

FCC REPORT

Applicant: Computime Ltd.

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Manufacturer/Factory: Computime Electronics (Shenzhen) Company Limited

Address of Manufacturer/Factory: Yuekenguangyu Industrial Park, Kangqiao Road 88#, Danzhotou Community, Nanwan Street office, Longgang District, Shenzhen, China.

Equipment Under Test (EUT)

Product Info: ZigBee-Ready RF Transceiver

Model No.: CTL2607

FCC ID: 2AAUQ-CTL2607

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: March 05, 2019

Date of Test: March 06- March 14, 2019

Date of report issued: March 15, 2019

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

Report No.	Version No.	Date	Description
GTSE15070148201	00	September 11, 2015	Original
GTS201903000162F01	01	March 15, 2019	Decrease output power

Prepared By:



Date:

March 15, 2019

Project Engineer

Check By:



Date:

March 15, 2019

Reviewer

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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	N/A
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	± 4.34dB	(1)
Radiated Emission	30MHz ~ 1000MHz	± 4.24dB	(1)
Radiated Emission	1GHz ~ 26.5GHz	± 4.68dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	± 3.45dB	(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:	ZigBee-Ready RF Transceiver
Model No.:	CTL2607
Serial No.:	DNT2183-1917-00001
Test sample(s) ID:	GTS201903000162-1
Sample(s) Status	Engineer sample
Hardware version:	CTL2607 REV1.0
Software version:	MCU:WTS10U190411, zigbee: em260-spi-ecc-with-standalone-bootloader_4.3.hex
Operation Frequency:	2405MHz~2480MHz
Channel numbers:	16
Channel separation:	5MHz
Modulation type:	O-QPSK
Antenna Type:	PCB Antenna
Antenna gain:	-0.32dBi (Declared by manufacturer)
Power supply:	DC 3.0V

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
MEILI	DC POWER SUPPLY	MCH-305A	011121168

5.4 Test Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> ● 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. ● 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. ● NVLAP (LAB CODE:600179-0) Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0
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5.5 Test Location

All tests were performed at:
<p>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</p>

5.6 Additional instructions

Software (Used for test) from client

Test software Built-in by manufacturer, power set 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	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 27 2018	June. 26 2019
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 27 2018	June. 26 2019
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 27 2018	June. 26 2019
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 27 2018	June. 26 2019
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 27 2018	June. 26 2019
9	Coaxial Cable	GTS	N/A	GTS211	June. 27 2018	June. 26 2019
10	Coaxial cable	GTS	N/A	GTS210	June. 27 2018	June. 26 2019
11	Coaxial Cable	GTS	N/A	GTS212	June. 27 2018	June. 26 2019
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 27 2018	June. 26 2019
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 27 2018	June. 26 2019
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 27 2018	June. 26 2019
15	Band filter	Amindeon	82346	GTS219	June. 27 2018	June. 26 2019
16	Power Meter	Anritsu	ML2495A	GTS540	June. 27 2018	June. 26 2019
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 27 2018	June. 26 2019
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 27 2018	June. 26 2019
19	Splitter	Agilent	11636B	GTS237	June. 27 2018	June. 26 2019
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 27 2018	June. 26 2019
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 20 2018	Oct. 19 2019
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 20 2018	Oct. 19 2019
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 20 2018	Oct. 19 2019
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 27 2018	June. 26 2019

RF Conducted Test:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	June. 27 2018	June. 26 2019
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 27 2018	June. 26 2019
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 27 2018	June. 26 2019
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 27 2018	June. 26 2019
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 27 2018	June. 26 2019
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 27 2018	June. 26 2019
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 27 2018	June. 26 2019
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 27 2018	June. 26 2019

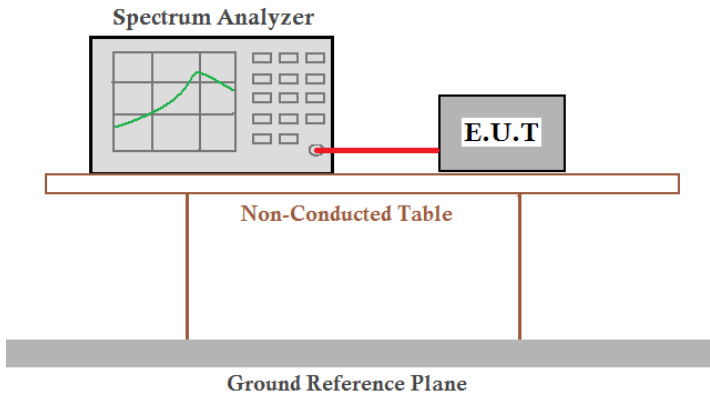
General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 27 2018	June. 26 2019
2	Barometer	ChangChun	DYM3	GTS255	June. 27 2018	June. 26 2019

7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)
<p>15.203 requirement:</p> <p>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.</p>	
<p>15.247(c) (1)(i) requirement:</p> <p>(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.</p>	
<p>EUT Antenna:</p> <p><i>The antenna is PCB antenna, the best case gain of the antenna is -0.32dBi, Reference to the appendix II for details.</i></p>	

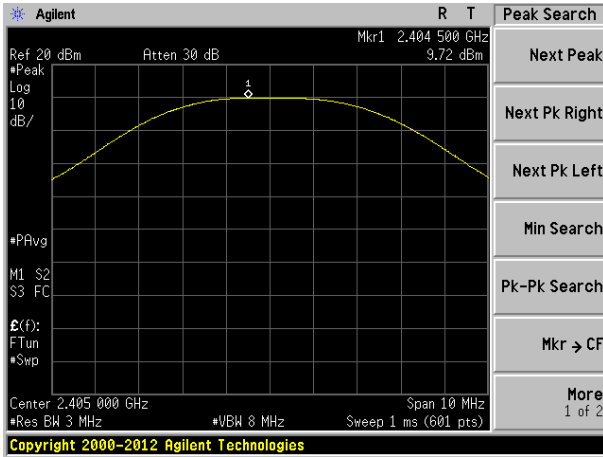
7.2 Conducted Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V05
Limit:	30dBm
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer and an E.U.T. (Equipment Under Test) are connected by a red cable. Both are placed on a Non-Conducted Table, which is supported by two vertical legs. Below the table is a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

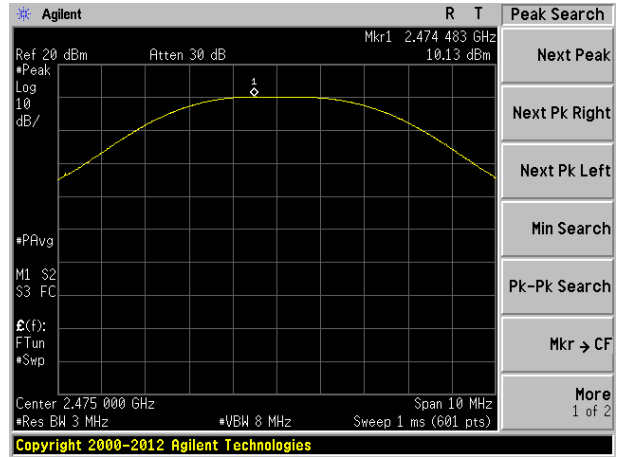
Measurement Data

Frequency (MHz)	Peak Output Power (dBm)	Limit(dBm)	Result
2405	9.72	30	PASS
2440	10.13		
2475	10.13		
2480	0.87		

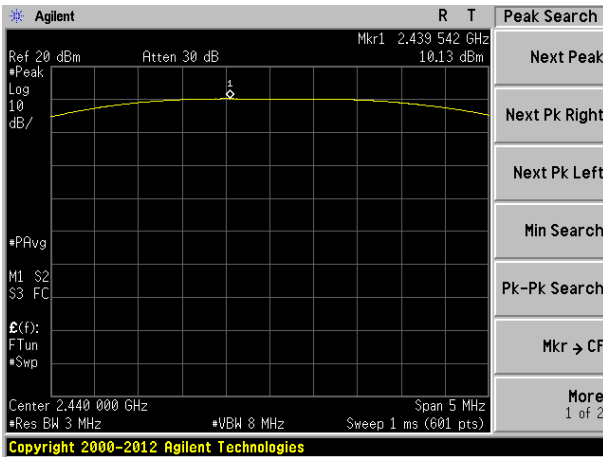
Test plot as follows:



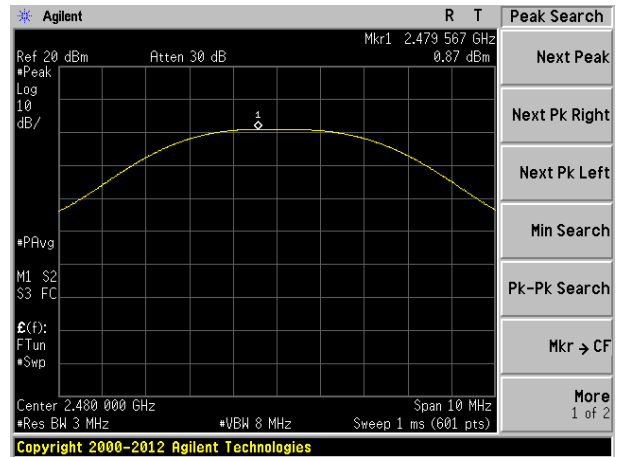
2405MHz



2475

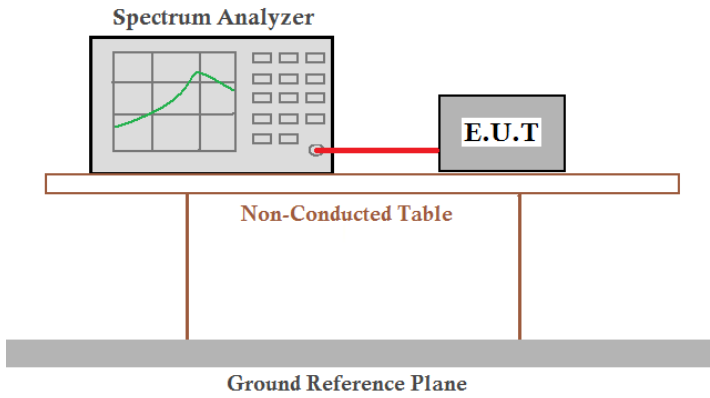


2440MHz



2480

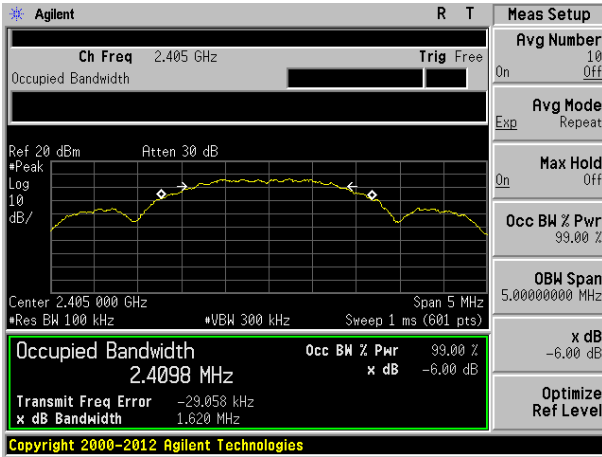
7.3 Channel Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V05
Limit:	>500KHz
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

