

TEST REPORT

Applicant: RADIOSHACK WORLDWIDE CORP.

Address: Building AFRA, Ave. Samuel Lewis and street 54, Panama City,
Panama 5, Republic of Panama

Product Name: USB Dongle

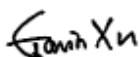
FCC ID: 2BDUR-2604811U

Standard(s): 47 CFR Part 15, Subpart C(15.249)
ANSI C63.10-2013

Report Number: DG1231220-77066E-RF-00

Report Date: 2024/3/1

The above device has been tested and found compliant with the requirement of the relative standards by Bay Area Compliance Laboratories Corp. (Dongguan).



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CONTENTS

DOCUMENT REVISION HISTORY	4
1. GENERAL INFORMATION	5
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	5
1.2 ACCESSORY INFORMATION.....	5
1.3 ANTENNA INFORMATION DETAIL▲:	5
1.4 EQUIPMENT MODIFICATIONS	5
2. DESCRIPTION OF TEST CONFIGURATION	6
2.1 OPERATION FREQUENCY DETAIL.....	6
2.2 EUT OPERATION CONDITION.....	6
2.3 EUT EXERCISE SOFTWARE.....	6
2.4 SUPPORT EQUIPMENT LIST AND DETAILS	6
2.5 SUPPORT CABLE LIST AND DETAILS	6
2.6 BLOCK DIAGRAM OF TEST SETUP	7
2.7 TEST FACILITY.....	8
2.8 MEASUREMENT UNCERTAINTY	8
3. SUMMARY OF TEST RESULTS	9
4. REQUIREMENTS AND TEST PROCEDURES	10
4.1 AC LINE CONDUCTED EMISSIONS.....	10
4.1.1 Applicable Standard.....	10
4.1.2 EUT Setup.....	11
4.1.3 EMI Test Receiver Setup	11
4.1.4 Test Procedure	12
4.1.5 Corrected Amplitude & Margin Calculation.....	12
4.1.6 Test Result	12
4.2 RADIATED EMISSIONS	13
4.2.1 Applicable Standard.....	13
4.2.2 EUT Setup.....	13
4.2.3 EMI Test Receiver & Spectrum Analyzer Setup	15
4.2.4 Test Procedure	15
4.2.5 Corrected Amplitude & Margin Calculation.....	15
4.2.6 Test Result	15
4.3 20 dB EMISSION BANDWIDTH	16
4.3.1 Applicable Standard.....	16
4.3.2 EUT Setup.....	16
4.3.3 Test Procedure	16
4.3.4 Test Result	17
4.4 ANTENNA REQUIREMENT.....	18
4.4.1 Applicable Standard.....	18
4.4.2 Judgment.....	18

5. Test DATA AND RESULTS.....	19
5.1 AC LINE CONDUCTED EMISSIONS.....	19
5.2 RADIATION SPURIOUS EMISSIONS.....	22
5.3 20 dB EMISSION BANDWIDTH:	33
APPENDIX A - EUT PHOTOGRAPHS	35
APPENDIX B - TEST SETUP PHOTOGRAPHS.....	36
APPENDIX C - RF EXPOSURE EVALUATION	37
APPLICABLE STANDARD.....	37
MEASUREMENT RESULT	37

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	DG1231220-77066E-RF-00	Original Report	2024/3/1

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	USB Dongle
EUT Model:	2604811
Operation Frequency:	2402-2480 MHz
Modulation Type:	GFSK
Rated Input Voltage:	DC 5V from USB Host
Serial Number:	2FJY-1
EUT Received Date:	2023/12/20
EUT Received Status:	Good

1.2 Accessory Information

Accessory Description	Manufacturer	Model	Parameters
/	/	/	/

1.3 Antenna Information Detail▲:

Antenna Manufacturer	Antenna Type	input impedance (Ohm)	Frequency Range	Antenna Gain
Shenzh Boychuang Technology Co.,LTD	PCB	50	2.4~2.5GHz	-5.92 dBi
The design of compliance with §15.203:				
☒ Unit uses a permanently attached antenna.				
☐ Unit uses a unique coupling to the intentional radiator.				
☐ Unit was professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.				

1.4 Equipment Modifications

No modifications are made to the EUT during all test items.

2. DESCRIPTION OF TEST CONFIGURATION

2.1 Operation Frequency Detail

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2402	21	2442
2	2404	22	2444
...	...	...	...
19	2438	39	2478
20	2440	40	2480

2.2 EUT Operation Condition

The system was configured for testing in Engineering Mode, which was provided by the manufacturer. The following summary table is showing all test modes to demonstrate in compliance with the standard:

Test Items	Test Modes
Radiated Emission	Mode 1: Transmitting
AC Line Conducted Emission	Test was performed at the channel with maximum output power (High Channel)
Note: Mode 1 was tested with the frequencies in bold in section 2.1.	

2.3 EUT Exercise Software

EUT Exercise Software:	Simitek FCC V6.5.1		
The software was provided by manufacturer. The maximum power was configured as below, that was provided by the manufacturer▲:			
Test Modes	Power Level Setting		
	Low Channel	Middle Channel	High Channel
GFSK	Default	Default	Default

2.4 Support Equipment List and Details

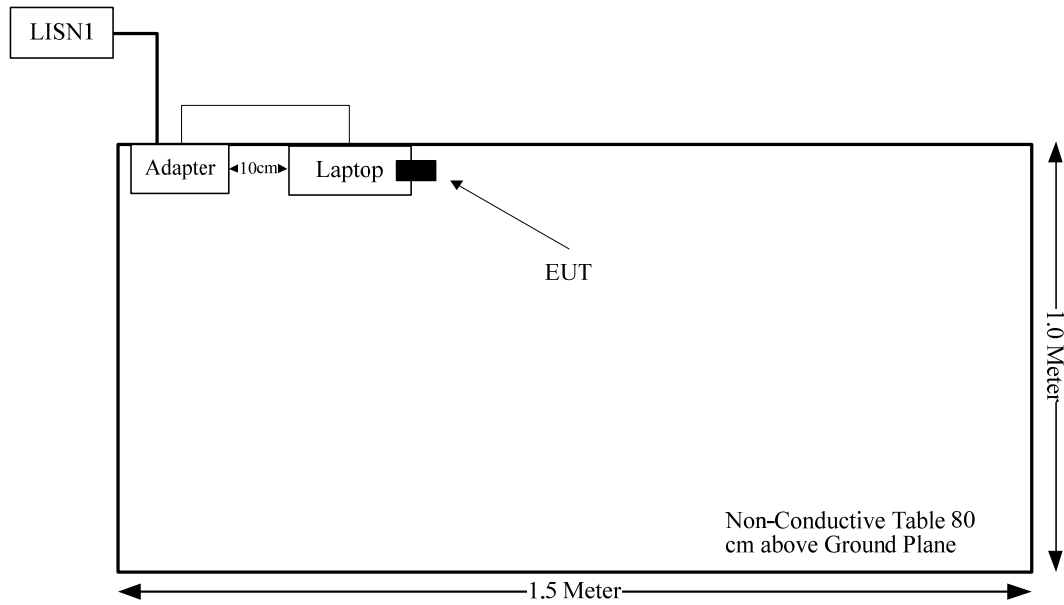
Manufacturer	Description	Model	Serial Number
DELL	Laptop	E6410	GMLGPM1
DELL	Adapter	HA65NM130	CN-OFPC2Y-CH200-14M-061U-A07

