Company: Radwin Ltd

Test of: RADWIN 2000 JET, RADWIN 5000 JET

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

Report No.: RDWN32-U2a Rev A

CONDUCTED & RADIATED TEST REPORT



CONDUCTED AND RADIATED TEST REPORT



Test of: Radwin RADWIN 2000 JET, RADWIN 5000 JET

to

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

Test Report Serial No.: RDWN32-U2a Rev A

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

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

This report supersedes: NONE

Applicant: Radwin Ltd.

27 Habarzel Street Tel Aviv 69710

Israel

Product Function: Multipole MIMO PtP/PtMP Smart

Antenna Outdoor Radio Device

Issue Date: 29th July 2015

This Test Report is Issued Under the Authority of:

MiCOM Labs, Inc.

575 Boulder Court Pleasanton California 94566 USA

Phone: +1 (925) 462-0304 Fax: +1 (925) 462-0306 www.micomlabs.com



MiCOM Labs is an ISO 17025 Accredited Testing Laboratory



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 3 of 223

Table of Contents

1.	ACCREDITATION, LISTINGS & RECOGNITION	4
	1.1. TESTING ACCREDITATION	4
	1.2. RECOGNITION	5
	1.3. PRODUCT CERTIFICATION	6
2.	DOCUMENT HISTORY	7
	TEST RESULT CERTIFICATE	
4.	REFERENCES AND MEASUREMENT UNCERTAINTY	9
	4.1. Normative References	9
	4.2. Test and Uncertainty Procedure	.10
5.	PRODUCT DETAILS AND TEST CONFIGURATIONS	.11
	5.1. Technical Details	
	5.2. Scope Of Test Program	.12
	5.3. Equipment Model(s) and Serial Number(s)	.14
	5.4. Antenna Details	
	5.5. Cabling and I/O Ports	.14
	5.6. Test Configurations	.15
	5.7. Equipment Modifications	
	5.8. Deviations from the Test Standard	.15
6.	TEST SUMMARY	.16
7.	TEST EQUIPMENT CONFIGURATION(S)	.17
	7.1. Conducted	.17
8.	MEASUREMENT AND PRESENTATION OF TEST DATA	.20
9.	TEST RESULTS	
	9.1. Peak Transmit Power	
	9.2. 26 dB & 99% Bandwidth	
	9.3. Peak Power Spectral Density	.33
	9.4. Radiated Testing	
	9.4.1. Radiated Spurious Emissions	
	9.4.2. Restricted Band-Edge Spurious	.47
	9.4.3. Digital Emissions (0.03 – 1 GHz)	. 54
A.	. APPENDIX - GRAPHICAL IMAGES	
	A.1. 26 dB & 99% Bandwidth	
	A.2. Peak Power Spectral Density1	
	A.3. Radiated Spurious Emissions	
	A.4. Radiated Restricted Band-Edge Emissions	217



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

Serial #: RDWN32-U2a Rev A

Page: 29thJuly 2015 **Page:** 4 of 223

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/scopepdf/2381-01.pdf





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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 5 of 223

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	USA Federal Communications Commission (FCC)		-	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	
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	US0159
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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 6 of 223

1.3. PRODUCT CERTIFICATION

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



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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 7 of 223

2. DOCUMENT HISTORY

Document History					
Revision	Date	Comments			
Draft	21 st July 2015				
Draft #2	27 th July 2015				
Rev A	29 th July 2015	Initial Release			
·					
·					

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



Title: Radwin RADWIN 2000 JET, RADWIN 5000 JET **To:** FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 8 of 223

3. TEST RESULT CERTIFICATE

Manufacturer: Radwin

27 Habarzel Street Tel Aviv 69710

Israel

Model: RADWIN 2000 JET, RADWIN 5000 JET

Type Of Equipment: Smart Antenna Outdoor Radio Device

S/N's: C121901000D00212

Test Date(s): 6th – 8th July 2015

Tested By: MiCOM Labs, Inc.

575 Boulder Court

Pleasanton

California 94566 USA

Telephone: +1 925 462 0304

Fax: +1 925 462 0306

Website: www.micomlabs.com

STANDARD(S)

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

TEST RESULTS

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:

Ollu

TESTING CERT #2381.01

Gordon Hurst

President & CEO MiCOM Labs, Inc.

Graeme Grieve

Quality Manager MiCOM Labs, Inc.



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page**: 9 of 223

4. REFERENCES AND MEASUREMENT UNCERTAINTY

4.1. Normative References

REF.	PUBLICATION	YEAR	TITLE
I	KDB 662911	Oct 31 2013	Guidance for measurement of output emission of devices that employ single transmitter with multiple outputs or systems with multiple transmitters operating simultaneously in the same frequency band
П	KDB 905462 D07 v01	10th June 2015	Test guidance to demonstrate compliance for U-NII devices subject to DFS requirements.
III	KDB 926956 DO1 v01r02	17th October 2014	U-NII Device Transition Plan
IV	KDB 789033 D02 v01	6th June 2014	General UNII Test Procedures New Rules V01
V	A2LA	June 2015	R105 - Requirement's When Making Reference to A2LA Accreditation Status
VI	ANSI C63.10	2013	American National Standard for Testing Unlicensed Wireless Devices
VII	ANSI C63.4	2014	American National Standards for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
VIII	CISPR 22	2008	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
IX	ETSI TR 100 028	2001-12	Parts 1 and 2 Electromagnetic compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics
Х	FCC 06-96	Jun 3 2006	Memorandum Opinion and Order
XI	FCC 47 CFR Part 15.407	2014	Radio Frequency Devices; Subpart E –Unlicensed National Information Infrastructure Devices
XII	ICES-003	Issue 5 2012	Spectrum Management and Telecommunications; Interference-Causing Equipment Standard. Information Technology Equipment (ITE) – Limits and methods of measurement.
XIII	M 3003	Edition 3 Nov. 2012	Expression of Uncertainty and Confidence in Measurements
XIV	RSS-247, Issue 1	May 2015	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
XV	RSS-Gen, Issue 4	Nov 2014	General Requirements and Information for the Certification of Radiocommunication Equipment
XVI	KDB 644545 D03 v01	August 14th 2014	Guidance for IEEE 802.11ac New Rules
XVII	FCC 47 CFR Part 2.1033	2014	FCC requirements and rules regarding photographs and test setup diagrams.



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 10 of 223

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.



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 11 of 223

5. PRODUCT DETAILS AND TEST CONFIGURATIONS

5.1. <u>Technical Details</u>

Details	Description
Purpose:	Test of the Radwin RADWIN 2000 JET, RADWIN 5000 JET to FCC
	CFR 47 Part 15 Subpart E 15.407, Industry Canada RSS-247
	Radio Frequency Devices; Subpart E –Unlicensed National
A 12	Information Infrastructure Devices
Applicant:	Radwin Ltd
	27 Habarzel Street Tel Aviv 69710 Israel
Manufacturer:	
Laboratory performing the tests:	• •
Education y performing the toole.	575 Boulder Court
	Pleasanton California 94566 USA
Test report reference number:	RDWN32-U2a
Date EUT received:	,
	FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247 Issue 1
Dates of test (from - to):	6 th – 8 th July 2015
No of Units Tested:	1
Type of Equipment:	Smart Antenna Outdoor Radio Device
Product Family Name:	RADWIN JET
Model(s):	RADWIN 2000 JET, RADWIN 5000 JET
Location for use:	Outdoor
Declared Frequency Range(s):	5250 – 5350 & 5470 - 5725 MHz;
Primary function of equipment:	Multipole MIMO PtP/PtMP Smart Antenna Outdoor Radio Device
Secondary function of equipment:	None Provided
Type of Modulation:	OFDM
EUT Modes of Operation:	10, 20, 40 MHz Bandwidths
Transmit/Receive Operation:	Time Division Duplex (TDD)
Rated Input Voltage and Current:	POE (POE adaptor sold with unit) 55Vdc
Operating Temperature Range:	Declared Range -40°C to 60°C
ITU Emission Designator:	10M0W7W
	20M0W7W
F : 15:	40M0W7W
	13.9" x 9.0" x 2.6" inches
	11.6 lbs
Hardware Rev:	
Software Rev:	Prototype



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

Serial #: RDWN32-U2a Rev A

Page: 29thJuly 2015 12 of 223

5.2. Scope Of Test Program

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

FCC CFR 47 Part 15 Subpart E 15.407

Radio Frequency Devices; Subpart E – Unlicensed National Information Infrastructure Devices

Industry Canada RSS-247 Issue 1

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

EQUIPMENT CONFIGURATION

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

Antenna Chain (Port)	Antenna Gain (dBi)	Polarization	
а	20.5	Horizontal	
b	17.5	Vertical	
С	17.5	Vertical	

Power Spectral Density Test

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

Output Power

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page**: 13 of 223

RADWIN 2000 JET, RADWIN 5000 JET





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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page**: 14 of 223

Equipment Model(s) and Serial Number(s)

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

5.3. Antenna Details

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

BF Gain - Beamforming Gain Dir BW - Directional BeamWidth

X-Pol - Cross Polarization

5.4. Cabling and I/O Ports

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

^{*} antenna gain dedicated to chain (port) a (horizontal polarization)

^{**} antenna connected to chains (ports) b and c (vertical polarization)



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page**: 15 of 223

5.5. Test Configurations

Results for the following configurations are provided in this report:

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

5.6. Equipment Modifications

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

1. NONE

5.7. Deviations from the Test Standard

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

1. NONE



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 16 of 223

6. TEST SUMMARY

List of Measurements

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

^{*} manufacturer to provide test data



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 17 of 223

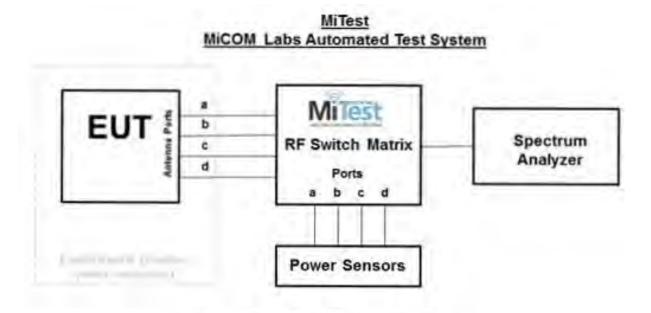
7. TEST EQUIPMENT CONFIGURATION(S)

7.1. Conducted

Conducted RF Emission Test Set-up(s)

The following tests were performed using the conducted test set-up shown in the diagram below.

- 1. Peak Transmit Power
- 2. 26 dB and 99% Bandwidth
- 3. Peak Power Spectral Density



Conducted Test Measurement Setup

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



Title: Radwin RADWIN 2000 JET, RADWIN 5000 JET **To:** FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page**: 18 of 223

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 19 of 223

RF# SMA#	11	Mitest box to SA	Flexco	SMA Cable SA	None	20 Dec 2015
RF# USB		JSB Cable to Mitest Box	Dynex	USB Cable	None	Not Required



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 20 of 223

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 <u>MiTest</u>. <u>MiTest</u> is an automated test system developed by MiCOM Labs. <u>MiTest</u> 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)



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

Serial #: RDWN32-U2a Rev A

Page: 29thJuly 2015 **Page:** 21 of 223

9. TEST RESULTS

9.1. 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):	See Normative References					

Test Procedure for Maximum Conducted Output Power Measurement

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

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

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

A = Total Power [$10*Log10 (10^{a/10} + 10^{b/10} + 10^{c/10} + 10^{d/10})$]

G = Antenna Gain

Y = Beamforming Gain

x = Duty Cycle (average power measurements only)

Limits Maximum Conducted Output Power

Operating Frequency Band 5150-5250 MHz

15. 407 (a)(1)

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

- (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29th July 2015 Page: 22 of 223

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.



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 23 of 223

Equipment Configuration for Peak Transmit Power

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

Test Measur	Test Measurement Results								
Test Frequency	Measure	Measured Conducted Output Power (dBm) Port(s)			Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power
MHz	а	b	С	d	Σ Port(s) dBm	MHz	dBm	dBm	Setting
5259.0	-1.98	-0.26	2.39		5.24	9.469	6.263	-1.023	6.50
5300.0	-1.78	-1.37	2.27		4.93	9.519	6.286	-1.356	6.50
5341.0	1.43	-0.65	2.17		5.95	9.519	6.286	-0.336	6.50

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

Equipment Configuration for Peak Transmit Power

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

Test	Measure	d Conducted	Output Pow	er (dBm)	Calculated	Minimum				
Frequency		Poi	rt(s)		Total Power	26 dB Limit Margin Bandwidth			EUT Power	
MHz	а	b	С	d	Σ Port(s) dBm	MHz	dBm	dBm	Setting	
5484.0	0.98	0.17	1.47		5.72	9.469	6.263	-0.543	8.50	
5595.0	2.04	0.56	0.96		6.05	9.419	6.240	-0.190	11.50	
		2.12	-0.07		5.44	9.519	6.286	-0.846	7.50	

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 24 of 223

Equipment Configuration for Peak Transmit Power

Variant:	20 MHz	Duty Cycle (%):	99.0
Data Rate:	QAM 64	Antenna Gain (dBi):	20.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measur	Test Measurement Results								
Test	Measure	Measured Conducted Output Power (dBm)				Minimum 26 dB	Limit	Margin	
Frequency		Por	t(s)		Total 26 dB Limit Margin Power Bandwidth			EUT Power Setting	
MHz	а	b	С	d	Σ Port(s) dBm	MHz	dBm	dBm	Setting
5264.0	1.44	5.26	5.28		9.14	20.741	9.50	-0.36	10.50
5300.0	1.78	4.18	5.58		8.93	20.942	9.50	-0.57	10.50
5336.0	4.63	3.43	5.31		9.34	20.842	9.50	-0.16	9.50

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

Equipment Configuration for Peak Transmit Power

Variant:	20 MHz	Duty Cycle (%):	99.0
Data Rate:	QAM 64	Antenna Gain (dBi):	20.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results									
Test Frequency	Measured Conducted Output Power (dBm) Port(s)			Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power	
MHz	а	b	С	d	Σ Port(s) dBm	MHz	dBm	dBm	Setting
5489.0	4.34	4.00	4.81		9.21	21.242	9.50	-0.29	12.00
5590.0	4.67	3.79	4.52		9.16	21.042	9.50	-0.34	14.50
5706.0	2.77	6.21	3.89		9.35	20.641	9.50	-0.15	12.50

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 25 of 223

Equipment Configuration for Peak Transmit Power

Variant:	40 MHz	Duty Cycle (%):	99.0
Data Rate:	QAM 64	Antenna Gain (dBi):	20.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results									
Test Frequency	Measure		onducted Output Power (dBm) Port(s)			d Minimum 26 dB Limit I Bandwidth		Margin	EUT Power
MHz	а	b	С	d	Power Σ Port(s) dBm	MHz	dBm	dBm	Setting
5274.0	1.79	5.24	5.54		9.30	40.281	9.50	-0.20	10.50
5300.0	1.99	4.25	5.39		8.91	40.882	9.50	-0.59	10.50
5326.0	3.82	3.88	4.92		9.05	40.481	9.50	-0.45	10.00

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

Equipment Configuration for Peak Transmit Power

Variant:	40 MHz	Duty Cycle (%):	99.0
Data Rate:	QAM 64	Antenna Gain (dBi):	20.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results									
Test Frequency	Measure	d Conducted Por	Output Pow	er (dBm)	Calculated Total Power	Total 26 dB Limit		Margin	EUT Power
MHz	а	b	С	d	Σ Port(s) dBm	MHz	dBm	dBm	Setting
5499.0	4.36	4.14	4.80		9.26	40.681	9.50	-0.24	12.00
5570.0	4.21	4.14	5.17		9.35	40.281	9.50	-0.15	14.50
5696.0	3.36	6.05	4.16		9.49	40.882	9.50	-0.01	14.00

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 26 of 223

9.2. 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 with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency. The Resolution Bandwidth was set to approximately 1% of the emission bandwidth.

Testing was performed under ambient conditions at nominal voltage. Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured and reported.

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 27 of 223

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

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

Test Measure	Test Measurement Results								
Test	Measured 26 dB Bandwidth (MHz)			OO dD Day desides (MILE)					
Frequency		Por	t(s)		26 dB Bandwidth (MHz)				
MHz	а	b	С	d	Highest	Lowest			
5259.0	<u>9.719</u>	9.970	9.469		9.970	9.469			
5300.0	<u>9.519</u>	<u>9.770</u>	<u>9.719</u>		9.770	9.519			
5341.0	<u>9.619</u>	<u>9.870</u>	<u>9.519</u>		9.870	9.519			

Test	Me	easured 99% E	Bandwidth (MF	lz)	99% Randy	vidth (MHz)	
Frequency		Por	t(s)		99% Bandwidth (MHz)		
MHz	а	b	С	d	Highest	Lowest	
5259.0	<u>8.317</u>	<u>8.317</u>	<u>8.267</u>		8.317	8.267	
5300.0	<u>8.367</u>	<u>8.317</u>	<u>8.367</u>		8.367	8.317	
5341.0	<u>8.367</u>	<u>8.367</u>	<u>8.367</u>		8.367	8.367	

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 28 of 223

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

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

Test Measure	Test Measurement Results									
Test	Measured 26 dB Bandwidth (MHz)				00 dD D deddd (MI)					
Frequency		Por	t(s)		26 dB Bandwidth (MHz)					
MHz	а	b	С	d	Highest	Lowest				
5484.0	9.770	9.870	9.469		9.870	9.469				
5595.0	<u>10.020</u>	<u>9.870</u>	<u>9.419</u>		10.020	9.419				
5711.0	<u>9.519</u>	<u>9.719</u>	<u>9.569</u>		9.719	9.519				

Test	M	easured 99% E	Bandwidth (MF	lz)	99% Bandy	vidth (MHz)	
Frequency	Port(s)				99% Bandwidth (MHz)		
MHz	а	b	С	d	Highest	Lowest	
5484.0	<u>8.367</u>	<u>8.367</u>	<u>8.317</u>		8.367	8.317	
5595.0	<u>8.367</u>	<u>8.367</u>	<u>8.367</u>		8.367	8.367	
5711.0	<u>8.367</u>	<u>8.317</u>	<u>8.367</u>		8.367	8.317	

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 29 of 223

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

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

Test Measure	Test Measurement Results										
Test	Measured 26 dB Bandwidth (MHz)				OC 4D Deve desidate (MILE)						
Frequency		Port(s)			- 26 dB Bandwidth (MHz)						
MHz	а	b	С	d	Highest	Lowest					
5264.0	20.741	<u>21.443</u>	20.842		21.443	20.741					
5300.0	20.942	21.242	21.142		21.242	20.942					
5336.0	20.942	<u>21.443</u>	20.842		21.443	20.842					

Test	M	easured 99% E	Bandwidth (MF	łz)	99% Bandy	vidth (MHz)	
Frequency	Port(s)				99% Bandwidth (MHz)		
MHz	а	b	С	d	Highest	Lowest	
5264.0	<u>16.733</u>	<u>16.533</u>	<u>16.533</u>		16.733	16.533	
5300.0	<u>16.733</u>	<u>16.633</u>	<u>16.533</u>		16.733	16.533	
5336.0	<u>16.733</u>	<u>16.633</u>	<u>16.533</u>		16.733	16.533	

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 30 of 223

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

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

Test Measure	Test Measurement Results										
Test	est Measured 26 dB Bandwidth (MHz)				OC 4D Deve desidate (MILE)						
Frequency		Port(s)			- 26 dB Bandwidth (MHz)						
MHz	а	b	С	d	Highest	Lowest					
5489.0	<u>21.242</u>	<u>21.443</u>	<u>21.343</u>		21.443	21.242					
5590.0	21.042	22.044	<u>21.343</u>		22.044	21.042					
5706.0	20.942	21.343	20.641		21.343	20.641					

Test	Me	easured 99% E	Bandwidth (MF	lz)	99% Randy	vidth (MHz)	
Frequency	Port(s)				3370 Banav	vidir (iviriz)	
MHz	а	b	С	d	Highest	Lowest	
5489.0	<u>16.633</u>	<u>16.633</u>	<u>16.633</u>		16.633	16.633	
5590.0	<u>16.733</u>	<u>16.633</u>	<u>16.633</u>		16.733	16.633	
5706.0	<u>16.733</u>	<u>16.533</u>	<u>16.633</u>		16.733	16.533	

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 31 of 223

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	40 MHz	Duty Cycle (%):	99
Data Rate:	QAM 64	Antenna Gain (dBi):	20.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results									
Test	Measured 26 dB Bandwidth (MHz)			00 dB B deddd (411-)					
Frequency		Port(s)		26 dB Bandwidth (MHz)					
MHz	а	b	С	d	Highest	Lowest			
5274.0	43.086	40.882	40.281		43.086	40.281			
5300.0	<u>41.283</u>	<u>41.683</u>	40.882		41.683	40.882			
5326.0	40.481	43.086	40.681		43.086	40.481			

Test Frequency	M	easured 99% E Por	•	łz)	99% Bandwidth (MHz)		
MHz	а	b	C	d	Highest	Lowest	
5274.0	34.068	33.868	33.868		34.068	33.868	
5300.0	34.068	33.868	33.868		34.068	33.868	
5326.0	<u>33.868</u>	33.868	33.868		33.868	33.868	

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 32 of 223

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	40 MHz	Duty Cycle (%):	99
Data Rate:	QAM 64	Antenna Gain (dBi):	20.50
Modulation:	OFDM	Beam Forming Gain (Y):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results								
Test	Measured 26 dB Bandwidth (MHz)			26 dB Band	width (MU=)			
Frequency		Port(s)			26 UB Ballu	width (MHZ)		
MHz	а	b	С	d	Highest	Lowest		
5499.0	<u>40.681</u>	<u>42.685</u>	<u>41.683</u>		42.685	40.681		
5570.0	40.281	<u>41.683</u>	<u>40.681</u>		41.683	40.281		
5696.0	<u>41.483</u>	<u>40.882</u>	43.487		43.487	40.882		

Test	Me	easured 99% E	Bandwidth (MF	lz)	99% Randy	vidth (MHz)	
Frequency		Port(s)			3370 Banav	vidir (iviriz)	
MHz	а	b	С	d	Highest	Lowest	
5499.0	<u>33.868</u>	<u>34.068</u>	<u>33.868</u>		34.068	33.868	
5570.0	<u>33.868</u>	34.068	<u>33.868</u>		34.068	33.868	
5696.0	<u>34.068</u>	<u>34.068</u>	<u>34.068</u>		34.068	34.068	

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



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

Serial #: RDWN32-U2a Rev A

Page: 29thJuly 2015

9.3. Peak Power Spectral Density

Conducted Test Conditions for Power Spectral Density							
Standard:	CC 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):	See Normative References						

Test Procedure for Power Spectral Density

The in-band power spectral density was measured using the test technique specified in KDB 789033. A 1 MHz measurement bandwidth was implemented for the analyzer sweep. Once the sweep is complete the analyzer trace data is downloaded and used for post processing purposes.

