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Test Report

Report No.: CQASZ20240901999E-03
Applicant: Ultimea Technology (Shenzhen) Limited
Address of Applicant: 20th Floor, Building 4, Tianan Cloud Park, Bantian St., Longgang District, Shenzhen, China

Equipment Under Test (EUT):

EUT Name: Apollo S90 9.1 Channel Dolby Atmos Detachable Lighting Soundbar,
Apollo S90 9.1 Channel Detachable Lighting Soundbar with Dolby Atmos
Model No.: U3820
Test Model No.: U3820
Brand Name: ULTIMEA
FCC ID: 2A900-U3820S
Standards: 47 CFR Part 15, Subpart C
Date of Receipt: 2024-09-14
Date of Test: 2024-09-14 to 2024-11-04
Date of Issue: 2024-11-04
Test Result: **PASS***

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

Tested By: Lewis Zhou
(Lewis Zhou)

Reviewed By: Timo Lei
(Timo Lei)

Approved By: Alex
(Alex Wang)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20240901999E-03	Rev.01	Initial report	2024-11-04

2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203	ANSI C63.10 (2013)	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 (2013)	PASS
Field Strength of the Fundamental Signal	47 CFR Part 15, Subpart C Section 15.249 (a)	ANSI C63.10 (2013)	PASS
Spurious Emissions	47 CFR Part 15, Subpart C Section 15.249 (a)/15.209	ANSI C63.10 (2013)	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15, Subpart C Section 15.249(a)/15.205	ANSI C63.10 (2013)	PASS
20dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.215 (c)	ANSI C63.10 (2013)	PASS

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4 General Information

4.1 Client Information

Applicant:	Ultimea Technology (Shenzhen) Limited
Address of Applicant:	20th Floor, Building 4, Tianan Cloud Park, Bantian St., Longgang District, Shenzhen, China
Manufacturer:	Ultimea Technology (Shenzhen) Limited
Address of Manufacturer:	20th Floor, Building 4, Tianan Cloud Park, Bantian St., Longgang District, Shenzhen, China

4.2 General Description of EUT

EUT Name:	Apollo S90 9.1 Channel Dolby Atmos Detachable Lighting Soundbar, Apollo S90 9.1 Channel Detachable Lighting Soundbar with Dolby Atmos
Model No.:	U3820
Test Model No.:	U3820
Trade Mark:	ULTIMEA
Software Version:	0.1
Hardware Version:	0.1
Frequency Range:	5729MHz~5847MHz
Modulation Type:	GFSK
Number of Channels:	119
Sample Type:	<input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable <input type="checkbox"/> Fix Location
Test Software of EUT:	RF Test
Antenna Type:	FPC antenna
Antenna Gain:	ANT1:4.41dBi ANT2:2.07dBi
Power Supply:	Model:SMS-00180300-S38 Input:100-240V~50/60Hz 1.5A Output:18V 3.0A 54W
	Model:FX48U-180300C Input:100-240V~50/60Hz 1.0A Output:18V 3.0A 54W

Note:

ANT1 and ANT2 do not support simultaneous transmission, and the report only reflects the worst data of ANT1

Operation Frequency each of channel					
Channel	Frequency	Channel	Frequency	Channel	Frequency
1	5729	41	5769	81	5809
2	5730	42	5770	82	5810
3	5731	43	5771	83	5811
4	5732	44	5772	84	5812
5	5733	45	5773	85	5813
6	5734	46	5774	86	5814
7	5735	47	5775	87	5815
8	5736	48	5776	88	5816
9	5737	49	5777	89	5817
10	5738	50	5778	90	5818
11	5739	51	5779	91	5819
12	5740	52	5780	92	5820
13	5741	53	5781	93	5821
14	5742	54	5782	94	5822
15	5743	55	5783	95	5823
16	5744	56	5784	96	5824
17	5745	57	5785	97	5825
18	5746	58	5786	98	5826
19	5747	59	5787	99	5827
20	5748	60	5788	100	5828
21	5749	61	5789	101	5829
22	5750	62	5790	102	5830
23	5751	63	5791	103	5831
24	5752	64	5792	104	5832
25	5753	65	5793	105	5833
26	5754	66	5794	106	5834
27	5755	67	5795	107	5835
28	5756	68	5796	108	5836
29	5757	69	5797	109	5837
30	5758	70	5798	110	5838
31	5759	71	5799	111	5839
32	5760	72	5800	112	5840

33	5761	73	5801	113	5841
34	5762	74	5802	114	5842
35	5763	75	5803	115	5843
36	5764	76	5804	116	5844
37	5765	77	5805	117	5845
38	5766	78	5806	118	5846
39	5767	79	5807	119	5847
40	5768	80	5808	120	

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(CH1)	5729MHz
The Middle channel(CH60)	5788MHz
The Highest channel(CH119)	5847MHz

4.3 Additional Instructions

EUT Test Software Settings:		
Mode:	<input checked="" type="checkbox"/> Special software is used. <input type="checkbox"/> Through engineering command into the engineering mode. engineering command: <code>***#3646633#**</code>	
EUT Power level:	Class2	
Use test software to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT.		
Mode	Channel	Frequency(MHz)
GFSK	CH1	5729
	CH60	5788
	CH119	5847

Run Software:



4.4 Test Environment and Mode

Operating Environment:	
Radiated Emissions:	
Temperature:	27 °C
Humidity:	59 % RH
Atmospheric Pressure:	1009mbar
Operating Environment:	
Temperature:	26 °C
Humidity:	59 % RH
Atmospheric Pressure:	1009mbar
Radio conducted item test (RF Conducted test room):	
Temperature:	25.3 °C
Humidity:	55 % RH
Atmospheric Pressure:	1009mbar
Test mode:	
Transmitting mode:	Use test software (RF test) to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT.

4.5 Description of Support Units

The EUT has been tested with associated equipment below.

1) Support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
/	/	/	/	/

2) Cable

Cable No.	Description	Manufacturer	Cable Type/Length	Supplied by
/	/	/	/	/

4.6 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate.

The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities.

The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the **Shenzhen Huaxia Testing Technology Co., Ltd.** quality system acc. to DIN EN ISO/IEC 17025.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for **CQA** laboratory is reported:

Test	Range	Uncertainty	Notes
Radiated Emission	Below 1GHz	5.12dB	(1)
Radiated Emission	Above 1GHz	4.60dB	(1)
Conducted Disturbance	0.15~30MHz	3.34dB	(1)

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.7 Test Location

All tests were performed at:

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

4.8 Test Facility

- **A2LA (Certificate No. 4742.01)**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

- **FCC Registration No.: 522263**

Shenzhen Huaxia Testing Technology 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 our files. Registration No.:522263

4.9 Deviation from Standards

None.

4.10 Abnormalities from Standard Conditions

None.

4.11 Other Information Requested by the Customer

None.

4.12 Equipment List

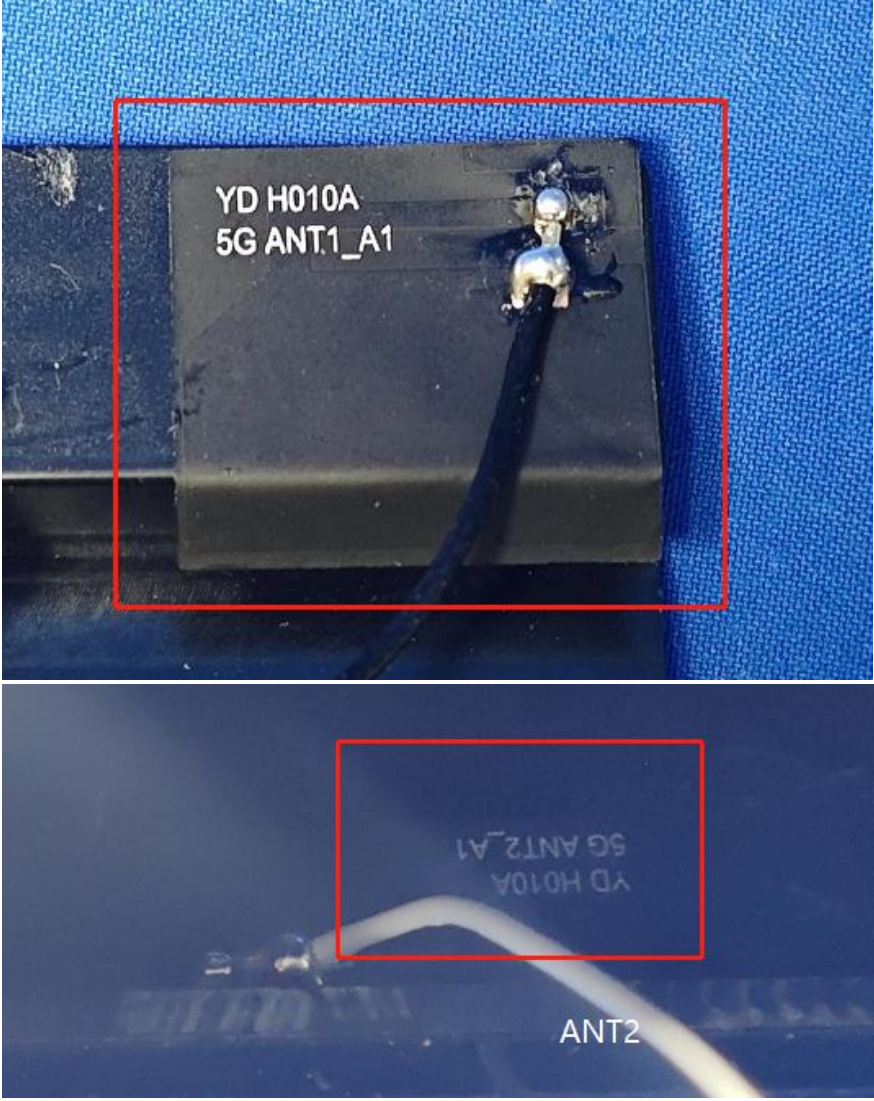
Test Equipment	Manufacturer	Model No.	Instrument No.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2024/9/2	2025/9/1
Spectrum analyzer	R&S	FSV40	CQA-075	2024/9/2	2025/9/1
Preamplifier	MITEQ	AFS4-00010300-18-10P-4	CQA-035	2024/9/2	2025/9/1
Preamplifier	MITEQ	AMF-6D-02001800-29-20P	CQA-036	2024/9/2	2025/9/1
Loop antenna	Schwarzbeck	FMZB1516	CQA-060	2023/9/8	2026/9/7
Bilog Antenna	R&S	HL562	CQA-011	2023/11/01	2026/10/31
Horn Antenna	R&S	HF906	CQA-012	2023/11/01	2026/10/31
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2023/9/7	2026/9/6
Coaxial Cable (Above 1GHz)	CQA	N/A	C019	2024/9/2	2025/9/1
Coaxial Cable (Below 1GHz)	CQA	N/A	C020	2024/9/2	2025/9/1
Antenna Connector	CQA	RFC-01	CQA-080	2024/9/2	2025/9/1
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2024/9/2	2025/9/1
Power divider	MIDWEST	PWD-2533-02-SMA-79	CQA-067	2024/9/2	2025/9/1
EMI Test Receiver	R&S	ESPI3	CQA-013	2024/9/2	2025/9/1
LISN	R&S	ENV216	CQA-003	2024/9/2	2025/9/1
Coaxial cable	CQA	N/A	CQA-C009	2024/9/2	2025/9/1

