Test Report Serial Number:	**45461911 1.0**
Test Report Date:	**8 March 2024**
Project Number:	**1657**

EMC Test Report - New Filing

Applicant:

President Electronics USA
1007 Collier Center Way
Naples, FL, 34110
USA

FCC ID:

2AEOCP219

Product Model Number / HVIN

Jerry FCC

Product Name / PMN

Jerry FCC

In Accordance With:

FCC 47 CFR Part 95 Subpart D, Part 15 Subpart B
Licensed Non-Broadcast Station Transmitter (TNB)

Approved By:

Ben Hewson, President
Celltech Labs Inc.
21-364 Lougheed Rd.
Kelowna, BC, V1X 7R8
Canada

Test Lab Certificate: 2470.01

IC Registration 3874A

FCC Registration: CA3874

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1.0 REVISION HISTORY

Revision History				
Samples Tested By:	Art Voss, P.Eng.	**Date(s) of Evaluation:**		22 - 27 Feb, 8 Mar, 2024
Report Prepared By:	Art Voss, P.Eng.	**Report Reviewed By:**		Art Voss
Report Revision	**Description of Revision**	**Revised Section**	**Revised By**	**Revision Date**
0.1	Draft	n/a	Art Voss	27 February 2024
1.0	Initial Release	n/a	Art Voss	8 March 2024

2.0 CLIENT AND DUT INFORMATION

Client Information	
Applicant Name (FCC)	**President Electronics USA**
Applicant Address (FCC)	1007 Collier Center Way
	Naples, FL, 34110
	USA
DUT Information	
Device Identifier(s):	**FCC ID:** **2AEOCPC219**
Device Type:	Portable/Mobile 1W / 4W AM / FM CBRS Transceiver
Device Model(s) / HVIN:	Jerry FCC
Device Marketing Name / PMN:	Jerry FCC
Firmware Version ID Number / FVIN:	-
Host Marketing Name / HMN:	-
Test Sample Serial No.:	TA Sample No. 1
Equipment Class (FCC):	Licensed Non-Broadcast Station Transmitter (TNB)
Transmit Frequency Range:	26.965MHz - 27.405MHz
Test Channels:	40 Channels
Manuf. Max. Rated Output Power:	1W (30dBm), 4W (36dBm) DSB
Manuf. Max. Rated BW/Data Rate:	8kHz DSB
Antenna Make and Model:	n/a
Antenna Type and Gain:	0dBi (Typical), 3dBi (Max)
Modulation:	AM / FM
Mode:	Simplex
DUT Power Source:	7.4VDC Li-Ion
DUT Dimensions [WxLxH]	65mm x 135mm x45mm w/o Antenna
Deviation(s) from standard/procedure:	None
Modification of DUT:	None

3.0 SCOPE

Preface:

This Certification Report was prepared on behalf of:

President Electronics USA

,(the '*Applicant*"), in accordance with the applicable Federal Communications Commission (FCC) CFR 47 and Innovation, Scientific and Economic Development (ISED) Canada rules parts and regulations (the '*Rules*'). The scope of this investigation was limited to only the equipment, devices and accessories (the '*Equipment*') supplied by the *Applicant*. The tests and measurements performed on this *Equipment* were only those set forth in the applicable *Rules* and/or the Test and Measurement Standards they reference. The *Rules* applied and the Test and Measurement Standards used during this evaluation appear in the Normative References section of this report. The limits set forth in the technical requirements of the applicable *Rules* were applied to the measurement results obtained during this evaluation and ,unless otherwise noted, these limits were used as the Pass/Fail criteria. The Pass/Fail statements made in this report apply to only the tests and measurements performed on only the *Equipment* tested during this evaluation. Where applicable and permissible, information including test and measurement data and/or results from previous evaluations of same or similar equipment, devices and/or accessories may be cited in this report.

Device Description:

The Jerry FCC is Portable / Mobile 1W / 4W AM / FM CBRS Transceiver.

Application:

This is an application for a New Certification, Single.

Regulatory Requirement:

As per FCC 47 CFR 2 Subpart I , Equipment Authorization is require for this *Equipment* by means of Certification in accordance with FCC 47 CFR §95 Subpart D, (CBRS), and ANSI C63.26.

Scope of Work:

The scope of this investigation is limited only to the evaluation of the Jerry FCC to determine compliance to the *Rules* identified herein.

RF Exposure:

The Jerry FCC can be used as a portable or mobile transceiver. As per FCC 47 CFR §2.1091 and §2.1093, an RF Exposure (SAR and MPE) evaluation is required for this *Equipment* and the results of the RF Exposure (SAR and MPE) evaluation appear in a separate report.

4.0 TEST RESULT SUMMARY

TEST SUMMARY

Referenced Standard(s):		FCC CFR Title 47 Parts 2, 95D, 15B			
Section	**Description of Test**	**Procedure Reference**	**Applicable Rule Part(s) FCC**	**Test Date**	**Result**
7.0	Conducted Power (Fundamental) Compliance to §2.1033(c)(8)	ANSI/TIA/EIA-382-A ANSI/TIA-603-E ANSI C63.26:2015 ANSI C63.4:2014	§2.1046 §2.1033(c)(8) §95.967	26 Feb 2024 8 Mar 2024	**Complies**
8.0	Modulation Response	ANSI/TIA/EIA-382-A ANSI/TIA-603-E ANSI C63.26:2015 ANSI C63.4:2014	§2.1047 §95.975 §95.977	26 Feb 2024	**Complies**
9.0	Occupied Bandwidth	ANSI/TIA/EIA-382-A ANSI C63.26:2015 ANSI C63.4:2014	§2.1049 §95.973	26 Feb 2024	**Complies**
	Emission Mask	ANSI/TIA/EIA-382-A ANSI C63.26:2015 ANSI C63.4:2014	§2.1049 §95.979	26 Feb 2024	**Complies**
10.0	Conducted TX Spurious Emissions	ANSI/TIA/EIA-382-A ANSI C63.26:2015 ANSI C63.4:2014	§2.1051 §95.979	26 Feb 2024	**Complies**
11.0	Radiated TX Spurious Emissions	ANSI/TIA/EIA-382-A ANSI C63.26:2015 ANSI C63.4:2014	§2.1053 §95.979	22 Feb 2024	**Complies**
12.0	Radiated Receiver Emissions	ANSI C63.26:2015 ANSI C63.4:2014	§15 Subpart B §15.109(d)	22 Feb 2024	**Complies**
13.0	Frequency Stability	ANSI/TIA/EIA-382-A ANSI C63.26:2015 ANSI C63.4:2014	§2.1055 §95.965	27 Feb 2024	**Complies**
14.0	Line Conducted Emissions	ANSI C63.26:2015 ANSI C63.4:2014	§15 Subpart B §15.107	27 Feb 2024	**Complies**

Test Station Day Log					
Date	Ambient Temp (°C)	Relative Humidity (%)	Barometric Pressure (kPa)	Test Station	Tests Performed Section(s)
22 Feb 2024	11.0	45	102.1	**OATS**	**11, 12**
26 Feb 2024	21.4	17	100.5	**EMC**	**7, 8, 9, 10**
27 Feb 2024	18.6	26	101.3	**TC**	**13**
27 Feb 2024	18.6	26	101.3	**LISN**	**14**
8 Mar 2023	22.1	16	101.5	**EMC**	**7**

EMC - EMC Test Bench
OATS - Open Area Test Site
LISN - LISN Test Area
IMM - Immunity Test Area
SAC - Semi-Anechoic Chamber
TC - Temperature Chamber
ESD - ESD Test Bench
RI - Radiated Immunity Chamber

I attest that the data reported herein is true and accurate within the tolerance of the Measurement Instrument Uncertainty; that all tests and measurements were performed in accordance with accepted practices or procedures; and that all tests and measurements were performed by me or by trained personnel under my direct supervision. The results of this investigation are based solely on the test sample(s) provided by the client which were not adjusted, modified or altered in any manner whatsoever, except as required to carry out specific tests or measurements. This test report has been completed in accordance with ISO/IEC 17025.

Art Voss, P.Eng.
Technical Manager
Celltech Labs Inc.

27 February 2024
Date

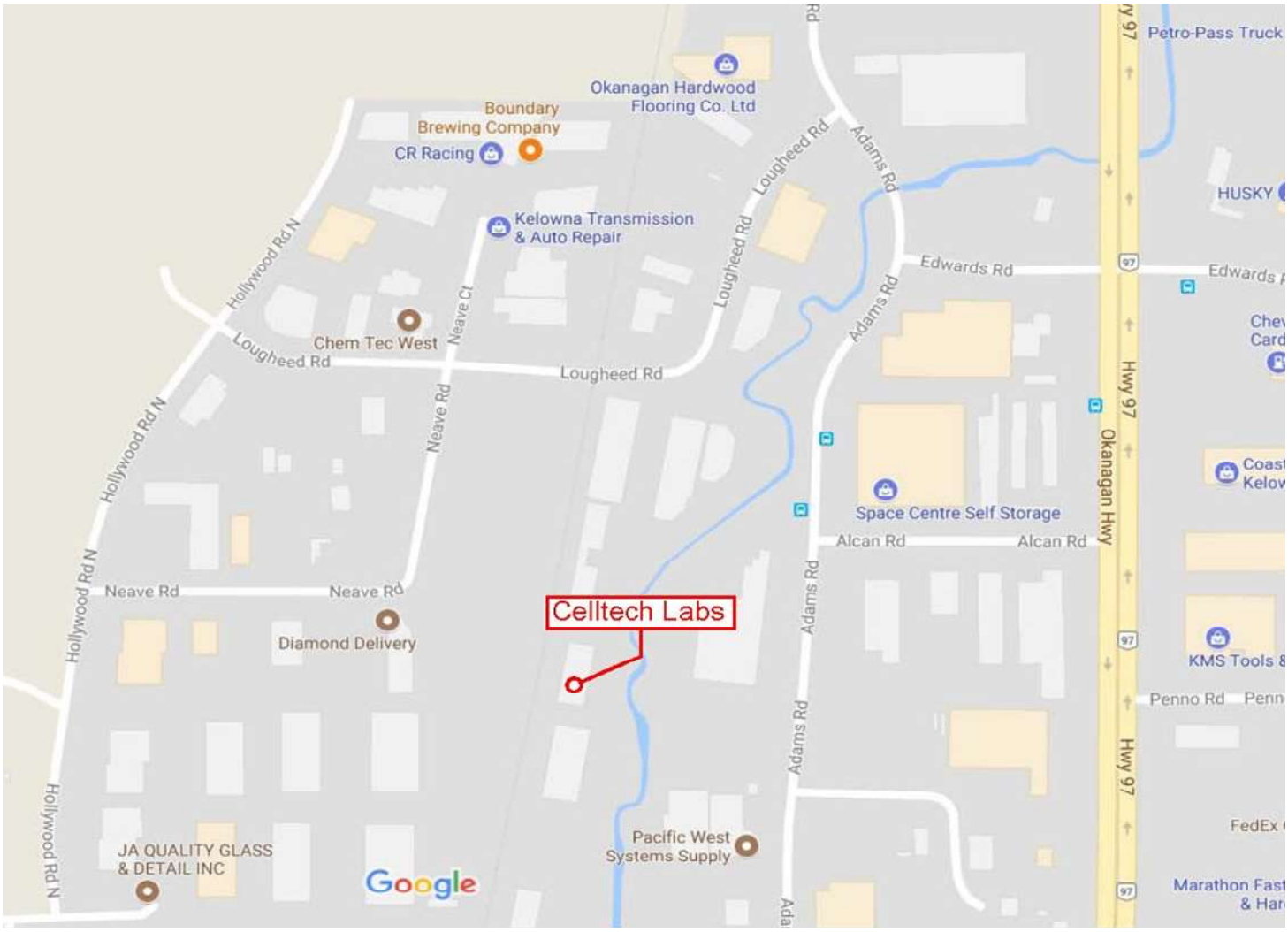
5.0 NORMATIVE REFERENCES

Normative References	
ISO/IEC 17025:2017	General requirements for the competence of testing and calibration laboratories
ANSI C63.4-2014	American National Standard of Procedures for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electric and Electronic Equipment in the Range of 9kHz to 40GHz
ANSI C63.26-2015	American National Standard of Procedures for Compliance Testing of Transmitters Used in Licensed Radio Services
ANSI/TIA-382-A	Minimum Standards - Citizens Band Radio Service Amplitude Modulated (AM) Transceivers Operating in the 27 MHz Band (Revision of EIA-382)
ANSI/TIA-603-E	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards (Revision of TIA-603-D)
CFR	Code of Federal Regulations Title 47: Telecommunication Part 2: Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
CFR	Code of Federal Regulations Title 47: Telecommunication Part 2: Frequency Allocations and Radio Treaty Matters; General Rules and Regulations Subpart (2.1091): Radiofrequency radiation exposure evaluation: mobile devices.
CFR	Code of Federal Regulations Title 47: Telecommunication Part 15: Radio Frequency Devices Subpart B: Unintentional Radiators
CFR	Code of Federal Regulations Title 47: Telecommunication Part 95: Personal Radio Service Subpart D: Citizens Band Radio Service (CBRS)

6.0 FACILITIES AND ACCREDITATIONS

Facility and Accreditation:

The facilities used to evaluate this device outlined in this report are located at 21-364 Lougheed Road, Kelowna, British Columbia, Canada V1X 7R8. The radiated emissions site (OATS) conforms to the requirements set forth in ANSI C63.4 and is filed and listed with the FCC under Test Firm Registration Number CA3874 and Industry Canada under Test Site File Number IC 3874A. Celltech is accredited to ISO 17025, through accrediting body A2LA and with certificate 2470.01.



7.0 CONDUCTED POWER

Test Procedure	
Normative Reference	**FCC 47 CFR §2.1046, §2.1033(c)(8), §95.967, RSS-236** **EIA/TIA-382-A, TIA-603-E**

Limits	
47 CFR §95.967	(a) When transmitting amplitude modulated (AM) voice signals or frequency modulated (FM) voice signals, the mean carrier power must not exceed 4 Watts.
RSS-236 4.6	The transmitter output power shall not exceed 4.0 watts for a DSB or FM signals.

General Procedure	
EIA/TIA-382-A	**19. TRANSMITTER CARRIER POWER OUTPUT** Transmitter Carrier Power Output for this service is the power (rms) available at the output terminals of the transmitter when the output terminals are connected to a standard output load. This measurement shall be performed without modulation, at standard test. conditions.
TIA-603-E	**2.2.1 Conducted Carrier Output Power Rating** The conducted carrier power output rating for a transmitter is the power available at the output terminals of the transmitter when the output terminals are connected to the standard transmitter load.

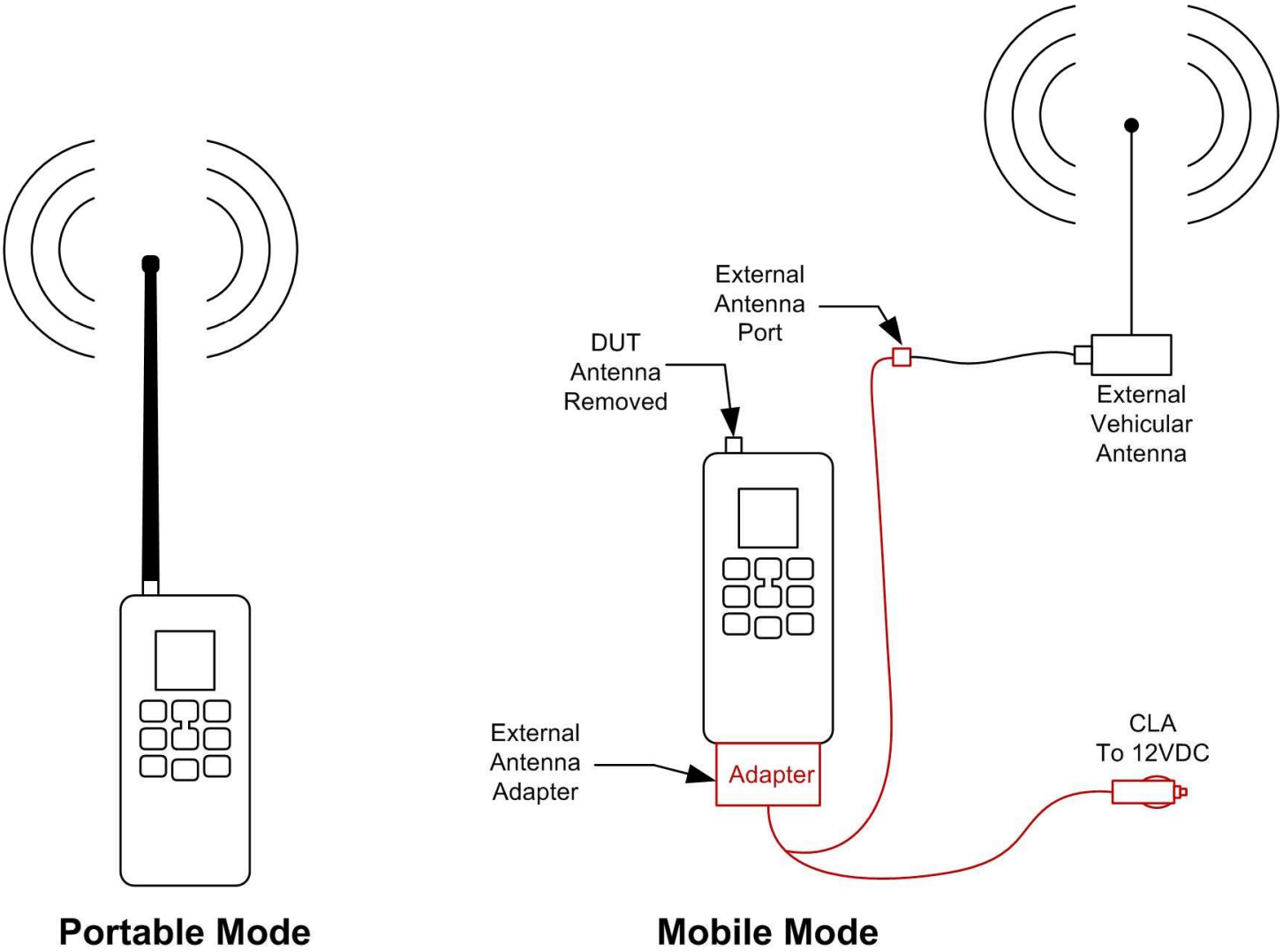
Test Setup	Appendix A - Figure A.1

Measurement Procedure
The DUT was connected to a Spectrum Analyzer (SA) via a 30dB attenuator connected to the DUT's antenna port. The SA was configured as above using the Automatic 6dB Cursor Bandwidth measurement. The output power of the DUT was set to the manufacturer's highest output power setting at the Low, Mid and High frequency channels as permitted by the device. The DUT was set to transmit at its maximum Duty Cycle.

Note: This device is capable of operating as a portable device or as a mobile device. When used as a portable device, a detachable flexible antenna is connected to the DUT's antenna port. When operated as a mobile device, an external vehicular mounted antenna is connected to the external antenna port via an attached adapter. See below. For mobile operation, the DUT antenna to be removed be removed as instructed in the User's Manual

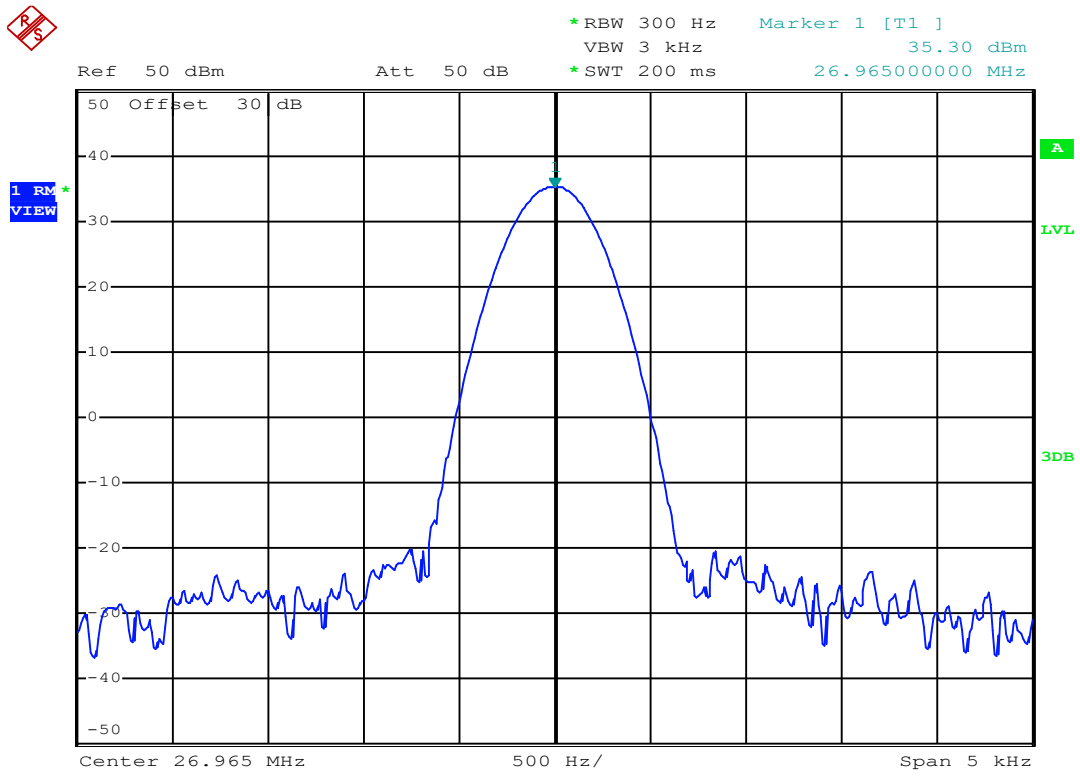
Antenna port conducted power was measured on both the DUT antenna port and the external antenna port.

Figure 7.1 – Portable and Mobile Use Configuration



Plot 7.1 – Conducted Output Power, Channel 1, AM, 4W

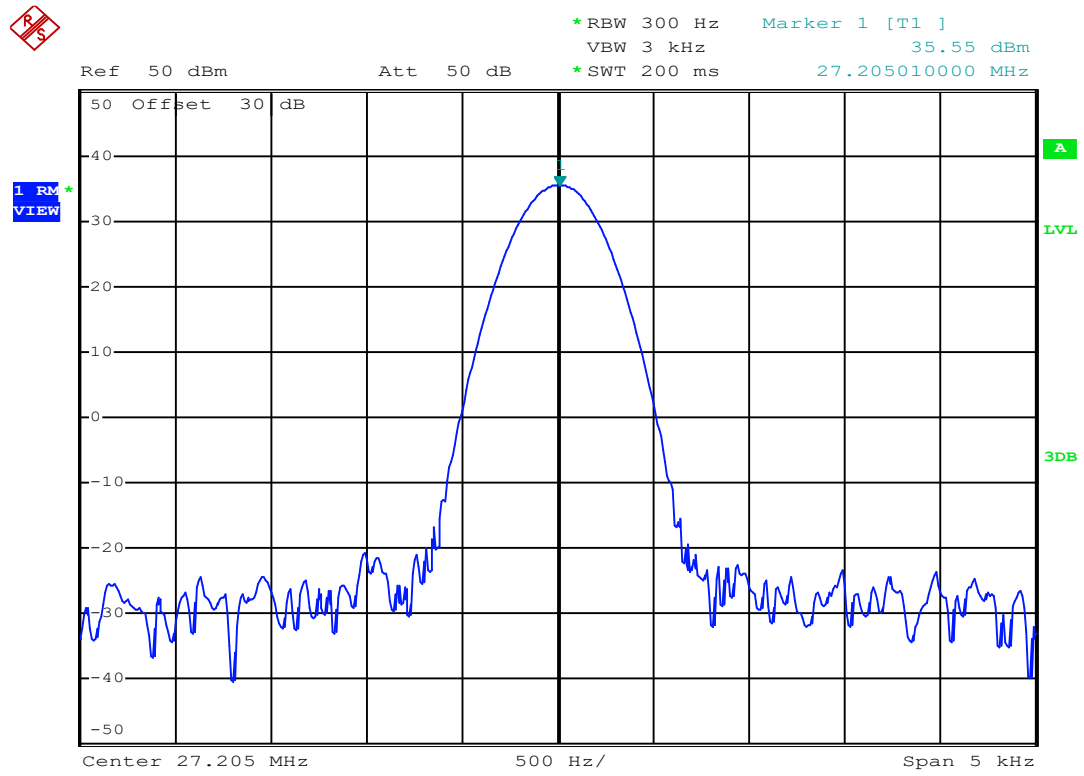
Conducted Power:



Channel:	1	**Channel Frequency:**	26.965 MHz
Mode:	AM	**Modulation:**	AM
		Measured Power:	35.3 dBm

Plot 7.2 – Conducted Output Power, Channel 20, AM, 4W

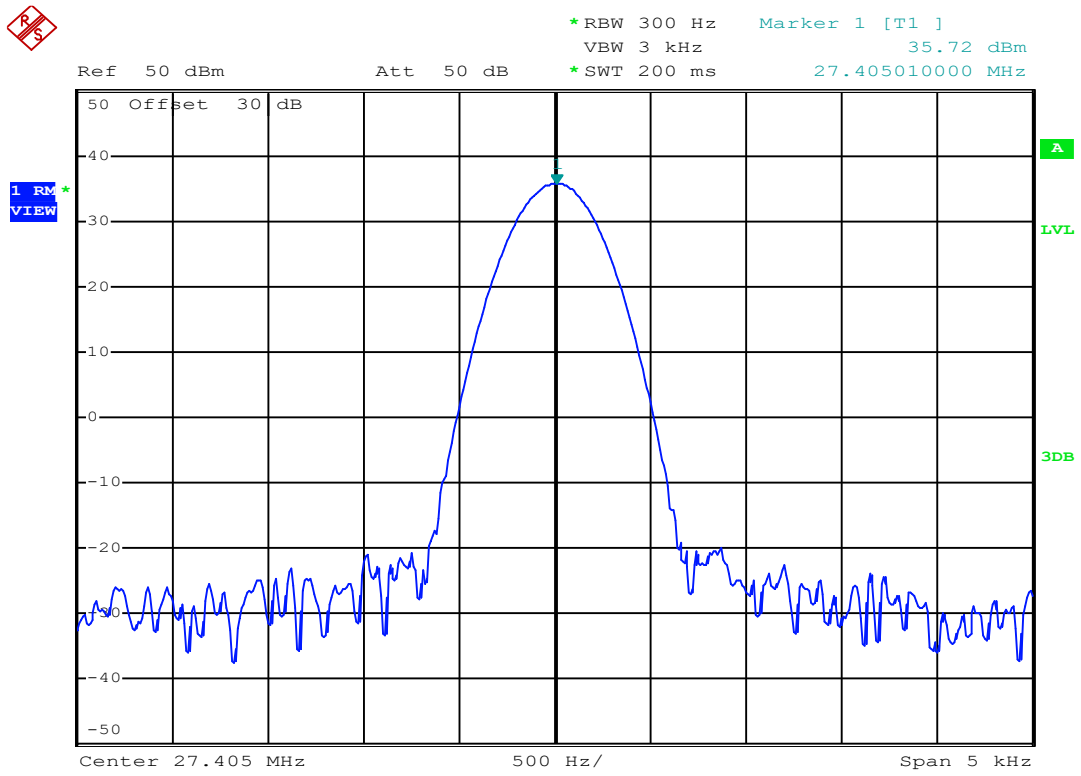
Conducted Power:



Channel:	**20**	**Channel Frequency:**	**27.205** **MHz**
Mode:	**AM**	**Modulation:**	**AM**
		Measured Power:	**35.55** **dBm**

Plot 7.3 – Conducted Output Power, Channel 40, AM, 4W

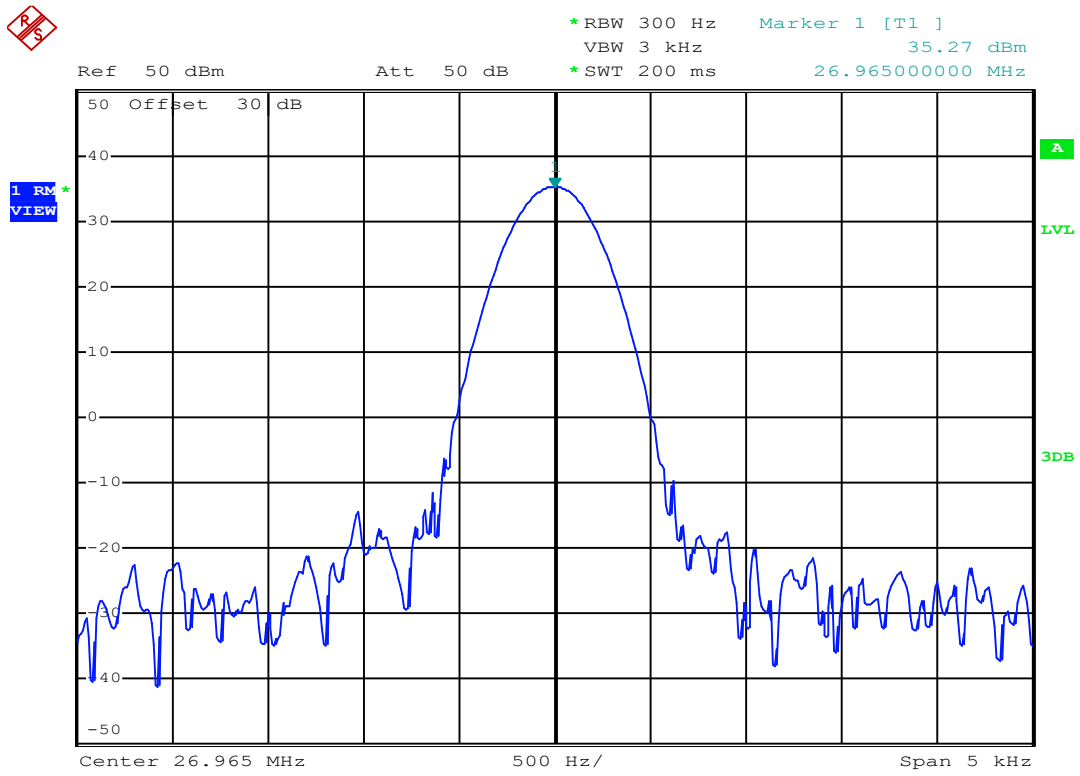
Conducted Power:



Channel:	**40**	**Channel Frequency:**	**27.405**	**MHz**
Mode:	**AM**	**Modulation:**	**AM**	
		Measured Power:	**35.72**	**dBm**

Plot 7.4 – Conducted Output Power, Channel 1, FM, 4W

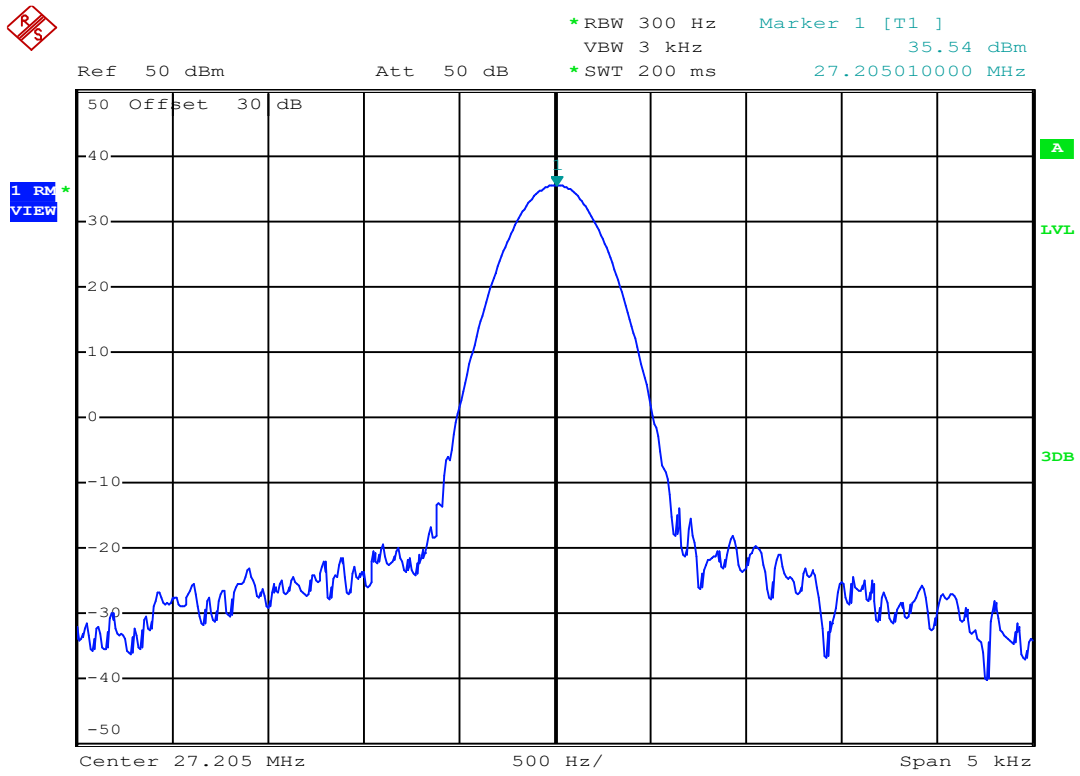
Conducted Power:



Channel:	**1**		**Channel Frequency:**	**26.965**	**MHz**
Mode:	**FM**		**Modulation:**	**FM**	
			Measured Power:	**35.27**	**dBm**

Plot 7.5 – Conducted Output Power, Channel 20, FM, 4W

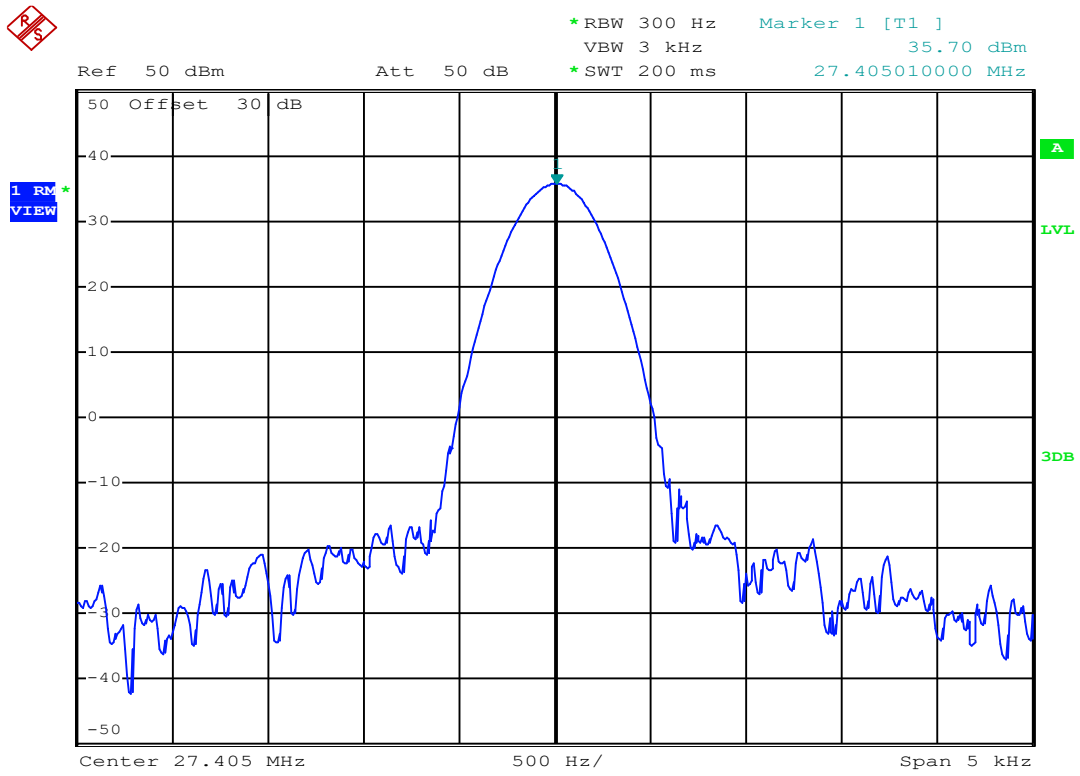
Conducted Power:



