

Company: Tarana Wireless

Test of: AA2-CN65AFP  
To: FCC CFR 47 Part 15 Subpart E 15.407

Report No.: TARA25-U3\_Conducted Rev A

**TEST REPORT ADDENDUM - CONDUCTED**



Issue Date: 15th December 2016

Master Document Number	Addendum Reports
TARA25-U3_Master	TARA25-U3_Conducted
	TARA25-U3_Radiated

## Table of Contents

<b>1. TEST SUMMARY .....</b>	<b>3</b>
<b>2. MEASUREMENT AND PRESENTATION OF TEST DATA .....</b>	<b>4</b>
<b>3. TEST RESULTS .....</b>	<b>5</b>
3.1. Peak Transmit Power .....	5
3.2. 26 dB & 99% Bandwidth .....	11
3.3. 6 dB & 99% Bandwidth .....	14
3.4. Power Spectral Density .....	17
<b>A. APPENDIX - GRAPHICAL IMAGES .....</b>	<b>27</b>
A.1. 26 dB & 99% Bandwidth .....	28
A.2. 6 dB & 99% Bandwidth .....	34
A.3. Power Spectral Density .....	40

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

## 1. TEST SUMMARY

### List of Measurements

Test Header	Result	Data Link
Peak Transmit Power	Complies	<a href="#">View Data</a>
26 dB & 99% Bandwidth	Complies	<a href="#">View Data</a>
6 dB & 99% Bandwidth	Complies	<a href="#">View Data</a>
Power Spectral Density	Complies	<a href="#">View Data</a>

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

## 2. MEASUREMENT AND PRESENTATION OF TEST DATA

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

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

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



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

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

### 3. TEST RESULTS

#### 3.1. Peak Transmit Power

Conducted Test Conditions for Maximum Conducted Output Power			
<b>Standard:</b>	FCC CFR 47:15.407	<b>Ambient Temp. (°C):</b>	24.0 - 27.5
<b>Test Heading:</b>	Maximum Conducted Output Power	<b>Rel. Humidity (%):</b>	32 - 45
<b>Standard Section(s):</b>	15.407 (a)	<b>Pressure (mBars):</b>	999 - 1001
<b>Reference Document(s):</b>	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 ( $\Sigma$ ) 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 [ $10^{\log(10)} (10^{a/10} + 10^{b/10} + 10^{c/10} + 10^{d/10})$ ]

$G$  = Antenna Gain

$Y$  = Beamforming Gain

$x$  = Duty Cycle (average power measurements only)

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

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

(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  $11 \text{ dBm} + 10 \log B$ , 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.



**Title:** Tarana Wireless AA2-CN65AAPP  
**To:** FCC CFR 47 Part 15 Subpart E 15.407  
**Serial #:** TARA25-U3\_Conducted Rev A  
**Issue Date:** 15<sup>th</sup> December 2016  
**Page:** 7 of 88

#### Equipment Configuration for Peak Transmit Power

<b>Variant:</b>	20 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Dynamic	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Horizontal Plane)		

#### Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Number of Ports	Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)									
MHz	a	b	c	d	#	$\Sigma$ Port(s) dBm	MHz	dBm	dB	
5170.0	20.80	--	--	--	8.00	29.83	--	30.00	-0.17	5.00
5200.0	20.86	--	--	--	8.00	29.89	--	30.00	-0.11	5.50
5240.0	20.42	--	--	--	8.00	29.45	--	30.00	-0.55	6.50

#### Traceability to Industry Recognized Test Methodologies

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

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

#### Equipment Configuration for Peak Transmit Power

<b>Variant:</b>	20 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Dynamic	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Vertical Plane)		

#### Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Number of Ports	Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)									
MHz	a	b	c	d	#	$\Sigma$ Port(s) dBm	MHz	dBm	dB	
5170.0	--	20.78	--	--	8.00	29.81	--	30.00	-0.19	6.00
5200.0	--	20.63	--	--	8.00	29.66	--	30.00	-0.34	6.50
5240.0	--	20.51	--	--	8.00	29.54	--	30.00	-0.46	7.00

#### Traceability to Industry Recognized Test Methodologies

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

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

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



**Title:** Tarana Wireless AA2-CN65AAPP  
**To:** FCC CFR 47 Part 15 Subpart E 15.407  
**Serial #:** TARA25-U3\_Conducted Rev A  
**Issue Date:** 15<sup>th</sup> December 2016  
**Page:** 8 of 88

#### Equipment Configuration for Peak Transmit Power

<b>Variant:</b>	40 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Dynamic	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Horizontal Plane)		

#### Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Number of Ports	Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)									
MHz	a	b	c	d	#	$\Sigma$ Port(s) dBm	MHz	dBm	dB	
5180.0	20.53	--	--	--	8.00	29.56	--	30.00	-0.44	8.50
5200.0	20.95	--	--	--	8.00	29.98	--	30.00	-0.02	8.50
5230.0	20.49	--	--	--	8.00	29.52	--	30.00	-0.48	9.00

#### Traceability to Industry Recognized Test Methodologies

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

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

#### Equipment Configuration for Peak Transmit Power

<b>Variant:</b>	40 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Dynamic	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Vertical Plane)		

#### Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Number of Ports	Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)									
MHz	a	b	c	d	#	$\Sigma$ Port(s) dBm	MHz	dBm	dB	
5180.0	--	20.59	--	--	8.00	29.62	--	30.00	-0.38	9.50
5200.0	--	20.45	--	--	8.00	29.48	--	30.00	-0.52	10.00
5230.0	--	20.17	--	--	8.00	29.20	--	30.00	-0.80	10.50

#### Traceability to Industry Recognized Test Methodologies

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

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

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



**Title:** Tarana Wireless AA2-CN65AAPP  
**To:** FCC CFR 47 Part 15 Subpart E 15.407  
**Serial #:** TARA25-U3\_Conducted Rev A  
**Issue Date:** 15<sup>th</sup> December 2016  
**Page:** 9 of 88

#### Equipment Configuration for Peak Transmit Power

<b>Variant:</b>	20 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Dynamic	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Horizontal Plane)		

#### Test Measurement Results

<b>Test Frequency</b>	<b>Measured Conducted Output Power (dBm)</b>				<b>Number of Ports</b>	<b>Calculated Total Power</b>	<b>Minimum 26 dB Bandwidth</b>	<b>Limit</b>	<b>Margin</b>	<b>EUT Power Setting</b>
	<b>Port(s)</b>									
<b>MHz</b>	<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>#</b>	<b><math>\Sigma</math> Port(s) dBm</b>	<b>MHz</b>	<b>dBm</b>	<b>dB</b>	
<b>5735.0</b>	20.58	--	--	--	8.00	29.61	--	30.00	-0.39	5.00
<b>5785.0</b>	20.73	--	--	--	8.00	29.76	--	30.00	-0.24	5.00
<b>5835.0</b>	20.84	--	--	--	8.00	29.87	--	30.00	-0.13	5.00

#### Traceability to Industry Recognized Test Methodologies

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

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

#### Equipment Configuration for Peak Transmit Power

<b>Variant:</b>	20 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Dynamic	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Vertical Plane)		

#### Test Measurement Results

<b>Test Frequency</b>	<b>Measured Conducted Output Power (dBm)</b>				<b>Number of Ports</b>	<b>Calculated Total Power</b>	<b>Minimum 26 dB Bandwidth</b>	<b>Limit</b>	<b>Margin</b>	<b>EUT Power Setting</b>
	<b>Port(s)</b>									
<b>MHz</b>	<b>a</b>	<b>b</b>	<b>c</b>	<b>d</b>	<b>#</b>	<b><math>\Sigma</math> Port(s) dBm</b>	<b>MHz</b>	<b>dBm</b>	<b>dB</b>	
<b>5735.0</b>	--	20.58	--	--	8.00	29.61	--	30.00	-0.39	5.50
<b>5785.0</b>	--	20.73	--	--	8.00	29.76	--	30.00	-0.24	5.50
<b>5835.0</b>	--	20.84	--	--	8.00	29.87	--	30.00	-0.13	5.50

#### Traceability to Industry Recognized Test Methodologies

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

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

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



**Title:** Tarana Wireless AA2-CN65AAPP  
**To:** FCC CFR 47 Part 15 Subpart E 15.407  
**Serial #:** TARA25-U3\_Conducted Rev A  
**Issue Date:** 15<sup>th</sup> December 2016  
**Page:** 10 of 88

#### Equipment Configuration for Peak Transmit Power

<b>Variant:</b>	40 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Dynamic	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Horizontal Plane)		

#### Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Number of Ports	Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)									
MHz	a	b	c	d	#	$\Sigma$ Port(s) dBm	MHz	dBm	dB	
5745.0	20.93	--	--	--	8.00	29.96	--	30.00	-0.04	8.00
5785.0	20.83	--	--	--	8.00	29.86	--	30.00	-0.14	8.00
5825.0	20.75	--	--	--	8.00	29.78	--	30.00	-0.22	8.00

#### Traceability to Industry Recognized Test Methodologies

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

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

#### Equipment Configuration for Peak Transmit Power

<b>Variant:</b>	40 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Dynamic	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Vertical Plane)		

#### Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Number of Ports	Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)									
MHz	a	b	c	d	#	$\Sigma$ Port(s) dBm	MHz	dBm	dB	
5745.0	--	20.88	--	--	8.00	29.91	--	30.00	-0.09	8.50
5785.0	--	20.48	--	--	8.00	29.51	--	30.00	-0.49	9.00
5825.0	--	20.60	--	--	8.00	29.63	--	30.00	-0.37	9.00

#### Traceability to Industry Recognized Test Methodologies

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

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

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

### **3.2. 26 dB & 99% Bandwidth**

Conducted Test Conditions for 26 dB and 99% Bandwidth			
<b>Standard:</b>	FCC CFR 47:15.407	<b>Ambient Temp. (°C):</b>	24.0 - 27.5
<b>Test Heading:</b>	26 dB and 99 % Bandwidth	<b>Rel. Humidity (%):</b>	32 - 45
<b>Standard Section(s):</b>	15.407 (a)	<b>Pressure (mBars):</b>	999 - 1001
<b>Reference Document(s):</b>	See Normative References		
<b>Test Procedure for 26 dB and 99% Bandwidth Measurement</b> 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.			



**Title:** Tarana Wireless AA2-CN65AFC  
**To:** FCC CFR 47 Part 15 Subpart E 15.407  
**Serial #:** TARA25-U3\_Conducted Rev A  
**Issue Date:** 15<sup>th</sup> December 2016  
**Page:** 12 of 88

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

<b>Variant:</b>	20 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Dynamic	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	Product is multi point to point links.		

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)	
	Port(s)					
MHz	a	b	c	d	Highest	Lowest
5170.0	<a href="#">18.998</a>	--	--	--	18.998	18.998
5200.0	<a href="#">18.998</a>	--	--	--	18.998	18.998
5240.0	<a href="#">18.998</a>	--	--	--	18.998	18.998

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)	
	Port(s)					
MHz	a	b	c	d	Highest	Lowest
5170.0	<a href="#">18.357</a>	--	--	--	18.357	18.357
5200.0	<a href="#">18.357</a>	--	--	--	18.357	18.357
5240.0	<a href="#">18.357</a>	--	--	--	18.357	18.357

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).

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



**Title:** Tarana Wireless AA2-CN65AAPP  
**To:** FCC CFR 47 Part 15 Subpart E 15.407  
**Serial #:** TARA25-U3\_Conducted Rev A  
**Issue Date:** 15<sup>th</sup> December 2016  
**Page:** 13 of 88

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

<b>Variant:</b>	40 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Not Applicable	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	Product is multi point to point links.		

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)	
	Port(s)					
MHz	a	b	c	d	Highest	Lowest
5180.0	<a href="#">37.836</a>	--	--	--	37.836	37.836
5200.0	<a href="#">37.836</a>	--	--	--	37.836	37.836
5230.0	<a href="#">37.836</a>	--	--	--	37.836	37.836

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)	
	Port(s)					
MHz	a	b	c	d	Highest	Lowest
5180.0	<a href="#">36.553</a>	--	--	--	36.553	36.553
5200.0	<a href="#">36.553</a>	--	--	--	36.553	36.553
5230.0	<a href="#">36.553</a>	--	--	--	36.553	36.553

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).

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

### **3.3. 6 dB & 99% Bandwidth**

Conducted Test Conditions for 6 dB and 99% Bandwidth			
<b>Standard:</b>	FCC CFR 47:15.407	<b>Ambient Temp. (°C):</b>	24.0 - 27.5
<b>Test Heading:</b>	6 dB and 99 % Bandwidth	<b>Rel. Humidity (%):</b>	32 - 45
<b>Standard Section(s):</b>	15.407 (a)	<b>Pressure (mBars):</b>	999 - 1001
<b>Reference Document(s):</b>	See Normative References		
<b>Test Procedure for 6 dB and 99% Bandwidth Measurement</b> The bandwidth at 6 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 100 kHz. 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.			

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



**Title:** Tarana Wireless AA2-CN65AFC  
**To:** FCC CFR 47 Part 15 Subpart E 15.407  
**Serial #:** TARA25-U3\_Conducted Rev A  
**Issue Date:** 15<sup>th</sup> December 2016  
**Page:** 15 of 88

#### Equipment Configuration for 6 dB & 99% Bandwidth

<b>Variant:</b>	20 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Not Applicable	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	Product is multi point to point links.		

#### Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz)				6 dB Bandwidth (MHz)	
	Port(s)					
MHz	a	b	c	d	Highest	Lowest
5735.0	<a href="#">18.357</a>	--	--	--	18.357	18.357
5785.0	<a href="#">18.357</a>	--	--	--	18.357	18.357
5835.0	<a href="#">18.357</a>	--	--	--	18.357	18.357

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)	
	Port(s)					
MHz	a	b	c	d	Highest	Lowest
5735.0	<a href="#">18.357</a>	--	--	--	18.357	18.357
5785.0	<a href="#">18.357</a>	--	--	--	18.357	18.357
5835.0	<a href="#">18.357</a>	--	--	--	18.357	18.357

#### 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).

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

**Equipment Configuration for 6 dB & 99% Bandwidth**

<b>Variant:</b>	40 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Not Applicable	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	Product is multi point to point links.		

**Test Measurement Results**

Test Frequency	Measured 6 dB Bandwidth (MHz)				6 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5745.0	<a href="#">36.713</a>	--	--	--	36.713	36.713		
5785.0	<a href="#">36.713</a>	--	--	--	36.713	36.713		
5825.0	<a href="#">36.713</a>	--	--	--	36.713	36.713		

Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5745.0	<a href="#">36.393</a>	--	--	--	36.393	36.393		
5785.0	<a href="#">36.393</a>	--	--	--	36.393	36.393		
5825.0	<a href="#">36.393</a>	--	--	--	36.393	36.393		

**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).

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

### 3.4. Power Spectral Density

Conducted Test Conditions for Power Spectral Density			
<b>Standard:</b>	FCC CFR 47:15.407	<b>Ambient Temp. (°C):</b>	24.0 - 27.5
<b>Test Heading:</b>	Power Spectral Density	<b>Rel. Humidity (%):</b>	32 - 45
<b>Standard Section(s):</b>	15.407 (a)	<b>Pressure (mBars):</b>	999 - 1001
<b>Reference Document(s):</b>	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 (à) 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

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

$x = \text{Duty Cycle}$

#### 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.

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

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

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

#### **Operating Frequency Band 5250-5350 and 5470 – 5725 MHz**

##### **15. 407 (a)(2)**

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10 \log B$ , 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.



**Title:** Tarana Wireless AA2-CN65AAPP  
**To:** FCC CFR 47 Part 15 Subpart E 15.407  
**Serial #:** TARA25-U3\_Conducted Rev A  
**Issue Date:** 15<sup>th</sup> December 2016  
**Page:** 19 of 88

#### Equipment Configuration for Power Spectral Density

<b>Variant:</b>	20 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Dynamic	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Horizontal Plane)		

#### Test Measurement Results

Test Frequency	Measured Power Spectral Density				Number of Ports	Summation Peak Marker + DCCF (+2.92 dB)	Limit	Margin
	Port(s) (dBm/MHz)							
MHz	a	b	c	d	#	dBm/MHz	dBm/MHz	dB
5170.0	-0.698	--	--	--	8.00	11.260	17.0	-6.8
5200.0	-0.323	--	--	--	8.00	11.630	17.0	-6.4
5240.0	0.157	--	--	--	8.00	12.110	17.0	-5.9

#### Traceability to Industry Recognized Test Methodologies

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

DCCF - Duty Cycle Correction Factor

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

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



**Title:** Tarana Wireless AA2-CN65AAPP  
**To:** FCC CFR 47 Part 15 Subpart E 15.407  
**Serial #:** TARA25-U3\_Conducted Rev A  
**Issue Date:** 15<sup>th</sup> December 2016  
**Page:** 20 of 88

#### Equipment Configuration for Power Spectral Density

<b>Variant:</b>	20 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Not Applicable	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Vertical Plane)		

#### Test Measurement Results

Test Frequency	Measured Power Spectral Density				Number of Ports	Summation Peak Marker + DCCF (+2.92 dB)	Limit	Margin
	Port(s) (dBm/MHz)							
MHz	a	b	c	d	#	dBm/MHz	dBm/MHz	dB
5170.0	--	<a href="#">-4.787</a>	--	--	8.00	<a href="#">4.240</a>	17.0	-12.76
5200.0	--	<a href="#">-4.260</a>	--	--	8.00	<a href="#">4.770</a>	17.0	-12.23
5240.0	--	<a href="#">-8.360</a>	--	--	8.00	<a href="#">0.670</a>	17.0	-16.33

#### Traceability to Industry Recognized Test Methodologies

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

DCCF - Duty Cycle Correction Factor

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

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



**Title:** Tarana Wireless AA2-CN65AFP  
**To:** FCC CFR 47 Part 15 Subpart E 15.407  
**Serial #:** TARA25-U3\_Conducted Rev A  
**Issue Date:** 15<sup>th</sup> December 2016  
**Page:** 21 of 88

#### Equipment Configuration for Power Spectral Density

<b>Variant:</b>	40 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Not Applicable	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Horizontal Plane)		

#### Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+2.92 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5180.0	<u>-4.224</u>	--	--	--	<u>7.730</u>	17.0	-9.27
5200.0	<u>-2.852</u>	--	--	--	<u>9.100</u>	17.0	-7.90
5230.0	<u>-3.845</u>	--	--	--	<u>5.190</u>	17.0	-11.81

#### Traceability to Industry Recognized Test Methodologies

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

DCCF - Duty Cycle Correction Factor

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

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



**Title:** Tarana Wireless AA2-CN65AAPP  
**To:** FCC CFR 47 Part 15 Subpart E 15.407  
**Serial #:** TARA25-U3\_Conducted Rev A  
**Issue Date:** 15<sup>th</sup> December 2016  
**Page:** 22 of 88

#### Equipment Configuration for Power Spectral Density

<b>Variant:</b>	40 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Not Applicable	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Vertical Plane)		

#### Test Measurement Results

Test Frequency	Measured Power Spectral Density				Number of Ports	Summation Peak Marker + DCCF (+2.92 dB)	Limit	Margin
	Port(s) (dBm/MHz)							
MHz	a	b	c	d	#	dBm/MHz	dBm/MHz	dB
5180.0	--	<a href="#">-6.901</a>	--	--	8.00	<a href="#">5.050</a>	17.0	-11.95
5200.0	--	<a href="#">-2.920</a>	--	--	8.00	<a href="#">6.110</a>	17.0	-10.89
5230.0	--	<a href="#">-6.369</a>	--	--	8.00	<a href="#">5.590</a>	17.0	-11.41

#### Traceability to Industry Recognized Test Methodologies

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

DCCF - Duty Cycle Correction Factor

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

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



**Title:** Tarana Wireless AA2-CN65AAPP  
**To:** FCC CFR 47 Part 15 Subpart E 15.407  
**Serial #:** TARA25-U3\_Conducted Rev A  
**Issue Date:** 15<sup>th</sup> December 2016  
**Page:** 23 of 88

#### Equipment Configuration for Power Spectral Density

<b>Variant:</b>	20 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Not Applicable	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Horizontal Plane)		

#### Test Measurement Results

Test Frequency	Measured Power Spectral Density				Number of Ports	Summation Peak Marker + DCCF (+2.92 dB)	Limit	Margin
	Port(s) (dBm/500 KHz)							
MHz	a	b	c	d	#	dBm/500 KHz	dBm/500 KHz	dB
5735.0	<a href="#">-3.414</a>	--	--	--	8.00	<a href="#">8.540</a>	30.00	-21.46
5785.0	<a href="#">-3.135</a>	--	--	--	8.00	<a href="#">8.820</a>	30.00	-21.18
5835.0	<a href="#">-1.033</a>	--	--	--	8.00	<a href="#">10.920</a>	30.00	-19.08

#### Traceability to Industry Recognized Test Methodologies

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

DCCF - Duty Cycle Correction Factor

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

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



**Title:** Tarana Wireless AA2-CN65A  
**To:** FCC CFR 47 Part 15 Subpart E 15.407  
**Serial #:** TARA25-U3\_Conducted Rev A  
**Issue Date:** 15<sup>th</sup> December 2016  
**Page:** 24 of 88

#### Equipment Configuration for Power Spectral Density

<b>Variant:</b>	20 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Not Applicable	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Vertical Plane)		

#### Test Measurement Results

Test Frequency	Measured Power Spectral Density				Number of Ports	Summation Peak Marker + DCCF (+2.92 dB)	Limit	Margin
	Port(s) (dBm/500 KHz)							
MHz	a	b	c	d	#	dBm/500 KHz	dBm/500 KHz	dB
5735.0	--	<a href="#">-7.046</a>	--	--	8.00	<a href="#">4.910</a>	30.0	-25.09
5785.0	--	<a href="#">-7.389</a>	--	--	8.00	<a href="#">4.570</a>	30.0	-25.43
5835.0	--	<a href="#">-5.048</a>	--	--	8.00	<a href="#">6.910</a>	30.0	-23.09

#### Traceability to Industry Recognized Test Methodologies

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

DCCF - Duty Cycle Correction Factor

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

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



**Title:** Tarana Wireless AA2-CN65AAPP  
**To:** FCC CFR 47 Part 15 Subpart E 15.407  
**Serial #:** TARA25-U3\_Conducted Rev A  
**Issue Date:** 15<sup>th</sup> December 2016  
**Page:** 25 of 88

#### Equipment Configuration for Power Spectral Density

<b>Variant:</b>	40 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Not Applicable	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Horizontal Plane)		

#### Test Measurement Results

Test Frequency	Measured Power Spectral Density				Number of Ports	Summation Peak Marker + DCCF (+2.92 dB)	Limit	Margin
	Port(s) (dBm/500 KHz)							
MHz	a	b	c	d	#	dBm/500 KHz	dBm/500 KHz	dB
5745.0	<a href="#">-4.078</a>	--	--	--	8.00	<a href="#">6.130</a>	30.00	-22.12
5785.0	<a href="#">-4.990</a>	--	--	--	8.00	<a href="#">6.960</a>	30.00	-23.04
5825.0	<a href="#">-4.181</a>	--	--	--	8.00	<a href="#">7.770</a>	30.00	-22.23

#### Traceability to Industry Recognized Test Methodologies

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

DCCF - Duty Cycle Correction Factor

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

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



**Title:** Tarana Wireless AA2-CN65AFP  
**To:** FCC CFR 47 Part 15 Subpart E 15.407  
**Serial #:** TARA25-U3\_Conducted Rev A  
**Issue Date:** 15<sup>th</sup> December 2016  
**Page:** 26 of 88

#### Equipment Configuration for Power Spectral Density

<b>Variant:</b>	40 MHz	<b>Duty Cycle (%):</b>	51.0
<b>Data Rate:</b>	16 QAM-2/4	<b>Antenna Gain (dBi):</b>	14.00
<b>Modulation:</b>	16QAM	<b>Beam Forming Gain (Y)(dB):</b>	Not Applicable
<b>TPC:</b>	Not Applicable	<b>Tested By:</b>	CC
<b>Engineering Test Notes:</b>	(Antenna Port tested on Vertical Plane)		

#### Test Measurement Results

Test Frequency	Measured Power Spectral Density				Number of Ports	Summation Peak Marker + DCCF (+2.92 dB)	Limit	Margin
	Port(s) (dBm/500 KHz)							
MHz	a	b	c	d	#	dBm/500 KHz	dBm/500 KHz	dB
5745.0	--	<a href="#">-8.594</a>	--	--	8.00	<a href="#">0.440</a>	30.0	-29.56
5785.0	--	<a href="#">-9.125</a>	--	--	8.00	<a href="#">-0.090</a>	30.0	-30.09
5825.0	--	<a href="#">-7.653</a>	--	--	8.00	<a href="#">1.380</a>	30.0	-28.62

#### Traceability to Industry Recognized Test Methodologies

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

DCCF - Duty Cycle Correction Factor

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

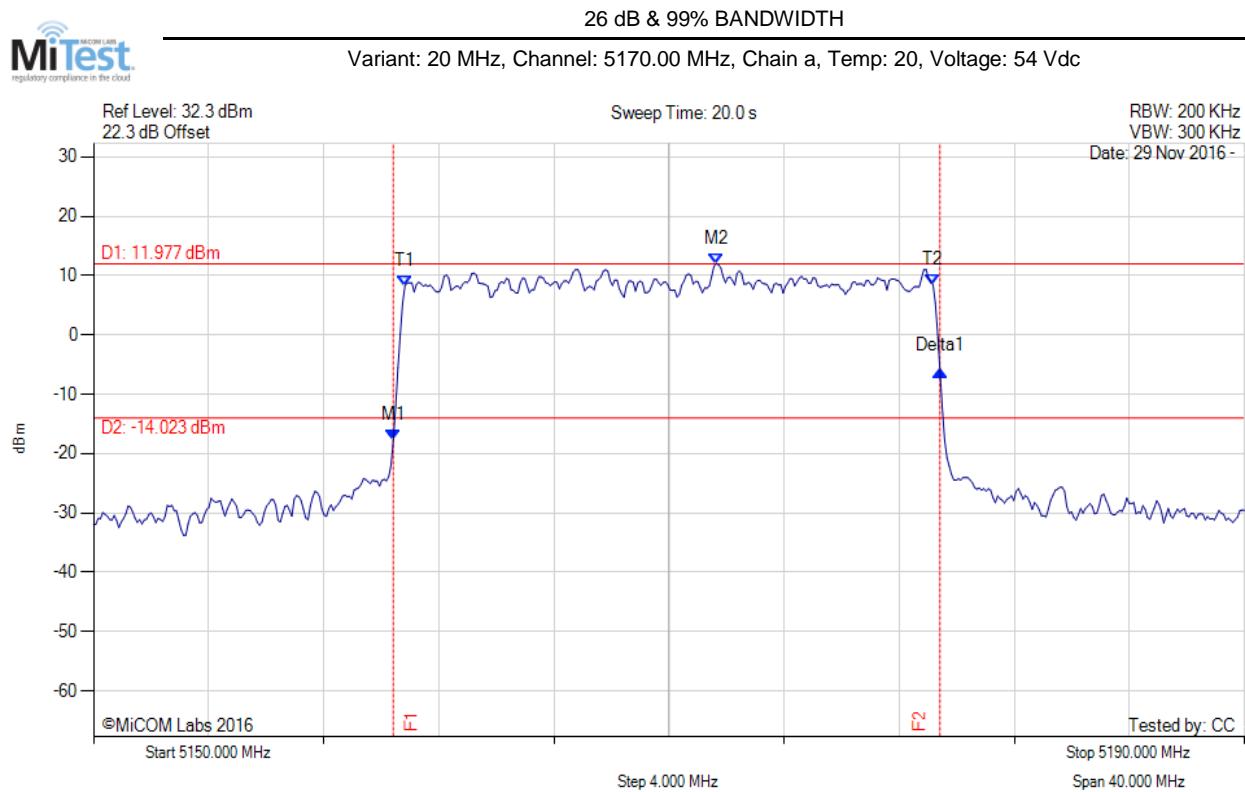
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

