

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-RFCA2
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▲
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▲ In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

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Wills Yu
RF Engineer

Approved By:

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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-RFCA2	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	Bluetooth: 2402-2480MHz
Maximum Conducted Peak Output Power	6.32dBm
Modulation Technique	Bluetooth: GFSK, $\pi/4$ -DQPSK, 8DPSK
Antenna Specification [#]	5.1dBi (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 test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commissions rules, section 15.203, 15.205, 15.207, 15.209, 15.247 rules and RSS-247 Issue 3, August 2023, RSS-GEN Issue 5, Feb. 2021 Amendment 2 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” 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-RFC.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices and RSS-247 Issue 3, August 2023, RSS-GEN Issue 5, Feb. 2021 Amendment 2 of the Innovation, Science and Economic Development Canada rules.

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 output power, conducted		0.86dB(k=2, 95% level of confidence)
AC Power Lines Conducted Emissions	9kHz-150kHz	3.63dB(k=2, 95% level of confidence)
	150kHz-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°C
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

The system was configured for testing in an engineering mode.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	40	2442
1	2403	41	2443
2	2404	42	2444
...
...
36	2438	75	2477
37	2439	76	2478
38	2440	77	2479
39	2441	78	2480

EUT was tested with Channel 0, 39 and 78.

EUT Exercise Software

EUT was test in engineering mode and the power level is default[#]. The power level was provided by the applicant.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

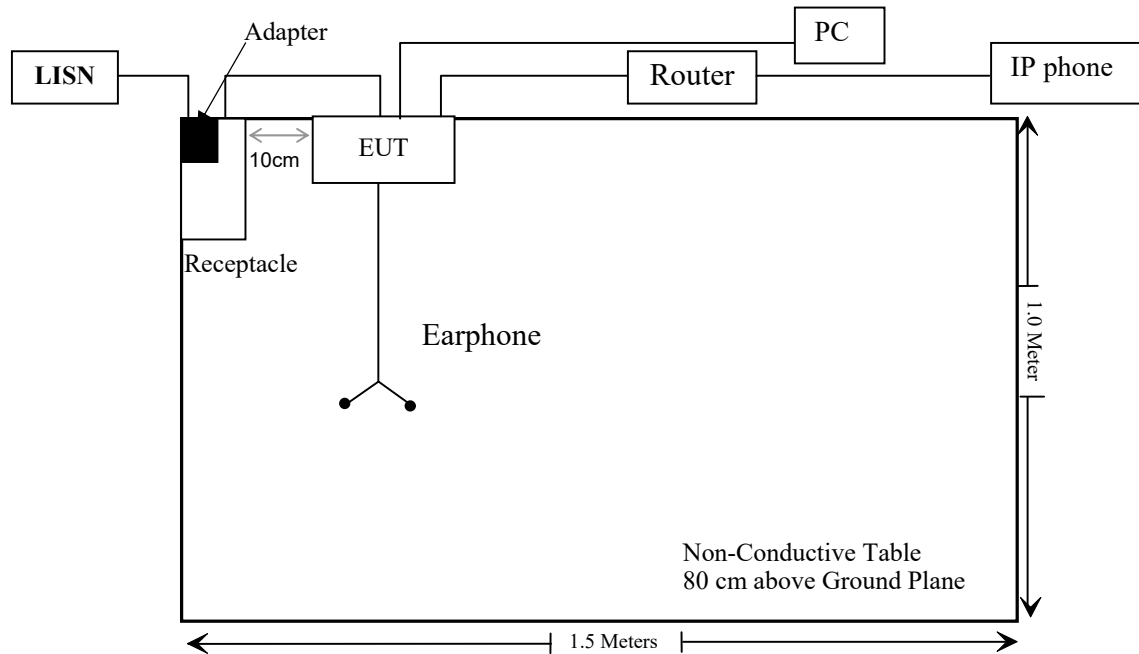
Manufacturer	Description	Model	Serial Number
BULL	Receptacle	GN-415K	5503290068073
Grandstream	IP Phone	GXV3480	T11223323B898
N/A	Earphone	N/A	N/A
HIKVISION	Router	DS-3WR03	10021642429
Lenovo	PC	TIANYI510Pro-18ICB	R3NO28B21001
GOSPEL	PoE	G0720-480-050	200200019

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
Unshielded Detachable AC cable	0.5	PoE	Receptacle
Unshielded Detachable RJ45 cable	1.0	PoE	EUT

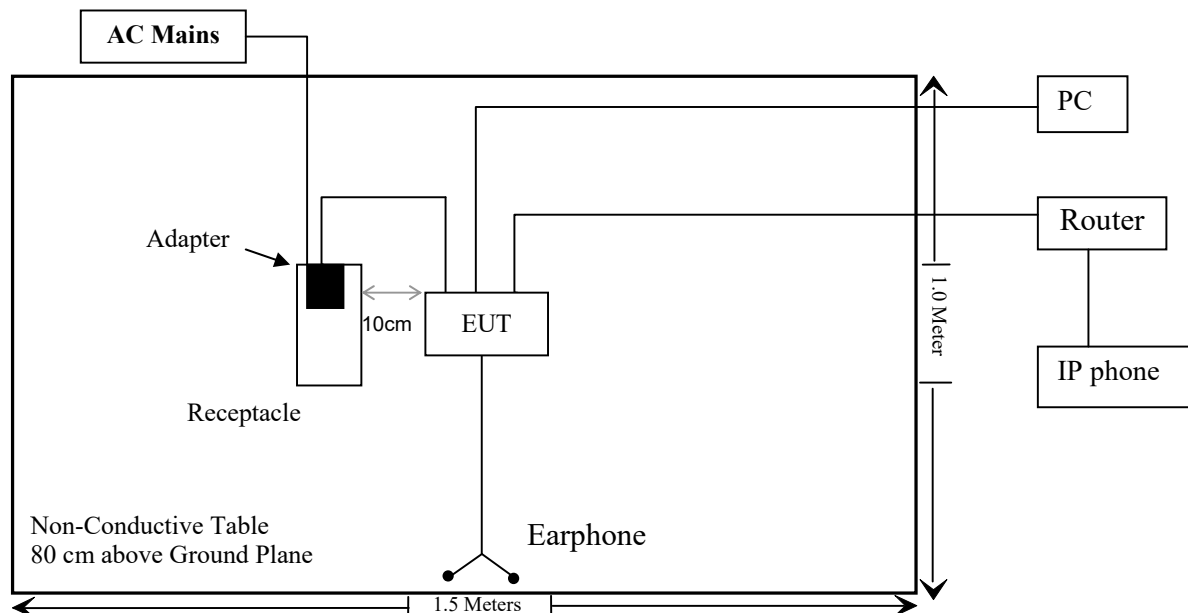
Block Diagram of Test Setup

For Conducted Emissions:

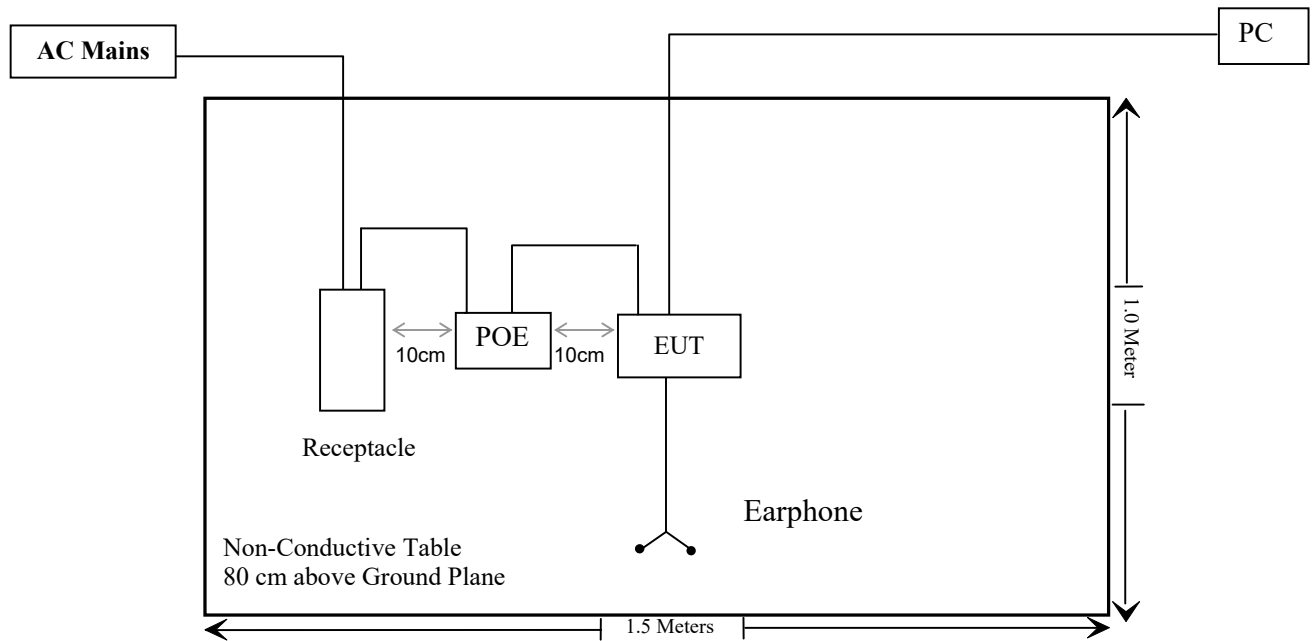


For Radiated Emissions (Below 1GHz):

Adapter



POE



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
FCC §15.203	RSS-Gen §6.8	Antenna Requirement	Compliant
FCC §15.207(a)	RSS-Gen §8.8	AC Line Conducted Emissions	Compliant
FCC §15.205, §15.209, §15.247(d)	RSS-247 § 5.5, RSS-GEN § 8.10	Radiated Emissions	Compliant**
FCC §15.247(a)(1)	RSS-247 § 5.1(a), RSS-GEN § 6.7	20 dB Emission Bandwidth & 99% Occupied Bandwidth	Compliant*
FCC §15.247(a)(1)	RSS-247 § 5.1 (b)	Channel Separation Test	Compliant*
FCC §15.247(a)(1)(iii)	RSS-247 § 5.1 (d)	Time of Occupancy (Dwell Time)	Compliant*
FCC §15.247(a)(1)(iii)	RSS-247 § 5.1 (d)	Quantity of hopping channel Test	Compliant*
FCC §15.247(b)(1)	RSS-247 § 5.1(b) & § 5.4(b)	Peak Output Power Measurement	Compliant*
FCC §15.247(d)	RSS-247 § 5.5	Band edges	Compliant*

*: The test data please refer to the report 2401U79863E-RFC.

**: Please refer to the report 2401U79863E-RFC 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 exemption from 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 $4.49/f^{0.5}$ 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 $1.31 \times 10^{-2} f^{0.6834}$ 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.

FCC §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.

Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

The structure and application of the EUT were analyzed to determine compliance 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 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 Connector Construction

The EUT has one internal antenna arrangement which was permanently attached for Bluetooth and the maximum antenna gain[#] is 5.1dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Antenna Type	Antenna Gain [#]	Impedance	Frequency Range
Integral	5.1dBi	50Ω	2.4~2.5GHz

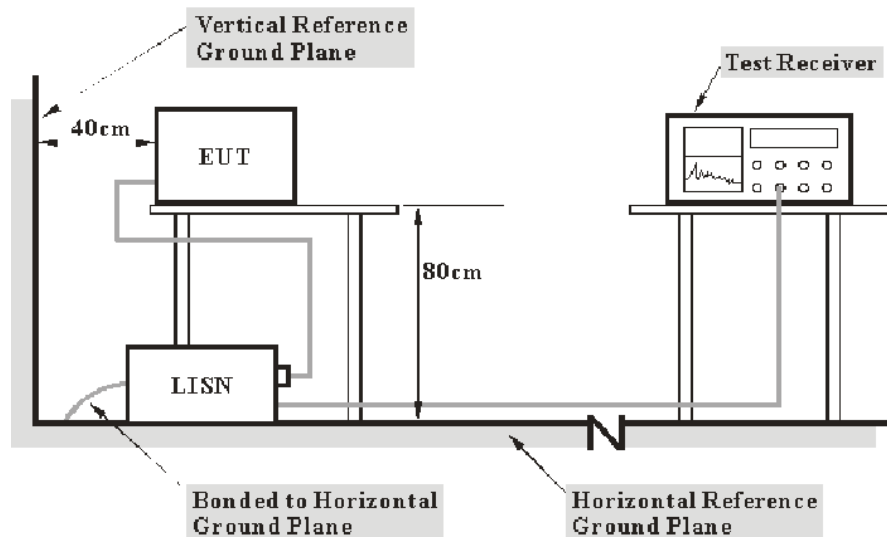
Result: Compliant

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

Applicable Standard

FCC §15.207(a), 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 measurement procedure of EUT setup is according with ANSI C63.10-2013. The related limit was specified in FCC Part 15.207 & RSS-Gen.

