中认信通
CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)

ACCREDITED
TESTING LABORATORY
CERTIFICATE # 6356.01

TEST REPORT

Applicant: **Shanghai Qiangling Electronic Co Ltd**

Address: 139 WANG DONG RD S SI JING SONG JIANG SHANGHAI China

FCC ID: **NIR-SMBOXFXBTNLC**

Product Name: **Smart box**

Model Number: **SMBOXFXBTNLC**

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

The above equipment has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

Report Number: **CR230421939-00B**

Date Of Issue: **2023/7/13**

Reviewed By: **Sun Zhong**

Sun Zhong

Title: Manager

Test Laboratory: **China Certification ICT Co., Ltd (Dongguan)**
No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, China
Tel: +86-769-82016888

Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang 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. : 442868, the FCC Designation No. : CN1314.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0123.

Declarations

China Certification ICT Co., Ltd (Dongguan) is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol "▲". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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CONTENTS

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	CR230421939-00B	Original Report	2023/7/13

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	Smart box
EUT Model:	SMBOXFXBTNLC
Operation Frequency:	5750-5870 MHz
Modulation Type:	CW
Rated Input Voltage:	120-277V 50/60Hz
Serial Number:	253G-2
EUT Received Date:	2023/4/26
EUT Received Status:	Good

Operation Frequency Detail:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	5750	61	5811
1	5751	…	…
…		…	…
…		119	5869
59	5809	120	5870
60	5810	/	/

Per section 15.31(m), the below frequencies were performed the test as below:

Test Channel	Frequency (MHz)
Lowest	5750
Middle	5800
Highest	5870

Antenna Information Detail▲:

Antenna Type	input impedance (Ohm)	Antenna Gain /Frequency Range	§15.203 Requirement
PCB	50	5.1 dBi/5.745~5.875GHz	**Compliance**

The Method of §15.203 Compliance:

☒Antenna must be permanently attached to the unit.

☐Antenna must use a unique type of connector to attach to the EUT.

☐Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

Accessory Information:

No Accessory.

1.2 Description of Test Configuration

1.2.1 EUT Operation Condition:

EUT Operation Mode:	The system was configured for testing in Engineering Mode, which was provided by the manufacturer.
Equipment Modifications:	No
EUT Exercise Software:	No
The engineering mode was provided by manufacturer▲. The maximum power was configured default setting.	

1.2.2 Support Equipment List and Details

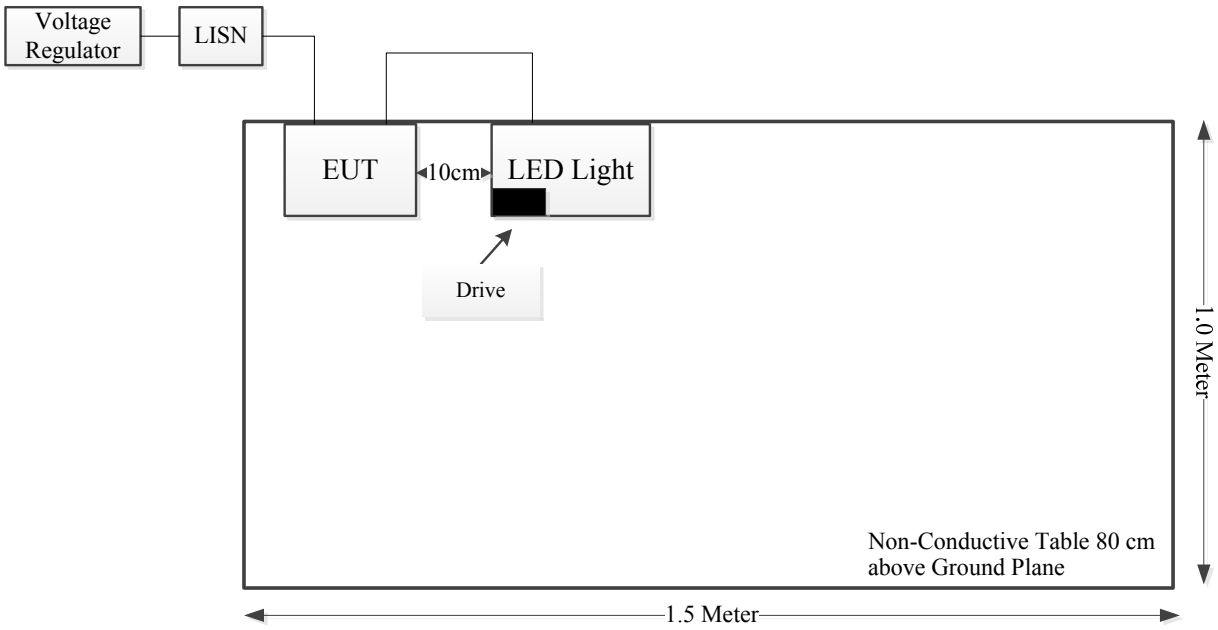
Manufacturer	Description	Model	Serial Number
TCP	LED Lamp	TF4042	PKS230619060
TCP	Drive	Unknown	Unknown
LANGGEELECTRIC	Voltage Regulator	STG3-5000W	CR235414536

1.2.3 Support Cable List and Details

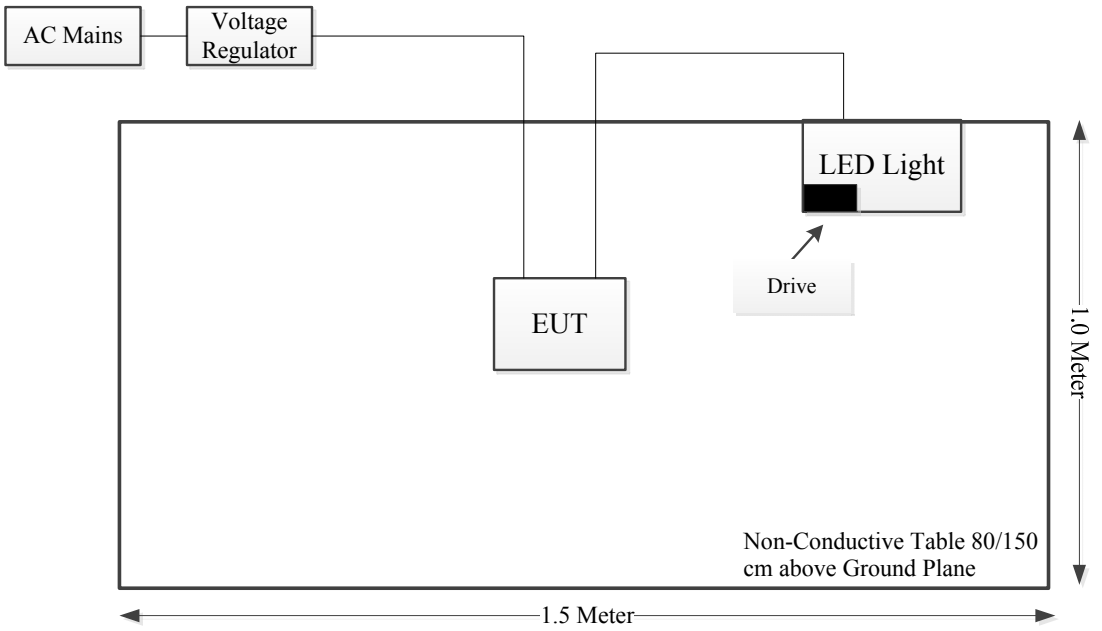
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Power Cable	No	No	1.5	Voltage Regulator	LISN
Power Cable	No	No	1	AC Mains	Voltage Regulator
Power Cable	No	No	1.2	LISN	EUT
Power Cable	No	No	2	Voltage Regulator	EUT
Power Cable	No	No	0.8	EUT	LED Lamp

1.2.4 Block Diagram of Test Setup

AC line conducted emissions:



Spurious emissions:



1.3 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	±5 %
Unwanted Emissions, radiated	30M~200MHz: 4.15 dB,200M~1GHz: 5.61 dB,1G~6GHz: 5.14 dB, 6G~18GHz: 5.93 dB,18G~26.5G:5.47 dB,26.5G~40G:5.63 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	2.8 dB (150 kHz to 30 MHz)

2. 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
§1.1307	RF Exposure Evaluation	Compliant

3. REQUIREMENTS AND TEST PROCEDURES

3.1 AC Line Conducted Emissions

3.1.1 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 μH/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.