Where the device operated with multiple antenna ports i.e. MIMO device, each port was measured separately. The Peak Power Spectral Density is the highest level found across the emission bandwidth. With multiple antenna port measurements the numerical analyzer data from each port is summed (å) and a link to this additional graphic is provided.

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

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

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

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

Limits Power Spectral Density

Operating Frequency Band 5150-5250 MHz

15. 407 (a)(1)

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

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29th July 2015 Page: 34 of 223

(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

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

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

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 35 of 223

Equipment Configuration for Peak Power Spectral Density

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

Test Measurement Results							
Test	N	leasured Power	Amplitude	Limaia			
Frequency	Port(s) (dBm/MHz) Limit						Margin
MHz	а	b	С	d	dBm/MHz	dBm/MHz	dB
5259.0	<u>-9.530</u>				<u>-9.574</u>	-3.5	-6.07
5300.0	<u>-9.945</u>				<u>-9.989</u>	-3.5	-6.49
5341.0	<u>-6.544</u>				<u>-6.588</u>	-3.5	-3.09

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

Equipment Configuration for Peak Power Spectral Density

Variant:	10 MHz	Duty Cycle (%):	99.0
Data Rate:	QAM64	Antenna Gain (dBi):	17.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measuren	nent Results						
Test	N	leasured Power	Amplitude Summation +				
Frequency		Port(s) (dBm/MHz)				Limit	Margin
MHz	а	b	С	d	dBm/MHz	dBm/MHz	dB
5259.0		<u>-8.304</u>	<u>-6.081</u>		<u>-4.313</u>	-0.5	-3.813
5300.0		<u>-8.919</u>	<u>-6.089</u>		<u>-4.583</u>	-0.5	-4.083
5341.0		<u>-8.711</u>	<u>-6.124</u>		<u>-4.272</u>	-0.5	-3.772

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

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

DCCF - Duty Cycle Correction Factor



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 36 of 223

Equipment Configuration for Peak Power Spectral Density

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

Test Measurement Results							
Test	N	leasured Power	Amplitude	1 114			
Frequency	Port(s) (dBm/MHz) Limit Summation						Margin
MHz	а	b	С	d	dBm/MHz	dBm/MHz	dB
5484.0	<u>-7.024</u>				<u>-7.068</u>	-3.5	-3.57
5595.0	<u>-5.343</u>				<u>-5.387</u>	-3.5	-1.89
5711.0	<u>-8.517</u>				<u>-8.561</u>	-3.5	-5.06

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

Equipment Configuration for Peak Power Spectral Density

Variant:	10 MHz	Duty Cycle (%):	99.0
Data Rate:	QAM 64	Antenna Gain (dBi):	17.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurem	nent Results						
	N	leasured Power	Amplitude				
Test Frequency		Port(s) (c	IBm/MHz)	Summation + DCCF (+0.04 dB)	Limit	Margin	
MHz	а	b	С	d	dBm/MHz	dBm/MHz	dB
5484.0		<u>-7.629</u>	<u>-6.812</u>		<u>-4.256</u>	-0.5	-3.756
5595.0		<u>-6.901</u>	<u>-6.925</u>		<u>-4.236</u>	-0.5	-3.736
5711.0		<u>-5.261</u>	-8.390		-3.581	-0.5	-3.081

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

DCCF - Duty Cycle Correction Factor



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 37 of 223

Equipment Configuration for Peak Power Spectral Density

Variant:	20MHz	Duty Cycle (%):	99.0
Data Rate:	QAM 64	Antenna Gain (dBi):	20.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurem	Test Measurement Results						
Test					Amplitude Summation +	Limit	Margin
Frequency		Port(s) (dBm/MHz)			DCCF (+0.04 dB)		9
MHz	а	b	С	d	dBm/MHz	dBm/MHz	dB
5264.0	<u>-10.655</u>				<u>-10.611</u>	-3.5	-7.111
5300.0	<u>-9.548</u>				<u>-9.504</u>	-3.5	-6.004
5336.0	<u>-6.764</u>				<u>-6.720</u>	-3.5	-3.220

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

Equipment Configuration for Peak Power Spectral Density

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

Test Measurement Results							
Measured Power Spectral Density					Amplitude		
Test Frequency	Port(s) (dBm/MHz)			Summation + DCCF (+0.04 dB)	Limit	Margin	
MHz	а	b	С	d	dBm/MHz	dBm/MHz	dB
5264.0		<u>-5.933</u>	<u>-5.737</u>		<u>-3.432</u>	-0.5	-2.932
5300.0		<u>-7.288</u>	<u>-5.622</u>		<u>-3.584</u>	-0.5	-3.084
5336.0		<u>-7.801</u>	<u>-5.662</u>		<u>-3.762</u>	-0.5	-3.262

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

DCCF - Duty Cycle Correction Factor



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 38 of 223

Equipment Configuration for Peak Power Spectral Density

Variant:	20 MHz	Duty Cycle (%):	99.0
Data Rate:	QAM 64	Antenna Gain (dBi):	20.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results							
Tool	Measured Power Spectral Density						
Test Frequency		Port(s) (dBm/MHz)			Summation + DCCF (+0.04 dB)	Limit	Margin
MHz	а	b	С	d	dBm/MHz	dBm/MHz	dB
5489.0	<u>-7.165</u>				<u>-7.121</u>	-3.5	-3.621
5590.0	<u>-6.588</u>				<u>-6.544</u>	-3.5	-3.044
5706.0	<u>-8.215</u>				<u>-8.171</u>	-3.5	-4.671

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

Equipment Configuration for Peak Power Spectral Density

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

Test Measurement Results							
Test Frequency				Amplitude Summation	Limit	Margin	
MHz	а	b	С	d	dBm/MHz	dBm/MHz	dB
5489.0		<u>-7.291</u>	<u>-5.783</u>		<u>-4.079</u>	-0.5	-3.579
5590.0		<u>-7.712</u>	<u>-6.858</u>		<u>-4.384</u>	-0.5	-3.884
5706.0		<u>-4.156</u>	<u>-6.384</u>		<u>-2.342</u>	-0.5	-1.842

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

DCCF - Duty Cycle Correction Factor



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 39 of 223

Equipment Configuration for Peak Power Spectral Density

Variant:	40 MHz	Duty Cycle (%):	99.0
Data Rate:	QAM64	Antenna Gain (dBi):	20.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results							
Test	N	leasured Power	Spectral Densit	Amplitude Summation +	1 114	N 4 i	
Frequency		Port(s) (dBm/MHz)				Limit	Margin
MHz	а	b	С	d	dBm/MHz	dBm/MHz	dB
5274.0	<u>-11.951</u>				<u>-11.907</u>	-3.5	-8.407
5300.0	<u>-12.571</u>				<u>-12.527</u>	-3.5	-9.027
5326.0	<u>-9.821</u>				<u>-9.777</u>	-3.5	-6.277

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

Equipment Configuration for Peak Power Spectral Density

Variant:	40 MHz	Duty Cycle (%):	99.0
Data Rate:	QAM 64	Antenna Gain (dBi):	17.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results							
Test	N	leasured Power	Amplitude Summation +				
Frequency		Port(s) (dBm/MHz)			DCCF (+0.04 dB)	Limit	Margin
MHz	а	b	С	d	dBm/MHz	dBm/MHz	dB
5274.0		<u>-8.748</u>	<u>-8.884</u>		<u>-5.940</u>	-0.5	-5.440
5300.0		<u>-10.439</u>	<u>-9.363</u>		<u>-7.242</u>	-0.5	-6.742
5326.0		<u>-10.710</u>	<u>-9.924</u>		<u>-7.591</u>	-0.5	-7.091

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

DCCF - Duty Cycle Correction Factor



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 40 of 223

Equipment Configuration for Peak Power Spectral Density

Variant:	40 MHz	Duty Cycle (%):	99.0
Data Rate:	QAM 64	Antenna Gain (dBi):	20.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results							
Measured Power Spectral Density					Amplitude		
Test Frequency	Port(s) (dBm/MHz)			Summation + DCCF (+0.04 dB)	Limit	Margin	
MHz	а	b	С	d	dBm/MHz	dBm/MHz	dB
5499.0	<u>-10.413</u>				<u>-10.369</u>	-3.5	-6.869
5570.0	<u>-16.260</u>				<u>-16.216</u>	-3.5	-12.716
5696.0	<u>-10.511</u>				<u>-10.467</u>	-3.5	-6.967

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

Equipment Configuration for Peak Power Spectral Density

Variant:	40 MHz	Duty Cycle (%):	99.0
Data Rate:	QAM 64	Antenna Gain (dBi):	17.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results							
Tool	N	leasured Power	у	Amplitude			
Test Frequency		Port(s) (dBm/MHz)			Summation + DCCF (+0.04 dB)	Limit	Margin
MHz	а	b	С	d	dBm/MHz	dBm/MHz	dB
5499.0		<u>-9.807</u>	<u>-9.547</u>		<u>-6.663</u>	-0.5	-6.163
5570.0		<u>-9.586</u>	<u>-8.715</u>		<u>-6.481</u>	-0.5	-5.981
5696.0		<u>-6.906</u>	<u>-9.288</u>		<u>-5.336</u>	-0.5	-4.836

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

DCCF - Duty Cycle Correction Factor



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

Serial #: RDWN32-U2a Rev A

Page: 29thJuly 2015 **Page:** 41 of 223

9.4. Radiated Testing

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

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

9.4.1. Radiated Spurious Emissions

Test Procedure

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

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

Operational Modes

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



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

Serial #: RDWN32-U2a Rev A

Page: 29thJuly 2015 **Page:** 42 of 223

Field Strength Calculation

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

FS = R + AF + CORR - FO

where: FS = Field Strength

R = Measured Spectrum analyzer Input Amplitude

AF = Antenna Factor

CORR = Correction Factor = CL - AG + NFL

CL = Cable Loss AG = Amplifier Gain

FO = Distance Falloff Factor

NFL = Notch Filter Loss or Waveguide Loss

For example:

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

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

Conversion between $dB\mu V/m$ (or $dB\mu V$) and $\mu V/m$ (or μV) are done as:

Level (dB
$$\mu$$
V/m) = 20 * Log (level (μ V/m))

40 dB μ V/m = 100 μ V/m 48 dB μ V/m = 250 μ V/m



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page**: 43 of 223

Equipment Configuration for Radiated Spurious - Restricted Band Emissions

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

Test Measurement Results

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

Equipment Configuration for Radiated Spurious - Restricted Band Emissions

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

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 44 of 223

Equipment Configuration for Radiated Spurious - Restricted Band Emissions

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

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 45 of 223

Equipment Configuration for Radiated Spurious - Restricted Band Emissions

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

Test Measurement Results

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

Equipment Configuration for Radiated Spurious - Restricted Band Emissions

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

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 46 of 223

Equipment Configuration for Radiated Spurious - Restricted Band Emissions

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

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 47 of 223

9.4.2. Restricted Band-Edge Spurious

RESULTS SUMMARY FOR RADIATED BAND-EDGE EMISSIONS

AM01	56430	Band-Edge Freq	Peak (Limit 74.0dBµV/m)	Average (Limit 54.0dBµV/m)	Power Setting	
Operational Mode	Operating Frequency (MHz)	MHz	dBμV/m	dBμV/m	Fower Setting	
10 MHz	5484.00	5460.00	<u>58.44</u>	<u>46.67</u>	6.50	
20 MHz	5489.00	5460.00	62.64	51.18	12.00	
40 MHz	5499.00	5460.00	62.50	50.27	12.00	

AM01	56430	Band-Edge Freq	Peak (Limit 74.0dBµV/m)	Average (Limit 54.0dBµV/m)	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBμV/m	dBμV/m	Power Setting
10 MHz	5341.00	5350.00	<u>61.02</u>	<u>47.97</u>	8.50
20 MHz	5336.00	5350.00	62.50	50.27	12.00
40 MHz	5326.00	5350.00	<u>62.64</u>	<u>51.18</u>	12.00

Click on the links to view the data.



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 48 of 223

Equipment Configuration for Restricted Lower Band-Edge Emissions

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

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 49 of 223

Equipment Configuration for Restricted Upper Band-Edge Emissions

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

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 50 of 223

Equipment Configuration for Restricted Lower Band-Edge Emissions

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

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 51 of 223

Equipment Configuration for Restricted Upper Band-Edge Emissions

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

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 52 of 223

Equipment Configuration for Restricted Lower Band-Edge Emissions

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

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 53 of 223

Equipment Configuration for Restricted Upper Band-Edge Emissions

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

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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page**: 54 of 223

9.4.3. Digital Emissions (0.03 – 1 GHz)

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

Specification

Limits

§15.205 (a) Except as shown in paragraph (d) of 15.205 (a), only spurious emissions are permitted in any of the frequency bands listed

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

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

§15.209 (a) Limit Matrix

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

Laboratory Measurement Uncertainty for Radiated Emissions

Measurement uncertainty	+5.6/ -4.5 dB
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To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 55 of 223

A. APPENDIX - GRAPHICAL IMAGES



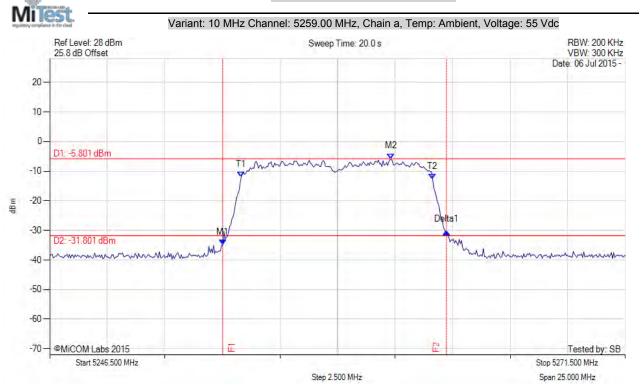
To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 56 of 223

A.1. 26 dB & 99% Bandwidth

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.719 MHz Measured 99% Bandwidth: 8.317 MHz

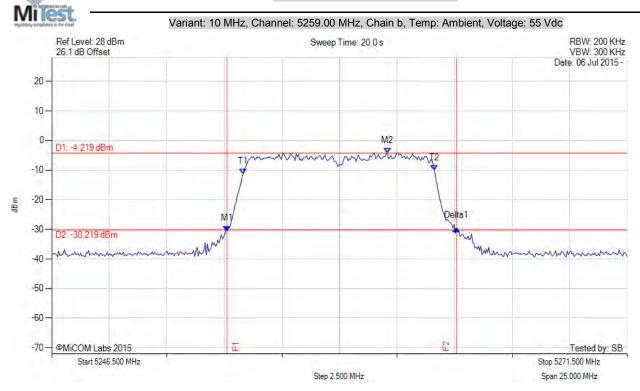


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 57 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
		Measured 26 dB Bandwidth: 9.970 MHz Measured 99% Bandwidth: 8.317 MHz

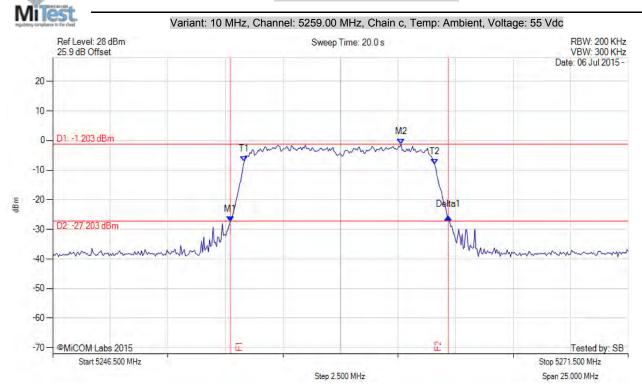


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 58 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.469 MHz Measured 99% Bandwidth: 8.267 MHz

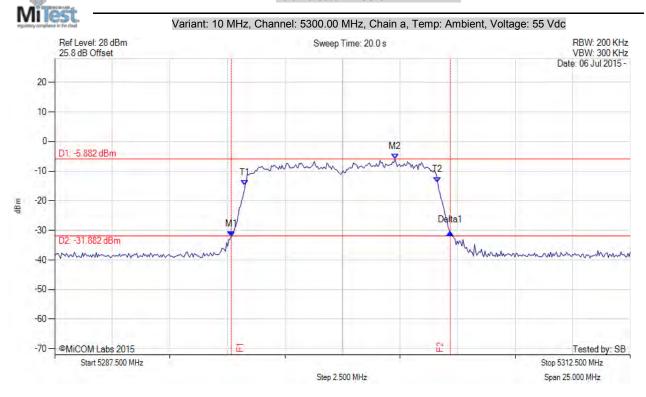


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 59 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.519 MHz Measured 99% Bandwidth: 8.367 MHz

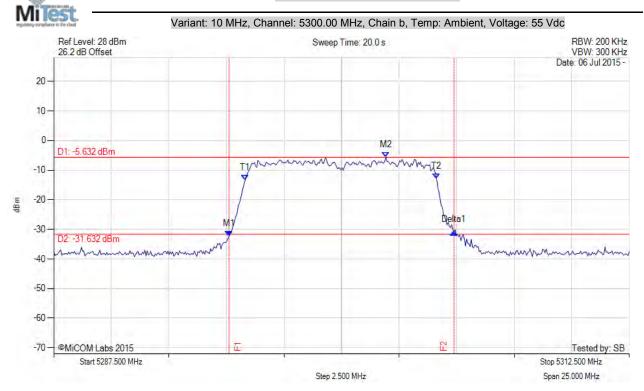


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 60 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.770 MHz Measured 99% Bandwidth: 8.317 MHz

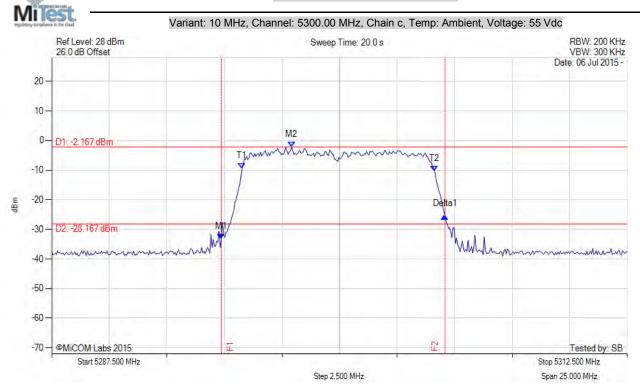


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 61 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.719 MHz Measured 99% Bandwidth: 8.367 MHz

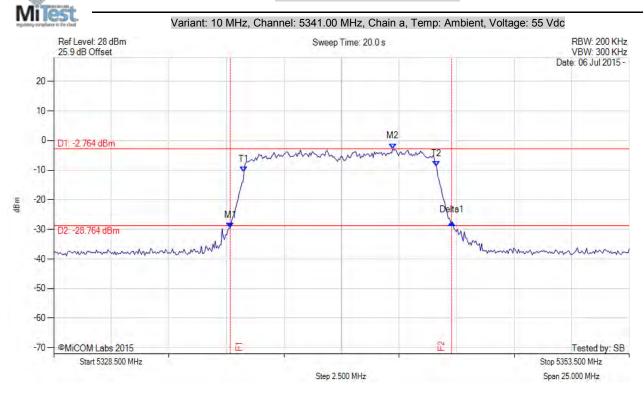


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 62 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.619 MHz Measured 99% Bandwidth: 8.367 MHz

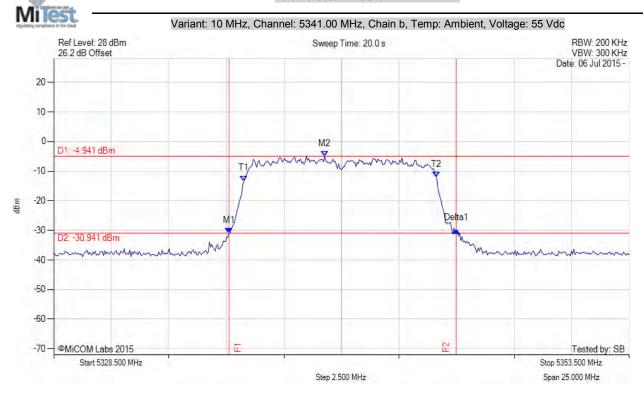


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 63 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.870 MHz Measured 99% Bandwidth: 8.367 MHz

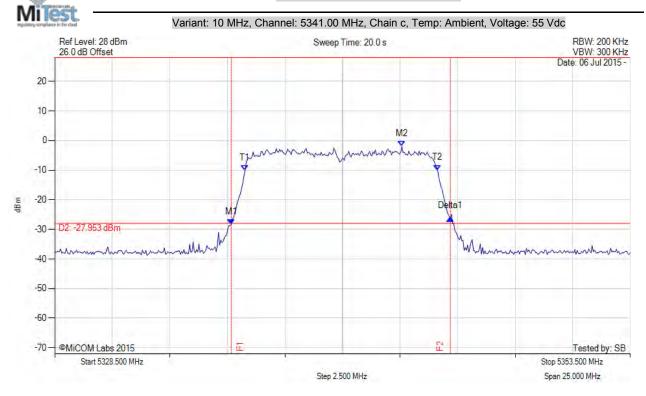


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 64 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.519 MHz Measured 99% Bandwidth: 8.367 MHz

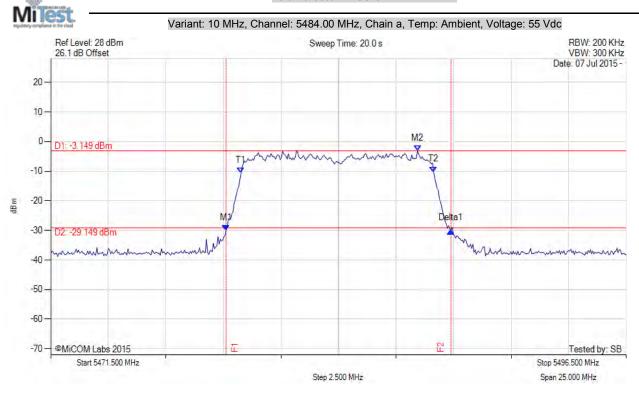


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 65 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.770 MHz Measured 99% Bandwidth: 8.367 MHz