## **A. APPENDIX - GRAPHICAL IMAGES**

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

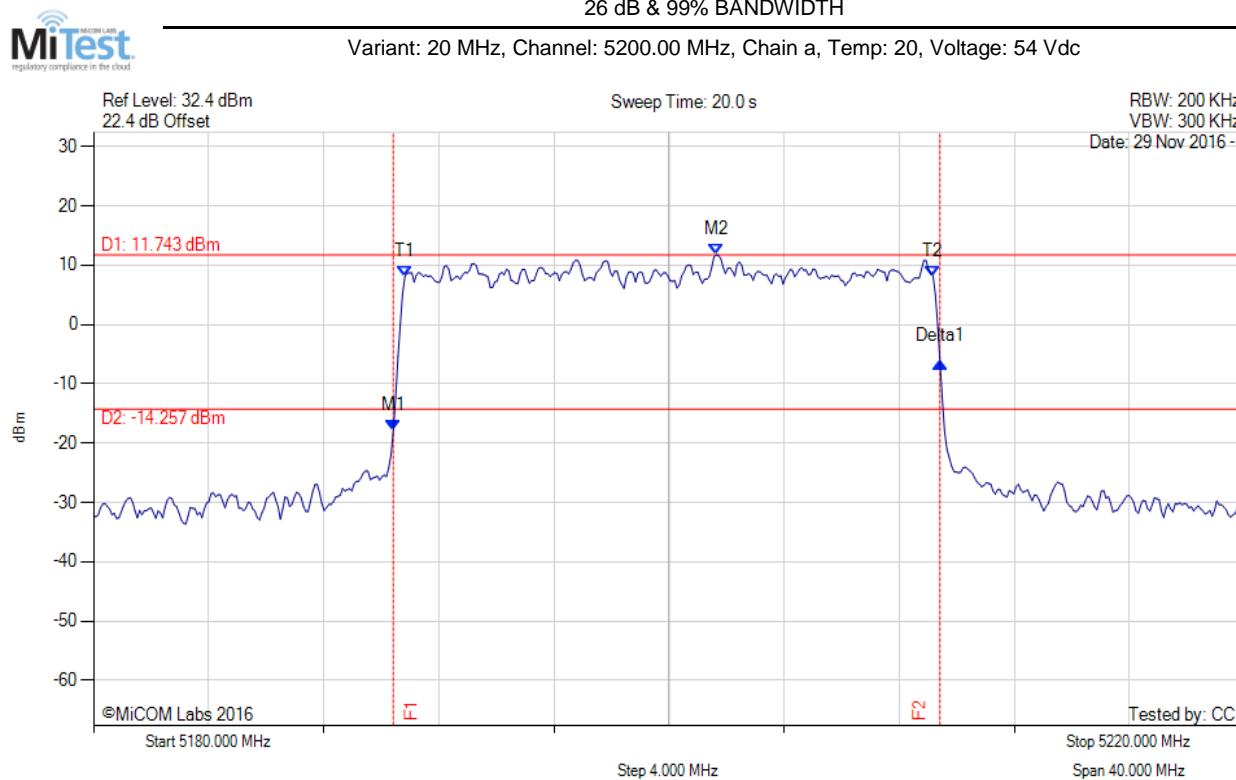
### A.1. 26 dB & 99% Bandwidth



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5160.421 MHz : -17.696 dBm M2 : 5171.643 MHz : 11.977 dBm Delta1 : 18.998 MHz : 11.546 dB T1 : 5160.822 MHz : 8.265 dBm T2 : 5179.178 MHz : 8.420 dBm OBW : 18.357 MHz	Measured 26 dB Bandwidth: 18.998 MHz Measured 99% Bandwidth: 18.357 MHz

[back to matrix](#)

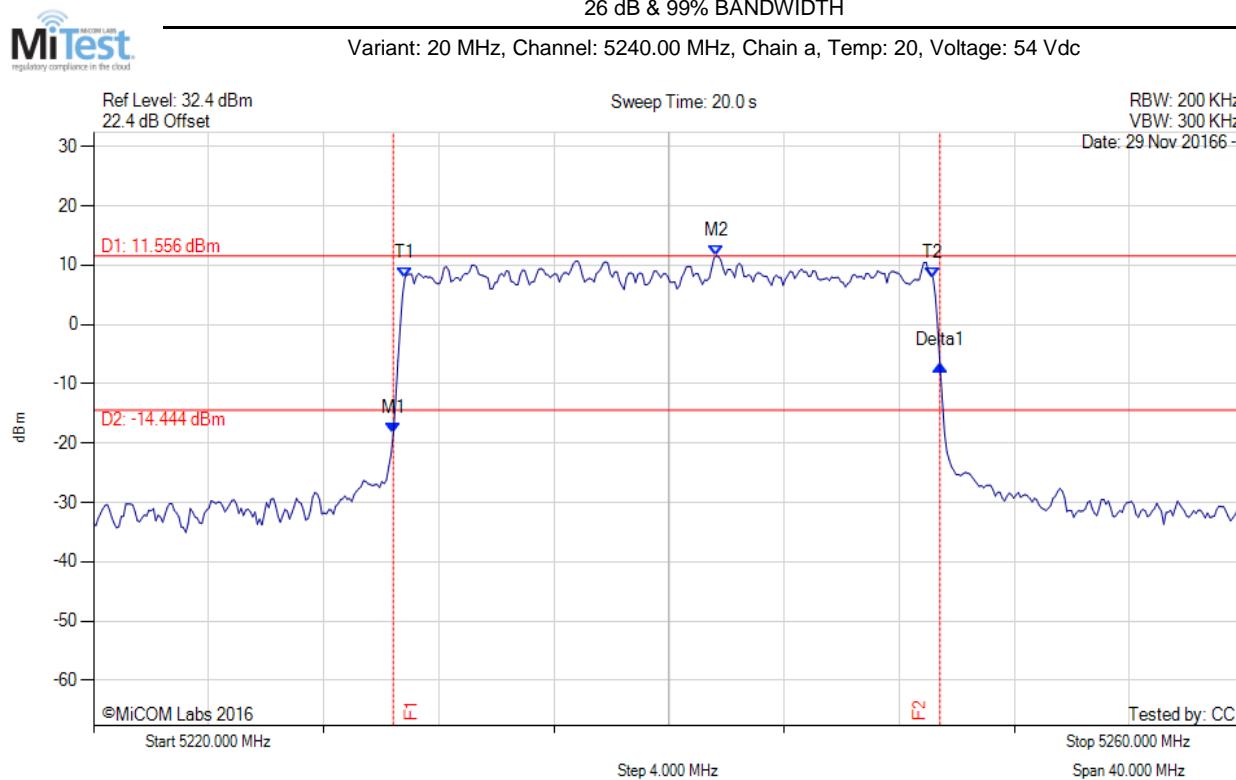
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5190.421 MHz : -17.803 dBm M2 : 5201.643 MHz : 11.743 dBm Delta1 : 18.998 MHz : 11.491 dB T1 : 5190.822 MHz : 8.119 dBm T2 : 5209.178 MHz : 8.146 dBm OBW : 18.357 MHz	Measured 26 dB Bandwidth: 18.998 MHz Measured 99% Bandwidth: 18.357 MHz

[back to matrix](#)

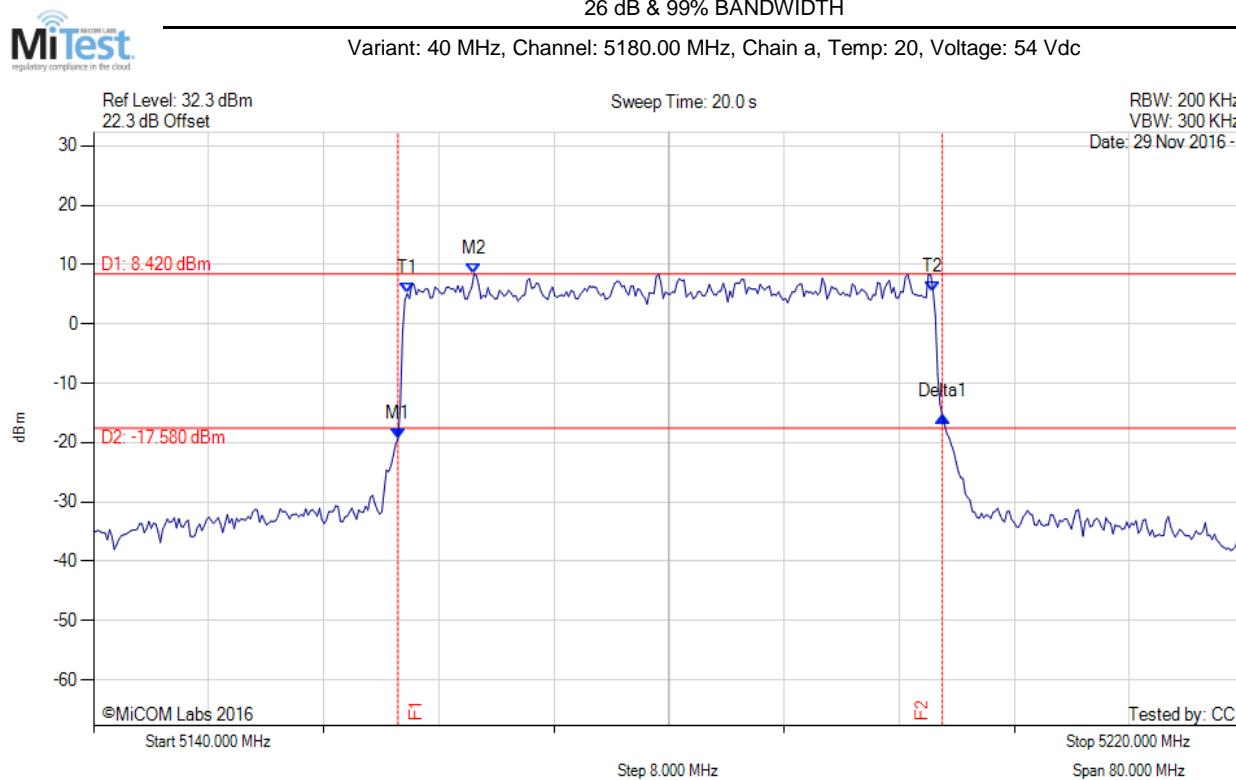
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5230.421 MHz : -18.403 dBm M2 : 5241.643 MHz : 11.556 dBm Delta1 : 18.998 MHz : 11.560 dB T1 : 5230.822 MHz : 7.883 dBm T2 : 5249.178 MHz : 7.867 dBm OBW : 18.357 MHz	Measured 26 dB Bandwidth: 18.998 MHz Measured 99% Bandwidth: 18.357 MHz

[back to matrix](#)

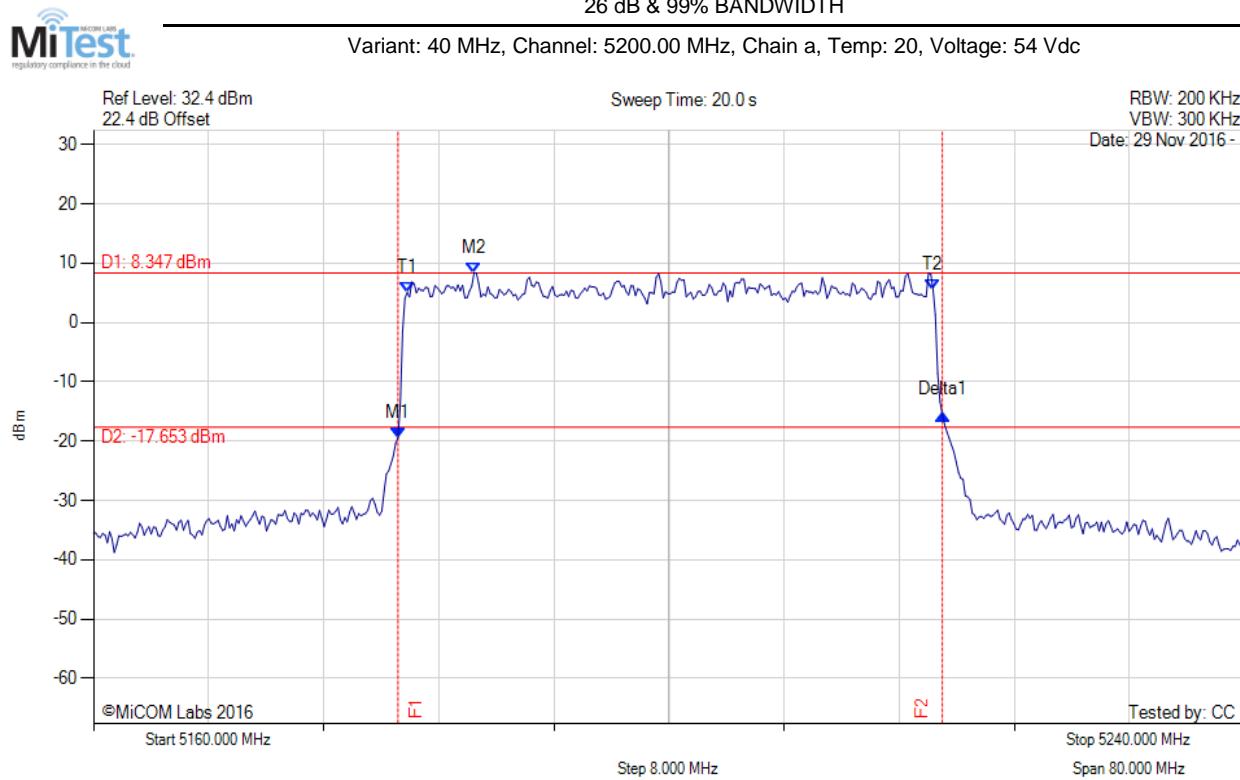
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5161.162 MHz : -19.349 dBm M2 : 5166.453 MHz : 8.420 dBm Delta1 : 37.836 MHz : 3.766 dB T1 : 5161.804 MHz : 5.078 dBm T2 : 5198.357 MHz : 5.471 dBm OBW : 36.553 MHz	Measured 26 dB Bandwidth: 37.836 MHz Measured 99% Bandwidth: 36.553 MHz

[back to matrix](#)

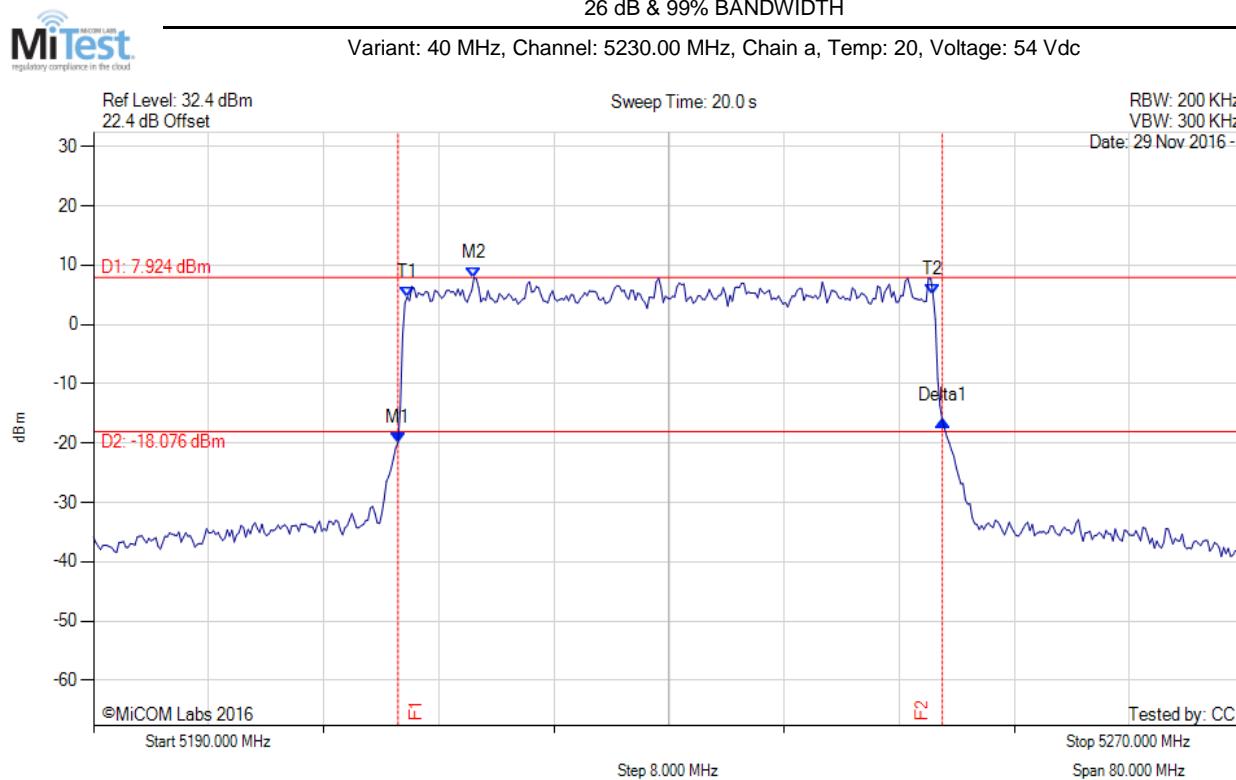
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5181.162 MHz : -19.485 dBm M2 : 5186.453 MHz : 8.347 dBm Delta1 : 37.836 MHz : 3.921 dB T1 : 5181.804 MHz : 5.054 dBm T2 : 5218.357 MHz : 5.487 dBm OBW : 36.553 MHz	Measured 26 dB Bandwidth: 37.836 MHz Measured 99% Bandwidth: 36.553 MHz

[back to matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

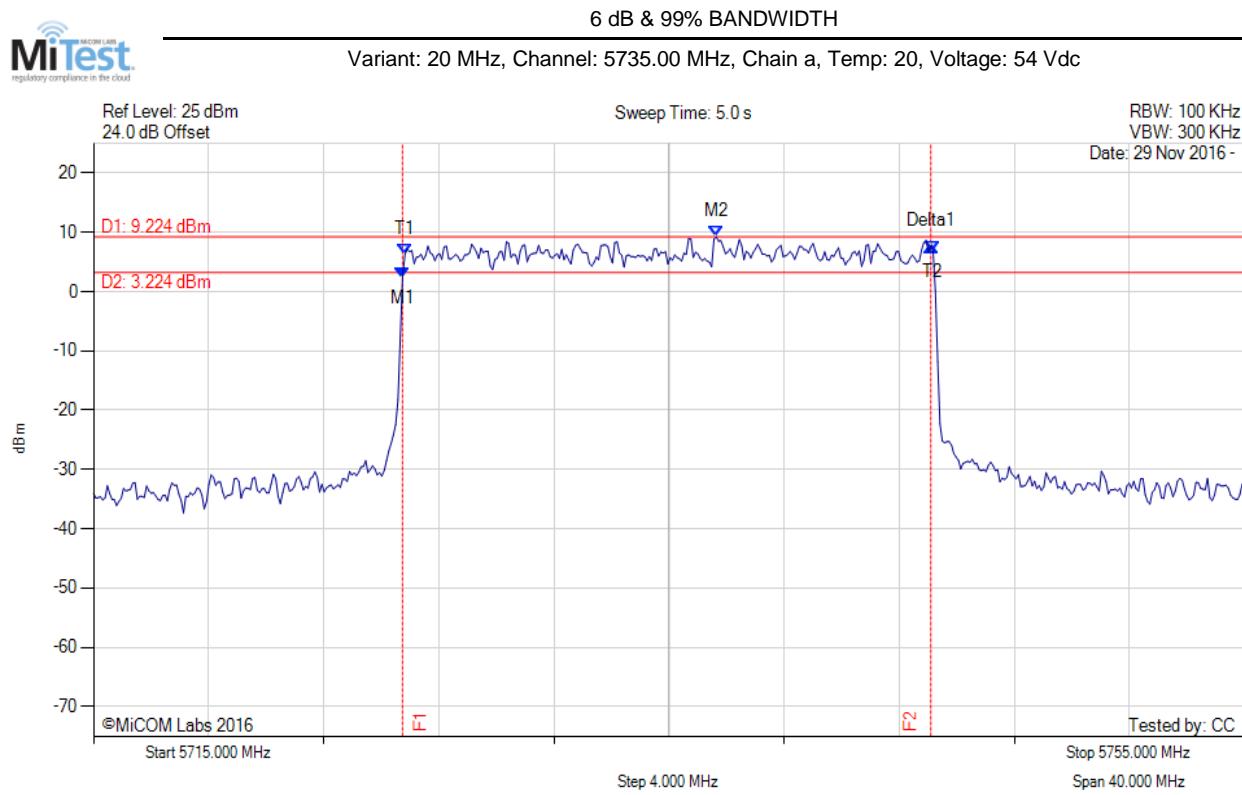


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5211.162 MHz : -19.985 dBm M2 : 5216.453 MHz : 7.924 dBm Delta1 : 37.836 MHz : 3.813 dB T1 : 5211.804 MHz : 4.648 dBm T2 : 5248.357 MHz : 4.953 dBm OBW : 36.553 MHz	Measured 26 dB Bandwidth: 37.836 MHz Measured 99% Bandwidth: 36.553 MHz

[back to matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

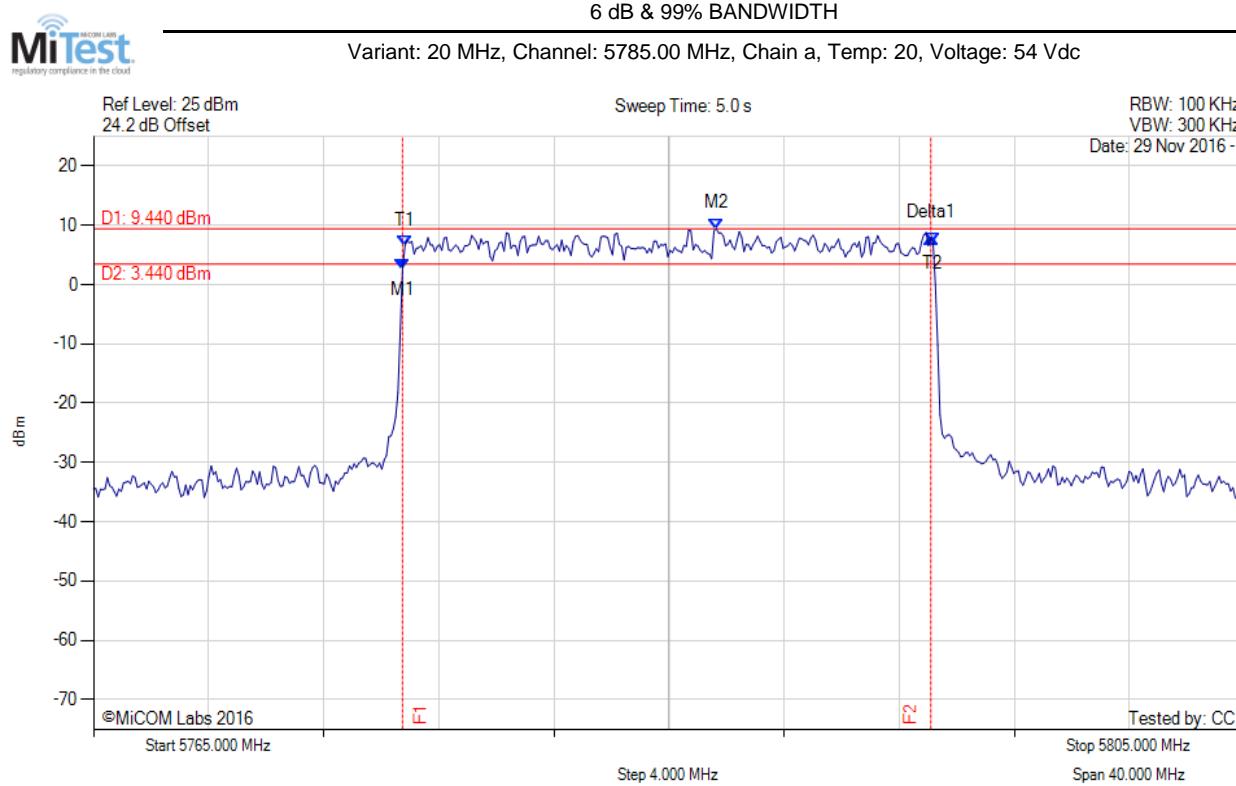
## A.2. 6 dB & 99% Bandwidth



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5725.741 MHz : 2.356 dBm M2 : 5736.643 MHz : 9.224 dBm Delta1 : 18.357 MHz : 5.396 dB T1 : 5725.822 MHz : 6.271 dBm T2 : 5744.178 MHz : 6.837 dBm OBW : 18.357 MHz	Measured 6 dB Bandwidth: 18.357 MHz Measured 99% Bandwidth: 18.357 MHz

[back to matrix](#)

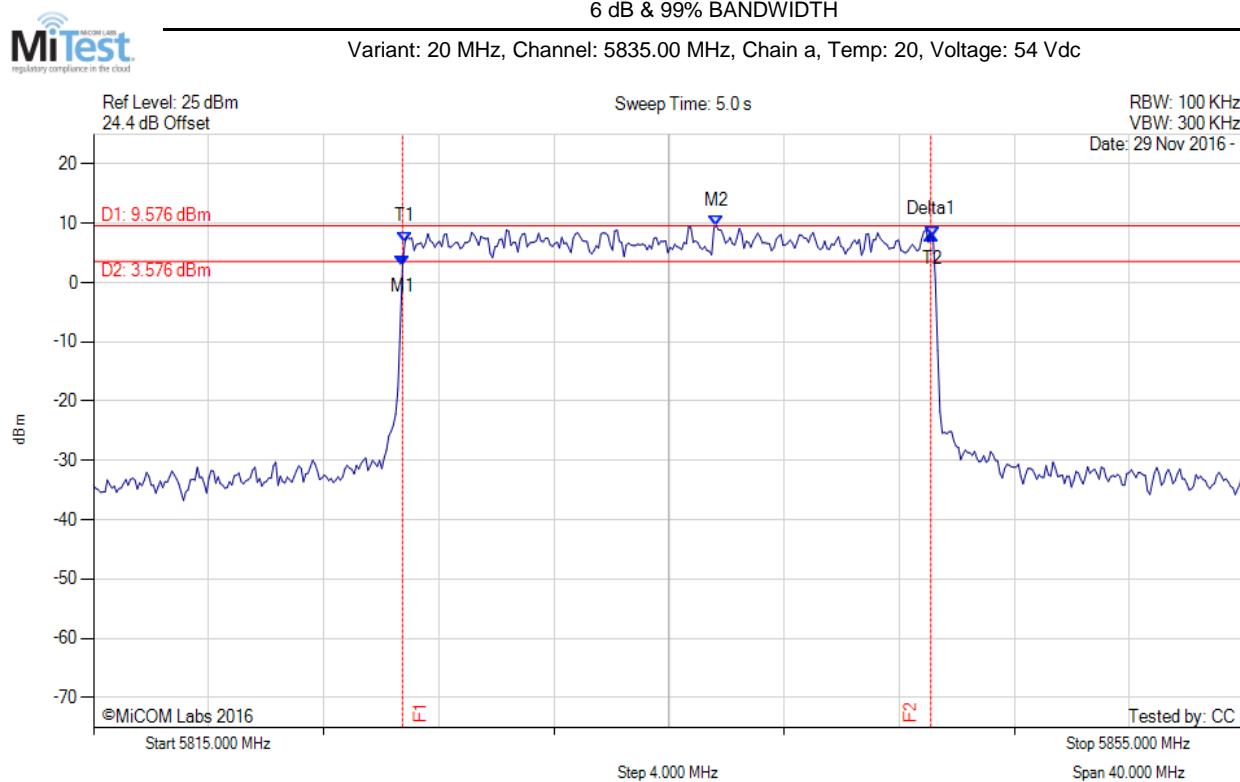
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5775.741 MHz : 2.586 dBm M2 : 5786.643 MHz : 9.440 dBm Delta1 : 18.357 MHz : 5.308 dB T1 : 5775.822 MHz : 6.552 dBm T2 : 5794.178 MHz : 7.020 dBm OBW : 18.357 MHz	Measured 6 dB Bandwidth: 18.357 MHz Measured 99% Bandwidth: 18.357 MHz

