

TECHNICAL REPORT



Report No.: TW2107298-02E
File Reference No.: 2021-08-05

Applicant: Shenzhen Renqing Excellent Technology Co., Ltd.

Product: Smart Plotter

Model No.: ZC2-Lite, ZC2-Pro, ZC2-MINI, ZC2-EU, ZC2-AF, ZC2-AS, ZC2-OA, ZC2-SA, ZC2-NA

Trademark: ROCK, rock space

Test Standards: FCC Part 15.247

Test Result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10, FCC Part 15.247 for the evaluation of electromagnetic compatibility

Approved By

A handwritten signature in black ink, appearing to read 'Jack Chung'.

Jack Chung
Manager

Dated: August 05, 2021

Results appearing herein relate only to the sample tested
The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China
Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com



Special Statement:

The testing quality ability of our laboratory meet with “Quality Law of People’s Republic of China” Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

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

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 744189

The 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.: 744189.

Industry Canada (IC) —Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01



Test Report Conclusion

Content

1.0	General Details	4
1.1	Test Lab Details.....	4
1.2	Applicant Details.....	4
1.3	Description of EUT	4
1.4	Submitted Sample.....	4
1.5	Test Duration.....	5
1.6	Test Uncertainty.....	5
1.7	Test By.....	5
2.0	List of Measurement Equipment	6
3.0	Technical Details	7
3.1	Summary of Test Results.....	7
3.2	Test Standards.....	7
4.0	EUT Modification	7
5.0	Power Line Conducted Emission Test	8
5.1	Schematics of the Test.....	8
5.2	Test Method and Test Procedure.....	8
5.3	Configuration of the EUT.....	8
5.4	EUT Operating Condition	9
5.5	Conducted Emission Limit	9
5.6	Test Result	9
6.0	Radiated Emission test	12
6.1	Test Method and Test Procedure.....	12
6.2	Configuration of the EUT.....	13
6.3	EUT Operation Condition.....	13
6.4	Radiated Emission Limit.....	13
7.0	6dB Bandwidth Measurement Bandwidth.....	23
8.0	Maximum Peak Output Power.....	28
9.0	Power Spectral Density Measurement.....	30
10.0	Out of Band Measurement.....	35
11.0	Antenna Requirement.....	42
12.0	FCC ID Label.....	43
13.0	Photo of Test Setup and EUT View.....	44

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1.0 General Details

1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TESTING LABORATORIES.
Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China
Telephone: (755) 83448688
Fax: (755) 83442996

1.2 Applicant Details

Applicant: Shenzhen Renqing Excellent Technology Co., Ltd.
Address: 104, No.15, Longfu Industrial Zone, Huarong Road, Tongsheng Community, Dalang Street, Longhua District, Shenzhen, China
Telephone: 0755-83038515
Fax: --

1.3 Description of EUT

Product: Smart Plotter
Manufacturer: Shenzhen Renqing Excellent Technology Co., Ltd.
Address: 104, No.15, Longfu Industrial Zone, Huarong Road, Tongsheng Community, Dalang Street, Longhua District, Shenzhen, China
Brand Name: ROCK
Additional Brand Name: rock space
Model Number: ZC2-Lite
Additional Model Number: ZC2-Pro, ZC2-MINI, ZC2-EU, ZC2-AF, ZC2-AS, ZC2-OA, ZC2-SA, ZC2-NA
Hardware Version: V9.0810
Software Version: V21.0710
Type of Modulation GFSK (Bluetooth BLE)
Frequency range 2402-2480MHz
Frequency Selection By software
Channel Number 40
Power Supply: Model: GM60-240275-F; Input: 100-240V, 50/60Hz, 2.0A;
Output: DC24V, 2.75A, 66W
Input Voltage: DC24V, 2.75A

1.4 Submitted Sample: 4 Samples

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1.5 Test Duration

2021-07-20 to 2021-08-04

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions below 1GHz Uncertainty =4.7dB

Radiated Emissions above 1GHz Uncertainty =6.0dB

Conducted Power Uncertainty =6.0dB

Occupied Channel Bandwidth Uncertainty =5%

1.7 Test Engineer

A handwritten signature in black ink that reads "Terry Tang".

The sample tested by _____

Print Name: Terry Tang

Note: The product Smart Plotter, with FCC ID: 2AUA9-RQZY011 is identical with the certified product Screen Protector Film Cutter with FCC ID: 2AVGR-MINI8MINI9, and only the applicant, product name and model names are different for the marketing requirement.

So All test data of FCC ID: 2AUA9-RQZY011 test report are from FCC ID 2AVGR-MINI8MINI9 test reports.



2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2021-06-18	2022-06-17
TWO Line-V-NETW	R&S	EZH3-Z5	100294	2021-06-18	2022-06-17
TWO Line-V-NETW	R&S	EZH3-Z5	100253	2021-06-18	2022-06-17
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2021-06-18	2022-06-17
Loop Antenna	EMCO	6507	00078608	2021-06-18	2022-06-17
Spectrum	R&S	FSIQ26	100292	2021-06-18	2022-06-17
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2021-07-02	2024-07-01
Horn Antenna	R&S	BBHA 9120D	9120D-631	2021-07-02	2024-07-01
Power meter	Anritsu	ML2487A	6K00003613	2021-06-18	2022-06-17
Power sensor	Anritsu	MA2491A	32263	2021-06-18	2022-06-17
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2021-07-02	2024-07-01
9*6*6 Anechoic	--	--	N/A	2021-07-02	2022-07-01
EMI Test Receiver	RS	ESVB	826156/011	2021-06-18	2022-06-17
EMI Test Receiver	RS	ESH3	860904/006	2021-06-18	2022-06-17
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2021-06-18	2022-06-17
Spectrum	HP/Agilent	E4407B	MY50441392	2021-06-18	2022-06-17
Spectrum	RS	FSP	1164.4391.38	2021-01-15	2022-01-14
RF Cable	Zhengdi	ZT26-NJ-NJ-8M/F A	--	2021-06-18	2022-06-17
RF Cable	Zhengdi	7m	--	2021-06-18	2022-06-17
RF Switch	EM	EMSW18	060391	2021-06-18	2022-06-17
Pre-Amplifier	Schwarebeck	BBV9743	#218	2021-06-18	2022-06-17
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2021-06-18	2022-06-17
LISN	SCHAFFNER	NNB42	00012	2021-01-15	2022-01-14

2.2 Automation Test Software
For Conducted Emission Test

Name	Version
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EZ-EMC	Ver.EMC-CON 3A1.1
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For Radiated Emissions

Name	Version
EMI Test Software BL410-EV18.91	V18.905
EMI Test Software BL410-EV18.806 High Frequency	V18.06

3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:			
Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.207	Conducted Emission Test	PASS	Complies
FCC Part 15 Subpart C Paragraph 15.247(a)(2) Limit	Spectrum bandwidth of a Orthogonal Frequency Division Multiplex System Limit: 6dB bandwidth>500kHz	PASS	Complies
FCC Part 15, Paragraph 15.247(b)	Maximum peak output power Limit: max. 30dBm	PASS	Complies
FCC Part 15, Paragraph 15.205 & 15.209	Transmitter Radiated Emission Limit: Table 15.209	PASS	Complies
FCC Part 15, Paragraph 15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Complies
FCC Part 15, Paragraph 15.247(d)	Out of Band Emission and Restricted Band Radiation Limit: 20dB less than peak value of fundamental frequency Restricted band limit: Table 15.209	PASS	Complies

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3.2 Test Standards

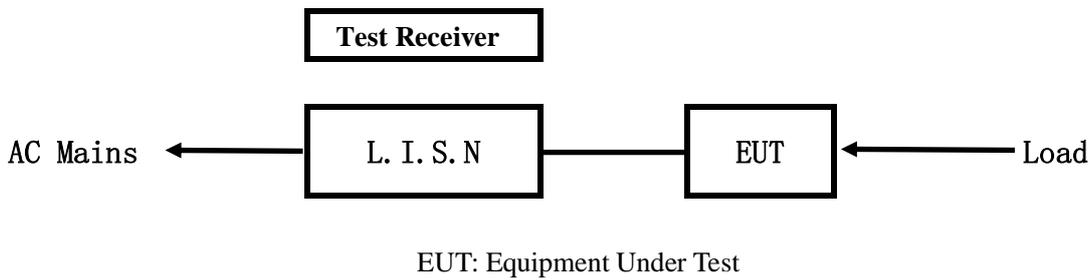
FCC Part 15 Subpart & Subpart C, Paragraph 15.247

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

5. Power Line Conducted Emission Test

5.1 Schematics of the test

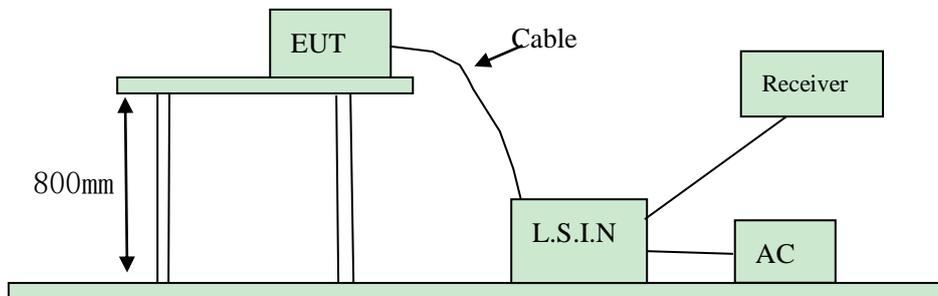


5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10 –2013.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT

Device	Manufacturer	Model	FCC ID
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Smart Plotter	Shenzhen Renqing Excellent Technology Co., Ltd.	ZC2-Lite, ZC2-Pro, ZC2-MINI, ZC2-EU, ZC2-AF, ZC2-AS, ZC2-OA, ZC2-SA, ZC2-NA	2AUA9-RQZY011
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B. Internal Device

Device	Manufacturer	Model	Rating

C. Peripherals

Device	Manufacturer	Model	Rating
N/A			

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Limits (dB μ V)	
	Quasi peak Level	Average Level
0.15 ~ 0.50	66.0~56.0*	56.0~46.0*
0.50 ~ 5 00	56.0	46.0
5.00 ~ 30.00	60.0	50.0

- Notes: 1. *Decreasing linearly with logarithm of frequency.
 2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.



A: Conducted Emission on Live Terminal (150kHz to 30MHz)

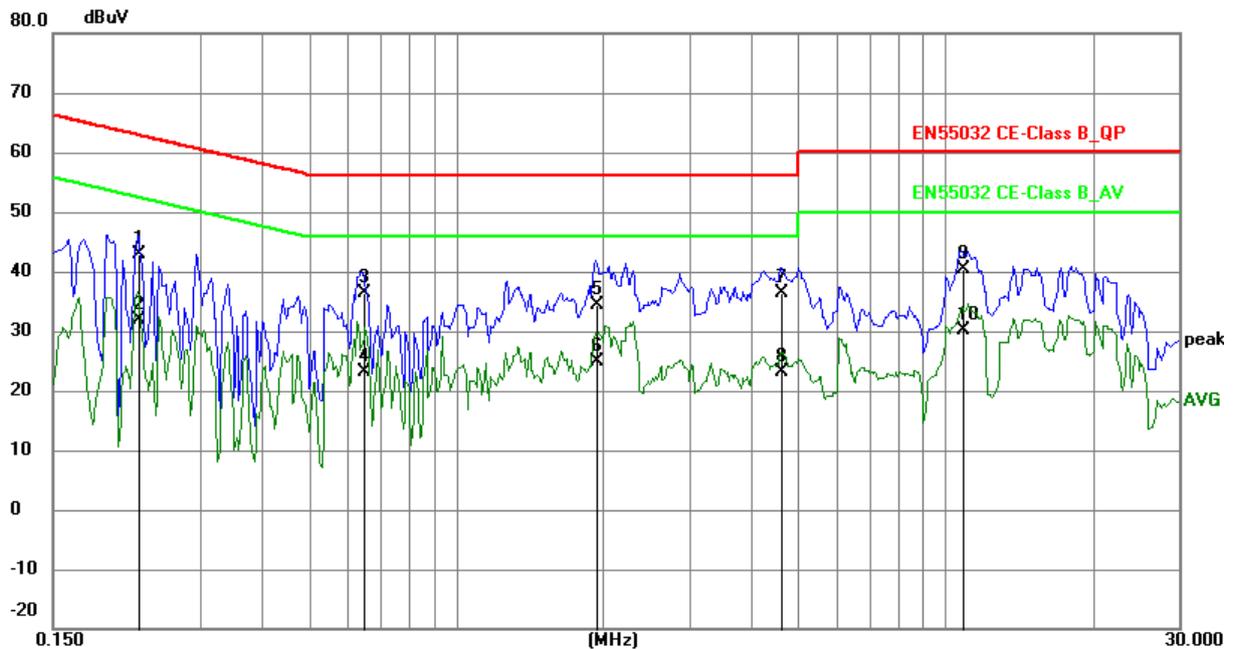
EUT Operating Environment

Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Keep Bluetooth Transmitting

Results: Pass

Please refer to following diagram for individual



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No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.2241	33.23	9.75	42.98	62.67	-19.69	QP	P
2	0.2241	22.09	9.75	31.84	52.67	-20.83	AVG	P
3	0.6453	26.61	9.78	36.39	56.00	-19.61	QP	P
4	0.6453	13.25	9.78	23.03	46.00	-22.97	AVG	P
5	1.9284	24.65	9.80	34.45	56.00	-21.55	QP	P
6	1.9284	15.13	9.80	24.93	46.00	-21.07	AVG	P
7	4.6185	26.49	9.91	36.40	56.00	-19.60	QP	P
8	4.6185	13.27	9.91	23.18	46.00	-22.82	AVG	P
9	10.7922	30.21	10.19	40.40	60.00	-19.60	QP	P
10	10.7922	20.05	10.19	30.24	50.00	-19.76	AVG	P