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 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:

$$\text{Factor} = \text{LISN VDF} + \text{Cable Loss}$$

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:

$$\begin{aligned}\text{Over Limit} &= \text{Level} - \text{Limit} \\ \text{Level} &= \text{Read Level} + \text{Factor}\end{aligned}$$

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

Test Data

Environmental Conditions

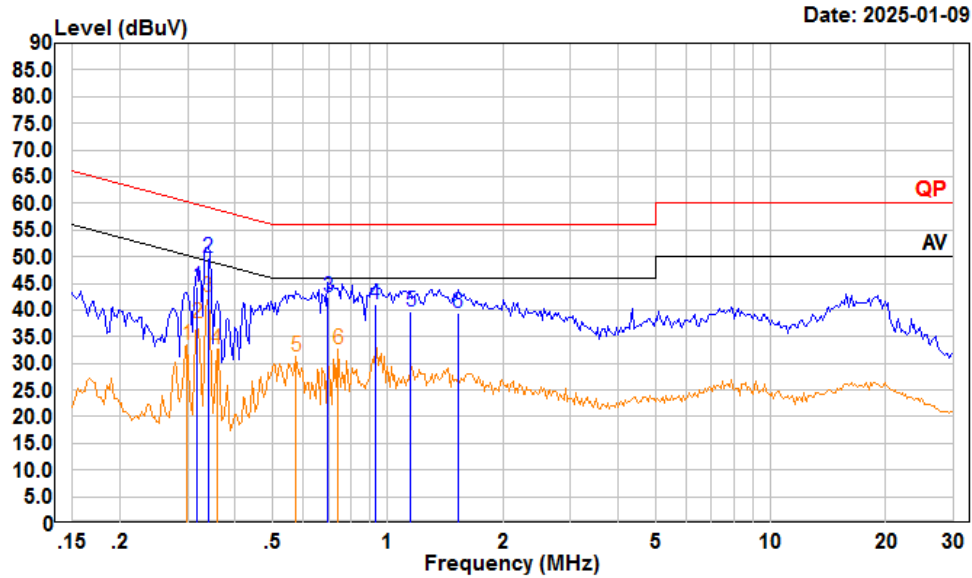
Temperature:	24°C
Relative Humidity:	50 %
ATM Pressure:	101 kPa

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

EUT operation mode: Transmitting (maximum output power mode 8DPSK, Low 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

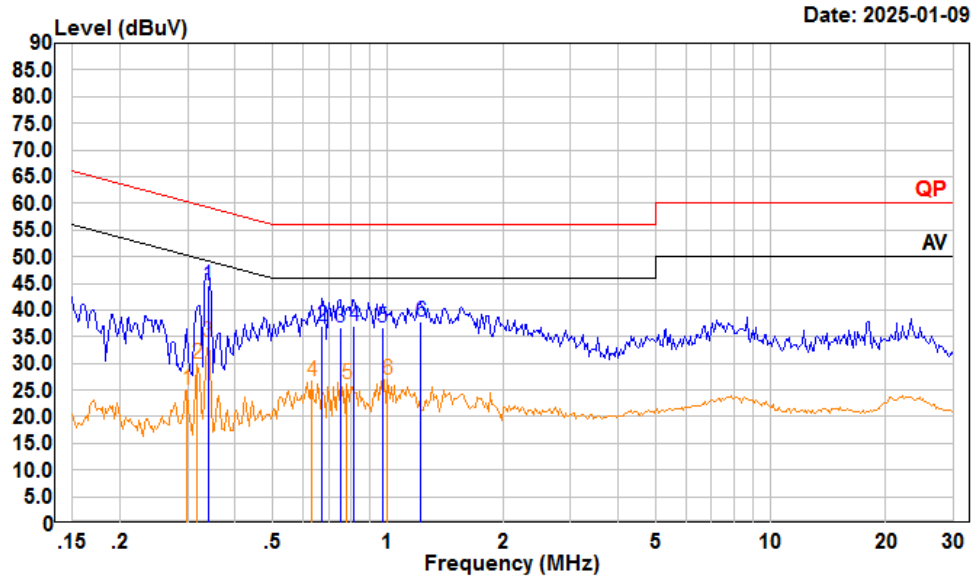
Project : 2401A110118E-RFA2

tester : Macy.shi Note:Transmitting

Setting : RBW:9kHz VBW:Auto SWT:Auto

	Freq	Read Level	Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.318	23.70	44.41	10.60	10.11	59.75	-15.34	QP
2	0.339	29.00	49.70	10.58	10.12	59.22	-9.52	QP
3	0.697	21.29	42.34	10.90	10.15	56.00	-13.66	QP
4	0.928	20.41	41.17	10.66	10.10	56.00	-14.83	QP
5	1.147	18.90	39.73	10.70	10.13	56.00	-16.27	QP
6	1.527	18.50	39.57	10.91	10.16	56.00	-16.43	QP
	Freq	Read Level	Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.299	12.70	33.42	10.61	10.11	50.28	-16.86	Average
2	0.318	16.93	37.64	10.60	10.11	49.75	-12.11	Average
3	0.339	21.75	42.45	10.58	10.12	49.22	-6.77	Average
4	0.358	12.08	32.77	10.57	10.12	48.78	-16.01	Average
5	0.576	10.47	31.26	10.67	10.12	46.00	-14.74	Average
6	0.743	11.59	32.58	10.85	10.14	46.00	-13.42	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	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.339	23.79	44.54	10.63	10.12	59.22	-14.68	QP
2	0.675	16.30	37.03	10.59	10.14	56.00	-18.97	QP
3	0.751	16.00	36.77	10.64	10.13	56.00	-19.23	QP
4	0.817	16.09	36.90	10.69	10.12	56.00	-19.10	QP
5	0.968	15.80	36.69	10.78	10.11	56.00	-19.31	QP
6	1.223	16.90	37.81	10.77	10.14	56.00	-18.19	QP

	Freq	Read Level	LISN Level	LISN Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.299	4.37	25.15	10.67	10.11	50.28	-25.13	Average
2	0.318	9.08	29.84	10.65	10.11	49.75	-19.91	Average
3	0.339	13.19	33.94	10.63	10.12	49.22	-15.28	Average
4	0.634	5.91	26.61	10.57	10.13	46.00	-19.39	Average
5	0.783	5.41	26.19	10.66	10.12	46.00	-19.81	Average
6	1.000	6.01	26.92	10.80	10.11	46.00	-19.08	Average

