



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



TEST REPORT

Applicant: PO FUNG ELECTRONIC (HK) INTERNATIONAL GROUP COMPANY LIMITED

Address: Room 1508, 15/F, Office Tower II, Grand Plaza, 625 Nathan Road, Kowloon, Hong Kong

FCC ID: 2AJGM-GT68

Product Name: FRS Two-way Radio

Model Number: GT-68, FR12, BF-12F, VS12, TH12, AR12

Standard(s): 47 CFR Part 15 Subpart B
ANSI C63.4-2014

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

Report Number: CR230739510-00A

Date Of Issue: 2023/11/18

Reviewed By: Julie Tan

Julie Tan

Title: RF Engineer

Approved By: Sun Zhong

Sun Zhong

Title: Manager

Test Laboratory: China Certification ICT Co., Ltd (Dongguan)

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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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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	CR230739510-00A	Original Report	2023/11/18

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	FRS Two-way Radio
EUT Model:	GT-68
Multiple Model:	FR12, BF-12F, VS12, TH12, AR12
Highest Operation Frequency:	467.7125MHz
Rated Input Voltage:	DC 3.7V from battery or DC 5V from USB
Serial Number:	282F-3
EUT Received Date:	2023/7/12
EUT Received Status:	Good
Note: The Multiple models are electrically identical with the test model. Please refer to the declaration letter for more detail, which was provided by manufacturer.	

Accessory Information:

No.

1.2 Description of Test Configuration

1.2.1 EUT Operation Condition:

EUT Operation Mode:	The system was configured for testing in Typical Use Mode, which was provided by the manufacturer. Test Mode :Receiving
Equipment Modifications:	No
EUT Exercise Software:	No

1.2.2 Support Equipment List and Details

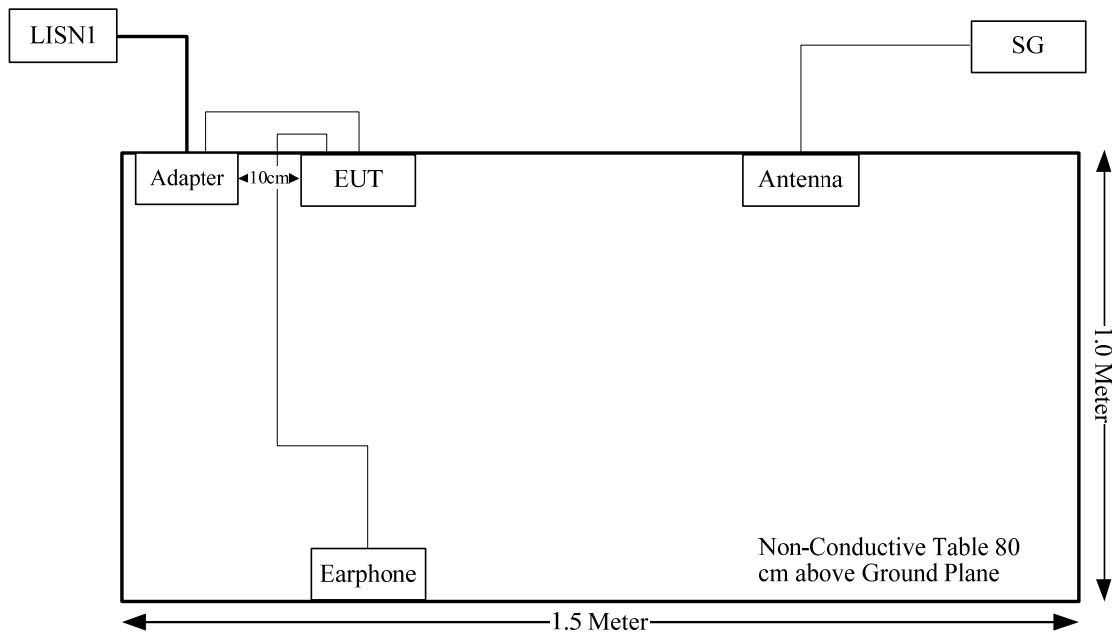
Manufacturer	Description	Model	Serial Number
Fangxin	Adapter	FX2U-050200U	AD220930001
PO FUNG	Earphone	GT68-01	GT68-01

1.2.3 Support Cable List and Details

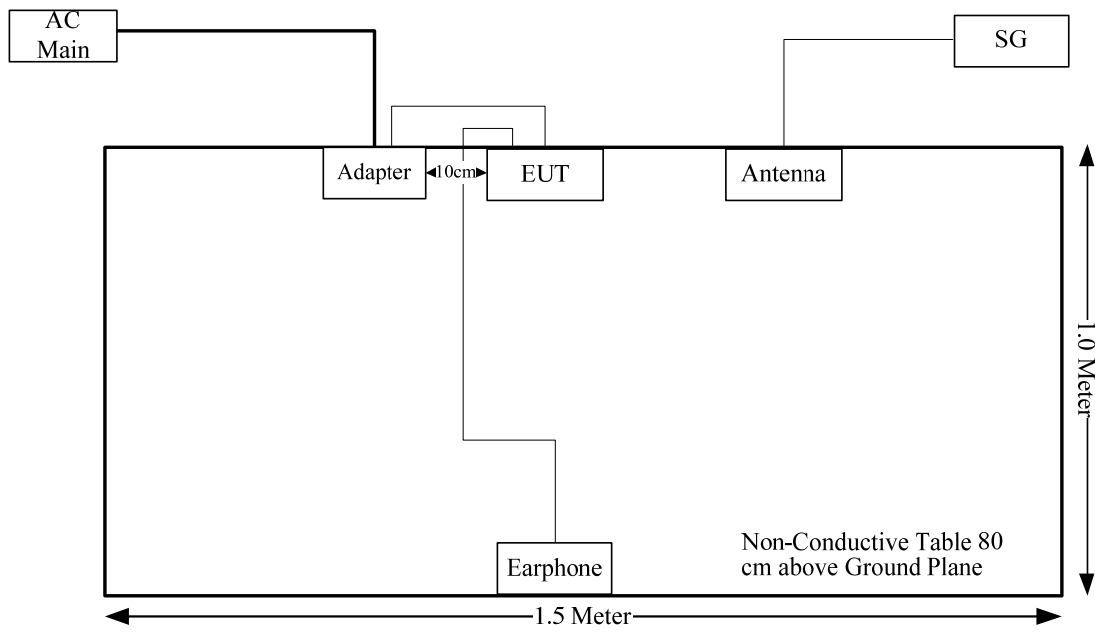
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	No	No	0.5	Adapter	EUT
Earphone Cable	No	No	1	Earphone	EUT

