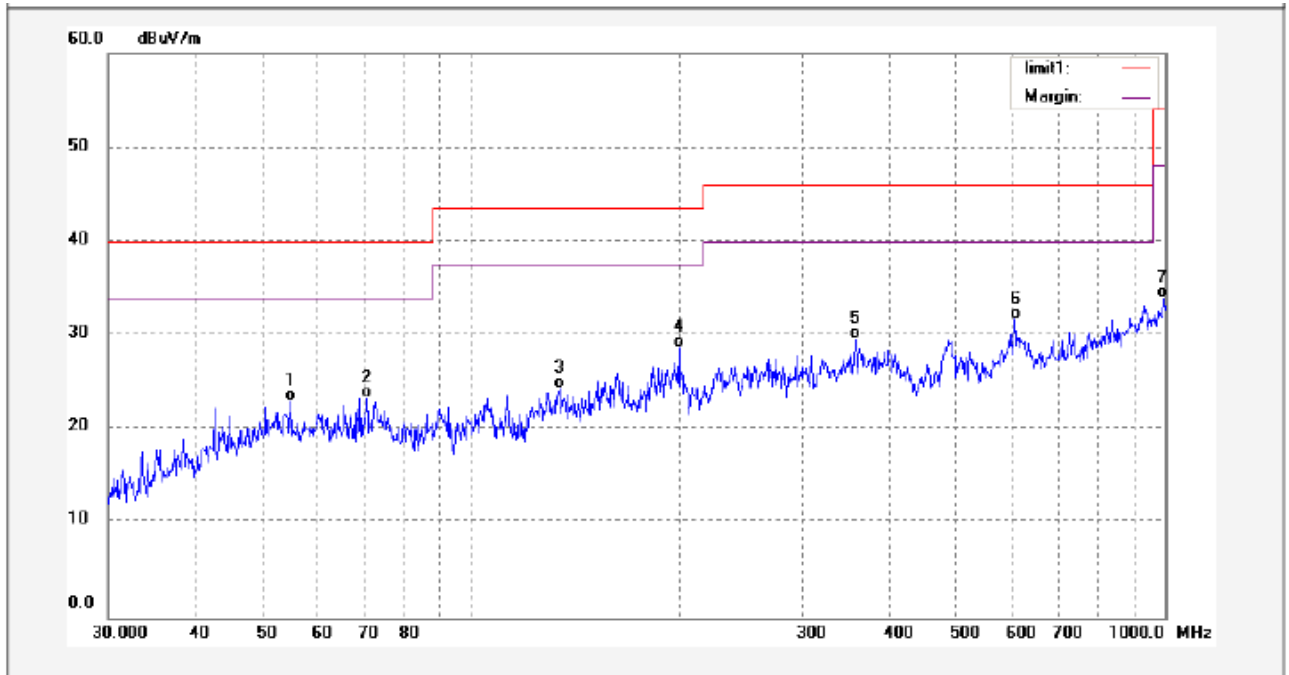
Antenna polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	35.5112	7.33	16.34	23.67	40.00	-16.33	QP	
2	58.2803	12.70	12.92	25.62	40.00	-14.38	QP	
3	99.7676	12.53	13.94	26.47	43.50	-17.03	QP	
4	143.2717	15.14	11.43	26.57	43.50	-16.93	QP	
5	488.3263	3.33	25.25	28.58	46.00	-17.42	QP	
6	815.6352	2.24	29.36	31.60	46.00	-14.40	QP	
7	986.0440	1.88	32.09	33.97	54.00	-20.03	QP	

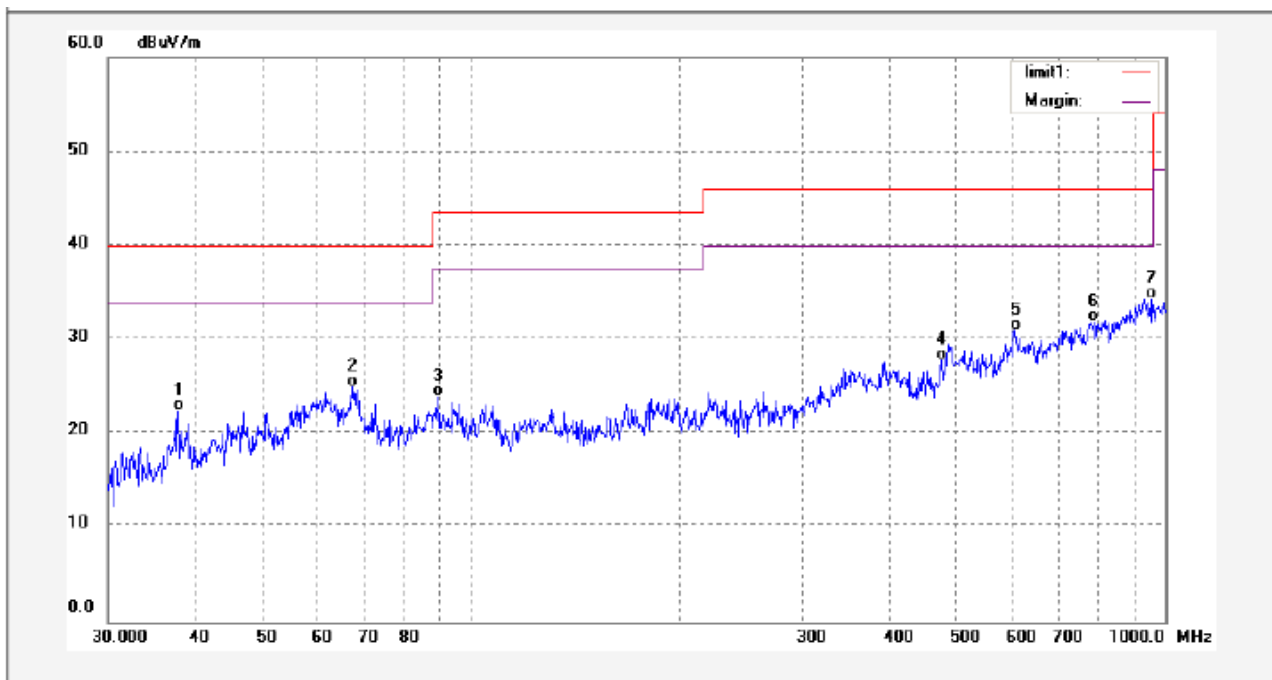
Operating Condition: Upper channel

Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	54.9011	9.27	13.80	23.07	40.00	-16.93	QP	
2	70.7047	13.57	9.81	23.38	40.00	-16.62	QP	
3	134.0194	12.32	12.09	24.41	43.50	-19.09	QP	
4	199.3416	13.38	15.34	28.72	43.50	-14.78	QP	
5	358.4497	8.91	20.68	29.59	46.00	-16.41	QP	
6	607.1806	5.71	25.95	31.66	46.00	-14.34	QP	
7	996.4926	1.48	32.47	33.95	54.00	-20.05	QP	

Antenna polarization: Horizontal

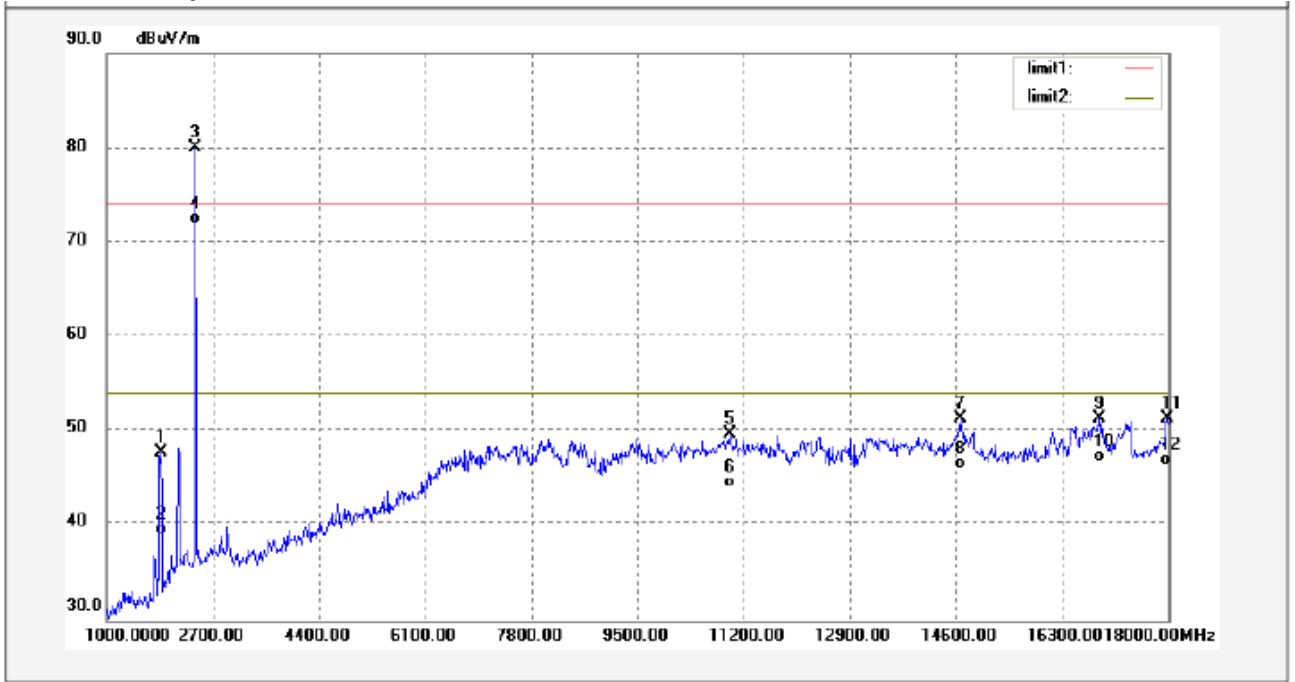


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	37.8297	5.71	16.68	22.39	40.00	-17.61	QP	
2	67.5478	14.47	10.47	24.94	40.00	-15.06	QP	
3	89.7866	12.38	11.59	23.97	43.50	-19.53	QP	
4	476.4624	5.44	22.36	27.80	46.00	-18.20	QP	
5	607.1806	5.05	25.95	31.00	46.00	-15.00	QP	
6	790.2466	2.70	29.19	31.89	46.00	-14.11	QP	
7	955.3509	2.87	31.47	34.34	46.00	-11.66	QP	

