Company: Radwin Ltd

Test of: RADWIN 2000 JET, RADWIN 5000 JET

To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Report No.: RDWN32-U2a Rev A

CONDUCTED & RADIATED TEST REPORT

CONDUCTED AND RADIATED TEST REPORT

FROM

MiCOMLabs
opening wireless markets

Test of: Radwin RADWIN 2000 JET, RADWIN 5000 JET

to

To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Test Report Serial No.: RDWN32-U2a Rev A

<u>Note:</u> this report is one of a set of two reports that together address the requirements for FCC 15.407

Report Number	Test Report Type
RDWN32-U2a	Conducted & Radiated Test Report
RDWN32-U2b	DFS Test Report

This report supersedes: NONE

Applicant: Radwin Ltd.
27 Habarzel Street
Tel Aviv 69710
Israel

Product Function: Multipole MIMO PtP/PtMP Smart Antenna Outdoor Radio Device

Issue Date: 29th July 2015

Table of Contents

1. ACCREDITATION, LISTINGS & RECOGNITION

1.1. TESTING ACCREDITATION

MiCOM Labs, Inc. is an accredited Electrical testing laboratory per the international standard ISO/IEC 17025:2005. 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

1.2. <u>RECOGNITION</u>

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

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	21st July 2015	
Draft #2	27th July 2015	
Rev A	29th July 2015	Initial Release
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In the above table the latest report revision will replace all earlier versions.

3. <u>TEST RESULT CERTIFICATE</u>

Manufacturer: Radwin 27 Habarzel Street Tel Aviv 69710 Israel	**Tested By:** MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Model: RADWIN 2000 JET, RADWIN 5000 JET	**Telephone:** +1 925 462 0304 **Fax:** +1 925 462 0306
Type Of Equipment: Smart Antenna Outdoor Radio Device	
S/N's: C121901000D00212	
Test Date(s): 6th – 8th July 2015	**Website:** www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247	**EQUIPMENT COMPLIES**
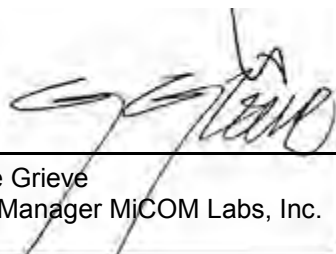
MiCOM Labs, Inc. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

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.

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	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 v01	10th June 2015	Test guidance to demonstrate compliance for U-NII devices subject to DFS requirements.
III	KDB 926956 DO1 v01r02	17th October 2014	U-NII Device Transition Plan
IV	KDB 789033 D02 v01	6th June 2014	General UNII Test Procedures New Rules V01
V	A2LA	June 2015	R105 - Requirement's When Making Reference to A2LA Accreditation Status
VI	ANSI C63.10	2013	American National Standard for Testing Unlicensed Wireless Devices
VII	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
VIII	CISPR 22	2008	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
IX	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
X	FCC 06-96	Jun 3 2006	Memorandum Opinion and Order
XI	FCC 47 CFR Part 15.407	2014	Radio Frequency Devices; Subpart E –Unlicensed National Information Infrastructure Devices
XII	ICES-003	Issue 5 2012	Spectrum Management and Telecommunications; Interference-Causing Equipment Standard. Information Technology Equipment (ITE) – Limits and methods of measurement.
XIII	M 3003	Edition 3 Nov. 2012	Expression of Uncertainty and Confidence in Measurements
XIV	RSS-247, Issue 1	May 2015	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
XV	RSS-Gen, Issue 4	Nov 2014	General Requirements and Information for the Certification of Radiocommunication Equipment
XVI	KDB 644545 D03 v01	August 14th 2014	Guidance for IEEE 802.11ac New Rules
XVII	FCC 47 CFR Part 2.1033	2014	FCC requirements and rules regarding photographs and test setup diagrams.

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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 RADWIN 2000 JET, RADWIN 5000 JET to FCC CFR 47 Part 15 Subpart E 15.407, Industry Canada RSS-247 Radio Frequency Devices; Subpart E –Unlicensed National Information Infrastructure Devices
Applicant:	Radwin Ltd 27 Habarzel Street Tel Aviv 69710 Israel
Manufacturer:	As Applicant
Laboratory performing the tests:	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Test report reference number:	RDWN32-U2a
Date EUT received:	July 6th 2015
Standard(s) applied:	FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247 Issue 1
Dates of test (from - to):	6th – 8th July 2015
No of Units Tested:	1
Type of Equipment:	Smart Antenna Outdoor Radio Device
Product Family Name:	RADWIN JET
Model(s):	RADWIN 2000 JET, RADWIN 5000 JET
Location for use:	Outdoor
Declared Frequency Range(s):	5250 – 5350 & 5470 - 5725 MHz;
Primary function of equipment:	Multipole MIMO PtP/PtMP Smart Antenna Outdoor Radio Device
Secondary function of equipment:	None Provided
Type of Modulation:	OFDM
EUT Modes of Operation:	10, 20, 40 MHz Bandwidths
Transmit/Receive Operation:	Time Division Duplex (TDD)
Rated Input Voltage and Current:	POE (POE adaptor sold with unit) 55Vdc
Operating Temperature Range:	Declared Range -40°C to 60°C
ITU Emission Designator:	10M0W7W 20M0W7W 40M0W7W
Equipment Dimensions:	13.9" x 9.0" x 2.6" inches
Weight:	11.6 lbs
Hardware Rev:	Prototype
Software Rev:	Prototype

5.2. <u>Scope Of Test Program</u>

The scope of the test program was to test the Radwin, RADWIN 2000 JET and RADWIN 5000 JET, Smart Antenna Outdoor Radio Device configurations in the frequency ranges 5250 – 5350 & 5470 - 5725 MHz; for compliance against the following specification(s):

FCC CFR 47 Part 15 Subpart E 15.407
Radio Frequency Devices; Subpart E –Unlicensed National Information Infrastructure Devices

Industry Canada RSS-247 Issue 1
Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

EQUIPMENT CONFIGURATION
The **RADWIN 2000** and **JET RADWIN 5000 JET** is a 3x3 Smart Antenna Outdoor Radio Device which implements different antenna gains connected to each antenna chain (port).

Antenna Chain (Port)	Antenna Gain (dBi)	Polarization
a	20.5	Horizontal
b	17.5	Vertical
c	17.5	Vertical

Power Spectral Density Test
As a result of the above configuration the test for Power Spectral Density was split into two separate tests. The spectral density for each polarization cannot be summed and therefore one test was completed for the horizontal chain, with a second for vertical chains.

Output Power
The output power from all three chains was measured and summed providing the maximum effective output power transmitted by the EUT.

	Title:	Radwin RADWIN 2000 JET, RADWIN 5000 JET
	To:	FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247
Serial #:		RDWN32-U2a Rev A
Issue Date:		29th July 2015
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RADWIN 2000 JET, RADWIN 5000 JET

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Equipment Model(s) and Serial Number(s)

Type	Description	Manufacturer	Model	Serial no.	Delivery Date
EUT	Radwin Jet Smart Antenna Outdoor Radio Device	Radwin Ltd	RADWIN 2000 JET RADWIN 5000 JET	C121901000D00212	21st April 2015

5.3. Antenna Details

Type	Manufacturer	Model	Family	Gain (dBi)	BF Gain	Dir BW	X-Pol	Frequency Band (MHz)
Integrated Smart	RADWIN Ltd	AM0156430	Multi-Pole	20.5*	-	9.4°	-	5250 – 5350 5470 - 5725
Integrated Smart	RADWIN Ltd	AM0156430	Multi-Pole	17.5**	-	16.4°	-	5250 – 5350 5470 - 5725
BF Gain - Beamforming Gain Dir BW - Directional BeamWidth X-Pol - Cross Polarization								

* antenna gain dedicated to chain (port) a (horizontal polarization)
** antenna connected to chains (ports) b and c (vertical polarization)

5.4. Cabling and I/O Ports

Port Type	Max Cable Length	# Of Ports	Screened	Conn Type	Data Type
Ethernet	100m	1	Y	RJ-45	

5.5. Test Configurations

Results for the following configurations are provided in this report:

Operational Mode(s)	Data Rate with Highest Power	Channel Frequency (MHz)		
		Low	**Mid**	**High**
		5250 - 5350 MHz		
10 MHz	32.5 Mbit/s	5259.00	5,300.00	5341.00
		5470 - 5725 MHz		
10 MHz	32.5 Mbit/s	5484.00	5595.00	5711.00
		5250 - 5350 MHz		
20 MHz	65 Mbit/s	5264.00	5,300.00	5336.00
		5470 - 5725 MHz		
20 MHz	65 Mbit/s	5489.00	5590.00	5706.00
		5250 - 5350 MHz		
40 MHz	135 Mbit/s	5274.00	5,300.00	5326.00
		5470 - 5725 MHz		
40 MHz	135 Mbit/s	5499.00	5570.00	5696.00

5.6. Equipment Modifications

The following modifications were required to bring the equipment into compliance:

1. NONE

5.7. Deviations from the Test Standard

The following modifications were required to bring the equipment into compliance:

1. NONE

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6. TEST SUMMARY

List of Measurements

Test Header	Result	Data Link
Conducted Testing		
Section 9.1 Peak Transmit Power	Complies	View Data
Section 9.2 26 dB & 99% Bandwidth	Complies	View Data
Section 9.3 Peak Power Spectral Density	Complies	View Data
Radiated Testing		
Section 9.4.1 Radiated Spurious Emissions	Complies	View Data
Section 9.4.1 Radiated Band-Edge Emissions	Complies	View Data
Section 9.4.3 Digital Emissions (0.03 – 1 GHz)	Not Tested*	--

* manufacturer to provide test data

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7. <u>TEST EQUIPMENT CONFIGURATION(S)</u>

7.1. <u>Conducted</u>

Conducted RF Emission Test Set-up(s)
The following tests were performed using the conducted test set-up shown in the diagram below.
1. Peak Transmit Power
2. 26 dB and 99% Bandwidth
3. Peak Power Spectral Density

MiTest
MiCOM Labs Automated Test System

Conducted Test Measurement Setup
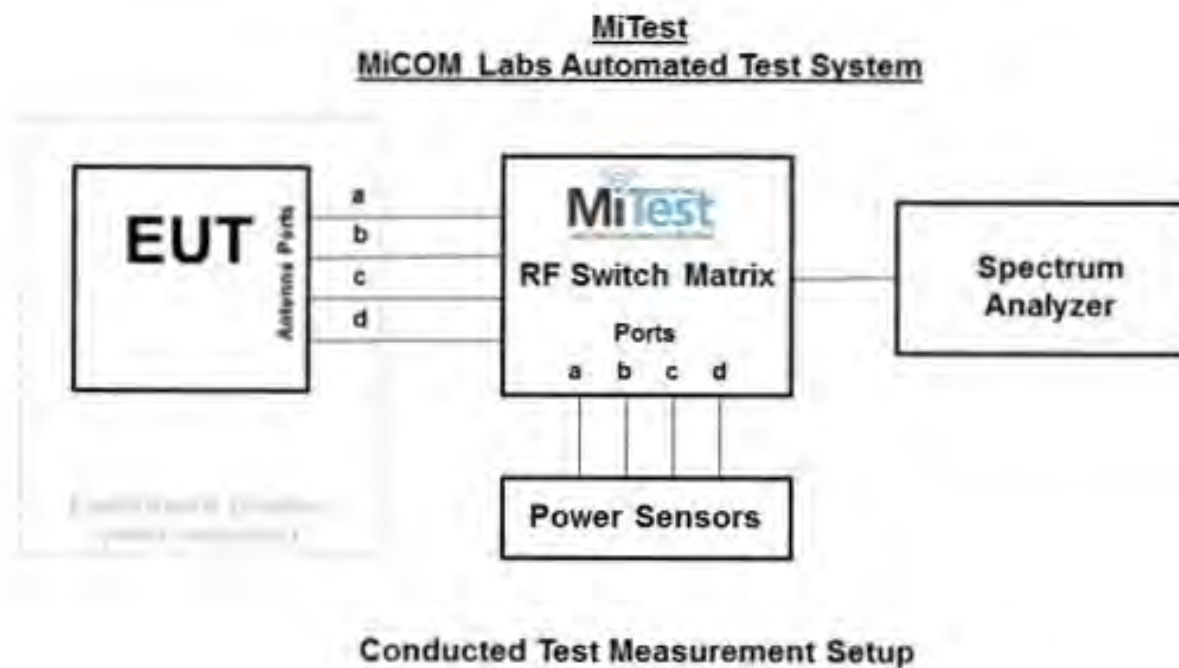
A full system calibration was performed on the test station and any resulting system losses (or gains) were taken into account in the production of all final measurement data.

Asset#	Description	Manufacturer	Model#	Serial#	Calibration Due Date
127	Power Supply	HP	6674A	US36370530	Cal when used
158	Barometer/Thermometer	Control Company	4196	E2846	04 Dec 2015
193	Receiver 20 Hz to 7 GHz	Rhode & Schwarz	ESI 7	838496/007	14 Jan 2016
248	Resistance Thermometer	Thermotronics	GR2105-02	9340 #1	30 Oct 2015
287	Rohde & Schwarz 40 GHz Receiver	Rhode & Schwarz	ESIB40	100201	31 Jul 2015
376	USB 10MHz - 18GHz Average Power Sensor	Agilent	U2000A	MY51440005	28 Oct 2015
378	Rohde & Schwarz 40 GHz Receiver with Generator	Rhode & Schwarz	ESIB40	100107/040	17 Jul 2015
381	4x4 RF Switch Box	MiCOM Labs	MiTest RF Switch Box	MIC002	20 Dec 2015
419	Laptop with Labview Software	Lenova	W520	TS02	Not Required
420	USB to GPIB Interface	National Instruments	GPIB-USB HS	1346738	Not Required
435	USB Wideband Power Sensor	Boonton	55006	8730	31 Jul 2015
440	USB Wideband Power Sensor	Boonton	55006	9178	25 Sep 2015
441	USB Wideband Power Sensor	Boonton	55006	9179	25 Sep 2015
442	USB Wideband Power Sensor	Boonton	55006	9181	25 Sep 2015
445	PoE Injector	D-Link	DPE-101GL	QTAH1E2000625	Not Required
460	Dell Computer with installation of MiTest executable.	Dell	Optiplex330	BC944G1	Not Required
74	Environmental Chamber Chamber 3	Tenney	TTC	12808-1	30 Sep 2015
RF#2 GPIB#1	GPIB cable to Power Supply	HP	GPIB	None	Not Required
RF#2 SMA#1	EUT to Mitest box port 1	Flexco	SMA Cable port1	None	20 Dec 2015
RF#2 SMA#2	EUT to Mitest box port 2	Flexco	SMA Cable port2	None	20 Dec 2015
RF#2 SMA#3	EUT to Mitest box port 3	Flexco	SMA Cable port3	None	20 Dec 2015
RF#2 SMA#4	EUT to Mitest box port 3	Flexco	SMA Cable port4	None	20 Dec 2015

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RF#2 SMA#SA	Mitest box to SA	Flexco	SMA Cable SA	None	20 Dec 2015
RF#2 USB#1	USB Cable to Mitest Box	Dynex	USB Cable	None	Not Required

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.

(iii) For fixed point-to-point access points 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. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring

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that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable 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.

Operating Frequency Band 5250-5350 and 5470 – 5725 MHz

15. 407 (a)(2)
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. 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.

Operating Frequency Band 5725 – 5850 MHz

15. 407 (a)(3)
For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Equipment Configuration for Peak Transmit Power

Variant:	10 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	20.50
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)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5259.0	-1.98	-0.26	2.39	--	5.24	9.469	6.263	-1.023	6.50
5300.0	-1.78	-1.37	2.27	--	4.93	9.519	6.286	-1.356	6.50
5341.0	1.43	-0.65	2.17	--	5.95	9.519	6.286	-0.336	6.50

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Transmit Power

Variant:	10 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	20.50
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)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5484.0	0.98	0.17	1.47	--	5.72	9.469	6.263	-0.543	8.50
5595.0	2.04	0.56	0.96	--	6.05	9.419	6.240	-0.190	11.50
5711.0	-0.68	2.12	-0.07	--	5.44	9.519	6.286	-0.846	7.50

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Transmit Power

Variant:	20 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	20.50
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)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5264.0	1.44	5.26	5.28	--	9.14	20.741	9.50	-0.36	10.50
5300.0	1.78	4.18	5.58	--	8.93	20.942	9.50	-0.57	10.50
5336.0	4.63	3.43	5.31	--	9.34	20.842	9.50	-0.16	9.50

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Transmit Power

Variant:	20 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	20.50
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)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5489.0	4.34	4.00	4.81	--	9.21	21.242	9.50	-0.29	12.00
5590.0	4.67	3.79	4.52	--	9.16	21.042	9.50	-0.34	14.50
5706.0	2.77	6.21	3.89	--	9.35	20.641	9.50	-0.15	12.50

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

	Title: Radwin RADWIN 2000 JET, RADWIN 5000 JET
	To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247
MiCOMLabs	**Serial #:** RDWN32-U2a Rev A
	Issue Date: 29th July 2015
	Page: 25 of 223

Equipment Configuration for Peak Transmit Power

Variant:	40 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	20.50
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)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5274.0	1.79	5.24	5.54	--	9.30	40.281	9.50	-0.20	10.50
5300.0	1.99	4.25	5.39	--	8.91	40.882	9.50	-0.59	10.50
5326.0	3.82	3.88	4.92	--	9.05	40.481	9.50	-0.45	10.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Transmit Power

Variant:	40 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	20.50
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)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dBm	
5499.0	4.36	4.14	4.80	--	9.26	40.681	9.50	-0.24	12.00
5570.0	4.21	4.14	5.17	--	9.35	40.281	9.50	-0.15	14.50
5696.0	3.36	6.05	4.16	--	9.49	40.882	9.50	-0.01	14.00

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

9.2. <u>26 dB & 99% Bandwidth</u>

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: 10 MHz	**Duty Cycle (%):** 99.0
Data Rate: QAM 64	**Antenna Gain (dBi):** 20.50
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)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5259.0	9.719	9.970	9.469	--	9.970	9.469		
5300.0	9.519	9.770	9.719	--	9.770	9.519		
5341.0	9.619	9.870	9.519	--	9.870	9.519		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5259.0	8.317	8.317	8.267	--	8.317	8.267		
5300.0	8.367	8.317	8.367	--	8.367	8.317		
5341.0	8.367	8.367	8.367	--	8.367	8.367		

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:	10 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	20.50
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)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5484.0	9.770	9.870	9.469	--	9.870	9.469		
5595.0	10.020	9.870	9.419	--	10.020	9.419		
5711.0	9.519	9.719	9.569	--	9.719	9.519		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5484.0	8.367	8.367	8.317	--	8.367	8.317		
5595.0	8.367	8.367	8.367	--	8.367	8.367		
5711.0	8.367	8.317	8.367	--	8.367	8.317		

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: 20 MHz	**Duty Cycle (%):** 99
Data Rate: QAM 64	**Antenna Gain (dBi):** 20.50
Modulation: OFDM	**Beam Forming Gain (Y):** Not Applicable
TPC: Not Applicable	**Tested By:** SB
Engineering Test Notes:	

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5264.0	20.741	21.443	20.842	--	21.443	20.741		
5300.0	20.942	21.242	21.142	--	21.242	20.942		
5336.0	20.942	21.443	20.842	--	21.443	20.842		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5264.0	16.733	16.533	16.533	--	16.733	16.533		
5300.0	16.733	16.633	16.533	--	16.733	16.533		
5336.0	16.733	16.633	16.533	--	16.733	16.533		

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).

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	20 MHz	**Duty Cycle (%):**	99
Data Rate:	QAM 64	**Antenna Gain (dBi):**	20.50
Modulation:	OFDM	**Beam Forming Gain (Y):**	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**		
5489.0	21.242	21.443	21.343	--	21.443	21.242		
5590.0	21.042	22.044	21.343	--	22.044	21.042		
5706.0	20.942	21.343	20.641	--	21.343	20.641		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5489.0	16.633	16.633	16.633	--	16.633	16.633		
5590.0	16.733	16.633	16.633	--	16.733	16.633		
5706.0	16.733	16.533	16.633	--	16.733	16.533		

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 (%):**	99
Data Rate:	QAM 64	**Antenna Gain (dBi):**	20.50
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5274.0	43.086	40.882	40.281	--	43.086	40.281		
5300.0	41.283	41.683	40.882	--	41.683	40.882		
5326.0	40.481	43.086	40.681	--	43.086	40.481		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5274.0	34.068	33.868	33.868	--	34.068	33.868		
5300.0	34.068	33.868	33.868	--	34.068	33.868		
5326.0	33.868	33.868	33.868	--	33.868	33.868		

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 (%):**	99
Data Rate:	QAM 64	**Antenna Gain (dBi):**	20.50
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5499.0	40.681	42.685	41.683	--	42.685	40.681		
5570.0	40.281	41.683	40.681	--	41.683	40.281		
5696.0	41.483	40.882	43.487	--	43.487	40.882		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5499.0	33.868	34.068	33.868	--	34.068	33.868		
5570.0	33.868	34.068	33.868	--	34.068	33.868		
5696.0	34.068	34.068	34.068	--	34.068	34.068		

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).

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9.3. Peak 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.

(iii) For fixed point-to-point access points 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. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable 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.

Operating Frequency Band 5250-5350 and 5470 – 5725 MHz

15. 407 (a)(2)
For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. 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.

Operating Frequency Band 5725 – 5850 MHz

15. 407 (a)(3)
For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz 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. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

NOTE: for the device the antenna ports are dual polarized i.e. 1 antenna operates horizontal polarization the other 2 vertical polarization.   For this reason the Power Spectral Density test does not compare all 3 antenna's to the limit but measures the horizontal and 2 vertical antennas separately, see Section 5.1 Technical Details/Equipment Configuration for the configuration details.

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Equipment Configuration for Peak Power Spectral Density

Variant:	10 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	20.50
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5259.0	-9.530	--	--	--	-9.574	-3.5	-6.07
5300.0	-9.945	--	--	--	-9.989	-3.5	-6.49
5341.0	-6.544	--	--	--	-6.588	-3.5	-3.09

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Power Spectral Density

Variant:	10 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM64	**Antenna Gain (dBi):**	17.50
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)				Amplitude Summation + DCCF (+0.04 dB)	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5259.0	--	-8.304	-6.081	--	-4.313	-0.5	-3.813
5300.0	--	-8.919	-6.089	--	-4.583	-0.5	-4.083
5341.0	--	-8.711	-6.124	--	-4.272	-0.5	-3.772

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).

DCCF - Duty Cycle Correction Factor

Equipment Configuration for Peak Power Spectral Density

Variant:	10 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	20.50
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density Port(s) (dBm/MHz)				Amplitude Summation	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5484.0	-7.024	--	--	--	-7.068	-3.5	-3.57
5595.0	-5.343	--	--	--	-5.387	-3.5	-1.89
5711.0	-8.517	--	--	--	-8.561	-3.5	-5.06

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Power Spectral Density

Variant:	10 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	17.50
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)				Amplitude Summation + DCCF (+0.04 dB)	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5484.0	--	-7.629	-6.812	--	-4.256	-0.5	-3.756
5595.0	--	-6.901	-6.925	--	-4.236	-0.5	-3.736
5711.0	--	-5.261	-8.390	--	-3.581	-0.5	-3.081

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).

Equipment Configuration for Peak Power Spectral Density

Variant:	20MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	20.50
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)				Amplitude Summation + DCCF (+0.04 dB)	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5264.0	-10.655	--	--	--	-10.611	-3.5	-7.111
5300.0	-9.548	--	--	--	-9.504	-3.5	-6.004
5336.0	-6.764	--	--	--	-6.720	-3.5	-3.220

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Power Spectral Density

Variant:	20 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	17.50
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)				Amplitude Summation + DCCF (+0.04 dB)	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5264.0	--	-5.933	-5.737	--	-3.432	-0.5	-2.932
5300.0	--	-7.288	-5.622	--	-3.584	-0.5	-3.084
5336.0	--	-7.801	-5.662	--	-3.762	-0.5	-3.262

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).

Equipment Configuration for Peak Power Spectral Density

Variant:	20 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	20.50
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				Amplitude Summation + DCCF (+0.04 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5489.0	-7.165	--	--	--	-7.121	-3.5	-3.621
5590.0	-6.588	--	--	--	-6.544	-3.5	-3.044
5706.0	-8.215	--	--	--	-8.171	-3.5	-4.671

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Power Spectral Density

Variant:	20 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	17.50
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Not Applicable	**Tested By:**	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Amplitude Summation	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5489.0	--	-7.291	-5.783	--	-4.079	-0.5	-3.579
5590.0	--	-7.712	-6.858	--	-4.384	-0.5	-3.884
5706.0	--	-4.156	-6.384	--	-2.342	-0.5	-1.842

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).

Equipment Configuration for Peak Power Spectral Density

Variant:	40 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM64	**Antenna Gain (dBi):**	20.50
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)				Amplitude Summation + DCCF (+0.04 dB)	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5274.0	-11.951	--	--	--	-11.907	-3.5	-8.407
5300.0	-12.571	--	--	--	-12.527	-3.5	-9.027
5326.0	-9.821	--	--	--	-9.777	-3.5	-6.277

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Power Spectral Density

Variant:	40 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	17.50
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)				Amplitude Summation + DCCF (+0.04 dB)	Limit	Margin
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5274.0	--	-8.748	-8.884	--	-5.940	-0.5	-5.440
5300.0	--	-10.439	-9.363	--	-7.242	-0.5	-6.742
5326.0	--	-10.710	-9.924	--	-7.591	-0.5	-7.091

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).

Equipment Configuration for Peak Power Spectral Density

Variant:	40 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	20.50
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				Amplitude Summation + DCCF (+0.04 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5499.0	-10.413	--	--	--	-10.369	-3.5	-6.869
5570.0	-16.260	--	--	--	-16.216	-3.5	-12.716
5696.0	-10.511	--	--	--	-10.467	-3.5	-6.967

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-03 MEASURING RF SPECTRUM MASK
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for Peak Power Spectral Density

Variant:	40 MHz	**Duty Cycle (%):**	99.0
Data Rate:	QAM 64	**Antenna Gain (dBi):**	17.50
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				Amplitude Summation + DCCF (+0.04 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	**a**	**b**	**c**	**d**	**dBm/MHz**	**dBm/MHz**	**dB**
5499.0	--	-9.807	-9.547	--	-6.663	-0.5	-6.163
5570.0	--	-9.586	-8.715	--	-6.481	-0.5	-5.981
5696.0	--	-6.906	-9.288	--	-5.336	-0.5	-4.836

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).

9.4. <u>Radiated Testing</u>

Transmitter Radiated Spurious Emissions (above 1 GHz); Peak Field Strength Measurements; and Radiated Band Edge Measurements – Restricted Bands, Digital Emissions

FCC, Part 15 Subpart E §**15.247(d)** **15.205; 15.209**

9.4.1. Radiated Spurious Emissions

Test Procedure

Radiated emissions 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 and waveguide filter was used to remove the fundamental frequency. The highest emissions relative to the limit are listed for each frequency spanned.

All measurements on any frequency or frequencies over 1 MHz are based on the use of measurement instrumentation employing an average detector function. All measurements above 1 GHz were performed using a minimum resolution bandwidth of 1 MHz.

Operational Modes

Operational mode(s) tested for spurious emissions were the modes which delivered maximum spectral density

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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 or Waveguide Loss

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

$$FS = 51.5 + 8.5 + 1.3 - 26.0 + 1 = 36.3 \text{ dB}\mu\text{V/m}$$

Conversion between dBμV/m (or dBμV) and μV/m (or μV) are done as:

$$\text{Level (dB}\mu\text{V/m)} = 20 * \text{Log (level (}\mu\text{V/m))}$$

$$40 \text{ dB}\mu\text{V/m} = 100 \ \mu\text{V/m}$$
$$48 \text{ dB}\mu\text{V/m} = 250 \ \mu\text{V/m}$$

Equipment Configuration for Radiated Spurious - Restricted Band Emissions

Antenna:	AM0156430	**Variant:**	20 MHz
Antenna Gain (dBi):	20.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5264.00	**Data Rate:**	QAM64
Power Setting:	10.5	**Tested By:**	SB

Test Measurement Results

Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	1400.27	29.10	3.05	-15.57	16.58	Max Avg	Horizontal	100	146	54.0	-37.4	Pass
#2	1400.27	46.27	3.05	-15.57	33.75	Max Peak	Horizontal	100	146	74.0	-40.3	Pass
#3	2399.38	27.59	4.02	-11.85	19.76	Max Avg	Horizontal	122	0	54.0	-34.2	Pass
#4	2399.38	39.36	4.02	-11.85	31.53	Max Peak	Horizontal	122	0	74.0	-42.5	Pass
#5	16188.60	24.12	12.11	1.12	37.35	Max Avg	Horizontal	197	257	54.0	-16.7	Pass
#6	16188.60	35.82	12.11	1.12	49.05	Max Peak	Horizontal	197	257	74.0	-25.0	Pass

Equipment Configuration for Radiated Spurious - Restricted Band Emissions

Antenna:	AM0156430	**Variant:**	20 MHz
Antenna Gain (dBi):	20.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5300.00	**Data Rate:**	QAM64
Power Setting:	10.5	**Tested By:**	SB

Test Measurement Results

Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	1399.93	51.58	3.05	-15.57	39.06	Max Avg	Horizontal	100	149	54.0	-14.9	Pass
#2	1399.93	56.26	3.05	-15.57	43.74	Max Peak	Horizontal	100	149	74.0	-30.3	Pass
#3	1629.97	27.93	3.29	-15.98	15.24	Max Avg	Horizontal	138	22	54.0	-38.8	Pass
#4	1629.97	39.55	3.29	-15.98	26.86	Max Peak	Horizontal	138	22	74.0	-47.1	Pass
#5	12733.43	29.19	10.19	-7.02	32.36	Max Avg	Horizontal	100	234	54.0	-21.6	Pass
#6	12733.43	40.33	10.19	-7.02	43.50	Max Peak	Horizontal	100	234	74.0	-30.5	Pass

Equipment Configuration for Radiated Spurious - Restricted Band Emissions

Antenna:	AM0156430	**Variant:**	20 MHz
Antenna Gain (dBi):	20.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5336.00	**Data Rate:**	QAM64
Power Setting:	9.5	**Tested By:**	SB

Test Measurement Results

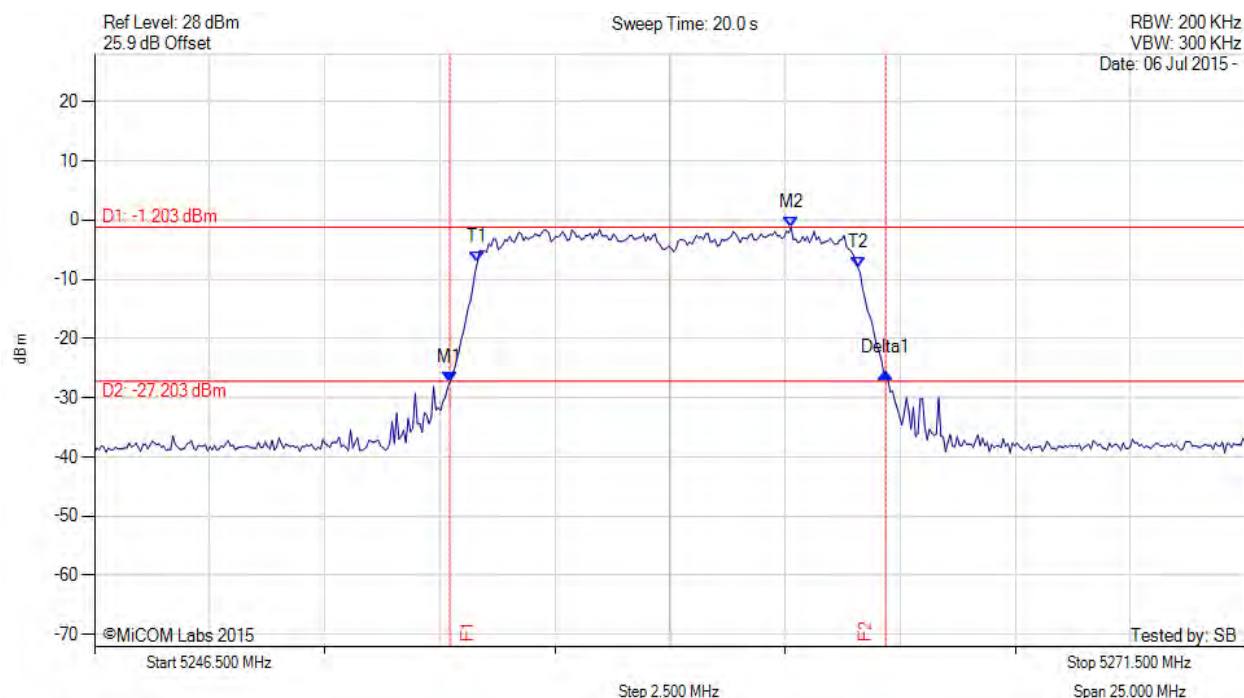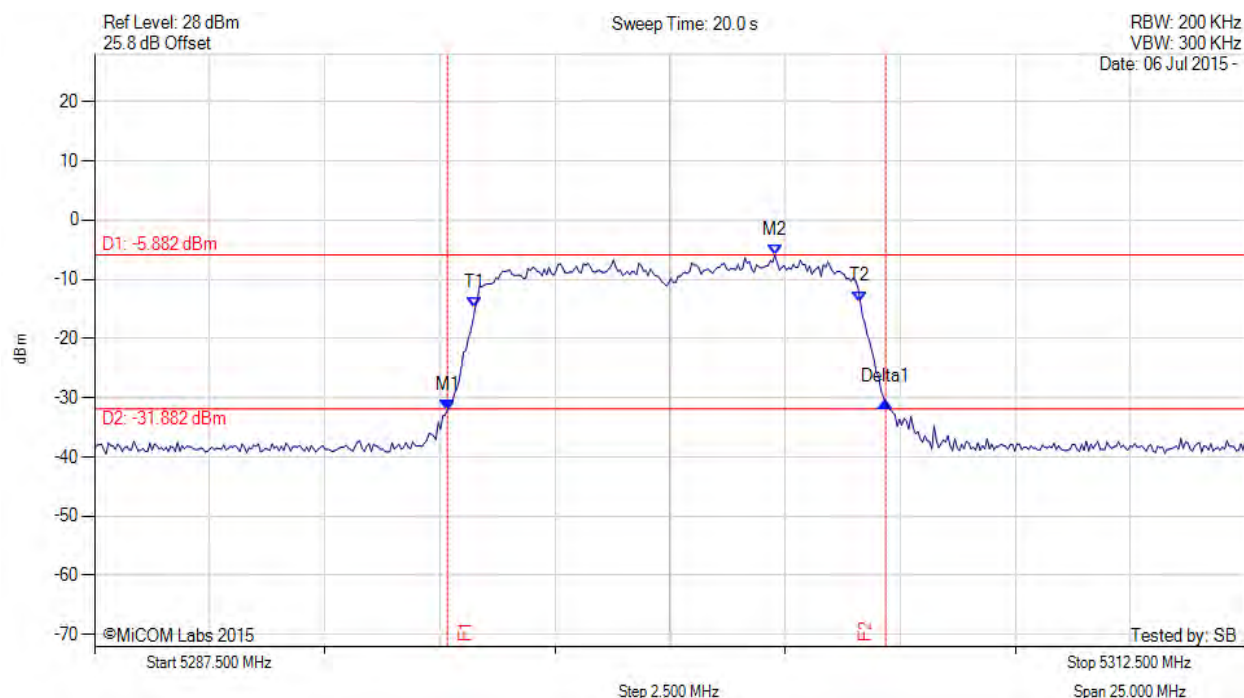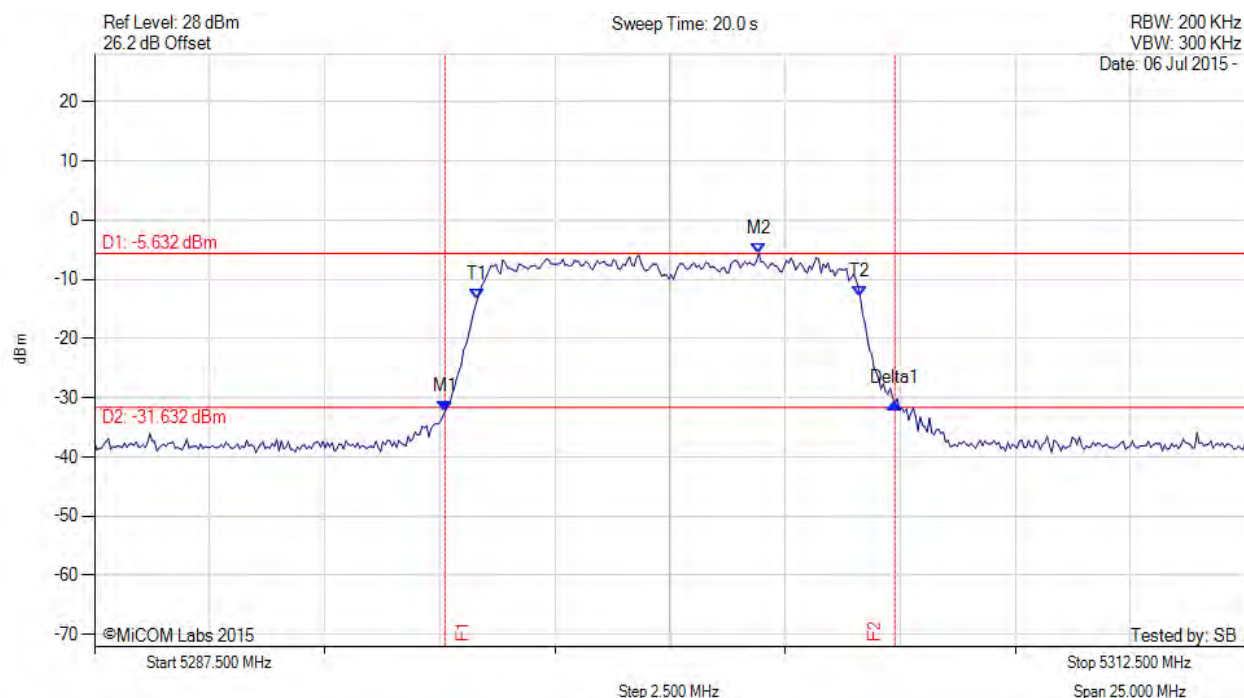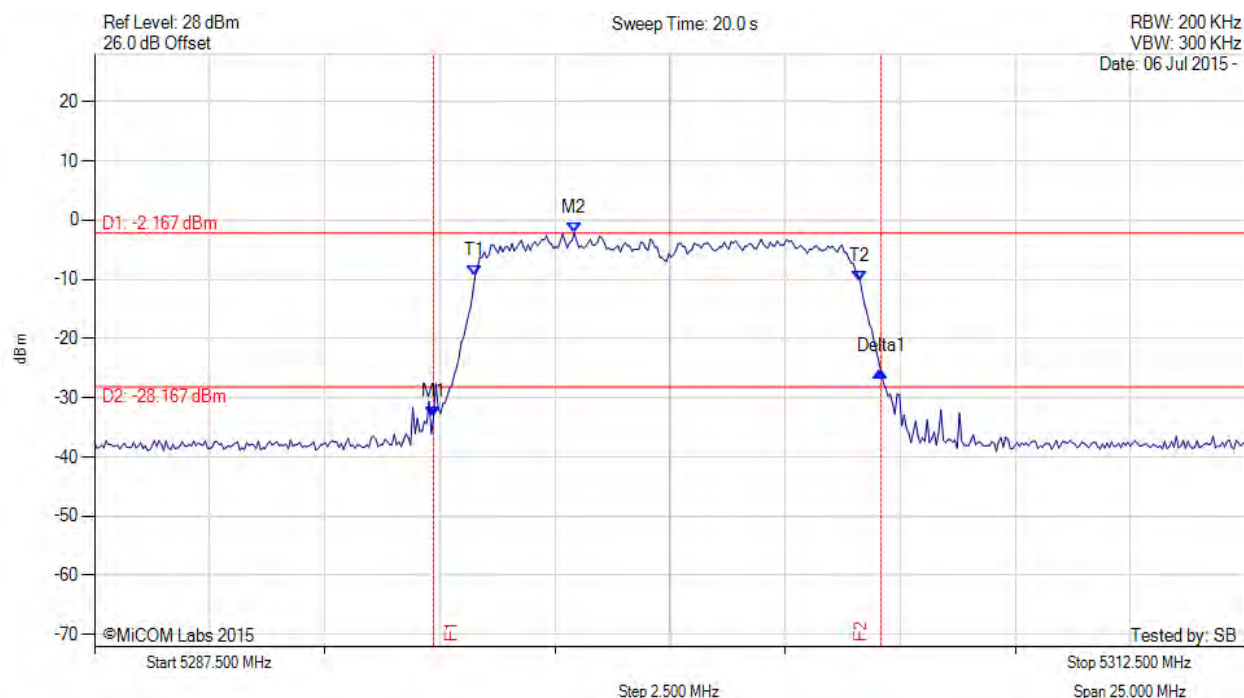| Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	1318.57	28.93	2.94	-14.91	16.96	Max Avg	Horizontal	100	159	54.0	-37.0	Pass
#2	1318.57	41.12	2.94	-14.91	29.15	Max Peak	Horizontal	100	159	74.0	-44.9	Pass
#3	1400.11	35.91	3.05	-15.57	23.39	Max Avg	Horizontal	102	148	54.0	-30.6	Pass
#4	1400.11	48.48	3.05	-15.57	35.96	Max Peak	Horizontal	102	148	74.0	-38.0	Pass
#5	1899.89	32.28	3.59	-13.09	22.78	Max Avg	Vertical	132	0	54.0	-31.2	Pass
#6	1899.89	44.62	3.59	-13.09	35.12	Max Peak	Vertical	132	0	74.0	-38.9	Pass

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Equipment Configuration for Radiated Spurious - Restricted Band Emissions

Antenna:	AM0156430	**Variant:**	20 MHz
Antenna Gain (dBi):	20.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5489.00	**Data Rate:**	QAM64
Power Setting:	12	**Tested By:**	SB

Test Measurement Results

Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	1277.55	28.80	2.90	-15.05	16.65	Max Avg	Horizontal	141	54	54.0	-37.4	Pass
#2	1277.55	40.51	2.90	-15.05	28.36	Max Peak	Horizontal	141	54	74.0	-45.6	Pass
#3	1399.85	35.52	3.05	-15.57	23.00	Max Avg	Horizontal	100	148	54.0	-31.0	Pass
#4	1399.85	47.83	3.05	-15.57	35.31	Max Peak	Horizontal	100	148	74.0	-38.7	Pass
#5	1600.05	44.36	3.28	-16.33	31.31	Max Avg	Horizontal	100	215	54.0	-22.7	Pass
#6	1600.05	51.38	3.28	-16.33	38.33	Max Peak	Horizontal	100	215	74.0	-35.7	Pass
#7	2400.02	38.09	4.02	-11.84	30.27	Max Avg	Horizontal	100	151	54.0	-23.7	Pass
#8	2400.02	46.83	4.02	-11.84	39.01	Max Peak	Horizontal	100	151	74.0	-35.0	Pass

Equipment Configuration for Radiated Spurious - Restricted Band Emissions

Antenna:	AM0156430	**Variant:**	20 MHz
Antenna Gain (dBi):	20.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5590.00	**Data Rate:**	QAM64
Power Setting:	14.5	**Tested By:**	SB

Test Measurement Results

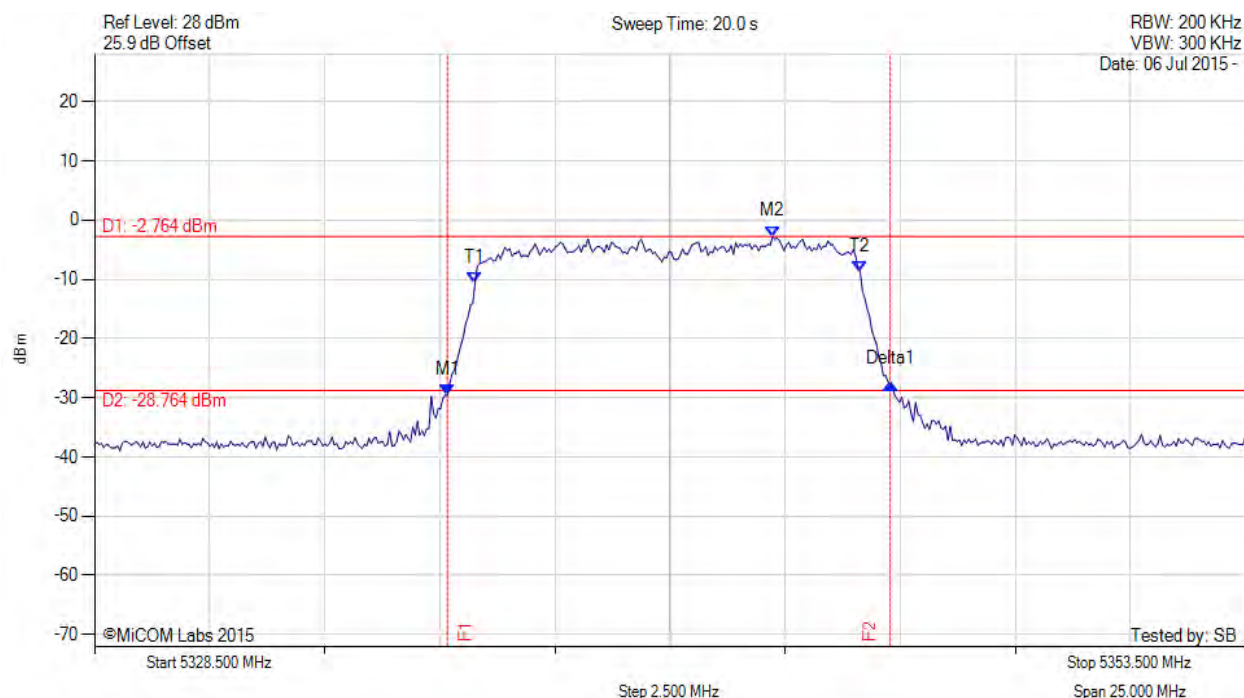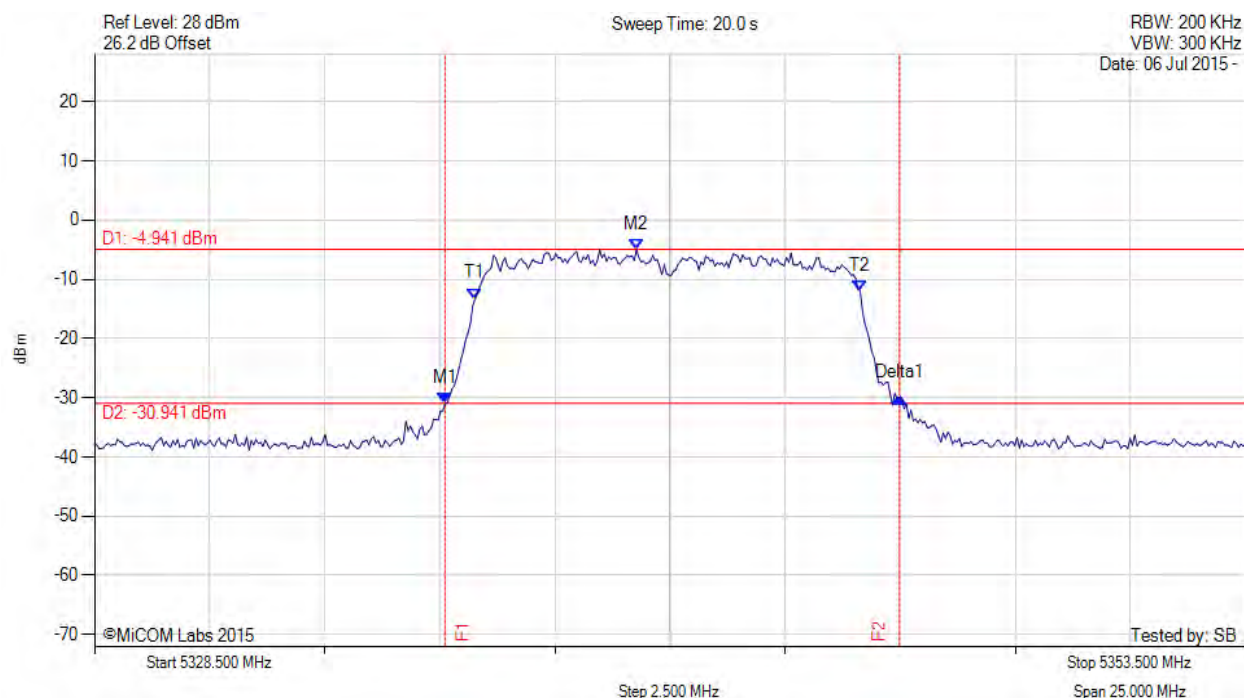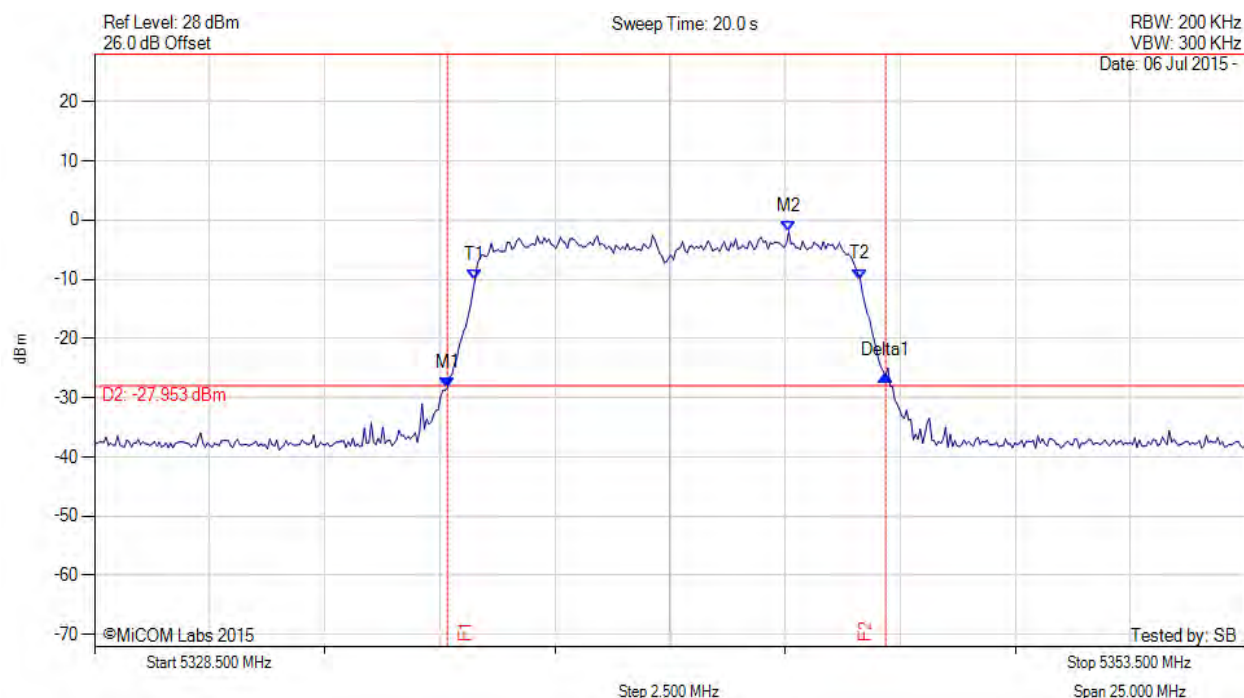| Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	1400.05	46.14	3.05	-15.57	33.62	Max Avg	Horizontal	100	144	54.0	-20.4	Pass
#2	1400.05	52.14	3.05	-15.57	39.62	Max Peak	Horizontal	100	144	74.0	-34.4	Pass
#3	1599.93	47.80	3.28	-16.33	34.75	Max Avg	Horizontal	104	213	54.0	-19.3	Pass
#4	1599.93	53.15	3.28	-16.33	40.10	Max Peak	Horizontal	104	213	74.0	-33.9	Pass

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Equipment Configuration for Radiated Spurious - Restricted Band Emissions

Antenna:	AM0156430	**Variant:**	20 MHz
Antenna Gain (dBi):	20.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5706.00	**Data Rate:**	QAM64
Power Setting:	12.5	**Tested By:**	SB

Test Measurement Results

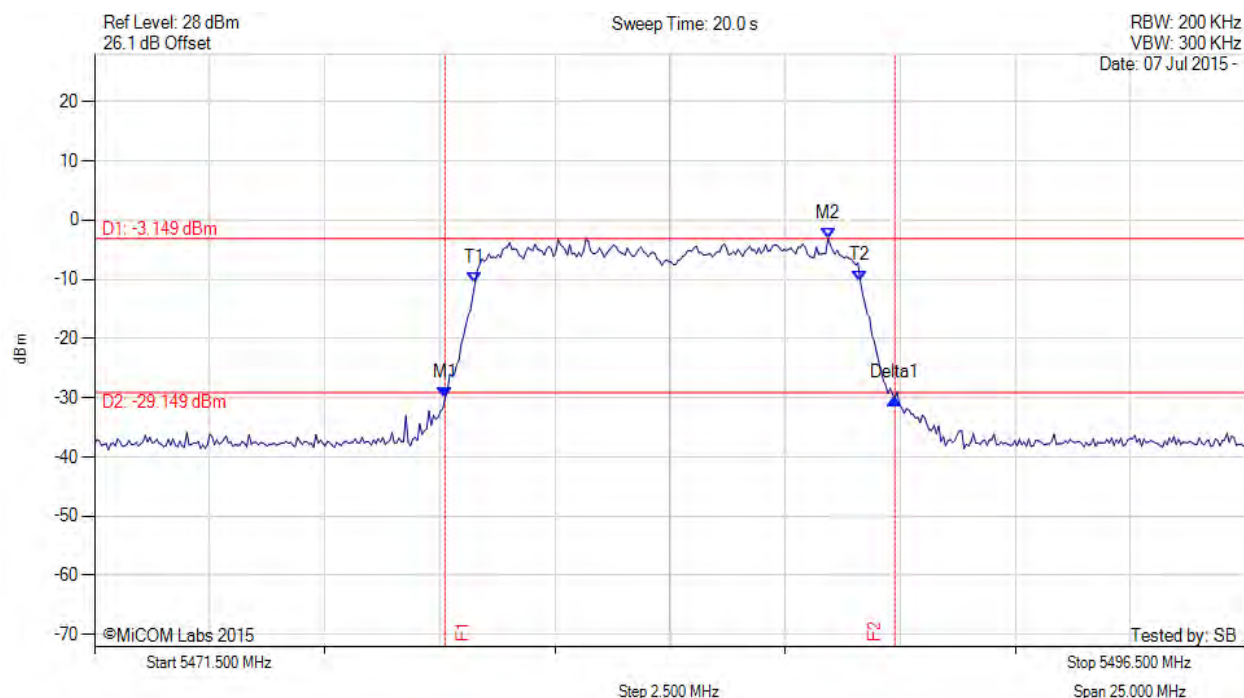| Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	1300.03	40.76	2.92	-14.74	28.94	Max Avg	Vertical	100	161	54.0	-25.1	Pass
#2	1300.03	48.41	2.92	-14.74	36.59	Max Peak	Vertical	100	161	74.0	-37.4	Pass
#3	1400.13	30.61	3.05	-15.57	18.09	Max Avg	Vertical	100	3	54.0	-35.9	Pass
#4	1400.13	45.81	3.05	-15.57	33.29	Max Peak	Vertical	100	3	74.0	-40.7	Pass

