

FCC REPORT

Applicant: SALUS North America, Inc.
Address of Applicant: 850 Main Street, Redwood City, California 94063, United States
Manufacturer: SALUS North America, Inc.
Address of Manufacturer: 850 Main Street, Redwood City, California 94063, United States
Factory 1: Computime Electronics (shenzhen) Company Limited
Address of Factory 1: Yuekenguangyu Industrial Park, Kangqiao Road 88#, Danzhutou Community, Nanwan Street Office, Longgang District, Shenzhen 518114, China
Factory 2: Asia Electronic Dongguan
Address of Factory 2: Zhen'an Science and Technology Industrial Park, Chang'an Dongguan Guangdong, PRC
Equipment Under Test (EUT)
Product Info: 8 zone wireless relay controller
Model No.: SAA6DW1HL, 40328
FCC ID: 2AG86-SAA6DW1
Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of sample receipt: March 20, 2018
Date of Test: March 21, 2018-April 10, 2018
Date of report issued: April 11, 2018
Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Lo

Laboratory Manager

This 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.

2 Version

Version No.	Date	Description
00	April 11, 2018	Original

Prepared By:

Tiger Chen

Project Engineer

Date:

April 11, 2018

Check By:

Andy Wu

Reviewer

Date:

April 11, 2018

3 Contents

	Page
1 COVER PAGE	1
2 VERSION	2
3 CONTENTS	3
4 TEST SUMMARY	4
4.1 MEASUREMENT UNCERTAINTY	4
5 GENERAL INFORMATION	5
5.1 GENERAL DESCRIPTION OF EUT	5
5.2 TEST MODE	7
5.3 DESCRIPTION OF SUPPORT UNITS	7
5.4 TEST FACILITY	7
5.5 TEST LOCATION	7
5.6 ADDITIONAL INSTRUCTIONS	8
6 TEST INSTRUMENTS LIST	9
7 TEST RESULTS AND MEASUREMENT DATA	10
7.1 ANTENNA REQUIREMENT	10
7.2 CONDUCTED EMISSIONS	11
7.3 CONDUCTED PEAK OUTPUT POWER	14
7.4 CHANNEL BANDWIDTH	19
7.5 POWER SPECTRAL DENSITY	24
7.6 BAND EDGES	29
7.6.1 Conducted Emission Method	29
7.6.2 Radiated Emission Method	32
7.7 SPURIOUS EMISSION	46
7.7.1 Conducted Emission Method	46
7.7.2 Radiated Emission Method	51
8 TEST SETUP PHOTO	72
9 EUT CONSTRUCTIONAL DETAILS	74

4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(3)	Pass
Channel Bandwidth	15.247 (a)(2)	Pass
Power Spectral Density	15.247 (e)	Pass
Band Edge	15.247(d)	Pass
Spurious Emission	15.205/15.209	Pass

Pass: The EUT complies with the essential requirements in the standard.

Remark : Test according to ANSI C63.10:2013

4.1 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz ~ 30MHz	$\pm 4.34\text{dB}$	(1)
Radiated Emission	30MHz ~ 1000MHz	$\pm 4.24\text{dB}$	(1)
Radiated Emission	1GHz ~ 26.5GHz	$\pm 4.68\text{dB}$	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	$\pm 3.45\text{dB}$	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

5 General Information

5.1 General Description of EUT

Product Info:	8 zone wireless relay controller
Model No.:	SAA6DW1HL, 40328
Test model:	SAA6DW1HL
<i>Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The differences are color and model name for commercial purpose.</i>	
Serial No.:	N/A
Test sample(s) ID:	GTS201803000050-1
Sample(s) Status	Engineer sample
Hardware:	0x0400
Software:	180326
Operation Frequency:	2405MHz~2480MHz
Channel numbers:	16
Channel separation:	5MHz
Modulation type:	O-QPSK
	External antenna is with reversed polarity non standard antenna port
Antenna gain:	Integral Antenna 2.15dBi (declare by manufacturer) External Antenna 2.15dBi(declare by manufacturer)
Maximum output power:	Integral Antenna 18.87dBm External Antenna 18.93dBm
Power supply:	AC 24V, 60Hz
Labeling:	30mm 40328 StatLink® 8 Zone Wireless Module Power Supply: 24V~ 60Hz RF Frequency: 2.4 GHz Pump Load Max.: 120V~, 1/3 HP Boiler Load Max.: 120V~, 3A (resistive) FCC ID: 2AG86-SAA6DW1 IC: 21063-SAA6DW1 Heat Link® This device complies with part 15 of the FCC Rules. 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 undesired operation. T45 Made in China Fabriqué en Chine 65mm

Remark: External antenna and Integral antenna can not be used simultaneously

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
11	2405MHz	15	2425MHz	19	2445MHz	23	2465MHz
12	2410MHz	16	2430MHz	20	2450MHz	24	2470MHz
13	2415MHz	17	2435MHz	21	2455MHz	25	2475MHz
14	2420MHz	18	2440MHz	22	2460MHz	26	2480MHz

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The lowest channel	2405MHz
The middle channel	2440MHz
The Highest channel	2475MHz and 2480MHz

5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
<i>Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
N/A	AC power transformer	MDB76-84	JMJ1650

5.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations: • FCC —Registration No.: 381383 Global United Technology Services Co., Ltd., Shenzhen 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 files. Registration 381383, January 08, 2018. • Industry Canada (IC) —Registration No.: 9079A-2 The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, August 15, 2016.
--

5.5 Test Location

All tests were performed at:
Global United Technology Services Co., Ltd. Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China Tel: 0755-27798480 Fax: 0755-27798960

5.6 Additional instructions

Software (Used for test) from client

Mode	Built-in by manufacturer
------	--------------------------

Channel	Power level
11	Default
18	Default
25	Default
26	Default

6 Test Instruments list

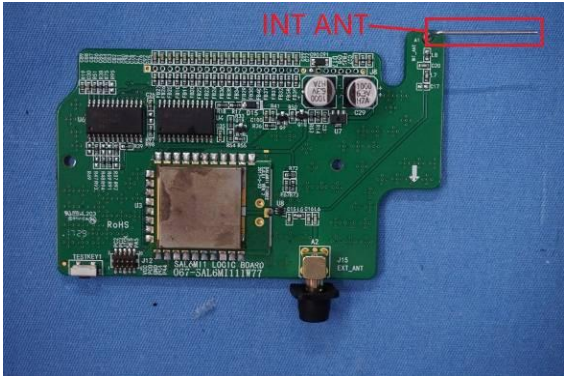
Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July 03 2015	July 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June 28 2017	June 27 2018
4	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June 28 2017	June 27 2018
5	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June 28 2017	June 27 2018
6	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 28 2017	June 27 2018
7	Horn Antenna	ETS-LINDGREN	3160	GTS217	June 28 2017	June 27 2018
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial Cable	GTS	N/A	GTS213	June 28 2017	June 27 2018
10	Coaxial Cable	GTS	N/A	GTS211	June 28 2017	June 27 2018
11	Coaxial cable	GTS	N/A	GTS210	June 28 2017	June 27 2018
12	Coaxial Cable	GTS	N/A	GTS212	June 28 2017	June 27 2018
13	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June 28 2017	June 27 2018
14	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	June 28 2017	June 27 2018
15	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 28 2017	June 27 2018
16	Band filter	Amindeon	82346	GTS219	June 28 2017	June 27 2018
17	Power Meter	Anritsu	ML2495A	GTS540	June 28 2017	June 27 2018
18	Power Sensor	Anritsu	MA2411B	GTS541	June 28 2017	June 27 2018
19	Loop Antenna	ZHINAN	ZN30900A	GTS534	June 28 2017	June 27 2018

Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May 16 2014	May 15 2019
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June 28 2017	June 27 2018
3	Pulse Limiter	R&S	ESH3-Z2	GTS224	June 28 2017	June 27 2018
4	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June 28 2017	June 27 2018
5	Artificial Mains Network	SCHWARZBECK MESS	NSLK8127	GTS226	June 28 2017	June 27 2018
6	Coaxial Cable	GTS	N/A	GTS227	June 28 2017	June 27 2018
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Thermo meter	KTJ	TA328	GTS233	June 28 2017	June 27 2018

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Barometer	ChangChun	DYM3	GTS257	June 28 2017	June 27 2018

7 Test results and Measurement Data

7.1 Antenna requirement

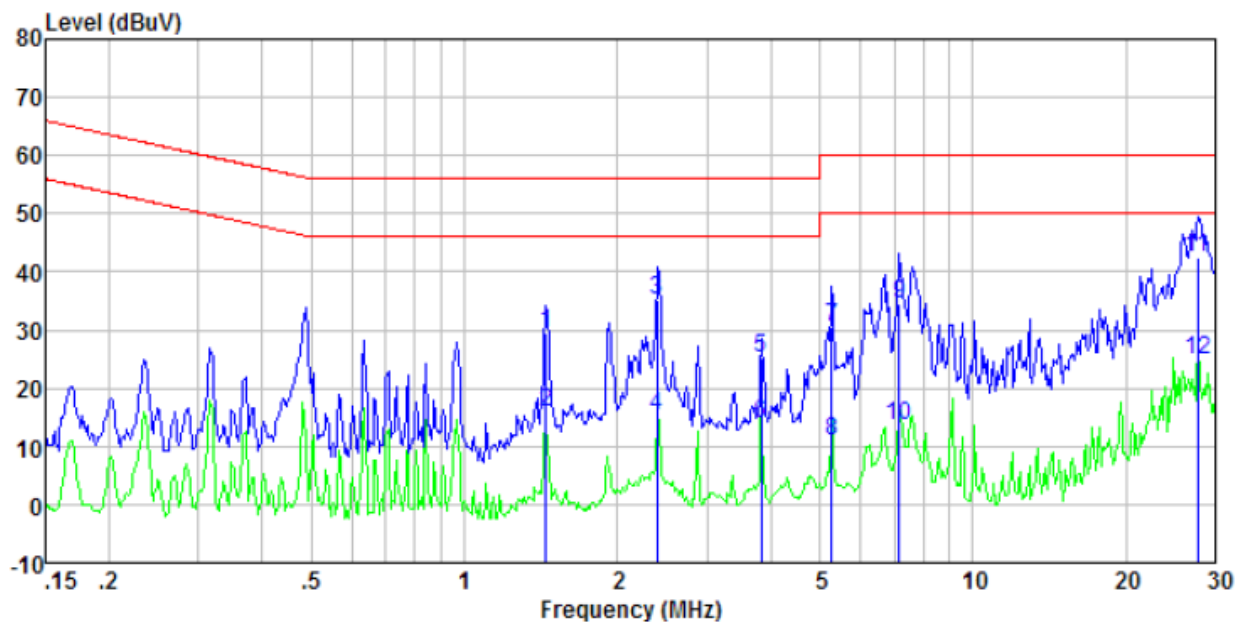
Standard requirement:	FCC Part15 C Section 15.203 /247(c)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.	
EUT Antenna: <i>Both internal antenna is integral Antenna, External antenna is with reversed polarity non standard antenna port the best case gain of the internal antenna is 2.15 dBi,</i> <i>The best case gain of the external antenna is 2.15dBi.</i> <i>The manufacturer designs the external ANT using an specific jark to connect the circuit, so that the ANT cannot be replaced by user.</i>	
  	

7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207		
Test Method:	ANSI C63.10:2013		
Test Frequency Range:	150KHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test setup:	Reference Plane Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m		
Test procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.		
Test Instruments:	Refer to section 6.0 for details		
Test mode:	Refer to section 5.2 for details		
Test results:	Pass		

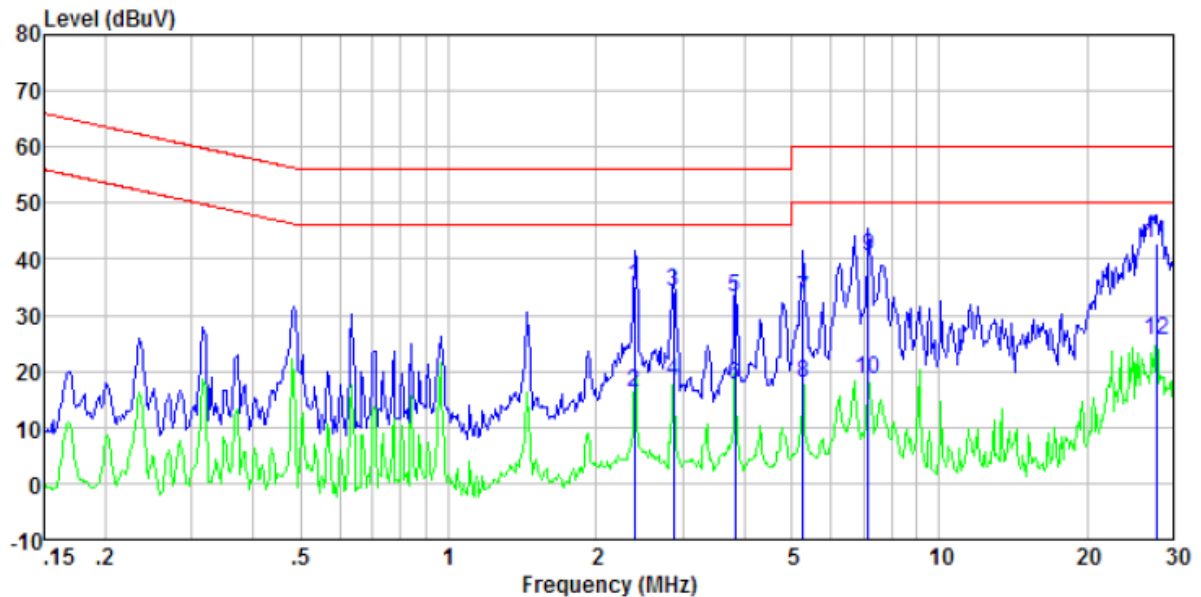
Measurement data

Line:



Freq MHz	Reading level dBuV	LIISN/ISN factor dB	Cable loss dB	level dBuV	Limit level dBuV	Over limit dB	Remark
1.449	29.14	0.20	0.16	29.50	56.00	-26.50	QP
1.449	15.56	0.20	0.16	15.92	46.00	-30.08	Average
2.396	34.89	0.20	0.18	35.27	56.00	-20.73	QP
2.396	15.00	0.20	0.18	15.38	46.00	-30.62	Average
3.840	24.79	0.20	0.18	25.17	56.00	-30.83	QP
3.840	13.44	0.20	0.18	13.82	46.00	-32.18	Average
5.277	30.03	0.20	0.17	30.40	60.00	-29.60	QP
5.277	10.48	0.20	0.17	10.85	50.00	-39.15	Average
7.175	34.12	0.20	0.19	34.51	60.00	-25.49	QP
7.175	13.35	0.20	0.19	13.74	50.00	-36.26	Average
27.708	41.83	0.38	0.23	42.44	60.00	-17.56	QP
27.708	24.34	0.38	0.23	24.95	50.00	-25.05	Average

Neutral:

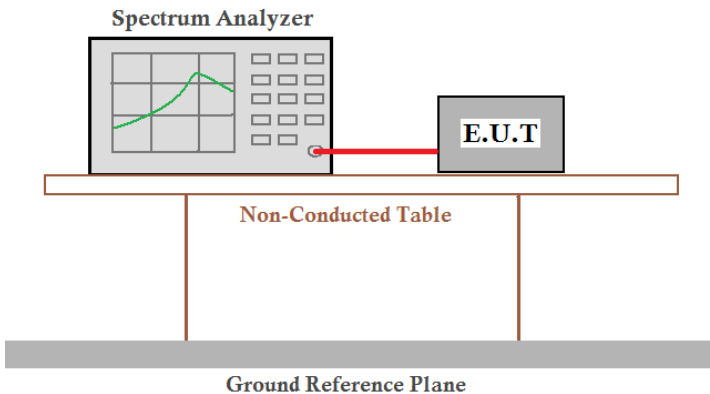


Freq MHz	Reading level dBuV	LISN/ISN factor dB	Cable loss dB	level dBuV	Limit level dBuV	Over limit dB	Remark
2.396	34.79	0.20	0.18	35.17	56.00	-20.83	QP
2.396	15.90	0.20	0.18	16.28	46.00	-29.72	Average
2.869	33.70	0.20	0.19	34.09	56.00	-21.91	QP
2.869	17.68	0.20	0.19	18.07	46.00	-27.93	Average
3.840	32.86	0.20	0.18	33.24	56.00	-22.76	QP
3.840	17.32	0.20	0.18	17.70	46.00	-28.30	Average
5.277	32.49	0.20	0.17	32.86	60.00	-27.14	QP
5.277	17.39	0.20	0.17	17.76	50.00	-32.24	Average
7.175	40.03	0.20	0.19	40.42	60.00	-19.58	QP
7.175	18.18	0.20	0.19	18.57	50.00	-31.43	Average
27.708	42.32	0.38	0.23	42.93	60.00	-17.07	QP
27.708	24.96	0.38	0.23	25.57	50.00	-24.43	Average

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

7.3 Conducted Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V03
Limit:	30dBm
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by two vertical legs and sits on a Ground Reference Plane.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

Internal Antenna:

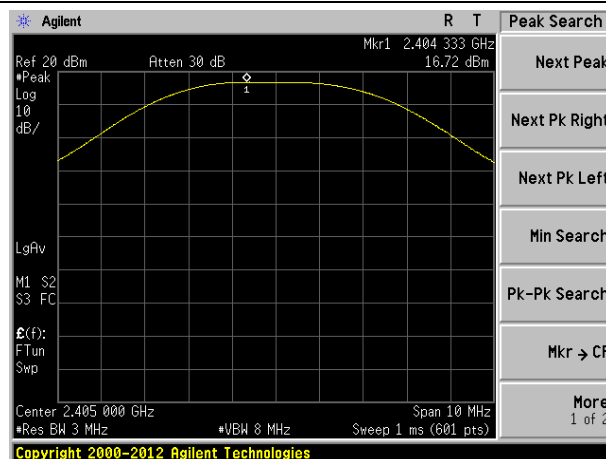
Frequency (MHz)	Peak Output Power (dBm)	Limit(dBm)	Result
2405	16.72	30	PASS
2440	16.50		
2475	15.81		
2480	-7.62		

External Antenna:

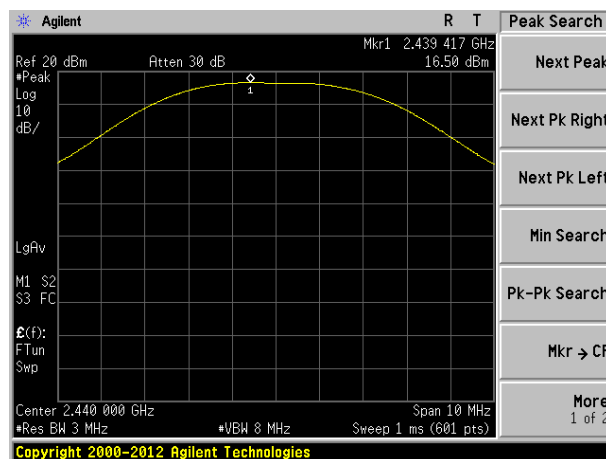
Frequency (MHz)	Peak Output Power (dBm)	Limit(dBm)	Result
2405	16.53	30	PASS
2440	16.78		
2475	15.85		
2480	-8.19		

Test plot as follows:

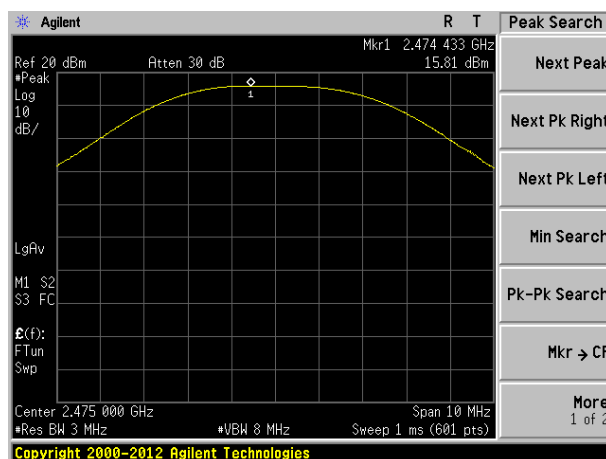
Internal Antenna:



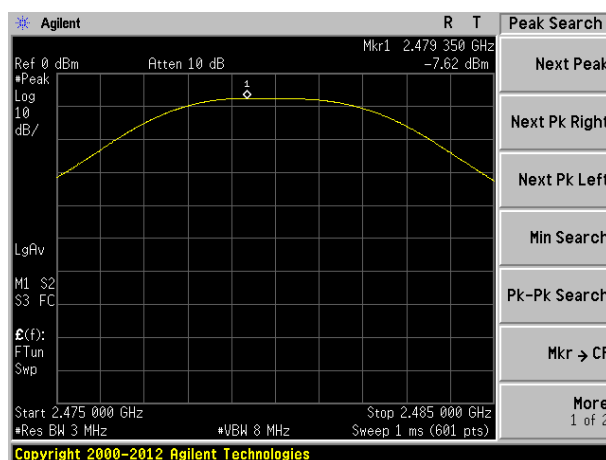
2405MHz



2440MHz

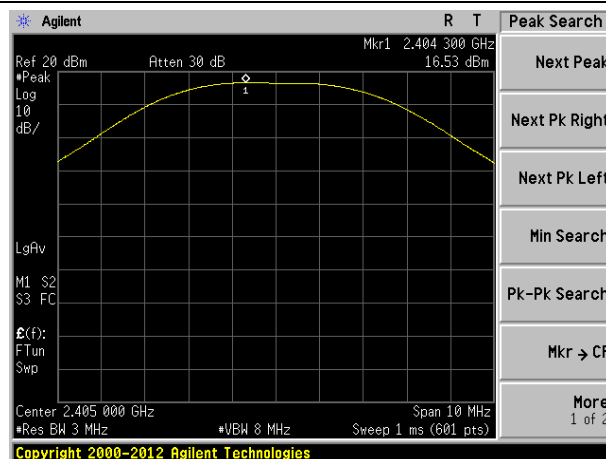


2475MHz

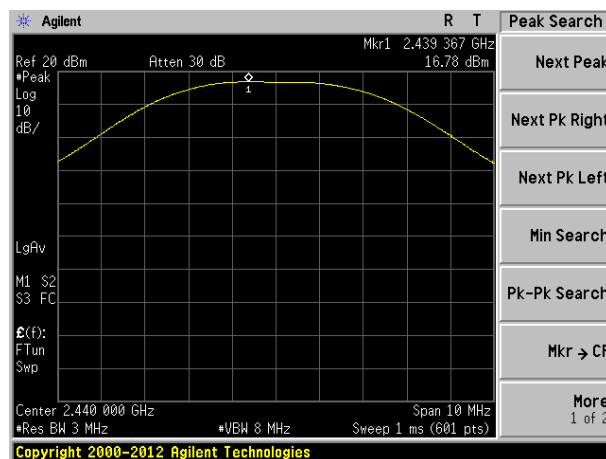


2480MHz

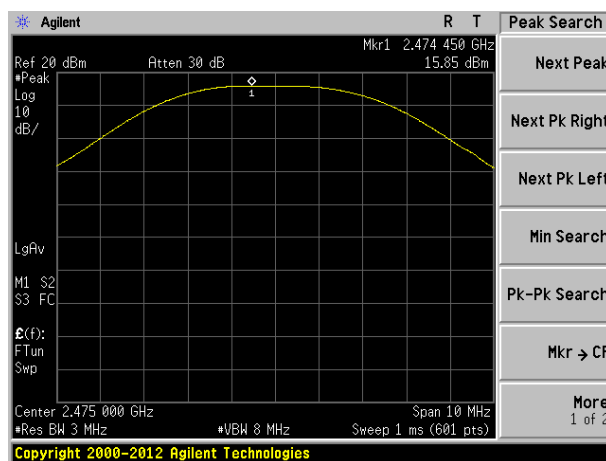
External Antenna



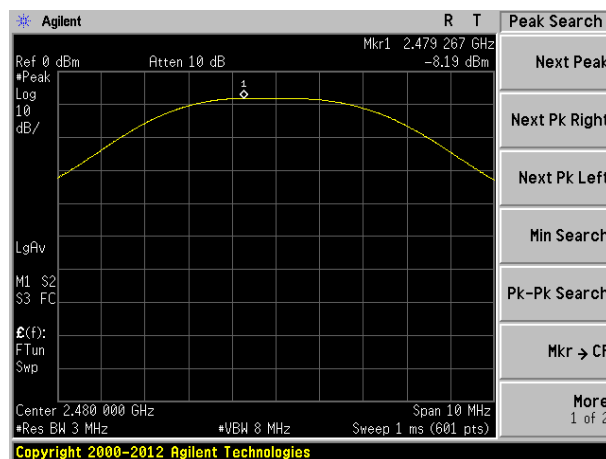
2405MHz



2440MHz

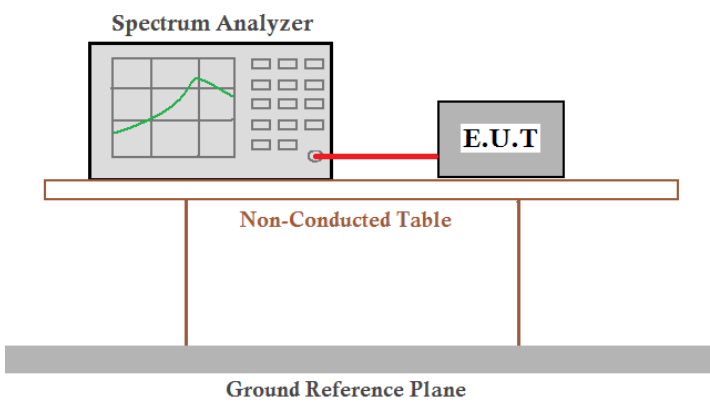


2475MHz



2480MHz

7.4 Channel Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V03
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement data

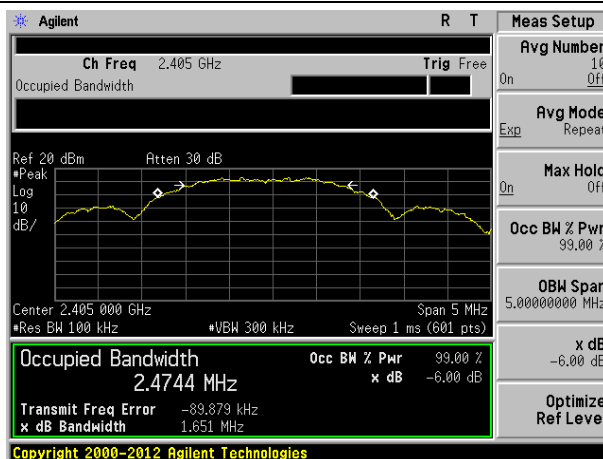
Internal Antenna:

Frequency (MHz)	6dB Bandwidth (MHz)	Limit(KHz)	Result
2405	1.651	>500	Pass
2440	1.603		
2475	1.585		
2480	1.574		

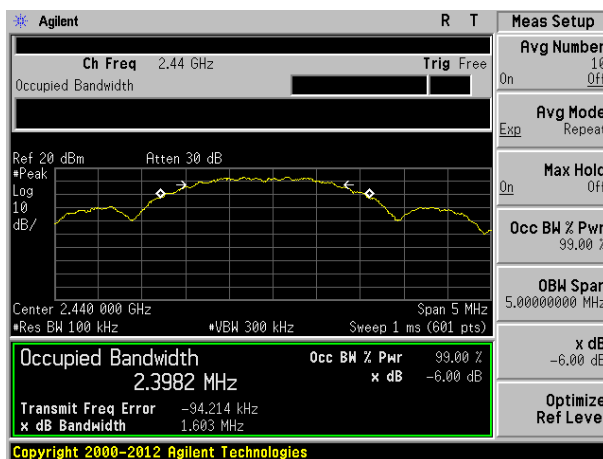
External Antenna:

Frequency (MHz)	6dB Bandwidth (MHz)	Limit(KHz)	Result
2405	1.693	>500	Pass
2440	1.584		
2475	1.574		
2480	1.597		

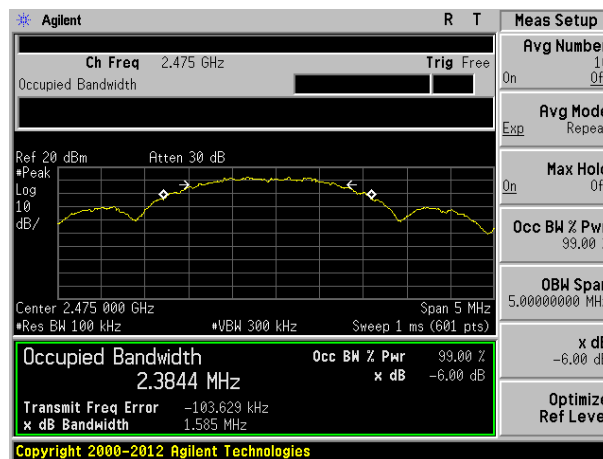
Internal Antenna:



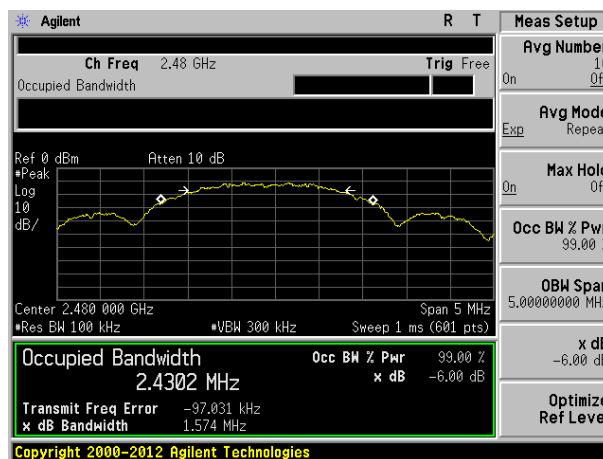
2405MHz



2440MHz

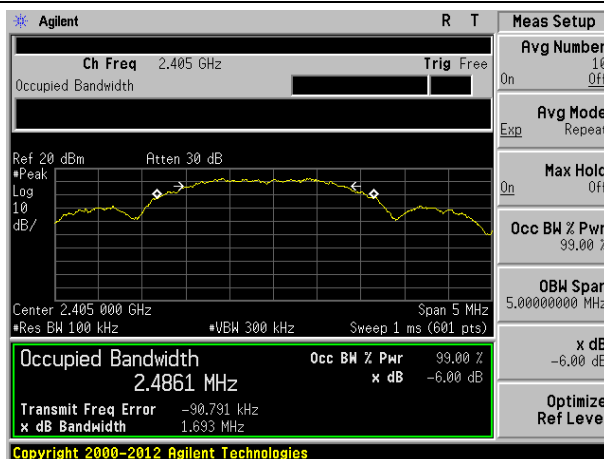


2475MHz

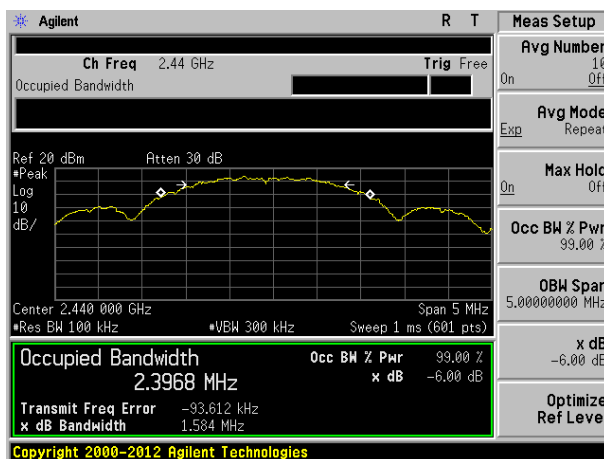


2480MHz

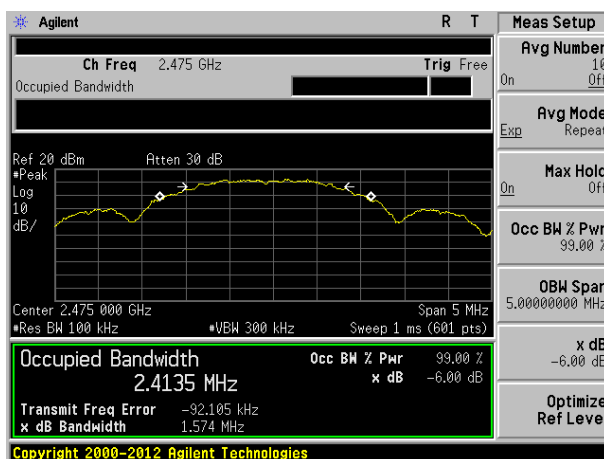
External Antenna:



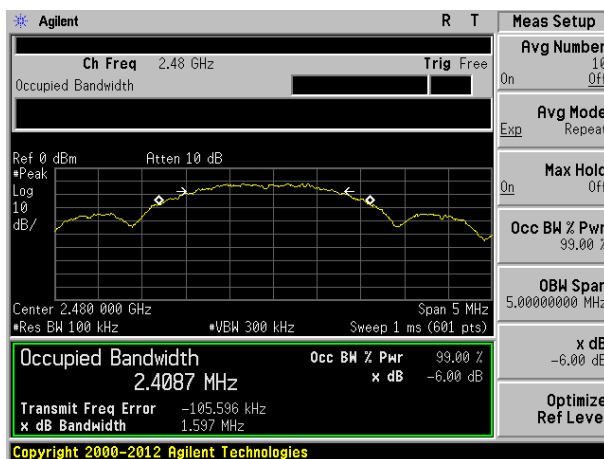
2405MHz



2440MHz

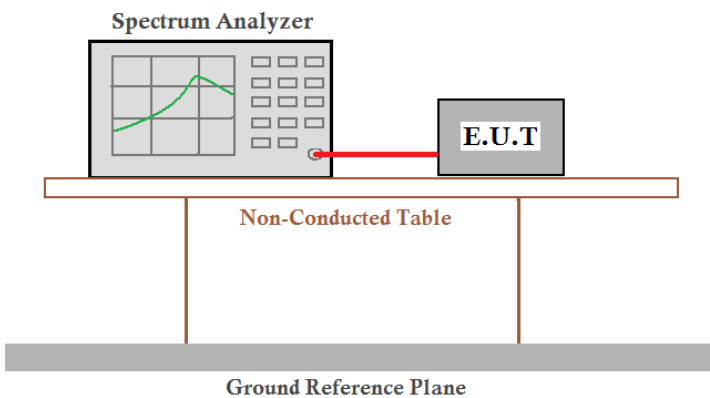


2475MHz



2480MHz

7.5 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V03
Limit:	8dBm/3kHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

Internal Antenna:

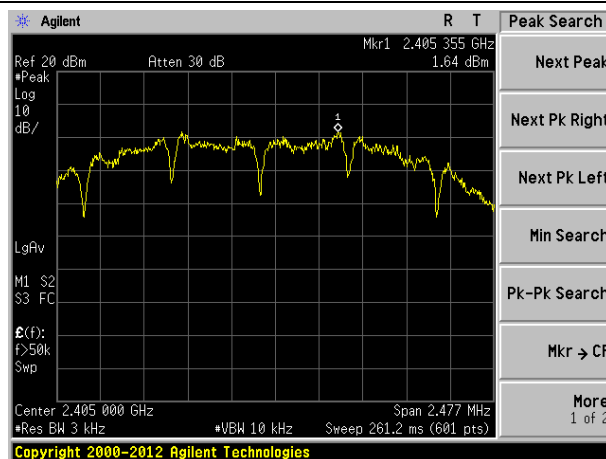
Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm/3kHz)	Result
2405	1.64	8.00	Pass
2440	1.28		
2475	0.69		
2480	-23.25		

External Antenna:

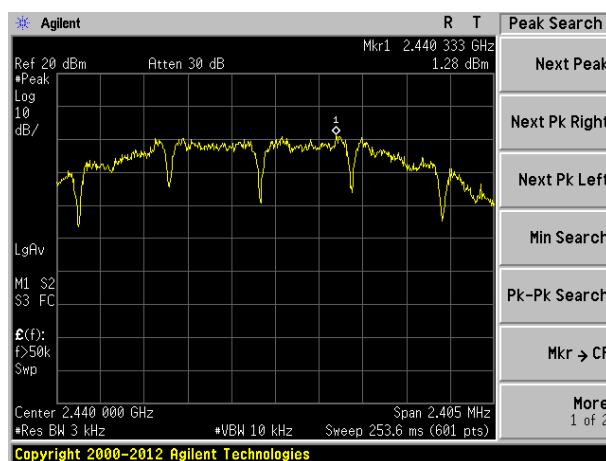
Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm/3kHz)	Result
2405	1.34	8.00	Pass
2440	1.75		
2475	0.17		
2480	-23.09		

Test plot as follows:

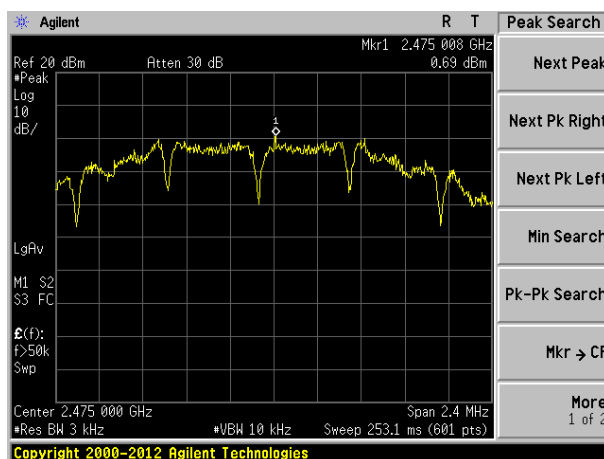
Internal Antenna:



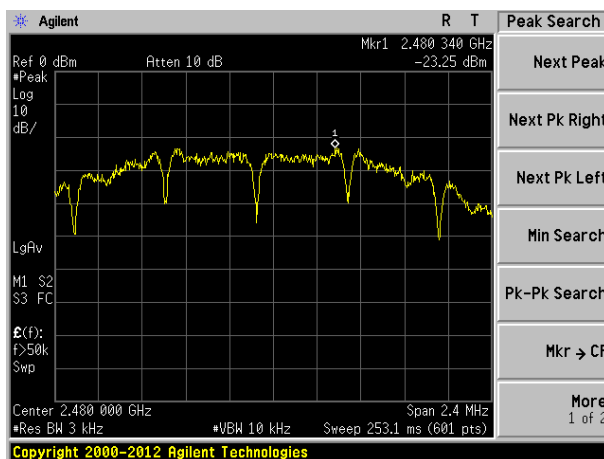
2405MHz



2440MHz

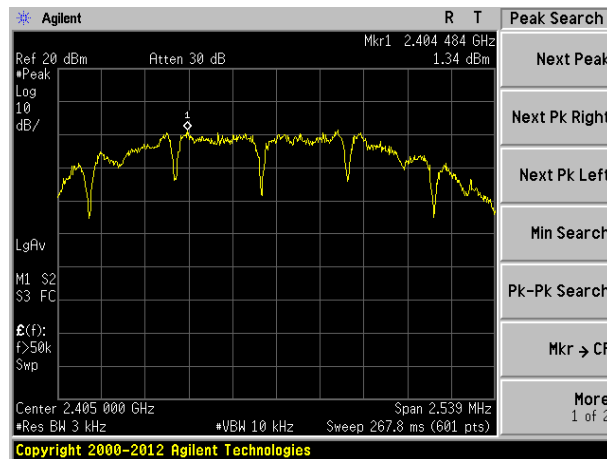


2475MHz

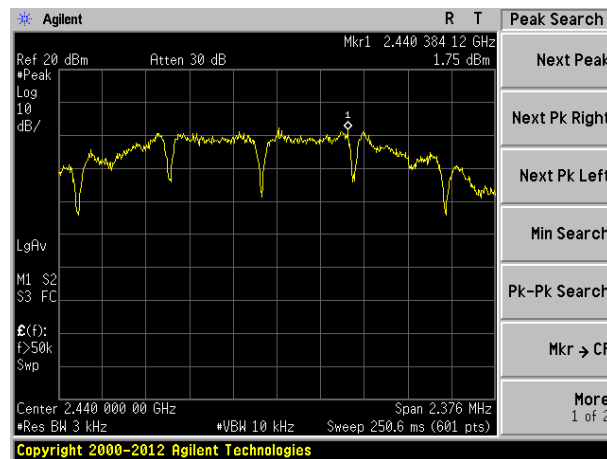


2480MHz

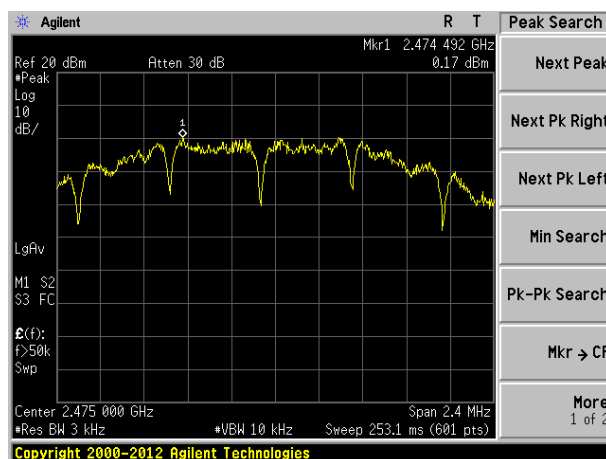
External Antenna:



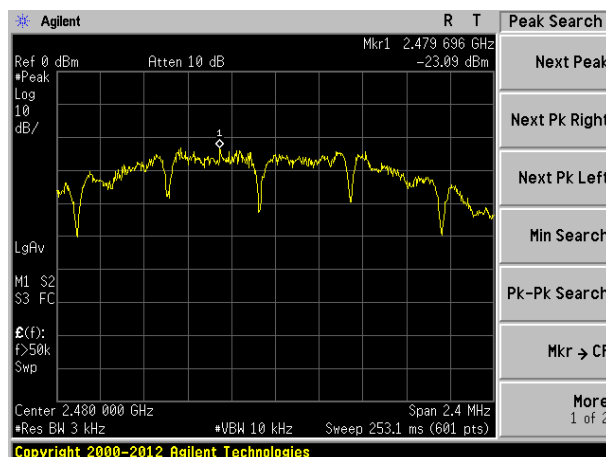
2405MHz



2440MHz



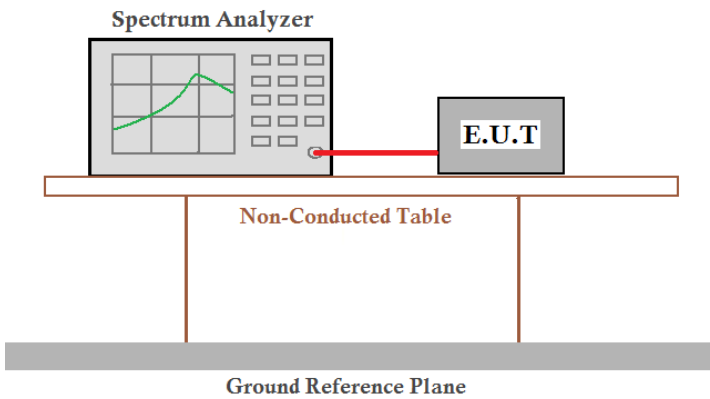
2475MHz



2480MHz

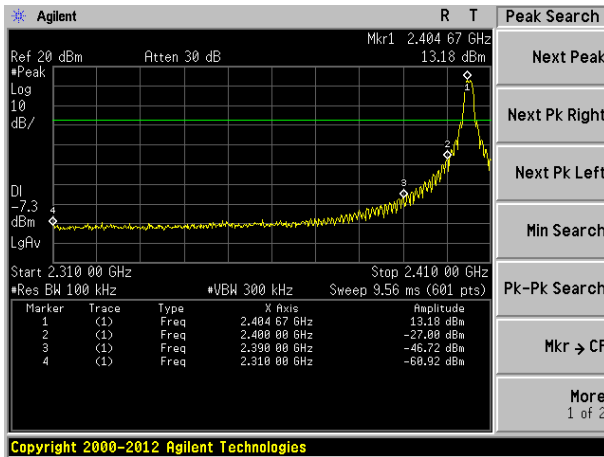
7.6 Band edges

7.6.1 Conducted Emission Method

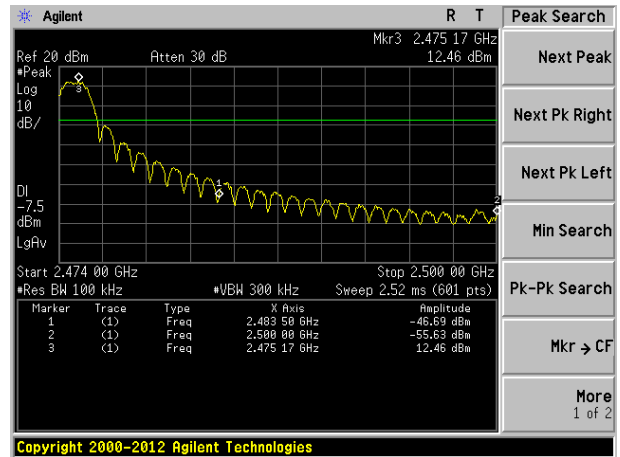
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V03
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional 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.
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Test plot as follows:

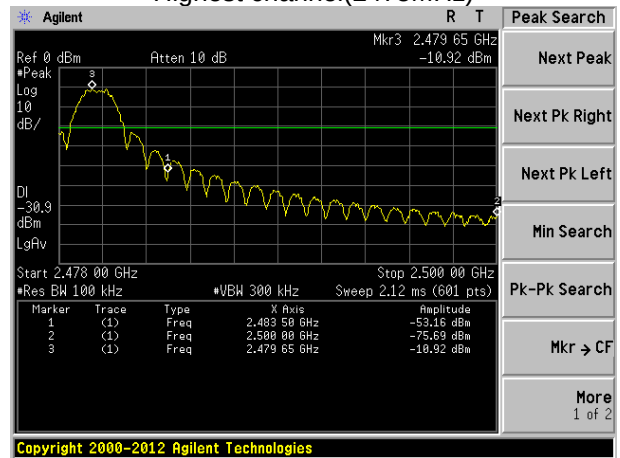
Internal Antenna:



Lowest channel

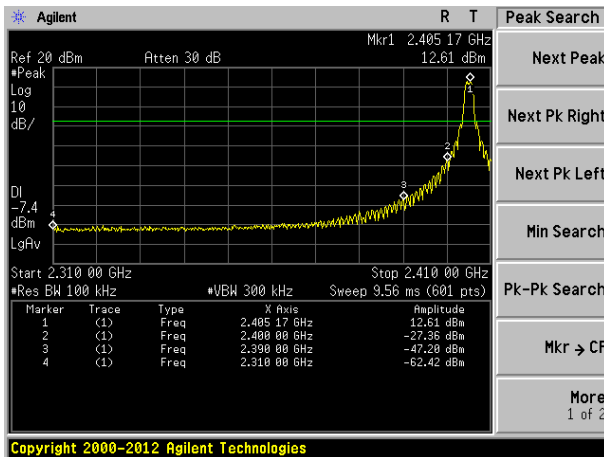


Highest channel(2475MHz)

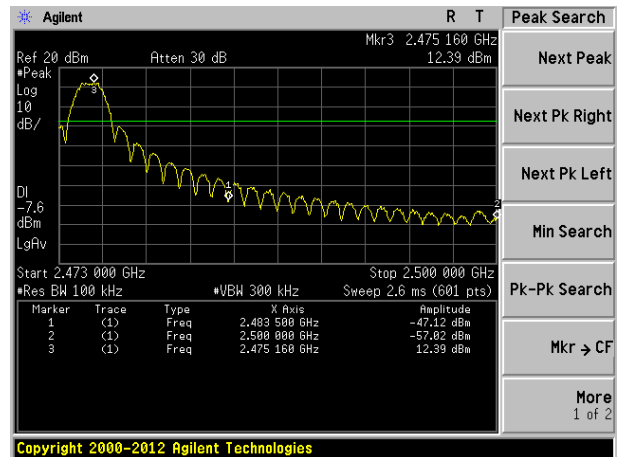


Highest channel(2480MHz)

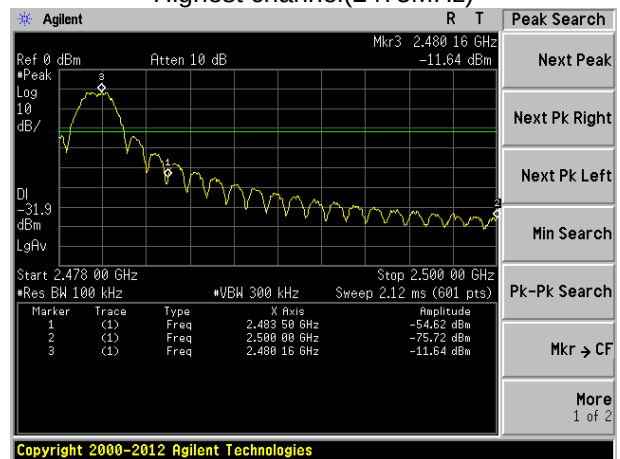
External Antenna:



Lowest channel

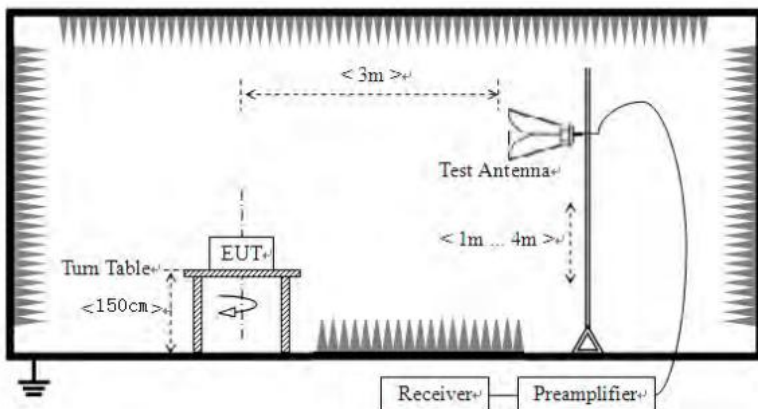


Highest channel(2475MHz)



Highest channel(2480MHz)

7.6.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	Above 1GHz	Peak	1MHz	3MHz	Peak
		RMS	1MHz	3MHz	Average
Limit:	Frequency		Limit (dBuV/m @3m)		Value
	Above 1GHz		54.00		Average
			74.00		Peak
Test setup:					
Test Procedure:	1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. 7. The radiation measurements are performed in X, Y, Z axis positioning. And found the Y axis positioning which it is worse case, only the test worst case mode is recorded in the report.				

Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

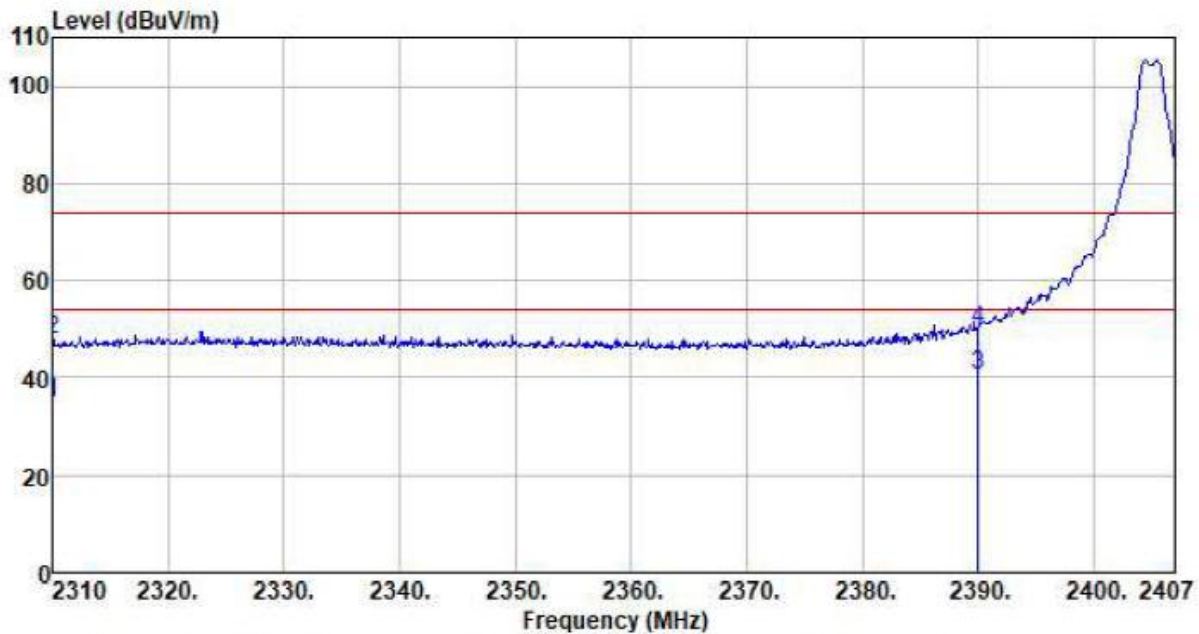
Measurement data:

Remark: The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.

Internal Antenna:

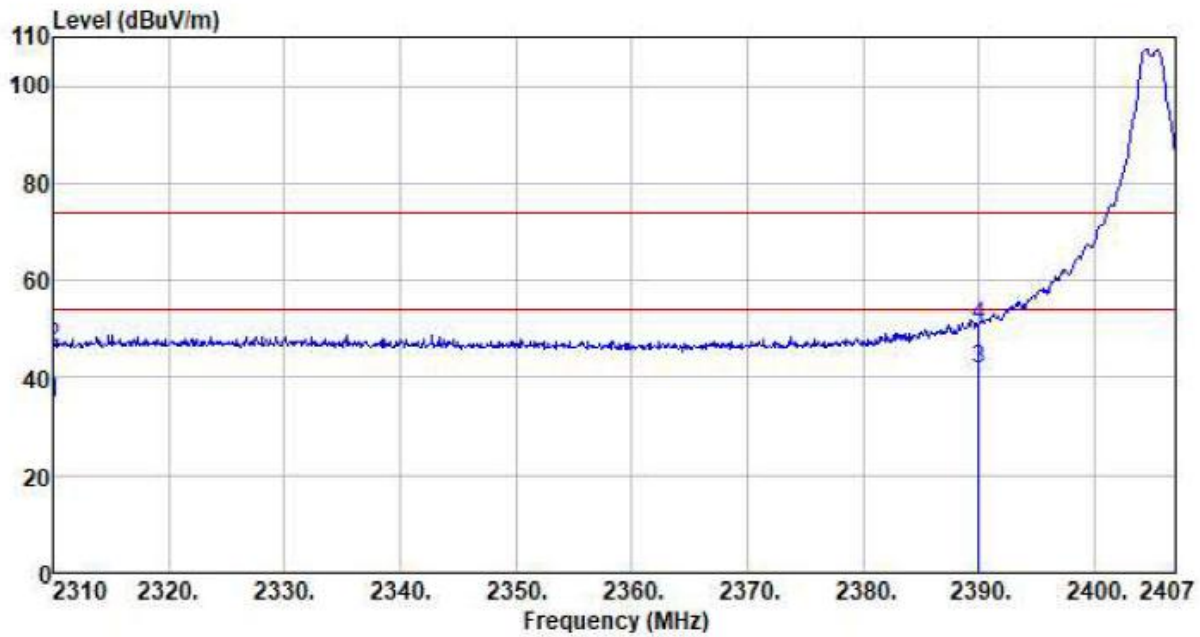
Test channel:	2405MHz
---------------	---------

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
2310.000	26.54	27.91	5.30	24.64	35.11	54.00	-18.89	Average
2310.000	39.42	27.91	5.30	24.64	47.99	74.00	-26.01	Peak
2390.000	32.43	27.59	5.38	24.71	40.69	54.00	-13.31	Average
2390.000	41.86	27.59	5.38	24.71	50.12	74.00	-23.88	Peak

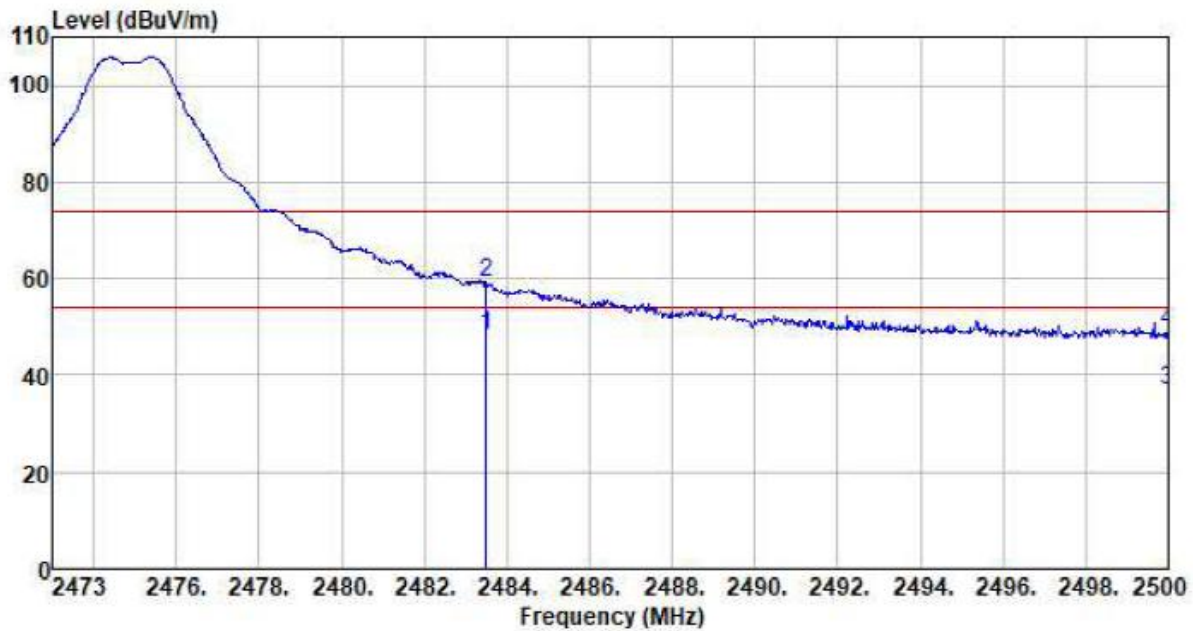
Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
2310.000	26.48	27.91	5.30	24.64	35.05	54.00	-18.95	Average
2310.000	37.66	27.91	5.30	24.64	46.23	74.00	-27.77	Peak
2390.000	33.40	27.59	5.38	24.71	41.66	54.00	-12.34	Average
2390.000	42.61	27.59	5.38	24.71	50.87	74.00	-23.13	Peak

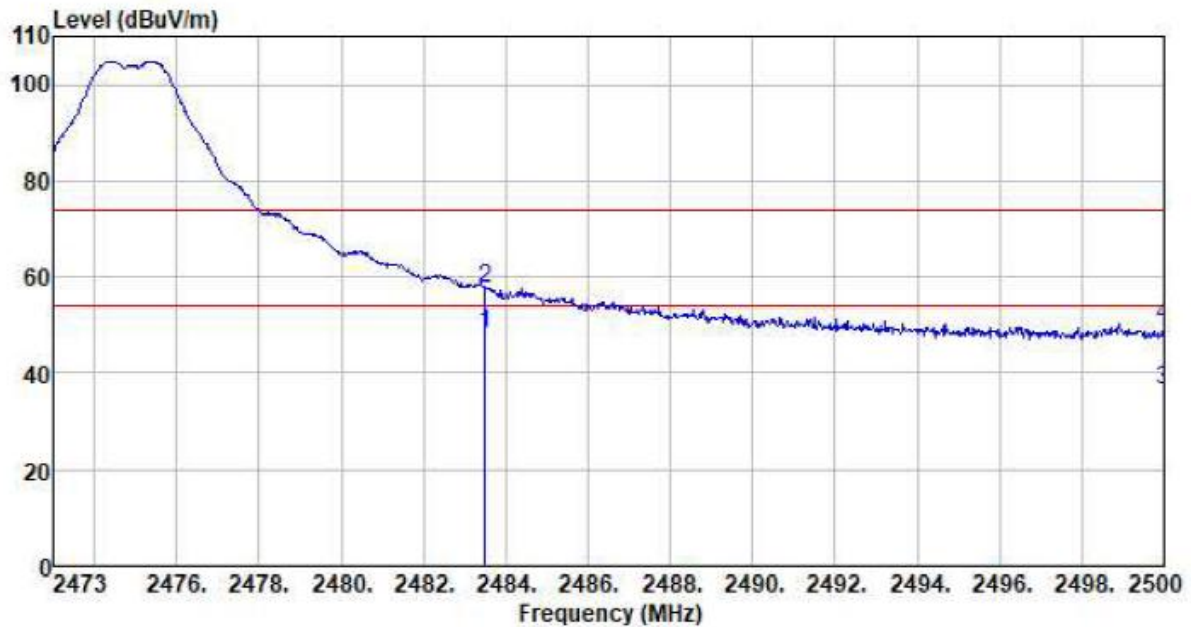
Test channel:	2475MHz
---------------	---------

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
2483.500	39.91	27.53	5.47	24.80	48.11	54.00	-5.89	Average
2483.500	51.06	27.53	5.47	24.80	59.26	74.00	-14.74	Peak
2500.000	28.63	27.55	5.49	24.86	36.81	54.00	-17.19	Average
2500.000	40.87	27.55	5.49	24.86	49.05	74.00	-24.95	Peak

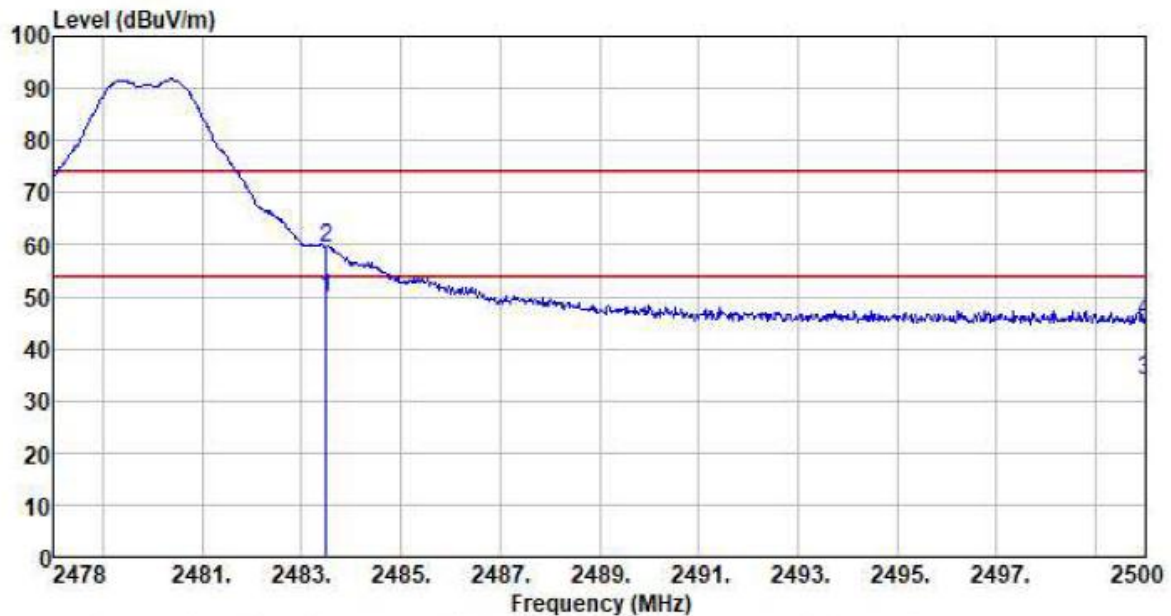
Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
2483.500	40.00	27.53	5.47	24.80	48.20	54.00	-5.80	Average
2483.500	49.53	27.53	5.47	24.80	57.73	74.00	-16.27	Peak
2500.000	28.41	27.55	5.49	24.86	36.59	54.00	-17.41	Average
2500.000	41.87	27.55	5.49	24.86	50.05	74.00	-23.95	Peak

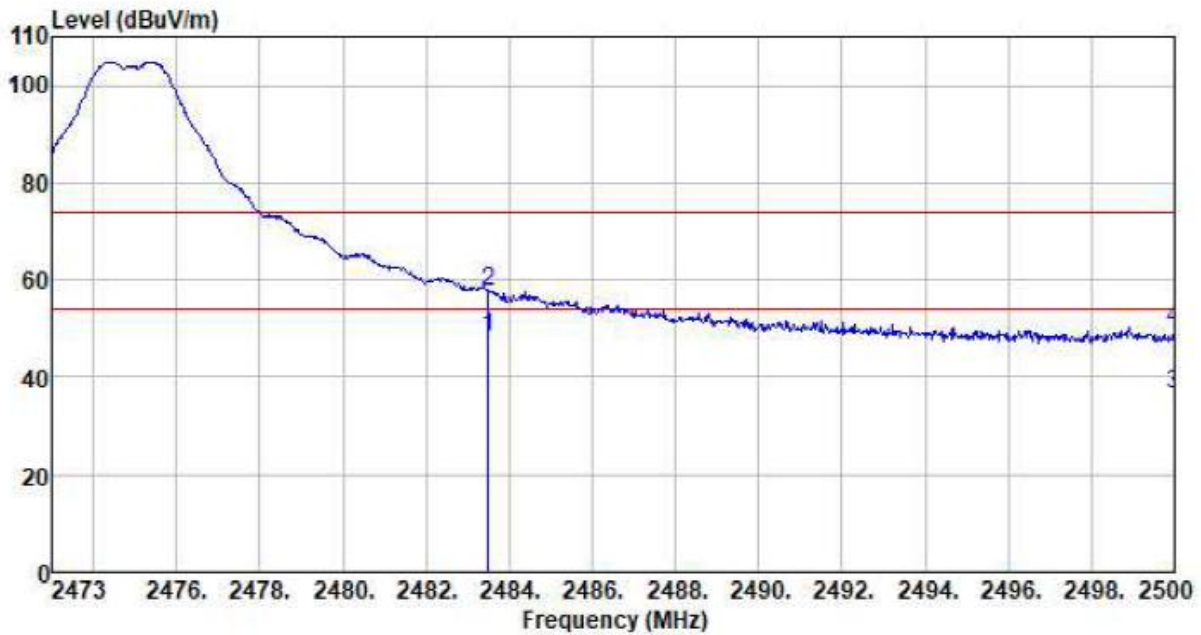
Test channel:	2480MHz
---------------	---------

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
2483.500	41.70	27.53	5.47	24.80	49.90	54.00	-4.10	Average
2483.500	51.23	27.53	5.47	24.80	59.43	74.00	-14.57	Peak
2500.000	25.68	27.55	5.49	24.86	33.86	54.00	-20.14	Average
2500.000	37.07	27.55	5.49	24.86	45.25	74.00	-28.75	Peak

Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
2483.500	40.00	27.53	5.47	24.80	48.20	54.00	-5.80	Average
2483.500	49.53	27.53	5.47	24.80	57.73	74.00	-16.27	Peak
2500.000	28.41	27.55	5.49	24.86	36.59	54.00	-17.41	Average
2500.000	41.87	27.55	5.49	24.86	50.05	74.00	-23.95	Peak