B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

EUT Operating Environment

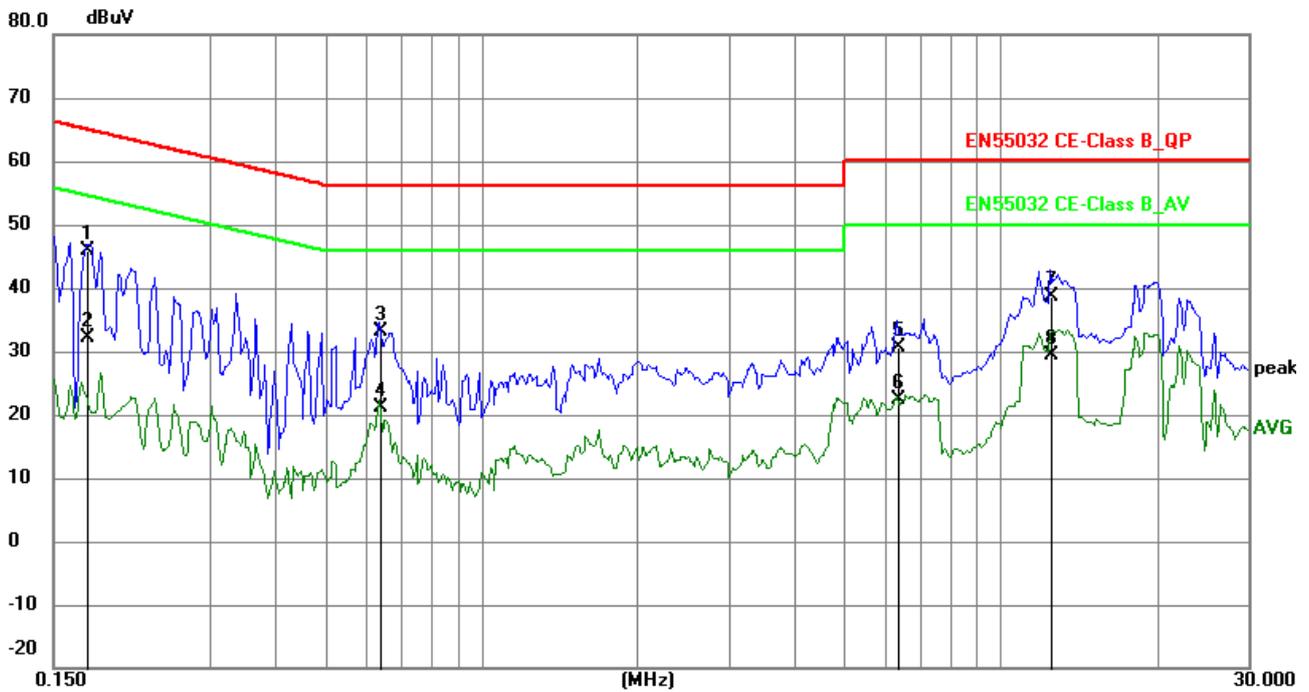
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 kPa

EUT set Condition: Keep Bluetooth Transmitting

Results: Pass

Please refer to following diagram for individual

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No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1734	36.09	9.77	45.86	64.80	-18.94	QP	P
2	0.1734	22.34	9.77	32.11	54.80	-22.69	AVG	P
3	0.6375	23.45	9.78	33.23	56.00	-22.77	QP	P
4	0.6375	11.42	9.78	21.20	46.00	-24.80	AVG	P
5	6.3228	20.64	9.98	30.62	60.00	-29.38	QP	P
6	6.3228	12.35	9.98	22.33	50.00	-27.67	AVG	P
7	12.5121	28.31	10.27	38.58	60.00	-21.42	QP	P
8	12.5121	19.15	10.27	29.42	50.00	-20.58	AVG	P

6 Radiated Emission Test

6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No.744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up

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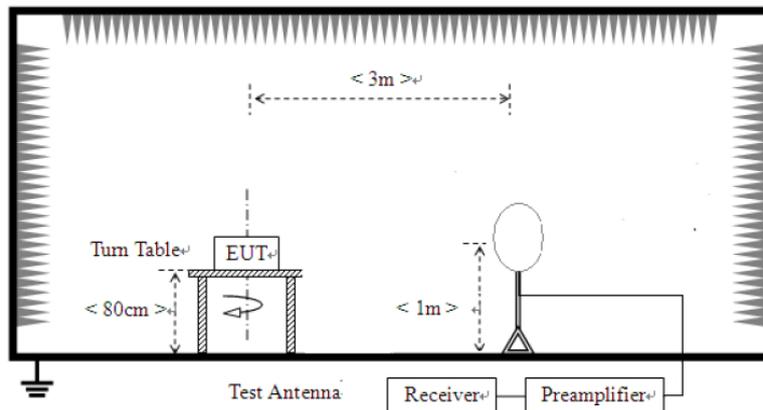


is according to ANSI C63.10-2013.

- (3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=1MHz VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a “QP” in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.

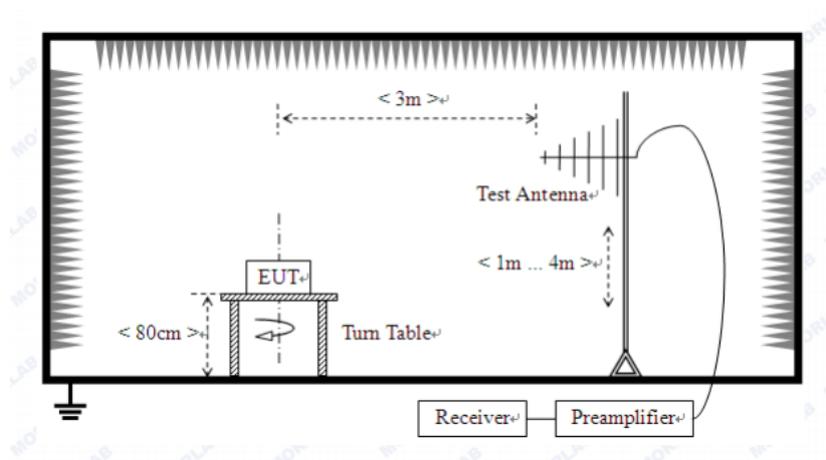
Block diagram of Test setup

For radiated emissions from 9kHz to 30MHz

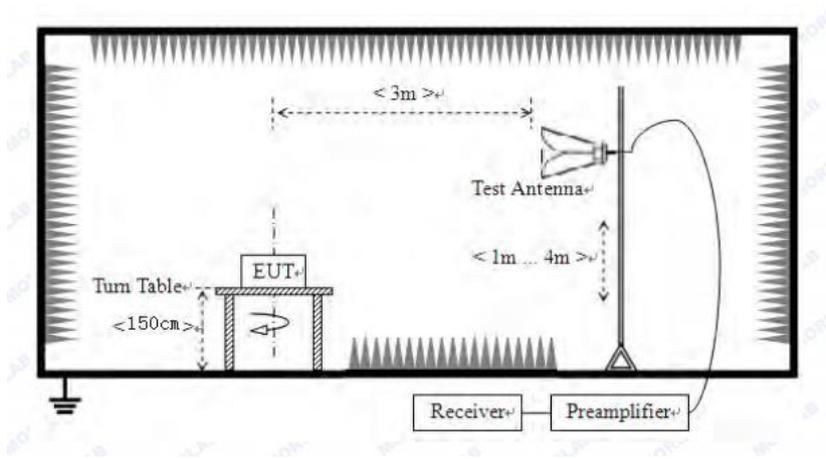


For radiated emissions from 30MHz to 1GHz

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For radiated emissions above 1GHz



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

Frequencies in restricted band are complied to limit on Paragraph 15.209

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Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

- Note:
1. RF Voltage (dBuV) = 20 log RF Voltage (μ V)
 2. In the Above Table, the higher limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

Test result

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General Radiated Emission Data and Harmonics Radiated Emission Data

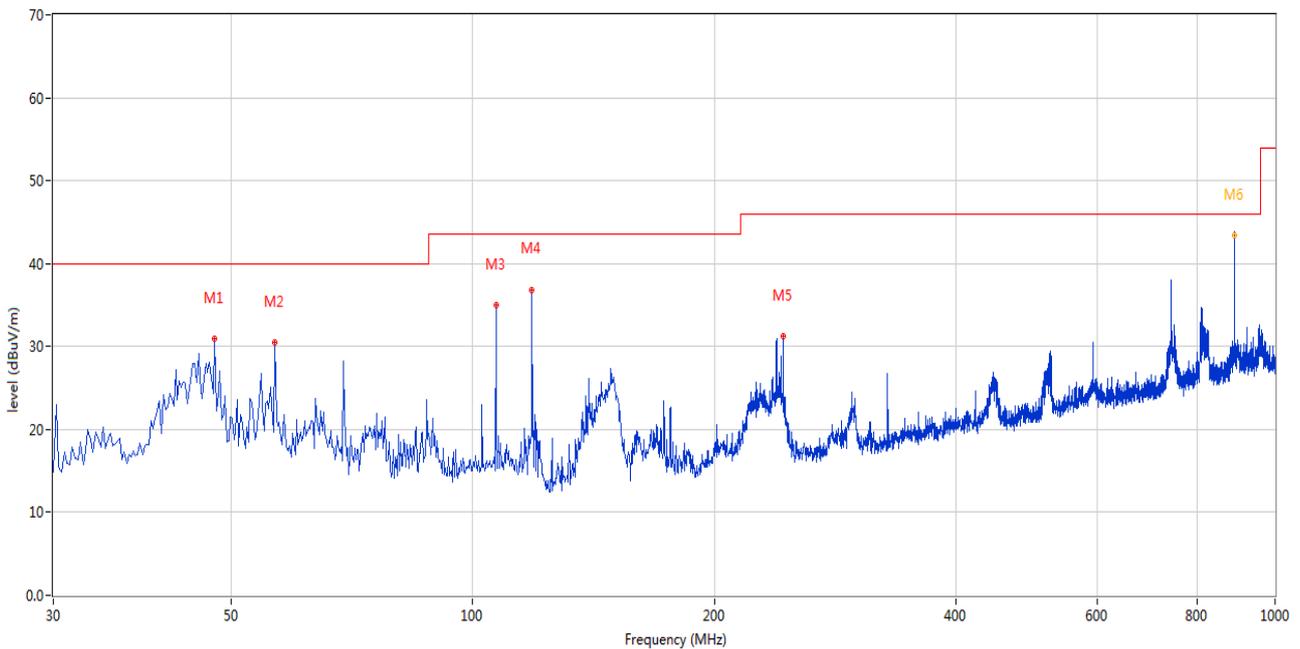
Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keep Bluetooth Transmitting

Results: Pass

Test Figure:

FCC_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	47.698	30.94	-11.34	40.0	-9.06	Peak	132.00	200	H	Pass
2	56.668	30.42	-12.22	40.0	-9.58	Peak	83.00	200	H	Pass
3	106.853	34.94	-13.38	43.5	-8.56	Peak	127.00	200	H	Pass
4	118.490	36.84	-14.97	43.5	-6.66	Peak	66.00	200	H	Pass
5	243.832	31.23	-12.23	46.0	-14.77	Peak	305.00	100	H	Pass
6	890.109	44.70	-1.89	46.0	-1.30	Peak	238.00	102	H	Pass
6*	890.109	43.43	-1.89	46.0	-2.57	QP	238.00	102	H	Pass

