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RADIO TEST REPORT – 392367-1TRFWL

Type of assessment:
Final product testing

Applicant:
Redline Communications Inc.

Product type:	Model:	FCC ID:
LTE Base Station	Ellipse 4G HP Band 48	QC8-B48

Specifications:
FCC 47 CFR Part 96 (RF part)
Citizens Broadband Radio Service

Date of issue: April 21, 2020

Andrey Adelberg, Senior EMC/Wireless Specialist	
Tested by	Signature
David Duchesne, Senior EMC/Wireless Specialist	
Reviewed by	Signature

Test location(s)

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	☐ *Almonte site:* 1500 Peter Robinson Road West Carleton, Ontario Canada K0A 1L0 Tel: +1 613 256-9117 Fax: +1 613 256-8848
Test site registration	**Organization**	**Recognition numbers and location**		
	FCC/ISED	FCC: CA2040; IC: 2040A-4 (Ottawa/Almonte); 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

Table of contents

Section 1. Report summary

1.1 Applicant and manufacturer

Company name	Redline Communications Inc.
Address	302 Town Center Blvd., Markham, ON, Canada, L3R 0E8

1.2 Test specifications

FCC 47 CFR Part 96	Citizens Broadband Radio Service

1.3 Test method

ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
940660 D01 Part 96 CBRS Eqpt v02	Certification and test procedures for citizens broadband radio service devices authorized under Part 96
662911 D01 Multiple Transmitter Output v02r01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band

1.4 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was performed against all relevant requirements of the test standard except as noted in section 1.5 below. 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

This test report covers only general requirements of Part 96.

1.6 Test report revision history

Table 1.6-1: *Test report revision history*

Revision #	Date of issue	Details of changes made to test report
TRF	April 21, 2020	Original report issued

Section 2. Summary of test results

2.1 FCC Part 96 test results

Part	Test description	Verdict
§96.41(a)	Digital modulation requirement	Pass[1]
§96.41(e)(3)	Emission and occupied bandwidth	Pass
§96.41(b)	Power limits	Pass
§96.41(e)(1)	3.5 GHz Emissions and Interference Limits	Pass
§96.41(e)(2)	Additional protection levels	Pass
§96.41(g)	The peak-to-average power ratio (PAPR)	Pass
§2.1055	Frequency stability	Pass

Notes: [1]EUT uses digital modulation techniques: from QPSK to 64-QAM.

Section 3. Equipment under test (EUT) details

3.1 Sample information

Receipt date	February 4, 2020
Nemko sample ID number	1

3.2 EUT information

Product name	LTE Base Station – Band 48
Model	Ellipse 4G HP Band 48
Serial number	360RM20020001

3.3 Technical information

Frequency band	3550–3700 MHz
Frequency Min (MHz)	3555 (10 MHz channel); 3560 (20 MHz channel)
Frequency Max (MHz)	3695 (10 MHz channel); 3690 (20 MHz channel)
RF total power Max (W), EIRP	31.92 (10 MHz channel, Category B); 62.23 (20 MHz channel, Category B)
Maximum declared power per port	35 dBm
RF power density (dBm/MHz), EIRP	36.95 (10 MHz channel, Category B); 36.99 (20 MHz channel, Category B)
Field strength, Units @ distance	N/A
Measured BW (MHz) (99 %)	8.97 (10 MHz channel); 17.94 (20 MHz channel)
Measured BW (MHz) (26 dB)	9.55 (10 MHz channel); 18.97 (20 MHz channel)
Type of modulation	Digital: QPSK to 64-QAM
Emission classification (F1D, G1D, D1D)	10M0W7D; 20M0W7D
Power requirements	48 V_{DC} 5 A via Power supply powered from 120 V_{AC} / 60 Hz
Antenna information	The EUT uses a unique antenna coupling/ non-detachable antenna to the intentional radiator.

Type	Manufacturer	Model	Gain
Omni	Redline	AOB-DB-3338-LTE-G1	10 dBi
Sectoral	Redline	AFS-DBG-334090-LTE-G1	14 dBi

3.4 Product description and theory of operation

Ellipse 4G HP B04 is an all outdoor LTE eNodeB (E-UTRAN Node B) single band base station operating in LTE Band 48 (3550–3700 MHz)

3.5 EUT exercise details

EUT was controlled via TeraTerm sessions from the computer.

3.6 EUT setup diagram

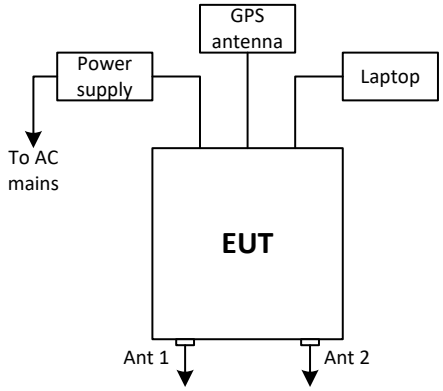


Figure 3.6-1: *Setup diagram*

3.7 EUT sub assemblies

Table 3.7-1: *EUT sub assemblies*

Description	Brand name	Model/Part number	Serial number
Power supply	Delta Electronics	DRP048V240W1BN	D482401BN00L13520086
Laptop	Dell	Latitude E6430	Nemko FA002851

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

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

Section 7. Test equipment

7.1 Test equipment list

Table 7.1-1: *Equipment list*

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
Spectrum analyzer	Rohde & Schwarz	FSU	FA001877	1 year	October 31, 2020
Temperature chamber	Espec	EPX-4H	FA002735	1 year	September 11, 2020
3 m EMI test chamber	TDK	SAC-3	FA002047	1 year	January 24, 2021
Flush mount turntable	Sunol	FM2022	FA002082	—	NCR
Controller	Sunol	SC104V	FA002060	—	NCR
Antenna mast	Sunol	TLT2	FA002061	—	NCR
Receiver/spectrum analyzer	Rohde & Schwarz	ESU 26	FA002043	1 year	May 8, 2020
Spectrum analyzer	Rohde & Schwarz	FSU	FA001877	1 year	October 31, 2020
Receiver/spectrum analyzer	Rohde & Schwarz	ESU 26	FA002043	1 year	May 8, 2020
Spectrum analyzer	Rohde & Schwarz	FSU	FA001877	1 year	October 31, 2020
Horn (1–18 GHz)	ETS Lindgren	3117	FA002840	1 year	January 25, 2021
Preamp (1–18 GHz)	ETS Lindgren	124334	FA002873	1 year	November 4, 2020
Preamp (1–18 GHz)	ETS Lindgren	124334	FA002877	1 year	November 4, 2020
Bilog antenna (20–3000 MHz)	Sunol	JB3	FA002108	1 year	January 14, 2021
Horn antenna (1–18 GHz)	EMCO	3115	FA000825	1 year	October 31, 2020
Horn antenna (18–40 GHz)	EMCO	3116	FA001847	1 year	November 7, 2020
Pre-amplifier (18–26 GHz)	Narda	BBS-1826N612	FA001550	—	VOU
Pre-amplifier (26–40 GHz)	Narda	DBL-2640N610	FA001556	—	VOU

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

Section 8. Testing data

8.1 FCC 96.41(b) Output power and PSD

8.1.1 Definitions and limits

Unless otherwise specified in this section, the maximum effective isotropic radiated power (EIRP) and maximum Power Spectral Density (PSD) of any CBSD and End User Device must comply with the limits shown in the following table:

Table 8.1-1: *Output power and PSD limits*

Device	Maximum EIRP, dBm/10 MHz	Maximum EIRP PSD, dBm/MHz
End User Device	23	N/A
Category A CBSD	30	20
Category B CBSD	**47**	**37**

8.1.2 Test summary

Test date	February 7, 2020

8.1.3 Observations, settings and special notes

Based on the maximum RF power listed in this report, considerations pertaining to the maximum allowed EIRP and antenna type should be considered for each installation. As per manufacturer declaration: EUT doesn't transmit more than one channel bandwidth simultaneously.
The test was performed using RMS detector of the spectrum analyzer with RBW of 1 MHz and VBW of 10 MHz and power integration over 10 MHz BW.
Total transmission power measurement results (in dBm units), provided below in the first 2 tables, are for the information purposes only. These values don't have limit in the section §96.41, since all the limits in the standard are expressed in dBm/10 MHz or dBm/MHz units.
Average output power was measured using the test method described in paragraph 5.2.4.4 of ANSI C63.26 (2015)
Average power density was measured using the test method described in paragraph 5.2.4.5 of ANSI C63.26 (2015)

8.1.4 Test data

Table 8.1-2: *Maximum total transmition power and EIRP for 10 MHz channel MIMO operation of CBRS Category B*

Frequency, MHz	Max Tx power at Ant 1, dBm	Max Tx power at Ant 2, dBm	Max Combined Tx power dBm	Antenna gain, dBi	EIRP, dBm	EIRP, W
3555.0	31.46	31.90	34.70	10.00	44.70	29.48
3625.0	31.69	31.95	34.83	10.00	44.83	30.42
3695.0	31.48	31.92	34.72	10.00	44.72	29.62
3555.0	27.50	27.84	30.68	14.00	44.68	29.40
3625.0	27.85	28.21	31.04	14.00	45.04	31.95
3695.0	27.46	27.96	30.73	14.00	44.73	29.70

Table 8.1-3: *Maximum total transmition power and EIRP for 20 MHz channel MIMO operation of CBRS Category B*

Frequency, MHz	Max Tx power at Ant 1, dBm	Max Tx power at Ant 2, dBm	Max Combined Tx power dBm	Antenna gain, dBi	EIRP, dBm	EIRP, W
3560.0	34.42	34.57	37.51	10.00	47.51	56.31
3625.0	34.68	34.94	37.82	10.00	47.82	60.57
3690.0	34.80	35.05	37.94	10.00	47.94	62.19
3560.0	30.39	30.70	33.56	14.00	47.56	56.99
3625.0	30.66	30.92	33.80	14.00	47.80	60.29
3690.0	30.50	30.93	33.73	14.00	47.73	59.30

Table 8.1-4: *EIRP in 10 MHz BW measurement result for 10 MHz MIMO operation of CBRS Category B*

Frequency, MHz	Modulation	Output power at Ant 1, dBm/10 MHz	Output power at Ant 2, dBm/10 MHz	Combined output power dBm/10 MHz	Antenna gain, dBi	EIRP, dBm/10 MHz	EIRP Limit, dBm/10 MHz	Margin, dB
3555.0	QPSK	31.40	31.90	34.67	10.00	44.67	47.00	2.33
3625.0	QPSK	31.69	31.88	34.80	10.00	44.80	47.00	2.20
3695.0	QPSK	31.48	31.92	34.72	10.00	44.72	47.00	2.28
3555.0	64QAM	31.46	31.67	34.58	10.00	44.58	47.00	2.42
3625.0	64QAM	31.68	31.95	34.83	10.00	44.83	47.00	2.17
3695.0	64QAM	31.39	31.83	34.63	10.00	44.63	47.00	2.37
3555.0	QPSK	27.42	27.81	30.63	14.00	44.63	47.00	2.37
3625.0	QPSK	27.85	28.18	31.03	14.00	45.03	47.00	1.97
3695.0	QPSK	27.46	27.96	30.73	14.00	44.73	47.00	2.27
3555.0	64QAM	27.50	27.84	30.68	14.00	44.68	47.00	2.32
3625.0	64QAM	27.84	28.21	31.04	14.00	45.04	47.00	1.96
3695.0	64QAM	27.37	27.88	30.64	14.00	44.64	47.00	2.36

Table 8.1-5: *EIRP in 10 MHz BW measurement result for 20 MHz MIMO operation of CBRS Category B*

Frequency, MHz	Modulation	Output power at Ant 1, dBm/10 MHz	Output power at Ant 2, dBm/10 MHz	Combined output power dBm/10 MHz	Antenna gain, dBi	EIRP, dBm/10 MHz	EIRP Limit, dBm/10 MHz	Margin, dB
3560.0	QPSK	31.87	32.01	34.95	10.00	44.95	47.00	2.05
3625.0	QPSK	32.13	32.40	35.28	10.00	45.28	47.00	1.72
3690.0	QPSK	32.22	32.54	35.39	10.00	45.39	47.00	1.61
3560.0	64QAM	31.88	32.06	34.98	10.00	44.98	47.00	2.02
3625.0	64QAM	32.15	32.26	35.22	10.00	45.22	47.00	1.78
3690.0	64QAM	32.09	32.51	35.32	10.00	45.32	47.00	1.68
3560.0	QPSK	27.83	28.22	31.04	14.00	45.04	47.00	1.96
3625.0	QPSK	28.08	28.38	31.24	14.00	45.24	47.00	1.76
3690.0	QPSK	27.93	28.40	31.18	14.00	45.18	47.00	1.82
3560.0	64QAM	27.90	28.08	31.00	14.00	45.00	47.00	2.00
3625.0	64QAM	28.13	28.37	31.26	14.00	45.26	47.00	1.74
3690.0	64QAM	27.90	28.39	31.16	14.00	45.16	47.00	1.84

Table 8.1-6: *PSD in 1 MHz BW measurement result for 10 MHz channel CBSD Category B*