2.5 Support Cable List and Details

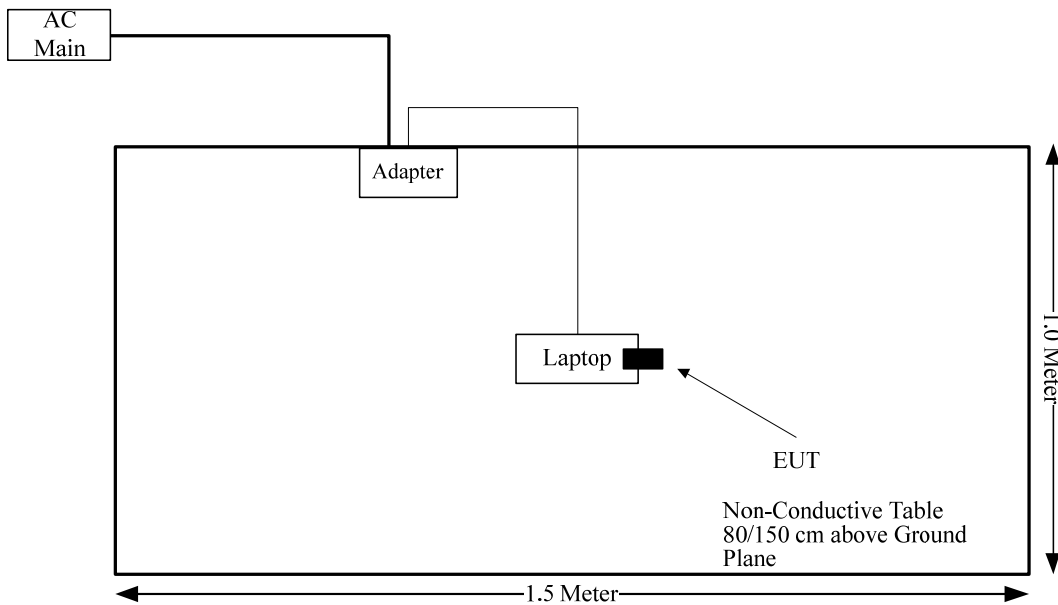
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
DC Cable	No	No	1.5	Adapter	Laptop

2.6 Block Diagram of Test Setup

AC Power Lines Conducted Emission:



Radiated Spurious Emissions:



2.7 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, 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. : 829273, the FCC Designation No. : CN5044.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

2.8 Measurement Uncertainty

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

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	$\pm 5\%$
Unwanted Emissions, radiated	9kHz~30MHz: 3.3dB, 30MHz~200MHz: 4.55 dB, 200MHz~1GHz: 5.92 dB, 1GHz~6GHz: 4.98 dB, 6GHz~18GHz: 5.89 dB, 18GHz~26.5GHz: 5.47 dB, 26.5GHz~40GHz: 5.63 dB
Temperature	$\pm 1^{\circ}\text{C}$
Humidity	$\pm 5\%$
DC and low frequency voltages	$\pm 0.4\%$
AC Power Lines Conducted Emission	3.11 dB (150 kHz to 30 MHz)

3. SUMMARY OF TEST RESULTS

Standard(s)/Rule(s)	Description of Test	Result
§ 15.203	Antenna Requirement	Compliant
§ 15.207(a)	Conduction Emissions	Compliant
15.205, § 15.209, § 15.249	Radiated Emissions	Compliant
§ 15.215 (c)	20 dB Bandwidth	Compliant

4. REQUIREMENTS AND TEST PROCEDURES

4.1 AC Line Conducted Emissions

4.1.1 Applicable Standard

FCC§15.207(a).

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

(b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

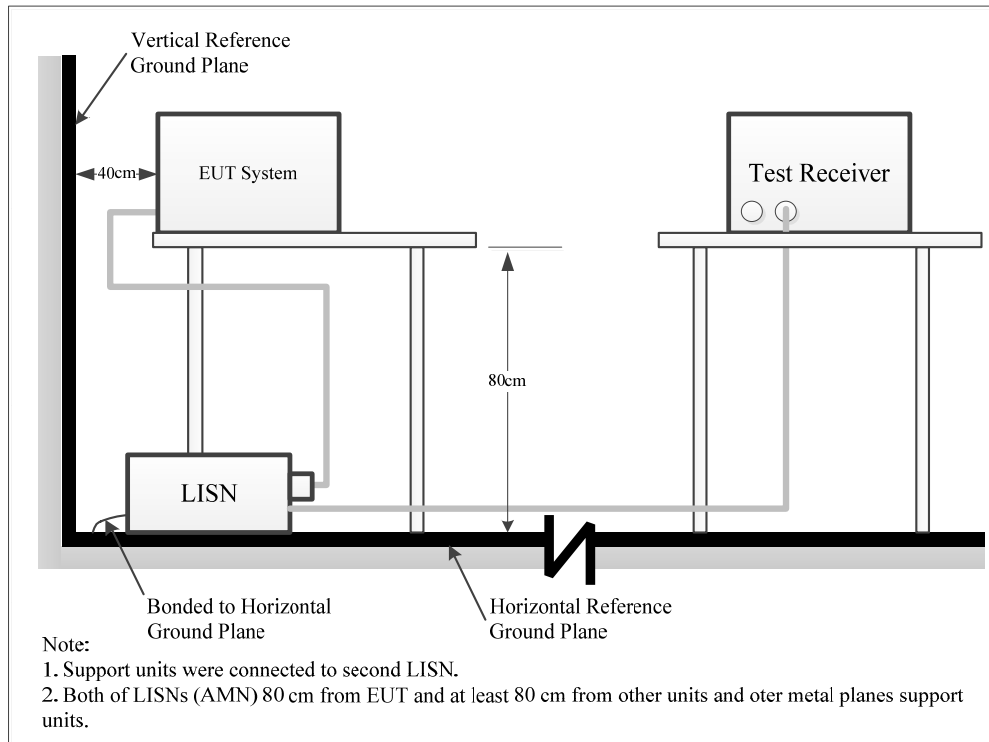
(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 μ V within the frequency band 535-1705 kHz, as measured using a 50 μ H/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.205, §15.209, §15.221, §15.223, or §15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

4.1.2 EUT Setup



The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The Adapter or EUT was connected to the main LISN with a 120 V/60 Hz AC power source.

4.1.3 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

4.1.4 Test Procedure

During the conducted emission test, the EUT was connected to the outlet of the first LISN.

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase (“hot”) line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

4.1.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = attenuation caused by cable loss + voltage division factor of AMN

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

4.1.6 Test Result

Please refer to section 5.1.

4.2 Radiated Emissions

4.2.1 Applicable Standard

As per FCC§15.249 (a), except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

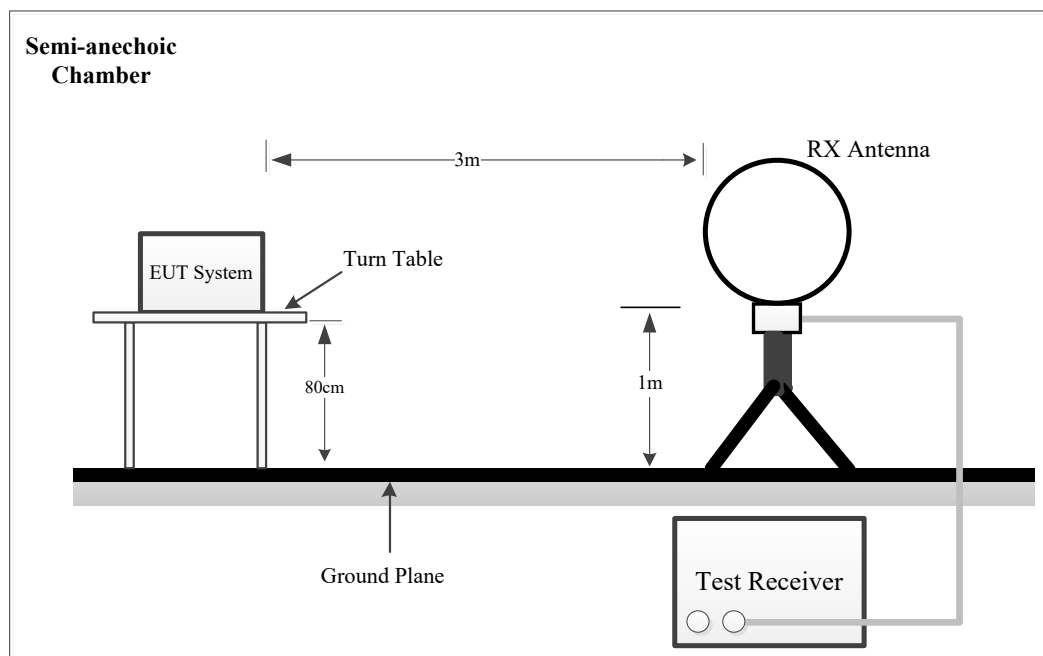
Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