[back to matrix](#)

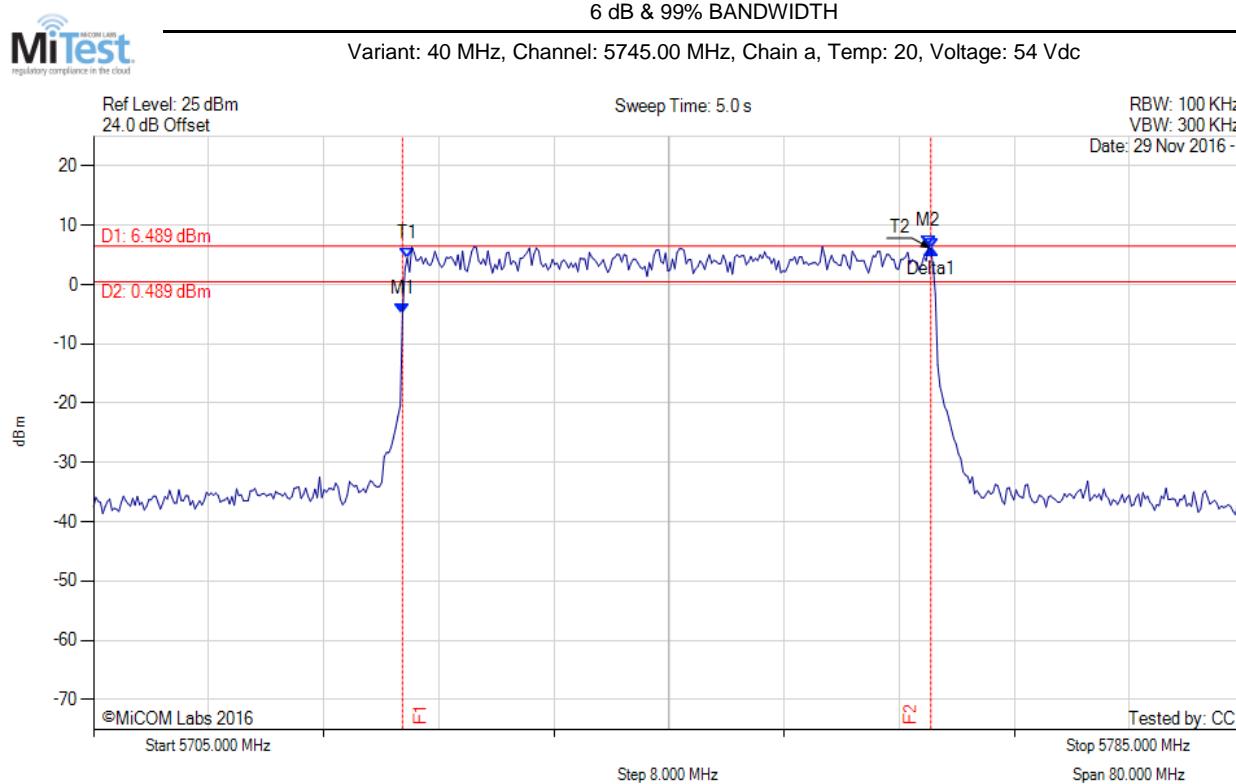
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5825.741 MHz : 2.877 dBm M2 : 5836.643 MHz : 9.576 dBm Delta1 : 18.357 MHz : 5.241 dB T1 : 5825.822 MHz : 6.849 dBm T2 : 5844.178 MHz : 7.662 dBm OBW : 18.357 MHz	Measured 6 dB Bandwidth: 18.357 MHz Measured 99% Bandwidth: 18.357 MHz

[back to matrix](#)

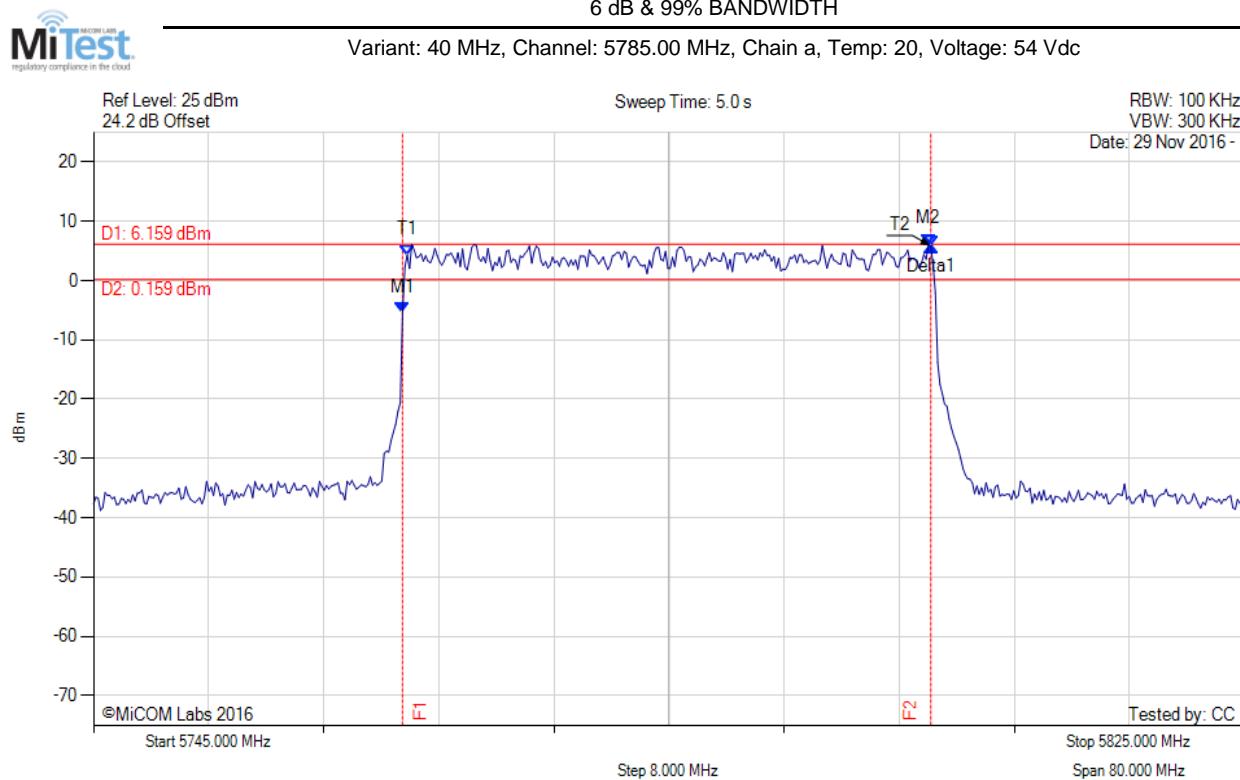
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5726.483 MHz : -4.857 dBm M2 : 5763.036 MHz : 6.489 dBm Delta1 : 36.713 MHz : 10.952 dB T1 : 5726.804 MHz : 4.467 dBm T2 : 5763.196 MHz : 6.094 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 36.713 MHz Measured 99% Bandwidth: 36.393 MHz

[back to matrix](#)

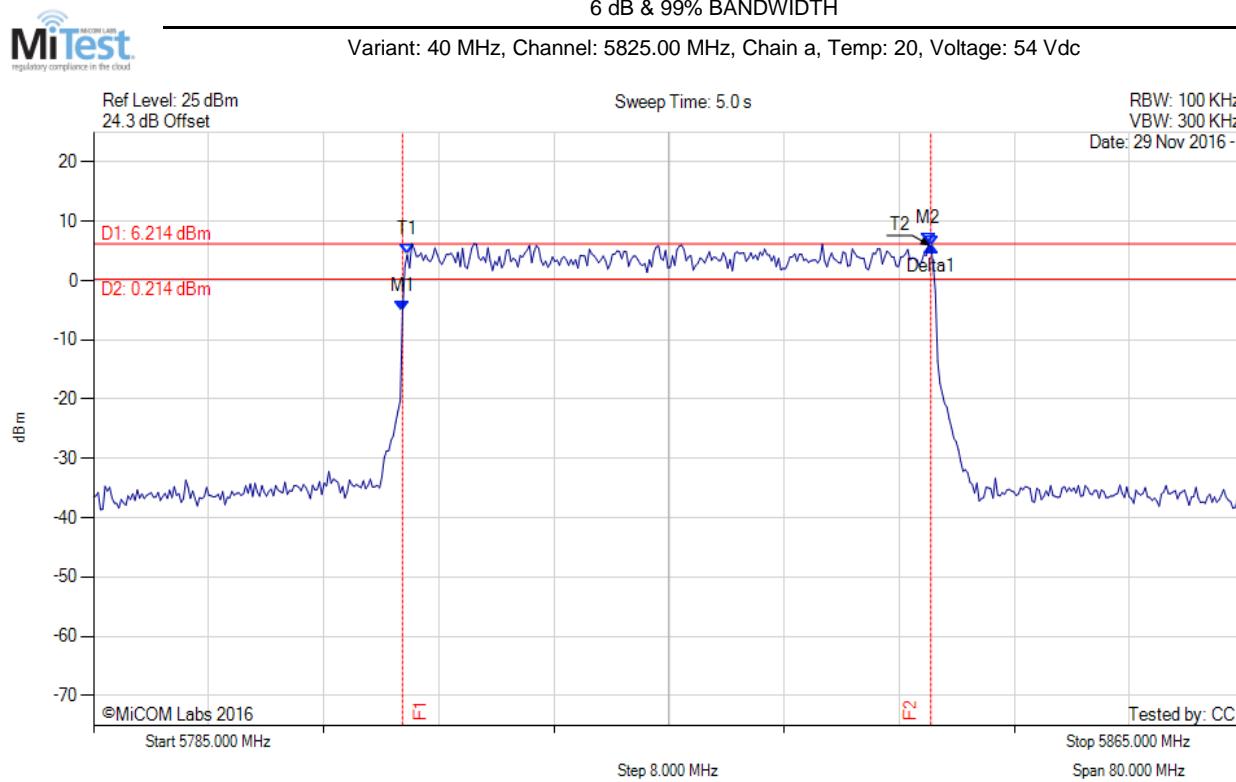
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5766.483 MHz : -5.364 dBm M2 : 5803.036 MHz : 6.159 dBm Delta1 : 36.713 MHz : 11.255 dB T1 : 5766.804 MHz : 4.274 dBm T2 : 5803.196 MHz : 5.891 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 36.713 MHz Measured 99% Bandwidth: 36.393 MHz

[back to matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

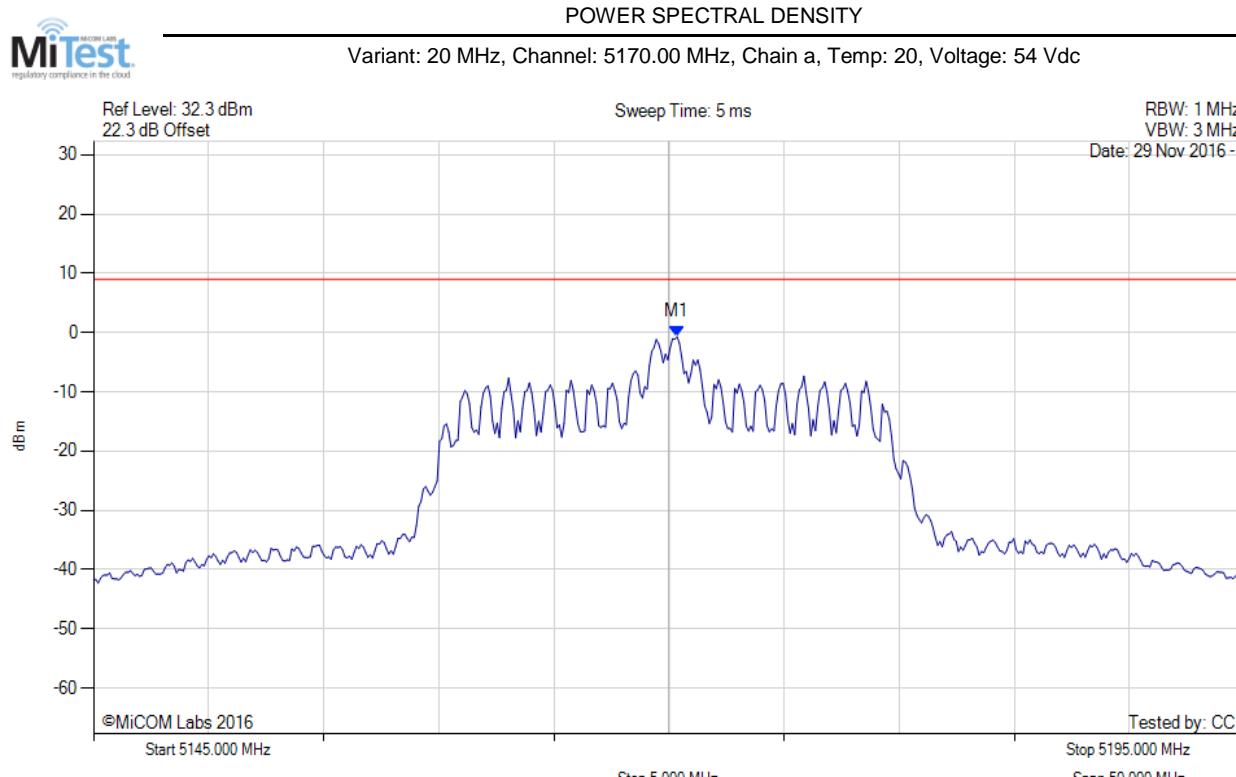


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5806.483 MHz : -5.144 dBm M2 : 5843.036 MHz : 6.214 dBm Delta1 : 36.713 MHz : 11.027 dB T1 : 5806.804 MHz : 4.374 dBm T2 : 5843.196 MHz : 5.883 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 36.713 MHz Measured 99% Bandwidth: 36.393 MHz

[back to matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

### A.3. Power Spectral Density

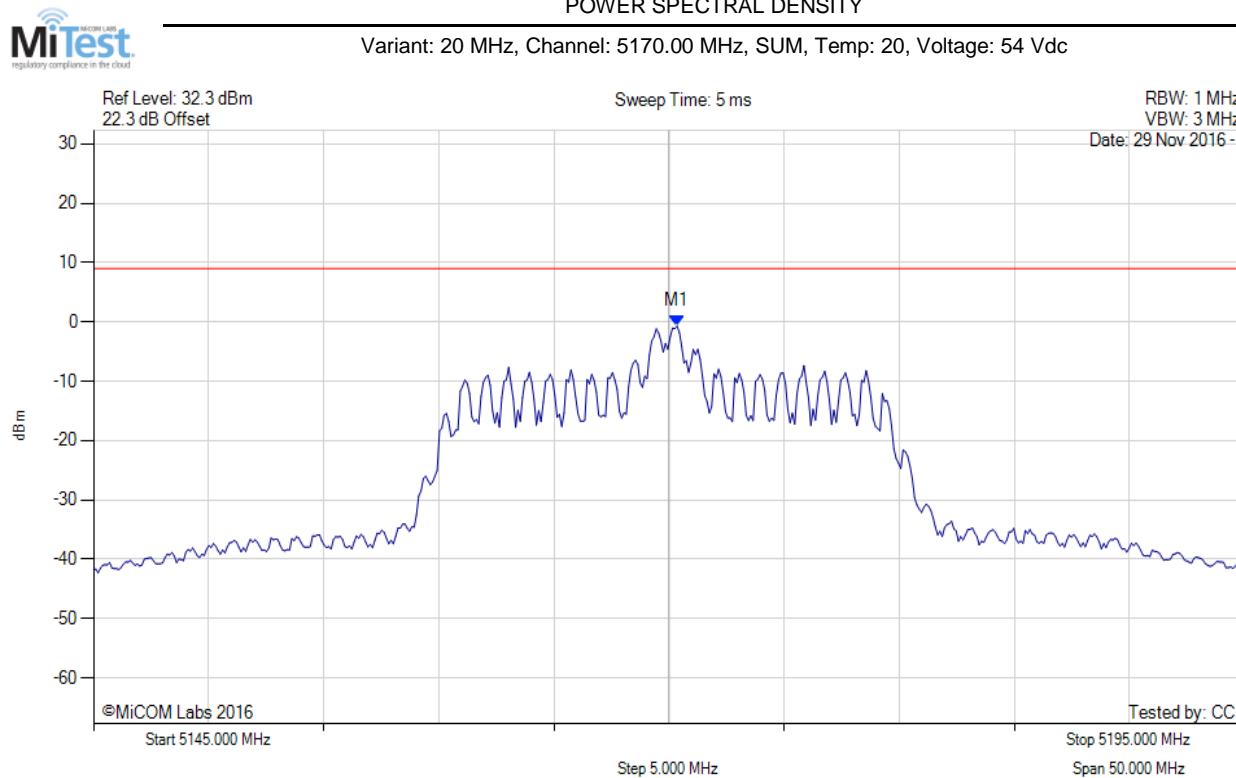


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5170.351 MHz : -0.698 dBm	Limit: ≤ 9.000 dBm

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

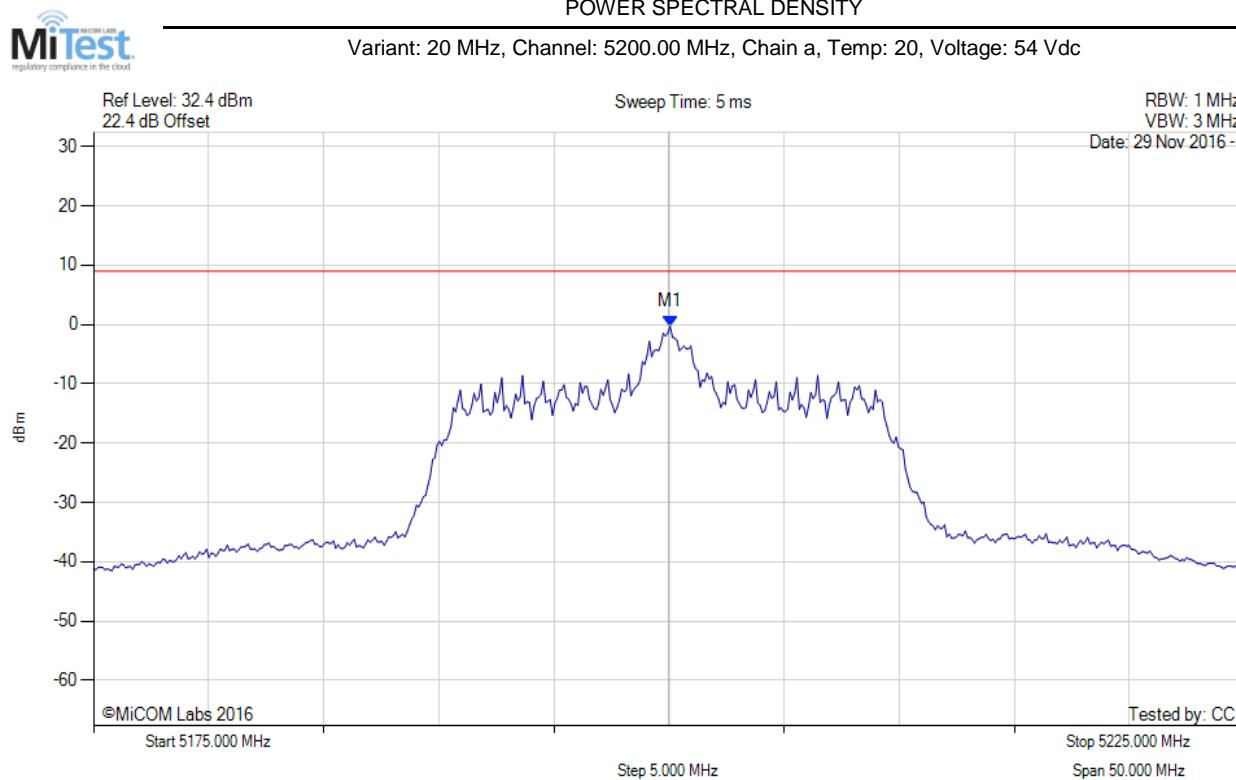


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5170.400 MHz : -0.698 dBm M1 + DCCF : 5170.400 MHz : 2.226 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 9.0 dBm Margin: -6.8 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

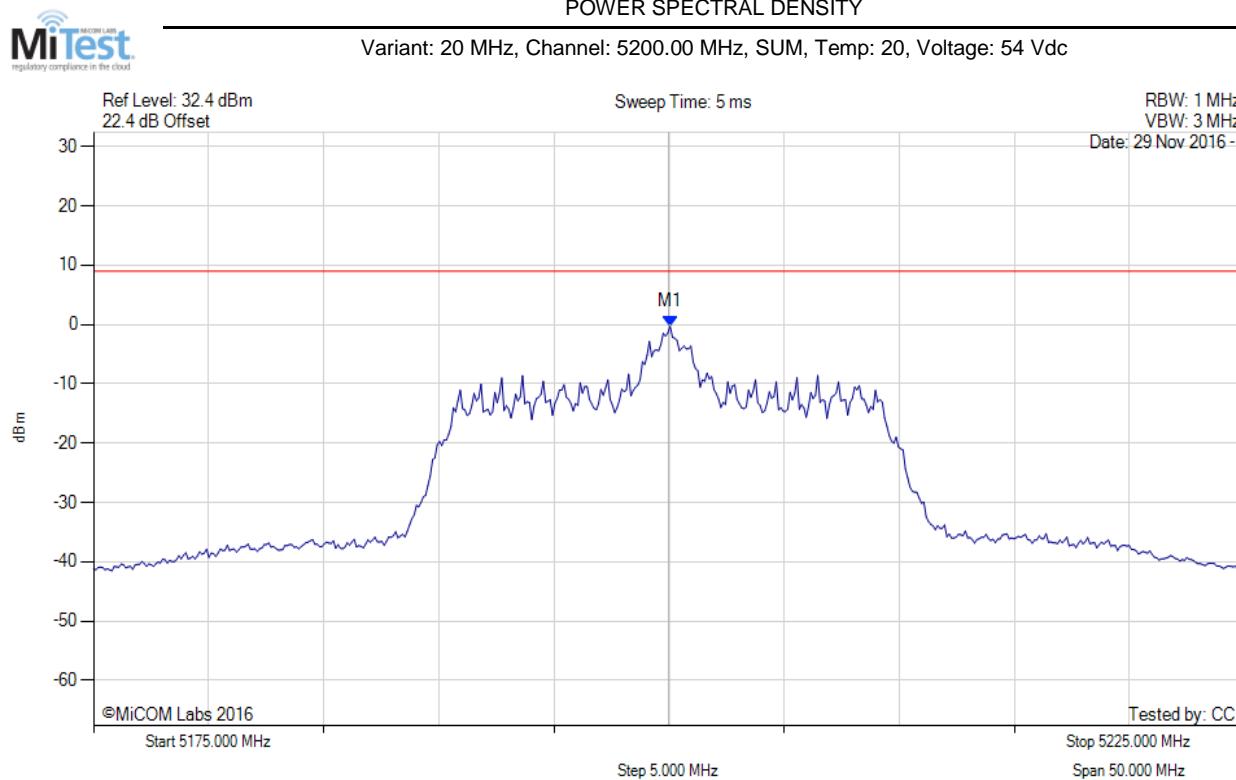


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5200.050 MHz : -0.323 dBm	Limit: ≤ 9.000 dBm

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

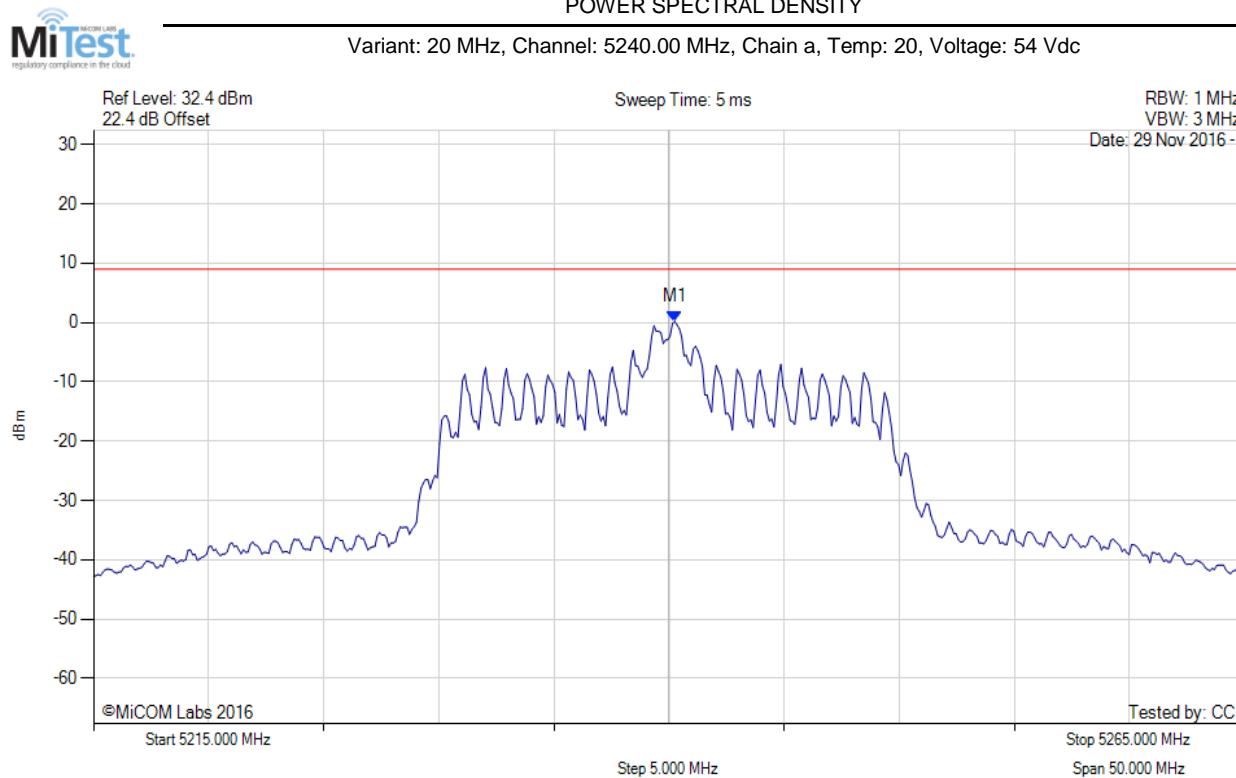


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5200.100 MHz : -0.323 dBm M1 + DCCF : 5200.100 MHz : 2.601 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 9.0 dBm Margin: -6.4 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

