

TEST REPORT

Applicant: Iradio Electronics Co., Ltd.

Address: No.16 Daxiamei Industrial Area, Nan'an, Quanzhou City, China

Product Name: GMRS Remote Mount Mobile Radio WITH NOAA

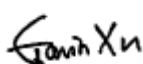
FCC ID: Y23GM-2520

Standard(s): FCC Part 15B
ANSI C63.4-2014

Report Number: XMTN1240131-07195E-RF-00A

Report Date: 2024/4/18

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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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	XMTN1240131-07195E-RF-00A	Original Report	2024/4/18

1. GENERAL INFORMATION

1.1 General Description Of Equipment Under Test

Product Name:	GMRS Remote Mount Mobile Radio WITH NOAA
Test Model:	UV-2520
Multiple Models:	ABBREE AR-2520
Highest Operation Frequency:	520MHz
Rated Input Voltage:	DC 13.8V from vehicle system
Serial Number:	Radiated emission test: 2HHP-2 RF Conducted test: 2HHP-1
EUT Received Date:	2024/2/2
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.	

1.2 Accessory Information

Accessory Description	Manufacturer	Model
Hand MIC	Iradio Electronics Co., Ltd.	Unknown

1.3 Equipment Modifications

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

2. SUMMARY OF TEST RESULTS

Standard Clause	Description of Test	Test Result
FCC§15.107	Conducted emissions	Not Applicable*
FCC§15.109	Radiated emissions	Compliant
FCC§15.121(b)	Scanning receivers and frequency converters used with scanning receivers	Compliant
Not Applicable*, the device was powered by vehicle system.		

3. DESCRIPTION OF TEST CONFIGURATION

3.1 Operation Frequency And Test Channel:

Operation Modes	Operation Frequency Range (MHz)	Test Frequency (MHz)
Receiving	108-520	108.0125, 350.0125, 519.9875
Scanning	108-520	108-520

3.2 Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user). The following summary table is showing all test modes to demonstrate in compliance with the standard:

Test Items	Test Mode(s)
Radiated Spurious Emission :	Test Mode 1: Scanning Test Mode 2: Receiving
AC Line Conducted Emission	Not Applicable

3.3 EUT Exercise Software

No software was used to test.

3.4 Support Equipment List and Details

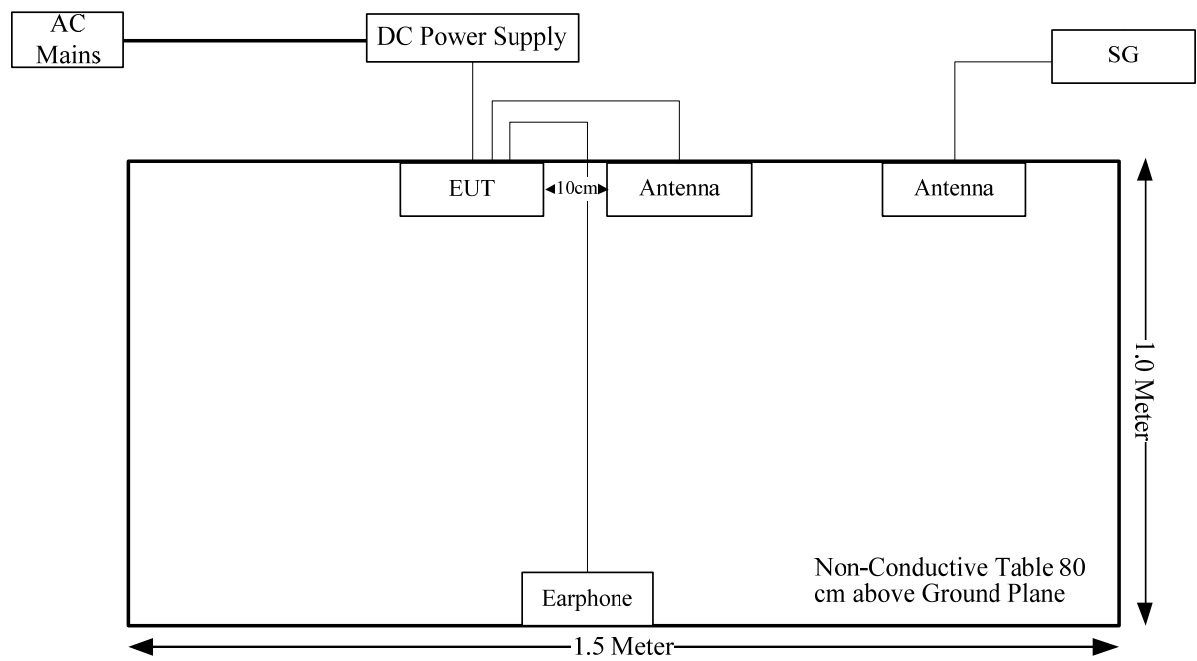
Manufacturer	Description	Model	Serial Number
Agilent	MXG Vector Signal Generator	N5182B	MY51350142
TDK-Lambda	DC Power Supply	KYT173381	LOC-825A153-0016
Keenion	Earphone	KDM-911	EMZBEP21103003B

3.5 Support Cable List and Details

Cable Description	Shielding Cable	Ferrite Core	Length (m)	From Port	To
Earphone cable	No	No	1.2	Earphone	EUT

3.6 Block Diagram of Test Setup

Radiated Spurious Emissions



3.7 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.

3.8 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
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
Unwanted Emissions, conducted	±2.47 dB
Temperature	±1 °C
Humidity	±5%
AC Power Lines Conducted Emission	3.11 dB (150 kHz to 30 MHz)

4. REQUIREMENTS AND TEST RESULTS

4.1 AC Line Conducted Emissions

Not Applicable, the device was powered by vehicle system.

