

TEST REPORT

FCC Applicant: Legrand/Pass & Seymour
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Danzhutou Community, Nanwan Street office, Longgang
District, Shenzhen, China.

Equipment Under Test (EUT)

Product Name: Thermostat
Model No.: WZ3TSTATH
Trade Mark: Legrand
FCC ID: 2AU5DWZ3TSTAT
IC: 25764-WZ3TSTAT
Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.249
RSS-Gen Issue 5
RSS-210 Issue 10
Date of sample receipt: June 23, 2020
Date of Test: June 24, 2020-January 21, 2021
Date of report issued: January 21, 2021
Test Result : PASS *

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

Authorized Signature:

A circular blue ink stamp from Global United Technology Services Co., Ltd. is visible. The stamp contains the text "GTS", "GLOBAL UNITED TECHNOLOGY SERVICES CO., LTD.", and "LABORATORY". A handwritten signature in blue ink is written over the stamp.

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	January 21, 2021	Original

Prepared By:

Tiger Chen

Date:

January 21, 2021

Project Engineer

Check By:

Robinson Law

Date:

January 21, 2021

Reviewer

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 DEVIATION FROM STANDARDS.....	7
5.5 ABNORMALITIES FROM STANDARD CONDITIONS	7
5.6 ADDITIONAL INSTRUCTIONS.....	7
5.7 TEST FACILITY.....	8
5.8 TEST LOCATION	8
6 TEST INSTRUMENTS LIST	9
7 TEST RESULTS AND MEASUREMENT DATA.....	11
7.1 ANTENNA REQUIREMENT	11
7.2 CONDUCTED EMISSIONS	12
7.3 RADIATED EMISSION METHOD.....	15
7.3.1 Field Strength of The Fundamental Signal	17
7.3.2 Spurious emissions.....	18
7.3.3 Bandedge emissions.....	26
7.4 OCCUPY BANDWIDTH.....	30
8 TEST SETUP PHOTO	34
9 EUT CONSTRUCTIONAL DETAILS	34

4 Test Summary

Test Item	Section	Result
Antenna requirement	15.203 RSS-Gen Clause 6.8	Pass
AC Power Line Conducted Emission	15.207 RSS-Gen 8.8	Pass
Field strength of the fundamental signal	15.249 (a) RSS-210 B.10	Pass
Spurious emissions	15.249 (a) (d)/15.209 RSS-210 B.10	Pass
Band edge	15.249 (d)/15.205 RSS-Gen 8.9 & RSS-Gen 8.10	Pass
20dB Occupied Bandwidth / 99% Occupied Bandwidth	15.215 (c) RSS-Gen Clause 6.7	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	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
Radiated Emission	1GHz-18GHz	4.29dB	(1)
Radiated Emission	18GHz-40GHz	3.30dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	3.44dB	(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 Name:	Thermostat
Model No.:	WZ3TSTATH
Serial No.:	N/A
Hardware version:	1.0
Software version:	1.0
Test sample(s) ID:	GTS202006000241-1
Sample(s) Status	Engineered sample
Operation Frequency:	2402MHz~2480MHz
Channel numbers:	79
Channel separation:	1MHz
Modulation type:	GFSK, $\pi/4$ -DQPSK, 8-DPSK
Antenna Type:	Integral antenna
Antenna gain:	0dBi(declare by applicant)
Power supply:	AC 24V

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	21	2422MHz	41	2442MHz	61	2462MHz
2	2403MHz	22	2423MHz	42	2443MHz	62	2463MHz
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
19	2420MHz	39	2440MHz	59	2460MHz	79	2480MHz
20	2421MHz	40	2441MHz	60	2461MHz		

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	2402MHz
The middle channel	2441MHz
The Highest channel	2480MHz

5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
<i>Remark: During the test, the dutycycle >98%, 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>	

Pre-test mode.

We have verified the construction and function in typical operation, The EUT was placed on three different polar directions; i.e. X axis, Y axis, Z axis. which was shown in this test report and defined as follows:

Axis	X	Y	Z
Field Strength(dBuV/m)	97.33	98.8	96.41

Final Test Mode:

The EUT was tested in GFSK, $\pi/4$ -DQPSK, 8-DPSK modulation, and found the GFSK modulation is the worst case.

According to ANSI C63.10 standards, the test results are both the "worst case" and "worst setup":

Y axis (see the test setup photo)

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
Supplied by client	AC adaptor	PPI76-24V05AC	N/A

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Additional Instructions

Test Software	Test command provide by manufacturer.
Power level setup	Default

5.7 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.

- **IC —Registration No.: 9079A**

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.

- **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

5.8 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

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. 02 2020	July. 01 2025
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. 25 2020	June. 24 2021
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 25 2020	June. 24 2021
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 25 2020	June. 24 2021
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 25 2020	June. 24 2021
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 25 2020	June. 24 2021
9	Coaxial Cable	GTS	N/A	GTS211	June. 25 2020	June. 24 2021
10	Coaxial cable	GTS	N/A	GTS210	June. 25 2020	June. 24 2021
11	Coaxial Cable	GTS	N/A	GTS212	June. 25 2020	June. 24 2021
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 25 2020	June. 24 2021
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 25 2020	June. 24 2021
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 25 2020	June. 24 2021
15	Band filter	Amindeon	82346	GTS219	June. 25 2020	June. 24 2021
16	Power Meter	Anritsu	ML2495A	GTS540	June. 25 2020	June. 24 2021
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 25 2020	June. 24 2021
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 25 2020	June. 24 2021
19	Splitter	Agilent	11636B	GTS237	June. 25 2020	June. 24 2021
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 25 2020	June. 24 2021
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 18 2020	Oct. 17 2021
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 18 2020	Oct. 17 2021
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 18 2020	Oct. 17 2021
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 25 2020	June. 24 2021

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.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 25 2020	June. 24 2021
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 25 2020	June. 24 2021
4	ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	GTS226	June. 25 2020	June. 24 2021
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 25 2020	June. 24 2021
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 25 2020	June. 24 2021
9	ISN	SCHWARZBECK	NTFM 8158	GTD565	June. 25 2020	June. 24 2021

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. 25 2020	June. 24 2021
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 25 2020	June. 24 2021
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 25 2020	June. 24 2021
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 25 2020	June. 24 2021
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 25 2020	June. 24 2021
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 25 2020	June. 24 2021
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 25 2020	June. 24 2021
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 25 2020	June. 24 2021

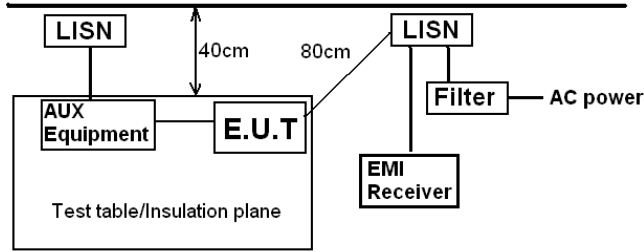
General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 25 2020	June. 24 2021
2	Barometer	ChangChun	DYM3	GTS255	June. 25 2020	June. 24 2021

7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203
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>The antenna is Integral antenna, the best case gain of the antenna is 0dBi, reference to the appendix II for details</i>	