Note:

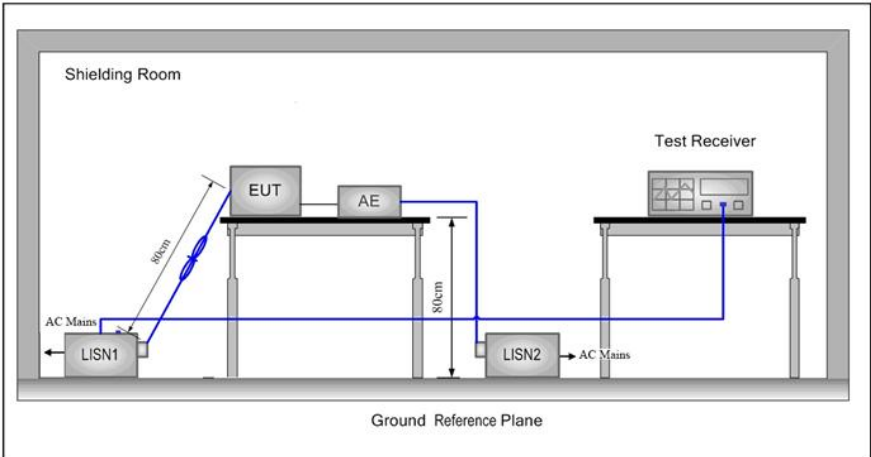
The temporary antenna connector is soldered on the pcb board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

5 Test results and Measurement Data

5.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203
<p>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.</p>	
EUT Antenna:	
<p>The antenna is FPC antenna. The connection/connection type between the antenna to the EUT's antenna port is: unique coupling. This is either permanently attachment or a unique coupling that satisfies the requirement.</p>	

5.2 Conducted Emissions

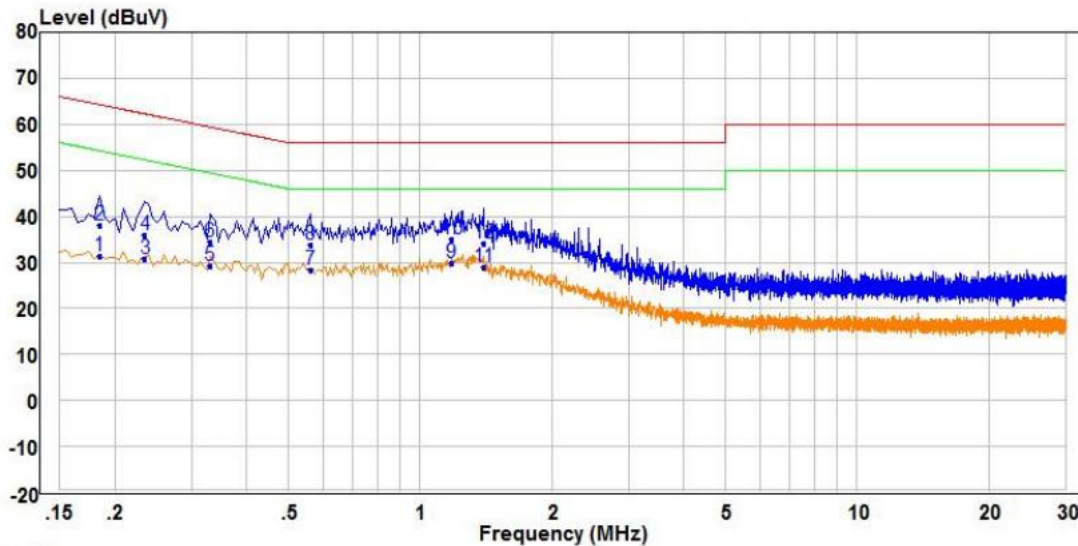
Test Requirement:	47 CFR Part 15C Section 15.207		
Test Method:	ANSI C63.10: 2013		
Test Frequency Range:	150kHz to 30MHz		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test Procedure:	<ol style="list-style-type: none"> 1) The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane. 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) 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 Setup:			

Test Mode:	Charge +Transmitting mode. Through Pre-scan, find the ANT1 at the lowest channel is the worst case. Only the worst case is recorded in the report.
Final Test Mode:	Charge +Transmitting mode
Test Results:	Pass

Measurement Data:

SMS-00180300-S38

Live line:

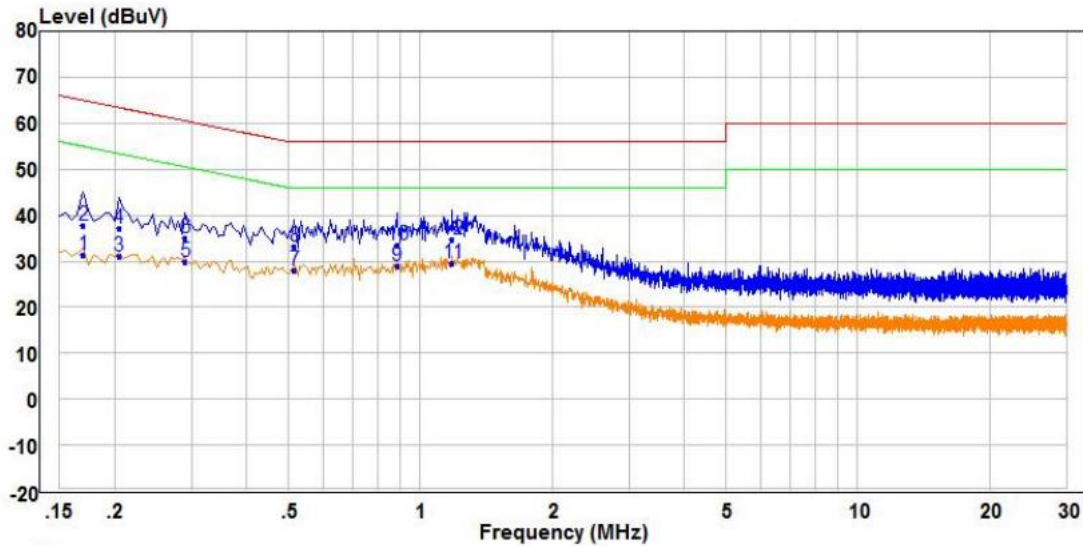


	Read Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.185	21.86	9.64	31.50	54.26	-22.76	Average	Line
2	0.185	28.43	9.64	38.07	64.26	-26.19	QP	Line
3	0.235	21.12	9.56	30.68	52.27	-21.59	Average	Line
4	0.235	26.43	9.56	35.99	62.27	-26.28	QP	Line
5	0.330	19.73	9.53	29.26	49.45	-20.19	Average	Line
6	0.330	24.99	9.53	34.52	59.45	-24.93	QP	Line
7	0.560	18.62	9.76	28.38	46.00	-17.62	Average	Line
8	0.560	23.98	9.76	33.74	56.00	-22.26	QP	Line
9	1.180	19.62	10.16	29.78	46.00	-16.22	Average	Line
10	1.180	25.00	10.16	35.16	56.00	-20.84	QP	Line
11	1.395	18.47	10.63	29.10	46.00	-16.90	Average	Line
12	1.395	23.57	10.63	34.20	56.00	-21.80	QP	Line

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

Neutral line:



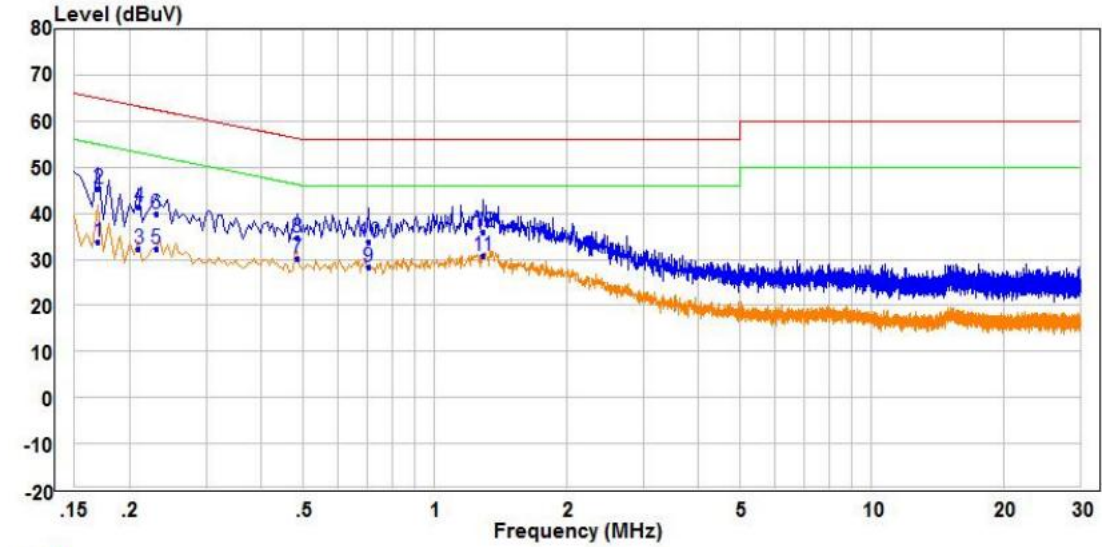
	Read Freq	Read Level	Factor	Limit Level	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dB		
1	0.170	21.71	9.66	31.37	54.96	-23.59 Average	Neutral
2	0.170	28.17	9.66	37.83	64.96	-27.13 QP	Neutral
3	0.205	21.62	9.60	31.22	53.41	-22.19 Average	Neutral
4	0.205	27.47	9.60	37.07	63.41	-26.34 QP	Neutral
5	0.290	20.50	9.49	29.99	50.52	-20.53 Average	Neutral
6	0.290	25.45	9.49	34.94	60.52	-25.58 QP	Neutral
7	0.515	18.45	9.72	28.17	46.00	-17.83 Average	Neutral
8	0.515	23.34	9.72	33.06	56.00	-22.94 QP	Neutral
9	0.885	19.14	9.78	28.92	46.00	-17.08 Average	Neutral
10	0.885	23.73	9.78	33.51	56.00	-22.49 QP	Neutral
11 PP	1.185	19.79	9.71	29.50	46.00	-16.50 Average	Neutral
12 QP	1.185	25.07	9.71	34.78	56.00	-21.22 QP	Neutral

