



中认信通

CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)



TEST REPORT

Applicant: Quanzhou Joycall Technology Co., Ltd

Address: No. 11 Longgaoshan, Pudang Village, Xiamei Town, Nan'an, Fujian, China

FCC ID: 2BBGC-JF18

Product Name: FRS TWO WAY RADIO

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

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: CR230634567-00A

Date Of Issue: 2023/7/14

Reviewed By: Julie Tan
Title: RF Engineer

Julie Tan

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

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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	CR230634567-00A	Original Report	2023/7/14

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	FRS TWO WAY RADIO
EUT Model:	JF18
Multiple Model:	GT-18
Highest Operation Frequency:	467.7125MHz
Rated Input Voltage:	DC 3.7V from battery or DC 5V from adapter
Serial Number:	270E-1
EUT Received Date:	2023/6/19
EUT Received Status:	Good

Note: The Multiple models are electrically identical with test model, please refer to the declaration letter for more detail, which was provided by manufacturer.

Accessory Information:

Accessory Description	Manufacturer	Model
Adapter	Dongguan Aohai Technology Co., Ltd	A18A-050100U-US2

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: M1:FRS Receiving(462.6375MHz/467.6375MHz) M2: NOAA Receiving(162.4MHz)
Equipment Modifications:	No
EUT Exercise Software:	No

1.2.2 Support Equipment List and Details

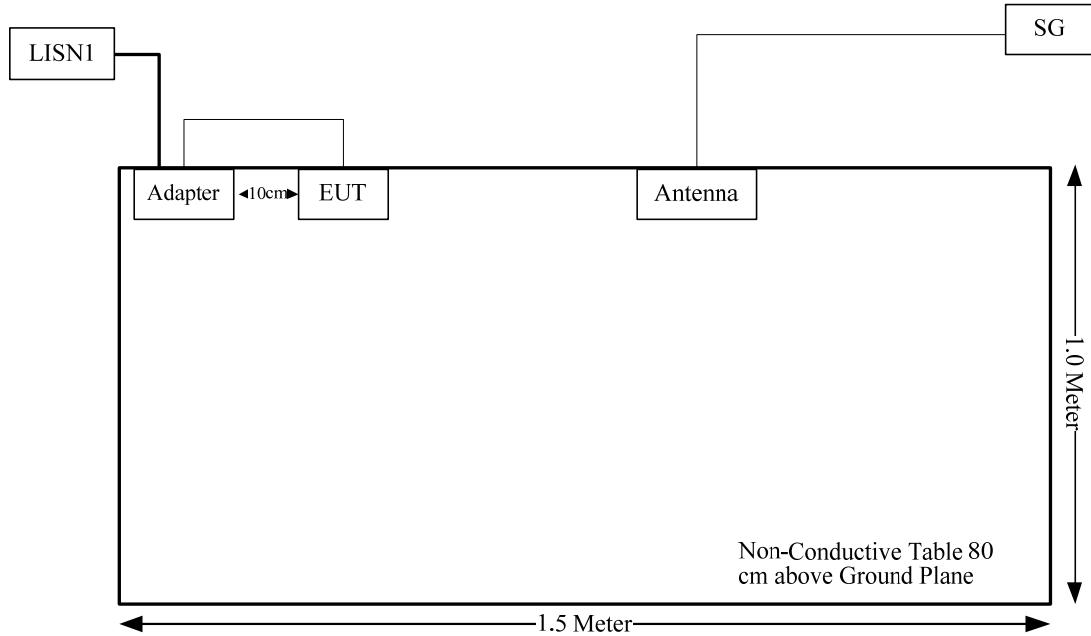
Manufacturer	Description	Model	Serial Number
Agilent	Signal Generator	E8247C	MY43321352

1.2.3 Support Cable List and Details

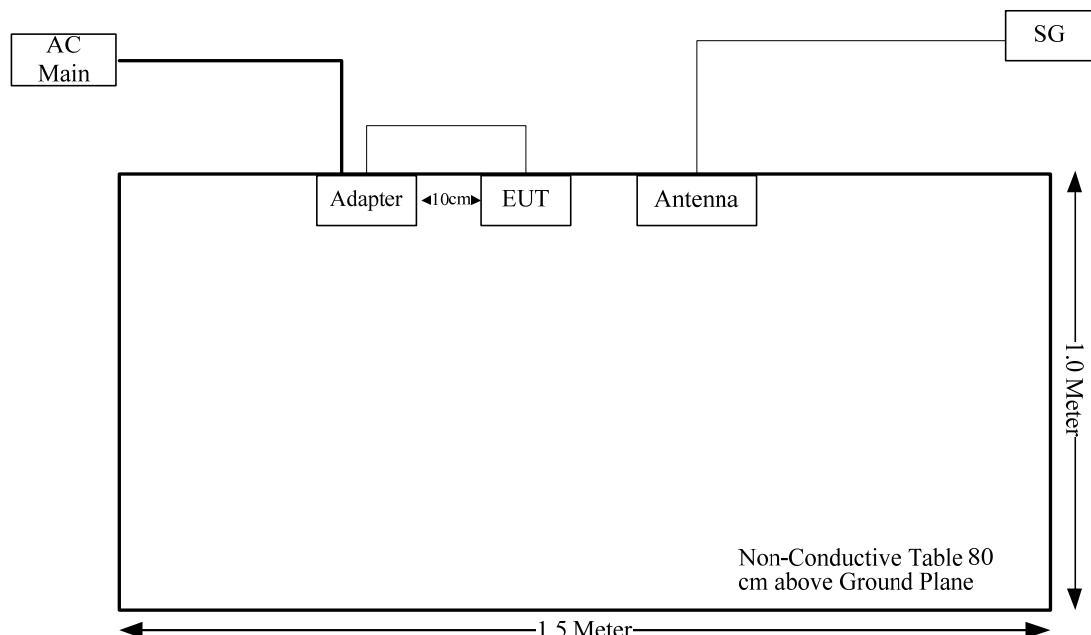
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB cable	No	No	0.5	Adapter	EUT
Antenna cable	No	No	1.5	Antenna	E8247C