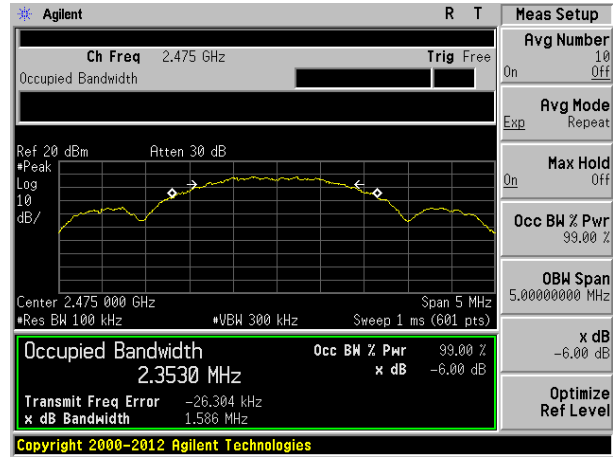
Measurement Data

Frequency (MHz)	Channel Bandwidth (MHz)	Limit(KHz)	Result
2405	1.620	>500	Pass
2440	1.608		
2475	1.586		
2480	1.566		

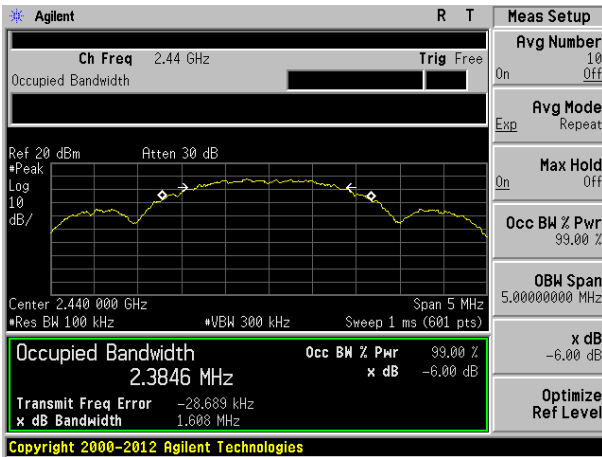
Test plot as follows:



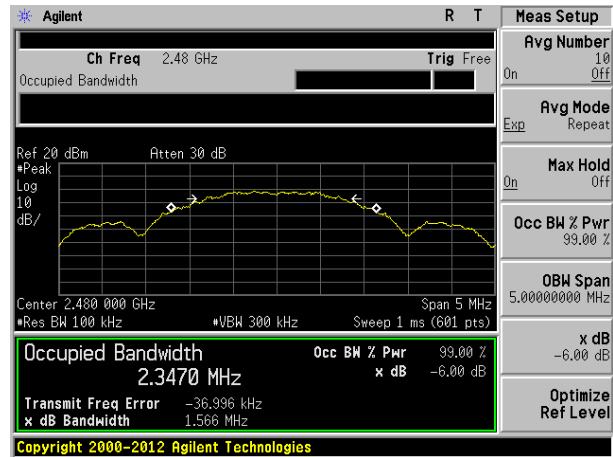
2405MHz



2475MHz

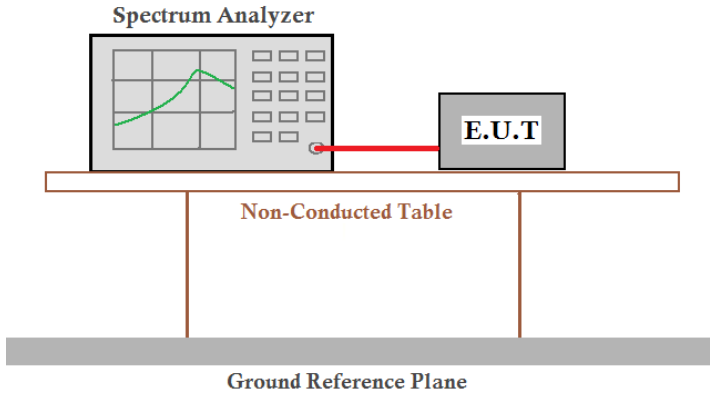


2440MHz



2480MHz

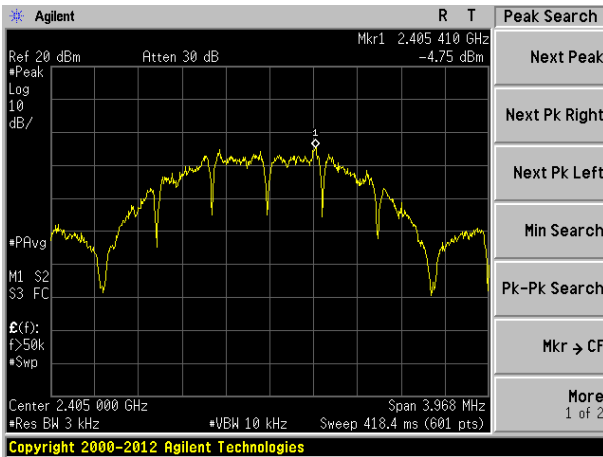
7.4 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V05
Limit:	8dBm/3kHz
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

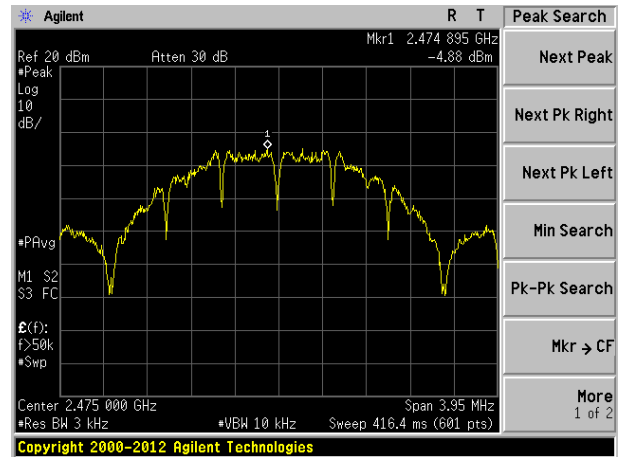
Measurement Data

Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm/3kHz)	Result
2405	-4.75	8.00	Pass
2440	-4.30		
2475	-4.88		
2480	-15.03		

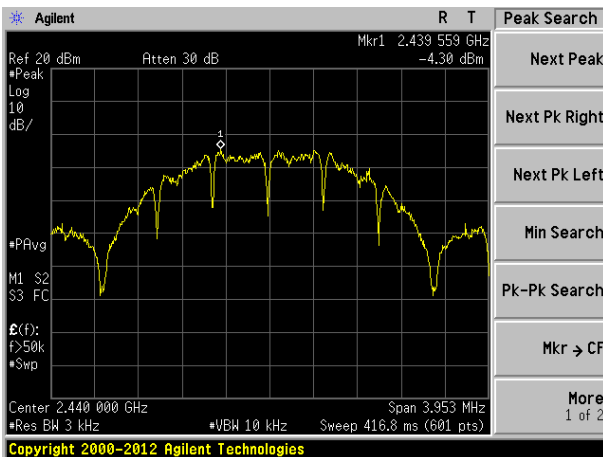
Test plot as follows:



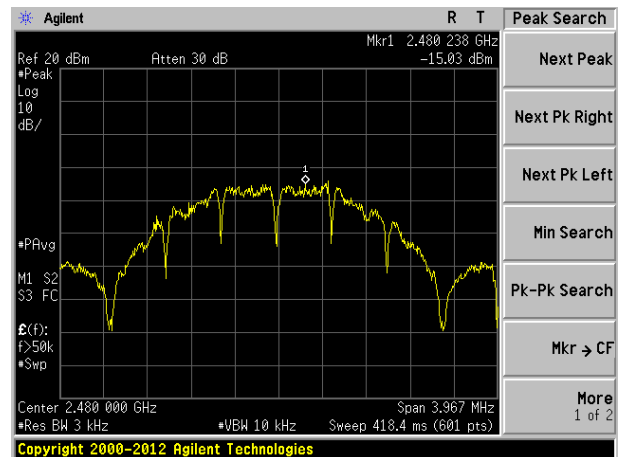
2405MHz



2475MHz



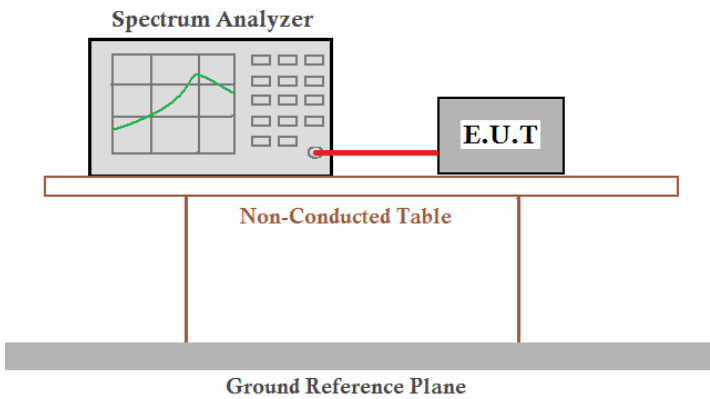
2440MHz



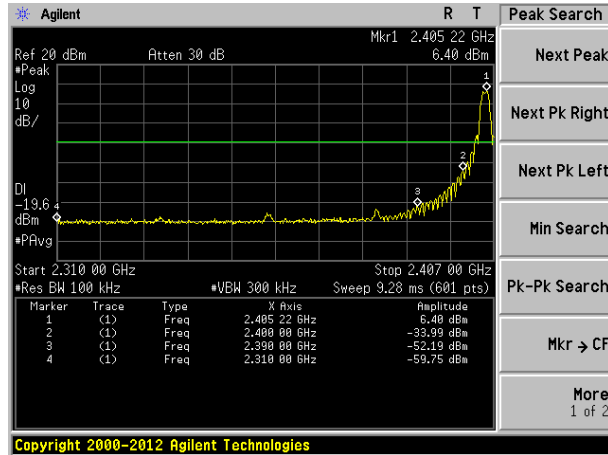
2480MHz

7.5 Band edges

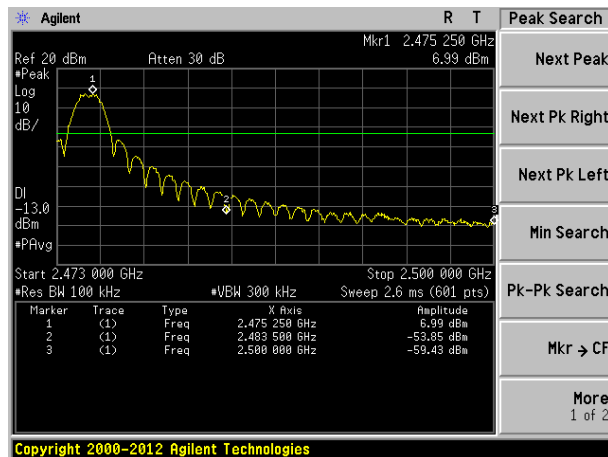
7.5.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 and KDB558074 D01 DTS Meas Guidance V05
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:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by two vertical legs. Below the table is a Ground Reference Plane, represented by a thick grey bar.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

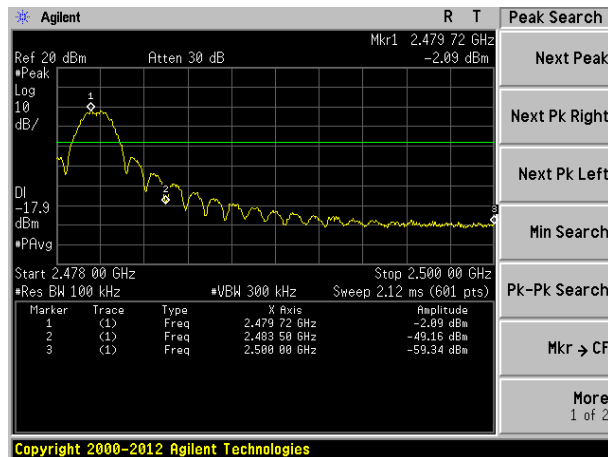
Test plot as follows:



Lowest channel



Highest channel(2475MHz)



Highest channel(2480MHz)

7.5.2 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:	<ol style="list-style-type: none"> 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. 				

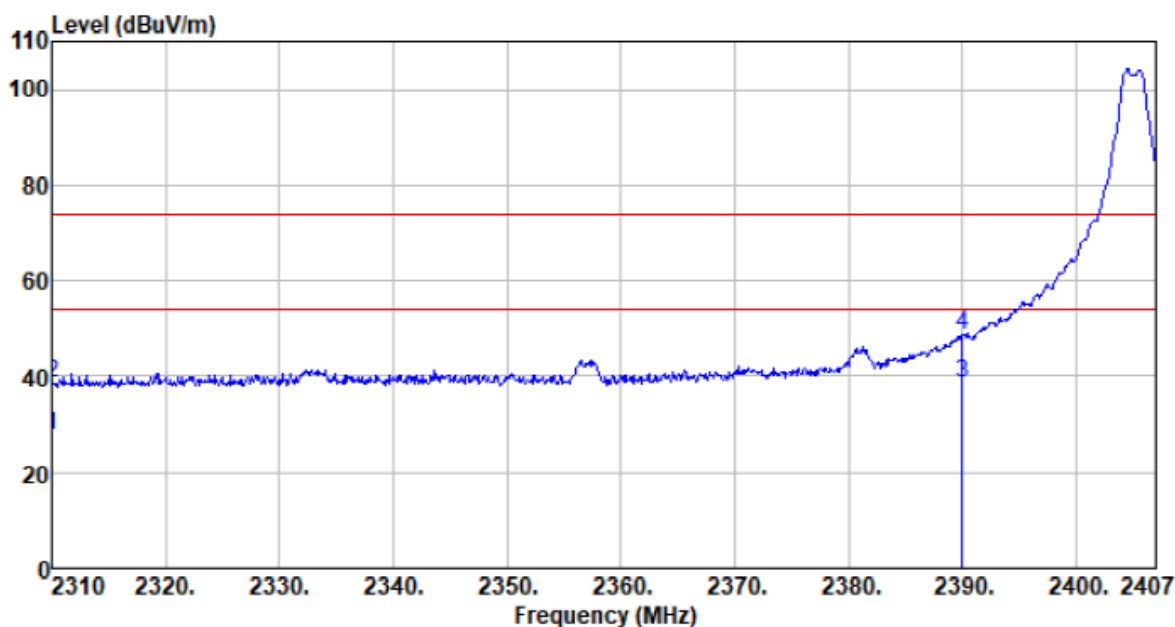
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

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.

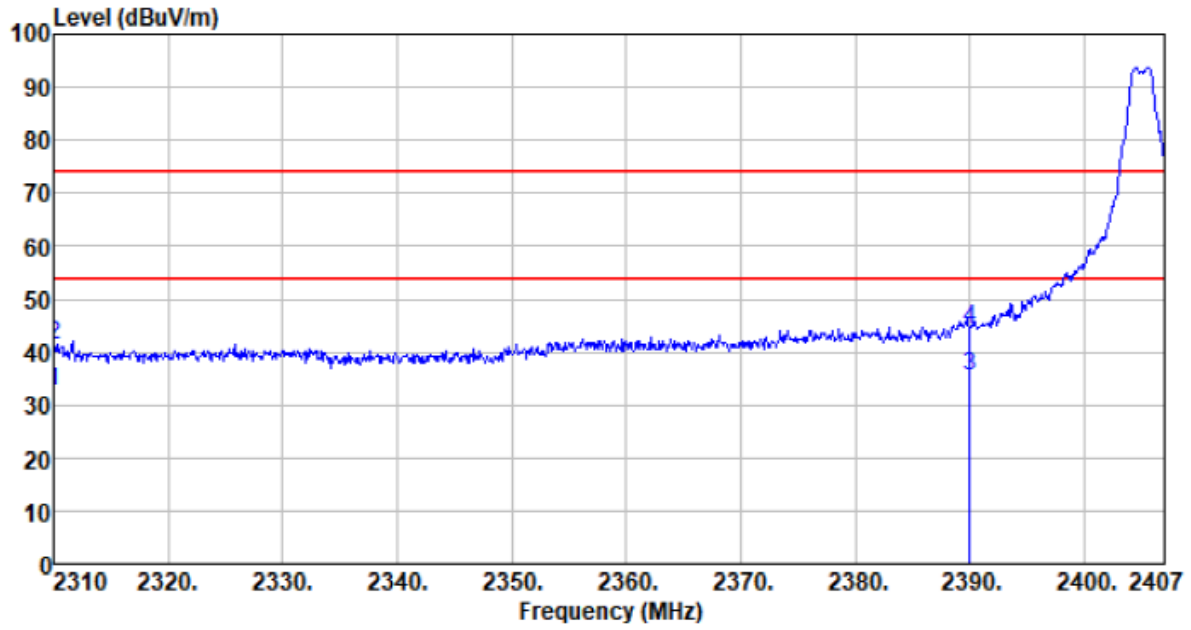
Test channel:	2405MHz
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Horizontal:



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	37.22	27.21	5.30	42.04	27.69	54.00	-26.31	Average
2310.000	47.90	27.21	5.30	42.04	38.37	74.00	-35.63	Peak
2390.025	47.83	27.41	5.38	42.11	38.51	54.00	-15.49	Average
2390.025	58.19	27.41	5.38	42.11	48.87	74.00	-25.13	Peak

