

TEST REPORT

Applicant Name : Shenzhen Ulefone Technology Co., Ltd.
Address(FCC): 7A01, Building A, Block 1, Anhongji Tianyao Plaza, Longhua District, Shenzhen City, Guangdong Province China
Address(IC): 7A01, Building A, Block 1, Anhongji Tianyao Plaza, Longhua District Shenzhen City Guangdong 518110 China
Report Number: 2504Y12371E-RFF
FCC ID: 2AT9T-8002
IC: 28620-8002

Test Standard (s)

FCC PART 15.225; RSS-GEN ISSUE 5, FEBRUARY 2021 AMENDMENT 2
RSS-210 ISSUE 11, JUNE 25, 2024; RSS-102, ISSUE 6, DECEMBER 15, 2023

Sample Description

Product Name: Tablet
Model No.(FCC): RugKing Pad 2 Pro, GQ8002, RugKing Pad 2, RugKing Pad 2 Ultra, RugKing Pad 2E, RugKing Pad 2S, RugKing Pad 2 Lite, RugKing Pad 2 Pro+, RugKing Pad 2s, RugKing Pad 2s Pro
Model No.(IC): RugKing Pad 2 Pro
Trade Mark: ulefone
Date Received: 2025-10-30
Report Date: 2026-01-27

Test Result:	The EUT complied with the standards above.
--------------	--

Prepared and Checked By:

Amanda Wei

Amanda Wei
EMC Engineer

Approved By:

Bob. Liao

Bob.Liao
EMC Engineer

Note: This report must not be used by the customer to claim product certification, approval, or endorsement by A2LA, or any agency of the Federal Government. The information marked “#” is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included but no need marked.

This report cannot be reproduced except in full, without prior written approval of the Company. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0. This report may contain data that are not covered by the accreditation scope and shall be marked with ▲. This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, or any agency of the U.S. Government. Each test item follows the test standard(s) without deviation.

Shenzhen Accurate Technology Co., Ltd.

Floor 1, KuMaKe Building, Dongzhou Community, Guangming Street, Guangming District, Shenzhen, Guangdong, China.

Tel: +86 755-26503290

Web: www.atc-lab.com

TABLE OF CONTENTS

DOCUMENT REVISION HISTORY 4

GENERAL INFORMATION 5

 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) 5

 OBJECTIVE 5

 TEST METHODOLOGY 5

 TEST FACILITY 6

 MEASUREMENT UNCERTAINTY 6

SYSTEM TEST CONFIGURATION 7

 DESCRIPTION OF TEST CONFIGURATION 7

 EUT EXERCISE SOFTWARE 7

 EQUIPMENT MODIFICATIONS 7

 SUPPORT EQUIPMENT LIST AND DETAILS 7

 EXTERNAL I/O CABLE 7

 BLOCK DIAGRAM OF TEST SETUP 8

MMARY OF TEST RESULTS 10

TEST EQUIPMENT LIST 11

RF EXPOSURE 12

 APPLICABLE STANDARD 12

 MEASUREMENT RESULT 12

EXEMPTION LIMITS FOR ROUTINE EVALUATION-RF EXPOSURE EVALUATION..... 13

 APPLICABLE STANDARD 13

 RESULT: 13

ANTENNA REQUIREMENT 14

 APPLICABLE STANDARD 14

 ANTENNA CONNECTED CONSTRUCTION 14

AC LINE CONDUCTED EMISSION 15

 APPLICABLE STANDARD 15

 EUT SETUP 15

 EMI TEST RECEIVER SETUP 15

 TEST PROCEDURE 16

 CALCULATION 16

 TEST DATA 16

RADIATED EMISSIONS TEST 24

 APPLICABLE STANDARD 24

 EUT SETUP 24

 EMI TEST RECEIVER SETUP 25

 CALCULATION 25

 TEST DATA 26

FREQUENCY STABILITY 49

 APPLICABLE STANDARD 49

 TEST PROCEDURE 49

 EUT SETUP 50

 TEST DATA 51

20DB EMISSION BANDWIDTH AND 99% OCCUPIED BANDWIDTH 52

 REQUIREMENT 52

 TEST PROCEDURE 52

 EUT SETUP 53

 TEST DATA 53

EXHIBIT A-EUT PHOTOGRAPHS 55

EXHIBIT B-TEST SETUP PHOTOGRAPHS 56

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
Rev.00	2504Y12371E-RFF	Original Report	2026-01-27

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product Name	Tablet
Tested Model (FCC&IC)	RugKing Pad 2 Pro
Multiple Model (FCC)	GQ8002, RugKing Pad 2, RugKing Pad 2 Ultra, RugKing Pad 2E, RugKing Pad 2S, RugKing Pad 2 Lite, RugKing Pad 2 Pro+, RugKing Pad 2s,RugKing Pad 2s Pro
Model Difference [#] (FCC)	The differences between the above models are in the model name and the sales channels. Please refer to DOS letter for details. The applicant provided model "RugKing Pad 2 Pro" for testing.
HVIN	GQ8002
Voltage Range [#]	DC 5V/9V from adapter DC 5V from desktop charger DC 3.87V from rechargeable battery
Adapter Information [#]	Model:HJ-PD18W-US Input:100-240 V~ 50/60Hz 0.8A Output:5.0V ---3.0A 15.0W OR 9.0V ---2.0A 18.0W OR 12.0V ---1.5A 18.0W (Note: The manufacturer claims that EUT only support 5/9V for charging.)
EUT Manufacture Information [#]	Company Name: Shenzhen Gotron Electronic CO.,Ltd. Address: 7B01, Building A, Block 1, Anhongji Tianyao Plaza, Longhua District, Shenzhen City, Guangdong Province China.

Frequency Range	NFC: 13.56 MHz
Modulation Technique	ASK
Antenna Specification [#]	Loop Antenna (It is provided by the applicant.)
Sample Serial Number	3C1Q-4 (Assigned by ATC, Shenzhen)
Sample/EUT Status	Good condition

Objective

This Type approval report is in accordance with Part 2- Subpart J, and Part 15-Subparts A and C of the Federal Communication Commissions rules, and RSS-210 ISSUE 11, JUNE 2024 and RSS-GEN, ISSUE 5, FEBRUARY 2021 AMENDMENT 2 of the Innovation, Science and Economic Development Canada.

The objective is to determine the compliance of the EUT with FCC rules, section 15.203, 15.205, 15.207, 15.209 and 15.225; RSS-210 ISSUE 11, JUNE 2024 and RSS-GEN, ISSUE 5, FEBRUARY 2021 AMENDMENT 2.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2020+Cor. 1-2023+ C63.10a-2024+Errata to C63.10a-2024▲, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices, RSS-210 ISSUE 11, JUNE 2024 and RSS-GEN, ISSUE 5, FEBRUARY 2021 AMENDMENT 2.

Unless otherwise stated there are no any additions to, deviations, or exclusions from the method.

Test Facility

The test site used by Shenzhen Accurate Technology Co., Ltd. to collect test data is located on the Floor 1, KuMaKe Building, Dongzhou Community, Guangming Street, Guangming District, Shenzhen, Guangdong, China.

Accredited by American Association for Laboratory Accreditation (A2LA).The Certificate Number is 4297.01.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements. The Registration Number is 30241.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		5 %
RF Frequency		0.064×10^{-7}
AC Power Lines Conducted Emissions		2.7 dB
Emissions, Radiated	9kHz - 30MHz	2.1 dB
	30MHz - 1GHz	4.3 dB
Temperature		1 °C
Humidity		7 %
Supply voltages		0.4 %

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

Note: The device has two charging methods: adapter charging and dock charging. According to the BT report's test results, the worst-case is adapter charging. In this report, both AC Line Conducted Emissions and Radiated Spurious Emissions(Below 1GHz) were tested using an adapter charging method.

Test Mode 1: Charging by Adapter + Transmitting

EUT Exercise Software

No Exercise Software was used.

Equipment Modifications

No modification on the EUT.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Unknown	SIM card	Unknown	Unknown
Kingston	TF card	64G	Unknown
Unknown	Magnetic card	Unknown	Unknown
Unknown	Earphone	Unknown	Unknown

External I/O Cable

Cable Description	Shielding Type	Length (m)	From Port	To
USB Cable	NO	1.0	Adapter	EUT
Earphone cable	NO	1.2	EUT	Earphone

With Magnetic Card

The diagram illustrates the test setup for the proposed method. The setup is placed on a Non-Conductive Table 80cm above the Ground Plane. The components and their connections are as follows:

- Test Receiver** is connected to the **LISN**.
- LISN** is connected to **AC Mains** and the **Socket**.
- Adapter** is connected to the **Socket**.
- USB cable①** connects the **Adapter** to the **Magnetic card**.
- Magnetic card** is connected to the **EUT**.
- The **EUT** (Equipment Under Test) contains a **SIM card** and a **TF card**.
- An **Earphone** is connected to the **EUT**.

Dimensions are indicated:

- 10cm distance between the **Socket** and the **EUT**.
- 150 cm distance between the **Adapter** and the **Earphone**.
- 100 cm distance between the **Earphone** and the **Magnetic card**.

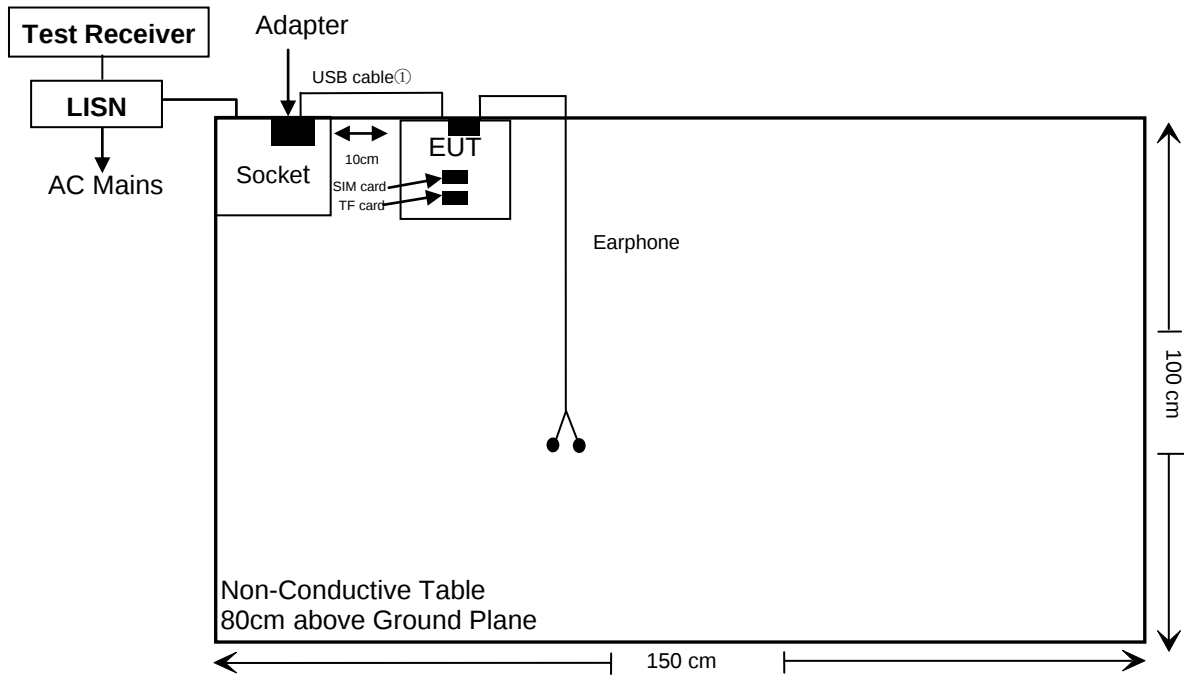
The diagram illustrates the experimental setup on a non-conductive table, 80 cm above the ground plane. The setup includes:

- AC Mains:** Connected to a **Socket**.
- Adapter:** Connected to the **Socket** and the **EUT**.
- USB cable ①:** Connected to the **EUT**.
- EUT (Equipment Under Test):** A device with a **10cm** dimension indicated. It contains a **SIM card** and a **TF card**.
- Magnetic card:** Positioned near the **EUT**.
- Earphone:** Connected to the **EUT**.

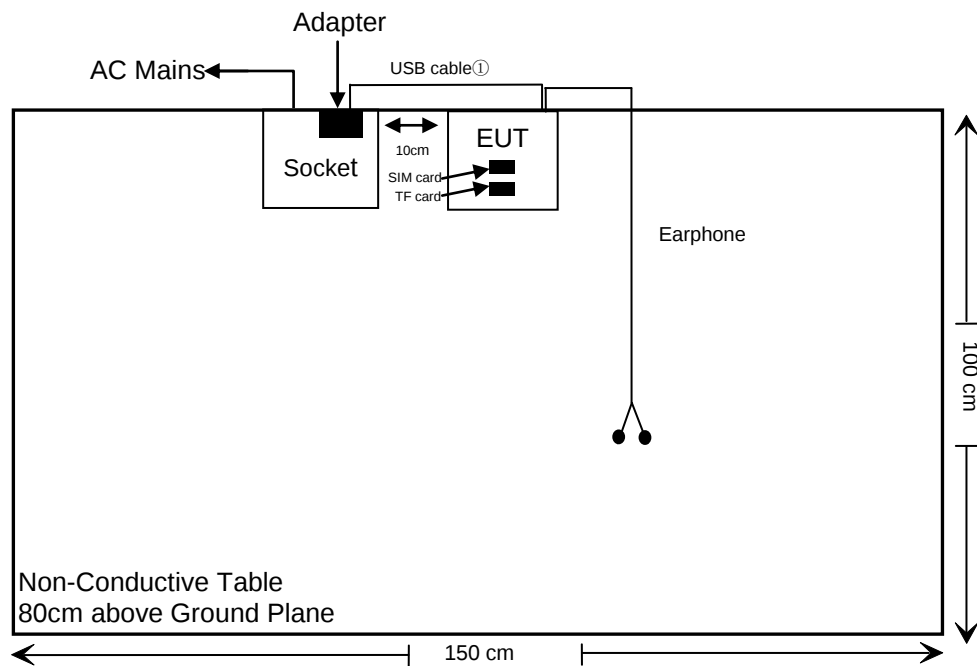
The table dimensions are indicated as **150 cm** in width and **100 cm** in height.

