REGULATORY COMPLIANCE TEST REPORT

FCC CFR 47 Part 15.407

Report No.: RDWN63-U7 Rev A

Company: Radwin Ltd.

Model: AP0168031

REGULATORY COMPLIANCE TEST REPORT

Company: Radwin Ltd.

Model: AP0168031

To: FCC CFR 47 Part 15 Subpart E 15.407

Test Report Serial No.: RDWN63-U7 Rev A

This report supersedes: NONE

Applicant: Radwin Ltd.
27 Habarzel Street
Tel Aviv, 6971039
Israel

Issue Date: 3rd April 2020

This Test Report is Issued Under the Authority of:

MiCOM Labs, Inc.
575 Boulder Court
Pleasanton California 94566
USA
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ACCREDITED
TESTING CERT #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

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1. ACCREDITATION, LISTINGS & RECOGNITION

1.1. TESTING ACCREDITATION

MiCOM Labs, Inc. is an accredited Electrical testing laboratory per the international standard ISO/IEC 17025:2017. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.01. MiCOM Labs test schedule is available at the following URL; http://www.a2la.org/scopepdf/2381-01.pdf

ilac-MRA A2LA

Accredited Laboratory

A2LA has accredited

MICOM LABS

Pleasanton, CA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 24th day of February 2020.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2381.01
Valid to November 30, 2021

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

1.2. RECOGNITION

MiCOM Labs, Inc has widely recognized wireless testing capabilities. Our international recognition includes Conformity Assessment Body designation by APEC MRA countries. MiCOM Labs test reports are accepted globally.

Country	Recognition Body	Status	Phase	Identification No.
USA	Federal Communications Commission (FCC)	TCB	-	US0159 Listing #: 102167
Canada	Industry Canada (IC)	FCB	APEC MRA 2	US0159 Listing #: 4143A-2 4143A-3
Japan	MIC (Ministry of Internal Affairs and Communication)	CAB	APEC MRA 2	RCB 210
	VCCI	--	--	A-0012
Europe	European Commission	NB	EU MRA	NB 2280
Australia	Australian Communications and Media Authority (ACMA)	CAB	APEC MRA 1	US0159
Hong Kong	Office of the Telecommunication Authority (OFTA)	CAB	APEC MRA 1	
Korea	Ministry of Information and Communication Radio Research Laboratory (RRL)	CAB	APEC MRA 1	
Singapore	Infocomm Development Authority (IDA)	CAB	APEC MRA 1	
Taiwan	National Communications Commission (NCC) Bureau of Standards, Metrology and Inspection (BSMI)	CAB	APEC MRA 1	
Vietnam	Ministry of Communication (MIC)	CAB	APEC MRA 1	

EU MRA – European Union Mutual Recognition Agreement.
NB – Notified Body
APEC MRA – Asia Pacific Economic Community Mutual Recognition Agreement. Recognition agreement under which test lab is accredited to regulatory standards of the APEC member countries.

Phase I - recognition for product testing
Phase II – recognition for both product testing and certification

1.3. PRODUCT CERTIFICATION

MiCOM Labs, Inc. is an accredited Product Certification Body per the international standard ISO/IEC 17065:2012. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.02. MiCOM Labs test schedule is available at the following URL; http://www.a2la.org/scopepdf/2381-02.pdf

Accredited Product Certification Body

A2LA has accredited

MiCOM LABS

Pleasanton, CA

This product certification body is accredited in accordance with the recognized International Standard ISO/IEC 17065:2012 Requirements for bodies certifying products, processes and services. This product certification body also meets the A2LA R322 – Specific Requirements – Notified Body Accreditation Requirements and A2LA R308 - Specific Requirements - ISO-IEC 17065 - Telecommunication Certification Body Accreditation Program. This accreditation demonstrates technical competence for a defined scope and the operation of a management system.

Presented this 24th day of February 2020

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2381.02
Valid to November 30, 2021

For the product certification schemes to which this accreditation applies, please refer to the organization's Product Certification Scope of Accreditation.

United States of America – Telecommunication Certification Body (TCB)
Industry Canada – Certification Body, CAB Identifier – US0159
Europe – Notified Body (NB), NB Identifier - 2280
Japan – Recognized Certification Body (RCB), RCB Identifier - 210

2. DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft	17th March 2020	Draft for client review
Rev A	3rd April 2020	Initial Release
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In the above table the latest report revision will replace all earlier versions.

MiCOM Labs, 575 Boulder Court, Pleasanton, California 94566 USA, Phone: +1 (925) 462 0304, Fax: +1 (925) 462 0306, www.micomlabs.com

3. TEST RESULT CERTIFICATE

Manufacturer:	Radwin Ltd. 27 Habarzel Street Tel Aviv 6971039 Israel	**Tested By:**	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Model:	AP0168031	**Telephone:**	+1 925 462 0304
Type Of Equipment:	5 GHz 802.11ac 3x3 RF Module	**Fax:**	+1 925 462 0306
S/N's:	Prototype 1		
Test Date(s):	27 - 30 January 2020	**Website:**	www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC CFR 47 Part 15 Subpart E 15.407	**EQUIPMENT COMPLIES**

MiCOM Labs, Inc. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

Notes:

1. This document reports conditions under which testing was conducted and the results of testing performed.

2. Details of test methods used have been recorded and kept on file by the laboratory.

3. Test results apply only to the item(s) tested.

A2LA ACCREDITED
TESTING CERT #2381.01

Approved & Released for MiCOM Labs, Inc. by:

Graeme Grieve
Quality Manager MiCOM Labs, Inc.

Gordon Hurst
President & CEO MiCOM Labs, Inc.

4. REFERENCES AND MEASUREMENT UNCERTAINTY

4.1. Normative References

REF.	PUBLICATION	YEAR	TITLE
I	KDB 662911 D01 & D02	Oct 31 2013	Guidance for measurement of output emission of devices that employ single transmitter with multiple outputs or systems with multiple transmitters operating simultaneously in the same frequency band
II	KDB 905462 D07 v02	22nd August 2016	Test guidance to demonstrate compliance for U-NII devices subject to DFS requirements.
III	KDB 926956 D01 v02	22nd August 2016	U-NII Device Transition Plan
IV	A2LA	October 2019	R105 - Requirement's When Making Reference to A2LA Accreditation Status
V	ANSI C63.10	2013	American National Standard for Testing Unlicensed Wireless Devices
VI	ANSI C63.4	2014	American National Standards for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
VII	CISPR 32	2015	Electromagnetic compatibility of multimedia equipment - Emission requirements
VIII	ETSI TR 100 028	2001-12	Parts 1 and 2 Electromagnetic compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics
IX	FCC 06-96	Jun 30 2006	Memorandum Opinion and Order
X	FCC 47 CFR Part 15.407	2016	Radio Frequency Devices; Subpart E –Unlicensed National Information Infrastructure Devices
XI	ICES-003	Issue 6 Jan 2016; Updated April 2019	Information Technology Equipment (Including Digital Apparatus) – Limits and methods of measurement.
XII	M 3003	Edition 3 Nov.2012	Expression of Uncertainty and Confidence in Measurements
XIII	RSS-247 Issue 2	Feb 2017	Digital Transmission Systems (DTSs), Frequency Hopping System (FHSs) and License-Exempt Local Area Network (LE-LEN) Devices
XIV	RSS-Gen Issue 5	March 2019 Amendment 1	General Requirements for Compliance of Radio Apparatus
XV	FCC 47 CFR Part 2.1033	2016	FCC requirements and rules regarding photographs and test setup diagrams.
XVI	KDB 905462 D02 v02	April 8 2016	Compliance Measurement Procedures for Unlicensed National Information Infrastructure devices operating in the 5250 to 5350 MHz and 5470 to 5725 MHz bands incorporating Dynamic Frequency Selection.
XVII	KDB 789033 D02 V02r01	14th December, 2017	Guidelines For Compliance Testing Of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E

4.2. Test and Uncertainty Procedure

Conducted and radiated emission measurements were conducted in accordance with American National Standards Institute ANSI C63.4, listed in the Normative References section of this report.

Measurement uncertainty figures are calculated in accordance with ETSI TR 100 028 Parts 1 and 2.

Measurement uncertainties stated are based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95 % in accordance with UKAS document M 3003 listed in the Normative References section of this report.

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5. PRODUCT DETAILS AND TEST CONFIGURATIONS

5.1. Technical Details

Details	Description
Purpose:	Test of the Radwin Ltd. AP0168031 to FCC CFR 47 Part 15 Subpart E 15.407 operating in the 5150-5250 MHz band.
Applicant:	Radwin Ltd. 27 Habarzel Street Tel Aviv . 6971039 Israel
Manufacturer:	Radwin Ltd.
Laboratory performing the tests:	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Test report reference number:	RDWN63-U7 Rev A
Date EUT received:	January 21 2020
Standard(s) applied:	FCC CFR 47 Part 15 Subpart E 15.407
Dates of test (from - to):	27 - 31 January 2020
No of Units Tested:	2
Product Family Name:	5 GHz 802.11ac 3x3 RF Module
Model(s):	AP0168031
Location for use:	Both
Declared Frequency Range(s):	5150 - 5250 MHz
Type of Modulation:	OFDM
EUT Modes of Operation:	5150 - 5250 MHz: 20 MHz; 40 MHz; 80 MHz;
Declared Nominal Output Power (dBm):	5150 - 5250 MHz: 24dBm
Transmit/Receive Operation:	Transceiver
Rated Input Voltage and Current:	POE: AC Input 100-240V 50/60 Hz 1.5A DC Output 55VDC 1.0A
Operating Temperature Range:	-40ºC to +60ºC
ITU Emission Designator:	20 MHz: 23M1W7W 40 MHz: 47M1W7W 80 MHz: 104M8W7W
Equipment Dimensions:	0.3 / 1.9 / 2.0 in
Weight:	0.042 Lb
Hardware Rev:	AP0168031
Software Rev:	B

5.2. Scope Of Test Program

Radwin Ltd. AP0168031

The scope of the test program was to test the Radwin Ltd. AP0168031 Module, configurations in the frequency ranges 5150 - 5250 MHz for compliance against the following specification:

FCC CFR 47 Part 15 Subpart E 15.407
Compliance Measurement Procedures for Unlicensed National Information Infrastructure devices operating in the 5150 to 5250 MHz range.

5.3. Equipment Model(s) and Serial Number(s)

Type	Description	Manu.	Model	Serial no.	Delivery Date
EUT	5 GHz 802.11ac 3x3 RF Module	Radwin Ltd.	AP0168031	Prototype1	21st January 2020

5.4. Antenna Details

Type	Manufacturer	Model	Family	Gain (dBi)	BF Gain	Dir BW	X-Pol	Frequency Band (MHz)
external	RADWIN	AT0058760	Directional	18.0	-	18	-	5150 - 5250
external	RADWIN	RW-9105-5158	Directional	19.0	-	17	-	5150 - 5250
external	RADWIN	RW-9314-5158	Yagi	14.0	-	30	-	5150 - 5250
external	RADWIN	RW-9401-5002	OMNI	12.0	-	50	-	5150 - 5250
external	RADWIN	RW-9401-5004	OMNI	13.0	-	36	-	5150 - 5250

BF Gain - Beamforming Gain
Dir BW - Directional BeamWidth
X-Pol - Cross Polarization

The table below represents an adjusted effective system gain for each antenna due to a system loss during installation. This loss is from a cable and a splitter (where used) which affects the gains when the module is installed in a RADWIN base station RF Unit.

Type	Manufacturer	Model	Family	Gain (dBi)*	Cable Loss (dB)	Splitter Loss (dB)	Minimum Effective Gain (dBi)	Frequency Band (MHz)
external	RADWIN	AT0058760	Directional	17.0	2.0	4.5	10.5	5150 - 5250
external	RADWIN	RW-9105-5158	Directional	18.0	2.0	4.5	11.5	5150 - 5250
external	RADWIN	RW-9314-5158	Yagi	13.0	2.0	4.5	6.5	5150 - 5250
external	RADWIN	RW-9401-5002	OMNI	11.0	2.0	0.0	9.0	5150 - 5250
external	RADWIN	RW-9401-5004	OMNI	12.0	2.0	0.0	10.0	5150 - 5250

*Gain includes 1 dB installation feeder loss.

5.5. Cabling and I/O Ports

Port Type	Max Cable Length	# Of Ports	Screened	Conn Type	Data Type
Ethernet	>30 m	1	Y	RJ45	Data

5.6. Test Configurations

Results for the following configurations are provided in this report:

Operational Mode(s) (802.11a/b/g/n/ac)	Data Rate with Highest Power MBit/s	Channel Frequency (MHz)		
		Low	Mid	High
5150 - 5250 MHz				
20 MHz	6.5	5,180.00	5,200.00	5,240.00
40 MHz	13.5	5,190.00	5,200.00	5,230.00
80 MHz	29.3	5,210.00	5,210.00	5,210.00

5.7. Equipment Modifications

The following modifications were required to bring the equipment into compliance:
1. NONE

5.8. Deviations from the Test Standard

The following deviations from the test standard were required in order to complete the test program:
1. NONE

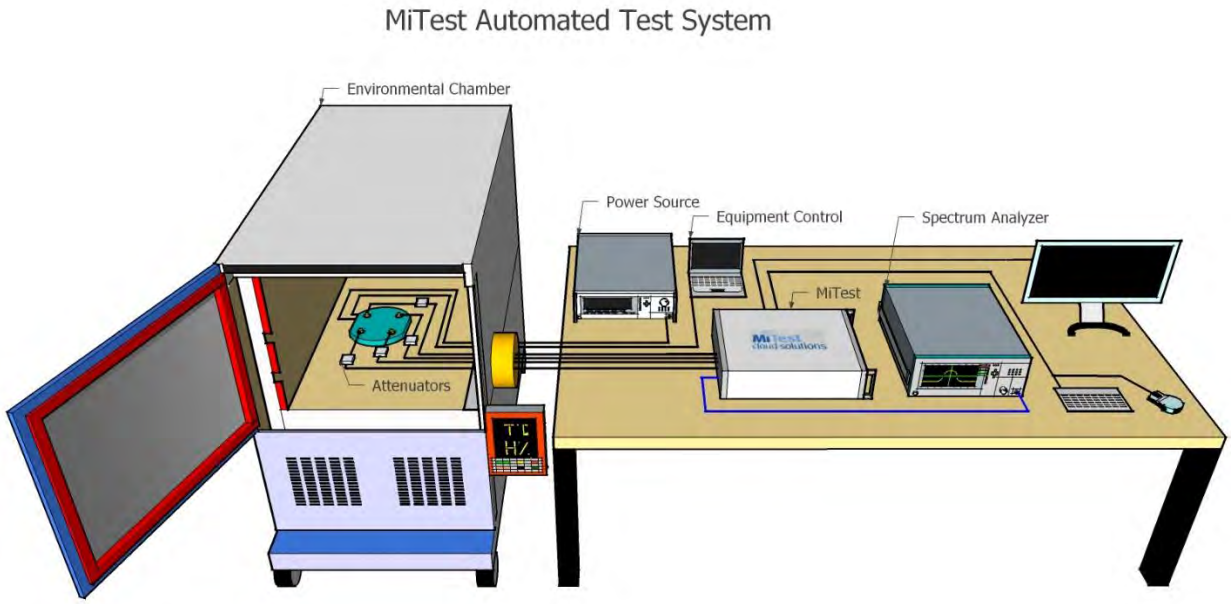
6. TEST SUMMARY

List of Measurements

Test Header	Result	Data Link
Peak Transmit Power	Complies	View Data
26 dB & 99% Bandwidth	Complies	View Data
Power Spectral Density	Complies	View Data
Radiated Spurious Emissions	Complies	View Data
TX Spurious & Restricted Band Emissions	Complies	View Data
Restricted Edge & Band-Edge Emissions	Complies	View Data
Digital Emissions	Complies	View Data
15.207 AC Wireline Emissions	Complies	View Data

7. TEST EQUIPMENT CONFIGURATION(S)

7.1. Conducted Test Setup



A full system calibration was performed on the test station and any resulting system losses (or gains) were considered in the production of all final measurement data.

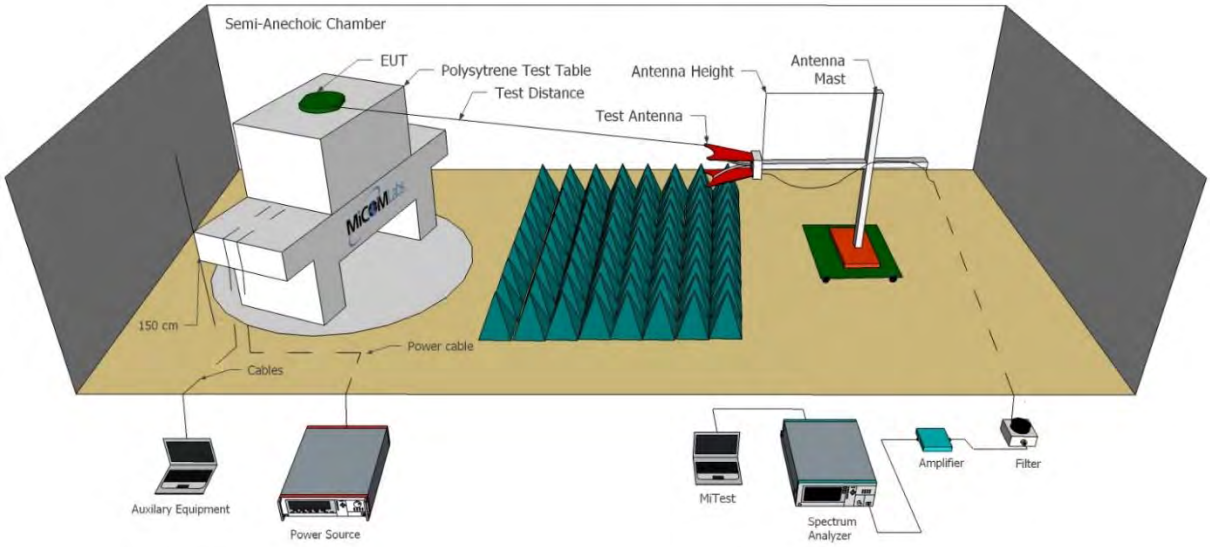
Asset#	Description	Manufacturer	Model#	Serial#	Calibration Due Date
#3 SA	MiTest Box to SA	Fairview Microwave	SCA1814-0101-72	#3 SA	9 Sep 2020
#3P1	EUT to MiTest box port 1	Fairview Microwave	SCA1814-0101-72	#3P1	9 Sep 2020
#3P2	EUT to MiTest box port 2	Fairview Microwave	SCA1814-0101-72	#3P2	9 Sep 2020
#3P3	EUT to MiTest box port 3	Fairview Microwave	SCA1814-0101-72	#3P3	9 Sep 2020
#3P4	EUT to MiTest box port 4	Fairview Microwave	SCA1812-0101-72	#3P4	9 Sep 2020
249	Resistance Thermometer	Thermotronics	GR2105-02	9340 #2	30 Oct 2020
287	Rohde & Schwarz 40 GHz Receiver	Rhode & Schwarz	ESIB40	100201	8 Oct 2020
398	MiTest RF Conducted Test Software	MiCOM	MiTest ATS	Version 4.1	Not Required
405	DC Power Supply 0-60V	Agilent	6654A	MY4001826	Cal when used
408	USB to GPIB interface	National Instruments	GPIB-USB HS	14C0DE9	Not Required
440	USB Wideband Power Sensor	Boonton	55006	9178	22 Sep 2020

441	USB Wideband Power Sensor	Boonton	55006	9179	20 Sep 2020
442	USB Wideband Power Sensor	Boonton	55006	9181	19 Sep 2020
445	PoE Injector	D-Link	DPE-101GL	QTAH1E2000625	Not Required
461	Spectrum Analyzer	Agilent	E4440A	MY46185537	20 Sep 2020
510	Barometer/Thermometer	Control Company	68000-49	170871375	20 Dec 2020
515	MiTest Cloud Solutions RF Test Box	MiCOM	2nd Gen with DFS	515	9 Sep 2020
534	Power Sensor 50 GHz -70dBm to +20dBm	R&S	NRP50SN	1419.0093K02-100888-SB	26 Feb 2021
75	Environmental Chamber	Thermatron	SE-300-2-2	27946	20 Feb 2021

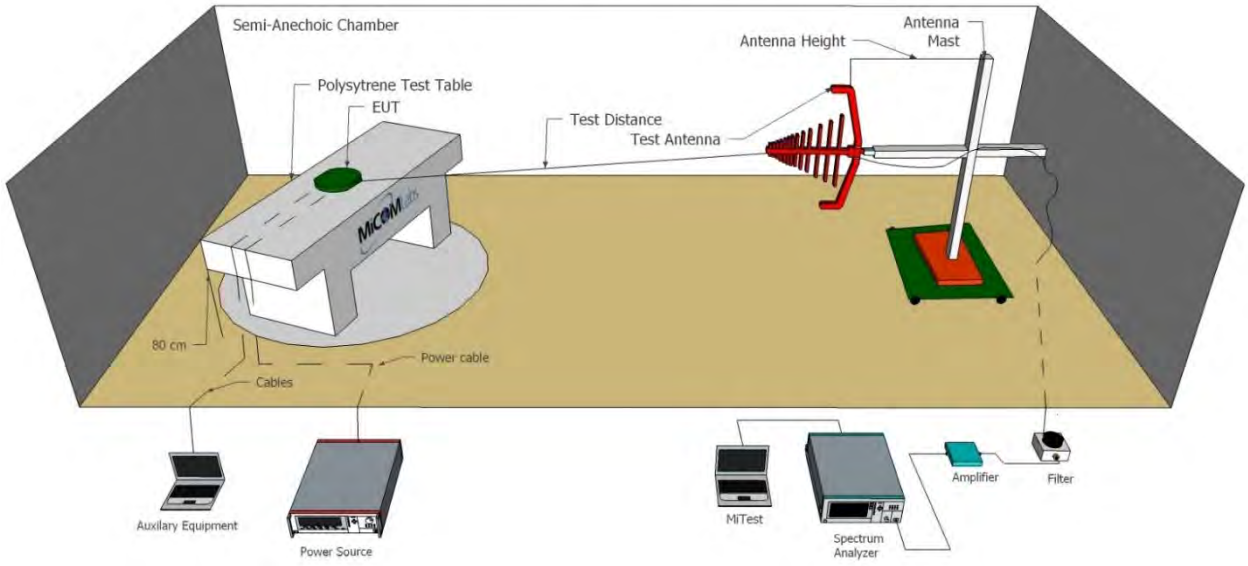
7.2. Radiated Emissions - 3m Chamber

The following tests were performed using the radiated test set-up shown in the diagram below.
Radiated emissions above and below 1GHz.

Radiated Emissions Above 1GHz Test Setup



Radiated Emissions Below 1GHz Test Setup



Asset#	Description	Manufacturer	Model#	Serial#	Calibration Due Date
170	Video System Controller for Semi Anechoic Chamber	Panasonic	WV-CU101	04R08507	Not Required
287	Rohde & Schwarz 40 GHz Receiver	Rhode & Schwarz	ESIB40	100201	8 Oct 2020
298	3M Radiated Emissions Chamber Maintenance Check	MiCOM	3M Chamber	298	26 Nov 2020
330	Variac 0-280 Vac	Staco Energy Co	3PN1020B	0546	Cal when used
338	Sunol 30 to 3000 MHz Antenna	Sunol	JB3	A052907	4 Apr 2021
373	26III RMS Multimeter	Fluke	Fluke 26 series III	76080720	21 Sep 2020
377	Band Rejection Filter 5150 to 5880MHz	Microtronics	BRM50716	034	3 Sep 2020
378	Rohde & Schwarz 40 GHz Receiver with Generator	Rhode & Schwarz	ESIB40	100107/040	12 Oct 2020
396	2.4 GHz Notch Filter	Microtronics	BRM50701	001	3 Sep 2020
397	Amp 10 - 2500MHz	MiCOM Labs	Amp 10 - 2500 MHz	NA	6 Sep 2020
399	ETS 1-18 GHz Horn Antenna	ETS	3117	00154575	12 Oct 2020
406	Amplifier for Radiated Emissions	MiCOM Labs	40dB 1 to 18GHz Amp	0406	9 Sep 2020
410	Desktop Computer	Dell	Inspiron 620	WS38	Not Required
411	Mast/Turntable Controller	Sunol Sciences	SC98V	060199-1D	Not Required
412	USB to GPIB Interface	National Instruments	GPIB-USB HS	11B8DC2	Not Required
413	Mast Controller	Sunol Science	TWR95-4	030801-3	Not Required
414	DC Power Supply 0-60V	HP	6274	1029A01285	Cal when used
415	Turntable Controller	Sunol Sciences	Turntable Controller	None	Not Required
416	Gigabit ethernet filter	ETS-Lingren	Gigafoil 260366	None	Not Required
447	MiTest Rad Emissions Test Software	MiCOM	Rad Emissions Test Software Version 1.0	447	Not Required
462	Schwarzbeck cable from Antenna to Amplifier.	Schwarzbeck	AK 9513	462	5 Sep 2020
463	Schwarzbeck cable from Amplifier to Bulkhead.	Schwarzbeck	AK 9513	463	5 Sep 2020
464	Schwarzbeck cable from Bulkhead to Receiver	Schwarzbeck	AK 9513	464	9 Sep 2020
466	Low Pass Filter DC-1500 MHz	Mini-Circuits	NLP-1750+	VUU10401438	3 Sep 2020

480	Cable - Bulkhead to Amp	SRC Haverhill	157-3050360	480	9 Sep 2020
481	Cable - Bulkhead to Receiver	SRC Haverhill	151-3050787	481	9 Sep 2020
510	Barometer/Thermometer	Control Company	68000-49	170871375	20 Dec 2020
518	Cable - Amp to Antenna	SRC Haverhill	157-3051574	518	9 Sep 2020
87	Uninterruptible Power Supply	Falcon Electric	ED2000-1/2LC	F3471 02/01	Cal when used

8. MEASUREMENT AND PRESENTATION OF TEST DATA

The measurement and graphical data presented in this test report was generated automatically using state-of-the-art technology creating an easy to read report structure. Numerical measurement data is separated from supporting graphical data (plots) through hyperlinks. Numerical measurement data can be reviewed without scrolling through numerous graphical pages to arrive at the next data matrix.

Plots have been relegated into the Appendix 'Graphical Data'.

Test and report automation was performed by MiTest. MiTest is an automated test system developed by MiCOM Labs. MiTest is the first cloud based modular test system enabling end-to-end automation of regulatory compliance testing for conducted RF testing.

The MiCOM Labs "MiTest" Automated Test System" (Patent Pending)

9. TEST RESULTS

9.1. Peak Transmit Power

Conducted Test Conditions for Maximum Conducted Output Power			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Maximum Conducted Output Power	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.407 (a)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Maximum Conducted Output Power Measurement
Method PM (Measurement using an RF average power meter). KDB 789033 defines a methodology using an average wideband power meter. Measurements were made while the EUT was operating in a continuous transmission mode (100% duty cycle) at the appropriate center frequency. All operational modes and frequency bands were measured independently and the resultant calculated. Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured and reported separately. A summation (Σ) of each antenna port output power is provided which includes any offset due to Duty Cycle Correction Factor (DCCF). Testing was performed under ambient conditions at nominal voltage.

Test configuration and setup used for the measurement was per the Conducted Test Set-up section specified in this document.
Supporting Information
Calculated Power = A + G + Y+ 10 log (1/x) dBm

A = Total Power [10*Log10 ($10^{a/10}$ + $10^{b/10}$ + $10^{c/10}$ + $10^{d/10}$)]
G = Antenna Gain
Y = Beamforming Gain
x = Duty Cycle (average power measurements only)

Limits Maximum Conducted Output Power

Operating Frequency Band 5150-5250 MHz

15. 407 (a)(1)
(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

9.1.1. FCC Peak Transmit Power

9.1.1.1. Base Station Mode

Equipment Configuration for Peak Transmit Power			
Variant:	20 MHz	**Duty Cycle (%):**	86.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	dBm	dB	
5180.0	17.22	16.77	17.18	-	21.83	29.50	-7.67	19.50
5200.0	24.73	24.25	24.02	-	29.11	29.50	-0.39	26.50
5240.0	24.53	24.35	24.11	-	28.68	29.50	-0.32	26.50

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	±1.33 dB

The above measurements are true pulse readings and therefore a Duty Cycling correction factor is not required.

Note: See section 5.4 for a complete list of antennas and effective gains. This antenna has a 2 dB cable and a 4.5 dB splitter system loss. This system loss happens during the module installation in the base station. As a result this would effectively reduce the gain of the antenna by 6.5 dB, this loss is reflected on the limit see the calculations below:

Loss 6.5 dB
Gain 13.0 dBi

Gain = 13 - 6.5 (system loss) = 6.5
Limit = 30 – Gain (6.5 - 6 = 0.5) = 29.5 dBm

Equipment Configuration for Peak Transmit Power			
Variant:	40 MHz	**Duty Cycle (%):**	78.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	dBm	dB	
5190.0	13.97	13.68	13.60	-	18.52	29.50	-10.98	16.50
5200.0	24.68	24.19	24.10	-	29.10	29.50	-0.40	27.00
5230.0	25.21	23.84	24.26	-	29.25	29.50	-0.25	27.00

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	±1.33 dB

The above measurements are true pulse readings and therefore a Duty Cycling correction factor is not required.

Note: See section 5.4 for a complete list of antennas and effective gains. This antenna has a 2 dB cable and a 4.5 dB splitter system loss. This system loss happens during the module installation in the base station. As a result this would effectively reduce the gain of the antenna by 6.5 dB, this loss is reflected on the limit see the calculations below:

Loss 6.5 dB
Gain 13.0 dBi

Gain = 13 - 6.5 (system loss) = 6.5
Limit = 30 – Gain (6.5 - 6 = 0.5) = 29.5 dBm

Equipment Configuration for Peak Transmit Power			
Variant:	80 MHz	**Duty Cycle (%):**	66.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	dBm	dB	
5210.0	14.28	13.81	13.95	-	18.79	29.50	-10.71	16.50

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	±1.33 dB

The above measurements are true pulse readings and therefore a Duty Cycling correction factor is not required.

Note: See section 5.4 for a complete list of antennas and effective gains. This antenna has a 2 dB cable and a 4.5 dB splitter system loss. This system loss happens during the module installation in the base station. As a result this would effectively reduce the gain of the antenna by 6.5 dB, this loss is reflected on the limit see the calculations below:

Loss 6.5 dB
Gain 13.0 dBi

Gain = 13 - 6.5 (system loss) = 6.5
Limit = 30 – Gain (6.5 - 6 = 0.5) = 29.5 dBm

9.1.1.2. Client Mode

Equipment Configuration for Peak Transmit Power			
Variant:	20 MHz	**Duty Cycle (%):**	86.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	dBm	dB	
5180.0	16.22	15.77	16.18	-	20.83	23.50	-2.67	19.50
5200.0	18.73	18.25	18.02	-	23.11	23.50	-0.39	20.50
5240.0	18.83	18.25	18.11	-	23.18	23.50	-0.32	20.50

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	±1.33 dB

The above measurements are true pulse readings and therefore a Duty Cycling correction factor is not required.

Note: See section 5.4 for a complete list of antennas and effective gains. This antenna has a 2 dB cable and a 4.5 dB splitter system loss. This system loss happens during the module installation in the base station. As a result this would effectively reduce the gain of the antenna by 6.5 dB, this loss is reflected on the limit see the calculations below:

Loss 6.5 dB
Gain 13.0 dBi

Gain = 13 - 6.5 (system loss) = 6.5
Limit = 24 – Gain (6.5 - 6 = 0.5) = 23.5 dBm

Equipment Configuration for Peak Transmit Power			
Variant:	40 MHz	**Duty Cycle (%):**	78.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	dBm	dB	
5190.0	15.97	15.68	15.6	-	20.52	23.50	-2.98	18.50
5200.0	18.68	18.19	18.1	-	23.10	23.50	-0.40	21.00
5230.0	19.21	17.84	18.26	-	23.25	23.50	-0.25	21.00

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	±1.33 dB

The above measurements are true pulse readings and therefore a Duty Cycling correction factor is not required.

Note: See section 5.4 for a complete list of antennas and effective gains. This antenna has a 2 dB cable and a 4.5 dB splitter system loss. This system loss happens during the module installation in the base station. As a result this would effectively reduce the gain of the antenna by 6.5 dB, this loss is reflected on the limit see the calculations below:

Loss 6.5 dB
Gain 13.0 dBi

Gain = 13 - 6.5 (system loss) = 6.5
Limit = 24 – Gain (6.5 - 6 = 0.5) = 23.5 dBm

Equipment Configuration for Peak Transmit Power			
Variant:	80 MHz	**Duty Cycle (%):**	66.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm) Port(s)				Calculated Total Power	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s) dBm	dBm	dB	
5210.0	16.28	15.81	15.95	-	20.79	23.50	-2.71	18.50

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Measurement Uncertainty:	±1.33 dB

The above measurements are true pulse readings and therefore a Duty Cycling correction factor is not required.

Note: See section 5.4 for a complete list of antennas and effective gains. This antenna has a 2 dB cable and a 4.5 dB splitter system loss. This system loss happens during the module installation in the base station. As a result this would effectively reduce the gain of the antenna by 6.5 dB, this loss is reflected on the limit see the calculations below:

Loss 6.5 dB
Gain 13.0 dBi

Gain = 13 - 6.5 (system loss) = 6.5
Limit = 24 – Gain (6.5 - 6 = 0.5) = 23.5 dBm

9.2. 26 dB & 99% Bandwidth

Conducted Test Conditions for 26 dB and 99% Bandwidth			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	26 dB and 99 % Bandwidth	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.407 (a);	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for 26 dB and 99% Bandwidth Measurement
The bandwidth at 26 dB and 99 % is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency. The Resolution Bandwidth was set to approximately 1% of the emission bandwidth.
Testing was performed under ambient conditions at nominal voltage. Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured and reported.

Test configuration and setup used for the measurement was per the Conducted Test Set-up section specified in this document.

Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	20 MHz	**Duty Cycle (%):**	86.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz) Port(s)				26 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5180.0	44.589	44.790	44.389		44.790	44.389		
5200.0	42.285	45.090	44.389		45.090	42.285		
5240.0	44.689	44.790	44.289		44.790	44.289		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5180.0	27.154	26.453	26.253		27.154	26.253		
5200.0	25.852	26.052	25.852		26.052	25.852		
5240.0	26.553	25.351	24.449		26.553	24.449		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	40 MHz	**Duty Cycle (%):**	78.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz) Port(s)				26 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5190.0	43.607	44.729	44.569		44.729	43.607		
5200.0	45.210	47.455	46.974		47.455	45.210		
5230.0	48.096	47.134	46.814		48.096	46.814		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5190.0	36.713	36.713	36.713		36.713	36.713		
5200.0	36.713	36.874	36.713		36.874	36.713		
5230.0	37.034	36.874	36.713		37.034	36.713		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	80 MHz	**Duty Cycle (%):**	78.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz) Port(s)				26 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5210.0	109.980	102.926	90.421		109.980	90.421		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5210.0	76.633	76.633	76.633		76.633	76.633		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Note: click the links in the above matrix to view the graphical image (plot).

9.3. Power Spectral Density

Conducted Test Conditions for Power Spectral Density			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Power Spectral Density	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.407 (a);	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Power Spectral Density
The in-band power spectral density was measured using the test technique specified in KDB 789033. A 1 MHz measurement bandwidth was implemented for the analyzer sweep. Once the sweep is complete the analyzer trace data is downloaded and used for post processing purposes.
Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured separately. The Peak Power Spectral Density is the highest level found across the emission bandwidth. With multiple antenna port measurements the numerical analyzer data from each port is summed (å) and a link to this additional graphic is provided.

Test configuration and setup used for the measurement was per the Conducted Test Set-up section specified in this document.

Measure and sum the spectra across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The individual spectra are then summed mathematically in linear power units. Unlike in-band power measurements, in which the sum involves a single measured value (output power) from each output, measurements for compliance with PSD limits involve summing entire spectra across corresponding frequency bins on the various outputs. Consistency is maintained for any device with multiple transmitter outputs to be certain the individual outputs are all aligned with the same span and same number of points. In this instance, the linear power spectrum value within the first spectral bin of output 0 is summed with that in the first spectral bin of output 1, and the first spectral bin of output 2, and so on up to the Nth output to obtain the true value for the first frequency bin of the summed spectrum. The summed spectrum value for each frequency bin is computed in this fashion. These summed spectral values were post processed and the resulting numerical and graphical data presented.

NOTE: It may be observed that spectrum in some plots break the limit line however this in itself does NOT constitute a failure. In all cases a spectrum summation plot is provided in order to prove compliance. A failure occurs only after the summation of all spectrum plots have been summed and are found to be greater than the limit line.

Supporting Information
Calculated Power = A + 10 log (1/x) dBm
A = Total Power Spectral Density [10*Log10 ($10^{a/10}$ + $10^{b/10}$ + $10^{c/10}$ + $10^{d/10}$)]
x = Duty Cycle

Limits Power Spectral Density

Operating Frequency Band 5150-5250 MHz

15. 407 (a)(1)
(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the

maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

9.3.1.3. Base Station Mode

Equipment Configuration for Power Spectral Density

Variant:	20 MHz	**Duty Cycle (%):**	86.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+0.66 dB)	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5180.0	2.160	0.905	3.130		5.545	16.5	-10.96
5200.0	7.420	4.602	6.366		10.528	16.5	-5.97
5240.0	7.094	6.209	6.801		11.732	16.5	-4.77

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Note: See section 5.4 for a complete list of antennas and effective gains. This antenna has a 2 dB cable and a 4.5 dB splitter system loss. This system loss happens during the module installation in the base station. As a result this would effectively reduce the gain of the antenna by 6.5 dB, this loss is reflected on the limit see the calculations below:

Loss 6.5 dB
Gain 13.0 dBi

Gain = 13 - 6.5 (system loss) = 6.5
Limit = 17 – Gain (6.5 - 6 = 0.5) = 16.5 dBm

Equipment Configuration for Power Spectral Density			
Variant:	40 MHz	**Duty Cycle (%):**	78.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+1.08 dB)	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5190.0	1.928	2.062	1.431		5.924	16.5	-10.58
5200.0	2.523	4.124	1.281		7.293	16.5	-9.21
5230.0	3.534	2.462	1.116		6.793	16.5	-9.71

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Note: See section 5.4 for a complete list of antennas and effective gains. This antenna has a 2 dB cable and a 4.5 dB splitter system loss. This system loss happens during the module installation in the base station. As a result this would effectively reduce the gain of the antenna by 6.5 dB, this loss is reflected on the limit see the calculations below:

Loss 6.5 dB
Gain 13.0 dBi

Gain = 13 - 6.5 (system loss) = 6.5
Limit = 17 – Gain (6.5 - 6 = 0.5) = 16.5 dBm

Equipment Configuration for Power Spectral Density			
Variant:	80 MHz	**Duty Cycle (%):**	66.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+1.8 dB)	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5210.0	-4.657	-9.189	-9.412		-1.389	16.50	-17.89

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Note: See section 5.4 for a complete list of antennas and effective gains. This antenna has a 2 dB cable and a 4.5 dB splitter system loss. This system loss happens during the module installation in the base station. As a result this would effectively reduce the gain of the antenna by 6.5 dB, this loss is reflected on the limit see the calculations below:

Loss 6.5 dB
Gain 13.0 dBi

Gain = 13 - 6.5 (system loss) = 6.5
Limit = 17 – Gain (6.5 - 6 = 0.5) = 16.5 dBm

9.3.1.4. Client Mode

Equipment Configuration for Power Spectral Density

Variant:	20 MHz	**Duty Cycle (%):**	86.0
Data Rate:	6.50 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+0.66 dB)	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5180.0	0.582	1.369	0.228		5.544	10.50	-4.96
5200.0	0.997	0.875	0.143		5.129	10.50	-5.37
5240.0	1.185	1.085	-0.153		5.042	10.50	-5.46

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Note: See section 5.4 for a complete list of antennas and effective gains. This antenna has a 2 dB cable and a 4.5 dB splitter system loss. This system loss happens during the module installation in the base station. As a result this would effectively reduce the gain of the antenna by 6.5 dB, this loss is reflected on the limit see the calculations below:

Loss 6.5 dB
Gain 13.0 dBi

Gain = 13 - 6.5 (system loss) = 6.5
Limit = 11 – Gain (6.5 - 6 = 0.5) = 10.5 dBm

Equipment Configuration for Power Spectral Density			
Variant:	40 MHz	**Duty Cycle (%):**	78.0
Data Rate:	13.50 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+1.08 dB)	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5190.0	-4.766	-7.447	-5.718		-1.396	10.50	-11.90
5200.0	-5.673	-6.935	-5.289		-1.498	10.50	-12.00
5230.0	-4.158	-7.025	-4.466		0.356	10.50	-10.14

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Note: See section 5.4 for a complete list of antennas and effective gains. This antenna has a 2 dB cable and a 4.5 dB splitter system loss. This system loss happens during the module installation in the base station. As a result this would effectively reduce the gain of the antenna by 6.5 dB, this loss is reflected on the limit see the calculations below:

Loss 6.5 dB
Gain 13.0 dBi

Gain = 13 - 6.5 (system loss) = 6.5
Limit = 11 – Gain (6.5 - 6 = 0.5) = 10.5 dBm

Equipment Configuration for Power Spectral Density			
Variant:	80 MHz	**Duty Cycle (%):**	66.0
Data Rate:	29.30 MBit/s	**Antenna Gain (dBi):**	13.00
Modulation:	OFDM	**Beam Forming Gain (Y)(dB):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Summation Peak Marker + DCCF (+1.8 dB)	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5210.0	-14.562	-14.708	-13.422		-8.236	10.50	-18.74

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

DCCF - Duty Cycle Correction Factor

Note: click the links in the above matrix to view the graphical image (plot).

Note: See section 5.4 for a complete list of antennas and effective gains. This antenna has a 2 dB cable and a 4.5 dB splitter system loss. This system loss happens during the module installation in the base station. As a result this would effectively reduce the gain of the antenna by 6.5 dB, this loss is reflected on the limit see the calculations below:

Loss 6.5 dB
Gain 13.0 dBi

Gain = 13 - 6.5 (system loss) = 6.5
Limit = 11 – Gain (6.5 - 6 = 0.5) = 10.5 dBm

9.4. Radiated

Radiated Test Conditions for Radiated Spurious and Band-Edge Emissions			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	20.0 - 24.5
Test Heading:	Radiated Spurious and Band-Edge Emissions	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.407 (b), 15.205, 15.209	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Radiated Spurious and Band-Edge Emissions
Radiated emissions for restricted bands above 1 GHz are measured in the anechoic chamber at a 3-meter distance on every azimuth in both horizontal and vertical polarities. The emissions are recorded and maximized as a function of azimuth by rotation through 360° with a spectrum analyzer in peak hold mode. Depending on the frequency band spanned a notch filter was used to remove the fundamental frequency. The highest emissions relative to the limit are listed for each frequency spanned.
Measurements on any restricted band frequency or frequencies above 1 GHz are based on the use of measurement instrumentation employing peak and average detectors. All measurements were performed using a resolution bandwidth of 1 MHz.

Test configuration and setup for Undesirable Measurement were per the Radiated Test Set-up specified in this document.

15.407 (b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

Limits for Restricted Bands (15.205, 15.209)
Peak emission: 74 dBuV/m
Average emission: 54 dBuV/m

Field Strength Calculation
The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. All factors are included in the reported data.
FS = R + AF + CORR - FO

where:
FS = Field Strength
R = Measured Spectrum analyzer Input Amplitude

AF = Antenna Factor
CORR = Correction Factor = CL – AG + NFL
CL = Cable Loss
AG = Amplifier Gain
FO = Distance Falloff Factor
NFL = Notch Filter Loss

Example:
The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength (dBµV/m);

$$E = \frac{1000000 \times \sqrt{30P}}{3} \ \mu V/m$$

where P is the EIRP in Watts

Therefore: -27 dBm/MHz equates to 68.23 dBuV/m

Conversion between dBmV/m (or dBmV) and mV/m (or mV) are as follows:
Level (dBmV/m) = 20 * Log (level (mV/m))

40 dBmV/m = 100 mV/m
48 dBmV/m = 250 mV/m

Restricted Bands of Operation (15.205)
(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

Frequency Band			
MHz	**MHz**	**MHz**	**GHz**
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

(b) Except as provided in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

(c) Except as provided in paragraphs (d) and (e) of this section, regardless of the field strength limits specified elsewhere in this subpart, the provisions of this section apply to emissions from any intentional radiator.

(d) The following devices are exempt from the requirements of this section:

(1) Swept frequency field disturbance sensors operating between 1.705 and 37 MHz provided their emissions only sweep through the bands listed in paragraph (a) of this section, the sweep is never stopped with the fundamental emission within the bands listed in paragraph (a) of this section, and the fundamental emission is outside of the bands listed in paragraph (a) of this section more than 99% of the time the device is actively transmitting, without compensation for duty cycle.

(2) Transmitters used to detect buried electronic markers at 101.4 kHz which are employed by telephone companies.

(3) Cable locating equipment operated pursuant to §15.213.

(4) Any equipment operated under the provisions of §15.253, 15.255, and 15.256 in the frequency band 75-85 GHz, or §15.257 of this part.

(5) Biomedical telemetry devices operating under the provisions of §15.242 of this part are not subject to the restricted band 608-614 MHz but are subject to compliance within the other restricted bands.

(6) Transmitters operating under the provisions of subparts D or F of this part.

(7) Devices operated pursuant to §15.225 are exempt from complying with this section for the 13.36-13.41 MHz band only.

(8) Devices operated in the 24.075-24.175 GHz band under §15.245 are exempt from complying with the requirements of this section for the 48.15-48.35 GHz and 72.225-72.525 GHz bands only, and shall not exceed the limits specified in §15.245(b).

(9) Devices operated in the 24.0-24.25 GHz band under §15.249 are exempt from complying with the requirements of this section for the 48.0-48.5 GHz and 72.0-72.75 GHz bands only, and shall not exceed the limits specified in §15.249(a).

(e) Harmonic emissions appearing in the restricted bands above 17.7 GHz from field disturbance sensors operating under the provisions of §15.245 shall not exceed the limits specified in §15.245(b).

9.4.1. TX Spurious & Restricted Band Emissions

9.4.1.5. RADWIN AT0058760

Equipment Configuration for TX Spurious & Restricted Band Emissions			
Antenna:	RADWIN AT0058760	**Variant:**	20 MHz
Antenna Gain (dBi):	17.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	
Channel Frequency (MHz):	5180.00	**Data Rate:**	6.50 MBit/s
Power Setting:	12.5	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5176.98	80.91	2.96	-12.14	71.73	Fundamental	Vertical	151	0	--	--	
#2	6906.63	61.13	3.40	-8.09	56.44	Peak (NRB)	Vertical	151	0	--	--	Pass
Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak Limit.												

Spurious emissions were measured up to 40 GHz, no emissions were found.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	RADWIN AT0058760	**Variant:**	20 MHz
Antenna Gain (dBi):	17.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5200.00	**Data Rate:**	6.50 MBit/s
Power Setting:	13.5	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5204.32	80.97	2.99	-12.42	71.54	Fundamental	Horizontal	151	0	--	--	
#2	6296.13	55.04	3.27	-9.30	49.01	Peak (NRB)	Vertical	151	0	--	--	Pass
#3	6933.33	62.24	3.35	-7.85	57.74	Peak (NRB)	Vertical	151	0	--	--	Pass
Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak Limit.												

Spurious emissions were measured up to 40 GHz, no emissions were found.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	RADWIN AT0058760	**Variant:**	20 MHz
Antenna Gain (dBi):	17.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5240.00	**Data Rate:**	6.50 MBit/s
Power Setting:	13.5	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5234.42	82.95	2.97	-12.19	73.73	Fundamental	Vertical	100	0	--	--	
#2	6986.67	71.48	3.46	-7.89	67.05	Max Peak	Vertical	197	352	68.2	-1.2	Pass
Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak Limit.												

Spurious emissions were measured up to 40 GHz, no emissions were found.

9.4.1.6. RADWIN RW-9105-5158

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	RADWIN RW-9105-5158	**Variant:**	20 MHz
Antenna Gain (dBi):	18.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5180.00	**Data Rate:**	6.50 MBit/s
Power Setting:	12.5	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	4864.19	64.09	2.91	-12.54	54.46	Max Peak	Horizontal	161	4	68.2	-13.8	Pass
#2	4864.19	50.33	2.91	-12.54	40.70	Max Avg	Horizontal	161	4	54.0	-13.3	Pass
#3	5174.00	84.75	2.95	-12.20	75.50	Fundamental	Horizontal	151	0	--	--	
#4	6332.32	57.44	3.28	-9.24	51.48	Peak (NRB)	Vertical	151	0	--	--	Pass
#5	6906.65	70.15	3.40	-8.09	65.46	Max Peak	Horizontal	198	0	68.2	-2.8	Pass
Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak limit												

Spurious emissions were measured up to 40 GHz, no emissions were found.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	RADWIN RW-9105-5158	**Variant:**	20 MHz
Antenna Gain (dBi):	18.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5200.00	**Data Rate:**	6.50 MBit/s
Power Setting:	12.5	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	4803.44	61.93	2.85	-12.42	52.36	Max Peak	Horizontal	157	4	68.2	-15.9	Pass
#2	4803.44	48.00	2.85	-12.42	38.43	Max Avg	Horizontal	157	4	54.0	-15.6	Pass
#3	5205.43	81.73	2.99	-12.40	72.32	Fundamental	Horizontal	100	0	--	--	
#4	6249.34	58.72	3.25	-9.50	52.47	Peak (NRB)	Vertical	151	0	--	--	Pass
#5	6933.32	69.38	3.35	-7.85	64.88	Max Peak	Horizontal	145	343	68.2	-3.4	Pass
Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak limit												

Spurious emissions were measured up to 40 GHz, no emissions were found.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	RADWIN RW-9105-5158	**Variant:**	20 MHz
Antenna Gain (dBi):	18.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5240.00	**Data Rate:**	6.50 MBit/s
Power Setting:	12.5	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5233.76	84.09	2.97	-12.19	74.87	Fundamental	Horizontal	100	0	--	--	
#2	6158.91	57.01	3.23	-9.75	50.49	Peak (NRB)	Horizontal	150	0	--	--	Pass
#3	6986.68	68.00	3.46	-7.89	63.57	Max Peak	Horizontal	188	342	68.2	-4.7	Pass
Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak limit												

Spurious emissions were measured up to 40 GHz, no emissions were found.