Test Frequency Range: 1GHz~18GHz

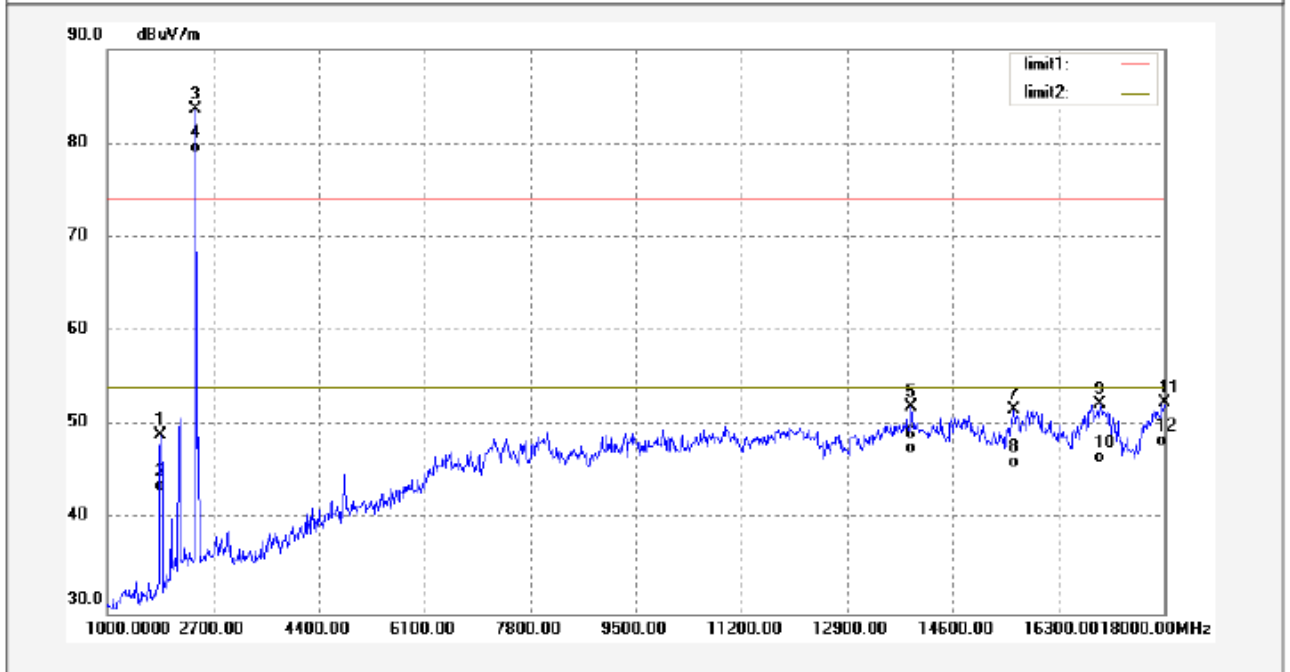
Operating Condition: Lower channel

Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1867.000	59.89	-12.12	47.77	74.00	-26.23	peak	
2	1867.000	51.23	-12.12	39.11	54.00	-14.89	AVG	
3	2405.000	89.33	-9.28	80.05	114.00	-33.95	peak	
4	2405.000	81.25	-9.28	71.97	94.00	-22.03	AVG	
5	10979.000	38.31	11.48	49.79	74.00	-24.21	peak	
6	10979.000	32.56	11.48	44.04	54.00	-9.96	AVG	
7	14668.000	32.98	18.46	51.44	74.00	-22.56	peak	
8	14668.000	27.56	18.46	46.02	54.00	-7.98	AVG	
9	16895.000	31.41	20.01	51.42	74.00	-22.58	peak	
10	16895.000	26.65	20.01	46.66	54.00	-7.34	AVG	
11	17983.000	23.61	27.81	51.42	74.00	-22.58	peak	
12	17983.000	18.56	27.81	46.37	54.00	-7.63	AVG	

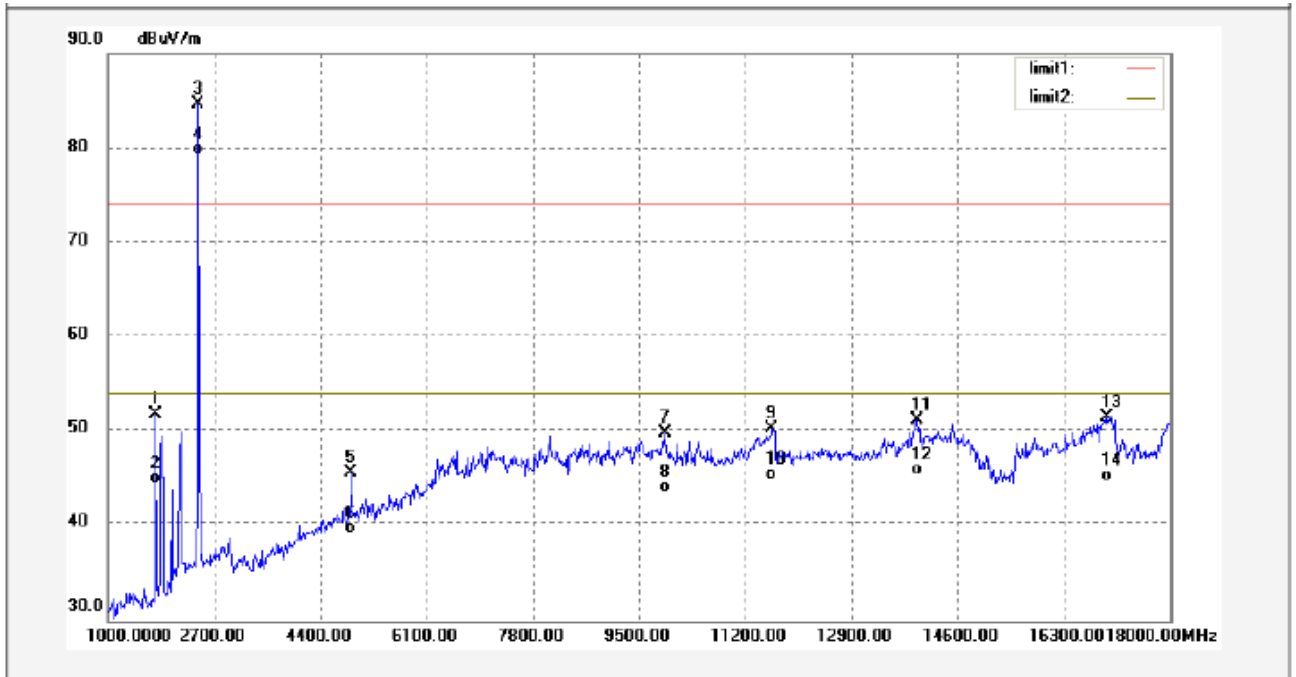
Antenna polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1850.000	61.19	-12.22	48.97	74.00	-25.03	peak	
2	1850.000	55.22	-12.22	43.00	54.00	-11.00	AVG	
3	2405.000	92.95	-9.28	83.67	114.00	-30.33	peak	
4	2405.000	88.22	-9.28	78.94	94.00	-15.06	AVG	
5	13937.000	35.17	16.76	51.93	74.00	-22.07	peak	
6	13937.000	30.21	16.76	46.97	54.00	-7.03	AVG	
7	15586.000	36.39	15.27	51.66	74.00	-22.34	peak	
8	15586.000	30.25	15.27	45.52	54.00	-8.48	AVG	
9	16963.000	31.95	20.30	52.25	74.00	-21.75	peak	
10	16963.000	25.65	20.30	45.95	54.00	-8.05	AVG	
11	18000.000	24.27	28.08	52.35	74.00	-21.65	peak	
12	18000.000	19.65	28.08	47.73	54.00	-6.27	AVG	

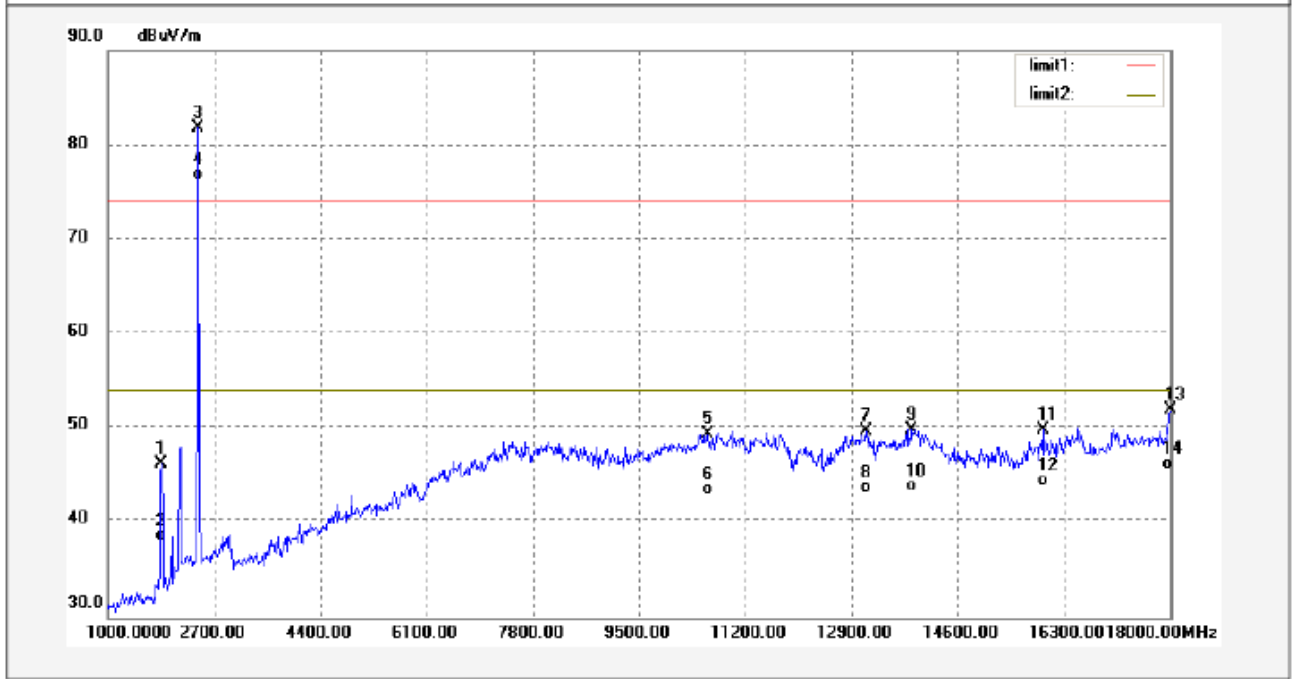
Operating Condition: Middle channel

Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1765.000	64.59	-12.75	51.84	74.00	-22.16	peak	
2	1765.000	57.23	-12.75	44.48	54.00	-9.52	AVG	
3	2440.000	93.97	-9.32	84.65	114.00	-29.35	peak	
4	2440.000	88.56	-9.32	79.24	94.00	-14.76	AVG	
5	4893.000	48.75	-3.02	45.73	74.00	-28.27	peak	
6	4893.000	42.23	-3.02	39.21	54.00	-14.79	AVG	
7	9908.000	41.08	8.78	49.86	74.00	-24.14	peak	
8	9908.000	34.85	8.78	43.63	54.00	-10.37	AVG	
9	11625.000	39.09	11.25	50.34	74.00	-23.66	peak	
10	11625.000	33.65	11.25	44.90	54.00	-9.10	AVG	
11	13954.000	34.36	16.84	51.20	74.00	-22.80	peak	
12	13954.000	28.56	16.84	45.40	54.00	-8.60	AVG	
13	16997.000	31.07	20.44	51.51	74.00	-22.49	peak	
14	16997.000	24.32	20.44	44.76	54.00	-9.24	AVG	