Channel:	**20**	**Channel Frequency:**	**27.205**	**MHz**
Mode:	**FM**	**Modulation:**	**FM**	
		Measured Power:	**35.54**	**dBm**

Plot 7.6 – Conducted Output Power, Channel 40, FM, 4W

Conducted Power:



Channel:	**40**	**Channel Frequency:**	**24.405**	**MHz**
Mode:	**FM**	**Modulation:**	**FM**	
		Measured Power:	**35.7**	**dBm**

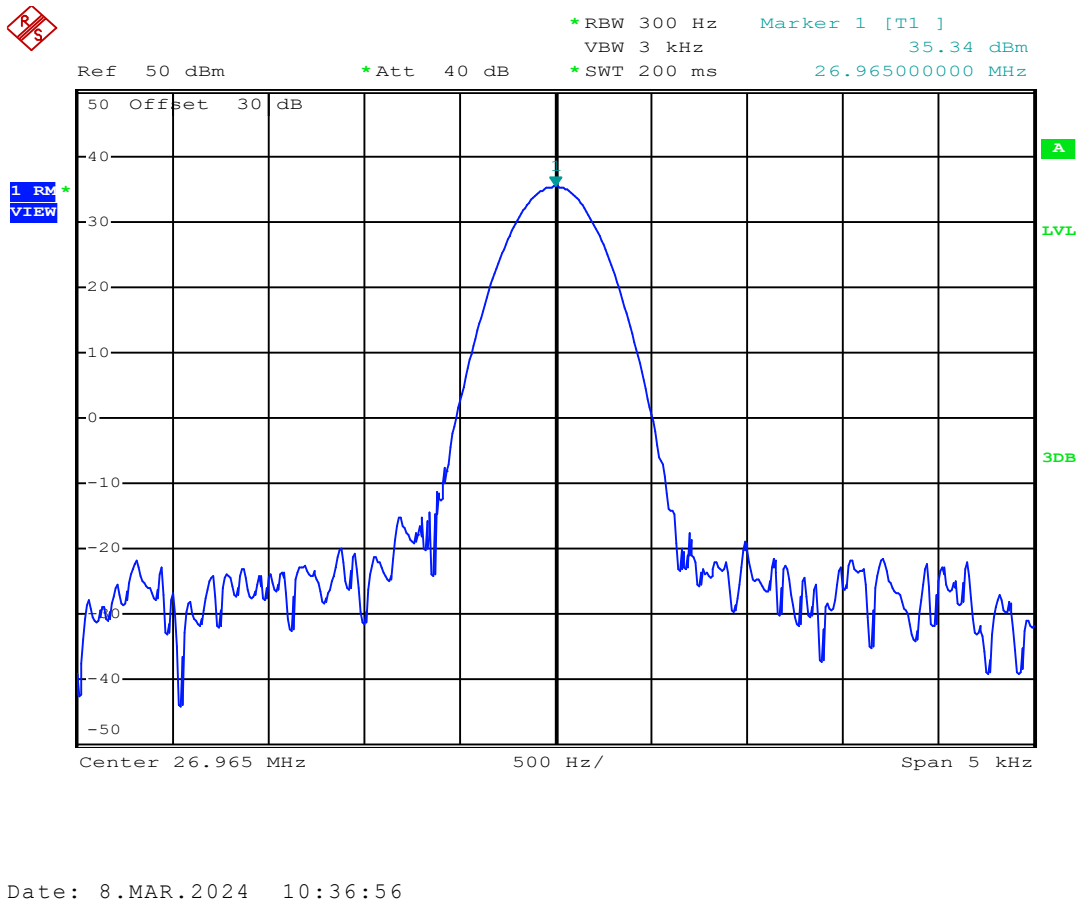
Table 7.1 – Summary of Conducted Power Measurements (RMS), 4W

Conducted Power Measurement Results:						
Channel Number	Channel Frequency (MHz)	Mode	Modulation	Measured Power [P_{Meas}] (dBm)	Limit [P_{Lim}] (dBm)	Margin (dB)
1	26.97	AM	AM	35.30	36	0.70
20	27.21			35.55		0.45
40	27.41			35.72		0.28
1	26.97	FM	FM	35.27		0.73
20	27.21			35.54		0.46
40	24.41			35.70		0.30
					Result:	Complies

Conducted Margin = P_{Limit} - P_{Meas}

Plot 7.7 – Conducted Output Power, Channel 1, AM, 4W, External

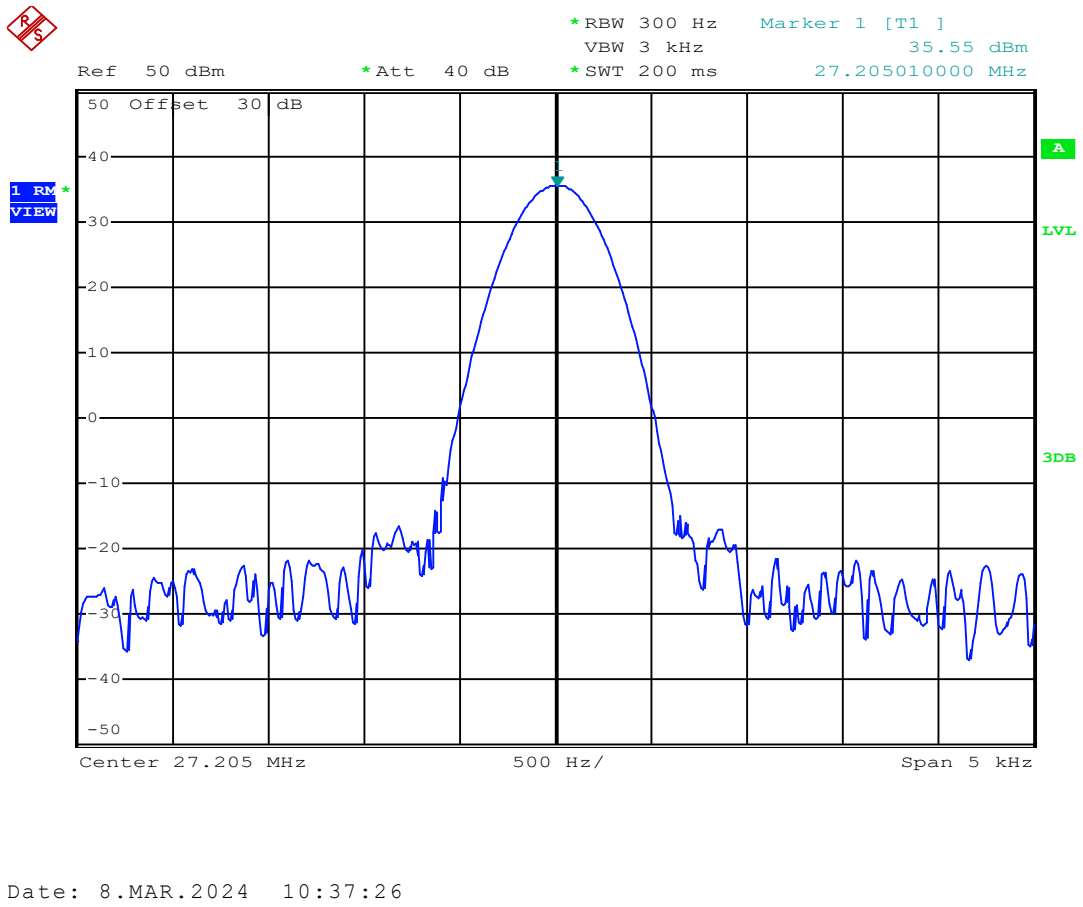
Conducted Power:



Channel:	**1**		**Channel Frequency:**	**26.965**	**MHz**
Mode:	**AM**		**Modulation:**	**AM**	
			Measured Power:	**35.34**	**dBm**

Plot 7.8 – Conducted Output Power, Channel 20, AM, 4W, External

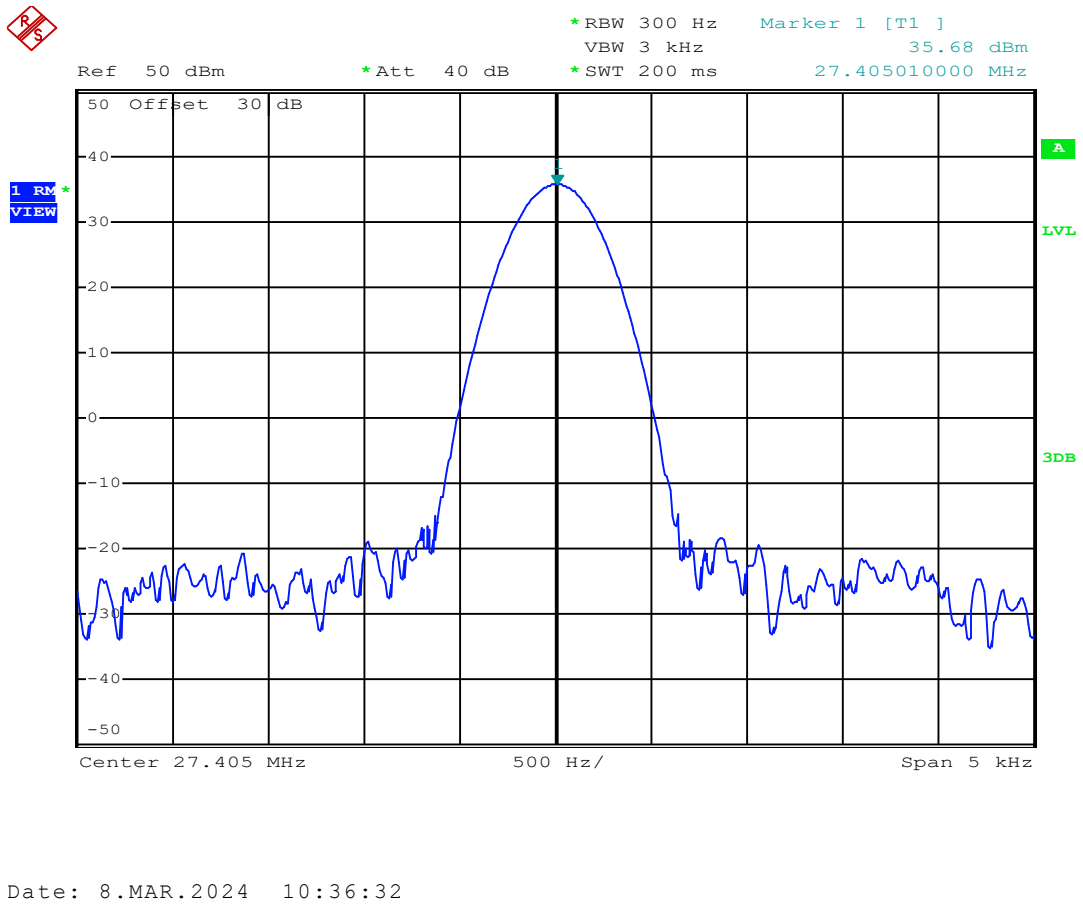
Conducted Power:



Channel:	**20**	**Channel Frequency:**	**27.205**	**MHz**
Mode:	**AM**	**Modulation:**	**AM**	
		Measured Power:	**35.55**	**dBm**

Plot 7.9 – Conducted Output Power, Channel 40, AM, 4W, External

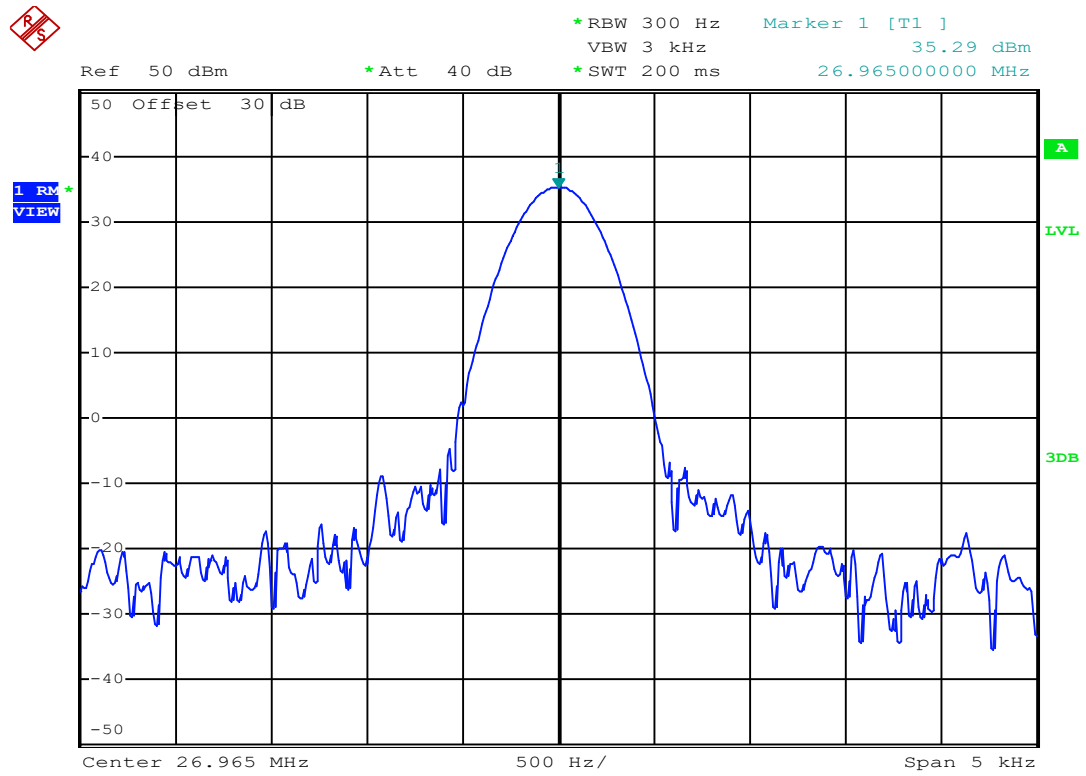
Conducted Power:



Channel:	**40**	**Channel Frequency:**	**27.405**	**MHz**
Mode:	**AM**	**Modulation:**	**AM**	
		Measured Power:	**35.68**	**dBm**

Plot 7.10 – Conducted Output Power, Channel 1, FM, 4W, External

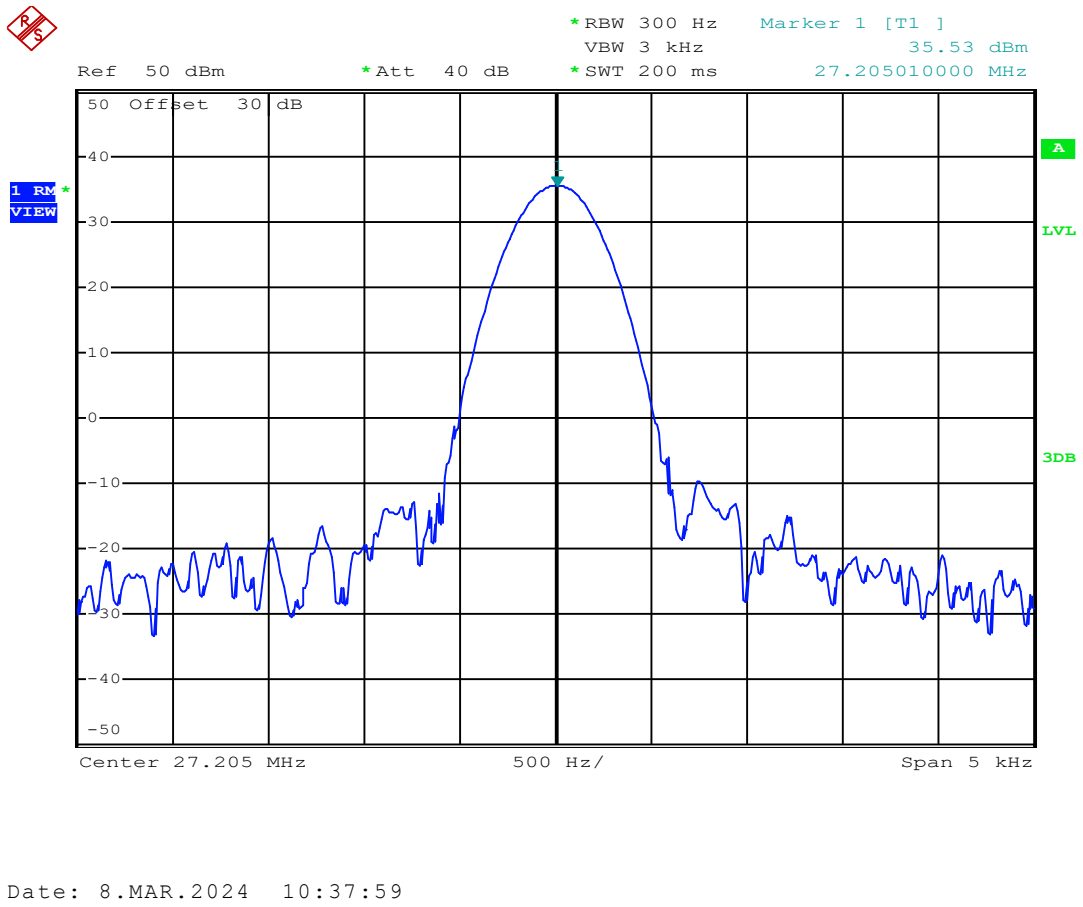
Conducted Power:



Channel:	**1**		**Channel Frequency:**	**26.965**	**MHz**
Mode:	**FM**		**Modulation:**	**FM**	
			Measured Power:	**35.29**	**dBm**

Plot 7.11 – Conducted Output Power, Channel 20, FM, 4W, External

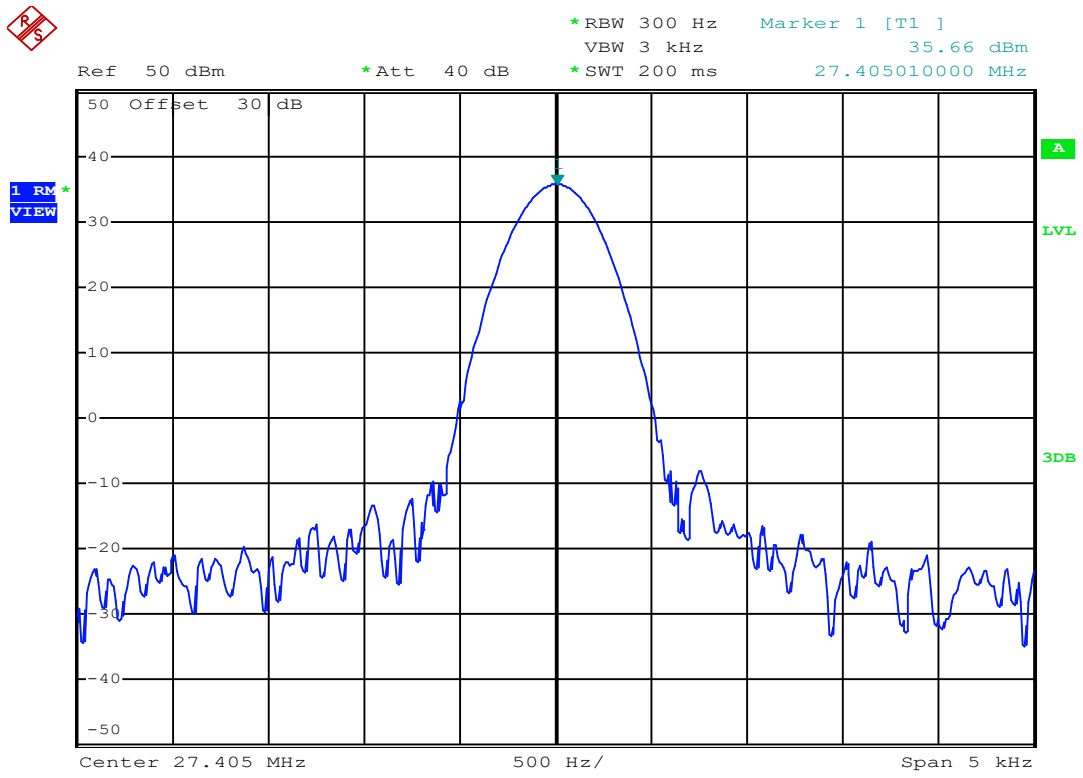
Conducted Power:



Channel:	**20**		**Channel Frequency:**	**27.205**	**MHz**
Mode:	**FM**		**Modulation:**	**FM**	
			Measured Power:	**35.53**	**dBm**

Plot 7.12 – Conducted Output Power, Channel 40, FM, 4W, External

Conducted Power:



Channel:	40	**Channel Frequency:**	24.405	MHz
Mode:	FM	**Modulation:**	FM	
		Measured Power:	35.66	dBm

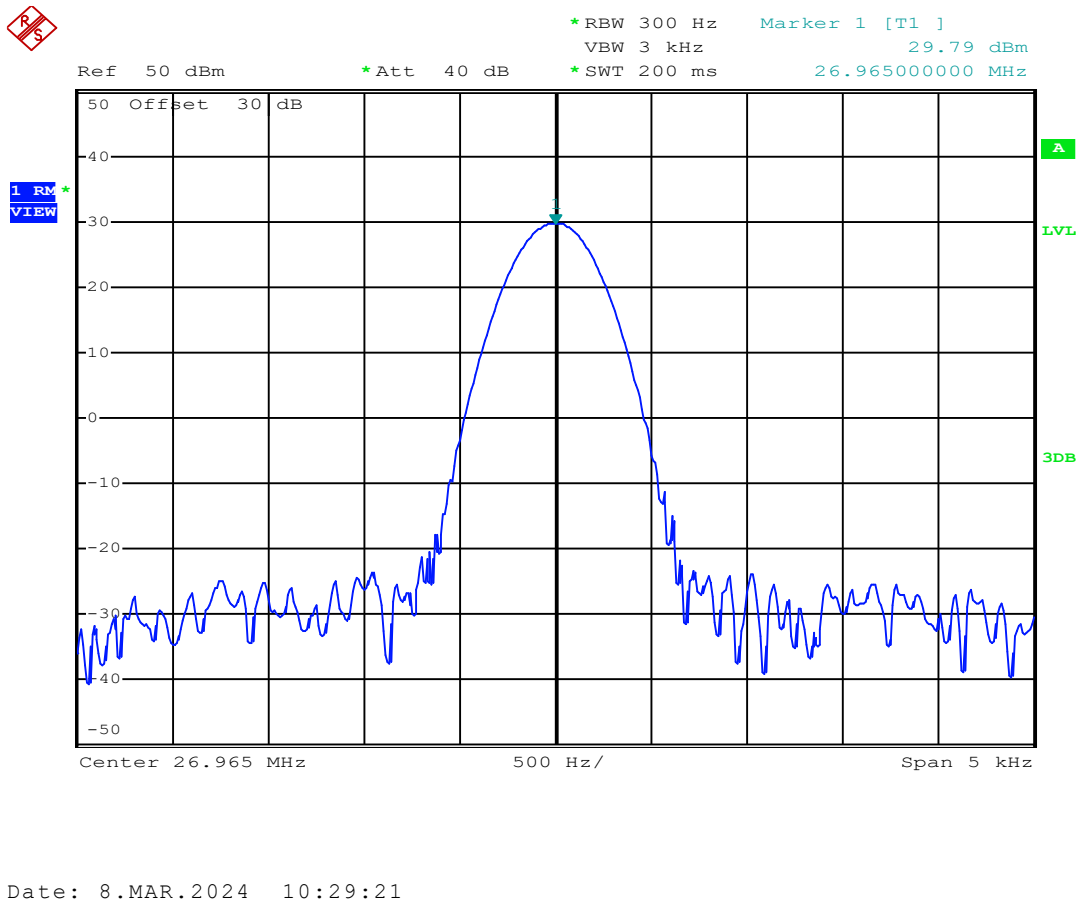
Table 7.2 – Summary of Conducted Power Measurements (RMS), 4W, External

Conducted Power Measurement Results (4W): Mobile Port						
Channel Number	Channel Frequency (MHz)	Mode	Modulation	Measured Power [P_{Meas}] (dBm)	Limit [P_{Lim}] (dBm)	Margin (dB)
1	26.97	AM	AM	35.34	36	0.66
20	27.21			35.55		0.45
40	27.41			35.68		0.32
1	26.97	FM	FM	35.29		0.71
20	27.21			35.53		0.47
40	24.41			35.66		0.34
					Result:	Complies

Conducted Margin = P_{Limit} - P_{Meas}

Plot 7.13 – Conducted Output Power, Channel 1, AM, 1W

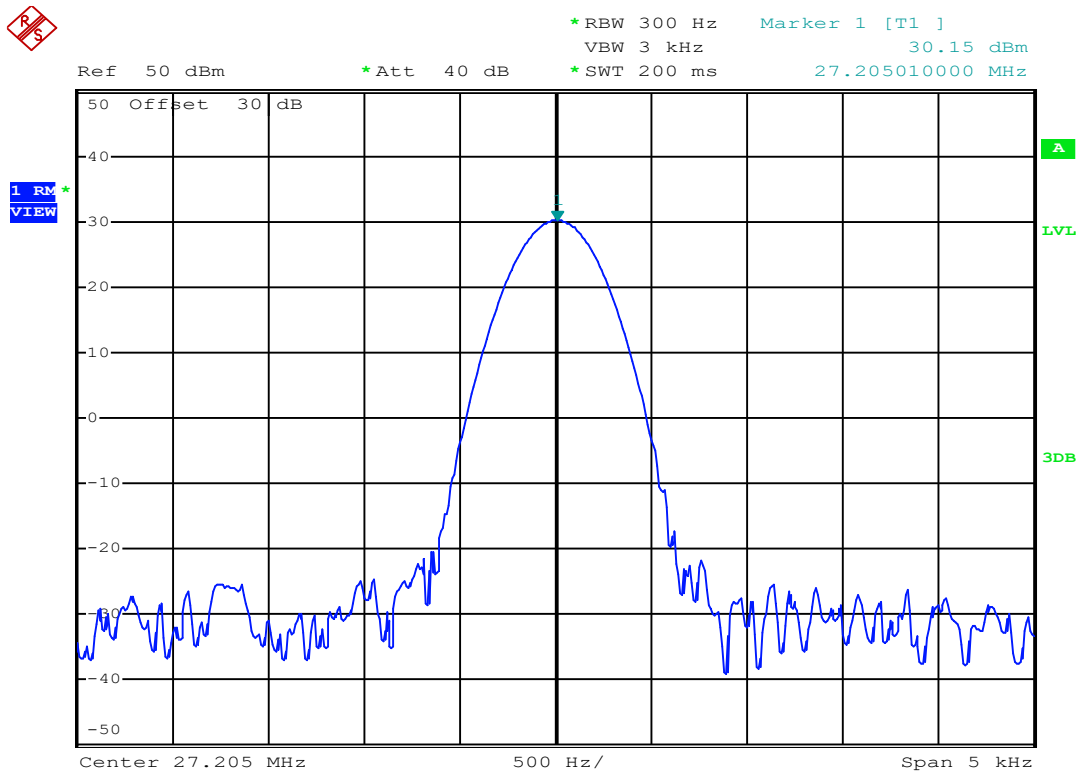
Conducted Power:



Channel:	**1**	**Channel Frequency:**	**26.965** **MHz**
Mode:	**AM**	**Modulation:**	**AM**
		Measured Power:	**29.79** **dBm**

Plot 7.14 – Conducted Output Power, Channel 20, AM, 1W

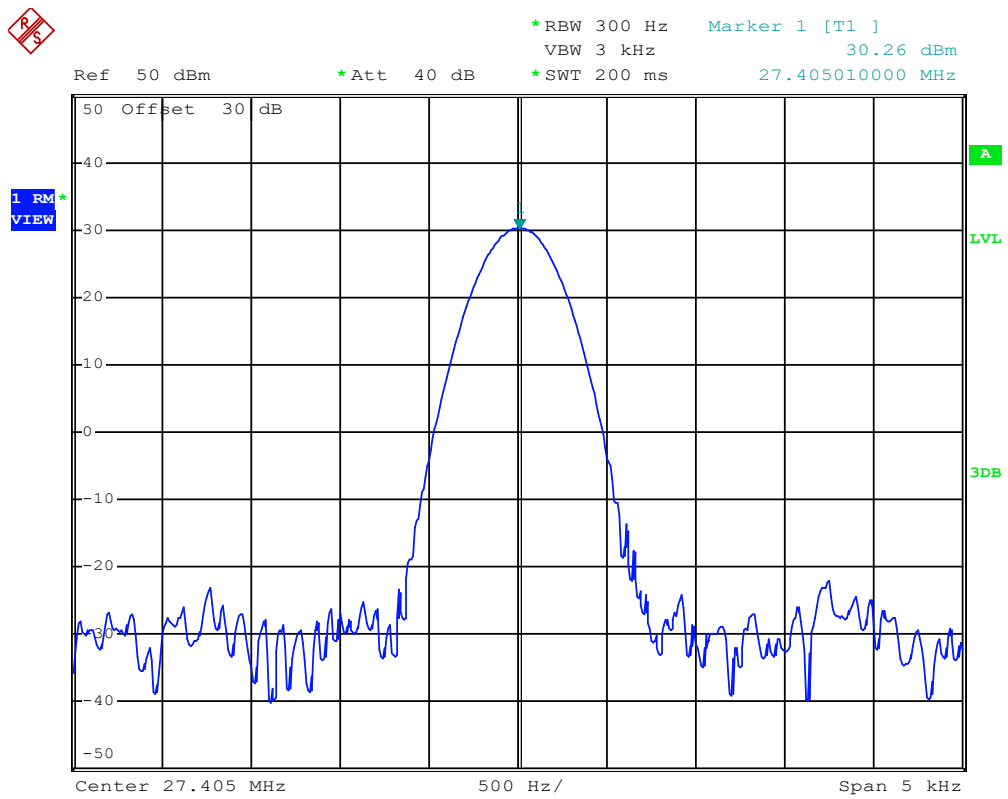
Conducted Power:



Channel:	**20**	**Channel Frequency:**	**27.205**	**MHz**
Mode:	**AM**	**Modulation:**	**AM**	
		Measured Power:	**30.15**	**dBm**

Plot 7.15 – Conducted Output Power, Channel 40, AM, 1W

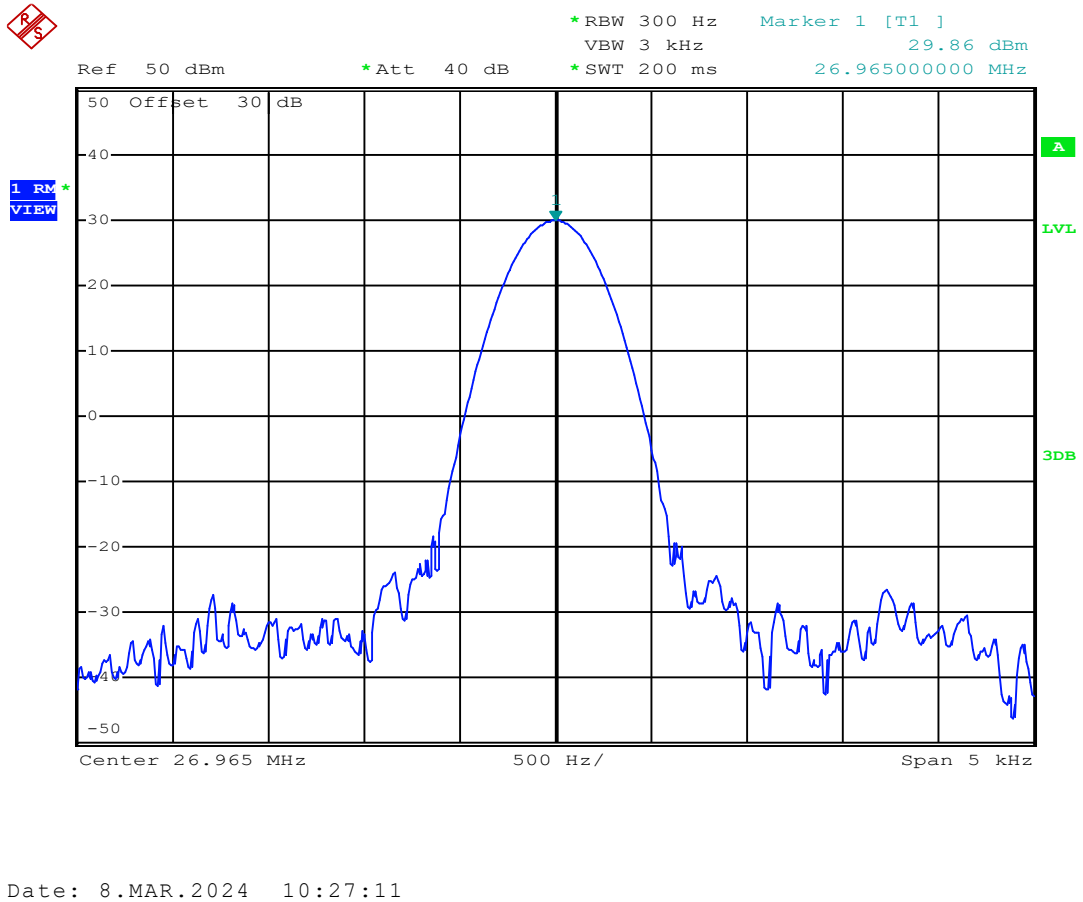
Conducted Power:



Channel:	**40**	**Channel Frequency:**	**27.405** **MHz**
Mode:	**AM**	**Modulation:**	**AM**
		Measured Power:	**30.26** **dBm**