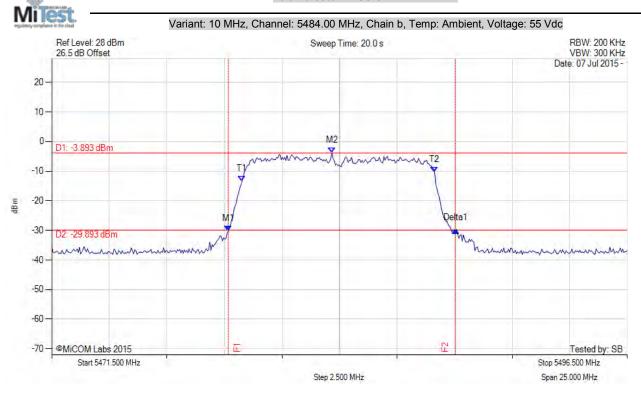


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 66 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.870 MHz Measured 99% Bandwidth: 8.367 MHz

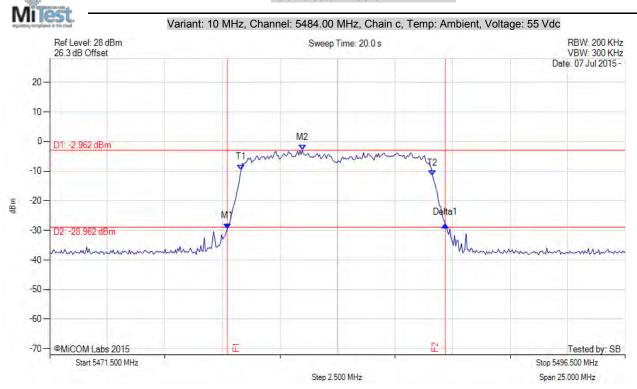


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 67 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.469 MHz Measured 99% Bandwidth: 8.317 MHz

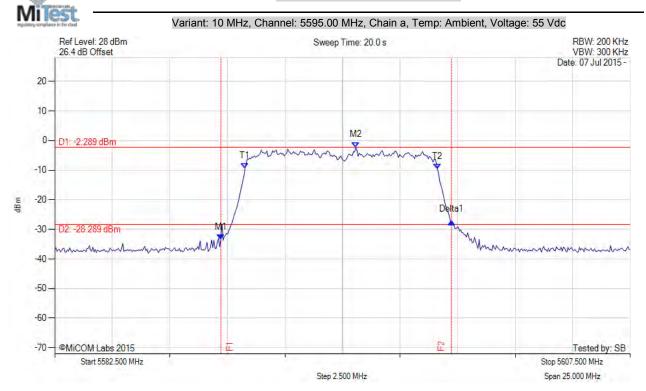


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 68 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 10.020 MHz Measured 99% Bandwidth: 8.367 MHz

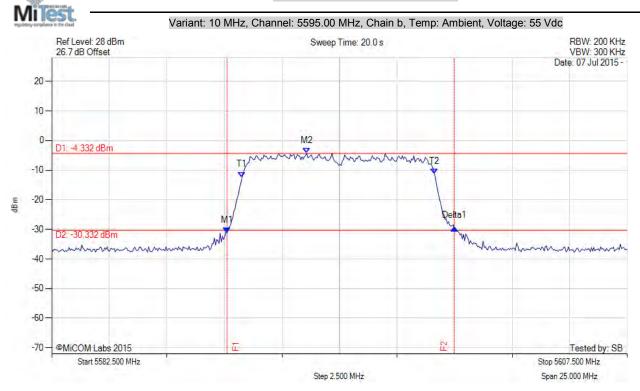


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 69 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.870 MHz Measured 99% Bandwidth: 8.367 MHz

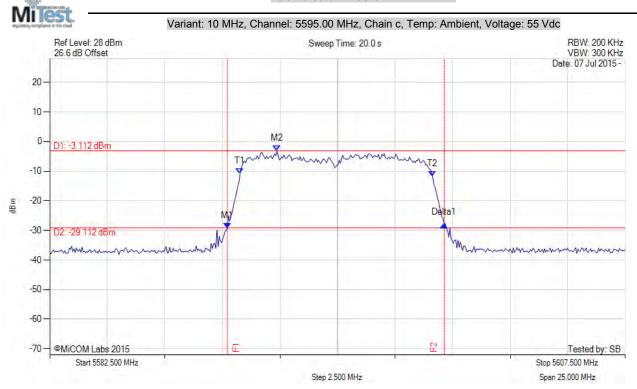


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 70 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.419 MHz Measured 99% Bandwidth: 8.367 MHz

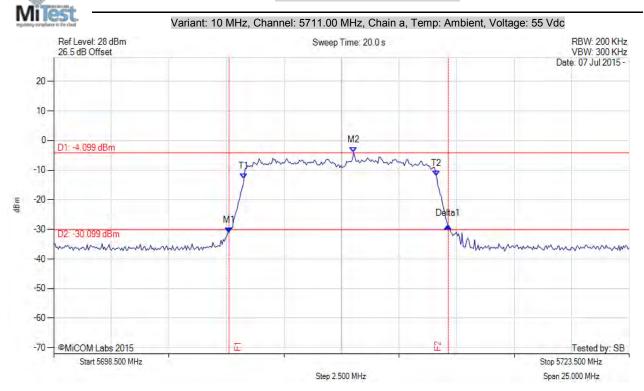


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 71 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.519 MHz Measured 99% Bandwidth: 8.367 MHz

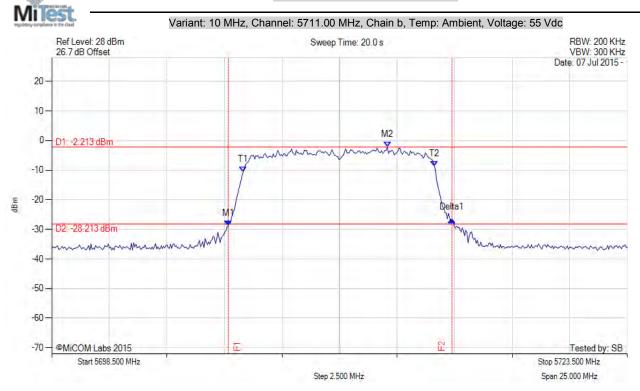


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 72 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.719 MHz Measured 99% Bandwidth: 8.317 MHz

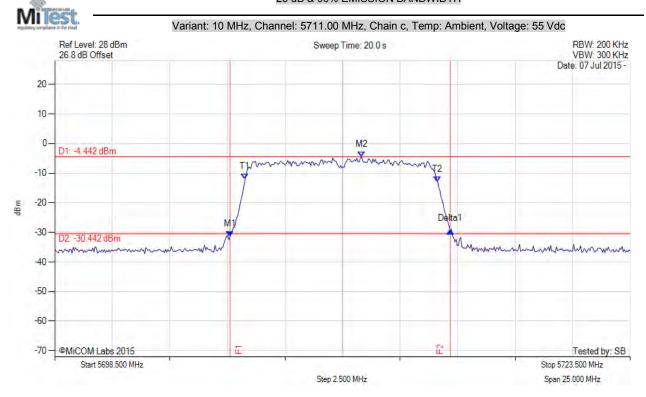


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 73 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 9.569 MHz Measured 99% Bandwidth: 8.367 MHz

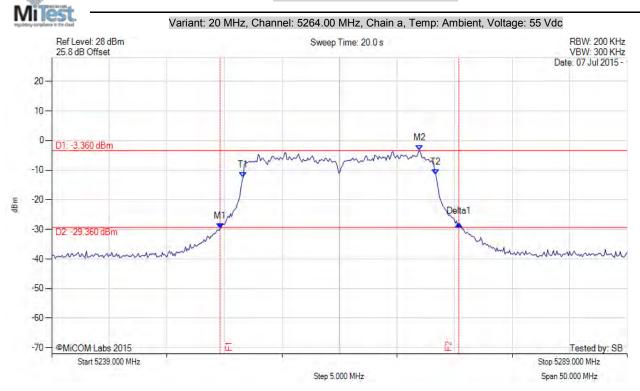


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 74 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 20.741 MHz Measured 99% Bandwidth: 16.733 MHz

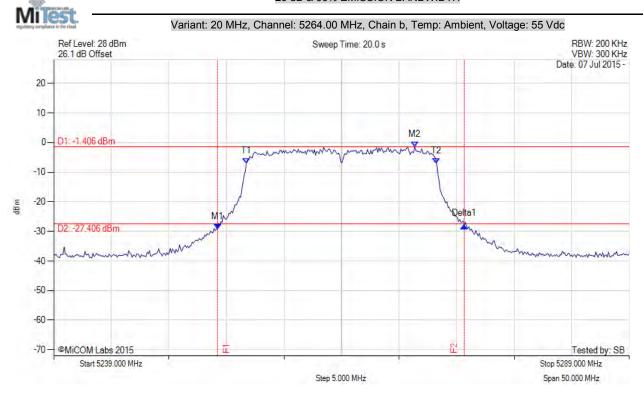


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 75 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 21.443 MHz Measured 99% Bandwidth: 16.533 MHz

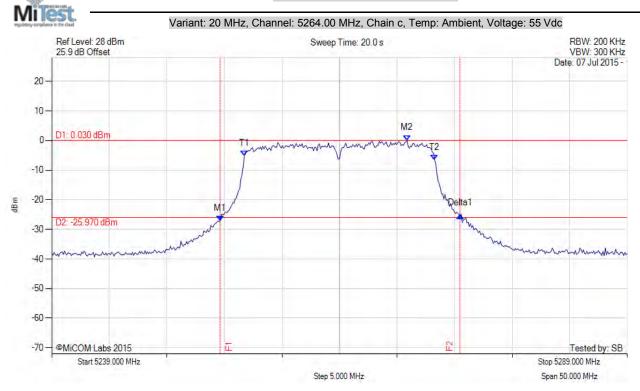


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 76 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 20.842 MHz Measured 99% Bandwidth: 16.533 MHz

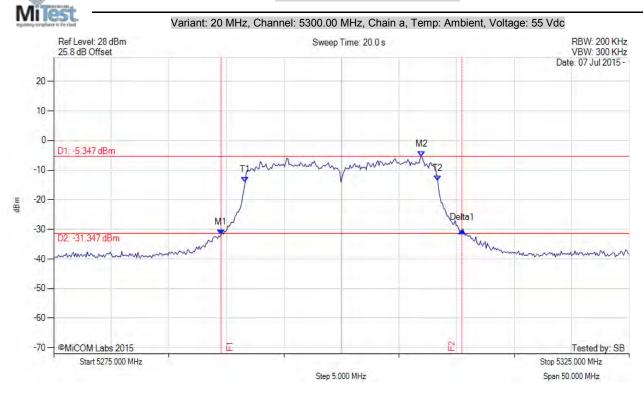


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 77 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 20.942 MHz Measured 99% Bandwidth: 16.733 MHz

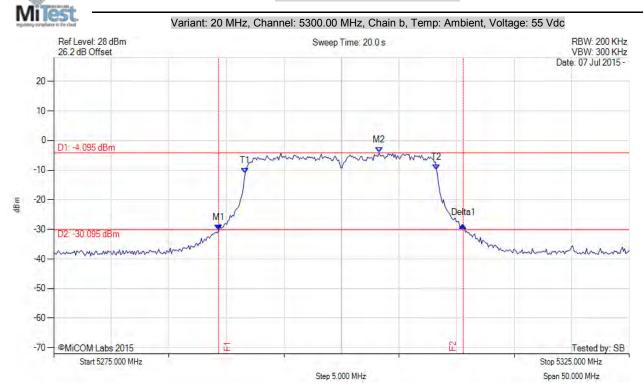


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 78 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 21.242 MHz Measured 99% Bandwidth: 16.633 MHz

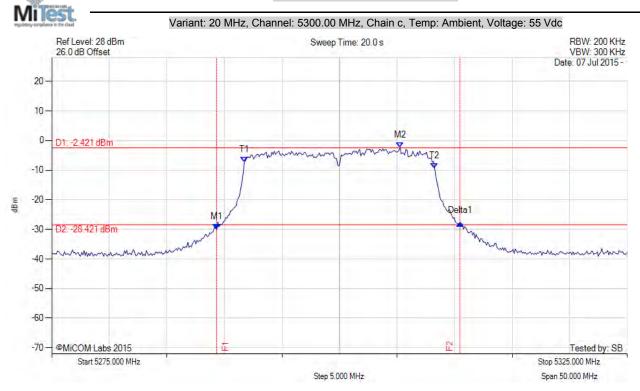


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 79 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
		Measured 26 dB Bandwidth: 21.142 MHz Measured 99% Bandwidth: 16.533 MHz

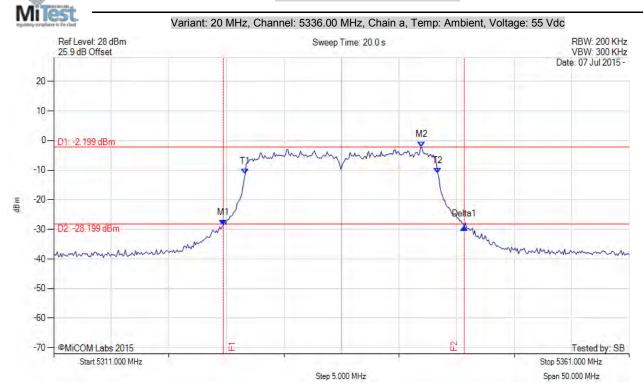


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 80 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 20.942 MHz Measured 99% Bandwidth: 16.733 MHz

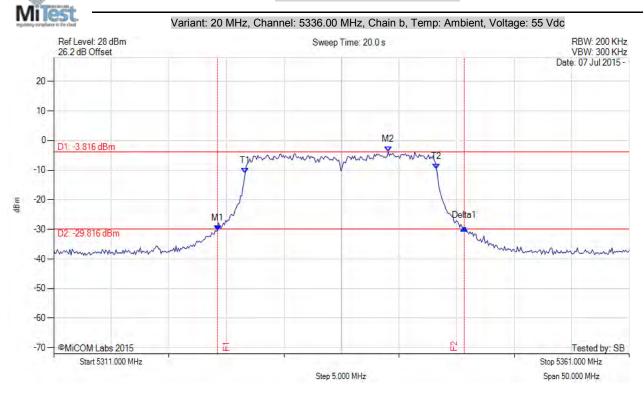


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 81 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 21.443 MHz Measured 99% Bandwidth: 16.633 MHz

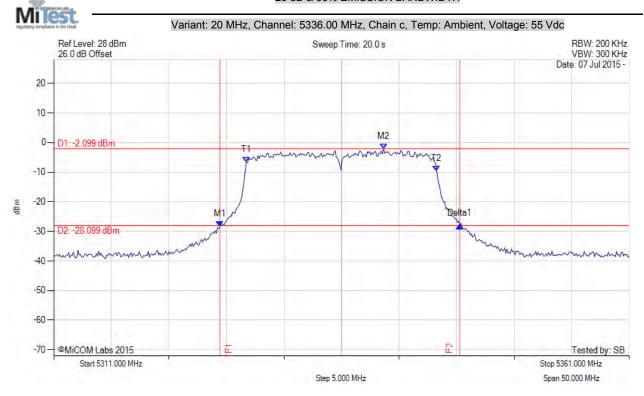


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 82 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 20.842 MHz Measured 99% Bandwidth: 16.533 MHz

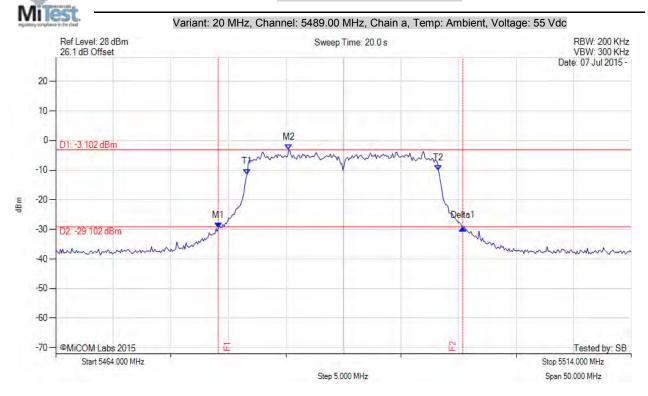


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 83 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
	M1: 5478.128 MHz: -29.494 dBm M2: 5484.240 MHz: -3.102 dBm Delta1: 21.242 MHz: -0.008 dB T1: 5480.633 MHz: -11.408 dBm T2: 5497.267 MHz: -10.194 dBm OBW: 16.633 MHz	Measured 26 dB Bandwidth: 21.242 MHz Measured 99% Bandwidth: 16.633 MHz

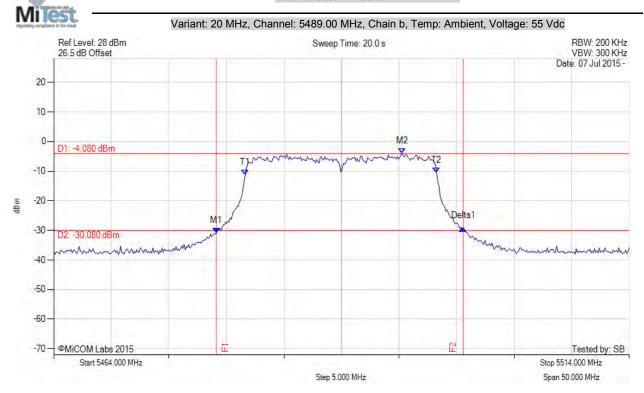


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page**: 84 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
		Measured 26 dB Bandwidth: 21.443 MHz Measured 99% Bandwidth: 16.633 MHz

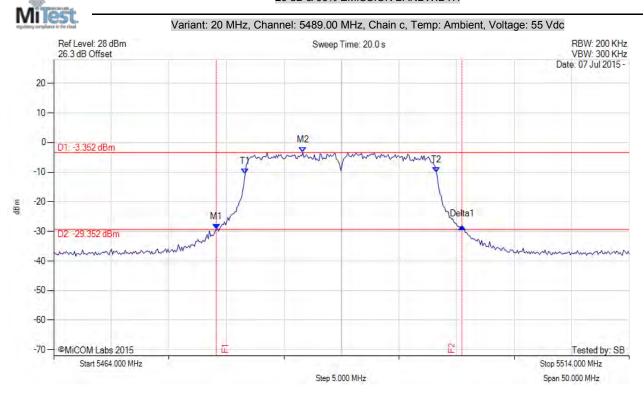


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 85 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 21.343 MHz Measured 99% Bandwidth: 16.633 MHz

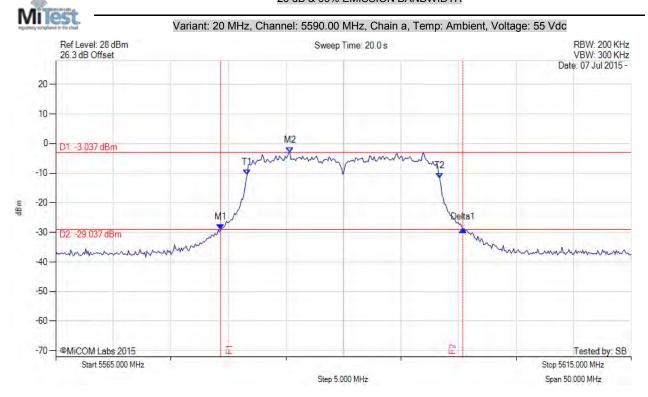


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 86 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
		Measured 26 dB Bandwidth: 21.042 MHz Measured 99% Bandwidth: 16.733 MHz

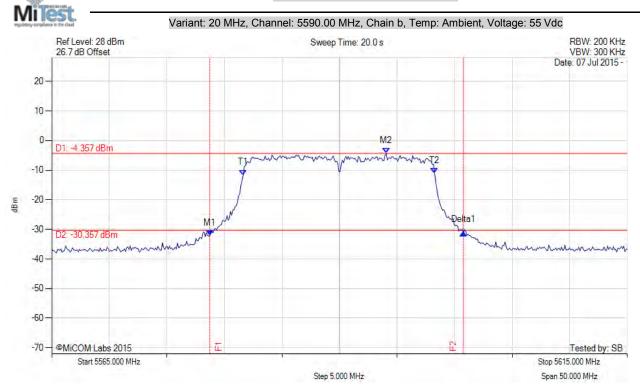


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 87 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 22.044 MHz Measured 99% Bandwidth: 16.633 MHz

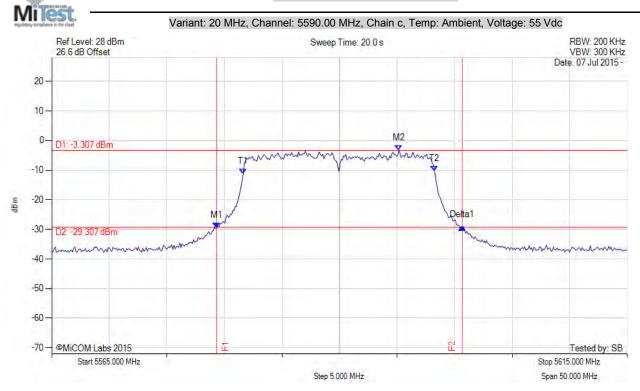


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 88 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 21.343 MHz Measured 99% Bandwidth: 16.633 MHz

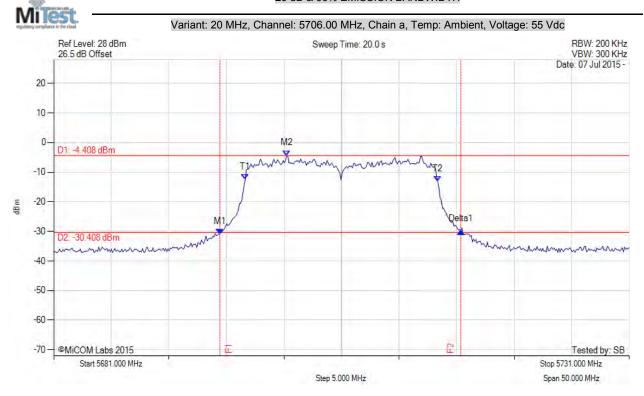


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 89 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 20.942 MHz Measured 99% Bandwidth: 16.733 MHz