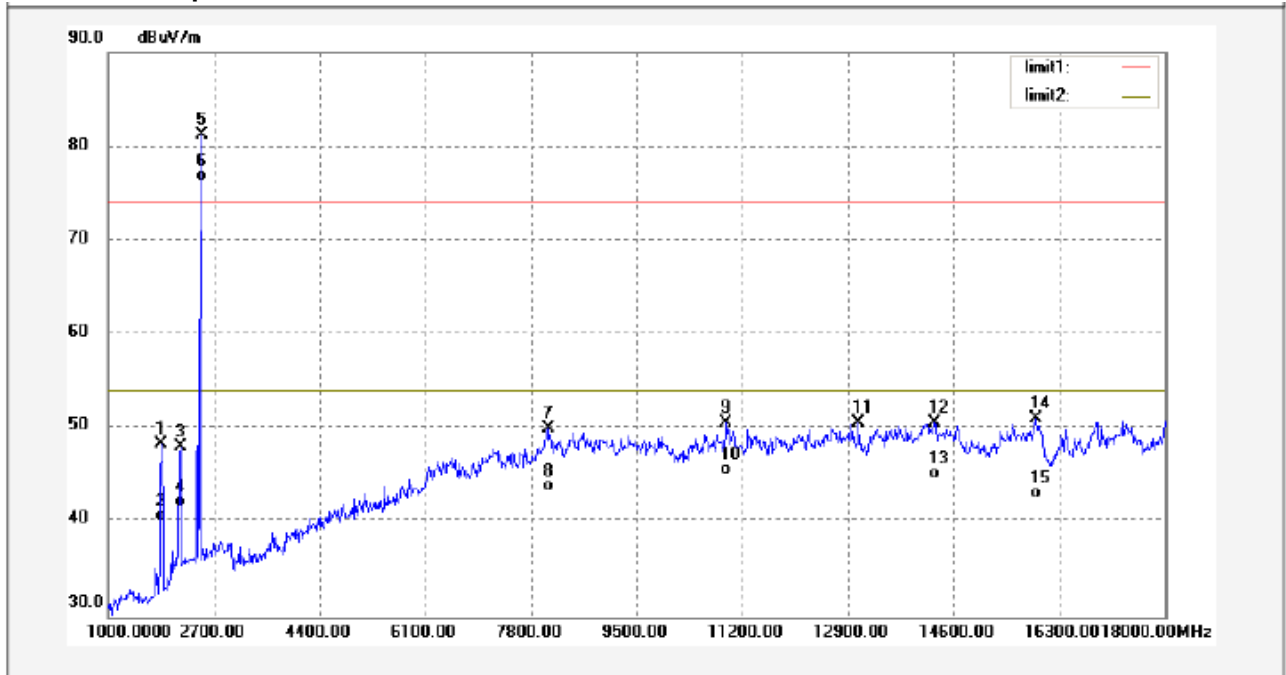
Antenna polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1850.000	58.55	-12.22	46.33	74.00	-27.67	peak	
2	1850.000	50.21	-12.22	37.99	54.00	-16.01	AVG	
3	2440.000	91.16	-9.32	81.84	114.00	-32.16	peak	
4	2440.000	85.65	-9.32	76.33	94.00	-17.67	AVG	
5	10588.000	38.99	10.44	49.43	74.00	-24.57	peak	
6	10588.000	32.56	10.44	43.00	54.00	-11.00	AVG	
7	13138.000	36.34	13.43	49.77	74.00	-24.23	peak	
8	13138.000	29.65	13.43	43.08	54.00	-10.92	AVG	
9	13869.000	33.46	16.45	49.91	74.00	-24.09	peak	
10	13869.000	26.85	16.45	43.30	54.00	-10.70	AVG	
11	15960.000	34.53	15.29	49.82	74.00	-24.18	peak	
12	15960.000	28.63	15.29	43.92	54.00	-10.08	AVG	
13	18000.000	23.95	28.08	52.03	74.00	-21.97	peak	
14	18000.000	17.65	28.08	45.73	54.00	-8.27	AVG	

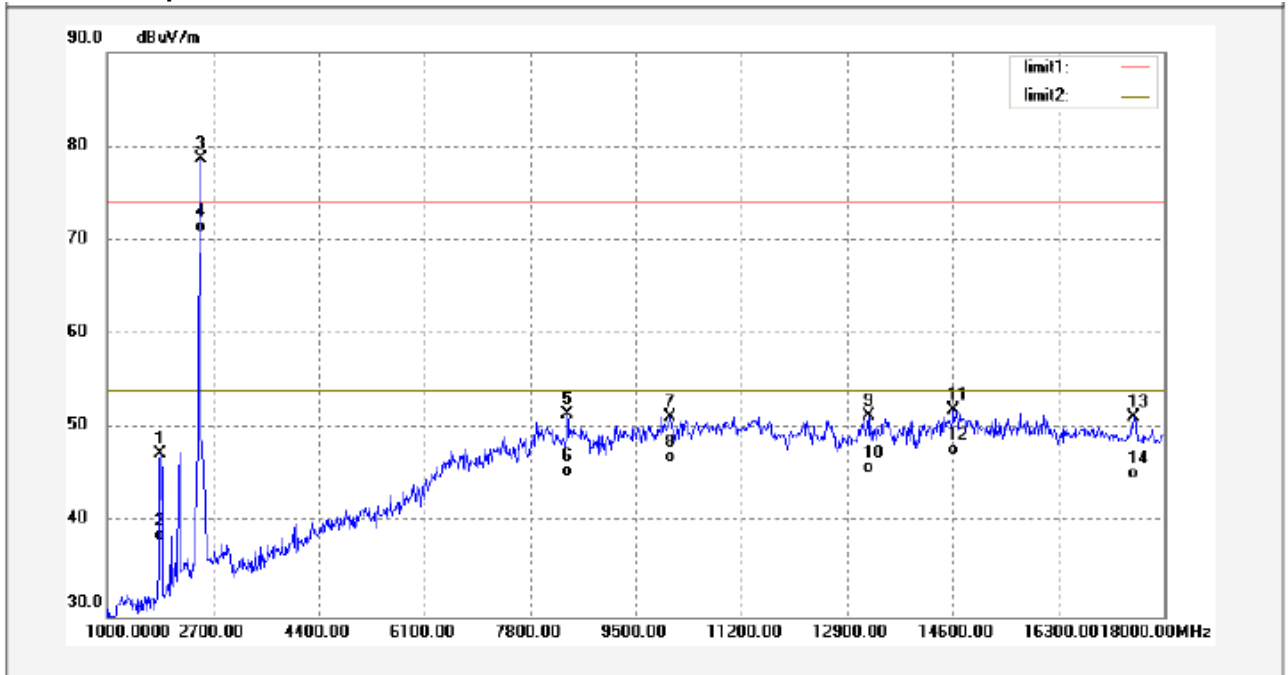
Operating Condition: Upper channel

Antenna polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1850.000	60.61	-12.22	48.39	74.00	-25.61	peak	
2	1850.000	52.33	-12.22	40.11	54.00	-13.89	AVG	
3	2156.000	57.66	-9.54	48.12	74.00	-25.88	peak	
4	2156.000	51.23	-9.54	41.69	54.00	-12.31	AVG	
5	2480.000	90.42	-9.22	81.20	114.00	-32.8	peak	
6	2480.000	85.56	-9.22	76.34	94.00	-17.66	AVG	
7	8072.000	44.00	5.96	49.96	74.00	-24.04	peak	
8	8072.000	37.25	5.96	43.21	54.00	-10.79	AVG	
9	10945.000	39.09	11.47	50.56	74.00	-23.44	peak	
10	10945.000	33.65	11.47	45.12	54.00	-8.88	AVG	
11	13070.000	37.40	13.16	50.56	74.00	-23.44	peak	
12	14294.000	32.52	18.08	50.60	74.00	-23.40	peak	
13	14294.000	26.52	18.08	44.60	54.00	-9.40	AVG	
14	15926.000	35.83	15.24	51.07	74.00	-22.93	peak	
15	15926.000	27.25	15.24	42.49	54.00	-11.51	AVG	

Antenna polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	1850.000	59.57	-12.22	47.35	74.00	-26.65	peak	
2	1850.000	50.23	-12.22	38.01	54.00	-15.99	AVG	
3	2480.000	87.87	-9.22	78.65	114.00	-35.35	peak	
4	2480.000	80.12	-9.22	70.90	94.00	-23.10	AVG	
5	8395.000	46.16	5.33	51.49	74.00	-22.51	peak	
6	8395.000	39.52	5.33	44.85	54.00	-9.15	AVG	
7	10061.000	42.40	8.84	51.24	74.00	-22.76	peak	
8	10061.000	37.56	8.84	46.40	54.00	-7.60	AVG	
9	13240.000	37.41	13.92	51.33	74.00	-22.67	peak	
10	13240.000	31.25	13.92	45.17	54.00	-8.83	AVG	
11	14617.000	33.48	18.52	52.00	74.00	-22.00	peak	
12	14617.000	28.65	18.52	47.17	54.00	-6.83	AVG	
13	17507.000	28.34	22.93	51.27	74.00	-22.73	peak	
14	17507.000	21.63	22.93	44.56	54.00	-9.44	AVG	

Test Frequency Range: Above 18GHz

Remark: All emissions were more than 20 dB below the limit and therefore not reported.