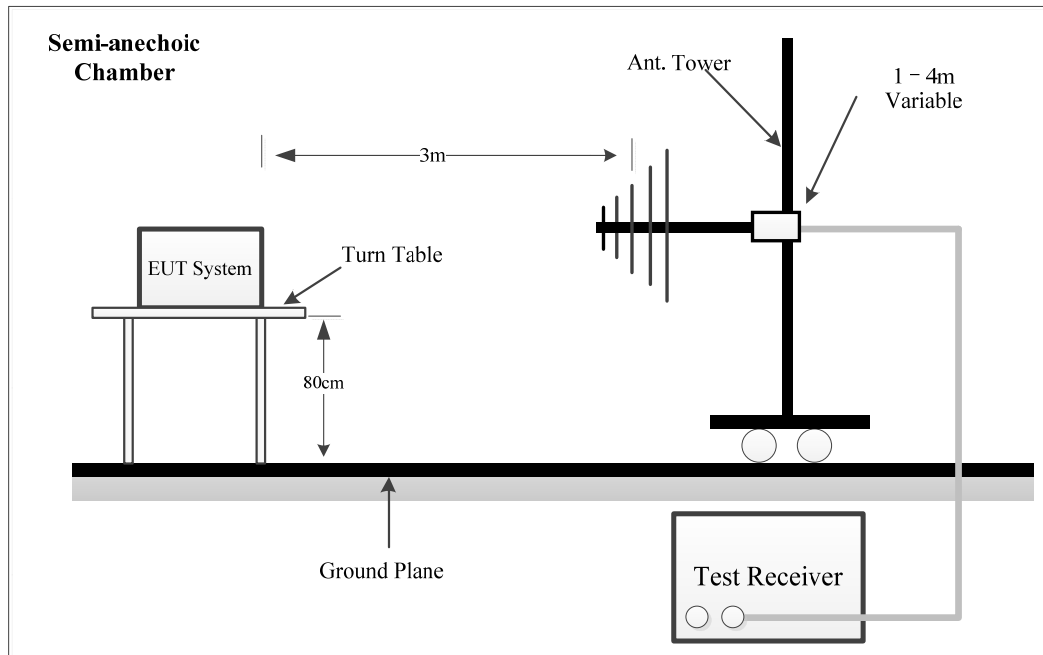
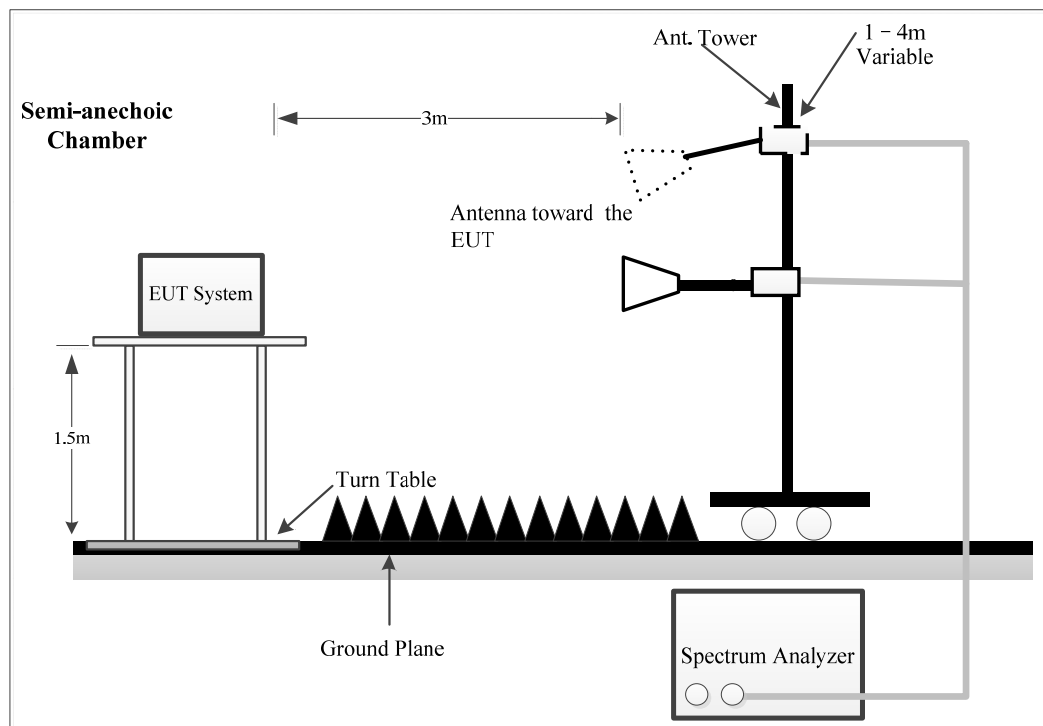
As per FCC§15.249 (c), Field strength limits are specified at a distance of 3 meters.

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

4.2.2 EUT Setup

9kHz~30MHz:



Below 1GHz:**Above 1GHz:**

The radiated emissions were performed in the 3 meters distance, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.249 limits.

4.2.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 25 GHz.

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

9kHz-1000MHz:

Frequency Range	Measurement	RBW	Video B/W	IF B/W
9 kHz – 150 kHz	QP/AV	200 Hz	1 kHz	200 Hz
150 kHz – 30 MHz	QP/AV	9 kHz	30 kHz	9 kHz
30 MHz – 1000 MHz	PK	100 kHz	300 kHz	/
	QP	/	/	120 kHz
Above 1 GHz	PK	1MHz	3 MHz	/
	AV	1MHz	10 Hz	/

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.

4.2.4 Test Procedure

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

Data was recorded in Quasi-peak detection mode for frequency range of 9 kHz -1 GHz, except 9-90 kHz, 110-490 kHz, employing an average detector, peak and Average detection modes for frequencies above 1 GHz.

4.2.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

Factor = Antenna Factor + Cable Loss- Amplifier Gain

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

4.2.6 Test Result

Please refer to section 5.2.

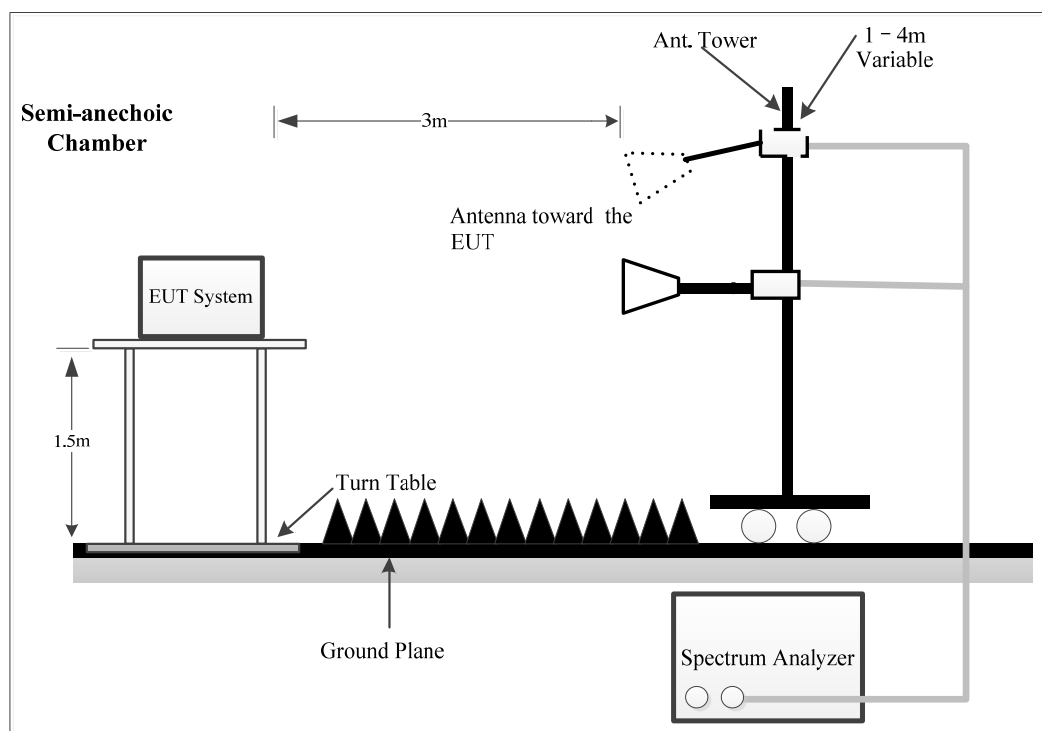
4.3 20 dB Emission Bandwidth

4.3.1 Applicable Standard

FCC §15.215

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.