Test result

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General Radiated Emission Data and Harmonics Radiated Emission Data

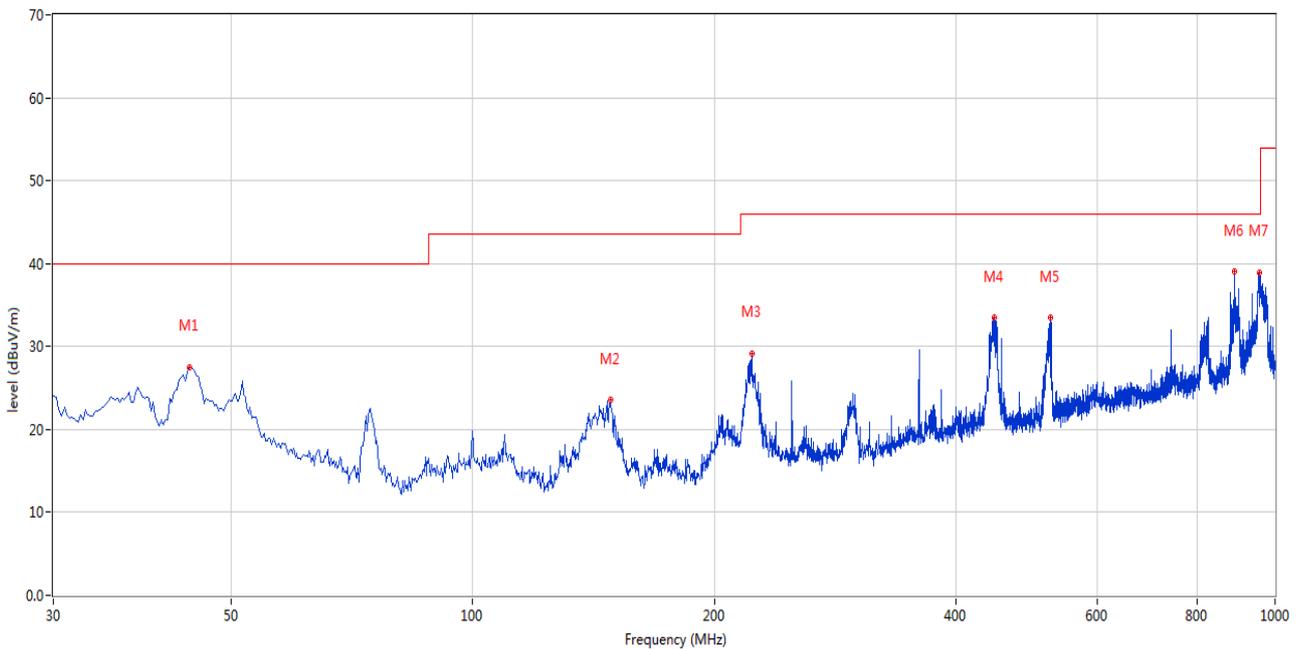
Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: **Keep Transmitting**

Results: Pass

Test Figure:

FCC_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	44.304	27.54	-11.46	40.0	-12.46	Peak	351.00	100	V	Pass
2	148.310	23.53	-17.16	43.5	-19.97	Peak	360.00	100	V	Pass
3	222.739	29.18	-13.19	46.0	-16.82	Peak	275.00	100	V	Pass
4	446.268	33.53	-8.05	46.0	-12.47	Peak	2.00	100	V	Pass
5	525.546	33.43	-6.54	46.0	-12.57	Peak	25.00	100	V	Pass
6	890.175	39.05	-1.89	46.0	-6.95	Peak	158.00	100	V	Pass
7	956.361	38.98	-1.72	46.0	-7.02	Peak	172.00	100	V	Pass

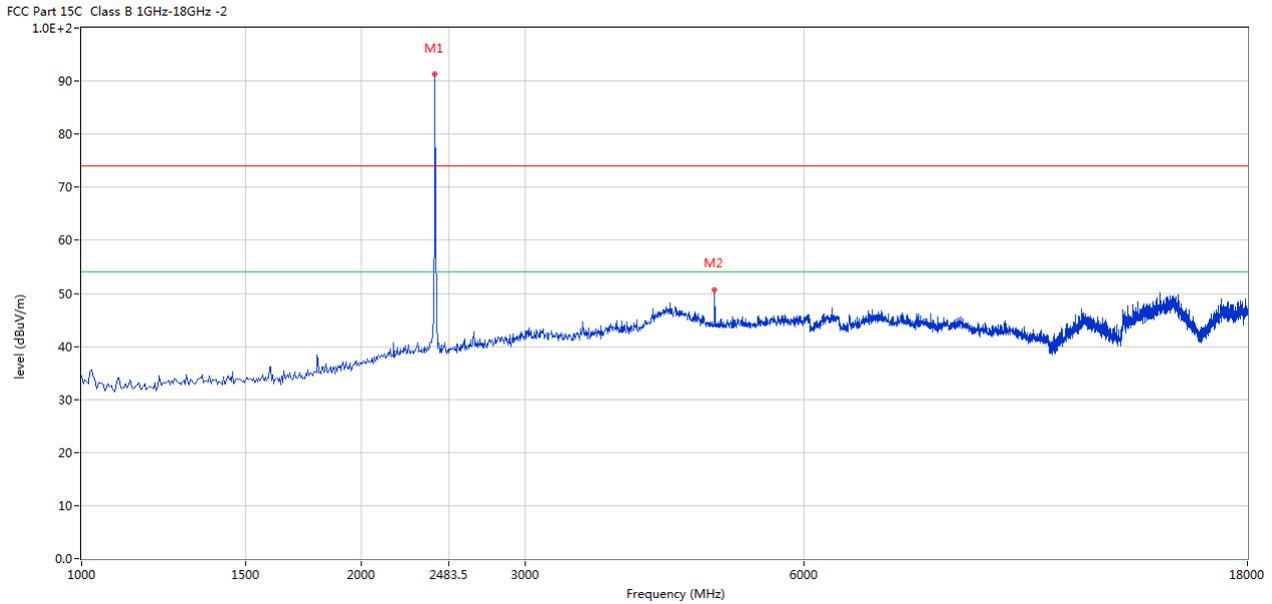
Test Figures above 1GHz:

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Please refer to the following test plots for details:

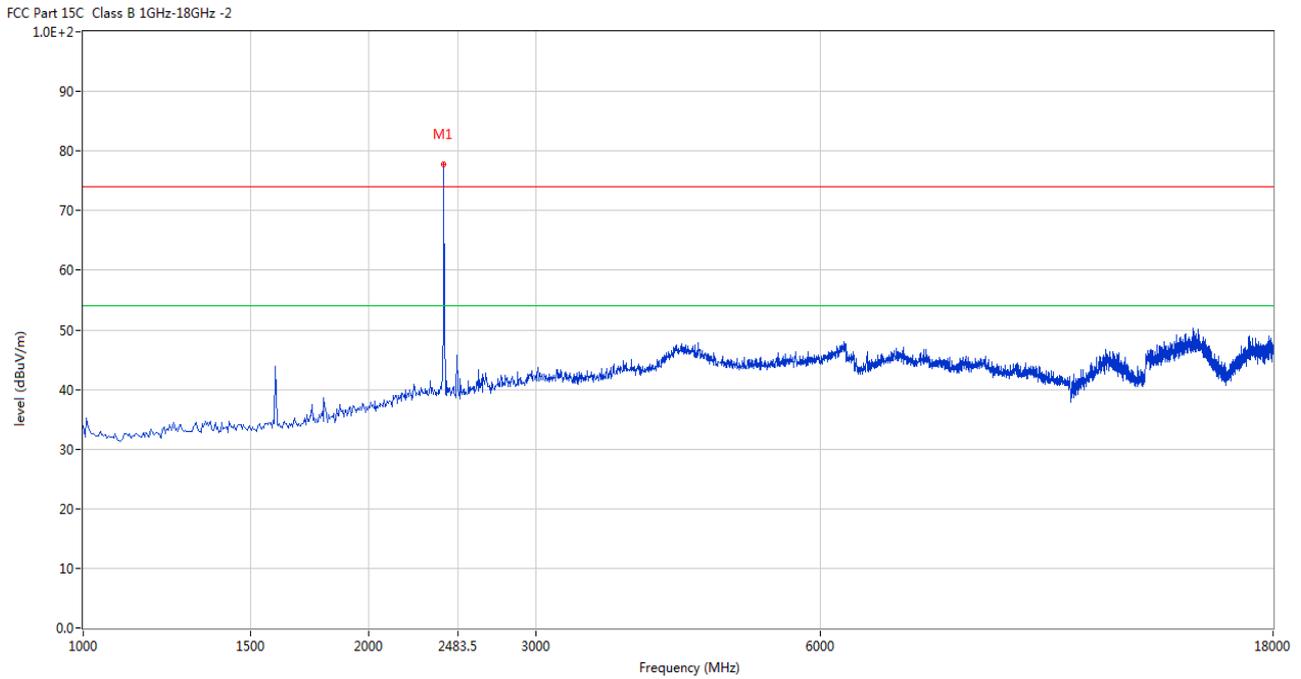
Low Channel: Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4802.799	50.64	3.12	74.0	-23.36	Peak	285.00	100	Horizontal	Pass

Low Channel: Vertical

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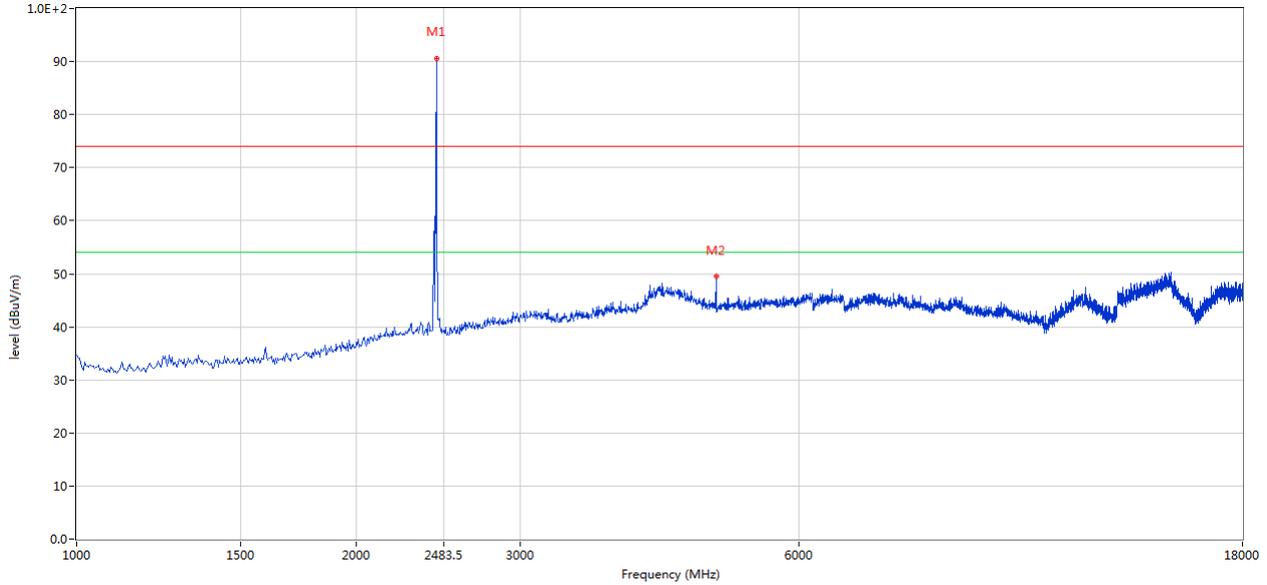


Middle Channel: Horizontal

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FCC Part 15C Class B 1GHz-18GHz -2