9.4.1.7. RADWIN RW-9314-5158

Equipment Configuration for TX Spurious & Restricted Band Emissions			
Antenna:	RADWIN RW-9314-5158	**Variant:**	20 MHz
Antenna Gain (dBi):	13.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5180.00	**Data Rate:**	6.50 MBit/s
Power Setting:	25	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	4561.07	69.84	2.77	-12.04	60.57	Max Peak	Vertical	193	358	68.2	-7.7	Pass
#2	4561.07	55.49	2.77	-12.04	46.22	Max Avg	Vertical	193	358	54.0	-7.8	Pass
#3	4837.03	72.09	2.81	-12.55	62.35	Max Peak	Vertical	185	0	68.2	-5.9	Pass
#4	4837.03	57.82	2.81	-12.55	48.08	Max Avg	Vertical	185	0	54.0	-5.9	Pass
#5	5178.64	90.71	2.97	-12.12	81.56	Fundamental	Vertical	200	0	--	--	
#6	6906.67	70.68	3.40	-8.09	65.99	Max Peak	Vertical	184	251	68.2	-2.2	Pass
#7	10358.77	50.41	4.38	-5.45	49.34	Peak (NRB)	Vertical	200	0	--	--	Pass
Test Notes: EUT powered by POE. 5G notch in front of amp to prevent overload.												

Spurious emissions were measured up to 40 GHz, no emissions were found.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	RADWIN RW-9314-5158	**Variant:**	20 MHz
Antenna Gain (dBi):	13.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5200.00	**Data Rate:**	6.50 MBit/s
Power Setting:	25	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	4490.15	64.04	2.77	-12.32	54.49	Peak (NRB)	Vertical	200	0	--	--	Pass
#2	4597.80	70.05	2.83	-12.23	60.65	Max Peak	Vertical	177	0	68.2	-7.6	Pass
#3	4597.80	55.31	2.83	-12.23	45.91	Max Avg	Vertical	177	0	54.0	-8.1	Pass
#4	4683.00	70.58	2.82	-12.38	61.02	Max Peak	Vertical	182	6	68.2	-7.2	Pass
#5	4683.00	55.83	2.82	-12.38	46.27	Max Avg	Vertical	182	6	54.0	-7.7	Pass
#6	4807.25	72.20	2.85	-12.43	62.62	Max Peak	Vertical	185	354	68.2	-5.6	Pass
#7	4807.25	57.30	2.85	-12.43	47.72	Max Avg	Vertical	185	354	54.0	-6.3	Pass
#8	5205.98	92.95	2.99	-12.40	83.54	Fundamental	Vertical	200	0	--	--	
#9	6933.29	65.21	3.35	-7.85	60.71	Max Peak	Vertical	184	284	68.2	-7.5	Pass
#10	10407.05	52.94	4.37	-5.51	51.80	Peak (NRB)	Vertical	200	0	--	--	Pass
Test Notes: EUT powered by POE. 5G notch in front of amp to prevent overload.												

Spurious emissions were measured up to 40 GHz, no emissions were found.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	RADWIN RW-9314-5158	**Variant:**	20 MHz
Antenna Gain (dBi):	13.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5240.00	**Data Rate:**	6.50 MBit/s
Power Setting:	25	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	4602.84	69.28	2.76	-12.26	59.78	Max Peak	Vertical	159	348	68.2	-8.5	Pass
#2	4602.84	54.59	2.76	-12.26	45.09	Max Avg	Vertical	159	348	54.0	-8.9	Pass
#3	4687.87	69.44	2.84	-12.38	59.90	Max Peak	Vertical	168	7	68.2	-8.3	Pass
#4	4687.87	54.71	2.84	-12.38	45.17	Max Avg	Vertical	168	7	54.0	-8.8	Pass
#5	4806.63	71.92	2.86	-12.43	62.35	Max Peak	Vertical	181	0	68.2	-5.9	Pass
#6	4806.63	57.01	2.86	-12.43	47.44	Max Avg	Vertical	181	0	54.0	-6.6	Pass
#7	5238.28	92.74	2.99	-12.11	83.62	Fundamental	Vertical	100	0	--	--	
#8	6986.67	69.51	3.46	-7.89	65.08	Max Peak	Vertical	185	253	68.2	-3.2	Pass
#9	10479.92	65.02	4.36	-5.21	64.17	Max Peak	Vertical	192	350	68.2	-4.1	Pass
#10	10479.92	49.42	4.36	-5.21	48.57	Max Avg	Vertical	192	350	54.0	-5.4	Pass
#11	15726.25	56.46	5.79	-2.97	59.28	Max Peak	Vertical	196	4	68.2	-9.0	Pass
#12	15726.25	40.95	5.79	-2.97	43.77	Max Avg	Vertical	196	4	54.0	-10.2	Pass
Test Notes: EUT powered by POE. 5G notch in front of amp to prevent overload.												

Spurious emissions were measured up to 40 GHz, no emissions were found.

9.4.1.8. RADWIN RW-9401-5004

Equipment Configuration for TX Spurious & Restricted Band Emissions			
Antenna:	RADWIN RW-9401-5004	**Variant:**	20 MHz
Antenna Gain (dBi):	12.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5180.00	**Data Rate:**	6.50 MBit/s
Power Setting:	22.5	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	4585.81	67.59	2.82	-12.17	58.24	Max Peak	Vertical	190	357	68.2	-10.0	Pass
#2	4585.81	52.88	2.82	-12.17	43.53	Max Avg	Vertical	190	357	54.0	-10.5	Pass
#3	4866.38	69.39	2.93	-12.53	59.79	Max Peak	Vertical	192	352	68.2	-8.4	Pass
#4	4866.38	55.27	2.93	-12.53	45.67	Max Avg	Vertical	192	352	54.0	-8.3	Pass
#5	5183.26	87.66	3.01	-12.18	78.49	Fundamental	Vertical	200	0	--	--	
#6	6103.17	60.01	3.21	-9.86	53.36	Peak (NRB)	Vertical	200	0	--	--	Pass
#7	6906.69	70.80	3.40	-8.09	66.11	Max Peak	Vertical	195	90	68.2	-2.1	Pass
#8	10358.77	47.52	4.38	-5.45	46.45	Peak (NRB)	Vertical	100	0	--	--	Pass
Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak Limit.												

Spurious emissions were measured up to 40 GHz, no emissions were found.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	RADWIN RW-9401-5004	**Variant:**	20 MHz
Antenna Gain (dBi):	12.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5200.00	**Data Rate:**	6.50 MBit/s
Power Setting:	22.5	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	4537.87	62.87	2.81	-12.18	53.50	Max Peak	Vertical	188	3	68.2	-14.7	Pass
#2	4537.87	47.75	2.81	-12.18	38.38	Max Avg	Vertical	188	3	54.0	-15.6	Pass
#3	4833.19	63.31	2.83	-12.52	53.62	Max Peak	Vertical	188	3	68.2	-14.6	Pass
#4	4833.19	49.39	2.83	-12.52	39.70	Max Avg	Vertical	188	3	54.0	-14.3	Pass
#5	5205.54	88.93	2.99	-12.40	79.52	Fundamental	Vertical	200	0	--	--	
#6	6102.66	58.17	3.21	-9.88	51.50	Peak (NRB)	Vertical	200	0	--	--	Pass
#7	6933.36	72.30	3.35	-7.85	67.80	Max Peak	Vertical	185	91	68.2	-0.4	Pass
Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak Limit												

Spurious emissions were measured up to 40 GHz, no emissions were found.

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	RADWIN RW-9401-5004	**Variant:**	20 MHz
Antenna Gain (dBi):	12.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5240.00	**Data Rate:**	6.50 MBit/s
Power Setting:	22.5	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	4595.30	62.86	2.86	-12.23	53.49	Max Peak	Vertical	158	353	68.2	-14.7	Pass
#2	4595.30	48.51	2.86	-12.23	39.14	Max Avg	Vertical	158	353	54.0	-14.9	Pass
#3	4804.20	64.01	2.85	-12.42	54.44	Max Peak	Vertical	189	356	68.2	-13.8	Pass
#4	4804.20	50.05	2.85	-12.42	40.48	Max Avg	Vertical	189	356	54.0	-13.5	Pass
#5	5239.49	91.46	3.01	-12.08	82.39	Fundamental	Vertical	200	0	--	--	
#6	6192.85	56.69	3.27	-9.68	50.28	Peak (NRB)	Vertical	200	0	--	--	Pass
#7	6986.66	71.35	3.46	-7.89	66.92	Max Peak	Vertical	180	207	68.2	-1.3	Pass
#8	10479.26	52.24	4.36	-5.21	51.39	Peak (NRB)	Vertical	200	0	--	--	Pass
Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak Limit												

Spurious emissions were measured up to 40 GHz, no emissions were found.

9.4.2. Restricted Edge & Band-Edge Emissions

9.4.2.9. RADWIN AT0058760

RESULTS SUMMARY FOR RADIATED BAND-EDGE EMISSIONS

5150 - 5250 MHz

RADWIN AT0058760		Band-Edge Freq	Limit 74.00	Limit 54.0	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
20 MHz	5180.00	5150.00	67.70	53.99	15.5
40 MHz	5190.00	5150.00	67.11	53.98	16.5
80 MHz	5210.00	5150.00	67.82	48.31	3.5

Click on the links to view the data.

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN AT0058760	**Variant:**	20 MHz
Antenna Gain (dBi):	17.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	86
Channel Frequency (MHz):	5180.00	**Data Rate:**	6.50 MBit/s
Power Setting:	15.5	**Tested By:**	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5150.00	16.85	2.93	34.21	53.99	Max Avg	Vertical	154	0	54.0	0.0	Pass
#2	5150.00	30.56	2.93	34.21	67.70	Max Peak	Vertical	154	0	74.0	-6.3	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by POE. PS reduced to 15.5 to meet band edge limit. *Includes Duty Cycle correction for Avg Measurement.												

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN AT0058760	**Variant:**	40 MHz
Antenna Gain (dBi):	17.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	78
Channel Frequency (MHz):	5190.00	**Data Rate:**	13.50 MBit/s
Power Setting:	16.5	**Tested By:**	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5141.78	29.96	2.95	34.20	67.11	Max Peak	Vertical	154	0	74.0	-6.9	Pass
#2	5150.00	16.84	2.93	34.21	53.98	Max Avg	Vertical	154	0	54.0	0.0	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE. PS reduced to 16.5 to meet band edge limit. *Includes Duty Cycle correction for Avg Measurement.

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN AT0058760	**Variant:**	80 MHz
Antenna Gain (dBi):	Not Applicable	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	66
Channel Frequency (MHz):	5210.00	**Data Rate:**	29.30 MBit/s
Power Setting:	3.5	**Tested By:**	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5150.00	11.17	2.93	34.21	48.31	Max Avg	Vertical	154	0	54.0	-5.7	Pass
#2	5150.00	30.68	2.93	34.21	67.82	Max Peak	Vertical	154	0	74.0	-6.2	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE. PS reduced to 3.5 to meet band edge limit. . *Includes Duty Cycle correction for Avg Measurement.

9.4.2.10. RADWIN RW-9105-5158

RESULTS SUMMARY FOR RADIATED BAND-EDGE EMISSIONS

5150 - 5250 MHz

RADWIN RW-9105-5158		Band-Edge Freq	Limit 74.00	Limit 54.0	Power Setting
Operational Mode	Operating Frequency (MHz)	dBµV/m	dBµV/m	dBµV/m	
20 MHz	5180.00	5150.00	62.69	50.19	12.5
40 MHz	5190.00	5150.00	67.99	53.19	12.5
80 MHz	5210.00	5150.00	71.59	51.33	9.5

Click on the links to view the data.

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN RW-9105-5158	**Variant:**	20 MHz
Antenna Gain (dBi):	18.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	86
Channel Frequency (MHz):	5180.00	**Data Rate:**	6.50 MBit/s
Power Setting:	12.5	**Tested By:**	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5143.99	25.56	2.93	34.20	62.69	Max Peak	Horizontal	192	2	74.0	-11.3	Pass
#2	5144.79	13.07	2.92	34.20	50.19	Max Avg	Horizontal	192	2	54.0	-3.8	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by POE. Power reduced to meet TX Spurious limit. *Includes Duty Cycle correction for Avg Measurement.												

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN RW-9105-5158	**Variant:**	40 MHz
Antenna Gain (dBi):	18.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	78
Channel Frequency (MHz):	5190.00	**Data Rate:**	13.50 MBit/s
Power Setting:	12.5	**Tested By:**	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5148.50	30.87	2.91	34.21	67.99	Max Peak	Horizontal	192	2	74.0	-6.0	Pass
#2	5150.00	16.05	2.93	34.21	53.19	Max Avg	Horizontal	192	2	54.0	-0.8	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by POE. Power reduced to meet limit. *Includes Duty Cycle correction for Avg Measurement.												

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN RW-9105-5158	**Variant:**	80 MHz
Antenna Gain (dBi):	18.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	66
Channel Frequency (MHz):	5210.00	**Data Rate:**	29.30 MBit/s
Power Setting:	9.5	**Tested By:**	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5150.00	14.19	2.93	34.21	51.33	Max Avg	Horizontal	192	2	54.0	-2.7	Pass
#2	5150.00	34.45	2.93	34.21	71.59	Max Peak	Horizontal	192	2	74.0	-2.4	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by POE. Power reduced to meet limit. *Includes Duty Cycle correction for Avg Measurement.												

9.4.2.11. RADWIN RW-9314-5158

RESULTS SUMMARY FOR RADIATED BAND-EDGE EMISSIONS

5150 - 5250 MHz

RADWIN RW-9314-5158		Band-Edge Freq	Limit 74.00	Limit 54.0	Power Setting
Operational Mode	Operating Frequency (MHz)	dBµV/m	dBµV/m	dBµV/m	
20 MHz	5180.00	5150.00	67.89	53.98	16
40 MHz	5190.00	5150.00	70.25	52.49	12.5
80 MHz	5210.00	5150.00	73.38	51.48	8

Click on the links to view the data.

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN RW-9314-5158	**Variant:**	20 MHz
Antenna Gain (dBi):	13.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	86
Channel Frequency (MHz):	5180.00	**Data Rate:**	6.50 MBit/s
Power Setting:	16	**Tested By:**	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5150.00	16.85	2.93	34.21	53.98	Max Avg	Vertical	186	358	54.0	0.0	Pass
#2	5150.00	30.75	2.93	34.21	67.89	Max Peak	Vertical	186	358	74.0	-6.1	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT Powered by POE. Power reduced to meet Avg Limit. *Includes Duty Cycle correction for Avg Measurement.												

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN RW-9314-5158	**Variant:**	40 MHz
Antenna Gain (dBi):	13.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	78
Channel Frequency (MHz):	5190.00	**Data Rate:**	13.50 MBit/s
Power Setting:	12.5	**Tested By:**	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5150.00	15.35	2.93	34.21	52.49	Max Avg	Vertical	186	358	54.0	-1.5	Pass
#2	5150.00	33.11	2.93	34.21	70.25	Max Peak	Vertical	186	358	74.0	-3.8	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT Powered by POE. Power reduced to meet Avg Limit.*Includes Duty Cycle correction for Avg Measurement.												

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN RW-9314-5158	**Variant:**	80 MHz
Antenna Gain (dBi):	13.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	66
Channel Frequency (MHz):	5210.00	**Data Rate:**	29.30 MBit/s
Power Setting:	8	**Tested By:**	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5150.00	14.34	2.93	34.21	51.48	Max Avg	Vertical	186	358	54.0	-2.5	Pass
#2	5150.00	36.24	2.93	34.21	73.38	Max Peak	Vertical	186	358	74.0	-0.6	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT Powered by POE. Power reduced to meet Peak Limit. *Includes Duty Cycle correction for Avg Measurement.												

9.4.2.12. RADWIN RW-9401-5004

RESULTS SUMMARY FOR RADIATED BAND-EDGE EMISSIONS

5150 - 5250 MHz

RADWIN RW-9401-5004		Band-Edge Freq	Limit 74.00	Limit 54.0	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
20 MHz	5180.00	5150.00	68.67	52.73	17.5
40 MHz	5190.00	5150.00	68.17	53.88	14.5
80 MHz	5210.00	5150.00	73.51	51.32	14.5

Click on the links to view the data.

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN RW-9401-5004	**Variant:**	20 MHz
Antenna Gain (dBi):	12.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	86
Channel Frequency (MHz):	5180.00	**Data Rate:**	6.50 MBit/s
Power Setting:	17.5	**Tested By:**	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5145.49	31.55	2.92	34.20	68.67	Max Peak	Vertical	198	3	74.0	-5.3	Pass
#2	5150.00	15.60	2.93	34.21	52.73	Max Avg	Vertical	198	3	54.0	-1.3	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by POE. Power reduced to meet Avg Limit. *Includes Duty Cycle correction for Avg Measurement.												

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN RW-9401-5004	**Variant:**	40 MHz
Antenna Gain (dBi):	12.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	78
Channel Frequency (MHz):	5190.00	**Data Rate:**	13.50 MBit/s
Power Setting:	14.5	**Tested By:**	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5150.00	16.74	2.93	34.21	53.88	Max Avg	Vertical	198	3	54.0	-0.1	Pass
#2	5150.00	31.03	2.93	34.21	68.17	Max Peak	Vertical	198	3	74.0	-5.8	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by POE. Power reduced to meet Avg Limit. *Includes Duty Cycle correction for Avg Measurement.												

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN RW-9401-5004	**Variant:**	80 MHz
Antenna Gain (dBi):	12.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	66
Channel Frequency (MHz):	5210.00	**Data Rate:**	29.30 MBit/s
Power Setting:	14.5	**Tested By:**	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	5150.00	14.18	2.93	34.21	51.32	Max Avg	Vertical	198	3	54.0	-2.7	Pass
#2	5150.00	36.37	2.93	34.21	73.51	Max Peak	Vertical	198	3	74.0	-0.5	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by POE. Power reduced to meet Peak Limit. *Includes Duty Cycle correction for Avg Measurement.												

9.4.3. Digital Emissions

Radiated Test Conditions for Radiated Digital Emissions (0.03 – 1 GHz)			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	20.0 - 24.5
Test Heading:	Digital Emissions	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.209	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Radiated Digital Emissions (0.03 – 1 GHz)
Testing 30M-1 GHz was performed in a 3-meter anechoic chamber using a CISPR compliant receiver. Preliminary radiated emissions were measured on every azimuth and with the receiving antenna in both horizontal and vertical polarizations. To further maximize emissions the receive antenna was varied between 1 and 4 meters. The emissions are recorded with receiver in peak hold mode. Emissions closest to the limits are measured in the quasi-peak mode with the tuned receiver using a bandwidth of 120 kHz. Only the highest emissions relative to the limit are listed.

Test configuration and setup for Radiated Spurious and Band-Edge Measurement were per the Radiated Test Set-up specified in this document.

Field Strength Calculation
The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. In this test facility, the Antenna Factor, Cable Loss, and Amplifier Gains are loaded into the Rohde & Schwarz Receiver and the corrected field strength can be read directly on the receiver.

FS = R + AF + CORR

where:
FS = Field Strength
R = Measured Receiver Input Amplitude
AF = Antenna Factor
CORR = Correction Factor = CL – AG + NFL
CL = Cable Loss
AG = Amplifier Gain

For example:
Given a Receiver input reading of 51.5dBmV; Antenna Factor of 8.5dB; Cable Loss of 1.3dB; Falloff Factor of 0dB, an Amplifier Gain of 26dB and Notch Filter Loss of 1dB. The Field Strength of the measured emission is:

FS = 51.5 + 8.5 + 1.3 - 26.0 +1 = 36.3dBmV/m

Conversion between dBmV/m (or dBmV) and mV/m (or mV) are done as:

Level (dBmV/m) = 20 * Log (level (mV/m))

40 dBmV/m = 100mV/m
48 dBmV/m = 250mV/m

Limits for Radiated Digital Emissions (0.03 – 1 GHz) (15.209)

(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength		Measurement Distance (m)
	µV/m (microvolts/meter)	dBµV/m (dB microvolts/meter)	
0.009-0.490	2400/F(kHz)	--	300
0.490-1.705	24000/F(kHz)	--	30

1.705-30.0	30	29.5	30
30-88	100**	40	3
88-216	150**	43.5	3
216-960	200**	46.0	3
Above 960	500	54.0	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

(b) In the emission table above, the tighter limit applies at the band edges. (c) The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. For intentional radiators which operate under the provisions of other sections within this part and which are required to reduce their unwanted emissions to the limits specified in this table, the limits in this table are based on the frequency of the unwanted emission and not the fundamental frequency. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency. (d) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector. (e) The provisions in §§15.31, 15.33, and 15.35 for measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this part. (f) In accordance with §15.33(a), in some cases the emissions from an intentional radiator must be measured to beyond the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator because of the incorporation of a digital device. If measurements above the tenth harmonic are so required, the radiated emissions above the tenth harmonic shall comply with the general radiated emission limits applicable to the incorporated digital device, as shown in §15.109 and as based on the frequency of the emission being measured, or, except for emissions contained in the restricted frequency bands shown in §15.205, the limit on spurious emissions specified for the intentional radiator, whichever is the higher limit. Emissions which must be measured above the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator and which fall within the restricted bands shall comply with the general radiated emission limits in §15.109 that are applicable to the incorporated digital device. (g) Perimeter protection systems may operate in the 54-72 MHz and 76-88 MHz bands under the provisions of this section. The use of such perimeter protection systems is limited to industrial, business and commercial applications.

Equipment Configuration for Digital Emissions

Antenna:	RADWIN AT0058760	**Variant:**	20 MHz
Antenna Gain (dBi):	17.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	86
Channel Frequency (MHz):	5200.00	**Data Rate:**	6.50 MBit/s
Power Setting:	25	**Tested By:**	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	30.52	38.78	3.54	-8.20	34.12	MaxQP	Vertical	111	328	40.0	-5.9	Pass
#2	80.93	55.95	3.94	-20.89	39.00	MaxQP	Horizontal	380	262	40.0	-1.0	Pass
#3	133.75	45.61	4.23	-14.82	35.02	MaxQP	Vertical	102	355	43.0	-8.0	Pass
#4	159.44	50.54	4.36	-15.90	39.00	MaxQP	Horizontal	175	131	43.0	-4.0	Pass
#5	320.00	51.98	4.99	-13.78	43.19	MaxQP	Horizontal	101	295	46.0	-2.8	Pass
#6	700.01	35.74	6.20	-7.22	34.72	MaxQP	Horizontal	111	174	46.0	-11.3	Pass
#7	899.97	33.09	6.76	-4.92	34.93	MaxQP	Horizontal	102	139	46.0	-11.1	Pass
Test Notes: EUT Powered by POE.												

9.4.4. ac Wireline Emissions

Test Conditions for ac Wireline Emissions (0.15 – 30 MHz)			
Standard:	FCC CFR 47:15.247	Ambient Temp. (ºC):	20.0 - 24.5
Test Heading:	Conducted (ac Wireline Emissions)	Rel. Humidity (%):	32 - 45
Standard Section(s):	15.207	Pressure (mBars):	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for ac Wireline Emissions (0.15 – 30 MHz)
The EUT is configured in accordance with ANSI C63.4. The conducted emissions are measured in a shielded room with a spectrum analyzer in peak hold in the first instance. Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation. The highest emissions relative to the limit are listed.

Test configuration and setup for ac Wireline Emission Measurement were per the ac Wireline Test Set-up specified in this document.

Limits for ac Wireline Emissions

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Limits for conducted disturbance at the mains ports of class B ITE

Frequency of emission (MHz)	Quasi-peak dBuV	Average dBuV
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50
Note 1	* Decreases with the logarithm of the frequency	
Note 2	* The lower limit applies at the boundary between frequency ranges	

Limits for conducted disturbance at the mains ports of class A ITE

Frequency of emission (MHz)	Quasi-peak dBuV	Average dBuV
0.15–0.5	79	66
0.5–30	73	60
Note 1	* The lower limit shall apply at the transition frequency.	

The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

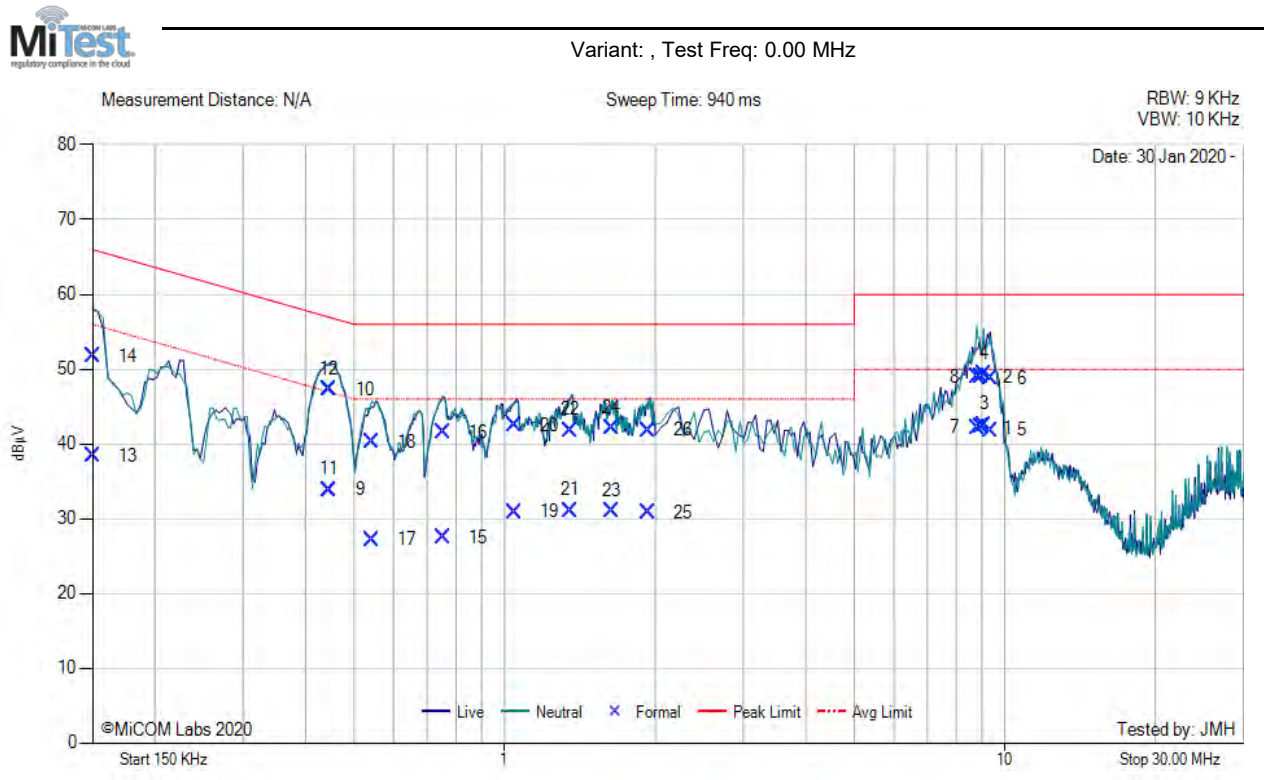
(2) For all other carrier current systems: 1000 μV within the frequency band 535-1705 kHz, as measured using a 50 μH/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.205, §15.209, §15.221, §15.223, or §15.227, as appropriate.

Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

Measurement Results for ac Wireline Conducted Emissions (150 kHz – 30 MHz)

Model:	AP0168031	Configuration tested:	AC/DC
Input power:	120V$_{AC}$/60Hz	Application	AC Mains



Num	Frequency MHz	Raw dBµV	Cable Loss dB	Factor dB	Total Correction dBµV	Corrected Value dBµV	Measurement Type	Line	Limit dBµV/m	Margin dB	Pass /Fail
1	8.816	31.51	0.44	10.21	10.65	42.16	Max Avg	Neutral	50.0	-7.8	Pass
2	8.816	38.34	0.44	10.21	10.65	48.99	Max Qp	Neutral	60.0	-11.0	Pass
3	9.101	31.92	0.44	10.22	10.66	42.58	Max Avg	Neutral	50.0	-7.4	Pass
4	9.101	38.69	0.44	10.22	10.66	49.35	Max Qp	Neutral	60.0	-10.7	Pass
5	9.386	31.18	0.44	10.21	10.65	41.83	Max Avg	Live	50.0	-8.2	Pass
6	9.386	38.12	0.44	10.21	10.65	48.77	Max Qp	Live	60.0	-11.2	Pass
7	8.958	31.64	0.44	10.20	10.64	42.28	Max Avg	Live	50.0	-7.7	Pass
8	8.958	38.30	0.44	10.20	10.64	48.94	Max Qp	Live	60.0	-11.1	Pass
9	0.447	23.86	0.06	9.93	9.99	33.85	Max Avg	Live	47.5	-13.7	Pass
10	0.447	37.31	0.06	9.93	9.99	47.30	Max Qp	Live	57.5	-10.2	Pass
11	0.447	23.88	0.06	9.93	9.99	33.87	Max Avg	Neutral	47.5	-13.6	Pass
12	0.447	37.26	0.06	9.93	9.99	47.25	Max Qp	Neutral	57.5	-10.3	Pass
13	0.150	28.44	0.05	9.92	9.97	38.41	Max Avg	Live	56.0	-17.6	Pass
14	0.150	41.79	0.05	9.92	9.97	51.76	Max Qp	Live	66.0	-14.2	Pass
15	0.753	17.39	0.12	9.93	10.05	27.44	Max Avg	Live	46.0	-18.6	Pass
16	0.753	31.51	0.12	9.93	10.05	41.56	Max Qp	Live	56.0	-14.4	Pass
17	0.541	17.18	0.09	9.92	10.01	27.19	Max Avg	Live	46.0	-18.8	Pass

18	0.541	30.30	0.09	9.92	10.01	40.31	Max Qp	Live	56.0	-15.7	Pass
19	1.048	20.92	0.08	9.94	10.02	30.94	Max Avg	Live	46.0	-15.1	Pass
20	1.048	32.41	0.08	9.94	10.02	42.43	Max Qp	Live	56.0	-13.6	Pass
21	1.353	21.03	0.11	9.94	10.05	31.08	Max Avg	Live	46.0	-14.9	Pass
22	1.353	31.81	0.11	9.94	10.05	41.86	Max Qp	Live	56.0	-14.1	Pass
23	1.635	20.95	0.15	9.97	10.12	31.07	Max Avg	Live	46.0	-14.9	Pass
24	1.635	32.04	0.15	9.97	10.12	42.16	Max Qp	Live	56.0	-13.8	Pass
25	1.931	20.69	0.18	9.97	10.15	30.84	Max Avg	Live	46.0	-15.2	Pass
26	1.931	31.69	0.18	9.97	10.15	41.84	Max Qp	Live	56.0	-14.2	Pass
32	0.000	0.05	--	--	--	--		--	--	--	--

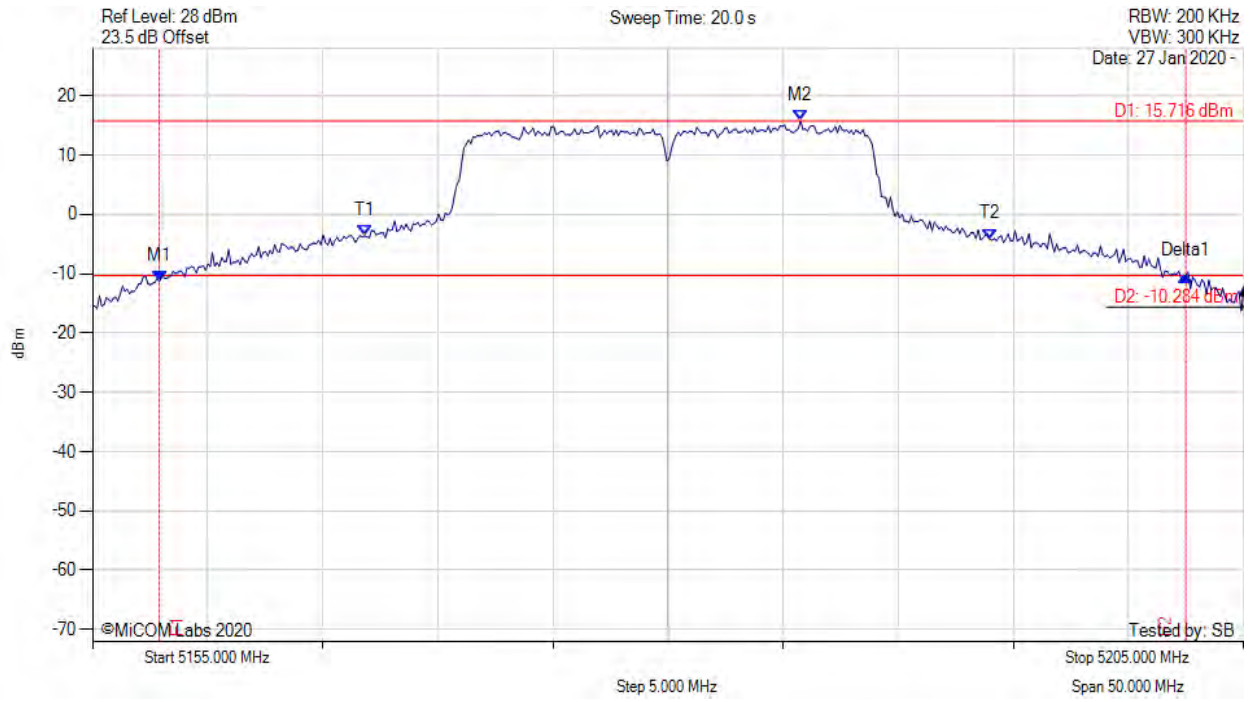
Test Notes: EUT powered by POE. 120V 60 Hz

A. APPENDIX - GRAPHICAL IMAGES

A.1. 26 dB & 99% Bandwidth

26 dB & 99% BANDWIDTH

Variant: 20 MHz, Channel: 5180.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

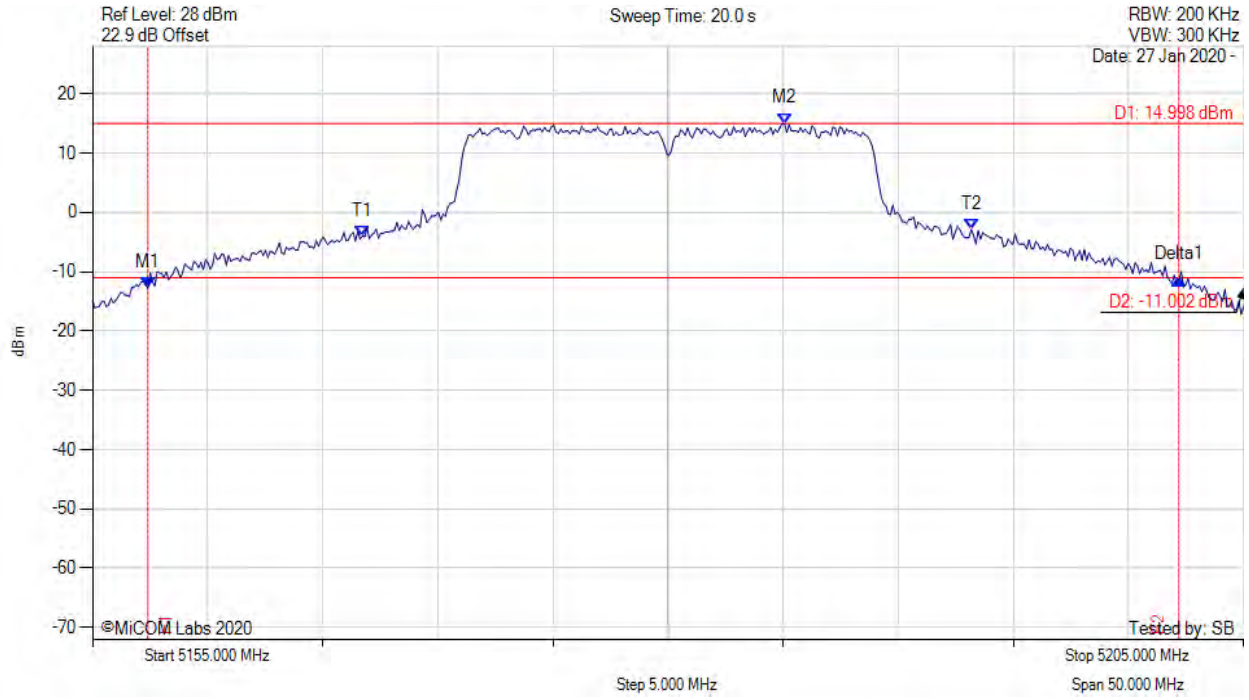


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5157.906 MHz : -11.333 dBm M2 : 5185.762 MHz : 15.716 dBm Delta1 : 44.589 MHz : 0.976 dB T1 : 5166.824 MHz : -3.631 dBm T2 : 5193.978 MHz : -4.170 dBm OBW : 27.154 MHz	Measured 26 dB Bandwidth: 44.589 MHz Measured 99% Bandwidth: 27.154 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 20 MHz, Channel: 5180.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

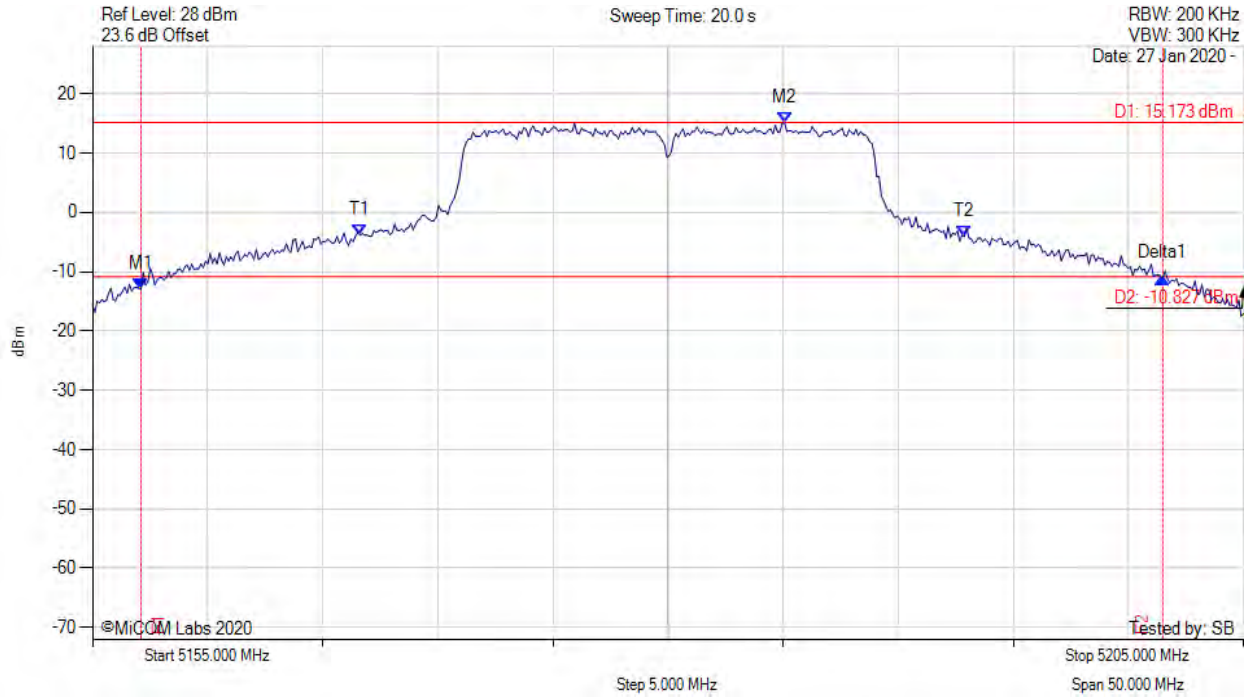


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5157.405 MHz : -12.771 dBm M2 : 5185.060 MHz : 14.998 dBm Delta1 : 44.790 MHz : 1.426 dB T1 : 5166.723 MHz : -3.989 dBm T2 : 5193.176 MHz : -2.901 dBm OBW : 26.453 MHz	Measured 26 dB Bandwidth: 44.790 MHz Measured 99% Bandwidth: 26.453 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 20 MHz, Channel: 5180.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

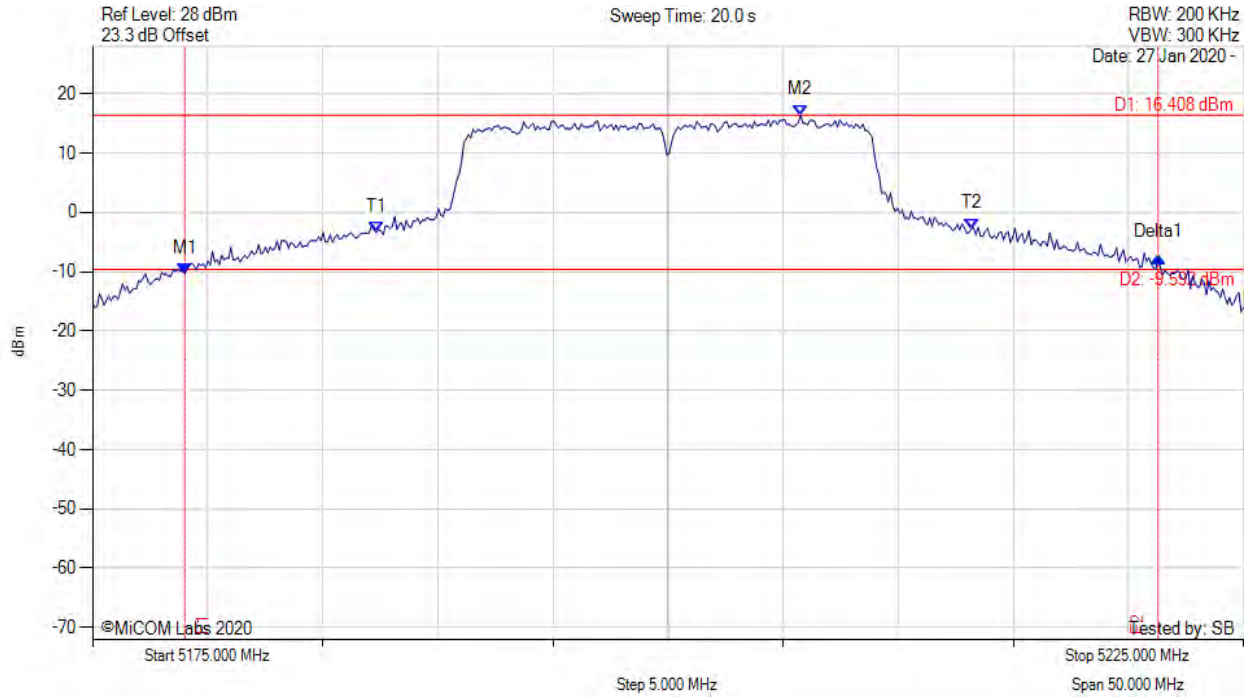


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5157.104 MHz : -12.998 dBm M2 : 5185.060 MHz : 15.173 dBm Delta1 : 44.389 MHz : 1.932 dB T1 : 5166.623 MHz : -3.840 dBm T2 : 5192.876 MHz : -4.101 dBm OBW : 26.253 MHz	Measured 26 dB Bandwidth: 44.389 MHz Measured 99% Bandwidth: 26.253 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 20 MHz, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

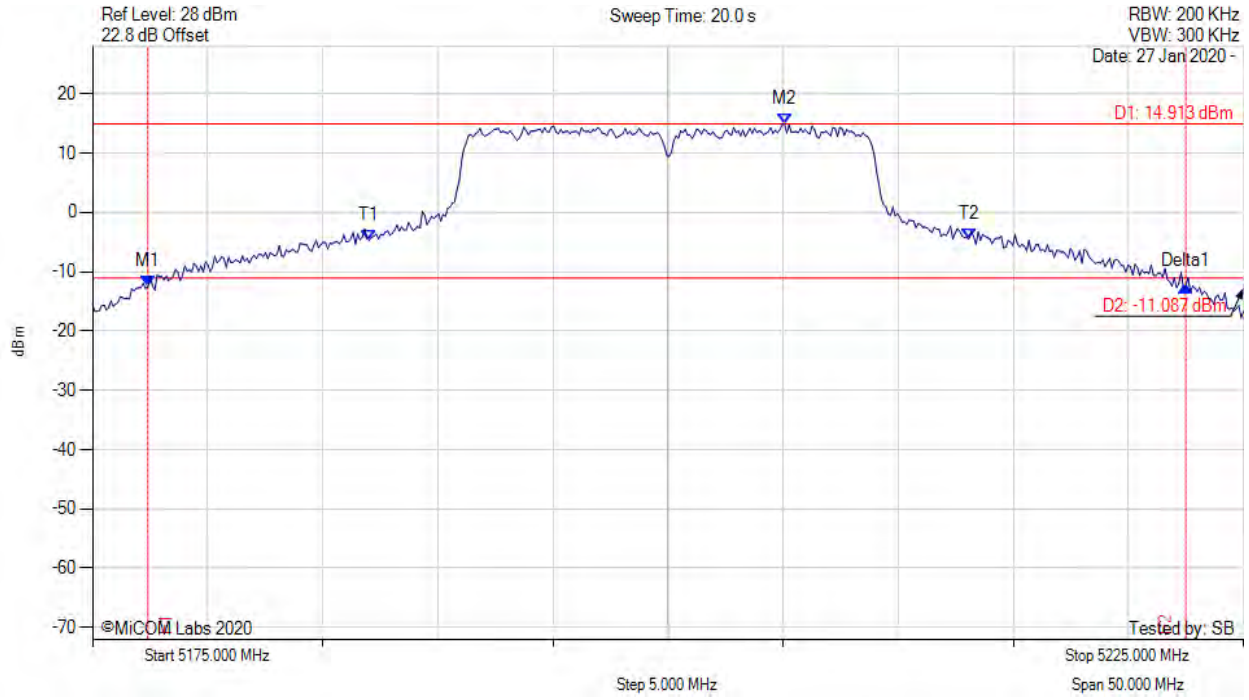


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5179.008 MHz : -10.338 dBm M2 : 5205.762 MHz : 16.408 dBm Delta1 : 42.285 MHz : 2.754 dB T1 : 5187.325 MHz : -3.350 dBm T2 : 5213.176 MHz : -2.750 dBm OBW : 25.852 MHz	Measured 26 dB Bandwidth: 42.285 MHz Measured 99% Bandwidth: 25.852 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 20 MHz, Channel: 5200.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

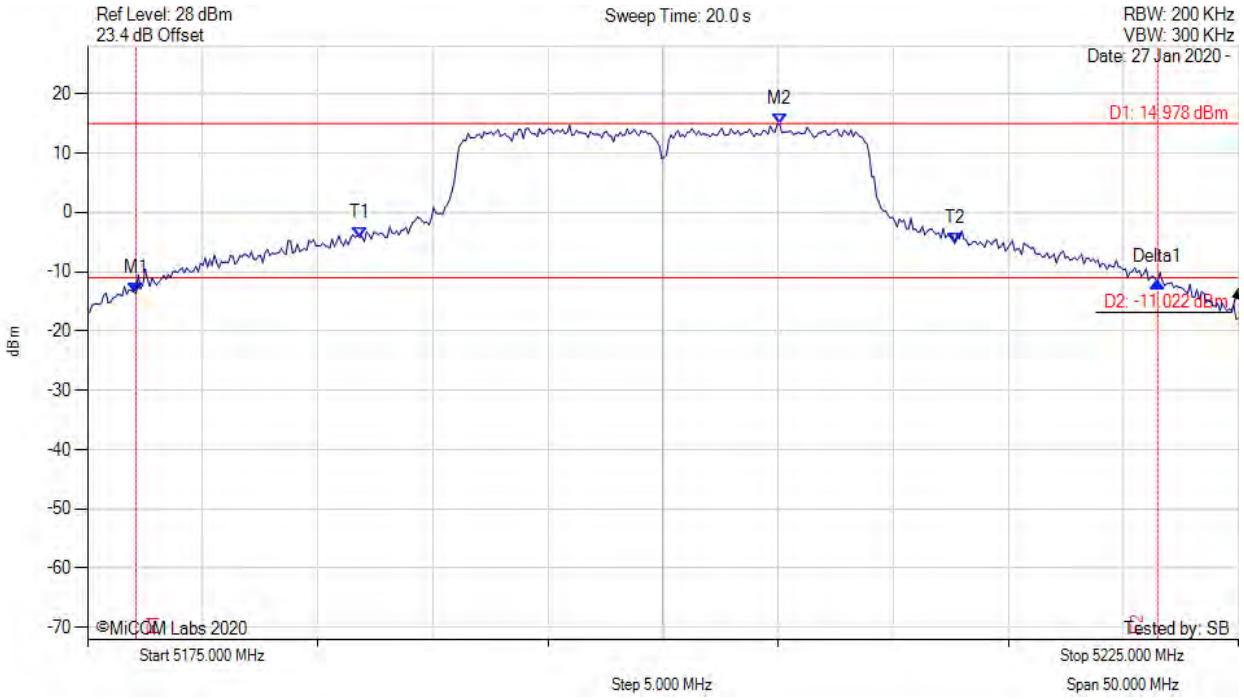


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5177.405 MHz : -12.547 dBm M2 : 5205.060 MHz : 14.913 dBm Delta1 : 45.090 MHz : 0.177 dB T1 : 5187.024 MHz : -4.739 dBm T2 : 5213.076 MHz : -4.430 dBm OBW : 26.052 MHz	Measured 26 dB Bandwidth: 45.090 MHz Measured 99% Bandwidth: 26.052 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 20 MHz, Channel: 5200.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

