Choose Scandinavian trust

RADIO TEST REPORT

Project ID
PRJ0045373

Report ID
REP021030

Applicant:
Barrett Communications Pty Ltd

Model (HVIN):
PRC-4090 System Docking Station

Product name (PMN):
SDR Transceiver

FCC identifier:
FCC ID: OW4-PRC4090MB

ISED certification number:
IC: 6468A-4090MB

Specifications:
FCC 47 CFR Part 90
Private Land Mobile Radio Services

Date of issue: July 10, 2025

Kevin Rose, EMC/RF Specialist
Tested by

Signature

Fahar A Sukkoor, EMC/RF Specialist
Reviewed by

Signature

Lab locations

Company name	Nemko Canada Inc.		
Facilities	*Ottawa site:* 303 River Road Ottawa, Ontario Canada K1V 1H2 Tel: +1 613 737 9680 Fax: +1 613 737 9691	*Montréal site:* 292 Labrosse Avenue Pointe-Claire, Québec Canada H9R 5L8 Tel: +1 514 694 2684 Fax: +1 514 694 3528	*Cambridge site:* 1-130 Saltsman Drive Cambridge, Ontario Canada N3E 0B2 Tel: +1 519 650 4811

Test site registration	**Organization**	**Recognition numbers and location**
	FCC/ISED	FCC: CA2040; IC: 2040A-4 (Ottawa); FCC: CA2041; IC: 2040G-5 (Montreal); CA0101 (Cambridge)
Website	www.nemko.com	

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.
This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contained in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

Copyright notification

Nemko Canada Inc. authorizes the applicant to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only.
Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties.
Nemko Canada Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Table of contents

Section 1. Report summary

1.1 Applicant and manufacturer

Company name	Barrett Communications Pty Ltd
Address	47 Discovery Drive, Bibra Lake
City	Perth
Province/State	Western Australia
Postal/Zip code	6163
Country	Australia

1.2 Test specifications

FCC 47 CFR Part 90	Private Land Mobile Radio Services

1.3 Test methods

ANSI C63.26:2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

1.4 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was completed against all relevant requirements of the test standard. Results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested.

See “Summary of test results” for full details.

1.5 Exclusions

None

1.6 Test report revision history

Revision #	Details of changes made to test report
REP021030	Original report issued

Section 2. Summary of test results

2.1 FCC Part 90 test results

Part	Test description	Verdict
90.205(a)(b)	Power limits	Pass
2.1047	Modulation characteristics	Reported
90.209	Bandwidth Limitations	Reported
90.210(a)	Emission limits, emission mask	Pass
90.210(a)	Emission limits, conducted method	Pass
90.210(a)	Emission limits, radiated method	Pass
90.213(a)	Frequency stability	Pass

Notes: None

Section 3. Equipment under test (EUT) details

3.1 Sample information

Receipt date	October 10, 2023
Nemko sample ID number	PRJ00453730001

3.2 EUT information

Product name	SDR Transceiver
Model	PRC-4090 System Docking Station
Serial number	402412160

3.3 Technical information

Operating band	1.5–30 MHz
Test frequencies	1.722, 16.1, and 27.86 MHz
Modulation type	J3E and H3E
Authorized bandwidth (99%)	2.7 kHz (J3E), 3 kHz (H3E)
Power requirements	24 Vdc
Emission designator	2K70J3E, 3K00H3E
Antenna information	Various antenna type based on the manual

3.4 Product description and theory of operation

The PRC-4090 System Docking Station is an SDR based HF SSB transceiver with a frequency range of 1.705 to 30 MHz in transmit and 250 kHz to 30 MHz in receive. The Barrett PRC-4090 is designed using the latest technology enabling a physically small package with a full feature complement.
Designed to operate in the most arduous environments, as encountered in portable, off-road vehicles, vessels and aircraft environments, the Barrett PRC-4090 will provide many years of efficient and trouble free service.
The Barrett PRC-4090 supports features such as digital voice, data transmission and remote diagnostics as well as established features such as Selective Call (Selcall), direct dial telephone connection to base stations fitted with telephone interconnect systems (Telcall), GPS location, 2G and 3G ALE (Automatic Link Establishment) and frequency hopping. These features make the Barrett PRC- 4090 transceiver one of the most economical and versatile HF transceivers available today.
The Barrett PRC-4090 transceiver caters for increased use of HF data transmission for Internet email access and point-to-point data applications, by providing a comprehensive data modem interface port, high speed transmit-to-receive switching, a high stability frequency standard and an efficient cooling system option.
The Barrett PRC-4090 is operated by a smartphone-style touchscreen, full colour Control Handset. The handset integrates seamlessly into manpack, vehicle and base station installations when used with the cradle and cradle docking station. The streamlined design and unobtrusive size can easily mount to a vehicle dashboard or vessel helm.
The Barrett PRC-4090 transceiver can be controlled from all major mobile and desktop platforms. Full remote control is available via the Barrett PRC-4090 Remote Control app, providing unprecedented access to all transceiver functionality across all major platforms.
Teamed with other matching Barrett products which include antennas, power supplies, vehicle tracking packages and HF modems, the Barrett PRC-4090 transceiver becomes a powerful tool, providing solutions to many long distance communication requirements.
Operated 24 V DC supply, the transmitter is rated at 150 watt PEP (when connected to DC via the System Docking Station (SDS)) respectively in voice and data mode and is protected from over-voltage or reverse-voltage application.
Auxiliary features such as Selcall, Telcall, scanning, mute status, alarm system etc. can be individually enabled or disabled for every channel as required to suit your operation.

3.5 EUT exercise details

The EUT was programmed for the low, mid, and high channels
J3E modulation used 400 and 1800 Hz audio input tone
H3E modulation used 1500 Hz audio input tone

3.6 EUT setup diagram

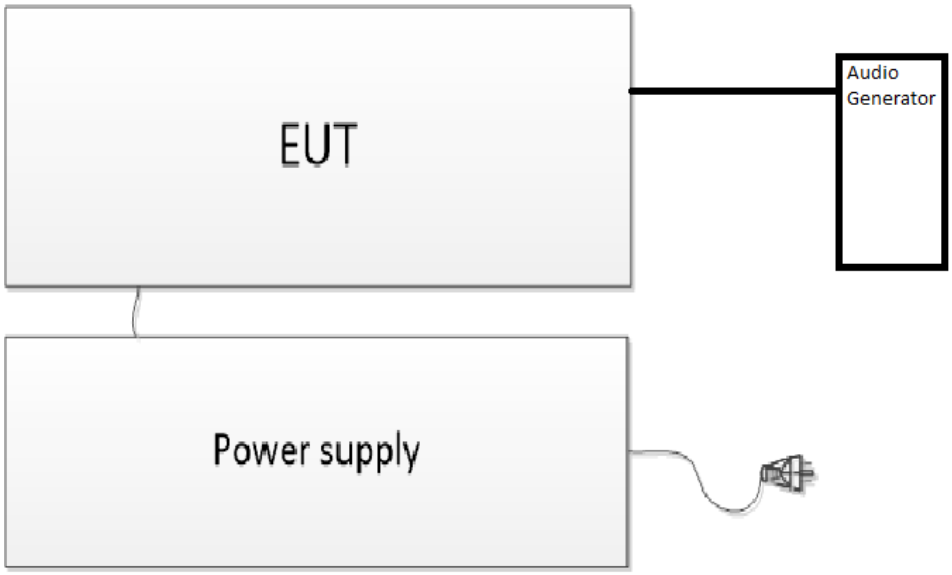


Figure 3.6-1: *Setup diagram*

3.7 EUT sub assemblies

Table 3.7-1: *EUT sub assemblies*

Description	Brand name	Model/Part number	Serial number
Power supply 24 VDC	Barrett	PRC-4022	402412150
SDR Transceiver	Barrett	PRC-4090	402412160

3.8 EUT Support Equipment

Table 3.8-1: *EUT support equipment*

Description	Brand name	Model/Part number	Serial number
Audio generator	Agilent	33500B	N/A

Section 4. Engineering considerations

4.1 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

4.2 Technical judgment

None

4.3 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.