	Conducted limit (dBμV)	
Frequency of emission (MHz)	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:

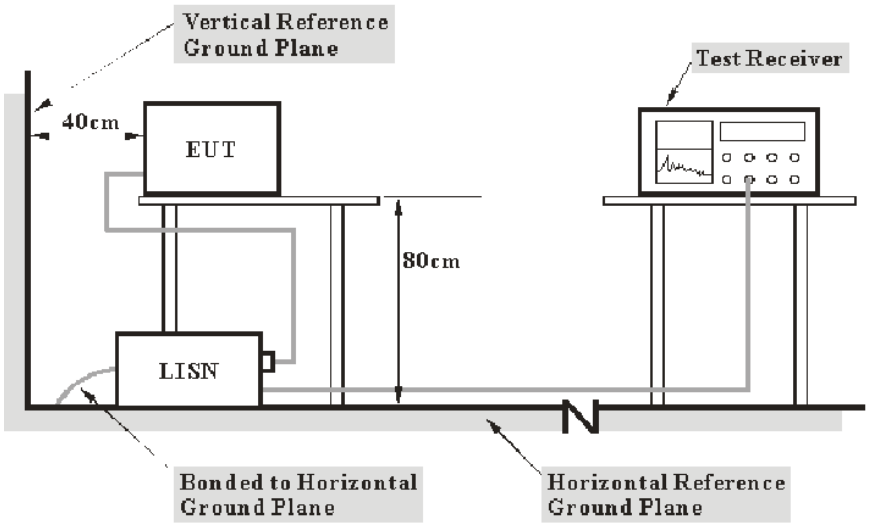
(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 μV within the frequency band 535-1705 kHz, as measured using a 50 μH/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, obtainig their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

3.1.2 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 limits.

The spacing between the peripherals was 10 cm.

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

3.1.3 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

3.1.4 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.

3.1.5 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

3.2 Radiated Emissions

3.2.1 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:

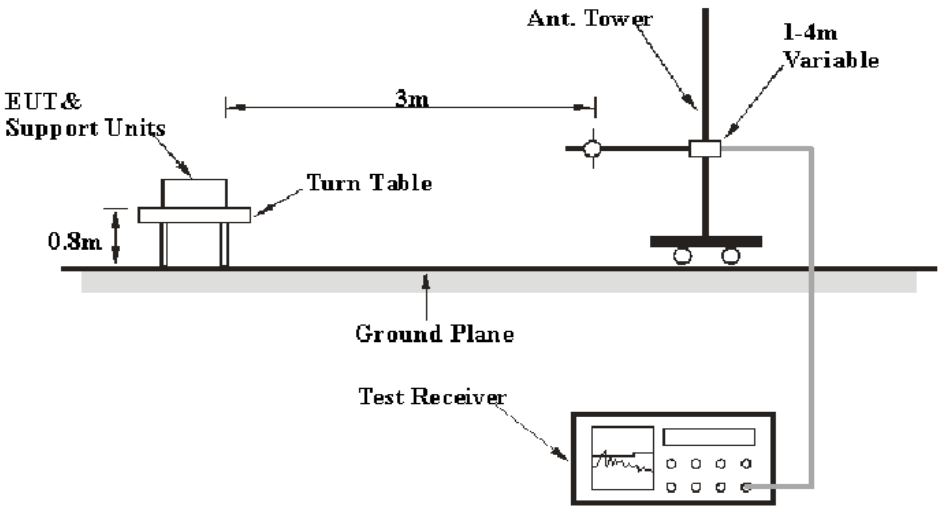
Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

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

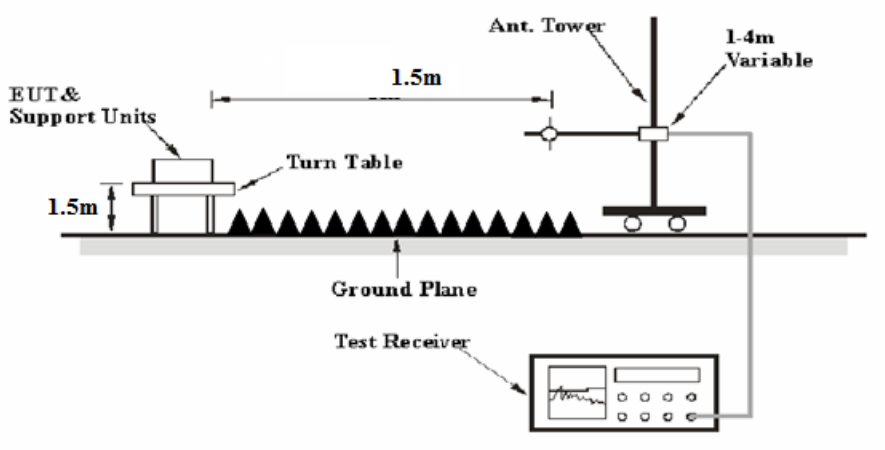
(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

3.2.2 EUT Setup

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.

3.2.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

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
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	AV

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.

3.2.4 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 30 MHz - 1 GHz, peak and average detection modes for frequencies above 1 GHz.

According to C63.10, the above 1G test result shall be extrapolated to the specified distance using an extrapolation Factor of 20dB/decade from 3m to 1.5m
Distance extrapolation Factor =20 log (specific distance [3m]/test distance [1.5m]) dB= 6.02 dB

3.2.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

For 30MHz-1GHz:
Result = Reading + Factor

For 1GHz-40GHz
Result = Reading + Factor-Distance extrapolation Factor

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

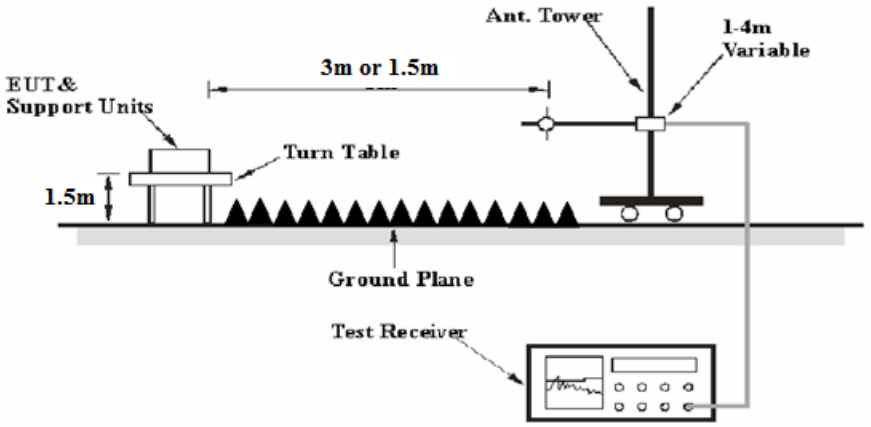
3.3 20 dB Emission Bandwidth:

3.3.1 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.

3.3.2 EUT Setup



3.3.3Test Procedure

1. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
2. Repeat above procedures until all frequencies measured were complete.

3.4 Antenna Requirement

3.4.1 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 user of a standard antenna jack or electrical connector is prohibited. 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.

3.4.2 Judgment

Please refer to the Antenna Information detail in Section 1.

