

Company: RADWIN Ltd.

Test of: RADWIN 2000 JET, RADWIN 5000 JET

To: FCC Part 15 Subpart E 15.407 & ISSED RSS-247 Issue 2

Report No.: RDWN47-U6 Rev B (DFS Bands)

COMBINED TEST REPORT



COMBINED TEST REPORT

FROM



Test of: RADWIN 2000 JET, RADWIN 5000 JET

To: FCC CFR 47 Part 15 Subpart E 15.407 & ISED RSS-247 Issue 2

Test Report Serial No.: RDWN47-U6 Rev B (DFS Bands)

This report supersedes: RDWN47-U6 Rev A

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

Product Function: 5 GHz Beamforming Outdoor
Radio Device

Issue Date: 19th December 2017

This Test Report is Issued Under the Authority of:

MiCOM Labs, Inc.
575 Boulder Court
Pleasanton California 94566
USA
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www.micomlabs.com



MiCOM Labs is an ISO 17025 Accredited Testing Laboratory



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1. ACCREDITATION, LISTINGS & RECOGNITION

1.1. TESTING ACCREDITATION

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



Accredited Laboratory

A2LA has accredited

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Pleasanton, CA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).



Presented this 4th day of February 2016.



President and CEO
For the Accreditation Council
Certificate Number 2381.01
Valid to January 31, 2018
Revised November 22, 2017

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

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1.2. RECOGNITION

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

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

EU MRA – European Union Mutual Recognition Agreement.

NB – Notified Body

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

Phase I - recognition for product testing

Phase II – recognition for both product testing and certification

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1.3. PRODUCT CERTIFICATION

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



Accredited Product Certification Body

A2LA has accredited
MICOM LABS
Pleasanton, CA

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

Presented this 4th day of February 2016.



President and CEO
For the Accreditation Council
Certificate Number 2381.02
Valid to January 31, 2018
Revised November 22, 2017



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

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

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2. DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft	2 nd November 2017	
Draft #2	15 th November 2017	
Rev A	26 th November 2017	Initial Release
Rev B	19 th December 2017	Correction to power setting for 80MHz radiated 5350 MHz band edge measurement for 20.5 dBi test configuration in the results summary table.
This report was originally issued as RDWN39-U9		
Rev A	8 th December 2017	Initial Release

In the above table the latest report revision will replace all earlier versions.

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3. TEST RESULT CERTIFICATE

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
Equipment Type: 5 GHz Beamforming Outdoor Radio Device	
S/N's: Prototype	
Test Date(s): 23 rd to 26 th October 2017	Website: www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC CFR 47 Part 15 Subpart E 15.407, ISED RSS-247 (DFS Bands)	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.

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4. REFERENCES AND MEASUREMENT UNCERTAINTY

4.1. Normative References

REF.	PUBLICATION	YEAR	TITLE
I	KDB 662911 D01 & D02	Oct 31 2013	Guidance for measurement of output emission of devices that employ single transmitter with multiple outputs or systems with multiple transmitters operating simultaneously in the same frequency band
II	KDB 905462 D07 v02	22nd August 2016	Test guidance to demonstrate compliance for U-NII devices subject to DFS requirements.
III	KDB 926956 D01 v02	22nd August 2016	U-NII Device Transition Plan
IV	KDB 789033 D02 v01r04	2nd May 2017	Guidelines for compliance testing of Unlicensed National Information Infrastructure (U-NII) Devices (Part 15, Subpart E)
V	A2LA	August 2017	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	ETSI TR 100 028	2001-12	Parts 1 and 2 Electromagnetic compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics
IX	FCC 47 CFR Part 15.407	2016	Radio Frequency Devices; Subpart E –Unlicensed National Information Infrastructure Devices
X	M 3003	Edition 3 Nov.2012	Expression of Uncertainty and Confidence in Measurements
XI	RSS-247 Issue 2	Feb 2017	Digital Transmission Systems (DTSs), Frequency Hopping System (FHSs) and Licence-Exempt Local Area Network (LE-LEN) Devices
XII	RSS-Gen Issue 4	November 2014	General Requirements and Information for the Certification of Radiocommunication Equipment
XIII	KDB 644545 D03 v01	August 14th 2014	Guidance for IEEE 802.11ac New Rules
XIV	FCC 47 CFR Part 2.1033	2016	FCC requirements and rules regarding photographs and test setup diagrams.
XV	KDB 905462 D02 v02	April 8 2016	Compliance Measurement Procedures for Unlicensed National Information Infrastructure devices operating in the 5250 to 5350 MHz and 5470 to 5725 MHz bands incorporating Dynamic Frequency Selection.
XVI	KDB 662911 D01	October 31, 2013	Emissions Testing of Transmitters with Multiple Outputs in the Same Band
XVII	KDB 662911 D02	October 25 2011	MIMO with Cross-Polarized Antenna
XVIII	KDB 558074 D01	April 5, 2017	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS).

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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 2000 JET, RADWIN 5000 JET to FCC CFR 47 Part 15 Subpart E 15.407 and ISSED RSS-247 Issue 2. Compliance Measurement Procedures for Unlicensed National Information Infrastructure devices operating in the 5250 to 5350 MHz and 5470 to 5725 MHz bands incorporating Dynamic Frequency Selection.
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:	RDWN47-U6
Date EUT received:	16 th October 2017
Standard(s) applied:	FCC CFR 47 Part 15 Subpart E 15.407, RSS-247 Issue 2
Dates of test (from - to):	23 rd – 26 th October 2017
No of Units Tested:	1
Product Family Name:	RADWIN JET
Model(s):	RADWIN 2000 JET, RADWIN 5000 JET
Location for use:	Outdoors
Declared Frequency Range(s):	5150 - 5250 MHz; 5250 - 5350 MHz; 5470 - 5725 MHz; 5725 - 5850 MHz;
Type of Modulation:	BPSK, QPSK, 16QAM, 64QAM, 256QAM
EUT Modes of Operation:	Bandwidths 10 MHz, 20 MHz, 40 MHz, 80 MHz
Declared Nominal Output Power:	+30 dBm
Transmit/Receive Operation:	Transceiver
Rated Input Voltage and Current:	POE 55 Vdc 1 A
Operating Temperature Range:	-40°C to +60°C
ITU Emission Designator:	10 MHz 10M0W7W 20 MHz 20M0W7W 40 MHz 40M0W7W 80 MHz 80M0W7W
Equipment Dimensions:	13.9 / 9.0 / 2.6 in
Weight:	11.6 lb
Hardware Rev:	Prototype
Software Rev:	Prototype

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5.2. Scope Of Test Program

RADWIN 2000 JET, RADWIN 5000 JET

The scope of the test program was to test the Radwin RADWIN 2000 JET, RADWIN 5000 JET configurations in the frequency ranges 5250 - 5350 MHz; 5470 - 5725 MHz; for compliance against the following specification:

The following antennas were tested in a previous report and referenced below:

Radwin Integral Antenna 20.5 dBi

Bands Covered in the referenced report below: 5250-5350, 5470-5725

RDWN39-U9b Radiated Rev A AP0158770 15.407

FCC CFR 47 Part 15 Subpart E 15.407

Compliance Measurement Procedures for Unlicensed National Information Infrastructure devices operating in the 5250 to 5350 MHz and 5470 to 5725 MHz bands incorporating Dynamic Frequency Selection.

ISED RSS-247

Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

Product Differences

RADWIN 2000 JET: The RADWIN 2000 denotes that the device is configured for Point to Point installation.

RADWIN 5000 JET: The RADWIN 5000 denotes that the device is configured for Point to Multipoint installation.

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

Type	Description	Manufacturer	Model	Serial no.	Delivery Date
EUT	5 GHz Beamforming Outdoor Radio Device	Radwin Ltd.	RADWIN 2000 JET, RADWIN 5000 JET	Prototype	16 th October 2017

5.4. Antenna Details

Type	Manufacturer	Model	Family	Gain (dBi)	BF Gain	Dir BW	X-Pol	Frequency Band (MHz)
integral	RADWIN Ltd.	SA0183620	Flat Panel	11.0	9.5	9.4	Yes	5150 – 5850
integral	RADWIN Ltd.	SA0183620	Sector	11.0	--	60	Yes	5150 – 5850

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

5.5. Cabling and I/O Ports

Port Type	Max Cable Length	# of Ports	Screened	Conn Type	Data Type	Bit Rate
Ethernet	>30m	1	Yes	RJ45	Packet Data	10/100/1000

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5.6. Test Configurations

Results for the following configurations are provided in this report:

Channel Bandwidth(s)	Data Rate with Highest Power MBit/s	Channel Frequency (MHz)		
		Low	Mid	High
5250-5350 MHz				
10MHz	3.25	5259	5300	5341
20MHz	6.50	5264	5300	5336
40MHz	13.50	5274	5300	5326
80MHz	29.30	5290	5300	5303
5470 - 5725 MHz				
10MHz	3.25	5484	5595	5711
20MHz	6.50	5489	5590	5706
40MHz	13.50	5499	5570	5696
80MHz	29.30	5520	5560	5675

5.7. Equipment Modifications

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

1. NONE

5.8. Deviations from the Test Standard

The following deviations from the test standard were required in order to complete the test program:

1. NONE

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6. TEST SUMMARY

List of Measurements

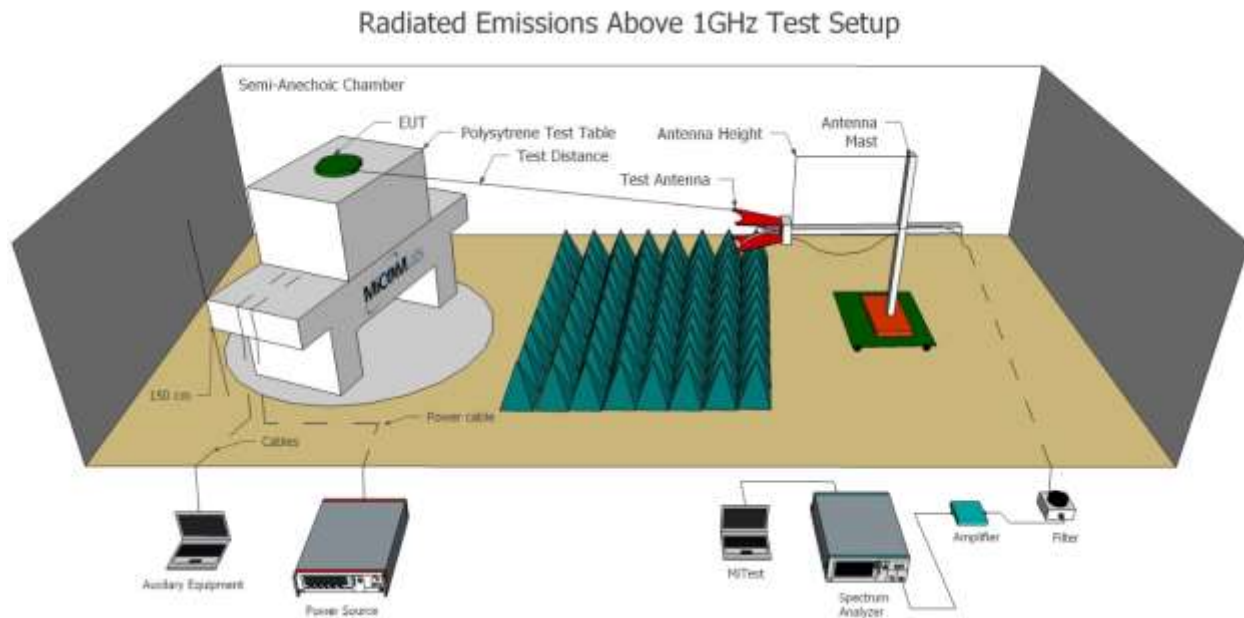
Test Header	Result	Data Link
Radiated	Complies	-
26 dB & 99% Bandwidth	Complies	View Data
Peak Transmit Power	Complies	View Data
Power Spectral Density	Complies	View Data
TX Spurious & Restricted Band Emissions	Complies	-
RADWIN Ltd. SA0183620 11 dBi	Complies	View Data
Restricted Edge & Band-Edge Emissions	Complies	-
RADWIN Ltd. SA0183620 11 dBi	Complies	View Data
RADWIN Ltd. SA0183620-20.5 dBi	Complies	View Data
Digital Emissions	Complies	View Data
Conducted Emissions AC mains	Complies	Note 1
Note 1: For Conducted Emissions ac Mains see test report "RDWN39-U8 Rev A"		

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7. TEST EQUIPMENT CONFIGURATION(S)

7.1. Radiated Emissions - 3m Chamber

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



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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
158	Barometer/Thermometer	Control Company	4196	E2846	30 Nov 2017
170	Video System Controller for Semi Anechoic Chamber	Panasonic	WV-CU101	04R08507	Not Required
287	Rohde & Schwarz 40 GHz Receiver	Rhode & Schwarz	ESIB40	100201	2 May 2018
338	Sunol 30 to 3000 MHz Antenna	Sunol	JB3	A052907	5 Oct 2018
341	900MHz Notch Filter	EWT	EWT-14-0199	H1	30 Oct 2017
397	Amp 10 - 2500MHz	MiCOM Labs	Amp 10 - 2500 MHz	NA	30 Oct 2017
399	ETS 1-18 GHz Horn Antenna	ETS	3117	00154575	30 Oct 2017
406	Amplifier for Radiated Emissions	MiCOM Labs	40dB 1 to 18GHz Amp	0406	30 Oct 2017
410	Desktop Computer	Dell	Inspiron 620	WS38	Not Required
411	Mast/Turntable Controller	Sunol Sciences	SC98V	060199-1D	Not Required
412	USB to GPIB Interface	National Instruments	GPIB-USB HS	11B8DC2	Not Required
413	Mast Controller	Sunol Science	TWR95-4	030801-3	Not Required
415	Turntable Controller	Sunol Sciences	Turntable Controller	None	Not Required
416	Gigabit ethernet filter	ETS-Lingren	Gigafoil 260366	None	Not Required
447	MiTest Rad Emissions Test Software	MiCOM	Rad Emissions Test Software Version 1.0	447	Not Required
462	Schwarzbeck cable from Antenna to Amplifier.	Schwarzbeck	AK 9513	462	30 Oct 2017
463	Schwarzbeck cable from Amplifier to Bulkhead.	Schwarzbeck	AK 9513	463	30 Oct 2017
464	Schwarzbeck cable from Bulkhead to Receiver	Schwarzbeck	AK 9513	464	30 Oct 2017
480	Cable - Bulkhead to Amp	SRC Haverhill	157-3050360	480	30 Oct 2017
481	Cable - Bulkhead to Receiver	SRC Haverhill	151-3050787	481	30 Oct 2017
482	Cable - Amp to Antenna	SRC Haverhill	157-3051574	482	30 Oct 2017

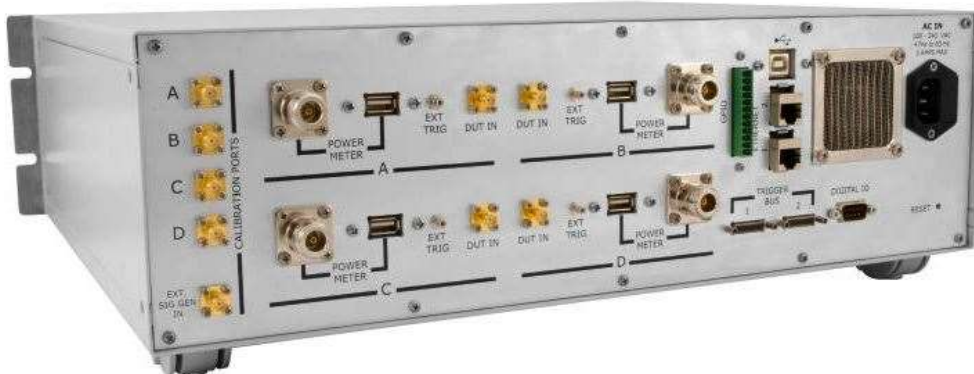
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8. MEASUREMENT AND PRESENTATION OF TEST DATA

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)

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9. TEST RESULTS

9.1. 26 dB & 99% Bandwidth

Conducted Test Conditions for 26 dB and 99% Bandwidth			
Standard:	FCC CFR 47:15.407	Ambient Temp. (°C):	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 radiated, in a 3 meter chamber, 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. In this case Vertical a (V) and Horizontal for port b (H).

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

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth			
Variant:	10 MHz Bandwidth	Duty Cycle (%):	100
Data Rate:	3.25 MBit/s	Antenna Gain (dBi):	11
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JMH
Engineering Test Notes:			

Test Measurement Results					
Test Frequency	Measured 26 dB Bandwidth (MHz)		26 dB Bandwidth (MHz)		
	H	V	Highest	Lowest	
5259.0	-	11.26	11.26	11.26	
5300.0	-	11.38	11.38	11.38	
5341.0	-	11.38	11.38	11.38	
Test Frequency	Measured 99% Bandwidth (MHz)		99% Bandwidth (MHz)		
	H	V	Highest	Lowest	
5259.0	-	8.98	8.98	8.98	
5300.0	-	8.90	8.90	8.90	
5341.0	-	8.94	8.94	8.94	

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).

The above values are representative of the worst case value between polarities and based on the power measurements.

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	20 MHz Bandwidth	Duty Cycle (%):	100
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	11
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)		26 dB Bandwidth (MHz)			
	H	V	Highest	Lowest		
5264.0	-	21.80	21.80	21.80		
5300.0	-	22.12	22.12	22.12		
5336.0	-	21.48	21.48	21.48		

Test Frequency	Measured 99% Bandwidth (MHz)		99% Bandwidth (MHz)			
	H	V	Highest	Lowest		
5264.0	-	17.80	17.80	17.80		
5300.0	-	17.80	17.80	17.80		
5336.0	-	17.80	17.80	17.80		

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).

The above values are representative of the worst case value between polarities and based on the power measurements.

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	40 MHz Bandwidth	Duty Cycle (%):	100
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	11
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)		26 dB Bandwidth (MHz)	
	H	V	Highest	Lowest
5274.0	-	43.29	43.29	43.29
5300.0	-	44.09	44.09	44.09
5326.0	-	43.59	43.59	43.59

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)		99% Bandwidth (MHz)	
	H	V	Highest	Lowest
5274.0	-	36.47	36.47	36.47
5300.0	-	36.47	36.47	36.47
5326.0	-	36.67	36.67	36.67

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).

The above values are representative of the worst case value between polarities and based on the power measurements.

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	80MHz	Duty Cycle (%):	100
Data Rate:	29.30 MBit/s	Antenna Gain (dBi):	11
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)		26 dB Bandwidth (MHz)			
	H	V	Highest	Lowest		
5290.0	-	93.31	93.31	93.31		
5300.0	-	91.06	91.06	91.06		
5303.0	-	86.58	86.58	86.58		

Test Frequency	Measured 99% Bandwidth (MHz)		99% Bandwidth (MHz)			
	H	V	Highest	Lowest		
5290.0	-	76.31	76.31	76.31		
5300.0	-	75.99	75.99	75.99		
5303.0	-	76.31	76.31	76.31		

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:	10 MHz Bandwidth	Duty Cycle (%):	100
Data Rate:	3.25 MBit/s	Antenna Gain (dBi):	11
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)		26 dB Bandwidth (MHz)	
	H	V	Highest	Lowest
5484.0	11.62	-	11.62	11.62
5595.0	10.98	-	11.98	11.98
5711.0	11.58	-	11.58	11.58

Test Frequency	Measured 99% Bandwidth (MHz)		99% Bandwidth (MHz)	
	H	V	Highest	Lowest
5484.0	8.98	-	8.98	8.98
5595.0	8.90	-	8.90	8.90
5711.0	8.98	-	8.98	8.98

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 Bandwidth	Duty Cycle (%):	100
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	11
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)		26 dB Bandwidth (MHz)			
	H	V	Highest	Lowest		
5489.0	22.18	-	21.18	21.18		
5590.0	22.53	-	22.53	22.53		
5706.0	21.96	-	21.96	21.96		

Test Frequency	Measured 99% Bandwidth (MHz)		99% Bandwidth (MHz)			
	H	V	Highest	Lowest		
5489.0	17.80	-	17.80	17.80		
5590.0	17.88	-	17.88	17.88		
5706.0	17.80	-	17.80	17.80		

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:	40 MHz Bandwidth	Duty Cycle (%):	100
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	11
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)		26 dB Bandwidth (MHz)	
	H	V	Highest	Lowest
5499.0	44.29	-	44.29	44.29
5570.0	44.69	-	44.69	44.69
5696.0	44.49	-	44.49	44.49

Test Frequency	Measured 99% Bandwidth (MHz)		99% Bandwidth (MHz)	
	H	V	Highest	Lowest
5499.0	36.67	-	36.67	36.67
5570.0	36.87	-	36.87	36.87
5696.0	36.67	-	36.67	36.67

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).

The above values are representative of the worst case value between polarities and based on the power measurements.

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Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	80MHz	Duty Cycle (%):	100
Data Rate:	29.30 MBit/s	Antenna Gain (dBi):	11
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	OC
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)		26 dB Bandwidth (MHz)			
	H	V	Highest	Lowest		
5520.0	90.42	-	90.42	90.42		
5560.0	92.02	-	92.02	92.02		
5675.0	88.50	-	88.50	88.50		

Test Frequency	Measured 99% Bandwidth (MHz)		99% Bandwidth (MHz)			
	H	V	Highest	Lowest		
5520.0	76.63	-	76.63	76.63		
5560.0	76.63	-	76.63	76.63		
5675.0	75.99	-	75.99	75.99		

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).

The above values are representative of the worst case value between polarities and based on the power measurements.

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9.2. Peak Transmit Power

Conducted Test Conditions for Maximum Conducted Output Power			
Standard:	FCC CFR 47:15.407	Ambient Temp. (°C):	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):	KDB 789033 - D02 General UNII Test Procedures New Rules v01		
Test Procedure for Maximum Output Power Measurement			
<p>Spectrum Analyzer Method. KDB 789033 defines a methodology using spectrum analyzer. Where power shall be calculated by integrating the spectrum across a frequency span that encompasses, at a minimum, either the EBW or the 99% occupied bandwidth of the signal. However, the EBW must be used to determine bandwidth dependent limits on maximum conducted output power in accordance with Section 15.407(a). Testing was performed under ambient conditions at nominal voltage.</p> <p>Test configuration and setup used for the measurement was per the Radiated Test Set-up section specified in this document. Supporting KDB's referenced below.</p> <p>KDB 662911 D01 & KDB 662911 D02, KDB 558074 D01</p> <p>Radiated measurements used for compliance with conducted limits, the following steps are required to ensure that the total emission power is determined for equipment driving cross polarized antennas:</p> <ol style="list-style-type: none">(1) Measure radiated emissions with vertical and horizontal polarizations of the measurement antenna;(2) Convert each radiated measurement to transmit power based on the antenna gain; <p>EIRP level to an equivalent electric field strength using the following relationship: $E = \sqrt{EIRP - 20 \cdot \log(D) + 104.8}$</p> <p>Where: E = electric field strength in dBμV/m, EIRP = equivalent isotropic radiated power in dBm D = specified measurement distance in meters.</p> <ol style="list-style-type: none">(3) Sum the powers across the two polarizations to compare the resultant electric field strength level to the applicable limit. <p>Calculated Power = A + G + Y + 10 log (1/x) dBm</p> <p>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)</p> <p>Limits Maximum Conducted Output Power</p> <p>Operating Frequency Band 5150-5250 MHz 15.407 (a)(1)</p> <p>(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).</p>			

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(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.

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Equipment Configuration for RF Output Power

Variant:	10MHz	Duty Cycle (%):	99
Data Rate:	3.25 MBit/s	Antenna Gain (dBi):	11.0
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency MHz	Measured Output Power		Calculated Total Power dBm	Limit dB	Margin Numeric	EUT Power Setting Numeric
	H	V				
5259	11.12	13.90	16.51	16.59	-0.08	1.5
5300	12.10	13.23	16.48	16.59	-0.11	1.0
5341	5.71	6.21	9.75	16.59	-6.84	-5.0

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Uncertainty:	±1.33 dB

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Equipment Configuration for RF Output Power

Variant:	20MHz	Duty Cycle (%):	99
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	11.0
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency MHz	Measured Output Power		Calculated Total Power dBm	Limit dB	Margin Numeric	EUT Power Setting Numeric
	H	V				
5264	13.73	15.91	18.74	19.00	-0.26	4.0
5300	14.25	15.36	18.62	19.00	-0.38	3.5
5336	5.72	5.91	9.60	19.00	-9.40	-5.0

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Uncertainty:	±1.33 dB

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Equipment Configuration for RF Output Power

Variant:	40MHz	Duty Cycle (%):	99
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	11.0
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency MHz	Measured Output Power		Calculated Total Power dBm	Limit dB	Margin Numeric	EUT Power Setting Numeric
	H	V				
5274	13.85	15.81	18.72	19.00	-0.28	4.0
5300	14.17	15.44	18.63	19.00	-0.37	4.0
5326	4.98	5.83	9.21	19.00	-9.79	-5.0

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Uncertainty:	±1.33 dB

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Equipment Configuration for RF Output Power

Variant:	80MHz	Duty Cycle (%):	99
Data Rate:	29.30 MBit/s	Antenna Gain (dBi):	11.0
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency MHz	Measured Output Power		Calculated Total Power dBm	Limit dB	Margin Numeric	EUT Power Setting Numeric
	H	V				
5290	13.97	15.62	18.66	19.00	-0.34	4.0
5300	14.29	15.55	18.75	19.00	-0.25	4.0
5303	8.40	9.54	12.79	19.00	-6.21	-2.5

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Uncertainty:	±1.33 dB

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Equipment Configuration for RF Output Power

Variant:	10MHz	Duty Cycle (%):	99
Data Rate:	3.25 MBit/s	Antenna Gain (dBi):	11.0
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency MHz	Measured Output Power		Calculated Total Power dBm	Limit dB	Margin Numeric	EUT Power Setting Numeric
	H	V				
5484	13.60	10.97	16.26	16.59	-0.33	3.0
5595	13.65	11.43	16.46	16.59	-0.13	4.0
5711	13.25	12.27	16.57	16.59	-0.02	3.0

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Uncertainty:	±1.33 dB

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Equipment Configuration for RF Output Power

Variant:	20MHz	Duty Cycle (%):	99
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	11.0
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency MHz	Measured Output Power		Calculated Total Power dBm	Limit dB	Margin Numeric	EUT Power Setting Numeric
	H	V				
5489	13.03	10.85	15.86	19.00	-3.14	4.0
5590	13.48	15.70	18.51	19.00	-0.49	6.5
5706	15.33	14.56	18.74	19.00	-0.26	5.5

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Uncertainty:	±1.33 dB

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Equipment Configuration for RF Output Power

Variant:	40MHz	Duty Cycle (%):	99
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	11.0
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency MHz	Measured Output Power		Calculated Total Power dBm	Limit dB	Margin Numeric	EUT Power Setting Numeric
	H	V				
5499	9.79	8.02	12.78	19.00	-6.22	0.0
5570	14.57	16.28	18.72	19.00	-0.28	6.5
5696	15.06	14.33	18.49	19.00	-0.51	5.5

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Uncertainty:	±1.33 dB

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Equipment Configuration for RF Output Power

Variant:	80MHz	Duty Cycle (%):	99
Data Rate:	29.30 MBit/s	Antenna Gain (dBi):	11.0
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency MHz	Measured Output Power		Calculated Total Power dBm	Limit dB	Margin Numeric	EUT Power Setting Numeric
	H	V				
5520	6.16	5.27	9.52	19.00	-9.48	-3.5
5560	15.95	14.01	18.87	19.00	-0.13	6.5
5675	15.98	14.11	18.93	19.00	-0.07	6.0

Traceability to Industry Recognized Test Methodologies

Work Instruction:	WI-01 MEASURING RF OUTPUT POWER
Uncertainty:	±1.33 dB

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9.3. Power Spectral Density

Conducted Test Conditions for Power Spectral Density			
Standard:	FCC CFR 47:15.407	Ambient Temp. (°C):	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):	KDB 789033 - D02 General UNII Test Procedures New Rules v01		

Test Procedure for Power Spectral Density

The In-Band power spectral density was measured using the measure and sum approach per FCC KDB 662911 (D01 Multiple Transmitter Output v01.)

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 N 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 calculated on a computer, and the results read back into the spectrum analyzer as a data file to produce a representative plot of total spectral power density.

Calculated Power = $A + 10 \log (1/x)$ dBm

$A = \text{Total Power Spectral Density } [10 \text{ Log}_{10} (10a/10 + 10 b/10 + 10c/10 + 10d/10)]$

$x = \text{Duty Cycle}$

Test configuration and setup used for the measurement was per the Radiated Test Set-up section specified in this document. Supporting KDB's referenced below.

KDB 662911 D01 & KDB 662911 D02, KDB 558074 D01

Radiated measurements used for compliance with conducted limits, the following steps are required to ensure that the total emission power s determined for equipment driving cross polarized antennas:

- (1) Measure radiated emissions with vertical and horizontal polarizations of the measurement antenna;
- (2) Convert each radiated measurement to transmit power based on the antenna gain;

EIRP level to an equivalent electric field strength using the following relationship:

$$E = \text{EIRP} - 20 \cdot \log (D) + 104.8$$

Where:

E = electric field strength in dB μ V/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

- (3) Sum the powers or PSDs across the two polarizations to compare the resultant electric field strength level to the applicable limit.

Calculated Power = $A + G + Y + 10 \log (1/x)$ dBm

$A = \text{Total Power } [10 \cdot \text{Log}_{10} (10^{a/10} + 10^{b/10} + 10^{c/10} + 10^{d/10})]$

G = Antenna Gain

Y = Beamforming Gain

x = Duty Cycle (average power measurements only)



Limits Maximum 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.



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Equipment Configuration for Power Spectral Density

Variant:	10 MHz	Duty Cycle (%):	100
Data Rate:	15.00 MBit/s	Antenna Gain (dBi):	11.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density		Summation Peak Marker + DCCF (+0.0 dB)	Limit	Margin
	(dBm/MHz)				
MHz	H	V	dBm/MHz	dBm/MHz	dB
5259.0	-9.98	-6.28	-3.96	6.0	--9.96
5300.0	-9.80	-9.10	-5.65	6.0	-11.65
5341.0	-16.68	-15.23	-12.11	6.0	-18.11

Traceability to Industry Recognized Test Methodologies

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

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Equipment Configuration for Power Spectral Density

Variant:	20 MHz	Duty Cycle (%):	100
Data Rate:	15.00 MBit/s	Antenna Gain (dBi):	11.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density		Summation Peak Marker + DCCF (+0.0 dB)	Limit	Margin
	(dBm/MHz)				
MHz	H	V	dBm/MHz	dBm/MHz	dB
5264.0	-8.58	-5.91	-3.26	6.0	-9.26
5300.0	-7.17	-5.41	-2.42	6.0	-8.42
5336.0	-14.82	-14.83	-11.04	6.0	-17.04

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).

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Equipment Configuration for Power Spectral Density

Variant:	40 MHz	Duty Cycle (%):	96.0
Data Rate:	15.00 MBit/s	Antenna Gain (dBi):	11.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JMH
Engineering Test Notes:			

Test Measurement Results					
Test Frequency	Measured Power Spectral Density		Summation Peak Marker + DCCF (+0.18 dB)	Limit	Margin
	(dBm/MHz)				
MHz	H	V	dBm/MHz	dBm/MHz	dB
5274.0	-11.19	-8.72	-6.00	6.00	-12.00
5300.0	-10.30	-8.78	-5.69	6.00	-11.69
5326.0	-18.98	-18.32	-14.85	6.00	-20.85

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

DCCF - Duty Cycle Correction Factor

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Equipment Configuration for Power Spectral Density

Variant:	80 MHz	Duty Cycle (%):	82.0
Data Rate:	15.00 MBit/s	Antenna Gain (dBi):	11.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density		Summation Peak Marker + DCCF (+0.86 dB)	Limit	Margin
	(dBm/MHz)				
MHz	H	V	dBm/MHz	dBm/MHz	dB
5290.0	-15.14	-13.90	-10.69	6.00	-16.69
5300.0	-13.99	-12.73	-9.53	6.00	-15.53
5303.0	-19.98	-18.40	-15.34	6.00	-21.34

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).

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Equipment Configuration for Power Spectral Density

Variant:	10 MHz	Duty Cycle (%):	100
Data Rate:	3.25 MBit/s	Antenna Gain (dBi):	11.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density		Summation Peak Marker + DCCF (+0.0 dB)	Limit	Margin
	(dBm/MHz)				
MHz	H	V	dBm/MHz	dBm/MHz	dB
5484.0	-5.52	-5.13	-1.54	6.0	-7.54
5595.0	-4.10	-4.36	-0.45	6.0	-6.45
5711.0	-3.86	-4.39	-0.33	6.0	-6.33

Traceability to Industry Recognized Test Methodologies

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

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Equipment Configuration for Power Spectral Density

Variant:	20 MHz	Duty Cycle (%):	100
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	11.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density		Summation Peak Marker + DCCF (+0.0 dB)	Limit	Margin
	(dBm/MHz)				
MHz	H	V	dBm/MHz	dBm/MHz	dB
5489.0	-7.46	-7.33	-3.61	6.0	-9.61
5590.0	-5.06	-5.21	-1.35	6.00	-7.35
5706.0	-4.26	-4.49	-0.59	6.00	-6.59

Traceability to Industry Recognized Test Methodologies

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

DCCF - Duty Cycle Correction Factor

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Equipment Configuration for Power Spectral Density

Variant:	40 MHz	Duty Cycle (%):	100
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	11.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density		Summation Peak Marker + DCCF (+0.0 dB)	Limit	Margin
	(dBm/MHz)				
MHz	H	V	dBm/MHz	dBm/MHz	dB
5499.0	-15.40	-15.22	-11.53	6.00	-17.53
5570.0	-9.22	-9.59	-5.62	6.00	-11.62
5696.0	-8.09	-8.65	-4.58	6.00	-10.58

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).

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Equipment Configuration for Power Spectral Density

Variant:	80 MHz	Duty Cycle (%):	100
Data Rate:	29.30 MBit/s	Antenna Gain (dBi):	11.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	JMH
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density		Summation Peak Marker + DCCF (+0.0 dB)	Limit	Margin
	(dBm/MHz)				
MHz	H	V	dBm/MHz	dBm/MHz	dB
5520.0	-22.14	-22.49	-18.53	6.00	-24.53
5560.0	-13.19	-13.99	-9.79	6.00	-15.79
5675.0	-12.26	-13.52	-9.06	6.00	-15.06

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).

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9.4. Radiated

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

Test Procedure for Radiated Spurious and Band-Edge Emissions

Radiated emissions for restricted bands above 1 GHz are measured in the anechoic chamber at a 3-meter distance on every azimuth in both horizontal and vertical polarities. The emissions are recorded and maximized as a function of azimuth by rotation through 360° with a spectrum analyzer in peak hold mode. Depending on the frequency band spanned a notch filter was used to remove the fundamental frequency. The highest emissions relative to the limit are listed for each frequency spanned.

Measurements on any restricted band frequency or frequencies above 1 GHz are based on the use of measurement instrumentation employing peak and average detectors. All measurements were performed using a resolution bandwidth of 1 MHz.

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

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

- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
- (6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.
- (7) The provisions of §15.205 apply to intentional radiators operating under this section.
- (8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

Limits for Restricted Bands (15.205, 15.209)

Peak emission: 74 dBuV/m

Average emission: 54 dBuV/m

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and subtracting Amplifier Gain from the measured reading. All factors are included in the reported data.

$$FS = R + AF + CORR - FO$$

where:

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FS = Field Strength
R = Measured Spectrum analyzer Input Amplitude
AF = Antenna Factor
CORR = Correction Factor = CL – AG + NFL
CL = Cable Loss
AG = Amplifier Gain
FO = Distance Falloff Factor
NFL = Notch Filter Loss

Example:

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

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

where P is the EIRP in Watts

Therefore: -27 dBm/MHz equates to 68.23 dBuV/m
 Conversion between dBmV/m (or dBmV) and mV/m (or mV) are as follows:
 Level (dBmV/m) = 20 * Log (level (mV/m))

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

Restricted Bands of Operation (15.205)

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

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

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

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

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

- (1) Swept frequency field disturbance sensors operating between 1.705 and 37 MHz provided their emissions only sweep through the bands listed in paragraph (a) of this section, the sweep is never stopped with the fundamental emission within the bands listed in paragraph (a) of this section, and the fundamental emission is outside of the bands listed in paragraph (a) of this section more than 99% of the time the device is actively transmitting, without compensation for duty cycle.
- (2) Transmitters used to detect buried electronic markers at 101.4 kHz which are employed by telephone companies.
- (3) Cable locating equipment operated pursuant to §15.213.
- (4) Any equipment operated under the provisions of §15.253, 15.255, and 15.256 in the frequency band 75-85 GHz, or §15.257 of this part.
- (5) Biomedical telemetry devices operating under the provisions of §15.242 of this part are not subject to the restricted band 608-614 MHz but are subject to compliance within the other restricted bands.
- (6) Transmitters operating under the provisions of subparts D or F of this part.
- (7) Devices operated pursuant to §15.225 are exempt from complying with this section for the 13.36-13.41 MHz band only.
- (8) Devices operated in the 24.075-24.175 GHz band under §15.245 are exempt from complying with the requirements of this section for the 48.15-48.35 GHz and 72.225-72.525 GHz bands only, and shall not exceed the limits specified in §15.245(b).
- (9) Devices operated in the 24.0-24.25 GHz band under §15.249 are exempt from complying with the requirements of this section for the 48.0-48.5 GHz and 72.0-72.75 GHz bands only, and shall not exceed the limits specified in §15.249(a).

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

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9.4.1. TX Spurious & Restricted Band Emissions

9.4.1.1. RADWIN Ltd. SA0183620 11 dBi

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	RADWIN Ltd. SA0183620	Variant:	10 MHz
Antenna Gain (dBi):	11.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5259.00	Data Rate:	3.25 MBit/s
Power Setting:	7.0	Tested By:	JMH

Note: The above power setting may be higher than the result reported under Section 9.2 Peak Transmit Power. The power setting reported in Section 9.2 always takes precedence

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5261.33	84.78	3.11	-14.34	73.55	Fundamental	Vertical	151	0	--	--	
#2	10517.92	62.68	4.48	0.33	67.49	Max Peak	Horizontal	159	26	68.2	-0.7	Pass

Test Notes: EUT powered by POE and connected to laptop outside chamber

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Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	RADWIN Ltd. SA0183620	Variant:	10 MHz
Antenna Gain (dBi):	11.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5300.00	Data Rate:	3.25 MBit/s
Power Setting:	6.5	Tested By:	JMH

Note: The above power setting may be higher than the result reported under Section 9.2 Peak Transmit Power. The power setting reported in Section 9.2 always takes precedence

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5296.39	85.51	3.11	-14.39	74.23	Fundamental	Horizontal	151	0	--	--	Pass
#2	10600.28	62.44	4.78	-0.03	67.19	Max Peak	Horizontal	147	49	68.2	-1.0	Pass
#3	10600.28	48.34	4.78	-0.03	53.09	Max Avg	Horizontal	147	49	54.0	-0.9	Pass

Test Notes: EUT powered by POE and connected to laptop outside chamber

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Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	RADWIN Ltd. SA0183620	Variant:	10 MHz
Antenna Gain (dBi):	11.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5341.00	Data Rate:	3.25 MBit/s
Power Setting:	-2.5	Tested By:	JMH

Note: The above power setting may be higher than the result reported under Section 9.2 Peak Transmit Power. The power setting reported in Section 9.2 always takes precedence

Test Measurement Results

1000.00 - 18000.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5337.18	67.00	3.14	-14.31	55.83	Fundamental	Horizontal	151	0	--	--	

Test Notes: EUT powered by POE and connected to laptop outside chamber

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Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	RADWIN Ltd. SA0183620	Variant:	10 MHz
Antenna Gain (dBi):	11.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5484.00	Data Rate:	3.25 MBit/s
Power Setting:	3	Tested By:	JMH

Note: The above power setting may be higher than the result reported under Section 9.2 Peak Transmit Power. The power setting reported in Section 9.2 always takes precedence

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5484.43	67.45	3.16	-13.56	57.05	Fundamental	Vertical	150	0	--	--	

Test Notes: EUT powered by POE and connected to laptop outside chamber

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Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	RADWIN Ltd. SA0183620	Variant:	10 MHz
Antenna Gain (dBi):	11.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5595.00	Data Rate:	3.25 MBit/s
Power Setting:	18	Tested By:	JMH

Note: The above power setting may be higher than the result reported under Section 9.2 Peak Transmit Power. The power setting reported in Section 9.2 always takes precedence

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5594.90	80.95	3.25	-13.31	70.89	Fundamental	Horizontal	151	0	--	--	Pass
#2	6101.13	57.89	3.24	-11.89	49.24	Peak (NRB)	Horizontal	151	0	--	--	Pass
#3	6157.80	57.87	3.24	-11.95	49.16	Peak (NRB)	Horizontal	151	0	--	--	Pass
#4	11186.76	63.54	4.25	-1.11	66.68	Max Peak	Horizontal	165	338	68.2	-1.6	Pass
#5	11186.76	50.30	4.25	-1.11	53.44	Max Avg	Horizontal	165	338	54.0	-0.6	Pass

Test Notes: EUT powered by POE and connected to laptop outside chamber

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Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	RADWIN Ltd. SA0183620	Variant:	10 MHz
Antenna Gain (dBi):	11.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5711.00	Data Rate:	3.25 MBit/s
Power Setting:	16.5	Tested By:	JMH

Note: The above power setting may be higher than the result reported under Section 9.2 Peak Transmit Power. The power setting reported in Section 9.2 always takes precedence

Test Measurement Results

1000.00 - 18000.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5711.10	76.41	3.19	-13.04	66.56	Fundamental	Horizontal	151	0	--	--	Pass
#2	6097.27	60.56	3.24	-11.99	51.81	Peak (NRB)	Horizontal	151	0	--	--	Pass
#3	11418.84	62.76	4.50	-0.82	66.44	Max Peak	Horizontal	164	47	68.2	-1.8	Pass
#4	11418.84	49.77	4.50	-0.82	53.45	Max Avg	Horizontal	164	47	54.0	-0.6	Pass

Test Notes: EUT powered by POE and connected to laptop outside chamber

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9.4.2. Restricted Edge & Band-Edge Emissions

9.4.2.2. RADWIN Ltd. SA0183620 11 dBi

RESULTS SUMMARY FOR RADIATED BAND-EDGE EMISSIONS

5250 - 5350 MHz

RADWIN Ltd. SA0183620 11 dBi		Band-Edge Freq	Limit 68.2dB μ V/m	Limit 54.0dB μ V/m	Power Setting
Channel Bandwidth(s)	Operating Frequency (MHz)	MHz	dB μ V/m	dB μ V/m	
10 MHz	5341.00	5350.00	67.62	47.06	-5
20 MHz	5336.00	5350.00	67.56	49.56	-5
40 MHz	5326.00	5350.00	67.56	51.98	-5
80 MHz	5303.00	5350.00	68.13	52.21	-2.5

5470 - 5725 MHz

RADWIN Ltd. SA0183620 11 dBi		Restricted-Edge Freq	Limit 68.2dB μ V/m	Limit 54.0dB μ V/m	Power Setting
Channel Bandwidth(s)	Operating Frequency (MHz)	MHz	dB μ V/m	dB μ V/m	
10 MHz	5484.00	5460.00	60.73	48.39	3
20 MHz	5489.00	5460.00	67.65	46.33	3
40 MHz	5499.00	5460.00	67.80	45.87	0
80 MHz	5520.00	5460.00	68.01	45.87	-3.5

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Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN Ltd. SA0183620	Variant:	10 MHz
Antenna Gain (dBi):	11.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5484.00	Data Rate:	3.25 MBit/s
Power Setting:	3	Tested By:	JMH

Test Measurement Results

5350.00 - 5500.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5460.00	9.24	3.15	36.00	48.39	Max Avg	Horizontal	155	10	54.0	-5.6	Pass
#2	5460.00	21.58	3.15	36.00	60.73	Max Peak	Horizontal	155	10	68.2	-7.5	Pass
#4	5470.00	27.95	3.16	36.00	67.11	Max Peak	Horizontal	155	10	68.2	-1.1	Pass
#3	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
#5	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT Powered by POE and connected to laptop outside chamber

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Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN Ltd. SA0183620	Variant:	20 MHz
Antenna Gain (dBi):	11.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5489.00	Data Rate:	6.50 MBit/s
Power Setting:	3	Tested By:	JMH

Test Measurement Results

5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5460.00	7.18	3.15	36.00	46.33	Max Avg	Horizontal	155	10	68.2	-21.9	Pass
#3	5469.70	28.49	3.16	36.00	67.65	Max Peak	Horizontal	155	10	68.2	-0.6	Pass
#2	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
#4	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT Powered by POE and connected to laptop outside chamber

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Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN Ltd. SA0183620	Variant:	40 MHz
Antenna Gain (dBi):	11.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5499.00	Data Rate:	13.50 MBit/s
Power Setting:	0	Tested By:	JMH

Test Measurement Results

5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5460.00	6.72	3.15	36.00	45.87	Max Avg	Horizontal	155	10	68.2	-22.3	Pass
#3	5469.10	28.65	3.15	36.00	67.80	Max Peak	Horizontal	155	10	68.2	-0.4	Pass
#2	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
#4	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by POE and connected to laptop outside chamber

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Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	RADWIN Ltd. SA0183620	Variant:	80 MHz
Antenna Gain (dBi):	11.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5520.00	Data Rate:	13.50 MBit/s
Power Setting:	-3.5	Tested By:	JMH

Test Measurement Results

5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5460.00	6.72	3.15	36.00	45.87	Max Avg	Horizontal	155	10	68.2	-22.3	Pass
#3	5469.70	28.85	3.16	36.00	68.01	Max Peak	Horizontal	155	10	68.2	-0.2	Pass
#2	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
#4	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by POE and connected to laptop outside chamber

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Equipment Configuration for Restricted Upper Band-Edge Emissions

Antenna:	RADWIN Ltd. SA0183620	Variant:	10 MHz
Antenna Gain (dBi):	11.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5341.00	Data Rate:	3.25 MBit/s
Power Setting:	-5	Tested By:	JMH

Test Measurement Results

5300.00 - 5460.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5350.00	8.08	3.18	35.80	47.06	Max Avg	Horizontal	155	8	54.0	-6.9	Pass
#2	5350.00	28.64	3.18	35.80	67.62	Max Peak	Horizontal	155	8	68.2	-0.6	Pass
#3	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE and connected to laptop outside chamber

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Equipment Configuration for Restricted Upper Band-Edge Emissions

Antenna:	RADWIN Ltd. SA0183620	Variant:	20 MHz
Antenna Gain (dBi):	11.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5336.00	Data Rate:	6.50 MBit/s
Power Setting:	-5	Tested By:	JMH

Test Measurement Results

5300.00 - 5460.00 MHz

Num	Frequency MHz	Raw dB μ V	Cable Loss dB	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
#1	5350.00	10.58	3.18	35.80	49.56	Max Avg	Horizontal	155	8	54.0	-4.4	Pass
#2	5350.00	28.58	3.18	35.80	67.56	Max Peak	Horizontal	155	8	68.2	-0.7	Pass
#3	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE and connected to laptop outside chamber

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Equipment Configuration for Restricted Upper Band-Edge Emissions

Antenna:	RADWIN Ltd. SA0183620-	Variant:	40 MHz
Antenna Gain (dBi):	11.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5326.00	Data Rate:	13.50 MBit/s
Power Setting:	-5	Tested By:	JMH

Test Measurement Results

5300.00 - 5460.00 MHz

Num	Frequency MHz	Raw dB μ V	Cable Loss dB	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
#1	5350.00	13.00	3.18	35.80	51.98	Max Avg	Horizontal	155	8	54.0	-2.0	Pass
#2	5350.00	28.58	3.18	35.80	67.56	Max Peak	Horizontal	155	8	68.2	-0.7	Pass
#3	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE and connected to laptop outside chamber

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Equipment Configuration for Restricted Upper Band-Edge Emissions

Antenna:	RADWIN Ltd. SA0183620	Variant:	80 MHz
Antenna Gain (dBi):	11.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5303.00	Data Rate:	29.30 MBit/s
Power Setting:	-2.5	Tested By:	JMH

Test Measurement Results

5300.00 - 5460.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5350.00	13.23	3.18	35.80	52.21	Max Avg	Horizontal	155	8	54.0	-1.8	Pass
#3	5351.28	29.15	3.18	35.80	68.13	Max Peak	Horizontal	155	8	68.2	-0.1	Pass
#2	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE, and connected to laptop outside chamber

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9.4.2.3. RADWIN Ltd. SA0183620 20.5 dBi

RESULTS SUMMARY FOR RADIATED BAND-EDGE EMISSIONS

5250 - 5350 MHz

RADWIN Ltd. SA0183620-20.5 dBi		Band-Edge Freq	Limit 68.2dB μ V/m	Limit 54.0dB μ V/m	Power Setting
Channel Bandwidth(s)	Operating Frequency (MHz)	MHz	dB μ V/m	dB μ V/m	
80 MHz	5303.00	5350.00	67.00	51.37	-16

Click on the links to view the data.