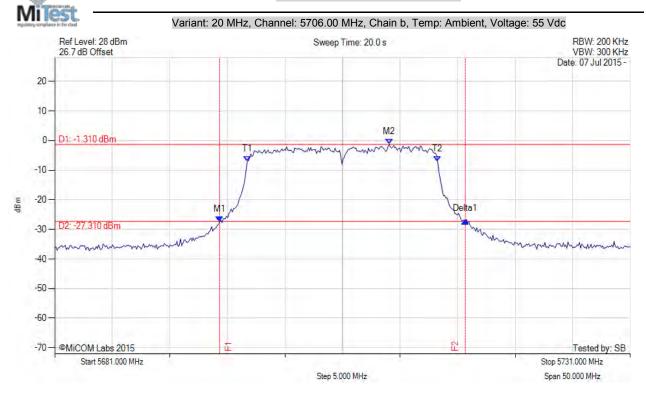


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 90 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 21.343 MHz Measured 99% Bandwidth: 16.533 MHz

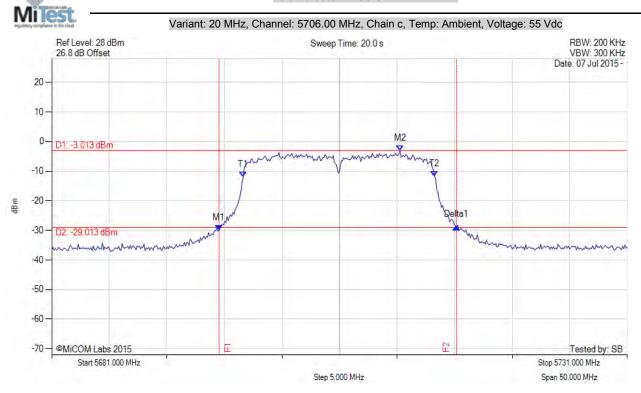


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 91 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 20.641 MHz Measured 99% Bandwidth: 16.633 MHz

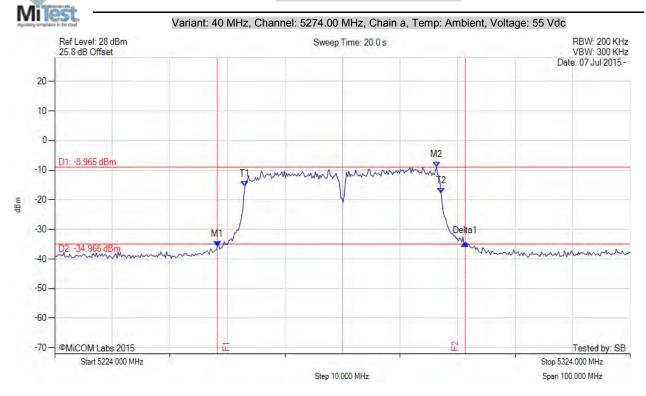


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 92 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 43.086 MHz Measured 99% Bandwidth: 34.068 MHz

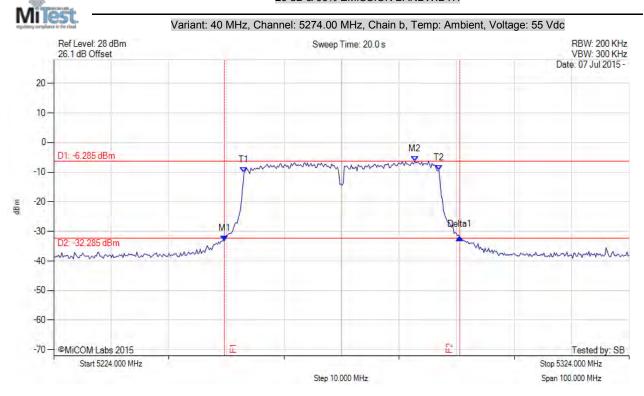


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 93 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 40.882 MHz Measured 99% Bandwidth: 33.868 MHz

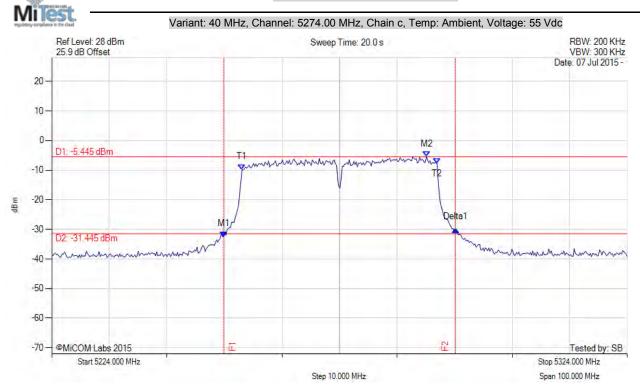


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 94 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 40.281 MHz Measured 99% Bandwidth: 33.868 MHz

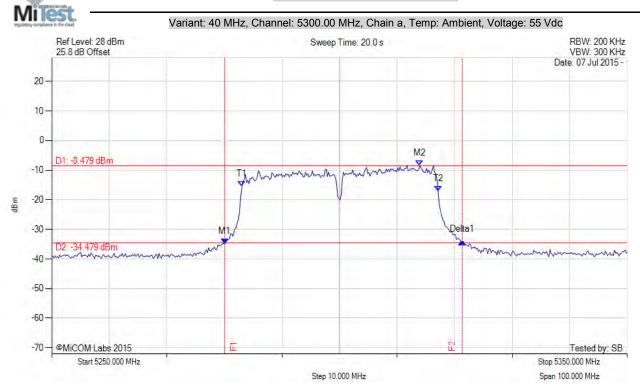


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 95 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
		Measured 26 dB Bandwidth: 41.283 MHz Measured 99% Bandwidth: 34.068 MHz

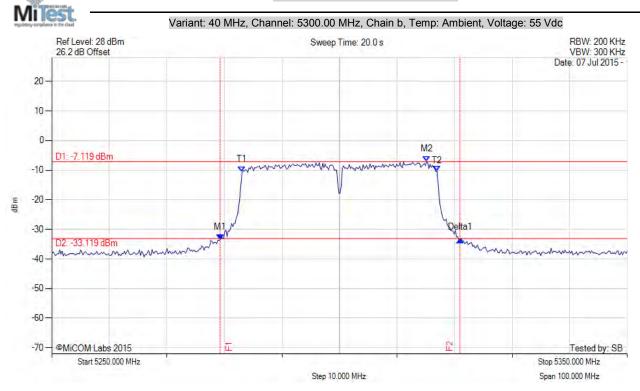


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 96 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 41.683 MHz Measured 99% Bandwidth: 33.868 MHz

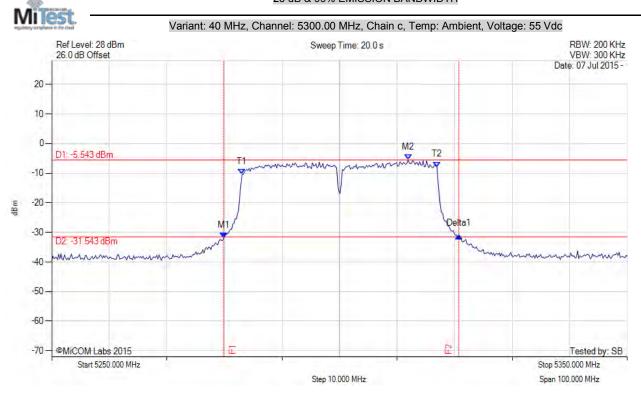


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 Page: 97 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 40.882 MHz Measured 99% Bandwidth: 33.868 MHz

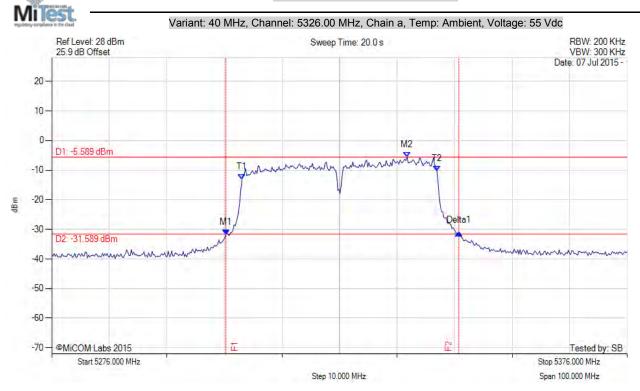


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 98 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 40.481 MHz Measured 99% Bandwidth: 33.868 MHz

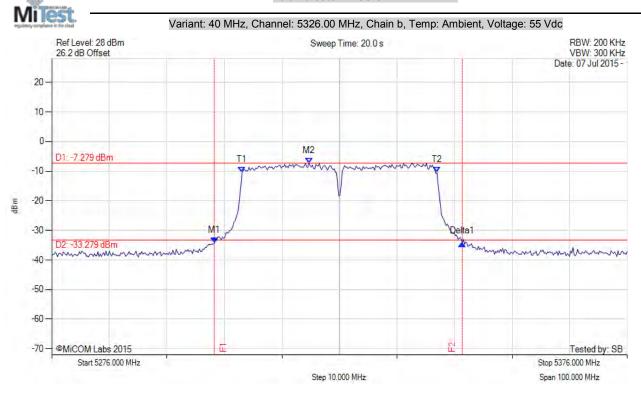


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 99 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 43.086 MHz Measured 99% Bandwidth: 33.868 MHz

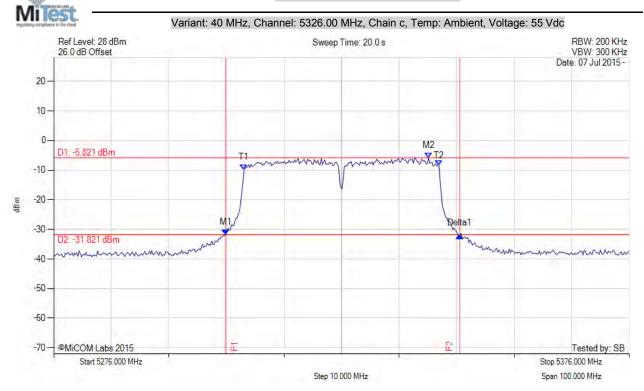


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 100 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 40.681 MHz Measured 99% Bandwidth: 33.868 MHz

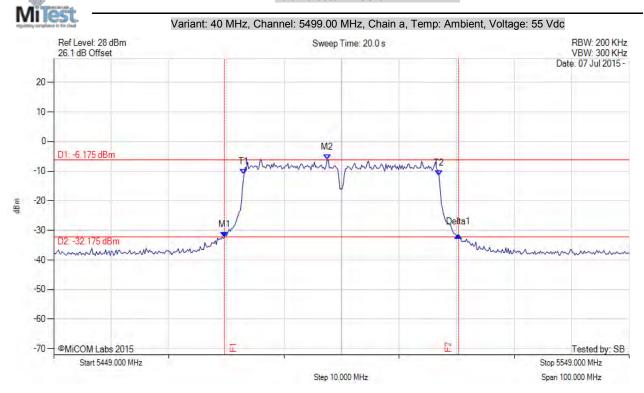


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 101 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
		Measured 26 dB Bandwidth: 40.681 MHz Measured 99% Bandwidth: 33.868 MHz

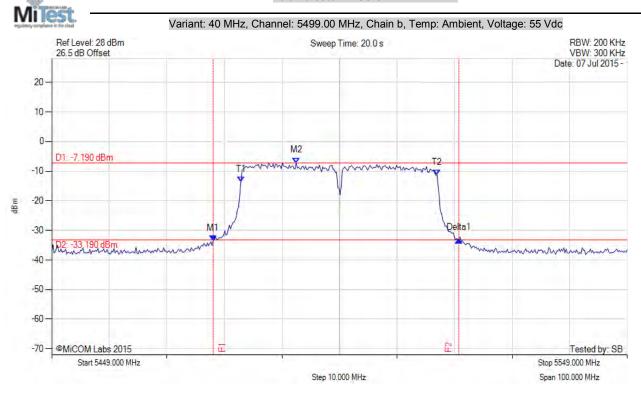


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 102 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
		Measured 26 dB Bandwidth: 42.685 MHz Measured 99% Bandwidth: 34.068 MHz

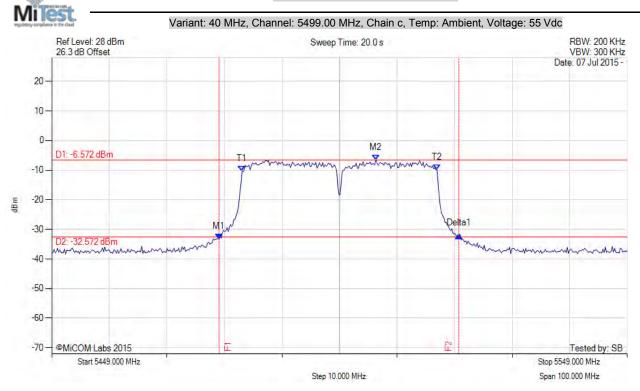


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 103 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
		Measured 26 dB Bandwidth: 41.683 MHz Measured 99% Bandwidth: 33.868 MHz

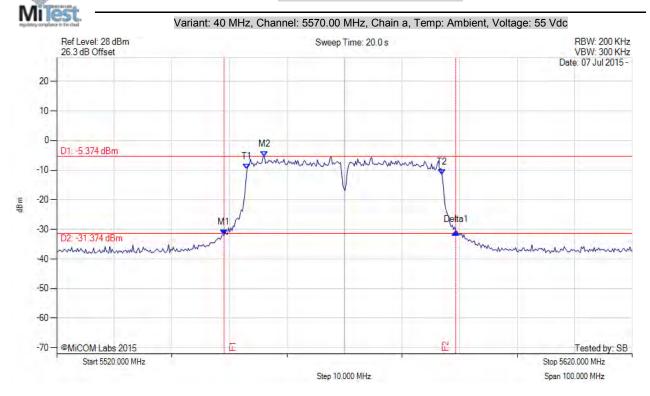


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 104 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 40.281 MHz Measured 99% Bandwidth: 33.868 MHz

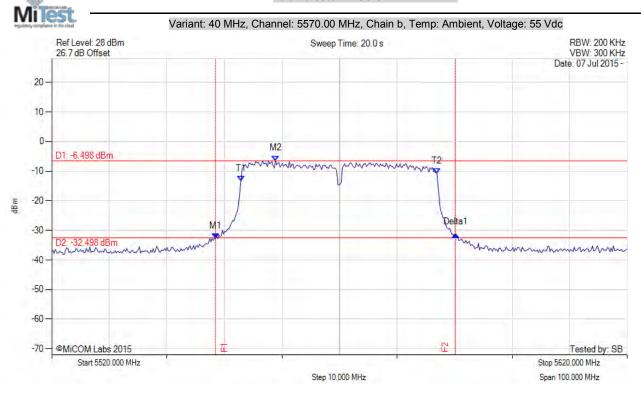


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 105 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
		Measured 26 dB Bandwidth: 41.683 MHz Measured 99% Bandwidth: 34.068 MHz

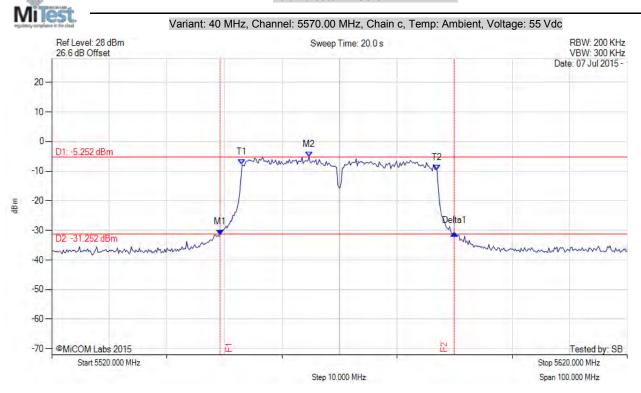


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 106 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
		Measured 26 dB Bandwidth: 40.681 MHz Measured 99% Bandwidth: 33.868 MHz

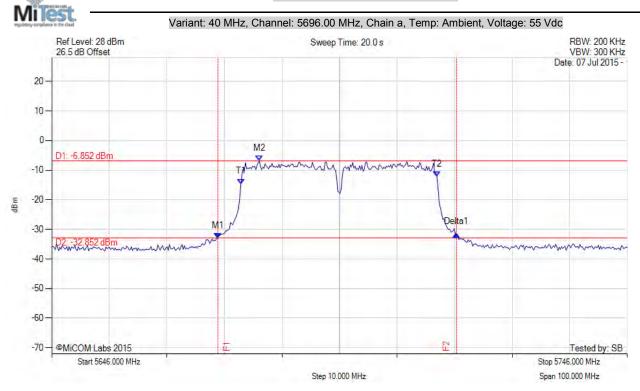


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 107 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 41.483 MHz Measured 99% Bandwidth: 34.068 MHz

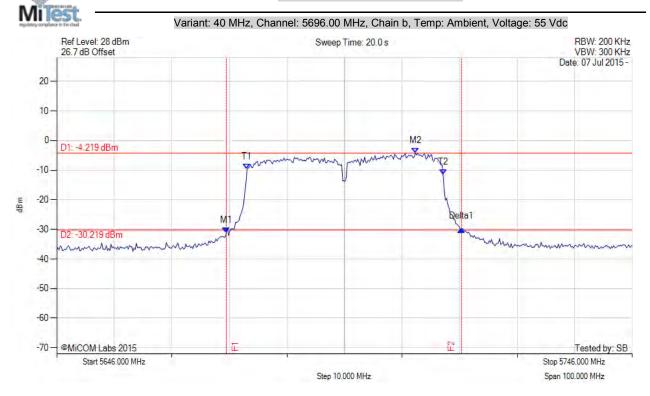


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 108 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 40.882 MHz Measured 99% Bandwidth: 34.068 MHz

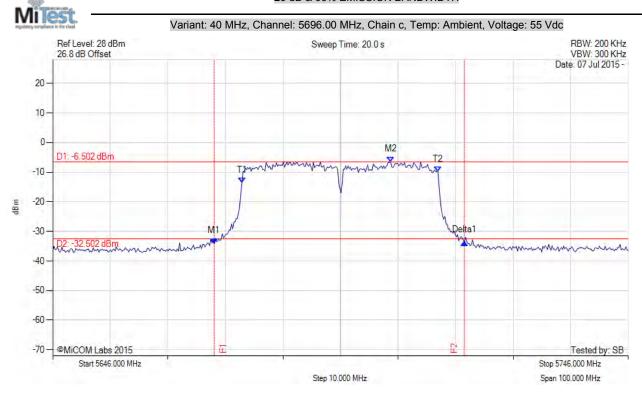


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 109 of 223

26 dB & 99% EMISSION BANDWIDTH



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD		Measured 26 dB Bandwidth: 43.487 MHz Measured 99% Bandwidth: 34.068 MHz



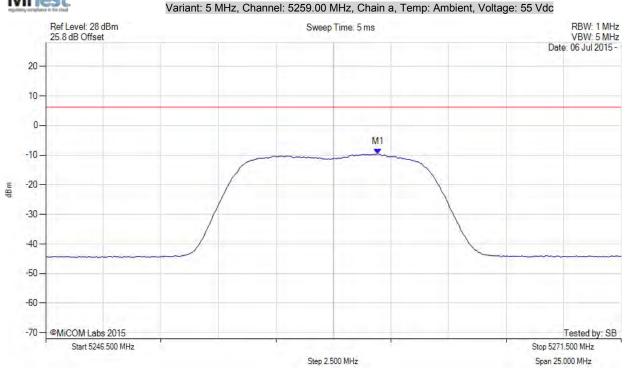
To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 110 of 223

A.2. Peak Power Spectral Density

PEAK POWER SPECTRAL DENSITY Variant: 5 MHz, Channel: 5259.00 MHz, Chain a, Temp: Aml



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

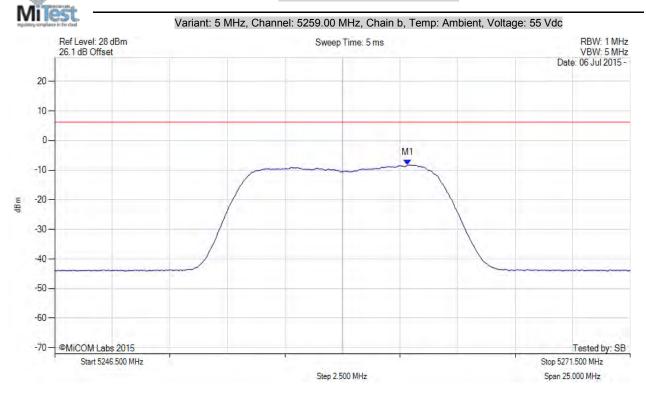


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 111 of 223

PEAK POWER SPECTRAL DENSITY



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

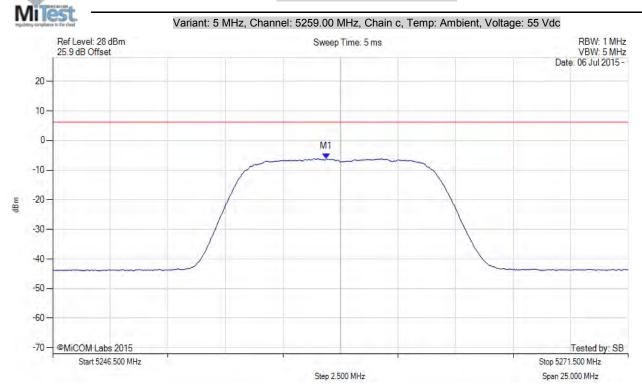


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 112 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5258.374 MHz : -6.081 dBm	Limit: ≤ 6.230 dBm

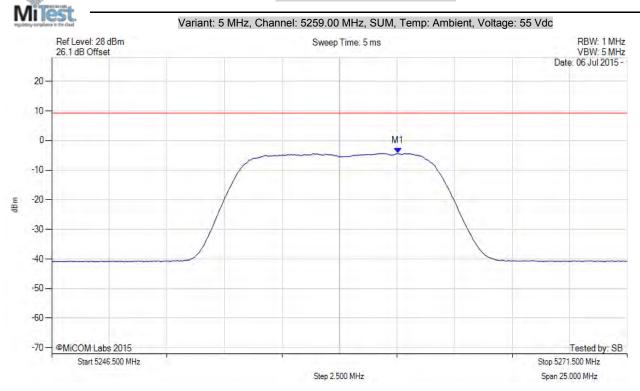


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 113 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1: 5261.500 MHz: -4.357 dBm	Limit: ≤ 9.2 dBm
Sweep Count = 100	M1 + DCCF : 5261.500 MHz : -4.313 dBm	Margin: -13.5 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor: +0.04 dB	
Trace Mode = VIEW		