1.2.4 Block Diagram of Test Setup

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	±1°C
Humidity	±5%
AC Power Lines Conducted Emission	2.8 dB (150 kHz to 30 MHz)

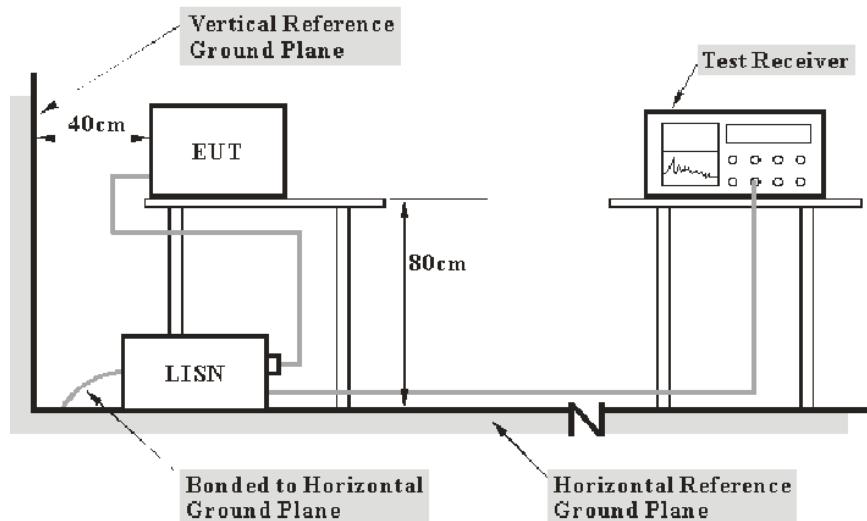
2. SUMMARY OF TEST RESULTS

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

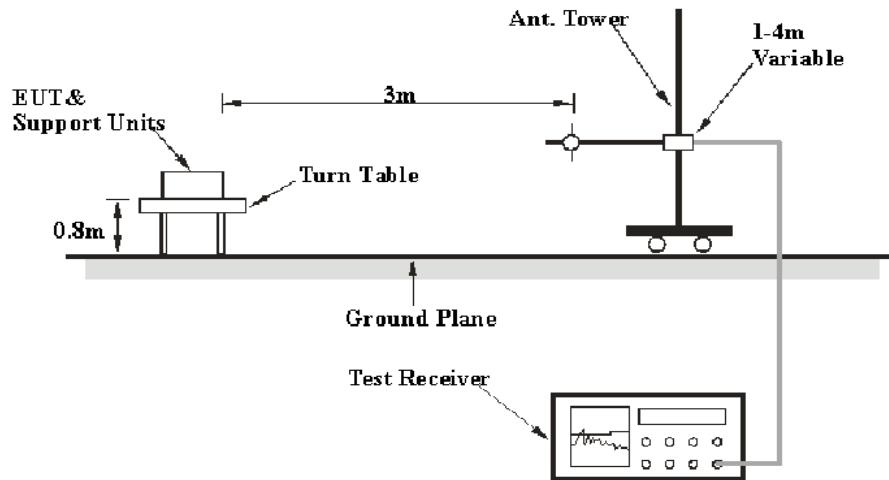
The “Margin” column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

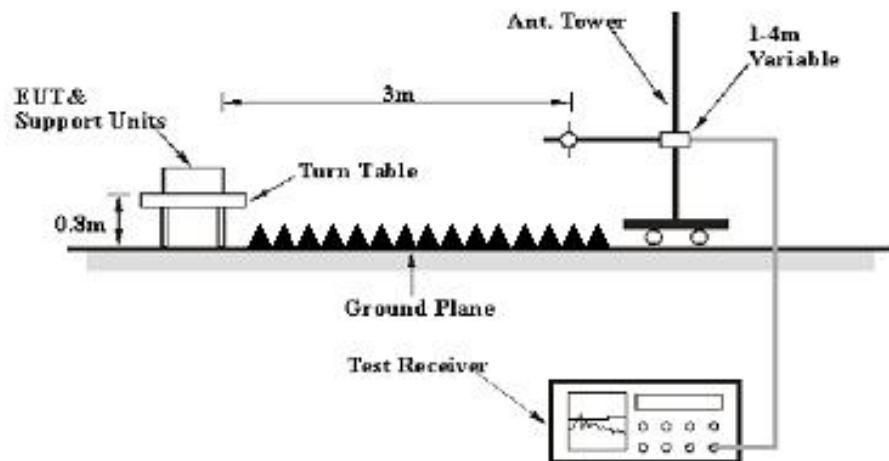
3.2 Radiation Spurious Emissions

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 5GHz.

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

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	3 MHz	/	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:	270E-1	Test Date:	2023/06/25
Test Site:	CE	Test Mode:	M1,M2
Tester:	David Huang	Test Result:	Pass

Environmental Conditions:

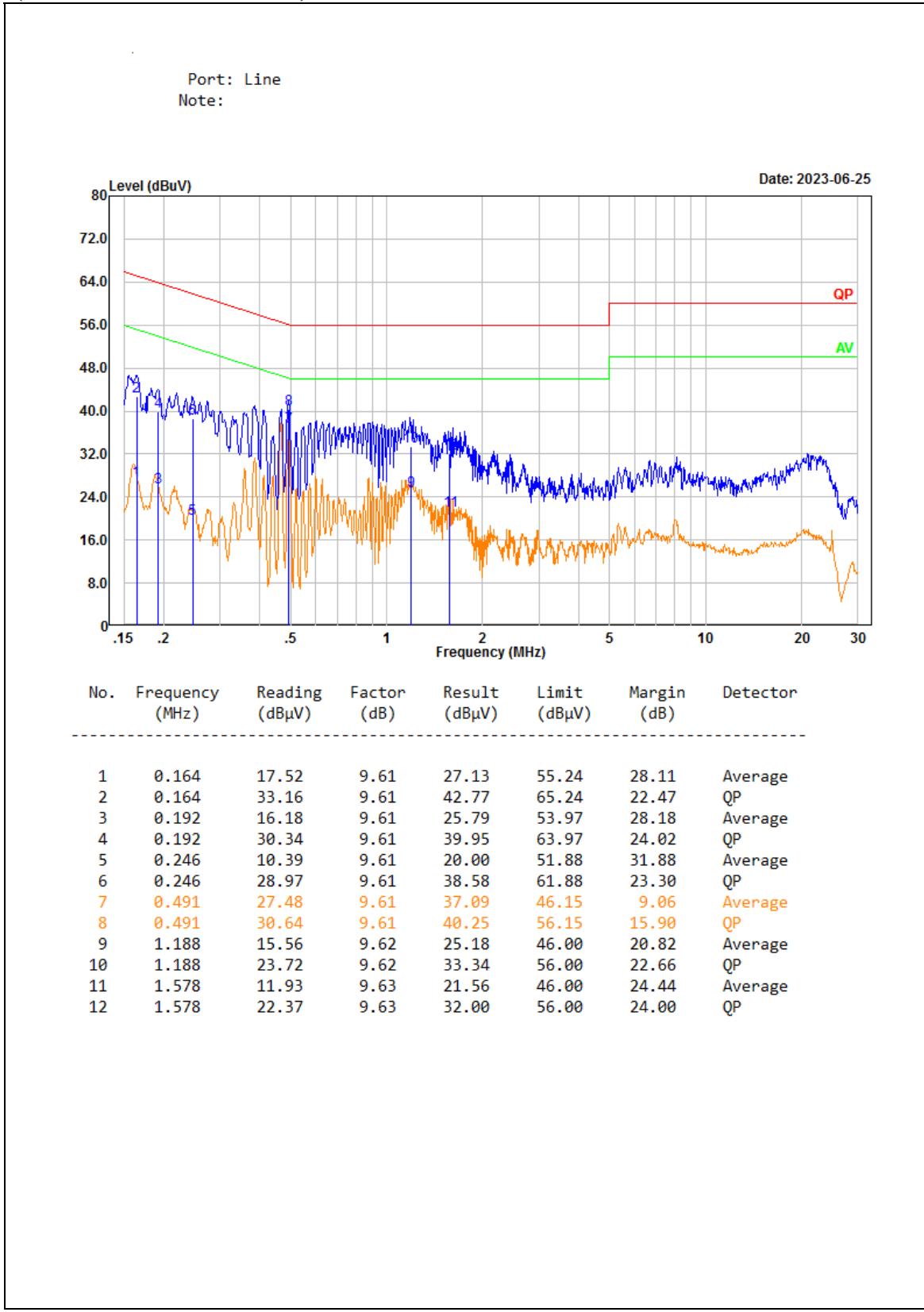
Temperature: (°C)	25.5	Relative Humidity: (%)	65	ATM Pressure: (kPa)	100.8
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Test Equipment List and Details:

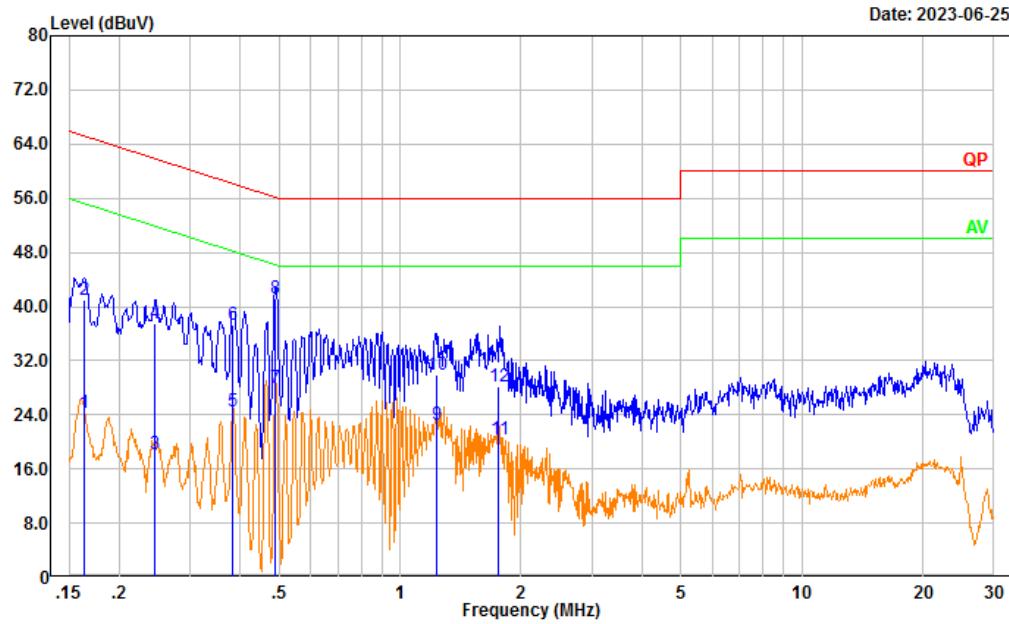
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101134	2023/03/31	2024/03/30
R&S	EMI Test Receiver	ESR3	102726	2022/07/15	2023/07/14
MICRO-COAX	Coaxial Cable	UTIFLEX	C-0200-01	2022/08/07	2023/08/06
Audix	Test Software	E3	190306 (V9)	N/A	N/A

* 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).

M1(462.6375 MHz was the worst):