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9.4.2. Restricted Band-Edge Spurious

RESULTS SUMMARY FOR RADIATED BAND-EDGE EMISSIONS

AM0156430		Band-Edge Freq	Peak (Limit 74.0dBµV/m)	Average (Limit 54.0dBµV/m)	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
10 MHz	5484.00	5460.00	58.44	46.67	6.50
20 MHz	5489.00	5460.00	62.64	51.18	12.00
40 MHz	5499.00	5460.00	62.50	50.27	12.00

AM0156430		Band-Edge Freq	Peak (Limit 74.0dBµV/m)	Average (Limit 54.0dBµV/m)	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
10 MHz	5341.00	5350.00	61.02	47.97	8.50
20 MHz	5336.00	5350.00	62.50	50.27	12.00
40 MHz	5326.00	5350.00	62.64	51.18	12.00

Click on the links to view the data.
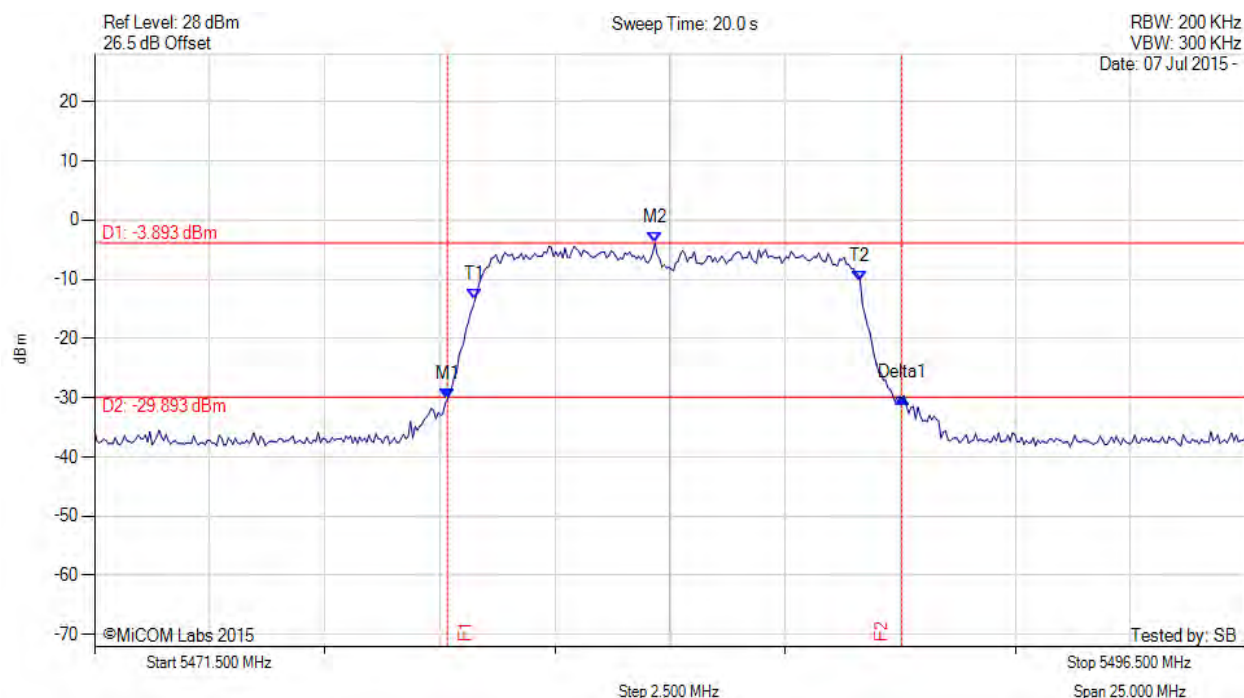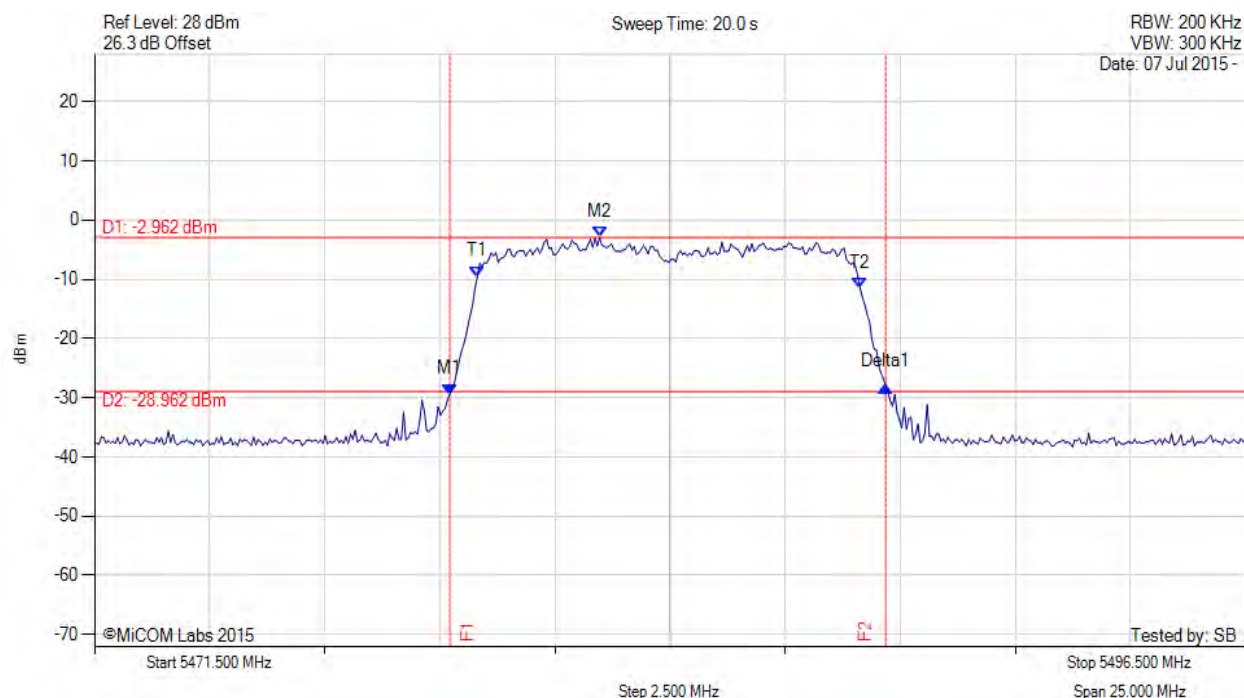
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Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	AM0156430	**Variant:**	20 MHz
Antenna Gain (dBi):	20.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5489.00	**Data Rate:**	QAM64
Power Setting:	12	**Tested By:**	SB

Test Measurement Results

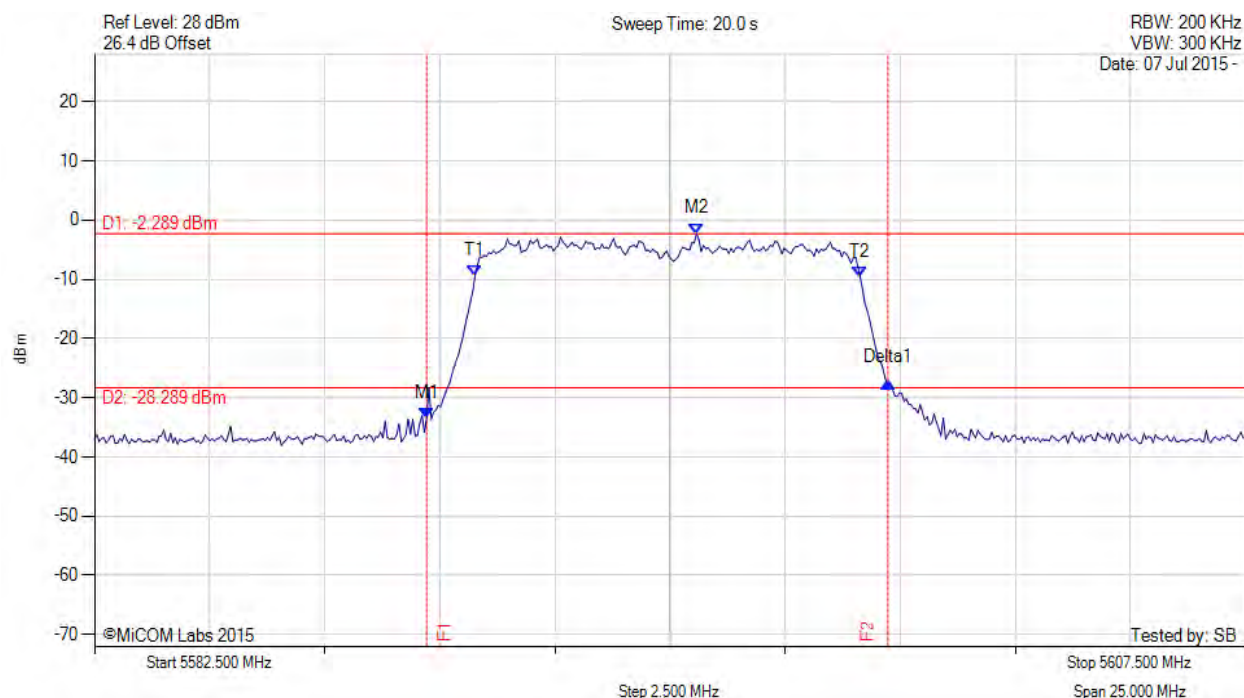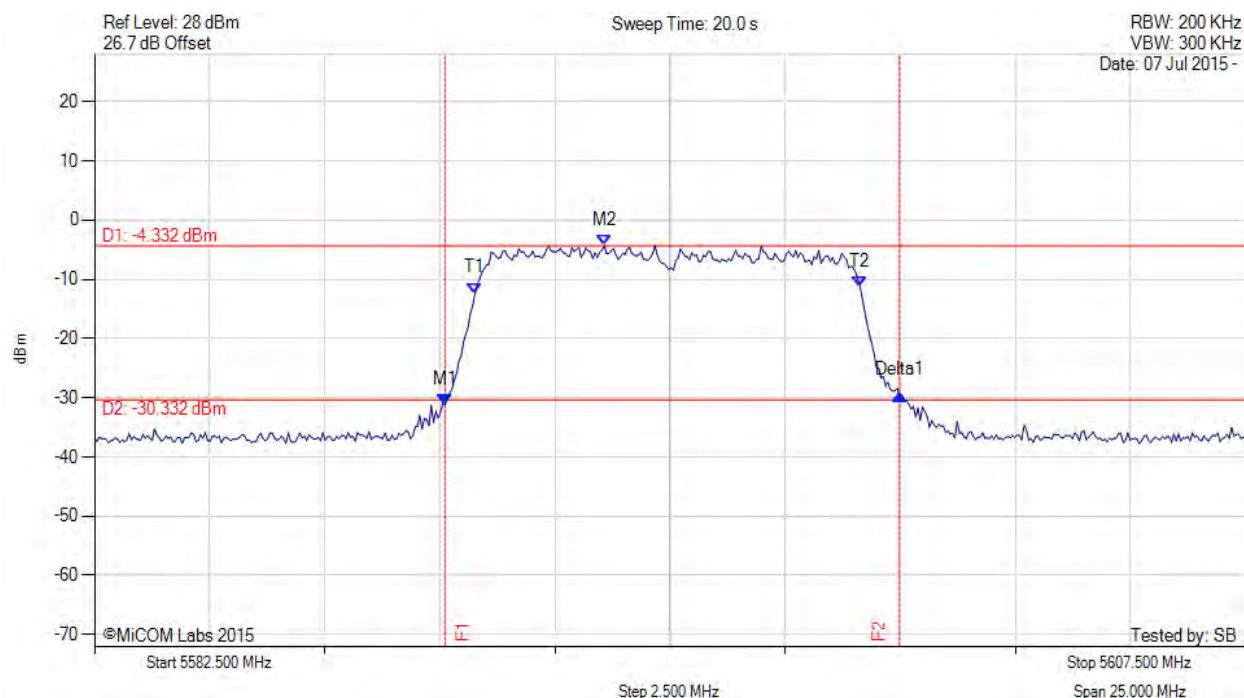| Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5360.58	67.53	6.17	-11.06	62.64	Max Peak	Horizontal	101	360	74.0	-11.4	Pass
#2	5400.04	56.10	6.24	-11.16	51.18	Max Avg	Horizontal	101	360	54.0	-2.8	Pass

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Equipment Configuration for Restricted Upper Band-Edge Emissions

Antenna:	AM0156430	**Variant:**	20 MHz
Antenna Gain (dBi):	20.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5336.00	**Data Rate:**	QAM64
Power Setting:	10	**Tested By:**	SB

Test Measurement Results

Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5350.00	55.13	6.16	-11.02	50.27	Max Avg	Horizontal	101	360	54.0	-3.7	Pass
#2	5352.87	67.38	6.16	-11.04	62.50	Max Peak	Horizontal	101	360	74.0	-11.5	Pass

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	AM0156430	**Variant:**	10 MHz
Antenna Gain (dBi):	20.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5489.00	**Data Rate:**	QAM64
Power Setting:	8.5	**Tested By:**	SB

Test Measurement Results

Num	Frequency MHz	Raw dBμV	Cable Loss	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	5372.71	65.92	6.18	-11.08	61.02	Max Peak	Horizontal	101	360	74.0	-13.0	Pass
#2	5388.58	52.87	6.23	-11.13	47.97	Max Avg	Horizontal	101	360	54.0	-6.0	Pass

Equipment Configuration for Restricted Upper Band-Edge Emissions

Antenna:	AM0156430	**Variant:**	10 MHz
Antenna Gain (dBi):	20.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5336.00	**Data Rate:**	QAM64
Power Setting:	6.5	**Tested By:**	SB

Test Measurement Results

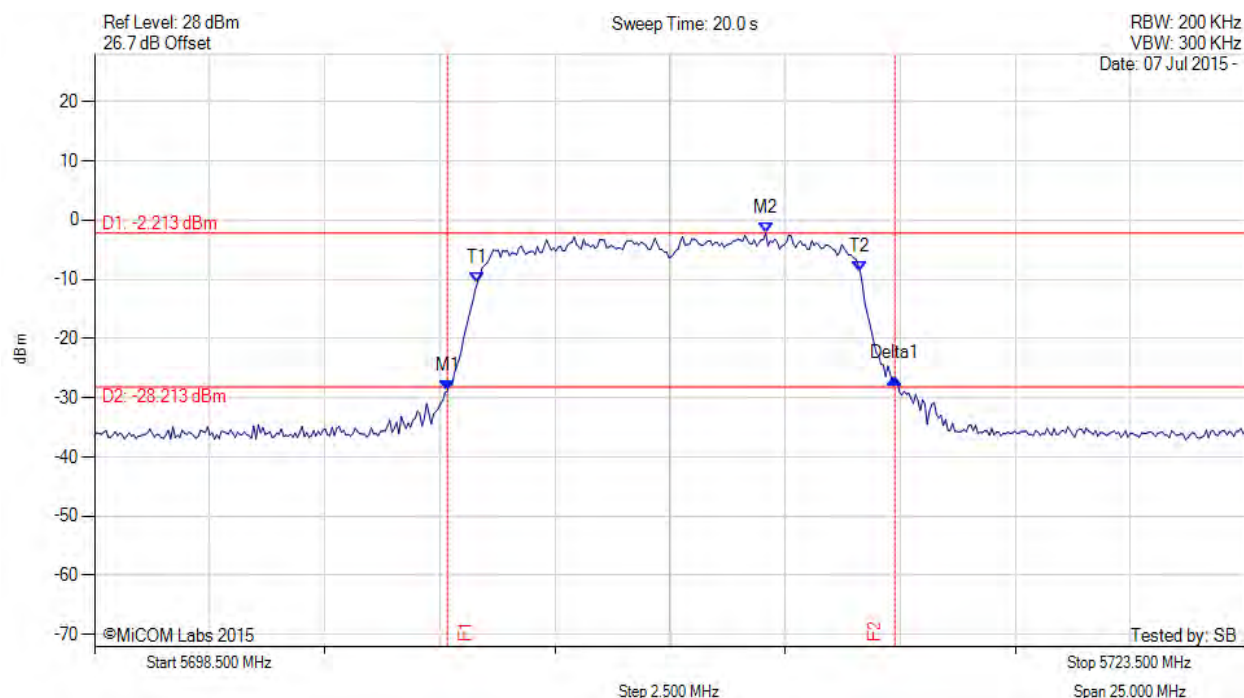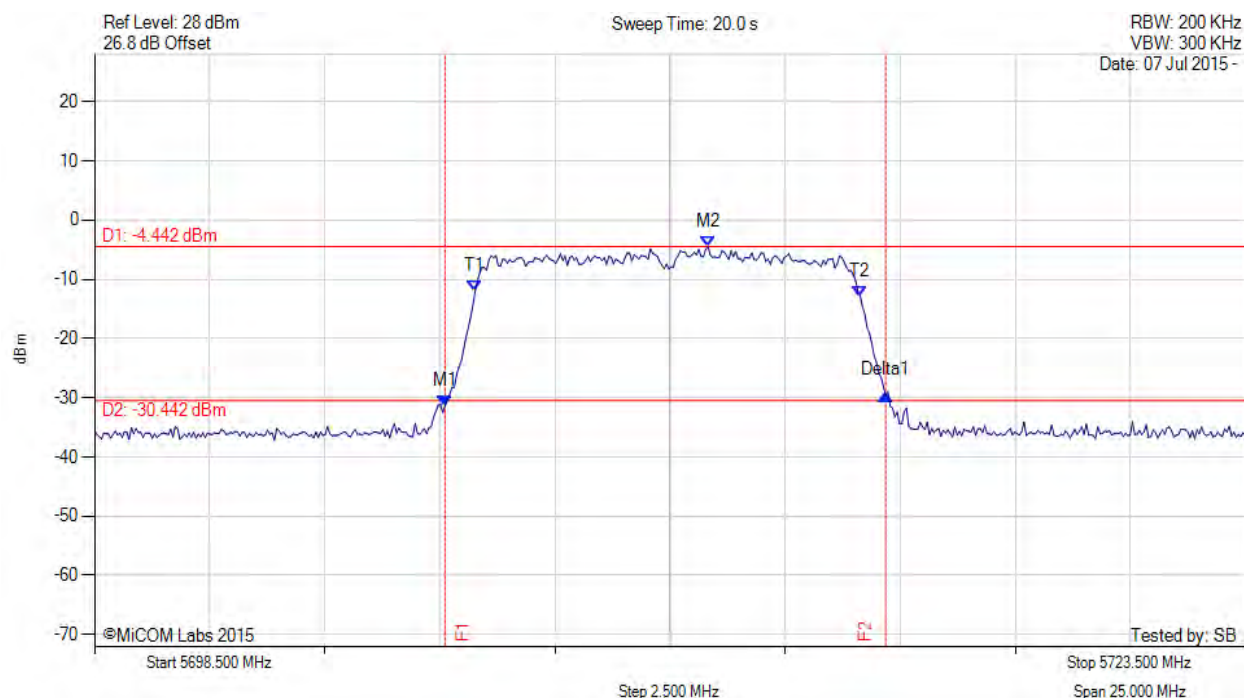| Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5350.00	51.53	6.16	-11.02	46.67	Max Avg	Horizontal	101	360	54.0	-7.3	Pass
#2	5387.47	63.34	6.22	-11.12	58.44	Max Peak	Horizontal	101	360	74.0	-15.6	Pass

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Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	AM0156430	**Variant:**	40 MHz
Antenna Gain (dBi):	20.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5489.00	**Data Rate:**	QAM64
Power Setting:	12	**Tested By:**	SB

Test Measurement Results

Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5360.58	67.53	6.17	-11.06	62.64	Max Peak	Horizontal	101	360	74.0	-11.4	Pass
#2	5400.04	56.10	6.24	-11.16	51.18	Max Avg	Horizontal	101	360	54.0	-2.8	Pass

Equipment Configuration for Restricted Upper Band-Edge Emissions

Antenna:	AM0156430	**Variant:**	40 MHz
Antenna Gain (dBi):	20.50	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	5336.00	**Data Rate:**	QAM64
Power Setting:	10	**Tested By:**	SB

Test Measurement Results

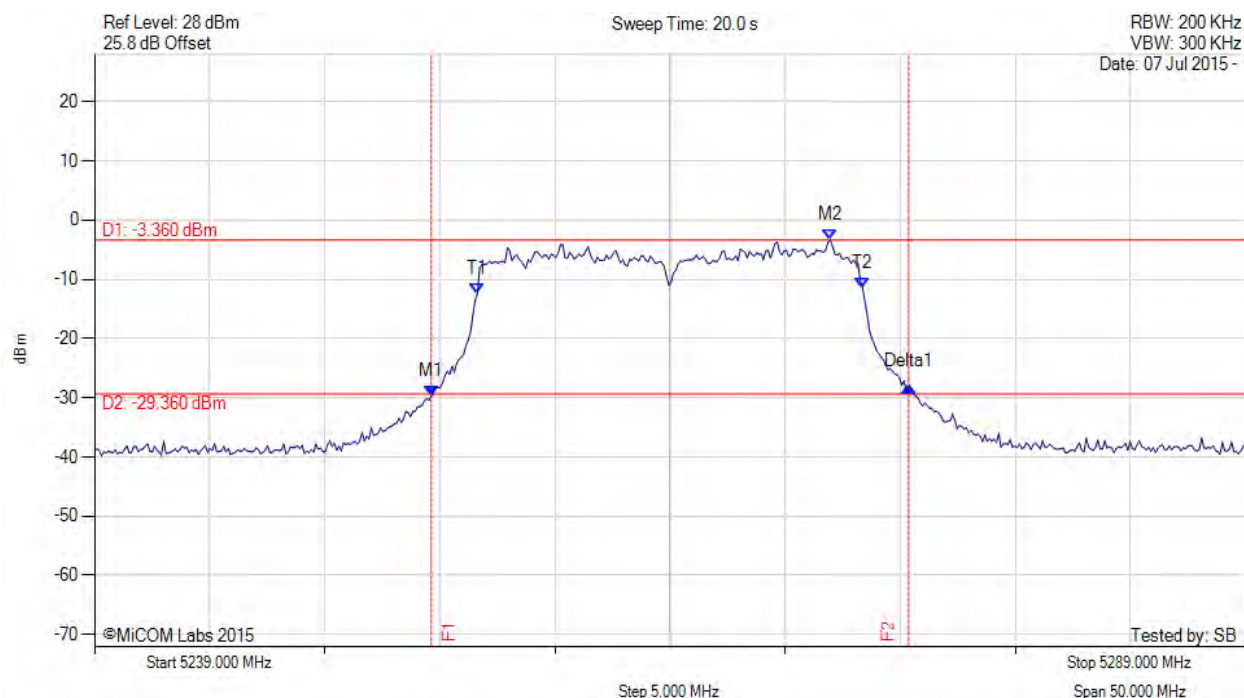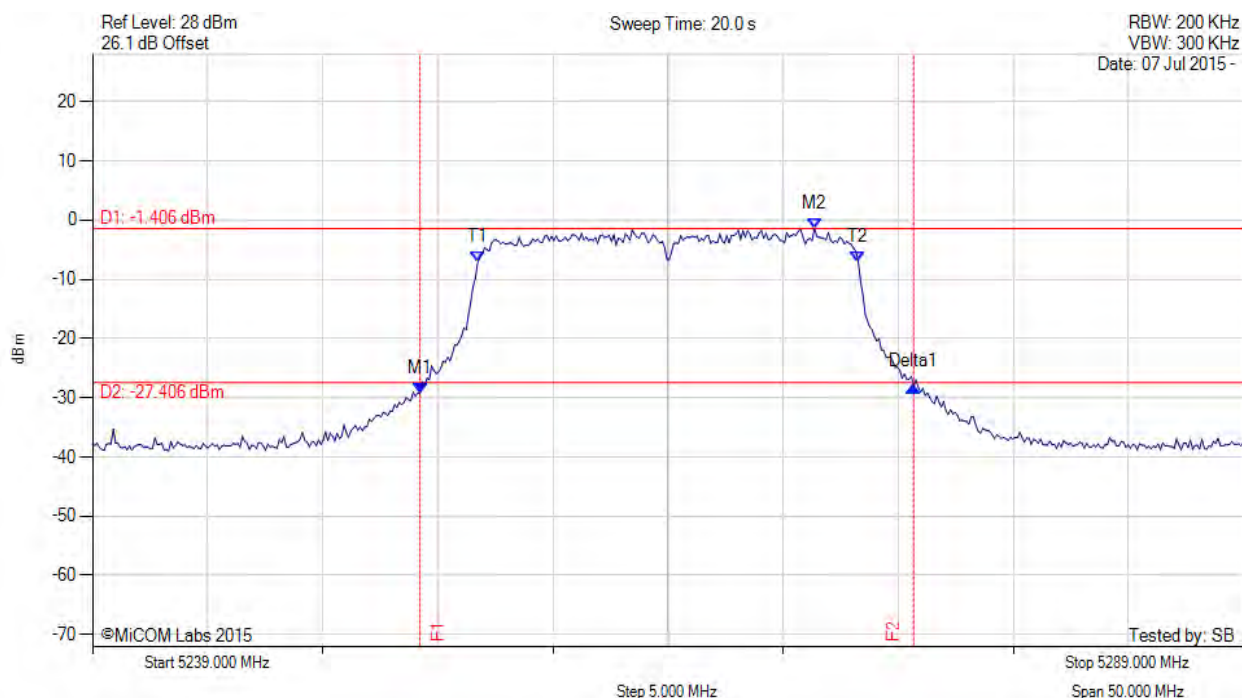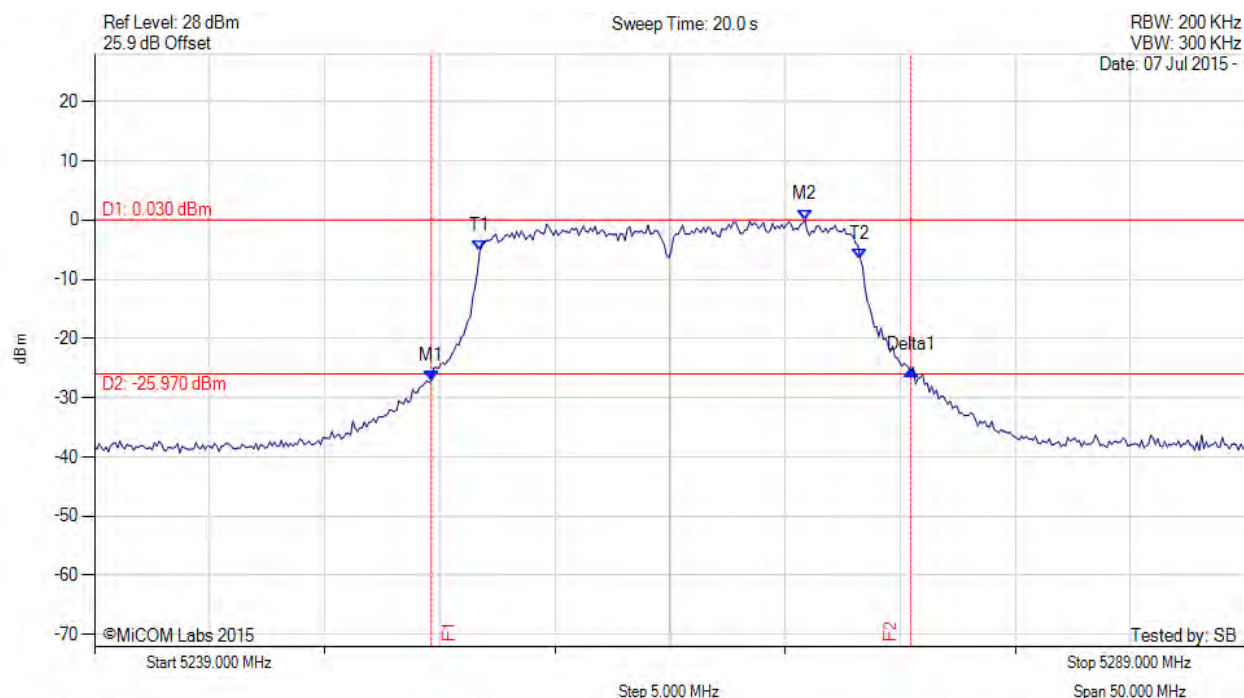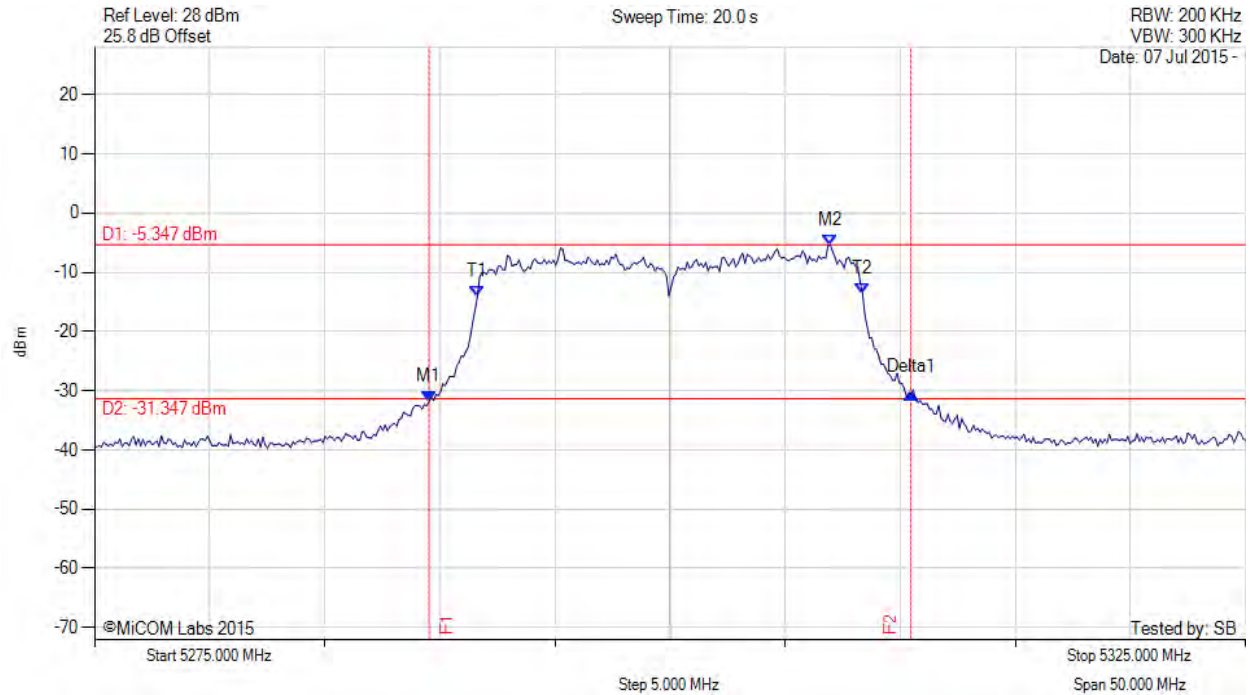| Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5350.00	55.13	6.16	-11.02	50.27	Max Avg	Horizontal	101	360	54.0	-3.7	Pass
#2	5352.87	67.38	6.16	-11.04	62.50	Max Peak	Horizontal	101	360	74.0	-11.5	Pass

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9.4.3. Digital Emissions (0.03 – 1 GHz)

Not measured by MiCOM Labs, manufacturer to provide digital emission data to satisfy Digital Emission (0.03 – 1 GHz) test criteria.

Specification

Limits

> **§15.205 (a)** Except as shown in paragraph (d) of 15.205 (a), only spurious emissions are permitted in any of the frequency bands listed
>
> *§15.205 (a) Except as shown 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 Section §15.209.   At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector.   Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions.   The provisions in Section 15.35 apply to these measurements
>
> **§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

§15.209 (a) Limit Matrix

Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance (meters)
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Laboratory Measurement Uncertainty for Radiated Emissions

Measurement uncertainty	+5.6/ -4.5 dB

A. APPENDIX - GRAPHICAL IMAGES

A.1. 26 dB & 99% Bandwidth

26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz Channel: 5259.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

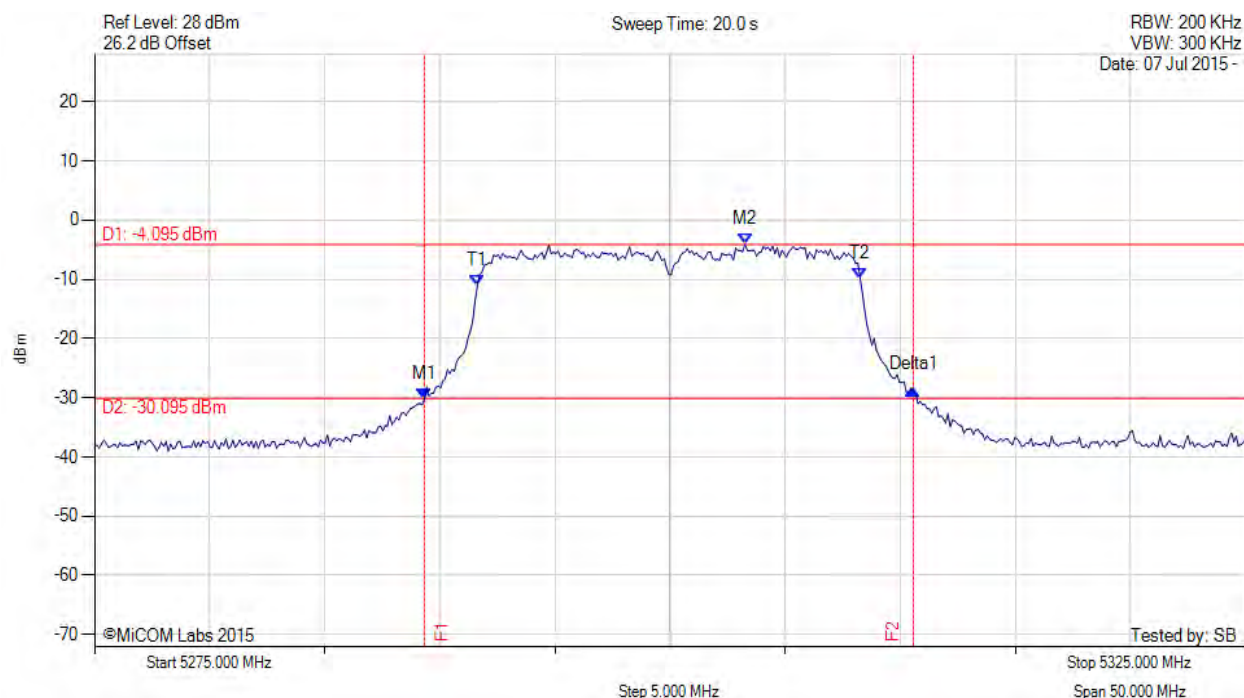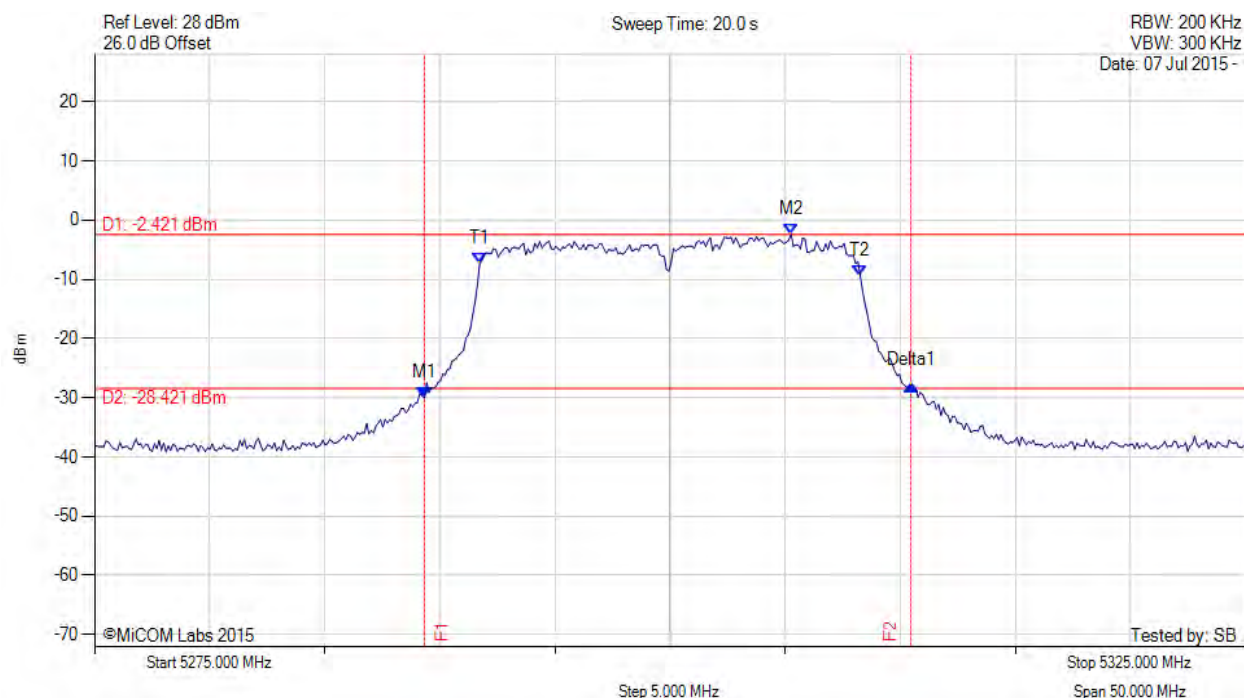| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5254.015 MHz : -34.890 dBm M2 : 5261.330 MHz : -5.801 dBm Delta1 : 9.719 MHz : 4.340 dB T1 : 5254.817 MHz : -11.892 dBm T2 : 5263.133 MHz : -12.746 dBm OBW : 8.317 MHz	Measured 26 dB Bandwidth: 9.719 MHz Measured 99% Bandwidth: 8.317 MHz

back to matrix

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26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5259.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5254.115 MHz : -30.568 dBm M2 : 5261.079 MHz : -4.219 dBm Delta1 : 9.970 MHz : 0.942 dB T1 : 5254.817 MHz : -11.257 dBm T2 : 5263.133 MHz : -10.186 dBm OBW : 8.317 MHz	Measured 26 dB Bandwidth: 9.970 MHz Measured 99% Bandwidth: 8.317 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5259.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5254.215 MHz : -27.474 dBm M2 : 5261.630 MHz : -1.203 dBm Delta1 : 9.469 MHz : 1.735 dB T1 : 5254.817 MHz : -7.090 dBm T2 : 5263.083 MHz : -7.948 dBm OBW : 8.267 MHz	Measured 26 dB Bandwidth: 9.469 MHz Measured 99% Bandwidth: 8.267 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5300.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5295.165 MHz : -32.126 dBm M2 : 5302.280 MHz : -5.882 dBm Delta1 : 9.519 MHz : 1.387 dB T1 : 5295.767 MHz : -14.843 dBm T2 : 5304.133 MHz : -13.753 dBm OBW : 8.367 MHz	Measured 26 dB Bandwidth: 9.519 MHz Measured 99% Bandwidth: 8.367 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5300.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

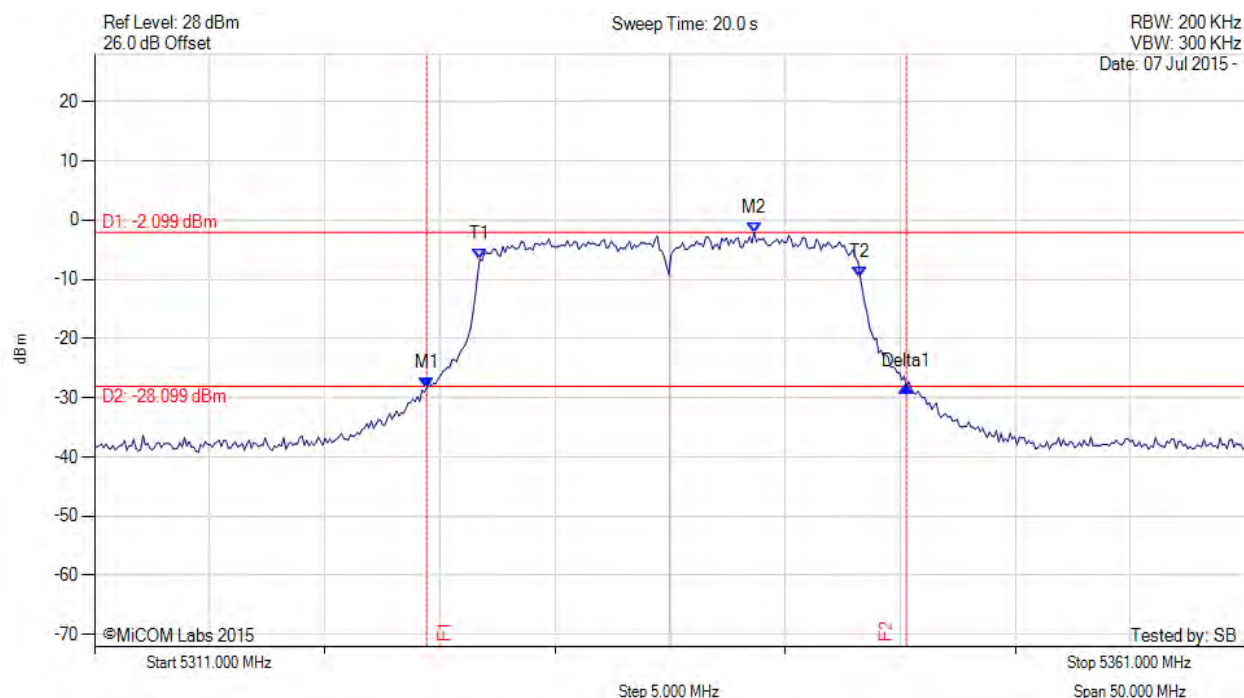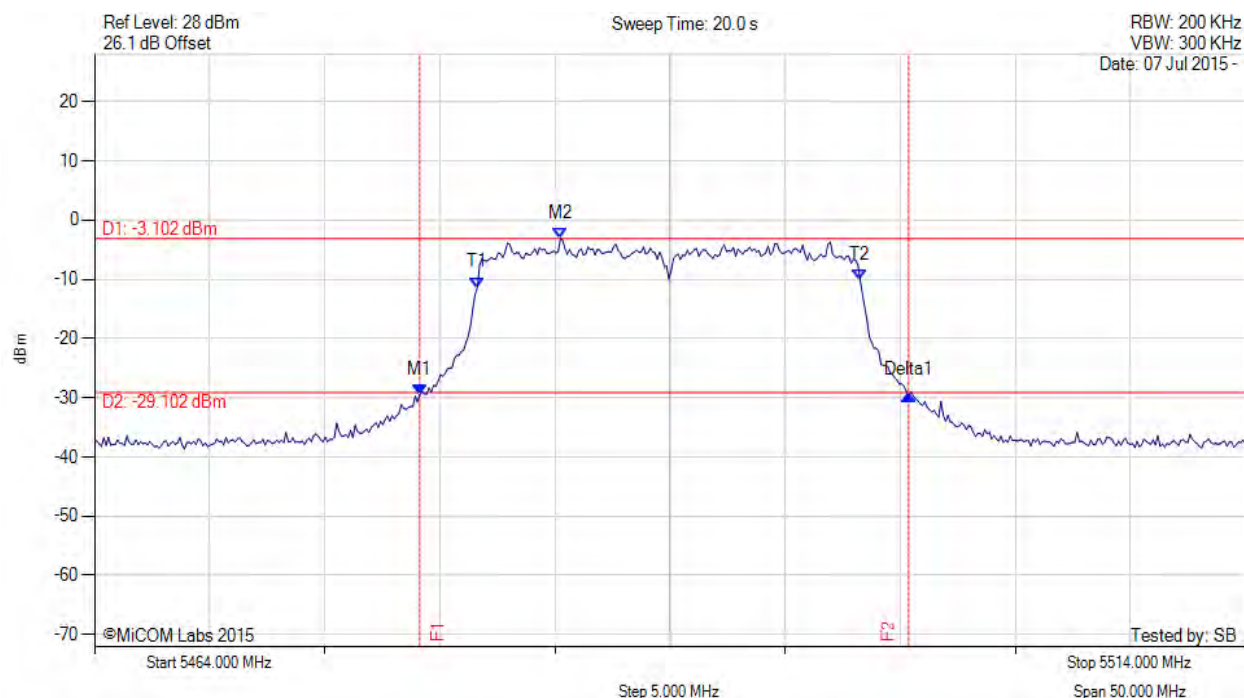| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5295.115 MHz : -32.258 dBm M2 : 5301.929 MHz : -5.632 dBm Delta1 : 9.770 MHz : 1.375 dB T1 : 5295.817 MHz : -13.401 dBm T2 : 5304.133 MHz : -12.909 dBm OBW : 8.317 MHz	Measured 26 dB Bandwidth: 9.770 MHz Measured 99% Bandwidth: 8.317 MHz

back to matrix

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26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5300.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5294.865 MHz : -33.222 dBm M2 : 5297.921 MHz : -2.167 dBm Delta1 : 9.719 MHz : 7.763 dB T1 : 5295.767 MHz : -9.494 dBm T2 : 5304.133 MHz : -10.389 dBm OBW : 8.367 MHz	Measured 26 dB Bandwidth: 9.719 MHz Measured 99% Bandwidth: 8.367 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5341.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5336.165 MHz : -29.482 dBm M2 : 5343.229 MHz : -2.764 dBm Delta1 : 9.619 MHz : 1.869 dB T1 : 5336.767 MHz : -10.584 dBm T2 : 5345.133 MHz : -8.711 dBm OBW : 8.367 MHz	Measured 26 dB Bandwidth: 9.619 MHz Measured 99% Bandwidth: 8.367 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5341.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5336.115 MHz : -31.003 dBm M2 : 5340.274 MHz : -4.941 dBm Delta1 : 9.870 MHz : 1.001 dB T1 : 5336.767 MHz : -13.279 dBm T2 : 5345.133 MHz : -12.059 dBm OBW : 8.367 MHz	Measured 26 dB Bandwidth: 9.870 MHz Measured 99% Bandwidth: 8.367 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5341.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5336.165 MHz : -28.325 dBm M2 : 5343.580 MHz : -1.953 dBm Delta1 : 9.519 MHz : 2.036 dB T1 : 5336.767 MHz : -10.133 dBm T2 : 5345.133 MHz : -10.005 dBm OBW : 8.367 MHz	Measured 26 dB Bandwidth: 9.519 MHz Measured 99% Bandwidth: 8.367 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5484.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5479.115 MHz : -30.004 dBm M2 : 5487.432 MHz : -3.149 dBm Delta1 : 9.770 MHz : -0.092 dB T1 : 5479.767 MHz : -10.615 dBm T2 : 5488.133 MHz : -10.236 dBm OBW : 8.367 MHz	Measured 26 dB Bandwidth: 9.770 MHz Measured 99% Bandwidth: 8.367 MHz

back to matrix

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personnel. All changes will be noted in the Document History section of the report.
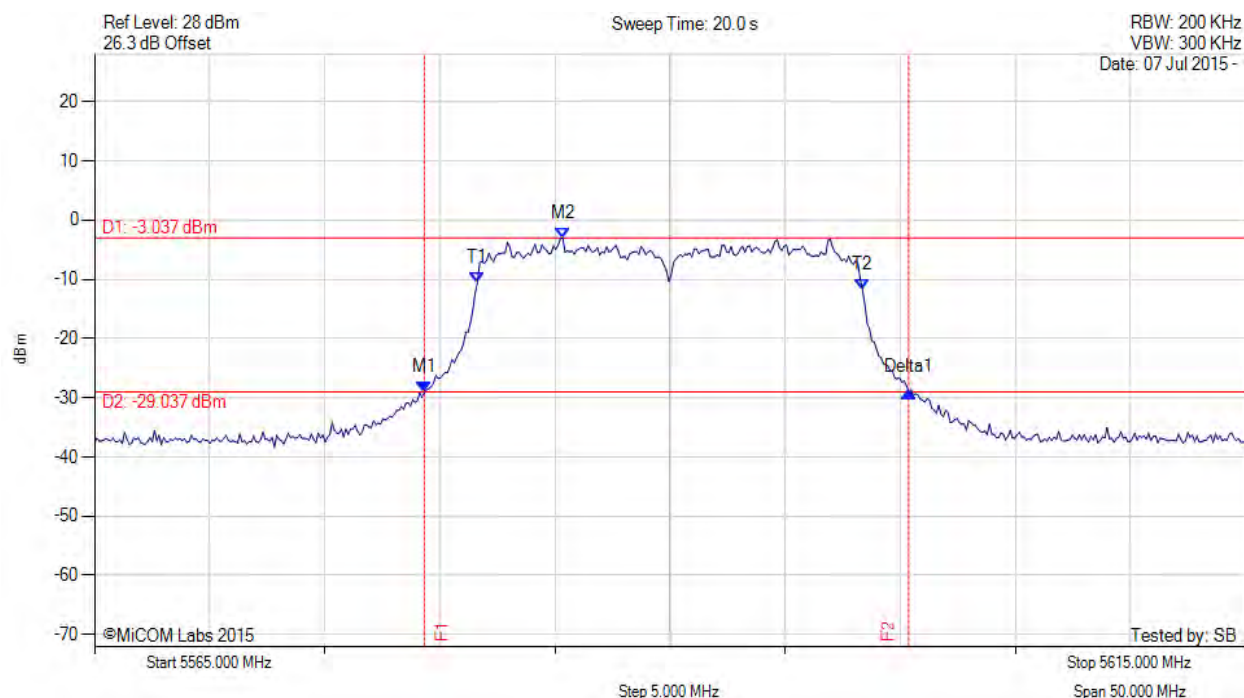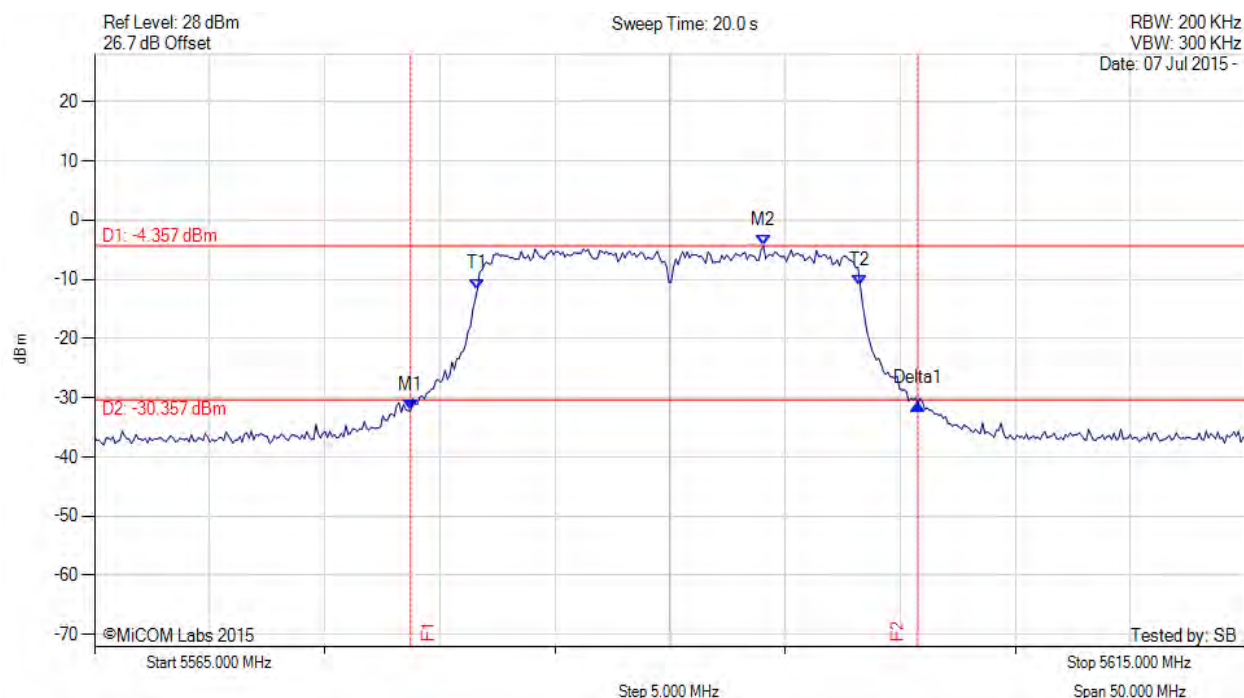
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26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5484.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5479.165 MHz : -30.253 dBm M2 : 5483.674 MHz : -3.893 dBm Delta1 : 9.870 MHz : 0.301 dB T1 : 5479.767 MHz : -13.431 dBm T2 : 5488.133 MHz : -10.387 dBm OBW : 8.367 MHz	Measured 26 dB Bandwidth: 9.870 MHz Measured 99% Bandwidth: 8.367 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5484.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

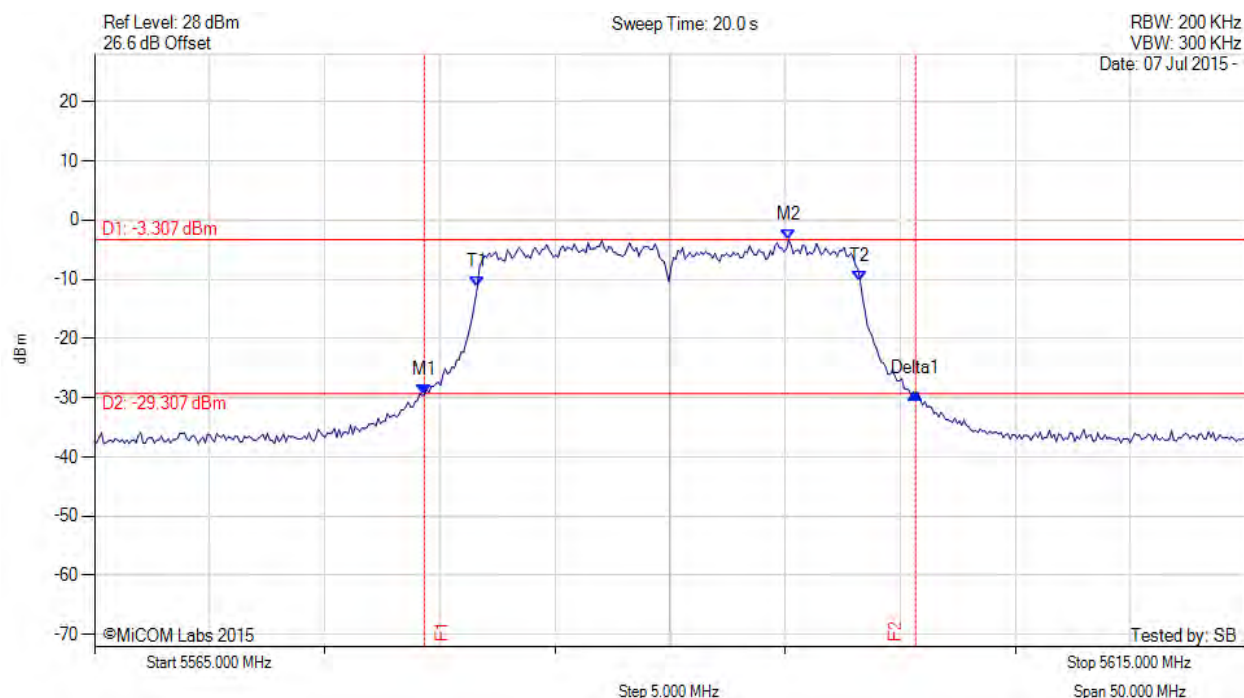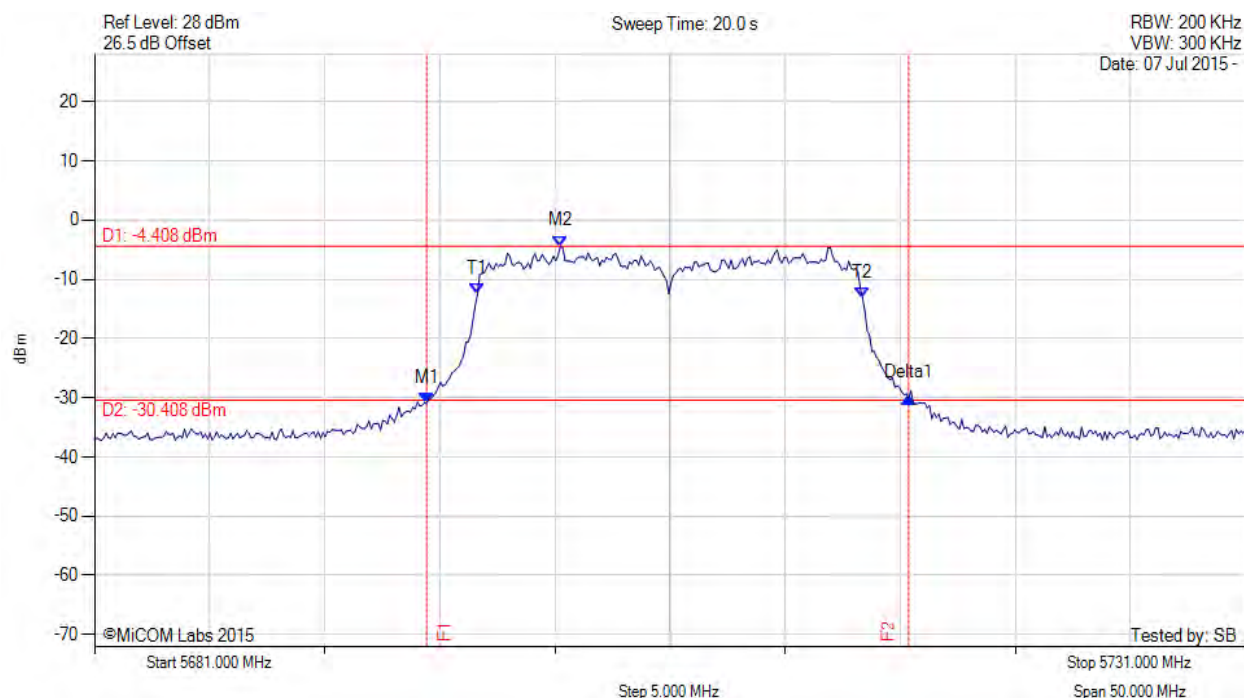| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5479.215 MHz : -29.411 dBm M2 : 5482.472 MHz : -2.962 dBm Delta1 : 9.469 MHz : 1.379 dB T1 : 5479.817 MHz : -9.531 dBm T2 : 5488.133 MHz : -11.589 dBm OBW : 8.317 MHz	Measured 26 dB Bandwidth: 9.469 MHz Measured 99% Bandwidth: 8.317 MHz

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26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5595.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5589.714 MHz : -33.393 dBm M2 : 5595.576 MHz : -2.289 dBm Delta1 : 10.020 MHz : 6.073 dB T1 : 5590.767 MHz : -9.468 dBm T2 : 5599.133 MHz : -9.647 dBm OBW : 8.367 MHz	Measured 26 dB Bandwidth: 10.020 MHz Measured 99% Bandwidth: 8.367 MHz

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MiCOMLabs

26 dB & 99% EMISSION BANDWIDTH

MiTest.

