TEST REPORT

Applicant Name:	Fanvil Technology Co., Ltd
Address:	10/F Block A, Dualshine Global Science Innovation Center, Honglang North 2nd Road, Bao'an District, Shenzhen, 518101, China
Report Number:	2401A110118E-RFAA2
FCC ID:	2APPZ-V62W
IC:	27176-V62W

Test Standard (s)

FCC PART 15.247; RSS-GEN ISSUE 5, FEBRUARY 2021 AMENDMENT 2;
RSS-247 ISSUE 3, AUGUST 2023

Sample Description

Product Type:	IP Phone
Model No.:	J640W
Multiple Model(s) No.:	J620W
Trade Mark:	Fanvil
Date Received:	2024/12/13
Issue Date:	2025/01/25

Test Result:	Pass▲

▲ In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Wills Yu
RF Engineer

Approved By:

Nancy Wang
RF Supervisor

Note: 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.
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2401A110118E-RFAA2	Class II Permissive Change Report	2025/01/25

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

HVIN	J640W, J620W
FVIN	Test_rf_telnet
Product	IP Phone
Tested Model	J640W
Multiple Model(s)	J620W
Frequency Range	2412-2462MHz
Maximum Conducted Peak Output Power	9.69dBm
Modulation Technique	DSSS, OFDM, OFDMA
Antenna Specification#	5.1dBi (It is provided by the applicant)
Voltage Range	DC 5V from adapter or DC 48V from POE
Sample serial number	2VWJ-5 (Assigned by BACL, Shenzhen)
Sample/EUT Status	Good condition
Adapter Information	Adapter 1 Model: F05L5-050100SPAU Input: AC 100-240V, 50/60Hz, 0.2A Output: DC 5.0V, 1.0A, 5.0W Adapter 2 Model: DCT06W050100US-D0 Input: AC 100-240V, 50/60Hz, 200mA Output: DC 5.0V, 1.0A
Note: The Multiple models are electrically identical with the test model except for model name, screen size and the PCB board of the screen keypad. Please refer to the declaration letter# for more detail, which was provided by manufacturer.	

Objective

This report is in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commission's rules and RSS-GEN Issue 5, February 2021 Amendment 2 and RSS-247 Issue 3, August 2023 of the Innovation, Science and Economic Development Canada rules.

Note: This is Class II permissive change application based on the Change ID device, model: V62W, FCC ID: 2APPZ-V62W, IC: 27176-V62W. The Change ID device based on the original device, model: V62W, FCC ID: 2BCUQ-V62W, IC: 32680-V62W, which was tested by Bay Area Compliance Laboratories Corp. (Shenzhen). The change between the original equipment and the current equipment is stated and guaranteed by the applicant, as following:

(1) Changing the company name to “Fanvil Technology Co., Ltd”.

(2) Changing the company address to “10/F Block A, Dualshine Global Science Innovation Center, Honglang North 2nd Road, Bao'an District, Shenzhen, 518101, China”.

(3) Changing the model number to “J640W, J620W”, where the model J640W and the original model V62W are the difference in model name, appearance color, appearance shape, screen size and the PCB board of the screen keypad, the model J620W and the original model V62W are the difference in model name, appearance color and appearance shape.

(4) Upgrading the standard version to “RSS-102 Issue 6”.

(5) Changing the HVIN and PMN to” J640W, J620W”

Based on above differences, it will affect partial test data “Conducted Emissions and Radiated Emissions for below 1GHz” for the model J640W, so the changed items were performed, we also updated related EUT photos in the report. The other test data and photos please refer to the report 2401U79863E-RFA.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliant Testing of Unlicensed Wireless Devices and RSS-GEN Issue 5, February 2021 Amendment 2 and RSS-247 Issue 3, August 2023.

And KDB 558074 D01 15.247 Meas Guidance v05r02.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Each test item follows test standards and with no deviation.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		109.2kHz(k=2, 95% level of confidence)
RF Frequency		56.6Hz(k=2, 95% level of confidence)
RF output power, conducted		0.86dB(k=2, 95% level of confidence)
Unwanted Emission, conducted		1.60dB(k=2, 95% level of confidence)
AC Power Lines Conducted Emissions	9 kHz~150 KHz	3.63dB(k=2, 95% level of confidence)
	150 kHz ~30MHz	3.66dB(k=2, 95% level of confidence)
Radiated Emissions	0.009MHz~30MHz	3.60dB(k=2, 95% level of confidence)
	30MHz~200MHz (Horizontal)	5.32dB(k=2, 95% level of confidence)
	30MHz~200MHz (Vertical)	5.43dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Horizontal)	5.77dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Vertical)	5.73dB(k=2, 95% level of confidence)
	1GHz - 6GHz	5.34dB(k=2, 95% level of confidence)
	6GHz - 18GHz	5.40dB(k=2, 95% level of confidence)
	18GHz - 40GHz	5.64dB(k=2, 95% level of confidence)
Temperature		±1℃
Humidity		±1%
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.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 715558, the FCC Designation No. : CN5045.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0023.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

For 2.4GHz Wi-Fi mode, total 11 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432	/	/
6	2437	/	/
7	2442	/	/

For 802.11b, 802.11g, 802.11n20, 802.11ax20, EUT was tested with Channel 1, 6 and 11.
For 802.11n40, 802.11ax40, EUT was tested with Channel 3, 6 and 9.