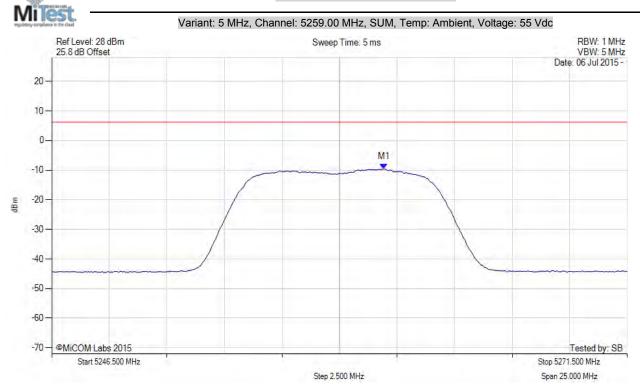


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 114 of 223

PEAK POWER SPECTRAL DENSITY



3	
ction Factor: +0.04 dB	
6	IHz : -9.574 dBm 60.900 MHz : -9.530 dBm ection Factor : +0.04 dB

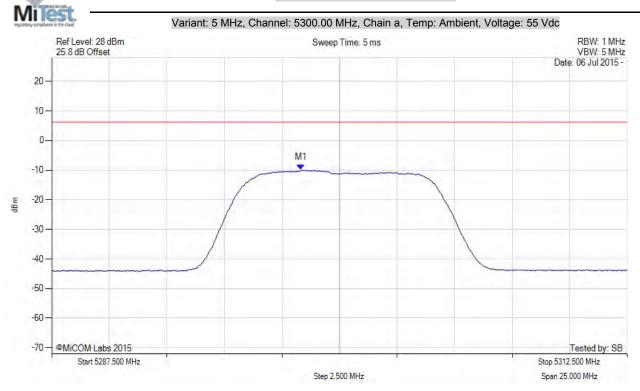


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 115 of 223

PEAK POWER SPECTRAL DENSITY



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

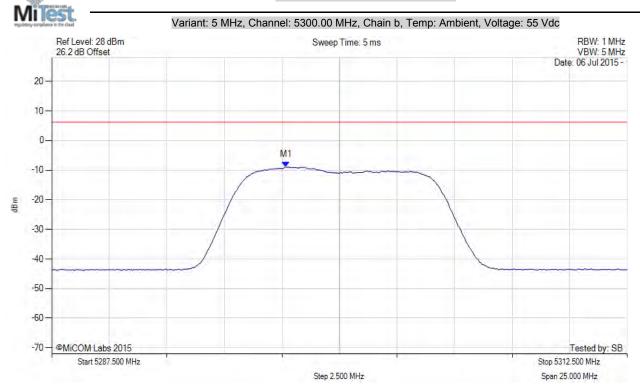


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 116 of 223

PEAK POWER SPECTRAL DENSITY



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

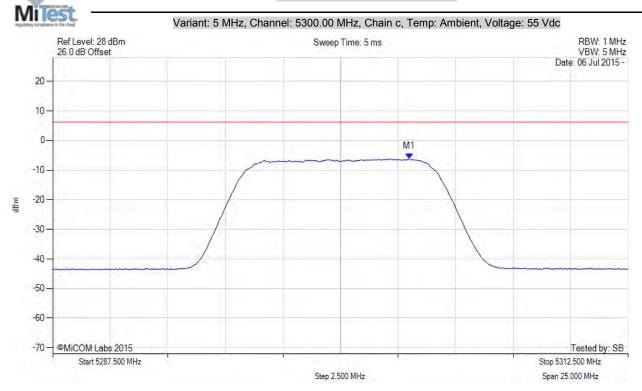


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 117 of 223

PEAK POWER SPECTRAL DENSITY



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

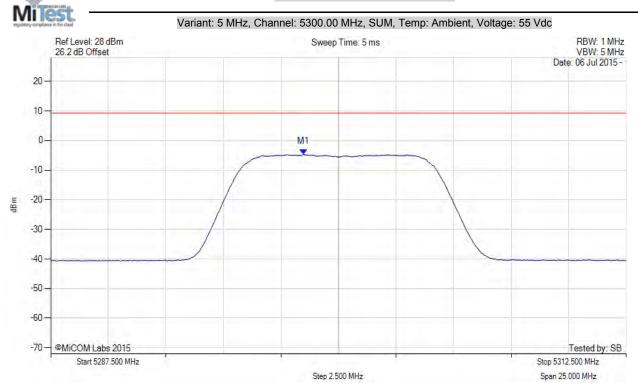


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 118 of 223

PEAK POWER SPECTRAL DENSITY



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

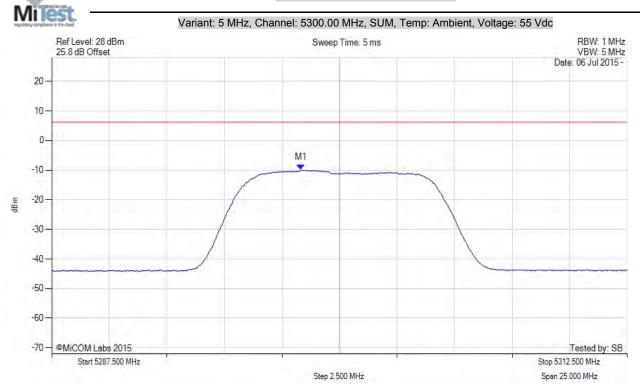


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 119 of 223

PEAK POWER SPECTRAL DENSITY



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

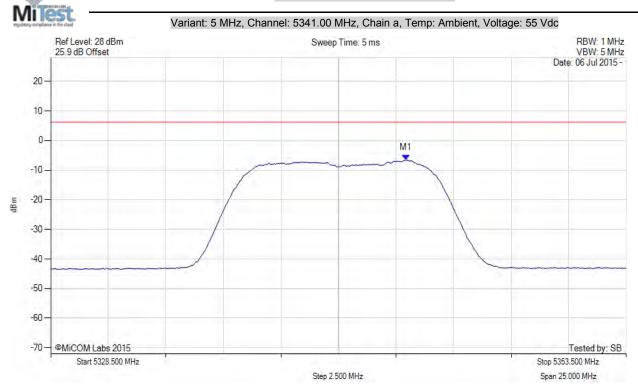


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 120 of 223

PEAK POWER SPECTRAL DENSITY



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

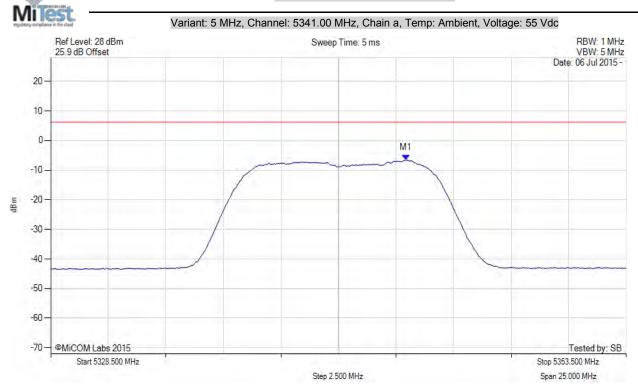


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 121 of 223

PEAK POWER SPECTRAL DENSITY



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

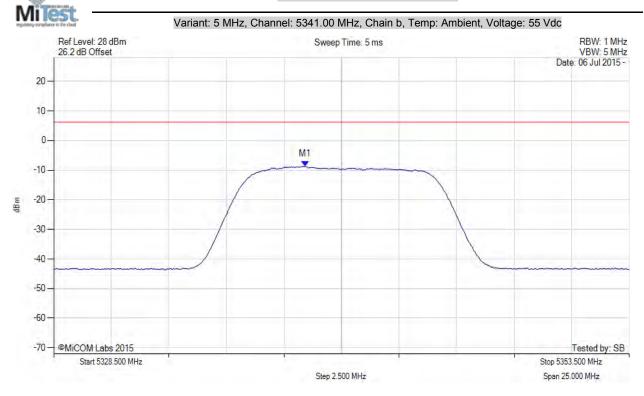


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 122 of 223

PEAK POWER SPECTRAL DENSITY



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

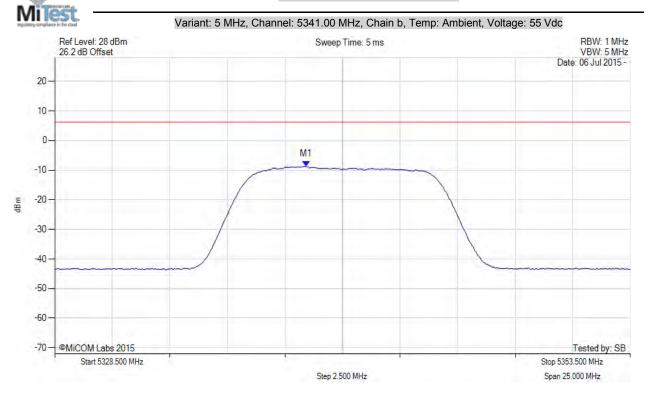


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 123 of 223

PEAK POWER SPECTRAL DENSITY



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

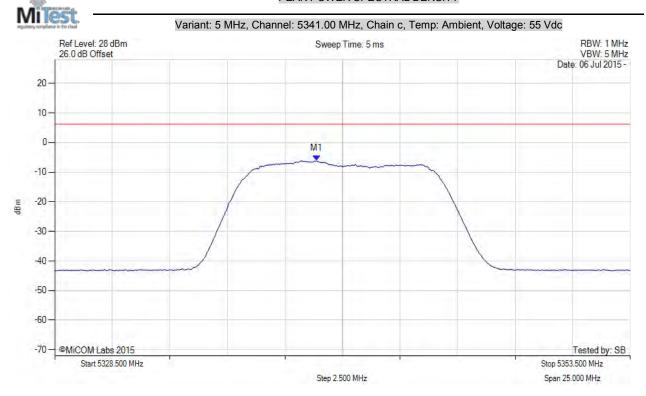


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 124 of 223

PEAK POWER SPECTRAL DENSITY



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

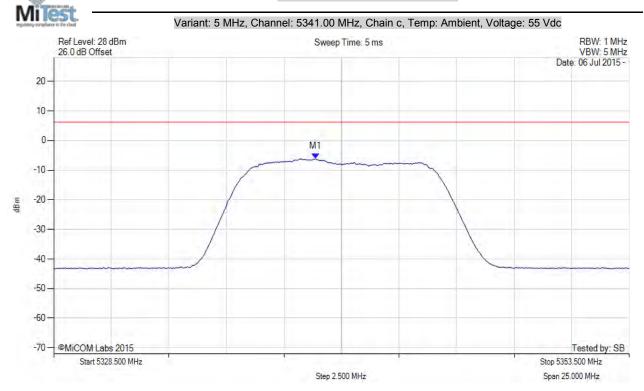


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 125 of 223

PEAK POWER SPECTRAL DENSITY



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

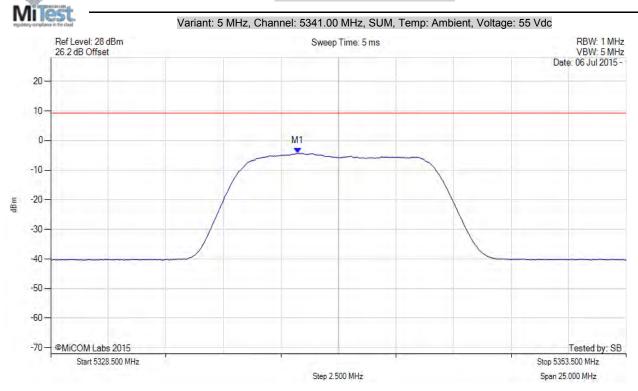


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 126 of 223

PEAK POWER SPECTRAL DENSITY



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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 127 of 223

PEAK POWER SPECTRAL DENSITY



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

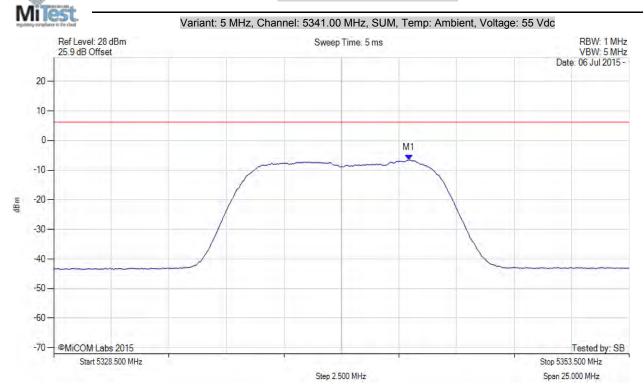


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 128 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
	M1 : 5343.900 MHz : -6.588 dBm M1 + DCCF : 5343.900 MHz : -6.544 dBm	Limit: ≤ 6.2 dBm Margin: -12.7 dB
	Duty Cycle Correction Factor: +0.04 dB	Wargin12.7 db
Trace Mode = VIEW		

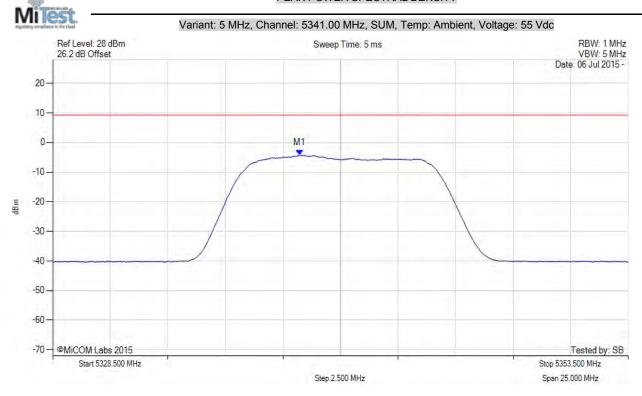


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 129 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1: 5339.200 MHz: -4.316 dBm	Limit: ≤ 9.2 dBm
Sweep Count = 100	M1 + DCCF : 5339.200 MHz : -4.272 dBm	Margin: -13.5 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor: +0.04 dB	
Trace Mode = VIEW		

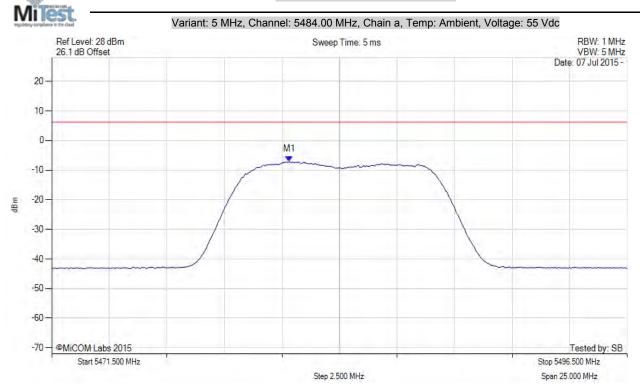


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 130 of 223

PEAK POWER SPECTRAL DENSITY



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

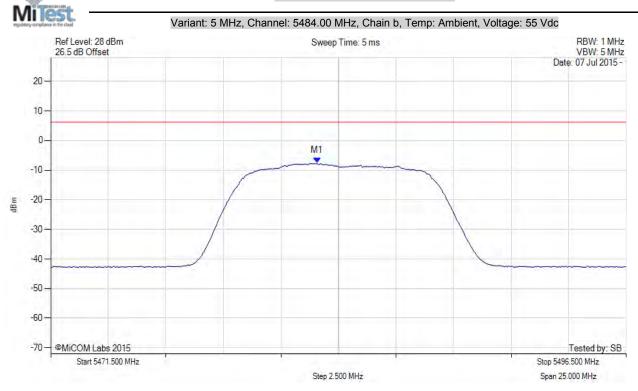


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 131 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5483.073 MHz : -7.629 dBm	Limit: ≤ 6.230 dBm

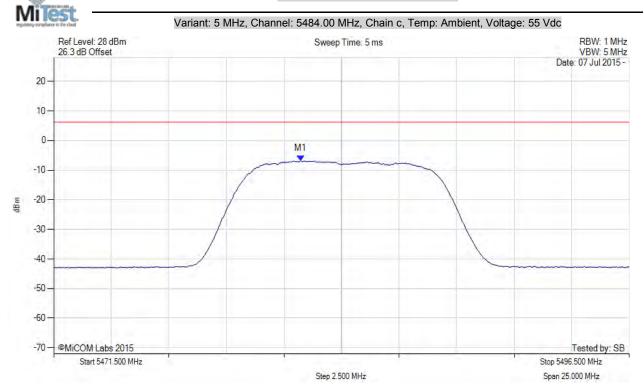


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 132 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5482.221 MHz : -6.812 dBm	Limit: ≤ 6.230 dBm

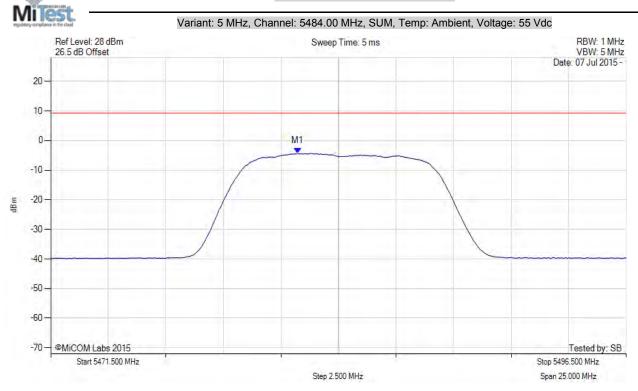


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 133 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1: 5482.200 MHz: -4.300 dBm	Limit: ≤ 9.2 dBm
Sweep Count = 100	M1 + DCCF : 5482.200 MHz : -4.256 dBm	Margin: -13.5 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor: +0.04 dB	
Trace Mode = VIEW		

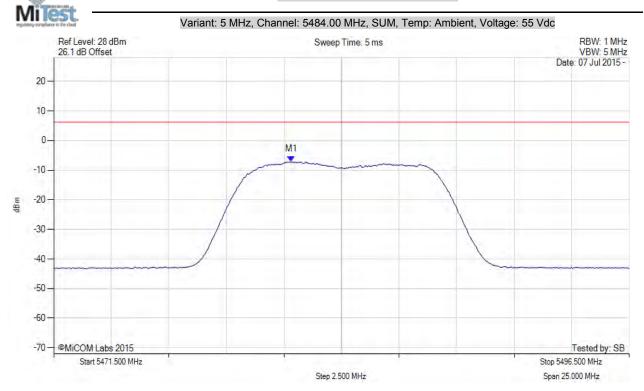


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 134 of 223

PEAK POWER SPECTRAL DENSITY



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

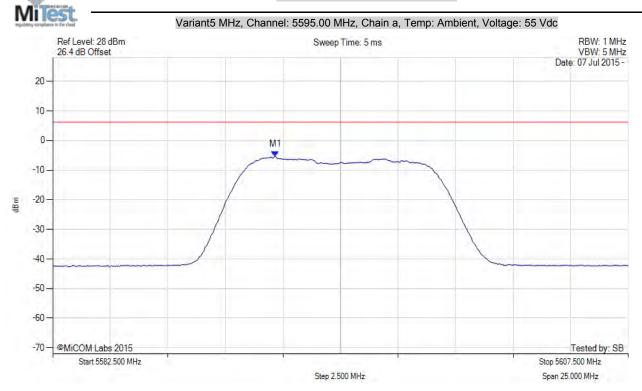


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 135 of 223

PEAK POWER SPECTRAL DENSITY



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

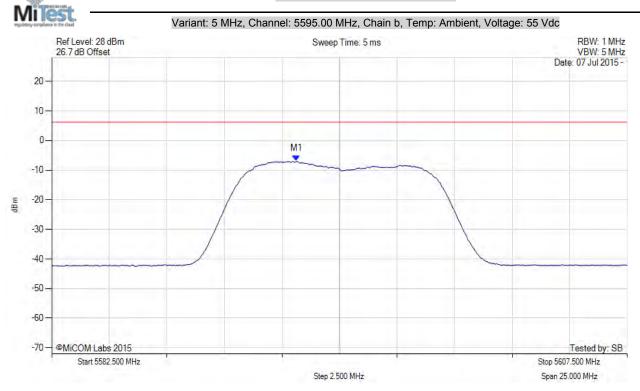


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 136 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5593.121 MHz : -6.901 dBm	Channel Frequency: 5595.00 MHz

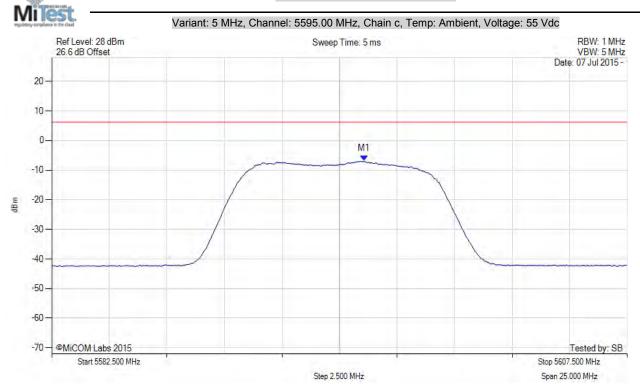


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 137 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5596.077 MHz : -6.925 dBm	Limit: ≤ 6.230 dBm

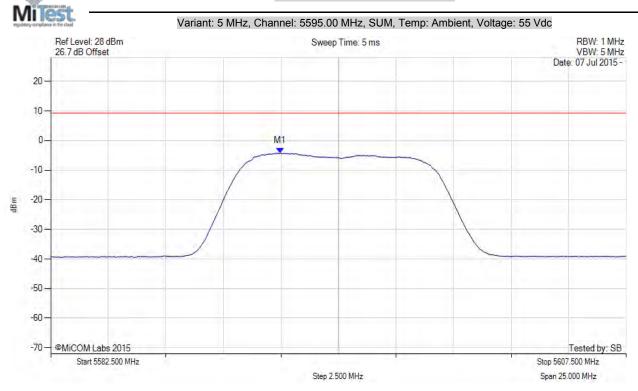


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 138 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1: 5592.500 MHz: -4.280 dBm	Limit: ≤ 9.2 dBm
Sweep Count = 100	M1 + DCCF : 5592.500 MHz : -4.236 dBm	Margin: -13.4 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor: +0.04 dB	
Trace Mode = VIEW		

