
FCC Test Report

Report No.: AGC01284251102FR03

FCC ID : T4KAT-5000

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION : CB RADIO

BRAND NAME : N/A

MODEL NAME : AT-5000, AE 5900, AT-5000PLUS, TK-110 ORION

APPLICANT : Qixiang Electron Science & Technology Co., Ltd.

DATE OF ISSUE : Feb. 05, 2026

STANDARD(S) : FCC Part 95 Subpart D

REPORT VERSION : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd



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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Feb. 05, 2026	Valid	Initial Release

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1. General Information

Applicant	Qixiang Electron Science & Technology Co., Ltd.
Address	Qixiang Building, Tangxi Industrial Zone, Luojiang, Quanzhou, Fujian, 362011 China
Manufacturer	Qixiang Electron Science & Technology Co., Ltd.
Address	Qixiang Building, Tangxi Industrial Zone, Luojiang, Quanzhou, Fujian, 362011 China
Factory	Qixiang Electron Science & Technology Co., Ltd.
Address	Qixiang Building, Tangxi Industrial Zone, Luojiang, Quanzhou, Fujian, 362011 China
Product Designation	CB RADIO
Brand Name	N/A
Test Model	AT-5000
Series Model(s)	AE 5900, AT-5000PLUS, TK-110 ORION
Difference Description	All the same except the model name.
Date of receipt of test item	Nov. 25, 2025
Date of Test	Nov. 25, 2025~Jan. 28, 2026
Deviation from Standard	No any deviation from the test method
Condition of Test Sample	Normal
Test Result	Pass
Test Report Form No	AGCER-FCC-CBRS-V1

Note: The test results of this report relate only to the tested sample identified in this report.

Prepared By



Bibo Zhang
(Project Engineer)

Feb. 05, 2026

Reviewed By



Jack Gui
(Reviewer)

Feb. 05, 2026

Approved By



Angela Li
(Authorized Officer)

Feb. 05, 2026

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2. Product Information

2.1 Product Technical Description

Equipment Type	Citizens' Band (CB) Radio
Communication Type	Voice / Tone only
Operation Frequency Range	26.965MHz-27.405MHz
Hardware Version	V1.0
Software Version	V1.0
Modulation Type	AM/FM/SSB
Channel Separation	10kHz
Number of Channels:	40 Channels
Rated Output Power	AM/FM:4W; SSB:12W (It was fixed by the manufacturer, any individual can't arbitrarily change it)
Maximum Transmitter Power	AM: 35.45dBm; FM:35.46dBm; LSB:40.61dBm; USB:40.61dBm
Antenna Designation	External antenna
Antenna Gain	0dBi (Typical), 3dBi (Max)
Frequency Tolerance	1.094ppm
Power Supply	DC 12V/DC 24V

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2.2 Test Frequency List

According to ANSI C63.26 section 5.1.2.1:

Measurements of transmitters shall be performed and, if required, reported for each frequency band in which the EUT can be operated with the device transmitting at the number of frequencies in each band specified in Table 2.

Frequency range Over which EUT operates	Number of Frequencies	Location in frequency range of operation
1 MHz or less	1	Middle
1 MHz to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

Operation Frequency Each of Channel			
CBRS		CBRS	
Channel	Frequency	Channel	Frequency
1	26.965 MHz	21	27.215 MHz
2	26.975 MHz	22	27.225 MHz
3	26.985 MHz	23	27.255 MHz
4	27.005 MHz	24	27.235 MHz
5	27.015 MHz	25	27.245 MHz
6	27.025 MHz	26	27.265 MHz
7	27.035 MHz	27	27.275 MHz
8	27.055 MHz	28	27.285 MHz
9	27.065 MHz	29	27.295 MHz
10	27.075 MHz	30	27.305 MHz
11	27.085 MHz	31	27.315 MHz
12	27.105 MHz	32	27.325 MHz
13	27.115 MHz	33	27.335 MHz
14	27.125 MHz	34	27.345 MHz
15	27.135 MHz	35	27.355 MHz
16	27.155 MHz	36	27.365 MHz
17	27.165 MHz	37	27.375 MHz
18	27.175 MHz	38	27.385 MHz
19	27.185 MHz	39	27.395 MHz
20	27.205 MHz	40	27.405 MHz

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2.3 Related Submittal(S) / Grant (S)

This submittal(s) (test report) is intended for FCC ID: **T4KAT-5000**, filing to comply with Part 2, Part 95 of the Federal Communication Commission rules.

2.4 Test Methodology

The tests were performed according to following standards:

No.	Identity	Document Title
1	FCC 47 CFR Part 95	Personal Radio Services
2	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
3	ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
4	ANSI EIA/TIA 382-A-1989	Minimum standards – Citizens band radio service amplitude modulated (AM) transceivers operating in the 27MHz band.

2.5 Calculation of Emission Indicators

FCC Rules and Regulations Part 2.202: Necessary Bandwidth and Emission Bandwidth

For AM Mode (Channel Spacing: 10kHz)

Emission Designator 8K00A3E

Bn = 2M, M may vary between 4000 and 10000 depending on the quality desired.

Speech and music, M = 4000, Bandwidth: 8000 Hz= 8 kHz

A3E portion of the designator represents an AM voice transmission.

Therefore, the entire designator for 10 kHz channel spacing AM mode is 8K00A3E.

For FM Mode (Channel Spacing: 10kHz)

Emission Designator 8K00F3E

Bn = 2M, M may vary between 4000 and 10000 depending on the quality desired.

Speech and music, M = 4000, Bandwidth: 8000 Hz= 8 kHz

F3E portion of the designator represents an FM voice transmission.

Therefore, the entire designator for 10 kHz channel spacing FM mode is 8K00F3E.

2.6 Statement-Compliance To §95.977

§95.977 CBRS tone transmissions.

In addition to the tones permitted under §95.377, CBRS transmitter types may be designed to transmit brief tones to indicate the beginning or end of a transmission.

This device is capable of transmitting a brief (less than one second) audio tone, “Roger Beep”, when the PTT button is released on the microphone indicating end of transmission. This function is user selectable and complies with the requirements of §95.377. See User’s Manual .

2.7 Special Accessories

Not available for this EUT intended for grant.

2.8 Equipment Modifications

Not available for this EUT intended for grant.

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3. Test Environment

3.1 Address of The Test Laboratory

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd.

Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L5488

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to follow CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories.)

A2LA-Lab Cert. No.: 5054.02

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to follow ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 975832

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files with Registration 975832.

IC-Registration No.: 24842(CAB identifier: CN0063)

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.

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3.3 Environmental Conditions

	Normal Conditions	Extreme Conditions
Temperature range (°C)	15 - 35	-30 - 50
Relative humidity range	20 % - 75 %	20 % - 75 %
Pressure range (kPa)	86 - 106	86 - 106
Power supply	DC 13.2V	LV DC 10.8V/HV DC 15.6V
	DC 26.4V	LV DC 21.6V/HV DC 31.2V

Note: The Extreme Temperature and Extreme Voltages declared by the manufacturer.

3.4 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

Test Items	Measurement Uncertainty
Frequency stability	$\pm 0.5\%$
Transmitter power conducted	$\pm 0.8\text{dB}$
Transmitter power Radiated	$\pm 1.3\text{dB}$
Conducted spurious emission 9kHz-40 GHz	$\pm 2.7\text{dB}$
Conducted Emission	$\pm 3.2\text{ dB}$
Radiated Emission below 1GHz	$\pm 3.9\text{ dB}$
Radiated Emission above 1GHz	$\pm 4.8\text{ dB}$
Occupied Channel Bandwidth	$\pm 2\%$
FM deviation	$\pm 2\%$
Audio level	$\pm 0.98\text{dB}$
Low Pass Filter Response	$\pm 0.65\text{dB}$
Modulation Limiting	0.42 %
Transient Frequency Behavior	6.8 %

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3.5 List of Equipment Used

● RF Conducted Test System							
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
☒	AGC-ER-E086	Spectrum Analyzer	KEYSIGHT	N9020A	MY53300860	2025-05-08	2026-05-07
☒	AGC-EM-E002	Wireless Connectivity Tester	HP	8920B	US35010161	2025-05-08	2026-05-07
☐	AGC-EM-E001	Digital Connectivity Tester	Aeroflex	3920B	N/A	2025-05-09	2027-05-08
☒	AGC-ER-E075	Small Environmental Tester	SH-242	ESPEC	93008290	2024-07-24	2026-07-23
☒	AGC-EM-A007	30dB Attenuator	Weinachel	58-30-33	ML030	2025-05-31	2027-05-30
☒	--	RF Connection Cable	N/A	1#	N/A	Each time	N/A
☒	--	RF Connection Cable	N/A	2#	N/A	Each time	N/A

● Radiated Spurious Emission							
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
☒	AGC-EM-E061	Spectrum Analyzer	Agilent	N9010A	MY53470504	2025-05-08	2026-05-07
☒	AGC-EM-E001	Wideband Antenna	SCHWARZBECK	VULB9168	D69250	2025-03-14	2027-03-13
☒	AGC-EM-E005	Wideband Antenna	SCHWARZBECK	VULB9168	VULB9168-494	2025-01-15	2027-01-14
☒	AGC-EM-E029	Broadband Ridged Horn Antenna	ETS	3117	00034609	2025-03-27	2026-03-26
☒	AGC-EM-E102	Broadband Ridged Horn Antenna	ETS	3117	00154520	2025-05-18	2026-05-17
☐	AGC-EM-E082	Horn Antenna	SCHWARZBECK	BBHA 9170	#768	2025-09-10	2027-09-09
☒	AGC-EM-E146	Pre-amplifier	ETS	3117-PA	00246148	2024-07-24	2026-07-23
☐	AGC-EM-E021	Pre-amplifier	MITEQ	AM-4A-000115	1465421	2024-05-28	2026-05-27
☒	AGC-ER-E037	Signal Generator	Agilent	N5182A	MY50140530	2025-05-08	2026-05-07
☐	AGC-EM-A139	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2025-05-16	2027-05-15
☒	AGC-EM-A088	UHF Filter	Microwave	N25155M2	498705	2025-05-21	2026-05-20

● Test Software					
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Version Information
☒	AGC-EM-S011	RSE Test System	Tonscend	TS+ Ver2.1(JS36-RSE)	4.0.0.0

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4. System Test Configuration

4.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

4.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

4.3 Configuration of Tested System

Fig. 2-1 Configuration of Tested System



Table 2-1 Equipment Used in Tested System

4.4 Equipment Used in Tested System

The following peripheral devices and interface cables were connected during the measurement:

☒ Test Accessories Come From The Laboratory

No.	Equipment	Manufacturer	Model No.	Specification Information	Cable
1	Load Antenna	HG-E10	Amphenol	Terminator DC -3G 50W	N/A
2	Bluetooth Speaker	SONY	SRS-XB01	N/A	--

☒ Test Accessories Come From The Manufacturer

No.	Equipment	Manufacturer	Model No.	Specification Information	Cable
1	Hand Microphone	N/A	N/A	N/A	0.8m unshielded
2	DC Power Line	N/A	N/A	N/A	1.0m Unshielded

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4.5 Summary of Test Results

Item	FCC Rules	Description of Test	Result
1	§ 95.967& 2.1046(a)	Maximum Transmitter Power	Pass
2	§95.975& 2.1047(a) (b)	Modulation Limit	Pass
3	§95.975& 2.1047(a)	Audio Frequency Response	Pass
4	§95.973& 2.1049	Emission Bandwidth	Pass
5	§95.979& 2.1049	Emission Mask	Pass
6	§95.965& 2.1055(a) (1)	Frequency Stability	Pass
7	§95.979& 2.1051	Spurious Emission on Antenna Port	Pass
8	§95.979& 2.1053	Radiated Spurious Emission	Pass

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5. Description of Test Modes

The EUT (**CB RADIO**) has been tested under normal operating condition. (CBRS TX) are chosen for testing at each channel separation.

