

Company: HP Inc

Test of: 0960-4025 and 0960-4034

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

Report No.: MARS11-U9 Rev B WiFi/BT Module

COMPLETE TEST REPORT



COMPLETE TEST REPORT



Test of: HP Inc 0960-4025 and 0960-4034

to

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

Test Report Serial No.: MARS11-U9 Rev B WiFi/BT Module

This report supersedes: MARS11-U9 Rev A

Applicant: HP Inc
1115 SE 164th Ave., Suite 210,
Vancouver,
Washington 98683,
USA

Product Function 802.11 a/b/g/n SDIO dual band
with BT/BLE

Issue Date: 27th October 2017

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



Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 3 of 298

Table of Contents

1. ACCREDITATION, LISTINGS & RECOGNITION.....	5
1.1. TESTING ACCREDITATION.....	5
1.2. RECOGNITION	6
1.3. PRODUCT CERTIFICATION	7
2. DOCUMENT HISTORY	8
3. TEST RESULT CERTIFICATE.....	9
4. REFERENCES AND MEASUREMENT UNCERTAINTY	10
4.1. Normative References	10
4.2. Test and Uncertainty Procedure	11
5. PRODUCT DETAILS AND TEST CONFIGURATIONS.....	12
5.1. Technical Details	12
5.2. Scope Of Test Program	13
5.3. Equipment Model(s) and Serial Number(s)	14
5.4. Antenna Details	14
5.5. Cabling and I/O Ports	15
5.6. Test Configurations.....	15
5.7. Equipment Modifications	15
5.8. Deviations from the Test Standard	15
6. TEST SUMMARY	16
7. TEST EQUIPMENT CONFIGURATION(S)	17
7.1. Conducted	17
7.2. Radiated Emissions - 3m Chamber.....	19
7.3. DFS - Conducted	22
8. MEASUREMENT AND PRESENTATION OF TEST DATA	24
9. TEST RESULTS	25
9.1. Peak Transmit Power	25
9.2. 26 dB & 99% Bandwidth	36
9.3. 6 dB & 99% Bandwidth	46
9.4. Power Spectral Density	50
9.5. Dynamic Frequency Selection (DFS)	64
9.5.1. Master Devices	65
9.5.2. Client Devices	66
9.5.3. DFS Detection Thresholds.....	66
9.1.4. Response Requirements	67
9.1.5. Radar Test Waveforms	68
9.1.5.1. Short Radar Pulses	68
9.1.5.2. Long Radar Pulse Test.....	69
9.1.5.3. Frequency Hopping Radar Test Waveform.....	71
9.1.6. Radar Waveform Calibration.....	71
9.5.7. Channel Close / Transmission Time	72
9.5.8. Non-Occupancy Period.....	74
9.6. Radiated	75
9.6.1. TX Spurious & Restricted Band Emissions.....	78
9.6.1.1. Integral.....	78
9.6.1.2. YAGEO ANTX300P002B24553	90
9.6.2. Restricted Edge & Band-Edge Emissions	102
9.6.2.3. Integral.....	102
9.6.2.4. YAGEO ANTX300P002B24553	119

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 4 of 298

9.6.3. Digital Emissions.....	136
A. APPENDIX - GRAPHICAL IMAGES	140
A.1. 26 dB & 99% Bandwidth	141
A.2. 6 dB & 99% Bandwidth	166
A.3. Power Spectral Density	174
A.4. Radiated	242
A.4.1. TX Spurious & Restricted Band Emissions	242
A.4.1.1. Integral	242
A.4.1.2. YAGEO ANT X300P002B24553	254
A.4.2. Restricted Edge & Band-Edge Emissions	266
A.4.2.3. Integral	266
A.4.2.4. YAGEO ANT X300P002B24553	281
A.4.3. Digital Emissions	296

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. ACCREDITATION, LISTINGS & RECOGNITION

1.1. TESTING ACCREDITATION

MiCOM Labs, Inc. is an accredited Electrical testing laboratory per the international standard ISO/IEC 17025:2005. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.01. MiCOM Labs test schedule is available at the following URL; <http://www.a2la.org/scopepdf/2381-01.pdf>



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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 6 of 298

1.2. RECOGNITION

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

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

EU MRA – European Union Mutual Recognition Agreement.

NB – Notified Body

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

Phase I - recognition for product testing

Phase II – recognition for both product testing and certification

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.

1.3. 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



Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 8 of 298

2. DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft	28th August 2017	Draft report for client review.
Draft 2	18th September 2017	5300 MHz, 5320 MHz, 5500 MHz, 5720 MHz and 5785 MHz Transmitter Spurious emissions data for Integral antenna updated as a result of complete retest of radiated emissions. No other changes required to the report as a result of retest.
Draft 3	9th October 2017	The following test results were updated in this report as a result of retest of the product;- 5500 MHz, 5580 MHz Transmitter Spurious emissions data for Integral antenna updated ; 5310 MHz HT40 Band Edge results for external antenna updated as a result of complete retest of radiated emissions; 5310 MHz HT40 conducted power and power spectral density results updated as a result of conducted power retest. No other changes required to the report as a result of retest.
Rev A	11 th October 2017	Initial release.
Rev B	27 th October 2017	Removed module photographs.
.		
.		

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

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 9 of 298

3. TEST RESULT CERTIFICATE

Manufacturer: HP Inc 1115 SE 164th Ave., Suite 210, Vancouver, Washington 98683, USA	Tested By: MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Model: HP Part # 0960-4025 and HP Part # 0960-4034	Telephone: +1 925 462 0304
Type Of Equipment: WLAN BT Radio module	Fax: +1 925 462 0306
S/N's: D80F99748D64, D80F99748D68	
Test Date(s): 7 - 26 July 2017, 14 September 2017, 5 th October 2017	Website: www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC CFR 47 Part 15 Subpart E 15.407 & RSS-247	EQUIPMENT COMPLIES

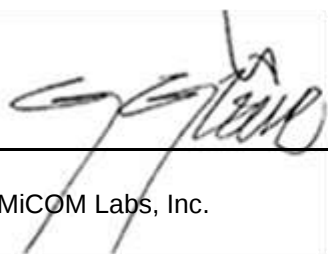
MiCOM Labs, Inc. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report.

Notes:

1. This document reports conditions under which testing was conducted and the results of testing performed.
2. Details of test methods used have been recorded and kept on file by the laboratory.
3. Test results apply only to the item(s) tested.

Approved & Released for MiCOM Labs, Inc. by:





Graeme Grieve
Quality Manager MiCOM Labs, Inc.



Gordon Hurst
President & CEO MiCOM Labs, Inc.

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.

4. REFERENCES AND MEASUREMENT UNCERTAINTY

4.1. Normative References

REF.	PUBLICATION	YEAR	TITLE
I	KDB 662911 D01 & D02	Oct 31 2013	Guidance for measurement of output emission of devices that employ single transmitter with multiple outputs or systems with multiple transmitters operating simultaneously in the same frequency band
II	KDB 905462 D07 v02	22nd August 2016	Test guidance to demonstrate compliance for U-NII devices subject to DFS requirements.
III	KDB 926956 D01 v02	22nd August 2016	U-NII Device Transition Plan
IV	KDB 789033 D02 v01r04	2nd May 2017	Guidelines for compliance testing of Unlicensed National Information Infrastructure (U-NII) Devices (Part 15, Subpart E)
V	A2LA	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 32	2012	Electromagnetic compatibility of multimedia equipment - Emission requirements
IX	ETSI TR 100 028	2001-12	Parts 1 and 2 Electromagnetic compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics
X	FCC 06-96	Jun 30 2006	Memorandum Opinion and Order
XI	FCC 47 CFR Part 15.407	2016	Radio Frequency Devices; Subpart E –Unlicensed National Information Infrastructure Devices
XII	ICES-003	Issue 6 Jan 2016	Spectrum Management and Telecommunications; Interference-Causing Equipment Standard. Information Technology Equipment (Including Digital Apparatus) – Limits and methods of measurement.
XIII	M 3003	Edition 3 Nov.2012	Expression of Uncertainty and Confidence in Measurements
XIV	RSS-247 Issue 2	Feb 2017	Digital Transmission Systems (DTSSs), Frequency Hopping System (FHSs) and Licence-Exempt Local Area Network (LE-LEN) Devices
XV	RSS-Gen Issue 4	November 2014	General Requirements and Information for the Certification of Radiocommunication Equipment
XVI	KDB 644545 D03 v01	14th August 2014	Guidance for IEEE 802.11ac New Rules
XVII	FCC 47 CFR Part 2.1033	2016	FCC requirements and rules regarding photographs and test setup diagrams.
XVIII	KDB 905462 D02 v02	April 8 2016	Compliance Measurement Procedures for Unlicensed National Information Infrastructure devices operating in the 5250 to 5350 MHz and 5470 to 5725 MHz bands incorporating Dynamic Frequency Selection.

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.

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.



Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 12 of 298

5. PRODUCT DETAILS AND TEST CONFIGURATIONS

5.1. Technical Details

Details	Description
Purpose:	Test of the HP Inc 0960-4025 and 0960-4034 to FCC CFR 47 Part 15 Subpart E 15.407 and RSS-247.
Applicant:	HP Inc 1115 SE 164th Ave., Suite 210, Vancouver, Washington 98683, USA
Manufacturer:	HP Inc
Laboratory performing the tests:	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Test report reference number:	MARS11-U9 Rev B WiFi/BT Module
Date EUT received:	12 th June 2017
Standard(s) applied:	FCC CFR 47 Part 15 Subpart E 15.407
Dates of test (from - to):	7 - 25 July 2017, 14 September 2017
No of Units Tested:	2
Product Family Name:	VCVRA-1712
Model(s):	Model: HP Inc.'s VCVRA-1712 Part numbers: 0960-4025 and 0960-4034
Location for use:	Indoors
Declared Frequency Range(s):	5150 - 5250 MHz; 5250 - 5350 MHz; 5470 - 5725 MHz; 5725 - 5850 MHz;
Type of Modulation:	OFDM
EUT Modes of Operation:	802.11a; 802.11n; HT-20; HT-40
Declared Nominal Output Power:	+15dBm
Transmit/Receive Operation:	Transceiver - Full Duplex
Rated Input Voltage and Current:	3.3V+/-10%, 1A
Operating Temperature Range:	Declared Range 0°C to 70°C
ITU Emission Designator:	802.11a: 28M9D1D 802.11n - HT20: 33M0D1D 802.11n - HT40: 64M4D1D
Equipment Dimensions:	37mm x 40mm
Weight:	0.3 oz
Hardware Rev:	V4
Software Rev:	P130

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 13 of 298

5.2. Scope Of Test Program

HP Inc 0960-4025 and 0960-4034

The scope of the test program was to test the HP Inc 0960-4025 and 0960-4034 in the frequency ranges 5150 - 5250 MHz; 5250 - 5350 MHz; 5470 - 5725 MHz; 5725 - 5850 MHz; for compliance against the following specifications:

FCC CFR 47 Part 15 Subpart E 15.407

Compliance Measurement Procedures for Unlicensed National Information Infrastructure devices operating in the 5150 - 5250 MHz; 5725 - 5850 MHz bands and 5250 to 5350 MHz and 5470 to 5725 MHz bands incorporating Dynamic Frequency Selection.

Industry Canada RSS-247

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

The product is available as 2 model variants;-

0960-4025 has U.FL connectors to enable connection to external antennas.

0960-4034 has integral antennas only.

PCB Manufacturing Variation

Testing commenced on Rev 3.1 of the wireless device using VCVRA-1712 pcb's.

For manufacturability, HP agreed to remove an extra set of holes on the digital interface connector. This is designated as the Rev 4 design.

Differences: All traces and pads remained however holes are not drilled on the two extra connections, and thus the connector cannot be loaded into the wrong location.

Verification: The differences between Revision 3.1 and Revision 4 of the VCVRA-1712 radio were reviewed, tested and judged to have no significant effect on device compliance.



Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 14 of 298

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

Type	Description	Manufacturer	Model	Serial no.	Delivery Date
EUT	802.11 a/b/g/n SDIO dual band 2.4G/5GHz WLAN with BT/BLE	HP Inc	Model: HP Inc.'s VCVRA-1712 Part numbers: 0960-4025 and 0960-4034	D8:0F:99:74:8D:68 D8:0F:99:74:8D:64	12 th June 2017
Support	Latitude Laptop, Linux	Dell	E6410	654C3Q1	12 th June 2017
Support	STYX SD Adapter Board	HP Inc	AB_W8977_STYX_ADAPTER_V1	-	12 th June 2017

The product is available as 2 model variants;-

0960-4025 has U.FL connectors to enable connection to external antennas.

0960-4034 has integral antennas only.

5.4. Antenna Details

Type	Manufacturer	Model	Family	Gain (dBi)	BF Gain	Dir BW	X-Pol	Frequency Band (MHz)
integral	HP	integral	5	3.8	-	360	-	5150 - 5250
integral	HP	integral	5	3.8	-	360	-	5250 - 5350
integral	HP	integral	5	3.8	-	360	-	5470 - 5725
integral	HP	integral	5	3.8	-	360	-	5725 - 5850
external	YAGEO	ANTX300P002B24553	5	2.3	-	360	-	5150 - 5250
external	YAGEO	ANTX300P002B24553	5	1.9	-	360	-	5250 - 5350
external	YAGEO	ANTX300P002B24553	5	1.0	-	360	-	5470 - 5725
external	YAGEO	ANTX300P002B24553	5	0.5	-	360	-	5725 - 5850

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

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 15 of 298

5.5. Cabling and I/O Ports

Port Type	Max Cable Length	# of Ports	Screened	Conn Type	Data Type	Bit Rate
24	5	1	--	SD	Data	10/100

5.6. Test Configurations

Results for the following configurations are provided in this report:

Operational Mode(s) (802.11a/b/g/n/ac)	Data Rate with Highest Power MBit/s	Channel Frequency (MHz)		
		Low	Mid	High
5150 - 5250 MHz				
a	6	5,180.00	5,200.00	5,240.00
HT-20	6.5	5,180.00	5,200.00	5,240.00
HT-40	13.5	5,190.00	--	5,230.00
5250 - 5350 MHz				
a	6	5,260.00	5,300.00	5,320.00
HT-20	6.5	5,260.00	5,300.00	5,320.00
HT-40	13.5	5,270.00	--	5,310.00
5470 - 5725 MHz				
a	6	5,500.00	5,580.00	5,720.00
HT-20	6.5	5,500.00	5,580.00	5,720.00
HT-40	13.5	5,510.00	5,550.00	5,710.00
5725 - 5850 MHz				
a	6	5,745.00	5,785.00	5,825.00
HT-20	6.5	5,745.00	5,785.00	5,825.00
HT-40	13.5	5,755.00	--	5,795.00

5.7. Equipment Modifications

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

1. NONE

5.8. Deviations from the Test Standard

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

1. NONE

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 16 of 298

6. TEST SUMMARY

List of Measurements

Test Header	Result	Data Link
Peak Transmit Power	Complies	View Data
26 dB & 99% Bandwidth	Complies	View Data
6 dB & 99% Bandwidth	Complies	View Data
Power Spectral Density	Complies	View Data
Dynamic Frequency Selection (DFS)	Complies	-
Channel Close / Transmission Time	Complies	View Data
Non-Occupancy Period	Complies	View Data
Radiated	Complies	-
TX Spurious & Restricted Band Emissions	Complies	-
Integral	Complies	View Data
YAGEO ANT X300P002B24553	Complies	View Data
Restricted Edge & Band-Edge Emissions	Complies	-
Integral	Complies	View Data
YAGEO ANT X300P002B24553	Complies	View Data
Digital Emissions	Complies	View Data
AC Wireline	Not Applicable	See Note 1

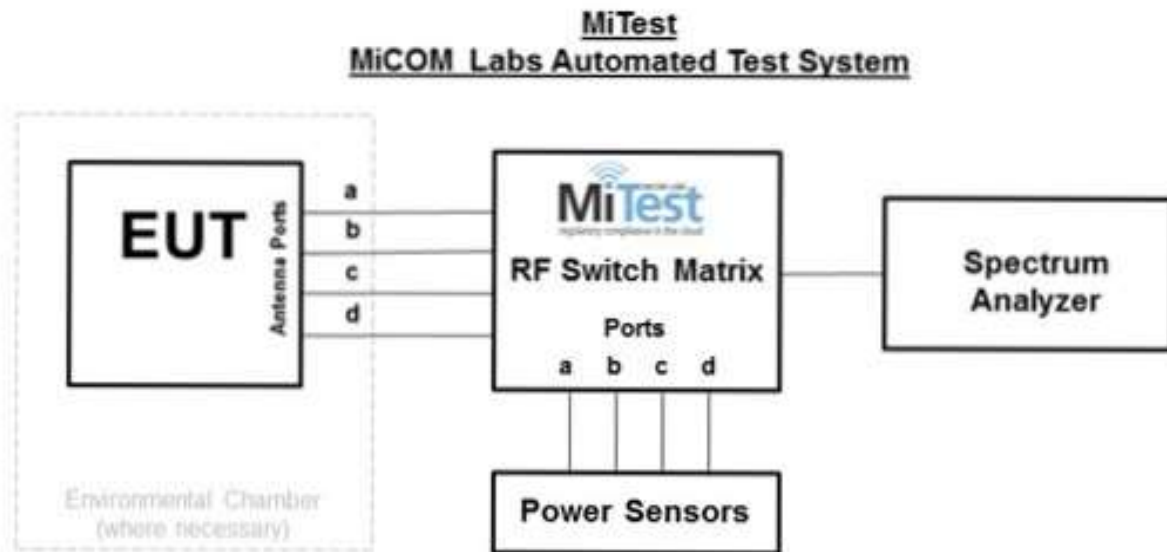
Note 1: EUT is powered by DC

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.

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.



Conducted Test Measurement Setup

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

Asset#	Description	Manufacturer	Model#	Serial#	Calibration Due Date
127	Power Supply	HP	6674A	US36370530	Cal when used
158	Barometer/Thermometer	Control Company	4196	E2846	30 Nov 2017
248	Resistance Thermometer	Thermotronics	GR2105-02	9340 #1	21 Oct 2017
287	Rohde & Schwarz 40 GHz Receiver	Rhode & Schwarz	ESIB40	100201	2 May 2018
376	USB 10MHz - 18GHz Average Power Sensor	Agilent	U2000A	MY51440005	23 Oct 2017
378	Rohde & Schwarz 40 GHz Receiver with Generator	Rhode & Schwarz	ESIB40	100107/040	4 Nov 2017
381	4x4 RF Switch Box	MiCOM Labs	MiTest RF	MIC002	2 Oct 2017

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.



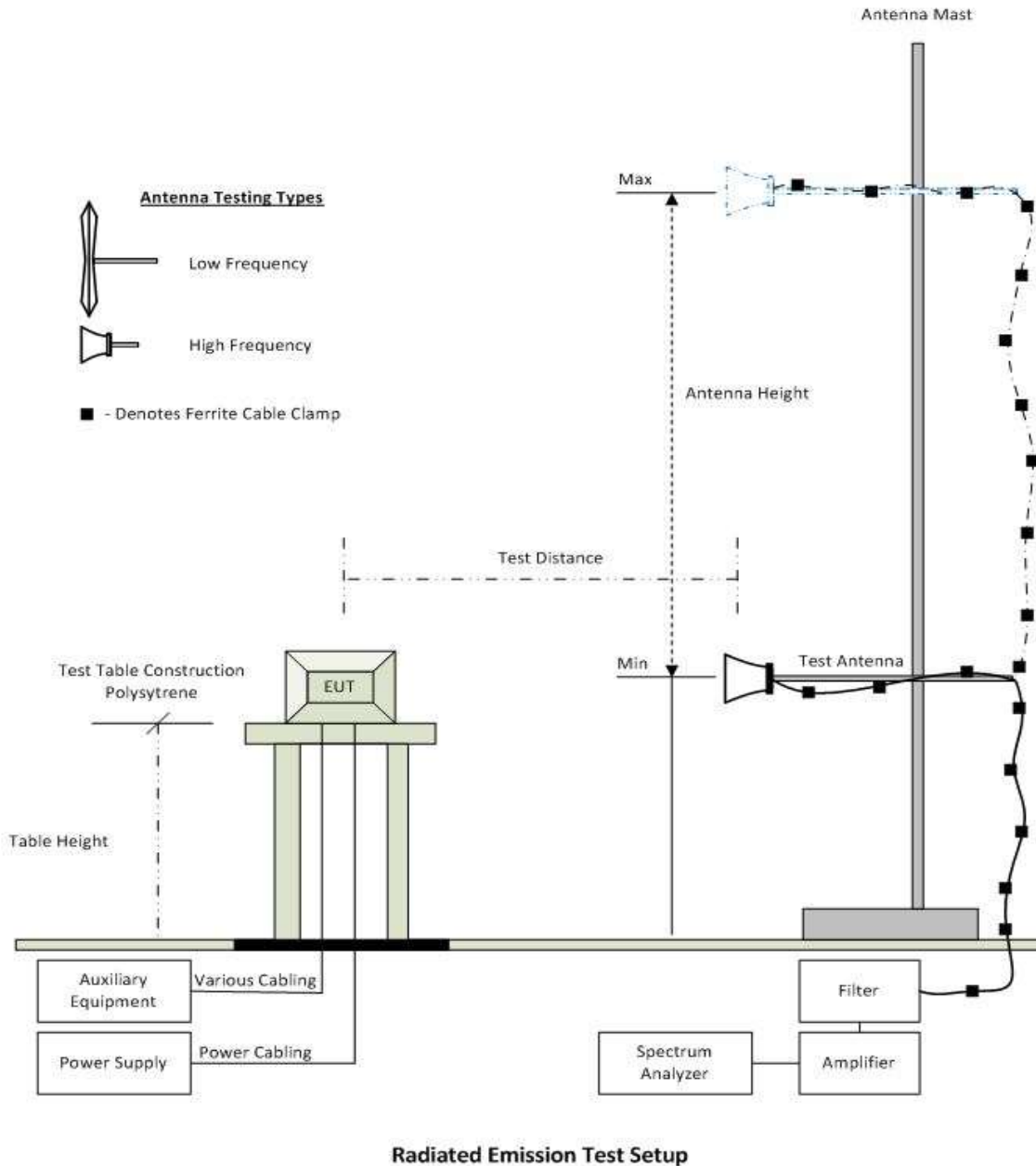
Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 18 of 298

			Switch Box		
398	MiTest RF Conducted Test Software	MiCOM	MiTest ATS	Version 4.1	Not Required
419	Laptop with Labview Software	Lenova	W520	TS02	Not Required
420	USB to GPIB Interface	National Instruments	GPIB-USB HS	1346738	Not Required
440	USB Wideband Power Sensor	Boonton	55006	9178	25 Sep 2017
442	USB Wideband Power Sensor	Boonton	55006	9181	6 Oct 2017
445	PoE Injector	D-Link	DPE-101GL	QTAH1E2000625	Not Required
460	Dell Computer with installation of MiTest executable.	Dell	Optiplex330	BC944G1	Not Required
461	Spectrum Analyzer	Agilent	E4440A	MY46185537	13 Nov 2017
493	USB Wideband Power Sensor	Boonton	55006	9634	10 Mar 2018
494	USB Wideband Power Sensor	Boonton	55006	9726	10 Mar 2018
74	Environmental Chamber Chamber 3	Tenney	TTC	12808-1	29 Sep 2017
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	2 Oct 2017
RF#2 SMA#2	EUT to Mitest box port 2	Flexco	SMA Cable port2	None	2 Oct 2017
RF#2 SMA#3	EUT to Mitest box port 3	Flexco	SMA Cable port3	None	2 Oct 2017
RF#2 SMA#4	EUT to Mitest box port 4	Flexco	SMA Cable port4	None	2 Oct 2017
RF#2 SMA#SA	Mitest box to SA	Flexco	SMA Cable SA	None	2 Oct 2017
RF#2 USB#1	USB Cable to Mitest Box	Dynex	USB Cable	None	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.