4.2 Radiation Spurious Emissions

4.2.1 Applicable Standard

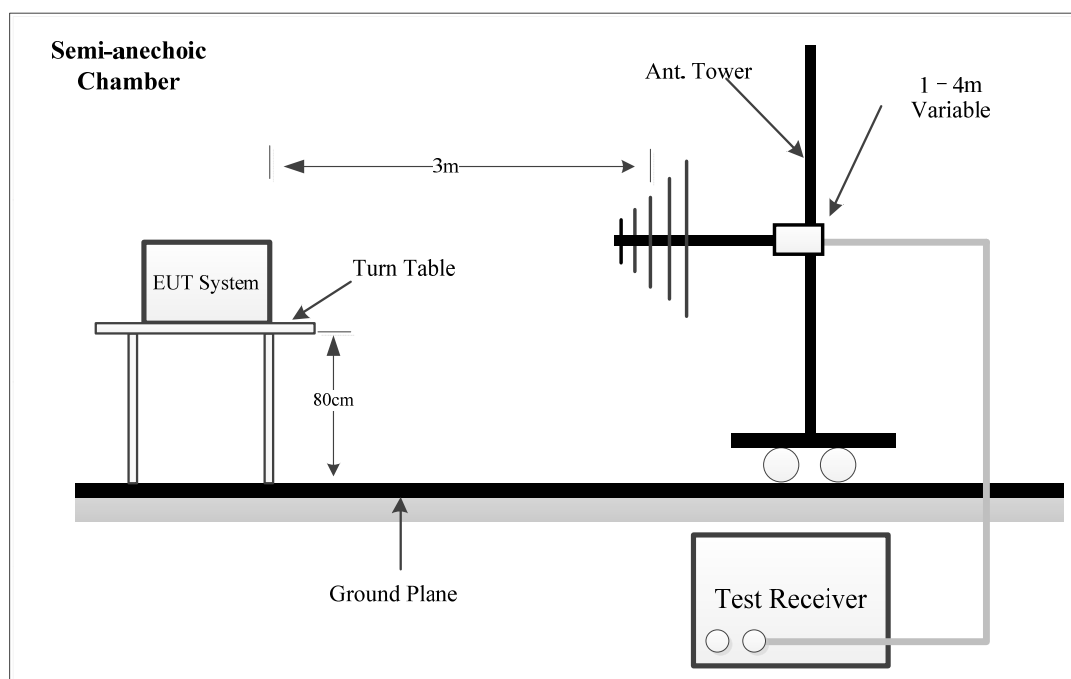
FCC§15.109

(a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

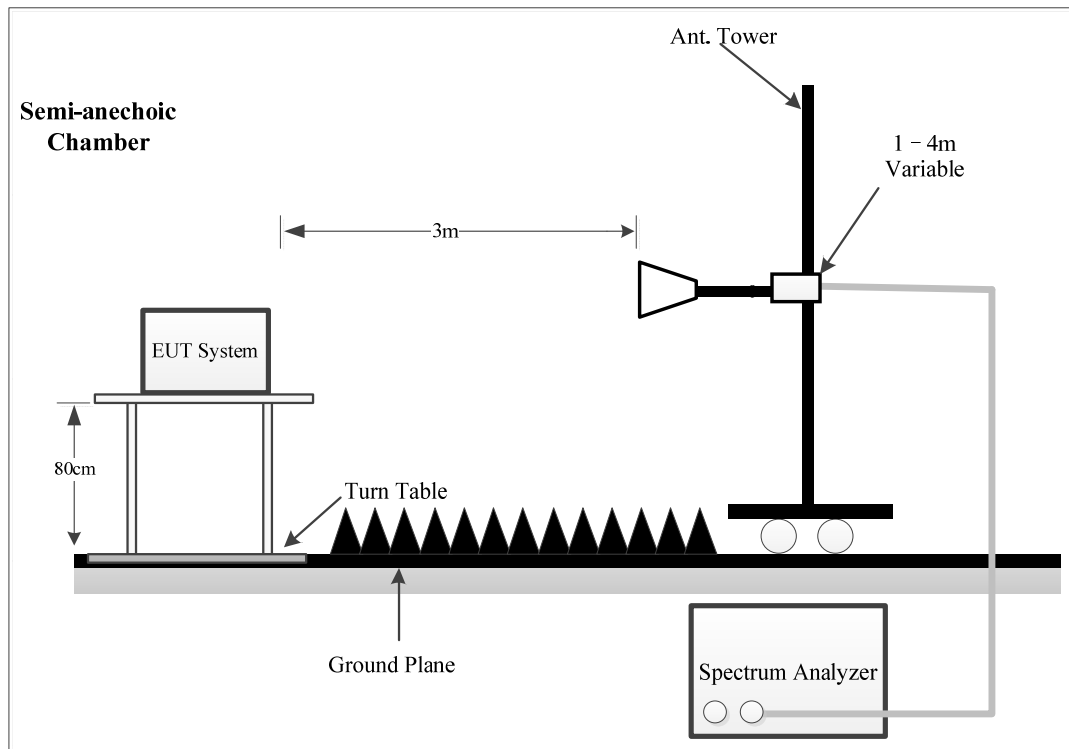
Frequency of emission (MHz)	Field strength (microvolts/meter)
30–88	100
88–216	150
216–960	200
Above 960	500

4.2.2 Test System Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed at the 3 meters distance, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15B Class B limits.

4.2.3 EMI Test Receiver Setup

The system was investigated from 30 MHz to 5 GHz.

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

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30MHz – 1000 MHz	100 kHz	300 kHz	/	Peak
	/	/	120kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	10Hz	/	AVG

4.2.4 Test Procedure

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, peak and average detection mode above 1 GHz.

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

4.2.5 Corrected Result & Margin Calculation

The basic equation is as follows:

$$\text{Result} = \text{Reading} + \text{Factor}$$

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

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:

$$\text{Margin} = \text{Limit} - \text{Result}$$

4.2.6 Test Data and Result

Serial Number:	2HHP-2	Test Date:	2024/2/29~2024/3/2
Test Site:	Chamber A, Chamber B	Test Mode:	Mode 1, Mode 2
Tester:	Joe Li, Bill Yang	Test Result:	Pass

Environmental Conditions:					
Temperature: (°C)	17.6~20.9	Relative Humidity: (%)	49~50	ATM Pressure: (kPa)	101.1~101.8

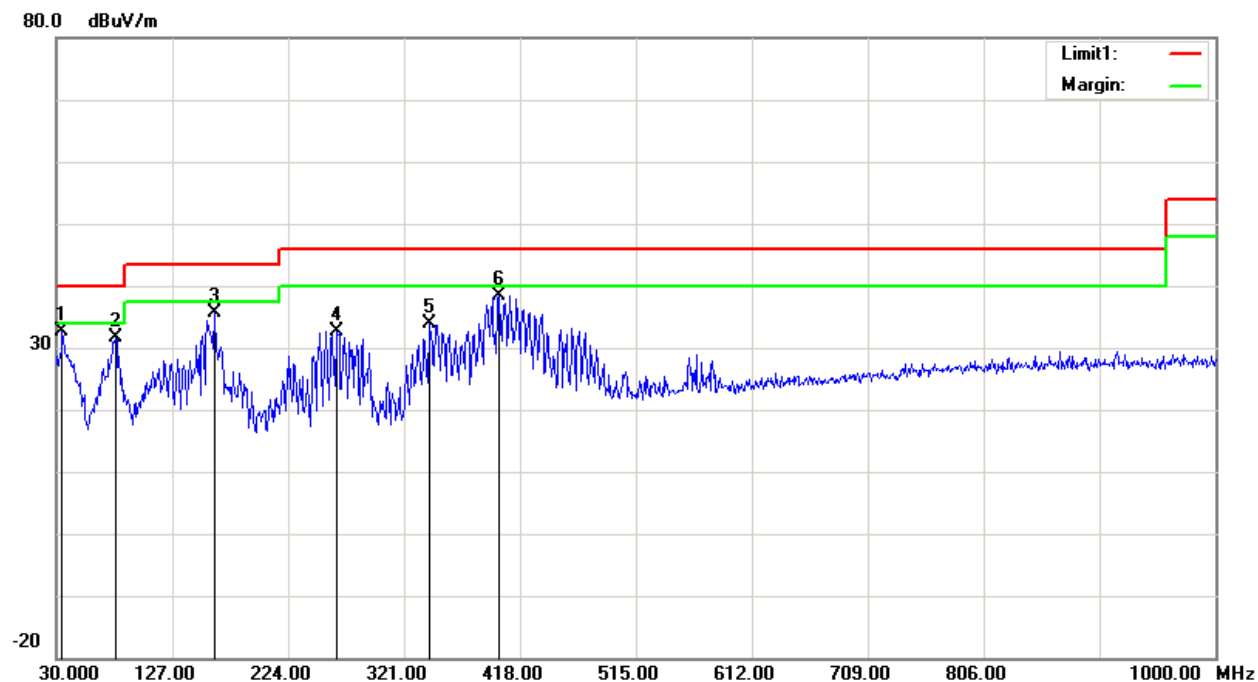
Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
30MHz-1000MHz					
Sunol Sciences	Hybrid Antenna	JB3	A060611-1	2023/9/6	2026/9/5
Narda	Attenuator	779-6dB	04269	2023/9/6	2024/9/5
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2023/8/1	2024/7/31
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-04	2023/8/1	2024/7/31
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2023/8/1	2024/7/31
Sonoma	Amplifier	310N	185914	2023/8/1	2024/7/31
R&S	EMI Test Receiver	ESCI	100224	2023/8/18	2024/8/17
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Above 1GHz					
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
Audix	Test Software	E3	191218 (V9)	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).