No.	Test Mode Description	Channel Separation
1	CBRS AM TX Channel 00	10.0 kHz
2	CBRS AM TX Channel 20	10.0 kHz
3	CBRS AM TX Channel 40	10.0 kHz
4	CBRS FM TX Channel 00	10.0 kHz
5	CBRS FM TX Channel 20	10.0 kHz
6	CBRS FM TX Channel 40	10.0 kHz
7	CBRS LSB TX Channel 00	10.0 kHz
8	CBRS LSB TX Channel 20	10.0 kHz
9	CBRS LSB TX Channel 40	10.0 kHz
10	CBRS USB TX Channel 00	10.0 kHz
11	CBRS USB TX Channel 20	10.0 kHz
12	CBRS USB TX Channel 40	10.0 kHz

Note:

1. Only the result of the worst case was recorded in the report, if no other cases.
2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
3. Manufacturers use computer PC programming software to switch and operate frequency points, refer to the instructions for details

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6. Frequency Stability

6.1 Provisions Applicable

Standard Applicable [Part 95.963] The carrier frequency stability is the ability of the transmitter to maintain an assigned carrier frequency.

- The carrier frequency of each CBRs transmitter type must be designed such that the transmit carrier frequency (or in the case of SSB transmissions, the reference frequency) remains within 50 ppm

6.2 Measurement Procedure

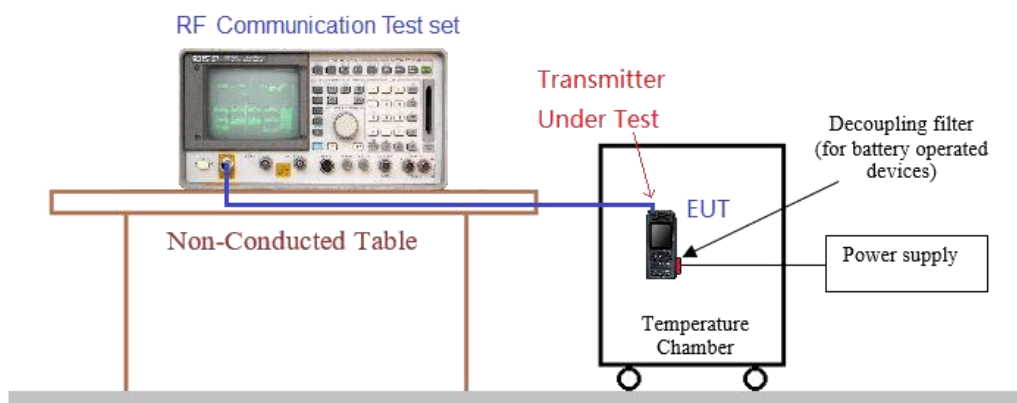
6.2.1 Frequency stability versus environmental temperature

1. Setup the configuration per figure 1 for frequencies measurement inside an environment chamber, Install new battery in the EUT.
2. Turn on EUT and set SA center frequency to the EUT radiated frequency. Set SA Resolution Bandwidth to 1kHz and Video Resolution Bandwidth to 1kHz and Frequency Span to 50kHz. Record this frequency as reference frequency.
3. Set the temperature of chamber to 50°C. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.
4. Repeat step 2 with a 10°C decreased per stage until the lowest temperature -30°C is measured, record all measured frequencies on each temperature step.

6.2.2 Frequency stability versus input voltage

1. Setup the configuration per figure 1 for frequencies measured at temperature if it is within 15°C to 25°C. Otherwise, an environment chamber set for a temperature of 20°C shall be used. The EUT should be powered by the normal operating voltage.
2. Set SA center frequency to the EUT radiated frequency. Set SA Resolution Bandwidth to 1 kHz and Video Resolution Bandwidth to 1kHz. Record this frequency as reference frequency.
3. Supply the EUT primary voltage at the operating end point which is specified by manufacturer and record the frequency.

6.3 Measurement Setup



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6.4 Measurement Result

10 kHz Channel Separation, AM modulation, Assigned Frequency For CBRS						
Test conditions		Frequency error (ppm)			Limit (ppm)	Result
Voltage (V)	Temp (°C)	Test Frequency (MHz)				
		26.965MHz	27.205MHz	27.405MHz		
13.2	-30	0.714	0.653	0.857	50	Pass
	-20	0.652	0.552	0.604		
	-10	0.522	0.962	0.674		
	0	0.821	1.001	0.737		
	10	1.039	0.631	0.946		
	20	0.622	0.868	0.575		
	30	0.709	0.500	0.686		
	40	0.554	0.626	0.580		
	50	1.027	0.579	0.802		
10.8	20	1.018	0.556	0.666		
11.73	20	1.075	0.970	0.850		

10 kHz Channel Separation, FM modulation, Assigned Frequency For CBRS						
Test conditions		Frequency error (ppm)			Limit (ppm)	Result
Voltage (V)	Temp (°C)	Test Frequency (MHz)				
		26.965MHz	27.205MHz	27.405MHz		
13.2	-30	1.094	0.580	1.039	50	Pass
	-20	0.915	1.035	0.600		
	-10	0.543	1.003	1.067		
	0	0.694	0.589	0.773		
	10	0.899	0.709	1.061		
	20	0.563	0.750	0.975		
	30	0.575	0.643	0.670		
	40	0.898	0.774	0.673		
	50	0.876	0.762	1.056		
15.87	20	0.501	0.587	0.827		
15.60	20	0.807	0.787	0.676		

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10 kHz Channel Separation, LSB modulation, Assigned Frequency For CBRS						
Test conditions		Frequency error (ppm)			Limit (ppm)	Result
Voltage (V)	Temp (°C)	Test Frequency (MHz)				
		26.965MHz	27.205MHz	27.405MHz		
13.2	-30	0.509	0.585	0.921	50	Pass
	-20	1.002	0.530	0.545		
	-10	1.073	0.684	0.847		
	0	1.042	0.909	1.049		
	10	0.707	0.623	0.585		
	20	1.048	0.601	0.748		
	30	0.627	1.041	0.757		
	40	0.864	1.020	1.076		
	50	0.807	0.657	0.879		
15.87	20	1.001	0.500	0.670		
15.60	20	0.914	0.910	0.758		

10 kHz Channel Separation, USB modulation, Assigned Frequency For CBRS						
Test conditions		Frequency error (ppm)			Limit (ppm)	Result
Voltage (V)	Temp (°C)	Test Frequency (MHz)				
		26.965MHz	27.205MHz	27.405MHz		
13.2	-30	1.067	0.593	0.736	50	Pass
	-20	0.908	1.006	0.524		
	-10	0.940	0.681	0.769		
	0	0.808	0.907	0.699		
	10	0.808	0.618	0.842		
	20	0.612	0.982	1.010		
	30	0.877	0.922	0.616		
	40	0.685	0.807	0.682		
	50	0.644	0.854	1.048		
15.87	20	0.746	0.861	0.741		
15.60	20	1.067	1.064	0.997		

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10 kHz Channel Separation, AM modulation, Assigned Frequency For CBRS						
Test conditions		Frequency error (ppm)			Limit (ppm)	Result
Voltage (V)	Temp (°C)	Test Frequency (MHz)				
		26.965MHz	27.205MHz	27.405MHz		
26.4	-30	0.748	0.758	0.777	50	Pass
	-20	0.530	0.856	0.687		
	-10	0.919	1.036	0.956		
	0	0.576	0.872	1.074		
	10	0.527	0.858	0.765		
	20	1.029	0.979	0.638		
	30	0.615	0.877	0.704		
	40	0.884	0.554	0.802		
	50	0.771	0.662	0.630		
21.6	20	0.731	1.073	1.029	50	Pass
31.2	20	0.715	0.625	0.907		

10 kHz Channel Separation, FM modulation, Assigned Frequency For CBRS						
Test conditions		Frequency error (ppm)			Limit (ppm)	Result
Voltage (V)	Temp (°C)	Test Frequency (MHz)				
		26.965MHz	27.205MHz	27.405MHz		
26.4	-30	1.048	1.015	0.636	50	Pass
	-20	0.846	0.614	0.632		
	-10	0.667	0.728	0.837		
	0	0.685	0.972	0.964		
	10	0.692	0.980	1.044		
	20	1.028	0.699	1.050		
	30	0.691	0.800	1.026		
	40	0.771	0.690	0.768		
	50	0.774	0.618	0.767		
21.6	20	0.631	0.805	0.506		
31.2	20	0.638	0.579	0.782		

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10 kHz Channel Separation, LSB modulation, Assigned Frequency For CBRS						
Test conditions		Frequency error (ppm)			Limit (ppm)	Result
Voltage (V)	Temp (°C)	Test Frequency (MHz)				
		26.965MHz	27.205MHz	27.405MHz		
26.4	-30	0.767	0.822	0.554	50	Pass
	-20	0.992	0.782	0.979		
	-10	0.767	0.687	1.076		
	0	0.612	0.630	0.861		
	10	0.805	1.074	0.590		
	20	0.908	1.047	0.705		
	30	0.927	0.520	0.816		
	40	1.092	0.560	0.658		
	50	0.624	0.786	0.769		
21.6	20	0.678	0.943	0.669	50	Pass
31.2	20	0.891	0.965	1.029		

10 kHz Channel Separation, USB modulation, Assigned Frequency For CBRS						
Test conditions		Frequency error (ppm)			Limit (ppm)	Result
Voltage (V)	Temp (°C)	Test Frequency (MHz)				
		26.965MHz	27.205MHz	27.405MHz		
26.4	-30	0.923	0.516	0.865	50	Pass
	-20	0.799	0.774	0.723		
	-10	0.734	0.651	0.868		
	0	0.953	0.622	1.059		
	10	0.785	0.666	0.817		
	20	0.698	0.851	0.891		
	30	0.632	0.701	0.681		
	40	0.547	0.909	0.503		
	50	0.611	1.004	0.660		
21.6	20	0.572	1.029	0.789		
31.2	20	0.948	0.707	0.796		

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7. 26dB Emission Bandwidth and 99% Occupied Bandwidth

7.1 Provisions Applicable

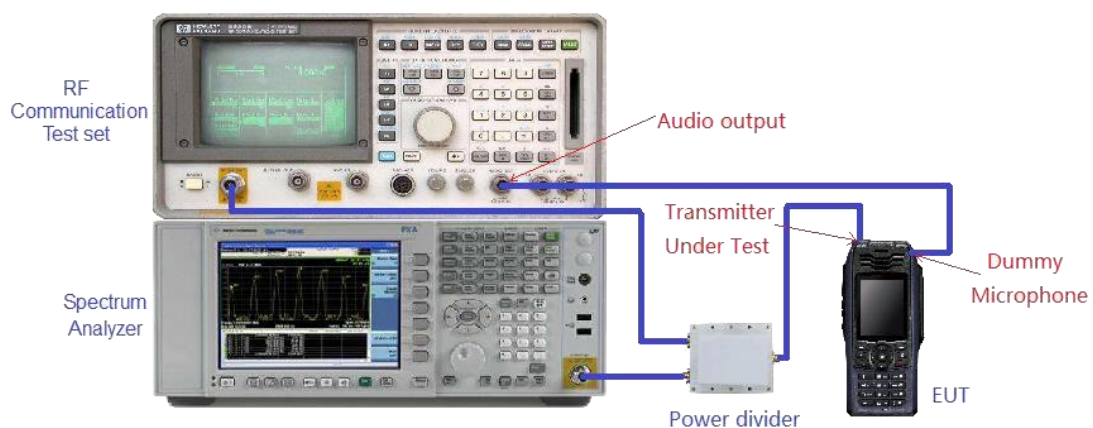
According to standard FCC Part 95.973, FCC Part 2.1049 reference is as follows: Each CBRS transmitter type must be designed such that the occupied bandwidth does not exceed the authorized bandwidth for the emission type under test.