7.16 – Conducted Output Power, Channel 1, FM, 1W

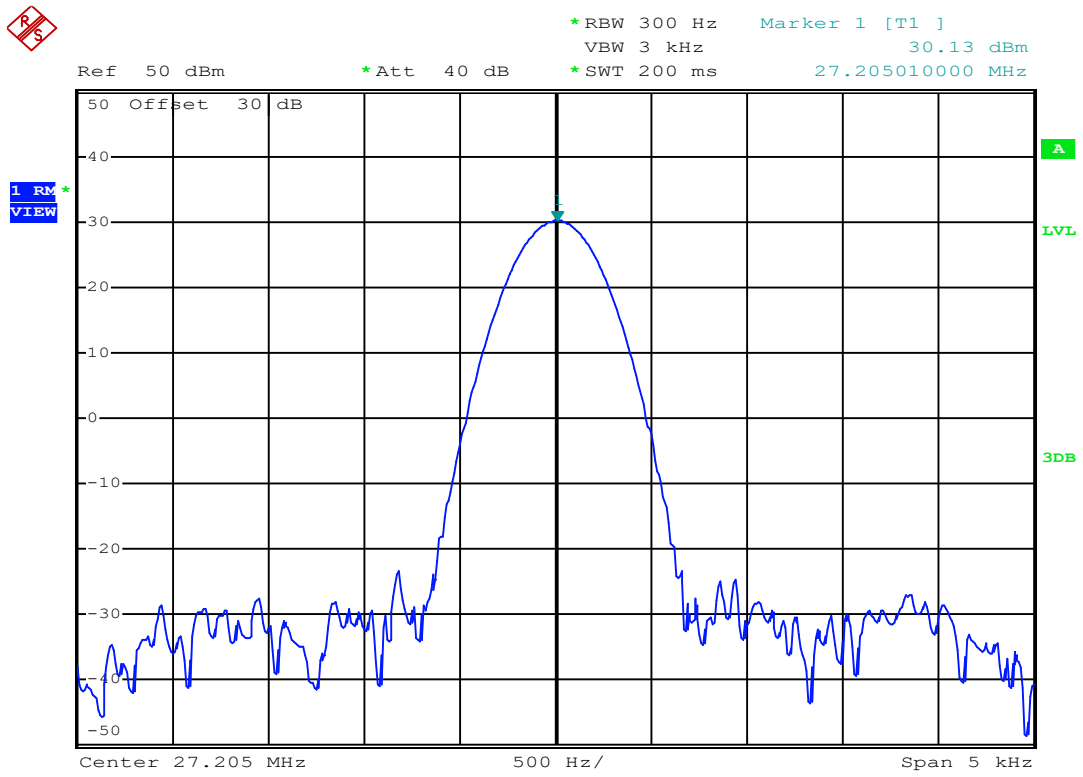
Conducted Power:



Channel:	1	**Channel Frequency:**	26.965 MHz
Mode:	FM	**Modulation:**	FM
		Measured Power:	29.86 dBm

7.17 – Conducted Output Power, Channel 20, FM, 1W

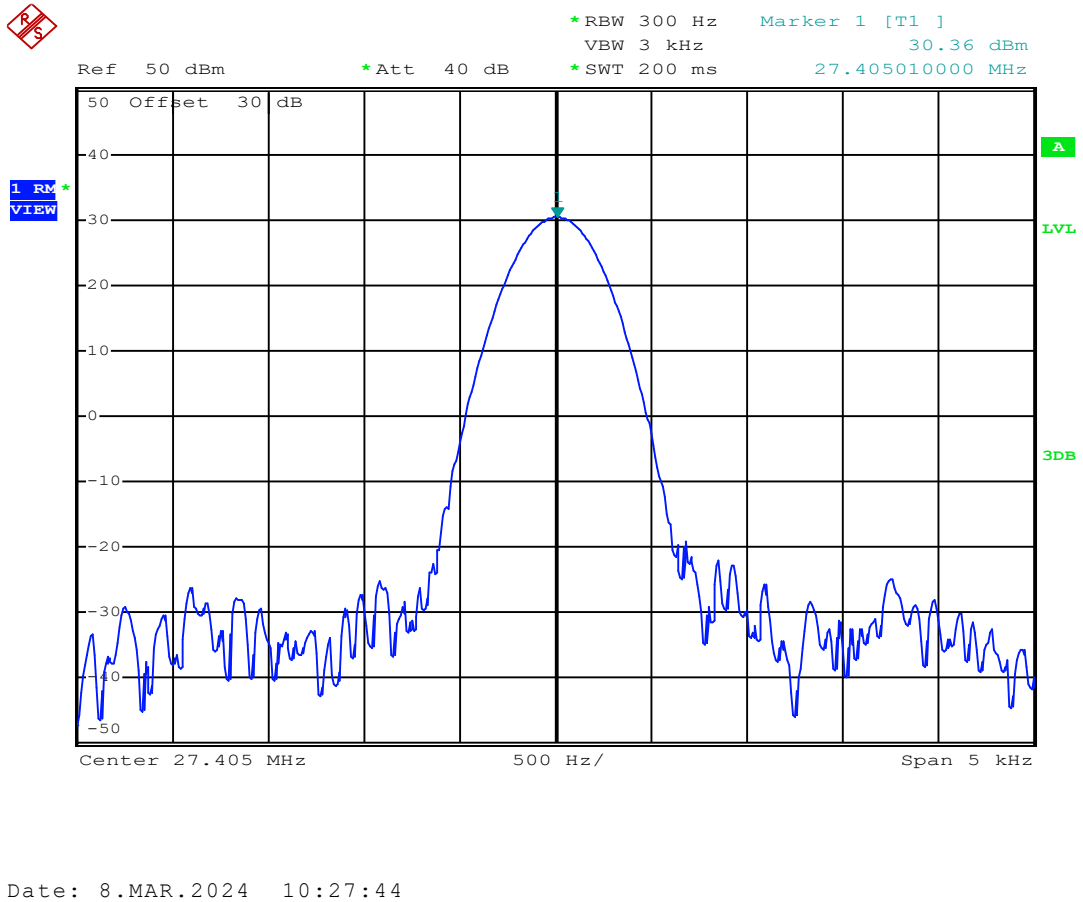
Conducted Power:



Channel:	20		**Channel Frequency:**	27.205	MHz
Mode:	FM		**Modulation:**	FM	
			Measured Power:	30.13	dBm

7.18 – Conducted Output Power, Channel 40, FM, 1W

Conducted Power:



Channel:	**40**		**Channel Frequency:**	**24.405**	**MHz**
Mode:	**FM**		**Modulation:**	**FM**	
			Measured Power:	**30.36**	**dBm**

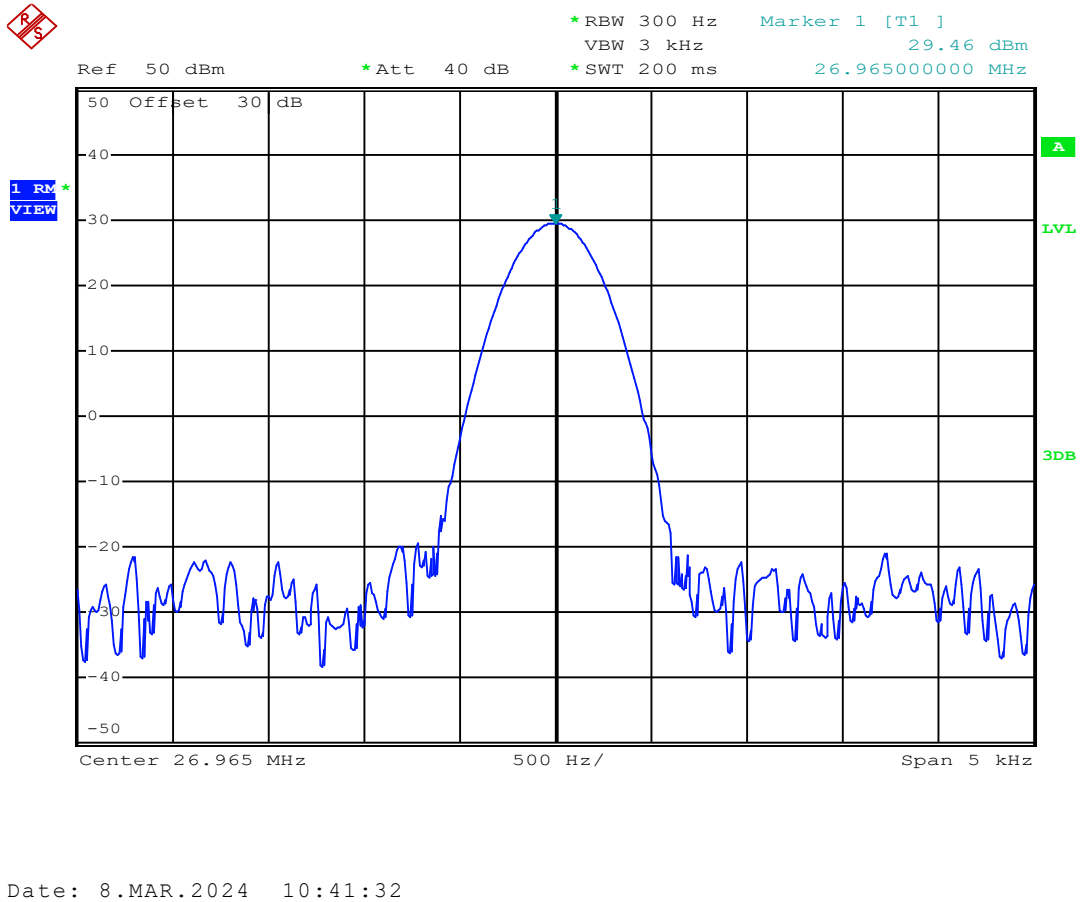
Table 7.3 – Summary of Conducted Power Measurements (RMS), 1W

Conducted Power Measurement Results (1W):						
Channel Number	**Channel Frequency (MHz)**	**Mode**	**Modulation**	**Measured Power [P_{Meas}] (dBm)**	**Limit [P_{Lim}] (dBm)**	**Margin (dB)**
1	26.97	AM	AM	29.79	36	6.21
20	27.21			30.15		5.85
40	27.41			30.26		5.74
1	26.97	FM	FM	29.86		6.14
20	27.21			30.13		5.87
40	24.41			30.36		5.64
					Result:	**Complies**

Conducted Margin = P_{Limit} - P_{Meas}

7.19 – Conducted Output Power, Channel 1, AM, 1W, External

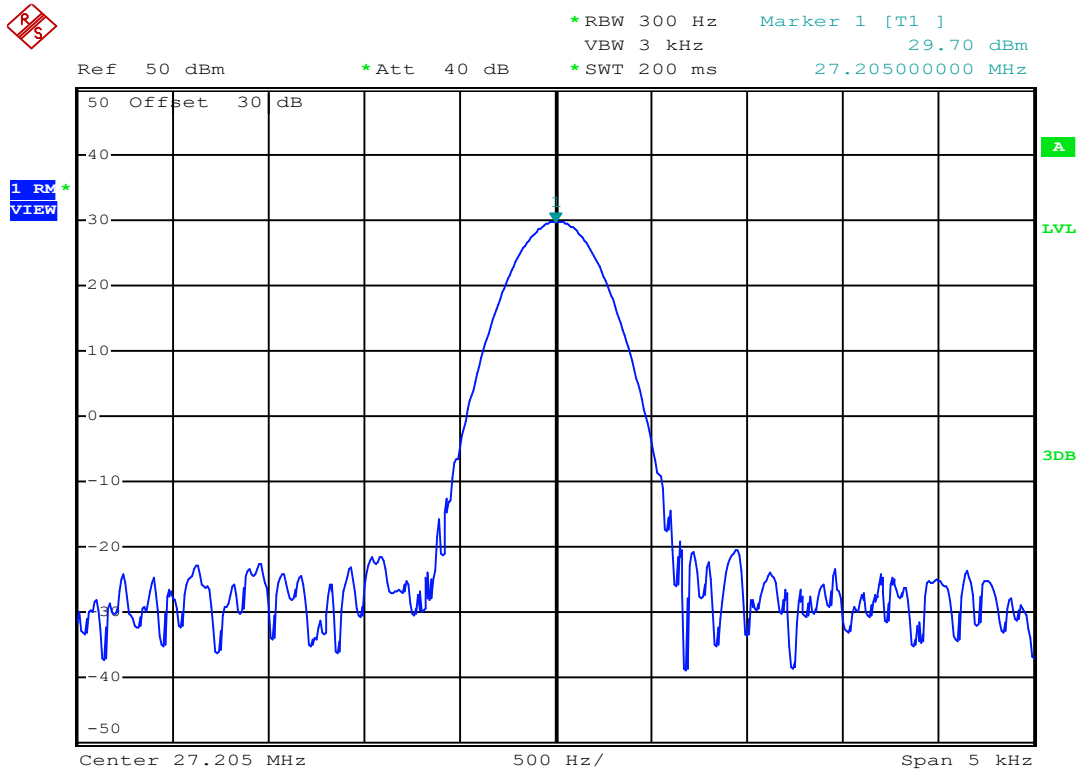
Conducted Power:



Channel:	1		**Channel Frequency:**	26.965	MHz
Mode:	AM		**Modulation:**	AM	
			Measured Power:	29.46	dBm

7.20 – Conducted Output Power, Channel 20, AM, 1W, External

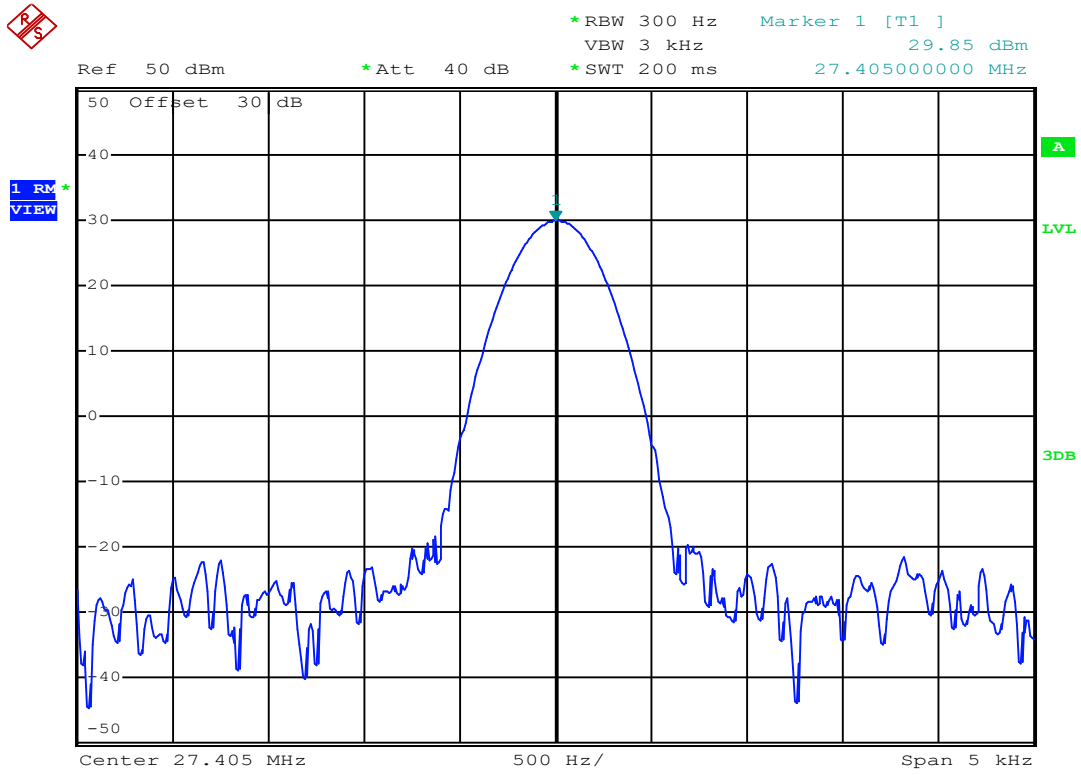
Conducted Power:



Channel:	**20**	**Channel Frequency:**	**27.205** **MHz**
Mode:	**AM**	**Modulation:**	**AM**
		Measured Power:	**27.2** **dBm**

7.21 – Conducted Output Power, Channel 40, AM, 1W, External

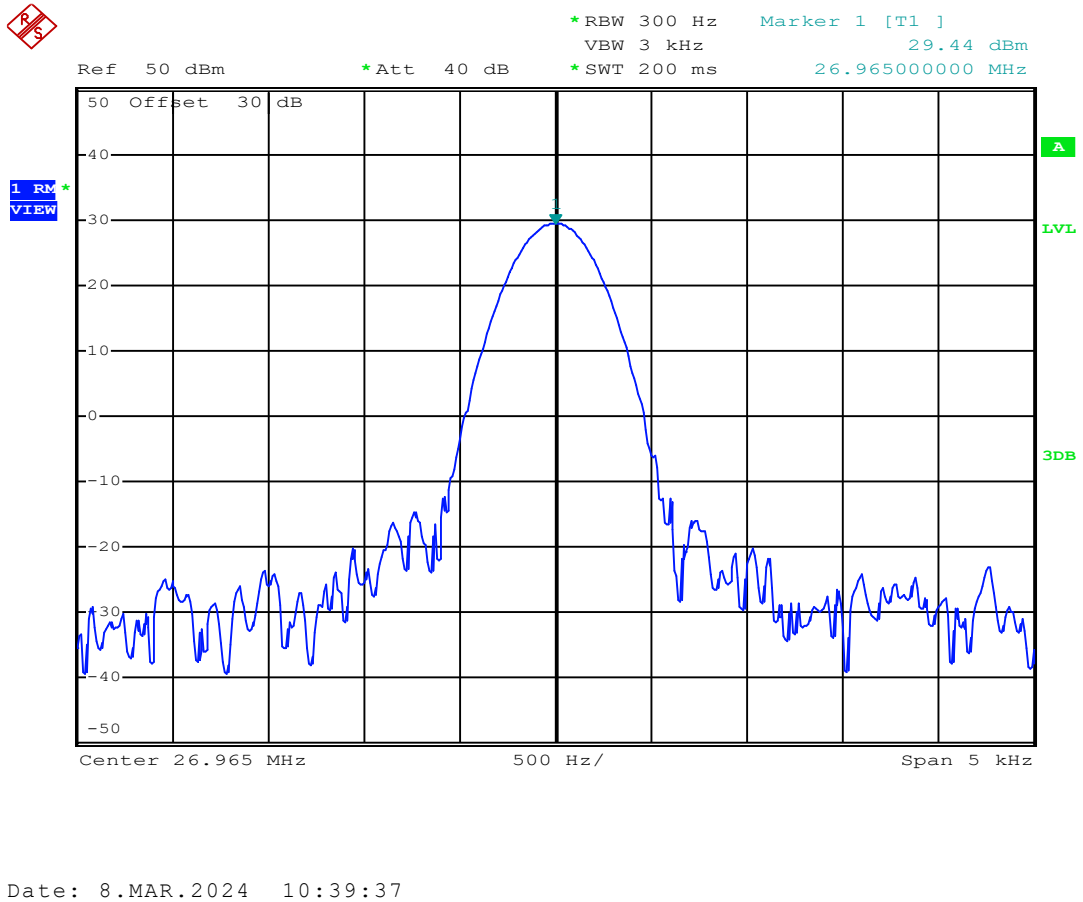
Conducted Power:



Channel:	**40**		**Channel Frequency:**	**27.405**	**MHz**
Mode:	**AM**		**Modulation:**	**AM**	
			Measured Power:	**29.85**	**dBm**

7.22 – Conducted Output Power, Channel 1, FM, 1W, External

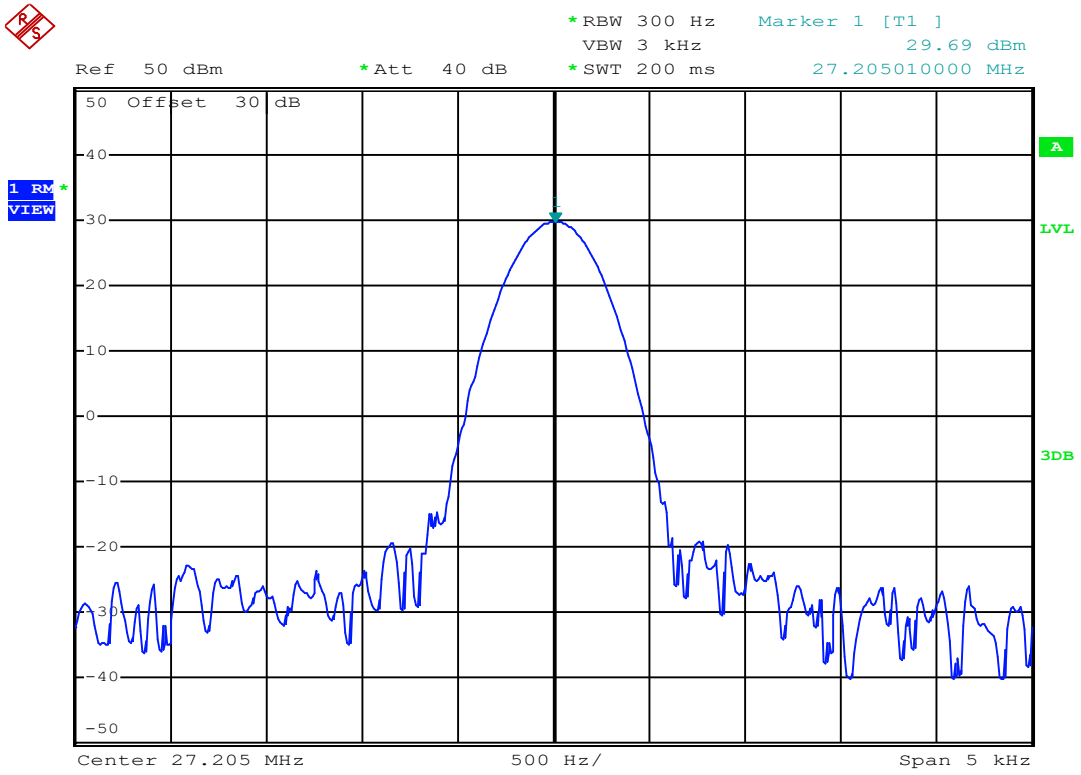
Conducted Power:



Channel:	1		**Channel Frequency:**	26.965	MHz
Mode:	FM		**Modulation:**	FM	
			Measured Power:	26.97	dBm

7.23 – Conducted Output Power, Channel 20, FM, 1W, External

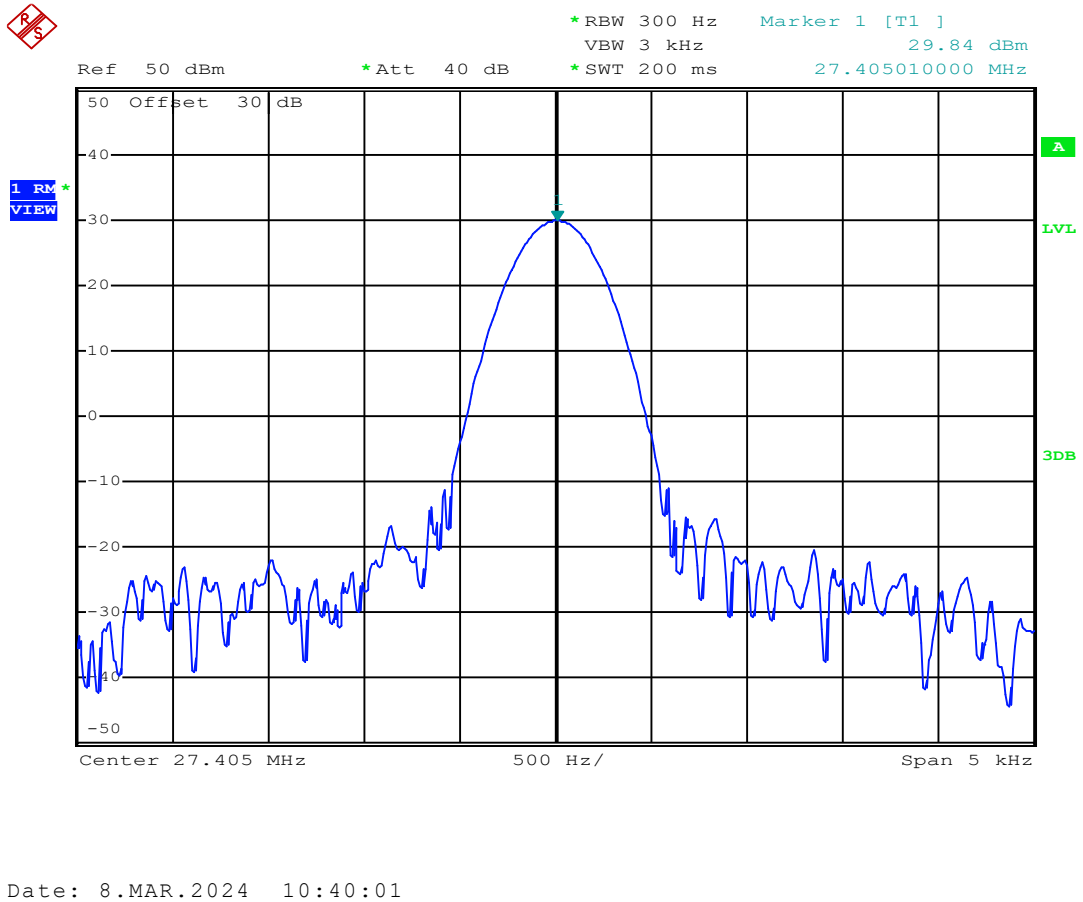
Conducted Power:



Channel:	**20**		**Channel Frequency:**	**27.205**	**MHz**
Mode:	**FM**		**Modulation:**	**FM**	
			Measured Power:	**29.69**	**dBm**

7.24 – Conducted Output Power, Channel 40, FM, 1W, External

Conducted Power:



Channel:	**40**		**Channel Frequency:**	**24.405**	**MHz**
Mode:	**FM**		**Modulation:**	**FM**	
			Measured Power:	**29.84**	**dBm**

Table 7.4 – Summary of Conducted Power Measurements (RMS), External

Conducted Power Measurement Results (1W): Mobile Port						
Channel Number	Channel Frequency (MHz)	Mode	Modulation	Measured Power [P_{Meas}] (dBm)	Limit [P_{Lim}] (dBm)	Margin (dB)
1	26.97	AM	AM	29.79	36	6.21
20	27.21			30.15		5.85
40	27.41			30.26		5.74
1	26.97	FM	FM	29.86		6.14
20	27.21			30.13		5.87
40	24.41			30.36		5.64
					Result:	Complies

Conducted Margin = P_{Limit} - P_{Meas}

Table 7.5 – Compliance to §2.1033(c)(8) – 7.4VDC, AM, FM

FCC CFR 47 §2.1033(c)(8): Power to Transmitter: AM (1W)		
Supply Voltage:	V = 7.40 VDC	
Measured Receiver Current:	IRx = 0.12 A	
Measured Total Current:	ITx = 0.37 A	
Transmitter Current (ITx - IRx):	IXmitter = 0.25 A	
Power to Transmitter:	PTx = 7.40 VDC X 0.25 A =	1.85 W
Result:	Complies	

FCC CFR 47 §2.1033(c)(8): Power to Transmitter: FM (1W)		
Supply Voltage:	V = 7.40 VDC	
Measured Receiver Current:	IRx = 0.12 A	
Measured Total Current:	ITx = 0.36 A	
Transmitter Current (ITx - IRx):	IXmitter = 0.24 A	
Power to Transmitter:	PTx = 7.40 VDC X 0.24 A =	1.78 W
Result:	Complies	

FCC CFR 47 §2.1033(c)(8): Power to Transmitter: AM (4W)		
Supply Voltage:	V = 7.40 VDC	
Measured Receiver Current:	IRx = 0.12 A	
Measured Total Current:	ITx = 0.69 A	
Transmitter Current (ITx - IRx):	IXmitter = 0.57 A	
Power to Transmitter:	PTx = 7.40 VDC X 0.57 A =	4.22 W
Result:	Complies	

FCC CFR 47 §2.1033(c)(8): Power to Transmitter: FM (4W)		
Supply Voltage:	V = 7.40 VDC	
Measured Receiver Current:	IRx = 0.12 A	
Measured Total Current:	ITx = 0.69 A	
Transmitter Current (ITx - IRx):	IXmitter = 0.57 A	
Power to Transmitter:	PTx = 7.40 VDC X 0.57 A =	4.22 W
Result:	Complies	

8.0 MODULATION RESPONSE

Test Conditions	
Normative Reference	**FCC 47 CFR §2.1047, §95.975**

Limits	
47 CFR §2.1047	a) Voice modulated communication equipment. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be submitted.
47 CFR §95.975	Each CBRS transmitter type must be designed such that the modulation characteristics are in compliance with the rules in this section. (a) When emission type A3E is transmitted with voice modulation, the modulation percentage must be at least 85%, but not more than 100%. (b) When emission type A3E is transmitted by a CBRS transmitter having a transmitter output power of more than 2.5 W, the transmitter must contain a circuit that automatically prevents the modulation percentage from exceeding 100%. (c) When emission type F3E is transmitted the peak frequency deviation shall not exceed ±2 kHz.
RSS-236 4.9	When emission type A3E is transmitted by a CB transmitter having a total power of greater than 2.5 W, the CB transmitter must automatically prevent the modulation from exceeding 100%. When emission type F3E is transmitted by a CB transmitter the peak frequency deviation shall not exceed ±2 kHz.

Measurement Procedure	
TIA 382 25.2	**Transmitter Audio Frequency Response** Operate the transmitter under standard test conditions and monitor the output with a modulation monitor or calibrated test receiver. The audio input signal applied through a suitable impedance matching network, as specified by the manufacturer, shall be adjusted to obtain 50% modulation at the maximum audio frequency response of the transmitter, and this point shall be taken as the 0 dB reference level. Vary the modulating frequency from 100 Hz to 10,000 Hz and record the input levels necessary to maintain a constant 50% modulation. Graph the audio level in dB relative to the 0 dB reference level as a function of the modulating frequency. Record any audio frequency where it is impossible to perform the measurement.
TIA-603-E	**2.2.6 Audio Frequency Response** 2.2.6.2.1 Constant deviation test method (300 Hz to 3000 Hz) a) Connect the equipment as illustrated. b) Set the test receiver to measure peak positive deviation. Set the audio bandwidth for ≤50 Hz to ≥15,000 Hz. Turn the de-emphasis function off. c) Set the DMM to measure rms voltage. d) Adjust the transmitter per the manufacturer's procedure for full rated system deviation. e) Apply a 1000 Hz tone and adjust the audio frequency generator to produce 20% of the rated system deviation. f) Set the test receiver to measure rms deviation and record the deviation reading. g) Record the DMM reading as V_{REF} . h) Set the audio frequency generator to the desired test frequency between 300 Hz and 3000 Hz. i) Vary the audio frequency generator output level until the deviation reading that was recorded in step f) is obtained. j) Record the DMM reading as V_{FREQ} . k) Calculate the audio frequency response at the present frequency as: audio frequency response= $20\text{Log}(V_{FREQ}/V_{REF})$

Statement - Compliance to §95.977

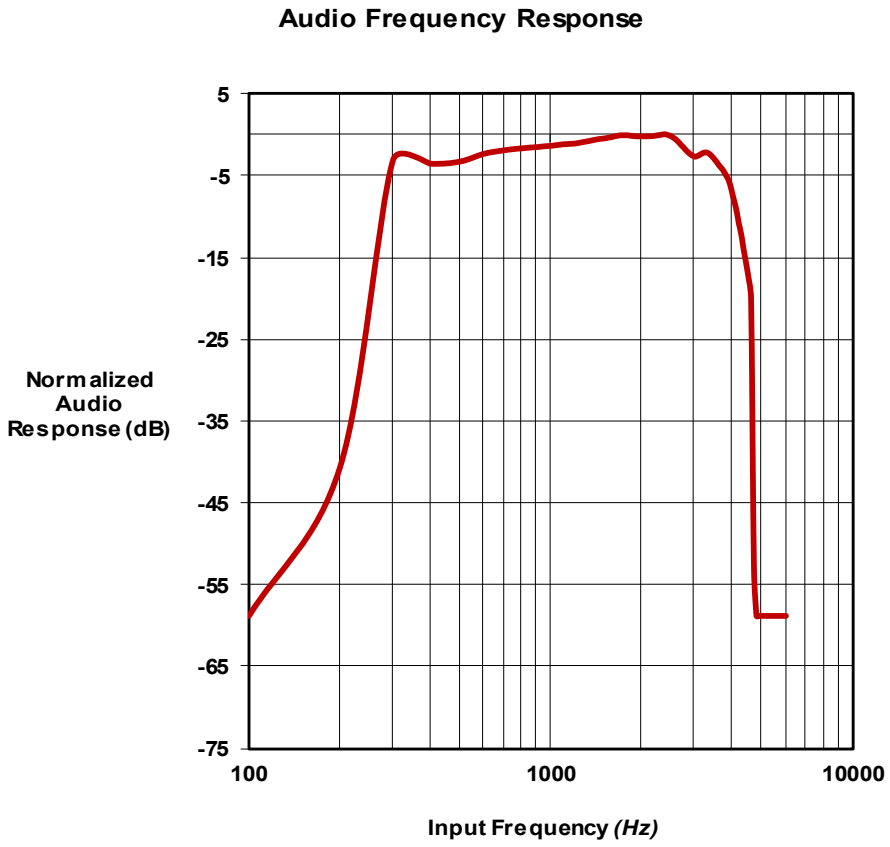
§95.977 CBRS tone transmissions.
In addition to the tones permitted under §95.377, CBRS transmitter types may be designed to transmit brief tones to indicate the beginning or end of a transmission.

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.