7.2. Radiated Emissions - 3m Chamber

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



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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 20 of 298

Asset#	Description	Manufacturer	Model#	Serial#	Calibration Due Date
158	Barometer/Thermometer	Control Company	4196	E2846	30 Nov 2017
170	Video System Controller for Semi Anechoic Chamber	Panasonic	WV-CU101	04R08507	Not Required
287	Rohde & Schwarz 40 GHz Receiver	Rhode & Schwarz	ESIB40	100201	2 May 2018
301	5470 to 5725 MHz Notch Filter	Microtronics	RBC50704	001	30 Oct 2017
302	5150 to 5350 MHz Notch Filter	Microtronics	BRC50703	002	30 Oct 2017
303	5725 to 5875 MHz Notch filter	Microtronics	BRC50705	003	30 Oct 2017
330	Variac 0-280 Vac	Staco Energy Co	3PN1020B	0546	Cal when used
338	Sunol 30 to 3000 MHz Antenna	Sunol	JB3	A052907	30 Oct 2017
341	900MHz Notch Filter	EWT	EWT-14-0199	H1	30 Oct 2017
342	2.4 GHz Notch Filter	EWT	EWT-14-0203	H1	30 Oct 2017
343	5.15 GHz Notch Filter	EWT	EWT-14-0200	H1	30 Oct 2017
344	5.35 GHz Notch Filter	EWT	EWT-14-0201	H1	30 Oct 2017
345	5.46 GHz Notch Filter	EWT	EWT-14-0202	H1	30 Oct 2017
373	26III RMS Multimeter	Fluke	Fluke 26 series III	76080720	26 Oct 2017
378	Rohde & Schwarz 40 GHz Receiver with Generator	Rhode & Schwarz	ESIB40	100107/040	4 Nov 2017
393	DC - 1050 MHz Low Pass Filter	Microcircuits	VLFX-1050	N/A	30 Oct 2017
396	2.4 GHz Notch Filter	Microtronics	BRM50701	001	30 Oct 2017
397	Amp 10 - 2500MHz	MiCOM Labs	Amp 10 - 2500 MHz	NA	9 Oct 2017
399	ETS 1-18 GHz Horn Antenna	ETS	3117	00154575	10 Oct 2017
406	Amplifier for Radiated Emissions	MiCOM Labs	40dB 1 to 18GHz Amp	0406	9 Oct 2017
410	Desktop Computer	Dell	Inspiron 620	WS38	Not Required
411	Mast/Turntable Controller	Sunol Sciences	SC98V	060199-1D	Not Required
412	USB to GPIB Interface	National Instruments	GPIB-USB HS	11B8DC2	Not Required
413	Mast Controller	Sunol Science	TWR95-4	030801-3	Not Required
414	DC Power Supply 0-60V	HP	6274	1029A01285	Cal when used
415	Turntable Controller	Sunol Sciences	Turntable Controller	None	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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 21 of 298

416	Gigabit ethernet filter	ETS-Lingren	Gigafoil 260366	None	Not Required
447	MiTest Rad Emissions Test Software	MiCOM	Rad Emissions Test Software Version 1.0	447	Not Required
462	Schwarzbeck cable from Antenna to Amplifier.	Schwarzbeck	AK 9513	462	30 Oct 2017
463	Schwarzbeck cable from Amplifier to Bulkhead.	Schwarzbeck	AK 9513	463	30 Oct 2017
464	Schwarzbeck cable from Bulkhead to Receiver	Schwarzbeck	AK 9513	464	30 Oct 2017
480	Cable - Bulkhead to Amp	SRC Haverhill	157-3050360	480	30 Oct 2017
481	Cable - Bulkhead to Receiver	SRC Haverhill	151-3050787	481	30 Oct 2017
482	Cable - Amp to Antenna	SRC Haverhill	157-3051574	482	30 Oct 2017
87	Uninterruptible Power Supply	Falcon Electric	ED2000-1/2LC	F3471 02/01	Cal when used
VLF-1700	Low pass filter DC-1700 MHz	Mini Circuits	VLF-1700	None	30 Oct 2017

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 22 of 298

7.3. DFS - Conducted

EUT Type: Client without radar detection

Frequency band(s): 5,250 - 5,350 MHz and 5,470 – 5,725 MHz

Uniform Loading: For the above frequency band(s) the manufacturer declared that the device provides an aggregate uniform loading of the spectrum across all devices by selecting an operating channel among the available channels using a random algorithm.

Test Environment: Conducted

Antenna Gain used for Testing: 3.8 dBi

802.11a: Transmit Power: 18 dBm Data Rate: 6 Mbit/s Duty Cycle: 17%

802.11n HT-40: Transmit Power: 18 dBm Data Rate: 18 Mbit/s Duty Cycle: 17%

Number of Antenna Chains: 1

Test Communication Throughput Methodology

The requisite MPEG video file ("TestFile.mpg" available on the NTIA website at the following link <http://ntiacsd.ntia.doc.gov/dfs/>) is used during this video stream.

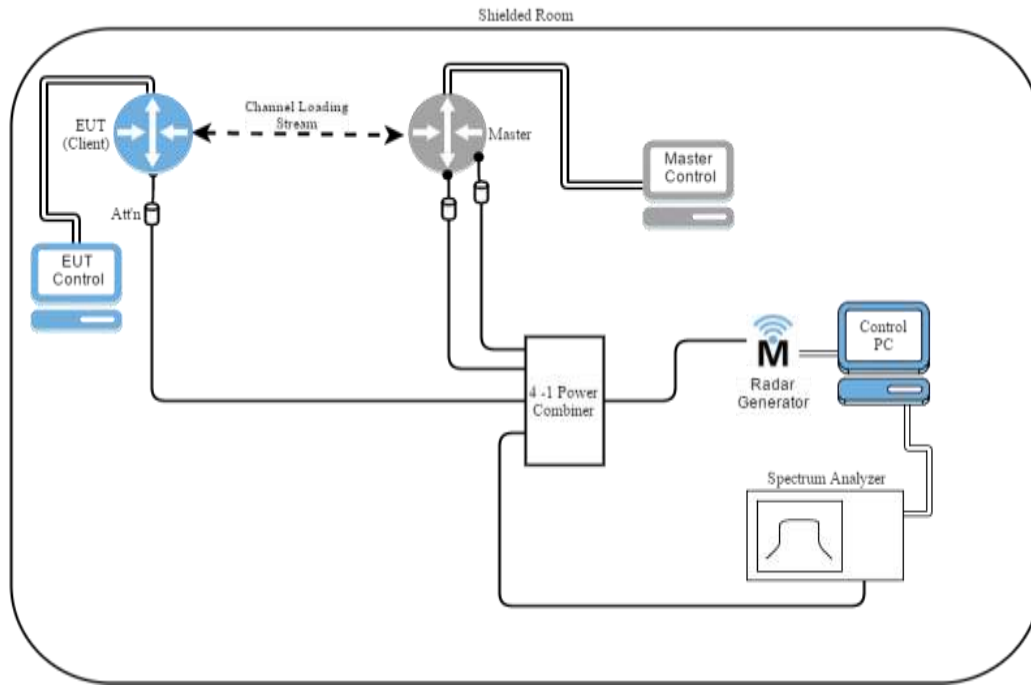
EUT Software Version: SD8977-16.68.1.p130-C3X16C248-GPL-(FP68)

Test Environmental Conditions - Ambient:

Temperature: 17 to 23 °C

Relative humidity: 31 to 57%

Pressure: 999 to 1012 mbar



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

Asset#	Description	Manufacturer	Model#	Serial#	Calibration Due Date
158	Barometer/Thermometer	Control Company	4196	E2846	30 Nov 2017
299	Test Software DFS Test System	Aeroflex	DFS test Software	V2.7.0	Not Required
359	DFS System	Aeroflex	PXI-1042	300001/004	10 Jan 2018
417	Laptop for DFS with DFS software	Lenova	W520	DFS	Not Required
418	PCI-e interface card	National Instruments	Express 8360	174AAC5	Not Required
422	Splitter/Combiner	Pasternack	PE 2031	001	Cal when used
495	RF Power Divider	Micon Precise Corp	91002	495	Cal when used
71	Spectrum Analyzer 9KHz-50GHz	HP	8565E	3425A00181	6 Aug 2018
DFS PCIe#1	PCIe cable for Aeroflex	National Instruments	PCIe cable	None	Not Required
DFS SMA#1	SMA Cable for DFS	Megaphase	SMA Cable	None	Cal when used
DFS SMA#2	SMA Cable for DFS	Megaphase	SMA Cable	None	Cal when used
DFS SMA#3	SMA Cable for DFS	Megaphase	SMA Cable	None	Cal when used

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.

8. MEASUREMENT AND PRESENTATION OF TEST DATA

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

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

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



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

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.



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 [$10 \cdot \log_{10} (10^{a/10} + 10^{b/10} + 10^{c/10} + 10^{d/10})$]

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.



Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 26 of 298

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

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.



Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 27 of 298

Equipment Configuration for Peak Transmit Power

Variant:	802.11a	Duty Cycle (%):	99.0
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	2.30
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5180.0	14.60				14.60	--	24.0	-9.4	
5200.0	15.90				15.90	--	24.0	-8.1	
5240.0	14.50				14.50	--	24.0	-9.5	

Traceability to Industry Recognized Test Methodologies

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

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-20	Duty Cycle (%):	99.0
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	2.30
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5180.0	14.56				14.56	--	24.0	-9.44	
5200.0	16.58				16.58	--	24.0	-7.42	
5240.0	14.16				14.16	--	24.0	-9.84	

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 28 of 298

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-40	Duty Cycle (%):	84.0
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	2.30
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5190.0	11.29				11.29	--	24.0	-12.71	
5230.0	14.83				14.83	--	24.0	-9.17	

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 29 of 298

Equipment Configuration for Peak Transmit Power

Variant:	802.11a	Duty Cycle (%):	99.0
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	1.90
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5260.0	16.23				16.23	43.788	24.00	-7.77	
5300.0	16.01				16.01	44.790	24.00	-7.99	
5320.0	14.80				14.80	43.788	24.00	-9.20	

Traceability to Industry Recognized Test Methodologies

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

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-20	Duty Cycle (%):	99.0
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	1.90
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5260.0	16.13				16.13	43.888	24.00	-7.87	
5300.0	15.93				15.93	44.589	24.00	-8.07	
5320.0	13.05				13.05	43.487	24.00	-10.95	

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 30 of 298

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-40	Duty Cycle (%):	84.0
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	1.90
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5270.0	15.19				15.19	97.655	24.00	-8.81	
5310.0	11.57				11.57	98.317	24.00	-12.43	

Traceability to Industry Recognized Test Methodologies

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

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 31 of 298

Equipment Configuration for Peak Transmit Power

Variant:	802.11a	Duty Cycle (%):	99.0
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	1.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5500.0	14.51				14.51	43.186	24.00	-9.49	
5580.0	15.41				15.41	44.389	24.00	-8.59	
5720.0	15.55				15.55	44.188	24.00	-8.45	

Traceability to Industry Recognized Test Methodologies

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

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-20	Duty Cycle (%):	99.0
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	1.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5500.0	14.45				14.45	43.687	24.00	-9.55	
5580.0	17.28				17.28	44.489	24.00	-6.72	
5720.0	17.66				17.66	44.188	24.00	-6.34	

Traceability to Industry Recognized Test Methodologies

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

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 32 of 298

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-40	Duty Cycle (%):	84.0
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	1.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5510.0	11.69				11.69	44.820	24.00	-12.31	14.00
5550.0	17.28				17.28	44.820	24.00	-6.72	22.00
5710.0	16.95				16.95	39.840	24.00	-7.05	22.00

Traceability to Industry Recognized Test Methodologies

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

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 33 of 298

Equipment Configuration for Peak Transmit Power

Variant:	802.11a	Duty Cycle (%):	99.0
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	0.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5745.0	17.48				17.48	--	30.00	-12.52	
5785.0	17.45				17.45	--	30.00	-12.55	
5825.0	17.48				17.48	--	30.00	-12.52	

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 34 of 298

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-20	Duty Cycle (%):	99.0
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	0.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5745.0	16.44				16.44	--	30.00	-13.56	
5785.0	17.41				17.41	--	30.00	-12.59	
5825.0	17.55				17.55	--	30.00	-12.45	

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 35 of 298

Equipment Configuration for Peak Transmit Power

Variant:	802.11n HT-40	Duty Cycle (%):	84.0
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	0.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Conducted Output Power (dBm)				Calculated Total Power	Minimum 26 dB Bandwidth	Limit	Margin	EUT Power Setting
	Port(s)								
MHz	a	b	c	d	Σ Port(s) dBm	MHz	dBm	dB	
5755.0	16.57				16.57	--	30.00	-13.43	
5795.0	16.73				16.73	--	30.00	-13.27	

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 36 of 298

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.			

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 37 of 298

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11a	Duty Cycle (%):	99.0
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	2.30
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5180.0	47.295				47.295	47.295		
5200.0	43.988				43.988	43.988		
5240.0	47.194				47.194	47.194		
Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5180.0	33.567				33.567	33.567		
5200.0	28.858				28.858	28.858		
5240.0	33.267				33.267	33.267		

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 38 of 298

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11n HT-20	Duty Cycle (%):	99.0
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	2.30
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5180.0	48.196				48.196	48.196		
5200.0	48.196				48.196	48.196		
5240.0	46.493				46.493	46.493		
Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5180.0	33.467				33.467	33.467		
5200.0	32.966				32.966	32.966		
5240.0	33.367				33.367	33.367		

Traceability to Industry Recognized Test Methodologies

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

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

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 39 of 298

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11n HT-40	Duty Cycle (%):	84.0
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	2.30
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5190.0	98.317				98.317	98.317		
5230.0	96.994				96.994	96.994		
Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5190.0	64.369				64.369	64.369		
5230.0	65.251				65.251	65.251		

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 40 of 298

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11a	Duty Cycle (%):	99.0
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	1.90
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5260.0	43.788				43.788	43.788		
5300.0	44.790				44.790	44.790		
5320.0	43.788				43.788	43.788		
Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5260.0	28.657				28.657	28.657		
5300.0	30.060				30.060	30.060		
5320.0	29.359				29.359	29.359		

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 41 of 298

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11n HT-20	Duty Cycle (%):	99.0
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	1.90
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5260.0	43.888				43.888	43.888		
5300.0	44.589				44.589	44.589		
5320.0	43.487				43.487	43.487		
Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5260.0	28.557				28.557	28.557		
5300.0	29.960				29.960	29.960		
5320.0	29.359				29.359	29.359		

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 42 of 298

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11n HT-40	Duty Cycle (%):	84.0
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	1.90
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5270.0	97.655				97.655	97.655		
5310.0	98.317				98.317	98.317		
Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5270.0	62.605				62.605	62.605		
5310.0	65.912				65.912	65.912		

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 43 of 298

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11a	Duty Cycle (%):	99.0
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	1.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5500.0	43.186				43.186	43.186		
5580.0	44.389				44.389	44.389		
5720.0	44.188				44.188	44.188		
Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5500.0	27.856				27.856	27.856		
5580.0	29.359				29.359	29.359		
5720.0	28.457				28.457	28.457		

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 44 of 298

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11n HT-20	Duty Cycle (%):	99.0
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	1.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5500.0	43.687				43.687	43.687		
5580.0	44.489				44.489	44.489		
5720.0	44.188				44.188	44.188		
Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5500.0	27.655				27.655	27.655		
5580.0	29.158				29.158	29.158		
5720.0	28.457				28.457	28.457		

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 45 of 298

Equipment Configuration for 26 dB & 99% Occupied Bandwidth

Variant:	802.11n HT-40	Duty Cycle (%):	84.0
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	1.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz)				26 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5510.0	44.820				44.820	44.820		
5550.0	44.820				44.820	44.820		
5710.0	39.840				39.840	39.840		
Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5510.0	56.453				56.453	56.453		
5550.0	58.257				58.257	58.257		
5710.0	55.631				55.631	55.631		

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 46 of 298

9.3. 6 dB & 99% Bandwidth

Conducted Test Conditions for 6 dB and 99% Bandwidth			
Standard:	FCC CFR 47:15.407	Ambient Temp. (°C):	24.0 - 27.5
Test Heading:	6 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 6 dB and 99% Bandwidth Measurement 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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 47 of 298

Equipment Configuration for 6 dB & 99% Bandwidth

Variant:	802.11a	Duty Cycle (%):	99.0
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	0.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz)				6 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5745.0	16.353				16.353	16.353		
5785.0	16.353				16.353	16.353		
5825.0	16.353				16.353	16.353		
Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5745.0	24.609				24.609	24.609		
5785.0	23.968				23.968	23.968		
5825.0	23.727				23.727	23.727		

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 48 of 298

Equipment Configuration for 6 dB & 99% Bandwidth

Variant:	802.11n HT-20	Duty Cycle (%):	99.0
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	0.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz)				6 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5745.0	16.353				16.353	16.353		
5785.0	16.353				16.353	16.353		
5825.0	16.353				16.353	16.353		
Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5745.0	24.689				24.689	24.689		
5785.0	23.888				23.888	23.888		
5825.0	23.647				23.647	23.647		

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 49 of 298

Equipment Configuration for 6 dB & 99% Bandwidth

Variant:	802.11n HT-40	Duty Cycle (%):	84.0
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	0.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz)				6 dB Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5755.0	36.393				36.393	36.393		
5795.0	36.072				36.072	36.072		
Test Frequency	Measured 99% Bandwidth (MHz)				99% Bandwidth (MHz)			
	Port(s)							
MHz	a	b	c	d	Highest	Lowest		
5755.0	52.265				52.265	52.265		
5795.0	47.615				47.615	47.615		

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.



9.4. Power Spectral Density

Conducted Test Conditions for Power Spectral Density			
Standard:	FCC CFR 47:15.407	Ambient Temp. (°C):	24.0 - 27.5
Test Heading:	Power Spectral Density	Rel. Humidity (%):	32 - 45
Standard Section(s):	15.407 (a)	Pressure (mBars):	999 - 1001
Reference Document(s):	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 (Σ) 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 = $A + 10 \log (1/x) \text{ dBm}$

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

$x = \text{Duty Cycle}$

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.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the



Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 51 of 298

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 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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 52 of 298

Equipment Configuration for Power Spectral Density

Variant:	802.11a	Duty Cycle (%):	99.0
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	2.30
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.04 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5180.0	4.066				4.110	11.0	-6.9
5200.0	3.925				3.969	11.0	-7.0
5240.0	3.112				3.156	11.0	-7.8

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 53 of 298

Equipment Configuration for Power Spectral Density

Variant:	802.11n HT-20	Duty Cycle (%):	99.0
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	2.30
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.04 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5180.0	3.837				3.881	11.0	-7.1
5200.0	4.652				4.696	11.0	-6.3
5240.0	2.808				2.852	11.0	-8.1

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 54 of 298

Equipment Configuration for Power Spectral Density

Variant:	802.11n HT-40	Duty Cycle (%):	84.0
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	2.30
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.76 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5190.0	-2.497				-1.740	11.0	-12.7
5230.0	-0.071				0.686	11.0	-10.3

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 55 of 298

Equipment Configuration for Power Spectral Density

Variant:	802.11a	Duty Cycle (%):	99.0
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	1.90
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.04 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5260.0	5.263				5.307	11.0	-5.7
5300.0	4.139				4.183	11.0	-6.8
5320.0	3.550				3.594	11.0	-7.4

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 56 of 298

Equipment Configuration for Power Spectral Density

Variant:	802.11n HT-20	Duty Cycle (%):	99.0
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	1.90
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.04 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5260.0	5.184				5.228	11.0	-5.8
5300.0	4.017				4.061	11.0	-6.9
5320.0	1.817				1.861	11.0	-9.1

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 57 of 298

Equipment Configuration for Power Spectral Density

Variant:	802.11n HT-40	Duty Cycle (%):	84.0
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	1.90
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.76 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5270.0	-0.937				-0.180	11.0	-11.2
5310.0	-2.282				-1.522	11.0	-12.5

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 58 of 298

Equipment Configuration for Power Spectral Density

Variant:	802.11a	Duty Cycle (%):	99.0
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	1.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.04 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5500.0	3.768				3.812	11.0	-7.2
5580.0	3.515				3.559	11.0	-7.4
5720.0	3.581				3.625	11.0	-7.4

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 59 of 298

Equipment Configuration for Power Spectral Density

Variant:	802.11n HT-20	Duty Cycle (%):	99.0
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	1.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.04 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5500.0	3.700				3.744	11.0	-7.3
5580.0	5.577				5.621	11.0	-5.4
5720.0	5.991				6.035	11.0	-5.0

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 60 of 298

Equipment Configuration for Power Spectral Density

Variant:	802.11n HT-40	Duty Cycle (%):	84.0
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	1.00
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.76 dB)	Limit	Margin
	Port(s) (dBm/MHz)						
MHz	a	b	c	d	dBm/MHz	dBm/MHz	dB
5510.0	-2.174				-1.417	11.0	-12.4
5550.0	0.994				1.751	11.0	-9.2
5710.0	0.863				1.620	11.0	-9.4

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 61 of 298

Equipment Configuration for Power Spectral Density

Variant:	802.11a	Duty Cycle (%):	99.0
Data Rate:	6.00 MBit/s	Antenna Gain (dBi):	0.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.04 dB)	Limit	Margin
	Port(s) (dBm/500 KHz)						
MHz	a	b	c	d	dBm/500 KHz	dBm/500 KHz	dB
5745.0	1.445				4.990	30.0	-25.0
5785.0	3.397				3.441	30.0	-26.6
5825.0	2.888				2.932	30.0	-27.1

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 62 of 298

Equipment Configuration for Power Spectral Density

Variant:	802.11n HT-20	Duty Cycle (%):	99.0
Data Rate:	6.50 MBit/s	Antenna Gain (dBi):	0.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.04 dB)	Limit	Margin
	Port(s) (dBm/500 KHz)						
MHz	a	b	c	d	dBm/500 KHz	dBm/500 KHz	dB
5745.0	1.494				1.538	30.0	-28.5
5785.0	3.369				3.413	30.0	-26.6
5825.0	3.046				3.090	30.0	-26.9

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 63 of 298

Equipment Configuration for Power Spectral Density

Variant:	802.11n HT-40	Duty Cycle (%):	84.0
Data Rate:	13.50 MBit/s	Antenna Gain (dBi):	0.50
Modulation:	OFDM	Beam Forming Gain (Y)(dB):	Not Applicable
TPC:	Not Applicable	Tested By:	SB
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density				Summation Peak Marker + DCCF (+0.76 dB)	Limit	Margin
	Port(s) (dBm/500 KHz)						
MHz	a	b	c	d	dBm/500 KHz	dBm/500 KHz	dB
5755.0	-3.169				-2.412	30.0	-32.4
5795.0	-1.760				-1.003	30.0	-31.0

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.