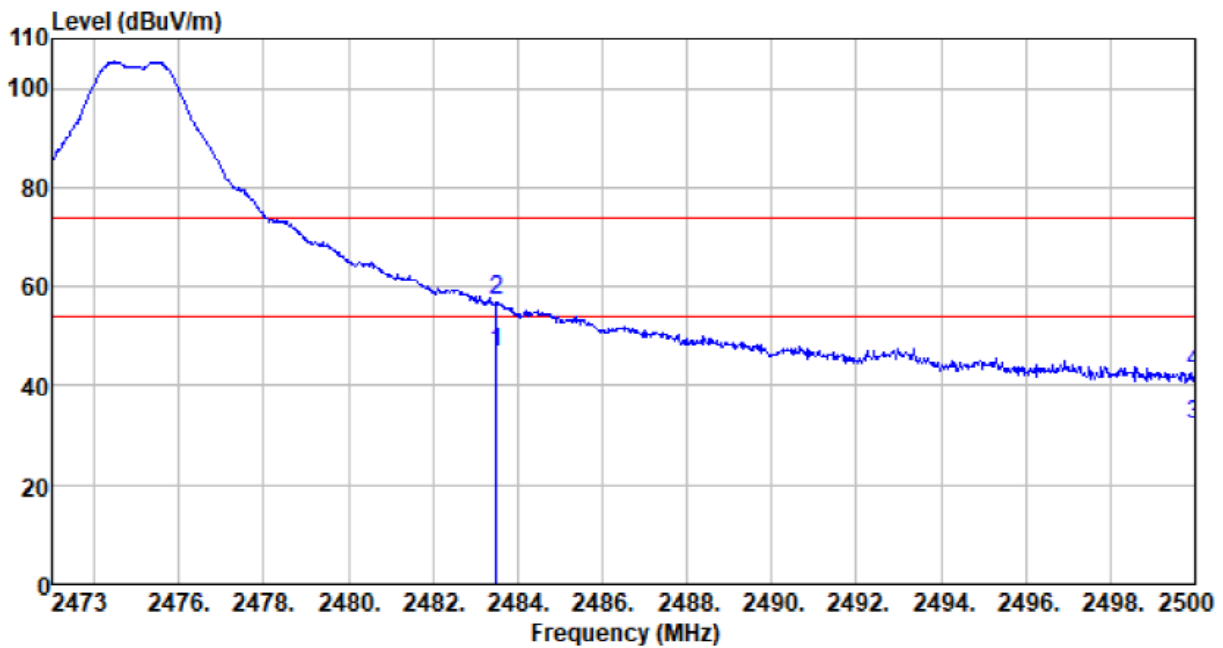
Vertical:



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	42.03	27.21	5.30	42.04	32.50	54.00	-21.50	Average
2310.000	50.71	27.21	5.30	42.04	41.18	74.00	-32.82	Peak
2390.025	44.77	27.41	5.38	42.11	35.45	54.00	-18.55	Average
2390.025	53.47	27.41	5.38	42.11	44.15	74.00	-29.85	Peak

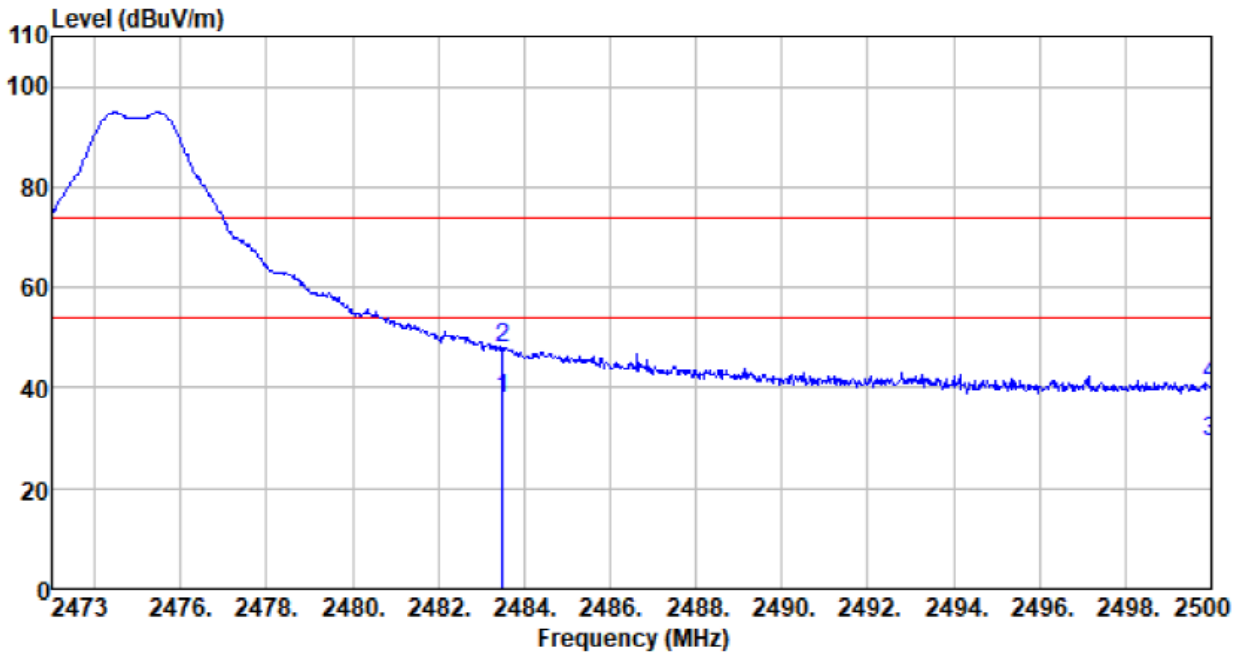
Test channel:	2475MHz
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Horizontal:



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	38.49	27.66	5.47	24.80	46.82	54.00	-7.18	Average
2483.500	49.02	27.66	5.47	24.80	57.35	74.00	-16.65	Peak
2500.000	23.87	27.70	5.49	24.86	32.20	54.00	-21.80	Average
2500.000	34.09	27.70	5.49	24.86	42.42	74.00	-31.58	Peak

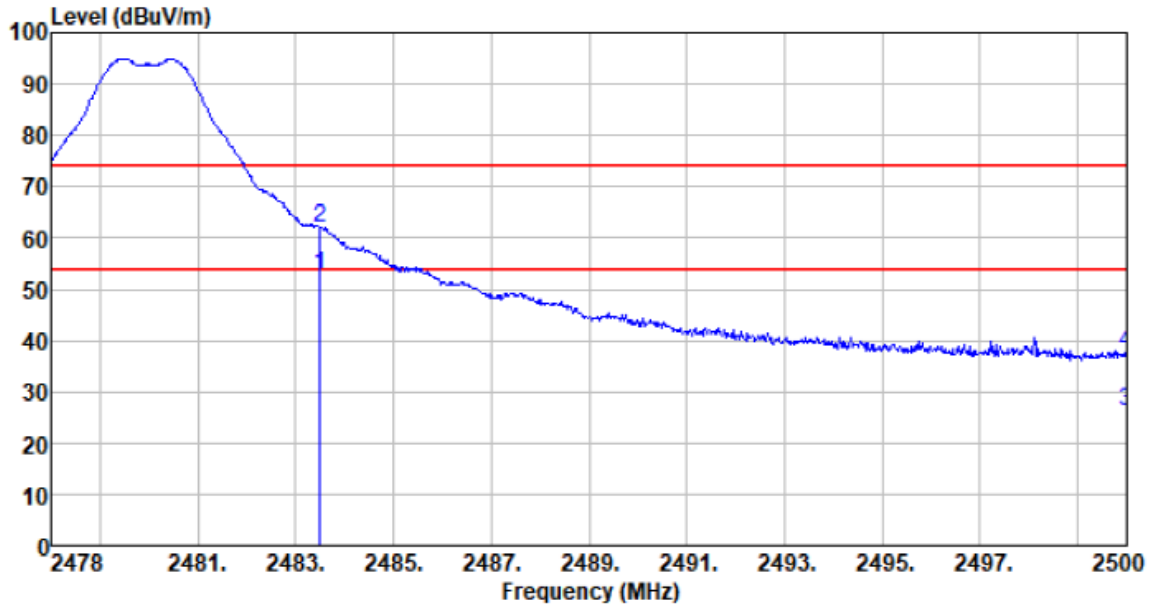
Vertical:



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	29.32	27.66	5.47	24.80	37.65	54.00	-16.35	Average
2483.500	39.41	27.66	5.47	24.80	47.74	74.00	-26.26	Peak
2500.000	20.91	27.70	5.49	24.86	29.24	54.00	-24.76	Average
2500.000	32.43	27.70	5.49	24.86	40.76	74.00	-33.24	Peak

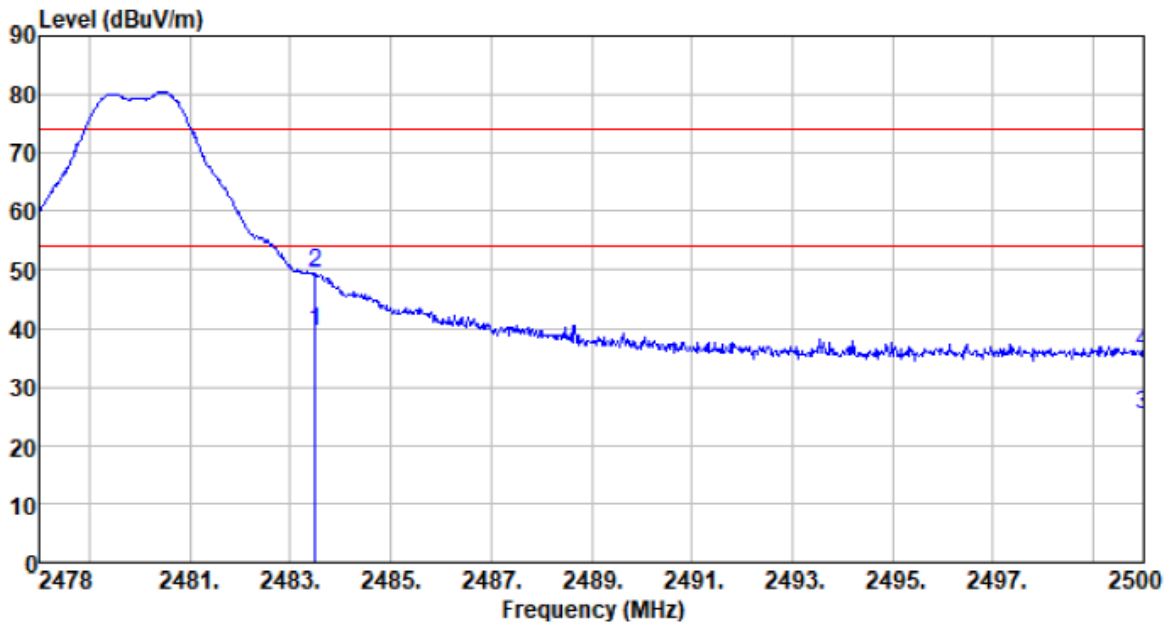
Test channel:	2480MHz
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Horizontal:



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	61.56	27.66	5.47	42.01	52.68	54.00	-1.32	Average
2483.500	70.87	27.66	5.47	42.01	61.99	74.00	-12.01	Peak
2500.000	35.10	27.70	5.49	42.00	26.29	54.00	-27.71	Average
2500.000	46.61	27.70	5.49	42.00	37.80	74.00	-36.20	Peak

Vertical:



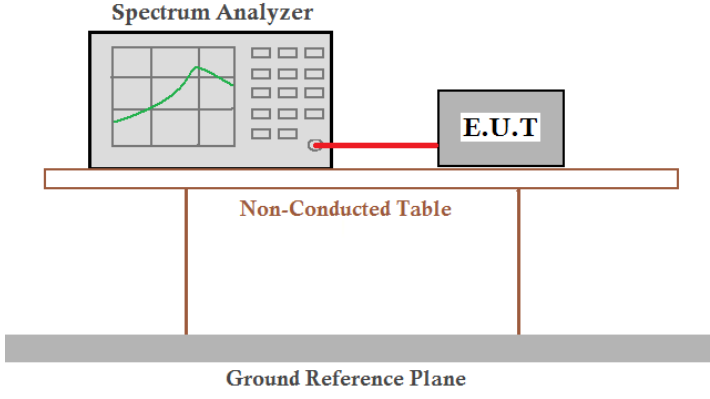
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
2483.500	48.40	27.66	5.47	42.01	39.52	54.00	-14.48	Average
2483.500	58.28	27.66	5.47	42.01	49.40	74.00	-24.60	Peak
2500.000	33.99	27.70	5.49	42.00	25.18	54.00	-28.82	Average
2500.000	44.74	27.70	5.49	42.00	35.93	74.00	-38.07	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.

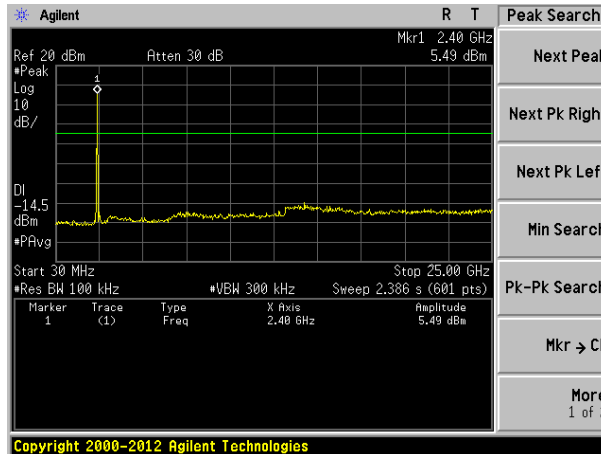
7.6 Spurious Emission

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 V05
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:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

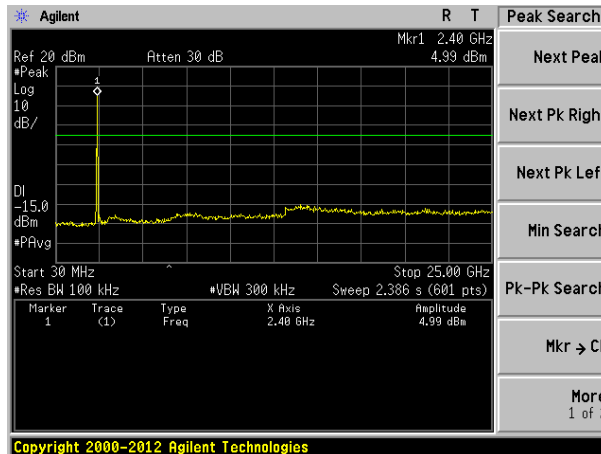
Test plot as follows:

Lowest channel



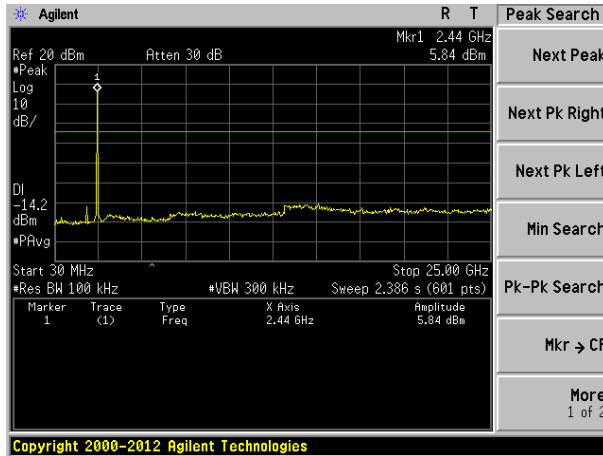
30MHz~25GHz

Middle channel



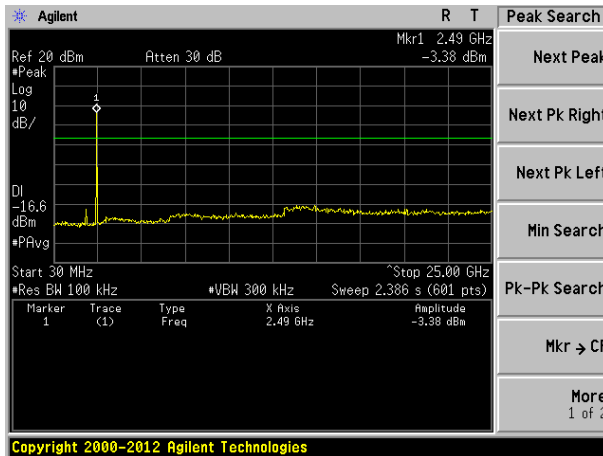
30MHz~25GHz

Highest channel (2475MHz)



30MHz~25GHz

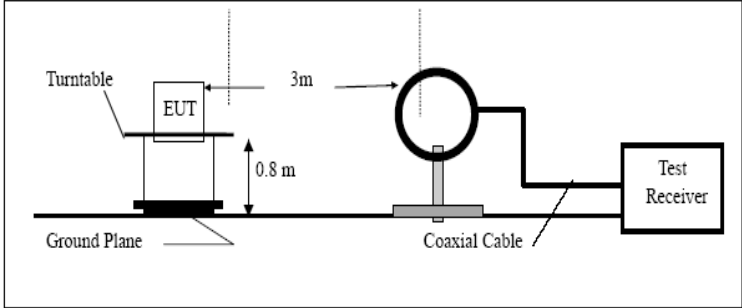
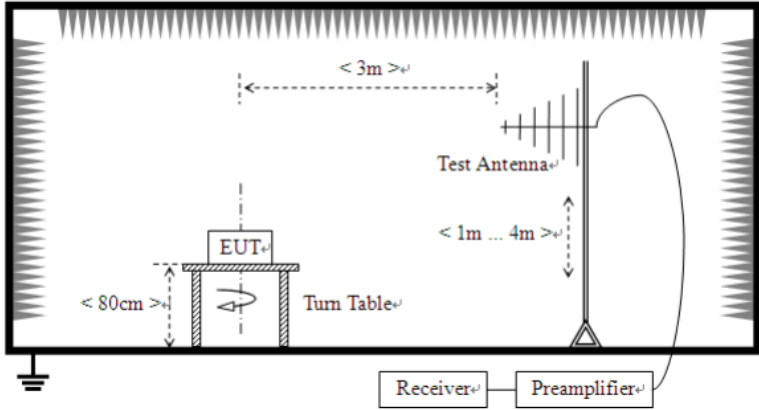
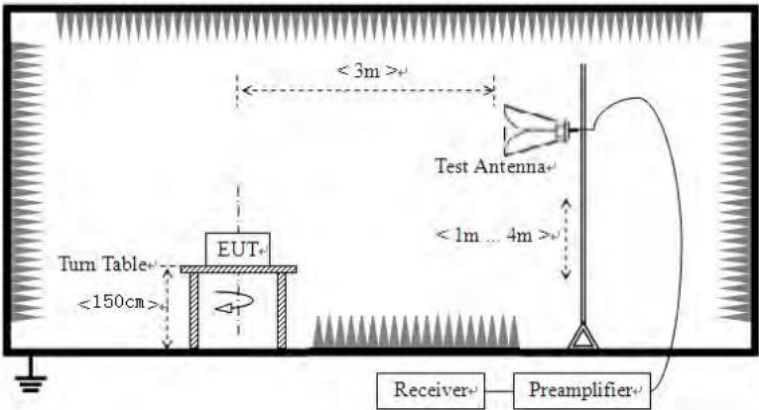
Highest channel (2480MHz)



30MHz~25GHz

7.6.2 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: (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.				