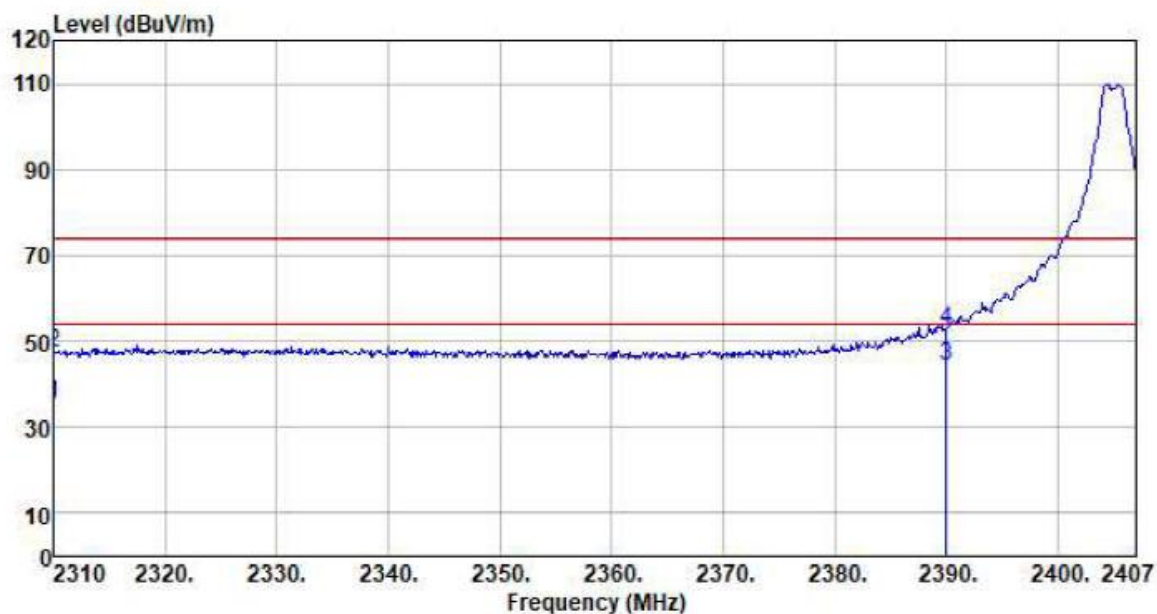
Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

External Antenna:

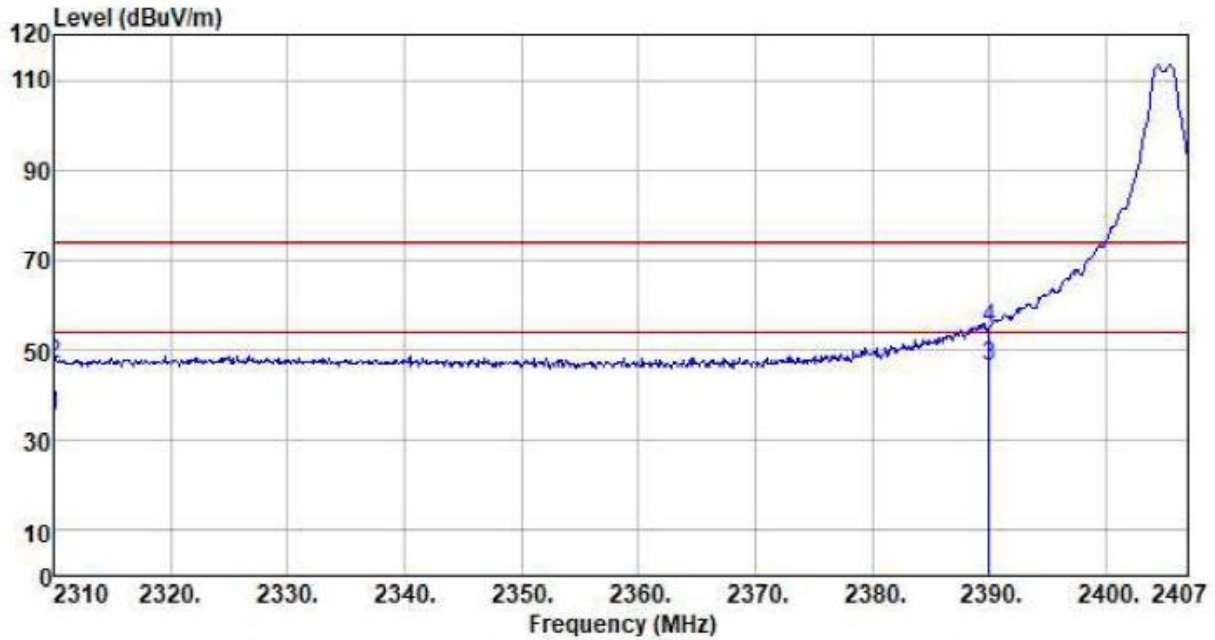
Test channel:	2405MHz
---------------	---------

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
2310.000	26.66	27.91	5.30	24.64	35.23	54.00	-18.77	Average
2310.000	38.81	27.91	5.30	24.64	47.38	74.00	-26.62	Peak
2390.000	36.02	27.59	5.38	24.71	44.28	54.00	-9.72	Average
2390.000	44.58	27.59	5.38	24.71	52.84	74.00	-21.16	Peak

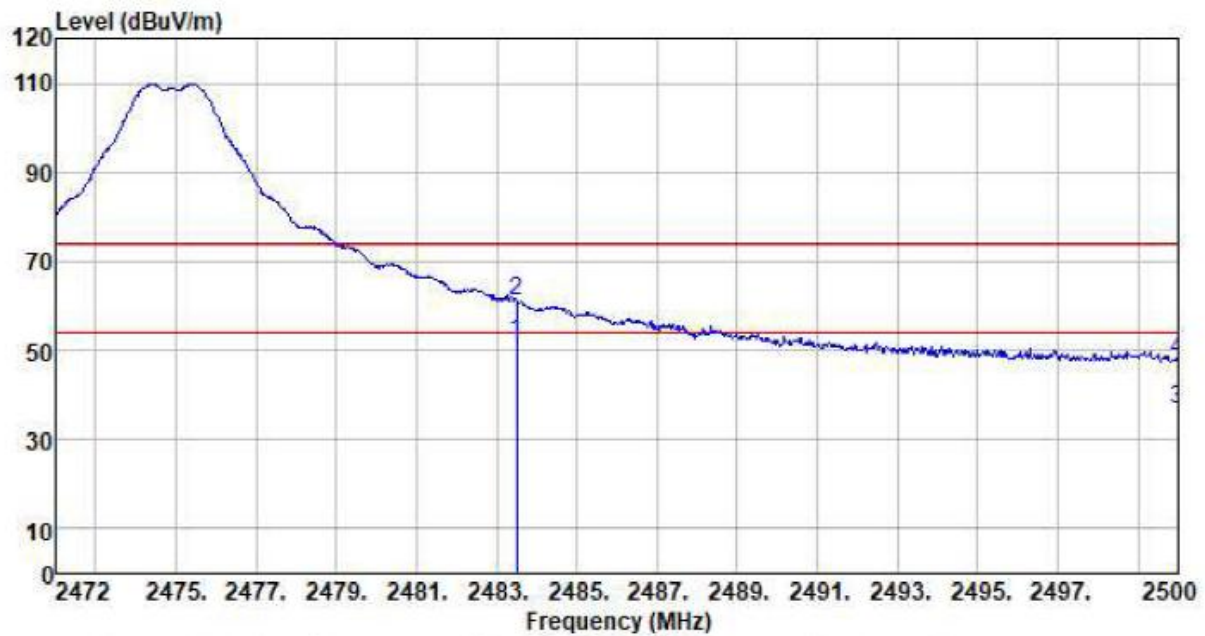
Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
2310.000	26.81	27.91	5.30	24.64	35.38	54.00	-18.62	Average
2310.000	38.21	27.91	5.30	24.64	46.78	74.00	-27.22	Peak
2390.000	38.21	27.59	5.38	24.71	46.47	54.00	-7.53	Average
2390.000	46.48	27.59	5.38	24.71	54.74	74.00	-19.26	Peak

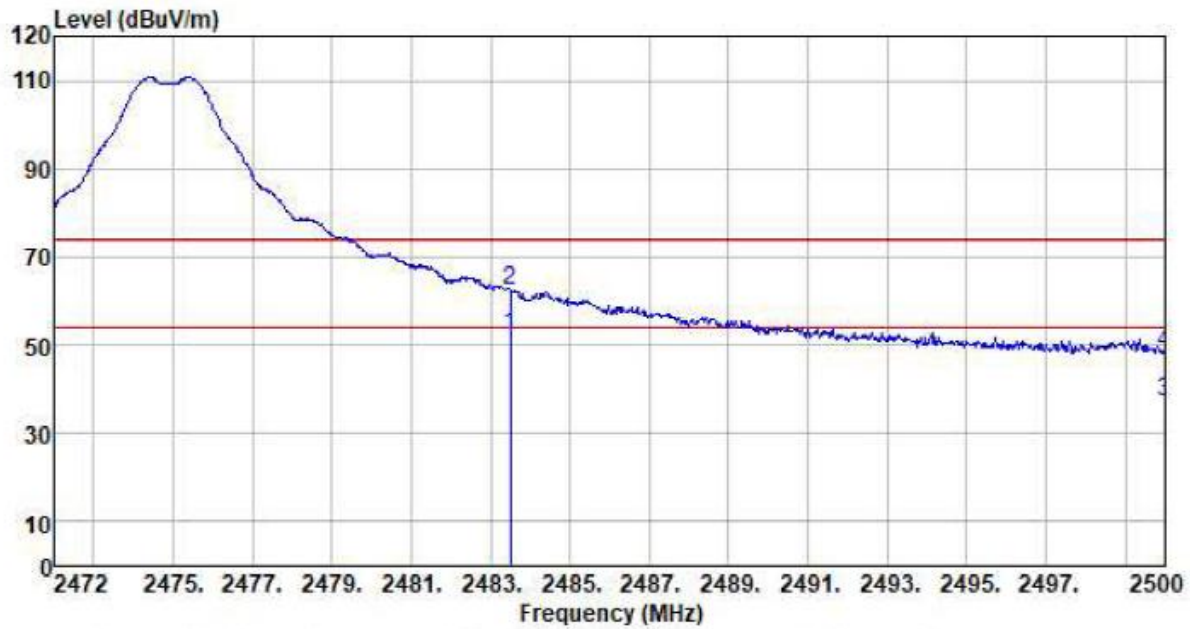
Test channel:	2475MHz
---------------	---------

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
2483.500	43.55	27.53	5.47	24.80	51.75	54.00	-2.25	Average
2483.500	52.73	27.53	5.47	24.80	60.93	74.00	-13.07	Peak
2500.000	28.38	27.55	5.49	24.86	36.56	54.00	-17.44	Average
2500.000	39.66	27.55	5.49	24.86	47.84	74.00	-26.16	Peak

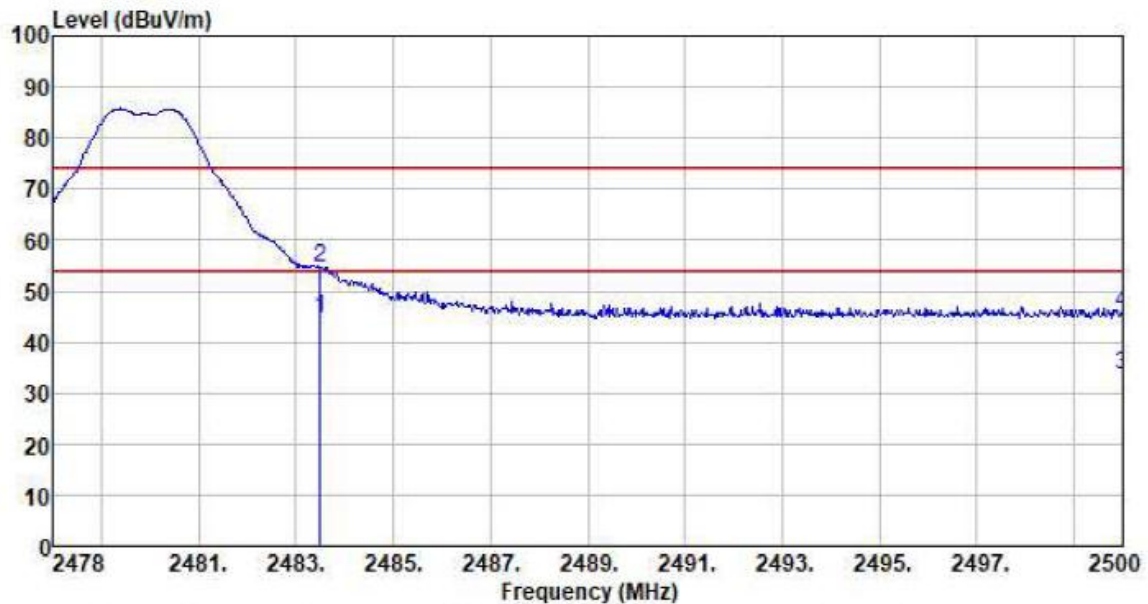
Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
2483.500	43.93	27.53	5.47	24.80	52.13	54.00	-1.87	Average
2483.500	54.40	27.53	5.47	24.80	62.60	74.00	-11.40	Peak
2500.000	29.10	27.55	5.49	24.86	37.28	54.00	-16.72	Average
2500.000	39.96	27.55	5.49	24.86	48.14	74.00	-25.86	Peak

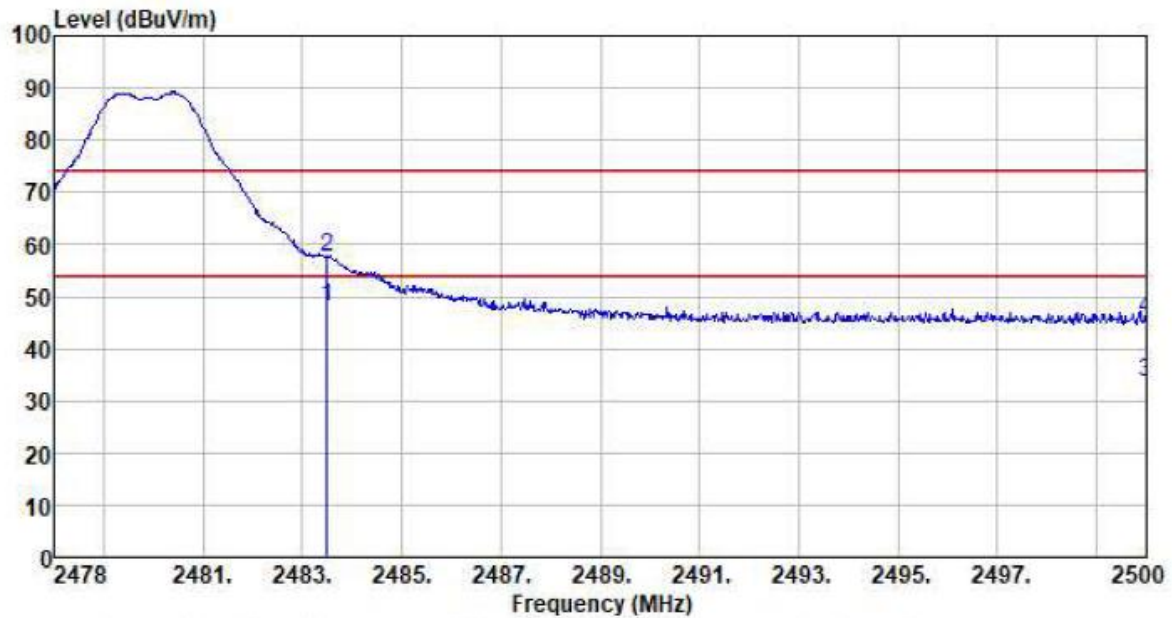
Test channel:	2480MHz
---------------	---------

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
2483.500	36.48	27.53	5.47	24.80	44.68	54.00	-9.32	Average
2483.500	46.34	27.53	5.47	24.80	54.54	74.00	-19.46	Peak
2500.000	25.40	27.55	5.49	24.86	33.58	54.00	-20.42	Average
2500.000	37.47	27.55	5.49	24.86	45.65	74.00	-28.35	Peak

Vertical:



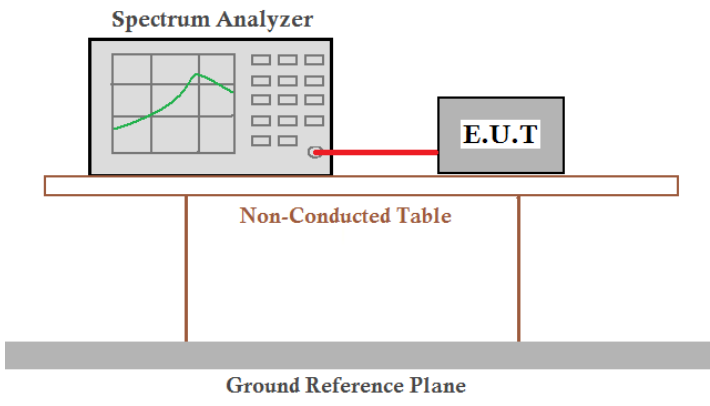
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
2483.500	39.92	27.53	5.47	24.80	48.12	54.00	-5.88	Average
2483.500	49.32	27.53	5.47	24.80	57.52	74.00	-16.48	Peak
2500.000	25.41	27.55	5.49	24.86	33.59	54.00	-20.41	Average
2500.000	37.61	27.55	5.49	24.86	45.79	74.00	-28.21	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

7.7 Spurious Emission

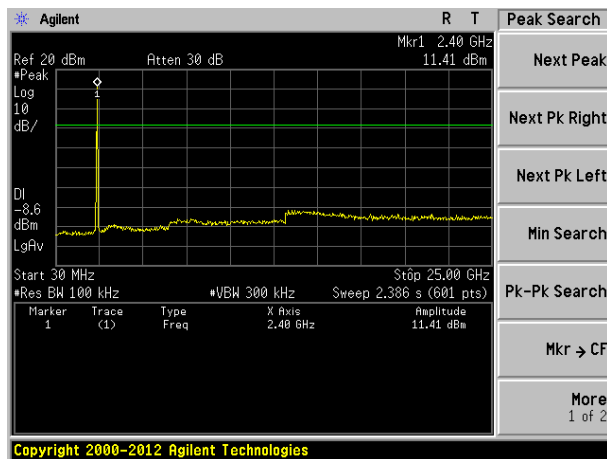
7.7.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V03
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Test plot as follows:

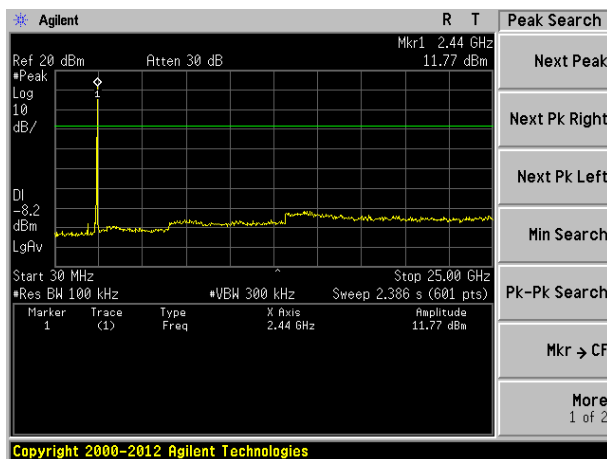
Internal Antenna:

Lowest channel



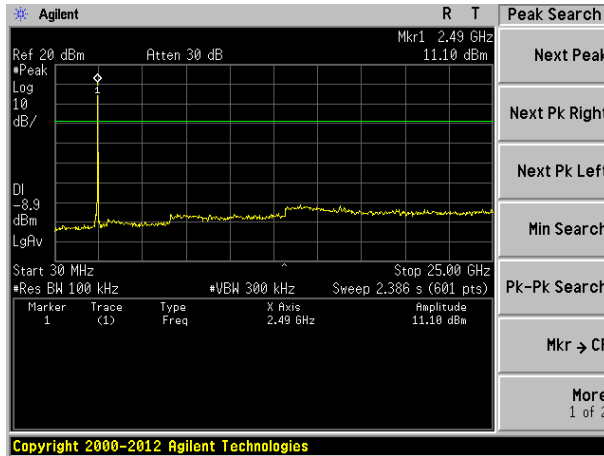
30MHz~25GHz

Middle channel



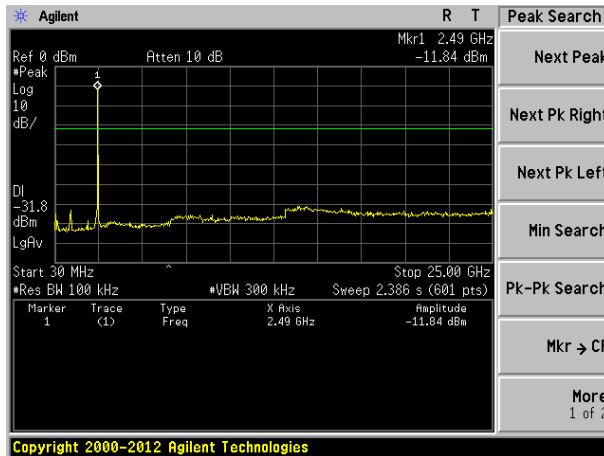
30MHz~25GHz

Highest channel (2475MHz)



30MHz~25GHz

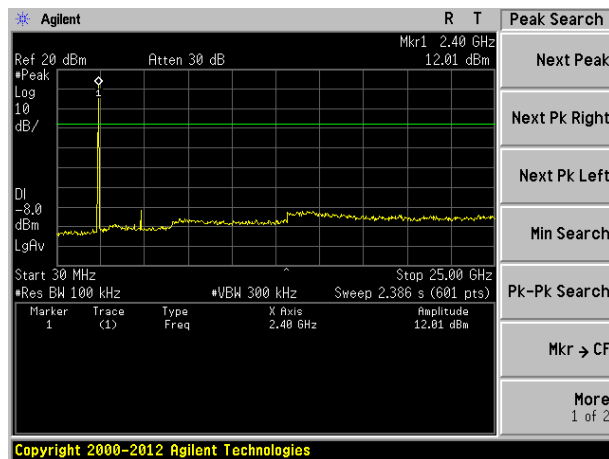
Highest channel (2480MHz)



30MHz~25GHz

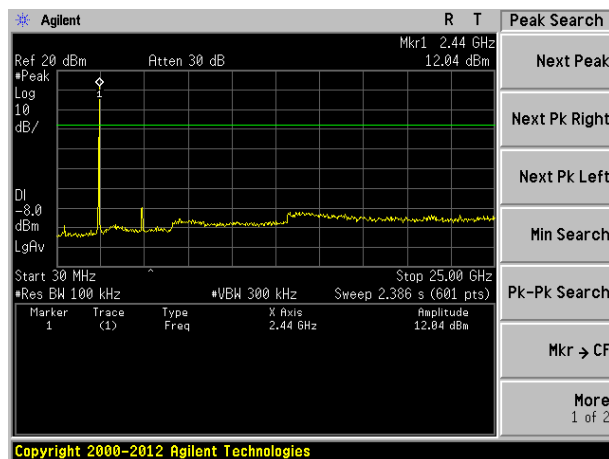
External Antenna:

Lowest channel



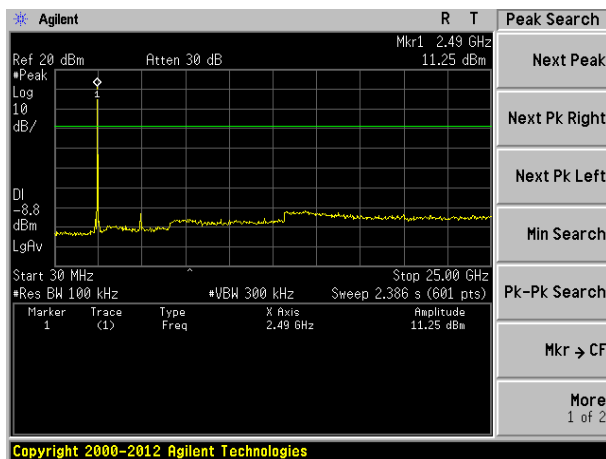
30MHz~25GHz

Middle channel



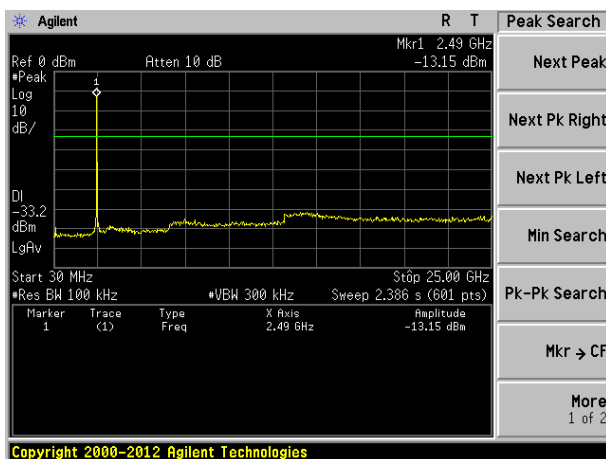
30MHz~25GHz

Highest channel (2475MHz)



30MHz~25GHz

Highest channel (2480MHz)



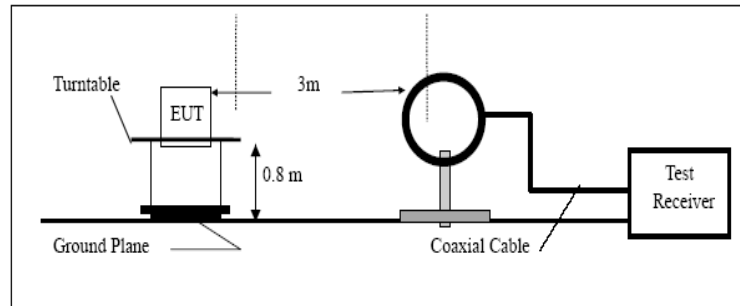
30MHz~25GHz

7.7.2 Radiated Emission Method

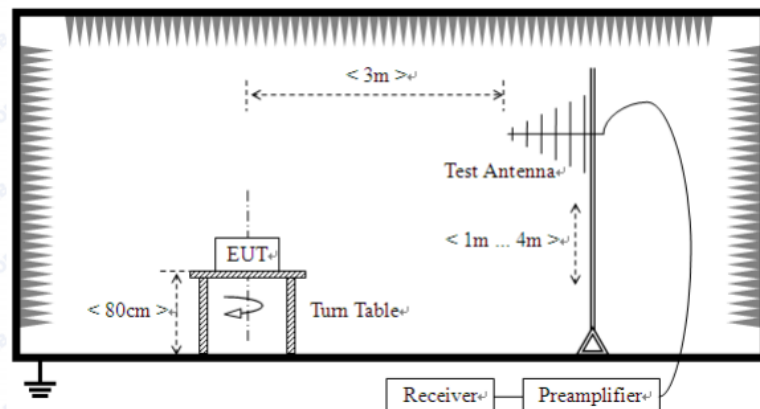
Test Requirement:	FCC Part15 C Section 15.209				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Limit: (Field strength of the fundamental signal)	Frequency		Limit (dBuV/m @3m)		Remark
	2400MHz-2483.5MHz		94.00		Average Value
			114.00		Peak Value
Limit: (Spurious Emissions)	Frequency		Limit (uV/m)	Value	Measurement Distance
	0.009MHz-0.490MHz		2400/F(KHz)	QP	300m
	0.490MHz-1.705MHz		24000/F(KHz)	QP	300m
	1.705MHz-30MHz		30	QP	30m
	30MHz-88MHz		100	QP	3m
	88MHz-216MHz		150	QP	
	216MHz-960MHz		200	QP	
	960MHz-1GHz		500	QP	
	Above 1GHz		500	Average	
			5000	Peak	
Limit: (band edge)	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 Section 15.209, whichever is the lesser attenuation.				

Test setup:

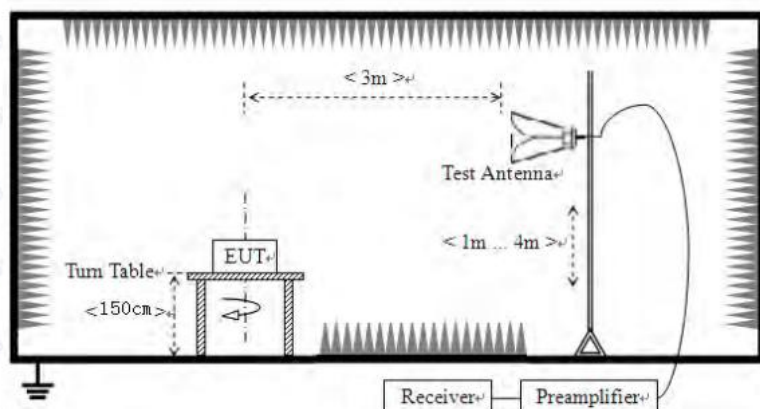
Below 30MHz



Below 1GHz



Above 1GHz



Test Procedure:	1. The EUT was placed on the top of a rotating table (0.8m for below 1G and 1.5m for above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement data:

■ Below 30MHz

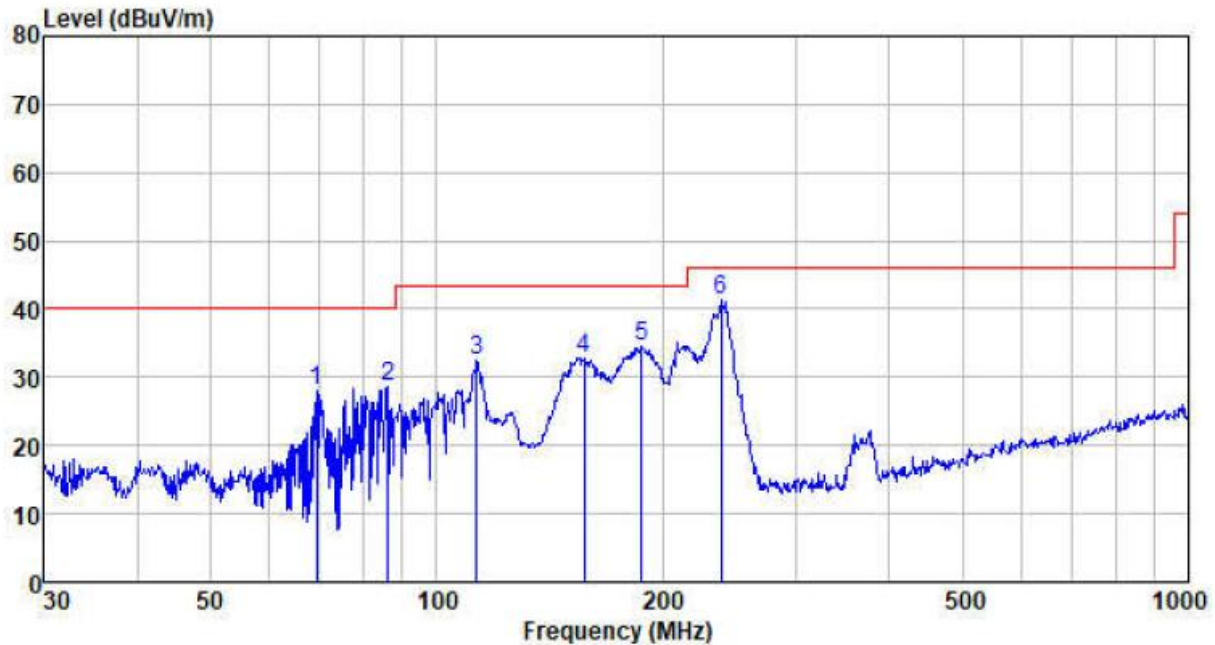
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o), the test result no need to reported.

Remark:

Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

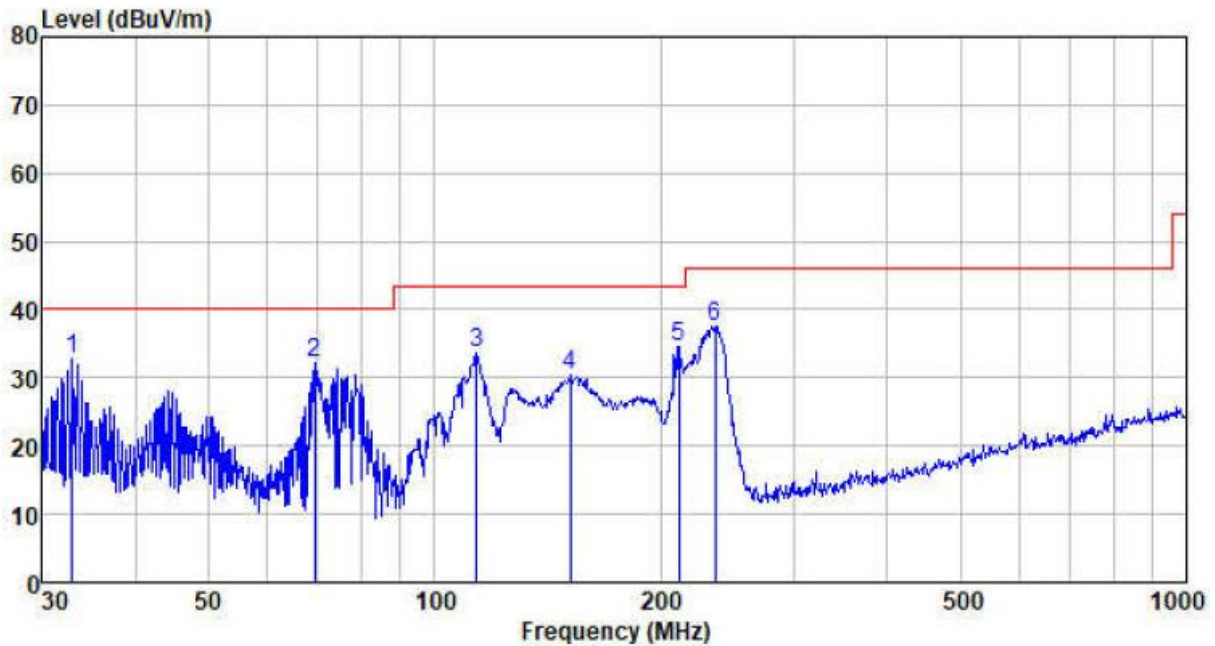
■ Below 1GHz

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
69.357	55.69	7.73	0.94	36.43	27.93	40.00	-12.07	QP
86.200	54.71	9.43	1.08	36.60	28.62	40.00	-11.38	QP
112.920	57.42	10.59	1.30	36.83	32.48	43.50	-11.02	QP
157.007	60.30	8.10	1.61	37.12	32.89	43.50	-10.61	QP
187.096	60.38	9.57	1.78	37.27	34.46	43.50	-9.04	QP
239.147	64.68	11.82	2.06	37.37	41.19	46.00	-4.81	QP

Vertical:



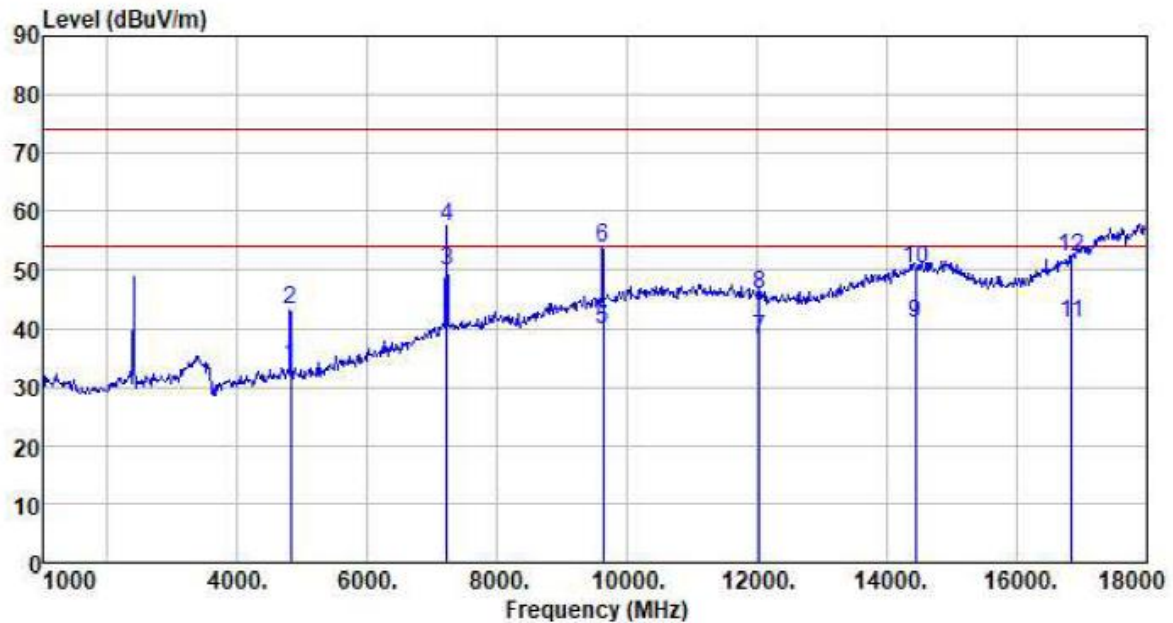
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
32.979	56.02	11.26	0.59	35.22	32.65	40.00	-7.35	QP
69.357	59.81	7.73	0.94	36.43	32.05	40.00	-7.95	QP
113.714	58.67	10.51	1.31	36.83	33.66	43.50	-9.84	QP
151.597	58.11	7.75	1.58	37.09	30.35	43.50	-13.15	QP
211.527	59.13	10.84	1.91	37.34	34.54	43.50	-8.96	QP
235.816	61.12	11.71	2.05	37.37	37.51	46.00	-8.49	QP

Internal Antenna:

■ Above 1GHz

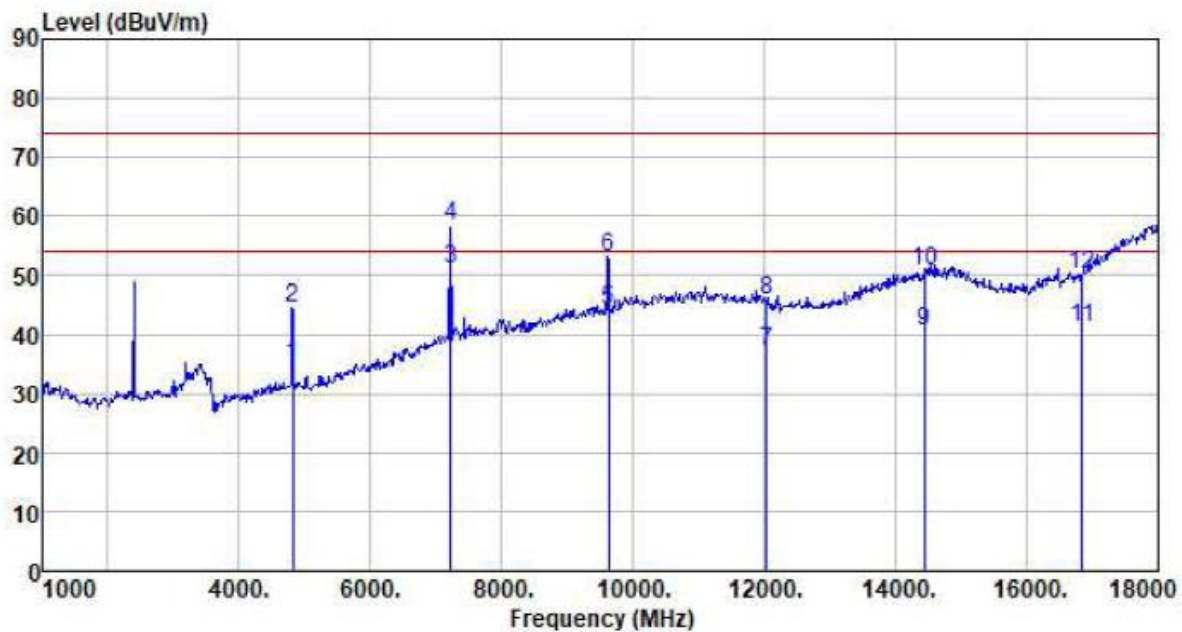
Test channel:	Lowest
---------------	--------

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4810.000	30.85	31.78	8.60	37.73	33.50	54.00	-20.50	Average
4810.000	40.58	31.78	8.60	37.73	43.23	74.00	-30.77	Peak
7216.370	37.55	36.15	11.66	35.63	49.73	54.00	-4.27	Average
7216.370	45.31	36.15	11.66	35.63	57.49	74.00	-16.51	Peak
9620.000	22.48	38.01	14.14	34.94	39.69	54.00	-14.31	Average
9620.000	36.61	38.01	14.14	34.94	53.82	74.00	-20.18	Peak
12025.000	20.37	39.08	15.03	36.20	38.28	54.00	-15.72	Average
12025.000	27.94	39.08	15.03	36.20	45.85	74.00	-28.15	Peak
14430.000	17.12	42.46	17.17	36.06	40.69	54.00	-13.31	Average
14430.000	26.55	42.46	17.17	36.06	50.12	74.00	-23.88	Peak
16835.000	15.92	42.13	18.82	36.17	40.70	54.00	-13.30	Average
16835.000	27.23	42.13	18.82	36.17	52.01	74.00	-21.99	Peak

Vertical:



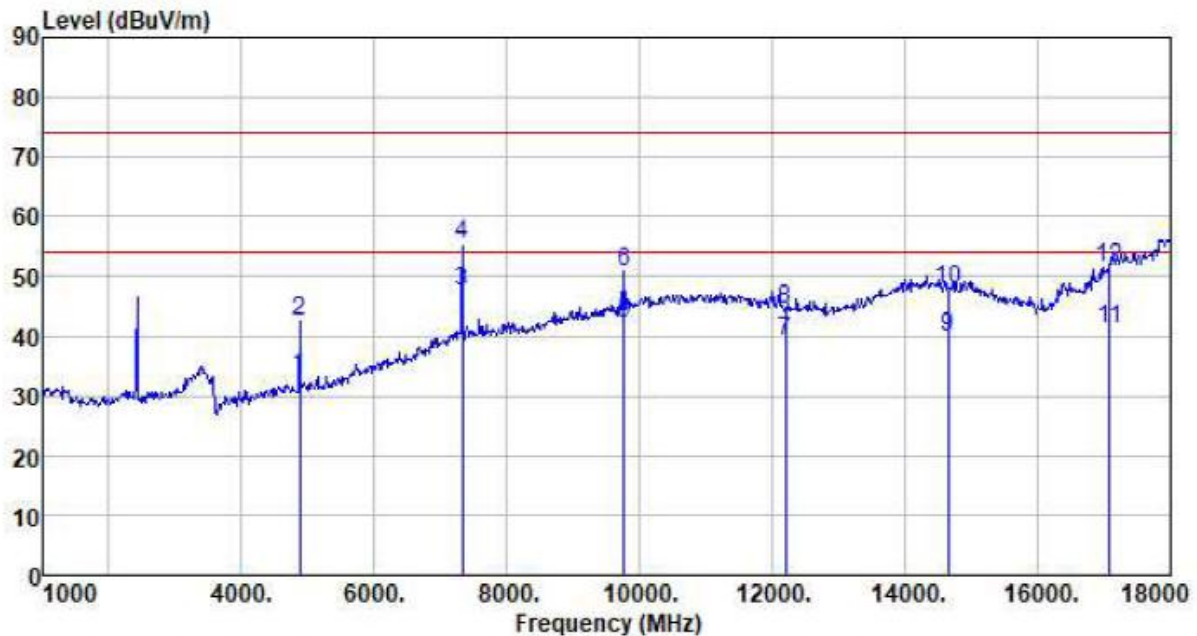
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4810.000	32.16	31.78	8.60	37.73	34.81	54.00	-19.19	Average
4810.000	41.69	31.78	8.60	37.73	44.34	74.00	-29.66	Peak
7216.300	38.82	36.15	11.66	35.63	51.00	54.00	-3.00	Average
7216.300	46.21	36.15	11.66	35.63	58.39	74.00	-15.61	Peak
9620.000	27.09	38.01	14.14	34.94	44.30	54.00	-9.70	Average
9620.000	35.87	38.01	14.14	34.94	53.08	74.00	-20.92	Peak
12025.000	19.23	39.08	15.03	36.20	37.14	54.00	-16.86	Average
12025.000	27.87	39.08	15.03	36.20	45.78	74.00	-28.22	Peak
14430.000	17.00	42.46	17.17	36.06	40.57	54.00	-13.43	Average
14430.000	27.32	42.46	17.17	36.06	50.89	74.00	-23.11	Peak
16835.000	16.24	42.13	18.82	36.17	41.02	54.00	-12.98	Average
16835.000	25.38	42.13	18.82	36.17	50.16	74.00	-23.84	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.