9.5. Dynamic Frequency Selection (DFS)

A U-NII network will employ a DFS function to detect signals from radar systems and to avoid co-channel operation with these systems. This applies to the 5250-5350 MHz and/or 5470-5725 MHz bands. Within the context of the operation of the DFS function, a U-NII device will operate in either Master Mode or Client Mode. U-NII devices operating in Client Mode can only operate in a network controlled by a U-NII device operating in Master Mode. The following tables summarize the requirements.

The HP Inc 0960-4025 and 0960-4034 is a client device without radar detection.

Requirement	Master Device or Client with Radar Detection	Client without Radar Detection
	Operational Mode	
DFS Detection Threshold	Yes	Not Required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not Required

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required

NOTE: Frequencies selected for statistical performance check should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.



Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 65 of 298

The operational behavior and individual DFS requirements associated with these modes are as follows:

9.5.1. Master Devices

- a) The Master Device will use DFS in order to detect Radar Waveforms with received signal strength above the DFS Detection Threshold in the 5250 – 5350 MHz and 5470 – 5725 MHz bands. DFS is not required in the 5150 – 5250 MHz or 5725 – 5850 MHz bands.
- b) Before initiating a network on a Channel, the Master Device will perform a Channel Availability Check for a specified time duration (Channel Availability Check Time) to ensure that there is no radar system operating on the Channel, using DFS described under subsection a) above.
- c) The Master Device initiates a U-NII network by transmitting control signals that will enable other U-NII devices to Associate with the Master Device.
- d) During normal operation, the Master Device will monitor the Channel (In-Service Monitoring) to ensure that there is no radar system operating on the Channel, using DFS described under a).
- e) If the Master Device has detected a Radar Waveform during In-Service Monitoring as described under d), the Operating Channel of the U-NII network is no longer an Available Channel. The Master Device will instruct all associated Client Device(s) to stop transmitting on this Channel within the Channel Move Time. The transmissions during the Channel Move Time will be limited to the Channel Closing Transmission Time.
- f) Once the Master Device has detected a Radar Waveform it will not utilize the Channel for the duration of the Non-Occupancy Period.
- g) If the Master Device delegates the In-Service Monitoring to a Client Device, then the combination will be tested to the requirements described under d) through f) above.

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.



9.5.2. Client Devices

- a) A Client Device will not transmit before having received appropriate control signals from a Master Device.
- b) A Client Device will stop all its transmissions whenever instructed by a Master Device to which it is associated and will meet the Channel Move Time and Channel Closing Transmission Time requirements. The Client Device will not resume any transmissions until it has again received control signals from a Master Device.
- c) If a Client Device is performing In-Service Monitoring and detects a Radar Waveform above the DFS Detection Threshold, it will inform the Master Device. This is equivalent to the Master Device detecting the Radar Waveform and d) through f) of section 5.1.1 apply.
- d) Irrespective of Client Device or Master Device detection the Channel Move Time and Channel Closing Transmission Time requirements remain the same.
- e) The client test frequency must be monitored to ensure no transmission of any type has occurred for 30 minutes. Note: If the client moves with the master, the device is considered compliant if nothing appears in the client non-occupancy period test. For devices that shutdown (rather than moving channels), no beacons should appear.

9.5.3. DFS Detection Thresholds

The table below provides the DFS Detection Thresholds for Master Devices as well as Client Devices incorporating In-Service Monitoring.

DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

Maximum Transmit Power	Value (see Notes 1, 2 and 3)
EIRP $\geq$ 200 milliwatt	-64 dBm
EIRP 200 milliwatt and power density +10 dBm/MHz	-62 dBm
EIRP 200 milliwatt that do not meet the power spectral density requirement	-64 dBm

NOTE 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna

NOTE 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

NOTE 3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.



9.1.4. Response Requirements

The following table provides the response requirements for Master and Client Devices incorporating DFS.

DFS Response Requirement Values

Parameter	Value
Non-Occupancy Period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds, see NOTE 1
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period, see NOTES 1 and 2
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth, see NOTE 3
NOTE 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.	
NOTE 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.	
NOTE 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	



9.1.5. Radar Test Waveforms

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.

9.1.5.1. Short Radar Pulses

Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μS)	PRI (μS)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	$\text{Roundup} \left(\frac{1}{360} \cdot \frac{19 \cdot 10^6}{\text{PRI}_{\mu\text{sec}}} \right)$	60%	30
		Test B: 15 unique PRI values randomly selected in the range 518-3066 μS, with a minimum increment of 1 μS, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Note 1: Short Radar Pulse Type 0 should be used for the Detection Bandwidth test, Channel Move Time and Channel Closing Time tests

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B.



9.1.5.2. Long Radar Pulse Test

Long Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

The parameters for this waveform are randomly chosen. Thirty unique waveforms are required for the Long Pulse radar test signal. If more than 30 waveforms are used for the Long Pulse radar test signal, then each additional waveform must also be unique and not repeated from the previous waveforms.

Each waveform is defined as follows:

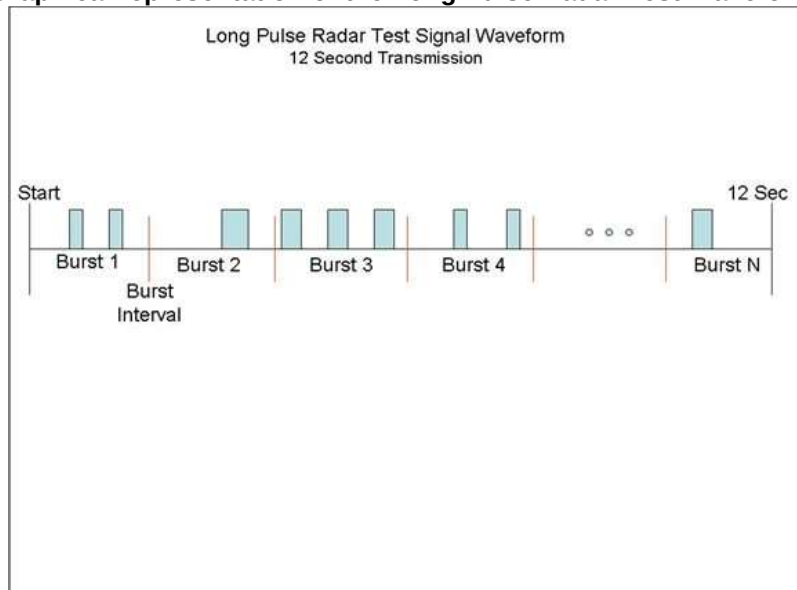
1. The transmission period for the Long Pulse Radar test signal is 12 seconds.
2. There are a total of 8 to 20 Bursts in the 12 second period, with the number of Bursts being randomly chosen. This number is Burst Count.
3. Each Burst consists of 1 to 3 pulses, with the number of pulses being randomly chosen. Each Burst within the 12 second sequence may have a different number of pulses.
4. The pulse width is between 50 and 100 microseconds, with the pulse width being randomly chosen. Each pulse within a Burst will have the same pulse width. Pulses in different Bursts may have different pulse widths.
5. Each pulse has a linear frequency modulated chirp between 5 and 20 MHz, with the chirp width being randomly chosen. Each pulse within a transmission period will have the same chirp width. The chirp is centered on the pulse. For example, with a radar frequency of 5300 MHz and a 20 MHz chirped signal, the chirp starts at 5290 MHz and ends at 5310 MHz
6. If more than one pulse is present in a Burst, the time between the pulses will be between 1000 and 2000 microseconds, with the time being randomly chosen. If three pulses are present in a Burst, the time between the first and second pulses is chosen independently of the time between the second and third pulses.
7. The 12 second transmission period is divided into even intervals. The number of intervals is equal to Burst_Count. Each interval is of length $(12,000,000 / \text{Burst_Count})$ microseconds. Each interval contains one Burst. The start time for the Burst, relative to the beginning of the interval, is between 1 and $[(12,000,000 / \text{Burst_Count}) - (\text{Total Burst Length}) + (\text{One Random PRI Interval})]$ microseconds, with the start time being randomly chosen. The step interval for the start time is 1 microsecond. The start time for each Burst is chosen independently.



A representative example of a Long Pulse radar test waveform:

1. The total test signal length is 12 seconds.
2. 8 Bursts are randomly generated for the Burst_Count
3. Burst 1 has 2 randomly generated pulses.
4. The pulse width (for both pulses) is randomly selected to be 75 microseconds.
5. The PRI is randomly selected to be at 1213 microseconds.
6. Bursts 2 through 8 are generated using steps 3 – 5.
7. Each Burst is contained in even intervals of 1,500,000 microseconds. The starting location for Pulse 1, Burst 1 is randomly generated (1 to 1,500,000 minus the total Burst 1 length + 1 random PRI interval) at the 325,001 microsecond step. Bursts 2 through 8 randomly fall in successive 1,500,000 microsecond intervals (i.e. Burst 2 falls in the 1,500,001 – 3,000,000 microsecond range).

Graphical representation of the Long Pulse Radar Test Waveform.





9.1.5.3. Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (μsec)	PRI (μsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	9	.333	300	70%	30

For the Frequency Hopping Radar Type, the same Burst parameters are used for each waveform. The hopping sequence is different for each waveform and a 100-length segment is selected from the hopping sequence defined by the following algorithm:

The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250 – 5724 MHz. Next, the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.

9.1.6. Radar Waveform Calibration

The following equipment setup was used to calibrate the Radar Waveform. A spectrum analyzer was used to establish the test signal level for each radar type. During this process, there were no transmissions by either the Master or Client Device. The spectrum analyzer was switched to the zero span (Time Domain) mode at the frequency of the Radar Waveform generator. Peak detection was utilized. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 1 MHz.

The signal generator amplitude was set so that the power level measured at the spectrum analyzer was equal to the DFS detection threshold +1dB (Ref Section 9.2).



Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 72 of 298

9.5.7. Channel Close / Transmission Time

The steps below define the procedure to determine the above-mentioned parameters when a radar Burst with a level equal to the DFS Detection Threshold is generated on the Operating Channel of the U-NII device.

The EUT will be associated with a support U-NII device in order to setup an appropriate transmission media in accordance with the FCC requirements.

The EUT was monitored on a frequency that contained control beacons.

Channel Closing Transmission Time and Channel Move Time - Measurement

The test system was set-up to capture all transmission data for access point events above a threshold level of -50 dBm. The test equipment time stamps all captured events.

A Type 0 waveform was introduced to the EUT, from which a 12 second transmission record was digitally captured. The start of the Type 0 radar waveform is indicated in the test result plot as "Start Waveform", the end of the waveform is indicated as "End waveform".

Channel Closing Transmission Time, and the Channel Move Time start immediately after the last radar pulse is transmitted.

The aggregate of all pulses seen after the end of the radar injection are measured as the "Channel Closing Transmission time".

The last EUT activity after the end of the radar pulse is identified and used to determine the "Channel Move Time"



Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 73 of 298

Frequency 5510 MHz Channel 104 Monitored 5500 MHz

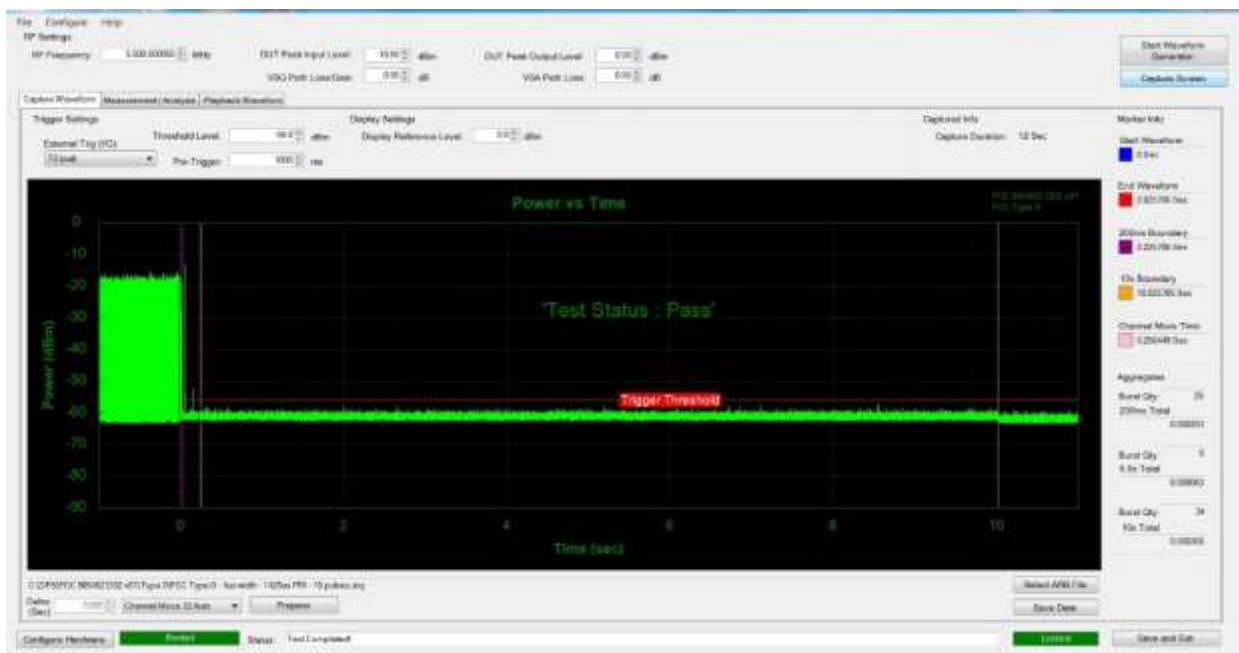
The PXI system measures and aggregates the pulses occurring after the end of the radar pulse to determine; -

- 1) Channel Closing Transmission Time (limit is 260 millisecond)
- 2) Channel Move Time (limit is 10 seconds)

1) Channel Closing Transmission Time = 0.266 mSecs

2) Channel Move Time = 0.256449 Secs

**Channel Move Time, Channel Closing Transmission Time for Type Radar
Captured by the Test System - 0-12 Seconds**



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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 74 of 298

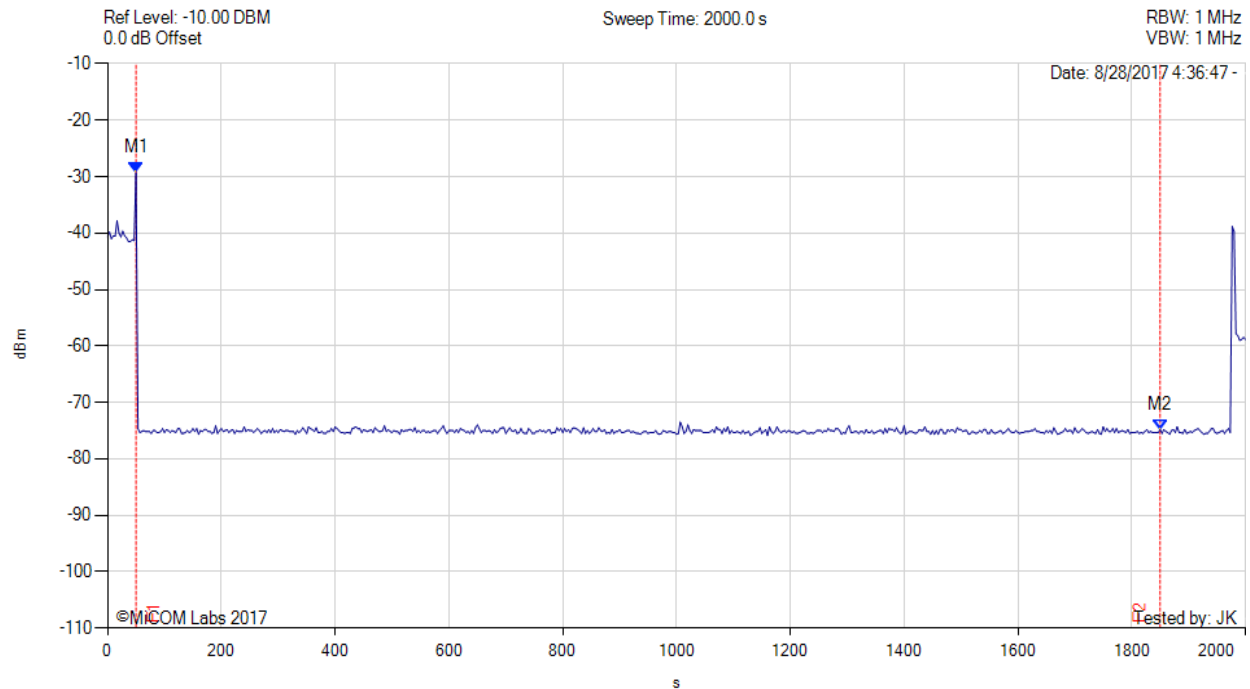
9.5.8. Non-Occupancy Period

The EUT is monitored for more than 30 minutes following the channel close/move time to verify no transmissions resume on this Channel. There should be no transmissions on the frequency of interest during the non-occupancy period.



NON-OCCUPANCY PERIOD

Variant: 802.11n HT40, Channel: 5510.00 MHz, Data Rate: 18 Mbit/s, Duty Cycle : 18.00%, Antenna Gain: 2.30 dBi



Analyzer Setup	Marker:Time:Amplitude	Test Results
Detector = POS Sweep Count = View RF Atten (dB) = 0 Trace Mode = 0	M1 : 50.000 s : -29.330 dBm M2 : 1850.000 s : -74.830 dBm	Channel Frequency: 5510.00 MHz

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.



9.6. Radiated

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

Test Procedure for Radiated Spurious and Band-Edge Emissions

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

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

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

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

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

Limits for Restricted Bands (15.205, 15.209)

Peak emission: 74 dBuV/m

Average emission: 54 dBuV/m

Field Strength Calculation

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

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

where:

FS = Field Strength

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.