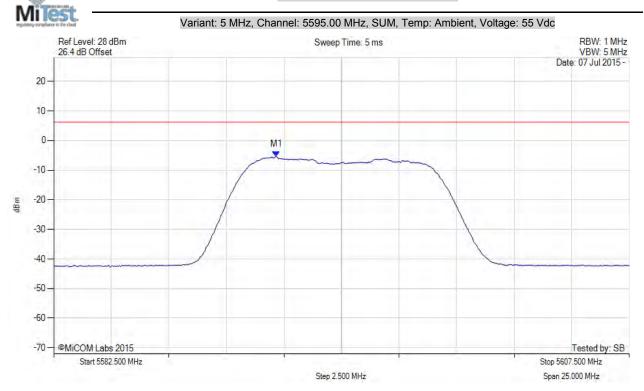


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 139 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1: 5592.200 MHz: -5.387 dBm	Limit: ≤ 6.2 dBm
Sweep Count = 100	M1 + DCCF: 5592.200 MHz: -5.343 dBm	Margin: -11.5 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor: +0.04 dB	
Trace Mode = VIEW		

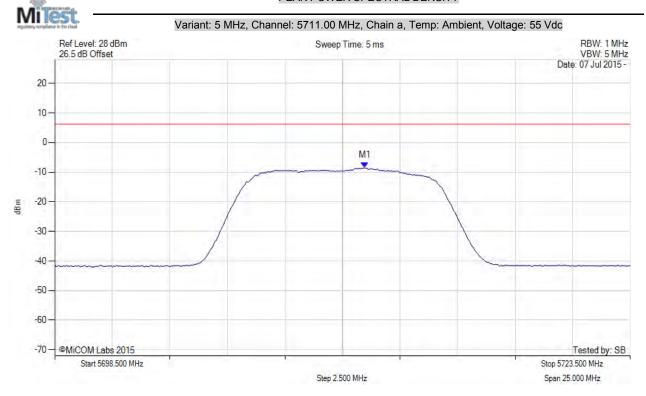


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 140 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5711.977 MHz : -8.561 dBm	Limit: ≤ 6.230 dBm

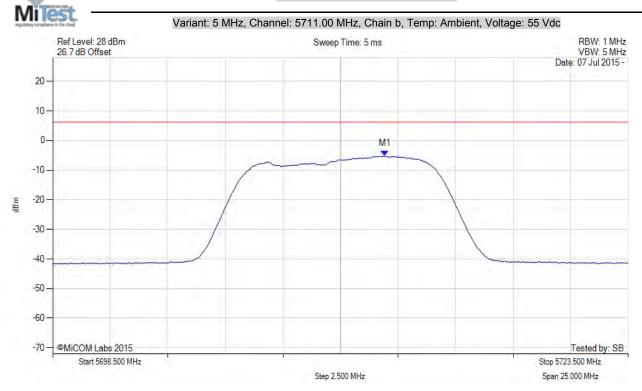


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 141 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5712.929 MHz : -5.261 dBm	Limit: ≤ 6.230 dBm

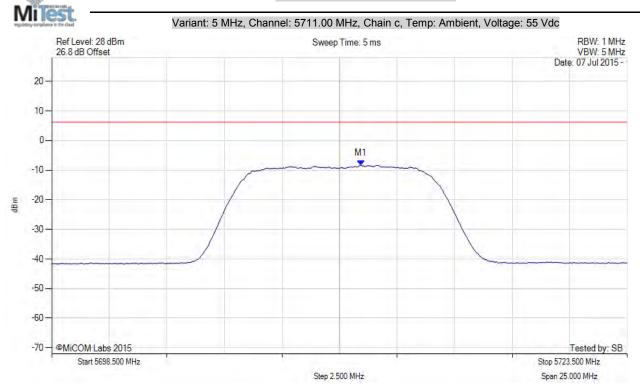


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 142 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5711.927 MHz : -8.390 dBm	Limit: ≤ 6.230 dBm

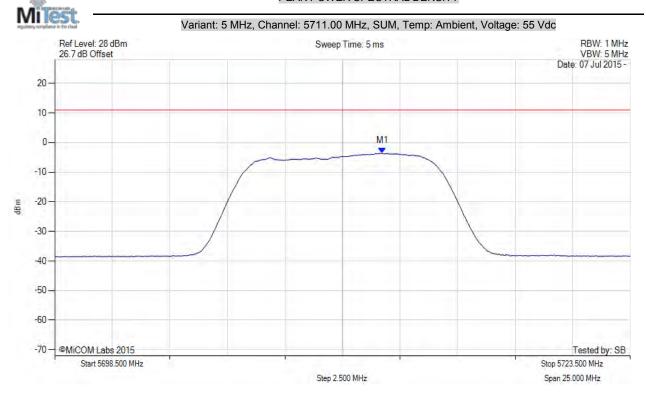


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Page: 29thJuly 2015 143 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1: 5712.700 MHz: -3.625 dBm	Limit: ≤ 11.0 dBm
Sweep Count = 100	M1 + DCCF : 5712.700 MHz : -3.581 dBm	Margin: -14.6 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor: +0.04 dB	
Trace Mode = VIEW		

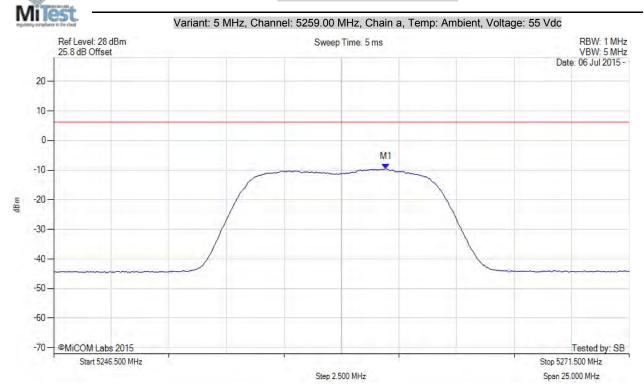


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 144 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW		Limit: ≤ -8.270 dBm Margin: 1.26 dB

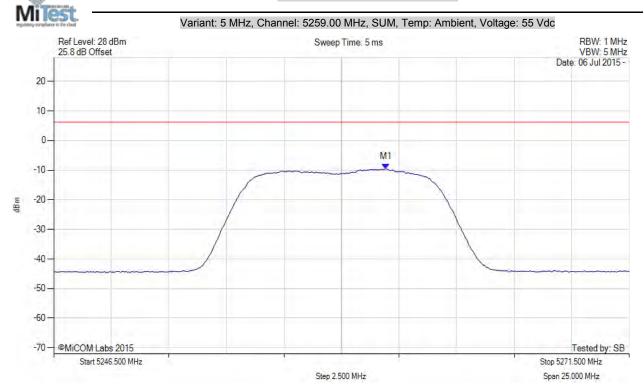


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 145 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5260.929 MHz : -9.574 dBm	Limit: ≤ -8.3 dBm Margin: -1.3 dB

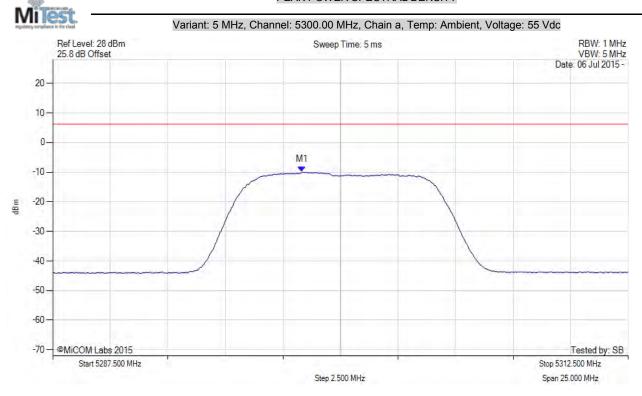


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 146 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1: 5298.322 MHz: -9.989 dBm	Limit: ≤ -8.270 dBm
Sweep Count = 100		Margin: 1.68 dB
RF Atten (dB) = 20		
Trace Mode = VIEW		

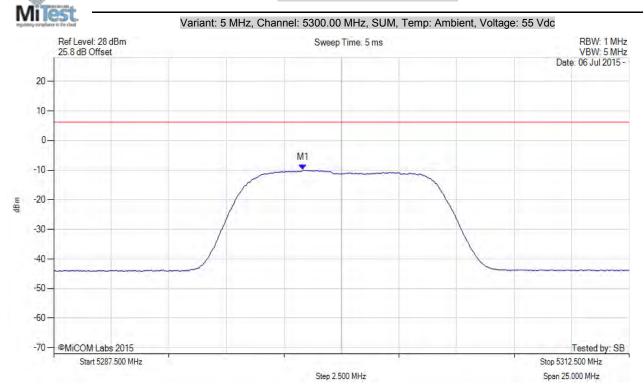


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 147 of 223

PEAK POWER SPECTRAL DENSITY



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

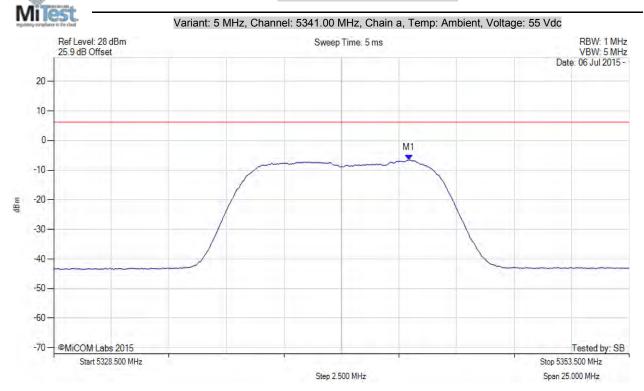


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 148 of 223

PEAK POWER SPECTRAL DENSITY



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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 149 of 223

PEAK POWER SPECTRAL DENSITY



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

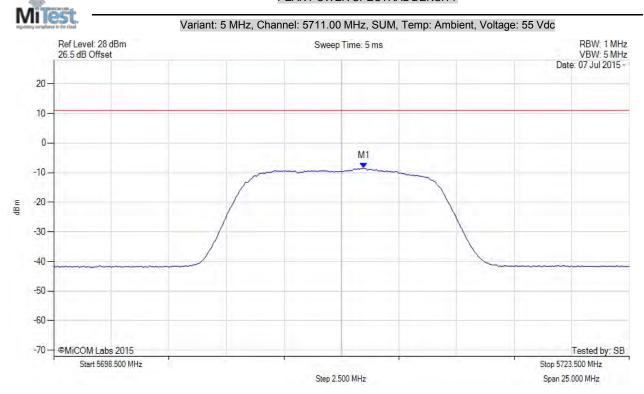


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 150 of 223

PEAK POWER SPECTRAL DENSITY



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

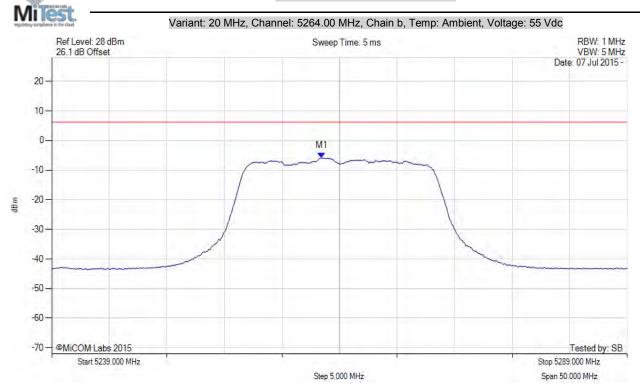


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 151 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5262.447 MHz : -5.933 dBm	Limit: ≤ 6.230 dBm



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 152 of 223

PEAK POWER SPECTRAL DENSITY



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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 153 of 223

PEAK POWER SPECTRAL DENSITY



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

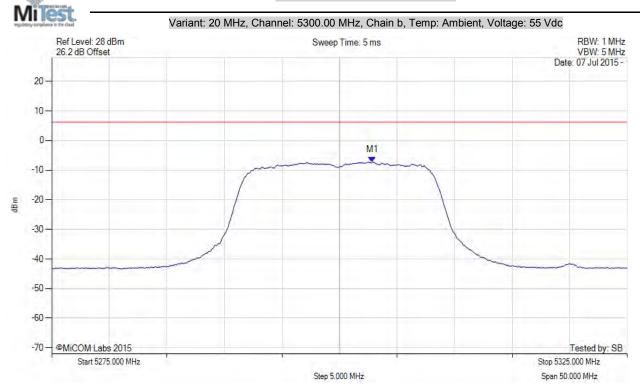


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 154 of 223

PEAK POWER SPECTRAL DENSITY



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

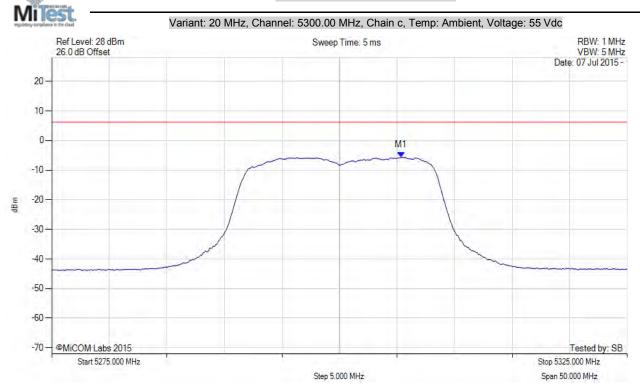


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 155 of 223

PEAK POWER SPECTRAL DENSITY



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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 156 of 223

PEAK POWER SPECTRAL DENSITY



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

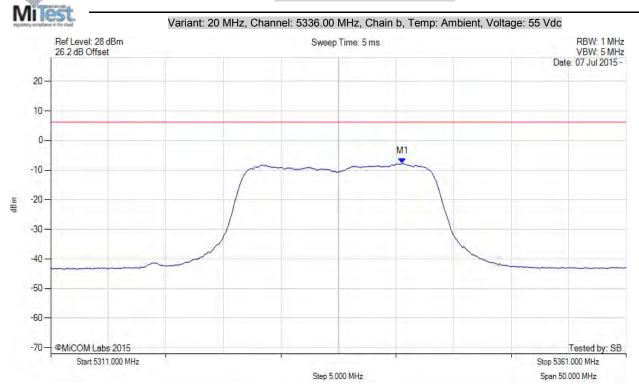


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 157 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5341.561 MHz : -7.801 dBm	Limit: ≤ 6.230 dBm

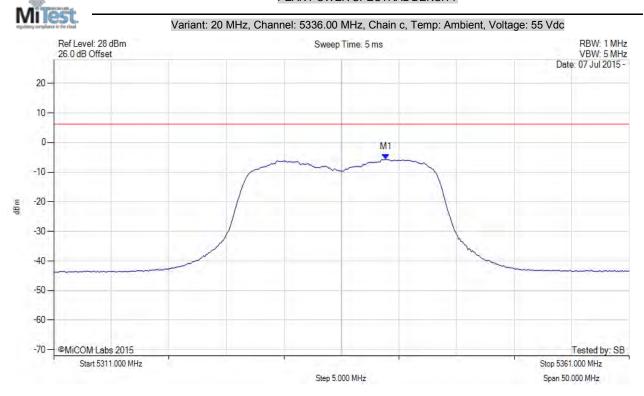


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 158 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5339.858 MHz : -5.662 dBm	Limit: ≤ 6.230 dBm

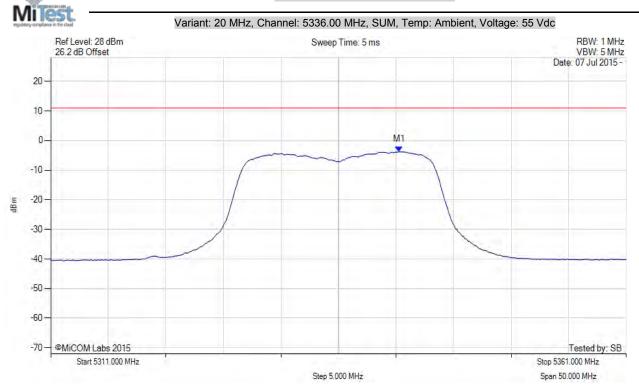


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 159 of 223

PEAK POWER SPECTRAL DENSITY



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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 160 of 223

PEAK POWER SPECTRAL DENSITY



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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 161 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1: 5490.353 MHz: -5.827 dBm	Limit: ≤ -8.270 dBm
Sweep Count = 100		Margin: -2.49 dB
RF Atten (dB) = 20		
Trace Mode = VIEW		

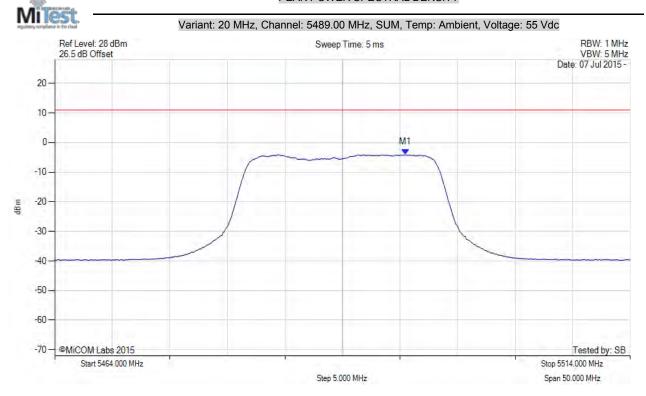


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 162 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1: 5494.461 MHz: -4.079 dBm	Limit: ≤ -3.5 dBm
Sweep Count = 100		Margin: -0.6 dB
RF Atten (dB) = 20		
Trace Mode = VIEW		

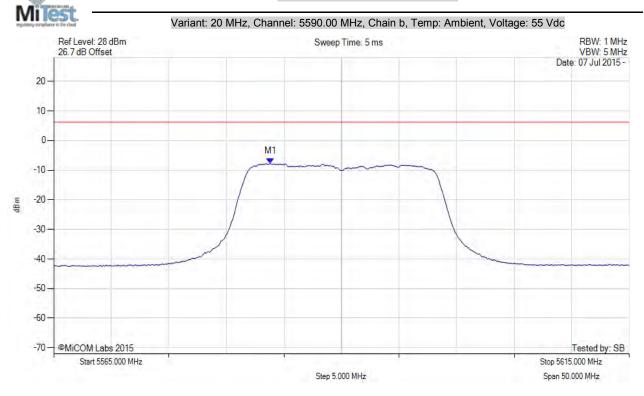


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 163 of 223

PEAK POWER SPECTRAL DENSITY



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

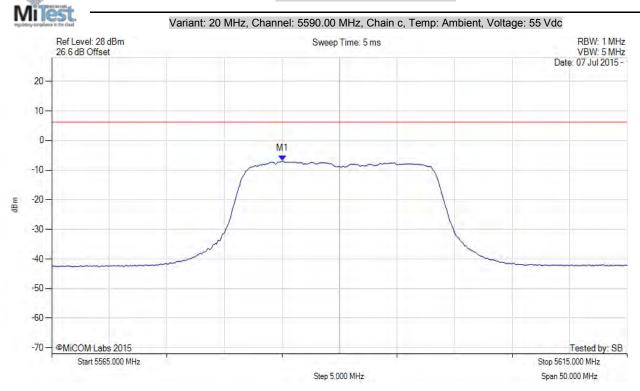


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 164 of 223

PEAK POWER SPECTRAL DENSITY



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

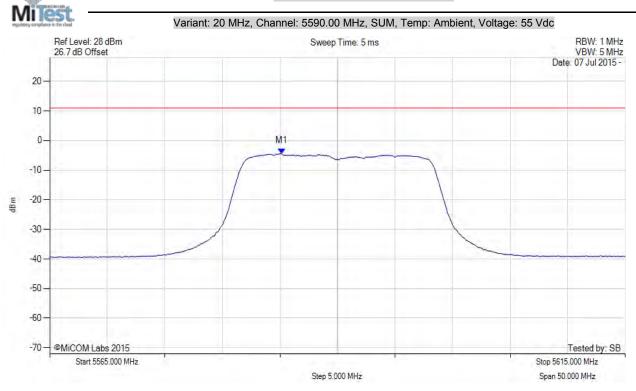


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 165 of 223

PEAK POWER SPECTRAL DENSITY



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

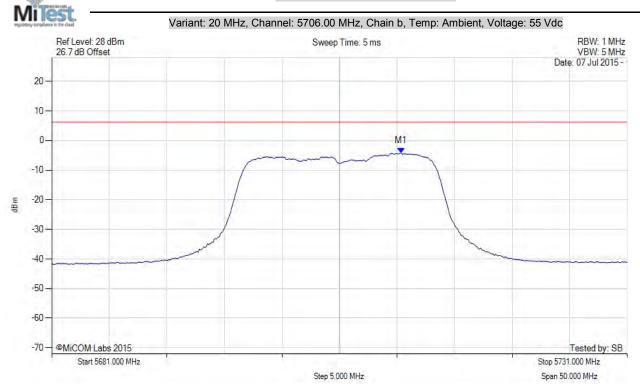


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 166 of 223

PEAK POWER SPECTRAL DENSITY



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

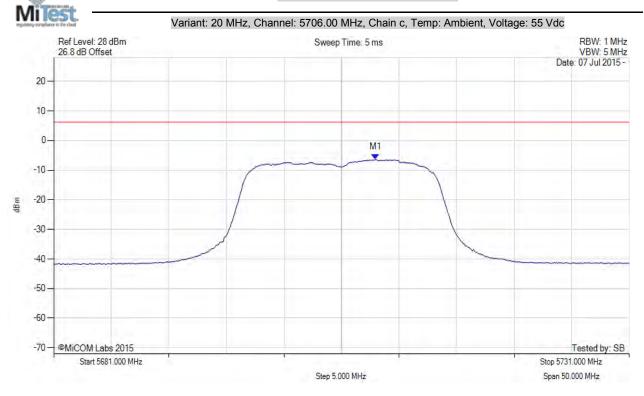


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 167 of 223

PEAK POWER SPECTRAL DENSITY



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

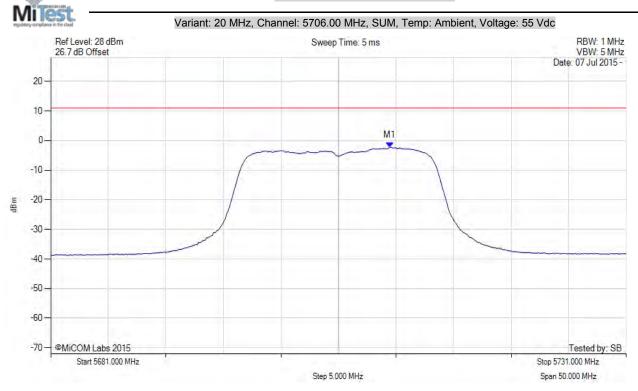


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 168 of 223

PEAK POWER SPECTRAL DENSITY



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

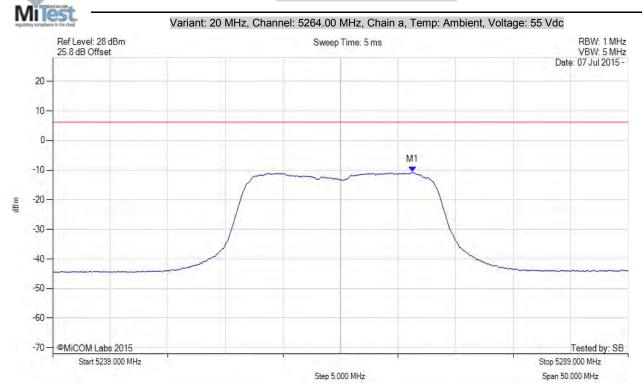


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 169 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5270.263 MHz : -10.655 dBm	Limit: ≤ 6.230 dBm