Variant: 10 MHz, Channel: 5595.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5590.115 MHz : -31.158 dBm M2 : 5593.572 MHz : -4.332 dBm Delta1 : 9.870 MHz : 1.625 dB T1 : 5590.767 MHz : -12.331 dBm T2 : 5599.133 MHz : -11.296 dBm OBW : 8.367 MHz	Measured 26 dB Bandwidth: 9.870 MHz Measured 99% Bandwidth: 8.367 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5595.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5590.215 MHz : -29.207 dBm M2 : 5592.370 MHz : -3.112 dBm Delta1 : 9.419 MHz : 1.167 dB T1 : 5590.767 MHz : -10.775 dBm T2 : 5599.133 MHz : -11.792 dBm OBW : 8.367 MHz	Measured 26 dB Bandwidth: 9.419 MHz Measured 99% Bandwidth: 8.367 MHz

back to matrix

	Title:	Radwin RADWIN 2000 JET, RADWIN 5000 JET
	To:	FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247
	Serial #:	RDWN32-U2a Rev A
	Issue Date:	29th July 2015
	Page:	71 of 223

26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5711.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5706.115 MHz : -31.121 dBm M2 : 5711.526 MHz : -4.099 dBm Delta1 : 9.519 MHz : 2.357 dB T1 : 5706.767 MHz : -12.838 dBm T2 : 5715.133 MHz : -12.059 dBm OBW : 8.367 MHz	Measured 26 dB Bandwidth: 9.519 MHz Measured 99% Bandwidth: 8.367 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5711.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

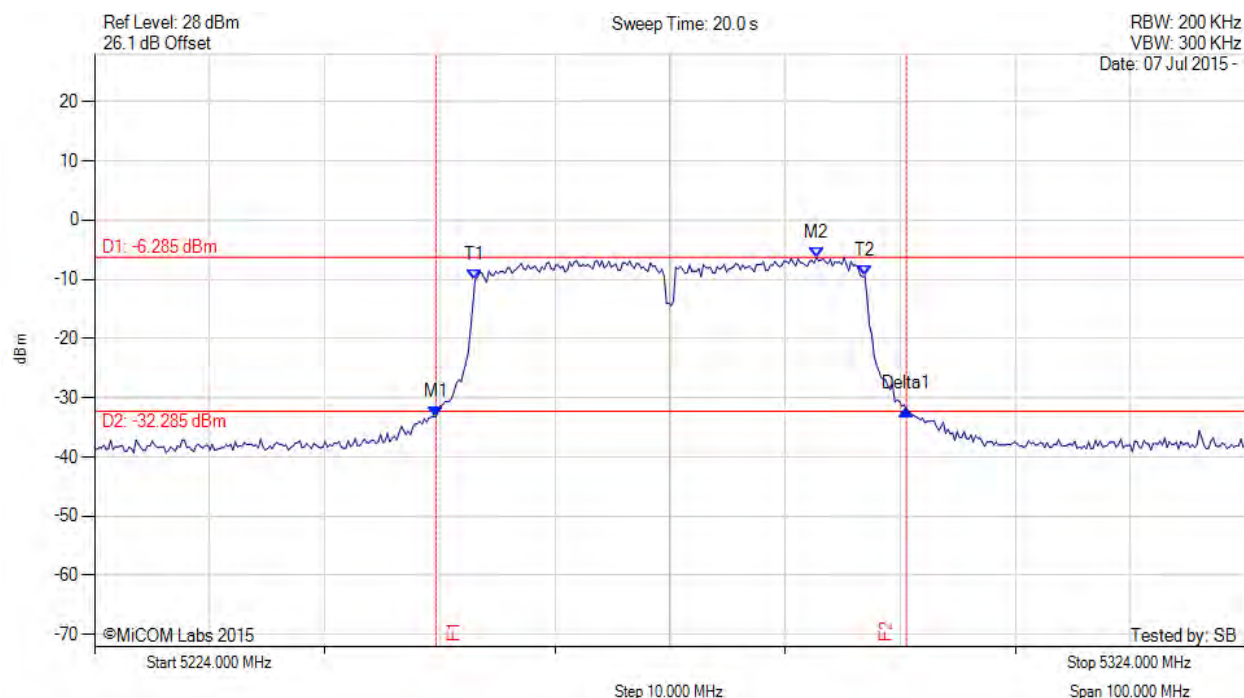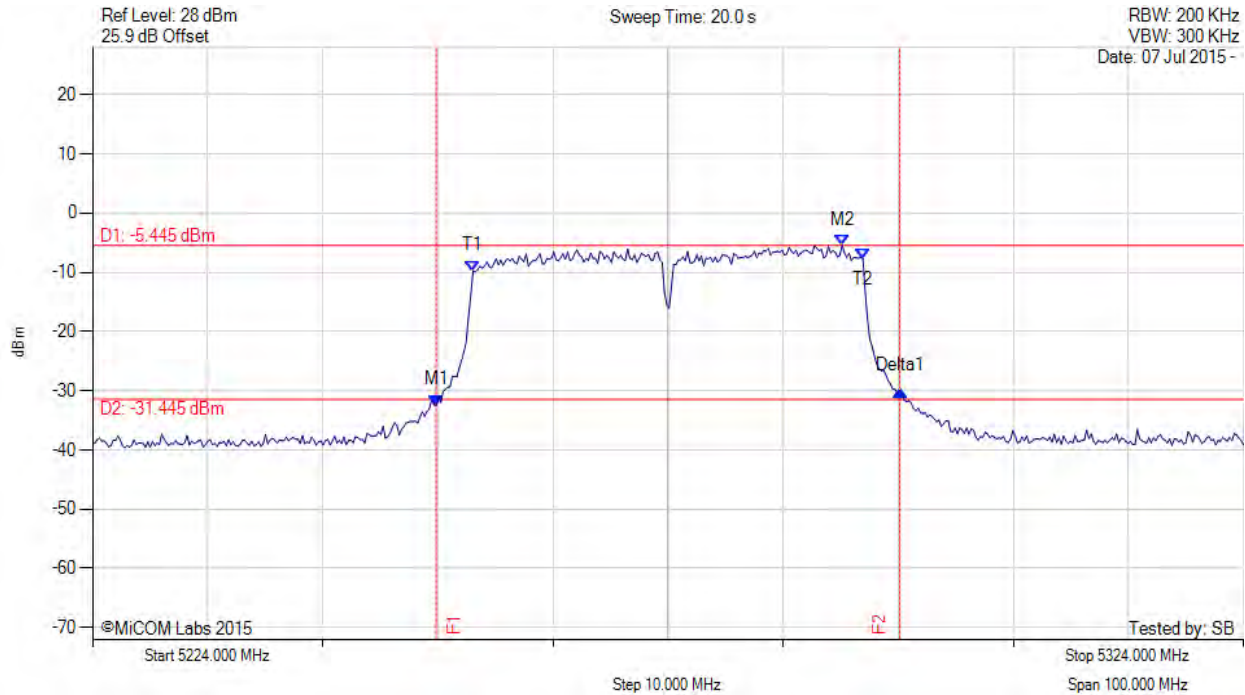| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5706.165 MHz : -28.878 dBm M2 : 5713.079 MHz : -2.213 dBm Delta1 : 9.719 MHz : 2.113 dB T1 : 5706.817 MHz : -10.560 dBm T2 : 5715.133 MHz : -8.717 dBm OBW : 8.317 MHz	Measured 26 dB Bandwidth: 9.719 MHz Measured 99% Bandwidth: 8.317 MHz

back to matrix

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26 dB & 99% EMISSION BANDWIDTH

Variant: 10 MHz, Channel: 5711.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5706.115 MHz : -31.369 dBm M2 : 5711.827 MHz : -4.442 dBm Delta1 : 9.569 MHz : 1.749 dB T1 : 5706.767 MHz : -12.083 dBm T2 : 5715.133 MHz : -12.834 dBm OBW : 8.367 MHz	Measured 26 dB Bandwidth: 9.569 MHz Measured 99% Bandwidth: 8.367 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5264.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5253.629 MHz : -29.677 dBm M2 : 5270.964 MHz : -3.360 dBm Delta1 : 20.741 MHz : 1.586 dB T1 : 5255.633 MHz : -12.394 dBm T2 : 5272.367 MHz : -11.445 dBm OBW : 16.733 MHz	Measured 26 dB Bandwidth: 20.741 MHz Measured 99% Bandwidth: 16.733 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5264.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5253.228 MHz : -29.238 dBm M2 : 5270.363 MHz : -1.406 dBm Delta1 : 21.443 MHz : 1.149 dB T1 : 5255.733 MHz : -7.145 dBm T2 : 5272.267 MHz : -7.050 dBm OBW : 16.533 MHz	Measured 26 dB Bandwidth: 21.443 MHz Measured 99% Bandwidth: 16.533 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5264.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5253.629 MHz : -27.086 dBm M2 : 5269.862 MHz : 0.030 dBm Delta1 : 20.842 MHz : 1.871 dB T1 : 5255.733 MHz : -5.299 dBm T2 : 5272.267 MHz : -6.559 dBm OBW : 16.533 MHz	Measured 26 dB Bandwidth: 20.842 MHz Measured 99% Bandwidth: 16.533 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5300.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5289.529 MHz : -31.835 dBm M2 : 5306.964 MHz : -5.347 dBm Delta1 : 20.942 MHz : 1.489 dB T1 : 5291.633 MHz : -14.141 dBm T2 : 5308.367 MHz : -13.574 dBm OBW : 16.733 MHz	Measured 26 dB Bandwidth: 20.942 MHz Measured 99% Bandwidth: 16.733 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5300.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5289.329 MHz : -30.251 dBm M2 : 5303.257 MHz : -4.095 dBm Delta1 : 21.242 MHz : 1.566 dB T1 : 5291.633 MHz : -11.072 dBm T2 : 5308.267 MHz : -9.933 dBm OBW : 16.633 MHz	Measured 26 dB Bandwidth: 21.242 MHz Measured 99% Bandwidth: 16.633 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5300.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5289.329 MHz : -30.037 dBm M2 : 5305.261 MHz : -2.421 dBm Delta1 : 21.142 MHz : 2.156 dB T1 : 5291.733 MHz : -7.332 dBm T2 : 5308.267 MHz : -9.421 dBm OBW : 16.533 MHz	Measured 26 dB Bandwidth: 21.142 MHz Measured 99% Bandwidth: 16.533 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5336.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

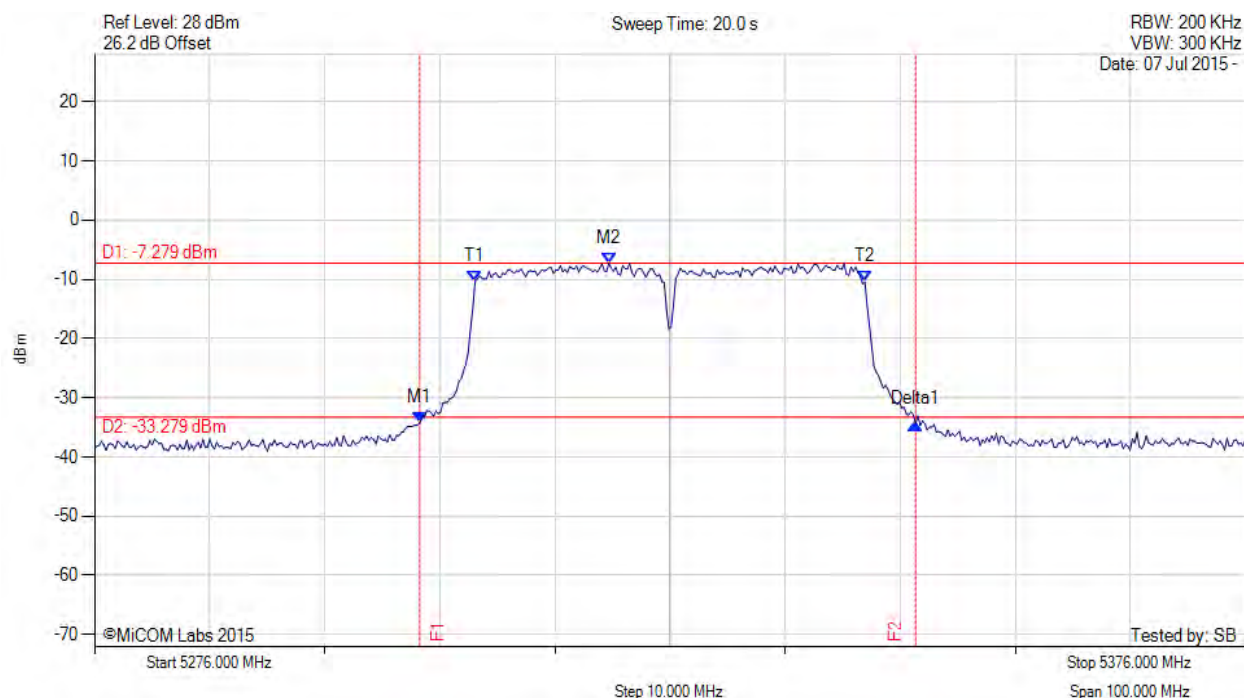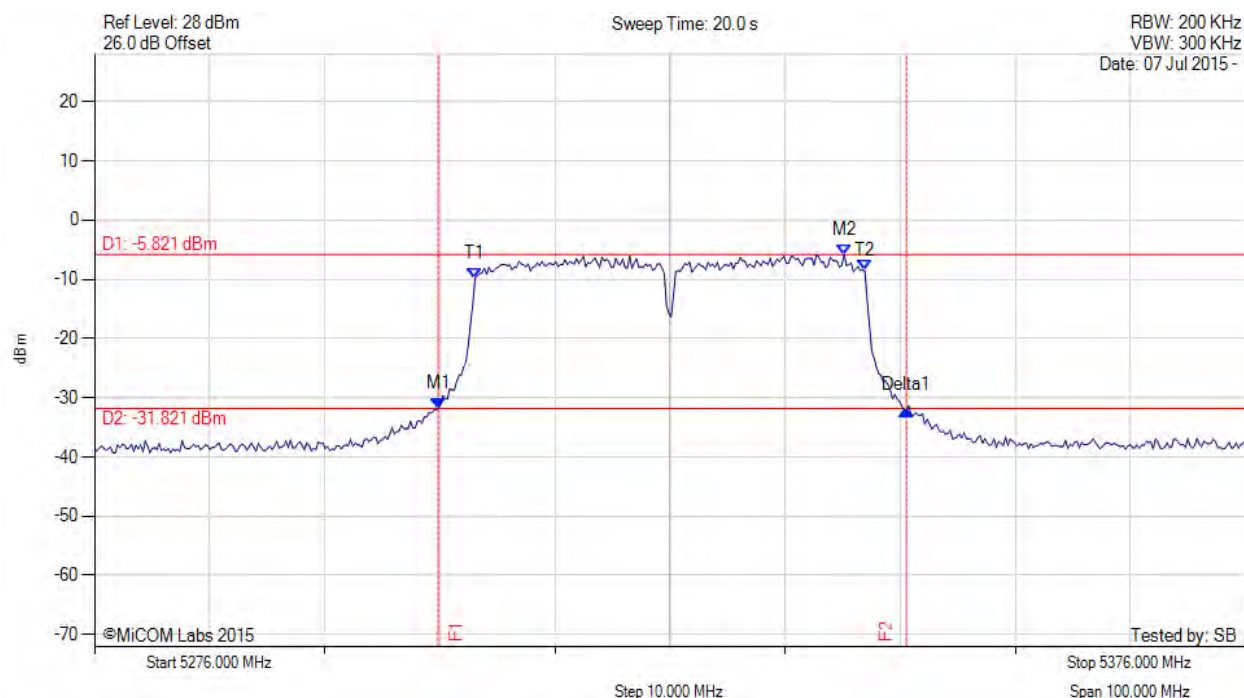| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5325.729 MHz : -28.556 dBm M2 : 5342.964 MHz : -2.199 dBm Delta1 : 20.942 MHz : -0.622 dB T1 : 5327.633 MHz : -11.329 dBm T2 : 5344.367 MHz : -10.967 dBm OBW : 16.733 MHz	Measured 26 dB Bandwidth: 20.942 MHz Measured 99% Bandwidth: 16.733 MHz

back to matrix

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26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5336.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5325.228 MHz : -30.476 dBm M2 : 5340.058 MHz : -3.816 dBm Delta1 : 21.443 MHz : 0.936 dB T1 : 5327.633 MHz : -11.105 dBm T2 : 5344.267 MHz : -9.710 dBm OBW : 16.633 MHz	Measured 26 dB Bandwidth: 21.443 MHz Measured 99% Bandwidth: 16.633 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5336.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

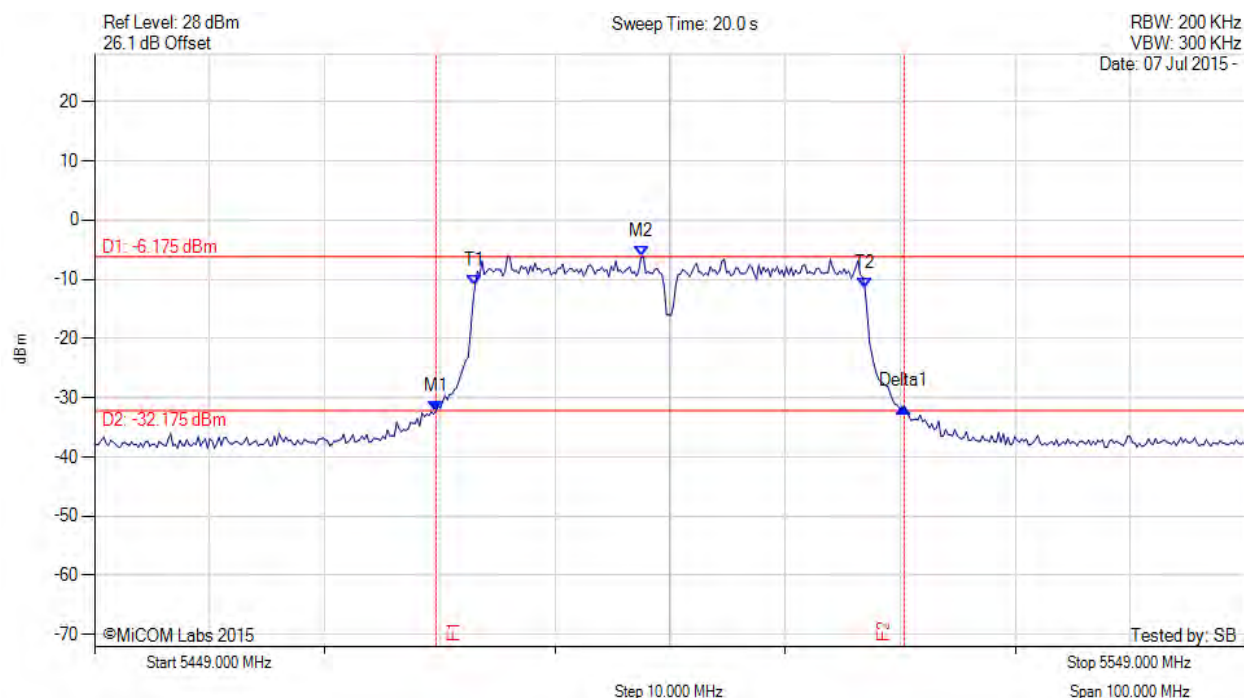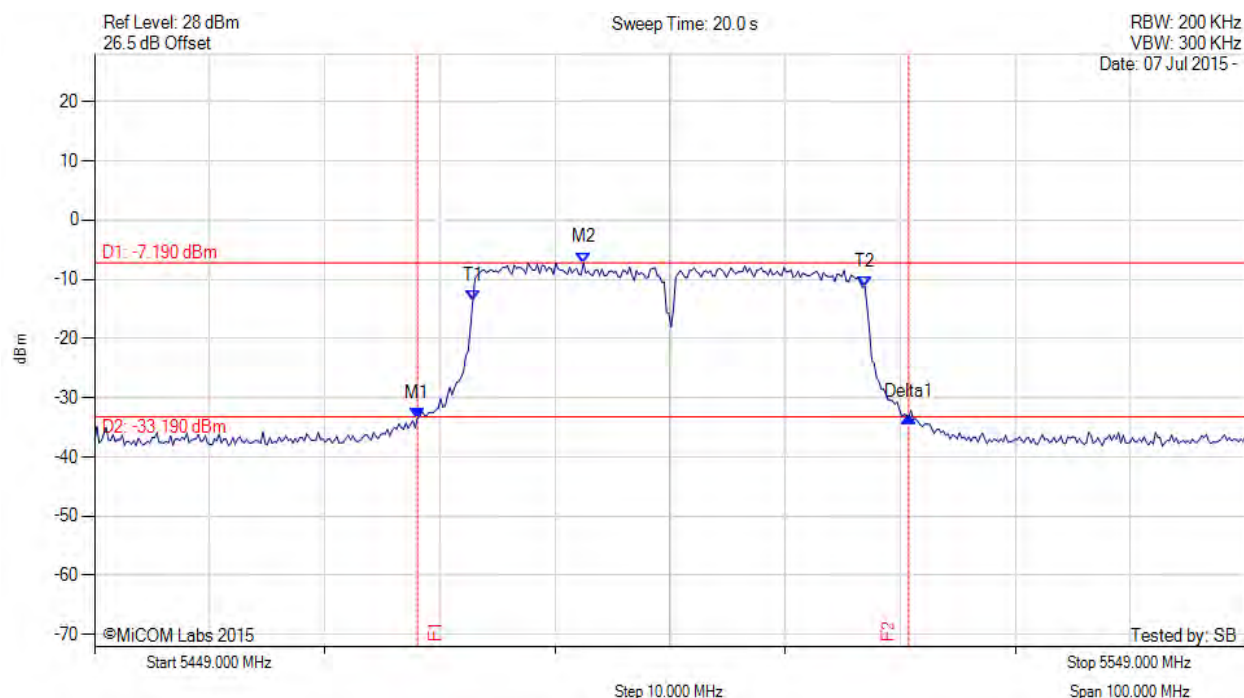| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5325.429 MHz : -28.357 dBm M2 : 5339.657 MHz : -2.099 dBm Delta1 : 20.842 MHz : 0.218 dB T1 : 5327.733 MHz : -6.576 dBm T2 : 5344.267 MHz : -9.612 dBm OBW : 16.533 MHz	Measured 26 dB Bandwidth: 20.842 MHz Measured 99% Bandwidth: 16.533 MHz

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26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5489.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5478.128 MHz : -29.494 dBm M2 : 5484.240 MHz : -3.102 dBm Delta1 : 21.242 MHz : -0.008 dB T1 : 5480.633 MHz : -11.408 dBm T2 : 5497.267 MHz : -10.194 dBm OBW : 16.633 MHz	Measured 26 dB Bandwidth: 21.242 MHz Measured 99% Bandwidth: 16.633 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5489.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

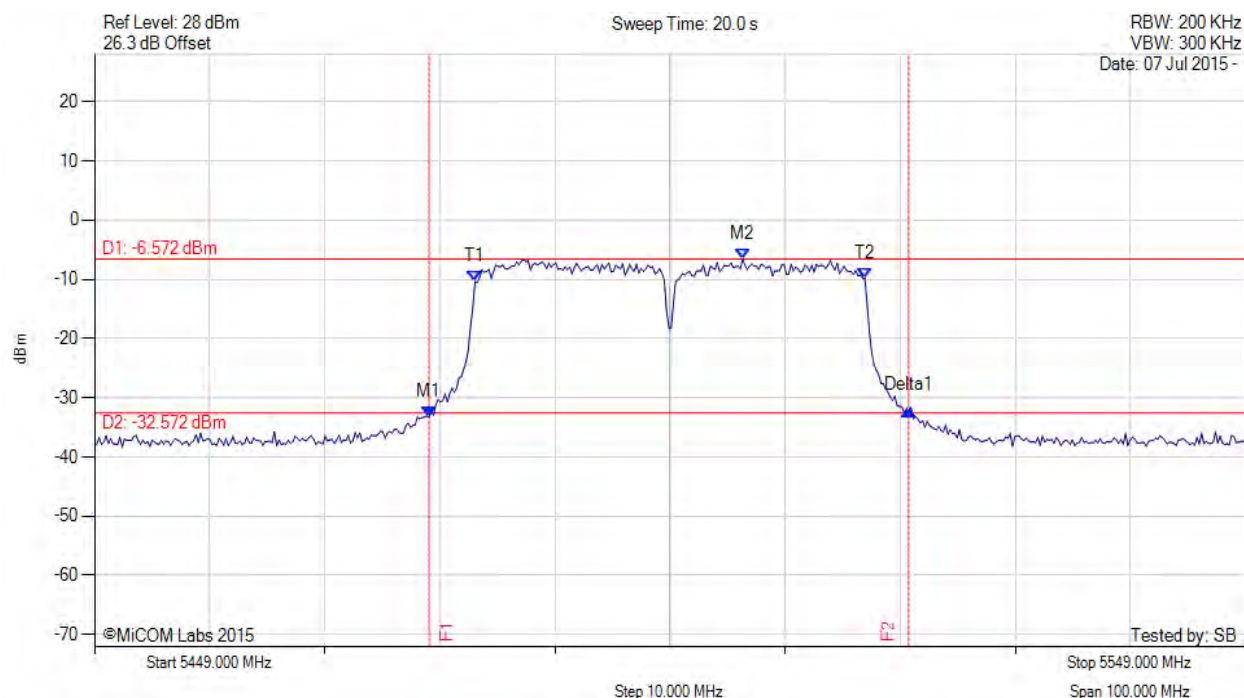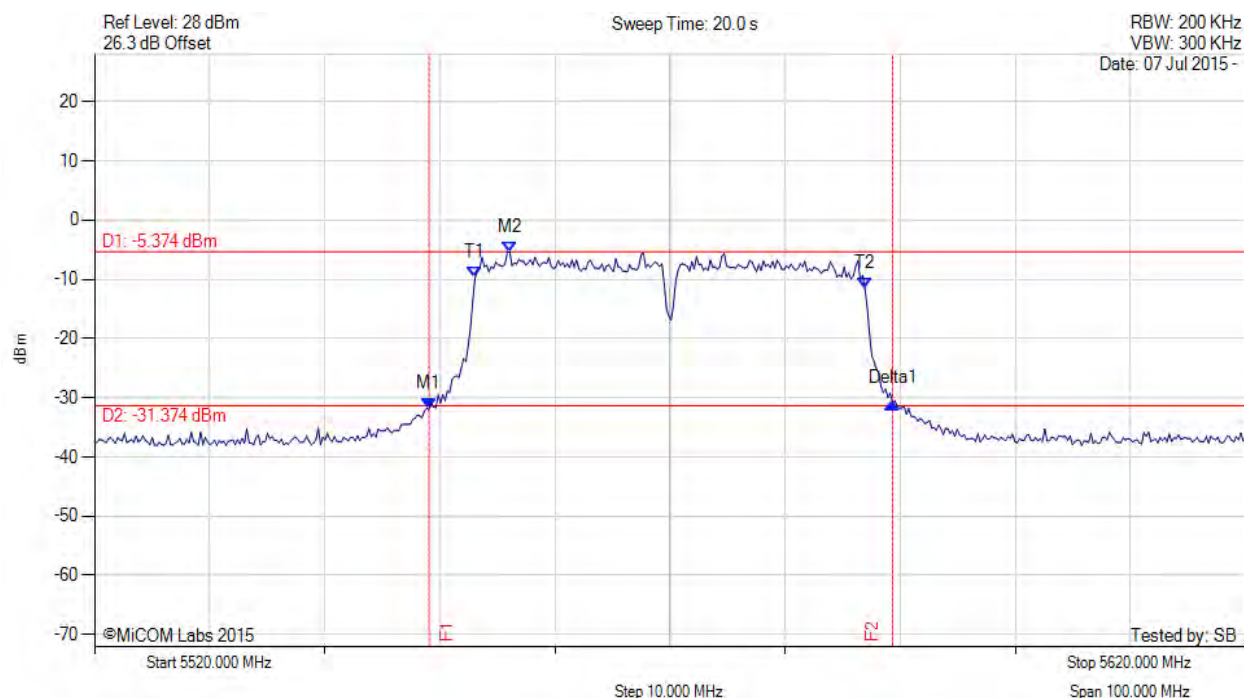| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5478.128 MHz : -30.871 dBm M2 : 5494.261 MHz : -4.080 dBm Delta1 : 21.443 MHz : 1.548 dB T1 : 5480.633 MHz : -11.314 dBm T2 : 5497.267 MHz : -10.657 dBm OBW : 16.633 MHz	Measured 26 dB Bandwidth: 21.443 MHz Measured 99% Bandwidth: 16.633 MHz

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26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5489.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5478.128 MHz : -29.362 dBm M2 : 5485.643 MHz : -3.352 dBm Delta1 : 21.343 MHz : 0.994 dB T1 : 5480.633 MHz : -10.501 dBm T2 : 5497.267 MHz : -10.214 dBm OBW : 16.633 MHz	Measured 26 dB Bandwidth: 21.343 MHz Measured 99% Bandwidth: 16.633 MHz

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26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5590.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5579.329 MHz : -29.118 dBm M2 : 5585.341 MHz : -3.037 dBm Delta1 : 21.042 MHz : 0.067 dB T1 : 5581.633 MHz : -10.609 dBm T2 : 5598.367 MHz : -11.835 dBm OBW : 16.733 MHz	Measured 26 dB Bandwidth: 21.042 MHz Measured 99% Bandwidth: 16.733 MHz

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26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5590.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Ref Level: 28 dBm
26.7 dB Offset

Sweep Time: 20.0 s

RBW: 200 KHz
VBW: 300 KHz
Date: 07 Jul 2015 -

D1: -4.357 dBm

D2: -30.357 dBm

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Tested by: SB

Start 5565.000 MHz

Step 5.000 MHz

Stop 5615.000 MHz

Span 50.000 MHz

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5578.727 MHz : -32.150 dBm M2 : 5594.058 MHz : -4.357 dBm Delta1 : 22.044 MHz : 1.106 dB T1 : 5581.633 MHz : -11.646 dBm T2 : 5598.267 MHz : -11.087 dBm OBW : 16.633 MHz	Measured 26 dB Bandwidth: 22.044 MHz Measured 99% Bandwidth: 16.633 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5590.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5579.329 MHz : -29.518 dBm M2 : 5595.160 MHz : -3.307 dBm Delta1 : 21.343 MHz : 0.226 dB T1 : 5581.633 MHz : -11.255 dBm T2 : 5598.267 MHz : -10.285 dBm OBW : 16.633 MHz	Measured 26 dB Bandwidth: 21.343 MHz Measured 99% Bandwidth: 16.633 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5706.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5695.429 MHz : -30.968 dBm M2 : 5701.240 MHz : -4.408 dBm Delta1 : 20.942 MHz : 0.936 dB T1 : 5697.633 MHz : -12.549 dBm T2 : 5714.367 MHz : -13.204 dBm OBW : 16.733 MHz	Measured 26 dB Bandwidth: 20.942 MHz Measured 99% Bandwidth: 16.733 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5706.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5695.329 MHz : -27.487 dBm M2 : 5710.058 MHz : -1.310 dBm Delta1 : 21.343 MHz : 0.236 dB T1 : 5697.733 MHz : -7.141 dBm T2 : 5714.267 MHz : -7.086 dBm OBW : 16.533 MHz	Measured 26 dB Bandwidth: 21.343 MHz Measured 99% Bandwidth: 16.533 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 20 MHz, Channel: 5706.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5695.529 MHz : -30.047 dBm M2 : 5711.261 MHz : -3.013 dBm Delta1 : 20.641 MHz : 1.330 dB T1 : 5697.633 MHz : -12.038 dBm T2 : 5714.267 MHz : -11.766 dBm OBW : 16.633 MHz	Measured 26 dB Bandwidth: 20.641 MHz Measured 99% Bandwidth: 16.633 MHz

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26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5274.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc
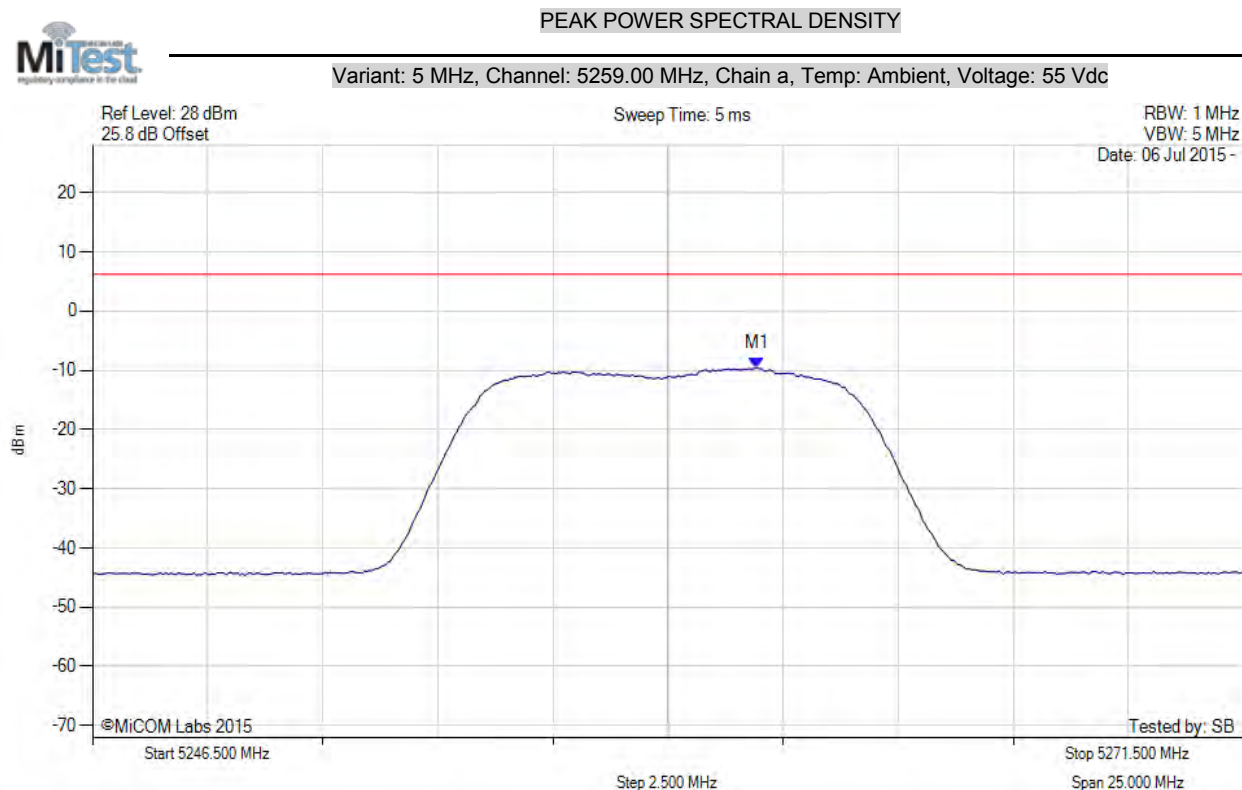

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5252.257 MHz : -35.819 dBm M2 : 5290.333 MHz : -8.965 dBm Delta1 : 43.086 MHz : 1.135 dB T1 : 5257.066 MHz : -15.510 dBm T2 : 5291.134 MHz : -17.859 dBm OBW : 34.068 MHz	Measured 26 dB Bandwidth: 43.086 MHz Measured 99% Bandwidth: 34.068 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5274.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5253.659 MHz : -33.285 dBm M2 : 5286.725 MHz : -6.285 dBm Delta1 : 40.882 MHz : 1.306 dB T1 : 5257.066 MHz : -10.082 dBm T2 : 5290.934 MHz : -9.464 dBm OBW : 33.868 MHz	Measured 26 dB Bandwidth: 40.882 MHz Measured 99% Bandwidth: 33.868 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5274.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5253.860 MHz : -32.447 dBm M2 : 5289.130 MHz : -5.445 dBm Delta1 : 40.281 MHz : 2.510 dB T1 : 5257.066 MHz : -9.777 dBm T2 : 5290.934 MHz : -7.713 dBm OBW : 33.868 MHz	Measured 26 dB Bandwidth: 40.281 MHz Measured 99% Bandwidth: 33.868 MHz

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26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5300.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5280.060 MHz : -34.806 dBm M2 : 5313.928 MHz : -8.479 dBm Delta1 : 41.283 MHz : 0.551 dB T1 : 5283.066 MHz : -15.402 dBm T2 : 5317.134 MHz : -17.125 dBm OBW : 34.068 MHz	Measured 26 dB Bandwidth: 41.283 MHz Measured 99% Bandwidth: 34.068 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5300.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5279.259 MHz : -33.527 dBm M2 : 5315.130 MHz : -7.119 dBm Delta1 : 41.683 MHz : 0.124 dB T1 : 5283.066 MHz : -10.688 dBm T2 : 5316.934 MHz : -10.271 dBm OBW : 33.868 MHz	Measured 26 dB Bandwidth: 41.683 MHz Measured 99% Bandwidth: 33.868 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5300.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5279.860 MHz : -31.937 dBm M2 : 5311.924 MHz : -5.543 dBm Delta1 : 40.882 MHz : 0.734 dB T1 : 5283.066 MHz : -10.369 dBm T2 : 5316.934 MHz : -7.916 dBm OBW : 33.868 MHz	Measured 26 dB Bandwidth: 40.882 MHz Measured 99% Bandwidth: 33.868 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5326.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5306.261 MHz : -31.851 dBm M2 : 5337.723 MHz : -5.589 dBm Delta1 : 40.481 MHz : 0.620 dB T1 : 5309.066 MHz : -13.080 dBm T2 : 5342.934 MHz : -10.271 dBm OBW : 33.868 MHz	Measured 26 dB Bandwidth: 40.481 MHz Measured 99% Bandwidth: 33.868 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5326.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

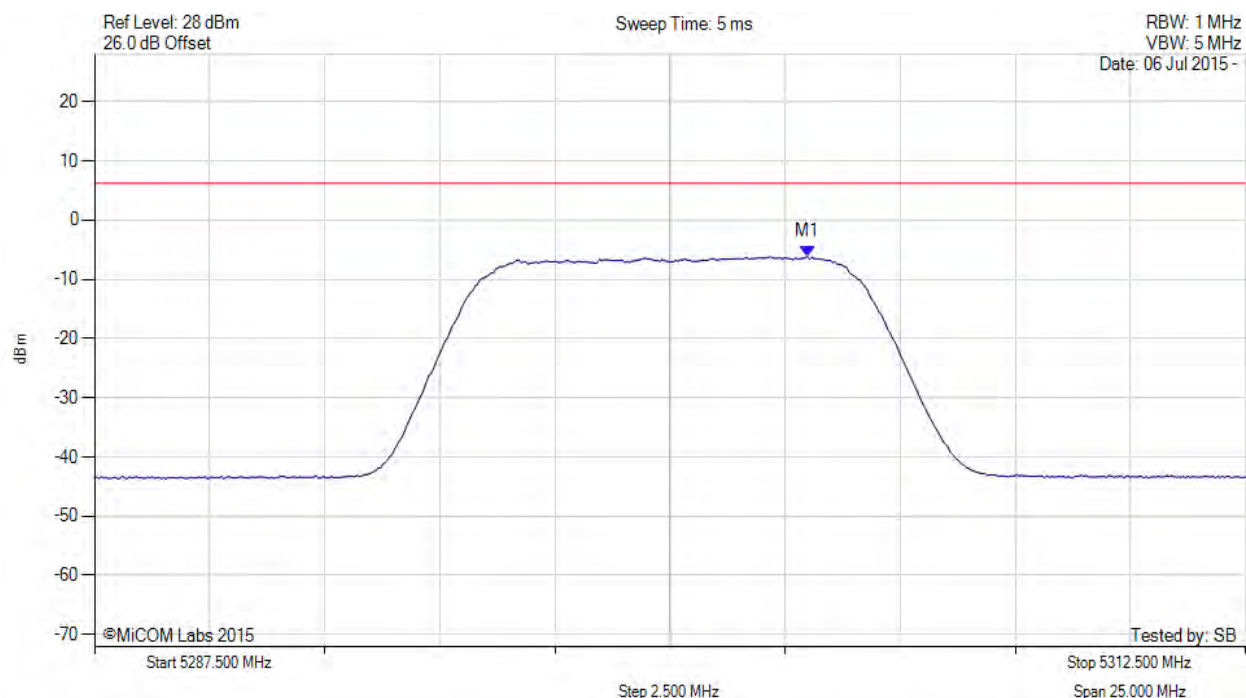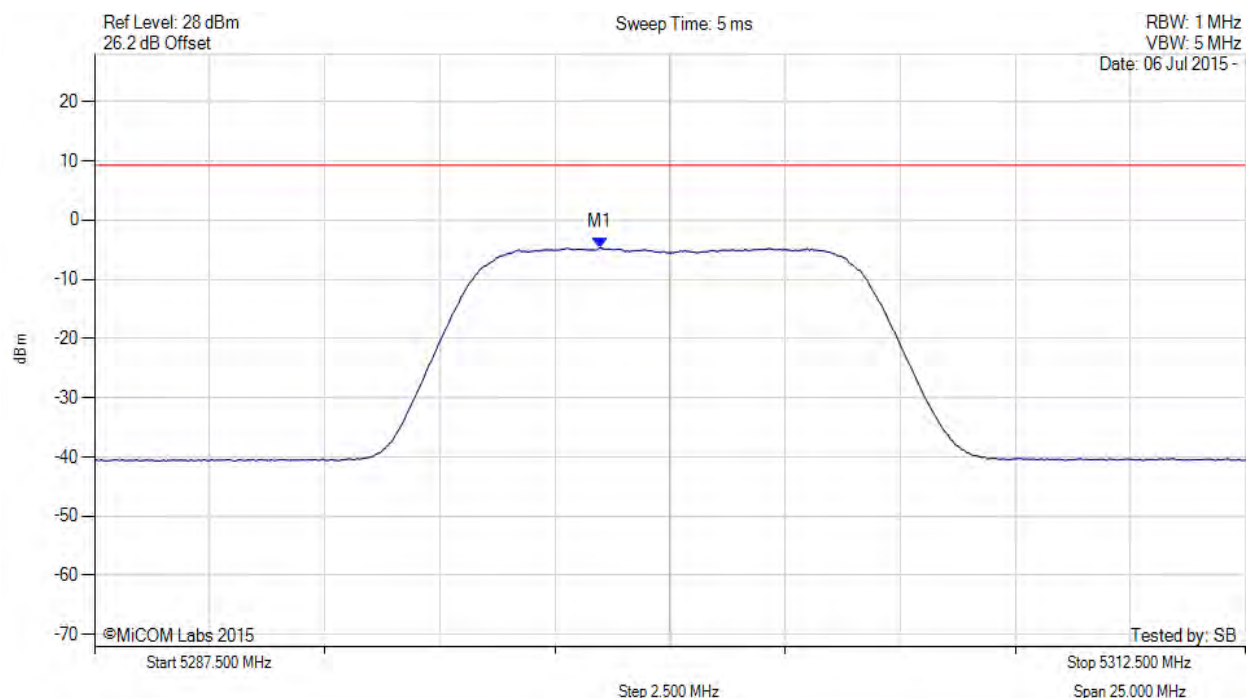| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5304.257 MHz : -34.294 dBm M2 : 5320.689 MHz : -7.279 dBm Delta1 : 43.086 MHz : -0.098 dB T1 : 5309.066 MHz : -10.397 dBm T2 : 5342.934 MHz : -10.436 dBm OBW : 33.868 MHz	Measured 26 dB Bandwidth: 43.086 MHz Measured 99% Bandwidth: 33.868 MHz

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26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5326.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5305.860 MHz : -31.823 dBm M2 : 5341.130 MHz : -5.821 dBm Delta1 : 40.681 MHz : -0.270 dB T1 : 5309.066 MHz : -9.864 dBm T2 : 5342.934 MHz : -8.565 dBm OBW : 33.868 MHz	Measured 26 dB Bandwidth: 40.681 MHz Measured 99% Bandwidth: 33.868 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5499.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5478.659 MHz : -32.296 dBm M2 : 5496.495 MHz : -6.175 dBm Delta1 : 40.681 MHz : 0.787 dB T1 : 5482.066 MHz : -11.097 dBm T2 : 5515.934 MHz : -11.536 dBm OBW : 33.868 MHz	Measured 26 dB Bandwidth: 40.681 MHz Measured 99% Bandwidth: 33.868 MHz

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26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5499.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5477.056 MHz : -33.474 dBm M2 : 5491.485 MHz : -7.190 dBm Delta1 : 42.685 MHz : 0.301 dB T1 : 5481.866 MHz : -13.637 dBm T2 : 5515.934 MHz : -11.207 dBm OBW : 34.068 MHz	Measured 26 dB Bandwidth: 42.685 MHz Measured 99% Bandwidth: 34.068 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5499.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5478.058 MHz : -33.230 dBm M2 : 5505.313 MHz : -6.572 dBm Delta1 : 41.683 MHz : 1.090 dB T1 : 5482.066 MHz : -10.405 dBm T2 : 5515.934 MHz : -9.866 dBm OBW : 33.868 MHz	Measured 26 dB Bandwidth: 41.683 MHz Measured 99% Bandwidth: 33.868 MHz

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26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5570.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5549.058 MHz : -31.953 dBm M2 : 5556.072 MHz : -5.374 dBm Delta1 : 40.281 MHz : 0.992 dB T1 : 5553.066 MHz : -9.722 dBm T2 : 5586.934 MHz : -11.510 dBm OBW : 33.868 MHz	Measured 26 dB Bandwidth: 40.281 MHz Measured 99% Bandwidth: 33.868 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5570.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5548.457 MHz : -32.799 dBm M2 : 5558.878 MHz : -6.498 dBm Delta1 : 41.683 MHz : 1.479 dB T1 : 5552.866 MHz : -13.421 dBm T2 : 5586.934 MHz : -10.781 dBm OBW : 34.068 MHz	Measured 26 dB Bandwidth: 41.683 MHz Measured 99% Bandwidth: 34.068 MHz

back to matrix

26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5570.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5549.259 MHz : -31.499 dBm M2 : 5564.689 MHz : -5.252 dBm Delta1 : 40.681 MHz : 0.588 dB T1 : 5553.066 MHz : -7.839 dBm T2 : 5586.934 MHz : -9.559 dBm OBW : 33.868 MHz	Measured 26 dB Bandwidth: 40.681 MHz Measured 99% Bandwidth: 33.868 MHz

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26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5696.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