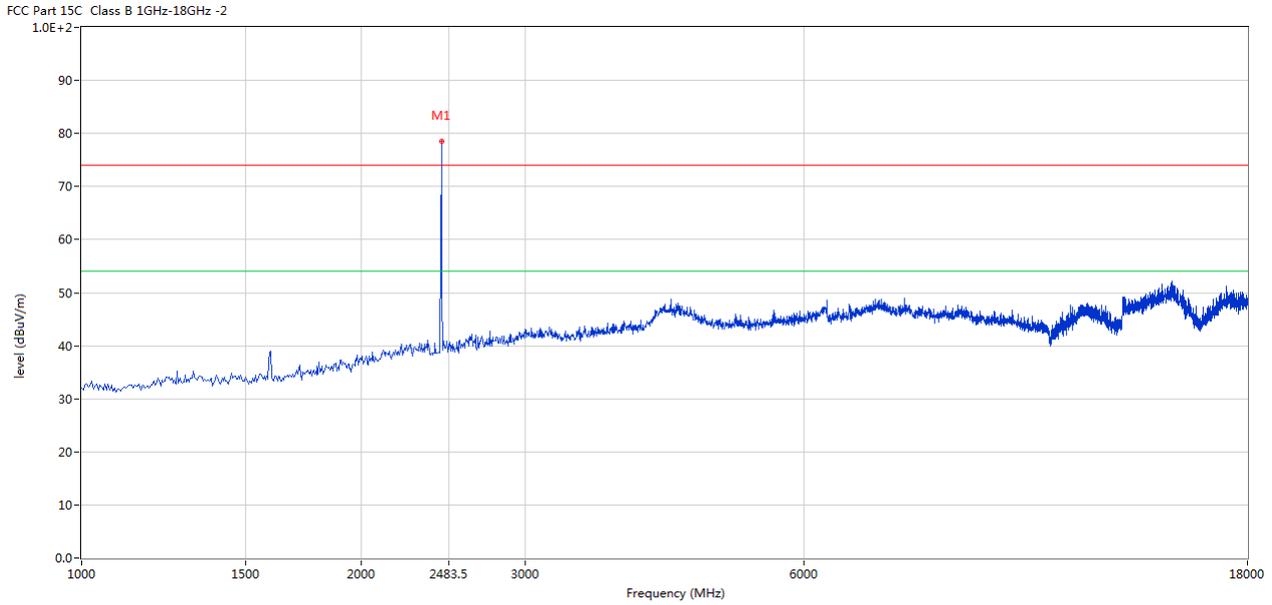
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4879.280	49.55	3.20	74.0	-24.45	Peak	271.00	100	Horizontal	Pass

Middle Channel: Vertical

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High Channel: Horizontal

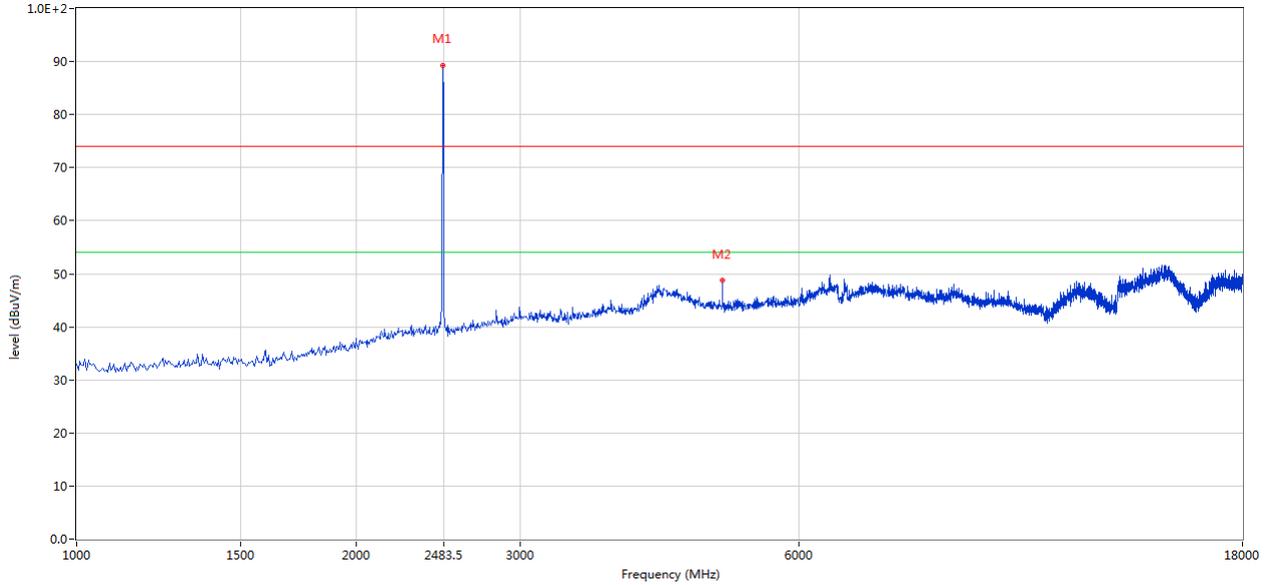
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FCC Part 15C Class B 1GHz-18GHz -2



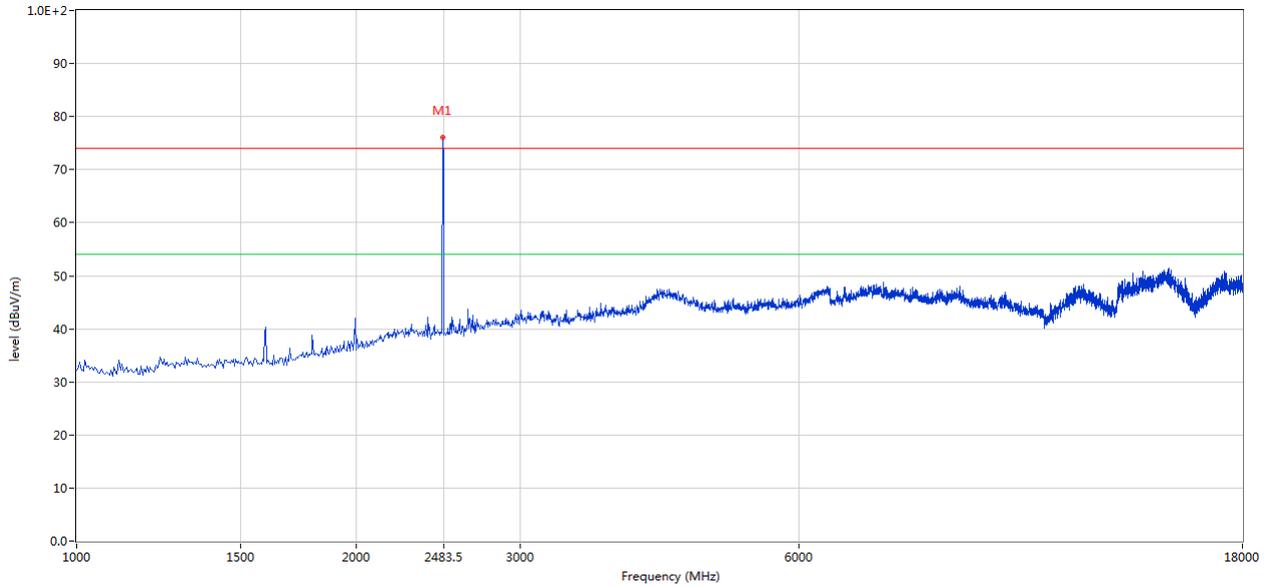
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4960.010	48.70	3.36	74.0	-25.30	Peak	80.00	100	Horizontal	Pass

High Channel: Vertical

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FCC Part 15C Class B 1GHz-18GHz -2



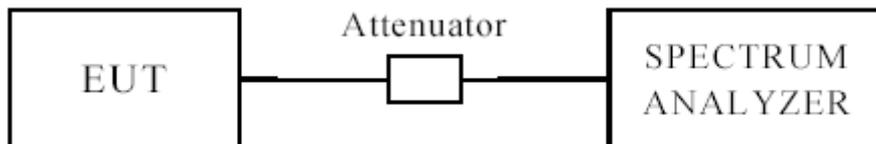
- Note: 1. Level = Reading + AF + Cable - Preamp
- 2. For the radiated emissions above 18G, it is the floor noise.
- 3. The measured PK value less than the AV limit, no necessary to take down the AV measurement result.

7.0 6dB Bandwidth Measurement

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7.1 Test Setup



7.2 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is >500 kHz

7.3 Test Procedure

1. Set resolution bandwidth (RBW) = 100 kHz
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.4 Test Result

6dB BW

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EUT	Smart Plotter	Model	ZC2-Lite	
Mode	Keep Transmitting	Input Voltage	120V~	
Temperature	24 deg. C,	Humidity	56% RH	
Channel	Channel Frequency (MHz)	6 dB Bandwidth (kHz)	Minimum Limit (kHz)	Pass/ Fail
Low	2402	902	0.5	Pass
Middle	2440	902	0.5	Pass
High	2480	896	0.5	Pass

Test Figure:

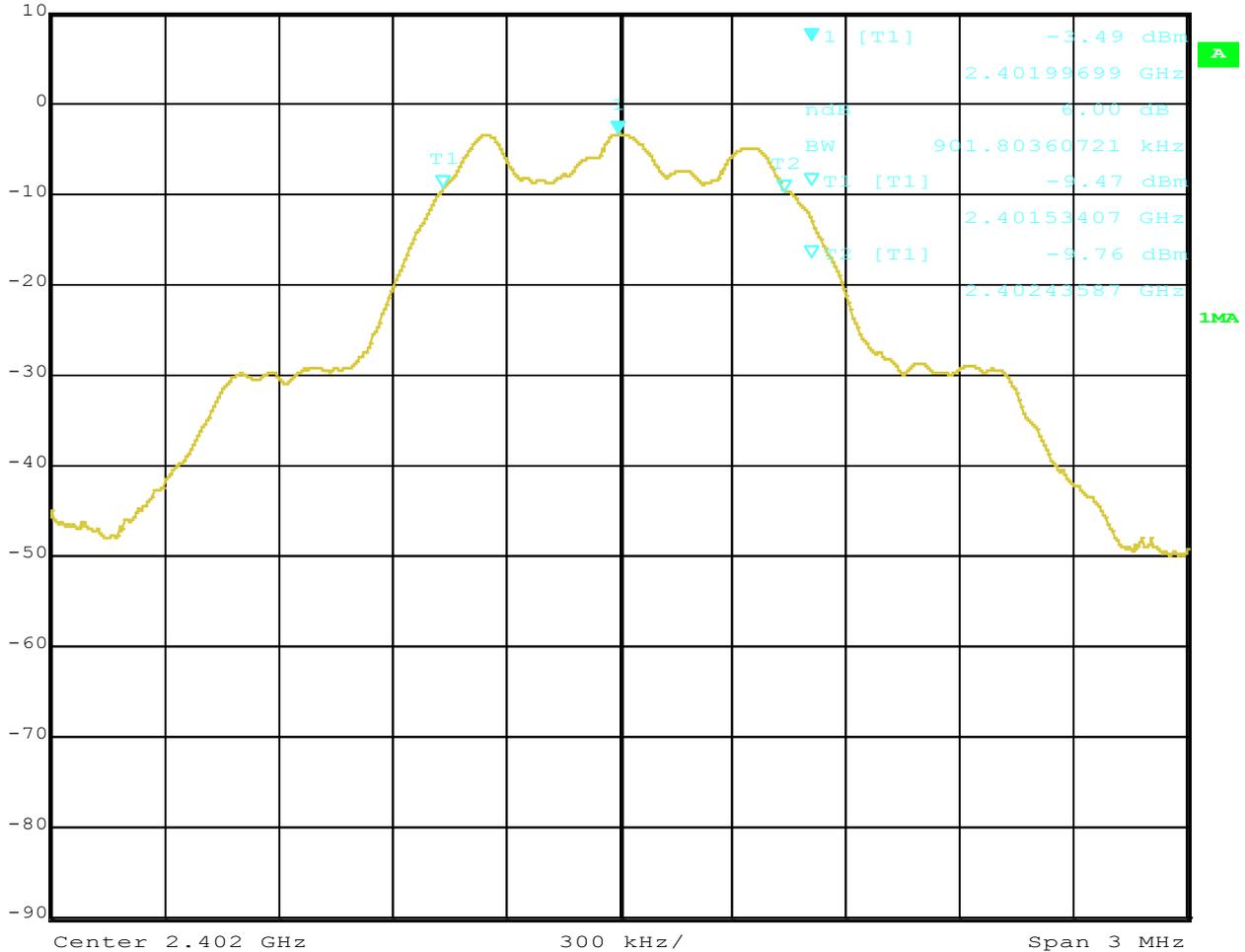
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1. Condition: Low Channel



Ref Lvl	10 dBm	Marker 1 [T1 ndB]	6.00 dB	RBW	100 kHz	RF Att	20 dB
		BW	901.80360721 kHz	VBW	300 kHz	Unit	dBm
		SWT	5 ms				