Frequency, MHz	Modulation	Antenna gain, dBi	PSD at Ant 1, dBm/MHz	PSD at Ant 2, dBm/MHz	Combined PSD, dBm/MHz	EIRP PSD, dBm/MHz	EIRPSD Limit, dBm/MHz	Margin, dB
3555.0	QPSK	10	23.57	23.87	26.73	36.73	37.00	0.27
3625.0	QPSK	10	23.91	23.97	26.95	36.95	37.00	0.05
3695.0	QPSK	10	23.42	23.82	26.63	36.63	37.00	0.37
3555.0	64QAM	10	23.13	23.58	26.37	36.37	37.00	0.63
3625.0	64QAM	10	23.38	23.63	26.52	36.52	37.00	0.48
3695.0	64QAM	10	23.08	23.58	26.35	36.35	37.00	0.65
3555.0	QPSK	14	19.51	19.75	22.64	36.64	37.00	0.36
3625.0	QPSK	14	19.89	19.95	22.93	36.93	37.00	0.07
3695.0	QPSK	14	19.35	19.89	22.64	36.64	37.00	0.36
3555.0	64QAM	14	19.23	19.67	22.47	36.47	37.00	0.53
3625.0	64QAM	14	19.55	19.97	22.78	36.78	37.00	0.22
3695.0	64QAM	14	19.14	19.72	22.45	36.45	37.00	0.55

Table 8.1-7: *PSD in 1 MHz BW measurement result for 20 MHz channel CBSD Category B*

Frequency, MHz	Modulation	Antenna gain, dBi	PSD at Ant 1, dBm/MHz	PSD at Ant 2, dBm/MHz	Combined PSD, dBm/MHz	EIRP PSD, dBm/MHz	EIRPSD Limit, dBm/MHz	Margin, dB
3560.0	QPSK	10	23.72	23.49	26.62	36.62	37.00	0.38
3625.0	QPSK	10	23.97	23.95	26.97	36.97	37.00	0.03
3690.0	QPSK	10	23.91	23.62	26.78	36.78	37.00	0.22
3560.0	64QAM	10	23.47	23.57	26.54	36.54	37.00	0.46
3625.0	64QAM	10	23.51	23.66	26.60	36.60	37.00	0.40
3690.0	64QAM	10	23.88	24.07	26.99	36.99	37.00	0.01
3560.0	QPSK	14	19.40	19.75	22.59	36.59	37.00	0.41
3625.0	QPSK	14	19.44	19.83	22.65	36.65	37.00	0.35
3690.0	QPSK	14	19.60	19.97	22.80	36.80	37.00	0.20
3560.0	64QAM	14	19.49	19.67	22.60	36.60	37.00	0.40
3625.0	64QAM	14	19.49	19.71	22.61	36.61	37.00	0.39
3690.0	64QAM	14	19.74	19.93	22.85	36.85	37.00	0.15

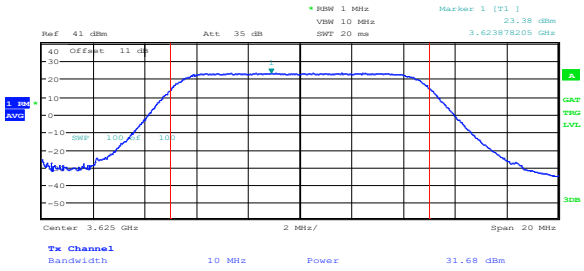


Figure 8.1-1: *Total power and power spectral density sample plot, 10 MHz channel*

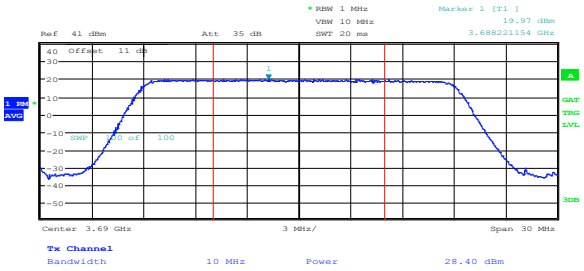


Figure 8.1-2: *Total power and power spectral density sample plot, 20 MHz channel*

8.2 FCC 96.41(g) The peak-to-average power ratio (PAPR)

8.2.1 Definitions and limits

The peak-to-average power ratio (PAPR) of any CBSD transmitter output power must not exceed 13 dB. PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities or another Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

8.2.2 Test summary

Test date	February 7, 2020

8.2.3 Observations, settings and special notes

The peak-to-average power ratio was measured using the test method described in paragraph 5.2.6 of ANSI C63.26 (2015)
The test was performed using spectrum analyzer signal statistics' Complimentary Cumulative Distribution Function

8.2.4 Test data

Table 8.2-1: *PAPR measurement results for Low power operation (14 dBi antenna)*

Channel BW, MHz	Antenna port	Modulation	Frequency, MHz	CCDF at 0.1%, dB	Limit, dB	Margin, dB
10	1	QPSK	3555.0	7.88	13.00	5.12
10	1	QPSK	3625.0	7.82	13.00	5.18
10	1	QPSK	3695.0	7.72	13.00	5.28
10	1	64QAM	3555.0	8.43	13.00	4.57
10	1	64QAM	3625.0	7.85	13.00	5.15
10	1	64QAM	3695.0	8.14	13.00	4.86
10	2	QPSK	3555.0	7.79	13.00	5.21
10	2	QPSK	3625.0	7.85	13.00	5.15
10	2	QPSK	3695.0	7.92	13.00	5.08
10	2	64QAM	3555.0	8.43	13.00	4.57
10	2	64QAM	3625.0	7.76	13.00	5.24
10	2	64QAM	3695.0	7.69	13.00	5.31
20	1	QPSK	3560.0	8.17	13.00	4.83
20	1	QPSK	3625.0	8.40	13.00	4.60
20	1	QPSK	3690.0	8.27	13.00	4.73
20	1	64QAM	3560.0	8.17	13.00	4.83
20	1	64QAM	3625.0	8.30	13.00	4.70
20	1	64QAM	3690.0	8.27	13.00	4.73
20	2	QPSK	3560.0	8.21	13.00	4.79
20	2	QPSK	3625.0	8.33	13.00	4.67
20	2	QPSK	3690.0	8.08	13.00	4.92
20	2	64QAM	3560.0	8.21	13.00	4.79
20	2	64QAM	3625.0	8.14	13.00	4.86
20	2	64QAM	3690.0	8.17	13.00	4.83

Table 8.2-2: *PAPR measurement results for High power operation (10 dBi antenna)*

Channel BW, MHz	Antenna port	Modulation	Frequency, MHz	CCDF at 0.1%, dB	Limit, dB	Margin, dB
10	1	QPSK	3555.0	7.88	13.00	5.12
10	1	QPSK	3625.0	7.79	13.00	5.21
10	1	QPSK	3695.0	7.72	13.00	5.28
10	1	64QAM	3555.0	8.43	13.00	4.57
10	1	64QAM	3625.0	7.85	13.00	5.15
10	1	64QAM	3695.0	8.14	13.00	4.86
10	2	QPSK	3555.0	7.76	13.00	5.24
10	2	QPSK	3625.0	7.82	13.00	5.18
10	2	QPSK	3695.0	7.88	13.00	5.12
10	2	64QAM	3555.0	8.43	13.00	4.57
10	2	64QAM	3625.0	7.76	13.00	5.24
10	2	64QAM	3695.0	7.69	13.00	5.31
20	1	QPSK	3560.0	8.21	13.00	4.79
20	1	QPSK	3625.0	8.49	13.00	4.51
20	1	QPSK	3690.0	8.17	13.00	4.83
20	1	64QAM	3560.0	8.49	13.00	4.51
20	1	64QAM	3625.0	8.27	13.00	4.73
20	1	64QAM	3690.0	8.27	13.00	4.73
20	2	QPSK	3560.0	8.21	13.00	4.79
20	2	QPSK	3625.0	8.46	13.00	4.54
20	2	QPSK	3690.0	8.14	13.00	4.86
20	2	64QAM	3560.0	8.43	13.00	4.57
20	2	64QAM	3625.0	8.27	13.00	4.73
20	2	64QAM	3690.0	8.24	13.00	4.76

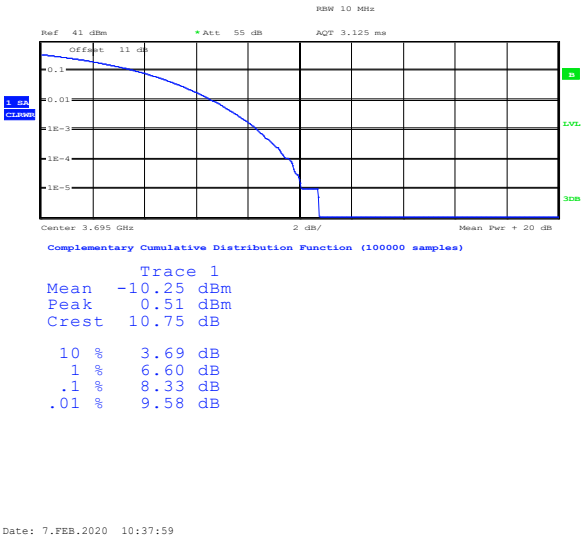


Figure 8.2-1: *CCDF sample plot, 10 MHz channel*

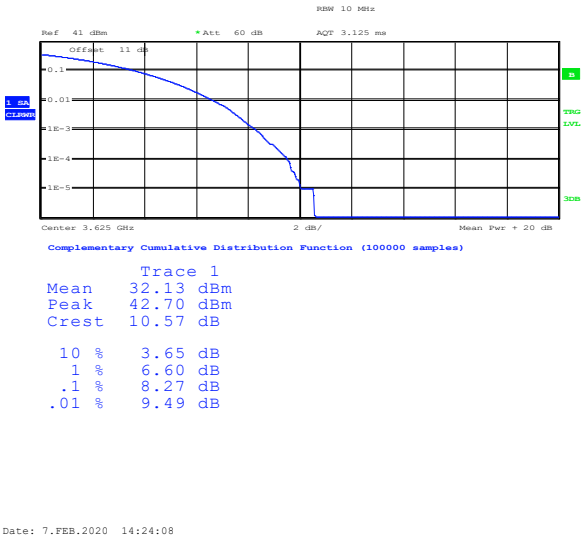


Figure 8.2-2: *CCDF sample plot, 20 MHz channel*

8.3 FCC 96.41(e)(3) Emission bandwidth and occupied bandwidth

8.3.1 Definitions and limits

The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.
FCC 2.1049 The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

8.3.2 Test summary

Test date	October 10, 2018

8.3.3 Observations, settings and special notes

Occupied bandwidth was measured using the test method described in paragraph 5.4 of ANSI C63.26 (2015).
Spectrum analyser settings for OBW measurements:

Resolution bandwidth	100 kHz
Video bandwidth	300 kHz
Detector mode	Peak
Trace mode	Max Hold

8.3.4 Test data

Table 8.3-1: *Occupied bandwidth measurement results for Low power operation (14 dBi antenna)*

Channel BW, MHz	Antenna port	Frequency, MHz	Modulation	99% OBW, MHz	26 dB BW,MHz
10	1	3555.0	QPSK	8.97	9.51
10	1	3625.0	QPSK	8.97	9.55
10	1	3695.0	QPSK	8.94	9.51
10	1	3555.0	64QAM	8.97	9.55
10	1	3625.0	64QAM	8.97	9.55
10	1	3695.0	64QAM	8.97	9.48
10	2	3555.0	QPSK	8.94	9.55
10	2	3625.0	QPSK	8.94	9.48
10	2	3695.0	QPSK	8.97	9.48
10	2	3555.0	64QAM	8.97	9.48
10	2	3625.0	64QAM	8.94	9.55
10	2	3695.0	64QAM	8.97	9.51
20	1	3560.0	QPSK	17.88	18.78
20	1	3625.0	QPSK	17.82	18.78
20	1	3690.0	QPSK	17.94	18.91
20	1	3560.0	64QAM	17.94	18.91
20	1	3625.0	64QAM	17.94	18.97
20	1	3690.0	64QAM	17.94	18.84
20	2	3560.0	QPSK	17.94	18.78
20	2	3625.0	QPSK	17.88	18.97
20	2	3690.0	QPSK	17.94	18.71
20	2	3560.0	64QAM	17.94	18.84
20	2	3625.0	64QAM	17.94	18.84
20	2	3690.0	64QAM	17.94	18.91

Table 8.3-2: *Occupied bandwidth measurement results for High power operation (10 dBi antenna)*

Channel BW, MHz	Antenna port	Frequency, MHz	Modulation	99% OBW, MHz	26 dB BW,MHz
10	1	3555.0	QPSK	8.97	9.54
10	1	3625.0	QPSK	8.94	9.45
10	1	3695.0	QPSK	8.94	9.58
10	1	3555.0	64QAM	8.97	9.48
10	1	3625.0	64QAM	8.97	9.55
10	1	3695.0	64QAM	8.94	9.55
10	2	3555.0	QPSK	8.94	9.55
10	2	3625.0	QPSK	8.97	9.55
10	2	3695.0	QPSK	8.97	9.51
10	2	3555.0	64QAM	8.97	9.55
10	2	3625.0	64QAM	8.97	9.48
10	2	3695.0	64QAM	8.97	9.48
20	1	3560.0	QPSK	17.94	18.84
20	1	3625.0	QPSK	17.88	18.71
20	1	3690.0	QPSK	17.94	18.84
20	1	3560.0	64QAM	17.94	18.97
20	1	3625.0	64QAM	17.94	18.84
20	1	3690.0	64QAM	17.94	18.91
20	2	3560.0	QPSK	17.88	18.84
20	2	3625.0	QPSK	17.94	18.84
20	2	3690.0	QPSK	17.94	18.84
20	2	3560.0	64QAM	17.94	18.78
20	2	3625.0	64QAM	17.94	18.91
20	2	3690.0	64QAM	17.94	18.78