4.3.2 EUT Setup



4.3.3 Test Procedure

According to ANSI C63.10-2013 Section 6.9.2

- The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, unless otherwise specified by the applicable requirement.
- Set the video bandwidth (VBW) $\geq 3 \times \text{RBW}$.
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

4.3.4 Test Result

Please refer to section 5.3.

4.4 Antenna Requirement

4.4.1 Applicable Standard

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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. 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.

4.4.2 Judgment

Compliant. Please refer to the Antenna Information detail in Section 1.3.

5. Test DATA AND RESULTS

5.1 AC Line Conducted Emissions

Serial Number:	2FJY-1	Test Date:	2024/1/3
Test Site:	CE	Test Mode:	Transmitting
Tester:	Lane Sun	Test Result:	Pass

Environmental Conditions:

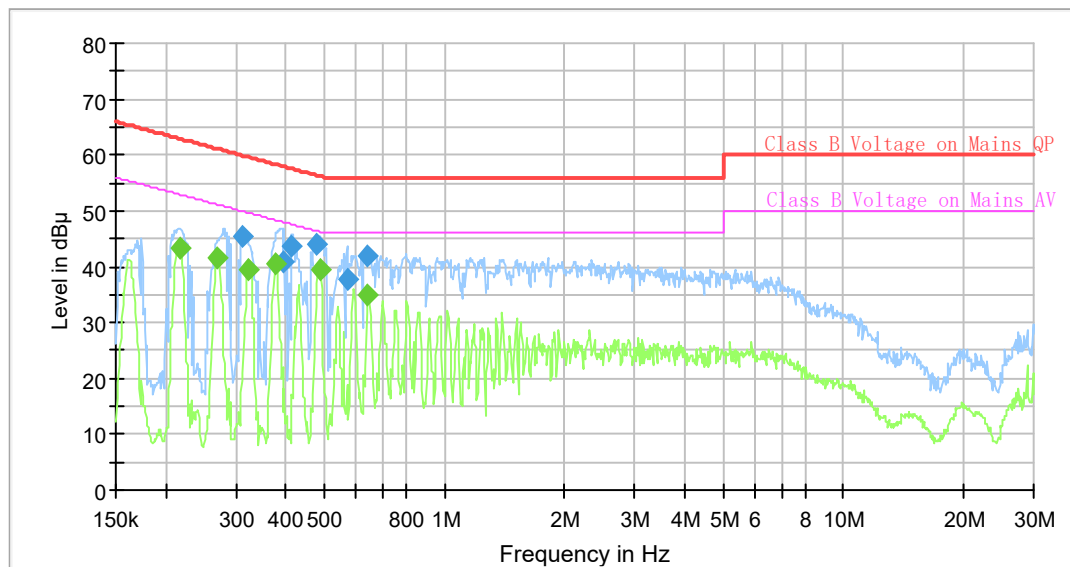
Temperature: (°C)	21.9	Relative Humidity: (%)	58	ATM Pressure: (kPa)	101.4
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101614	2023/10/18	2024/10/17
MICRO-COAX	Coaxial Cable	C-NJNJ-50	C-0200-01	2023/9/5	2024/9/4
R&S	EMI Test Receiver	ESCI	100035	2023/8/18	2024/8/17
R&S	Test Software	EMC32	V9.10.00	N/A	N/A

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

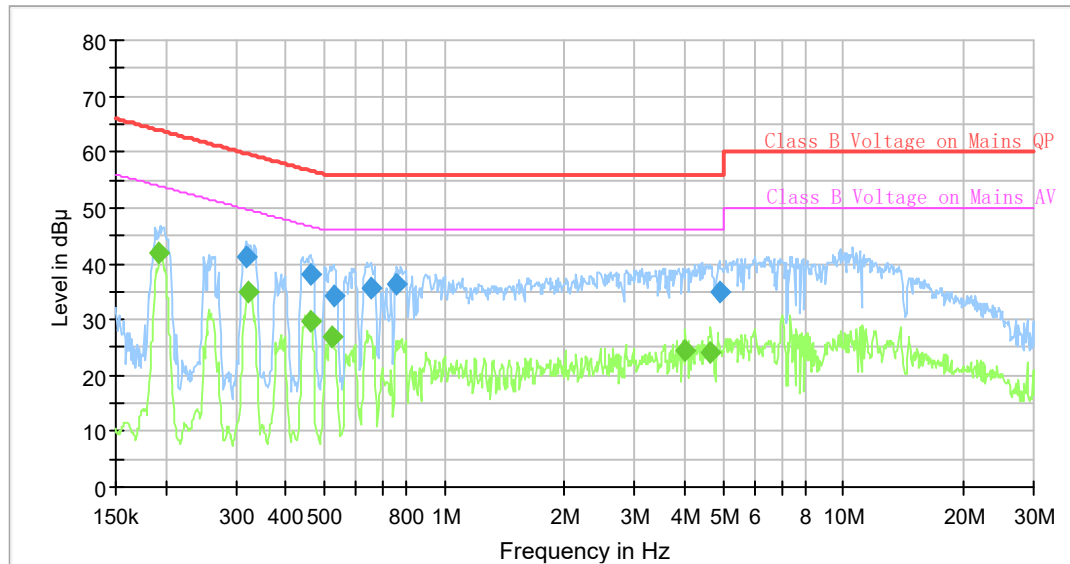
Project No: DG1231220-77066E-RF
Test Engineer: Lane Sun
Test Date: 2024-1-3
Port: L
Test Mode: Transmitting(High Channel was tested)
Power Source: AC 120V/60Hz



Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.216960	---	43.27	52.93	9.66	9.000	L1	10.8
0.270201	---	41.57	51.11	9.54	9.000	L1	10.8
0.312250	45.51	---	59.91	14.40	9.000	L1	10.8
0.323344	---	39.51	49.62	10.11	9.000	L1	10.8
0.379296	---	40.54	48.29	7.75	9.000	L1	10.8
0.392773	40.93	---	58.00	17.07	9.000	L1	10.8
0.414923	43.78	---	57.55	13.77	9.000	L1	10.8
0.477109	44.16	---	56.39	12.23	9.000	L1	10.8
0.486723	---	39.51	46.22	6.71	9.000	L1	10.8
0.570947	37.90	---	56.00	18.10	9.000	L1	10.8
0.637161	41.83	---	56.00	14.17	9.000	L1	10.8
0.643549	---	35.03	46.00	10.97	9.000	L1	10.8

Project No: DG1231220-77066E-RF
Test Engineer: Lane Sun
Test Date: 2024-1-3
Port: N
Test Mode: Transmitting(High Channel was tested)
Power Source: AC 120V/60Hz



Final Result

Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ V)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.192484	---	41.89	53.93	12.04	9.000	N	10.9
0.316957	41.13	---	59.79	18.66	9.000	N	10.8
0.323344	---	34.99	49.62	14.63	9.000	N	10.8
0.460739	38.11	---	56.68	18.57	9.000	N	10.8
0.463043	---	29.72	46.64	16.92	9.000	N	10.8
0.524533	---	26.88	46.00	19.12	9.000	N	10.7
0.527156	34.07	---	56.00	21.93	9.000	N	10.7
0.656516	35.60	---	56.00	20.40	9.000	N	10.7
0.758685	36.39	---	56.00	19.61	9.000	N	10.8
4.013525	---	24.57	46.00	21.43	9.000	N	10.9
4.661308	---	23.98	46.00	22.02	9.000	N	10.8
4.899688	34.94	---	56.00	21.06	9.000	N	10.8