- AM or FM modulation: the authorized bandwidth for emission type A3E and F3E is 8 kHz.
- SSB modulation: the authorized bandwidth for emission types J3E, R3E, and H3E is 4 kHz.

7.2 Measurement Procedure

1. Connect the equipment as illustrated
2. The EUT was modulated by 2.5kHz sine wave audio signal; the level of the audio signal employed is 16dB
3. greater than that necessary to produce 50% of rated system deviation.
4. Rated system deviation is 2.5 kHz for 12.5kHz channel spacing).
5. Spectrum set as follow:
6. Centre frequency = the nominal EUT channel center frequency,
7. The frequency span for the spectrum analyzer shall be set wide enough to capture all modulation products
8. including the emission skirts (typically a span of $1.5 \times \text{OBW}$ is sufficient)
9. RBW = 1% to 5% of the anticipated OBW, VBW $\geq 3 \times \text{RBW}$, Sweep = auto, Detector function = peak,
10. Trace = max hold
11. Set 99% Occupied Bandwidth and 26dB Bandwidth
12. Measure and record the results in the test report.

7.3 Measurement Setup



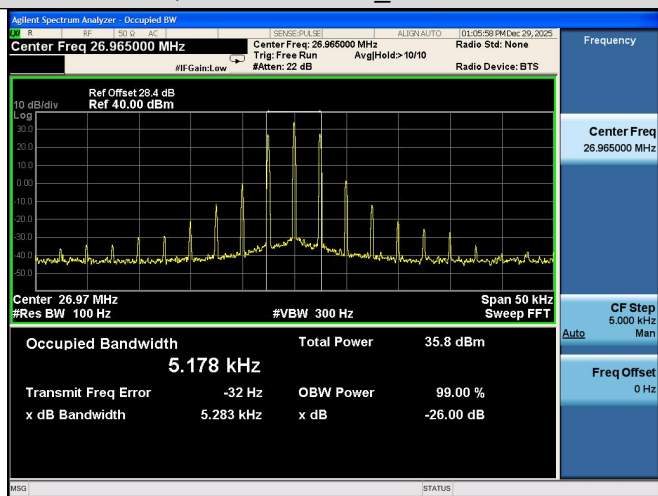
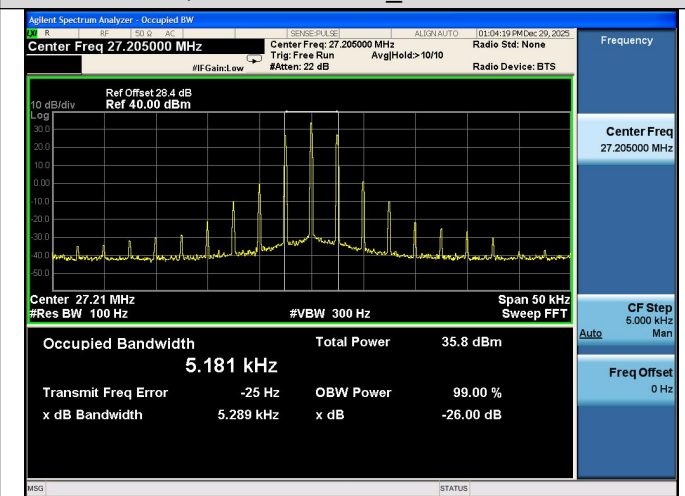
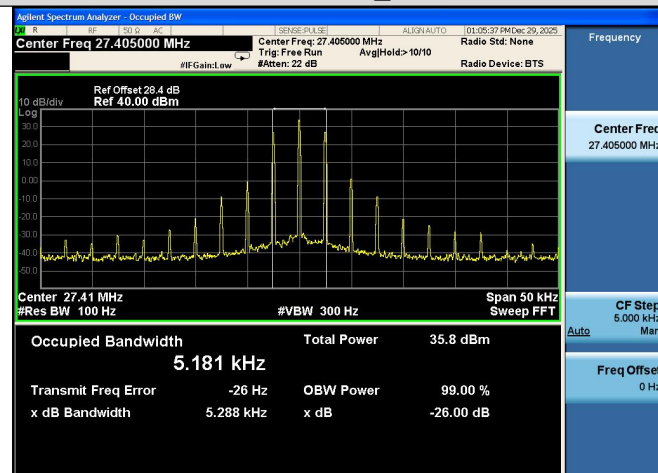
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7.4 Measurement Result

- For DC 12V System:

Emission Bandwidth Measurement Result-CBRS				
Operating Frequency (MHz)	10 kHz Channel Separation			
	Occupied Bandwidth (kHz)	Emission Bandwidth (kHz)	Limits (kHz)	Result
26.965	5.178	5.283	8.0	Pass
27.205	5.181	5.289	8.0	Pass
27.405	5.181	5.288	8.0	Pass

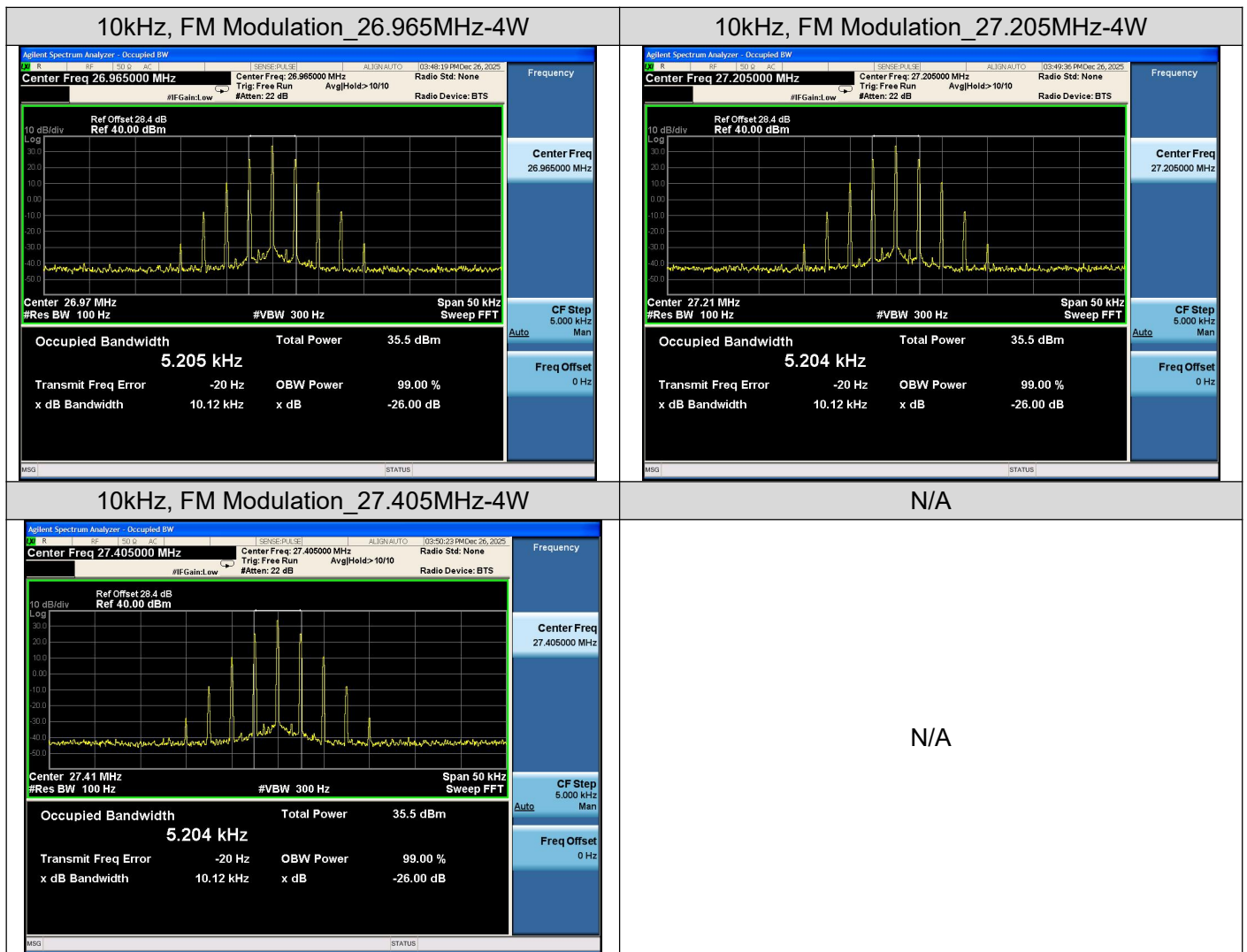
Test plot as follows:

10kHz, AM Modulation_26.965MHz-4W	10kHz, AM Modulation_27.205MHz-4W
	
10kHz, AM Modulation_27.405MHz-4W	N/A
	N/A

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Emission Bandwidth Measurement Result-CBRS				
Operating Frequency (MHz)	10 kHz Channel Separation			
	Occupied Bandwidth (kHz)	Emission Bandwidth (kHz)	Limits (kHz)	Result
26.965 MHz	5.205	10.12	8.0	Pass
27.205 MHz	5.204	10.12	8.0	Pass
27.405 MHz	5.204	10.12	8.0	Pass