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Equipment Configuration for Restricted Upper Band-Edge Emissions

Antenna:	RADWIN Ltd. SA0183620	Variant:	80 MHz
Antenna Gain (dBi):	11.00	Modulation:	OFDM
Beam Forming Gain (Y):	9.5	Duty Cycle (%):	99
Channel Frequency (MHz):	5303.00	Data Rate:	29.30 MBit/s
Power Setting:	-16	Tested By:	JMH

Test Measurement Results

5300.00 - 5460.00 MHz

Num	Frequency MHz	Raw dB μ V	Cable Loss dB	AF dB	Level dB μ V/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB μ V/m	Margin dB	Pass /Fail
#1	5350.00	12.39	3.18	35.80	51.37	Max Avg	Horizontal	155	8	54.0	-2.6	Pass
#3	5350.32	28.02	3.18	35.80	67.00	Max Peak	Horizontal	155	8	68.2	-1.2	Pass
#2	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE, and connected to laptop outside chamber

Click on the links to view the data.

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9.4.3. Digital Emissions

FCC, Part 15 Subpart C §15.205/ §15.209

Test Procedure

Testing 30M-1 GHz was performed in a 3-meter anechoic chamber using a CISPR compliant receiver. Preliminary radiated emissions were measured on every azimuth and with the receiving antenna in both horizontal and vertical polarizations. To further maximize emissions the receive antenna was varied between 1 and 4 meters. The emissions are recorded with receiver in peak hold mode. Emissions closest to the limits are measured in the quasi-peak mode with the tuned receiver using a bandwidth of 120 kHz. Only the highest emissions relative to the limit are listed. The anechoic chamber test set-up is identified in Section 6 Test Set-Up Photographs.

The EUT had two methods of powering on ac/dc converter and Power over Ethernet (POE). Both modes were tested for emissions below 1GHz.

Field Strength Calculation

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

where:

$$FS = R + AF + CORR$$

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

For example:

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

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

Conversion between dB μ V/m (or dB μ V) and μ V/m (or μ V) are done as:

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

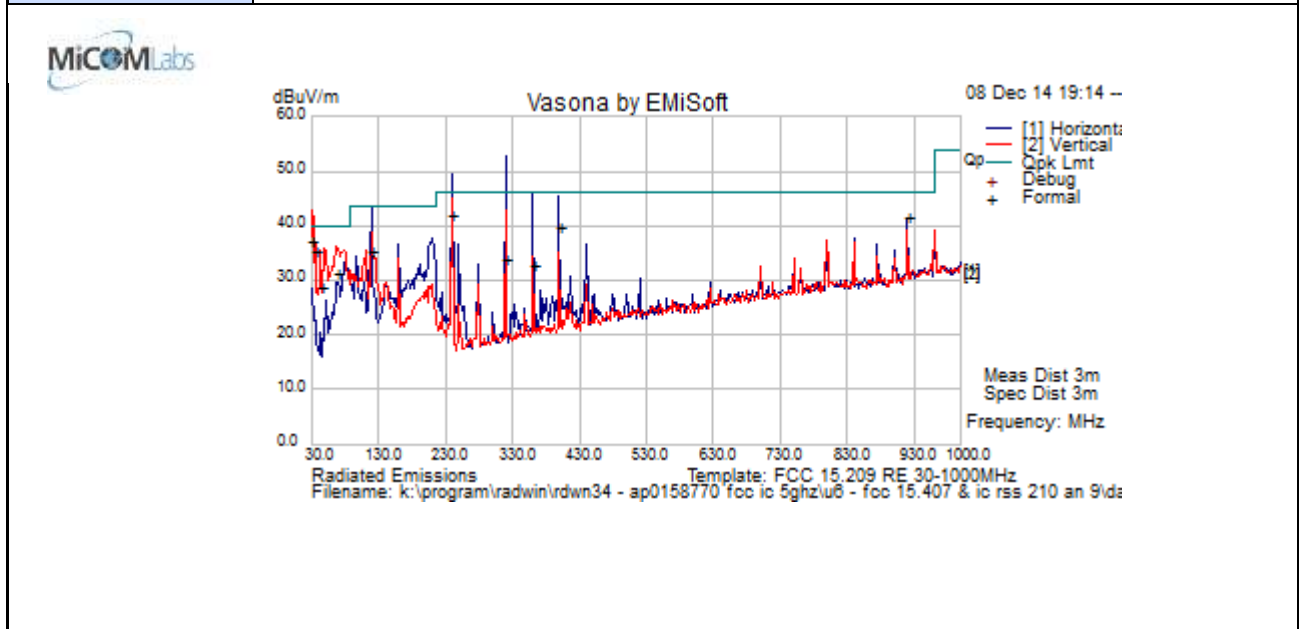
$$40 \text{ dB}\mu\text{V/m} = 100\mu\text{V/m}$$

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



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Test Freq.	NA	Engineer	JMH
Variant	Digital Emissions	Temp (°C)	20
Freq. Range	30-1000 MHz	Rel. Hum.(%)	56
Power Setting	NA	Press. (mBars)	848
Antenna	20.5 dBi		
Test Notes 1			



Formally measured emission peaks												
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	PoI	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
319.999	45.4	5.2	-16.7	33.9	Quasi Max	H	99	179	46.0	-12.1	Pass	
240.015	56.0	4.8	-19.0	41.9	Quasi Max	H	100	157	46	-4.2	Pass	
30.251	43.5	3.5	-9.9	37.1	Quasi Max	V	224	18	40	-2.9	Pass	
34.975	45.3	3.6	-13.6	35.3	Quasi Max	V	142	12	40	-4.7	Pass	
120.005	48.6	4.2	-17.5	35.3	Quasi Max	H	209	204	43.5	-8.2	Pass	
360.008	42.9	5.3	-15.4	32.8	Quasi Max	H	217	152	46	-13.2	Pass	
399.995	49.0	5.5	-14.8	39.7	Quasi Max	H	160	202	46	-6.3	Pass	
66.934	50.9	3.8	-23.3	31.4	Quasi Max	V	108	313	40	-8.6	Pass	
44.815	45.7	3.6	-20.7	28.7	Quasi Max	V	130	349	40	-11.4	Pass	
919.995	42.0	7.2	-7.7	41.4	Quasi Max	H	109	181	46	-4.6	Pass	
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental Frequency ETSI Vid Avg Type = 100 kHz RBW, 100 kHz VBW, Peak Detector, Video Average, 100 Sweeps												

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A. APPENDIX - GRAPHICAL IMAGES

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A.1. 26 dB & 99% Bandwidth

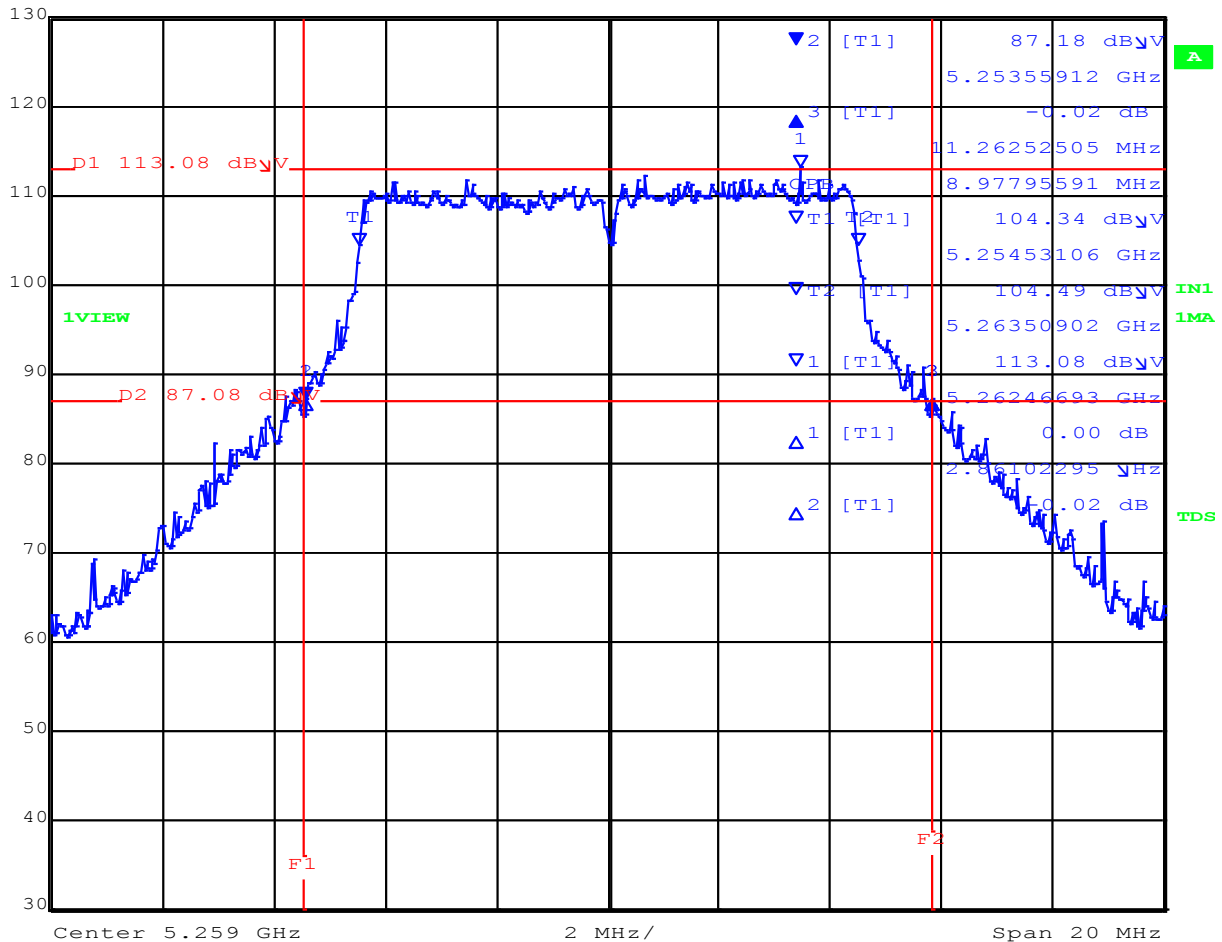


26 dB & 99% BANDWIDTH

Variant: 802.11 10MHz, Channel: 5259.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	100 kHz	RF Att	0 dB
130 dB μ V	-0.02 dB	VBW	300 kHz		
87 dB μ V	11.26252505 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 11:42:14

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5254.53106 MHz : 104.34 dBuV T2 : 5263.50902 MHz : 104.49 dBuV OBW : 8.98 MHz	Measured 26 dB Bandwidth: 11.26 MHz Measured 99% Bandwidth: 8.98 MHz

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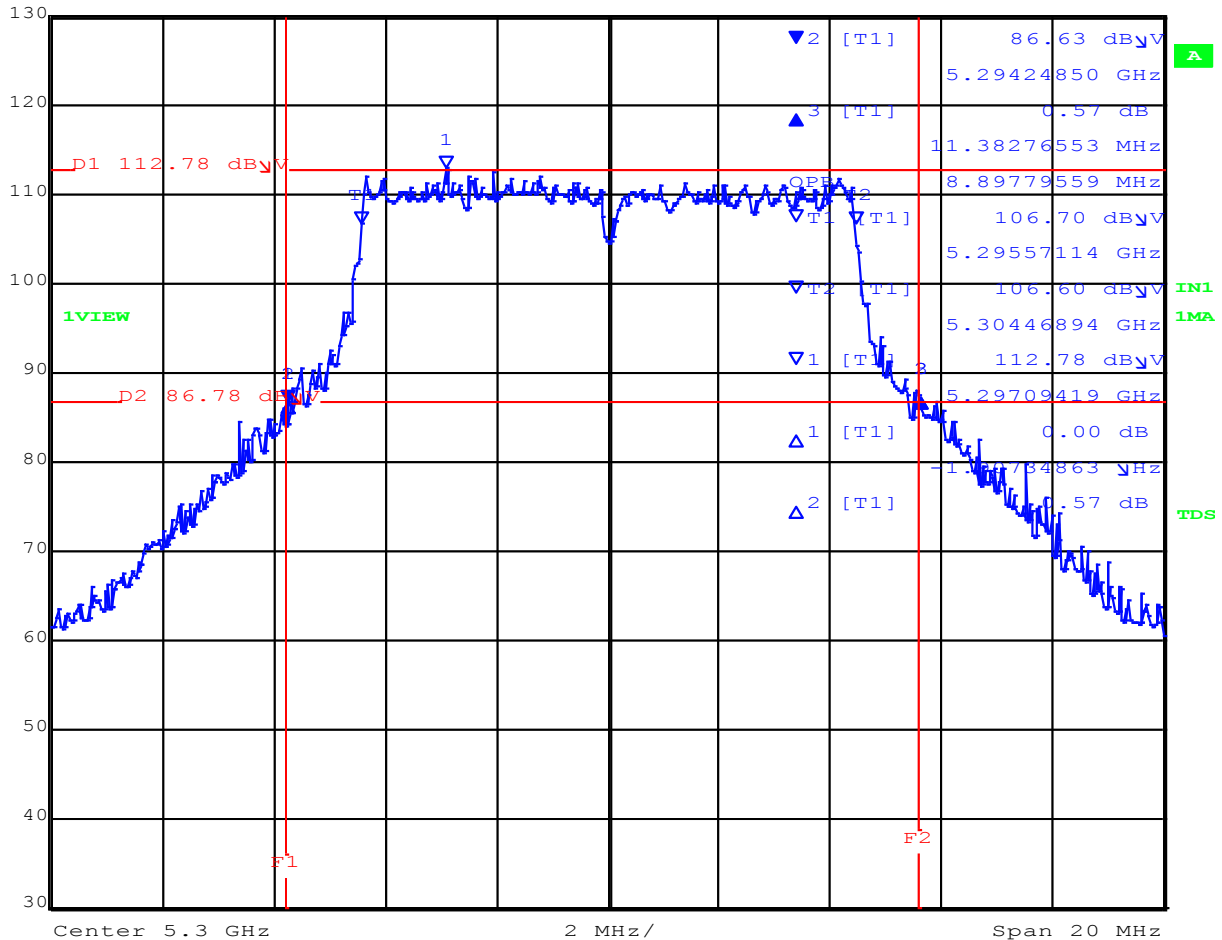
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26 dB & 99% BANDWIDTH



Variant: 802.11 10MHz, Channel: 5300.00 MHz, Temp: 20, Voltage: 120 Vac

	Max/Ref Lvl	Delta 3 [T1]	RBW	100 kHz	RF Att	0 dB
	130 dB μ V	0.57 dB	VBW	300 kHz		
	87 dB μ V	11.38276553 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 11:45:31

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5295.57114 MHz : 106.70 dB μ V T2 : 5304.46894 MHz : 106.60 dB μ V OBW : 8.89 MHz	Measured 26 dB Bandwidth: 11.38 MHz Measured 99% Bandwidth: 8.89 MHz

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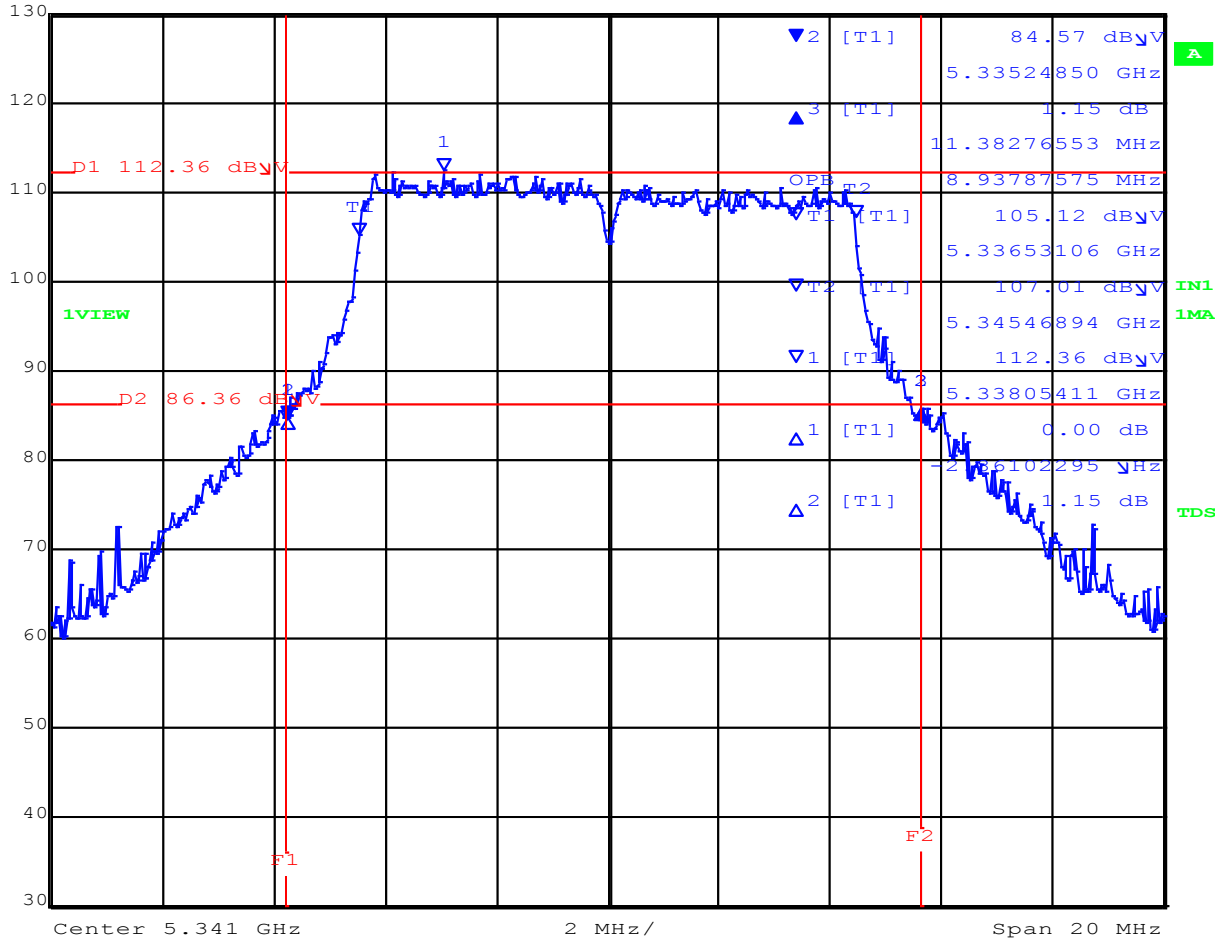
26 dB & 99% BANDWIDTH



Variant: 802.11 10MHz, Channel: 5341.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	100 kHz	RF Att	0 dB
130 dB μ V	1.15 dB	VBW	300 kHz		
87 dB μ V	11.38276553 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 11:49:06

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5336.53106 MHz : 105.12 dB μ V T2 : 5345.46894 MHz : 112.36 dB μ V OBW : 8.94 MHz	Measured 26 dB Bandwidth: 11.38 MHz Measured 99% Bandwidth: 8.94 MHz

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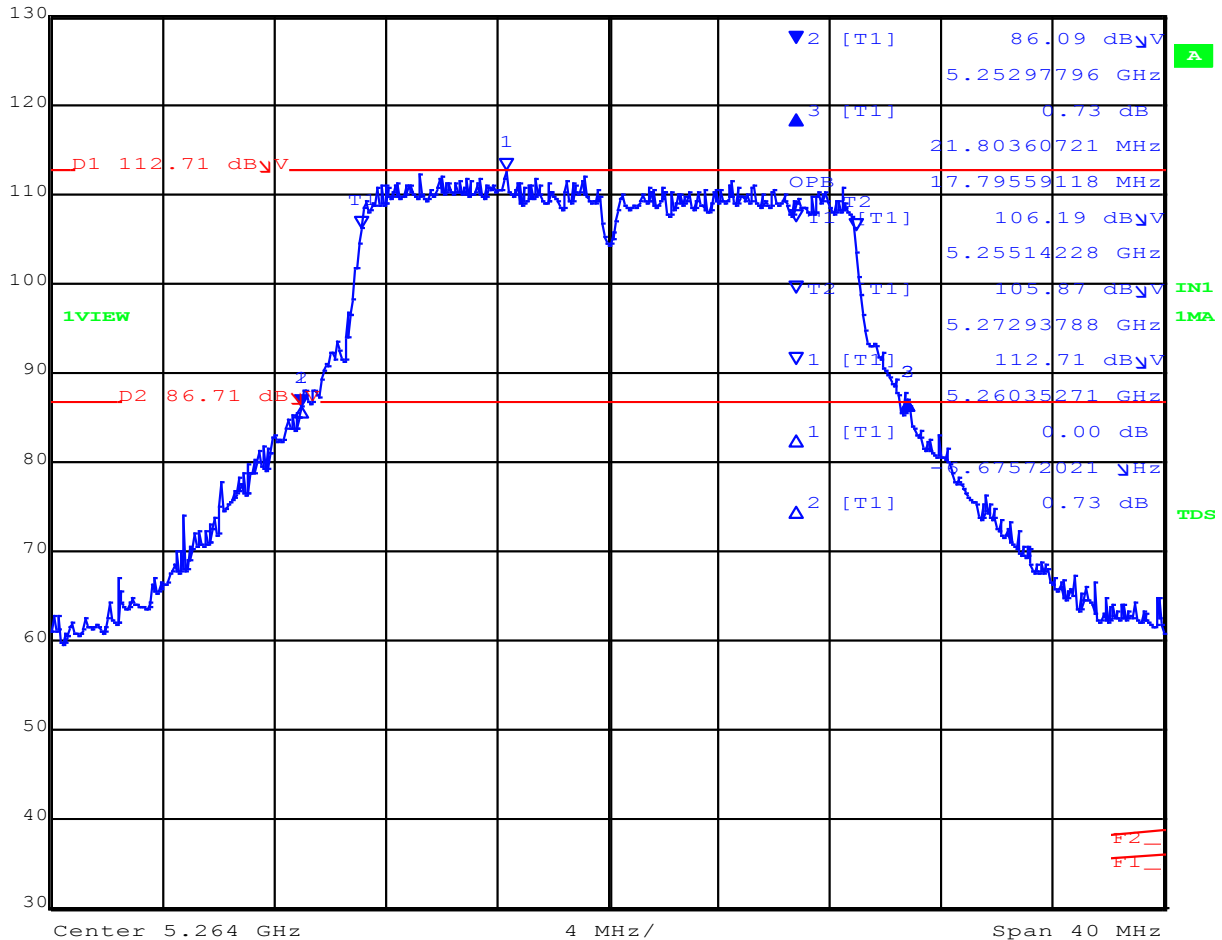
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26 dB & 99% BANDWIDTH



Variant: 802.11 20MHz, Channel: 5264.00 MHz, Temp: 20, Voltage: 120 Vac

	Max/Ref Lvl	Delta 3 [T1]	RBW	200 kHz	RF Att	0 dB
	130 dB μ V	0.73 dB	VBW	300 kHz		
	87 dB μ V	21.80360721 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 11:52:48

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5255.14228 MHz : 106.19 dB μ V T2 : 5272.93788 MHz : 105.87 dB μ V OBW : 17.80 MHz	Measured 26 dB Bandwidth: 21.80 MHz Measured 99% Bandwidth: 17.80 MHz

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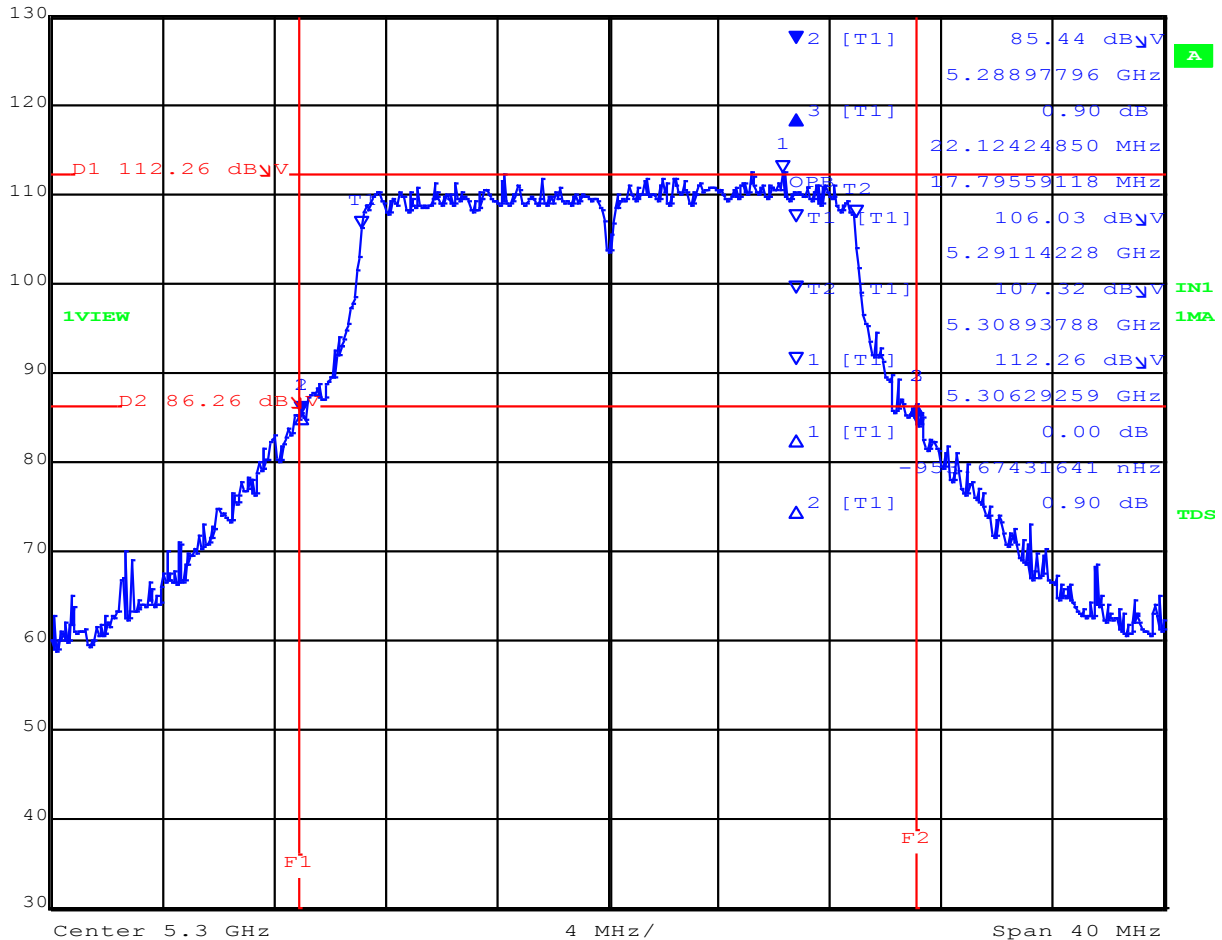
26 dB & 99% BANDWIDTH



Variant: 802.11 20MHz, Channel: 5300.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	200 kHz	RF Att	0 dB
130 dB μ V	0.90 dB	VBW	300 kHz		
87 dB μ V	22.12424850 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 12:01:32

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5291.14228 MHz : 106.03 dB μ V T2 : 5308.93788 MHz : 107.32 dB μ V OBW : 17.80 MHz	Measured 26 dB Bandwidth: 22.12 MHz Measured 99% Bandwidth: 17.80 MHz

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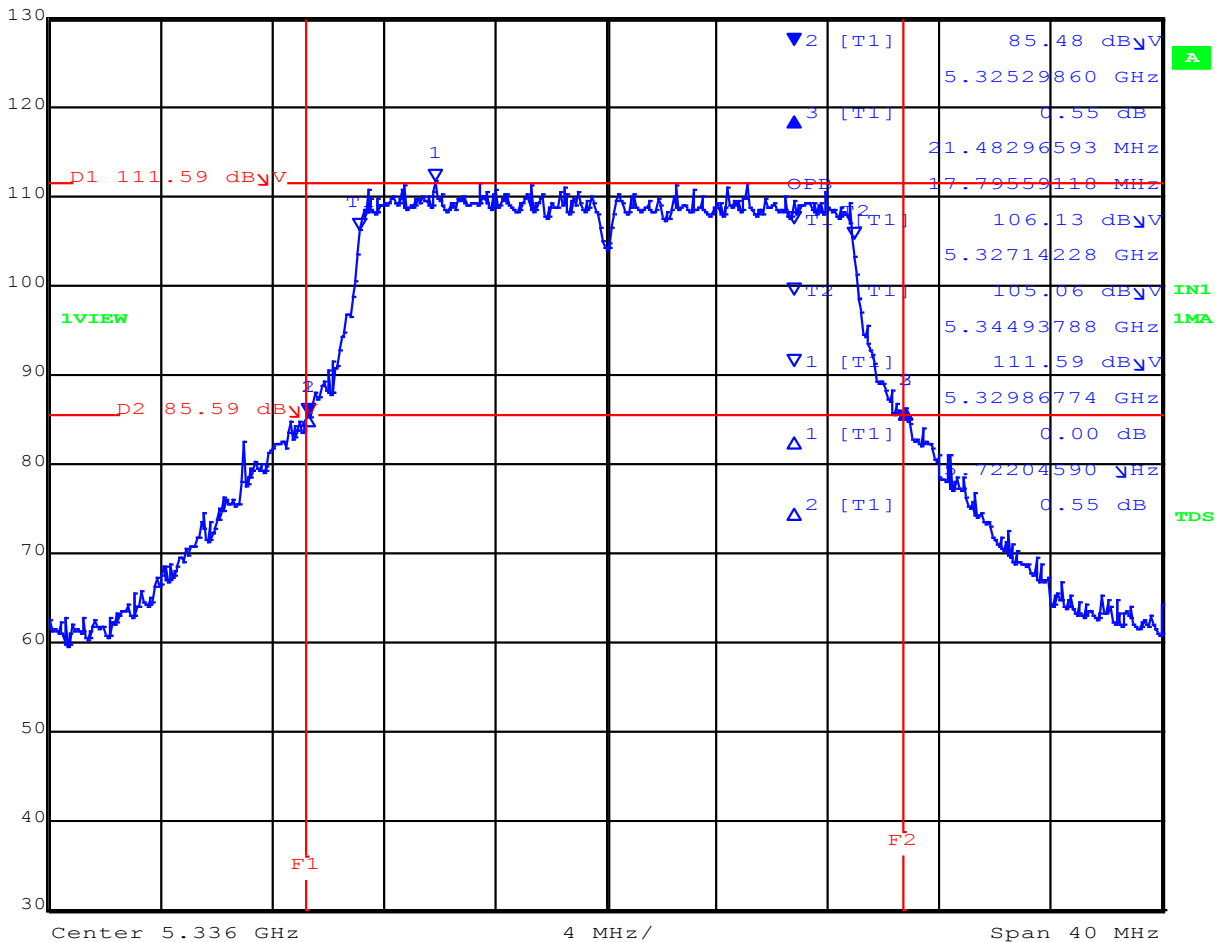
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26 dB & 99% BANDWIDTH



Variant: 802.11 20MHz, Channel: 5336.00 MHz, Temp: 20, Voltage: 120 Vac

	Max/Ref Lvl	Delta 3 [T1]	RBW	200 kHz	RF Att	0 dB
	130 dB μ V	0.55 dB	VBW	300 kHz		
	87 dB μ V	21.48296593 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 12:05:28

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5327.14228 MHz : 106.13 dB μ V T2 : 5344.93788MHz : 105.06 dB μ V OBW : 17.80 MHz	Measured 26 dB Bandwidth: 21.48 MHz Measured 99% Bandwidth: 17.80 MHz

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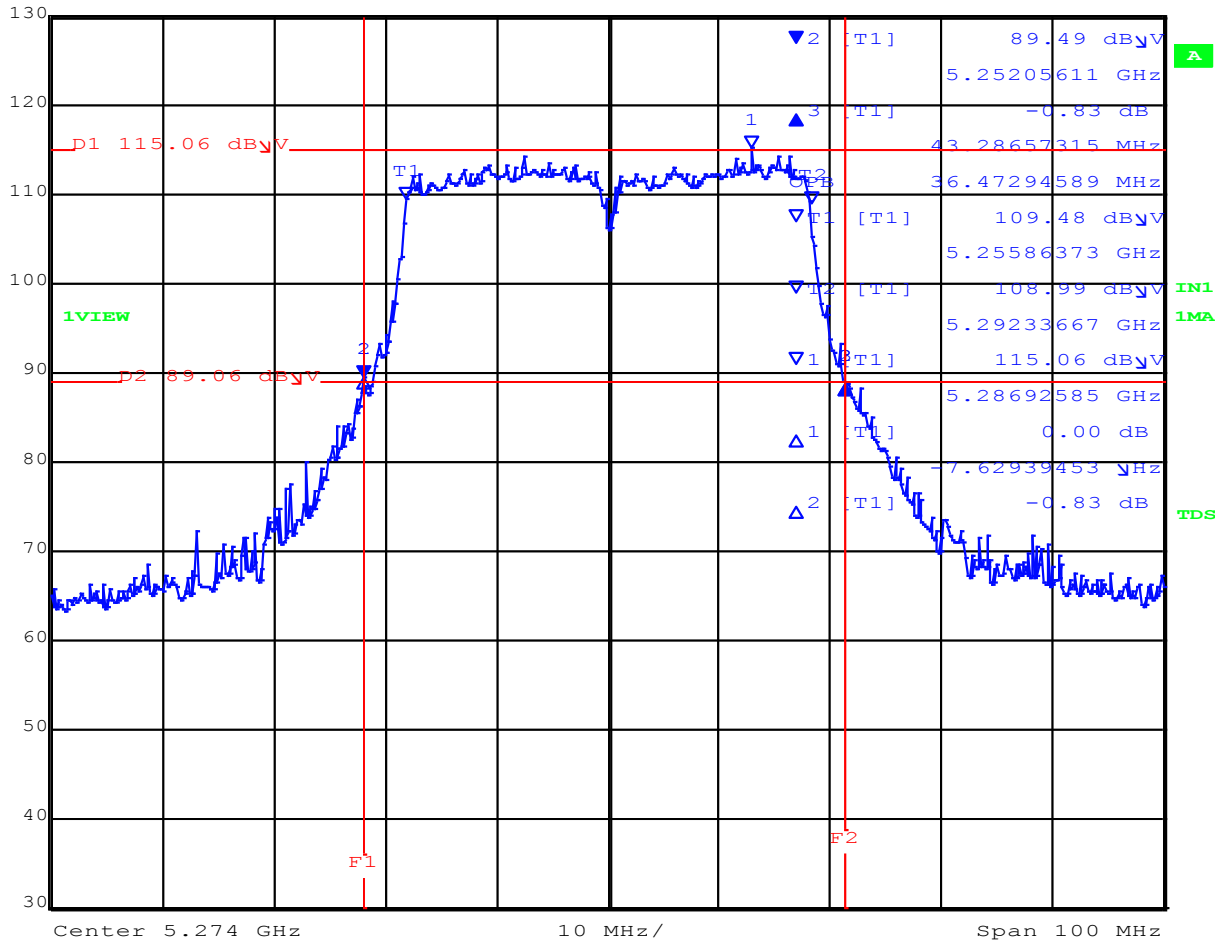
26 dB & 99% BANDWIDTH



Variant: 802.11 40MHz, Channel: 5274.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	500 kHz	RF Att	0 dB
130 dB μ V	-0.83 dB	VBW	2 MHz		
87 dB μ V	43.28657315 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 12:10:13

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5255.86373 MHz : 109.48 dBuV T2 : 5292.33667 MHz : 108.99 dBuV OBW : 36.47 MHz	Measured 26 dB Bandwidth: 43.29 MHz Measured 99% Bandwidth: 36.47 MHz

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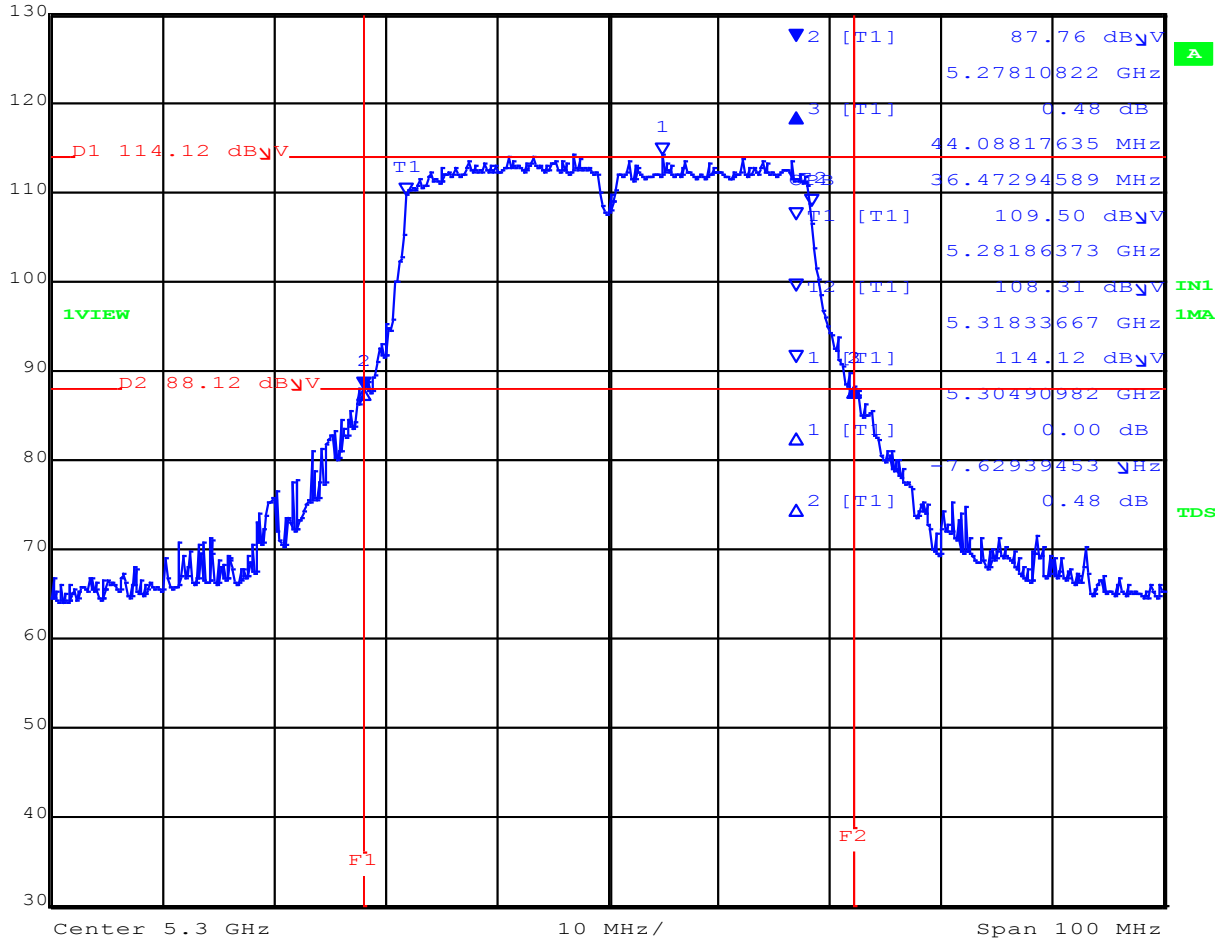
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26 dB & 99% BANDWIDTH



Variant: 802.11 40MHz, Channel: 5300.00 MHz, Temp: 20, Voltage: 120 Vac

	Max/Ref Lvl	Delta 3 [T1]	RBW	500 kHz	RF Att	0 dB
	130 dB μ V	0.48 dB	VBW	2 MHz		
	87 dB μ V	44.08817635 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 12:14:12

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5281.86373 MHz : 109.50 dB μ V T2 : 5318.33667 MHz : 108.31 dB μ V OBW : 36.87 MHz	Measured 26 dB Bandwidth: 44.09 MHz Measured 99% Bandwidth: 36.87 MHz

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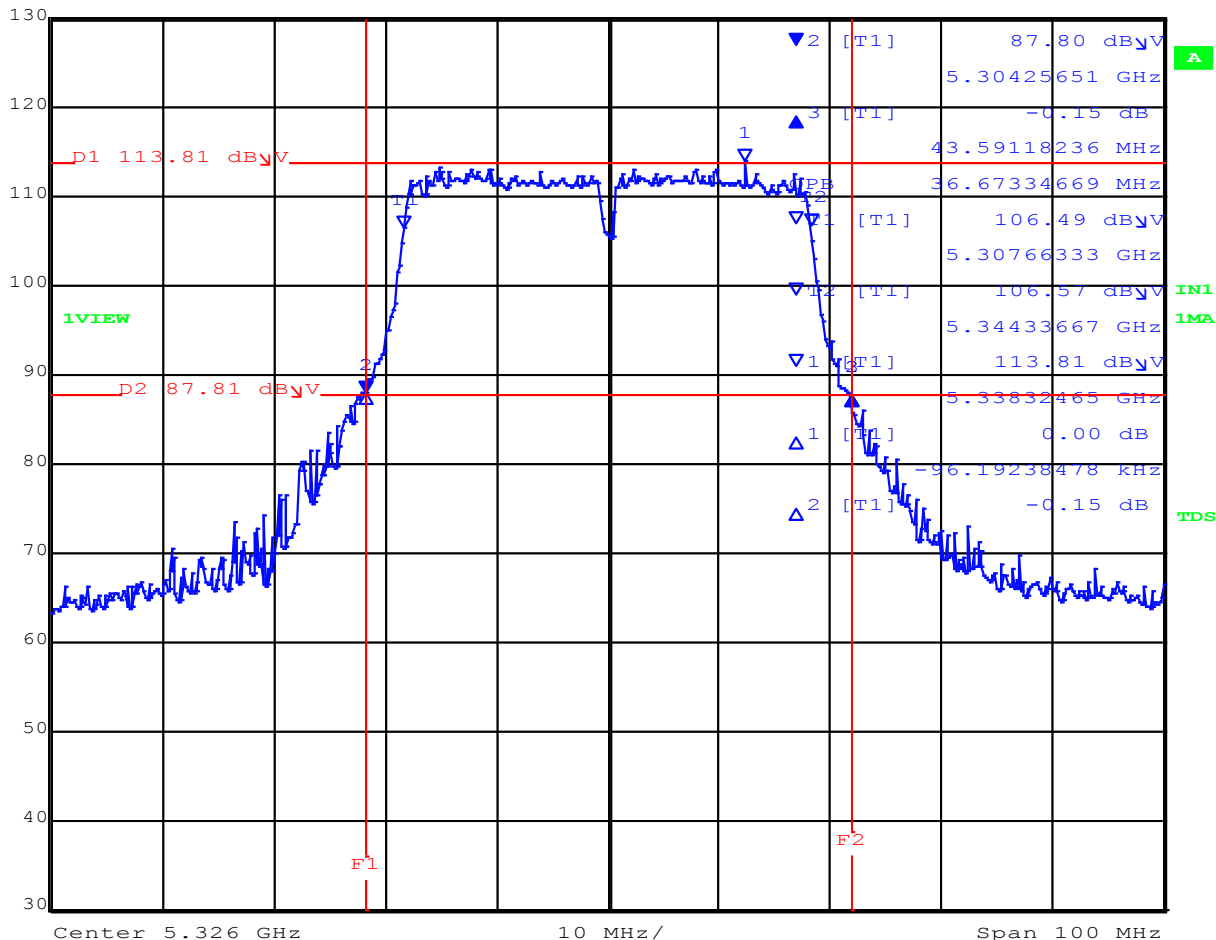
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26 dB & 99% BANDWIDTH



Variant: 802.11 40MHz, Channel: 5326.00 MHz, Temp: 20, Voltage: 120 Vac

	Max/Ref Lvl	Delta 3 [T1]	RBW	500 kHz	RF Att	0 dB
	130 dB μ V	-0.15 dB	VBW	2 MHz		
	87 dB μ V	43.59118236 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 12:17:38

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5307.66333 MHz : 106.49 dB μ V T2 : 5344.33667 MHz : 106.57 dB μ V OBW : 36.67 MHz	Measured 26 dB Bandwidth: 43.59 MHz Measured 99% Bandwidth: 36.67 MHz

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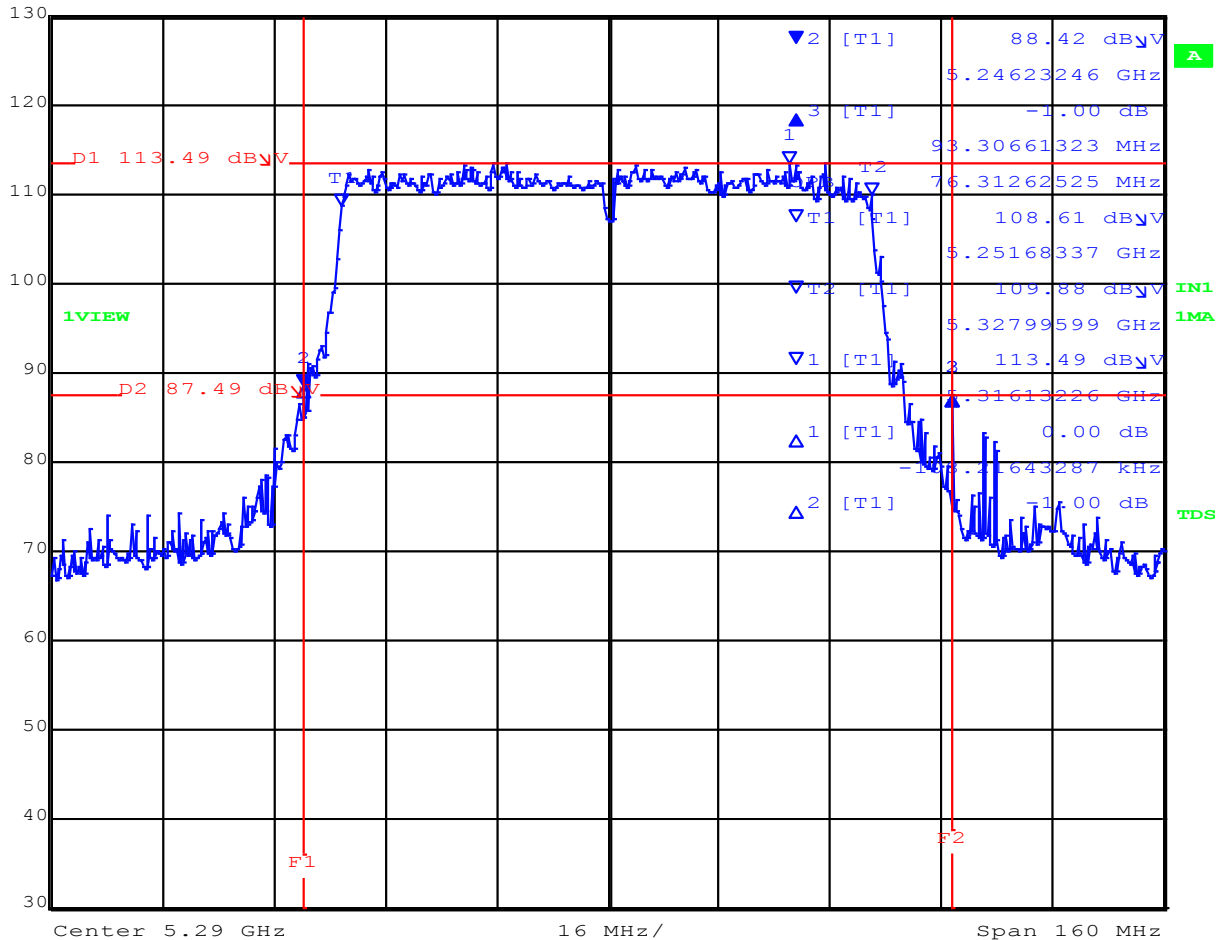
26 dB & 99% BANDWIDTH



Variant: 802.11 80MHz, Channel: 5290.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	1 MHz	RF Att	0 dB
130 dB μ V	-1.00 dB	VBW	3 MHz		
87 dB μ V	93.30661323 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 12:22:22

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5251.68337 MHz : 108.61 dB μ V T2 : 5327.99599 MHz : 109.88 dB μ V OBW : 76.31 MHz	Measured 26 dB Bandwidth: 93.31 MHz Measured 99% Bandwidth: 76.31 MHz