Plot 8.1 – Audio Frequency and Low Pass Filter Response, AM

Audio Frequency and Low Pass Filter Response (AM)

Measured Audio Response		
Freq	Audio Response (@ 50% MI)	
(Hz)	*(mV)*	*(dB)**
100	6000.00	-58.723
200	750.00	-40.662
400	10.50	-3.584
600	9.15	-2.389
800	8.45	-1.697
1000	8.15	-1.383
1200	7.90	-1.113
1400	7.50	-0.662
1600	7.20	-0.307
1800	7.05	-0.124
2000	7.15	-0.246
2200	7.10	-0.185
2400	**6.95**	**0.000**
2600	7.50	-0.662
2800	8.65	-1.901
3000	9.50	-2.715
3200	9.00	-2.245
3400	9.40	-2.623
3600	10.70	-3.748
3800	12.30	-4.958
4000	16.20	-7.351
4200	24.40	-10.908
4400	39.90	-15.180
4600	69.40	-19.987
4700	3000.00	-52.703
4800	6000.00	-58.723
1000	6000.00	-58.723
*** Normalize to 2400Hz**		

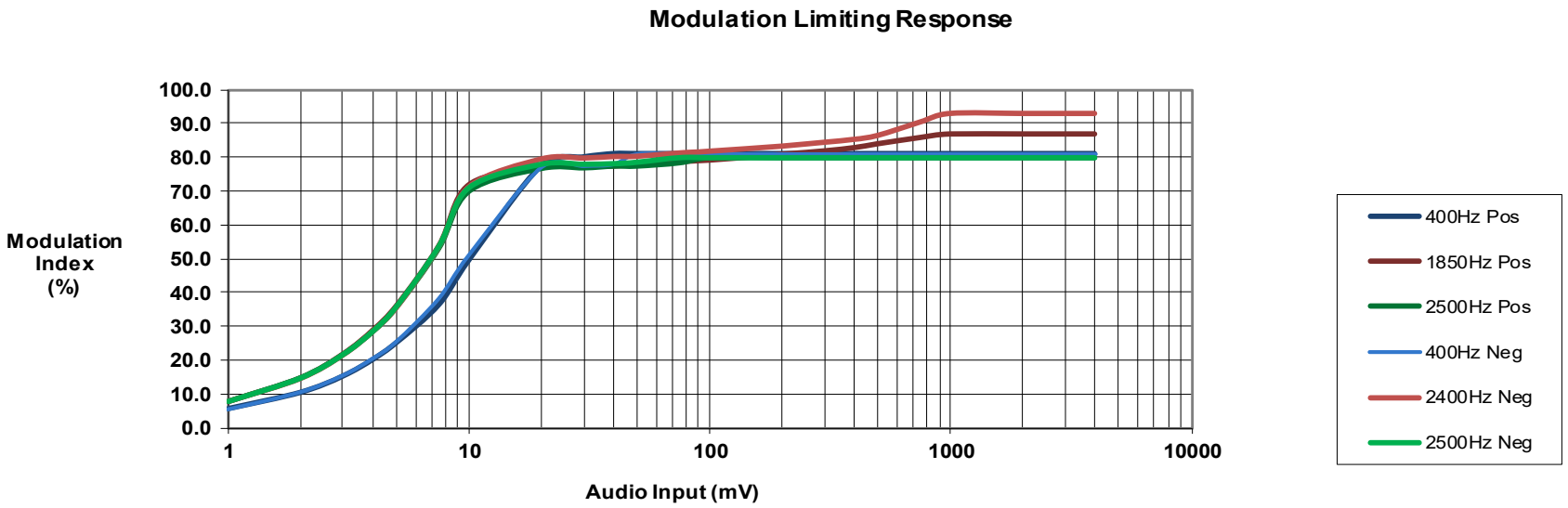


Note: 50% MI could not be achieved above 4800Hz.

Audio Frequency at -6dB Attenuation:	~3900Hz
Audio Frequency @ Maximum Response (f_{MAX}):	2400Hz
Audio Input @ Maximum Response (V_{MAX}):	6.95
Result:	Complies

Plot 8.2 – Modulation Limiting Response, AM

Modulation Limiting Response (AM)



Measured Modulation Response [Modulation Index (%)]

Freq (Hz)	Audio Input (mV)																						Deviation
	1	2	3	4	5	7.5	10	20	30	40	50	75	100	200	300	400	500	750	1000	2000	3000	4000	
400	5.5	10.4	15.2	20.2	25.1	36.3	49.5	77.5	80.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	Positive
2400	7.7	14.8	21.8	29.0	36.2	53.9	72.0	77.0	77.5	77.5	78.0	78.8	79.3	81.0	82.0	83.0	84.1	86.0	87.0	87.0	87.0	87.0	
2500	7.5	14.6	21.5	28.5	35.6	53.1	70.0	76.8	77.0	77.5	77.5	78.5	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	
400	5.5	10.6	15.5	20.5	25.5	38.2	51.0	77.0	77.5	78.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	81.0	Negative
2400	7.5	14.4	21.3	28.4	35.4	53.3	71.0	79.2	79.5	79.9	80.0	81.0	81.5	83.0	84.2	85.0	86.2	90.1	92.7	92.7	92.7	92.7	
2500	7.6	14.6	21.5	28.6	35.8	53.7	71.0	78.0	78.0	78.2	78.6	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	

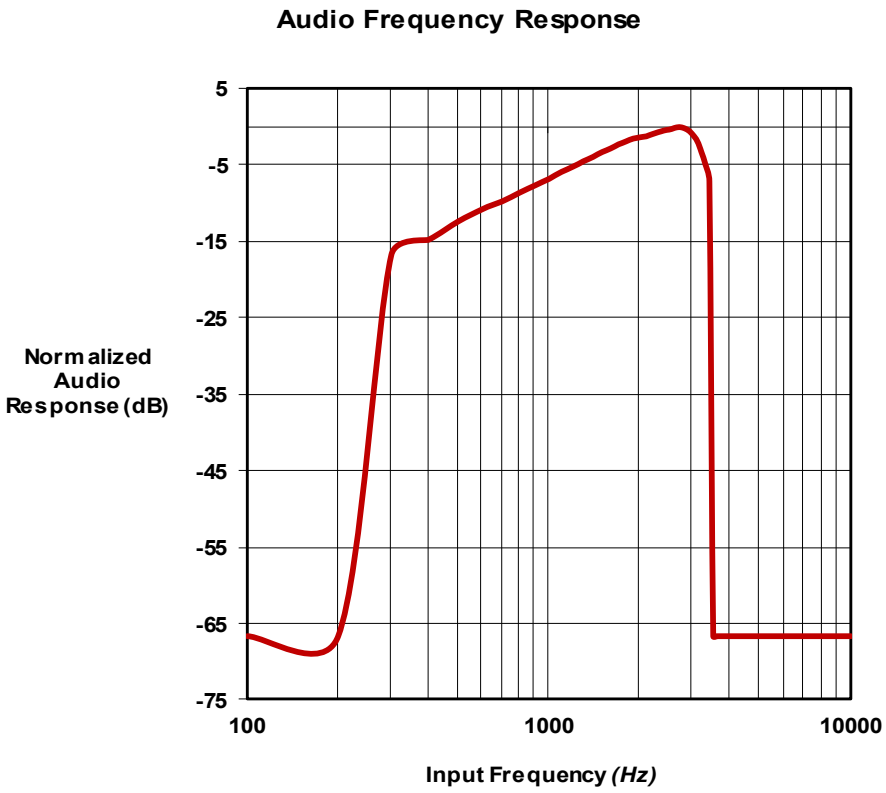
Audio Frequency @ Maximum Deviation (f_{MAX}):	2400Hz
Audio Input @ Maximum Deviation (V_{MAX}):	6.95mV
V_{MAX} + 40dB:	695mV
Maximum Measured Modulation Index:	92.7%
Result:	**Complies**

Plot 8.3 – Audio Frequency and Low Pass Filter Response, FM

Audio Frequency and Low Pass Filter Response (FM)

Measured Audio Response		
Freq	Audio Response (@ 20% Deviation)	
(Hz)	*(mV)*	*(dB)**
100	6000.00	-66.776
300	19.00	-16.788
500	11.40	-12.351
700	8.40	-9.699
900	6.60	-7.604
1100	5.40	-5.861
1300	4.60	-4.469
1500	4.00	-3.255
1700	3.57	-2.267
1900	3.27	-1.504
2100	3.15	-1.180
2300	2.97	-0.668
2500	2.85	-0.310
2700	**2.75**	**0.000**
2900	2.89	-0.431
3100	3.39	-1.817
3300	4.85	-4.928
3500	6000.00	-66.776
10000	6000.00	-66.776

*** Normalize to 2700Hz**

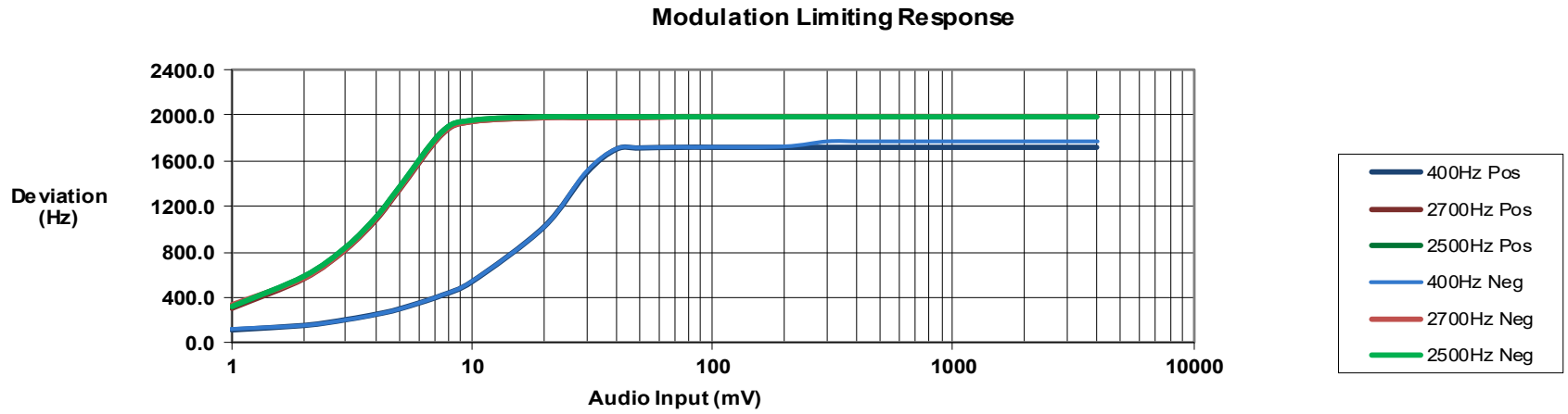


Note: 20% Deviation (+/-400Hz) could not be achieved above 3600Hz.

Audio Frequency at -6dB Attenuation:	**3400Hz**
Audio Frequency @ Maximum Response (f_{MAX}):	**2700Hz**
Audio Input @ Maximum Response (V_{MAX}):	**2.75mV**
Result:	**Complies**

Plot 8.4 – Modulation Limiting Response, FM

Modulation Limiting Response (FM)



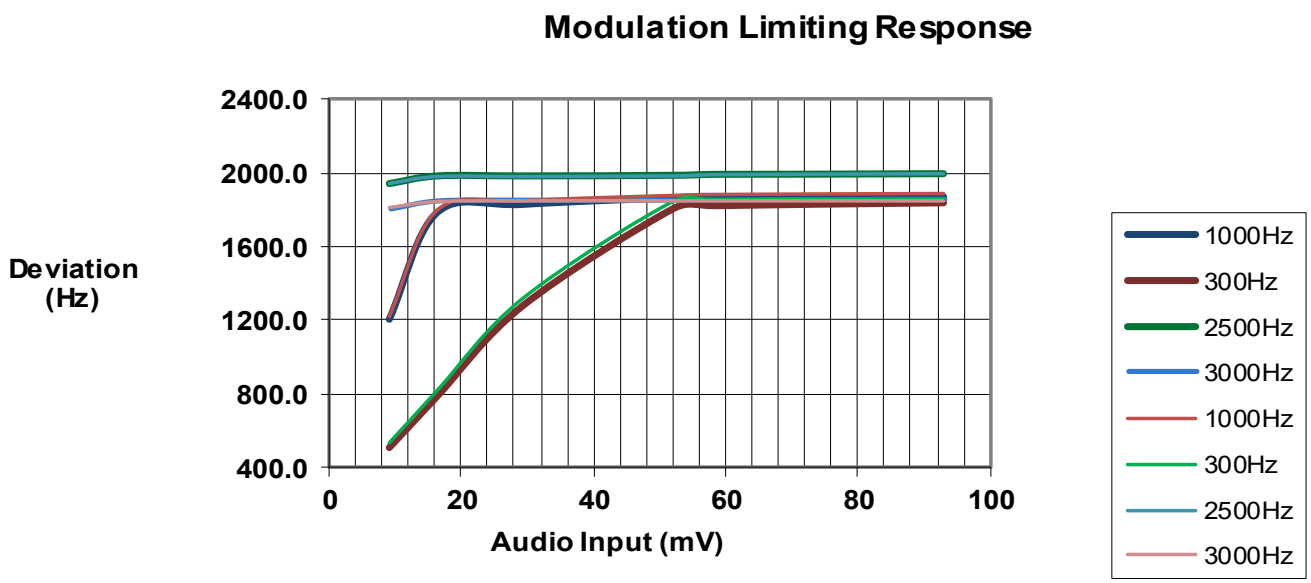
Measured Modulation Response: Frequency Deviation (Hz)

Freq (Hz)	Audio Input (mV)																						
	1	2	3	4	5	7.5	10	20	30	40	50	75	100	200	300	400	500	750	1000	2000	3000	4000	Deviation
400	110	150	200	248	295	415	535	1020	1495	1703	1713	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	1720	Positive
2700	310	570	830	1090	1350	1833	1945	1980	1980	1983	1983	1988	1990	1990	1990	1990	1990	1990	1990	1990	1990	1990	
2500	315	580	840	1105	1365	1850	1950	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	1980	
400	125	155	204	251	300	420	540	1020	1505	1705	1715	1720	1720	1725	1770	1770	1770	1770	1770	1770	1770	1770	Negative
2700	340	575	835	1100	1362	1840	1945	1980	1980	1980	1980	1986	1988	1990	1990	1990	1990	1990	1990	1990	1990	1990	
2500	318	585	843	1108	1370	1852	1954	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983	

Audio Frequency @ Maximum Response (f_{MAX}):	2700Hz
Audio Input @ Maximum Response (V_{MAX}):	2.75mV
V_{MAX} + 40dB:	275mV
Maximum Measured Deviation:	1990Hz
Result:	Complies

Plot 8.5 – Modulation Limiting Response, FM (ANSI C63.26)

Modulation Limiting Response (FM): ANSI C63.26



Measured Modulation Response: Frequency Deviation (Hz)

Freq (Hz)	Audio Input (mV) +0dB 9.3	+5dB 16.54	+10dB 29.41	+15dB 52.30	+16dB 58.68	+20dB 93.00	Deviation
1000	1205	1790	1834	1870	1872	1875	Positive
300	510	790	1280	1810	1825	1840	
2500	1945	1980	1980	1983	1987	1990	
3000	1800	1845	1850	1850	1852	1855	
1000	1223	1800	1850	1880	1885	1890	Negative
300	535	820	1320	1850	1855	1860	
2500	1946	1978	1978	1980	1986	1990	
3000	1805	1845	1850	1850	1850	1850	

Audio Input @ 1000Hz @ 60% Deviation (+/- 1.2kHz) (V_{0dB}):	9.3 mV
Maximum Measured Deviation:	1990 Hz
Result:	Complies

9.0 OCCUPIED BANDWIDTH AND EMISSION MASKS

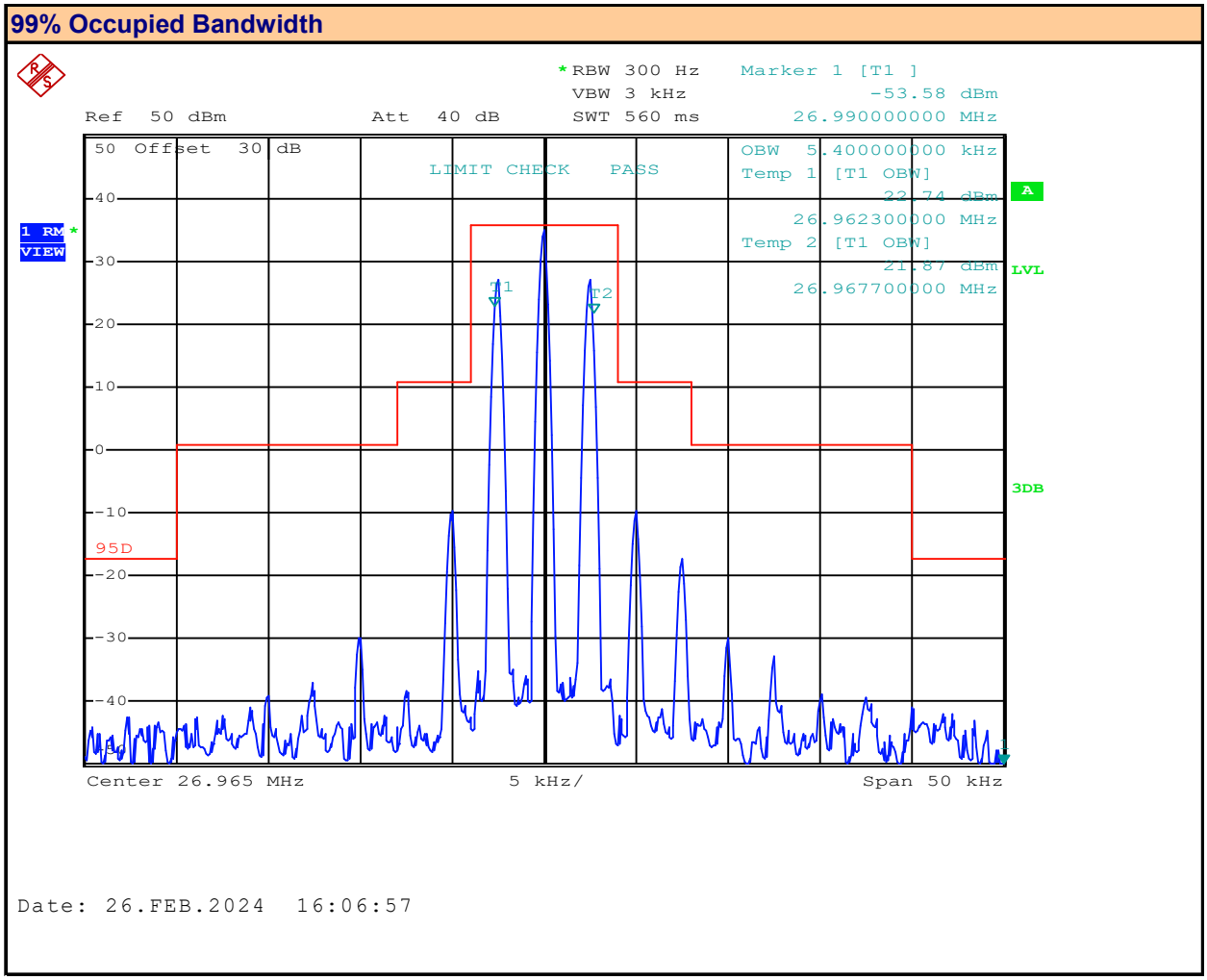
Test Conditions	
Normative Reference	**FCC 47 CFR §2.1049, §95.973**

Limits	
47 CFR §95.973	Each CBRS transmitter type must be designed such that the occupied bandwidth does not exceed the authorized bandwidth for the emission type under test. (a) AM and FM. The authorized bandwidth for emission types A3E and F3E is 8 kHz.
RSS-236 5.3.2	The authorized bandwidth for emission type A1D or A3E is 8 kHz.
47 CFR §95.979	Each CBRS transmitter type must be designed to comply with the applicable unwanted emissions limits in this section. (a) Attenuation requirements. The power of unwanted emissions must be attenuated below the transmitter output power in Watts (P) as specified in the applicable paragraphs listed in the following table: For A3E and F3E (1), (3), (5), (6) (1) 25 dB (decibels) in the frequency band 4 kHz to 8 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; (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.
RSS-236 4.4.4	For A1D and A3E: _ At least 25 dB on any frequency removed from the center of the authorized bandwidth by more than 50% up to and including 100% of the authorized bandwidth. _ At least 35 dB on any frequency removed from the center of the authorized bandwidth by more than 100% up to and including 250% of the authorized bandwidth. _ At least 53 + 10 log10 (T) dB on any frequency removed from the center of the authorized bandwidth by more than 250%. _ At least 60 dB on any frequency twice or greater than twice the fundamental frequency.

Measurement Procedure
TIA 382 23.2 Transmitter Modulation Occupied Bandwidth The transmitter is modulated by a sinusoidal audio signal applied to the microphone input jack. First, the frequency is adjusted to deliver 50% modulation at the highest audio response level (minimum applied audio level). Then the audio signal level is increased 16 dB and the audio frequency is readjusted to 2500 Hz The analyzer is adjusted to display each of the discrete modulation sidebands and their respective harmonic products within +/- 50 kHz of the carrier frequency.

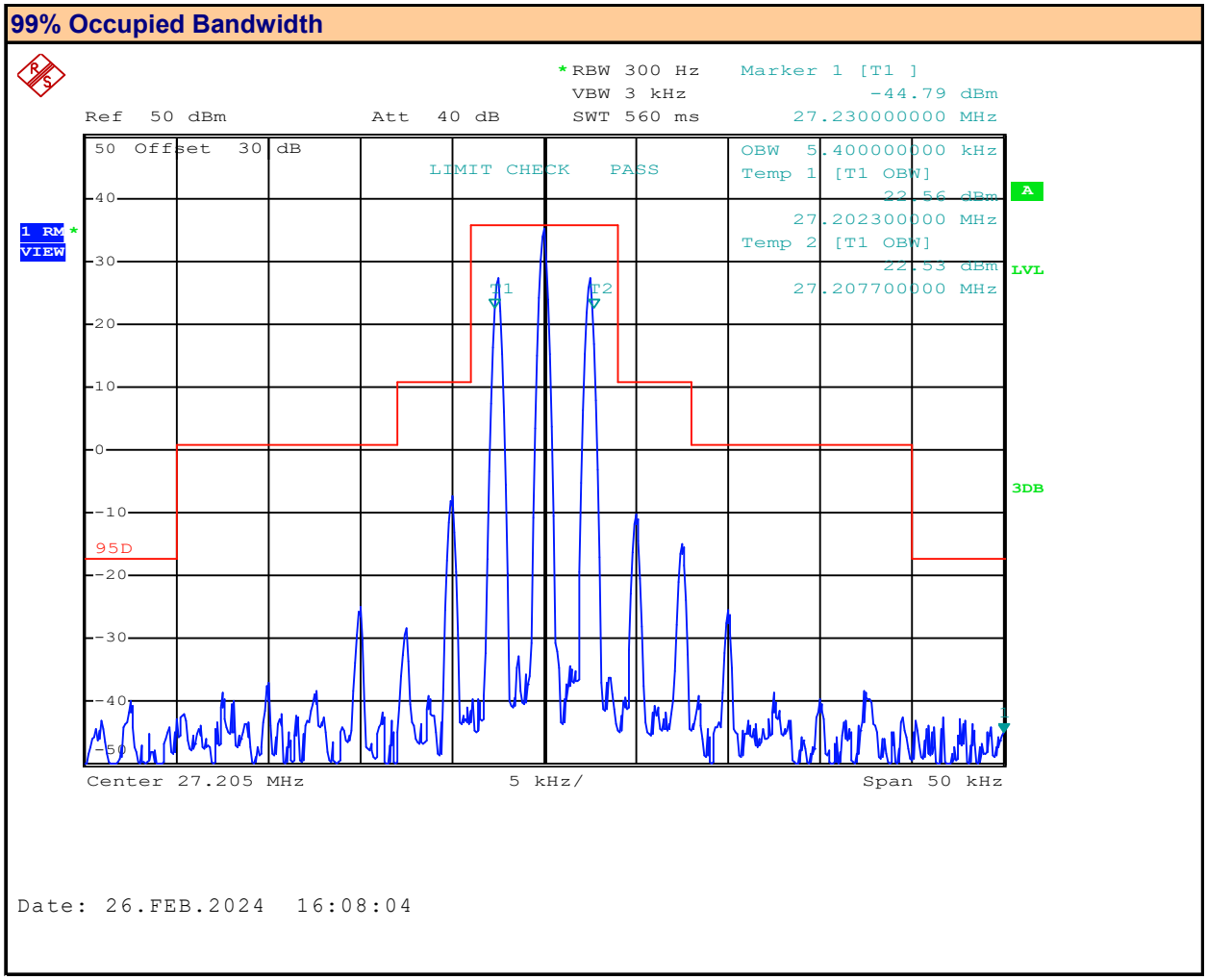
Test Setup	Appendix A Figure A.1

Plot 9.1 – Occupied Bandwidth, Channel 1, AM



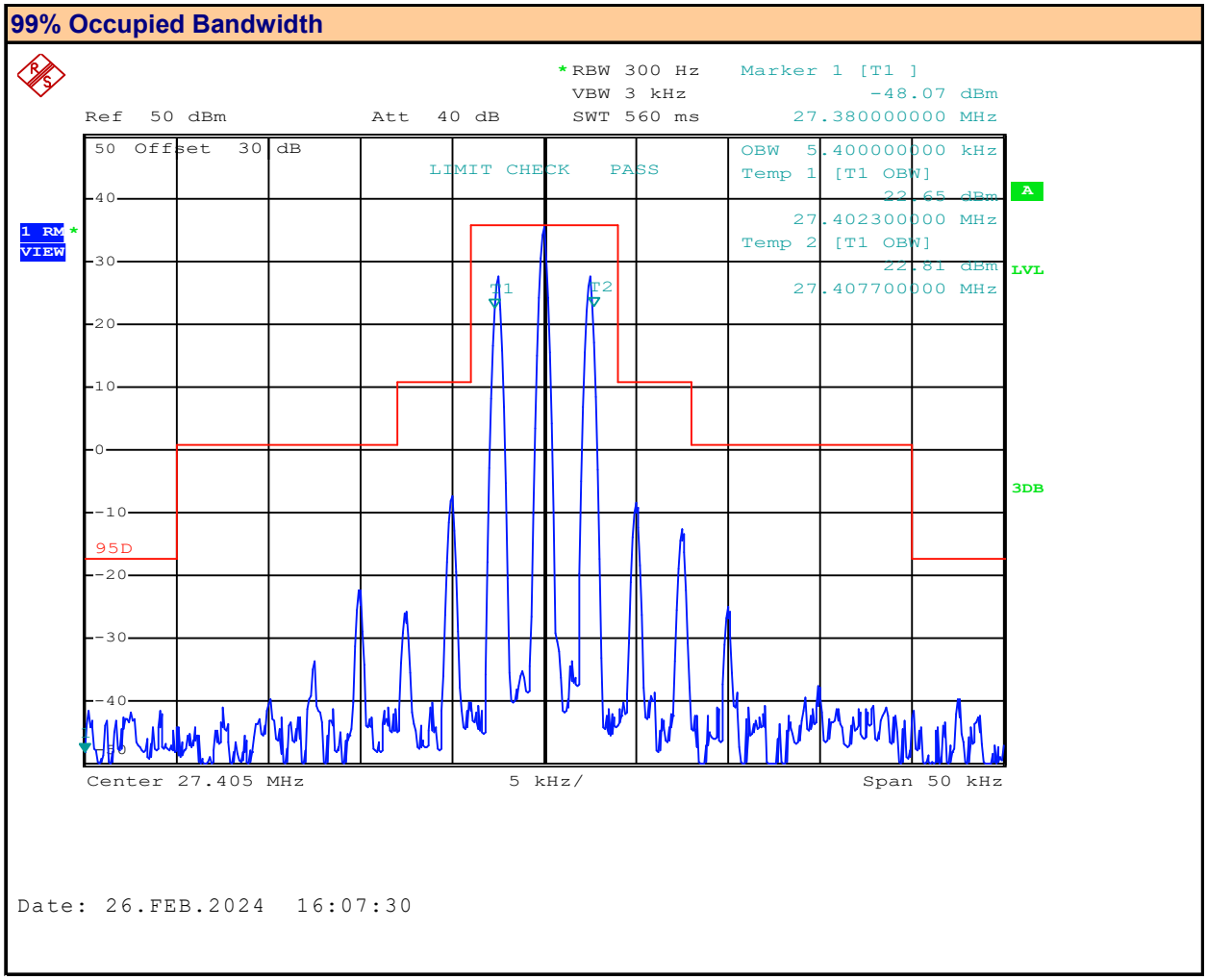
Channel:	1	**Channel Frequency:**	26.965 MHz
Modulation:	AM	**Measured Occupied Bandwidth:**	5.4 kHz

Plot 9.2 – Occupied Bandwidth, Channel 20, AM



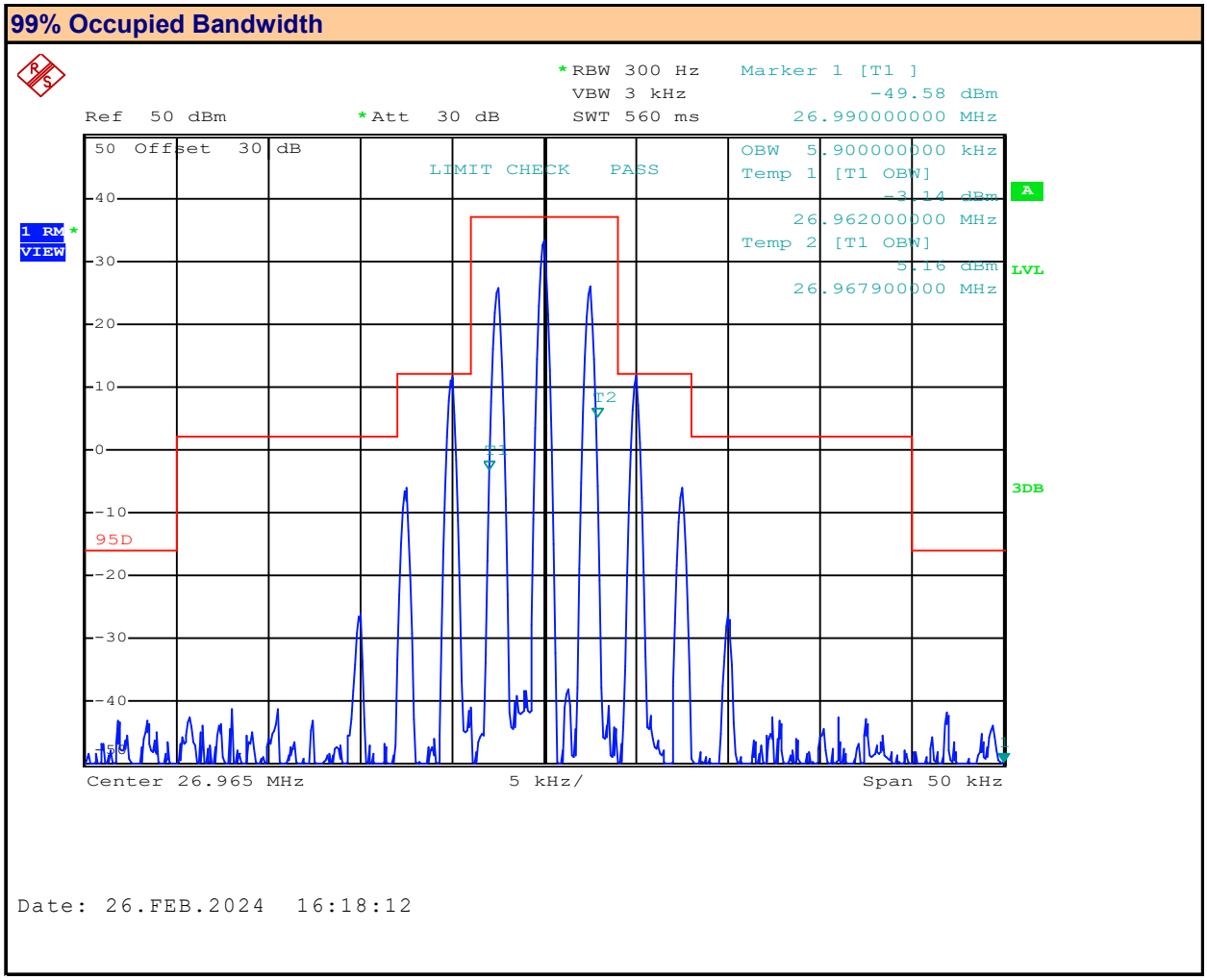
Channel:	**20**	**Channel Frequency:**	**27.205** **MHz**
Modulation:	**AM**	**Measured Occupied Bandwidth:**	**5.4** **kHz**

Plot 9.3 – Occupied Bandwidth, Channel 40, AM



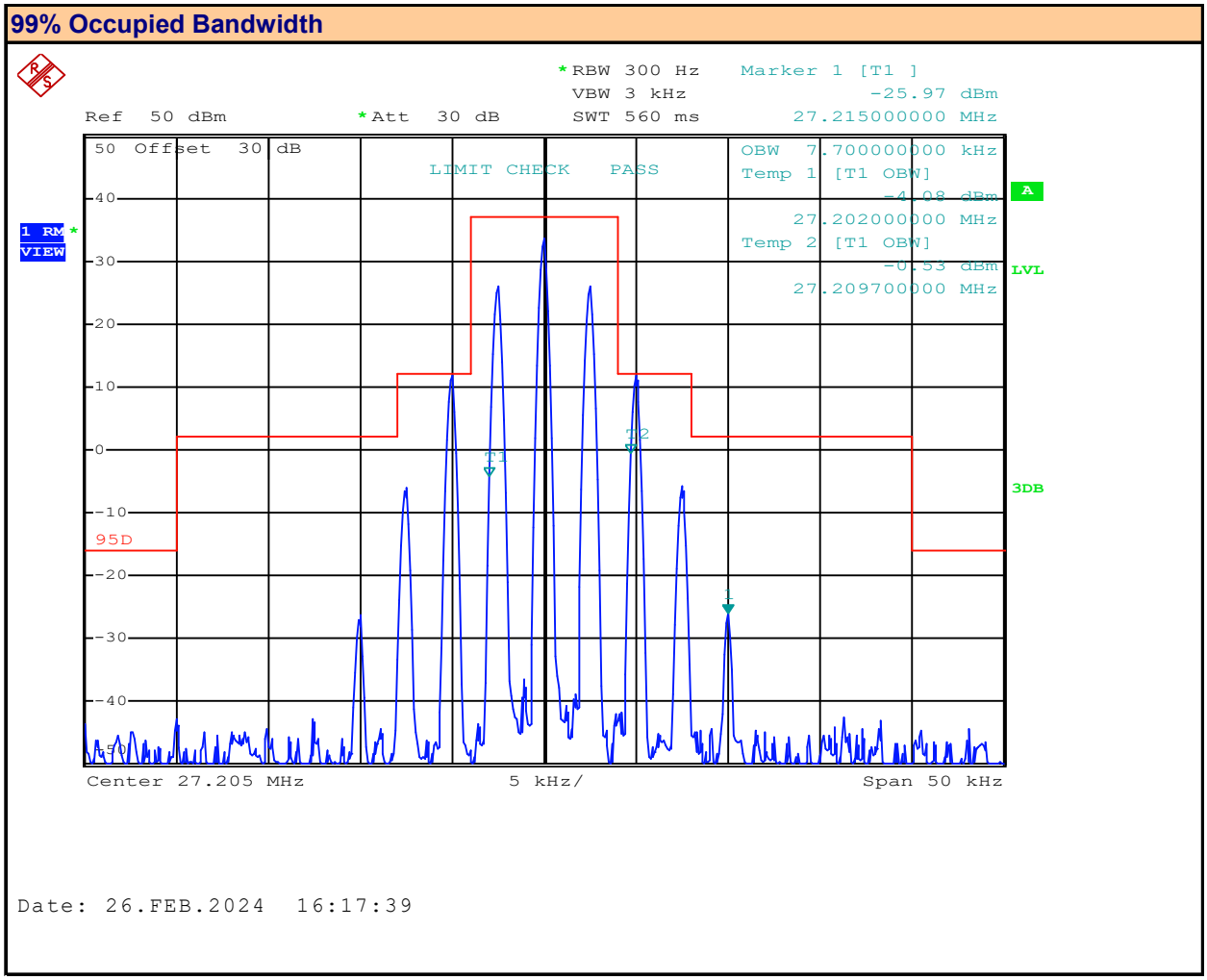
Channel:	**40**	**Channel Frequency:**	**27.405** **MHz**
Modulation:	**AM**	**Measured Occupied Bandwidth:**	**5.4** **kHz**