R = Measured Spectrum analyzer Input Amplitude

AF = Antenna Factor

CORR = Correction Factor = CL – AG + NFL

CL = Cable Loss

AG = Amplifier Gain

FO = Distance Falloff Factor

NFL = Notch Filter Loss

Example:

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

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

where P is the EIRP in Watts

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

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

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

40 dBmV/m = 100 mV/m

48 dBmV/m = 250 mV/m

Restricted Bands of Operation (15.205)

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

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

(b) Except as provided in paragraphs (d) and (e) of this section, the field strength of emissions appearing within these frequency

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 77 of 298

bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

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

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

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

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

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

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

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

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

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

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

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

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



Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 78 of 298

9.6.1. TX Spurious & Restricted Band Emissions

9.6.1.1. Integral

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5180.00	Data Rate:	6.00 MBit/s
Power Setting:	17	Tested By:	jMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dB	Cable Loss dB	AF dB	Level dB	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB	Margin dB	Pass /Fail
#1	4616.68	62.01	3.53	-11.34	54.20	Max Peak	Horizontal	98	5	74.0	-19.8	Pass
#2	4616.68	47.39	3.53	-11.34	39.58	Max Avg	Horizontal	98	5	54.0	-14.4	Pass
#3	5176.98	69.53	3.69	-11.51	61.71	Fundamental	Horizontal	100	0	--	--	
#4	6906.74	71.30	4.11	-7.54	67.87	Peak (NRB)	Horizontal	100	0	--	--	Pass
#5	7770.36	53.88	4.42	-6.71	51.59	Peak (NRB)	Horizontal	100	0	--	--	Pass
#6	10360.64	56.37	5.57	-5.26	56.68	Peak (NRB)	Vertical	100	0	--	--	Pass
#7	15544.55	57.28	5.97	-0.55	62.70	Max Peak	Horizontal	197	335	74.0	-11.3	Pass
#8	15544.55	43.30	5.97	-0.55	48.72	Max Avg	Horizontal	197	335	54.0	-5.3	Pass

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 79 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5200.00	Data Rate:	6.00 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	3466.74	56.72	3.11	-11.25	48.58	Peak (NRB)	Vertical	100	0	--	--	Pass
#2	4621.31	63.07	3.55	-11.34	55.28	Max Peak	Horizontal	131	349	74.0	-18.7	Pass
#3	4621.31	49.31	3.55	-11.34	41.52	Max Avg	Horizontal	131	349	54.0	-12.5	Pass
#4	5204.76	75.23	3.65	-11.45	67.43	Fundamental	Horizontal	100	0	--	--	
#5	6927.81	71.28	4.11	-7.35	69.04	Peak (NRB)	Horizontal	100	0	--	--	Pass
#6	7798.81	57.28	4.46	-6.71	55.03	Peak (NRB)	Horizontal	100	0	--	--	Pass
#7	10400.22	64.30	5.41	-5.03	64.68	Peak (NRB)	Horizontal	100	27	--	--	Pass
#8	15607.50	58.09	6.01	-0.20	63.90	Max Peak	Horizontal	190	342	74.0	-10.1	Pass
#9	15607.50	44.22	6.01	-0.20	50.03	Max Avg	Horizontal	190	342	54.0	-4.0	Pass

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 80 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5240.00	Data Rate:	6.00 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1309.98	64.61	2.21	-14.83	51.99	Max Peak	Vertical	98	111	74.0	-22.0	Pass
#2	1309.98	62.58	2.21	-14.83	49.96	Max Avg	Vertical	98	111	54.0	-4.0	Pass
#3	3493.31	59.60	3.11	-11.26	51.45	Peak (NRB)	Vertical	100	0	--	--	Pass
#4	4511.17	62.64	3.53	-11.56	54.61	Max Peak	Horizontal	120	356	74.0	-19.4	Pass
#5	4511.17	48.92	3.53	-11.56	40.89	Max Avg	Horizontal	120	356	54.0	-13.1	Pass
#6	5236.96	79.51	3.63	-11.37	71.77	Fundamental	Horizontal	100	0	--	--	
#7	6986.68	74.69	4.13	-7.45	71.37	Peak (NRB)	Horizontal	100	0	--	--	Pass
#8	7856.68	61.01	4.48	-6.75	58.74	Peak (NRB)	Horizontal	100	0	--	--	Pass
#9	10476.73	63.56	5.44	-4.48	64.52	Peak (NRB)	Horizontal	100	0	--	--	Pass
#10	15717.00	56.99	6.05	0.18	63.22	Max Peak	Horizontal	197	342	74.0	-10.8	Pass
#11	15717.00	43.38	6.05	0.18	49.61	Max Avg	Horizontal	197	342	54.0	-4.4	Pass

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 81 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5260.00	Data Rate:	6.00 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1314.86	64.89	2.22	-14.88	52.23	Max Peak	Vertical	98	108	74.0	-21.8	Pass
#2	1314.86	63.11	2.22	-14.88	50.45	Max Avg	Vertical	98	108	54.0	-3.6	Pass
#3	3506.75	59.11	3.11	-11.25	50.97	Peak (NRB)	Vertical	100	0	--	--	Pass
#4	4590.11	62.78	3.55	-11.39	54.94	Max Peak	Horizontal	129	347	74.0	-19.1	Pass
#5	4590.11	49.00	3.55	-11.39	41.16	Max Avg	Horizontal	129	347	54.0	-12.8	Pass
#6	5261.22	76.72	3.66	-11.29	69.09	Fundamental	Horizontal	100	0	--	--	
#7	7013.35	74.98	4.18	-7.42	71.74	Peak (NRB)	Horizontal	100	0	--	--	Pass
#8	7886.89	58.12	4.54	-6.79	55.87	Peak (NRB)	Vertical	100	0	--	--	Pass
#9	10518.18	65.99	5.44	-4.21	67.22	Peak (NRB)	Horizontal	100	0	--	--	Pass
#10	15772.73	56.46	5.97	0.11	62.54	Max Peak	Horizontal	197	342	74.0	-11.5	Pass
#11	15772.73	42.47	5.97	0.11	48.55	Max Avg	Horizontal	197	342	54.0	-5.5	Pass

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 82 of 298

Equipment Configuration for Restricted Band Spurious Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.8	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5300.00	Data Rate:	6 MBit/s
Power Setting:	16	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1324.97	64.99	2.24	-14.97	52.26	Max Peak	Vertical	111	71	74.0	-21.7	Pass
#2	1324.97	63.14	2.24	-14.97	50.41	Max Avg	Vertical	111	71	54.0	-3.6	Pass
#3	3533.60	65.95	3.13	-11.25	57.83	Peak (NRB)	Vertical	100	0	--	--	Pass
#4	5297.93	74.69	3.81	-11.10	67.40	Fundamental	Horizontal	100	0	--	--	
#5	7066.57	63.63	4.18	-7.34	60.47	Peak (NRB)	Horizontal	100	0	--	--	Pass
#6	10600.44	59.86	5.58	-3.93	61.51	Max Peak	Vertical	101	340	74.0	-12.5	Pass
#7	10600.44	45.35	5.58	-3.93	47.00	Max Avg	Vertical	101	340	54.0	-7.0	Pass

Test Notes: EUT connected to laptop inside chamber and powered by 5V. Short shielded interface cable.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 83 of 298

Equipment Configuration for Restricted Band Spurious Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.8	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5320.00	Data Rate:	6 MBit/s
Power Setting:	16	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz

Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1330.03	62.94	2.24	-15.02	50.16	Max Peak	Horizontal	134	238	74.0	-23.8	Pass
#2	1330.03	61.05	2.24	-15.02	48.27	Max Avg	Horizontal	134	238	54.0	-5.7	Pass
#3	3546.87	63.30	3.14	-11.24	55.20	Peak (NRB)	Vertical	100	31	--	--	Pass
#4	5327.26	70.25	3.71	-11.05	62.91	Fundamental	Horizontal	100	0	--	--	Pass
#5	7093.29	59.85	4.24	-7.34	56.75	Peak (NRB)	Horizontal	100	0	--	--	Pass
#6	10640.29	58.96	5.39	-3.89	60.46	Max Peak	Vertical	110	338	74.0	-13.5	Pass
#7	10640.29	44.78	5.39	-3.89	46.28	Max Avg	Vertical	110	338	54.0	-7.7	Pass

Test Notes: EUT connected to laptop inside chamber and powered by 5V. Short shielded interface cable. In 1 channel to try higher power

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 84 of 298

Equipment Configuration for Restricted Band Spurious Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.8	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5500.00	Data Rate:	6 MBit/s
Power Setting:	15	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1375.04	67.48	2.26	-18.20	51.54	Max Peak	Horizontal	143	233	74.0	-22.5	Pass
#2	1375.04	65.10	2.26	-18.20	49.16	Max Avg	Horizontal	143	233	54.0	-4.8	Pass
#3	3667.06	73.35	3.17	-10.83	65.69	Max Peak	Vertical	190	61	74.0	-8.3	Pass
#4	3667.06	59.07	3.17	-10.83	51.41	Max Avg	Vertical	190	61	54.0	-2.6	Pass
#5	5506.95	58.68	3.75	-9.42	53.01	Fundamental	Vertical	151	0	--	--	
#6	7333.32	61.66	4.28	-5.21	60.73	Max Peak	Vertical	164	72	74.0	-13.3	Pass
#7	7333.32	54.18	4.28	-5.21	53.25	Max Avg	Vertical	164	72	54.0	-0.8	Pass
#8	11000.95	48.11	5.59	-1.06	52.64	Max Peak	Horizontal	128	355	74.0	-21.4	Pass
#9	11000.95	34.23	5.59	-1.06	38.76	Max Avg	Horizontal	128	355	54.0	-15.2	Pass
#10	16499.71	47.62	6.02	0.99	54.63	Peak (NRB)	Vertical	151	44	--	--	Pass

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Host PCB shielded with silver tape. Transmitter module connected to host PCB with shielded ribbon cable instead of directly to board

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 85 of 298

Equipment Configuration for Restricted Band Spurious Emissions

Antenna:	Not Applicable	Variant:	802.11a
Antenna Gain (dBi):	Not Applicable	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5580.00	Data Rate:	6 MBit/s
Power Setting:	15	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	1394.99	69.06	2.25	-18.09	53.22	Max Peak	Horizontal	139	239	74.0	-20.8	Pass
#2	1394.99	67.56	2.25	-18.09	51.72	Max Avg	Horizontal	139	239	54.0	-2.3	Pass
#3	3720.26	71.56	3.21	-10.67	64.10	Max Peak	Vertical	138	76	74.0	-9.9	Pass
#4	3720.26	59.52	3.21	-10.67	52.06	Max Avg	Vertical	138	76	54.0	-1.9	Pass
#5	5577.09	65.62	3.81	-9.24	60.19	Peak (NRB)	Vertical	100	0	--	--	Pass
#6	7439.98	60.33	4.30	-4.97	59.66	Max Peak	Vertical	103	200	74.0	-14.3	Pass
#7	7439.98	52.67	4.30	-4.97	52.00	Max Avg	Vertical	103	200	54.0	-2.0	Pass
#8	16739.07	51.58	6.08	1.07	58.73	Peak (NRB)	Vertical	150	177	--	--	Pass

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Host PCB shielded with silver tape. Transmitter module connected to host PCB with shielded ribbon cable instead of directly to board

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 86 of 298

Equipment Configuration for Restricted Band Spurious Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.8	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5720.00	Data Rate:	6 MBit/s
Power Setting:	16	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	1429.98	62.31	2.29	-15.74	48.86	Peak (NRB)	Horizontal	100	0	--	--	Pass
#2	3813.17	69.66	3.24	-10.85	62.05	Max Peak	Horizontal	98	338	74.0	-12.0	Pass
#3	3813.17	58.06	3.24	-10.85	50.45	Max Avg	Horizontal	98	338	54.0	-3.6	Pass
#4	5712.49	60.32	3.83	-10.77	53.38	Fundamental	Horizontal	100	0	--	--	
#5	7626.76	62.83	4.38	-6.97	60.24	Max Peak	Vertical	141	250	74.0	-13.8	Pass
#6	7626.76	55.72	4.38	-6.97	53.13	Max Avg	Vertical	141	250	54.0	-0.9	Pass
#7	11440.71	59.41	5.36	-4.92	59.85	Max Peak	Vertical	105	338	74.0	-14.2	Pass
#8	11440.71	45.53	5.36	-4.92	45.97	Max Avg	Vertical	105	338	54.0	-8.0	Pass
#9	17151.09	50.95	6.34	0.39	57.68	Peak (NRB)	Horizontal	100	182	--	--	Pass

Test Notes: EUT connected to laptop inside chamber and powered by 5V. Short shielded interface cable.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 87 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5745.00	Data Rate:	6.00 MBit/s
Power Setting:	16	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1436.32	64.36	2.28	-15.77	50.87	Max Peak	Horizontal	177	133	74.0	-23.1	Pass
#2	1436.32	62.46	2.28	-15.77	48.97	Max Avg	Horizontal	177	133	54.0	-5.0	Pass
#3	4309.29	59.25	3.39	-11.48	51.16	Max Peak	Horizontal	98	343	74.0	-22.8	Pass
#4	4309.29	45.08	3.39	-11.48	36.99	Max Avg	Horizontal	98	343	54.0	-17.0	Pass
#5	5737.40	52.84	3.82	-10.67	45.99	Fundamental	Horizontal	151	0	--	--	
#6	6273.11	57.69	3.92	-8.50	53.11	Peak (NRB)	Horizontal	151	0	--	--	Pass
#7	7660.08	61.87	4.38	-6.95	59.30	Max Peak	Vertical	128	231	74.0	-14.7	Pass
#8	7660.08	54.45	4.38	-6.95	51.88	Max Avg	Vertical	128	231	54.0	-2.1	Pass
#9	9578.01	46.72	5.26	-5.98	46.00	Peak (NRB)	Horizontal	151	0	--	--	Pass
#10	11490.62	62.16	5.45	-4.84	62.77	Max Peak	Horizontal	184	26	74.0	-11.2	Pass
#11	11490.62	47.90	5.45	-4.84	48.51	Max Avg	Horizontal	184	26	54.0	-5.5	Pass
#12	17240.75	52.10	6.47	0.34	58.91	Peak (NRB)	Horizontal	151	0	--	--	Pass

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power reduced to meet TX Spurious Limit.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 88 of 298

Equipment Configuration for Restricted Band Spurious Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.8	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5785.00	Data Rate:	6 MBit/s
Power Setting:	16	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1446.24	66.04	2.28	-15.83	52.49	Max Peak	Horizontal	122	230	74.0	-21.5	Pass
#2	1446.24	64.73	2.28	-15.83	51.18	Max Avg	Horizontal	122	230	54.0	-2.8	Pass
#3	3856.60	67.17	3.23	-10.81	59.59	Max Peak	Horizontal	118	339	74.0	-14.4	Pass
#4	3856.60	54.03	3.23	-10.81	46.45	Max Avg	Horizontal	118	339	54.0	-7.6	Pass
#5	5792.96	50.71	3.78	-10.40	44.09	Fundamental	Horizontal	100	0	--	--	
#6	6352.61	54.70	3.95	-8.18	50.47	Peak (NRB)	Horizontal	100	0	--	--	Pass
#7	7713.38	62.72	4.41	-6.85	60.28	Max Peak	Horizontal	130	346	74.0	-13.7	Pass
#8	7713.38	55.75	4.41	-6.85	53.31	Max Avg	Horizontal	130	346	54.0	-0.7	Pass
#9	11569.50	57.47	5.46	-4.64	58.29	Max Peak	Vertical	110	334	74.0	-15.7	Pass
#10	11569.50	43.15	5.46	-4.64	43.97	Max Avg	Vertical	110	334	54.0	-10.0	Pass
#11	17358.34	49.92	6.28	-0.04	56.16	Peak (NRB)	Horizontal	100	360	--	--	Pass

Test Notes: EUT connected to laptop inside chamber and powered by 5V. Short shielded interface cable.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 89 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5825.00	Data Rate:	6.00 MBit/s
Power Setting:	19	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1456.28	63.73	2.29	-15.91	50.11	Max Peak	Horizontal	112	208	74.0	-23.9	Pass
#2	1456.28	62.19	2.29	-15.91	48.57	Max Avg	Horizontal	112	208	54.0	-5.4	Pass
#3	4560.67	59.60	3.45	-11.39	51.66	Max Peak	Horizontal	138	346	74.0	-22.3	Pass
#4	4560.67	45.61	3.45	-11.39	37.67	Max Avg	Horizontal	138	346	54.0	-16.3	Pass
#5	5831.89	56.14	3.84	-10.22	49.76	Fundamental	Horizontal	100	0	--	--	
#6	6316.23	59.09	3.93	-8.34	54.68	Peak (NRB)	Horizontal	100	0	--	--	Pass
#7	6388.56	57.77	3.99	-8.08	53.68	Peak (NRB)	Horizontal	100	0	--	--	Pass
#8	7766.70	63.78	4.43	-6.71	61.50	Peak (NRB)	Horizontal	100	0	--	--	Pass
#9	9714.99	53.14	5.41	-6.24	52.31	Peak (NRB)	Horizontal	100	0	--	--	Pass
#10	11650.60	65.01	5.46	-4.47	66.00	Max Peak	Horizontal	196	310	74.0	-8.0	Pass
#11	11650.60	50.82	5.46	-4.47	51.81	Max Avg	Horizontal	196	310	54.0	-2.2	Pass
#12	17472.83	49.44	6.23	-0.57	55.10	Peak (NRB)	Vertical	100	0	--	--	Pass

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power reduced to meet TX Spurious Limit.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 90 of 298