1.2.4 Block Diagram of Test Setup

AC line conducted emissions:



Radiated 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
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	$\pm 1^{\circ}\text{C}$
Humidity	$\pm 5\%$
AC Power Lines Conducted Emission	2.8 dB (150 kHz to 30 MHz)

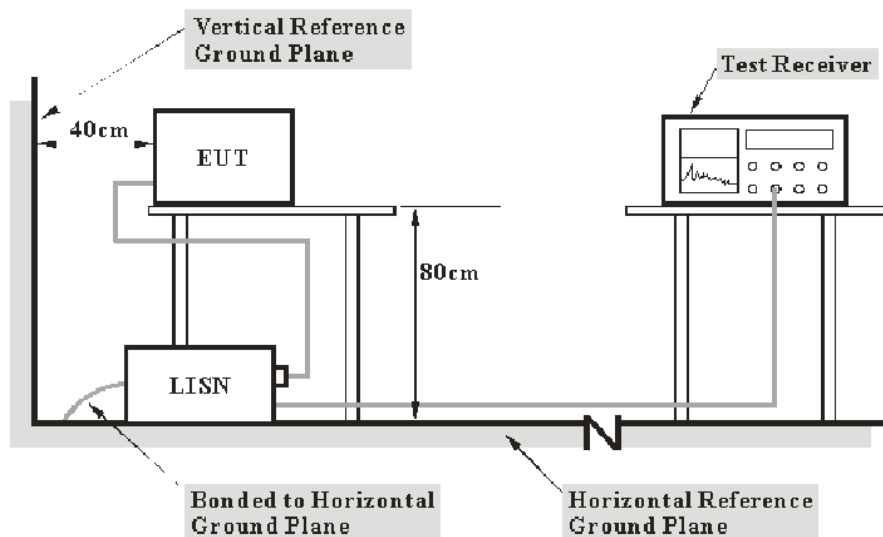
2. SUMMARY OF TEST RESULTS

Standard(s) Section	Description of Test	Result
§15.107	Conducted emissions	Compliant
§15.109	Radiated emissions	Compliant

3. REQUIREMENTS AND TEST PROCEDURES

3.1 AC Line Conducted Emissions

3.1.1 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 C63.4-2014 measurement procedure. The specification used was with the FCC Part 15 B Class B limits.

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

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

3.1.2 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

3.1.3 Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT, the report shall list the six emissions with the smallest margin relative to the limit, unless the margin is greater than 20 dB.

All data was recorded in the Quasi-peak and average detection mode.

The report shall list the six emissions with the smallest margin relative to the limit, unless the margin is greater than 20 dB.

3.1.4 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor

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

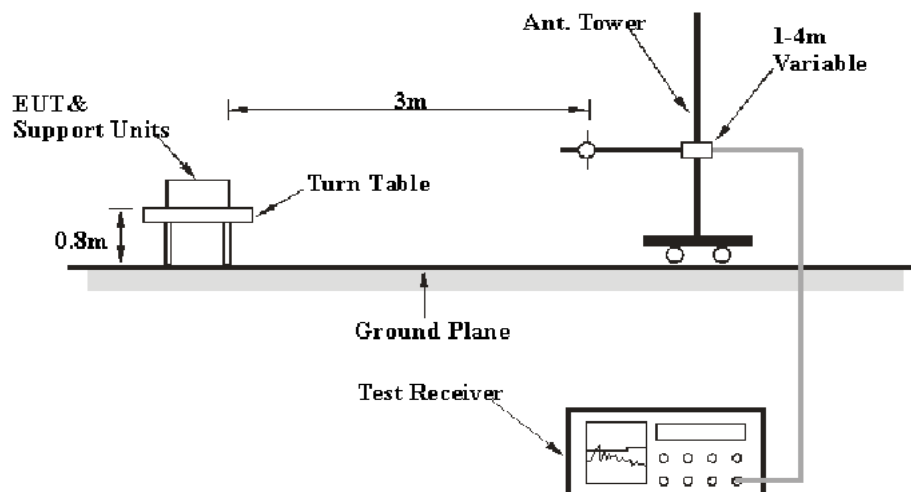
The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

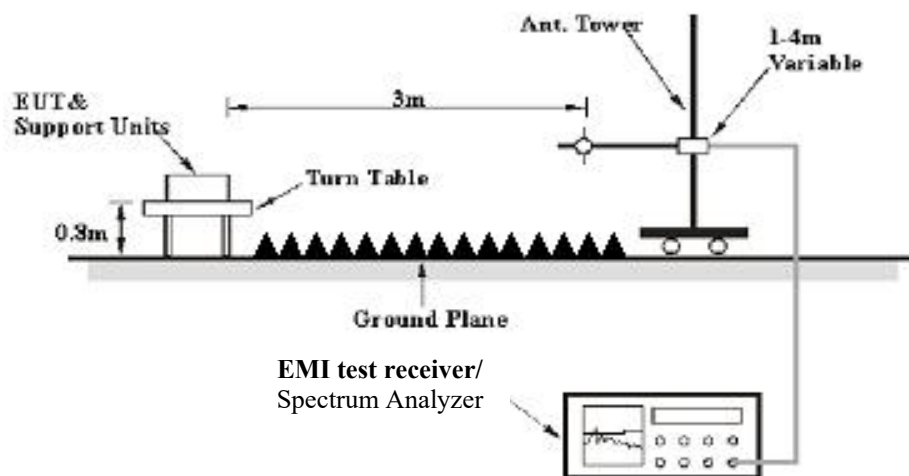
3.2 Radiation Spurious Emissions

3.2.1 EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emissions were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was with the FCC Part 15 B Class B limits.