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

FX48U-180300C

Live line:

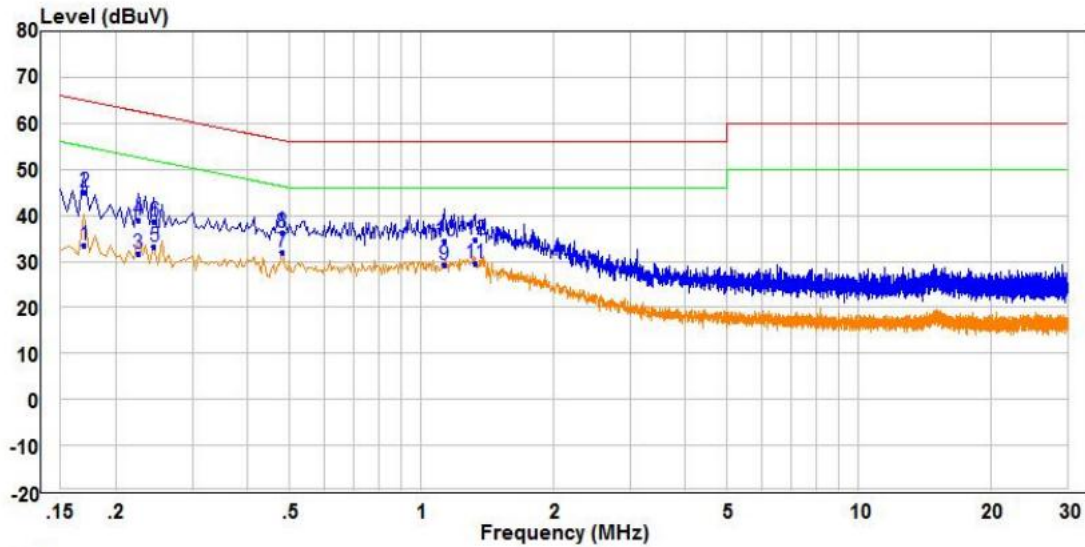


	Read	Limit	Over						
	Freq	Level	Factor	Level	Line	Limit	Remark	Pol/Phase	
	MHz	dBuV	dB	dBuV	dBuV	dB			
1	0.170	24.09	9.66	33.75	54.96	-21.21	Average	Line	
2	QP	0.170	35.73	9.66	45.39	64.96	-19.57	QP	
3	0.210	22.82	9.60	32.42	53.21	-20.79	Average	Line	
4	0.210	31.84	9.60	41.44	63.21	-21.77	QP	Line	
5	0.230	22.72	9.57	32.29	52.45	-20.16	Average	Line	
6	0.230	30.19	9.57	39.76	62.45	-22.69	QP	Line	
7	0.485	20.53	9.69	30.22	46.25	-16.03	Average	Line	
8	0.485	25.09	9.69	34.78	56.25	-21.47	QP	Line	
9	0.705	18.46	9.90	28.36	46.00	-17.64	Average	Line	
10	0.705	23.78	9.90	33.68	56.00	-22.32	QP	Line	
11	PP	1.290	20.34	10.41	30.75	46.00	-15.25	Average	Line
12	1.290	25.46	10.41	35.87	56.00	-20.13	QP	Line	

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

Neutral line:



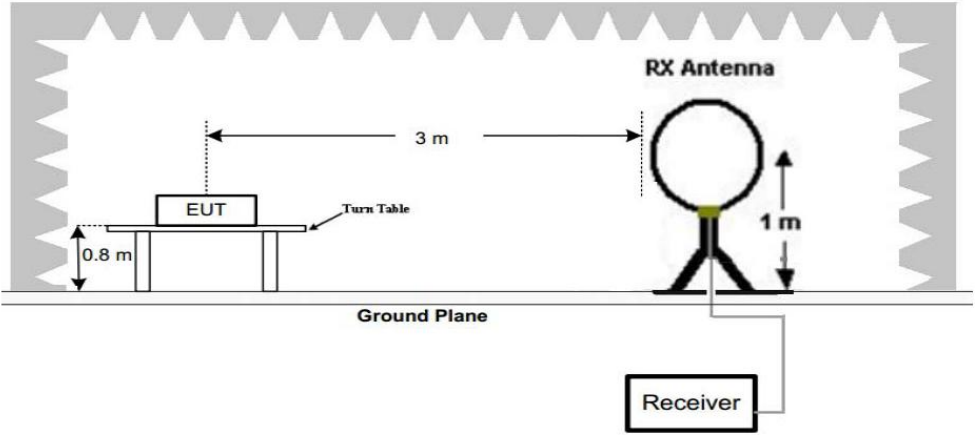
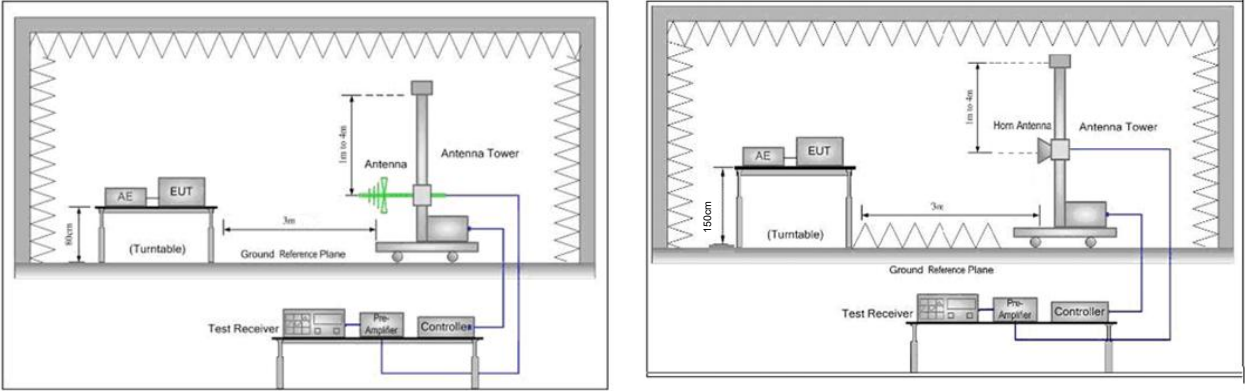
	Read Freq	Read Level	Factor	Limit Level	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dB		
1	0.170	23.99	9.66	33.65	54.96	-21.31 Average	Neutral
2	QP 0.170	35.48	9.66	45.14	64.96	-19.82 QP	Neutral
3	0.225	21.99	9.57	31.56	52.63	-21.07 Average	Neutral
4	0.225	29.50	9.57	39.07	62.63	-23.56 QP	Neutral
5	0.245	23.69	9.54	33.23	51.92	-18.69 Average	Neutral
6	0.245	29.09	9.54	38.63	61.92	-23.29 QP	Neutral
7	PP 0.480	22.24	9.68	31.92	46.34	-14.42 Average	Neutral
8	0.480	26.59	9.68	36.27	56.34	-20.07 QP	Neutral
9	1.130	19.66	9.71	29.37	46.00	-16.63 Average	Neutral
10	1.130	24.84	9.71	34.55	56.00	-21.45 QP	Neutral
11	1.325	19.83	9.72	29.55	46.00	-16.45 Average	Neutral
12	1.325	24.99	9.72	34.71	56.00	-21.29 QP	Neutral

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

5.3 Radiated Emission

Test Requirement:	47 CFR Part 15C Section 15.249 and 15.209 and 15.205				
Test Method:	ANSI C63.10: 2013				
Test Site:	Measurement Distance: 3m (Semi-Anechoic Chamber)				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30KHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30KHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30KHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30KHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30KHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100 kHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Note: For fundamental frequency, RBW=5MHz, VBW=5MHz, Peak detector is for PK value, RMS detector is for Average value.					
Limit: (Spurious Emissions and band edge)	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3
Note: 1) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. 2) 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.					
Limit: (Field strength of the fundamental signal)	Frequency	Limit (dBuV/m @3m)		Remark	
	2400MHz-2483.5MHz	94.0		Average Value	
		114.0		Peak Value	

<p>Test Setup:</p>		
		
<p>Figure 1. Below 30MHz</p>		
		
<p>Figure 2. 30MHz to 1GHz</p>		
<p>Figure 3. Above 1 GHz</p>		
<p>Test Procedure:</p>	<p>a. 1) Below 1G: The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>2) Above 1G: The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>Note: For the radiated emission test above 1GHz: Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.</p> <p>b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>c. 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>d. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table</p>	

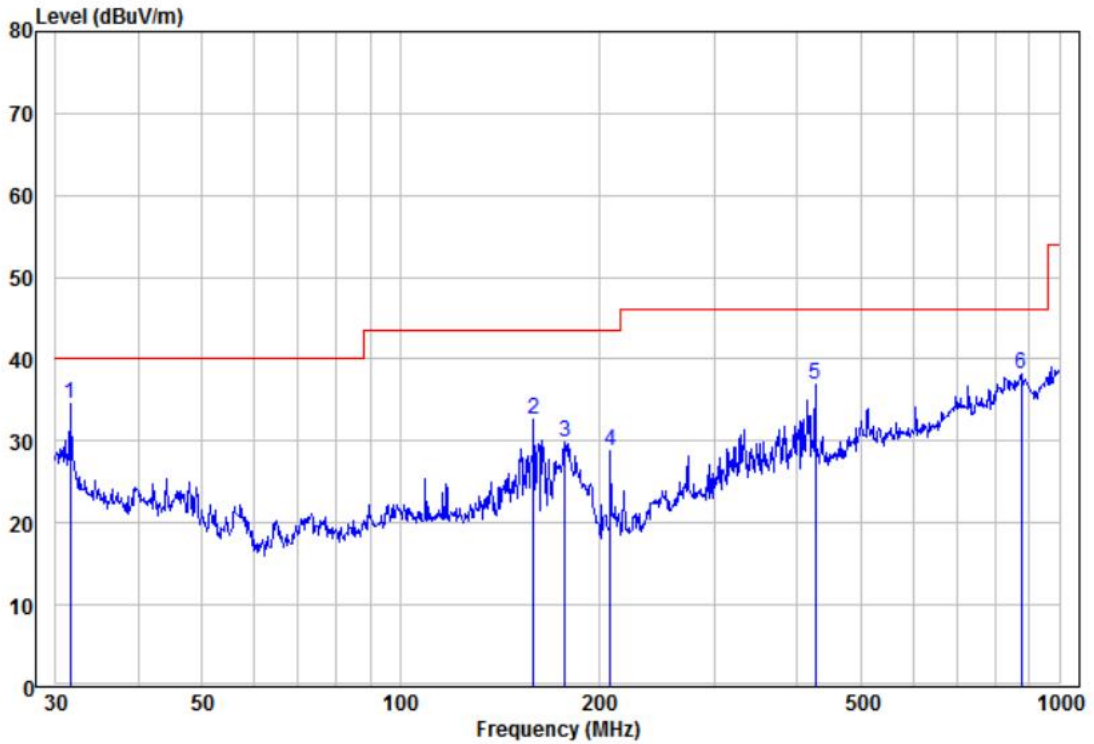
	<p>was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could 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> <p>g. Test the EUT in the lowest channel,the middle channel,the Highest channel</p> <p>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode,And found the X axis positioning which it is worse case.</p> <p>i. Repeat above procedures until all frequencies measured was complete.</p>
Exploratory Test Mode:	Transmitting mode, Charge + Transmitting mode.
Final Test Mode:	<p>Pretest the EUT at Transmitting mode and Charge + Transmitting mode, found the Charge + Transmitting mode which it is worse case.</p> <p>For below 1GHz part, through pre-scan, the worst case is the lowest channel.</p> <p>Through Pre-scan, find the ANT1 at the lowest channel is the worst case.</p> <p>Only the worst case is recorded in the report.</p>
Test Results:	Pass

