



MEASUREMENT REPORT

FCC PART 15.247 ZigBee

Report No.: S2025062756520101

Issue Date: 07-18-2025

Applicant: Lumi United Technology Co., Ltd
Address: B1, Chongwen Park, Nanshan iPark, Liuxian Avenue, Taoyuan Residential District, Nanshan District, Shenzhen, China
FCC ID: 2AKIT-PSS04
Product: Presence Multi-Sensor FP300
Model No.: PS-S04E
FCC Classification: Digital Transmission System (DTS)
FCC Rule Part(s): Part 15 Subpart C (15.247)
Test Procedure(s): ANSI C63.10-2013, KDB 558074 D01v05r02
Result: Pass
Item Receipt Date: Feb.13 2025
Test Date: Feb.14 2025 ~ Jun.30 2025

Compiled By

Stone Zhang

(Stone Zhang)
Senior Test Engineer

Approved By

Line Chen

(Line Chen)
Engineer Manager



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2013. Test results reported herein relate only to the item(s) The test report shall not be reproduced except in full without the written approval of Fangguang Inspection & Testing Co., Ltd. Wuxi Branch
The test report must not be used by the client to claim product certifications, approval, or endorsement by NVLAP, NIST or any agency of U.S. Government.

Revision History

Report No.	Version	Description	Issue Date
S2025062756520101	Rev. 01	/	07-18-2025

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§2.1033 General Information

Applicant:	Lumi United Technology Co., Ltd
Applicant Address:	B1, Chongwen Park, Nanshan iPark, Liuxian Avenue, Taoyuan Residential District, Nanshan District, Shenzhen, China
Manufacturer:	Lumi United Technology Co., Ltd
Manufacturer Address:	B1, Chongwen Park, Nanshan iPark, Liuxian Avenue, Taoyuan Residential District, Nanshan District, Shenzhen, China
Test Site:	Fanguang Inspection & Testing Co., Ltd.
LAB ID:	CN5037
Test Site Address:	No.8 Ningyun Rd., Xinwu District Wuxi, Jiangsu 214000 China
FCC Rule Part(s):	Part 15 Subpart C (15.247)
FCC ID:	2AKIT-PSS04
Test Device Serial No.:	S/N.:/ ☐ Production ☒ Pre-Production ☐ Engineering
FCC Classification:	Digital Transmission System (DTS)

1. INTRODUCTION

1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

1.2. FangguangTest Location

These measurement tests were performed at the Fangguang Inspection and testing Co.,LTD located at No.8 Ningyun Rd., Xinwu District Wuxi, Jiangsu 214000 China. The detailed description of the measurement facility was found to be in compliance with the requirements of ANSI C63.10-2014.

2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name:	Presence Multi-Sensor FP300
Test Model:	PS-S04E
Additional Model:	PS-S04D
Model difference descriptions:	They have the same technical construction including circuit diagram, PCB LAYOUT, hardware version and software version identical, except sales area and packaging are different.
Trade Mark:	Aqara
Input Voltage Range:	3.0V DC supplied by button cell
Hardware Version:	1.0.0.0
Software Version:	1.0.0.0
EUT sample number:	S20250627565201-1-1/-1-2

Note: This information is provided by the Customer and its authenticity is the responsibility of the Customer.

2.2. Product Specification Subjective to this Report

OperatingBand	2405~2480MHz
Number of Channels	16
Channel Spacing	5 MHz
Type of modulation	O-QPSK
Antenna Type:	Internal antenna
Antenna Gain:	1.0dBi (Max.)
Note:	The EUT antenna gain is provided by the applicant. This report is made solely on the basis of such data and/or information. We accept no responsibility for the authenticity and completeness of the above data and information and the validity of the results and/or conclusions. The test model is PS-S04E.

2.3. Operation Frequency / Channel List

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

EUT was tested with Channel 11, 18 and 26.

2.4. Device Capabilities

This device contains the following capabilities: Zigbee.

Note: The maximum achievable duty cycle was determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 10MHz, VBW =10MHz. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles of Zigbee are 100%.

Environment: 18.7°C/33%RH/102.5kPa

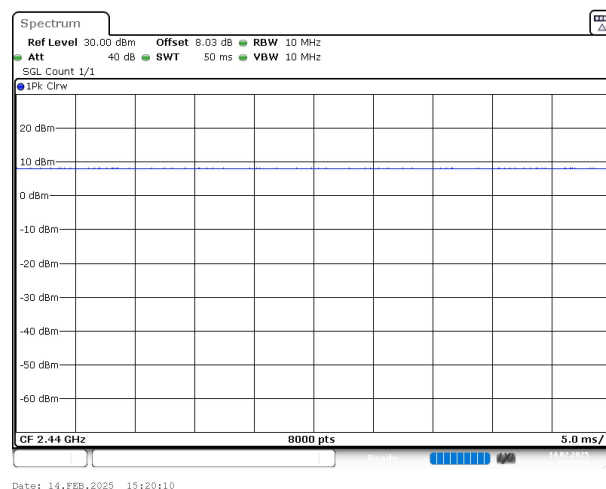
Voltage: DC 3V

Tested By: Stone Zhang

Date: 2025-02-14

Test Mode	Antenna	Frequency (MHz)	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	T [s]
ZigBee	Ant1	2440	50	50	100	/

2440MHz



2.5. Description of Test Software

Test software:

Software version	Test level
QCOM_V1.0	80

2.6. Test Mode

Test Mode	Mode 1: Transmit by Zigbee
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2.7. Test Configuration

The EUT was tested per the guidance of KDB 558074 D01 v05r02. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing.

2.8. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

2.9. EUT Photo

The EUT external photo, internal photo and test setup photo, please refer to the plots in the S20250627565201-A1/A2/A3.

2.10. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase.

However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

2.11. Calculation with all conversion and correction factors used

For Radiated Emissions Below 1GHz Test:

Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m).

For Radiated Emissions Above 1GHz Test:

Measure Level (dB μ V/m) = Reading Level (dB μ V) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB).

3. DESCRIPTION OF TEST

3.1. Evaluation Procedure

The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2013), and the guidance provided in KDB 558074 D01 v05r02 were used in the measurement of the EUT.

Deviation from measurement procedure.....None

4. ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 shall be considered sufficient to comply with the provisions of this section.”

- Use a unique coupling to the intentional radiator.

5. TEST EQUIPMENT CALIBRATION DATE

Conducted Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	FWXGJC-2016-181	1 year	2025/07/22
Two-Line V-Network	R&S	ENV 216	FWXGJC-2016-182	1 year	2025/07/23
Thermohygrometer	Yuhuaze	HTC-1	FWXDA-2016-385	1 year	2025/09/03

Radiated Emission

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Loop Antenna	Schwarzbeck	FMZB 1519B	FWXGJC-2018-015	1 year	2025/07/23
Bi-Log Antenna	R&S	VULB 9168	FGZZ-2024-036	1 year	2025/08/03
Broadband Horn Antenna	R&S	HF907	FWXGJC-2016-267-07	1 year	2025/07/26
Broadband Horn Antenna	Schwarzbeck	BBHA9170	FWXGJC-2018-016	1 year	2025/07/26
EMI Receiver	R&S	ESCI3	FGZZ-2024-033	1 year	2025/07/18
EXA Signal Analyzer	Keysight	N9020A	FWXGJC-2025-006	1 year	2025/07/14
EXA Signal Analyzer	Keysight	N9010B	FWXGJC-2018-010	1 year	2025/07/14
Pre-Amplifier	Tonscend	TAP0118048	FGZZ-2024-037	1 year	2025/08/19
Pre-Amplifier	Chengyi	EMC184055SE	FWXGJC-2018-018	1 year	2025/07/23
Thermohygrometer	Yuhuaze	HTC-1	FWXDA-2016-387	1 year	2025/09/03
Anechoic Chamber	SAEMC	FSAC318	FWXGJC-2024-035	3 year	2027/06/02

Conducted Test Equipment

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	Keysight	N9010B	FWXGJC-2018-010	1 year	2025/07/15
RF Control Unit	Toncend	JS0806-2	FWXGJC-2018-013	1 year	2025/07/26
Thermohygrometer	Yuhuaze	HTC-1	FWXDA-2016-385	1 year	2025/09/03
Spectrum Analyzer	R&S	FSV30	1321.3008K30-104381-rH	1 year	2025/09/22
Pulse power sensor	Anritsu	MA2411B	1126150	1 year	2025/12/07
Power meter	Anritsu	ML2495A	1204003	1 year	2025/12/07

Test Software	Manufacturer	Version	Asset No.	Function
JS1120-3 Test System	tonscend	V3.3.10	/	Conducted Test
JS32	tonscend	V5.0.0	/	Radiated Emission
EMI Test Software	R&S	9.26.00	/	Conducted Emission

Auxiliary Equipment

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Filter	Tonscend	ZBSF6	07247867	1 year	2025/07/26
Filter	Tonscend	ZHPF6	07233297	1 year	2025/07/26
Attenuator	Tonscend	10dB	/	1 year	2025/07/26
RF Cable	Tonscend	T-1	/	1 year	2025/07/26

6. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

AC Conducted Emission Measurement
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 2.68dB
Radiated Emission Measurement (9kHz - 30MHz)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 3.06dB
Radiated Emission Measurement (30MHz -1GHz)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 4.01dB
Radiated Emission Measurement (1-18GHz)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 4.97dB
Radiated Emission Measurement (18-40GHz)
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 5.32dB
Spurious Emissions, Conducted
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 30MHz-1GHz: 1.00 dB 1GHz-12.75GHz: 1.30 dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 0.60dB
Power Spectrum Density
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 0.80dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 0.20MHz
Frequency Stability
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 0.1×10^{-6} MHz

7. TEST RESULT

7.1. Summary

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(2)	6dB Bandwidth	$\geq 500\text{kHz}$	Conducted	Pass	Section 7.2
15.247(b)(3)	Output Power	$\leq 30\text{dBm}$		Pass	Section 7.3
15.247(e)	Power Spectral Density	$\leq 8\text{dBm}/3\text{kHz}$		Pass	Section 7.4
15.247(d)	Band Edge	$\geq 20\text{dBc}$		Pass	Section 7.5
15.247(d)	Out-of-Band Emissions	$\geq 20\text{dBc}$		Pass	Section 7.5
15.205 15.209	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209	Radiated	Pass	Section 7.6 & 7.7
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	N/A	Section 7.8

Notes:

- 1) All modes of operation and data rates were investigated. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.

7.2. 6dB Bandwidth Measurement

7.2.1. Test Limit

The minimum permissible 6dB bandwidth is 500 kHz.