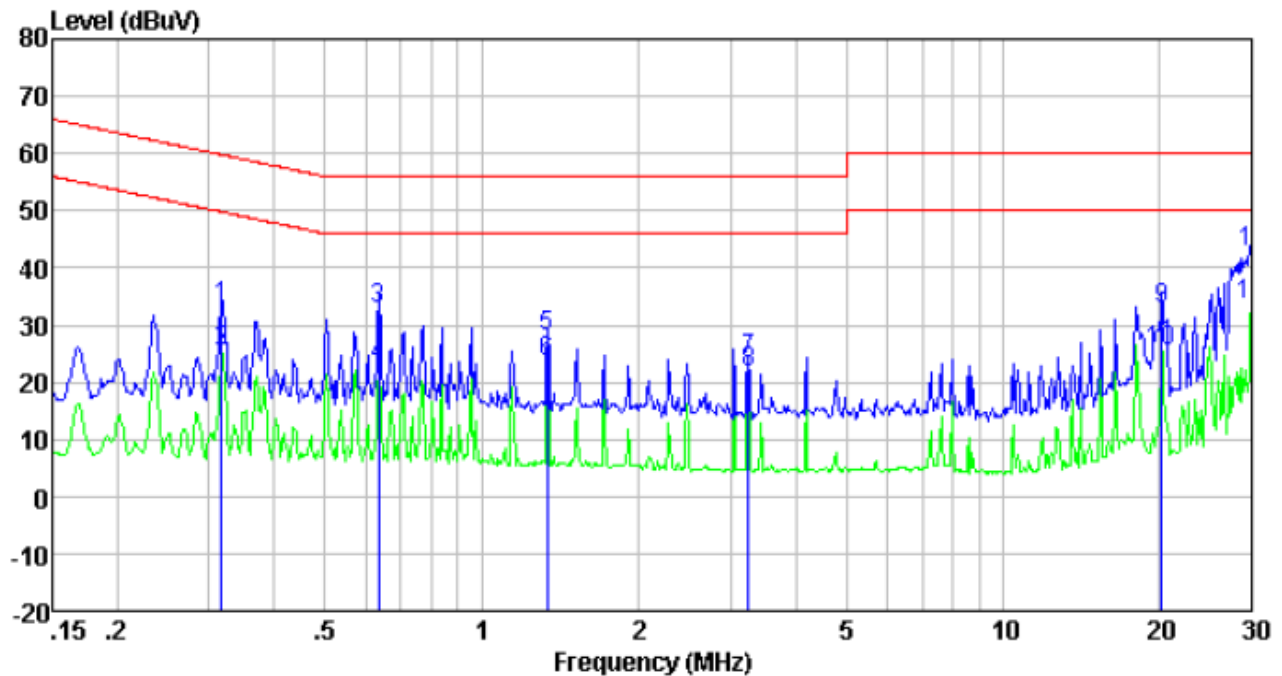
7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207 RSS-Gen Section 8.8						
Test Method:	ANSI C63.10:2014						
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 EUT 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: 2014 on conducted measurement.						
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 results:	Pass						

Measurement data

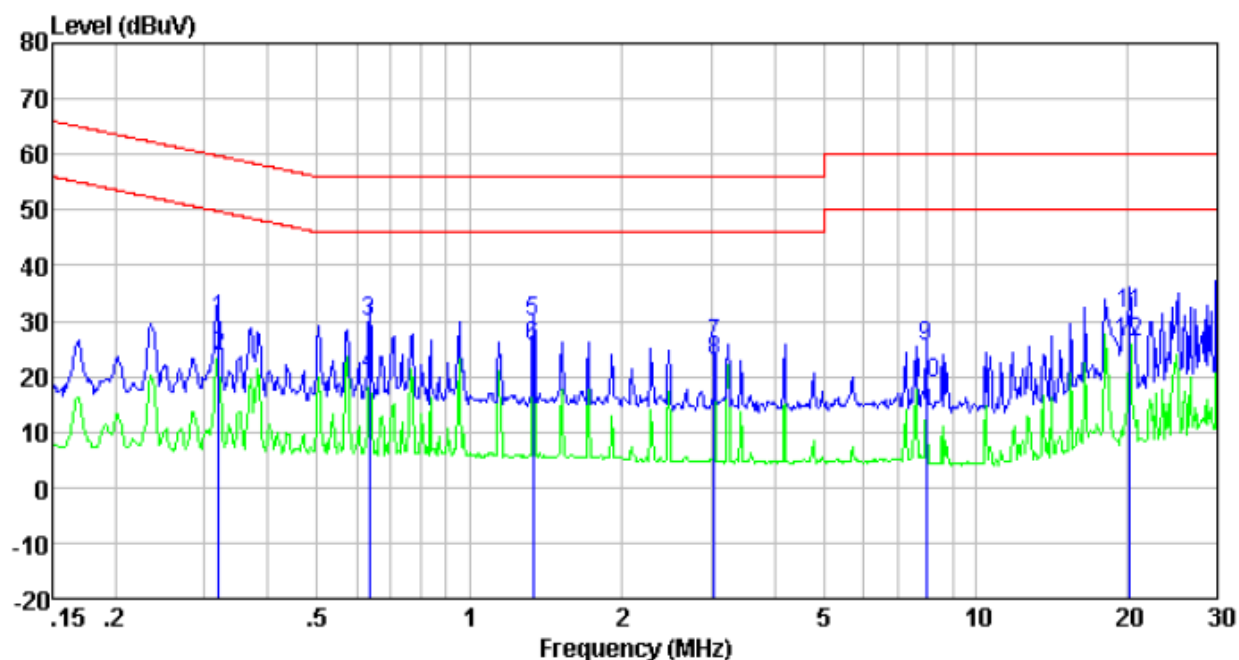
Pre-scan all test modes, found worst case at 2480MHz, and so only show the test result of 2480MHz

Line:



Freq. MHz	Read Level dBuV	Factor dB/m	Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.32	12.63	20.49	33.12	59.80	-26.68	QP
0.32	4.73	20.49	25.22	49.80	-24.58	Average
0.63	12.26	20.40	32.66	56.00	-23.34	QP
0.63	2.28	20.40	22.68	46.00	-23.32	Average
1.34	7.54	20.36	27.90	56.00	-28.10	QP
1.34	3.15	20.36	23.51	46.00	-22.49	Average
3.24	3.45	20.39	23.84	56.00	-32.16	QP
3.24	1.41	20.39	21.80	46.00	-24.20	Average
20.16	12.15	20.53	32.68	60.00	-27.32	QP
20.16	5.00	20.53	25.53	50.00	-24.47	Average
30.00	22.27	20.63	42.90	60.00	-17.10	QP
30.00	12.95	20.63	33.58	50.00	-16.42	Average

Neutral:

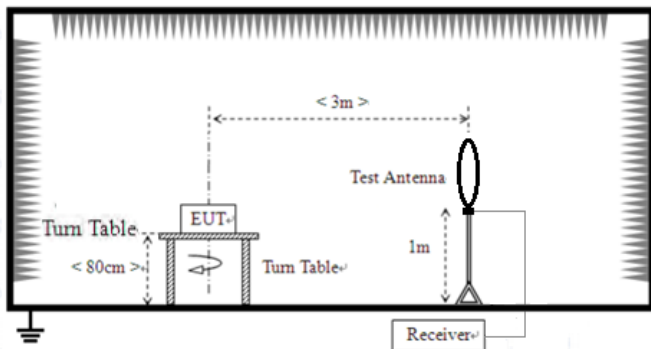


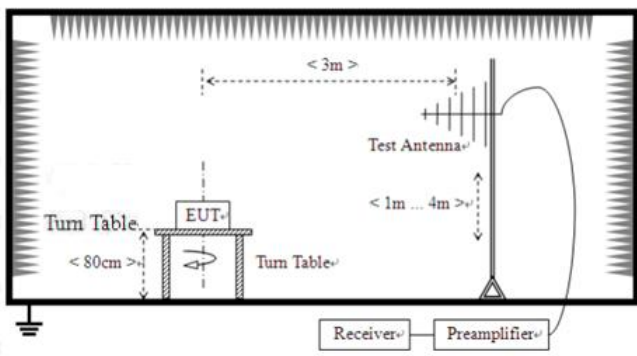
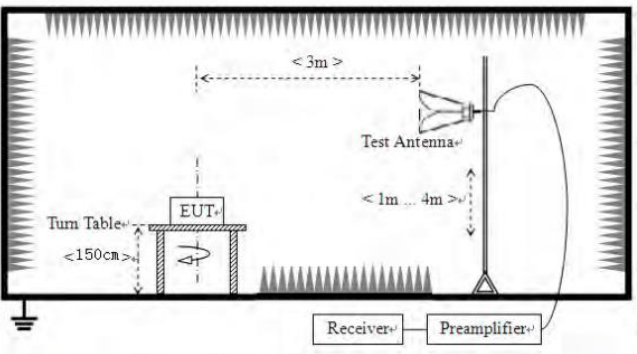
Freq. MHz	Read Level dBuV	Factor dB/m	Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.32	9.64	20.49	30.13	59.71	-29.58	QP
0.32	3.01	20.49	23.50	49.71	-26.21	Average
0.63	9.57	20.40	29.97	56.00	-26.03	QP
0.63	-0.06	20.40	20.34	46.00	-25.66	Average
1.34	9.34	20.36	29.70	56.00	-26.30	QP
1.34	4.90	20.36	25.26	46.00	-20.74	Average
3.04	5.30	20.39	25.69	56.00	-30.31	QP
3.04	2.34	20.39	22.73	46.00	-23.27	Average
7.98	4.82	20.39	25.21	60.00	-34.79	QP
7.98	-1.79	20.39	18.60	50.00	-31.40	Average
20.16	10.62	20.53	31.15	60.00	-28.85	QP
20.16	5.72	20.53	26.25	50.00	-23.75	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 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 RSS-210 B.10& RSS-Gen 8.9 & RSS-Gen 8.10				
Test Method:	ANSI C63.10: 2013 & RSS-Gen				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	9kHz-150kHz	Quasi-peak	200Hz	300Hz	Quasi-peak Value
	150kHz-30MHz	Quasi-peak	9kHz	10kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		Peak	1MHz	10Hz	Average Value
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)		Remark
	0.009MHz-0.490MHz		2400/F(kHz) @300m		Quasi-peak Value
	0.490MHz-1.705MHz		24000/F(kHz) @30m		Quasi-peak Value
	1.705MHz-30.0MHz		30 @30m		Quasi-peak Value
	30MHz-88MHz		100 @3m		Quasi-peak Value
	88MHz-216MHz		150 @3m		Quasi-peak Value
	216MHz-960MHz		200 @3m		Quasi-peak Value
	960MHz-1GHz		500 @3m		Quasi-peak Value
	Above 1GHz		500 @3m		Average Value
5000 @3m			Peak Value		
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:	For radiated emissions from 9kHz to 30MHz  For radiated emissions from 30MHz to1GHz				