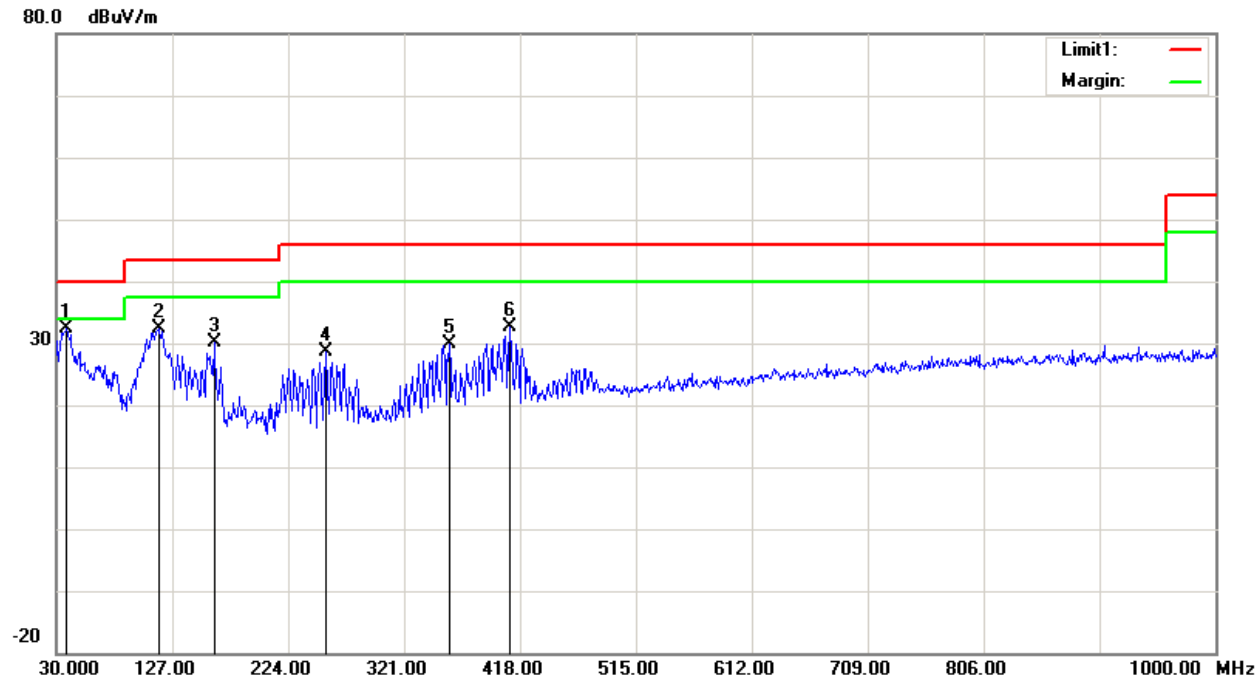
1) 30MHz-1GHz:

Project No: XMTN1240131-07195E-RF
Test Engineer: Joe Li
Test Date: 2024-2-29
Polarization: Horizontal
Test Mode: Scanning
Power Source: DC 13.8V
Note: Scanning 108-520MHz



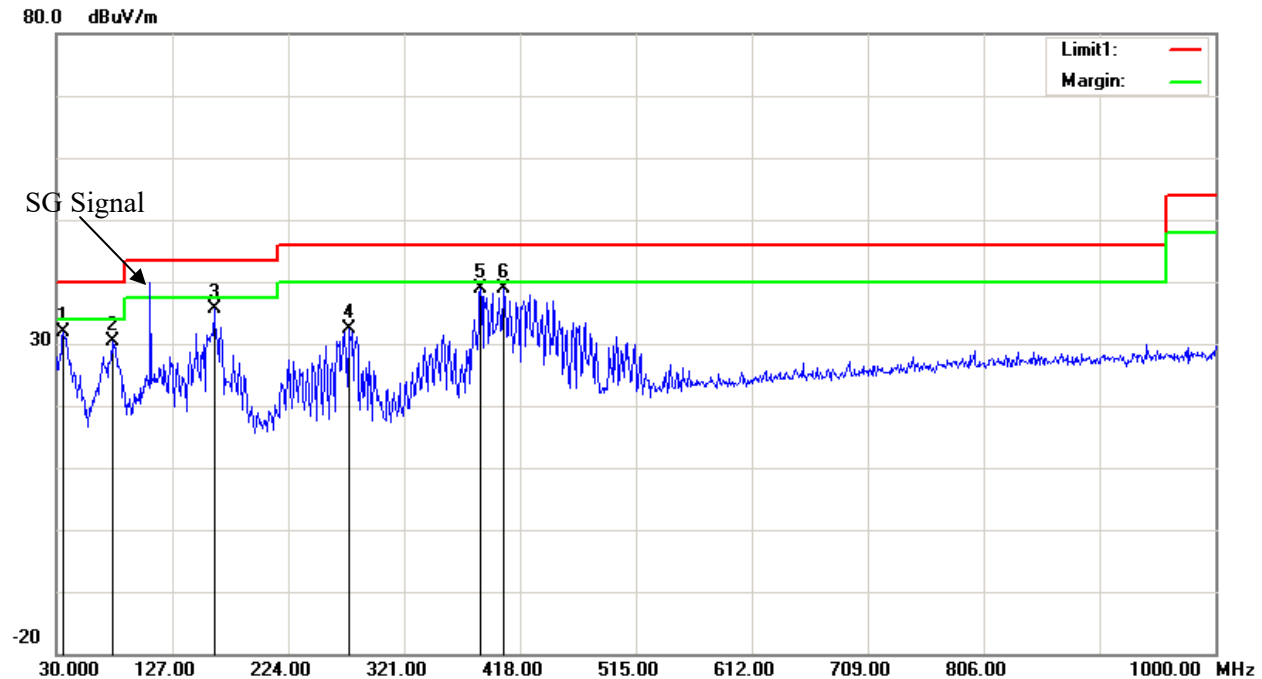
No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	34.8500	39.37	peak	-6.83	32.54	40.00	7.46
2	79.4700	47.97	peak	-16.44	31.53	40.00	8.47
3	161.9200	46.87	peak	-11.15	35.72	43.50	7.78
4	264.7400	43.23	peak	-10.49	32.74	46.00	13.26
5	342.3400	42.50	peak	-8.73	33.77	46.00	12.23
6	400.5400	45.36	peak	-6.95	38.41	46.00	7.59