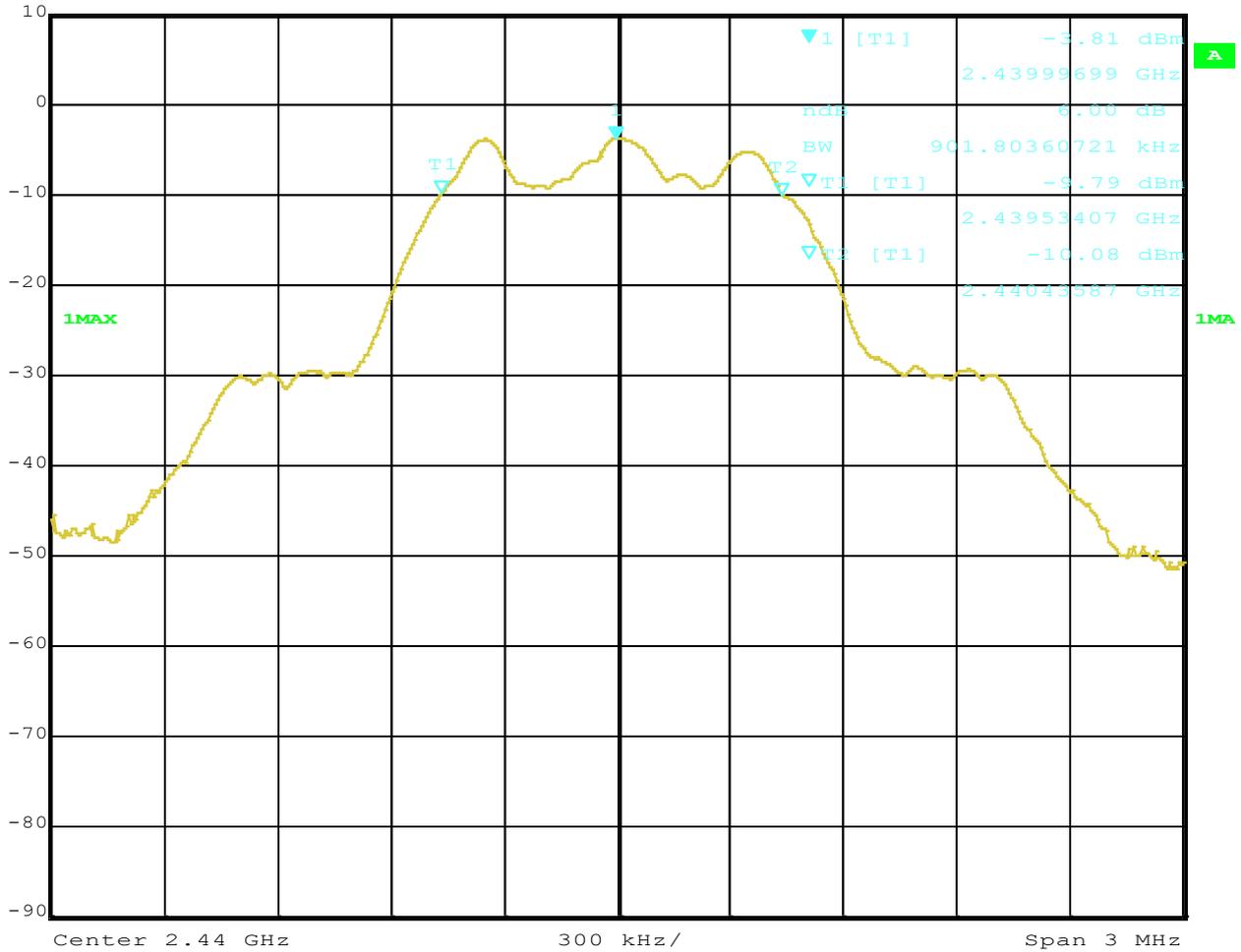
Date: 4.AUG.2021 09:50:28

2. Condition: Middle Channel

The report refers only to the sample tested and does not apply to the bulk.
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Ref Lvl	10 dBm	Marker 1 [T1 ndB]	6.00 dB	RBW	100 kHz	RF Att	20 dB
		BW	901.80360721 kHz	VBW	300 kHz	Unit	dBm
		SWT	5 ms				



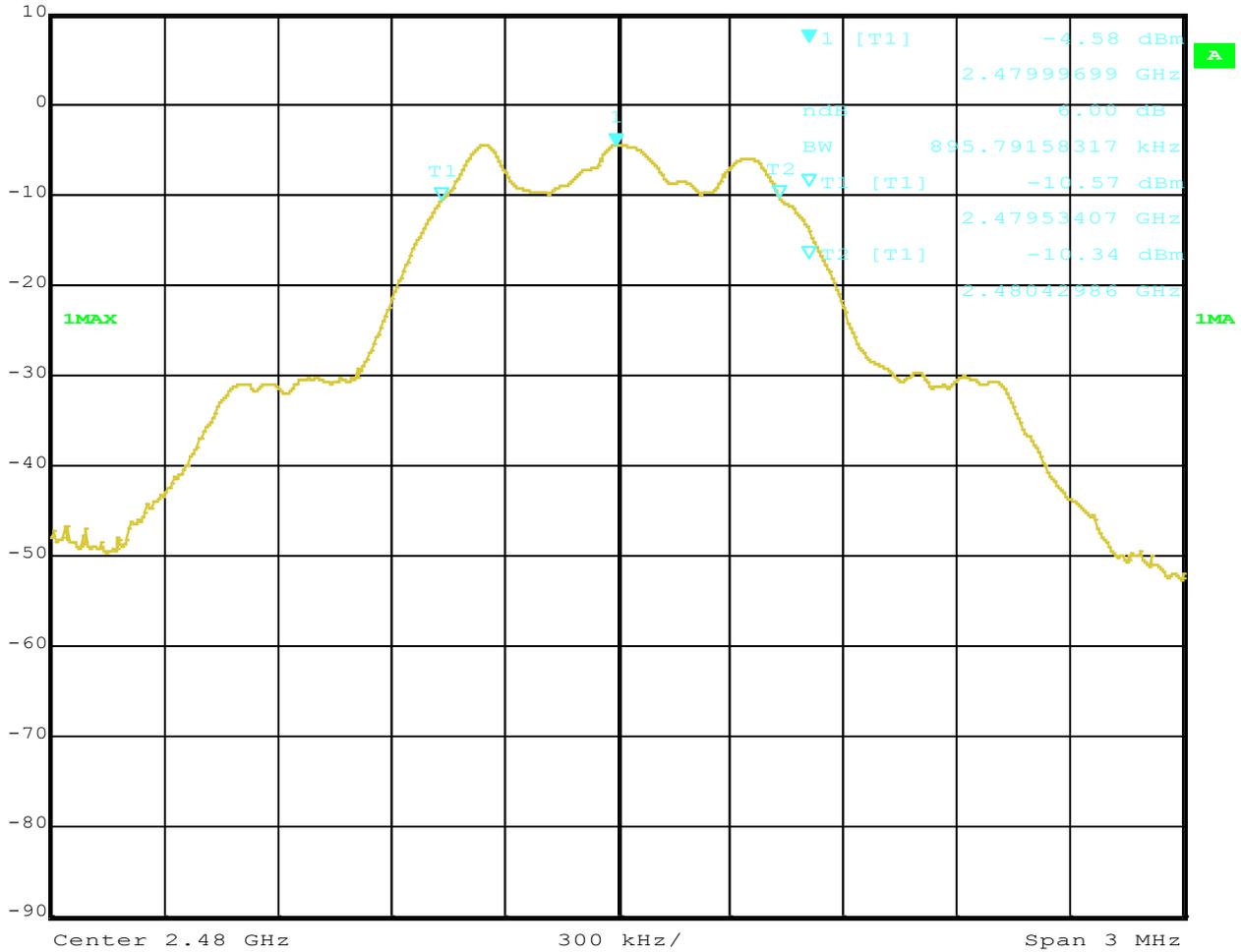
Date: 4.AUG.2021 09:54:58

3. High Channel

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Ref Lvl	10 dBm	Marker 1 [T1 ndB]	ndB	6.00 dB	RBW	100 kHz	RF Att	20 dB
		BW	895.79158317 kHz		VBW	300 kHz		
		SWT			5 ms	Unit		dBm



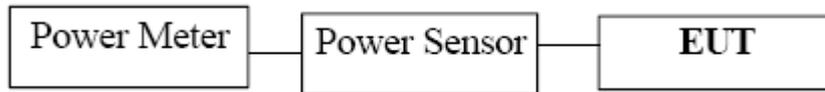
Date: 4.AUG.2021 09:57:34

8. Maximum Output Power

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8.1 Test Setup



8.2 Limits of Maximum Output Power

The Maximum Output Power Measurement is 30dBm.

8.3 Test Procedure

The RF power output was measured with a Power meter connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

Note: the Peak power were measured.

8.4 Test Results

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EUT	Smart Plotter	Model	ZC2-Lite		
Mode	Keep Transmitting	Input Voltage	120V~		
Temperature	24 deg. C,	Humidity	56% RH		
Channel	Channel Frequency (MHz)	Max. Power Output (dBm)		Peak Power Limit (dBm)	Pass/ Fail
		Peak			
Low	2402	-2.35		30	Pass
Middle	2440	-2.66		30	Pass
High	2480	-3.44		30	Pass

Note: 1. the result basic equation calculation as follow:

$$\text{Max. Power Output} = \text{Power Reading} + \text{Cable loss} + \text{Attenuator}$$

9. Power Spectral Density Measurement

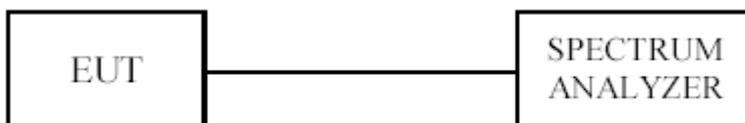
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9.1 Test Setup



9.2 Limits of Power Spectral Density Measurement

The Maximum Power Spectral Density Measurement is 8dBm/3kHz.

9.3 Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 10 kHz.
3. Set the VBW \geq 30 kHz.
4. Set the span to 1.5 times the DTS channel bandwidth.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
11. The resulting peak PSD level must be \leq 8 dBm/3kHz.

9.4 Test Result

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EUT		Smart Plotter		Model	ZC2-Lite
Mode		Keep Transmitting		Input Voltage	120V~
Temperature		24 deg. C,		Humidity	56% RH
Channel	Peak Power Reading (dBm)	Cable Loss (dB)	Final Power Spectral Density (dBm/10kHz)	Maximum Limit (dBm/3kHz)	Pass/ Fail
Low	-6.61	0.2	-6.41	8	Pass
Middle	-7.19	0.2	-6.99	8	Pass
High	-8.07	0.2	-7.87	8	Pass