Section 5. Test conditions

5.1 Atmospheric conditions

Temperature	15–30 °C
Relative humidity	20–75 %
Air pressure	860–1060 mbar

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

5.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages ±5 %, for which the equipment was designed.

Section 6. Measurement uncertainty

6.1 Uncertainty of measurement

UKAS Lab 34 and TIA-603-B have been used as guidance for measurement uncertainty reasonable estimations with regards to previous experience and validation of data. Nemko Canada, Inc. follows these test methods in order to satisfy ISO/IEC 17025 requirements for estimation of uncertainty of measurement for wireless products.

Measurement uncertainty budgets for the tests are detailed below. Measurement uncertainty calculations assume a coverage factor of K = 2 with 95% certainty.

Test name	Measurement uncertainty, dB
All antenna port measurements	0.55
Conducted spurious emissions	1.13
Radiated spurious emissions	3.78
AC power line conducted emissions	3.55

Section 7. Test equipment

7.1 Test equipment list

Table 7.1-1: *Equipment list*

Equipment	Manufacturer	Model no.	Asset no.	Cal./Ver. cycle	Next cal./ver.
3 m EMI test chamber	TDK	SAC-3	FA002047	1 year	January 19, 2024
Flush mount turntable	SUNAR	FM2022	FA003006	—	NCR
Controller	SUNAR	SC110V	FA002976	—	NCR
Antenna mast	SUNAR	TLT2	FA003007	—	NCR
AC Power source	Chroma		FA003020	—	NCR
Receiver/spectrum analyzer	Rohde & Schwarz	ESU 40	FA002071	1 year	March 2, 2024
Bilog antenna (20–3000 MHz)	Sunol	JB3	FA002108	1 year	March 7, 2024
Active loop antenna (0.01–30 MHz)	Com-Power	AL-130	FA002722	1 year	April 3, 2024
Spectrum analyzer	Rohde & Schwarz	FSW50	FA002971	1 year	December 31, 2023
Temperature chamber	Thermotron	SM-16C	FA001030	1 year	January 24, 2024
Audio Generator	Agilent	33500 B series	None	N/A	NCR
Attenuator	Narda	776B-20	FA001153	—	VOU
Attenuator	Narda	769-20	FA001394	—	VOU

Note: NCR - no calibration required, VOU - verify on use

Section 8. Testing data

8.1 FCC 90.205(a),(b) Power Limits

8.1.1 Definitions and limits

Applicants for licenses must request and use no more power than the actual power necessary for satisfactory operation. Except where otherwise specifically provided for, the maximum power that will be authorized to applicants whose license applications for new stations are filed after August 18, 1995 is as follows:
(a) *Below 25 MHz.* For single sideband operations (J3E emission), the maximum transmitter peak envelope power is 1000 watts.
(b) *25-50 MHz.* The maximum transmitter output power is 300 watts.

8.1.2 Test summary

Verdict	Pass		
Tested by	Kevin Rose	Test date	November 16, 2023

8.1.3 Observations, settings and special notes

Test conditions

Audio input	1500 Hz
Modulation	H3E
OBW	3.0 kHz

Audio input	400 Hz and 1800 Hz
Modulation	J3E
OBW	2.7 kHz

Test receiver settings:

Detector mode	Peak
Resolution bandwidth	>OBW
Video bandwidth	=>RBW
Trace mode	Max Hold
Measurement time	Auto

8.1.4 Test data

Table 8.1-1: *Output power results 150 W system operation J3E*

Modulation	Frequency, MHz	RF output power, dBm	Limit, dBm	Margin, dB
J3E	1.722	50.97	60.00	9.03
J3E	16.1	51.61	60.00	8.39
J3E	27.86	51.10	54.77	3.67

Table 8.1-2: *Output power results 125 W system operation J3E*

Modulation	Frequency, MHz	RF output power, dBm	Limit, dBm	Margin, dB
J3E	1.722	50.58	60.00	9.42
J3E	16.1	51.05	60.00	8.95
J3E	27.86	51.19	54.77	3.58

Table 8.1-3: *Output power results 30 W system operation J3E*

Modulation	Frequency, MHz	RF output power, dBm	Limit, dBm	Margin, dB
J3E	1.722	44.72	60.00	15.28
J3E	16.1	45.20	60.00	14.8
J3E	27.86	44.87	54.77	9.9

Table 8.1-4: *Output power results 10 W system operation J3E*

Modulation	Frequency, MHz	RF output power, dBm	Limit, dBm	Margin, dB
J3E	1.722	40.33	60.00	19.67
J3E	16.1	40.66	60.00	19.34
J3E	27.86	40.33	54.77	14.44

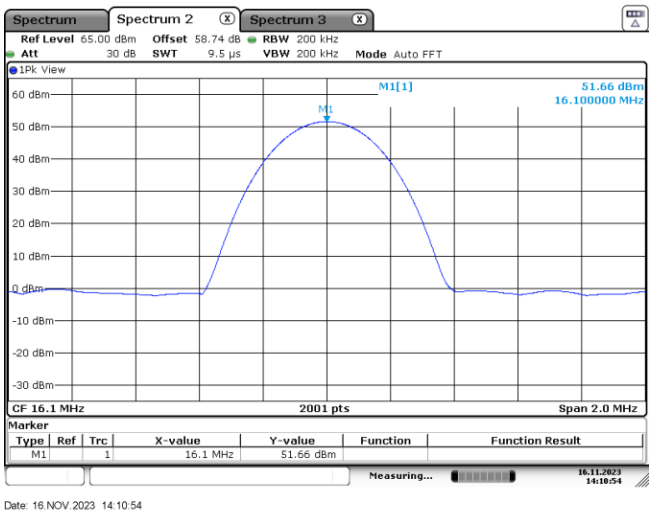


Figure 8.1-1: *J3E modulation, output power Example*

Test data continued

Table 8.1-5: *Output power results 150 W system operation H3E*

Modulation	Frequency, MHz	RF output power, dBm	Limit, dBm	Margin, dB
H3E	1.722	51.57	60.00	8.43
H3E	16.10	51.66	60.00	8.34
H3E	27.86	51.34	54.77	3.43

Table 8.1-6: *Output power results 125 W system operation H3E*

Modulation	Frequency, MHz	RF output power, dBm	Limit, dBm	Margin, dB
H3E	1.722	50.52	60.00	9.48
H3E	16.10	51.05	60.00	8.95
H3E	27.86	51.18	54.77	3.59

Table 8.1-7: *Output power results 30 W system operation H3E*

Modulation	Frequency, MHz	RF output power, dBm	Limit, dBm	Margin, dB
H3E	1.722	44.72	60.00	15.28
H3E	16.10	45.20	60.00	14.8
H3E	27.86	45.10	54.77	9.67

Table 8.1-8: *Output power results 10 W system operation H3E*

Modulation	Frequency, MHz	RF output power, dBm	Limit, dBm	Margin, dB
H3E	1.722	40.23	60.00	19.77
H3E	16.10	40.67	60.00	19.33
H3E	27.86	40.33	54.77	14.44

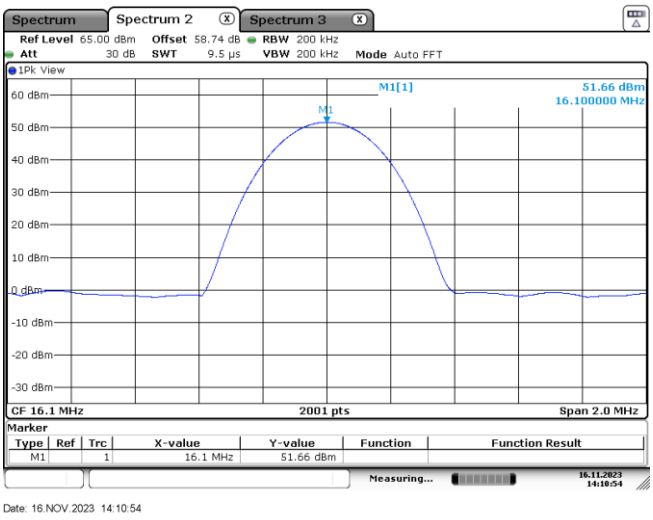


Figure 8.1-2: *H3E modulation, output power Example*

8.2 FCC 2.1047 Modulation characteristic

8.2.1 Definitions and limits

§2.1047 Measurements required: Modulation characteristics.