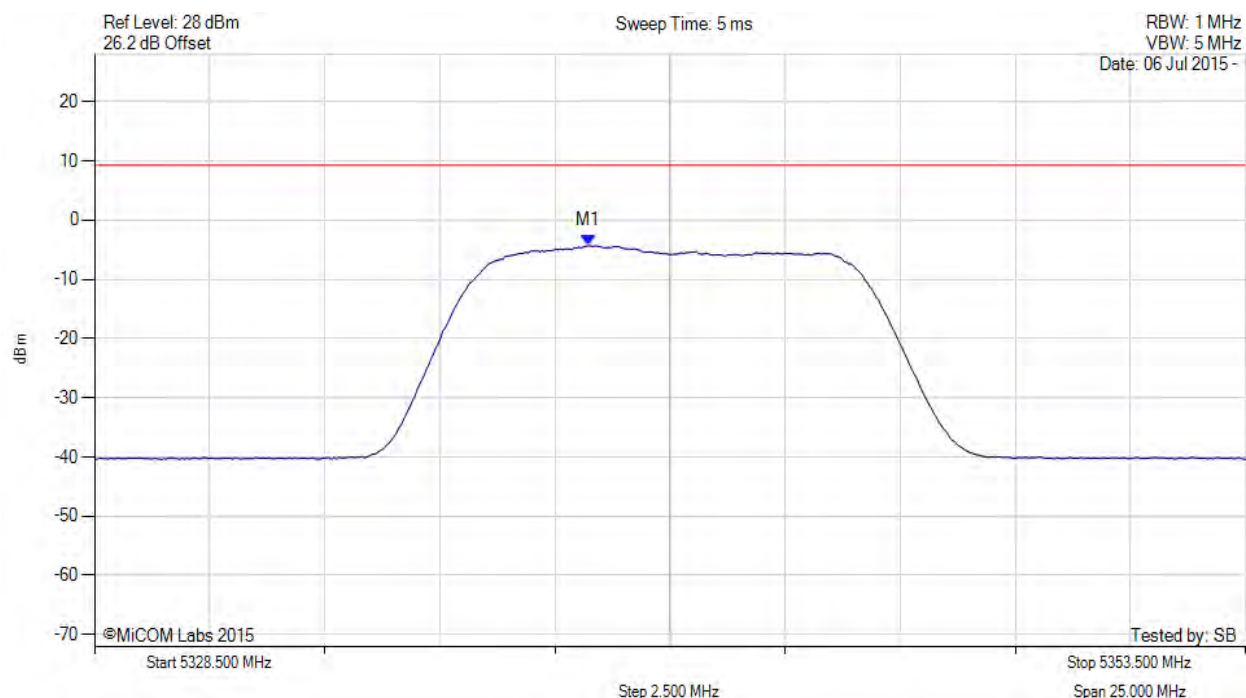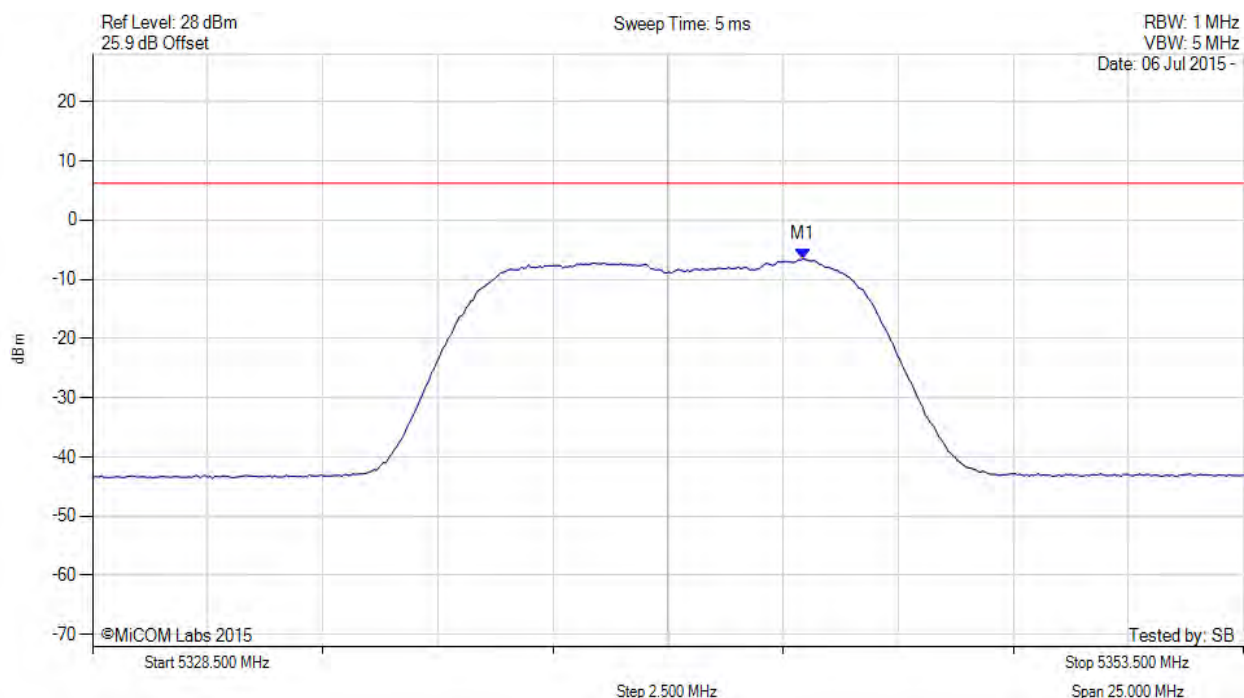| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5674.858 MHz : -32.953 dBm M2 : 5682.072 MHz : -6.852 dBm Delta1 : 41.483 MHz : 1.428 dB T1 : 5678.866 MHz : -14.686 dBm T2 : 5712.934 MHz : -12.254 dBm OBW : 34.068 MHz	Measured 26 dB Bandwidth: 41.483 MHz Measured 99% Bandwidth: 34.068 MHz

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26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5696.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5675.459 MHz : -31.180 dBm M2 : 5708.325 MHz : -4.219 dBm Delta1 : 40.882 MHz : 1.306 dB T1 : 5679.066 MHz : -9.724 dBm T2 : 5713.134 MHz : -11.514 dBm OBW : 34.068 MHz	Measured 26 dB Bandwidth: 40.882 MHz Measured 99% Bandwidth: 34.068 MHz

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26 dB & 99% EMISSION BANDWIDTH

Variant: 40 MHz, Channel: 5696.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5674.056 MHz : -34.068 dBm M2 : 5704.717 MHz : -6.502 dBm Delta1 : 43.487 MHz : 0.366 dB T1 : 5678.866 MHz : -13.688 dBm T2 : 5712.934 MHz : -9.876 dBm OBW : 34.068 MHz	Measured 26 dB Bandwidth: 43.487 MHz Measured 99% Bandwidth: 34.068 MHz

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A.2. Peak Power Spectral Density

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5259.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5260.929 MHz : -9.574 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5259.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5261.831 MHz : -8.304 dBm	Limit: ≤ 6.230 dBm

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5259.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc
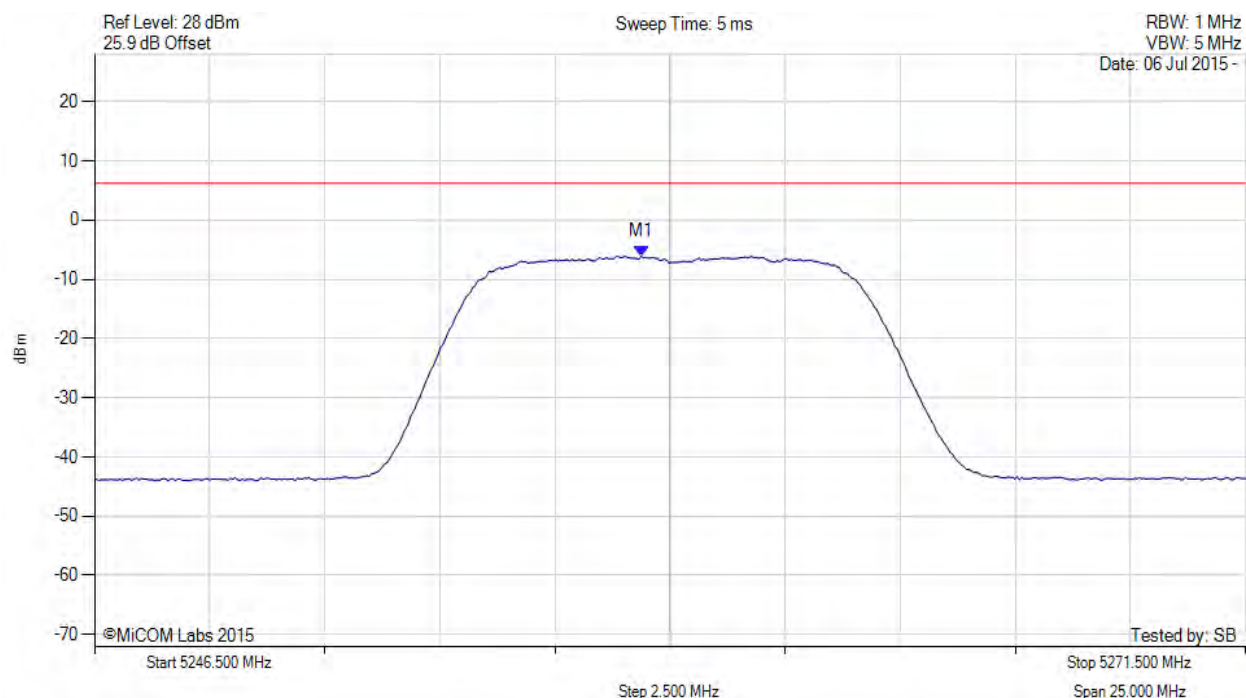
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5258.374 MHz : -6.081 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5259.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
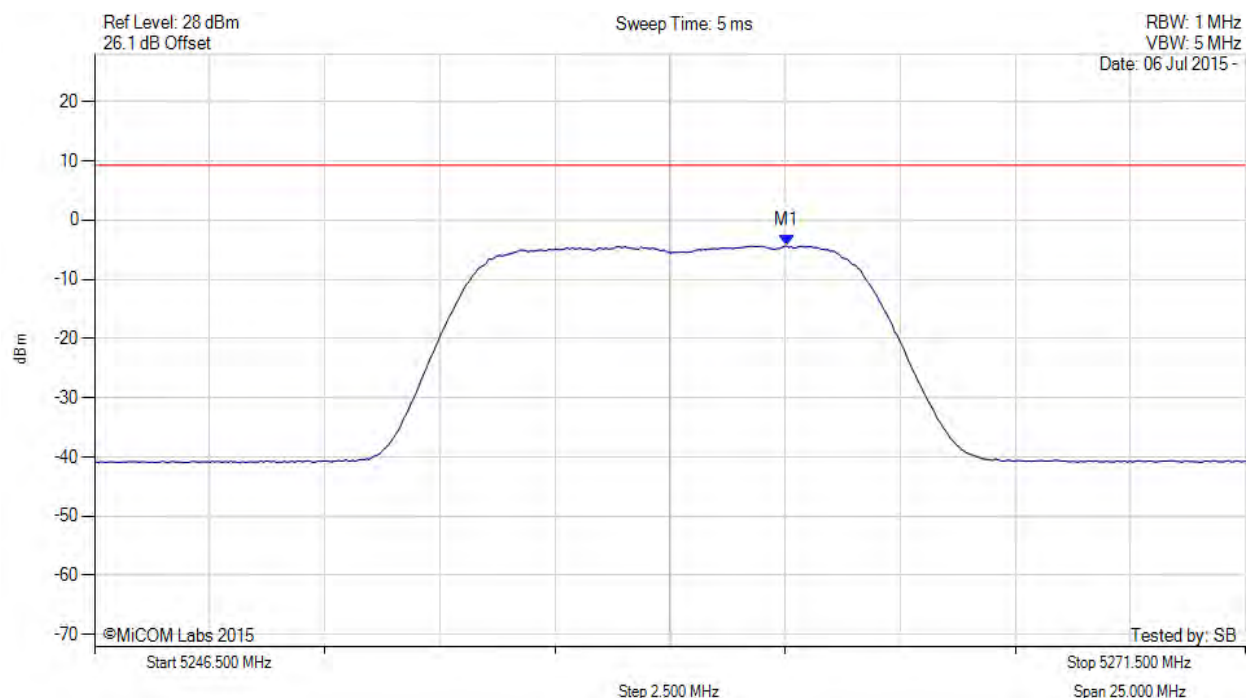
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5261.500 MHz : -4.357 dBm M1 + DCCF : 5261.500 MHz : -4.313 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 9.2 dBm Margin: -13.5 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5259.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1 : 5260.900 MHz : -9.574 dBm	Limit: ≤ 6.2 dBm
Sweep Count = 100	M1 + DCCF : 5260.900 MHz : -9.530 dBm	Margin: -15.7 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor : +0.04 dB	
Trace Mode = VIEW		

back to matrix

MiCOMLabs

PEAK POWER SPECTRAL DENSITY

MiTest

Variant: 5 MHz, Channel: 5300.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5298.322 MHz : -9.989 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5300.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5297.670 MHz : -8.919 dBm	Channel Frequency: 5300.00 MHz

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5300.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5302.981 MHz : -6.089 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5300.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

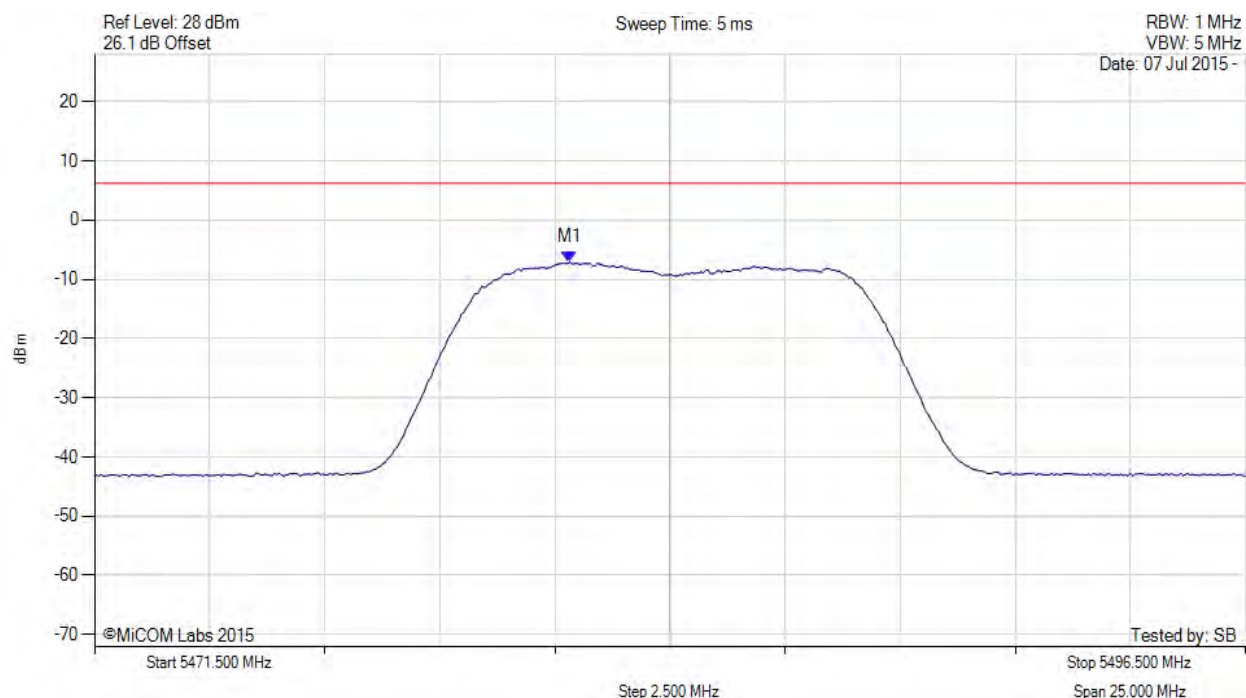| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5298.500 MHz : -4.627 dBm M1 + DCCF : 5298.500 MHz : -4.583 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 9.2 dBm Margin: -13.8 dB
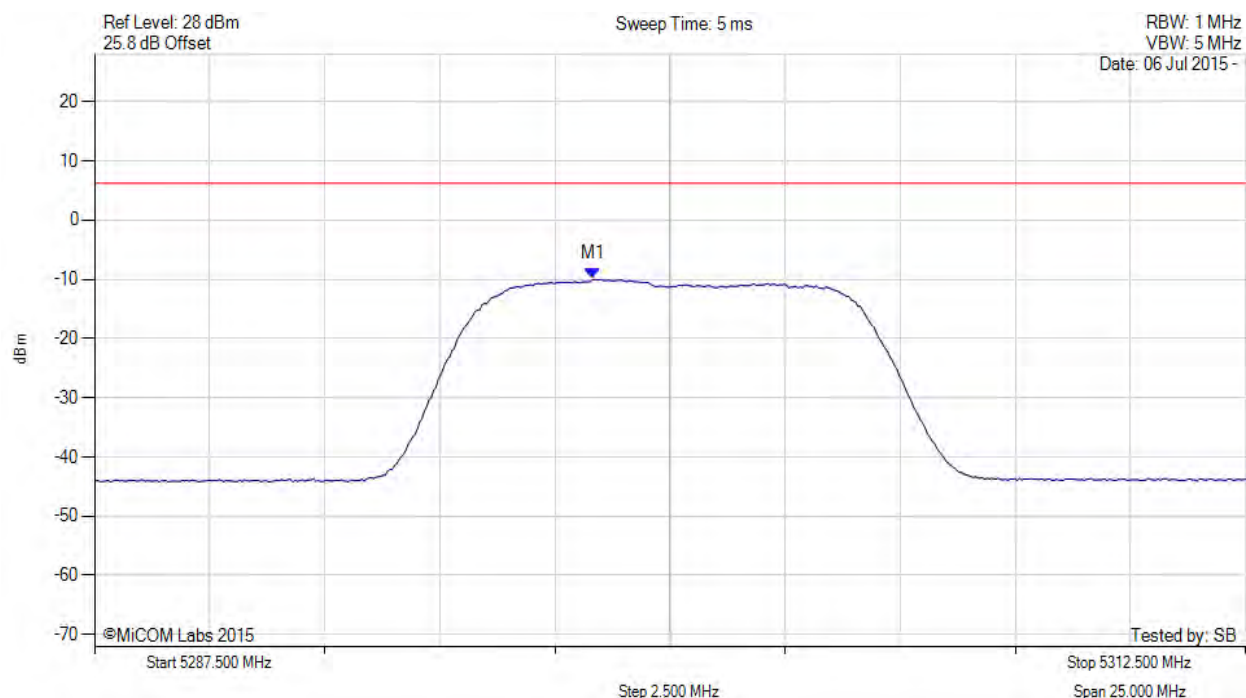
back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5300.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

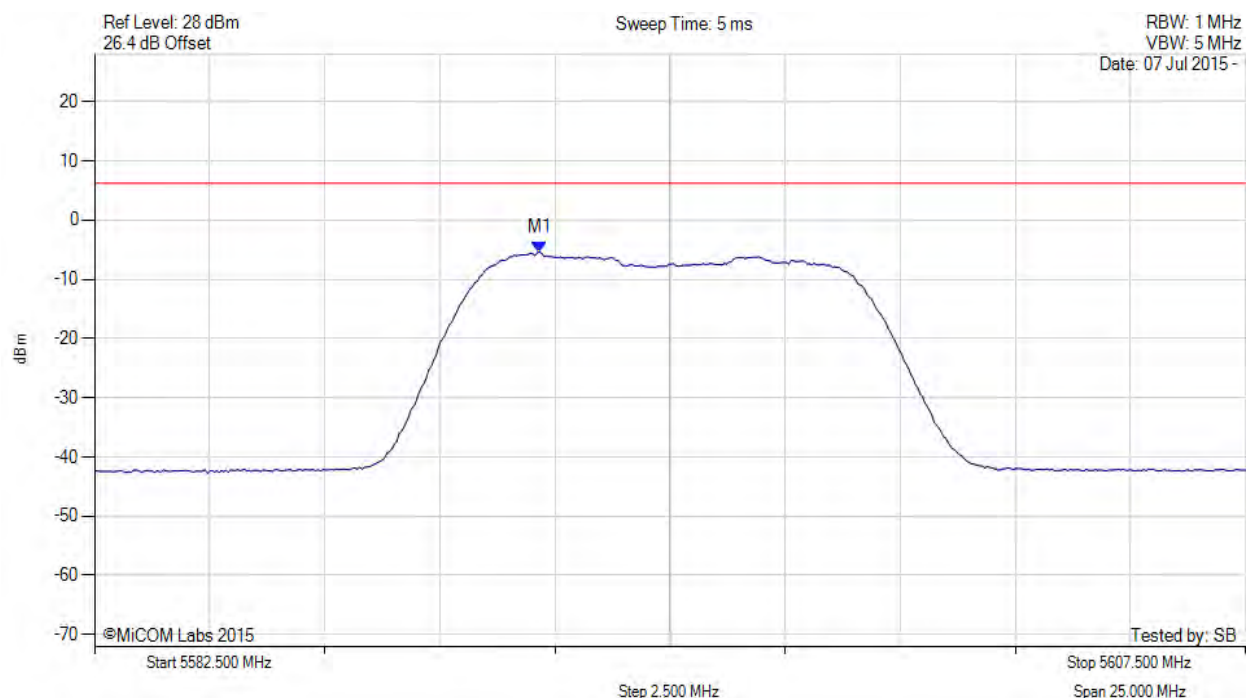| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5298.300 MHz : -9.989 dBm M1 + DCCF : 5298.300 MHz : -9.945 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 6.2 dBm Margin: -16.1 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5341.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5343.931 MHz : -6.588 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5341.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5343.931 MHz : -6.588 dBm	Limit: ≤ -8.270 dBm Margin: -1.73 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5341.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5339.422 MHz : -8.711 dBm	Limit: ≤ -5.270 dBm Margin: 3.40 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5341.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5339.422 MHz : -8.711 dBm	Limit: ≤ 6.230 dBm

back to matrix

MiCOMLabs

PEAK POWER SPECTRAL DENSITY

MiTest.

Variant: 5 MHz, Channel: 5341.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Ref Level: 28 dBm
26.0 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 5 MHz
Date: 06 Jul 2015 -

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Tested by: SB

Start 5328.500 MHz

Stop 5353.500 MHz

Step 2.500 MHz

Span 25.000 MHz

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5339.873 MHz : -6.124 dBm	Limit: ≤ 6.230 dBm

back to matrix

MiCOMLabs

PEAK POWER SPECTRAL DENSITY

MiTest

Variant: 5 MHz, Channel: 5341.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5339.873 MHz : -6.124 dBm	Limit: ≤ -5.270 dBm Margin: 0.81 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5341.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5339.221 MHz : -4.316 dBm	Limit: ≤ -2.3 dBm Margin: -2.1 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5341.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5343.931 MHz : -6.588 dBm	Limit: ≤ -8.3 dBm Margin: 1.7 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5341.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

Ref Level: 28 dBm
25.9 dB Offset
Sweep Time: 5 ms
RBW: 1 MHz
VBW: 5 MHz
Date: 06 Jul 2015 -

©MiCOM Labs 2015
Tested by: SB

Start 5328.500 MHz
Stop 5353.500 MHz
Step 2.500 MHz
Span 25.000 MHz

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5343.900 MHz : -6.588 dBm M1 + DCCF : 5343.900 MHz : -6.544 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 6.2 dBm Margin: -12.7 dB

back to matrix

	Title:	Radwin RADWIN 2000 JET, RADWIN 5000 JET
	To:	FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247
	Serial #:	RDWN32-U2a Rev A
	Issue Date:	29th July 2015
	Page:	129 of 223

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5341.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
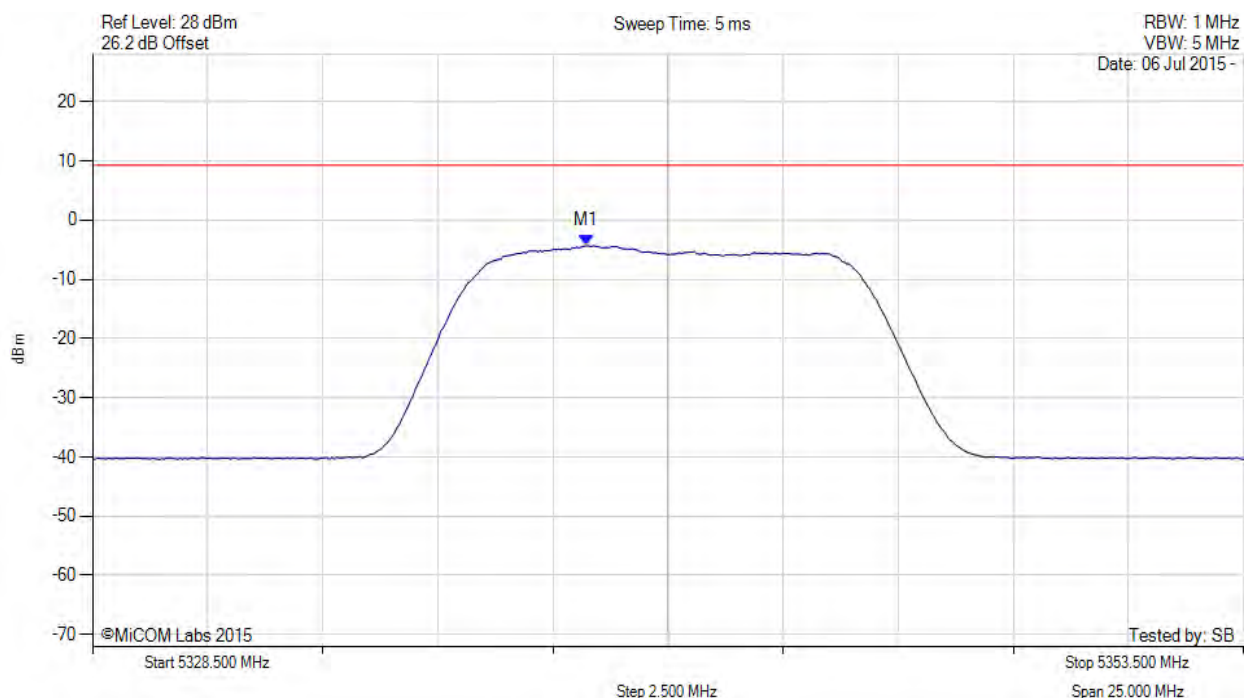
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5339.200 MHz : -4.316 dBm M1 + DCCF : 5339.200 MHz : -4.272 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 9.2 dBm Margin: -13.5 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5484.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5481.821 MHz : -7.068 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5484.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc
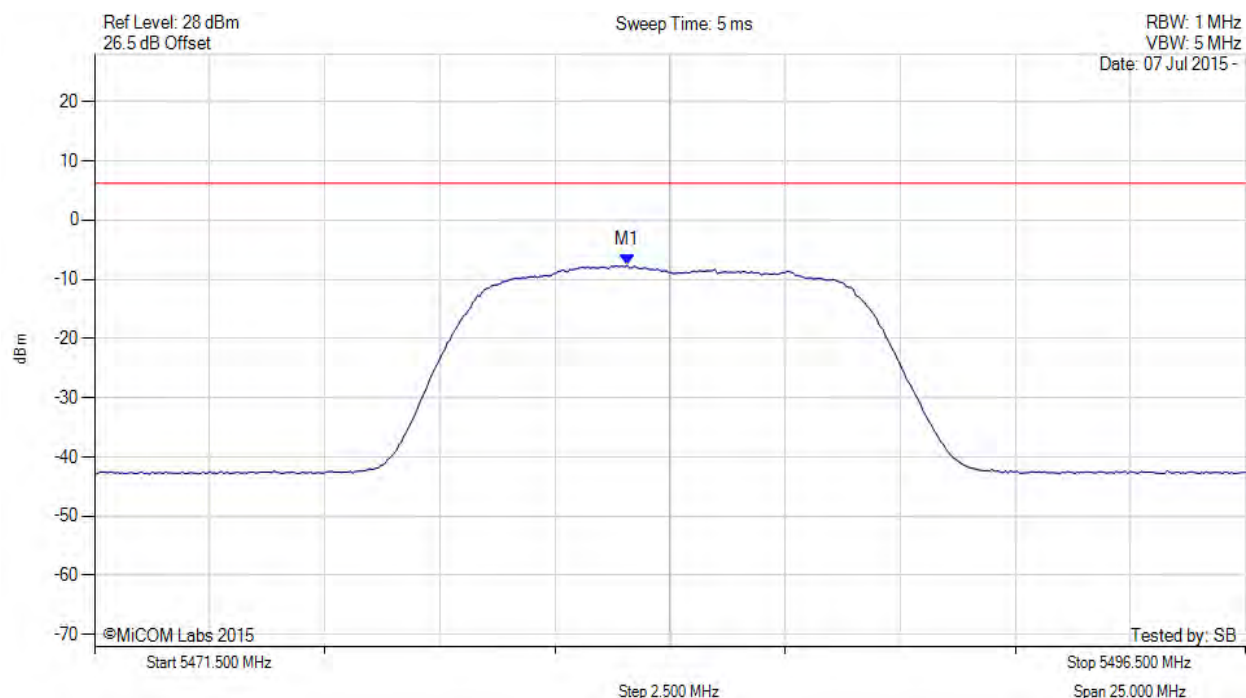
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5483.073 MHz : -7.629 dBm	Limit: ≤ 6.230 dBm

back to matrix

MiCOMLabs

PEAK POWER SPECTRAL DENSITY

MiTest

Variant: 5 MHz, Channel: 5484.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc
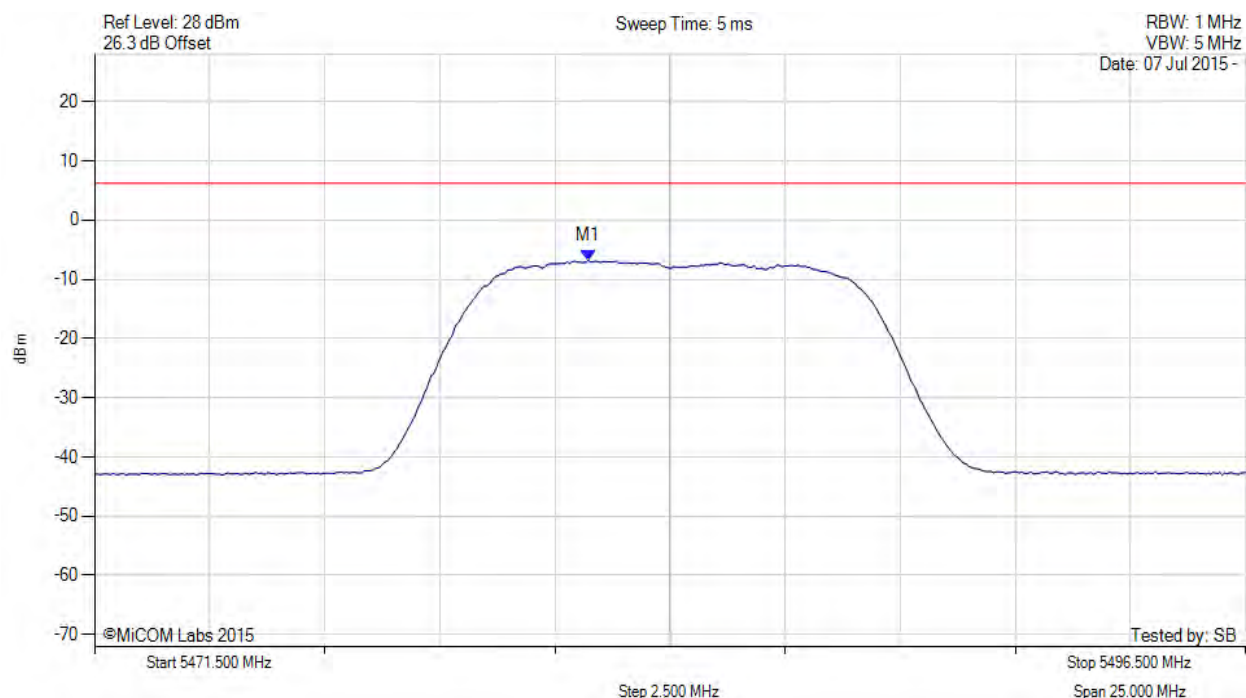
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5482.221 MHz : -6.812 dBm	Limit: ≤ 6.230 dBm

back to matrix

MiCOMLabs

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5484.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
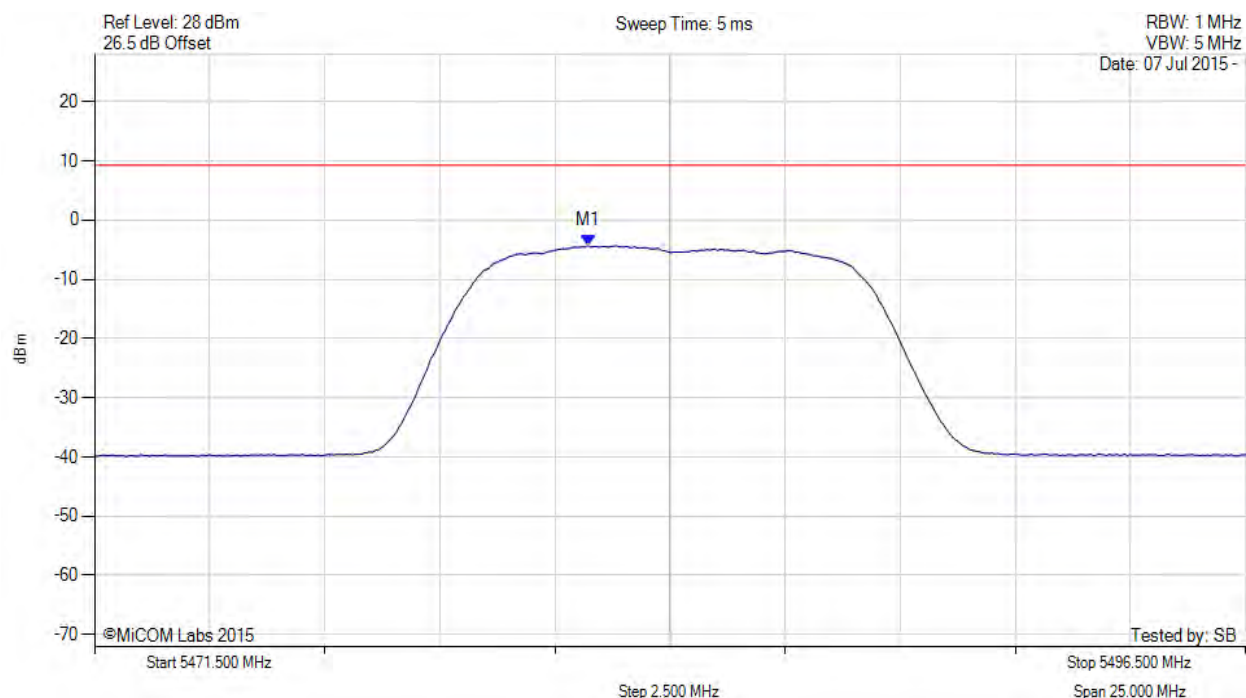
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5482.200 MHz : -4.300 dBm M1 + DCCF : 5482.200 MHz : -4.256 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 9.2 dBm Margin: -13.5 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5484.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5481.800 MHz : -7.068 dBm M1 + DCCF : 5481.800 MHz : -7.024 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 6.2 dBm Margin: -13.2 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant5 MHz, Channel: 5595.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5592.169 MHz : -5.387 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5595.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc
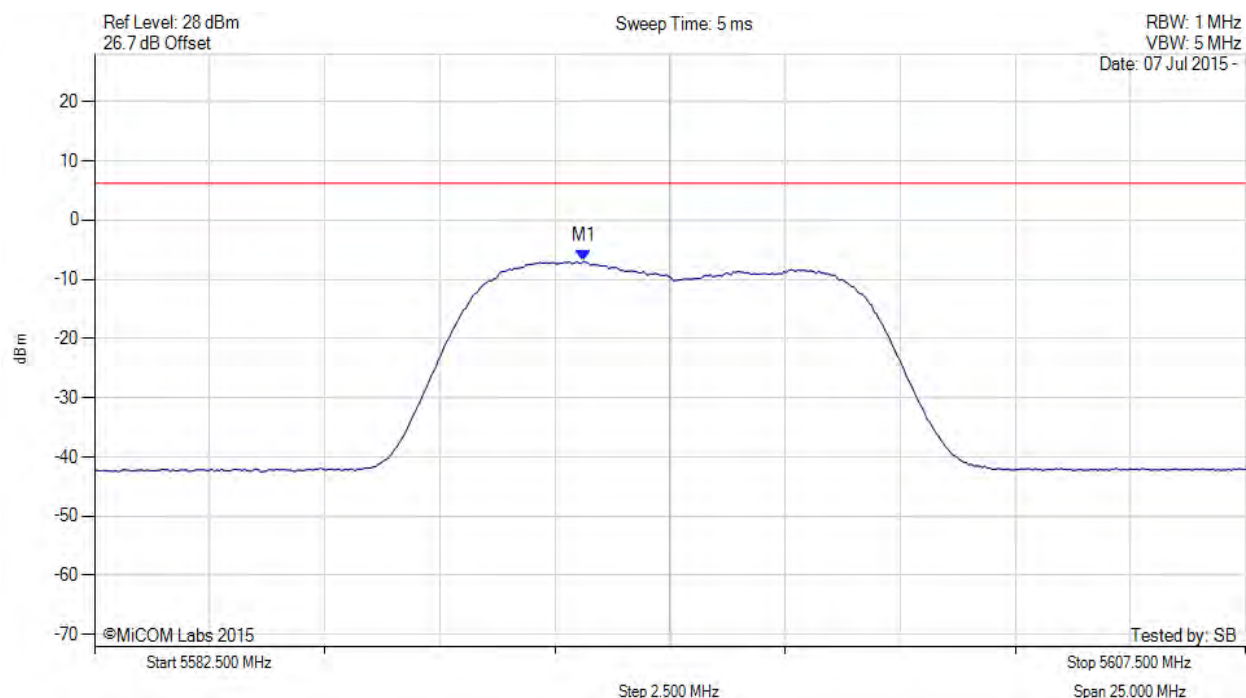
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5593.121 MHz : -6.901 dBm	Channel Frequency: 5595.00 MHz

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5595.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc
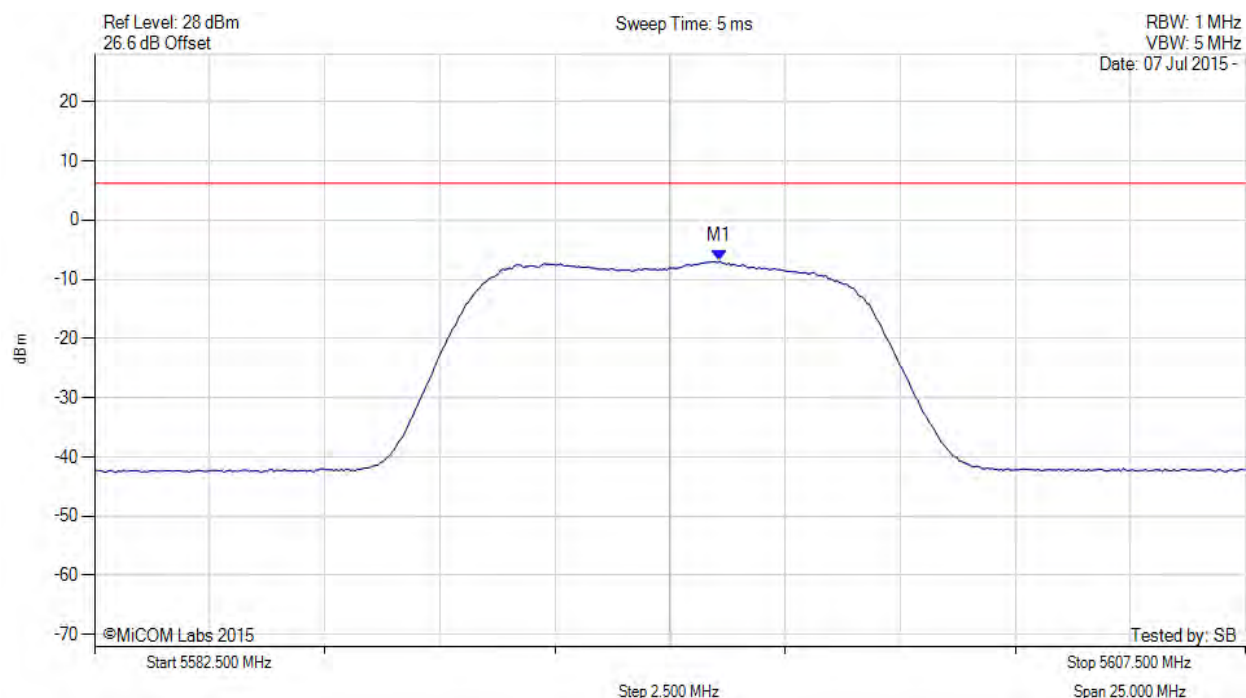
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5596.077 MHz : -6.925 dBm	Limit: ≤ 6.230 dBm

back to matrix

MiCOMLabs

PEAK POWER SPECTRAL DENSITY

MiTest

Variant: 5 MHz, Channel: 5595.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
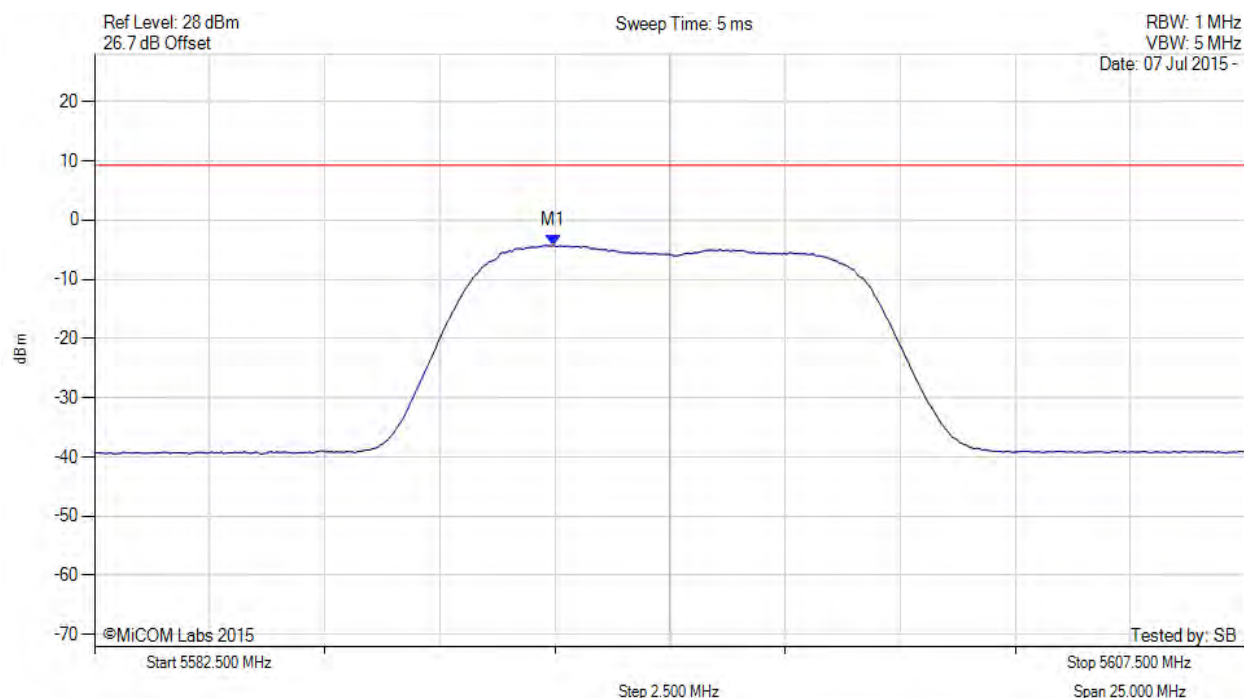
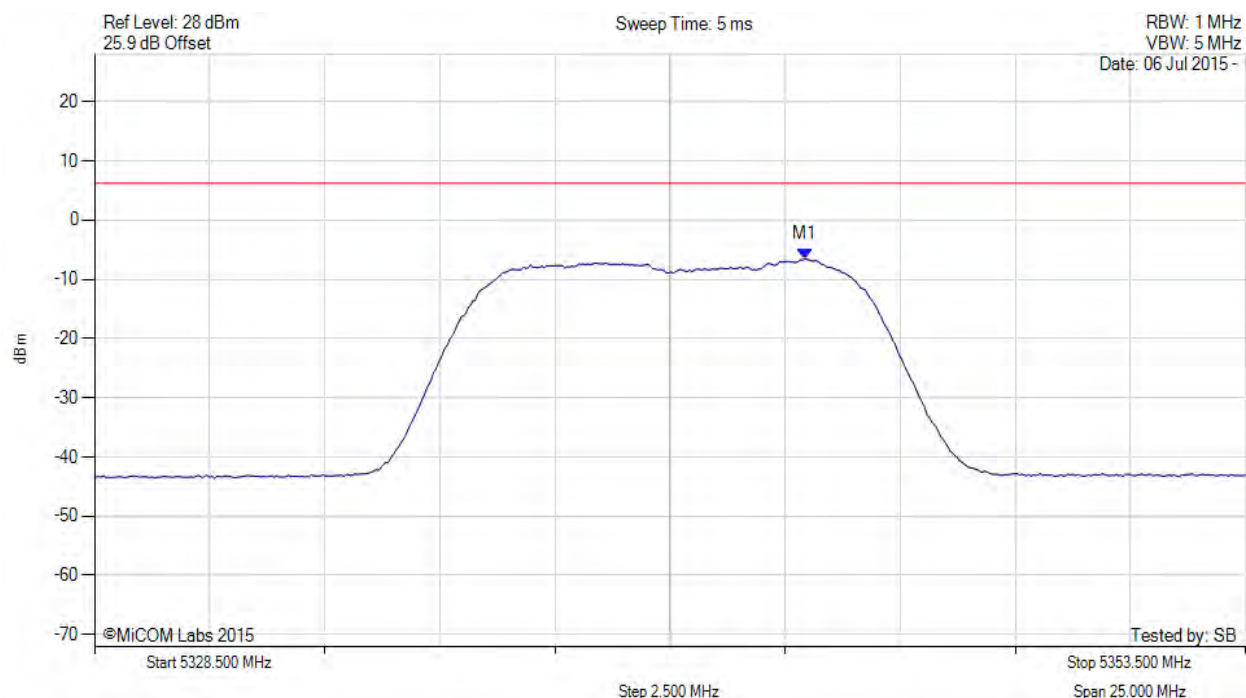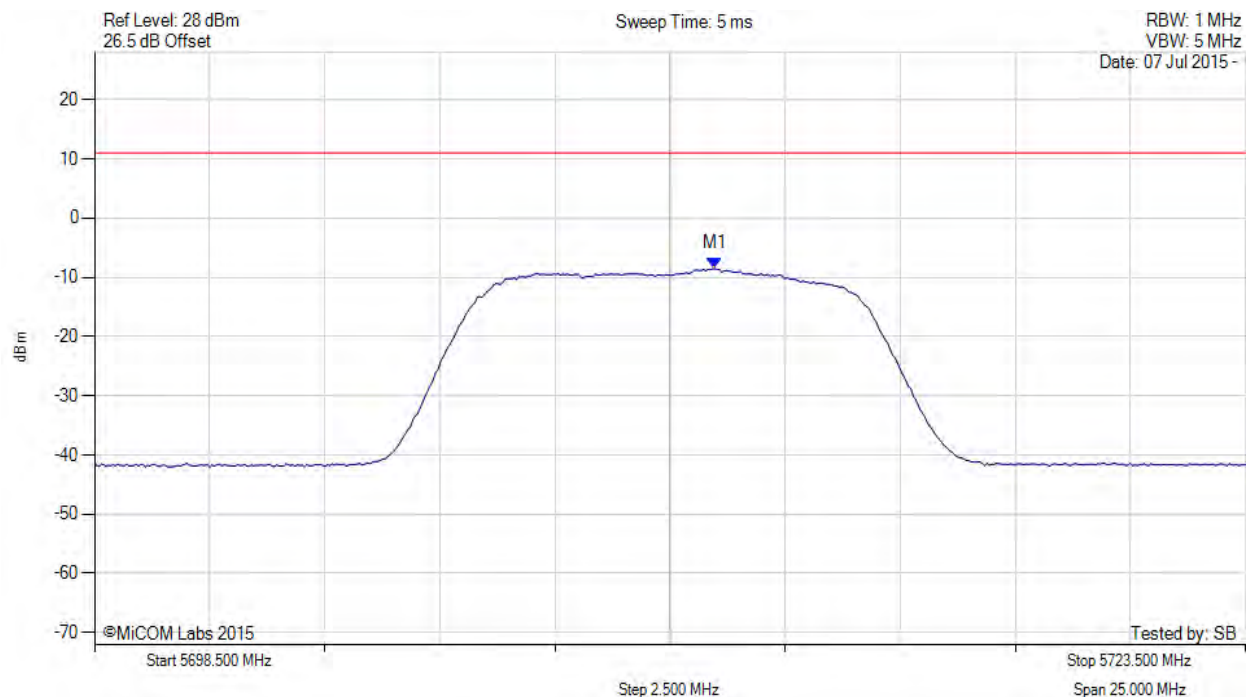| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1 : 5592.500 MHz : -4.280 dBm	Limit: ≤ 9.2 dBm
Sweep Count = 100	M1 + DCCF : 5592.500 MHz : -4.236 dBm	Margin: -13.4 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor : +0.04 dB	
Trace Mode = VIEW		

back to matrix

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PEAK POWER SPECTRAL DENSITY

MiTest

Variant: 5 MHz, Channel: 5595.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
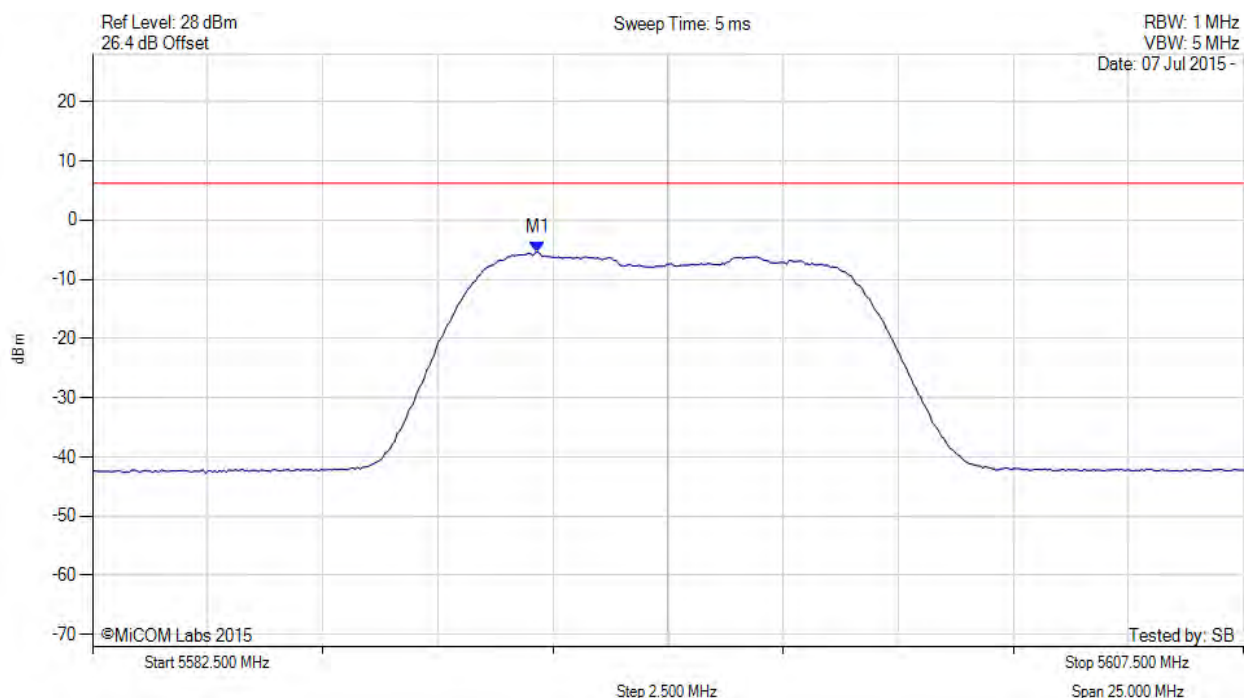
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1 : 5592.200 MHz : -5.387 dBm	Limit: ≤ 6.2 dBm
Sweep Count = 100	M1 + DCCF : 5592.200 MHz : -5.343 dBm	Margin: -11.5 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor : +0.04 dB	
Trace Mode = VIEW		