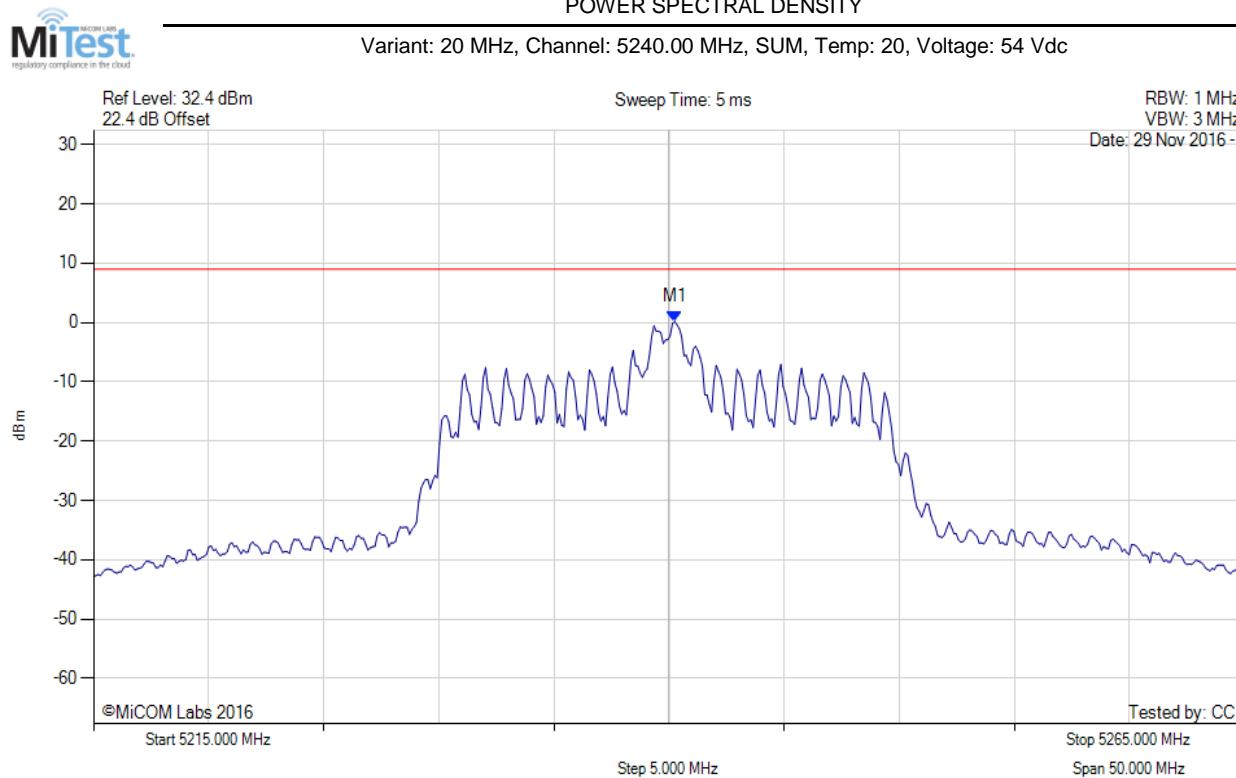


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5240.251 MHz : 0.157 dBm	Limit: ≤ 9.000 dBm

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

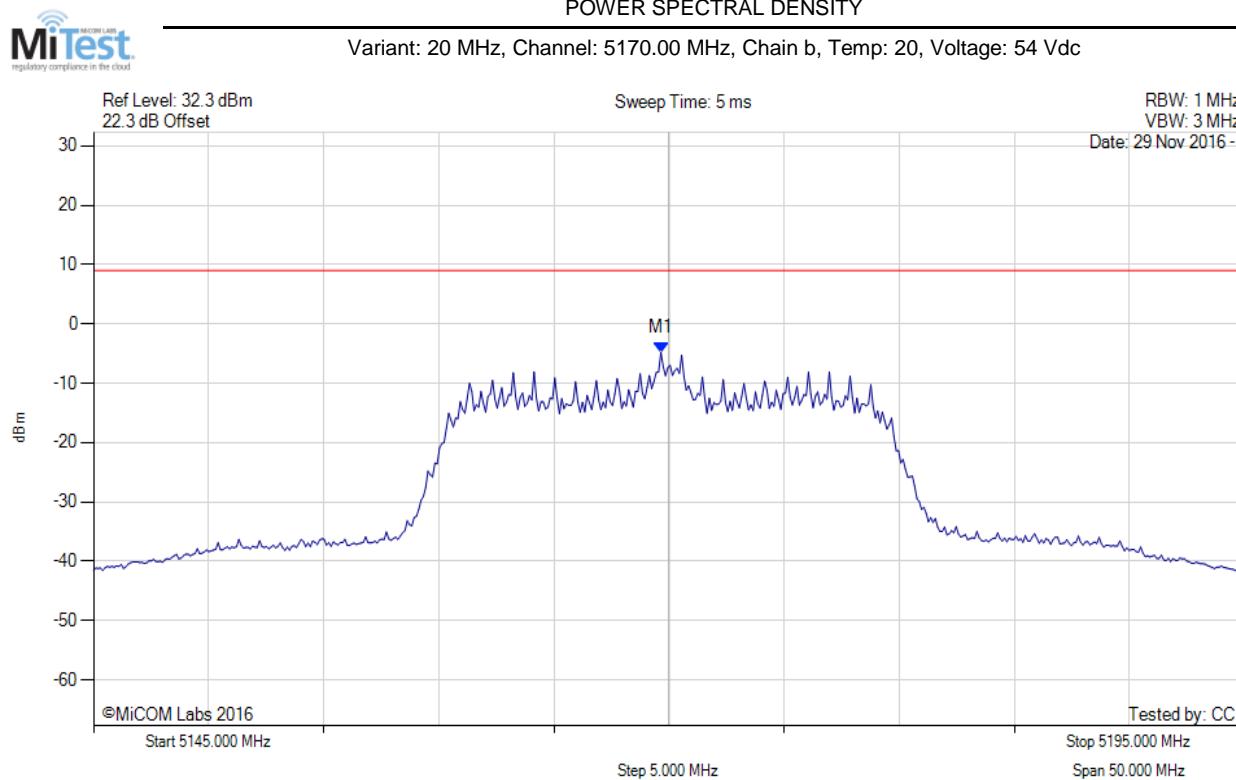


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5240.300 MHz : 0.157 dBm M1 + DCCF : 5240.300 MHz : 3.081 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 9.0 dBm Margin: -5.9 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

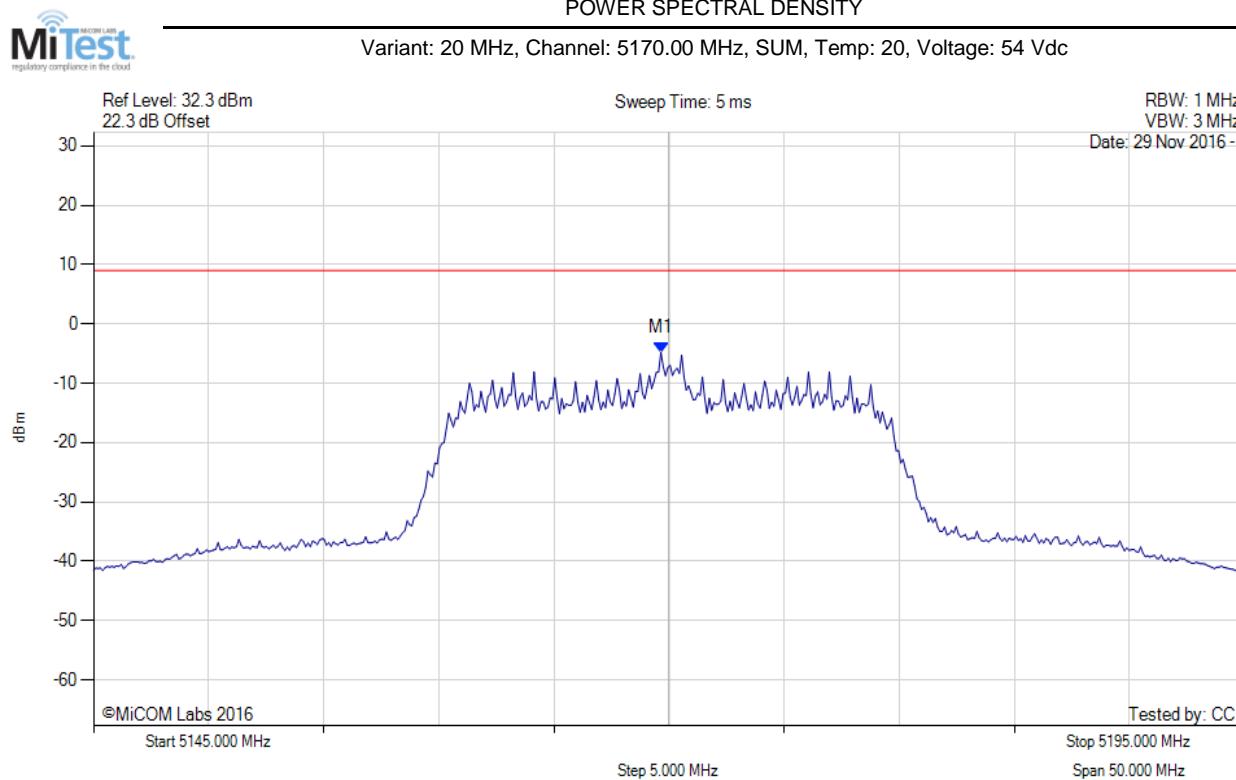


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5169.649 MHz : -4.787 dBm	Limit: ≤ 9.000 dBm

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

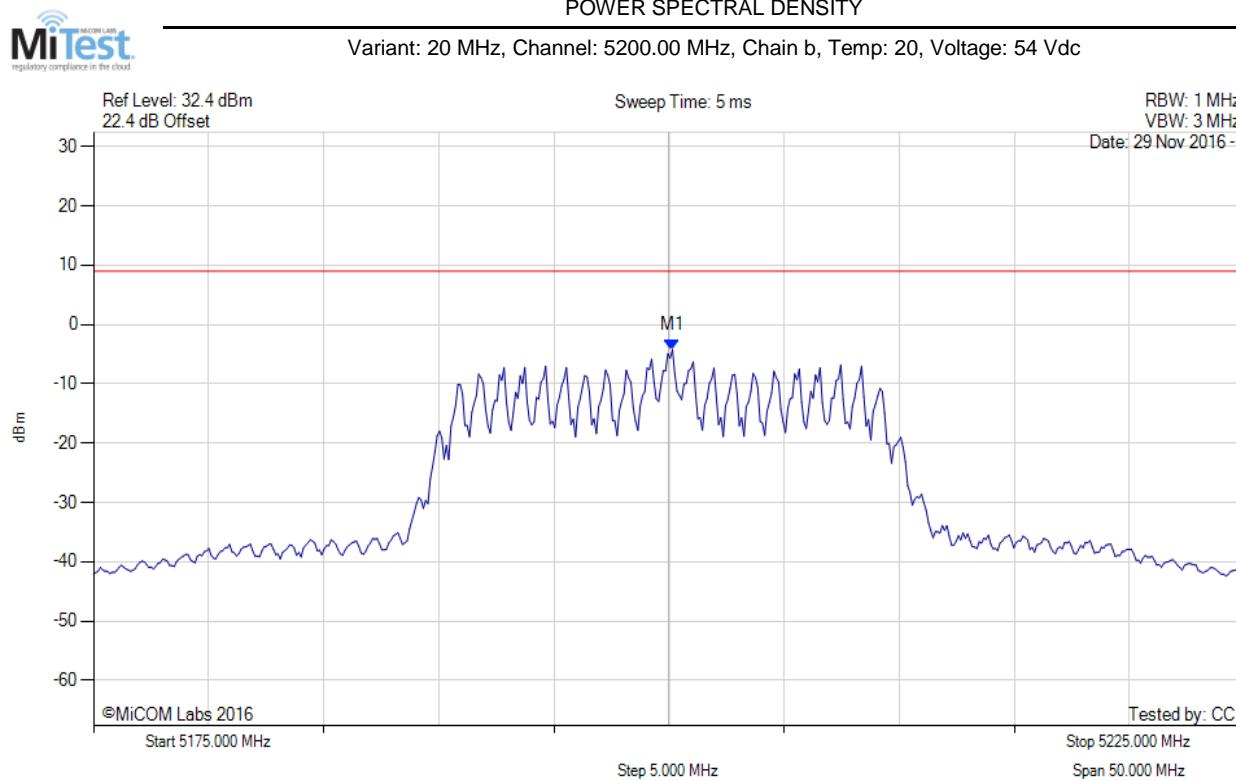


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5169.600 MHz : -4.787 dBm M1 + DCCF : 5169.600 MHz : -1.863 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 9.0 dBm Margin: -10.9 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

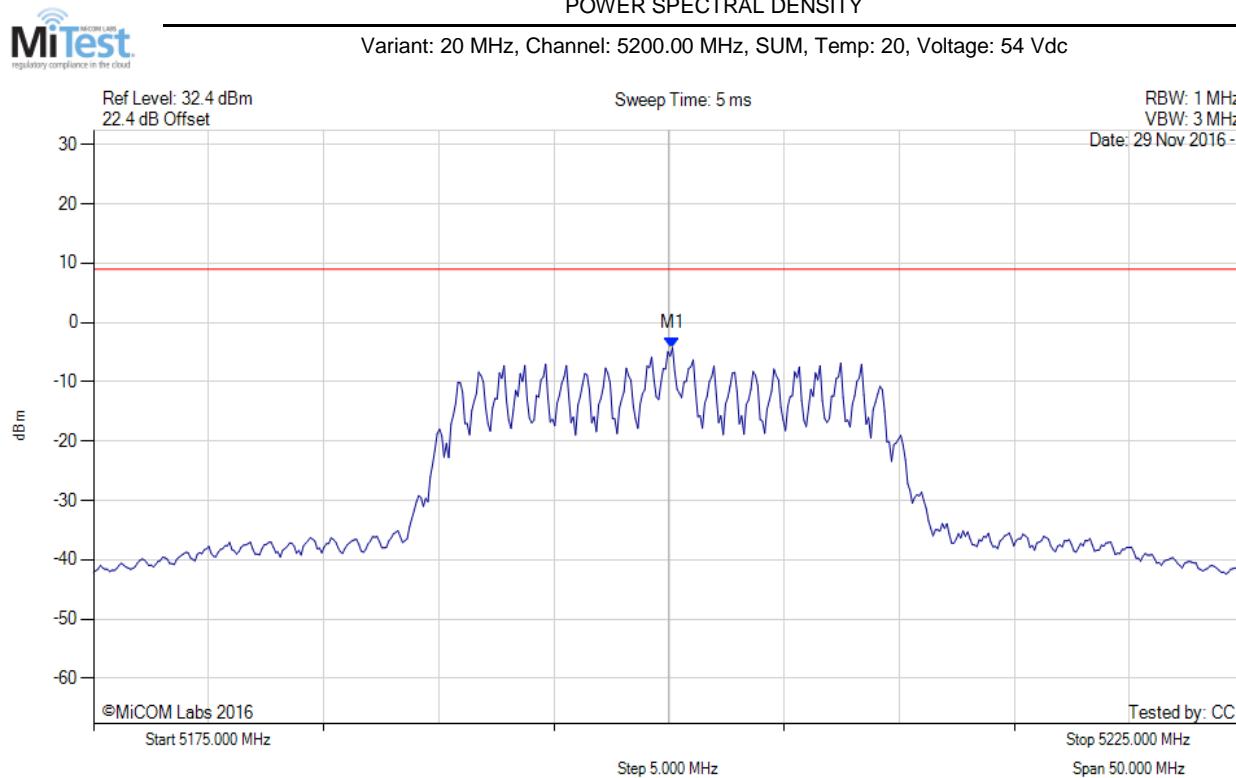


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5200.150 MHz : -4.260 dBm	Limit: ≤ 9.000 dBm

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

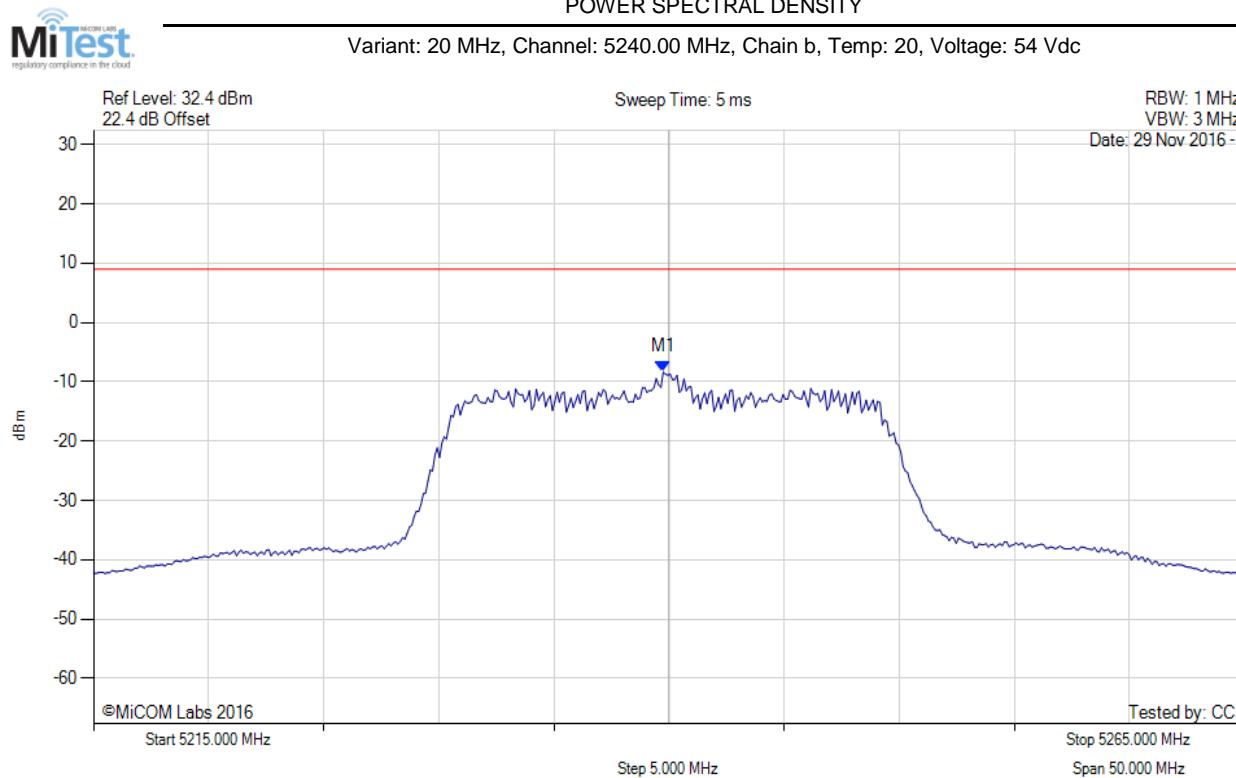


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5200.200 MHz : -4.260 dBm M1 + DCCF : 5200.200 MHz : -1.336 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 9.0 dBm Margin: -10.3 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

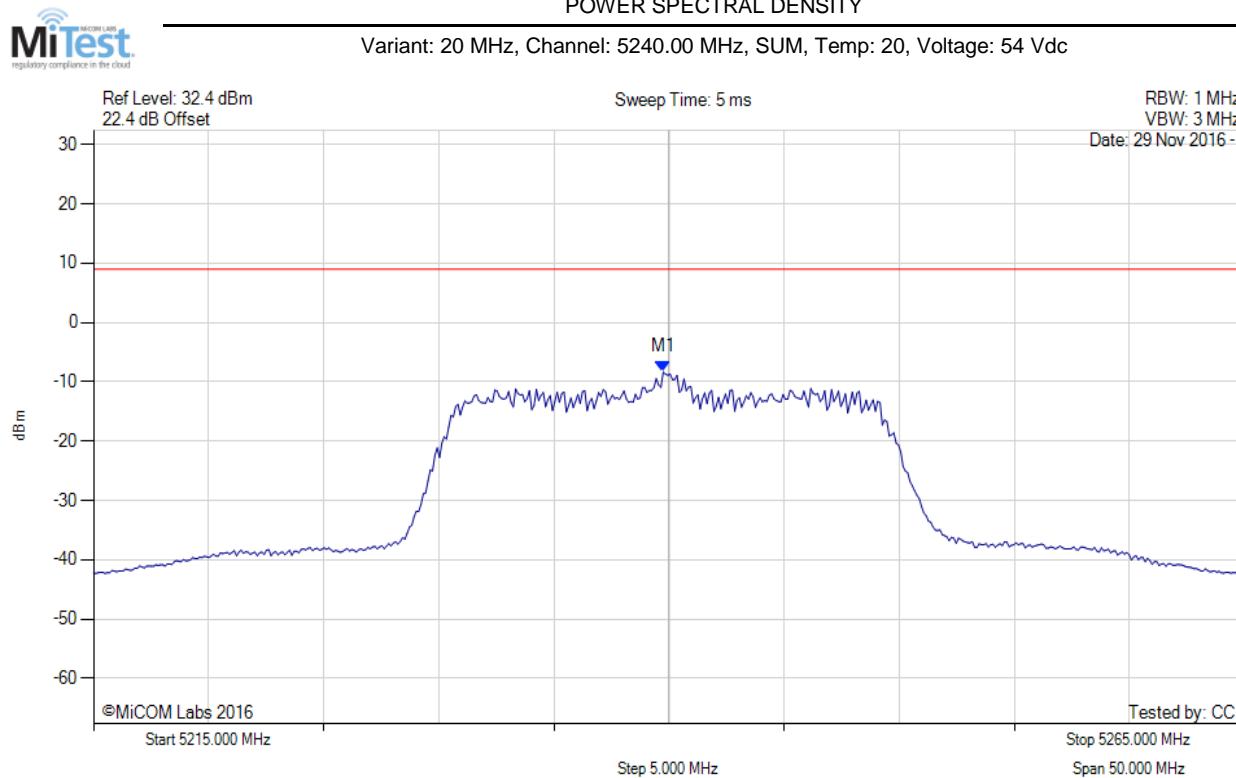


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5239.749 MHz : -8.360 dBm	Limit: ≤ 9.000 dBm

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5239.700 MHz : -8.360 dBm M1 + DCCF : 5239.700 MHz : -5.436 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 9.0 dBm Margin: -14.4 dB

[back to matrix](#)

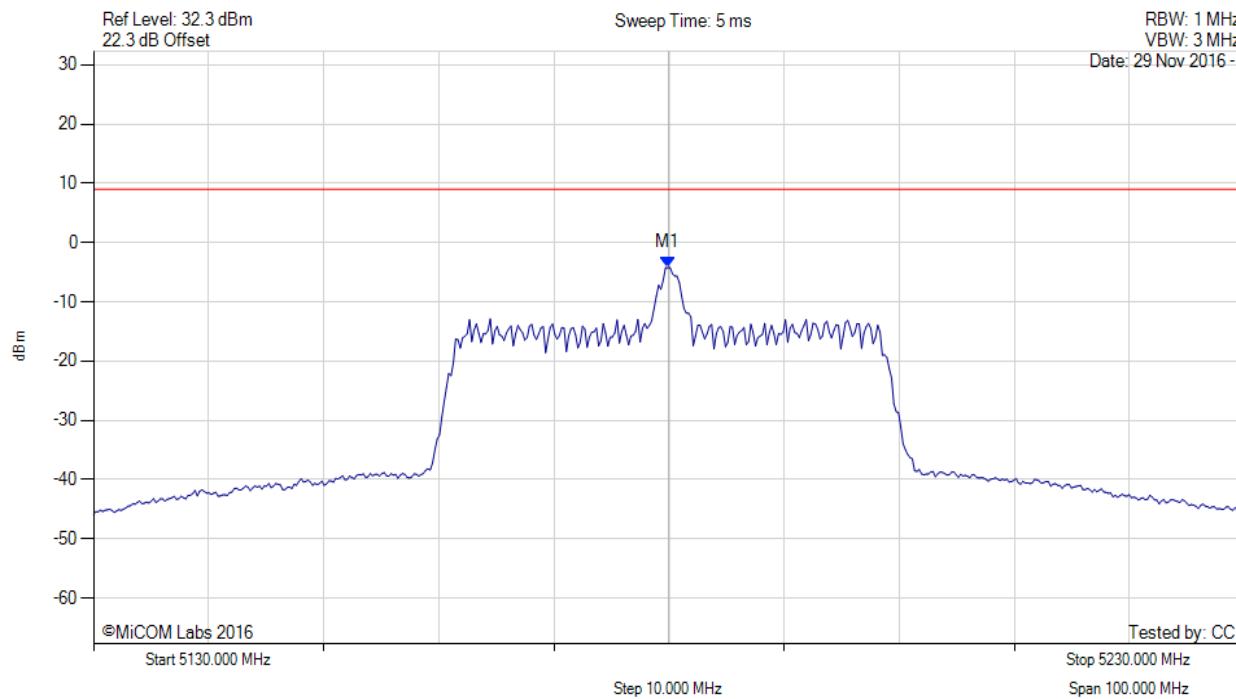
---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



POWER SPECTRAL DENSITY

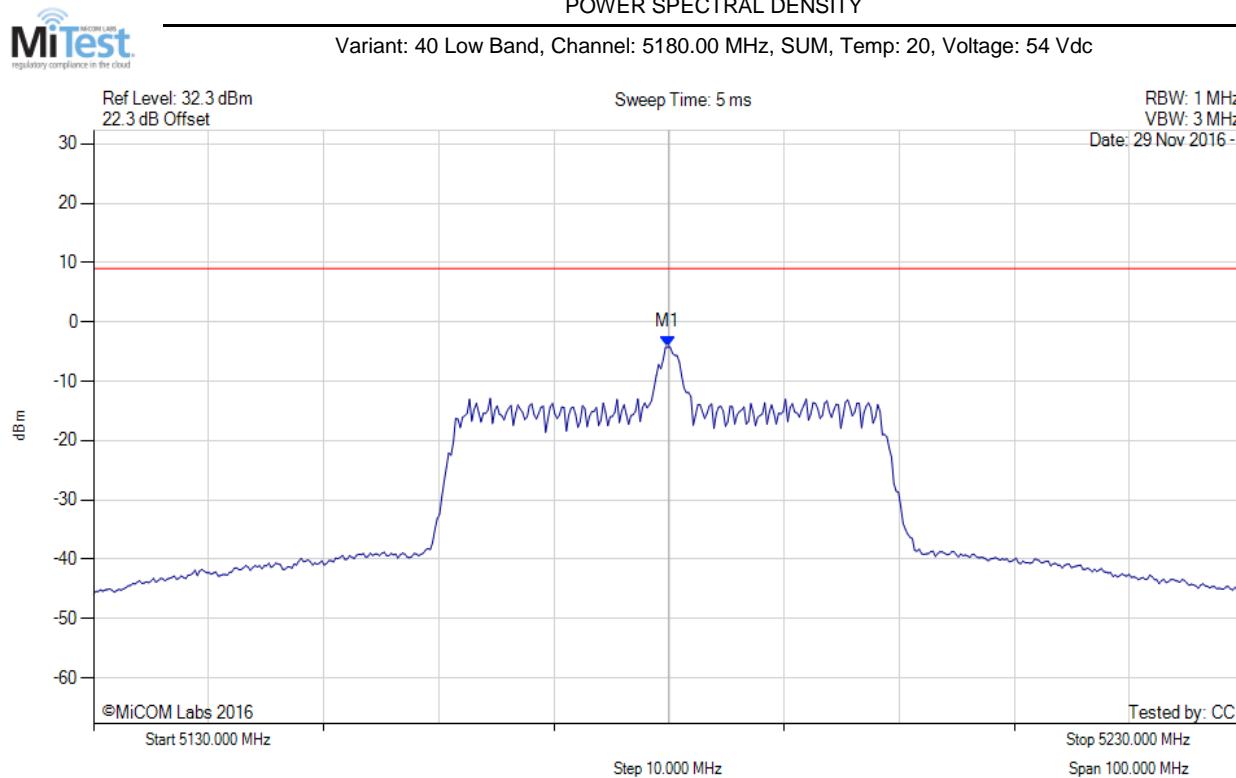
Variant: 40 Low Band, Channel: 5180.00 MHz, Chain a, Temp: 20, Voltage: 54 Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5179.900 MHz : -4.224 dBm	Limit: ≤ 9.000 dBm