Note: The result basic equation calculation as follow:

$$\text{Peak Power Output} = \text{Peak Power Reading} + \text{Cable loss}$$

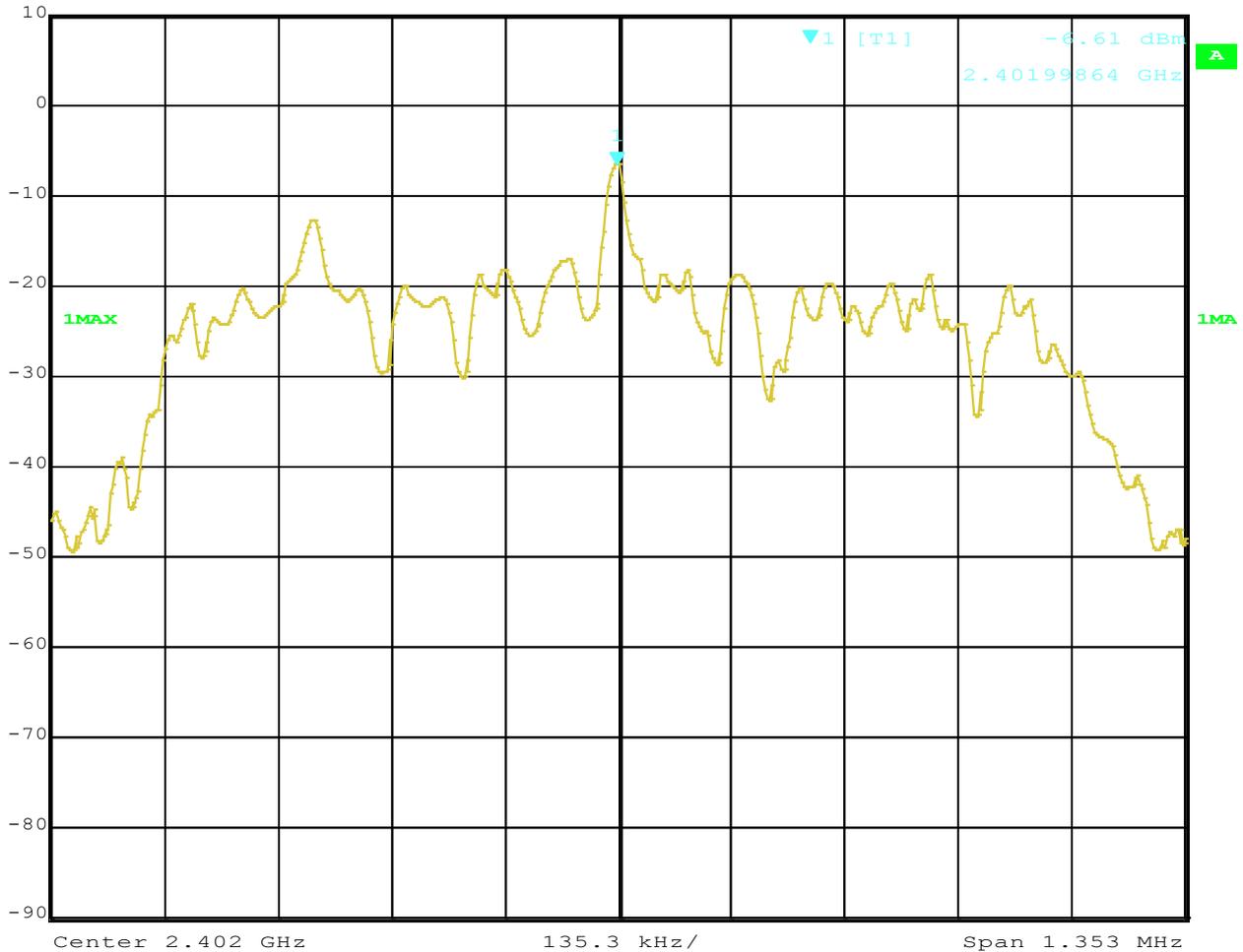
Test Figure:

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1. Condition: Low Channel

	Marker 1 [T1]	RBW	10 kHz	RF Att	20 dB
	Ref Lvl	-6.61 dBm	VBW	30 kHz	
	10 dBm	2.40199864 GHz	SWT	34 ms	Unit dBm



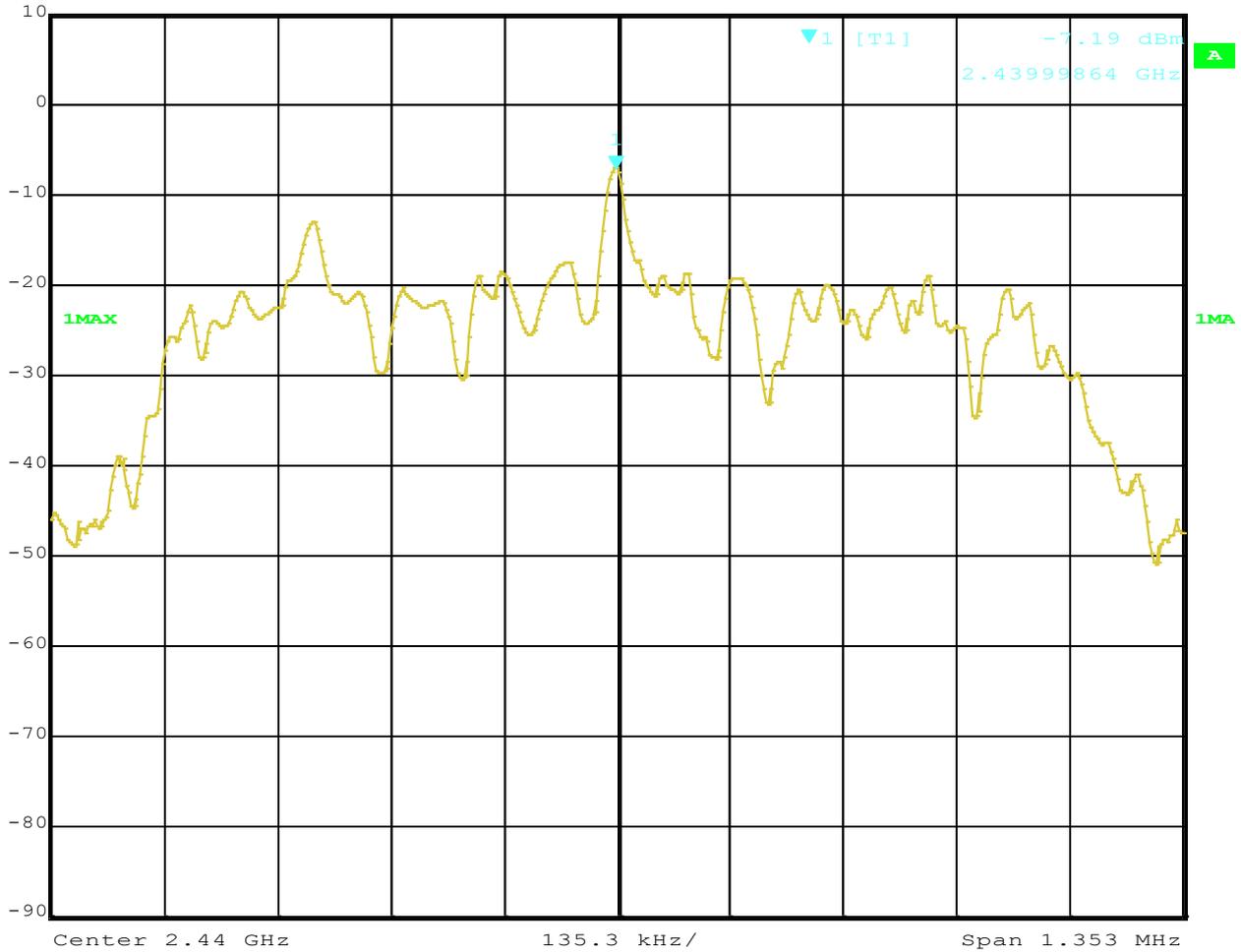
Date: 4.AUG.2021 10:00:38

2. Condition: Middle Channel

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	Marker 1 [T1]	RBW	10 kHz	RF Att	20 dB
Ref Lvl	-7.19 dBm	VBW	30 kHz		
10 dBm	2.43999864 GHz	SWT	34 ms	Unit	dBm



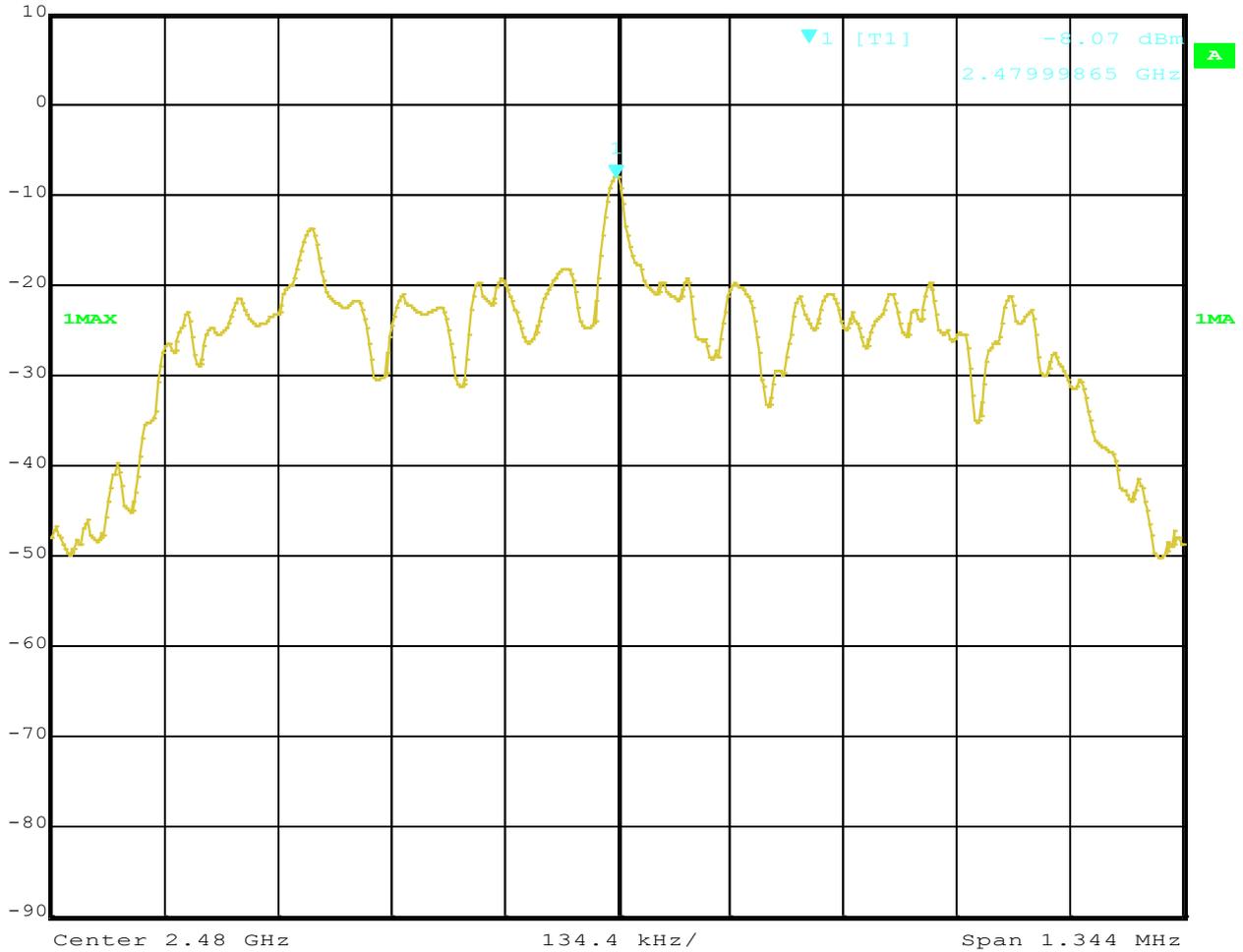
Date: 4.AUG.2021 10:01:11

3. High Channel

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Marker 1 [T1]	RBW	10 kHz	RF Att	20 dB
Ref Lvl	-8.07 dBm	VBW	30 kHz	
10 dBm	2.47999865 GHz	SWT	34 ms	Unit dBm



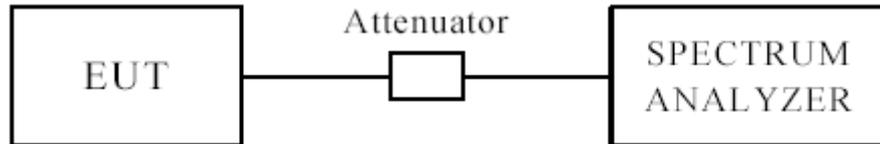
Date: 4.AUG.2021 10:02:11

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10 Out of Band Measurement

10.1 Test Setup for band edge



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

10.2 Limits of Out of Band Emissions Measurement

1. Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

10.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of Radiated emission test. (Peak values with RBW=1MHz, VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector)

For bandage test, the spectrum set as follows: RBW=100 kHz, VBW=300 kHz. A conducted measurement used

10.4 Test Result

Please see next pages

Note: For band-edge measurement, the frequency from 30MHz-25GHz was tested. And It met the FCC rule.