9.6.1.2. YAGEO ANT300P002B24553

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	2.30	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5180.00	Data Rate:	6.00 MBit/s
Power Setting:	18	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	1149.33	64.43	2.12	-16.82	49.73	Max Peak	Horizontal	156	197	74.0	-24.3	Pass
#2	1149.33	47.49	2.12	-16.82	32.79	Max Avg	Horizontal	156	197	54.0	-21.2	Pass
#3	3453.45	53.48	3.09	-11.25	45.32	Peak (NRB)	Horizontal	151	0	--	--	Pass
#4	4560.01	60.64	3.45	-11.39	52.70	Max Peak	Vertical	178	61	74.0	-21.3	Pass
#5	4560.01	44.04	3.45	-11.39	36.10	Max Avg	Vertical	178	61	54.0	-17.9	Pass
#6	5176.98	62.56	3.69	-11.51	54.74	Fundamental	Horizontal	151	0	--	--	
#7	6906.70	51.27	4.11	-7.54	47.84	Peak (NRB)	Vertical	150	360	--	--	Pass
#8	15541.70	52.01	5.96	-0.57	57.40	Max Peak	Horizontal	174	309	74.0	-16.6	Pass
#9	15541.70	38.59	5.96	-0.57	43.98	Max Avg	Horizontal	174	309	54.0	-10.0	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 91 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	2.30	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5200.00	Data Rate:	6.00 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1147.02	66.97	2.12	-16.83	52.26	Max Peak	Horizontal	101	129	74.0	-21.7	Pass
#2	1147.02	53.91	2.12	-16.83	39.20	Max Avg	Horizontal	101	129	54.0	-14.8	Pass
#3	3464.42	60.41	3.10	-11.25	52.26	Peak (NRB)	Horizontal	100	0	--	--	Pass
#4	4517.23	61.42	3.52	-11.53	53.41	Max Peak	Horizontal	121	192	74.0	-20.6	Pass
#5	4517.23	44.93	3.52	-11.53	36.92	Max Avg	Horizontal	121	192	54.0	-17.1	Pass
#6	5202.34	67.46	3.66	-11.46	59.66	Fundamental	Horizontal	100	0	--	--	
#7	6933.40	57.57	4.11	-7.49	54.19	Peak (NRB)	Vertical	151	360	--	--	Pass
#8	10400.55	49.42	5.41	-5.03	49.80	Peak (NRB)	Vertical	151	330	--	--	Pass
#9	15599.96	52.28	6.04	-0.25	58.07	Max Peak	Horizontal	191	182	74.0	-15.9	Pass
#10	15599.96	39.17	6.04	-0.25	44.96	Max Avg	Horizontal	191	182	54.0	-9.0	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 92 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	2.30	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5240.00	Data Rate:	6.00 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1145.36	66.95	2.12	-16.83	52.24	Max Peak	Horizontal	98	131	74.0	-21.8	Pass
#2	1145.36	53.15	2.12	-16.83	38.44	Max Avg	Horizontal	98	131	54.0	-15.6	Pass
#3	3493.75	60.16	3.11	-11.26	52.01	Peak (NRB)	Horizontal	100	0	--	--	Pass
#4	4459.67	57.66	3.52	-11.60	49.58	Peak (NRB)	Horizontal	100	173	--	--	Pass
#5	5237.73	71.30	3.63	-11.37	63.56	Fundamental	Horizontal	100	0	--	--	
#6	6986.64	60.35	4.13	-7.45	57.03	Peak (NRB)	Horizontal	100	173	--	--	Pass
#7	10479.15	47.31	5.42	-4.46	48.27	Peak (NRB)	Vertical	100	173	--	--	Pass
#8	15716.49	51.71	6.04	0.18	57.93	Max Peak	Horizontal	194	187	74.0	-16.1	Pass
#9	15716.49	37.49	6.04	0.18	43.71	Max Avg	Horizontal	194	187	54.0	-10.3	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 93 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	1.90	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5260.00	Data Rate:	6.00 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1145.14	66.83	2.12	-16.83	52.12	Max Peak	Horizontal	104	130	74.0	-21.9	Pass
#2	1145.14	51.79	2.12	-16.83	37.08	Max Avg	Horizontal	104	130	54.0	-16.9	Pass
#3	3506.99	61.95	3.11	-11.25	53.81	Peak (NRB)	Horizontal	100	0	--	--	Pass
#4	4512.11	59.80	3.53	-11.55	51.78	Max Peak	Vertical	164	185	74.0	-22.2	Pass
#5	4512.11	46.07	3.53	-11.55	38.05	Max Avg	Vertical	164	185	54.0	-16.0	Pass
#6	5267.50	69.70	3.68	-11.25	62.13	Fundamental	Horizontal	100	0	--	--	
#7	7013.46	65.07	4.18	-7.42	61.83	Peak (NRB)	Vertical	151	188	--	--	Pass
#8	7029.07	51.59	4.17	-7.39	48.37	Peak (NRB)	Vertical	151	0	--	--	Pass
#9	10520.51	47.92	5.43	-4.21	49.14	Peak (NRB)	Vertical	151	309	--	--	Pass
#10	15774.71	49.48	5.98	0.10	55.56	Max Peak	Horizontal	185	164	74.0	-18.4	Pass
#11	15774.71	35.95	5.98	0.10	42.03	Max Avg	Horizontal	185	164	54.0	-12.0	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 94 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	1.90	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5300.00	Data Rate:	6.00 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1146.69	66.72	2.12	-16.83	52.01	Max Peak	Horizontal	98	136	74.0	-22.0	Pass
#2	1146.69	53.66	2.12	-16.83	38.95	Max Avg	Horizontal	98	136	54.0	-15.1	Pass
#3	3533.88	61.96	3.13	-11.25	53.84	Peak (NRB)	Horizontal	100	0	--	--	Pass
#4	4517.51	57.92	3.52	-11.53	49.91	Max Peak	Vertical	98	230	74.0	-24.1	Pass
#5	4517.51	43.81	3.52	-11.53	35.80	Max Avg	Vertical	98	230	54.0	-18.2	Pass
#6	4557.14	59.24	3.44	-11.40	51.28	Max Peak	Vertical	115	207	74.0	-22.7	Pass
#7	4557.14	44.36	3.44	-11.40	36.40	Max Avg	Vertical	115	207	54.0	-17.6	Pass
#8	5297.38	69.29	3.80	-11.11	61.98	Fundamental	Horizontal	100	0	--	--	
#9	7066.61	61.10	4.18	-7.34	57.94	Peak (NRB)	Horizontal	100	191	--	--	Pass
#10	10600.49	53.46	5.58	-3.93	55.11	Max Peak	Vertical	119	293	74.0	-18.9	Pass
#11	10600.49	39.68	5.58	-3.93	41.33	Max Avg	Vertical	119	293	54.0	-12.7	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 95 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	1.90	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5320.00	Data Rate:	6.00 MBit/s
Power Setting:	18	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1145.20	64.53	2.12	-16.83	49.82	Max Peak	Horizontal	147	199	74.0	-24.2	Pass
#2	1145.20	49.77	2.12	-16.83	35.06	Max Avg	Horizontal	147	199	54.0	-18.9	Pass
#3	3547.66	60.47	3.14	-11.24	52.37	Peak (NRB)	Horizontal	100	189	--	--	Pass
#4	4528.71	57.95	3.47	-11.48	49.94	Max Peak	Vertical	146	288	74.0	-24.1	Pass
#5	4528.71	43.08	3.47	-11.48	35.07	Max Avg	Vertical	146	288	54.0	-18.9	Pass
#6	5316.57	62.60	3.76	-11.07	55.29	Fundamental	Horizontal	100	0	--	--	
#7	7093.41	58.24	4.24	-7.34	55.14	Peak (NRB)	Horizontal	151	0	--	--	Pass
#8	10640.67	51.73	5.39	-3.89	53.23	Max Peak	Horizontal	164	184	74.0	-20.8	Pass
#9	10640.67	37.40	5.39	-3.89	38.90	Max Avg	Horizontal	164	184	54.0	-15.1	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 96 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	1.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5500.00	Data Rate:	6.00 MBit/s
Power Setting:	17	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1145.80	66.33	2.12	-16.83	51.62	Max Peak	Horizontal	103	133	74.0	-22.4	Pass
#2	1145.80	53.06	2.12	-16.83	38.35	Max Avg	Horizontal	103	133	54.0	-15.7	Pass
#3	3667.07	75.62	3.17	-11.02	67.77	Max Peak	Horizontal	113	180	74.0	-6.2	Pass
#4	3667.07	59.26	3.17	-11.02	51.41	Max Avg	Horizontal	113	180	54.0	-2.6	Pass
#5	4558.36	57.96	3.45	-11.39	50.02	Max Peak	Horizontal	129	182	74.0	-24.0	Pass
#6	4558.36	43.34	3.45	-11.39	35.40	Max Avg	Horizontal	129	182	54.0	-18.6	Pass
#7	5496.61	57.34	3.73	-11.17	49.90	Fundamental	Horizontal	100	27	--	--	
#8	6334.64	51.52	3.95	-8.26	47.21	Peak (NRB)	Vertical	100	0	--	--	Pass
#9	7333.44	63.88	4.28	-7.24	60.92	Max Peak	Horizontal	106	217	74.0	-13.1	Pass
#10	7333.44	55.92	4.28	-7.24	52.96	Max Avg	Horizontal	106	217	54.0	-1.0	Pass
#11	11000.10	54.83	5.59	-4.24	56.18	Max Peak	Horizontal	133	323	74.0	-17.8	Pass
#12	11000.10	41.01	5.59	-4.24	42.36	Max Avg	Horizontal	133	323	54.0	-11.6	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 97 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	1.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5580.00	Data Rate:	6.00 MBit/s
Power Setting:	18	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1145.58	65.95	2.12	-16.83	51.24	Max Peak	Vertical	98	251	74.0	-22.8	Pass
#2	1145.58	52.52	2.12	-16.83	37.81	Max Avg	Vertical	98	251	54.0	-16.2	Pass
#3	3720.33	73.08	3.21	-10.90	65.39	Max Peak	Horizontal	115	177	74.0	-8.6	Pass
#4	3720.33	58.13	3.21	-10.90	50.44	Max Avg	Horizontal	115	177	54.0	-3.6	Pass
#5	4558.25	59.72	3.45	-11.39	51.78	Max Peak	Horizontal	142	181	74.0	-22.2	Pass
#6	4558.25	44.68	3.45	-11.39	36.74	Max Avg	Horizontal	142	181	54.0	-17.3	Pass
#7	5587.45	64.23	3.78	-11.19	56.82	Fundamental	Horizontal	100	0	--	--	
#8	6335.97	53.29	3.95	-8.25	48.99	Peak (NRB)	Vertical	100	275	--	--	Pass
#9	7440.00	60.54	4.30	-7.13	57.71	Max Peak	Vertical	108	5	74.0	-16.3	Pass
#10	7440.00	53.47	4.30	-7.13	50.64	Max Avg	Vertical	108	5	54.0	-3.4	Pass
#11	11160.73	53.17	5.81	-4.07	54.91	Max Peak	Vertical	104	294	74.0	-19.1	Pass
#12	11160.73	39.19	5.81	-4.07	40.93	Max Avg	Vertical	104	294	54.0	-13.1	Pass
#13	16742.84	44.65	6.07	1.50	52.22	Peak (NRB)	Horizontal	100	275	--	--	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 98 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	1.00	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5720.00	Data Rate:	6.00 MBit/s
Power Setting:	18	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1145.47	63.24	2.12	-16.83	48.53	Max Peak	Vertical	101	259	74.0	-25.5	Pass
#2	1145.47	49.49	2.12	-16.83	34.78	Max Avg	Vertical	101	259	54.0	-19.2	Pass
#3	3814.14	66.43	3.24	-10.85	58.82	Max Peak	Vertical	115	208	74.0	-15.2	Pass
#4	3814.14	52.29	3.24	-10.85	44.68	Max Avg	Vertical	115	208	54.0	-9.3	Pass
#5	4448.76	58.52	3.46	-11.59	50.39	Peak (NRB)	Horizontal	151	207	--	--	Pass
#6	5712.23	55.18	3.83	-10.77	48.24	Fundamental	Horizontal	100	21	--	--	
#7	6284.47	57.29	3.92	-8.47	52.74	Peak (NRB)	Vertical	151	324	--	--	Pass
#8	7626.62	60.91	4.38	-6.97	58.32	Max Peak	Vertical	145	179	74.0	-15.7	Pass
#9	7626.62	53.62	4.38	-6.97	51.03	Max Avg	Vertical	145	179	54.0	-3.0	Pass
#10	11440.13	51.94	5.36	-4.92	52.38	Max Peak	Horizontal	187	309	74.0	-21.6	Pass
#11	11440.13	38.16	5.36	-4.92	38.60	Max Avg	Horizontal	187	309	54.0	-15.4	Pass
#12	17159.05	56.86	6.35	0.39	63.60	Peak (NRB)	Horizontal	151	224	--	--	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 99 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	0.50	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5745.00	Data Rate:	6.00 MBit/s
Power Setting:	20	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1145.03	63.37	2.12	-16.83	48.66	Max Peak	Vertical	98	243	74.0	-25.3	Pass
#2	1145.03	47.51	2.12	-16.83	32.80	Max Avg	Vertical	98	243	54.0	-21.2	Pass
#3	3830.69	71.02	3.21	-10.83	63.40	Max Peak	Horizontal	98	185	74.0	-10.6	Pass
#4	3830.69	56.90	3.21	-10.83	49.28	Max Avg	Horizontal	98	185	54.0	-4.7	Pass
#5	4507.64	59.46	3.51	-11.57	51.40	Max Peak	Horizontal	98	180	74.0	-22.6	Pass
#6	4507.64	44.60	3.51	-11.57	36.54	Max Avg	Horizontal	98	180	54.0	-17.5	Pass
#7	5737.51	51.63	3.82	-10.67	44.78	Fundamental	Horizontal	100	45	--	--	
#8	6315.02	57.08	3.93	-8.34	52.67	Peak (NRB)	Horizontal	100	149	--	--	Pass
#9	7659.94	63.35	4.37	-6.95	60.77	Max Peak	Vertical	114	199	74.0	-13.2	Pass
#10	7659.94	55.48	4.37	-6.95	52.09	Max Avg	Vertical	114	199	54.0	-1.0	Pass
#11	11490.62	53.66	5.45	-4.84	54.27	Max Peak	Horizontal	110	225	74.0	-19.7	Pass
#12	11490.62	39.11	5.45	-4.84	39.72	Max Avg	Horizontal	110	225	54.0	-14.3	Pass
#13	17237.88	49.41	6.47	0.34	56.22	Peak (NRB)	Vertical	100	244	--	--	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 100 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	0.50	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5785.00	Data Rate:	6.00 MBit/s
Power Setting:	21	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1147.79	63.39	2.12	-16.83	48.68	Max Peak	Vertical	98	253	74.0	-25.3	Pass
#2	1147.79	50.00	2.12	-16.83	35.29	Max Avg	Vertical	98	253	54.0	-18.7	Pass
#3	3857.15	65.92	3.23	-10.81	58.34	Max Peak	Horizontal	106	186	74.0	-15.7	Pass
#4	3857.15	52.24	3.23	-10.81	44.66	Max Avg	Horizontal	106	186	54.0	-9.3	Pass
#5	5792.55	53.94	3.78	-10.40	47.32	Fundamental	Vertical	100	306	--	--	
#6	6081.05	56.35	3.86	-9.57	50.64	Peak (NRB)	Vertical	100	303	--	--	Pass
#7	7713.34	58.61	4.41	-6.85	56.17	Max Peak	Vertical	113	200	74.0	-17.8	Pass
#8	7713.34	52.53	4.41	-6.85	50.09	Max Avg	Vertical	113	200	54.0	-3.9	Pass
#9	11571.43	55.53	5.42	-4.63	56.32	Max Peak	Vertical	128	273	74.0	-17.7	Pass
#10	11571.43	42.23	5.42	-4.63	43.02	Max Avg	Vertical	128	273	54.0	-11.0	Pass
#11	17358.01	51.18	6.28	-0.04	57.42	Peak (NRB)	Horizontal	100	151	--	--	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 101 of 298

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	0.50	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5825.00	Data Rate:	6.00 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	1146.58	63.38	2.12	-16.83	48.67	Max Peak	Vertical	98	250	74.0	-25.3	Pass
#2	1146.58	50.19	2.12	-16.83	35.48	Max Avg	Vertical	98	250	54.0	-18.5	Pass
#3	3882.50	66.68	3.25	-10.76	59.17	Max Peak	Horizontal	112	185	74.0	-14.8	Pass
#4	3882.50	52.57	3.25	-10.76	45.06	Max Avg	Horizontal	112	185	54.0	-8.9	Pass
#5	5832.66	54.07	3.84	-10.21	47.70	Fundamental	Vertical	100	195	--	--	
#6	6315.46	57.75	3.93	-8.34	53.34	Peak (NRB)	Vertical	100	239	--	--	Pass
#7	7766.72	55.14	4.43	-6.71	52.86	Peak (NRB)	Vertical	100	167	--	--	Pass
#8	11650.50	56.57	5.46	-4.47	57.56	Max Peak	Vertical	122	267	74.0	-16.4	Pass
#9	11650.50	42.28	5.46	-4.47	43.27	Max Avg	Vertical	122	267	54.0	-10.7	Pass
#10	17484.29	52.99	6.41	-0.63	58.77	Peak (NRB)	Horizontal	100	185	--	--	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 102 of 298

9.6.2. Restricted Edge & Band-Edge Emissions

9.6.2.3. Integral

RESULTS SUMMARY FOR RADIATED BAND-EDGE EMISSIONS

5150 - 5250 MHz

Integral		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
802.11a	5180.00	5150.00	70.61	53.05	17
802.11n HT-20	5180.00	5150.00	71.31	51.29	16
802.11n HT-40	5190.00	5150.00	70.75	52.64	14

5470 - 5725 MHz

Integral		Restricted-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
802.11a	5500.00	5460.00	70.79	51.65	17
802.11n HT-20	5500.00	5460.00	72.12	52.78	17
802.11n HT-40	5510.00	5460.00	70.34	51.77	15

Integral		Band-Edge Freq	Limit 68.23dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	
802.11a	5500.00	5470.00	56.99	17
802.11n HT-20	5500.00	5470.00	58.26	17
802.11n HT-40	5510.00	5470.00	54.43	15

5250 - 5350 MHz

Integral		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
802.11a	5320.00	5350.00	73.66	52.44	16
802.11n HT-20	5320.00	5350.00	71.98	50.72	15
802.11n HT-40	5310.00	5350.00	72.66	48.92	14

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 103 of 298

5725 MHz Radiated Lower Band-Edge Emissions

Integral		Band-Edge Freq	dBµV/m	dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz			
802.11a	5725.00	5725.00	76.24	68.84	22
802.11n HT-20	5725.00	5725.00	78.24	67.85	22
802.11n HT-40	5725.00	5725.00	80.14	78.36	22

5850 MHz Radiated Higher Band-Edge Emissions

Integral		Band-Edge Freq	dBµV/m	dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz			
802.11a	5850.00	5850.00	72.58	68.93	22
802.11n HT-20	5850.00	5850.00	74.32	69.76	22
802.11n HT-40	5850.00	5850.00	69.91	68.02	22

Click on the links to view the data.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 104 of 298

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5180.00	Data Rate:	6.00 MBit/s
Power Setting:	17	Tested By:	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5150.00	15.27	3.67	34.11	53.05	Max Avg	Horizontal	102	158	54.0	-1.0	Pass
#2	5150.00	32.83	3.67	34.11	70.61	Max Peak	Horizontal	102	158	74.0	-3.4	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits												

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 105 of 298

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	Integral	Variant:	802.11n HT-20
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5180.00	Data Rate:	6.50 MBit/s
Power Setting:	16	Tested By:	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5150.00	13.51	3.67	34.11	51.29	Max Avg	Horizontal	102	158	54.0	-2.7	Pass
#2	5150.00	33.53	3.67	34.11	71.31	Max Peak	Horizontal	102	158	74.0	-2.7	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits												

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 106 of 298

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	Integral	Variant:	802.11n HT-40
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5190.00	Data Rate:	13.50 MBit/s
Power Setting:	14	Tested By:	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5150.00	14.86	3.67	34.11	52.64	Max Avg	Horizontal	102	158	54.0	-1.4	Pass
#2	5150.00	32.97	3.67	34.11	70.75	Max Peak	Horizontal	102	158	74.0	-3.3	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits												

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 107 of 298

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5500.00	Data Rate:	6.00 MBit/s
Power Setting:	17	Tested By:	JMH

Test Measurement Results

5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5459.40	32.69	3.79	34.31	70.79	Max Peak	Horizontal	111	353	74.0	-3.2	Pass
#2	5460.00	13.55	3.79	34.31	51.65	Max Avg	Horizontal	111	353	54.0	-2.4	Pass
#4	5470.00	18.91	3.76	34.32	56.99	Max Avg	Horizontal	111	353	68.2	-11.2	Pass
#3	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
#5	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 108 of 298

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	Integral	Variant:	802.11n HT-20
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5500.00	Data Rate:	6.50 MBit/s
Power Setting:	17	Tested By:	JMH

Test Measurement Results

5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5459.40	34.02	3.79	34.31	72.12	Max Peak	Horizontal	111	353	74.0	-1.9	Pass
#2	5460.00	14.68	3.79	34.31	52.78	Max Avg	Horizontal	111	353	54.0	-1.2	Pass
#4	5470.00	20.18	3.76	34.32	58.26	Max Avg	Horizontal	111	353	68.2	-9.9	Pass
#3	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
#5	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 109 of 298

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	Integral	Variant:	802.11n HT-40
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5510.00	Data Rate:	13.50 MBit/s
Power Setting:	15	Tested By:	JMH

Test Measurement Results

5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5460.00	13.67	3.79	34.31	51.77	Max Avg	Horizontal	111	353	54.0	-2.2	Pass
#2	5460.00	32.24	3.79	34.31	70.34	Max Peak	Horizontal	111	353	74.0	-3.7	Pass
#4	5470.00	16.35	3.76	34.32	54.43	Max Avg	Horizontal	111	353	68.2	-13.8	Pass
#3	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
#5	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 110 of 298

Equipment Configuration for Restricted Upper Band-Edge Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5320.00	Data Rate:	6.00 MBit/s
Power Setting:	16	Tested By:	JMH

Test Measurement Results

5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5350.00	14.23	3.70	34.51	52.44	Max Avg	Horizontal	140	337	54.0	-1.6	Pass
#3	5352.57	35.45	3.71	34.50	73.66	Max Peak	Horizontal	140	337	74.0	-0.3	Pass
#2	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits												

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 111 of 298

Equipment Configuration for Restricted Upper Band-Edge Emissions

Antenna:	Integral	Variant:	802.11n HT-20
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5320.00	Data Rate:	6.50 MBit/s
Power Setting:	15	Tested By:	JMH

Test Measurement Results

5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5350.00	12.51	3.70	34.51	50.72	Max Avg	Horizontal	140	337	54.0	-3.3	Pass
#2	5350.00	33.77	3.70	34.51	71.98	Max Peak	Horizontal	140	337	74.0	-2.0	Pass
#3	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits												

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 112 of 298

Equipment Configuration for Restricted Upper Band-Edge Emissions

Antenna:	Integral	Variant:	802.11n HT-40
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5310.00	Data Rate:	13.50 MBit/s
Power Setting:	14	Tested By:	JMH

Test Measurement Results

5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5350.00	10.71	3.70	34.51	48.92	Max Avg	Horizontal	140	337	54.0	-5.1	Pass
#3	5350.32	34.45	3.70	34.51	72.66	Max Peak	Horizontal	140	337	74.0	-1.3	Pass
#2	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits												

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 113 of 298

Equipment Configuration for 5725 MHz Radiated Band-Edge Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5745.00	Data Rate:	6.00 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

5600.00 - 5780.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5715.00	28.69	3.81	34.34	66.84	Max Avg	Horizontal	119	6	109.4	-42.6	Pass
#2	5725.00	38.10	3.79	34.35	76.24	Max Avg	Horizontal	119	6	122.2	-46.0	Pass
#3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 114 of 298

Equipment Configuration for 5725 MHz Radiated Band-Edge Emissions

Antenna:	Integral	Variant:	802.11n HT-20
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5745.00	Data Rate:	6.50 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

5600.00 - 5780.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5715.00	29.70	3.81	34.34	67.85	Max Avg	Horizontal	119	6	109.4	-41.6	Pass
#2	5725.00	40.14	3.79	34.35	78.28	Max Avg	Horizontal	119	6	122.2	-43.9	Pass
#3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 115 of 298

Equipment Configuration for 5725 MHz Radiated Band-Edge Emissions

Antenna:	Integral	Variant:	802.11n HT-40
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5755.00	Data Rate:	13.50 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

5600.00 - 5780.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5717.53	40.21	3.81	34.34	78.36	Max Avg	Horizontal	119	6	110.2	-31.9	Pass
#2	5725.00	42.00	3.79	34.35	80.14	Max Avg	Horizontal	119	6	122.2	-42.1	Pass
#3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 116 of 298

Equipment Configuration for 5850 MHz Radiated Band-Edge Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5825.00	Data Rate:	6.00 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

5770.00 - 6000.00 MHz

Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	5850.00	34.14	3.81	34.63	72.58	Max Avg	Horizontal	119	6	122.2	-49.6	Pass
#3	5860.00	30.42	3.86	34.65	68.93	Max Avg	Horizontal	119	6	109.4	-40.5	Pass
#2	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 117 of 298

Equipment Configuration for 5850 MHz Radiated Band-Edge Emissions

Antenna:	Integral	Variant:	802.11n HT-20
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5825.00	Data Rate:	6.50 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

5770.00 - 6000.00 MHz

Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	5850.00	35.88	3.81	34.63	74.32	Max Avg	Horizontal	119	6	122.2	-47.9	Pass
#3	5860.00	31.25	3.86	34.65	69.76	Max Avg	Horizontal	119	6	109.4	-39.6	Pass
#2	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 118 of 298

Equipment Configuration for 5850 MHz Radiated Band-Edge Emissions

Antenna:	Integral	Variant:	802.11n HT-40
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5795.00	Data Rate:	13.50 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

5770.00 - 6000.00 MHz

Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	5850.00	31.47	3.81	34.63	69.91	Max Avg	Horizontal	119	6	122.2	-52.3	Pass
#3	5869.22	29.52	3.82	34.68	68.02	Max Avg	Horizontal	119	6	106.9	-38.9	Pass
#2	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 119 of 298

9.6.2.4. YAGEO ANT300P002B24553

RESULTS SUMMARY FOR RADIATED BAND-EDGE EMISSIONS

5150 - 5250 MHz

YAGEO ANT300P002B24553		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
802.11a	5180.00	5150.00	68.67	52.85	17
802.11n HT-20	5180.00	5150.00	68.50	53.05	17
802.11n HT-40	5190.00	5150.00	71.74	52.33	14

5470 - 5725 MHz

YAGEO ANT300P002B24553		Restricted-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
802.11a	5500.00	5460.00	69.15	50.49	16
802.11n HT-20	5500.00	5460.00	73.28	52.57	16
802.11n HT-40	5510.00	5460.00	69.15	53.88	14

YAGEO ANT300P002B24553		Band-Edge Freq	Limit 68.23dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	
802.11a	5500.00	5470.00	56.79	16
802.11n HT-20	5500.00	5470.00	58.49	16
802.11n HT-40	5510.00	5470.00	57.00	14

5250 - 5350 MHz

YAGEO ANT300P002B24553		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
802.11a	5320.00	5350.00	71.38	53.39	16
802.11n HT-20	5320.00	5350.00	70.09	52.44	15
802.11n HT-40	5310.00	5350.00	73.16	53.58	14

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 120 of 298

5725 MHz Radiated Lower Band-Edge Emissions

YAGEO ANT300P002B24553		Band-Edge Freq	Limit 68.2dBµV/m	Limit 68.2dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
802.11a	5725.00	0.00	75.30	53.45	20
802.11n HT-20	5725.00	0.00	75.95	53.98	20
802.11n HT-40	5725.00	0.00	74.30	57.67	20

5850 MHz Radiated Higher Band-Edge Emissions

YAGEO ANT300P002B24553		Band-Edge Freq	Limit 122.2dBµV/m	Limit 110.8dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
802.11a	5850.00	5850.00	75.53	55.20	22
802.11n HT-20	5850.00	5850.00	76.23	55.66	22
802.11n HT-40	5850.00	5850.00	73.61	61.45	22

Click on the links to view the data.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 121 of 298

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	2.30	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5180.00	Data Rate:	6.00 MBit/s
Power Setting:	17	Tested By:	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	5150.00	15.07	3.67	34.11	52.85	Max Avg	Vertical	179	178	54.0	-1.2	Pass
#2	5150.00	30.89	3.67	34.11	68.67	Max Peak	Vertical	179	178	74.0	-5.3	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.												

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 122 of 298

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11n HT-20
Antenna Gain (dBi):	2,30	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5180.00	Data Rate:	6.50 MBit/s
Power Setting:	17	Tested By:	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	5148.50	30.71	3.68	34.11	68.50	Max Peak	Horizontal	179	178	74.0	-5.5	Pass
#2	5150.00	15.27	3.67	34.11	53.05	Max Avg	Horizontal	179	178	54.0	-1.0	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.												

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 123 of 298

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11n HT-40
Antenna Gain (dBi):	2.30	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5190.00	Data Rate:	13.50 MBit/s
Power Setting:	14	Tested By:	JMH

Test Measurement Results

4500.00 - 5250.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	5148.50	33.95	3.68	34.11	71.74	Max Peak	Horizontal	179	178	74.0	-2.3	Pass
#2	5150.00	14.55	3.67	34.11	52.33	Max Avg	Horizontal	179	178	54.0	-1.7	Pass
#3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.												