8 Occupied Bandwidth

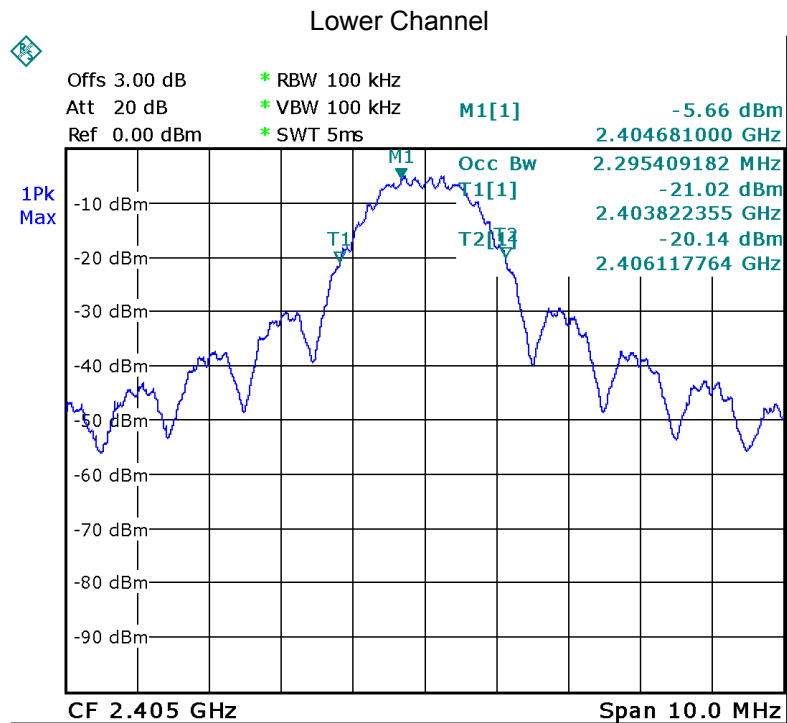
Test Requirement: FCC Part 15.215c
Test Method: ANSI C63.4
Test mode: Transmitting
Test Result: PASS

8.1 Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. The bandwidth of the fundamental frequency was measure by spectrum analyser with 1MHz RBW and 1MHz VBW.