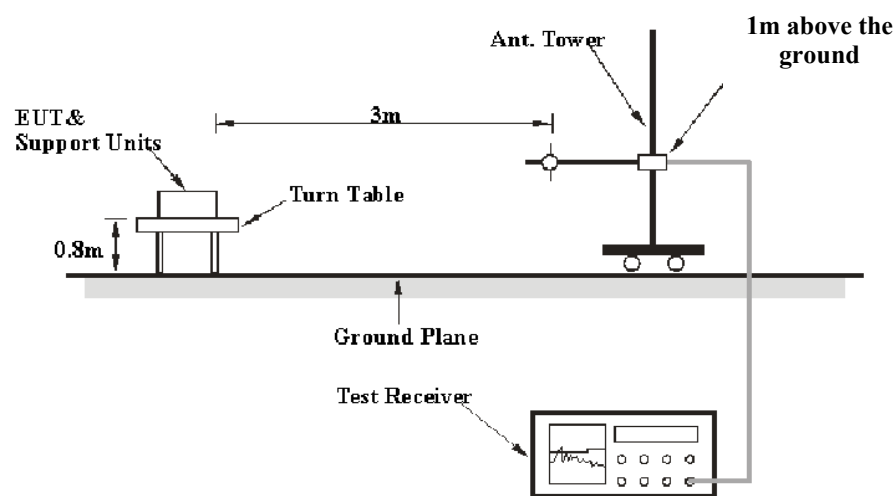
FCC §15.209, §15.205 & §15.247(D) & RSS-247§ 5.5 - SPURIOUS EMISSIONS

Applicable Standard

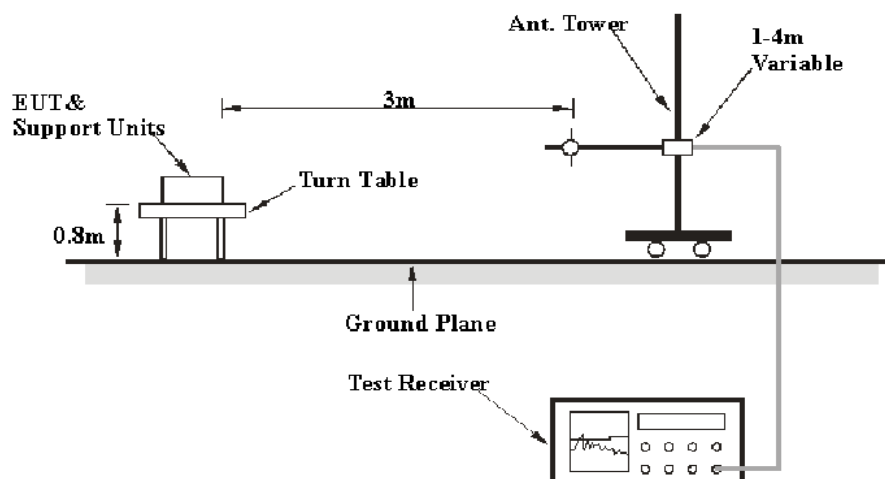
FCC §15.205; §15.209; §15.247(d); RSS-247§ 5.5; RSS-GEN § 8.10

EUT Setup

9 kHz-30MHz:



30MHz-1GHz:



The radiated emission performed in the 3 meters, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, FCC 15.247, RSS-247, RSS-Gen limits.

EMI Test Receiver & Spectrum Analyzer Setup

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

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.

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.

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:

$$\text{Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

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:

$$\begin{aligned} \text{Over Limit/Margin} &= \text{Level} / \text{Corrected Amplitude} - \text{Limit} \\ \text{Level} / \text{Corrected Amplitude} &= \text{Read Level} + \text{Factor} \end{aligned}$$

Test Data**Environmental Conditions**

Temperature:	23.4°C
Relative Humidity:	46 %
ATM Pressure:	101.3 kPa

The testing was performed by Jack Liu from 2025-01-08 to 2025-01-20 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.

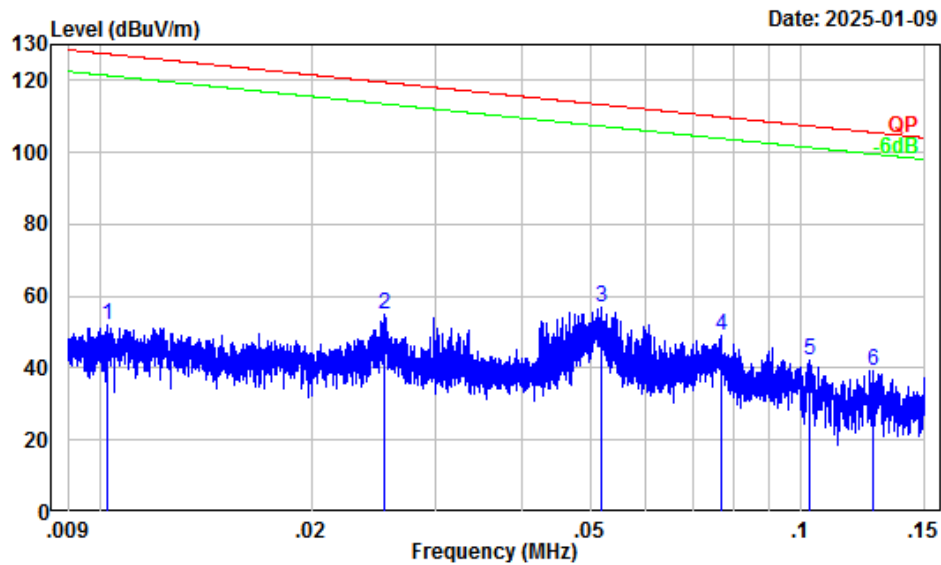
The spurious emission from 9 kHz-30MHz of IC RSS-Gen standard, the unit of final result on the test plots are dBμV/m, so the limit should be added by 51,5 dB from dBμA/m to dBμV/m.