Project No: XMTN1240131-07195E-RF
 Test Engineer: Joe Li
 Test Date: 2024-2-29
 Polarization: Vertical
 Test Mode: Scanning
 Power Source: DC 13.8V
 Note: Scanning 108-520MHz



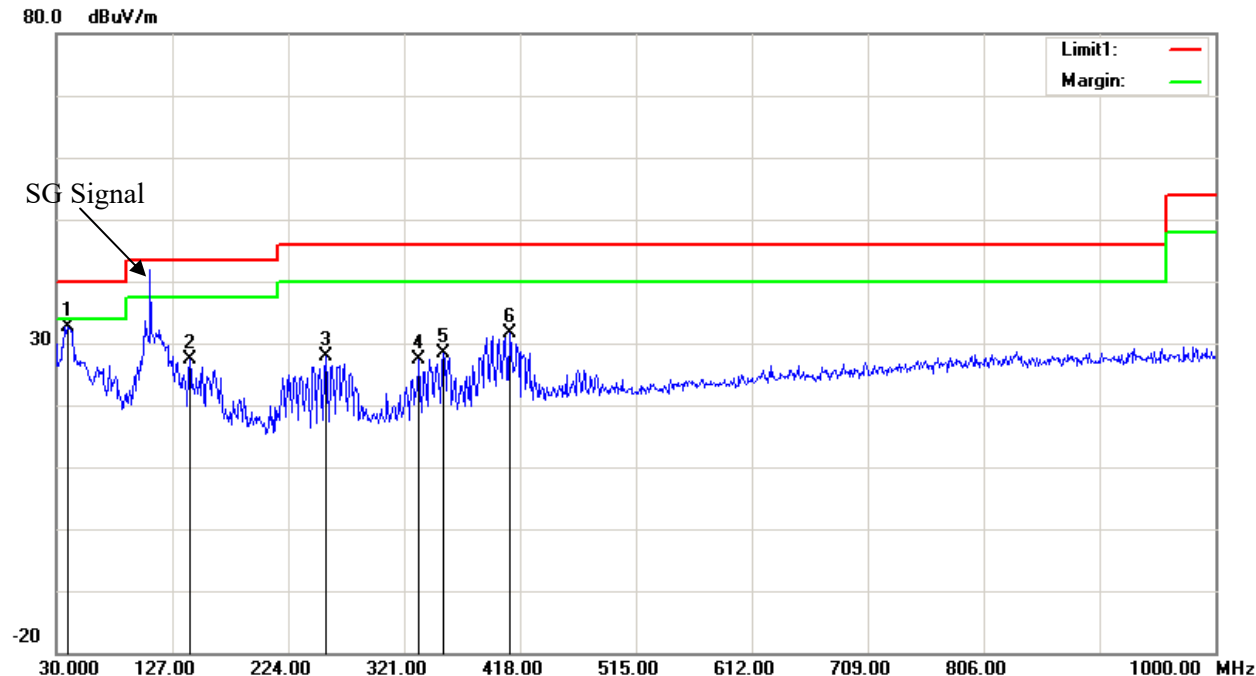
No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	38.7300	42.45	peak	-9.97	32.48	40.00	7.52
2	116.3300	42.62	peak	-10.30	32.32	43.50	11.18
3	161.9200	41.17	peak	-11.15	30.02	43.50	13.48
4	256.0100	40.01	peak	-11.32	28.69	46.00	17.31
5	358.8300	38.30	peak	-8.50	29.80	46.00	16.20
6	409.2700	39.40	peak	-6.67	32.73	46.00	13.27

Project No: XMTN1240131-07195E-RF
Test Engineer: Joe Li
Test Date: 2024-2-29
Polarization: Horizontal
Test Mode: Receiving
Power Source: DC 13.8V
Note: 108.0125MHz



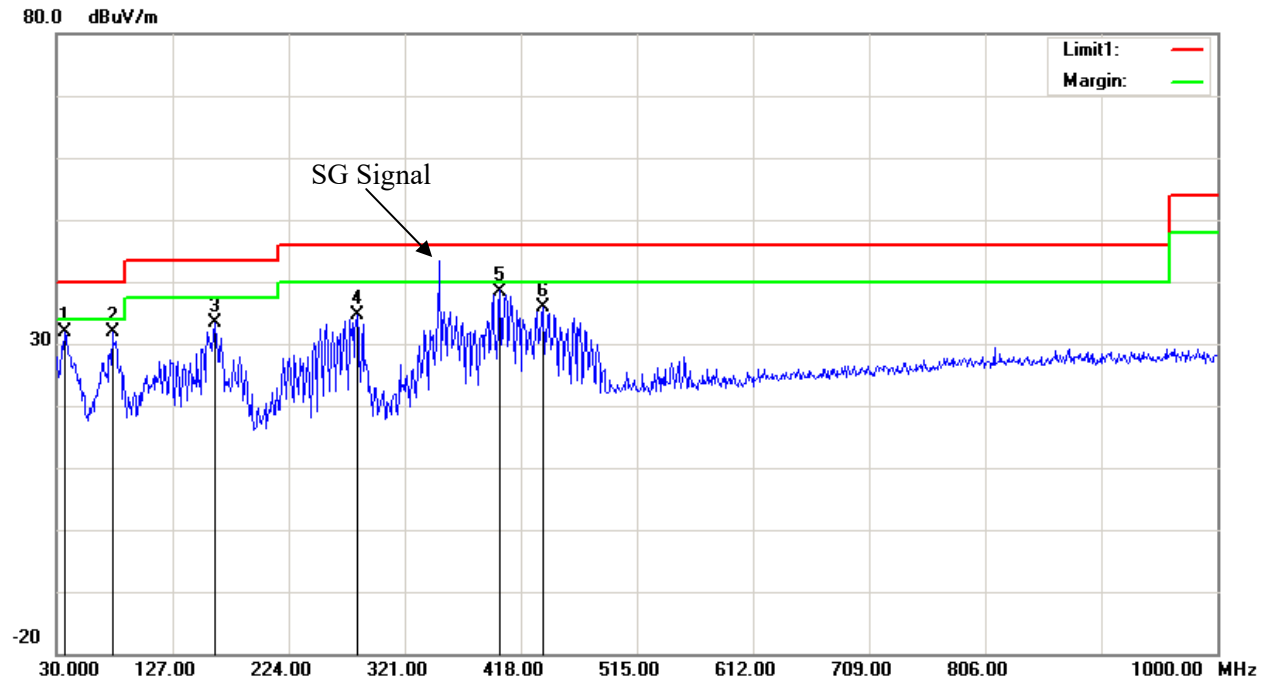
No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	35.8200	39.39	peak	-7.51	31.88	40.00	8.12
2	76.5600	46.52	peak	-16.25	30.27	40.00	9.73
3	161.9200	46.80	peak	-11.15	35.65	43.50	7.85
4	274.4400	42.28	peak	-9.92	32.36	46.00	13.64
5	385.0200	46.37	peak	-7.40	38.97	46.00	7.03
6	404.4200	45.59	peak	-6.79	38.80	46.00	7.20