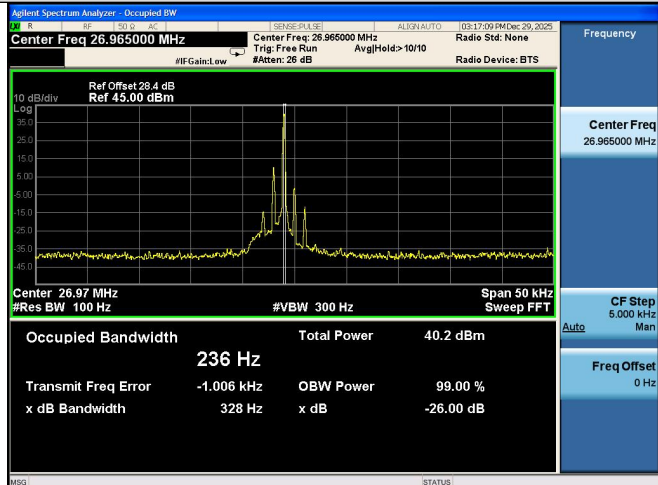
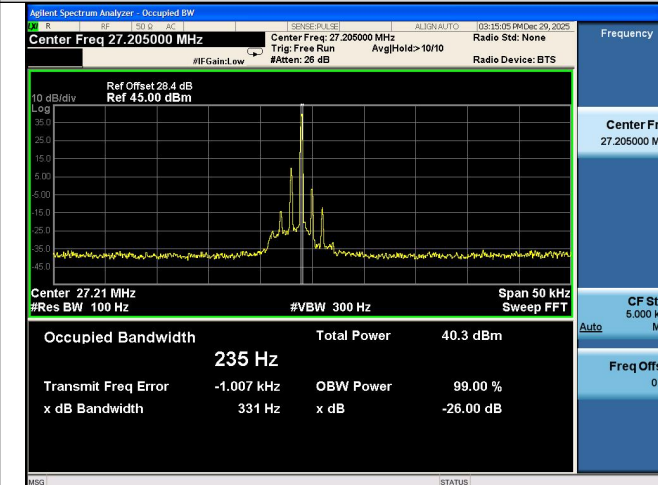
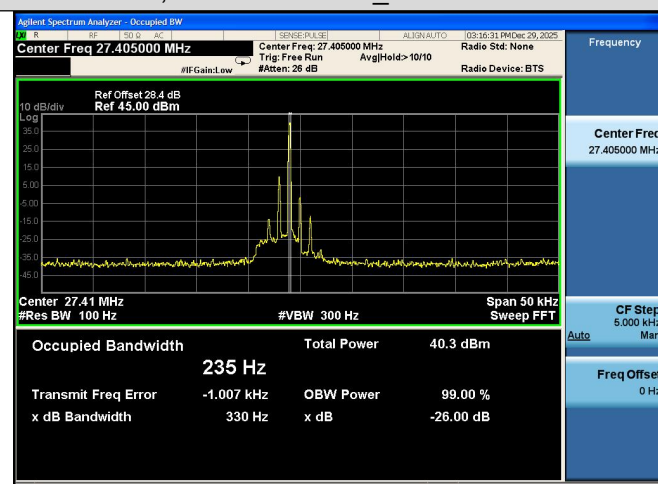
Test plot as follows:



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Emission Bandwidth Measurement Result-CBRS				
Operating Frequency (MHz)	10 kHz Channel Separation			
	Occupied Bandwidth (kHz)	Emission Bandwidth (kHz)	Limits (kHz)	Result
26.965	0.236	0.328	8.0	Pass
27.205	0.235	0.331	8.0	Pass
27.405	0.235	0.330	8.0	Pass

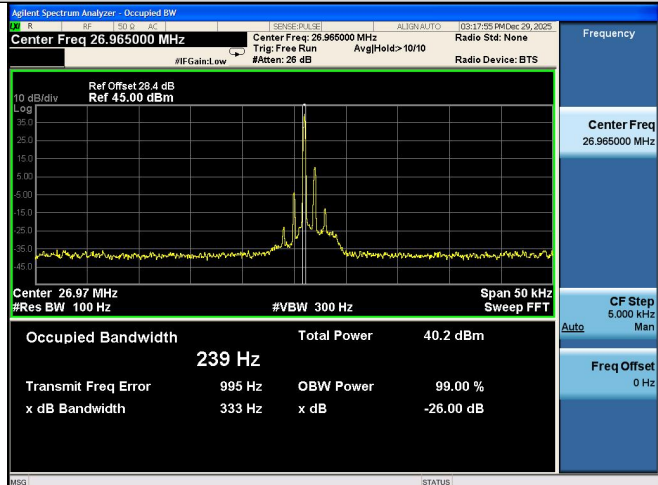
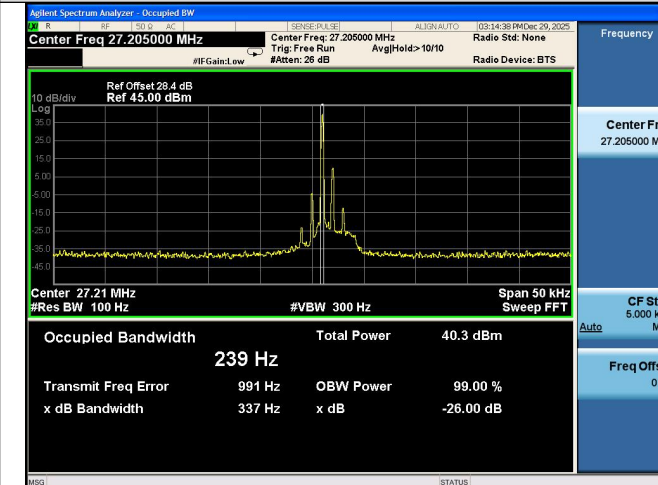
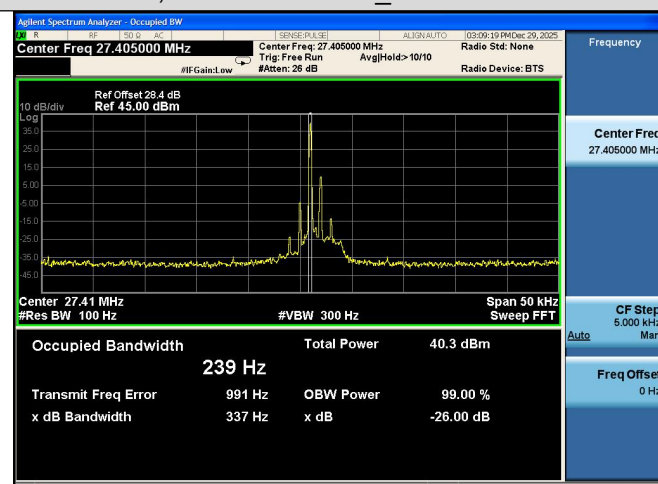
Test plot as follows:

10kHz, LSB Modulation_26.965MHz-12W	10kHz, LSB Modulation_27.205MHz-12W
 Agilent Spectrum Analyzer - Occupied BW Center Freq 26.965000 MHz Ref Offset 28.4 dB Ref 45.00 dBm Center 26.97 MHz #Res BW 100 Hz #VBW 300 Hz Span 50 kHz CF Step 5.000 kHz Sweep FFT Occupied Bandwidth 236 Hz Total Power 40.2 dBm Transmit Freq Error -1.006 kHz OBW Power 99.00 % x dB Bandwidth 328 Hz x dB -26.00 dB	 Agilent Spectrum Analyzer - Occupied BW Center Freq 27.205000 MHz Ref Offset 28.4 dB Ref 45.00 dBm Center 27.21 MHz #Res BW 100 Hz #VBW 300 Hz Span 50 kHz CF Step 5.000 kHz Sweep FFT Occupied Bandwidth 235 Hz Total Power 40.3 dBm Transmit Freq Error -1.007 kHz OBW Power 99.00 % x dB Bandwidth 331 Hz x dB -26.00 dB
10kHz, LSB Modulation_27.405MHz-12W	N/A
 Agilent Spectrum Analyzer - Occupied BW Center Freq 27.405000 MHz Ref Offset 28.4 dB Ref 45.00 dBm Center 27.41 MHz #Res BW 100 Hz #VBW 300 Hz Span 50 kHz CF Step 5.000 kHz Sweep FFT Occupied Bandwidth 235 Hz Total Power 40.3 dBm Transmit Freq Error -1.007 kHz OBW Power 99.00 % x dB Bandwidth 330 Hz x dB -26.00 dB	N/A

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Emission Bandwidth Measurement Result-CBRS				
Operating Frequency (MHz)	10 kHz Channel Separation			
	Occupied Bandwidth (kHz)	Emission Bandwidth (kHz)	Limits (kHz)	Result
26.965 MHz	0.239	0.333	8.0	Pass
27.205 MHz	0.239	0.337	8.0	Pass
27.405 MHz	0.239	0.337	8.0	Pass

Test plot as follows:

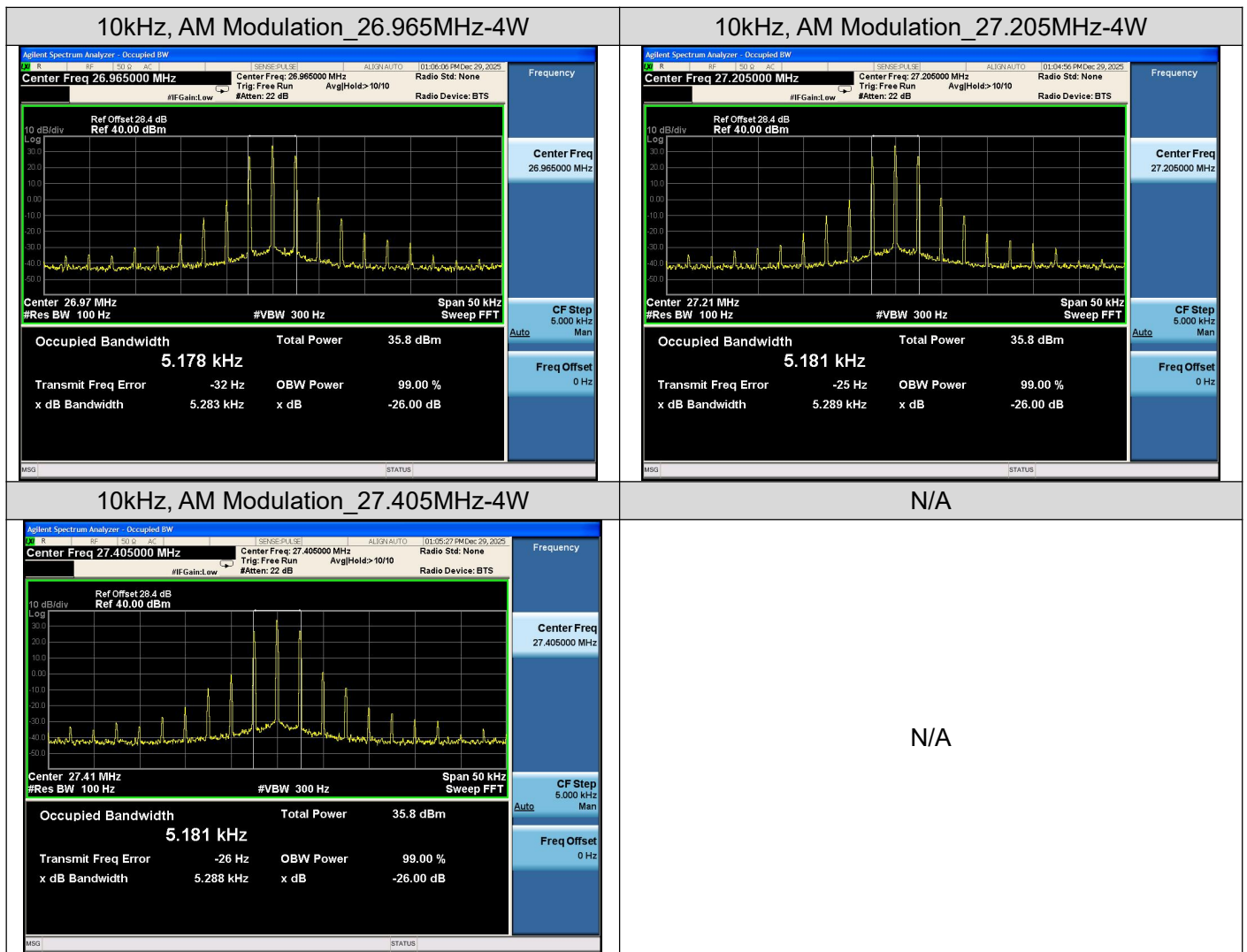
10kHz, USB Modulation_26.965MHz-12W	10kHz, USB Modulation_27.205MHz-12W
 Agilent Spectrum Analyzer - Occupied BW Center Freq 26.965000 MHz Ref Offset 28.4 dB Ref 45.00 dBm Center 26.97 MHz #Res BW 100 Hz #VBW 300 Hz Span 50 kHz Sweep FFT Occupied Bandwidth 239 Hz Total Power 40.2 dBm Transmit Freq Error 995 Hz OBW Power 99.00 % x dB Bandwidth 333 Hz x dB -26.00 dB	 Agilent Spectrum Analyzer - Occupied BW Center Freq 27.205000 MHz Ref Offset 28.4 dB Ref 45.00 dBm Center 27.21 MHz #Res BW 100 Hz #VBW 300 Hz Span 50 kHz Sweep FFT Occupied Bandwidth 239 Hz Total Power 40.3 dBm Transmit Freq Error 991 Hz OBW Power 99.00 % x dB Bandwidth 337 Hz x dB -26.00 dB
10kHz, USB Modulation_27.405MHz-12W	N/A
 Agilent Spectrum Analyzer - Occupied BW Center Freq 27.405000 MHz Ref Offset 28.4 dB Ref 45.00 dBm Center 27.41 MHz #Res BW 100 Hz #VBW 300 Hz Span 50 kHz Sweep FFT Occupied Bandwidth 239 Hz Total Power 40.3 dBm Transmit Freq Error 991 Hz OBW Power 99.00 % x dB Bandwidth 337 Hz x dB -26.00 dB	N/A