9 kHz-30MHz: (Maximum output power mode 8DPSK, Low Channel)

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

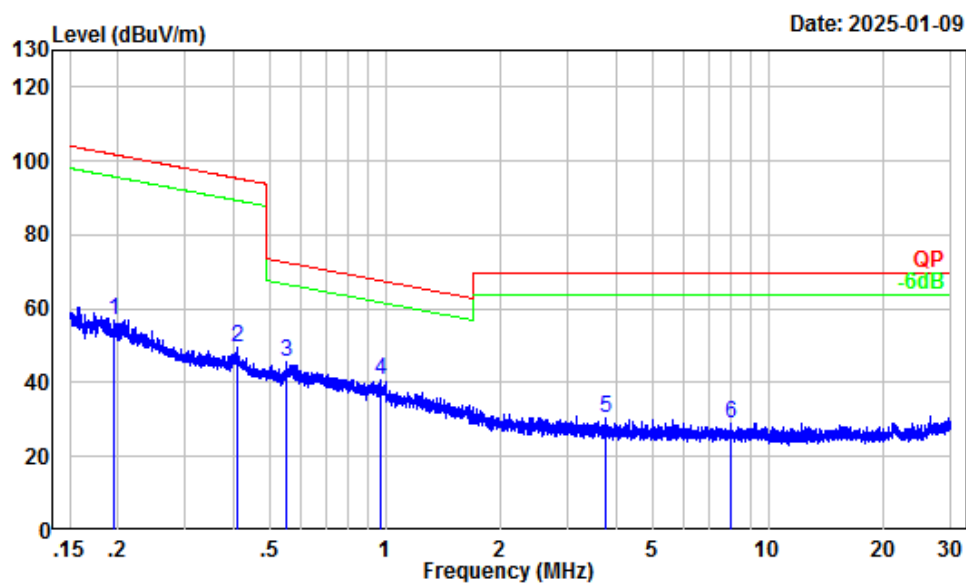
For Adapter1

Parallel (worst case)



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

	Freq Factor		Read Level		Limit	Over	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.01	32.26	19.57	51.83	127.41	-75.58	Peak
2	0.03	29.35	25.73	55.08	119.47	-64.39	Peak
3	0.05	26.23	30.55	56.78	113.33	-56.55	Peak
4	0.08	23.71	25.26	48.97	109.89	-60.92	Peak
5	0.10	21.82	20.30	42.12	107.35	-65.23	Peak
6	0.13	20.45	18.78	39.23	105.57	-66.34	Peak

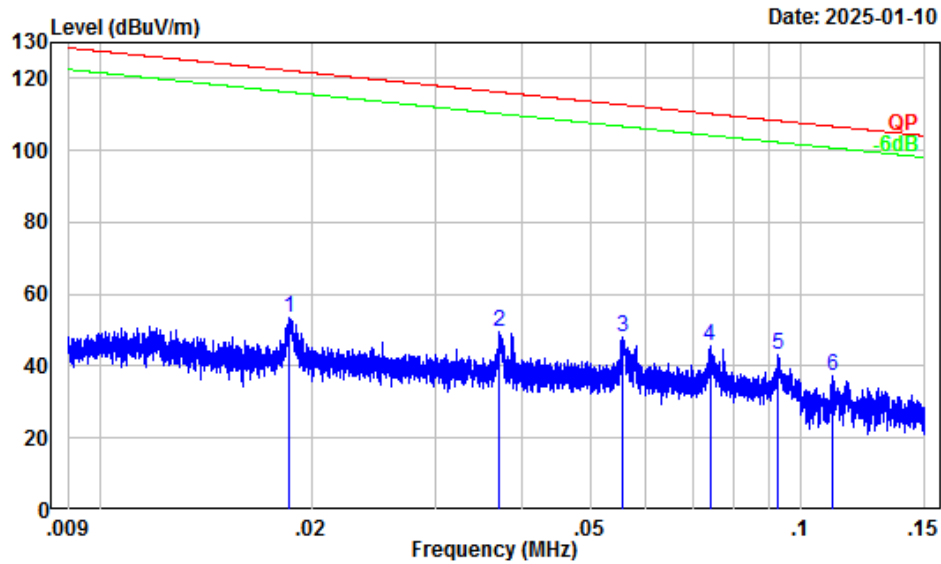


Site : Chamber A
 Condition : 3m
 Project Number: 2401A110118E-RFA2
 Test Mode : Transmitting
 Setting PK RBW: 10KHz VBW:30KHz
 Tester : Jack Liu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.20	16.31	40.61	56.92	101.74	-44.82	Peak
2	0.41	8.13	41.27	49.40	95.37	-45.97	Peak
3	0.55	5.78	39.84	45.62	72.77	-27.15	Peak
4	0.97	1.44	39.37	40.81	67.76	-26.95	Peak
5	3.77	-2.57	32.82	30.25	69.54	-39.29	Peak
6	8.01	-3.00	31.96	28.96	69.54	-40.58	Peak

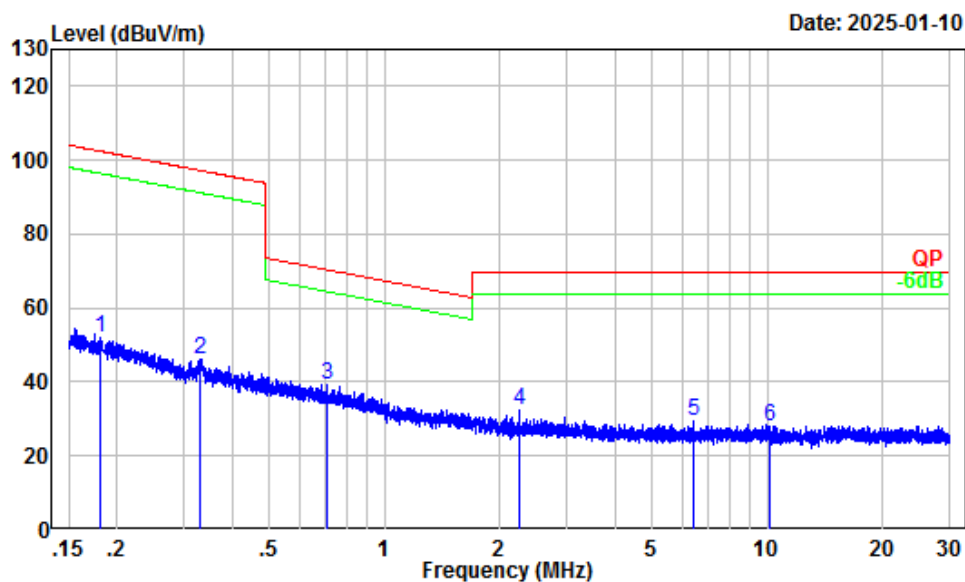
For Adapter2

Parallel (worst case)



Site : Chamber A
 Condition : 3m
 Project Number: 2401A110118E-RFA2
 Test Mode : Transmitting
 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	0.02	30.67	22.71	53.38	122.24	-68.86	Peak
2	0.04	27.76	21.81	49.57	116.23	-66.66	Peak
3	0.06	25.83	22.16	47.99	112.69	-64.70	Peak
4	0.07	23.99	21.66	45.65	110.21	-64.56	Peak
5	0.09	22.50	20.88	43.38	108.25	-64.87	Peak
6	0.11	21.35	15.75	37.10	106.69	-69.59	Peak