Project No: XMTN1240131-07195E-RF
 Test Engineer: Joe Li
 Test Date: 2024-2-29
 Polarization: Vertical
 Test Mode: Receiving
 Power Source: DC 13.8V
 Note: 108.0125MHz



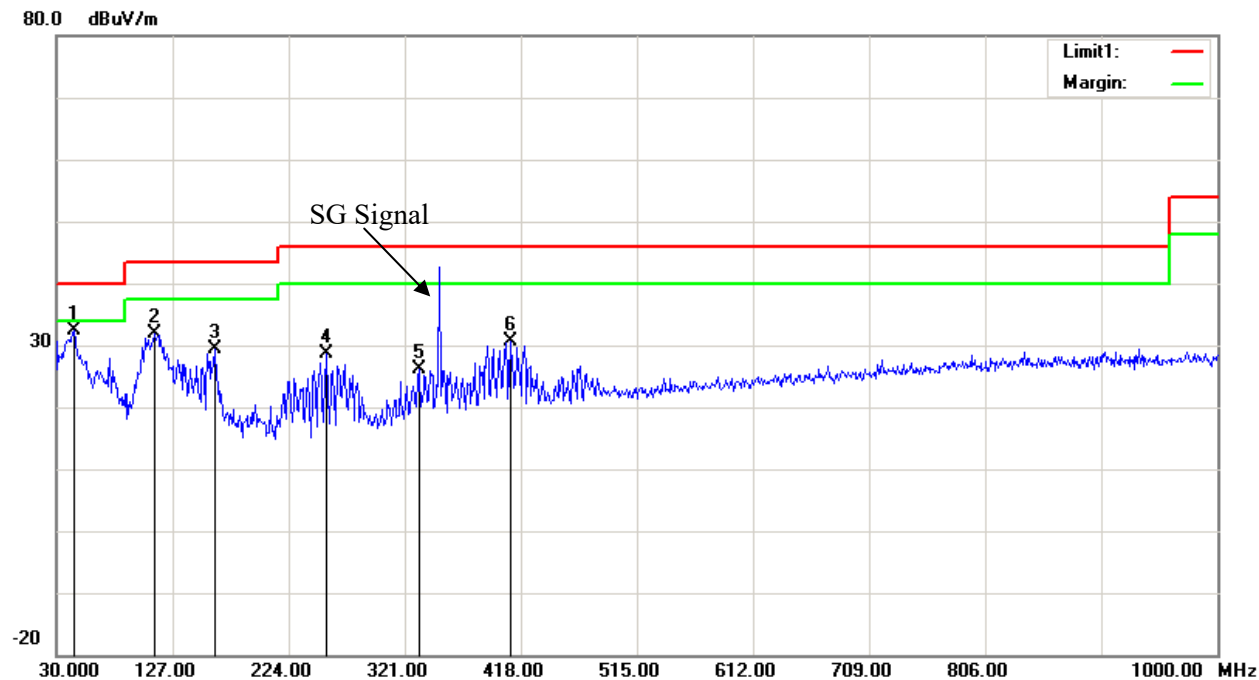
No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	39.7000	43.36	peak	-10.71	32.65	40.00	7.35
2	141.5500	38.01	peak	-10.62	27.39	43.50	16.11
3	256.0100	39.24	peak	-11.32	27.92	46.00	18.08
4	333.6100	36.18	peak	-8.80	27.38	46.00	18.62
5	353.9800	36.93	peak	-8.63	28.30	46.00	17.70
6	409.2700	38.31	peak	-6.67	31.64	46.00	14.36

Project No: XMTN1240131-07195E-RF
Test Engineer: Joe Li
Test Date: 2024-2-29
Polarization: Horizontal
Test Mode: Receiving
Power Source: DC 13.8V
Note: 350.0125MHz



No.	Frequency (MHz)	Reading (dB μ V)	Detector	Corrected dB/m	Result (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
1	36.7900	40.17	peak	-8.35	31.82	40.00	8.18
2	76.5600	48.05	peak	-16.25	31.80	40.00	8.20
3	161.9200	44.58	peak	-11.15	33.43	43.50	10.07
4	281.2300	44.40	peak	-9.70	34.70	46.00	11.30
5	400.5400	45.45	peak	-6.95	38.50	46.00	7.50
6	436.4300	41.64	peak	-5.85	35.79	46.00	10.21

Project No: XMTN1240131-07195E-RF
Test Engineer: Joe Li
Test Date: 2024-2-29
Polarization: Vertical
Test Mode: Receiving
Power Source: DC 13.8V
Note: 350.0125MHz



No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	44.5500	46.41	peak	-14.00	32.41	40.00	7.59
2	112.4500	42.75	peak	-10.97	31.78	43.50	11.72
3	161.9200	40.51	peak	-11.15	29.36	43.50	14.14
4	256.0100	39.84	peak	-11.32	28.52	46.00	17.48
5	332.6400	34.86	peak	-8.83	26.03	46.00	19.97
6	409.2700	37.19	peak	-6.67	30.52	46.00	15.48