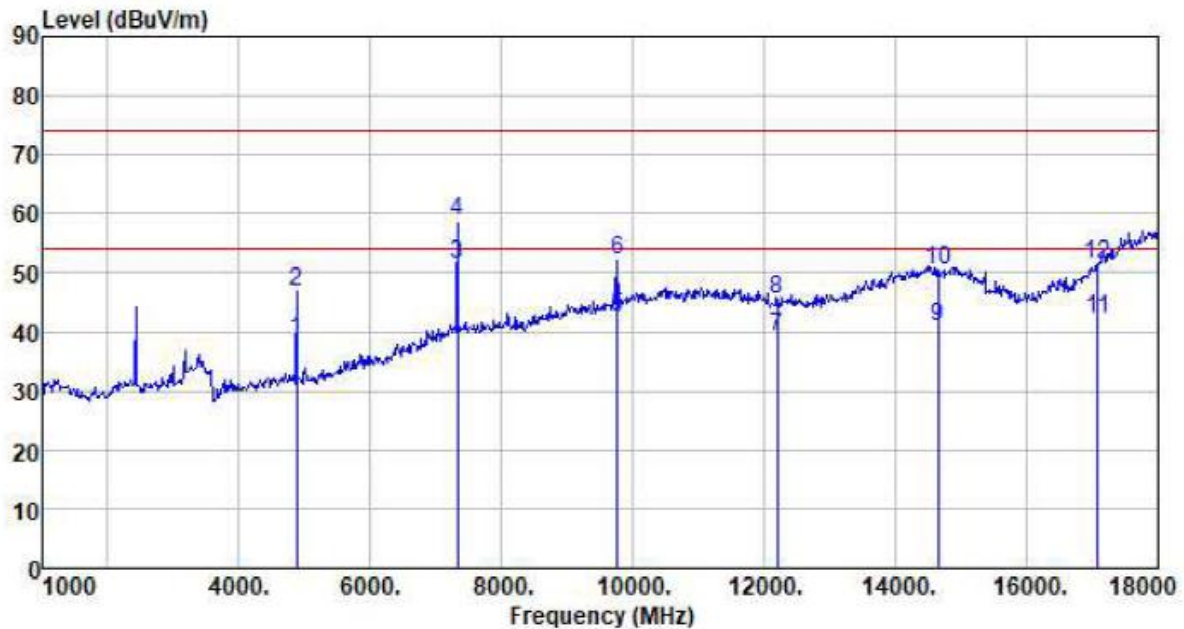
Test channel:	Middle
---------------	--------

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4880.000	30.60	31.85	8.66	37.75	33.36	54.00	-20.64	Average
4880.000	39.66	31.85	8.66	37.75	42.42	74.00	-31.58	Peak
7321.180	35.11	36.37	11.72	35.60	47.60	54.00	-6.40	Average
7321.180	43.05	36.37	11.72	35.60	55.54	74.00	-18.46	Peak
9760.000	24.65	38.35	14.25	35.03	42.22	54.00	-11.78	Average
9760.000	33.14	38.35	14.25	35.03	50.71	74.00	-23.29	Peak
12200.000	21.46	38.92	15.14	36.31	39.21	54.00	-14.79	Average
12200.000	26.85	38.92	15.14	36.31	44.60	74.00	-29.40	Peak
14640.000	16.19	42.21	17.28	35.77	39.91	54.00	-14.09	Average
14640.000	23.94	42.21	17.28	35.77	47.66	74.00	-26.34	Peak
17080.000	14.18	44.30	18.99	36.29	41.18	54.00	-12.82	Average
17080.000	24.62	44.30	18.99	36.29	51.62	74.00	-22.38	Peak

Vertical:



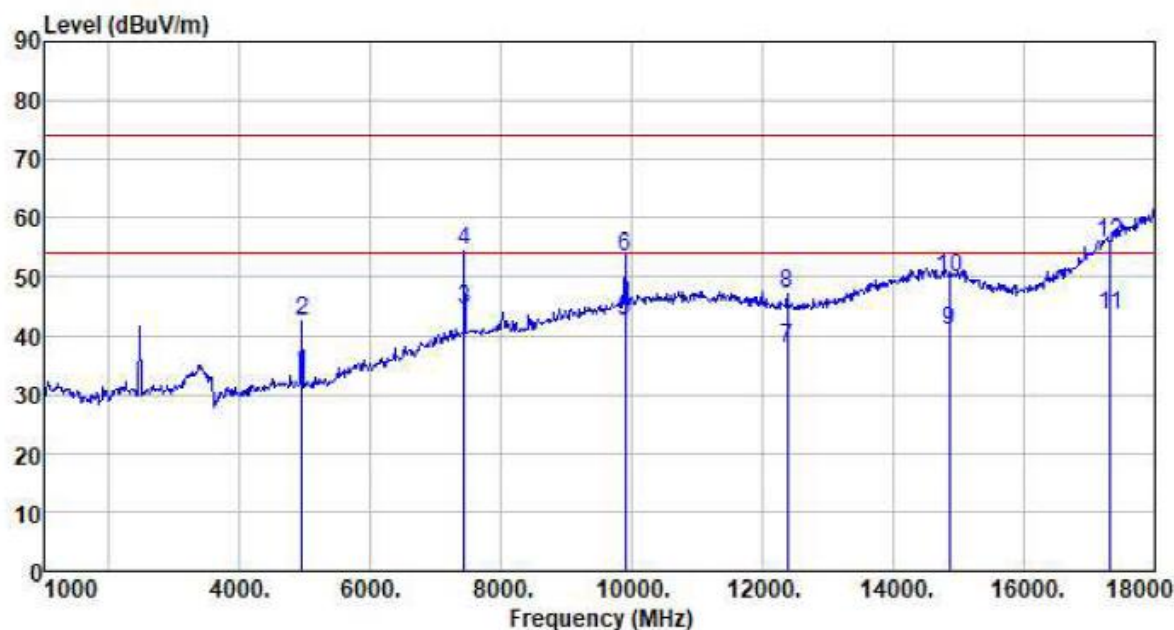
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4880.000	35.77	31.85	8.66	37.75	38.53	54.00	-15.47	Average
4880.000	44.04	31.85	8.66	37.75	46.80	74.00	-27.20	Peak
7321.240	39.06	36.37	11.72	35.60	51.55	54.00	-2.45	Average
7321.240	46.29	36.37	11.72	35.60	58.78	74.00	-15.22	Peak
9760.000	24.78	38.35	14.25	35.03	42.35	54.00	-11.65	Average
9760.000	34.64	38.35	14.25	35.03	52.21	74.00	-21.79	Peak
12200.000	21.47	38.92	15.14	36.31	39.22	54.00	-14.78	Average
12200.000	27.63	38.92	15.14	36.31	45.38	74.00	-28.62	Peak
14640.000	17.04	42.21	17.28	35.77	40.76	54.00	-13.24	Average
14640.000	26.68	42.21	17.28	35.77	50.40	74.00	-23.60	Peak
17080.000	15.01	44.30	18.99	36.29	42.01	54.00	-11.99	Average
17080.000	24.48	44.30	18.99	36.29	51.48	74.00	-22.52	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.

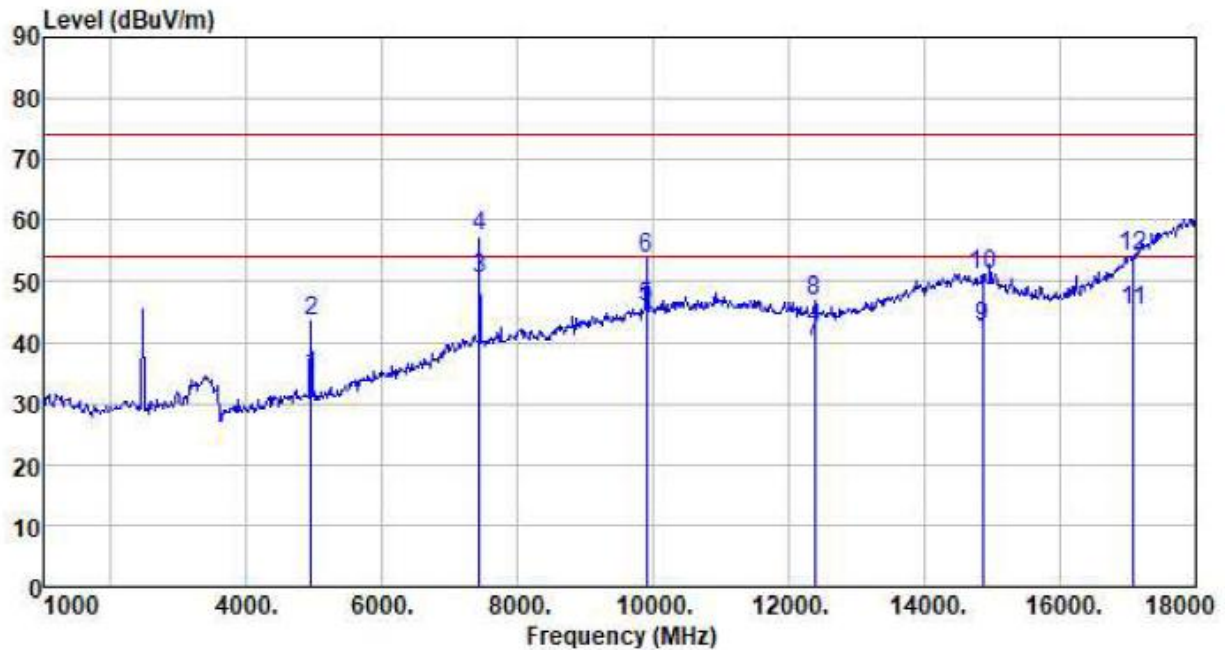
Test channel:	Highest(2475MHz)
---------------	------------------

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4950.000	30.64	31.91	8.71	37.78	33.48	54.00	-20.52	Average
4950.000	39.53	31.91	8.71	37.78	42.37	74.00	-31.63	Peak
7425.000	31.74	36.56	11.79	35.56	44.53	54.00	-9.47	Average
7425.000	41.71	36.56	11.79	35.56	54.50	74.00	-19.50	Peak
9900.000	24.40	38.81	14.35	35.12	42.44	54.00	-11.56	Average
9900.000	35.56	38.81	14.35	35.12	53.60	74.00	-20.40	Peak
12375.000	20.41	38.78	15.25	36.42	38.02	54.00	-15.98	Average
12375.000	29.48	38.78	15.25	36.42	47.09	74.00	-26.91	Peak
14850.000	17.62	41.52	17.37	35.53	40.98	54.00	-13.02	Average
14850.000	26.54	41.52	17.37	35.53	49.90	74.00	-24.10	Peak
17325.000	14.70	46.19	18.98	36.26	43.61	54.00	-10.39	Average
17325.000	26.95	46.19	18.98	36.26	55.86	74.00	-18.14	Peak

Vertical:



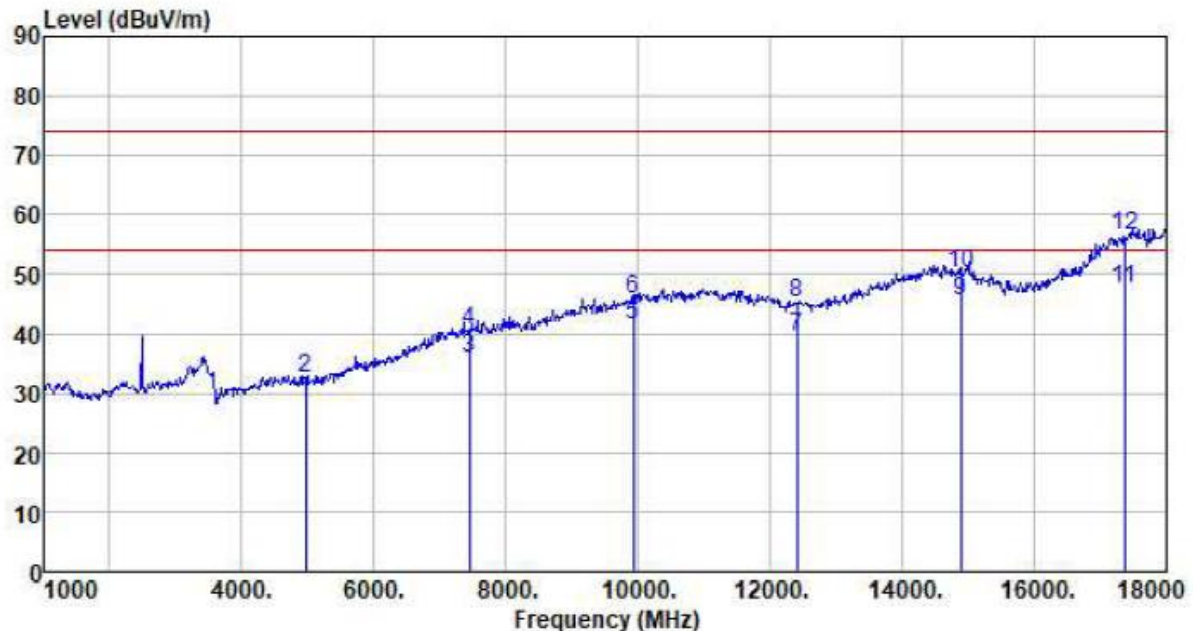
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4950.000	31.73	31.91	8.71	37.78	34.57	54.00	-19.43	Average
4950.000	40.53	31.91	8.71	37.78	43.37	74.00	-30.63	Peak
7426.000	37.84	36.56	11.79	35.56	50.63	54.00	-3.37	Average
7426.000	44.72	36.56	11.79	35.56	57.51	74.00	-16.49	Peak
9900.000	27.82	38.81	14.35	35.12	45.86	54.00	-8.14	Average
9900.000	35.73	38.81	14.35	35.12	53.77	74.00	-20.23	Peak
12375.000	22.72	38.78	15.25	36.42	40.33	54.00	-13.67	Average
12375.000	29.12	38.78	15.25	36.42	46.73	74.00	-27.27	Peak
14850.000	19.20	41.52	17.37	35.53	42.56	54.00	-11.44	Average
14850.000	27.83	41.52	17.37	35.53	51.19	74.00	-22.81	Peak
17080.000	18.13	44.30	18.99	36.29	45.13	54.00	-8.87	Average
17080.000	26.99	44.30	18.99	36.29	53.99	74.00	-20.01	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.

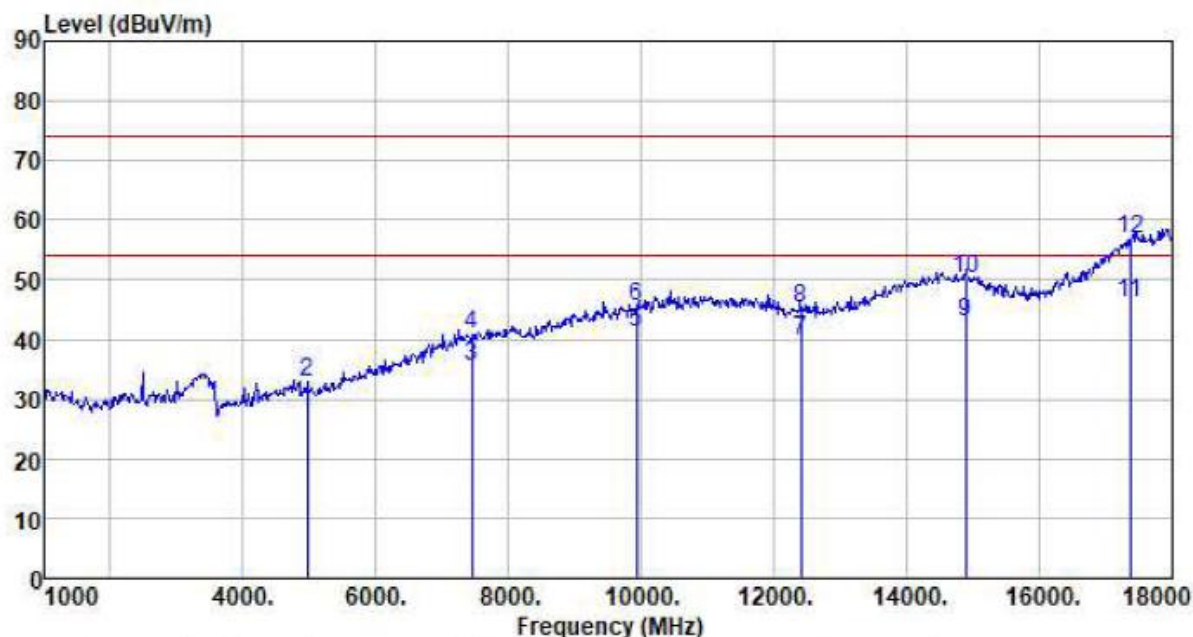
Test channel:	Highest(2480MHz)
---------------	------------------

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4960.000	25.31	31.93	8.73	37.78	28.19	54.00	-25.81	Average
4960.000	29.66	31.93	8.73	37.78	32.54	74.00	-41.46	Peak
7440.000	23.20	36.59	11.79	35.56	36.02	54.00	-17.98	Average
7440.000	27.71	36.59	11.79	35.56	40.53	74.00	-33.47	Peak
9920.000	23.41	38.81	14.38	35.14	41.46	54.00	-12.54	Average
9920.000	27.90	38.81	14.38	35.14	45.95	74.00	-28.05	Peak
12400.000	22.10	38.76	15.27	36.44	39.69	54.00	-14.31	Average
12400.000	27.52	38.76	15.27	36.44	45.11	74.00	-28.89	Peak
14880.000	21.99	41.52	17.39	35.47	45.43	54.00	-8.57	Average
14880.000	26.85	41.52	17.39	35.47	50.29	74.00	-23.71	Peak
17360.000	18.70	46.19	18.98	36.26	47.61	54.00	-6.39	Average
17360.000	27.54	46.19	18.98	36.26	56.45	74.00	-17.55	Peak

Vertical::



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4960.000	25.16	31.93	8.73	37.78	28.04	54.00	-25.96	Average
4960.000	29.95	31.93	8.73	37.78	32.83	74.00	-41.17	Peak
7440.000	22.62	36.59	11.79	35.56	35.44	54.00	-18.56	Average
7440.000	28.01	36.59	11.79	35.56	40.83	74.00	-33.17	Peak
9920.000	23.12	38.81	14.38	35.14	41.17	54.00	-12.83	Average
9920.000	27.30	38.81	14.38	35.14	45.35	74.00	-28.65	Peak
12400.000	22.38	38.76	15.27	36.44	39.97	54.00	-14.03	Average
12400.000	27.51	38.76	15.27	36.44	45.10	74.00	-28.90	Peak
14880.000	19.48	41.52	17.39	35.47	42.92	54.00	-11.08	Average
14880.000	26.72	41.52	17.39	35.47	50.16	74.00	-23.84	Peak
17360.000	17.16	46.19	18.98	36.26	46.07	54.00	-7.93	Average
17360.000	27.90	46.19	18.98	36.26	56.81	74.00	-17.19	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.

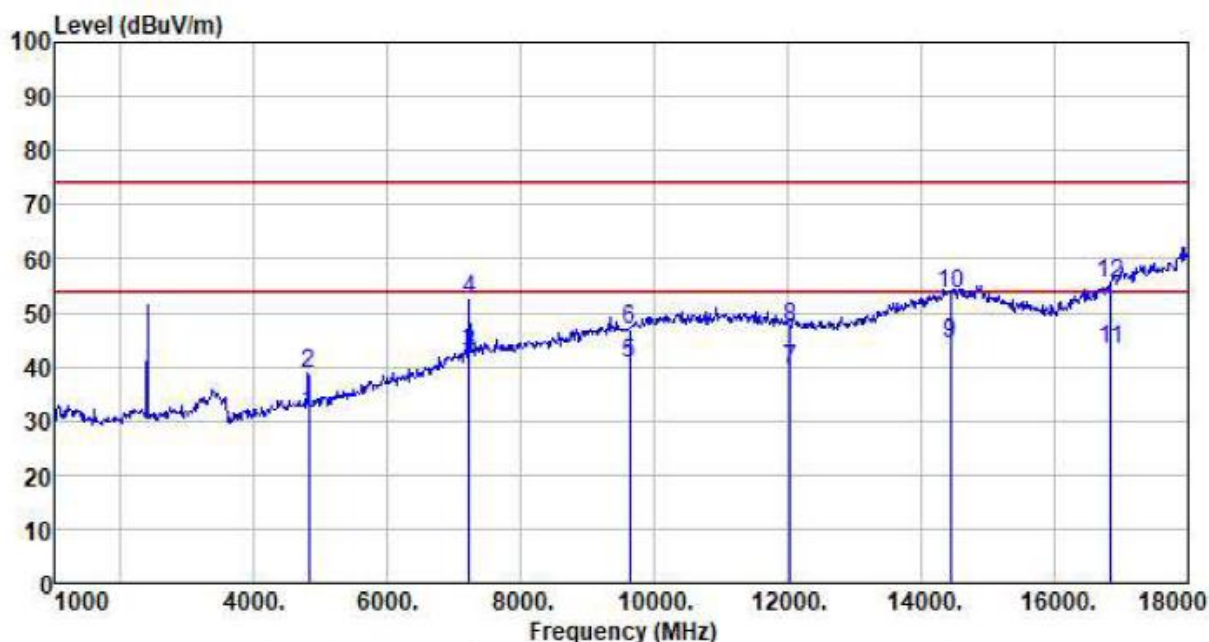
External Antenna:

■ Above 1GHz

Test channel:

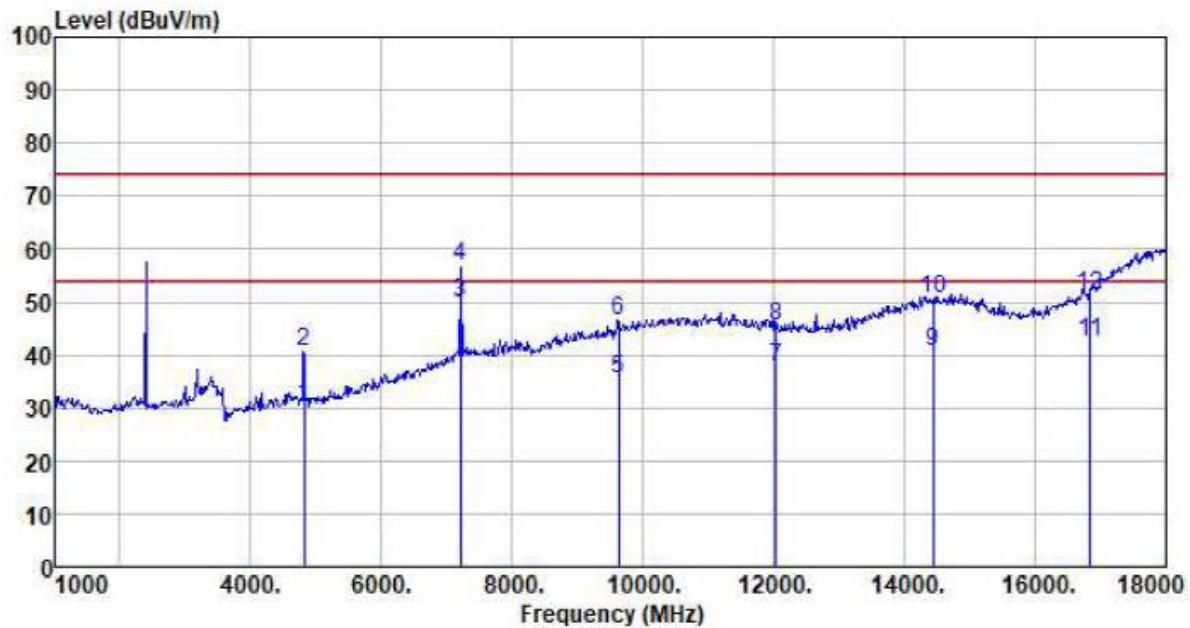
Lowest

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4810.000	28.84	31.78	8.60	37.73	31.49	54.00	-22.51	Average
4810.000	36.08	31.78	8.60	37.73	38.73	74.00	-35.27	Peak
7215.000	30.34	36.15	11.66	35.63	42.52	54.00	-11.48	Average
7215.000	40.03	36.15	11.66	35.63	52.21	74.00	-21.79	Peak
9620.000	23.33	38.01	14.14	34.94	40.54	54.00	-13.46	Average
9620.000	29.83	38.01	14.14	34.94	47.04	74.00	-26.96	Peak
12025.000	21.62	39.08	15.03	36.20	39.53	54.00	-14.47	Average
12025.000	29.37	39.08	15.03	36.20	47.28	74.00	-26.72	Peak
14430.000	20.74	42.46	17.17	36.06	44.31	54.00	-9.69	Average
14430.000	29.88	42.46	17.17	36.06	53.45	74.00	-20.55	Peak
16835.000	18.29	42.13	18.82	36.17	43.07	54.00	-10.93	Average
16835.000	30.72	42.13	18.82	36.17	55.50	74.00	-18.50	Peak

Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4810.000	27.55	31.78	8.60	37.73	30.20	54.00	-23.80	Average
4810.000	37.95	31.78	8.60	37.73	40.60	74.00	-33.40	Peak
7213.330	37.60	36.15	11.66	35.63	49.78	54.00	-4.22	Average
7213.330	44.69	36.15	11.66	35.63	56.87	74.00	-17.13	Peak
9620.000	18.18	38.01	14.14	34.94	35.39	54.00	-18.61	Average
9620.000	29.15	38.01	14.14	34.94	46.36	74.00	-27.64	Peak
12025.000	19.55	39.08	15.03	36.20	37.46	54.00	-16.54	Average
12025.000	27.36	39.08	15.03	36.20	45.27	74.00	-28.73	Peak
14430.000	17.17	42.46	17.17	36.06	40.74	54.00	-13.26	Average
14430.000	26.82	42.46	17.17	36.06	50.39	74.00	-23.61	Peak
16835.000	17.73	42.13	18.82	36.17	42.51	54.00	-11.49	Average
16835.000	26.45	42.13	18.82	36.17	51.23	74.00	-22.77	Peak

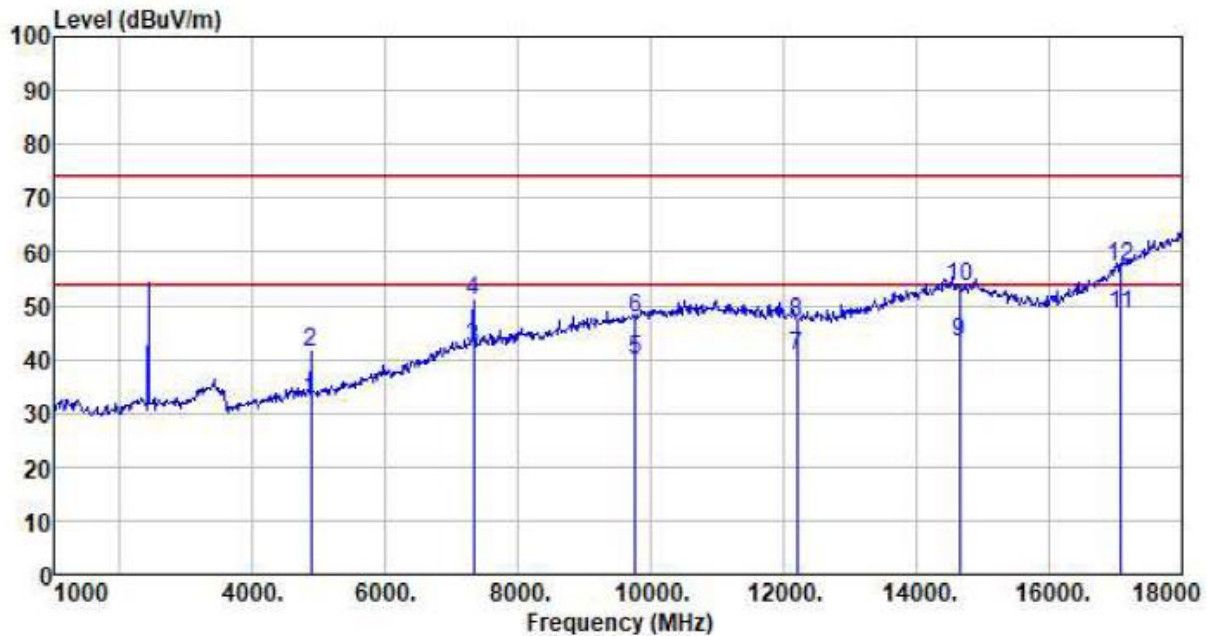
Remark:

3. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

4. “*”, means this data is the too weak instrument of signal is unable to test.

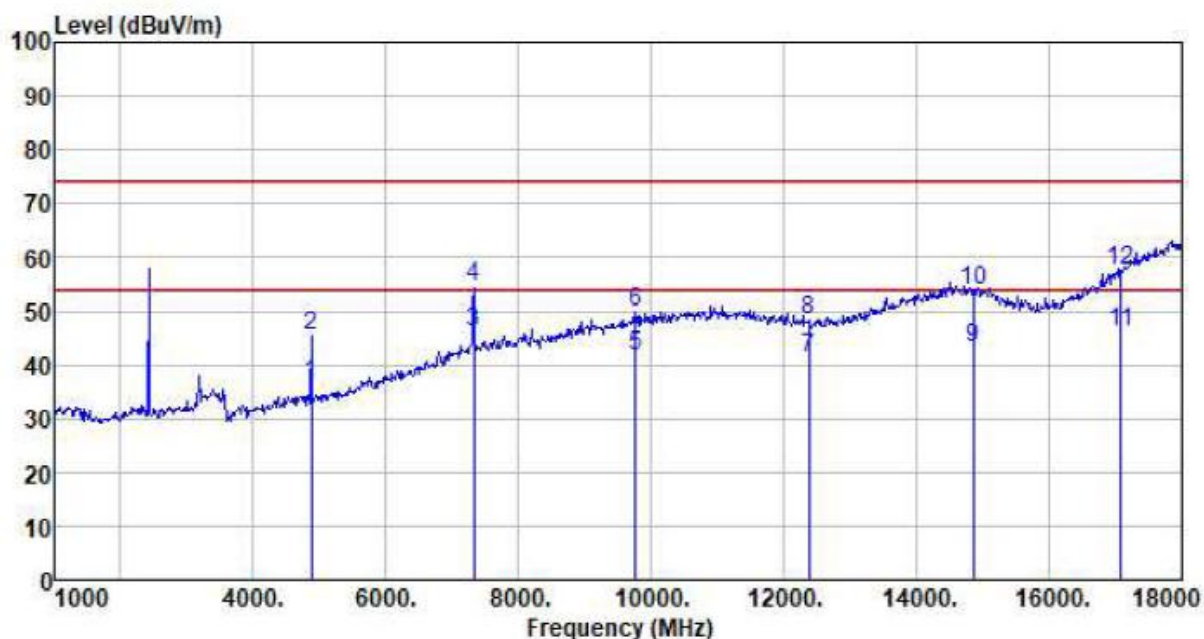
Test channel:	Middle
---------------	--------

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4880.000	29.66	31.85	8.66	37.75	32.42	54.00	-21.58	Average
4880.000	38.64	31.85	8.66	37.75	41.40	74.00	-32.60	Peak
7320.000	29.74	36.37	11.72	35.60	42.23	54.00	-11.77	Average
7320.000	38.38	36.37	11.72	35.60	50.87	74.00	-23.13	Peak
9760.000	22.12	38.35	14.25	35.03	39.69	54.00	-14.31	Average
9760.000	30.03	38.35	14.25	35.03	47.60	74.00	-26.40	Peak
12200.000	22.74	38.92	15.14	36.31	40.49	54.00	-13.51	Average
12200.000	29.27	38.92	15.14	36.31	47.02	74.00	-26.98	Peak
14640.000	19.28	42.21	17.28	35.77	43.00	54.00	-11.00	Average
14640.000	29.62	42.21	17.28	35.77	53.34	74.00	-20.66	Peak
17080.000	21.26	44.30	18.99	36.29	48.26	54.00	-5.74	Average
17080.000	30.21	44.30	18.99	36.29	57.21	74.00	-16.79	Peak

Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4880.000	33.93	31.85	8.66	37.75	36.69	54.00	-17.31	Average
4880.000	42.58	31.85	8.66	37.75	45.34	74.00	-28.66	Peak
7321.320	33.49	36.37	11.72	35.60	45.98	54.00	-8.02	Average
7321.320	42.03	36.37	11.72	35.60	54.52	74.00	-19.48	Peak
9760.000	24.09	38.35	14.25	35.03	41.66	54.00	-12.34	Average
9760.000	32.33	38.35	14.25	35.03	49.90	74.00	-24.10	Peak
12375.000	23.69	38.78	15.25	36.42	41.30	54.00	-12.70	Average
12375.000	30.77	38.78	15.25	36.42	48.38	74.00	-25.62	Peak
14850.000	19.81	41.52	17.37	35.53	43.17	54.00	-10.83	Average
14850.000	30.55	41.52	17.37	35.53	53.91	74.00	-20.09	Peak
17080.000	19.13	44.30	18.99	36.29	46.13	54.00	-7.87	Average
17080.000	30.71	44.30	18.99	36.29	57.71	74.00	-16.29	Peak

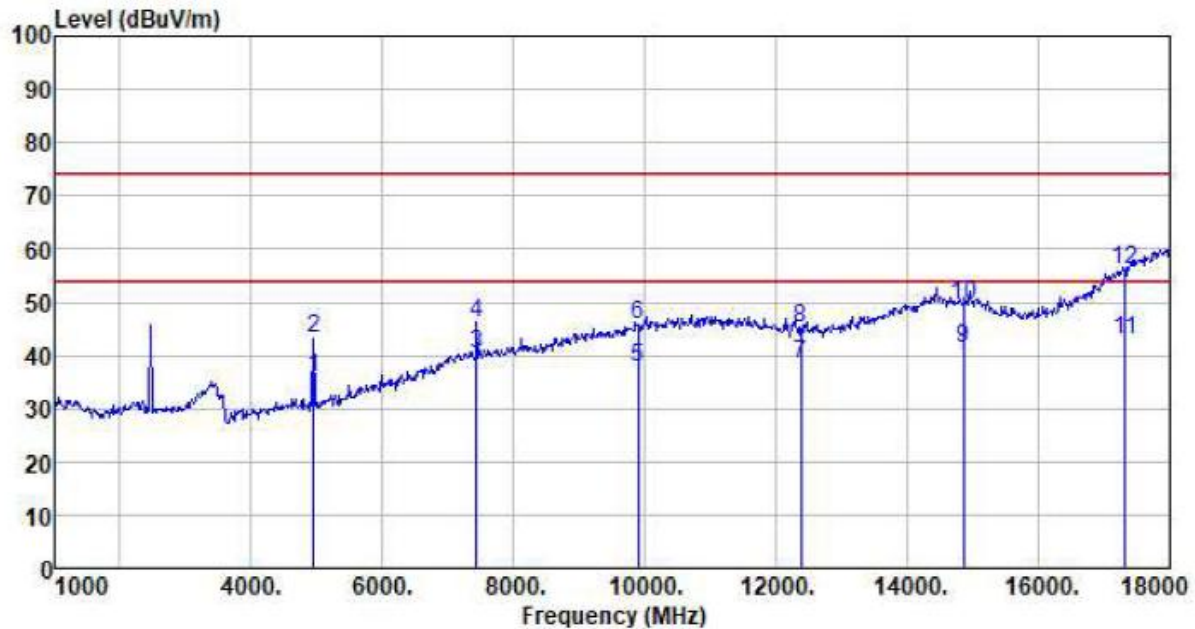
Remark:

3. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

4. “*”, means this data is the too weak instrument of signal is unable to test.

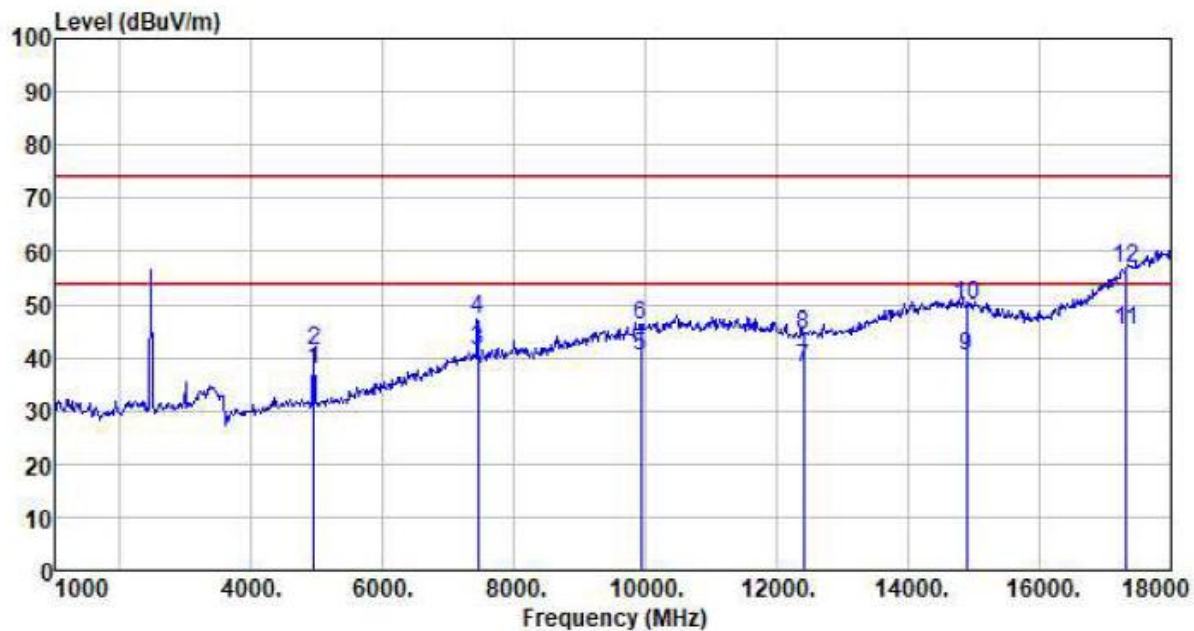
Test channel:	Highest(2475MHz)
---------------	------------------

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4950.000	33.07	31.91	8.71	37.78	35.91	54.00	-18.09	Average
4950.000	40.18	31.91	8.71	37.78	43.02	74.00	-30.98	Peak
7425.000	27.42	36.56	11.79	35.56	40.21	54.00	-13.79	Average
7425.000	33.34	36.56	11.79	35.56	46.13	74.00	-27.87	Peak
9900.000	19.45	38.81	14.35	35.12	37.49	54.00	-16.51	Average
9900.000	27.85	38.81	14.35	35.12	45.89	74.00	-28.11	Peak
12375.000	20.72	38.78	15.25	36.42	38.33	54.00	-15.67	Average
12375.000	27.27	38.78	15.25	36.42	44.88	74.00	-29.12	Peak
14850.000	17.86	41.52	17.37	35.53	41.22	54.00	-12.78	Average
14850.000	26.01	41.52	17.37	35.53	49.37	74.00	-24.63	Peak
17325.000	13.88	46.19	18.98	36.26	42.79	54.00	-11.21	Average
17325.000	27.30	46.19	18.98	36.26	56.21	74.00	-17.79	Peak

Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4950.000	34.71	31.91	8.71	37.78	37.55	54.00	-16.45	Average
4950.000	38.41	31.91	8.71	37.78	41.25	74.00	-32.75	Peak
7440.000	28.53	36.59	11.79	35.56	41.35	54.00	-12.65	Average
7440.000	34.45	36.59	11.79	35.56	47.27	74.00	-26.73	Peak
9920.000	22.11	38.81	14.38	35.14	40.16	54.00	-13.84	Average
9920.000	28.24	38.81	14.38	35.14	46.29	74.00	-27.71	Peak
12400.000	20.40	38.76	15.27	36.44	37.99	54.00	-16.01	Average
12400.000	26.63	38.76	15.27	36.44	44.22	74.00	-29.78	Peak
14880.000	16.91	41.52	17.39	35.47	40.35	54.00	-13.65	Average
14880.000	26.38	41.52	17.39	35.47	49.82	74.00	-24.18	Peak
17325.000	16.26	46.19	18.98	36.26	45.17	54.00	-8.83	Average
17325.000	28.02	46.19	18.98	36.26	56.93	74.00	-17.07	Peak

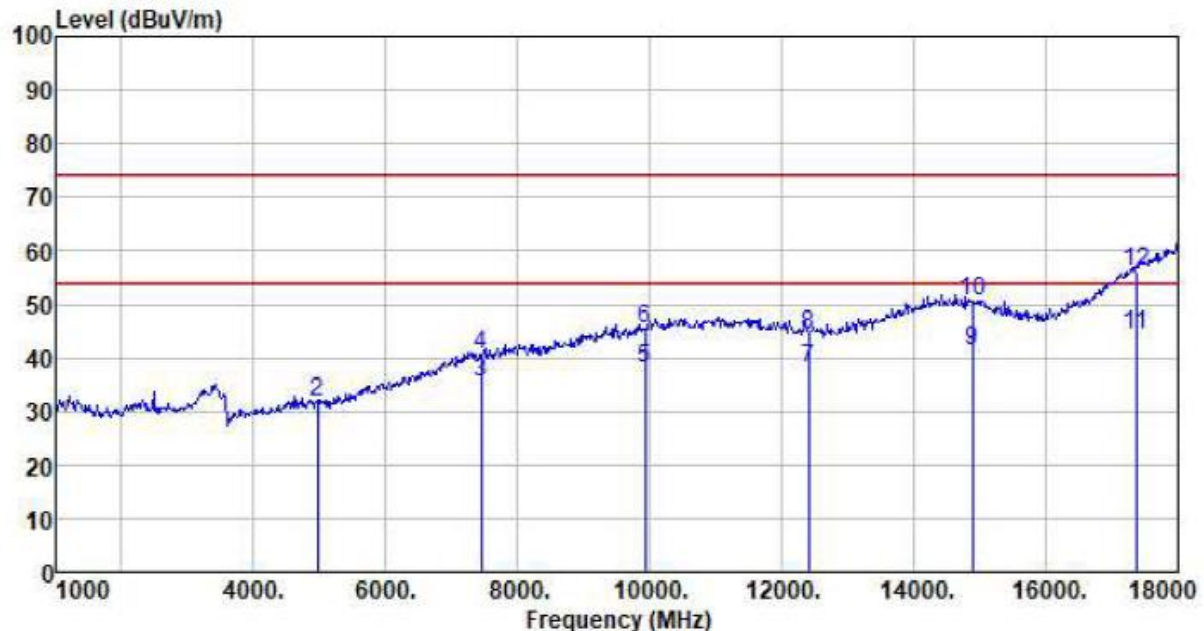
Remark:

3. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

4. “*”, means this data is the too weak instrument of signal is unable to test.

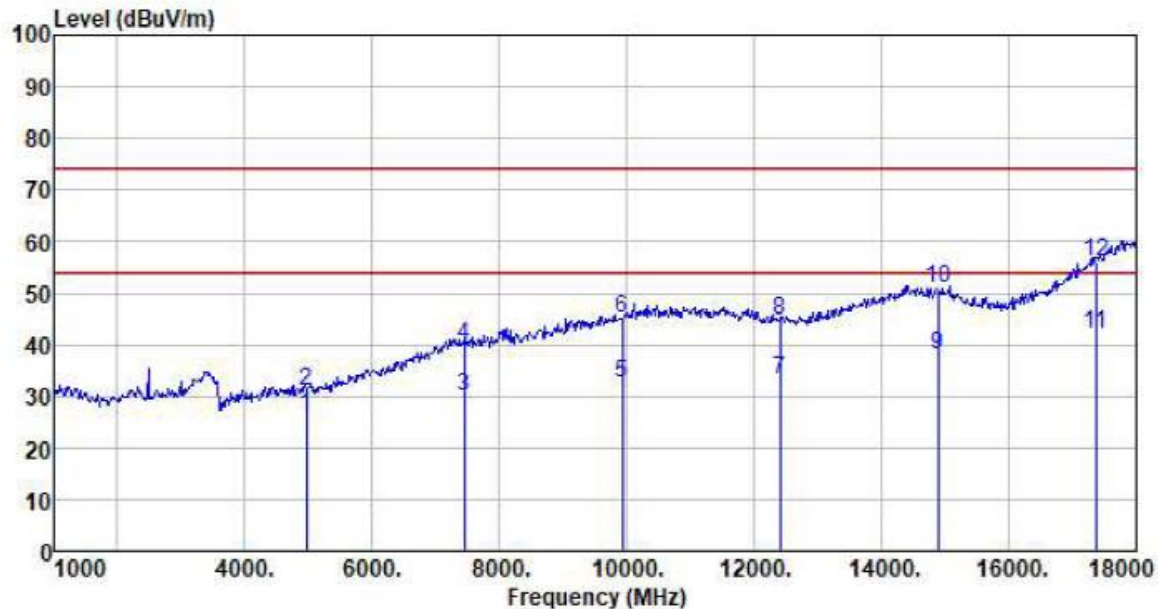
Test channel:	Highest(2480MHz)
---------------	------------------

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4960.000	24.70	31.93	8.73	37.78	27.58	54.00	-26.42	Average
4960.000	28.68	31.93	8.73	37.78	31.56	74.00	-42.44	Peak
7440.000	22.52	36.59	11.79	35.56	35.34	54.00	-18.66	Average
7440.000	27.85	36.59	11.79	35.56	40.67	74.00	-33.33	Peak
9920.000	19.94	38.81	14.38	35.14	37.99	54.00	-16.01	Average
9920.000	27.37	38.81	14.38	35.14	45.42	74.00	-28.58	Peak
12400.000	20.47	38.76	15.27	36.44	38.06	54.00	-15.94	Average
12400.000	26.80	38.76	15.27	36.44	44.39	74.00	-29.61	Peak
14880.000	17.80	41.52	17.39	35.47	41.24	54.00	-12.76	Average
14880.000	27.27	41.52	17.39	35.47	50.71	74.00	-23.29	Peak
17360.000	15.37	46.19	18.98	36.26	44.28	54.00	-9.72	Average
17360.000	27.30	46.19	18.98	36.26	56.21	74.00	-17.79	Peak

Vertical::



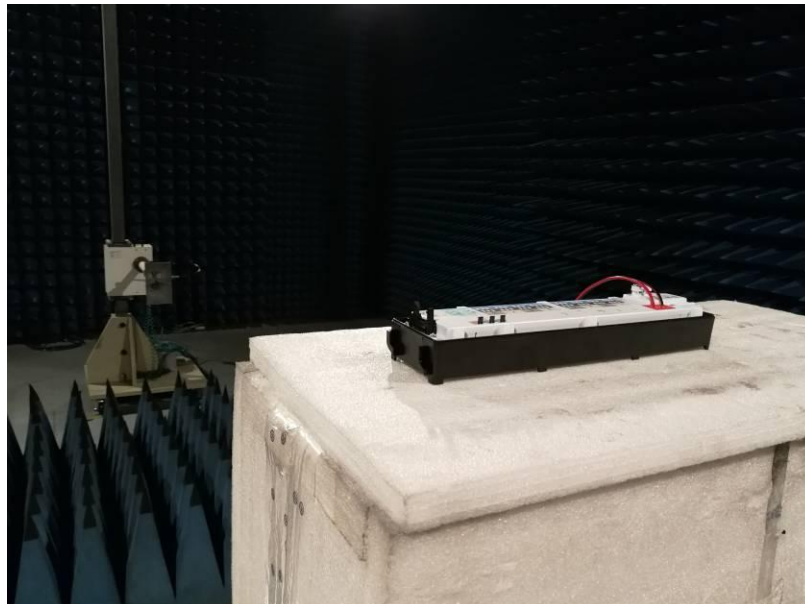
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4960.000	23.29	31.93	8.73	37.78	26.17	54.00	-27.83	Average
4960.000	28.29	31.93	8.73	37.78	31.17	74.00	-42.83	Peak
7440.000	16.95	36.59	11.79	35.56	29.77	54.00	-24.23	Average
7440.000	27.00	36.59	11.79	35.56	39.82	74.00	-34.18	Peak
9920.000	14.58	38.81	14.38	35.14	32.63	54.00	-21.37	Average
9920.000	26.98	38.81	14.38	35.14	45.03	74.00	-28.97	Peak
12400.000	15.53	38.76	15.27	36.44	33.12	54.00	-20.88	Average
12400.000	26.96	38.76	15.27	36.44	44.55	74.00	-29.45	Peak
14880.000	14.67	41.52	17.39	35.47	38.11	54.00	-15.89	Average
14880.000	27.44	41.52	17.39	35.47	50.88	74.00	-23.12	Peak
17360.000	13.09	46.19	18.98	36.26	42.00	54.00	-12.00	Average
17360.000	27.34	46.19	18.98	36.26	56.25	74.00	-17.75	Peak

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. “*”, means this data is the too weak instrument of signal is unable to test.