[back to matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

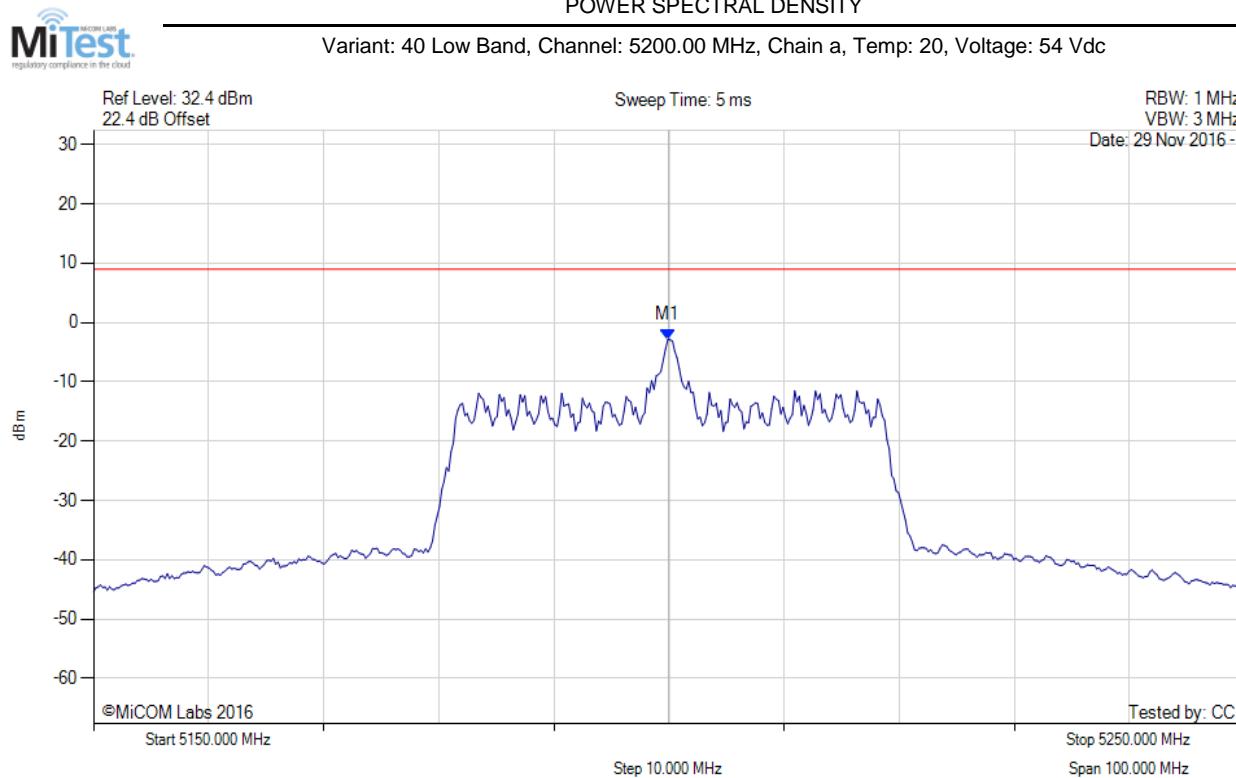


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5179.900 MHz : -4.224 dBm M1 + DCCF : 5179.900 MHz : -1.300 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 9.0 dBm Margin: -10.3 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

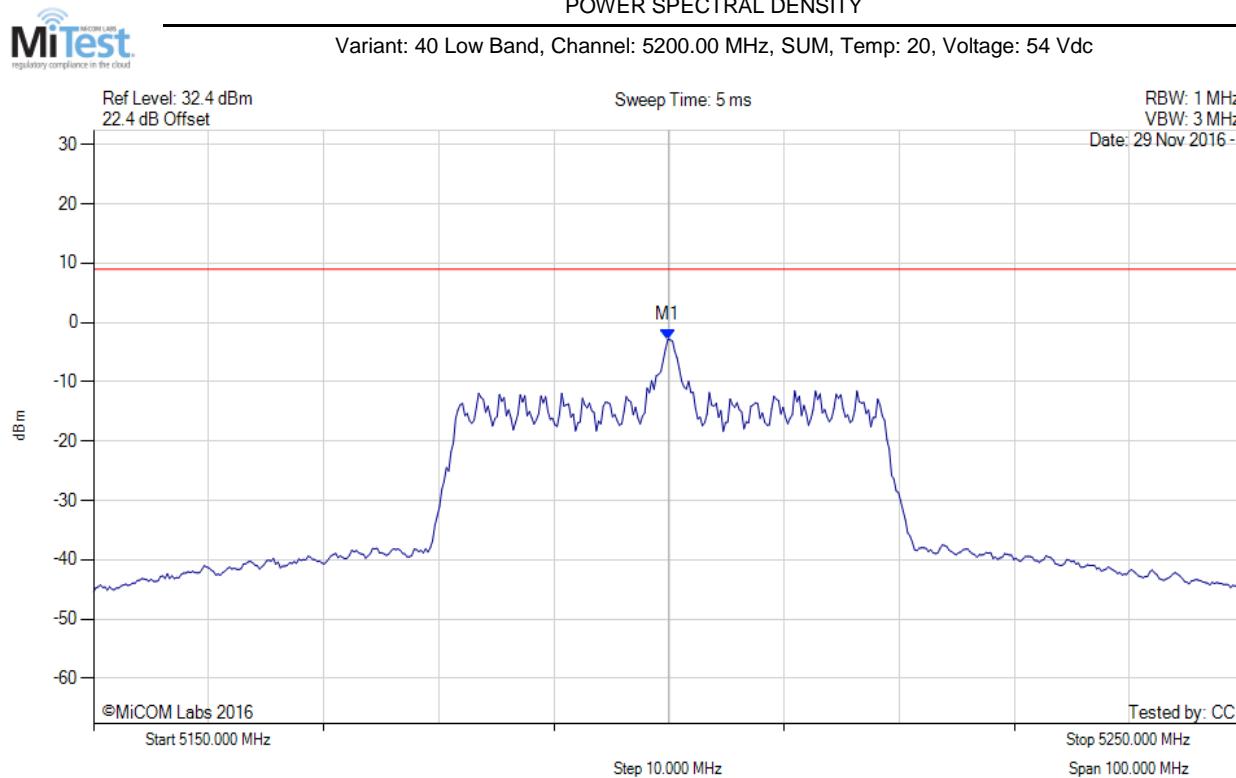


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5199.900 MHz : -2.852 dBm	Limit: ≤ 9.000 dBm

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

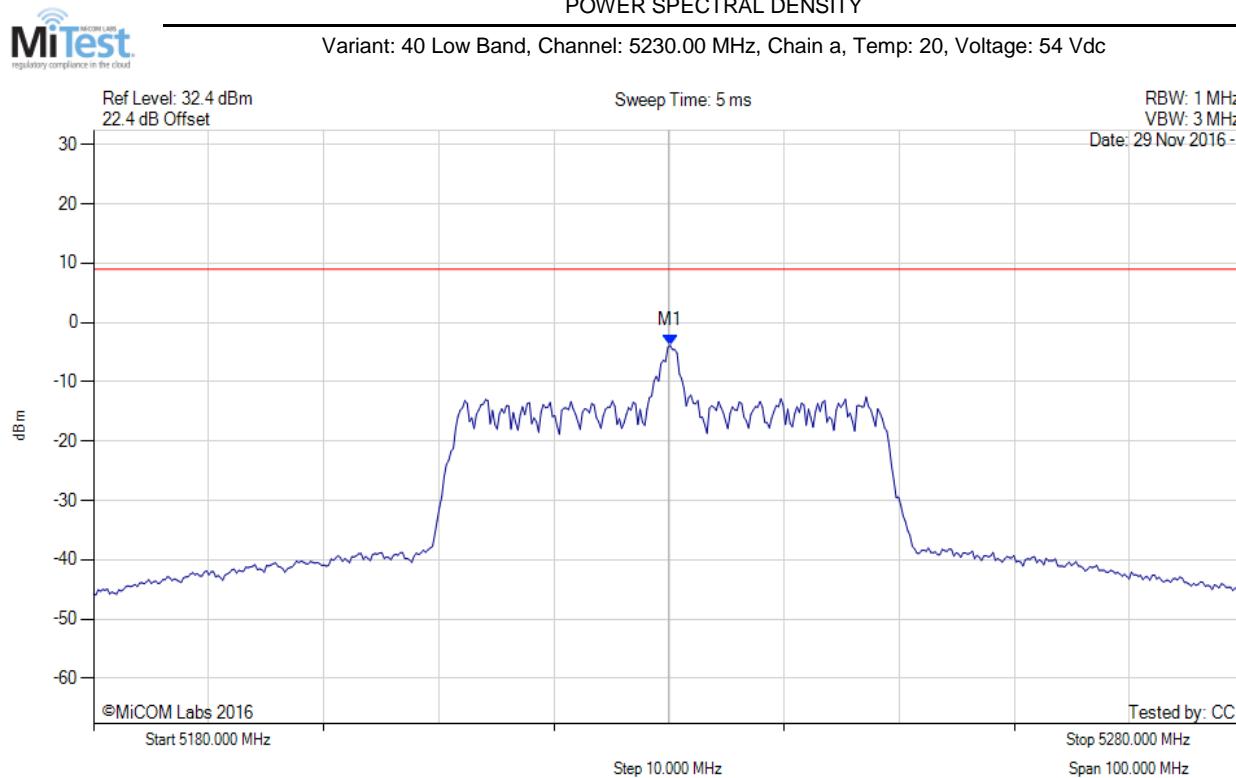


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5199.900 MHz : -2.852 dBm M1 + DCCF : 5199.900 MHz : 0.072 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 9.0 dBm Margin: -8.9 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

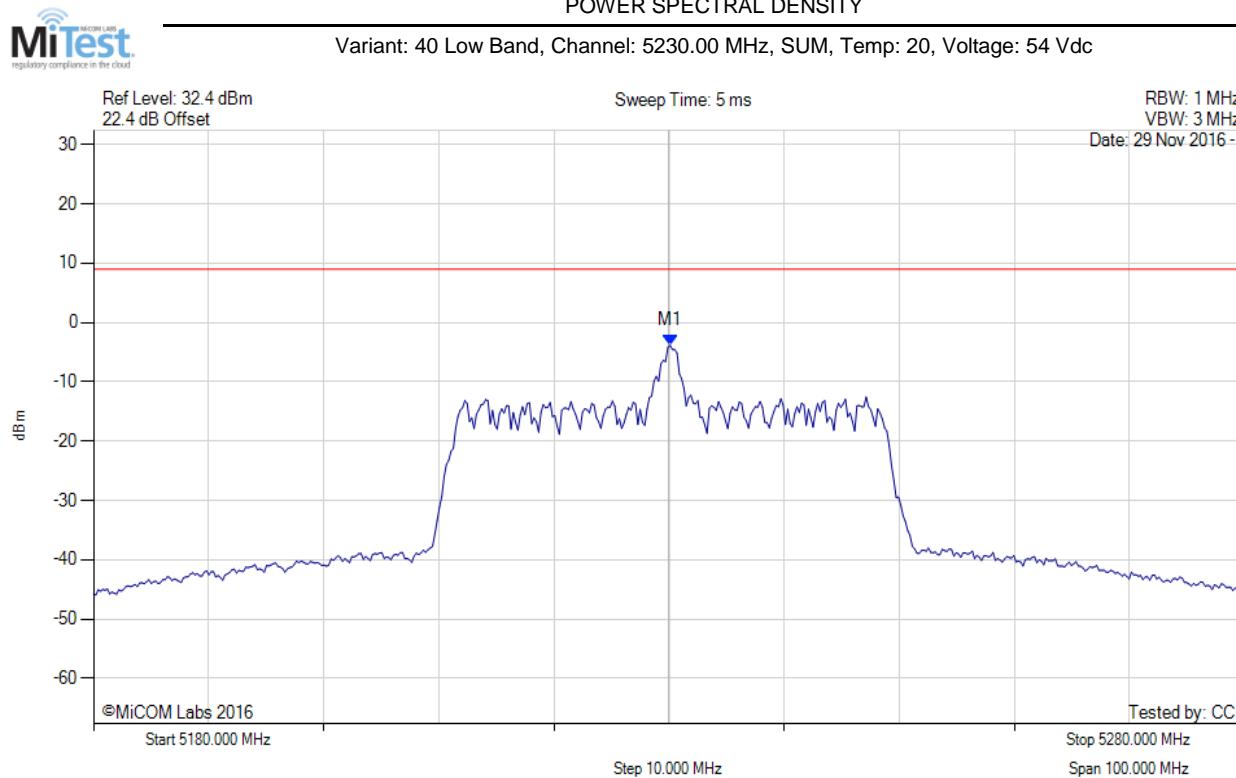


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5230.100 MHz : -3.845 dBm	Limit: ≤ 9.000 dBm

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

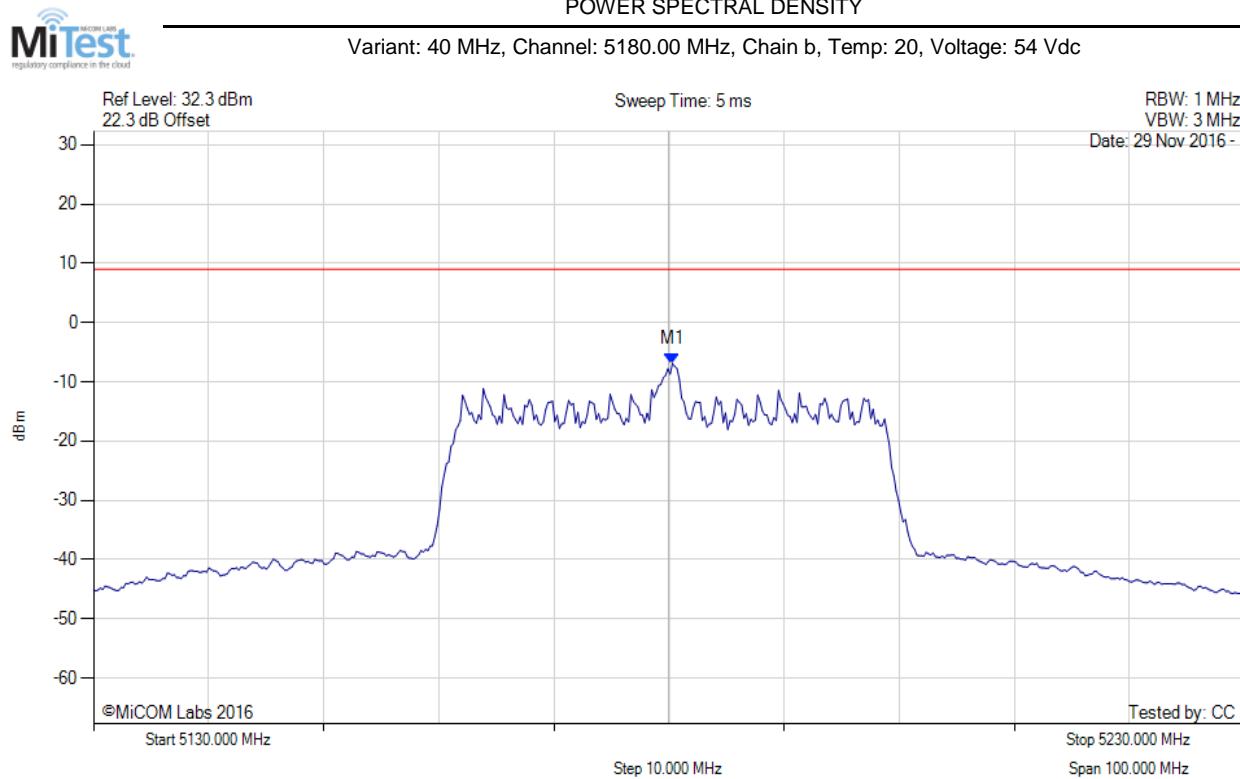


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5230.100 MHz : -3.845 dBm M1 + DCCF : 5230.100 MHz : -0.921 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 9.0 dBm Margin: -9.9 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

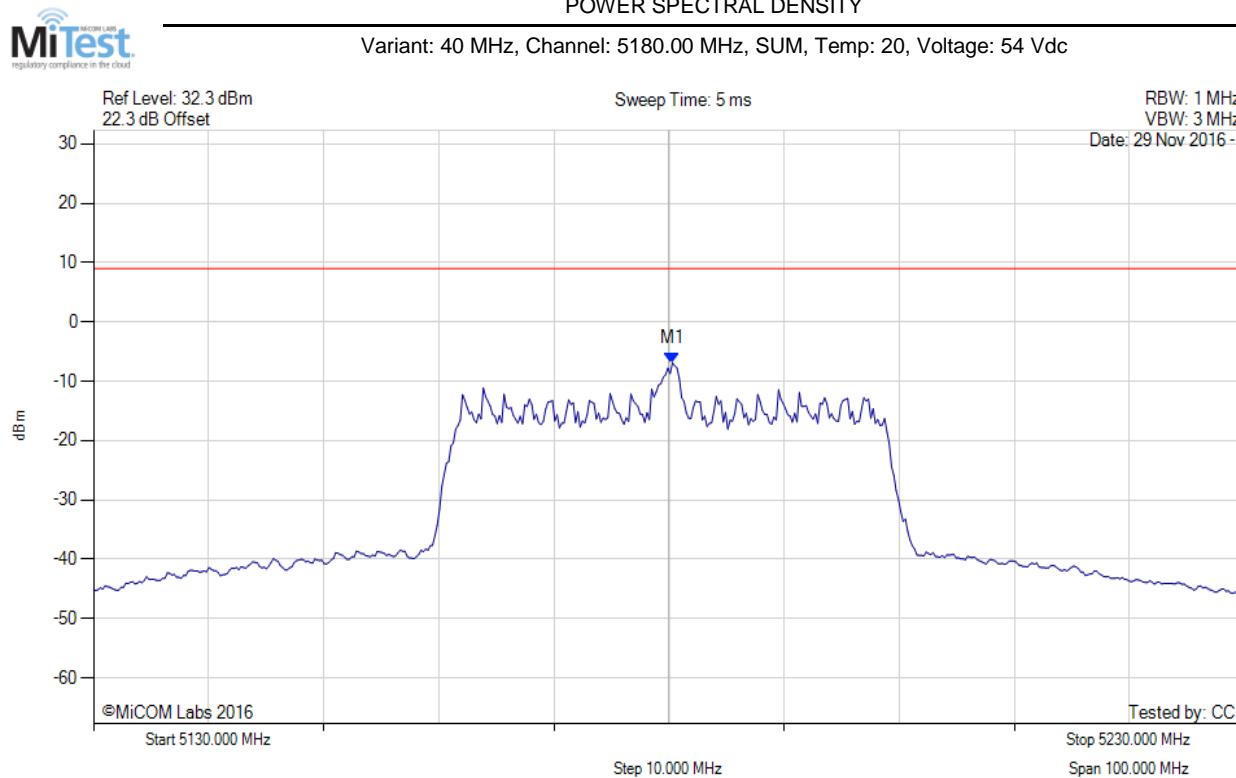


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5180.301 MHz : -6.901 dBm	Limit: ≤ 9.000 dBm

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

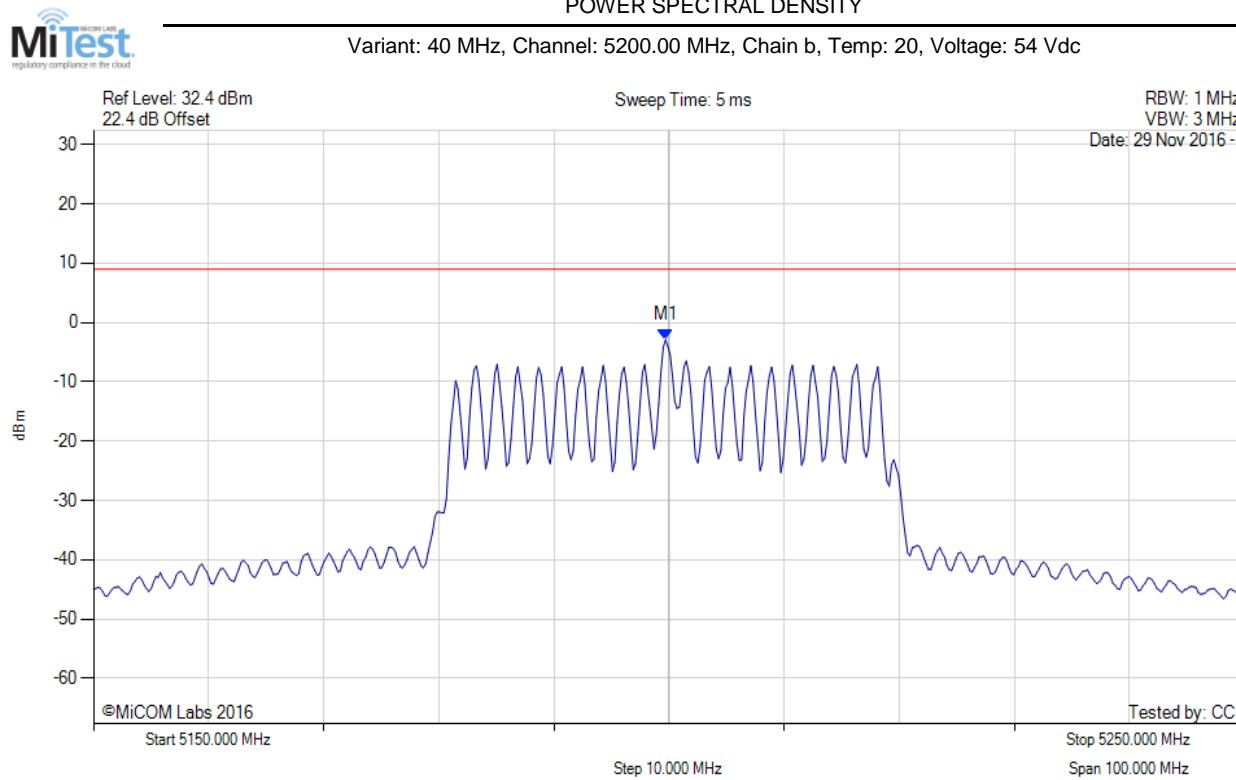


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5180.300 MHz : -6.901 dBm M1 + DCCF : 5180.300 MHz : -3.977 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 9.0 dBm Margin: -13.0 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

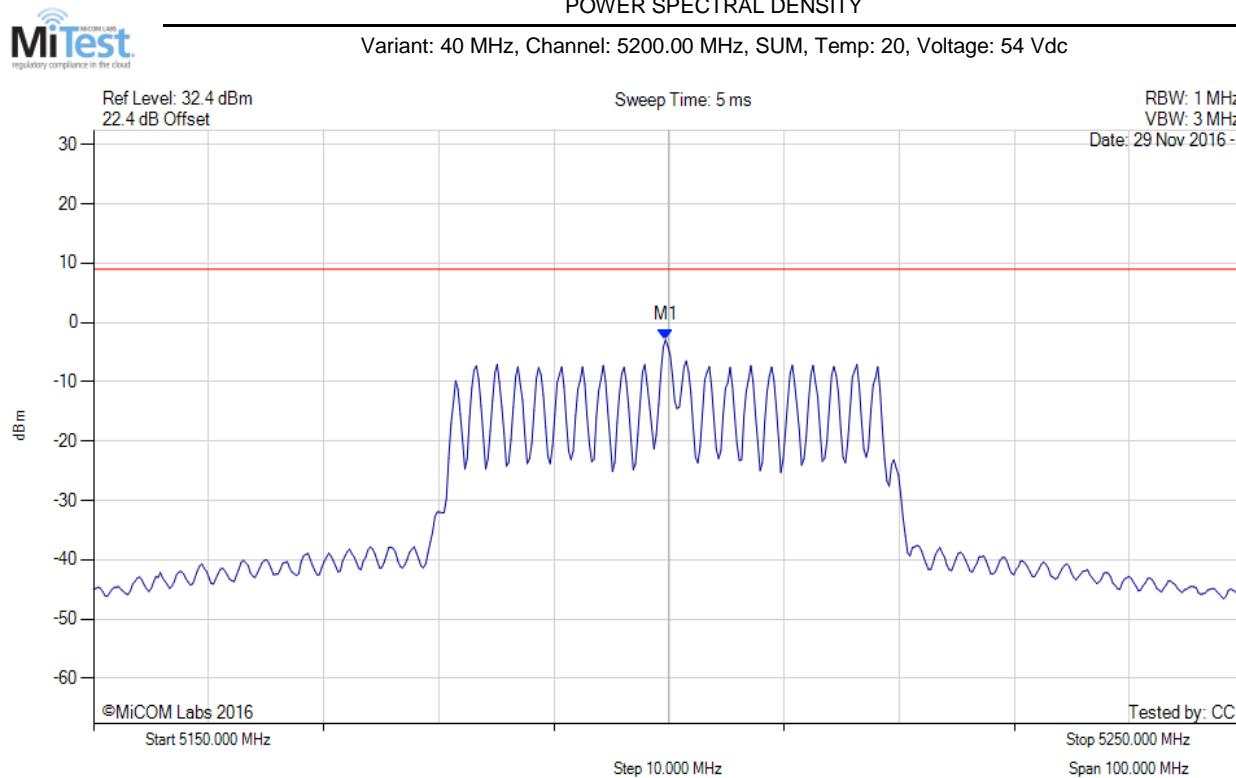


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5199.699 MHz : -2.920 dBm	Limit: ≤ 9.000 dBm