	 For radiated emissions above 1GHz 
Test Procedure:	1. The EUT was placed on the top of a rotating table (0.8m for below 1GHz and 1.5 meters for above 1GHz) 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 environment:	Temp.: 25 °C Humid.: 52% Press.: 1012mbar
Test results:	Pass

Measurement data:

7.3.1 Field Strength of The Fundamental Signal

Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2402.00	92.54	27.41	2.91	30.26	92.60	114	-21.4	Vertical
2402.00	98.74	27.41	2.91	30.26	98.80	114	-15.2	Horizontal
2441.00	91.08	27.53	2.96	30.14	91.43	114	-22.57	Vertical
2441.00	97.89	27.53	2.96	30.14	98.24	114	-15.76	Horizontal
2480.00	93.62	27.64	2.99	30.08	94.17	114	-19.83	Vertical
2480.00	98.12	27.64	2.99	30.08	98.67	114	-15.33	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2402.00	73.48	27.41	2.91	30.26	73.54	94	-20.46	Vertical
2402.00	77.08	27.41	2.91	30.26	77.14	94	-16.86	Horizontal
2441.00	71.27	27.53	2.96	30.14	71.62	94	-22.38	Vertical
2441.00	76.74	27.53	2.96	30.14	77.09	94	-16.91	Horizontal
2480.00	73.08	27.64	2.99	30.08	73.63	94	-20.37	Vertical
2480.00	78.11	27.64	2.99	30.08	78.66	94	-15.34	Horizontal

7.3.2 Spurious emissions

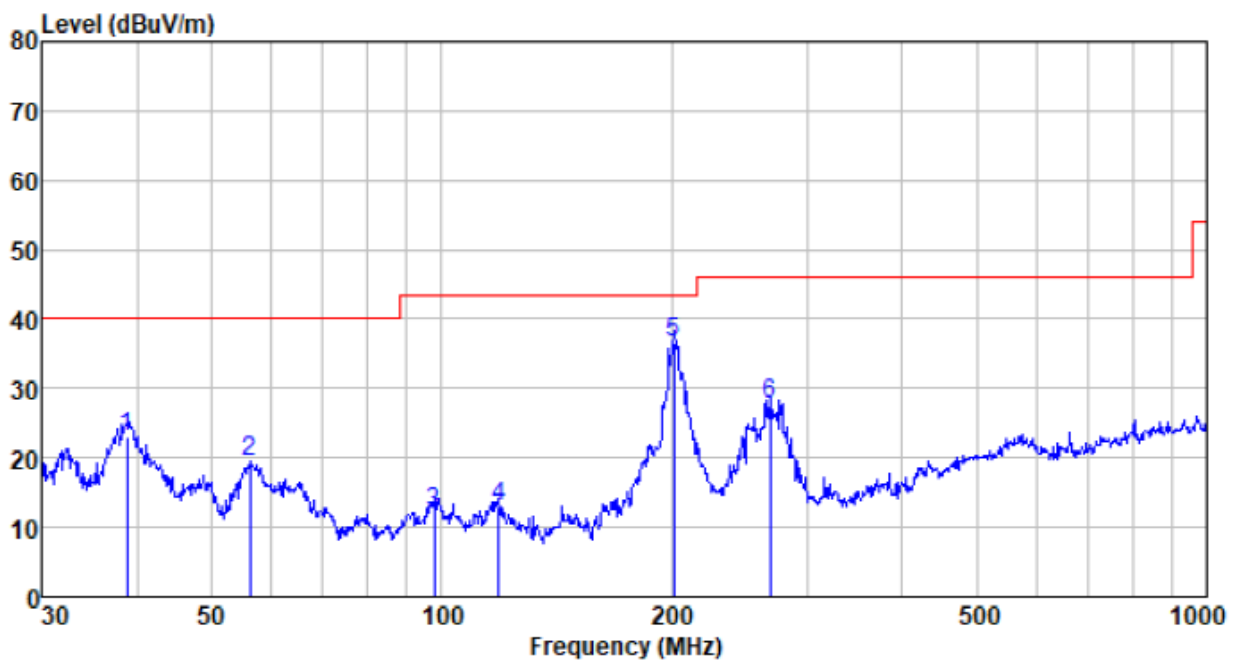
■ Below 30MHz

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.

■ Below 1GHz

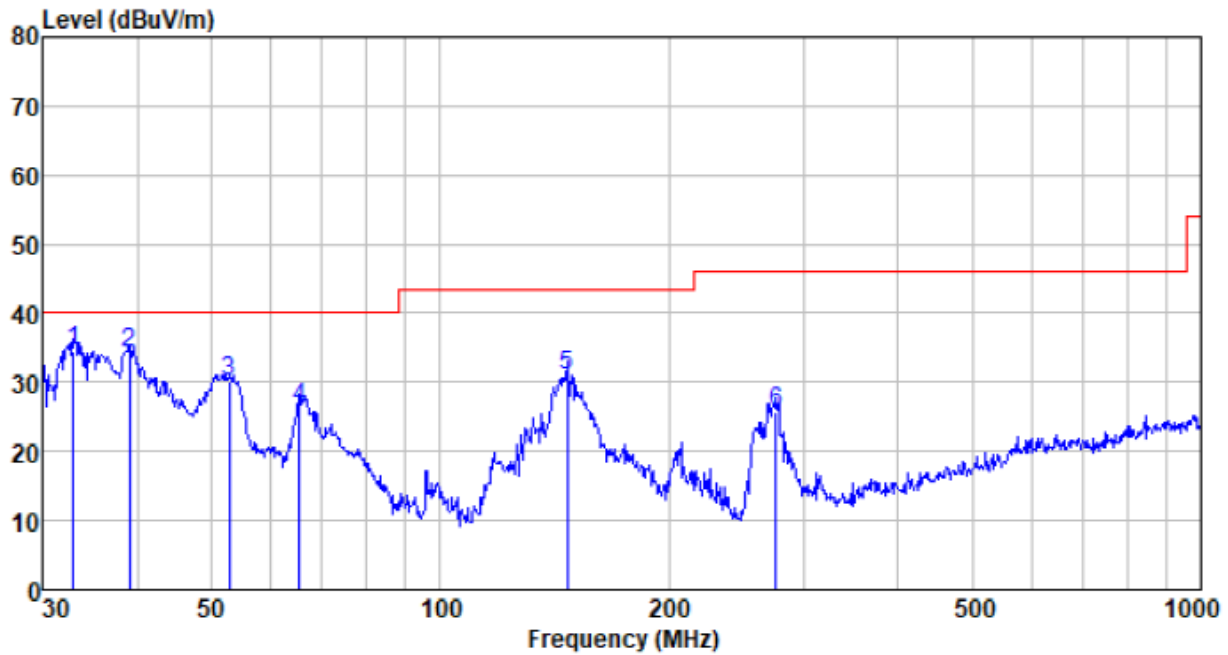
Pre-scan all test modes, found worst case at 2480MHz, and so only show the test result of 2480MHz

Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
38.752	46.07	12.01	0.65	35.59	23.14	40.00	-16.86	QP
56.197	43.21	11.68	0.83	36.27	19.45	40.00	-20.55	QP
97.798	35.70	11.93	1.17	36.70	12.10	43.50	-31.40	QP
118.601	38.85	9.75	1.35	36.87	13.08	43.50	-30.42	QP
201.393	61.55	10.44	1.85	37.33	36.51	43.50	-6.99	QP
268.485	50.33	12.73	2.21	37.40	27.87	46.00	-18.13	QP

Vertical:

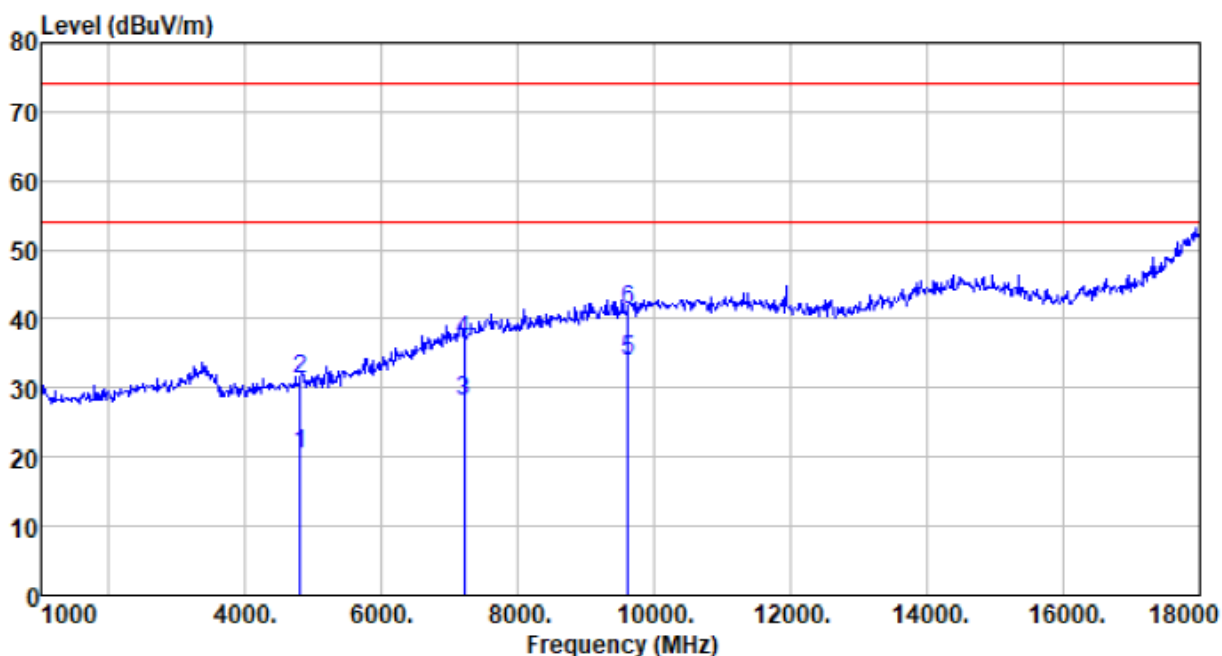


Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
32.979	57.79	11.26	0.59	35.22	34.42	40.00	-5.58	QP
39.024	57.25	12.04	0.65	35.61	34.33	40.00	-5.67	QP
52.760	53.61	12.00	0.80	36.22	30.19	40.00	-9.81	QP
65.343	52.46	9.23	0.90	36.39	26.20	40.00	-13.80	QP
146.888	59.08	7.54	1.55	37.06	31.11	43.50	-12.39	QP
276.124	47.98	12.95	2.25	37.40	25.78	46.00	-20.22	QP

■ Above 1GHz

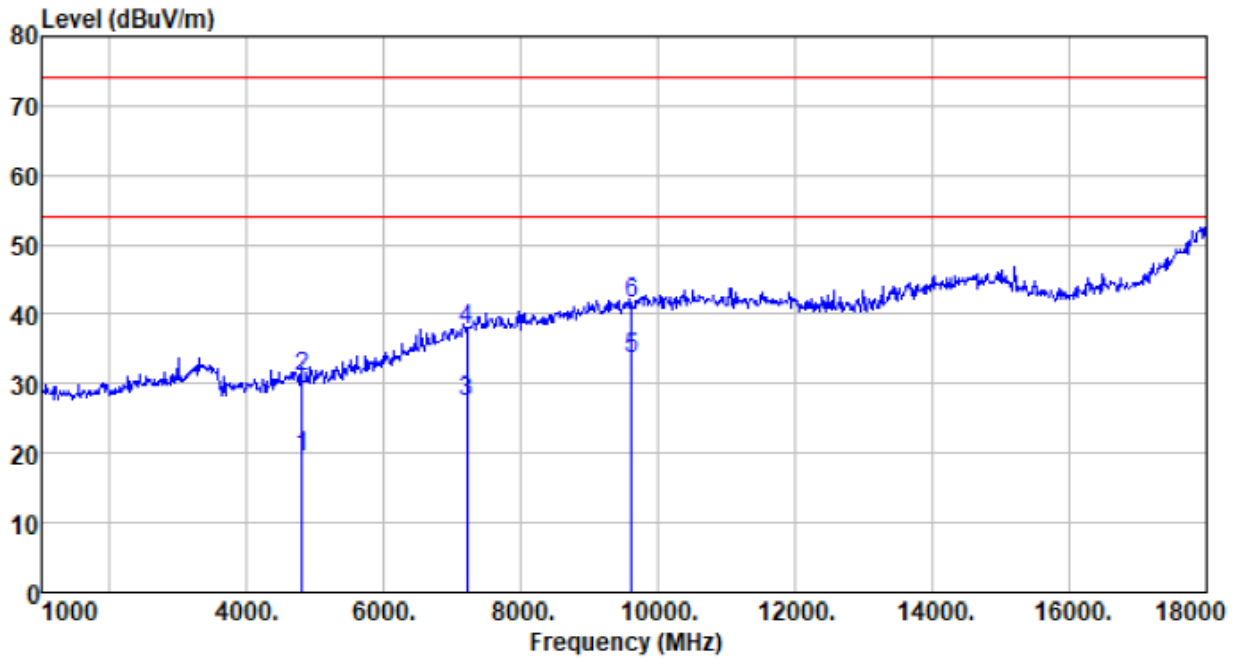
Test channel:	Lowest channel
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Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4804.000	22.43	31.20	4.61	37.73	20.51	54.00	-33.49	Average
4804.000	33.20	31.20	4.61	37.73	31.28	74.00	-42.72	Peak
7206.000	20.89	36.16	6.48	35.63	27.90	54.00	-26.10	Average
7206.000	30.01	36.16	6.48	35.63	37.02	74.00	-36.98	Peak
9608.000	22.99	37.93	7.97	34.94	33.95	54.00	-20.05	Average
9608.000	30.30	37.93	7.97	34.94	41.26	74.00	-32.74	Peak

Vertical:

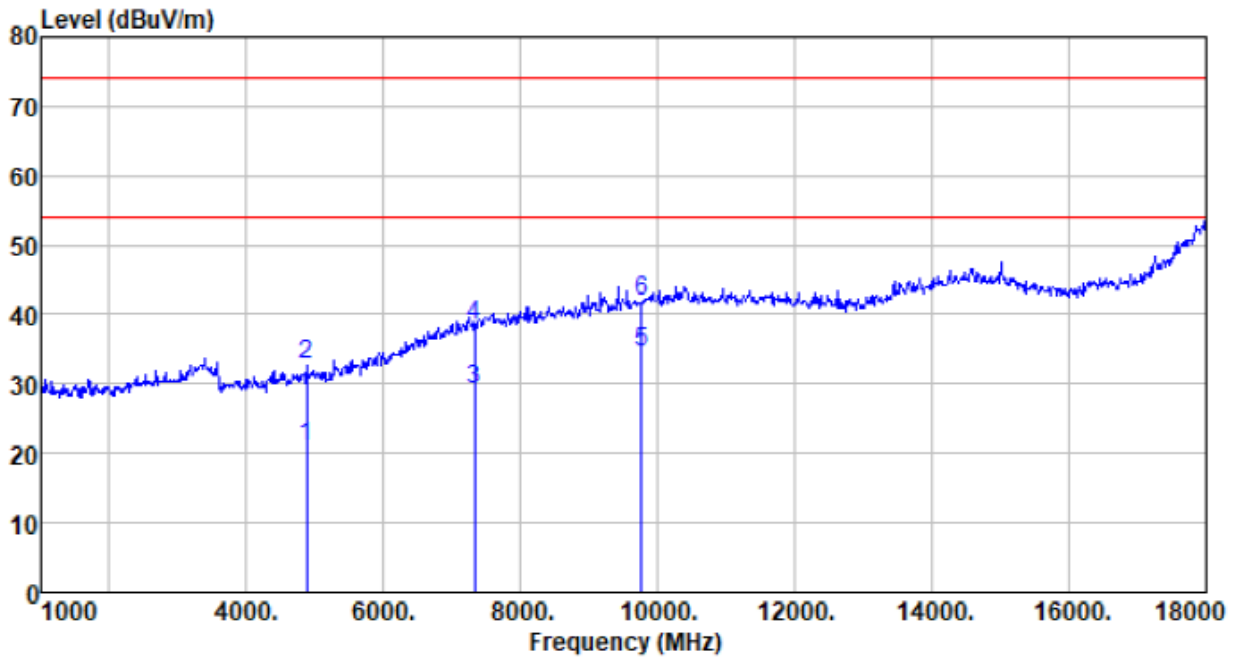


Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4804.000	21.30	31.20	4.61	37.73	19.38	54.00	-34.62	Average
4804.000	32.86	31.20	4.61	37.73	30.94	74.00	-43.06	Peak
7206.000	20.56	36.16	6.48	35.63	27.57	54.00	-26.43	Average
7206.000	30.82	36.16	6.48	35.63	37.83	74.00	-36.17	Peak
9608.000	22.58	37.93	7.97	34.94	33.54	54.00	-20.46	Average
9608.000	30.75	37.93	7.97	34.94	41.71	74.00	-32.29	Peak

Remark: Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

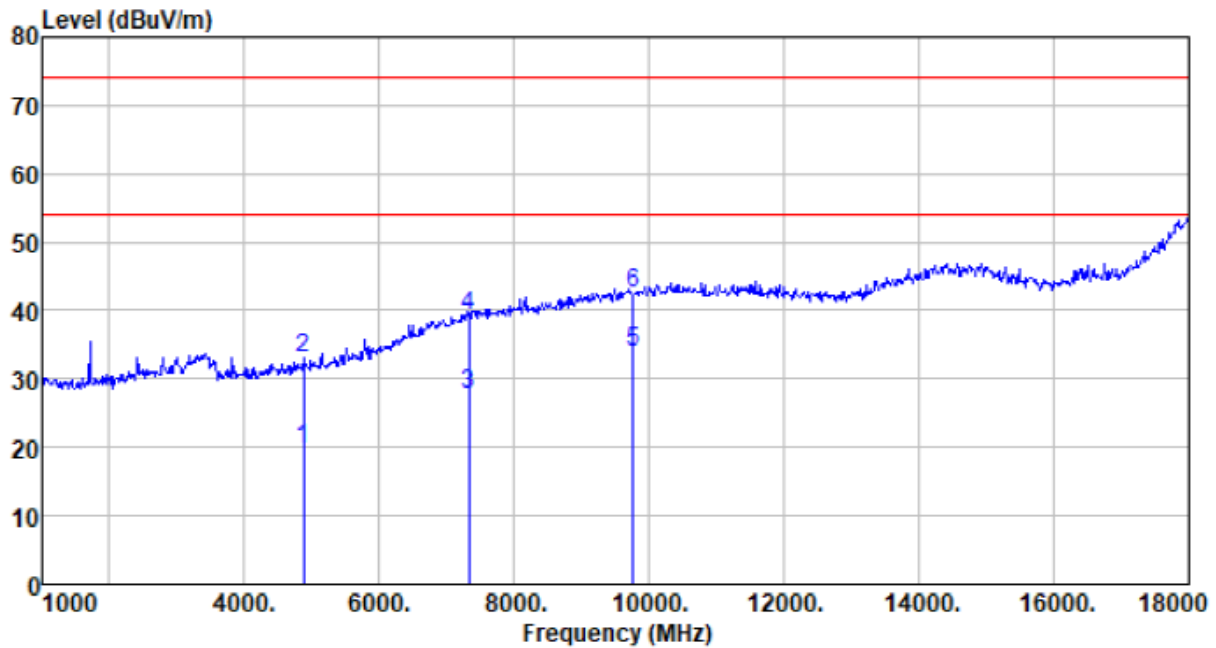
Test channel:	Middle channel
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Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4882.000	22.65	31.33	4.69	37.76	20.91	54.00	-33.09	Average
4882.000	34.63	31.33	4.69	37.76	32.89	74.00	-41.11	Peak
7323.000	21.64	36.43	6.63	35.60	29.10	54.00	-24.90	Average
7323.000	30.94	36.43	6.63	35.60	38.40	74.00	-35.60	Peak
9764.000	23.42	38.10	8.03	35.03	34.52	54.00	-19.48	Average
9764.000	30.83	38.10	8.03	35.03	41.93	74.00	-32.07	Peak

Vertical:

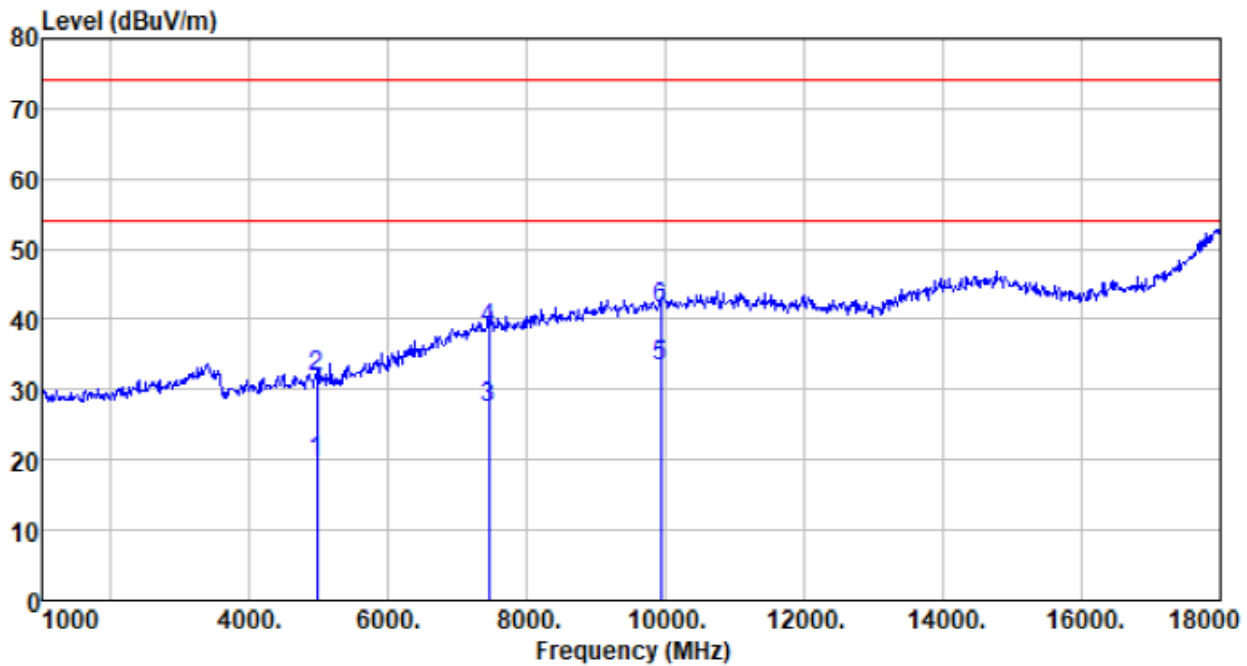


Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4882.000	21.42	31.33	4.69	37.76	19.68	54.00	-34.32	Average
4882.000	34.67	31.33	4.69	37.76	32.93	74.00	-41.07	Peak
7323.000	20.22	36.43	6.63	35.60	27.68	54.00	-26.32	Average
7323.000	31.90	36.43	6.63	35.60	39.36	74.00	-34.64	Peak
9764.000	22.86	38.10	8.03	35.03	33.96	54.00	-20.04	Average
9764.000	31.50	38.10	8.03	35.03	42.60	74.00	-31.40	Peak