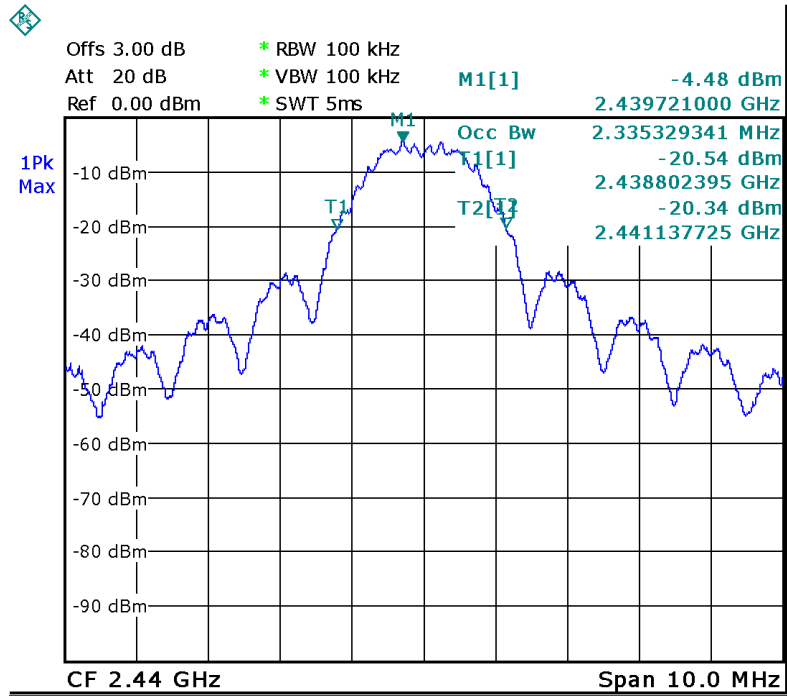
8.2 Test Result

99%Bandwidth



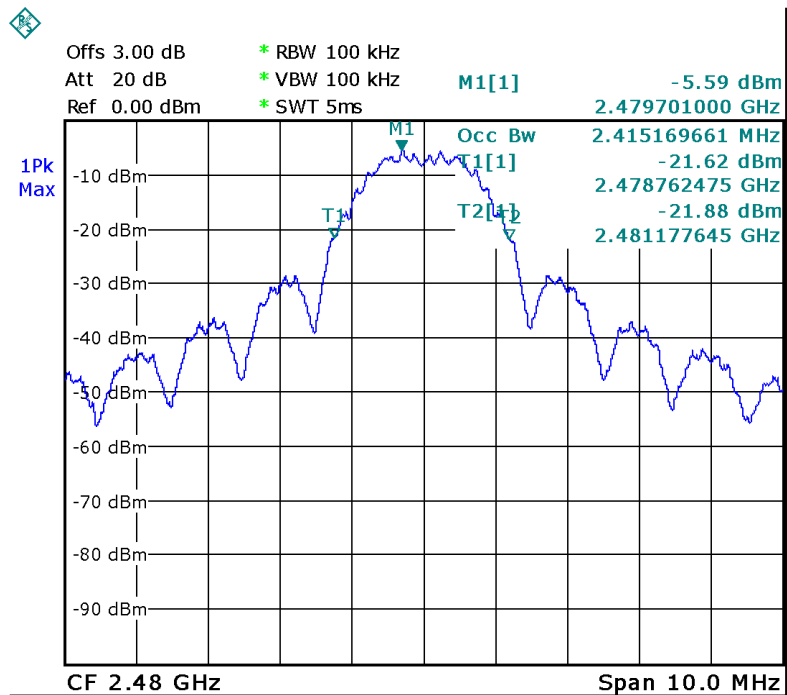
Date: 19.JAN.2013 18:59:59

Middle Channel



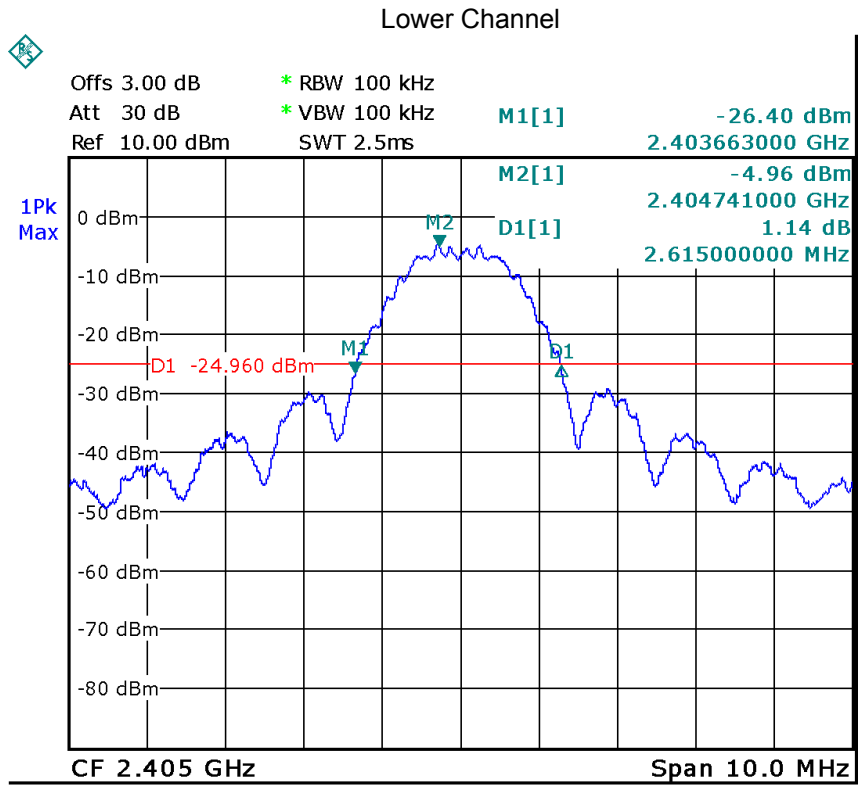
Date: 19.JAN.2013 18:59:35

Upper Channel

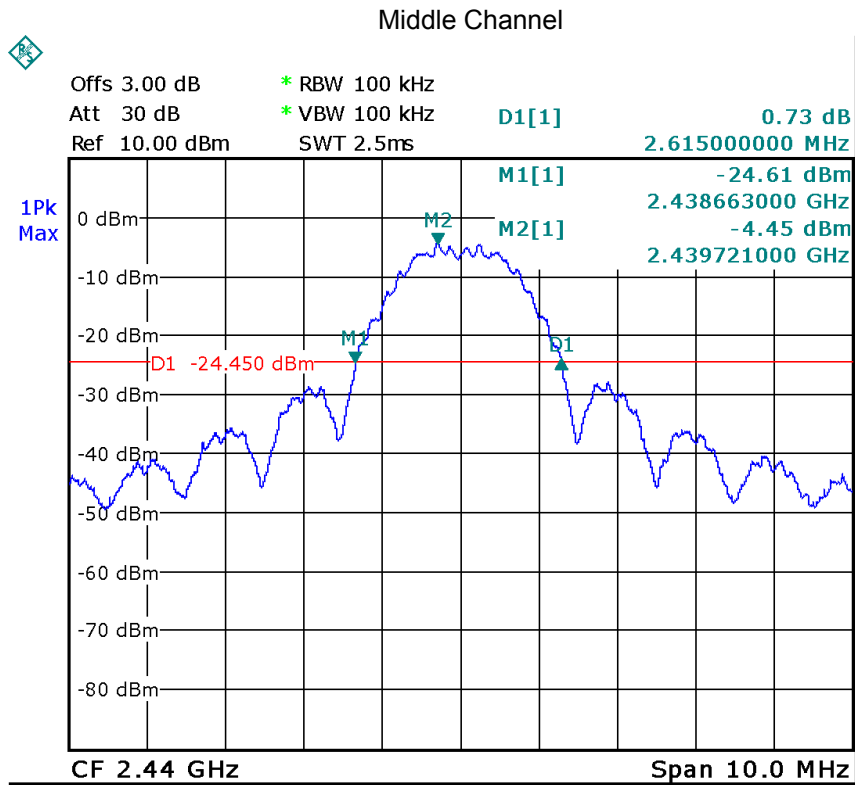


Date: 19.JAN.2013 19:00:26

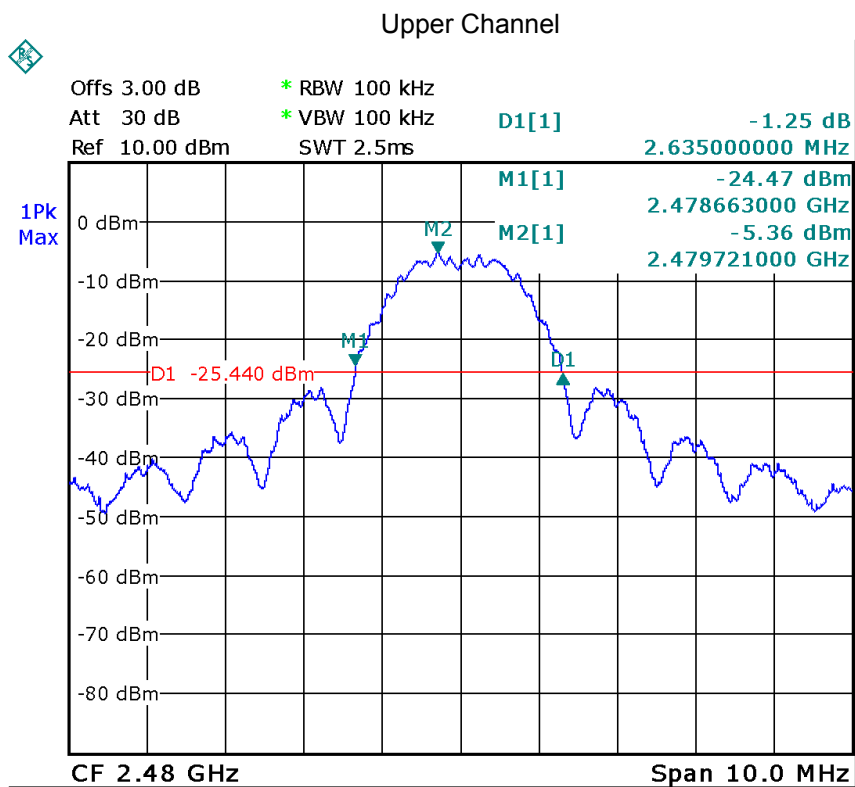
20dB Bandwidth



Date: 19.JAN.2013 18:47:31



Date: 19.JAN.2013 18:46:24



Date: 19.JAN.2013 18:44:47

9 Restricted band

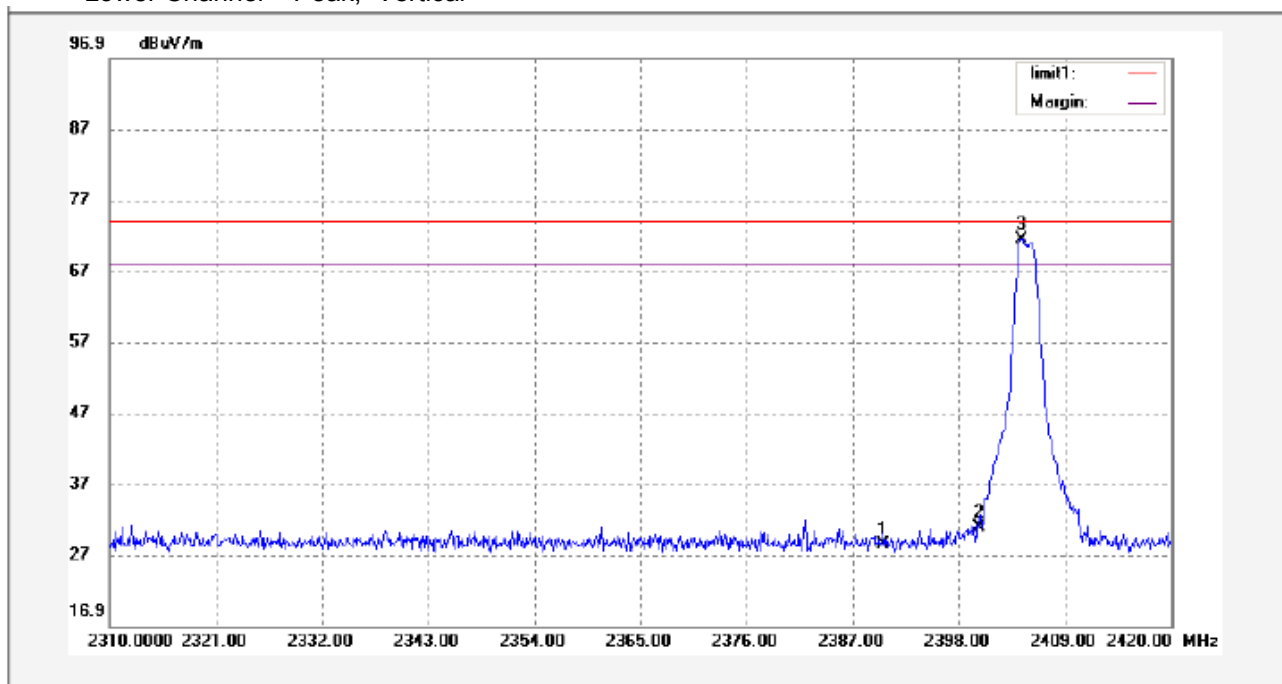
Test Requirement:	Section 15.249(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation. In addition, radiated 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) and 15.205(c).
Test Method:	ANSI C63.4
Measurement Distance:	3m
Detector:	For Peak value: RBW = 1MHz VBW = 3MHz; Sweep = auto Detector function = peak Trace = max hold For Average value: RBW = 1MHz VBW = 10Hz; Sweep = auto Detector function = Average Trace = max hold

9.1 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.

9.2 Test Result

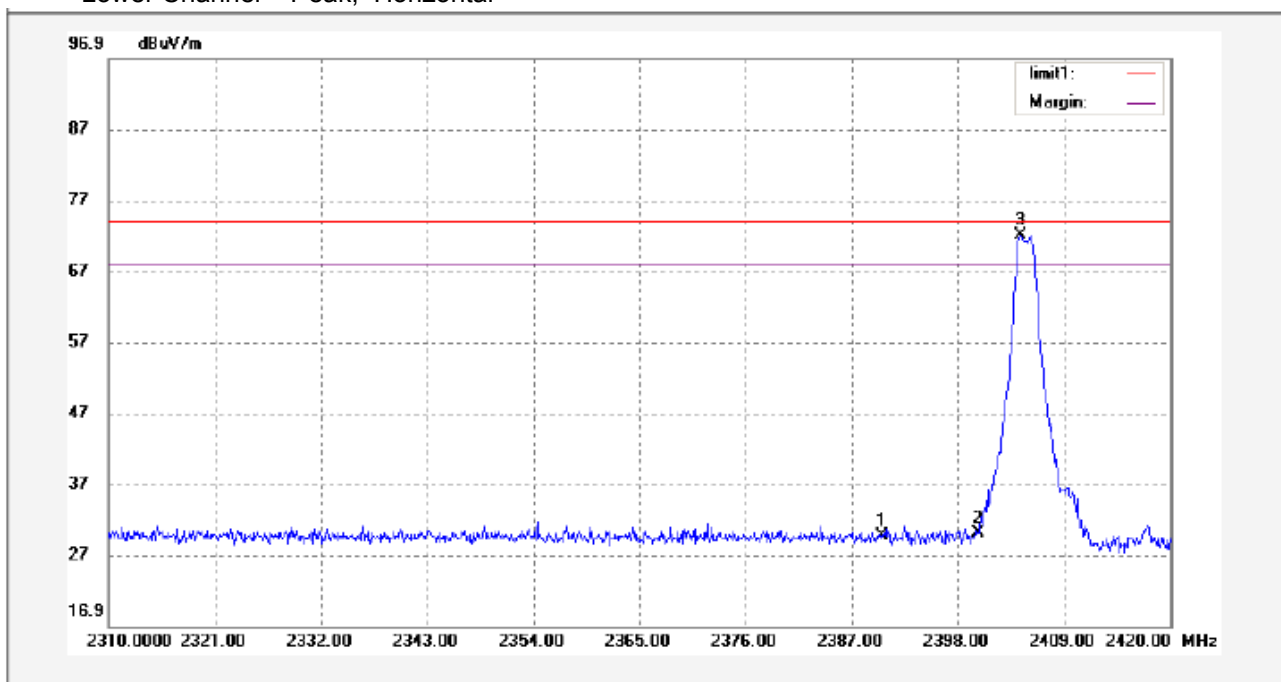
Lower Channel – Peak, Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2390.000	44.05	-15.55	28.50	74.00	-45.50	peak	
2	2400.000	46.29	-15.58	30.71	74.00	-43.29	peak	
3	2404.490	87.09	-15.59	71.50	74.00	-2.50	peak	

Remark:Mark3 is fundamental wave.

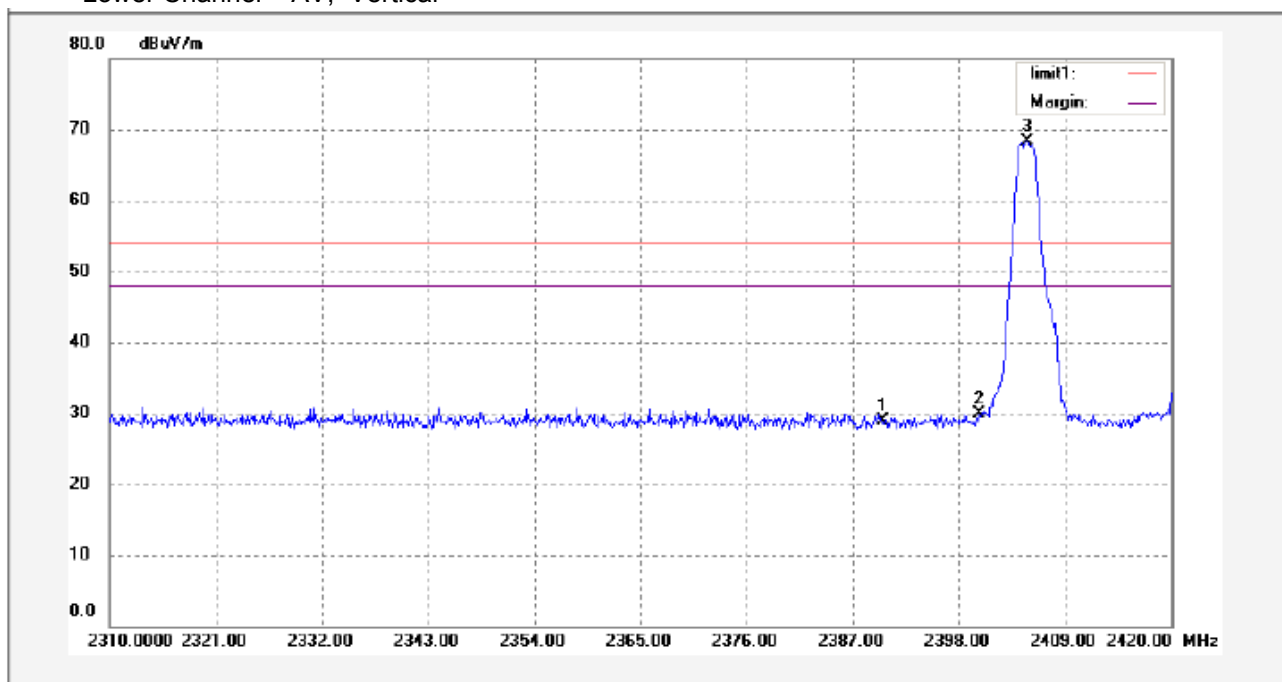
Lower Channel – Peak, Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2390.000	45.16	-15.55	29.61	74.00	-44.39	peak	
2	2400.000	45.57	-15.58	29.99	74.00	-44.01	peak	
3	2404.490	87.60	-15.59	72.01	74.00	-1.99	peak	

Remark:Mark3 is fundamental wave.