7.2.2. Test Procedure used

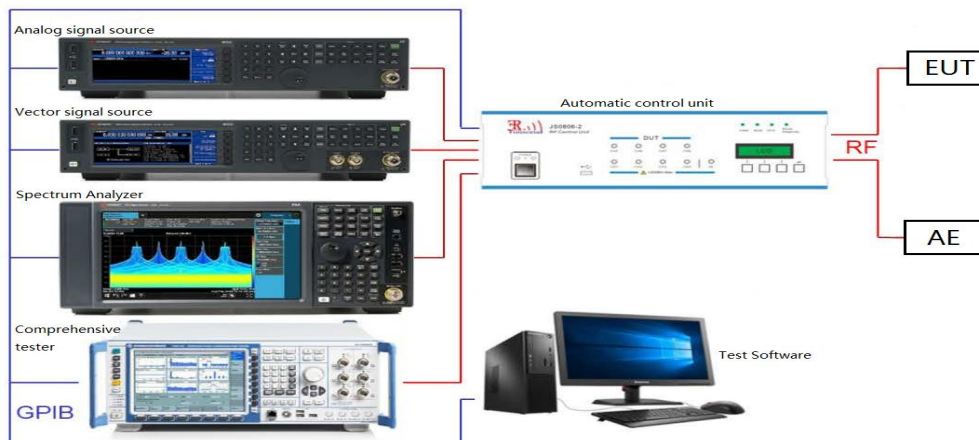
ANSI C63.10-2013 Section 11.8.2 Option 1

KDB 558074 D01 v05r02 – Section 8.2

7.2.3. Test Setting

1. Set RBW = 100 kHz
2. VBW $\geq 3 \times$ RBW
3. Detector = peak
4. Trace mode = max hold
5. Sweep = auto couple
6. Allow the trace was allowed 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 frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.2.4. Test Setup



7.2.5. Test Result

Environment: 18.7°C/33%RH/102.5kPa

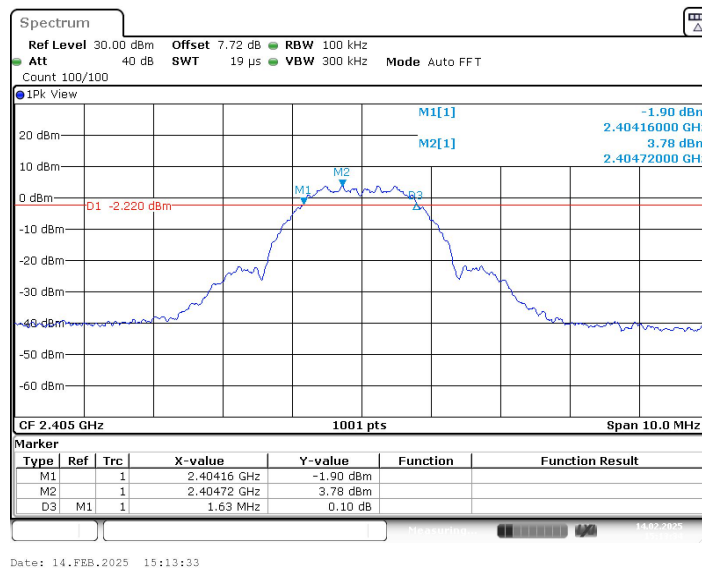
Voltage: DC 3V

Tested By: Stone Zhang

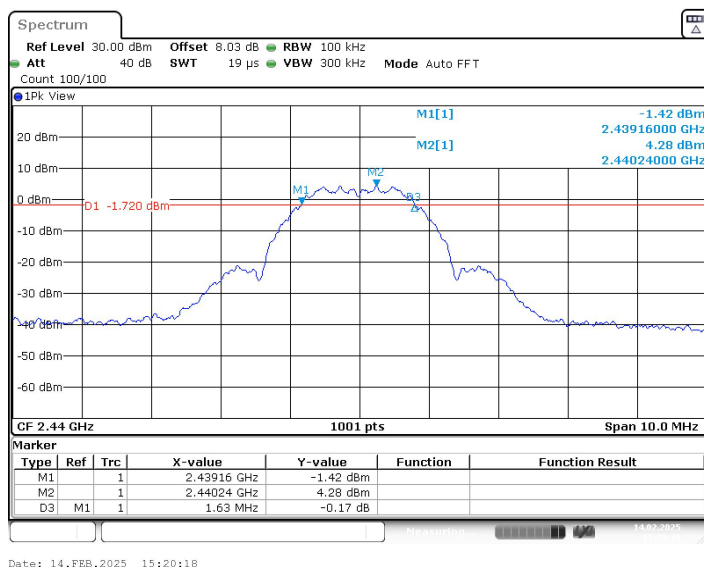
Date: 2025-02-14

Ch Name	Frequency (MHz)	Bandwidth [kHz]	Limit[kHz]	Verdict
Lowest	2405	1630	≥500	PASS
Middle	2440	1630		PASS
Highest	2480	1630		PASS

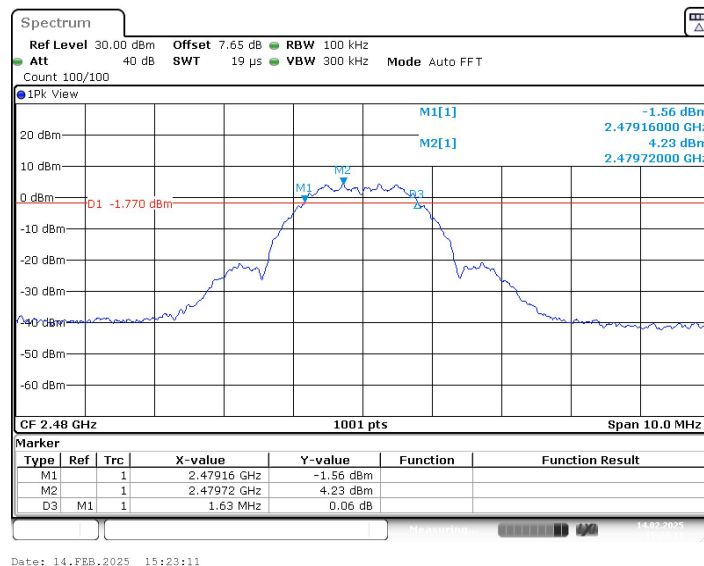
Lowest Frequency (2405MHz)



Middle Frequency (2440 MHz)



Highest Frequency (2480MHz)



7.3. Output Power Measurement

7.3.1. Test Limit

The maximum permissible conducted output power is 1 Watt (30dBm). And for antenna gain greater than 6dBi the limit shall reduce by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.3.2. Test Procedure Used

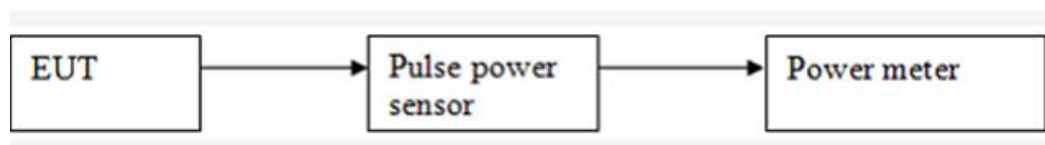
ANSI C63.10-2013 – Section 11.9.1.1

KDB 558074 D01 v05r02 –Section 8.3.1.2

7.3.3. Test Setting

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the power meter and enable the EUT transmit continuously.
2. Keep the EUT in transmitting at lowest, middle and highest channel individually. Record the max value.

7.3.4. Test Setup



7.3.5. Test Result

Environment: 18.7°C/33%RH/102.5kPa

Voltage: DC 3V

Tested By: Stone Zhang

Date: 2025-02-14

ChName	Frequency (MHz)	Measured Channel Power (dBm)	Limit	Peak/ Average	Result
Lowest	2405	8.22	1W (30dBm)	Peak	Pass
Middle	2440	8.20			Pass
Highest	2480	8.15			Pass

7.4. Power Spectral Density Measurement

7.4.1. TestLimit

The maximum permissible power spectral density is 8dBm in any 3 kHz band. And for antenna gain greater than 6dBi the limit shall reduce by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.4.2. Test Procedure Used

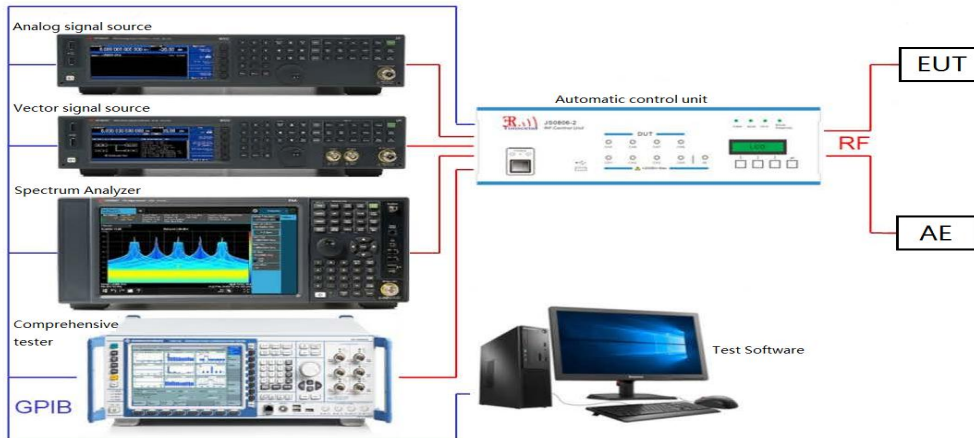
KDB 558074 D01 v05r02- Section 8.4

ANSI C63.10 – Section 11.10.2

7.4.3. Test Setting

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
4. Set the VBW $\geq [3 \times \text{RBW}]$.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.

7.4.4. Test Setup



7.4.5. Test Result

Environment: 18.7°C/33%RH/102.5kPa

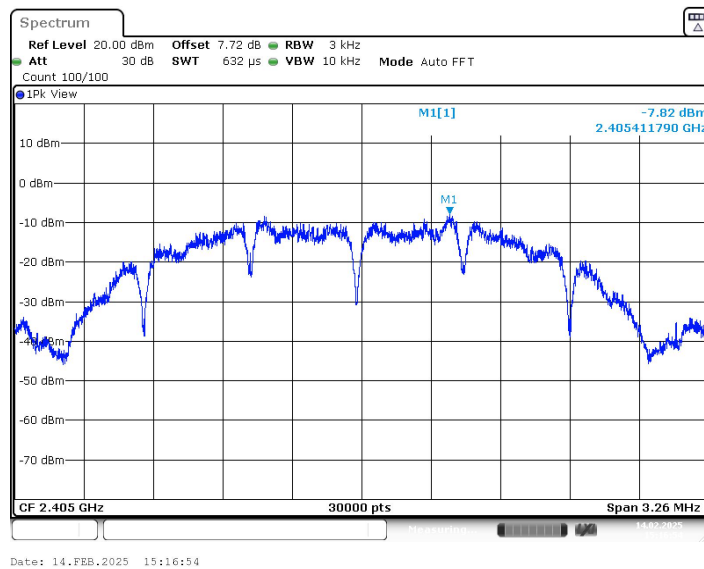
Voltage: DC 3V

Tested By: Stone Zhang

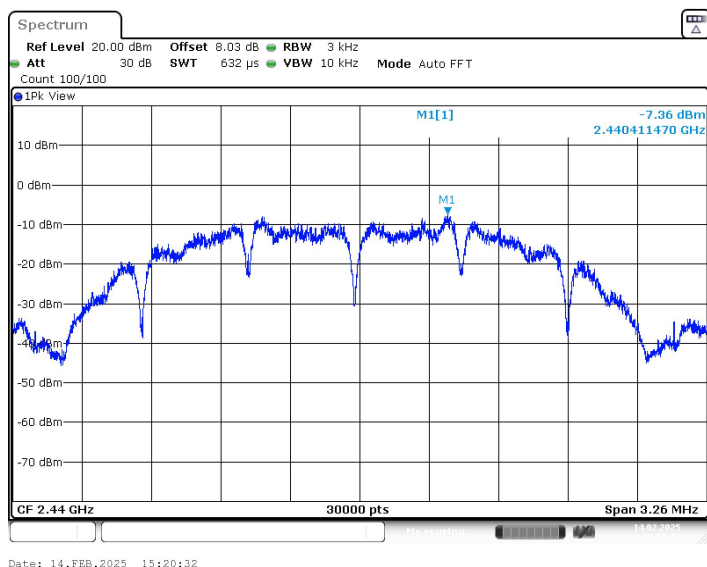
Date: 2025-02-14

Ch Name	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
Lowest	2405	-7.82	8.00	Pass
Middle	2440	-7.36	8.00	Pass
Highest	2480	-7.50	8.00	Pass