Without Magnetic Card

For Conducted Emission:



For Radiated Emission Below 1GHz:



MMARY OF TEST RESULTS

FCC Rules	ISED Rules	Description of Test	Result
§2.1093	RSS-102	RF Exposure	Compliance
§15.203	RSS-GEN §6.8	Antenna Requirement	Compliance
§15.207	RSS-GEN §8.8	AC Line Conducted Emission	Compliance
§15.225 §15.209, §15.205	RSS-210 Annex B B.6	Radiated Emission Test	Compliance
§15.225(e)	RSS-210 Annex B B.6	Frequency Stability	Compliance
§15.215(c)	RSS-GEN §6.7	20dB Emission Bandwidth	Compliance

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	100784	2025/09/17	2026/09/16
Rohde & Schwarz	L.I.S.N.	ENV216	101314	2025/09/17	2026/09/16
Anritsu Corp	50 Coaxial Switch	MP59B	6100237248	2025/09/18	2026/09/17
Rohde & Schwarz	Pulse Limiter	ESH3-Z2	100312	2025/05/30	2026/05/29
Unknown	RF Coaxial Cable	No.17	N0350	2025/05/30	2026/05/29
Test Software: e3 191218 (V9)					
Radiated Spurious Emission Test(Below 1GHz)/ 20dB Emission Bandwidth/Occupied Bandwidth					
Rohde & Schwarz	Test Receiver	ESR	102725	2025/09/18	2026/09/17
SONOMA INSTRUMENT	Amplifier	310 N	186131	2025/03/26	2026/03/25
Unknown	RF Coaxial Cable	No.12	N040	2025/05/30	2026/05/29
Unknown	RF Coaxial Cable	No.13	N300	2025/05/30	2026/05/29
Unknown	RF Coaxial Cable	No.14	N800	2025/05/30	2026/05/29
BACL	LOOP ANTENNA	1313-1A	3110711	2024/01/16	2027/01/15
Schwarzbeck	Bilog Antenna	VULB9163	9163-194	2023/02/14	2026/02/13
Test Software: e3 191218 (V9)					
Frequency Stability					
Rohde & Schwarz	Spectrum Analyzer	FSV-40	101948	2025/09/18	2026/09/17
UNI-T	DC Power Supply	UTP1306S	2109D0903324	2025/03/26	2026/03/25
BACL	Temp. & Humid. Chamber	BTH-150-40	30192	2025/09/18	2026/09/17
BACL	LOOP ANTENNA	1313-1A	3110711	2024/01/16	2027/01/15

*** Statement of Traceability:** Shenzhen Accurate Technology Co., Ltd. attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

RF EXPOSURE

Applicable Standard

According to KDB447498 D01 General RF Exposure Guidance v06: 4.3. General SAR test exclusion guidance

c) For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):

- 1) For test separation distances > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by $[1 + \log(100/f(\text{MHz}))]$
- 2) For test separation distances ≤ 50 mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$.
- 3) SAR measurement procedures are not established below 100 MHz.

Measurement Result

For NFC, the power of EUT: E Field@3m is 64.36 dBuV/m = -30.84 dBm (0.0009mW)

Note: $E[\text{dB}\mu\text{V/m}] = \text{EIRP}[\text{dBm}] + 95.2$ for $d = 3$ m.

SAR test exclusion threshold for NFC(13.56MHz) separation distance < 50 mm

$$= [474 * (1 + \log(100/f(\text{MHz})))]/2$$

$$= 443\text{mW}$$

$$> 0.0009\text{mW}$$

Result: Compliance

EXEMPTION LIMITS FOR ROUTINE EVALUATION-RF EXPOSURE EVALUATION

Applicable Standard

According to RSS-102 Issue 6 §6.3, Devices operating at or below the applicable output power levels (adjusted for tune-up tolerance) specified in table 11, based on the separation distance, are exempt from SAR evaluation. The separation distance, defined as the distance between the user and/or bystander and the antenna and/or radiating element of the device or the outer surface of the device, shall be less than or equal to 20 cm for these exemption limits to apply.

Table 11: Power limits for exemption from routine SAR evaluation based on the separation distance

Frequency (MHz)	≤ 5 mm (mW)	10 mm (mW)	15 mm (mW)	20 mm (mW)	25 mm (mW)	30 mm (mW)	35 mm (mW)	40 mm (mW)	45 mm (mW)	> 50 mm (mW)
≤ 300	45	116	139	163	189	216	246	280	319	362
450	32	71	87	104	124	147	175	208	248	296
835	21	32	41	54	72	96	129	172	228	298
1900	6	10	18	33	57	92	138	194	257	323
2450	3	7	16	32	56	89	128	170	209	245
3500	2	6	15	29	50	72	94	114	134	158
5800	1	5	13	23	32	41	54	74	102	128

The exemption limits in table 11 are based on measurements and simulations of half-wave dipole antennas at separation distances of 5 mm to 50 mm from a flat phantom, which provides a SAR value of approximately 0.4 W/kg for 1 g of tissue.

For limb-worn devices where the 10 gram of tissue applies, the exemption limits for routine evaluation in table 11 are multiplied by a factor of 2.5.

For controlled-use devices where the 8 W/kg for 1 gram of tissue applies, the exemption limits for routine evaluation in table 11 are multiplied by a factor of 5.

When the operating frequency of the device is between two frequencies located in table 11, linear interpolation shall be applied for the applicable separation distance. If the separation distance of the device is between two distances located in table 11, linear interpolation may be applied for the applicable frequency. Alternatively, the limit corresponding to the smaller distance may be employed. For example, in case of a 7 mm separation distance, either use the exception value for a 5 mm separation distance or interpolate between the limits corresponding to 5 mm and 10 mm separation distances.

For implanted medical devices, the exemption limit for routine SAR evaluation is set at an output power of 1 mW, regardless of frequency.

Result:

The limit is 45 mW.

For NFC, the power of EUT: E Field@3m is 64.36 dBuV/m = -30.84 dBm (0.0009mW) < 45 mW.

Note: $E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP}[\text{dBm}] + 95.2$ for $d = 3$ m.

SAR test exclusion threshold for NFC(13.56MHz) separation distance < 5mm

So compliance with RF exposure evaluation.

ANTENNA REQUIREMENT

Applicable Standard

According to FCC§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. 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.

According to RSS-GEN §6.8:

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

For licence-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:

This radio transmitter [enter the device's ISED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

Antenna Connected Construction

The EUT has a loop antenna arrangement for NFC, which was permanently attached, fulfill the requirement of this section. Please refer to the EUT photos.

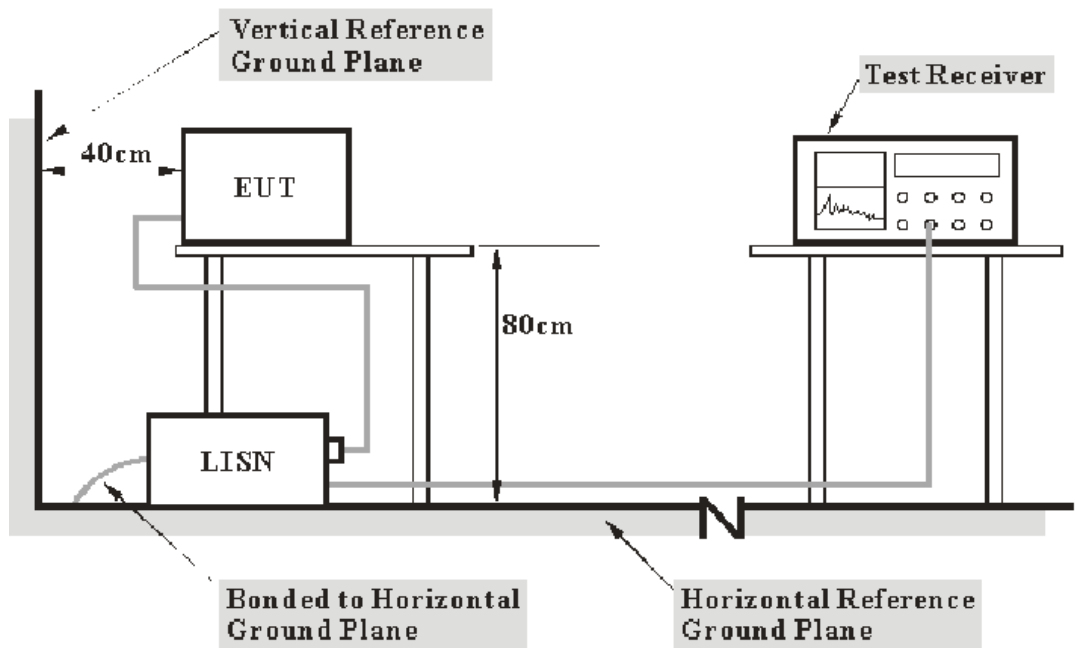
Result: Compliance.

AC LINE CONDUCTED EMISSION

Applicable Standard

FCC §15.207, RSS-GEN §8.8

EUT Setup



- Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2020 measurement procedure. The specification used was with the FCC Part 15.207 and RSS-GEN.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle. The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter of Host was connected to the outlet of the LISN.
Maximizing procedure was performed on the six (6) highest emissions of the EUT.
All final data was recorded in the Quasi-peak and average detection mode.

Calculation

The factor is calculated by adding LISN VDF (Voltage Division Factor) and Cable Loss. The basic equation is as follows:

Factor = LISN VDF + Cable Loss + 10dB Attenuation(Limiter)

The “**Over limit**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit of -7 dB means the emission is 7 dB below the limit. The equation for calculation is as follows:

Over Limit = Level - Limit
Level = Read Level + Factor

Test Data

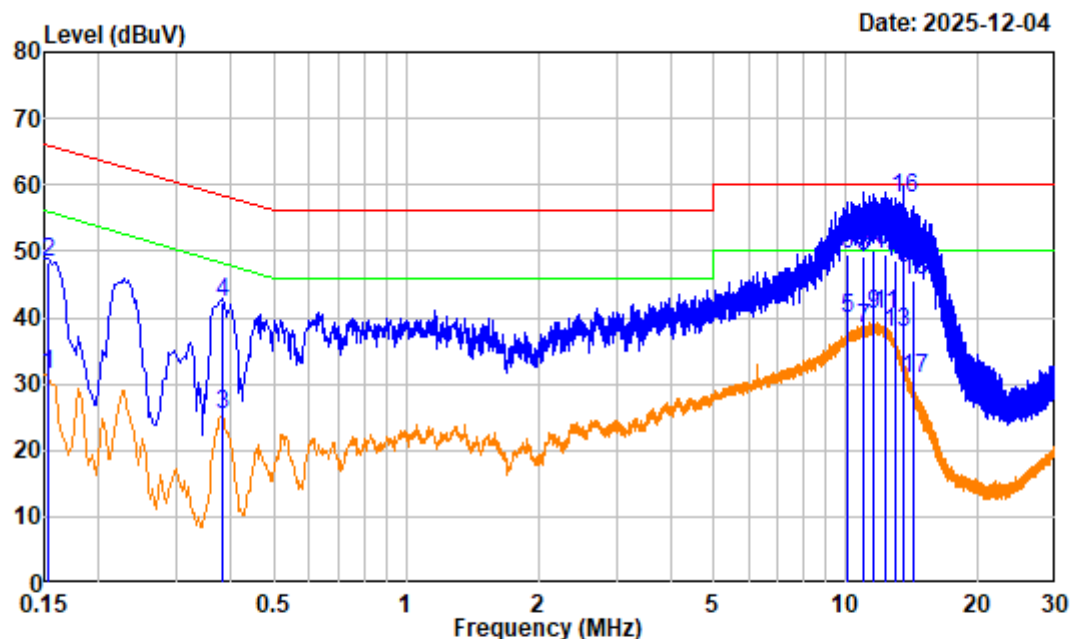
Environmental Conditions

Temperature:	23.6 °C
Relative Humidity:	35 %
ATM Pressure:	100.9 kPa
Test Engineer:	Jason Fan
Test Date:	2025-12-04
EUT Operation Mode:	NFC Transmitting

Test Result: Compliance, please refer to the below data.

With card:

AC 120V/60Hz, Line:

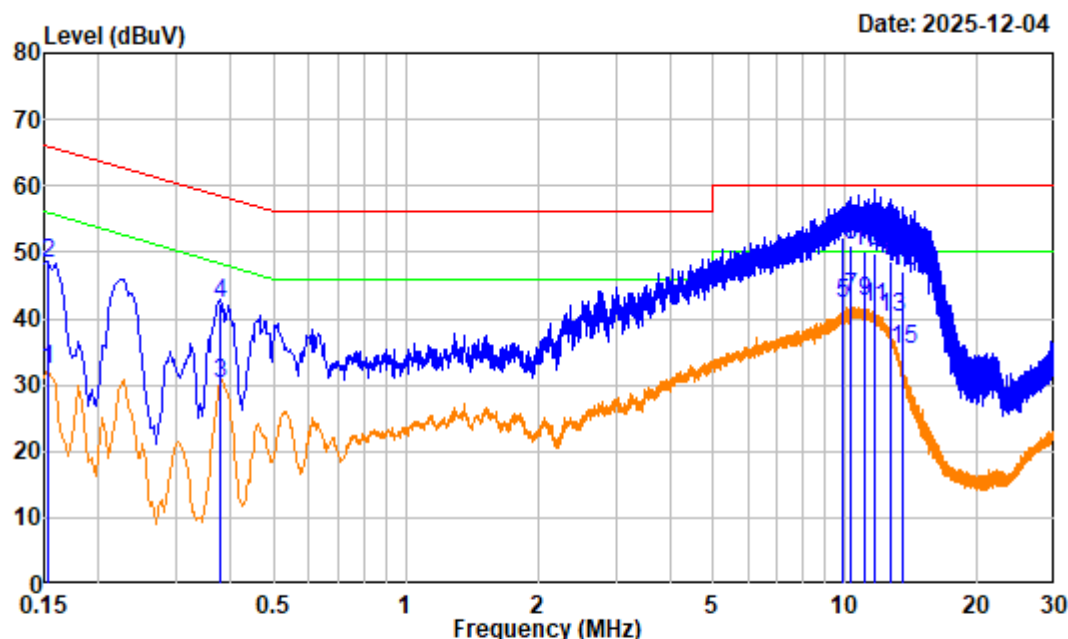


Site : Shielding Room
 Condition : Line
 Job No. : 2504Y12371E-RF
 Test Mode : Test mode 1 with card
 Tester : Jason Fan
 Receiver Setting: IF B/W 9kHz PK/AV

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.153	19.96	11.39	31.35	55.84	-24.49	Average
2	0.153	19.96	28.34	48.30	65.84	-17.54	QP
3	0.381	20.04	5.39	25.43	48.26	-22.83	Average
4	0.381	20.04	22.33	42.37	58.26	-15.89	QP
5	10.119	22.80	17.11	39.91	50.00	-10.09	Average
6	10.119	22.80	26.81	49.61	60.00	-10.39	QP
7	10.935	22.94	15.38	38.32	50.00	-11.68	Average
8	10.935	22.94	26.32	49.26	60.00	-10.74	QP
9	11.523	23.02	17.43	40.45	50.00	-9.55	Average
10	11.523	23.02	27.01	50.03	60.00	-9.97	QP
11	12.303	23.13	17.24	40.37	50.00	-9.63	Average
12	12.303	23.13	26.47	49.60	60.00	-10.40	QP
13	12.930	23.22	14.38	37.60	50.00	-12.40	Average
14	12.930	23.22	25.33	48.55	60.00	-11.45	QP
15	13.569	23.30	24.26	47.56	50.00	-2.44	Average

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
16	13.569	23.30	34.76	58.06	60.00	-1.94	QP
17	14.196	23.38	7.38	30.76	50.00	-19.24	Average
18	14.196	23.38	22.33	45.71	60.00	-14.29	QP

AC 120V/60Hz, Neutral:



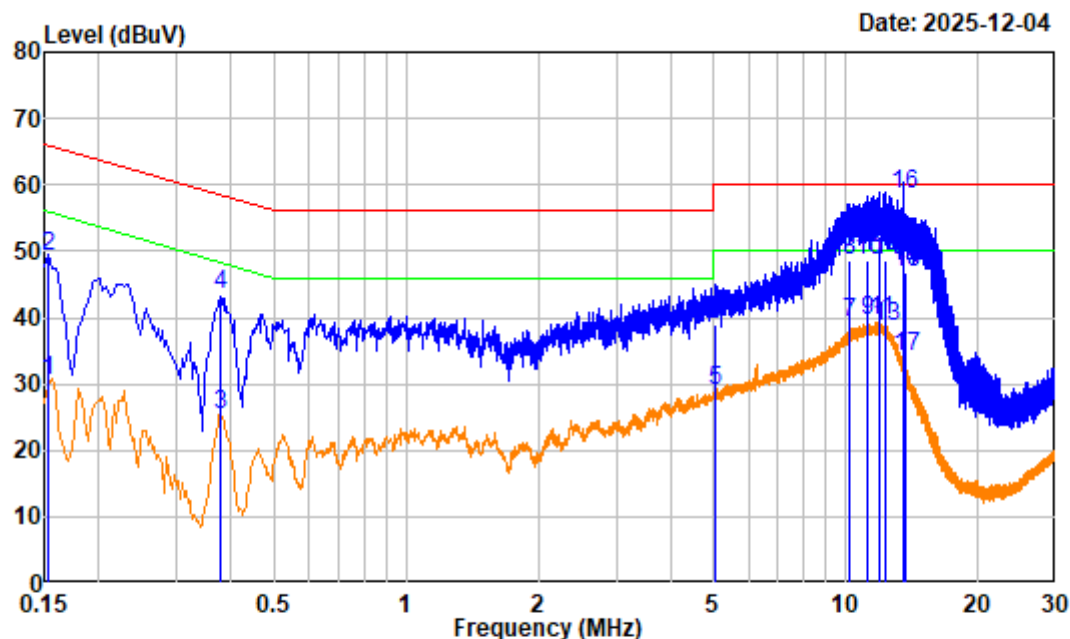
Site : Shielding Room
 Condition : neutral
 Job No. : 2504Y12371E-RF
 Test Mode : Test mode 1 with card
 Tester : Jason Fan
 Receiver Setting: IF B/W 9kHz PK/AV

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.153	19.87	12.38	32.25	55.84	-23.59	Average
2	0.153	19.87	28.33	48.20	65.84	-17.64	QP
3	0.378	19.94	10.39	30.33	48.32	-17.99	Average
4	0.378	19.94	22.34	42.28	58.32	-16.04	QP
5	9.852	22.87	19.39	42.26	50.00	-7.74	Average
6	9.852	22.87	29.33	52.20	60.00	-7.80	QP
7	10.266	22.94	20.24	43.18	50.00	-6.82	Average
8	10.266	22.94	28.18	51.12	60.00	-8.88	QP
9	11.106	23.07	19.48	42.55	50.00	-7.45	Average
10	11.106	23.07	27.14	50.21	60.00	-9.79	QP
11	11.682	23.15	18.63	41.78	50.00	-8.22	Average
12	11.682	23.15	26.64	49.79	60.00	-10.21	QP
13	12.663	23.29	16.82	40.11	50.00	-9.89	Average
14	12.663	23.29	25.30	48.59	60.00	-11.41	QP
15	13.473	23.38	11.91	35.29	50.00	-14.71	Average

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
16	13.473	23.38	23.80	47.18	60.00	-12.82	QP

Without card:

AC 120V/60Hz, Line:

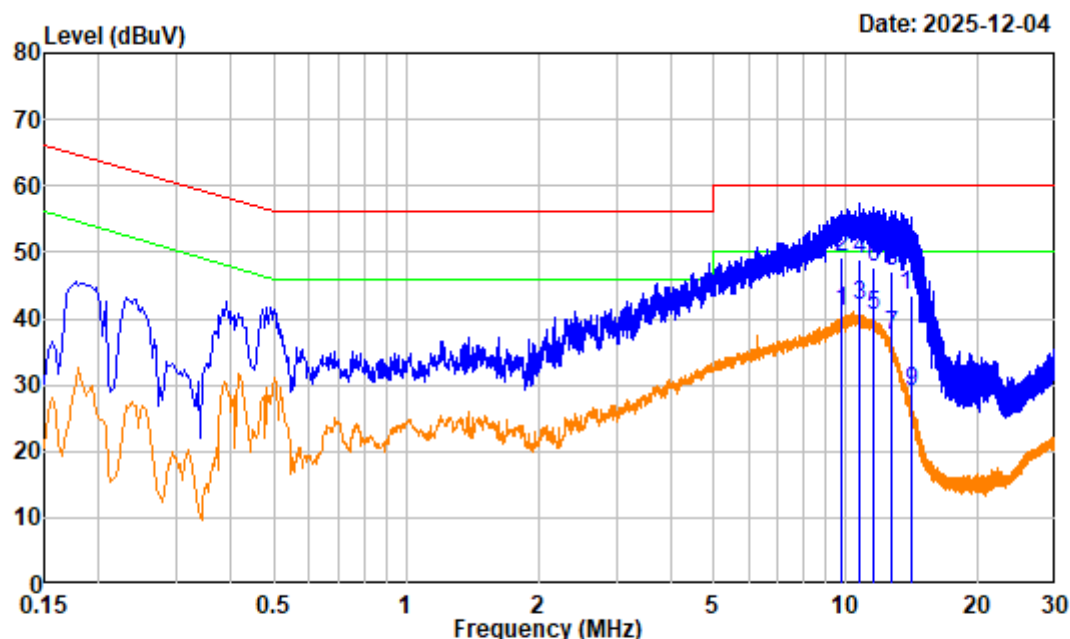


Site : Shielding Room
 Condition : Line
 Job No. : 2504Y12371E-RF
 Test Mode : Test mode 1 without card
 Tester : Jason Fan
 Receiver Setting: IF B/W 9kHz PK/AV

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	0.153	19.96	10.39	30.35	55.84	-25.49	Average
2	0.153	19.96	29.34	49.30	65.84	-16.54	QP
3	0.378	20.04	5.39	25.43	48.32	-22.89	Average
4	0.378	20.04	23.33	43.37	58.32	-14.95	QP
5	5.019	21.71	7.39	29.10	50.00	-20.90	Average
6	5.019	21.71	17.33	39.04	60.00	-20.96	QP
7	10.158	22.81	16.58	39.39	50.00	-10.61	Average
8	10.158	22.81	25.67	48.48	60.00	-11.52	QP
9	11.193	22.97	16.59	39.56	50.00	-10.44	Average
10	11.193	22.97	25.75	48.72	60.00	-11.28	QP
11	11.958	23.08	16.39	39.47	50.00	-10.53	Average
12	11.958	23.08	27.33	50.41	60.00	-9.59	QP
13	12.303	23.13	15.65	38.78	50.00	-11.22	Average
14	12.303	23.13	25.36	48.49	60.00	-11.51	QP
15	13.554	23.30	24.53	47.83	50.00	-2.17	Average

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
16	13.554	23.30	35.32	58.62	60.00	-1.38	QP
17	13.689	23.31	10.73	34.04	50.00	-15.96	Average
18	13.689	23.31	23.56	46.87	60.00	-13.13	QP

AC 120V/60Hz, Neutral:



Site : Shielding Room
 Condition : neutral
 Job No. : 2504Y12371E-RF
 Test Mode : Test mode 1 without card
 Tester : Jason Fan
 Receiver Setting: IF B/W 9kHz PK/AV

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dBuV	dBuV	dBuV	dB	
1	9.741	22.85	18.19	41.04	50.00	-8.96	Average
2	9.741	22.85	26.29	49.14	60.00	-10.86	QP
3	10.758	23.01	18.97	41.98	50.00	-8.02	Average
4	10.758	23.01	25.99	49.00	60.00	-11.00	QP
5	11.586	23.14	17.37	40.51	50.00	-9.49	Average
6	11.586	23.14	24.64	47.78	60.00	-12.22	QP
7	12.633	23.28	14.23	37.51	50.00	-12.49	Average
8	12.633	23.28	23.89	47.17	60.00	-12.83	QP
9	14.082	23.45	5.39	28.84	50.00	-21.16	Average
10	14.082	23.45	20.11	43.56	60.00	-16.44	QP

RADIATED EMISSIONS TEST

Applicable Standard

According to FCC Part 15.225, §15.205& §15.209:

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

According to RSS-210 Annex B B.6

B.6 Band 13.110-14.010 MHz

Devices shall comply with the following requirements:

a. the field strength of any emission shall not exceed the following limits:

i. 15.848 mV/m (84 dB μ V/m) at 30 m, within the band 13.553-13.567 MHz

ii. 334 μ V/m (50.5 dB μ V/m) at 30 m, within the bands 13.410-13.553 MHz and 13.567-13.710 MHz

iii. 106 μ V/m (40.5 dB μ V/m) at 30 m, within the bands 13.110-13.410 MHz and 13.710-14.010 MHz

iv. RSS-Gen general field strength limits for frequencies outside the band 13.110-14.010 MHz

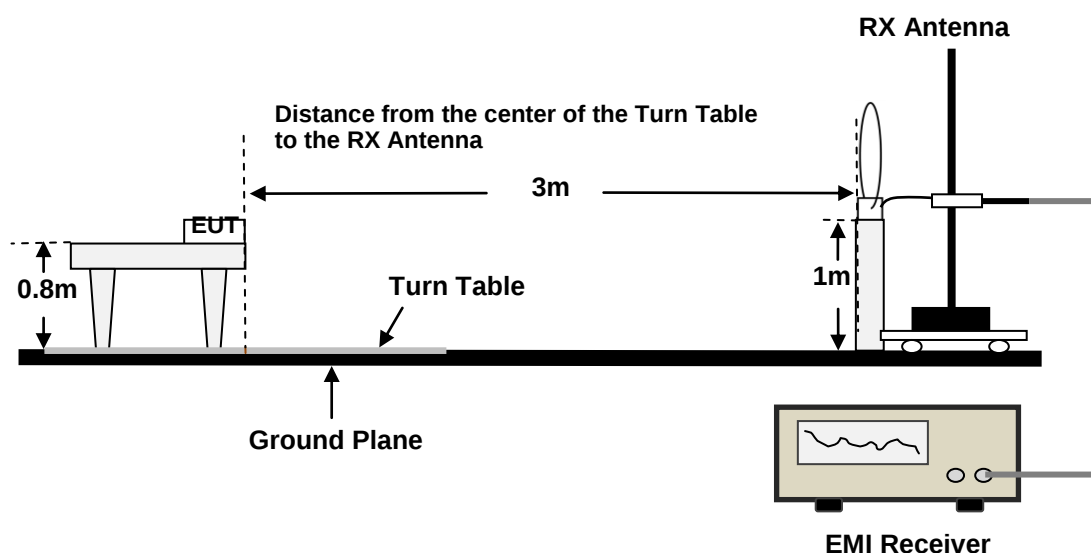
b. the carrier frequency stability shall not exceed ± 100 ppm

As per RSS-210 Issue 11 Clause Annex B B.6, Field strength limits are specified at a distance of 3 meters.

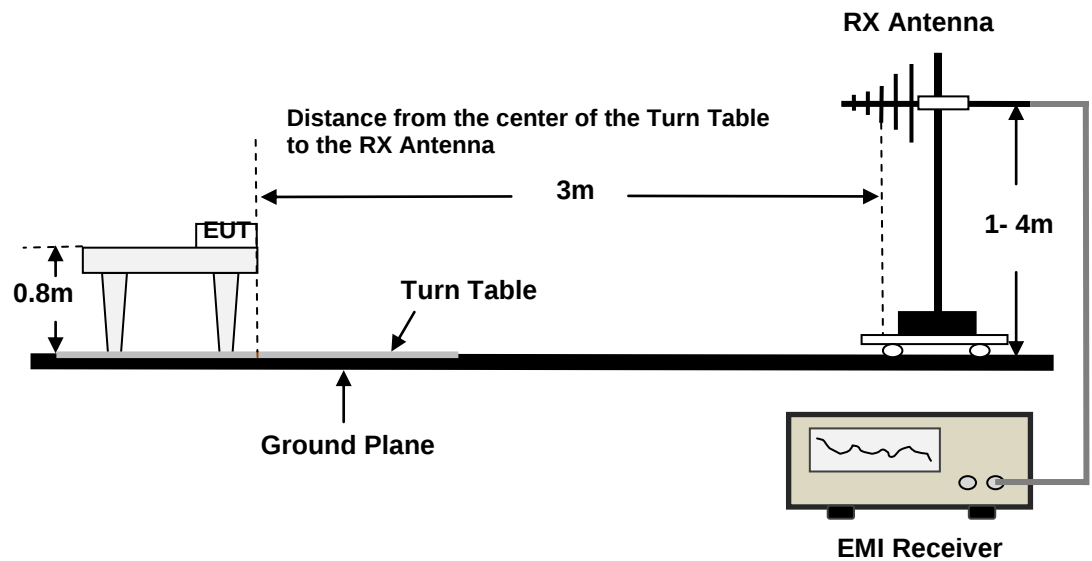
For the spurious emission below 30MHz, the unit of final result on the test plots are dB μ V/m, so the limit should be added by 51,5 dB from dB μ A/m to dB μ V/m.

EUT Setup

9kHz - 30MHz:



30MHz - 1GHz:



The radiated emission tests were performed in the 3-meter chamber a test site, using the setup accordance with the ANSI C63.10-2020. The specification used was the FCC Part Subpart C, RSS-210 and RSS-GEN limits.

EMI Test Receiver Setup

The system was investigated from 9 kHz to 1 GHz.

During the radiated emission test, the EMI test Receiver was set with the following configurations:

Frequency Range	Measurement	RBW	Video B/W	IF B/W	Detector
9kHz - 150kHz	PK	0.3kHz	1kHz	/	PK
	QP/AV	/	/	200Hz	QP/AV
150kHz - 30MHz	PK	10kHz	30kHz	/	PK
	QP/AV	/	/	9kHz	QP/AV
30MHz - 1000MHz	PK	100kHz	300kHz	/	PK
	QP	/	/	120kHz	QP

Calculation

The Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain. The basic equation is as follows:

Factor = Antenna Factor + Cable Loss - Amplifier Gain

The “**Over Limit/Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit/margin of -7dB means the emission is 7dB below the limit. The equation for calculation is as follows:

Over Limit/Margin = Level / Corrected Amplitude – Limit
Level / Corrected Amplitude = Read Level + Factor

Test Data

For Radiated Spurious Emissions, after pre-scan testing in the X, Y and Z axes of orientation, the worst case as setup photos was recorded.