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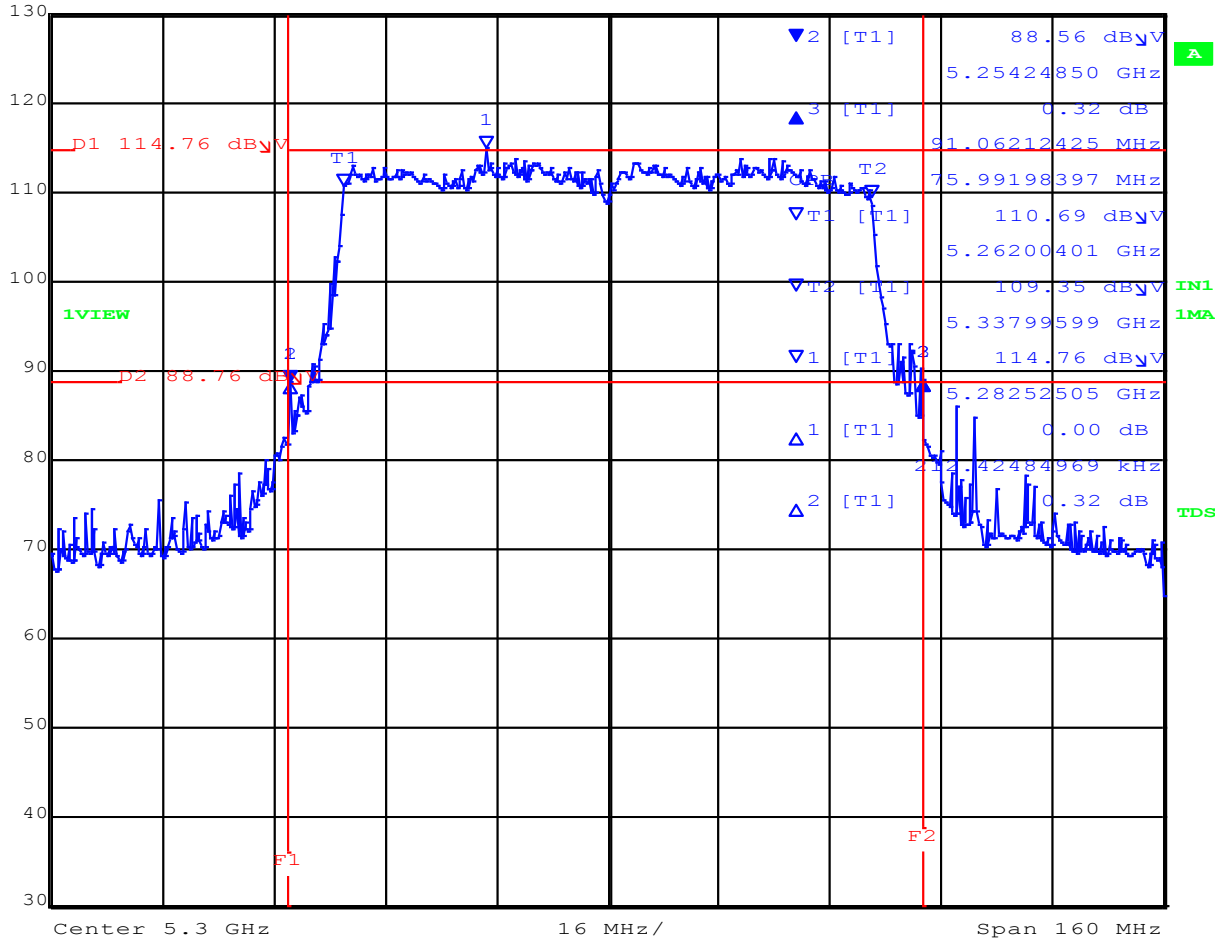
26 dB & 99% BANDWIDTH



Variant: 802.11 80MHz, Channel: 5300.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	1 MHz	RF Att	0 dB
130 dB μ V	0.32 dB	VBW	3 MHz		
87 dB μ V	91.06212425 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 12:25:31

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5262.00401 MHz : 110.69 dB μ V T2 : 5337.99599 MHz : 109.35 dB μ V OBW : 75.99 MHz	Measured 26 dB Bandwidth: 91.06 MHz Measured 99% Bandwidth: 75.99 MHz

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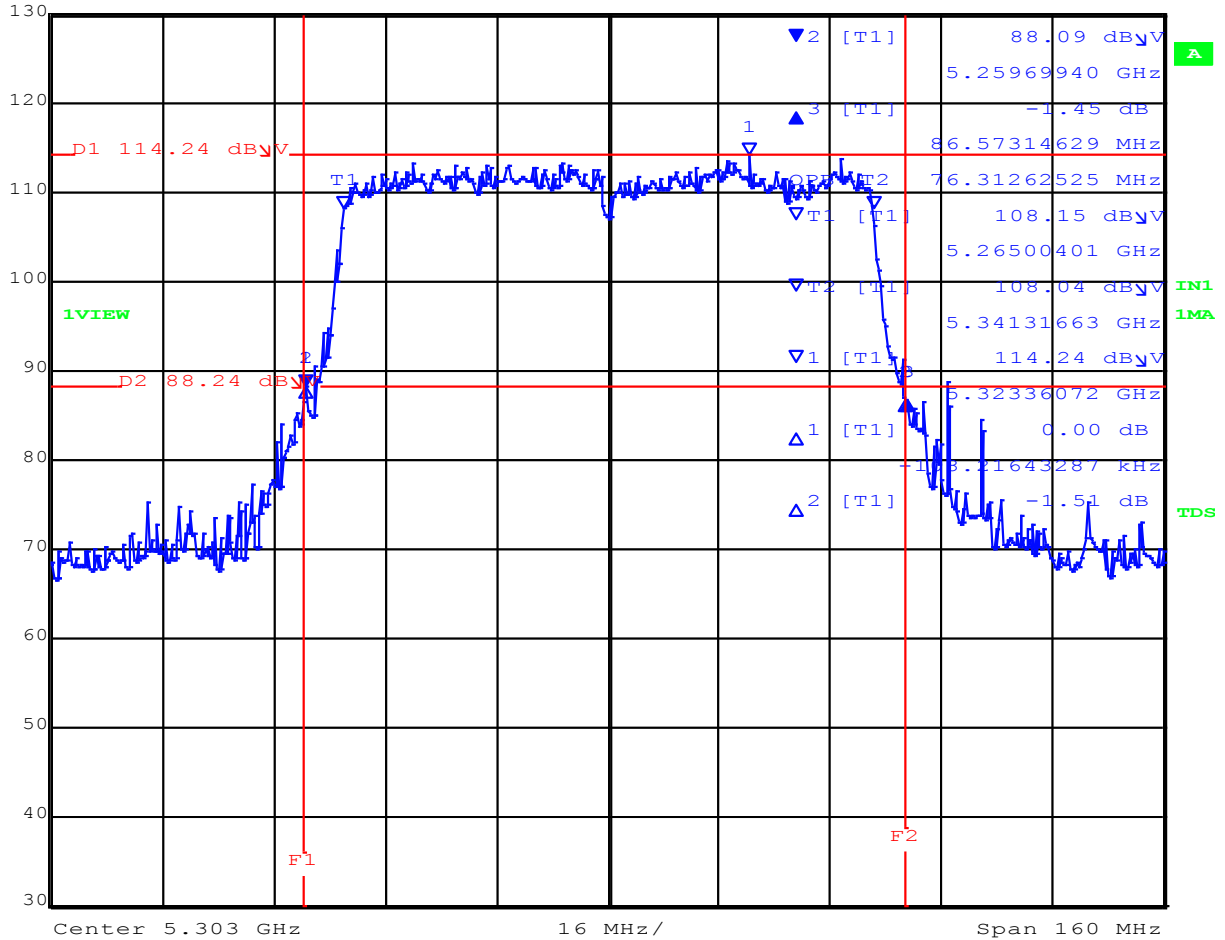
26 dB & 99% BANDWIDTH



Variant: 802.11 80MHz, Channel: 5303.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	1 MHz	RF Att	0 dB
130 dB μ V	-1.45 dB	VBW	3 MHz		
87 dB μ V	86.57314629 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 12:28:34

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5265.00401 MHz : 108.15 dB μ V T2 : 5341.31663 MHz : 108.04 dB μ V OBW : 76.31 MHz	Measured 26 dB Bandwidth: 86.57 MHz Measured 99% Bandwidth: 76.31 MHz

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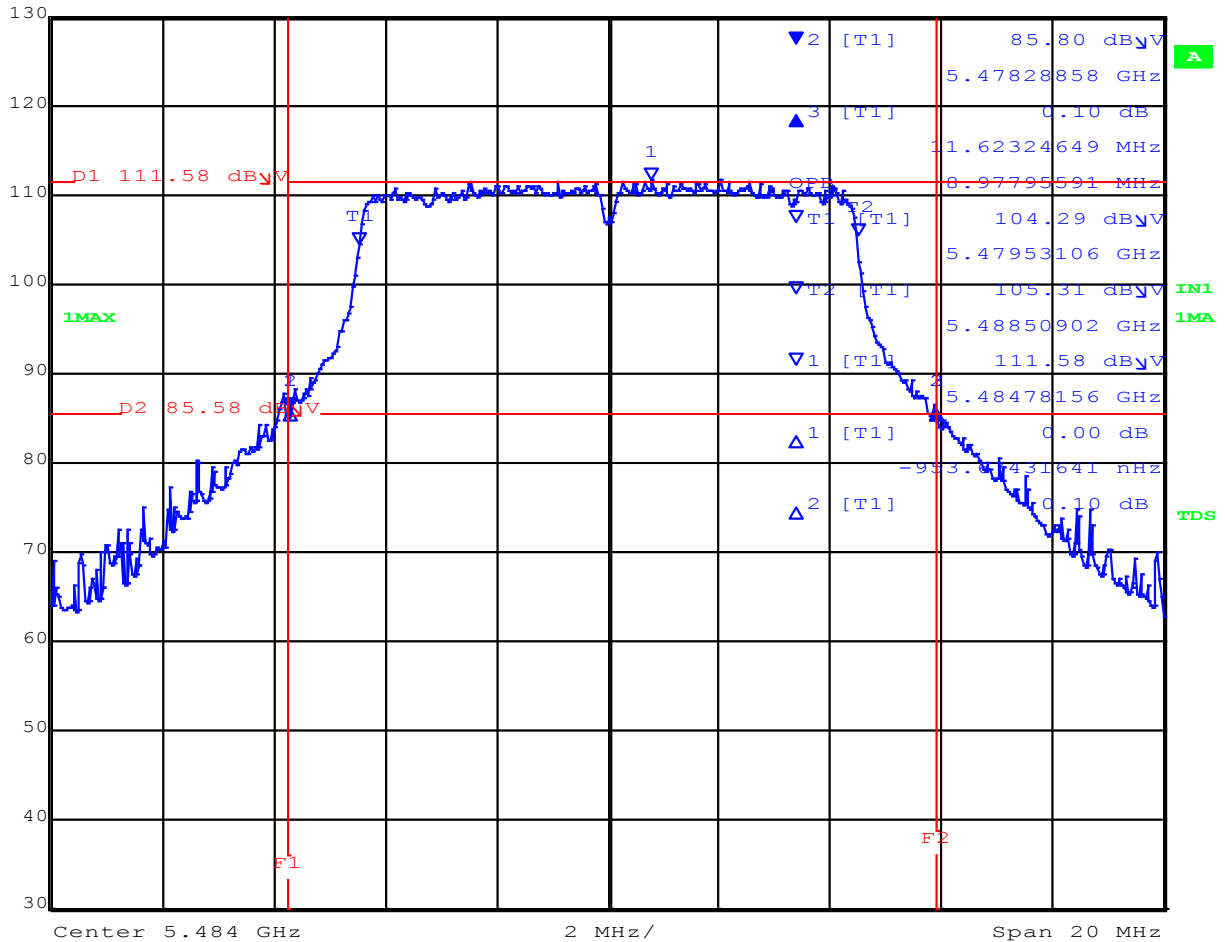
26 dB & 99% BANDWIDTH



Variant: 802.11 10MHz, Channel: 5484.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	100 kHz	RF Att	0 dB
130 dB μ V	0.10 dB	VBW	300 kHz		
87 dB μ V	11.62324649 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 12:36:30

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5479.53106 MHz : 104.29 dB μ V T2 : 5488.50905 MHz : 105.31 dB μ V OBW : 8.98 MHz	Measured 26 dB Bandwidth: 11.62 MHz Measured 99% Bandwidth: 8.98 MHz

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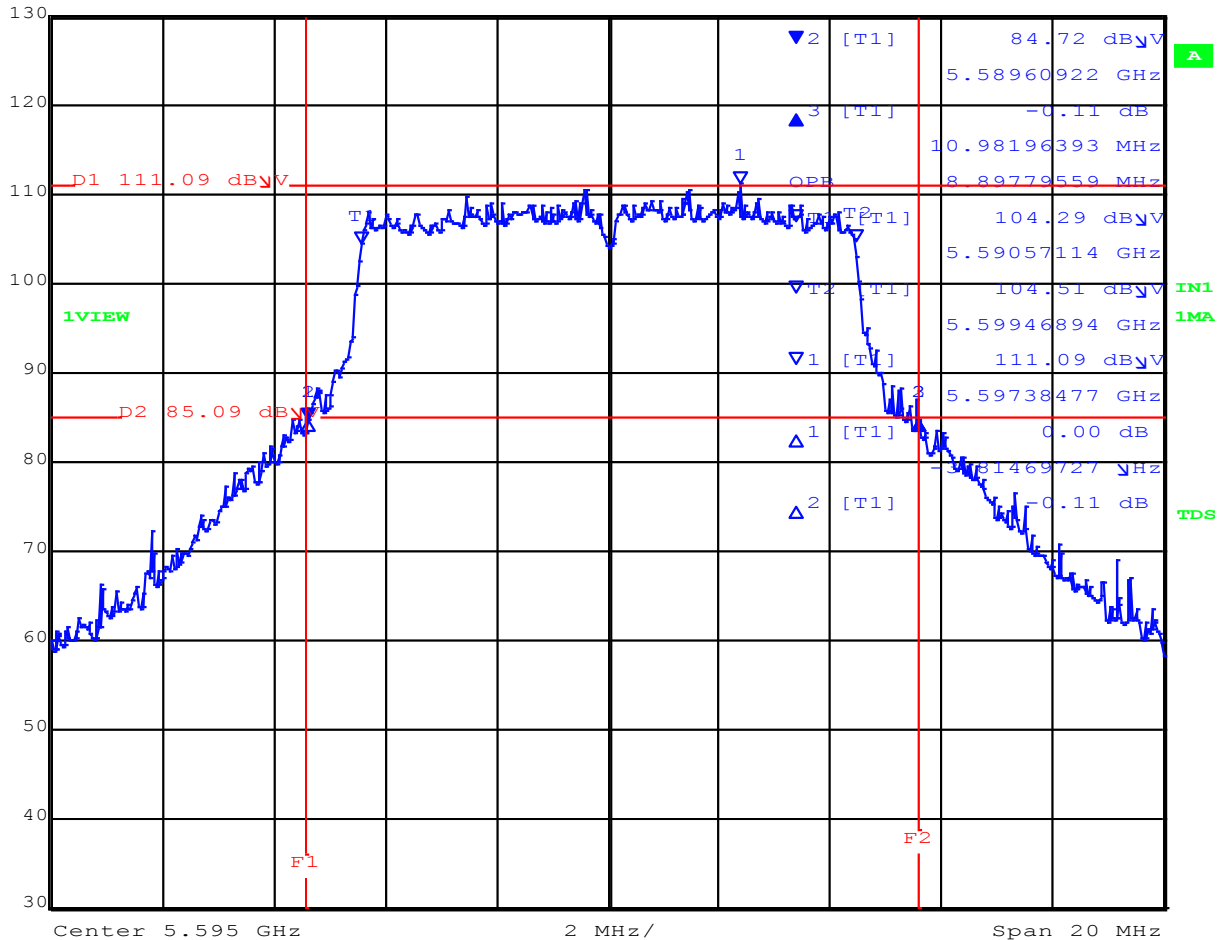
26 dB & 99% BANDWIDTH



Variant: 802.11 10MHz, Channel: 5595.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	100 kHz	RF Att	0 dB
130 dB μ V	-0.11 dB	VBW	300 kHz		
87 dB μ V	10.98196393 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 12:40:20

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5590.57114 MHz : 104.29 dB μ V T2 : 5599.46894 MHz : 111.09 dB μ V OBW : 8.90 MHz	Measured 26 dB Bandwidth: 10.98 MHz Measured 99% Bandwidth: 8.90 MHz

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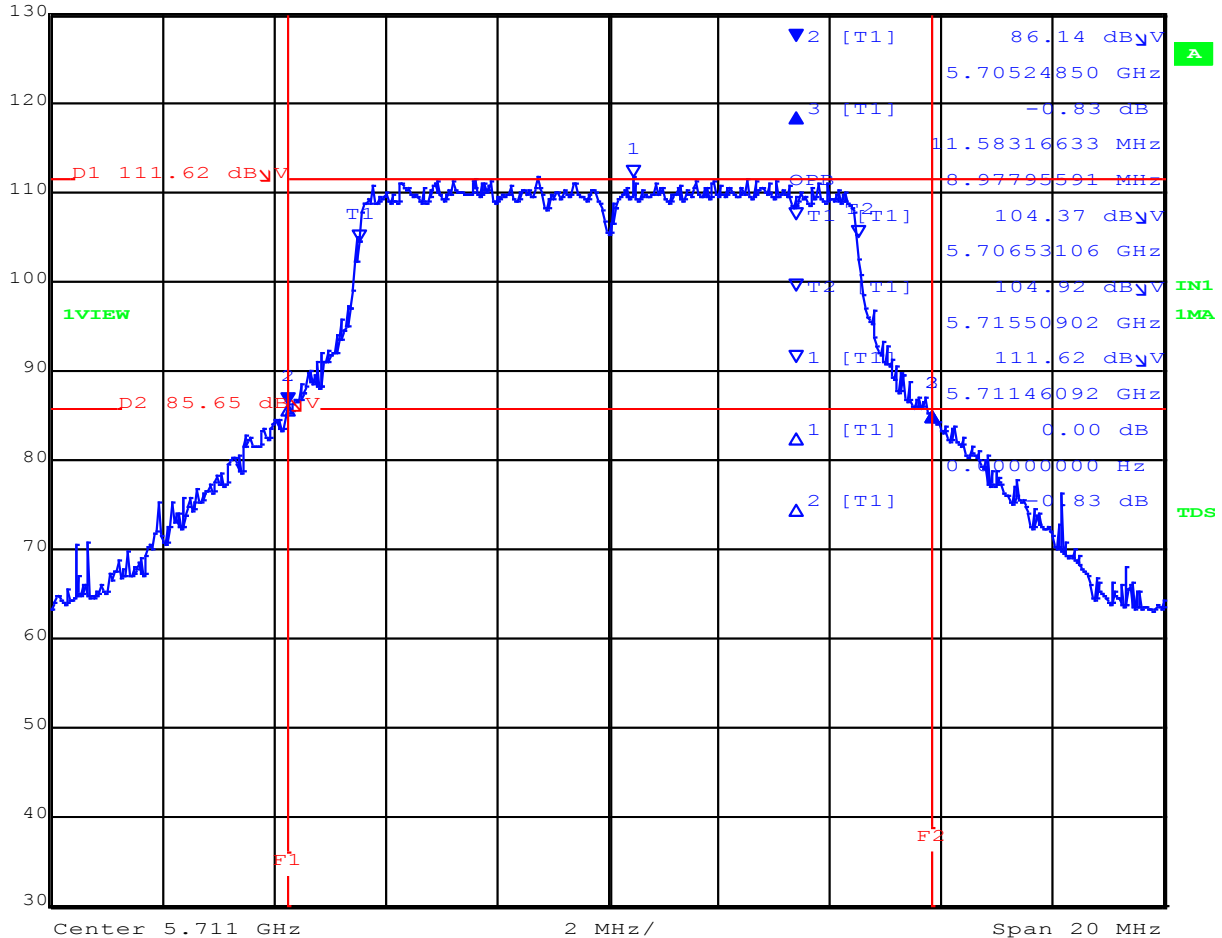
26 dB & 99% BANDWIDTH



Variant: 802.11 10MHz, Channel: 5711.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	100 kHz	RF Att	0 dB
130 dB μ V	-0.83 dB	VBW	300 kHz		
87 dB μ V	11.58316633 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 12:43:44

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5706.53106 MHz : 104.37 dB μ V T2 : 5715.50902 MHz : 104.92 dB μ V OBW : 8.98 MHz	Measured 26 dB Bandwidth: 11.58 MHz Measured 99% Bandwidth: 8.98 MHz

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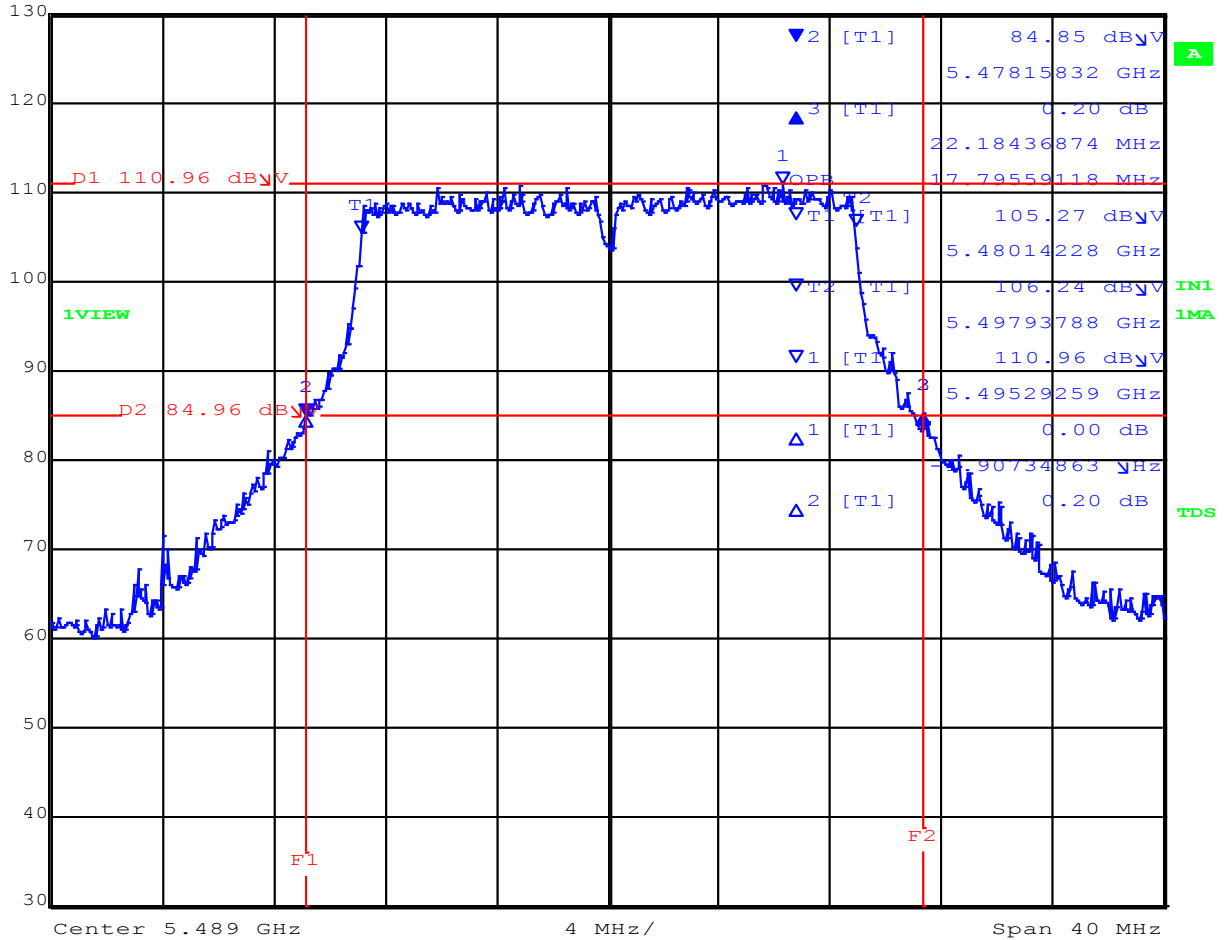
26 dB & 99% BANDWIDTH



Variant: 802.11 20MHz, Channel: 5489.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	200 kHz	RF Att	0 dB
130 dB μ V	0.20 dB	VBW	1 MHz		
87 dB μ V	22.18436874 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 12:49:09

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5480.14228 MHz : 105.27 dBuV T2 : 5497.93788 MHz : 106.24 dBuV OBW : 17.80 MHz	Measured 26 dB Bandwidth: 22.18 MHz Measured 99% Bandwidth: 17.80 MHz

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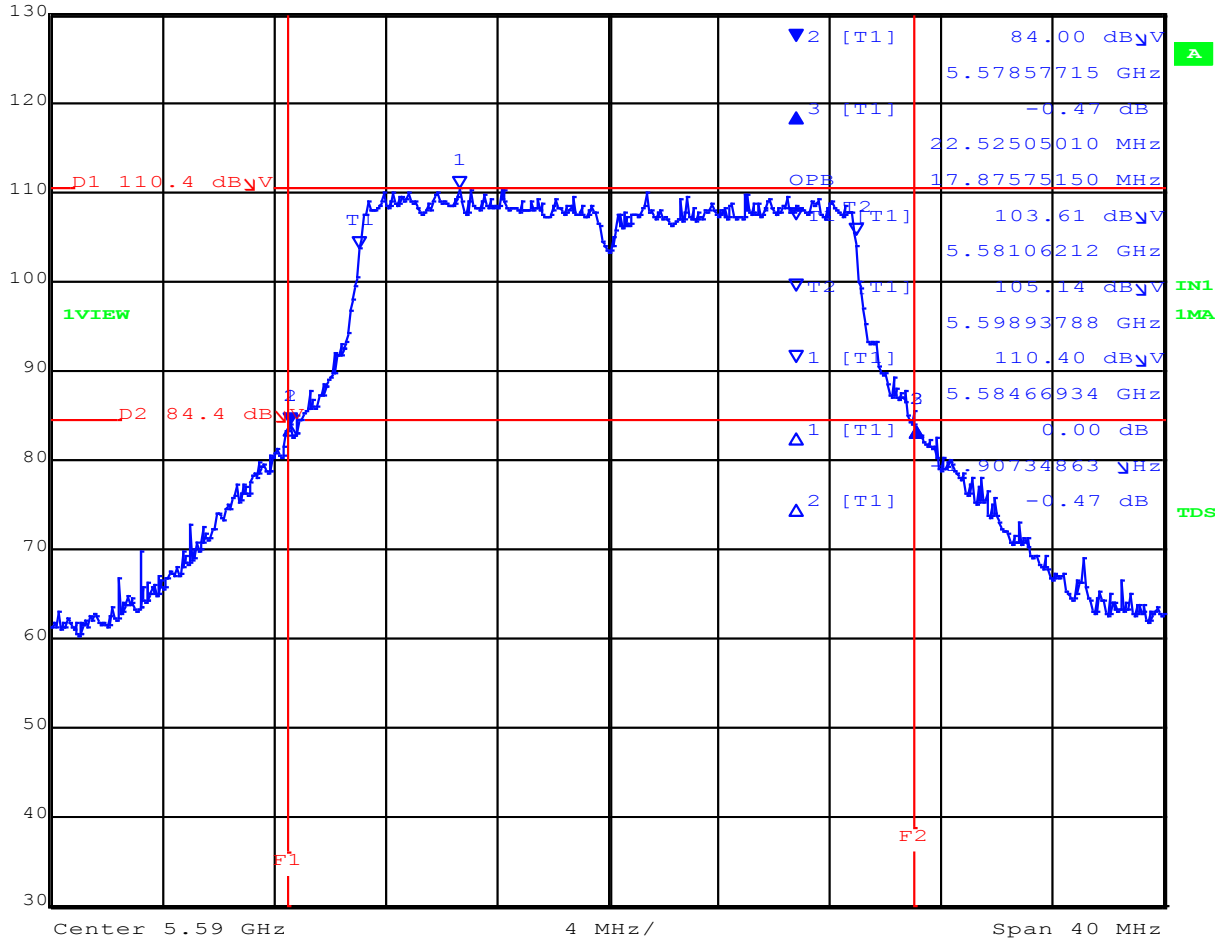
26 dB & 99% BANDWIDTH



Variant: 802.11 20MHz, Channel: 5590.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	200 kHz	RF Att	0 dB
130 dB μ V	-0.47 dB	VBW	1 MHz		
87 dB μ V	22.52505010 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 12:53:25

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5581.06212 MHz : 103.61 dB μ V T2 : 5598.93788 MHz : 105.14 dB μ V OBW : 17.88 MHz	Measured 26 dB Bandwidth: 22.53 MHz Measured 99% Bandwidth: 17.88 MHz

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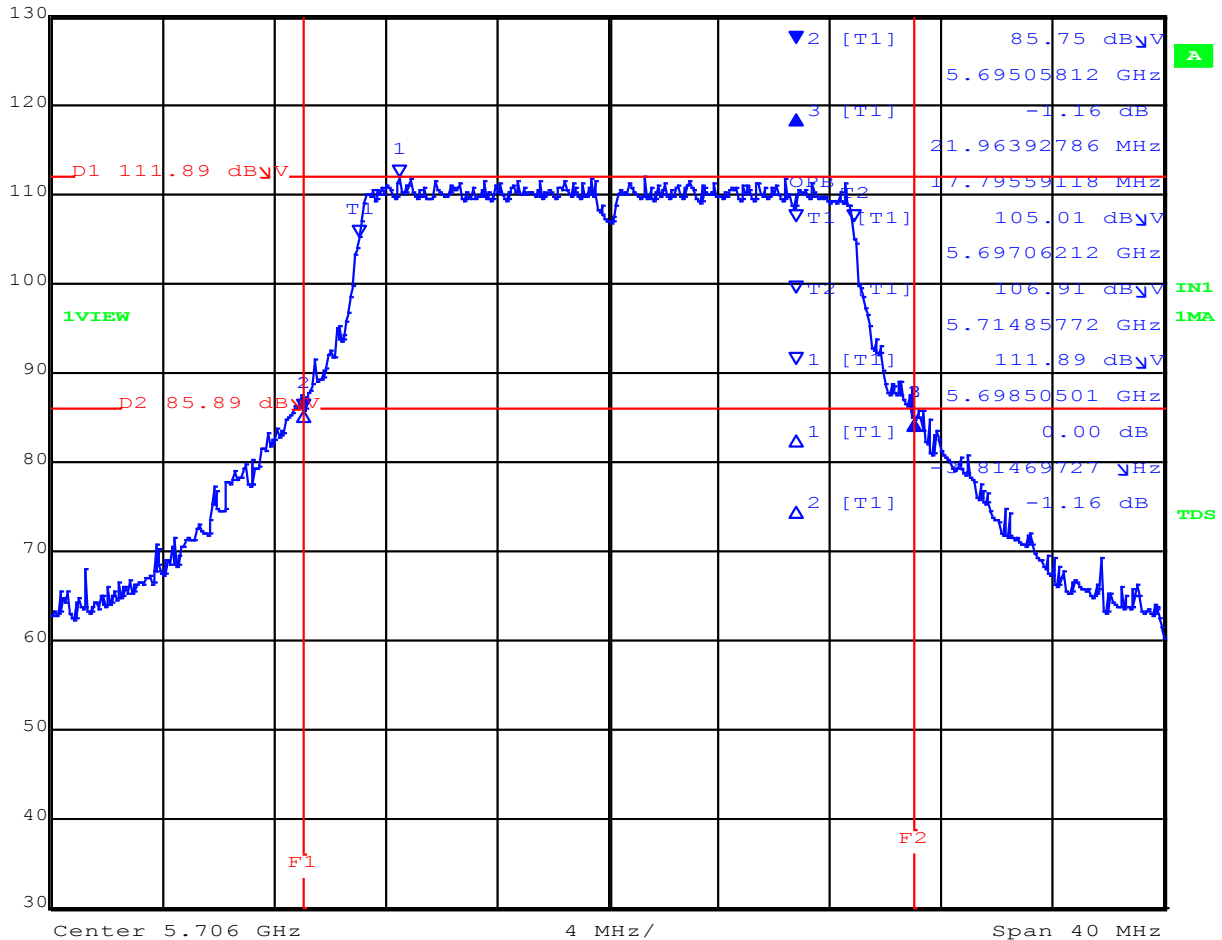
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26 dB & 99% BANDWIDTH



Variant: 802.11 20MHz, Channel: 5706.00 MHz, Temp: 20, Voltage: 120 Vac

	Max/Ref Lvl	Delta 3 [T1]	RBW	200 kHz	RF Att	0 dB
	130 dB μ V	-1.16 dB	VBW	1 MHz		
	87 dB μ V	21.96392786 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 12:56:48

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5697.06212 MHz : 105.01 dB μ V T2 : 5714.85772 MHz : 106.91 dB μ V OBW : 17.80 MHz	Measured 26 dB Bandwidth: 21.96 MHz Measured 99% Bandwidth: 17.80 MHz

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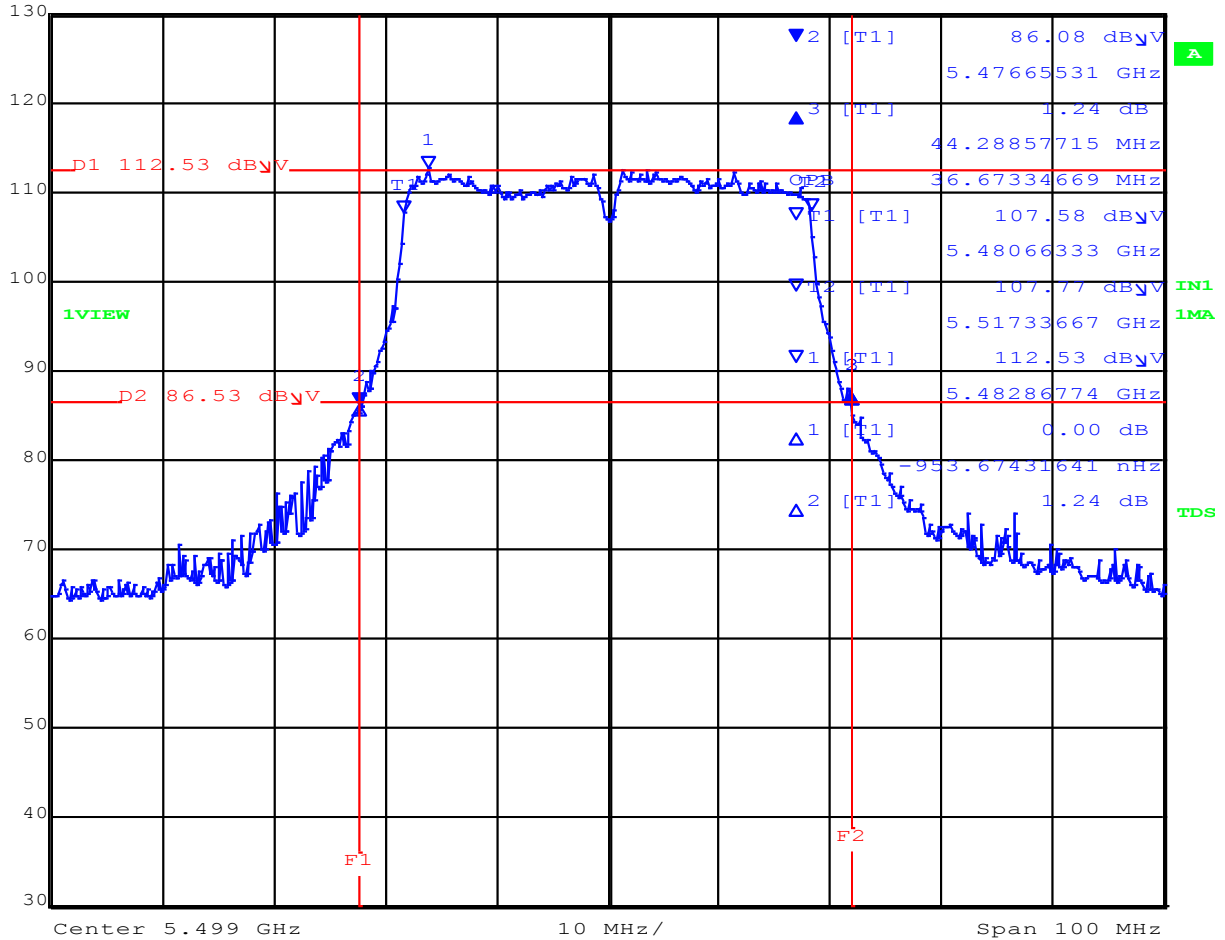
26 dB & 99% BANDWIDTH



Variant: 802.11 40MHz, Channel: 5499.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	500 kHz	RF Att	0 dB
130 dB μ V	1.24 dB	VBW	3 MHz		
87 dB μ V	44.28857715 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 13:00:56

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5480.66333 MHz : 107.58 dB μ V T2 : 5517.33667 MHz : 107.77 dB μ V OBW : 36.67 MHz	Measured 26 dB Bandwidth: 43.29 MHz Measured 99% Bandwidth: 36.67 MHz

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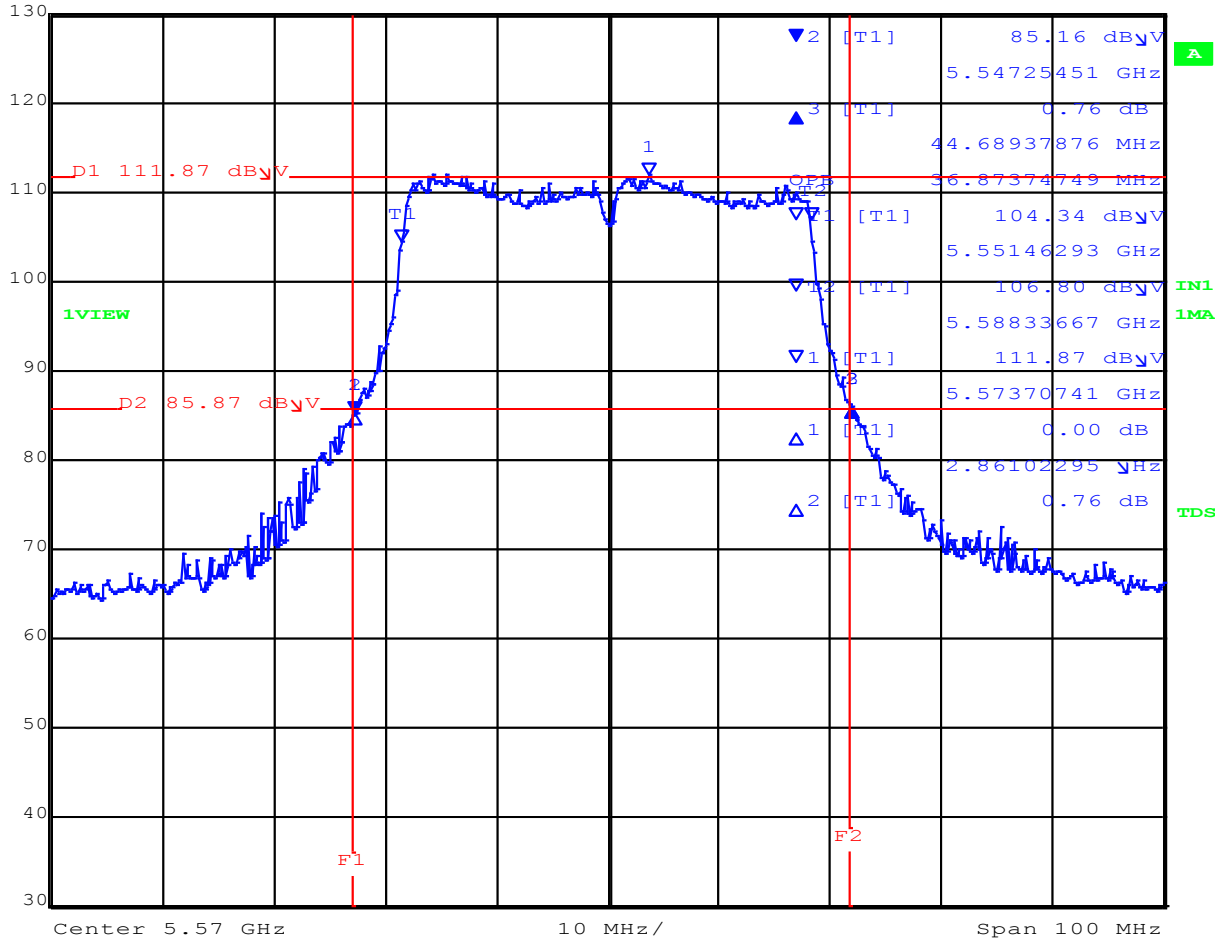
26 dB & 99% BANDWIDTH



Variant: 802.11 40MHz, Channel: 5570.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	500 kHz	RF Att	0 dB
130 dB μ V	0.76 dB	VBW	3 MHz		
87 dB μ V	44.68937876 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 13:05:04

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5551.46293 MHz : 104.34 dB μ V T2 : 5588.33667 MHz : 106.80 dB μ V OBW : 36.87 MHz	Measured 26 dB Bandwidth: 44.69 MHz Measured 99% Bandwidth: 36.87 MHz

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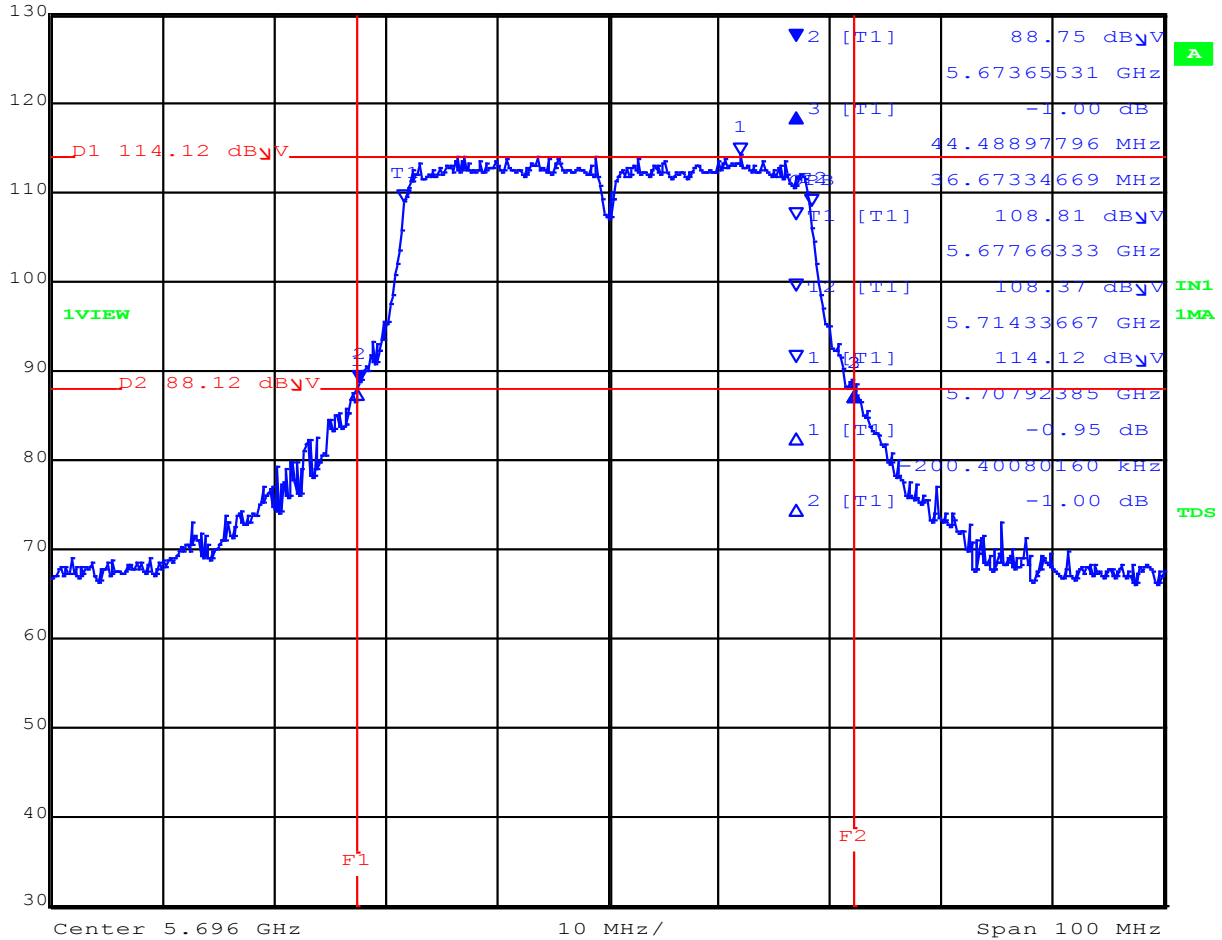
26 dB & 99% BANDWIDTH



Variant: 802.11 40MHz, Channel: 5696.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	500 kHz	RF Att	0 dB
130 dB μ V	-1.00 dB	VBW	3 MHz		
87 dB μ V	44.48897796 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 13:08:33

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5677.66333 MHz : 108.81 dB μ V T2 : 5714.33667 MHz : 108.37 dB μ V OBW : 36.67 MHz	Measured 26 dB Bandwidth: 44.49 MHz Measured 99% Bandwidth: 36.67 MHz

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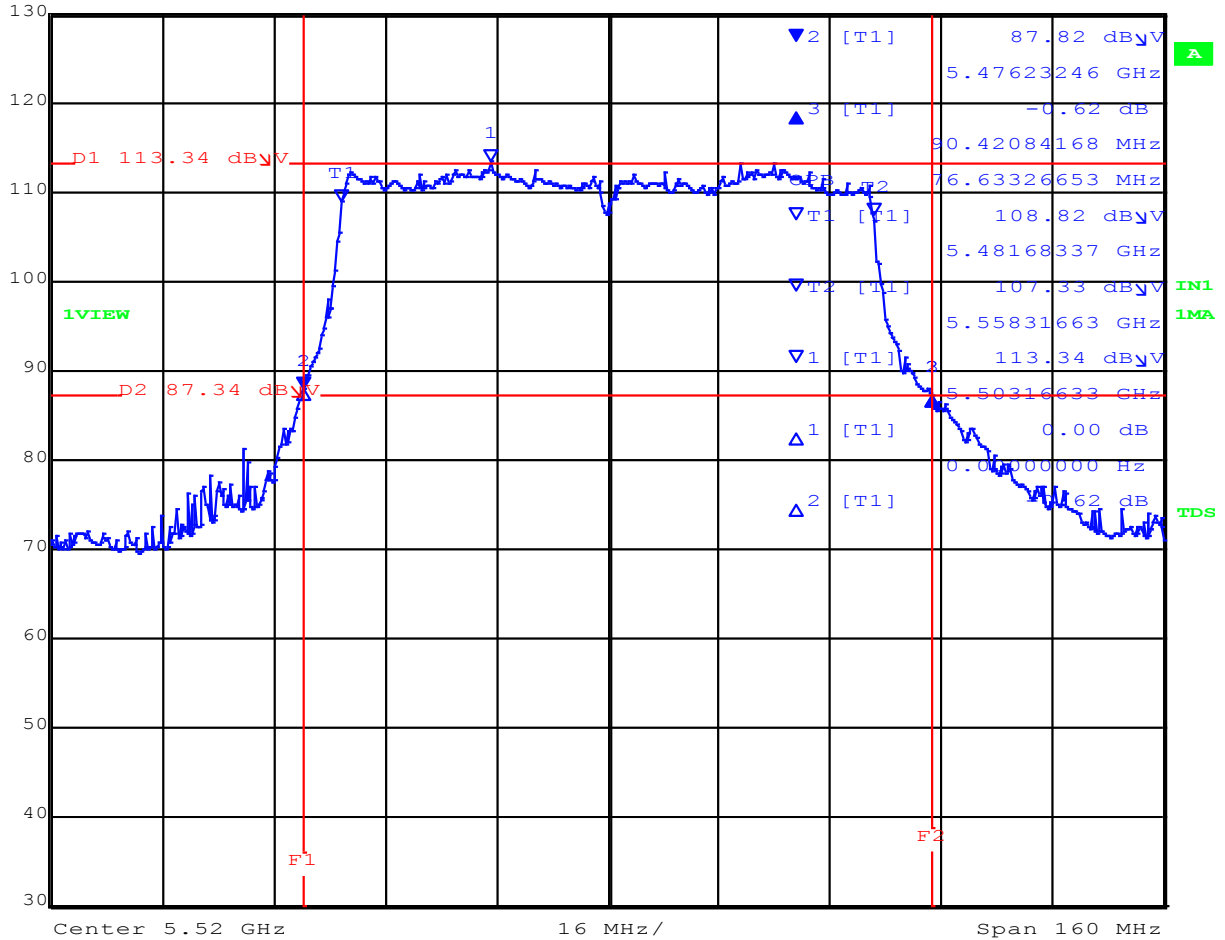
26 dB & 99% BANDWIDTH



Variant: 802.11 80MHz, Channel: 5520.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	1 MHz	RF Att	0 dB
130 dB μ V	-0.62 dB	VBW	3 MHz		
87 dB μ V	90.42084168 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 13:12:26

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5481.68337 MHz : 108.82 dB μ V T2 : 5558.31663 MHz : 107.33 dB μ V OBW : 76.63 MHz	Measured 26 dB Bandwidth: 90.42 MHz Measured 99% Bandwidth: 76.63 MHz