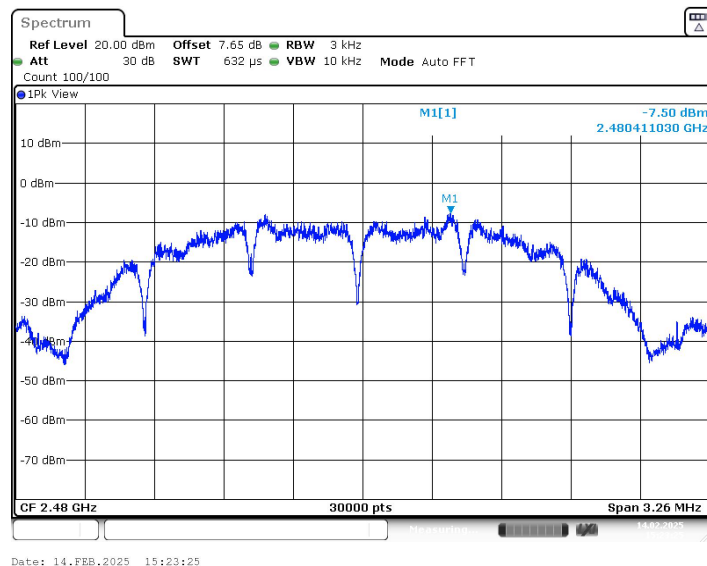
Lowest Frequency (2405MHz)



Middle Frequency (2440 MHz)



Highest Frequency (2480MHz)



7.5. Conducted Band Edge and Out-of-Band Emissions

7.5.1. Test Limit

The limit for out-of-band spurious emissions at the band edge is 20dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100 kHz bandwidth per the PSD procedure.

7.5.2. Test Procedure Used

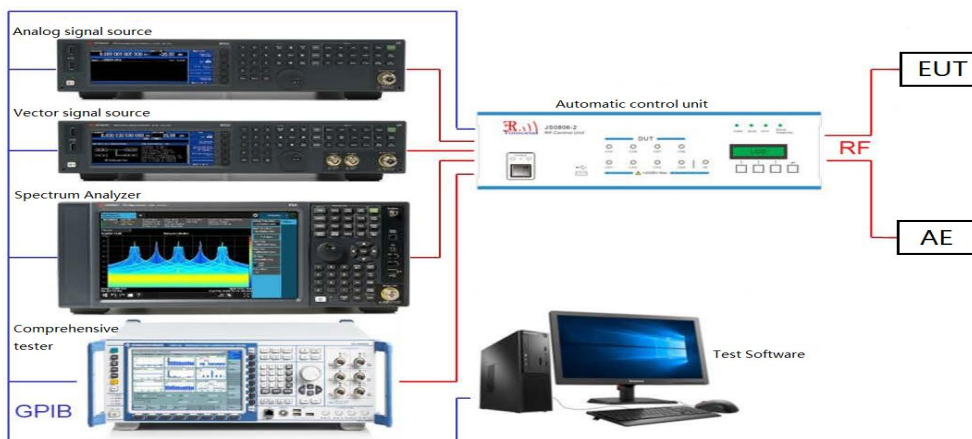
KDB 558074 D01 v05r02 - Section 8.5 & Section 8.6

ANSI C63.10 – Section 11.11&11.12

7.5.3. Test Setting

- (a) Set the center frequency and span to encompass frequency range to be measured
- (b) RBW = 100kHz
- (c) VBW = 300kHz
- (d) Detector = Peak
- (e) Trace mode = max hold
- (f) Sweep time = auto couple
- (g) The trace was allowed to stabilize

7.5.4. Test Setup



7.5.5. Test Result

Environment: 18.7°C/33%RH/102.5kPa

Voltage: DC 3V

Tested By: Stone Zhang

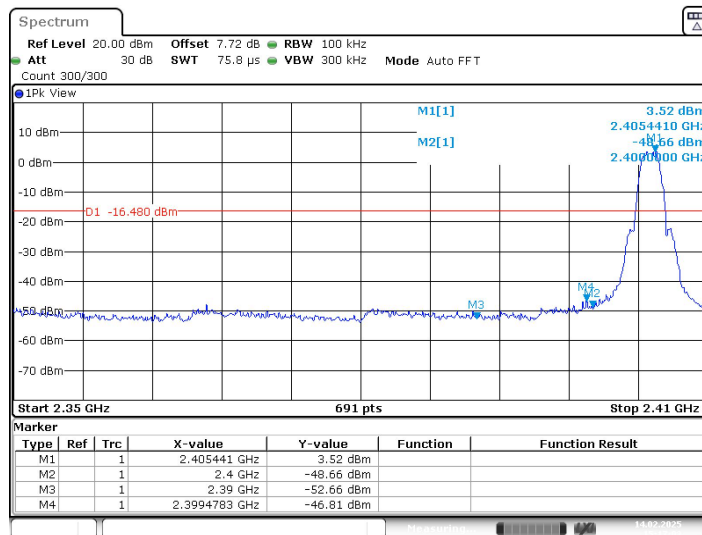
Date: 2025-02-14

Band edge

Test Mode	Antenna	Ch Name	Frequency [MHz]	Ref Level[dBm]	Result[dBm]	Limit[dBm]	Verdict
ZigBee	Ant1	Lowest	2405	3.52	-46.81	≤-16.48	PASS
		Highest	2480	4.28	-45.05	≤-15.72	PASS

Lowest Frequencyl (2405MHz)

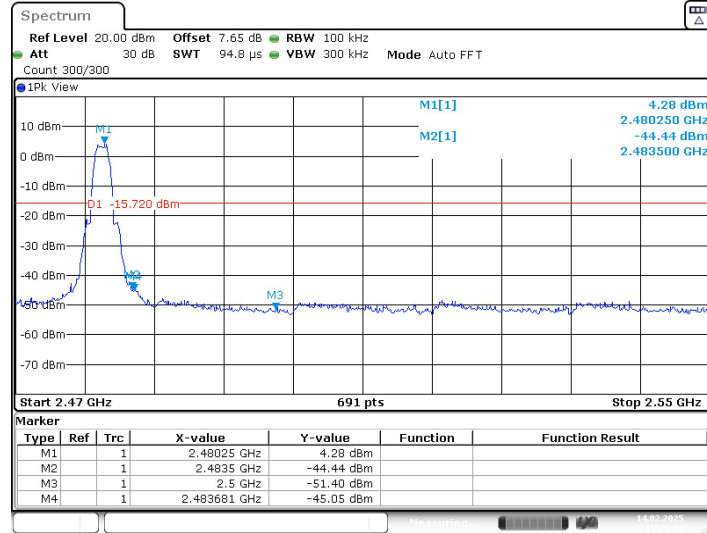
2.35GHz-2.41GHz



Date: 14.FEB.2025 15:17:03

Highest Frequency (2480MHz)

2.47GHz-2.55GHz

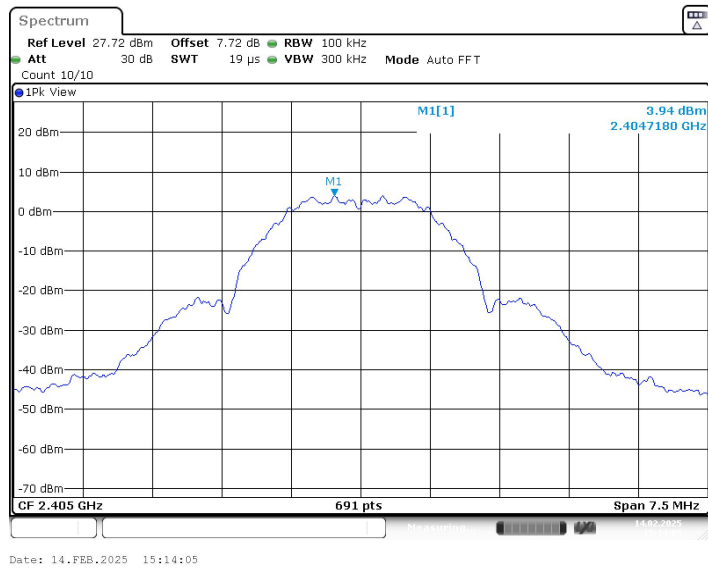


Date: 14.FEB.2025 15:23:34

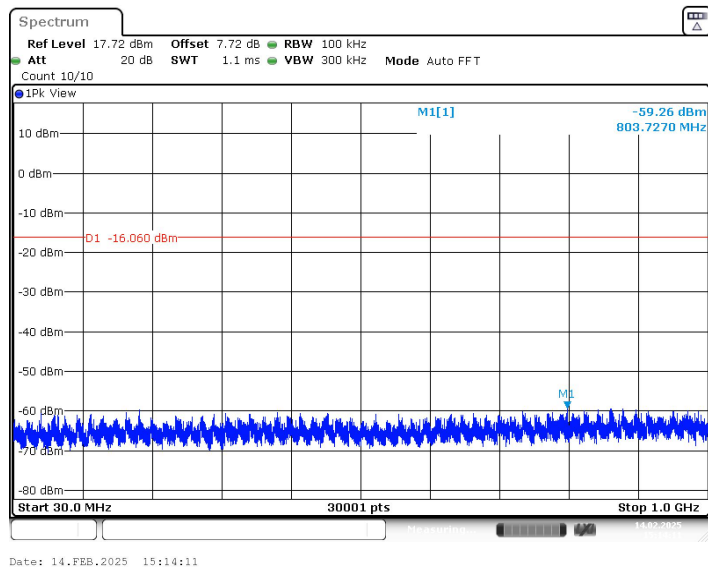
Conducted Spurious Emission

Test Mode	Antenna	Frequency [MHz]	Freq Range [MHz]	Ref Level [dBm]	Result[dBm]	Limit[dBm]	Verdict
ZigBee	Ant1	2405	Reference	3.94	3.94	---	PASS
			30~1000	3.94	-59.26	≤-16.06	PASS
			1000~26500	3.94	-45.07	≤-16.06	PASS
		2440	Reference	4.27	4.27	---	PASS
			30~1000	4.27	-59.13	≤-15.73	PASS
			1000~26500	4.27	-44.38	≤-15.73	PASS
		2480	Reference	4.22	4.22	---	PASS
			30~1000	4.22	-58.28	≤-15.78	PASS
			1000~26500	4.22	-44.27	≤-15.78	PASS