9kHz-1GHz

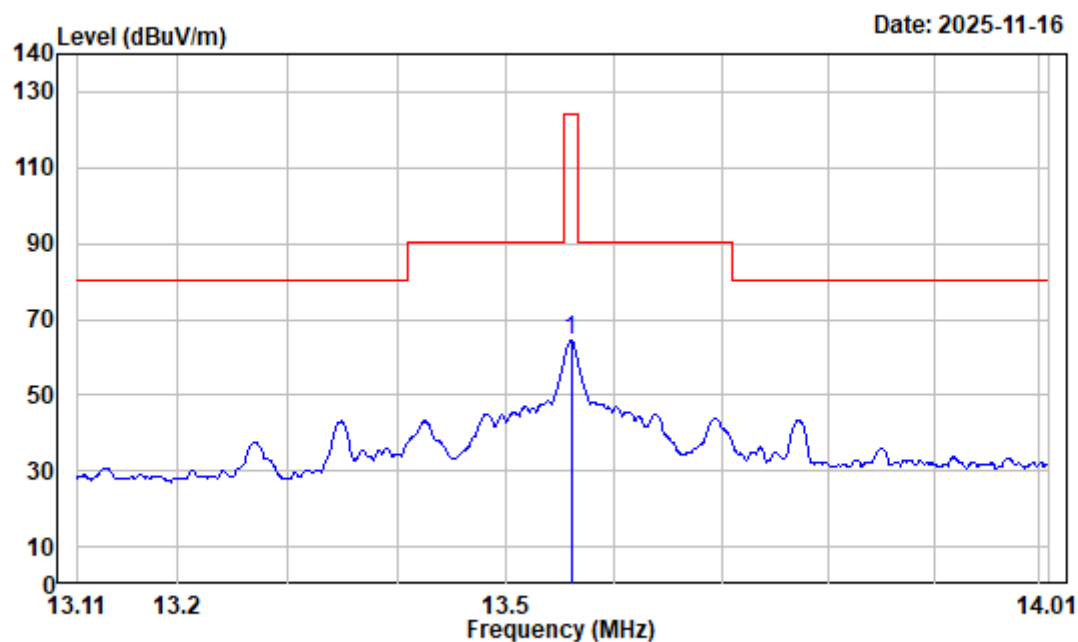
Environmental Conditions

Temperature:	24.8 °C
Relative Humidity:	55 %
ATM Pressure:	101.1 kPa
Test Engineer:	Colin Lin
Test Date:	2025-11-16
EUT Operation Mode:	NFC Transmitting

Test Result: Compliance, please refer to the below data.

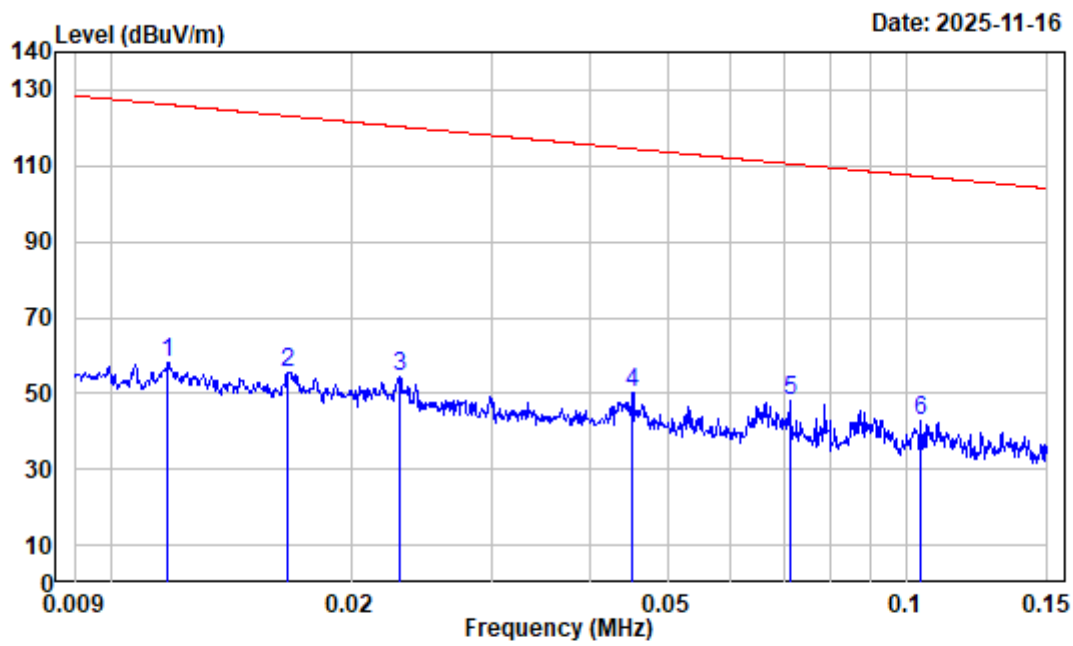
9kHz~30MHz:

With card:



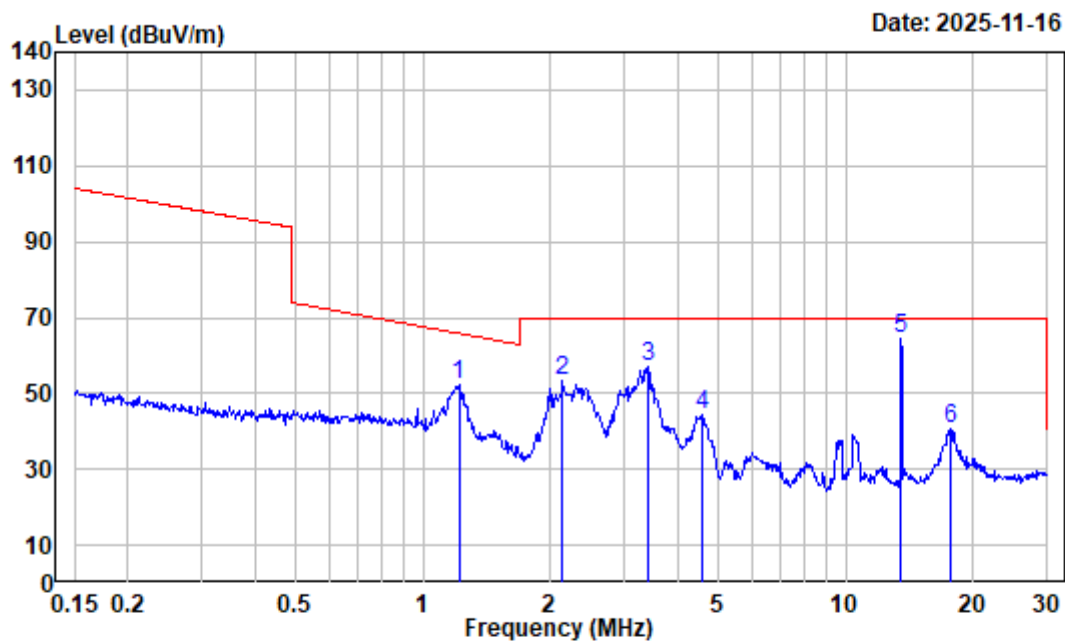
Site : Chamber
Condition : 3m
Job No. : 2504Y12371E-RF
Polarization : Parallel Tester: Colin Lin
Test Mode : Test Mode 1
Note : with card
Receiver Setting: RBW:10kHz VBW:30kHz

Freq		Factor	Read Level	Level	Limit Line	Over Limit	Remark
MHz		dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	13.560	-4.41	68.77	64.36	124.00	-59.64	Peak



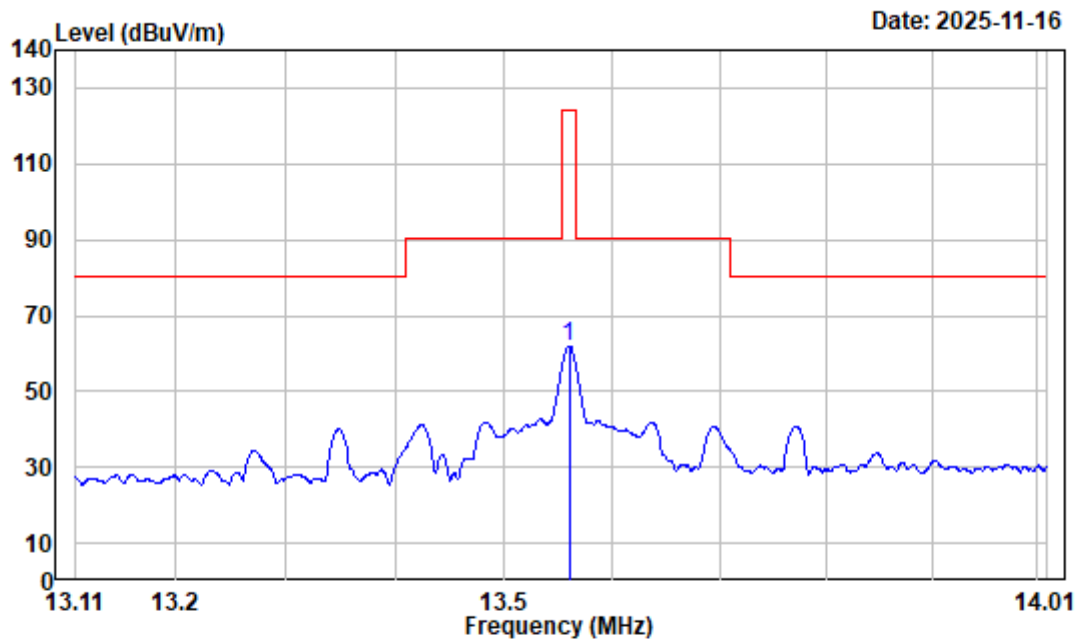
Site : Chamber
Condition : 3m
Job No. : 2504Y12371E-RF
Polarization : Parallel Tester: Colin Lin
Test Mode : Test Mode 1
Note : with card
Receiver Setting: RBW:300Hz VBW:1kHz

	Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.012	35.03	22.87	57.90	126.17	-68.27	Peak
2	0.017	32.89	22.70	55.59	123.19	-67.60	Peak
3	0.023	30.01	24.52	54.53	120.33	-65.80	Peak
4	0.045	23.79	26.35	50.14	114.49	-64.35	Peak
5	0.071	19.79	28.18	47.97	110.56	-62.59	Peak
6	0.104	16.27	26.27	42.54	107.28	-64.74	Peak



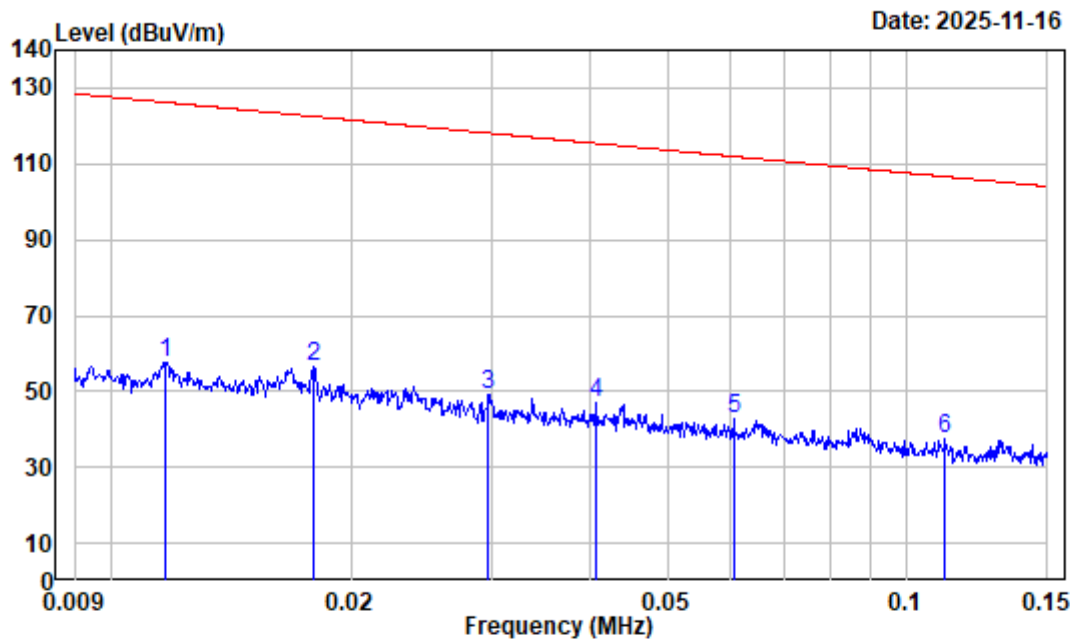
Site : Chamber
Condition : 3m
Job No. : 2504Y12371E-RF
Polarization : Parallel Tester: Colin Lin
Test Mode : Test Mode 1
Note : with card
Receiver Setting: RBW:10kHz VBW:30kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1.216	-2.60	54.68	52.08	65.74	-13.66	Peak
2	2.144	-5.44	58.68	53.24	69.54	-16.30	Peak
3	3.399	-6.02	62.89	56.87	69.54	-12.67	Peak
4	4.574	-6.30	50.51	44.21	69.54	-25.33	Peak
5	13.551	-4.41	68.67	64.26	69.54	-5.28	Peak
6	17.755	-3.82	44.39	40.57	69.54	-28.97	Peak



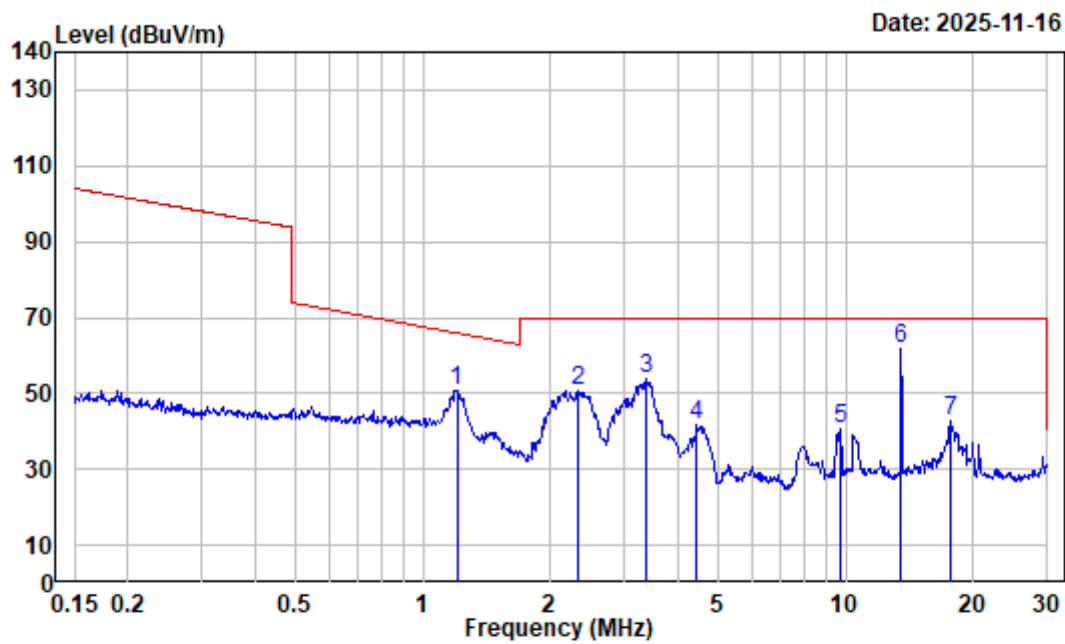
Site : Chamber
Condition : 3m
Job No. : 2504Y12371E-RF
Polarization : Perpendicular Tester: Colin Lin
Test Mode : Test Mode 1
Note : with card
Receiver Setting: RBW:10kHz VBW:30kHz

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBUV/m	dBUV/m	dB	
1	13.560	-4.41	66.37	61.96	124.00	-62.04 Peak



Site : Chamber
Condition : 3m
Job No. : 2504Y12371E-RF
Polarization : Perpendicular Tester: Colin Lin
Test Mode : Test Mode 1
Note : with card
Receiver Setting: RBW:300Hz VBW:1kHz

	Freq	Factor	Read Level	Limit Level	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1	0.012	35.08	22.61	57.69	126.25	-68.56 Peak
2	0.018	32.29	24.01	56.30	122.51	-66.21 Peak
3	0.030	27.06	21.96	49.02	118.13	-69.11 Peak
4	0.041	24.74	22.31	47.05	115.42	-68.37 Peak
5	0.061	21.30	21.41	42.71	111.95	-69.24 Peak
6	0.112	15.91	21.50	37.41	106.65	-69.24 Peak