4. Test DATA AND RESULTS

4.1 AC Line Conducted Emissions

Serial Number:	253G-2	Test Date:	2023/7/11
Test Site:	CE	Test Mode:	Transmitting(Low channel)
Tester:	David Huang		Pass

Environmental Conditions:

Temperature: (℃)	27.2	Relative Humidity: (%)	62	ATM Pressure: (kPa)	100.9

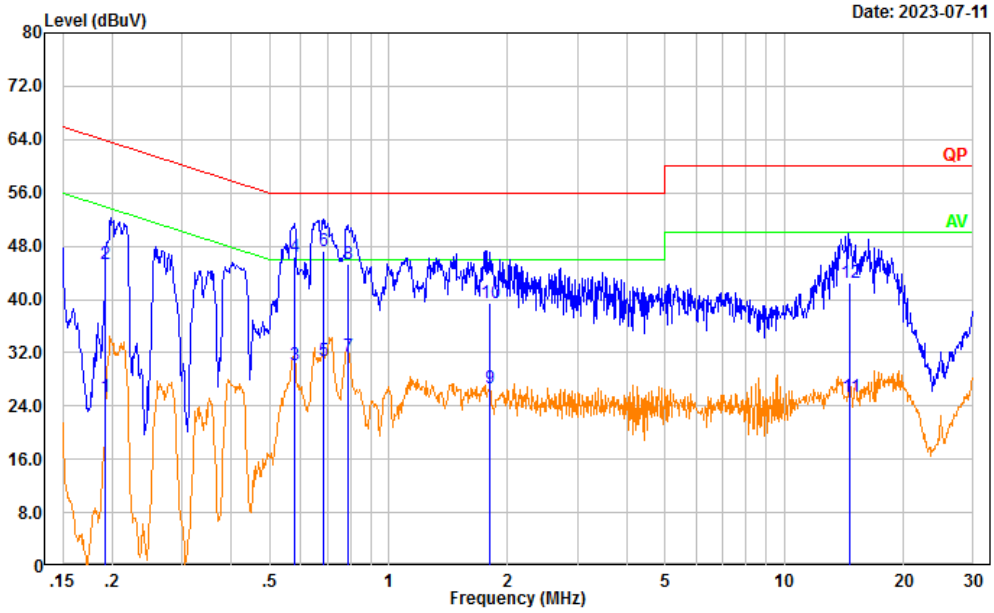
Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
COM-POWER	LISN	LI-3P-132	20200005	2022/11/18	2023/11/17
R&S	EMI Test Receiver	ESR3	102726	2022/07/15	2023/07/14
MICRO-COAX	Coaxial Cable	UTIFLEX	C-0200-01	2022/08/7	20230/8/06
Audix	Test Software	E3	190306 (V9)	N/A	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

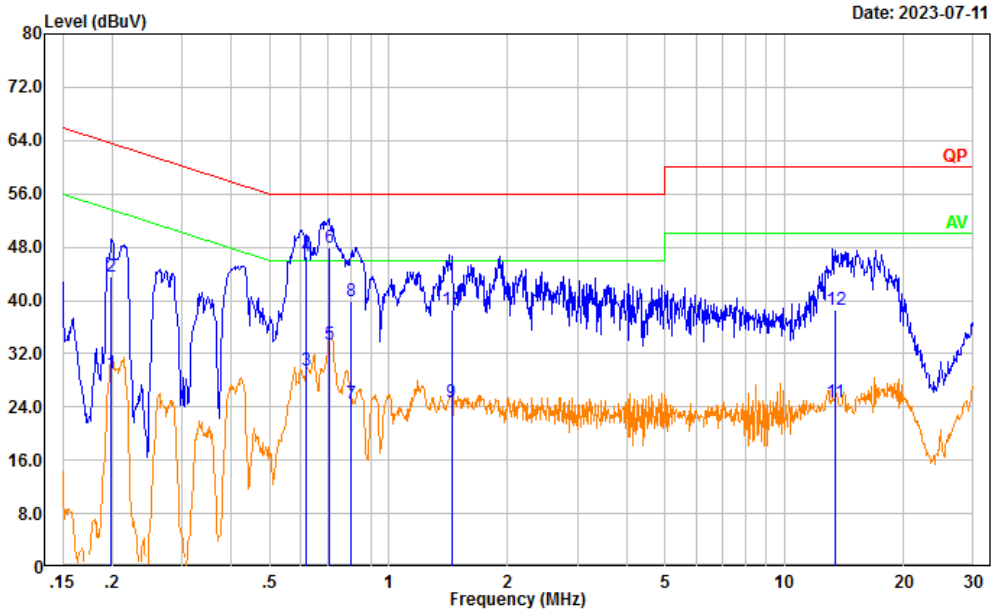
120V:

Test Mode: Transmitting
Port: Line
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector
1	0.193	15.77	9.61	25.38	53.92	28.54	Average
2	0.193	35.71	9.61	45.32	63.92	18.60	QP
3	0.579	20.60	9.62	30.22	46.00	15.78	Average
4	0.579	36.72	9.62	46.34	56.00	9.66	QP
5	0.684	21.08	9.62	30.70	46.00	15.30	Average
6	0.684	37.72	9.62	47.34	56.00	8.66	QP
7	0.789	21.86	9.62	31.48	46.00	14.52	Average
8	0.789	35.65	9.62	45.27	56.00	10.73	QP
9	1.807	16.99	9.63	26.62	46.00	19.38	Average
10	1.807	29.75	9.63	39.38	56.00	16.62	QP
11	14.657	15.59	9.69	25.28	50.00	24.72	Average
12	14.657	32.78	9.69	42.47	60.00	17.53	QP

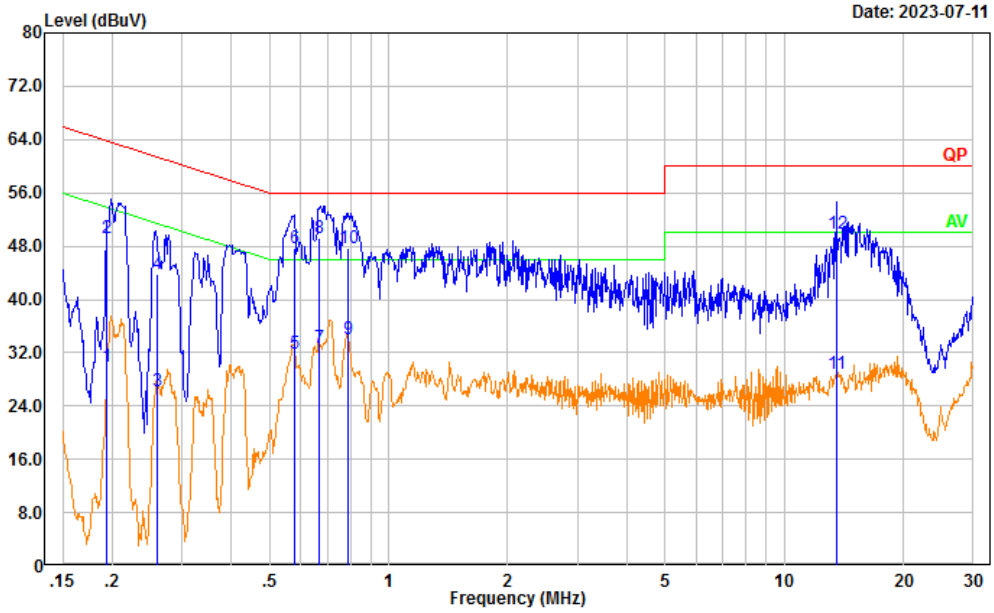
Test Mode: Transmitting
Port: neutral
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector
1	0.198	19.42	9.61	29.03	53.68	24.65	Average
2	0.198	33.95	9.61	43.56	63.68	20.12	QP
3	0.621	19.76	9.62	29.38	46.00	16.62	Average
4	0.621	36.97	9.62	46.59	56.00	9.41	QP
5	0.706	23.71	9.62	33.33	46.00	12.67	Average
6	0.706	38.32	9.62	47.94	56.00	8.06	QP
7	0.800	14.96	9.62	24.58	46.00	21.42	Average
8	0.800	30.28	9.62	39.90	56.00	16.10	QP
9	1.441	15.01	9.62	24.63	46.00	21.37	Average
10	1.441	28.98	9.62	38.60	56.00	17.40	QP
11	13.457	15.03	9.68	24.71	50.00	25.29	Average
12	13.457	28.91	9.68	38.59	60.00	21.41	QP