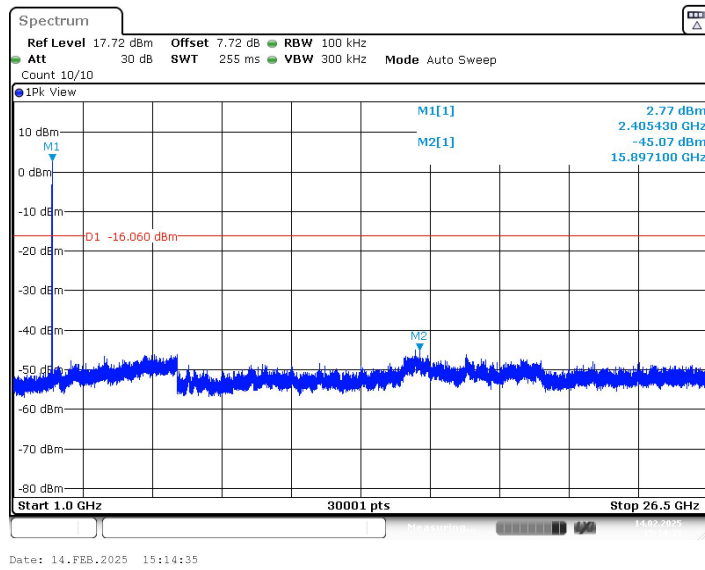
Lowest Frequency (2405MHz)



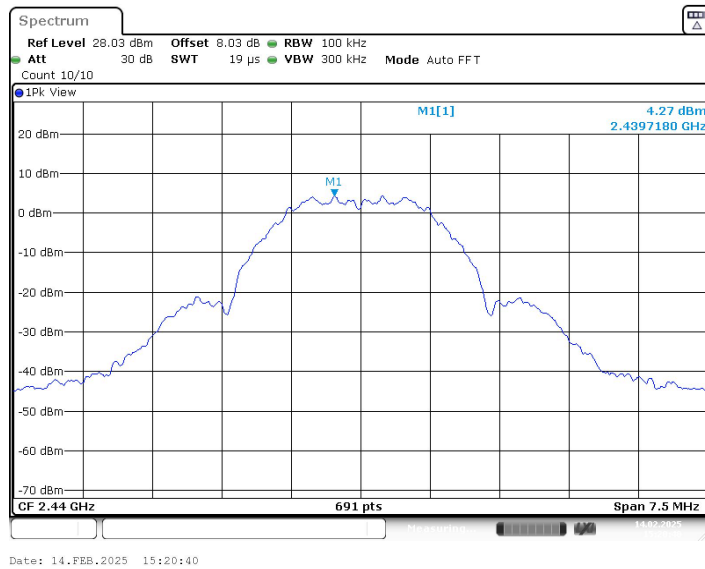
0.03GHz-1GHz



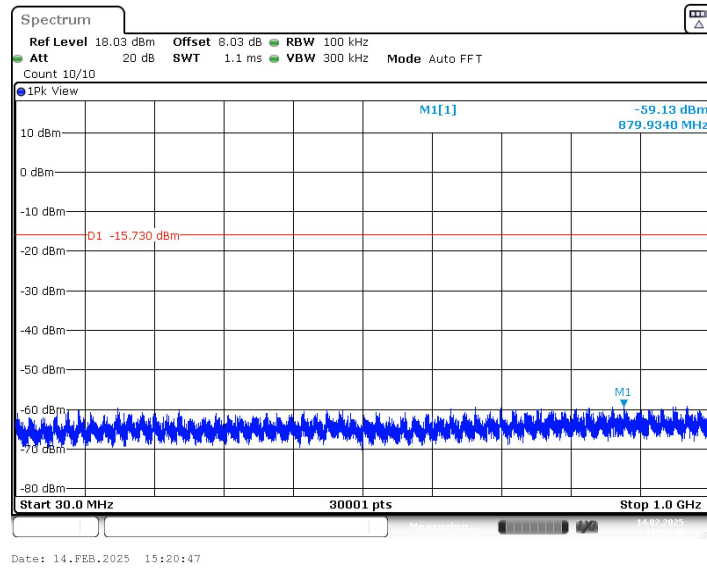
1GHz-26.5GHz



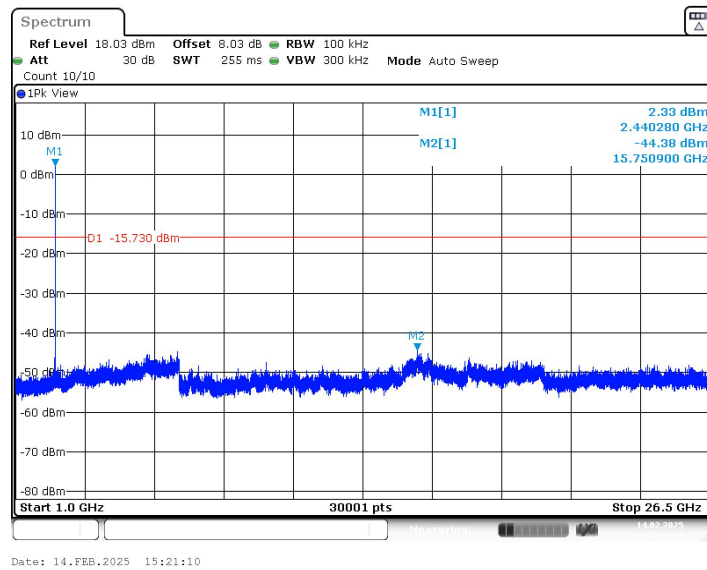
Middle Frequency (2440MHz)



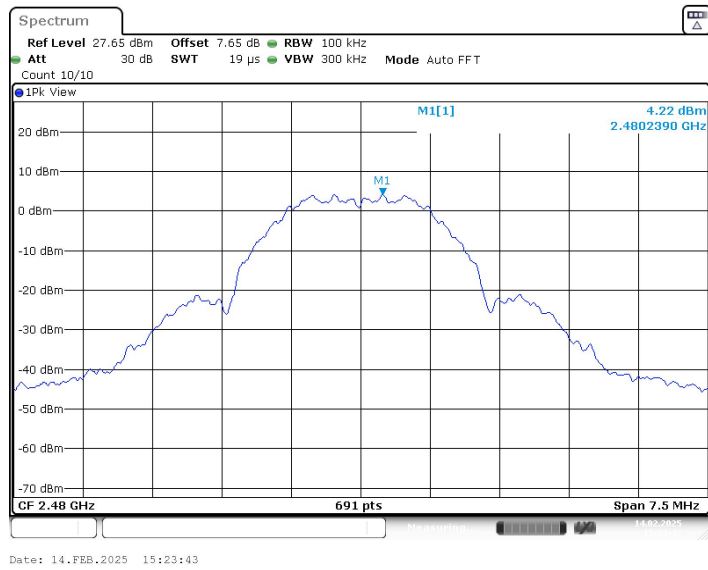
0.03GHz-1GHz



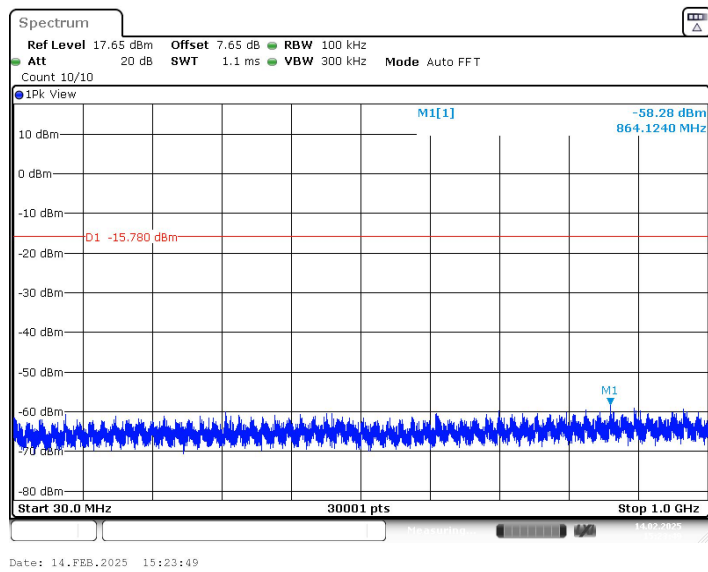
1GHz-26.5GHz



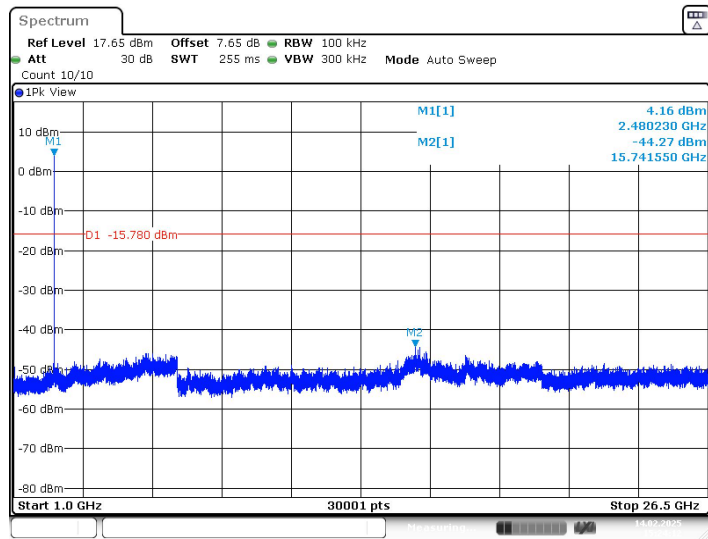
Highest Frequency (2480MHz)



0.03GHz-1GHz



1GHz-26.5GHz



Date: 14.FEB.2025 15:24:13

7.6. Radiated Spurious Emission Measurement

7.6.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 – 0.490	2400/F (kHz)	300
0.490 – 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

7.6.2. Test Procedure Used

ANSI C63.10-2013 – Section 6.6.4.3

7.6.3. Test Setting

Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = as specified in Table 1
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold

- Trace was allowed to stabilize

Table 1 - RBW as a function of frequency

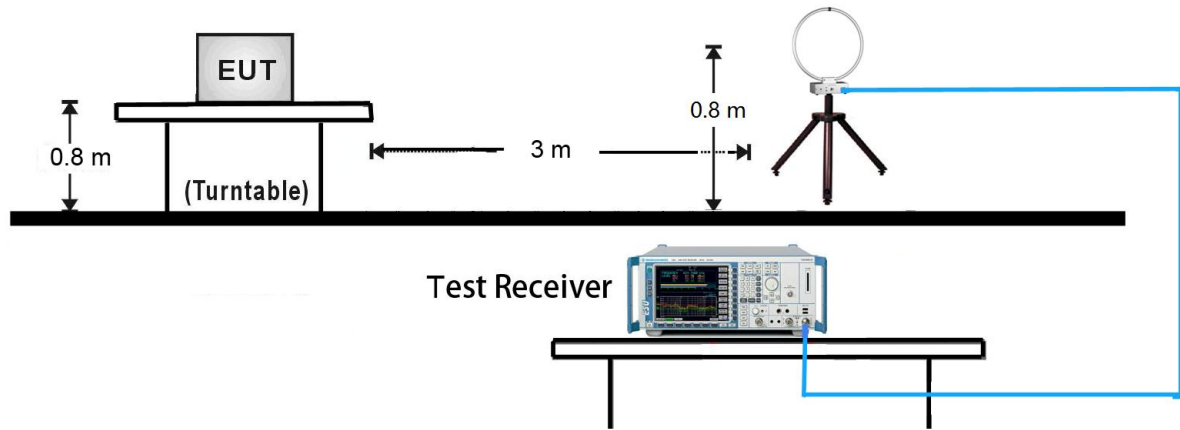
Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz
> 1000 MHz	1 MHz