Site : Chamber

Condition : 3m

Job No. : 2504Y12371E-RF

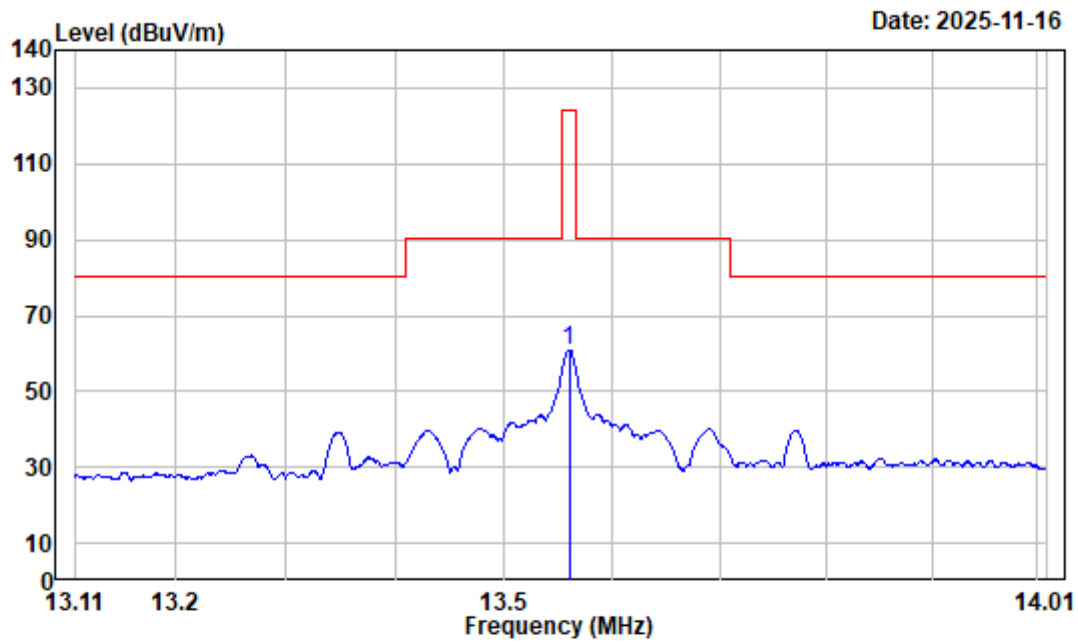
Polarization : Perpendicular Tester: Colin Lin

Test Mode : Test Mode 1

Note : with card

Receiver Setting: RBW:10kHz VBW:30kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1.203	-2.55	53.47	50.92	65.83	-14.91	Peak
2	2.321	-5.52	56.44	50.92	69.54	-18.62	Peak
3	3.381	-6.01	59.70	53.69	69.54	-15.85	Peak
4	4.454	-6.30	48.06	41.76	69.54	-27.78	Peak
5	9.757	-5.39	45.93	40.54	69.54	-29.00	Peak
6	13.551	-4.41	66.31	61.90	69.54	-7.64	Peak
7	17.661	-3.82	46.78	42.96	69.54	-26.58	Peak



Site : Chamber

Condition : 3m

Job No. : 2504Y12371E-RF

Polarization : Ground-parallel

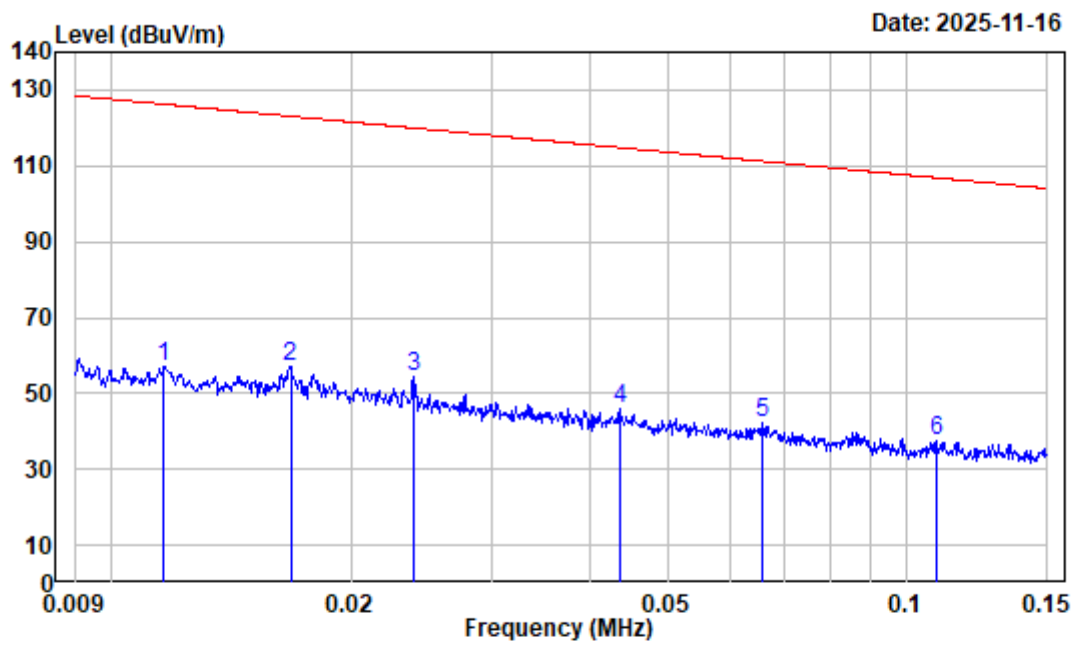
Test Mode : Test Mode 1

Note : with card

Receiver Setting: RBW:10kHz VBW:30kHz

Tester: Colin Lin

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	13.560	-4.41	65.39	60.98	124.00	-63.02	Peak



Site : Chamber

Condition : 3m

Job No. : 2504Y12371E-RF

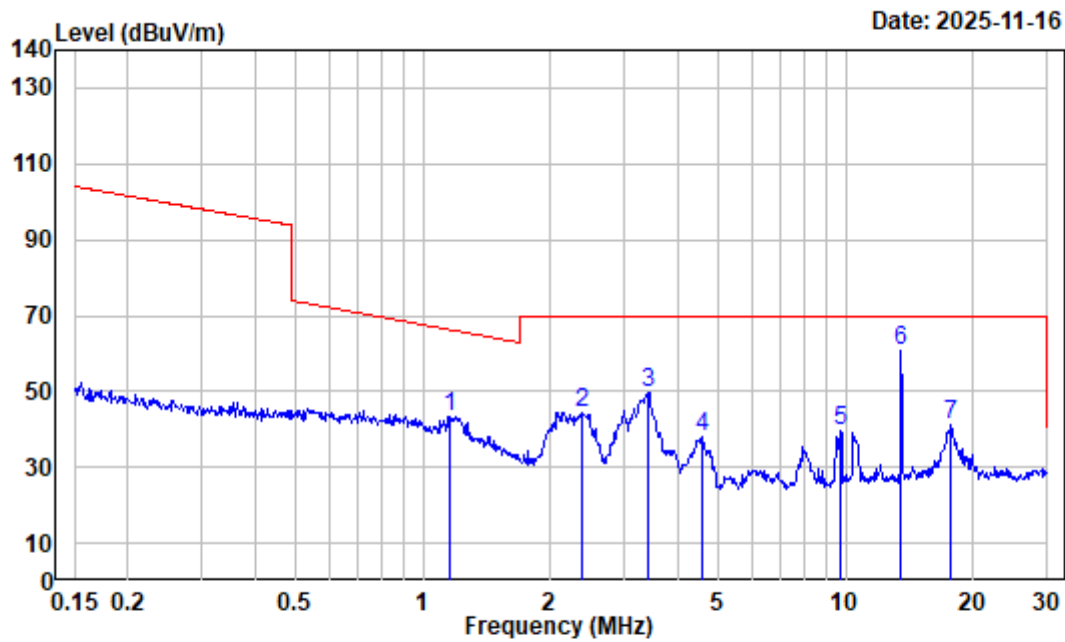
Polarization : Ground-parallel Tester: Colin Lin

Test Mode : Test Mode 1

Note : with card

Receiver Setting: RBW:300Hz VBW:1kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.012	35.09	22.19	57.28	126.27	-68.99	Peak
2	0.017	32.81	24.24	57.05	123.09	-66.04	Peak
3	0.024	29.63	24.58	54.21	120.02	-65.81	Peak
4	0.044	24.13	21.63	45.76	114.81	-69.05	Peak
5	0.066	20.56	21.44	42.00	111.24	-69.24	Peak
6	0.109	16.04	21.37	37.41	106.87	-69.46	Peak



Site : Chamber

Condition : 3m

Job No. : 2504Y12371E-RF

Polarization : Ground-parallel

Test Mode : Test Mode 1

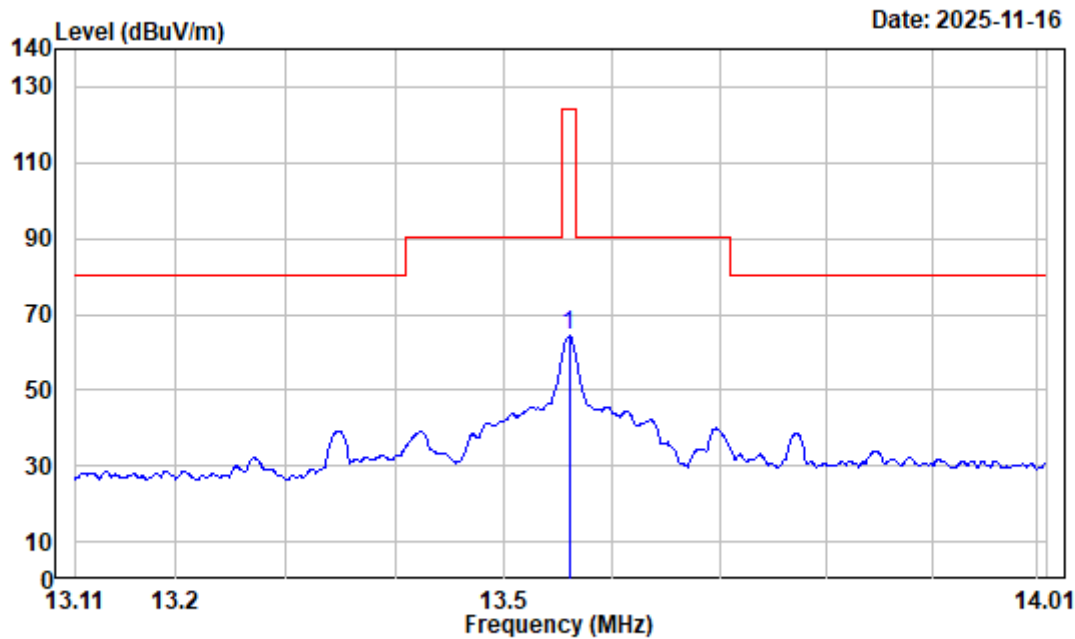
Note : with card

Receiver Setting: RBW:10kHz VBW:30kHz

Tester: Colin Lin

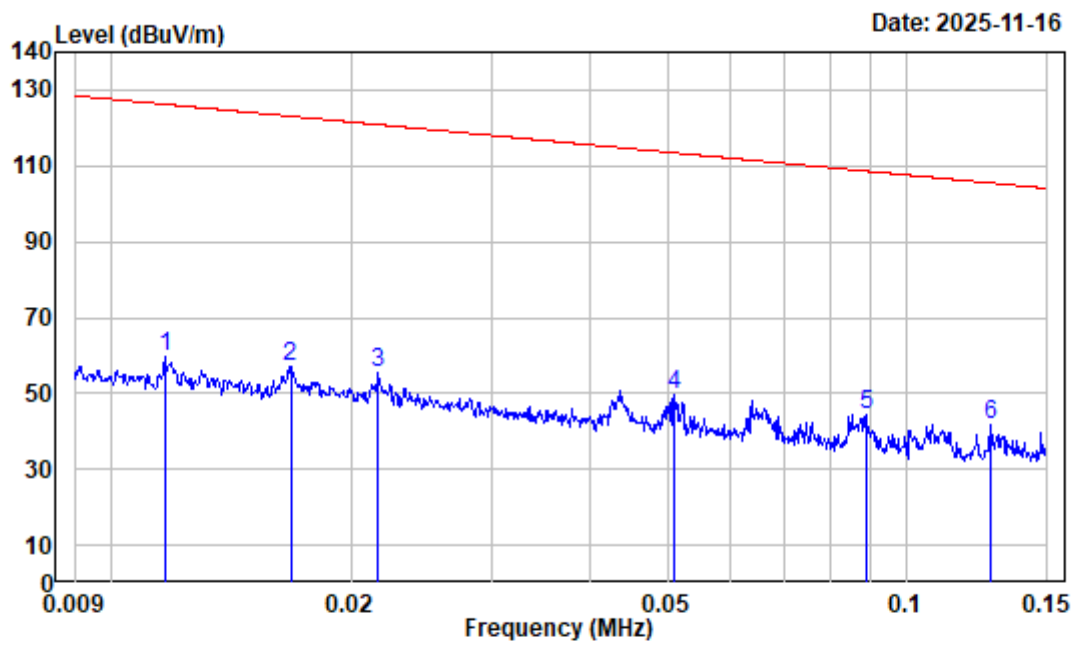
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1.153	-2.37	45.73	43.36	66.21	-22.85	Peak
2	2.371	-5.55	50.17	44.62	69.54	-24.92	Peak
3	3.417	-6.03	55.52	49.49	69.54	-20.05	Peak
4	4.574	-6.30	44.18	37.88	69.54	-31.66	Peak
5	9.757	-5.39	45.18	39.79	69.54	-29.75	Peak
6	13.551	-4.41	65.29	60.88	69.54	-8.66	Peak
7	17.755	-3.82	44.85	41.03	69.54	-28.51	Peak

Without card:



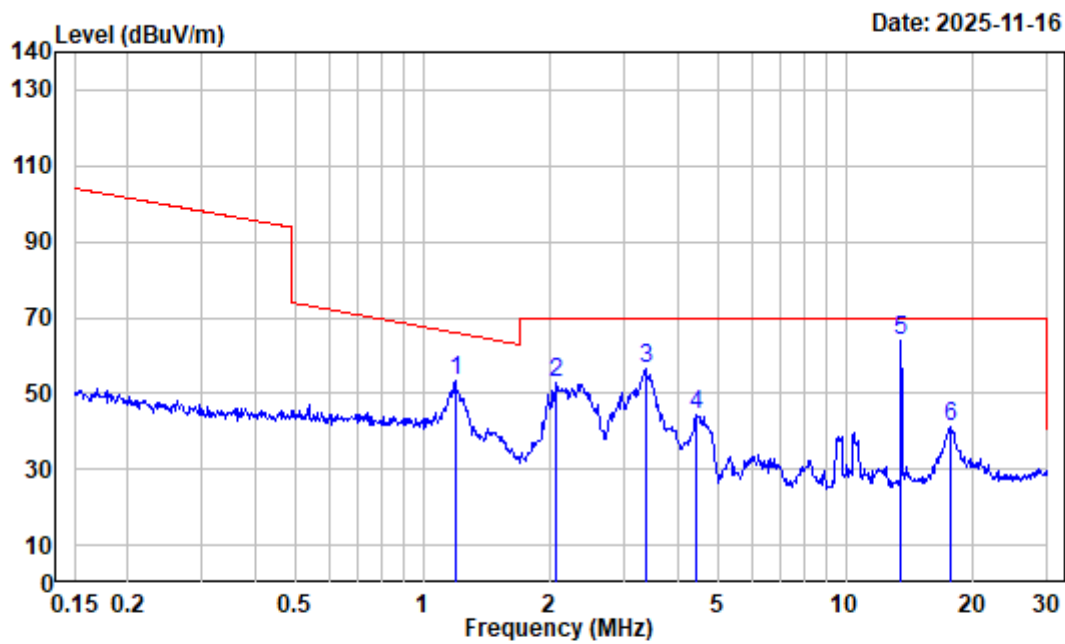
Site : Chamber
Condition : 3m
Job No. : 2504Y12371E-RF
Polarization : Parallel Tester: Colin Lin
Test Mode : Test Mode 1
Note : without card
Receiver Setting: RBW:10kHz VBW:30kHz