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5711.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc
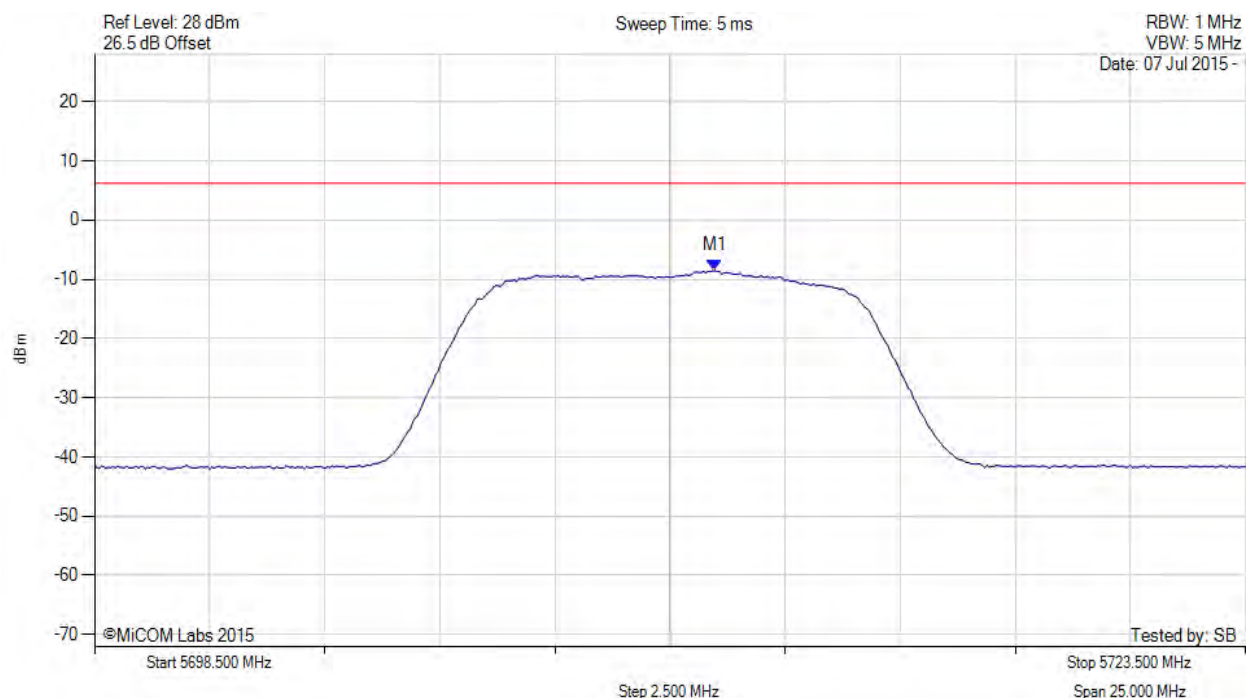
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5711.977 MHz : -8.561 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5711.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc
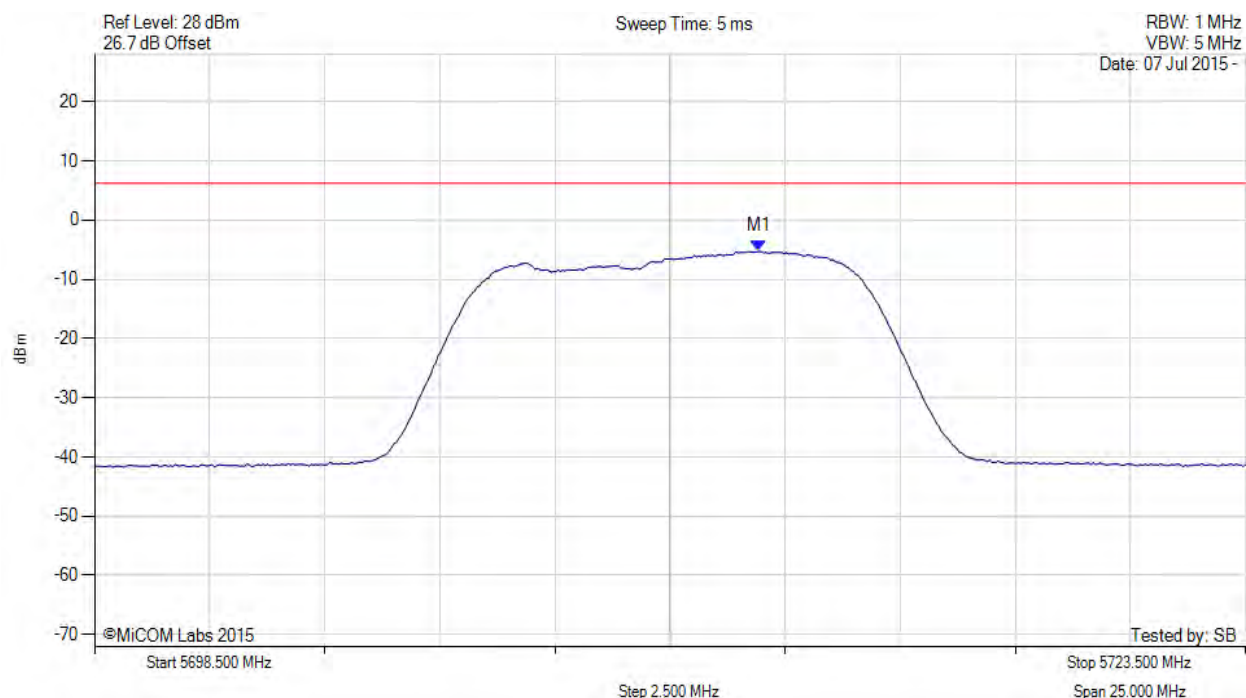
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5712.929 MHz : -5.261 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5711.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc
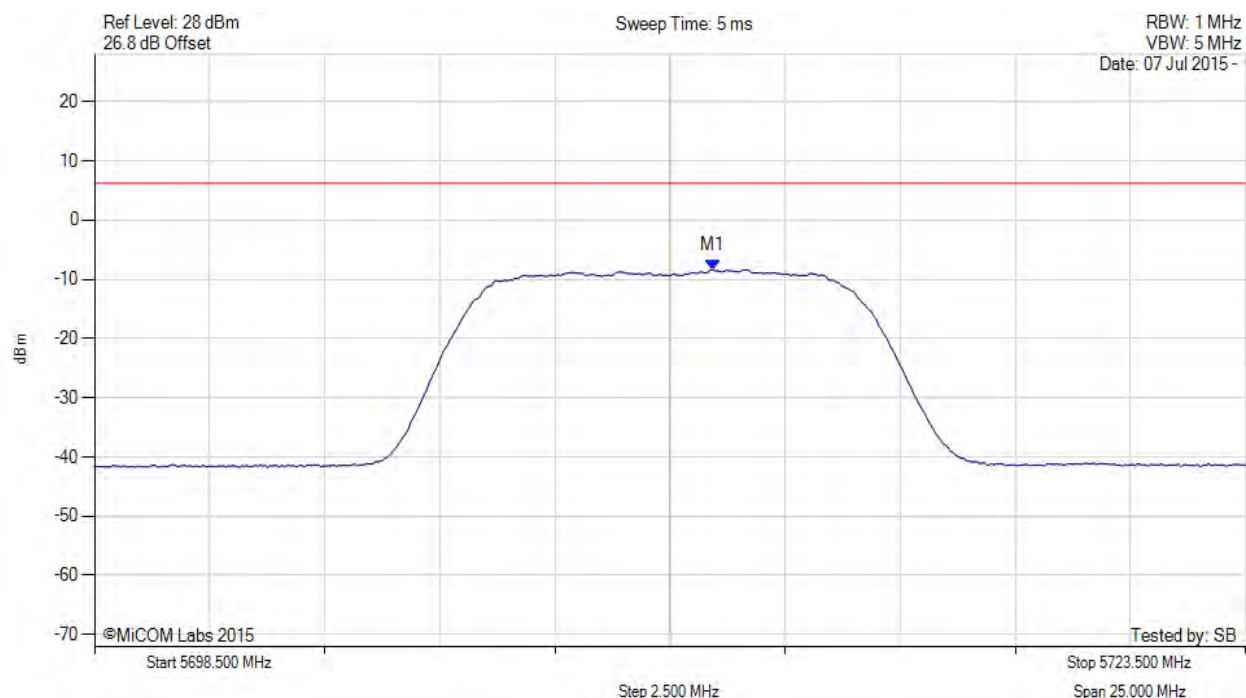
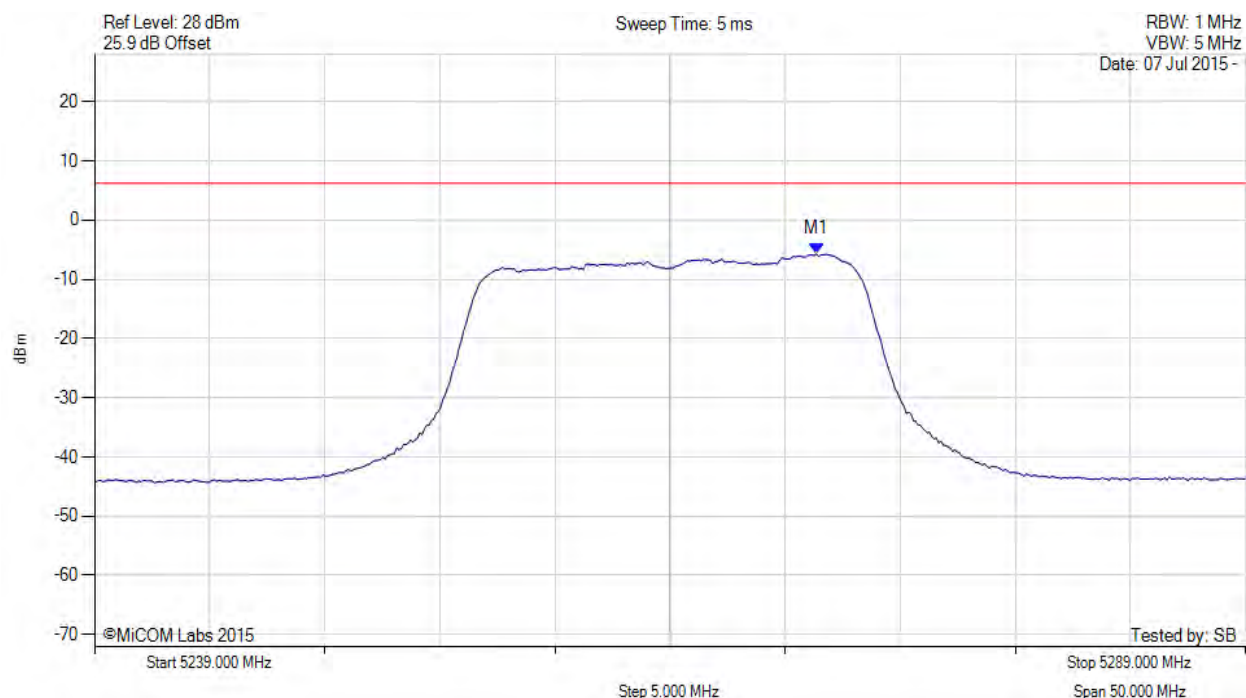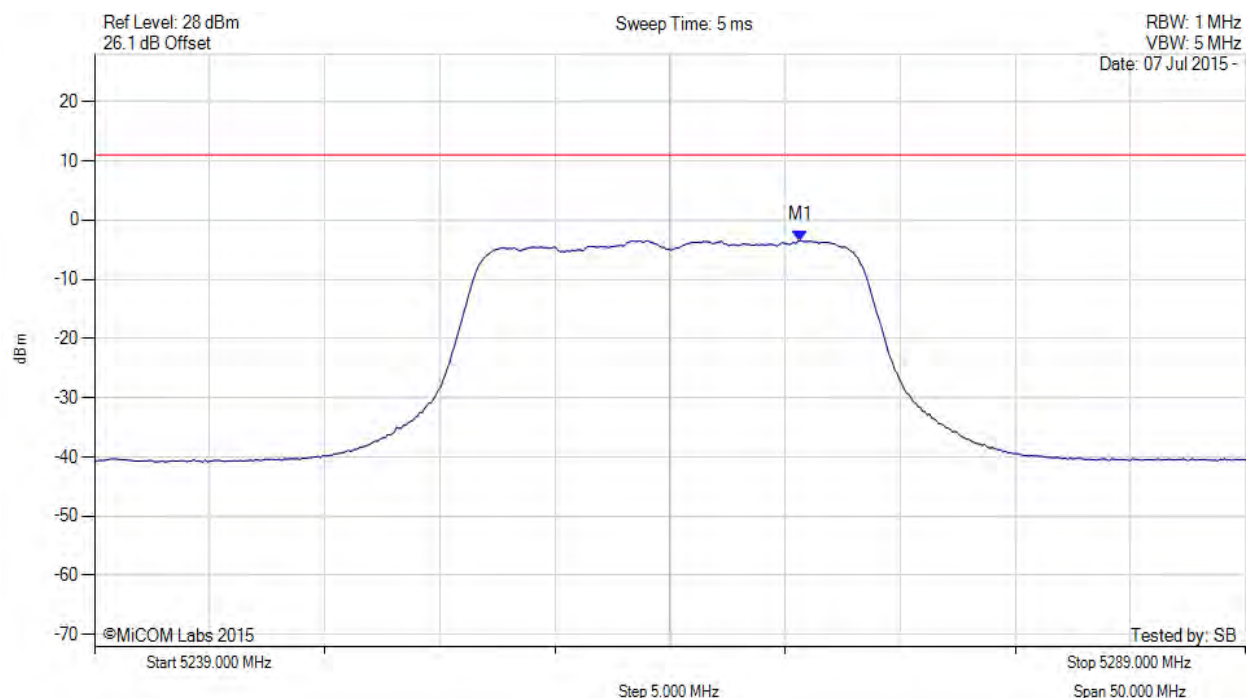| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5711.927 MHz : -8.390 dBm	Limit: ≤ 6.230 dBm

back to matrix

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PEAK POWER SPECTRAL DENSITY

MiTest

Variant: 5 MHz, Channel: 5711.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
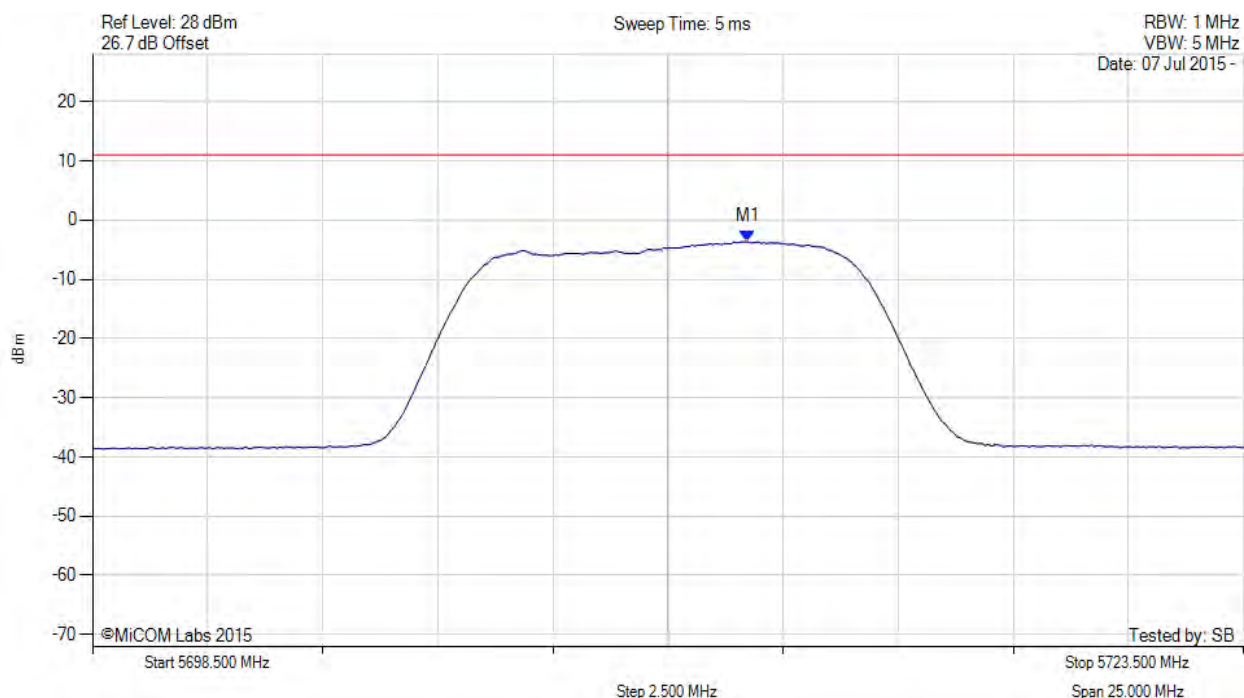
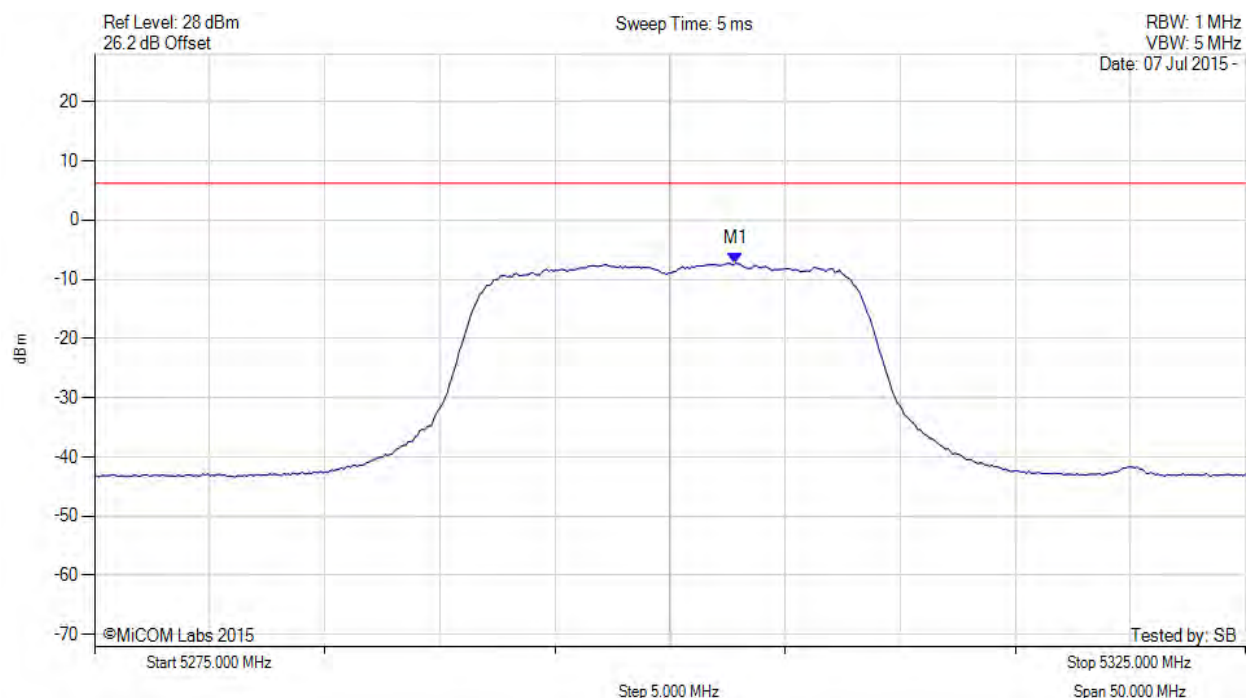| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5712.700 MHz : -3.625 dBm M1 + DCCF : 5712.700 MHz : -3.581 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -14.6 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5259.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc
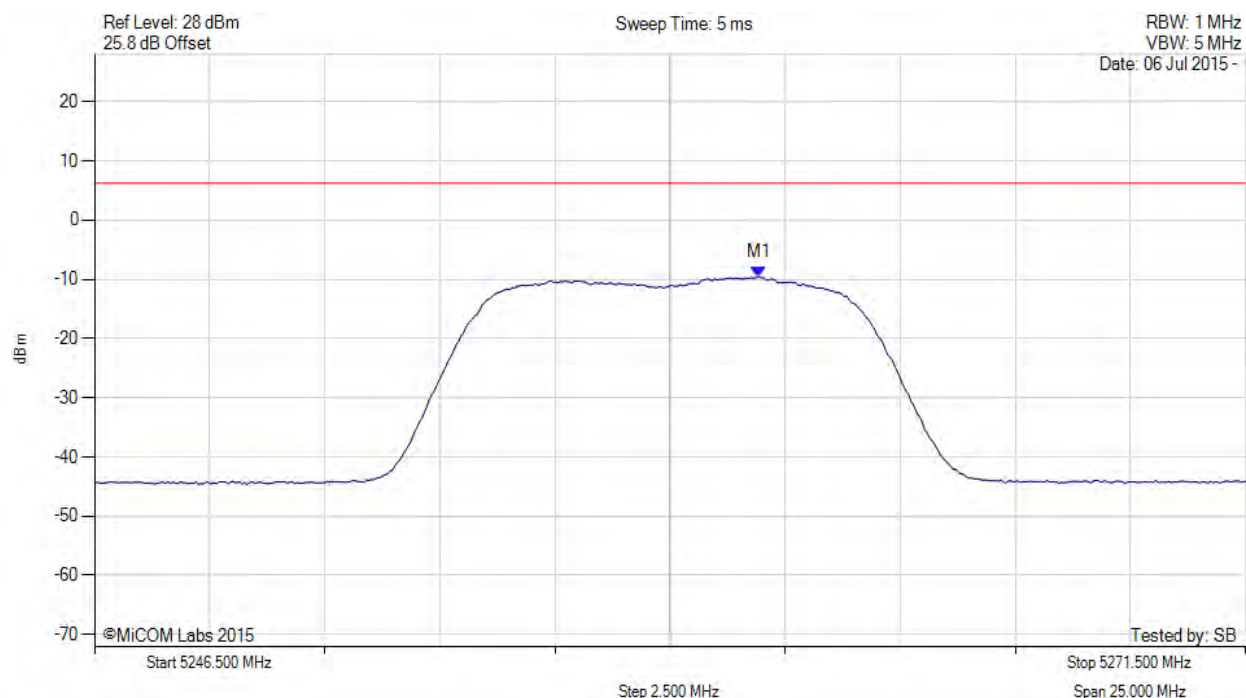
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5260.929 MHz : -9.574 dBm	Limit: ≤ -8.270 dBm Margin: 1.26 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5259.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
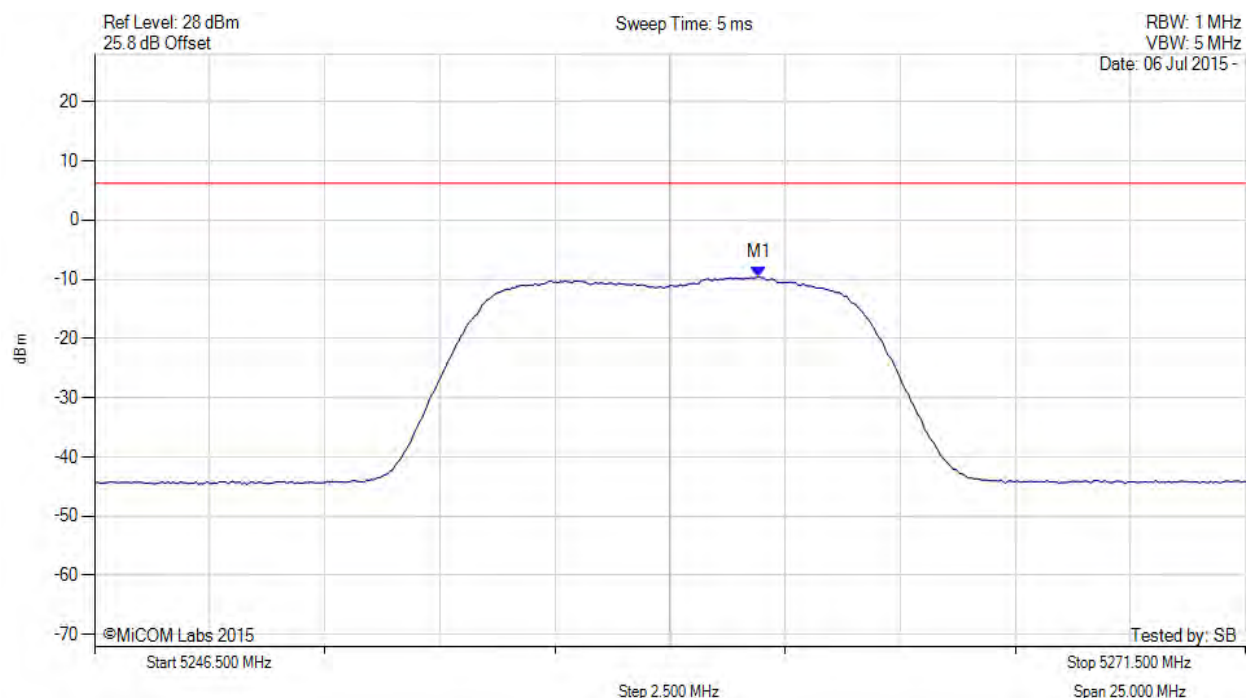
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5260.929 MHz : -9.574 dBm	Limit: ≤ -8.3 dBm Margin: -1.3 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5300.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc
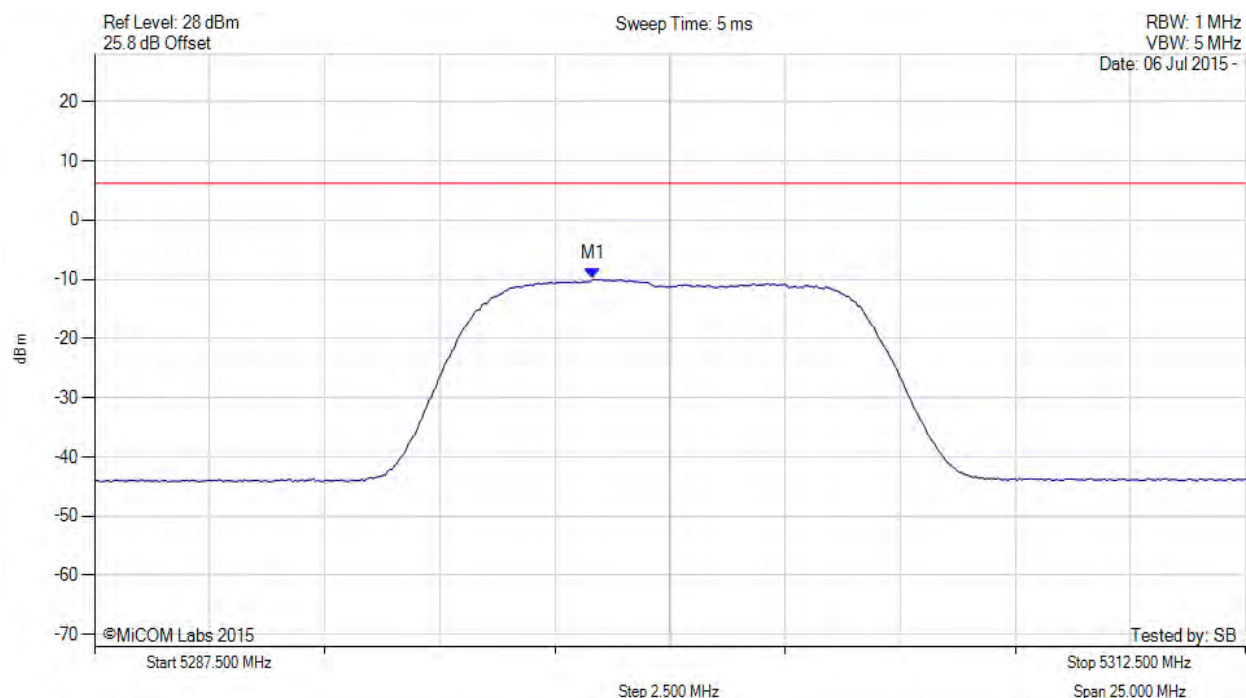
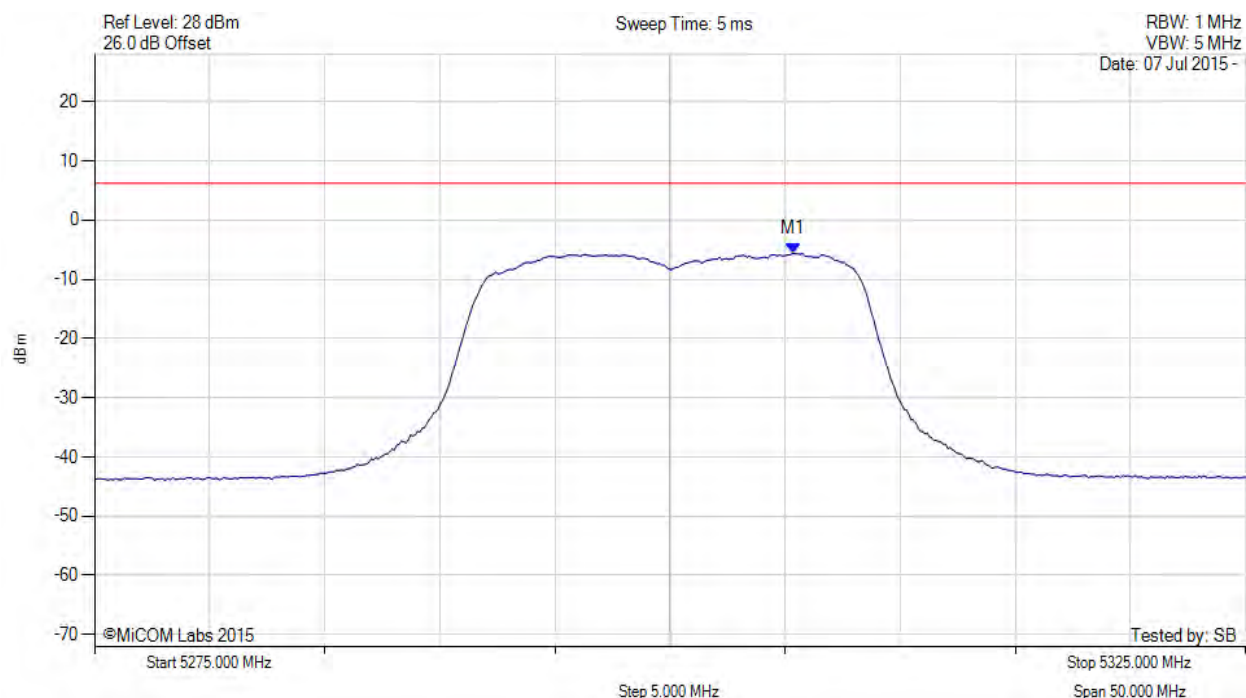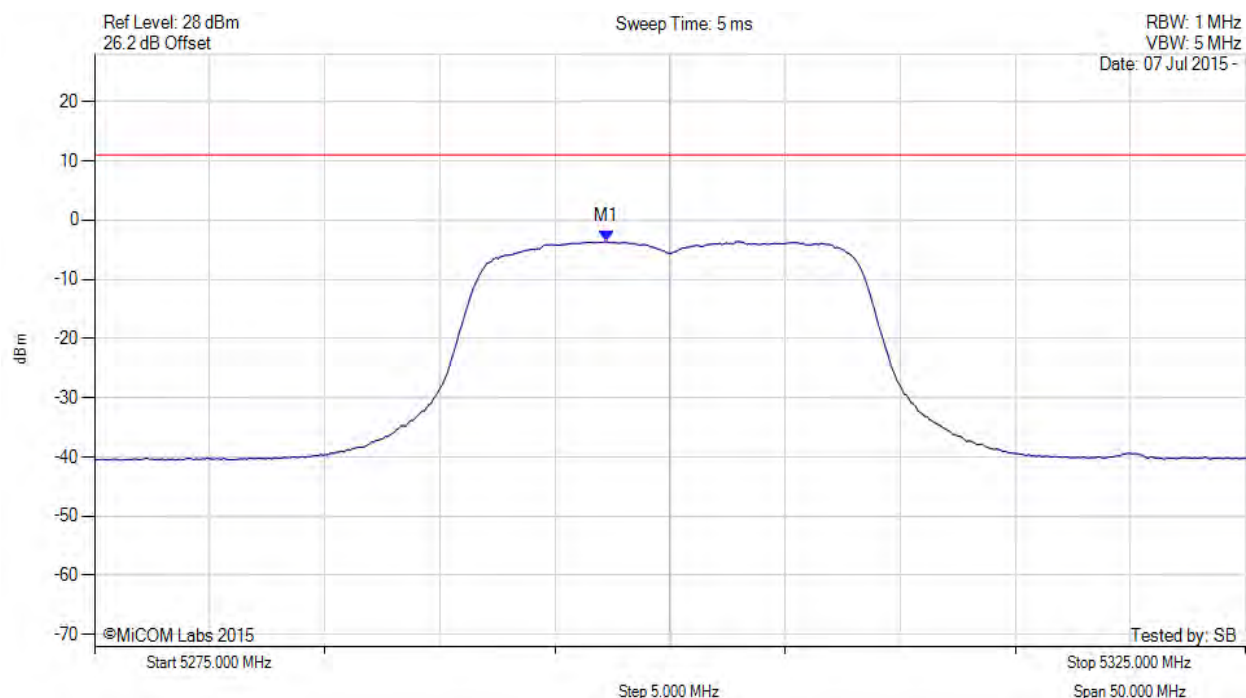| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5298.322 MHz : -9.989 dBm	Limit: ≤ -8.270 dBm Margin: 1.68 dB

back to matrix

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PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5300.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5298.322 MHz : -9.989 dBm	Limit: ≤ -8.3 dBm Margin: -1.7 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5341.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5343.931 MHz : -6.588 dBm	Limit: ≤ -8.270 dBm Margin: -1.73 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5341.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5343.931 MHz : -6.588 dBm	Limit: ≤ -8.3 dBm Margin: 1.7 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 5 MHz, Channel: 5711.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5712.000 MHz : -8.561 dBm M1 + DCCF : 5712.000 MHz : -8.517 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -19.5 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5264.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc
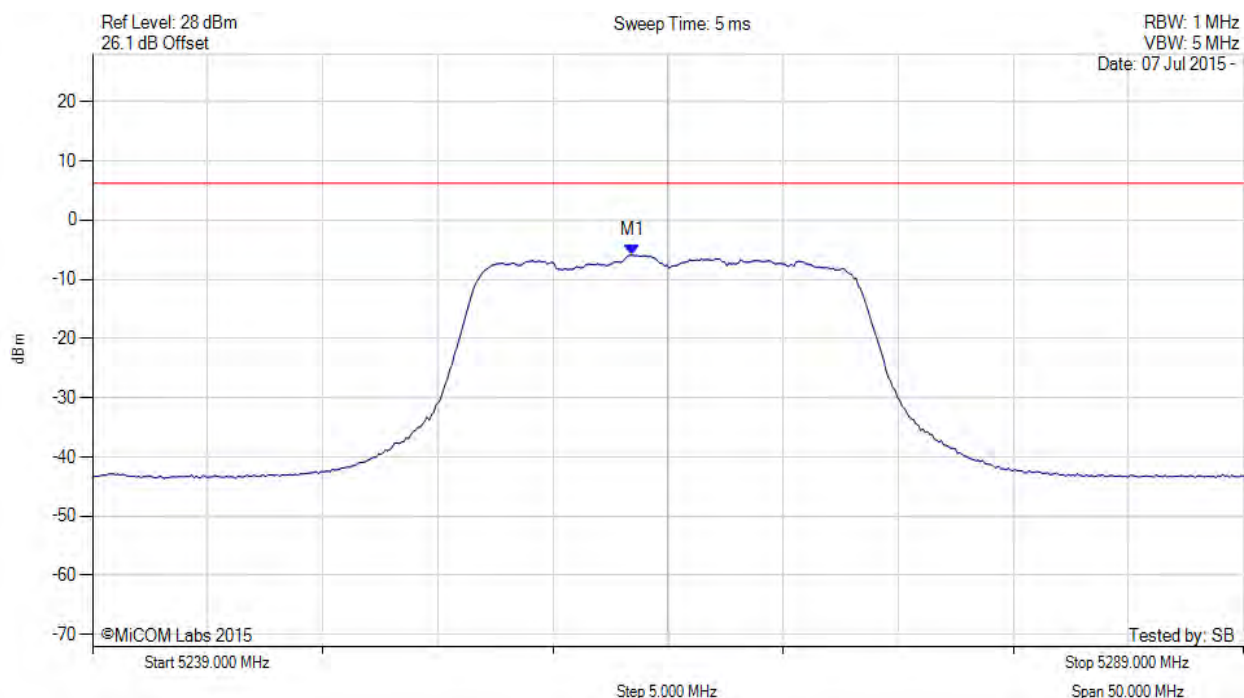
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5262.447 MHz : -5.933 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5264.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5270.363 MHz : -5.737 dBm	Limit: ≤ 6.230 dBm

back to matrix

MiCOMLabs

PEAK POWER SPECTRAL DENSITY

MiTest

Variant: 20 MHz, Channel: 5264.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

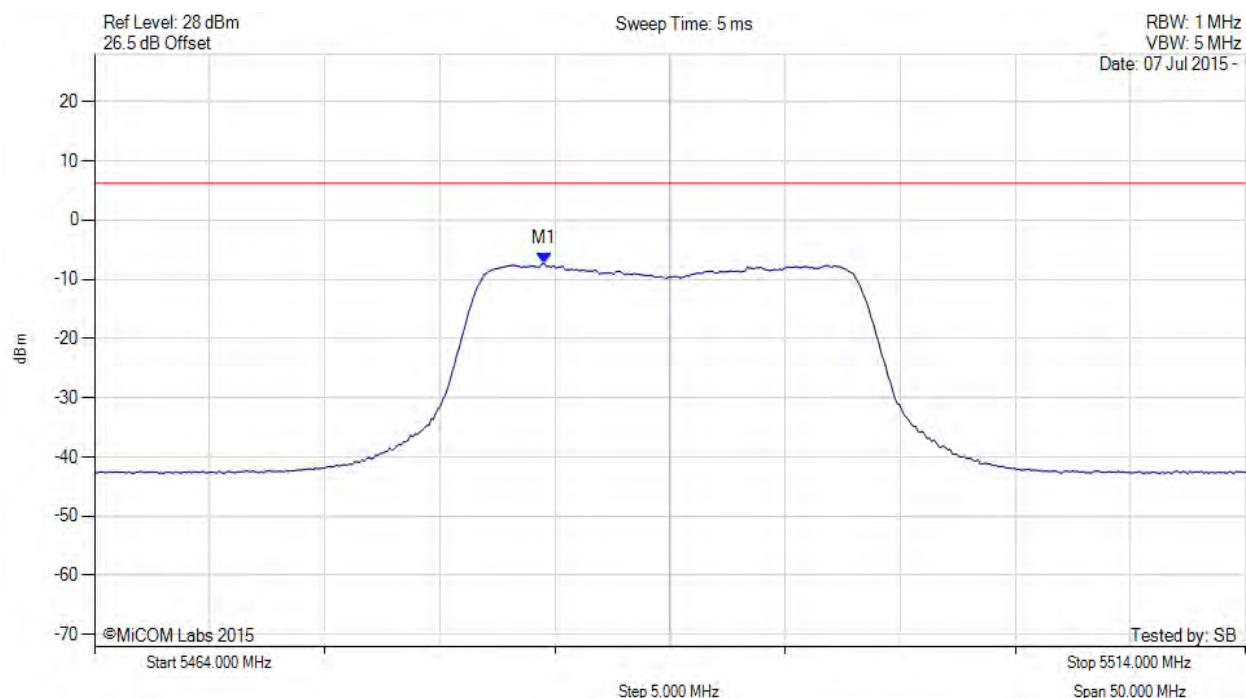| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5269.700 MHz : -3.476 dBm M1 + DCCF : 5269.700 MHz : -3.432 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -14.4 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5300.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5302.856 MHz : -7.288 dBm	Channel Frequency: 5300.00 MHz

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5300.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5305.361 MHz : -5.622 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5300.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5297.200 MHz : -3.628 dBm M1 + DCCF : 5297.200 MHz : -3.584 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -14.6 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5336.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc
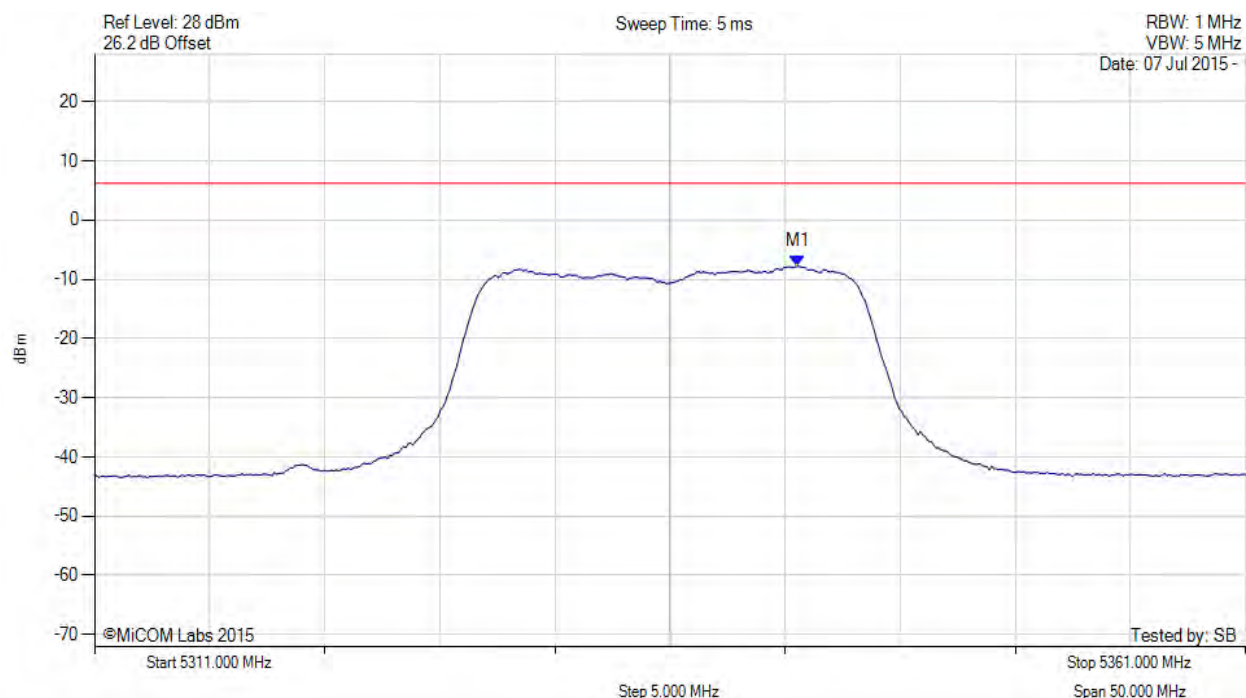
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5341.561 MHz : -7.801 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5336.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc
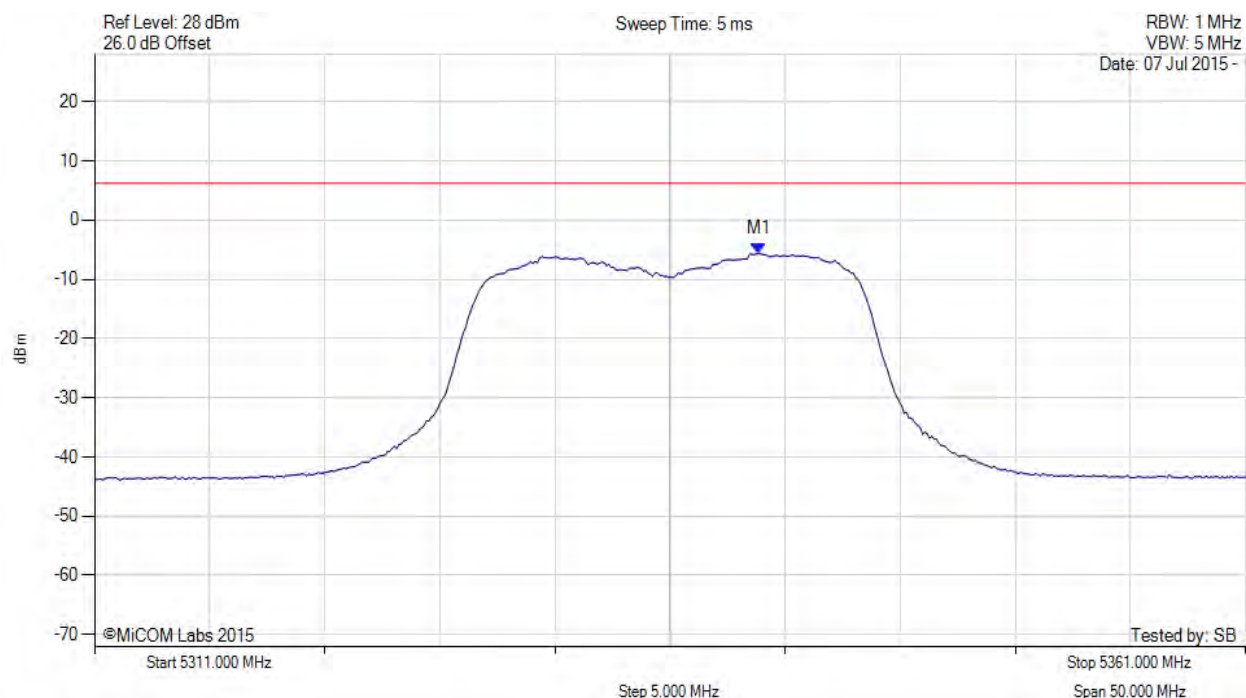
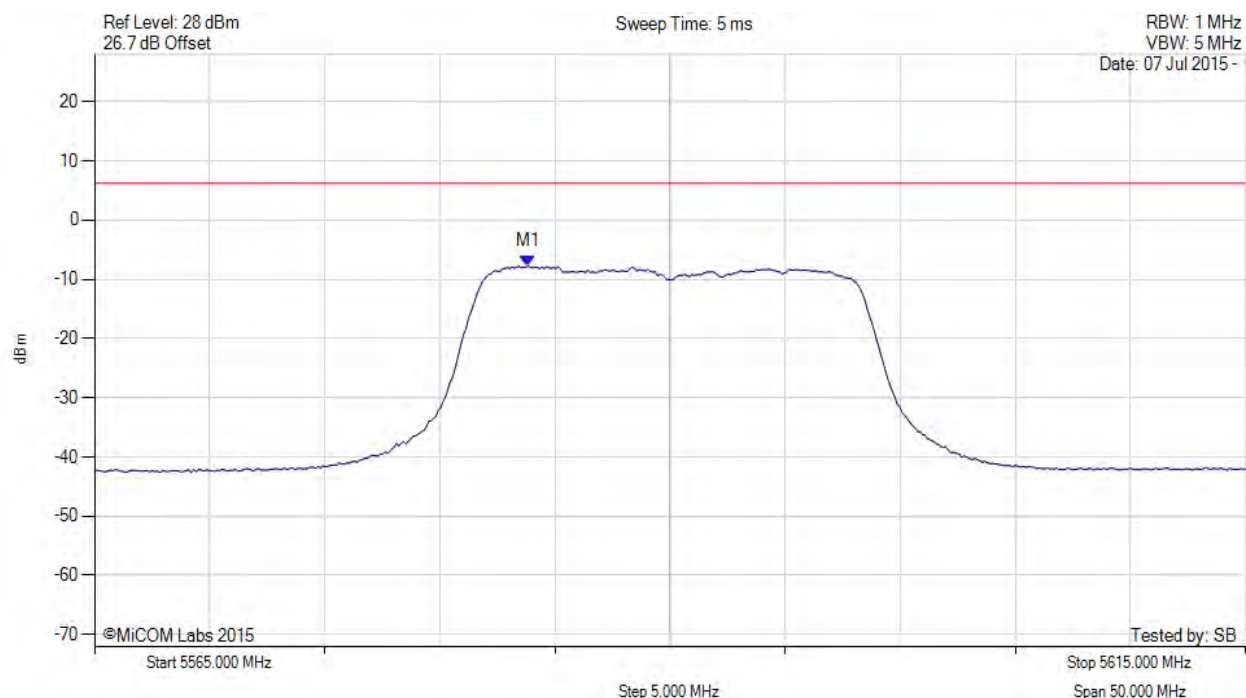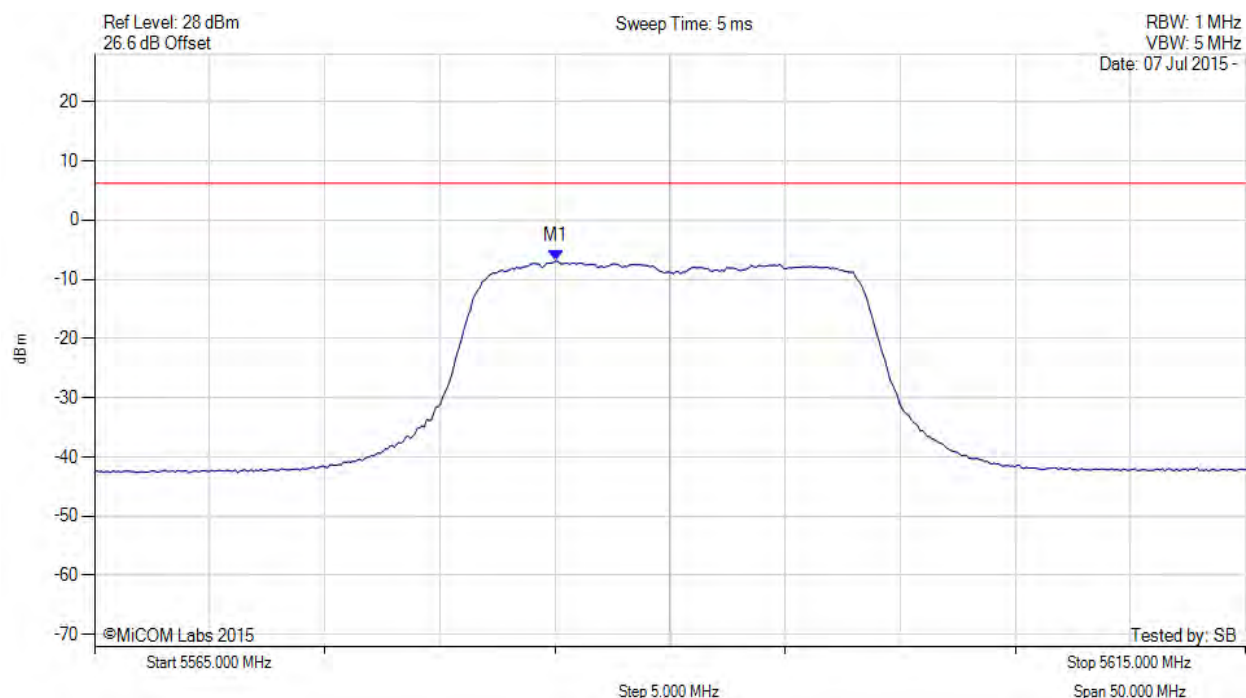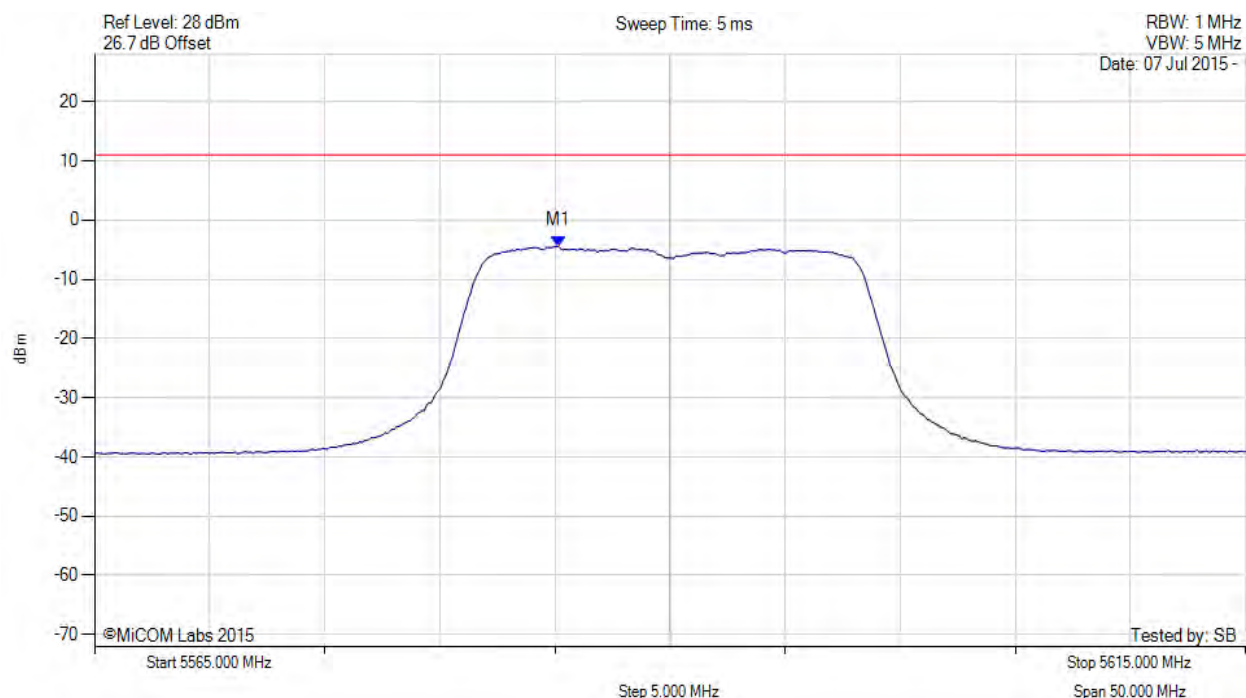| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5339.858 MHz : -5.662 dBm	Limit: ≤ 6.230 dBm

back to matrix

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PEAK POWER SPECTRAL DENSITY

MiTest

Variant: 20 MHz, Channel: 5336.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
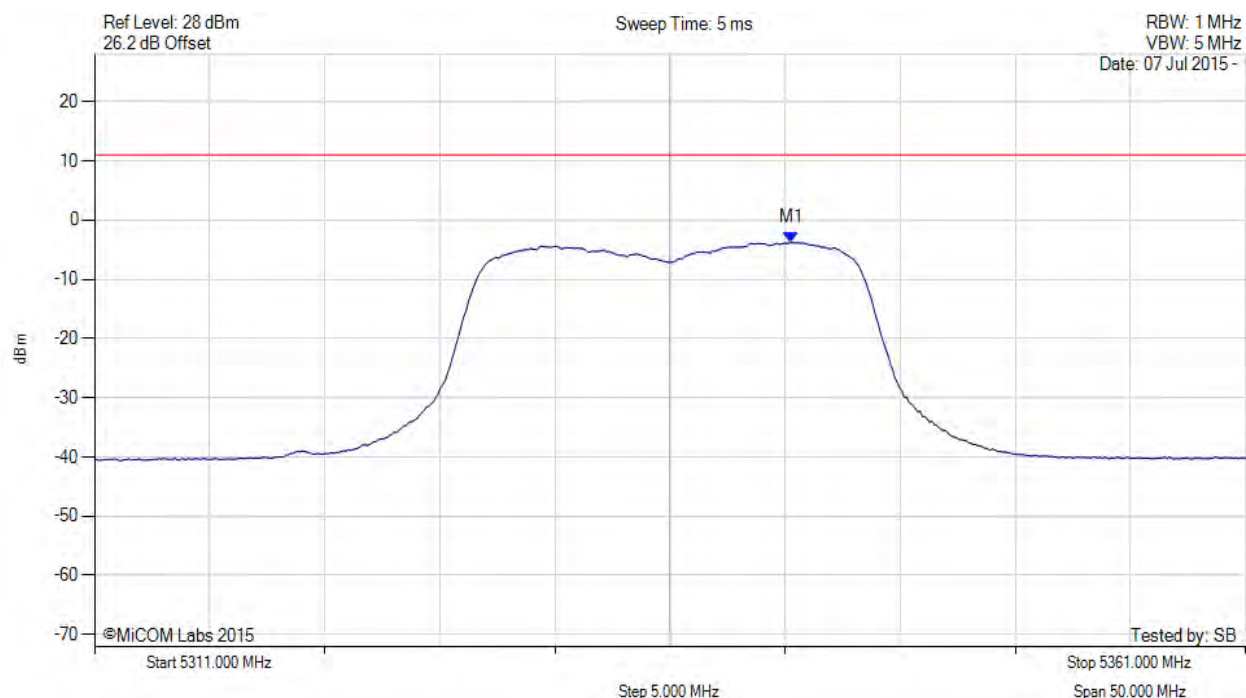
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5341.300 MHz : -3.806 dBm M1 + DCCF : 5341.300 MHz : -3.762 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -14.7 dB

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5489.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