<p>Test setup:</p>	<p>Below 30MHz</p>  <p>Below 1GHz</p>  <p>Above 1GHz</p> 
<p>Test Procedure:</p>	<ol style="list-style-type: none"> 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

	<p>antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>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.</p> <p>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.</p> <p>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>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.</p>					
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test voltage:	AC 120V, 60Hz					
Test results:	Pass					

Measurement data:

■ Below 30MHz

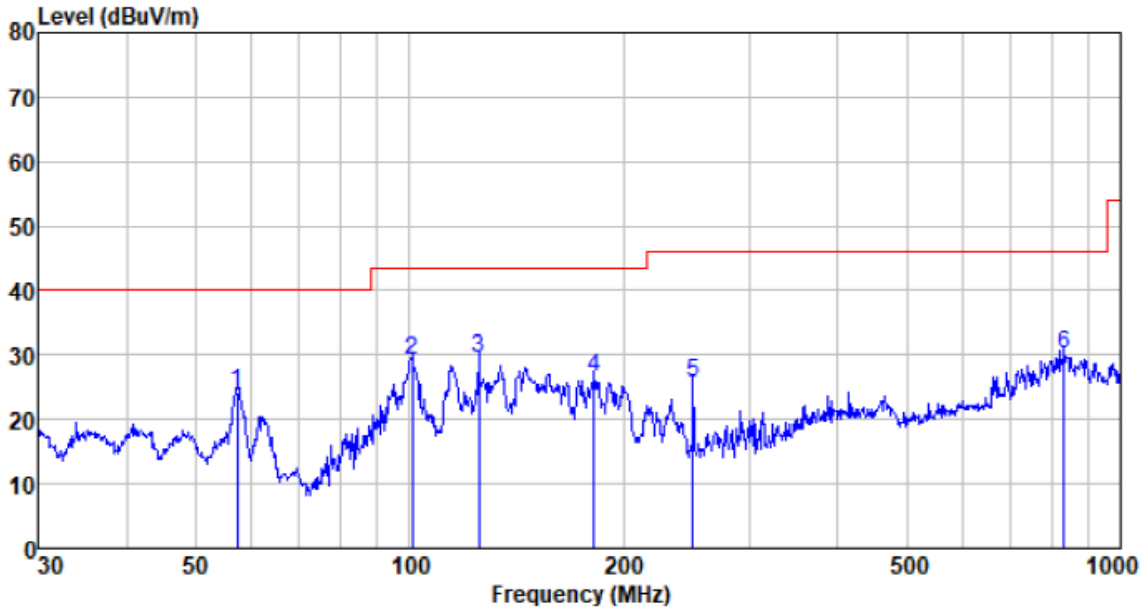
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o), the test result no need to reported.

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.

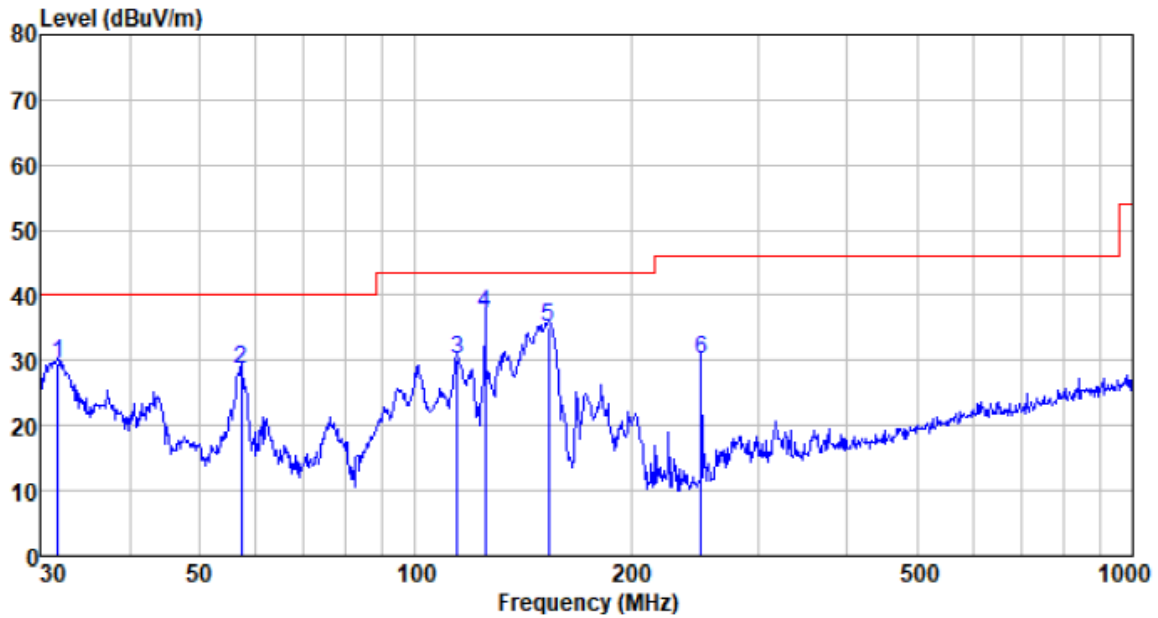
■ Below 1GHz

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
57.191	47.96	11.57	0.84	36.28	24.09	40.00	-15.91	QP
100.934	52.66	12.10	1.20	36.73	29.23	43.50	-14.27	QP
125.007	56.37	8.81	1.40	36.92	29.66	43.50	-13.84	QP
181.920	52.87	9.07	1.75	37.25	26.44	43.50	-17.06	QP
250.301	48.82	12.18	2.12	37.38	25.74	46.00	-20.26	QP
833.317	41.43	21.71	4.58	37.61	30.11	46.00	-15.89	QP

Vertical:

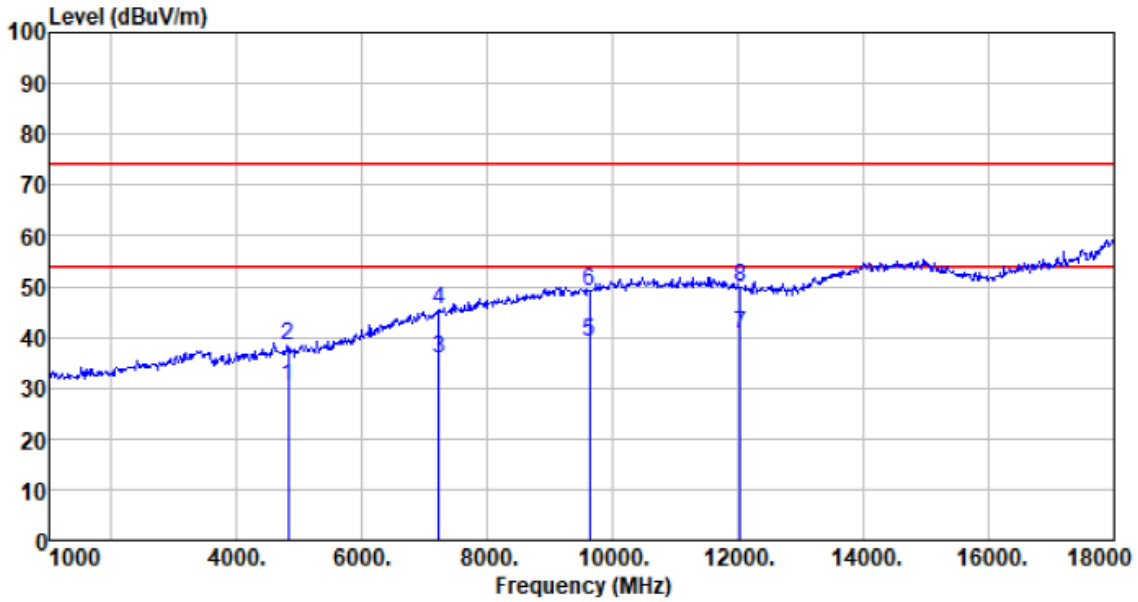


Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
31.731	52.87	11.24	0.57	35.13	29.55	40.00	-10.45	QP
57.191	52.46	11.57	0.84	36.28	28.59	40.00	-11.41	QP
114.515	55.23	10.34	1.31	36.84	30.04	43.50	-13.46	QP
125.007	63.79	8.81	1.40	36.92	37.08	43.50	-6.42	QP
153.200	62.86	7.85	1.59	37.10	35.20	43.50	-8.30	QP
250.301	53.32	12.18	2.12	37.38	30.24	46.00	-15.76	QP

■ Above 1GHz

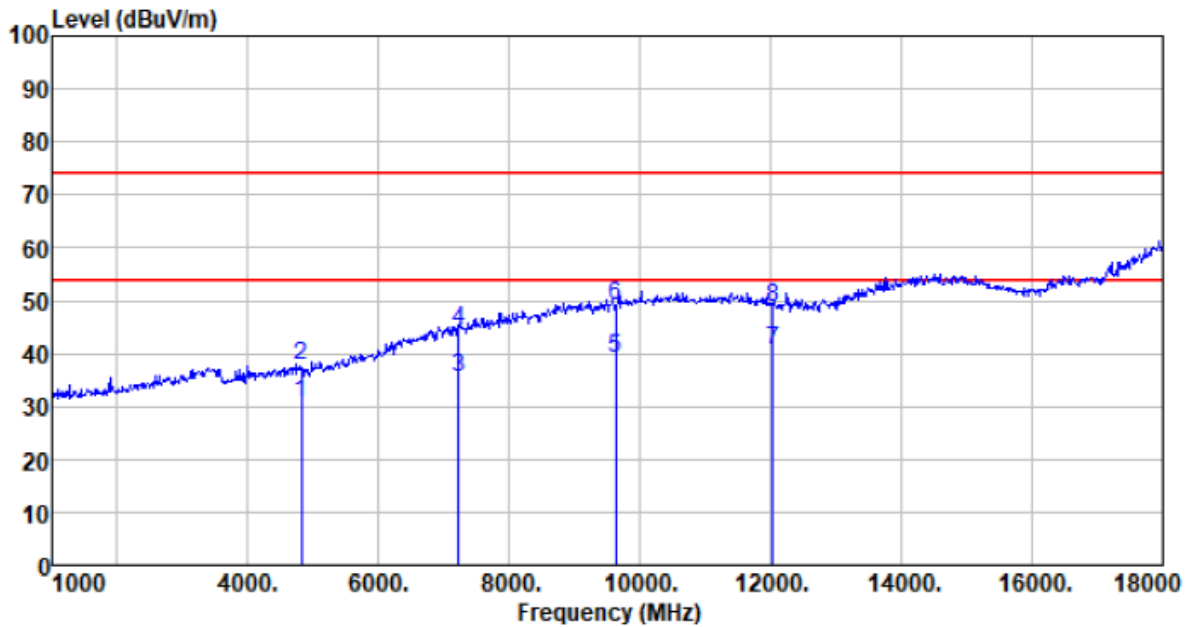
Test channel:	Lowest
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Horizontal:



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	27.94	31.36	8.60	37.73	30.17	54.00	-23.83	Average
4810.000	36.28	31.36	8.60	37.73	38.51	74.00	-35.49	Peak
7215.000	23.95	35.92	11.66	35.63	35.90	54.00	-18.10	Average
7215.000	33.30	35.92	11.66	35.63	45.25	74.00	-28.75	Peak
9620.000	22.25	37.76	14.14	34.94	39.21	54.00	-14.79	Average
9620.000	32.11	37.76	14.14	34.94	49.07	74.00	-24.93	Peak
12025.000	23.24	38.69	15.03	36.20	40.76	54.00	-13.24	Average
12025.000	32.35	38.69	15.03	36.20	49.87	74.00	-24.13	Peak

Vertical:



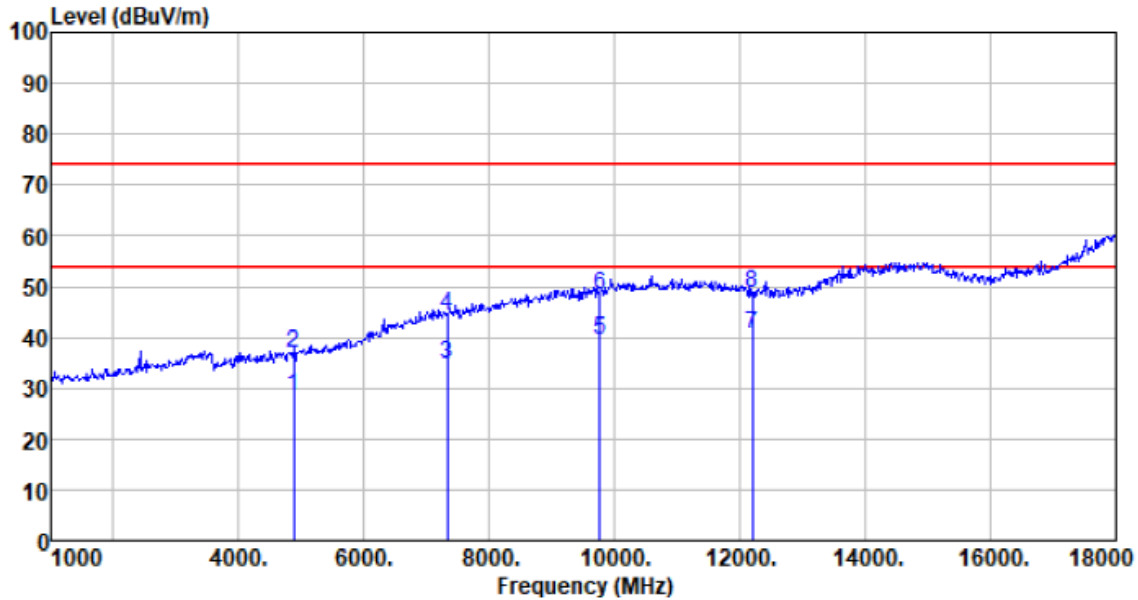
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4810.000	28.22	31.36	8.60	37.73	30.45	54.00	-23.55	Average
4810.000	35.40	31.36	8.60	37.73	37.63	74.00	-36.37	Peak
7215.000	23.44	35.92	11.66	35.63	35.39	54.00	-18.61	Average
7215.000	32.28	35.92	11.66	35.63	44.23	74.00	-29.77	Peak
9620.000	21.99	37.76	14.14	34.94	38.95	54.00	-15.05	Average
9620.000	32.19	37.76	14.14	34.94	49.15	74.00	-24.85	Peak
12025.000	22.97	38.69	15.03	36.20	40.49	54.00	-13.51	Average
12025.000	31.27	38.69	15.03	36.20	48.79	74.00	-25.21	Peak

Remark:

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

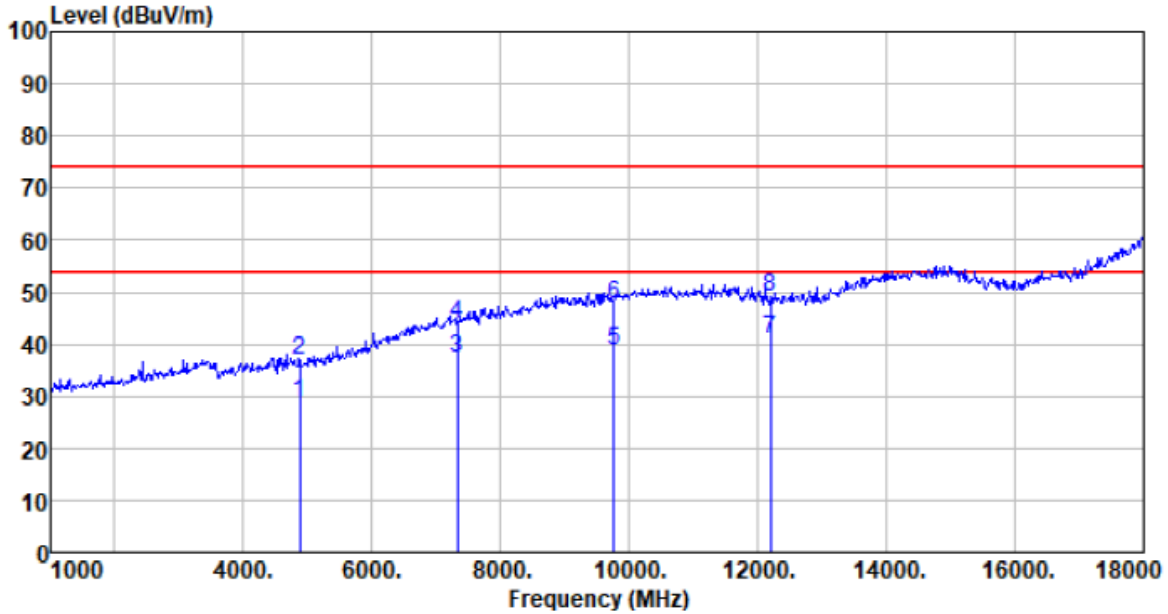
Test channel:	Middle
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Horizontal:



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	26.02	31.48	8.66	37.75	28.41	54.00	-25.59	Average
4880.000	34.44	31.48	8.66	37.75	36.83	74.00	-37.17	Peak
7320.000	22.27	36.17	11.72	35.60	34.56	54.00	-19.44	Average
7320.000	31.94	36.17	11.72	35.60	44.23	74.00	-29.77	Peak
9760.000	22.29	38.07	14.25	35.03	39.58	54.00	-14.42	Average
9760.000	30.91	38.07	14.25	35.03	48.20	74.00	-25.80	Peak
12200.000	23.16	38.62	15.14	36.31	40.61	54.00	-13.39	Average
12200.000	31.26	38.62	15.14	36.31	48.71	74.00	-25.29	Peak

Vertical:



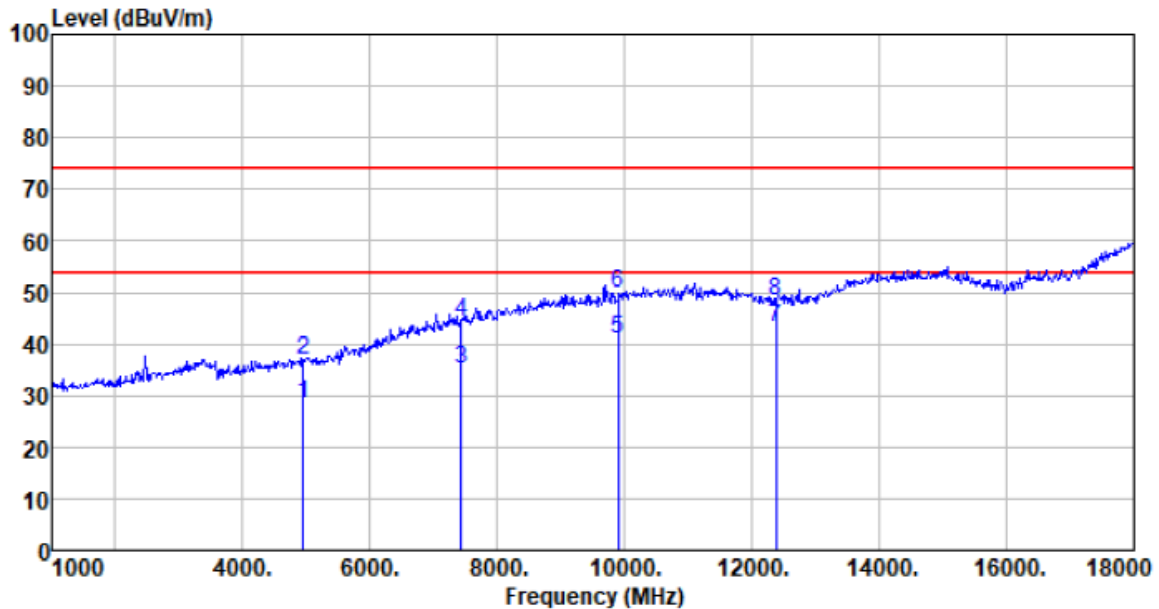
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4880.000	26.54	31.48	8.66	37.75	28.93	54.00	-25.07	Average
4880.000	34.34	31.48	8.66	37.75	36.73	74.00	-37.27	Peak
7320.000	24.90	36.17	11.72	35.60	37.19	54.00	-16.81	Average
7320.000	31.75	36.17	11.72	35.60	44.04	74.00	-29.96	Peak
9760.000	21.31	38.07	14.25	35.03	38.60	54.00	-15.40	Average
9760.000	30.33	38.07	14.25	35.03	47.62	74.00	-26.38	Peak
12200.000	23.34	38.62	15.14	36.31	40.79	54.00	-13.21	Average
12200.000	31.71	38.62	15.14	36.31	49.16	74.00	-24.84	Peak

Remark:

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

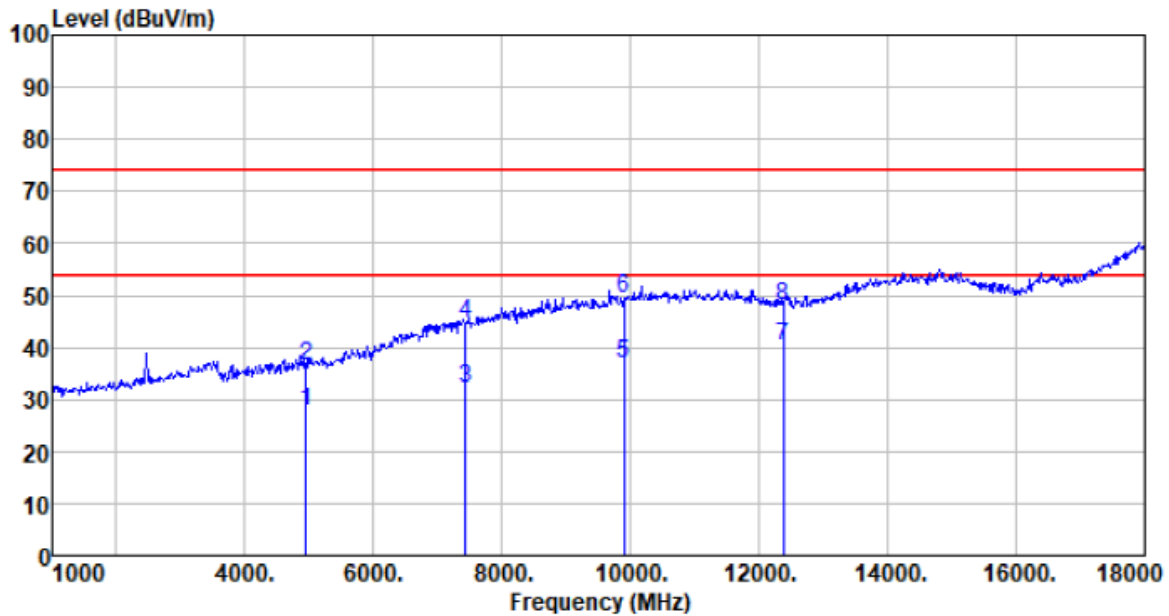
Test channel:	Highest(2475MHz)
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Horizontal:



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	25.85	31.61	8.71	37.78	28.39	54.00	-25.61	Average
4950.000	34.48	31.61	8.71	37.78	37.02	74.00	-36.98	Peak
7425.000	22.30	36.42	11.79	35.56	34.95	54.00	-19.05	Average
7425.000	31.80	36.42	11.79	35.56	44.45	74.00	-29.55	Peak
9900.000	23.40	38.38	14.35	35.12	41.01	54.00	-12.99	Average
9900.000	32.04	38.38	14.35	35.12	49.65	74.00	-24.35	Peak
12375.000	25.93	38.55	15.25	36.42	43.31	54.00	-10.69	Average
12375.000	31.10	38.55	15.25	36.42	48.48	74.00	-25.52	Peak

Vertical:



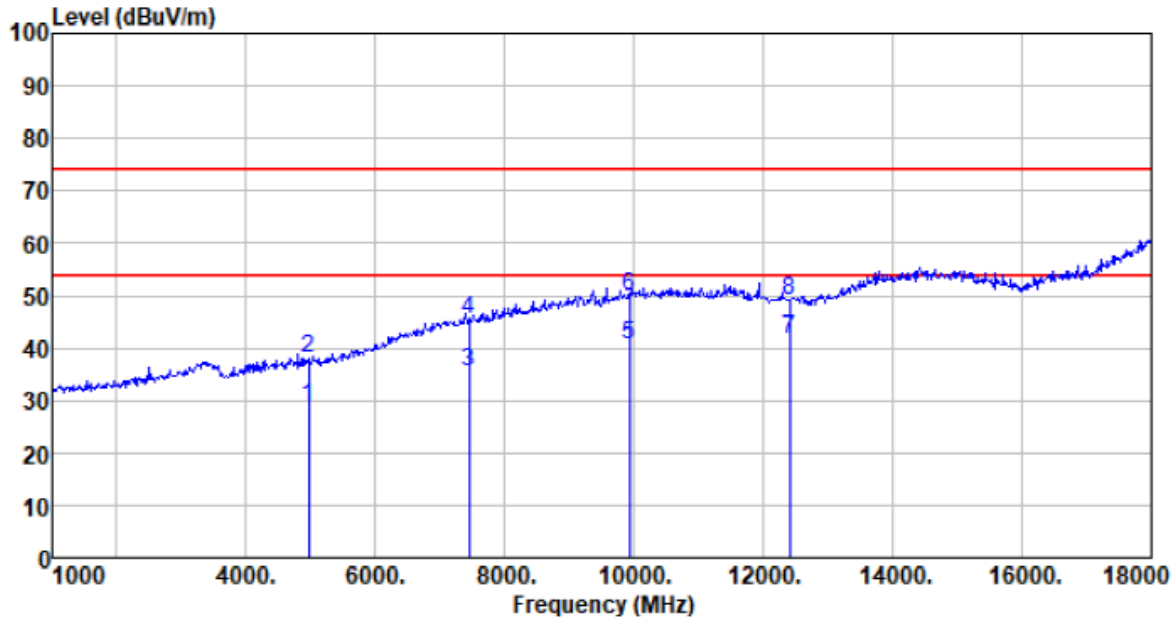
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV	Limit level dBuV/m	Over limit dB	Remark
4950.000	24.96	31.61	8.71	37.78	27.50	54.00	-26.50	Average
4950.000	34.00	31.61	8.71	37.78	36.54	74.00	-37.46	Peak
7425.000	19.32	36.42	11.79	35.56	31.97	54.00	-22.03	Average
7425.000	31.88	36.42	11.79	35.56	44.53	74.00	-29.47	Peak
9900.000	19.25	38.38	14.35	35.12	36.86	54.00	-17.14	Average
9900.000	31.93	38.38	14.35	35.12	49.54	74.00	-24.46	Peak
12375.000	22.81	38.55	15.25	36.42	40.19	54.00	-13.81	Average
12375.000	30.47	38.55	15.25	36.42	47.85	74.00	-26.15	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.

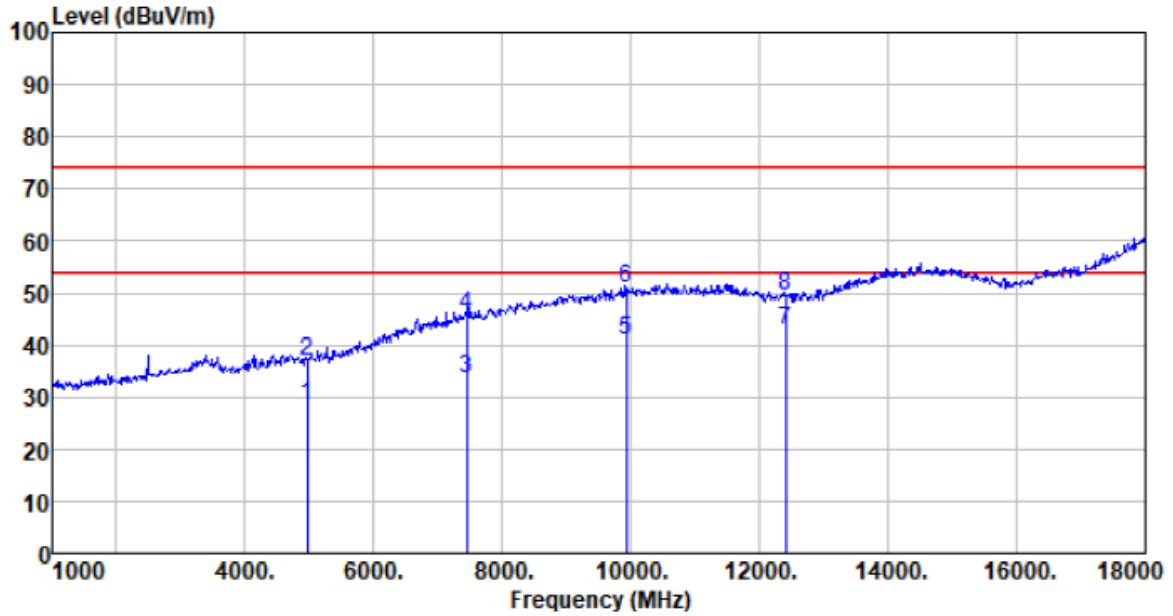
Test channel:	Highest(2480MHz)
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Horizontal:



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	26.03	31.63	8.73	37.78	28.61	54.00	-25.39	Average
4960.000	35.54	31.63	8.73	37.78	38.12	74.00	-35.88	Peak
7440.000	22.78	36.46	11.79	35.56	35.47	54.00	-18.53	Average
7440.000	32.61	36.46	11.79	35.56	45.30	74.00	-28.70	Peak
9920.000	23.00	38.42	14.38	35.14	40.66	54.00	-13.34	Average
9920.000	32.05	38.42	14.38	35.14	49.71	74.00	-24.29	Peak
12400.000	24.38	38.54	15.27	36.44	41.75	54.00	-12.25	Average
12400.000	31.86	38.54	15.27	36.44	49.23	74.00	-24.77	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	25.72	31.63	8.73	37.78	28.30	54.00	-25.70	Average
4960.000	34.34	31.63	8.73	37.78	36.92	74.00	-37.08	Peak
7440.000	21.01	36.46	11.79	35.56	33.70	54.00	-20.30	Average
7440.000	33.05	36.46	11.79	35.56	45.74	74.00	-28.26	Peak
9920.000	23.31	38.42	14.38	35.14	40.97	54.00	-13.03	Average
9920.000	33.19	38.42	14.38	35.14	50.85	74.00	-23.15	Peak
12400.000	25.49	38.54	15.27	36.44	42.86	54.00	-11.14	Average
12400.000	32.20	38.54	15.27	36.44	49.57	74.00	-24.43	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

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

-----End-----