Plot 9.4 – Occupied Bandwidth, Channel 1, FM



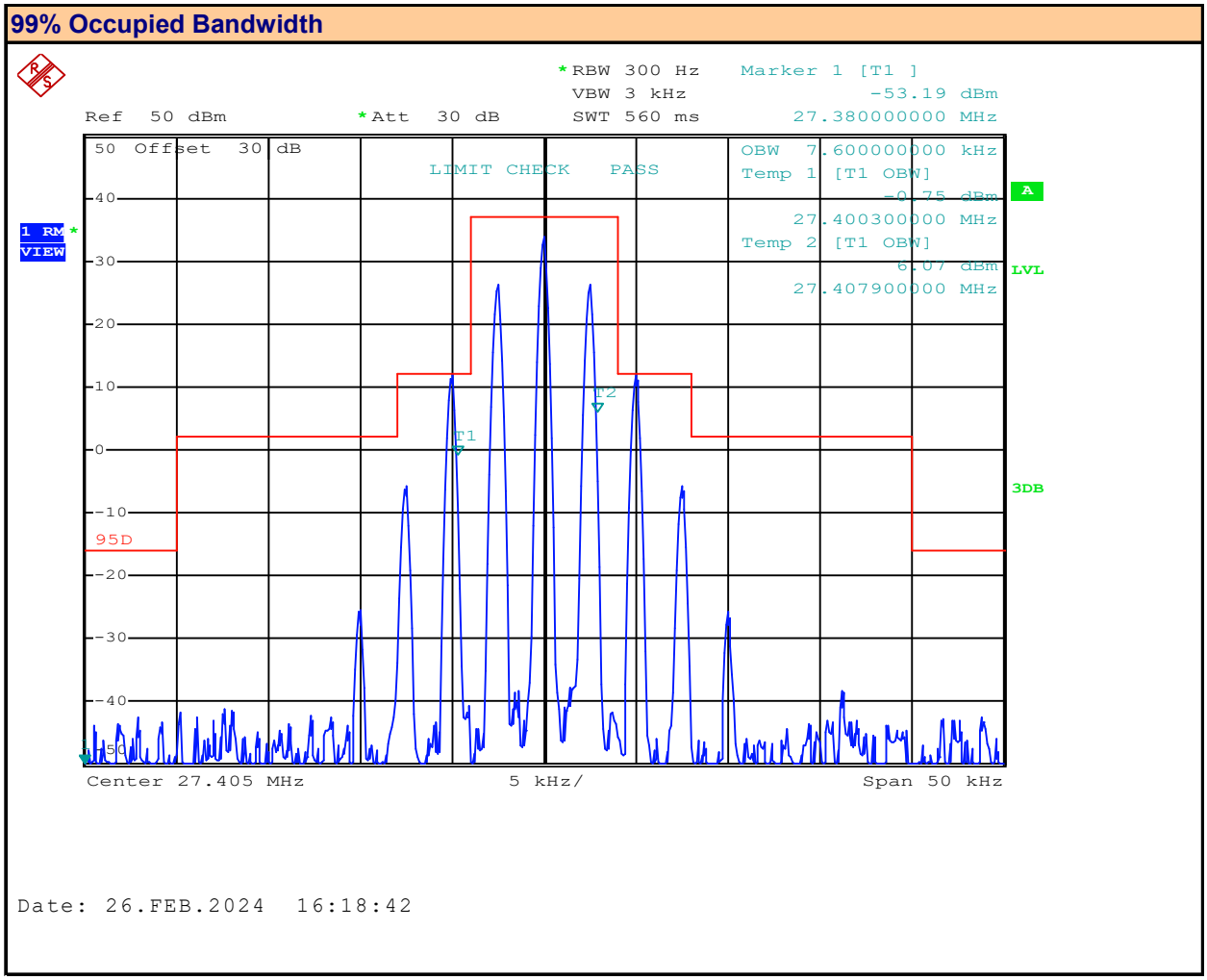
Channel:	1	**Channel Frequency:**	26.965 MHz
Modulation:	FM	**Measured Occupied Bandwidth:**	5.9 kHz

Plot 9.5 – Occupied Bandwidth, Channel 20, FM



Channel:	**20**	**Channel Frequency:**	**27.205** **MHz**
Modulation:	**FM**	**Measured Occupied Bandwidth:**	**7.7** **kHz**

Plot 9.6 – Occupied Bandwidth, Channel 40, FM



Channel:	**40**	**Channel Frequency:**	**27.405** **MHz**
Modulation:	**FM**	**Measured Occupied Bandwidth:**	**7.6** **kHz**

Table 9.1 - Summary of Occupied Bandwidth and Emission Mask Results

99% Occupied Bandwidth / Emissions Mask Results:						
Channel Number	Channel Frequency (MHz)	Modulation	Measured Occupied Bandwidth (kHz)	Limit (kHz)	Emission Designator	Emissions Mask Results
1	26.965	AM	5.40	8.00	5K40A3E	PASS
20	27.205		5.40		5K40A3E	PASS
40	27.405		5.40		5K40A3E	PASS
1	26.965	FM	5.90		5K90F3E	PASS
20	27.205		7.70		7K70F3E	PASS
40	27.405		7.60		7K60F3E	PASS
					Result:	Complies

10 CONDUCTED OUT OF BAND SPURIOUS EMISSIONS

Test Conditions	
Normative Reference	**FCC 47 CFR §95.979**

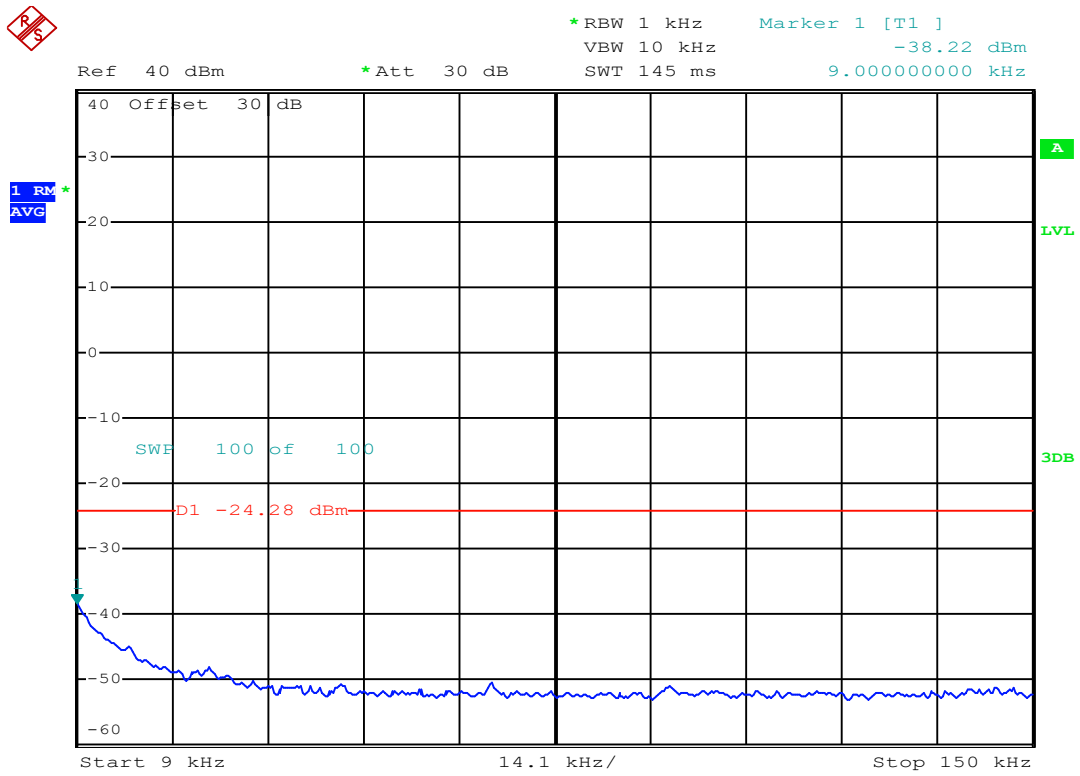
Limits	
47 CFR §95.979	Each CBRS transmitter type must be designed to comply with the applicable unwanted emissions limits in this section. (a) Attenuation requirements. The power of unwanted emissions must be attenuated below the transmitter output power in Watts (P) as specified in the applicable paragraphs listed in the following table: For A3E, F3E (1), (3), (5), (6) (1) 25 dB (decibels) in the frequency band 4 kHz to 8 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; (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.

Measurement Procedure	
TIA 382 21.2	**Transmitter Conducted Spurious and Harmonic Emissions** The transmitter RF output shall be connected to the standard nonradiating output load. The output shall be sampled and displayed using spectrum analysis techniques. 2500 Hz modulation shall be applied at a level 16 dB above that required to produce 50% modulation at the frequency of maximum response. The sampled output shall be analyzed from the lowest frequency generated in the equipment to the 10th harmonic of the fundamental signal and the levels of all spurious outputs attenuated not more than 20 dB below the maximum required attenuation shall be recorded.

Test Setup	
Appendix A	**A.1**

Plot 10.1 – Conducted Out of Band Emissions, 9kHz to 150kHz, Channel 20, AM

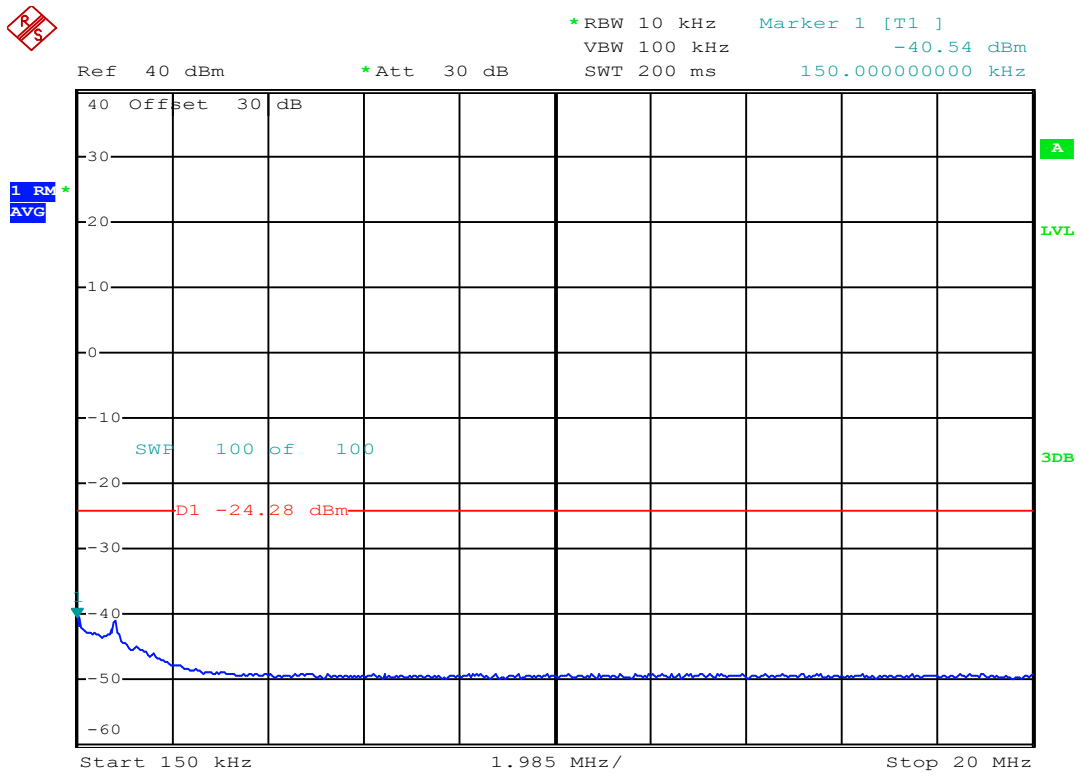
Conducted Spurious Emissions:



Channel:	**20**	**Channel Frequency:**	**27.205**	**MHz**
Modulation:	**AM**	**Emission Frequency:**	**ND**	**MHz**
		Measured Emission:	**ND**	**dBm**

Plot 10.2 – Conducted Out of Band Emissions, 150kHz – 20MHz, Channel 20, AM

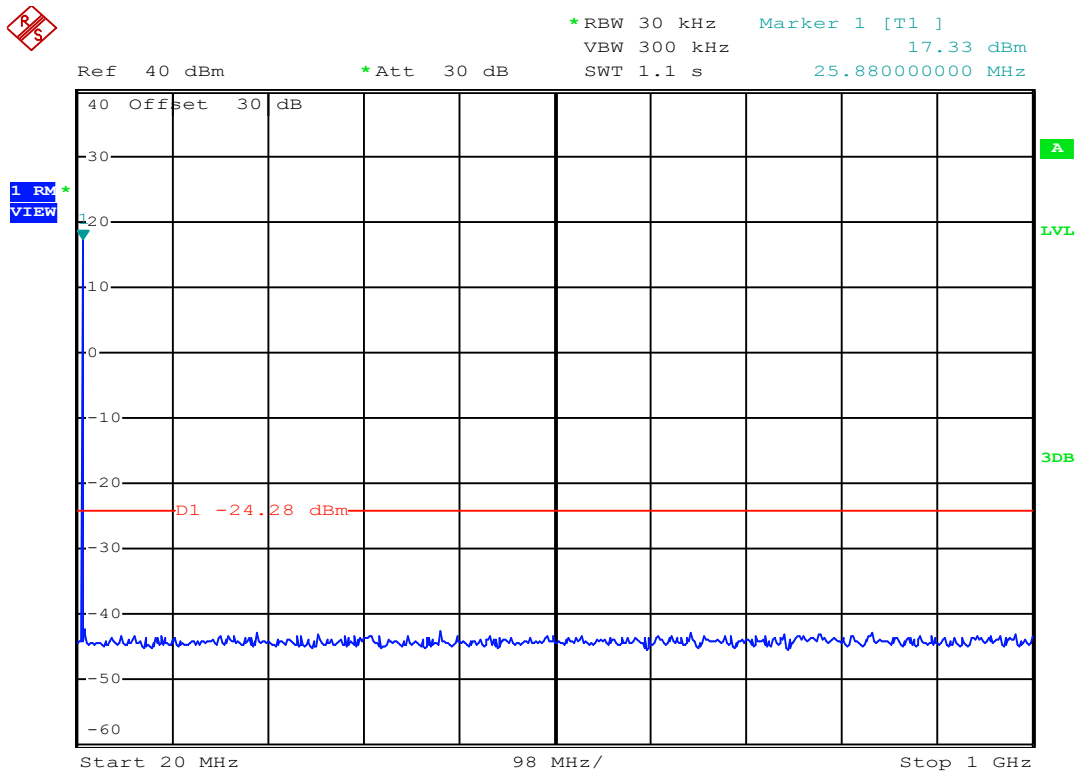
Conducted Spurious Emissions:



Channel:	**20**	**Channel Frequency:**	**27.205**	**MHz**
Modulation:	**AM**	**Emission Frequency:**	**ND**	**MHz**
		Measured Emission:	**ND**	**dBm**

Plot 10.3 – Conducted Out of Band Emissions, 20 – 1000MHz, Channel 20, AM

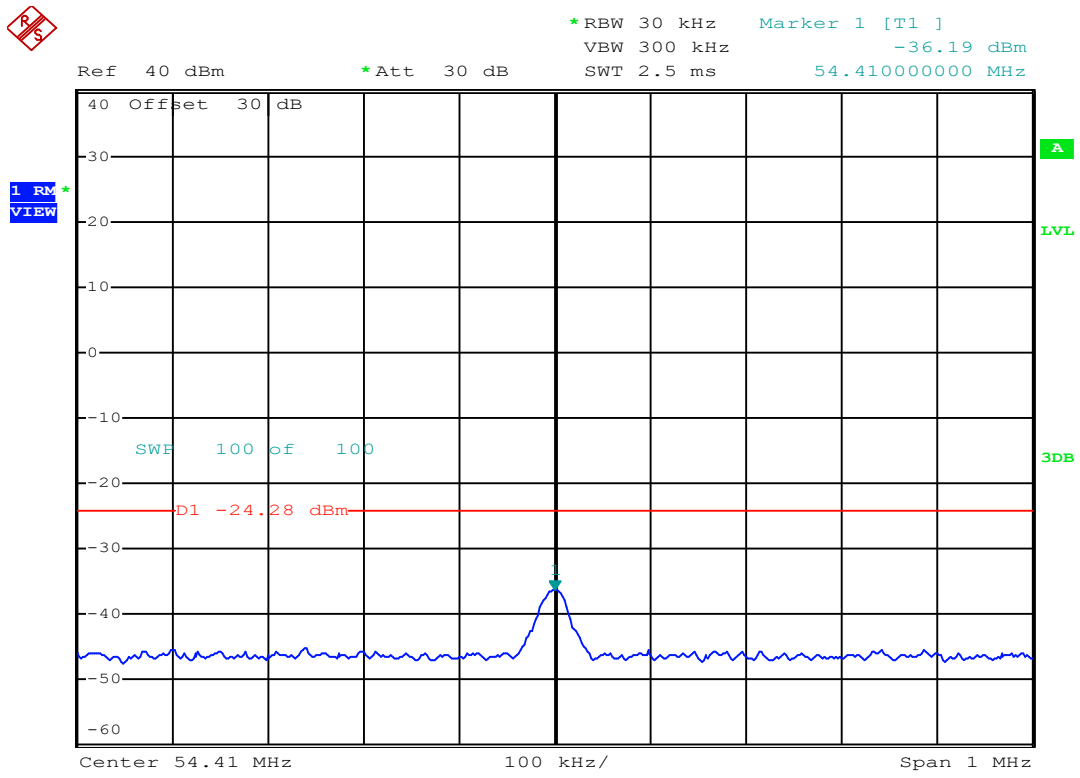
Conducted Spurious Emissions:



Channel:	**20**	**Channel Frequency:**	**27.205**	**MHz**
Modulation:	**AM**	**Emission Frequency:**	**ND**	**MHz**
Marker 1 = Fundamental		**Measured Emission:**	**ND**	**dBm**

Plot 10.4 – Conducted Out of Band Emissions, 2nd Harmonic, Channel 20, AM

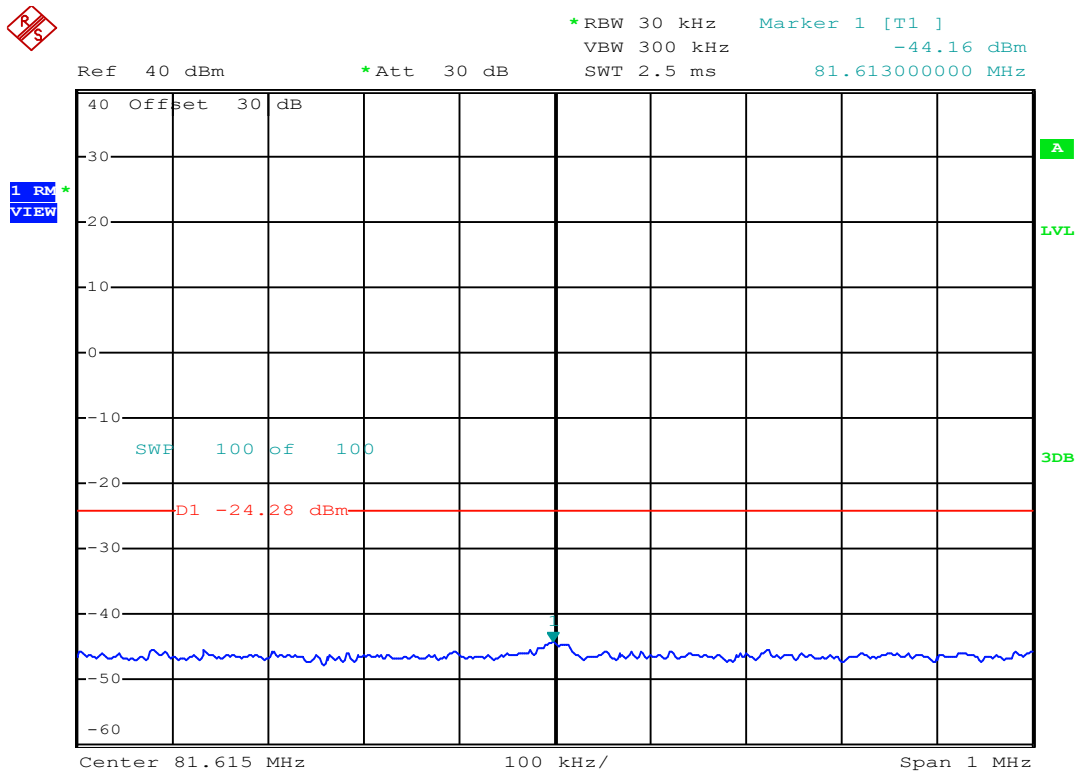
Conducted Spurious Emissions:



Channel:	**20**	**Channel Frequency:**	**27.205**	**MHz**
Modulation:	**AM**	**Emission Frequency:**	**54.41**	**MHz**
		Measured Emission:	**-36.19**	**dBm**

Plot 10.5 – Conducted Out of Band Emissions, 3rd Harmonic, Channel 20, AM

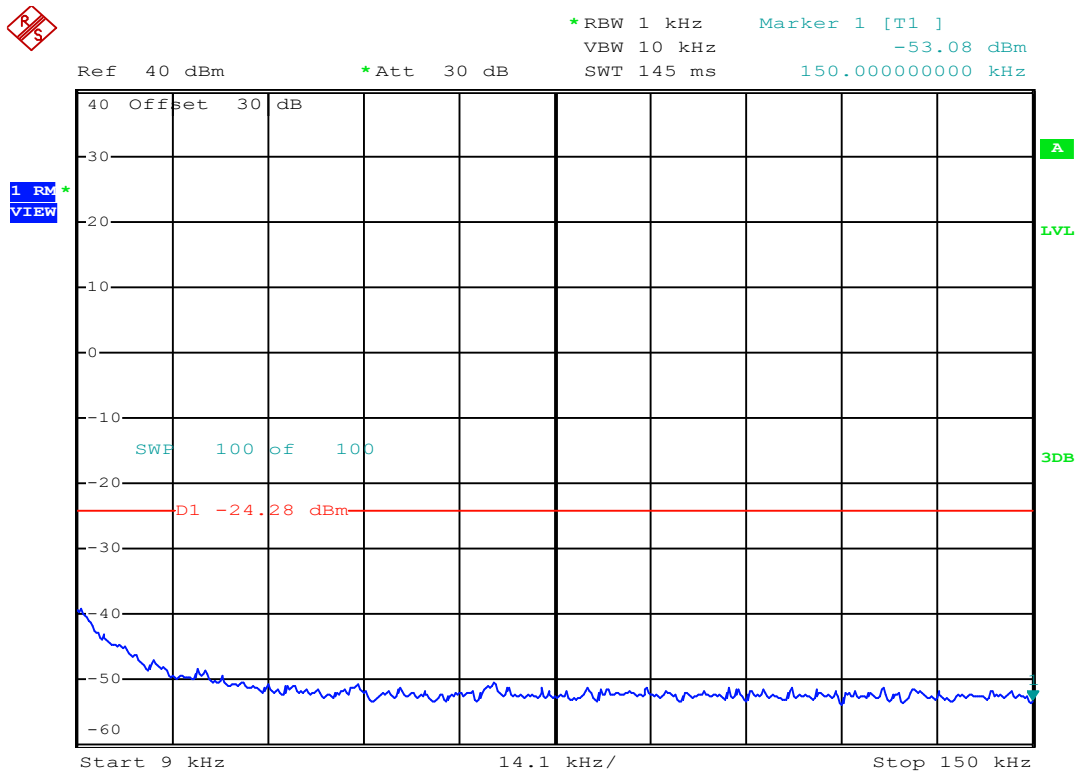
Conducted Spurious Emissions:



Channel:	**20**	**Channel Frequency:**	**27.205**	**MHz**
Modulation:	**AM**	**Emission Frequency:**	**81.61**	**MHz**
		Measured Emission:	**-44.16**	**dBm**

Plot 10.6 – Conducted Out of Band Emissions, 9kHz to 150kHz, Channel 20, FM

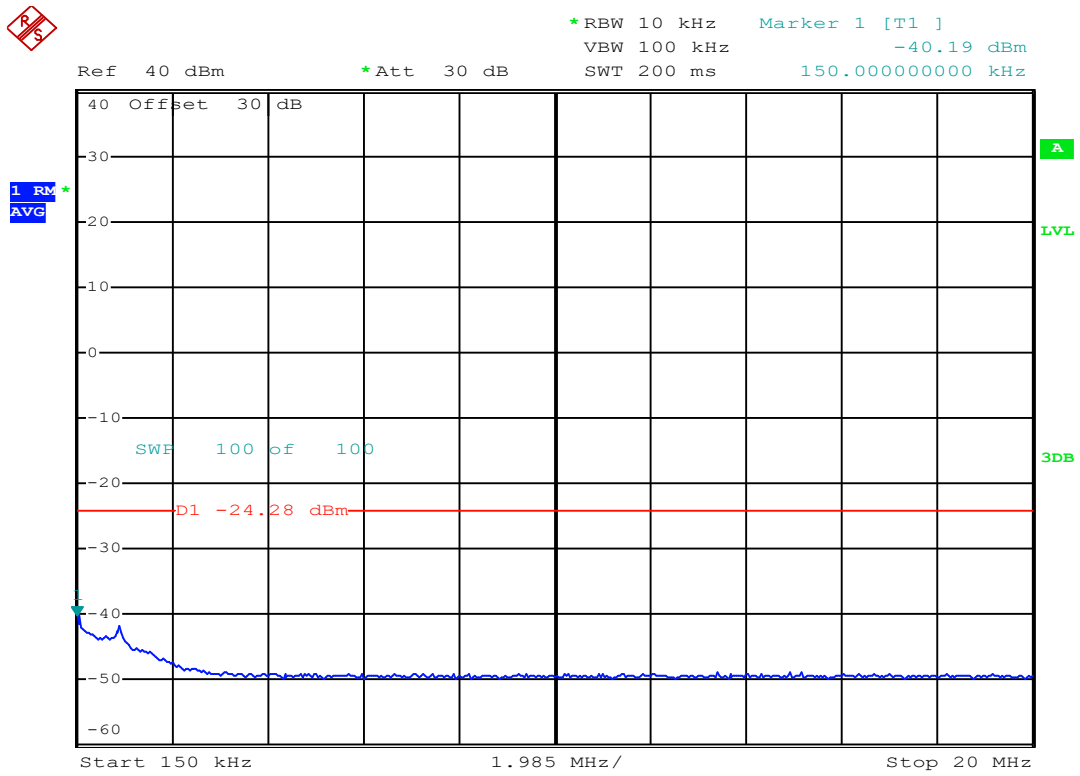
Conducted Spurious Emissions:



Channel:	**20**	**Channel Frequency:**	**27.205**	**MHz**
Modulation:	**FM**	**Emission Frequency:**	**ND**	**MHz**
		Measured Emission:	**ND**	**dBm**

Plot 10.7 – Conducted Out of Band Emissions, 150kHz – 20MHz, Channel 20, FM

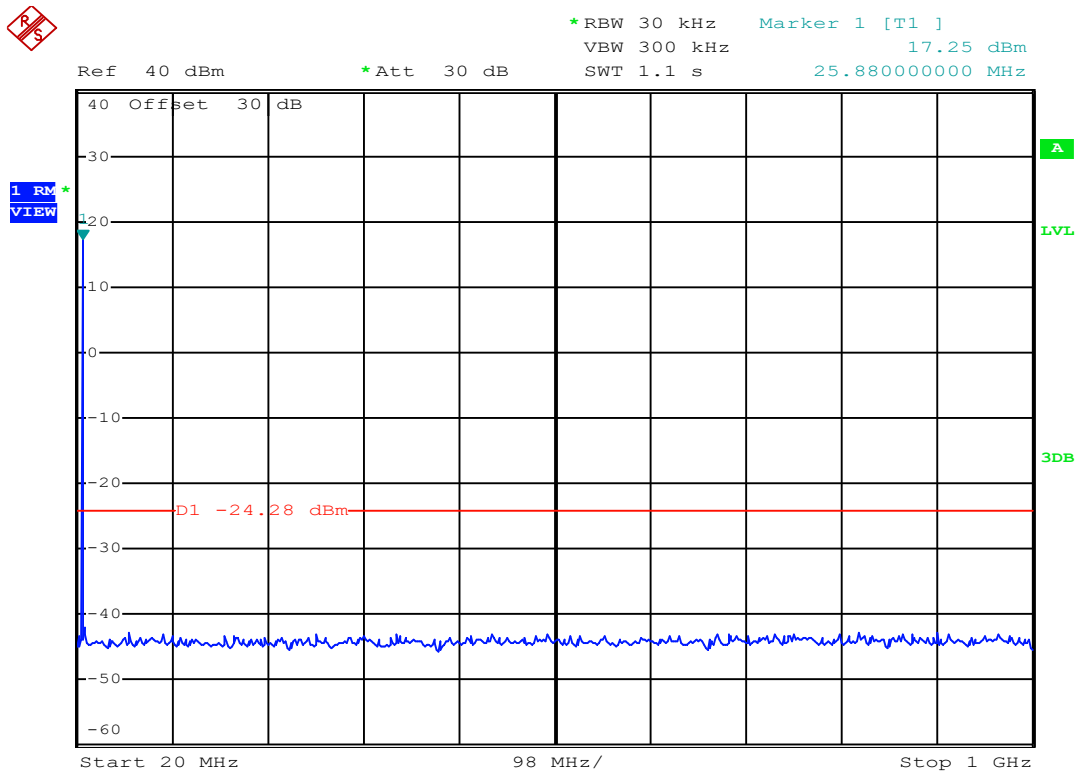
Conducted Spurious Emissions:



Channel:	**20**	**Channel Frequency:**	**27.205**	**MHz**
Modulation:	**FM**	**Emission Frequency:**	**ND**	**MHz**
		Measured Emission:	**ND**	**dBm**

Plot 10.8 – Conducted Out of Band Emissions, 20 – 1000MHz, Channel 20, FM

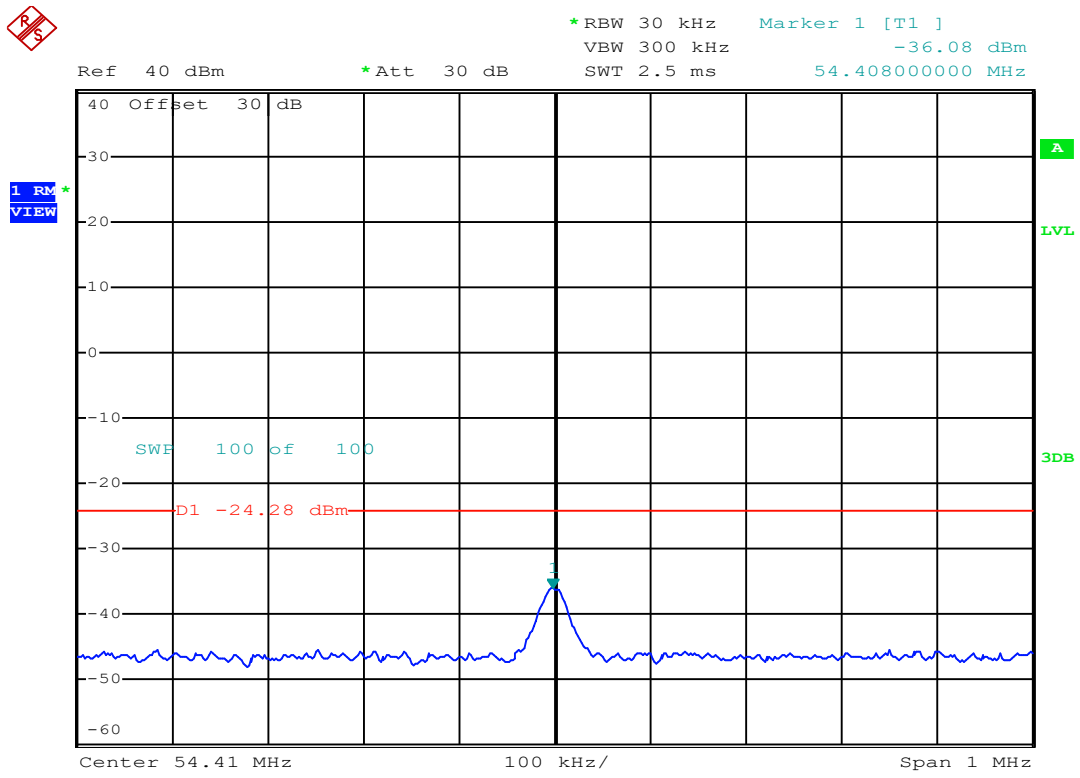
Conducted Spurious Emissions:



Channel:	**20**	**Channel Frequency:**	**27.205**	**MHz**
Modulation:	**FM**	**Emission Frequency:**	**ND**	**MHz**
Marker 1 = Fundamental		**Measured Emission:**	**ND**	**dBm**

Plot 10.9 – Conducted Out of Band Emissions, 2nd Harmonic, Channel 20, FM

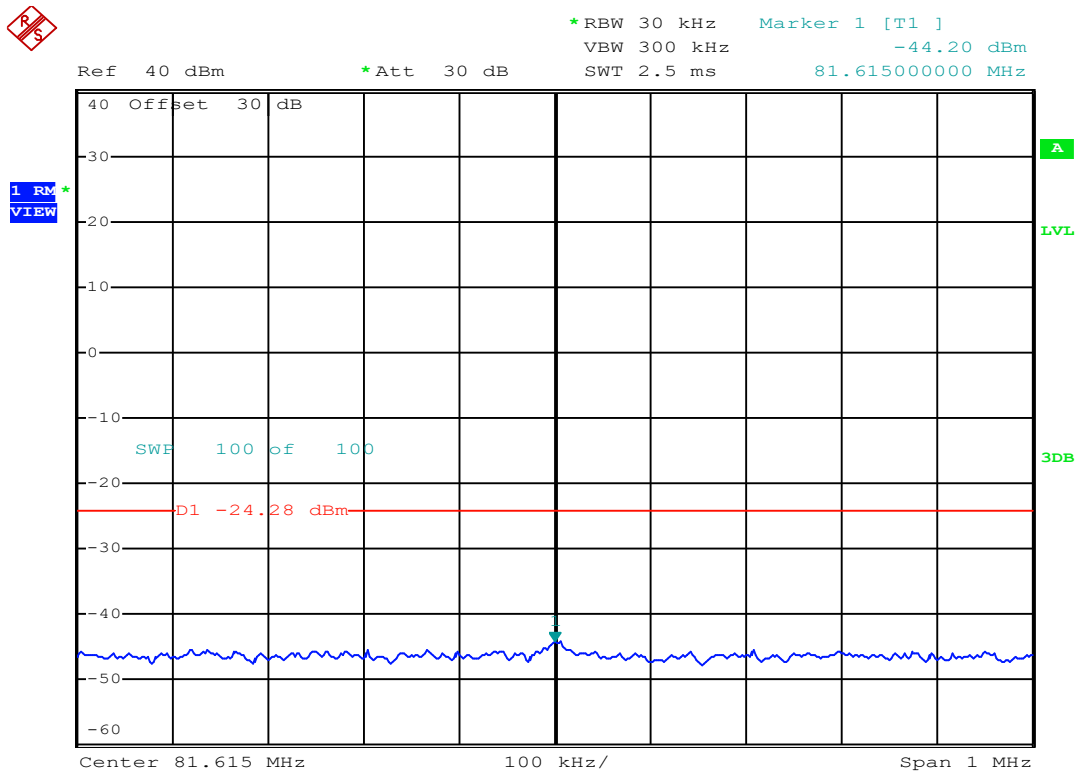
Conducted Spurious Emissions:



Channel:	**20**	**Channel Frequency:**	**27.205**	**MHz**
Modulation:	**FM**	**Emission Frequency:**	**54.41**	**MHz**
		Measured Emission:	**-36.08**	**dBm**

Plot 10.10 – Conducted Out of Band Emissions, 3rd Harmonic, Channel 20, FM

Conducted Spurious Emissions:



Channel:	**20**	**Channel Frequency:**	**27.205**	**MHz**
Modulation:	**FM**	**Emission Frequency:**	**81.62**	**MHz**
		Measured Emission:	**-44.28**	**dBm**

Table 10.1 – Summary of Conducted Out of Band Emissions

Conducted Spurious Emissions Measurement Results:								
Channel Number	Frequency (MHz)	Modulation	Emission Power [P_{Em}] (dBm)	Emission Frequency (MHz)	Fundamental Measurment [P_{Fund}] (dBm)	Attenuation [Atten] (dB)	Limit (dB)	Margin (dB)
20	27.205	AM	-36.19	54.51	35.72	71.91	60	11.91
			-44.16	81.61	35.72	79.88		19.88
		FM	-36.08	54.41	35.70	71.80		11.80
			-44.28	81.62	35.70	80.00		20.00
								Complies

Attenuation [Atten] = [P_{Fund}] - [P_{Em}]
Margin = Attenuation - Limit
ND = None Detected

11.0 RADIATED SPURIOUS TX EMISSIONS

Test Conditions	
Normative Reference	**FCC 47 CFR §95.979, RSS-236, ANSI C63.10**

Limits	
47 CFR §95.979 RSS-Gen RSS-236	Each CBRS transmitter type must be designed to comply with the applicable unwanted emissions limits in this section. (a) Attenuation requirements. The power of unwanted emissions must be attenuated below the transmitter output power in Watts (P) as specified in the applicable paragraphs listed in the following table: For A3E, F3E (1), (3), (5), (6) (1) 25 dB (decibels) in the frequency band 4 kHz to 8 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; (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. (c) Measurement conditions and procedures. Subject to additional measurement standards and procedures established pursuant to part 2, subpart J, the following conditions and procedures must be used. (1) The unwanted emissions limits requirements in this section must be met both with and without the connection of permitted attachments, such as external speakers, microphones, power cords and/or antennas.