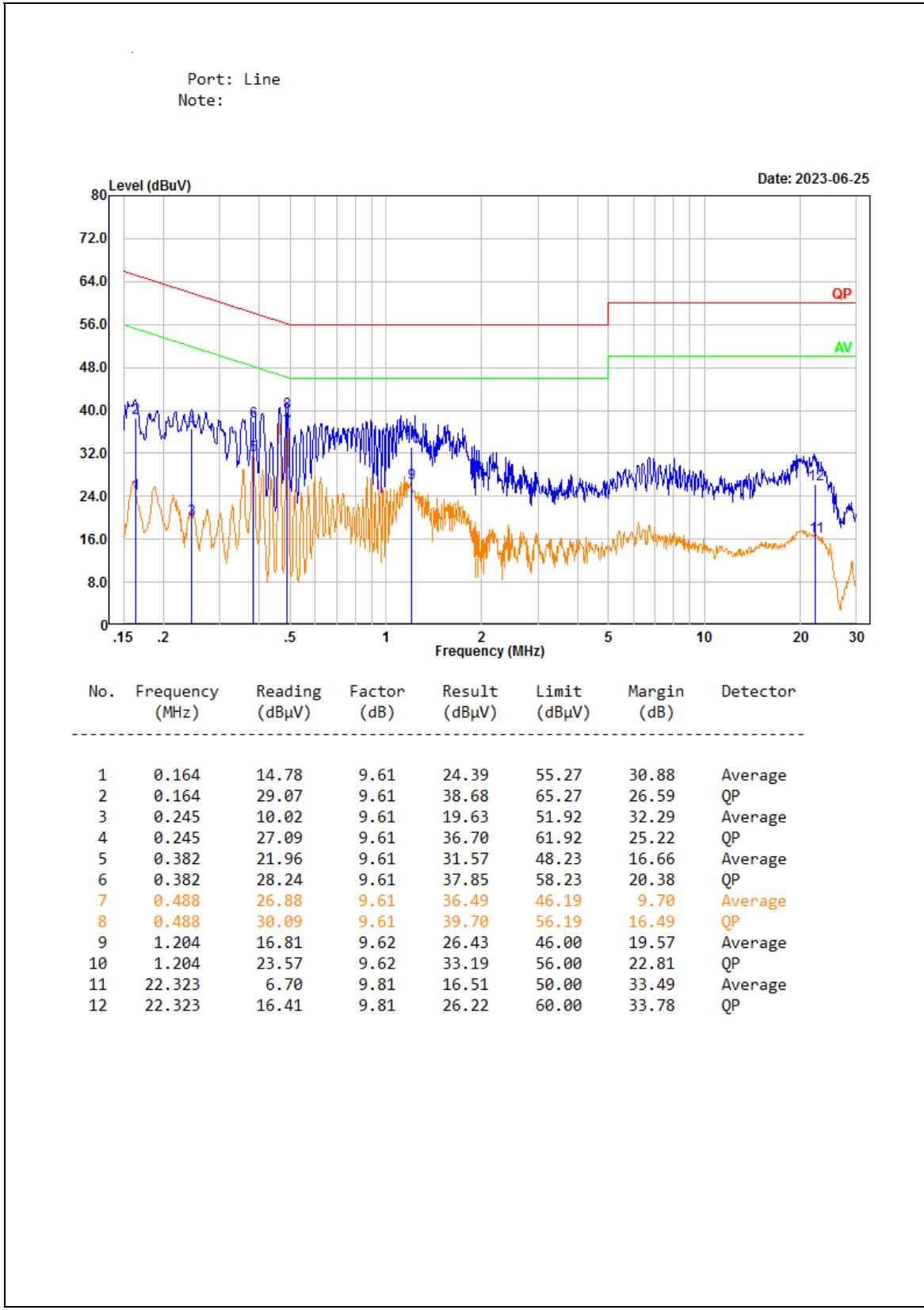


Port: neutral
Note:

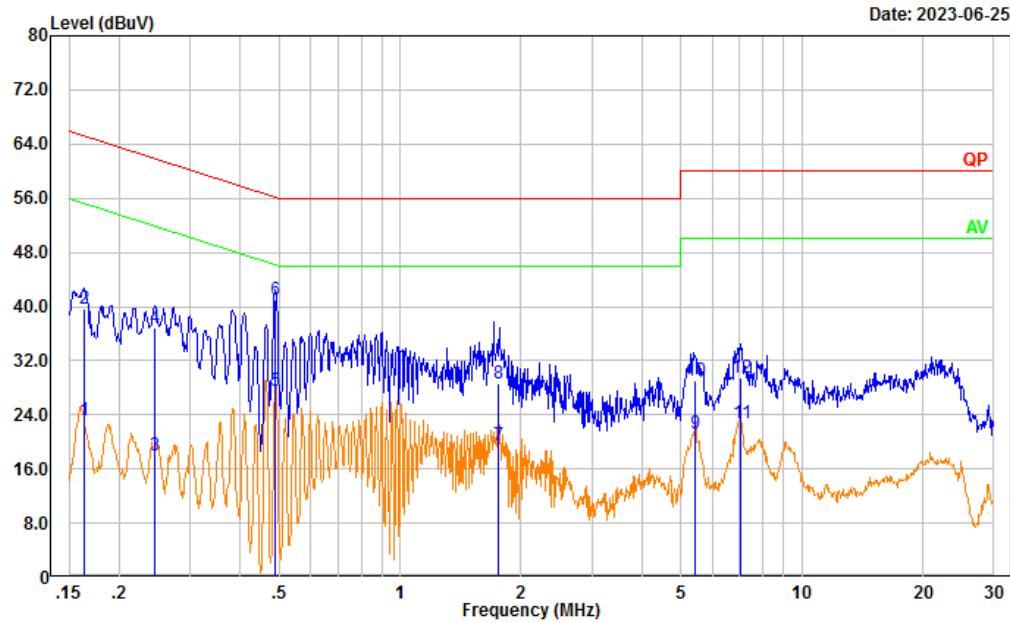


No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB)	Result (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
<hr/>							
1	0.164	14.62	9.61	24.23	55.28	31.05	Average
2	0.164	31.46	9.61	41.07	65.28	24.21	QP
3	0.246	8.63	9.61	18.24	51.89	33.65	Average
4	0.246	27.91	9.61	37.52	61.89	24.37	QP
5	0.383	14.84	9.61	24.45	48.21	23.76	Average
6	0.383	27.71	9.61	37.32	58.21	20.89	QP
7	0.490	18.44	9.61	28.05	46.16	18.11	Average
8	0.490	31.52	9.61	41.13	56.16	15.03	QP
9	1.235	12.89	9.62	22.51	46.00	23.49	Average
10	1.235	20.40	9.62	30.02	56.00	25.98	QP
11	1.758	10.79	9.63	20.42	46.00	25.58	Average
12	1.758	18.60	9.63	28.23	56.00	27.77	QP

M2:



Port: neutral
Note:



No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB)	Result (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
<hr/>							
1	0.163	13.49	9.61	23.10	55.30	32.20	Average
2	0.163	29.98	9.61	39.59	65.30	25.71	QP
3	0.245	8.40	9.61	18.01	51.92	33.91	Average
4	0.245	27.23	9.61	36.84	61.92	25.08	QP
5	0.489	18.02	9.61	27.63	46.18	18.55	Average
6	0.489	31.29	9.61	40.90	56.18	15.28	QP
7	1.758	9.84	9.63	19.47	46.00	26.53	Average
8	1.758	18.98	9.63	28.61	56.00	27.39	QP
9	5.436	11.67	9.66	21.33	50.00	28.67	Average
10	5.436	19.43	9.66	29.09	60.00	30.91	QP
11	7.055	13.18	9.66	22.84	50.00	27.16	Average
12	7.055	19.82	9.66	29.48	60.00	30.52	QP

4.2 Radiation Spurious Emissions

Serial Number:	270E-1	Test Date:	2023/06/24
Test Site:	966-2, 966-1	Test Mode:	M1,M2
Tester:	Vic Du, coco Tian	Test Result:	Pass

Environmental Conditions:

Temperature: (°C)	24.9~28.1	Relative Humidity: (%)	59~65	ATM Pressure: (kPa)	100
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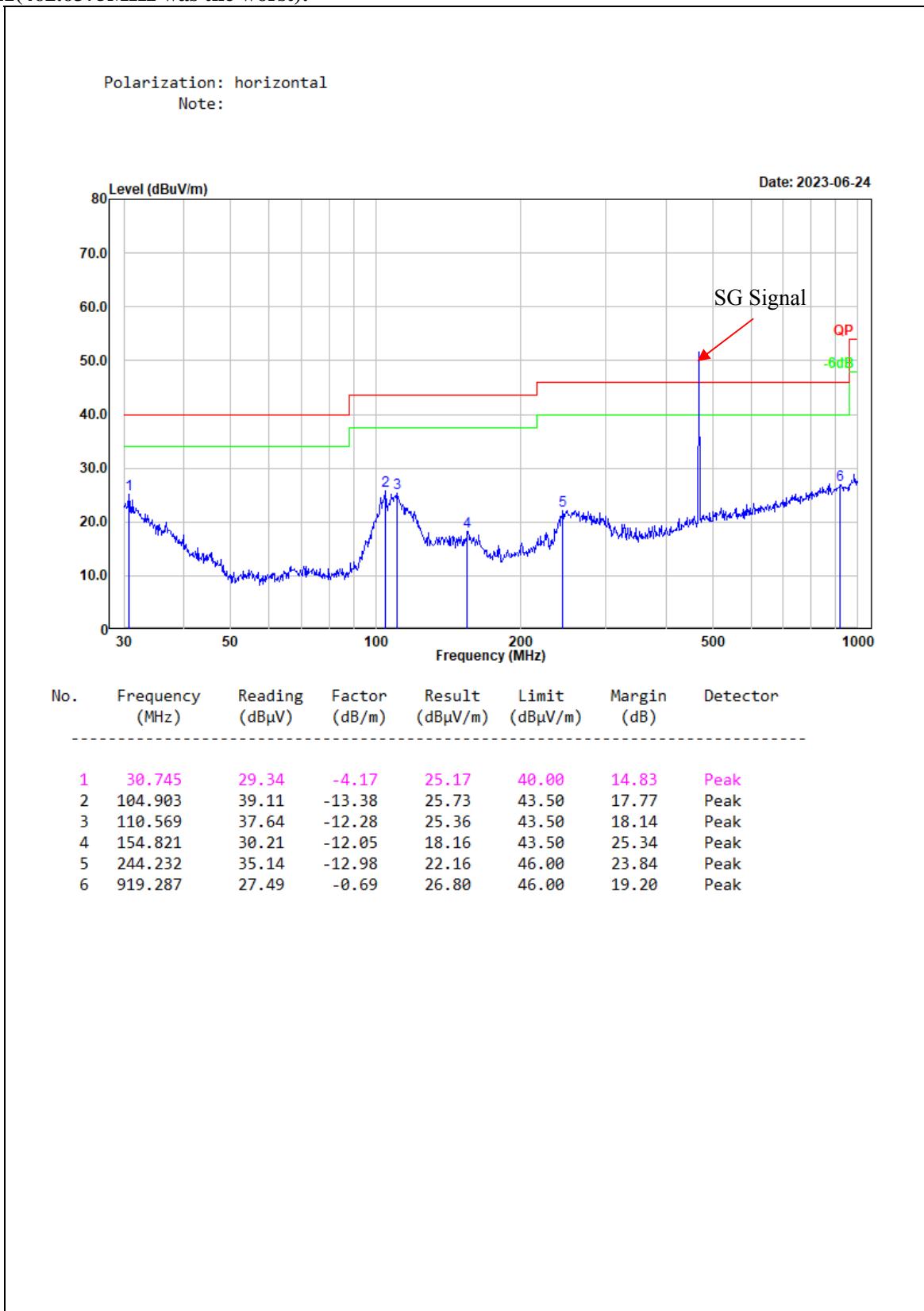
Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-5	2020/10/19	2023/10/18
R&S	EMI Test Receiver	ESR3	102724	2022/07/15	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
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
Audix	Test Software	E3	201021 (V9)	N/A	N/A
Mini Circuits	High Pass Filter	VHF-6010+	31119	2022/08/07	2023/08/06