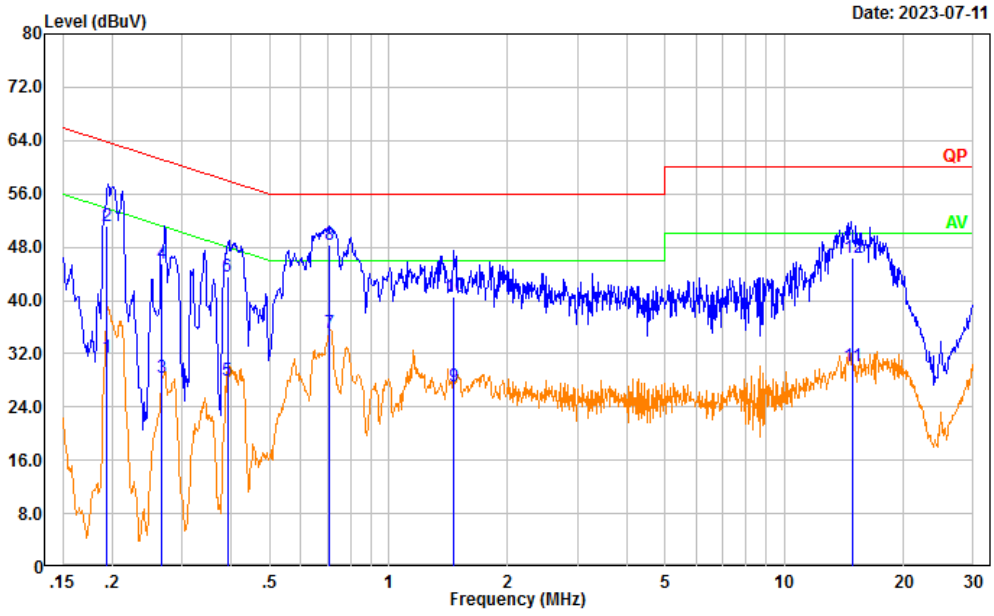
277V:

Test Mode: Transmitting
Port: Line
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector
1	0.193	20.41	9.61	30.02	53.89	23.87	Average
2	0.193	39.56	9.61	49.17	63.89	14.72	QP
3	0.261	16.70	9.61	26.31	51.41	25.10	Average
4	0.261	34.18	9.61	43.79	61.41	17.62	QP
5	0.580	22.27	9.62	31.89	46.00	14.11	Average
6	0.580	38.13	9.62	47.75	56.00	8.25	QP
7	0.668	23.21	9.62	32.83	46.00	13.17	Average
8	0.668	39.50	9.62	49.12	56.00	6.88	QP
9	0.789	24.37	9.62	33.99	46.00	12.01	Average
10	0.789	38.05	9.62	47.67	56.00	8.33	QP
11	13.560	19.16	9.68	28.84	50.00	21.16	Average
12	13.560	40.12	9.68	49.80	60.00	10.20	QP

Test Mode: Transmitting
Port: neutral
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector
1	0.193	21.91	9.61	31.52	53.90	22.38	Average
2	0.193	41.50	9.61	51.11	63.90	12.79	QP
3	0.267	18.77	9.61	28.38	51.21	22.83	Average
4	0.267	35.92	9.61	45.53	61.21	15.68	QP
5	0.391	18.31	9.61	27.92	48.04	20.12	Average
6	0.391	34.03	9.61	43.64	58.04	14.40	QP
7	0.706	25.45	9.62	35.07	46.00	10.93	Average
8	0.706	38.64	9.62	48.26	56.00	7.74	QP
9	1.455	17.45	9.62	27.07	46.00	18.93	Average
10	1.455	30.96	9.62	40.58	56.00	15.42	QP
11	14.839	20.52	9.69	30.21	50.00	19.79	Average
12	14.839	36.62	9.69	46.31	60.00	13.69	QP

4.2 Radiation Spurious Emissions

Serial Number:	253G-2	Test Date:	2023/7/7~2023/7/8
Test Site:	966-1,966-2	Test Mode:	Transmitting
Tester:	coco Tian,Carl Xue	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	26.1~27.2	Relative Humidity: (%)	60~69	ATM Pressure: (kPa)	100.2~100.5

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-5	2020/10/19	2023/10/18
R&S	EMI Test Receiver	ESR3	102724	2022/7/15	2023/07/14
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2022/07/17	2023/07/16
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2022/07/17	2023/07/16
Sonoma	Amplifier	310N	186165	2022/07/17	2023/07/16
Audix	Test Software	E3	201021 (V9)	N/A	N/A
ETS-Lindgren	Horn Antenna	3115	9912-5985	2020/10/13	2023/10/12
R&S	Spectrum Analyzer	FSV40	101591	2022/07/15	2023/07/14
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2022/08/07	2023/08/06
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2022/08/07	2023/08/06
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2022/11/09	2023/11/08
PASTERNACK	Horn Antenna	PE9852/2F-20	112002	2021/02/05	2024/02/04
Quinstar	Preamplifier	QLW-18405536-JO	15964001005	2022/9/16	2023/9/15
MICRO-COAX	Coaxial Cable	UFB142A-1-2362-200200	235772-001	2022/08/07	2023/08/06
E-Microwave	Band Rejection Filter	5150-5850MHz	OE01902423	2022/08/07	2023/08/06
Mini Circuits	High Pass Filter	VHF-6010+	31119	2022/08/07	2023/08/06
PASTERNACK	Horn Antenna	PE9850/2F-20	072001	2021/02/05	2024/02/04

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

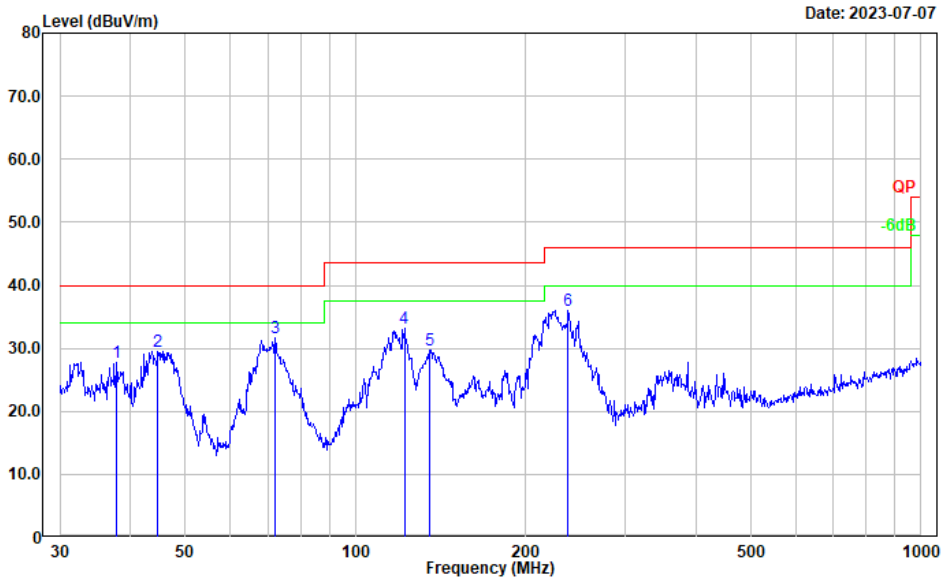
Test Data:

Please refer to the below table and plots.

Note: The device can be mounted in multiple orientations, test was performed with X,Y, Z Axis according to C63.10 figure 8, the worst orientation was photographed and it`s data was recorded.