3.2.2 EMI Test Receiver Setup

The system was investigated from 30 MHz to 2 GHz.

During the radiated emission test, the EMI test receiver/Spectrum Analyzer was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	Reduced video bandwidth	/	AVG

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

3.2.3 Test Procedure

During the radiated emissions, the adapter was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

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

The data was recorded in the Quasi-peak detection mode for below 1 GHz.

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

3.2.4 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. TEST DATA AND RESULTS

4.1 AC Line Conducted Emissions

Serial Number:	282F-3	Test Date:	2023/08/12
Test Site:	CE	Test Mode:	Receiving
Tester:	David Huang	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	26	Relative Humidity: (%)	57	ATM Pressure: (kPa)	100.5
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Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101134	2023/03/31	2024/03/30
R&S	EMI Test Receiver	ESR3	102726	2023/03/31	2024/03/30
MICRO-COAX	Coaxial Cable	UTIFLEX	C-0200-01	2023/8/6	2024/8/5
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).

Receiving frequency 462.6375 MHz :

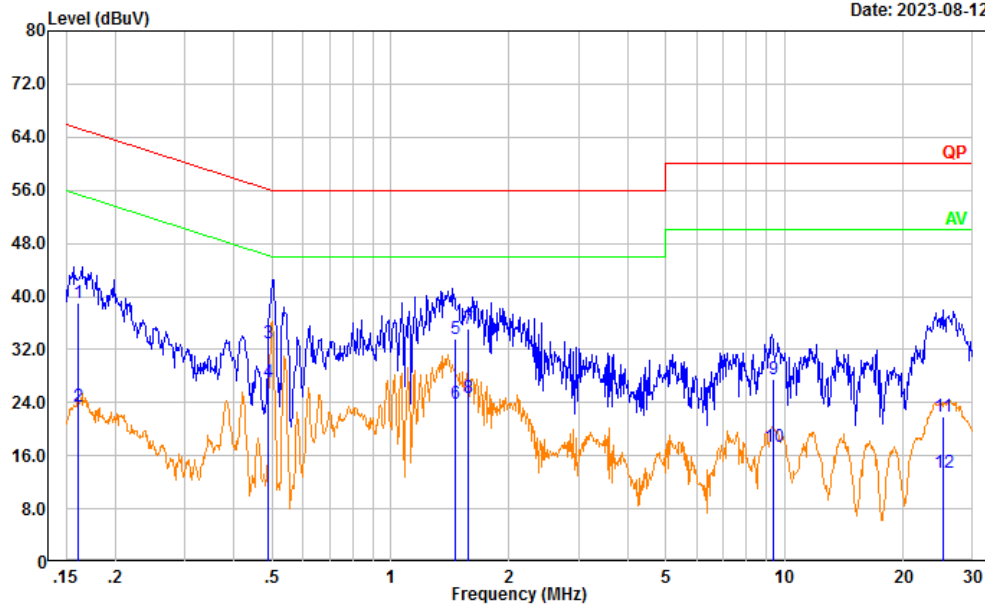
Project No.: CR230739510-RF

Tester: David Huang

Port: Line

Note:

Date: 2023-08-12



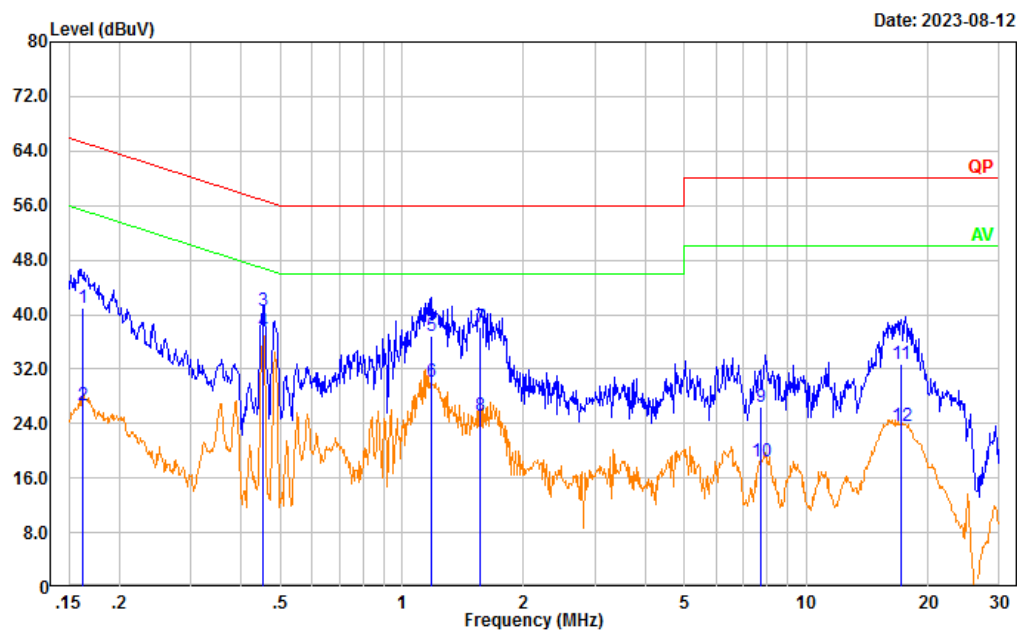
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.161	29.48	9.61	39.09	65.40	26.31	QP
2	0.161	13.91	9.61	23.52	55.40	31.88	Average
3	0.489	23.34	9.61	32.95	56.18	23.23	QP
4	0.489	17.51	9.61	27.12	46.18	19.06	Average
5	1.465	23.93	9.62	33.55	56.00	22.45	QP
6	1.465	14.22	9.62	23.84	46.00	22.16	Average
7	1.578	25.39	9.63	35.02	56.00	20.98	QP
8	1.578	15.15	9.63	24.78	46.00	21.22	Average
9	9.339	17.92	9.67	27.59	60.00	32.41	QP
10	9.339	7.70	9.67	17.37	50.00	32.63	Average
11	25.268	12.10	9.81	21.91	60.00	38.09	QP
12	25.268	3.55	9.81	13.36	50.00	36.64	Average