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

Test in the engineering mode

The device was tested with the worst case was performed as below:

Mode	Data rate	Power Level#		
		Low Channel	Middle Channel	High Channel
802.11b	1Mbps	10	10	10
802.11g	6Mbps	10	10	10
802.11n-HT20	MCS0	10	10	10
802.11n-HT 40	MCS0	10	10	10
802.11AX20	MCS0	10	10	10
802.11AX 40	MCS0	10	10	10

The power level was provided by the applicant.
For 802.211ax mode, the device only support full RU mode.

Support Equipment List and Details

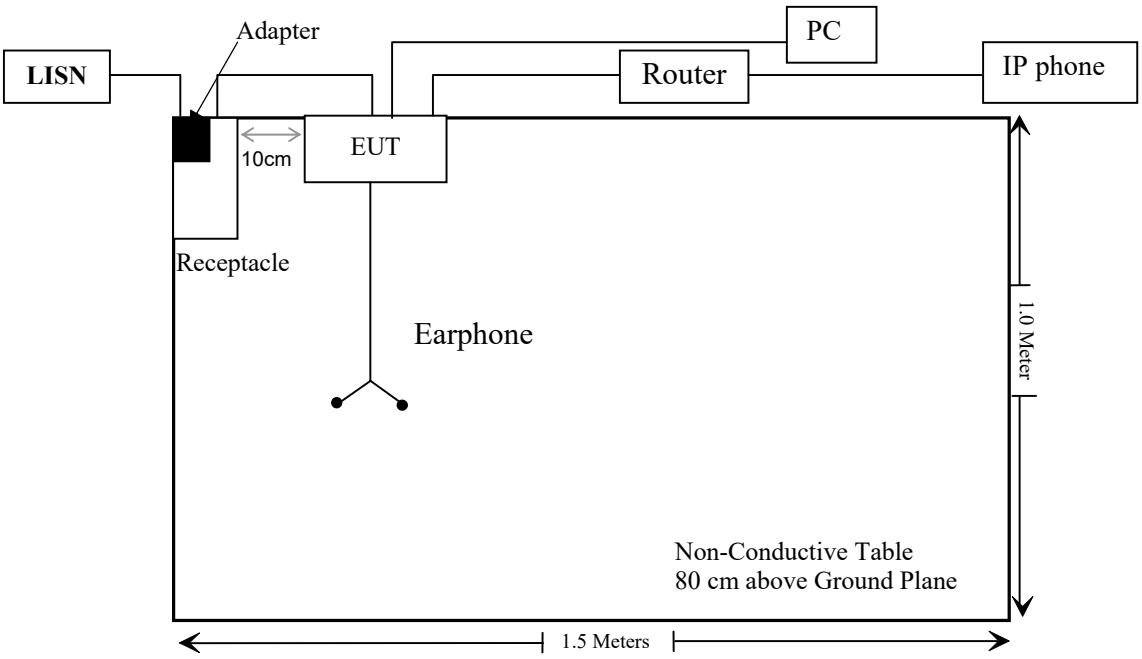
Manufacturer	Description	Model	Serial Number
BULL	Receptacle	GN-415K	5503290068073
Grandstream	IP Phone	GXV3480	T11223323B898
N/A	Earphone	N/A	N/A
HIKVISION	Router	DS-3WR03	10021642429
Lenovo	PC	TIANYI510Pro-18ICB	R3NO28B21001

External I/O Cable

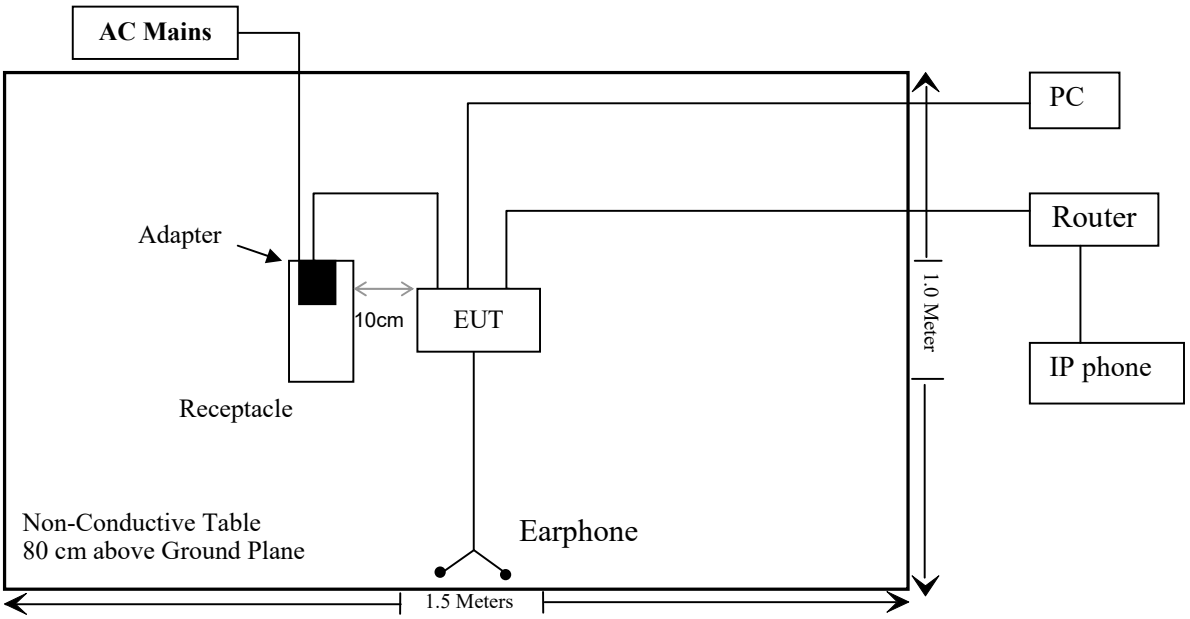
Cable Description	Length (m)	From Port	To
Un-shielded un-detachable AC cable	1.2	Receptacle	LISN/Mains
Un-shielded un-detachable DC cable	1.5	Adapter	EUT
Un-shielded detachable RJ45 cable	10.0	Router	EUT
Un-shielded detachable RJ45 cable	10.0	PC	EUT
Un-shielded detachable RJ45 cable	1.0	Router	IP Phone