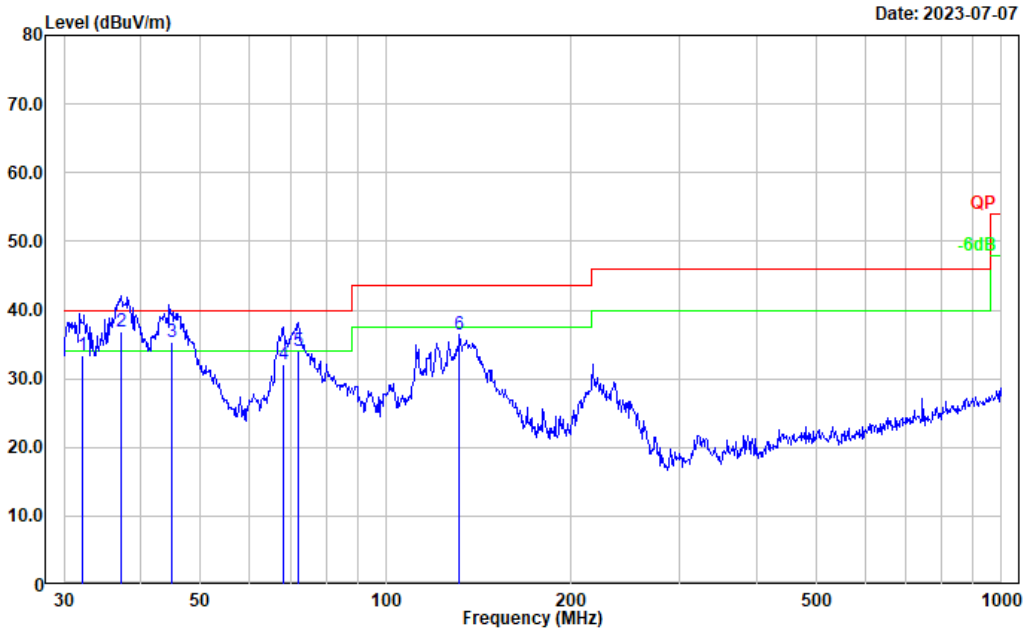
1) 30MHz-1GHz (Low channel):
120V:

Test Mode: Transmitting
Polarization: horizontal
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	37.812	37.40	-9.59	27.81	40.00	12.19	Peak
2	44.743	43.60	-14.08	29.52	40.00	10.48	Peak
3	72.084	48.34	-16.69	31.65	40.00	8.35	Peak
4	121.976	44.52	-11.42	33.10	43.50	10.40	Peak
5	135.032	41.37	-11.60	29.77	43.50	13.73	Peak
6	237.476	49.08	-13.05	36.03	46.00	9.97	Peak

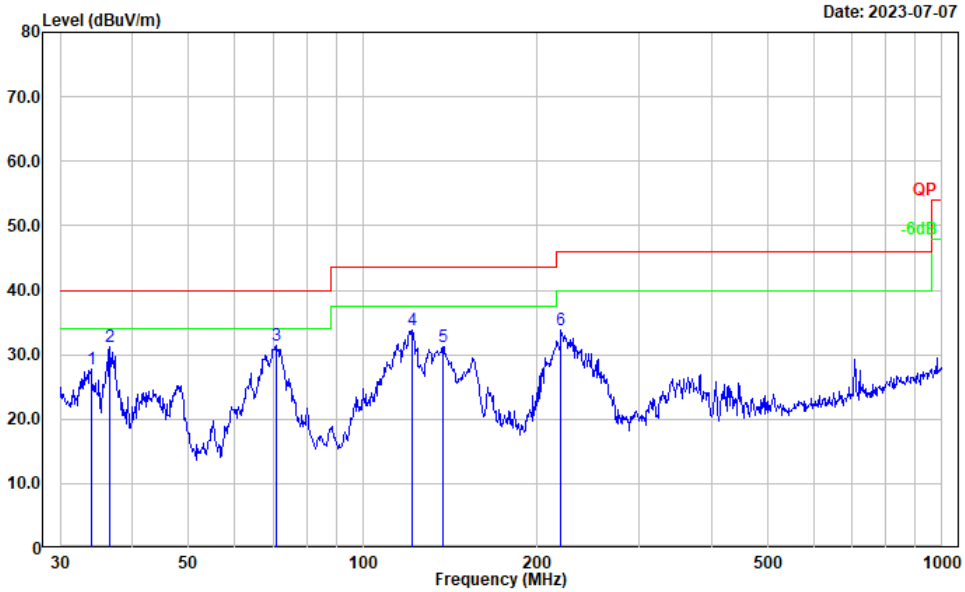
Test Mode: Transmitting
Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	32.137	38.52	-5.23	33.29	40.00	6.71	QP
2	37.155	45.89	-9.12	36.77	40.00	3.23	QP
3	44.860	49.49	-14.15	35.34	40.00	4.66	QP
4	68.146	48.73	-16.67	32.06	40.00	7.94	QP
5	72.162	50.70	-16.69	34.01	40.00	5.99	QP
6	131.758	47.84	-11.39	36.45	43.50	7.05	Peak

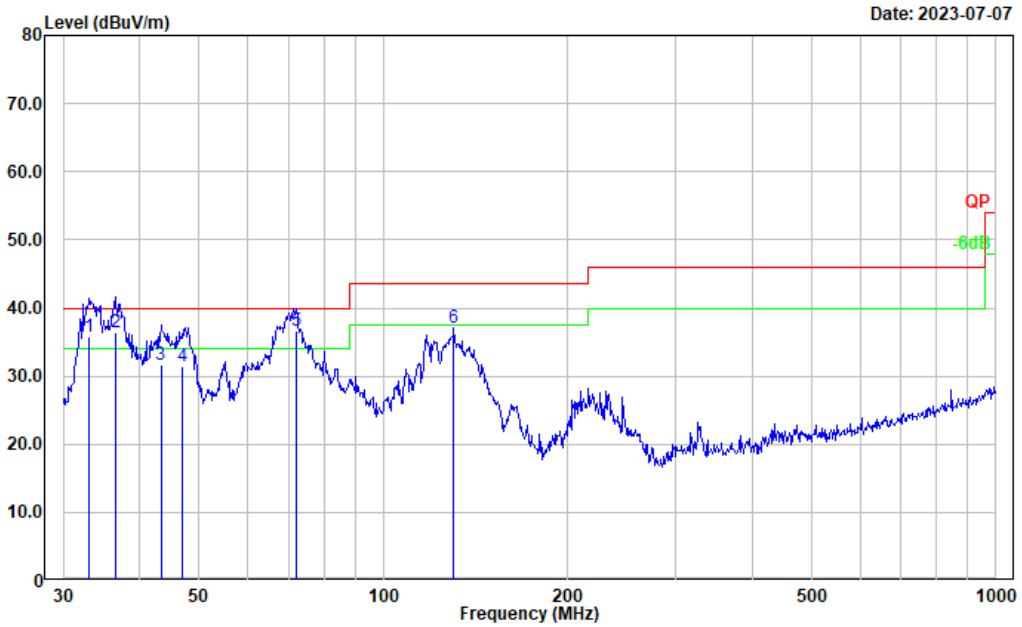
277V:

Test Mode: Transmitting
Polarization: horizontal
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	33.917	34.41	-6.61	27.80	40.00	12.20	Peak
2	36.637	39.96	-8.73	31.23	40.00	8.77	Peak
3	70.832	47.90	-16.55	31.35	40.00	8.65	Peak
4	121.549	45.16	-11.43	33.73	43.50	9.77	Peak
5	137.420	42.99	-11.75	31.24	43.50	12.26	Peak
6	219.845	46.67	-12.82	33.85	46.00	12.15	Peak

Test Mode: Transmitting
Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	33.095	41.83	-5.99	35.84	40.00	4.16	QP
2	36.509	45.16	-8.63	36.53	40.00	3.47	QP
3	43.300	44.88	-13.26	31.62	40.00	8.38	QP
4	46.962	46.82	-15.41	31.41	40.00	8.59	QP
5	72.064	53.33	-16.69	36.64	40.00	3.36	QP
6	130.379	48.37	-11.31	37.06	43.50	6.44	Peak

2) 1GHz-40GHz:
120V:

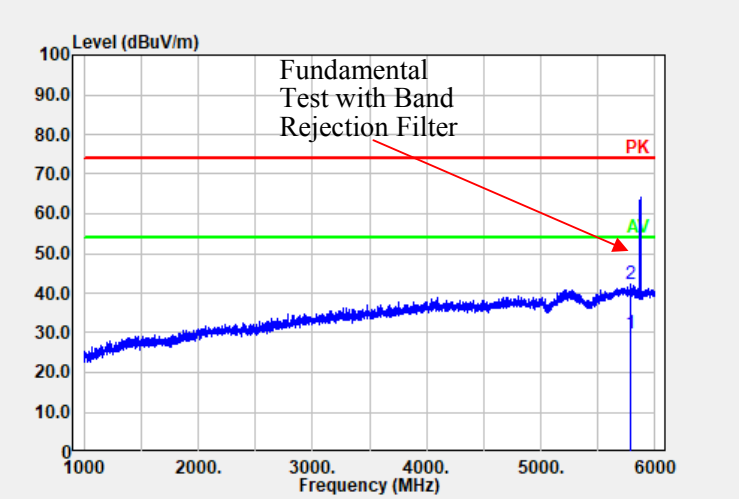
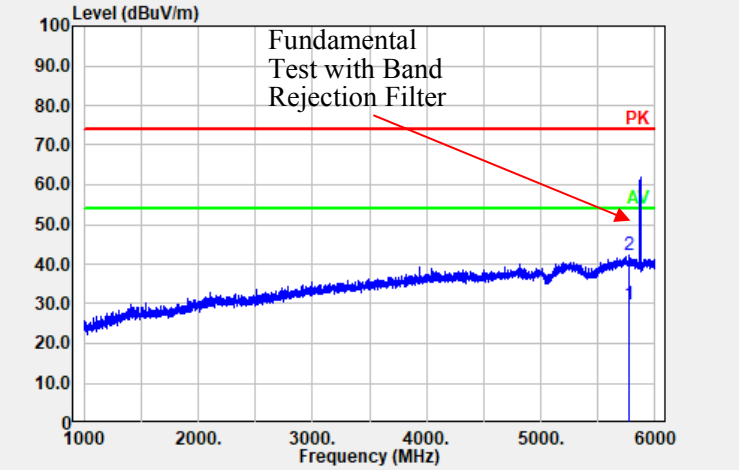
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Test Frequency: 5750 MHz							
5750.000	58.21	PK	H	39.45	91.64	113.98	22.34
5750.000	57.84	AV	H	39.45	91.27	93.98	2.71
5750.000	55.40	PK	V	39.45	88.83	113.98	25.15
5750.000	54.97	AV	V	39.45	88.40	93.98	5.58
5725.000	30.16	PK	H	39.48	63.62	74.00	10.38
5725.000	17.35	AV	H	39.48	50.81	54.00	3.19
11500.000	31.43	PK	H	20.64	46.05	74.00	27.95
11500.000	18.32	AV	H	20.64	32.94	54.00	21.06
17250.000	33.29	PK	H	26.85	54.12	74.00	19.88
17250.000	20.18	AV	H	26.85	41.01	54.00	12.99
Test Frequency: 5800 MHz							
5800.000	57.59	PK	H	39.43	91.00	113.98	22.98
5800.000	57.02	AV	H	39.43	90.43	93.98	3.55
5800.000	54.45	PK	V	39.43	87.86	113.98	26.12
5800.000	53.98	AV	V	39.43	87.39	93.98	6.59
11600.000	31.84	PK	H	20.91	46.73	74.00	27.27
11600.000	18.69	AV	H	20.91	33.58	54.00	20.42
17400.000	33.62	PK	H	28.23	55.83	74.00	18.17
17400.000	20.58	AV	H	28.23	42.79	54.00	11.21
Test Frequency: 5870 MHz							
5870.000	57.21	PK	H	39.58	90.77	113.98	23.21
5870.000	56.78	AV	H	39.58	90.34	93.98	3.64
5870.000	54.67	PK	V	39.58	88.23	113.98	25.75
5870.000	53.84	AV	V	39.58	87.40	93.98	6.58
5875.000	31.56	PK	H	39.60	65.14	74.00	8.86
5875.000	18.45	AV	H	39.60	52.03	54.00	1.97
11740.000	31.46	PK	H	21.15	46.59	74.00	27.41
11740.000	18.65	AV	H	21.15	33.78	54.00	20.22
17610.000	33.40	PK	H	29.63	57.01	74.00	16.99
17610.000	20.69	AV	H	29.63	44.30	54.00	9.70

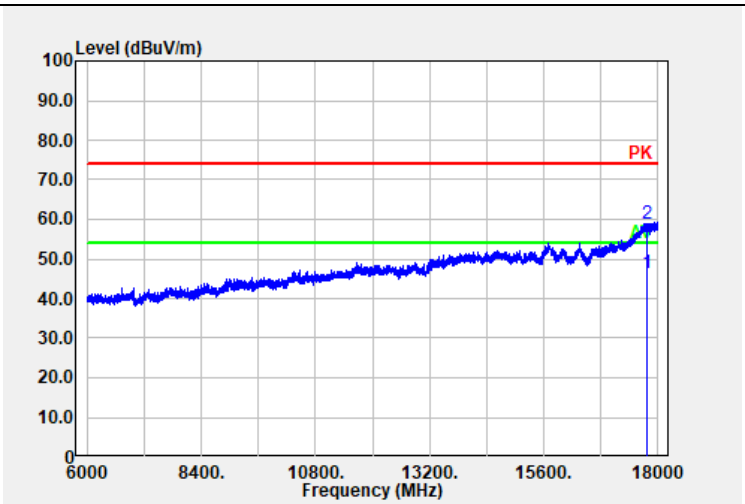
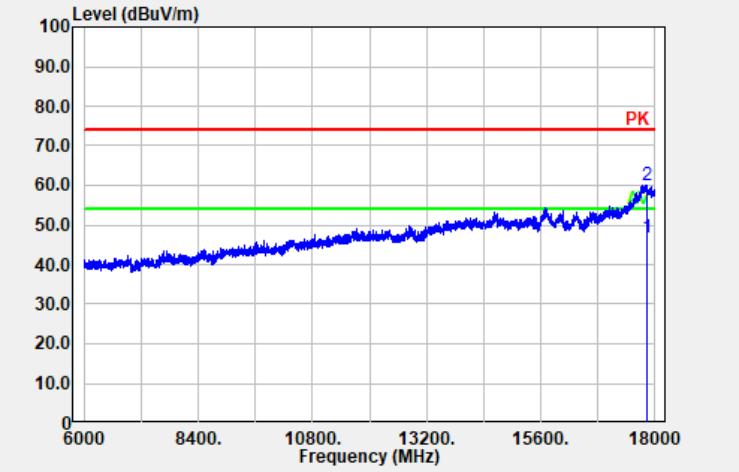
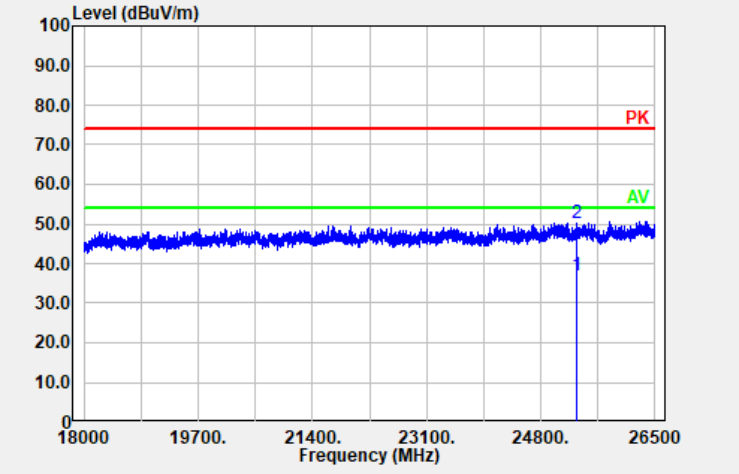
277V:

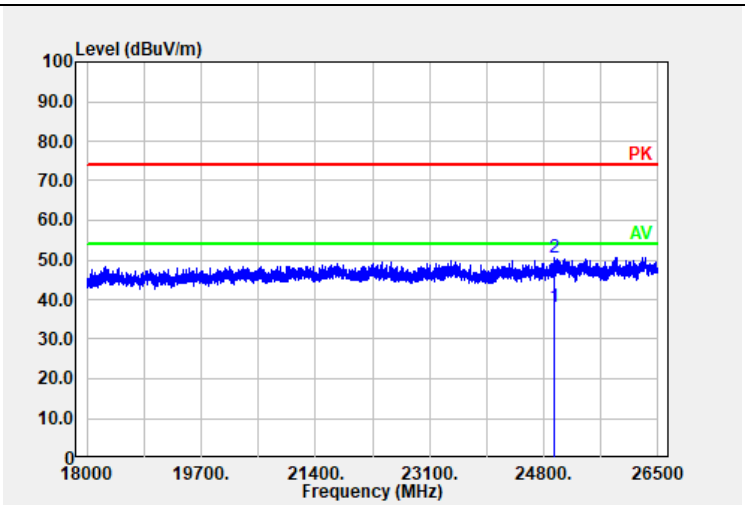
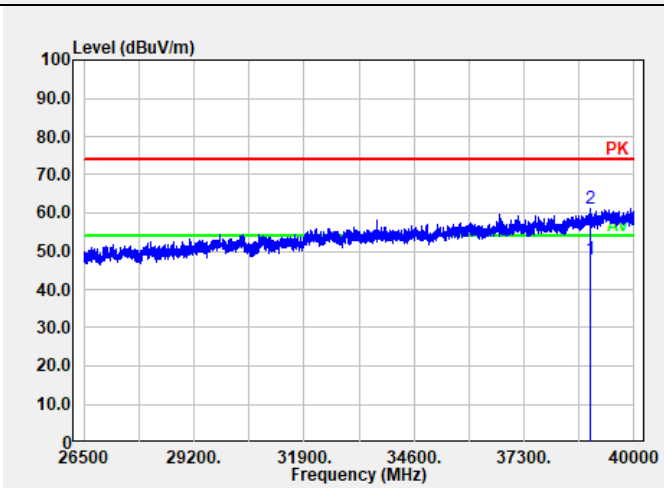
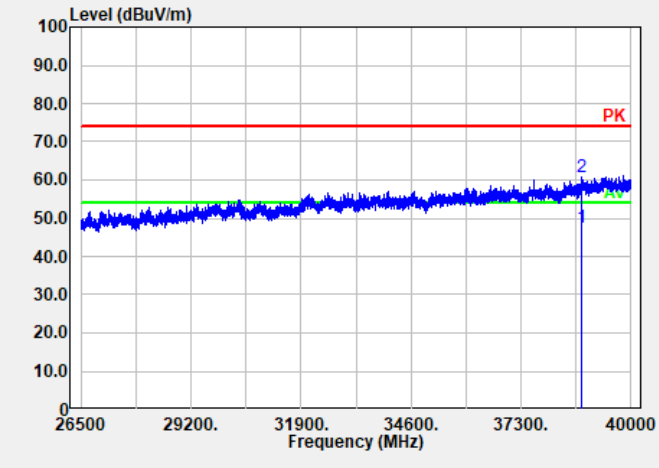
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Test Frequency: 5750 MHz							
5750.000	57.69	PK	H	39.45	91.12	113.98	22.86
5750.000	57.03	AV	H	39.45	90.46	93.98	3.52
5750.000	54.78	PK	V	39.45	88.21	113.98	25.77
5750.000	54.11	AV	V	39.45	87.54	93.98	6.44
5725.000	30.16	PK	H	39.48	63.62	74.00	10.38
5725.000	17.09	AV	H	39.48	50.55	54.00	3.45
11500.000	31.26	PK	H	20.64	45.88	74.00	28.12
11500.000	18.35	AV	H	20.64	32.97	54.00	21.03
17250.000	33.20	PK	H	26.85	54.03	74.00	19.97
17250.000	20.43	AV	H	26.85	41.26	54.00	12.74
Test Frequency: 5800 MHz							
5800.000	57.86	PK	H	39.43	91.27	113.98	22.71
5800.000	57.32	AV	H	39.43	90.73	93.98	3.25
5800.000	54.94	PK	V	39.43	88.35	113.98	25.63
5800.000	54.38	AV	V	39.43	87.79	93.98	6.19
11600.000	31.66	PK	H	20.91	46.55	74.00	27.45
11600.000	18.00	AV	H	20.91	32.89	54.00	21.11
17400.000	33.61	PK	H	28.23	55.82	74.00	18.18
17400.000	20.61	AV	H	28.23	42.82	54.00	11.18
Test Frequency: 5870 MHz							
5870.000	57.49	PK	H	39.58	91.05	113.98	22.93
5870.000	56.97	AV	H	39.58	90.53	93.98	3.45
5870.000	54.31	PK	V	39.58	87.87	113.98	26.11
5870.000	53.88	AV	V	39.58	87.44	93.98	6.54
5875.000	30.19	PK	H	39.60	63.77	74.00	10.23
5875.000	18.06	AV	H	39.60	51.64	54.00	2.36
11740.000	31.69	PK	H	21.15	46.82	74.00	27.18
11740.000	18.44	AV	H	21.15	33.57	54.00	20.43
17610.000	33.72	PK	H	29.63	57.33	74.00	16.67
17610.000	20.81	AV	H	29.63	44.42	54.00	9.58

Note:
Result = Reading + Factor- Distance extrapolation Factor
Distance extrapolation Factor =20 log (specific distance [3m]/test distance [1.5m]) dB= 6.02 dB

Worst Test plots (277V High channel was the worst)

Test Plots	
1GHz-6GHz Horizontal	
1GHz-6GHz Vertical	

6GHz-18GHz Horizontal	
6GHz-18GHz Vertical	
18GHz-26.5GHz Horizontal	

18GHz-26.5GHz Vertical	
26.5G-40G Horizontal	
26.5G-40G Vertical	

4.3 20 dB Emission Bandwidth:

Serial Number:	253G-2	Test Date:	2023/7/8
Test Site:	966-1	Test Mode:	Transmitting
Tester:	coco Tian	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	26.1	Relative Humidity: (%)	60	ATM Pressure: (kPa)	100.5

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
ETS-Lindgren	Horn Antenna	3115	9912-5985	2020/10/13	2023/10/12
R&S	Spectrum Analyzer	FSV40	101591	2022/07/15	2023/07/14
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2022/08/07	2023/08/06
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2022/08/07	2023/08/06
Audix	Test Software	E3	201021 (V9)	N/A	N/A

**** Statement of Traceability:*** *China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

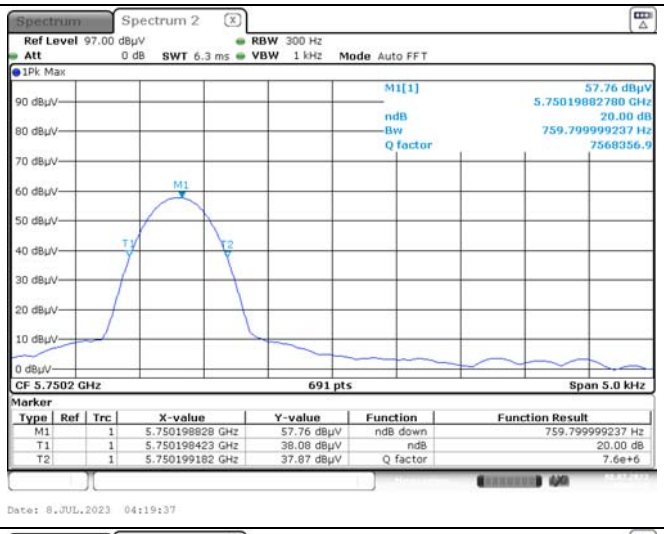
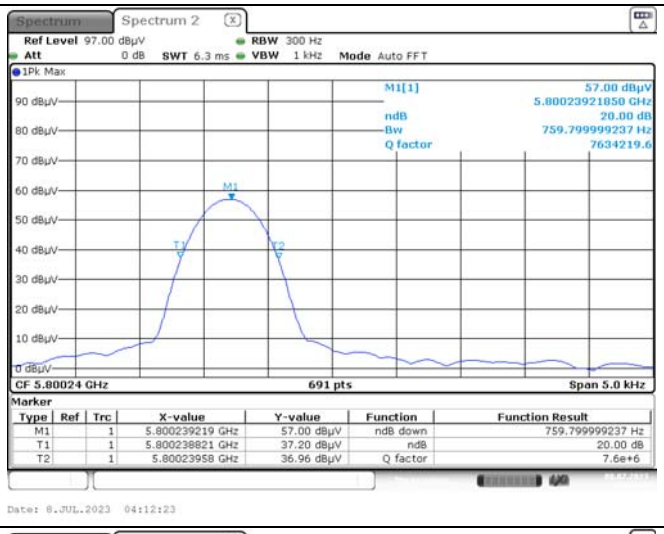
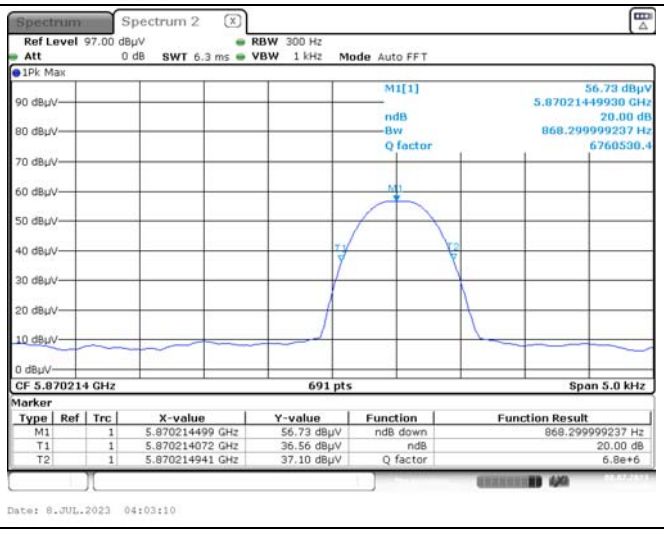
120V:

Test Channel	Test Frequency (MHz)	20 dB Bandwidth (Hz)
Low	5750	759.799
Middle	5800	759.799
High	5870	868.299

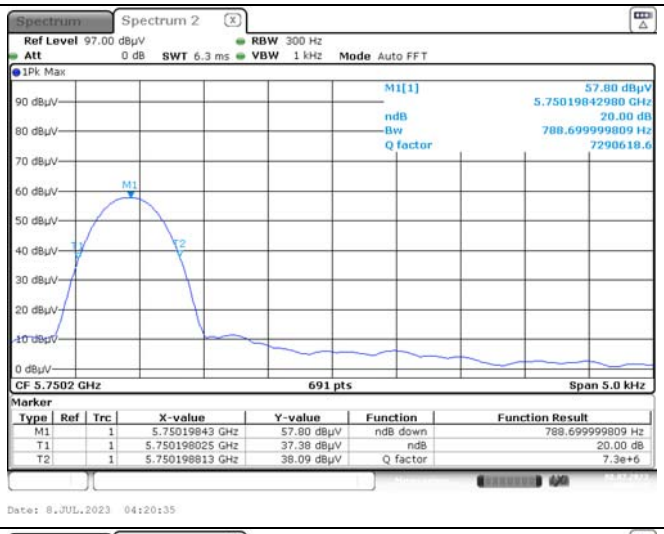
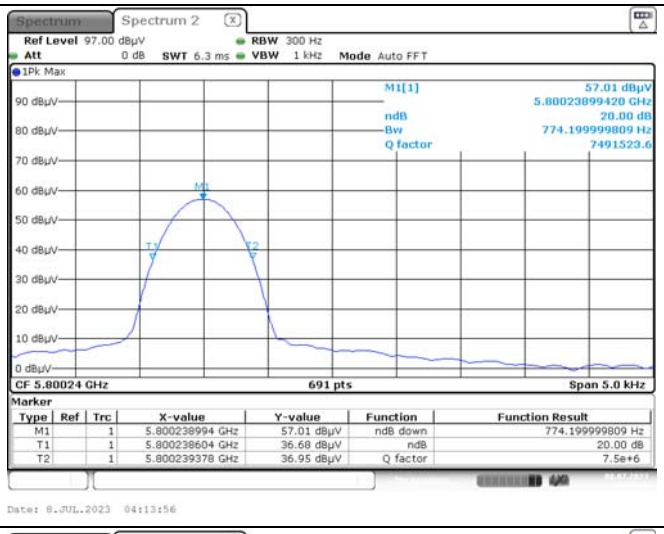
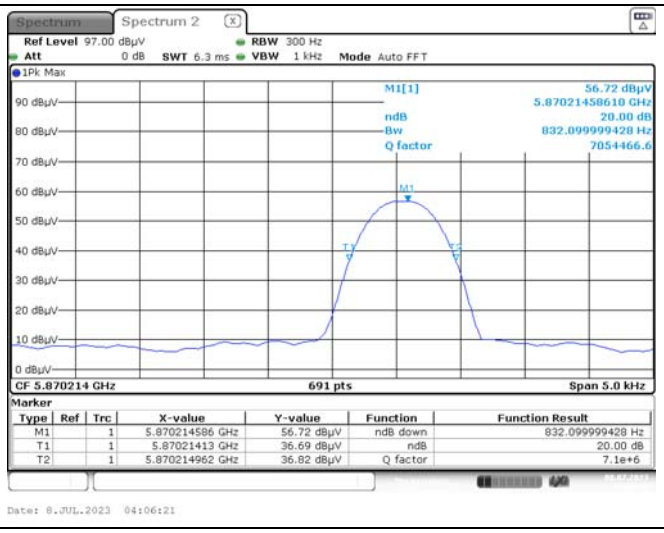
277V:

Test Channel	Test Frequency (MHz)	20 dB Bandwidth (Hz)
Low	5750	788.699
Middle	5800	774.199
High	5870	832.099

120V

20dB Emission Bandwidth	
5750MHz	
5800MHz	
5870MHz	

277V:

20dB Emission Bandwidth	
5750MHz	
5800MHz	
5870MHz	

5. RF EXPOSURE EVALUATION

5.1 Simultaneous Transmission with both MPE-based

1.1.1 Applicable Standard

According to §1.1307(b)(3)(ii)(B)

Simultaneous Transmission with both SAR-based and MPE-Based Test Exemptions

This case is described in detail in § 1.1307(b)(3)(ii)(B) and covers the situations where both SAR-based and MPE-based exemption may be considered for test exemption in fixed, mobile, or portable device exposure conditions. For these cases, a device with multiple RF sources transmitting simultaneously will be considered an RF exempt device if the condition of Formula (1) is satisfied.

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.

$$\sum_{i=1}^{a}\frac{P_i}{P_{th,i}}+\sum_{j=1}^{b}\frac{ERP_j}{ERP_{th,j}}+\sum_{k=1}^{c}\frac{Evaluated_k}{Exposure\ Limit_k}\leq 1 \qquad (1)$$

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(B) of this section for P_{th}, including existing exempt transmitters and those being added.

b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

P_i = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source *i* at a distance between 0.5 cm and 40 cm (inclusive).

$P_{th,i}$ = the exemption threshold power (P_{th}) according to paragraph (b)(3)(i)(B) of this section for fixed, mobile, or portable RF source *i*.

ERP_j = the ERP of fixed, mobile, or portable RF source *j*.

$ERP_{th,j}$ = exemption threshold ERP for fixed, mobile, or portable RF source *j*, at a distance of at least λ/2π according to the applicable formula of paragraph (b)(3)(i)(C) of this section.

$Evaluated_k$ = the maximum reported SAR or MPE of fixed, mobile, or portable RF source *k* either in the device or at the transmitter site from an existing evaluation at the location of exposure.

$Exposure\ Limit_k$ = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source *k*, as applicable from § 1.1310 of this chapter.

5.1.2 Measurement Result

Radio	Frequency (MHz)	λ /2Π (mm)	Distance (mm)	Exemption ERP (mW)	Maximum Conducted Power (dBm)	Antenna Gain (dBi)	ERP	
							dBm	mW
Bluetooth	2402-2480	19.89	200	768	10.71	2.50	11.06	12.76
SDR	5750-5870	8.30	200	768	/	/	-5.71	0.30

Note:
1. For SRD Chose the maximum power to do RF exposure analysis.
2. This device maximum E-Field level is 91.64 dBμV/m at 3m, so the EIRP power is -3.56 dBm.
3. EIRP(dBm)=Field Strength of Fundamental(dBuV/m)-95.2 (dB)
4. The devices contain certified Bluetooth Module, FCC ID: 2ANDL-BT3L.
5. Bluetooth and SRD can transmit simultaneously.

$$\sum_{i=1}^{a}\frac{P_i}{P_{\text{th},i}}+\sum_{j=1}^{b}\frac{ERP_j}{ERP_{\text{th},j}}+\sum_{k=1}^{c}\frac{Evaluated_k}{Exposure\ Limit_k}$$

$=ERP_{Bluetooth} / ERP_{th} + ERP_{SRD} / ERP_{th}$

= 12.76/768 +0.30/768

= 0.017

< 1.0

Result: The device compliant the MPE-Based Exemption at 20cm distances.

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