Project No.: CR230739510-RF

Tester: David Huang

Port: neutral

Note:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.162	31.28	9.61	40.89	65.36	24.47	QP
2	0.162	16.96	9.61	26.57	55.36	28.79	Average
3	0.454	31.02	9.61	40.63	56.81	16.18	QP
4	0.454	28.00	9.61	37.61	46.81	9.20	Average
5	1.182	27.25	9.62	36.87	56.00	19.13	QP
6	1.182	20.54	9.62	30.16	46.00	15.84	Average
7	1.555	28.44	9.63	38.07	56.00	17.93	QP
8	1.555	15.45	9.63	25.08	46.00	20.92	Average
9	7.700	16.79	9.67	26.46	60.00	33.54	QP
10	7.700	8.78	9.67	18.45	50.00	31.55	Average
11	17.152	23.12	9.69	32.81	60.00	27.19	QP
12	17.152	13.86	9.69	23.55	50.00	26.45	Average

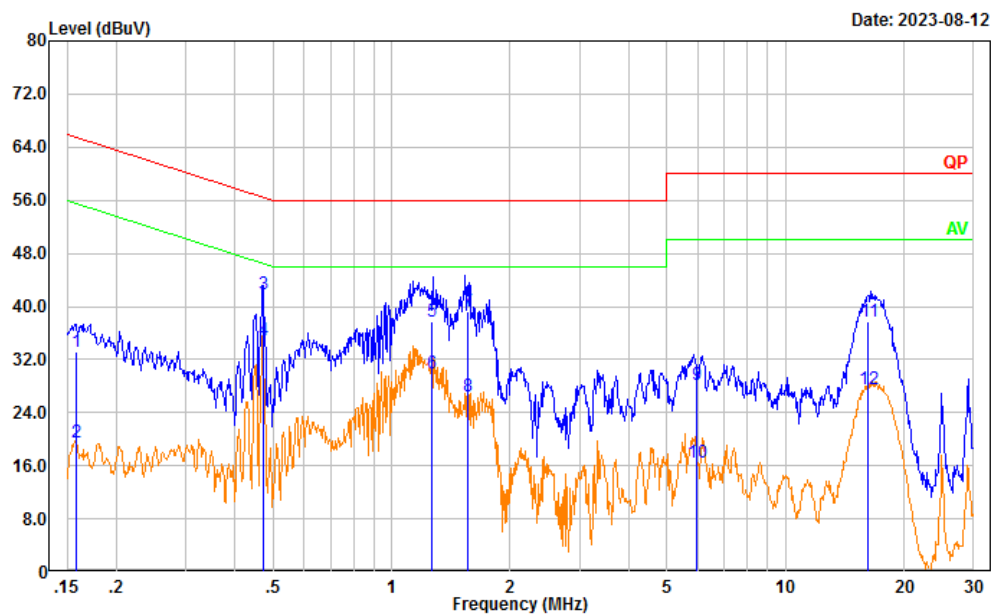
Receiving frequency 467.6375 MHz :

Project No.: CR230739510-RF

Tester: David Huang

Port: Line

Note:



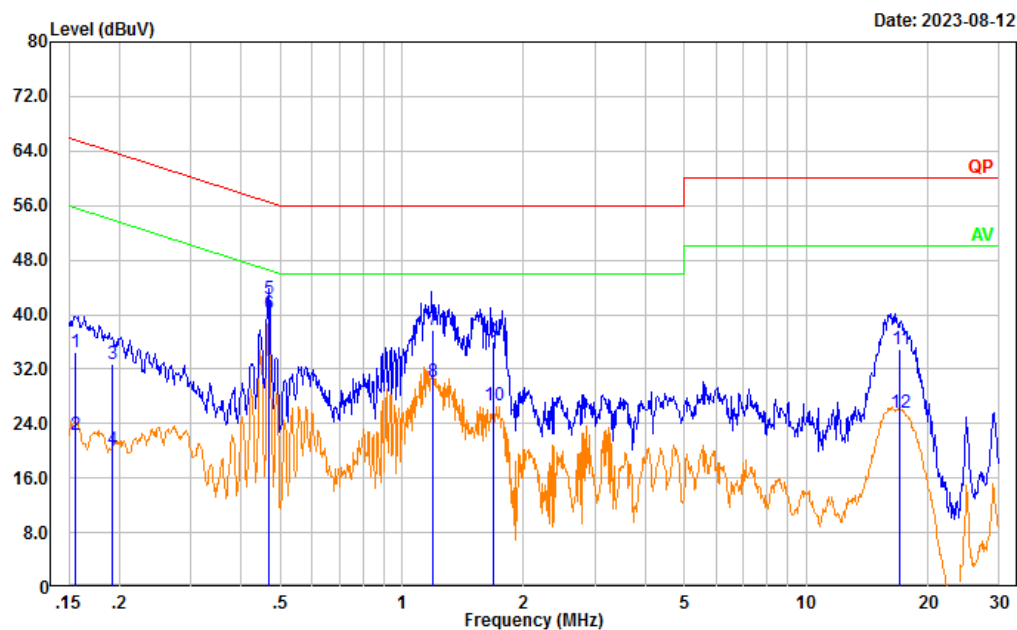
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.158	23.52	9.61	33.13	65.58	32.45	QP
2	0.158	9.92	9.61	19.53	55.58	36.05	Average
3	0.471	32.15	9.61	41.76	56.50	14.74	QP
4	0.471	25.29	9.61	34.90	46.50	11.60	Average
5	1.261	28.00	9.62	37.62	56.00	18.38	QP
6	1.261	20.36	9.62	29.98	46.00	16.02	Average
7	1.566	29.69	9.63	39.32	56.00	16.68	QP
8	1.566	16.84	9.63	26.47	46.00	19.53	Average
9	5.937	18.49	9.66	28.15	60.00	31.85	QP
10	5.937	6.73	9.66	16.39	50.00	33.61	Average
11	16.244	27.91	9.71	37.62	60.00	22.38	QP
12	16.244	17.92	9.71	27.63	50.00	22.37	Average