(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. For equipment required to have an audio low-pass filter, a curve showing the frequency response of the filter, or of all circuitries installed between the modulation limiter and the modulated stage shall be submitted.

(c) Single sideband and independent sideband radiotelephone transmitters which employ a device or circuit to limit peak envelope power. A curve showing the peak envelope power output versus the modulation input voltage shall be supplied. The modulating signals shall be the same in frequency as specified in paragraph (c) of §2.1049 for the occupied bandwidth tests.

8.2.2 Test summary

Verdict	Pass		
Tested by	Kevin Rose	Test date	November 16, 2023

8.2.3 Observations, settings and special notes

None

Detector mode	Peak
Resolution bandwidth	100 kHz
Video bandwidth	RBW × 3
Trace mode	Max Hold

8.2.1 Test data

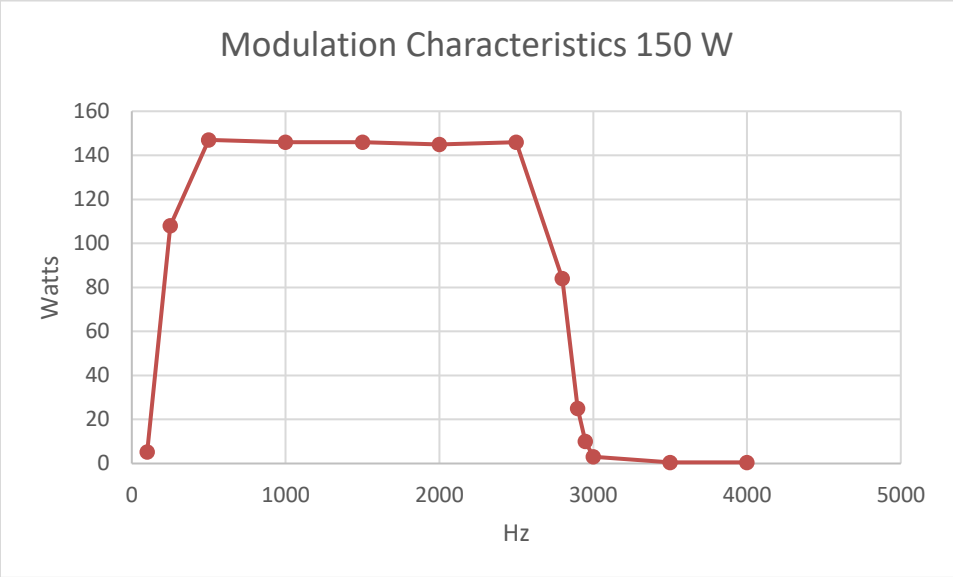


Figure 8.2-1: *Modulation Characteristic Audio Frequency Response*

Table 8.2-1: *Modulation characteristics, frequency response results 150 Watts*

Input Frequency, Hz	Output power, Watts
100	5.25
250	108
500	147
1000	146
1500	146
2000	145
2500	146
2800	84
2900	25
2950	10
3000	3
3500	0.5
4000	0.5
5000	0.5

Note: the input level we reduced to see the true audio response. The EUT shuts down when it exceeds the limit.

Table 8.2-2: *Modulation characteristics, modulation limiting results 150 Watts*

1.722 MHz		16.1 MHz		27.86 MHz	
Input Audio, V p-p	Output power, Watts	Input Audio, V p-p	Output power, Watts	Input Audio, V p-p	Output power, Watts
0.1	1.72	0.1	0.3	0.1	0.7
0.2	5.6	0.2	1.5	0.2	2.9
0.3	13	0.3	3.7	0.3	6.5
0.4	26	0.4	7.4	0.4	11.3
0.5	43	0.5	12.3	0.5	17
0.6	68	0.6	19	0.6	24
0.7	100	0.7	30	0.7	33
0.8	135	0.8	44	0.8	44
0.9	150	0.9	57	0.9	54
1	150	1	70	1	64
1.1	151	1.1	84	1.1	75
1.5	150	1.2	100	1.2	87
		1.3	118	1.3	100
		1.4	134	1.4	115
		1.5	147	1.5	129
		1.6	148	1.6	132
		1.7	148	1.7	139
		1.8	148	1.8	139
		1.9	148	1.9	139
		2	149	2	139

Table 8.2-3: *Modulation characteristics, modulation limiting results 125 Watts*

1.722 MHz		16.1 MHz		27.86 MHz	
Input Audio, V p-p	Output power, Watts	Input Audio, V p-p	Output power, Watts	Input Audio, V p-p	Output power, Watts
0.1	0.4	0.1	1.6	0.1	2.3
0.2	2	0.2	7	0.2	9
0.3	6.8	0.3	18	0.3	19
0.4	16	0.4	37	0.4	33
0.5	30	0.5	61	0.5	50
0.6	53	0.6	92	0.6	72
0.7	83	0.7	122	0.7	97
0.8	116	0.8	127	0.8	114
0.9	126	0.9	127	0.9	115
1	126	1	127	1	115
1.1	126	1.1	127	1.1	115
1.5	126	1.2	127	1.2	115
		1.3	127	1.3	115
		1.4	127	1.4	115
		1.5	127	1.5	115
		1.6	127	1.6	115
		1.7	127	1.7	115
		1.8	127	1.8	115
		1.9	127	1.9	115
		2	127	2	115

Table 8.2-4: *Modulation characteristics, modulation limiting results 30 Watts*

1.722 MHz		16.1 MHz		27.86 MHz	
Input Audio, V p-p	Output power, Watts	Input Audio, V p-p	Output power, Watts	Input Audio, V p-p	Output power, Watts
0.1	0.2	0.1	0.5	0.1	0.5
0.2	0.9	0.2	2	0.2	2
0.3	2	0.3	4.5	0.3	4.5
0.4	4	0.4	8	0.4	7.5
0.5	0.6	0.5	12.4	0.5	11
0.6	10	0.6	18.5	0.6	15.4
0.7	15	0.7	26	0.7	21
0.8	22	0.8	33	0.8	27.5
0.9	29.9	0.9	33	0.9	31.3
1	30	1	33	1	31.3
1.1	30	1.1	33	1.1	31.3
1.5	30	1.2	33	1.2	31.3
		1.3	33	1.3	31.3
		1.4	33	1.4	31.3
		1.5	33	1.5	31.3
		1.6	33	1.6	31.3
		1.7	33	1.7	31.3
		1.8	33	1.8	31.3
		1.9	33	1.9	31.3
		2	33	2	31.3

Table 8.2-5: *Modulation characteristics, modulation limiting results 10 Watts*

1.722 MHz		16.1 MHz		27.86 MHz	
Input Audio, V p-p	Output power, Watts	Input Audio, V p-p	Output power, Watts	Input Audio, V p-p	Output power, Watts
0.1	0.2	0.1	0.5	0.1	0.5
0.2	1	0.2	2.1	0.2	1.8
0.3	2.5	0.3	4.8	0.3	4.1
0.4	4.5	0.4	8.4	0.4	6.9
0.5	7.3	0.5	11.8	0.5	10.24
0.6	10.5	0.6	11.5	0.6	10.7
0.7	10	0.7	11.5	0.7	10.8
0.8	10	0.8	11.5	0.8	10.8
0.9	10.3	0.9	11.5	0.9	10.8
1	10.3	1	11.5	1	10.8
1.1	10.4	1.1	11.5	1.1	10.8
1.5	10.4	1.2	11.5	1.2	10.8
		1.3	11.5	1.3	10.8
		1.4	11.5	1.4	10.8
		1.5	11.5	1.5	10.8
		1.6	11.5	1.6	10.8
		1.7	11.5	1.7	10.8
		1.8	11.5	1.8	10.8
		1.9	11.5	1.9	10.8
		2	11.5	2	10.8

8.3 FCC 90.210(a) and (b) Emission limits, emission mask

8.3.1 Definitions and limits

(a) Emission Mask A. For transmitters utilizing J3E emission, the carrier must be at least 40 dB below the peak envelope power and the power of emissions must be reduced below the output power (P in watts) of the transmitter as follows:

1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 150 percent of the authorized bandwidth: At least 25 dB.
2) On any frequency removed from the assigned frequency by more than 150 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB.
3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log P dB.