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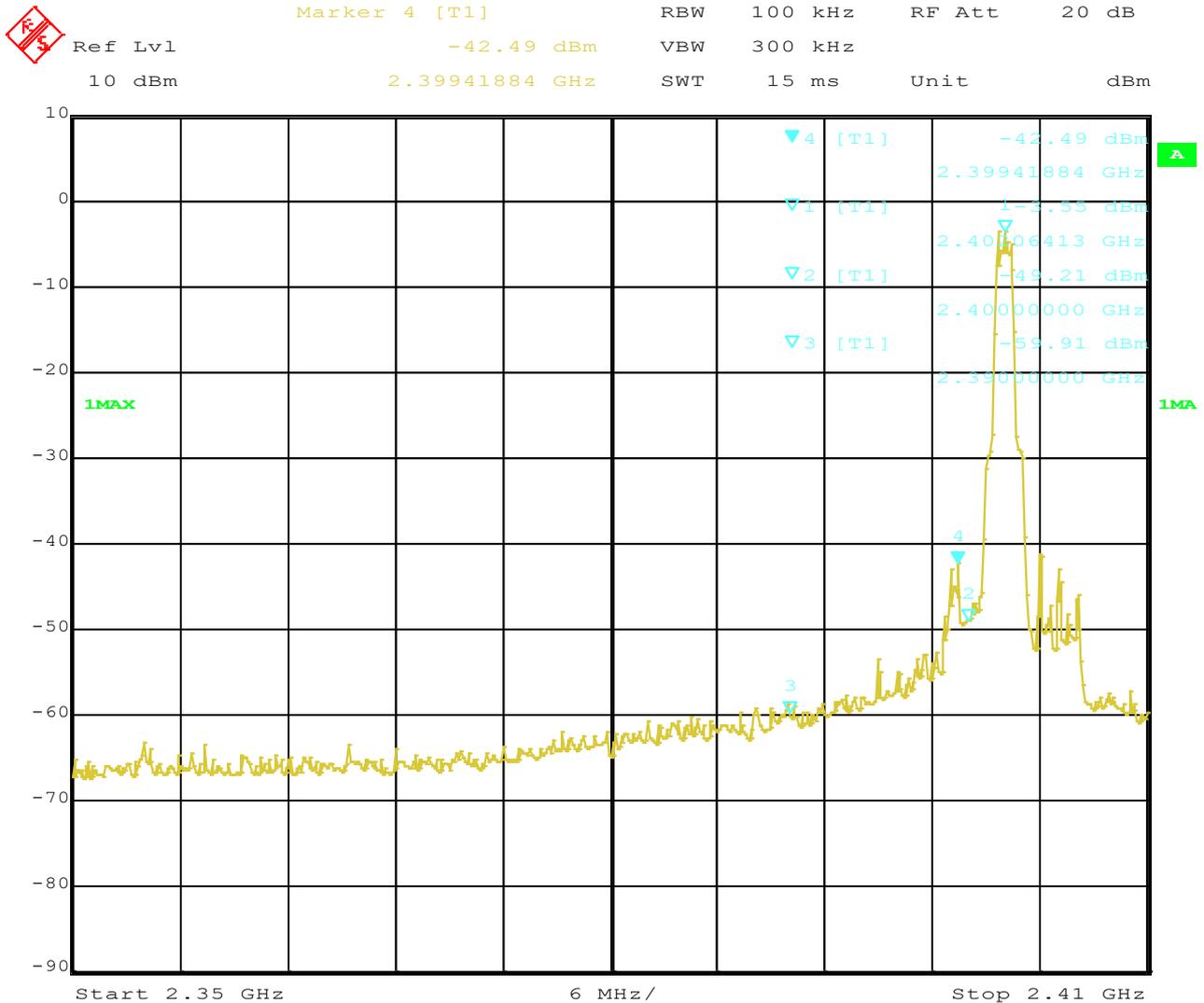
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10.4 Band-edge Measurement

EUT	Smart Plotter	Model	ZC2-Lite
Mode	Keep Transmitting	Input Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 4.AUG.2021 10:04:01

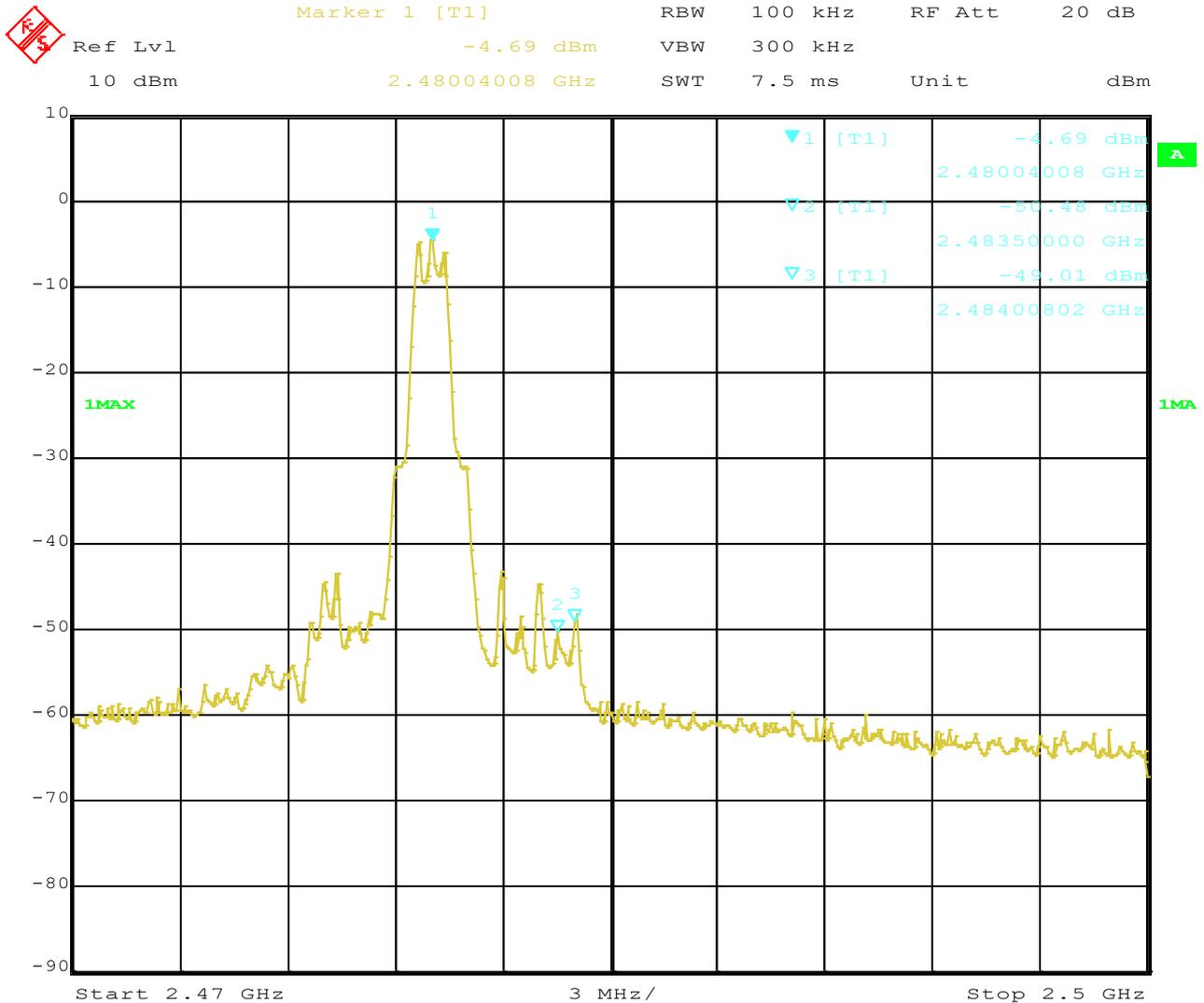
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10.4 Band-edge Measurement

EUT	Smart Plotter	Model	ZC2-Lite
Mode	Keeping Transmitting	Input Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



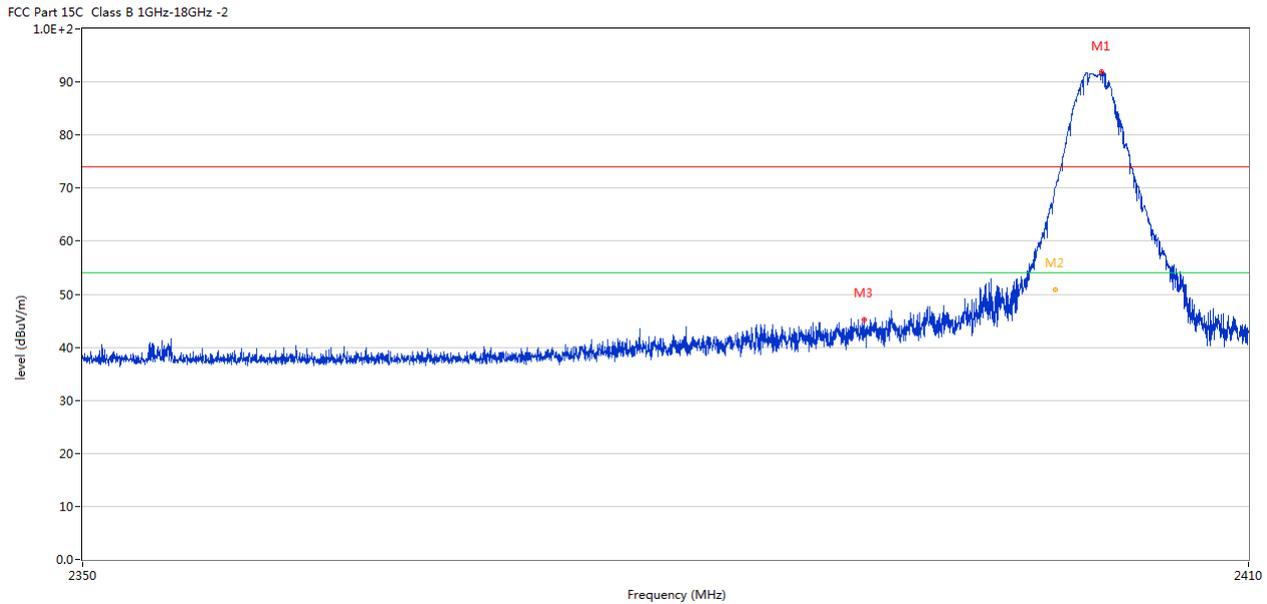
Date: 4.AUG.2021 10:03:18

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10.4 Restrict Band Measurement

EUT	Smart Plotter	Model	ZC2-Lite
Mode	Keep Transmitting	Input Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass		



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
3	2390.040	45.16	-3.53	74.0	-28.84	Peak	282.00	100	Horizontal	Pass

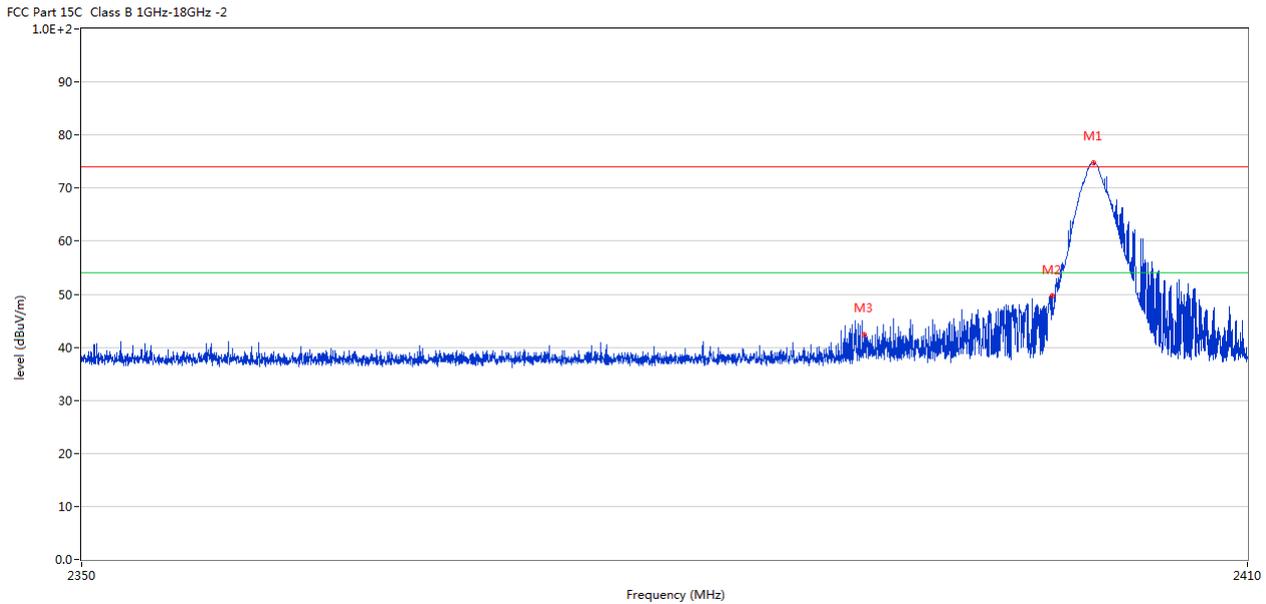
Note: The measured PK value less than the AV limit, no necessary to take down the AV measurement result.