Project No.: CR230739510-RF

Tester: David Huang

Port: neutral

Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV)	Margin (dB)	Detector
1	0.156	24.86	9.61	34.47	65.69	31.22	QP
2	0.156	12.73	9.61	22.34	55.69	33.35	Average
3	0.192	23.23	9.61	32.84	63.96	31.12	QP
4	0.192	10.60	9.61	20.21	53.96	33.75	Average
5	0.468	32.75	9.61	42.36	56.54	14.18	QP
6	0.468	30.52	9.61	40.13	46.54	6.41	Average
7	1.194	28.04	9.62	37.66	56.00	18.34	QP
8	1.194	20.53	9.62	30.15	46.00	15.85	Average
9	1.686	26.44	9.63	36.07	56.00	19.93	QP
10	1.686	17.00	9.63	26.63	46.00	19.37	Average
11	17.060	25.16	9.69	34.85	60.00	25.15	QP
12	17.060	15.95	9.69	25.64	50.00	24.36	Average

4.2 Radiation Spurious Emissions

Serial Number:	282F-3	Test Date:	2023/8/4~2023/11/17
Test Site:	966-1/966-2	Test Mode:	Receiving
Tester:	Carl Xue, coco Tian	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.1~27.2	Relative Humidity: (%)	54~66	ATM Pressure: (kPa)	99.8-102.1
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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
Sunol Sciences	Antenna	JB6	A082520-6	2023/9/18	2026/9/17
R&S	EMI Test Receiver	ESR3	102724	2023/3/31	2024/3/30
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2023/7/16	2024/7/15
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2023/7/16	2024/7/15
Sonoma	Amplifier	310N	186165	2023/7/16	2024/7/15
Audix	Test Software	E3	201021 (V9)	N/A	N/A
ETS-Lindgren	Horn Antenna	3115	9912-5985	2020/10/13	2023/10/12
AH	Double Ridge Guide Horn Antenna	SAS-571	1394	2023/2/22	2026/2/21
R&S	Spectrum Analyzer	FSV40	101591	2023/3/31	2024/3/30
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2022/8/7	2023/8/6
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2023/8/6	2024/8/5
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2022/8/7	2023/8/6
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2023/8/6	2024/8/5
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2022/11/9	2023/11/8
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2023/11/8	2024/11/7

* 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:

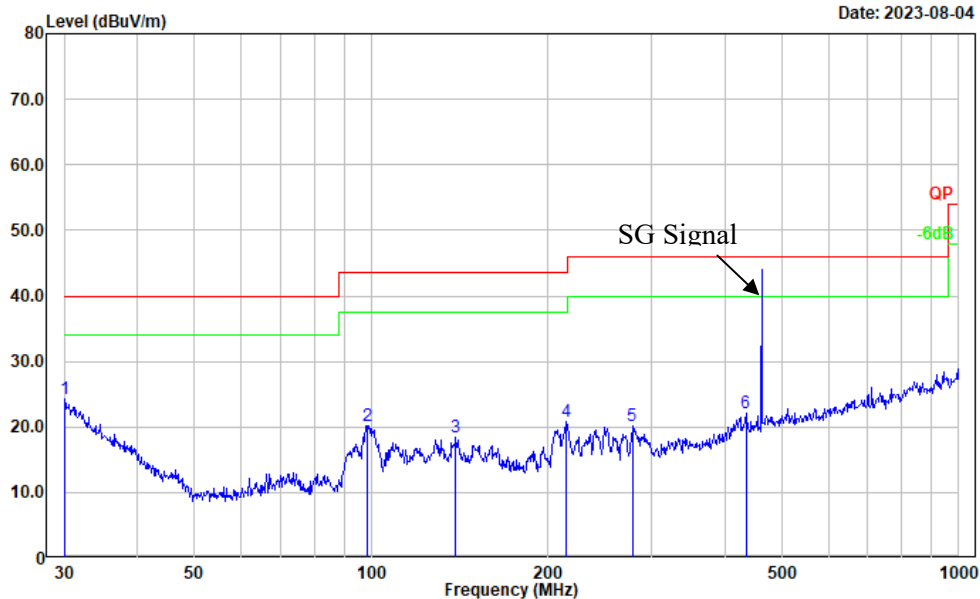
Please refer to the below table and plots.

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

1) 30MHz-1GHz
462.6375MHz:

Project No.: CR230739510-RF
Tester: Carl Xue
Polarization: horizontal
Note:

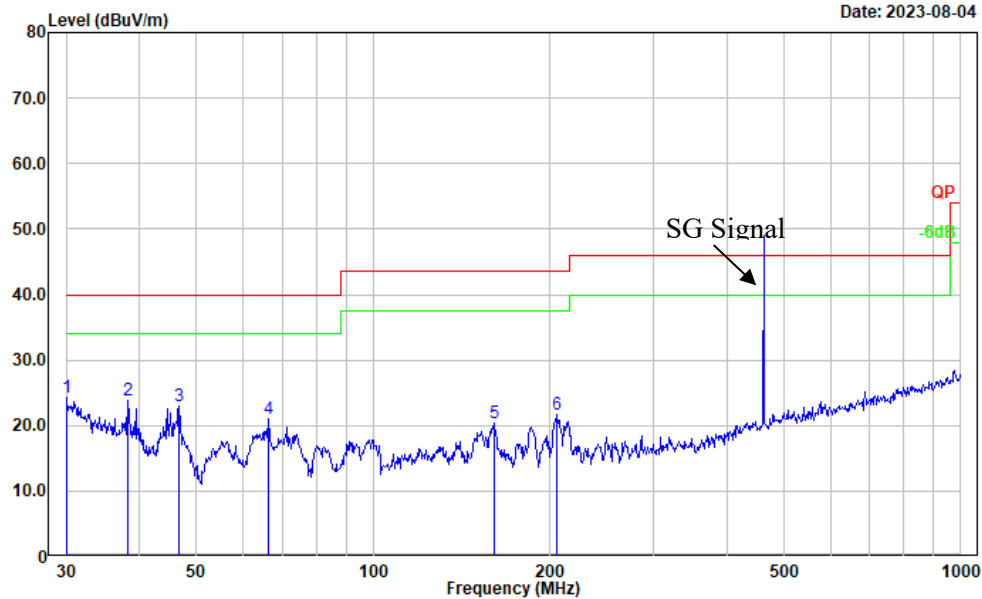
Date: 2023-08-04



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	30.105	28.00	-3.68	24.32	40.00	15.68	Peak
2	98.487	34.88	-14.66	20.22	43.50	23.28	Peak
3	139.361	30.19	-11.83	18.36	43.50	25.14	Peak
4	214.514	33.51	-12.60	20.91	43.50	22.59	Peak
5	278.067	31.98	-11.75	20.23	46.00	25.77	Peak
6	434.065	29.48	-7.37	22.11	46.00	23.89	Peak

Project No.: CR230739510-RF
Tester: Carl Xue
Polarization: vertical
Note:

Date: 2023-08-04

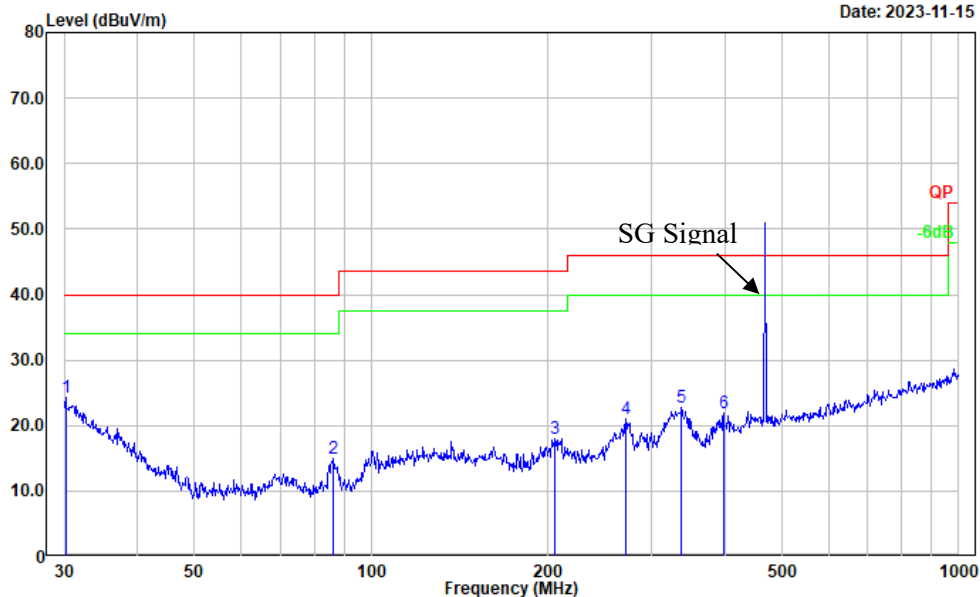


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.000	27.78	-3.60	24.18	40.00	15.82	Peak
2	38.212	33.80	-9.91	23.89	40.00	16.11	Peak
3	46.666	38.22	-15.23	22.99	40.00	17.01	Peak
4	66.266	37.80	-16.84	20.96	40.00	19.04	Peak
5	160.346	32.43	-12.09	20.34	43.50	23.16	Peak
6	205.675	33.98	-12.37	21.61	43.50	21.89	Peak

467.6375MHz:

Project No.: CR230739510-RF
Tester: Carl Xue
Polarization: horizontal
Note:

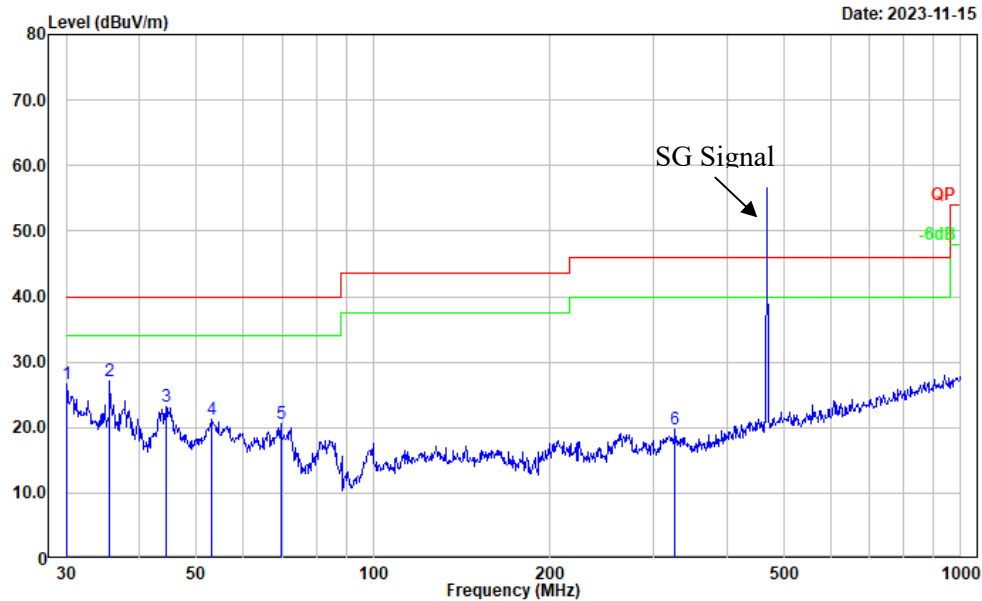
Date: 2023-11-15



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.211	28.34	-3.96	24.38	40.00	15.62	Peak
2	86.200	32.19	-17.13	15.06	40.00	24.94	Peak
3	204.955	30.40	-12.37	18.03	43.50	25.47	Peak
4	271.325	33.19	-12.10	21.09	46.00	24.91	Peak
5	337.216	32.82	-10.10	22.72	46.00	23.28	Peak
6	397.633	30.66	-8.79	21.87	46.00	24.13	Peak