Remark: Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

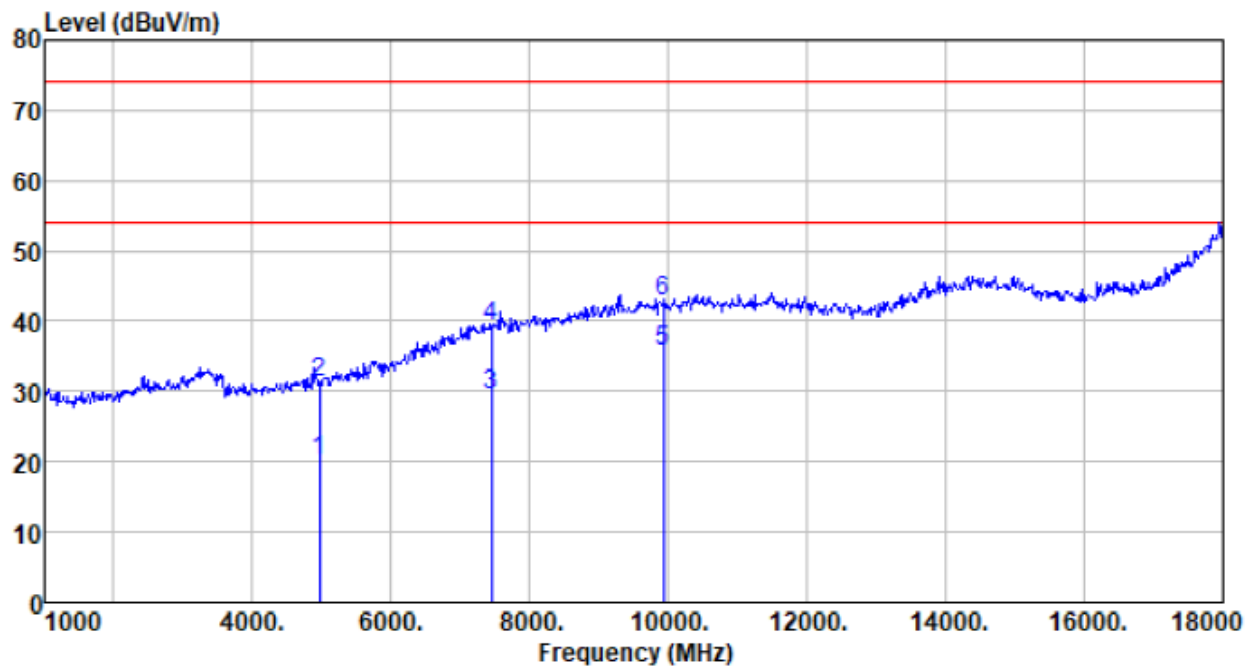
Test channel:	Highest channel
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Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4960.000	21.32	31.44	4.79	37.78	19.77	54.00	-34.23	Average
4960.000	33.50	31.44	4.79	37.78	31.95	74.00	-42.05	Peak
7440.000	19.44	36.66	6.77	35.56	27.31	54.00	-26.69	Average
7440.000	30.73	36.66	6.77	35.56	38.60	74.00	-35.40	Peak
9920.000	22.13	38.30	8.09	35.14	33.38	54.00	-20.62	Average
9920.000	30.41	38.30	8.09	35.14	41.66	74.00	-32.34	Peak

Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4960.000	21.61	31.44	4.79	37.78	20.06	54.00	-33.94	Average
4960.000	32.84	31.44	4.79	37.78	31.29	74.00	-42.71	Peak
7440.000	21.57	36.66	6.77	35.56	29.44	54.00	-24.56	Average
7440.000	31.48	36.66	6.77	35.56	39.35	74.00	-34.65	Peak
9920.000	24.55	38.30	8.09	35.14	35.80	54.00	-18.20	Average
9920.000	31.63	38.30	8.09	35.14	42.88	74.00	-31.12	Peak

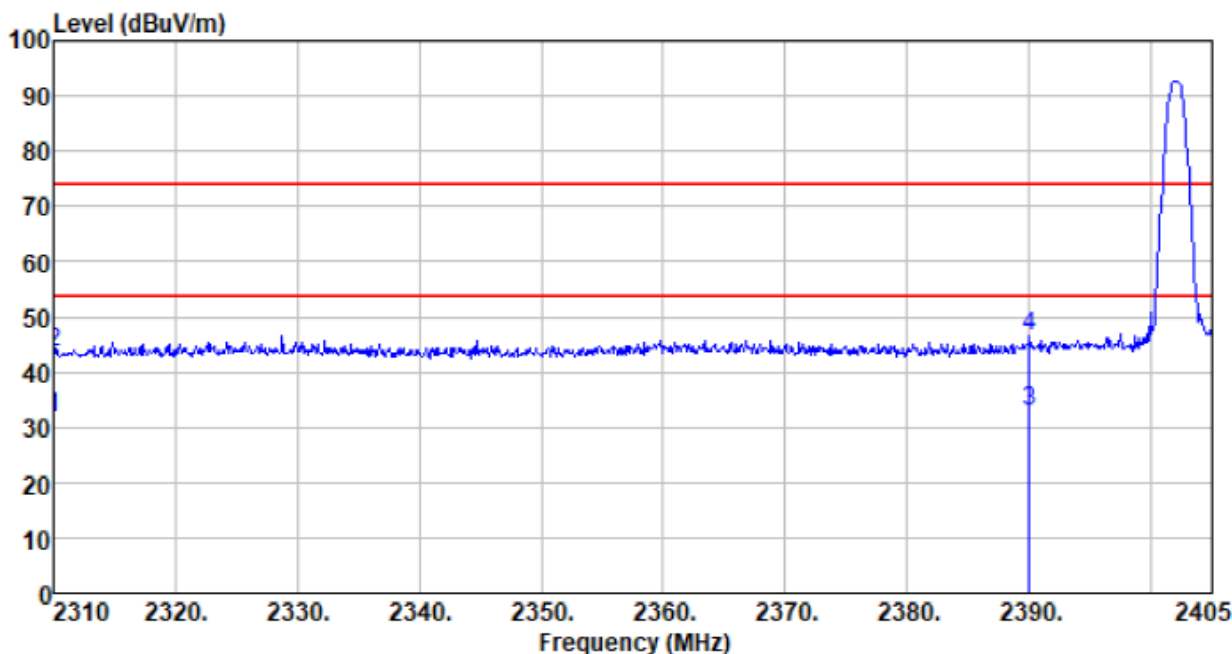
Remark: Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

7.3.3 Bandedge emissions

All of the restriction bands were tested, and only the data of worst case GFSK was exhibited.