ANT1:

Measurement Data

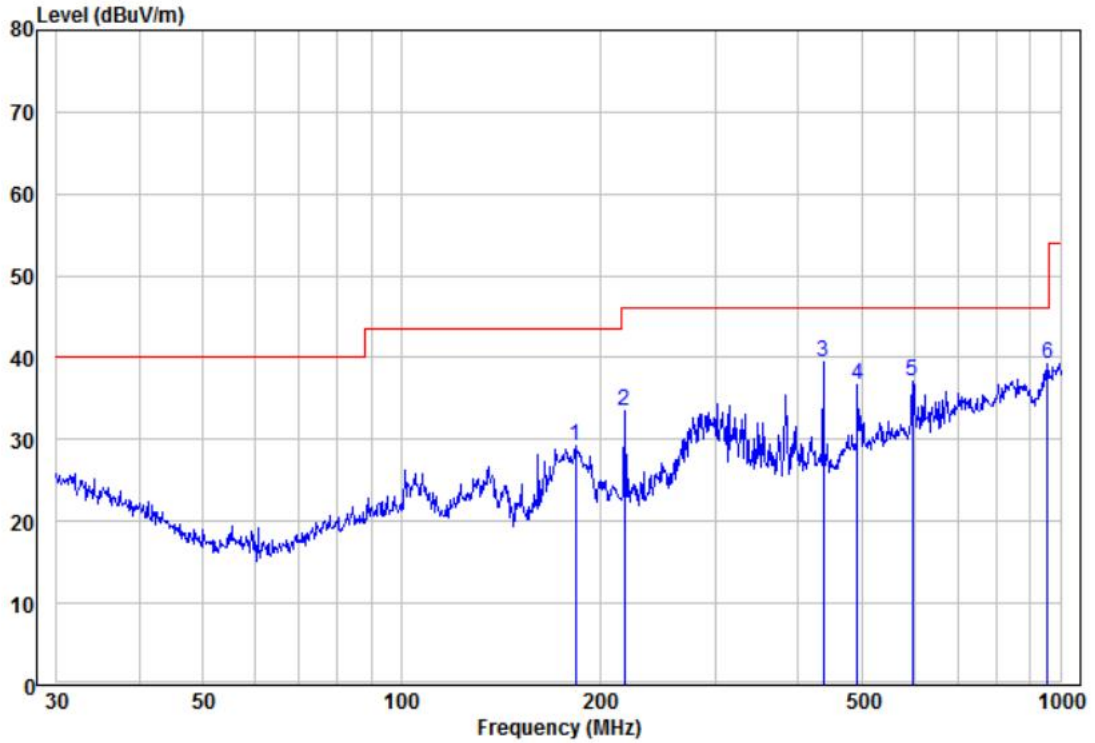
SMS-00180300-S38

30MHz~1GHz		
Test mode:	Transmitting	Vertical



	Read Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	pp	31.51	18.81	15.76	34.57	40.00	-5.43 Peak	VERTICAL
2		159.23	23.45	9.20	32.65	43.50	-10.85 Peak	VERTICAL
3		177.51	20.35	9.59	29.94	43.50	-13.56 Peak	VERTICAL
4		208.58	18.59	10.28	28.87	43.50	-14.63 Peak	VERTICAL
5		426.52	19.17	17.78	36.95	46.00	-9.05 Peak	VERTICAL
6		875.25	11.52	26.77	38.29	46.00	-7.71 Peak	VERTICAL

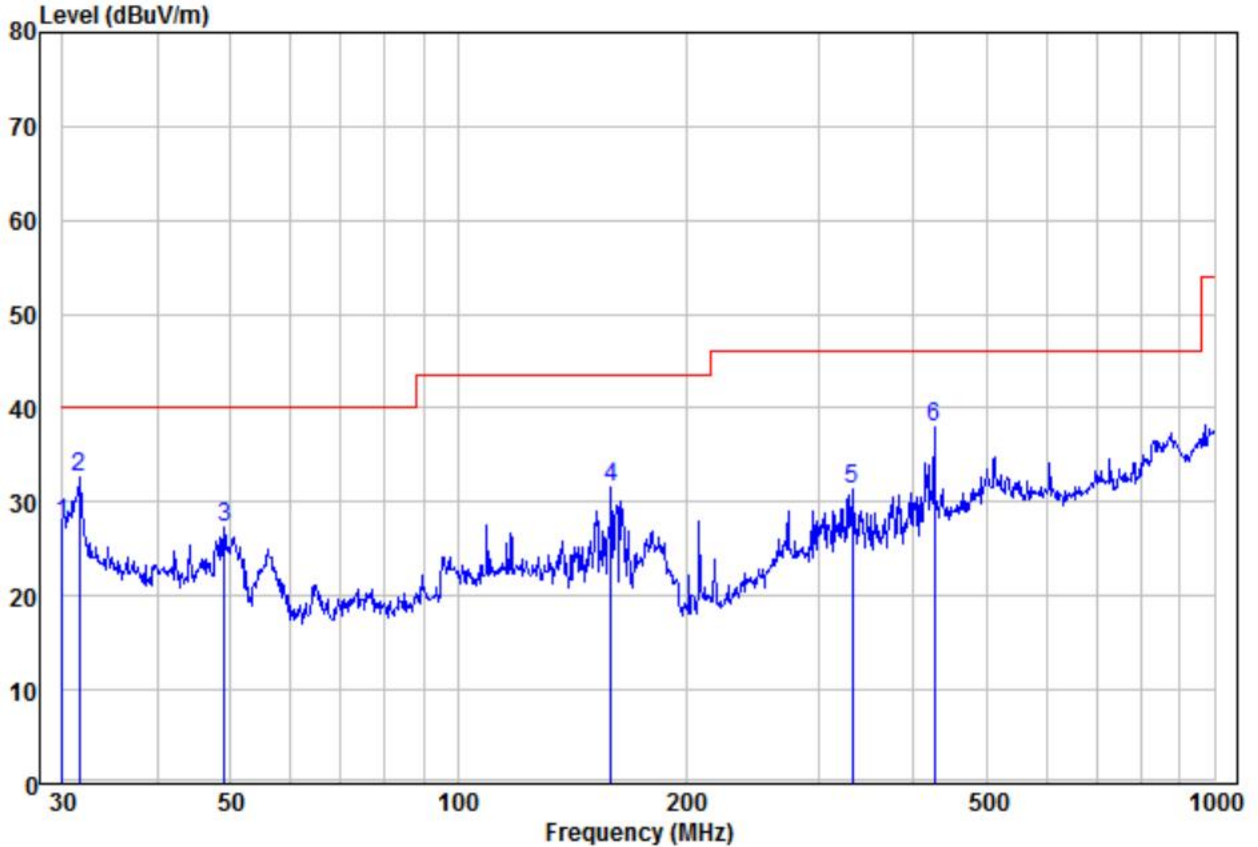
Test mode:	Transmitting	Horizontal
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	Read Freq	Read Level	Factor	Level	Limit	Over	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	183.84	19.57	9.65	29.22	43.50	-14.28	Peak	HORIZONTAL
2	218.31	22.96	10.60	33.56	46.00	-12.44	Peak	HORIZONTAL
3	437.12	21.34	18.14	39.48	46.00	-6.52	Peak	HORIZONTAL
4	492.47	16.57	20.04	36.61	46.00	-9.39	Peak	HORIZONTAL
5	597.22	16.02	21.01	37.03	46.00	-8.97	Peak	HORIZONTAL
6	955.44	12.70	26.54	39.24	46.00	-6.76	Peak	HORIZONTAL