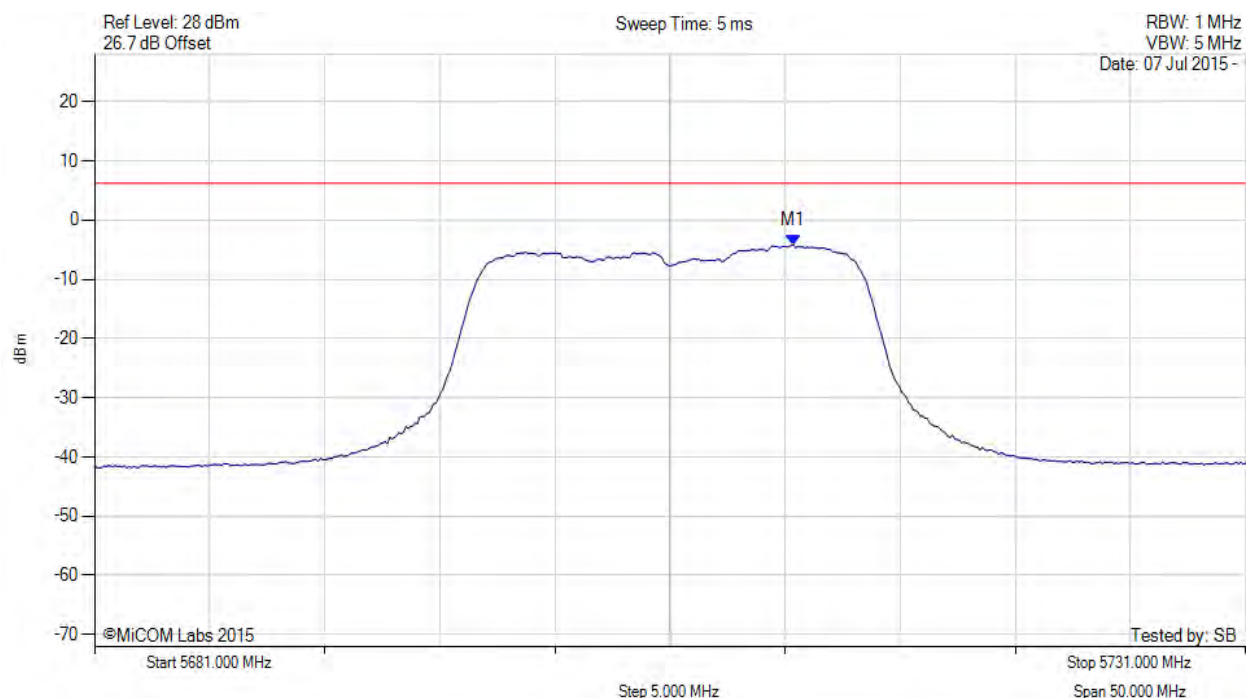| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5483.539 MHz : -7.335 dBm	Limit: ≤ -8.270 dBm Margin: -0.98 dB

back to matrix

	Title:	Radwin RADWIN 2000 JET, RADWIN 5000 JET
	To:	FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247
	Serial #:	RDWN32-U2a Rev A
	Issue Date:	29th July 2015
	Page:	161 of 223

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PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5489.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc
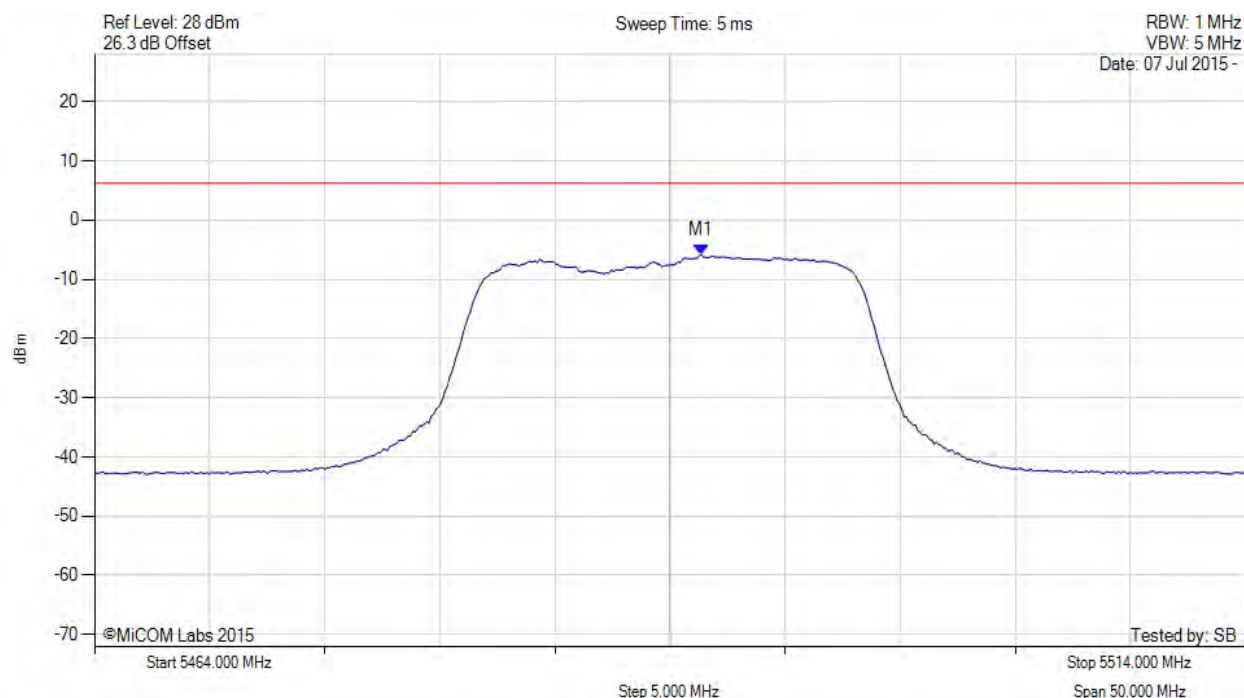
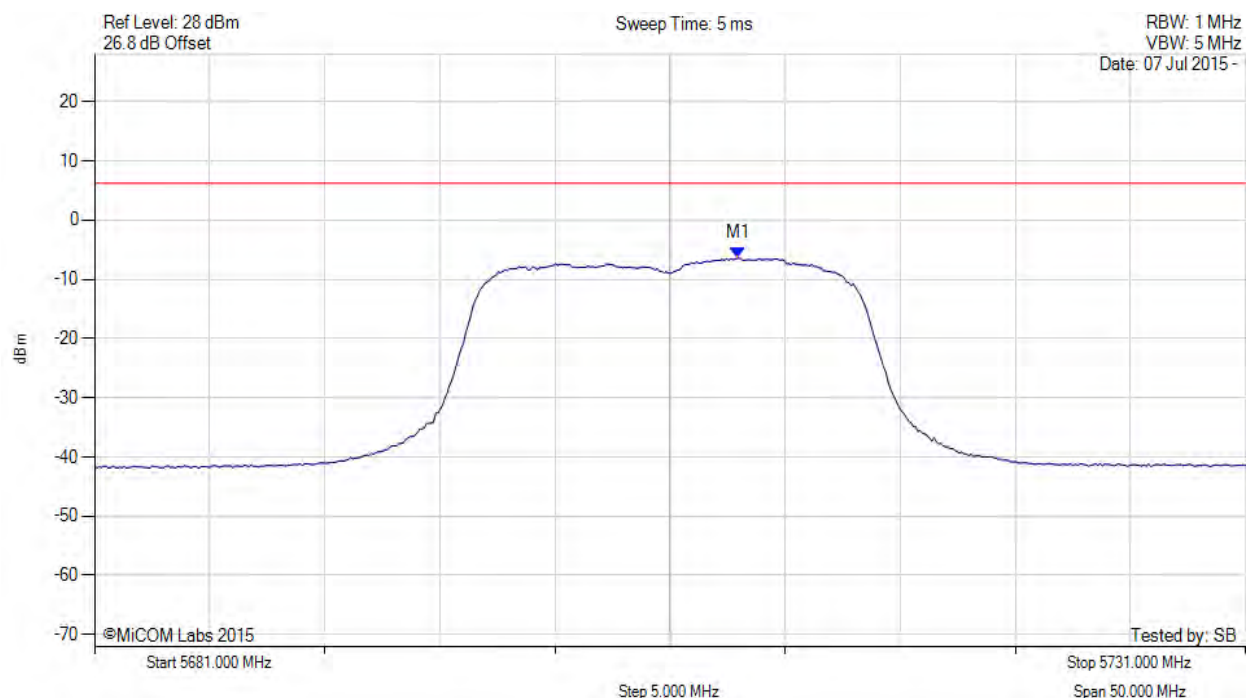| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5490.353 MHz : -5.827 dBm	Limit: ≤ -8.270 dBm Margin: -2.49 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5489.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
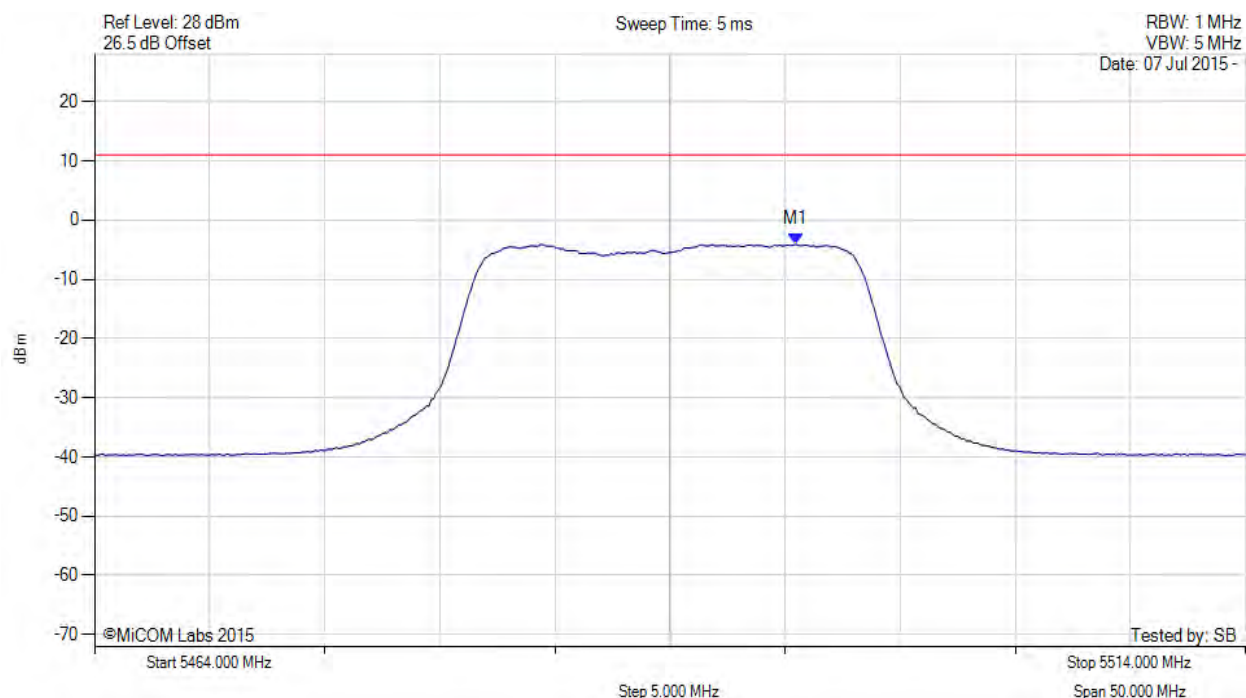
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5494.461 MHz : -4.079 dBm	Limit: ≤ -3.5 dBm Margin: -0.6 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5590.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

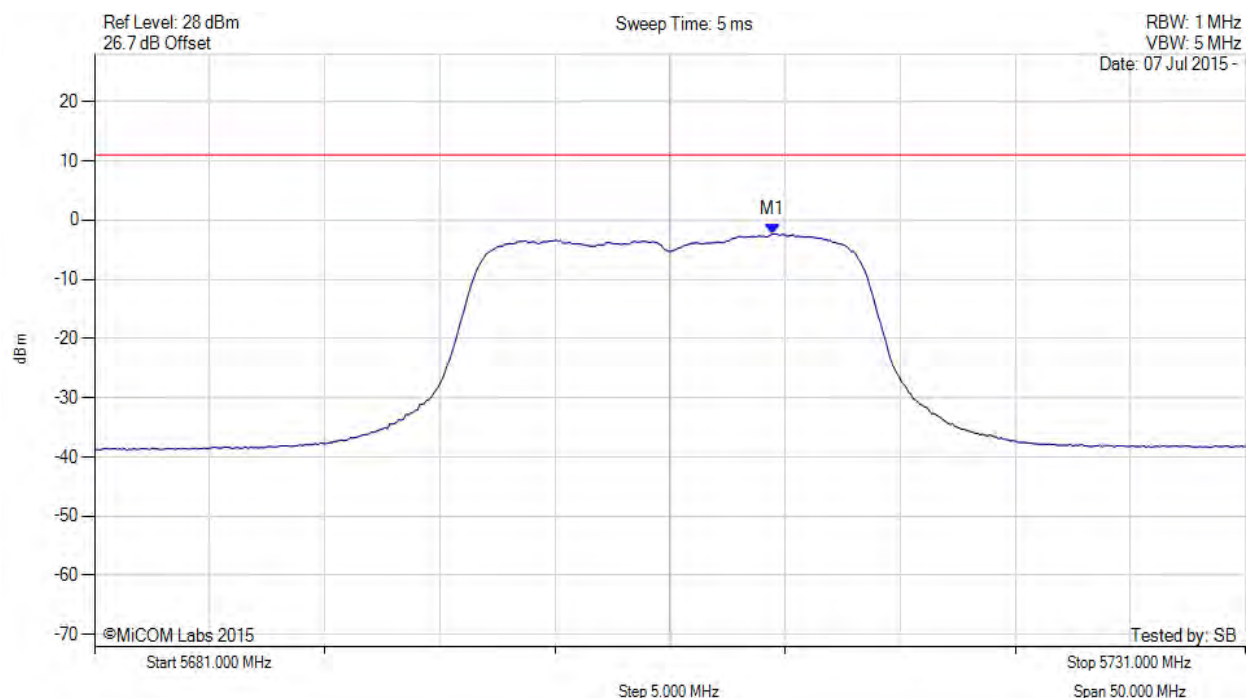| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5583.838 MHz : -7.756 dBm	Limit: ≤ -8.270 dBm Margin: -0.56 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5590.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5585.040 MHz : -6.902 dBm	Limit: ≤ -8.270 dBm Margin: -1.41 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5590.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5585.140 MHz : -4.384 dBm	Limit: ≤ -3.5 dBm Margin: -0.9 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5706.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5711.361 MHz : -4.200 dBm	Limit: ≤ -8.270 dBm Margin: -4.11 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5706.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5708.956 MHz : -6.428 dBm	Limit: ≤ -8.270 dBm Margin: -1.89 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5706.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

Ref Level: 28 dBm	Sweep Time: 5 ms	RBW: 1 MHz
26.7 dB Offset		VBW: 5 MHz
		Date: 07 Jul 2015 -

Start 5681.000 MHz   Step 5.000 MHz   Stop 5731.000 MHz   Span 50.000 MHz

Tested by: SB

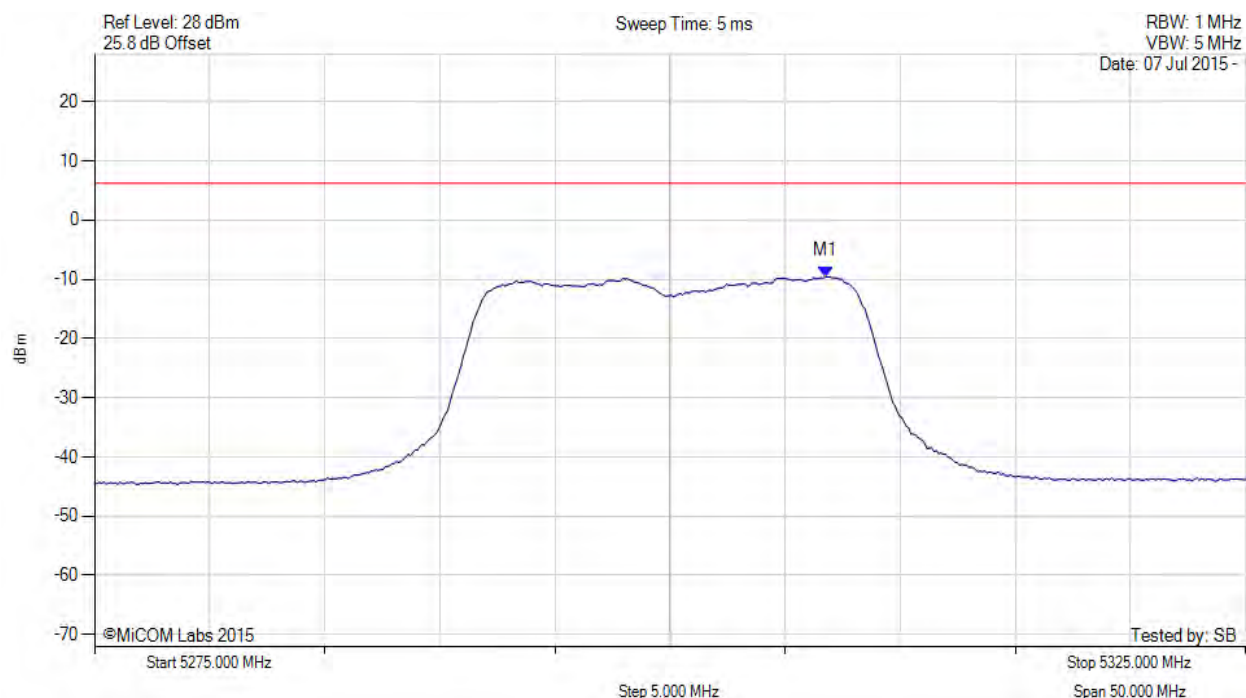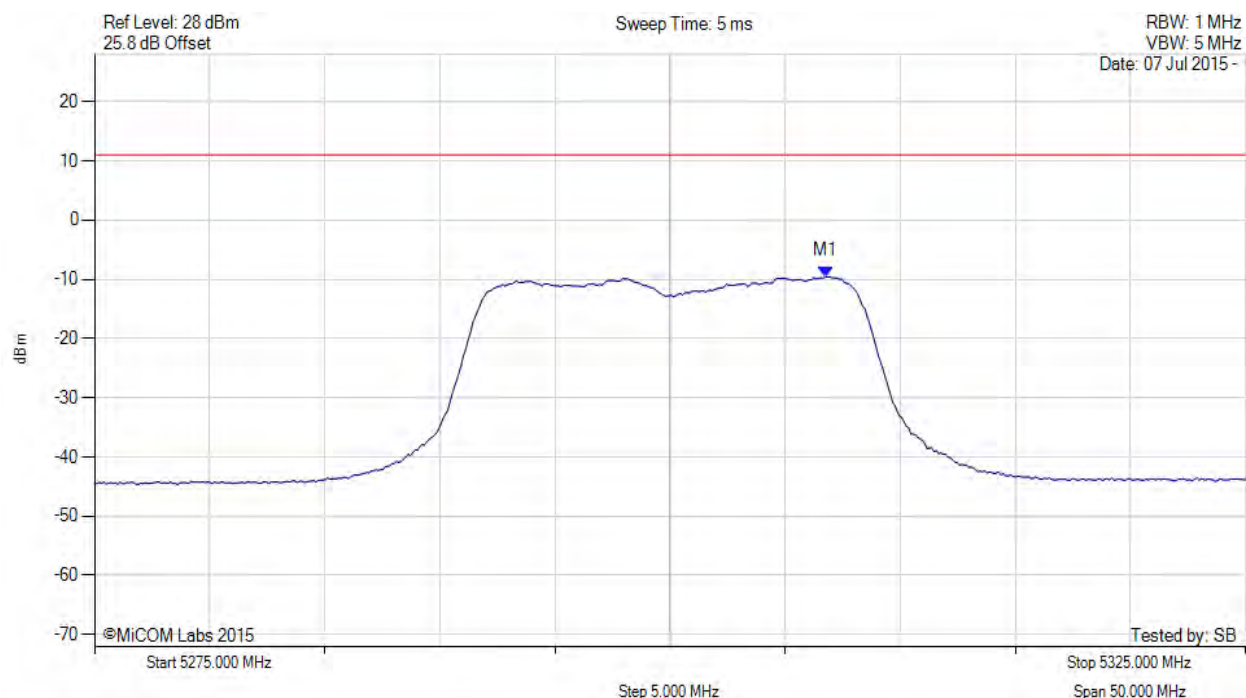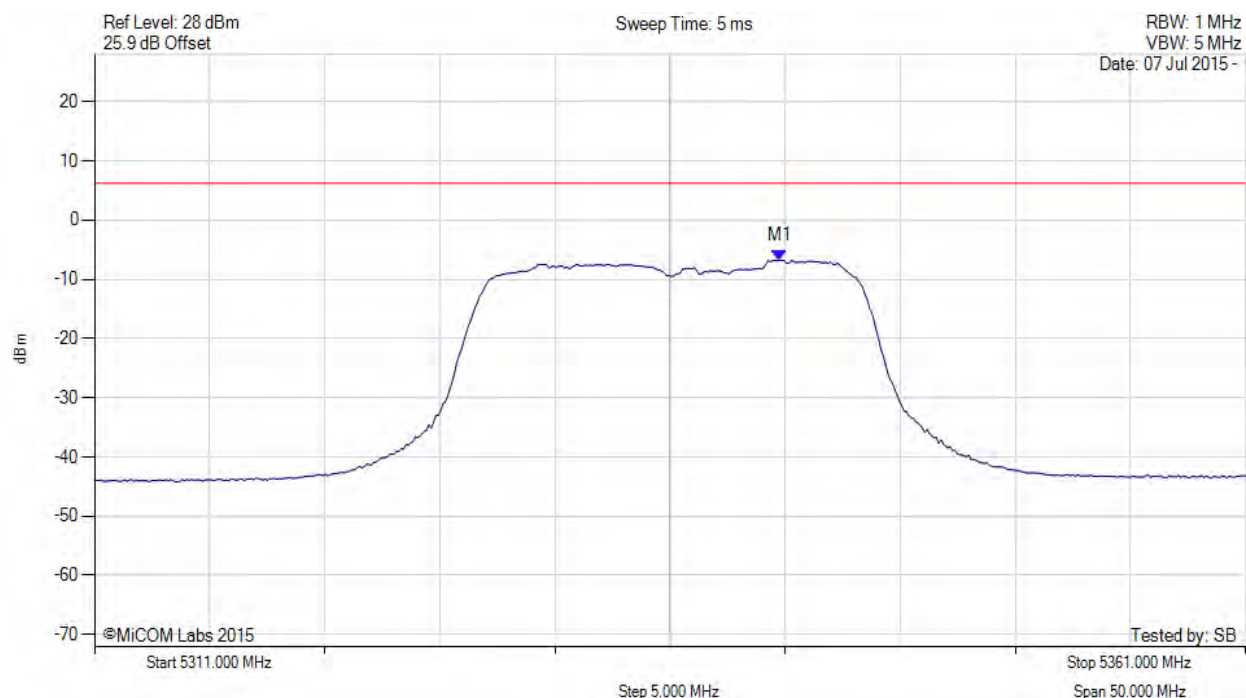| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5710.459 MHz : -2.342 dBm	Limit: ≤ -3.5 dBm Margin: 1.2 dB

back to matrix

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PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5264.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc
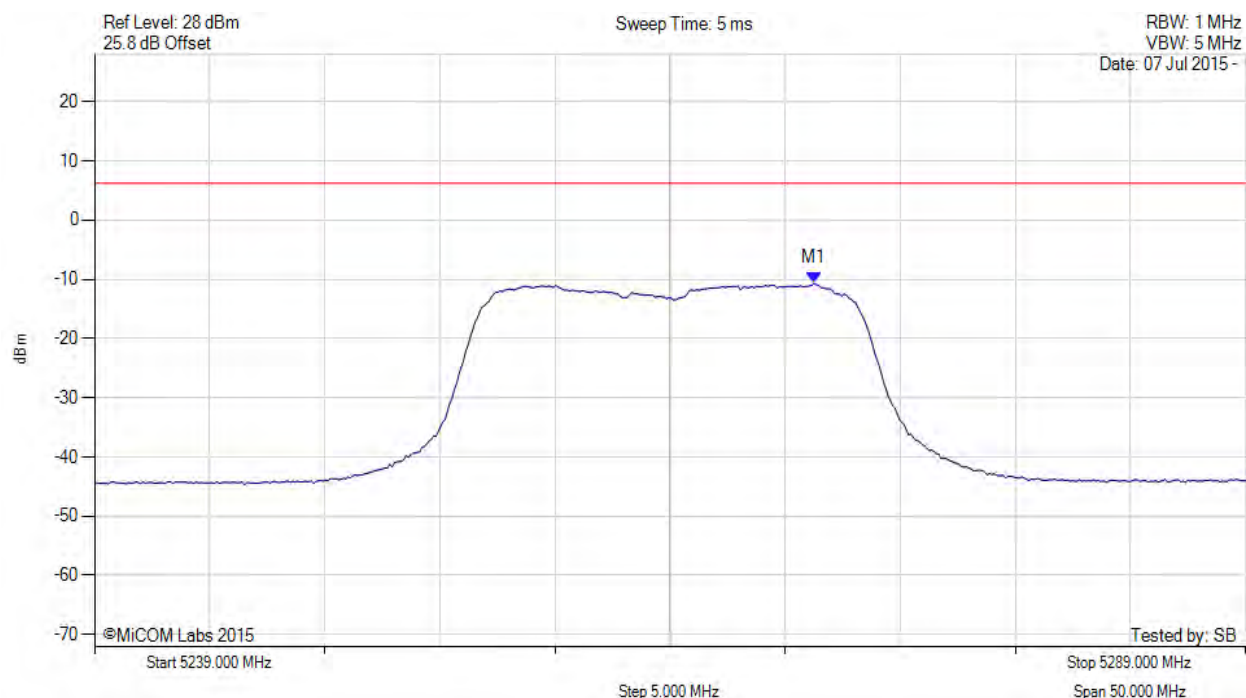
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5270.263 MHz : -10.655 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5264.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
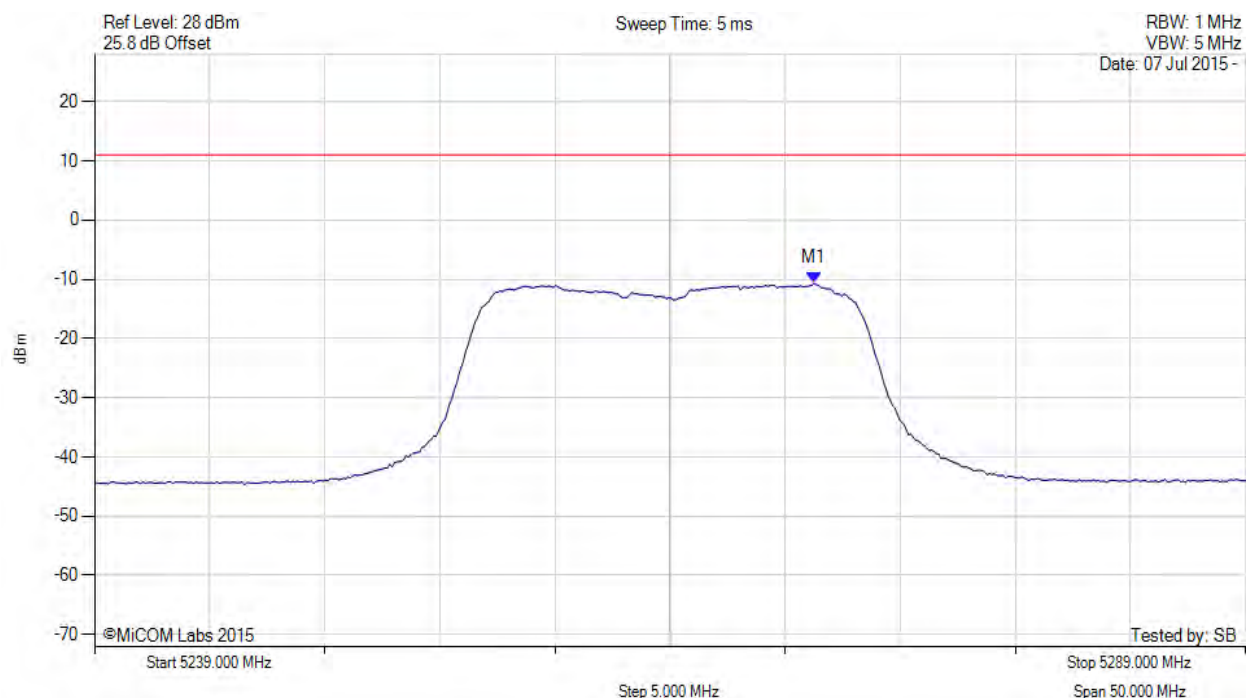
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1 : 5270.300 MHz : -10.655 dBm	Limit: ≤ 11.0 dBm
Sweep Count = 100	M1 + DCCF : 5270.300 MHz : -10.611 dBm	Margin: -21.6 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor : +0.04 dB	
Trace Mode = VIEW		

back to matrix

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PEAK POWER SPECTRAL DENSITY

MiTest.

Variant: 20 MHz, Channel: 5300.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5306.764 MHz : -9.548 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5300.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

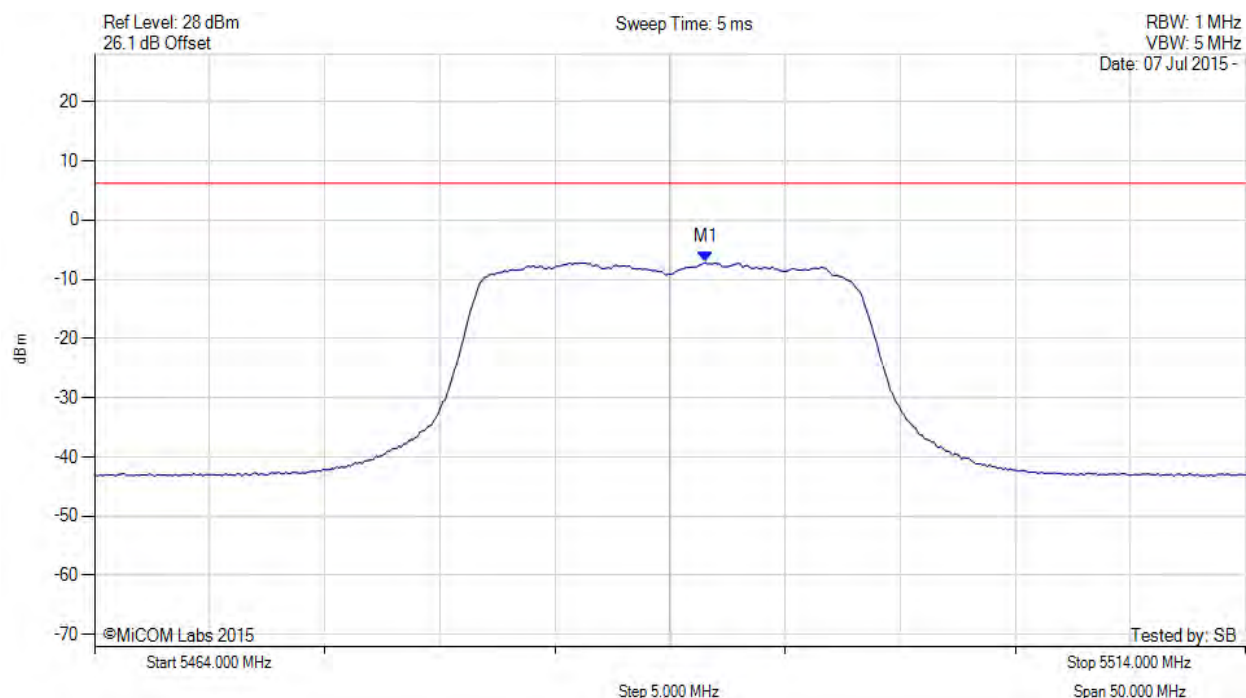| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5306.800 MHz : -9.548 dBm M1 + DCCF : 5306.800 MHz : -9.504 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -20.5 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5336.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5340.760 MHz : -6.764 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5336.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
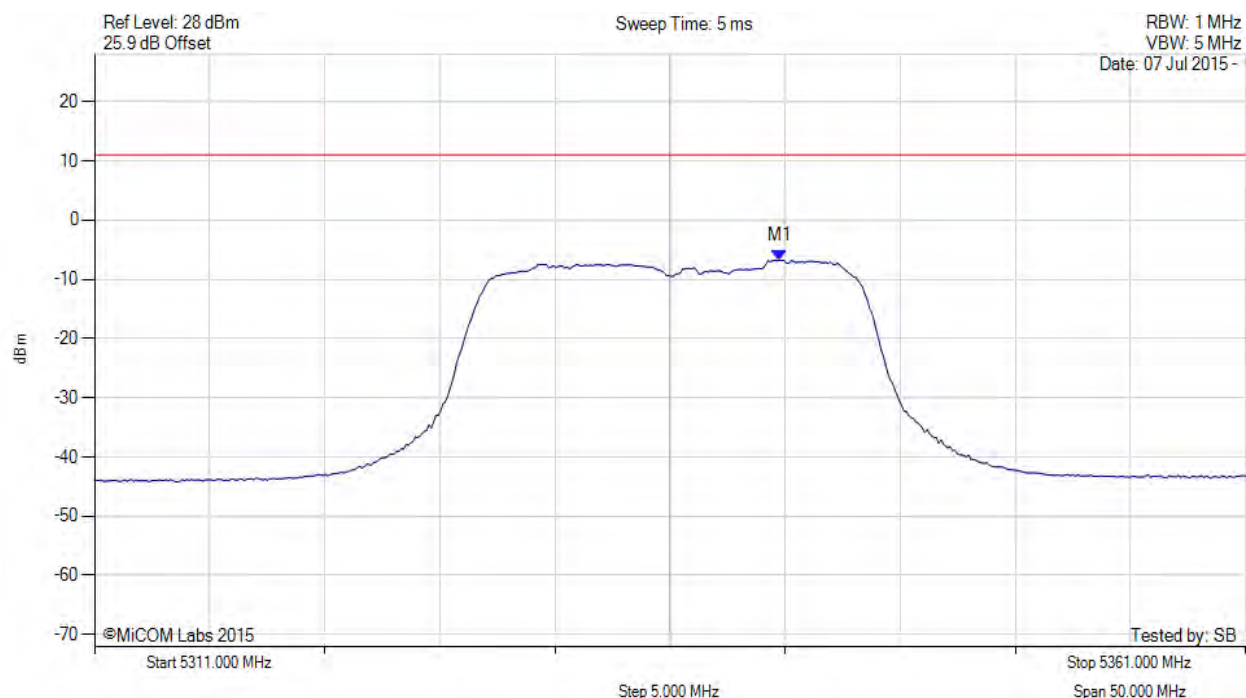
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5340.800 MHz : -6.764 dBm M1 + DCCF : 5340.800 MHz : -6.720 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -17.7 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5489.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5490.553 MHz : -7.165 dBm	Limit: ≤ 6.230 dBm

back to matrix

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PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5489.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
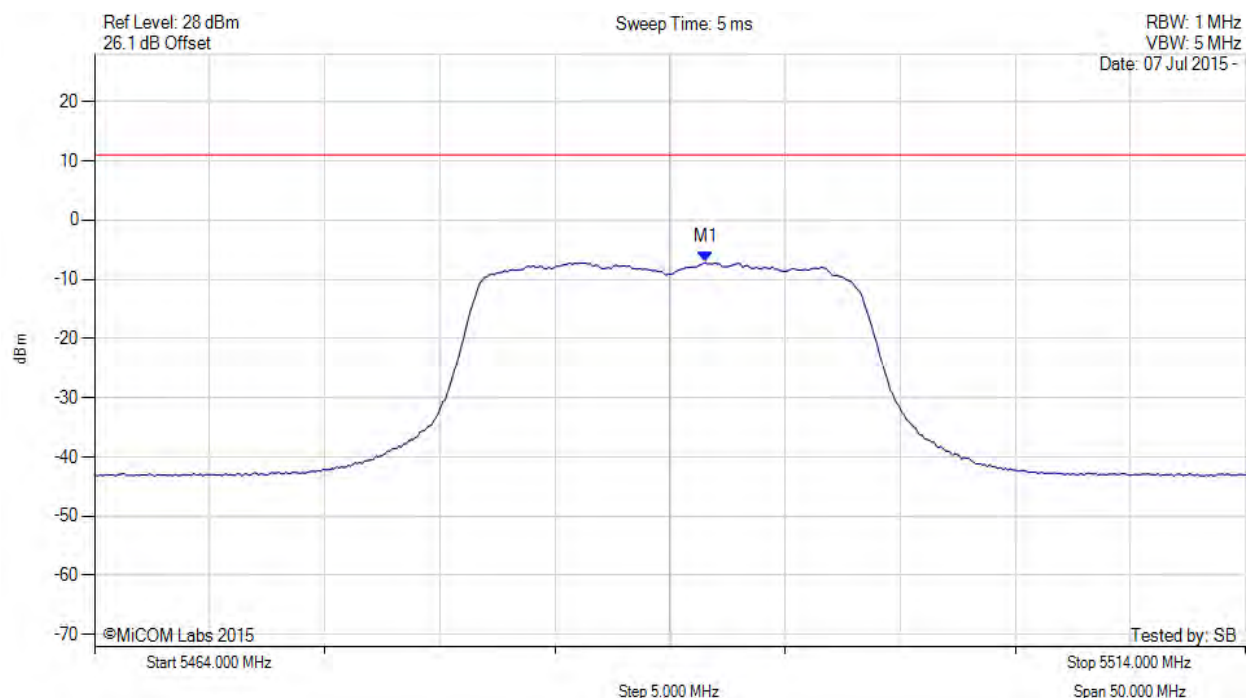
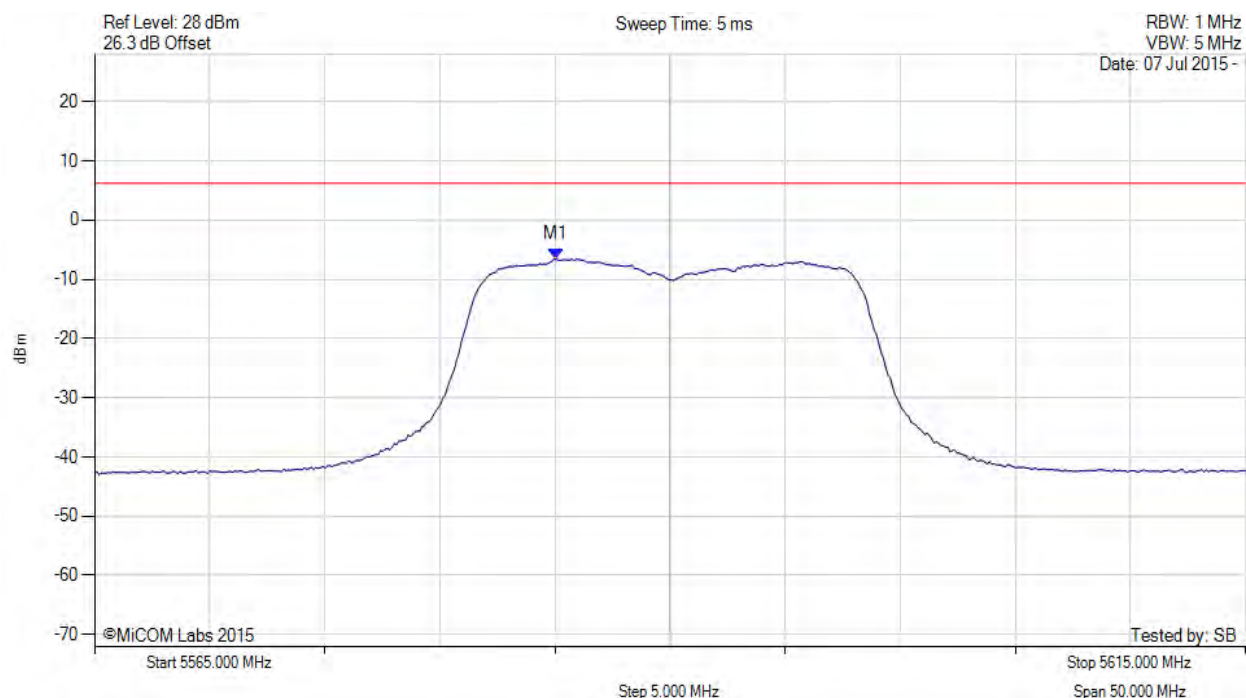| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5490.600 MHz : -7.165 dBm M1 + DCCF : 5490.600 MHz : -7.121 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -18.1 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5590.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5585.040 MHz : -6.588 dBm	Limit: ≤ 6.230 dBm

back to matrix
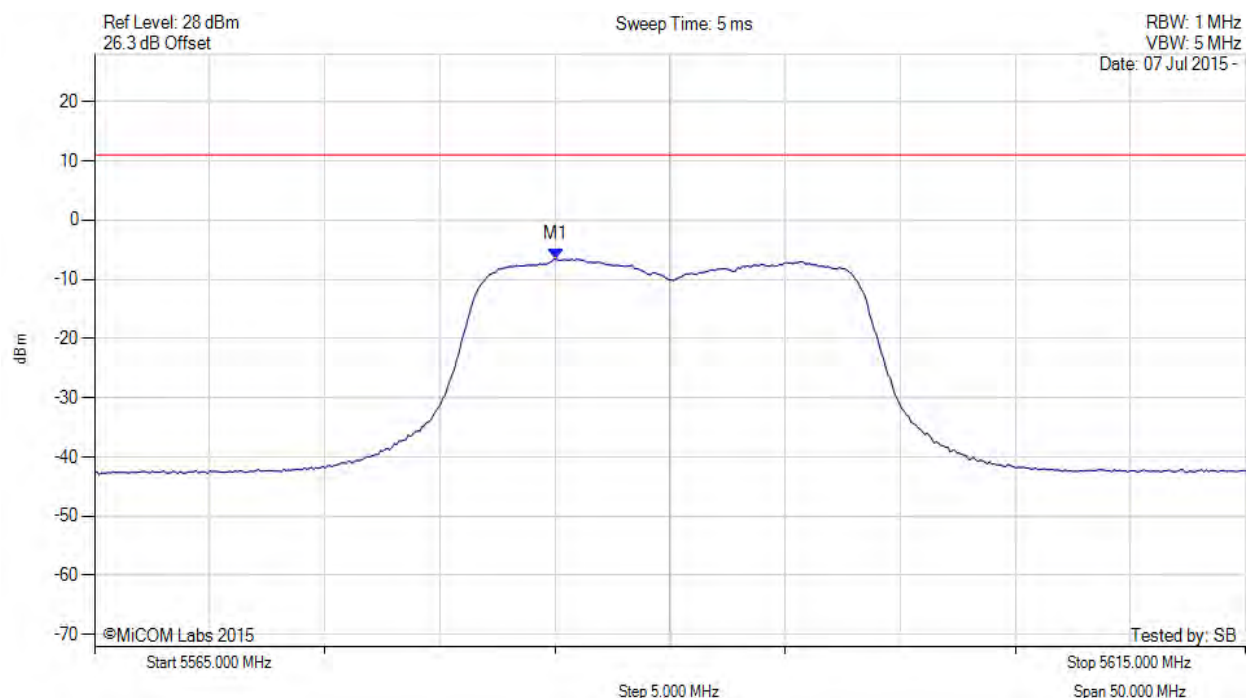
PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5590.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

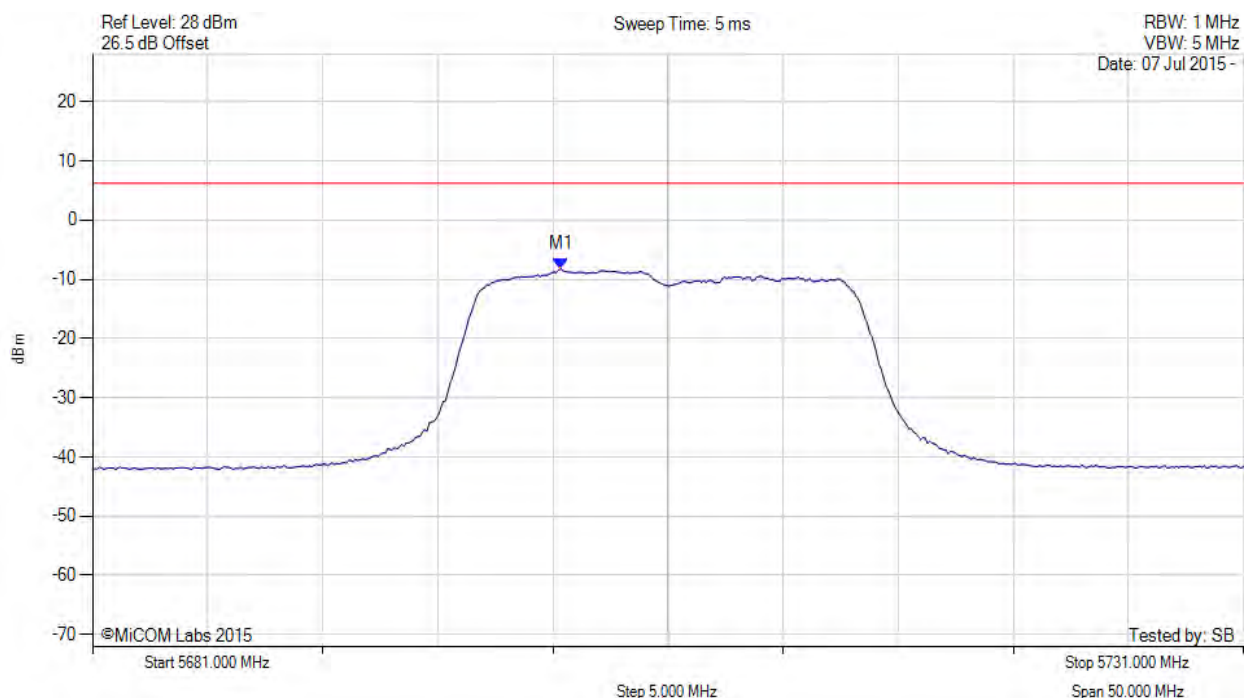| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5585.000 MHz : -6.588 dBm M1 + DCCF : 5585.000 MHz : -6.544 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -17.5 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5706.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5701.341 MHz : -8.215 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 20 MHz, Channel: 5706.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
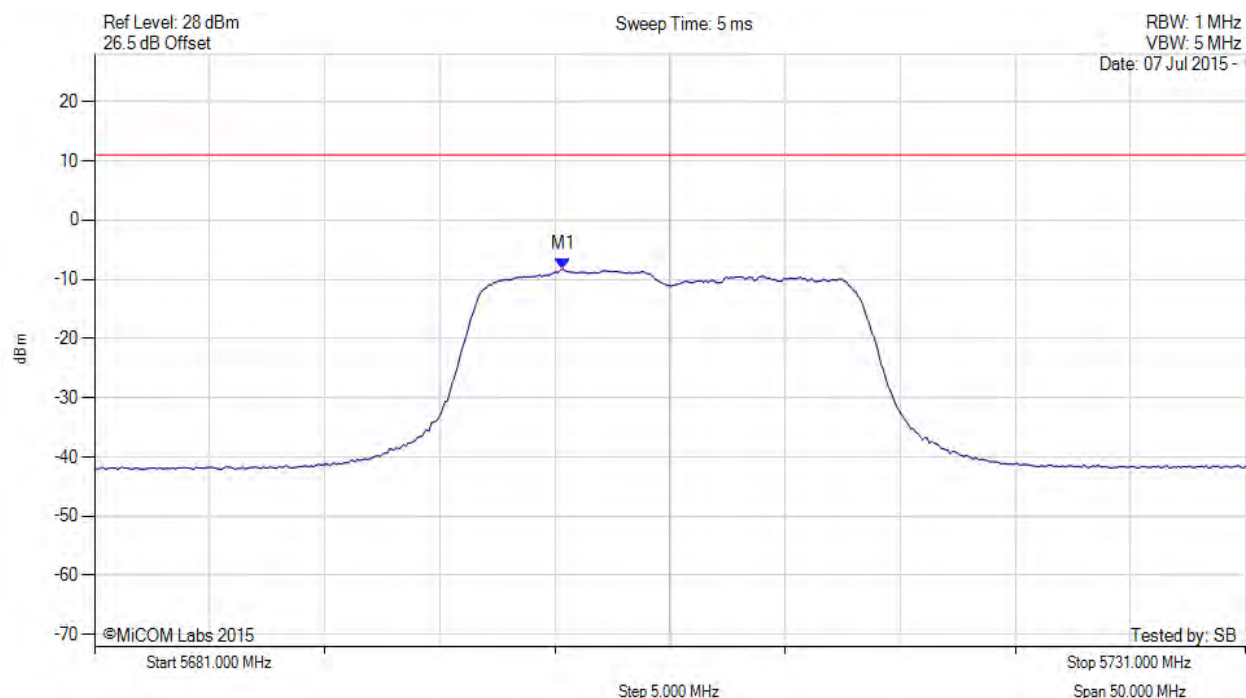
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5701.300 MHz : -8.215 dBm M1 + DCCF : 5701.300 MHz : -8.171 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -19.1 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5274.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

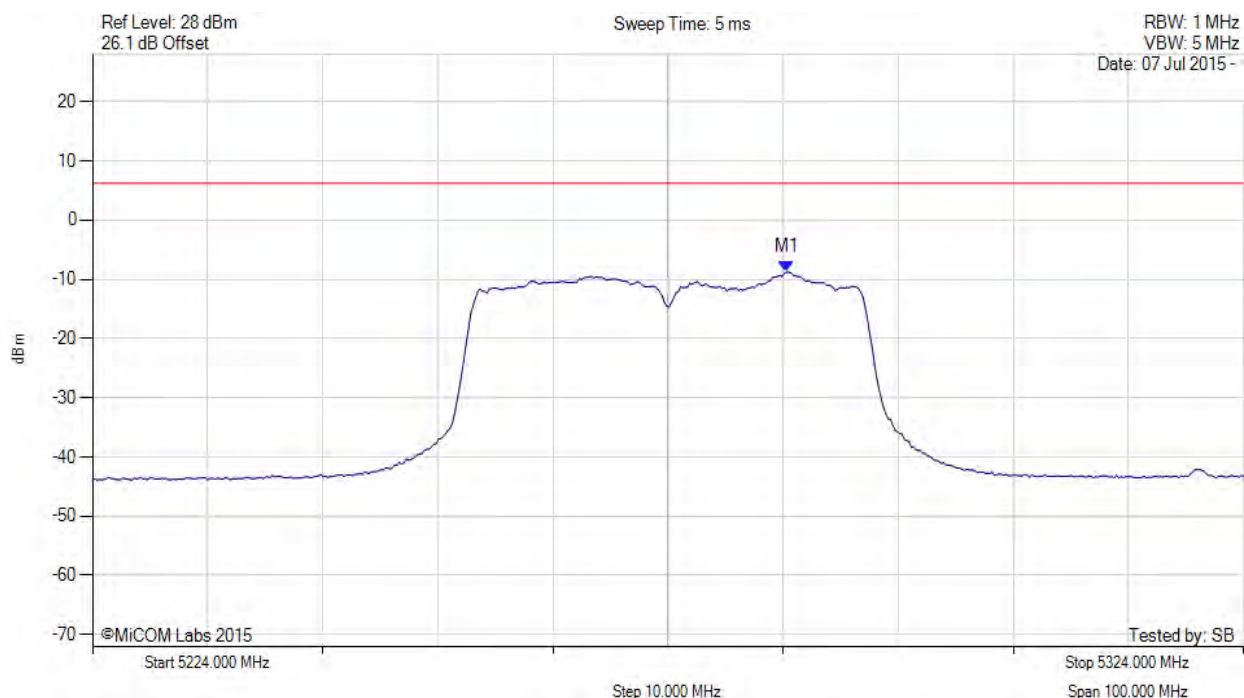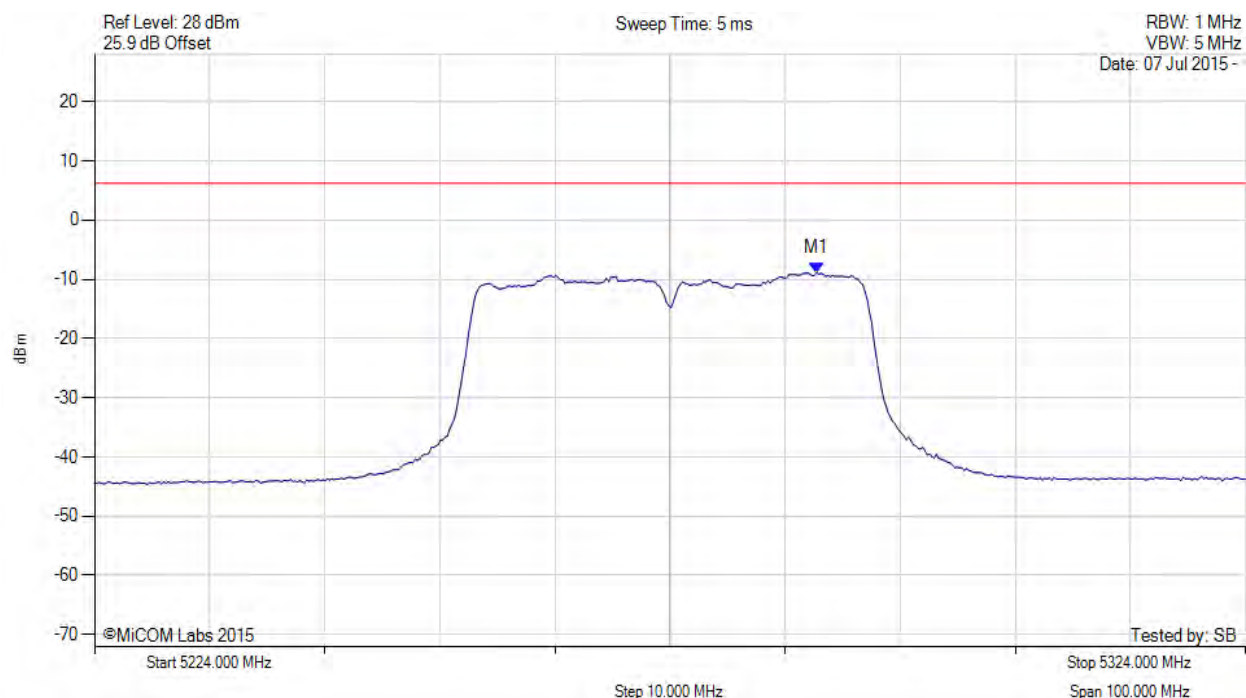| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5284.321 MHz : -8.748 dBm	Limit: ≤ 6.230 dBm

back to matrix

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PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5274.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5286.725 MHz : -8.884 dBm	Limit: ≤ 6.230 dBm

back to matrix
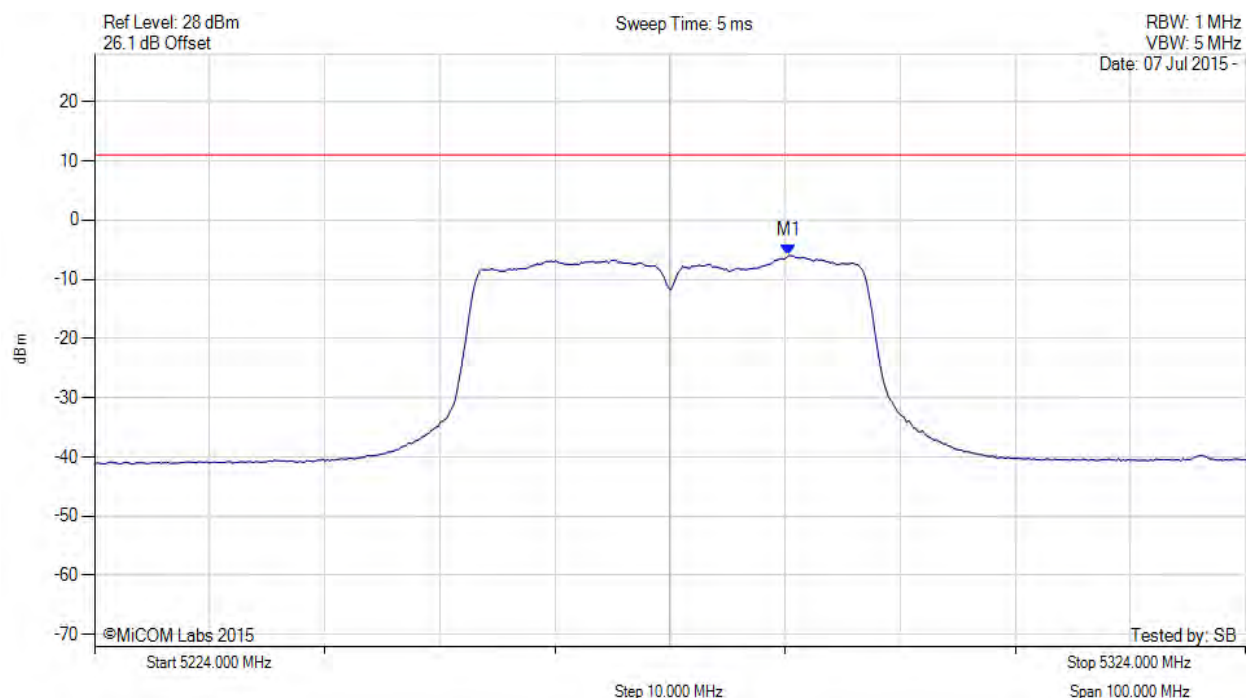
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PEAK POWER SPECTRAL DENSITY