5.2 Radiation Spurious Emissions

Serial Number:	2FJY-1	Test Date:	Below 1GHz: 2024/1/13 Above 1GHz: 2024/1/25~2024/1/29
Test Site:	Chamber A, Chamber B	Test Mode:	Transmitting
Tester:	Joe Li, Colin Yang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	17.4~22.9	Relative Humidity: (%)	36~46	ATM Pressure: (kPa)	101.3~102.5
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
9kHz~1000MHz					
EMCO	Passive Loop Antenna	6512	9706-1206	2023/10/21	2024/10/20
Sunol Sciences	Hybrid Antenna	JB3	A060611-3	2024/1/12	2026/1/11
Wilson	Attenuator	859936	F-08-EM014	2023/7/1	2024/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2023/7/1	2024/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2023/7/1	2024/6/30
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2023/7/1	2024/6/30
Sonoma	Amplifier	310N	372193	2023/7/1	2024/6/30
R&S	EMI Test Receiver	ESR3	102453	2023/8/18	2024/8/17
Audix	Test Software	E3	191218 (V9)	N/A	N/A
Above 1GHz					
ETS-Lindgren	Horn Antenna	3115	000 527 35	2023/9/7	2024/9/6
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2023/2/22	2026/2/21
Xinhang Macrowave	Coaxial Cable	XH750A-N/J-SMA/J-10M	20231117004 #0001	2023/11/17	2024/11/16
Xinhang Macrowave	Coaxial Cable	XH360A-2.92/J-2.92/J-6M-A	20231208001 #0001	2023/12/11	2024/12/10
AH	Preamplifier	PAM-0118P	469	2023/8/19	2024/8/18
AH	Preamplifier	PAM-1840VH	191	2023/9/7	2024/9/6
R&S	Spectrum Analyzer	FSV40	101944	2023/10/18	2024/10/17
E-Microwave	Band Rejection Filter	OBSF-2400-2483.5-S	OE01601525	2023/6/16	2024/6/15
Audix	Test Software	E3	191218 (V9)	N/A	N/A
Mini Circuits	High Pass Filter	VHF-6010+	OE48747	2023/6/16	2024/6/15

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

Test Data:

Please refer to the below table and plots.

After pre-scan in the X, Y and Z axes of orientation, the worst case is below:

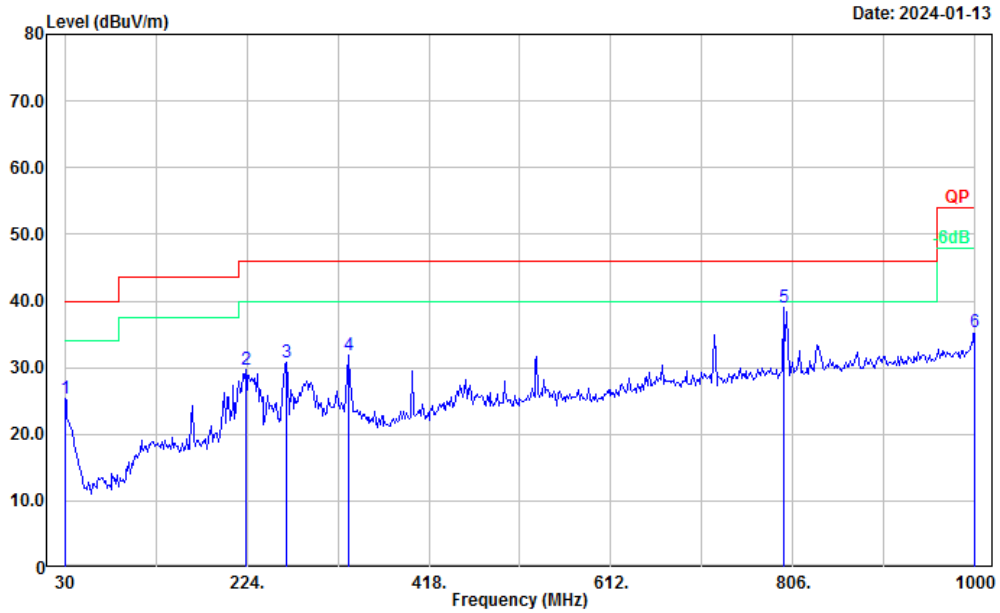
1) 9kHz~30MHz

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

2) 30MHz-1GHz (maximum output power Channel(High Channel) was tested)

Project No.: DG1231220-77066E -RF
Polarization: Horizontal
Test Mode: Transmitting
Note: TX mode_high channel

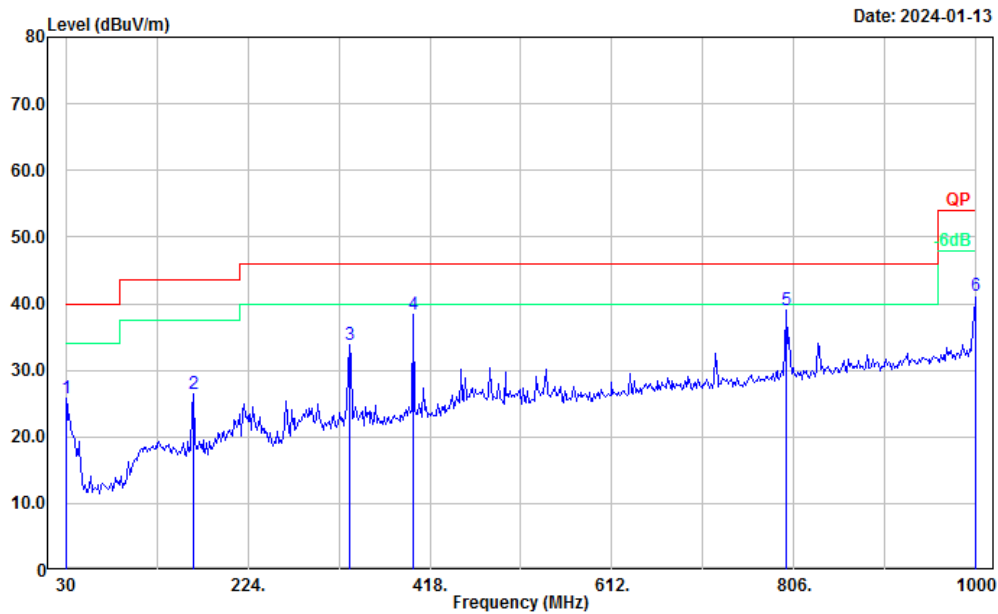
Serial No.: 2FJY-1
Tester: Joe Li



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.230	28.477	-3.127	25.350	40.000	14.650	Peak
2	222.594	40.452	-10.852	29.600	46.000	16.400	Peak
3	266.174	41.053	-10.183	30.870	46.000	15.130	Peak
4	332.246	40.104	-8.164	31.940	46.000	14.060	Peak
5	796.159	37.709	1.211	38.920	46.000	7.080	Peak
6	1000.000	30.290	5.050	35.340	54.000	18.660	Peak

Project No.: DG1231220-77066E -RF
Polarization: Vertical
Test Mode: Transmitting
Note: TX mode_high channel