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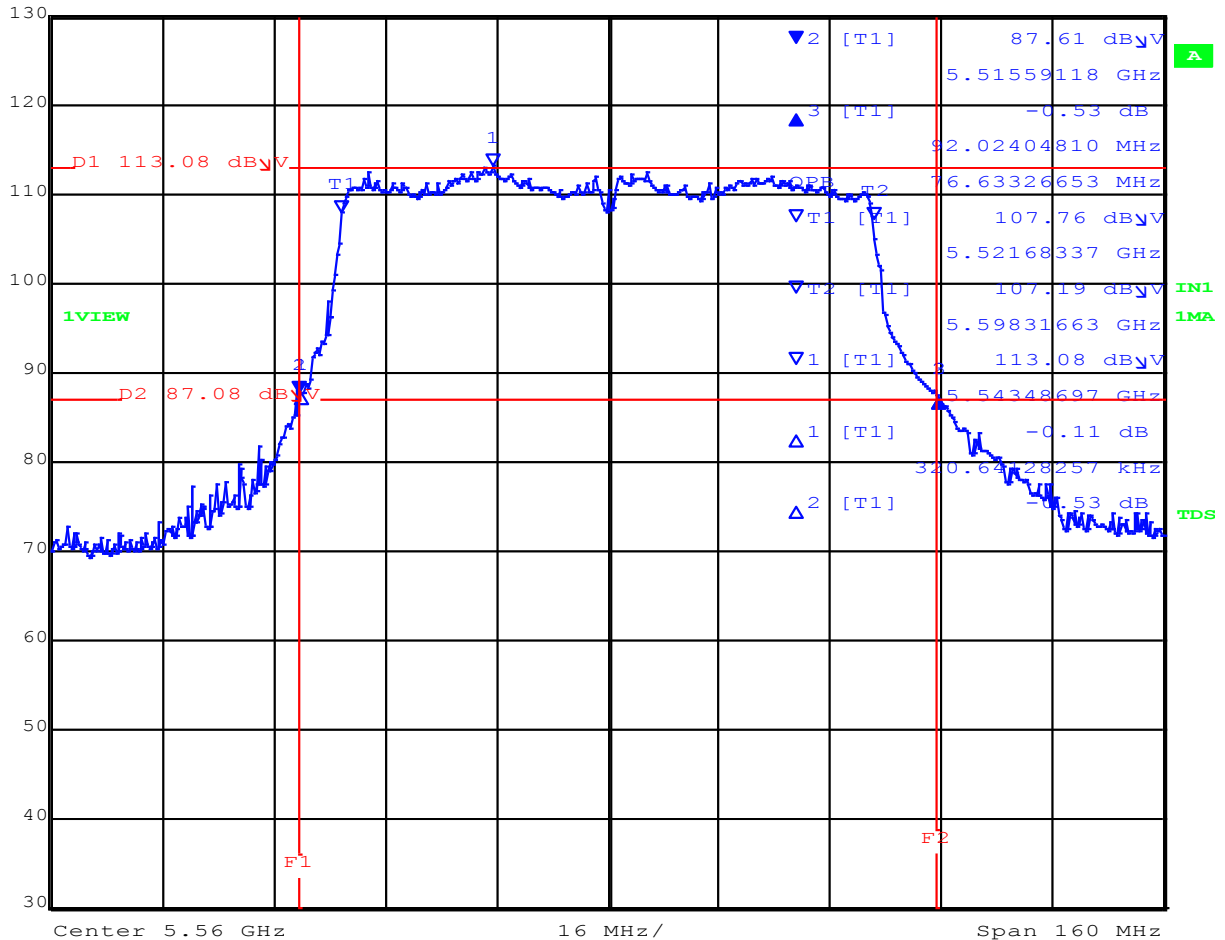
26 dB & 99% BANDWIDTH



Variant: 802.11 80MHz, Channel: 5560.00 MHz, Temp: 20, Voltage: 120 Vac



Max/Ref Lvl	Delta 3 [T1]	RBW	1 MHz	RF Att	0 dB
130 dB μ V	-0.53 dB	VBW	3 MHz		
87 dB μ V	92.02404810 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 13:16:14

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5521.68337 MHz : 107.76 dB μ V T2 : 5598.31663 MHz : 107.19 dB μ V OBW : 76.63 MHz	Measured 26 dB Bandwidth: 92.02 MHz Measured 99% Bandwidth: 76.63 MHz

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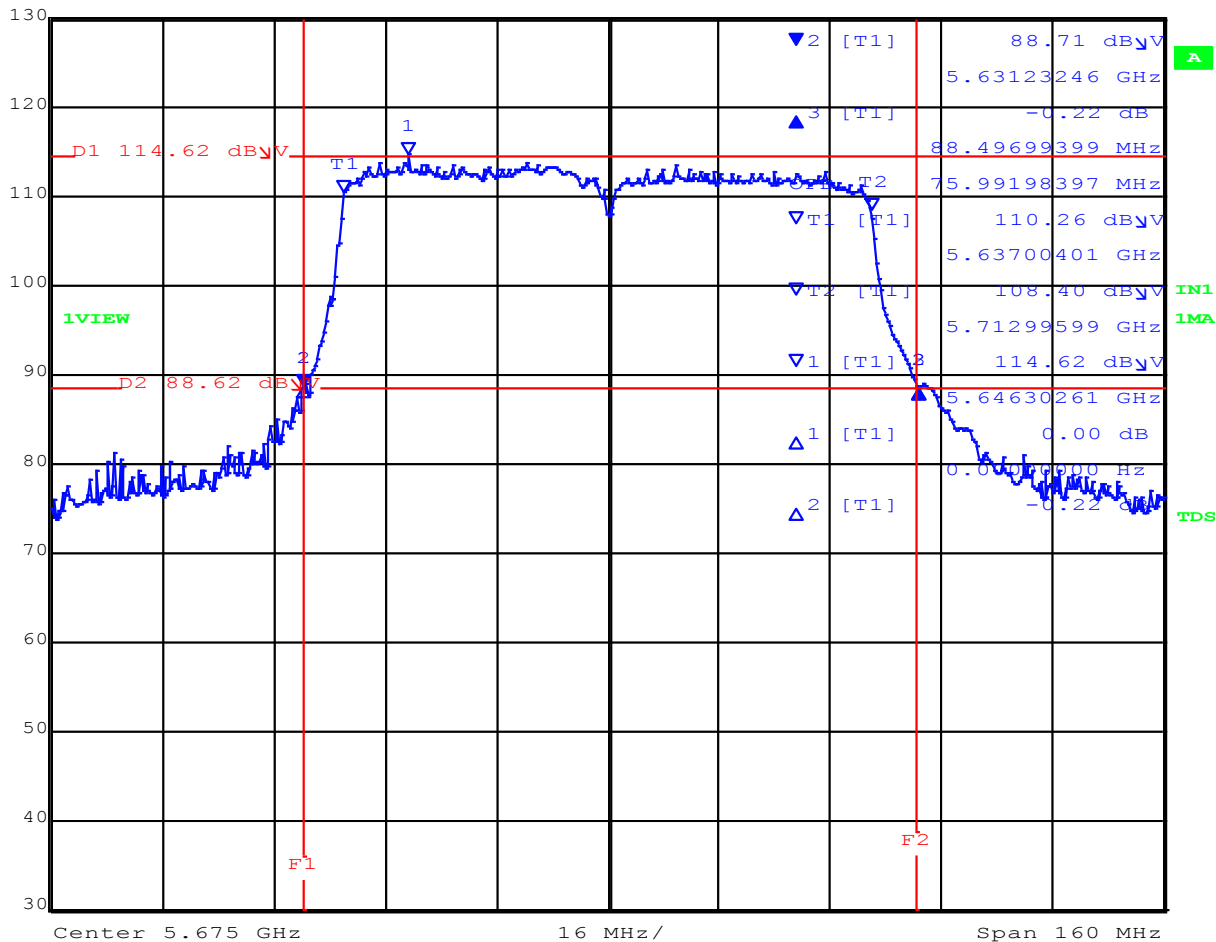
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26 dB & 99% BANDWIDTH



Variant: 802.11 80MHz, Channel: 5675.00 MHz, Temp: 20, Voltage: 120 Vac

	Max/Ref Lvl	Delta 3 [T1]	RBW	1 MHz	RF Att	0 dB
	130 dB μ V	-0.22 dB	VBW	3 MHz		
	87 dB μ V	88.49699399 MHz	SWT	5 ms	Unit	dB μ V



Date: 25.OCT.2017 13:19:10

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 0 Trace Mode = MAX HOLD	T1 : 5637.00401 MHz : 110.26 dB μ V T2 : 5712.99599 MHz : 108.40 dB μ V OBW : 76.00 MHz	Measured 26 dB Bandwidth: 88.50 MHz Measured 99% Bandwidth: 76.00 MHz

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A.2. Power Spectral Density

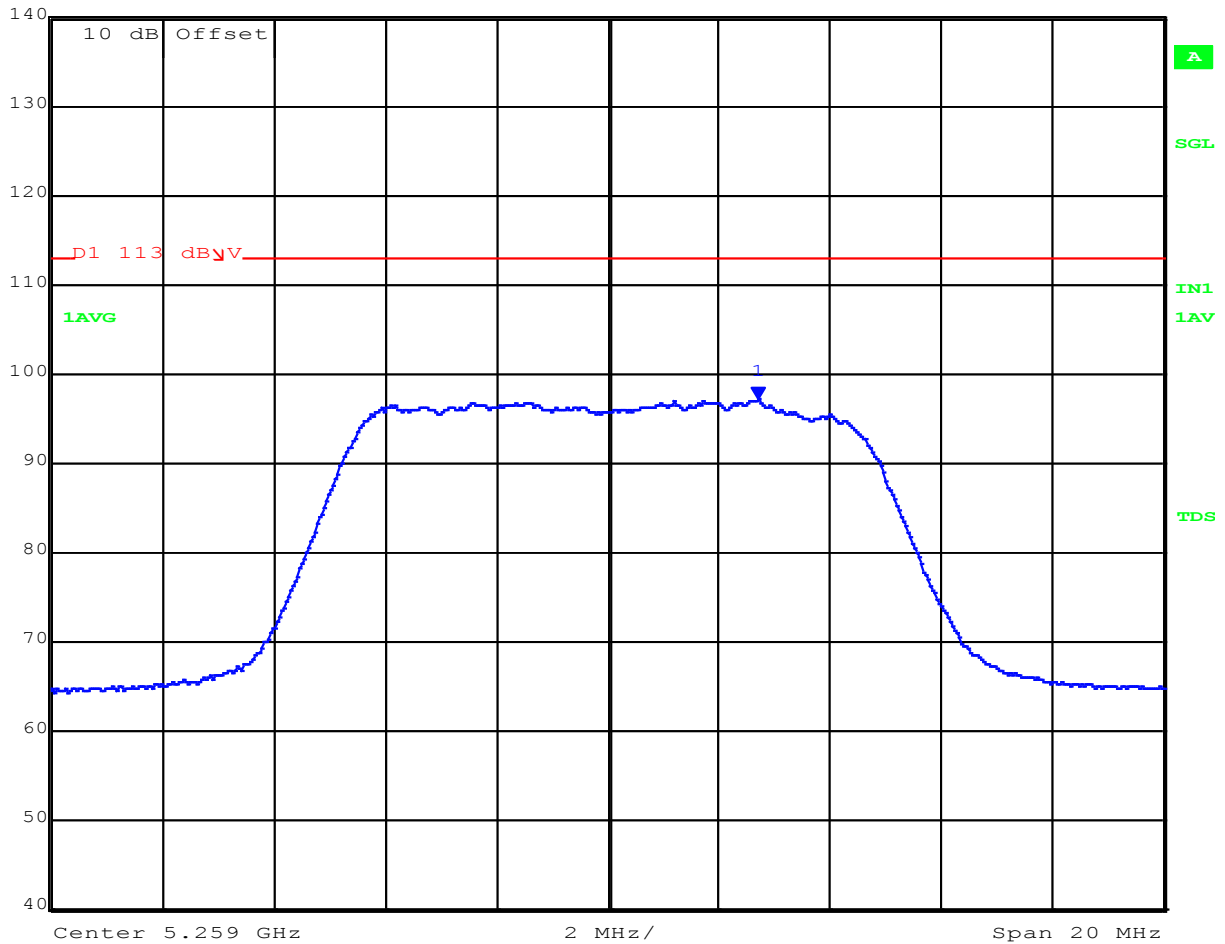


POWER SPECTRAL DENSITY

Variation: 10 MHz, Channel: 5259.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	97.02 dB μ V	VBW	3 MHz		
97 dB μ V	5.26170541 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 12:52:33

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5261.71 MHz : 97.02 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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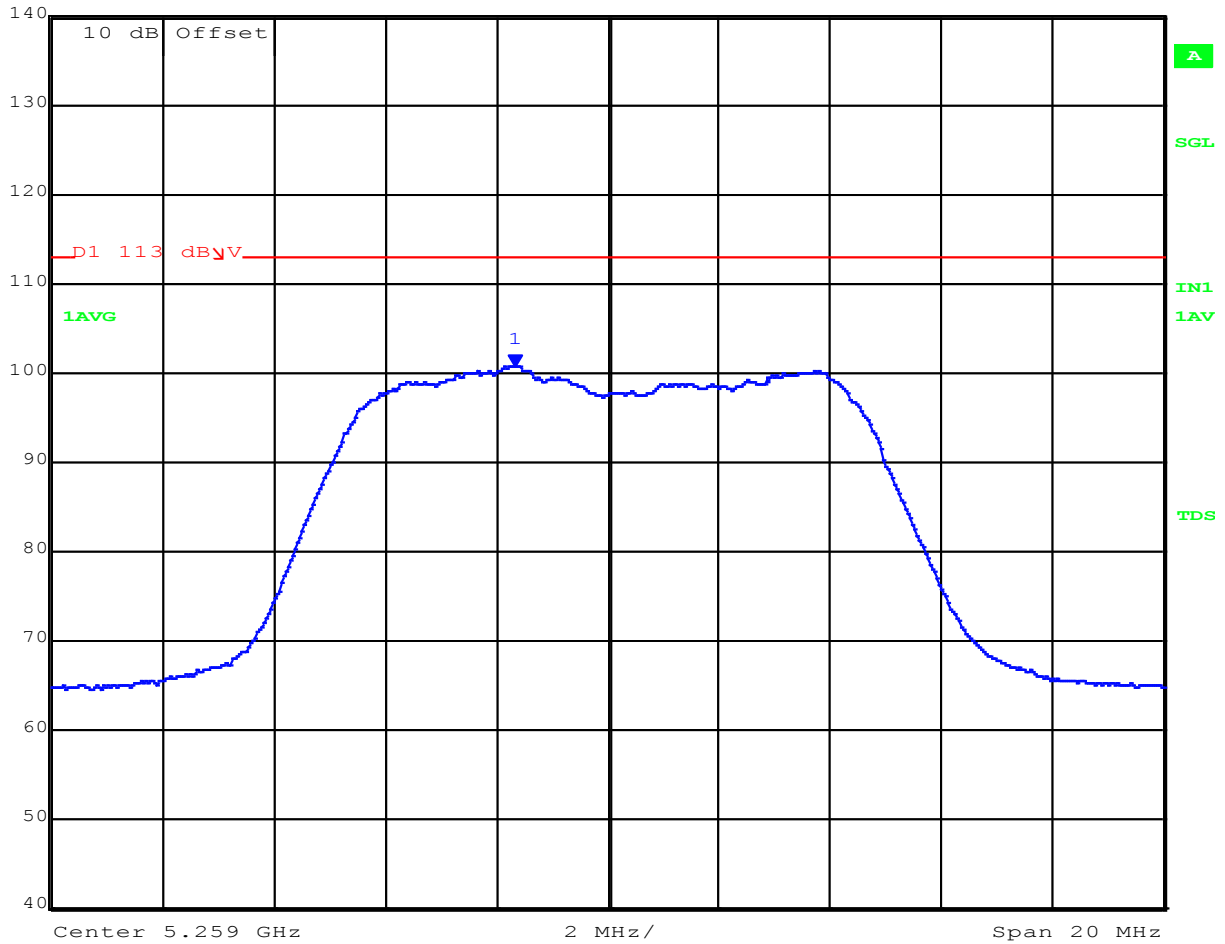
POWER SPECTRAL DENSITY



Variation: 10 MHz, Channel: 5259.00 MHz, Polarity V Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	100.72 dB μ V	VBW	3 MHz		
97 dB μ V	5.25733667 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 12:51:06

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5257.34 MHz :100.72 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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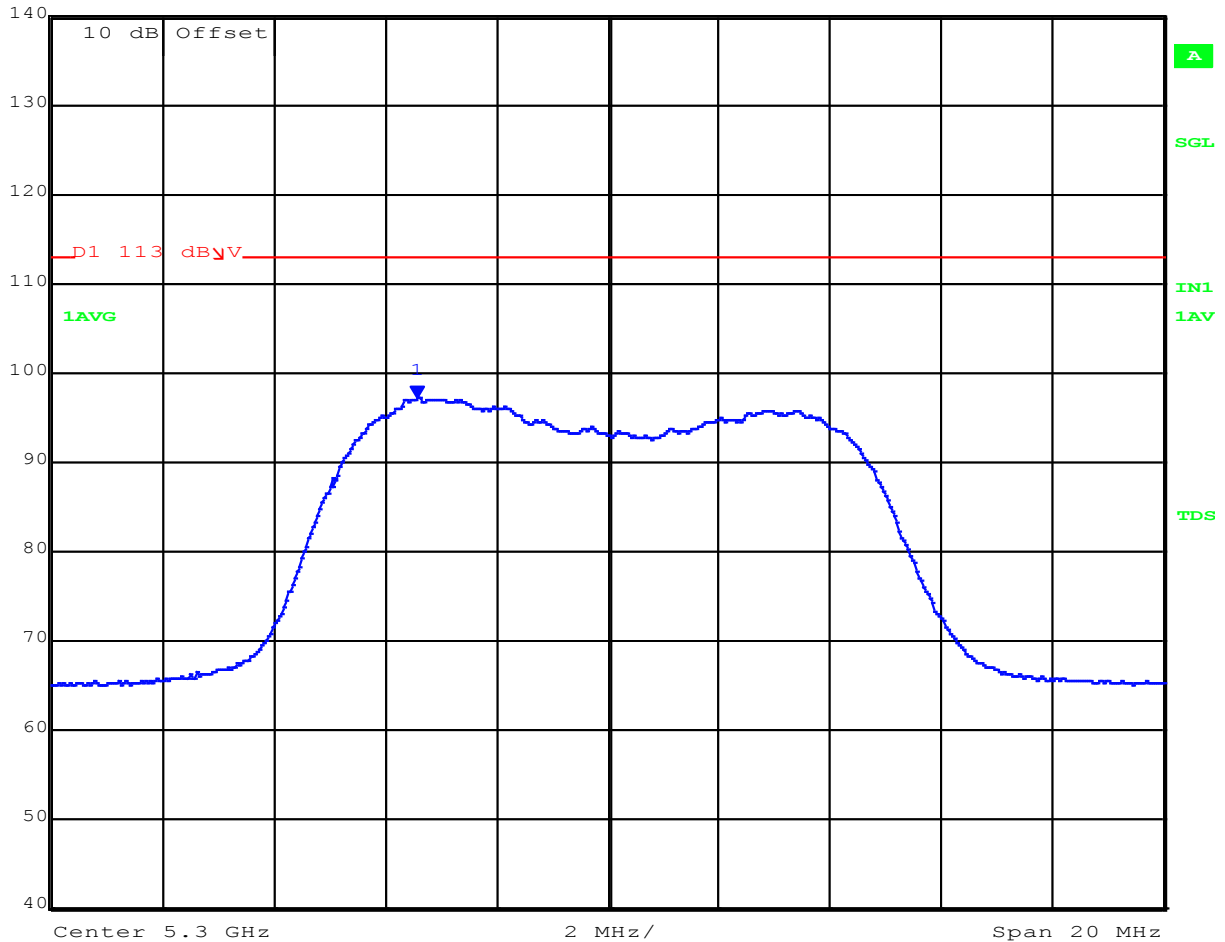
POWER SPECTRAL DENSITY



Variant: 10 MHz, Channel: 5300.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	97.20 dB μ V	VBW	3 MHz		
97 dB μ V	5.29657315 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 13:00:45

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5296.57 MHz : 97.20 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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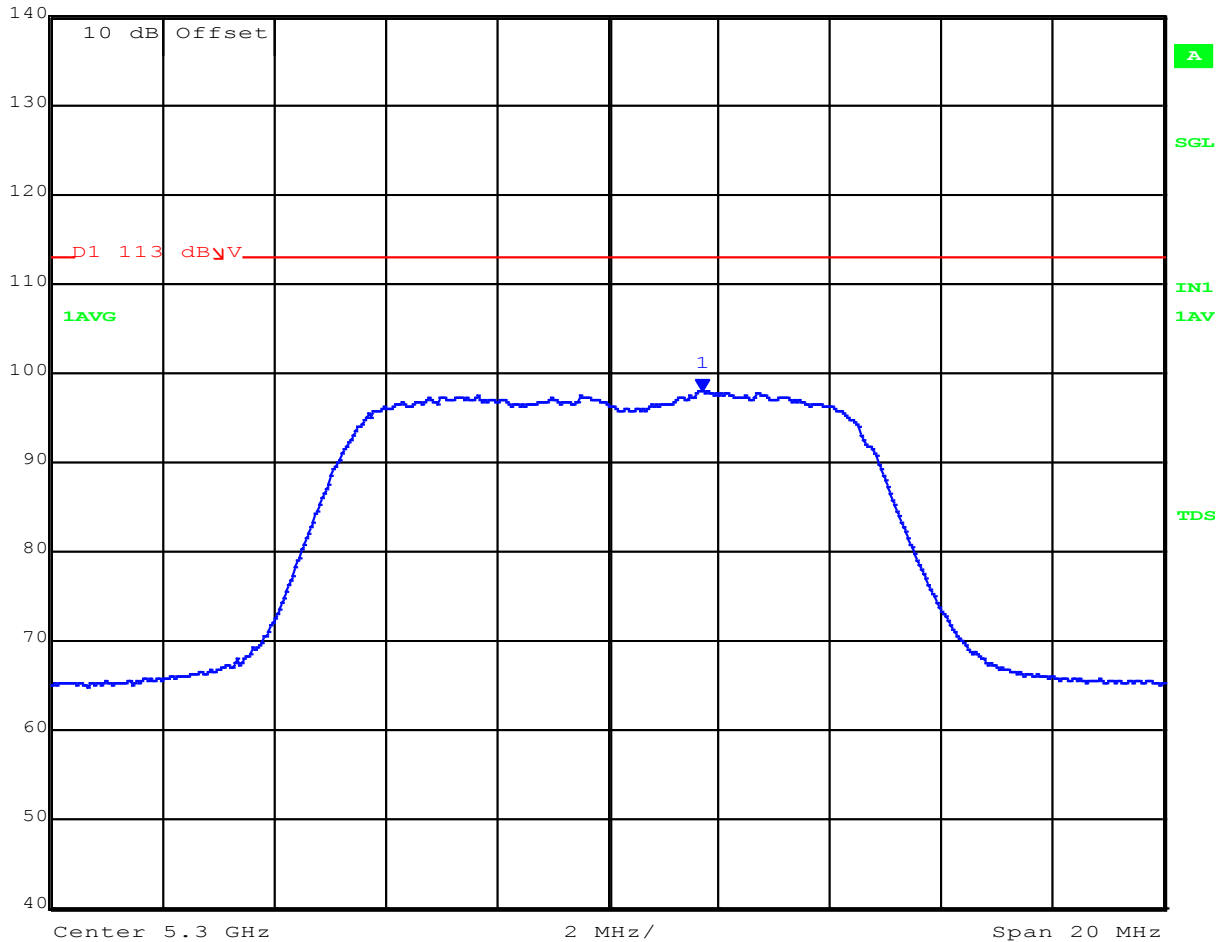
POWER SPECTRAL DENSITY



Variants: 10 MHz, Channel: 5300.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	97.90 dB μ V	VBW	3 MHz		
97 dB μ V	5.30170341 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 13:02:28

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5301.70 MHz : 97.90 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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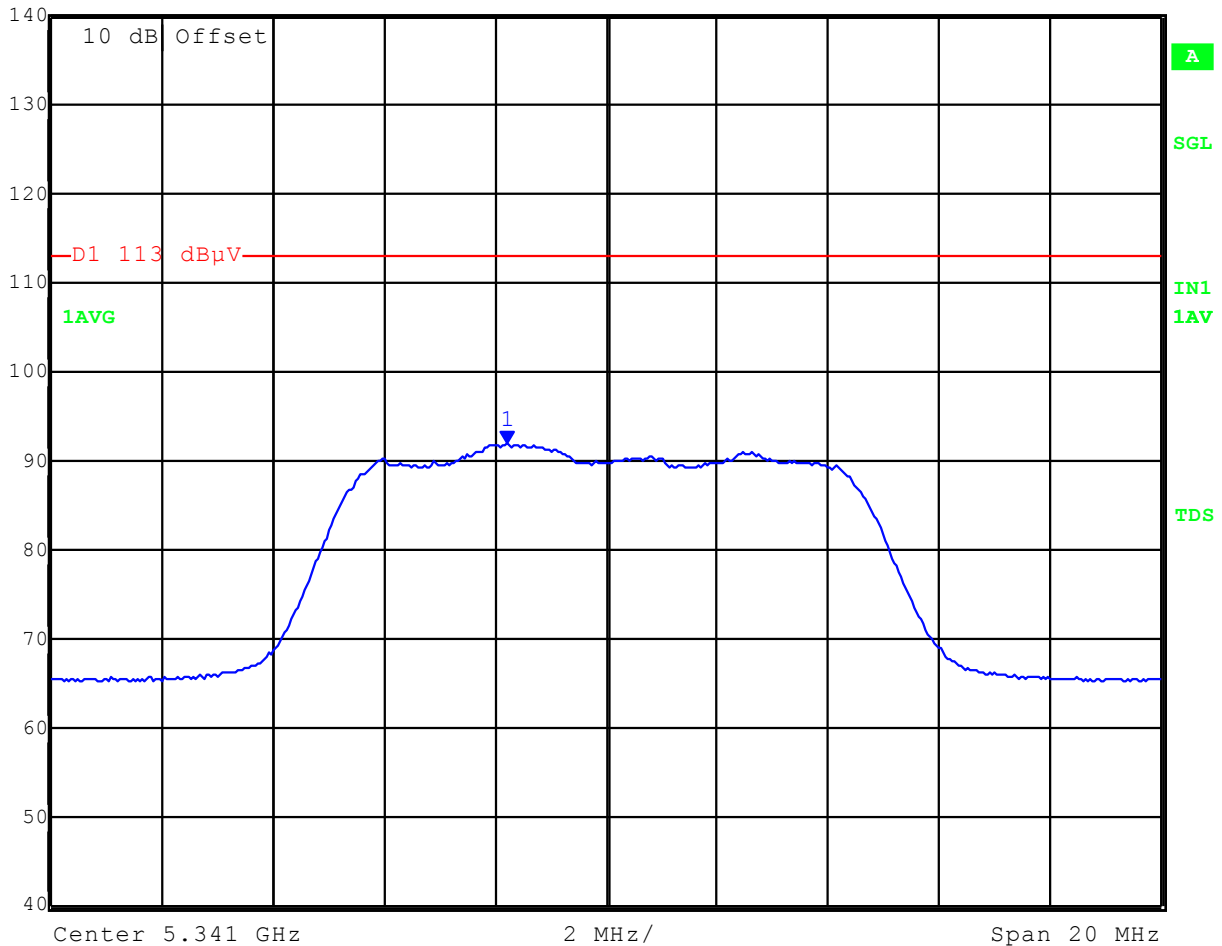
POWER SPECTRAL DENSITY



Variant: 10 MHz, Channel: 5341.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dBµV	90.32 dBµV	VBW	3 MHz		
97 dBµV	5.33921643 GHz	SWT	5 ms	Unit	dBµV



Date: 24.OCT.2017 13:10:05

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5339.2 MHz : 90.32 dBuV/m	Limit: ≤ 6.00 dBm, 113 dBuVm

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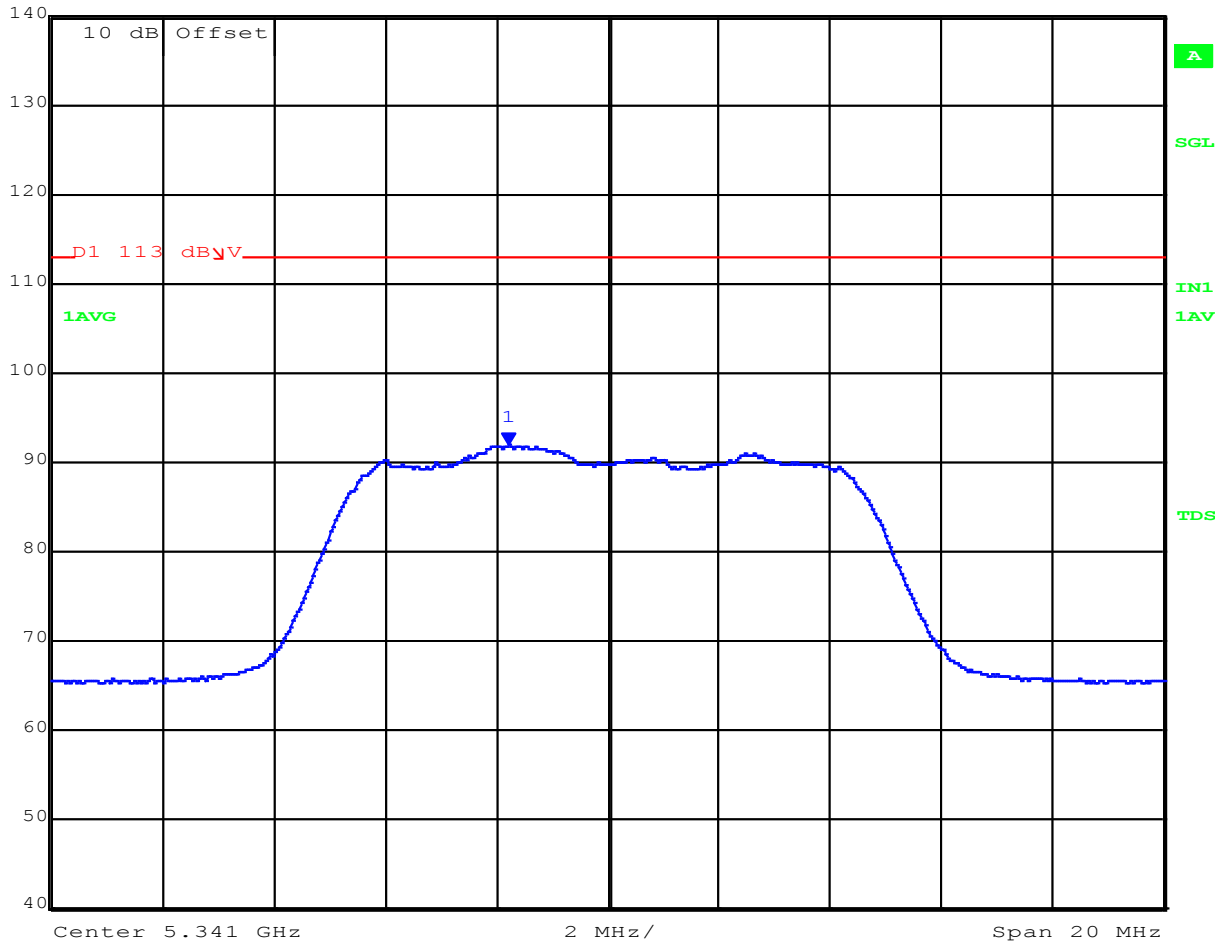
POWER SPECTRAL DENSITY



Variant: 10 MHz, Channel: 5341.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	91.77 dB μ V	VBW	3 MHz		
97 dB μ V	5.33921643 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 13:06:05

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5339.22 MHz : 91.77 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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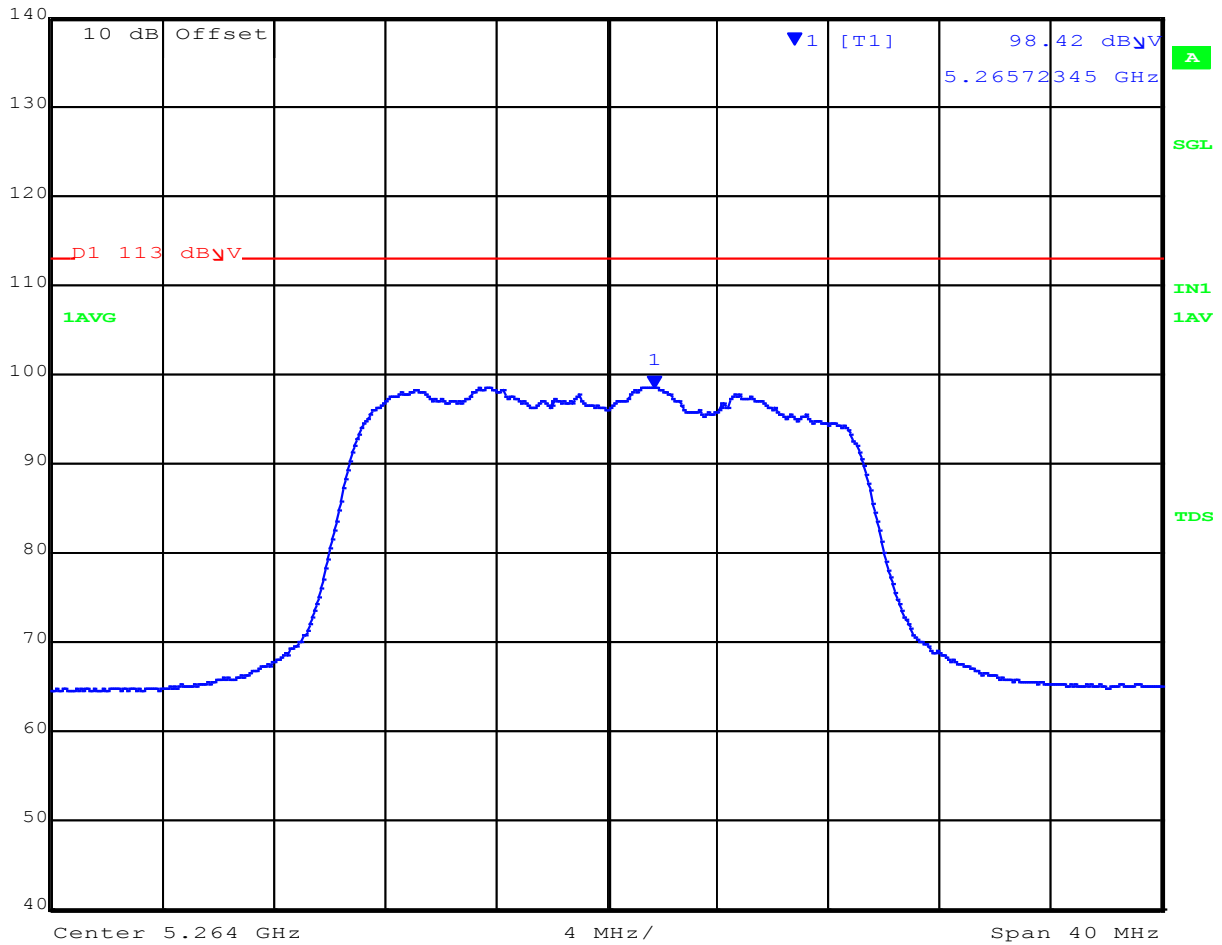
POWER SPECTRAL DENSITY



Variants: 20 MHz, Channel: 5264.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	98.42 dB μ V	VBW	3 MHz		
97 dB μ V	5.26572345 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 13:36:16

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5265.72 MHz : 98.42 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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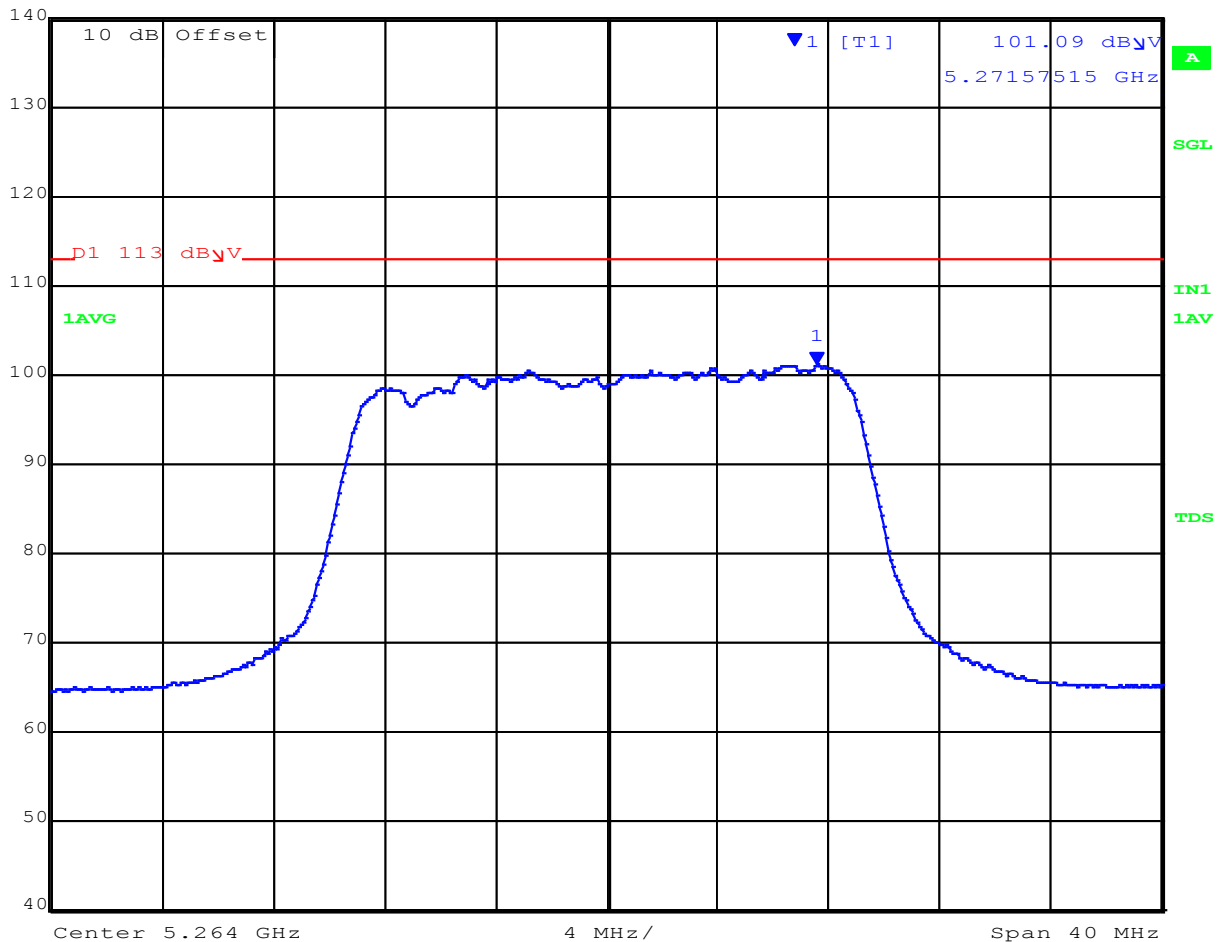
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POWER SPECTRAL DENSITY



Variant: 20 MHz, Channel: 5264.00 MHz, Polarity V Temp: 20, Voltage: 48 Vdc

	Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	140 dB μ V	101.09 dB μ V	VBW	3 MHz		
	97 dB μ V	5.27157515 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 13:34:55

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5271.58 MHz :101.09 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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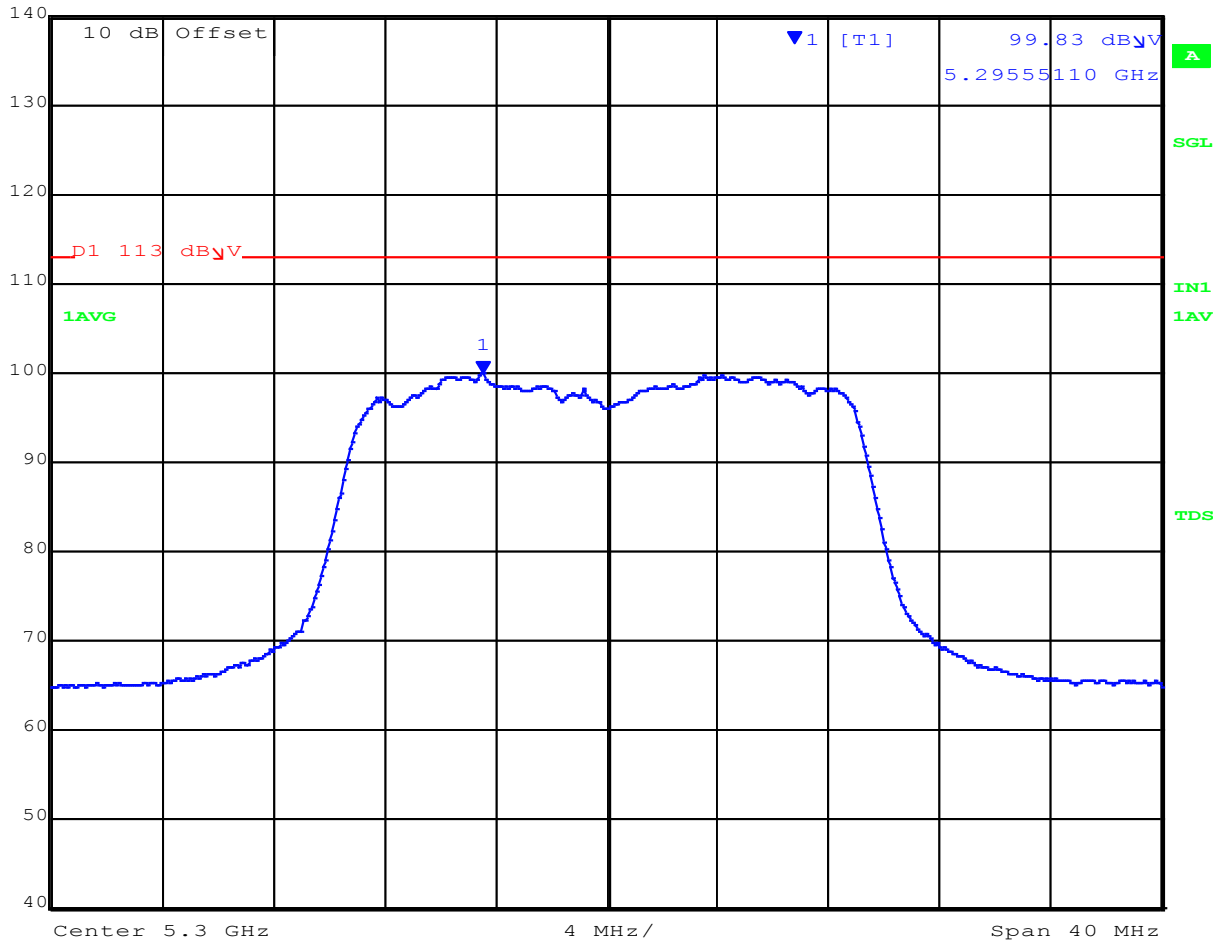
POWER SPECTRAL DENSITY



Variants: 20 MHz, Channel: 5300.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	99.83 dB μ V	VBW	3 MHz		
97 dB μ V	5.29555110 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 13:52:05

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5295.55 MHz : 99.83 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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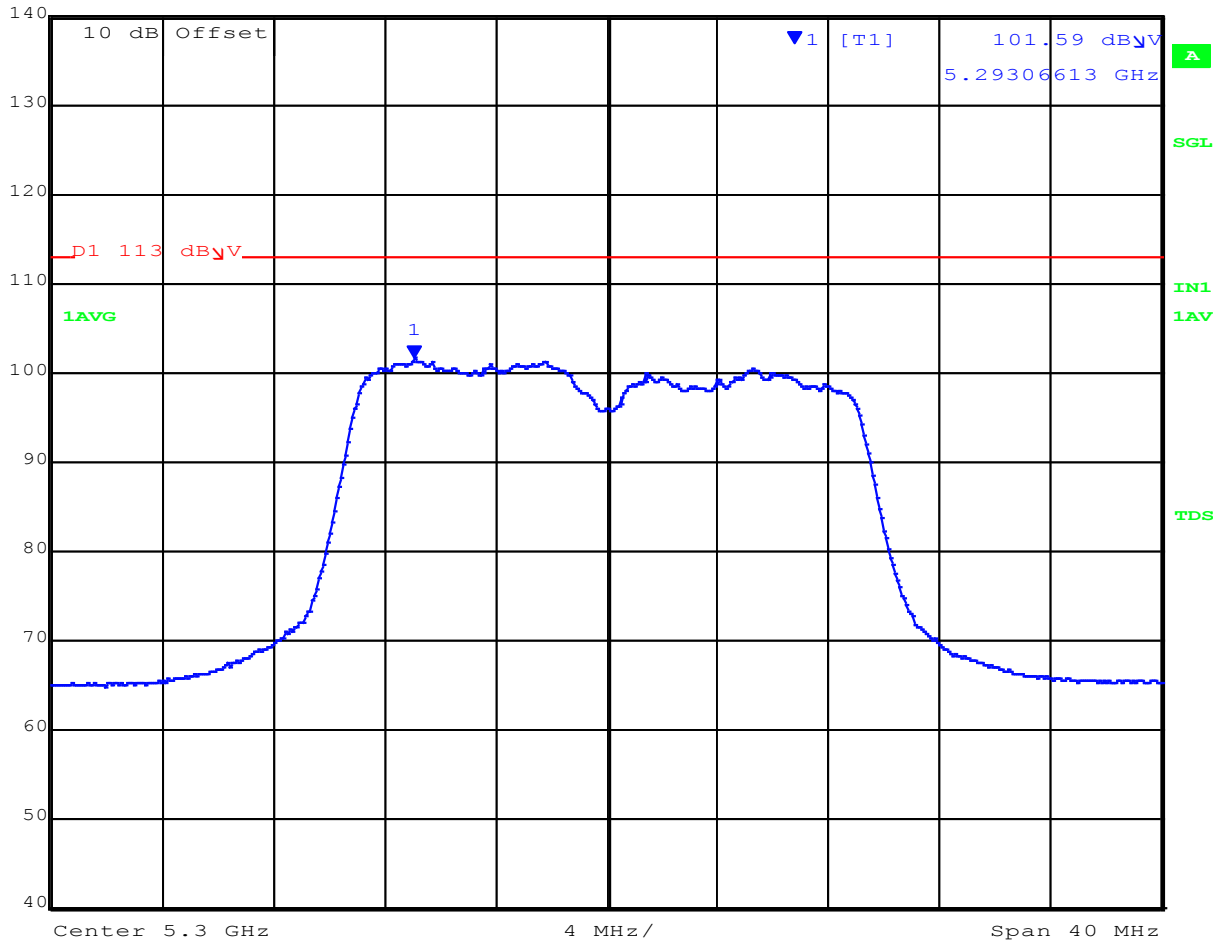
POWER SPECTRAL DENSITY



Variation: 20 MHz, Channel: 5300.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	101.59 dB μ V	VBW	3 MHz		
97 dB μ V	5.29306613 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 13:56:03

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5293.07 MHz : 101.59 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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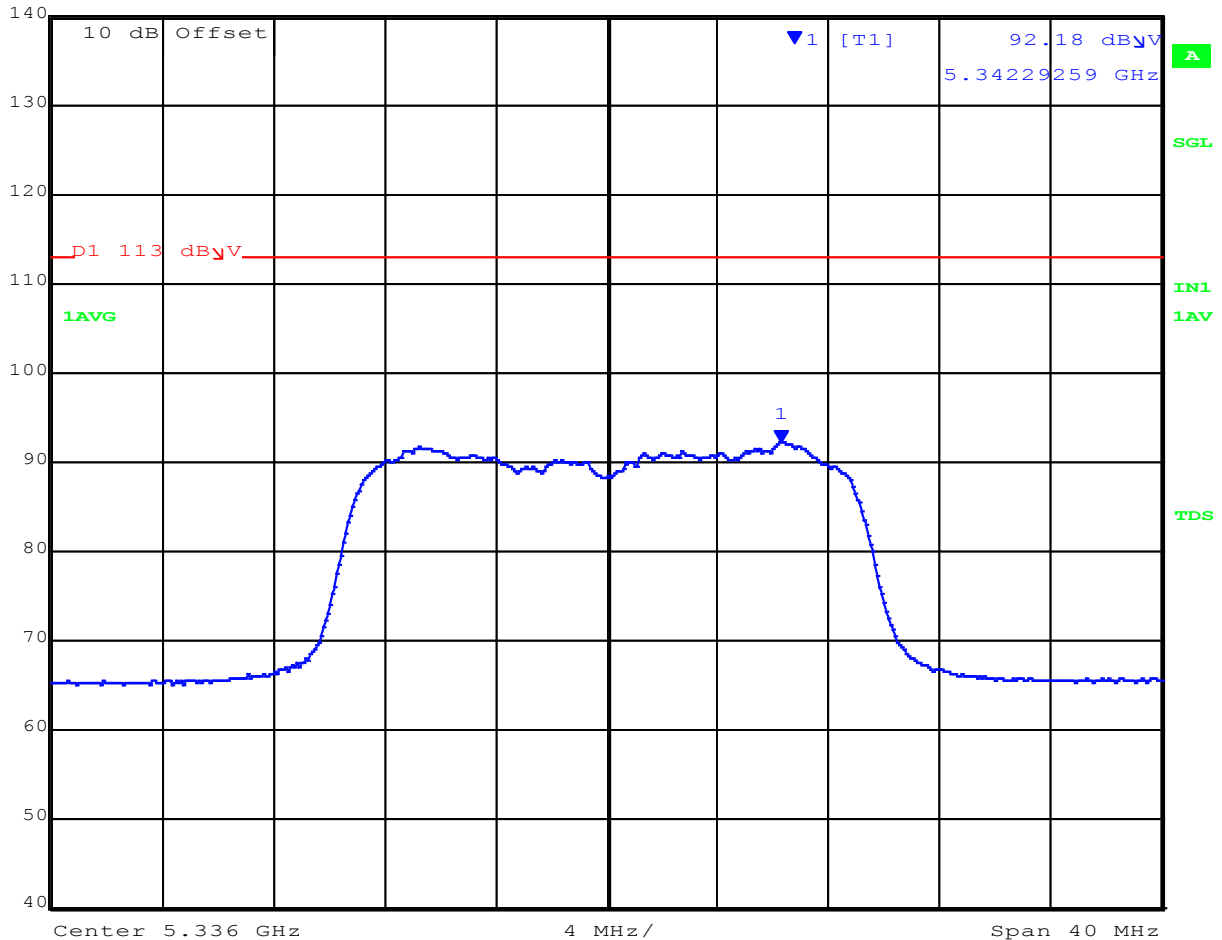
POWER SPECTRAL DENSITY