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- For DC 24V System:

Emission Bandwidth Measurement Result-CBRS				
Operating Frequency (MHz)	10 kHz Channel Separation			
	Occupied Bandwidth (kHz)	Emission Bandwidth (kHz)	Limits (kHz)	Result
26.965	5.178	5.283	8.0	Pass
27.205	5.181	5.289	8.0	Pass
27.405	5.181	5.288	8.0	Pass

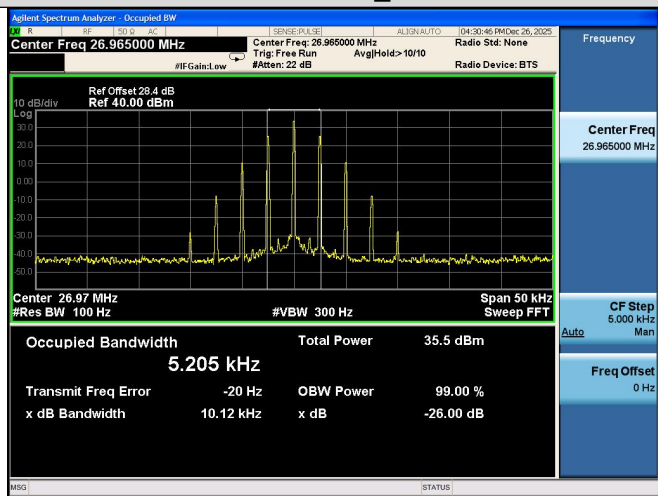
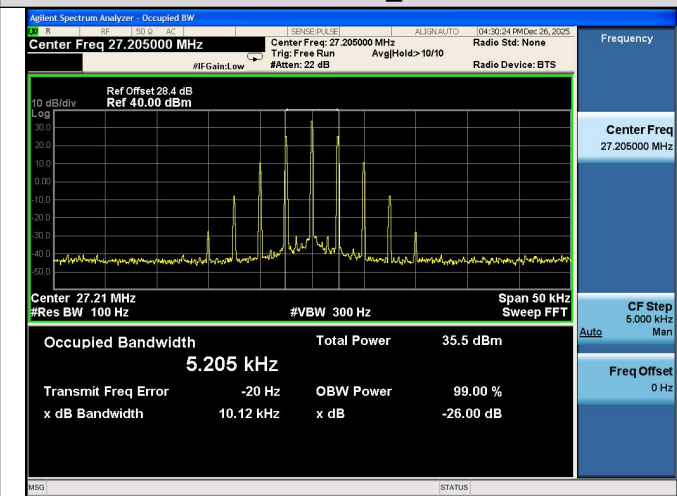
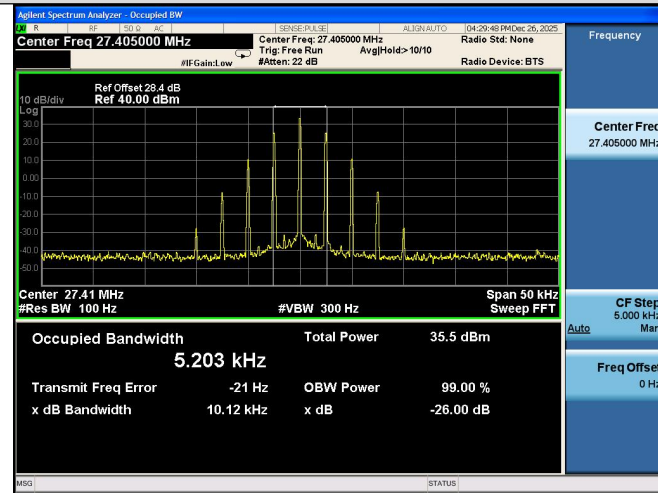
Test plot as follows:



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Emission Bandwidth Measurement Result-CBRS				
Operating Frequency (MHz)	10 kHz Channel Separation			
	Occupied Bandwidth (kHz)	Emission Bandwidth (kHz)	Limits (kHz)	Result
26.965 MHz	5.205	10.12	8.0	Pass
27.205 MHz	5.205	10.12	8.0	Pass
27.405 MHz	5.203	10.12	8.0	Pass

Test plot as follows:

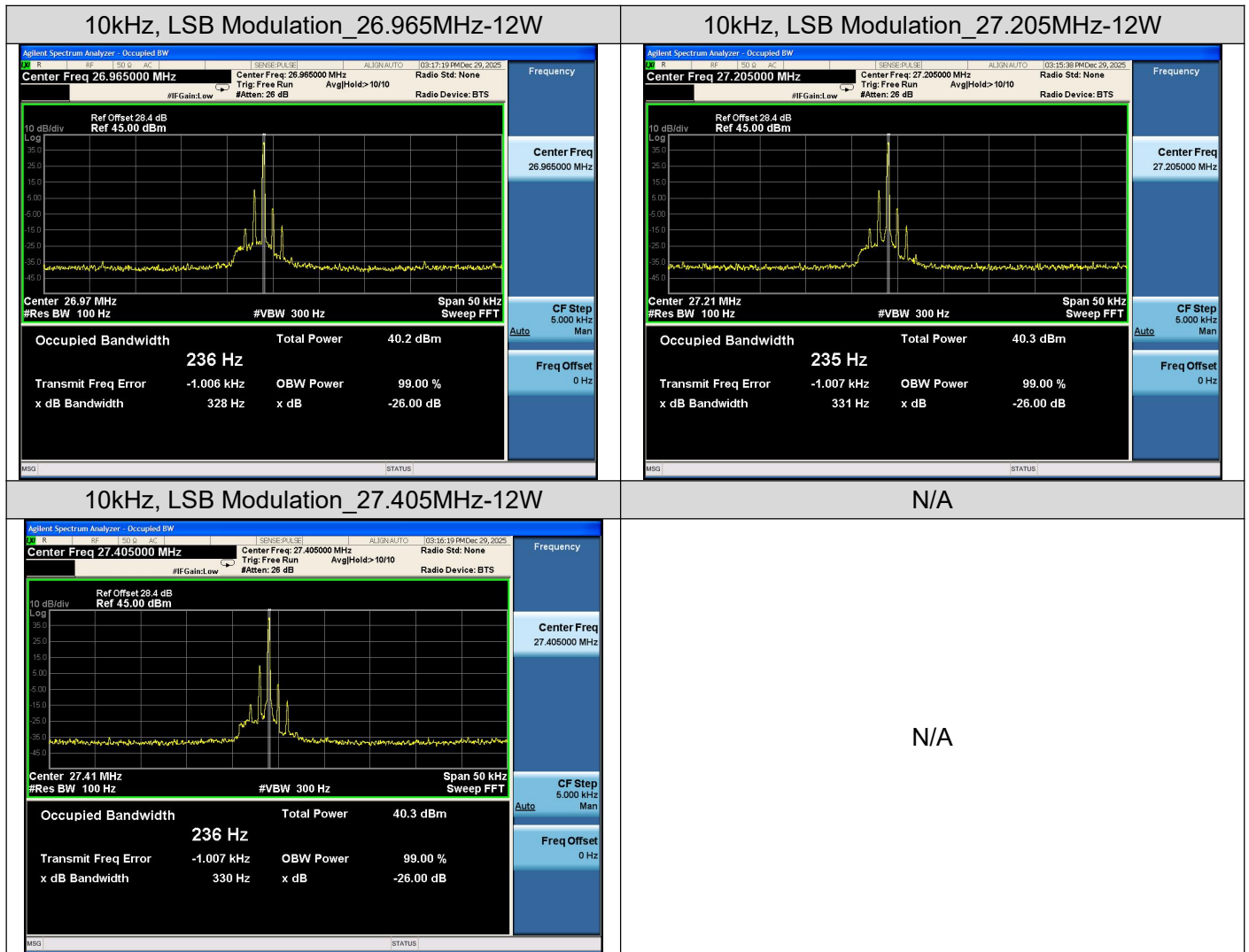
10kHz, FM Modulation_26.965MHz-4W	10kHz, FM Modulation_27.205MHz-4W
 Agilent Spectrum Analyzer - Occupied BW Center Freq 26.965000 MHz Ref Offset 28.4 dB Ref 40.00 dBm Center 26.97 MHz #Res BW 100 Hz #VBW 300 Hz Span 50 kHz Sweep FFT CF Step 5.000 kHz Auto Man Occupied Bandwidth 5.205 kHz Total Power 35.5 dBm Transmit Freq Error -20 Hz OBW Power 99.00 % x dB Bandwidth 10.12 kHz x dB -26.00 dB Freq Offset 0 Hz	 Agilent Spectrum Analyzer - Occupied BW Center Freq 27.205000 MHz Ref Offset 28.4 dB Ref 40.00 dBm Center 27.21 MHz #Res BW 100 Hz #VBW 300 Hz Span 50 kHz Sweep FFT CF Step 5.000 kHz Auto Man Occupied Bandwidth 5.205 kHz Total Power 35.5 dBm Transmit Freq Error -20 Hz OBW Power 99.00 % x dB Bandwidth 10.12 kHz x dB -26.00 dB Freq Offset 0 Hz
10kHz, FM Modulation_27.405MHz-4W	N/A
 Agilent Spectrum Analyzer - Occupied BW Center Freq 27.405000 MHz Ref Offset 28.4 dB Ref 40.00 dBm Center 27.41 MHz #Res BW 100 Hz #VBW 300 Hz Span 50 kHz Sweep FFT CF Step 5.000 kHz Auto Man Occupied Bandwidth 5.203 kHz Total Power 35.5 dBm Transmit Freq Error -21 Hz OBW Power 99.00 % x dB Bandwidth 10.12 kHz x dB -26.00 dB Freq Offset 0 Hz	N/A

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Emission Bandwidth Measurement Result-CBRS