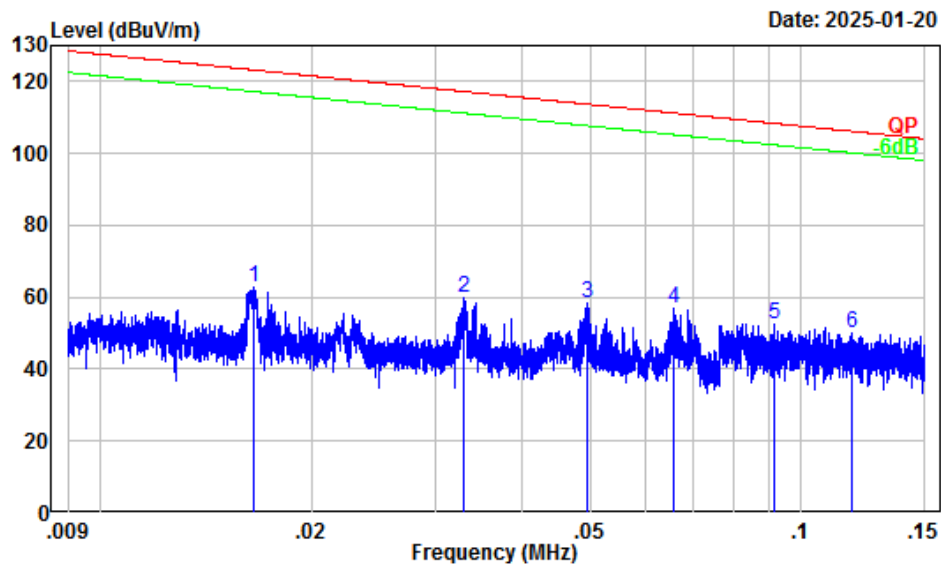


Site : Chamber A
 Condition : 3m
 Project Number: 2401A110118E-RFA2
 Test Mode : Transmitting
 Setting PK RBW: 10KHz VBW:30KHz
 Tester : Jack Liu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.18	17.26	34.85	52.11	102.48	-50.37	Peak
2	0.33	9.62	36.56	46.18	97.21	-51.03	Peak
3	0.71	3.82	35.25	39.07	70.52	-31.45	Peak
4	2.25	-1.74	34.26	32.52	69.54	-37.02	Peak
5	6.41	-2.92	32.16	29.24	69.54	-40.30	Peak
6	10.17	-2.80	30.98	28.18	69.54	-41.36	Peak

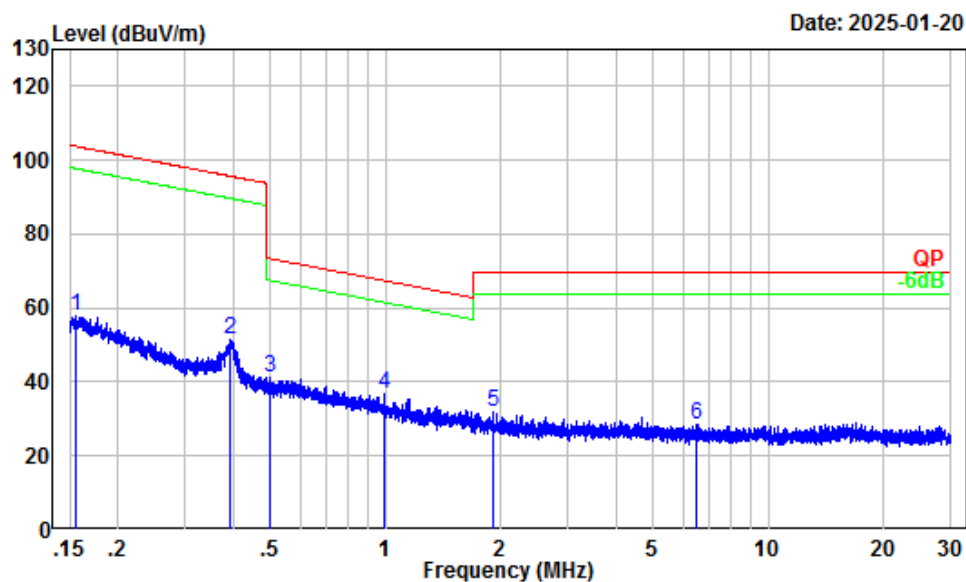
For POE

Parallel (worst case)



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

	Freq Factor		Read	Limit	Over	Remark
	MHz	dB/m	Level	Level	Line	
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1	0.02	31.05	31.62	62.67	123.21	-60.54 Peak
2	0.03	28.18	31.49	59.67	117.22	-57.55 Peak
3	0.05	26.44	31.97	58.41	113.70	-55.29 Peak
4	0.07	24.81	32.04	56.85	111.22	-54.37 Peak
5	0.09	22.61	29.64	52.25	108.39	-56.14 Peak
6	0.12	20.95	29.31	50.26	106.18	-55.92 Peak



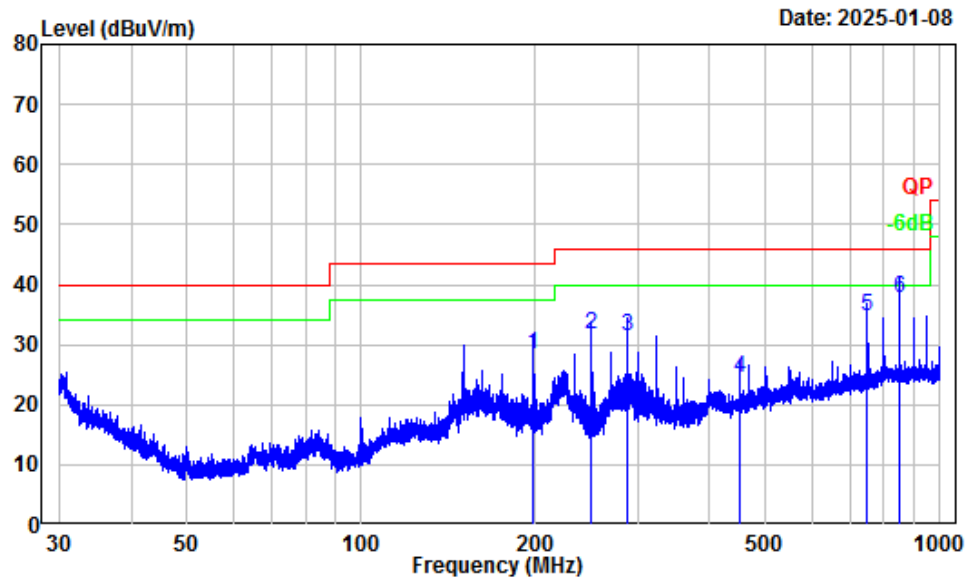
Site : Chamber A
 Condition : 3m
 Project Number : 2401A110118E-RFA2
 Test Mode : Transmitting
 Setting PEAK RBW: 10KHz VBW:30KHz
 Tester : Jack Liu