Variant: 20 MHz, Channel: 5336.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	92.18 dB μ V	VBW	3 MHz		
97 dB μ V	5.34229259 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 13:58:07

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5342.29 MHz : 92.18 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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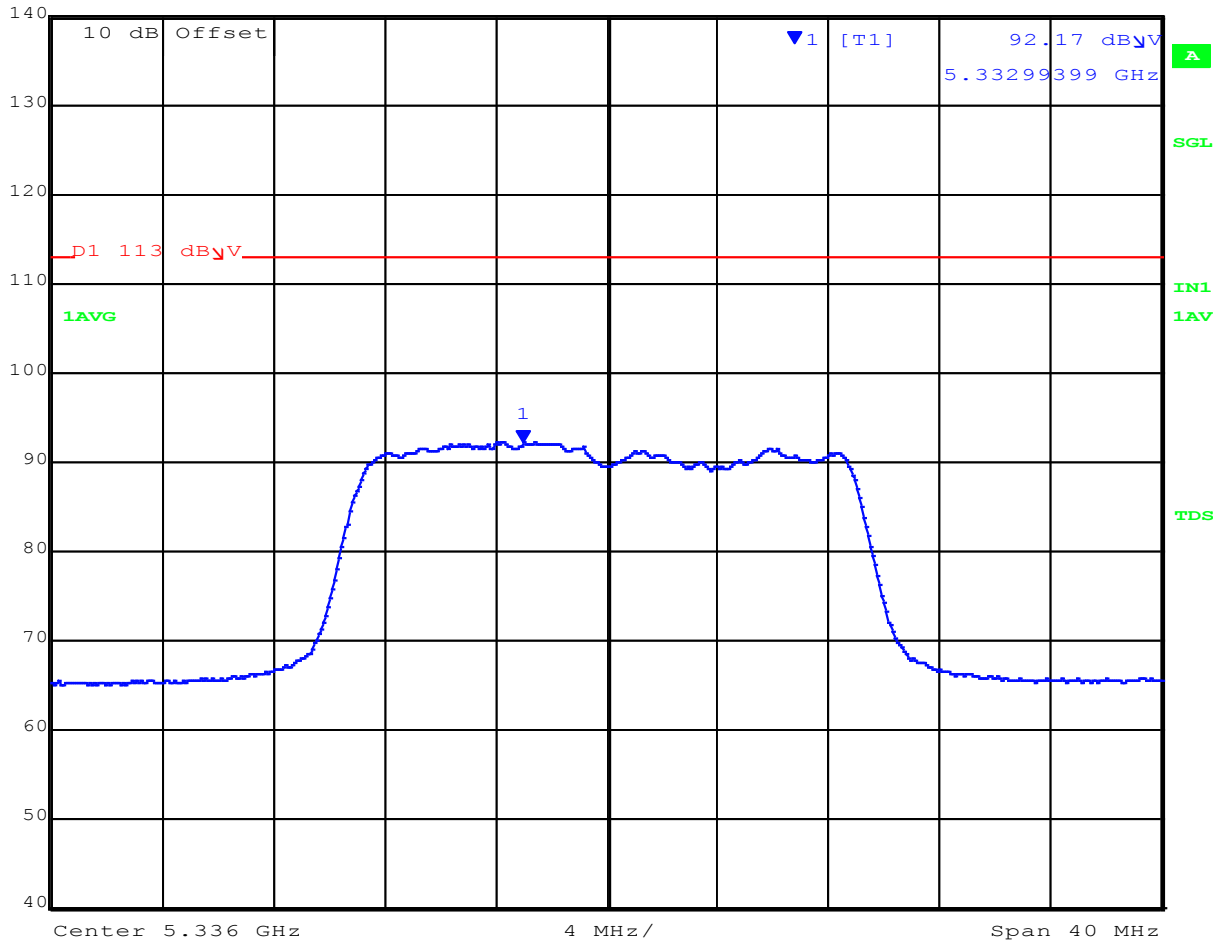
POWER SPECTRAL DENSITY



Variant: 20 MHz, Channel: 5336.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	92.17 dB μ V	VBW	3 MHz		
97 dB μ V	5.33299399 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 13:57:13

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5332.99 MHz : 92.17 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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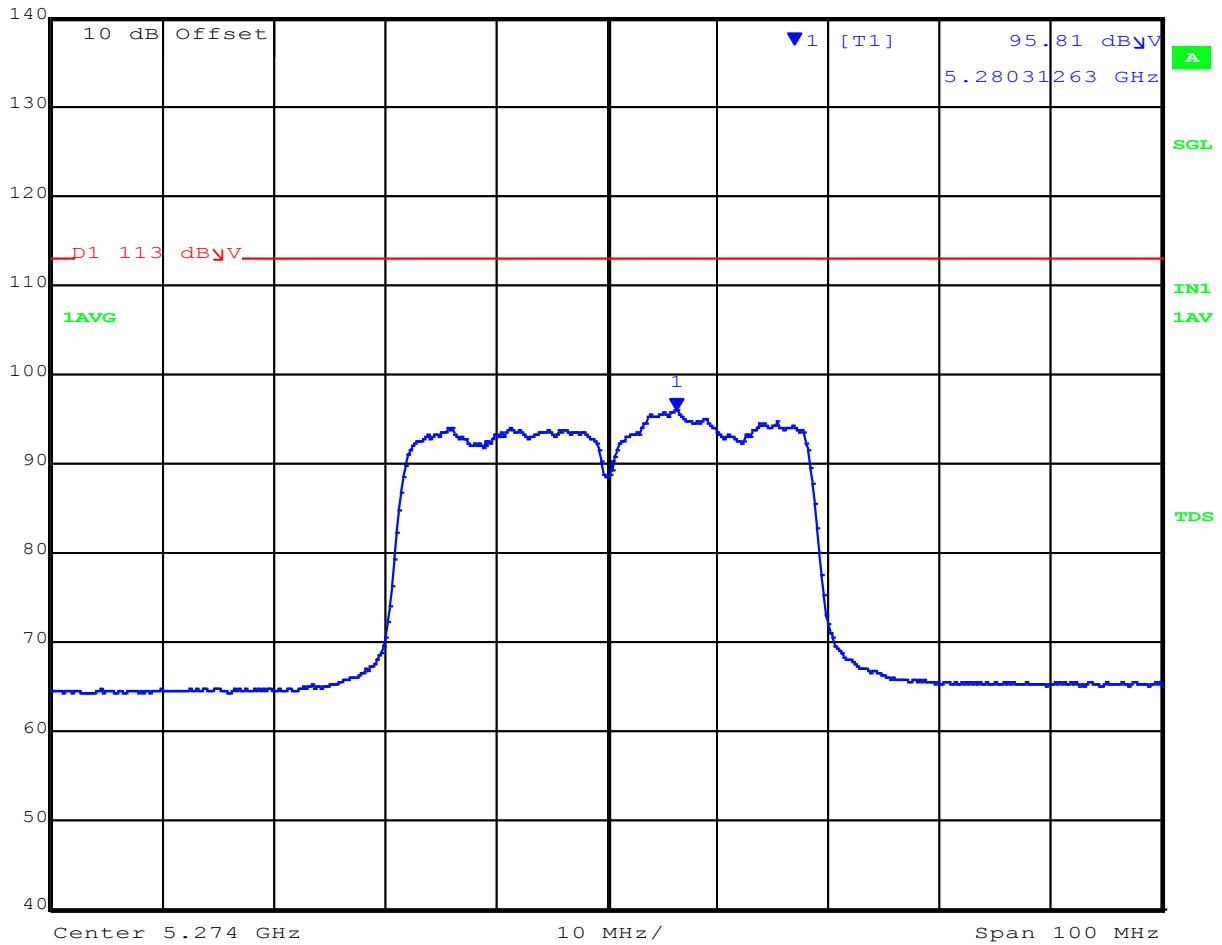
POWER SPECTRAL DENSITY



Variant: 40 MHz, Channel: 5274.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	95.81 dB μ V	VBW	3 MHz		
97 dB μ V	5.28031263 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 13:59:45

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5280.31 MHz : 95.81 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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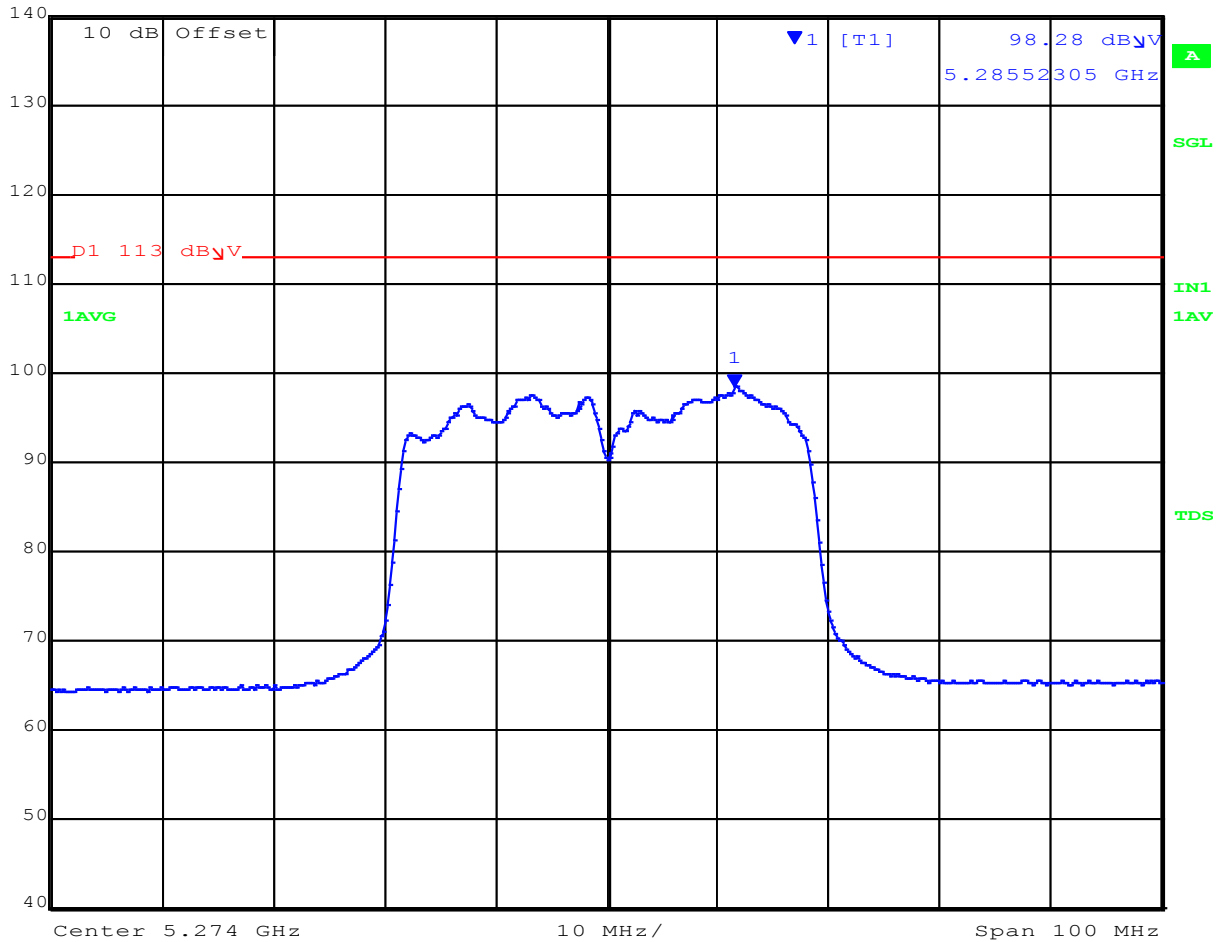
POWER SPECTRAL DENSITY



Variat: 40 MHz, Channel: 5274.00 MHz, Polarity V Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	98.28 dB μ V	VBW	3 MHz		
97 dB μ V	5.28552305 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:00:42

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5285.52 MHz :98.28 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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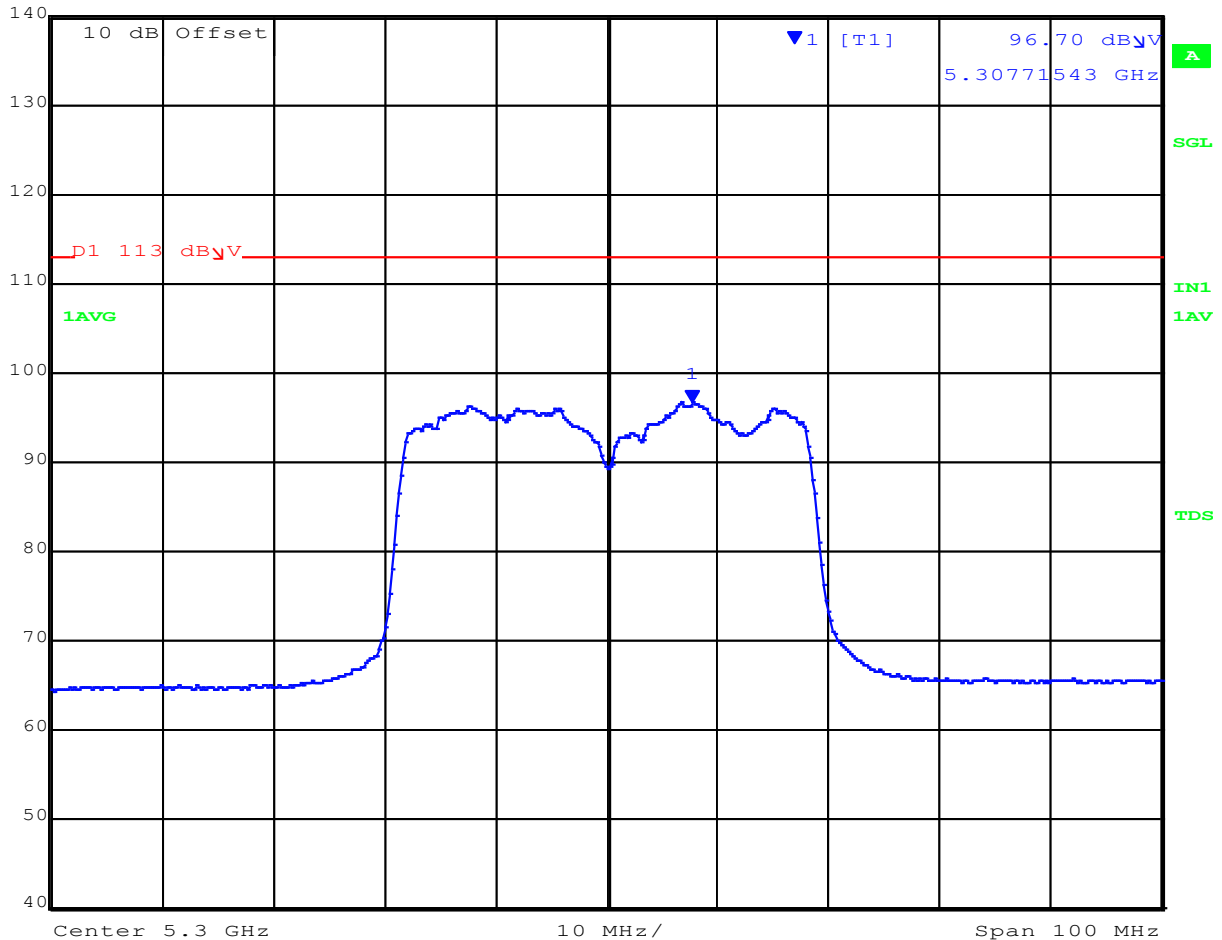
Title: RADWIN 2000 JET, RADWIN 5000 JET
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POWER SPECTRAL DENSITY



Variation: 40 MHz, Channel: 5300.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

	Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	140 dBμV	96.70 dBμV	VBW	3 MHz		
	97 dBμV	5.30771543 GHz	SWT	5 ms	Unit	dBμV



Date: 24.OCT.2017 14:02:52

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5307.72 MHz : 96.70 dBuV/m	Limit: ≤ 6.00 dBm, 113 dBuVm

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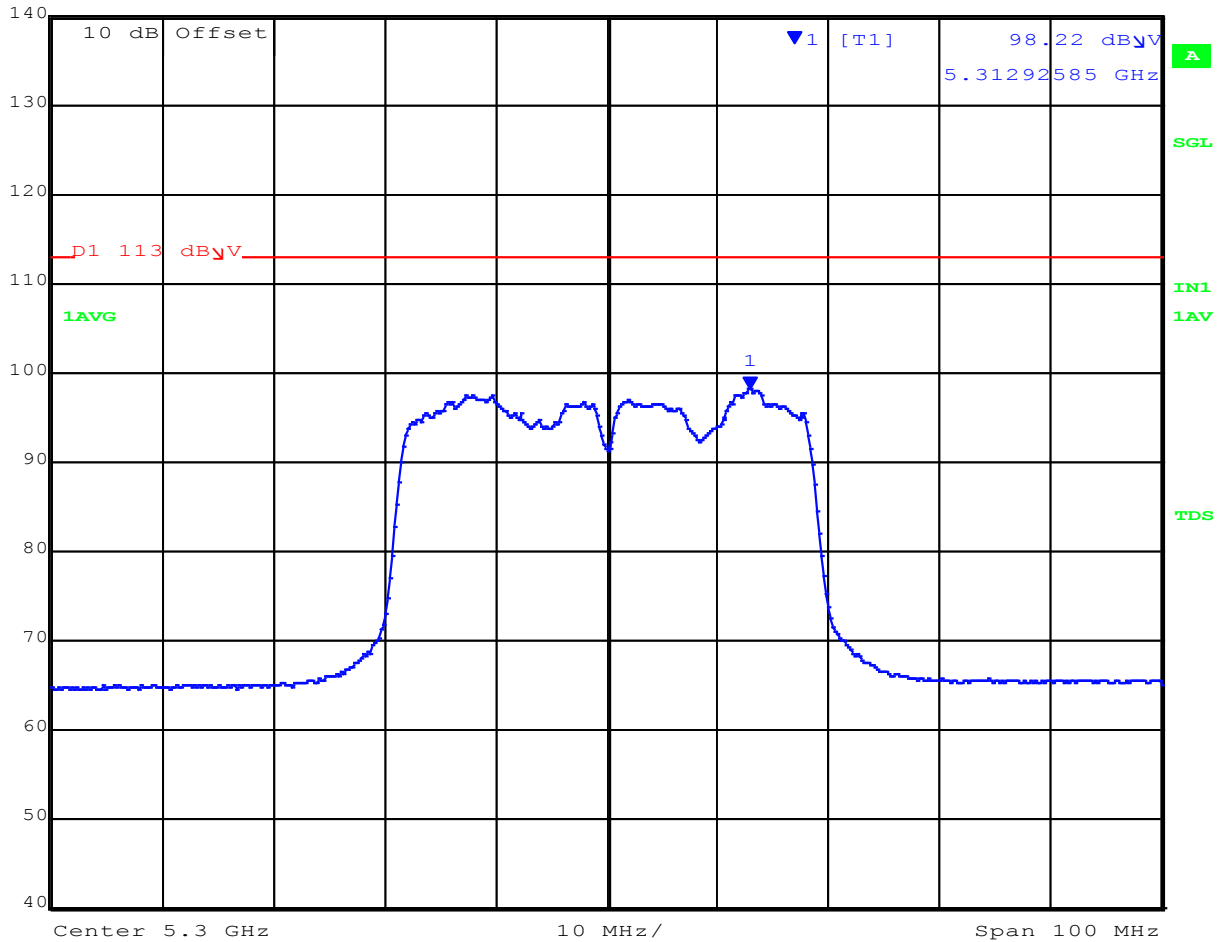
POWER SPECTRAL DENSITY



Variation: 40 MHz, Channel: 5300.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	98.22 dB μ V	VBW	3 MHz		
97 dB μ V	5.31292585 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:01:53

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5312.92 MHz : 98.22 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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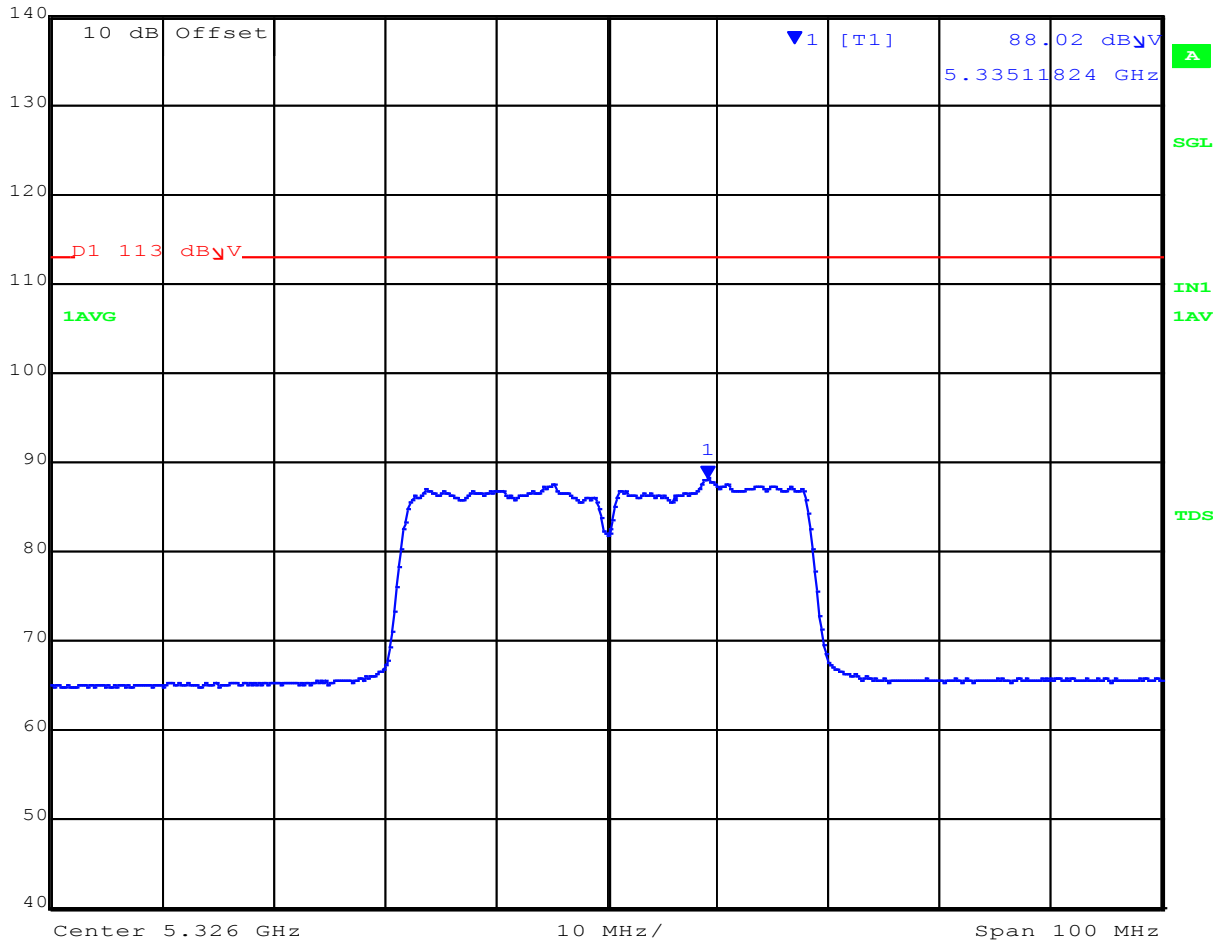
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POWER SPECTRAL DENSITY



Variant: 40 MHz, Channel: 5326.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

	Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	140 dB μ V	88.02 dB μ V	VBW	3 MHz		
	97 dB μ V	5.33511824 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:04:17

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5335.12 MHz : 88.02 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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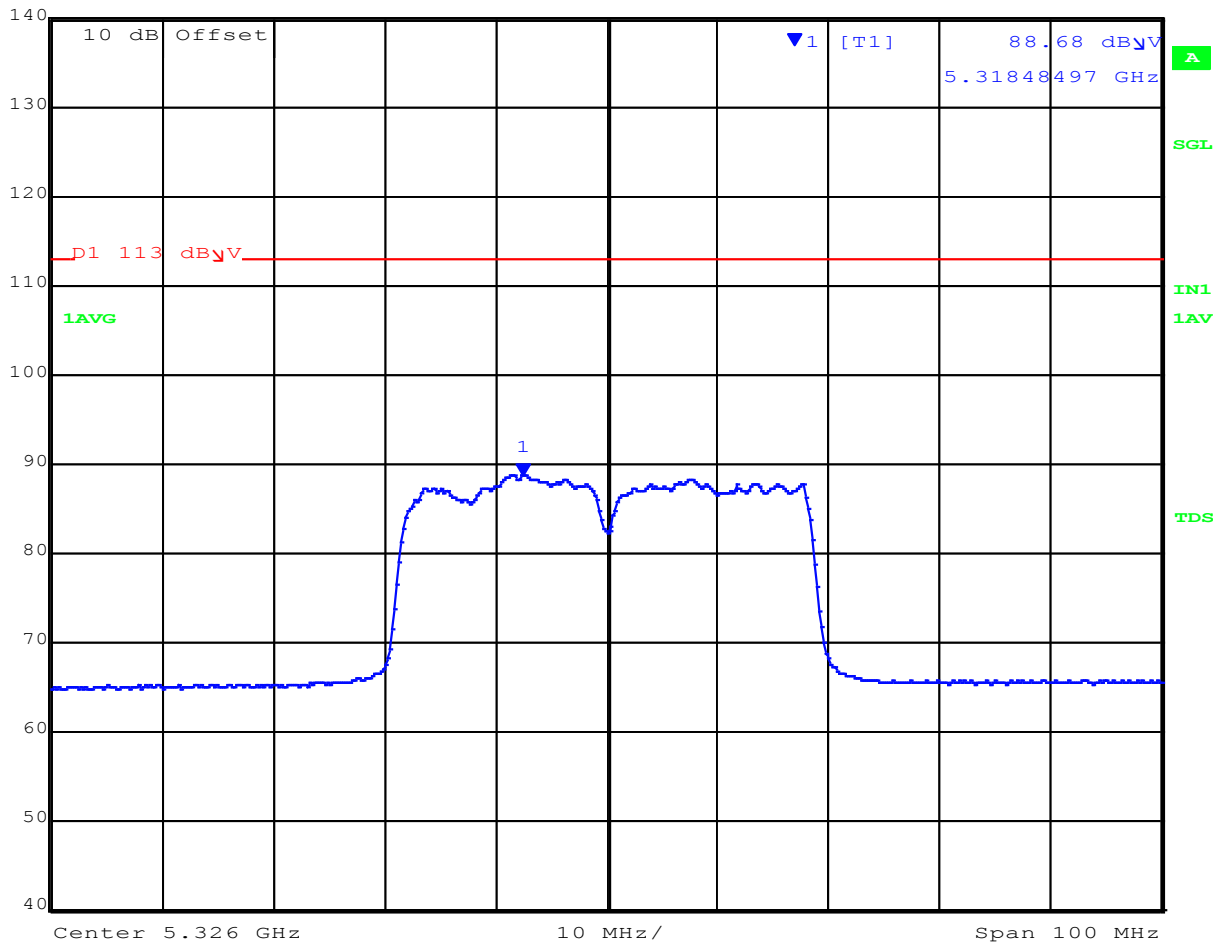
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POWER SPECTRAL DENSITY



Variat: 40 MHz, Channel: 5326.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

	Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	140 dB μ V	88.68 dB μ V	VBW	3 MHz		
	97 dB μ V	5.31848497 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:05:19

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5318.48 MHz : 88.68 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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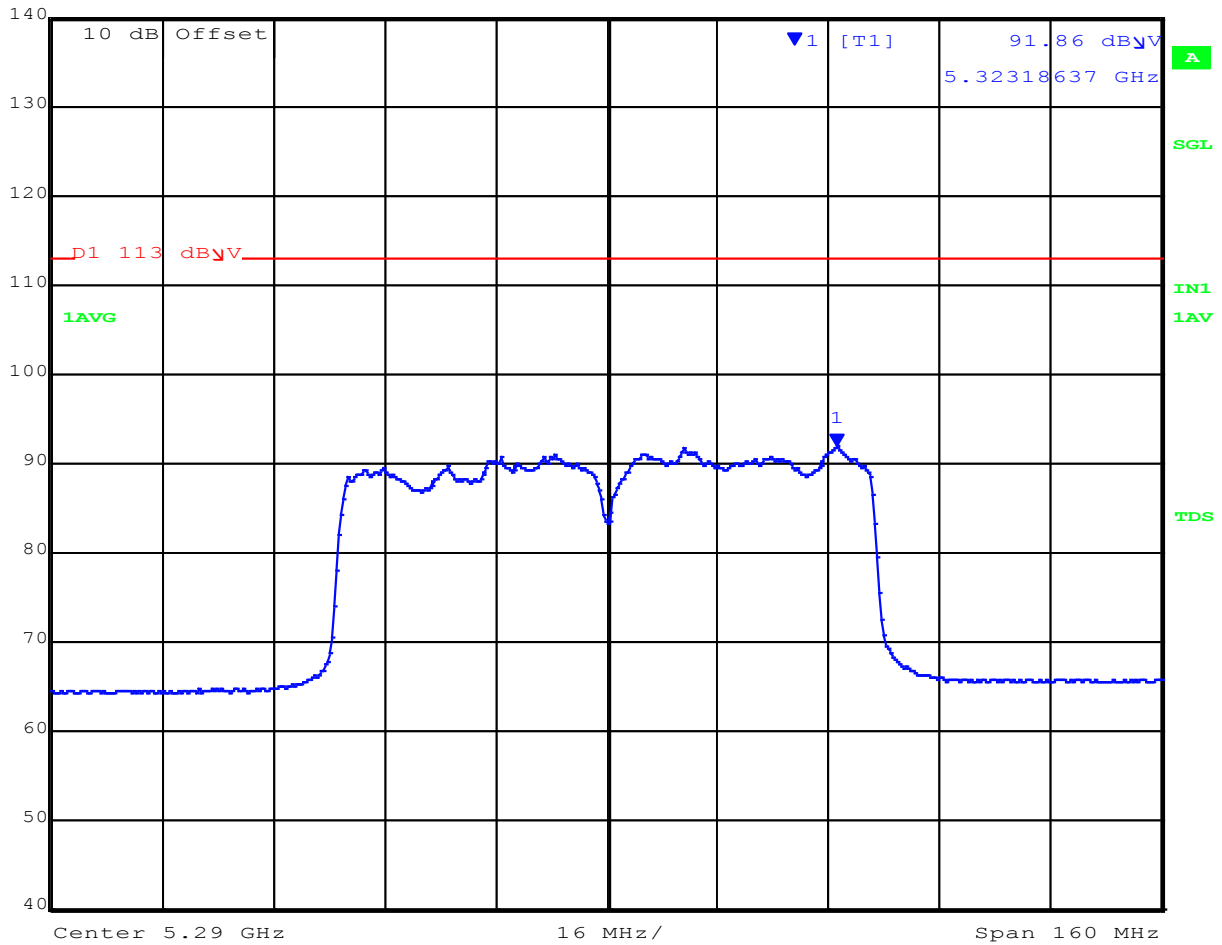
POWER SPECTRAL DENSITY



Variant: 80 MHz, Channel: 5290.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	91.86 dB μ V	VBW	3 MHz		
97 dB μ V	5.32318637 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:09:05

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5323.19 MHz : 91.86 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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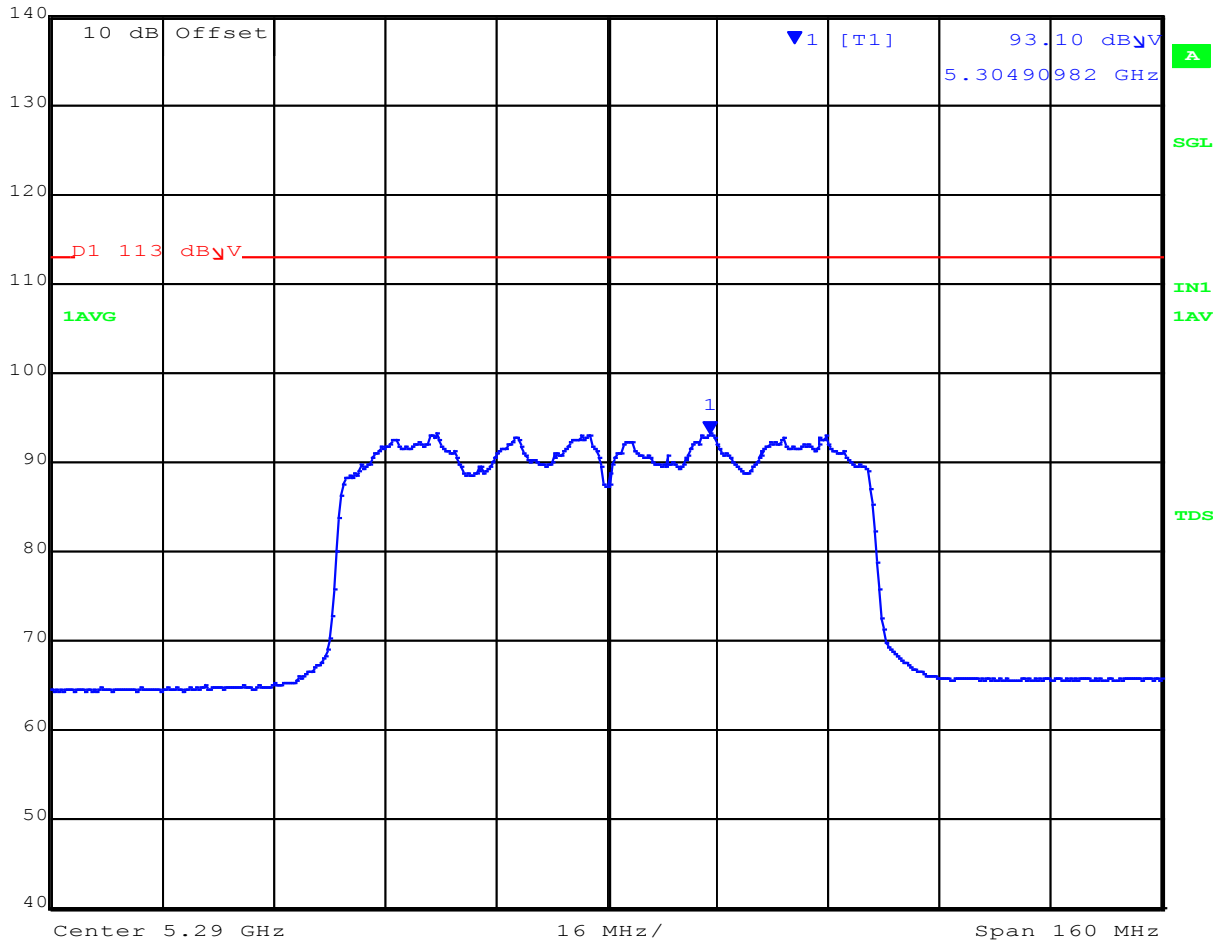
POWER SPECTRAL DENSITY



Variation: 80 MHz, Channel: 5290.00 MHz, Polarity V Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	93.10 dB μ V	VBW	3 MHz		
97 dB μ V	5.30490982 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:08:02

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5304.91 MHz :93.10 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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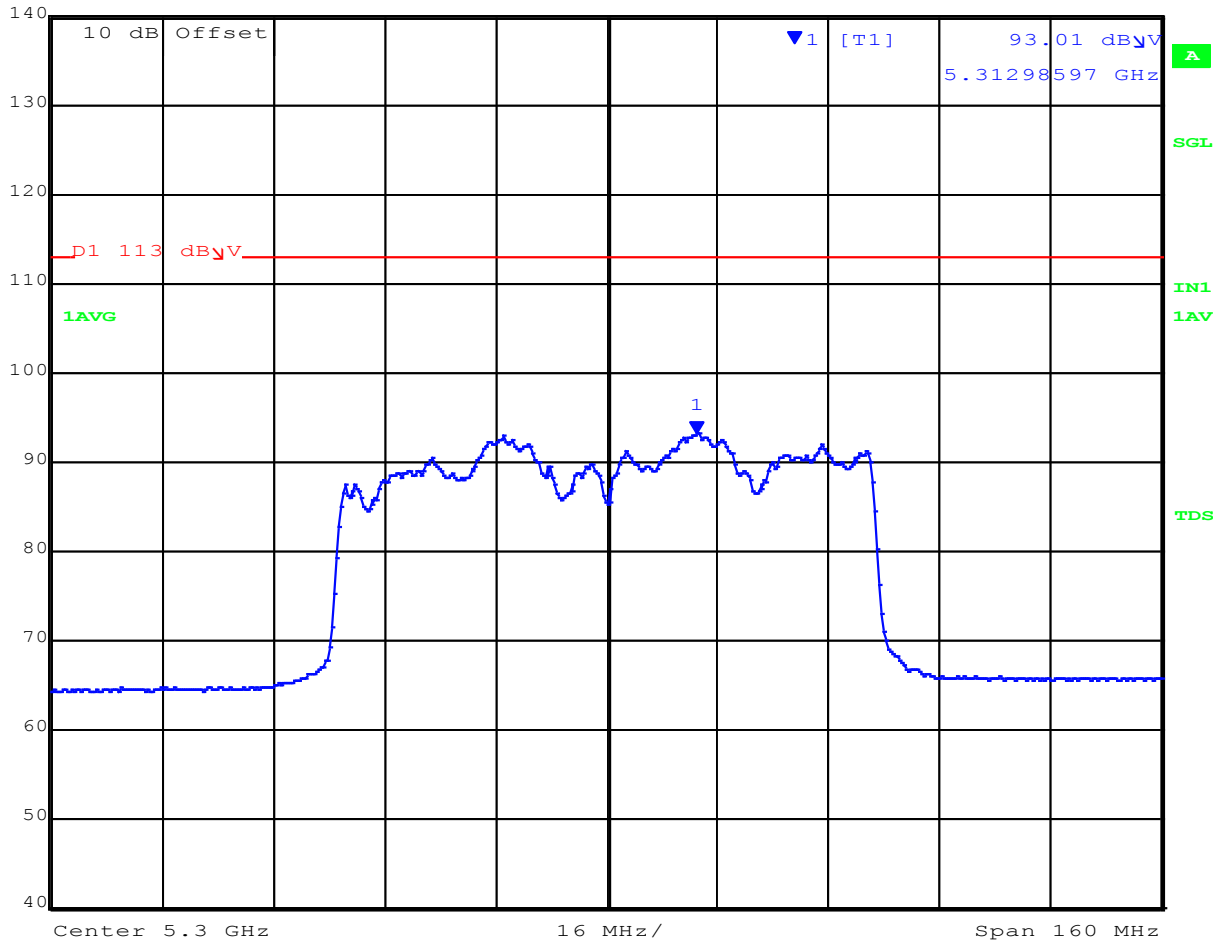
POWER SPECTRAL DENSITY



Variant: 80 MHz, Channel: 5300.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl Marker 1 [T1] RBW 1 MHz RF Att 0 dB
 140 dB μ V 93.01 dB μ V VBW 3 MHz
 97 dB μ V 5.31298597 GHz SWT 5 ms Unit dB μ V



Date: 24.OCT.2017 14:10:53

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5312.99 MHz : 93.01 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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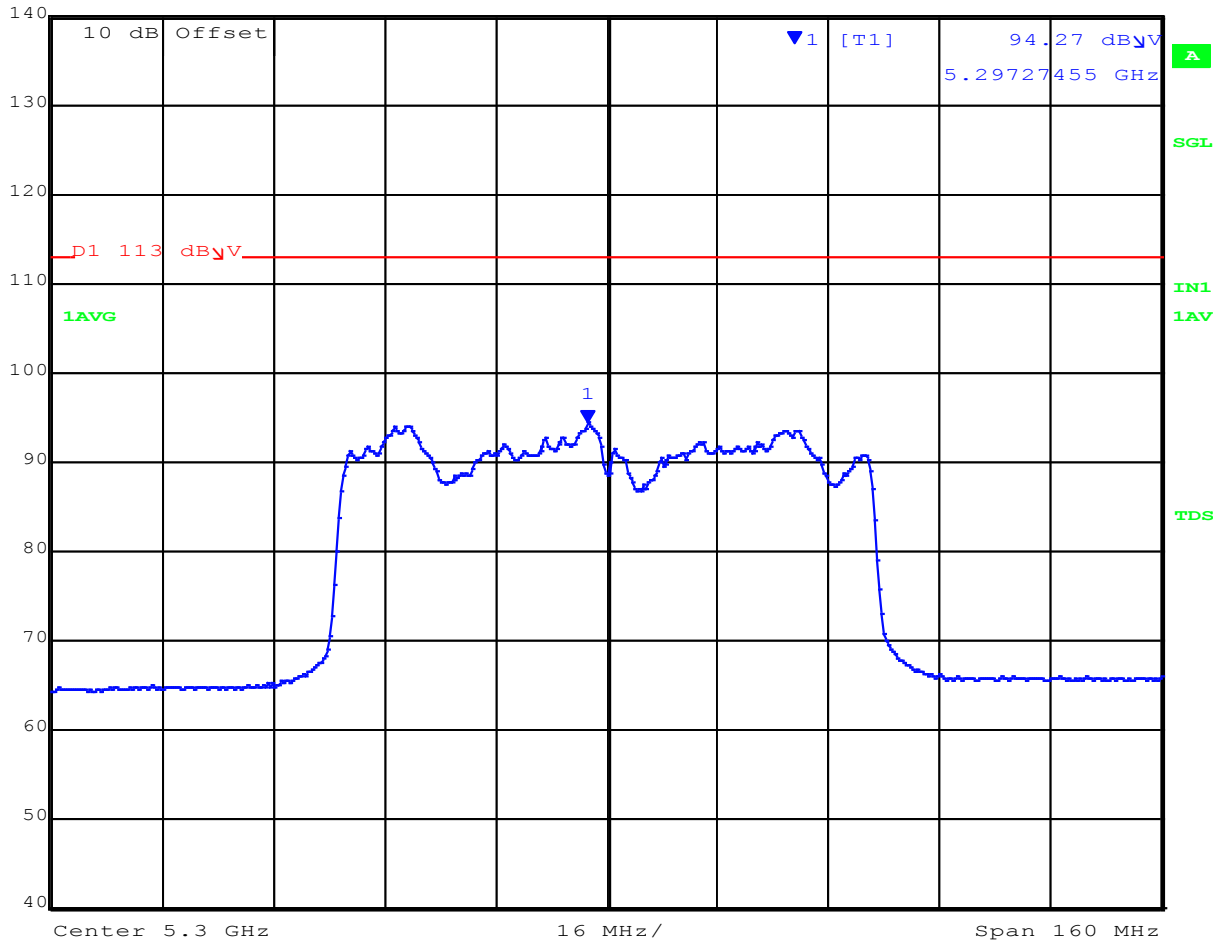
POWER SPECTRAL DENSITY



Variant: 80 MHz, Channel: 5300.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	94.27 dB μ V	VBW	3 MHz		
97 dB μ V	5.29727455 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:11:41

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5297.27 MHz : 94.27 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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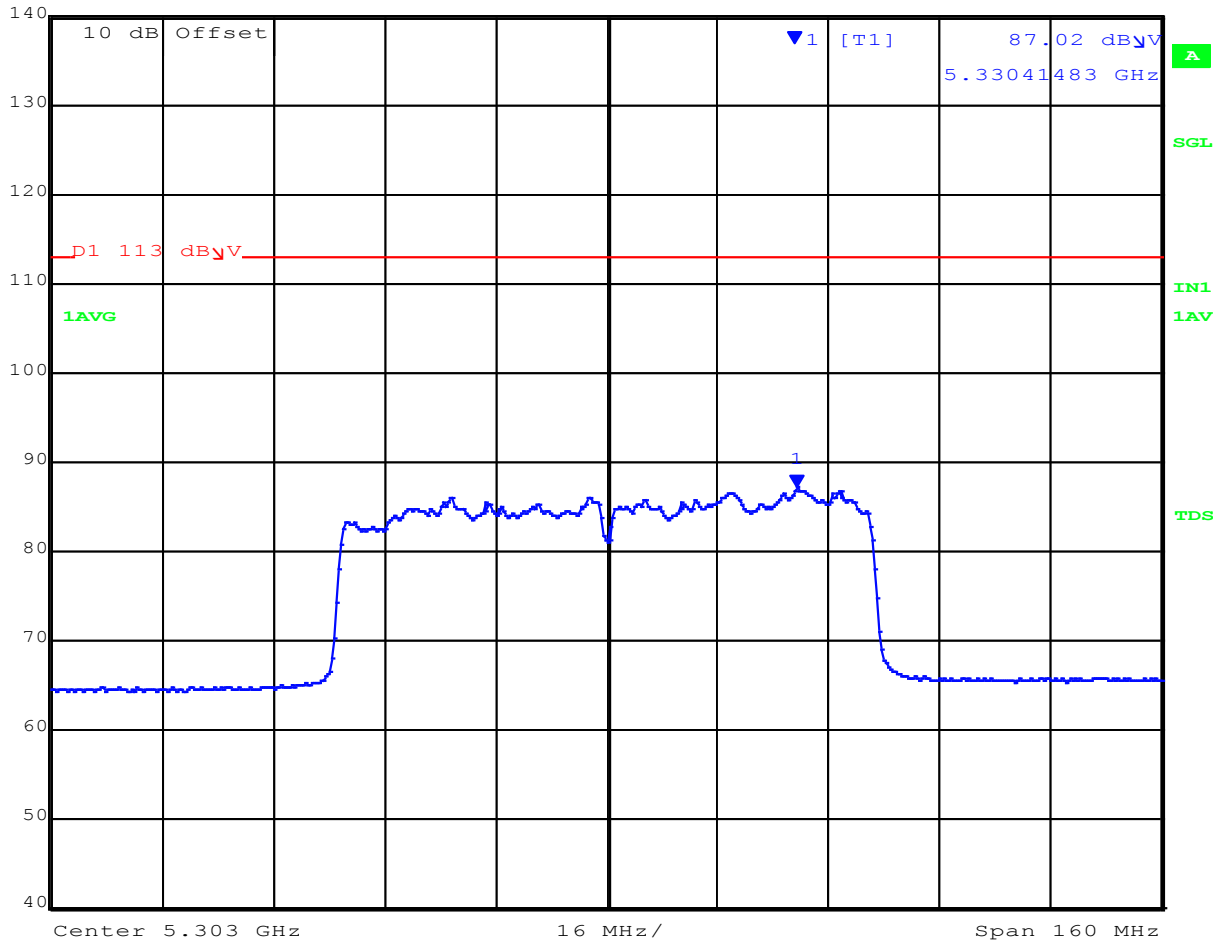
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POWER SPECTRAL DENSITY



Variant: 80 MHz, Channel: 5303.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

	Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	140 dB μ V	87.02 dB μ V	VBW	3 MHz		
	97 dB μ V	5.33041483 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:14:09