(b) Emission Mask B. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.
2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 190 percent of the authorized bandwidth: At least 35 dB.
3) On any frequency removed from the assigned frequency by more than 190 percent of the authorized bandwidth: At least 43 + 10 log P dB.

8.3.2 Test summary

Verdict	Pass		
Tested by	Kevin Rose	Test date	November 16, 2023

8.3.3 Observations, settings and special notes

The mask B that is more stringent than the mask A and therefore it was used for both modulations. Mask offsets were calculated using 2.7 kHz and 3 kHz authorized bandwidths.

Test conditions

Audio input	1500 Hz
Modulation	H3E

Audio input	400 Hz and 1800 Hz
Modulation	J3E

Detector mode	Peak
Resolution bandwidth	30 Hz
Video bandwidth	= >RBW
Trace mode	Max Hold

Note: the EUT has an Audio low-pass filter

8.3.4 Test data

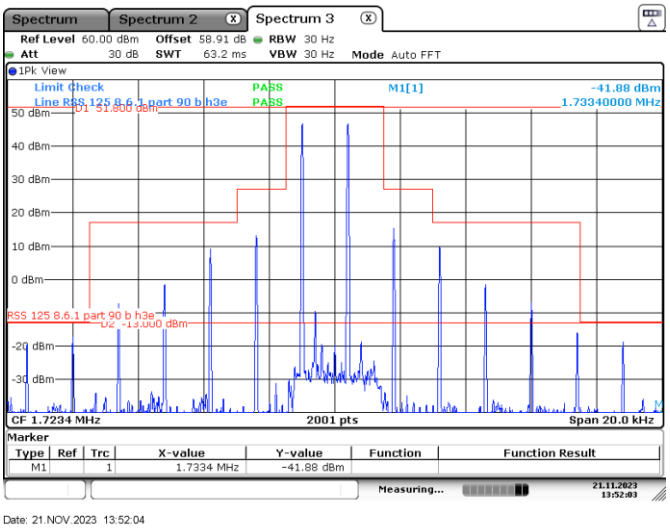


Figure 8.3-1: *Low channel Mask 150W 400 Hz and 1800 Hz*

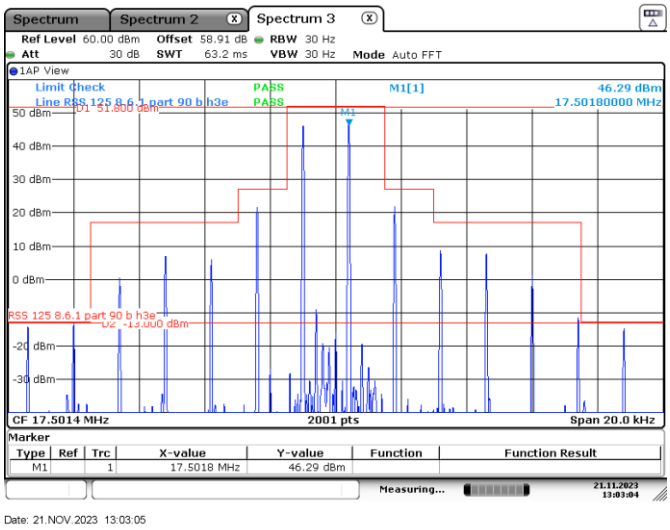


Figure 8.3-2: *Mid channel Mask 150W 400 Hz and 1800 Hz*

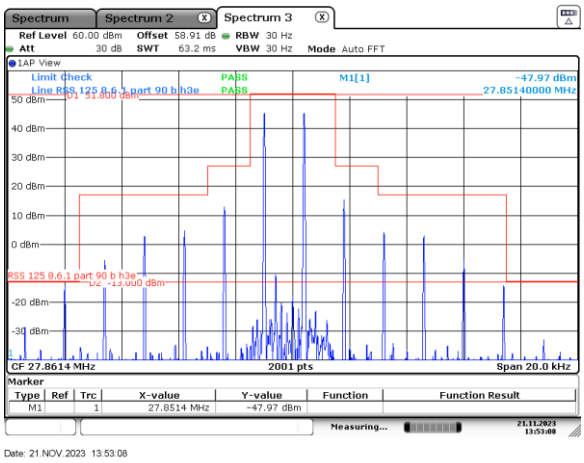


Figure 8.3-3: *High channel Mask 150W 400 Hz and 1800 Hz*

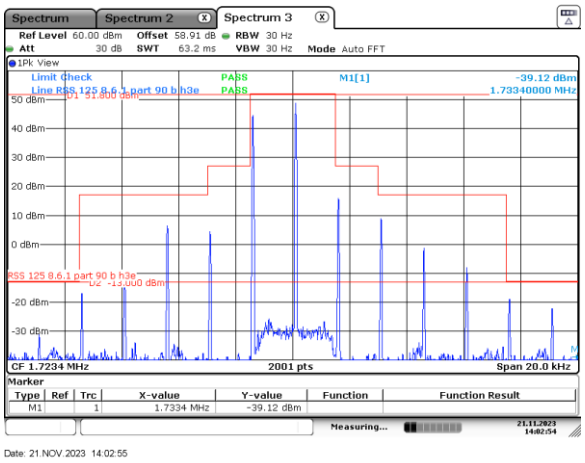


Figure 8.3-4: *Low channel Mask 150W 1500 Hz*

Note: Mask B was used

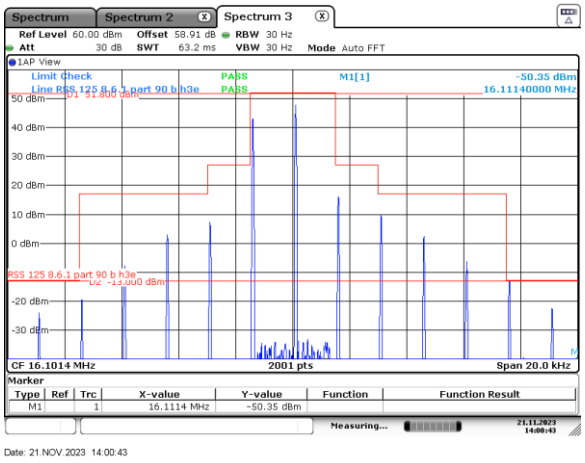


Figure 8.3-5: *Mid channel Mask 150W 1500 Hz*

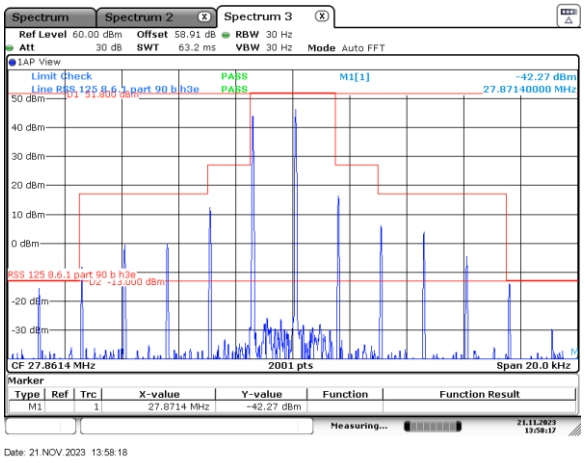


Figure 8.3-6: *High channel Mask 150W 1500 Hz*

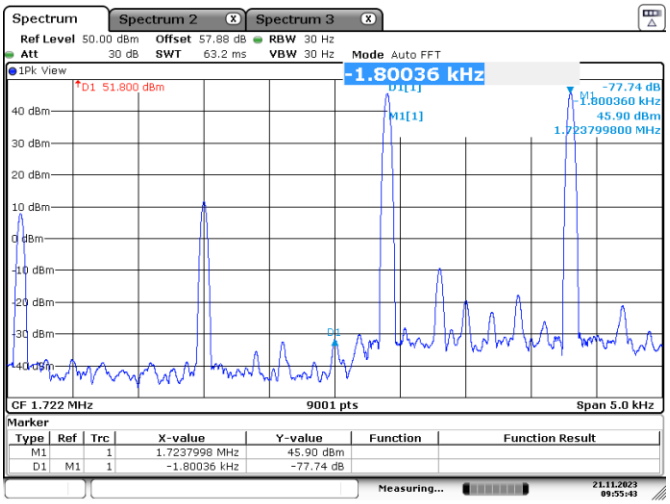


Figure 8.3-7: *Low channel 150W 400 Hz and 1800 Hz*

40 dB Carrier suppression

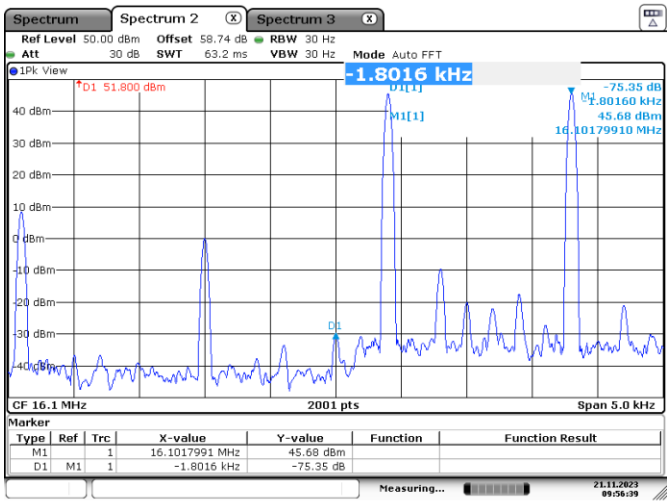


Figure 8.3-8: *Mid channel 150W 400 Hz and 1800 Hz*

40 dB Carrier suppression

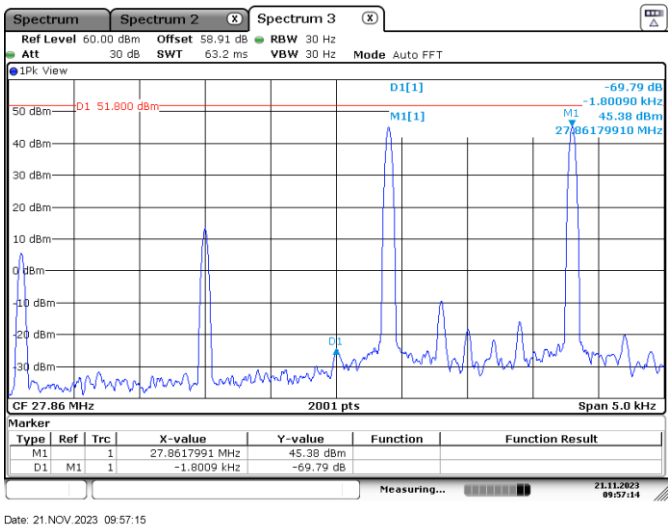


Figure 8.3-9: *High channel 150W 400 Hz and 1800 Hz*

Table 8.3-1: 40 dB Carrier suppression

Channel	Carrier suppression, dBc	Minimum Limit, dBc	Margin, dB
Low	77.74	40	37.74
Mid	75.35	40	35.35
High	67.79	40	27.79

8.4 FCC 90.210(a) Emission limits, conducted method

8.4.1 Definitions and limits

(a) Emission Mask A and Mask B: On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log P dB.

8.4.2 Test summary

Verdict	Pass		
Tested by	Kevin Rose	Test date	November 16, 2023

8.4.3 Observations, settings and special notes

Test conditions

Audio input	1500 Hz
Modulation	H3E

Audio input	400 Hz and 1800 Hz
Modulation	J3E

Below 30 MHz

Detector mode	Peak
Resolution bandwidth	10 kHz
Video bandwidth	= >RBW
Trace mode	Max Hold

Above 30 MHz

Detector mode	Peak
Resolution bandwidth	100 kHz
Video bandwidth	= >RBW
Trace mode	Max Hold