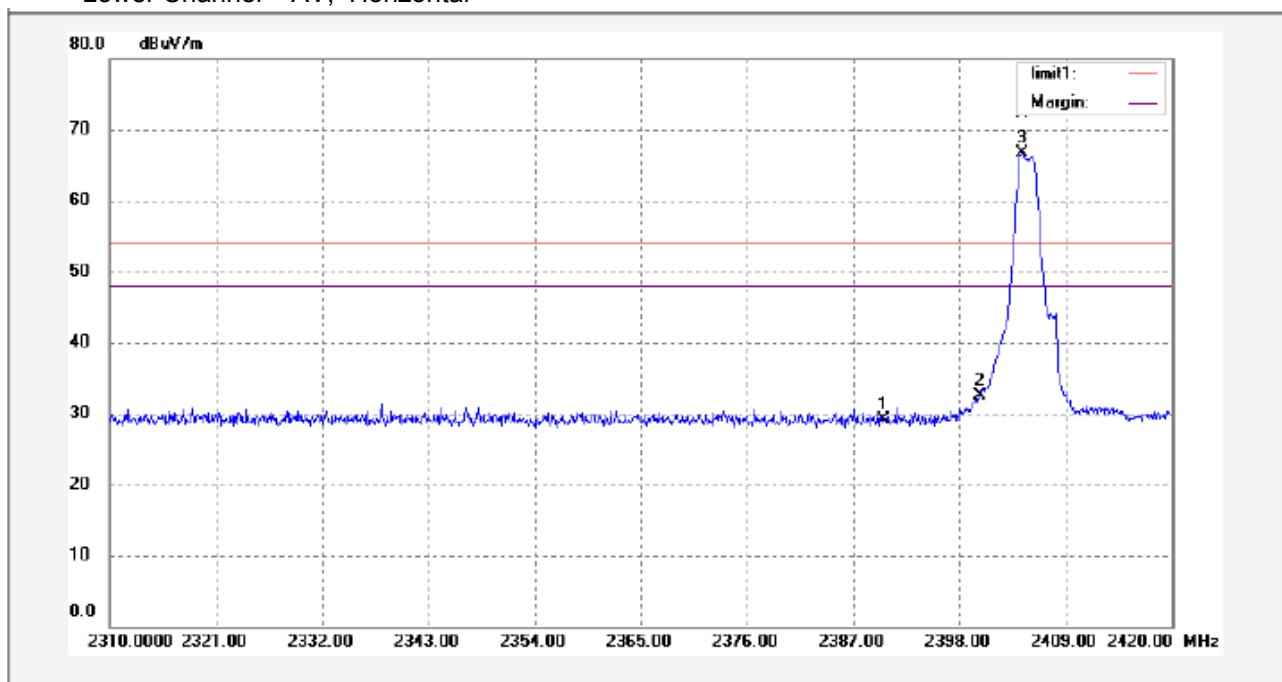
Lower Channel – AV, Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2390.000	44.55	-15.55	29.00	54.00	-25.00	AV	
2	2400.000	45.39	-15.58	29.81	54.00	-24.19	AV	
3	2405.040	83.88	-15.59	68.29	54.00	14.29	AV	

Remark:Mark3 is fundamental wave.

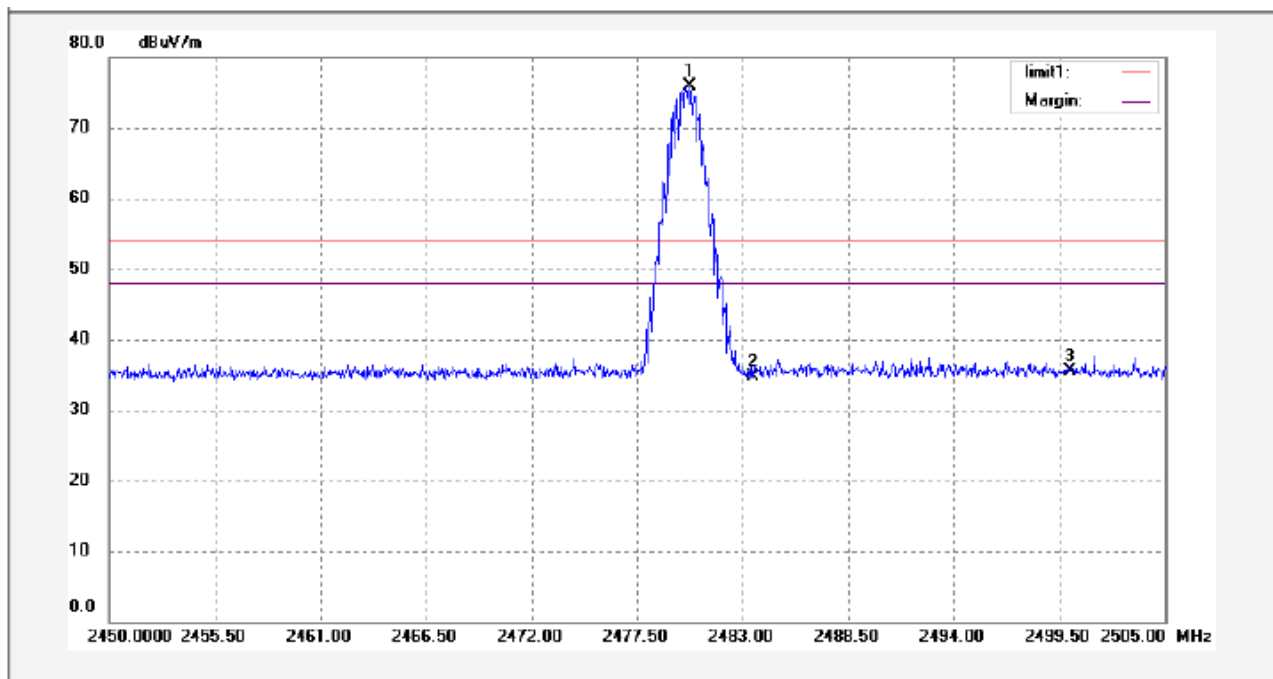
Lower Channel – AV, Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2390.000	44.66	-15.55	29.11	54.00	-24.89	AV	
2	2400.000	48.06	-15.58	32.48	54.00	-21.52	AV	
3	2404.490	82.39	-15.59	66.80	54.00	12.80	AV	

Remark:Mark3 is fundamental wave.

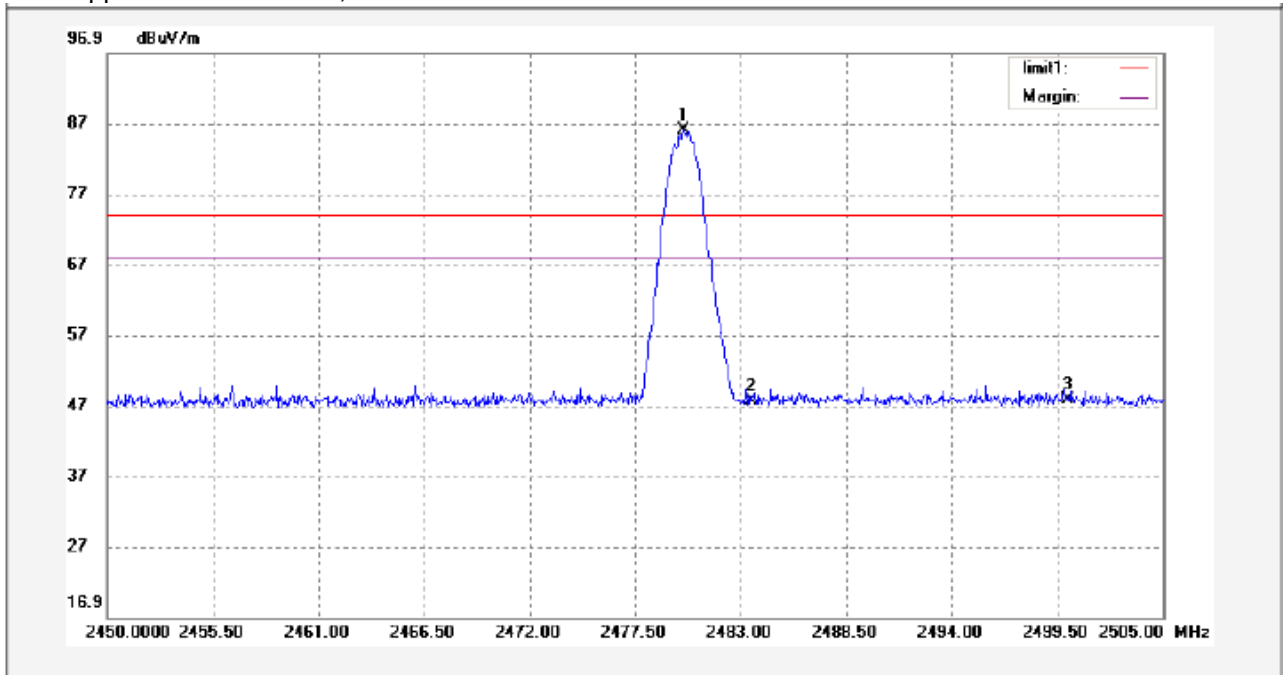
Upper Channel – Peak, Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2480.250	85.10	-9.22	75.88	54.00	21.88	AVG	
2	2483.500	43.88	-9.20	34.68	54.00	-19.32	AVG	
3	2500.000	44.69	-9.15	35.54	54.00	-18.46	AVG	

Remark:Mark1 is fundamental wave.