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 124 of 298

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	1.0	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5500.00	Data Rate:	6.00 MBit/s
Power Setting:	16	Tested By:	JMH

Test Measurement Results

5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	5458.50	31.05	3.80	34.30	69.15	Max Peak	Vertical	191	180	74.0	-4.9	Pass
#2	5460.00	12.39	3.79	34.31	50.49	Max Avg	Vertical	191	180	54.0	-3.5	Pass
#4	5470.00	18.71	3.76	34.32	56.79	Max Avg	Vertical	191	180	68.2	-11.4	Pass
#3	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
#5	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 125 of 298

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11n HT-20
Antenna Gain (dBi):	1.0	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5500.00	Data Rate:	6.50 MBit/s
Power Setting:	16	Tested By:	JMH

Test Measurement Results

5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	5456.69	35.18	3.80	34.30	73.28	Max Peak	Vertical	191	180	74.0	-0.7	Pass
#2	5460.00	14.47	3.79	34.31	52.57	Max Avg	Vertical	191	180	54.0	-1.4	Pass
#4	5470.00	20.41	3.76	34.32	58.49	Max Avg	Vertical	191	180	68.2	-9.7	Pass
#3	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
#5	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 126 of 298

Equipment Configuration for Restricted Lower Band-Edge Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11n HT-40
Antenna Gain (dBi):	1.0	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5510.00	Data Rate:	13.50 MBit/s
Power Setting:	14	Tested By:	JMH

Test Measurement Results

5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	5460.00	15.78	3.79	34.31	53.88	Max Avg	Vertical	191	180	54.0	-0.1	Pass
#2	5460.00	31.05	3.79	34.31	69.15	Max Peak	Vertical	191	180	74.0	-4.9	Pass
#3	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.												

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 127 of 298

Equipment Configuration for Restricted Upper Band-Edge Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	1.90	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5320.00	Data Rate:	6.00 MBit/s
Power Setting:	16	Tested By:	JMH

Test Measurement Results

5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	5350.00	15.18	3.70	34.51	53.39	Max Avg	Horizontal	199	181	54.0	-0.6	Pass
#2	5350.00	33.17	3.70	34.51	71.38	Max Peak	Horizontal	199	181	74.0	-2.6	Pass
#3	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.												

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 128 of 298

Equipment Configuration for Restricted Upper Band-Edge Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11n HT-20
Antenna Gain (dBi):	1.90	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5320.00	Data Rate:	6.50 MBit/s
Power Setting:	15	Tested By:	JMH

Test Measurement Results

5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	5350.00	14.23	3.70	34.51	52.44	Max Avg	Horizontal	199	181	54.0	-1.6	Pass
#3	5351.28	31.87	3.71	34.51	70.09	Max Peak	Horizontal	199	181	74.0	-3.9	Pass
#2	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.												

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 129 of 298

Equipment Configuration for 5350 MHz Radiated Band-Edge Emissions

Antenna:	YAGEO ANT-X300P002B24553	Variant:	802.11n HT40
Antenna Gain (dBi):	1.90	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5310.00	Data Rate:	13.50 MBit/s
Power Setting:	14	Tested By:	JMH

Test Measurement Results

5300.00 - 5460.00 MHz

Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5350.00	14.08	3.70	35.80	53.58	Max Avg	Vertical	158	291	54.0	-0.4	Pass
#3	5355.45	33.65	3.71	35.80	73.16	Max Peak	Vertical	158	291	74.0	-0.8	Pass
#2	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 130 of 298

Equipment Configuration for 5725 MHz Radiated Band-Edge Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	0.5	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5745.00	Data Rate:	6.00 MBit/s
Power Setting:	20	Tested By:	JMH

Test Measurement Results

5600.00 - 5780.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	5650.00	15.52	3.75	34.18	53.45	Max Avg	Horizontal	122	179	68.2	-14.8	Pass
#2	5725.00	37.16	3.79	34.35	75.30	Max Avg	Horizontal	122	179	122.2	-46.9	Pass
#3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 131 of 298

Equipment Configuration for 5725 MHz Radiated Band-Edge Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11n HT-20
Antenna Gain (dBi):	0.5	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5745.00	Data Rate:	6.50 MBit/s
Power Setting:	20	Tested By:	JMH

Test Measurement Results

5600.00 - 5780.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5650.00	16.05	3.75	34.18	53.98	Max Avg	Horizontal	122	179	68.2	-14.3	Pass
#2	5725.00	37.81	3.79	34.35	75.95	Max Avg	Horizontal	122	179	122.2	-46.3	Pass
#3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 132 of 298

Equipment Configuration for 5725 MHz Radiated Band-Edge Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11n HT-40
Antenna Gain (dBi):	0.5	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5755.00	Data Rate:	13.50 MBit/s
Power Setting:	20	Tested By:	JMH

Test Measurement Results

5600.00 - 5780.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	5650.00	19.74	3.75	34.18	57.67	Max Avg	Horizontal	122	179	68.2	-10.6	Pass
#2	5725.00	36.16	3.79	34.35	74.30	Max Avg	Horizontal	122	179	122.2	-47.9	Pass
#3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 133 of 298

Equipment Configuration for 5850 MHz Radiated Band-Edge Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	0.5	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5825.00	Data Rate:	6.00 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

5770.00 - 6000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5850.00	37.09	3.81	34.63	75.53	Max Avg	Horizontal	122	179	122.2	-46.7	Pass
#3	5925.92	16.54	3.84	34.82	55.20	Max Avg	Horizontal	122	179	68.2	-13.0	Pass
#2	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 134 of 298

Equipment Configuration for 5850 MHz Radiated Band-Edge Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11n HT-20
Antenna Gain (dBi):	0.5	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5825.00	Data Rate:	6.50 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

5770.00 - 6000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5850.00	37.79	3.81	34.63	76.23	Max Avg	Horizontal	122	179	122.2	-46.0	Pass
#3	5925.00	17.00	3.84	34.82	55.66	Max Avg	Horizontal	122	179	68.2	-12.6	Pass
#2	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 135 of 298

Equipment Configuration for 5850 MHz Radiated Band-Edge Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11n HT-40
Antenna Gain (dBi):	0.5	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5795.00	Data Rate:	13.50 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

5770.00 - 6000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	5850.00	35.17	3.81	34.63	73.61	Max Avg	Horizontal	122	179	122.2	-48.6	Pass
#3	5925.00	22.79	3.84	34.82	61.45	Max Avg	Horizontal	122	179	68.2	-6.8	Pass
#2	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B.

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 136 of 298

9.6.3. Digital Emissions

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

Test Procedure for Radiated Digital Emissions (0.03 – 1 GHz)

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

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

Field Strength Calculation

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

$$FS = R + AF + CORR$$

where:

FS = Field Strength

R = Measured Receiver Input Amplitude

AF = Antenna Factor

CORR = Correction Factor = CL – AG + NFL

CL = Cable Loss

AG = Amplifier Gain

For example:

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

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

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

$$\text{Level (dBmV/m)} = 20 * \text{Log (level (mV/m))}$$

$$40 \text{ dBmV/m} = 100\text{mV/m}$$

$$48 \text{ dBmV/m} = 250\text{mV/m}$$

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

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

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 137 of 298

Frequency (MHz)	Field Strength		Measurement Distance (m)
	$\mu\text{V/m}$ (microvolts/meter)	$\text{dB}\mu\text{V/m}$ (dB microvolts/meter)	
0.009-0.490	2400/F(kHz)	--	300
0.490-1.705	24000/F(kHz)	--	30
1.705-30.0	30	29.5	30
30-88	100**	40	3
88-216	150**	43.5	3
216-960	200**	46.0	3
Above 960	500	54.0	3

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

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

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 138 of 298

Equipment Configuration for Digital Emissions

Antenna:	Integral	Variant:	802.11a
Antenna Gain (dBi):	3.80	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5745.00	Data Rate:	6.00 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
#1	37.10	43.16	3.48	-16.06	30.58	MaxQP	Vertical	107	189	40.0	-9.4	Pass
#2	55.44	53.35	3.61	-24.13	32.83	MaxQP	Vertical	101	281	40.0	-7.2	Pass
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Laptop put into suspend mode to limit 50 MHz harmonics from support equipment. TX on 5745												

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: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 139 of 298

Equipment Configuration for Digital Emissions

Antenna:	YAGEO ANT300P002B24553	Variant:	802.11a
Antenna Gain (dBi):	0.50	Modulation:	OFDM
Beam Forming Gain (Y):	Not Applicable	Duty Cycle (%):	99
Channel Frequency (MHz):	5745.00	Data Rate:	6.00 MBit/s
Power Setting:	22	Tested By:	JMH

Test Measurement Results

30.00 - 1000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
#1	37.29	45.69	3.48	-16.06	33.11	MaxQP	Vertical	98	215	40.0	-6.9	Pass
#2	55.00	54.26	3.61	-24.13	33.74	MaxQP	Vertical	100	287	40.0	-6.3	Pass

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Laptop put into suspend mode to limit 50 MHz harmonics from support equipment. TX on 5745

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.

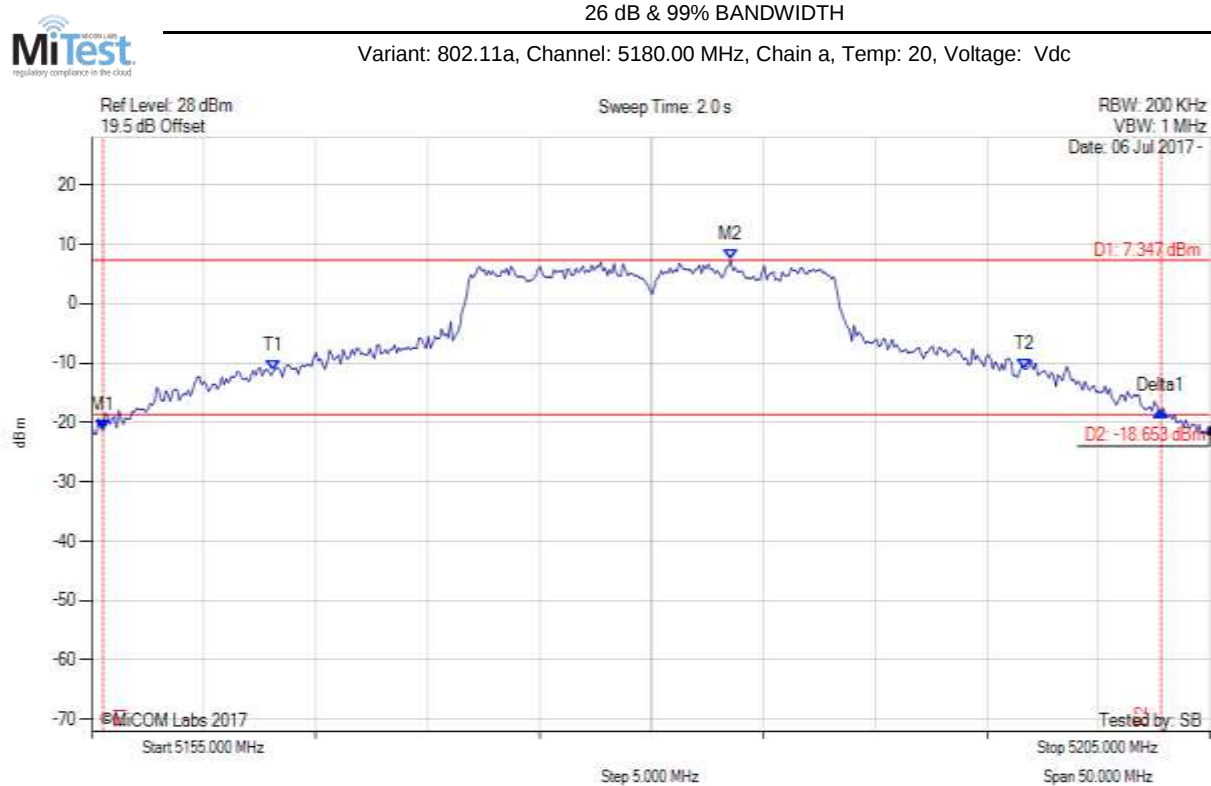


Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 140 of 298

A. APPENDIX - GRAPHICAL IMAGES

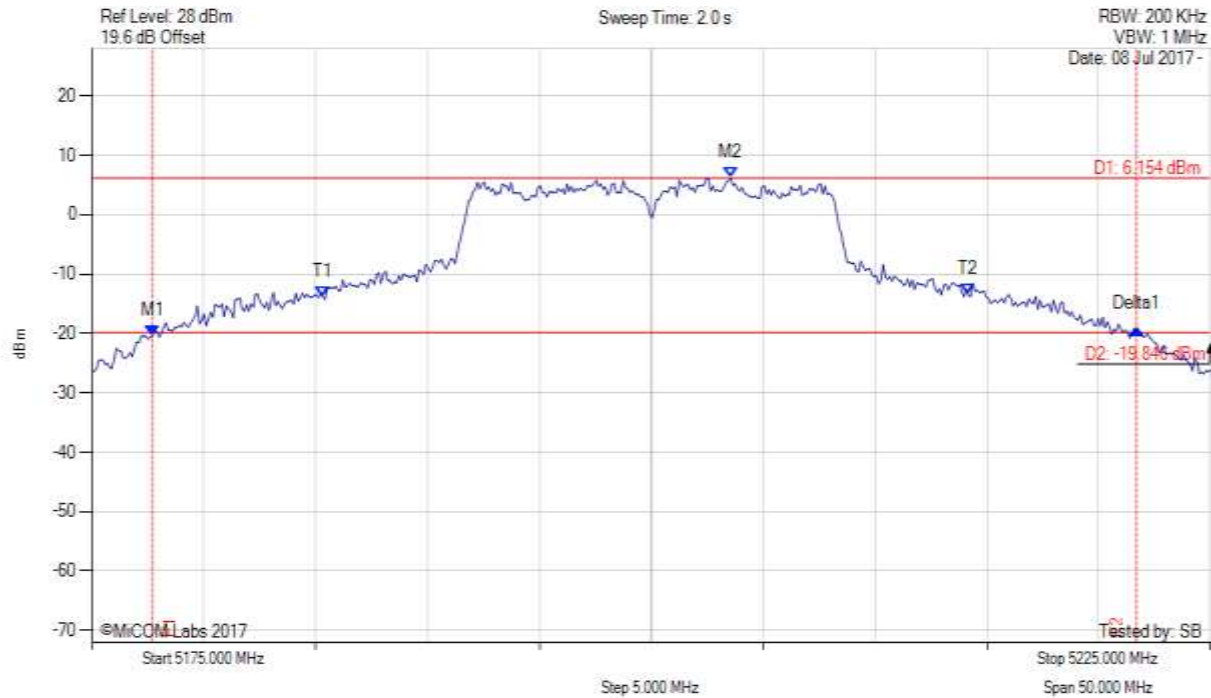
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

A.1. 26 dB & 99% Bandwidth



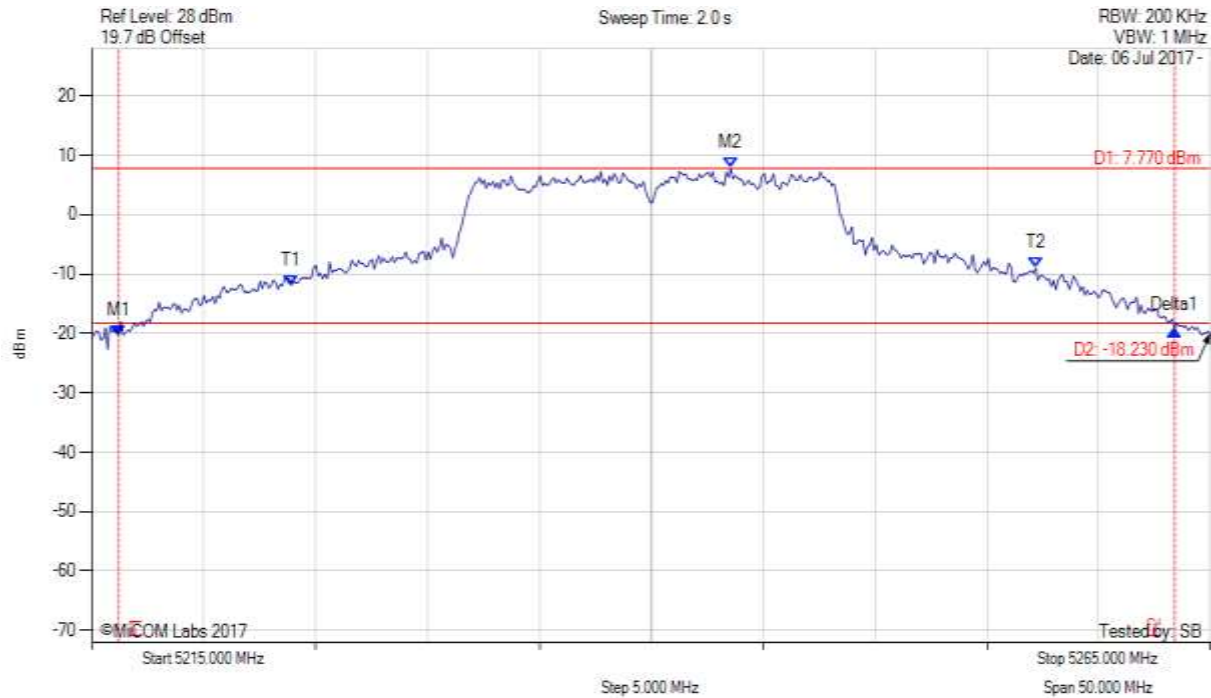
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5155.501 MHz : -21.406 dBm M2 : 5183.557 MHz : 7.347 dBm Delta1 : 47.295 MHz : 3.356 dB T1 : 5163.116 MHz : -11.379 dBm T2 : 5196.683 MHz : -10.981 dBm OBW : 33.567 MHz	Measured 26 dB Bandwidth: 47.295 MHz Measured 99% Bandwidth: 33.567 MHz

[back to matrix](#)



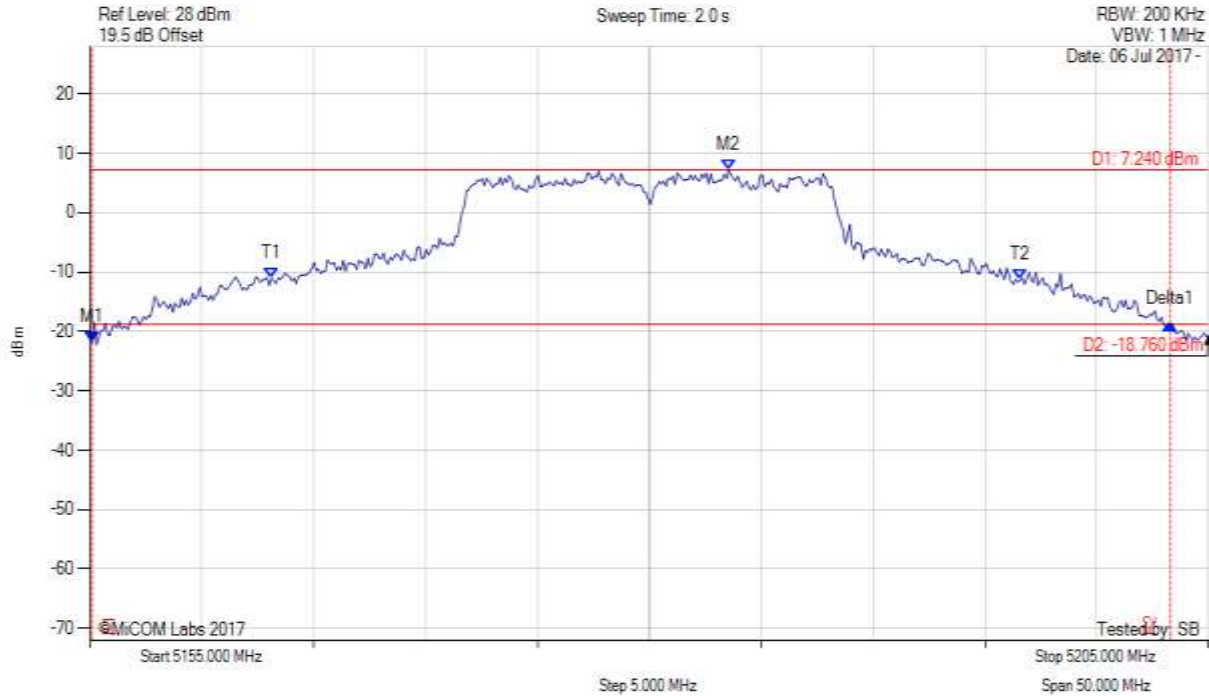
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5177.705 MHz : -20.472 dBm M2 : 5203.557 MHz : 6.154 dBm Delta1 : 43.988 MHz : 1.171 dB T1 : 5185.321 MHz : -13.771 dBm T2 : 5214.178 MHz : -13.464 dBm OBW : 28.858 MHz	Measured 26 dB Bandwidth: 43.988 MHz Measured 99% Bandwidth: 28.858 MHz

[back to matrix](#)



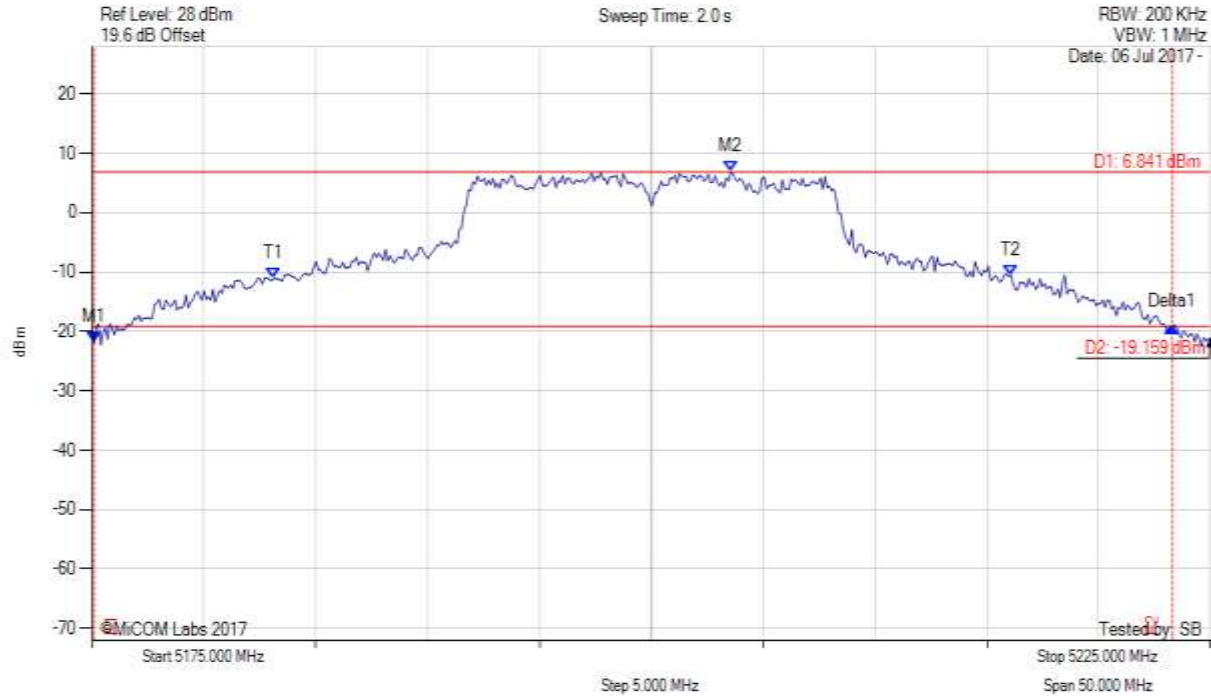
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5216.202 MHz : -20.448 dBm M2 : 5243.557 MHz : 7.770 dBm Delta1 : 47.194 MHz : 0.948 dB T1 : 5223.918 MHz : -11.906 dBm T2 : 5257.184 MHz : -8.976 dBm OBW : 33.267 MHz	Measured 26 dB Bandwidth: 47.194 MHz Measured 99% Bandwidth: 33.267 MHz