8.4.1 Test data

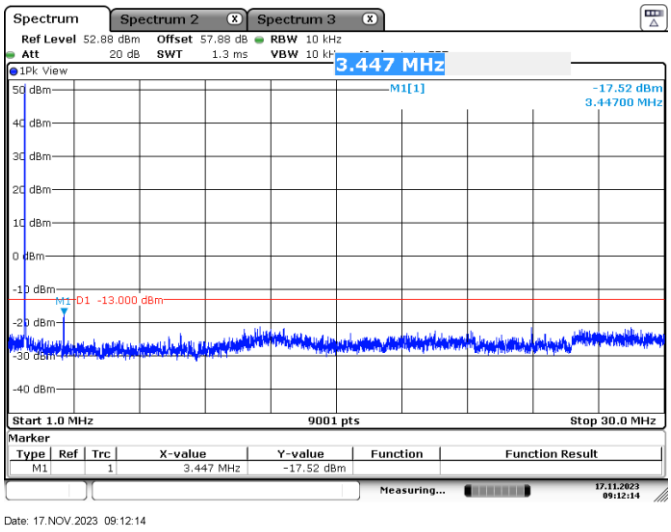


Figure 8.4-1: *Low channel 1.722 MHz, H3E modulation, Conducted Spurious*

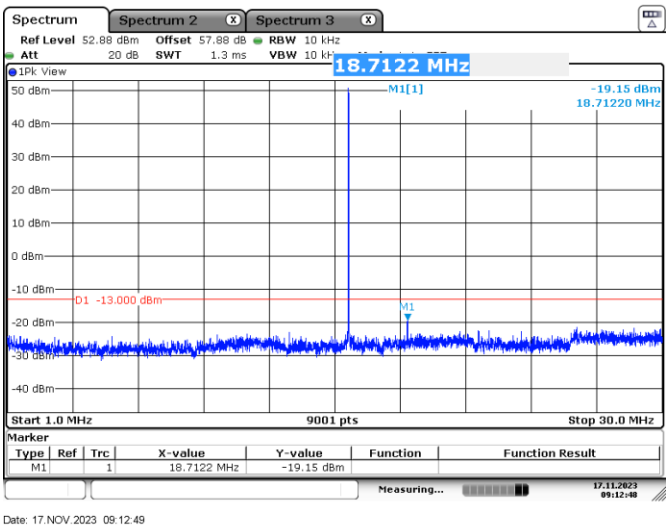


Figure 8.4-2: *Mid channel 16.1 MHz, H3E modulation, Conducted Spurious*

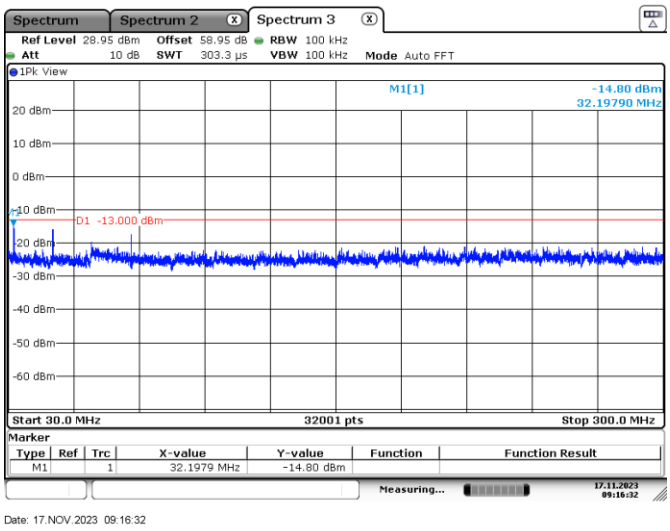
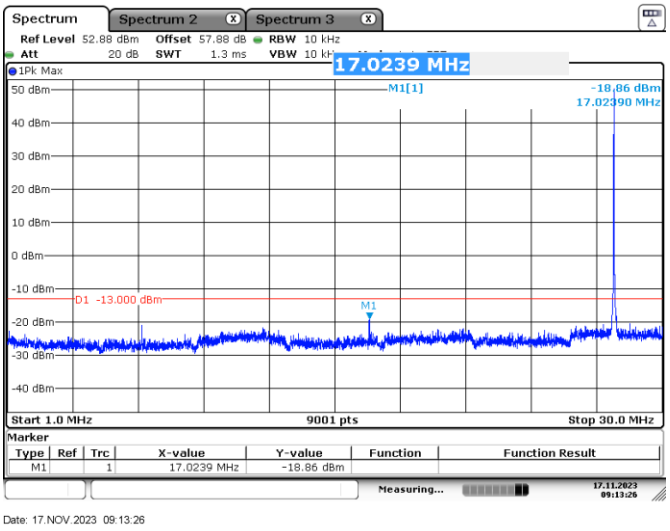
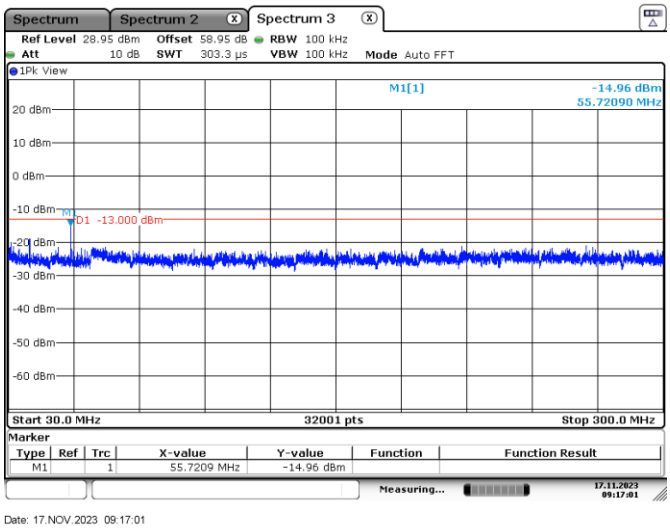