Freq Factor		Read		Limit	Over	Remark
MHz	dB/m	Level	Level	Line	Limit	
		dBuV	dBuV/m	dBuV/m	dB	
1	13.560	-4.41	68.63	64.22	124.00	-59.78 Peak



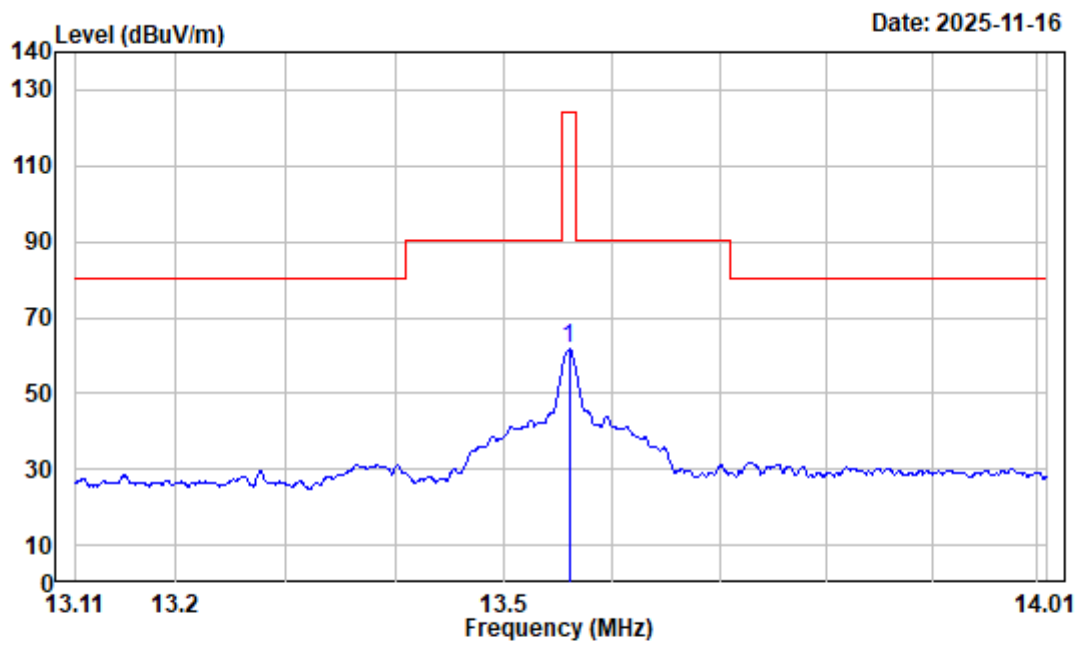
Site : Chamber
Condition : 3m
Job No. : 2504Y12371E-RF
Polarization : Parallel Tester: Colin Lin
Test Mode : Test Mode 1
Note : without card
Receiver Setting: RBW:300Hz VBW:1kHz

	Freq Factor		Read Level	Limit Level	Over Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.012	35.08	24.43	59.51	126.25	-66.74	Peak
2	0.017	32.81	24.32	57.13	123.09	-65.96	Peak
3	0.022	30.66	24.68	55.34	120.90	-65.56	Peak
4	0.051	22.66	27.25	49.91	113.44	-63.53	Peak
5	0.089	17.60	26.89	44.49	108.63	-64.14	Peak
6	0.127	15.22	26.53	41.75	105.52	-63.77	Peak



Site : Chamber
Condition : 3m
Job No. : 2504Y12371E-RF
Polarization : Parallel Tester: Colin Lin
Test Mode : Test Mode 1
Note : without card
Receiver Setting: RBW:10kHz VBW:30kHz

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1.191	-2.51	55.67	53.16	65.92	-12.76 Peak
2	2.055	-5.41	58.07	52.66	69.54	-16.88 Peak
3	3.364	-6.00	62.53	56.53	69.54	-13.01 Peak
4	4.454	-6.30	50.78	44.48	69.54	-25.06 Peak
5	13.551	-4.41	68.57	64.16	69.54	-5.38 Peak
6	17.661	-3.82	45.04	41.22	69.54	-28.32 Peak



Site : Chamber

Condition : 3m

Job No. : 2504Y12371E-RF

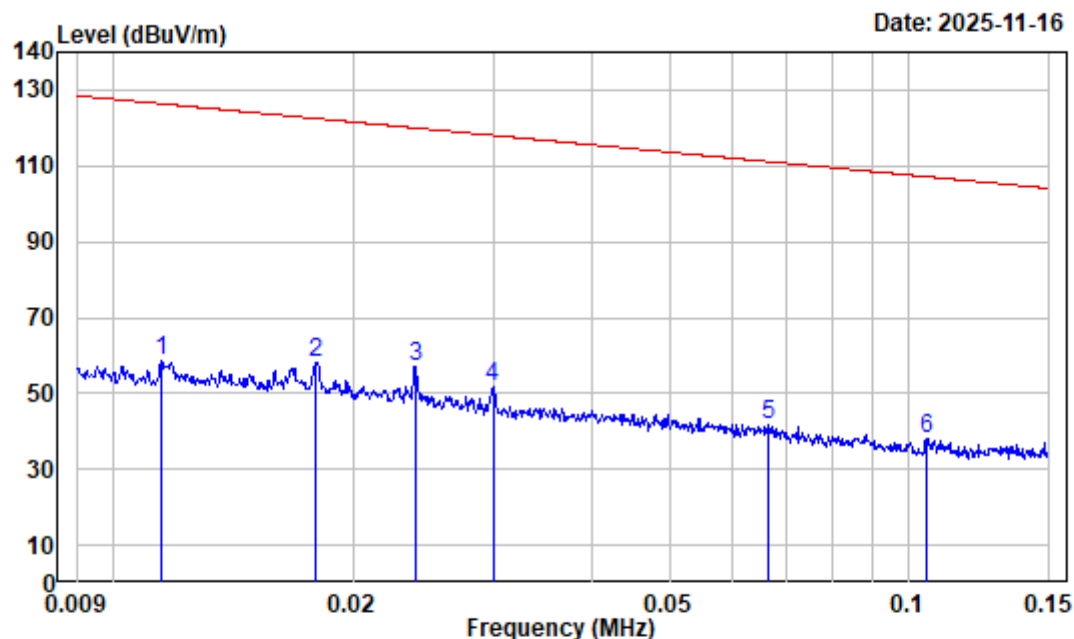
Polarization : Perpendicular Tester: Colin Lin

Test Mode : Test Mode 1

Note : without card

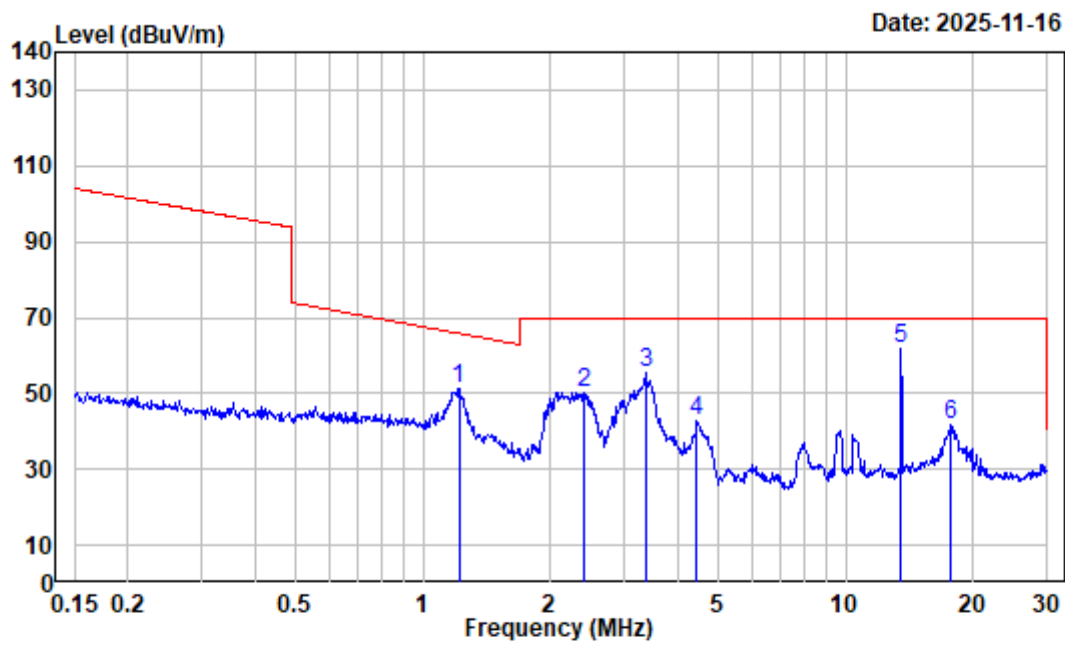
Receiver Setting: RBW:10kHz VBW:30kHz

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	13.560	-4.41	66.05	61.64	124.00	-62.36 Peak



Site : Chamber
 Condition : 3m
 Job No. : 2504Y12371E-RF
 Polarization : Perpendicular Tester: Colin Lin
 Test Mode : Test Mode 1
 Note : without card
 Receiver Setting: RBW:300Hz VBW:1kHz

	Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.012	35.15	23.33	58.48	126.37	-67.89	Peak
2	0.018	32.29	25.72	58.01	122.51	-64.50	Peak
3	0.024	29.63	27.32	56.95	120.02	-63.07	Peak
4	0.030	26.95	24.86	51.81	118.06	-66.25	Peak
5	0.067	20.45	21.35	41.80	111.14	-69.34	Peak
6	0.105	16.20	21.88	38.08	107.16	-69.08	Peak



Site : Chamber

Condition : 3m

Job No. : 2504Y12371E-RF

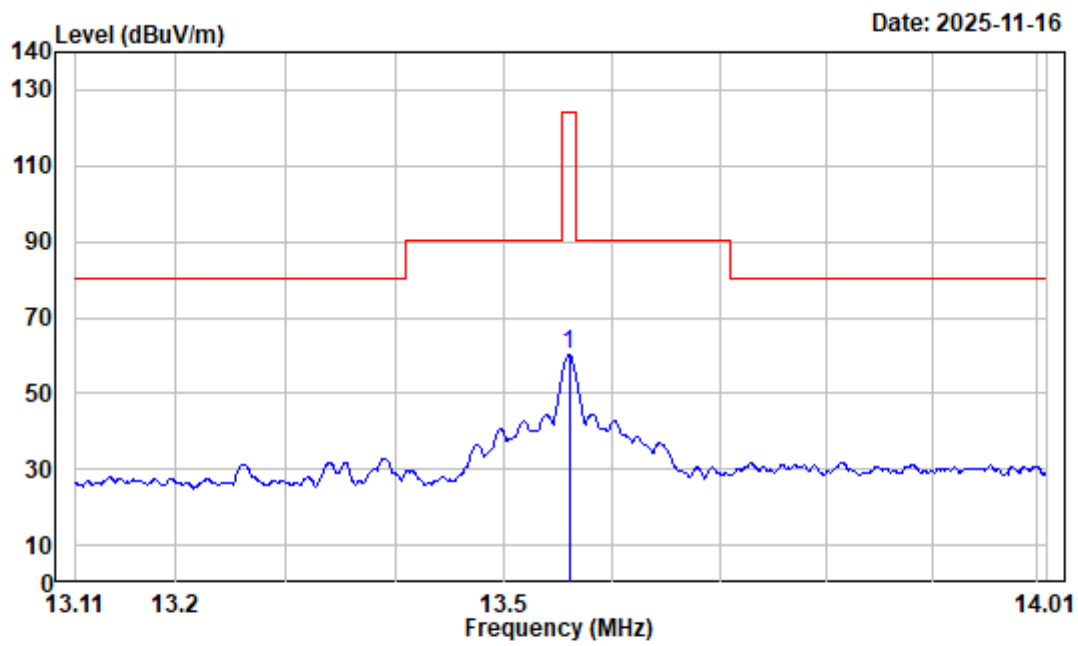
Polarization : Perpendicular Tester: Colin Lin

Test Mode : Test Mode 1

Note : without card

Receiver Setting: RBW:10kHz VBW:30kHz

	Freq Factor		Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1.216	-2.60	53.83	51.23	65.74	-14.51	Peak
2	2.409	-5.56	55.86	50.30	69.54	-19.24	Peak
3	3.364	-6.00	61.35	55.35	69.54	-14.19	Peak
4	4.430	-6.30	48.92	42.62	69.54	-26.92	Peak
5	13.551	-4.41	66.02	61.61	69.54	-7.93	Peak
6	17.661	-3.82	45.62	41.80	69.54	-27.74	Peak



Site : Chamber

Condition : 3m

Job No. : 2504Y12371E-RF

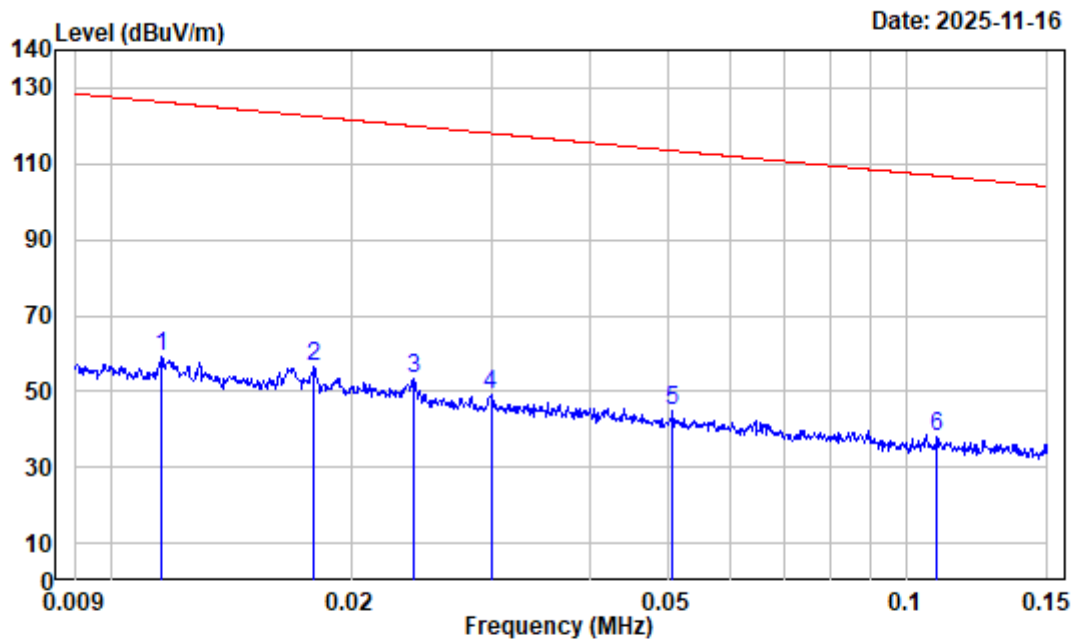
Polarization : Ground-parallelTester: Colin Lin