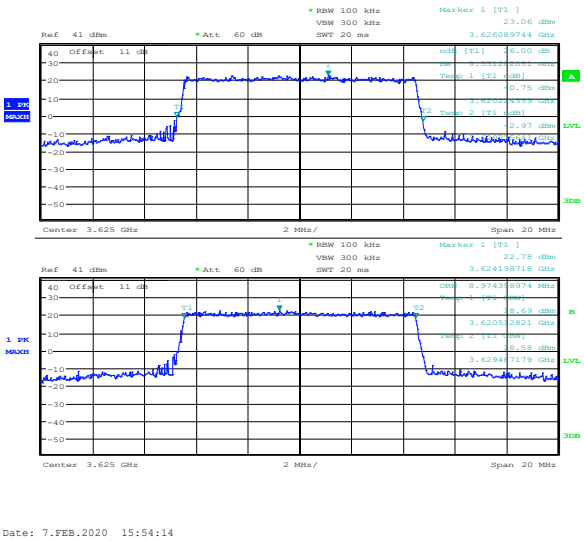


Figure 8.3-1: *Occupied bandwidth sample plot for 10 MHz channel*

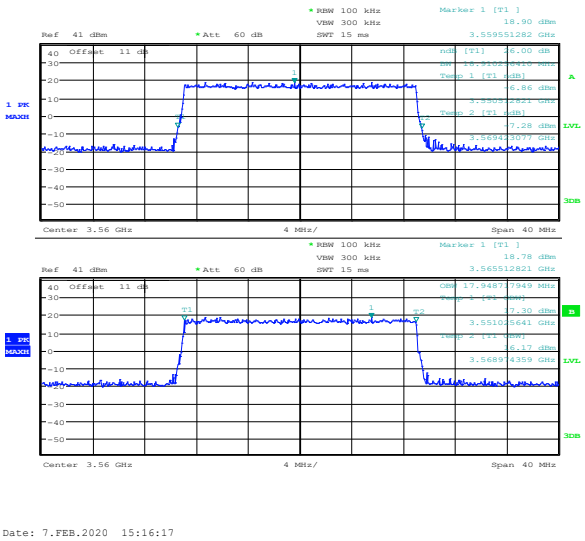


Figure 8.3-2: *Occupied bandwidth sample plot for 20 MHz channel*

8.4 FCC 96.41(e)(1) 3.5 GHz emissions and interference limits

8.4.1 Definitions and limits

General protection levels. Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by the SAS to CBSDs, the conducted power of any emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed −13 dBm/MHz within 0–10 MHz above the upper SAS-assigned channel edge and within 0–10 MHz below the lower SAS-assigned channel edge. At all frequencies greater than 10 MHz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any emission shall not exceed −25 dBm/MHz. The upper and lower SAS assigned channel edges are the upper and lower limits of any channel assigned to a CBSD by an SAS, or in the case of multiple contiguous channels, the upper and lower limits of the combined contiguous channels.

(3) Measurement procedure. (i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the licensee's authorized frequency channel, a resolution bandwidth of no less than one percent of the fundamental emission bandwidth may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full reference bandwidth (i.e., 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

8.4.2 Test summary

Test date	February 12, 2020

8.4.3 Observations, settings and special notes

Spurious emissions were measured using the test method described in paragraph 5.7 of ANSI C63.26 (2015).
Spectrum analyser settings for measurements within 1 MHz from the SAS assigned channel edges:

Resolution bandwidth	30 kHz
Video bandwidth	300 kHz
Detector mode	RMS
Trace mode	Power averaging
Power integration	Over 100 kHz for 10 MHz channel; over 200 kHz for 20 MHz channel

Spectrum analyser settings for measurements outside 1 MHz from the SAS assigned channel edges:

Resolution bandwidth	1 MHz
Video bandwidth	3 MHz
Detector mode	RMS
Trace mode	Power averaging

8.4.4 Test data

Table 8.4-1: *Emission mask measurements for 10 MHz channel*

Antenna port	Channel	Offset from the SAS assigned channel edges, MHz	Frequency of max emission, MHz	Emission level, dBm	Limit[1], dBm	Margin, dB
1	Low	0–1	3550.0	-32.74	-16.00	16.74
1	Low	0–1	3560.0	-33.19	-16.00	17.19
1	Low	1–10	3549.0	-27.90	-16.00	11.90
1	Low	1–10	3561.0	-26.61	-16.00	10.61
1	Low	>10	3540.0	-36.79	-28.00	8.79
1	Low	>10	3570.0	-34.60	-28.00	6.60
1	Mid	0–1	3620.0	-35.70	-16.00	19.70
1	Mid	0–1	3630.0	-35.28	-16.00	19.28
1	Mid	1–10	3619.0	-30.09	-16.00	14.09
1	Mid	1–10	3631.0	-35.37	-16.00	19.37
1	Mid	>10	3610.0	-36.04	-28.00	8.04
1	Mid	>10	3640.0	-33.33	-28.00	5.33
1	High	0–1	3690.0	-33.02	-16.00	17.02
1	High	0–1	3700.0	-34.01	-16.00	18.01
1	High	1–10	3689.0	-27.90	-16.00	11.90
1	High	1–10	3701.0	-28.62	-16.00	12.62
1	High	>10	3680.0	-35.87	-28.00	7.87
1	High	>10	3710.0	-37.35	-28.00	9.35
2	Low	0–1	3550.0	-36.14	-16.00	20.14
2	Low	0–1	3560.0	-37.57	-16.00	21.57
2	Low	1–10	3549.0	-30.86	-16.00	14.86
2	Low	1–10	3561.0	-31.00	-16.00	15.00
2	Low	>10	3540.0	-42.33	-28.00	14.33
2	Low	>10	3570.0	-35.08	-28.00	7.08
2	Mid	0–1	3620.0	-33.94	-16.00	17.94
2	Mid	0–1	3630.0	-31.87	-16.00	15.87
2	Mid	1–10	3619.0	-28.28	-16.00	12.28
2	Mid	1–10	3631.0	-26.18	-16.00	10.18
2	Mid	>10	3610.0	-35.42	-28.00	7.42
2	Mid	>10	3640.0	-35.13	-28.00	7.13
2	High	0–1	3690.0	-33.03	-16.00	17.03
2	High	0–1	3700.0	-33.57	-16.00	17.57
2	High	1–10	3689.0	-27.98	-16.00	11.98
2	High	1–10	3701.0	-26.71	-16.00	10.71
2	High	>10	3680.0	-34.88	-28.00	6.88
2	High	>10	3710.0	-35.57	-28.00	7.57

Note: [1]To compensate for second antenna port during MIMO 2×2 operation: 3 dB was subtracted from the limit.

Table 8.4-2: *Emission mask measurements for 20 MHz channel*

Antenna port	Channel	Offset from the SAS assigned channel edges, MHz	Frequency of max emission, MHz	Emission level, dBm	Limit, dBm	Margin[1], dB
1	Low	0–1	3550.0	-36.45	-16.00	20.45
1	Low	0–1	3570.0	-33.52	-16.00	17.52
1	Low	1–10	3549.0	-31.33	-16.00	15.33
1	Low	1–10	3571.0	-26.78	-16.00	10.78
1	Low	>10	3540.0	-31.89	-28.00	3.89
1	Low	>10	3580.0	-31.26	-28.00	3.26
1	Mid	0–1	3615.0	-34.38	-16.00	18.38
1	Mid	0–1	3635.0	-30.52	-16.00	14.52
1	Mid	1–10	3614.0	-26.60	-16.00	10.60
1	Mid	1–10	3636.0	-23.69	-16.00	7.69
1	Mid	>10	3605.0	-33.10	-28.00	5.10
1	Mid	>10	3645.0	-31.83	-28.00	3.83
1	High	0–1	3680.0	-34.20	-16.00	18.20
1	High	0–1	3700.0	-29.51	-16.00	13.51
1	High	1–10	3679.0	-26.24	-16.00	10.24
1	High	1–10	3701.0	-22.51	-16.00	6.51
1	High	>10	3670.0	-31.18	-28.00	3.18
1	High	>10	3710.0	-31.29	-28.00	3.29
2	Low	0–1	3550.0	-37.10	-16.00	21.10
2	Low	0–1	3570.0	-36.06	-16.00	20.06
2	Low	1–10	3549.0	-30.58	-16.00	14.58
2	Low	1–10	3571.0	-31.04	-16.00	15.04
2	Low	>10	3540.0	-32.35	-28.00	4.35
2	Low	>10	3580.0	-31.11	-28.00	3.11
2	Mid	0–1	3615.0	-32.88	-16.00	16.88
2	Mid	0–1	3635.0	-30.00	-16.00	14.00
2	Mid	1–10	3614.0	-27.39	-16.00	11.39
2	Mid	1–10	3636.0	-22.97	-16.00	6.97
2	Mid	>10	3605.0	-31.36	-28.00	3.36
2	Mid	>10	3645.0	-30.56	-28.00	2.56
2	High	0–1	3680.0	-32.11	-16.00	16.11
2	High	0–1	3700.0	-27.82	-16.00	11.82
2	High	1–10	3679.0	-24.51	-16.00	8.51
2	High	1–10	3701.0	-20.49	-16.00	4.49
2	High	>10	3670.0	-30.24	-28.00	2.24
2	High	>10	3710.0	-31.61	-28.00	3.61

Note: [1]To compensate for second antenna port during MIMO 2×2 operation: 3 dB was subtracted from the limit.

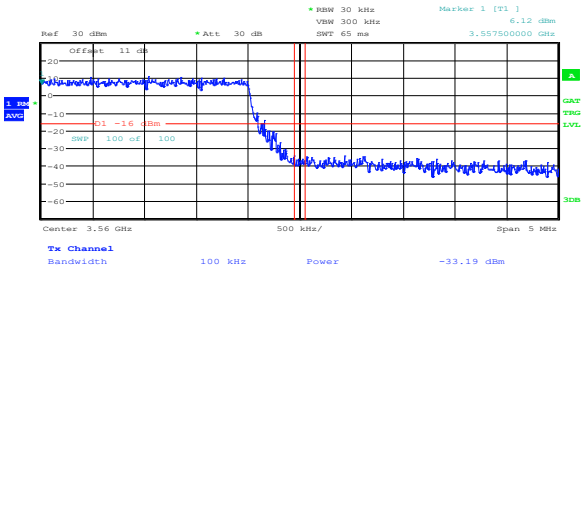


Figure 8.4-1: *Emission measurement within 0–1 MHz from the SAS assigned channel edge, sample plot for 10 MHz channel*

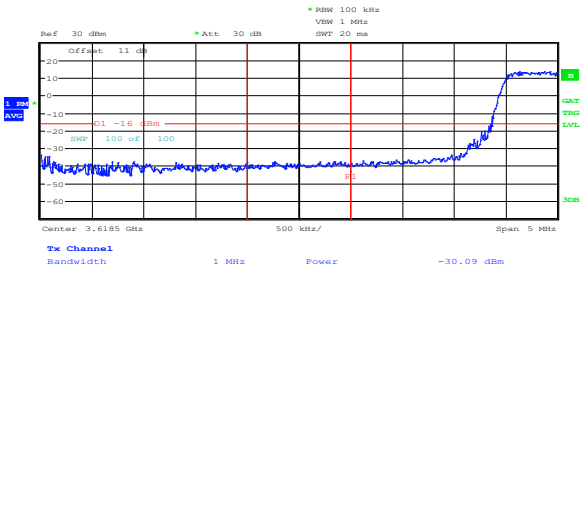


Figure 8.4-2: *Emission measurement within 1–10 MHz from the SAS assigned channel edge, sample plot for 10 MHz channel*

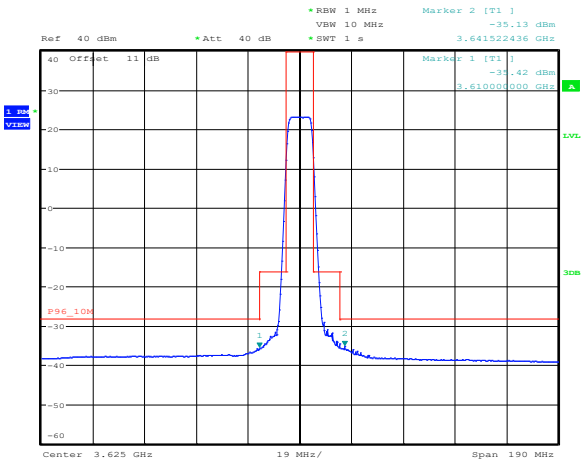


Figure 8.4-3: *Emission measurement more than 10 MHz from the SAS assigned channel edge, sample plot for 10 MHz channel*

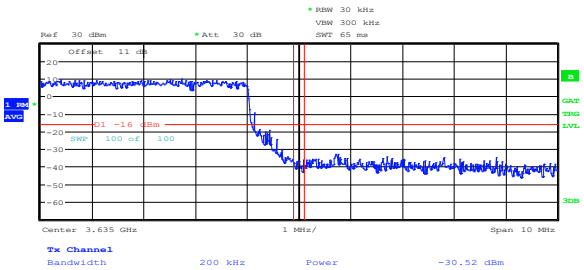


Figure 8.4-4: *Emission measurement within 0–1 MHz from the SAS assigned channel edge, sample plot for 20 MHz channel*