Project No: XMTN1240131-07195E-RF

Test Engineer: Joe Li

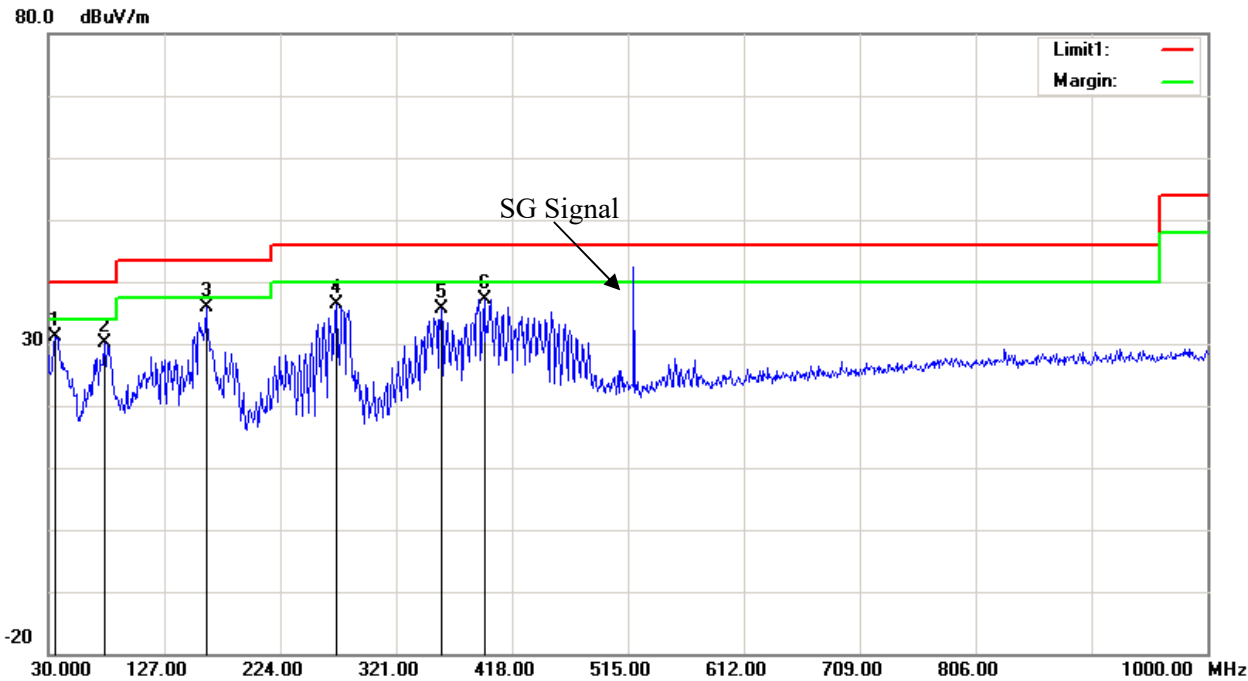
Test Date: 2024-2-29

Polarization: Horizontal

Test Mode: Receiving

Power Source: DC 13.8V

Note: 519.9875MHz



No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	35.8200	38.67	peak	-7.51	31.16	40.00	8.84
2	76.5600	46.39	peak	-16.25	30.14	40.00	9.86
3	161.9200	47.04	peak	-11.15	35.89	43.50	7.61
4	270.5600	46.36	peak	-10.05	36.31	46.00	9.69
5	358.8300	44.19	peak	-8.50	35.69	46.00	10.31
6	394.7200	44.39	peak	-7.17	37.22	46.00	8.78