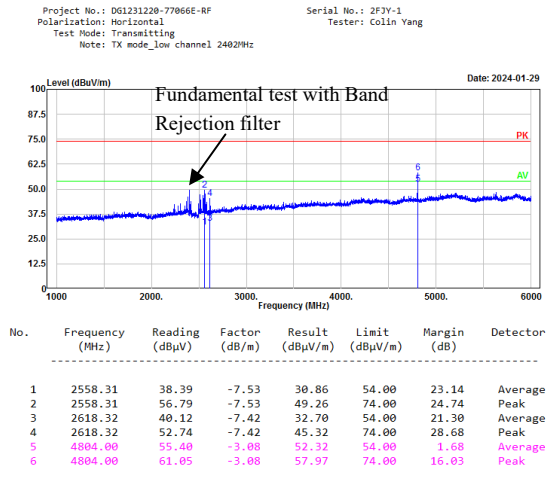
Serial No.: 2FJY-1
Tester: Joe Li



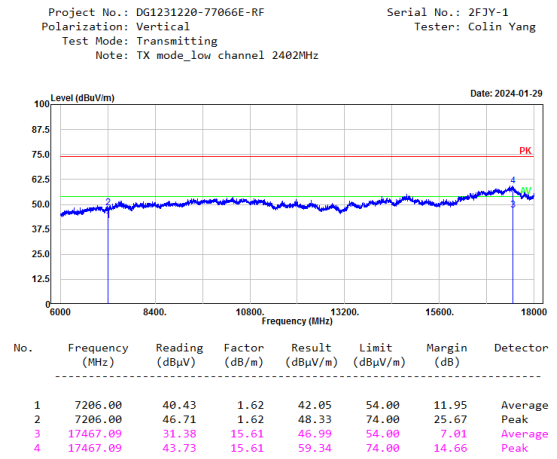
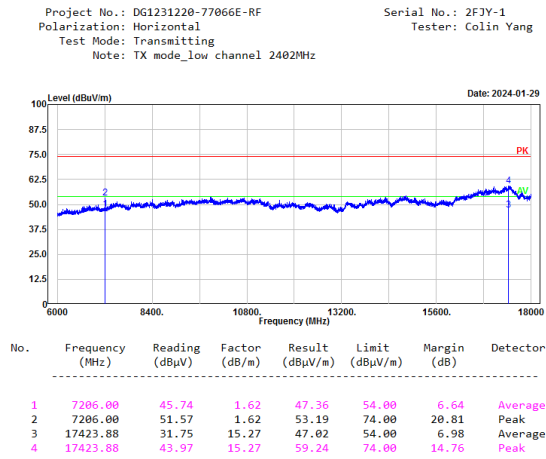
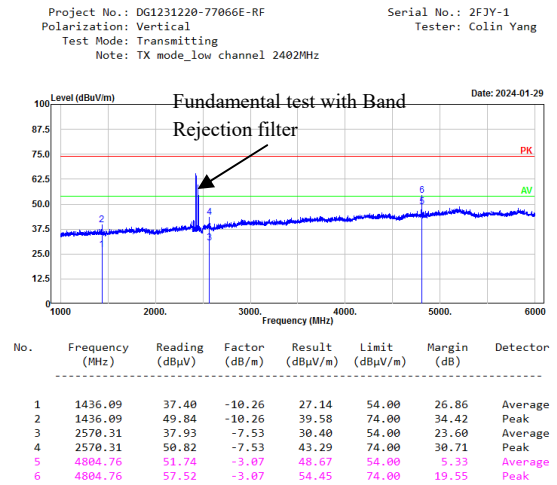
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.010	28.736	-2.996	25.740	40.000	14.260	Peak
2	166.362	37.903	-11.443	26.460	43.500	17.040	Peak
3	332.246	42.074	-8.164	33.910	46.000	12.090	Peak
4	399.725	44.964	-6.614	38.350	46.000	7.650	Peak
5	797.565	37.856	1.244	39.100	46.000	6.900	Peak
6	1000.000	36.140	5.050	41.190	54.000	12.810	Peak

3) 1-18GHz:

Low Channel, Horizontal

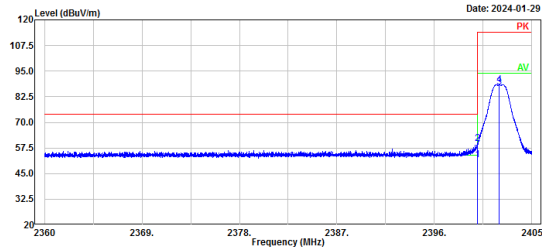


Low Channel, Vertical



Low Channel, Fundamental And Bandedge,
Horizontal

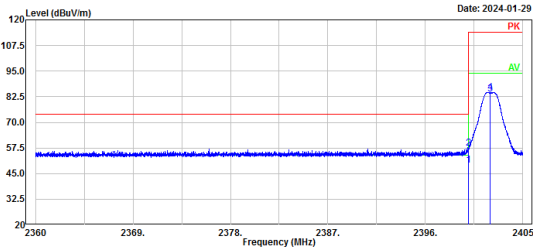
Project No.: DG1231220-77066E-RF Serial No.: 2FJY-1
Polarization: Horizontal Tester: Colin Yang
Test Mode: Transmitting
Note: TX mode_Low channel 2402MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2400.00	23.11	28.61	51.72	54.00	2.28	Average
2	2400.00	30.88	28.61	59.49	74.00	14.51	Peak
3	2402.00	58.61	28.62	87.23	94.00	6.77	Average
4	2402.00	59.78	28.62	88.40	114.00	25.60	Peak

Low Channel, Fundamental And Bandedge,
Vertical

Project No.: DG1231220-77066E-RF Serial No.: 2FJY-1
Polarization: Vertical Tester: Colin Yang
Test Mode: Transmitting
Note: TX mode_Low channel 2402MHz

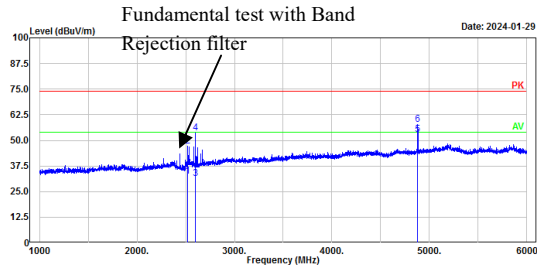


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2400.00	20.58	28.61	49.19	54.00	4.81	Average
2	2400.00	28.77	28.61	57.38	74.00	16.62	Peak
3	2402.00	54.97	28.62	83.59	94.00	10.41	Average
4	2402.00	56.07	28.62	84.69	114.00	29.31	Peak

Middle Channel, Horizontal

Project No.: DG1231220-77066E-RF
Polarization: Horizontal
Test Mode: Transmitting
Note: TX mode_middle channel 2440MHz

Serial No.: 2F3Y-1
Tester: Colin Yang

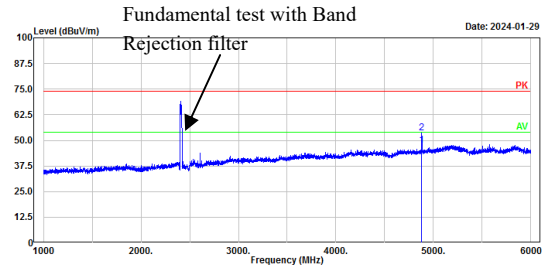


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2523.31	40.03	-7.57	32.46	54.00	21.54	Average
2	2523.31	54.78	-7.57	47.21	74.00	26.79	Peak
3	2596.32	38.79	-7.52	31.27	54.00	22.73	Average
4	2596.32	60.94	-7.52	53.42	74.00	20.58	Peak
5	4880.00	55.41	-2.73	52.68	54.00	1.32	Average
6	4880.00	60.60	-2.73	57.87	74.00	16.13	Peak

Middle Channel, Vertical

Project No.: DG1231220-77066E-RF
Polarization: Vertical
Test Mode: Transmitting
Note: TX mode_middle channel 2440MHz

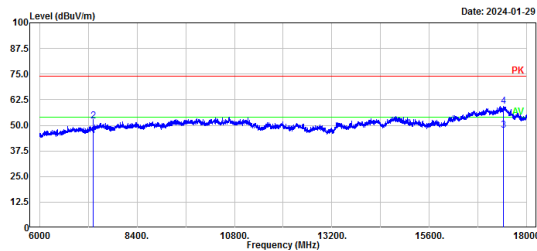
Serial No.: 2F3Y-1
Tester: Colin Yang



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4880.00	50.24	-2.73	47.51	54.00	6.49	Average
2	4880.00	56.21	-2.73	53.48	74.00	20.52	Peak

Project No.: DG1231220-77066E-RF
Polarization: Horizontal
Test Mode: Transmitting
Note: TX mode_middle channel 2440MHz

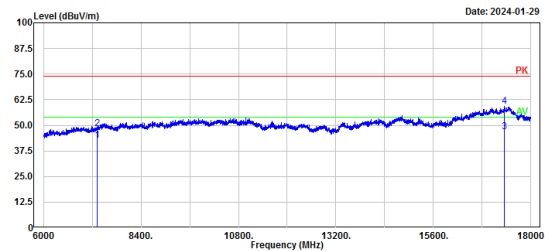
Serial No.: 2F3Y-1
Tester: Colin Yang



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	7320.00	42.62	2.10	44.72	54.00	9.28	Average
2	7320.00	49.86	2.10	51.96	74.00	22.04	Peak
3	17428.69	32.21	15.30	47.51	54.00	6.49	Average
4	17428.69	44.02	15.30	59.32	74.00	14.68	Peak

Project No.: DG1231220-77066E-RF
Polarization: Vertical
Test Mode: Transmitting
Note: TX mode_middle channel 2440MHz

Serial No.: 2F3Y-1
Tester: Colin Yang

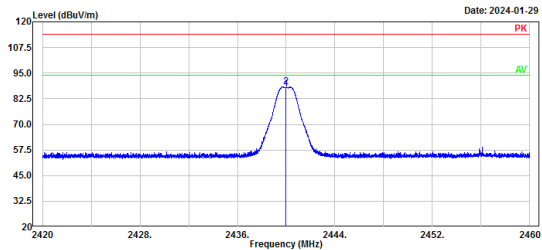


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	7320.00	40.36	2.10	42.46	54.00	11.54	Average
2	7320.00	46.23	2.10	48.33	74.00	25.67	Peak
3	17351.87	32.08	14.69	46.77	54.00	7.23	Average
4	17351.87	44.53	14.69	59.22	74.00	14.78	Peak