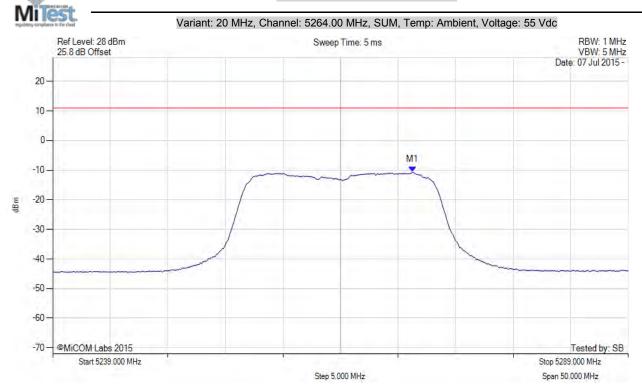


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 170 of 223

PEAK POWER SPECTRAL DENSITY



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

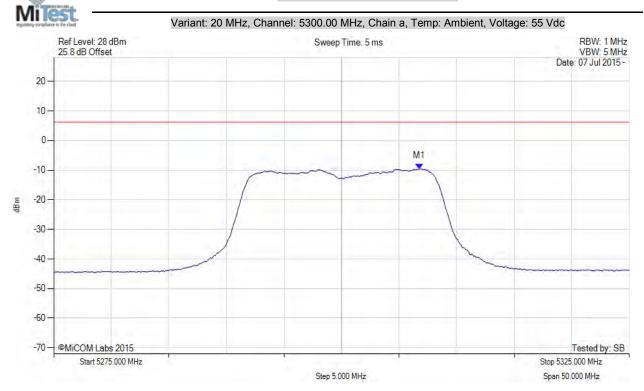


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 171 of 223

PEAK POWER SPECTRAL DENSITY



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

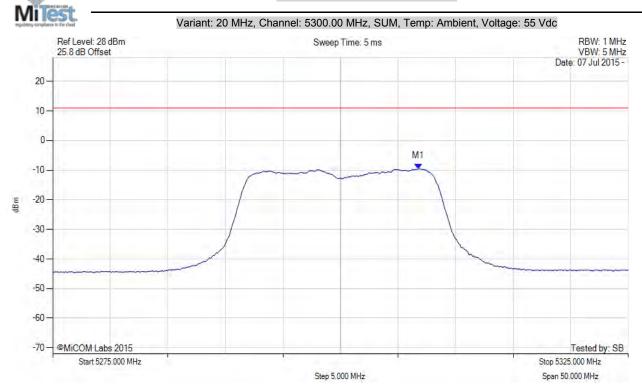


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 172 of 223

PEAK POWER SPECTRAL DENSITY



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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 173 of 223

PEAK POWER SPECTRAL DENSITY



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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 174 of 223

PEAK POWER SPECTRAL DENSITY



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

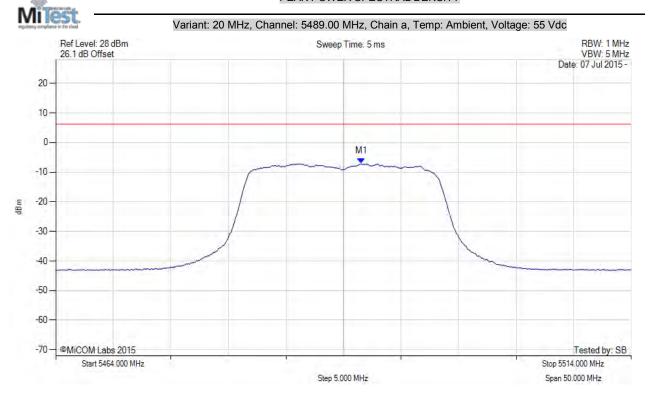


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 175 of 223

PEAK POWER SPECTRAL DENSITY



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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 176 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1: 5490.600 MHz: -7.165 dBm	Limit: ≤ 11.0 dBm
Sweep Count = 100	M1 + DCCF : 5490.600 MHz : -7.121 dBm	Margin: -18.1 dB
	Duty Cycle Correction Factor: +0.04 dB	
Trace Mode = VIEW		

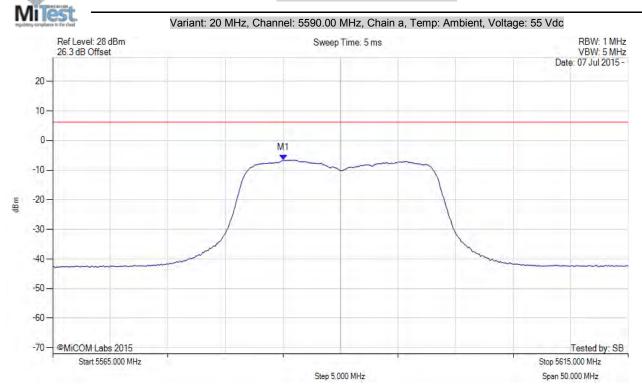


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 177 of 223

PEAK POWER SPECTRAL DENSITY



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

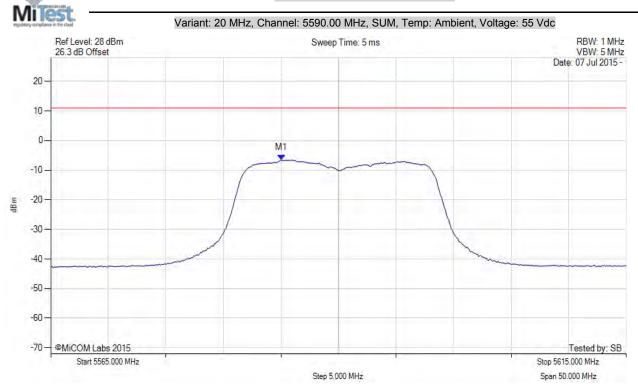


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 178 of 223

PEAK POWER SPECTRAL DENSITY



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

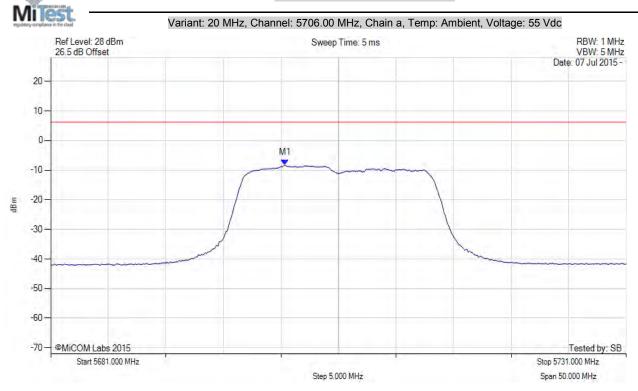


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 179 of 223

PEAK POWER SPECTRAL DENSITY



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

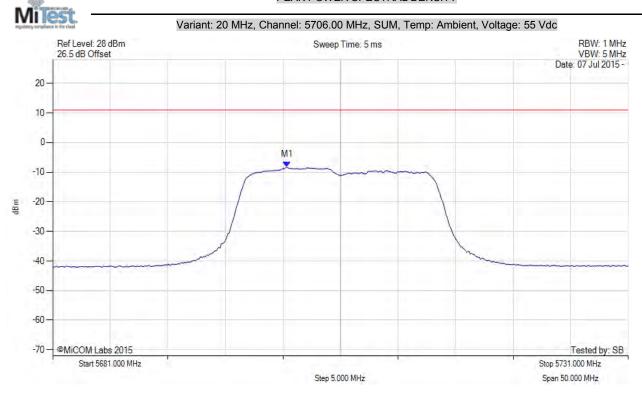


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 180 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
	M1: 5701.300 MHz: -8.215 dBm	Limit: ≤ 11.0 dBm
Sweep Count = 100	M1 + DCCF : 5701.300 MHz : -8.171 dBm	Margin: -19.1 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor: +0.04 dB	
Trace Mode = VIEW		

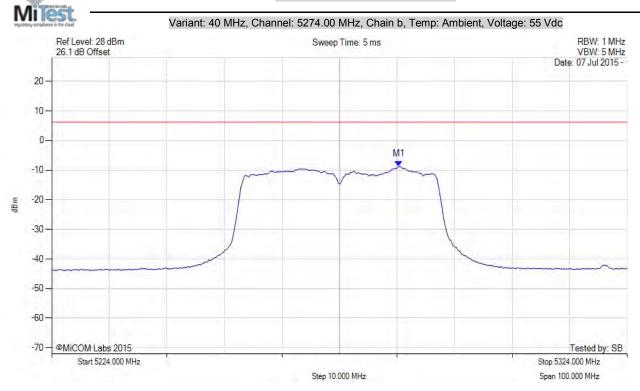


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 181 of 223

PEAK POWER SPECTRAL DENSITY



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

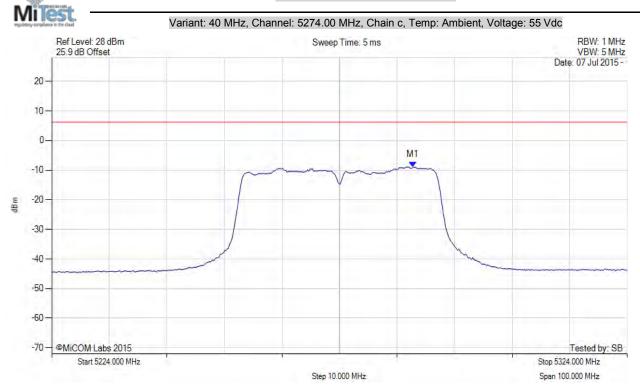


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 182 of 223

PEAK POWER SPECTRAL DENSITY



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

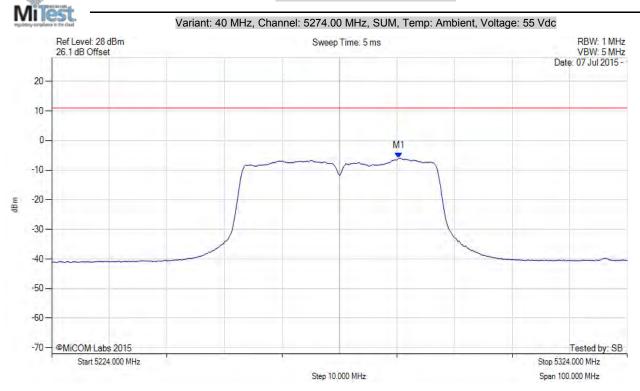


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 183 of 223

PEAK POWER SPECTRAL DENSITY



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

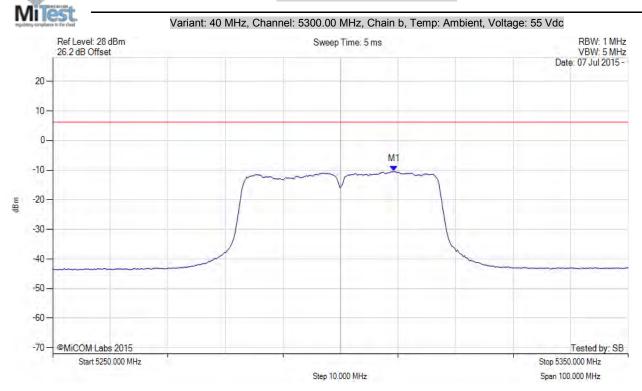


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 184 of 223

PEAK POWER SPECTRAL DENSITY



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

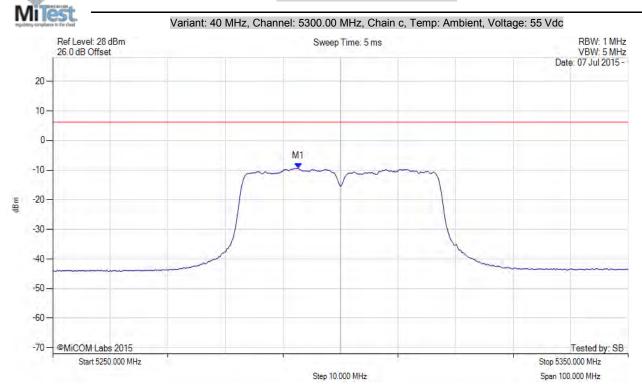


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 185 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5292.685 MHz : -9.363 dBm	Limit: ≤ 6.230 dBm

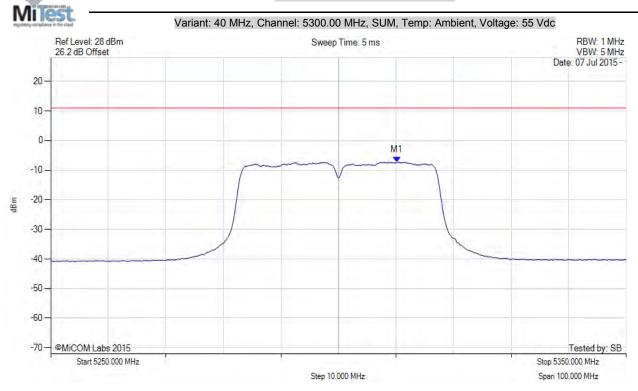


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 186 of 223

PEAK POWER SPECTRAL DENSITY



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

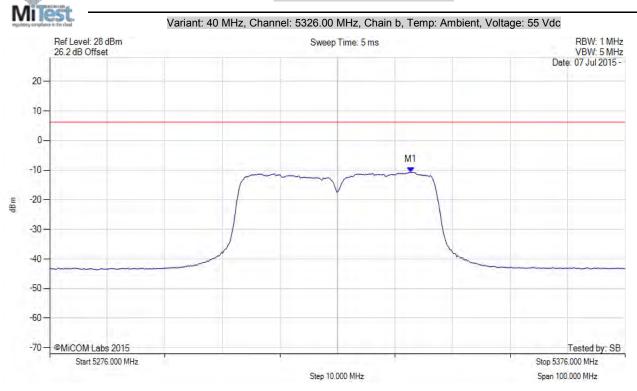


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 187 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5338.725 MHz : -10.710 dBm	Limit: ≤ 6.230 dBm

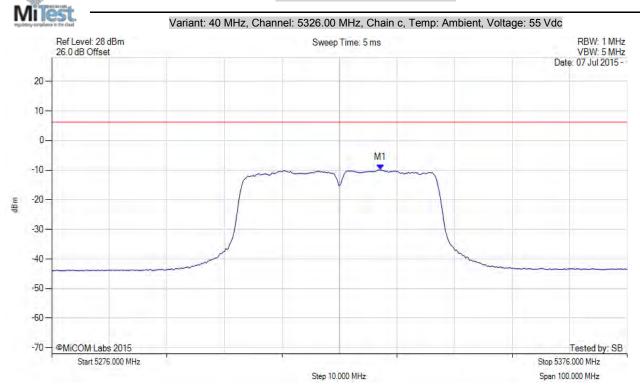


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 188 of 223

PEAK POWER SPECTRAL DENSITY



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

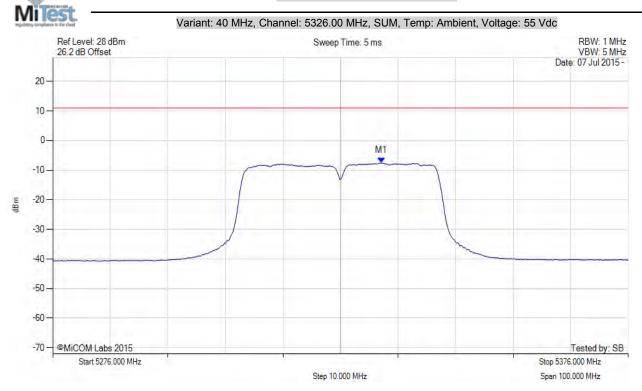


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 189 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
	M1 : 5333.100 MHz : -7.635 dBm	Limit: ≤ 11.0 dBm
	M1 + DCCF: 5333.100 MHz: -7.591 dBm Duty Cycle Correction Factor: +0.04 dB	Margin: -18.6 dB
Trace Mode = VIEW		

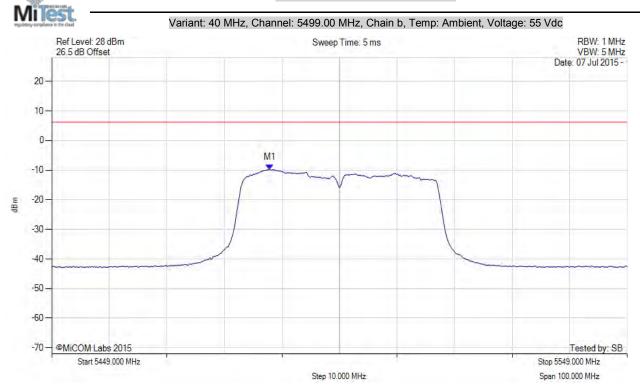


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 190 of 223

PEAK POWER SPECTRAL DENSITY



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

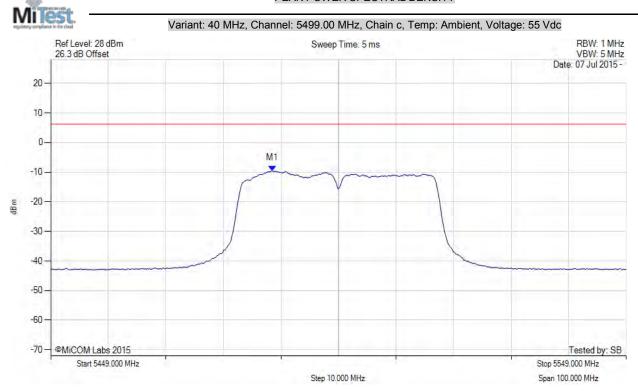


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 191 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5487.477 MHz : -9.547 dBm	Limit: ≤ 6.230 dBm



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 192 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1: 5487.500 MHz: -6.707 dBm	Limit: ≤ 11.0 dBm
Sweep Count = 100	M1 + DCCF : 5487.500 MHz : -6.663 dBm	Margin: -17.6 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor: +0.04 dB	
Trace Mode = VIEW		

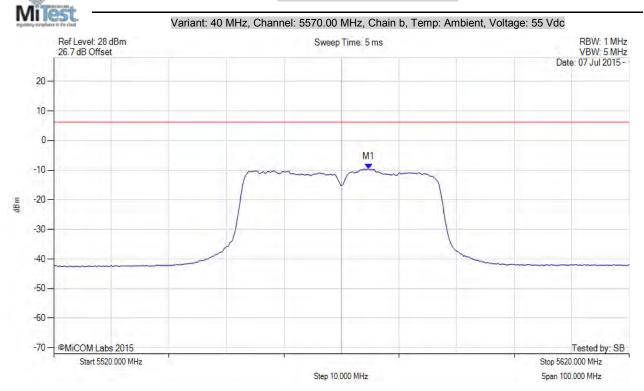


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 193 of 223

PEAK POWER SPECTRAL DENSITY



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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 194 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5563.487 MHz : -8.715 dBm	Limit: ≤ 6.230 dBm

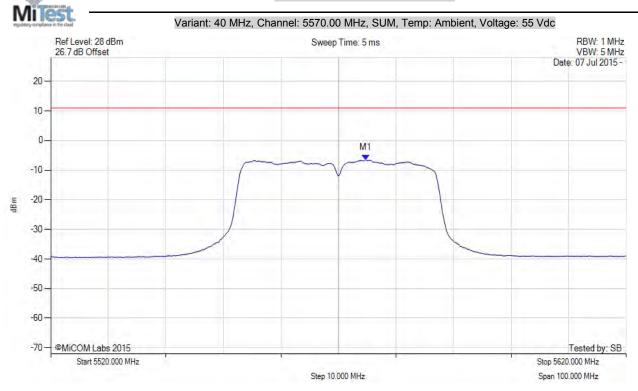


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 195 of 223

PEAK POWER SPECTRAL DENSITY



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

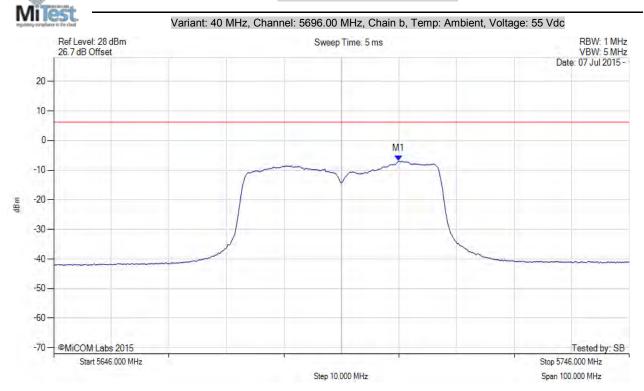


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 196 of 223

PEAK POWER SPECTRAL DENSITY



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

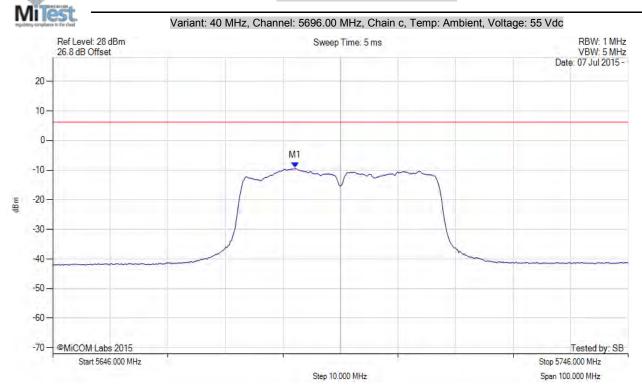


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 197 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5688.084 MHz : -9.288 dBm	Limit: ≤ 6.230 dBm