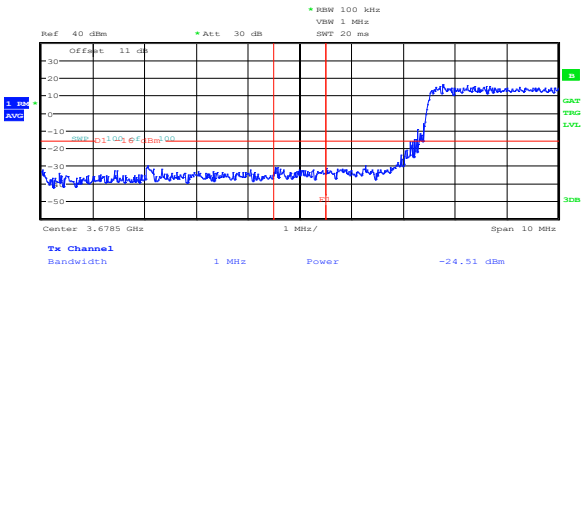


Figure 8.4-5: *Emission measurement within 1–10 MHz from the SAS assigned channel edge, sample plot for 20 MHz channel*

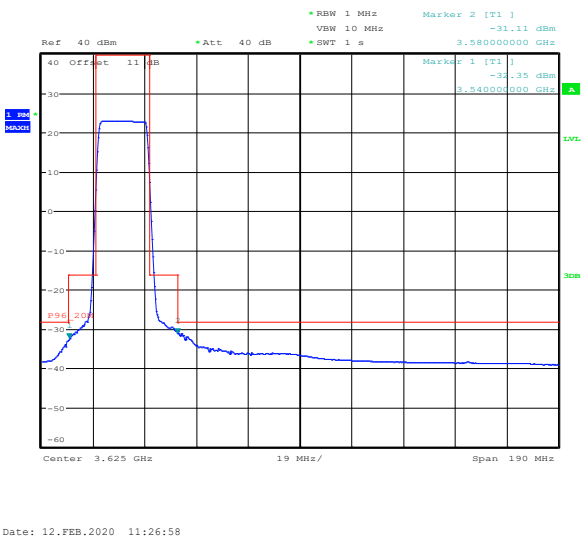


Figure 8.4-6: *Emission measurement more than 10 MHz from the SAS assigned channel edge, sample plot for 20 MHz channel*

8.5 FCC 96.41(e)(2) Additional protection levels

8.5.1 Definitions and limits

The conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed −40 dBm/MHz.

8.5.2 Test summary

Test date	February 12 and 13, 2020

8.5.3 Observations, settings and special notes

Spurious emissions were measured using the test method described in paragraph 5.7 of ANSI C63.26 (2015). The testing was performed conducted on each antenna port as well as radiated with both ports operating simultaeneously in MIMO mode and terminated with 50 Ohm loads.Spurious emissions were tested from 30 MHz to the 10th harmonic. Only critical plots provided in test data below. Spectrum analyser settings:

Resolution bandwidth	100 kHz (radiated below 1 GHz) and 1 MHz (radiated above 1 GHz); 1 MHz (conducted)
Video bandwidth	3 × RBW
Detector and trace mode	RMS Power averaging

8.5.4 Test data

Table 8.5-1: *Alocated CBRS band edge measurements at 3530 and 3720 MHz*

Antenna port	Channel BW, MHz	Channel	Band edge frequency, MHz	Emission level, dBm/MHz	Limit[1], dBm/MHz	Margin, dB
1	10	Low	3530	-53.23	-43.00	10.23
1	10	Low	3720	-53.13	-43.00	10.13
1	10	Mid	3530	-53.36	-43.00	10.36
1	10	Mid	3720	-53.11	-43.00	10.11
1	10	High	3530	-53.33	-43.00	10.33
1	10	High	3720	-53.11	-43.00	10.11
2	10	Low	3530	-51.60	-43.00	8.60
2	10	Low	3720	-53.11	-43.00	10.11
2	10	Mid	3530	-53.39	-43.00	10.39
2	10	Mid	3720	-53.12	-43.00	10.12
2	10	High	3530	-53.36	-43.00	10.36
2	10	High	3720	-53.09	-43.00	10.09
1	20	Low	3530	-53.40	-43.00	10.40
1	20	Low	3720	-53.37	-43.00	10.37
1	20	Mid	3530	-53.48	-43.00	10.48
1	20	Mid	3720	-53.36	-43.00	10.36
1	20	High	3530	-52.57	-43.00	9.57
1	20	High	3720	-52.12	-43.00	9.12
2	20	Low	3530	-53.38	-43.00	10.38
2	20	Low	3720	-52.56	-43.00	9.56
2	20	Mid	3530	-54.29	-43.00	11.29
2	20	Mid	3720	-52.58	-43.00	9.58
2	20	High	3530	-52.63	-43.00	9.63
2	20	High	3720	-52.08	-43.00	9.08

Note: [1]To compensate for second antenna port during MIMO 2×2 operation: 3 dB was subtracted from the limit.

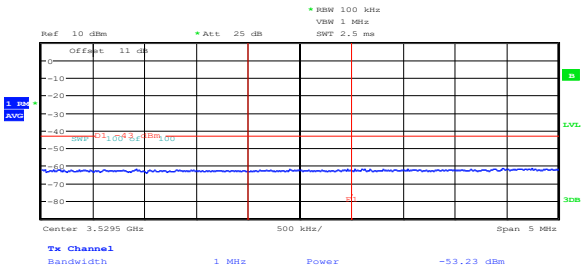


Figure 8.5-1: *Band emission measurement at 3530 MHz sample plot*

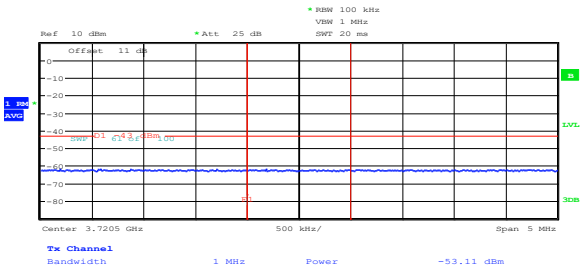


Figure 8.5-2: *Band emission measurement at 3720 MHz sample plot*

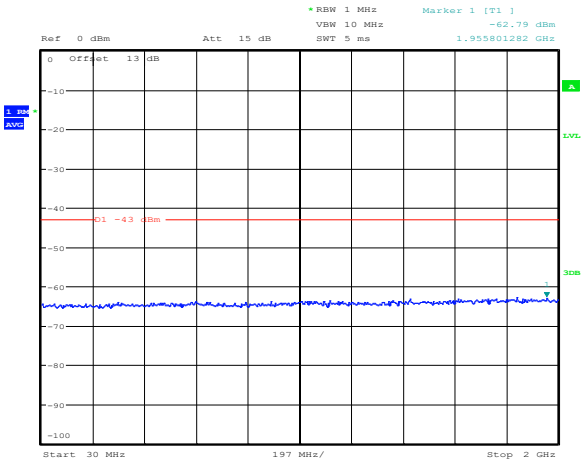


Figure 8.5-3: *Conducted spurious emissions below 2 GHz at Antenna 1 for 10 MHz low channel*

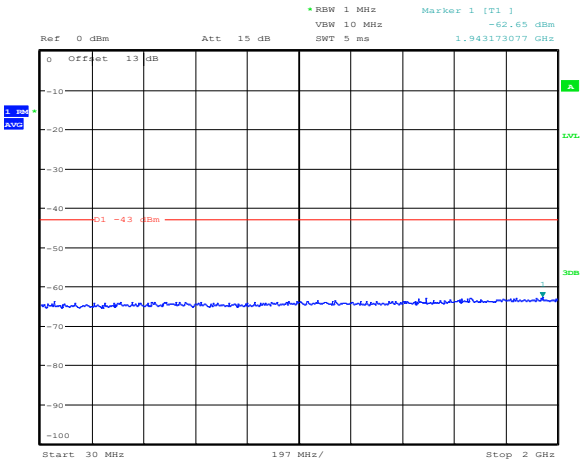


Figure 8.5-4: *Conducted spurious emissions below 2 GHz at Antenna 1 for 10 MHz mid channel*

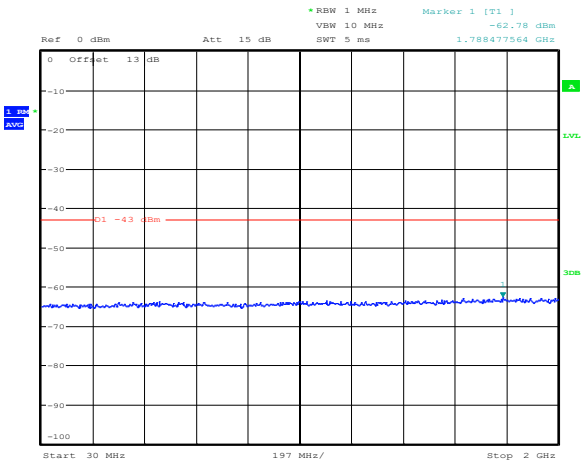


Figure 8.5-5: *Conducted spurious emissions below 2 GHz at Antenna 1 for 10 MHz high channel*

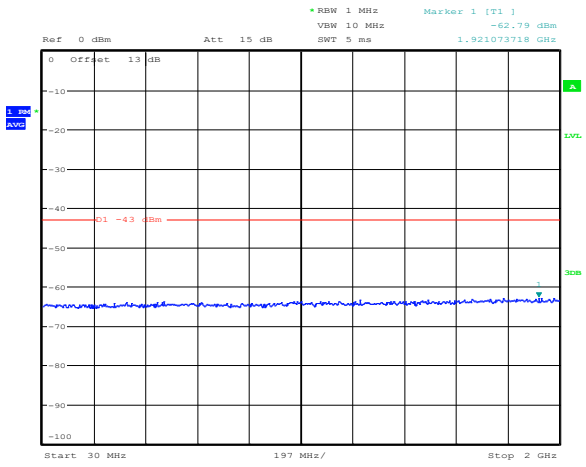


Figure 8.5-6: *Conducted spurious emissions below 2 GHz at Antenna 2 for 10 MHz low channel*

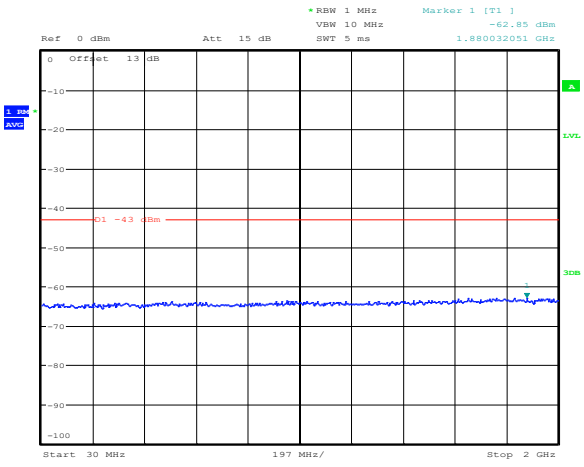


Figure 8.5-7: *Conducted spurious emissions below 2 GHz at Antenna 2 for 10 MHz mid channel*

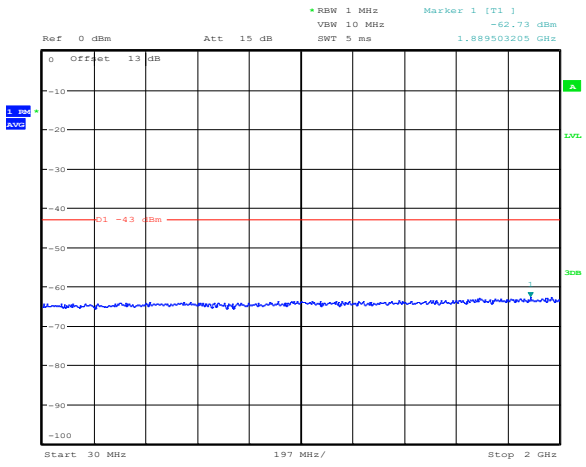


Figure 8.5-8: *Conducted spurious emissions below 2 GHz at Antenna 2 for 10 MHz high channel*

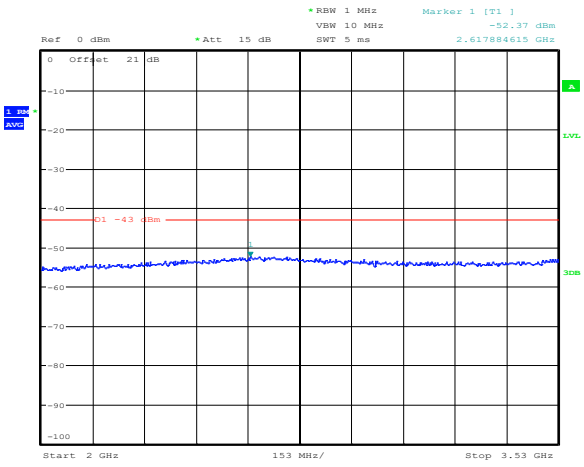


Figure 8.5-9: *Conducted spurious emissions within 2–3.53 GHz at Antenna 1 for 10 MHz low channel*