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

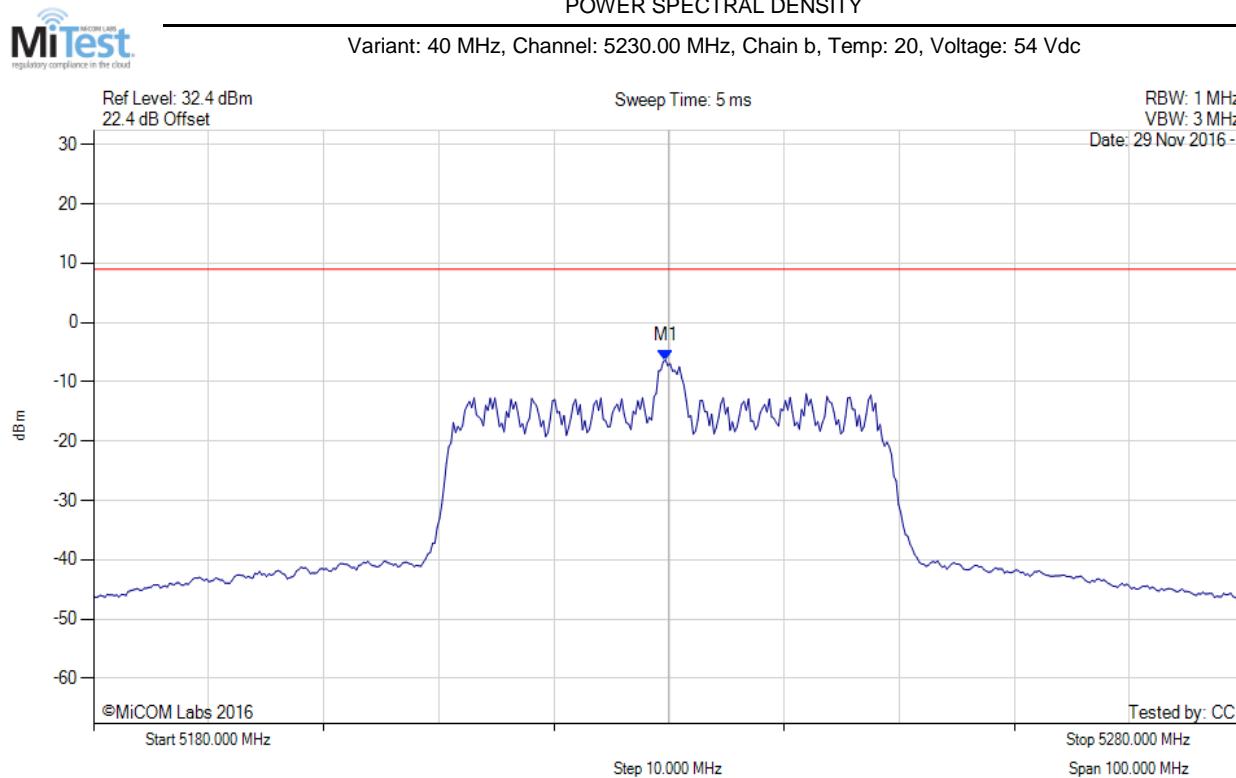


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5199.700 MHz : -2.920 dBm M1 + DCCF : 5199.700 MHz : 0.004 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 9.0 dBm Margin: -9.0 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

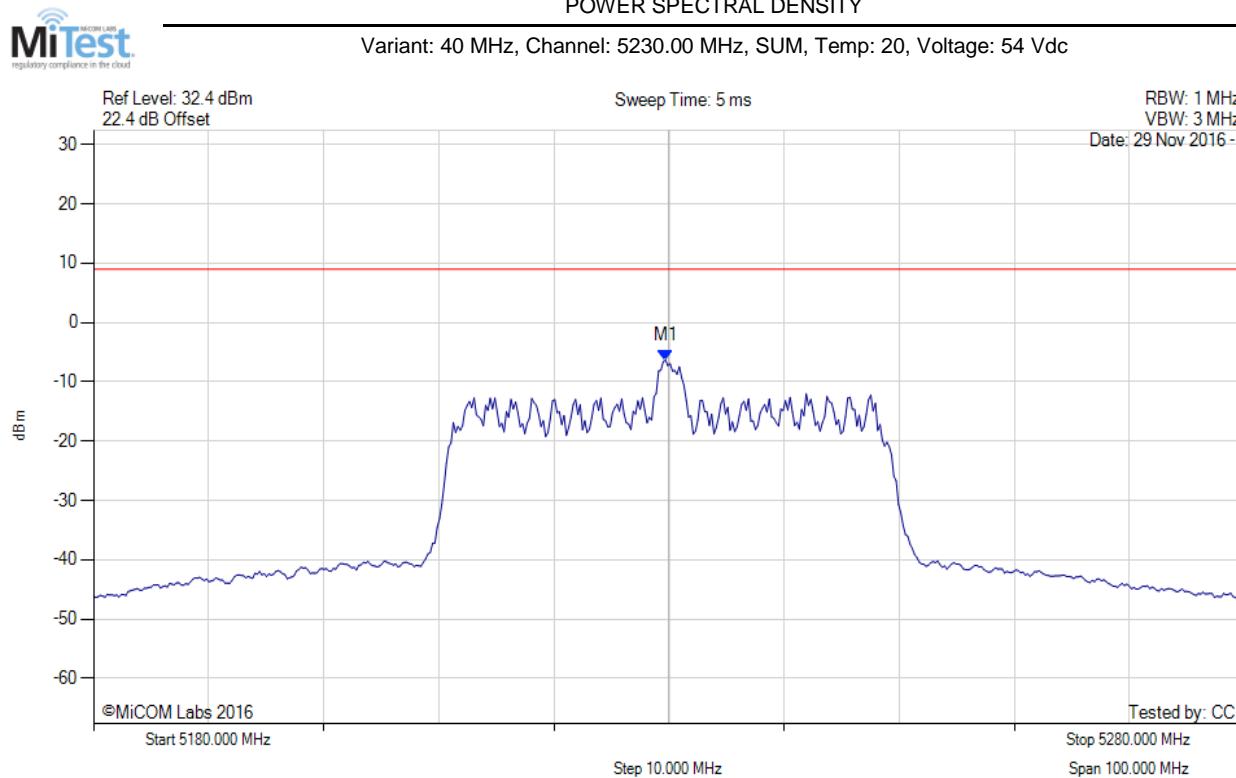


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5229.699 MHz : -6.369 dBm	Limit: ≤ 9.000 dBm

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5229.700 MHz : -6.369 dBm M1 + DCCF : 5229.700 MHz : -3.445 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 9.0 dBm Margin: -12.4 dB

[back to matrix](#)

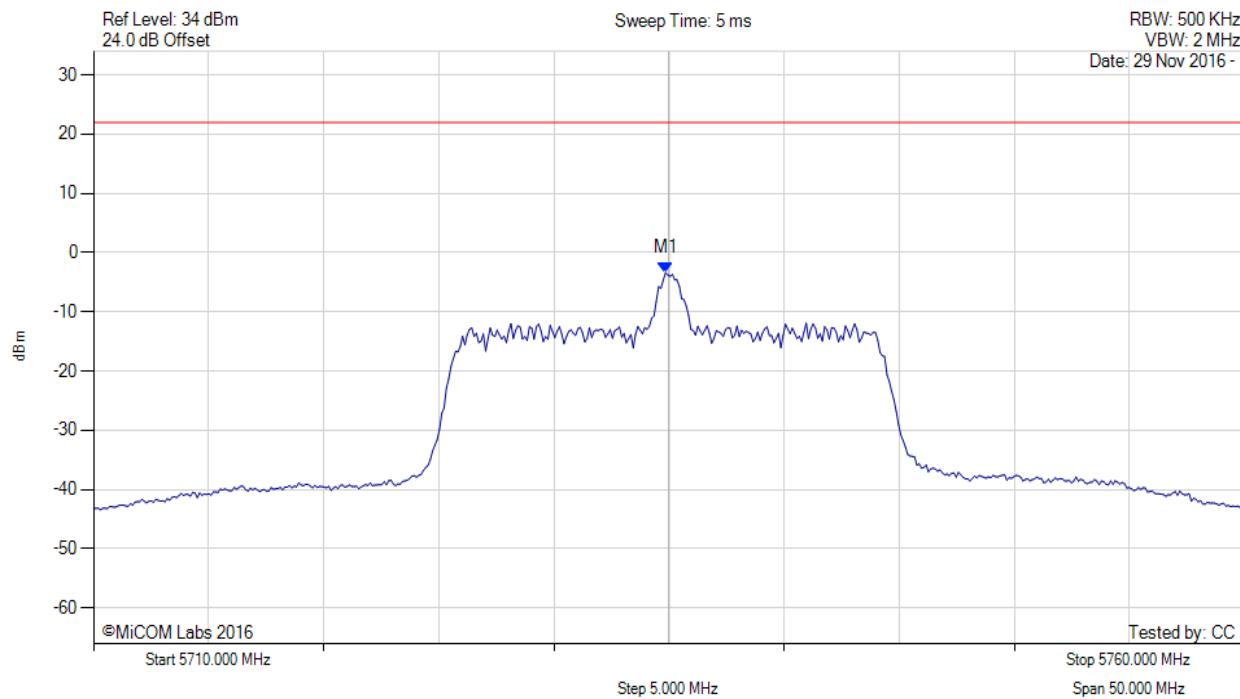
---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



POWER SPECTRAL DENSITY

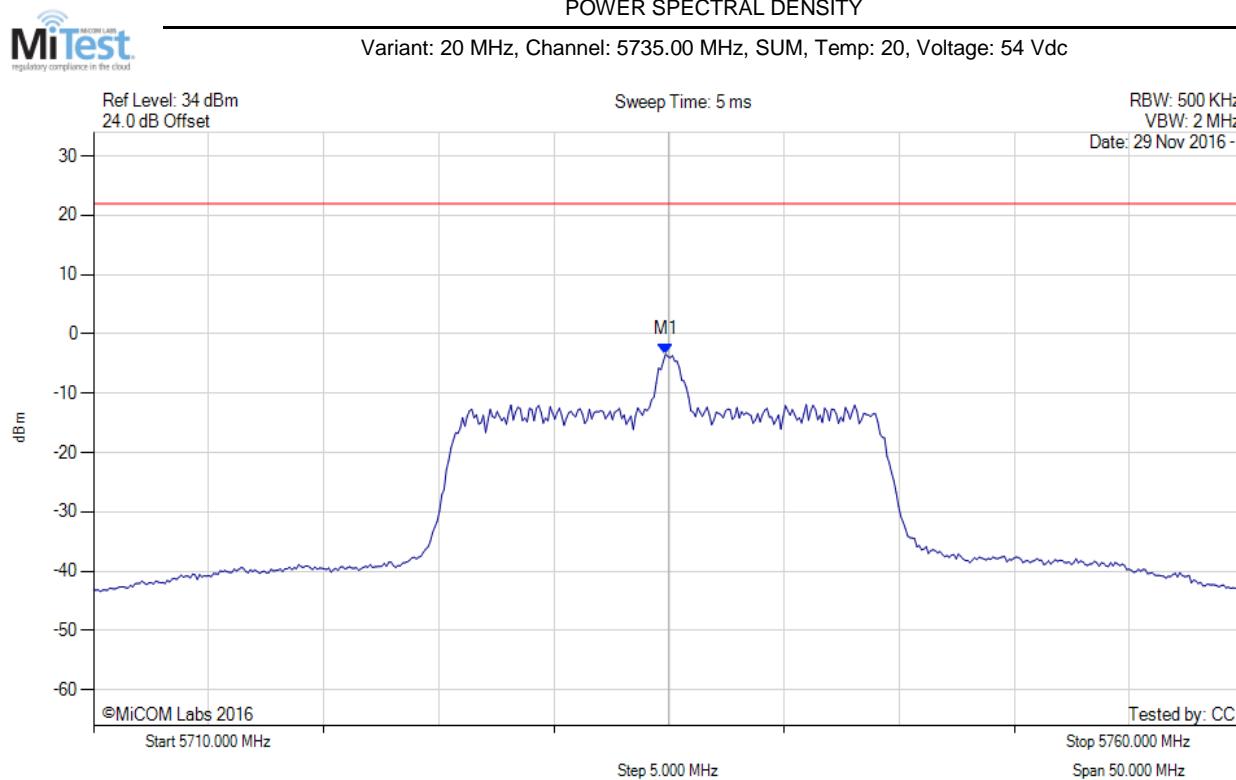
Variant: 20 MHz, Channel: 5735.00 MHz, Chain a, Temp: 20, Voltage: 54 Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5734.850 MHz : -3.414 dBm	Limit: ≤ 22.000 dBm

[back to matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

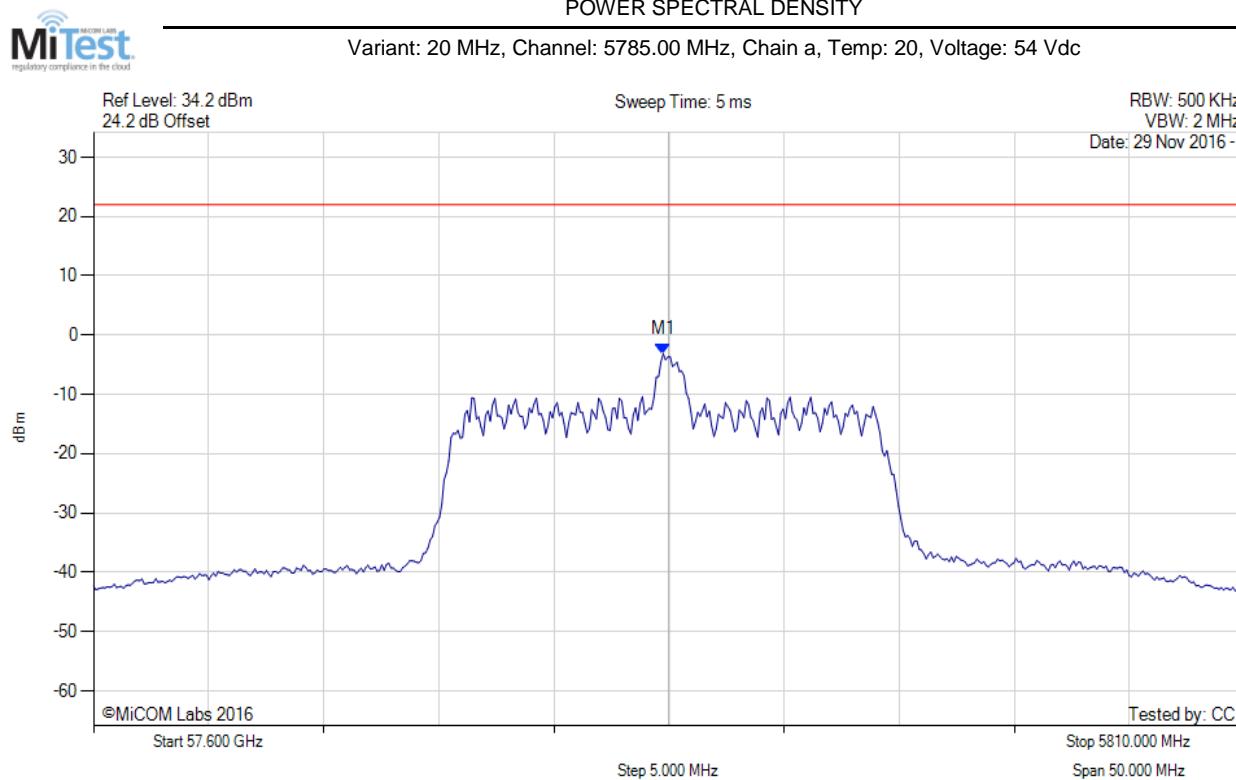


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5734.800 MHz : -3.414 dBm M1 + DCCF : 5734.800 MHz : -0.490 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 22.0 dBm Margin: -22.5 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

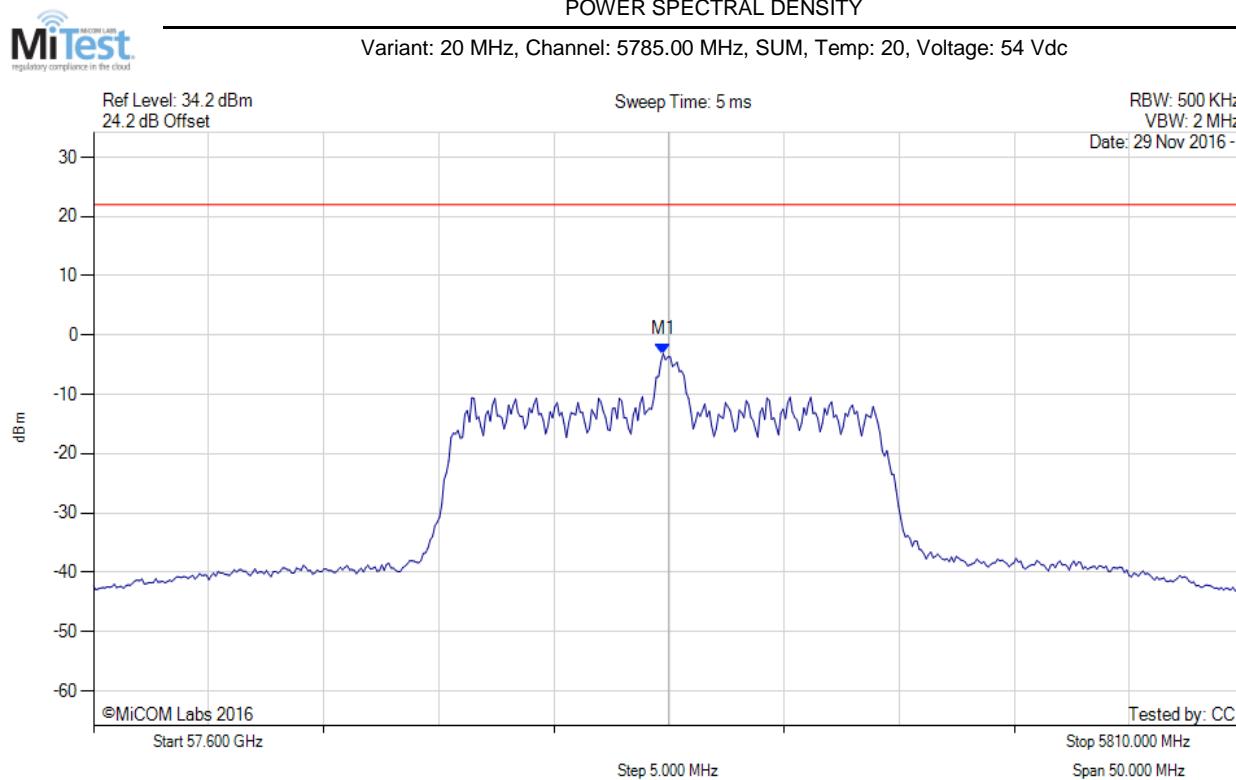


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5784.749 MHz : -3.135 dBm	Limit: ≤ 22.000 dBm

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

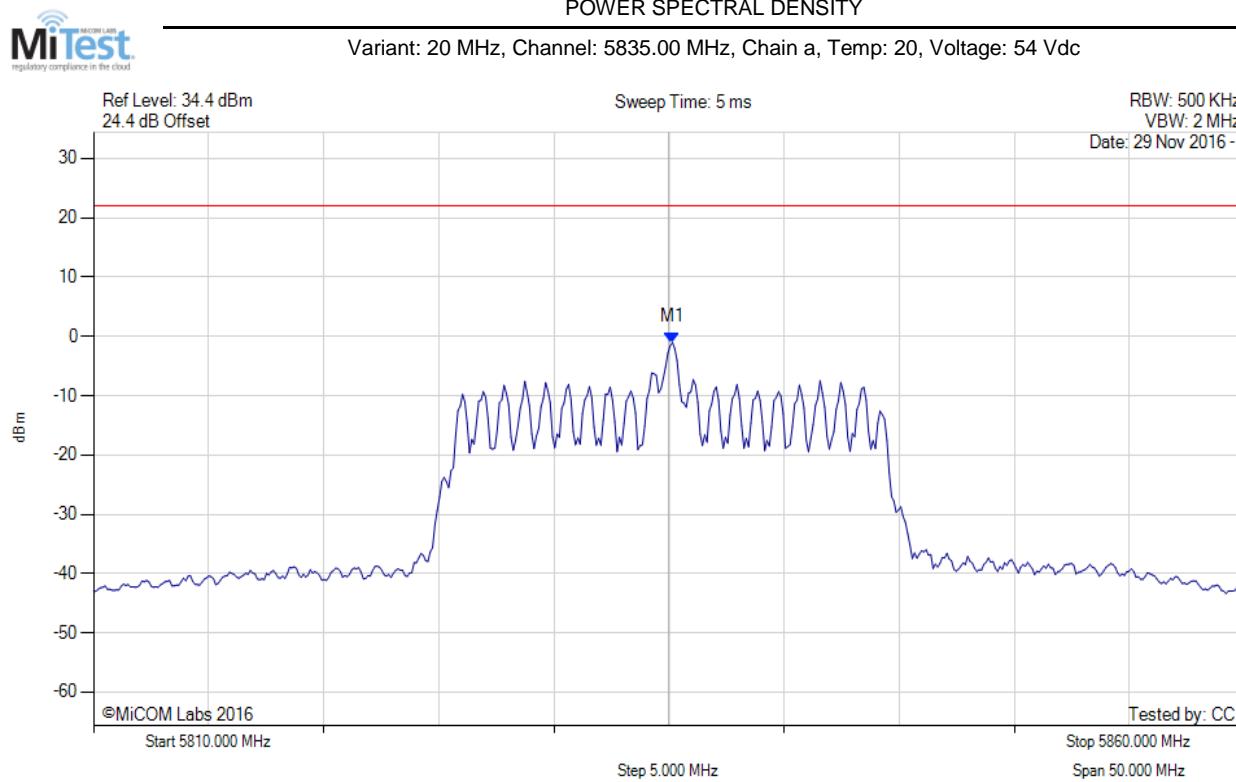


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5784.700 MHz : -3.135 dBm M1 + DCCF : 5784.700 MHz : -0.211 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 22.0 dBm Margin: -22.2 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

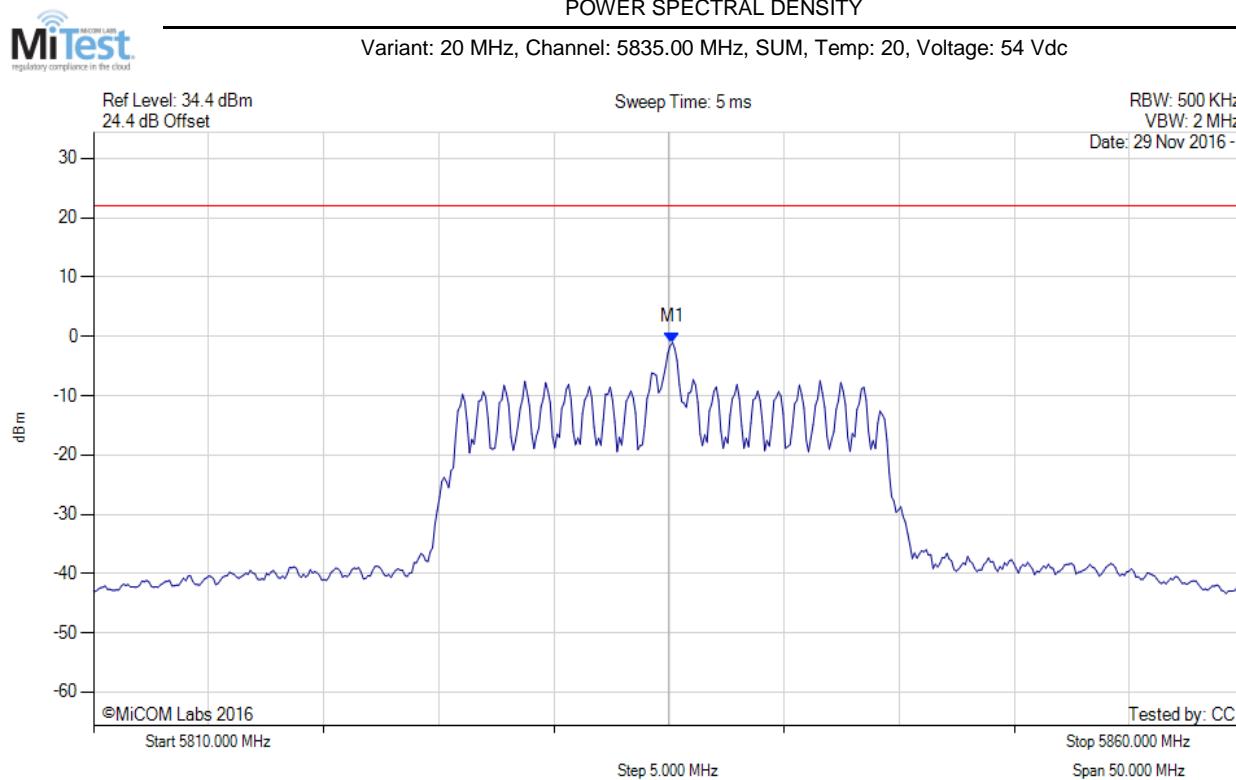


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5835.150 MHz : -1.033 dBm	Limit: ≤ 22.000 dBm

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5835.200 MHz : -1.033 dBm M1 + DCCF : 5835.200 MHz : 1.891 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 22.0 dBm Margin: -20.1 dB

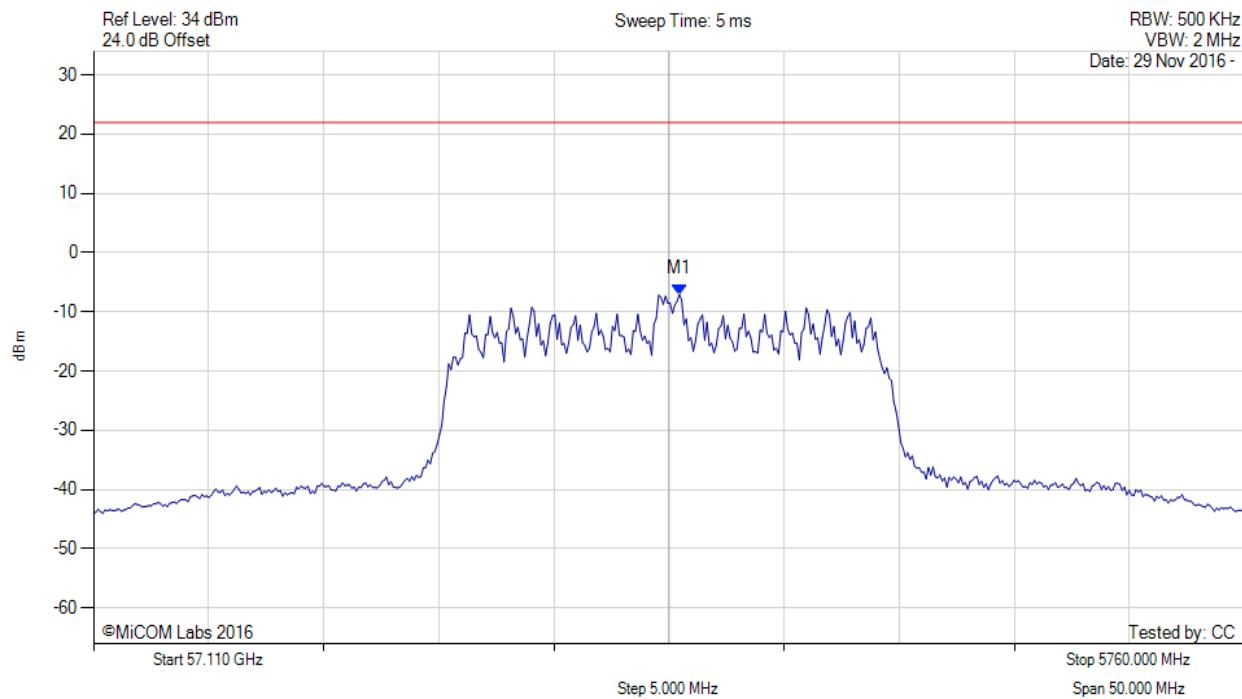
[back to matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