Figure 8.4-3: *Mid channel 16.1 MHz, H3E modulation, Conducted Spurious*



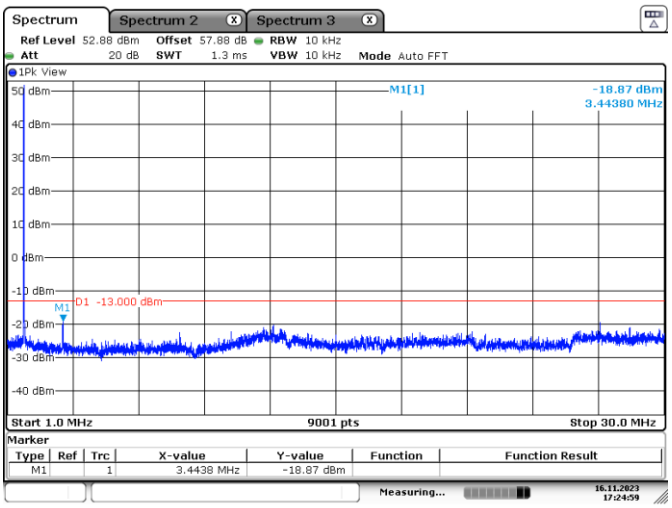
Date: 17.NOV.2023 09:13:26

Figure 8.4-4: *High channel 27.86 MHz, H3E modulation, Conducted Spurious*



Date: 17.NOV.2023 09:17:01

Figure 8.4-5: *High channel 27.86 MHz, H3E modulation, Conducted Spurious*



Date: 16.NOV.2023 17:24:59

Figure 8.4-6: *Low channel 1.722 MHz, J3E modulation, Conducted Spurious*

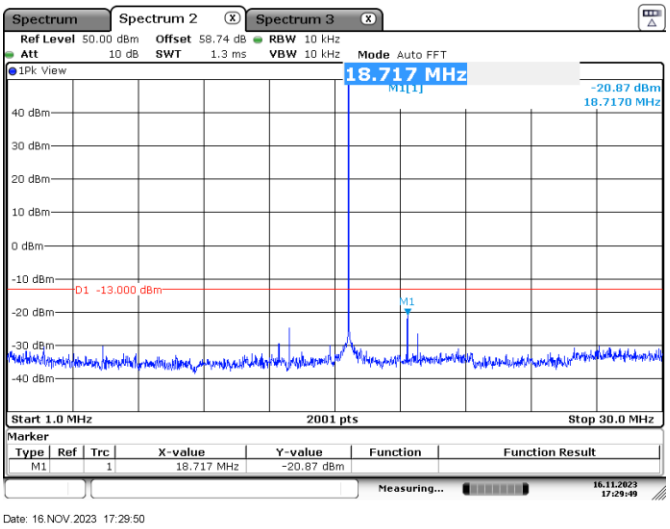


Figure 8.4-7: *Mid channel 16.1 MHz, J3E modulation, Conducted Spurious*

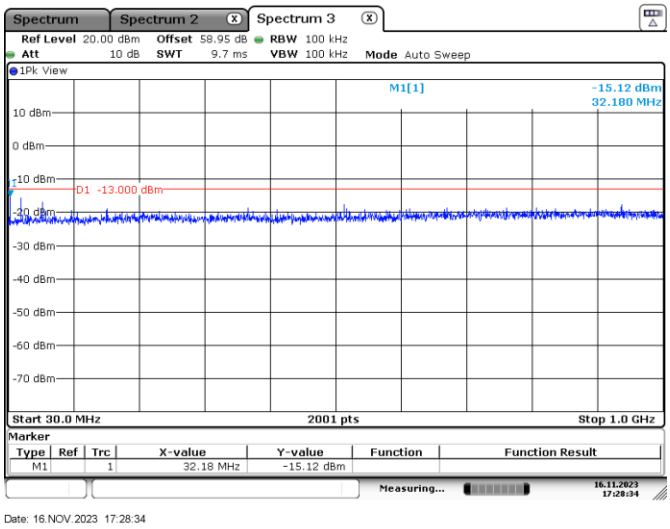


Figure 8.4-8: *Mid channel 16.1 MHz, J3E modulation, Conducted Spurious*

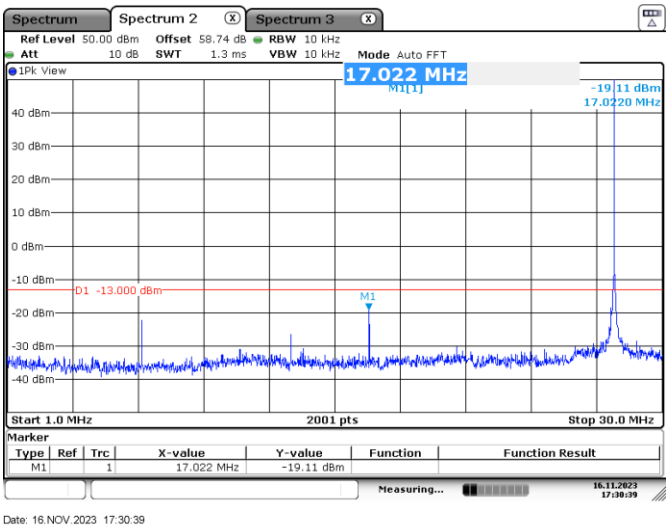


Figure 8.4-9: *High channel 27.86 MHz, J3E modulation, Conducted Spurious*

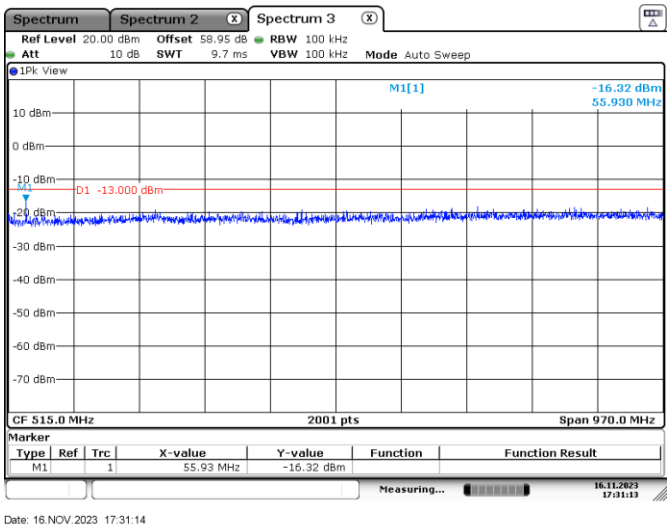


Figure 8.4-10: *High channel 27.86 MHz, J3E modulation, Conducted Spurious*

8.5 FCC 90.210(a) Emission limits, radiated method

8.5.1 Definitions and limits

(a) Emission Mask A and Mask B: On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log P dB.

Test conditions

Audio input	1500 Hz
Modulation	H3E (according to TCB test plan only H3E representative modulation was used for testing)

Spectrum analyzer settings below 30 MHz:

Detector mode	Peak
Resolution bandwidth	10 kHz
Video bandwidth	10 kHz
Trace mode	Max Hold

Spectrum analyzer settings above 30 MHz:

Detector mode	Peak
Resolution bandwidth	100 kHz
Video bandwidth	100 kHz
Trace mode	Max Hold

8.5.1 Test data

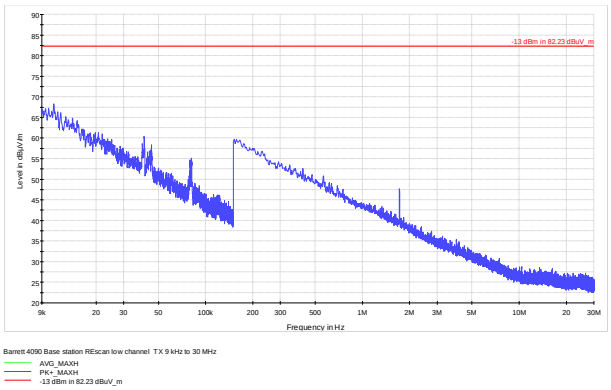