Measurement Procedure

TIA 382 22.2 Transmitter Radiated Spurious and Harmonic Emissions

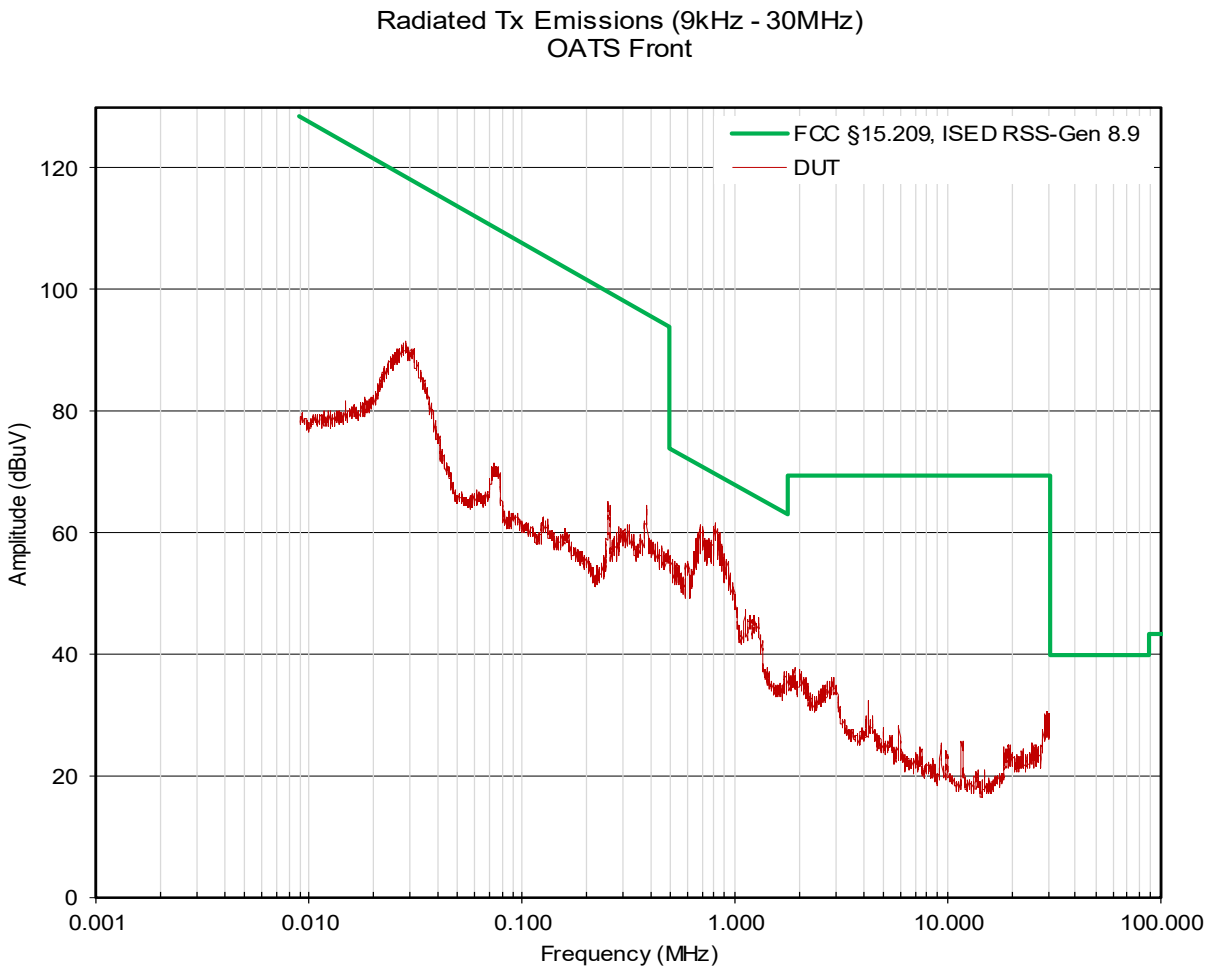
The transmitter shall be terminated in a nonradiating dummy load and shall be keyed but not modulated.

For each spurious frequency, raise and lower the receiver antenna to obtain a maximum reading on the FIM with the antenna at horizontal polarity. Then the turntable should be rotated to further increase this maximum reading. Repeat this procedure of raising and lowering the antenna and rotating the turntable until the highest possible signal has been obtained. The effect of the simulated accessory connections shall be noted, so that the measurement series producing the maximum radiation level can be recorded. Measurements were repeated with and without approved accessories.

Test Setup	Appendix A Figure A.3

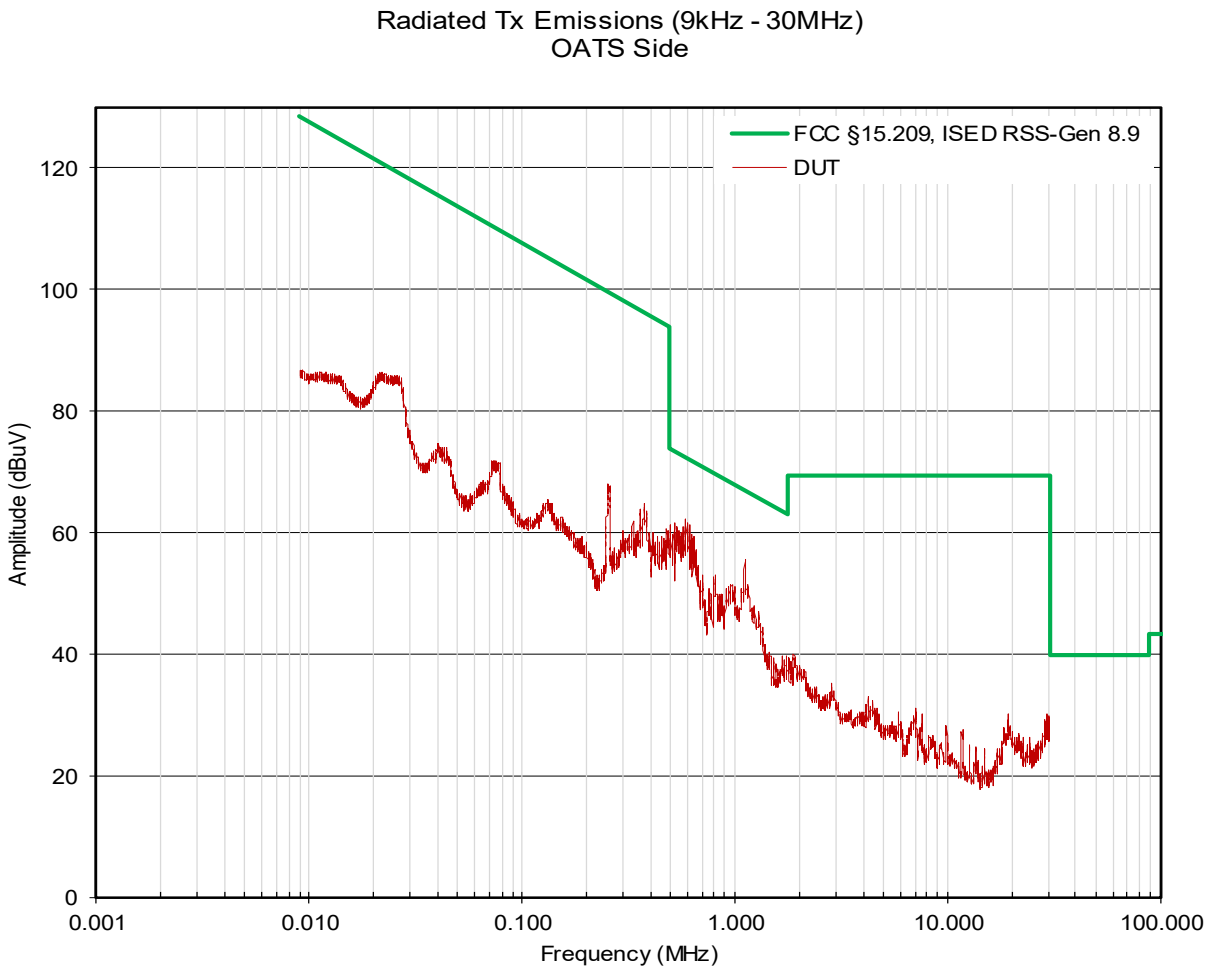
Plot 11.1 – Radiated Spurious Emissions OATS, 9kHz - 30MHz, without Accessories, Front

Radiated Tx Emissions:



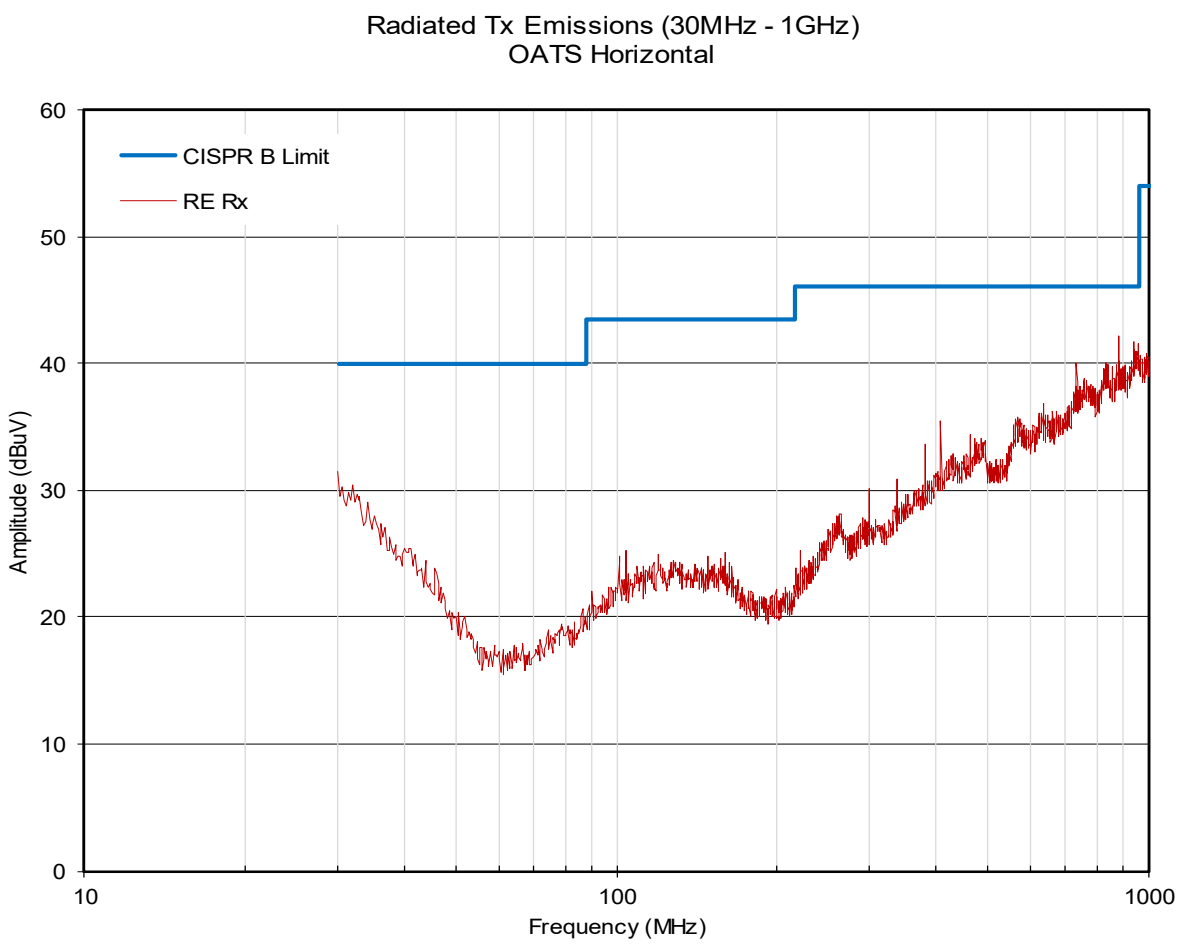
Plot 11.2 – Radiated Spurious Emissions OATS, 9kHz - 30MHz, without Accessories, Side

Radiated Tx Emissions:



Plot 11.3 – Radiated Spurious Emissions OATS, 30 - 1000MHz, without Accessories, Horizontal

Radiated Tx Emissions:



Plot 11.4 – Radiated Spurious Emissions OATS, 30 - 1000MHz, without Accessories, Vertical

Radiated Tx Emissions:

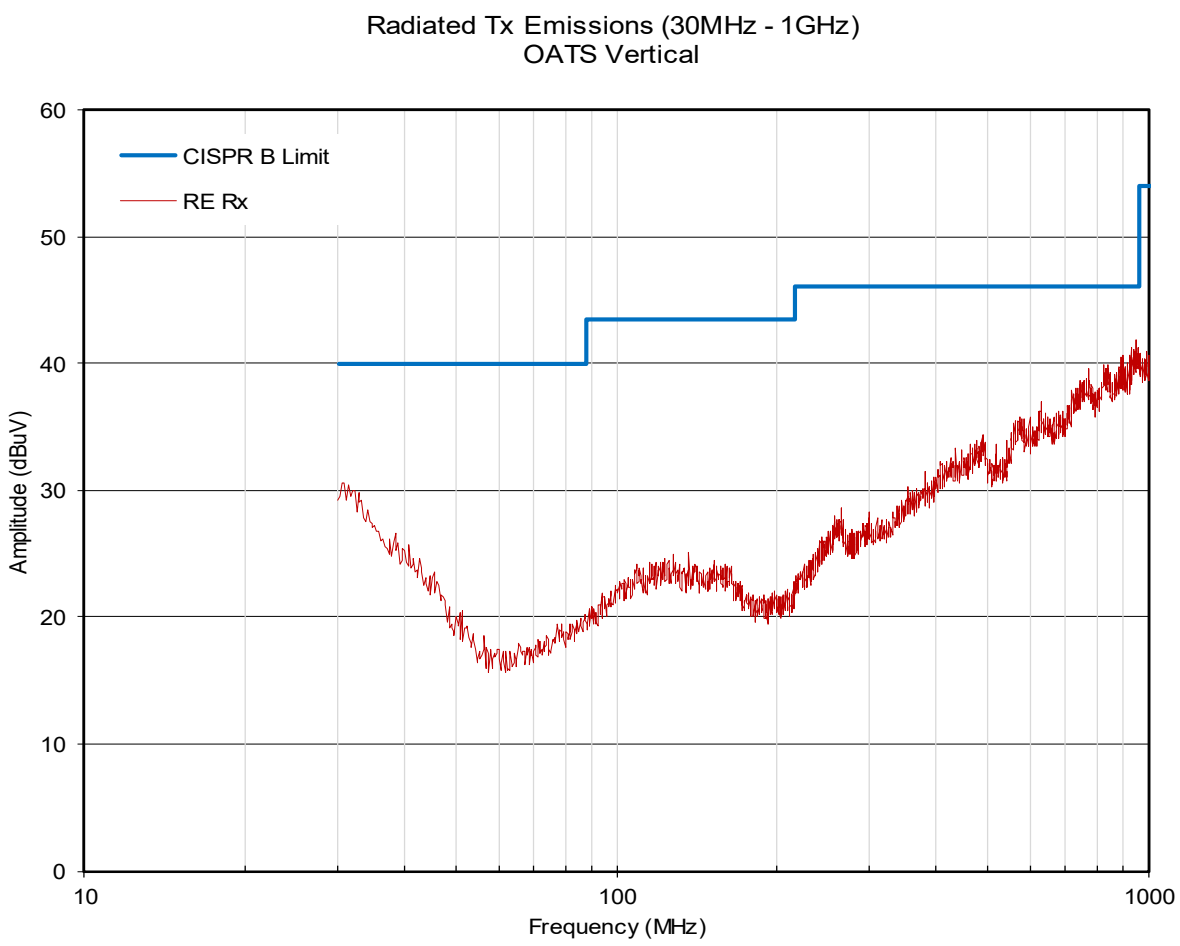


Table 11.1 – Summary of Radiated Tx Emissions, without Accessories

Summary of Radiated Tx Emissions w/o Accessories									
Measured Frequency Range (MHz)	Antenna Polarization	Emission Frequency (MHz)	Measured Emission [E_{Meas}] (dBuV)	Antenna ACF [ACF] (dB)	Cable Loss [L_C] (dB)	Amplifier Gain [G_A] (dB)	Corrected Emission [E_{Corr}] (dBuV/m)	Limit (dBuV)	Margin (dB)
.009 - 30	Front	**0.710**	47.83 AV	10.07	0.44	0.00 (3)	**58.3** (2)	70.6	**12.2**
.009 - 30	Front	**0.824**	50.32 AV	10.04	0.44	0.00 (3)	**60.8** (2)	69.3	**8.5**
.009 - 30	Front	**1.182**	33.63 AV	10.32	0.45	0.00 (3)	**44.4** (2)	66.2	**21.8**
.009 - 30	Side	**0.597**	48.39 AV	10.07	0.44	0.00 (3)	**58.9** (2)	72.1	**13.2**
.009 - 30	Side	**0.822**	40.32 AV	10.04	0.44	0.00 (3)	**50.8** (2)	69.3	**18.5**
.009 - 30	Side	**1.142**	43.23 AV	10.33	0.45	0.00 (3)	**54.0** (2)	66.4	**12.4**
30-1000	Horizontal	**388.11**	9.89 AV	20.80	1.88	0.00 (3)	**32.6** (2)	45.0	**12.4**
30-1000	Horizontal	**415.24**	9.21 AV	21.72	1.95	0.00 (3)	**32.9** (2)	45.0	**12.1**
30-1000	Horizontal	**415.96**	9.69 AV	21.80	1.95	0.00 (3)	**33.4** (2)	45.0	**11.6**
30-1000	Horizontal	**470.93**	8.54 AV	22.70	2.10	0.00 (3)	**33.3** (2)	45.0	**11.7**
30-1000	Horizontal	**896.48**	9.07 AV	29.20	2.92	0.00 (3)	**41.2** (2)	45.0	**3.8**
30-1000	Vertical	**ND**	**ND** AV	-	-	0.00 (3)	**ND** (2)	-	**-**
							Results:	**Complies**	

ND: No Emissions Detected above ambient or within 20dB of the limit

(2) Antenna ACF, Cable Loss and Amplifier Gain corrected in Spectrum Analyzer Transducer Factor

(3) External Amplier not used

$E_{Corr} = E_{Meas} + ACF^E + L_C - G_A$

Where ACF^E is the Electric Antenna Correction Factor

Table 11.2 – Summary of Radiated Tx Emissions, without Accessories, <30MHz

Summary of Radiated Tx Emissions ISED RSS-Gen 6.5 (Below 30MHz) w/o Accessories									
Measured Frequency Range (MHz)	Antenna Polarization	Emission Frequency (MHz)	Measured Emission [E_{Meas}] (dBuV)	Antenna ACF [ACF^H] (dB/Ωm)	Cable Loss [L_C] (dB)	Amplifier Gain [G_A] (dB)	Corrected Emission [H_{Corr}] (dBuA/m)	Limit (dBuA/m)	Margin (dB)
.009 - 30	Front	**0.7100**	47.83 AV	-41.43	0.44	0.00 (3)	6.84 (2)	19.1	**12.2**
.009 - 30	Front	**0.8242**	50.32 AV	-41.46	0.44	0.00 (3)	9.30 (2)	17.8	**8.5**
.009 - 30	Front	**1.1817**	33.63 AV	-41.18	0.45	0.00 (3)	-7.10 (2)	14.7	**21.8**
.009 - 30	Side	**0.5969**	48.40 AV	-41.44	0.44	0.00 (3)	7.40 (2)	20.6	**13.2**
.009 - 30	Side	**0.8221**	40.32 AV	-41.46	0.44	0.00 (3)	-0.70 (2)	17.8	**18.5**
.009 - 30	Side	**1.1424**	43.23 AV	-41.17	0.45	0.00 (3)	2.50 (2)	14.9	**12.4**

ND: No Emissions Detected above ambient or within 20dB of the limit

(2) Antenna ACF, Cable Loss and Amplifier Gain corrected in Spectrum Analyzer Transducer Factor

(3) External Amplier not used

$H_{Corr}(dBuA/m) = E_{Meas}(dBuV) + ACF^H(dB/\Omega m) + L_C - G_A$

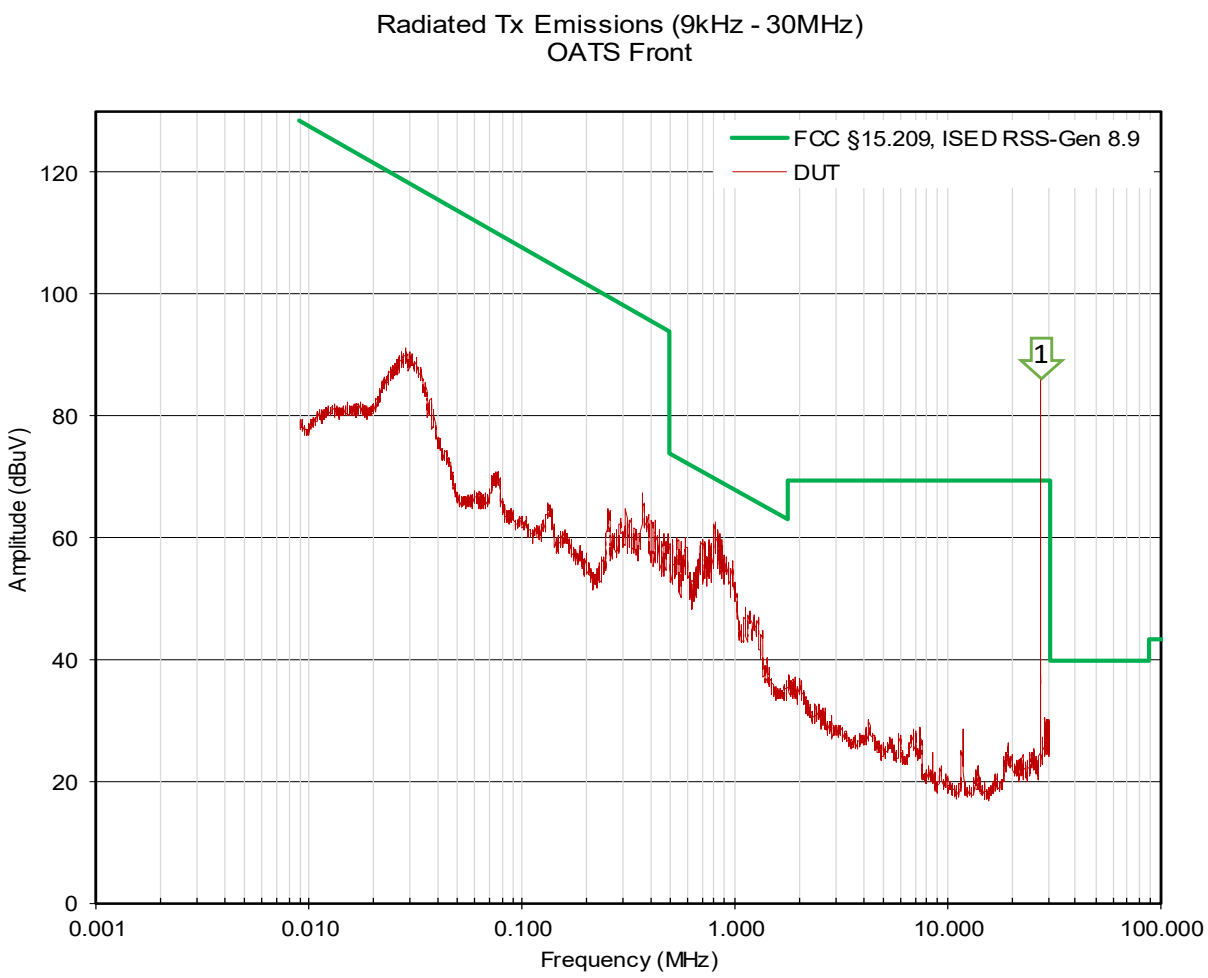
Where ACF^H is the Magnetic Antenna Correction Factor

$ACF^H(dB/\Omega m) = ACF^E(dB/m) - Z0(dB\Omega)$

Where $Z_0 = 120\pi\Omega = 377\Omega$, $Z_0(dB\Omega) = 20Log(377) = 51.5dB\Omega$

Plot 11.5 – Radiated Spurious Emissions OATS, 9kHz - 30MHz, with Accessories, Front

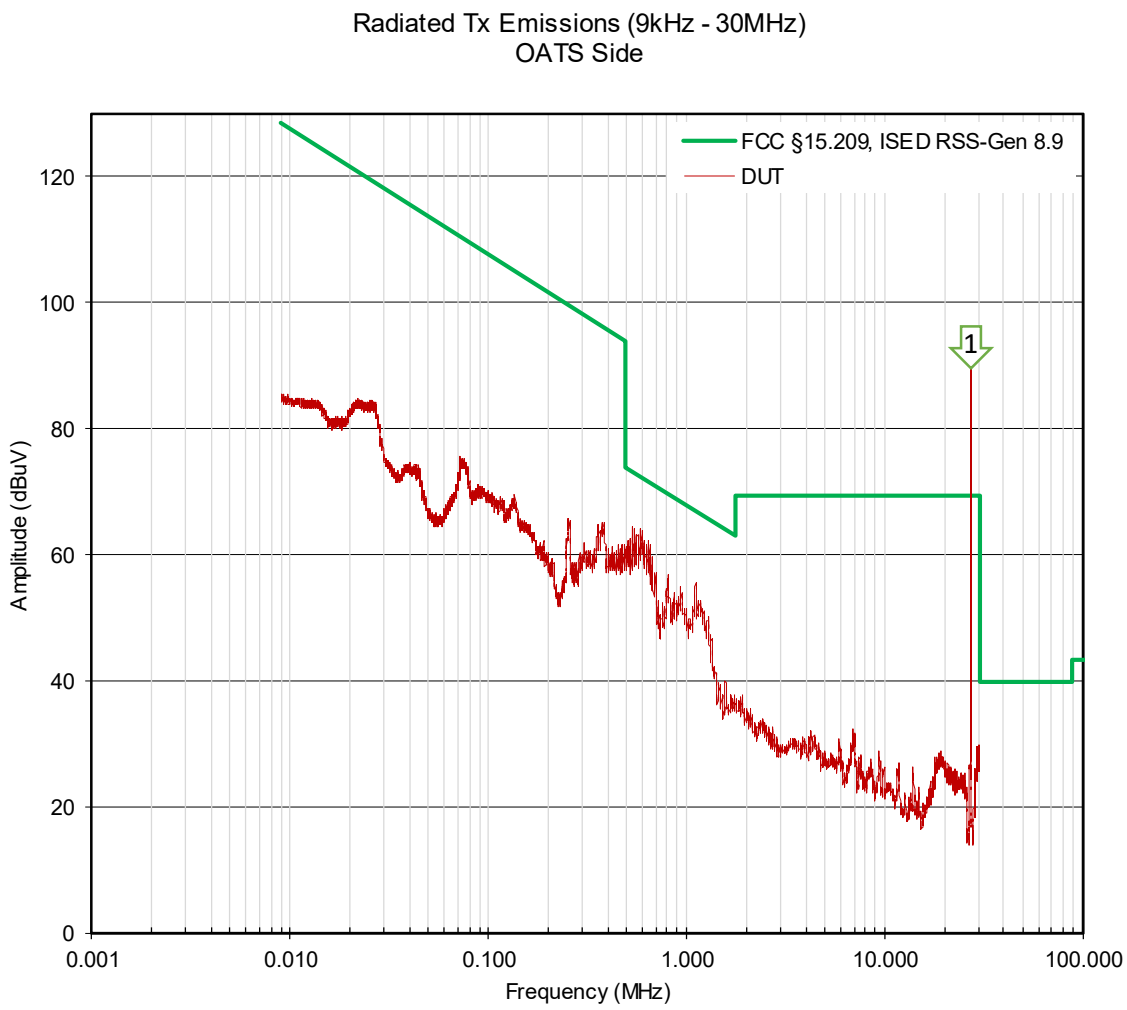
Radiated Rx Emissions:



Marker 1 = Fundamental

Plot 11.6 – Radiated Spurious Emissions OATS, 9kHz - 30MHz, with Accessories, Side

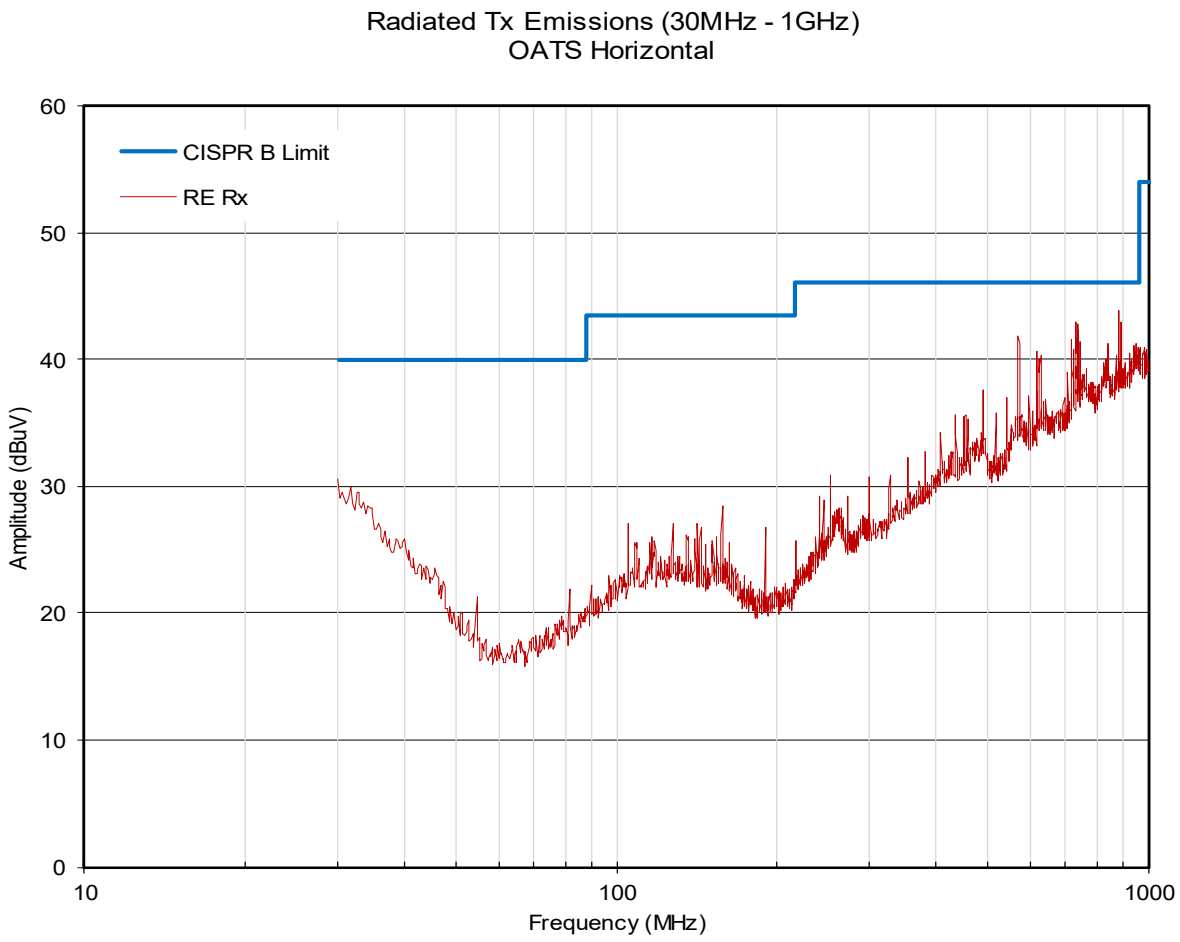
Radiated Rx Emissions:



Marker 1 = Fundamental

Plot 11.7 – Radiated Spurious Emissions OATS, 30 - 1000MHz, with Accessories, Horizontal

Radiated Tx Emissions:



Plot 11.8 – Radiated Spurious Emissions OATS, 30 - 1000MHz, with Accessories, Vertical

Radiated Tx Emissions:

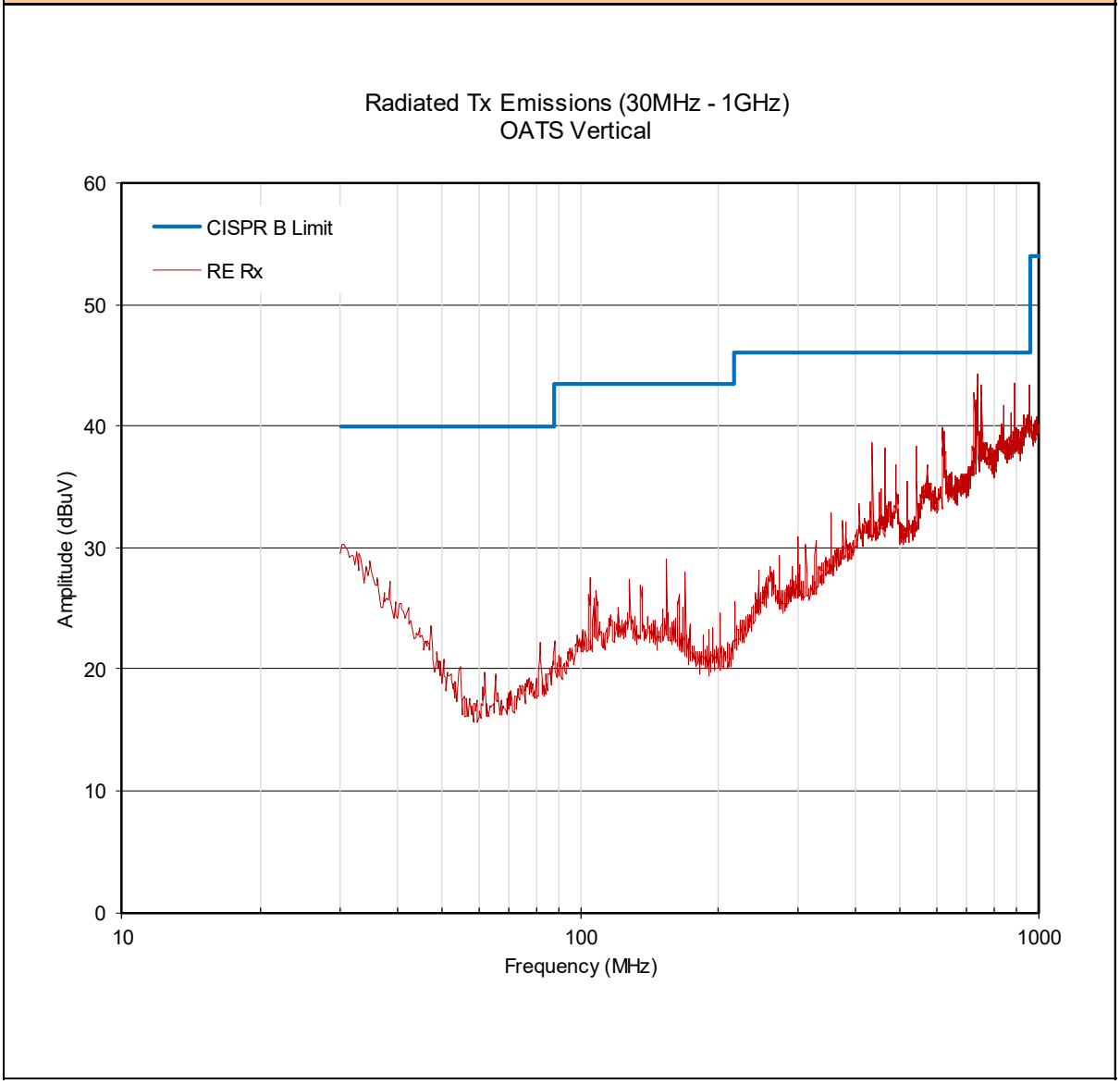


Table 11.3 – Summary of Radiated Tx Emissions, with Accessories

Summary of Radiated Tx Emissions w/ Accessories									
Measured Frequency Range (MHz)	Antenna Polarization	Emission Frequency (MHz)	Measured Emission [E_{Meas}] (dBuV)	Antenna ACF [ACF] (dB)	Cable Loss [L_C] (dB)	Amplifier Gain [G_A] (dB)	Corrected Emission [E_{Corr}] (dBuV/m)	Limit (dBuV)	Margin (dB)
.009 - 30	Front	**0.545**	48.33 AV	10.03	0.44	0.00 (3)	**58.8** (2)	72.9	**14.1**
.009 - 30	Front	**0.714**	48.89 AV	10.07	0.44	0.00 (3)	**59.4** (2)	70.5	**11.1**
.009 - 30	Front	**0.822**	49.22 AV	10.04	0.44	0.00 (3)	**59.7** (2)	69.3	**9.6**
.009 - 30	Front	**1.131**	35.33 AV	10.33	0.45	0.00 (3)	**46.1** (2)	66.5	**20.4**
.009 - 30	Side	**0.552**	51.33 AV	10.03	0.44	0.00 (3)	**61.8** (2)	72.8	**11.0**
.009 - 30	Side	**0.598**	51.29 AV	10.07	0.44	0.00 (3)	**61.8** (2)	72.1	**10.3**
.009 - 30	Side	**0.826**	43.52 AV	10.04	0.44	0.00 (3)	**54.0** (2)	69.3	**15.3**
.009 - 30	Side	**1.121**	42.73 AV	10.33	0.45	0.00 (3)	**53.5** (2)	66.6	**13.1**
30-1000	Horizontal	**161.14**	11.90 AV	15.39	1.21	0.00 (3)	**28.5** (2)	43.5	**15.0**
30-1000	Horizontal	**193.91**	9.52 AV	13.89	1.33	0.00 (3)	**24.7** (2)	43.5	**18.8**
30-1000	Horizontal	**581.60**	12.06 AV	25.44	2.37	0.00 (3)	**39.9** (2)	45.0	**5.1**
30-1000	Horizontal	**630.16**	11.81 AV	26.42	2.47	0.00 (3)	**40.7** (2)	45.0	**4.3**
30-1000	Horizontal	**745.58**	11.38 AV	28.70	2.69	0.00 (3)	**42.8** (2)	45.0	**2.2**
30-1000	Horizontal	**896.48**	10.77 AV	29.20	2.9	0.00 (3)	**42.9** (2)	45.0	**2.1**
30-1000	Vertical	**107.16**	8.79 AV	15.82	1.01	0.00 (3)	**25.6** (2)	43.5	**17.9**
30-1000	Vertical	**156.29**	10.18 AV	15.67	1.19	0.00 (3)	**27.0** (2)	43.5	**16.5**
30-1000	Vertical	**171.56**	12.25 AV	14.49	1.25	0.00 (3)	**28.0** (2)	43.5	**15.5**
30-1000	Vertical	**438.74**	11.83 AV	22.00	2.02	0.00 (3)	**35.8** (2)	45.0	**9.2**
30-1000	Vertical	**466.32**	11.43 AV	22.63	2.09	0.00 (3)	**36.1** (2)	45.0	**8.9**
30-1000	Vertical	**549.04**	11.66 AV	24.41	2.3	0.00 (3)	**38.4** (2)	45.0	**6.6**
30-1000	Vertical	**628.93**	10.80 AV	26.29	2.46	0.00 (3)	**39.6** (2)	45.0	**5.4**
30-1000	Vertical	**733.56**	11.70 AV	28.40	2.66	0.00 (3)	**42.8** (2)	45.0	**2.2**
30-1000	Vertical	**761.14**	9.89 AV	28.60	2.71	0.00 (3)	**41.2** (2)	45.0	**3.8**
							Results:	**Complies**	

ND: No Emissions Detected above ambient or within 20dB of the limit

(2) Antenna ACF, Cable Loss and Amplifier Gain corrected in Spectrum Analyzer Transducer Factor

(3) External Amplier not used

$E_{Corr} = E_{Meas} + ACF^E + L_C - G_A$

Where ACF^E is the Electric Antenna Correction Factor

Table 11.4 – Summary of Radiated Tx Emissions, with Accessories < 30MHz

Summary of Radiated Tx Emissions ISED RSS-Gen 6.5 (Below 30MHz) w/ Accessories									
Measured Frequency Range (MHz)	Antenna Polarization	Emission Frequency (MHz)	Measured Emission [E_{Meas}] (dBuV)	Antenna ACF [ACF^H] (dB/Ωm)	Cable Loss [L_C] (dB)	Amplifier Gain [G_A] (dB)	Corrected Emission [H_{Corr}] (dBuA/m)	Limit (dBuA/m)	Margin (dB)
.009 - 30	Front	**0.5454**	48.34 AV	-41.48	0.44	0.00 (3)	7.30 (2)	21.4	**14.1**
.009 - 30	Front	**0.7140**	48.89 AV	-41.43	0.44	0.00 (3)	7.90 (2)	19.0	**11.1**
.009 - 30	Front	**0.8221**	49.22 AV	-41.46	0.44	0.00 (3)	8.20 (2)	17.8	**9.6**
.009 - 30	Side	**1.1312**	35.33 AV	-41.17	0.45	0.00 (3)	-5.40 (2)	15.0	**20.4**
.009 - 30	Side	**0.5518**	51.34 AV	-41.48	0.44	0.00 (3)	10.30 (2)	21.3	**11.0**
.009 - 30	Side	**0.5979**	51.29 AV	-41.44	0.44	0.00 (3)	10.30 (2)	20.6	**10.3**
.009 - 30	Side	**0.8262**	43.52 AV	-41.46	0.44	0.00 (3)	2.50 (2)	17.8	**15.3**
.009 - 30	Side	**1.1211**	42.73 AV	-41.17	0.45	0.00 (3)	2.00 (2)	15.1	**13.1**

ND: No Emissions Detected above ambient or within 20dB of the limit

(2) Antenna ACF, Cable Loss and Amplifier Gain corrected in Spectrum Analyzer Transducer Factor

(3) External Amplier not used

$H_{Corr}(dBuA/m) = E_{Meas}(dBuV) + ACF^H(dB/\Omega m) + L_C - G_A$

Where ACF^H is the Magnetic Antenna Correction Factor

$ACF^H(dB/\Omega m) = ACF^E(dB/m) - Z0(dB\Omega)$

Where $Z_0 = 120\pi\Omega = 377\Omega$, $Z_0(dB\Omega) = 20Log(377) = 51.5dB\Omega$

12.0 RADIATED SPURIOUS RX EMISSIONS

Test Procedure	
Normative Reference	**FCC 47 CFR §15.109, ICES-003(6.2)** **ANSI C63.4:2014**

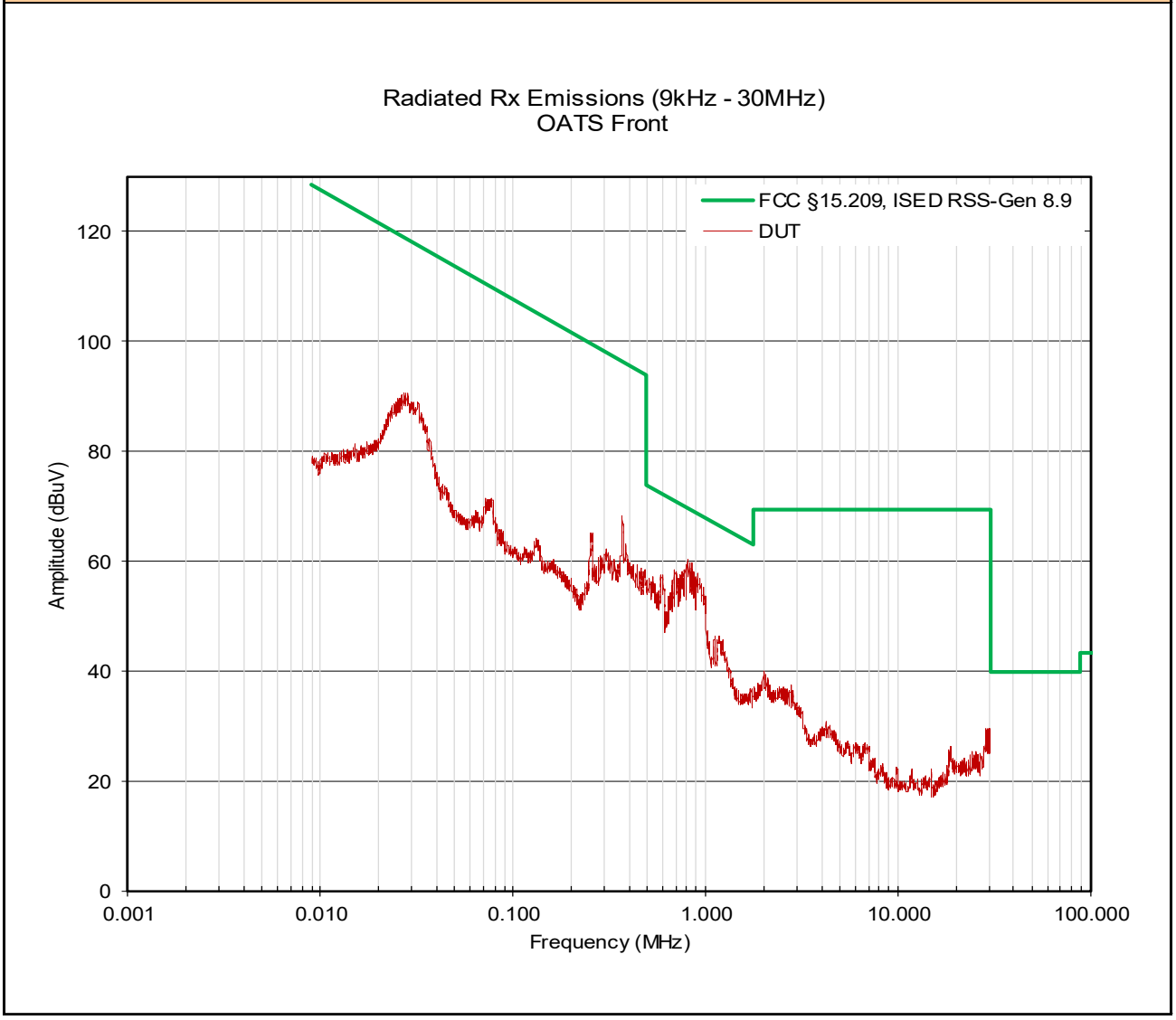
Limits	
47 CFR §15.109	(a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values: 30-88MHz: 40dBuV/m 88-216MHz: 43.5dBuV/m 216-960MHz: 46dBuV/m > 960MHz: 54dBuV/m
ICES-003(6.2.1) RSS-Gen 8.9	6.2.1 - Radiated Emissions Limits Below 1 GHz Class B: ITE that does not meet the conditions for Class A operation shall comply with the Class B radiated limits set out in Table 5 determined at a distance of 3 metres. 30-88MHz: 40dBuV/m 88-216MHz: 43.5dBuV/m 216-960MHz: 46dBuV/m > 960MHz: 54dBuV/m

Test Setup	**Appendix A** **Figure A.3**

Measurement Procedure
The DUT was set up as per ANSI C63.4:2014. Emissions were scanned between 30MHz and 1000MHz. The turntable was rotated 360 degrees and the antenna was elevated to 4m to optimize the measured emissions.

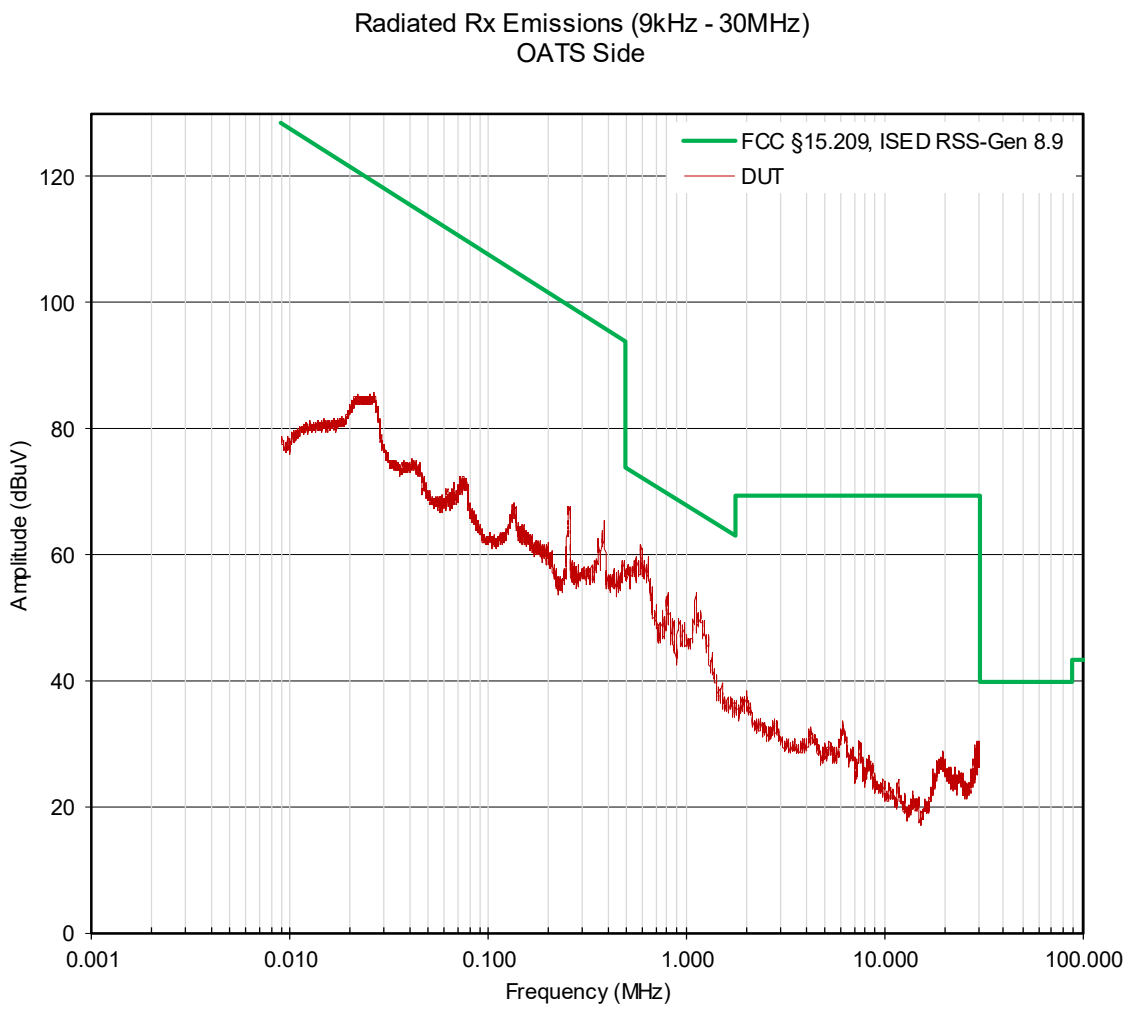
Plot 12.1 – Radiated Rx Emissions OATS, 9kHz - 30MHz, Front

Radiated Rx Emissions:



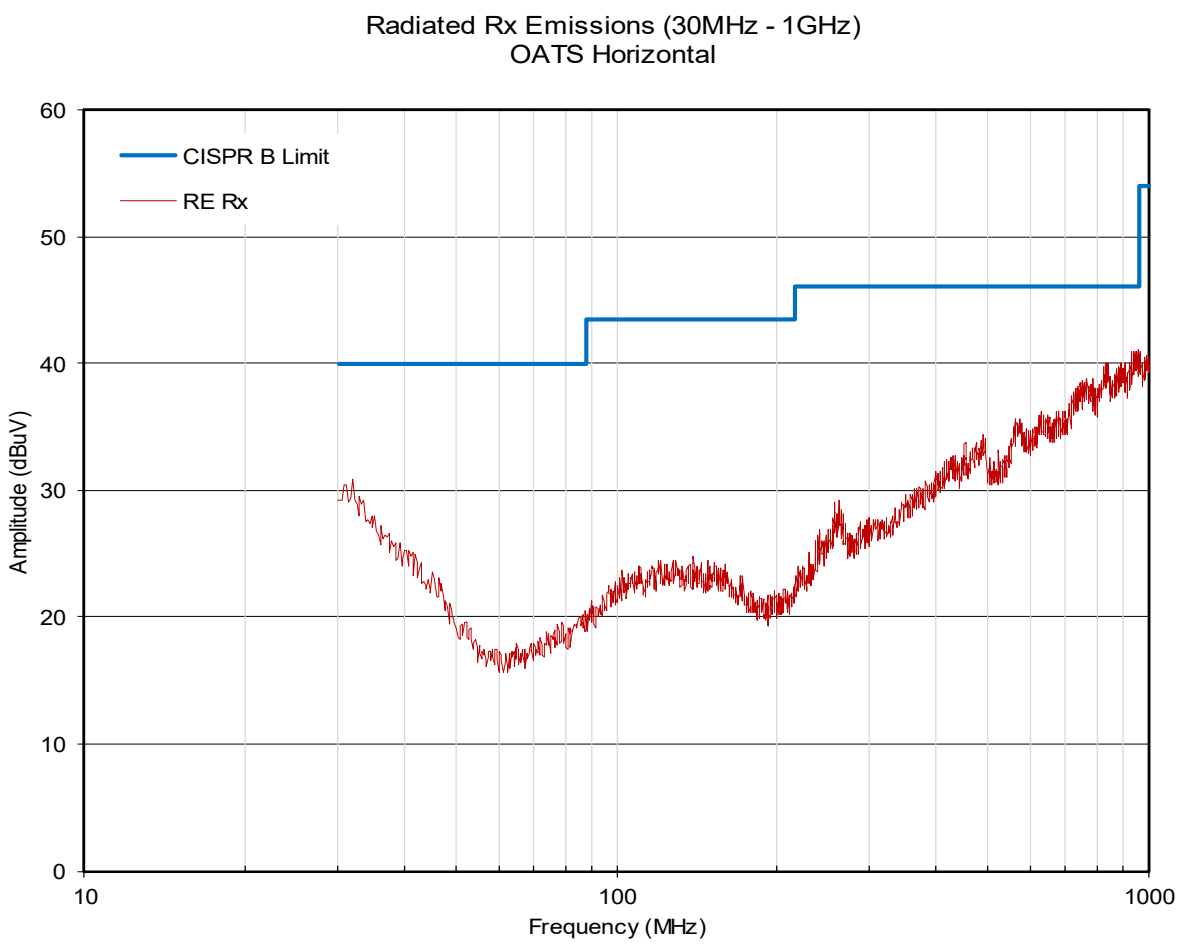
Plot 12.2 – Radiated Rx Emissions OATS, 9kHz - 30MHz, Side

Radiated Rx Emissions:



Plot 12.3– Radiated Spurious Emissions OATS, 30 - 1000MHz, Horizontal

Radiated Rx Emissions:



Plot 12.4– Radiated Spurious Emissions OATS, 30 - 1000MHz, Vertical

Radiated Rx Emissions:

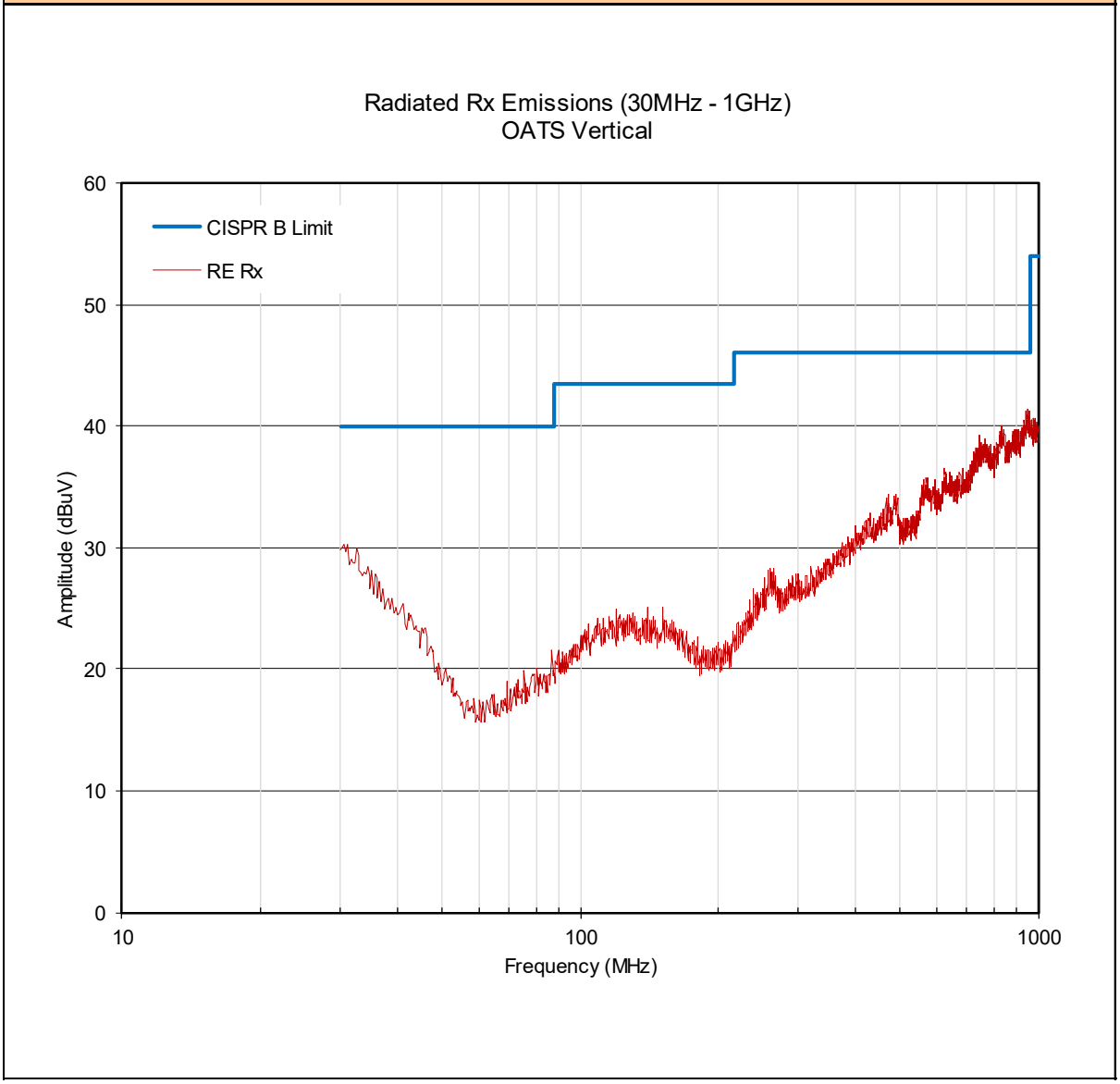


Table 12.1 – Summary of Radiated Rx Emissions

Summary of Radiated Rx Emissions									
Measured Frequency Range (MHz)	Antenna Polarization	Emission Frequency (MHz)	Measured Emission [E_{Meas}] (dBuV)	Antenna ACF [ACF] (dB)	Cable Loss [L_C] (dB)	Amplifier Gain [G_A] (dB)	Corrected Emission [E_{Corr}] (dBuV/m)	Limit (dBuV)	Margin (dB)
.009 - 30	Front	**0.5989**	46.39 AV	10.06440	0.4419	0.00 (3)	**56.9** (2)	72.1	**15.2**
.009 - 30	Front	**0.7171**	46.99 AV	10.06910	0.4427	0.00 (3)	**57.5** (2)	70.5	**13.0**
.009 - 30	Front	**0.8262**	48.92 AV	10.03820	0.4436	0.00 (3)	**59.4** (2)	69.3	**9.9**
.009 - 30	Side	**0.6079**	50.19 AV	10.06680	0.4419	0.00 (3)	**60.7** (2)	71.9	**11.2**
.009 - 30	Side	**0.8303**	42.12 AV	10.03860	0.4436	0.00 (3)	**52.6** (2)	69.2	**16.6**
.009 - 30	Side	**1.1424**	42.43 AV	10.32640	0.4460	0.00 (3)	**53.2** (2)	66.4	**13.2**
30-1000	Vertical	**ND**	**ND**	-	-	0.00 (3)	**ND** (2)	-	**-**
30-1000	Horizontal	**ND**	**ND**	-	-	0.00 (3)	**ND** (2)	-	**-**
							Results:	**Complies**	

ND: No Emissions Detected above ambient or within 20dB of the limit

(2) Antenna ACF, Cable Loss and Amplifier Gain corrected in Spectrum Analyzer Transducer Factor

(3) External Amplier not used

$E_{Corr} = E_{Meas} + ACF^E + L_C - G_A$

Where ACF^E is the Electric Antenna Correction Factor

* Without Manufacturer's Accessories, ** With Manufacturer's Accessories

Summary of Radiated Rx Emissions ISED RSS-Gen 6.5 (Below 30MHz)									
Measured Frequency Range (MHz)	Antenna Polarization	Emission Frequency (MHz)	Measured Emission [E_{Meas}] (dBuV)	Antenna ACF [ACF^H] (dB/Ωm)	Cable Loss [L_C] (dB)	Amplifier Gain [G_A] (dB)	Corrected Emission [H_{Corr}] (dBuA/m)	Limit (dBuA/m)	Margin (dB)
.009 - 30	Front	**0.5989**	46.39 AV	-41.44	0.44	0.00 (3)	5.40 (2)	20.6	**15.2**
.009 - 30	Front	**0.7171**	46.99 AV	-41.43	0.44	0.00 (3)	6.00 (2)	19.0	**13.0**
.009 - 30	Front	**0.8262**	48.92 AV	-41.46	0.44	0.00 (3)	7.90 (2)	17.8	**9.9**
.009 - 30	Side	**0.6079**	50.19 AV	-41.43	0.44	0.00 (3)	9.20 (2)	20.4	**11.2**
.009 - 30	Side	**0.8303**	42.12 AV	-41.46	0.44	0.00 (3)	1.10 (2)	17.7	**16.6**
.009 - 30	Side	**1.1424**	42.43 AV	-41.17	0.45	0.00 (3)	1.70 (2)	14.9	**13.2**

ND: No Emissions Detected above ambient or within 20dB of the limit

(2) Antenna ACF, Cable Loss and Amplifier Gain corrected in Spectrum Analyzer Transducer Factor

(3) External Amplier not used

$H_{Corr}(dBuA/m) = E_{Meas}(dBuV) + ACF^H(dB/\Omega m) + L_C - G_A$

Where ACF^H is the Magnetic Antenna Correction Factor

$ACF^H(dB/\Omega m) = ACF^E(dB/m) - Z0(dB\Omega)$

Where $Z_0 = 120\pi\Omega = 377\Omega$, $Z_0(dB\Omega) = 20Log(377) = 51.5dB\Omega$

13.0 FREQUENCY STABILITY

Test Conditions	
Normative Reference	**FCC 47 CFR §2.1055, §95.965, RSS-Gen, ANSI C63.10**

Limits	
47 CFR §95.965	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 parts-per-million of the channel center frequencies specified in §95.963 under all normal operating conditions.

Measurement Procedure

47 CFR §2.1055 Frequency Stability

(a) The frequency stability shall be measured with variation of ambient temperature as follows:

(1) From -30° to +50° centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.

(b) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10° centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement.