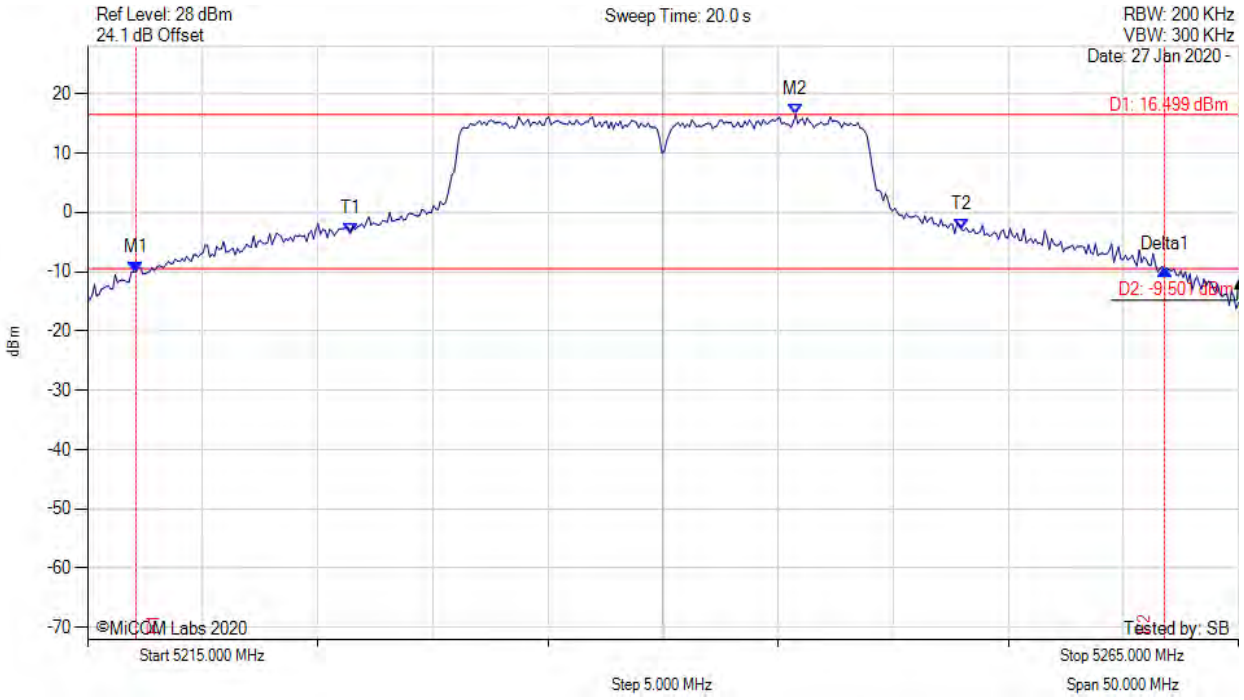


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5177.104 MHz : -13.684 dBm M2 : 5205.060 MHz : 14.978 dBm Delta1 : 44.389 MHz : 1.989 dB T1 : 5186.824 MHz : -4.194 dBm T2 : 5212.675 MHz : -5.250 dBm OBW : 25.852 MHz	Measured 26 dB Bandwidth: 44.389 MHz Measured 99% Bandwidth: 25.852 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 20 MHz, Channel: 5240.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

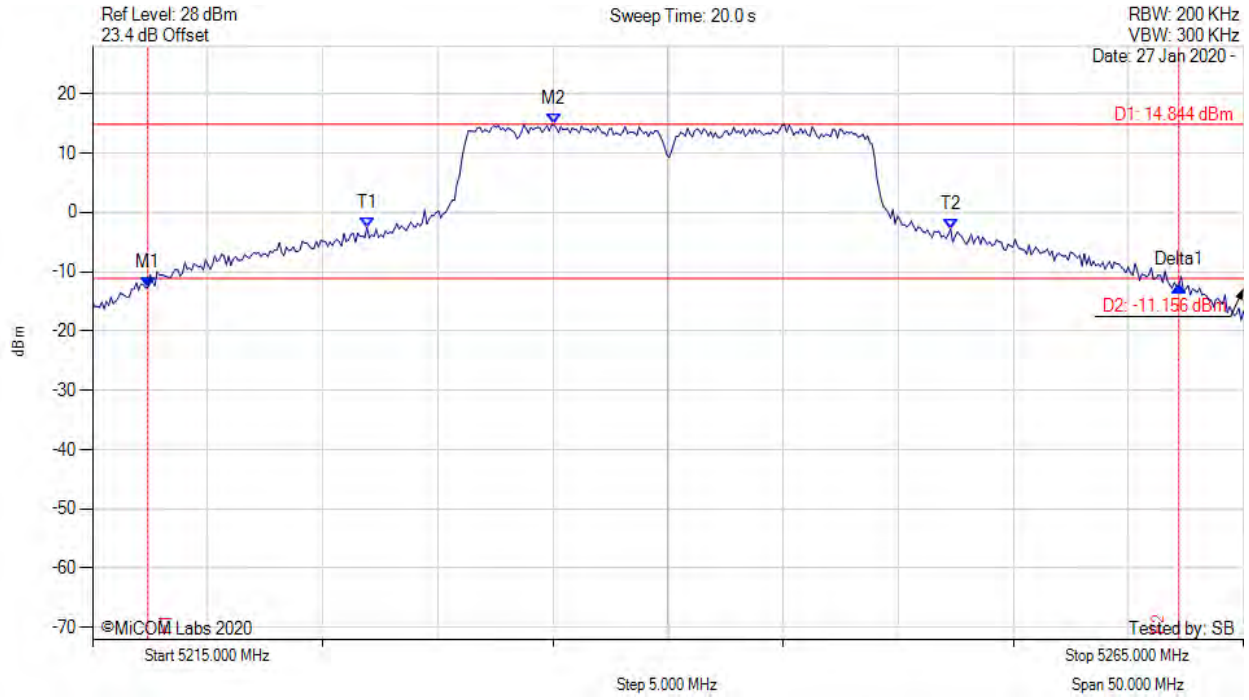


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5217.104 MHz : -10.104 dBm M2 : 5245.762 MHz : 16.499 dBm Delta1 : 44.689 MHz : 0.513 dB T1 : 5226.423 MHz : -3.486 dBm T2 : 5252.976 MHz : -2.935 dBm OBW : 26.553 MHz	Measured 26 dB Bandwidth: 44.689 MHz Measured 99% Bandwidth: 26.553 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 20 MHz, Channel: 5240.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

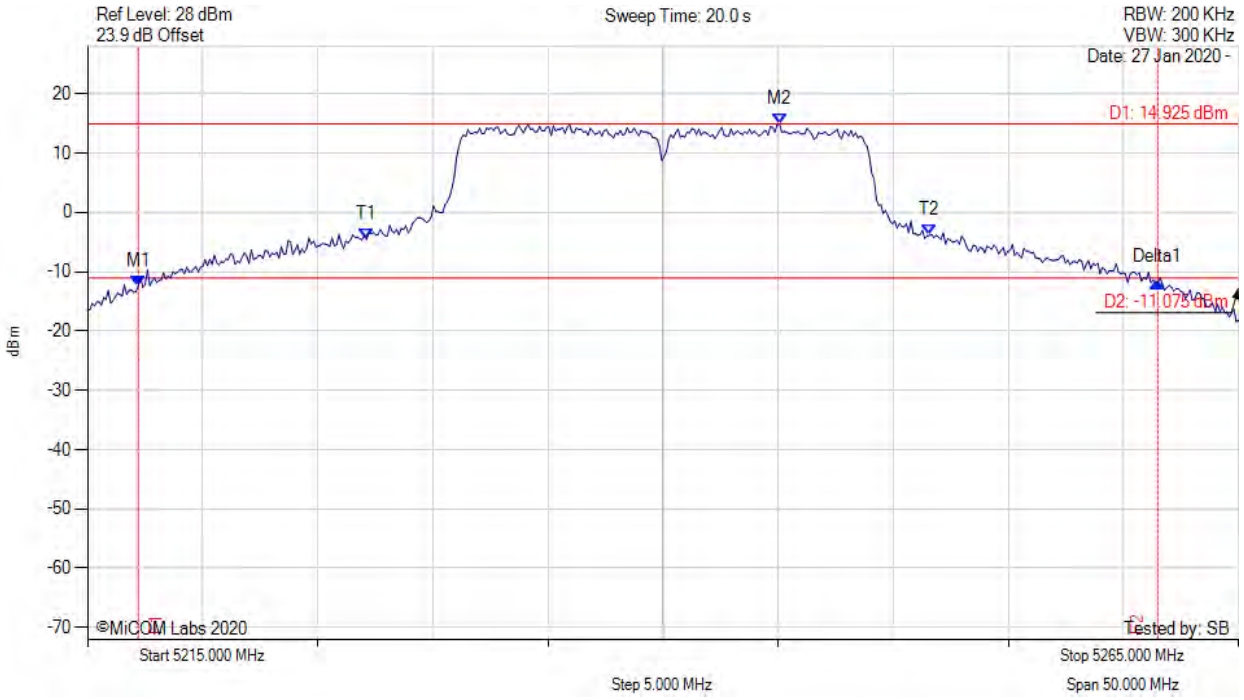


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5217.405 MHz : -12.663 dBm M2 : 5235.040 MHz : 14.844 dBm Delta1 : 44.790 MHz : 0.331 dB T1 : 5226.924 MHz : -2.551 dBm T2 : 5252.275 MHz : -2.785 dBm OBW : 25.351 MHz	Measured 26 dB Bandwidth: 44.790 MHz Measured 99% Bandwidth: 25.351 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 20 MHz, Channel: 5240.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

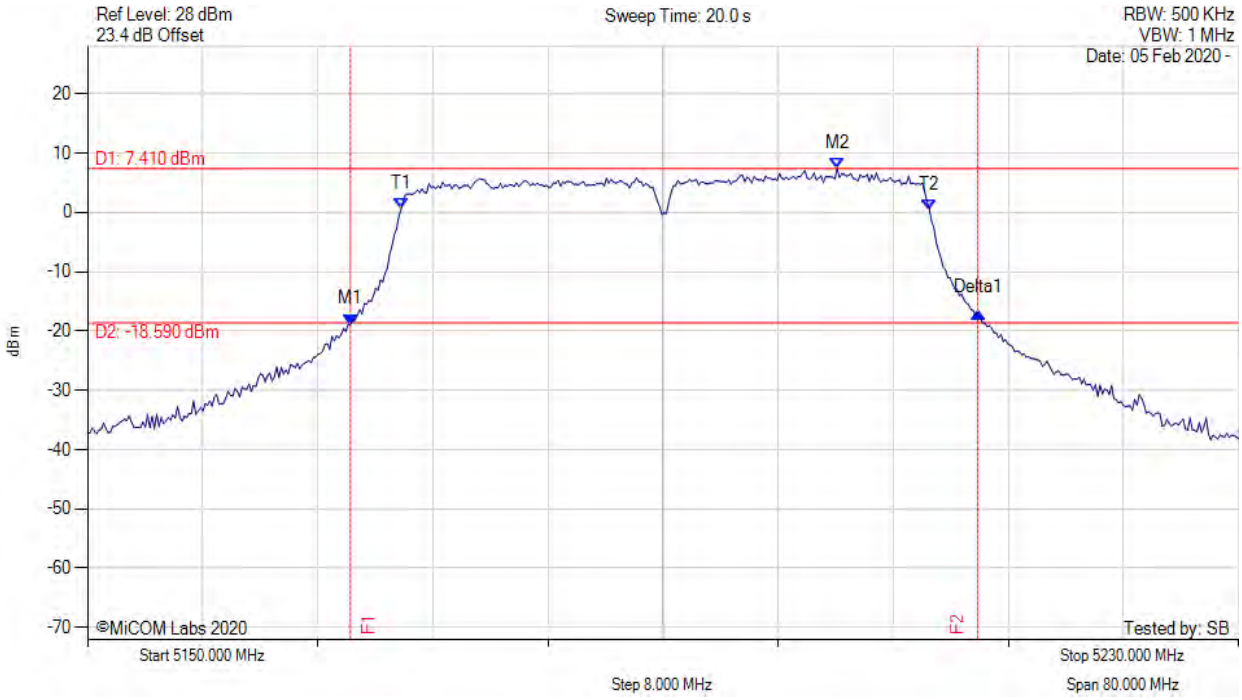


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5217.204 MHz : -12.417 dBm M2 : 5245.060 MHz : 14.925 dBm Delta1 : 44.289 MHz : 0.600 dB T1 : 5227.124 MHz : -4.595 dBm T2 : 5251.573 MHz : -3.861 dBm OBW : 24.449 MHz	Measured 26 dB Bandwidth: 44.289 MHz Measured 99% Bandwidth: 24.449 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 40 MHz, Channel: 5190.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

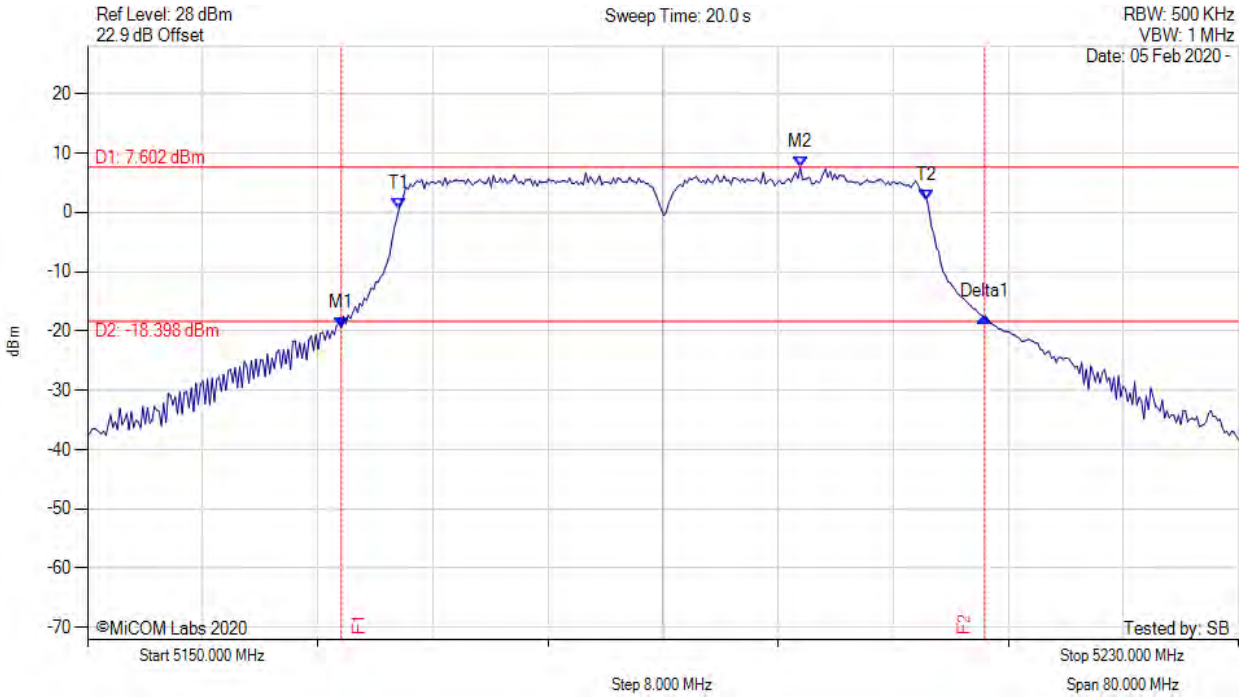


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5168.277 MHz : -18.874 dBm M2 : 5202.104 MHz : 7.410 dBm Delta1 : 43.607 MHz : 1.910 dB T1 : 5171.804 MHz : 0.559 dBm T2 : 5208.517 MHz : 0.477 dBm OBW : 36.713 MHz	Measured 26 dB Bandwidth: 43.607 MHz Measured 99% Bandwidth: 36.713 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 40 MHz, Channel: 5190.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

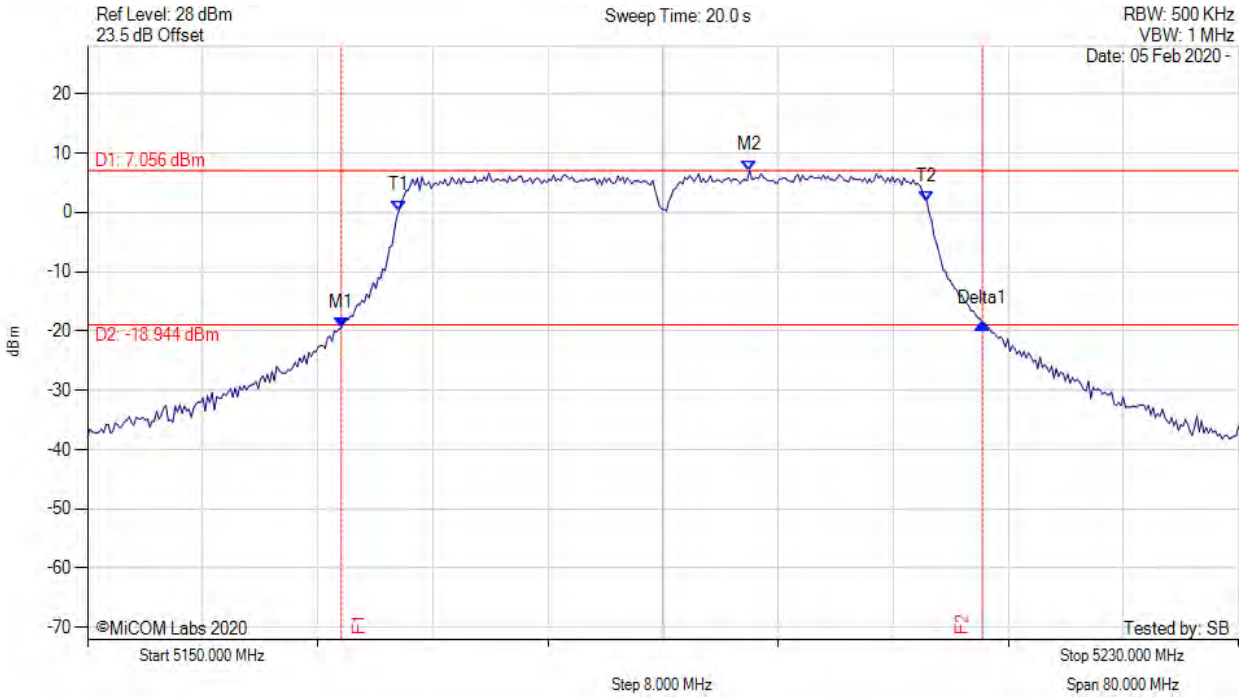


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5167.635 MHz : -19.464 dBm M2 : 5199.539 MHz : 7.602 dBm Delta1 : 44.729 MHz : 1.782 dB T1 : 5171.643 MHz : 0.553 dBm T2 : 5208.357 MHz : 1.984 dBm OBW : 36.713 MHz	Measured 26 dB Bandwidth: 44.729 MHz Measured 99% Bandwidth: 36.713 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 40 MHz, Channel: 5190.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

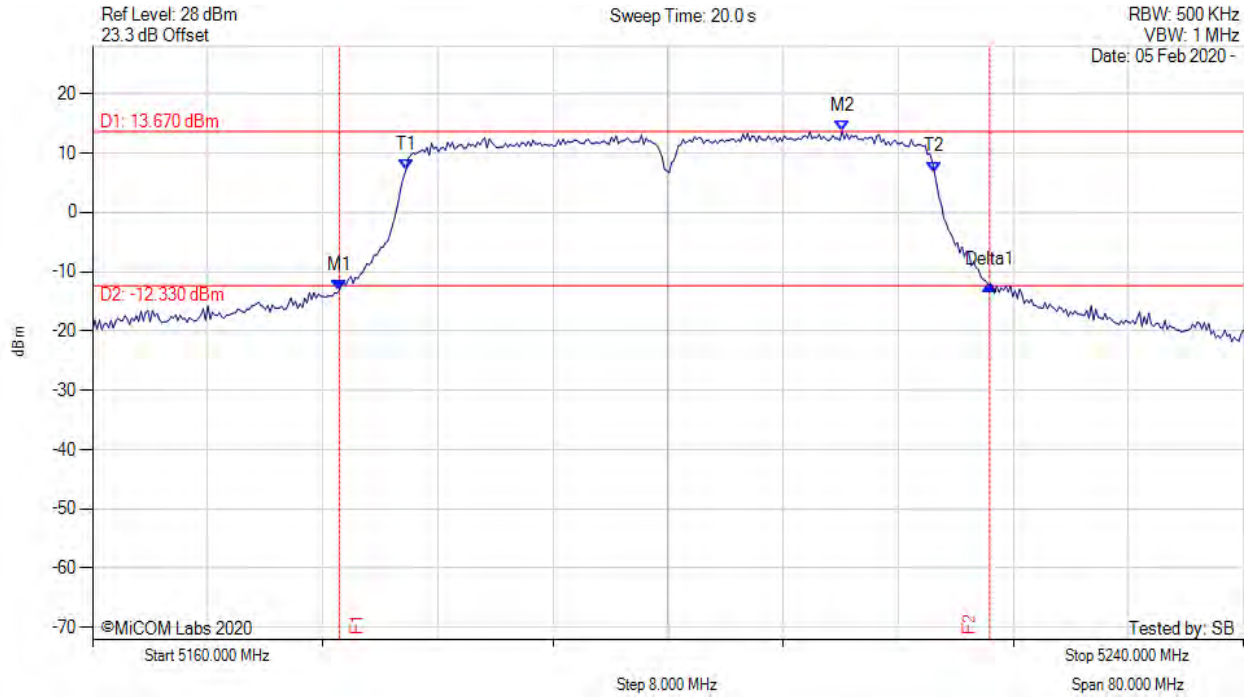


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5167.635 MHz : -19.525 dBm M2 : 5196.012 MHz : 7.056 dBm Delta1 : 44.569 MHz : 0.822 dB T1 : 5171.643 MHz : 0.280 dBm T2 : 5208.357 MHz : 1.724 dBm OBW : 36.713 MHz	Measured 26 dB Bandwidth: 44.569 MHz Measured 99% Bandwidth: 36.713 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 40 MHz, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

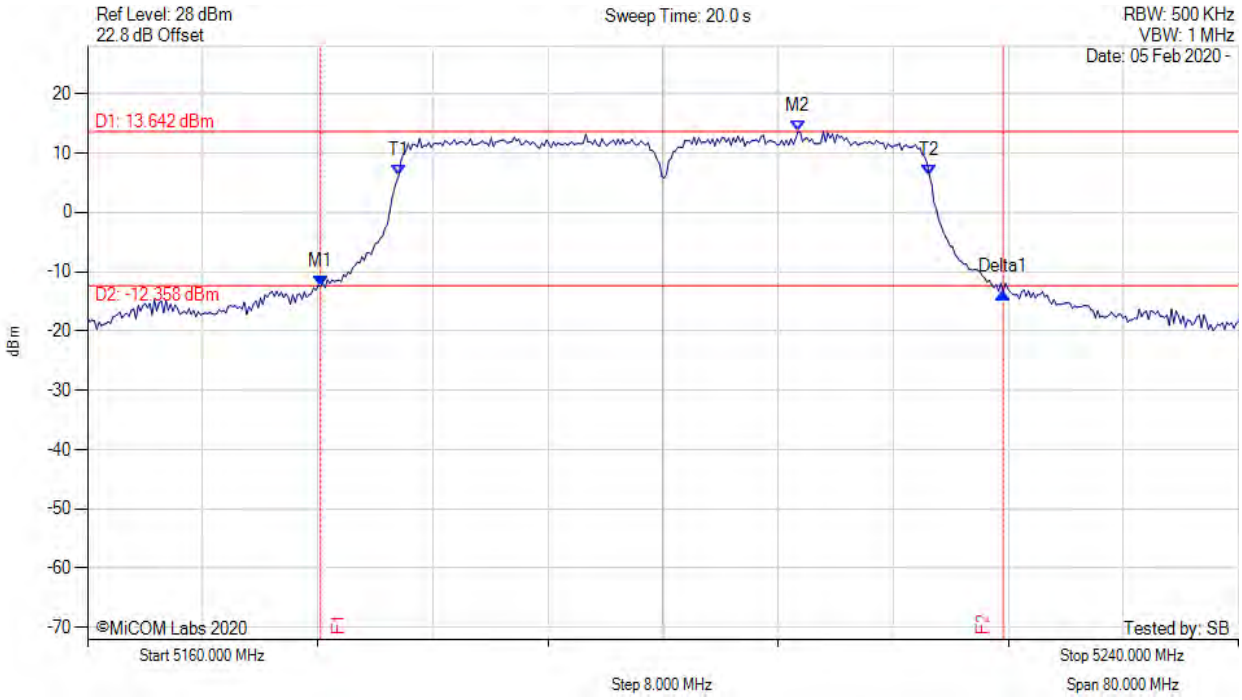


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5177.154 MHz : -13.130 dBm M2 : 5212.104 MHz : 13.670 dBm Delta1 : 45.210 MHz : 0.813 dB T1 : 5181.804 MHz : 7.217 dBm T2 : 5218.517 MHz : 6.812 dBm OBW : 36.713 MHz	Measured 26 dB Bandwidth: 45.210 MHz Measured 99% Bandwidth: 36.713 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 40 MHz, Channel: 5200.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

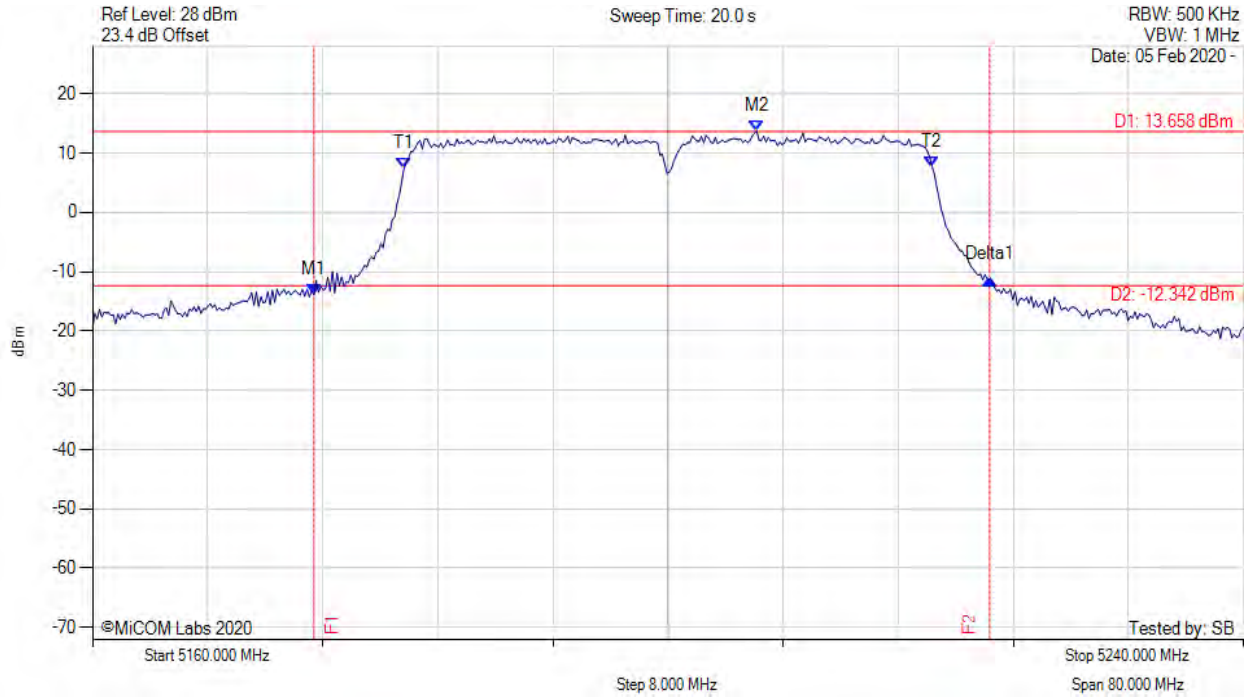


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5176.192 MHz : -12.423 dBm M2 : 5209.379 MHz : 13.642 dBm Delta1 : 47.455 MHz : -1.092 dB T1 : 5181.643 MHz : 6.192 dBm T2 : 5218.517 MHz : 6.182 dBm OBW : 36.874 MHz	Measured 26 dB Bandwidth: 47.455 MHz Measured 99% Bandwidth: 36.874 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 40 MHz, Channel: 5200.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

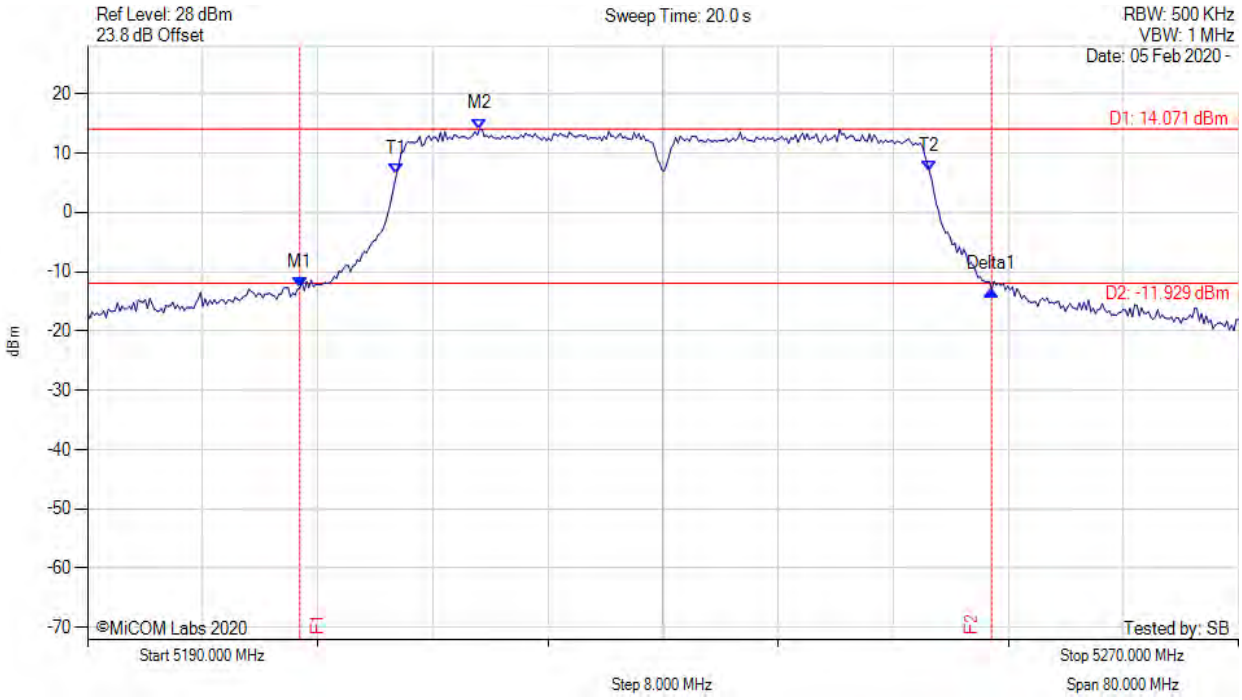


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5175.391 MHz : -13.857 dBm M2 : 5206.172 MHz : 13.658 dBm Delta1 : 46.974 MHz : 2.585 dB T1 : 5181.643 MHz : 7.423 dBm T2 : 5218.357 MHz : 7.719 dBm OBW : 36.713 MHz	Measured 26 dB Bandwidth: 46.974 MHz Measured 99% Bandwidth: 36.713 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 40 MHz, Channel: 5230.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

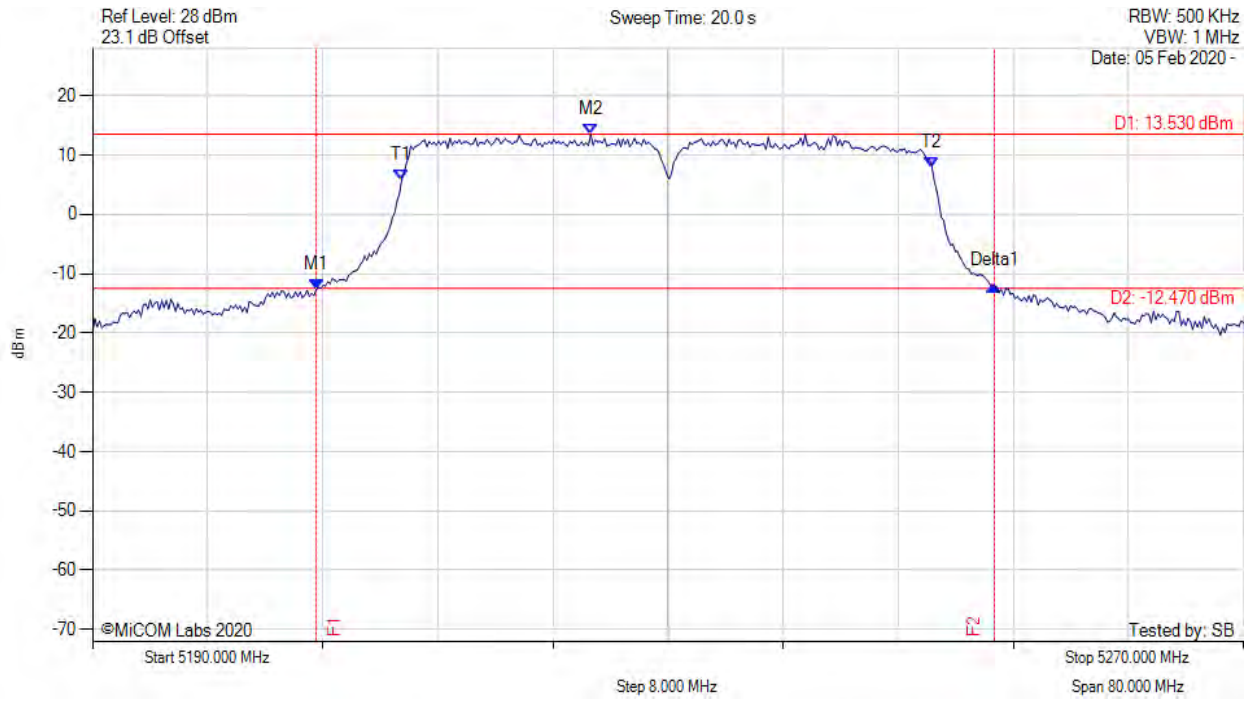


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5204.749 MHz : -12.760 dBm M2 : 5217.255 MHz : 14.071 dBm Delta1 : 48.096 MHz : -0.273 dB T1 : 5211.483 MHz : 6.511 dBm T2 : 5248.517 MHz : 7.002 dBm OBW : 37.034 MHz	Measured 26 dB Bandwidth: 48.096 MHz Measured 99% Bandwidth: 37.034 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 40 MHz, Channel: 5230.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

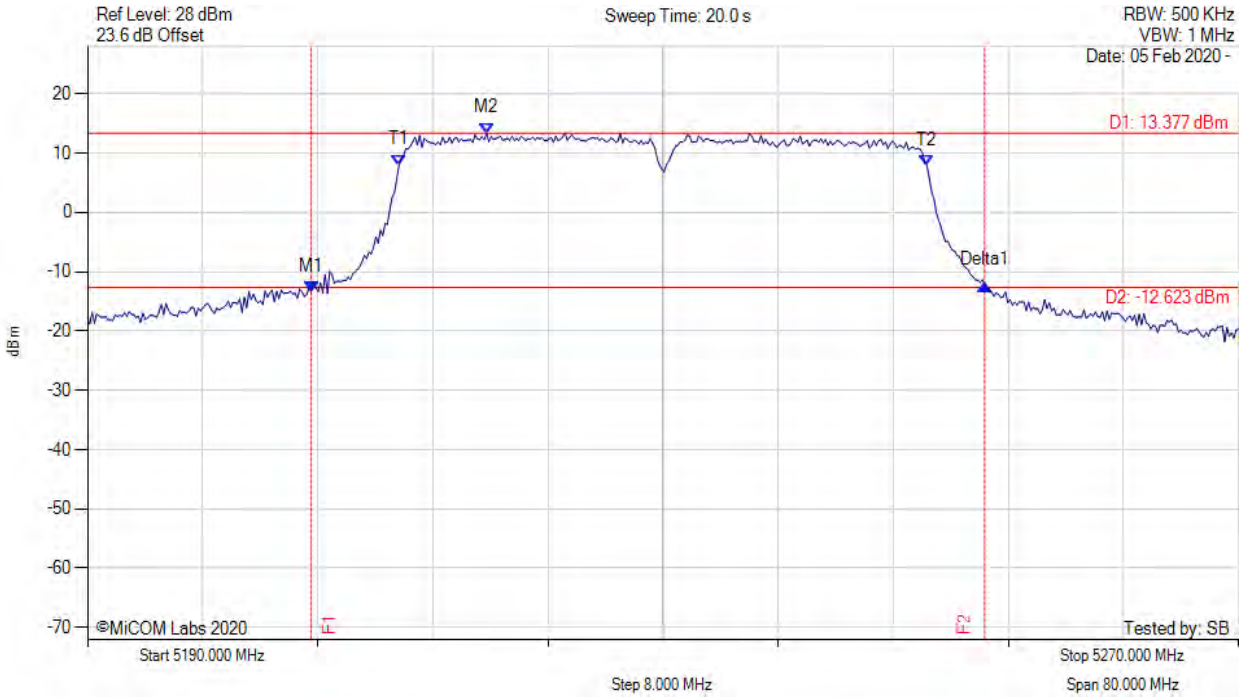


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5205.551 MHz : -12.636 dBm M2 : 5224.629 MHz : 13.530 dBm Delta1 : 47.134 MHz : 0.647 dB T1 : 5211.483 MHz : 5.726 dBm T2 : 5248.357 MHz : 7.791 dBm OBW : 36.874 MHz	Measured 26 dB Bandwidth: 47.134 MHz Measured 99% Bandwidth: 36.874 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 40 MHz, Channel: 5230.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

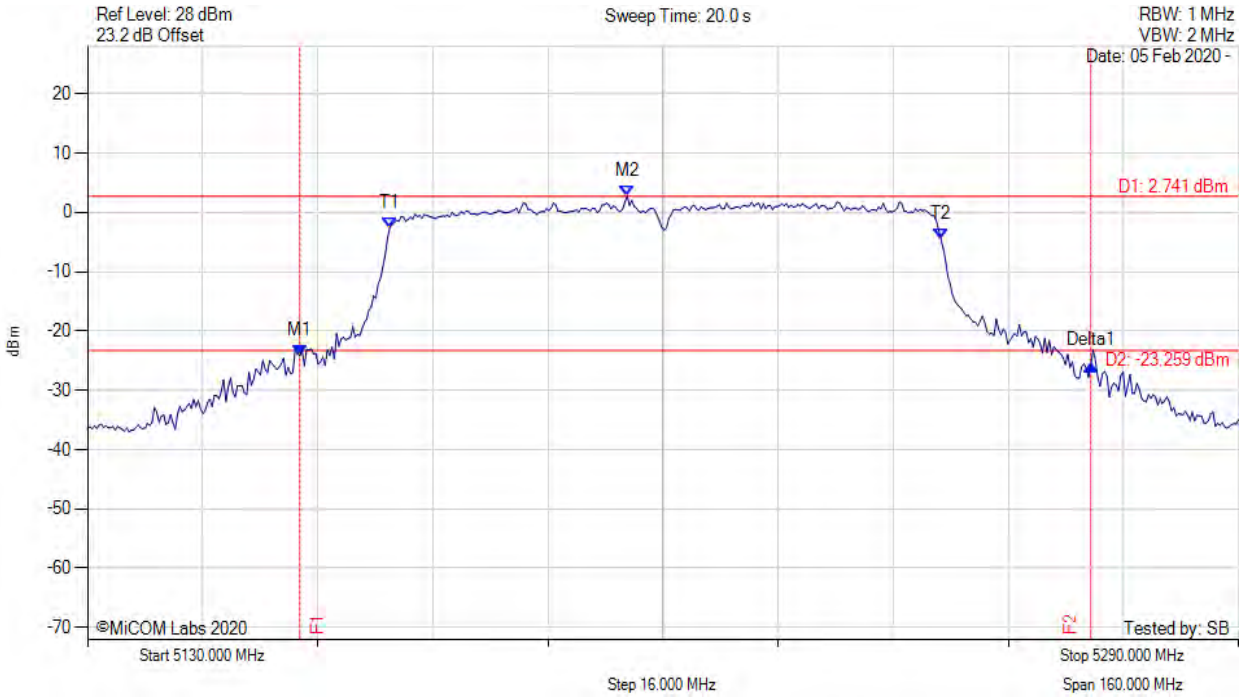


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5205.551 MHz : -13.305 dBm M2 : 5217.735 MHz : 13.377 dBm Delta1 : 46.814 MHz : 1.161 dB T1 : 5211.643 MHz : 7.982 dBm T2 : 5248.357 MHz : 7.825 dBm OBW : 36.713 MHz	Measured 26 dB Bandwidth: 46.814 MHz Measured 99% Bandwidth: 36.713 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 80 MHz, Channel: 5210.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

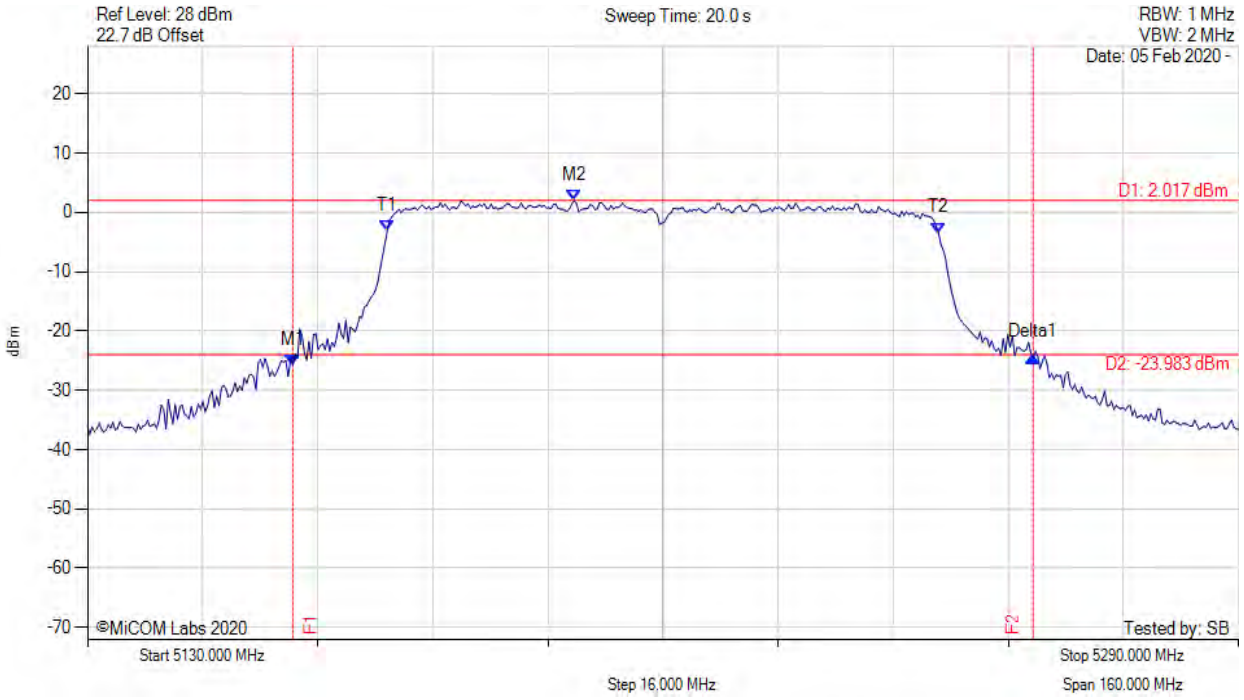


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5159.499 MHz : -24.188 dBm M2 : 5205.030 MHz : 2.741 dBm Delta1 : 109.980 MHz : -1.515 dB T1 : 5172.004 MHz : -2.583 dBm T2 : 5248.637 MHz : -4.524 dBm OBW : 76.633 MHz	Measured 26 dB Bandwidth: 109.980 MHz Measured 99% Bandwidth: 76.633 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 80 MHz, Channel: 5210.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

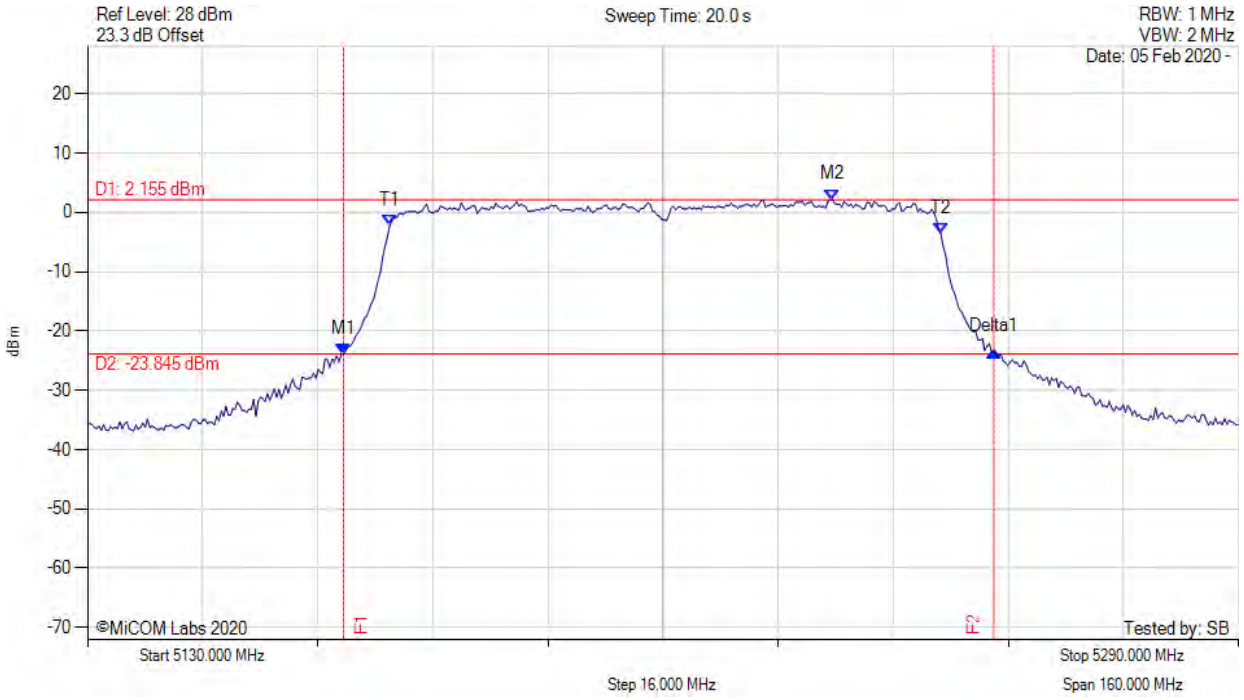


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5158.537 MHz : -25.707 dBm M2 : 5197.655 MHz : 2.017 dBm Delta1 : 102.926 MHz : 1.273 dB T1 : 5171.683 MHz : -3.074 dBm T2 : 5248.317 MHz : -3.458 dBm OBW : 76.633 MHz	Measured 26 dB Bandwidth: 102.926 MHz Measured 99% Bandwidth: 76.633 MHz

back to matrix

26 dB & 99% BANDWIDTH

Variant: 80 MHz, Channel: 5210.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