Average Field Strength Measurements

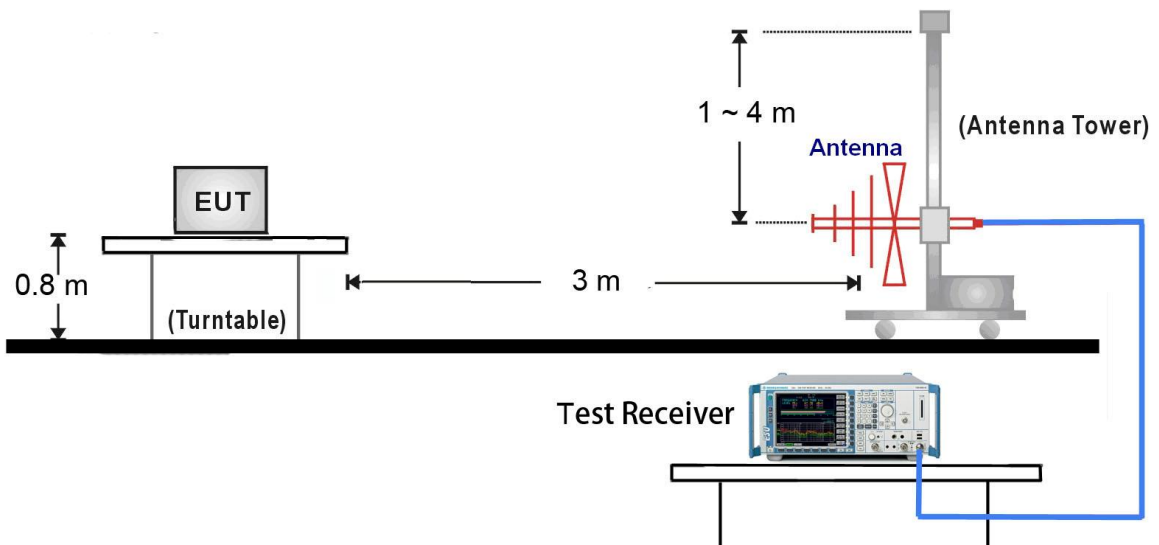
- Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
- RBW = 1MHz
- VBW = 3MHz
- Detector = Power Average (RMS)
- Number of sweep point = 2001 (Number of sweep points must be $\geq 2 \times \text{span} / \text{RBW}$)
- Sweep time = auto
- Trace (RMS) averaging was performed over at least 100 traces.

7.6.4. Test Setup

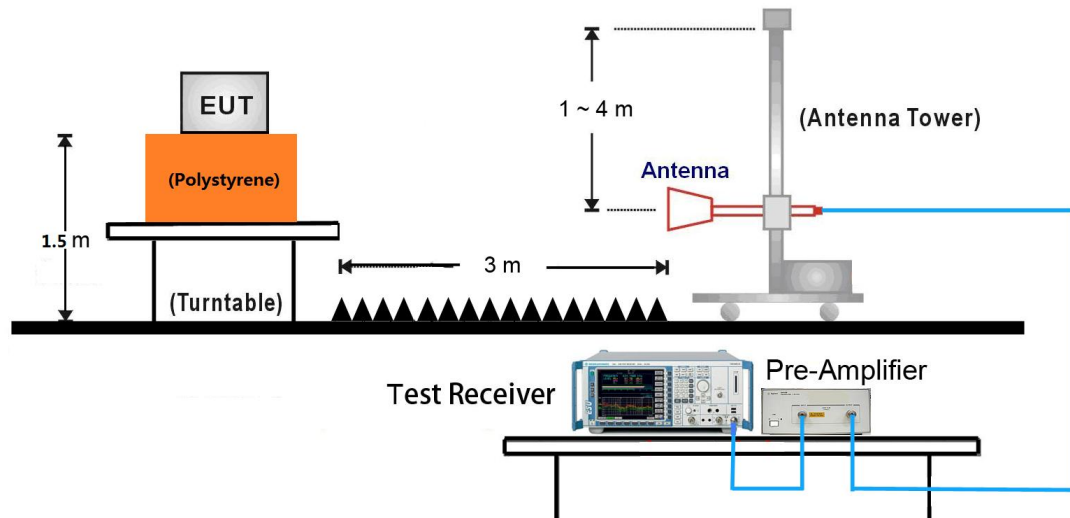
9kHz ~30MHz Test Setup:



30MHz ~ 1GHz Test Setup:

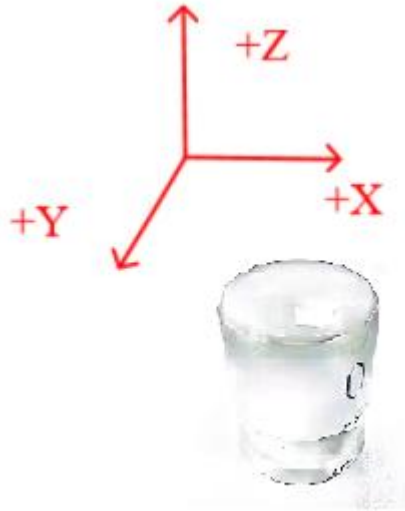


1GHz ~ 26.5GHz Test Setup:



7.6.5. Test Result

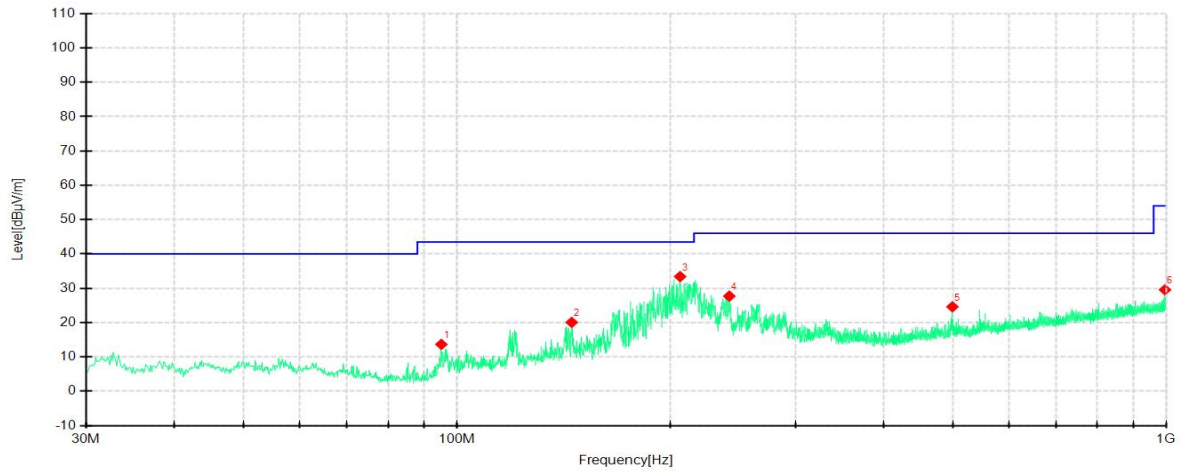
The test are under 3-axes (X, Y, Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand). After pre-test, it was found that the worse radiation emission was get at the Z position. So the data was shown the Z position only.



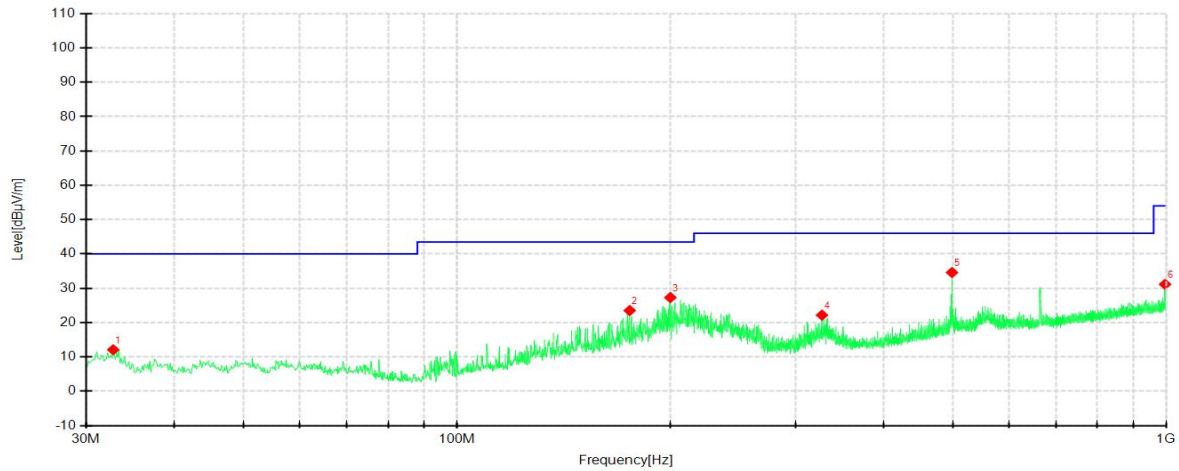
Below 1GHz

Note: Pre-scan all modes , only the worst case(Lowest Frequency_2405MHz) were recorded in this report.

Power supply:	DC 3V	Environmental Conditions:	22.1°C/57%RH/101.1kPa
Test Engineer:	Stone Zhang	Test Date:	2025-06-30



NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Height [cm]	Angle [°]	Polarity	Verdict
1	95.1194	46.56	13.64	-32.92	43.50	29.86	QP	200	193	Horizontal	PASS
2	145.2019	48.48	20.05	-28.43	43.50	23.45	QP	200	193	Horizontal	PASS
3	206.4408	64.76	33.40	-31.36	43.50	10.10	QP	200	193	Horizontal	PASS
4	242.2140	57.22	27.70	-29.52	46.00	18.30	QP	100	8	Horizontal	PASS
5	499.6600	46.30	24.59	-21.71	46.00	21.41	QP	200	126	Horizontal	PASS
6	995.9983	43.93	29.56	-14.37	54.00	24.44	QP	200	207	Horizontal	PASS



NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Height [cm]	Angle [°]	Polarity	Verdict
1	32.7891	41.42	12.08	-29.34	40.00	27.92	QP	100	298	Vertical	PASS
2	175.2757	52.86	23.51	-29.35	43.50	19.99	QP	100	59	Vertical	PASS
3	200.0138	58.80	27.29	-31.51	43.50	16.21	QP	100	86	Vertical	PASS
4	327.2209	48.75	22.17	-26.58	46.00	23.83	QP	200	0	Vertical	PASS
5	498.9324	56.30	34.59	-21.71	46.00	11.41	QP	100	20	Vertical	PASS
6	996.2408	45.52	31.15	-14.37	54.00	22.85	QP	200	327	Vertical	PASS

Remark:

- 1 No emission found between lowest internal used/generated frequency to 30MHz.
- 2 Radiated emissions measured in frequency range from 9kHz to 1GHz were made with an instrument using Quasi-peak detector mode.
- 3 Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 The IF bandwidth of Receiver between 30MHz to 1GHz was 120kHz.