Operating Frequency (MHz)	10 kHz Channel Separation			
	Occupied Bandwidth (kHz)	Emission Bandwidth (kHz)	Limits (kHz)	Result
26.965	0.236	0.328	8.0	Pass
27.205	0.235	0.331	8.0	Pass
27.405	0.236	0.330	8.0	Pass

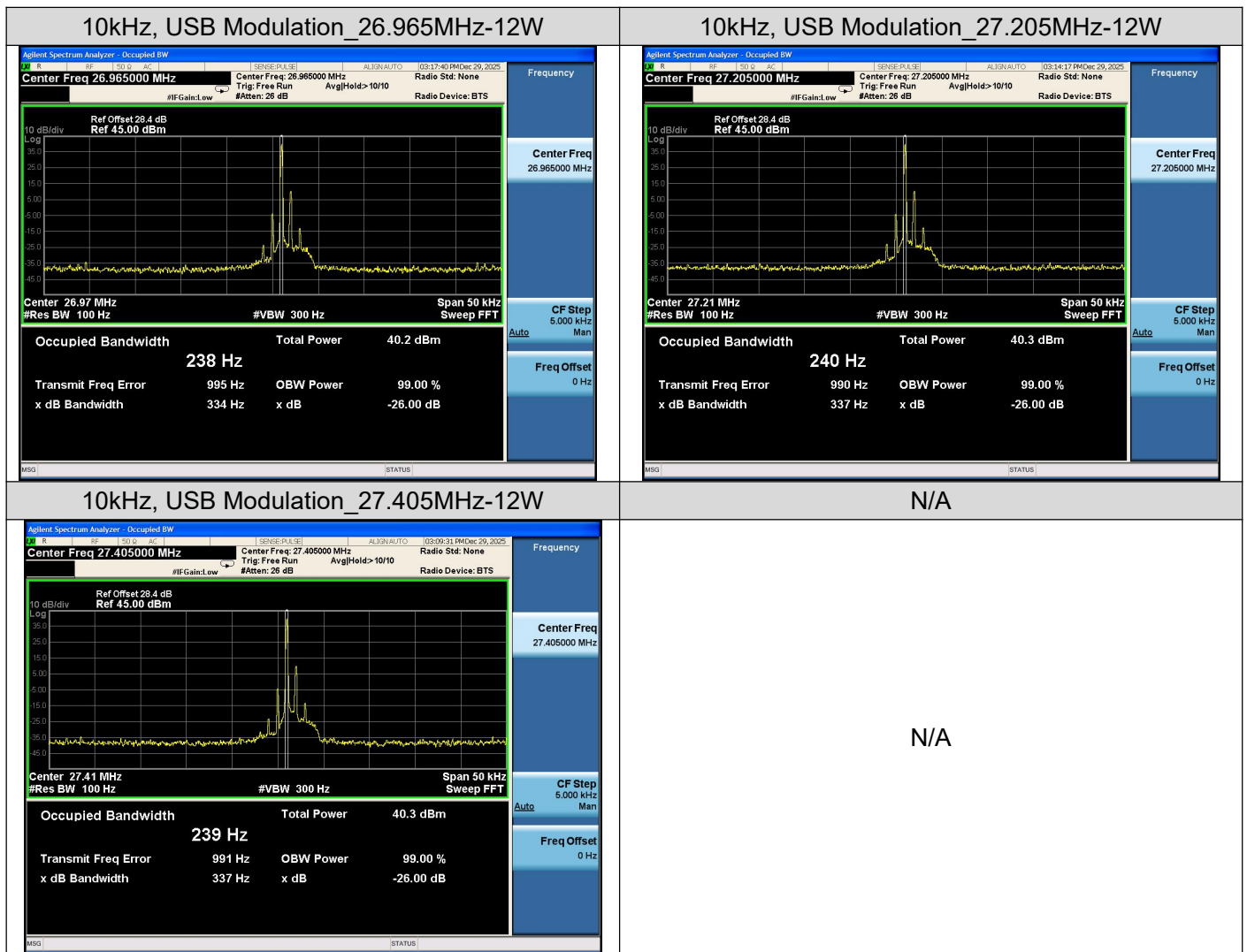
Test plot as follows:



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Emission Bandwidth Measurement Result-CBRS				
Operating Frequency (MHz)	10 kHz Channel Separation			
	Occupied Bandwidth (kHz)	Emission Bandwidth (kHz)	Limits (kHz)	Result
26.965 MHz	0.238	0.334	8.0	Pass
27.205 MHz	0.240	0.337	8.0	Pass
27.405 MHz	0.239	0.337	8.0	Pass

Test plot as follows:



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8. Radiated Spurious Emission and Emission Mask

8.1 Provisions Applicable

According to the standard FCC Part 95.979(a), the requirements of FCC Part 2.1053 are as follows:

Each GMRS transmitter type must be designed to comply with the applicable unwanted emissions limits in this section.

- Emission masks. Emission masks applicable to transmitting equipment in the GMRS are defined by the requirements in the following table. The numbers in the attenuation requirements column refer to rule paragraph numbers under paragraph (b) of this section.

Emission Types	Attenuation Requirements
A3E, F3E	(1), (3), (5), (6)
H3E, J3E, R3E	(2), (4), (5), (6)

- 1) 25 dB (decibels) in the frequency band 4 kHz to 8 kHz removed from the channel center frequency;
- 2) 25 dB in the frequency band 2 kHz to 6 kHz removed from the channel center frequency;
- 3) 35 dB in the frequency band 8 kHz to 20 kHz removed from the channel center frequency;
- 4) 35 dB in the frequency band 6 kHz to 10 kHz removed from the channel center frequency;
- 5) $53 + 10 \log(P)$ dB in any frequency band removed from the channel center frequency by more than 250% of the authorized bandwidth.
- 6) 60 dB in any frequency band centered on a harmonic (i.e., an integer multiple of two or more times) of the carrier frequency.

8.2 Measurement Procedure

- 1) EUT was placed on a 0.8 or 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The disturbance of the transmitter was maximized on the test receiver display by raising and lowering from 1m to 4m the receive antenna and by rotating through 360° the turntable. After the fundamental emission was maximized, a field strength measurement was made. The radiated emission measurements of all transmit frequencies in all channels were measured with peak detector.
- 2) A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
- 3) The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz for above 1GHz and RBW=100kHz, VBW=300kHz for 30MHz to 1GHz, And the maximum value of the receiver should be recorded as (Pr).
- 4) The EUT shall be replaced by a substitution antenna. In the chamber, a substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the

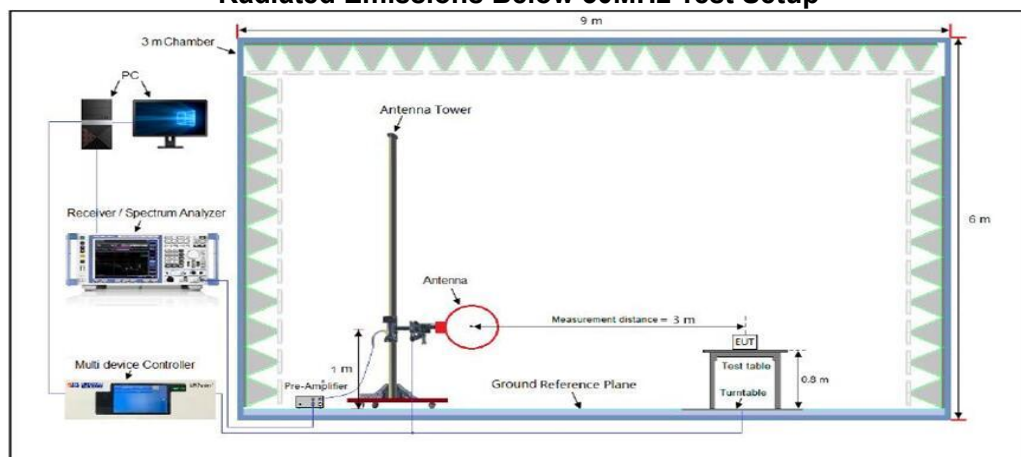
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frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

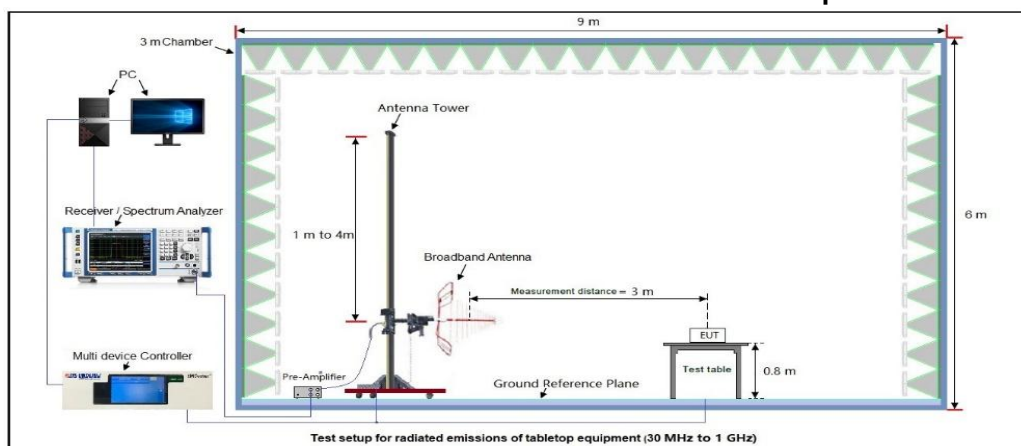
- 5) A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (P_{cl}) ,the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test
- 6) The measurement results are obtained as described below: $Power(EIRP) = P_{Mea} - P_{Ag} - P_{cl} - G_a$ The measurement results are amend as described below: $Power(EIRP) = P_{Mea} - P_{cl} - G_a$
- 7) This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
- 8) ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.15dBi$.
- 9) Test the EUT in the lowest channel, the middle channel the Highest channel

8.3 Measurement Setup

Radiated Emissions Below 30MHz Test Setup



Radiated Emissions 30MHz-1000MHz Test Setup



Test setup for radiated emissions of tabletop equipment (30 MHz to 1 GHz)

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8.4 Measurement Result

- The Unwanted spurious emissions limits are as follows:

Attenuation Requirement Results	Reference limit
At least $53+10\log(P) = 53+10\log(4W) = 59.02$ (dB)	Limit=P(dBm)- Preliminary calculation=-23dBm
At least $53+10\log(P) = 53+10\log(12W) = 63.79$ (dB)	Limit=P(dBm)- Preliminary calculation=-23dBm

- The Harmonic emissions spurious limits are as follows:

The maximum power of the measured fundamental frequency drops by at least 60Db

- For DC 12V System:

Test Mode	Measuring Center frequency (MHz)	Maximum Power (dBm)	Reference limit (dBm)
AM	26.965	35.43	-24.57
	27.205	35.45	-24.55
	27.405	35.42	-24.58
FM	26.965	35.46	-24.54
	27.205	35.44	-24.57
	27.405	35.46	-24.54
LSB	26.965	40.59	-19.41
	27.205	40.59	-19.41
	27.405	40.61	-19.39
USB	26.965	40.56	-19.44
	27.205	40.61	-19.39
	27.405	40.61	-19.39

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● For DC 24V System:

Test Mode	Measuring Center frequency (MHz)	Maximum Power (dBm)	Reference limit (dBm)
AM	26.965	35.42	-24.58
	27.205	35.43	-24.57
	27.405	35.46	-24.54
FM	26.965	35.43	-24.57
	27.205	35.44	-24.56
	27.405	35.46	-24.54
LSB	26.965	40.54	-19.46
	27.205	40.54	-19.46
	27.405	40.58	-19.42
USB	26.965	40.52	-19.48
	27.205	40.54	-19.46
	27.405	40.58	-19.42

There will be accuracy errors when the radiation spurious software reads the harmonic frequency points, which are in correspondence with the harmonic frequency points given by the reference limit. Please ignore them.