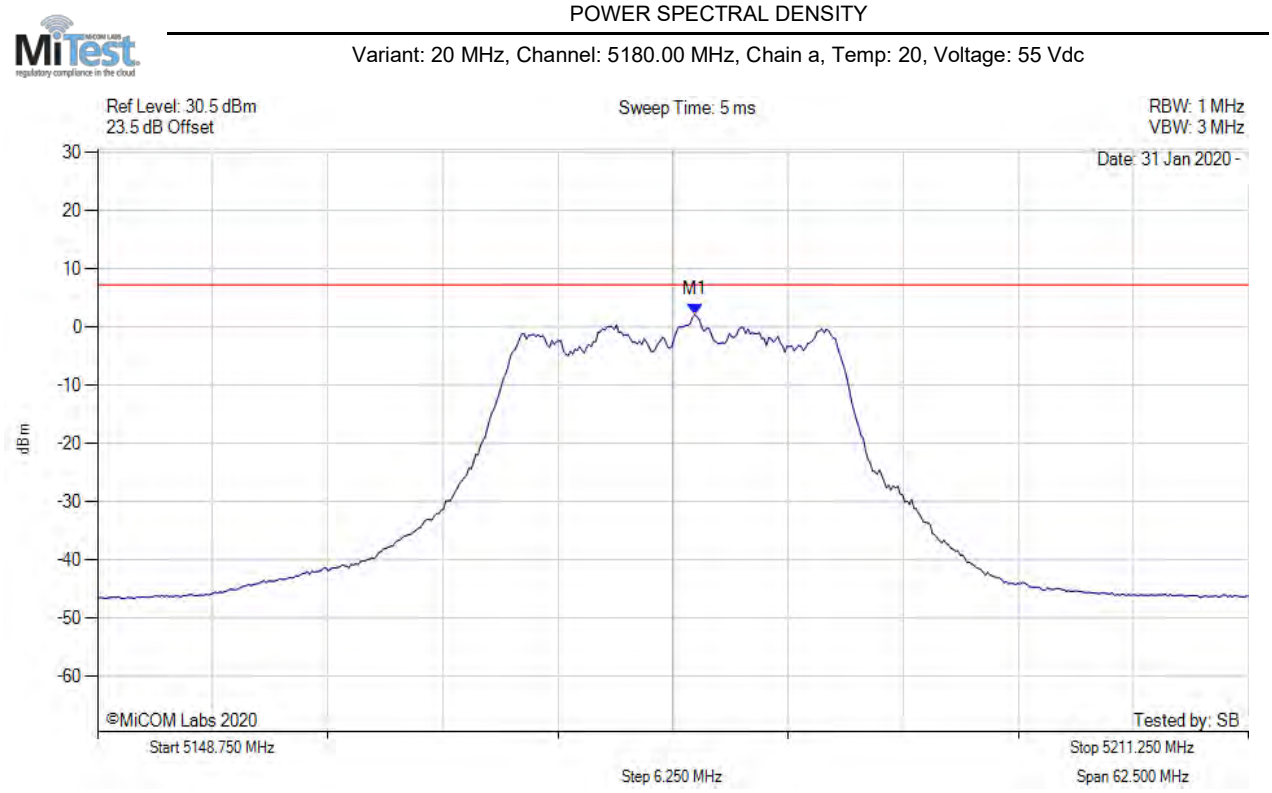


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5165.591 MHz : -23.936 dBm M2 : 5233.567 MHz : 2.155 dBm Delta1 : 90.421 MHz : 0.549 dB T1 : 5172.004 MHz : -2.234 dBm T2 : 5248.637 MHz : -3.627 dBm OBW : 76.633 MHz	Measured 26 dB Bandwidth: 90.421 MHz Measured 99% Bandwidth: 76.633 MHz

back to matrix

A.2. Power Spectral Density

9.4.4.13. Base Station Mode

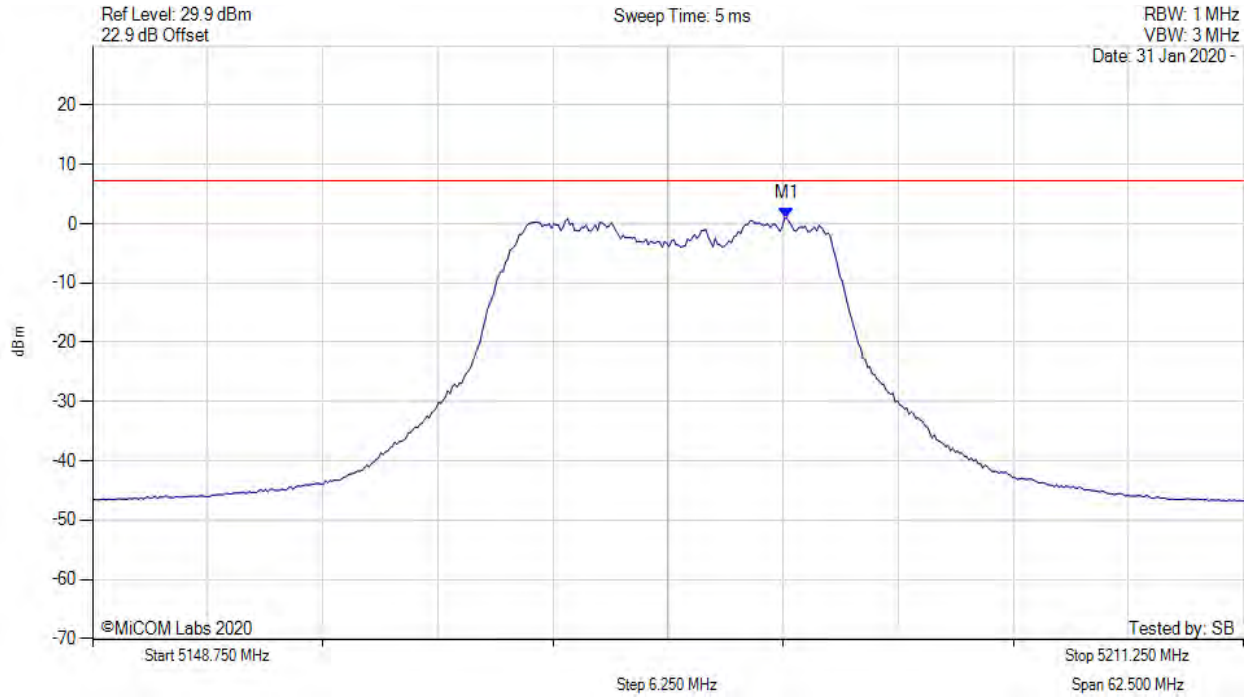


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5181.190 MHz : 2.160 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5180.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

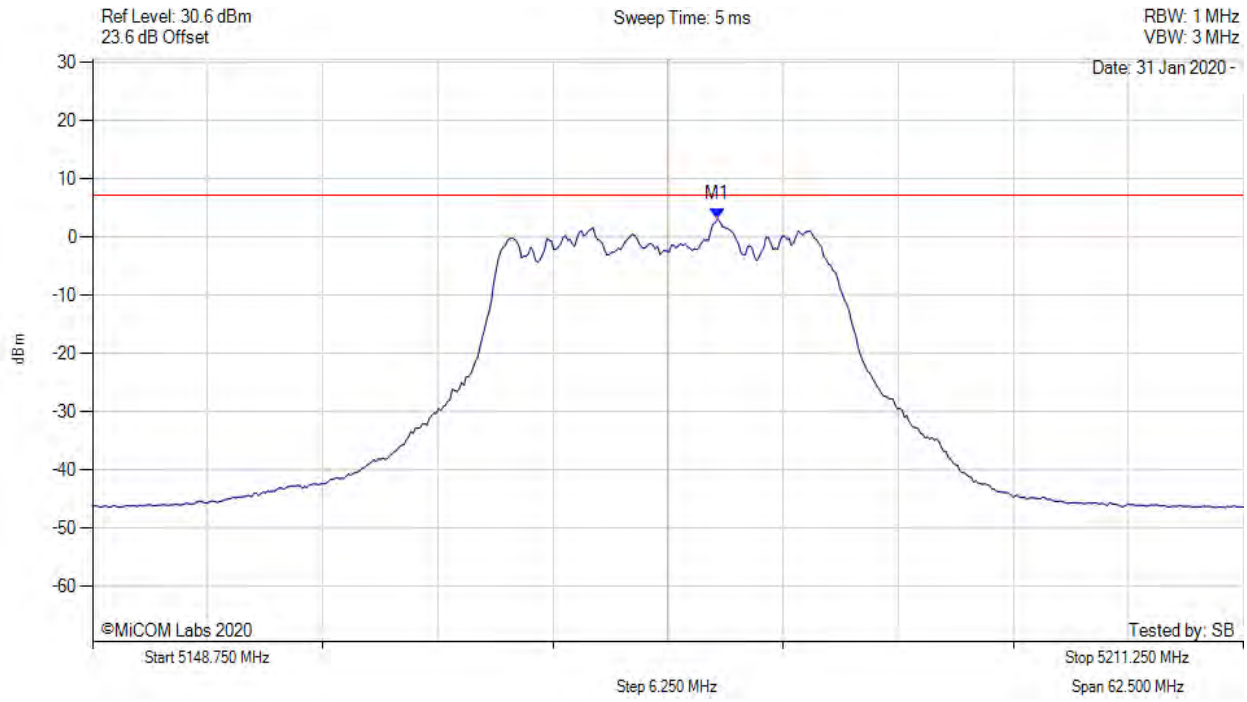


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5186.450 MHz : 0.905 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5180.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

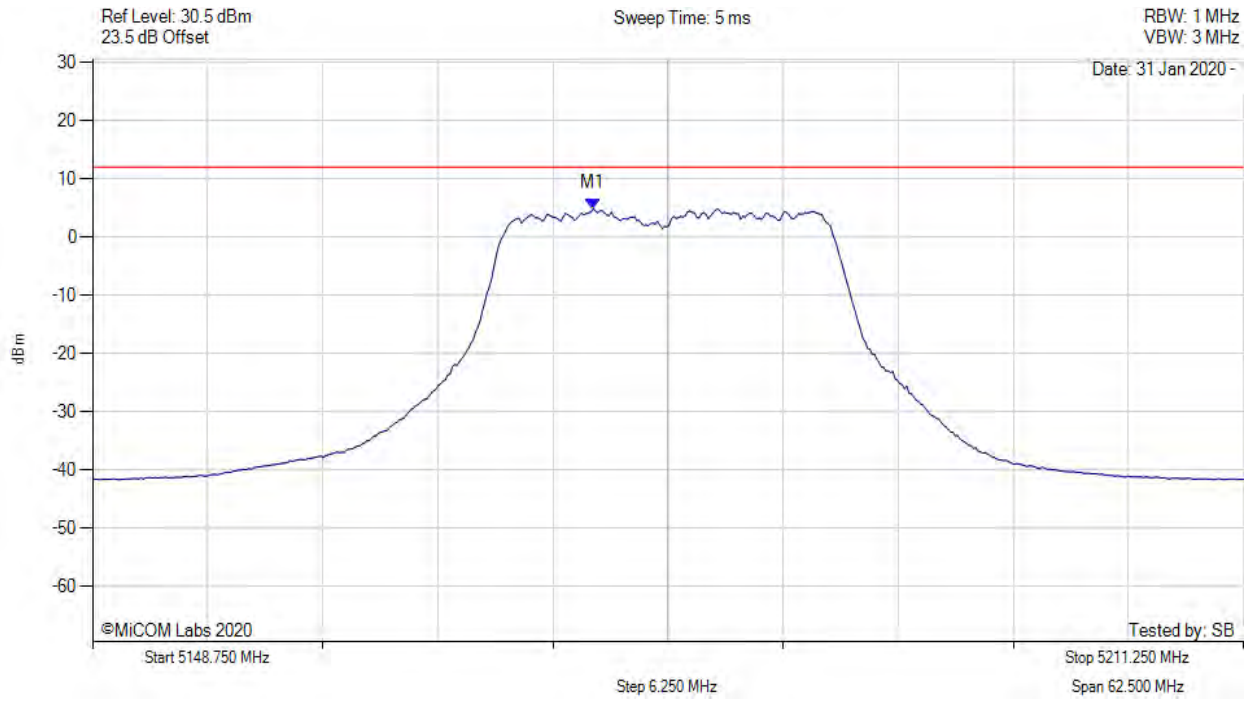


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5182.693 MHz : 3.130 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5180.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

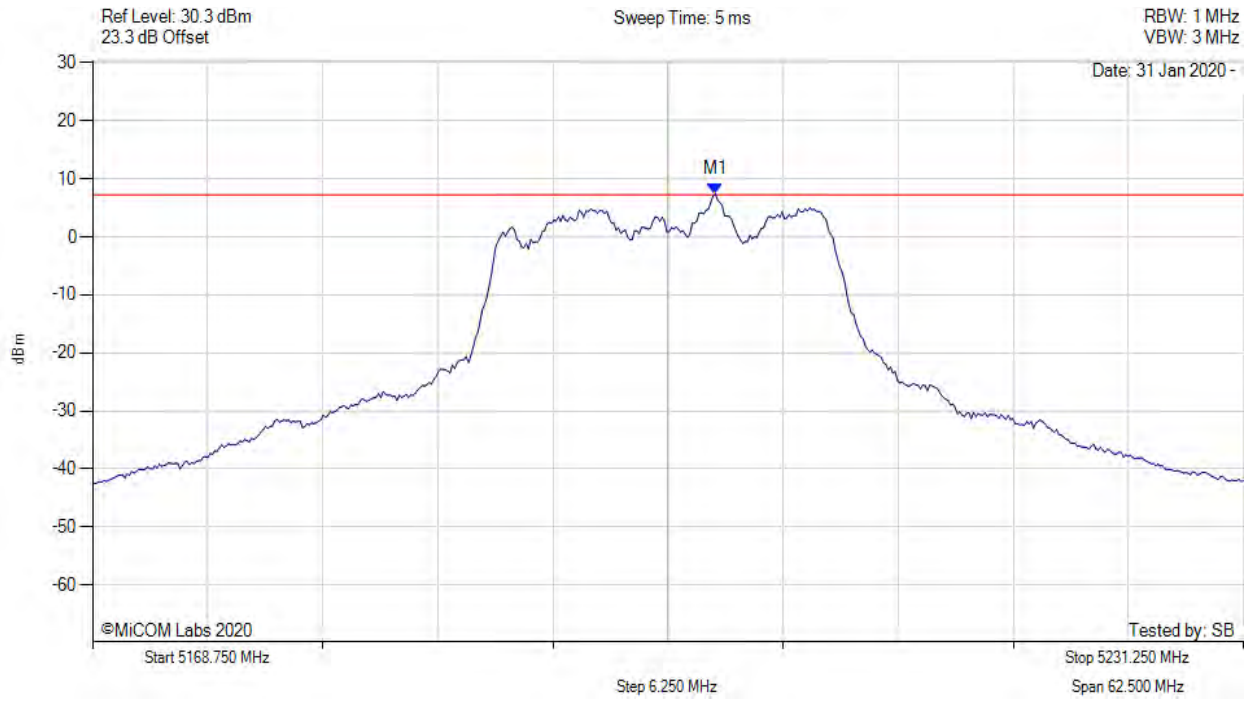


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5175.900 MHz : 4.890 dBm M1 + DCCF : 5175.900 MHz : 5.545 dBm Duty Cycle Correction Factor : +0.66 dB	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

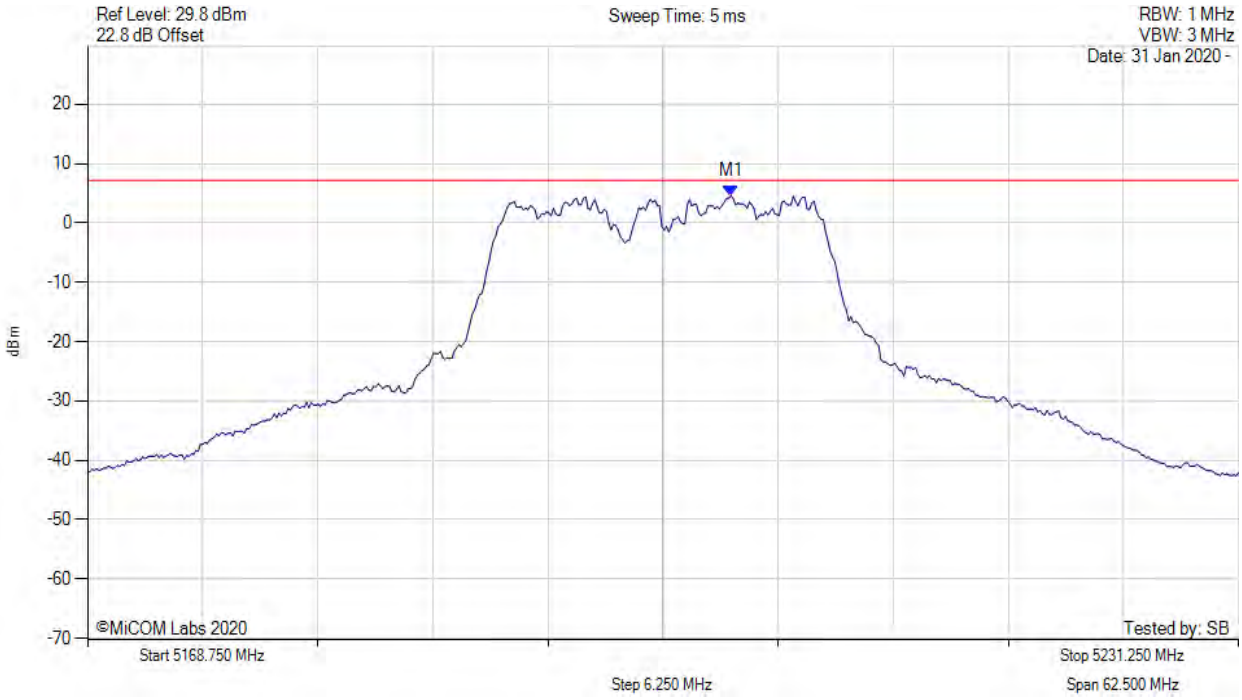


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5202.568 MHz : 7.420 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5200.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

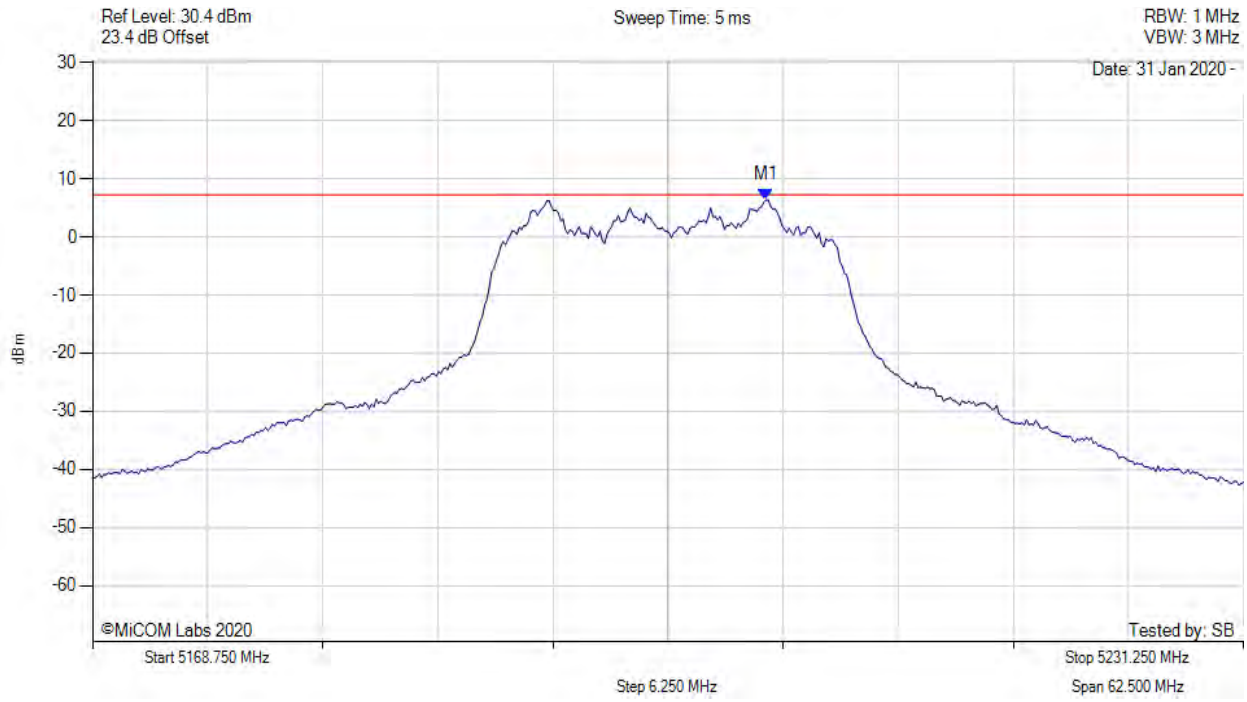


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5203.695 MHz : 4.602 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5200.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

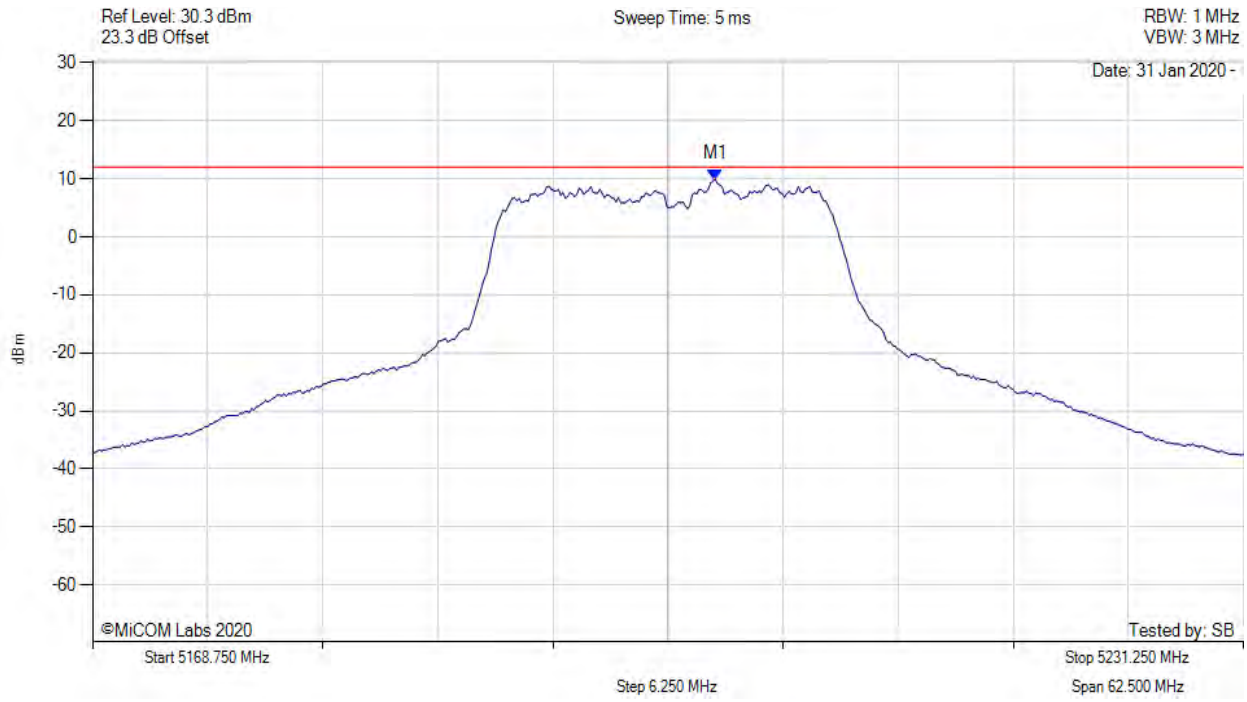


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5205.323 MHz : 6.366 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5200.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

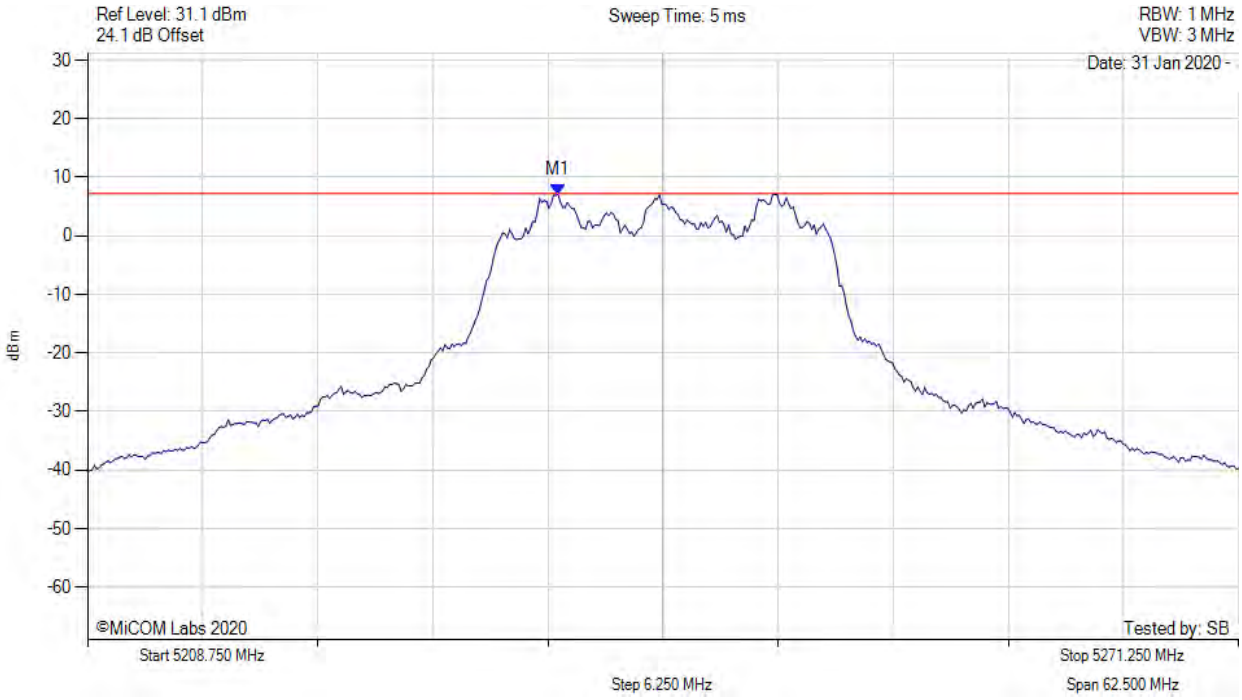


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5202.600 MHz : 9.873 dBm M1 + DCCF : 5202.600 MHz : 10.528 dBm Duty Cycle Correction Factor : +0.66 dB	Limit: ≤ 14.0 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5240.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

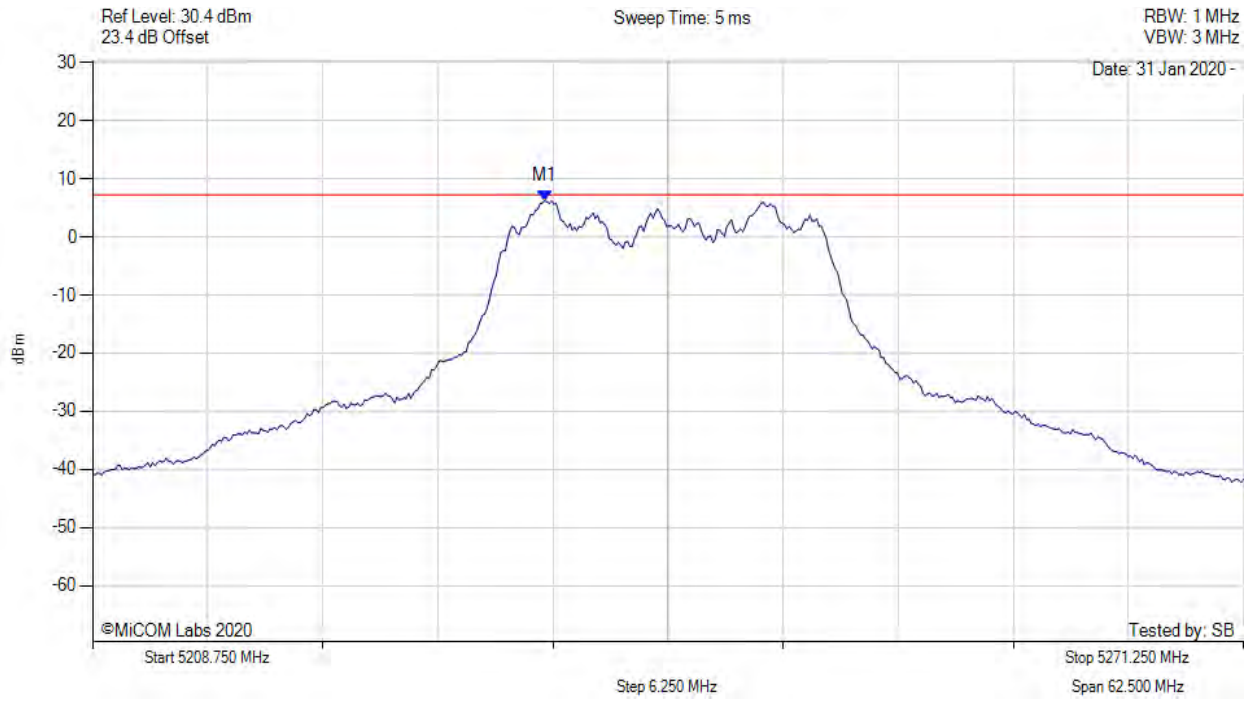


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5234.301 MHz : 7.094 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5240.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

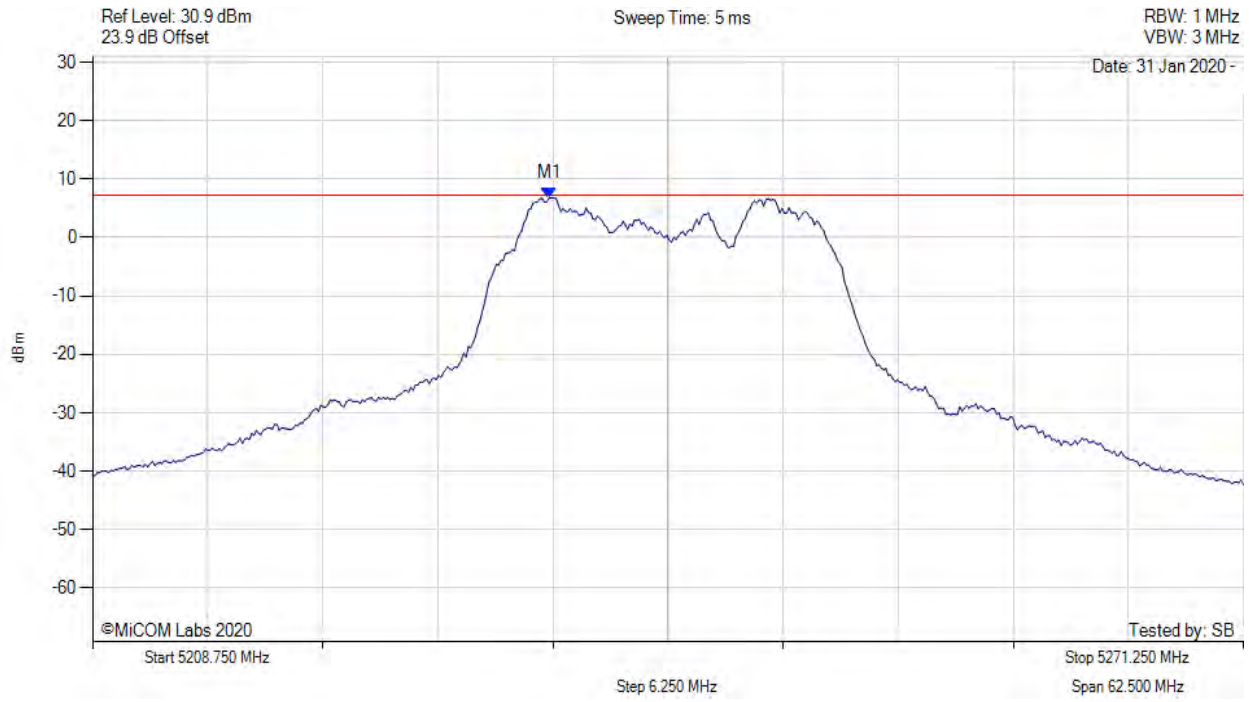


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5233.299 MHz : 6.209 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5240.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

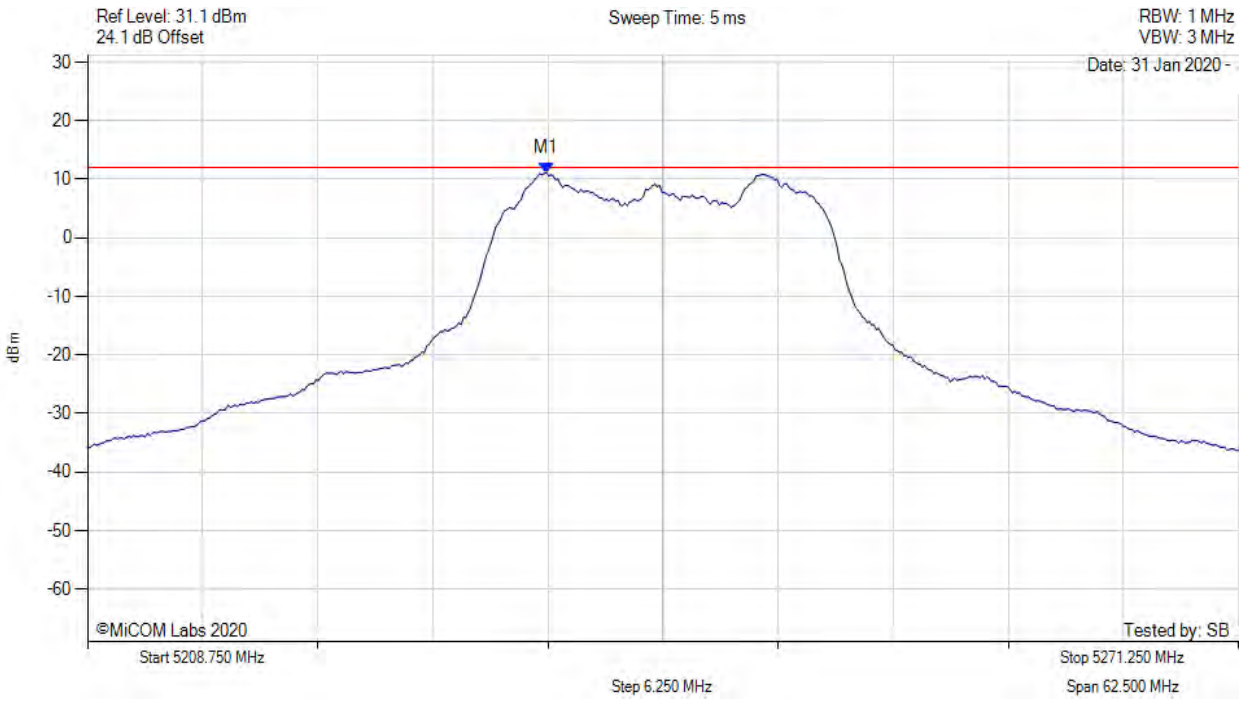


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5233.550 MHz : 6.801 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5240.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

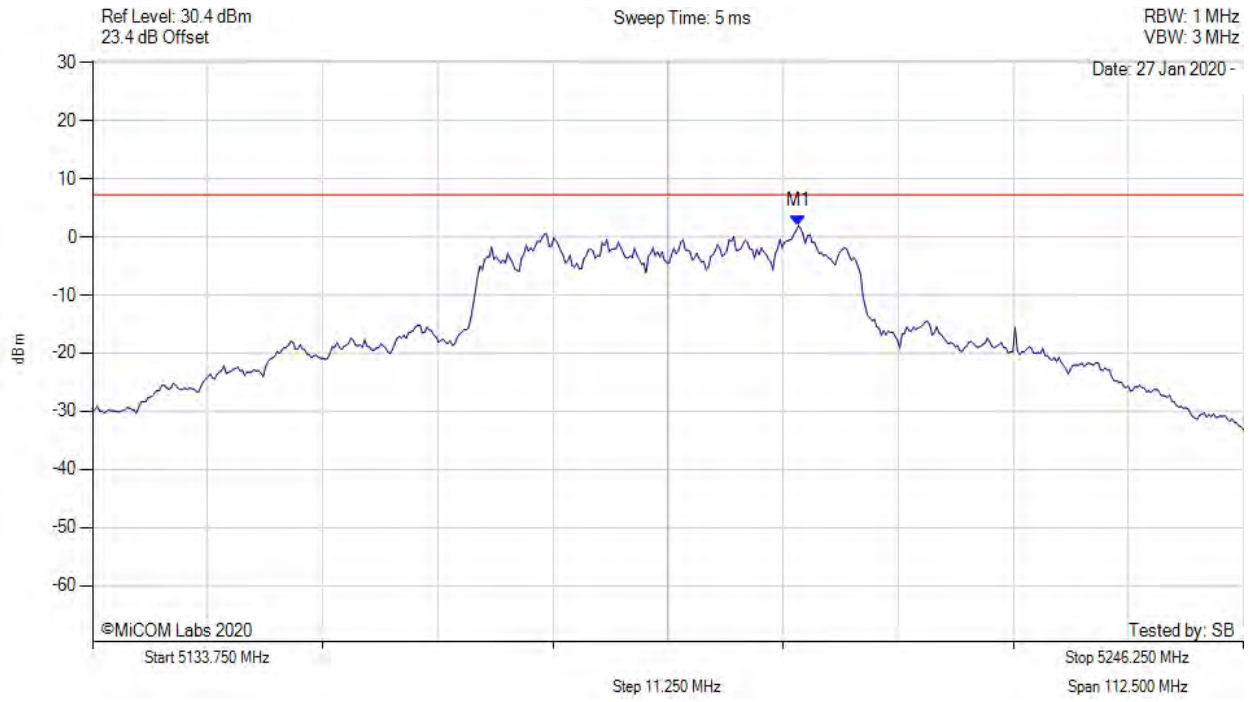


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5233.700 MHz : 11.077 dBm M1 + DCCF : 5233.700 MHz : 11.732 dBm Duty Cycle Correction Factor : +0.66 dB	Limit: ≤ 14.0 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5190.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

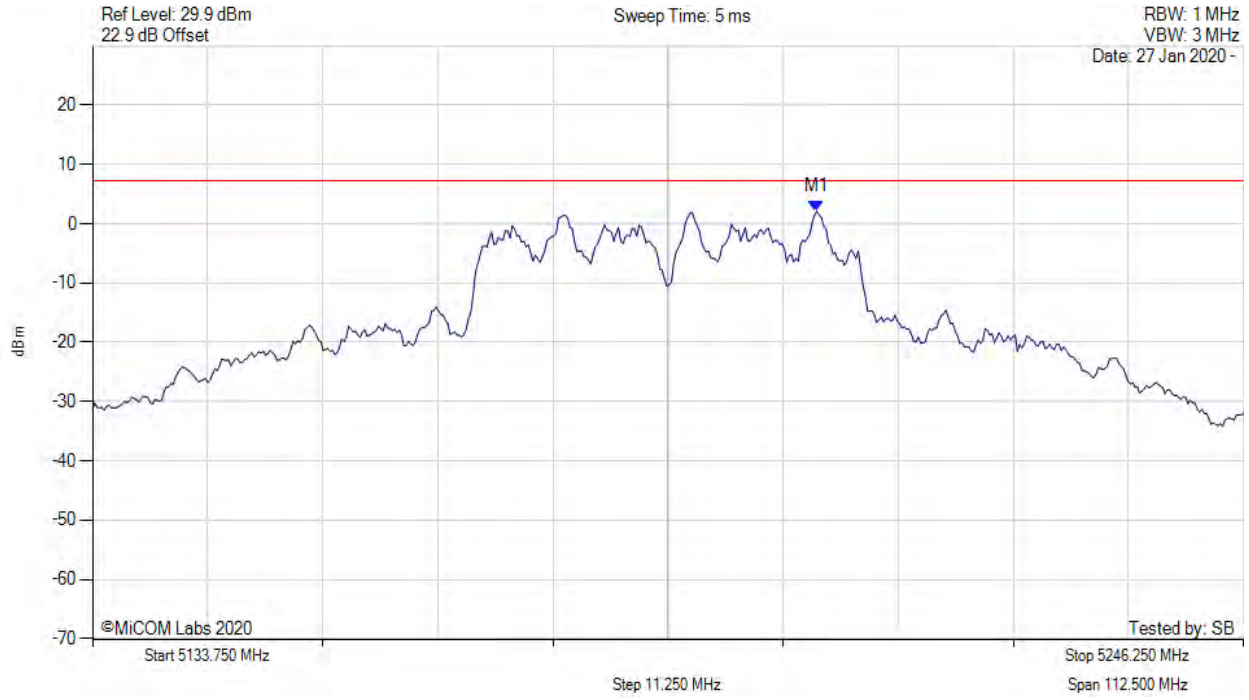


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5202.738 MHz : 1.928 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5190.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

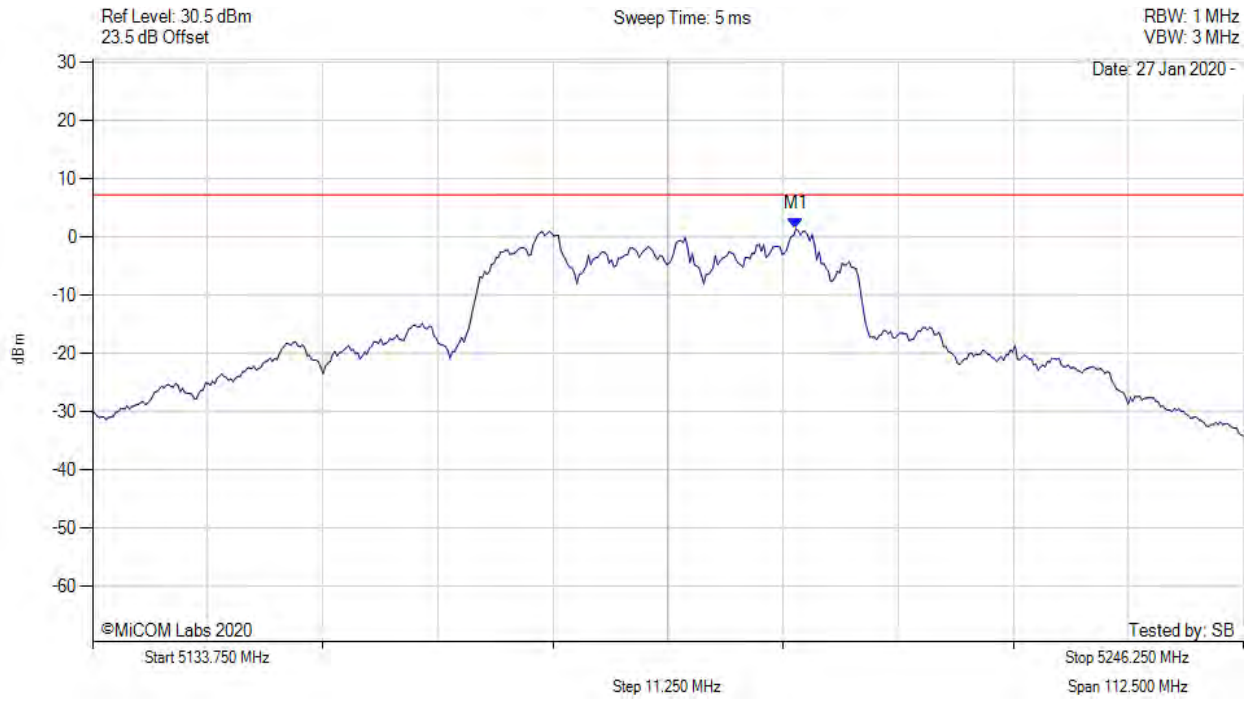


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5204.542 MHz : 2.062 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5190.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

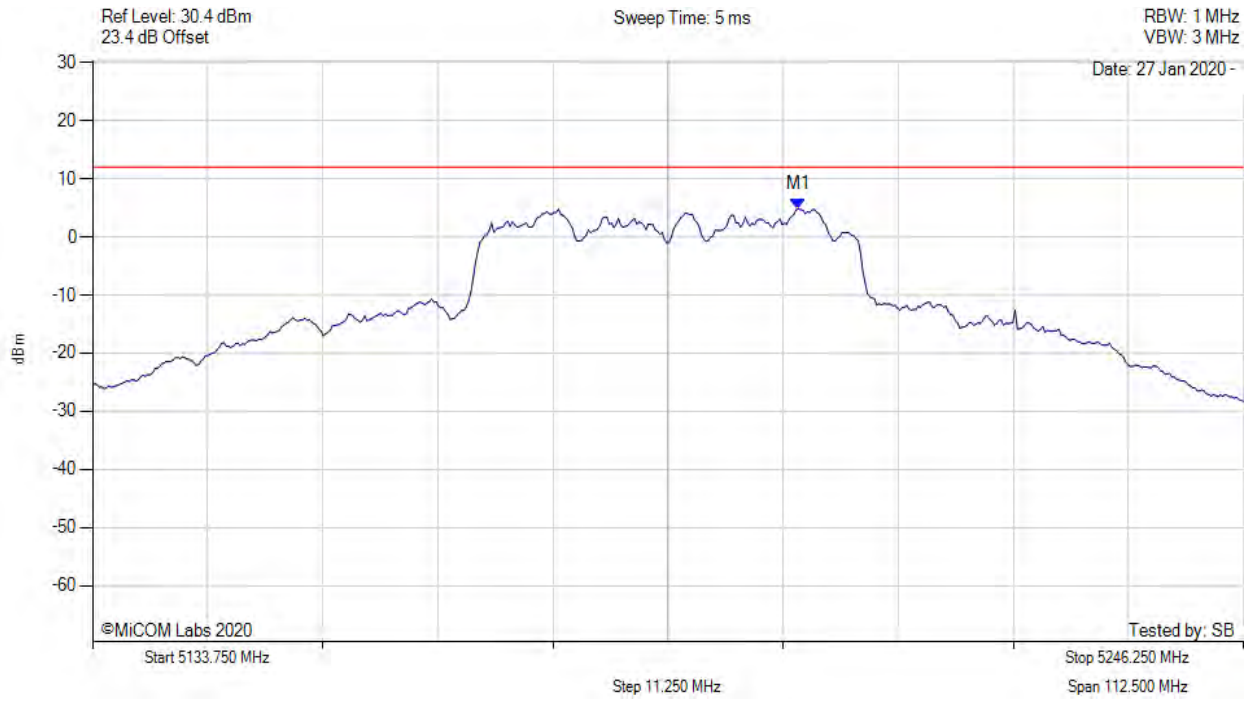


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5202.513 MHz : 1.431 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5190.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

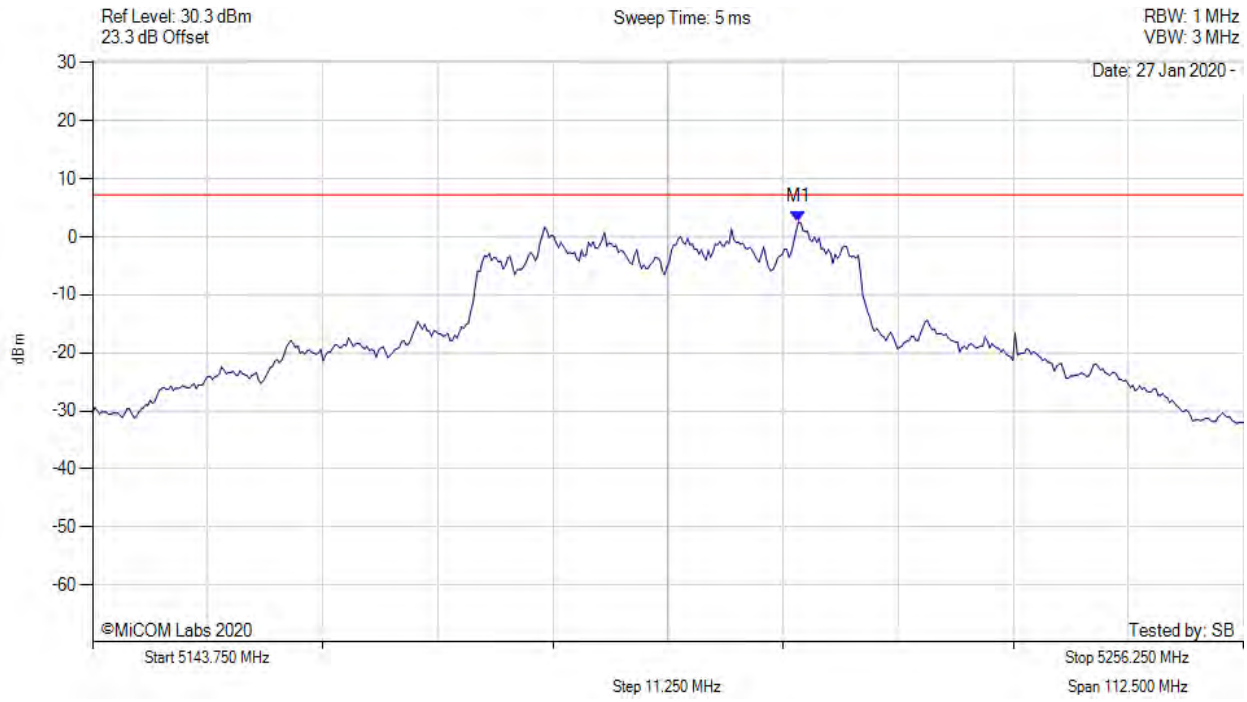


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5202.700 MHz : 4.845 dBm M1 + DCCF : 5202.700 MHz : 5.924 dBm Duty Cycle Correction Factor : +1.08 dB	Limit: ≤ 14.0 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

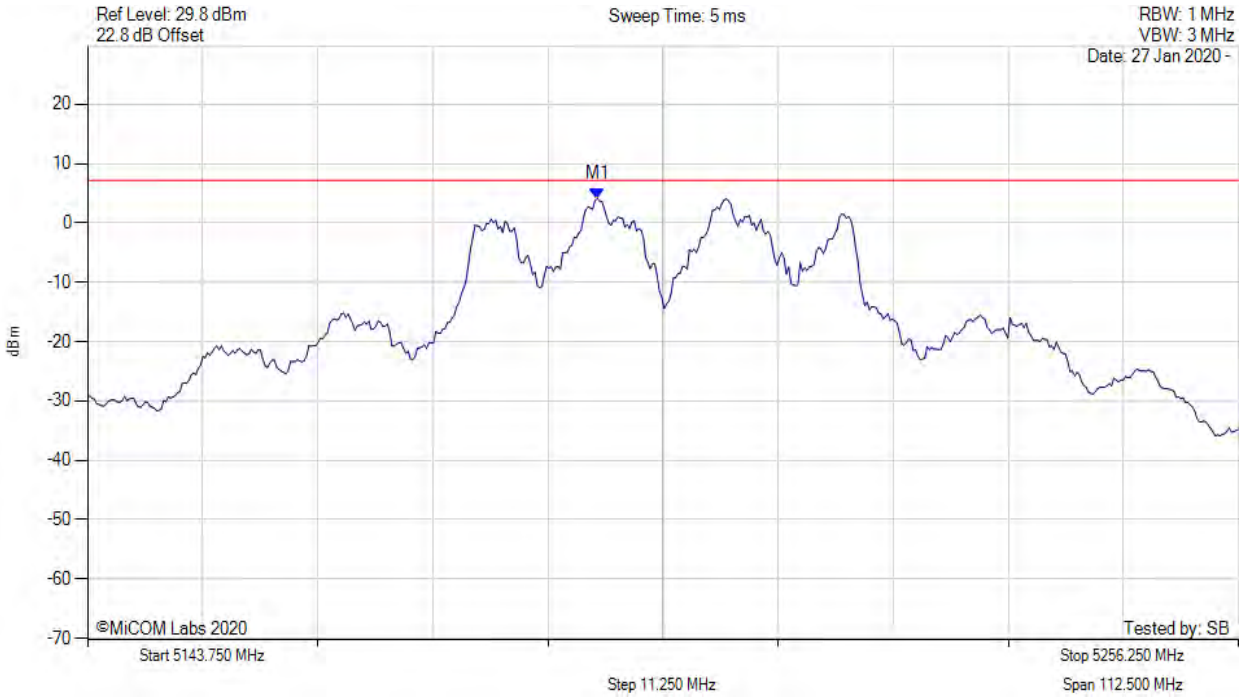


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5212.738 MHz : 2.523 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5200.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