MiTest

Variant: 40 MHz, Channel: 5274.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5284.300 MHz : -5.984 dBm M1 + DCCF : 5284.300 MHz : -5.940 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -16.9 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5300.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5309.319 MHz : -10.439 dBm	Channel Frequency: 5300.00 MHz

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5300.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc
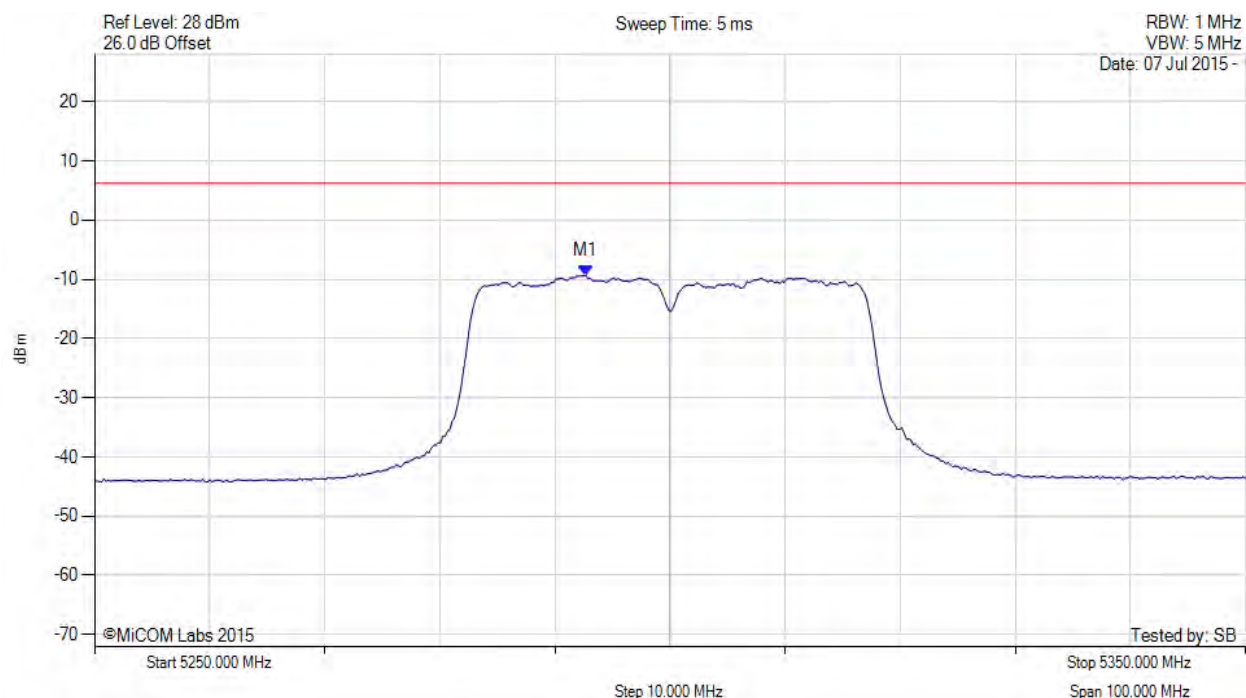
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5292.685 MHz : -9.363 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5300.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

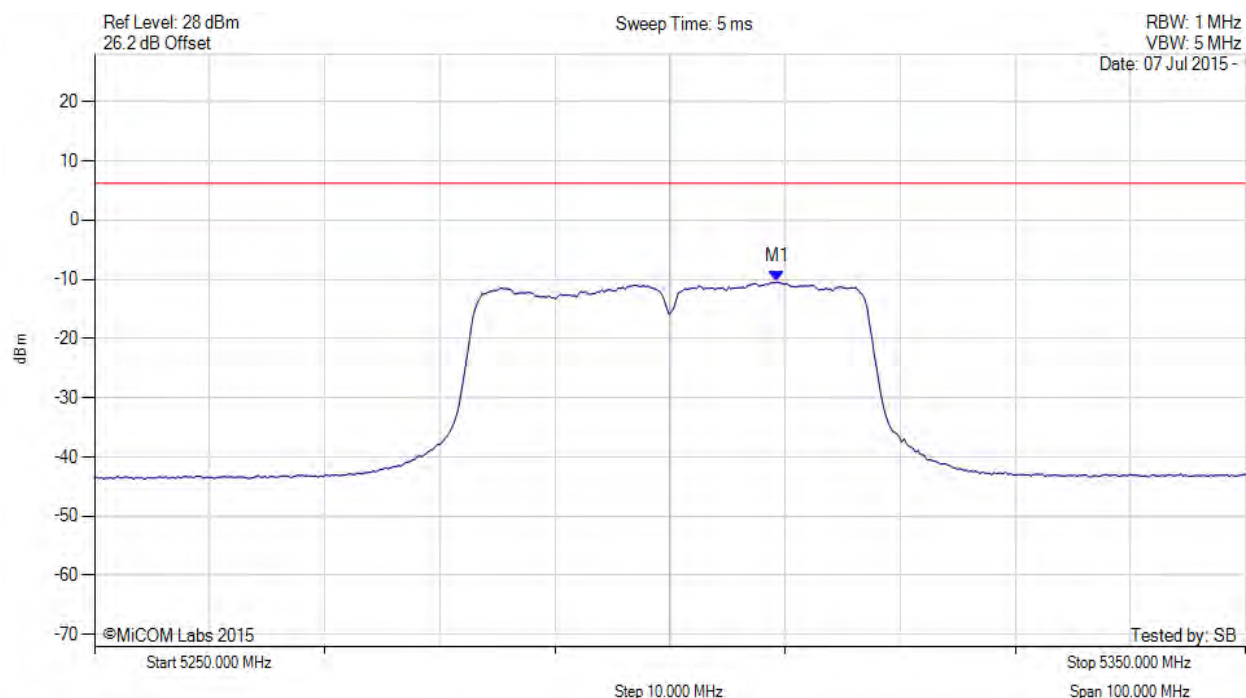| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5310.100 MHz : -7.286 dBm M1 + DCCF : 5310.100 MHz : -7.242 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -18.2 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5326.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc
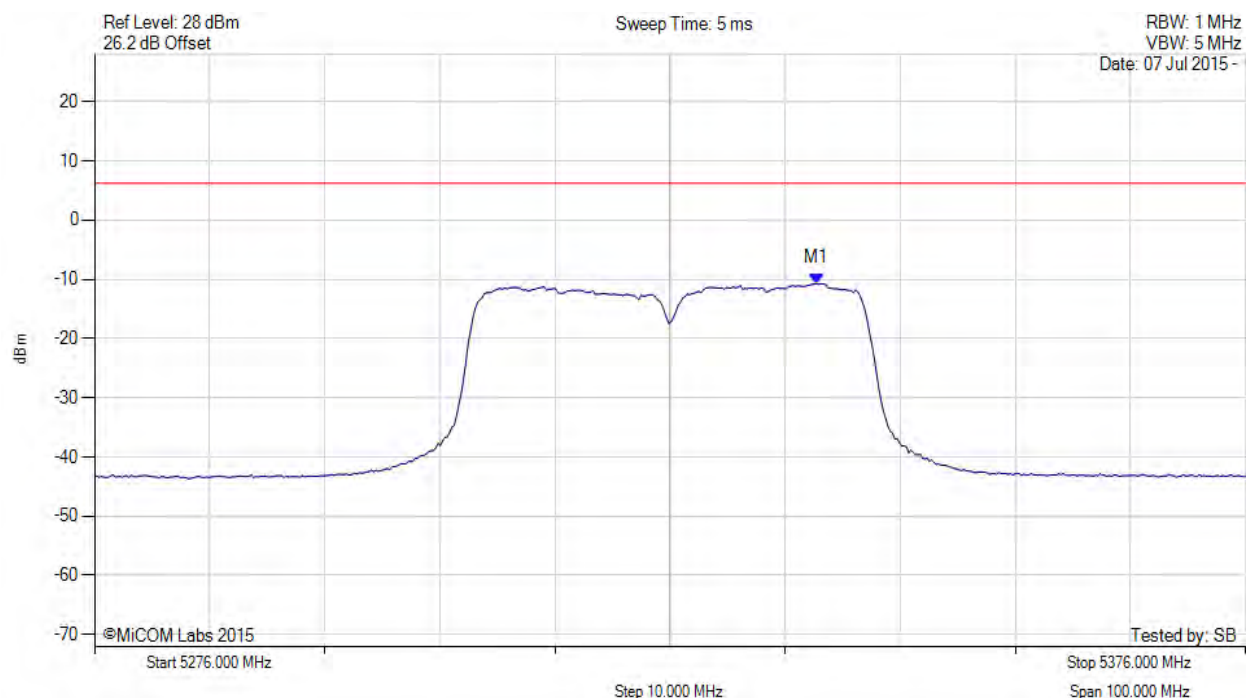
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5338.725 MHz : -10.710 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5326.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc

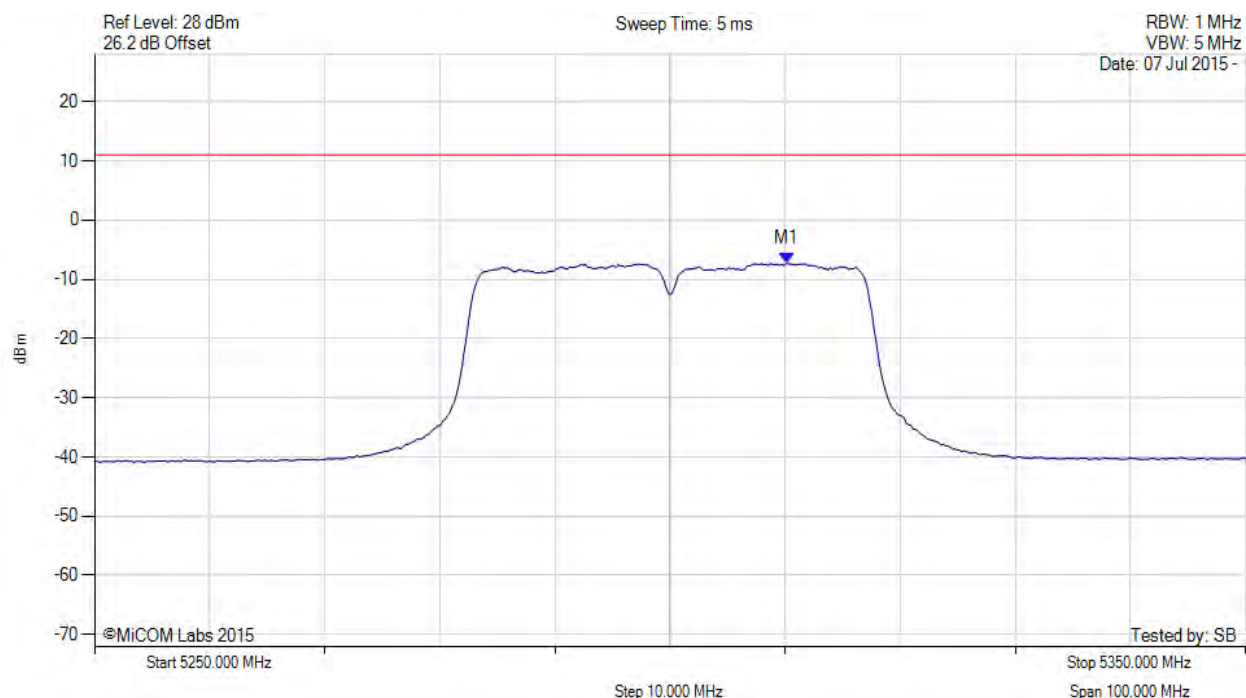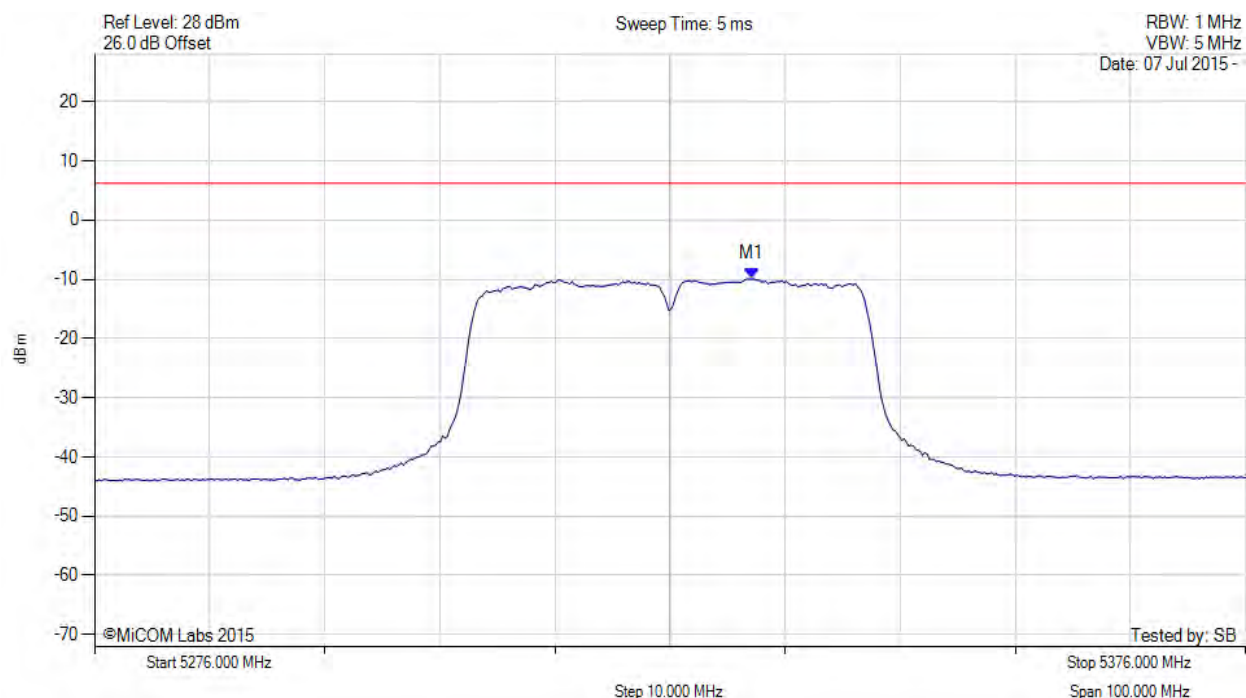| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5333.114 MHz : -9.924 dBm	Limit: ≤ 6.230 dBm

back to matrix

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PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5326.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
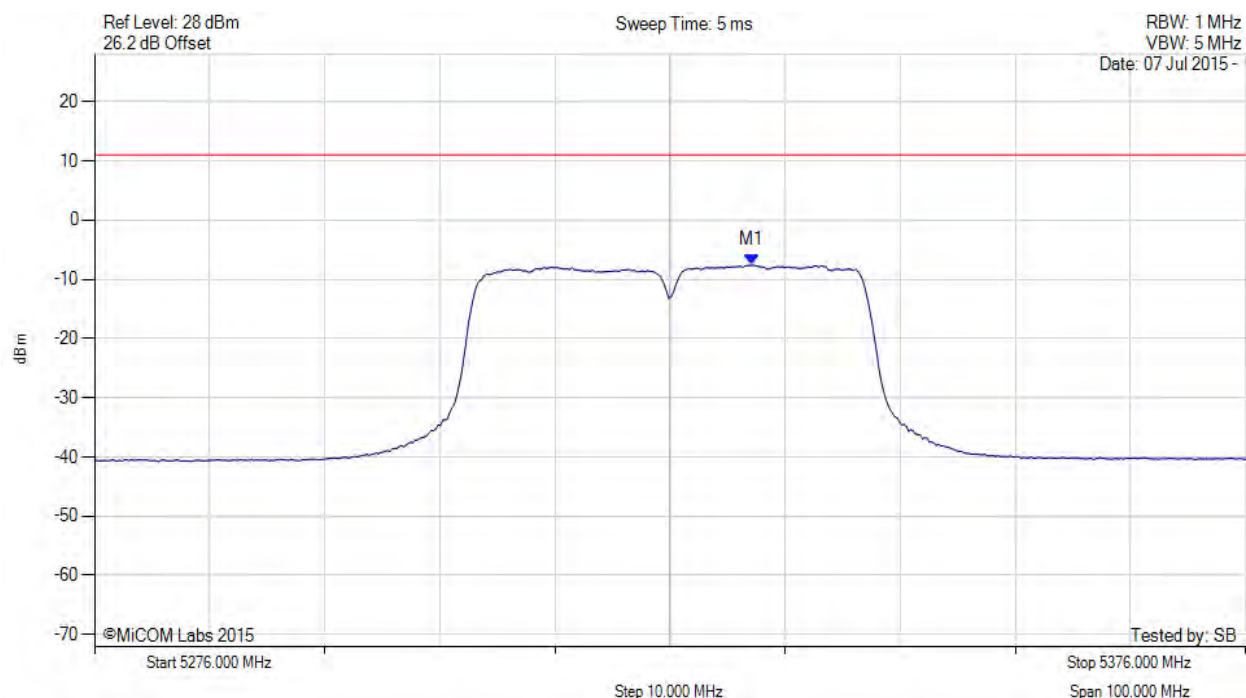
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1 : 5333.100 MHz : -7.635 dBm	Limit: ≤ 11.0 dBm
Sweep Count = 100	M1 + DCCF : 5333.100 MHz : -7.591 dBm	Margin: -18.6 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor : +0.04 dB	
Trace Mode = VIEW		

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5499.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Ref Level: 28 dBm
26.5 dB Offset

Sweep Time: 5 ms

RBW: 1 MHz
VBW: 5 MHz
Date: 07 Jul 2015 -

M1

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Tested by: SB

Start 5449.000 MHz

Stop 5549.000 MHz

Step 10.000 MHz

Span 100.000 MHz
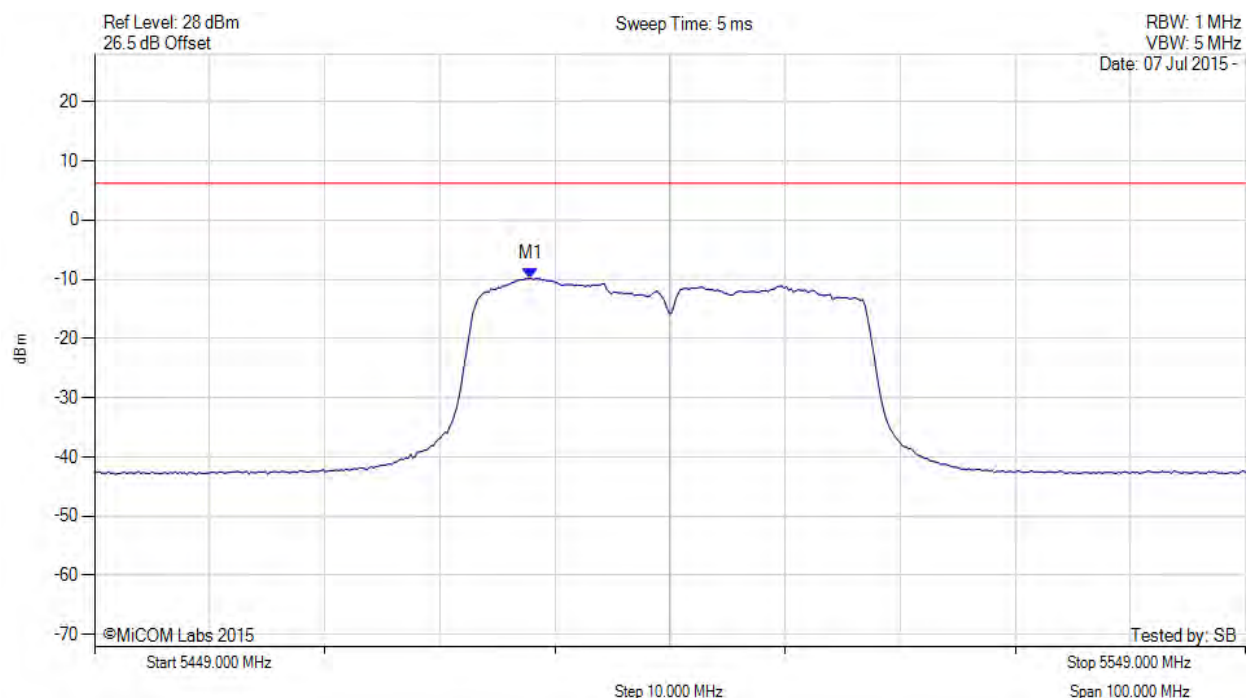
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5486.876 MHz : -9.807 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5499.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc
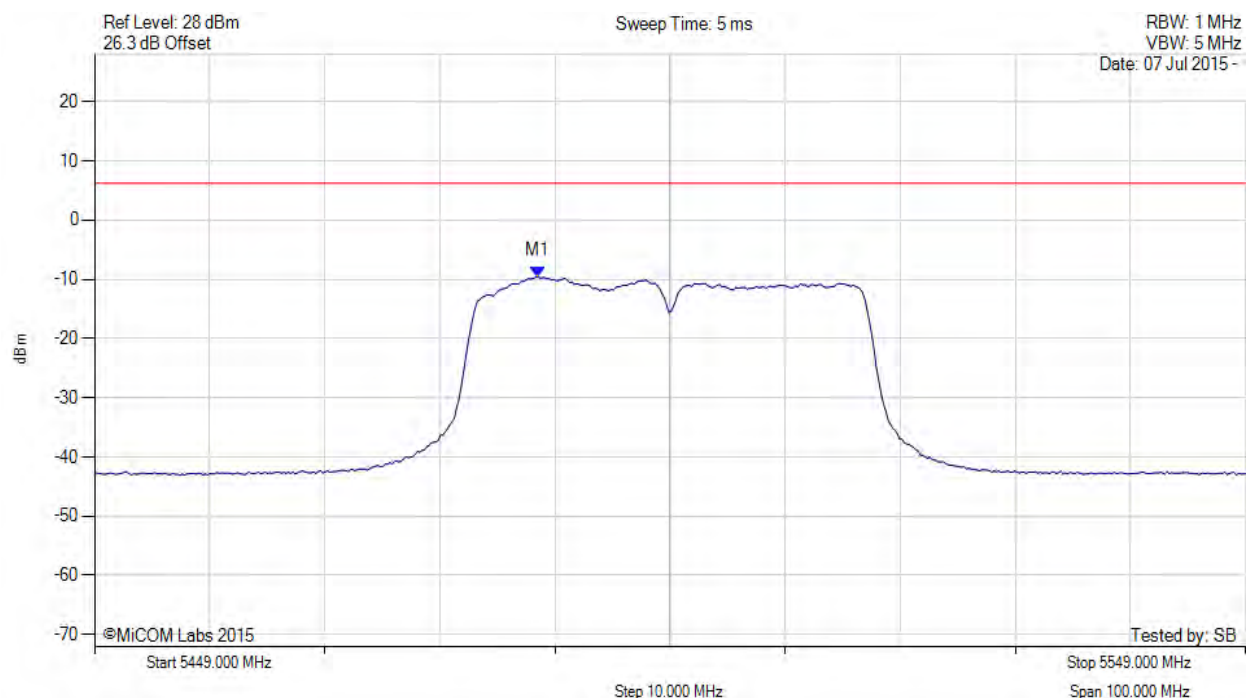
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5487.477 MHz : -9.547 dBm	Limit: ≤ 6.230 dBm

back to matrix

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PEAK POWER SPECTRAL DENSITY

MiTest

Variant: 40 MHz, Channel: 5499.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
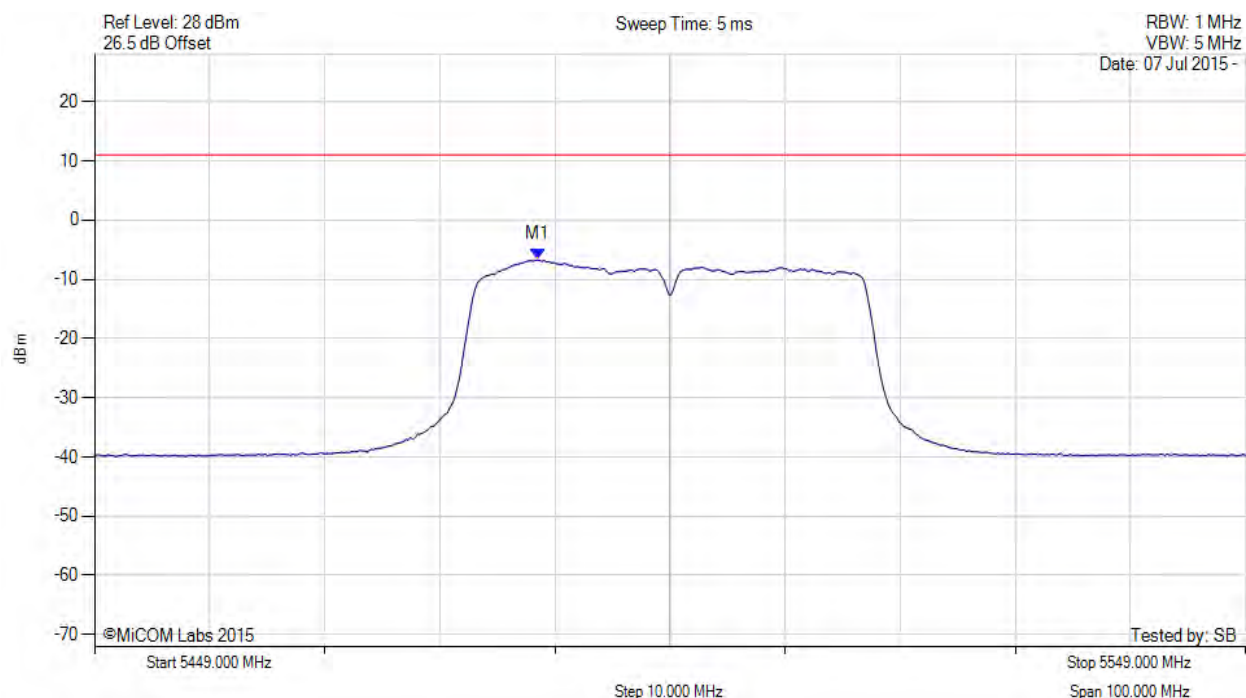
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1 : 5487.500 MHz : -6.707 dBm	Limit: ≤ 11.0 dBm
Sweep Count = 100	M1 + DCCF : 5487.500 MHz : -6.663 dBm	Margin: -17.6 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor : +0.04 dB	
Trace Mode = VIEW		

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5570.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5574.709 MHz : -9.586 dBm	Channel Frequency: 5570.00 MHz

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5570.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc
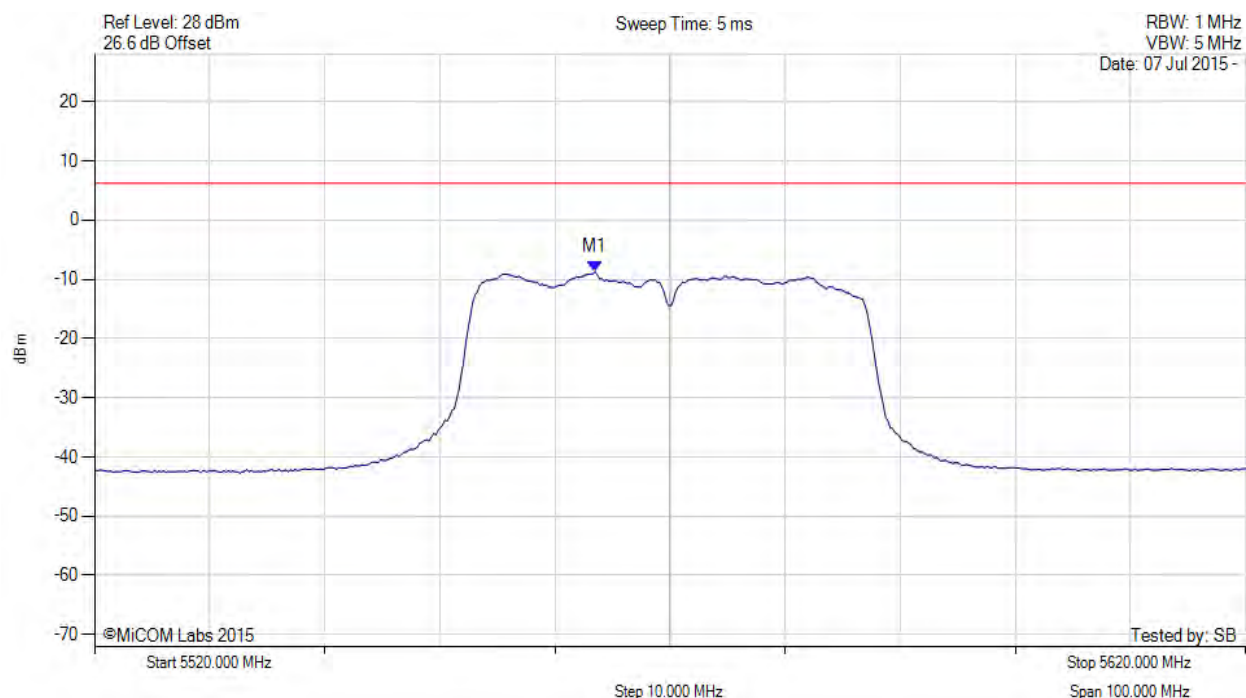
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5563.487 MHz : -8.715 dBm	Limit: ≤ 6.230 dBm

back to matrix

MiCOMLabs

PEAK POWER SPECTRAL DENSITY

MiTest

Variant: 40 MHz, Channel: 5570.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc

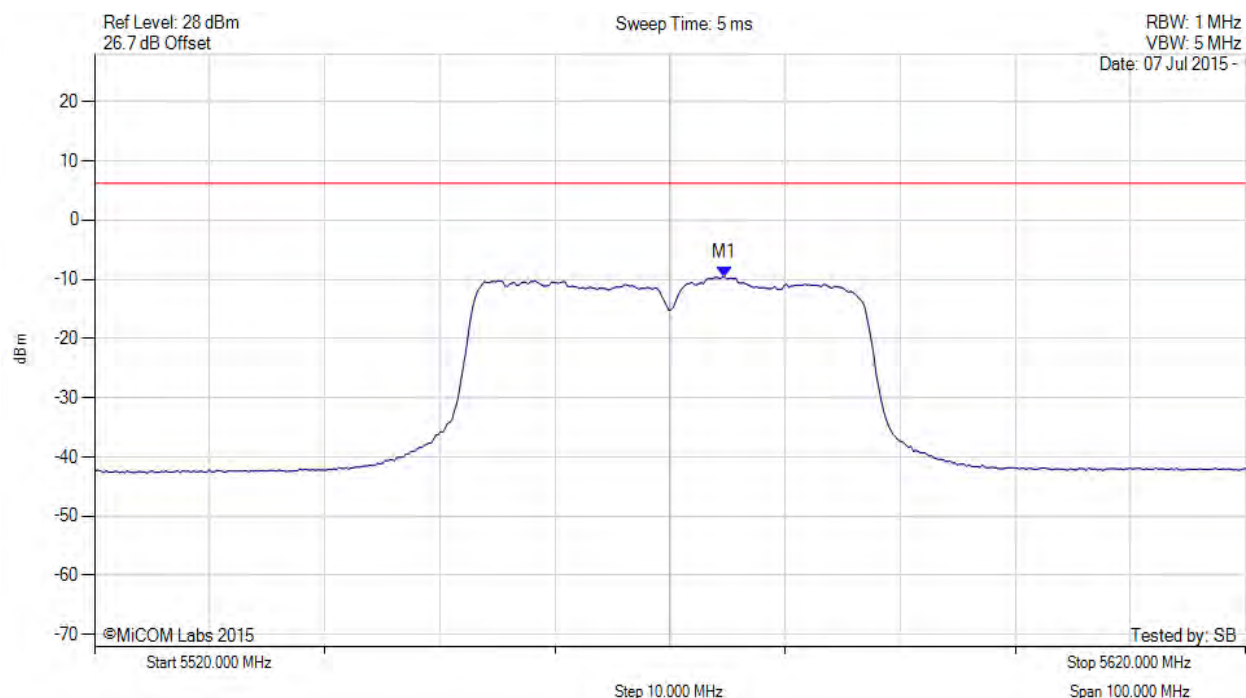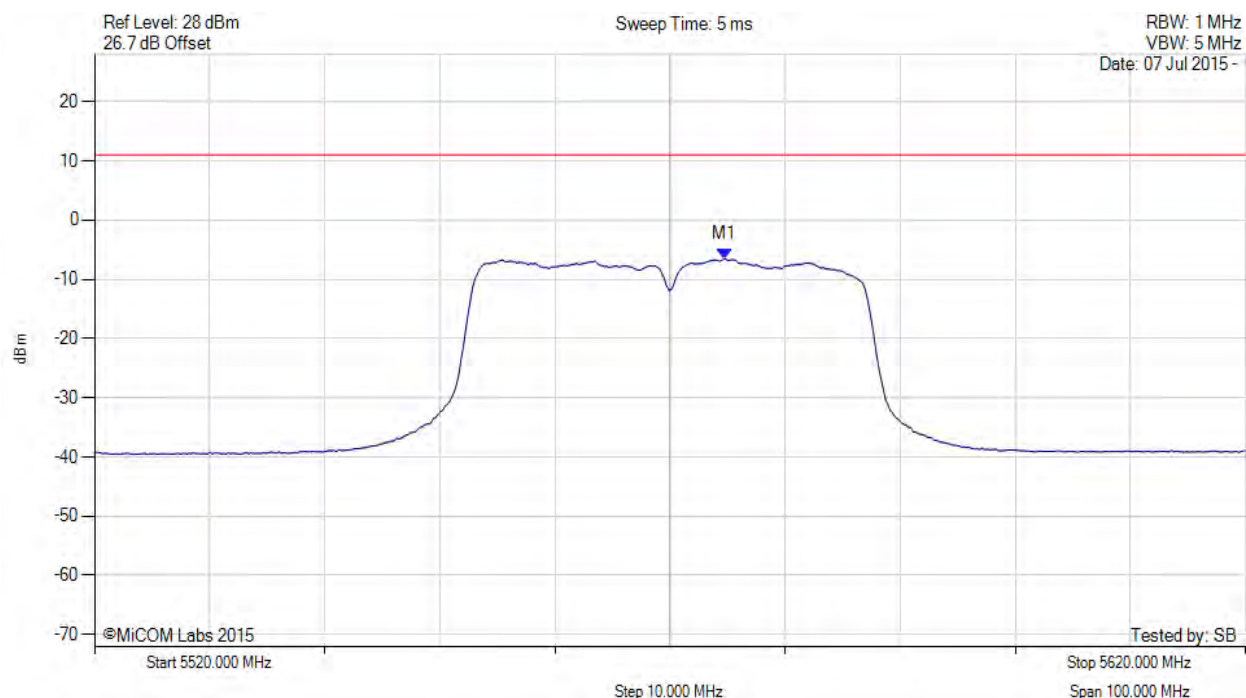| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5574.700 MHz : -6.525 dBm M1 + DCCF : 5574.700 MHz : -6.481 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -17.5 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5696.00 MHz, Chain b, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5705.920 MHz : -6.906 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5696.00 MHz, Chain c, Temp: Ambient, Voltage: 55 Vdc
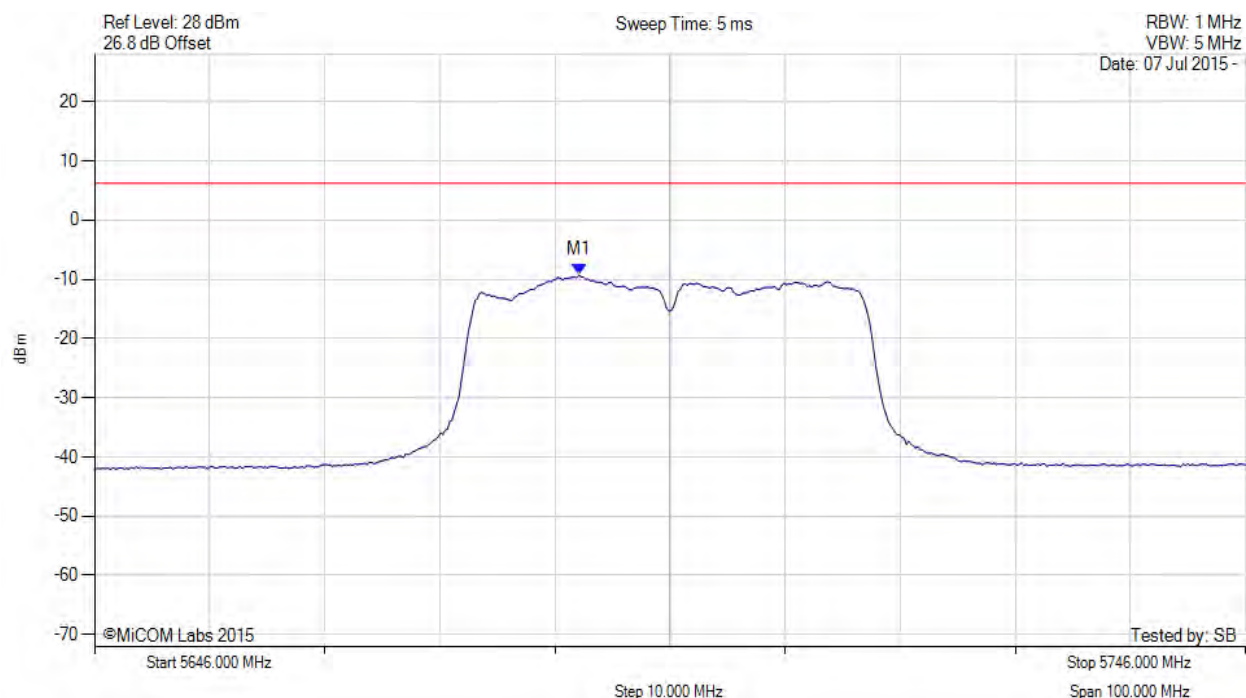
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5688.084 MHz : -9.288 dBm	Limit: ≤ 6.230 dBm

back to matrix

MiCOMLabs

PEAK POWER SPECTRAL DENSITY

MiTest

Variant: 40 MHz, Channel: 5696.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
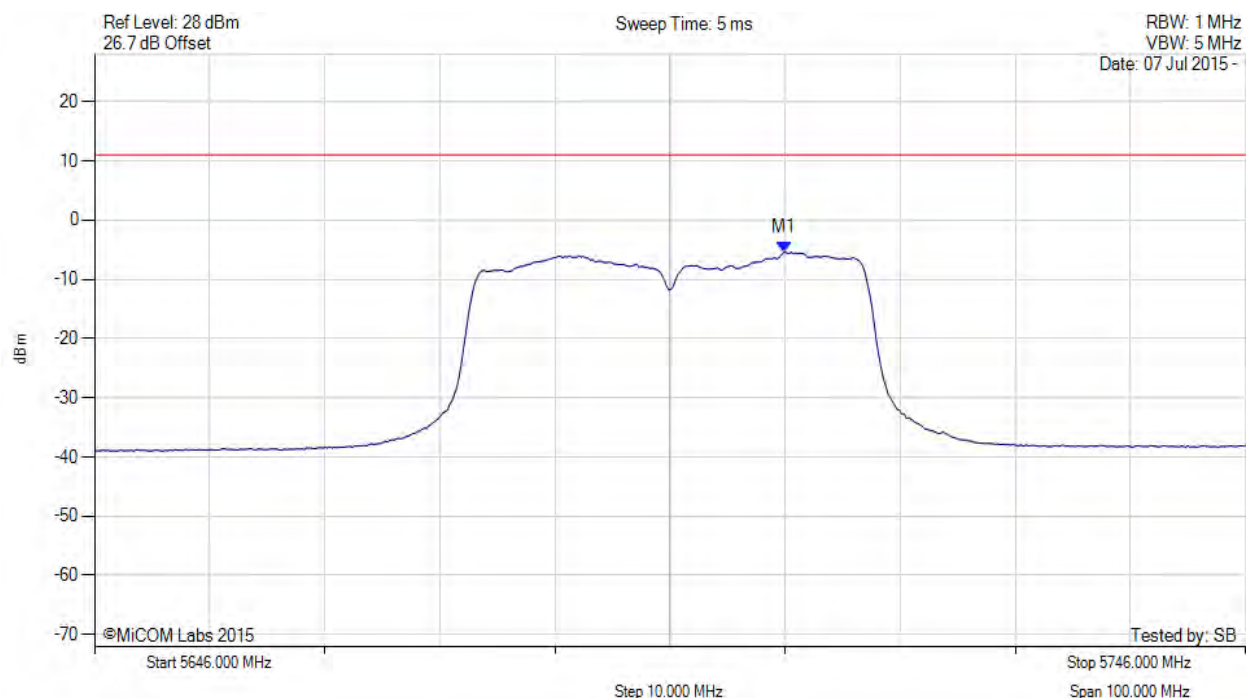
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5705.900 MHz : -5.380 dBm M1 + DCCF : 5705.900 MHz : -5.336 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -16.3 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5274.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5286.725 MHz : -11.951 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5274.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
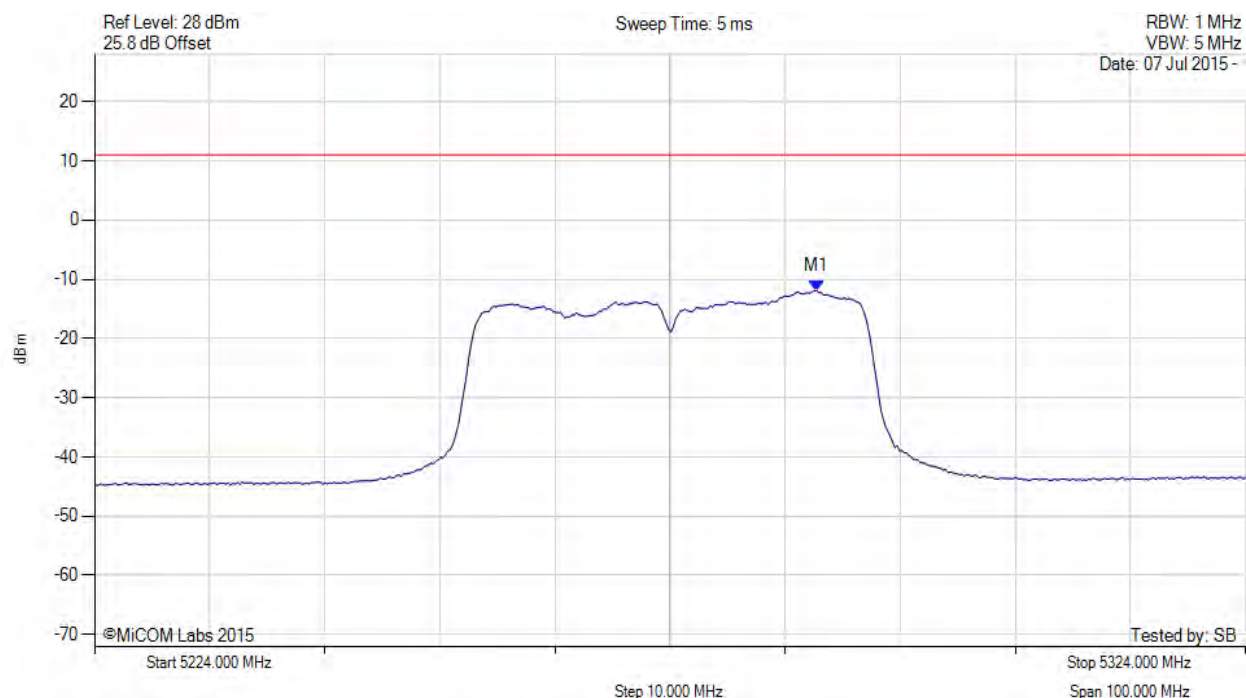
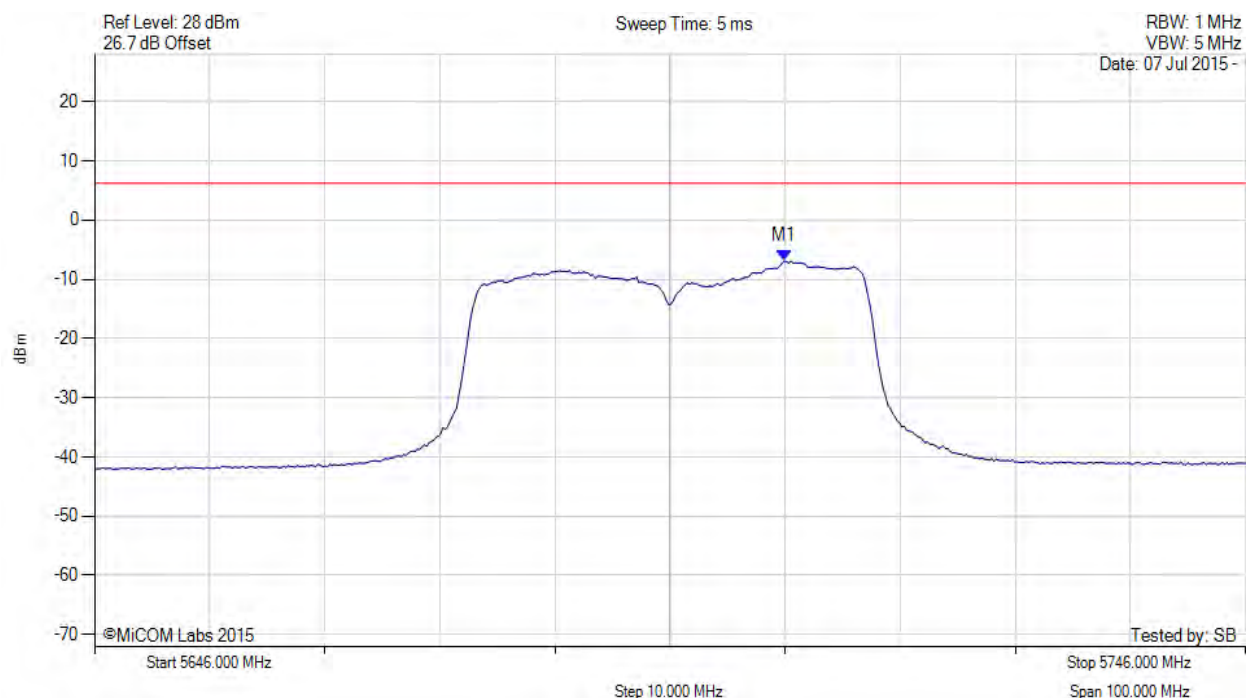| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5286.700 MHz : -11.951 dBm M1 + DCCF : 5286.700 MHz : -11.907 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -22.9 dB

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5300.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5311.523 MHz : -12.571 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5300.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
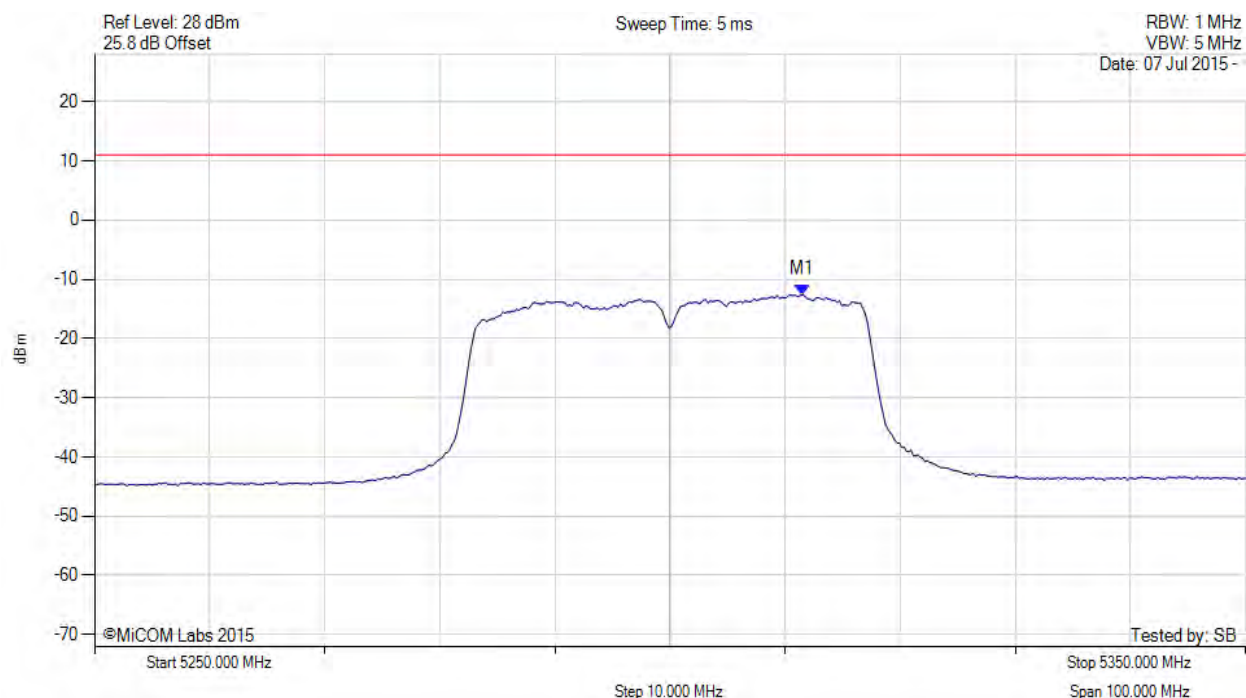
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5311.500 MHz : -12.571 dBm M1 + DCCF : 5311.500 MHz : -12.527 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -23.5 dB

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MiCOMLabs

PEAK POWER SPECTRAL DENSITY

MiTest.