	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	0.16	18.73	39.04	57.77	103.77	-46.00	Peak
2	0.40	8.39	43.03	51.42	95.67	-44.25	Peak
3	0.50	6.41	34.95	41.36	73.63	-32.27	Peak
4	0.99	1.28	35.66	36.94	67.57	-30.63	Peak
5	1.91	-1.36	33.20	31.84	69.54	-37.70	Peak
6	6.52	-2.93	31.36	28.43	69.54	-41.11	Peak

30MHz-1GHz: (Maximum output power mode 8DPSK, Low Channel)

For Adapter1

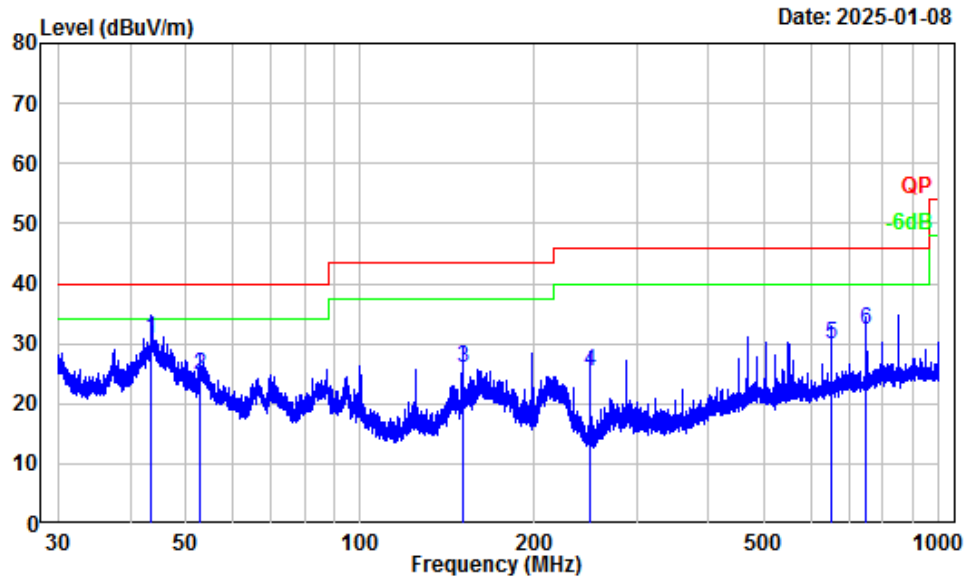
Horizontal



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

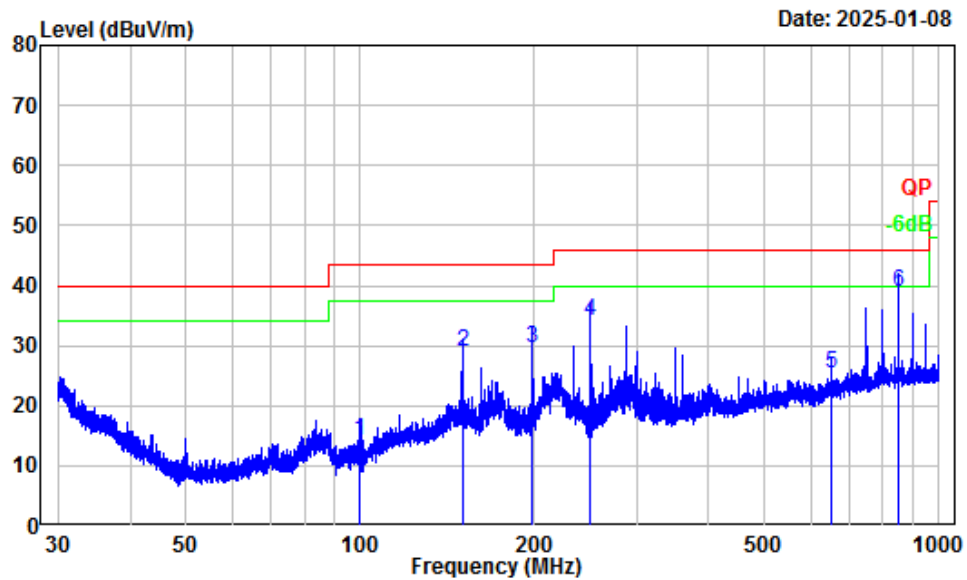
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	197.98	-13.28	41.66	28.38	43.50	-15.12	QP
2	249.97	-13.09	44.75	31.66	46.00	-14.34	QP
3	287.99	-11.22	42.55	31.33	46.00	-14.67	QP
4	450.15	-7.53	32.11	24.58	46.00	-21.42	QP
5	750.11	-2.88	37.70	34.82	46.00	-11.18	QP
6	850.29	-1.72	39.58	37.86	46.00	-8.14	QP

Vertical



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

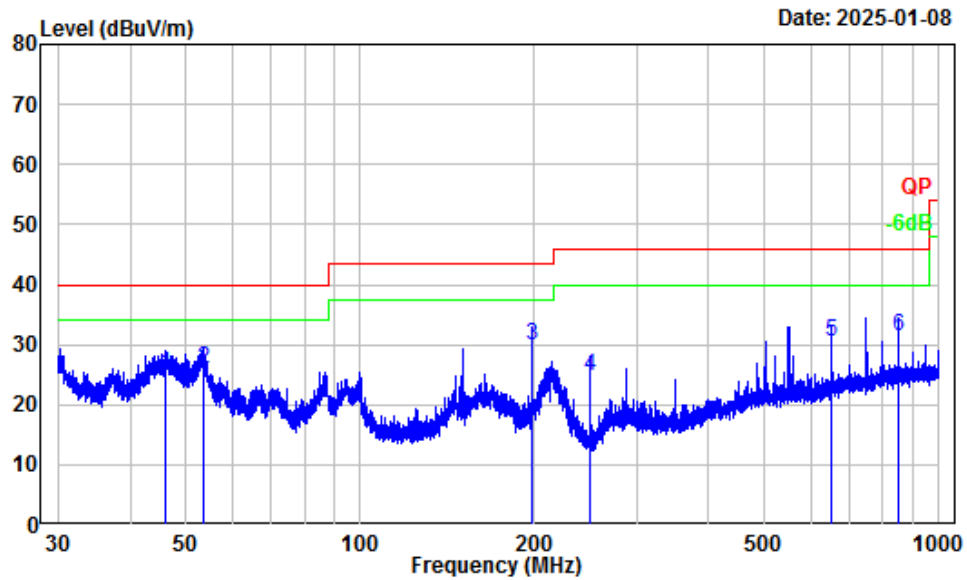
	Freq Factor		Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	43.58	-14.92	45.63	30.71	40.00	-9.29	QP
2	52.76	-18.29	42.92	24.63	40.00	-15.37	QP
3	150.01	-12.46	38.49	26.03	43.50	-17.47	QP
4	249.97	-13.09	38.56	25.47	46.00	-20.53	QP
5	650.23	-4.13	34.16	30.03	46.00	-15.97	QP
6	750.11	-2.88	35.26	32.38	46.00	-13.62	QP