8 Test Setup Photo

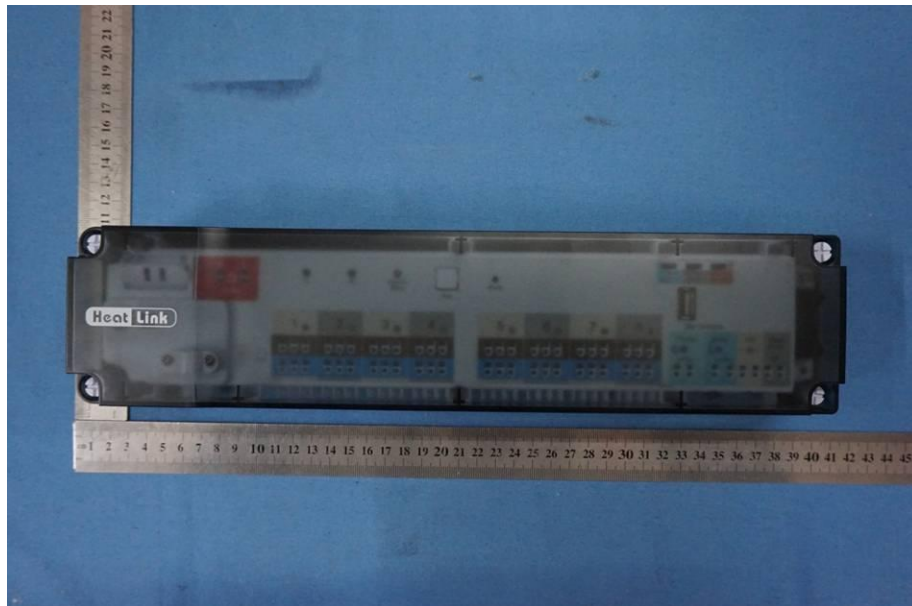
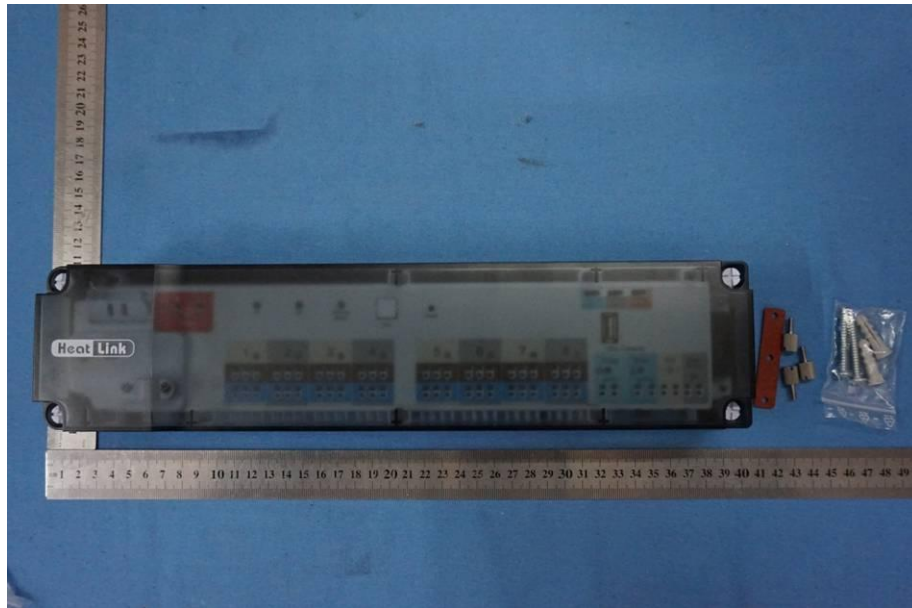
Radiated Emission

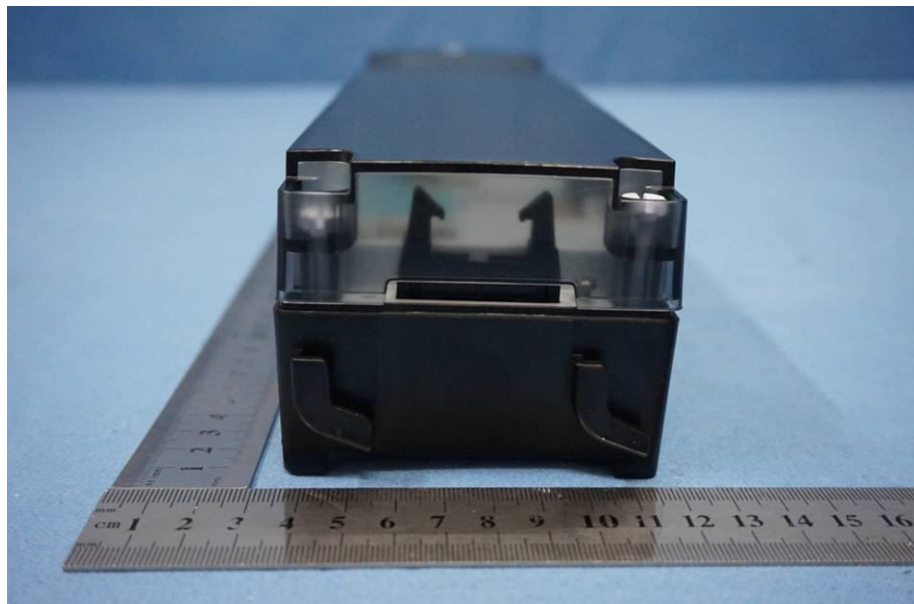


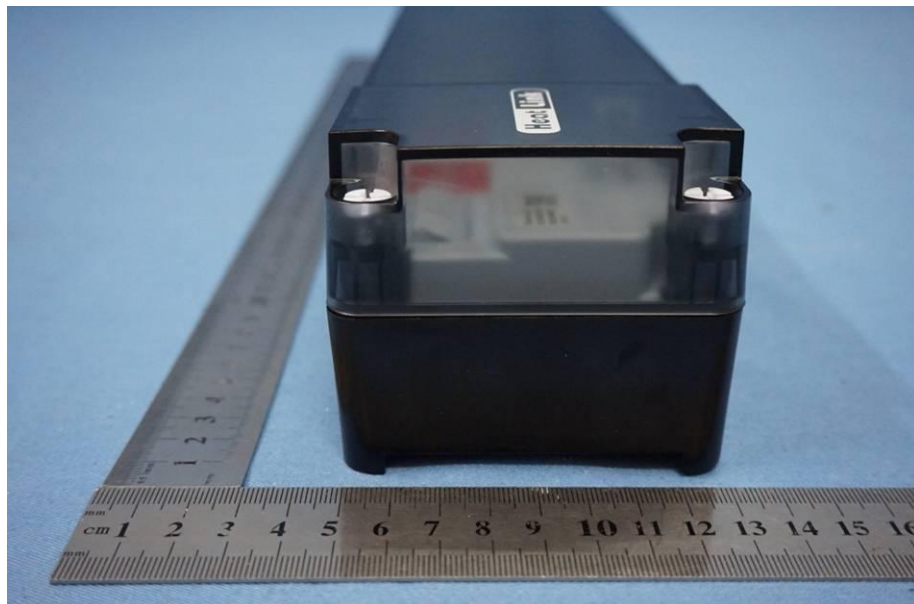
Conducted Emission

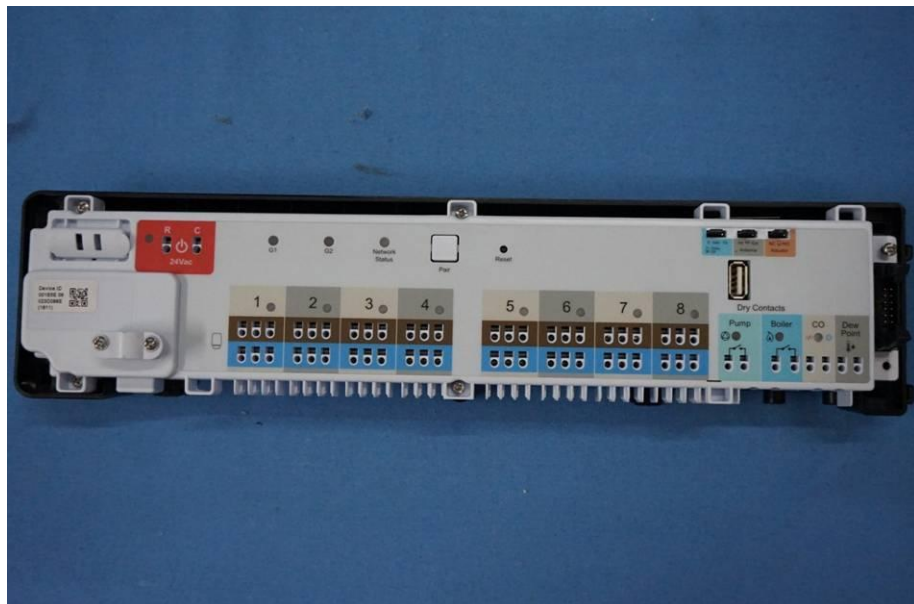


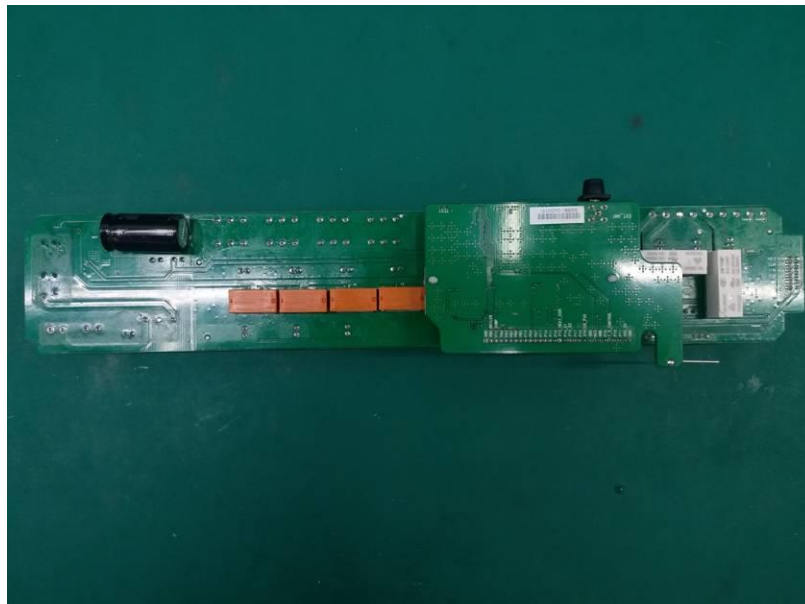
9 EUT Constructional Details

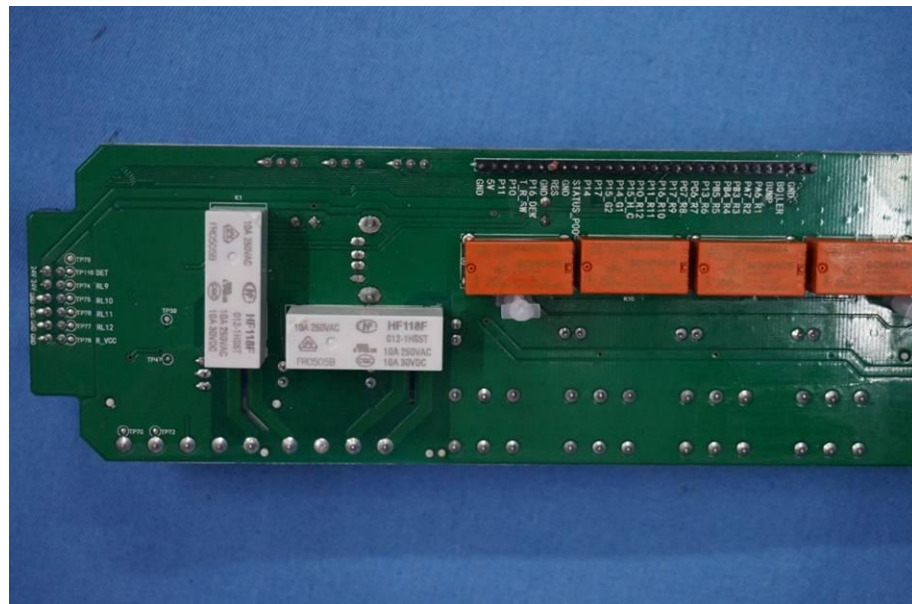
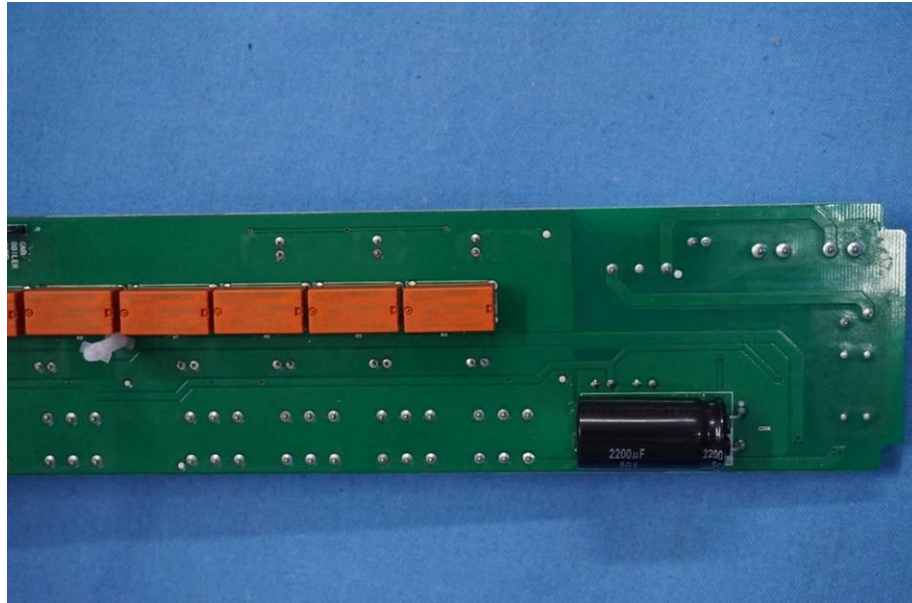


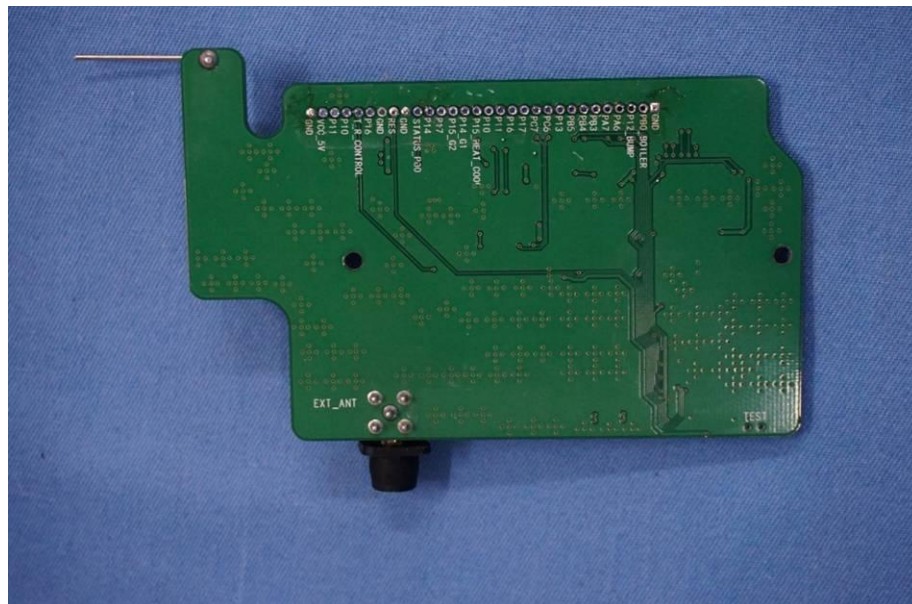
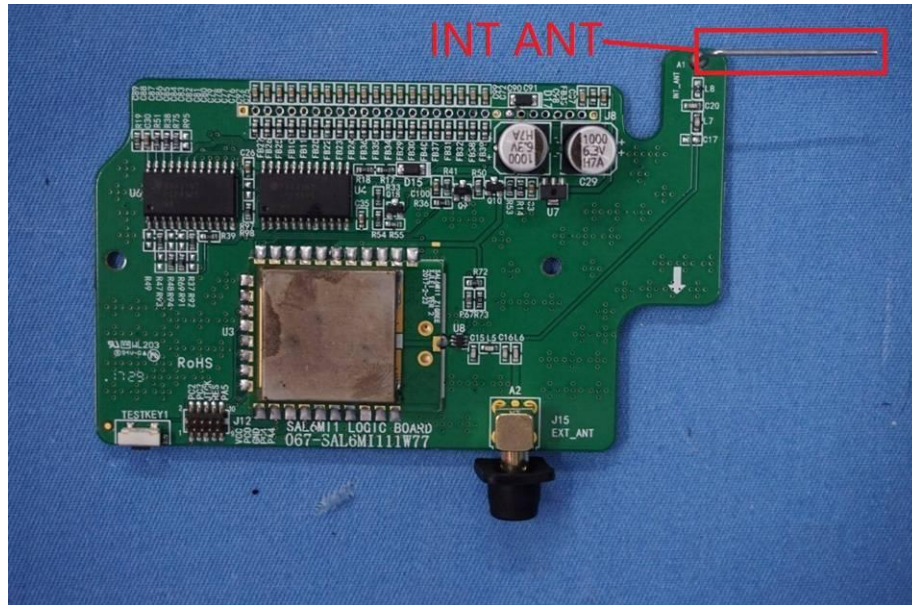


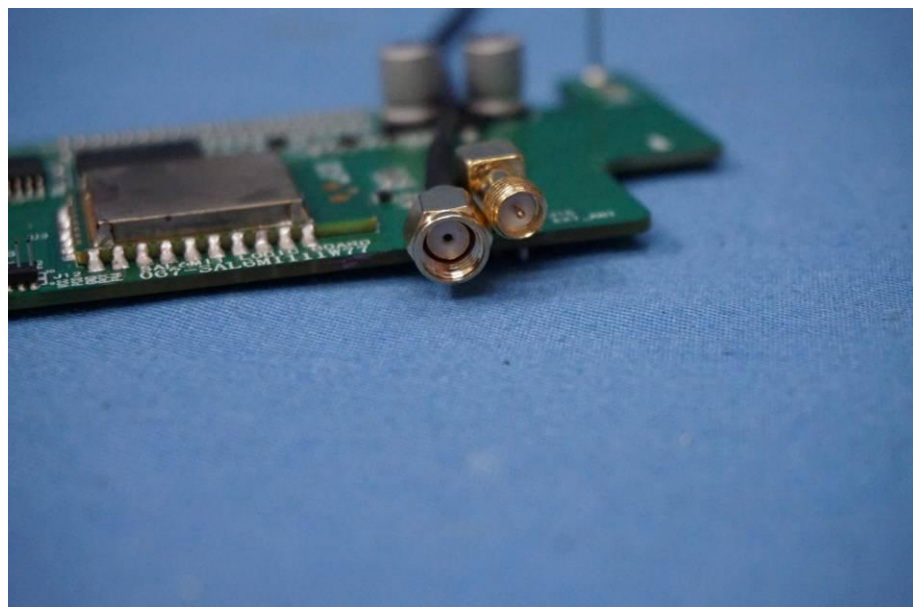
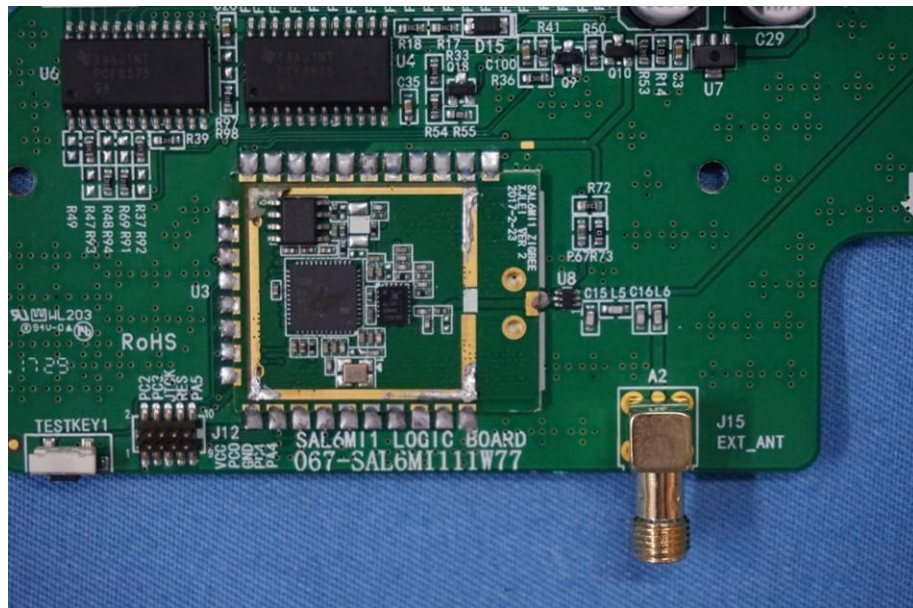












-----End-----