Block Diagram of Test Setup

For Conducted Emissions:



For Radiated Emissions (Below 1GHz):



SUMMARY OF TEST RESULTS

FCC Rules	RSS Rules	Description of Test	Result
§15.247 (i), §1.1307 (b) (3) & §2.1091	/	MPE-Based Exemption	Compliant
/	RSS-102 § 6.6	Field reference level exposure exemption limits	Compliant
§15.203	RSS-Gen §6.8	Antenna Requirement	Compliant
§15.207 (a)	RSS-Gen §8.8	AC Line Conducted Emissions	Compliant
§15.205, §15.209, §15.247(d)	RSS-GEN § 8.10 & RSS-247 § 5.5	Spurious Emissions	Compliant**
§15.247 (a)(2)	RSS- Gen§6.7 RSS-247 § 5.2 (a)	99% Occupied Bandwidth & 6 dB Emission Bandwidth	Compliant*
§15.247(b)(3)	RSS-247 § 5.4(d)	Maximum Conducted Output Power	Compliant*
§15.247(d)	RSS-247 § 5.5	100 kHz Bandwidth of Frequency Band Edge	Compliant*
§15.247(e)	RSS-247 § 5.2 (b)	Power Spectral Density	Compliant*
C63.10 §11.6	C63.10 §11.6	Duty Cycle	*

*: The test data please refer to the report 2401U79863E-RFA.
**: Please refer to the report 2401U79863E-RFA for test data of radiation emission above 1GHz.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2024/12/04	2025/12/03
Rohde & Schwarz	LISN	ENV216	101613	2024/12/04	2025/12/03
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2024/05/21	2025/05/20
Unknown	CE Cable	Unknown	UF A210B-1-0720-504504	2024/05/21	2025/05/20
Audix	EMI Test software	E3	191218(V9)	NCR	NCR
Radiated Emissions Test					
Rohde & Schwarz	EMI Test Receiver	ESR3	102455	2024/12/04	2025/12/03
Sonoma instrument	Pre-amplifier	310 N	186238	2024/05/21	2025/05/20
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2023/07/20	2026/07/19
Unknown	Cable	Chamber A Cable 1	N/A	2024/06/18	2025/06/17
Unknown	Cable	XH500C	J-10M-A	2024/06/18	2025/06/17
BACL	Active Loop Antenna	1313-1A	4031911	2024/05/14	2027/05/13
Unknown	Cable	2Y194	0735	2024/12/04	2025/12/03
Unknown	Cable	PNG214	1354	2024/12/04	2025/12/03
Audix	EMI Test software	E3	19821b(V9)	NCR	NCR

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §15.247 (i) & §1.1307 (b) (3) & §2.1091- MPE-BASED EXEMPTION

Applicable Standard

According to subpart 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

According to KDB 447498 D04 v01 Interim General RF Exposure Guidance

MPE-Based Exemption:

General frequency and separation-distance dependent MPE-based effective radiated power (ERP) thresholds are in Table B.1 [Table 1 of § 1.1307(b)(3)(i)(C)] to support an exemptionfrom further evaluation from 300 kHz through 100 GHz.

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

R is the minimum separation distance in meters
f = frequency in MHz

Result

Mode	Frequency (MHz)	Tune up conducted power#	Antenna Gain#		ERP		Evaluation Distance (m)	ERP Limit (mW)
		(dBm)	(dBi)	(dBd)	(dBm)	(mW)		
BT	2402-2480	6.5	5.1	2.95	9.45	8.81	0.2	768
BLE	2402-2480	4.0	5.1	2.95	6.95	4.95	0.2	768
2.4G Wi-Fi	2412-2462	10	5.1	2.95	12.95	19.72	0.2	768
5.2G Wi-Fi	5180-5240	15.0	4.0	1.85	16.85	48.42	0.2	768
5.8G Wi-Fi	5745-5825	16.0	4.6	2.45	18.45	69.98	0.2	768

Note 1: The tune-up power and antenna gain was declared by the applicant.
Note 2: 0dBd=2.15dBi.
Note 3: The BT and Wi-Fi cannot transmit at same time.

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliant

RSS-102 § 6.6 - FIELD REFERENCE LEVEL EXPOSURE EXEMPTION LIMITS

Applicable Standard

According to RSS-102 Issue 6§6.6:

Field reference level (FRL) exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm (i.e. mobile devices), except when the device operates as follows:

• below 20 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 1 W (adjusted for tune-up tolerance)

• at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than $4.49/f0.5$ W (adjusted for tune-up tolerance), where f is in MHz

• at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance)

• at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than $1.31 \times 10{-}2f\ 0.6834\ W$ (adjusted for tune-up tolerance), where f is in MHz

• at or above 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 5 W (adjusted for tune-up tolerance) In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the EIRP was derived.