Project No.: CR230739510-RF
Tester: Carl Xue
Polarization: vertical
Note:

Date: 2023-11-15

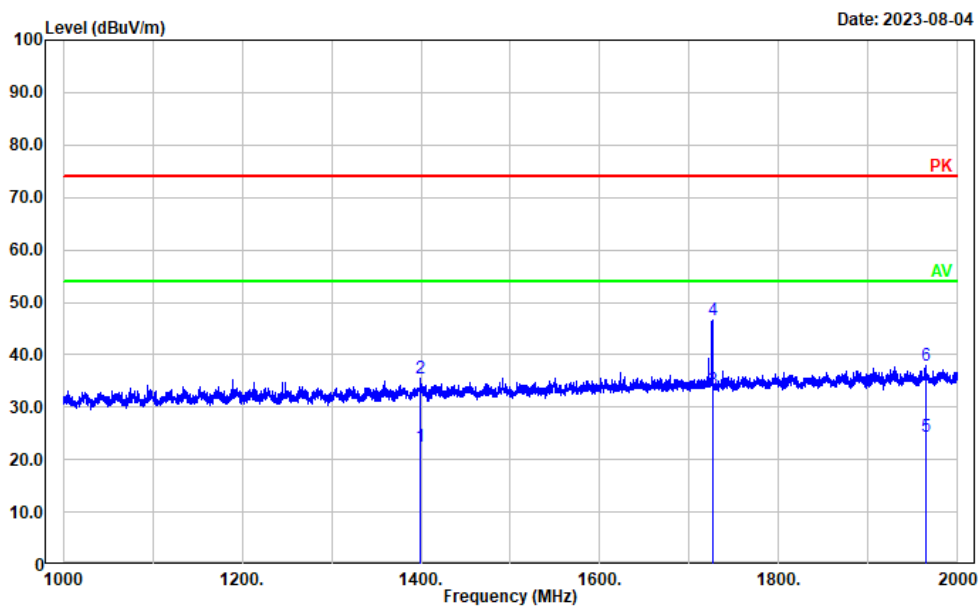


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	30.000	30.49	-3.80	26.69	40.00	13.31	Peak
2	35.624	35.11	-8.10	27.01	40.00	12.99	Peak
3	44.431	37.09	-13.92	23.17	40.00	16.83	Peak
4	52.945	38.35	-17.13	21.22	40.00	18.78	Peak
5	69.600	37.20	-16.61	20.59	40.00	19.41	Peak
6	326.740	30.01	-10.33	19.68	46.00	26.32	Peak

2) Above 1GHz

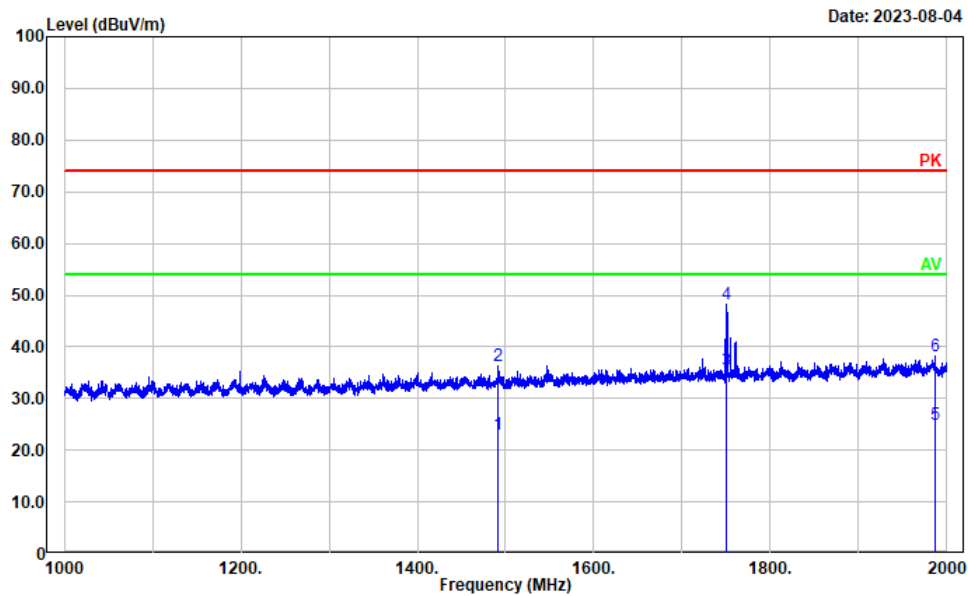
462.6375MHz:

Project No.: CR230739510-RF
Tester: coco Tian
Polarization: horizontal
Note:



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	1398.680	23.52	-0.90	22.62	54.00	31.38	Average
2	1398.680	36.31	-0.90	35.41	74.00	38.59	Peak
3	1725.545	32.50	0.86	33.36	54.00	20.64	Average
4	1725.545	45.75	0.86	46.61	74.00	27.39	Peak
5	1964.193	22.12	2.15	24.27	54.00	29.73	Average
6	1964.193	35.66	2.15	37.81	74.00	36.19	Peak