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5330.41 MHz : 87.02 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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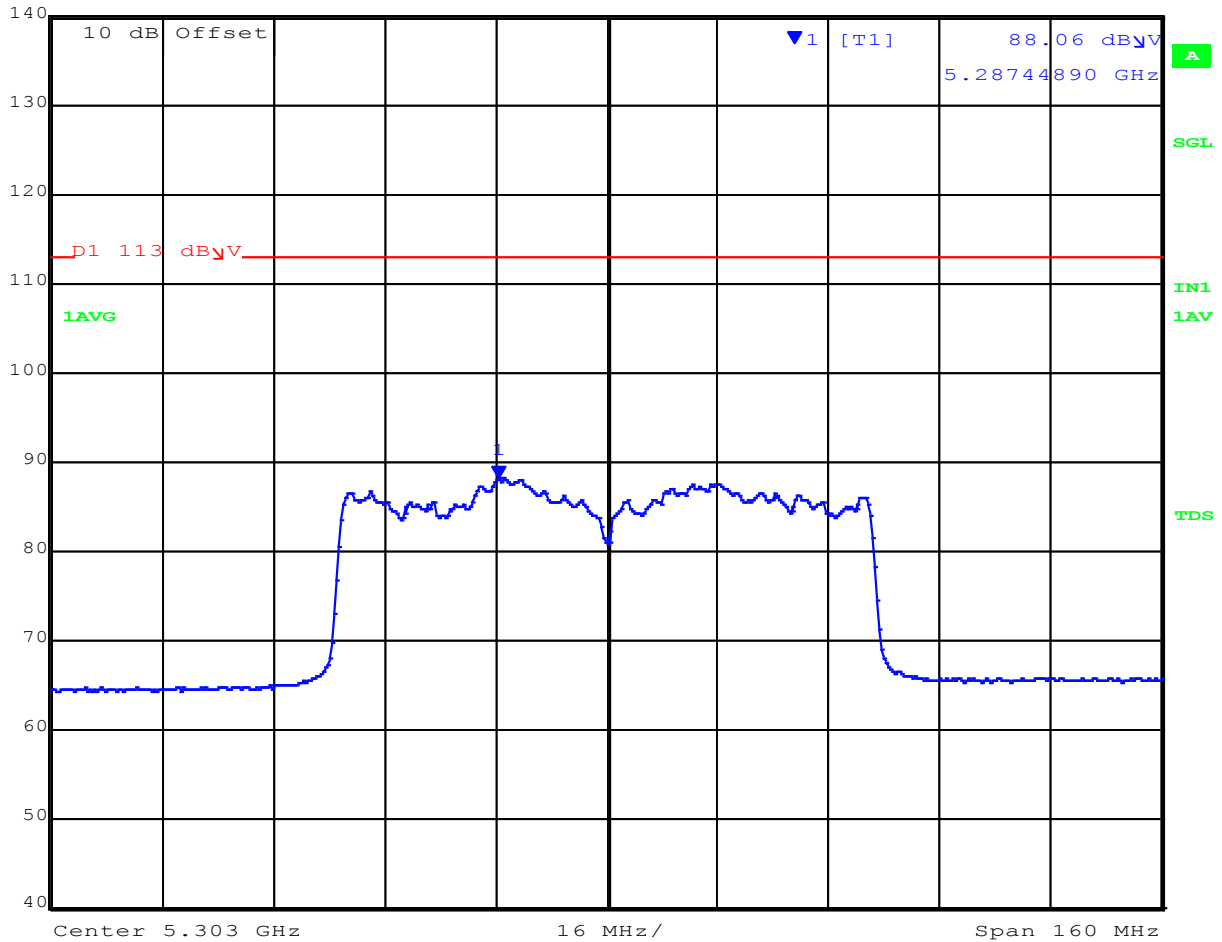
POWER SPECTRAL DENSITY



Variant: 80 MHz, Channel: 5303.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	88.06 dB μ V	VBW	3 MHz		
97 dB μ V	5.28744890 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:13:07

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5287.49 MHz : 88.06 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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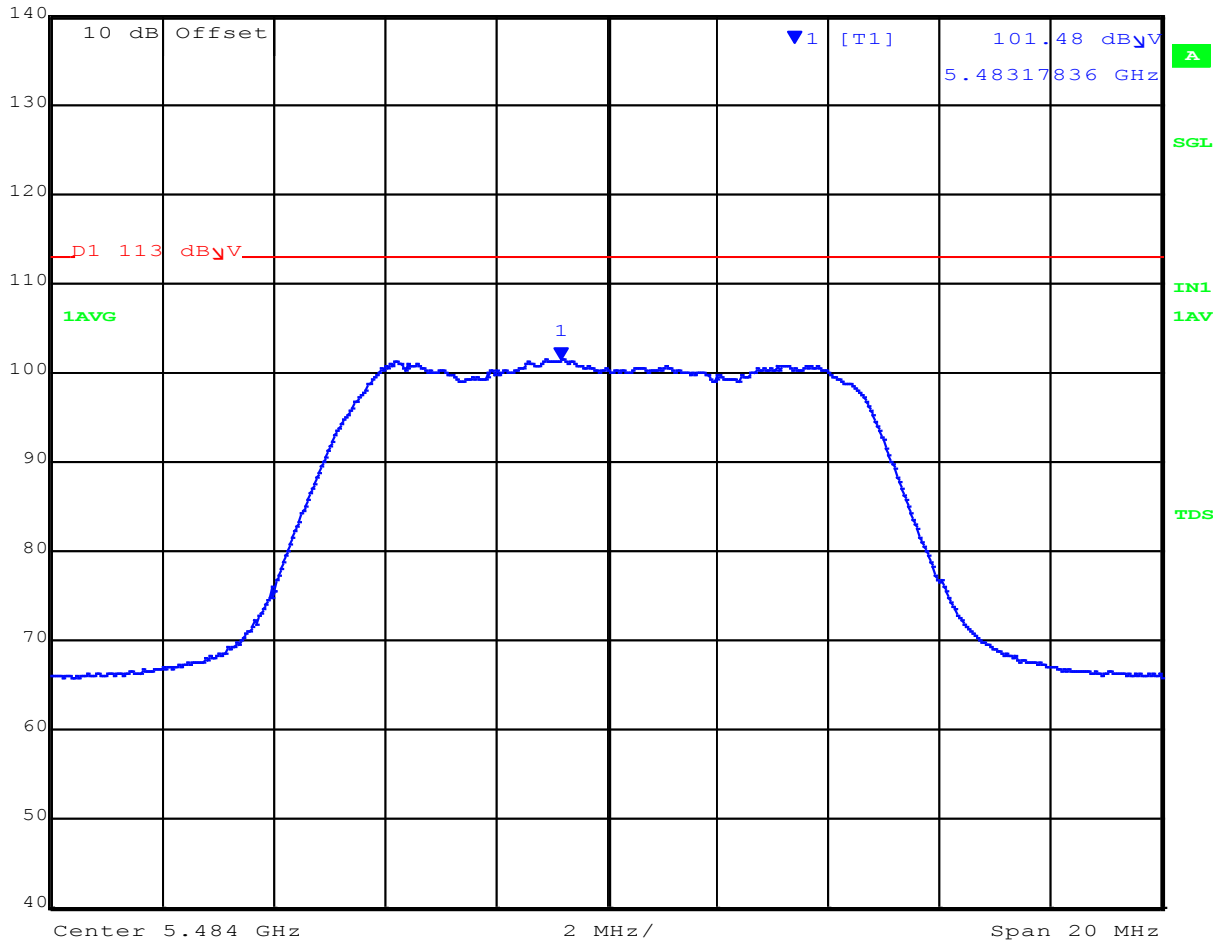
POWER SPECTRAL DENSITY



Variant: 10 MHz, Channel: 5484.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	101.48 dB μ V	VBW	3 MHz		
97 dB μ V	5.48317836 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:22:48

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5261.71 MHz : 101.48 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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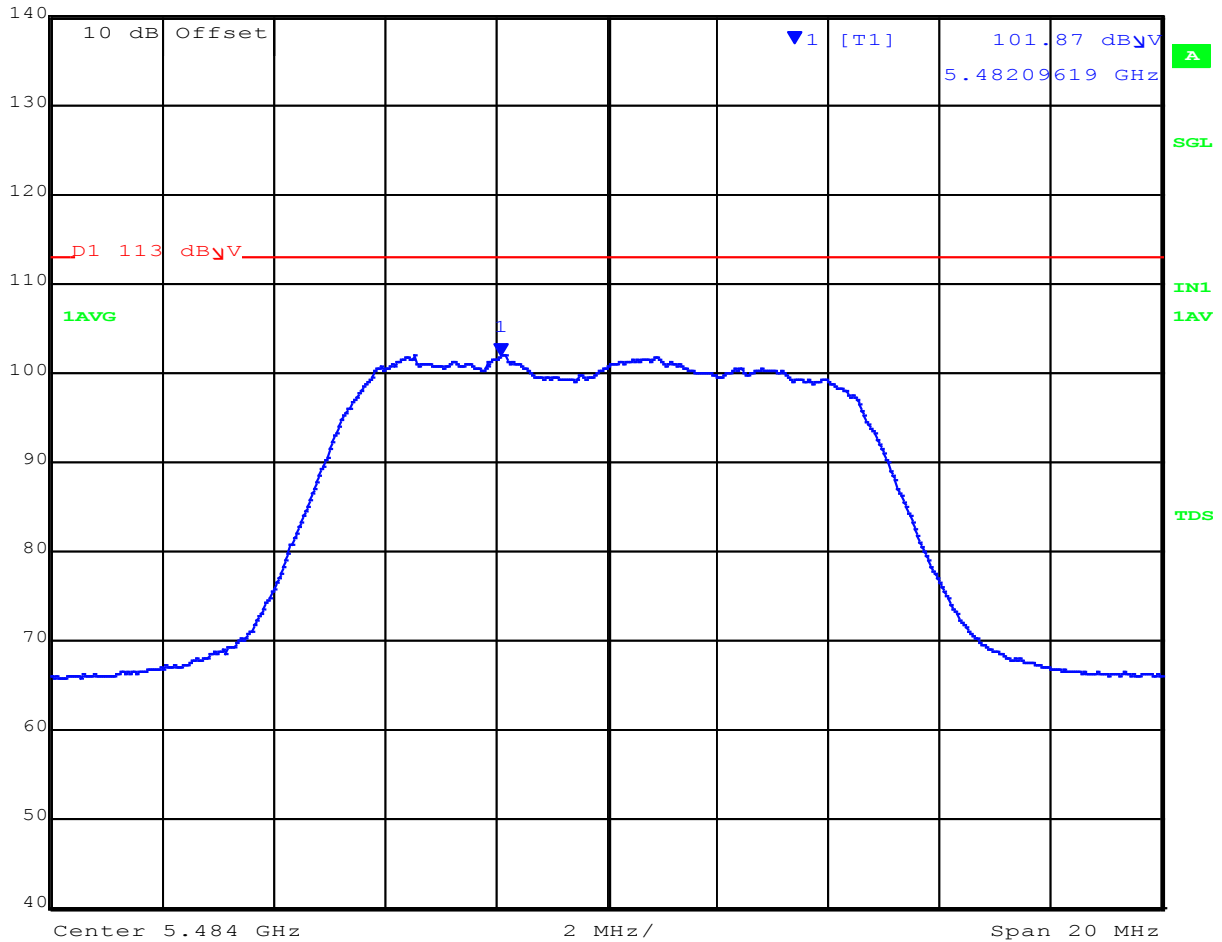
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POWER SPECTRAL DENSITY



Variation: 10 MHz, Channel: 5484.00 MHz, Polarity V Temp: 20, Voltage: 48 Vdc

	Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	140 dB μ V	101.87 dB μ V	VBW	3 MHz		
	97 dB μ V	5.48209619 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:25:18

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5257.34 MHz :101.87 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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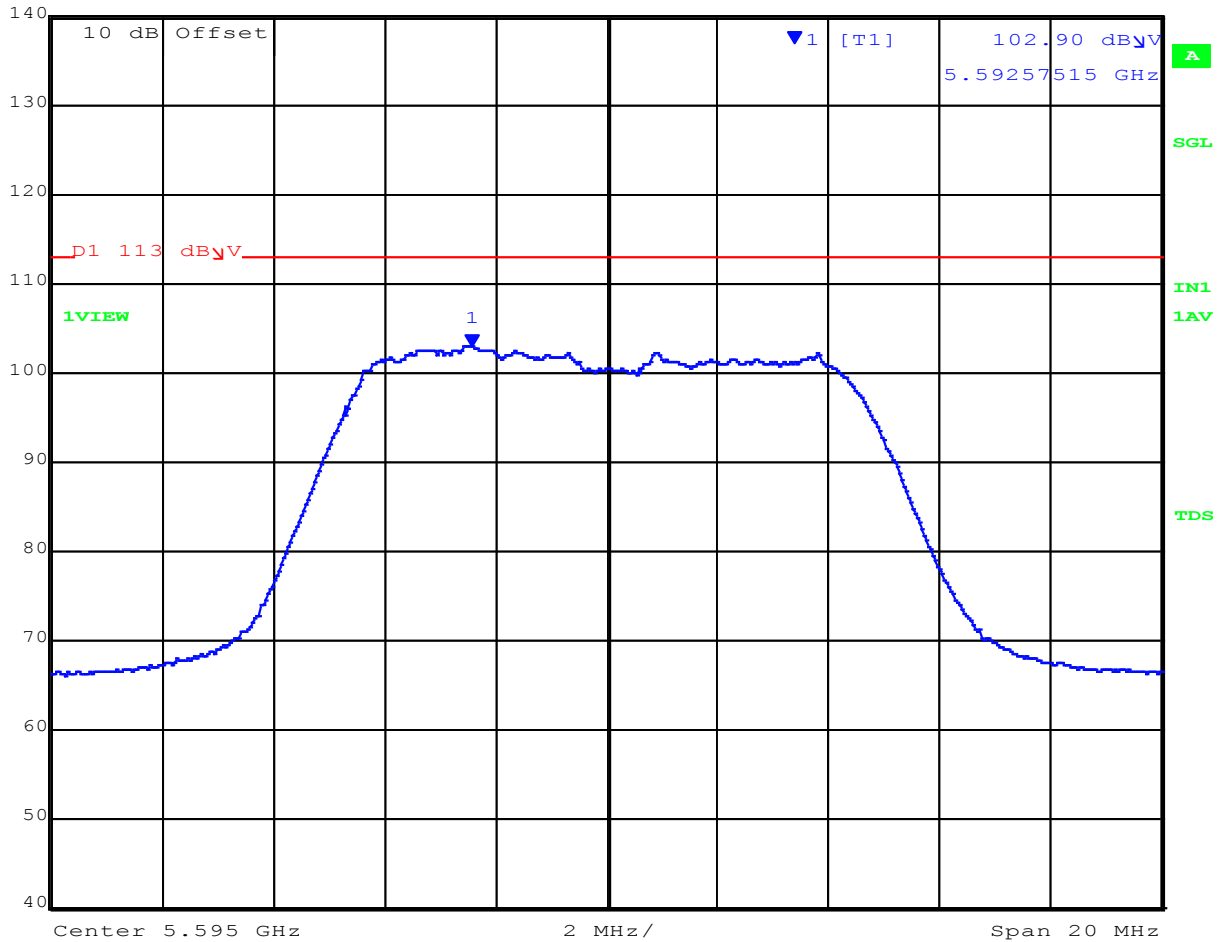
POWER SPECTRAL DENSITY



Variants: 10 MHz, Channel: 5595.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	102.90 dB μ V	VBW	3 MHz		
97 dB μ V	5.59257515 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:38:39

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5296.57 MHz : 102.90 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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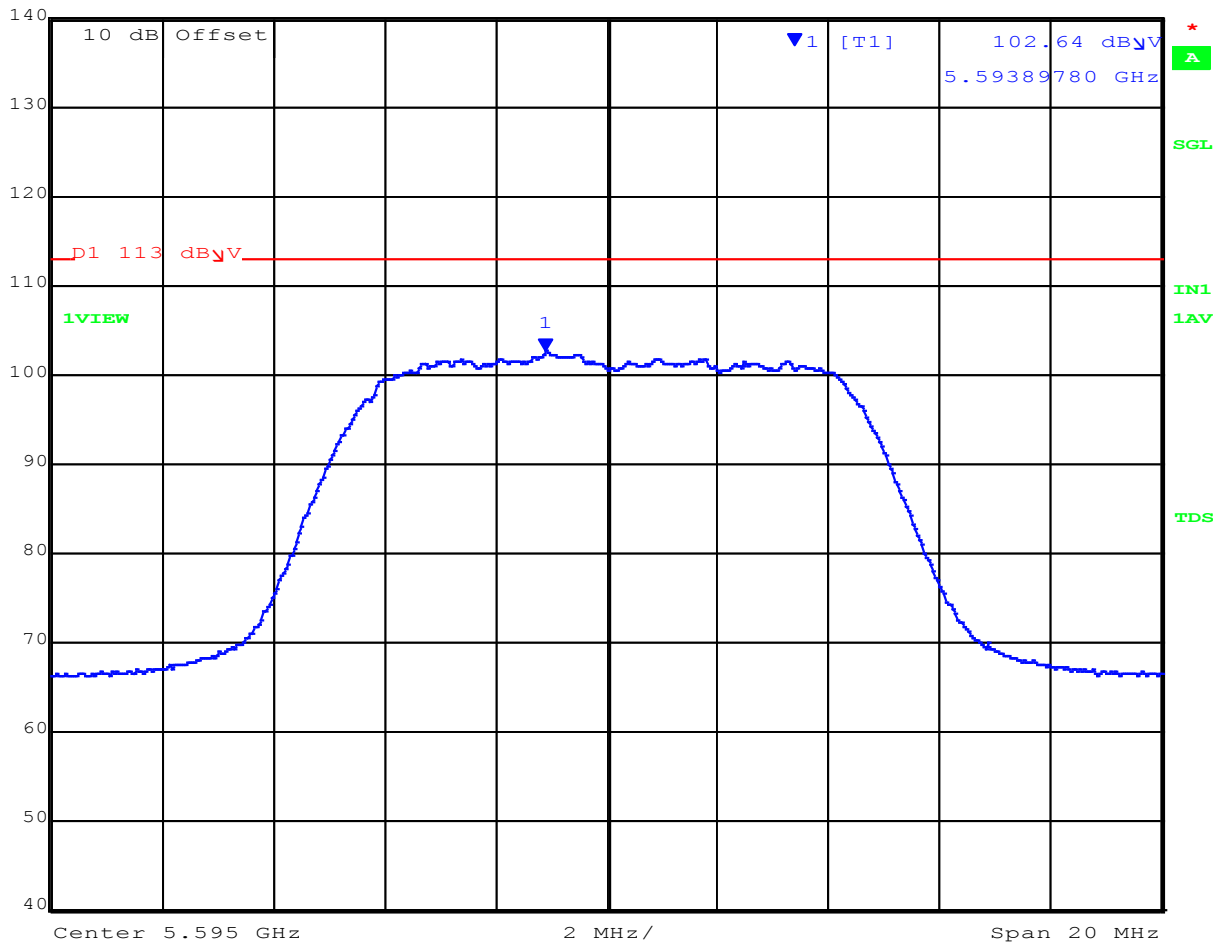
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POWER SPECTRAL DENSITY



Variant: 10 MHz, Channel: 5595.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

	Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	140 dB μ V	102.64 dB μ V	VBW	3 MHz		
	97 dB μ V	5.59389780 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:33:20

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5301.70 MHz : 102.64 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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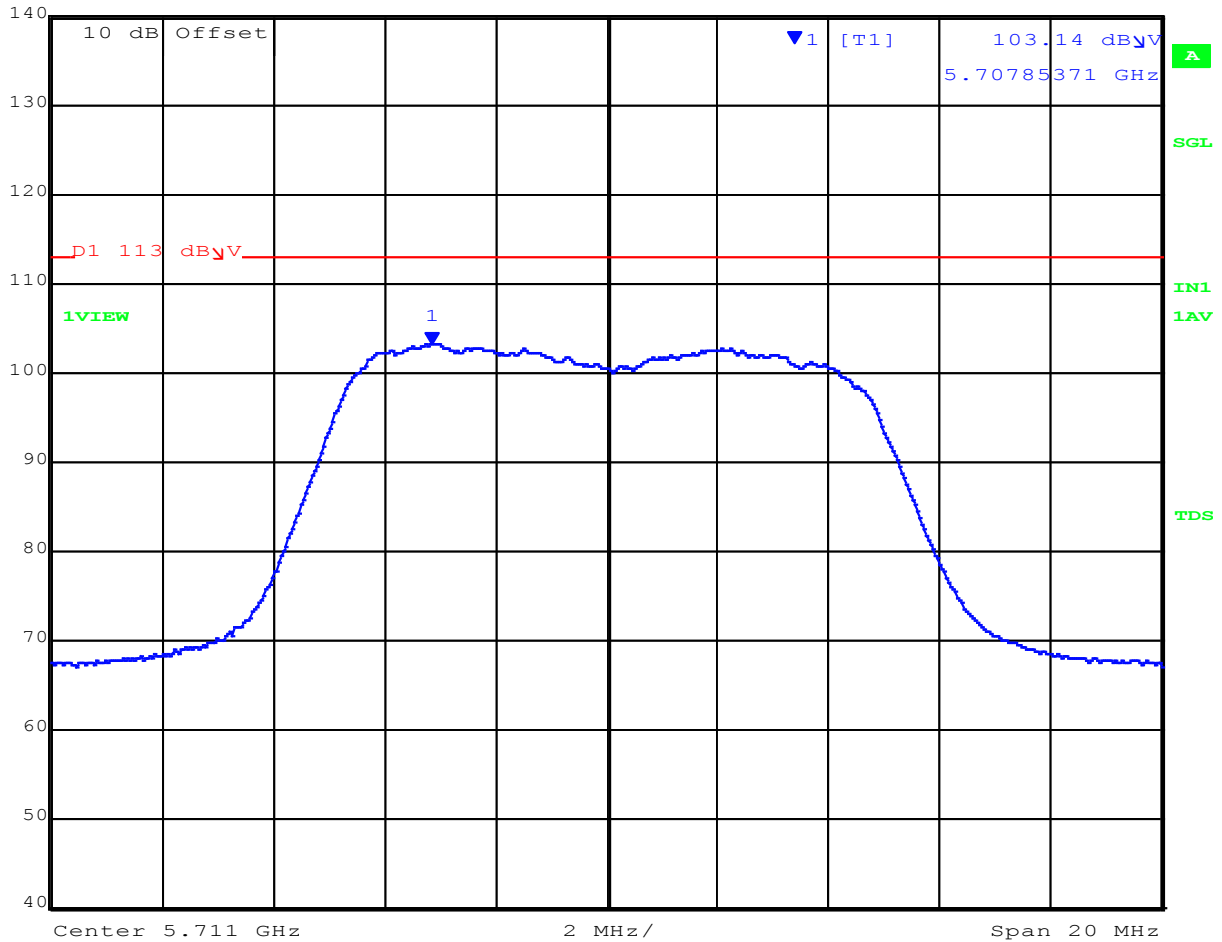
POWER SPECTRAL DENSITY



Variants: 10 MHz, Channel: 5711.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	103.14 dB μ V	VBW	3 MHz		
97 dB μ V	5.70785371 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:40:19

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5339.2 MHz : 103.14 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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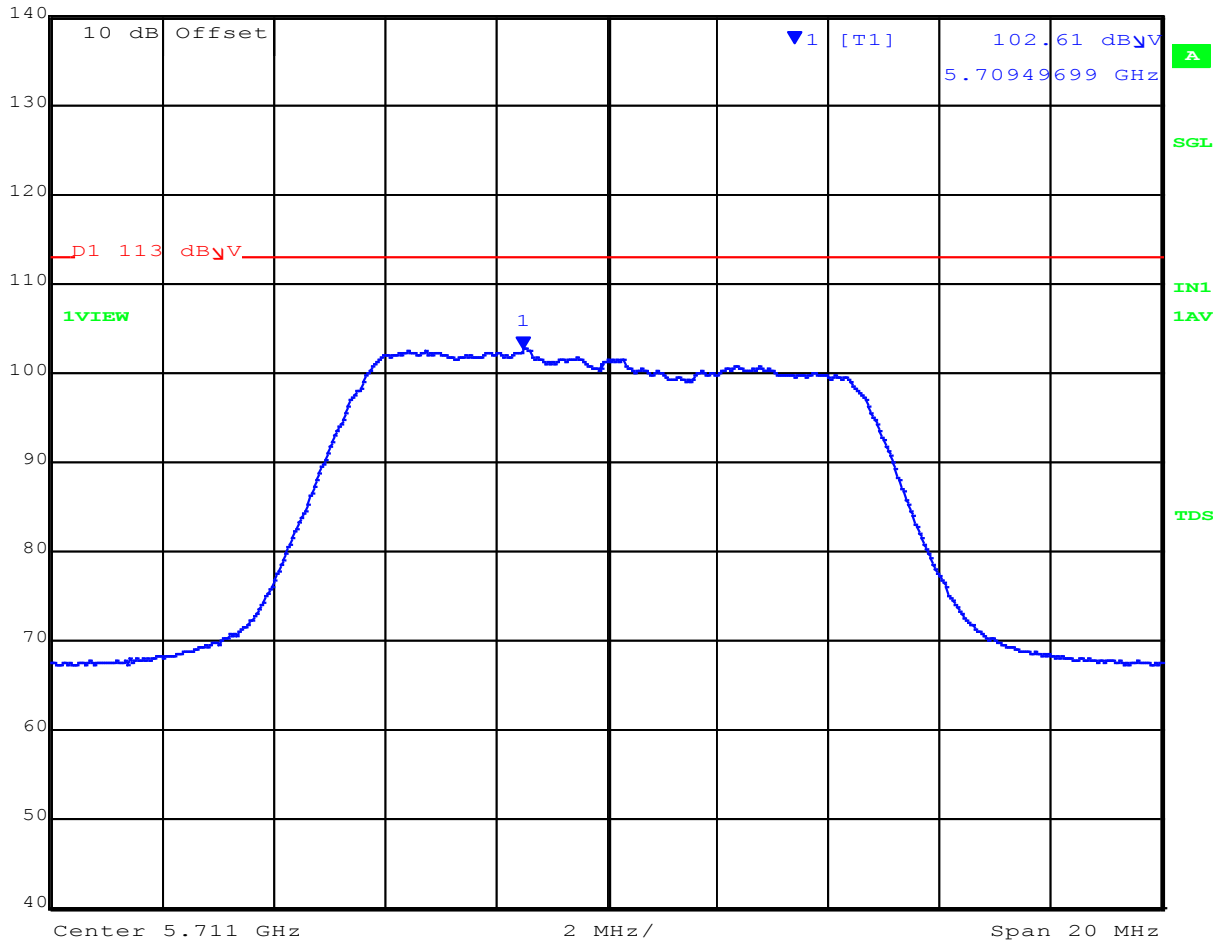
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POWER SPECTRAL DENSITY



Variant: 10 MHz, Channel: 5711.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

	Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	140 dB μ V	102.61 dB μ V	VBW	3 MHz		
	97 dB μ V	5.70949699 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:41:48

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5339.22 MHz : 102.61 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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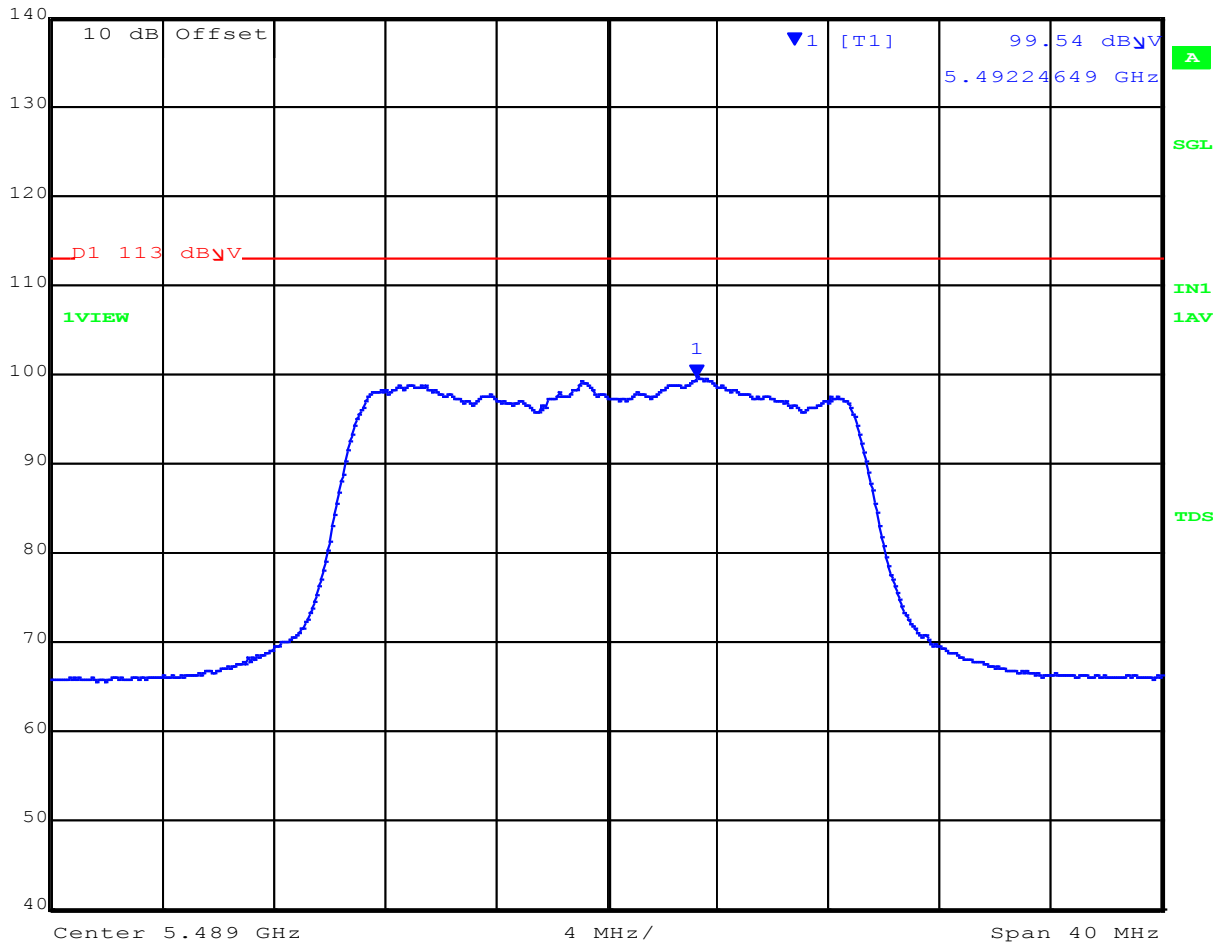
POWER SPECTRAL DENSITY



Variants: 20 MHz, Channel: 5489.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	99.54 dB μ V	VBW	3 MHz		
97 dB μ V	5.49224649 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 14:45:18

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5265.72 MHz : 99.54 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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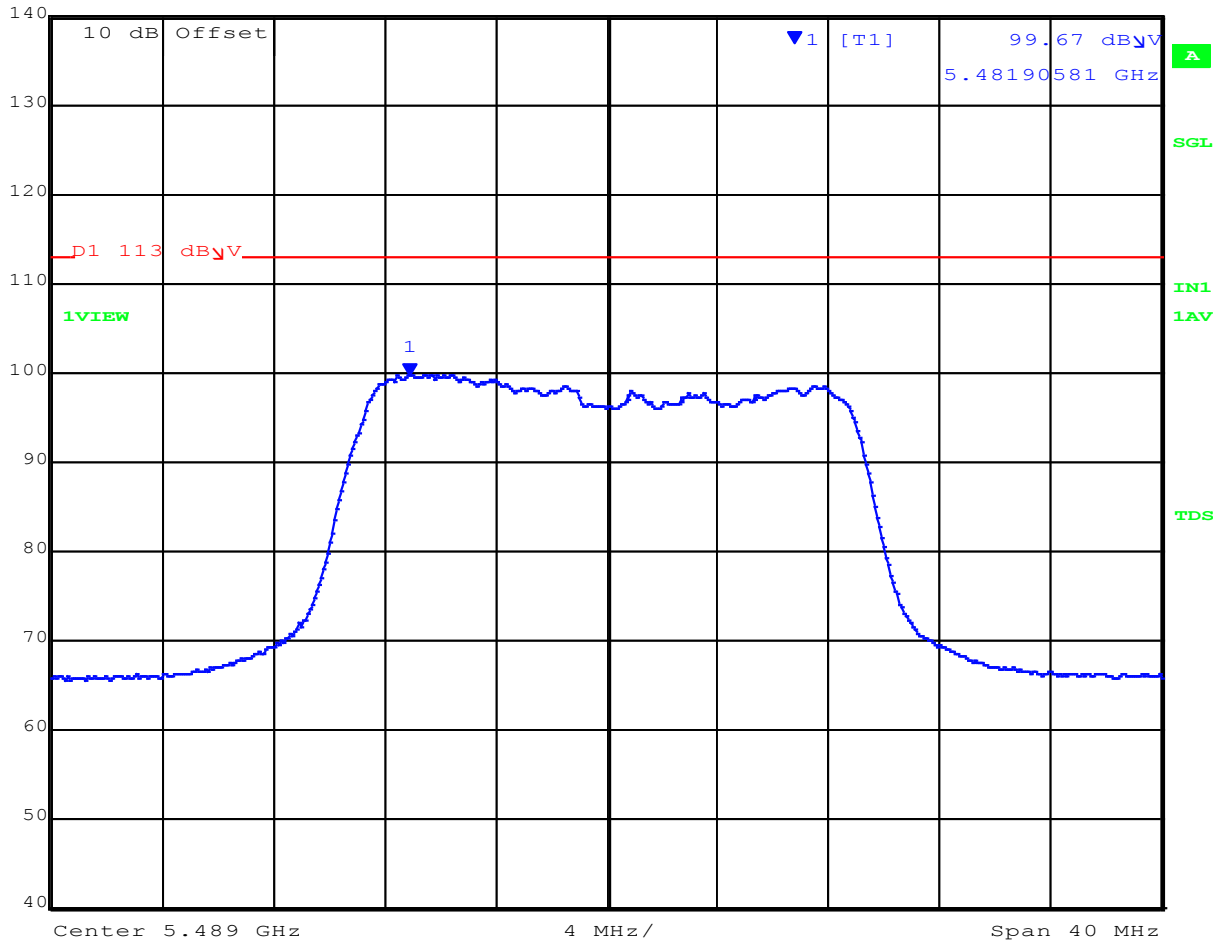
POWER SPECTRAL DENSITY



Variat: 20 MHz, Channel: 5489.00 MHz, Polarity V Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl Marker 1 [T1] RBW 1 MHz RF Att 0 dB
 140 dB μ V 99.67 dB μ V VBW 3 MHz
 97 dB μ V 5.48190581 GHz SWT 5 ms Unit dB μ V



Date: 24.OCT.2017 14:43:41

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5271.58 MHz :99.67 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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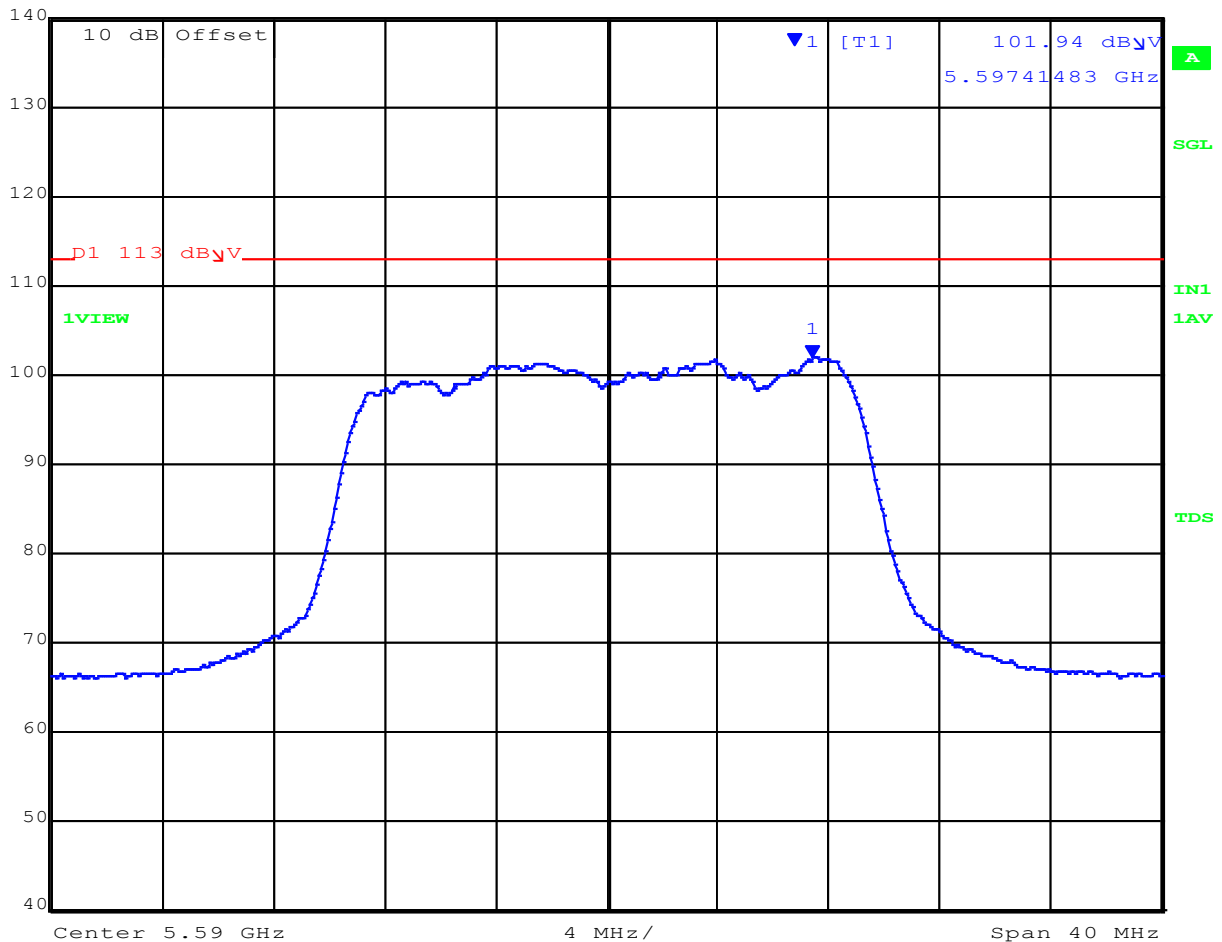
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POWER SPECTRAL DENSITY



Variants: 20 MHz, Channel: 5590.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

	Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	140 dB μ V	101.94 dB μ V	VBW	3 MHz		
	97 dB μ V	5.59741483 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 15:15:32

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5295.55 MHz : 101.94 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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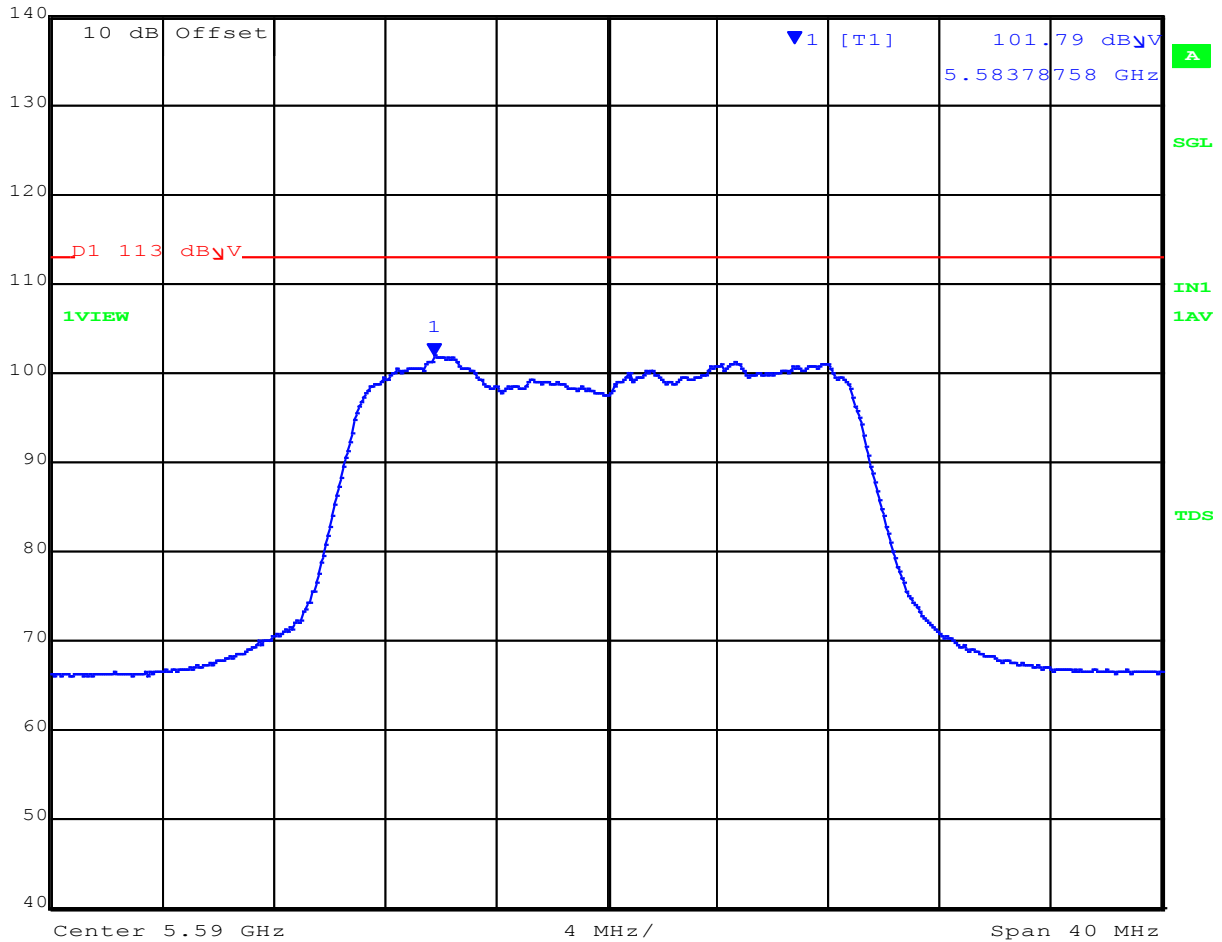
POWER SPECTRAL DENSITY



Variant: 20 MHz, Channel: 5590.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	101.79 dB μ V	VBW	3 MHz		
97 dB μ V	5.58378758 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 15:18:20

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5293.07 MHz : 101.79 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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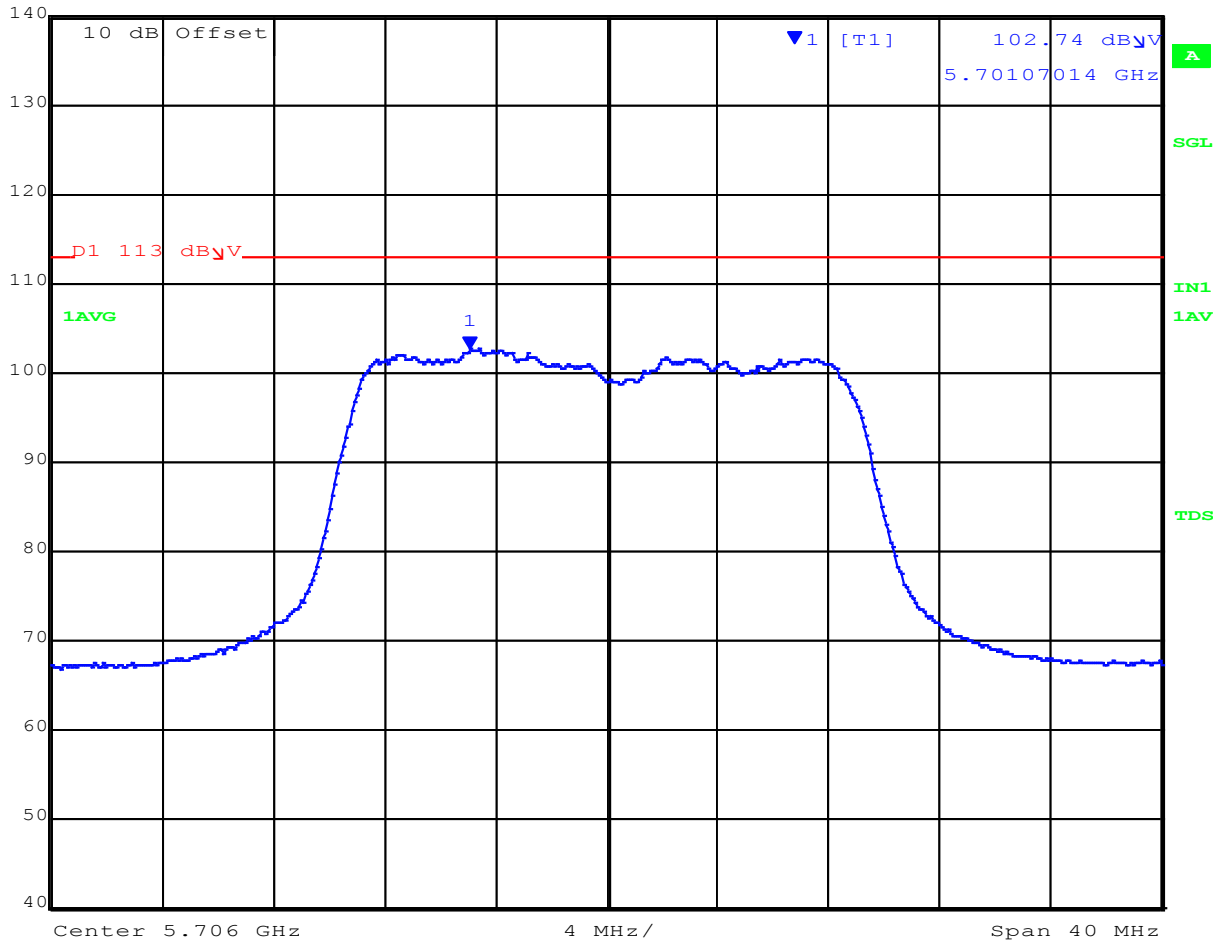
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POWER SPECTRAL DENSITY



Variants: 20 MHz, Channel: 5706.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

	Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	140 dB μ V	102.74 dB μ V	VBW	3 MHz		
	97 dB μ V	5.70107014 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 15:40:14

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5342.29 MHz : 102.74 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

[back to matrix](#)

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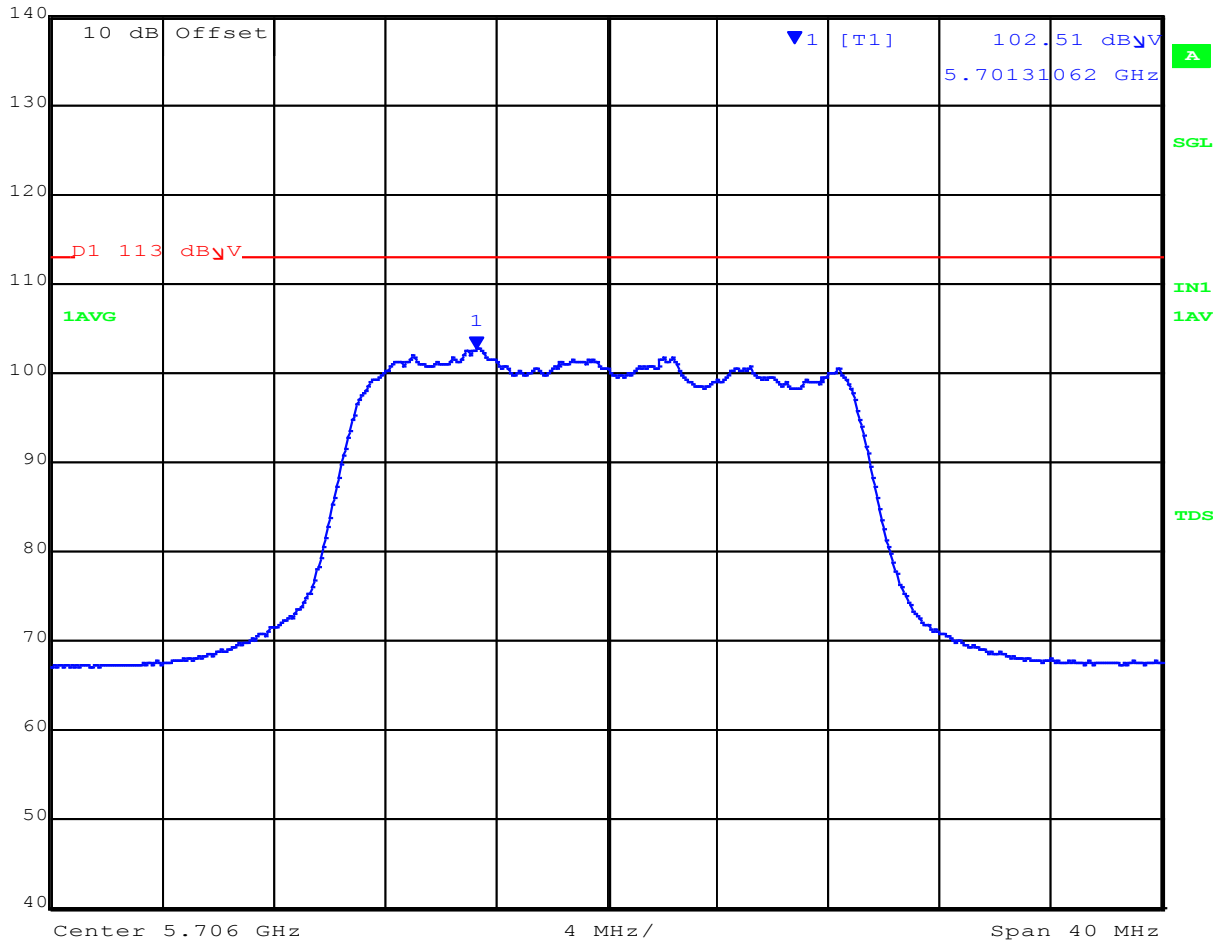
Title: RADWIN 2000 JET, RADWIN 5000 JET
To: FCC Part 15.407 & ISED RSS-247
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POWER SPECTRAL DENSITY