Middle Channel, Fundamental, Horizontal

Project No.: DG1231220-77066E-RF
Polarization: Horizontal
Test Mode: Transmitting
Note: TX mode_middle channel 2440MHz

Serial No.: 2F3Y-1
Tester: Colin Yang

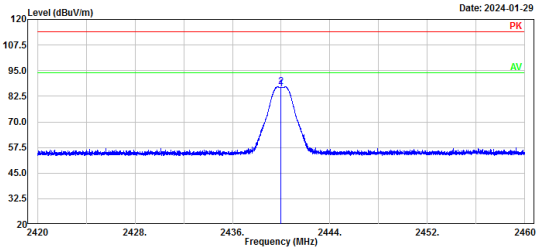


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2440.00	58.25	28.76	87.01	94.00	6.99	Average
2	2440.00	59.45	28.76	88.21	114.00	25.79	Peak

Middle Channel, Fundamental, Vertical

Project No.: DG1231220-77066E-RF
Polarization: Vertical
Test Mode: Transmitting
Note: TX mode_middle channel 2440MHz

Serial No.: 2F3Y-1
Tester: Colin Yang

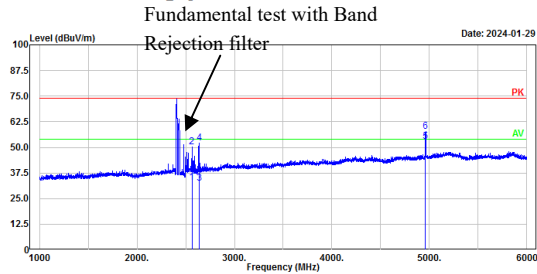


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2440.00	57.12	28.76	85.88	94.00	8.12	Average
2	2440.00	58.33	28.76	87.09	114.00	26.91	Peak

High Channel, Horizontal

Project No.: DG1231220-77066E-RF
Polarization: Horizontal
Test Mode: Transmitting
Note: TX mode_high channel 2480MHz

Serial No.: 2F3Y-1
Tester: Colin Yang

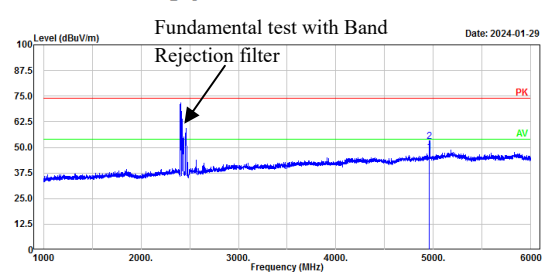


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2563.31	40.32	-7.53	32.79	54.00	21.21	Average
2	2563.31	57.66	-7.53	50.13	74.00	23.87	Peak
3	2635.33	39.86	-7.32	32.54	54.00	21.46	Average
4	2635.33	59.22	-7.32	51.90	74.00	22.10	Peak
5	4960.00	55.14	-2.35	52.79	54.00	1.21	Average
6	4960.00	60.03	-2.35	57.68	74.00	16.32	Peak

High Channel, Vertical

Project No.: DG1231220-77066E-RF
Polarization: Vertical
Test Mode: Transmitting
Note: TX mode_high channel 2480MHz

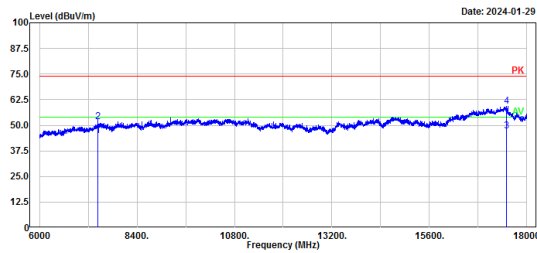
Serial No.: 2F3Y-1
Tester: Colin Yang



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4960.00	49.78	-2.35	47.43	54.00	6.57	Average
2	4960.00	55.32	-2.35	52.97	74.00	21.03	Peak

Project No.: DG1231220-77066E-RF
Polarization: Horizontal
Test Mode: Transmitting
Note: TX mode_high channel 2480MHz

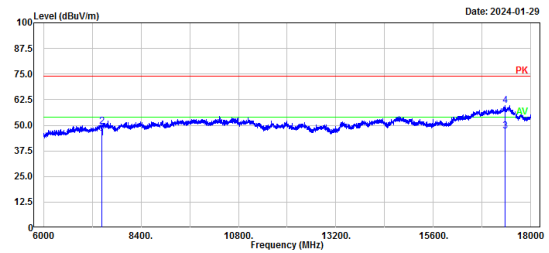
Serial No.: 2F3Y-1
Tester: Colin Yang



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	7440.00	42.46	2.47	44.93	54.00	9.07	Average
2	7440.00	49.33	2.47	51.80	74.00	22.20	Peak
3	17505.50	31.40	15.88	47.28	54.00	6.72	Average
4	17505.50	43.20	15.88	59.08	74.00	14.92	Peak

Project No.: DG1231220-77066E-RF
Polarization: Vertical
Test Mode: Transmitting
Note: TX mode_high channel 2480MHz

Serial No.: 2F3Y-1
Tester: Colin Yang

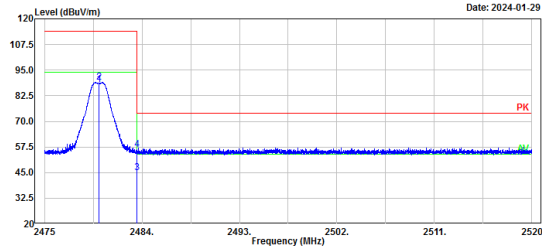


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	7440.00	41.26	2.47	43.73	54.00	10.27	Average
2	7440.00	46.97	2.47	49.44	74.00	24.56	Peak
3	17371.07	32.37	14.83	47.20	54.00	6.80	Average
4	17371.07	44.94	14.83	59.77	74.00	14.23	Peak

High Channel, Fundamental And Bandedge,
Horizontal

Project No.: DG1231220-77066E-RF
Polarization: Horizontal
Test Mode: Transmitting
Note: TX mode_high channel 2480MHz

Serial No.: 2FJY-1
Tester: Colin Yang

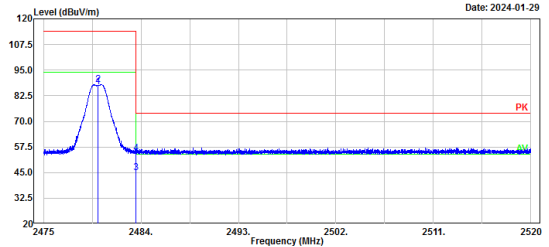


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2480.00	59.01	28.94	87.95	94.00	6.05	Average
2	2480.00	59.99	28.94	88.93	114.00	25.07	Peak
3	2483.50	16.12	28.95	45.07	54.00	8.93	Average
4	2483.50	27.28	28.95	56.23	74.00	17.77	Peak

High Channel, Fundamental And Bandedge, Vertical

Project No.: DG1231220-77066E-RF
Polarization: Vertical
Test Mode: Transmitting
Note: TX mode_high channel 2480MHz