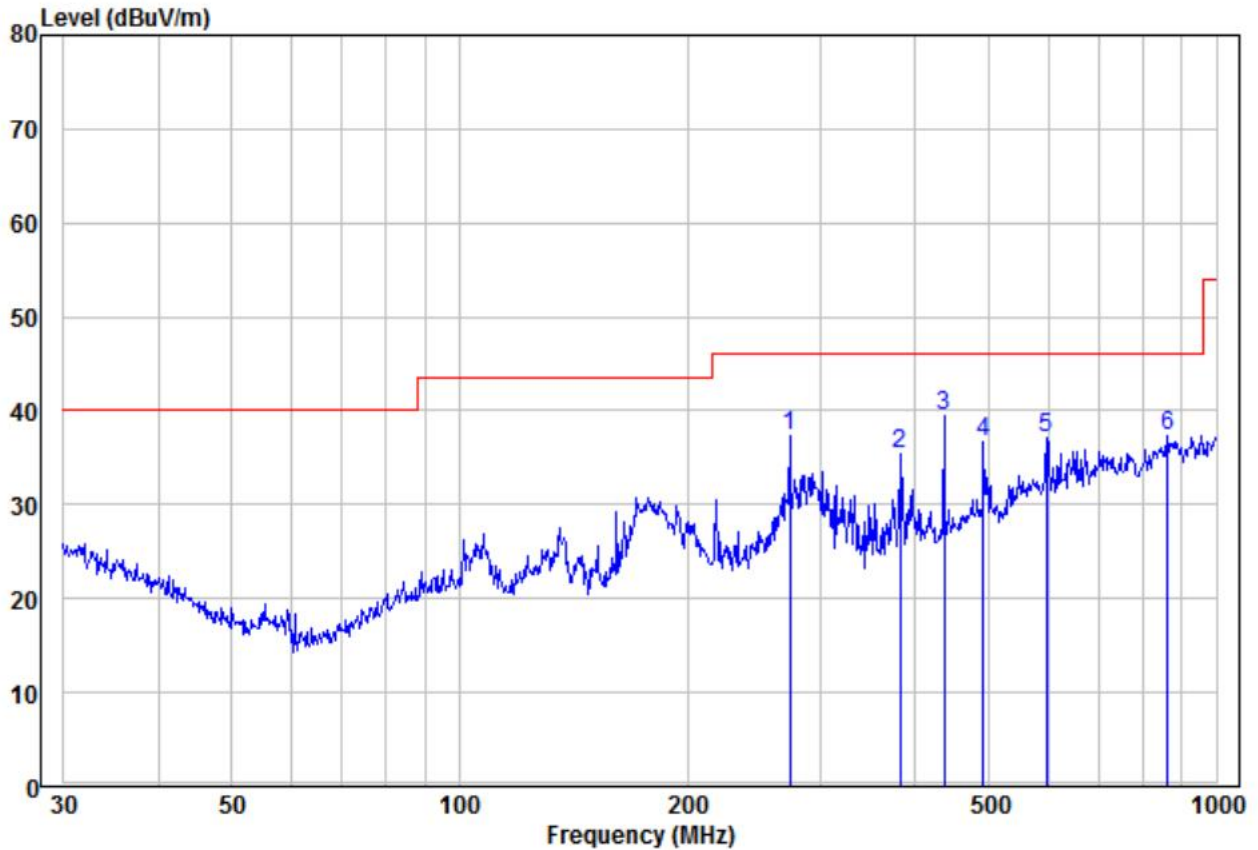
FX48U-180300C

30MHz~1GHz		
Test mode:	Transmitting	Vertical



	Read Freq	Read Level	Read Factor	Limit Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	30.00	11.65	16.08	27.73	40.00	-12.27	Peak	VERTICAL
2 pp	31.51	16.81	15.76	32.57	40.00	-7.43	Peak	VERTICAL
3	49.01	17.98	9.25	27.23	40.00	-12.77	Peak	VERTICAL
4	159.23	22.45	9.20	31.65	43.50	-11.85	Peak	VERTICAL
5	332.52	15.18	16.16	31.34	46.00	-14.66	Peak	VERTICAL
6	426.52	20.17	17.78	37.95	46.00	-8.05	Peak	VERTICAL

Test mode:	Transmitting	Horizontal
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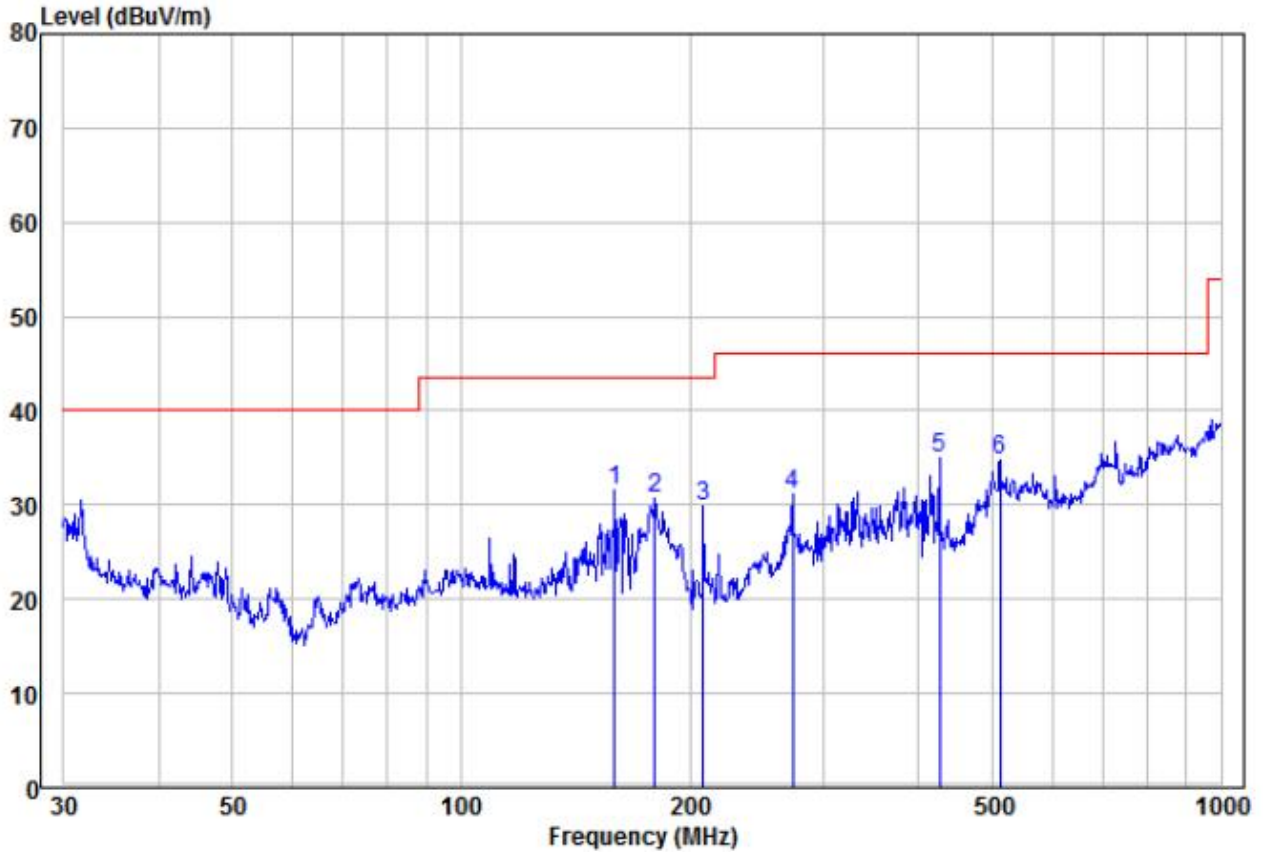
	Read Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	273.23	22.94	14.41	37.35	46.00	-8.65	Peak	HORIZONTAL
2	382.59	18.94	16.43	35.37	46.00	-10.63	Peak	HORIZONTAL
3 pp	437.12	21.34	18.14	39.48	46.00	-6.52	Peak	HORIZONTAL
4	492.47	16.57	20.04	36.61	46.00	-9.39	Peak	HORIZONTAL
5	597.22	16.02	21.01	37.03	46.00	-8.97	Peak	HORIZONTAL
6	863.06	10.53	26.79	37.32	46.00	-8.68	Peak	HORIZONTAL

ANT2:

Measurement Data

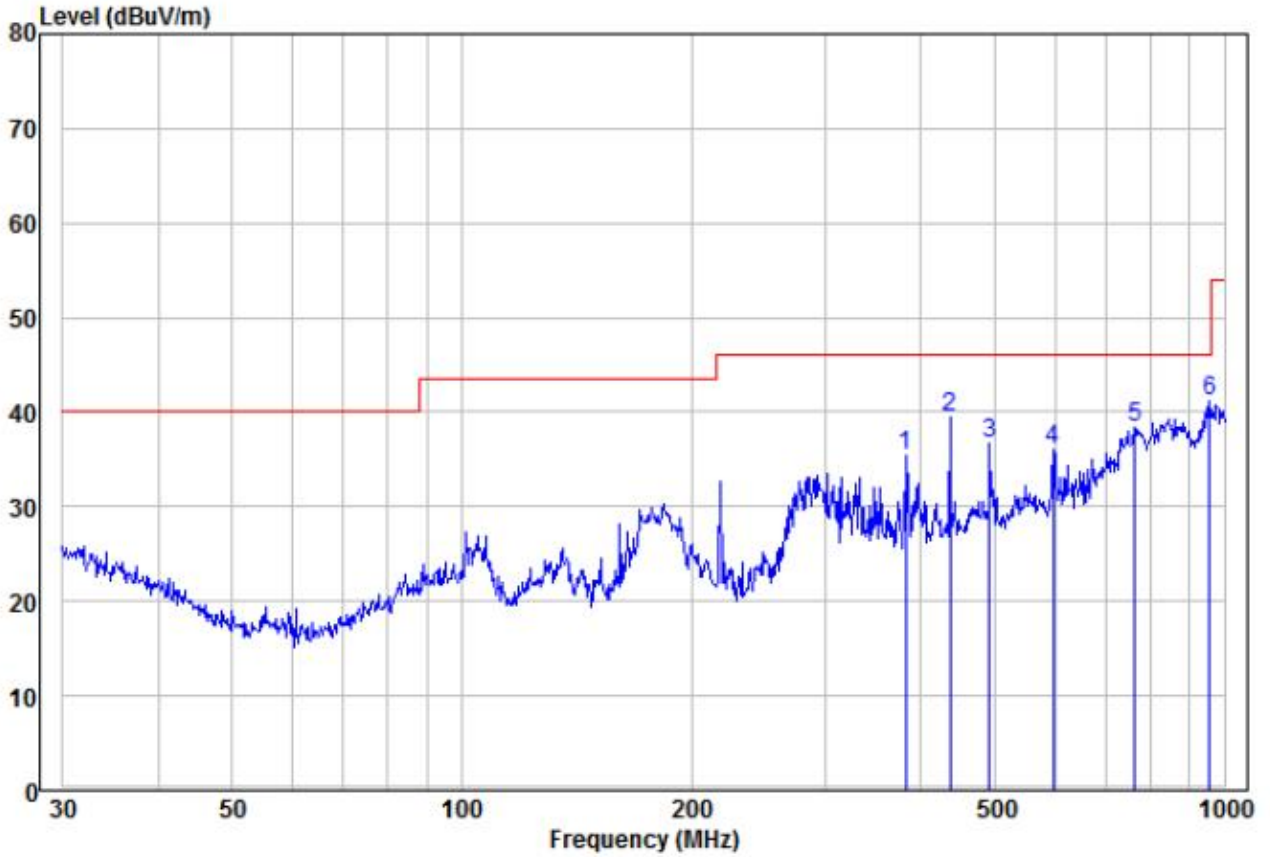
SMS-00180300-S38

30MHz~1GHz		
Test mode:	Transmitting	Vertical



	Read Freq	Read Level	Read Factor	Limit Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	159.23	22.45	9.20	31.65	43.50	-11.85	Peak	VERTICAL
2	180.02	20.89	9.78	30.67	43.50	-12.83	Peak	VERTICAL
3	208.58	19.59	10.28	29.87	43.50	-13.63	Peak	VERTICAL
4	273.23	16.64	14.41	31.05	46.00	-14.95	Peak	VERTICAL
5 pp	426.52	17.17	17.78	34.95	46.00	-11.05	Peak	VERTICAL
6	511.84	14.39	20.46	34.85	46.00	-11.15	Peak	VERTICAL