Test Result:

For worst case:

Mode	Frequency (MHz)	Gain[#] (dBi)	Max tune-up conducted power[#] (dBm)	Max tune-up EIRP[#] (dBm)	Max tune-up EIRP[#] (W)	Distance (cm)	Exemption Limit (W)	SAR Evaluation Exemption
BT	2402-2480	5.1	6.5	11.6	0.014	20	2.68	Yes
BLE	2402-2480	5.1	4.0	9.1	0.008	20	2.68	Yes
2.4G Wi-Fi	2412-2462	5.1	10.0	15.1	0.032	20	2.68	Yes
5.2G Wi-Fi	5180-5240	4.0	15.0	19.00	0.079	20	4.53	Yes
5.8G Wi-Fi	5745-5825	4.6	16.0	20.60	0.115	20	4.86	Yes

Note 1: The antenna gain and Conducted output power including Tune-up Tolerance was declared and provided by the manufacturer

Note 2: The BT and Wi-Fi cannot transmit at the same time.

§15.203 & RSS-GEN §6.8 ANTENNA REQUIREMENT

Applicable Standard

According to § 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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine Compliant with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.
c. Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

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

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 Compliant 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 Connector Construction

The EUT has an internal antenna arrangement which was permanently attached for Wi-Fi and the antenna gain# is 5.1dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Type	Antenna Gain#	Impedance
Integral	5.1dBi	50Ω

Result: Compliant

§15.207 (a) & RSS-GEN §8.8 AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC § 15.207 (a) & RSS-GEN §8.8

Unless stated otherwise in the applicable RSS, for radio apparatus that are designed to be connected to the public utility AC power network, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the range 150 kHz to 30 MHz shall not exceed the limits in table 4, as measured using a 50 μH / 50 Ω line impedance stabilization network. This requirement applies for the radio frequency voltage measured between each power line and the ground terminal of each AC power-line mains cable of the EUT.

For an EUT that connects to the AC power lines indirectly, through another device, the requirement for Compliant with the limits in table 4 shall apply at the terminals of the AC power-line mains cable of a representative support device, while it provides power to the EUT. The lower limit applies at the boundary between the frequency ranges. The device used to power the EUT shall be representative of typical applications.

Table 4 - AC Power Lines Conducted Emission Limits

Frequency range (MHz)	Conducted limit (dBμV)	
	Quasi-Peak	Average
0.15 – 0.5	66 to 56[1]	56 to 46[1]
0.5 – 5	56	46
5 – 30	60	50

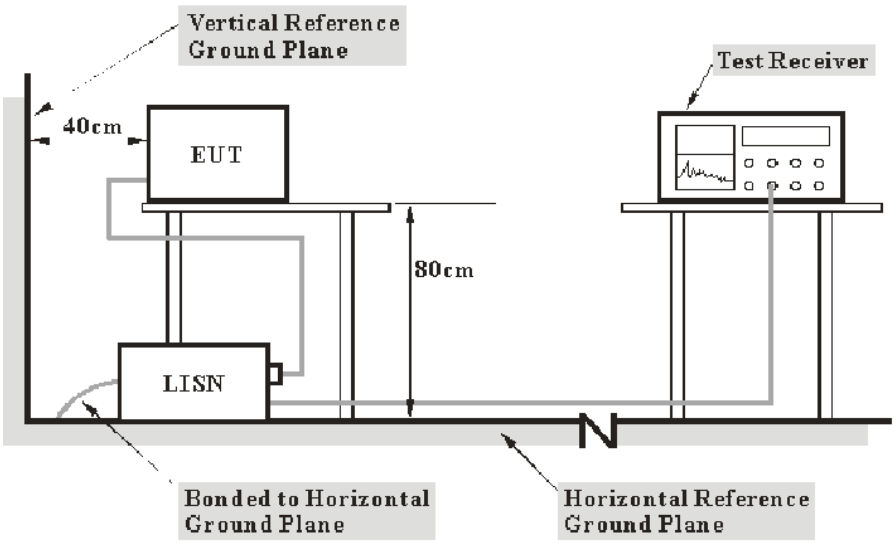
Note 1: The level decreases linearly with the logarithm of the frequency.

For an EUT with a permanent or detachable antenna operating between 150 kHz and 30 MHz, the AC power-line conducted emissions must be measured using the following configurations:

(a) Perform the AC power-line conducted emissions test with the antenna connected to determine Compliant with the limits of table 4 outside the transmitter's fundamental emission band.

(b) Retest with a dummy load instead of the antenna to determine Compliant with the limits of table 4 within the transmitter's fundamental emission band. For a detachable antenna, remove the antenna and connect a suitable dummy load to the antenna connector. For a permanent antenna, remove the antenna and terminate the RF output with a dummy load or network that simulates the antenna in the fundamental frequency band.

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 C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 & RSS-247/RSS-Gen limits.

The spacing between the peripherals was 10 cm.

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

EMI Test Receiver Setup

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

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

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

Test Procedure

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.

Factor & Over Limit 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

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

Note: The term "cable loss" refers to the combination of a cable and a 10dB transient limiter (attenuator).