■ The Radiated Spurious Measurement Parameters are as Follows:

Note 1: Factor=Antenna Factor + Cable loss. (Below 1GHz)

Note 2: Factor=Antenna Factor+ Cable loss -Pre-amplifier. (Above 1 GHz)

Note 3: Margin=Limit- Level

Note 4: Unwanted spurious signals in the 9kHz-30MHz band are below the limit by 20dB and are not recorded.

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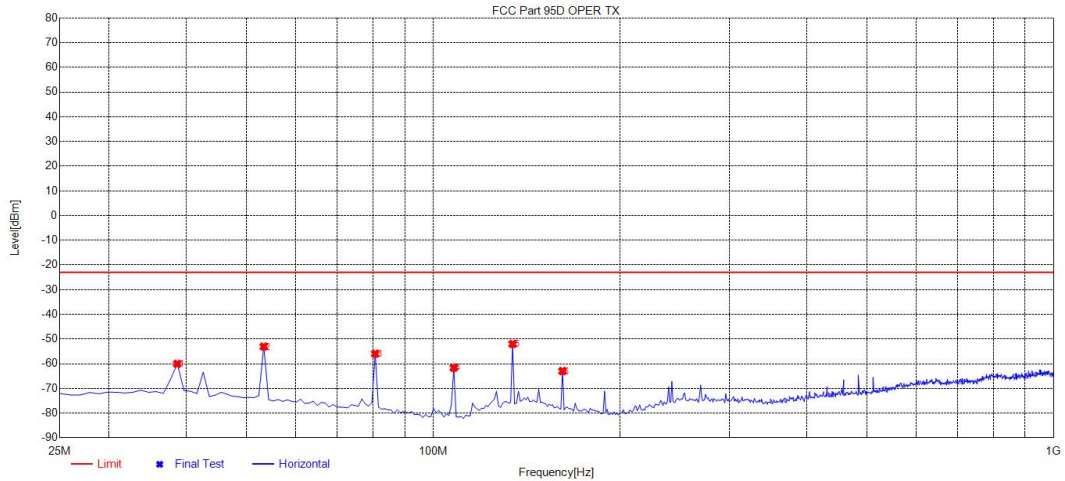
Attestation of Global Compliance(Shenzhen)Co., Ltd

Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: <http://www.agccert.com/>

Test Mode	Mode 1	Supply Voltage	DC 12V
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Test graph and data for Unwanted Spurious Emissions



No.	Frequency [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Detector	Polarity
1	38.65	-89.67	-60.02	-23.00	37.02	29.65	Peak	Horizontal
2	53.275	-80.23	-53.04	-23.00	30.04	27.19	Peak	Horizontal
3	80.575	-79.82	-55.93	-23.00	32.93	23.89	Peak	Horizontal
4	107.875	-81.57	-61.65	-23.00	38.65	19.92	Peak	Horizontal
5	134.2	-77.83	-51.98	-23.00	28.98	25.85	Peak	Horizontal
6	161.5	-86.70	-62.93	-23.00	39.93	23.77	Peak	Horizontal

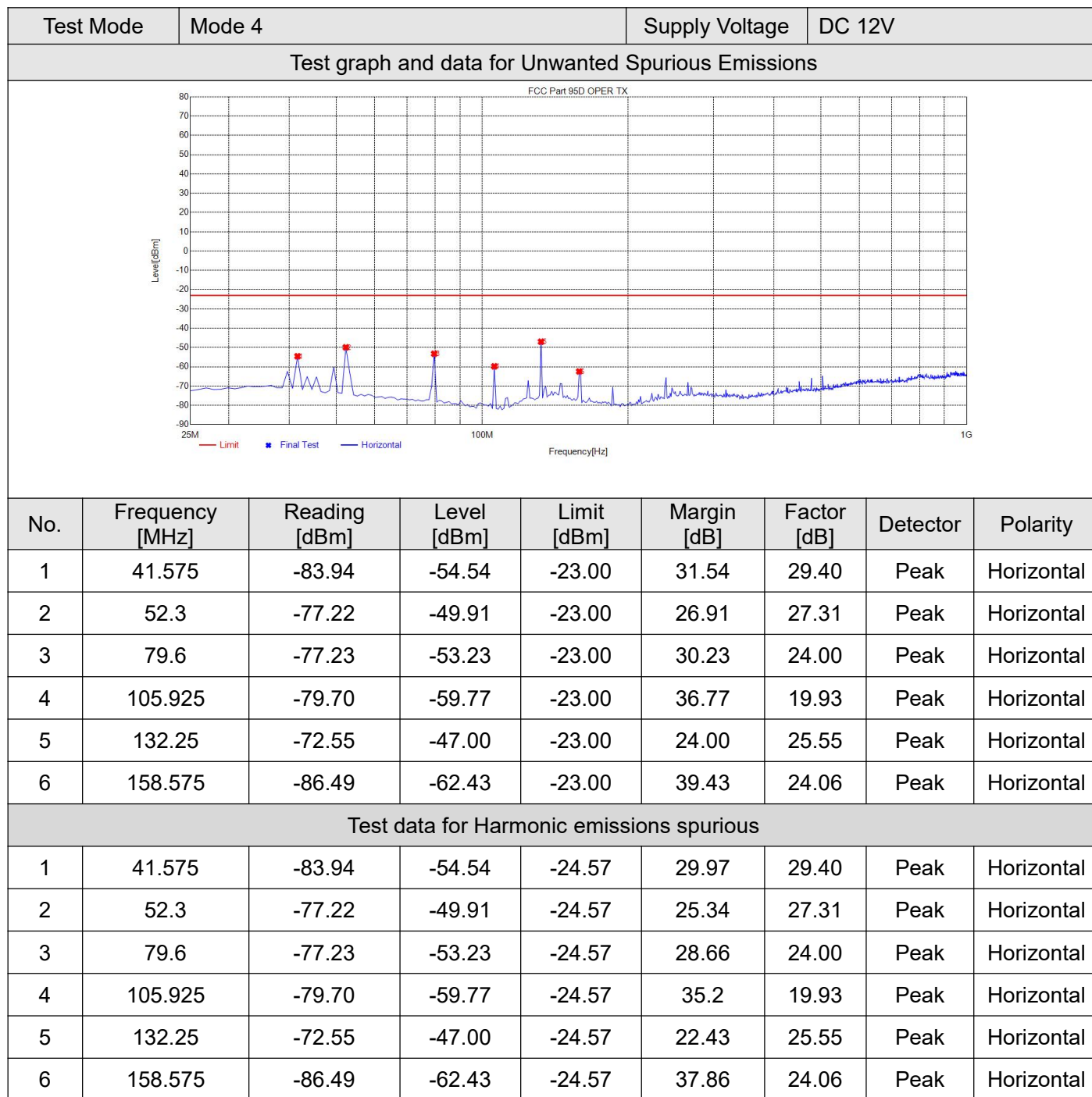
Test data for Harmonic emissions spurious

1	38.65	-89.67	-60.02	-24.58	35.44	29.65	Peak	Horizontal
2	53.275	-80.23	-53.04	-24.58	28.46	27.19	Peak	Horizontal
3	80.575	-79.82	-55.93	-24.58	31.35	23.89	Peak	Horizontal
4	107.875	-81.57	-61.65	-24.58	37.07	19.92	Peak	Horizontal
5	134.2	-77.83	-51.98	-24.58	27.4	25.85	Peak	Horizontal
6	161.5	-86.70	-62.93	-24.58	38.35	23.77	Peak	Horizontal

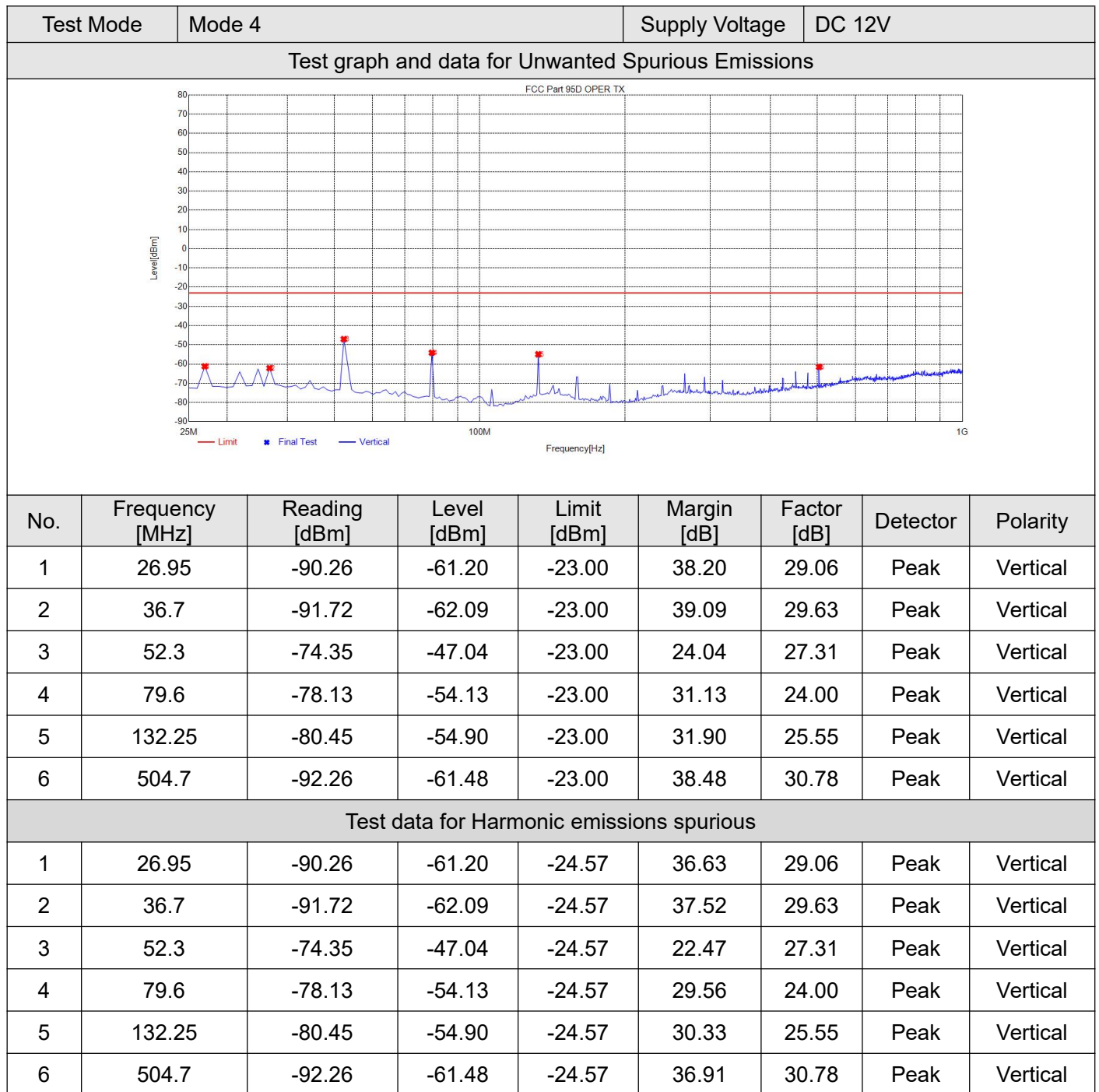
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Test Mode	Mode 1	Supply Voltage	DC 12V
Test graph and data for Unwanted Spurious Emissions			
FCC Part 95D OPER TX <			