### POWER SPECTRAL DENSITY

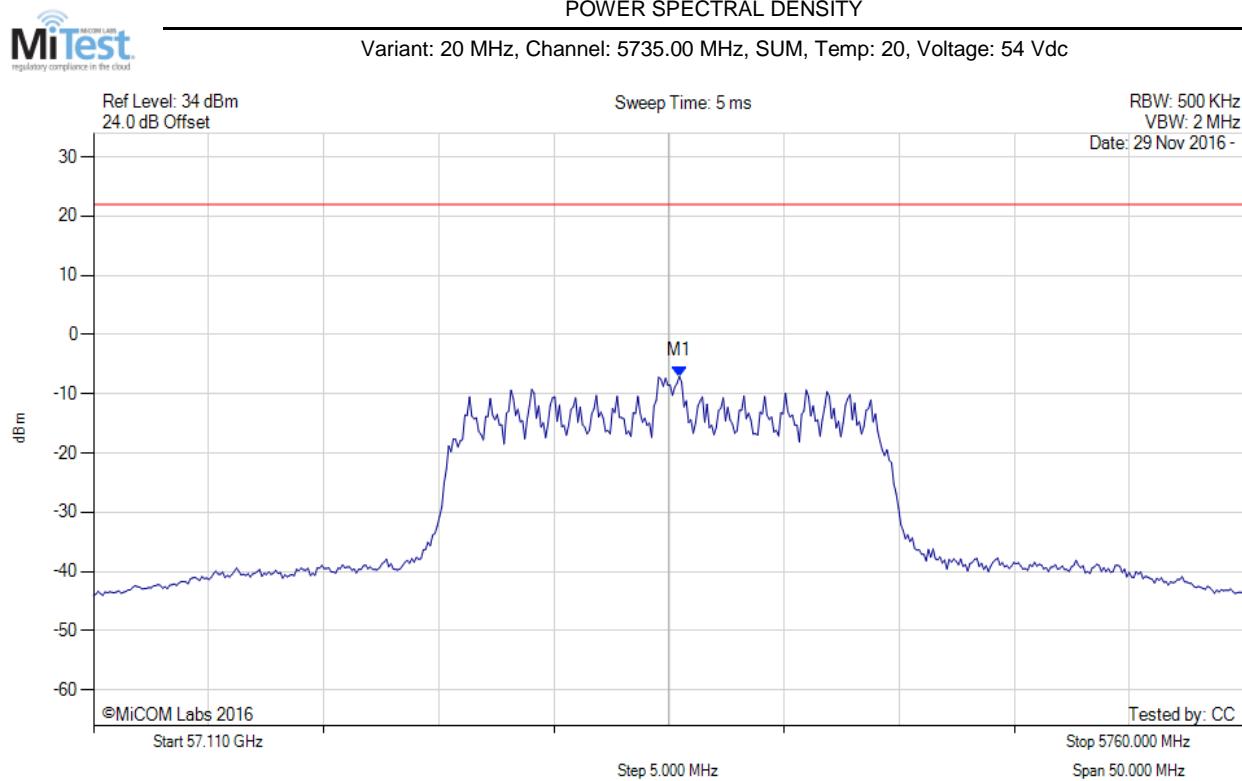
Variant: 20 MHz, Channel: 5735.00 MHz, Chain b, Temp: 20, Voltage: 54 Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5735.451 MHz : -7.046 dBm	Limit: ≤ 22.000 dBm

[back to matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

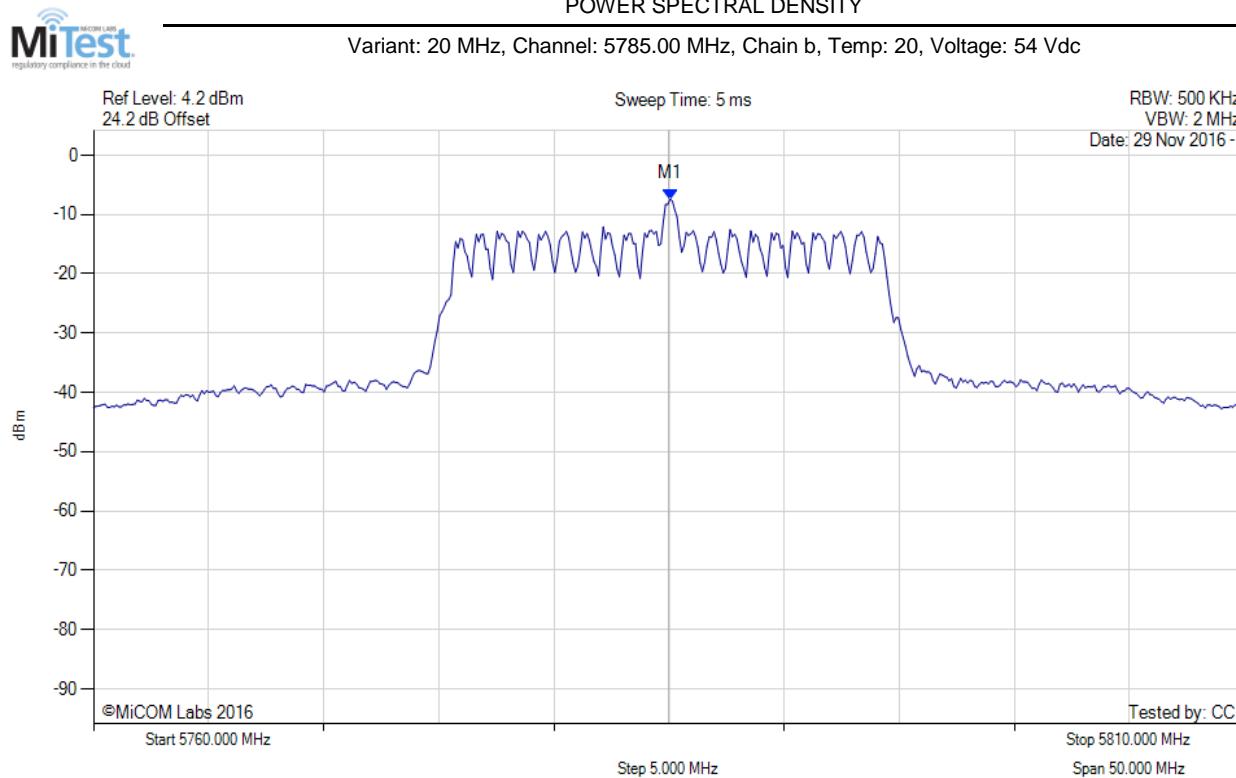


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5735.500 MHz : -7.046 dBm M1 + DCCF : 5735.500 MHz : -4.122 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 22.0 dBm Margin: -26.1 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

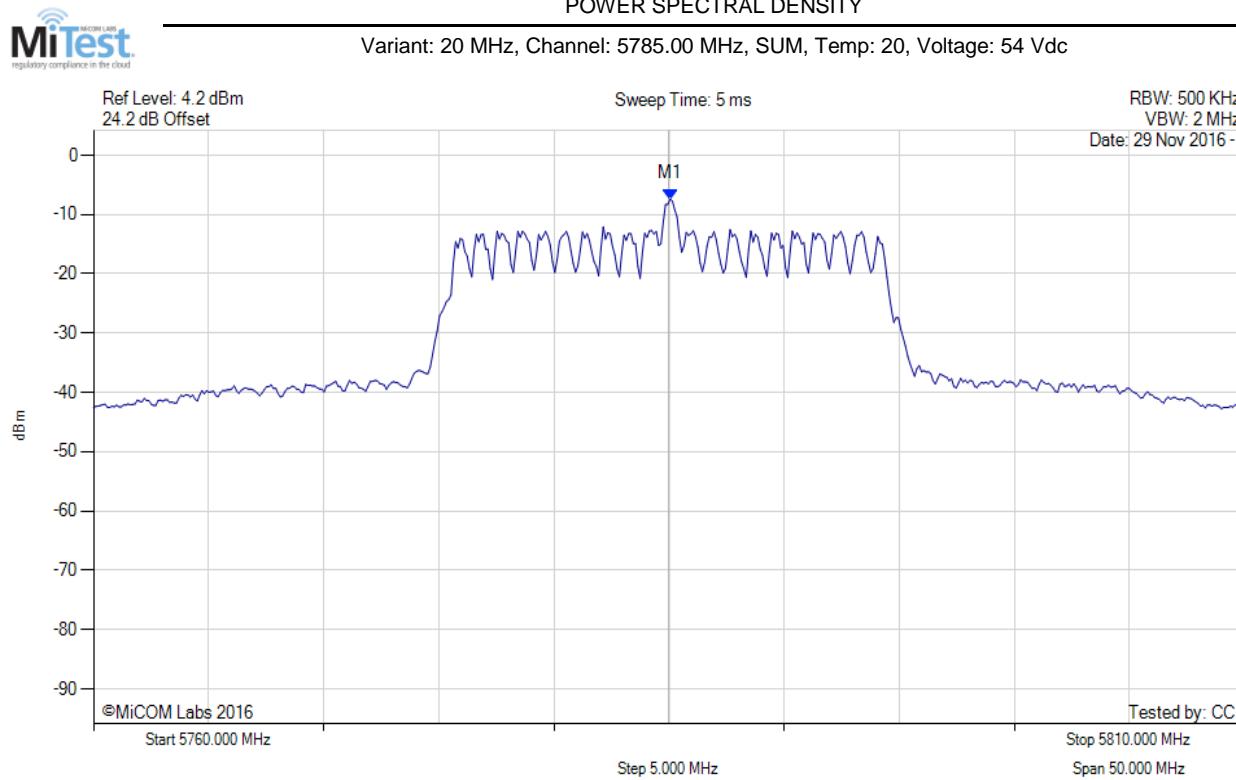


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5785.050 MHz : -7.389 dBm	Limit: ≤ 22.000 dBm

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

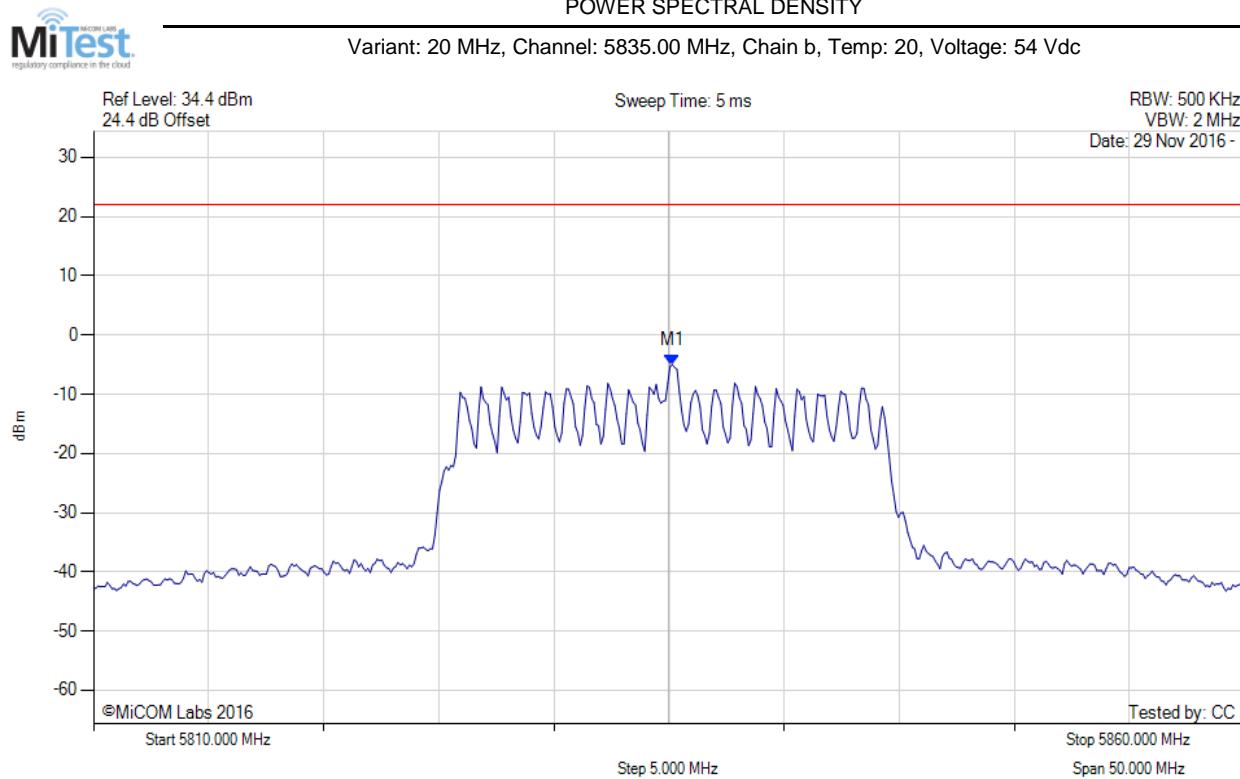


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5785.100 MHz : -7.389 dBm M1 + DCCF : 5785.100 MHz : -4.465 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 22.0 dBm Margin: -26.5 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

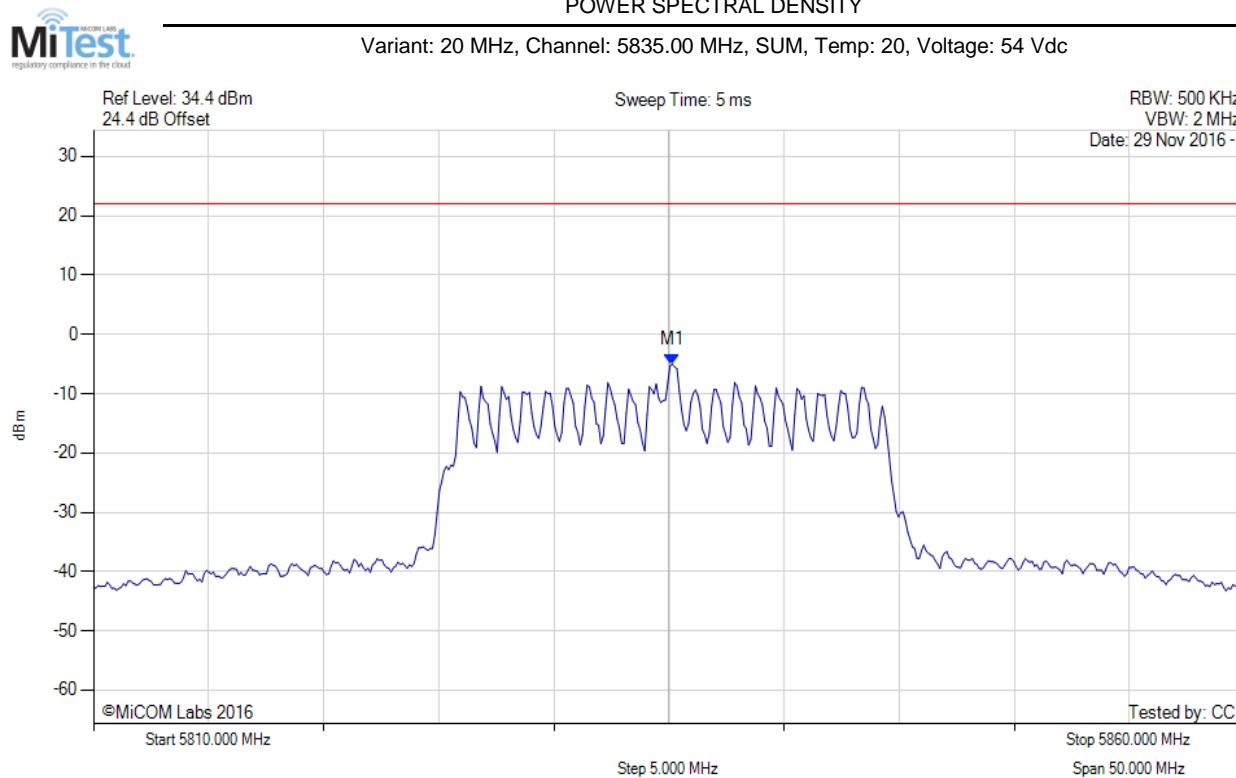


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5835.150 MHz : -5.048 dBm	Limit: ≤ 22.000 dBm

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5835.200 MHz : -5.048 dBm M1 + DCCF : 5835.200 MHz : -2.124 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 22.0 dBm Margin: -24.1 dB

[back to matrix](#)

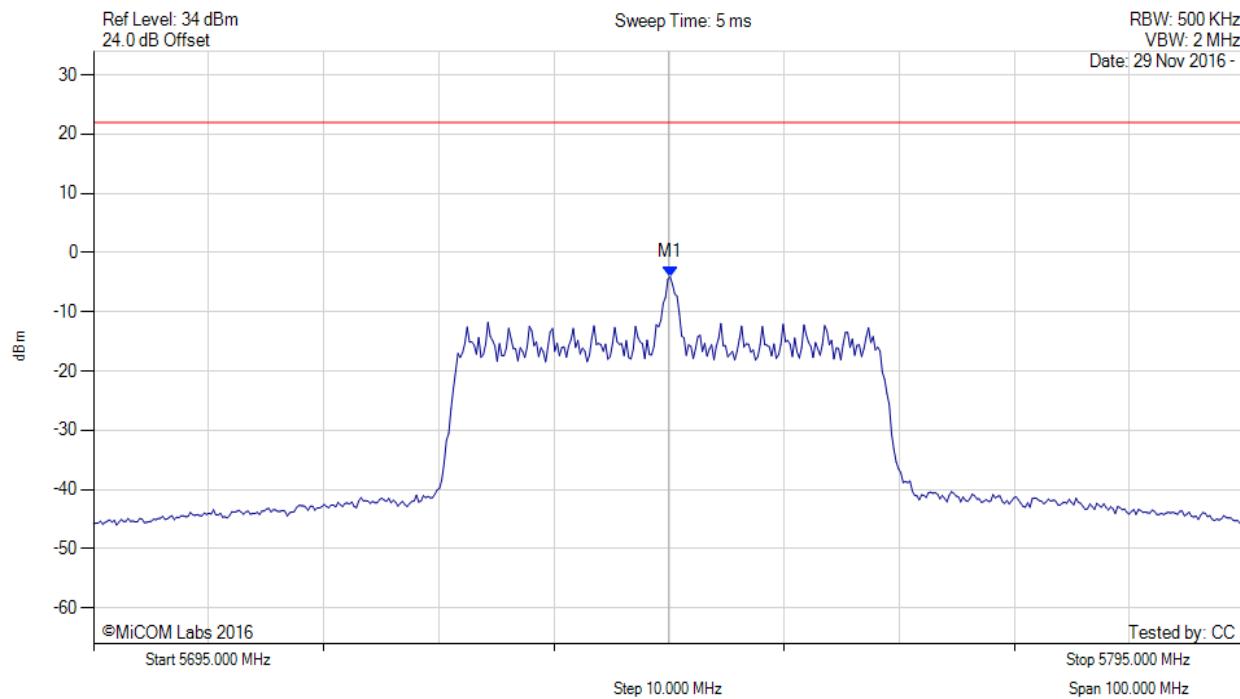
---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



POWER SPECTRAL DENSITY

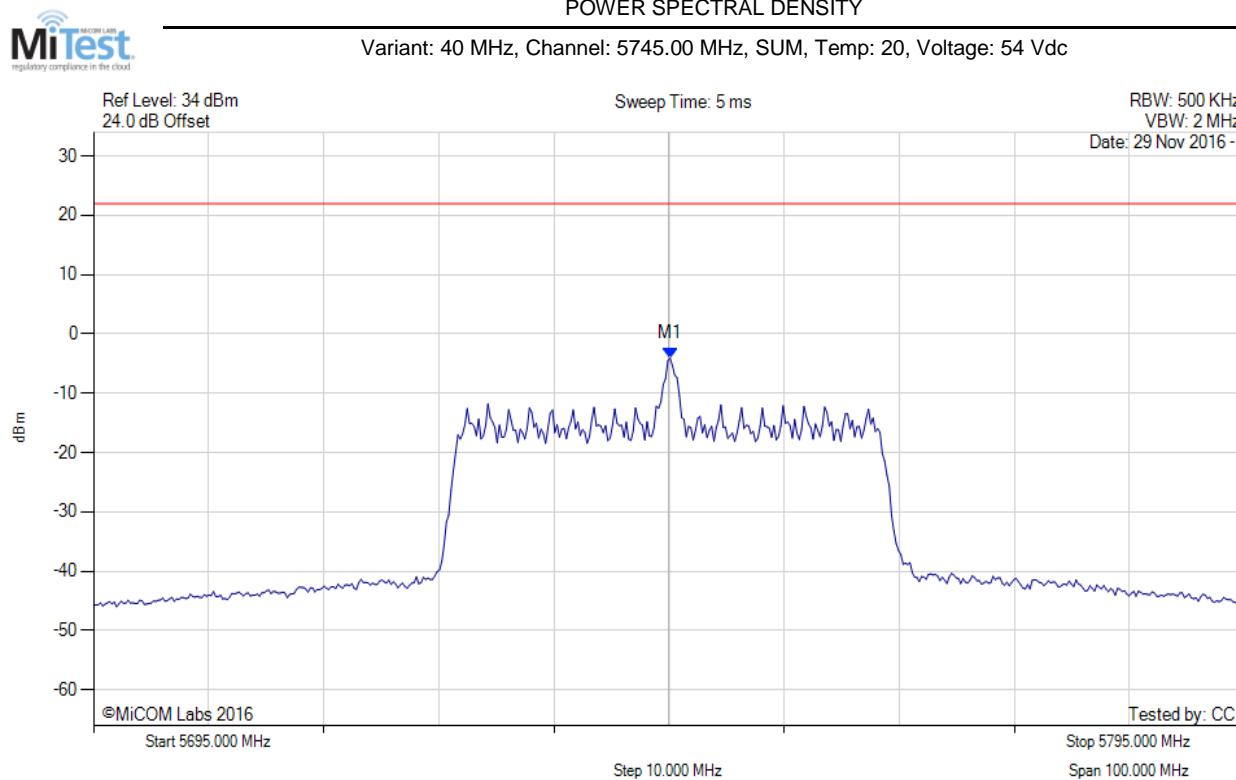
Variant: 40 MHz, Channel: 5745.00 MHz, Chain a, Temp: 20, Voltage: 54 Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5745.100 MHz : -4.078 dBm	Limit: ≤ 22.000 dBm

[back to matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

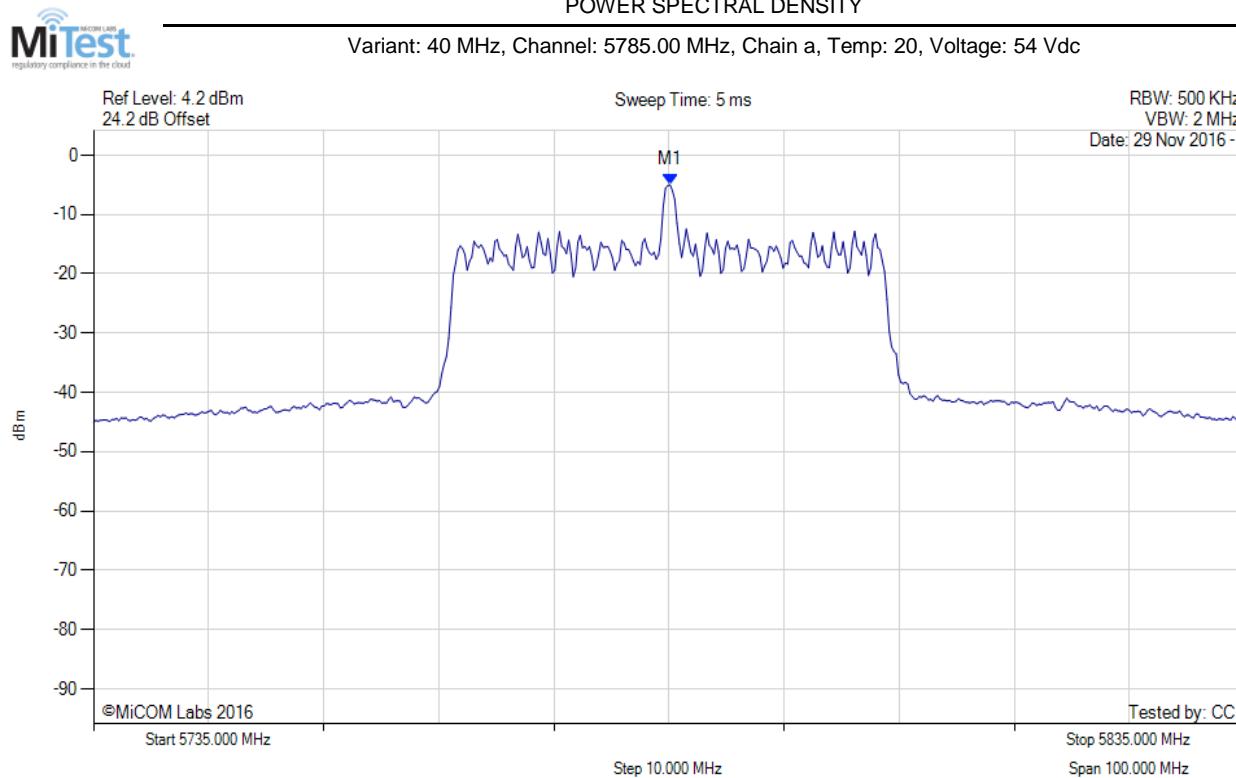


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5745.100 MHz : -4.078 dBm M1 + DCCF : 5745.100 MHz : -1.154 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 22.0 dBm Margin: -23.2 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5785.100 MHz : -4.990 dBm	Limit: ≤ 22.000 dBm