Variant: 40 MHz, Channel: 5326.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc

Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5335.118 MHz : -9.821 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5326.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
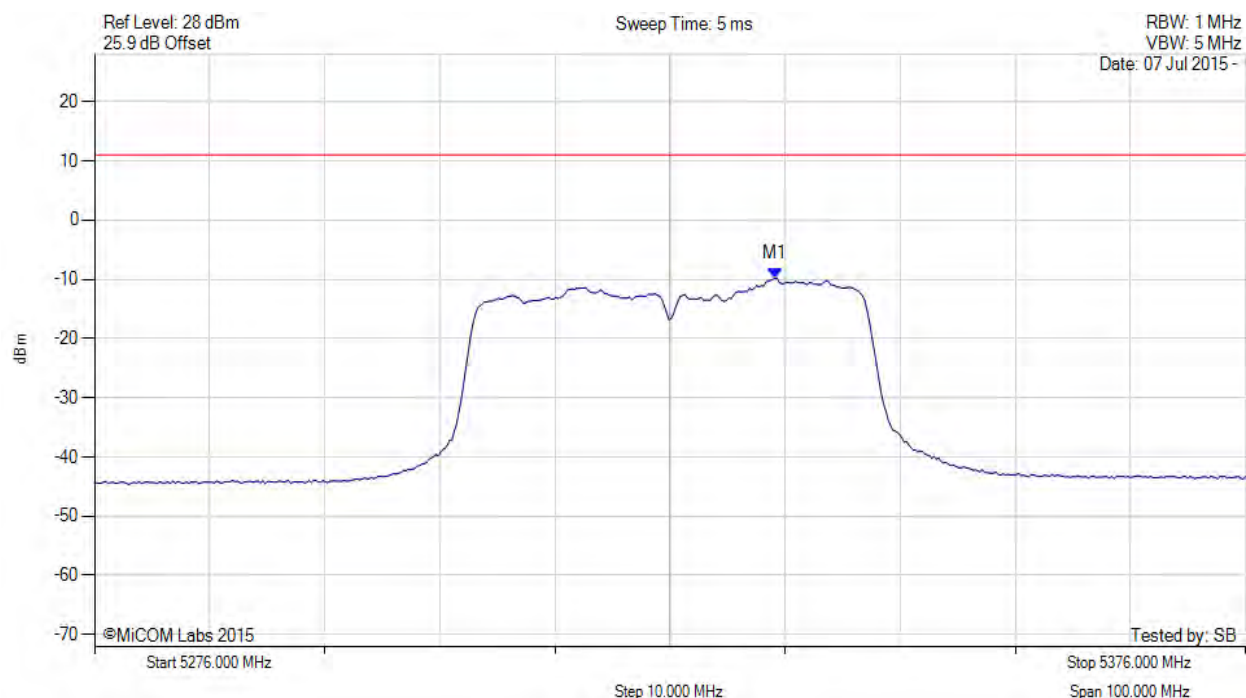
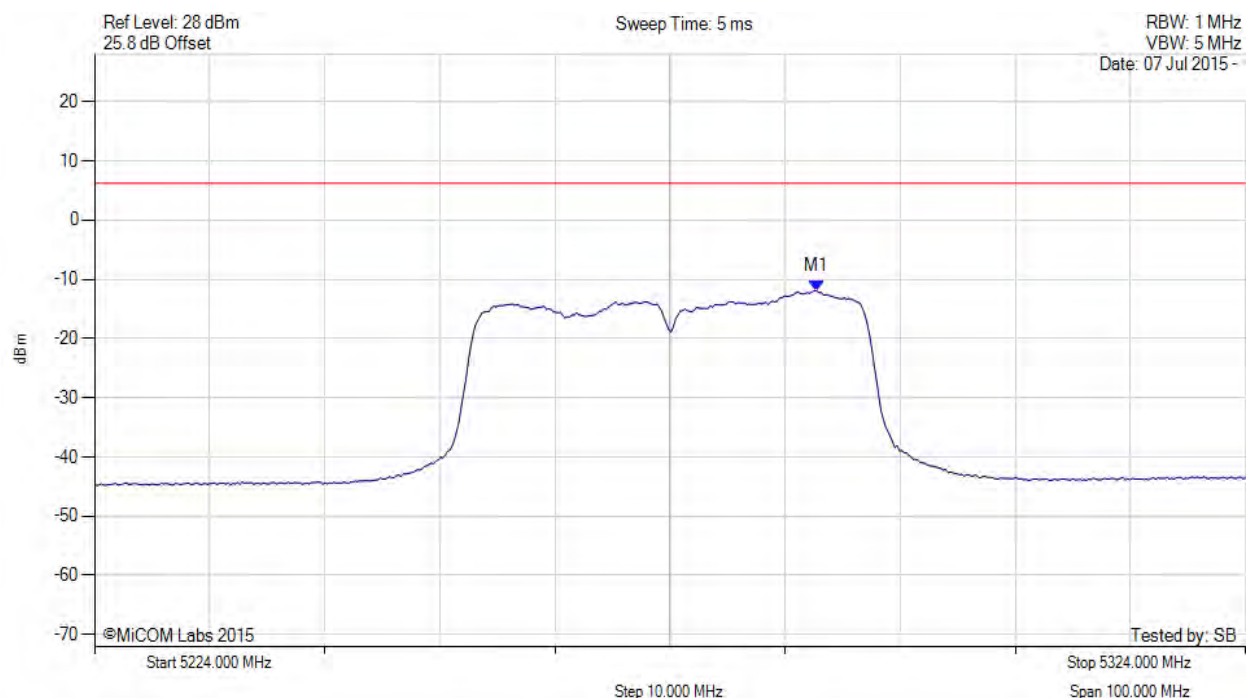| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5335.100 MHz : -9.821 dBm M1 + DCCF : 5335.100 MHz : -9.777 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -20.7 dB

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	Title:	Radwin RADWIN 2000 JET, RADWIN 5000 JET
	To:	FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247
	Serial #:	RDWN32-U2a Rev A
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PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5499.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc
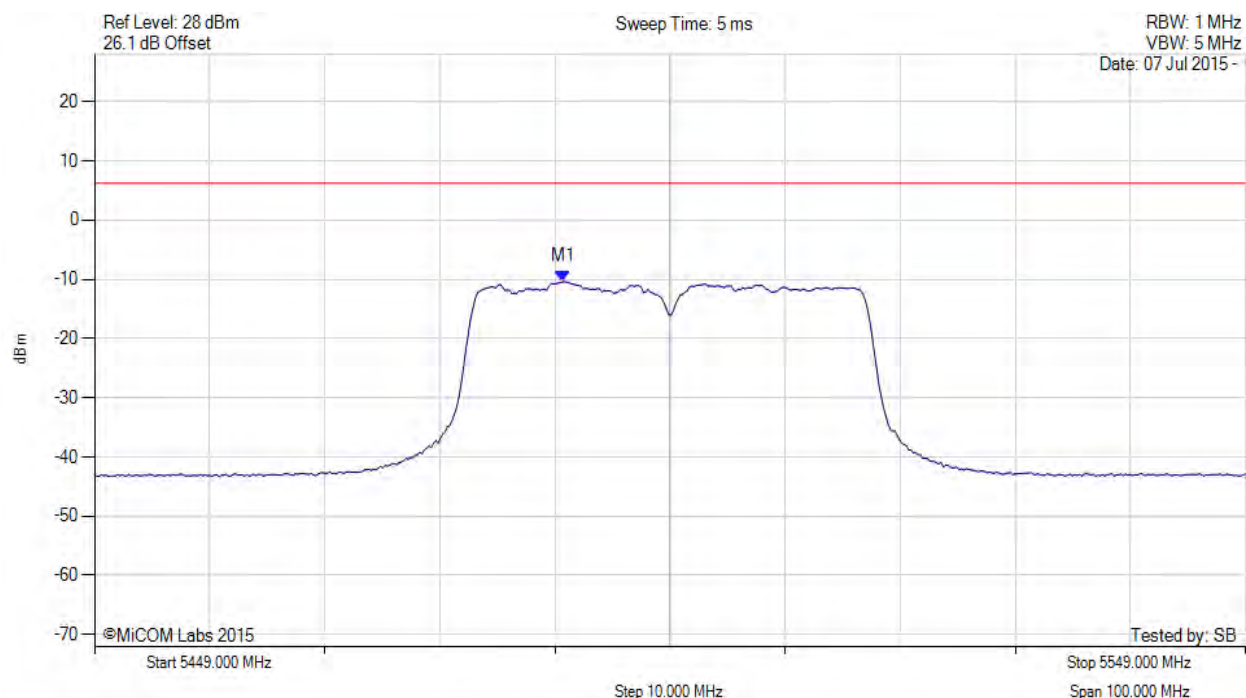
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5489.681 MHz : -10.413 dBm	Limit: ≤ 6.230 dBm

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PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5499.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
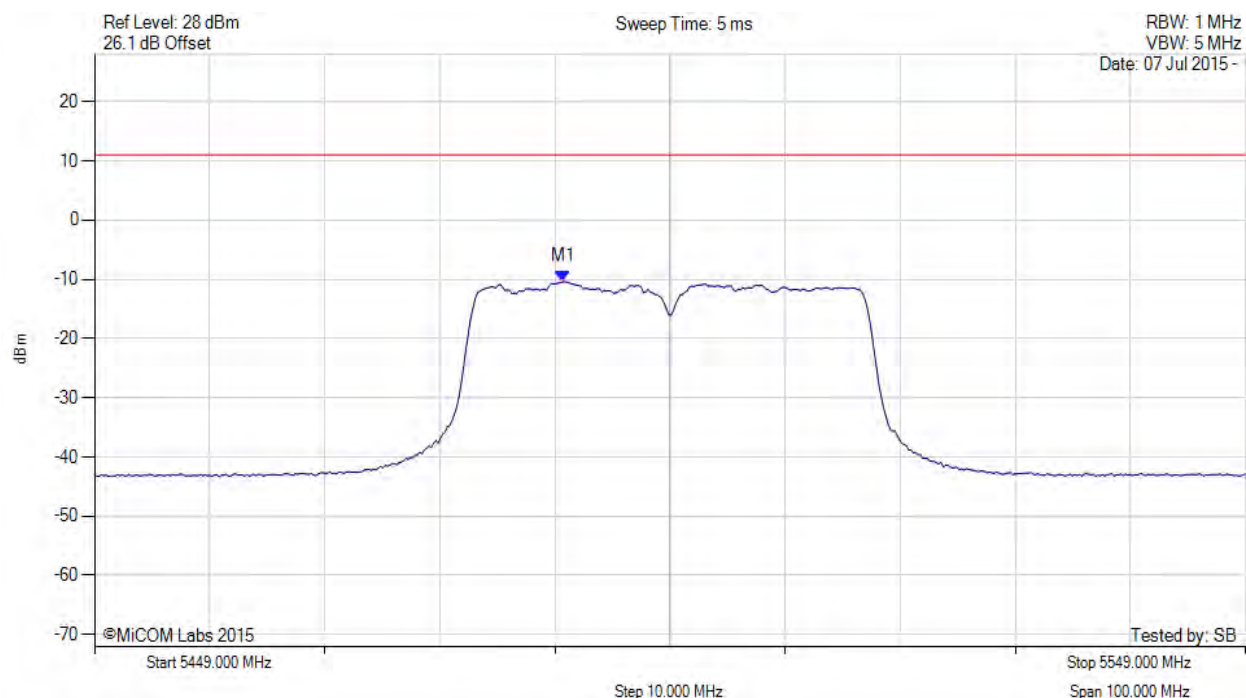
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1 : 5489.700 MHz : -10.413 dBm	Limit: ≤ 11.0 dBm
Sweep Count = 100	M1 + DCCF : 5489.700 MHz : -10.369 dBm	Margin: -21.3 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor : +0.04 dB	
Trace Mode = VIEW		

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PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5570.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc
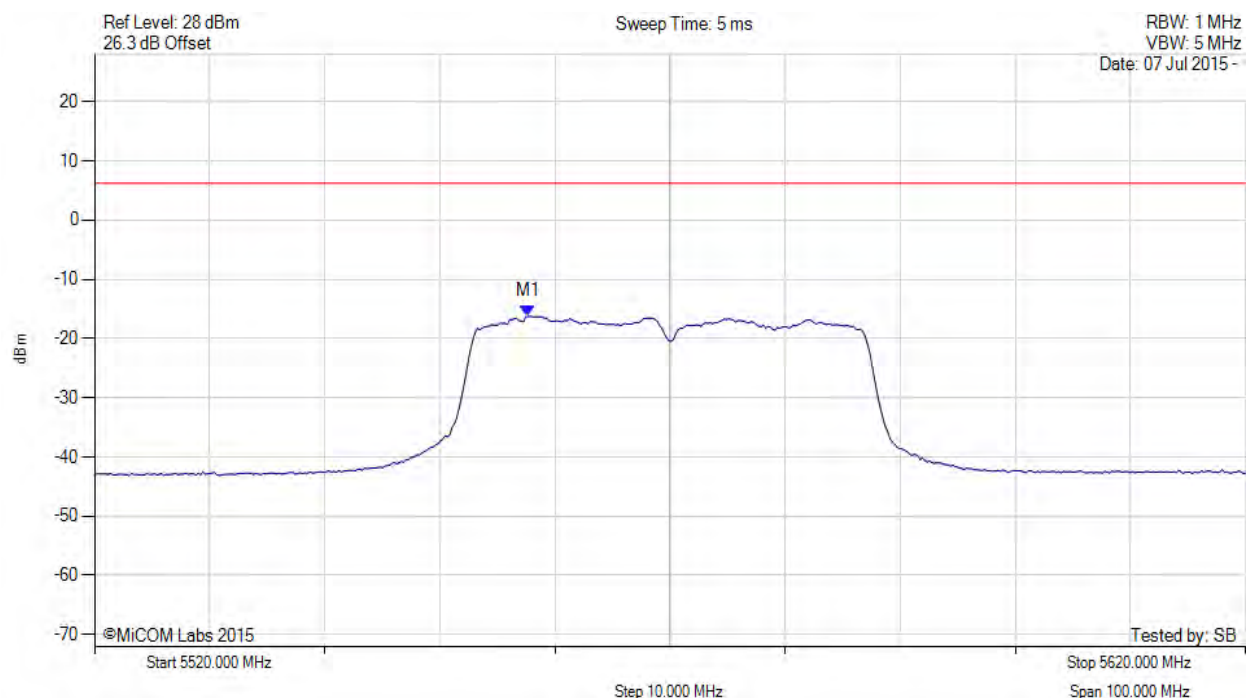
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5557.675 MHz : -16.260 dBm	Limit: ≤ 6.230 dBm

back to matrix

PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5570.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
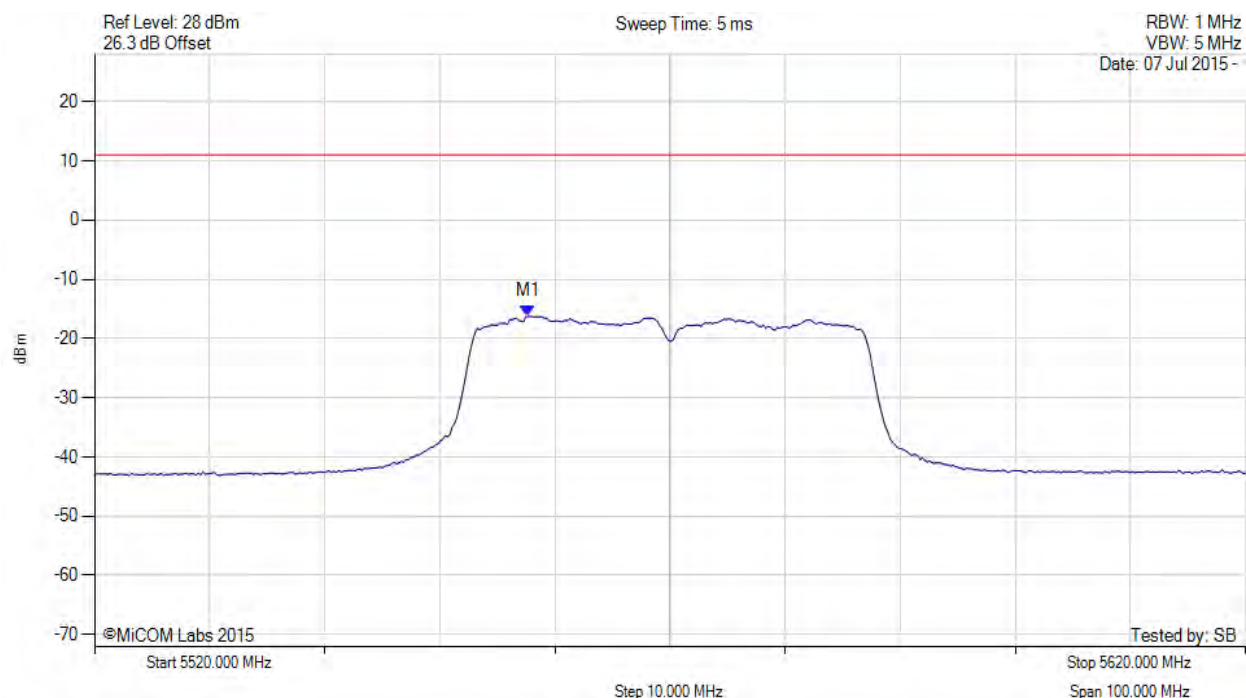
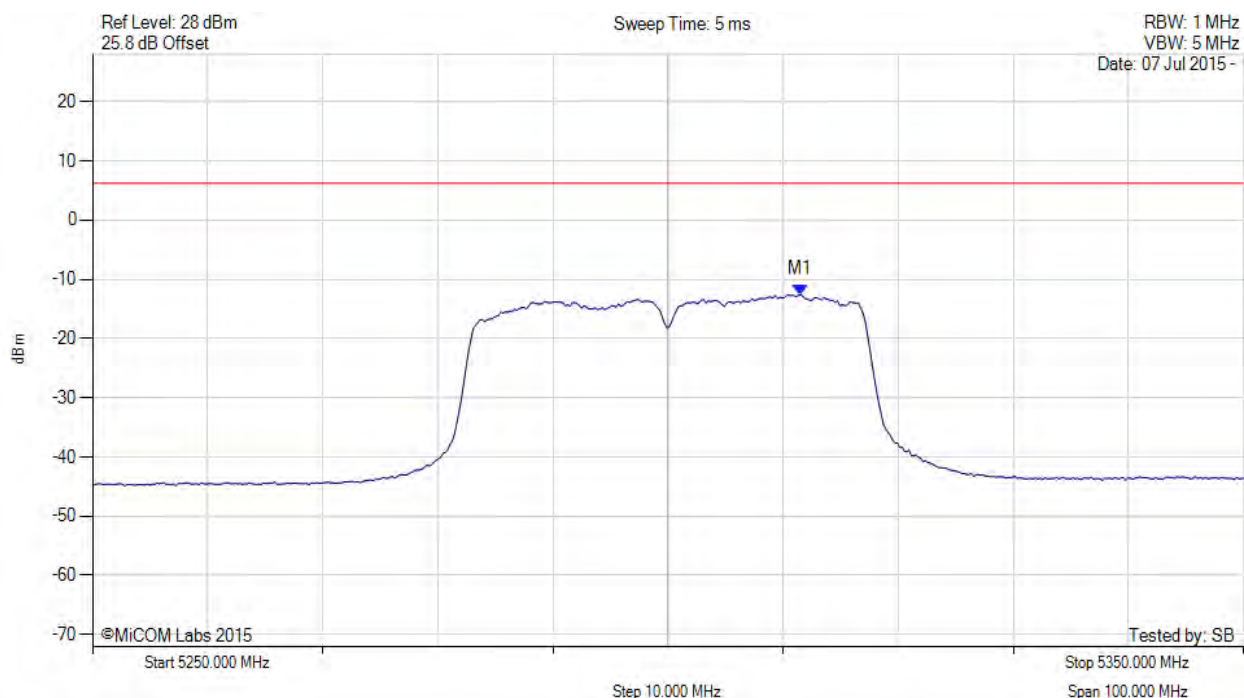| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5557.700 MHz : -16.260 dBm M1 + DCCF : 5557.700 MHz : -16.216 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -27.2 dB

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PEAK POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5696.00 MHz, Chain a, Temp: Ambient, Voltage: 55 Vdc
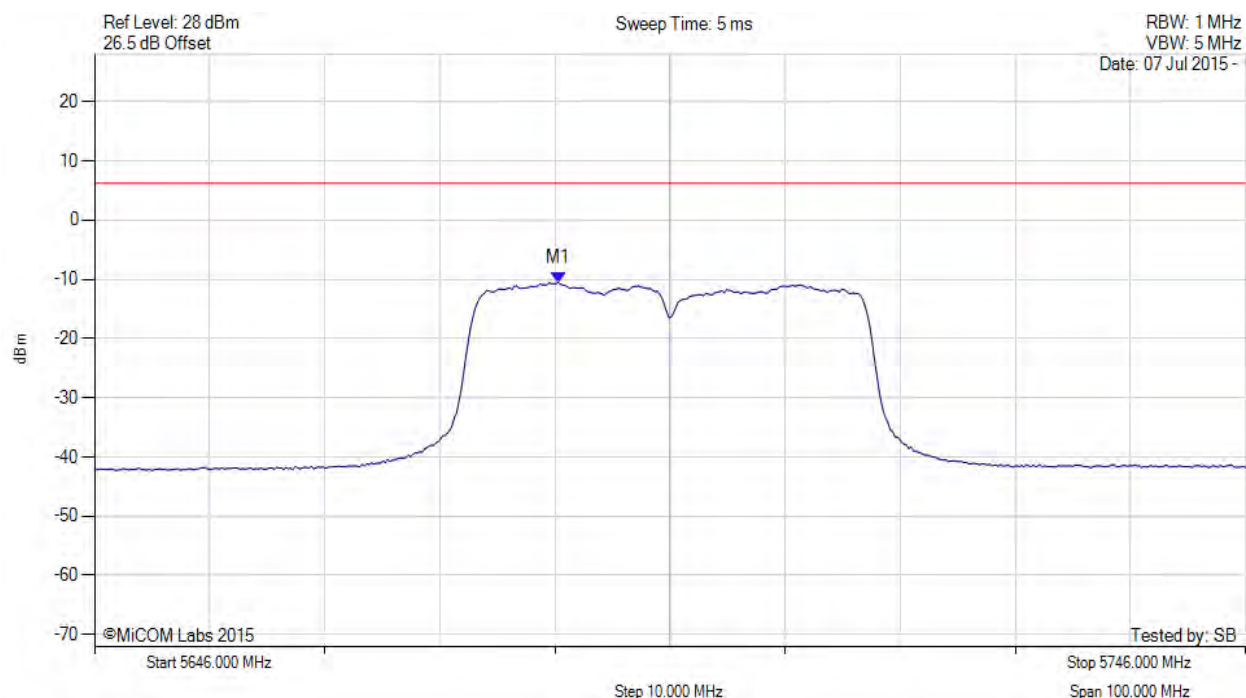
Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5686.281 MHz : -10.511 dBm	Limit: ≤ 6.230 dBm

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MiCOMLabs

PEAK POWER SPECTRAL DENSITY

MiTest

Variant: 40 MHz, Channel: 5696.00 MHz, SUM, Temp: Ambient, Voltage: 55 Vdc
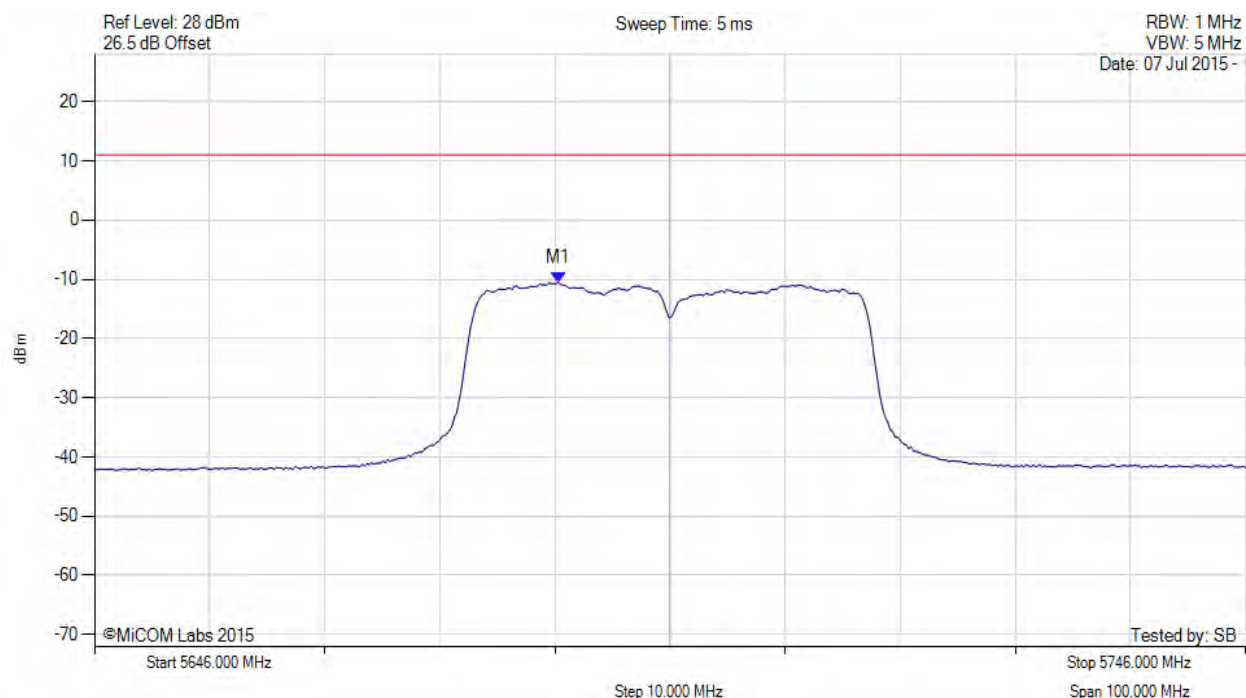
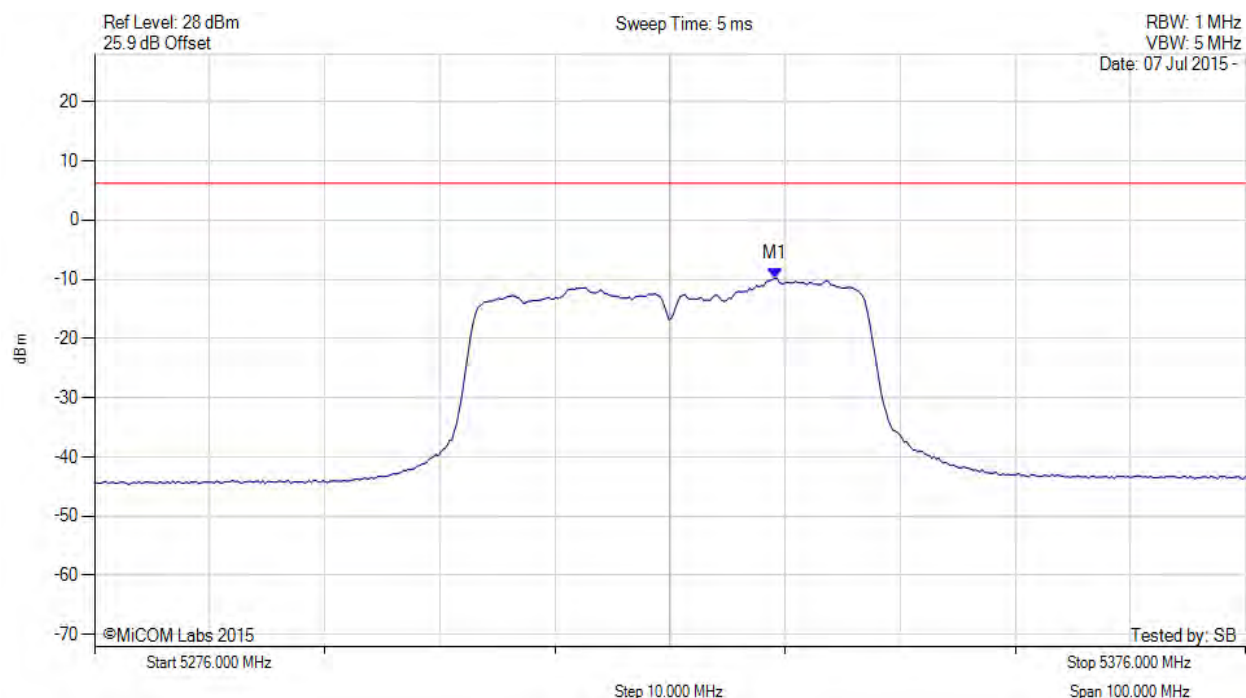| Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5686.300 MHz : -10.511 dBm M1 + DCCF : 5686.300 MHz : -10.467 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -21.4 dB

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A.3. Radiated Spurious Emissions

RADIATED SPURIOUS - RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5264.00 MHz, Antenna: AM0156430, Power Setting: 10.5, Duty Cycle (%): 99

| Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	1400.27	29.10	3.05	-15.57	16.58	Max Avg	Horizontal	100	146	54.0	-37.4	Pass
2	1400.27	46.27	3.05	-15.57	33.75	Max Peak	Horizontal	100	146	74.0	-40.3	Pass
3	2399.38	27.59	4.02	-11.85	19.76	Max Avg	Horizontal	122	0	54.0	-34.2	Pass
4	2399.38	39.36	4.02	-11.85	31.53	Max Peak	Horizontal	122	0	74.0	-42.5	Pass
5	16188.60	24.12	12.11	1.12	37.35	Max Avg	Horizontal	197	257	54.0	-16.7	Pass
6	16188.60	35.82	12.11	1.12	49.05	Max Peak	Horizontal	197	257	74.0	-25.0	Pass

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RADIATED SPURIOUS - RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5300.00 MHz, Antenna: AM0156430, Power Setting: 10.5, Duty Cycle (%): 99

Measurement Distance: 3m   Sweep Time: 170 ms   RBW: 1 MHz
VBW: 3 MHz

| Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	1399.93	51.58	3.05	-15.57	39.06	Max Avg	Horizontal	100	149	54.0	-14.9	Pass
2	1399.93	56.26	3.05	-15.57	43.74	Max Peak	Horizontal	100	149	74.0	-30.3	Pass
3	1629.97	27.93	3.29	-15.98	15.24	Max Avg	Horizontal	138	22	54.0	-38.8	Pass
4	1629.97	39.55	3.29	-15.98	26.86	Max Peak	Horizontal	138	22	74.0	-47.1	Pass
5	12733.43	29.19	10.19	-7.02	32.36	Max Avg	Horizontal	100	234	54.0	-21.6	Pass
6	12733.43	40.33	10.19	-7.02	43.50	Max Peak	Horizontal	100	234	74.0	-30.5	Pass

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RADIATED SPURIOUS - RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5336.00 MHz, Antenna: AM0156430, Power Setting: 9.5, Duty Cycle (%): 99

Measurement Distance: 3m   Sweep Time: 170 ms   RBW: 1 MHz
VBW: 3 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	1318.57	28.93	2.94	-14.91	16.96	Max Avg	Horizontal	100	159	54.0	-37.0	Pass
2	1318.57	41.12	2.94	-14.91	29.15	Max Peak	Horizontal	100	159	74.0	-44.9	Pass
3	1400.11	35.91	3.05	-15.57	23.39	Max Avg	Horizontal	102	148	54.0	-30.6	Pass
4	1400.11	48.48	3.05	-15.57	35.96	Max Peak	Horizontal	102	148	74.0	-38.0	Pass
5	1899.89	32.28	3.59	-13.09	22.78	Max Avg	Vertical	132	0	54.0	-31.2	Pass
6	1899.89	44.62	3.59	-13.09	35.12	Max Peak	Vertical	132	0	74.0	-38.9	Pass

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RADIATED SPURIOUS - RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5489.00 MHz, Antenna: AM0156430, Power Setting: 12, Duty Cycle (%): 99

Measurement Distance: 3m | Sweep Time: 170 ms | RBW: 1 MHz / VBW: 3 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	1277.55	28.80	2.90	-15.05	16.65	Max Avg	Horizontal	141	54	54.0	-37.4	Pass
2	1277.55	40.51	2.90	-15.05	28.36	Max Peak	Horizontal	141	54	74.0	-45.6	Pass
3	1399.85	35.52	3.05	-15.57	23.00	Max Avg	Horizontal	100	148	54.0	-31.0	Pass
4	1399.85	47.83	3.05	-15.57	35.31	Max Peak	Horizontal	100	148	74.0	-38.7	Pass
5	1600.05	44.36	3.28	-16.33	31.31	Max Avg	Horizontal	100	215	54.0	-22.7	Pass
6	1600.05	51.38	3.28	-16.33	38.33	Max Peak	Horizontal	100	215	74.0	-35.7	Pass
7	2400.02	38.09	4.02	-11.84	30.27	Max Avg	Horizontal	100	151	54.0	-23.7	Pass
8	2400.02	46.83	4.02	-11.84	39.01	Max Peak	Horizontal	100	151	74.0	-35.0	Pass

back to matrix

RADIATED SPURIOUS - RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5590.00 MHz, Antenna: AM0156430, Power Setting: 14.5, Duty Cycle (%): 99

Measurement Distance: 3m   Sweep Time: 170 ms   RBW: 1 MHz
VBW: 3 MHz

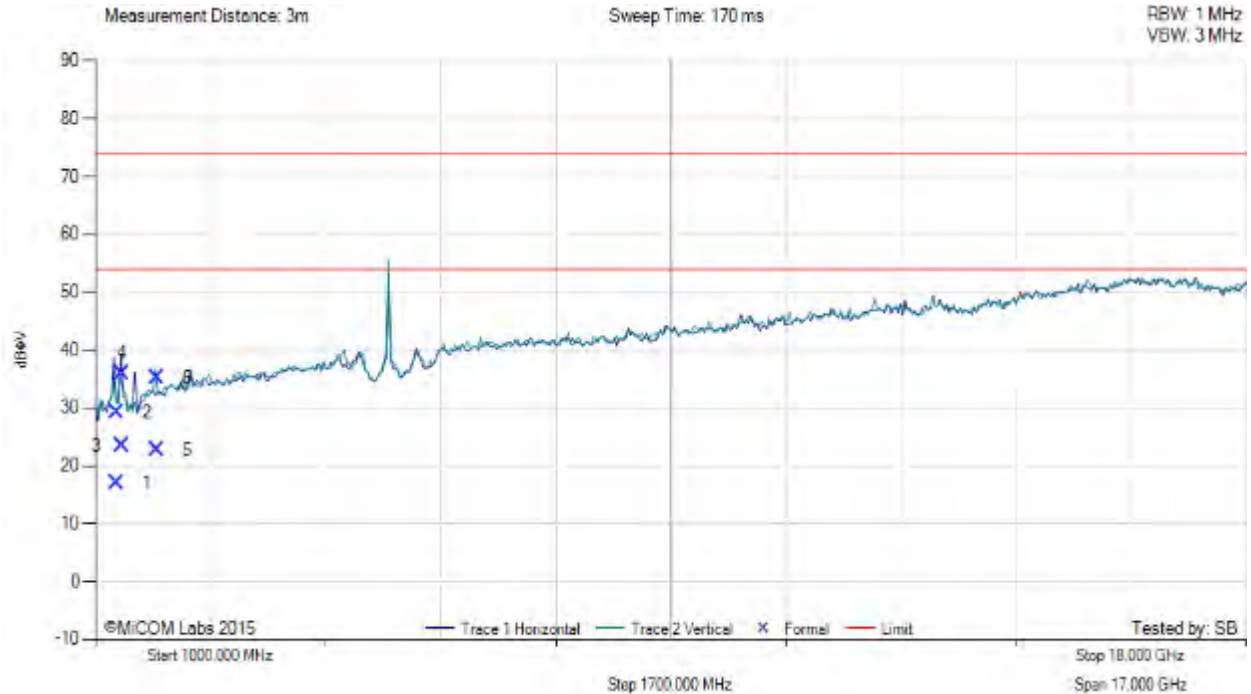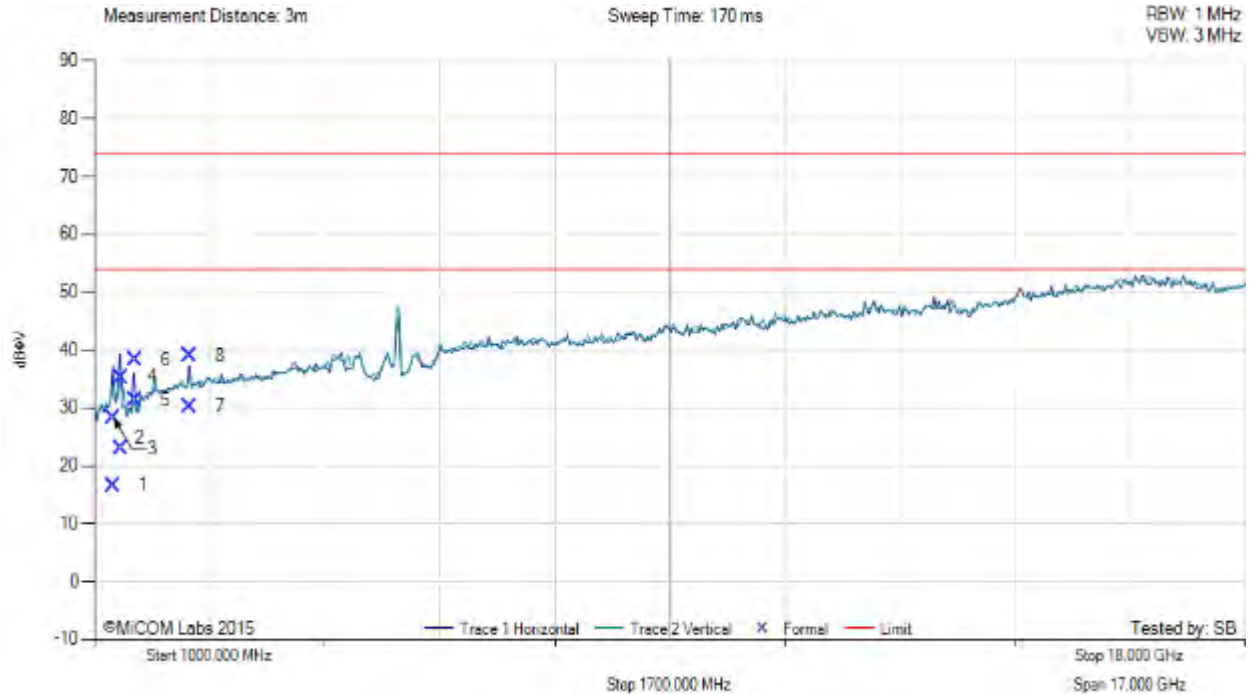| Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	1400.05	46.14	3.05	-15.57	33.62	Max Avg	Horizontal	100	144	54.0	-20.4	Pass
2	1400.05	52.14	3.05	-15.57	39.62	Max Peak	Horizontal	100	144	74.0	-34.4	Pass
3	1599.93	47.80	3.28	-16.33	34.75	Max Avg	Horizontal	104	213	54.0	-19.3	Pass
4	1599.93	53.15	3.28	-16.33	40.10	Max Peak	Horizontal	104	213	74.0	-33.9	Pass

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RADIATED SPURIOUS - RESTRICTED BAND EMISSIONS

Variant: 20 MHz, Test Freq: 5706.00 MHz, Antenna: AM0156430, Power Setting: 12.5, Duty Cycle (%): 99

Measurement Distance: 3m   Sweep Time: 170 ms   RBW: 1 MHz
                                                              VBW: 3 MHz

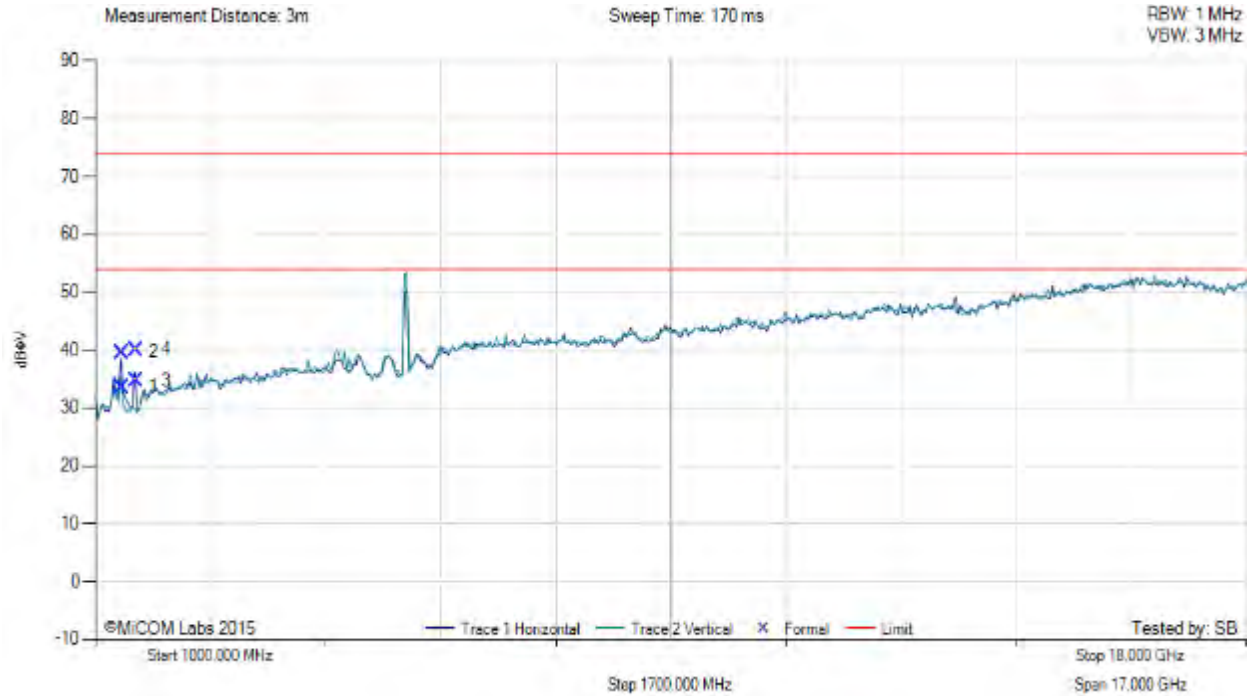| Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	1300.03	40.76	2.92	-14.74	28.94	Max Avg	Vertical	100	161	54.0	-25.1	Pass
2	1300.03	48.41	2.92	-14.74	36.59	Max Peak	Vertical	100	161	74.0	-37.4	Pass
3	1400.13	30.61	3.05	-15.57	18.09	Max Avg	Vertical	100	3	54.0	-35.9	Pass
4	1400.13	45.81	3.05	-15.57	33.29	Max Peak	Vertical	100	3	74.0	-40.7	Pass

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A.4. Radiated Restricted Band-Edge Emissions

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 20 MHz, Test Freq: 5489.00 MHz, Antenna: AM0156430, Power Setting: 12, Duty Cycle (%): 99

Measurement Distance: 3m   Sweep Time: 170 ms   RBW: 1 MHz
VBW: 1 MHz

Start 5350.000 MHz   Stop 5460.000 MHz
Step 11.000 MHz   Span 110.000 MHz

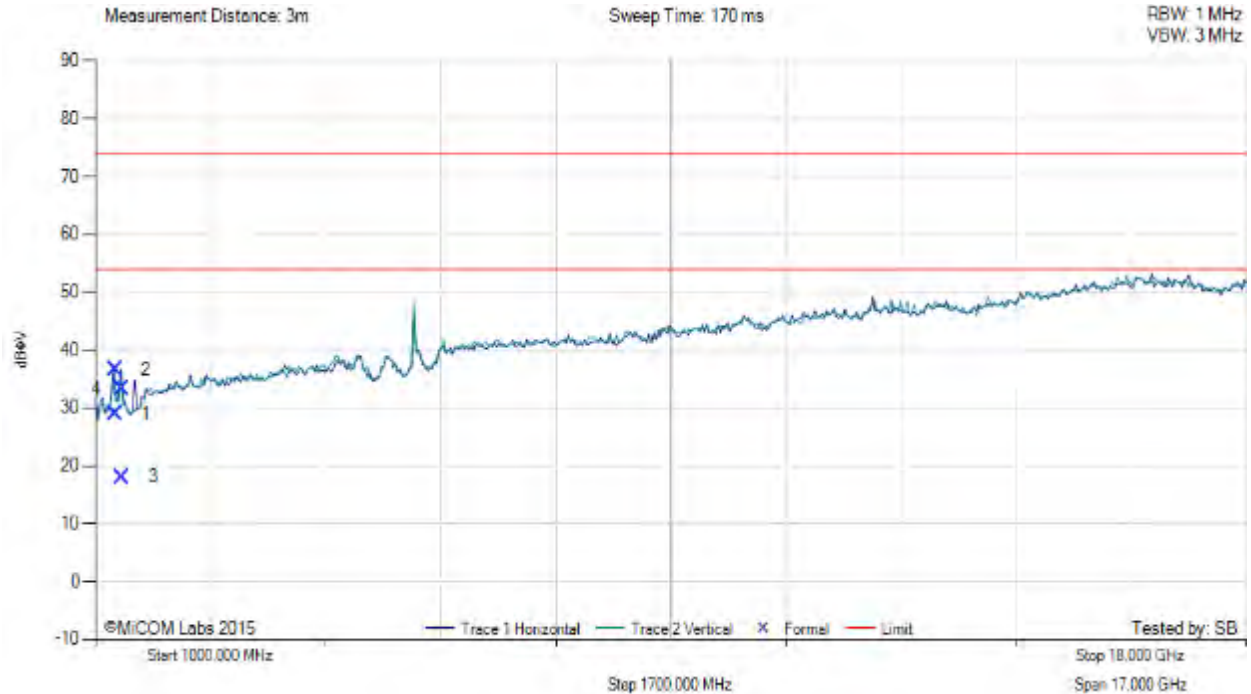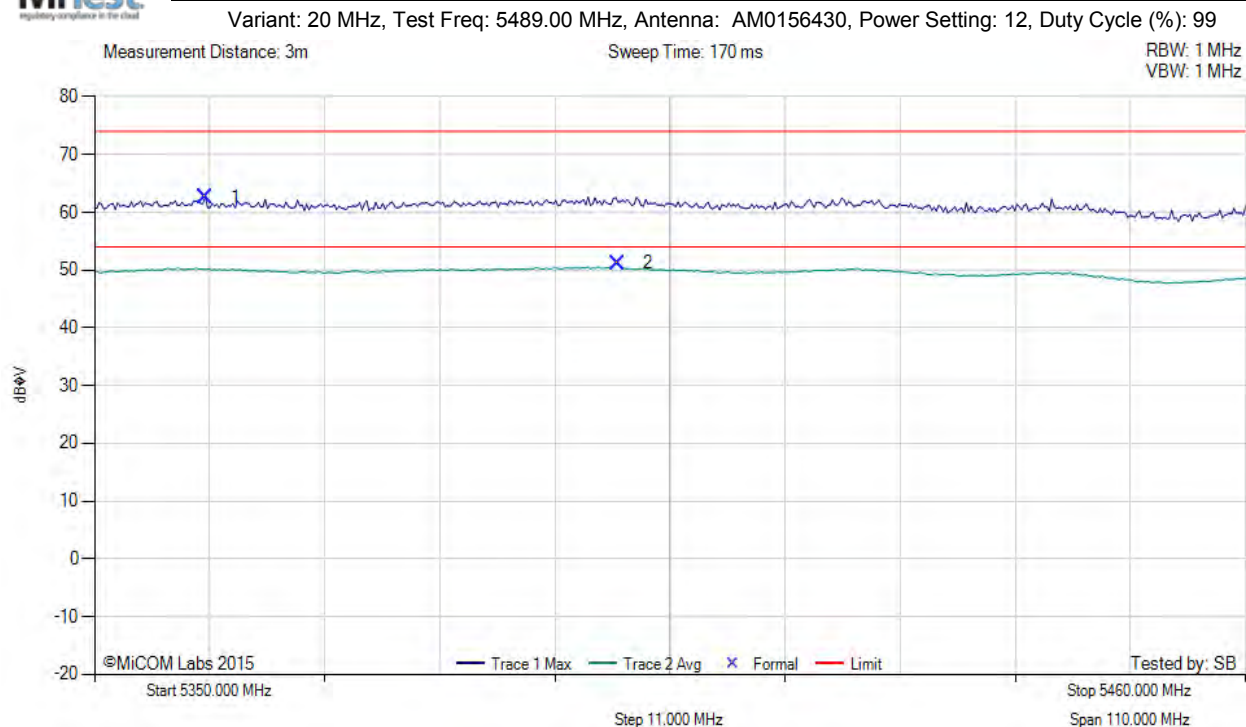| Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5360.58	67.53	6.17	-11.06	62.64	Max Peak	Horizontal	101	360	74.0	-11.4	Pass
2	5400.04	56.10	6.24	-11.16	51.18	Max Avg	Horizontal	101	360	54.0	-2.8	Pass

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RESTRICTED UPPER BAND-EDGE EMISSIONS

Variant: 20 MHz, Test Freq: 5336.00 MHz, Antenna: AM0156430, Power Setting: 10, Duty Cycle (%): 99

Measurement Distance: 3m

Sweep Time: 10.0 s

RBW: 1 MHz
VBW: 1 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5350.00	55.13	6.16	-11.02	50.27	Max Avg	Horizontal	101	360	54.0	-3.7	Pass
2	5352.87	67.38	6.16	-11.04	62.50	Max Peak	Horizontal	101	360	74.0	-11.5	Pass

back to matrix

RESTRICTED UPPER BAND-EDGE EMISSIONS

Variant: 20 MHz, Test Freq: 5336.00 MHz, Antenna: AM0156430, Power Setting: 6.5, Duty Cycle (%): 99

Measurement Distance: 3m   Sweep Time: 10.0 s   RBW: 1 MHz
                                                              VBW: 1 MHz

Start 5350.000 MHz   Stop 5460.000 MHz
Step 11.000 MHz   Span 110.000 MHz

Trace 1 Max — Trace 2 Avg — X Formal — Limit   Tested by: SB

Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5350.00	51.53	6.16	-11.02	46.67	Max Avg	Horizontal	101	360	54.0	-7.3	Pass
2	5387.47	63.34	6.22	-11.12	58.44	Max Peak	Horizontal	101	360	74.0	-15.6	Pass

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RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 20 MHz, Test Freq: 5489.00 MHz, Antenna: AM0156430, Power Setting: 8.5, Duty Cycle (%): 99

Measurement Distance: 3m   Sweep Time: 10.0 s   RBW: 1 MHz
                                                                 VBW: 1 MHz

Start 5350.000 MHz   Stop 5460.000 MHz
                    Step 11.000 MHz   Span 110.000 MHz
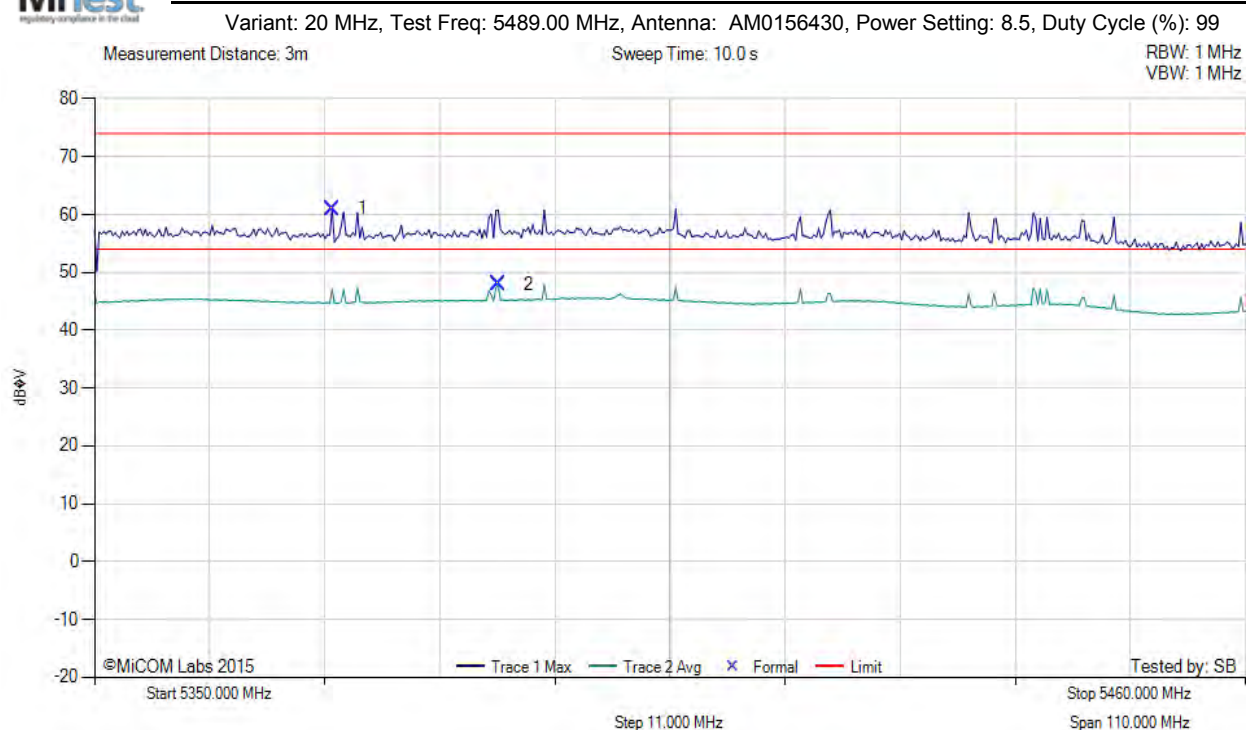
Num	Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5372.71	65.92	6.18	-11.08	61.02	Max Peak	Horizontal	101	360	74.0	-13.0	Pass
2	5388.58	52.87	6.23	-11.13	47.97	Max Avg	Horizontal	101	360	54.0	-6.0	Pass

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RESTRICTED UPPER BAND-EDGE EMISSIONS

Variant: 20 MHz, Test Freq: 5336.00 MHz, Antenna: AM0156430, Power Setting: 10, Duty Cycle (%): 99

Measurement Distance: 3m   Sweep Time: 10.0 s   RBW: 1 MHz
VBW: 1 MHz

Start 5350.000 MHz   Stop 5460.000 MHz
Step 11.000 MHz   Span 110.000 MHz

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Num	Frequency MHz	Raw dBμV	Cable Loss	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5350.00	55.13	6.16	-11.02	50.27	Max Avg	Horizontal	101	360	54.0	-3.7	Pass
2	5352.87	67.38	6.16	-11.04	62.50	Max Peak	Horizontal	101	360	74.0	-11.5	Pass

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 20 MHz, Test Freq: 5489.00 MHz, Antenna: AM0156430, Power Setting: 12, Duty Cycle (%): 99

Measurement Distance: 3m · Sweep Time: 170 ms · RBW: 1 MHz · VBW: 1 MHz

Start 5350.000 MHz · Step 11.000 MHz · Stop 5460.000 MHz · Span 110.000 MHz

Tested by: SB

Num	Frequency MHz	Raw dBμV	Cable Loss	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5360.58	67.53	6.17	-11.06	62.64	Max Peak	Horizontal	101	360	74.0	-11.4	Pass
2	5400.04	56.10	6.24	-11.16	51.18	Max Avg	Horizontal	101	360	54.0	-2.8	Pass

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