Variant: 20 MHz, Channel: 5706.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

	Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	140 dB μ V	102.51 dB μ V	VBW	3 MHz		
	97 dB μ V	5.70131062 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 15:36:49

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5332.99 MHz : 102.91 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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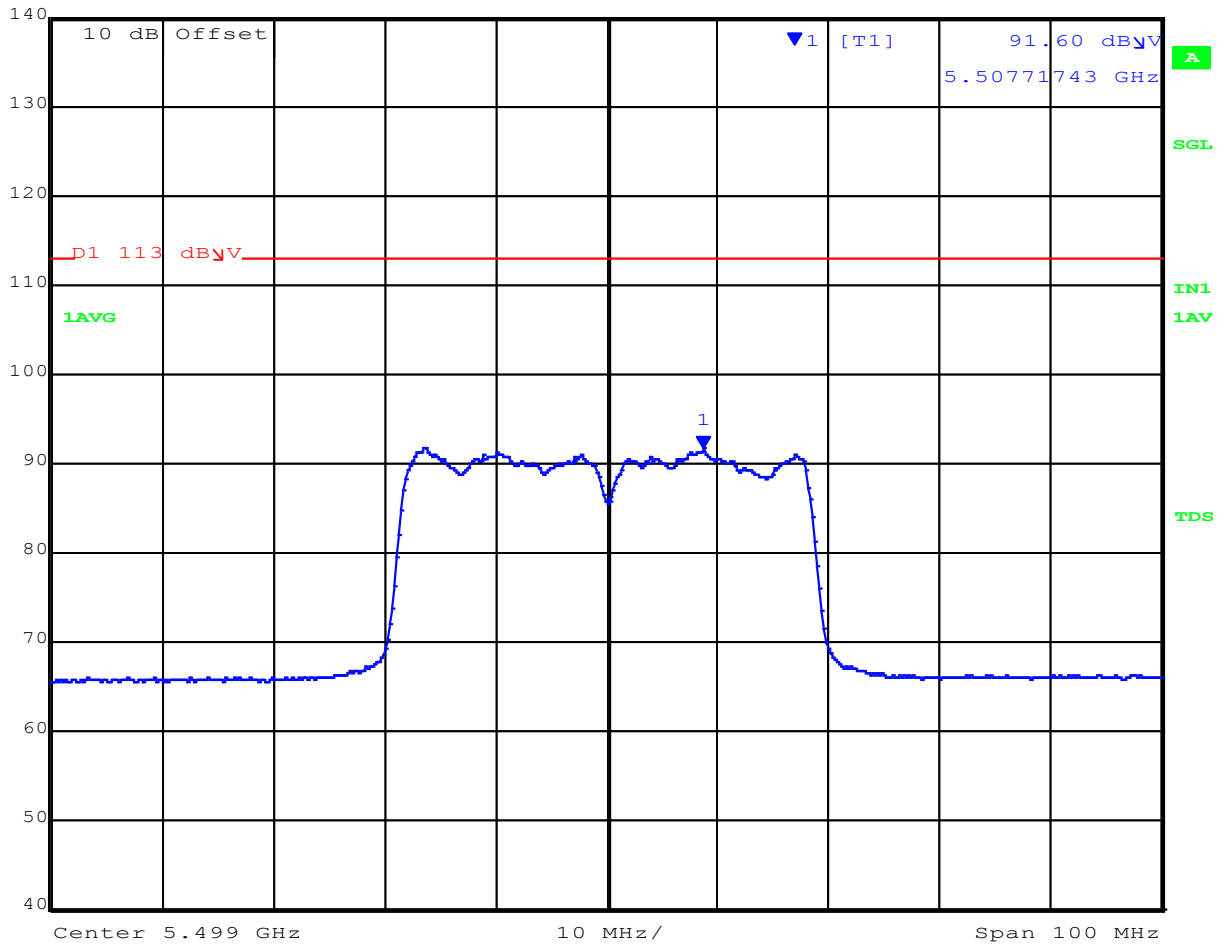
POWER SPECTRAL DENSITY



Variant: 40 MHz, Channel: 5499.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	91.60 dB μ V	VBW	3 MHz		
97 dB μ V	5.50771743 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 15:43:27

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5280.31 MHz : 91.60 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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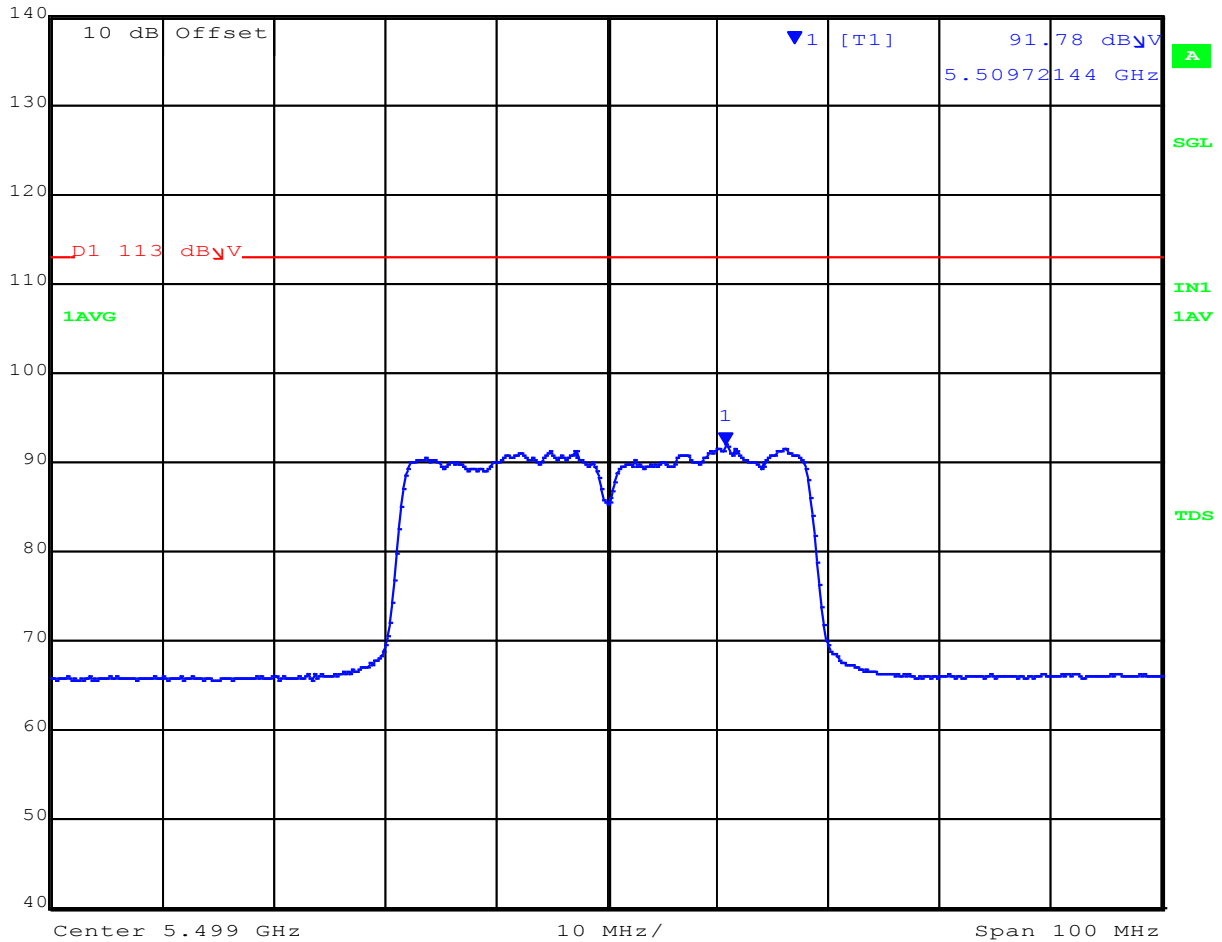
POWER SPECTRAL DENSITY



Variation: 40 MHz, Channel: 5499.00 MHz, Polarity V Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl Marker 1 [T1] RBW 1 MHz RF Att 0 dB
 140 dB μ V 91.78 dB μ V VBW 3 MHz
 97 dB μ V 5.50972144 GHz SWT 5 ms Unit dB μ V



Date: 24.OCT.2017 15:47:27

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5285.52 MHz :91.78 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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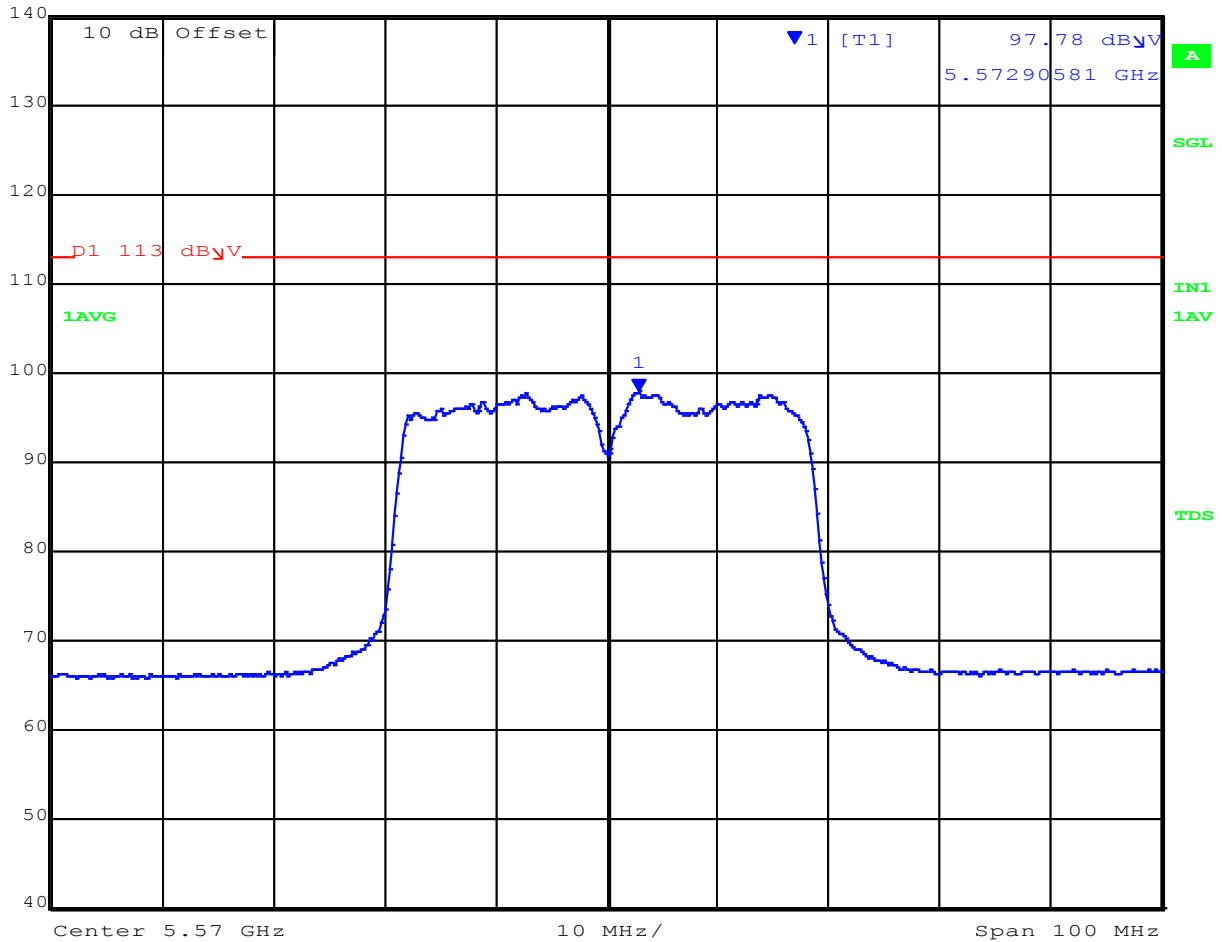
POWER SPECTRAL DENSITY



Variation: 40 MHz, Channel: 5570.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	97.78 dB μ V	VBW	3 MHz		
97 dB μ V	5.57290581 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 15:50:57

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5307.72 MHz : 97.78 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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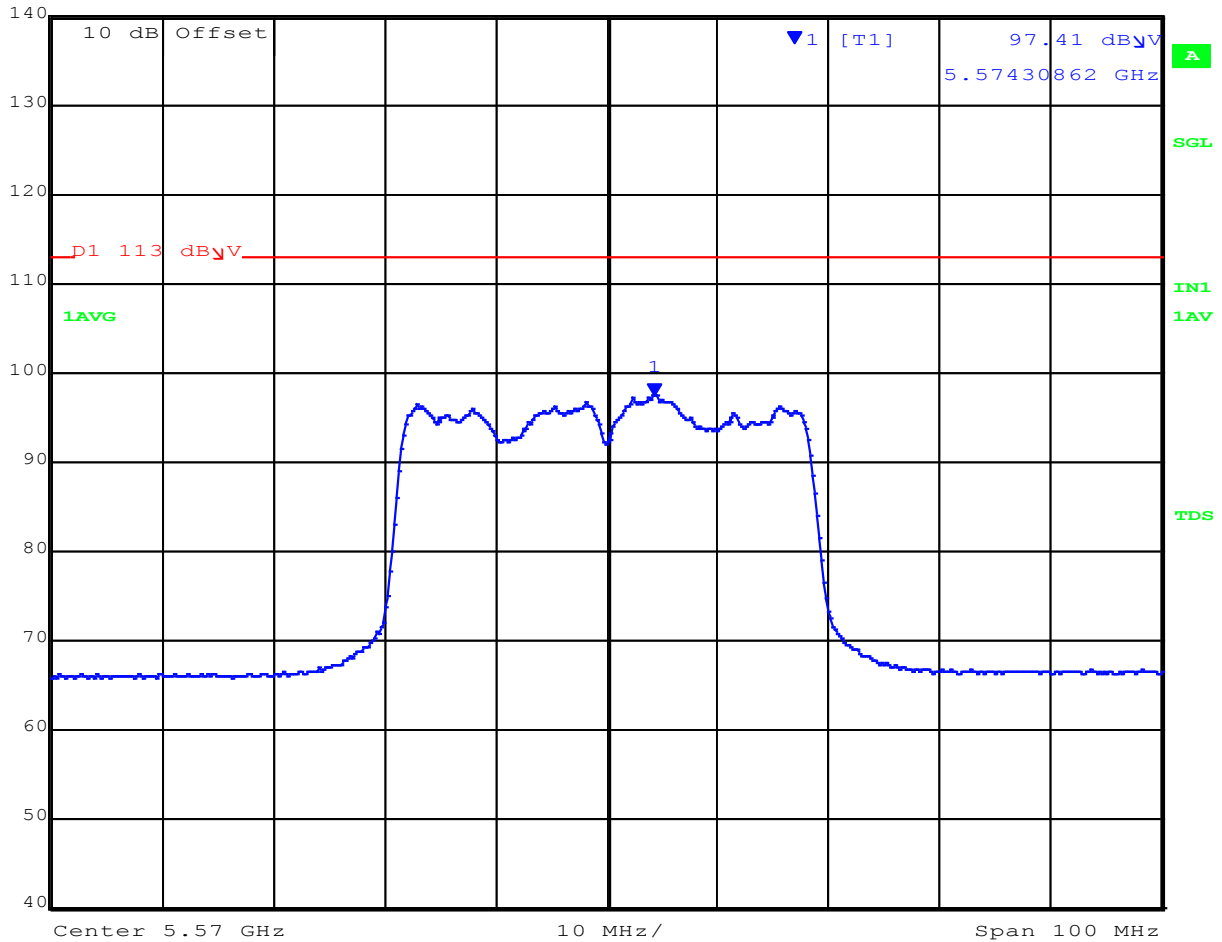
POWER SPECTRAL DENSITY



Variation: 40 MHz, Channel: 5570.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	97.41 dB μ V	VBW	3 MHz		
97 dB μ V	5.57430862 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 15:49:41

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5312.92 MHz : 97.41 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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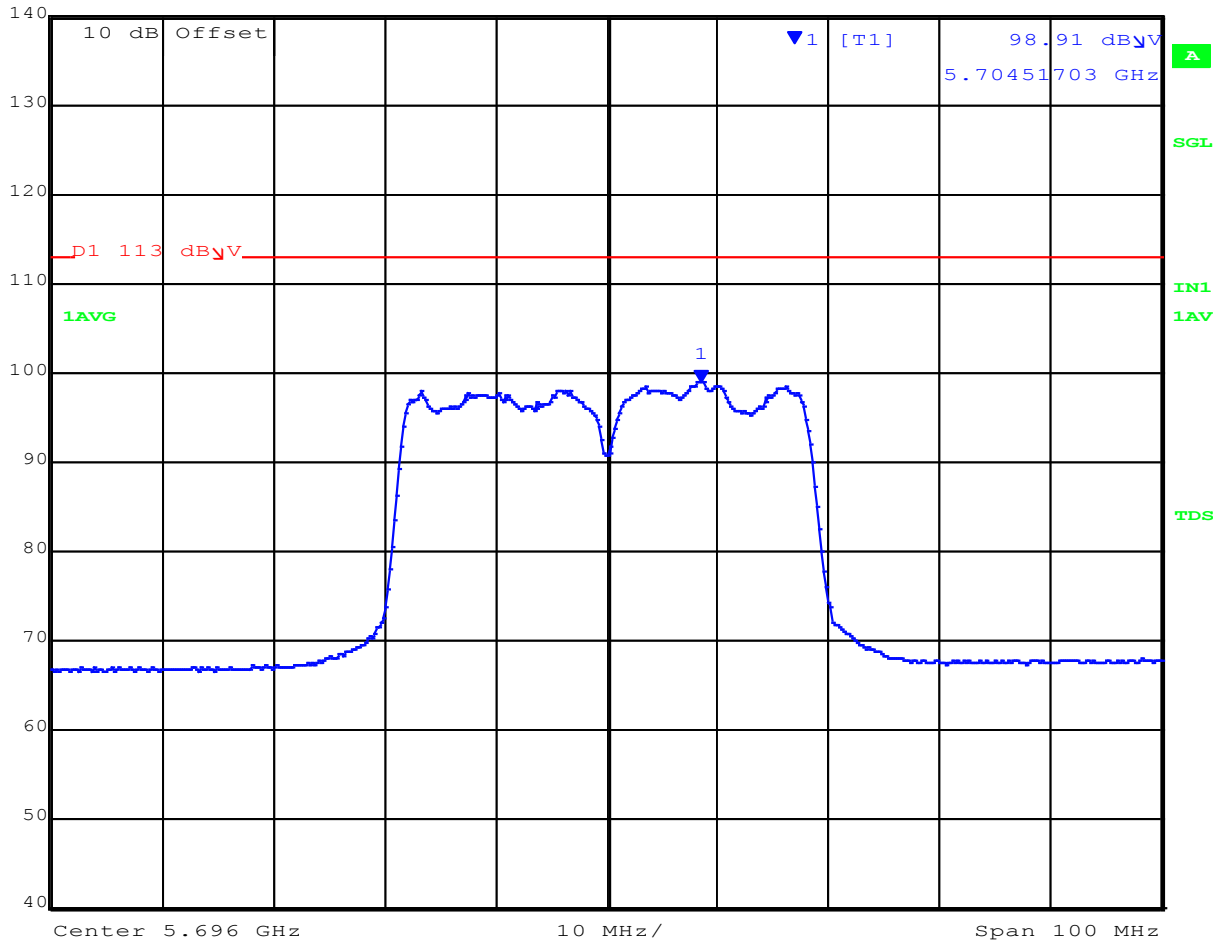
Title: RADWIN 2000 JET, RADWIN 5000 JET
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POWER SPECTRAL DENSITY



Variation: 40 MHz, Channel: 5696.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

	Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	140 dB μ V	98.91 dB μ V	VBW	3 MHz		
	97 dB μ V	5.70451703 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 15:53:32

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5335.12 MHz : 98.91 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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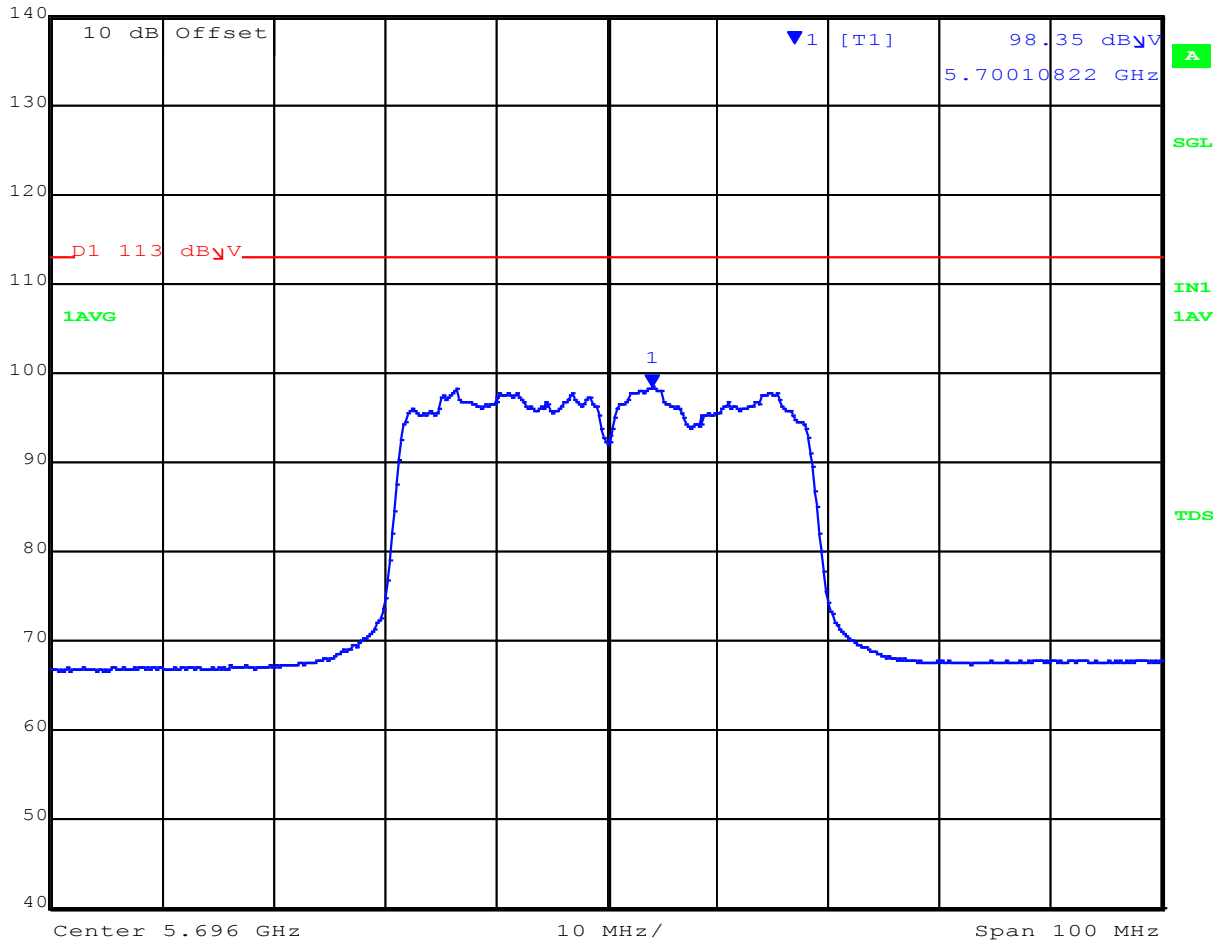
Title: RADWIN 2000 JET, RADWIN 5000 JET
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POWER SPECTRAL DENSITY



Variant: 40 MHz, Channel: 5696.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc

	Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	140 dB μ V	98.35 dB μ V	VBW	3 MHz		
	97 dB μ V	5.70010822 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 15:55:27

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5318.48 MHz : 98.35 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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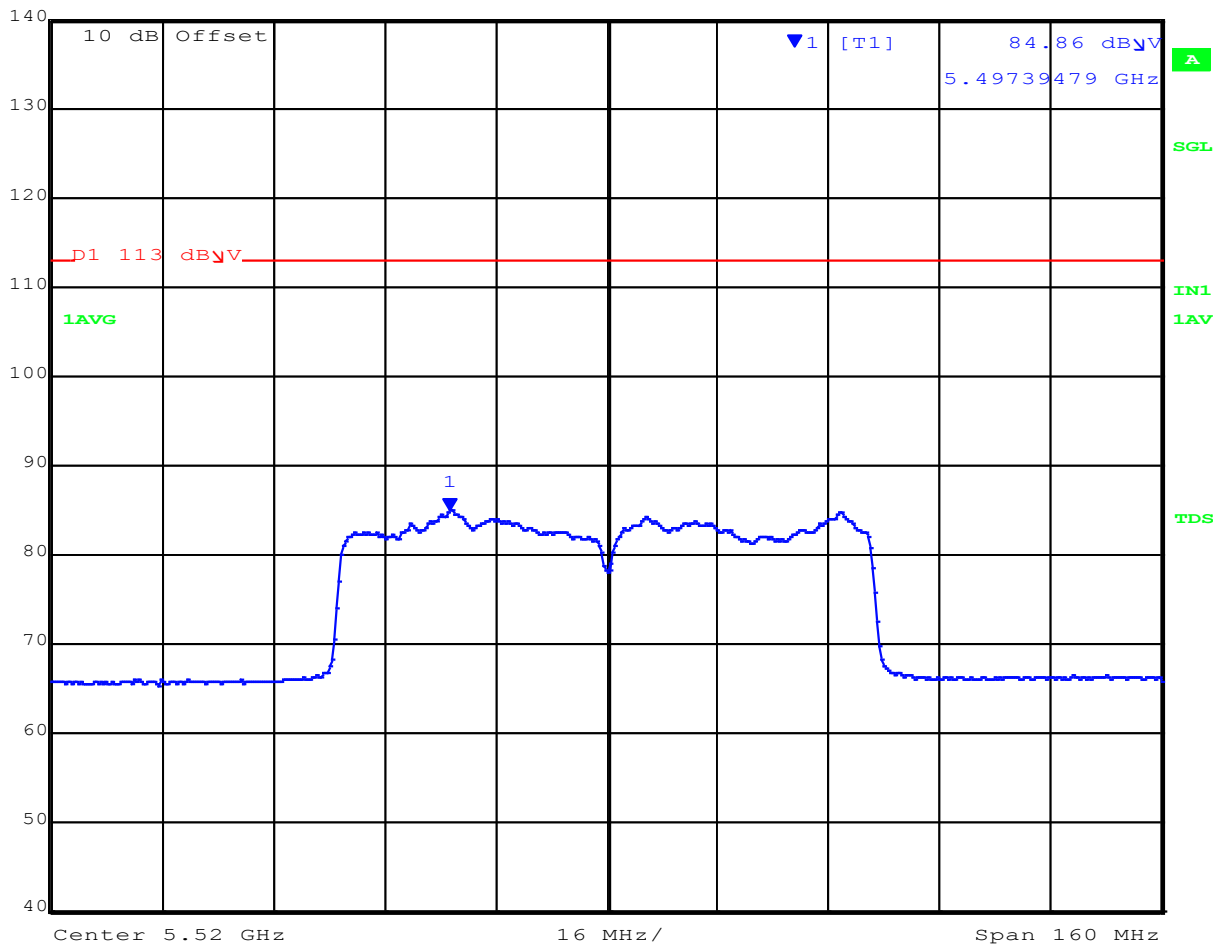
POWER SPECTRAL DENSITY



Variant: 80 MHz, Channel: 5520.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	84.86 dB μ V	VBW	3 MHz		
97 dB μ V	5.49739479 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 15:59:36

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5323.19 MHz : 84.86 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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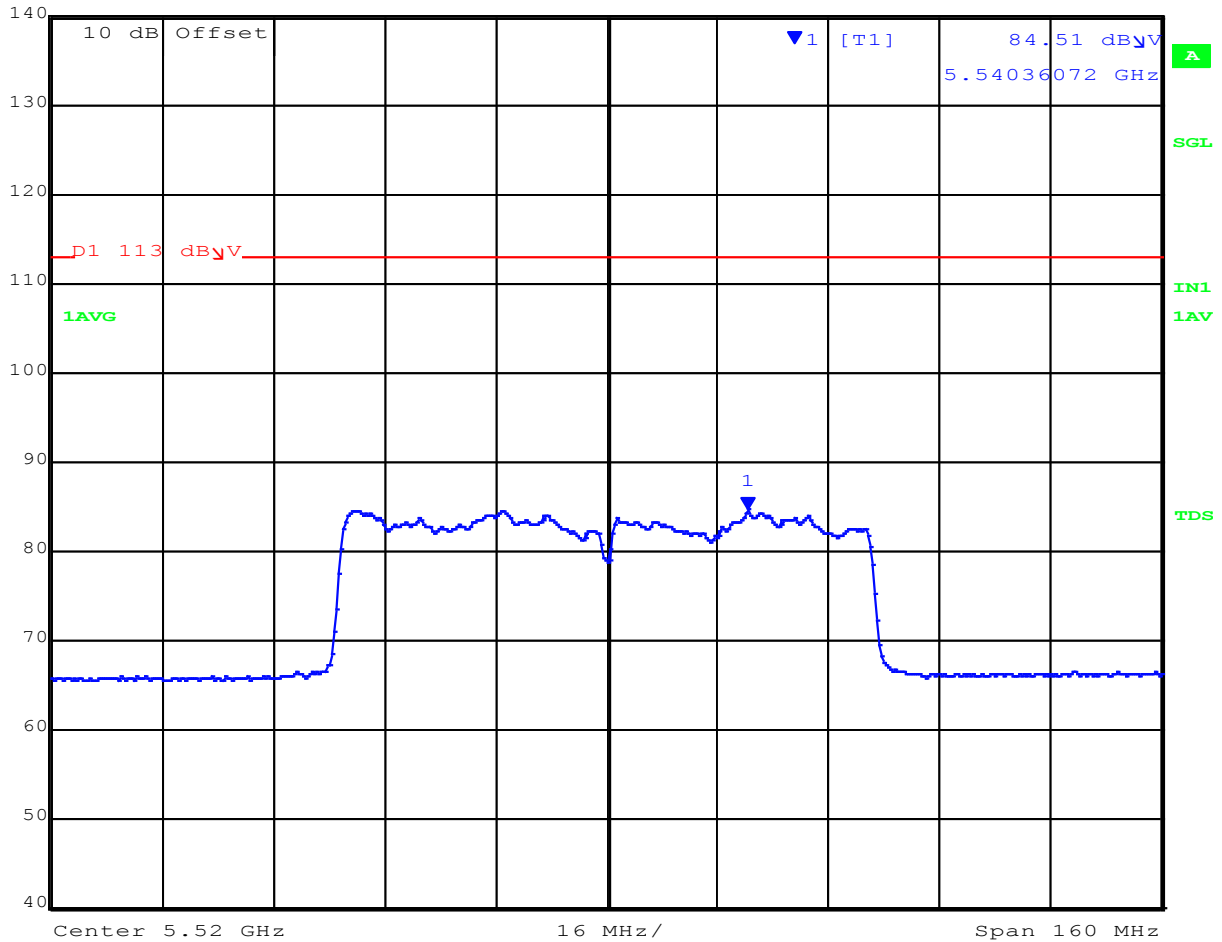
POWER SPECTRAL DENSITY



Variat: 80 MHz, Channel: 5520.00 MHz, Polarity V Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	84.51 dB μ V	VBW	3 MHz		
97 dB μ V	5.54036072 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 15:58:09

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5304.91 MHz :84.51 dB μ V/m	Limit: \leq 6.00 dBm, 113 dB μ Vm

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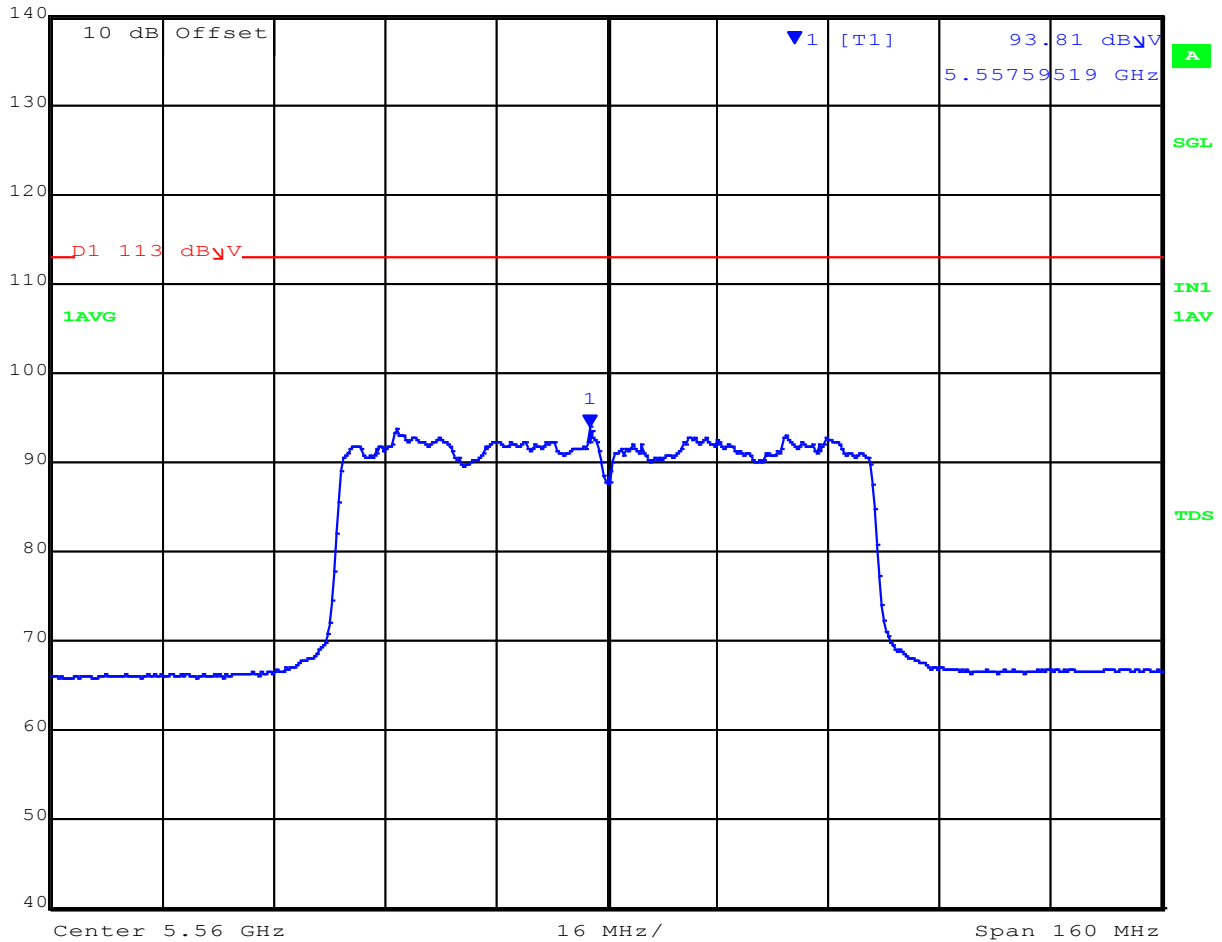
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POWER SPECTRAL DENSITY



Variant: 80 MHz, Channel: 5560.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc

	Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	140 dB μ V	93.81 dB μ V	VBW	3 MHz		
	97 dB μ V	5.55759519 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 16:02:11

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5312.99 MHz : 93.81 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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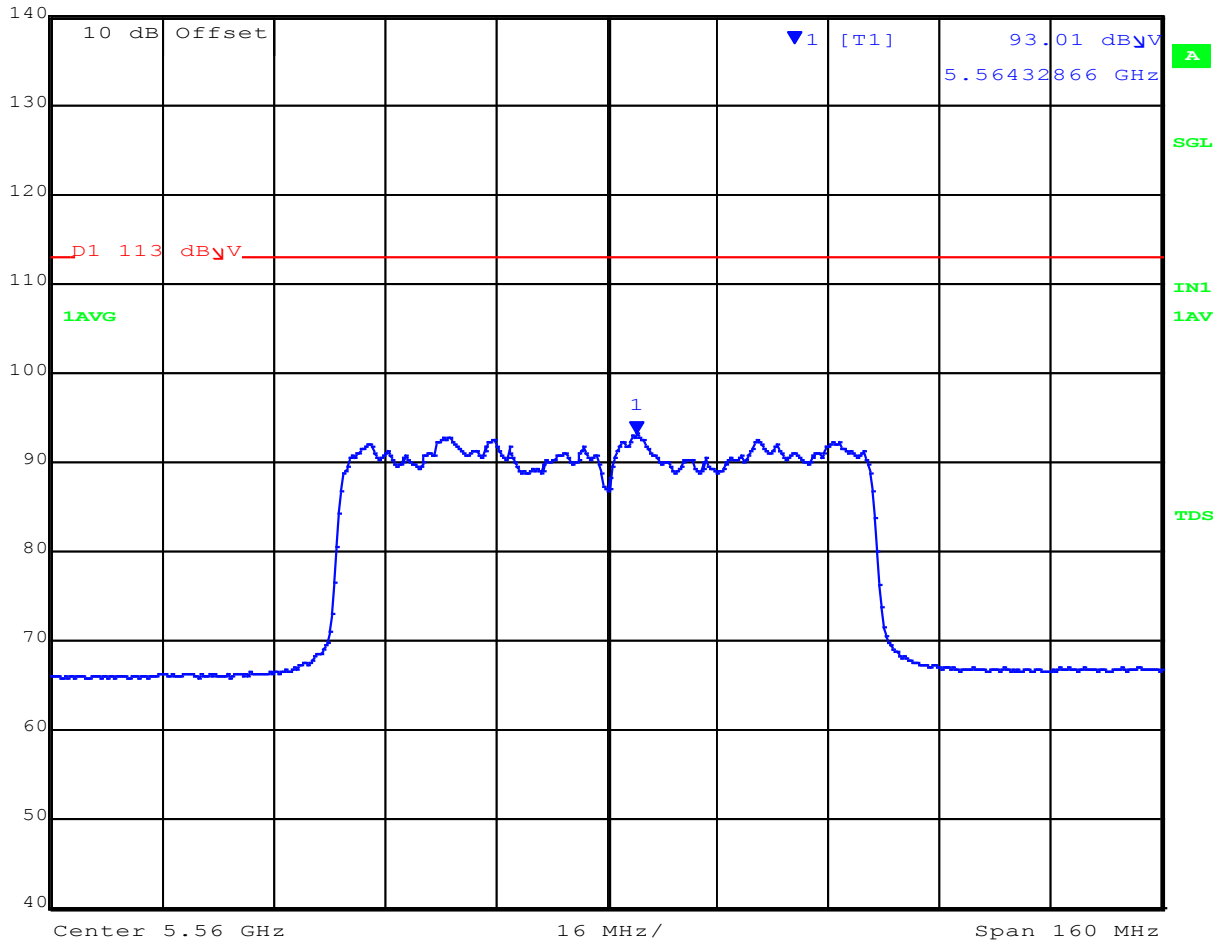
POWER SPECTRAL DENSITY



Variants: 80 MHz, Channel: 5560.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	93.01 dB μ V	VBW	3 MHz		
97 dB μ V	5.56432866 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 16:03:22

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5297.27 MHz : 93.01 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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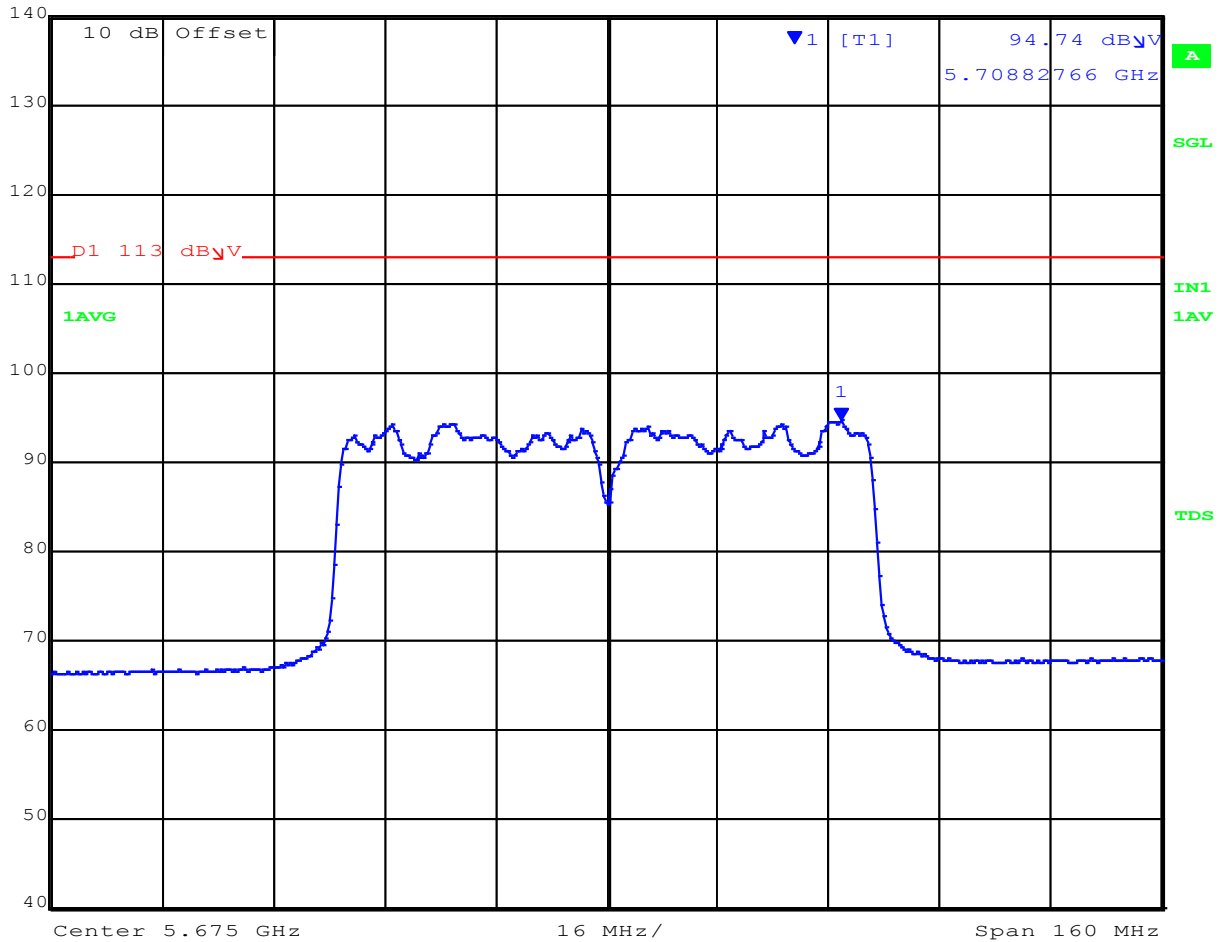
POWER SPECTRAL DENSITY



Variant: 80 MHz, Channel: 5675.00 MHz, Polarity H, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	94.74 dB μ V	VBW	3 MHz		
97 dB μ V	5.70882766 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 17:32:20

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5330.41 MHz : 94.74 dBuV/m	Limit: ≤ 6.00 dBm, 113 dBuVm

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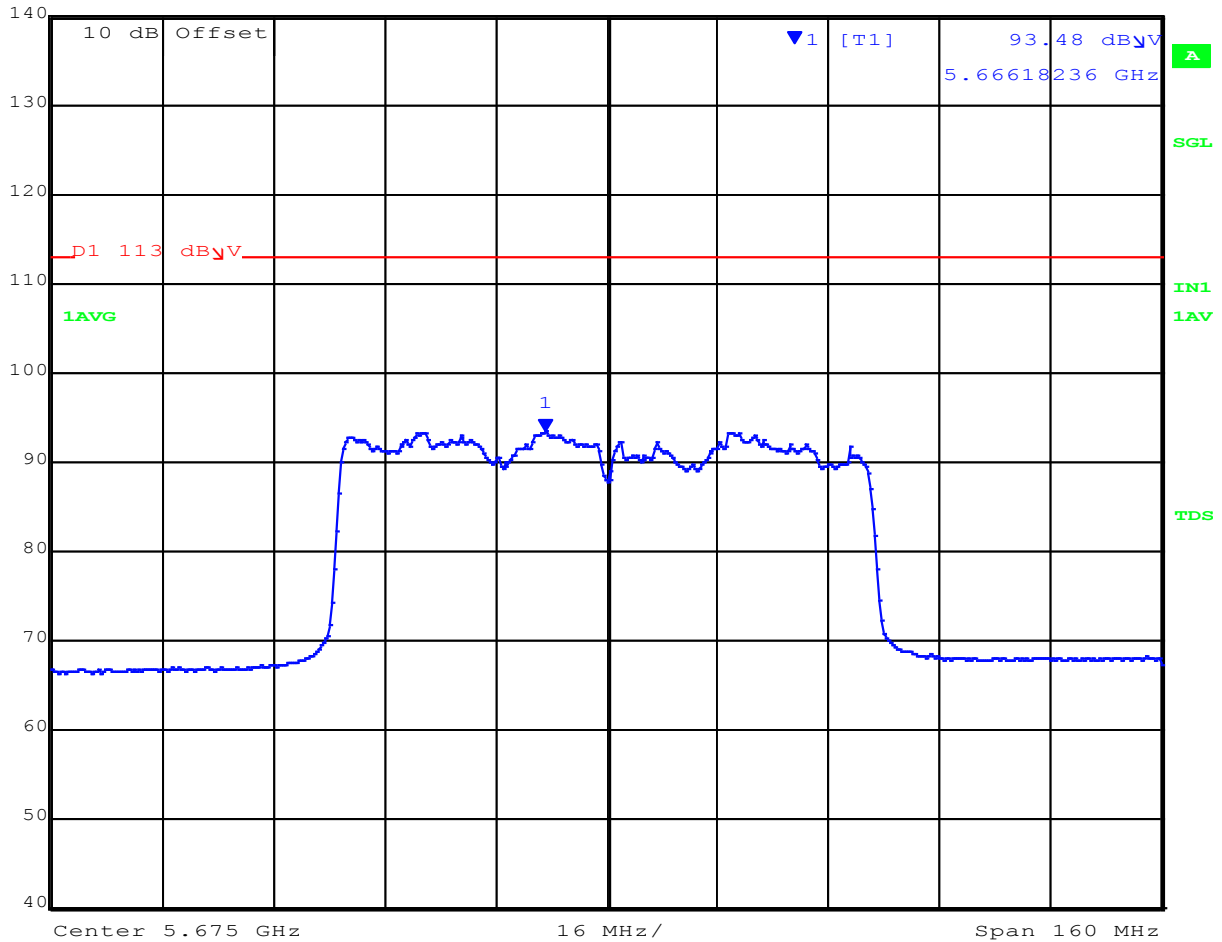
POWER SPECTRAL DENSITY



Variation: 80 MHz, Channel: 5675.00 MHz, Polarity V, Temp: 20, Voltage: 48 Vdc



Max/Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
140 dB μ V	93.48 dB μ V	VBW	3 MHz		
97 dB μ V	5.66618236 GHz	SWT	5 ms	Unit	dB μ V



Date: 24.OCT.2017 17:33:37

Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = Average Sweep Count = 100 RF Atten (dB) = 0 Trace Mode = VIEW	M1 : 5287.49 MHz : 93.48 dBuV/m	Limit: \leq 6.00 dBm, 113 dBuVm