Test Data

Environmental Conditions

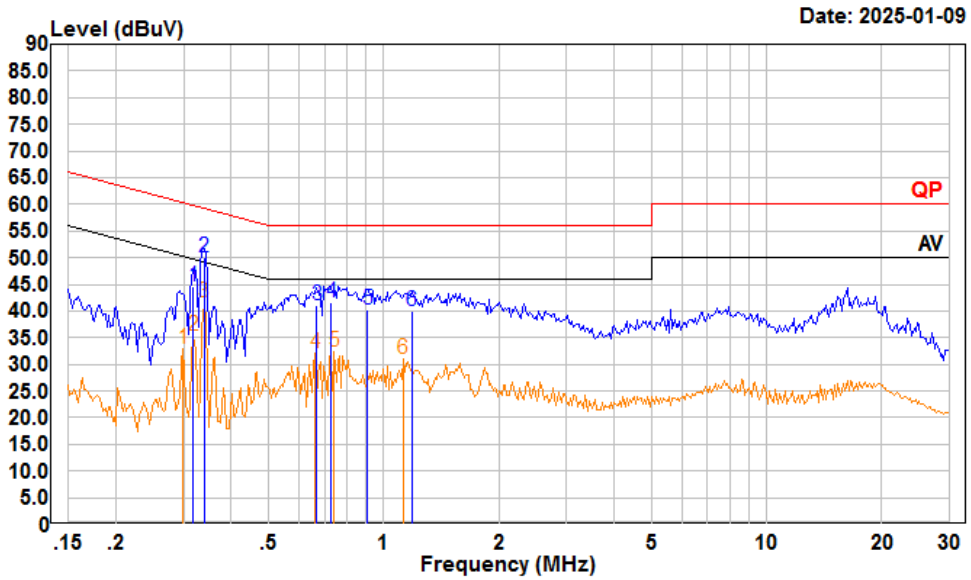
Temperature:	24 ℃
Relative Humidity:	50 %
ATM Pressure:	101 kPa

The testing was performed by Macy Shi on 2025-01-09.

EUT operation mode: Transmitting (Maximum output power mode 802.11b mode, High channel)

Note: according to the test result of 5G Wi-Fi report, the adapter 2 was worst case, so the worst case adapter 2 was tested in this report.

AC 120V/60 Hz, Line



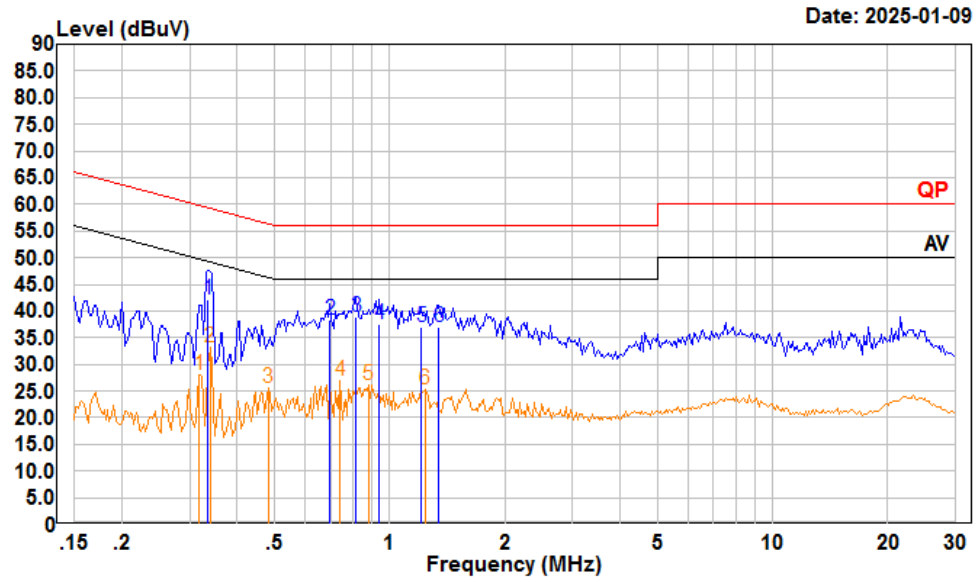
Trace: 1

Condition: Line
Project : 2401A110118E-RFA2
tester : Macy.shi Note:Transmitting
Setting : RBW:9kHz VBW:Auto SWT:Auto

	Freq	Read Level	LISN Level	Cable Factor	Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.318	23.80	44.51	10.60	10.11	59.75	-15.24	QP
2	0.339	29.30	50.00	10.58	10.12	59.22	-9.22	QP
3	0.668	20.11	41.09	10.84	10.14	56.00	-14.91	QP
4	0.727	20.50	41.51	10.87	10.14	56.00	-14.49	QP
5	0.909	19.50	40.28	10.68	10.10	56.00	-15.72	QP
6	1.184	19.10	39.96	10.72	10.14	56.00	-16.04	QP

	Freq	Read Level	LISN Level	Cable Factor	Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.299	12.20	32.92	10.61	10.11	50.28	-17.36	Average
2	0.318	14.65	35.36	10.60	10.11	49.75	-14.39	Average
3	0.339	20.96	41.66	10.58	10.12	49.22	-7.56	Average
4	0.661	11.14	32.11	10.83	10.14	46.00	-13.89	Average
5	0.743	11.26	32.25	10.85	10.14	46.00	-13.75	Average
6	1.123	10.30	31.11	10.68	10.13	46.00	-14.89	Average

AC 120V/60 Hz, Neutral



Trace: 1

Condition: Neutral
Project : 2401A110118E-RFA2
tester : Macy.shi Note:Transmitting
Setting : RBW:9kHz VBW:Auto SWT:Auto

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.336	21.40	42.15	10.63	10.12	59.31	-17.16	QP
2	0.697	17.70	38.45	10.60	10.15	56.00	-17.55	QP
3	0.817	18.19	39.00	10.69	10.12	56.00	-17.00	QP
4	0.938	16.81	37.67	10.76	10.10	56.00	-18.33	QP
5	1.210	16.20	37.11	10.77	10.14	56.00	-18.89	QP
6	1.345	16.10	37.01	10.76	10.15	56.00	-18.99	QP