*For Adapter2***Horizontal**

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

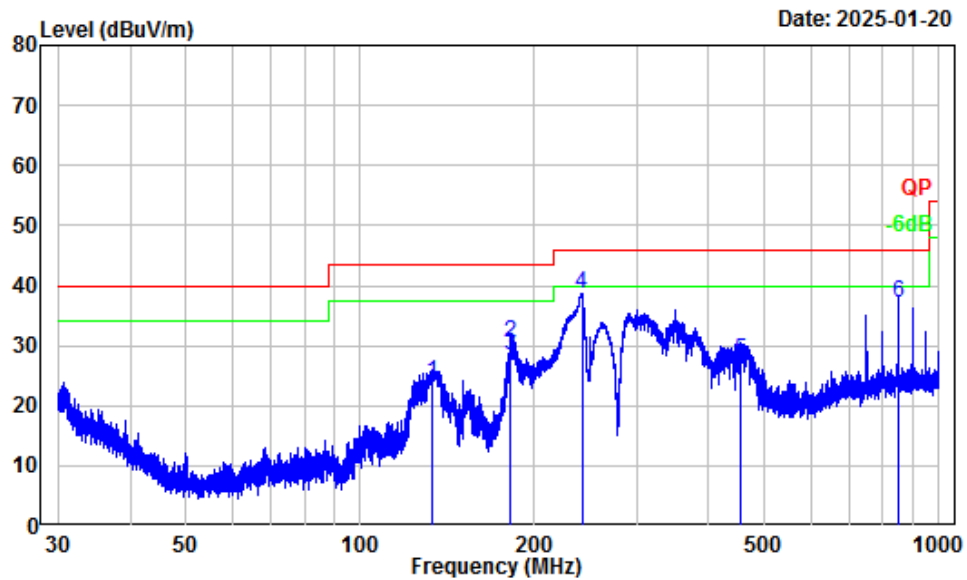
	Freq	Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	100.01	-15.89	30.08	14.19	43.50	-29.31	QP
2	150.01	-12.46	41.49	29.03	43.50	-14.47	QP
3	197.98	-13.28	42.91	29.63	43.50	-13.87	QP
4	249.97	-13.09	47.10	34.01	46.00	-11.99	QP
5	650.23	-4.13	29.36	25.23	46.00	-20.77	QP
6	850.29	-1.72	40.74	39.02	46.00	-6.98	QP

Vertical



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

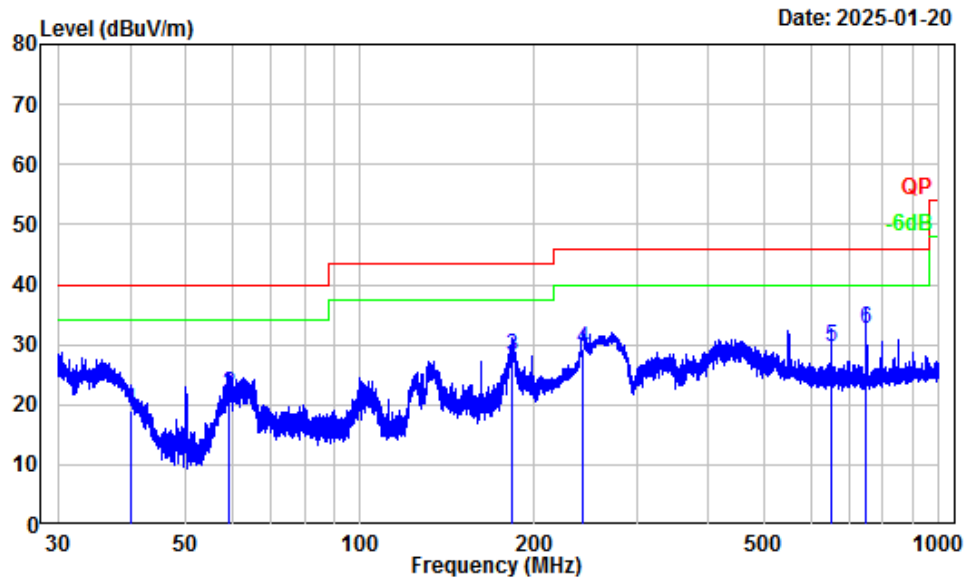
	Freq Factor		Read Level		Limit	Over	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB	
1	45.90	-16.40	41.47	25.07	40.00	-14.93	QP
2	53.53	-18.32	44.20	25.88	40.00	-14.12	QP
3	197.98	-13.28	43.10	29.82	43.50	-13.68	QP
4	249.97	-13.09	37.99	24.90	46.00	-21.10	QP
5	650.23	-4.13	34.49	30.36	46.00	-15.64	QP
6	850.29	-1.72	33.14	31.42	46.00	-14.58	QP

*For POE***Horizontal**

Site : Chamber A
Condition : 3m Horizontal
Project Number: 2401A110118E-RFA2
Test Mode : Transmitting
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	133.27	-11.40	35.31	23.91	43.50	-19.59	QP
2	181.28	-13.74	44.10	30.36	43.50	-13.14	QP
3	181.28	-13.74	41.97	28.23	43.50	-15.27	QP
4	241.46	-13.29	52.00	38.71	46.00	-7.29	QP
5	453.71	-7.34	34.91	27.57	46.00	-18.43	QP
6	850.29	-1.72	39.00	37.28	46.00	-8.72	QP

Vertical



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

	Freq Factor		Read Level	Limit Level	Over Limit	Remark
	MHz	dB/m	dBuV	dBuV/m	dBuV/m	dB
1	40.06	-12.42	31.50	19.08	40.00	-20.92 QP
2	59.41	-18.18	39.93	21.75	40.00	-18.25 QP
3	183.36	-13.91	41.87	27.96	43.50	-15.54 QP
4	242.42	-13.26	42.41	29.15	46.00	-16.85 QP
5	650.23	-4.13	33.84	29.71	46.00	-16.29 QP
6	750.11	-2.88	35.61	32.73	46.00	-13.27 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-RFBA2 Test Setup photo.

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