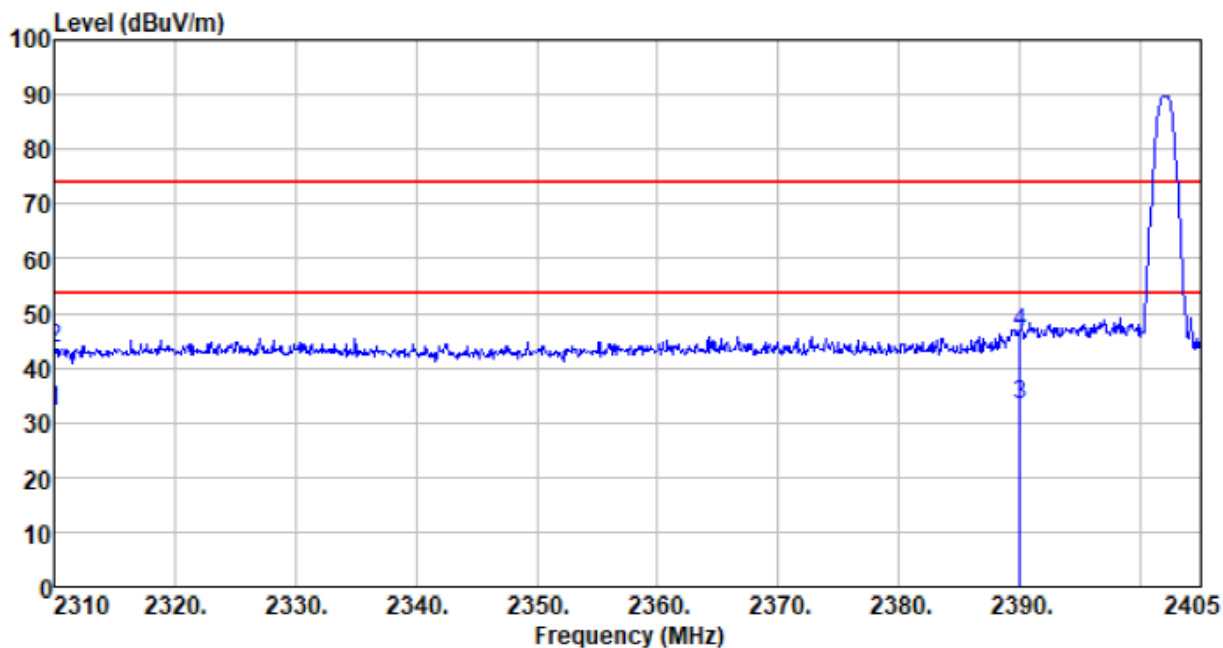
Test channel:	Lowest channel
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Horizontal:



Freq MHz	Reading level dBUV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBUV/m	Limit level dBUV/m	Over limit dB	Remark
2310.000	32.35	27.14	2.81	30.43	31.87	54.00	-22.13	Average
2310.000	43.91	27.14	2.81	30.43	43.43	74.00	-30.57	Peak
2390.000	32.65	27.37	2.91	30.24	32.69	54.00	-21.31	Average
2390.000	46.29	27.37	2.91	30.24	46.33	74.00	-27.67	Peak

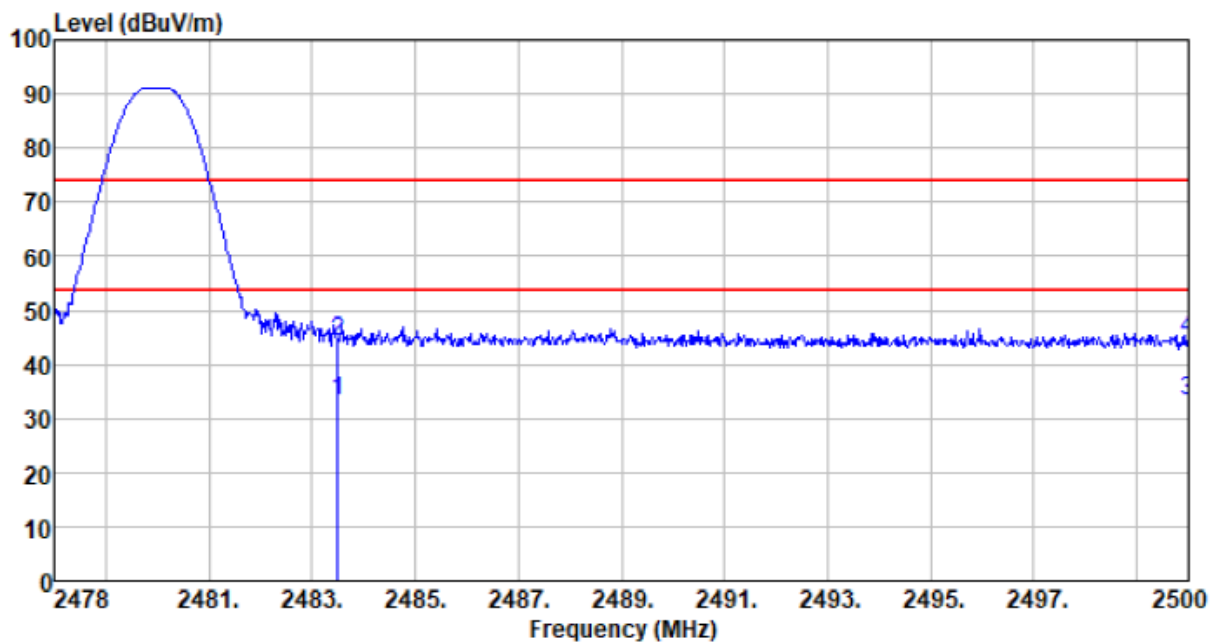
Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	32.42	27.14	2.81	30.43	31.94	54.00	-22.06	Average
2310.000	44.15	27.14	2.81	30.43	43.67	74.00	-30.33	Peak
2390.000	33.35	27.37	2.91	30.24	33.39	54.00	-20.61	Average
2390.000	46.32	27.37	2.91	30.24	46.36	74.00	-27.64	Peak

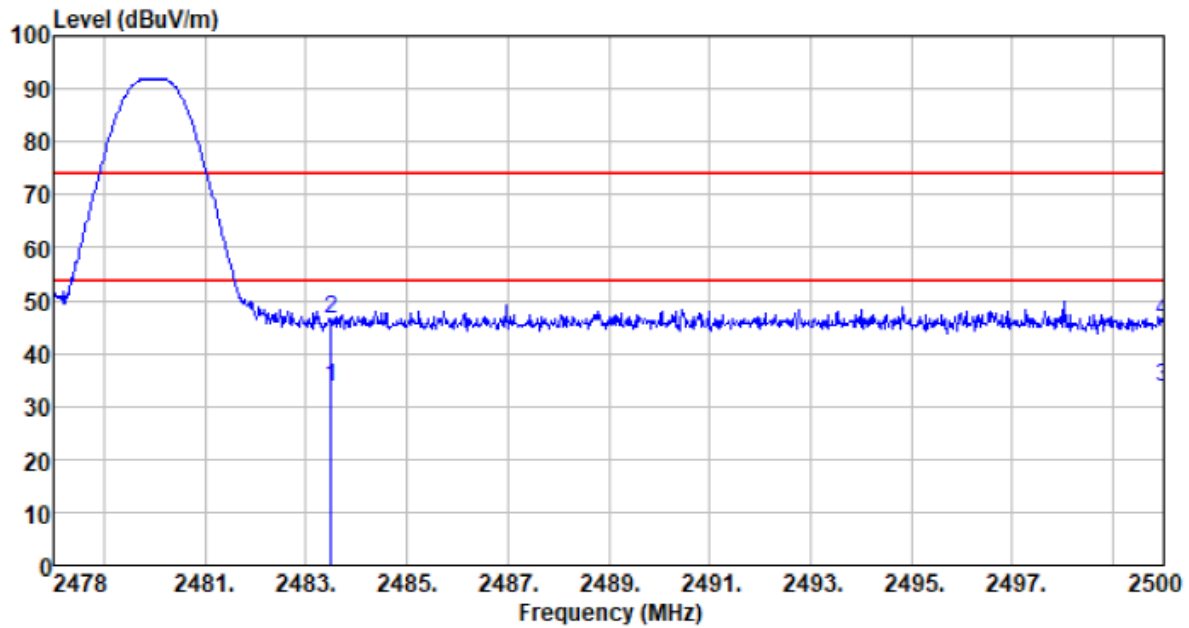
Test channel:	Highest channel
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Horizontal:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2483.500	32.78	27.66	2.99	30.12	33.31	54.00	-20.69	Average
2483.500	43.73	27.66	2.99	30.12	44.26	74.00	-29.74	Peak
2500.000	32.52	27.70	3.01	30.13	33.10	54.00	-20.90	Average
2500.000	44.10	27.70	3.01	30.13	44.68	74.00	-29.32	Peak

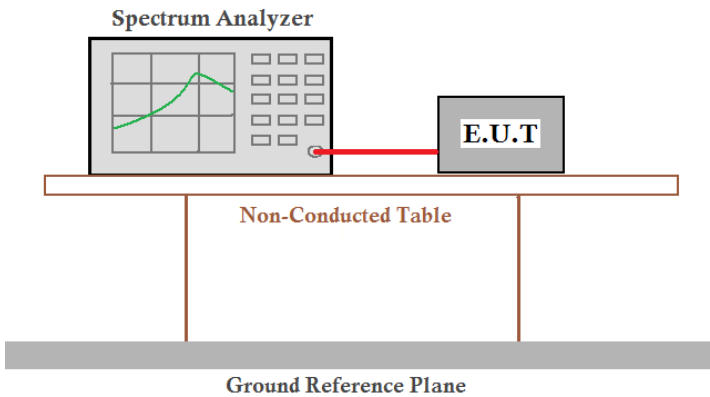
Vertical:



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2483.500	33.18	27.66	2.99	30.12	33.71	54.00	-20.29	Average
2483.500	45.98	27.66	2.99	30.12	46.51	74.00	-27.49	Peak
2500.000	32.98	27.70	3.01	30.13	33.56	54.00	-20.44	Average
2500.000	45.60	27.70	3.01	30.13	46.18	74.00	-27.82	Peak

Remark: Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

7.4 Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.249/15.215 & RSS-Gen 6.7
Test Method:	ANSI C63.10:2013 and RSS-Gen
Limit:	Operation Frequency range 2400MHz~2483.5MHz
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

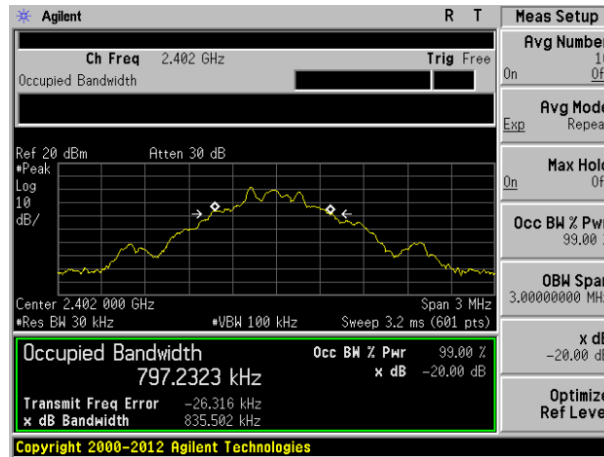
Measurement Data

Test channel	20dB bandwidth(MHz)			Result
	GFSK	$\pi/4$ -DQPSK	8-DPSK	
Lowest	0.836	1.117	1.160	Pass
Middle	0.836	1.114	1.160	Pass
Highest	0.809	1.114	1.154	Pass

Test channel	99% bandwidth(MHz)			Result
	GFSK	$\pi/4$ -DQPSK	8-DPSK	
Lowest	0.797	1.0677	1.1031	Pass
Middle	0.801	1.0616	1.1029	Pass
Highest	0.796	1.0682	1.0965	Pass

Test plot as follows:

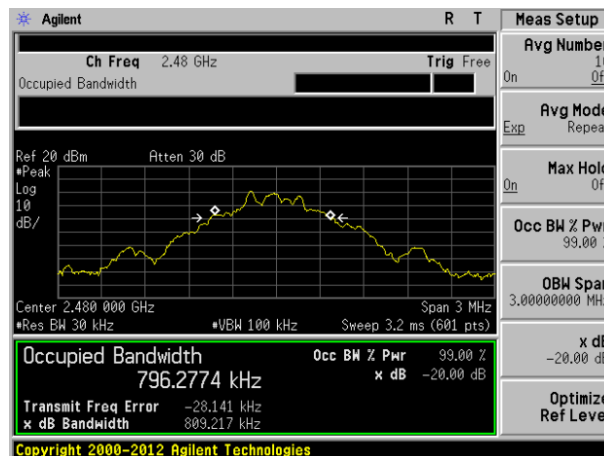
GFSK:



Lowest channel

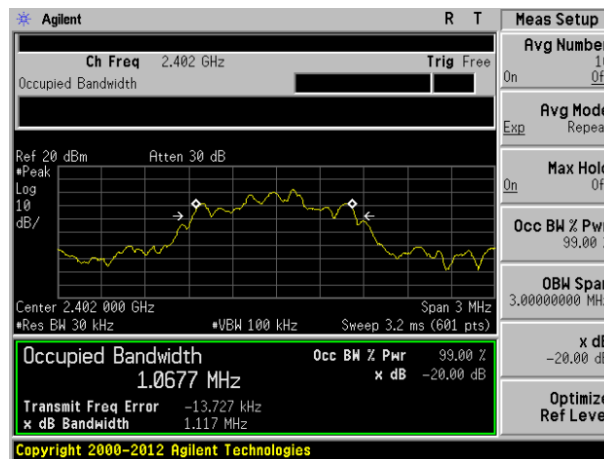


Middle channel

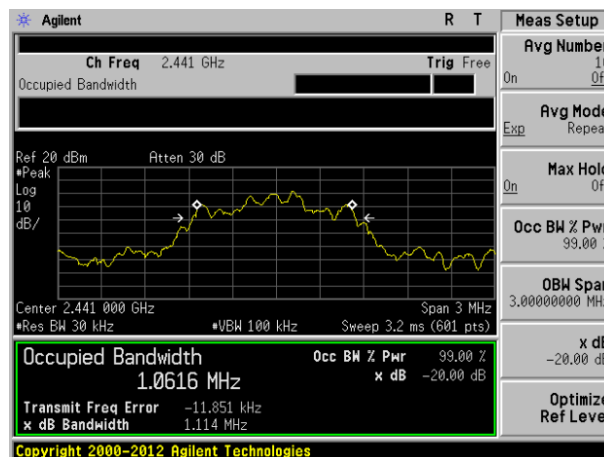


Highest channel

$\pi/4$ -DQPSK:



Lowest channel

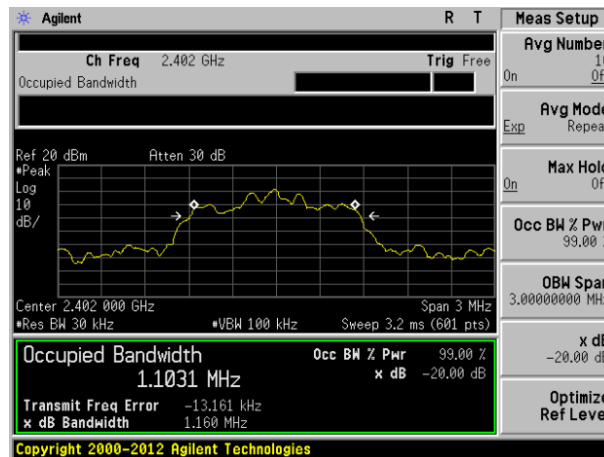


Middle channel

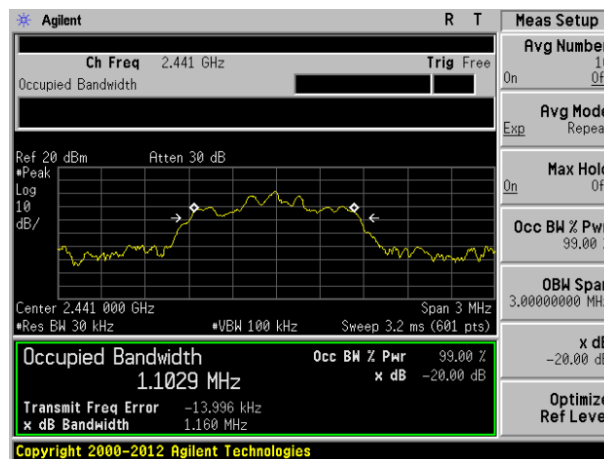


Highest channel

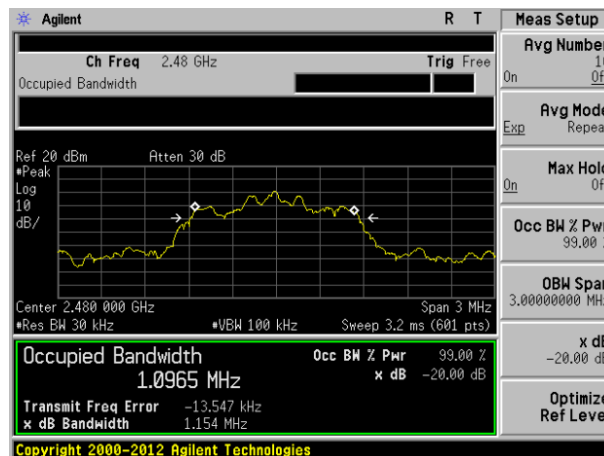
8-DPSK:



Lowest channel



Middle channel



Highest channel

8 Test Setup Photo

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

9 EUT Constructional Details

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

-----End-----