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.318	7.14	27.90	10.65	10.11	49.75	-21.85	Average
2	0.339	12.47	33.22	10.63	10.12	49.22	-16.00	Average
3	0.481	4.98	25.62	10.51	10.13	46.32	-20.70	Average
4	0.743	6.05	26.82	10.63	10.14	46.00	-19.18	Average
5	0.880	5.27	26.10	10.73	10.10	46.00	-19.90	Average
6	1.236	4.38	25.29	10.77	10.14	46.00	-20.71	Average

§15.205, §15.209, §15.247(d) & RSS-GEN § 8.10 & RSS-247 § 5.5 SPURIOUS EMISSIONS

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

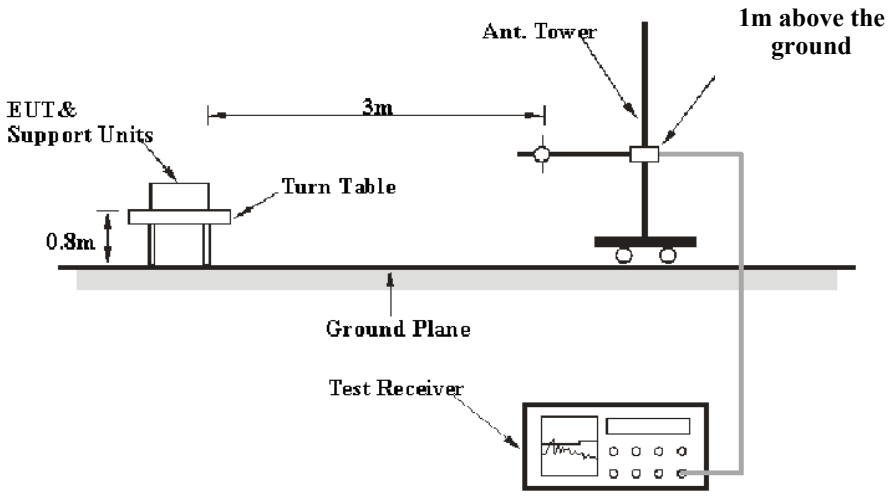
According to RSS-GEN § 8.10 & RSS-247 § 5.5

Restricted frequency bands, identified in table 7, are designated primarily for safety-of-life services (distress calling and certain aeronautical activities), certain satellite downlinks, radio astronomy and some government uses. Except where otherwise indicated, the following conditions related to the restricted frequency bands apply:(a) The transmit frequency, including fundamental components of modulation, of licence-exempt radio apparatus shall not fall within the restricted frequency bands listed in table 7 except for apparatus compliant with RSS-287, Emergency Position Indicating Radio Beacons (EPIRB), Emergency Locator Transmitters (ELT), Personal Locator Beacons (PLB), and Maritime Survivor Locator Devices (MSLD).(b) Unwanted emissions that fall into restricted frequency bands listed in table 7 shall comply with the limits specified in table 5 and table 6.(c) Unwanted emissions that do not fall within the restricted frequency bands listed in table 7 shall comply either with the limits specified in the applicable RSS or with those specified in table 5 and table 6.

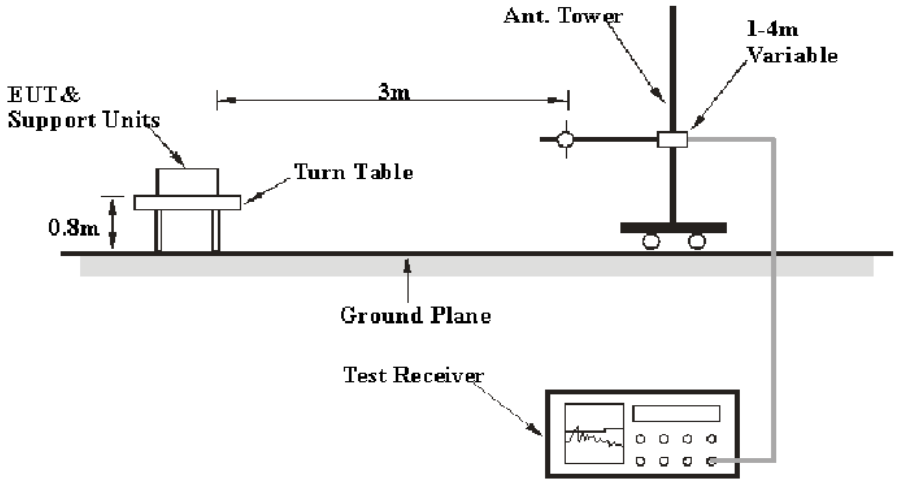
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates Compliant with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

EUT Setup

9 kHz-30MHz:



30MHz-1GHz:



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10-2013 & RSS-Gen. The specification used was the FCC 15.209, and FCC 15.247 & RSS-Gen limits.

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

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to1GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

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

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All final data was recorded in Quasi-peak detection mode except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz, average detection modes for frequency bands 9–90 kHz and 110–490 kHz.

For 9 kHz-30MHz, the report shall list the six emissions with the smallest margin relative to the limit, for each of the three antenna orientations (parallel, perpendicular, and ground-parallel) unless the margin is greater than 20 dB.

All emissions under the average limit and under the noise floor have not recorded in the report.

Factor & Over Limit/Margin 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

Environmental Conditions

Temperature:	23.4 ℃
Relative Humidity:	46 %
ATM Pressure:	101.3 kPa

The testing was performed by Jack Liu from 2025-01-08 to 2025-01-09 for below 1GHz.