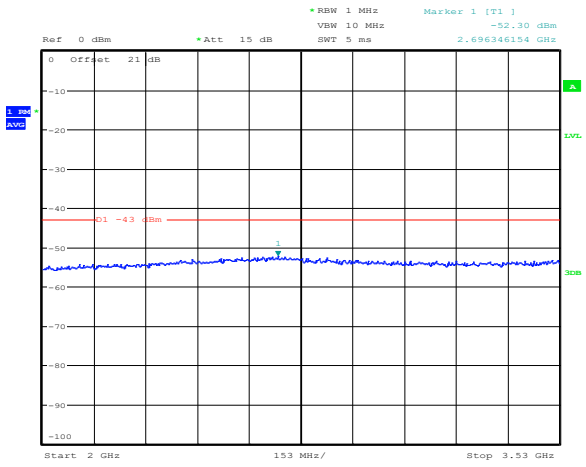


Figure 8.5-10: *Conducted spurious emissions within 2–3.53 GHz at Antenna 1 for 10 MHz mid channel*

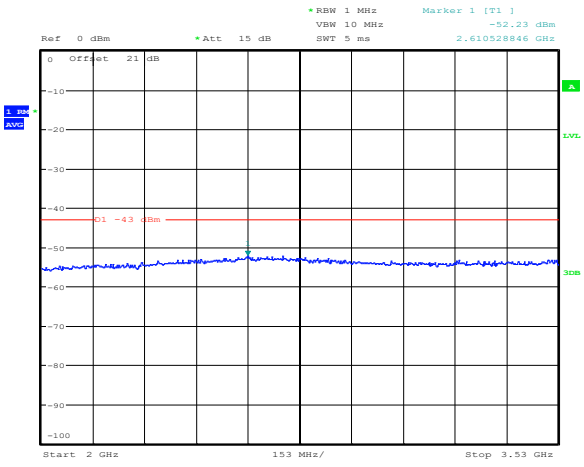


Figure 8.5-11: *Conducted spurious emissions within 2–3.53 GHz at Antenna 1 for 10 MHz high channel*

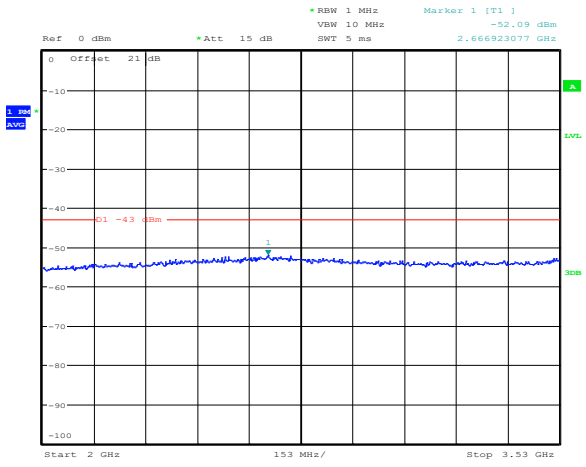


Figure 8.5-12: *Conducted spurious emissions within 2–3.53 GHz at Antenna 2 for 10 MHz low channel*

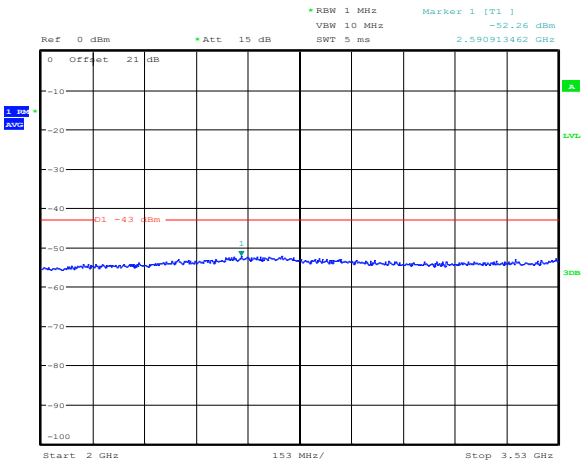


Figure 8.5-13: *Conducted spurious emissions within 2–3.53 GHz at Antenna 2 for 10 MHz mid channel*

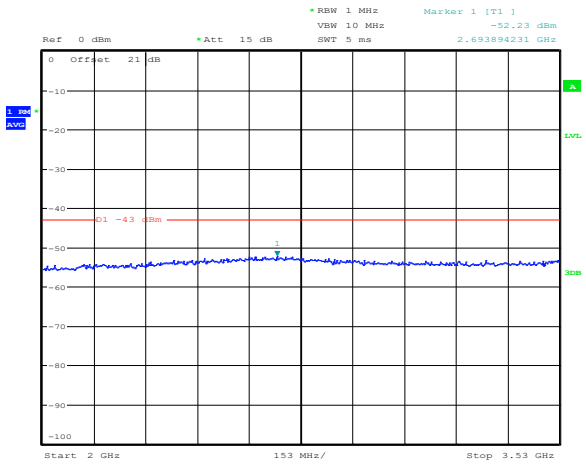


Figure 8.5-14: *Conducted spurious emissions within 2–3.53 GHz at Antenna 2 for 10 MHz high channel*

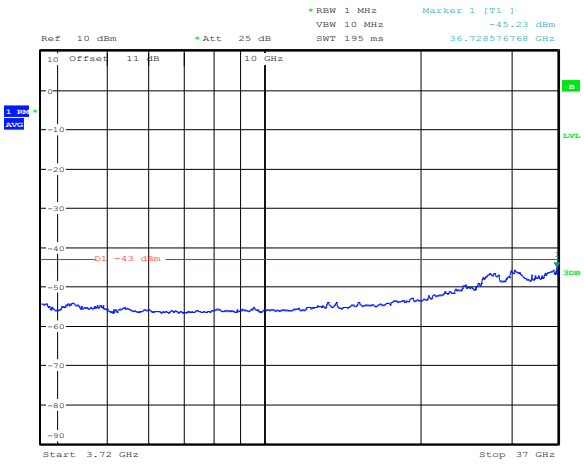


Figure 8.5-15: *Conducted spurious emissions within 3.72–37 GHz at Antenna 1 for 10 MHz low channel*

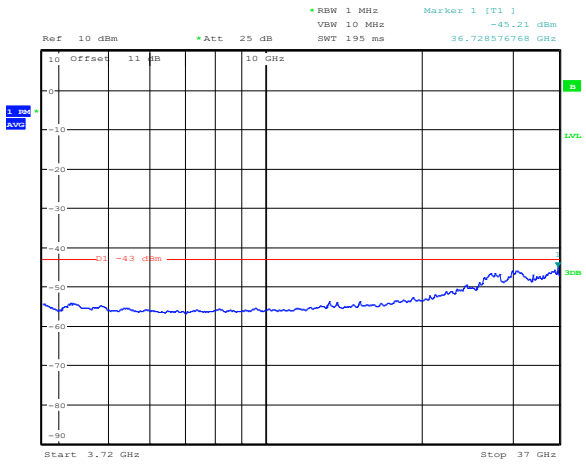


Figure 8.5-16: *Conducted spurious emissions within 3.72–37 GHz at Antenna 1 for 10 MHz mid channel*

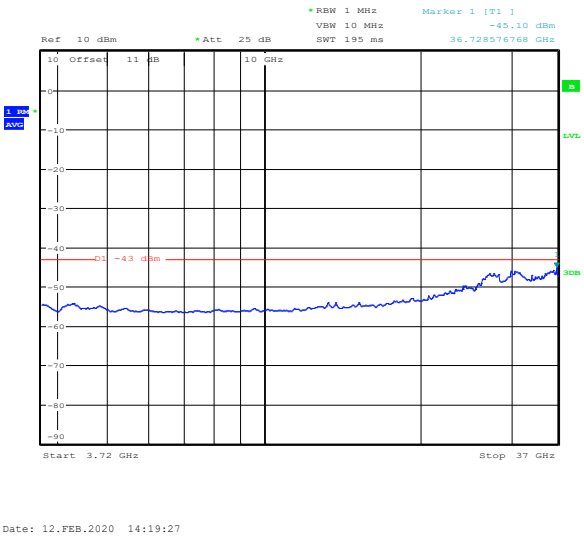


Figure 8.5-17: *Conducted spurious emissions within 3.72–37 GHz at Antenna 1 for 10 MHz high channel*

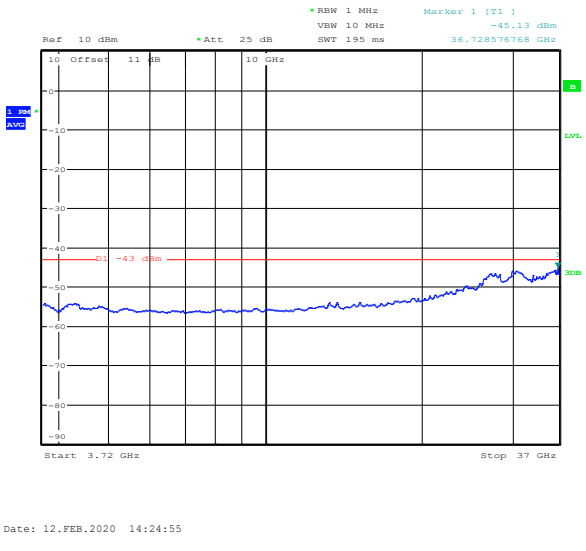


Figure 8.5-18: *Conducted spurious emissions within 3.72–37 GHz at Antenna 2 for 10 MHz low channel*

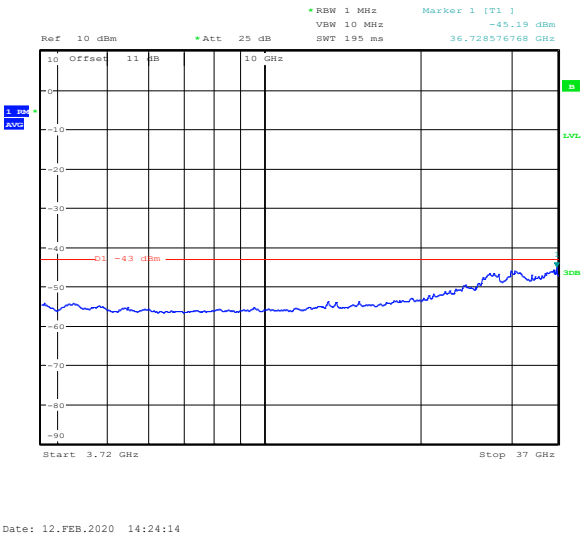


Figure 8.5-19: *Conducted spurious emissions within 3.72–37 GHz at Antenna 2 for 10 MHz mid channel*

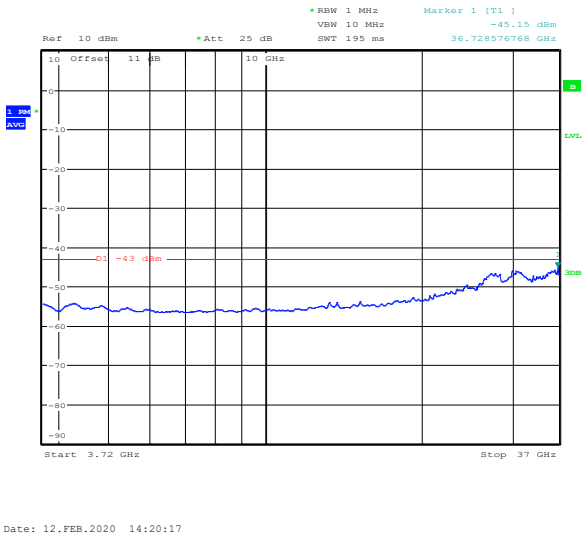


Figure 8.5-20: *Conducted spurious emissions within 3.72–37 GHz at Antenna 2 for 10 MHz high channel*

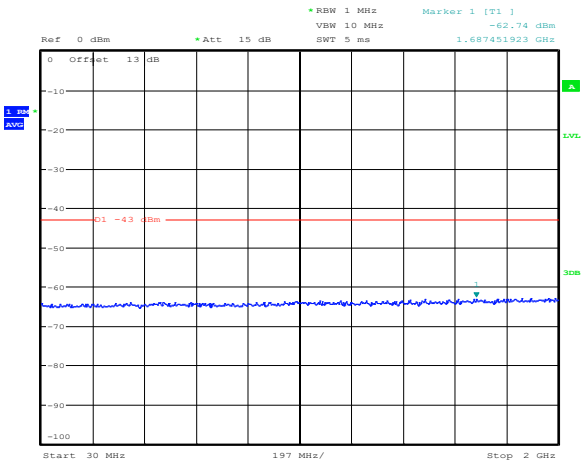


Figure 8.5-21: *Conducted spurious emissions below 2 GHz at Antenna 1 for 20 MHz low channel*

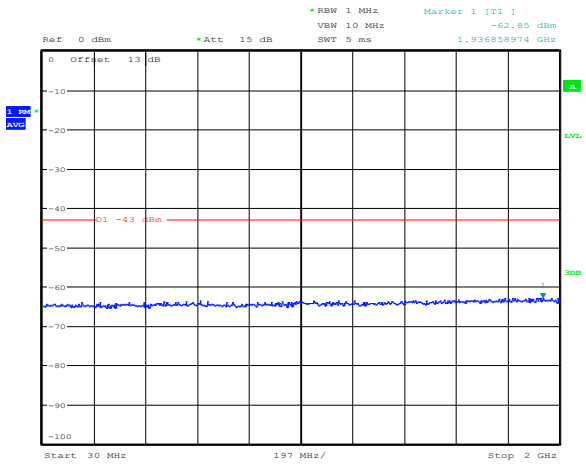


Figure 8.5-22: *Conducted spurious emissions below 2 GHz at Antenna 1 for 20 MHz mid channel*