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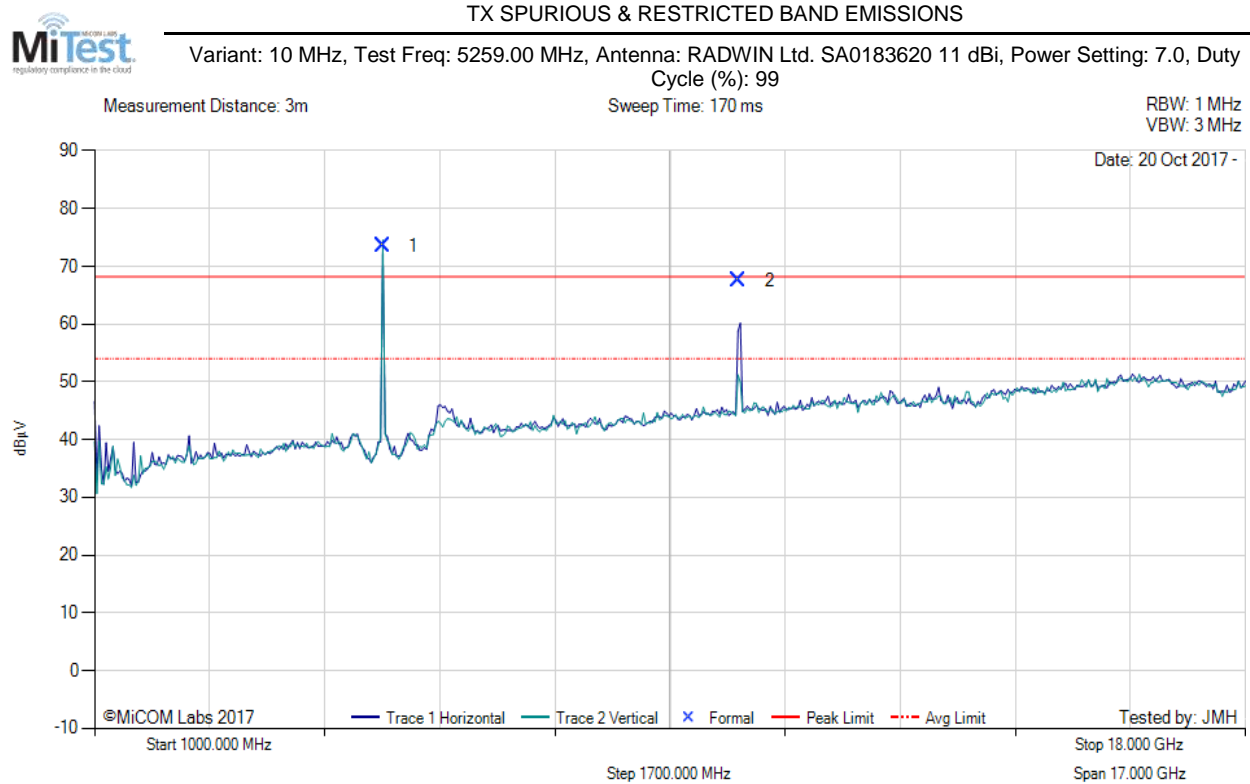


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A.3. Radiated

A.3.1. TX Spurious & Restricted Band Emissions

A.3.1.1. RADWIN Ltd. SA0183620 11 dBi



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5261.33	84.78	3.11	-14.34	73.55	Fundamental	Vertical	151	0	--	--	
2	10517.92	62.68	4.48	0.33	67.49	Max Peak	Horizontal	159	26	68.2	-0.7	Pass

Test Notes: EUT powered by POE and connected to laptop outside chamber

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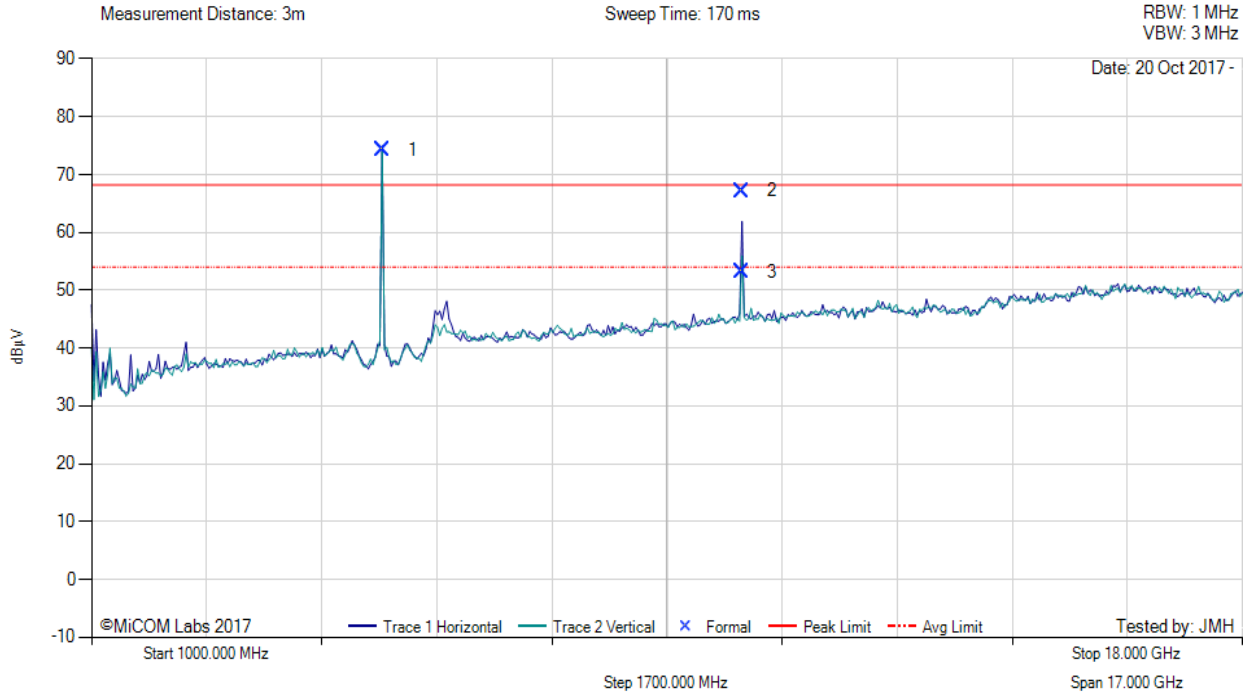


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TX SPURIOUS & RESTRICTED BAND EMISSIONS



Variant: 10 MHz, Test Freq: 5300.00 MHz, Antenna: RADWIN Ltd. SA0183620 11 dBi, Power Setting: 6.5, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5296.39	85.51	3.11	-14.39	74.23	Fundamental	Horizontal	151	0	--	--	Pass
2	10600.28	62.44	4.78	-0.03	67.19	Max Peak	Horizontal	147	49	68.2	-1.0	Pass
3	10600.28	48.34	4.78	-0.03	53.09	Max Avg	Horizontal	147	49	54.0	-0.9	Pass

Test Notes: EUT powered by POE and connected to laptop outside chamber

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TX SPURIOUS & RESTRICTED BAND EMISSIONS

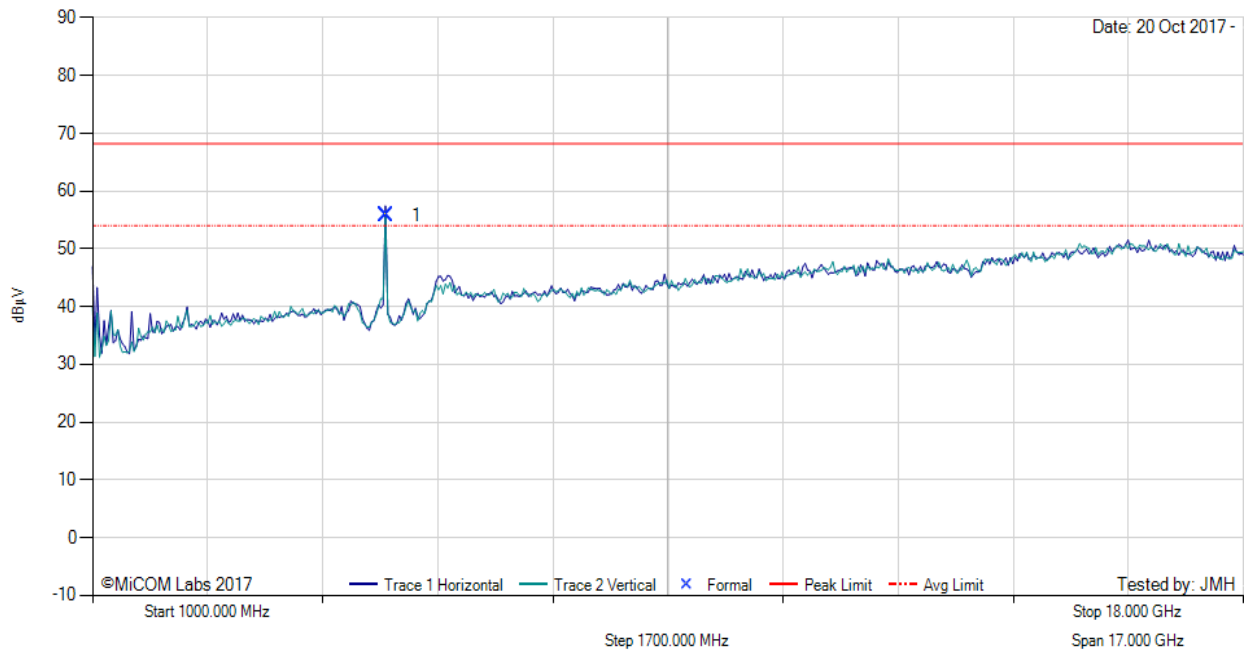
Variant: 10 MHz, Test Freq: 5341.00 MHz, Antenna: RADWIN Ltd. SA0183620 11 dBi, Power Setting: -2.5, Duty Cycle (%): 99

Measurement Distance: 3m

Sweep Time: 170 ms

RBW: 1 MHz
 VBW: 3 MHz

Date: 20 Oct 2017 -



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5337.18	67.00	3.14	-14.31	55.83	Fundamental	Horizontal	151	0	--	--	

Test Notes: EUT powered by POE and connected to laptop outside chamber

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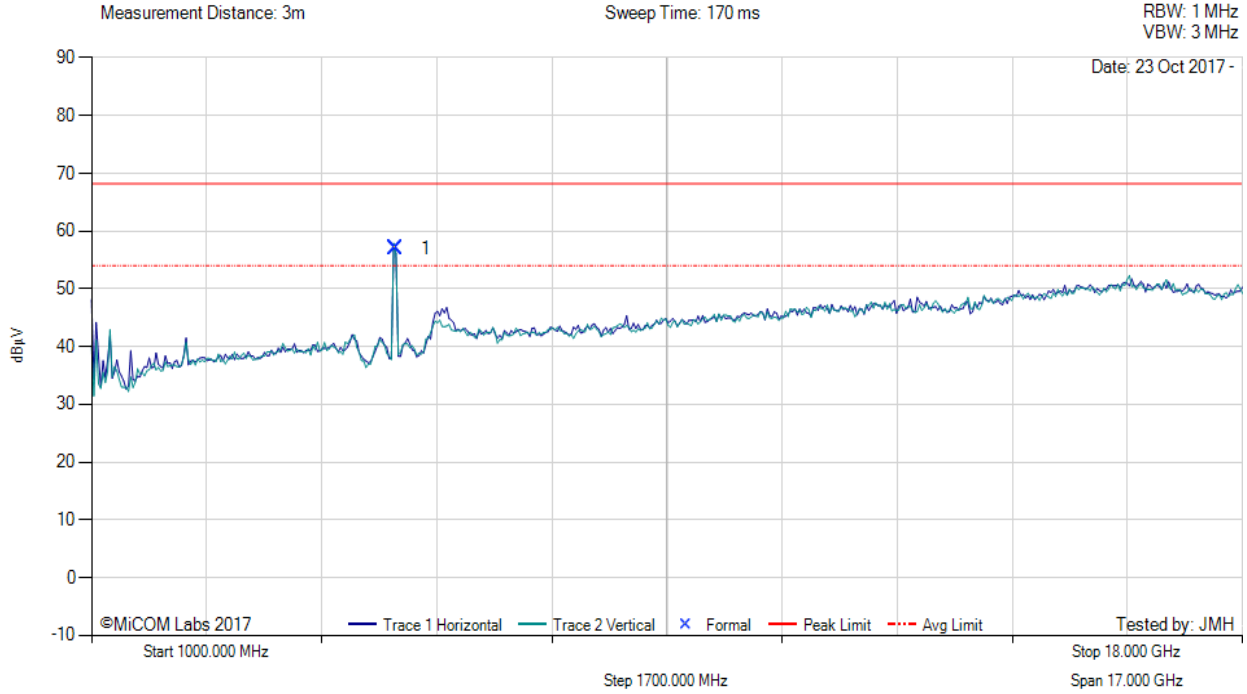


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TX SPURIOUS & RESTRICTED BAND EMISSIONS



Variant: 10 MHz, Test Freq: 5484.00 MHz, Antenna: RADWIN Ltd. SA0183620 11 dBi, Power Setting: 3, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5484.43	67.45	3.16	-13.56	57.05	Fundamental	Vertical	150	0	--	--	

Test Notes: EUT powered by POE and connected to laptop outside chamber

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TX SPURIOUS & RESTRICTED BAND EMISSIONS

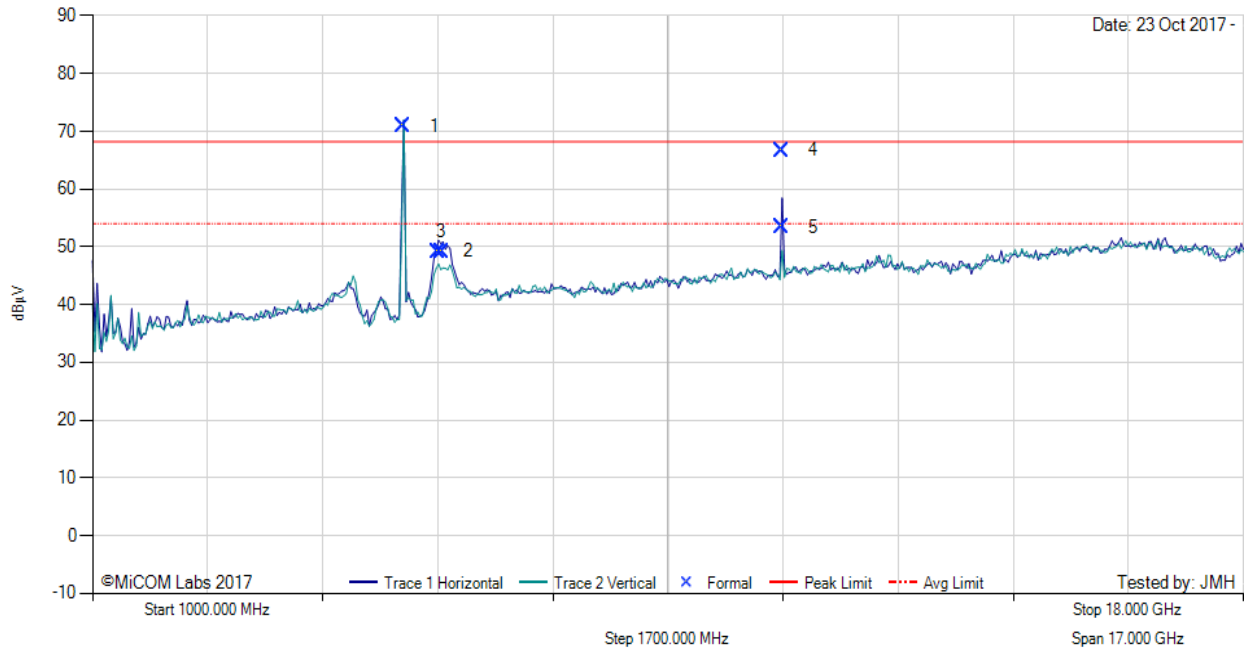
Variant: 10 MHz, Test Freq: 5595.00 MHz, Antenna: RADWIN Ltd. SA0183620 11 dBi, Power Setting: 18, Duty Cycle (%): 99

Measurement Distance: 3m

Sweep Time: 170 ms

RBW: 1 MHz
VBW: 3 MHz

Date: 23 Oct 2017 -



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5594.90	80.95	3.25	-13.31	70.89	Fundamental	Horizontal	151	0	--	--	Pass
2	6101.13	57.89	3.24	-11.89	49.24	Peak (NRB)	Horizontal	151	0	--	--	Pass
3	6157.80	57.87	3.24	-11.95	49.16	Peak (NRB)	Horizontal	151	0	--	--	Pass
4	11186.76	63.54	4.25	-1.11	66.68	Max Peak	Horizontal	165	338	68.2	-1.6	Pass
5	11186.76	50.30	4.25	-1.11	53.44	Max Avg	Horizontal	165	338	54.0	-0.6	Pass

Test Notes: EUT powered by POE and connected to laptop outside chamber

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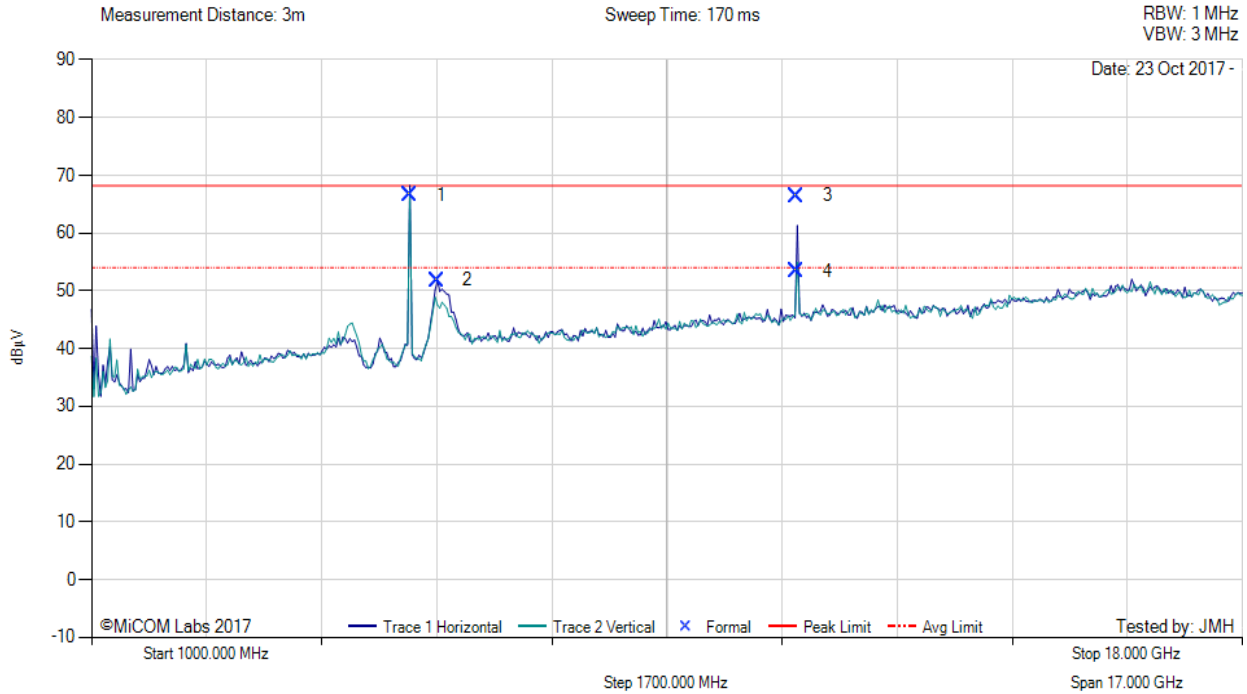


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TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variat: 10 MHz, Test Freq: 5711.00 MHz, Antenna: RADWIN Ltd. SA0183620 11 dBi, Power Setting: 16.5, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5711.10	76.41	3.19	-13.04	66.56	Fundamental	Horizontal	151	0	--	--	Pass
2	6097.27	60.56	3.24	-11.99	51.81	Peak (NRB)	Horizontal	151	0	--	--	Pass
3	11418.84	62.76	4.50	-0.82	66.44	Max Peak	Horizontal	164	47	68.2	-1.8	Pass
4	11418.84	49.77	4.50	-0.82	53.45	Max Avg	Horizontal	164	47	54.0	-0.6	Pass

Test Notes: EUT powered by POE and connected to laptop outside chamber

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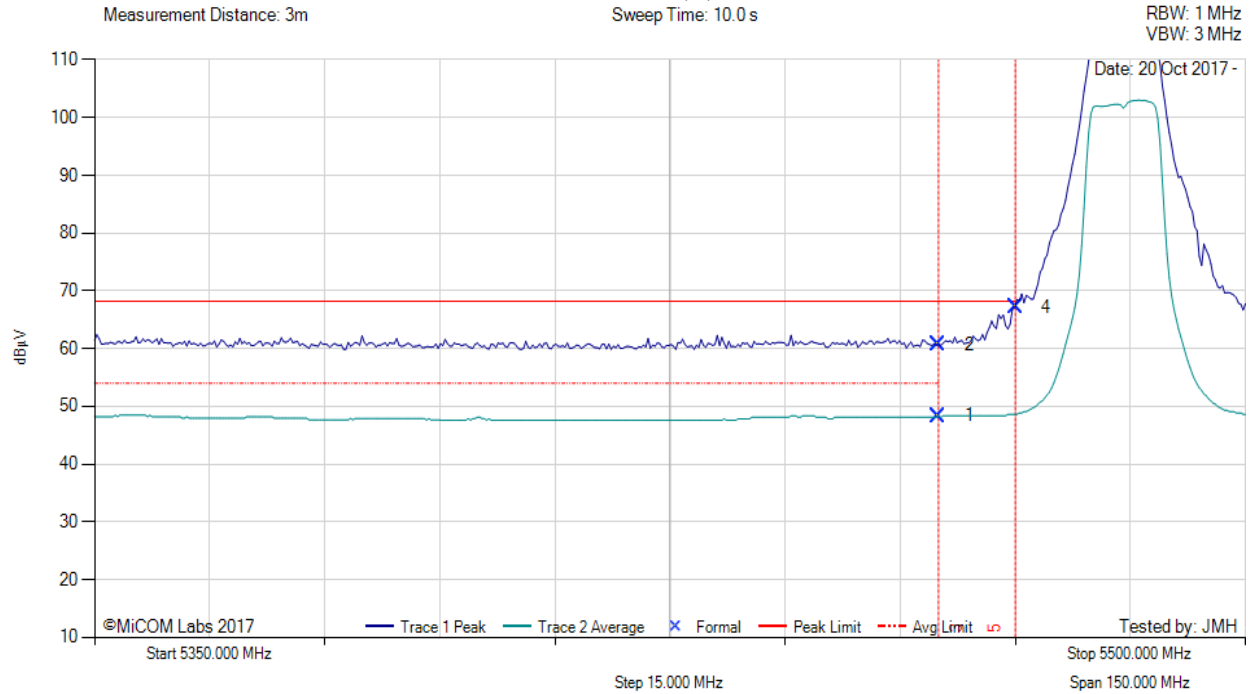
A.3.2. Restricted Edge & Band-Edge Emissions

A.3.2.2. RADWIN Ltd. SA0183620 11 dBi



RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 10 MHz, Test Freq: 5484.00 MHz, Antenna: RADWIN Ltd. SA0183620 11 dBi, Power Setting: 3, Duty Cycle (%): 99



5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5460.00	9.24	3.15	36.00	48.39	Max Avg	Horizontal	155	10	54.0	-5.6	Pass
2	5460.00	21.58	3.15	36.00	60.73	Max Peak	Horizontal	155	10	68.2	-7.5	Pass
4	5470.00	27.95	3.16	36.00	67.11	Max Peak	Horizontal	155	10	68.2	-1.1	Pass
3	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
5	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT Powered by POE and connected to laptop outside chamber

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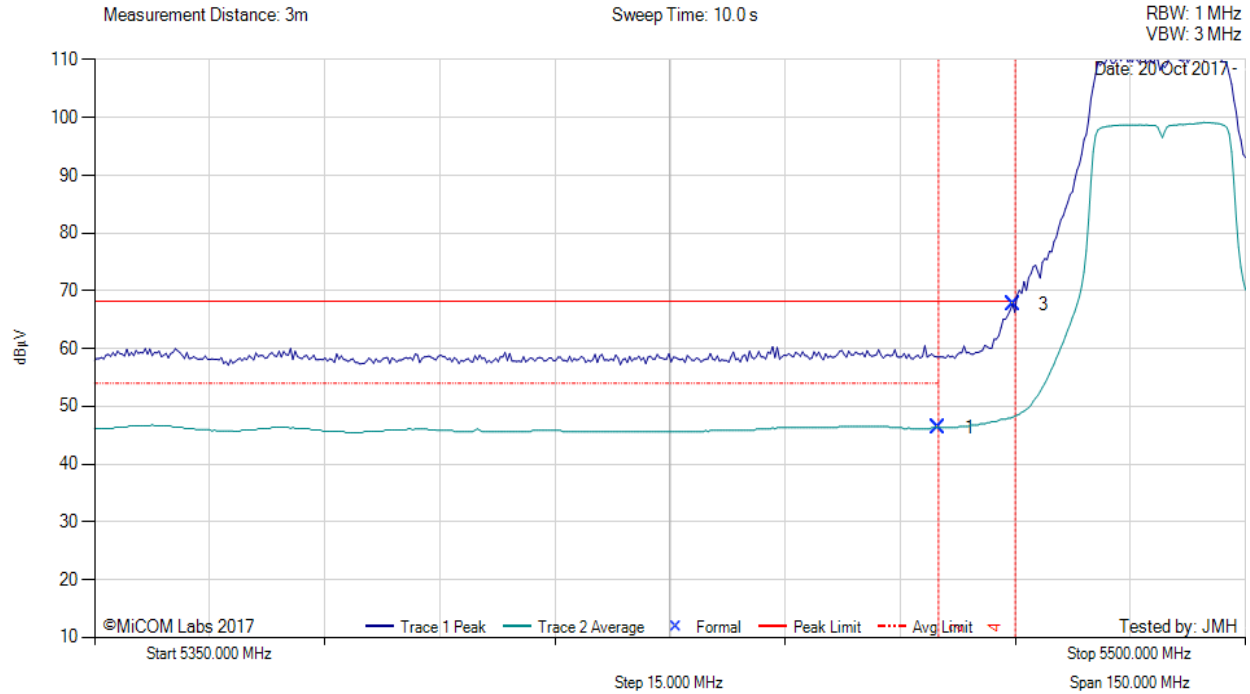


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RESTRICTED LOWER BAND-EDGE EMISSIONS



Variant: 20 MHz, Test Freq: 5489.00 MHz, Antenna: RADWIN Ltd. SA0183620 11 dBi, Power Setting: 3, Duty Cycle (%): 99



5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5460.00	7.18	3.15	36.00	46.33	Max Avg	Horizontal	155	10	68.2	-21.9	Pass
3	5469.70	28.49	3.16	36.00	67.65	Max Peak	Horizontal	155	10	68.2	-0.6	Pass
2	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
4	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT Powered by POE and connected to laptop outside chamber

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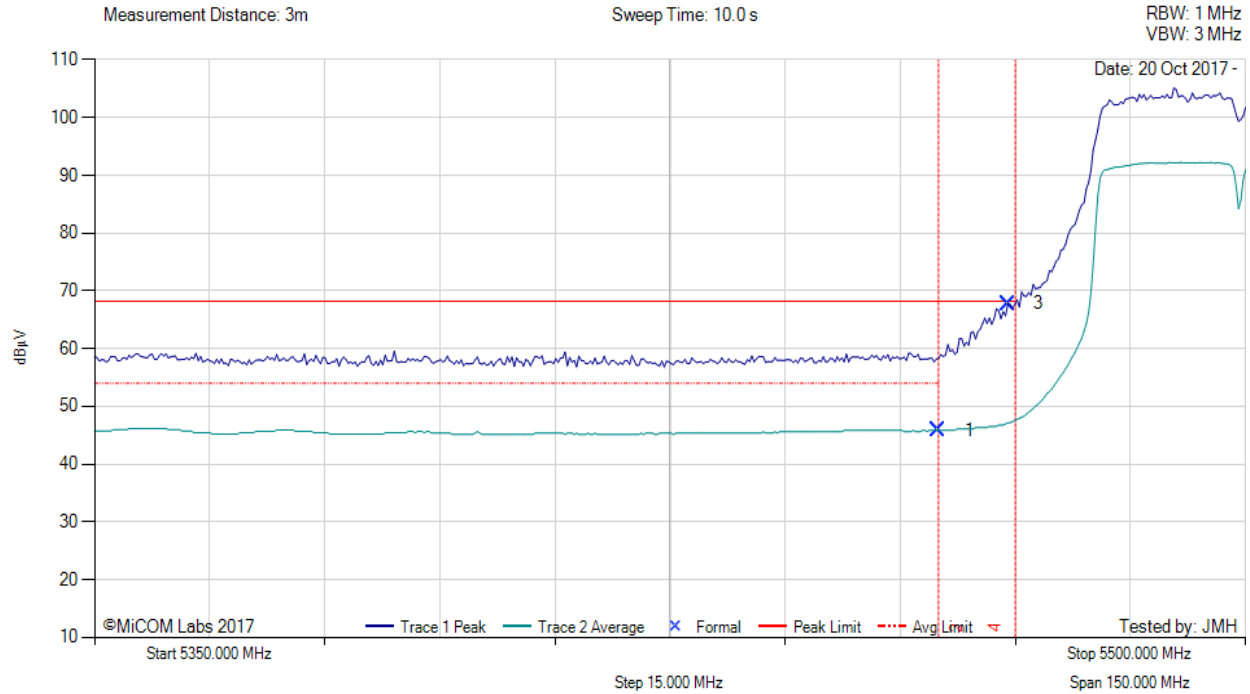


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RESTRICTED LOWER BAND-EDGE EMISSIONS



Variant: 40 MHz, Test Freq: 5499.00 MHz, Antenna: RADWIN Ltd. SA0183620 11 dBi, Power Setting: 0, Duty Cycle (%): 99



5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5460.00	6.72	3.15	36.00	45.87	Max Avg	Horizontal	155	10	68.2	-22.3	Pass
3	5469.10	28.65	3.15	36.00	67.80	Max Peak	Horizontal	155	10	68.2	-0.4	Pass
2	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
4	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by POE and connected to laptop outside chamber

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RESTRICTED LOWER BAND-EDGE EMISSIONS

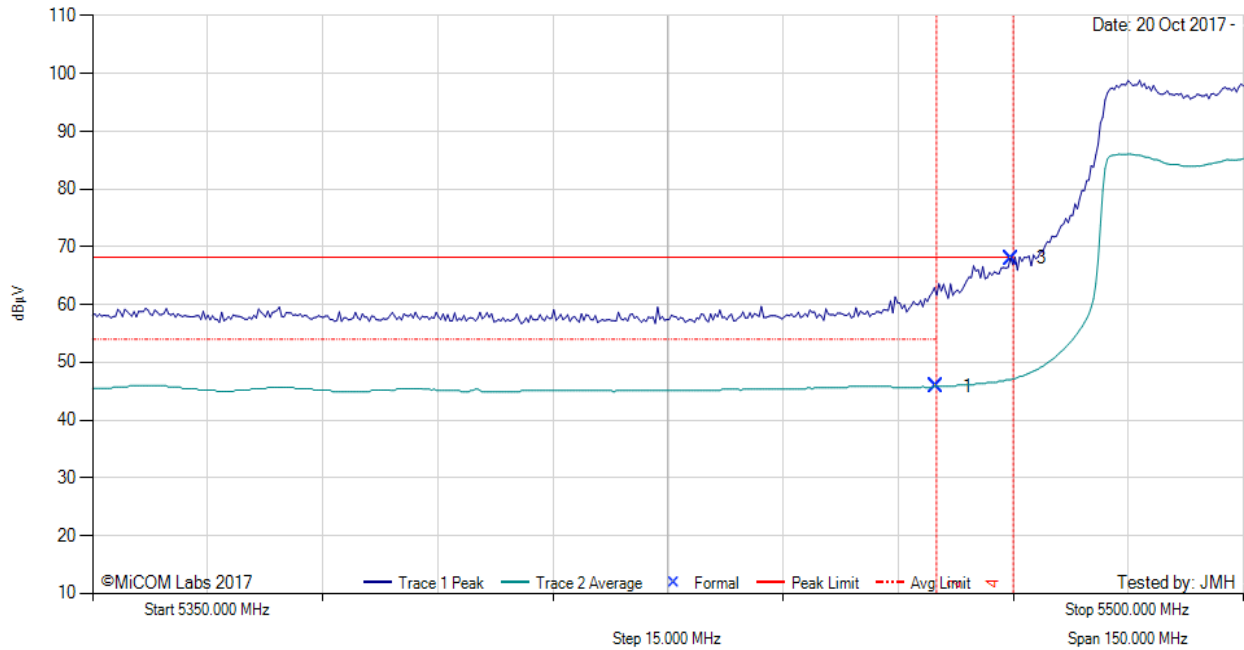


Variant: 80 MHz, Test Freq: 5520.00 MHz, Antenna: RADWIN Ltd. SA0183620 11 dBi, Power Setting: -3.5, Duty Cycle (%): 99

Measurement Distance: 3m

Sweep Time: 10.0 s

RBW: 1 MHz
 VBW: 3 MHz



5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5460.00	6.72	3.15	36.00	45.87	Max Avg	Horizontal	155	10	68.2	-22.3	Pass
3	5469.70	28.85	3.16	36.00	68.01	Max Peak	Horizontal	155	10	68.2	-0.2	Pass
2	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
4	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by POE and connected to laptop outside chamber

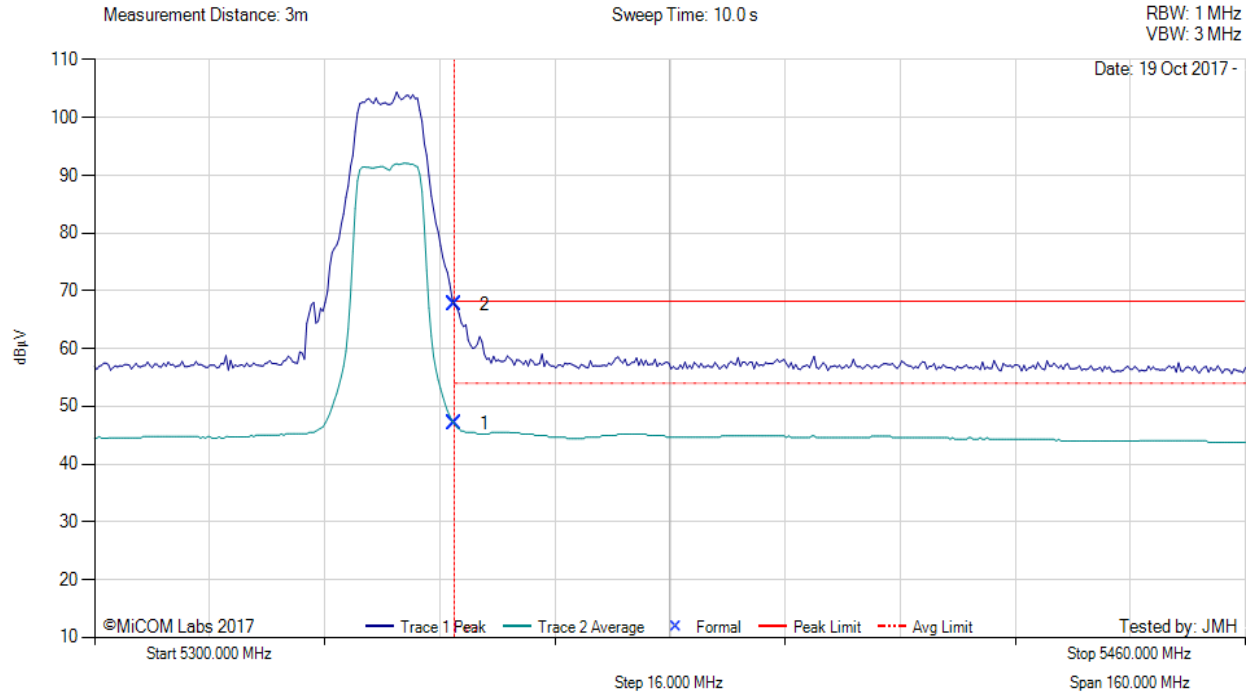
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RESTRICTED UPPER BAND-EDGE EMISSIONS

Variant: 10 MHz, Test Freq: 5341.00 MHz, Antenna: RADWIN Ltd. SA0183620 11 dBi, Power Setting: -5



5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5350.00	8.08	3.18	35.80	47.06	Max Avg	Horizontal	155	8	54.0	-6.9	Pass
2	5350.00	28.64	3.18	35.80	67.62	Max Peak	Horizontal	155	8	68.2	-0.6	Pass
3	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE and connected to laptop outside chamber

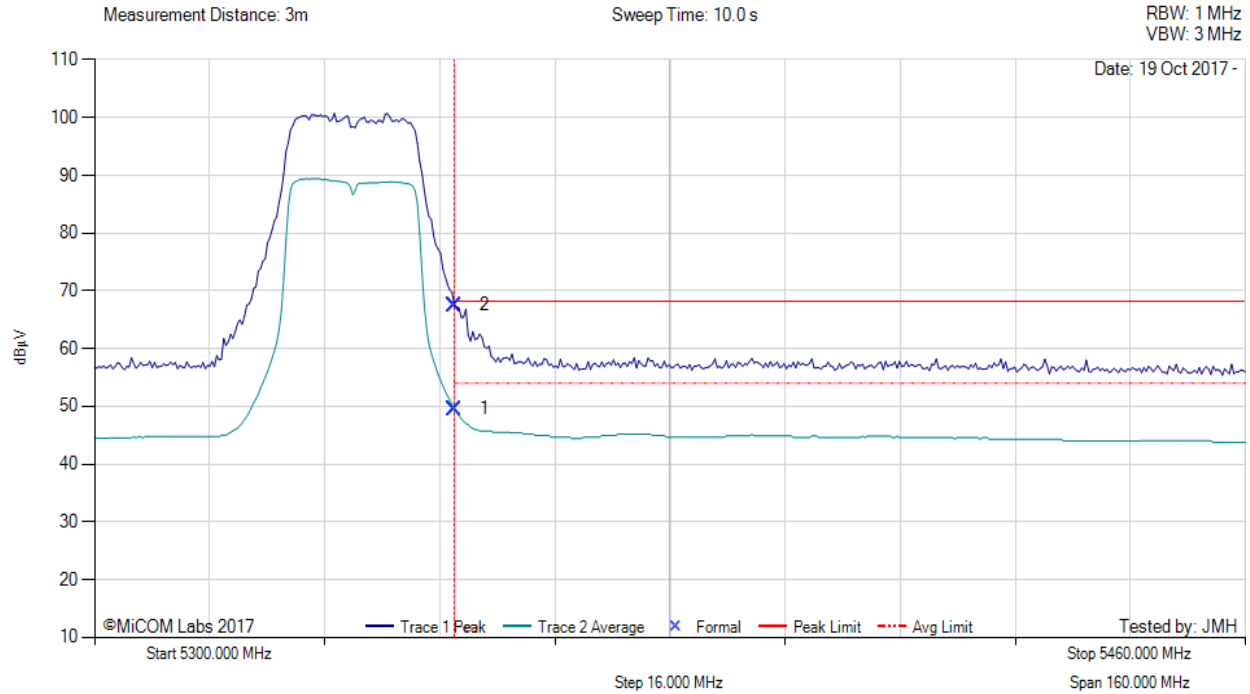
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RESTRICTED UPPER BAND-EDGE EMISSIONS

Variant: 20 MHz, Test Freq: 5336.00 MHz, Antenna: RADWIN Ltd. SA0183620 11 dBi, Power Setting: -5



5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5350.00	10.58	3.18	35.80	49.56	Max Avg	Horizontal	155	8	54.0	-4.4	Pass
2	5350.00	28.58	3.18	35.80	67.56	Max Peak	Horizontal	155	8	68.2	-0.7	Pass
3	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE and connected to laptop outside chamber

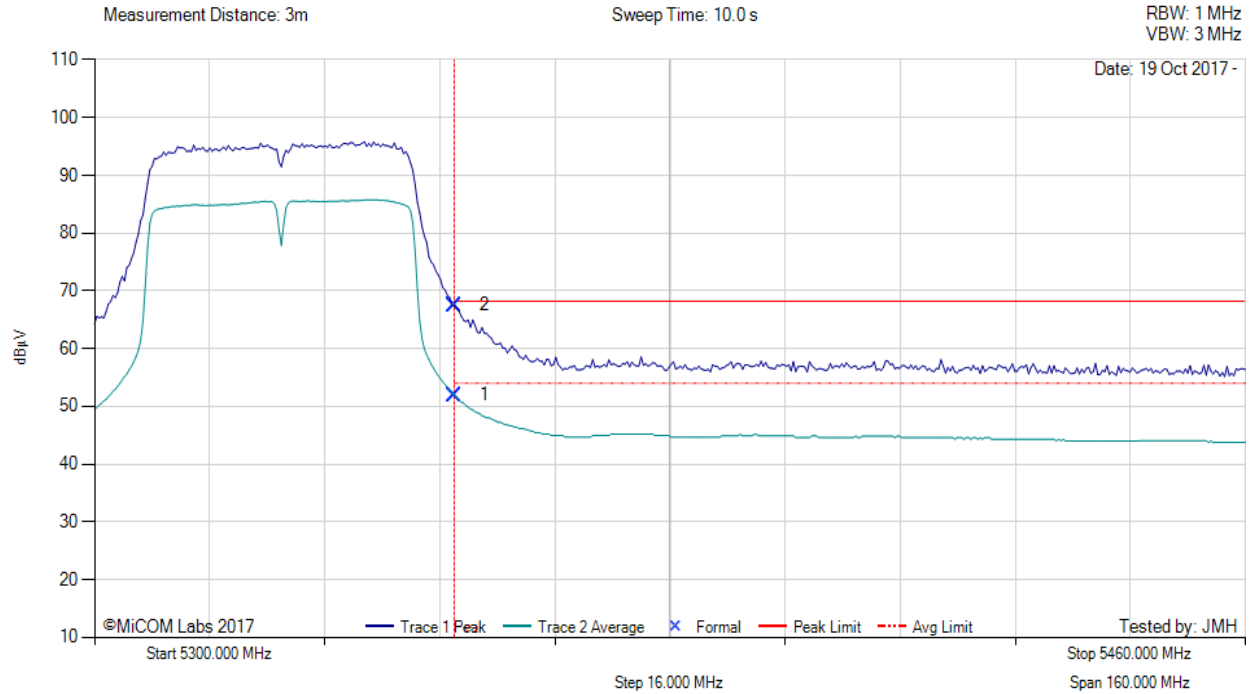
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RESTRICTED UPPER BAND-EDGE EMISSIONS

Variant: 40 MHz, Test Freq: 5326.00 MHz, Antenna: RADWIN Ltd. SA0183620-11 dBi, Power Setting: -5



5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5350.00	13.00	3.18	35.80	51.98	Max Avg	Horizontal	155	8	54.0	-2.0	Pass
2	5350.00	28.58	3.18	35.80	67.56	Max Peak	Horizontal	155	8	68.2	-0.7	Pass
3	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE and connected to laptop outside chamber

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RESTRICTED UPPER BAND-EDGE EMISSIONS

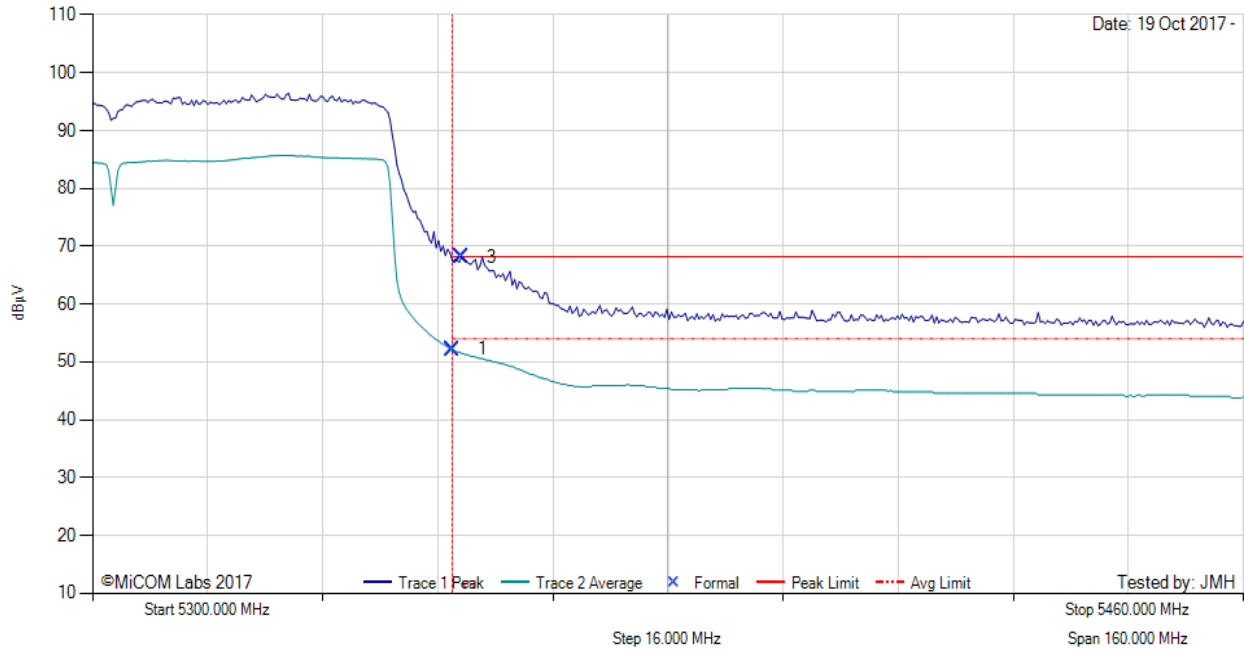
Variant: 80 MHz, Test Freq: 5303.00 MHz, Antenna: RADWIN Ltd. SA0183620 11 dBi, Power Setting: -2.5, Duty Cycle (%): 99

Measurement Distance: 3m

Sweep Time: 10.0 s

RBW: 1 MHz
VBW: 3 MHz

Date: 19 Oct 2017 -



5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5350.00	13.23	3.18	35.80	52.21	Max Avg	Horizontal	155	8	54.0	-1.8	Pass
3	5351.28	29.15	3.18	35.80	68.13	Max Peak	Horizontal	155	8	68.2	-0.1	Pass
2	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE, and connected to laptop outside chamber

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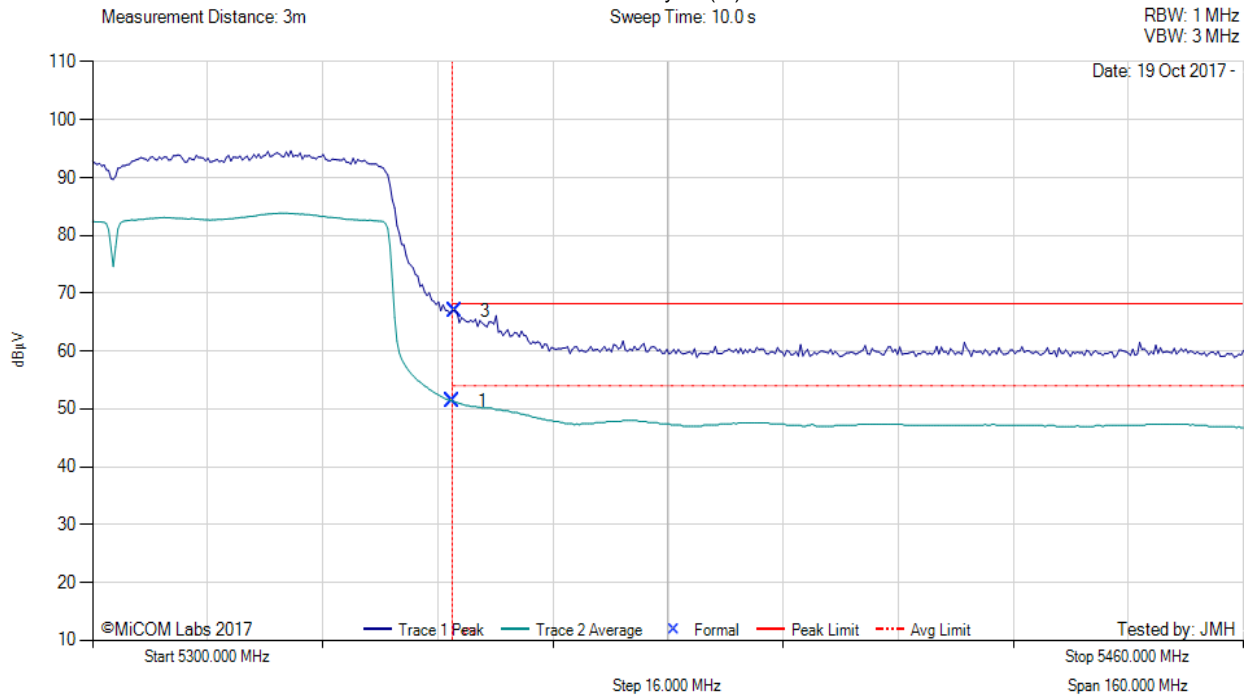


A.3.2.3. RADWIN Ltd. SA0183620-20.5 dBi



RESTRICTED UPPER BAND-EDGE EMISSIONS

Variant: 80 MHz, Test Freq: 5310.00 MHz, Antenna: RADWIN Ltd. SA0183620-20.5 dBi, Power Setting: -16, Duty Cycle (%): 99



5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	5350.00	12.39	3.18	35.80	51.37	Max Avg	Horizontal	155	8	54.0	-2.6	Pass
3	5350.32	28.02	3.18	35.80	67.00	Max Peak	Horizontal	155	8	68.2	-1.2	Pass
2	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE, and connected to laptop outside chamber

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