EUT operation mode: Transmitting

Note: Pre-scan in the X, Y and Z axes of orientation, the worst case Z-axis of orientation was recorded.

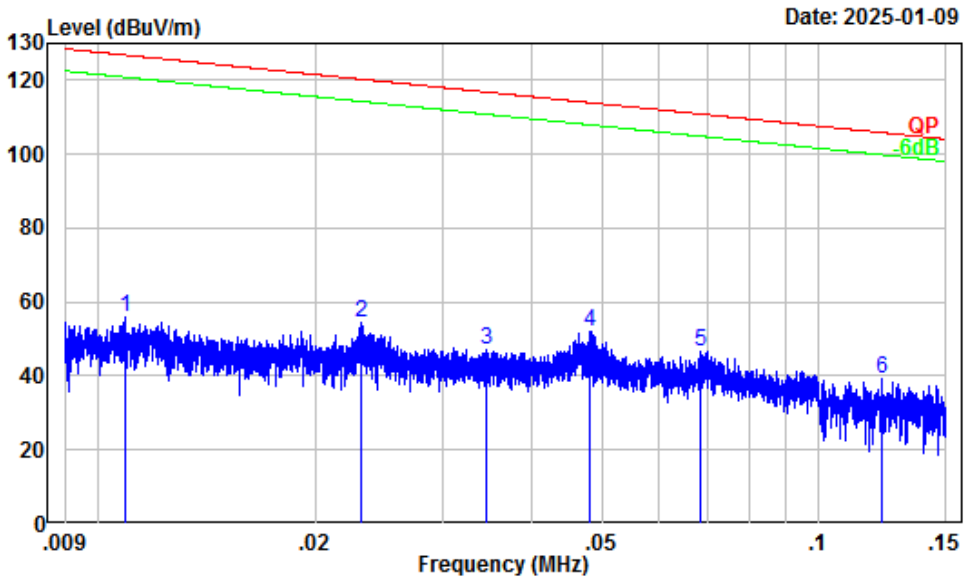
Note: for below 1GHz range, according to the test result of BT report, the adapter 2 was worst case, so the worst case adapter 2 was tested in this report.

The spurious emission from 9 kHz-30MHz of IC RSS-Gen standard, the unit of final result on the test plots are dBμV/m, so the limit should be added by 51,5 dB from dBμA/m to dBμV/m.

9 kHz-30MHz: *(Maximum output power mode 802.11b mode, High channel)*

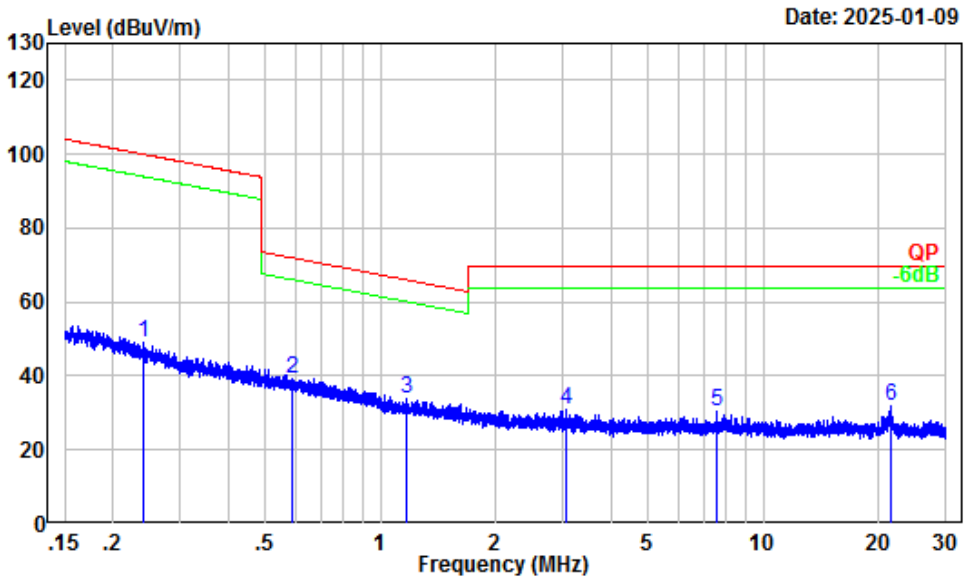
Note: When the test result of peak was less than the limit of QP/Average more than 6dB, just peak value were recorded.

Parallel (worst case)



Site : Chamber A
Condition : 3m
Project Number: 2401A110118E-RFA2
Test Mode : Tramsmitting
Setting PK RBW: 0.3KHz VBW:1KHz
Tester : Jack Liu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	32.13	23.81	55.94	126.86	-70.92	Peak
2	0.02	29.78	24.56	54.34	120.28	-65.94	Peak
3	0.03	28.01	18.90	46.91	116.81	-69.90	Peak
4	0.05	26.59	25.47	52.06	113.94	-61.88	Peak
5	0.07	24.54	21.97	46.51	110.87	-64.36	Peak
6	0.12	20.69	18.41	39.10	105.87	-66.77	Peak