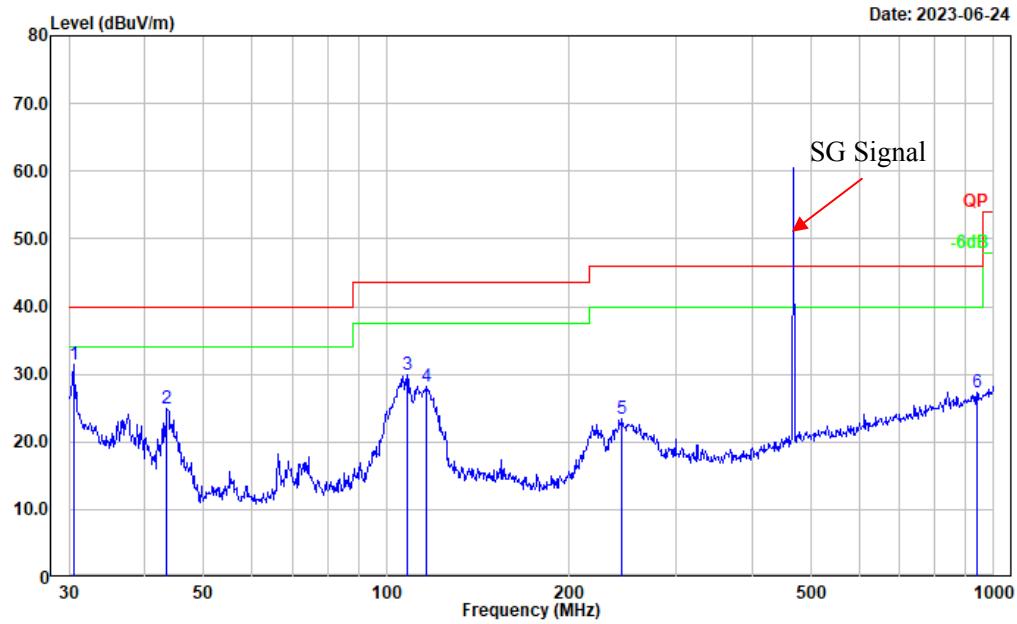
* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

1) 30MHz-1GHz:

M1(462.6375MHz was the worst):



Polarization: vertical
Note:

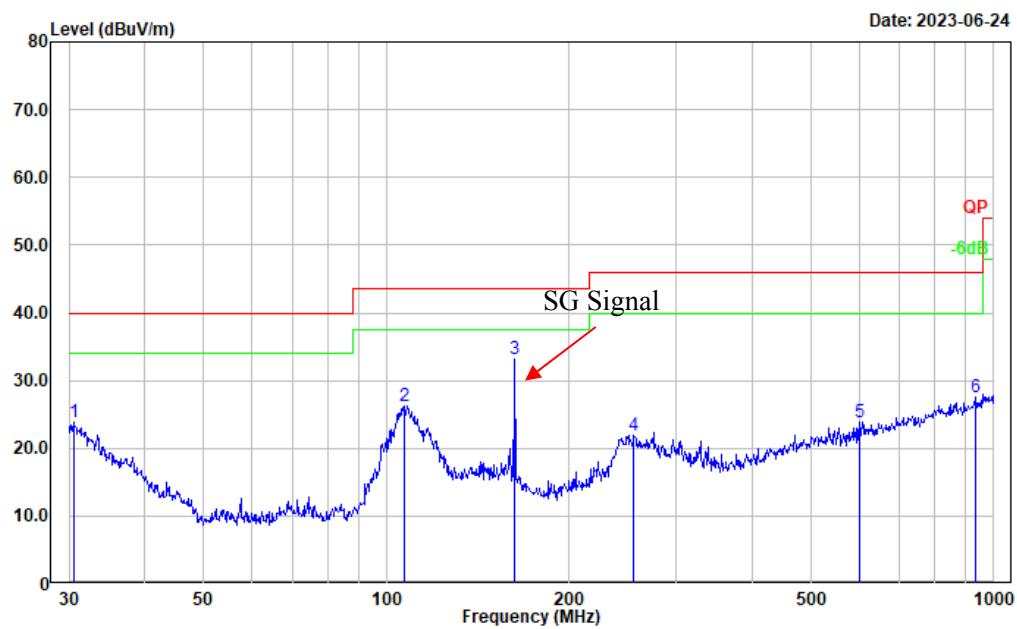


No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
<hr/>							
1	30.531	35.43	-4.00	31.43	40.00	8.57	Peak
2	43.506	38.24	-13.37	24.87	40.00	15.13	Peak
3	108.267	42.58	-12.64	29.94	43.50	13.56	Peak
4	116.540	40.04	-11.75	28.29	43.50	15.21	Peak
5	244.232	36.31	-12.98	23.33	46.00	22.67	Peak
6	938.833	27.69	-0.40	27.29	46.00	18.71	Peak

M2:

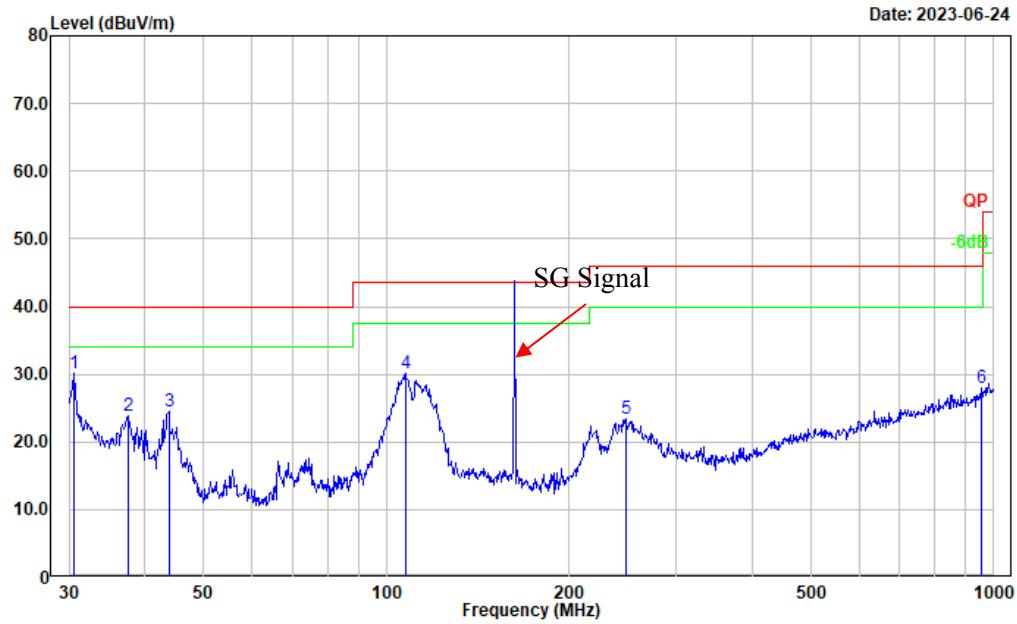
Polarization: horizontal

Note:



No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	30.531	27.90	-4.00	23.90	40.00	16.10	Peak
2	107.134	39.06	-12.87	26.19	43.50	17.31	Peak
3	162.611	45.43	-12.31	33.12	43.50	10.38	Peak
4	255.623	34.69	-12.77	21.92	46.00	24.08	Peak
5	601.427	28.95	-5.03	23.92	46.00	22.08	Peak
6	935.546	28.04	-0.50	27.54	46.00	18.46	Peak

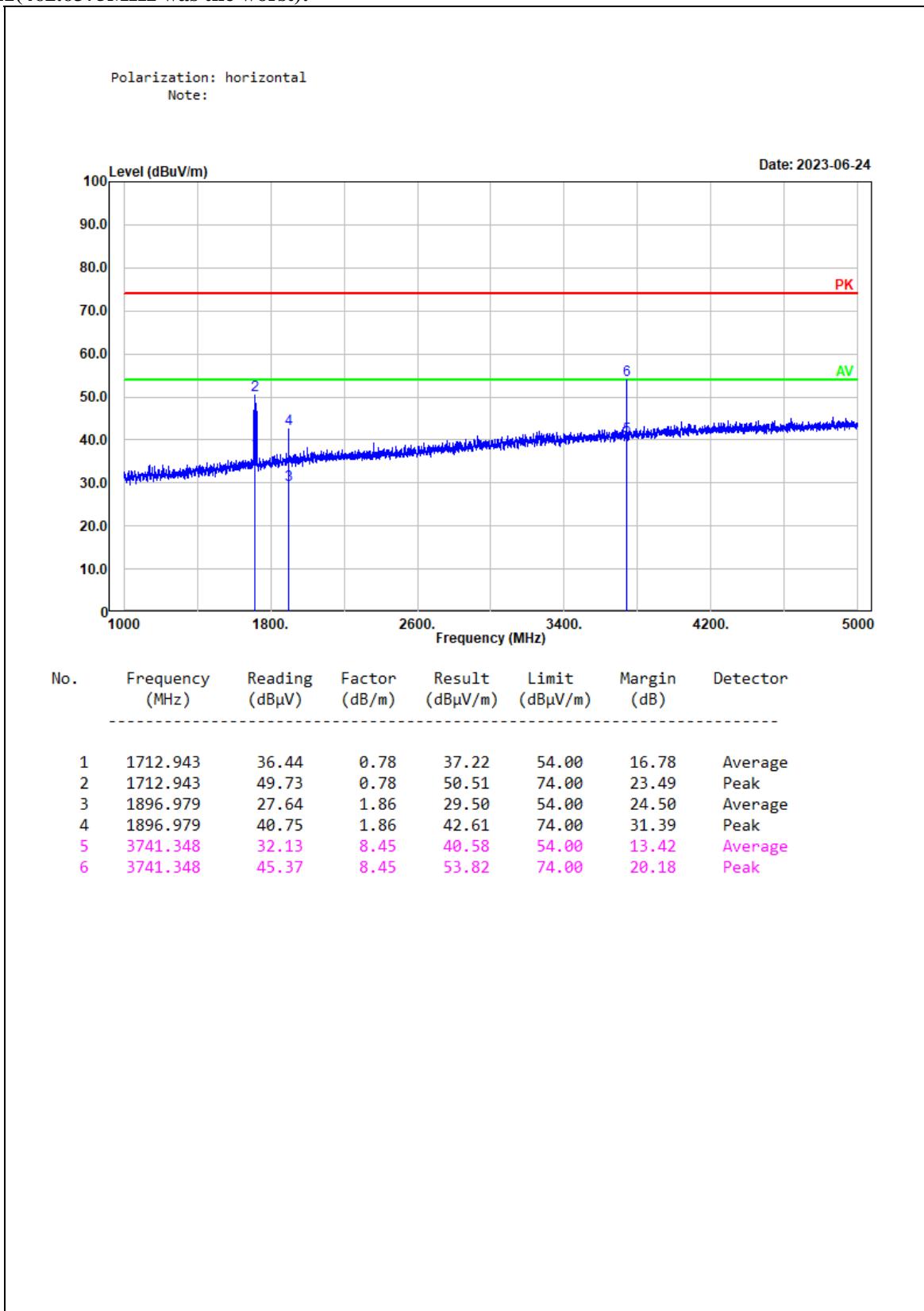
Polarization: vertical
Note:



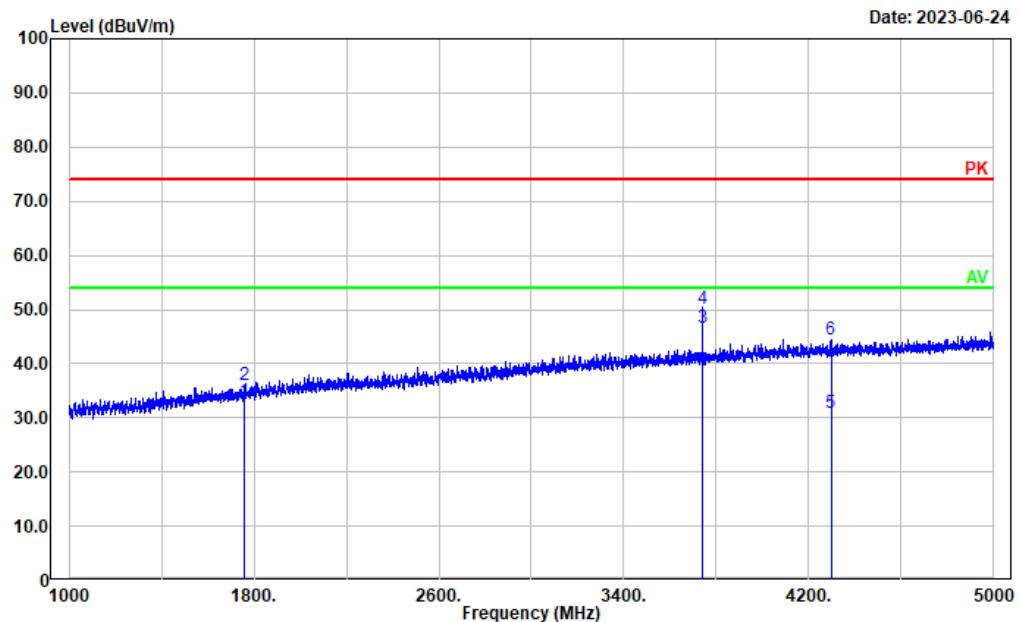
No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
<hr/>							
1	30.638	34.30	-4.09	30.21	40.00	9.79	Peak
2	37.548	33.18	-9.40	23.78	40.00	16.22	Peak
3	43.812	38.08	-13.56	24.52	40.00	15.48	Peak
4	107.510	43.02	-12.80	30.22	43.50	13.28	Peak
5	247.682	36.37	-13.04	23.33	46.00	22.67	Peak
6	952.094	28.14	-0.12	28.02	46.00	17.98	Peak