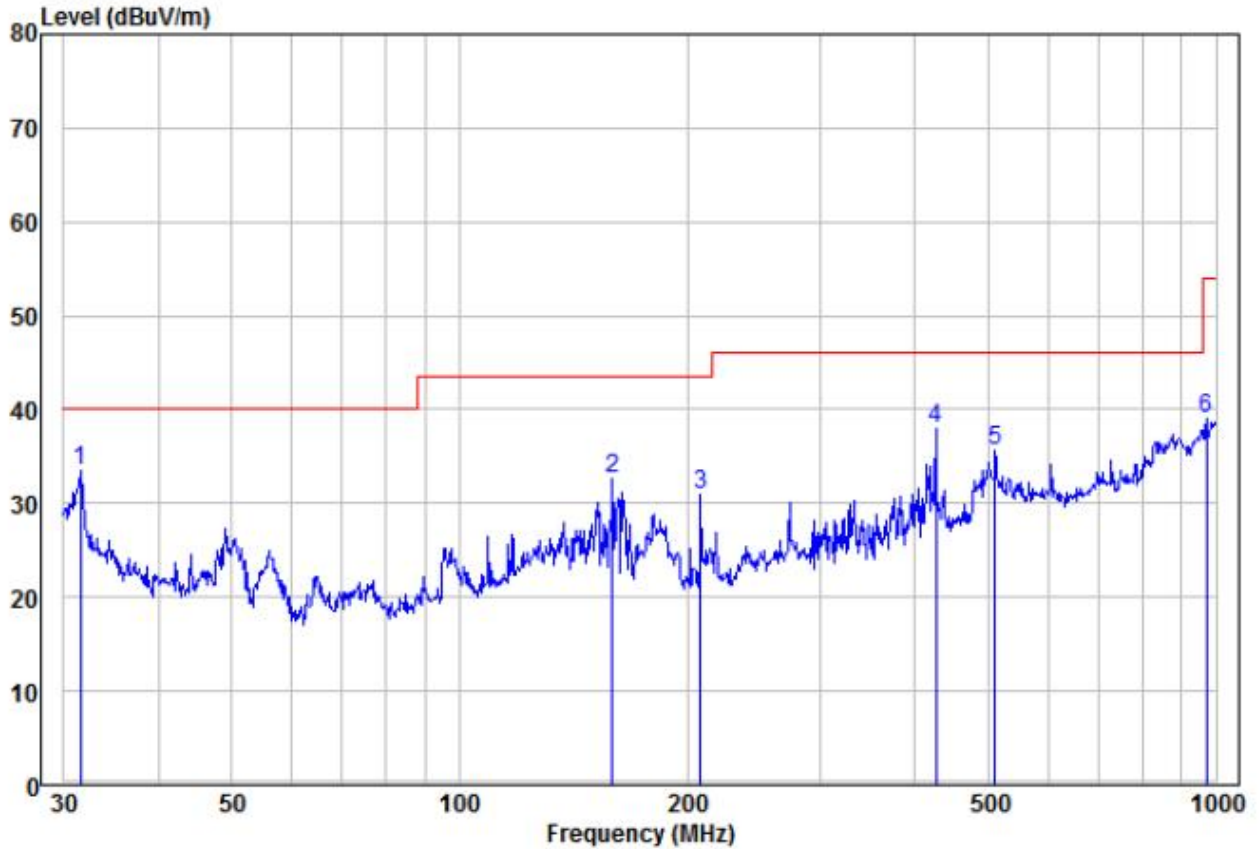
Test mode:	Transmitting	Horizontal
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	Read Freq	Read Level	Factor	Level	Limit	Over	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	382.59	18.94	16.43	35.37	46.00	-10.63	Peak	HORIZONTAL
2	437.12	21.34	18.14	39.48	46.00	-6.52	Peak	HORIZONTAL
3	492.47	16.57	20.04	36.61	46.00	-9.39	Peak	HORIZONTAL
4	597.22	15.02	21.01	36.03	46.00	-9.97	Peak	HORIZONTAL
5	763.38	14.03	24.33	38.36	46.00	-7.64	Peak	HORIZONTAL
6 pp	955.44	14.70	26.54	41.24	46.00	-4.76	Peak	HORIZONTAL

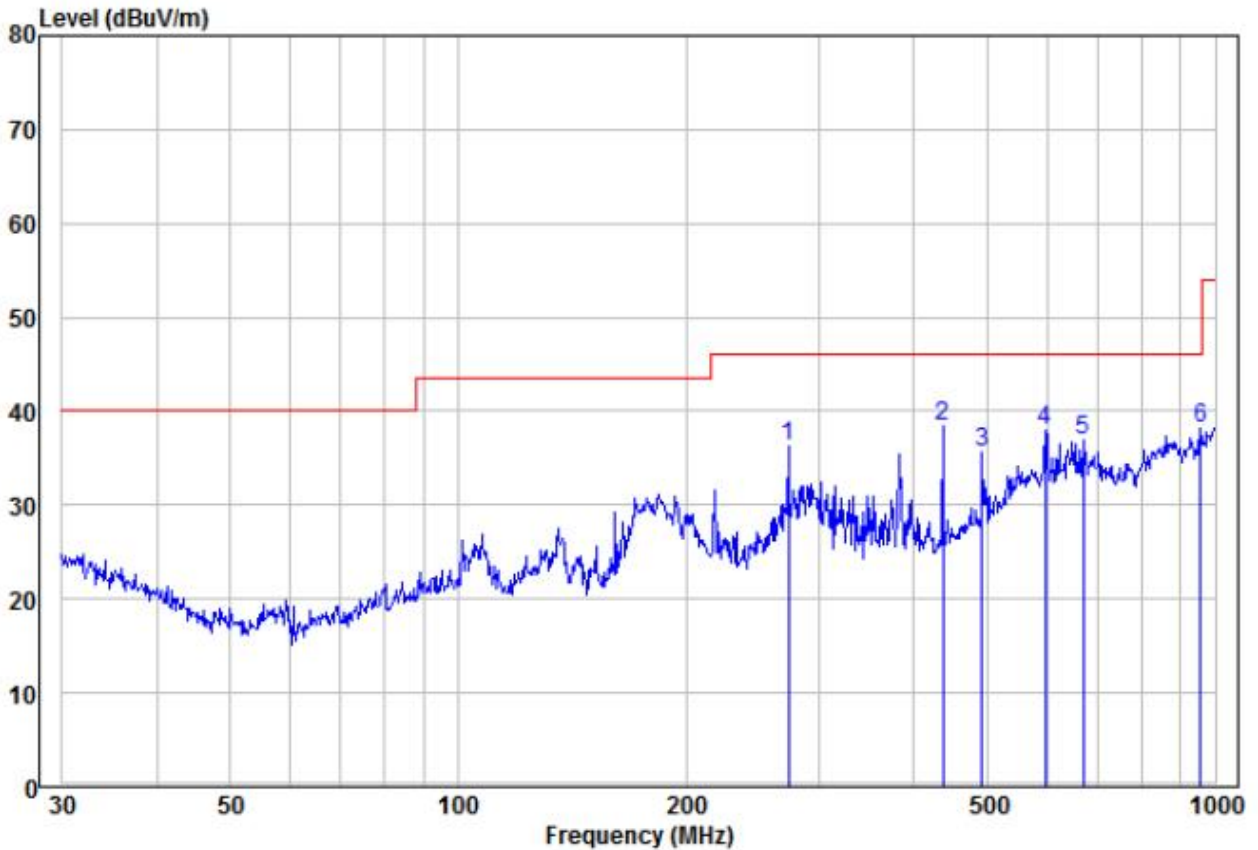
FX48U-180300C

30MHz~1GHz		
Test mode:	Transmitting	Vertical



	Read Freq	Read Level	Read Factor	Limit Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1 pp	31.51	17.81	15.76	33.57	40.00	-6.43	Peak	VERTICAL
2	159.23	23.45	9.20	32.65	43.50	-10.85	Peak	VERTICAL
3	208.58	20.59	10.28	30.87	43.50	-12.63	Peak	VERTICAL
4	426.52	20.17	17.78	37.95	46.00	-8.05	Peak	VERTICAL
5	510.04	15.13	20.43	35.56	46.00	-10.44	Peak	VERTICAL
6	972.34	12.10	26.98	39.08	54.00	-14.92	Peak	VERTICAL

Test mode:	Transmitting	Horizontal
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	Read Freq	Read Level	Factor	Limit Level	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	273.23	21.94	14.41	36.35	46.00	-9.65 Peak	HORIZONTAL
2	pp 437.12	20.34	18.14	38.48	46.00	-7.52 Peak	HORIZONTAL
3	492.47	15.57	20.04	35.61	46.00	-10.39 Peak	HORIZONTAL
4	597.22	17.02	21.01	38.03	46.00	-7.97 Peak	HORIZONTAL
5	670.49	14.59	22.32	36.91	46.00	-9.09 Peak	HORIZONTAL
6	955.44	11.70	26.54	38.24	46.00	-7.76 Peak	HORIZONTAL

ANT1:

Above 1GHz							
Test mode:		Transmitting		Test channel:		Lowest	
Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Over (dB)	Detector Type	Ant. Pol. H/V
5725	60.86	-9.39	51.47	74	-22.53	Peak	H
5725	45.31	-9.39	35.92	54	-18.08	AVG	H
5729	96.76	-2.74	94.02	114	-19.98	peak	H
5729	94.25	-2.74	91.51	94	-2.49	AVG	H
11458	48.66	6.84	55.50	74	-18.50	peak	H
11458	39.93	6.84	46.77	54	-7.23	AVG	H
17187	42.02	13.02	55.04	74	-18.96	peak	H
17187	31.48	13.02	44.50	54	-9.50	AVG	H
5725	62.25	-9.39	52.86	74	-21.14	peak	V
5725	43.68	-9.39	34.29	54	-19.71	AVG	V
5729	96.85	-2.74	94.11	114	-19.89	peak	V
5729	90.92	-2.74	88.18	94	-5.82	AVG	V
11458	49.00	6.84	55.84	74	-18.16	peak	V
11458	36.45	6.84	43.29	54	-10.71	AVG	V
17187	42.79	13.02	55.81	74	-18.19	peak	V
17187	31.48	13.02	44.50	54	-9.50	AVG	V

Test mode:		Transmitting		Test channel:		Middle	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)		H/V
5788	96.92	-2.39	94.53	114	-19.47	peak	H
5788	92.07	-2.39	89.68	94	-4.32	AVG	H
11576	48.56	6.97	55.53	74	-18.47	peak	H
11576	37.22	6.97	44.19	54	-9.81	AVG	H
17,364	42.90	15.71	58.61	74	-15.39	peak	H
17,364	27.82	15.71	43.53	54	-10.47	AVG	H
5788	96.35	-2.41	93.94	114	-20.06	peak	V
5788	93.27	-2.41	90.86	94	-3.14	AVG	V
11576	48.08	6.97	55.05	74	-18.95	peak	V
11576	37.75	6.97	44.72	54	-9.28	AVG	V
17,364	41.20	15.71	56.91	74	-17.09	peak	V
17,364	29.55	15.71	45.26	54	-8.74	AVG	V