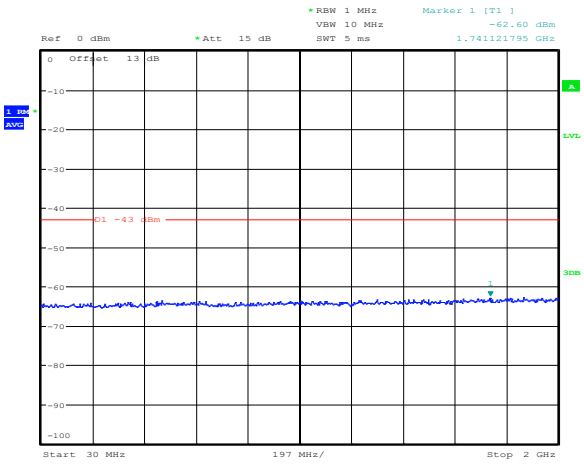


Figure 8.5-23: *Conducted spurious emissions below 2 GHz at Antenna 1 for 20 MHz high channel*

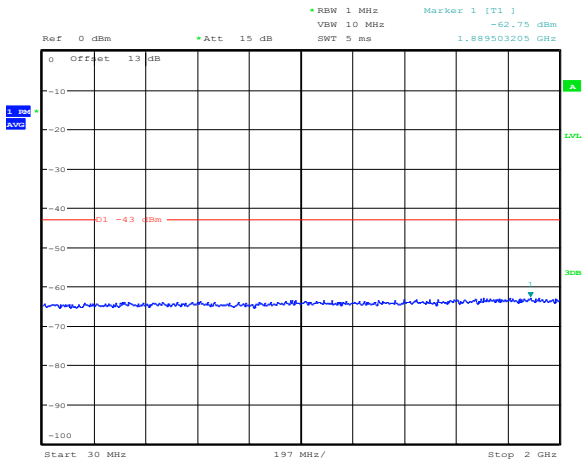


Figure 8.5-24: *Conducted spurious emissions below 2 GHz at Antenna 2 for 20 MHz low channel*

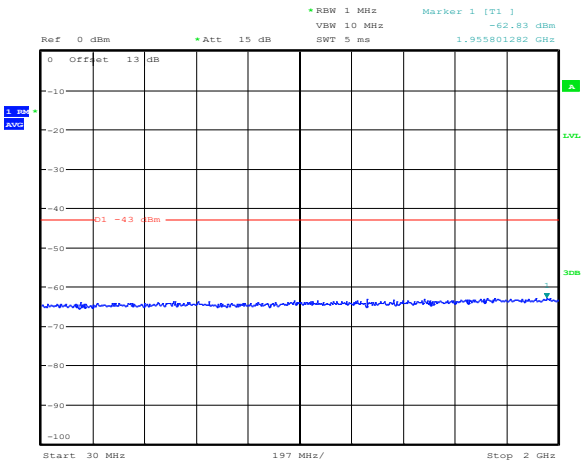


Figure 8.5-25: *Conducted spurious emissions below 2 GHz at Antenna 2 for 20 MHz mid channel*

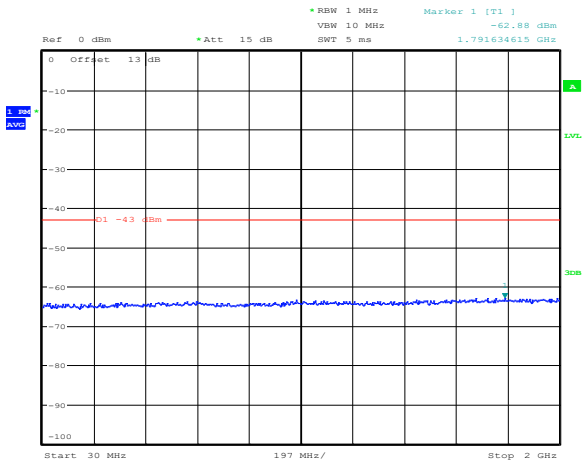


Figure 8.5-26: *Conducted spurious emissions below 2 GHz at Antenna 2 for 20 MHz high channel*

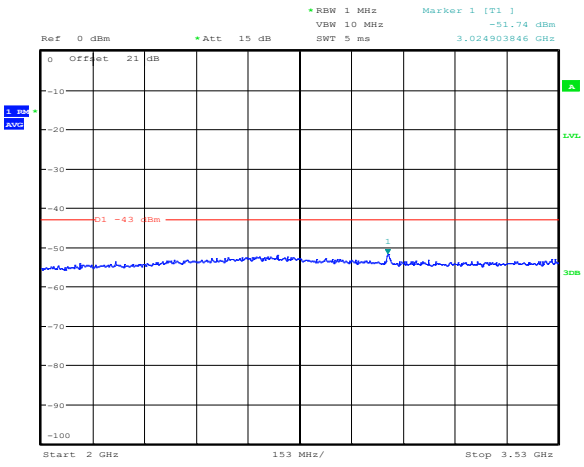


Figure 8.5-27: *Conducted spurious emissions within 2–3.53 GHz at Antenna 1 for 20 MHz low channel*

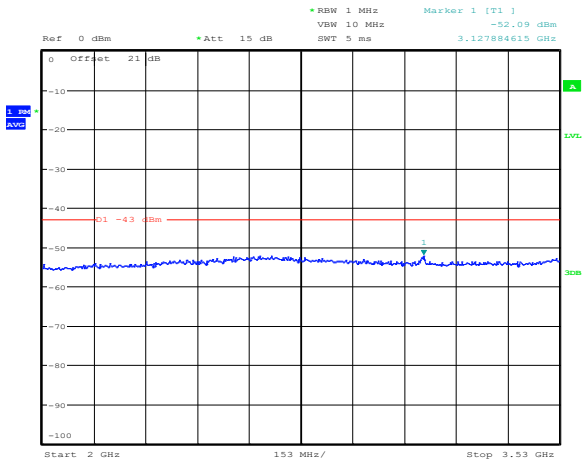


Figure 8.5-28: *Conducted spurious emissions within 2–3.53 GHz at Antenna 1 for 20 MHz mid channel*

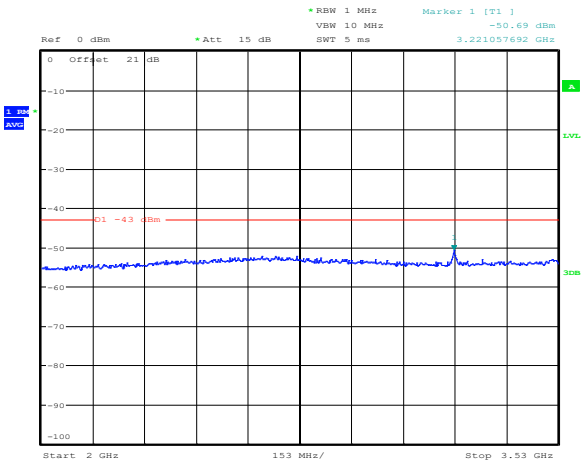


Figure 8.5-29: *Conducted spurious emissions within 2–3.53 GHz at Antenna 1 for 20 MHz high channel*

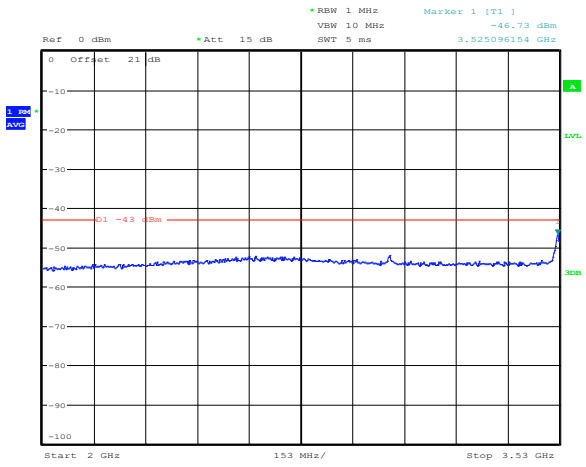


Figure 8.5-30: *Conducted spurious emissions within 2–3.53 GHz at Antenna 2 for 20 MHz low channel*

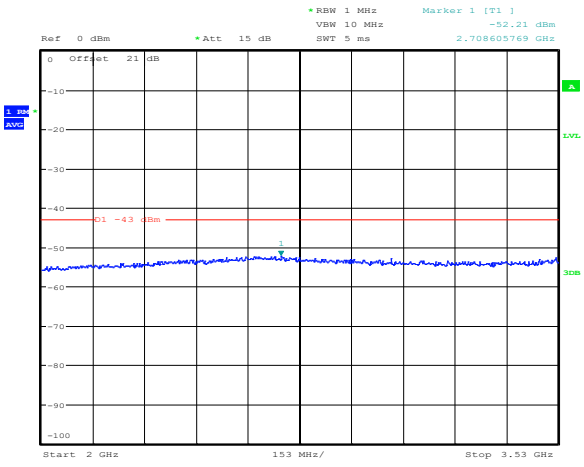


Figure 8.5-31: *Conducted spurious emissions within 2–3.53 GHz at Antenna 2 for 20 MHz mid channel*

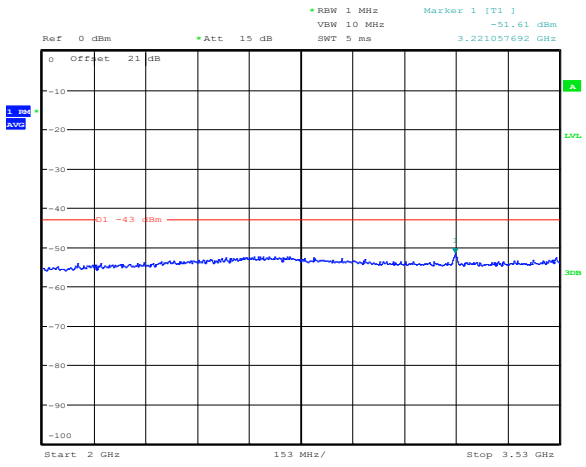


Figure 8.5-32: *Conducted spurious emissions within 2–3.53 GHz at Antenna 2 for 20 MHz high channel*

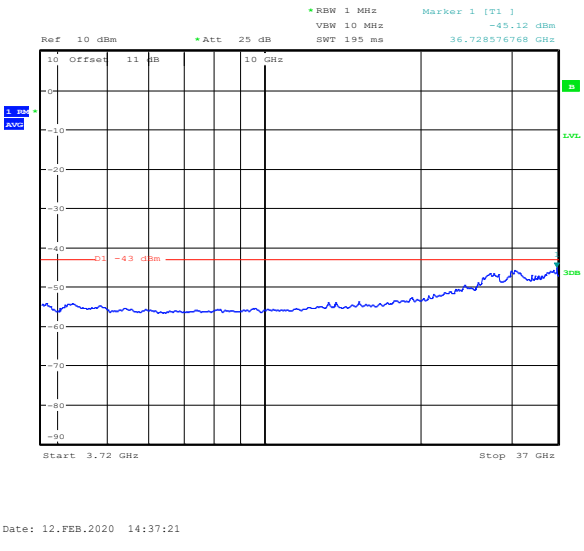


Figure 8.5-33: *Conducted spurious emissions within 3.72–37 GHz at Antenna 1 for 20 MHz low channel*

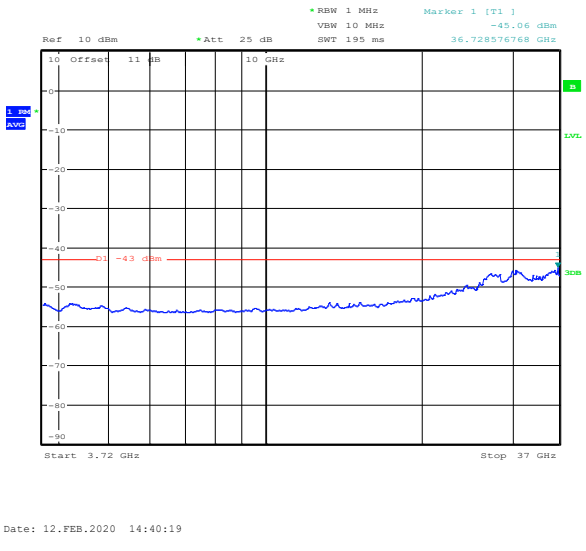


Figure 8.5-34: *Conducted spurious emissions within 3.72–37 GHz at Antenna 1 for 20 MHz mid channel*

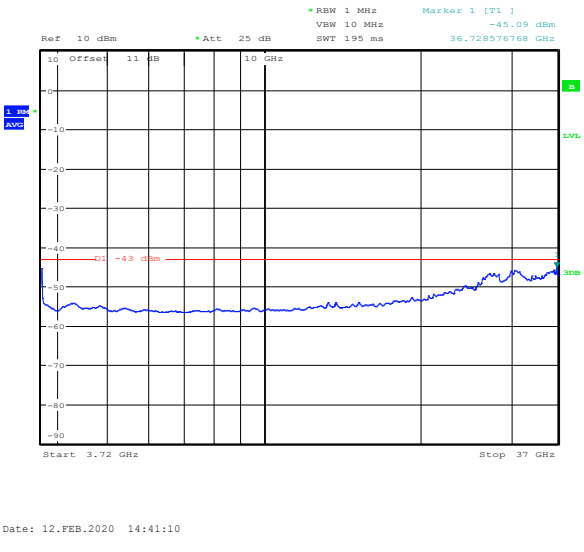


Figure 8.5-35: *Conducted spurious emissions within 3.72–37 GHz at Antenna 1 for 20 MHz high channel*