Test Mode : Test Mode 1

Note : without card

Receiver Setting: RBW:10kHz VBW:30kHz

Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	13.560	-4.41	64.56	60.15	124.00	-63.85 Peak



Site : Chamber

Condition : 3m

Job No. : 2504Y12371E-RF

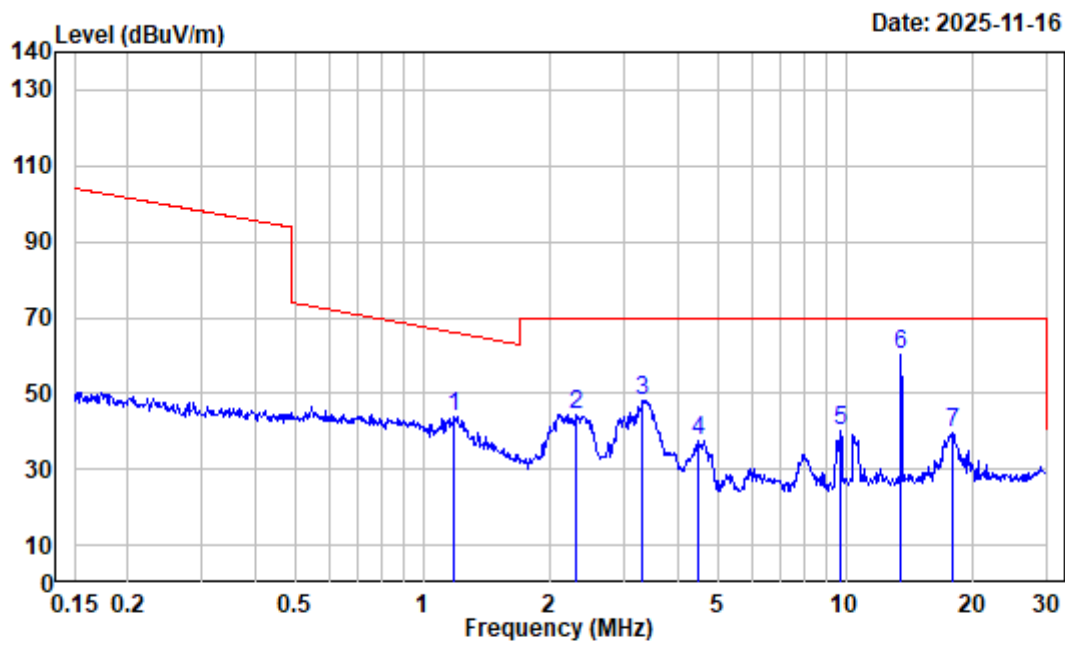
Polarization : Ground-parallelTester: Colin Lin

Test Mode : Test Mode 1

Note : without card

Receiver Setting: RBW:300Hz VBW:1kHz

	Freq Factor		Read Level	Limit Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.012	35.12	23.91	59.03	126.32	-67.29	Peak
2	0.018	32.29	24.30	56.59	122.51	-65.92	Peak
3	0.024	29.63	23.53	53.16	120.02	-66.86	Peak
4	0.030	26.95	22.29	49.24	118.06	-68.82	Peak
5	0.051	22.70	22.18	44.88	113.49	-68.61	Peak
6	0.109	16.03	21.79	37.82	106.84	-69.02	Peak



Site : Chamber

Condition : 3m

Job No. : 2504Y12371E-RF

Polarization : Ground-parallel

Test Mode : Test Mode 1

Note : without card

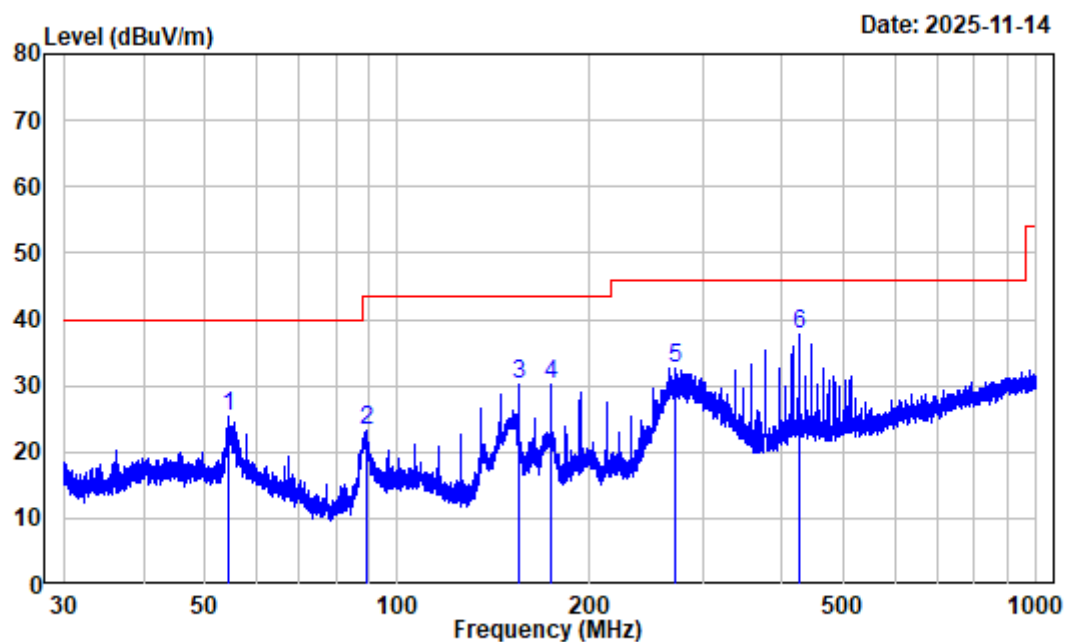
Receiver Setting: RBW:10kHz VBW:30kHz

Tester: Colin Lin

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	1.184	-2.48	46.45	43.97	65.97	-22.00	Peak
2	2.309	-5.51	49.92	44.41	69.54	-25.13	Peak
3	3.310	-5.98	54.25	48.27	69.54	-21.27	Peak
4	4.478	-6.30	44.06	37.76	69.54	-31.78	Peak
5	9.757	-5.39	45.31	39.92	69.54	-29.62	Peak
6	13.551	-4.41	64.46	60.05	69.54	-9.49	Peak
7	17.944	-3.81	43.67	39.86	69.54	-29.68	Peak

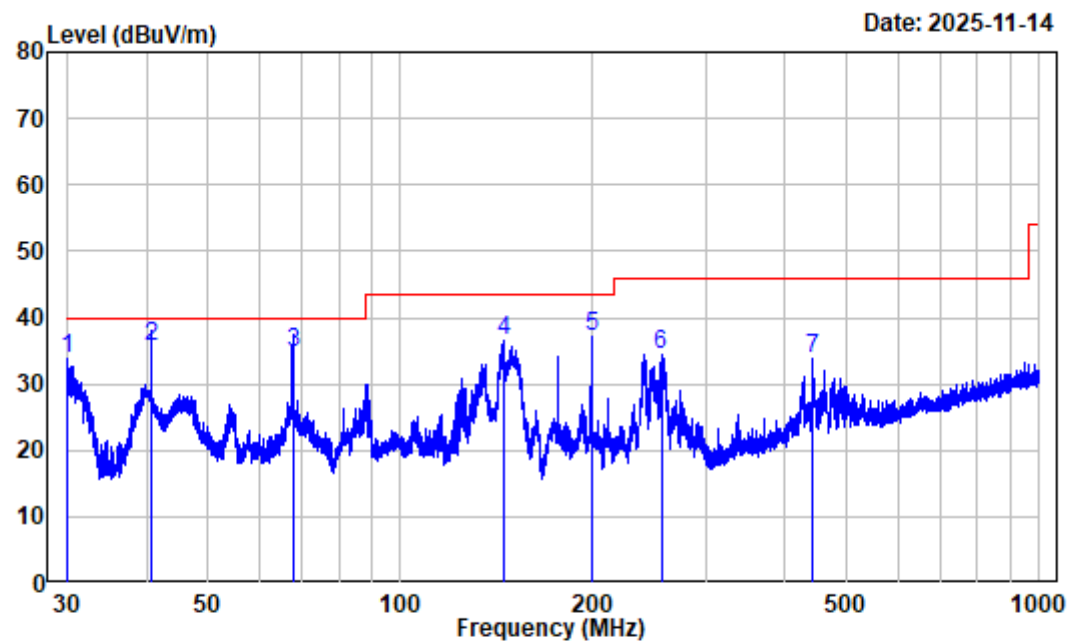
30MHz~1GHz:

With card:



Site : Chamber
 Condition : 3m HORIZONTAL
 Job No. : 2504Y12371E-RF Tester: Colin Lin
 Test Mode : Test Mode 1
 Note : with card
 Receiver Setting: RBW:100kHz VBW:300kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	54.499	-10.57	35.97	25.40	40.00	-14.60	Peak
2	89.237	-13.92	37.17	23.25	43.50	-20.25	Peak
3	154.549	-14.51	44.79	30.28	43.50	-13.22	Peak
4	173.814	-13.37	43.54	30.17	43.50	-13.33	Peak
5	272.755	-9.59	42.18	32.59	46.00	-13.41	Peak
6	424.842	-5.00	42.80	37.80	46.00	-8.20	Peak



Site : Chamber

Condition : 3m VERTICAL

Job No. : 2504Y12371E-RF Tester: Colin Lin

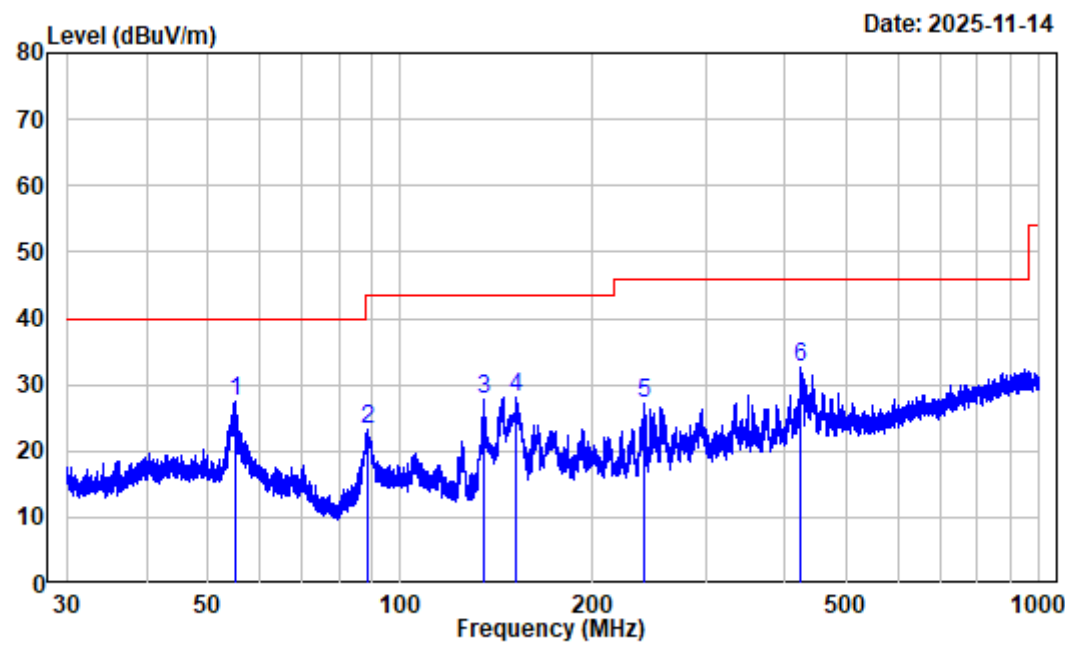
Test Mode : Test Mode 1

Note : with card

Receiver Setting: RBW:100kHz VBW:300kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	30.132	-11.80	45.73	33.93	40.00	-6.07	Peak
2	40.666	-10.45	46.20	35.75	40.00	-4.25	QP
3	67.794	-13.58	48.20	34.62	40.00	-5.38	QP
4	144.651	-14.95	51.34	36.39	43.50	-7.11	Peak
5	198.849	-10.41	47.63	37.22	43.50	-6.28	Peak
6	255.847	-10.13	44.53	34.40	46.00	-11.60	Peak
7	441.356	-4.96	38.92	33.96	46.00	-12.04	Peak

Without card:



Site : Chamber

Condition : 3m HORIZONTAL

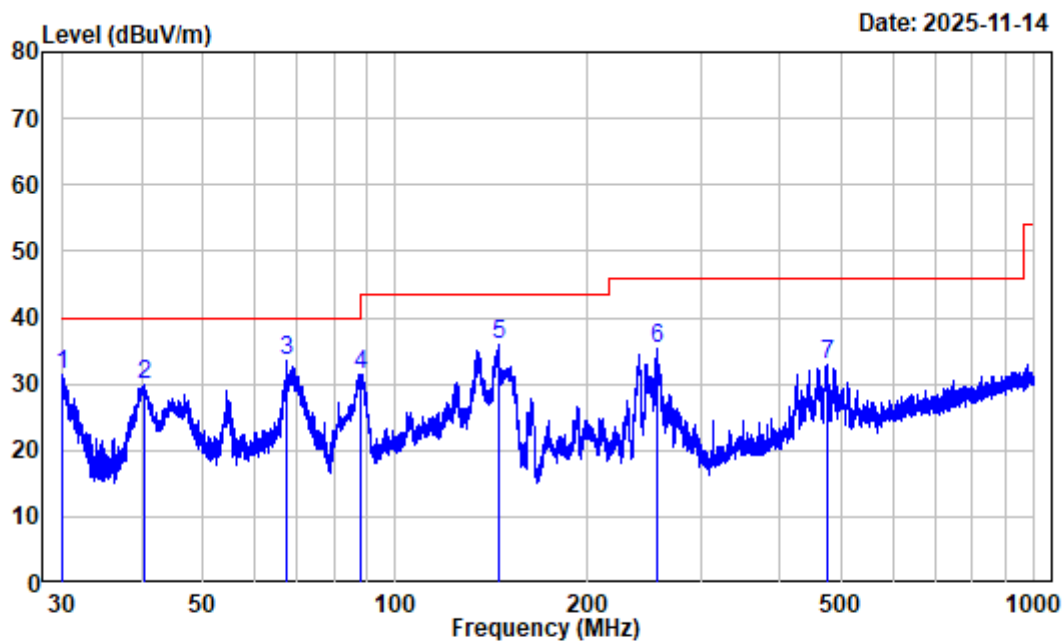
Job No. : 2504Y12371E-RF Tester: Colin Lin

Test Mode : Test Mode 1

Note : without card

Receiver Setting: RBW:100kHz VBW:300kHz

	Freq Factor		Read		Limit	Over	Remark
	MHz	dB/m	Level	Level	Line	Limit	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	54.979	-10.69	38.15	27.46	40.00	-12.54	Peak
2	88.652	-14.10	37.23	23.13	43.50	-20.37	Peak
3	135.032	-14.43	42.19	27.76	43.50	-15.74	Peak
4	151.797	-14.68	42.80	28.12	43.50	-15.38	Peak
5	240.619	-10.05	37.11	27.06	46.00	-18.94	Peak
6	423.540	-5.03	37.49	32.46	46.00	-13.54	Peak



Site : Chamber

Condition : 3m VERTICAL

Job No. : 2504Y12371E-RF Tester: Colin Lin

Test Mode : Test Mode 1

Note : without card

Receiver Setting: RBW:100kHz VBW:300kHz

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	30.000	-11.77	43.04	31.27	40.00	-8.73	Peak
2	40.364	-10.48	40.37	29.89	40.00	-10.11	Peak
3	67.379	-13.44	46.86	33.42	40.00	-6.58	Peak
4	88.265	-14.23	45.70	31.47	43.50	-12.03	Peak
5	144.842	-14.95	50.78	35.83	43.50	-7.67	Peak
6	257.084	-10.11	45.57	35.46	46.00	-10.54	Peak
7	474.666	-4.59	37.52	32.93	46.00	-13.07	Peak

FREQUENCY STABILITY

Applicable Standard

According to FCC§15.225(e):

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to $+50$ degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

According to RSS-210 ANNEX B B.6:

The carrier frequency stability shall not exceed ± 100 ppm

Test Procedure

According to ANSI C63.10-2020 Section 6.8

Frequency stability with respect to ambient temperature

a) Supply the EUT with a nominal ac voltage or install a new or fully charged battery in the EUT. If possible, a dummy load shall be connected to the EUT because an antenna near the metallic walls of an environmental test chamber could affect the output frequency of the EUT. If the EUT is equipped with a permanently attached, adjustable-length antenna, then the EUT shall be placed in the center of the chamber with the antenna adjusted to the shortest length possible. Turn ON the EUT and tune it to one of the number of frequencies shown in 5.6.

b) Couple the unlicensed wireless device output to the measuring instrument by connecting an antenna to the measuring instrument with a suitable length of coaxial cable and placing the measuring antenna near the EUT (e.g., 15 cm away), or b connecting a dummy load to the measuring instrument, through an attenuator if necessary.

NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory agency is the recommended measuring instrument.

c) Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).

d) Turn the EUT OFF and place it inside the environmental temperature chamber. For devices that have oscillator heaters, energize only the heater circuit.

e) Set the temperature control on the chamber to the highest specified in the regulatory requirements for the type of device and allow the oscillator heater and the chamber temperature to stabilize.

f) While maintaining a constant temperature inside the environmental chamber, turn the EUT ON and record the operating frequency at startup, and at 2 minutes, 5 minutes, and 10 minutes after the EUT is energized. Four measurements in total are made.

g) Measure the frequency at each of frequencies specified in 5.6.

h) Switch OFF the EUT but do not switch OFF the oscillator heater.

i) Lower the chamber temperature by not more than 10°C , and allow the temperature inside the chamber to stabilize.

j) Repeat step f) through step i) down to the lowest specified temperature.

Frequency stability when varying supply voltage

Unless otherwise specified, these tests shall be made at ambient room temperature (+15 °C to +25 °C). An antenna shall be connected to the antenna output terminals of the EUT if possible. If the EUT is equipped with or uses an adjustable-length antenna, then it shall be fully extended.

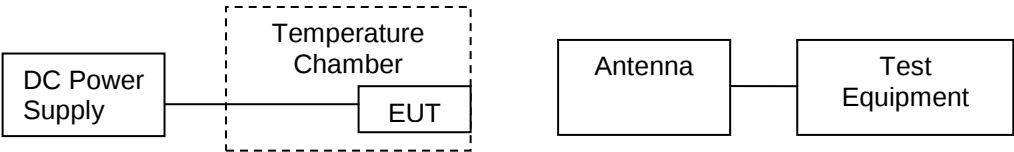
- a) Supply the EUT with nominal voltage or install a new or fully charged battery in the EUT. Turn ON the EUT and couple its output to a frequency counter or other frequency-measuring instrument. NOTE—An instrument that has an adequate level of accuracy as specified by the procuring or regulatory agency is the recommended measuring instrument.
- b) Tune the EUT to one of the number of frequencies required in 5.6. Adjust the location of the measurement antenna and the controls on the measurement instrument to obtain a suitable signal level (i.e., a level that will not overload the measurement instrument but is strong enough to allow measurement of the operating or fundamental frequency of the EUT).
- c) Measure the frequency at each of the frequencies specified in 5.6.
- d) Repeat the above procedure at 85% and 115% of the nominal supply voltage as described in 5.13.

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and inductive antenna was connected to a Spectrum Analyzer. The EUT was placed inside the temperature chamber.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the Spectrum Analyzer.

Frequency Stability vs. Voltage: An external DC power supply Source. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the end point. The output frequency was recorded for each voltage.

EUT Setup



Test Data

Environmental Conditions

Temperature:	24.8 °C
Relative Humidity:	55 %
ATM Pressure:	101.1 kPa

The testing was performed by Colin Lin on 2025-11-16.

EUT operation mode: Transmitting(Radiated Measurement)

Test Result: Compliance. Please refer to the below data.

With Magnetic card

Test Item	Temperature (°C)	Voltage (VDC)	Measured frequency (MHz)	FCC Frequency Error (%)	FCC Limit (%)	ISED Frequency Error (ppm)	ISED Limit (ppm)
Frequency Stability vs. Temperature	-20	3.87	13.56002279	0.00017	0.01	1.7	±100
	-10		13.56002695	0.00020	0.01	2.0	±100
	0		13.56002062	0.00015	0.01	1.5	±100
	10		13.56002424	0.00018	0.01	1.8	±100
	20		13.56001870	0.00014	0.01	1.4	±100
	25		13.56001737	0.00013	0.01	1.3	±100
	30		13.56002636	0.00019	0.01	1.9	±100
	40		13.56002266	0.00017	0.01	1.7	±100
	50		13.56002202	0.00016	0.01	1.6	±100
Frequency Stability vs. Voltage	20	3.5	13.56002333	0.00017	0.01	1.7	±100
	20	4.45	13.56002243	0.00017	0.01	1.7	±100

Without Magnetic card

Test Item	Temperature (°C)	Voltage (VDC)	Measured frequency (MHz)	FCC Frequency Error (%)	FCC Limit (%)	ISED Frequency Error (ppm)	ISED Limit (ppm)
Frequency Stability vs. Temperature	-20	3.87	13.56002763	0.00020	0.01	2.0	±100
	-10		13.56003046	0.00022	0.01	2.2	±100
	0		13.56002488	0.00018	0.01	1.8	±100
	10		13.56003128	0.00023	0.01	2.3	±100
	20		13.56002482	0.00018	0.01	1.8	±100
	25		13.56001737	0.00013	0.01	1.3	±100
	30		13.56001879	0.00014	0.01	1.4	±100
	40		13.56002330	0.00017	0.01	1.7	±100
	50		13.56002186	0.00016	0.01	1.6	±100
Frequency Stability vs. Voltage	20	3.5	13.56002018	0.00016	0.01	1.6	±100
	20	4.45	13.56002472	0.00018	0.01	1.8	±100

Note: the extreme voltage was declared by the applicant.

20DB EMISSION BANDWIDTH AND 99% OCCUPIED BANDWIDTH

Requirement

According to FCC §15.215 (c):

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

According to RSS-GEN §6.7:

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

In some cases, the “x dB bandwidth” is required, which is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated x dB below the maximum in-band power level of the modulated signal, where the two points are on the outskirts of the in-band emission.

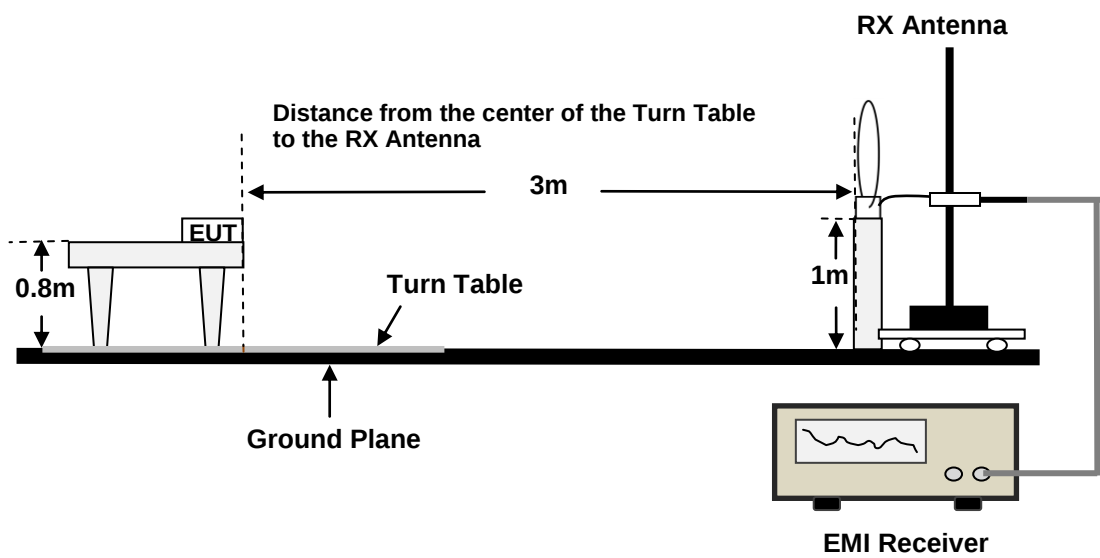
Test Procedure

According to ANSI C63.10-2020 Section 6.9.2

- a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (\text{OBW}/\text{RBW})]$ below the reference level. Specific guidance is given in 4.1.5.2 d) Steps a) through c) might require iteration to adjust within the specified tolerances.
- e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target “-xx dB down” requirement; that is, if the requirement calls for measuring the -20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.
- f) Set detection mode to peak and trace mode to max hold.
- g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).
- h) Determine the “-xx dB down amplitude” using $[(\text{reference value}) - \text{xx}]$. Alternatively, this calculation may be made by using the marker-delta function of the instrument.
- i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j).

- j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the “-xx dB down amplitude” determined in step h). If a marker is below this “-xx dB down amplitude” value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the “-xx dB down amplitude” determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.
- k) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).
- Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.

EUT Setup



Test Data

Environmental Conditions

Temperature:	24.8 °C
Relative Humidity:	55 %
ATM Pressure:	101.1 kPa

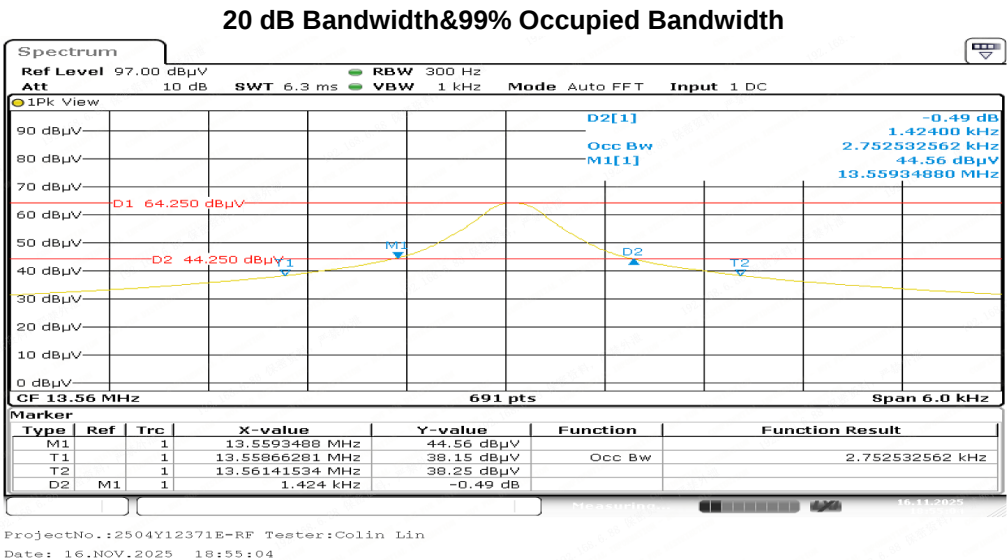
The testing was performed by Colin Lin on 2025-11-16.

EUT operation mode: Transmitting(Radiated Measurement)

Test Result: Compliance. Please refer to the below data.

With Magnetic card

Frequency (MHz)	20 dB Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
13.56	1.424	2.7525



Without Magnetic card

Frequency (MHz)	20 dB Bandwidth (kHz)	99% Occupied Bandwidth (kHz)
13.56	1.4153	2.7438

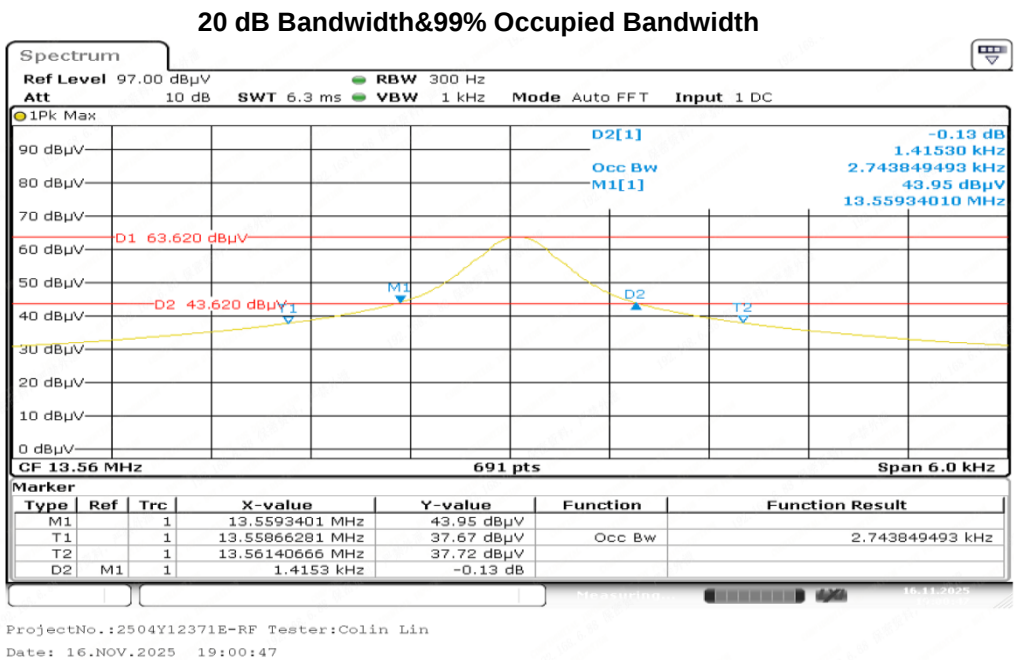


EXHIBIT A-EUT PHOTOGRAPHS

For FCC, please refer to the Attachment No.1 2504Y12371E-RF-00 EUT External Photos and Attachment No.2 2504Y12371E-RF EUT Internal Photos.

For IC, please refer to the Attachment No.8 2504Y12371E-RF-08 EUT External Photos and Attachment No.2 2504Y12371E-RF EUT Internal Photos.

EXHIBIT B-TEST SETUP PHOTOGRAPHS

Please refer to the Attachment No.6 2504Y12371E-RFF Test Photos.

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