1GHz-18GHz:

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Lowest Frequency (2405MHz)

/

Environment: 24.6°C/45%RH/101.0kPa

Voltage: DC 3V

Tested By: Stone Zhang

Date: 2025-05-17

Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1529.0000	52.04	43.99	-8.05	74.00	30.01	200	211	Horizontal
2	2796.2000	46.89	45.55	-1.34	74.00	28.45	100	144	Horizontal
3	3610.0000	51.02	38.63	-12.39	74.00	35.37	200	219	Horizontal
4	4810.0000	52.15	44.62	-7.53	74.00	29.38	100	145	Horizontal
5	7216.0000	45.21	46.13	0.92	74.00	27.87	200	132	Horizontal
6	9675.0000	39.13	46.98	7.85	74.00	27.02	200	219	Horizontal

Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1912.2000	50.92	46.24	-4.68	74.00	27.76	200	239	Vertical
2	2918.6000	46.69	45.94	-0.75	74.00	28.06	100	36	Vertical
3	3694.0000	51.52	39.94	-11.58	74.00	34.06	200	177	Vertical
4	4811.0000	52.28	45.23	-7.05	74.00	28.77	100	146	Vertical
5	5990.0000	46.83	43.10	-3.73	74.00	30.90	200	57	Vertical
6	7216.0000	46.57	47.25	0.68	74.00	26.75	100	40	Vertical

Middle Frequency (2440MHz)

/

Environment: 23.2°C/49%RH/101.0kPa

Voltage: DC 3V

Tested By: Stone Zhang

Date: 2025-03-19

Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1894.2000	48.39	44.15	-4.24	74.00	29.85	100	198	Horizontal
2	3999.0000	54.62	43.89	-10.73	74.00	30.11	100	266	Horizontal
3	4879.0000	53.08	45.84	-7.24	74.00	28.16	100	1	Horizontal
4	7639.0000	52.49	53.99	1.50	74.00	20.01	200	133	Horizontal
5	11709.0000	52.96	64.86	11.90	74.00	9.14	100	14	Horizontal
6	15707.0000	56.64	67.00	10.36	74.00	7.00	100	281	Horizontal

AV Final Data List

NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	7632.5180	1.46	31.54	33.04	54.00	20.96	200	117	Horizontal
2	11710.1740	11.90	24.86	36.76	54.00	17.24	200	41	Horizontal
3	15709.3520	10.33	25.17	35.53	54.00	18.47	200	205	Horizontal

Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1199.0000	54.37	45.36	-9.01	74.00	28.64	100	348	Vertical
2	1798.6000	51.79	45.77	-6.02	74.00	28.23	200	145	Vertical
3	3321.0000	57.07	43.67	-13.40	74.00	30.33	100	11	Vertical
4	3983.0000	56.42	46.24	-10.18	74.00	27.76	100	130	Vertical
5	4879.0000	54.53	47.45	-7.08	74.00	26.55	200	325	Vertical
6	15247.0000	54.38	68.04	13.66	74.00	5.96	200	100	Vertical

AV Final Data List

NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	15247.0000	13.66	26.85	40.51	54.00	13.49	200	100	Vertical

Highest Frequency (2480MHz)

Environment: 23.2°C/49%RH/101.0kPa

Tested By: Stone Zhang

Voltage: DC 3V

Date: 2025-03-19

Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1793.0000	53.23	46.53	-6.70	74.00	27.47	100	103	Horizontal
2	2976.4000	48.24	47.62	-0.62	74.00	26.38	100	223	Horizontal
3	3290.0000	54.07	41.46	-12.61	74.00	32.54	100	312	Horizontal
4	4960.0000	53.73	46.97	-6.76	74.00	27.03	200	133	Horizontal
5	7636.0000	52.75	54.23	1.48	74.00	19.77	200	163	Horizontal
6	15914.0000	56.87	67.43	10.56	74.00	6.57	100	221	Horizontal

AV Final Data List

NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	7632.7630	1.46	30.58	32.06	54.00	21.94	200	15	Horizontal
2	15911.2050	10.58	26.03	36.59	54.00	17.41	200	133	Horizontal

Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2664.6000	52.26	49.89	-2.37	74.00	24.11	100	360	Vertical
2	3992.0000	52.87	42.78	-10.09	74.00	31.22	100	115	Vertical
3	4795.0000	55.47	48.34	-7.13	74.00	25.66	100	340	Vertical
4	4958.0000	55.25	48.27	-6.98	74.00	25.73	100	129	Vertical
5	5311.0000	53.06	47.25	-5.81	74.00	26.75	100	310	Vertical
6	15249.0000	54.20	67.89	13.69	74.00	6.11	200	326	Vertical

AV Final Data List

NO.	Freq. [MHz]	Factor [dB]	AV Reading [dBμV/m]	AV Value [dBμV/m]	AV Limit [dBμV/m]	AV Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2664.4250	-2.37	36.89	34.52	54.00	19.48	100	360	Vertical
2	4791.3690	-7.18	50.74	43.61	54.00	10.39	200	341	Vertical
3	4952.2630	-6.97	51.03	44.05	54.00	9.95	200	341	Vertical
4	5301.7520	-5.93	48.62	42.81	54.00	11.19	200	44	Vertical
5	15242.2850	13.62	25.74	39.43	54.00	14.57	200	147	Vertical

18GHz-26.5GHz:

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Note: Pre-scan all modes, only the worst case 2405MHz were recorded in this report.

Environment: 21.6°C/47%RH/101.0kPa

Voltage: DC 3V

Tested By: Stone Zhang

Date: 2025-03-07

Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV/m]	Level for 1m [dBμV/m]	Level for 3m [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	21649.8	51.02	54.55	45.01	3.53	74	28.95	100	165	Horizontal
2	24375.6	41.92	47.4	37.86	5.48	74	36.10	100	339	Horizontal
3	27491.9	43.38	48.67	39.13	5.29	74	34.83	100	80	Horizontal
4	30262.8	43.69	49.44	39.9	5.75	74	34.06	100	165	Horizontal
5	35799.1	42.99	52.34	42.8	9.35	74	31.16	100	280	Horizontal
6	39025.4	40.67	55.68	46.14	15.01	74	27.82	100	22	Horizontal

Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV/m]	Level for 1m [dBμV/m]	Level for 3m [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	21648.7	52.05	55.82	46.28	3.77	74	27.68	100	53	Vertical
2	24364.6	41.78	47.91	38.37	6.13	74	35.59	100	340	Vertical
3	27463.3	43.28	49.11	39.57	5.83	74	34.39	100	312	Vertical
4	29853.6	44.26	49.89	40.35	5.63	74	33.61	100	195	Vertical
5	36319.4	42.97	53.22	43.68	10.25	74	30.28	100	340	Vertical
6	38644.8	41.87	56.38	46.84	14.51	74	27.12	100	282	Vertical

Remark:

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
- Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- Above 18G test distance is 1m, so the Level for 3m= Level for 1m + 20*log(1/3).

7.7. Radiated Restricted Band Edge Measurement

7.7.1. Test Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42-16.423	399.9 - 410	4.5-5.15
¹ 0.495 - 0.505	16.69475-16.69525	608 - 614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960 - 1240	7.25-7.75
4.125-4.128	25.5 -25.67	1300 - 1427	8.25 - 8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660 - 1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123 - 138	2200 - 2300	14.47-14.5
8.291-8.294	149.9-150.05	2310 - 2390	15.35-16.2
8.362-8.366	156.52480-156.525	2483.5 - 2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690 - 2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260 - 3267	23.6-24.0
12.29-12.293	167.72-173.2	3332 - 3339	31.2-31.8
12.51975-12.52025	240 - 285	3345.8 - 3358	36.43-36.5
12.57675-12.57725	322-335.4	3600 - 4400	(²)
13.36-13.41	--	--	--

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

7.7.2. Test Procedure Used

ANSI C63.10 Section 6.3 (General Requirements)

ANSI C63.10 Section 6.6 (Standard test method above 1GHz)

7.7.3. Test Setting

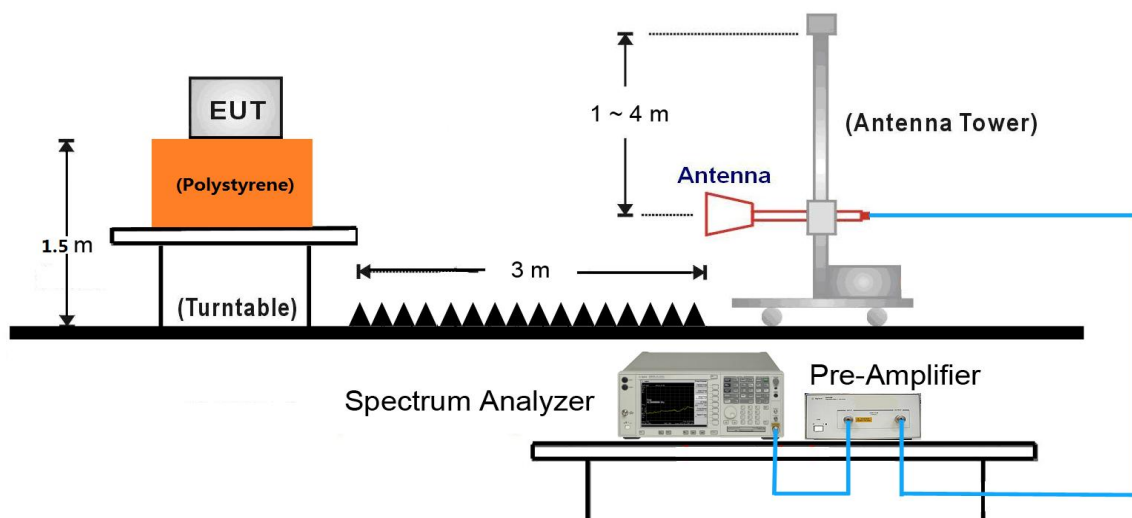
Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Average Field Strength Measurements

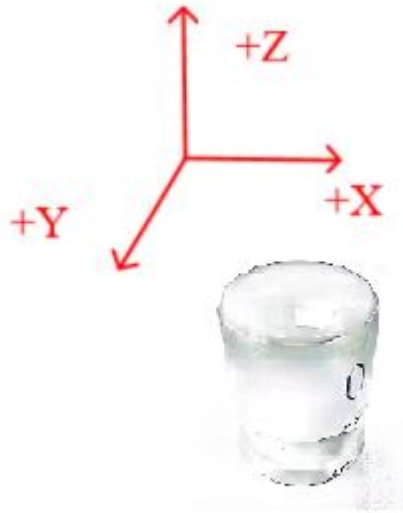
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = Power Average (RMS)
5. Number of sweep point = 2001 (Number of sweep points must be $\geq 2 \times \text{span} / \text{RBW}$)
6. Sweep time = auto
7. Trace (RMS) averaging was performed over at least 100 traces.