[back to matrix](#)



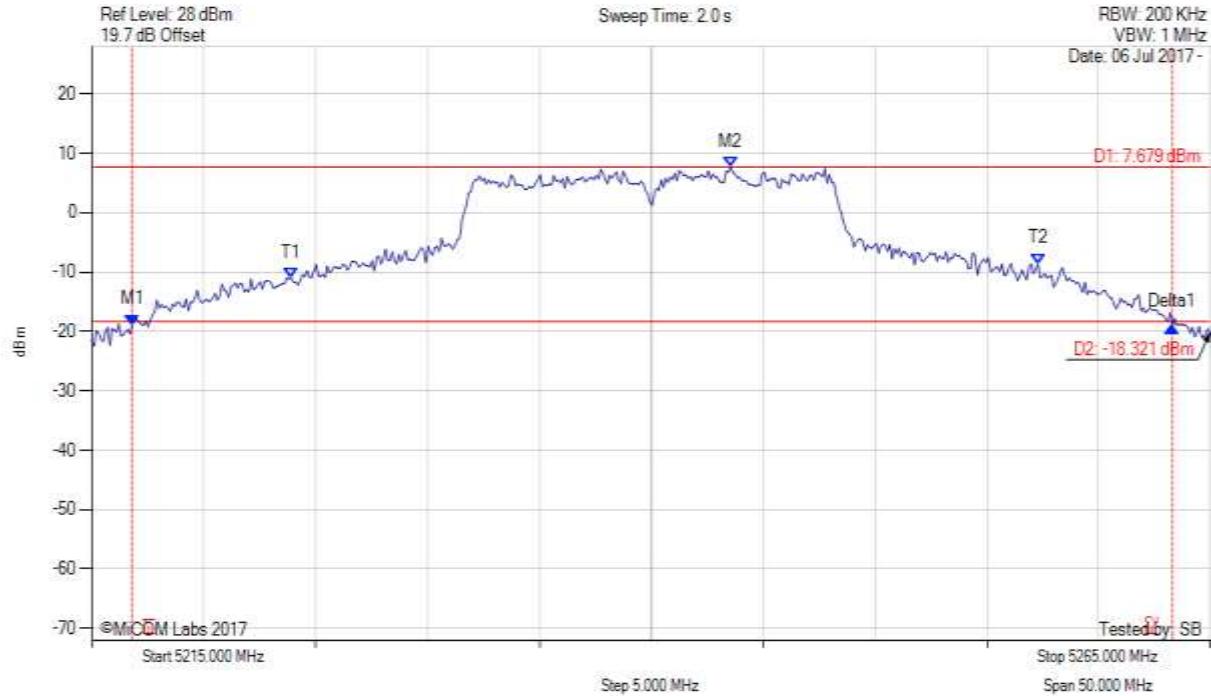
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5155.100 MHz : -21.867 dBm M2 : 5183.557 MHz : 7.240 dBm Delta1 : 48.196 MHz : 3.134 dB T1 : 5163.116 MHz : -11.015 dBm T2 : 5196.583 MHz : -11.355 dBm OBW : 33.467 MHz	Measured 26 dB Bandwidth: 48.196 MHz Measured 99% Bandwidth: 33.467 MHz

[back to matrix](#)



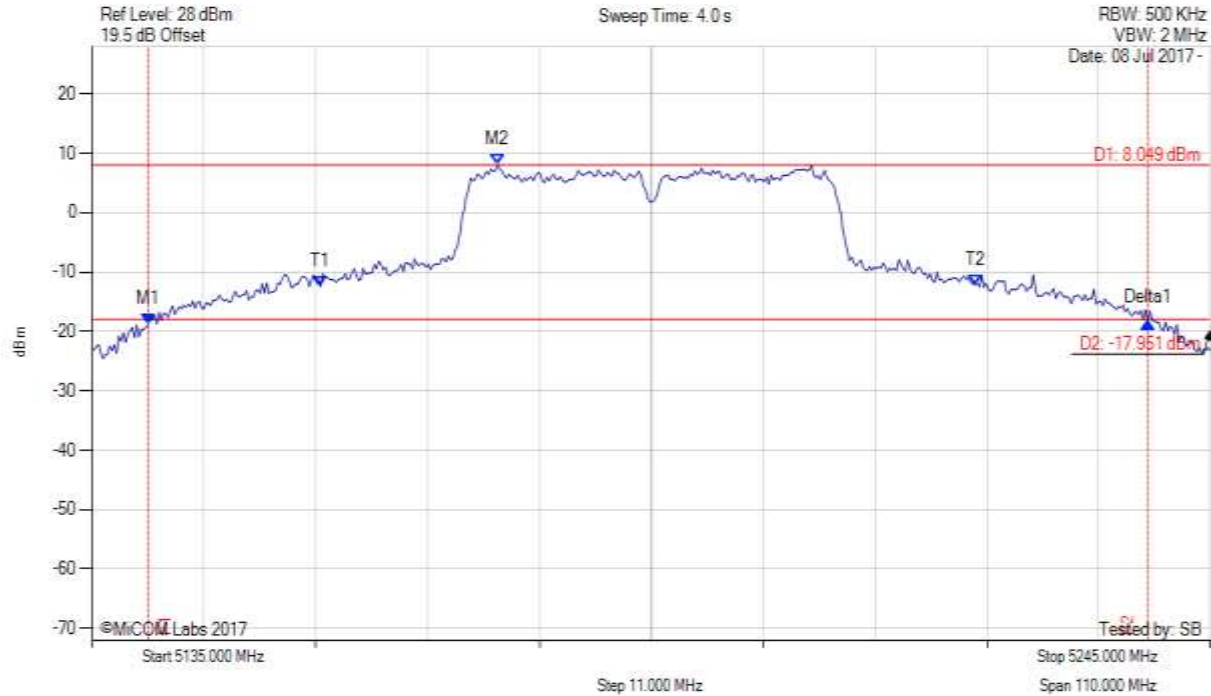
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5175.100 MHz : -21.894 dBm M2 : 5203.557 MHz : 6.841 dBm Delta1 : 48.196 MHz : 2.725 dB T1 : 5183.116 MHz : -11.135 dBm T2 : 5216.082 MHz : -10.539 dBm OBW : 32.966 MHz	Measured 26 dB Bandwidth: 48.196 MHz Measured 99% Bandwidth: 32.966 MHz

[back to matrix](#)



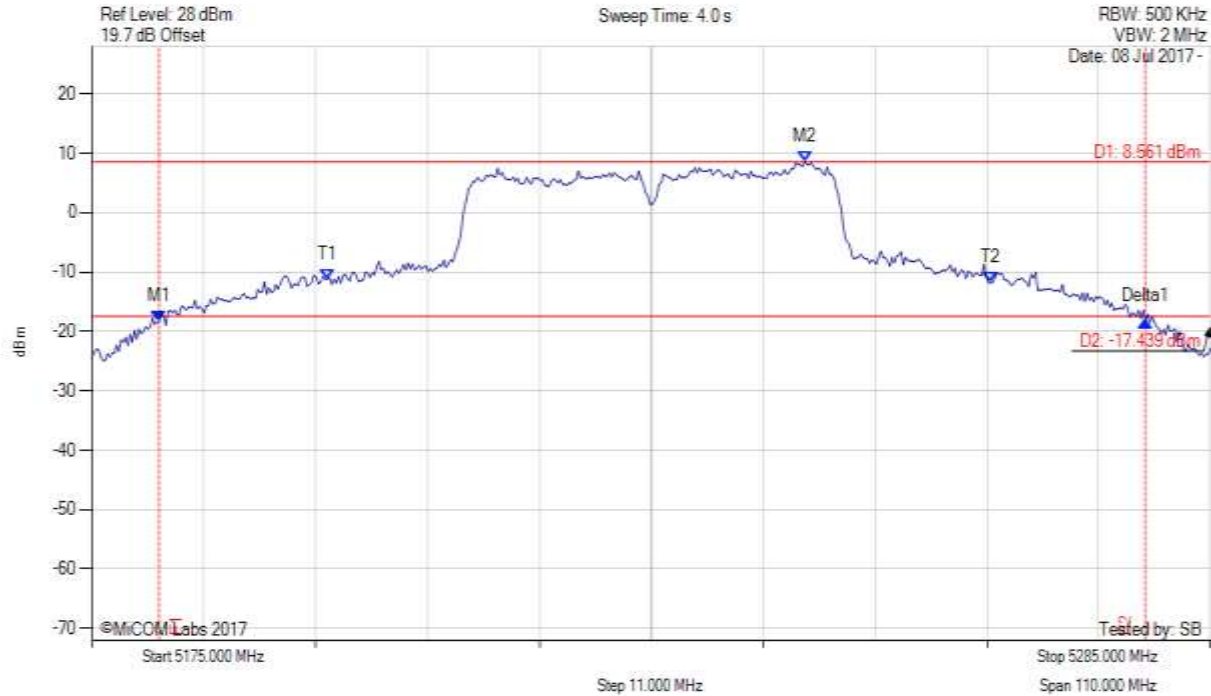
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5216.804 MHz : -18.888 dBm M2 : 5243.557 MHz : 7.679 dBm Delta1 : 46.493 MHz : -0.409 dB T1 : 5223.918 MHz : -10.991 dBm T2 : 5257.285 MHz : -8.599 dBm OBW : 33.367 MHz	Measured 26 dB Bandwidth: 46.493 MHz Measured 99% Bandwidth: 33.367 MHz

[back to matrix](#)



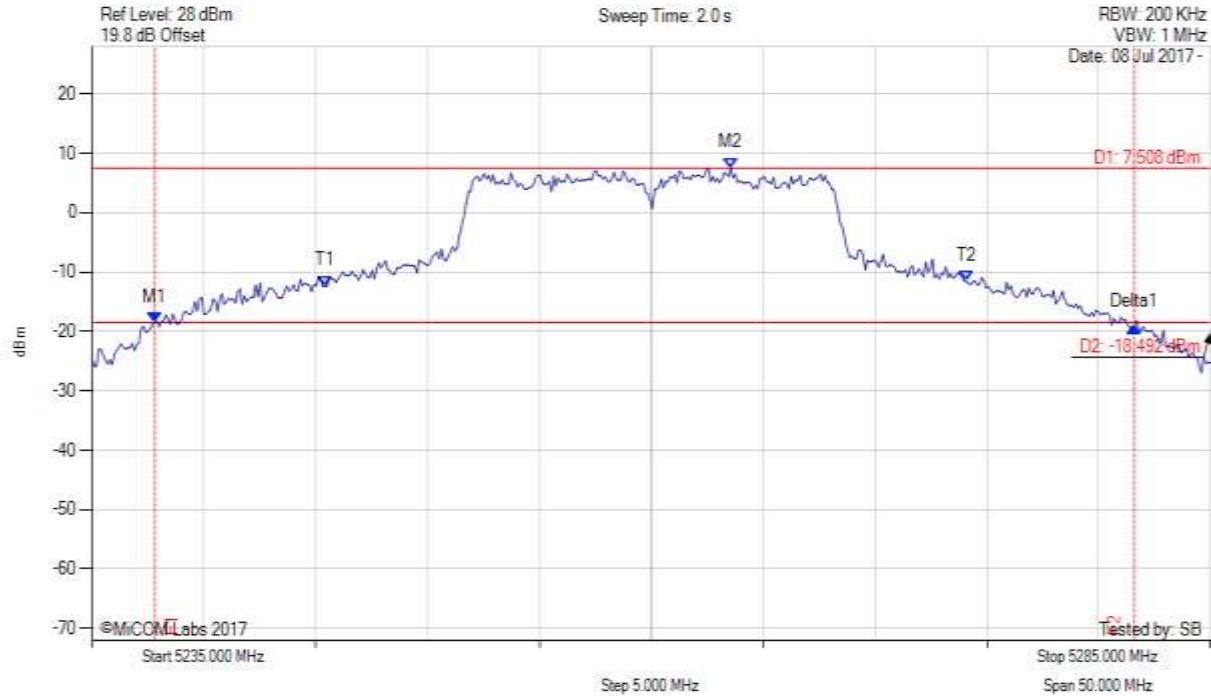
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5140.511 MHz : -18.827 dBm M2 : 5174.900 MHz : 8.049 dBm Delta1 : 98.317 MHz : 0.340 dB T1 : 5157.485 MHz : -12.467 dBm T2 : 5221.854 MHz : -12.136 dBm OBW : 64.369 MHz	Measured 26 dB Bandwidth: 98.317 MHz Measured 99% Bandwidth: 64.369 MHz

[back to matrix](#)



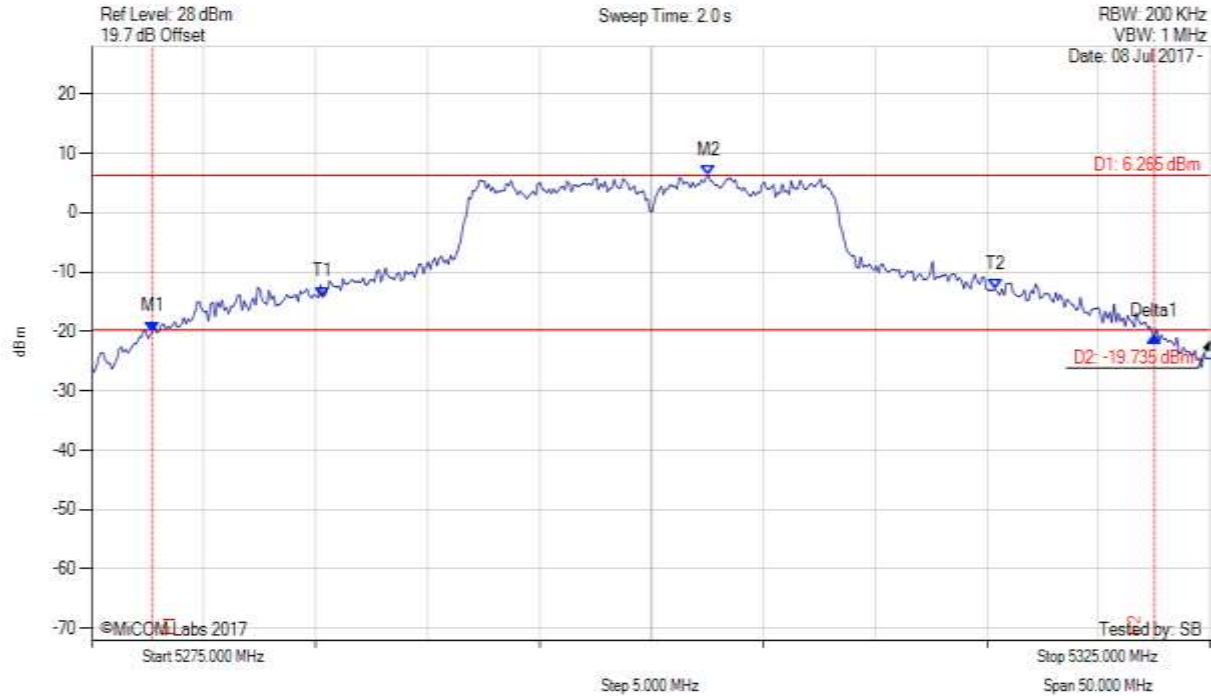
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5181.613 MHz : -18.343 dBm M2 : 5245.100 MHz : 8.561 dBm Delta1 : 96.994 MHz : 0.128 dB T1 : 5198.146 MHz : -11.215 dBm T2 : 5263.397 MHz : -11.853 dBm OBW : 65.251 MHz	Measured 26 dB Bandwidth: 96.994 MHz Measured 99% Bandwidth: 65.251 MHz

[back to matrix](#)



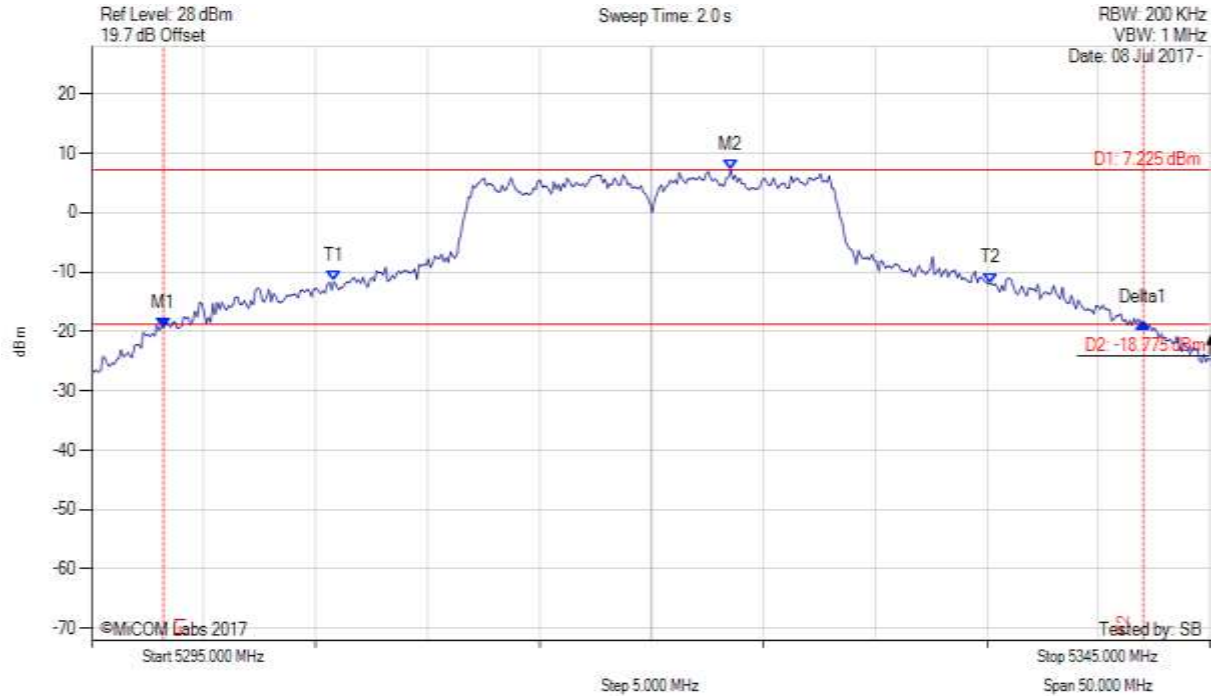
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5237.806 MHz : -18.561 dBm M2 : 5263.557 MHz : 7.508 dBm Delta1 : 43.788 MHz : -0.696 dB T1 : 5245.421 MHz : -12.356 dBm T2 : 5274.078 MHz : -11.605 dBm OBW : 28.657 MHz	Measured 26 dB Bandwidth: 43.788 MHz Measured 99% Bandwidth: 28.657 MHz

[back to matrix](#)



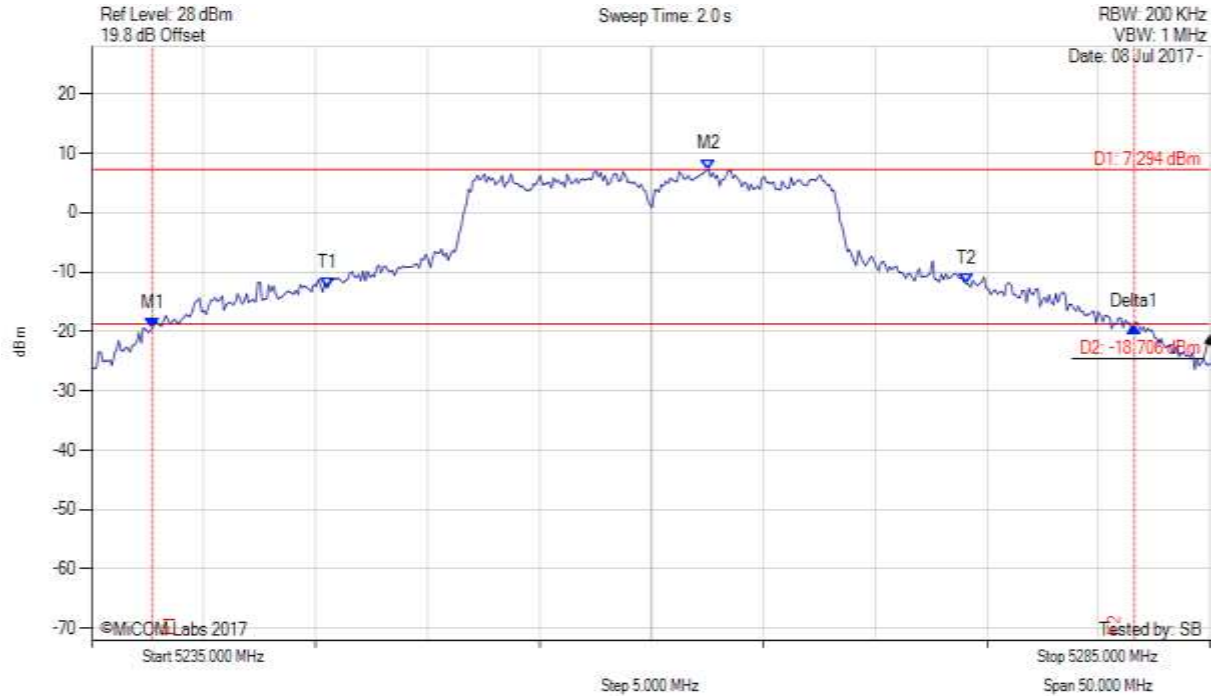
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5277.705 MHz : -20.059 dBm M2 : 5302.555 MHz : 6.265 dBm Delta1 : 44.790 MHz : -0.893 dB T1 : 5285.321 MHz : -14.219 dBm T2 : 5315.381 MHz : -12.864 dBm OBW : 30.060 MHz	Measured 26 dB Bandwidth: 44.790 MHz Measured 99% Bandwidth: 30.060 MHz