(d) The frequency stability shall be measured with variation of primary supply voltage as follows:

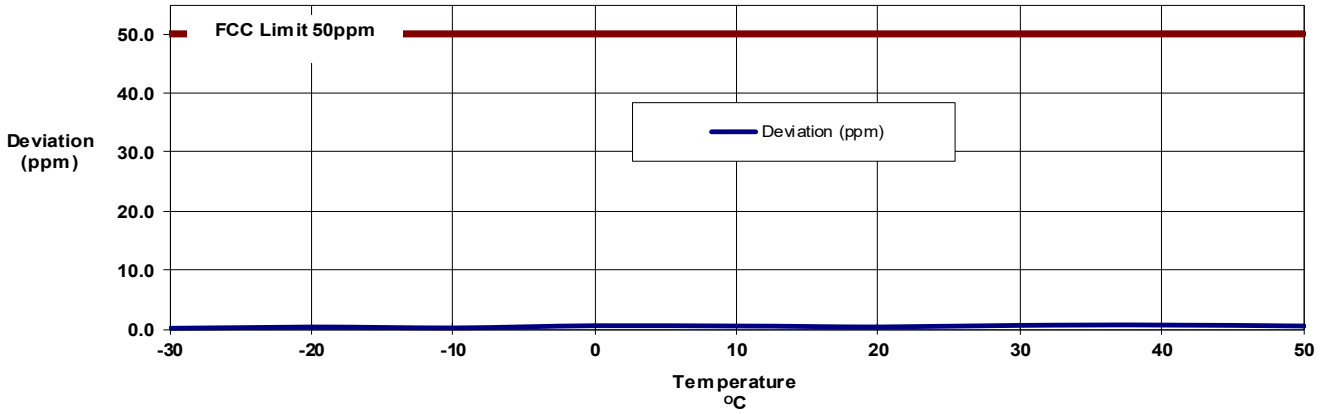
(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

Test Setup	Appendix A Figure A.4

Table 13.1 – Summary of Frequency Stability Results (AM)

Frequency Stability

Nominal Frequency (MHz):	27.205
Nominal Channel BW (KHz):	CW
Nominal Voltage (VDC):	7.4
Nominal Temperature (°C):	20



Frequency Stability Measurements (Temperature)

Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (Hz)	Deviation [Absolute] (ppm)
-30	27.205000	27.2050016	2	0.06
-20		27.2050066	7	0.24
-10		27.2050033	3	0.12
0		27.2050130	13	0.48
10		27.2050126	13	0.46
20		27.2050078	8	0.29
30		27.2050149	15	0.55
40		27.2050174	17	0.64
50		27.2050120	12	0.44
			Maximum Deviation:	0.64
			Maximum Limit:	50.00
			Result:	Complies

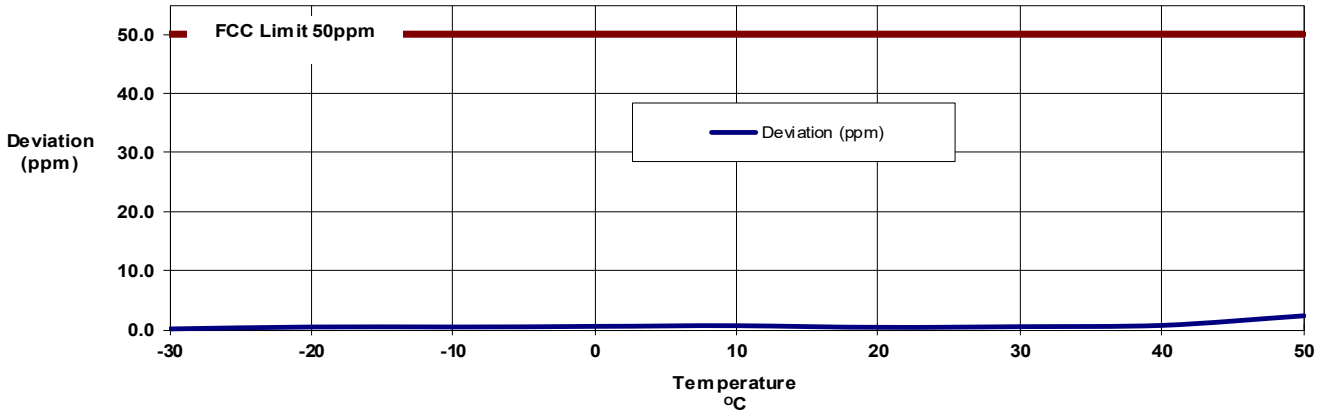
Frequency Stability Measurements (Voltage)

Voltage (VDC)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (Hz)	Deviation [Absolute] (ppm)
7.4 (100%)	27.205000	27.2050078	8	0.29
			Maximum Deviation:	0.29
			Maximum Limit:	50.00
			Result:	Complies

Table 13.2 – Summary of Frequency Stability Results (FM)

Frequency Stability

Nominal Frequency (MHz):	27.205
Nominal Channel BW (KHz):	CW
Nominal Voltage (VDC):	7.4
Nominal Temperature (°C):	20



Frequency Stability Measurements (Temperature)

Temp (°C)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (Hz)	Deviation [Absolute] (ppm)
-30	27.205000	27.2049980	-2	0.07
-20		27.2050106	11	0.39
-10		27.2050104	10	0.38
0		27.2050131	13	0.48
10		27.2050163	16	0.60
20		27.2050085	9	0.31
30		27.2050114	11	0.42
40		27.2050181	18	0.67
50		27.2050610	61	2.24
			Maximum Deviation:	2.24
			Maximum Limit:	50.00
			Result:	Complies

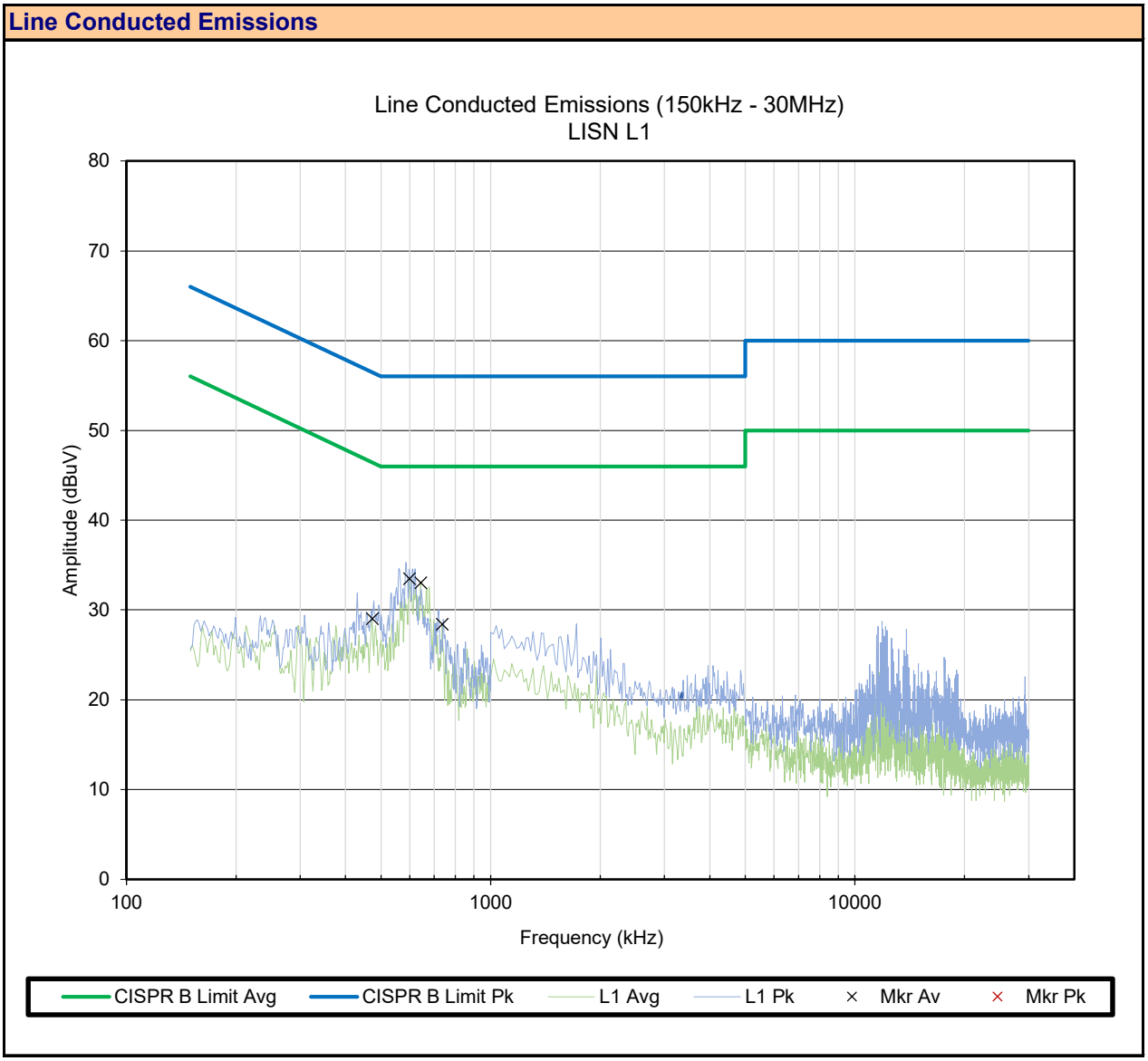
Frequency Stability Measurements (Voltage)

Voltage (VDC)	Assigned Frequency (MHz)	Measured Frequency (MHz)	Deviation (Hz)	Deviation [Absolute] (ppm)
	27.205000			
7.4 (100%)		27.2050085	9	0.31
			Maximum Deviation:	0.31
			Maximum Limit:	50.00
			Result:	Complies

14.0 LINE CONDUCTED EMISSIONS

Plot 14.1– Line Conducted Emissions, L1

Line Conducted Emissions



Plot 14.2– Line Conducted Emissions, L2

Line Conducted Emissions

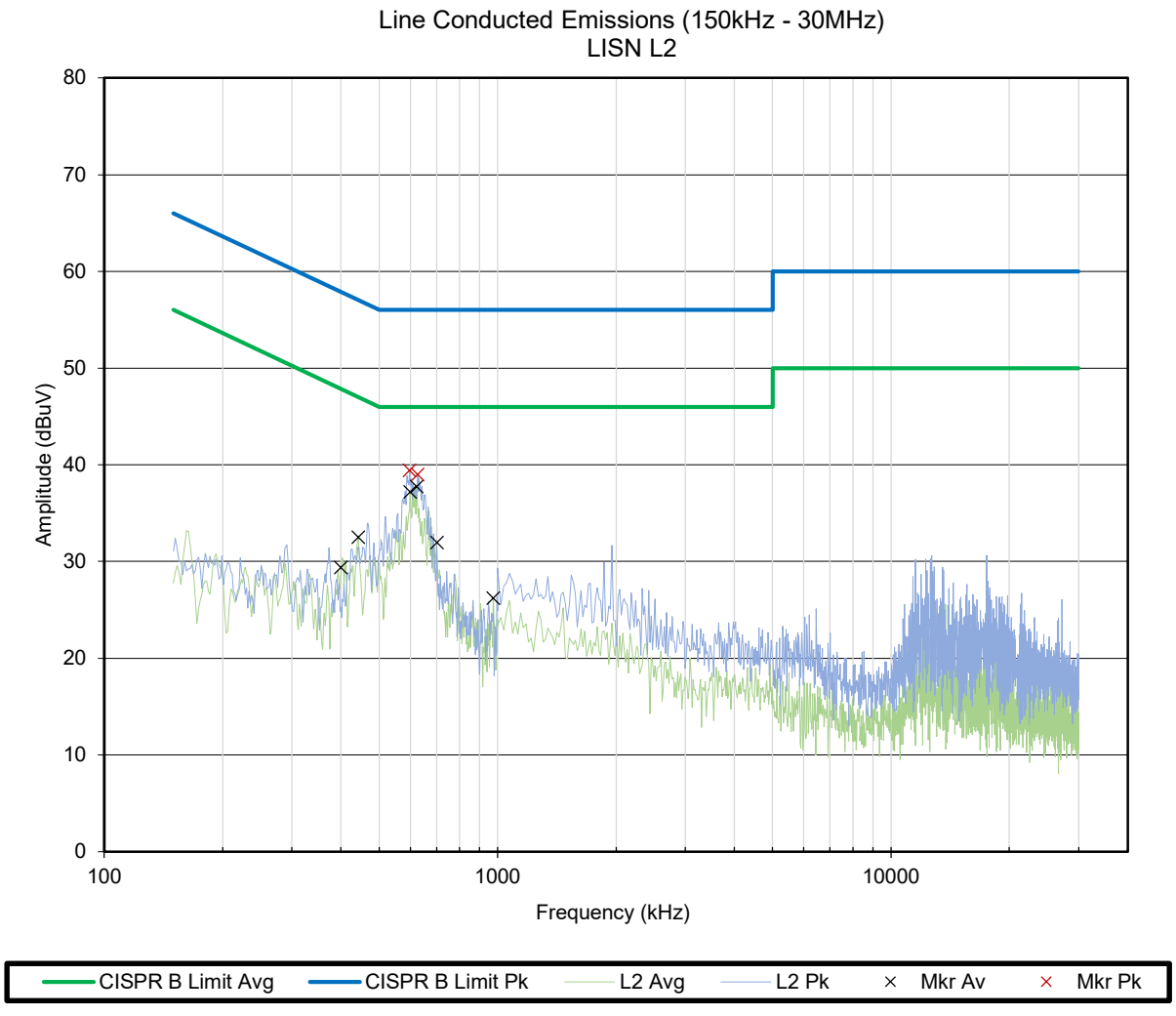


Table 14.1 – Summary of Line Conducted Emissions

§15.107, ICES-003 (6.1)								
Frequency	**LISN Port**	**Meas Detector**	**Measured Emission [E_{Meas}] (dBuV)**	**Cable Loss [L_C] (dB)**	**LISN Loss [L_{LISN}] (dB)**	**Corrected Emission [E_{Corr}] (W)**	**Limit [Limit] (dBuV/m)**	**Margin [Margin] (dB)**
473.0 kHz	L1	Avgerage	28.30	0.50	0.70	29.00	46.5	**17.5**
598.8 kHz	L1	Avgerage	32.83	0.50	0.66	33.49	46.0	**12.5**
643.0 kHz	L1	Avgerage	32.40	0.51	0.64	33.05	46.0	**13.0**
736.5 kHz	L1	Avgerage	27.80	0.52	0.61	28.40	46.0	**17.6**
399.9 kHz	L2	Avgerage	28.48	0.50	0.90	29.38	47.9	**18.6**
442.4 kHz	L2	Avgerage	31.71	0.50	0.82	32.53	47.1	**14.5**
598.8 kHz	L2	Avgerage	36.45	0.50	0.76	37.21	46.0	**8.8**
622.6 kHz	L2	Avgerage	36.99	0.51	0.75	37.74	46.0	**8.3**
700.8 kHz	L2	Avgerage	31.26	0.51	0.72	31.98	46.0	**14.0**
974.5 kHz	L2	Avgerage	25.51	0.55	0.70	26.21	46.0	**19.8**
597.1 kHz	L2	Peak	38.67	0.50	0.76	39.43	56.0	**16.6**
626.0 kHz	L2	Peak	38.26	0.51	0.75	39.01	56.0	**17.0**
							Complies	

$E_{Corr} = E_{Meas} + L_C + AFC$

Margin = Limit - E_{Corr}

** No Emissions within 20dB of the limit detected

APPENDIX A – TEST SETUP DRAWINGS AND EQUIPMENT

Table A.1 – Setup - Conducted Measurements Equipment

Equipment List			
Asset Number	Manufacturer	Model Number	Description
00241	R&S	FSU40	Spectrum Analyzer

Figure A.1 – Test Setup Conducted Measurements

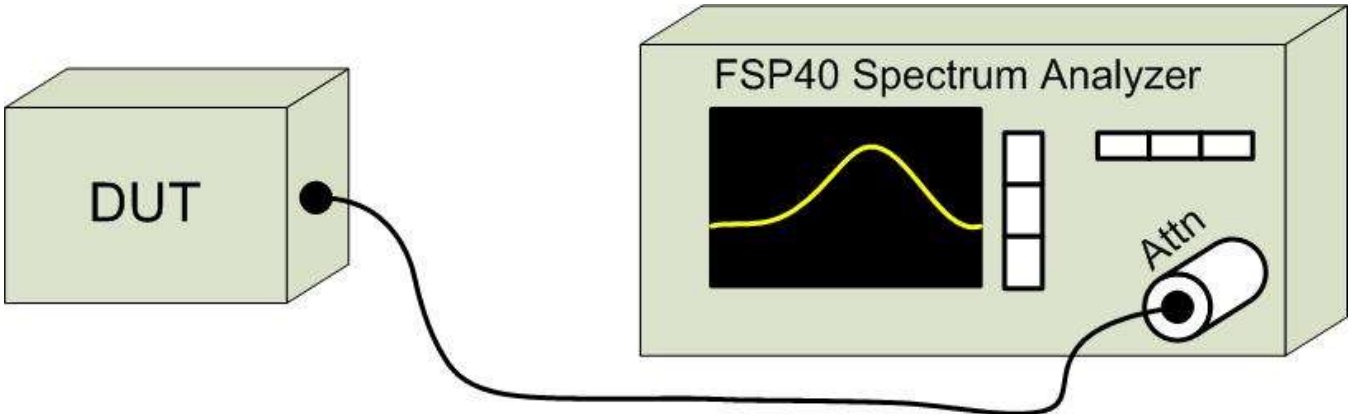


Table A.2 – Setup - Audio Modulation Equipment

Equipment List			
Asset Number	**Manufacturer**	**Model Number**	**Description**
00028	HP	8901A	Modulation Analyzer
00027	HP	8903B	Audio Analyzer/Generator

Figure A.2 – Test Setup Audio Modulation Response Measurements

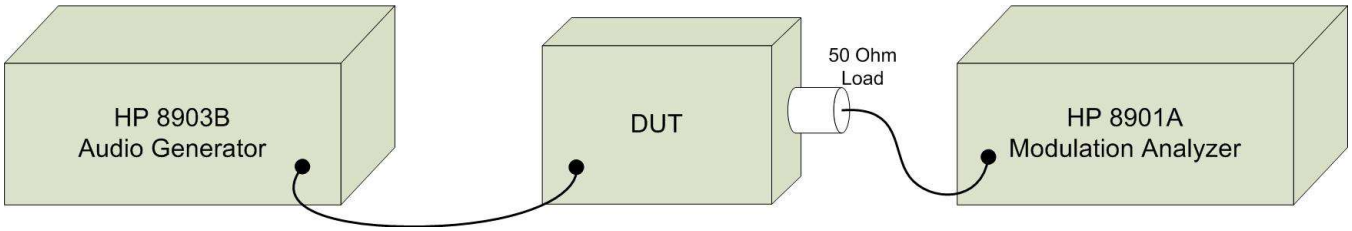


Table A.3 – Setup - Radiated Emissions Equipment

Equipment List			
Asset Number	**Manufacturer**	**Model Number**	**Description**
00051	HP	8566B	Spectrum Analyzer
00049	HP	85650A	Quasi-peak Adapter
00047	HP	85685A	RF Preselector
00072	EMCO	2075	Mini-mast
00073	EMCO	2080	Turn Table
00071	EMCO	2090	Multi-Device Controller
00265	Miteq	JS32-00104000-58-5P	Microwave L/N Amplifier
00241	R&S	FSU40	Spectrum Analyzer
00050	Chase	CBL-6111A	Bilog Antenna
00275	Coaxis	LMR400	25m Cable
00276	Coaxis	LMR400	4m Cable
00278	TILE	34G3	TILE Test Software
00034	ETS	3115	Double Ridged Guide Horn

CNR: Calibration Not Required
COU: Calibrate On Use

Figure A.3 – Test Setup Radiated Emissions Measurements Below 30MHz

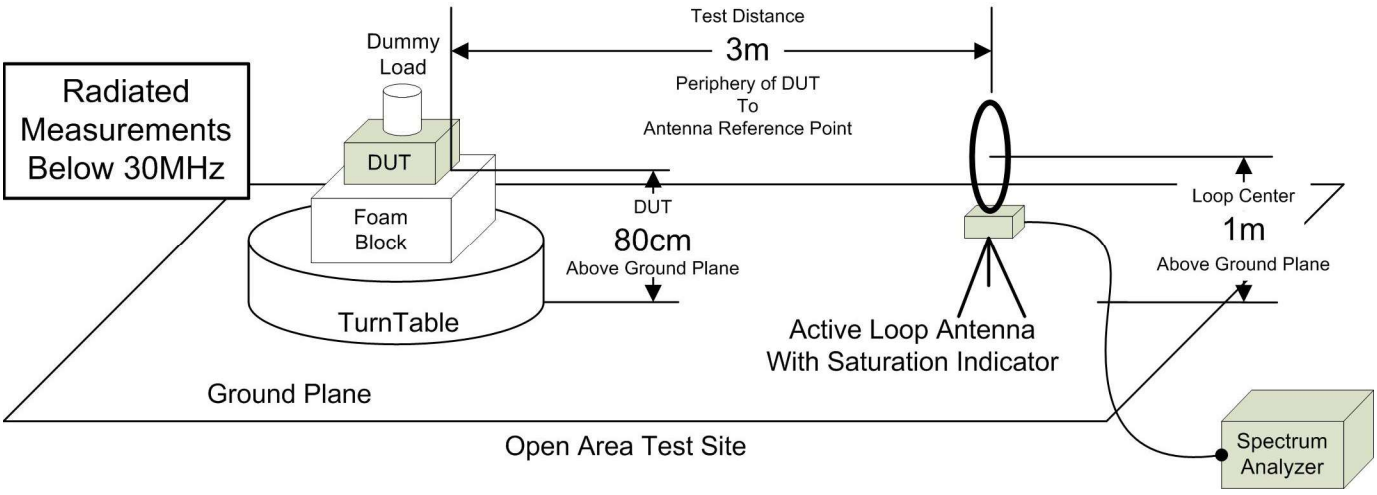


Figure A.4 – Test Setup Radiated Emissions Measurements 30-1000MHz

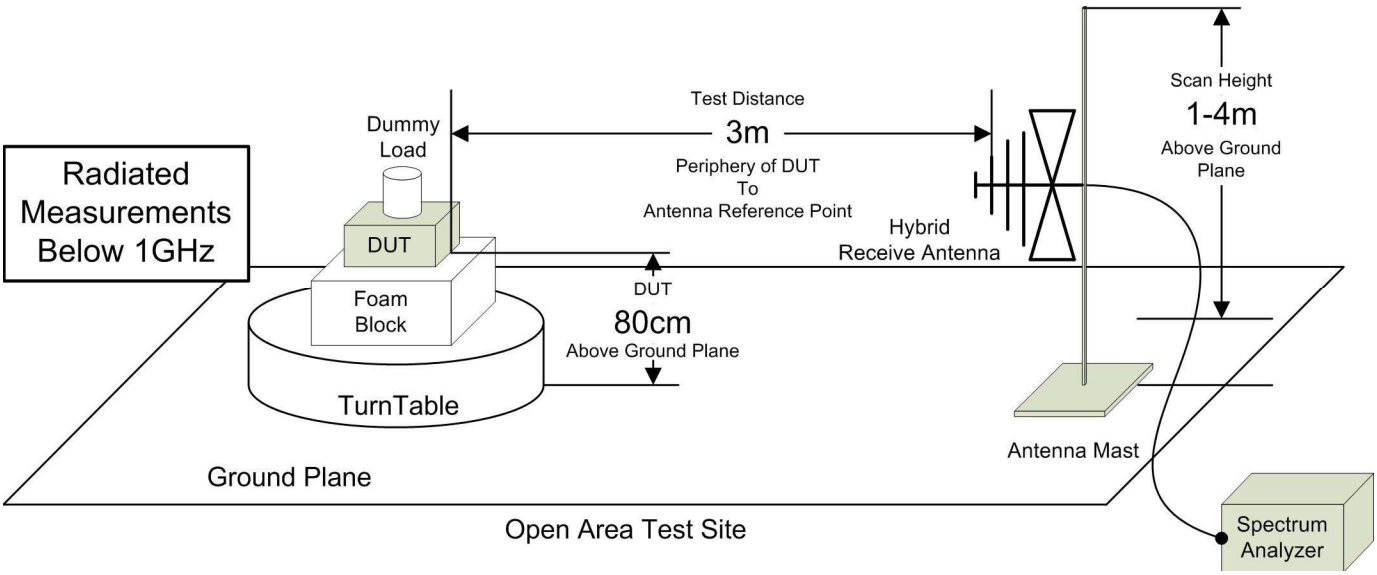


Figure A.5 – Test Setup Radiated Emissions Measurements 30-1000MHz

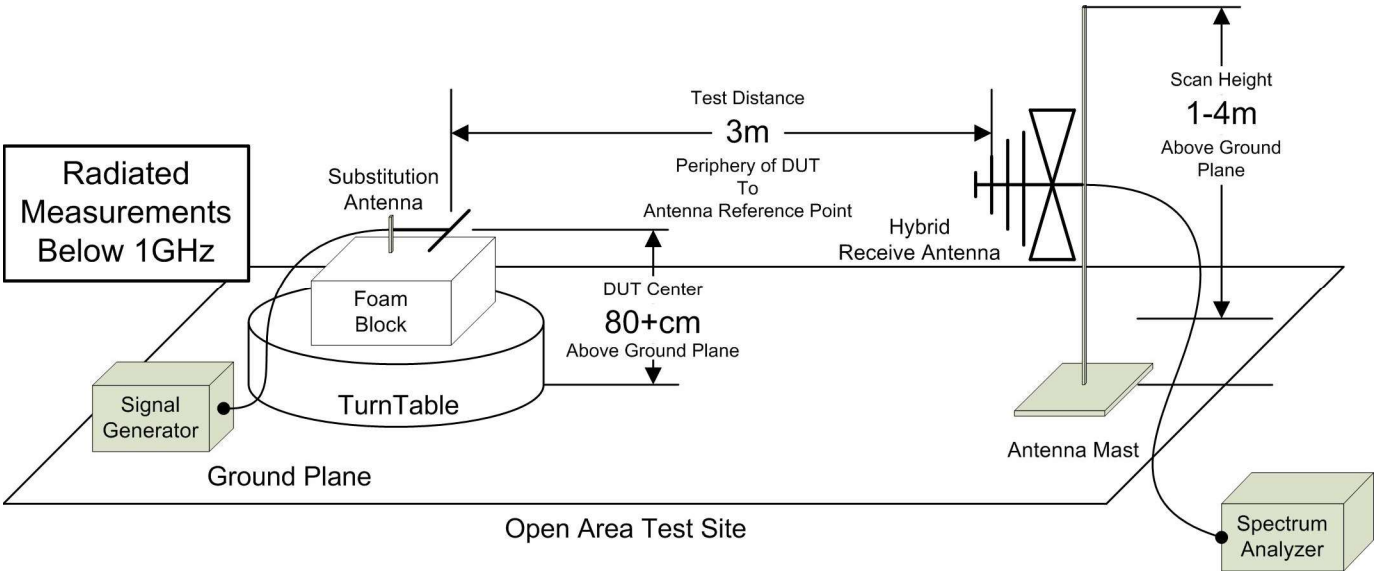


Table A.4 – Setup - Frequency Stability Measurement Equipment

Equipment List			
Asset Number	**Manufacturer**	**Model Number**	**Description**
n/a	ESPEC	ECT-2	Environmental Chamber
00003	HP	53181A	Frequency Counter
n/a	HP	E3611A	Power Supply
00234	VWR	61161-378	Temp/Humidity Meter

Figure A.6 – Test Setup Frequency Stability Measurements

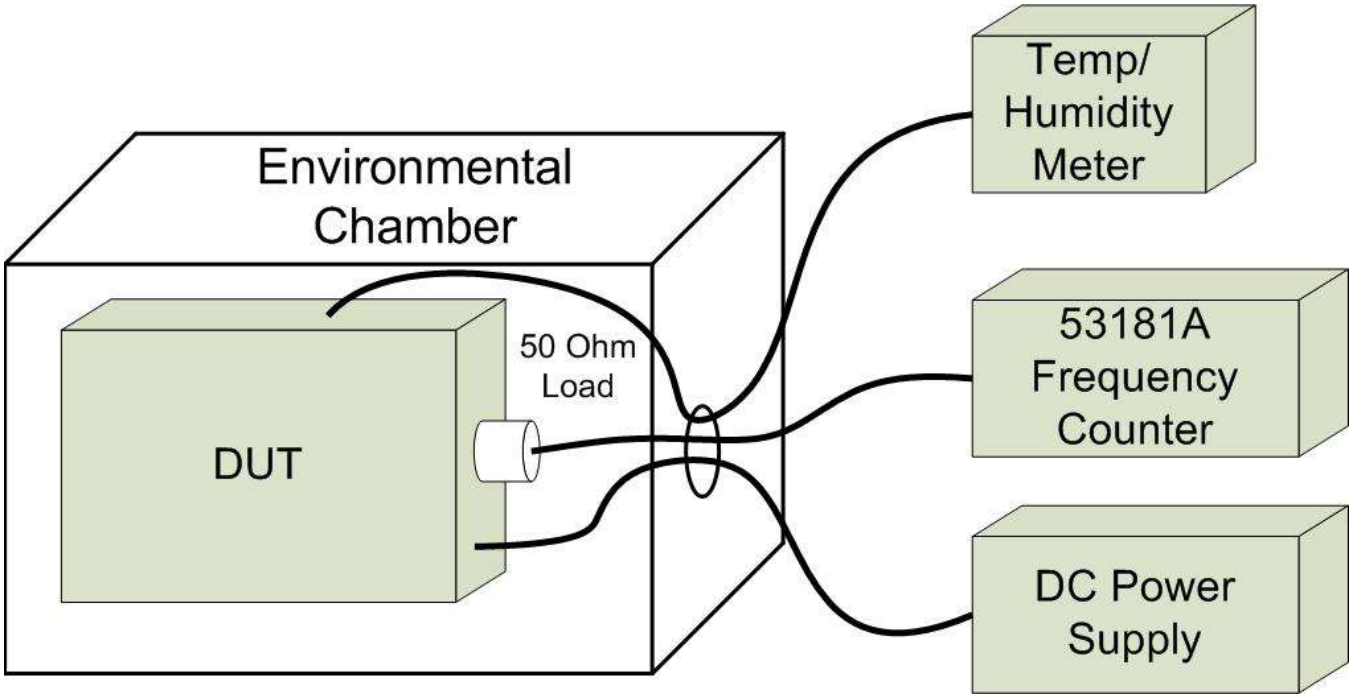
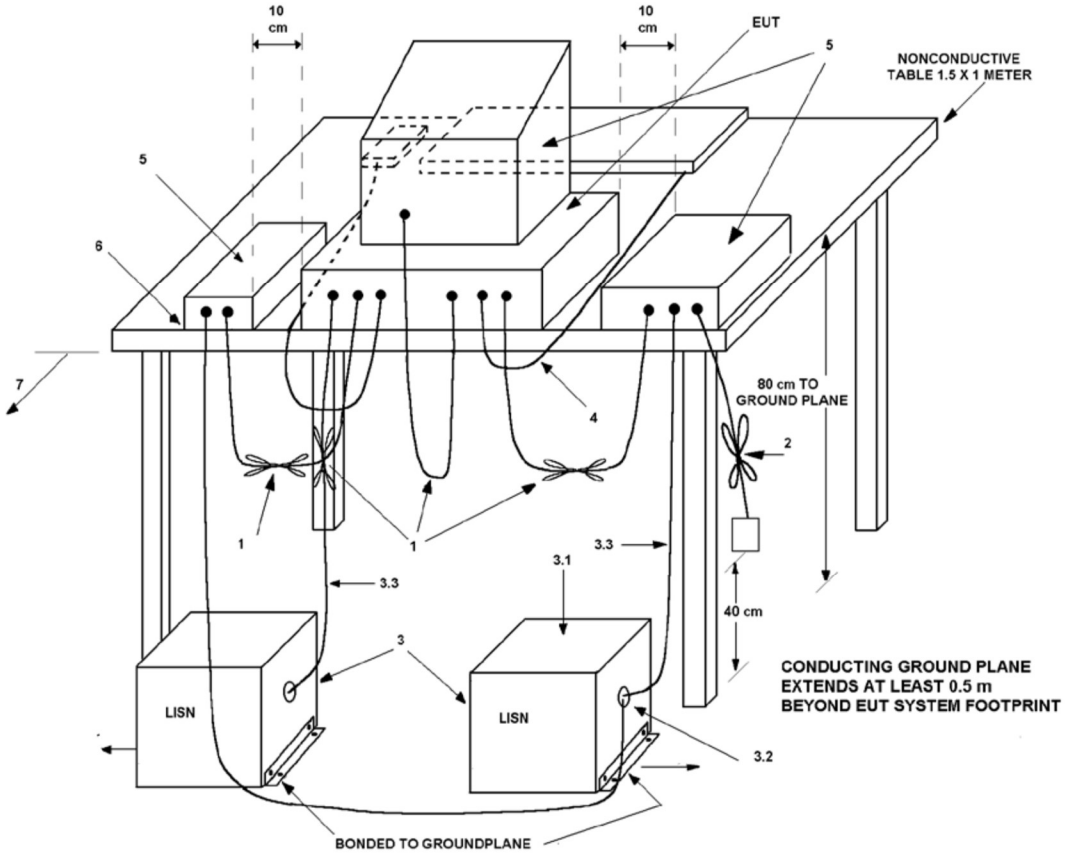


Table A.4 – Power Line Conducted Measurement Equipment and Environmental

Equipment List			
Asset Number	**Manufacturer**	**Model Number**	**Description**
00241	R&S	FSP40	Spectrum Analyzer
00276	Coaxis	LMR400	4m Cable
00278	TILE	34G3	TILE Test Software
00257	Comm Power	LI-215A	LISN

Figure A.7 – Test Setup Power Line Conducted Measurements



APPENDIX B – EQUIPMENT LIST AND CALIBRATION

Equipment List							
Asset Number	Manufacturer	Model Number	Serial Number	Description	Last Calibrated	Calibration Interval	Calibration Due
00050	Chase	CBL-6111A	1607	Bilog Antenna	16 Nov 2023	Triennial	16 Nov 2026
00085	EMCO	6502	9203-2724	Loop Antenna	6 Sep 2022	Triennial	6 Sep 2025
00223	HP	8901A	3749A07154	Modulation Analyzer	10 Jan 2024	Triennial	10 Jan 2027
00224	HP	8903B	3729A18691	Audio Analyzer	COU		COU
00241	R&S	FSU40	100500	Spectrum Analyzer	10 Aug 2021	Triennial	10 Aug 2024
00005	HP	8648D	3847A00611	Signal Generator	28 Jun 2023	Triennial	28 Jun 2026
00003	HP	53181A	3736A05175	Frequency Counter	28 Jun 2023	Triennial	28 Jun 2026
00257	Com-Power	LI-215A	191934	LISN	27 Dec 2021	Triennial	27 Dec 2024
00250	Circuit Test	DMR-1800	TE182	Digital Multi-Meter - DVM	26 Jun 2023	Triennial	26 Jun 2026
00071	EMCO	2090	9912-1484	Multi-Device Controller	n/a	n/a	n/a
00072	EMCO	2075	0001-2277	Mini-mast	n/a	n/a	n/a
00073	EMCO	2080	0002-1002	Turn Table	n/a	n/a	n/a
00081	ESPEC	ECT-2	0510154-B	Environmental Chamber	NCR	n/a	CNR
00234	VWR	61161-378	140320430	Temp/Humidity Meter	New	Triennial	New
00201	HP	E3611A	KR83015294	DC Power Supply	COU	n/a	COU
00263	Koaxis	KP10-1.00M-TD	263	1m Armoured Cable	COU	n/a	COU
00065	Pasternack	PE7014-30	n/a	30dB, 5W Attenuator	COU	n/a	COU
00130	Pasternack	PE7019-30	n/a	30dB, 50W Attenuator	COU	n/a	COU
00275	TMS	LMR400	n/a	25m Cable	COU	n/a	COU
00278	TILE	34G3	n/a	TILE Test Software	NCR	n/a	NCR

NCR: No Calibration Required
COU: Calibrate On Use

APPENDIX C – MEASUREMENT INSTRUMENT UNCERTAINTY

CISPR 16-4 Measurement Uncertainty (U_{LAB})	
This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence interval using a coverage factor of k=2	
Radiated Emissions 30MHz - 200MHz	
U_{LAB} = 5.14dB U_{CISPR} = 6.3dB	
Radiated Emissions 200MHz - 1000MHz	
U_{LAB} = 5.90dB U_{CISPR} = 6.3dB	
Radiated Emissions 1GHz - 6GHz	
U_{LAB} = 4.80dB U_{CISPR} = 5.2dB	
Radiated Emissions 6GHz - 18GHz	
U_{LAB} = 5.1dB U_{CISPR} = 5.5dB	
Power Line Conducted Emissions 9kHz to 150kHz	
U_{LAB} = 2.96dB U_{CISPR} = 3.8dB	
Power Line Conducted Emissions 150kHz to 30MHz	
U_{LAB} = 3.12dB U_{CISPR} = 3.4dB	
If the calculated uncertainty U_{lab} is **less** than U_{CISPR} then:	
1	Compliance is deemed to occur if **NO** measured disturbance exceeds the disturbance limit
2	Non-Compliance is deemed to occur if **ANY** measured disturbance **EXCEEDS** the disturbance limit
If the calculated uncertainty U_{lab} is **greater** than U_{CISPR} then:	
3	Compliance is deemed to occur if **NO** measured disturbance, increased by (U_{lab} - U_{CISPR}), exceeds the disturbance limit
4	Non-Compliance is deemed to occur if **ANY** measured disturbance, increased by (U_{lab} - U_{CISPR}), **EXCEEDS** the disturbance limit

Other Measurement Uncertainties (U_{LAB})
RF Conducted Emissions 9kHz - 40GHz
U_{LAB} = 1.0dB U_{CISPR} = n/a
Frequency/Bandwidth 9kHz - 40GHz
U_{LAB} = 0.1ppm U_{CISPR} = n/a
Temperature
U_{LAB} = 1^{O}C U_{CISPR} = n/a

END OF REPORT