7.7.4. Test Setup



7.7.5. Test Result

The test are under 3-axes(X, Y, Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand). After pre-test, it was found that the worse radiation emission was get at the Z position. So the data was shown the Z position only.



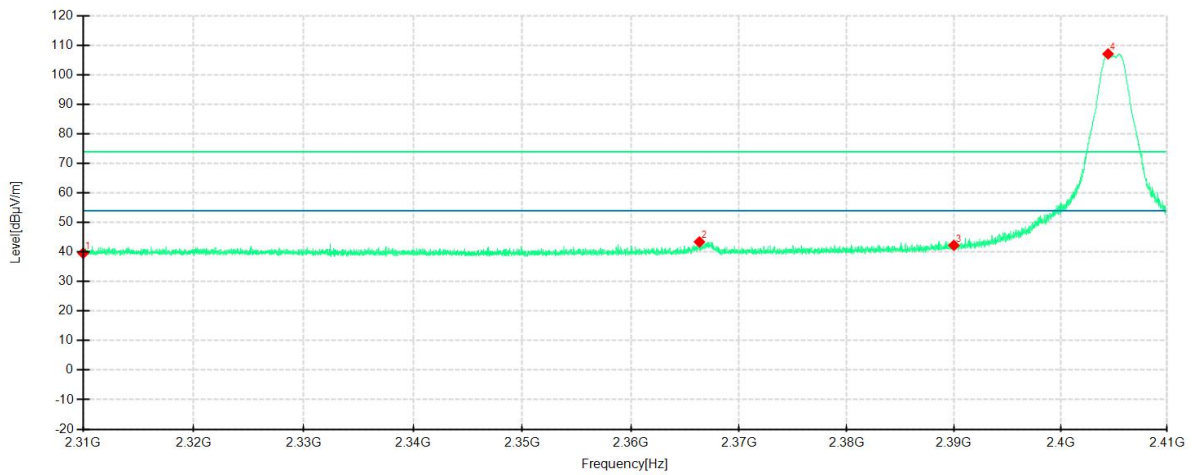
Test Voltage:	DC 3V	Test Engineer:	Stone Zhang
Test Date	2025-02-28	Environmental Conditions	17.3°C/34%RH/101.5kPa

Lowest Channel

Frequency: 2405MHz

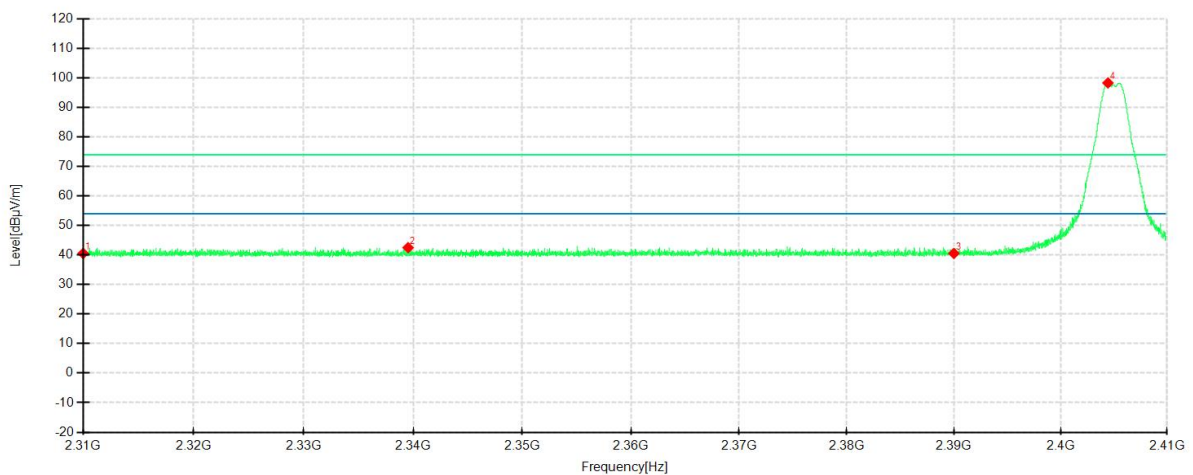
Detector mode: Peak

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



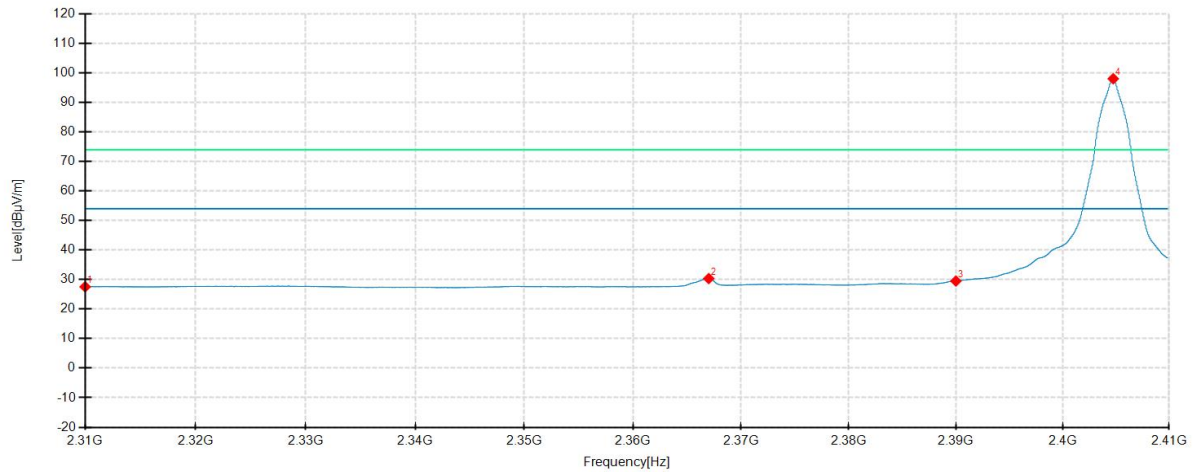
No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2310.0000	45.49	39.59	-5.90	74.00	34.41	100	188	Horizontal	/
2	2366.3375	49.54	43.43	-6.11	74.00	30.57	200	133	Horizontal	/
3	2390.0000	48.00	42.27	-5.73	74.00	31.73	100	138	Horizontal	
4	2404.4500	112.57	107.10	-5.47	74.00	-33.10	100	138	Horizontal	No limit
1	2310.0000	45.84	40.54	-5.30	74.00	33.46	200	342	Vertical	/
2	2339.5375	47.85	42.50	-5.35	74.00	31.50	200	26	Vertical	/
3	2390.0000	46.01	40.56	-5.45	74.00	33.44	100	284	Vertical	/
4	2404.4375	103.74	98.29	-5.45	74.00	-24.29	100	181	Vertical	No limit

Lowest Channel

Frequency: 2405MHz

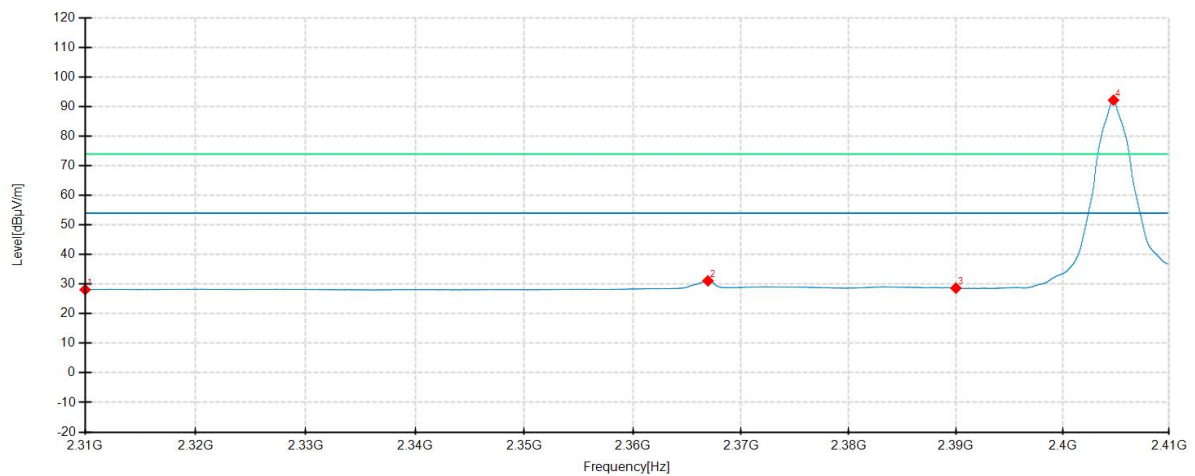
Detector mode: Average

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



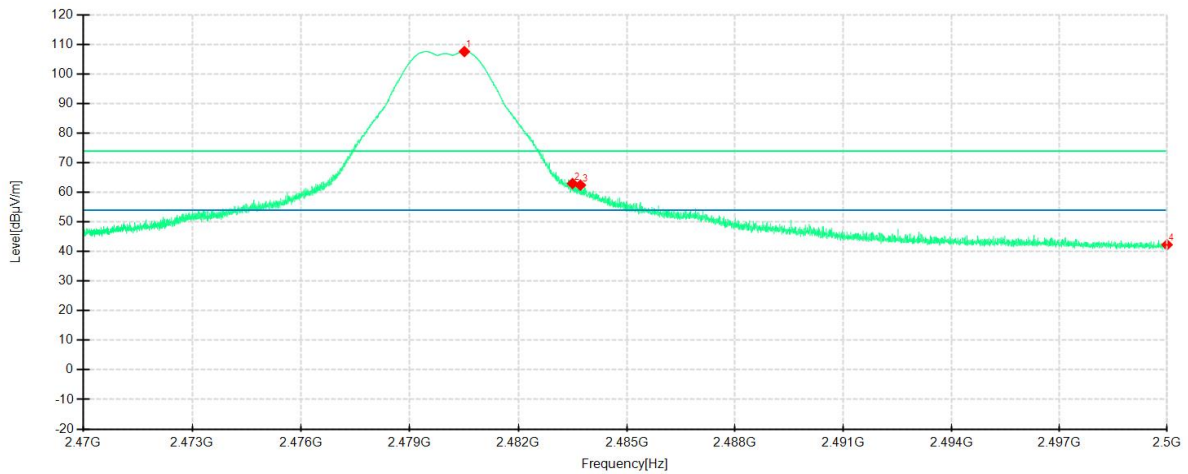
No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2310.0000	33.45	27.55	-5.90	54.00	26.45	100	360	Horizontal	/
2	2367.0125	36.44	30.34	-6.10	54.00	23.66	200	161	Horizontal	/
3	2390.0000	35.24	29.51	-5.73	54.00	24.49	100	285	Horizontal	/
4	2404.7500	103.48	98.02	-5.46	54.00	-44.02	100	347	Horizontal	No limit
1	2310.0000	33.44	28.14	-5.30	54.00	25.86	100	0	Vertical	/
2	2366.9375	36.51	31.11	-5.40	54.00	22.89	200	24	Vertical	/
3	2390.0000	34.09	28.64	-5.45	54.00	25.36	200	24	Vertical	/
4	2404.7750	97.64	92.19	-5.45	54.00	-38.19	200	24	Vertical	No limit