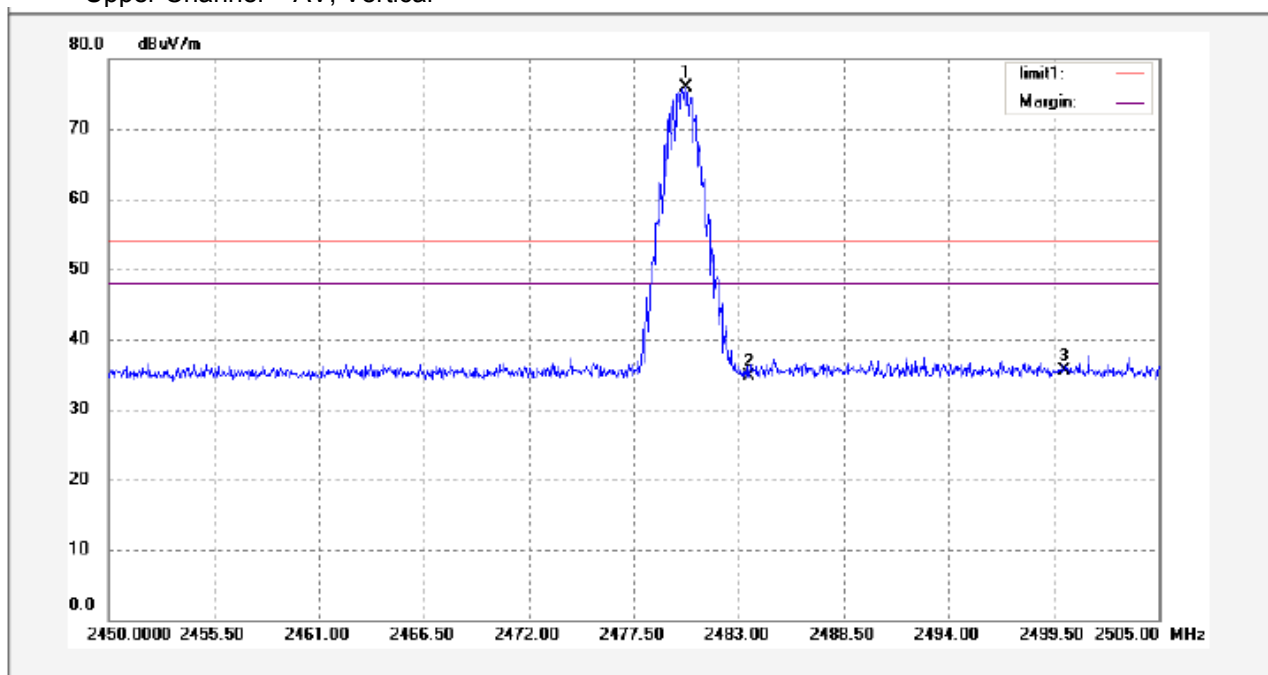
Upper Channel – Peak, Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2480.030	83.33	2.58	85.91	74.00	11.91	peak	
2	2483.500	44.95	2.60	47.55	74.00	-26.45	peak	
3	2500.000	45.24	2.65	47.89	74.00	-26.11	peak	

Remark:Mark1 is fundamental wave.

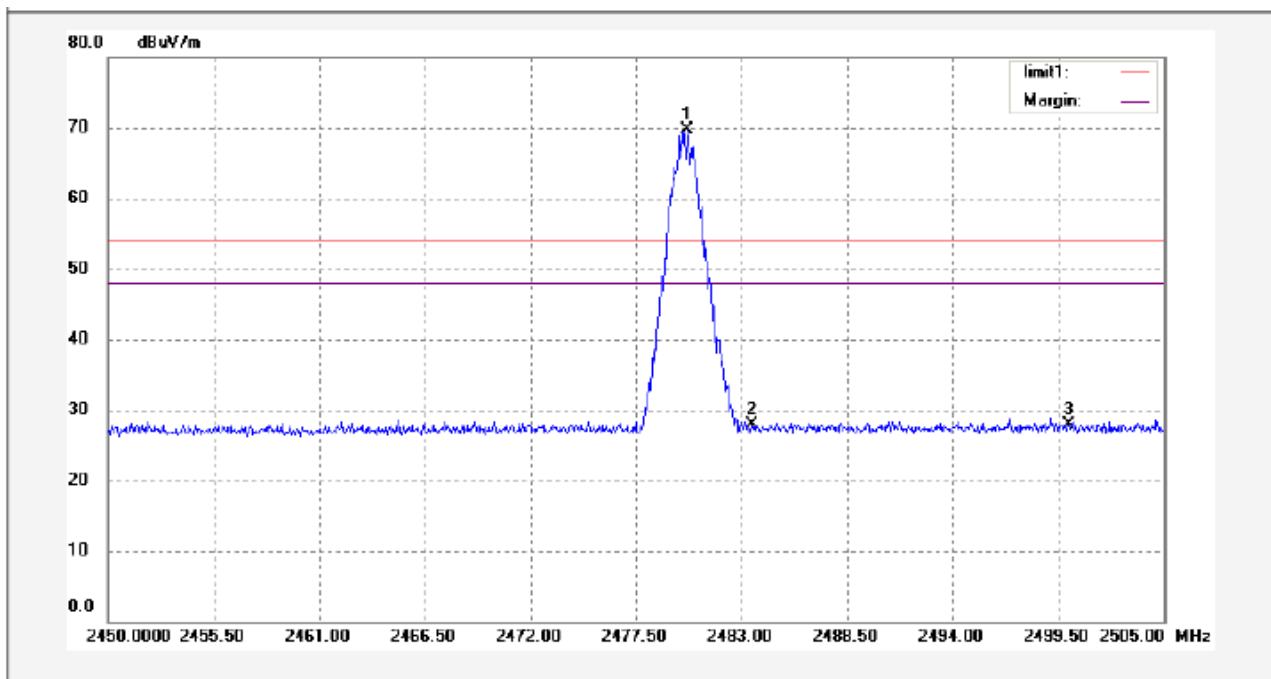
Upper Channel – AV, Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2480.250	85.10	-9.22	75.88	54.00	21.88	AVG	
2	2483.500	43.88	-9.20	34.68	54.00	-19.32	AVG	
3	2500.000	44.69	-9.15	35.54	54.00	-18.46	AVG	

Remark:Mark1 is fundamental wave.

Upper Channel – AV, Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	2480.195	78.93	-9.22	69.71	54.00	15.71	AVG	
2	2483.500	37.09	-9.20	27.89	54.00	-26.11	AVG	
3	2500.000	36.98	-9.15	27.83	54.00	-26.17	AVG	

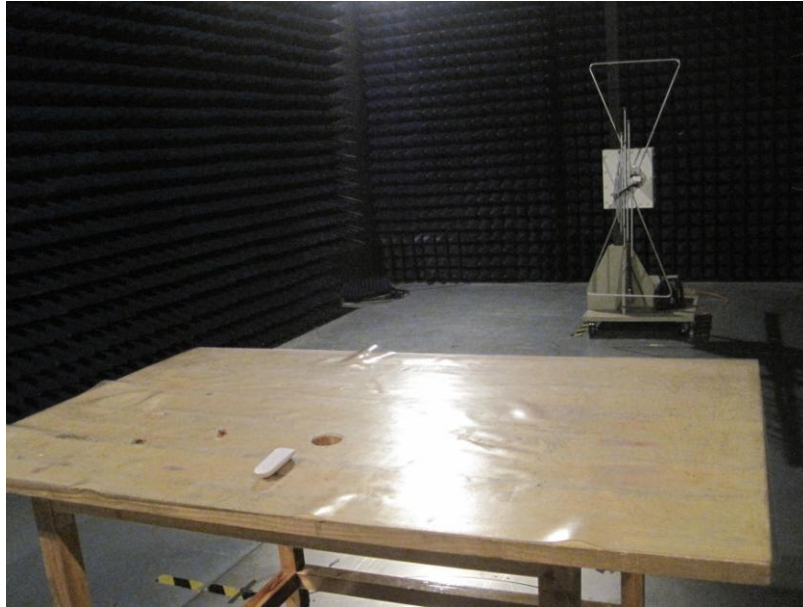
Remark:Mark1 is fundamental wave.

10 Antenna Requirement

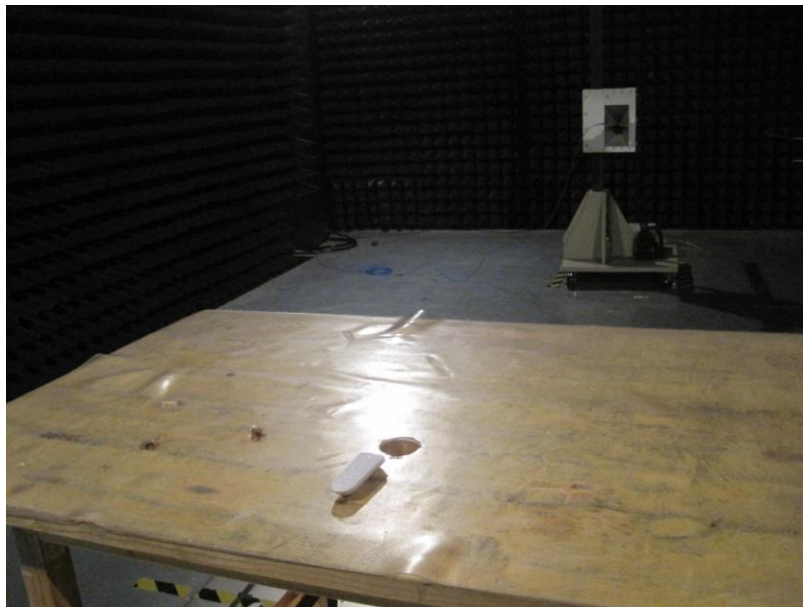
According to the FCC Part 15 Paragraph 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. This product has a PCB printed antenna, fulfil the requirement of this section.