Test mode:		Transmitting		Test channel:		Highest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)		H/V
5847	97.26	-2.31	94.95	114	-19.05	peak	H
5847	94.74	-2.31	92.43	94	-1.57	AVG	H
5875	58.02	-2.21	55.81	74	-18.19	peak	H
5875	43.35	-2.21	41.14	54	-12.86	AVG	H
11694	49.40	6.63	56.03	74	-17.97	peak	H
11694	37.10	6.63	43.73	54	-10.27	AVG	H
17,541	42.71	16.05	58.76	74	-15.24	peak	H
17,541	28.32	16.05	44.37	54	-9.63	AVG	H
5847	96.52	-2.31	94.21	114	-19.79	peak	V
5847	94.43	-2.31	92.12	94	-1.88	AVG	V
5875	58.40	-2.21	56.19	74	-17.81	peak	V
5875	41.75	-2.21	39.54	54	-14.46	AVG	V
11694	49.35	6.63	55.98	74	-18.02	peak	V
11694	37.89	6.63	44.52	54	-9.48	AVG	V
17,541	42.46	16.05	58.51	74	-15.49	peak	V
17,541	29.86	16.05	45.91	54	-8.09	AVG	V

ANT2:

Above 1GHz							
Test mode:		Transmitting		Test channel:		Lowest	
Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Over (dB)	Detector Type	Ant. Pol. H/V
5725	56.21	-9.39	46.82	74	-27.18	Peak	H
5725	42.05	-9.39	32.66	54	-21.34	AVG	H
5729	98.58	-2.74	95.84	114	-18.16	peak	H
5729	94.28	-2.74	91.54	94	-2.46	AVG	H
11458	48.00	6.84	54.84	74	-19.16	peak	H
11458	38.94	6.84	45.78	54	-8.22	AVG	H
17187	42.06	13.02	55.08	74	-18.92	peak	H
17187	30.83	13.02	43.85	54	-10.15	AVG	H
5725	56.44	-9.39	47.05	74	-26.95	peak	V
5725	42.04	-9.39	32.65	54	-21.35	AVG	V
5729	98.79	-2.74	96.05	114	-17.95	peak	V
5729	93.93	-2.74	91.19	94	-2.81	AVG	V
11458	50.10	6.84	56.94	74	-17.06	peak	V
11458	39.62	6.84	46.46	54	-7.54	AVG	V
17187	40.88	13.02	53.90	74	-20.10	peak	V
17187	32.33	13.02	45.35	54	-8.65	AVG	V

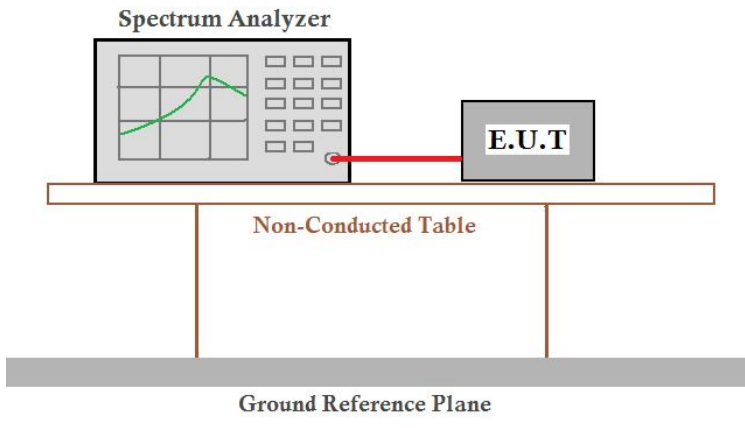
Test mode:		Transmitting		Test channel:		Middle	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)		H/V
5788	95.24	-2.39	92.85	114	-21.15	peak	H
5788	93.13	-2.39	90.74	94	-3.26	AVG	H
11576	48.21	6.97	55.18	74	-18.82	peak	H
11576	37.28	6.97	44.25	54	-9.75	AVG	H
17,364	42.60	15.71	58.31	74	-15.69	peak	H
17,364	30.35	15.71	46.06	54	-7.94	AVG	H
5788	95.96	-2.41	93.55	114	-20.45	peak	V
5788	91.37	-2.41	88.96	94	-5.04	AVG	V
11576	48.07	6.97	55.04	74	-18.96	peak	V
11576	38.20	6.97	45.17	54	-8.83	AVG	V
17,364	42.15	15.71	57.86	74	-16.14	peak	V
17,364	29.57	15.71	45.28	54	-8.72	AVG	V

Test mode:		Transmitting		Test channel:		Highest	
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detector Type	Ant. Pol.
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V
5847	97.13	-2.31	94.82	114	-19.18	peak	H
5847	93.61	-2.31	91.30	94	-2.70	AVG	H
5875	56.44	-2.21	54.23	74	-19.77	peak	H
5875	44.31	-2.21	42.10	54	-11.90	AVG	H
11694	47.88	6.63	54.51	74	-19.49	peak	H
11694	36.99	6.63	43.62	54	-10.38	AVG	H
17,541	43.25	16.05	59.30	74	-14.70	peak	H
17,541	29.26	16.05	45.31	54	-8.69	AVG	H
5847	96.18	-2.31	93.87	114	-20.13	peak	V
5847	92.29	-2.31	89.98	94	-4.02	AVG	V
5875	56.88	-2.21	54.67	74	-19.33	peak	V
5875	42.29	-2.21	40.08	54	-13.92	AVG	V
11694	48.73	6.63	55.36	74	-18.64	peak	V
11694	36.29	6.63	42.92	54	-11.08	AVG	V
17,541	43.39	16.05	59.44	74	-14.56	peak	V
17,541	30.44	16.05	46.49	54	-7.51	AVG	V

Remark:

- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 2) Scan from 9kHz to 25GHz,The disturbance above 10GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported .

5.4 20dB Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.215
Test Method:	ANSI C63.10:2013
Test Setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>
Test Mode:	Transmitting with GFSK modulation. Through Pre-scan, find the ANT1 at the lowest channel is the worst case. Only the worst case is recorded in the report.
Limit:	N/A
Test Results:	Pass

Measurement Data

ANT1:

Test channel	20dB bandwidth (MHz)	Results
Lowest	3.670	Pass
Middle	3.948	Pass
Highest	3.647	Pass

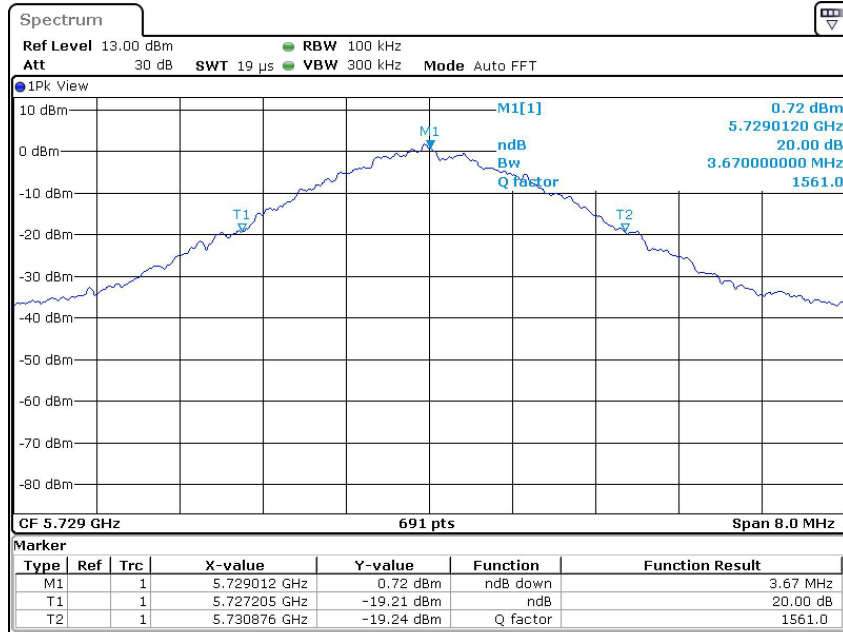
ANT2:

Test channel	20dB bandwidth (MHz)	Results
Lowest	3.612	Pass
Middle	3.902	Pass
Highest	3.531	Pass

Test plot as follows:

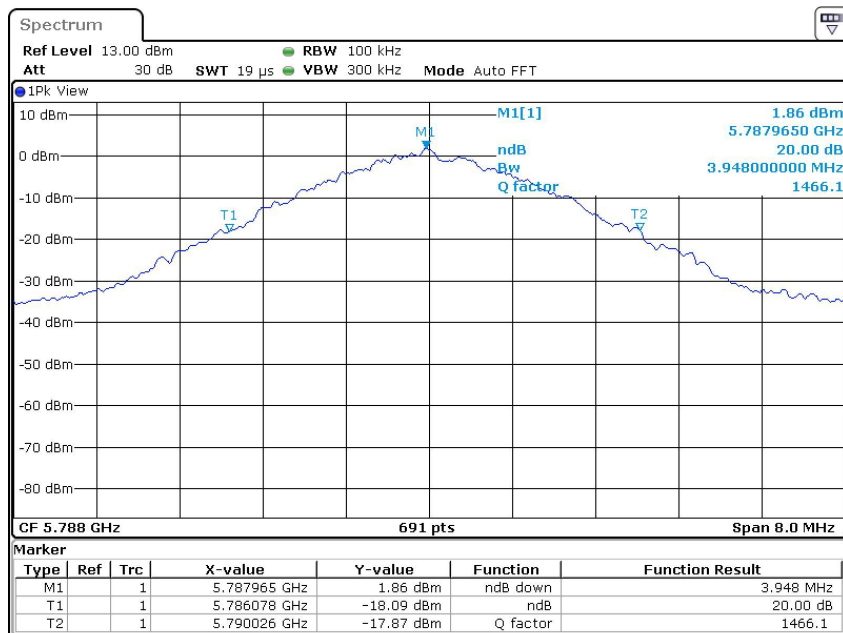
Ant1:

Test channel: Lowest



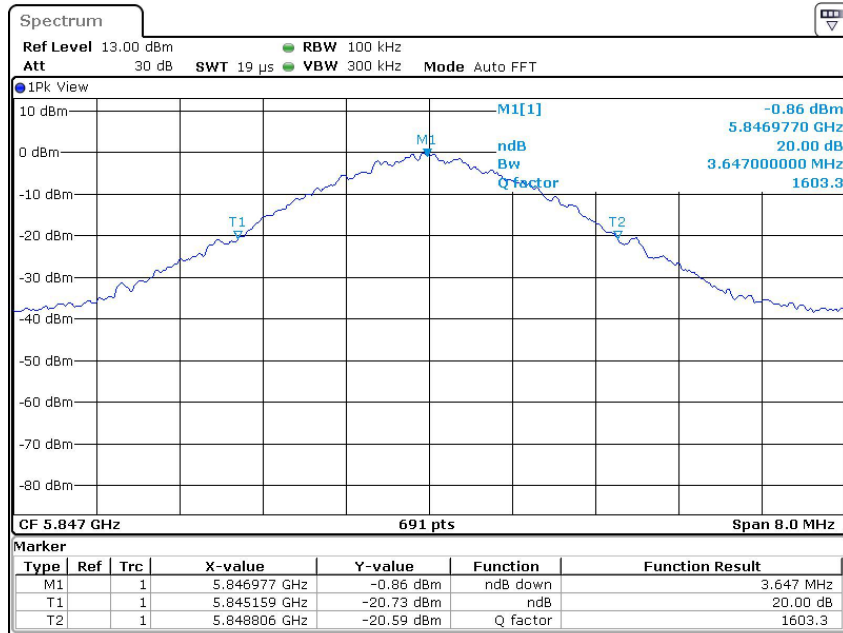
Date: 17.OCT.2024 17:46:05

Test channel: Middle



Date: 17.OCT.2024 17:46:58

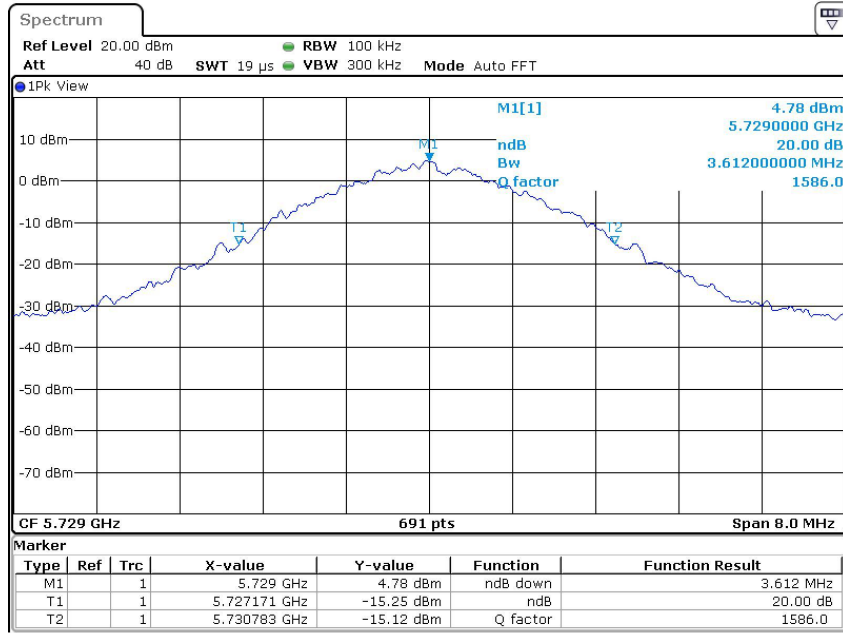
Test channel: Highest



Date: 17.OCT.2024 17:47:56

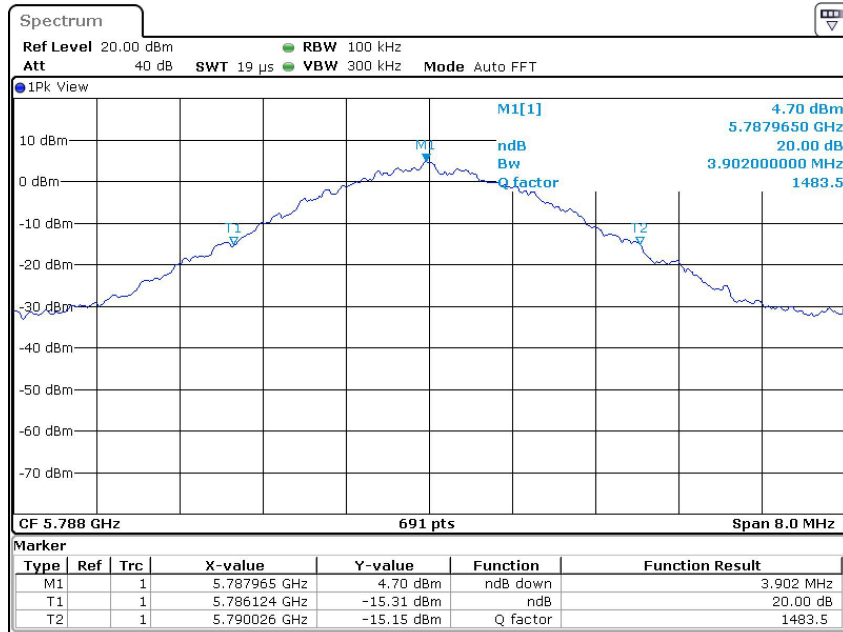
Ant2:

Test channel: Lowest



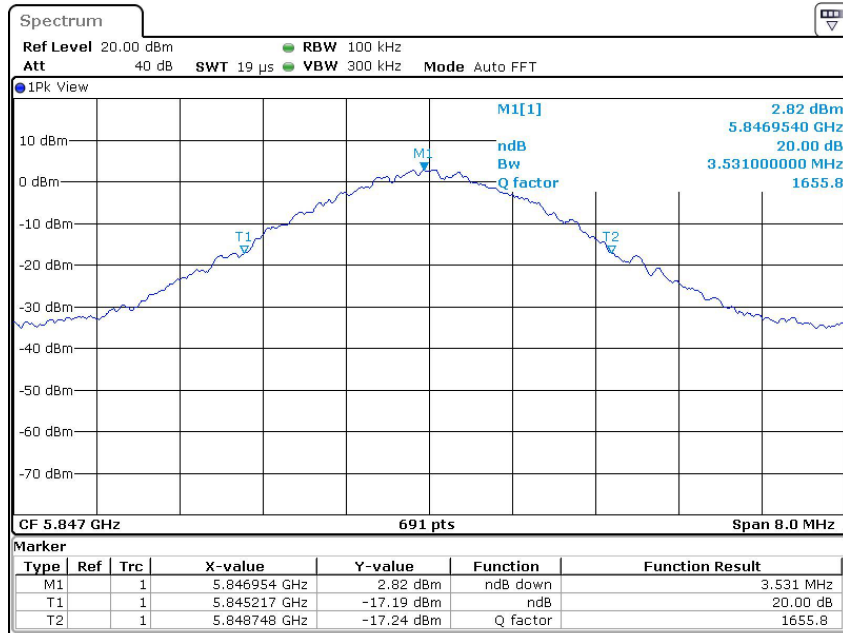
Date: 13.NOV.2024 14:15:08

Test channel: Middle



Date: 13.NOV.2024 14:15:39

Test channel: Highest



Date: 13.NOV.2024 14:17:10

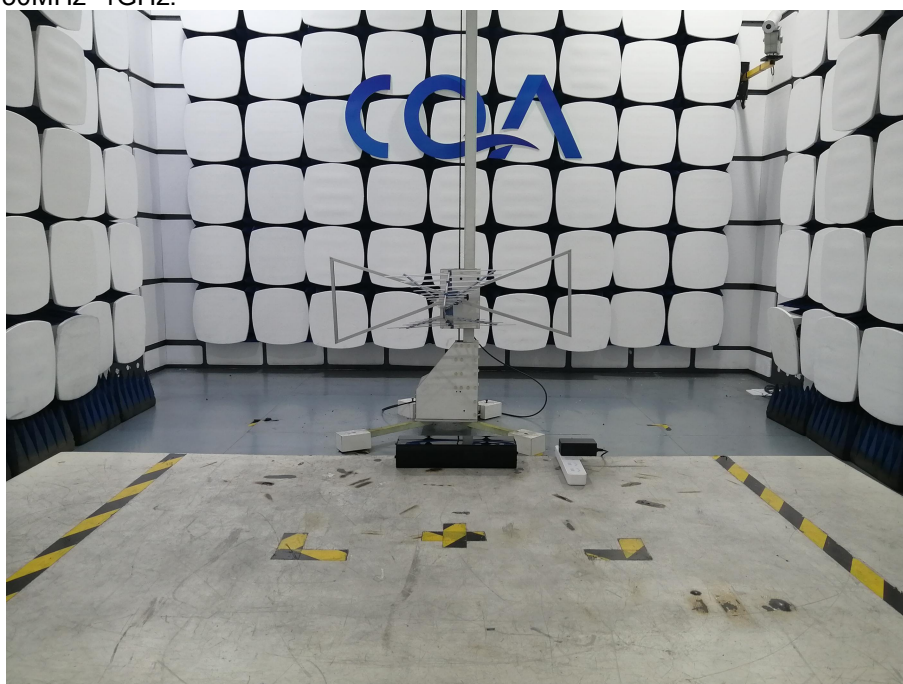
6 Photographs

6.1 Radiated Emission Test Setup

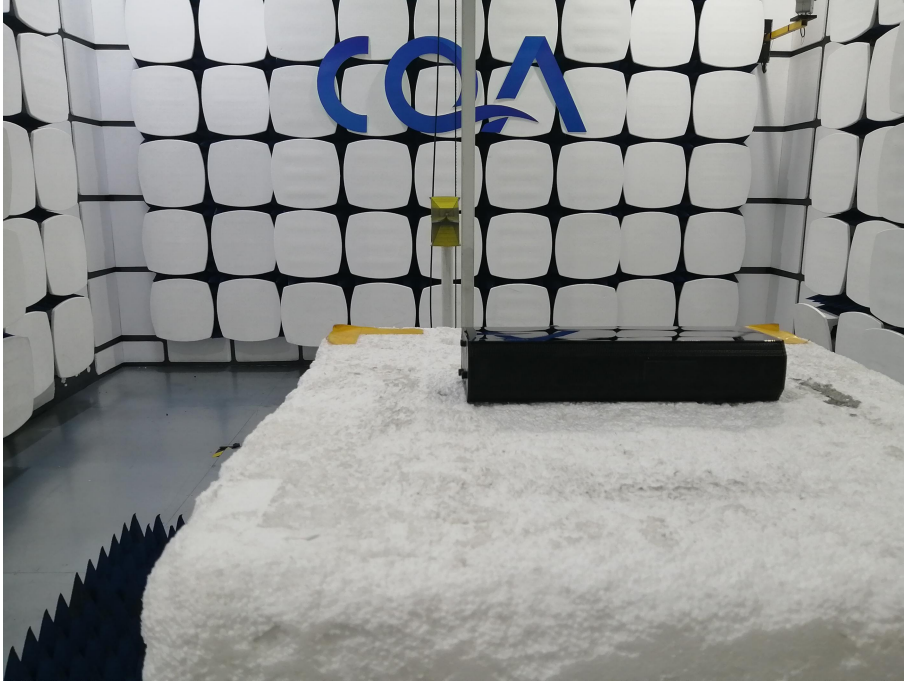
9kHz~30MHz



30MHz~1GHz:



Above 1GHz:



6.2 Conducted Emission Test Setup



6.3 EUT Constructional Details

Refer to Photographs - EUT Constructional Details OF EUT for CQASZ20240901999E-01.

***** END OF REPORT *****