Figure 8.5-1: *Low channel Radiated Spurious*

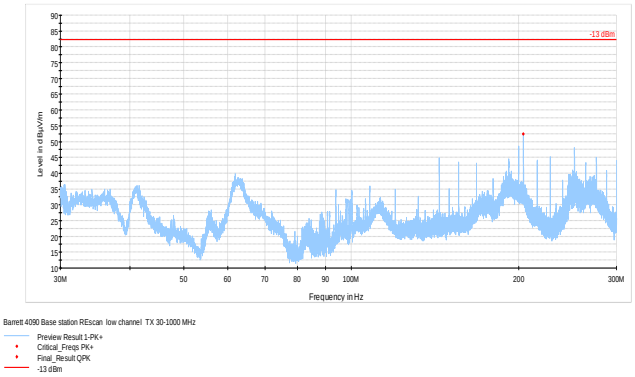


Figure 8.5-2: *Low channel Radiated Spurious*

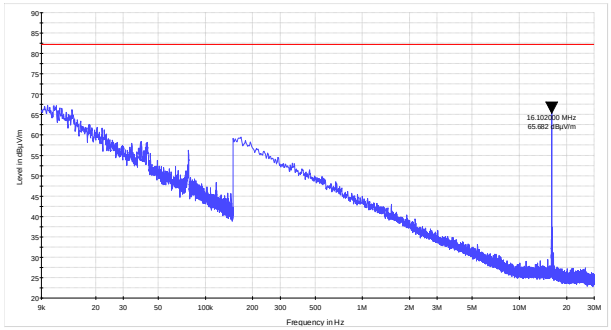


Figure 8.5-3: *Mid channel Radiated Spurious*

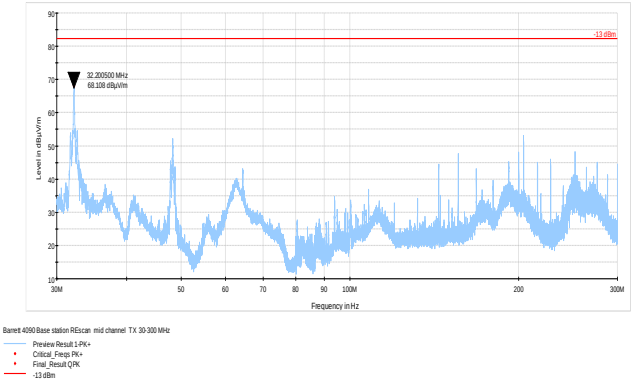


Figure 8.5-4: *Mid channel Radiated Spurious*

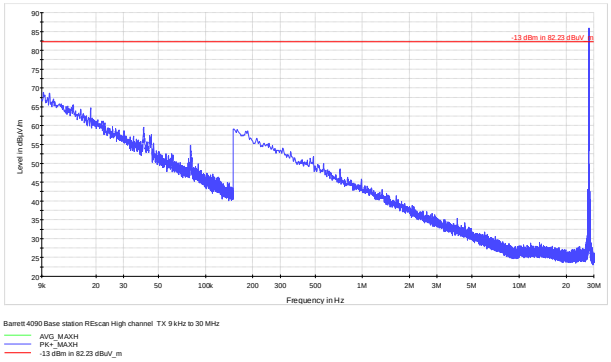


Figure 8.5-5: *High channel Radiated Spurious*

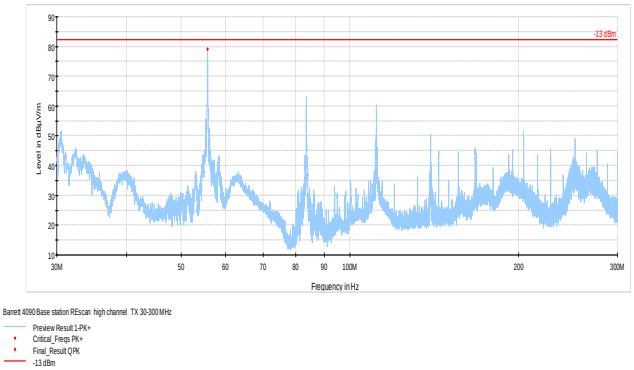


Figure 8.5-6: *High channel Radiated Spurious*

8.6 FCC §90.213(a) Frequency stability

8.6.1 Definitions and limits

FCC:
(a) Unless noted elsewhere, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following table:

Table 8.6-1: *Minimum frequency stability*

Frequency range (MHz)	Fixed and base stations (±ppm)	Mobile stations (±ppm)	
		Over 2 watts output power	2 watts or less output power
Below 25	[1, 2, 3]100	100	200
25–50	20	20	50

[1]Fixed and base stations with over 200 watts transmitter power must have a frequency stability of 50 ppm except for equipment used in the Public Safety Pool where the frequency stability is 100 ppm.
[2]For single sideband operations below 25 MHz, the carrier frequency must be maintained within 50 Hz of the authorized carrier frequency.
[3]Travelers information station transmitters operating from 530-1700 kHz and transmitters exceeding 200 watts peak envelope power used for disaster communications and long distance circuit operations pursuant to §§90.242 and 90.264 must maintain the carrier frequency to within 20 Hz of the authorized frequency.