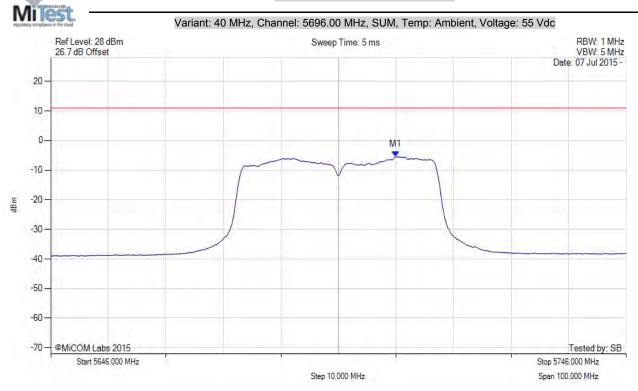


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 198 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
	M1 : 5705.900 MHz : -5.380 dBm M1 + DCCF : 5705.900 MHz : -5.336 dBm	Limit: ≤ 11.0 dBm Margin: -16.3 dB
	Duty Cycle Correction Factor: +0.04 dB	Margin16.3 db
Trace Mode = VIEW		

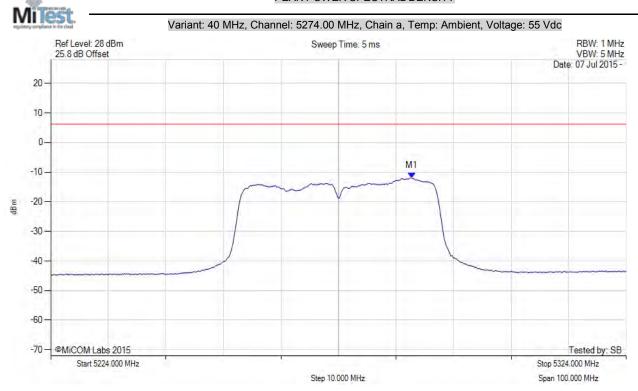


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 199 of 223

PEAK POWER SPECTRAL DENSITY



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

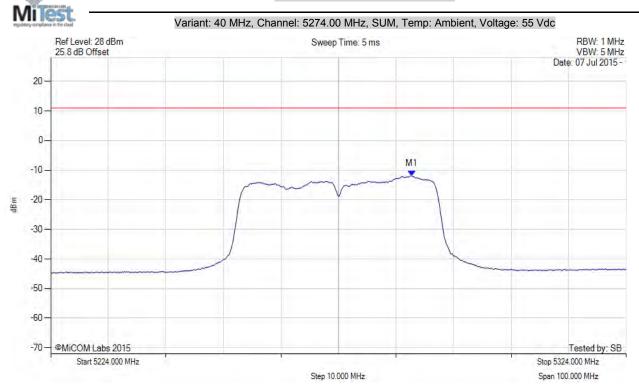


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 200 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
	M1 : 5286.700 MHz : -11.951 dBm	Limit: ≤ 11.0 dBm
	M1 + DCCF : 5286.700 MHz : -11.907 dBm Duty Cycle Correction Factor : +0.04 dB	Margin: -22.9 dB
Trace Mode = VIEW		

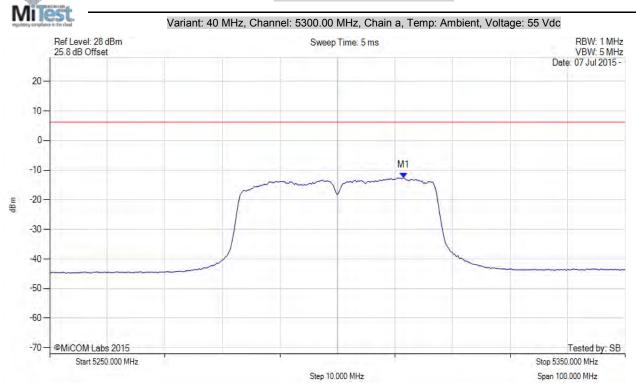


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 201 of 223

PEAK POWER SPECTRAL DENSITY



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

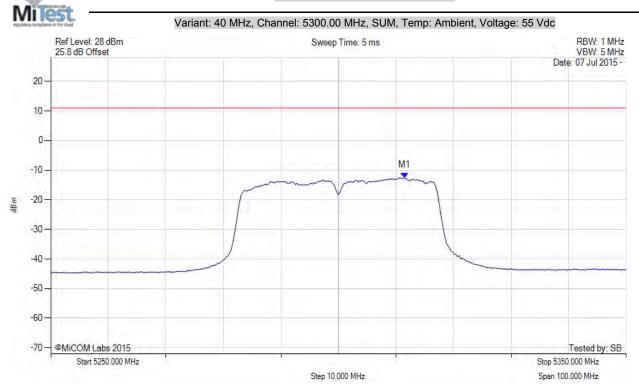


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 202 of 223

PEAK POWER SPECTRAL DENSITY



requency:Amplitude	Test Results
	Limit: ≤ 11.0 dBm Margin: -23.5 dB
e Correction Factor : +0.04 dB	margin. 20.0 db
	.500 MHz : -12.571 dBm F : 5311.500 MHz : -12.527 dBm

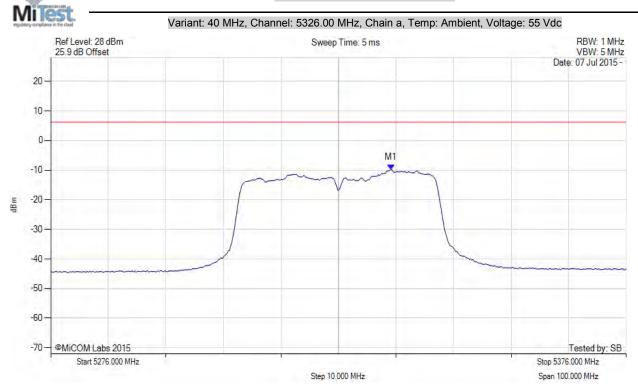


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 203 of 223

PEAK POWER SPECTRAL DENSITY



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

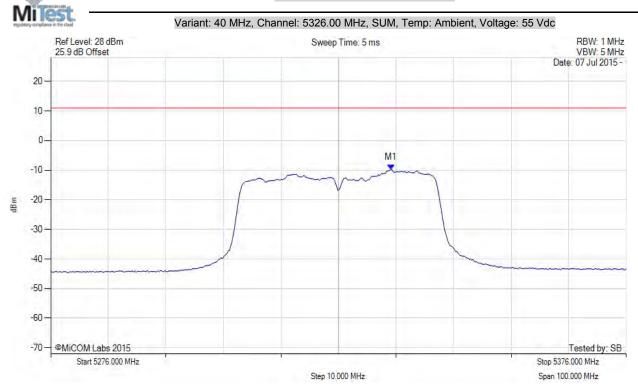


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 204 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1: 5335.100 MHz: -9.821 dBm	Limit: ≤ 11.0 dBm
Sweep Count = 100	M1 + DCCF : 5335.100 MHz : -9.777 dBm	Margin: -20.7 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor: +0.04 dB	
Trace Mode = VIEW		

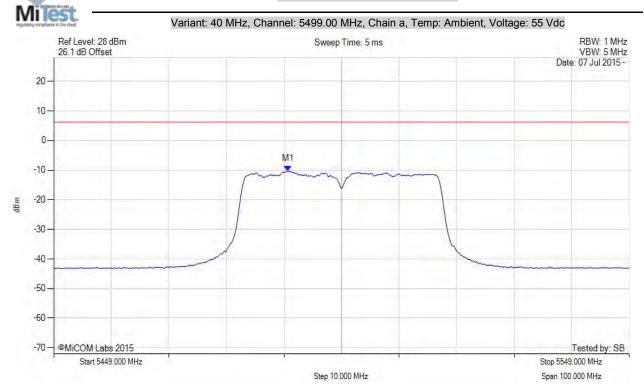


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 205 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5489.681 MHz : -10.413 dBm	Limit: ≤ 6.230 dBm

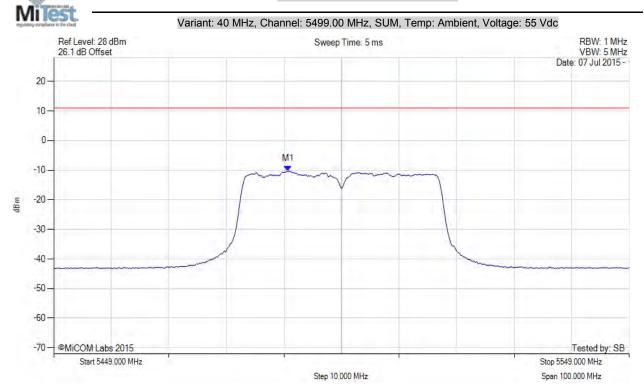


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 206 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1: 5489.700 MHz: -10.413 dBm	Limit: ≤ 11.0 dBm
Sweep Count = 100	M1 + DCCF : 5489.700 MHz : -10.369 dBm	Margin: -21.3 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor: +0.04 dB	
Trace Mode = VIEW		

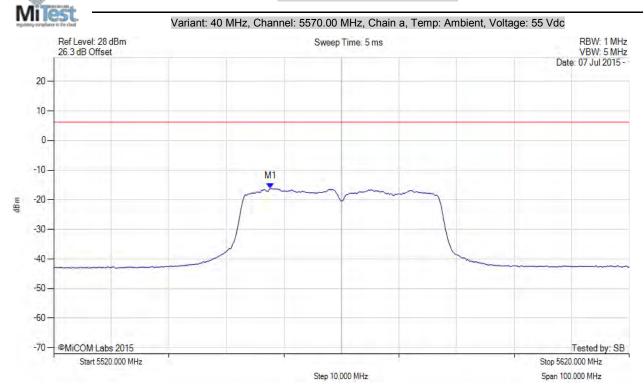


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 207 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5557.675 MHz : -16.260 dBm	Limit: ≤ 6.230 dBm

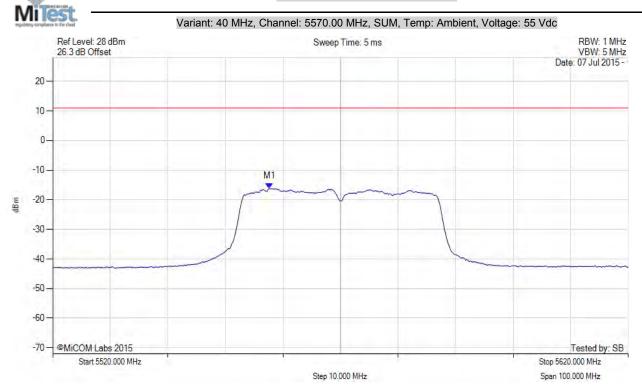


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 208 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1: 5557.700 MHz: -16.260 dBm	Limit: ≤ 11.0 dBm
Sweep Count = 100	M1 + DCCF : 5557.700 MHz : -16.216 dBm	Margin: -27.2 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor: +0.04 dB	
Trace Mode = VIEW		

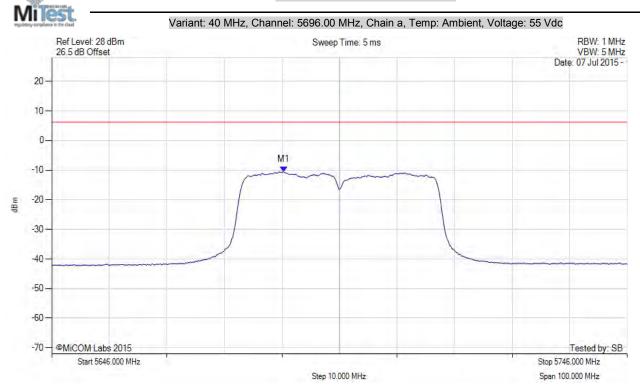


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 209 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5686.281 MHz : -10.511 dBm	Limit: ≤ 6.230 dBm

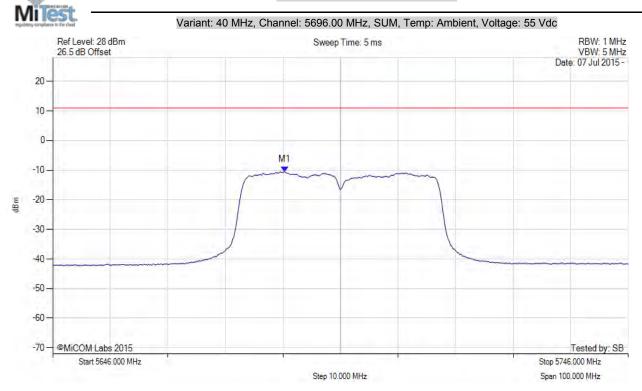


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 210 of 223

PEAK POWER SPECTRAL DENSITY



Analyser Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS	M1: 5686.300 MHz: -10.511 dBm	Limit: ≤ 11.0 dBm
Sweep Count = 100	M1 + DCCF : 5686.300 MHz : -10.467 dBm	Margin: -21.4 dB
RF Atten (dB) = 20	Duty Cycle Correction Factor: +0.04 dB	
Trace Mode = VIEW		



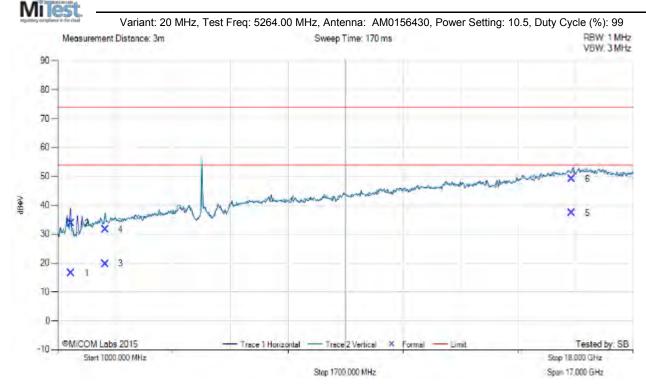
To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 211 of 223

A.3. Radiated Spurious Emissions

RADIATED SPURIOUS - RESTRICTED BAND EMISSIONS



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

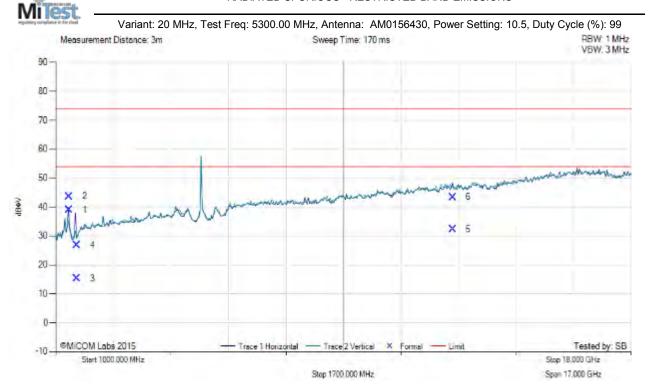


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 212 of 223

RADIATED SPURIOUS - RESTRICTED BAND EMISSIONS



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

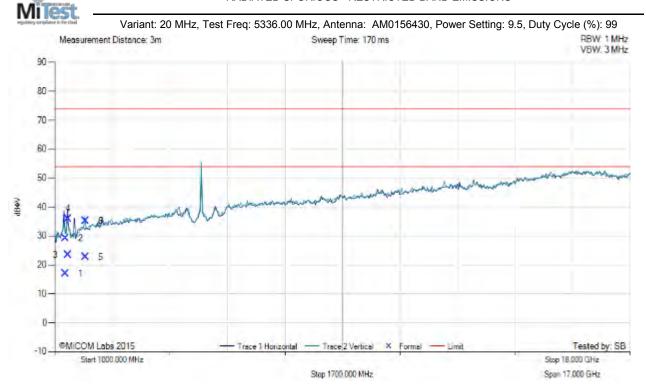


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 213 of 223

RADIATED SPURIOUS - RESTRICTED BAND EMISSIONS



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

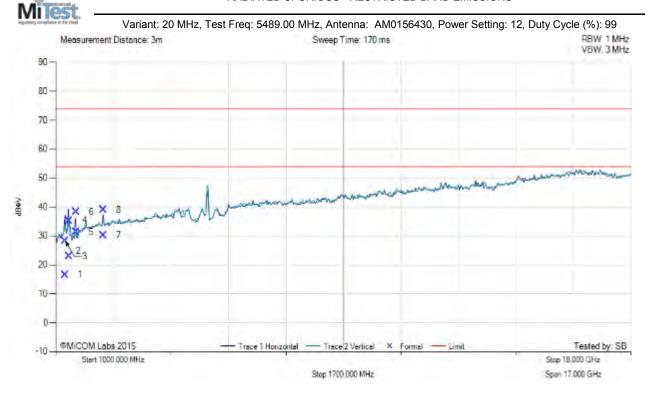


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 214 of 223

RADIATED SPURIOUS - RESTRICTED BAND EMISSIONS



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

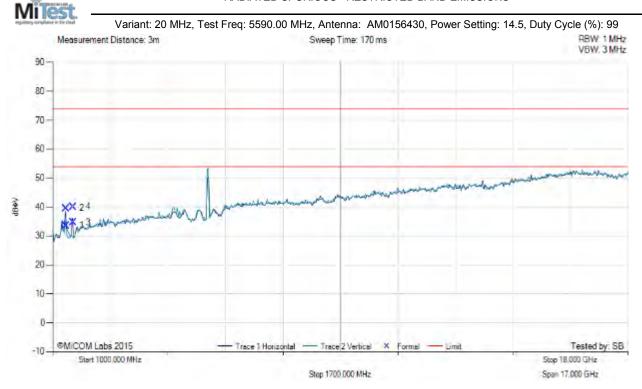


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 215 of 223

RADIATED SPURIOUS - RESTRICTED BAND EMISSIONS



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

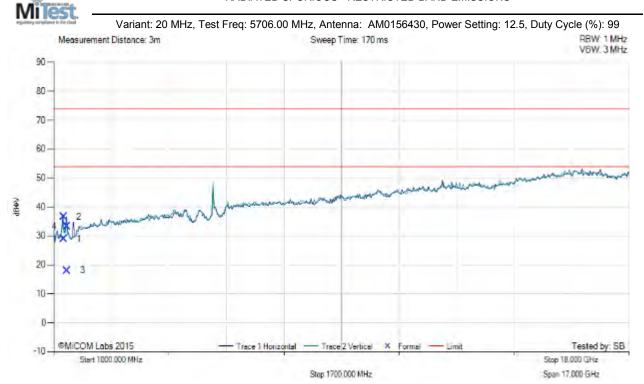


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 216 of 223

RADIATED SPURIOUS - RESTRICTED BAND EMISSIONS



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



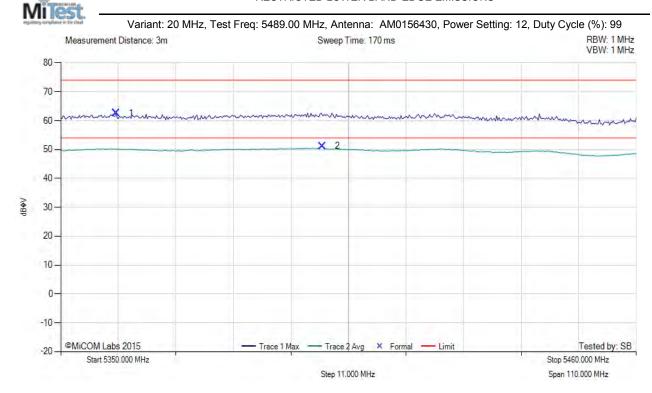
To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 217 of 223

A.4. Radiated Restricted Band-Edge Emissions

RESTRICTED LOWER BAND-EDGE EMISSIONS



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

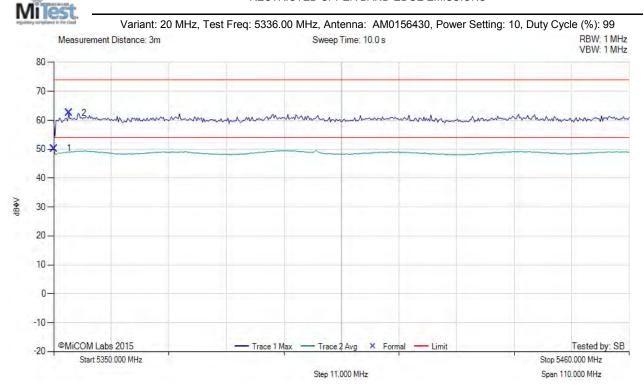


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 218 of 223

RESTRICTED UPPER BAND-EDGE EMISSIONS



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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 219 of 223

RESTRICTED UPPER BAND-EDGE EMISSIONS



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



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

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 220 of 223

RESTRICTED LOWER BAND-EDGE EMISSIONS



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

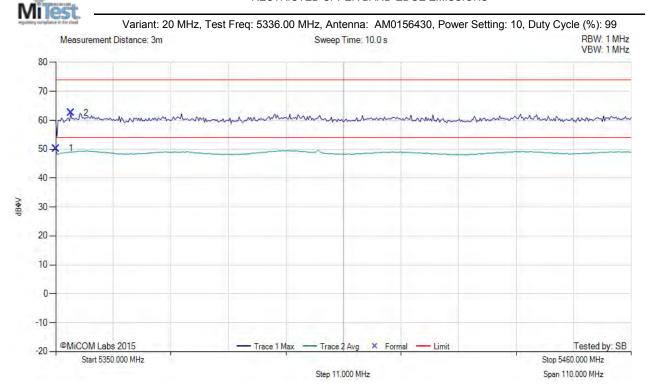


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 221 of 223

RESTRICTED UPPER BAND-EDGE EMISSIONS



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

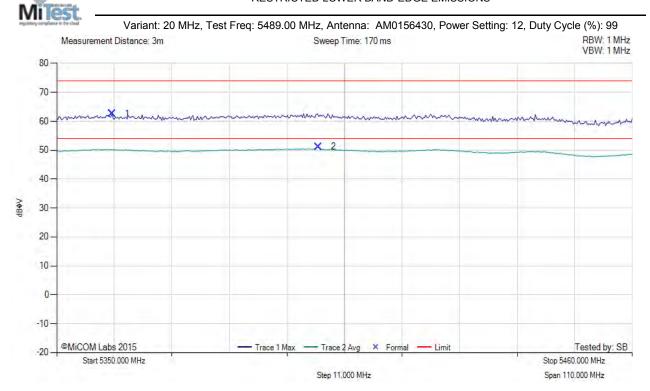


To: FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247

Serial #: RDWN32-U2a Rev A

Issue Date: 29thJuly 2015 **Page:** 222 of 223

RESTRICTED LOWER BAND-EDGE EMISSIONS



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



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