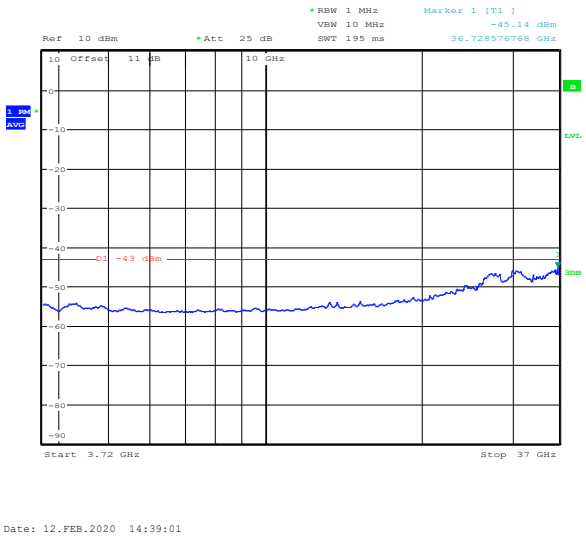


Figure 8.5-36: *Conducted spurious emissions within 3.72–37 GHz at Antenna 2 for 20 MHz low channel*

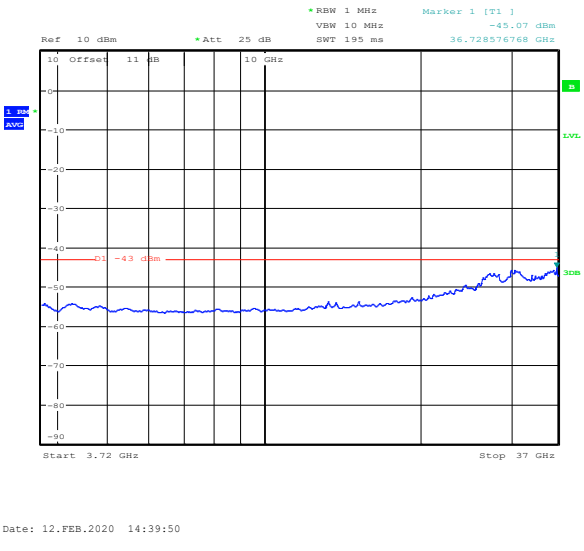


Figure 8.5-37: *Conducted spurious emissions within 3.72–37 GHz at Antenna 2 for 20 MHz mid channel*

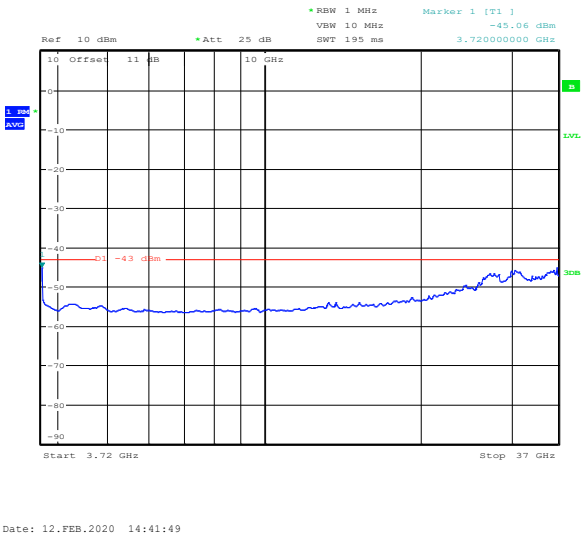


Figure 8.5-38: *Conducted spurious emissions within 3.72–37 GHz at Antenna 2 for 20 MHz high channel*

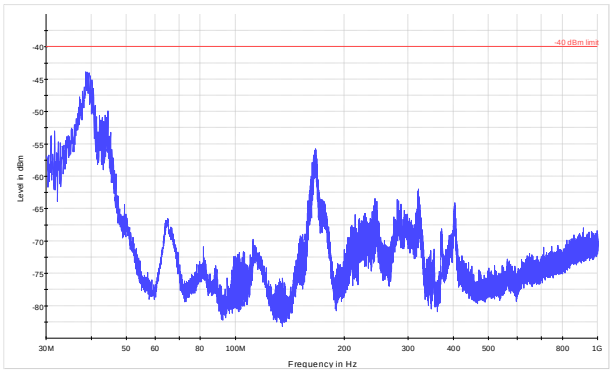


Figure 8.5-39: *Cabinet spurious radiation scan below 1 GHz for 10 MHz low channel*

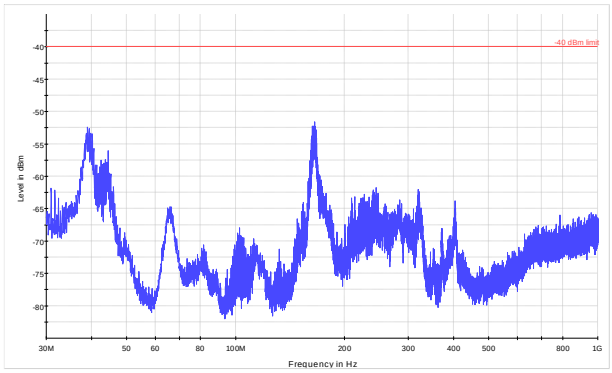


Figure 8.5-40: *Cabinet spurious radiation scan below 1 GHz for 10 MHz mid channel*

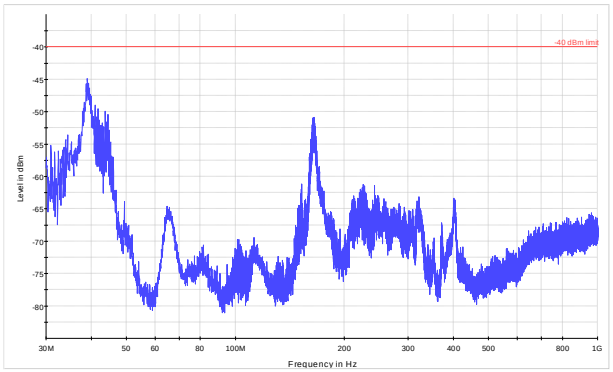


Figure 8.5-41: *Cabinet spurious radiation scan below 1 GHz for 10 MHz high channel*

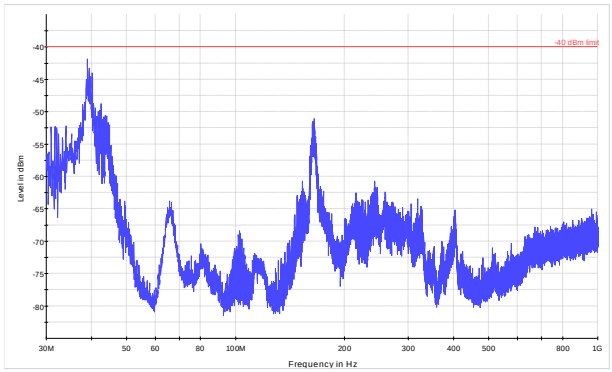


Figure 8.5-42: *Cabinet spurious radiation scan below 1 GHz for 20 MHz low channel*

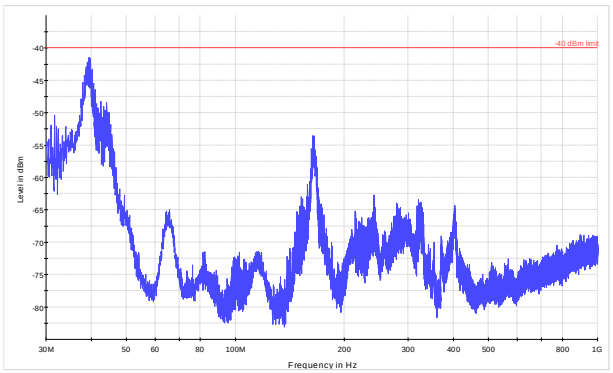


Figure 8.5-43: *Cabinet spurious radiation scan below 1 GHz for 20 MHz mid channel*

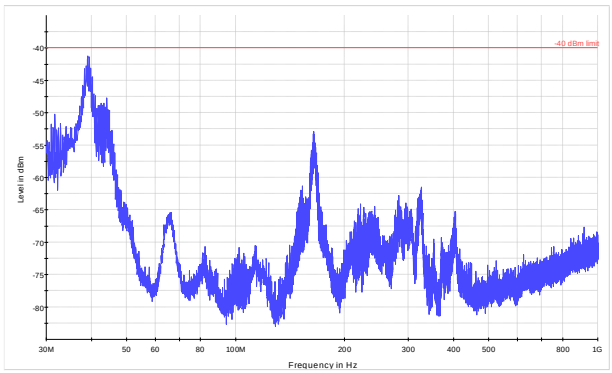


Figure 8.5-44: *Cabinet spurious radiation scan below 1 GHz for 20 MHz high channel*

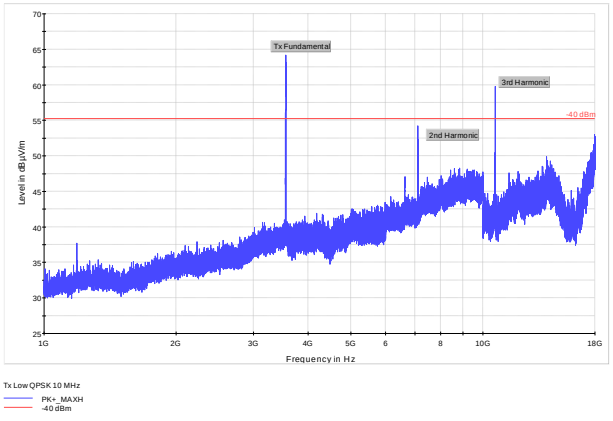


Figure 8.5-45: *Cabinet spurious radiation scan within 1–18 GHz for 10 MHz low channel*

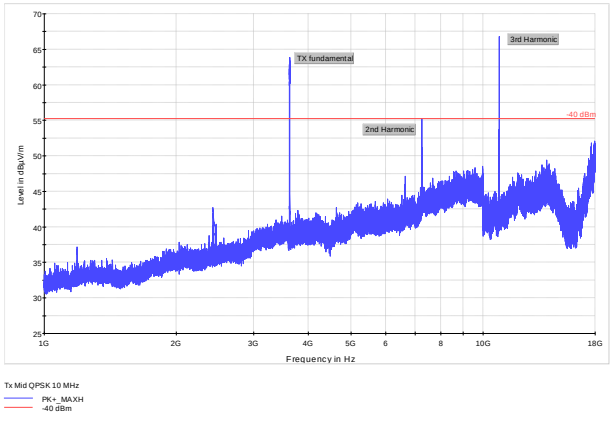


Figure 8.5-46: *Cabinet spurious radiation scan within 1–18 GHz for 10 MHz mid channel*

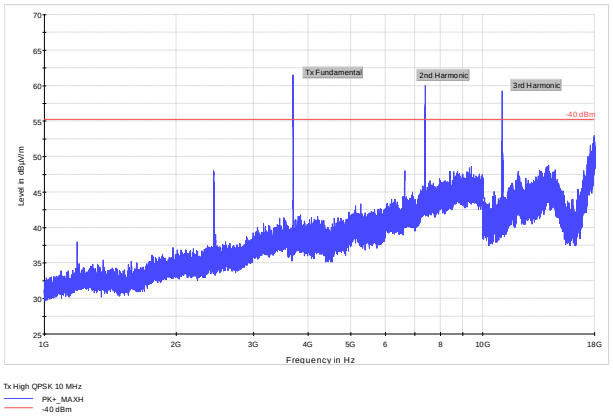


Figure 8.5-47: *Cabinet spurious radiation scan within 1–18 GHz for 10 MHz high channel*

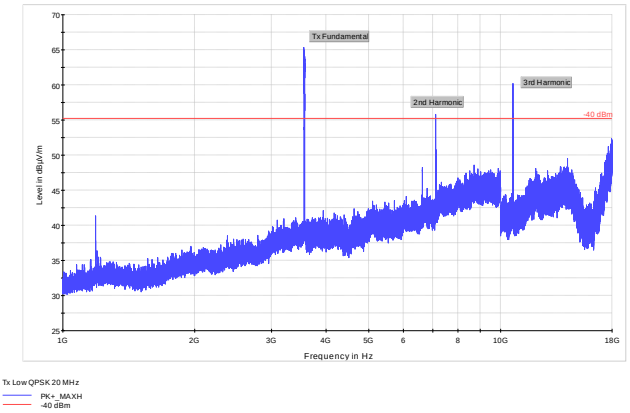


Figure 8.5-48: *Cabinet spurious radiation scan within 1–18 GHz for 20 MHz low channel*

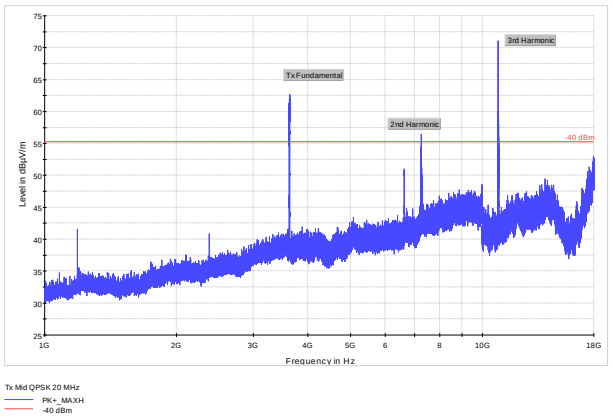


Figure 8.5-49: *Cabinet spurious radiation scan within 1–18 GHz for 20 MHz mid channel*