Project No: XMTN1240131-07195E-RF

Test Engineer: Joe Li

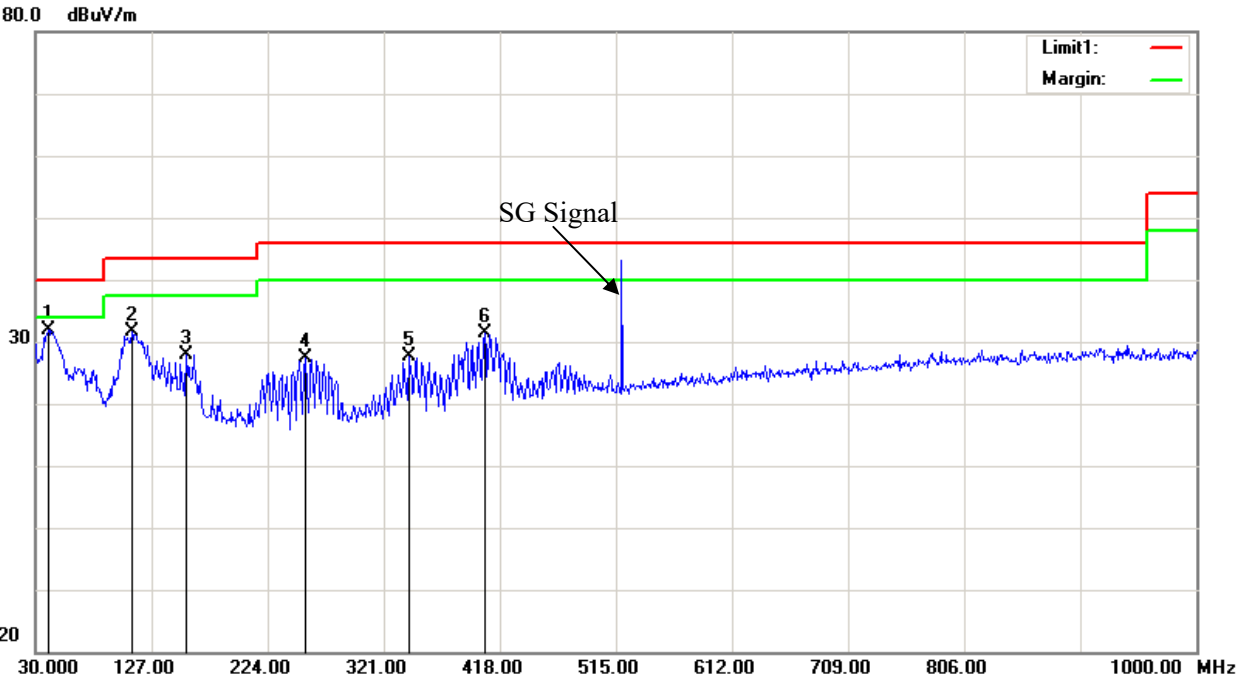
Test Date: 2024-2-29

Polarization: Vertical

Test Mode: Receiving

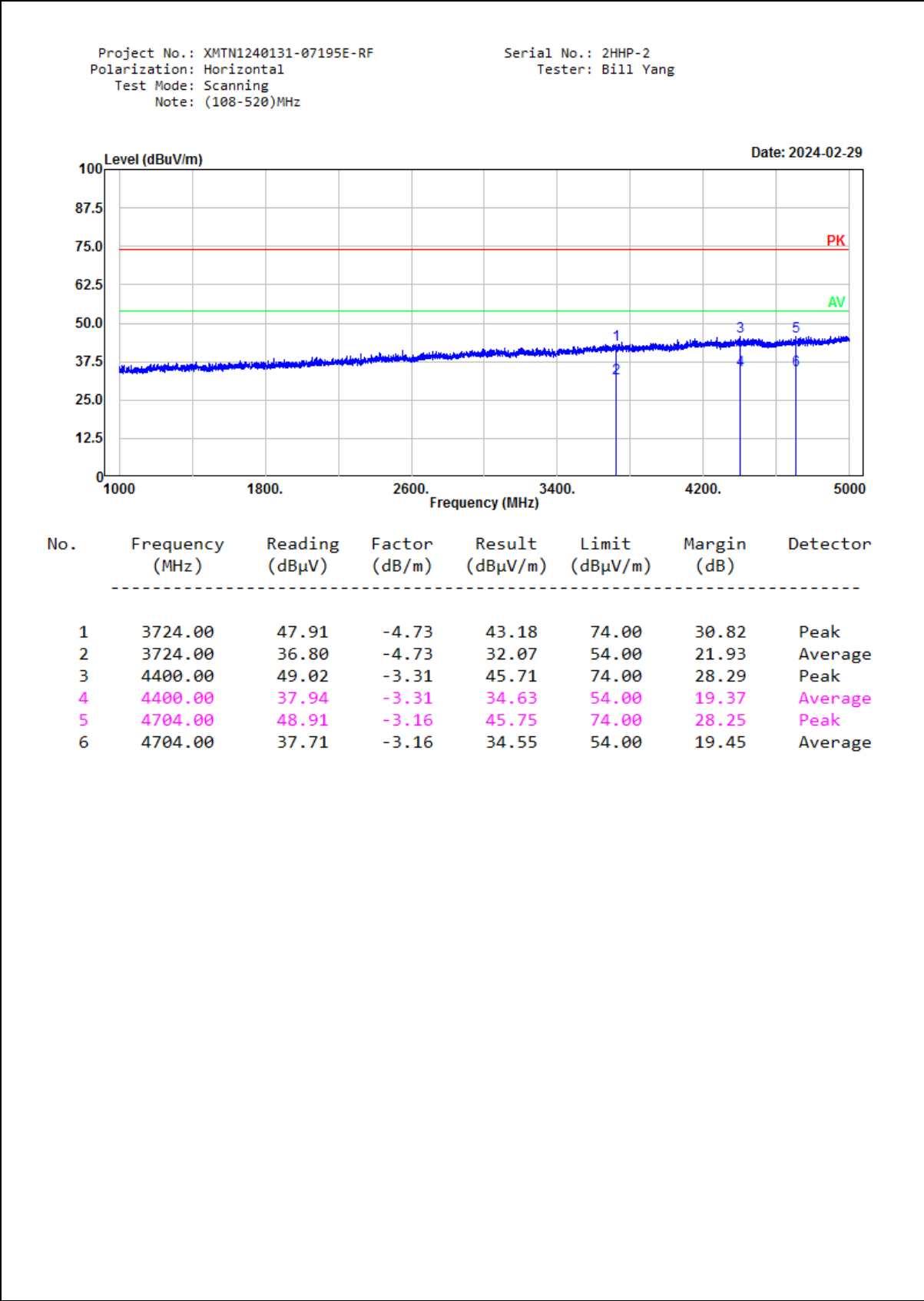
Power Source: DC 13.8V

Note: 519.9875MHz



No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBμV)		dB/m	(dBuV/m)	(dBuV/m)	(dB)
1	40.6700	43.20	peak	-11.37	31.83	40.00	8.17
2	110.5100	42.83	peak	-11.28	31.55	43.50	11.95
3	156.1000	39.03	peak	-11.04	27.99	43.50	15.51
4	256.0100	38.80	peak	-11.32	27.48	46.00	18.52
5	342.3400	36.32	peak	-8.73	27.59	46.00	18.41
6	405.3900	38.05	peak	-6.75	31.30	46.00	14.70

2) 1GHz-5GHz:
Scanning Mode:



Project No.: XMTN1240131-07195E-RF

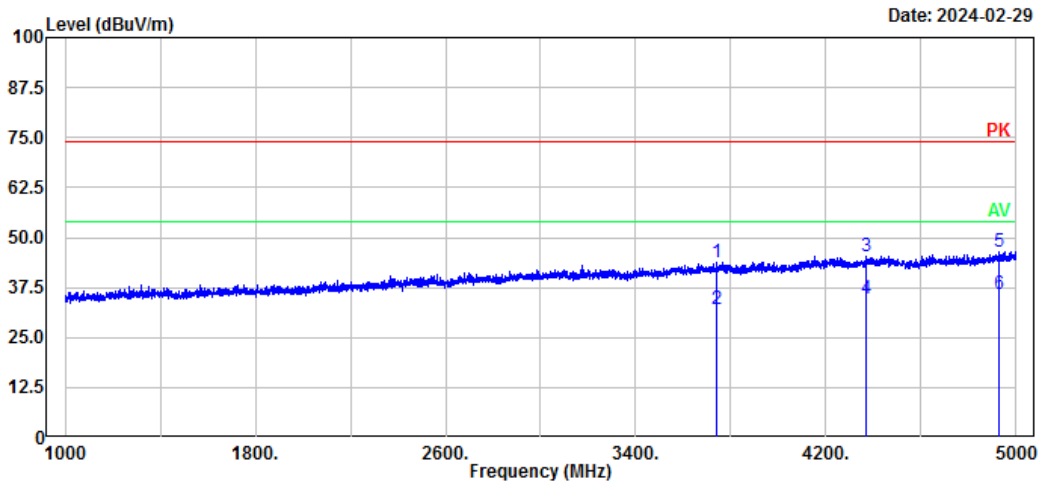
Serial No.: 2HHP-2

Polarization: Vertical

Tester: Bill Yang

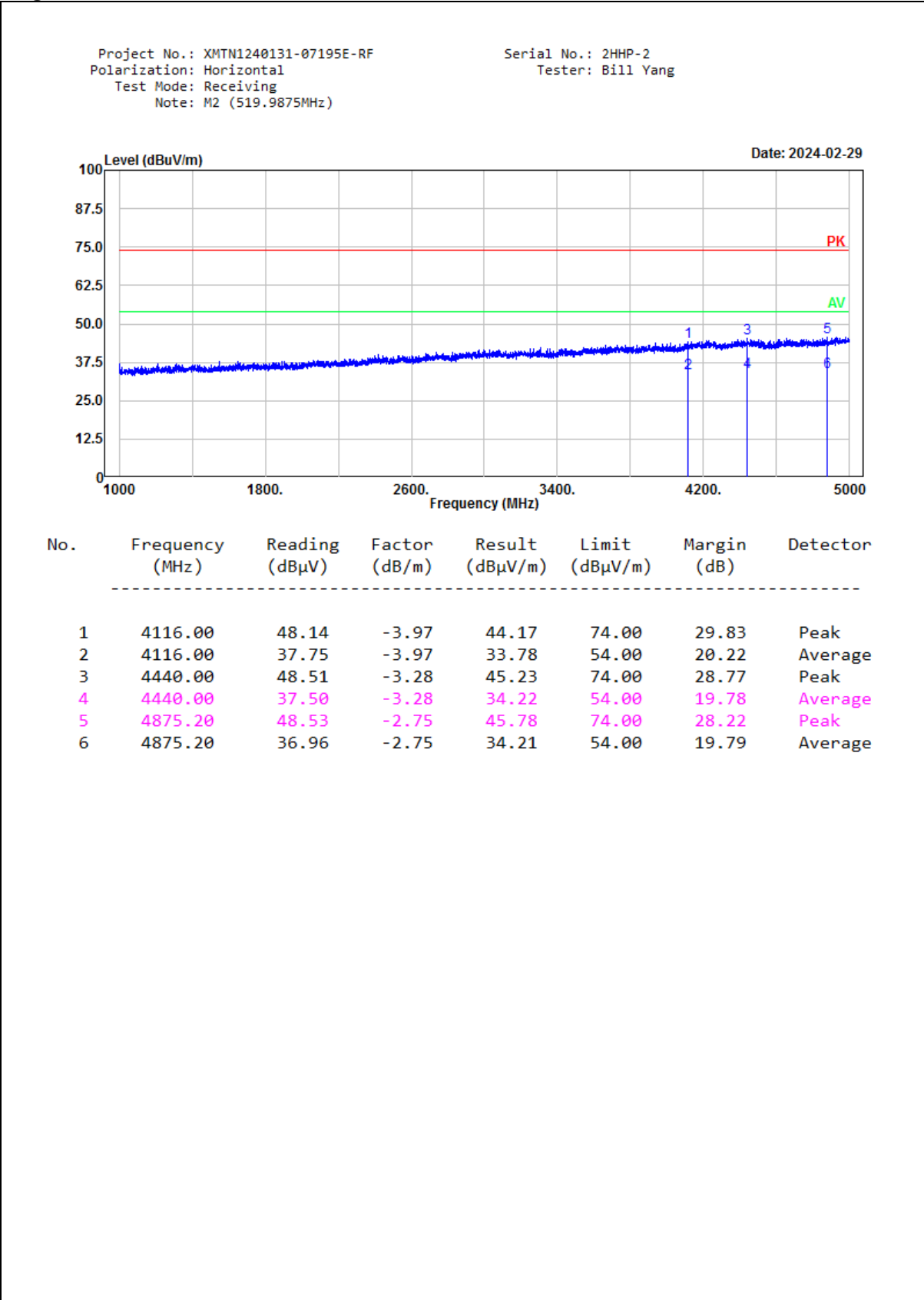
Test Mode: Scanning

Note: (108-520)MHz



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	3739.20	48.71	-4.79	43.92	74.00	30.08	Peak
2	3739.20	36.81	-4.79	32.02	54.00	21.98	Average
3	4366.40	48.87	-3.42	45.45	74.00	28.55	Peak
4	4366.40	38.05	-3.42	34.63	54.00	19.37	Average
5	4928.80	48.87	-2.51	46.36	74.00	27.64	Peak
6	4928.80	38.29	-2.51	35.78	54.00	18.22	Average