2) Above 1GHz:

M1(462.6375MHz was the worst):

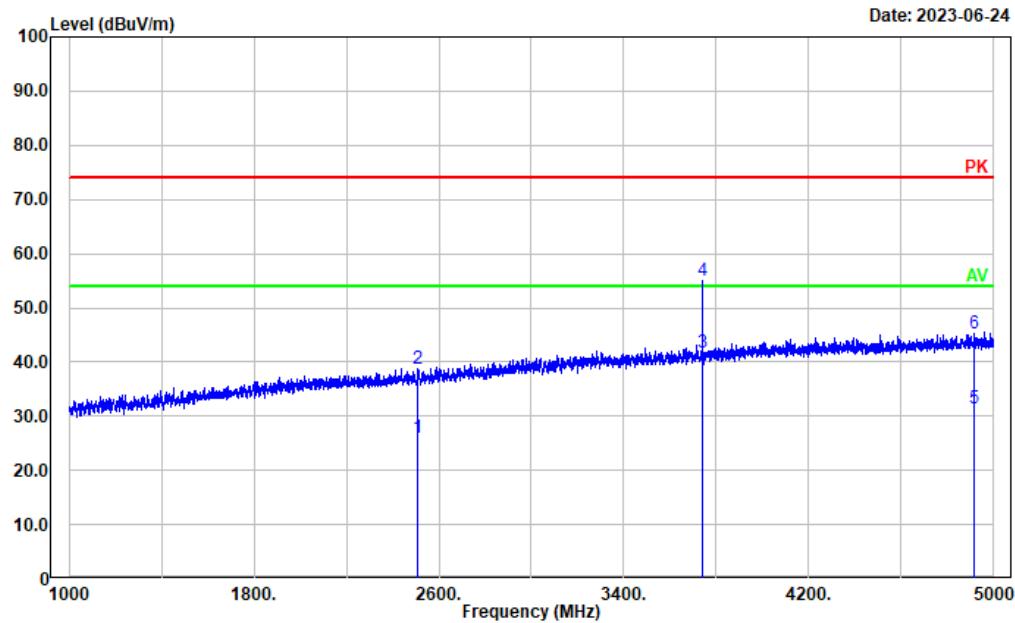


Polarization: vertical
Note:



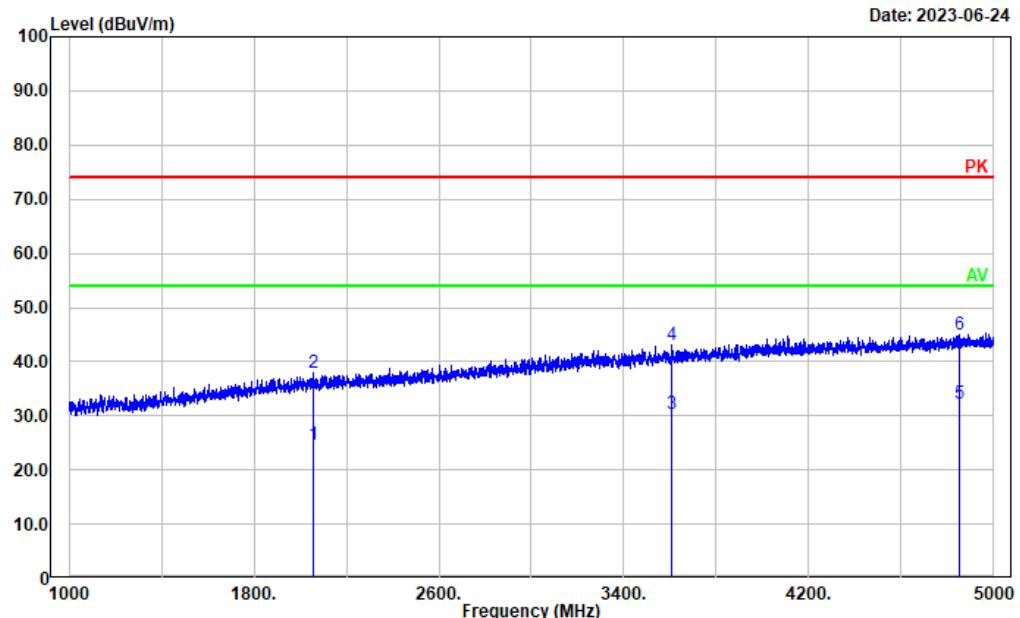
M2:

Polarization: horizontal
Note:



No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
<hr/>							
1	2509.102	22.31	3.68	25.99	54.00	28.01	Average
2	2509.102	35.10	3.68	38.78	74.00	35.22	Peak
3	3741.348	33.20	8.45	41.65	54.00	12.35	Average
4	3741.348	46.69	8.45	55.14	74.00	18.86	Peak
5	4916.783	20.16	11.17	31.33	54.00	22.67	Average
6	4916.783	33.97	11.17	45.14	74.00	28.86	Peak

Polarization: vertical
Note:



No.	Frequency (MHz)	Reading (dB μ V)	Factor (dB/m)	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector
1	2056.211	22.17	2.51	24.68	54.00	29.32	Average
2	2056.211	35.35	2.51	37.86	74.00	36.14	Peak
3	3609.322	22.38	7.99	30.37	54.00	23.63	Average
4	3609.322	35.16	7.99	43.15	74.00	30.85	Peak
5	4853.571	21.34	10.98	32.32	54.00	21.68	Average
6	4853.571	34.11	10.98	45.09	74.00	28.91	Peak

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