Project No.: CR230739510-RF
Tester: coco Tian
Polarization: vertical
Note:

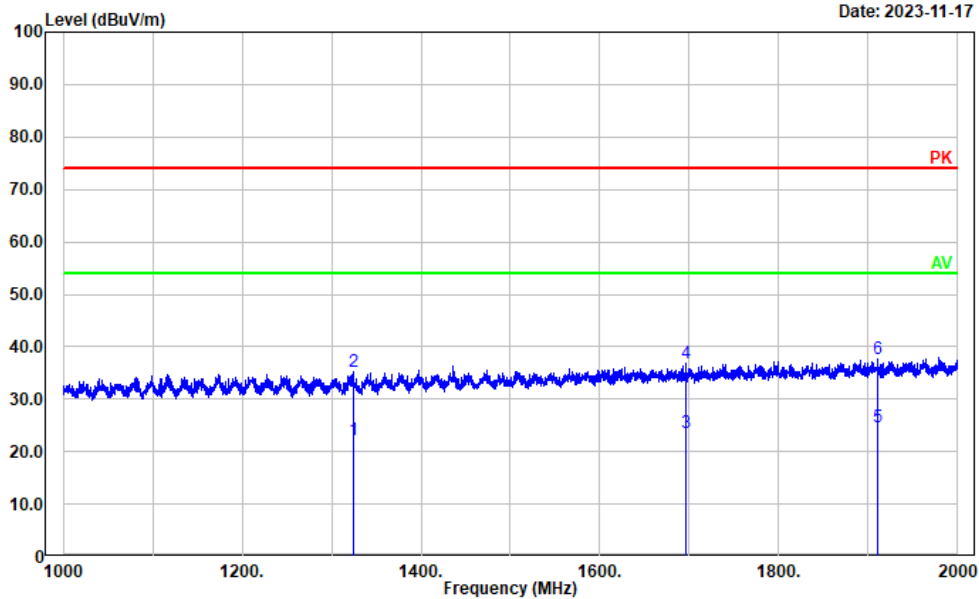


No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	1491.498	23.50	-0.50	23.00	54.00	31.00	Average
2	1491.498	36.73	-0.50	36.23	74.00	37.77	Peak
3	1749.950	34.50	0.98	35.48	54.00	18.52	Average
4	1749.950	47.21	0.98	48.19	74.00	25.81	Peak
5	1986.597	22.58	2.26	24.84	54.00	29.16	Average
6	1986.597	35.83	2.26	38.09	74.00	35.91	Peak

467.6375MHz:

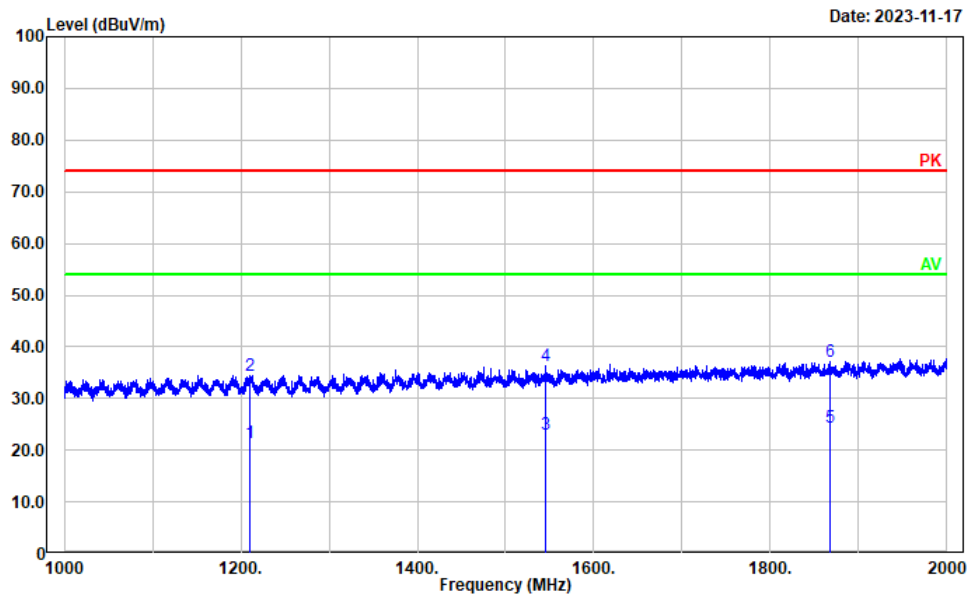
Project No.: CR230739510-RF
Tester: coco Tian
Polarization: horizontal
Note:

Date: 2023-11-17



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	1324.265	23.83	-1.48	22.35	54.00	31.65	Average
2	1324.265	36.71	-1.48	35.23	74.00	38.77	Peak
3	1695.539	22.84	0.70	23.54	54.00	30.46	Average
4	1695.539	36.03	0.70	36.73	74.00	37.27	Peak
5	1909.982	22.82	1.93	24.75	54.00	29.25	Average
6	1909.982	35.63	1.93	37.56	74.00	36.44	Peak

Project No.: CR230739510-RF
Tester: coco Tian
Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1210.442	23.14	-1.70	21.44	54.00	32.56	Average
2	1210.442	36.24	-1.70	34.54	74.00	39.46	Peak
3	1545.909	23.32	-0.17	23.15	54.00	30.85	Average
4	1545.909	36.48	-0.17	36.31	74.00	37.69	Peak
5	1867.974	22.71	1.66	24.37	54.00	29.63	Average
6	1867.974	35.50	1.66	37.16	74.00	36.84	Peak

5. EUT PHOTOGRAPHS

Please refer to the attachment CR230739510-FCC-EXP EUT EXTERNAL PHOTOGRAPHS and
CR230739510-FCC-INP EUT INTERNAL PHOTOGRAPHS

6. TEST SETUP PHOTOGRAPHS

Please refer to the attachment CR230739510-00A-TSP TEST SETUP PHOTOGRAPHS.

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