Highest Channel

Frequency: 2480MHz

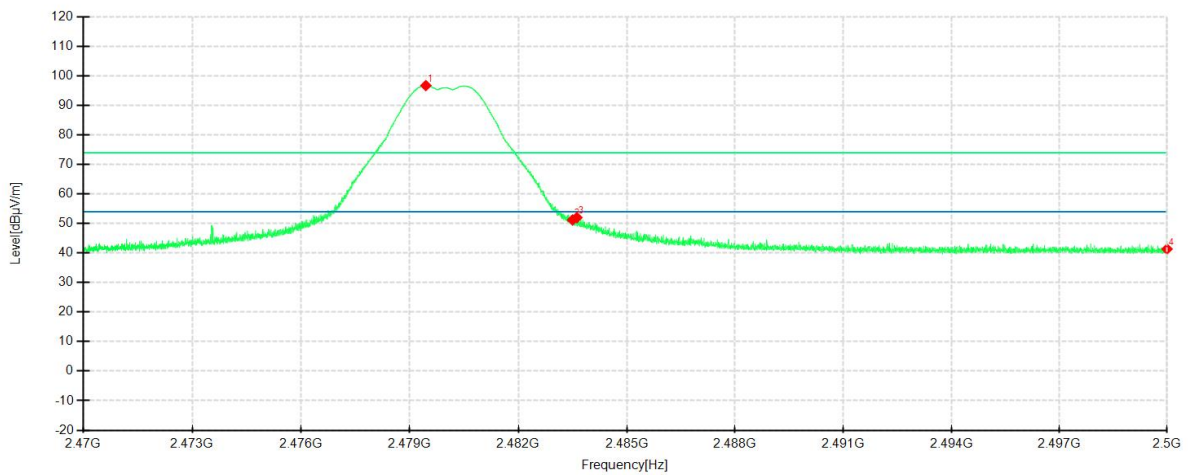
Detector mode: Peak

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



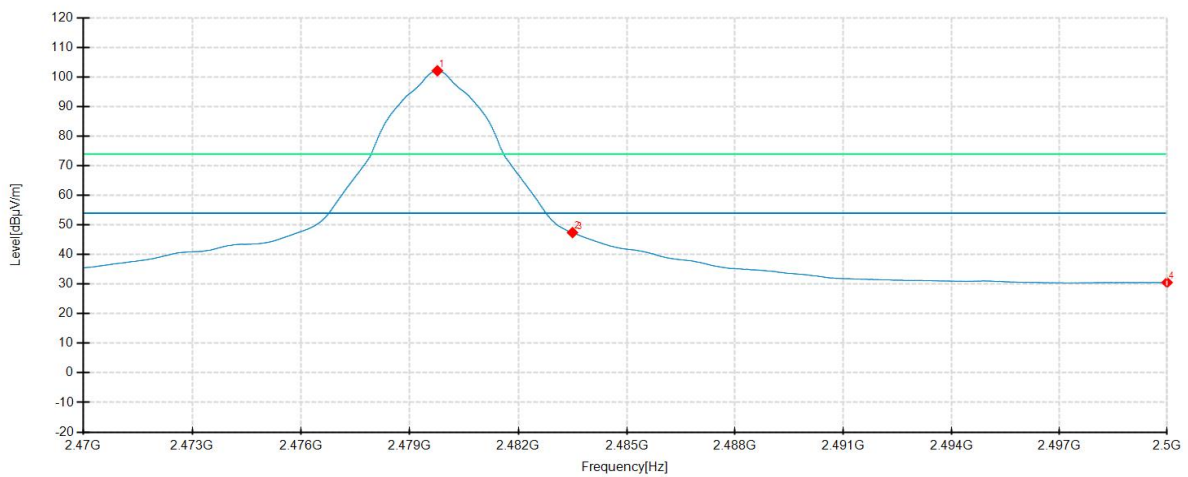
No.	Frequency MHz	Reading dB μ V/m	Level dB μ V/ m	Factor dB	Limit dB μ V/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2480.5113	112.26	107.61	-4.65	74.00	-33.61	100	132	Horizontal	No limit
2	2483.5000	67.68	63.01	-4.67	74.00	10.99	100	132	Horizontal	/
3	2483.7175	67.12	62.45	-4.67	74.00	11.55	200	138	Horizontal	/
4	2500.0000	47.08	42.29	-4.79	74.00	31.71	100	296	Horizontal	/
1	2479.4463	101.86	96.71	-5.15	74.00	-22.71	100	183	Vertical	No limit
2	2483.5000	56.33	51.20	-5.13	74.00	22.80	100	345	Vertical	/
3	2483.6200	57.14	52.01	-5.13	74.00	21.99	100	345	Vertical	/
4	2500.0000	46.45	41.36	-5.09	74.00	32.64	100	26	Vertical	/

Highest Channel

Frequency: 2480MHz

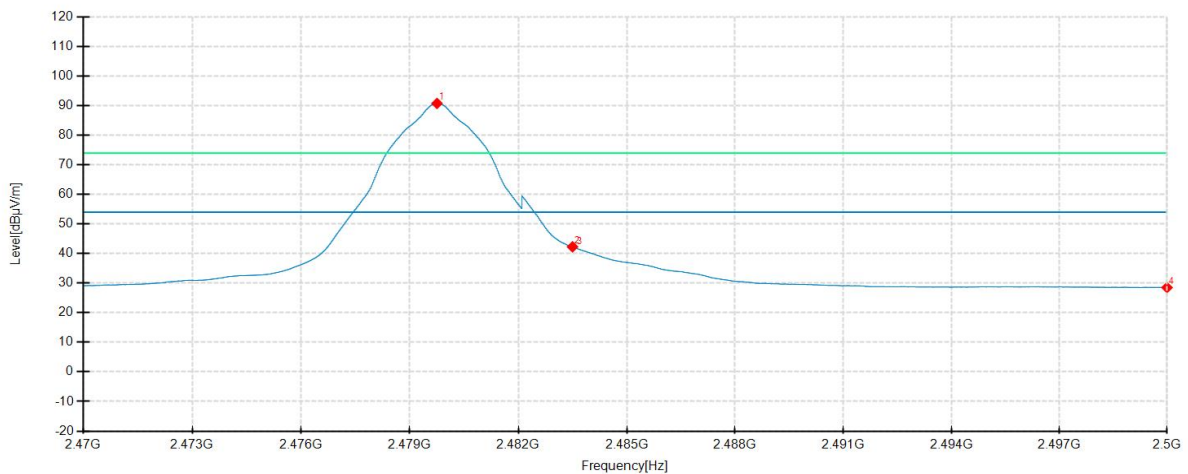
Detector mode: Average

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dB μ V/m	Level dB μ V/ m	Factor dB	Limit dB μ V/m	Margin dB	Height cm	Angle °	Pole	Comment
1	2479.7650	106.78	102.13	-4.65	54.00	-48.13	200	138	Horizontal	No limit
2	2483.5000	52.10	47.43	-4.67	54.00	6.57	200	151	Horizontal	/
3	2483.5600	51.81	47.14	-4.67	54.00	6.86	200	151	Horizontal	/
4	2500.0000	35.35	30.56	-4.79	54.00	23.44	100	146	Horizontal	/
1	2479.7538	95.90	90.75	-5.15	54.00	-36.75	100	24	Vertical	No limit
2	2483.5000	47.40	42.27	-5.13	54.00	11.73	200	336	Vertical	/
3	2483.5600	47.13	42.00	-5.13	54.00	12.00	200	336	Vertical	/
4	2500.0000	33.60	28.51	-5.09	54.00	25.49	100	324	Vertical	/

Remark: Max field strength in 3m distance. No any other emission which falls in restricted bands can be detected and be reported.

7.8. AC Conducted Emissions Measurement

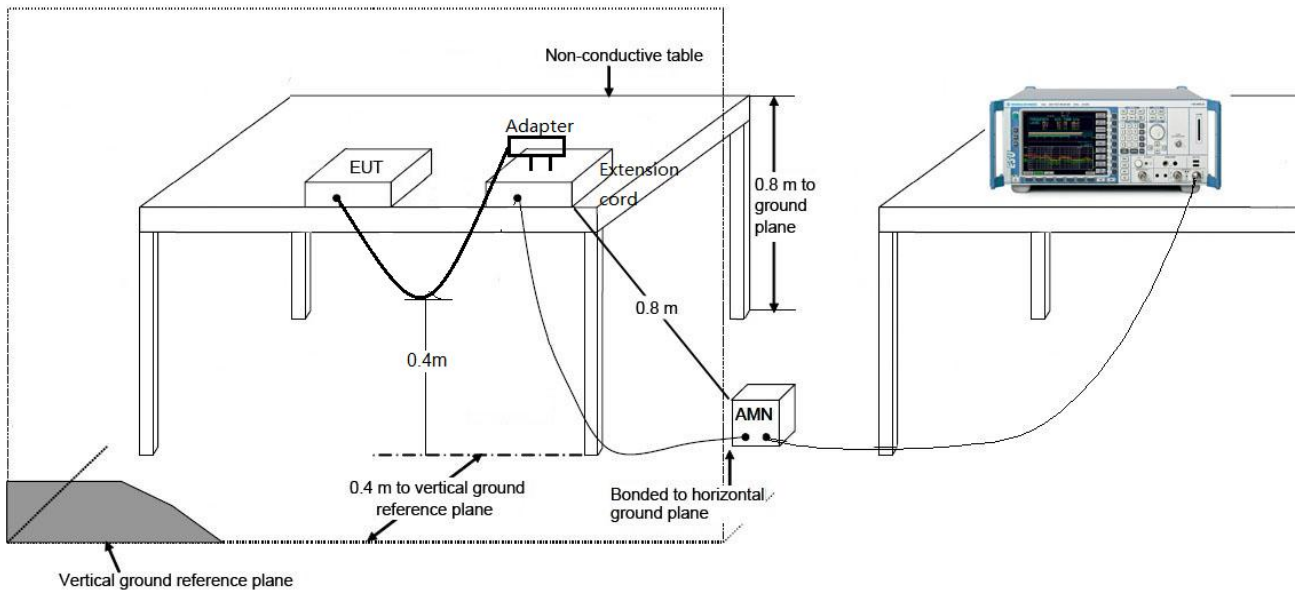
7.8.1. TestLimit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 – 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

7.8.2. Test Setup



7.8.3. Test Result

The EUT is DC battery powered, N/A.

8. CONCLUSION

The data collected relate only the item(s) tested and show that the **EUT** is in compliance with Part 15C of the FCC Rules.

Statement

1. This report is invalid for the following states: without the special inspection and testing stamp or the official stamp of our institution; without the signature of the report authorized officer; if the report is altered.
2. It is forbidden to copy partial contents of the report except in full without the approval of our institution.
3. The client shall provide the test sample(s) and commission information and be responsible for their authenticity.
4. The report content is only applicable to the tested sample(s) this time.
5. If there are any objections to the report content, please submit them to our company in writing within 15 days from the date of receiving the report.
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