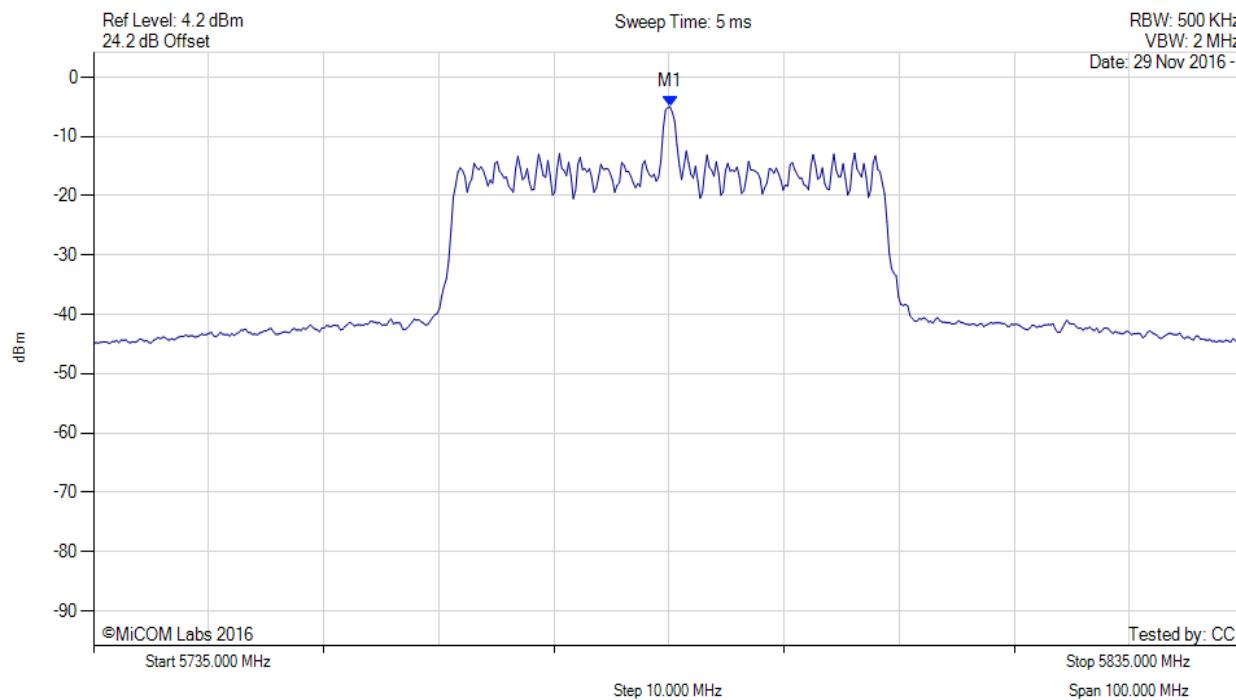
[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

### POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5785.00 MHz, SUM, Temp: 20, Voltage: 54 Vdc

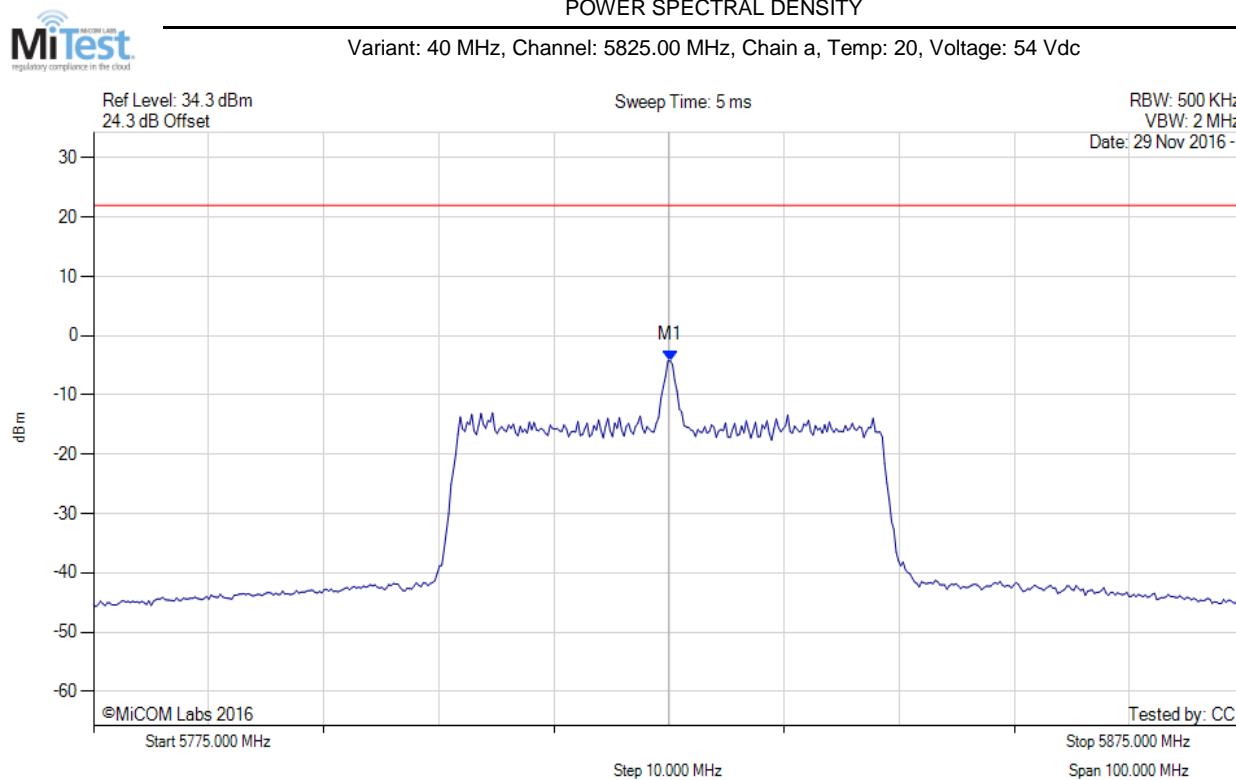


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5785.100 MHz : -4.990 dBm M1 + DCCF : 5785.100 MHz : -2.066 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 22.0 dBm Margin: -24.1 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

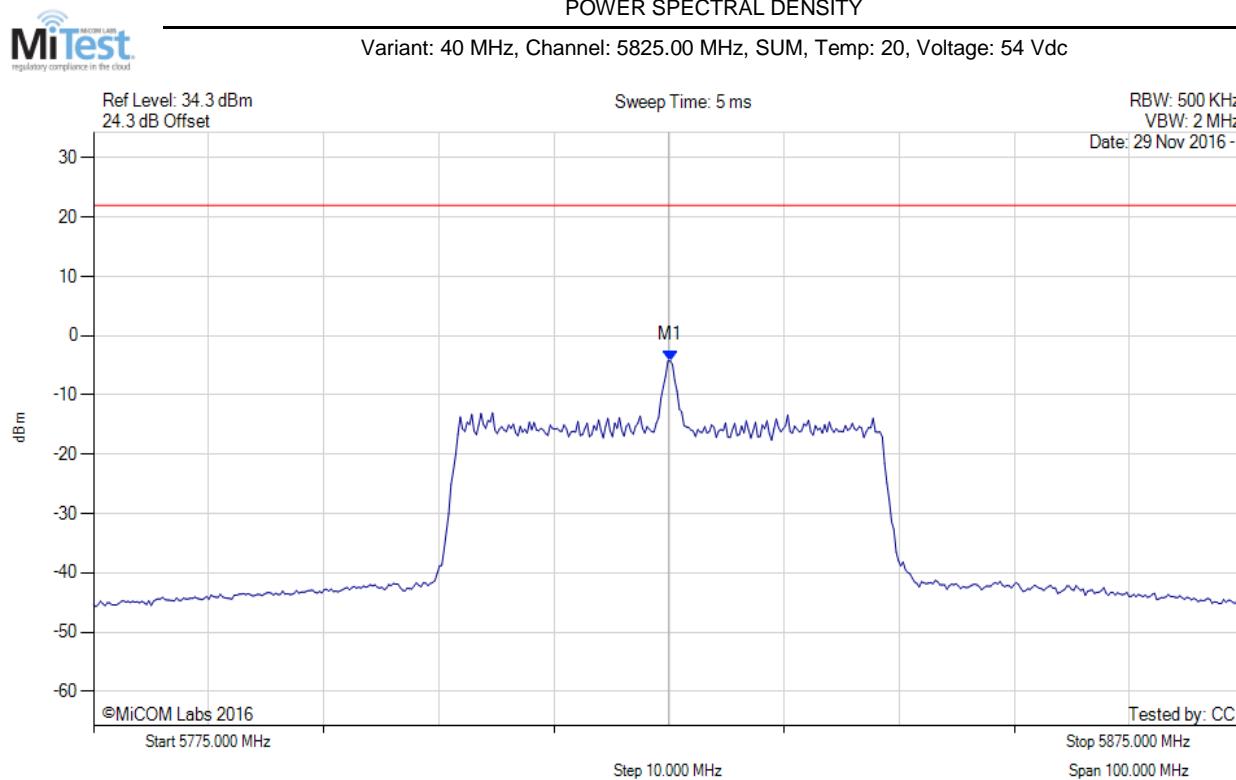


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5825.100 MHz : -4.181 dBm	Limit: ≤ 22.000 dBm

[back to matrix](#)

---

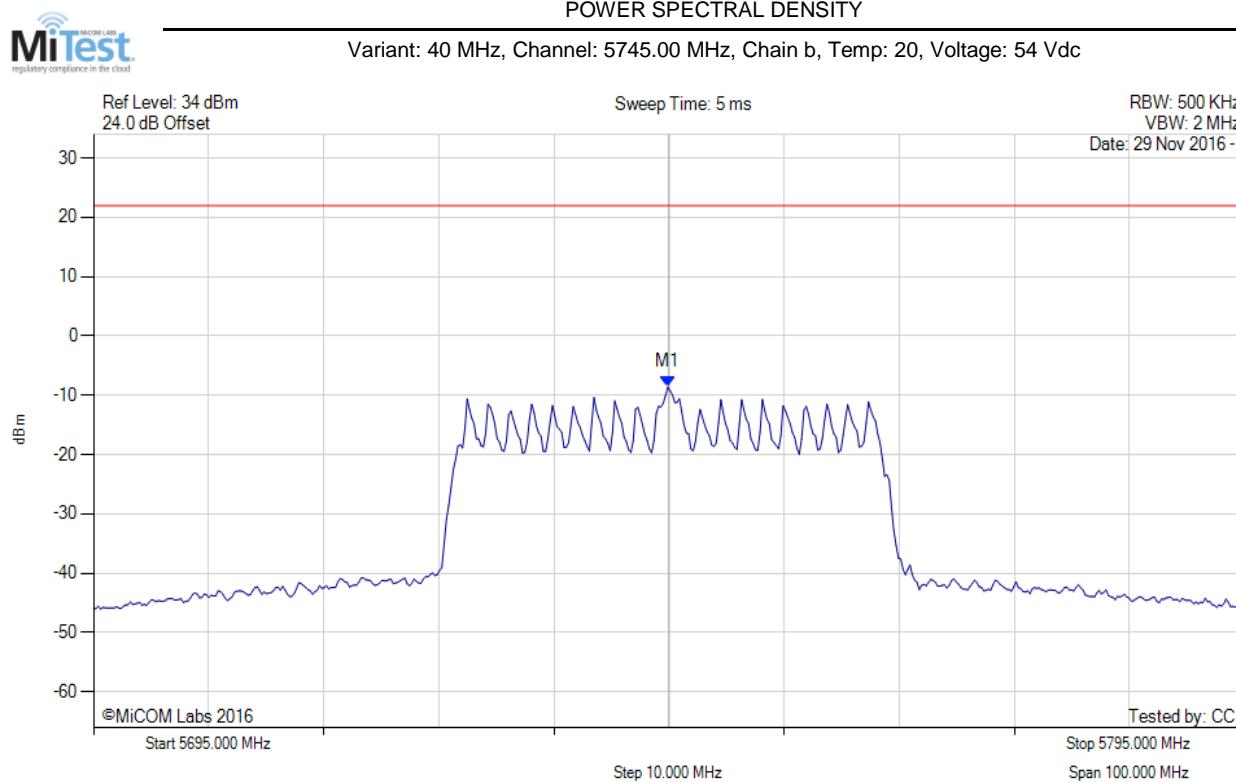
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5825.100 MHz : -4.181 dBm M1 + DCCF : 5825.100 MHz : -1.257 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 22.0 dBm Margin: -23.3 dB

[back to matrix](#)

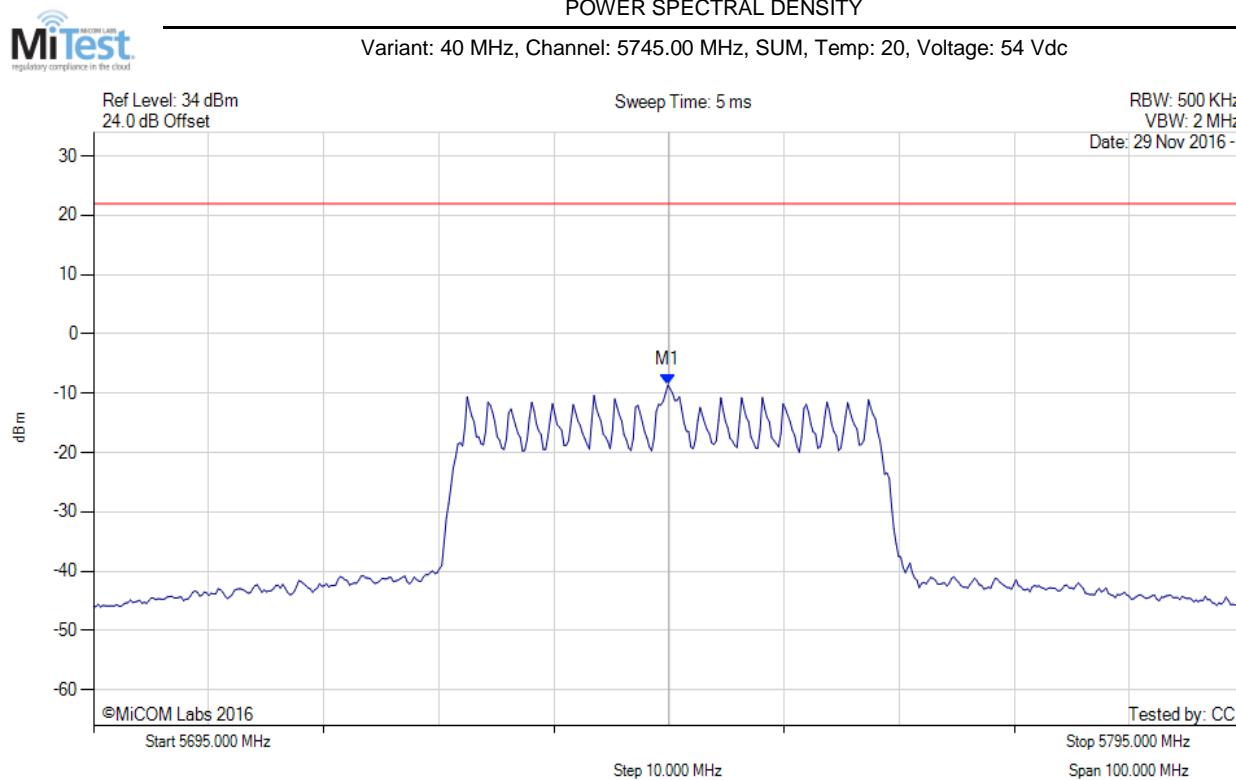
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5744.900 MHz : -8.594 dBm	Limit: ≤ 22.000 dBm

[back to matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

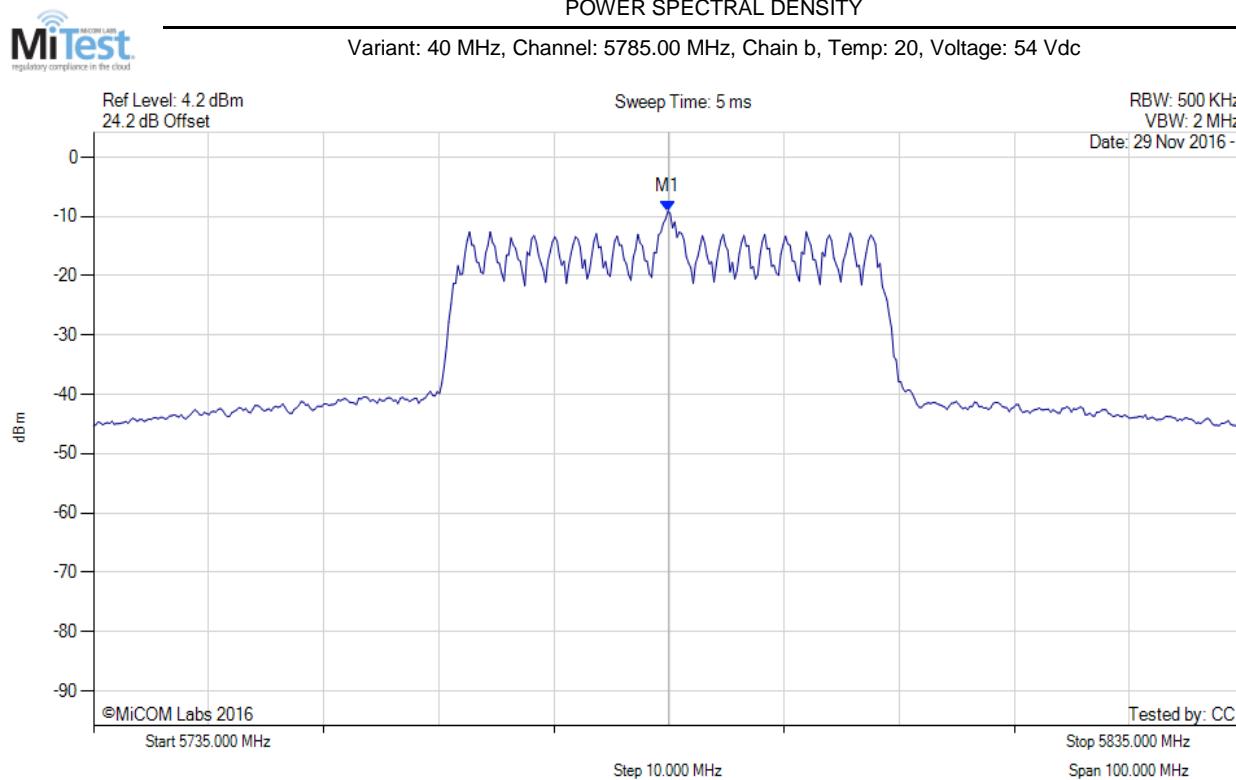


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5744.900 MHz : -8.594 dBm M1 + DCCF : 5744.900 MHz : -5.670 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 22.0 dBm Margin: -27.7 dB

[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5784.900 MHz : -9.125 dBm	Limit: ≤ 22.000 dBm

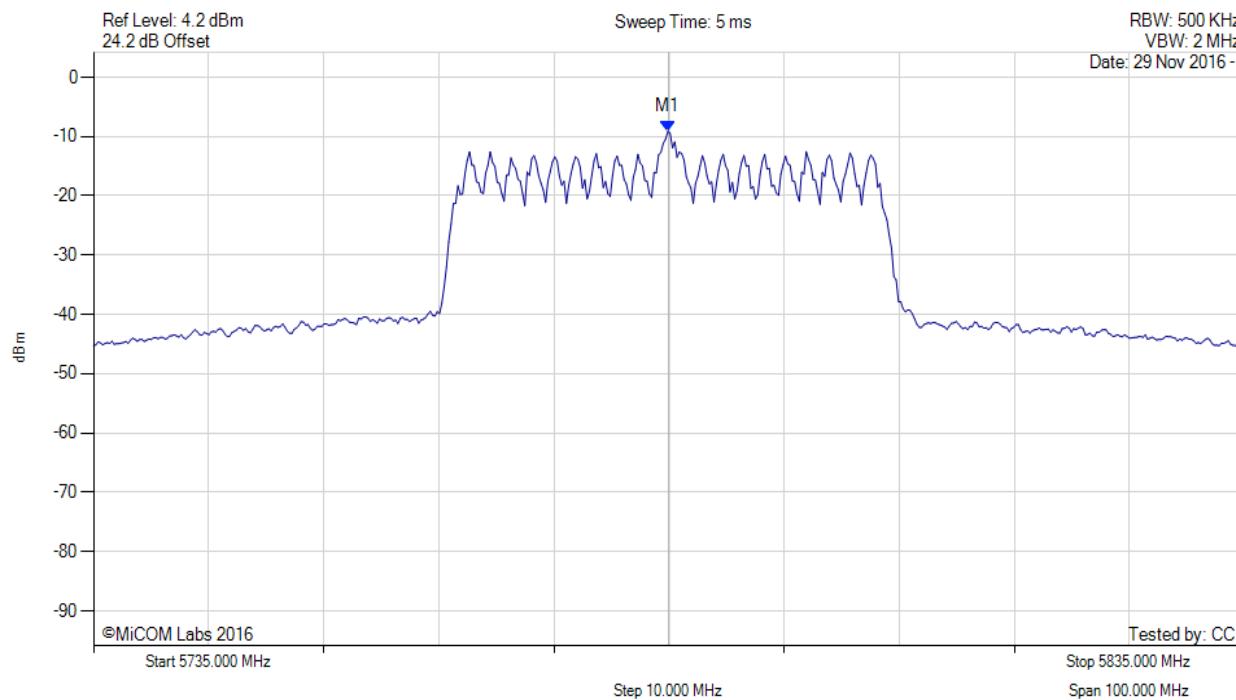
[back to matrix](#)

---

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

### POWER SPECTRAL DENSITY

Variant: 40 MHz, Channel: 5785.00 MHz, SUM, Temp: 20, Voltage: 54 Vdc

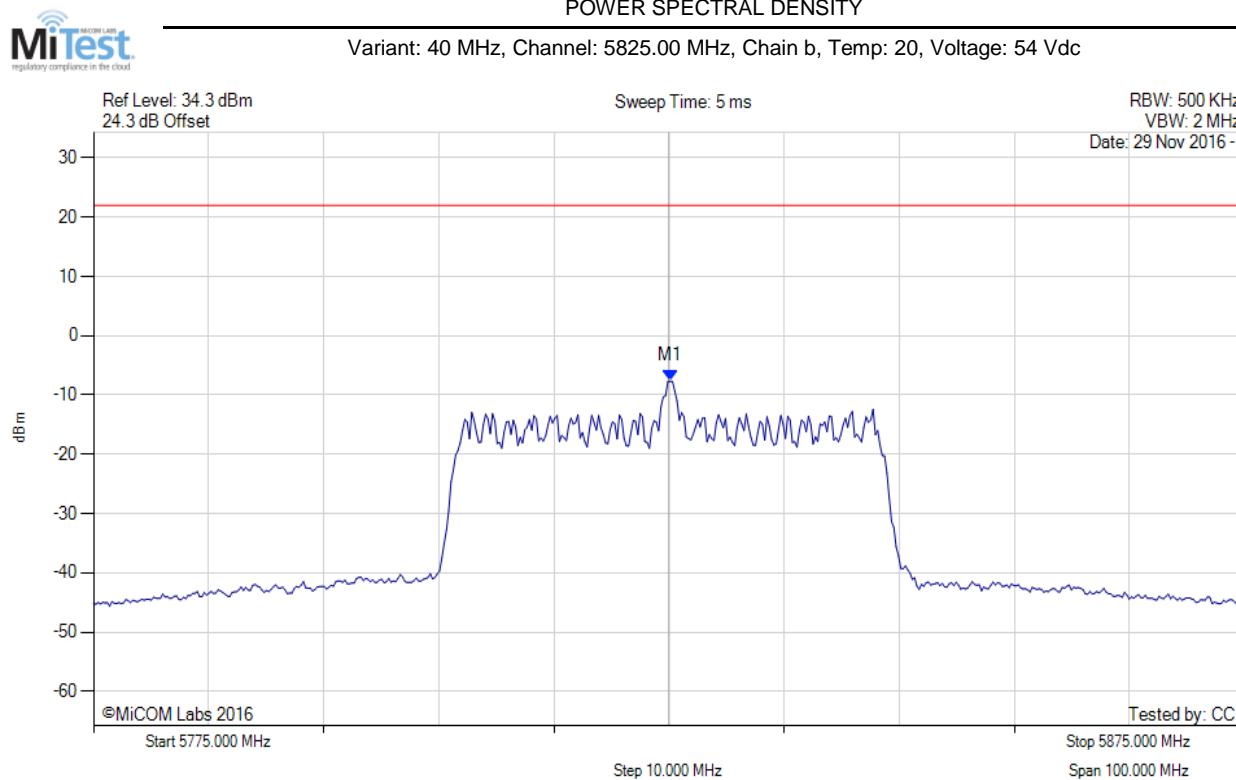


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5784.900 MHz : -9.125 dBm M1 + DCCF : 5784.900 MHz : -6.201 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 22.0 dBm Margin: -28.2 dB

[back to matrix](#)

---

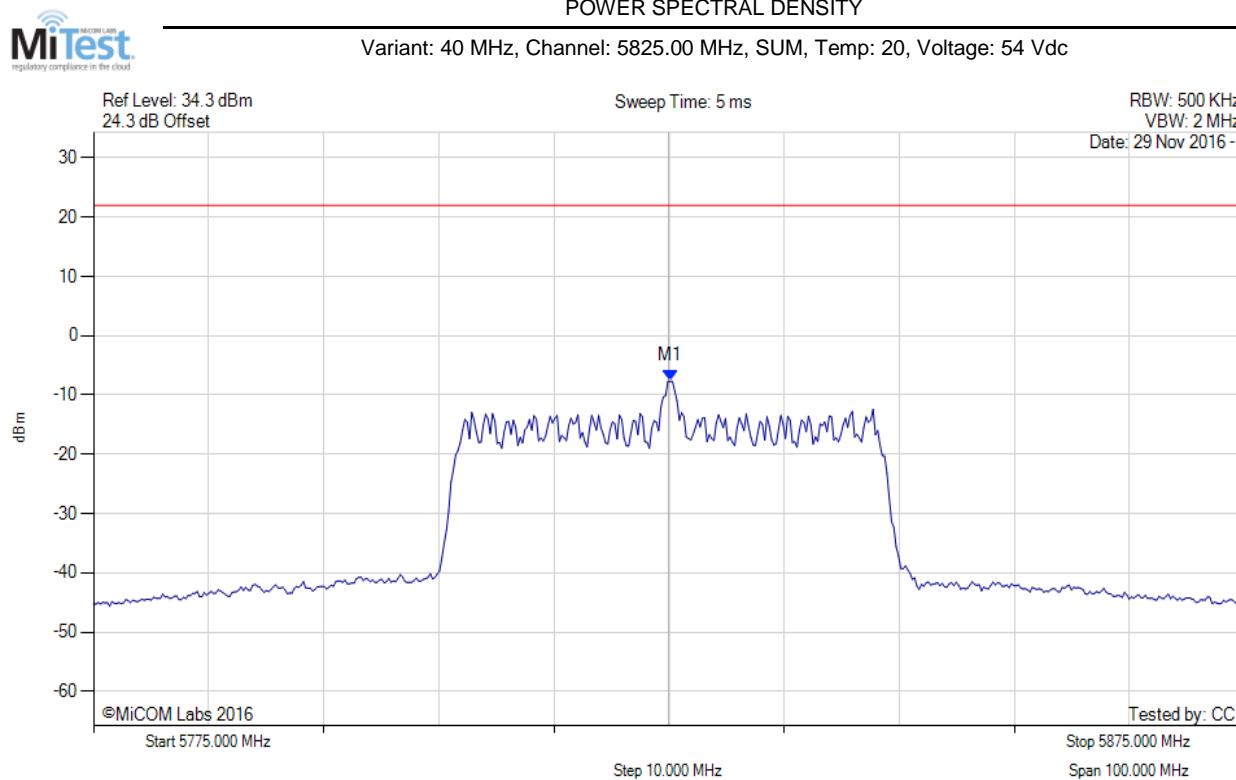
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5825.100 MHz : -7.653 dBm	Limit: ≤ 22.000 dBm

[back to matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5825.100 MHz : -7.653 dBm M1 + DCCF : 5825.100 MHz : -4.729 dBm Duty Cycle Correction Factor : +2.92 dB	Limit: ≤ 22.0 dBm Margin: -26.7 dB

[back to matrix](#)

This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



575 Boulder Court  
Pleasanton, California 94566, USA  
Tel: +1 (925) 462 0304  
Fax: +1 (925) 462 0306  
[www.micomlabs.com](http://www.micomlabs.com)