Receiving mode: 519.9875MHz was the worst



Project No.: XMTN1240131-07195E-RF

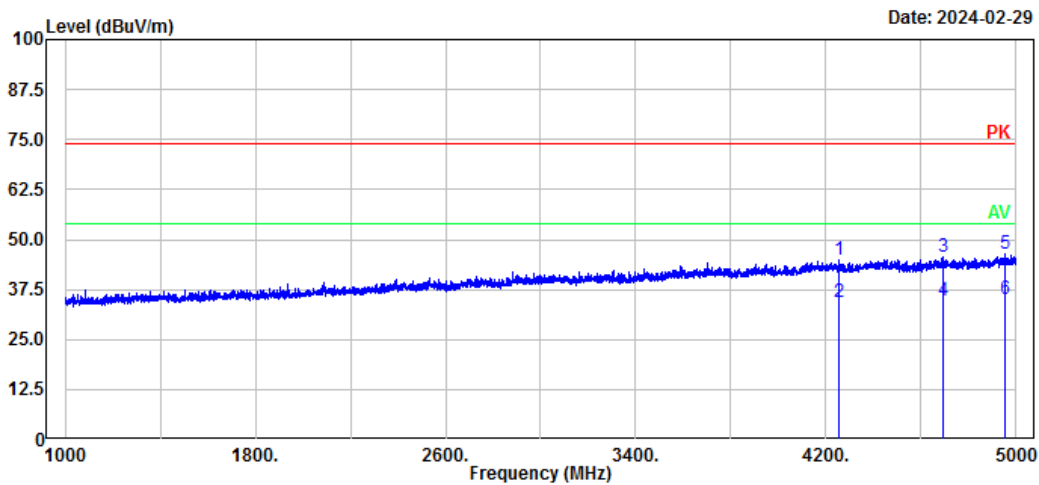
Serial No.: 2HHP-2

Polarization: Vertical

Tester: Bill Yang

Test Mode: Receiving

Note: M2 (519.9875MHz)



No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector
1	4252.00	48.57	-3.56	45.01	74.00	28.99	Peak
2	4252.00	37.77	-3.56	34.21	54.00	19.79	Average
3	4695.20	48.82	-3.19	45.63	74.00	28.37	Peak
4	4695.20	37.75	-3.19	34.56	54.00	19.44	Average
5	4956.00	48.66	-2.38	46.28	74.00	27.72	Peak
6	4956.00	37.52	-2.38	35.14	54.00	18.86	Average

4.3 Scanning Receivers and Frequency Converters Used with Scanning Receivers

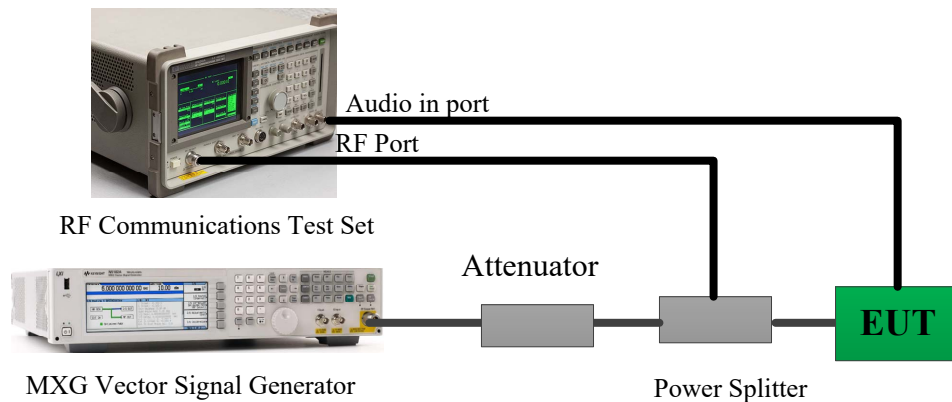
4.3.1 Applicable Standard

FCC §15.121(b).

(b) Except as provided in paragraph (c) of this section, scanning receivers shall reject any signals from the Cellular Radiotelephone Service frequency bands that are 38 dB or lower based upon a 12 dB SINAD measurement, which is considered the threshold where a signal can be clearly discerned from any interference that may be present.

4.3.2 Test Procedure

1. Connected the EUT as the below block diagram;



2. Apply a signal to the EUT antenna port at lowest, middle, highest channel frequencies of the operating band;
3. Adjust the audio output level of the EUT to its rated value with the distortion less than 10%;
4. Adjust the 8920 output power to produce 12 dB SINAD without the audio output power dropping by more than 3 dB; These output level of the 8920 at each channel frequency is the sensitivity of the EUT;
5. Select the lowest or worst case sensitivity level for all of the bands as the reference sensitivity;
6. Adjust the Signal Generator output to a level of +60 dB above the reference sensitivity obtained in step 5 and its frequency to the frequency point in the Cellular Band;
7. Set the EUT squelch to threshold, the signal required to open the squelch must be lower than the reference sensitivity level;
8. Set the EUT in a scanning mode and allow it to scan through its complete receiving range;
9. If the EUT un-squelched or stopped on any frequency, receiving at this frequency, then adjust the signal generator output level until 12 dB SINAD is produced, this level is the spurious value and the difference between the reference sensitivity and the spurious value is the rejection ratio and must be at least 38 dB;
10. Repeat above procedure at the frequencies 824, 836, 849 MHz for the mobile band, and 869, 881.5 and 894 MHz for the Cellular Base Band.

4.3.3 Test Data and Result

Serial Number:	2HHP-1	Test Date:	2024/4/12
Test Site:	RF	Test Mode:	Scanning
Tester:	Stu Song	Test Result:	Pass

Environmental Conditions:					
Temperature: (°C)	25.1	Relative Humidity: (%)	55	ATM Pressure: (kPa)	100.7

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010012	2023/9/1	2024/8/31
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010013	2023/9/1	2024/8/31
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41005011	2023/9/1	2024/8/31
HP	RF Communications Test Set	8920A	3438A05201	2023/10/18	2024/10/17
Agilent	MXG Vector Signal Generator	N5182B	MY51350142	2023/9/1	2024/8/31
Weinschel	Coaxial Attenuator	53-20-34	LN749	2023/6/7	2024/6/6
Minl-Clrcuits	Coaxial Power Splitters & Combiner	ZFRSC-183-S+	SF448201614	2024/2/25	2025/2/24

** 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:

Scanning Frequency Range (MHz)	Test Frequency (MHz)	Measurement Result (dB)	Limit (dB)
108-520	824, 836, 849, 869, 881.5, 894	45	>38

APPENDIX A - EUT PHOTOGRAPHS

Please refer to the attachment XMTN1240131-07195E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and XMTN1240131-07195E-RF-INP EUT INTERNAL PHOTOGRAPHS

APPENDIX B - TEST SETUP PHOTOGRAPHS

Please refer to the attachment XMTN1240131-07195E-RF-00A-TSP TEST SETUP PHOTOGRAPHS.

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