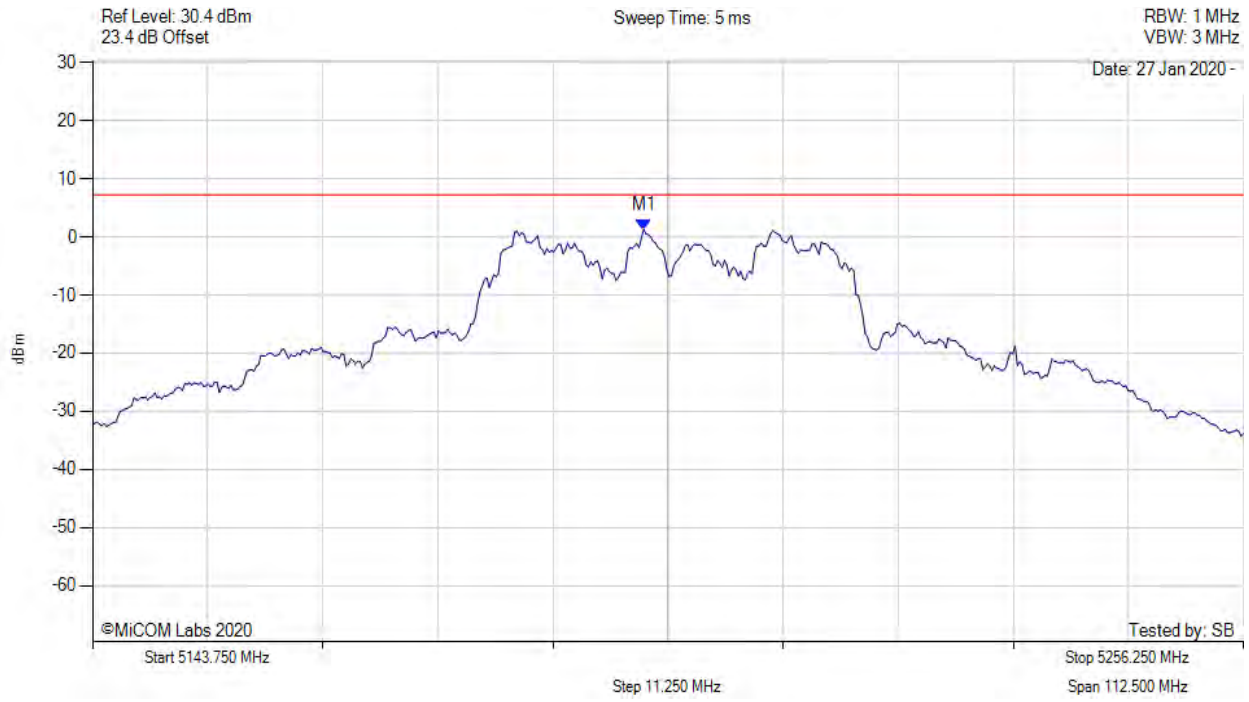


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5193.575 MHz : 4.124 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5200.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

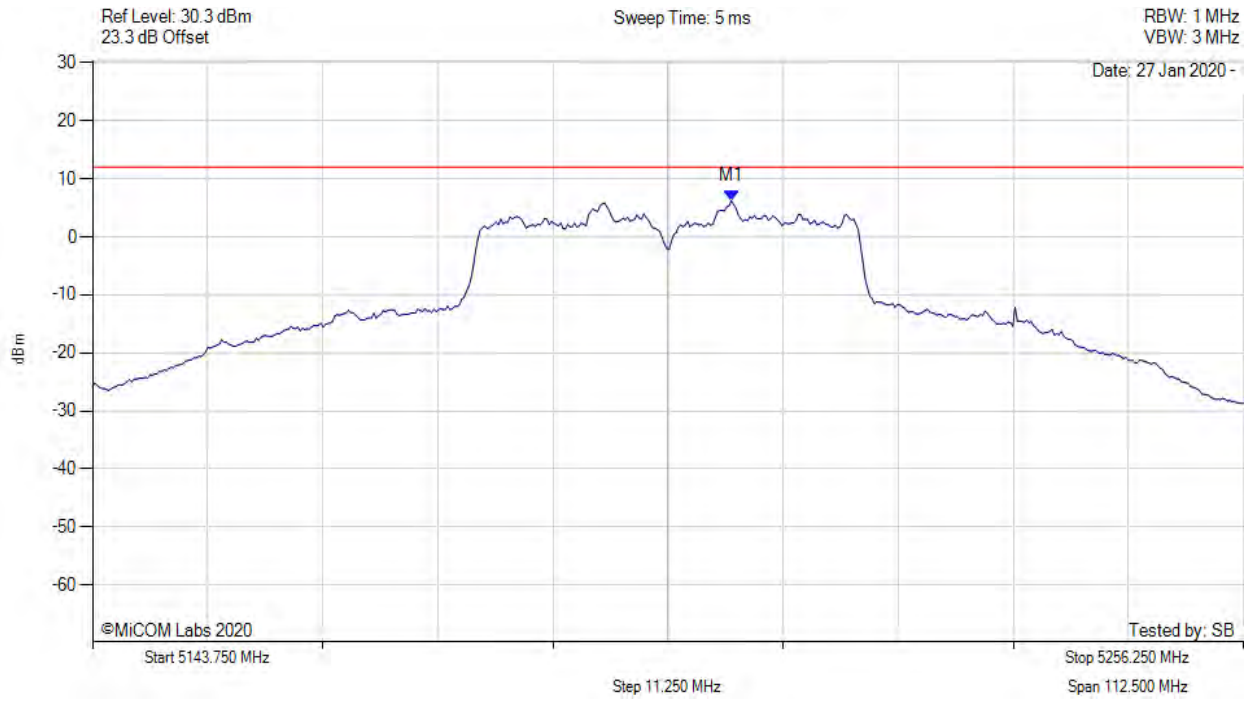


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5197.633 MHz : 1.281 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5200.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

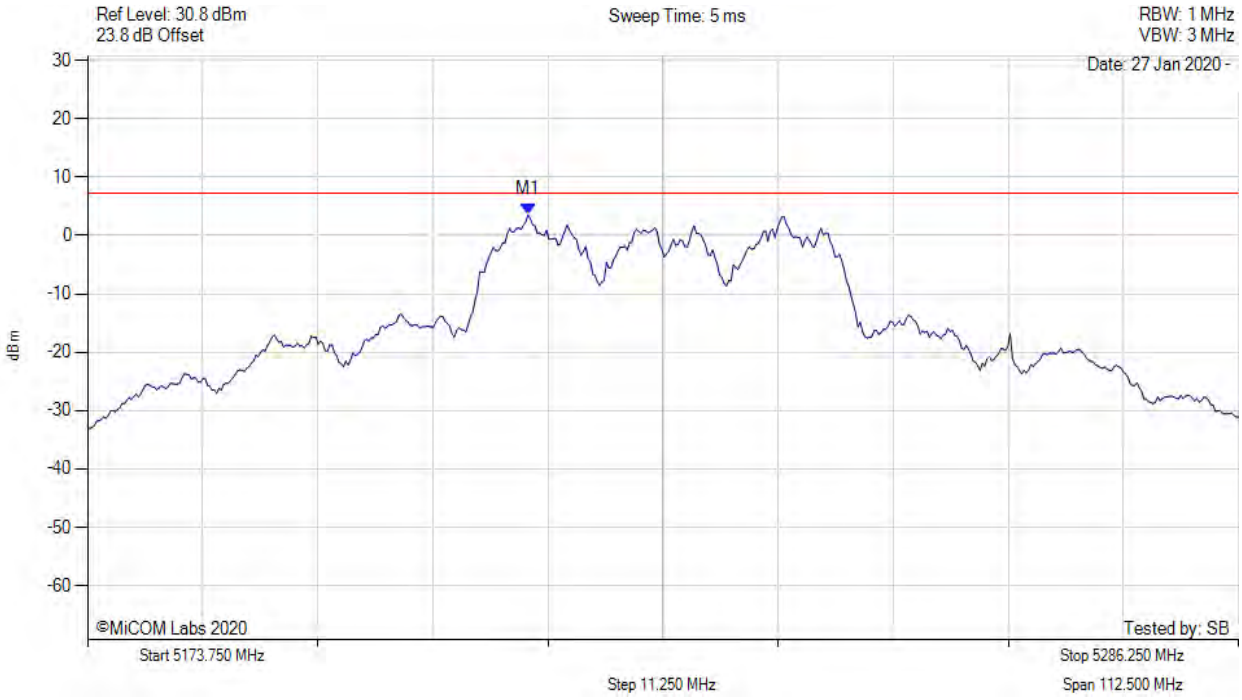


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5206.200 MHz : 6.214 dBm M1 + DCCF : 5206.200 MHz : 7.293 dBm Duty Cycle Correction Factor : +1.08 dB	Limit: ≤ 14.0 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5230.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

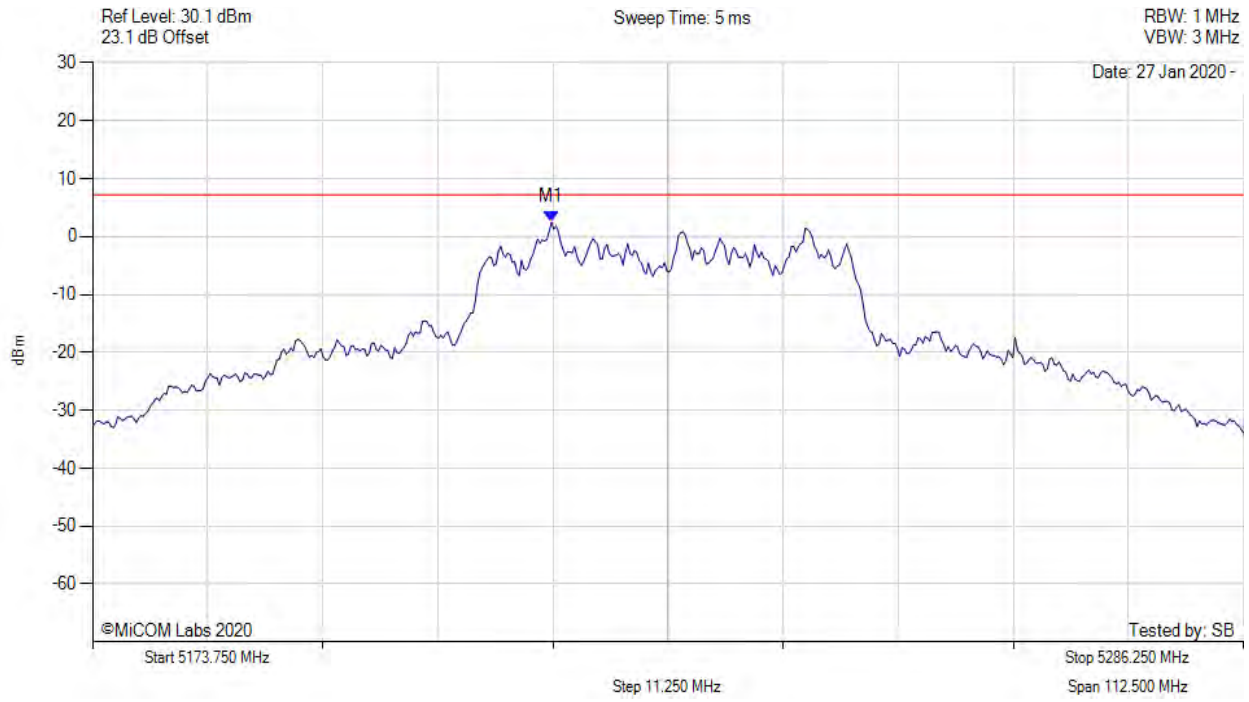


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5216.811 MHz : 3.534 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5230.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

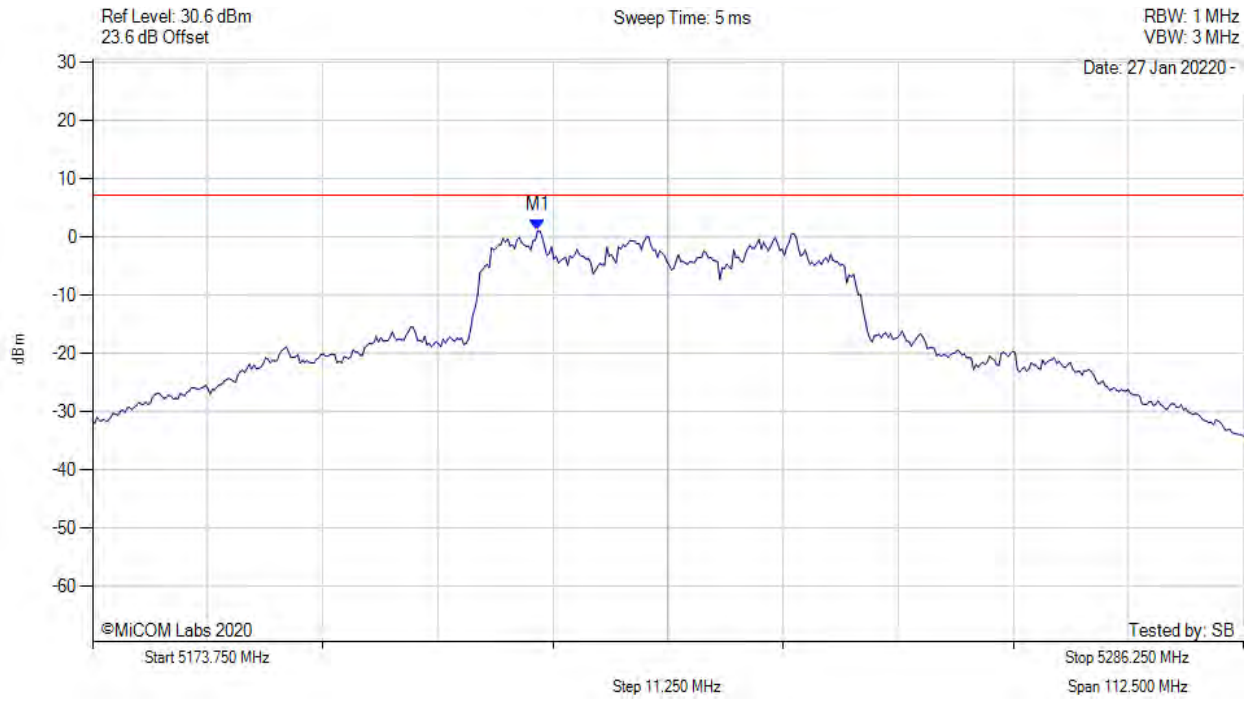


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5218.615 MHz : 2.462 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5230.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

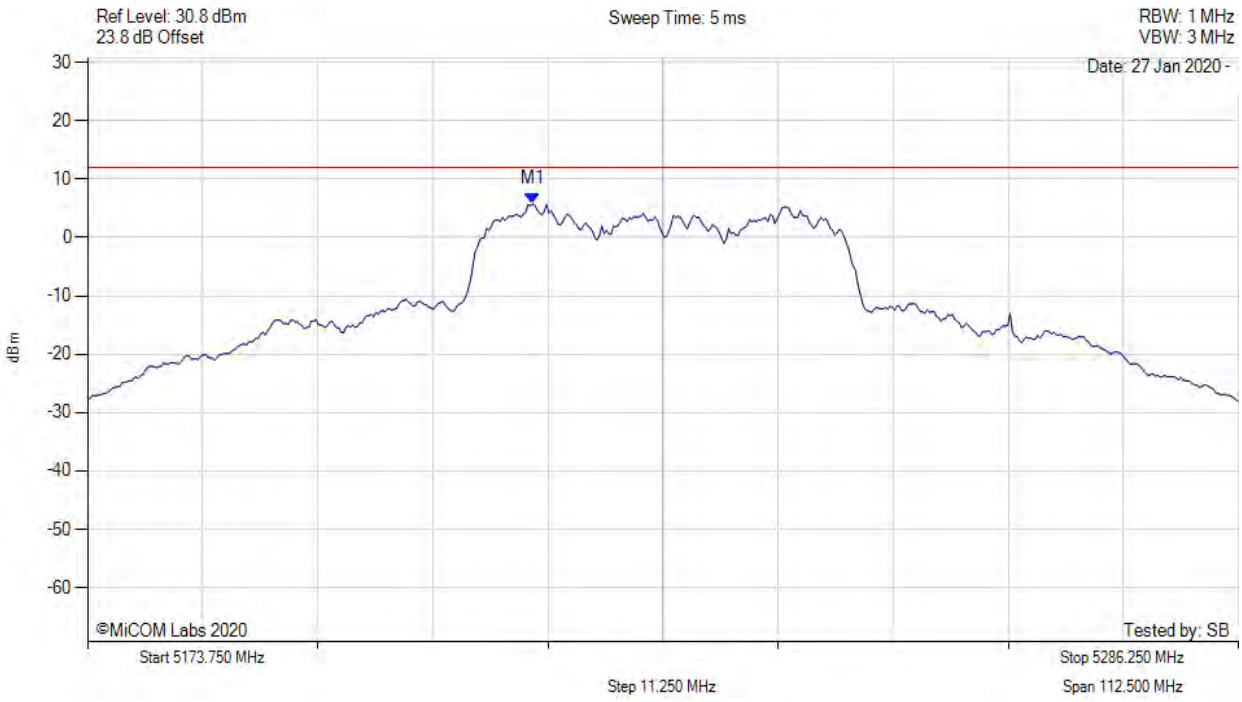


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5217.262 MHz : 1.116 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5230.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

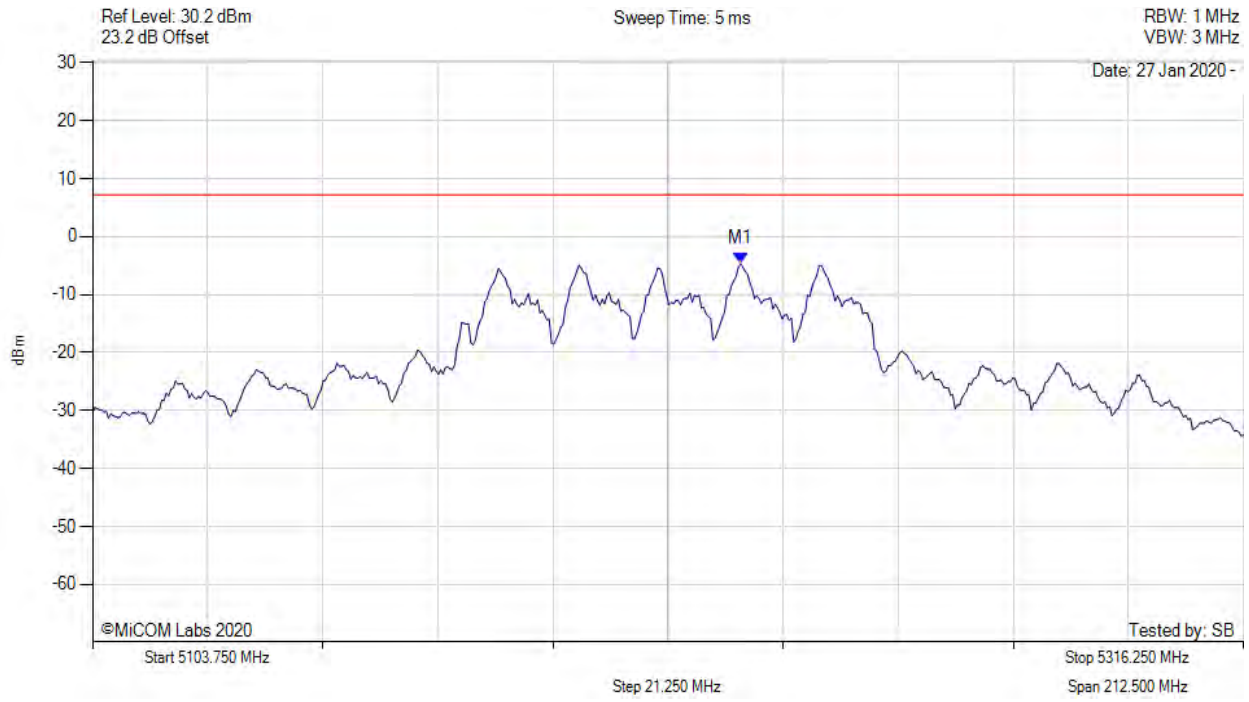


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5217.300 MHz : 5.714 dBm M1 + DCCF : 5217.300 MHz : 6.793 dBm Duty Cycle Correction Factor : +1.08 dB	Limit: ≤ 14.0 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 80 MHz, Channel: 5210.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

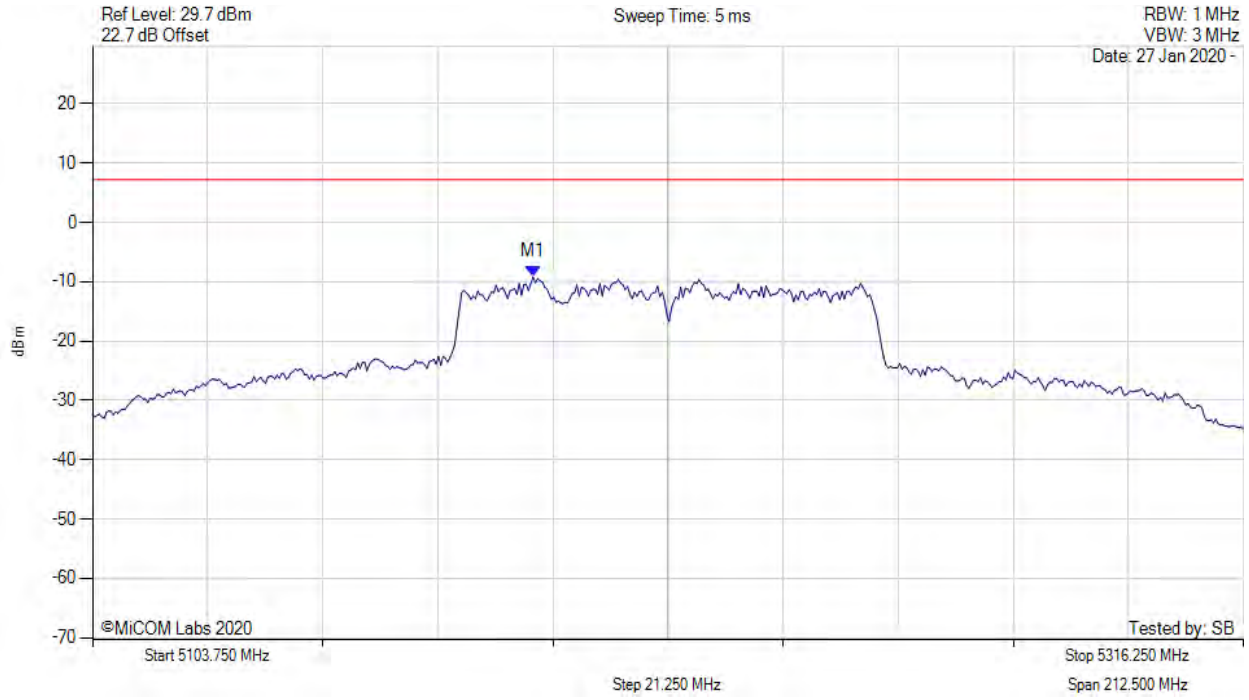


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5223.414 MHz : -4.657 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 80 MHz, Channel: 5210.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

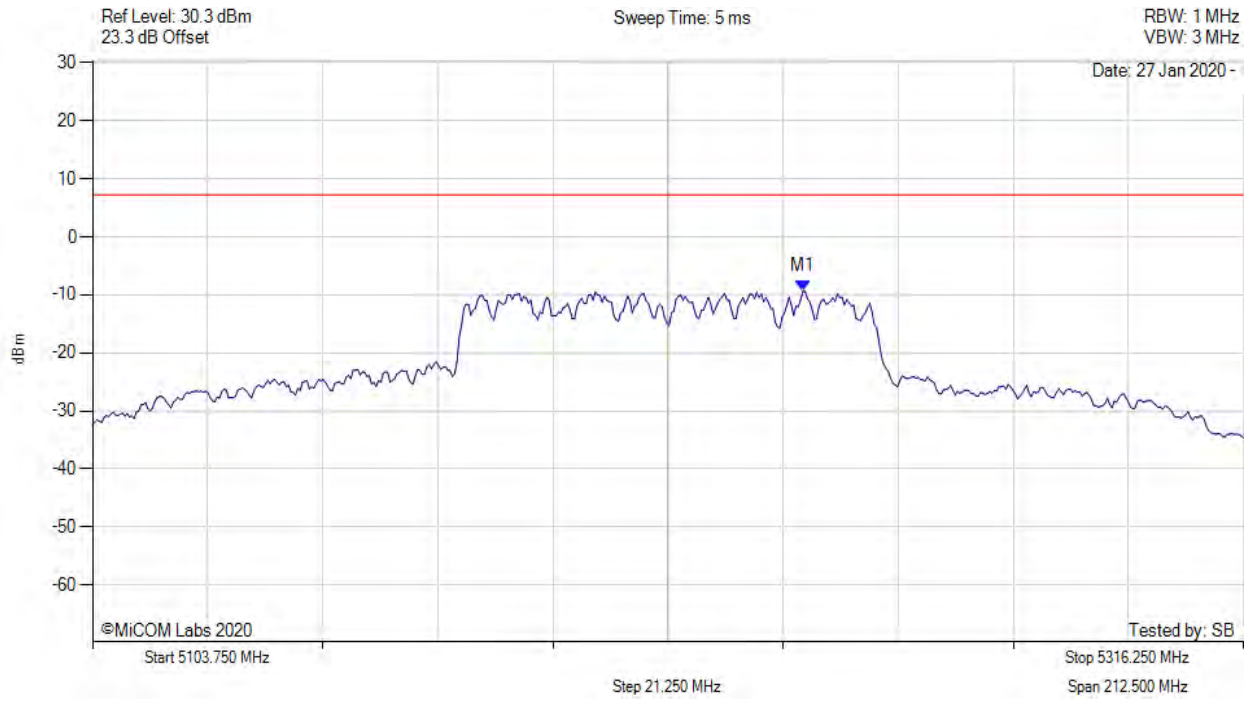


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5185.088 MHz : -9.189 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 80 MHz, Channel: 5210.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

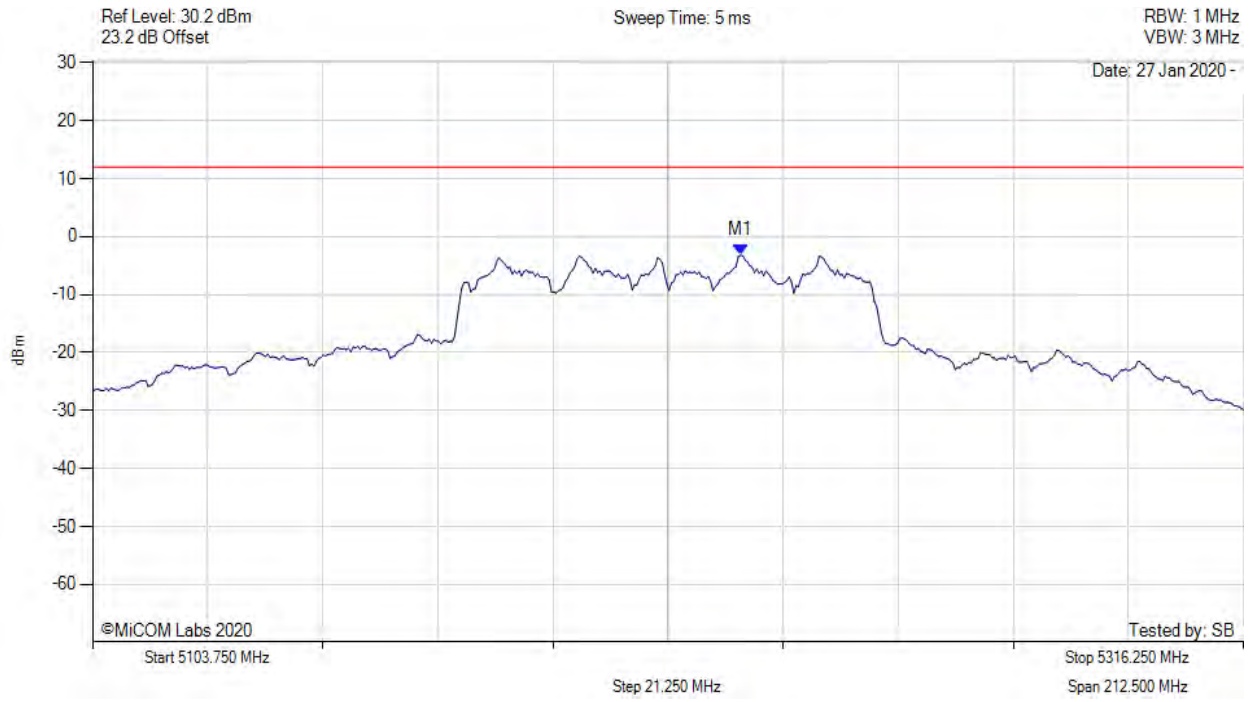


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5234.912 MHz : -9.412 dBm	Limit: ≤ 9.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 80 MHz, Channel: 5210.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc



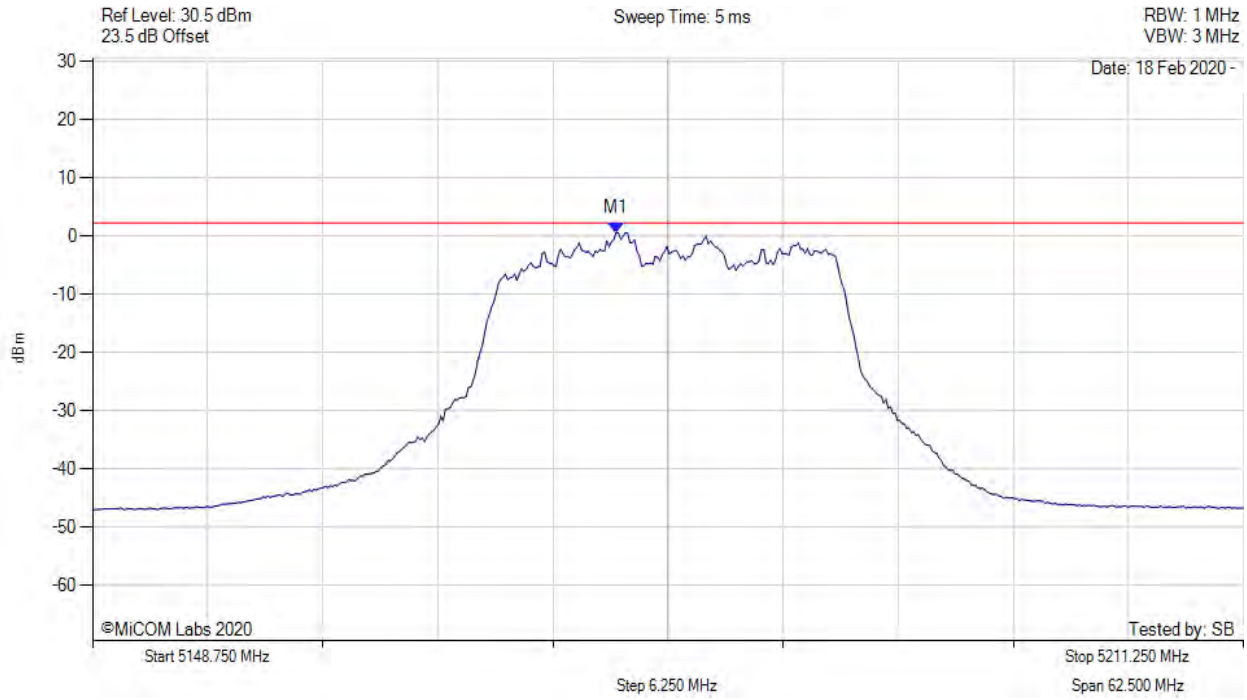
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5223.400 MHz : -3.194 dBm M1 + DCCF : 5223.400 MHz : -1.389 dBm Duty Cycle Correction Factor : +1.8 dB	Limit: ≤ 14.0 dBm

back to matrix

9.4.4.14. Slave Mode

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5180.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

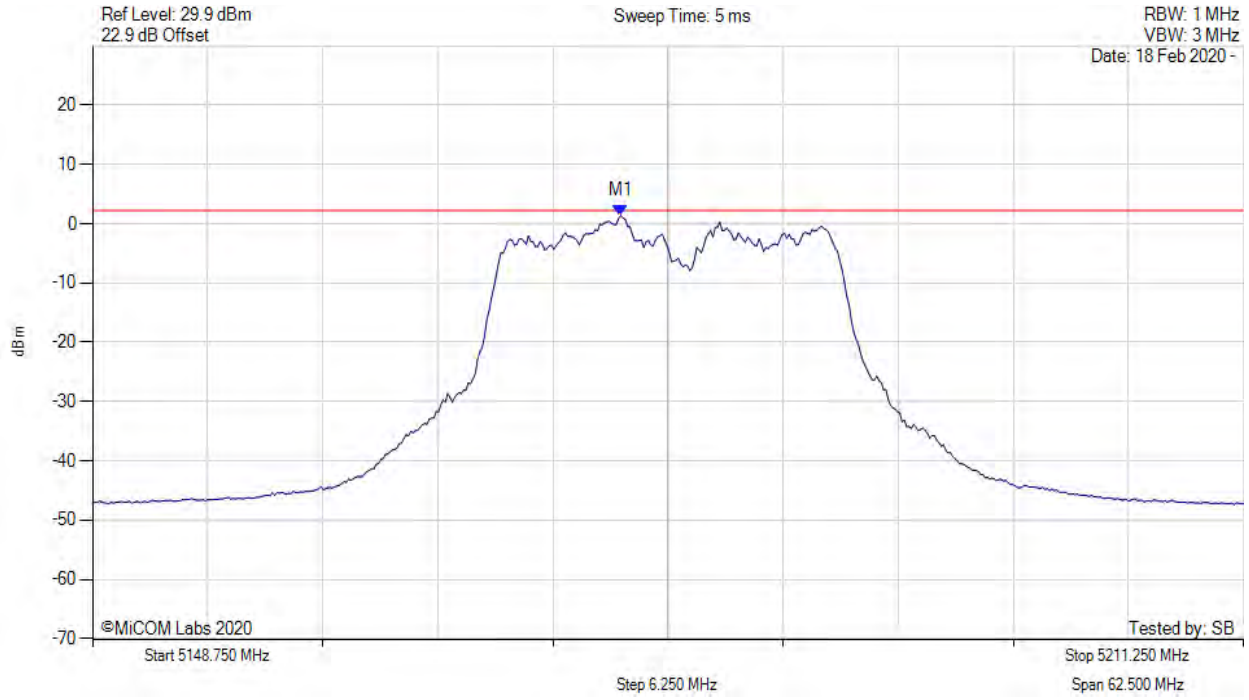


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5177.182 MHz : 0.582 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5180.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

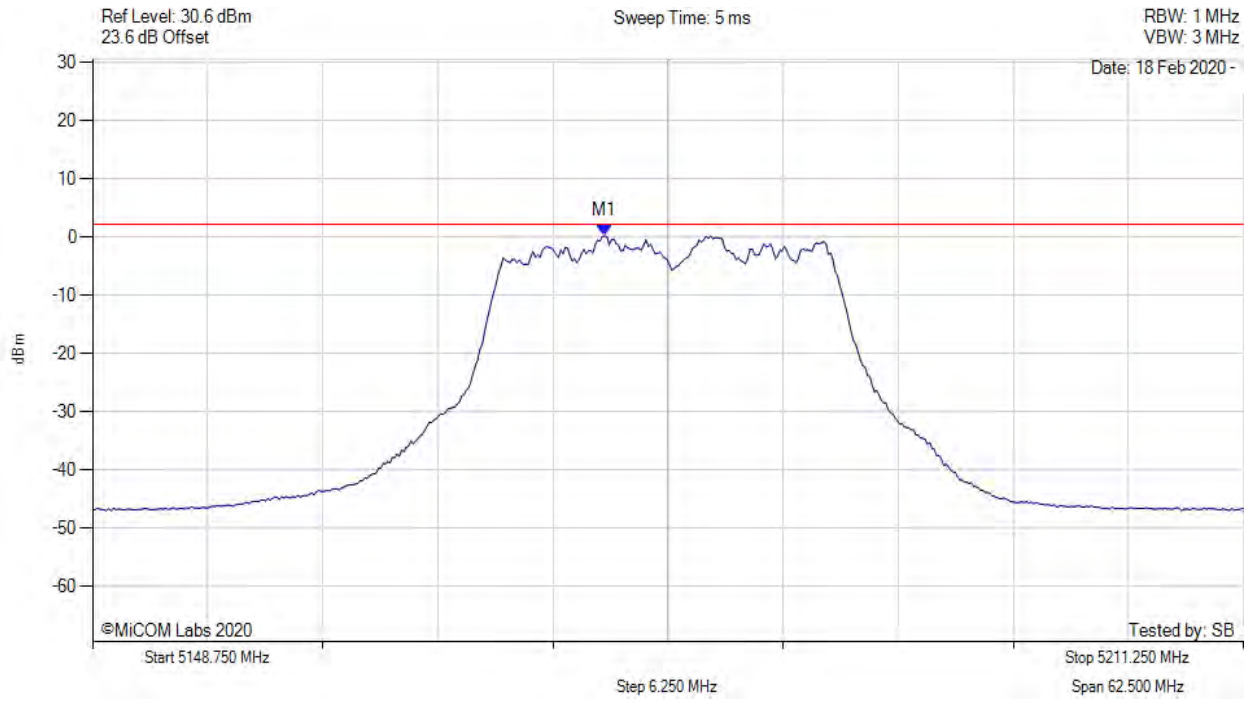


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5177.432 MHz : 1.369 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5180.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

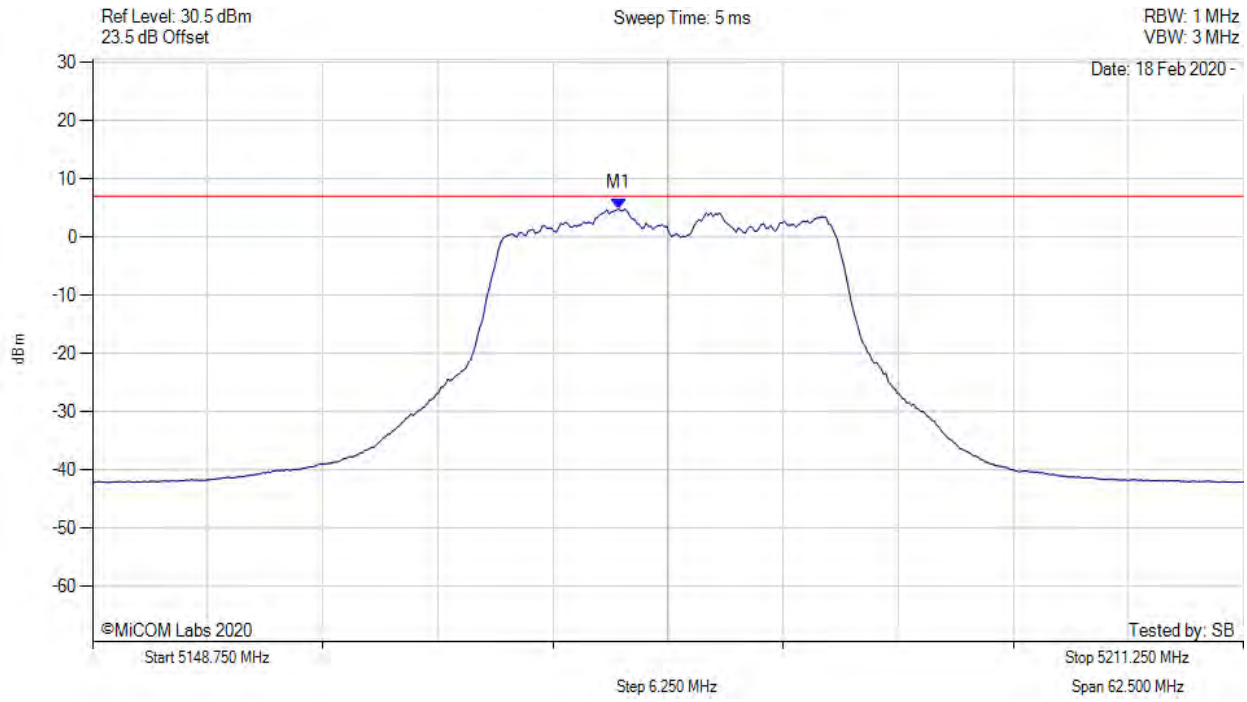


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5176.556 MHz : 0.228 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5180.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

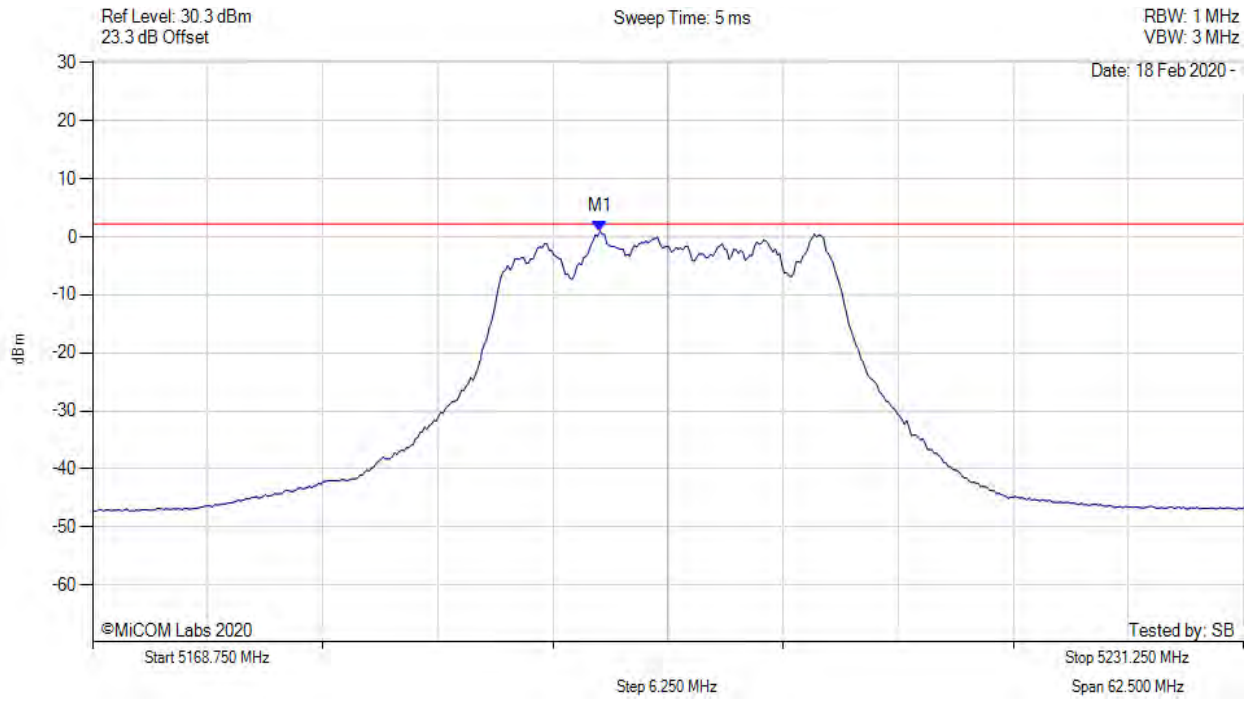


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5177.300 MHz : 4.889 dBm M1 + DCCF : 5177.300 MHz : 5.544 dBm Duty Cycle Correction Factor : +0.66 dB	Limit: ≤ 8.0 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

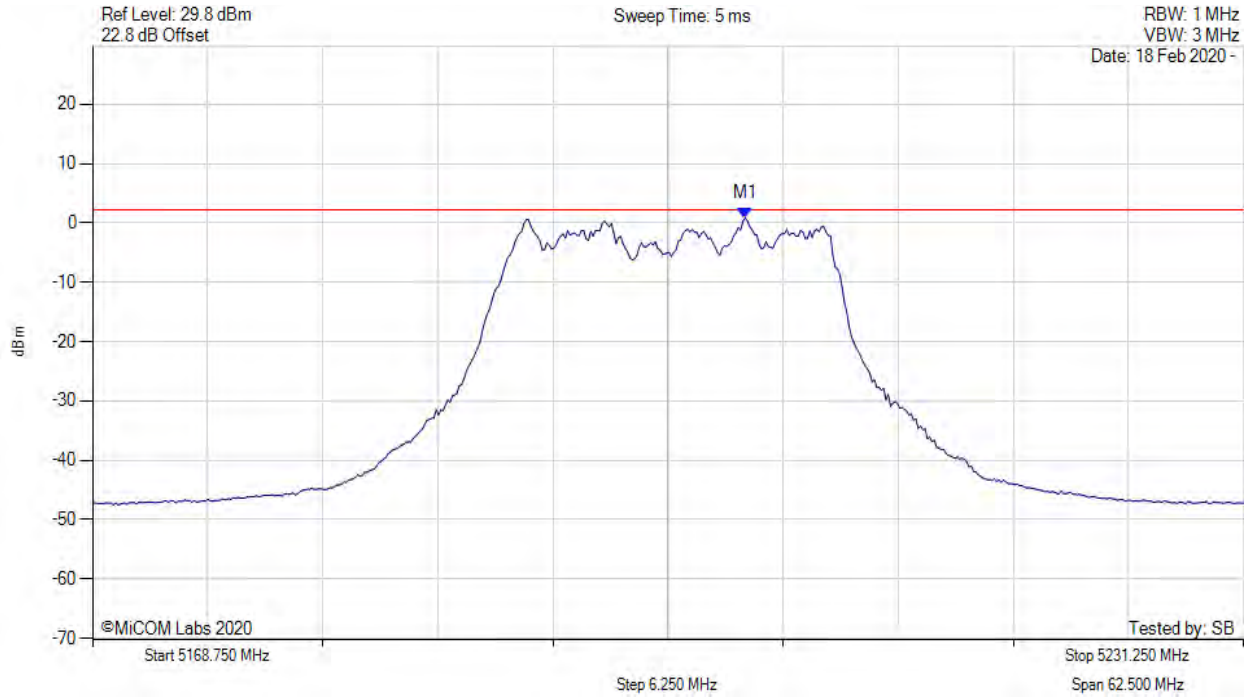


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5196.305 MHz : 0.997 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5200.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

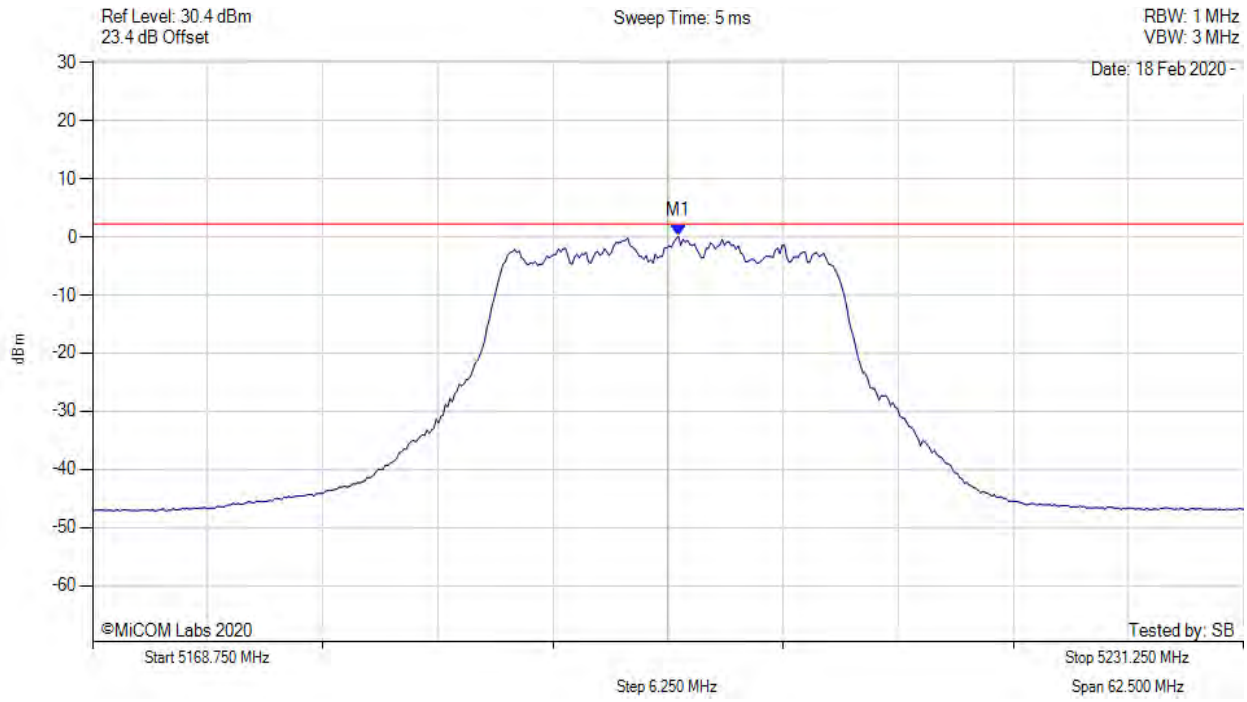


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5204.196 MHz : 0.875 dBm	Limit: ≤ 2.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5200.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