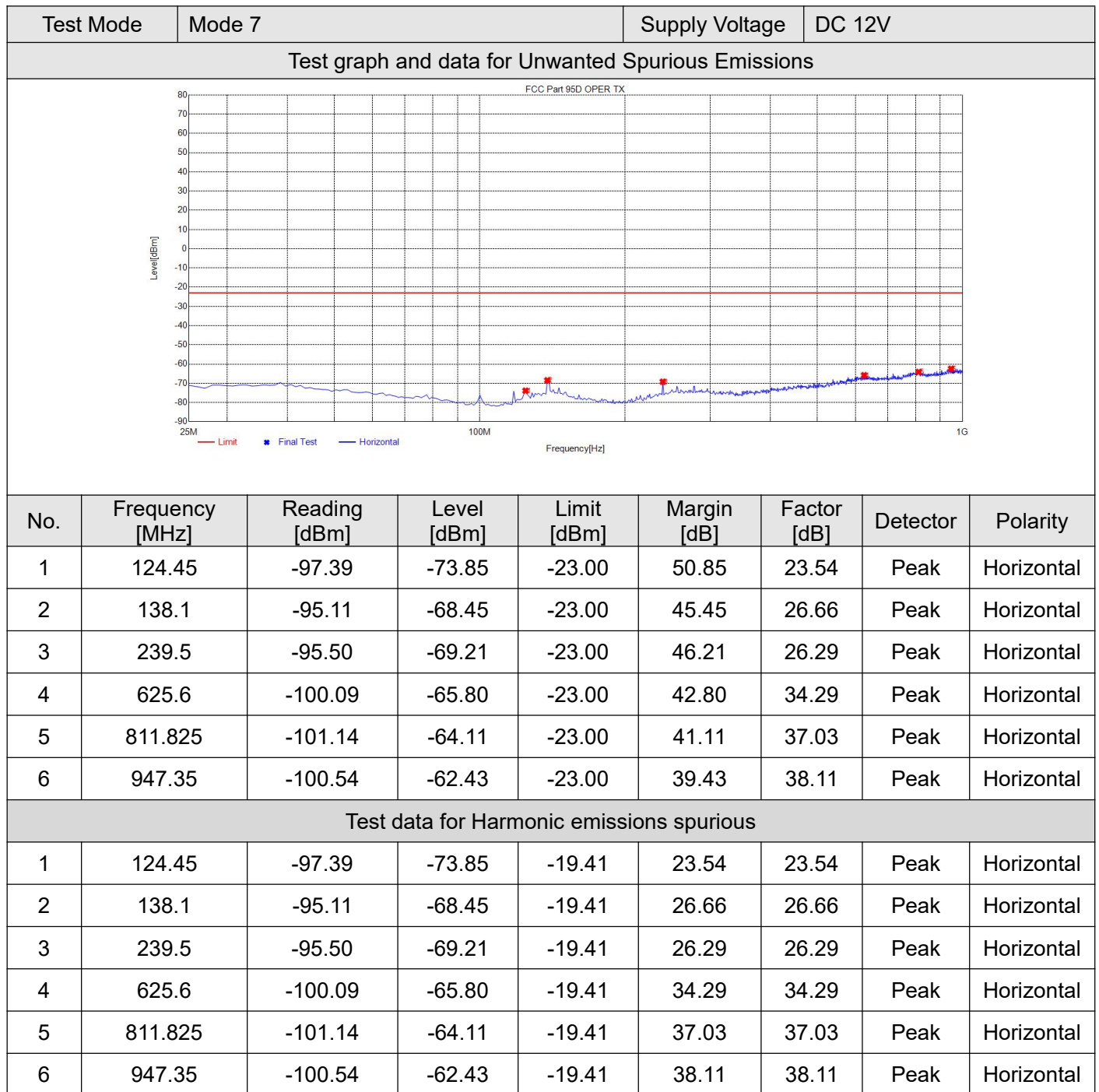
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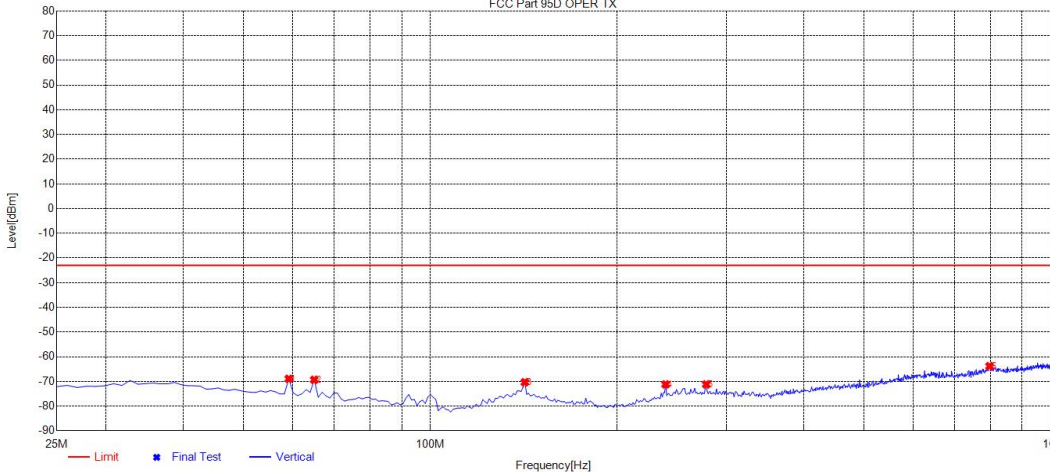
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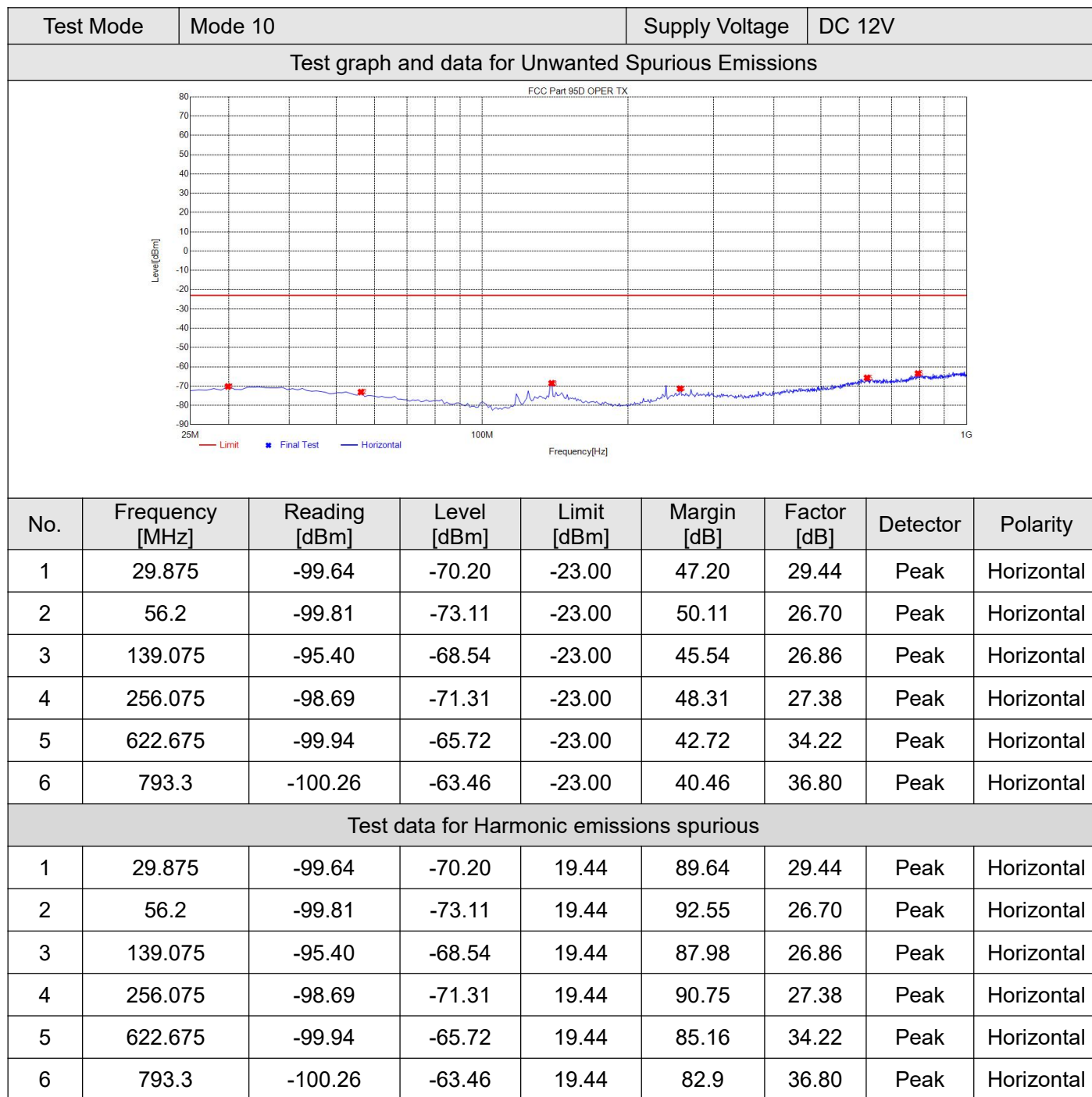
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Test Mode		Mode 7			Supply Voltage		DC 12V	
Test graph and data for Unwanted Spurious Emissions								
FCC Part 95D OPER TX  — Limit ■ Final Test — Vertical								
No.	Frequency [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Detector	Polarity
1	59.125	-95.05	-68.91	-23.00	45.91	26.14	Peak	Vertical
2	64.975	-94.54	-69.32	-23.00	46.32	25.22	Peak	Vertical
3	142	-97.08	-70.31	-23.00	47.31	26.77	Peak	Vertical
4	239.5	-97.47	-71.18	-23.00	48.18	26.29	Peak	Vertical
5	278.5	-98.45	-71.18	-23.00	48.18	27.27	Peak	Vertical
6	797.2	-100.79	-63.80	-23.00	40.80	36.99	Peak	Vertical
Test data for Harmonic emissions spurious								
1	59.125	-95.05	-68.91	-19.41	49.5	26.14	Peak	Vertical
2	64.975	-94.54	-69.32	-19.41	49.91	25.22	Peak	Vertical
3	142	-97.08	-70.31	-19.41	50.9	26.77	Peak	Vertical
4	239.5	-97.47	-71.18	-19.41	51.77	26.29	Peak	Vertical
5	278.5	-98.45	-71.18	-19.41	51.77	27.27	Peak	Vertical
6	797.2	-100.79	-63.80	-19.41	44.39	36.99	Peak	Vertical

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Test Mode	Mode 10				Supply Voltage	DC 12V		
Test graph and data for Unwanted Spurious Emissions								
FCC Part 95D OPER TX </								

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