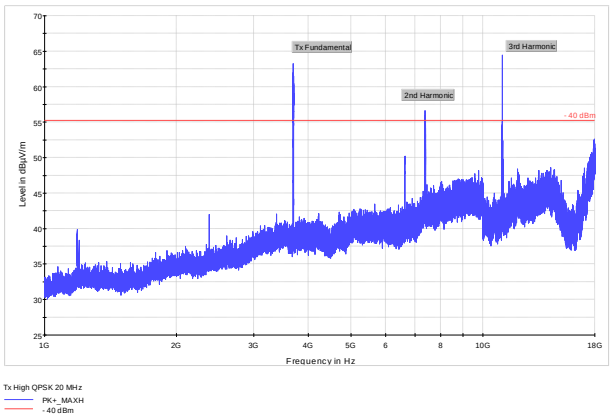


Figure 8.5-50: *Cabinet spurious radiation scan within 1–18 GHz for 20 MHz high channel*

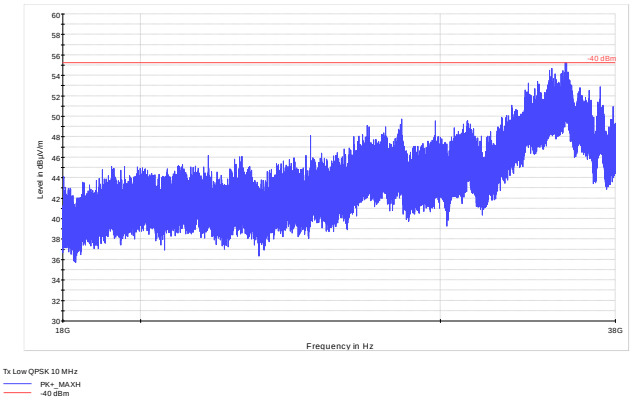


Figure 8.5-51: *Cabinet spurious radiation scan within 18–38 GHz for 10 MHz low channel*

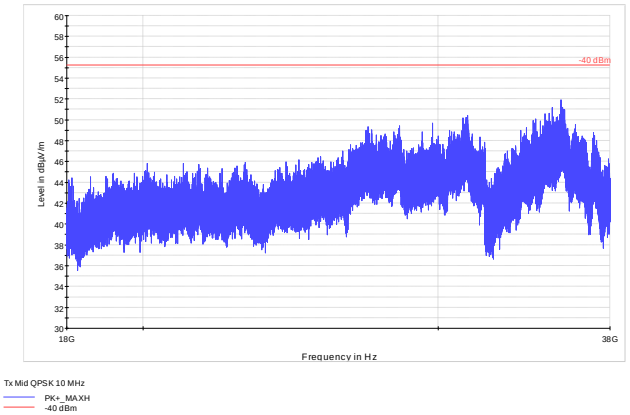


Figure 8.5-52: *Cabinet spurious radiation scan within 18–38 GHz for 10 MHz mid channel*

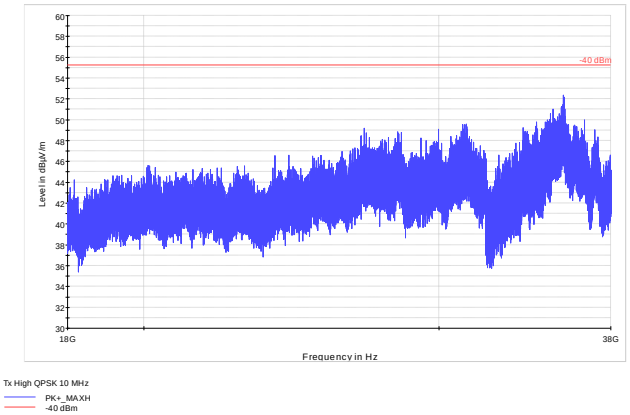


Figure 8.5-53: *Cabinet spurious radiation scan within 18–38 GHz for 10 MHz high channel*

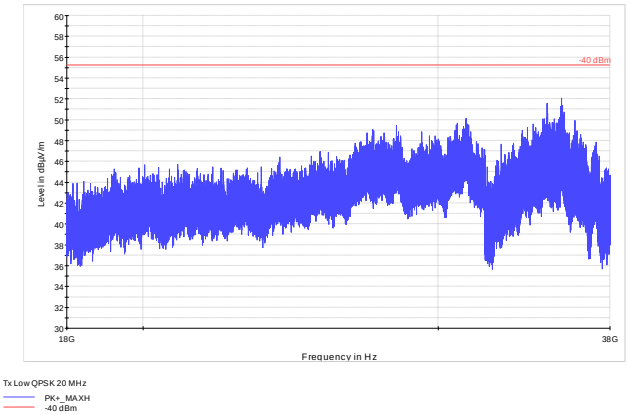


Figure 8.5-54: *Cabinet spurious radiation scan within 18–38 GHz for 20 MHz low channel*

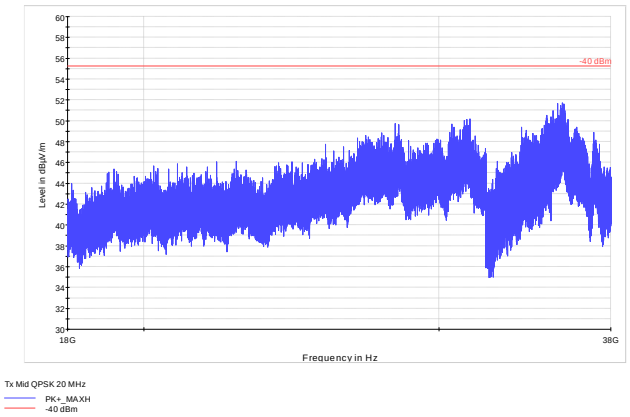


Figure 8.5-55: *Cabinet spurious radiation scan within 18–38 GHz for 20 MHz mid channel*

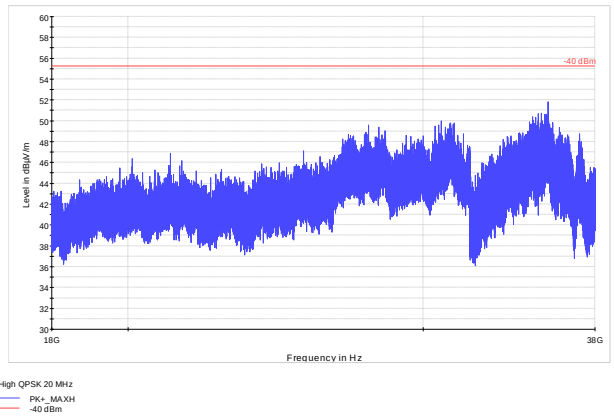


Figure 8.5-56: *Cabinet spurious radiation scan within 18–38 GHz for 20 MHz high channel*

Table 8.5-2: *Cabinet radiation measurement results*

Channel size	Frequency, GHz	Emission level, dBµV/m	Substitution factor, dB	Emission level, dBm	Limit, dBm	Margin, dB
10 MHz low channel	7.11	39.24	94.46	-55.22	-40.00	15.22
10 MHz low channel	10.67	41.85	95.92	-54.07	-40.00	14.07
10 MHz mid channel	7.25	44.65	95.04	-50.39	-40.00	10.39
10 MHz mid channel	10.88	47.07	95.62	-48.55	-40.00	8.55
10 MHz high channel	7.39	45.52	95.09	-49.57	-40.00	9.57
10 MHz high channel	11.09	44.38	96.05	-51.67	-40.00	11.67
20 MHz low channel	7.12	40.42	94.47	-54.05	-40.00	14.05
20 MHz low channel	10.68	44.37	95.91	-51.54	-40.00	11.54
20 MHz mid channel	7.25	42.08	95.04	-52.96	-40.00	12.96
20 MHz mid channel	10.87	51.46	95.64	-44.18	-40.00	4.18
20 MHz high channel	7.38	44.87	95.06	-50.19	-40.00	10.19
20 MHz high channel	11.07	47.19	95.92	-48.73	-40.00	8.73

8.6 FCC 2.1055 Frequency stability

8.6.1 Definitions and limits

(a) The frequency stability shall be measured with variation of ambient temperature as follows:
(1) From −30°C to +50°C 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° C through the range.
(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.

8.6.2 Test summary

Test date:	February 12, 2020

8.6.3 Observations, settings and special notes

Frequency stability was measured using the test method described in paragraph 5.6 of ANSI C63.26 (2015). Spectrum analyser settings:

Resolution bandwidth	≥ 1 % of emission bandwidth
Video bandwidth	≥ 3 × RBW
Frequency span	Wider than emission bandwidth
Detector mode	Peak

8.6.4 Test data

Table 8.6-1: *Frequency drift measurement results*

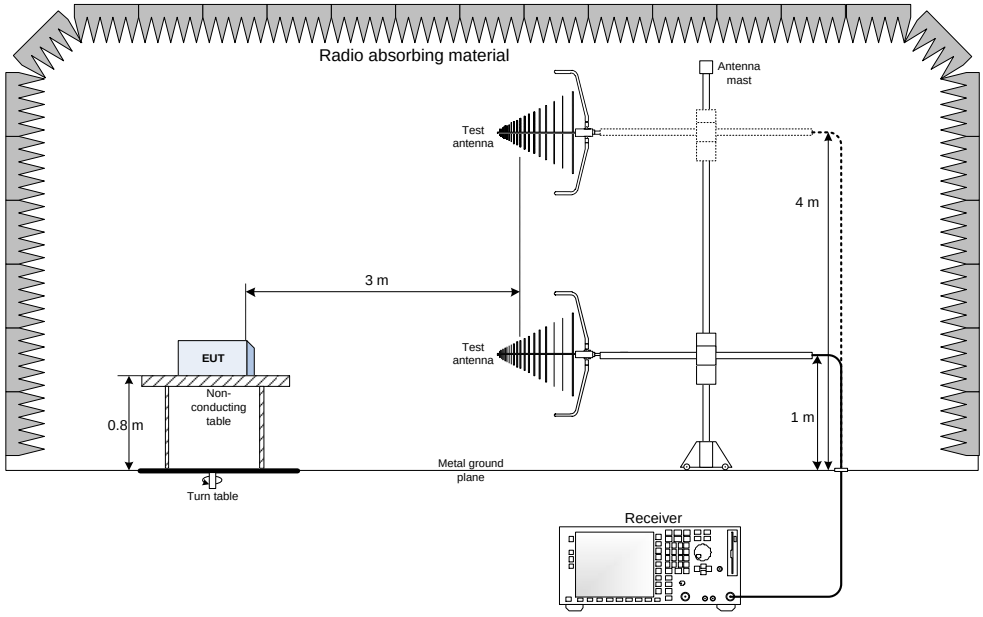
Test conditions	Frequency, Hz	Offset, ppm
+50 °C, Nominal	3554999948	0.0020
+40 °C, Nominal	3554999942	0.0003
+30 °C, Nominal	3554999941	0.0000
+20 °C, +15 %	3554999940	-0.0003
+20 °C, Nominal	3554999941	Reference
+20 °C, -15 %	3554999943	0.0006
+10 °C, Nominal	3554999948	0.0020
0 °C, Nominal	3554999946	0.0014
−10 °C, Nominal	3554999949	0.0023
−20 °C, Nominal	3554999949	0.0023
−30 °C, Nominal	3554999950	0.0025

Note: Offset was calculated as per the following formula:

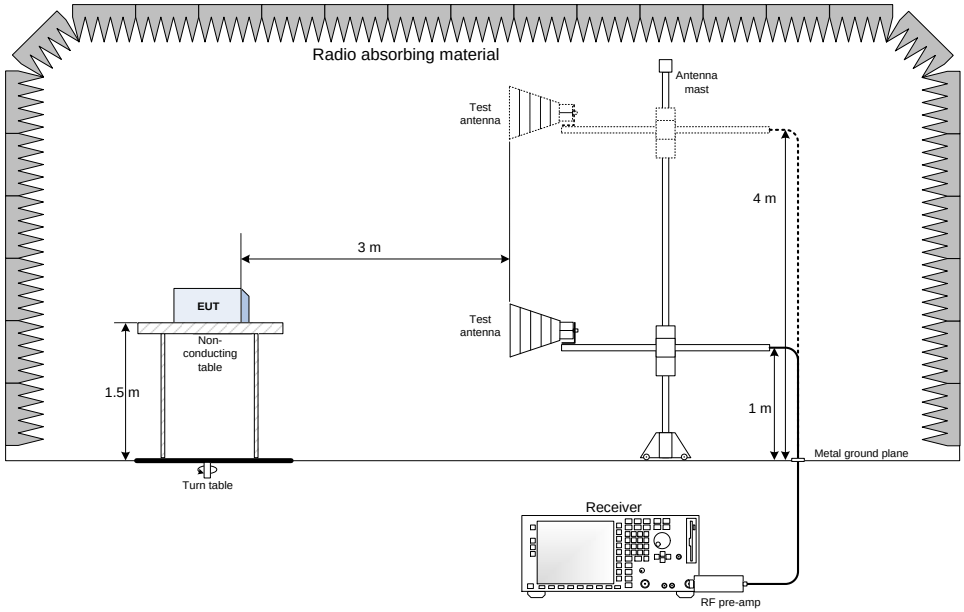
$$\frac{F_{Measured} - F_{reference}}{F_{reference}} \times 1 \cdot 10^{6}$$

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 Conducted emissions set-up