11 Photographs of Testing

11.1 Radiation Emission From 30MHz-1GHz



11.2 Radiation Emission From Above 1GHz



12 Photographs - Constructional Details

12.1 EUT –External View



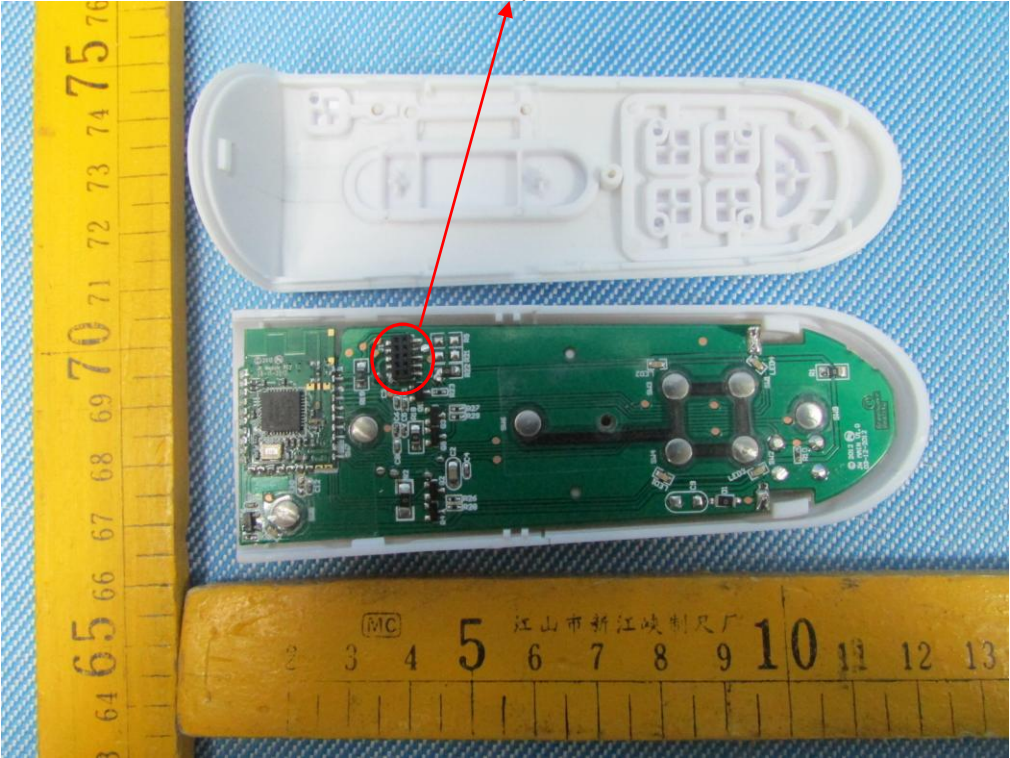




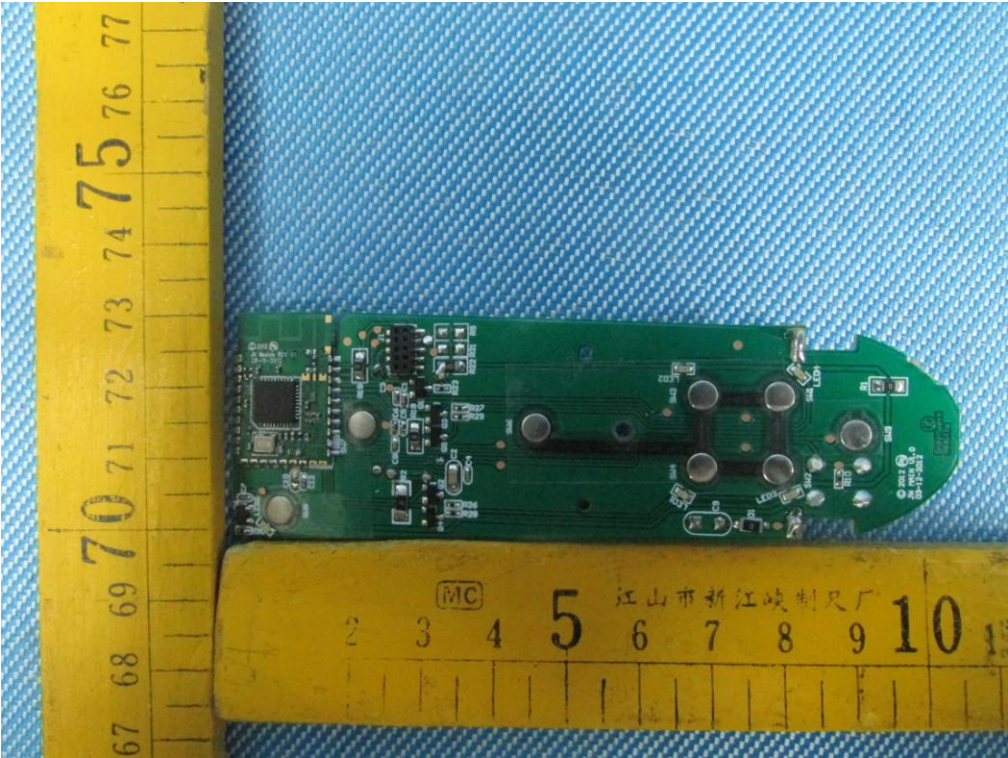
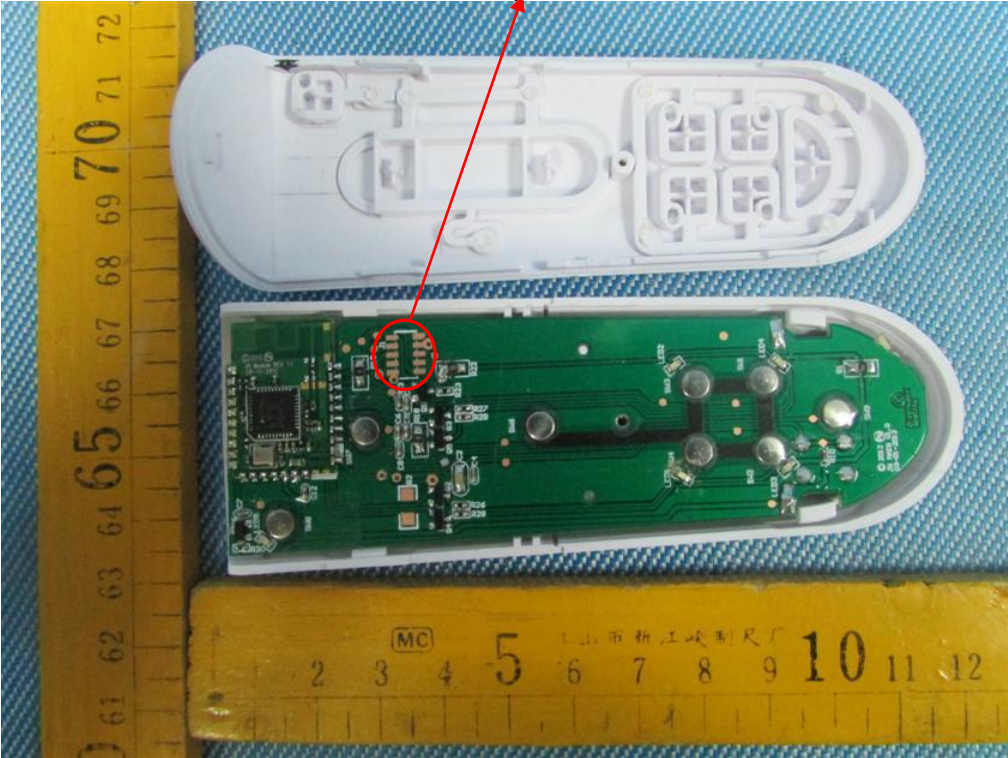
12.2 EUT – Internal View

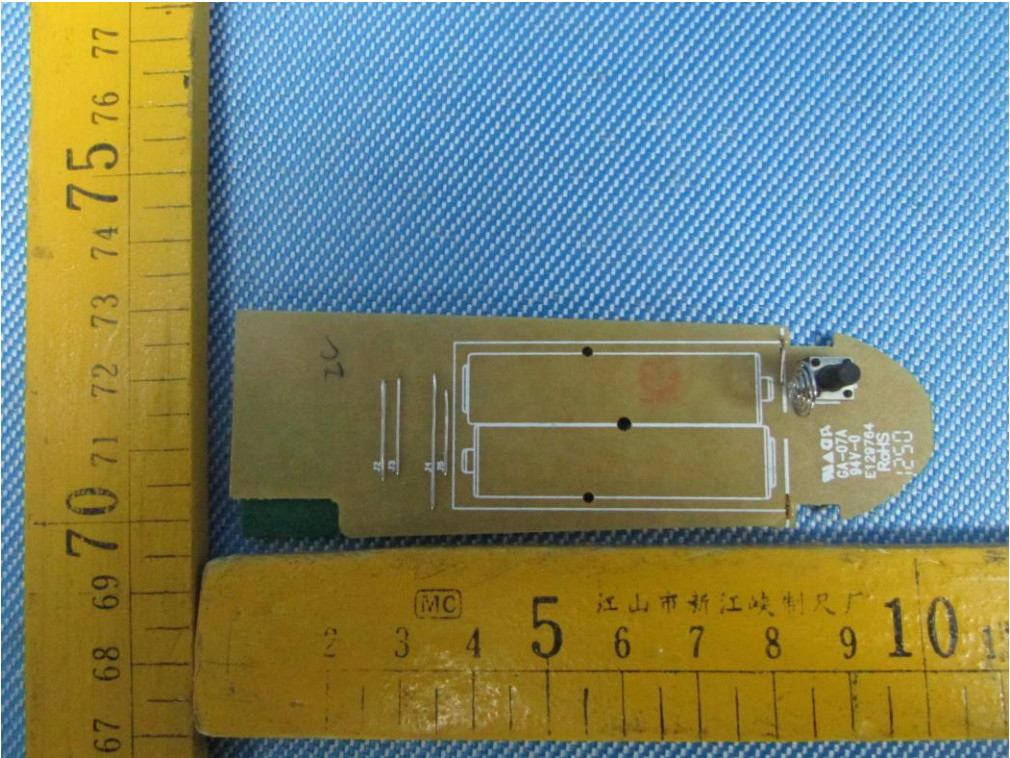


EUT with 10 pins connector



EUT without 10 pins connector

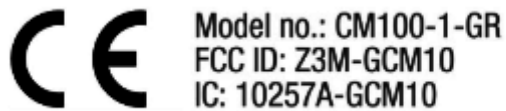




13 FCC ID Label

13.1 Label sample

Label sample for model: CM1UV-Y-XX("U" stands for "0-9/A-Z"; "V" stands for "0-9"; "Y" stands for "0-9/A-Z"; "XX" stands for "00-99/AA-ZZ")



The follow note is stated into user manual since there is no enough place.
THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES AND INDUSTRY CANADA LICENSE-EXEMPT RSS STANDARD(S). OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

==End of report==