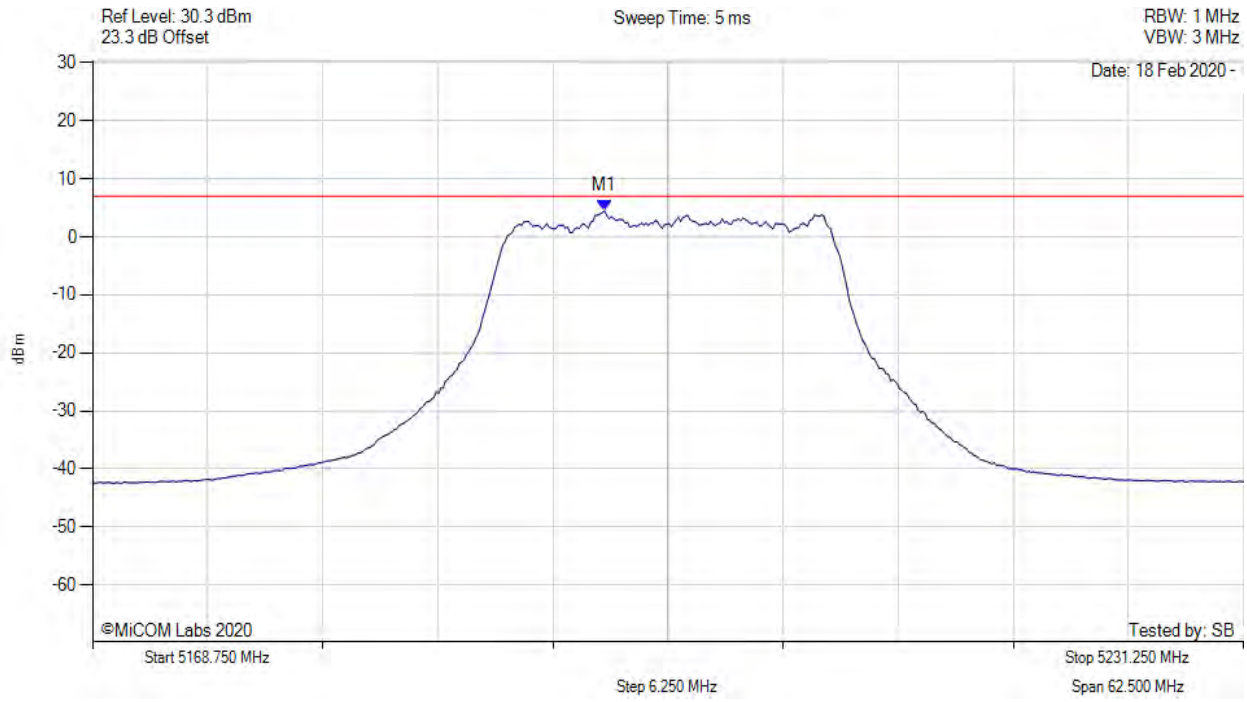


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5200.564 MHz : 0.143 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5200.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

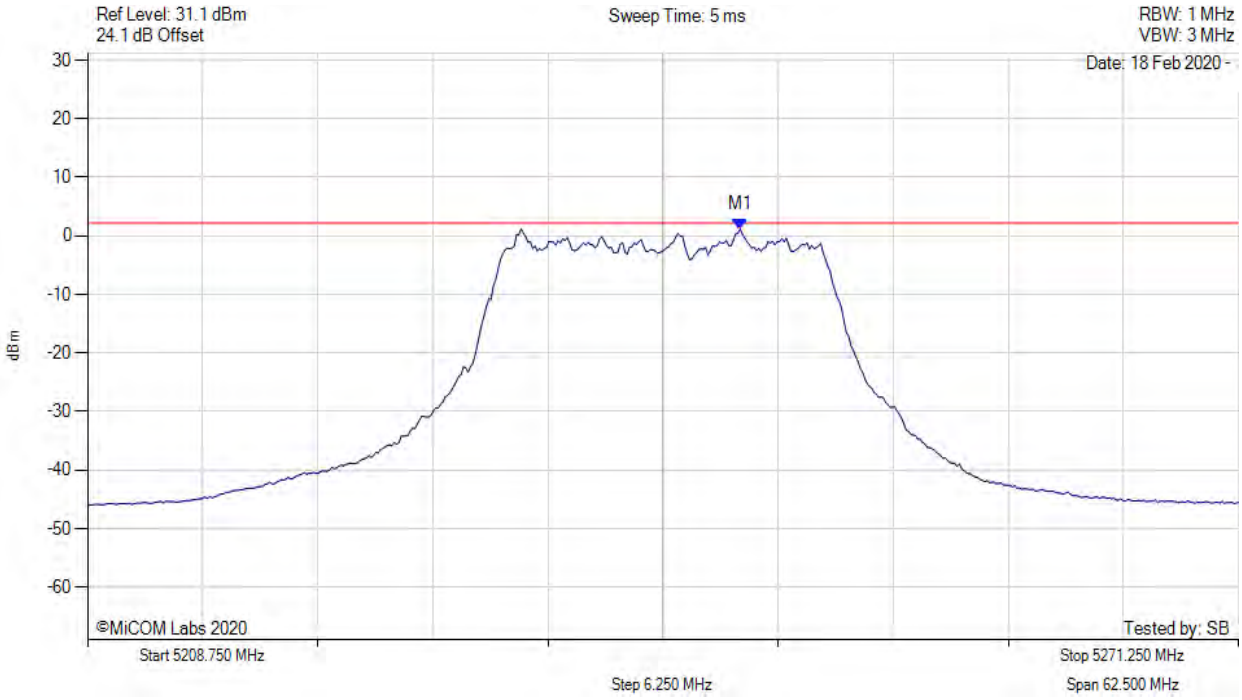


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5196.600 MHz : 4.474 dBm M1 + DCCF : 5196.600 MHz : 5.129 dBm Duty Cycle Correction Factor : +0.66 dB	Limit: ≤ 8.0 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5240.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

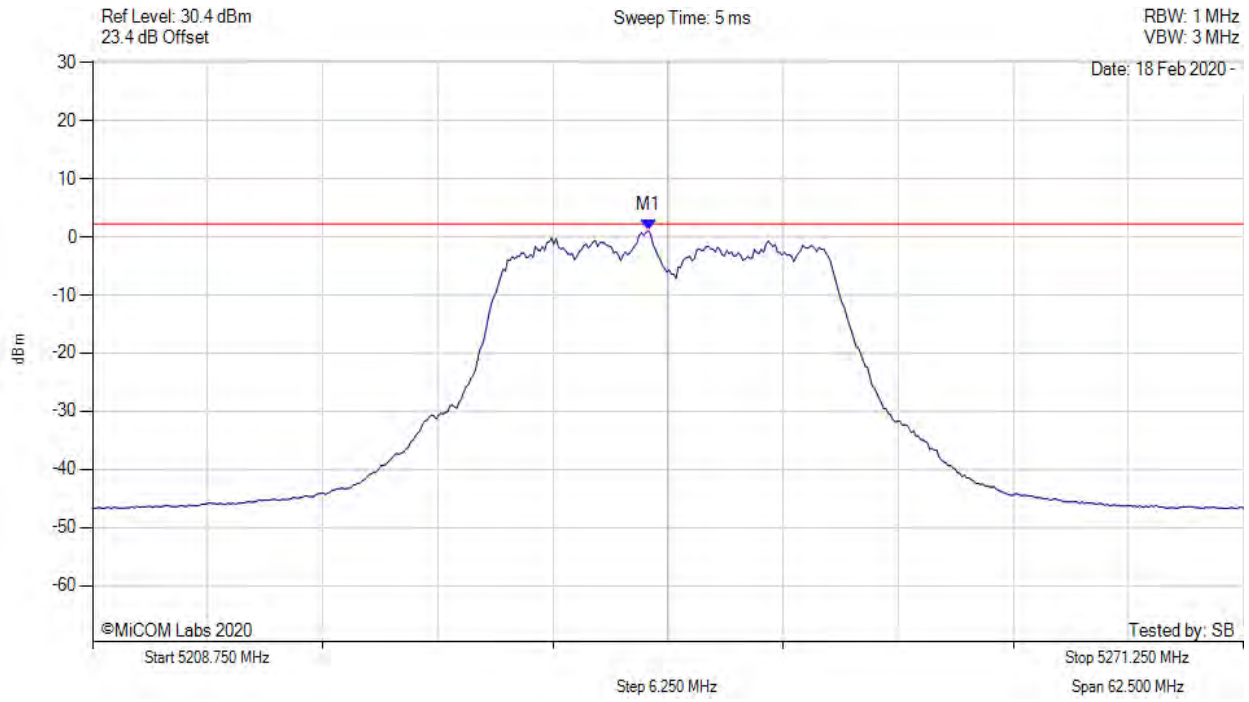


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5244.196 MHz : 1.185 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5240.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

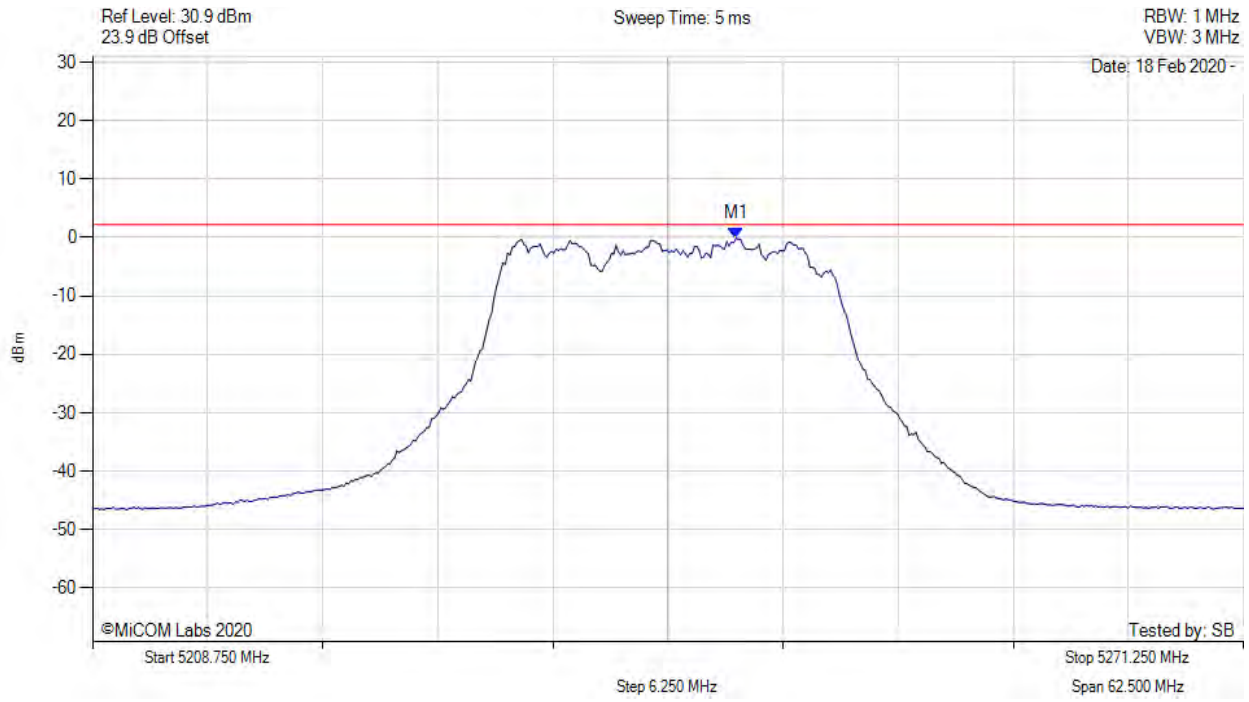


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5238.935 MHz : 1.085 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5240.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

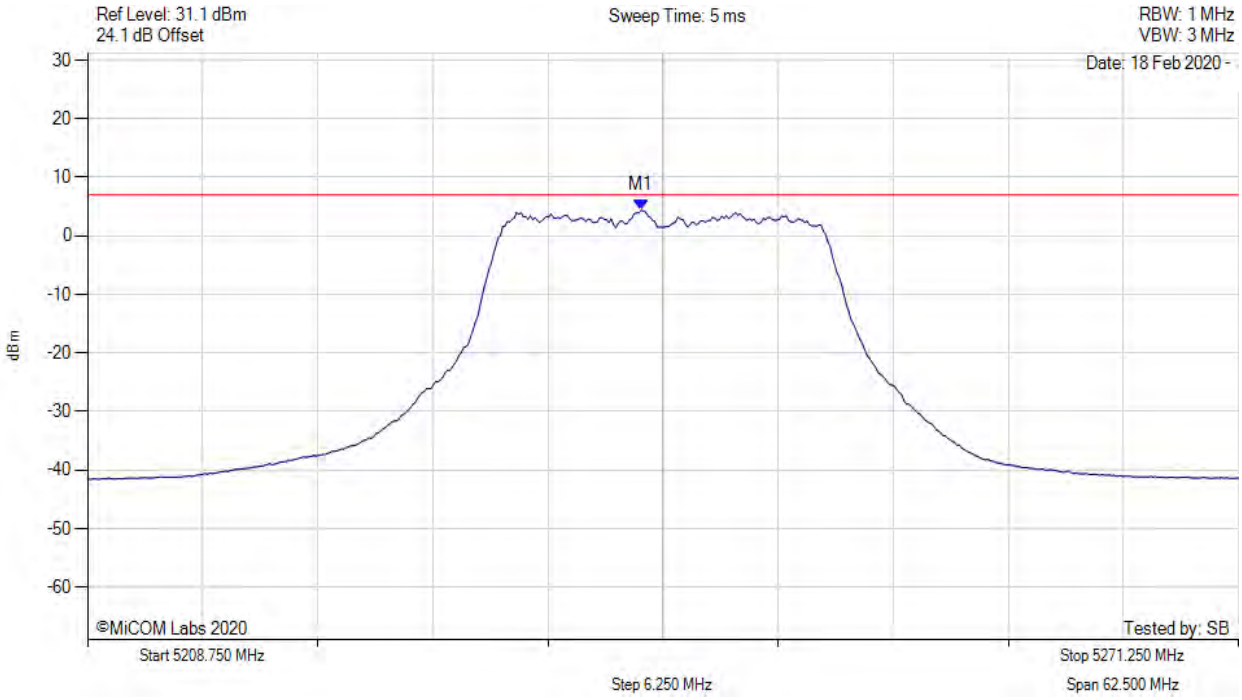


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5243.695 MHz : -0.153 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5240.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

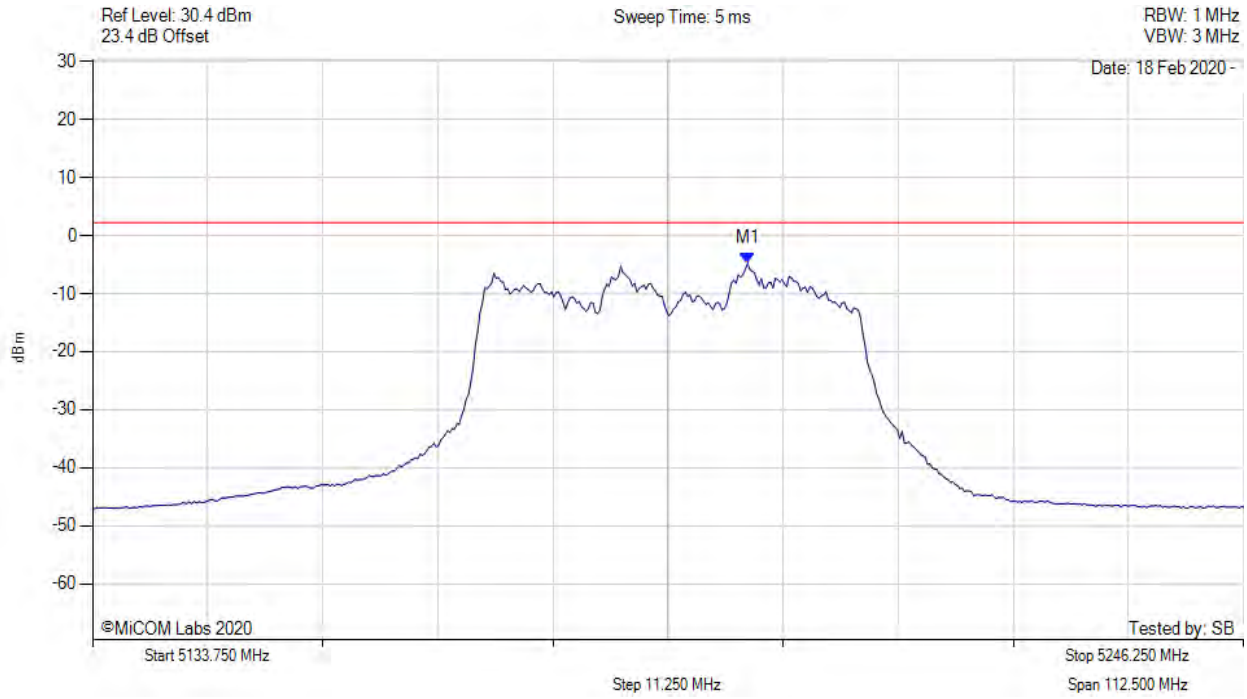


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5238.800 MHz : 4.387 dBm M1 + DCCF : 5238.800 MHz : 5.042 dBm Duty Cycle Correction Factor : +0.66 dB	Limit: ≤ 8.0 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5190.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

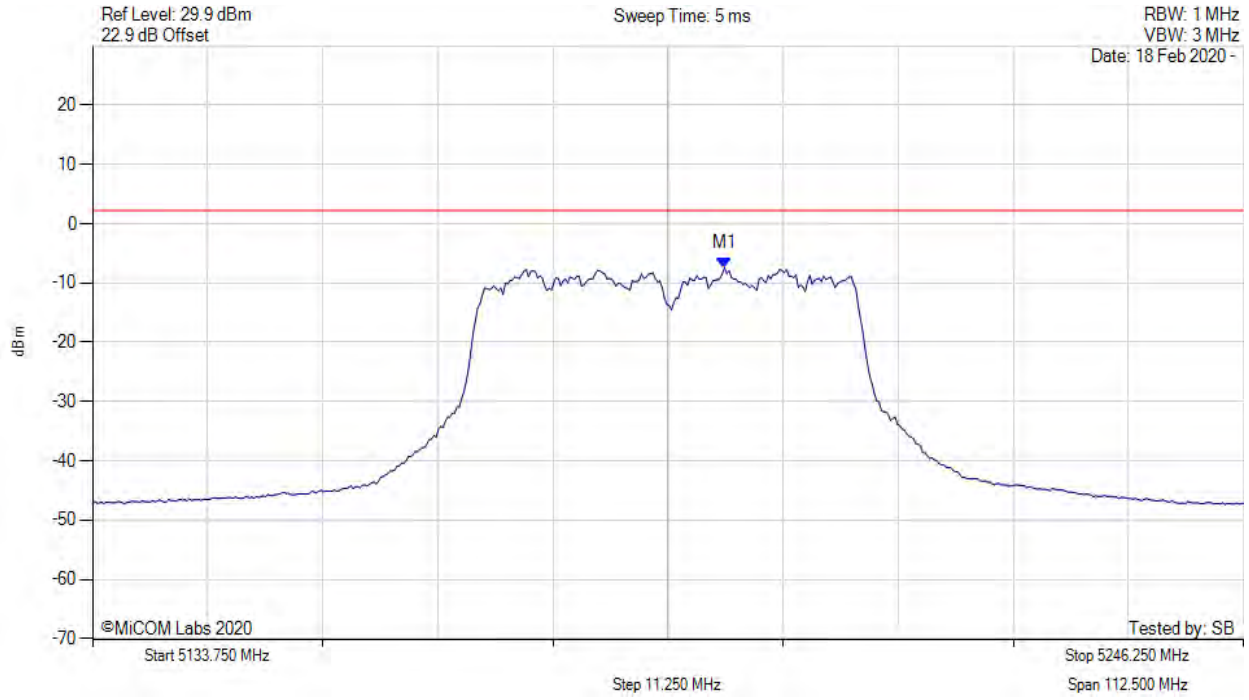


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5197.778 MHz : -4.766 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5190.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

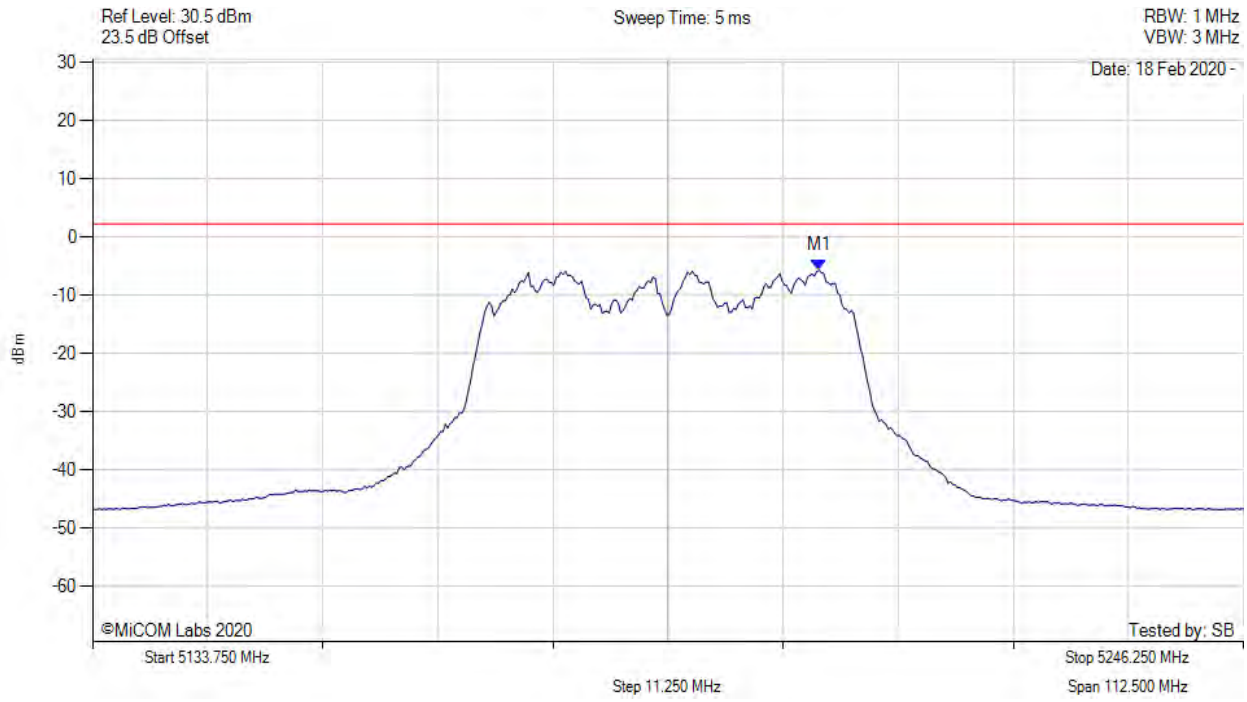


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5195.524 MHz : -7.447 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5190.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

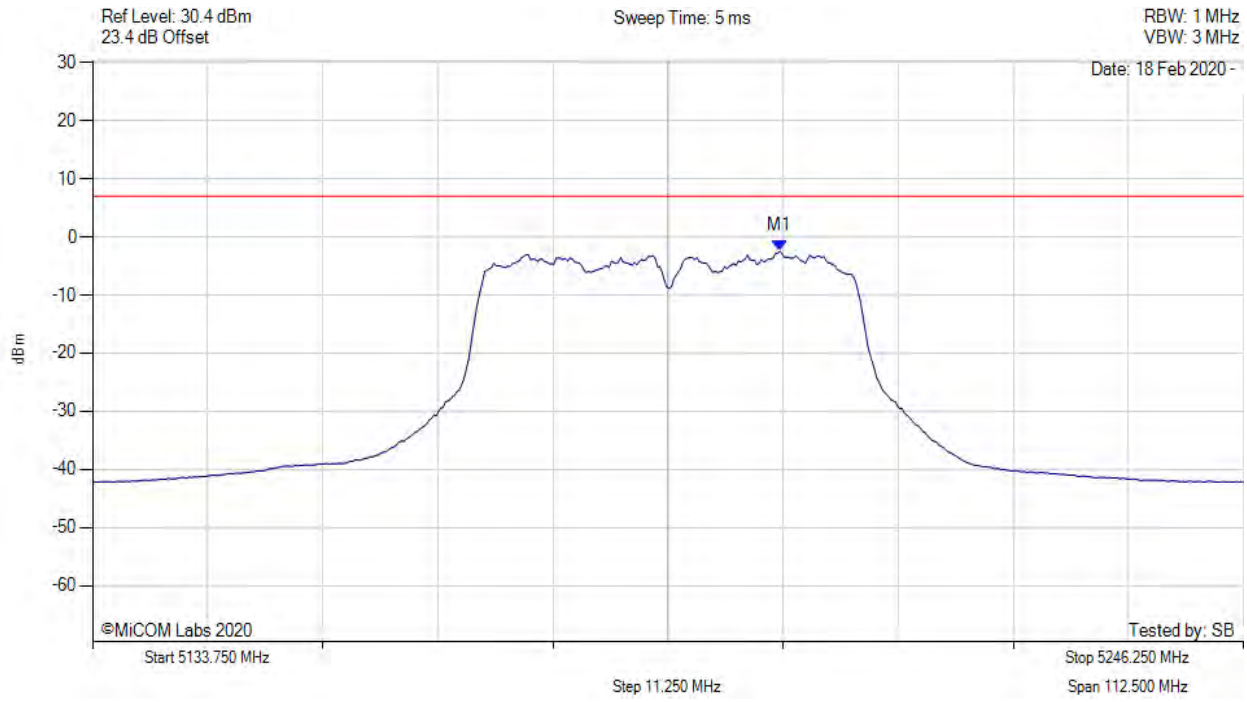


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5204.767 MHz : -5.718 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5190.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

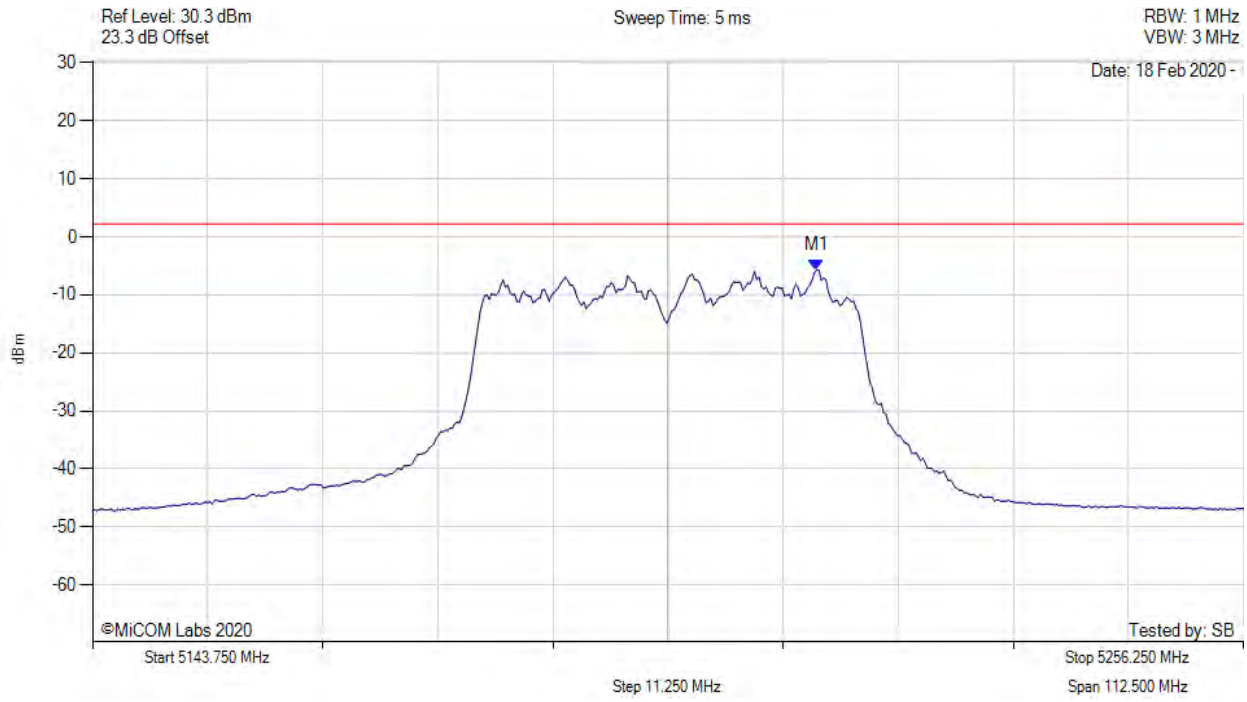


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5200.900 MHz : -2.475 dBm M1 + DCCF : 5200.900 MHz : -1.396 dBm Duty Cycle Correction Factor : +1.08 dB	Limit: ≤ 8.0 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

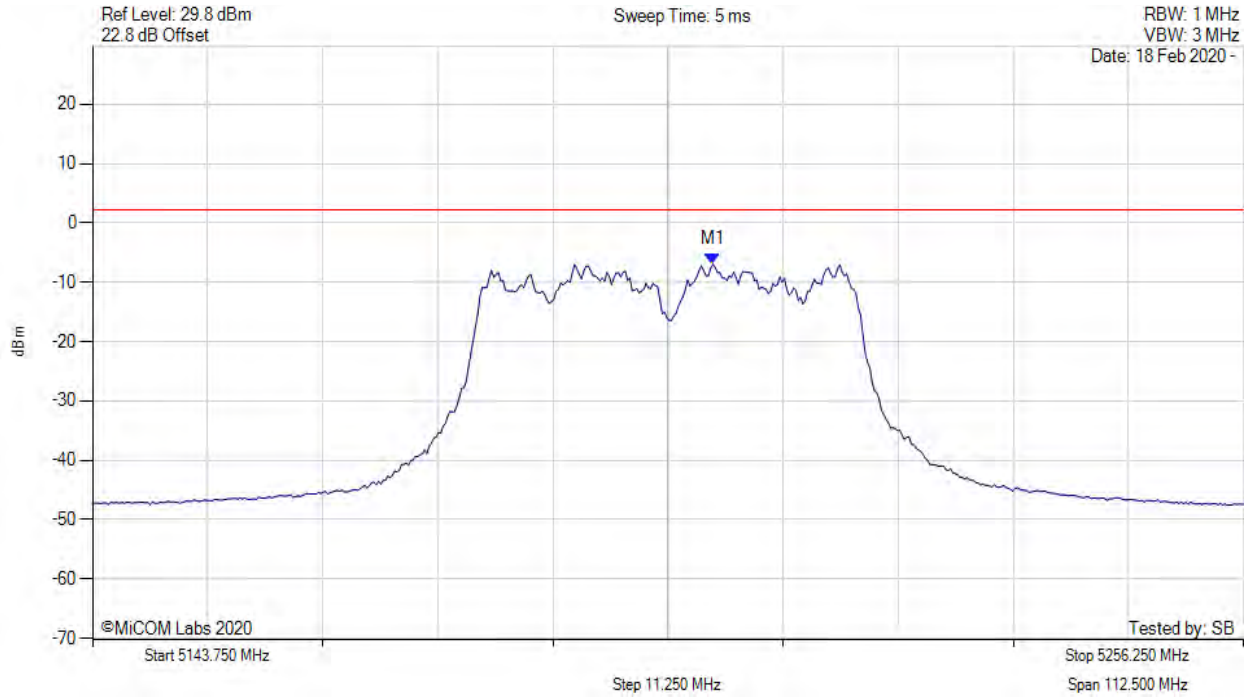


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5214.542 MHz : -5.673 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5200.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

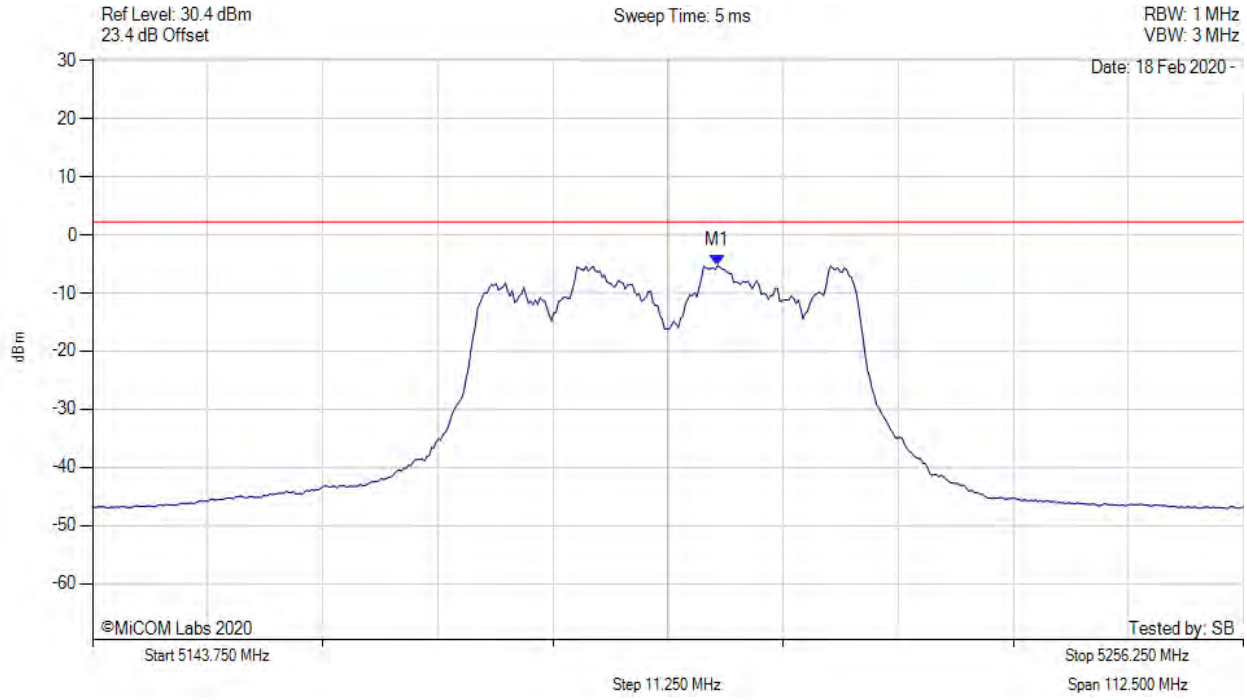


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5204.396 MHz : -6.935 dBm	Limit: ≤ 2.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5200.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

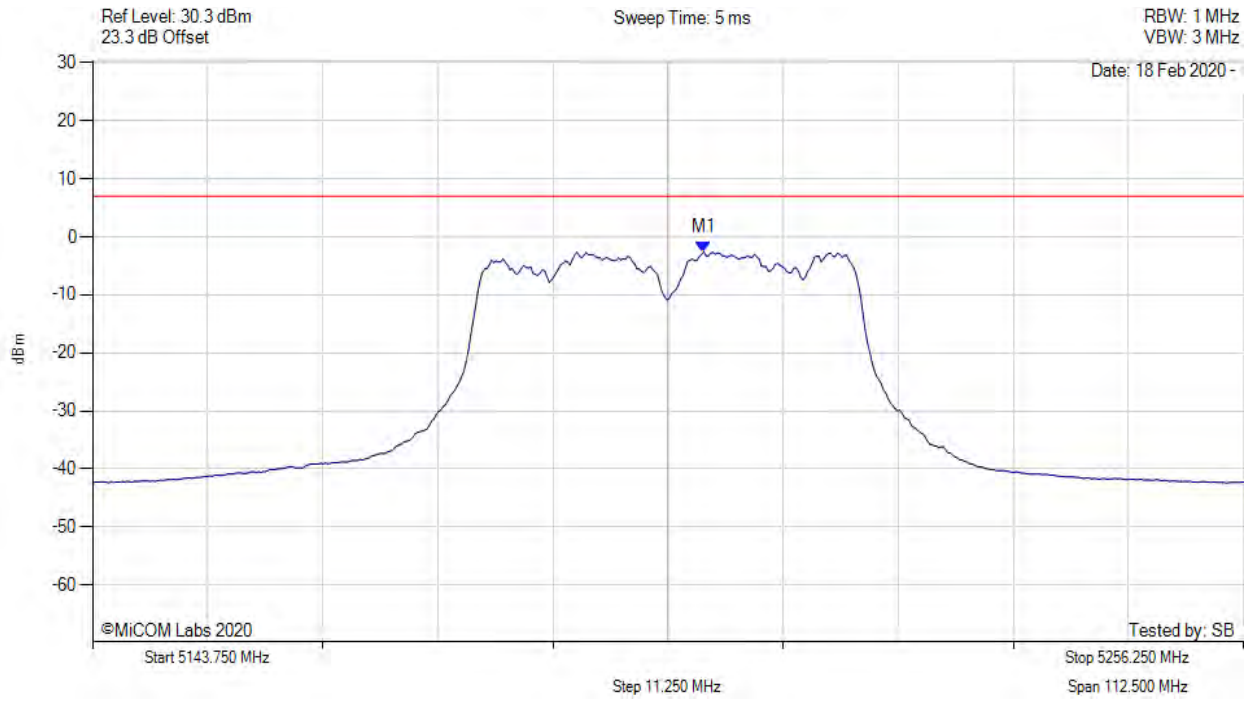


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5204.847 MHz : -5.289 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5200.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

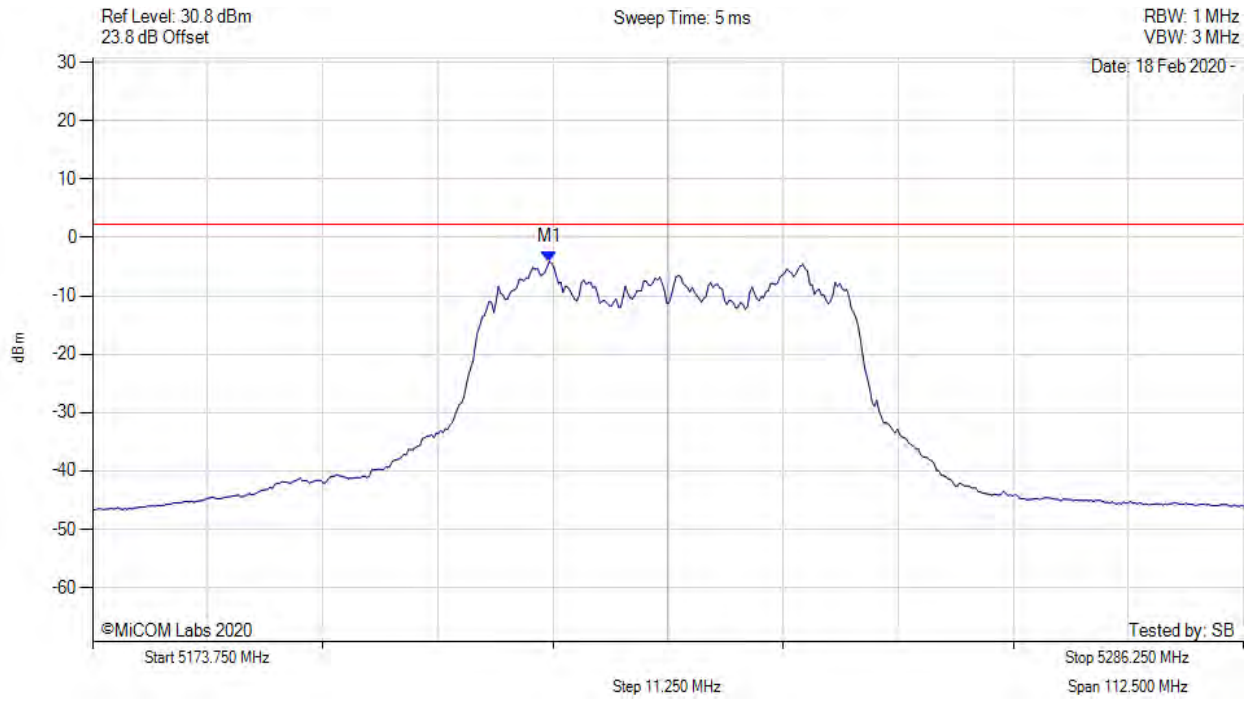


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5203.500 MHz : -2.577 dBm M1 + DCCF : 5203.500 MHz : -1.498 dBm Duty Cycle Correction Factor : +1.08 dB	Limit: ≤ 8.0 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5230.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

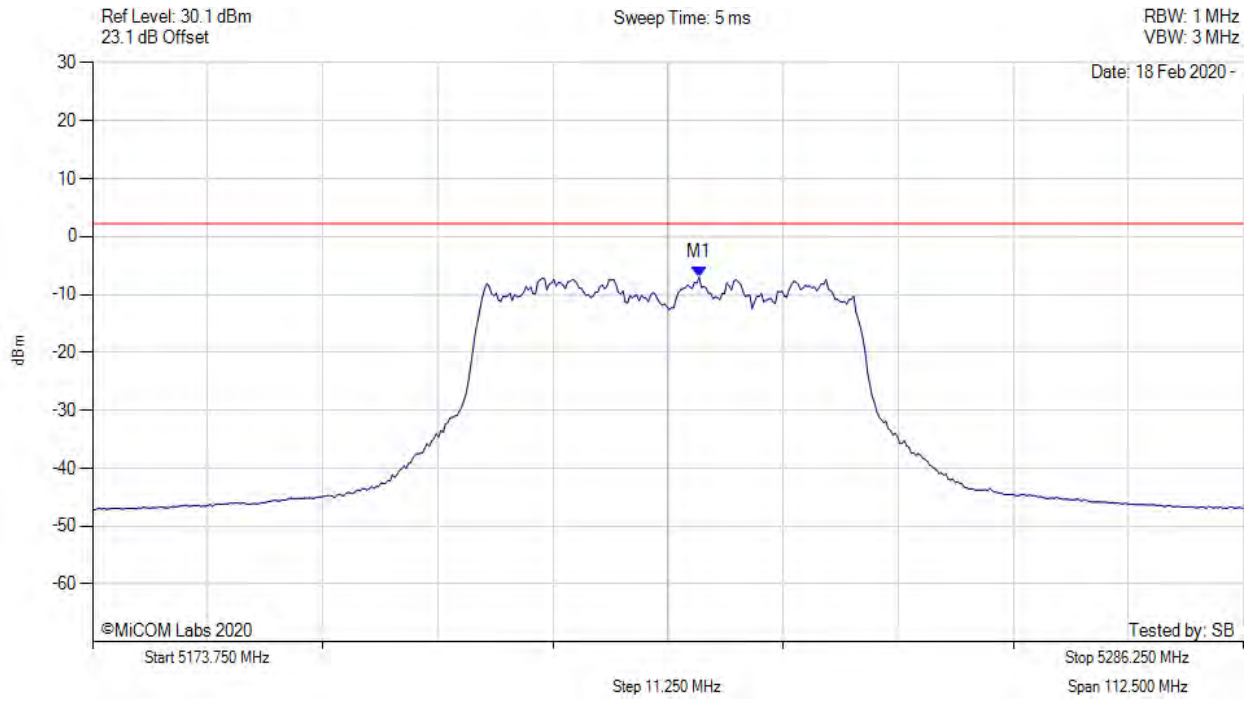


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5218.389 MHz : -4.158 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5230.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

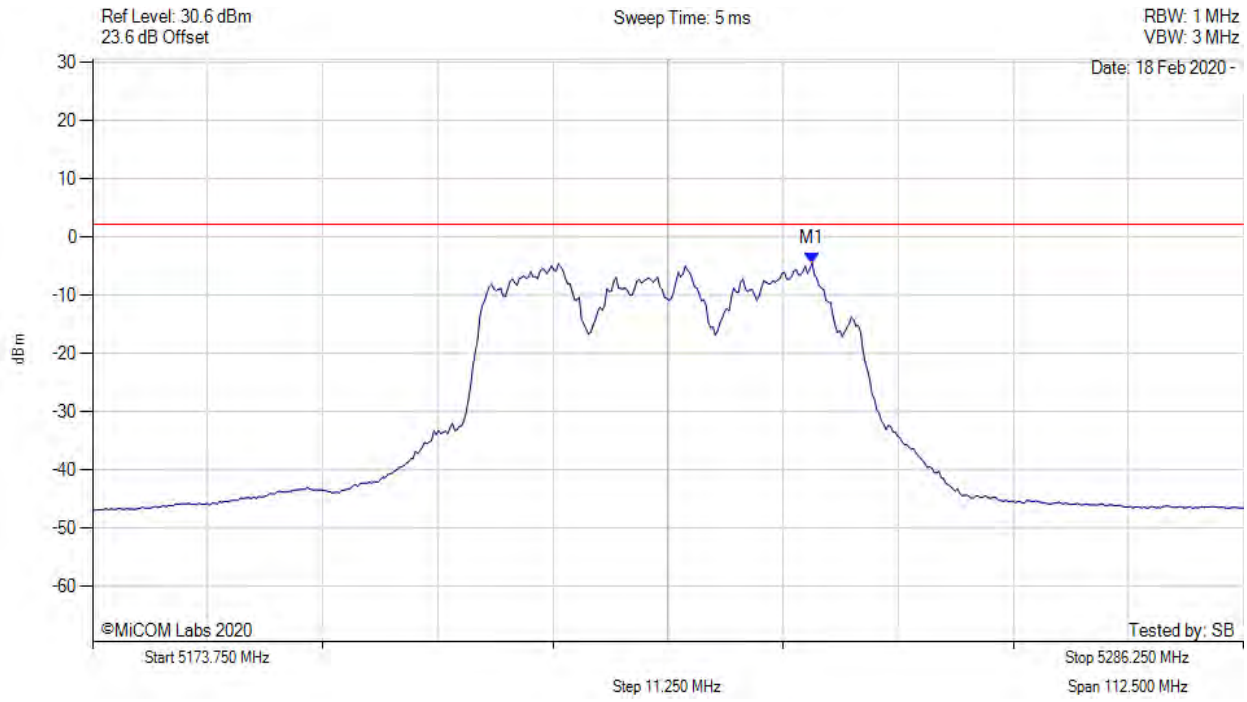


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5233.044 MHz : -7.025 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5230.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

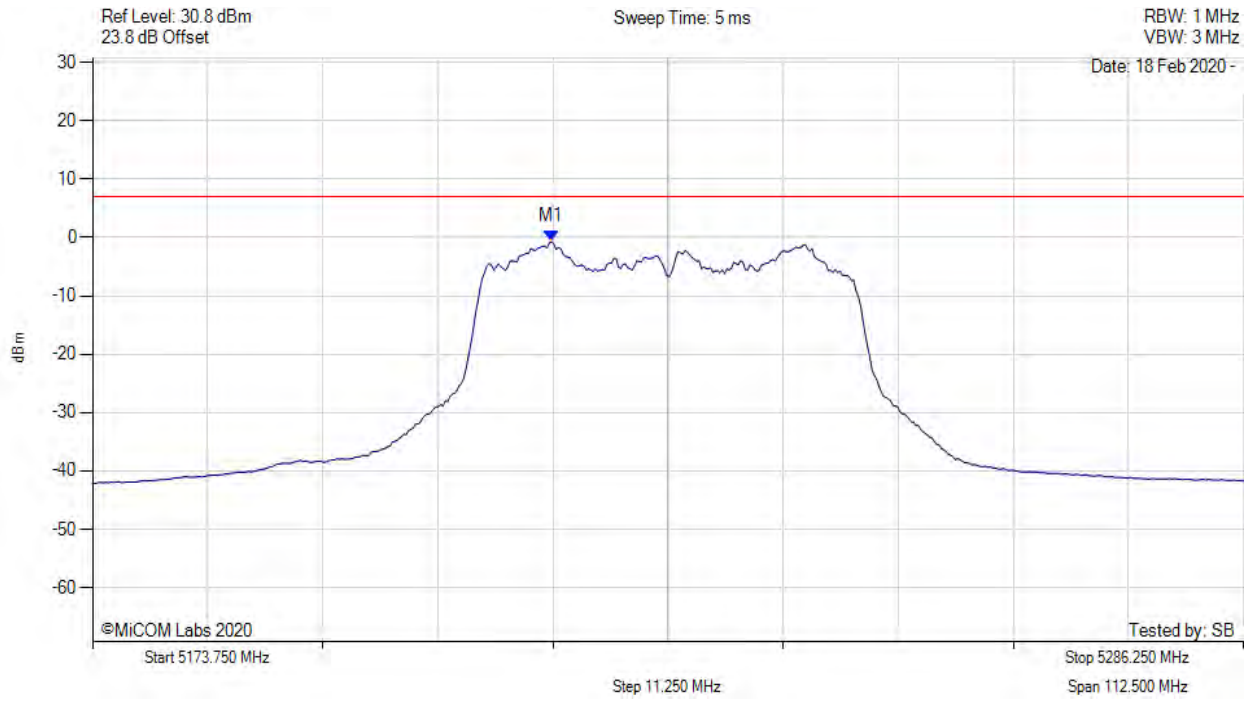


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5244.091 MHz : -4.466 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5230.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc

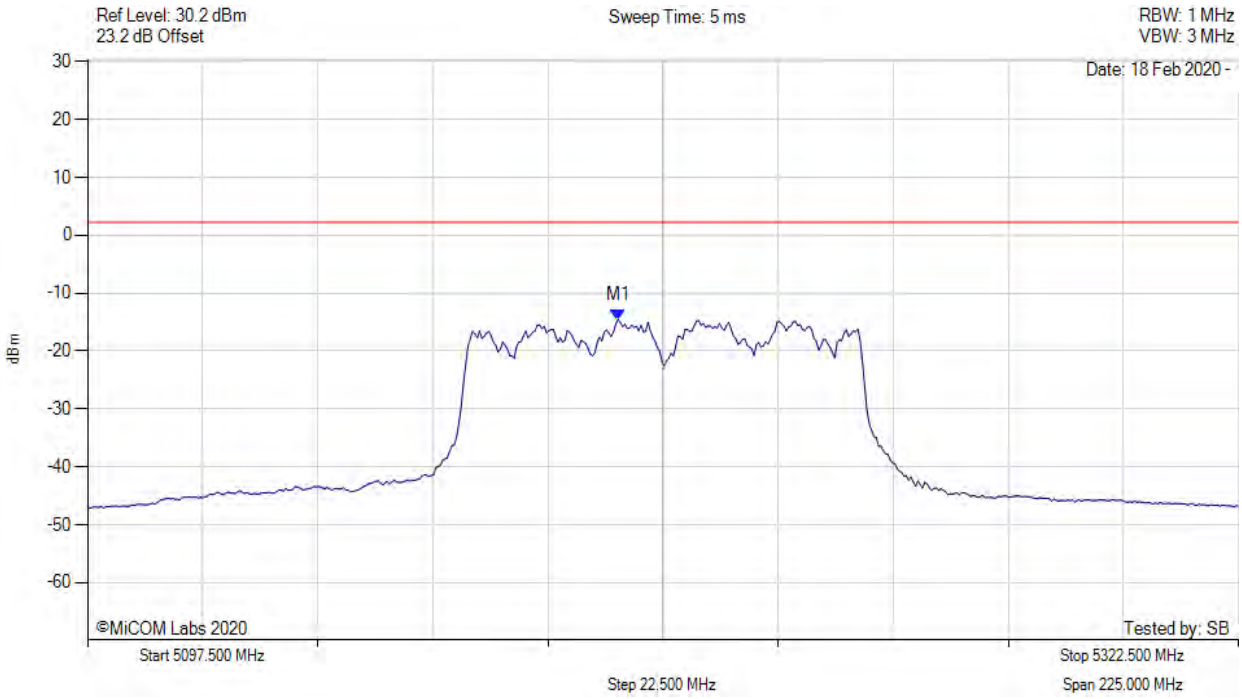


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5218.600 MHz : -0.723 dBm M1 + DCCF : 5218.600 MHz : 0.356 dBm Duty Cycle Correction Factor : +1.08 dB	Limit: ≤ 8.0 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 80 MHz, Channel: 5210.00 MHz, Chain a, Temp: 20, Voltage: 55 Vdc

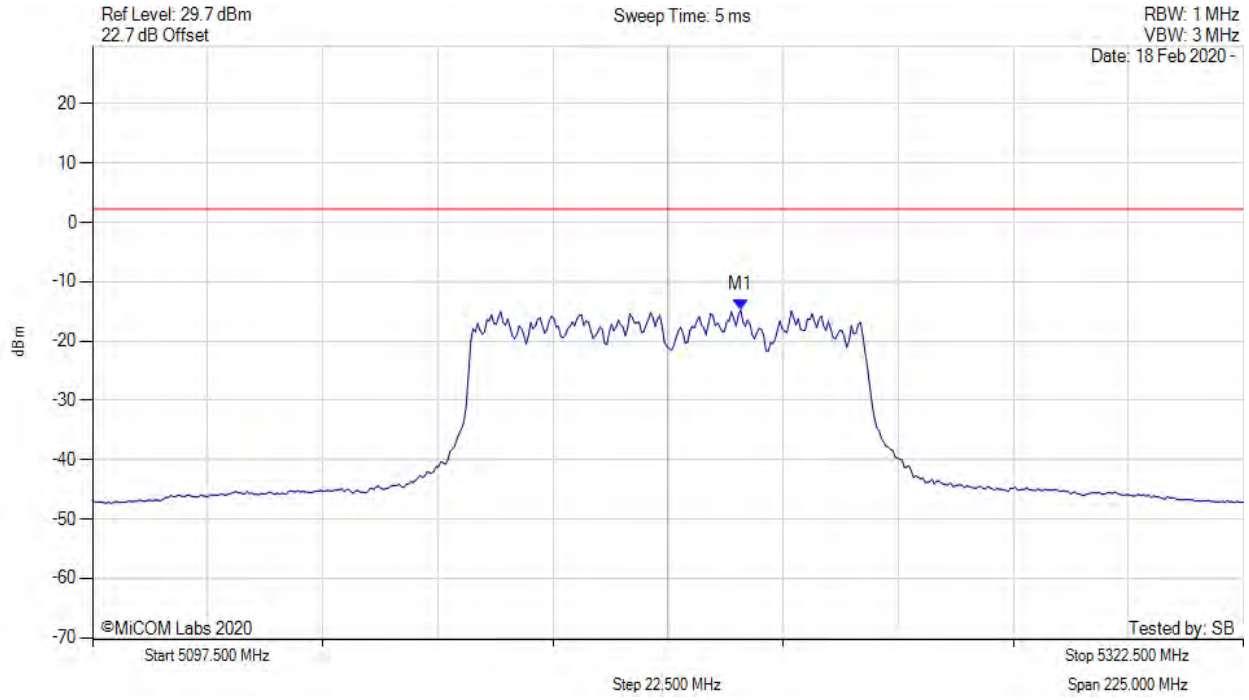


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5201.207 MHz : -14.562 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 80 MHz, Channel: 5210.00 MHz, Chain b, Temp: 20, Voltage: 55 Vdc

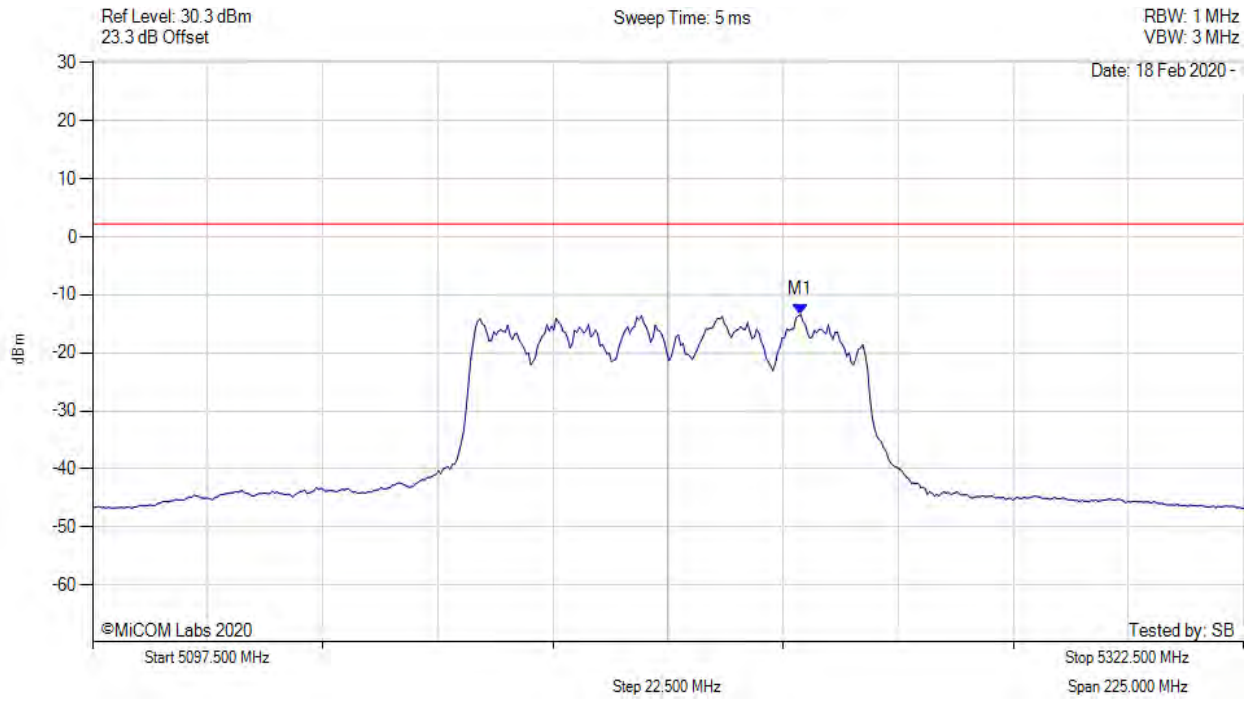


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5224.203 MHz : -14.708 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 80 MHz, Channel: 5210.00 MHz, Chain c, Temp: 20, Voltage: 55 Vdc

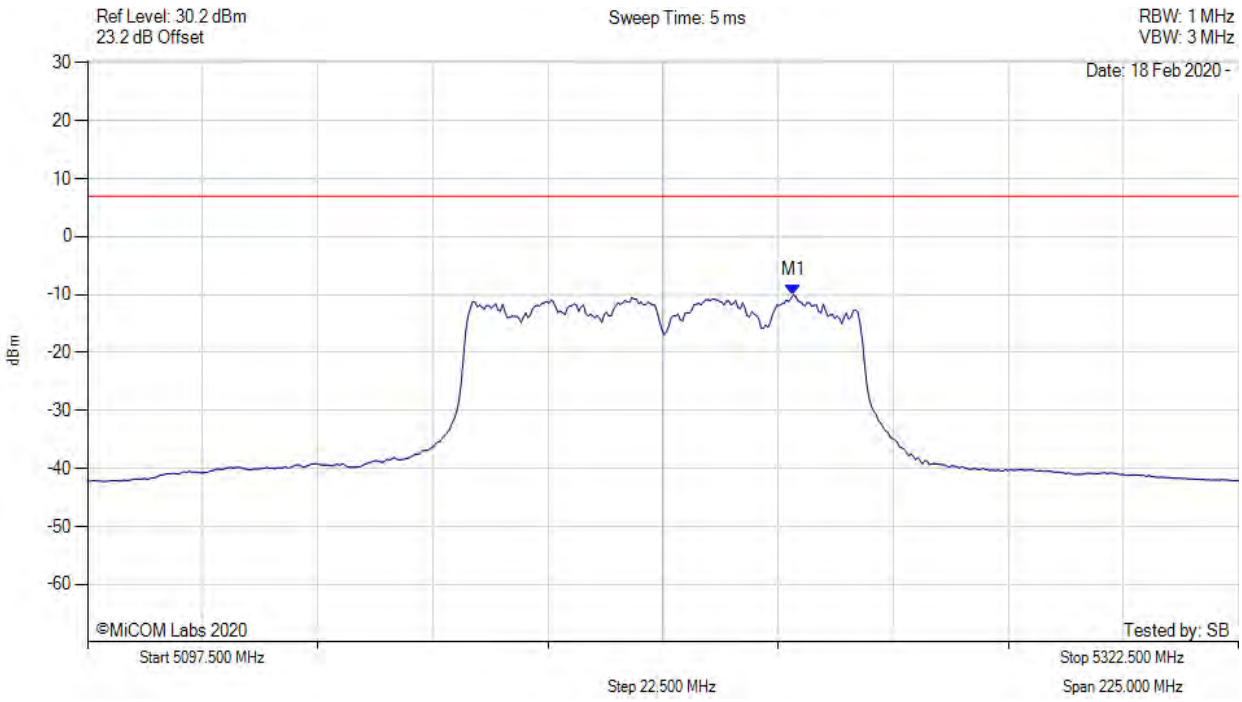


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5235.927 MHz : -13.422 dBm	Limit: ≤ 3.230 dBm

back to matrix

POWER SPECTRAL DENSITY

Variant: 80 MHz, Channel: 5210.00 MHz, SUM, Temp: 20, Voltage: 55 Vdc



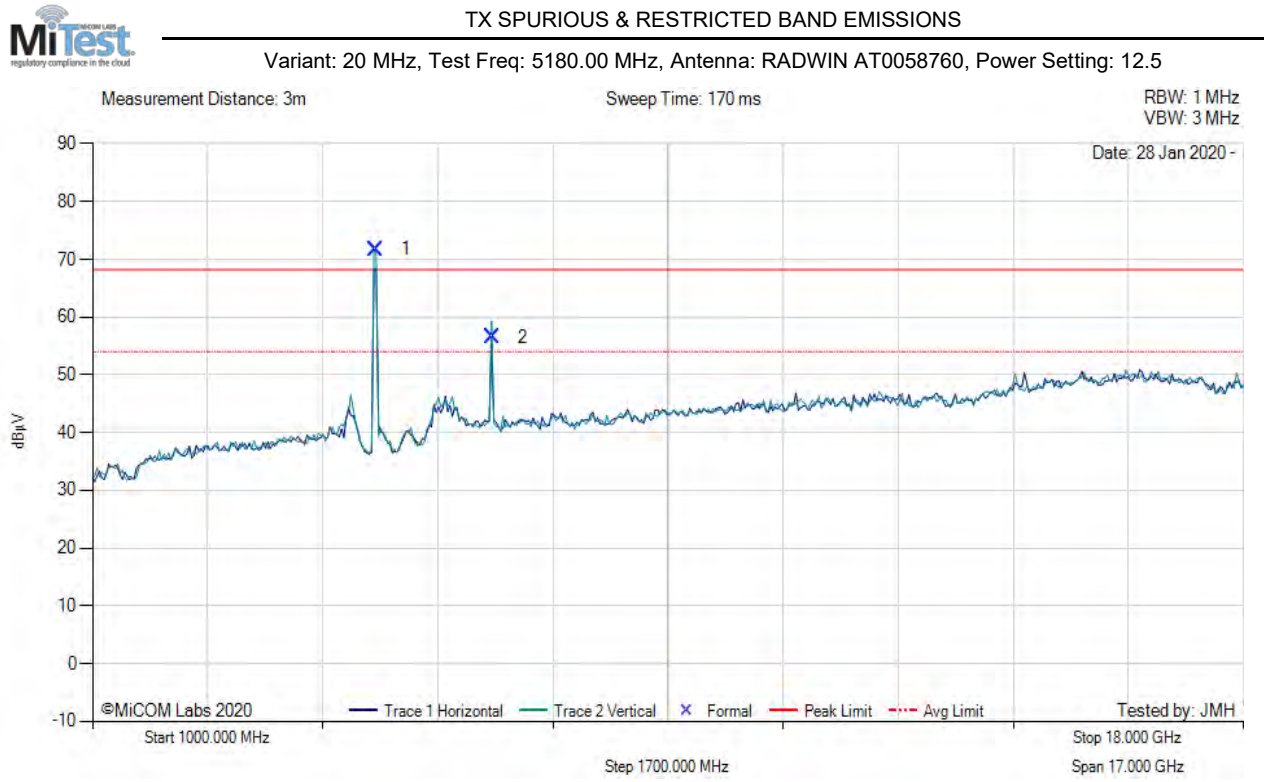
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5235.500 MHz : -10.041 dBm M1 + DCCF : 5235.500 MHz : -8.236 dBm Duty Cycle Correction Factor : +1.8 dB	Limit: ≤ 8.0 dBm

back to matrix

A.3. Radiated

A.3.1. TX Spurious & Restricted Band Emissions

A.3.1.1. RADWIN AT0058760



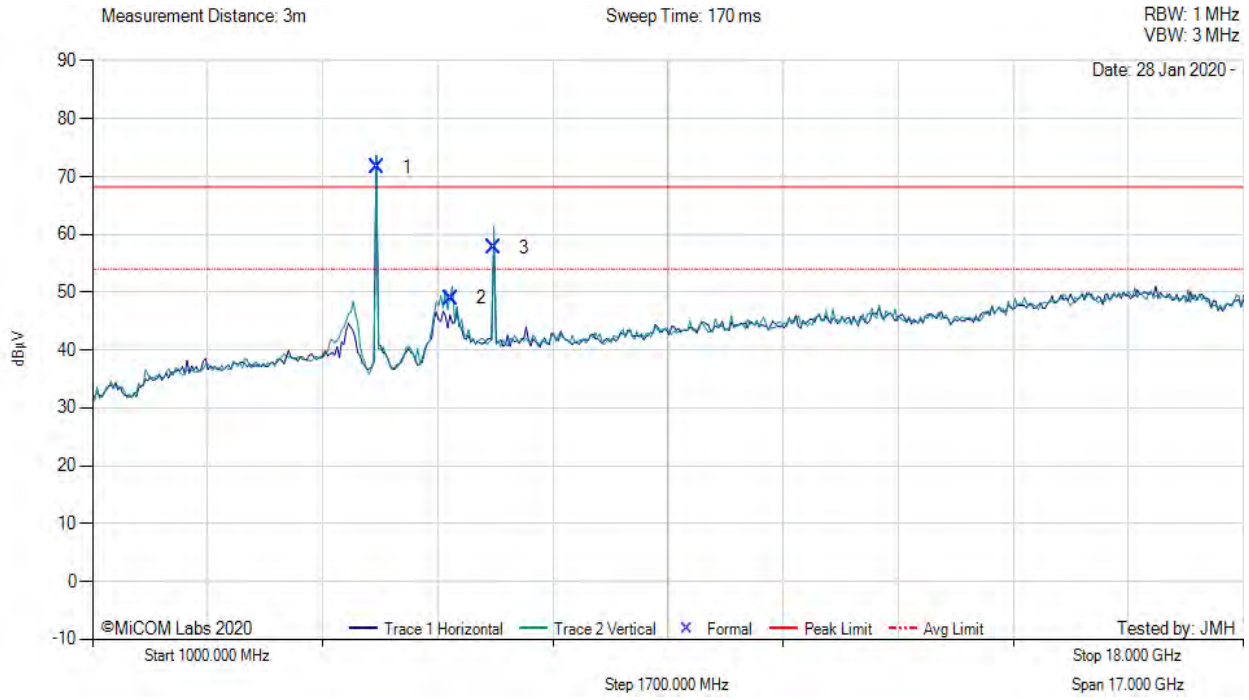
1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5176.98	80.91	2.96	-12.14	71.73	Fundamental	Vertical	151	0	--	--	
2	6906.63	61.13	3.40	-8.09	56.44	Peak (NRB)	Vertical	151	0	--	--	Pass

Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak Limit.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5200.00 MHz, Antenna: RADWIN AT0058760, Power Setting: 13.5, Duty Cycle (%): 99



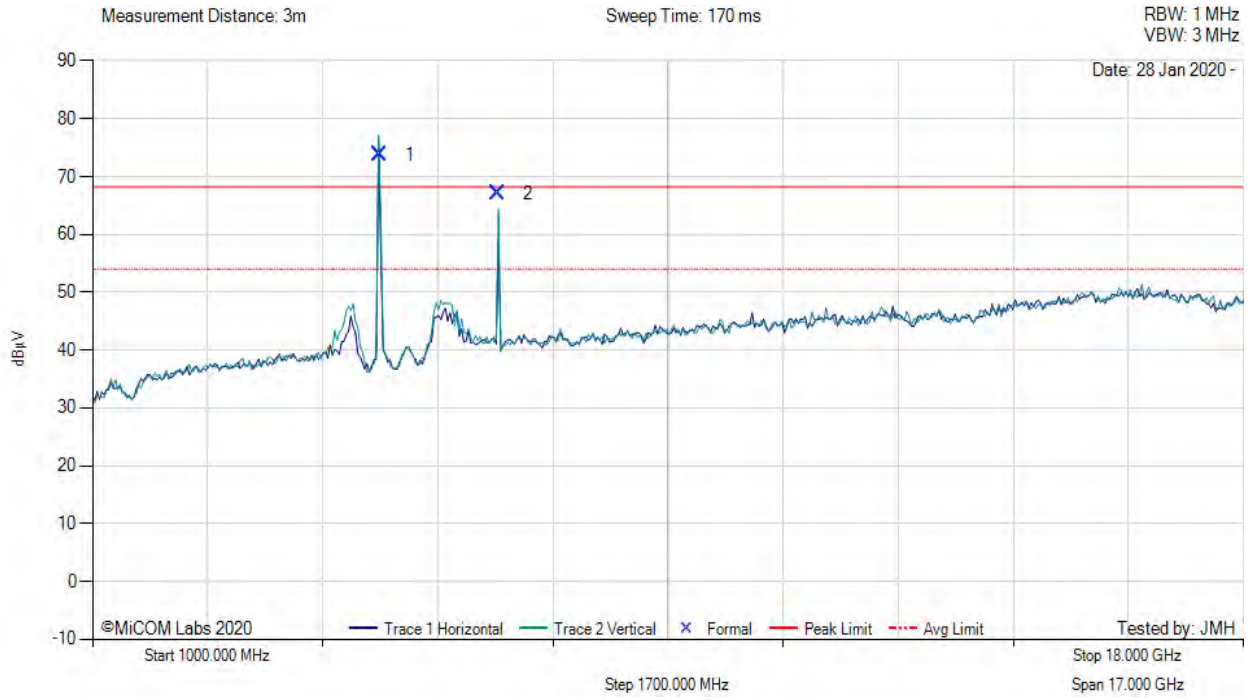
1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5204.32	80.97	2.99	-12.42	71.54	Fundamental	Horizontal	151	0	--	--	
2	6296.13	55.04	3.27	-9.30	49.01	Peak (NRB)	Vertical	151	0	--	--	Pass
3	6933.33	62.24	3.35	-7.85	57.74	Peak (NRB)	Vertical	151	0	--	--	Pass

Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak Limit.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5240.00 MHz, Antenna: RADWIN AT0058760, Power Setting: 13.5, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5234.42	82.95	2.97	-12.19	73.73	Fundamental	Vertical	100	0	--	--	
2	6986.67	71.48	3.46	-7.89	67.05	Max Peak	Vertical	197	352	68.2	-1.2	Pass

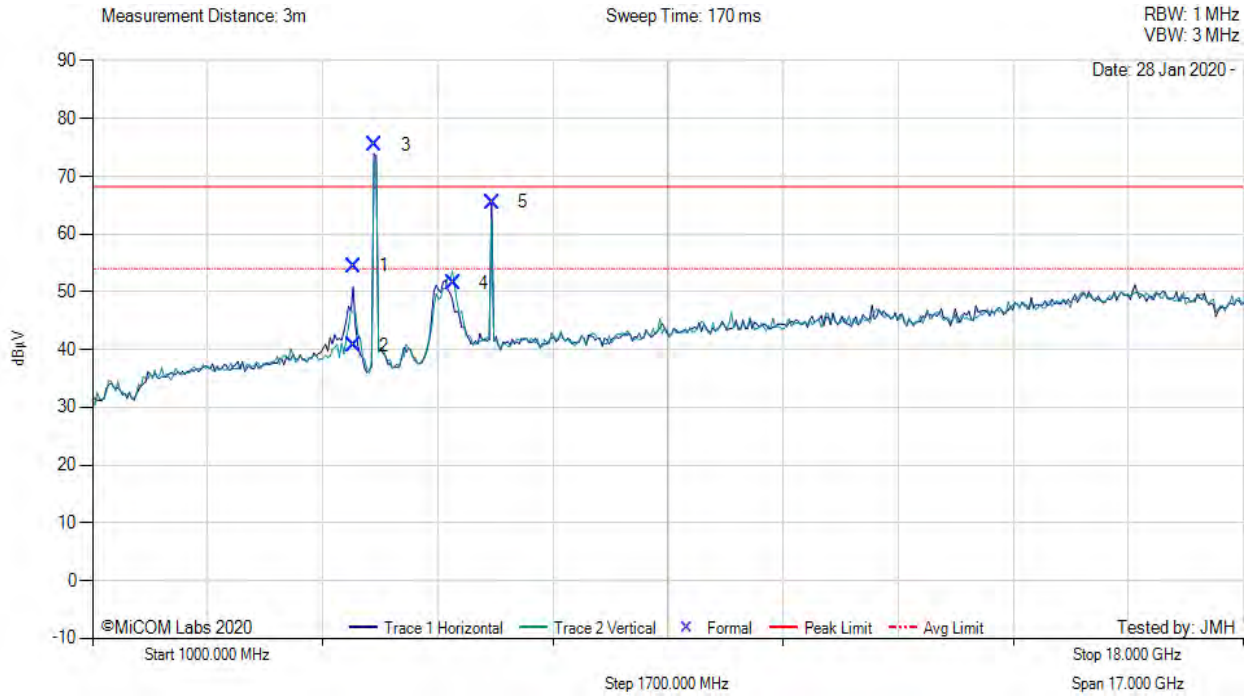
Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak Limit.

back to matrix

A.3.1.2. RADWIN RW-9105-5158

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5180.00 MHz, Antenna: RADWIN RW-9105-5158, Power Setting: 12.5, Duty Cycle (%): 99



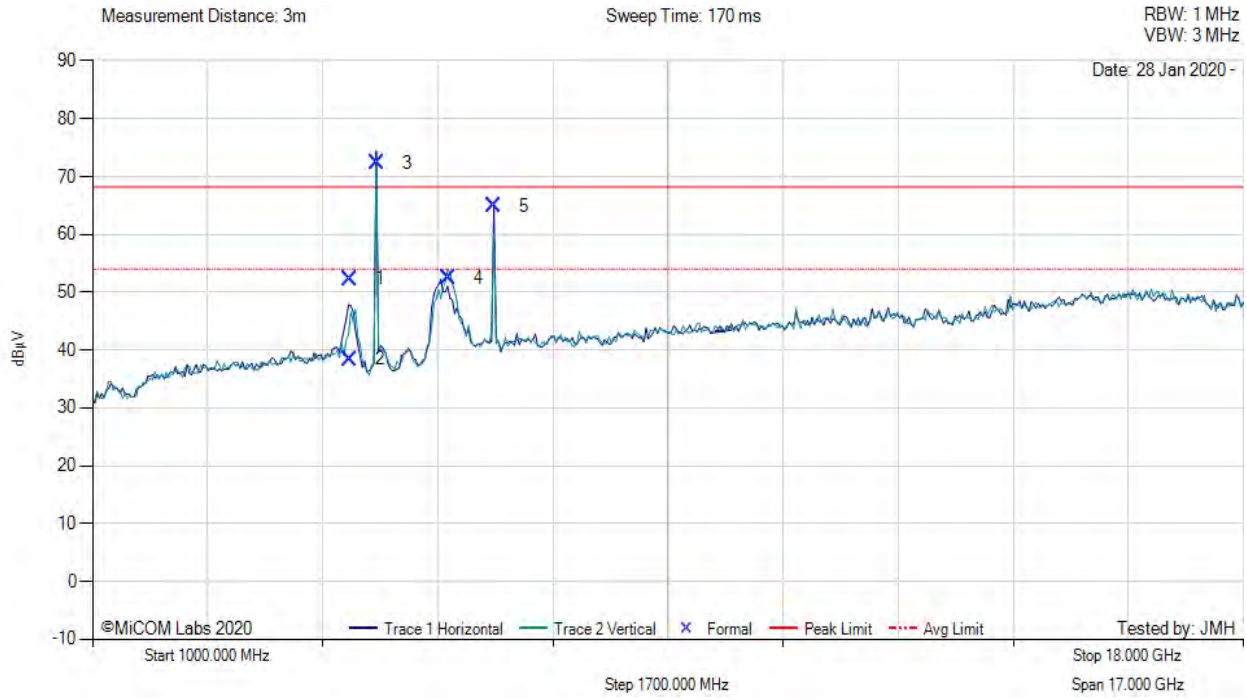
1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	4864.19	64.09	2.91	-12.54	54.46	Max Peak	Horizontal	161	4	68.2	-13.8	Pass
2	4864.19	50.33	2.91	-12.54	40.70	Max Avg	Horizontal	161	4	54.0	-13.3	Pass
3	5174.00	84.75	2.95	-12.20	75.50	Fundamental	Horizontal	151	0	--	--	
4	6332.32	57.44	3.28	-9.24	51.48	Peak (NRB)	Vertical	151	0	--	--	Pass
5	6906.65	70.15	3.40	-8.09	65.46	Max Peak	Horizontal	198	0	68.2	-2.8	Pass

Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak limit

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5200.00 MHz, Antenna: RADWIN RW-9105-5158, Power Setting: 12.5, Duty Cycle (%): 99



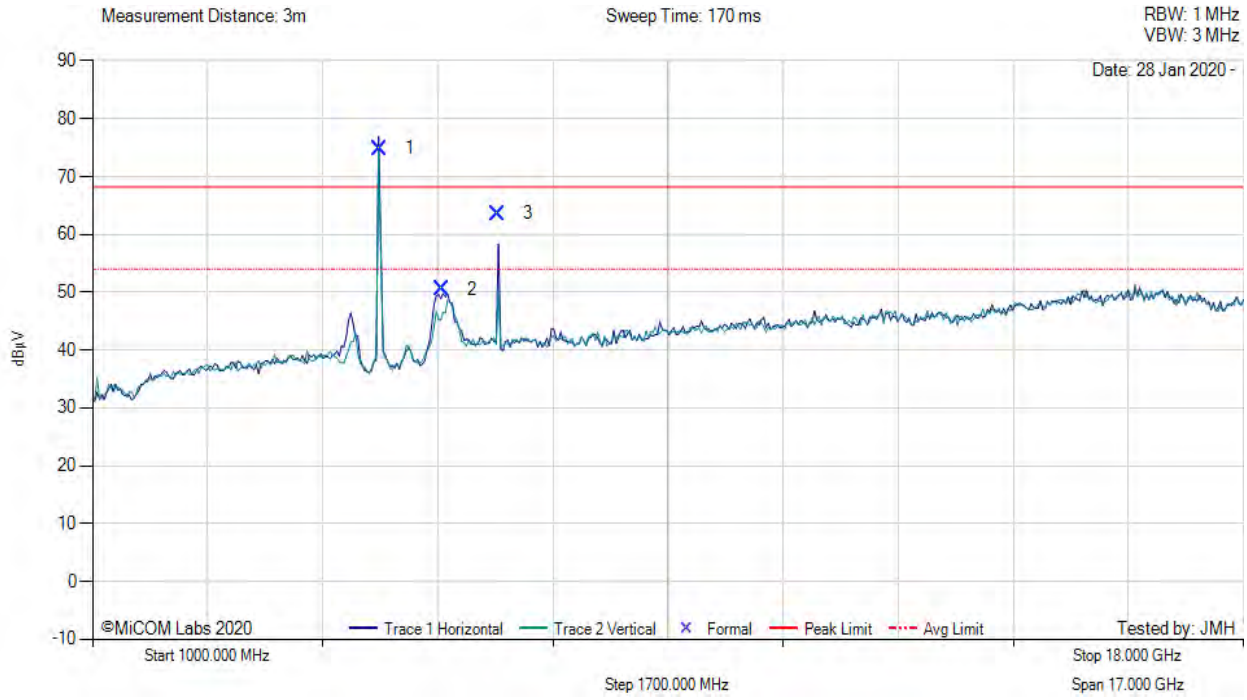
1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	4803.44	61.93	2.85	-12.42	52.36	Max Peak	Horizontal	157	4	68.2	-15.9	Pass
2	4803.44	48.00	2.85	-12.42	38.43	Max Avg	Horizontal	157	4	54.0	-15.6	Pass
3	5205.43	81.73	2.99	-12.40	72.32	Fundamental	Horizontal	100	0	--	--	
4	6249.34	58.72	3.25	-9.50	52.47	Peak (NRB)	Vertical	151	0	--	--	Pass
5	6933.32	69.38	3.35	-7.85	64.88	Max Peak	Horizontal	145	343	68.2	-3.4	Pass

Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak limit

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5240.00 MHz, Antenna: RADWIN RW-9105-5158, Power Setting: 12.5, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5233.76	84.09	2.97	-12.19	74.87	Fundamental	Horizontal	100	0	--	--	
2	6158.91	57.01	3.23	-9.75	50.49	Peak (NRB)	Horizontal	150	0	--	--	Pass
3	6986.68	68.00	3.46	-7.89	63.57	Max Peak	Horizontal	188	342	68.2	-4.7	Pass

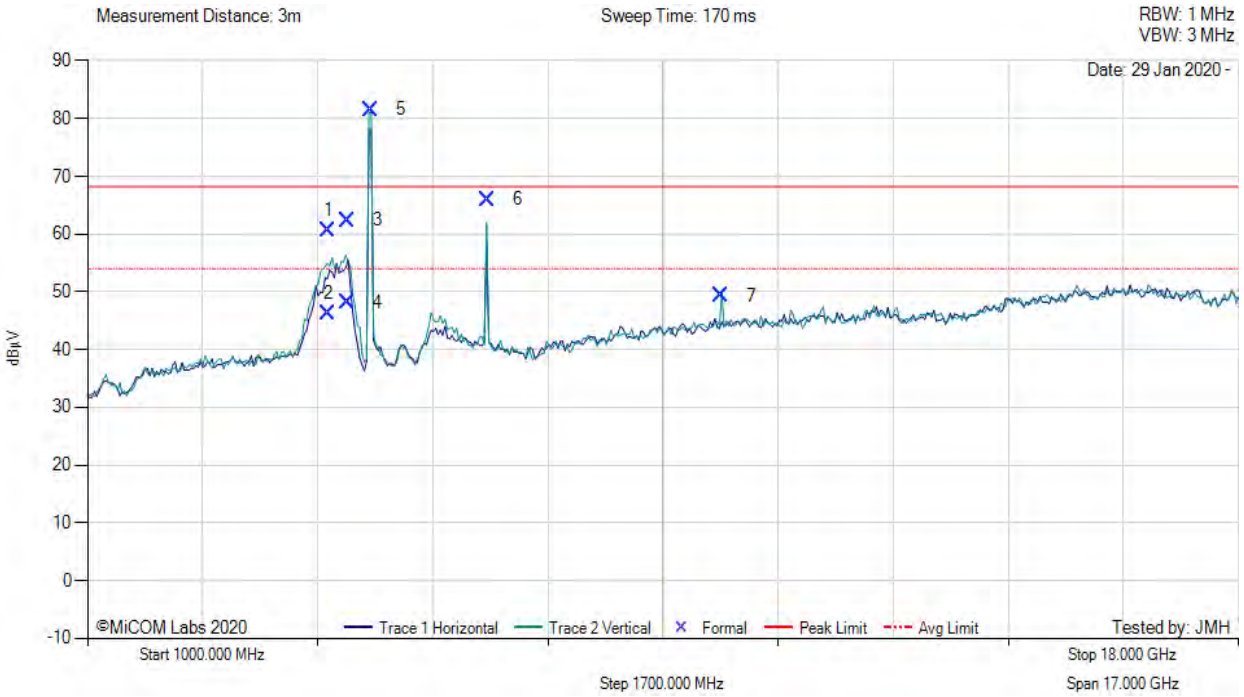
Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak limit

back to matrix

A.3.1.3. RADWIN RW-9314-5158

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5180.00 MHz, Antenna: RADWIN RW-9314-5158, Power Setting: 25, Duty Cycle (%): 99



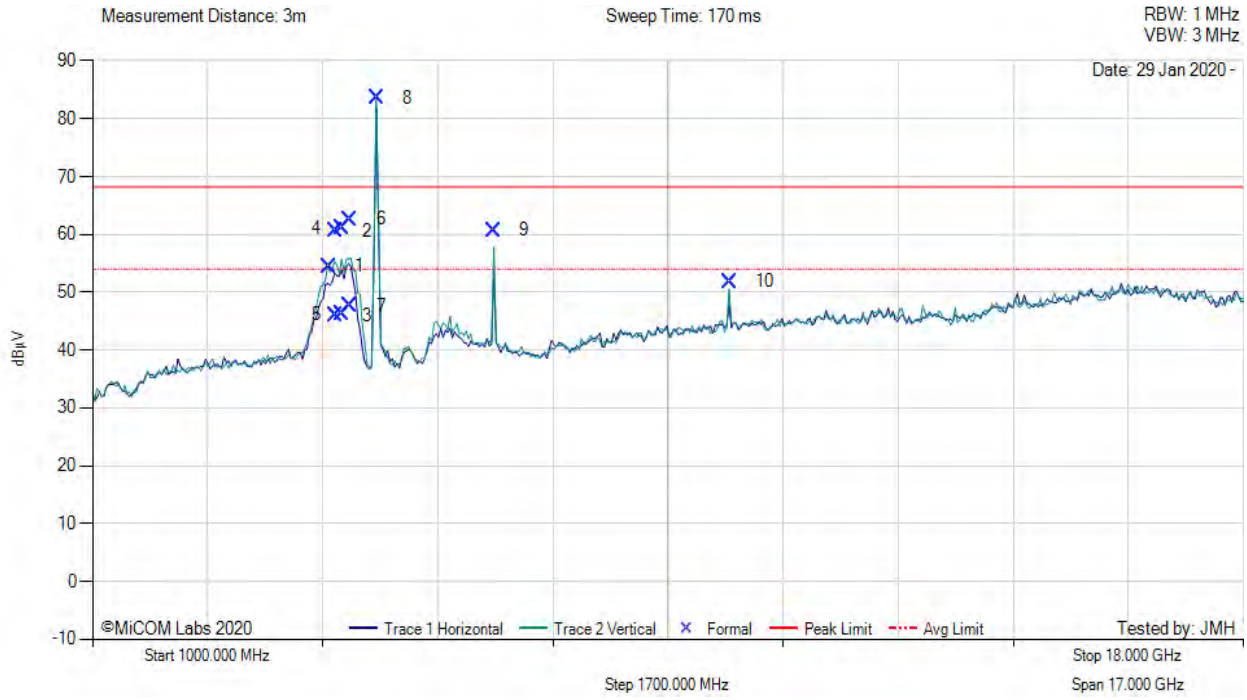
1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	4561.07	69.84	2.77	-12.04	60.57	Max Peak	Vertical	193	358	68.2	-7.7	Pass
2	4561.07	55.49	2.77	-12.04	46.22	Max Avg	Vertical	193	358	54.0	-7.8	Pass
3	4837.03	72.09	2.81	-12.55	62.35	Max Peak	Vertical	185	0	68.2	-5.9	Pass
4	4837.03	57.82	2.81	-12.55	48.08	Max Avg	Vertical	185	0	54.0	-5.9	Pass
5	5178.64	90.71	2.97	-12.12	81.56	Fundamental	Vertical	200	0	--	--	
6	6906.67	70.68	3.40	-8.09	65.99	Max Peak	Vertical	184	251	68.2	-2.2	Pass
7	10358.77	50.41	4.38	-5.45	49.34	Peak (NRB)	Vertical	200	0	--	--	Pass

Test Notes: EUT powered by POE. 5G notch in front of amp to prevent overload.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5200.00 MHz, Antenna: RADWIN RW-9314-5158, Power Setting: 25, Duty Cycle (%): 99



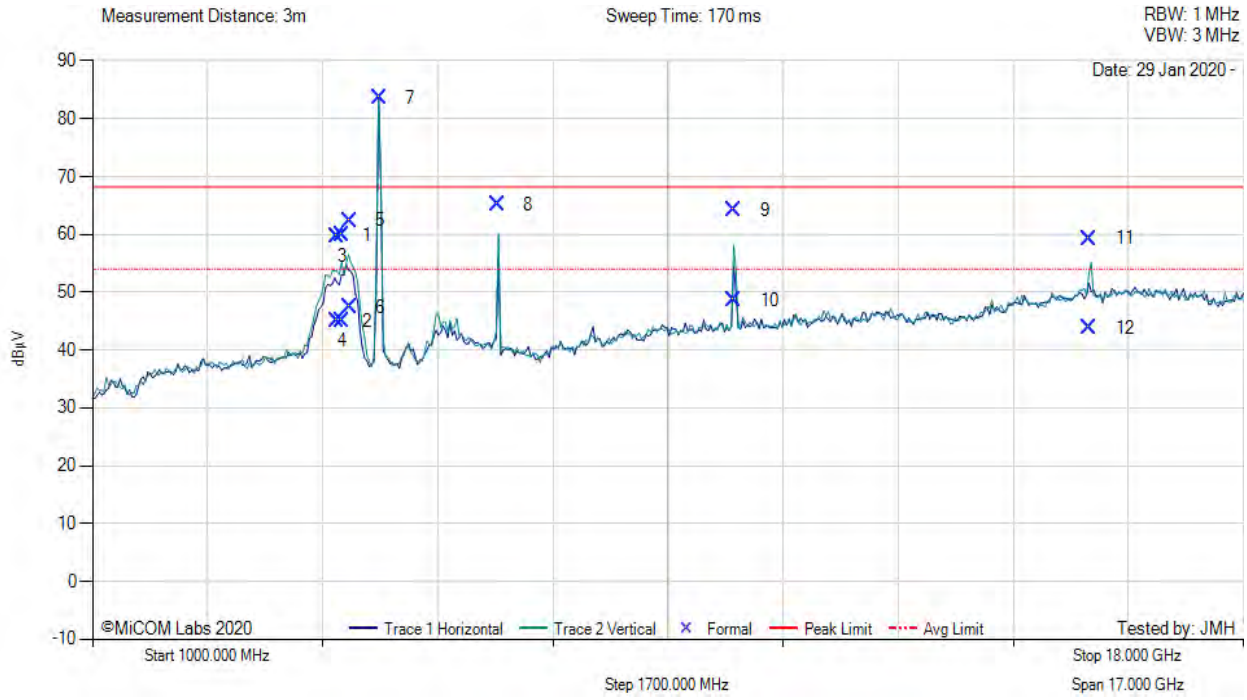
1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	4490.15	64.04	2.77	-12.32	54.49	Peak (NRB)	Vertical	200	0	--	--	Pass
2	4597.80	70.05	2.83	-12.23	60.65	Max Peak	Vertical	177	0	68.2	-7.6	Pass
3	4597.80	55.31	2.83	-12.23	45.91	Max Avg	Vertical	177	0	54.0	-8.1	Pass
4	4683.00	70.58	2.82	-12.38	61.02	Max Peak	Vertical	182	6	68.2	-7.2	Pass
5	4683.00	55.83	2.82	-12.38	46.27	Max Avg	Vertical	182	6	54.0	-7.7	Pass
6	4807.25	72.20	2.85	-12.43	62.62	Max Peak	Vertical	185	354	68.2	-5.6	Pass
7	4807.25	57.30	2.85	-12.43	47.72	Max Avg	Vertical	185	354	54.0	-6.3	Pass
8	5205.98	92.95	2.99	-12.40	83.54	Fundamental	Vertical	200	0	--	--	
9	6933.29	65.21	3.35	-7.85	60.71	Max Peak	Vertical	184	284	68.2	-7.5	Pass
10	10407.05	52.94	4.37	-5.51	51.80	Peak (NRB)	Vertical	200	0	--	--	Pass

Test Notes: EUT powered by POE. 5G notch in front of amp to prevent overload.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5240.00 MHz, Antenna: RADWIN RW-9314-5158, Power Setting: 25, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	4602.84	69.28	2.76	-12.26	59.78	Max Peak	Vertical	159	348	68.2	-8.5	Pass
2	4602.84	54.59	2.76	-12.26	45.09	Max Avg	Vertical	159	348	54.0	-8.9	Pass
3	4687.87	69.44	2.84	-12.38	59.90	Max Peak	Vertical	168	7	68.2	-8.3	Pass
4	4687.87	54.71	2.84	-12.38	45.17	Max Avg	Vertical	168	7	54.0	-8.8	Pass
5	4806.63	71.92	2.86	-12.43	62.35	Max Peak	Vertical	181	0	68.2	-5.9	Pass
6	4806.63	57.01	2.86	-12.43	47.44	Max Avg	Vertical	181	0	54.0	-6.6	Pass
7	5238.28	92.74	2.99	-12.11	83.62	Fundamental	Vertical	100	0	--	--	
8	6986.67	69.51	3.46	-7.89	65.08	Max Peak	Vertical	185	253	68.2	-3.2	Pass
9	10479.92	65.02	4.36	-5.21	64.17	Max Peak	Vertical	192	350	68.2	-4.1	Pass
10	10479.92	49.42	4.36	-5.21	48.57	Max Avg	Vertical	192	350	54.0	-5.4	Pass
11	15726.25	56.46	5.79	-2.97	59.28	Max Peak	Vertical	196	4	68.2	-9.0	Pass
12	15726.25	40.95	5.79	-2.97	43.77	Max Avg	Vertical	196	4	54.0	-10.2	Pass

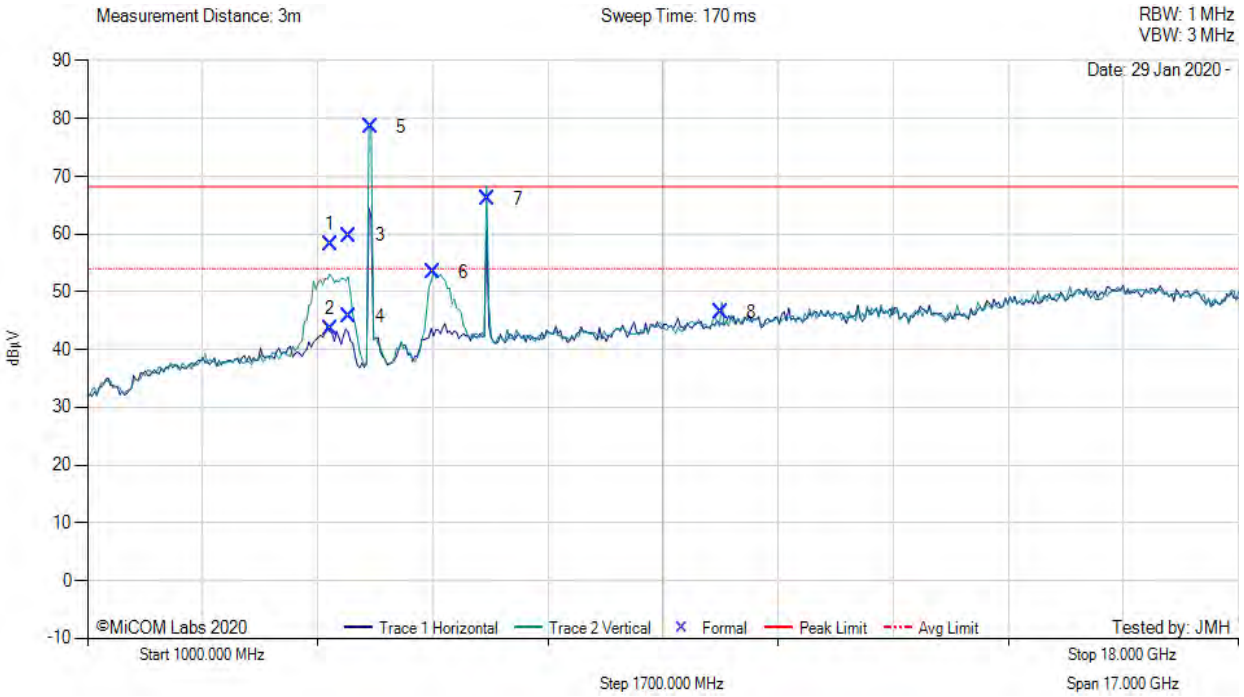
Test Notes: EUT powered by POE. 5G notch in front of amp to prevent overload.

back to matrix

A.3.1.4. RADWIN RW-9401-5004

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5180.00 MHz, Antenna: RADWIN RW-9401-5004, Power Setting: 22.5, Duty Cycle (%): 99



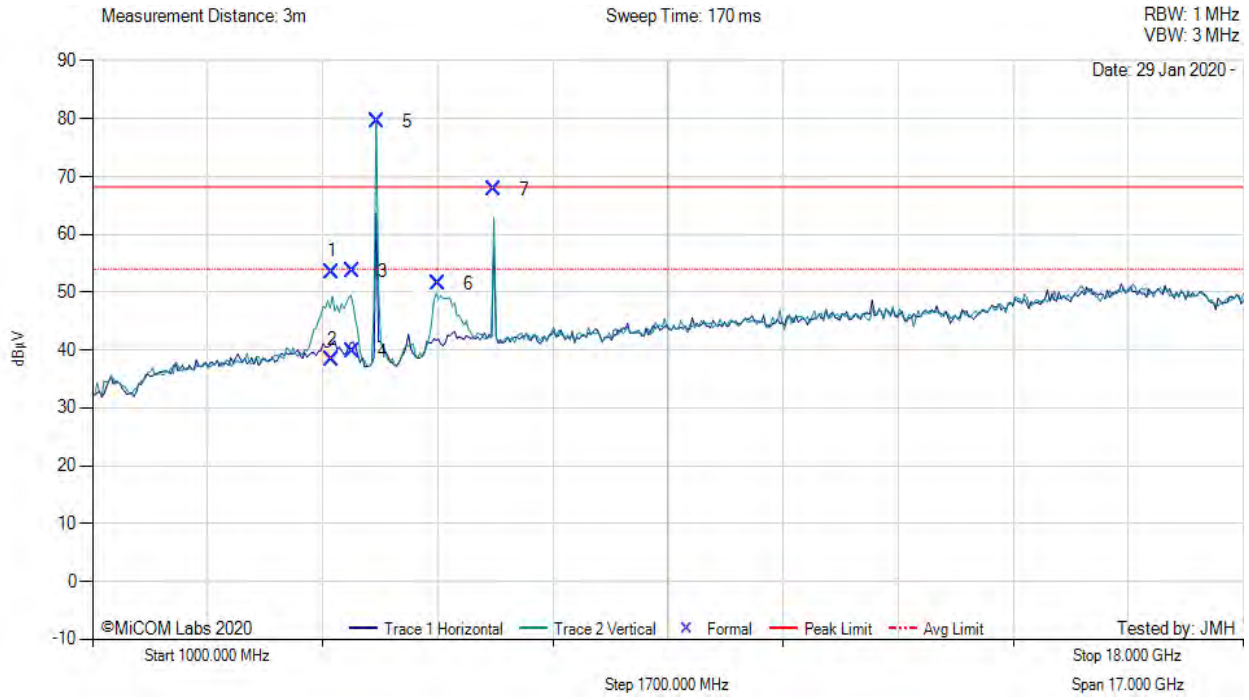
1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	4585.81	67.59	2.82	-12.17	58.24	Max Peak	Vertical	190	357	68.2	-10.0	Pass
2	4585.81	52.88	2.82	-12.17	43.53	Max Avg	Vertical	190	357	54.0	-10.5	Pass
3	4866.38	69.39	2.93	-12.53	59.79	Max Peak	Vertical	192	352	68.2	-8.4	Pass
4	4866.38	55.27	2.93	-12.53	45.67	Max Avg	Vertical	192	352	54.0	-8.3	Pass
5	5183.26	87.66	3.01	-12.18	78.49	Fundamental	Vertical	200	0	--	--	
6	6103.17	60.01	3.21	-9.86	53.36	Peak (NRB)	Vertical	200	0	--	--	Pass
7	6906.69	70.80	3.40	-8.09	66.11	Max Peak	Vertical	195	90	68.2	-2.1	Pass
8	10358.77	47.52	4.38	-5.45	46.45	Peak (NRB)	Vertical	100	0	--	--	Pass

Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak Limit.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5200.00 MHz, Antenna: RADWIN RW-9401-5004, Power Setting: 22.5, Duty Cycle (%): 99



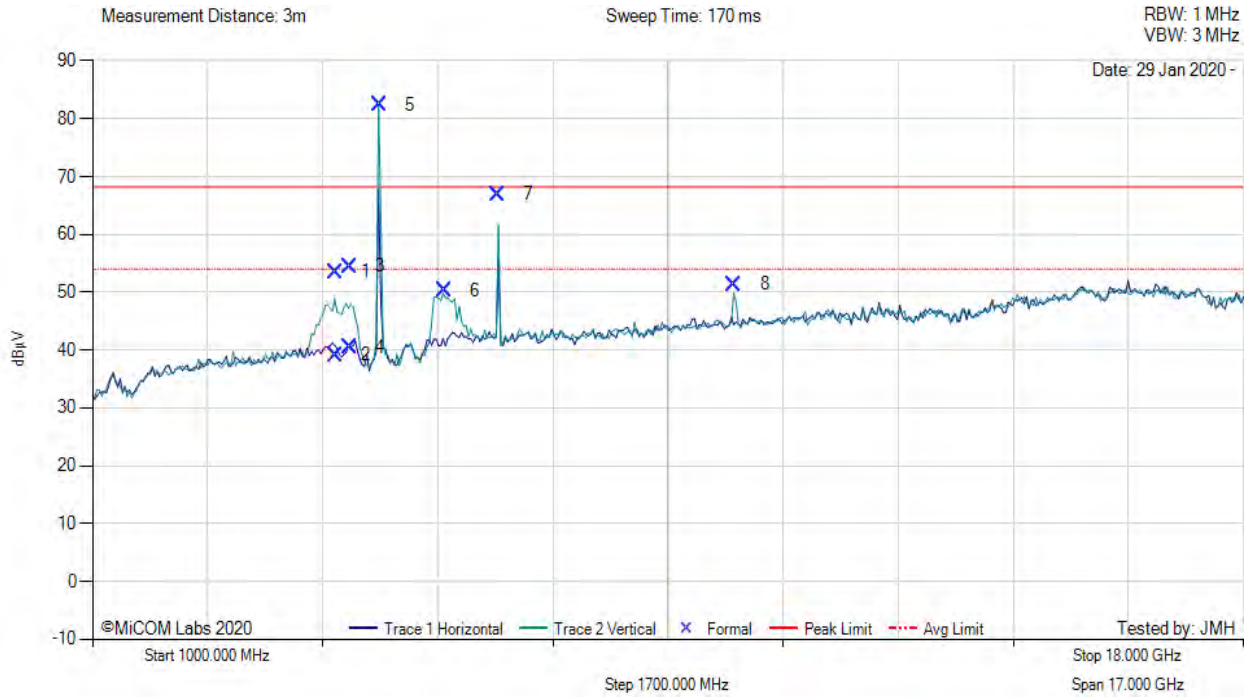
1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	4537.87	62.87	2.81	-12.18	53.50	Max Peak	Vertical	188	3	68.2	-14.7	Pass
2	4537.87	47.75	2.81	-12.18	38.38	Max Avg	Vertical	188	3	54.0	-15.6	Pass
3	4833.19	63.31	2.83	-12.52	53.62	Max Peak	Vertical	188	3	68.2	-14.6	Pass
4	4833.19	49.39	2.83	-12.52	39.70	Max Avg	Vertical	188	3	54.0	-14.3	Pass
5	5205.54	88.93	2.99	-12.40	79.52	Fundamental	Vertical	200	0	--	--	
6	6102.66	58.17	3.21	-9.88	51.50	Peak (NRB)	Vertical	200	0	--	--	Pass
7	6933.36	72.30	3.35	-7.85	67.80	Max Peak	Vertical	185	91	68.2	-0.4	Pass

Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak Limit

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5240.00 MHz, Antenna: RADWIN RW-9401-5004, Power Setting: 22.5, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	4595.30	62.86	2.86	-12.23	53.49	Max Peak	Vertical	158	353	68.2	-14.7	Pass
2	4595.30	48.51	2.86	-12.23	39.14	Max Avg	Vertical	158	353	54.0	-14.9	Pass
3	4804.20	64.01	2.85	-12.42	54.44	Max Peak	Vertical	189	356	68.2	-13.8	Pass
4	4804.20	50.05	2.85	-12.42	40.48	Max Avg	Vertical	189	356	54.0	-13.5	Pass
5	5239.49	91.46	3.01	-12.08	82.39	Fundamental	Vertical	200	0	--	--	
6	6192.85	56.69	3.27	-9.68	50.28	Peak (NRB)	Vertical	200	0	--	--	Pass
7	6986.66	71.35	3.46	-7.89	66.92	Max Peak	Vertical	180	207	68.2	-1.3	Pass
8	10479.26	52.24	4.36	-5.21	51.39	Peak (NRB)	Vertical	200	0	--	--	Pass

Test Notes: EUT powered by POE. 5G Notch in front of amp to prevent overload. Power reduced to meet Peak Limit

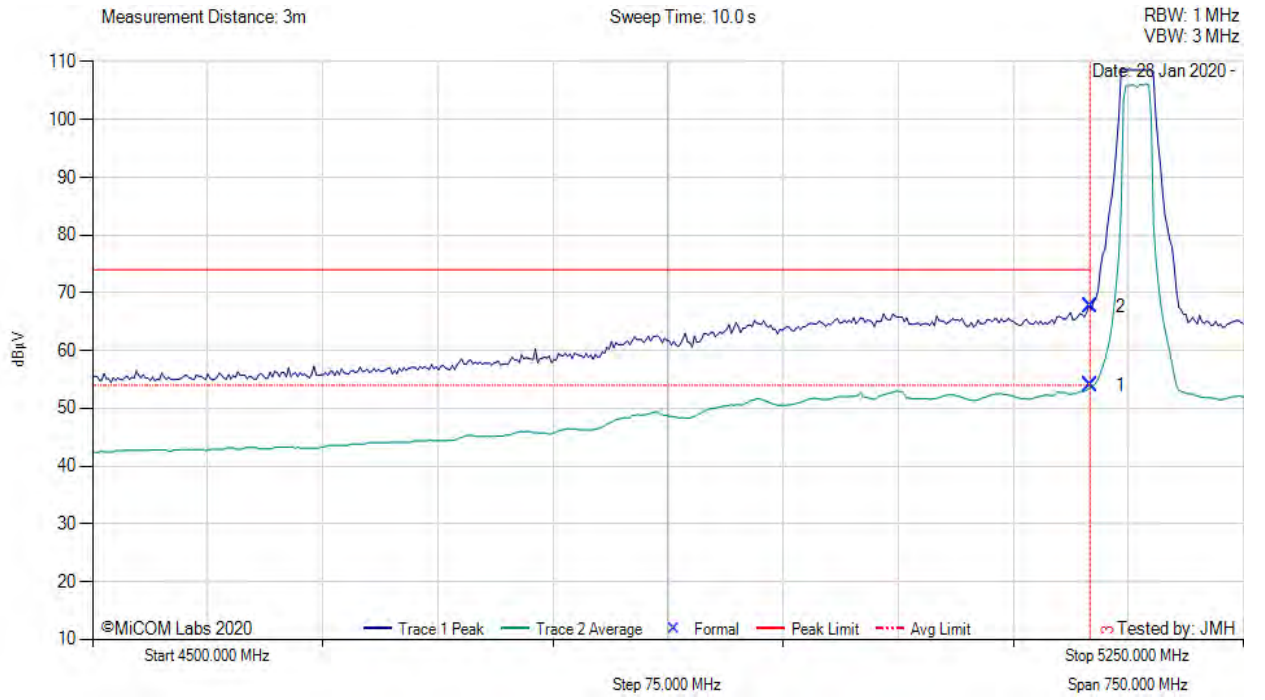
back to matrix

A.3.2. Restricted Edge & Band-Edge Emissions

A.3.2.5. RADWIN AT0058760

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 20 MHz, Test Freq: 5180.00 MHz, Antenna: RADWIN AT0058760, Power Setting: 15.5, Duty Cycle (%): 86



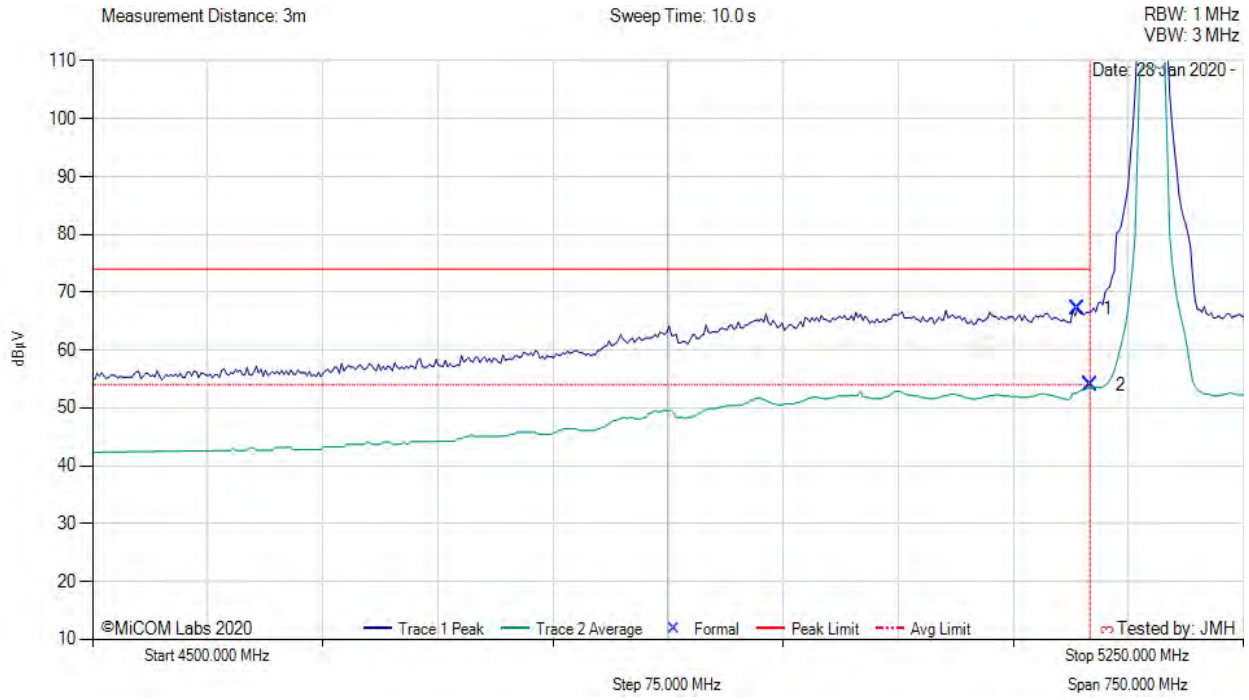
4500.00 - 5250.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5150.00	16.85	2.93	34.21	53.99	Max Avg	Vertical	154	0	54.0	0.0	Pass
2	5150.00	30.56	2.93	34.21	67.70	Max Peak	Vertical	154	0	74.0	-6.3	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE. PS reduced to 15.5 to meet band edge limit. *Includes Duty Cycle correction for Avg Measurement.

back to matrix

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 40 MHz, Test Freq: 5190.00 MHz, Antenna: RADWIN AT0058760, Power Setting: 16.5, Duty Cycle (%): 78



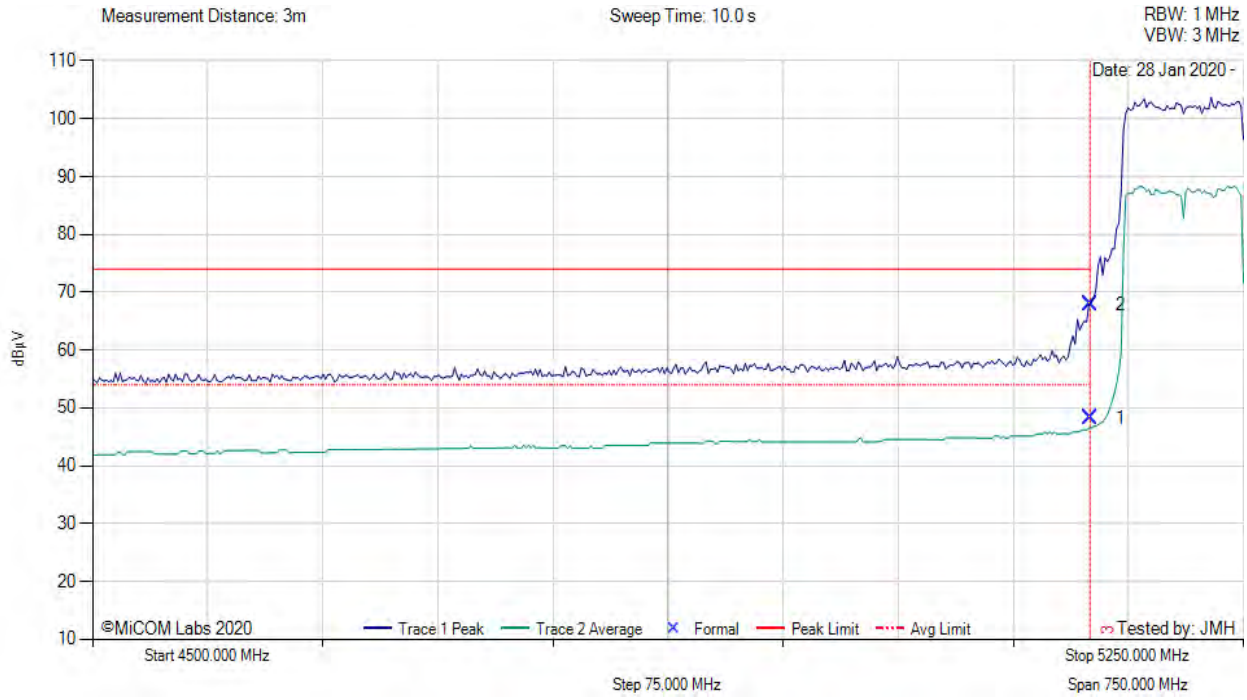
4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5141.78	29.96	2.95	34.20	67.11	Max Peak	Vertical	154	0	74.0	-6.9	Pass
2	5150.00	16.84	2.93	34.21	53.98	Max Avg	Vertical	154	0	54.0	0.0	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE. PS reduced to 16.5 to meet band edge limit. *Includes Duty Cycle correction for Avg Measurement.

back to matrix

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 80 MHz, Test Freq: 5210.00 MHz, Antenna: RADWIN AT0058760, Power Setting: 3.5, Duty Cycle (%): 66



4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5150.00	11.17	2.93	34.21	48.31	Max Avg	Vertical	154	0	54.0	-5.7	Pass
2	5150.00	30.68	2.93	34.21	67.82	Max Peak	Vertical	154	0	74.0	-6.2	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

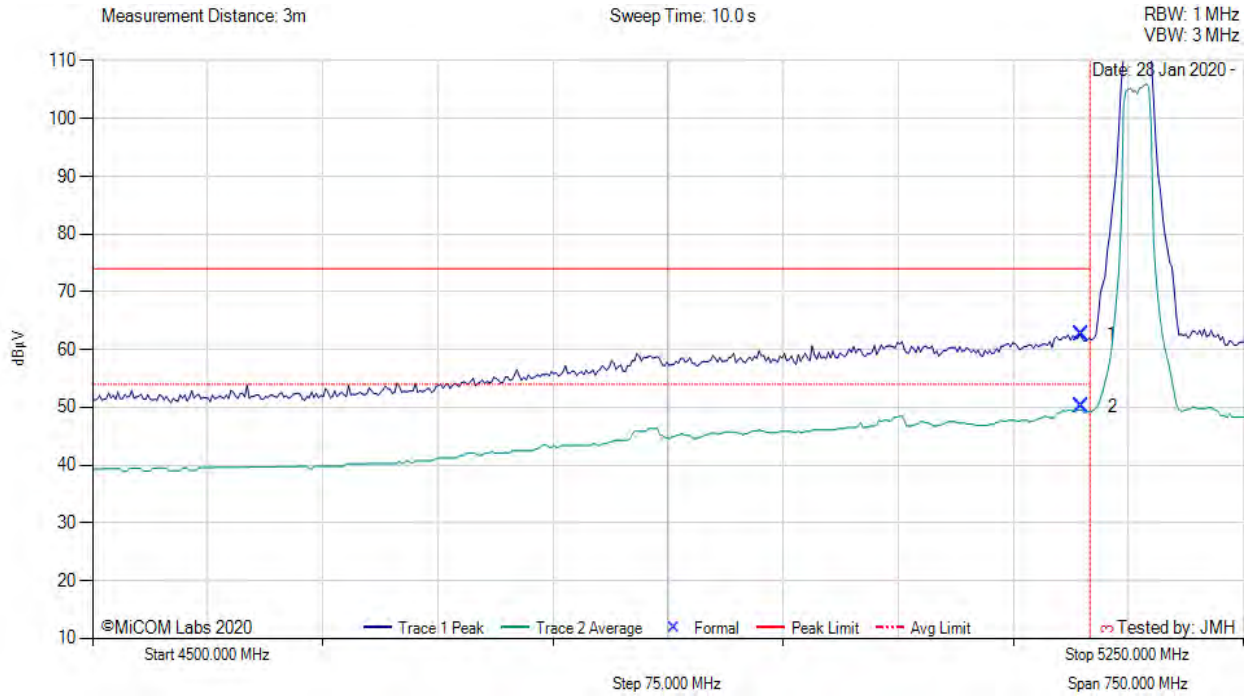
Test Notes: EUT powered by POE. PS reduced to 3.5 to meet band edge limit.

back to matrix

A.3.2.6. RADWIN RW-9105-5158

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 20 MHz, Test Freq: 5180.00 MHz, Antenna: RADWIN RW-9105-5158, Power Setting: 12.5, Duty Cycle (%): 86



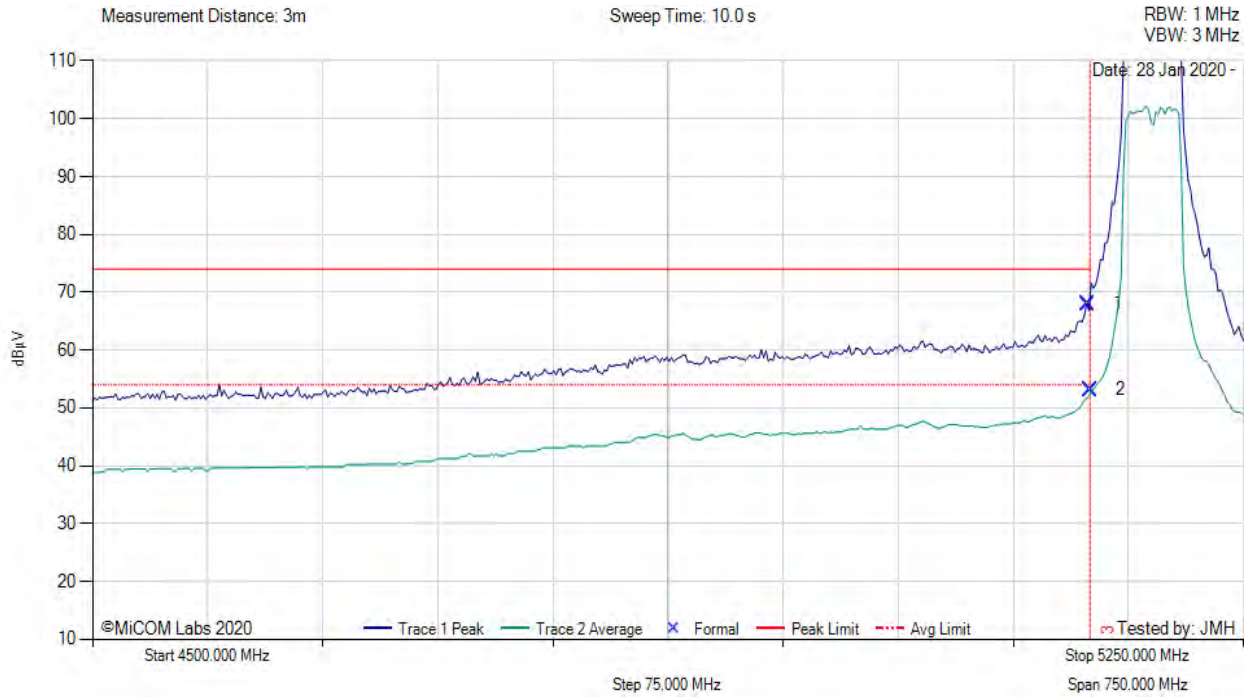
4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5143.99	25.56	2.93	34.20	62.69	Max Peak	Horizontal	192	2	74.0	-11.3	Pass
2	5144.79	13.07	2.92	34.20	50.19	Max Avg	Horizontal	192	2	54.0	-3.8	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE. Power reduced to meet TX Spurious limit. *Includes Duty Cycle correction for Avg Measurement.

back to matrix

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 40 MHz, Test Freq: 5190.00 MHz, Antenna: RADWIN RW-9105-5158, Power Setting: 12.5, Duty Cycle (%): 78



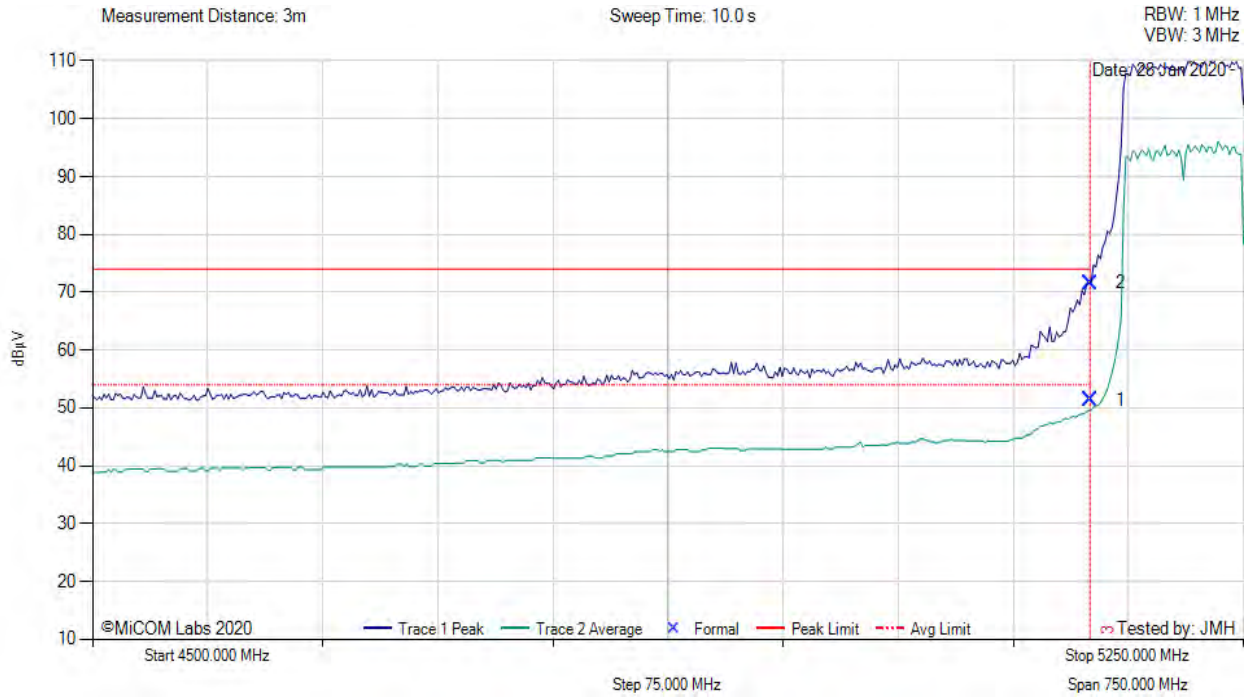
4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5148.50	30.87	2.91	34.21	67.99	Max Peak	Horizontal	192	2	74.0	-6.0	Pass
2	5150.00	16.05	2.93	34.21	53.19	Max Avg	Horizontal	192	2	54.0	-0.8	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE. Power reduced to meet limit. *Includes Duty Cycle correction for Avg Measurement.

back to matrix

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 80 MHz, Test Freq: 5210.00 MHz, Antenna: RADWIN RW-9105-5158, Power Setting: 9.5, Duty Cycle (%): 66



4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5150.00	14.19	2.93	34.21	51.33	Max Avg	Horizontal	192	2	54.0	-2.7	Pass
2	5150.00	34.45	2.93	34.21	71.59	Max Peak	Horizontal	192	2	74.0	-2.4	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

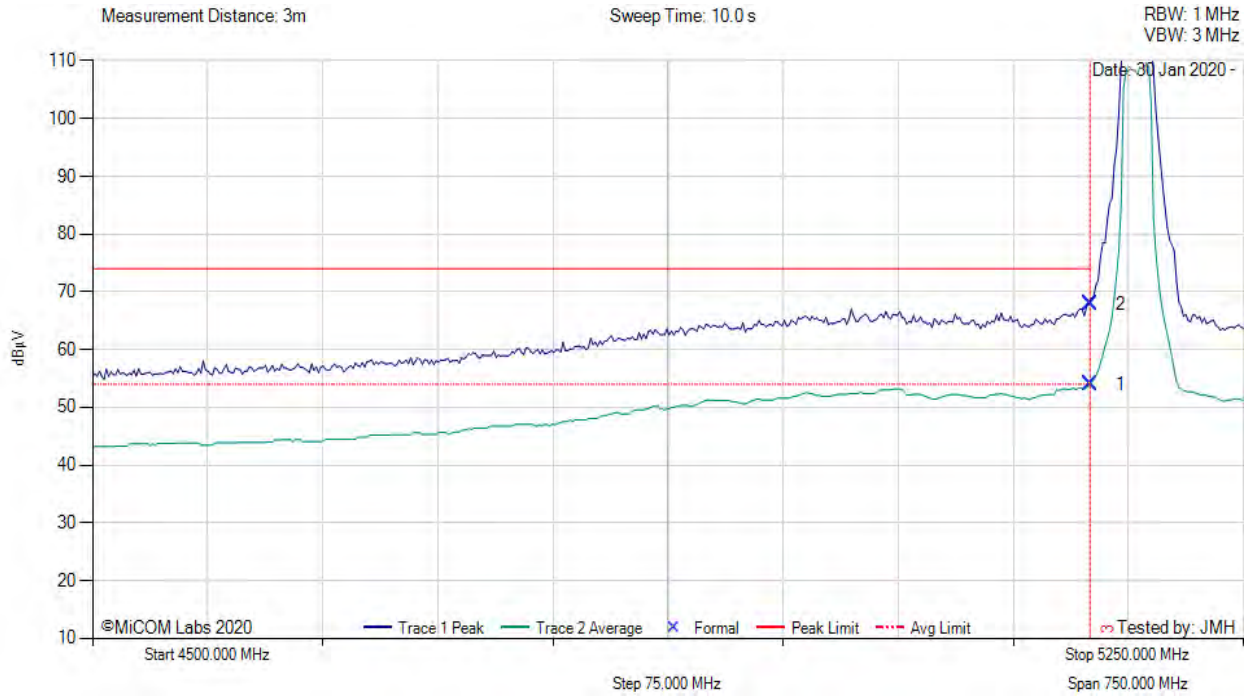
Test Notes: EUT powered by POE. Power reduced to meet limit. *Includes Duty Cycle correction for Avg Measurement.

back to matrix

A.3.2.7. RADWIN RW-9314-5158

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 20 MHz, Test Freq: 5180.00 MHz, Antenna: RADWIN RW-9314-5158, Power Setting: 16, Duty Cycle (%): 86



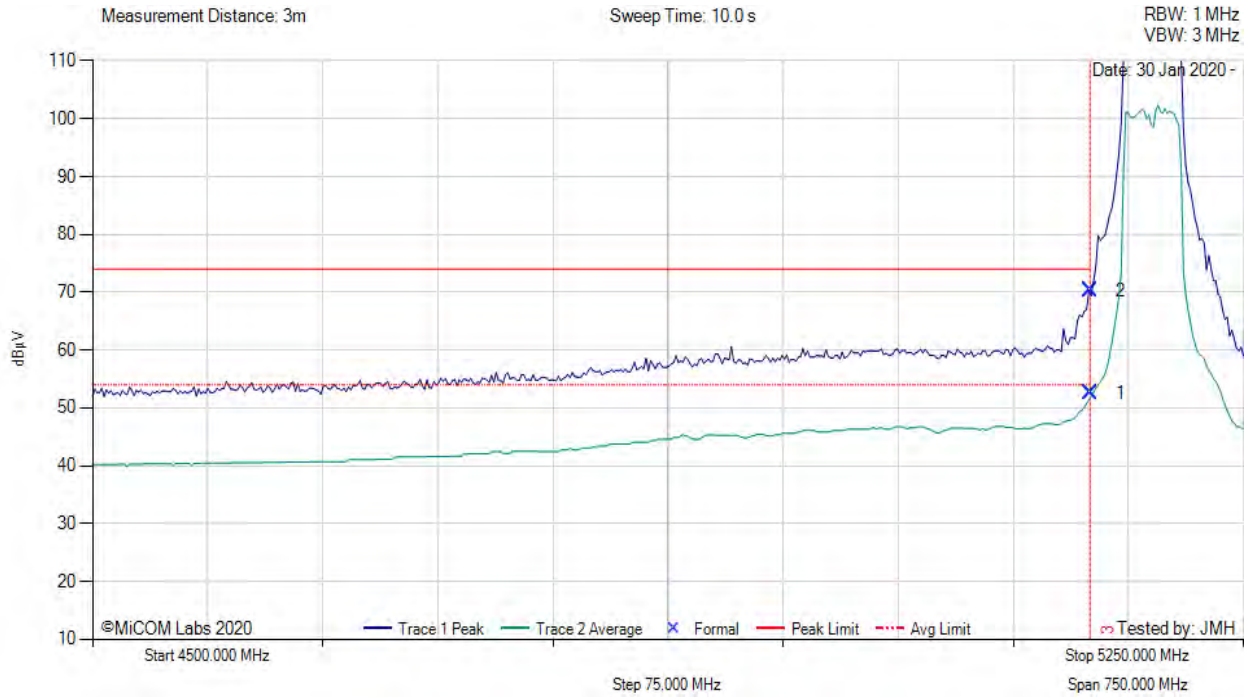
4500.00 - 5250.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5150.00	16.85	2.93	34.21	53.98	Max Avg	Vertical	186	358	54.0	0.0	Pass
2	5150.00	30.75	2.93	34.21	67.89	Max Peak	Vertical	186	358	74.0	-6.1	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT Powered by POE. Power reduced to meet Avg Limit. *Includes Duty Cycle correction for Avg Measurement.

back to matrix

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 40 MHz, Test Freq: 5190.00 MHz, Antenna: RADWIN RW-9314-5158, Power Setting: 12.5, Duty Cycle (%): 78



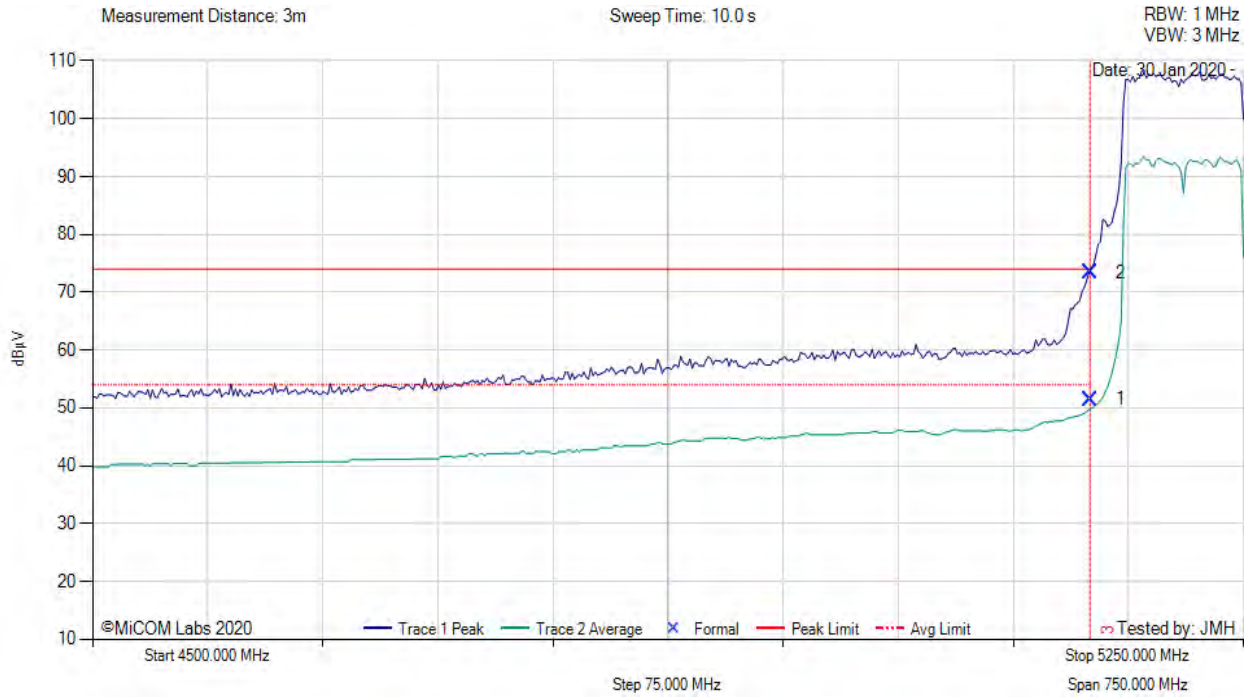
4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5150.00	15.35	2.93	34.21	52.49	Max Avg	Vertical	186	358	54.0	-1.5	Pass
2	5150.00	33.11	2.93	34.21	70.25	Max Peak	Vertical	186	358	74.0	-3.8	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT Powered by POE. Power reduced to meet Avg Limit.*Includes Duty Cycle correction for Avg Measurement.

back to matrix

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 80 MHz, Test Freq: 5210.00 MHz, Antenna: RADWIN RW-9314-5158, Power Setting: 8, Duty Cycle (%): 66



4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5150.00	14.34	2.93	34.21	51.48	Max Avg	Vertical	186	358	54.0	-2.5	Pass
2	5150.00	36.24	2.93	34.21	73.38	Max Peak	Vertical	186	358	74.0	-0.6	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT Powered by POE. Power reduced to meet Peak Limit. *Includes Duty Cycle correction for Avg Measurement.

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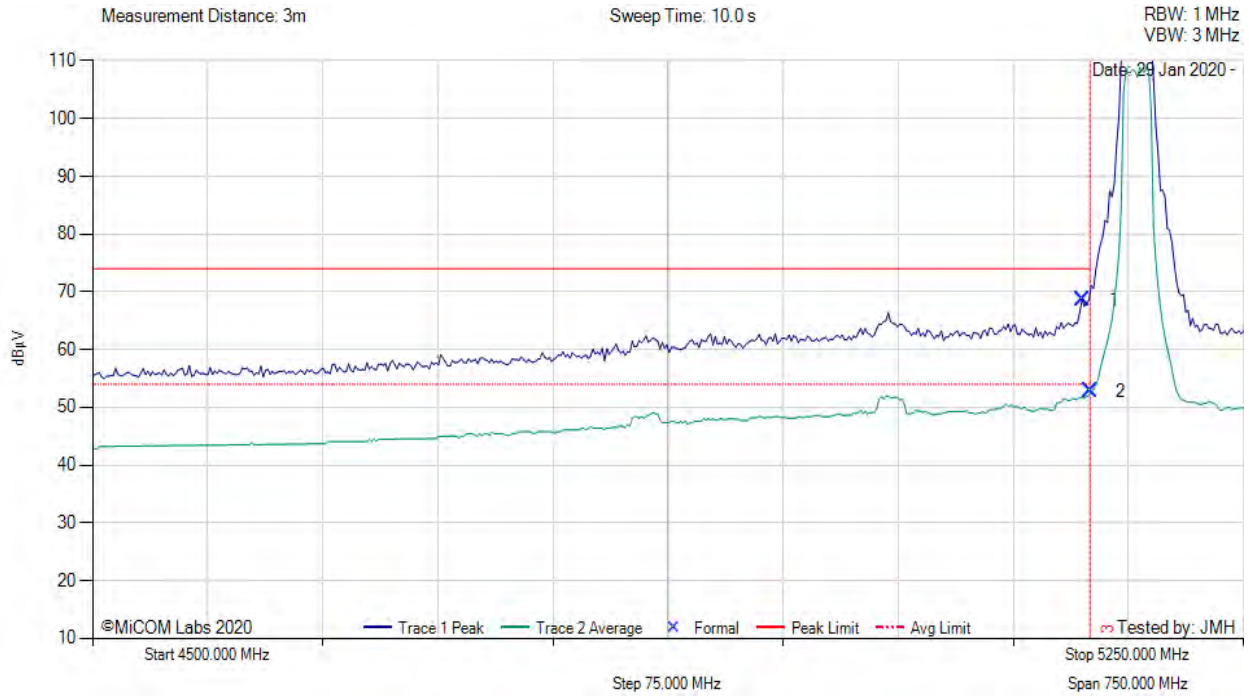
A.3.2.8. RADWIN RW-9401-5004

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 20 MHz, Test Freq: 5180.00 MHz, Antenna: RADWIN RW-9401-5004, Power Setting: 17.5, Duty Cycle (%): 86



4500.00 - 5250.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5145.49	31.55	2.92	34.20	68.67	Max Peak	Vertical	198	3	74.0	-5.3	Pass
2	5150.00	15.60	2.93	34.21	52.73	Max Avg	Vertical	198	3	54.0	-1.3	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE. Power reduced to meet Avg Limit. *Includes Duty Cycle correction for Avg Measurement.

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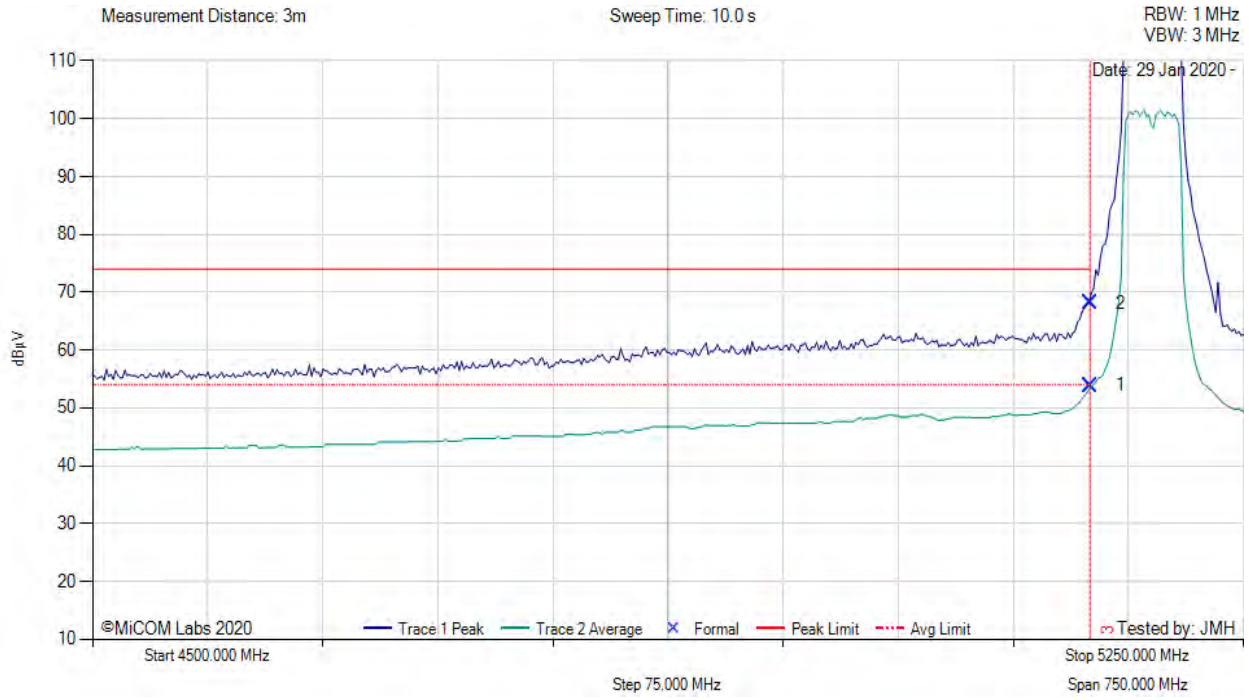
RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 40 MHz, Test Freq: 5190.00 MHz, Antenna: RADWIN RW-9401-5004, Power Setting: 14.5, Duty Cycle (%): 78



4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5150.00	16.74	2.93	34.21	53.88	Max Avg	Vertical	198	3	54.0	-0.1	Pass
2	5150.00	31.03	2.93	34.21	68.17	Max Peak	Vertical	198	3	74.0	-5.8	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE. Power reduced to meet Avg Limit. *Includes Duty Cycle correction for Avg Measurement.

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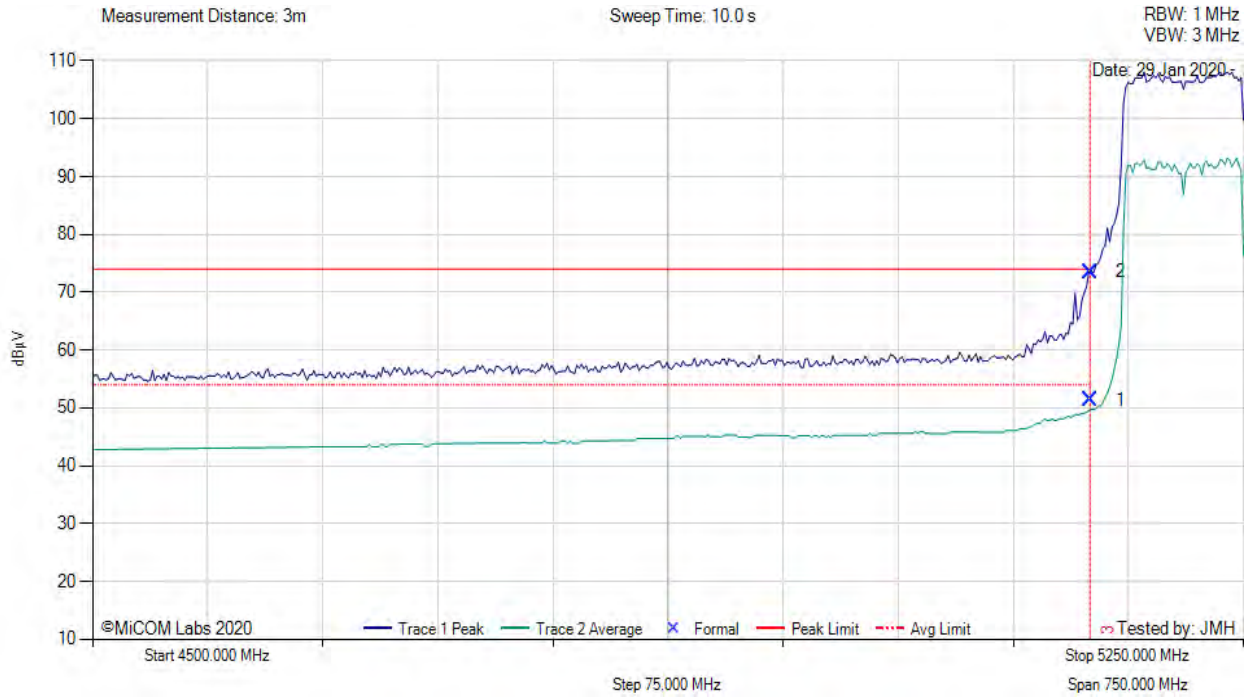
RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 80 MHz, Test Freq: 5210.00 MHz, Antenna: RADWIN RW-9401-5004, Power Setting: 14.5, Duty Cycle (%): 66



4500.00 - 5250.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	5150.00	14.18	2.93	34.21	51.32	Max Avg	Vertical	198	3	54.0	-2.7	Pass
2	5150.00	36.37	2.93	34.21	73.51	Max Peak	Vertical	198	3	74.0	-0.5	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE. Power reduced to meet Peak Limit. *Includes Duty Cycle correction for Avg Measurement.

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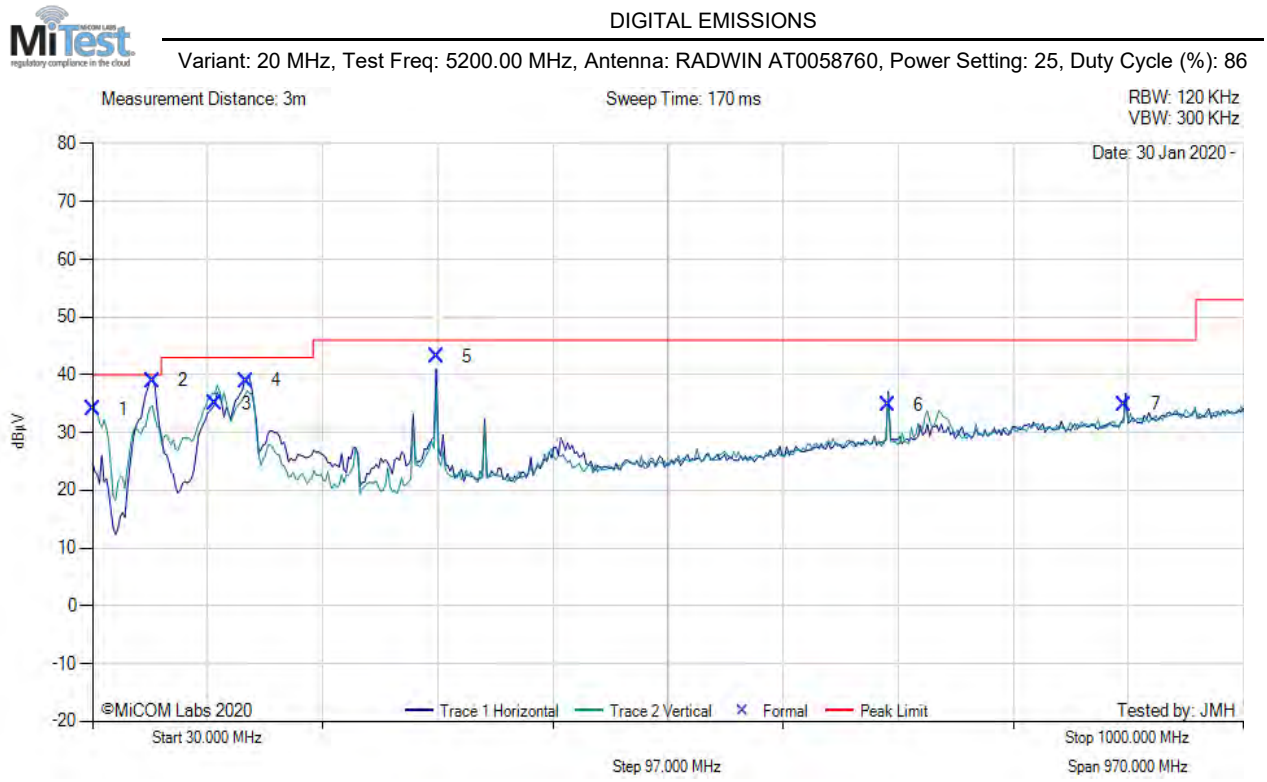
A.3.3. Digital Emissions



30.00 - 1000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	30.52	38.78	3.54	-8.20	34.12	MaxQP	Vertical	111	328	40.0	-5.9	Pass
2	80.93	55.95	3.94	-20.89	39.00	MaxQP	Horizontal	380	262	40.0	-1.0	Pass
3	133.75	45.61	4.23	-14.82	35.02	MaxQP	Vertical	102	355	43.0	-8.0	Pass
4	159.44	50.54	4.36	-15.90	39.00	MaxQP	Horizontal	175	131	43.0	-4.0	Pass
5	320.00	51.98	4.99	-13.78	43.19	MaxQP	Horizontal	101	295	46.0	-2.8	Pass
6	700.01	35.74	6.20	-7.22	34.72	MaxQP	Horizontal	111	174	46.0	-11.3	Pass
7	899.97	33.09	6.76	-4.92	34.93	MaxQP	Horizontal	102	139	46.0	-11.1	Pass

Test Notes: EUT Powered by POE.

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