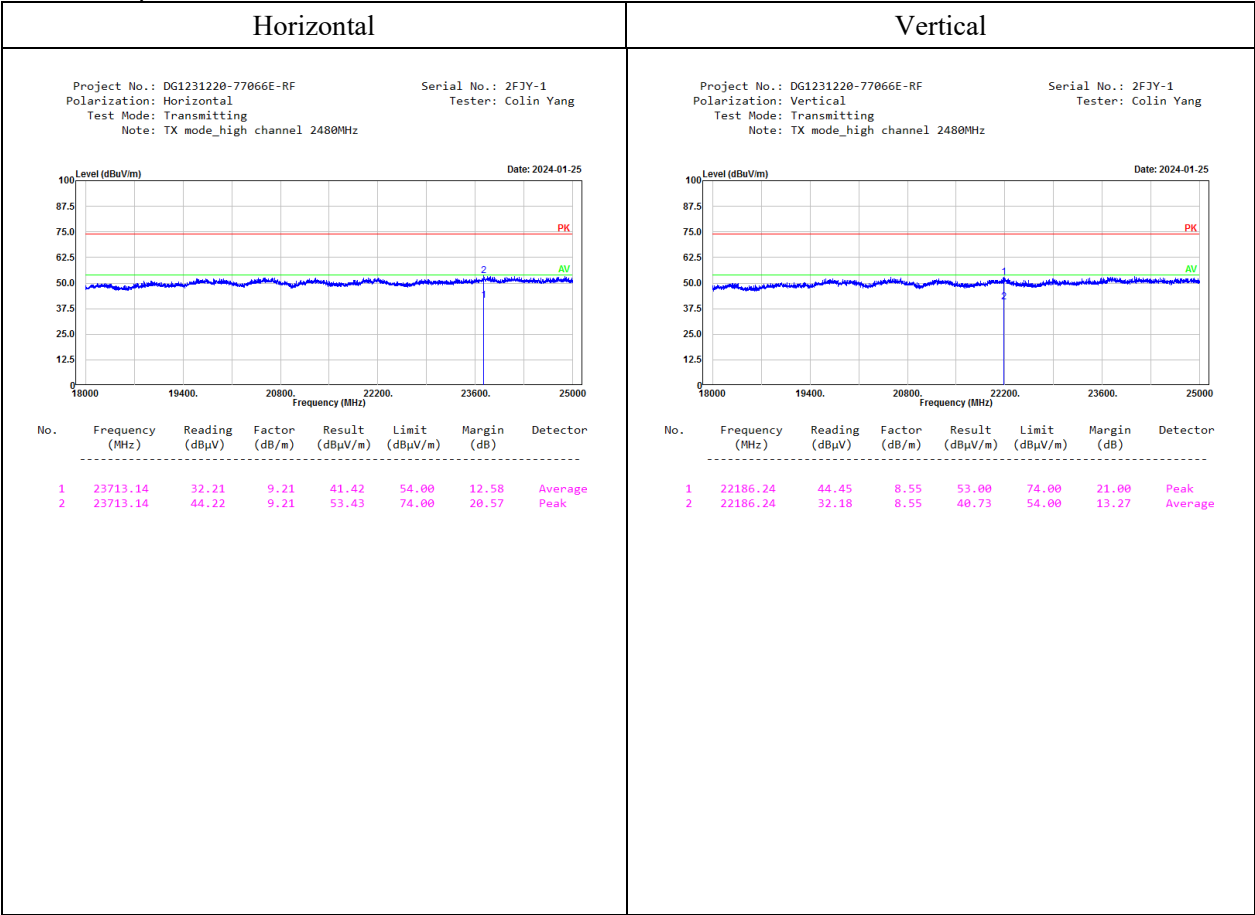
Serial No.: 2FJY-1
Tester: Colin Yang



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2480.00	57.74	28.94	86.68	94.00	7.32	Average
2	2480.00	59.02	28.94	87.96	114.00	26.04	Peak
3	2483.50	15.96	28.95	44.91	54.00	9.09	Average
4	2483.50	25.51	28.95	54.46	74.00	19.54	Peak

18-25GHz:

No Emission was detected in the range 18-25GHz, test was performed on channel which with the maximum power.



5.3 20 dB Emission Bandwidth:

Serial No.:	2FJY-1	Test Date:	2024/2/29-2024/3/1
Test Site:	Chamber A	Test Mode:	Transmitting
Tester:	Alan Xie	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	18.8-21.8	Relative Humidity: (%)	45-52	ATM Pressure: (kPa)	101.1-101.6
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Test Equipment List and Details:

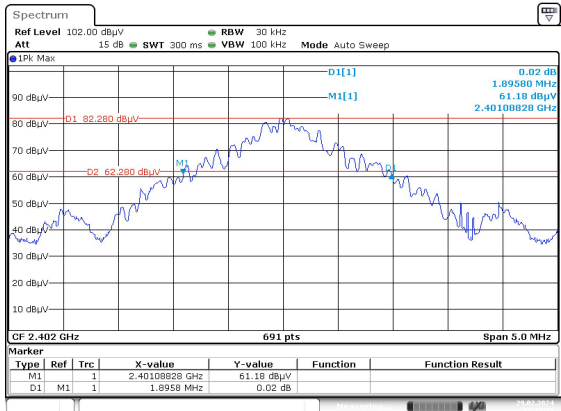
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
ETS-Lindgren	Horn Antenna	3115	000 527 35	2023/9/7	2024/9/6
Xinhang Macrowave	Coaxial Cable	XH750A- N/J-SMA/J- 10M	20231117004 #0001	2023/11/17	2024/11/16
AH	Preamplifier	PAM- 0118P	469	2023/8/19	2024/8/18
R&S	Spectrum Analyzer	FSV40	101944	2023/10/18	2024/10/17

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

Test Data:

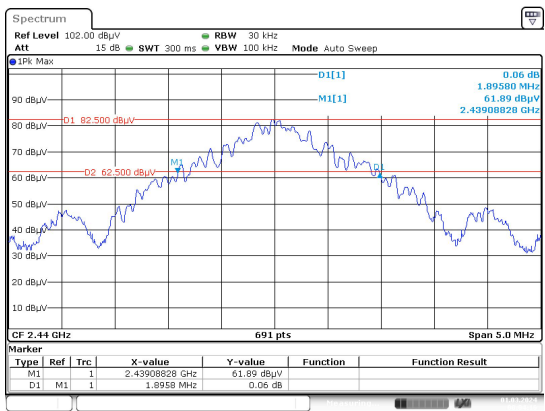
Test Channel	Value (MHz)	F _L (MHz)	F _L Limit (MHz)	F _H (MHz)	F _H Limit (MHz)
Low	1.8958	2401.08828	2400	2402.98408	2483.5
Mid	1.8958	2439.08828	2400	2440. 98408	2483.5
High	1.91751	2479.08104	2400	2480.99855	2483.5

Low



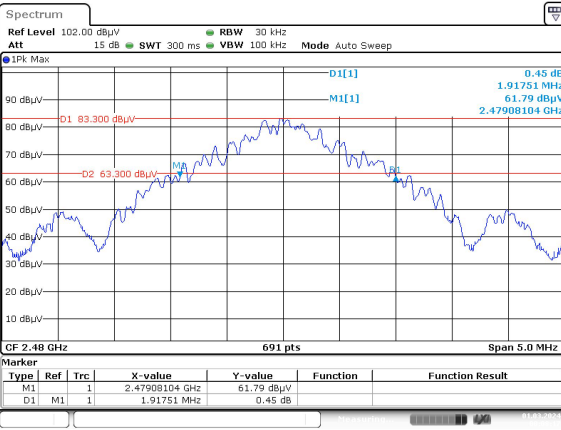
ProjectNo.:DG1231220-77066E -RF Tester:Alan Xie
Date: 29.FEB.2024 23:57:54

Mid



ProjectNo.:DG1231220-77066E -RF Tester:Alan Xie
Date: 1.MAR.2024 00:04:17

High



ProjectNo.:DG1231220-77066E -RF Tester:Alan Xie
Date: 1.MAR.2024 00:08:17

APPENDIX A - EUT PHOTOGRAPHS

Please refer to the attachment DG1231220-77066E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and DG1231220-77066E-RF-INP EUT INTERNAL PHOTOGRAPHS

APPENDIX B - TEST SETUP PHOTOGRAPHS

Please refer to the attachment DG1231220-77066E-RF-00-TSP TEST SETUP PHOTOGRAPHS.

APPENDIX C - RF EXPOSURE EVALUATION

Applicable Standard

According to §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB447498 D01 General RF Exposure Guidance v06:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

Measurement Result

The max conducted power including tune-up tolerance is 0 dBm (1.0mW).

$[(\text{max. power of channel, mW})/(\text{min. test separation distance, mm})][\sqrt{f(\text{GHz})}]$
 $= 1.0/5 \cdot (\sqrt{2.480}) = 0.3 < 3.0$

Note:

1. This device maximum E-Field level is 88.93 dB μ V/m at 3m, so the EIRP power is -6.27 dBm, Antenna Gain is -5.92dBi.

Maximum Conduct Power is -0.35 dBm.

Note:

EIRP(dBm)=Field Strength of Fundamental(dBuV/m)-95.2 (dB),

Maximum Conduct Power (dBm)= EIRP(dBm)- Antenna Gain(dBi).

Maximum Power declared by manufacturer.

Result: Compliant. The stand-alone SAR evaluation is not necessary.

===== END OF REPORT =====