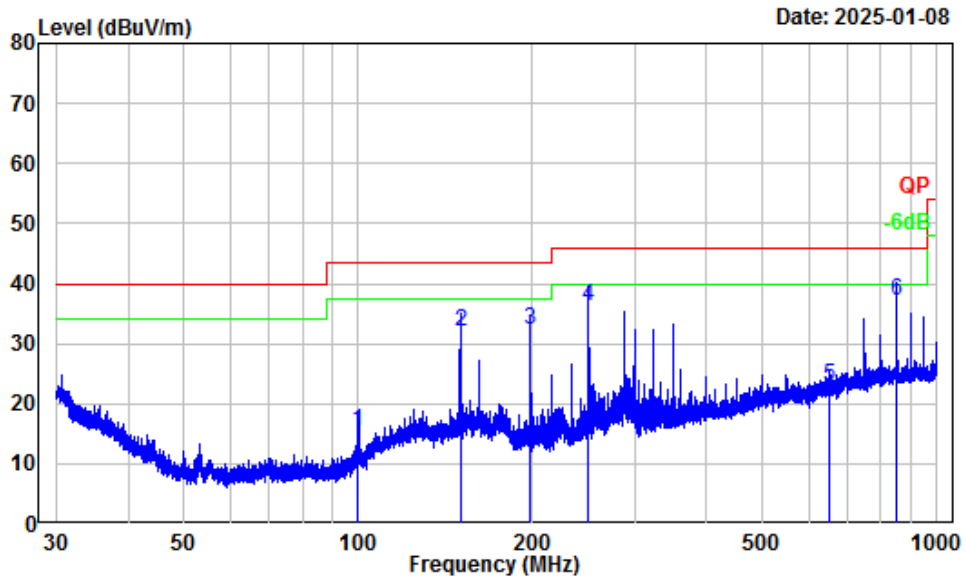
Site : Chamber A
Condition : 3m
Project Number: 2401A110118E-RFA2
Test Mode : Tramsmitting
Setting PK RBW: 10KHz VBW:30KHz
Tester : Jack Liu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.24	13.64	35.38	49.02	99.94	-50.92	Peak
2	0.59	5.29	33.98	39.27	72.16	-32.89	Peak
3	1.17	0.72	33.37	34.09	66.06	-31.97	Peak
4	3.06	-2.19	32.89	30.70	69.54	-38.84	Peak
5	7.58	-2.98	33.43	30.45	69.54	-39.09	Peak
6	21.51	-3.10	34.99	31.89	69.54	-37.65	Peak

30 MHz~1 GHz: *(Maximum output power mode 802.11b mode, High channel)*

Note: When the test result of Peak was more than 6dB below the limit of QP, just the Peak value was recorded.

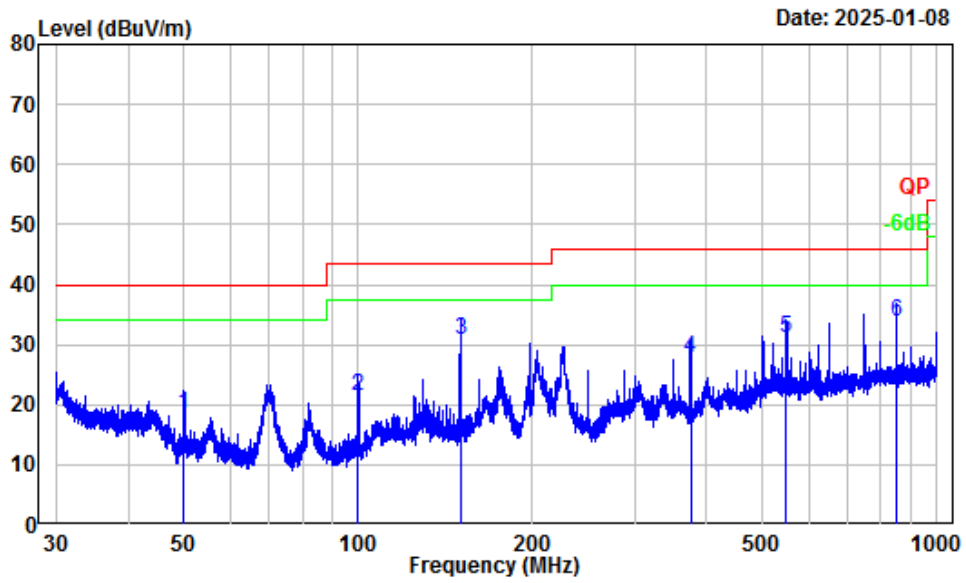
Horizontal



Site : Chamber A
Condition : 3m Horizontal
Project Number: 2401A110118E-RFA2
Test Mode : Tramsmitting
Setting QP RBW: 120KHz
Tester : Jack Liu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	100.01	-15.89	31.18	15.29	43.50	-28.21	QP
2	150.01	-12.46	44.34	31.88	43.50	-11.62	QP
3	197.98	-13.28	45.67	32.39	43.50	-11.11	QP
4	249.97	-13.09	49.46	36.37	46.00	-9.63	QP
5	650.23	-4.13	26.99	22.86	46.00	-23.14	QP
6	850.29	-1.72	38.77	37.05	46.00	-8.95	QP

Vertical



Site : Chamber A
Condition : 3m Vertical
Project Number: 2401A110118E-RFA2
Test Mode : Tramsmitting
Setting QP RBW: 120KHz
Tester : Jack Liu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	49.99	-17.92	36.38	18.46	40.00	-21.54	QP
2	100.01	-15.89	37.18	21.29	43.50	-22.21	QP
3	150.01	-12.46	43.38	30.92	43.50	-12.58	QP
4	375.12	-9.28	36.91	27.63	46.00	-18.37	QP
5	549.98	-5.43	36.60	31.17	46.00	-14.83	QP
6	850.29	-1.72	35.40	33.68	46.00	-12.32	QP

EUT PHOTOGRAPHS

Please refer to the attachment 2401A110118E-RFA2 External photo and 2401A110118E-RFA2 Internal photo.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2401A110118E-RFAA2 Test Setup photo.

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