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10.4 Restrict Band Measurement

EUT	Smart Plotter	Model	ZC2-Lite
Mode	Keep Transmitting	Input Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass		



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
3	2390.085	42.30	-3.53	74.0	-31.70	Peak	142.00	150	Vertical	Pass

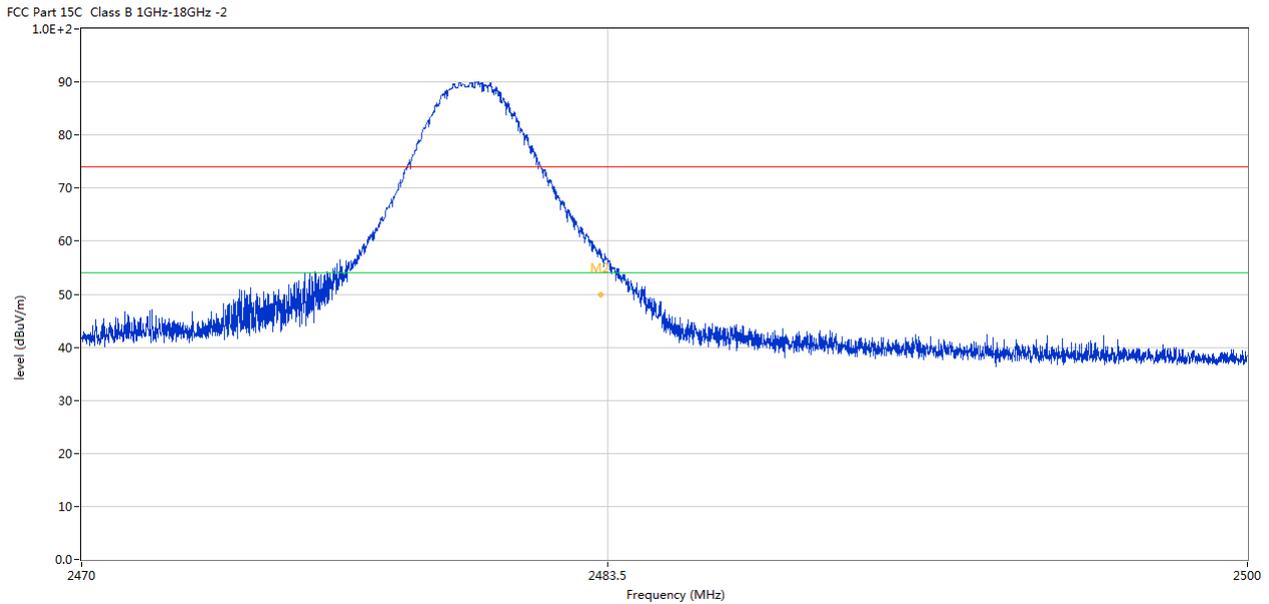
Note: The measured PK value less than the AV limit, no necessary to take down the AV measurement result.

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10.4 Restrict Band Measurement

EUT	Smart Plotter	Model	ZC2-Lite
Mode	Keep Transmitting	Input Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass		



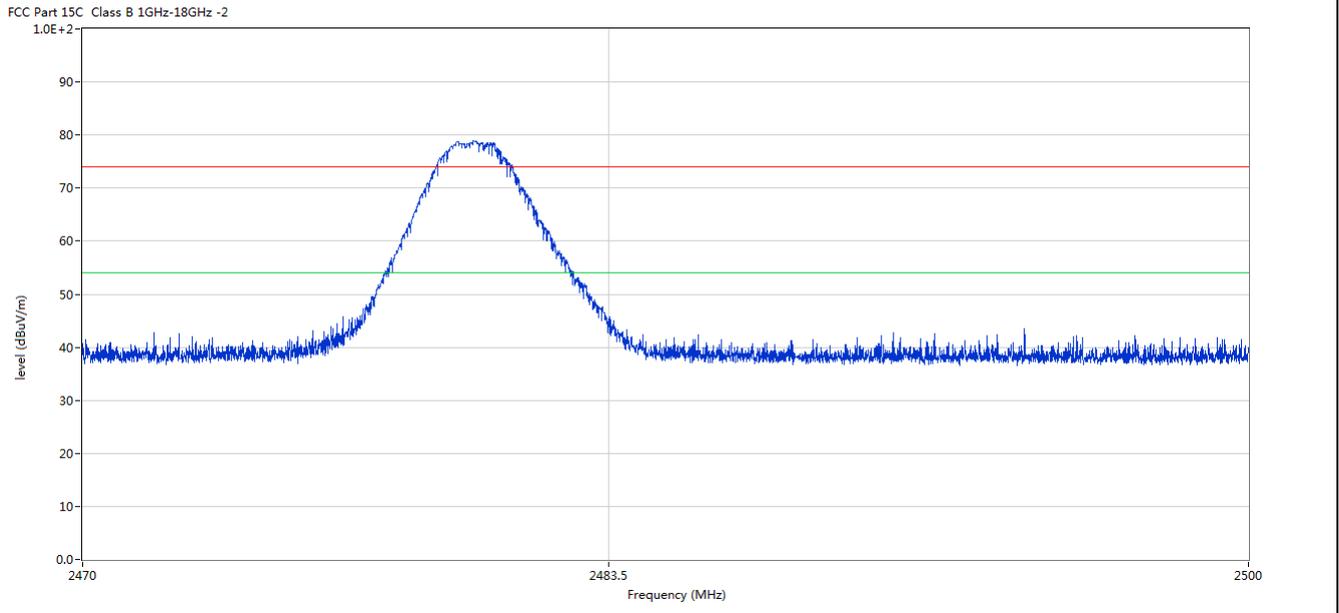
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	2483.317	58.27	-3.57	74.0	-15.73	Peak	87.00	100	Horizontal	Pass
2**	2483.317	49.89	-3.57	54.0	-4.11	AV	87.00	100	Horizontal	Pass

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10.4 Restrict Band Measurement

EUT	Smart Plotter	Model	ZC2-Lite
Mode	Keep Transmitting	Input Voltage	120V~
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass		



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	2483.242	47.64	-3.57	74.0	-26.36	Peak	180.00	100	Vertical	Pass

Note: The measured PK value less than the AV limit, no necessary to take down the AV measurement result.

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11.0 Antenna Requirement

11.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

11.2 Antenna Connected construction

PCB antenna used. The gain of 2.0dBi.

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12.0 FCC ID Label

FCC ID: 2AUA9-RQZY011

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:

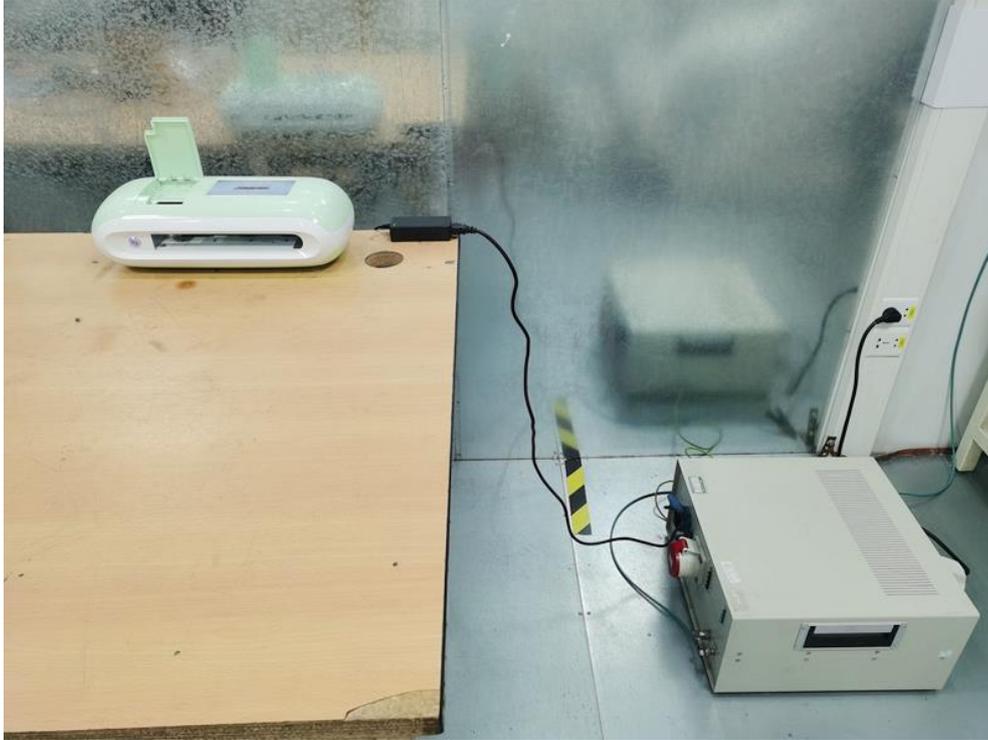


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13.0 Photo of testing

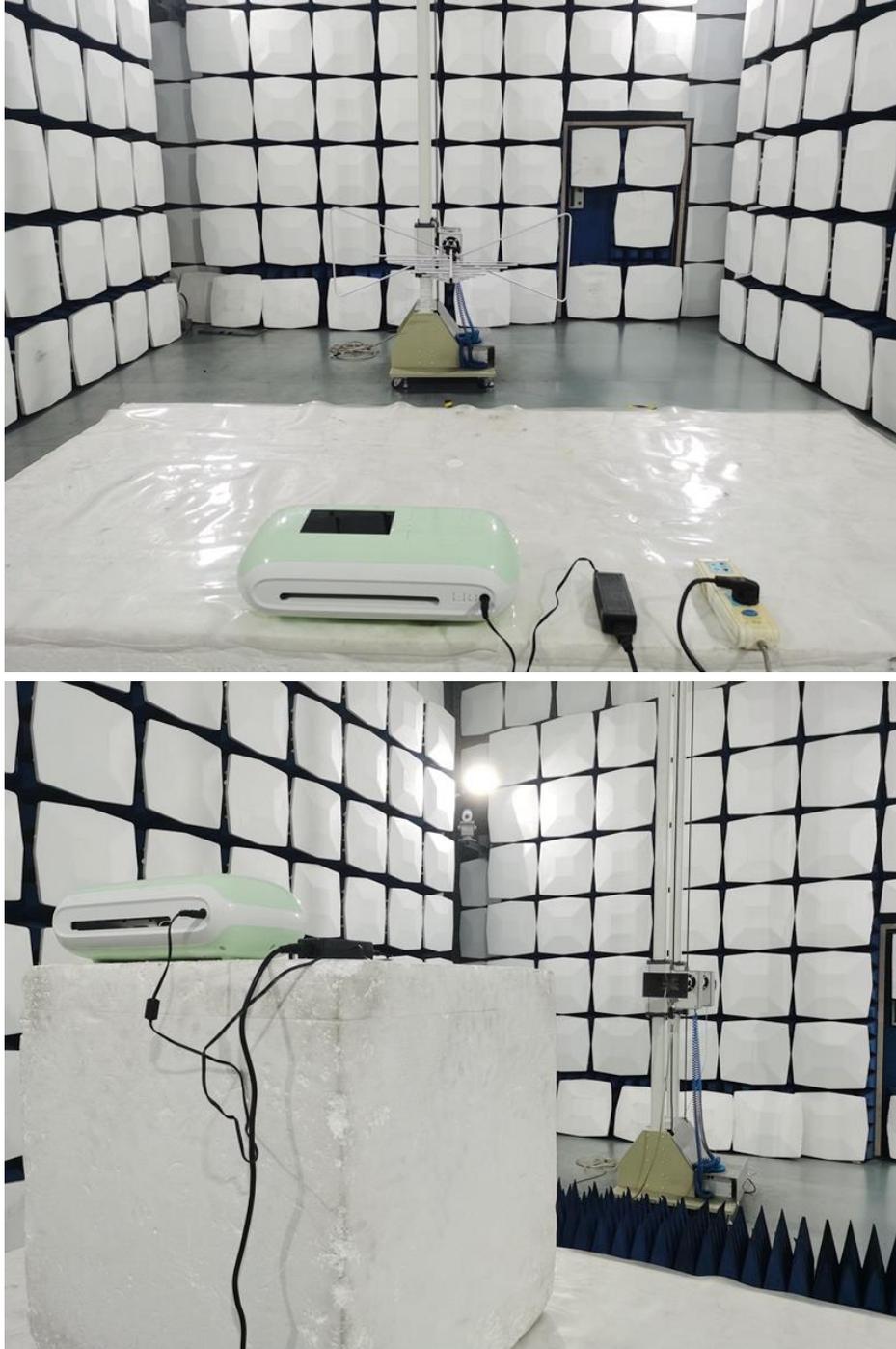
Conducted Emission Test Setup:



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Radiated Emission Test Setup:



Photographs – EUT

Please refer test report TW2107298-01E

End of the report

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