8.6.1 Test summary

Verdict	Pass		
Tested by	Kevin Rose	Test date	December 13, 2023

8.6.2 Observations, settings and special notes

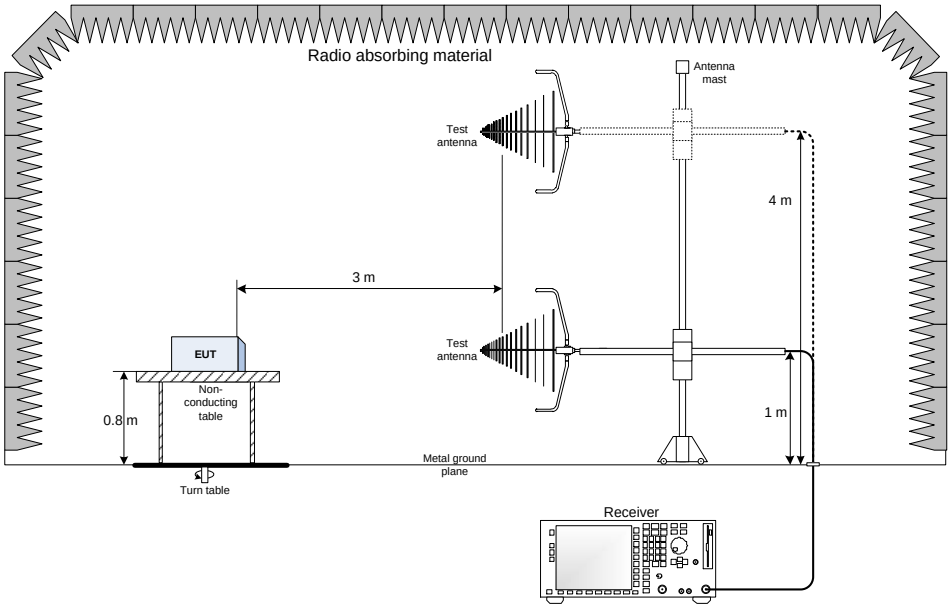
1500 Hz tone was used during testing

Table 8.6-2: *Frequency drift measurement FCC Part 90.213(a) results*

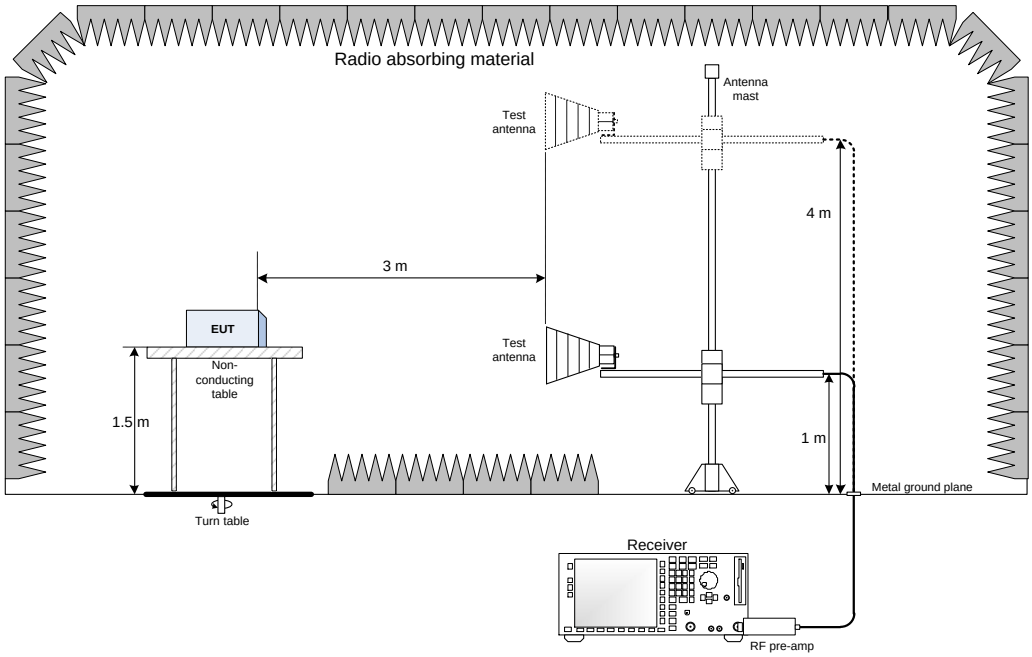
Test conditions	Frequency, MHz	Drift, Hz	Limit, Hz
+50 °C, Nominal	16.101796	6	50 Hz
+40 °C, Nominal	16.101797	-4	50 Hz
+30 °C, Nominal	16.101798	-3	50 Hz
+20 °C, +15 %	16.101802	0	50 Hz
+20 °C, Nominal	16.101802	Reference	
+20 °C, -15 %	16.101802	0	50 Hz
+10 °C, Nominal	16.101806	-4	50 Hz
0 °C, Nominal	16.101806	-4	50 Hz
−10 °C, Nominal	16.101806	-4	50 Hz
−20 °C, Nominal	16.101807	-5	50 Hz
−30 °C, Nominal	16.101807	-5	50 Hz

Section 9. Block diagrams of test set-ups

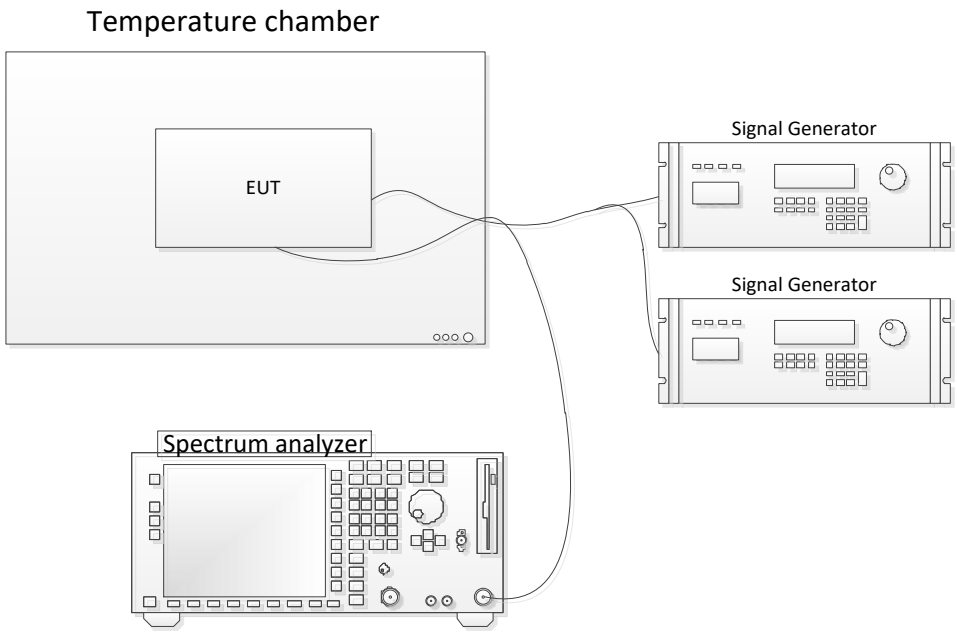
9.1 Radiated emissions set-up for frequencies below 1 GHz



9.2 Radiated emissions set-up for frequencies above 1 GHz



9.3 Frequency stability



9.4 Power limits, Modulation Characteristics, Emission limits, emission mask, bandwidth, Emission limits, conducted method