[back to matrix](#)



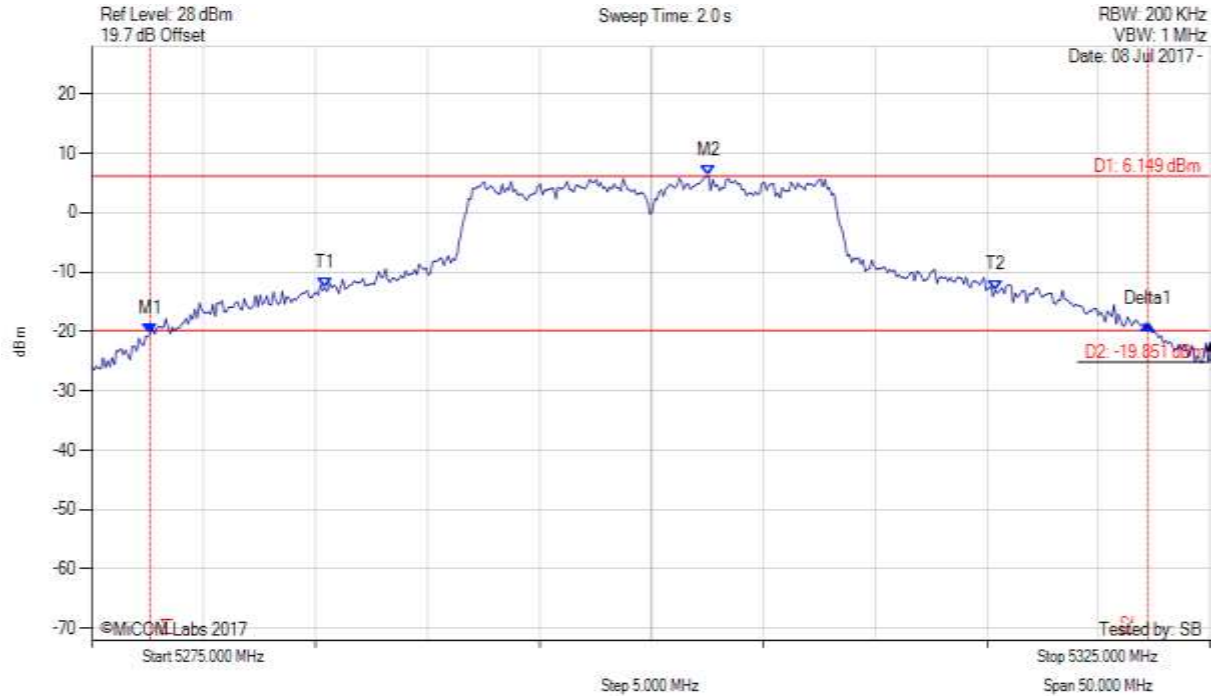
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5298.206 MHz : -19.384 dBm M2 : 5323.557 MHz : 7.225 dBm Delta1 : 43.788 MHz : 0.822 dB T1 : 5305.822 MHz : -11.599 dBm T2 : 5335.180 MHz : -11.888 dBm OBW : 29.359 MHz	Measured 26 dB Bandwidth: 43.788 MHz Measured 99% Bandwidth: 29.359 MHz

[back to matrix](#)



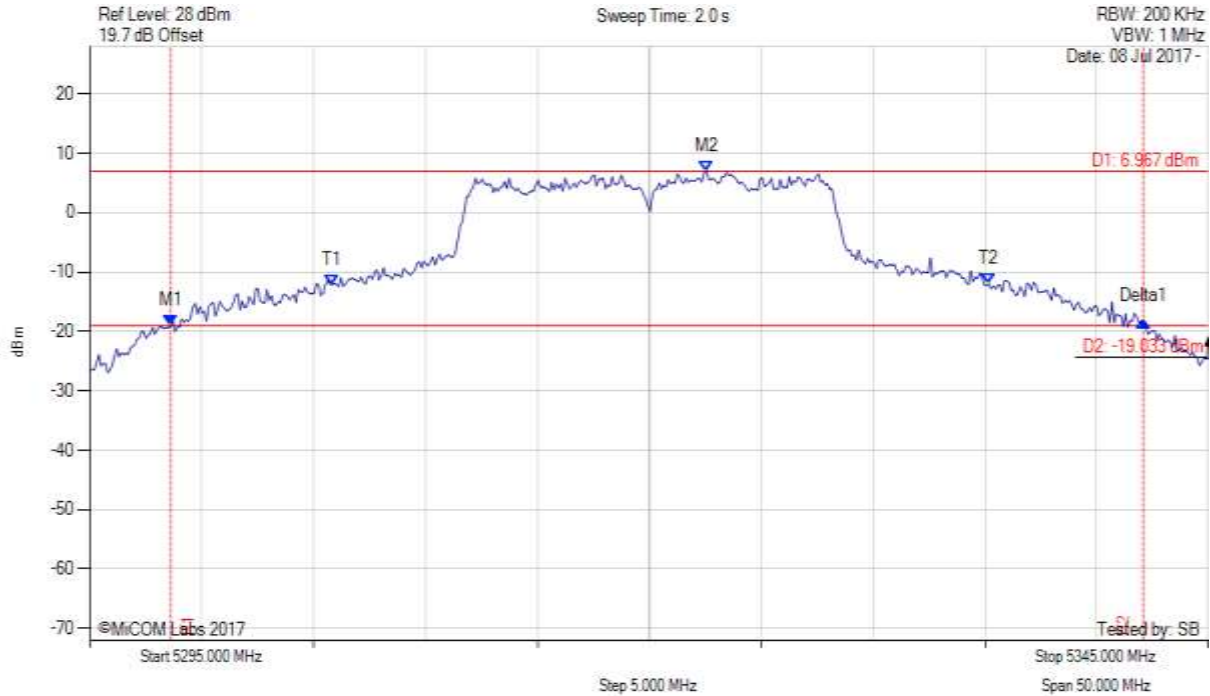
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5237.705 MHz : -19.455 dBm M2 : 5262.555 MHz : 7.294 dBm Delta1 : 43.888 MHz : 0.305 dB T1 : 5245.521 MHz : -12.687 dBm T2 : 5274.078 MHz : -11.971 dBm OBW : 28.557 MHz	Measured 26 dB Bandwidth: 43.888 MHz Measured 99% Bandwidth: 28.557 MHz

[back to matrix](#)



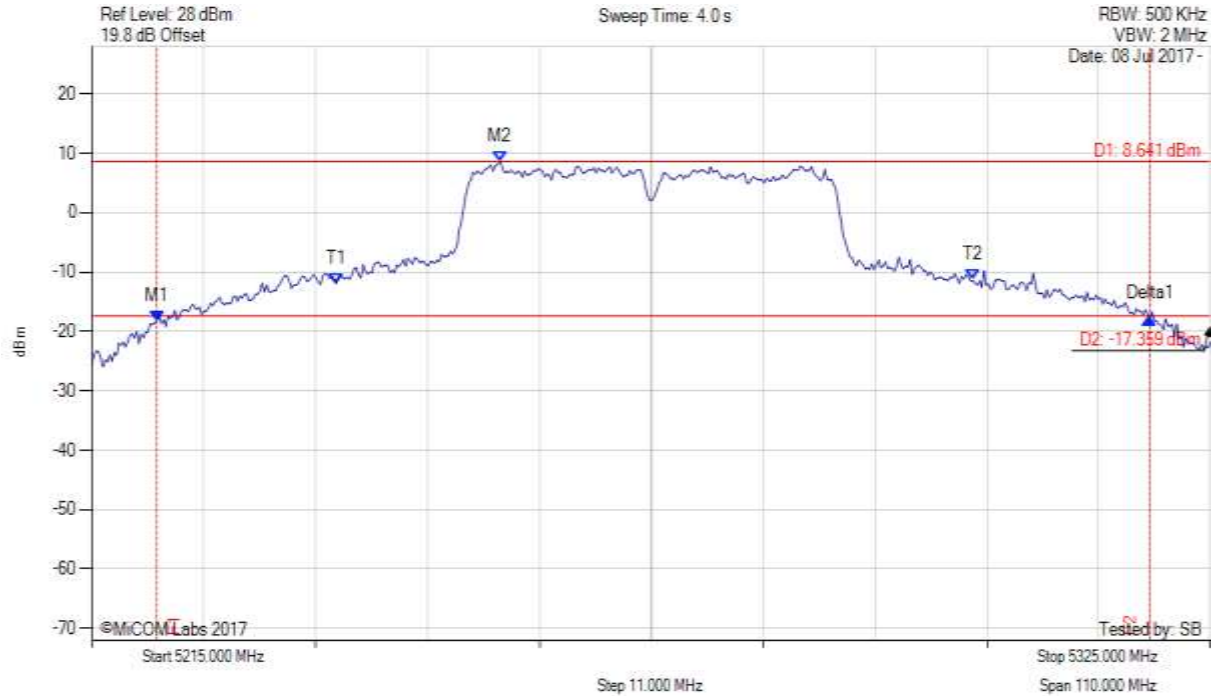
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5277.605 MHz : -20.446 dBm M2 : 5302.555 MHz : 6.149 dBm Delta1 : 44.589 MHz : 1.603 dB T1 : 5285.421 MHz : -12.673 dBm T2 : 5315.381 MHz : -13.047 dBm OBW : 29.960 MHz	Measured 26 dB Bandwidth: 44.589 MHz Measured 99% Bandwidth: 29.960 MHz

[back to matrix](#)



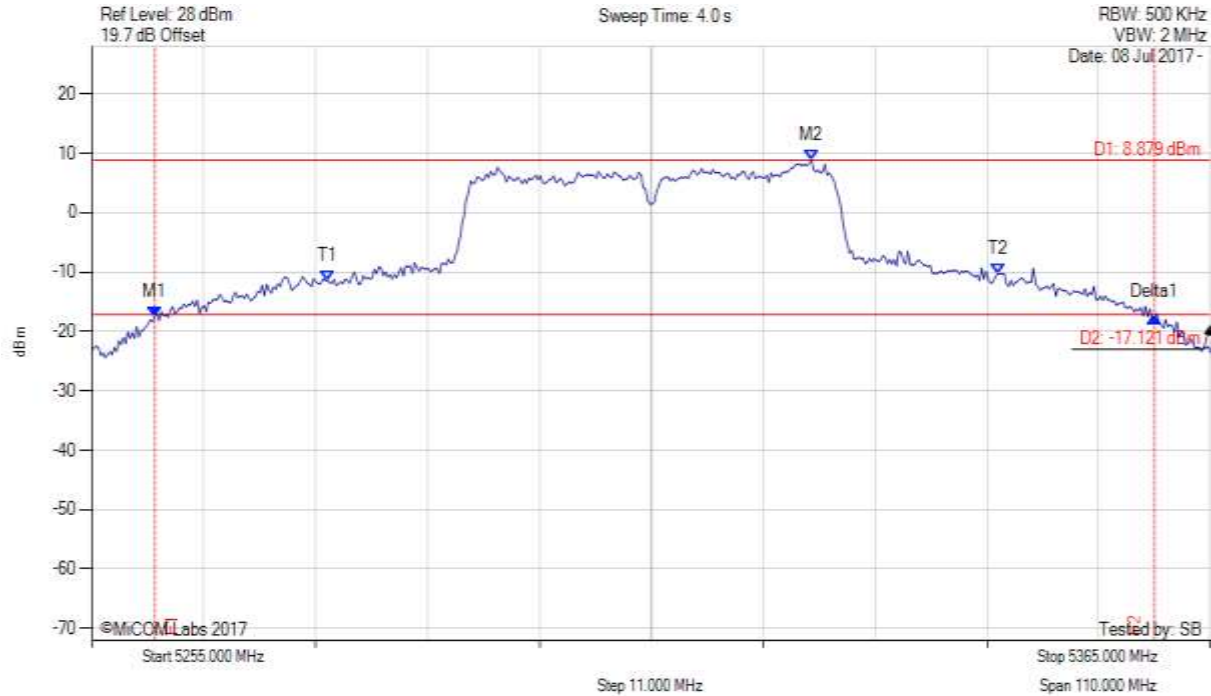
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5298.607 MHz : -19.091 dBm M2 : 5322.555 MHz : 6.967 dBm Delta1 : 43.487 MHz : 0.736 dB T1 : 5305.822 MHz : -12.138 dBm T2 : 5335.180 MHz : -11.977 dBm OBW : 29.359 MHz	Measured 26 dB Bandwidth: 43.487 MHz Measured 99% Bandwidth: 29.359 MHz

[back to matrix](#)



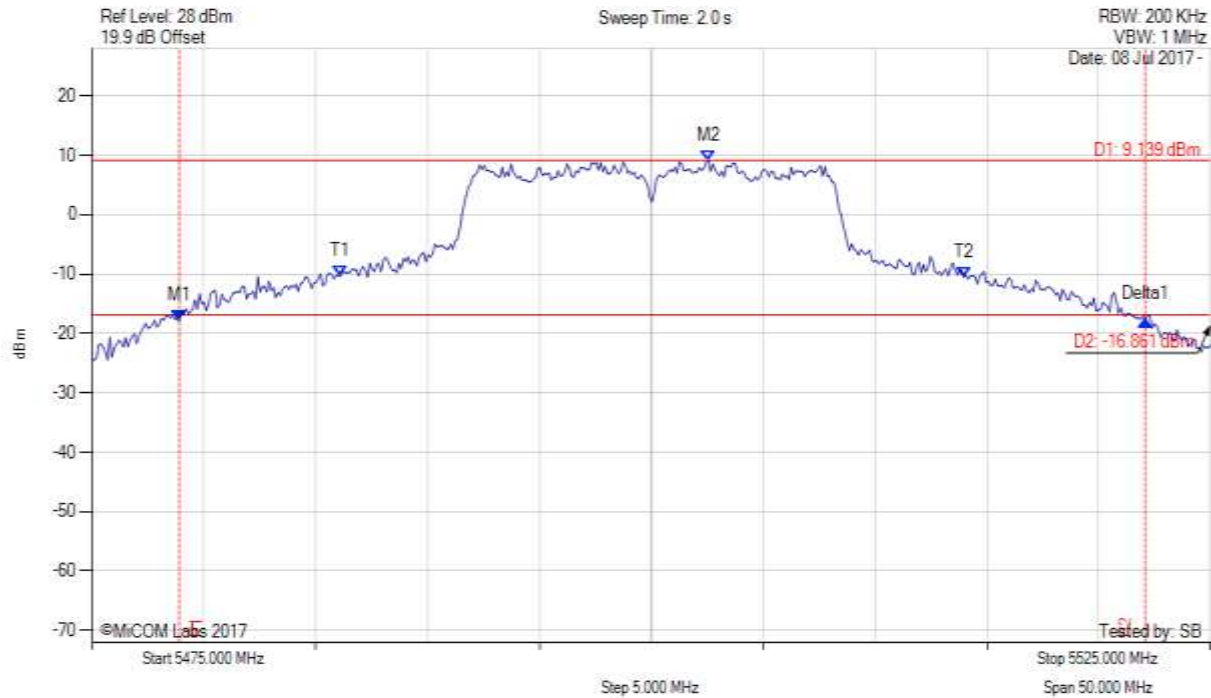
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5221.393 MHz : -18.207 dBm M2 : 5255.120 MHz : 8.641 dBm Delta1 : 97.655 MHz : 0.270 dB T1 : 5239.028 MHz : -11.939 dBm T2 : 5301.633 MHz : -11.381 dBm OBW : 62.605 MHz	Measured 26 dB Bandwidth: 97.655 MHz Measured 99% Bandwidth: 62.605 MHz

[back to matrix](#)



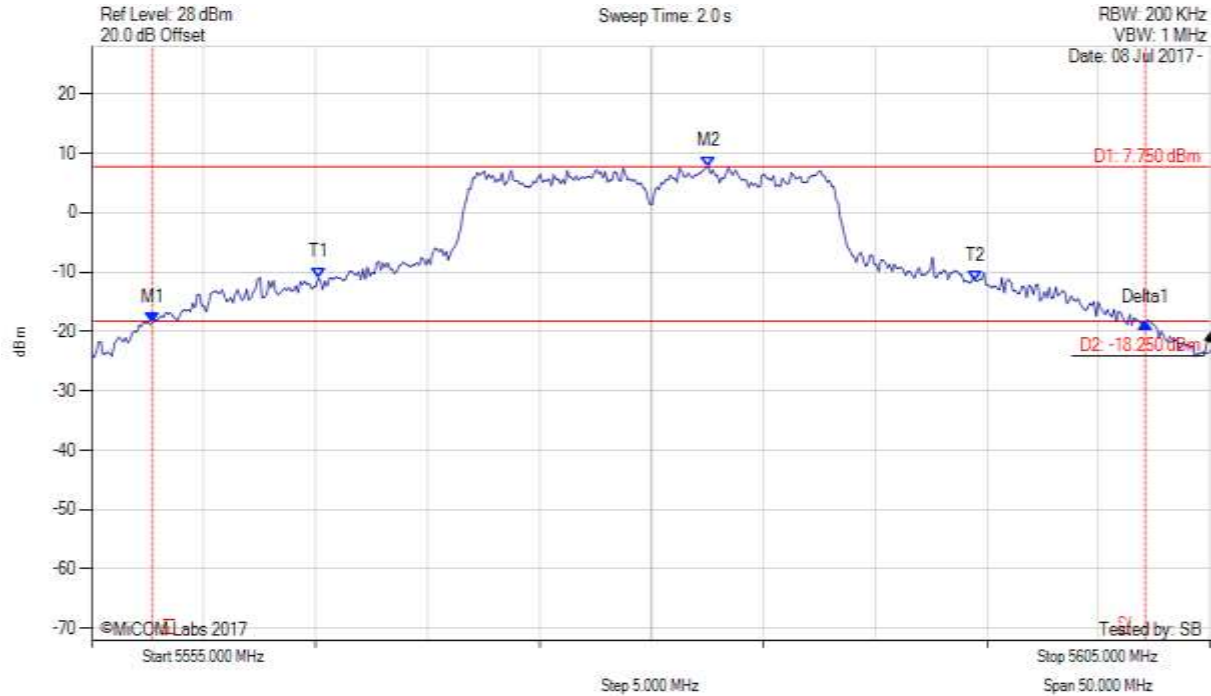
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5261.172 MHz : -17.517 dBm M2 : 5325.762 MHz : 8.879 dBm Delta1 : 98.317 MHz : -0.169 dB T1 : 5278.146 MHz : -11.432 dBm T2 : 5344.058 MHz : -10.308 dBm OBW : 65.912 MHz	Measured 26 dB Bandwidth: 98.317 MHz Measured 99% Bandwidth: 65.912 MHz

[back to matrix](#)



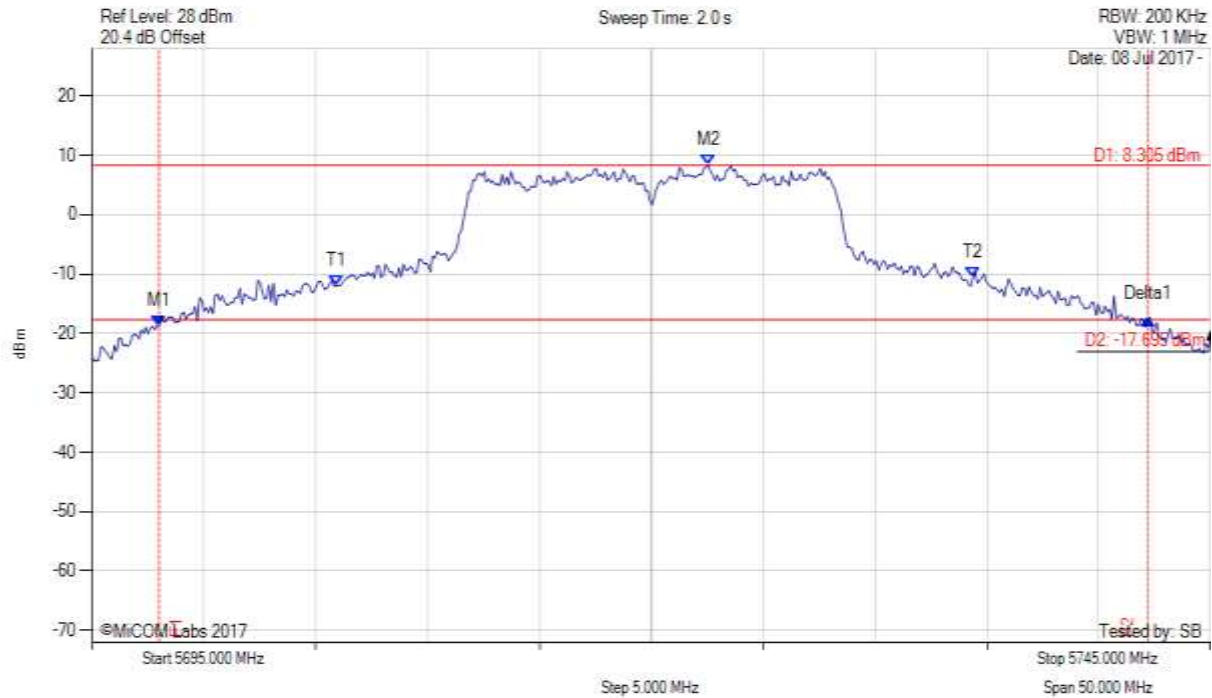
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5478.908 MHz : -17.910 dBm M2 : 5502.555 MHz : 9.139 dBm Delta1 : 43.186 MHz : 0.193 dB T1 : 5486.122 MHz : -10.389 dBm T2 : 5513.978 MHz : -10.489 dBm OBW : 27.856 MHz	Measured 26 dB Bandwidth: 43.186 MHz Measured 99% Bandwidth: 27.856 MHz

[back to matrix](#)



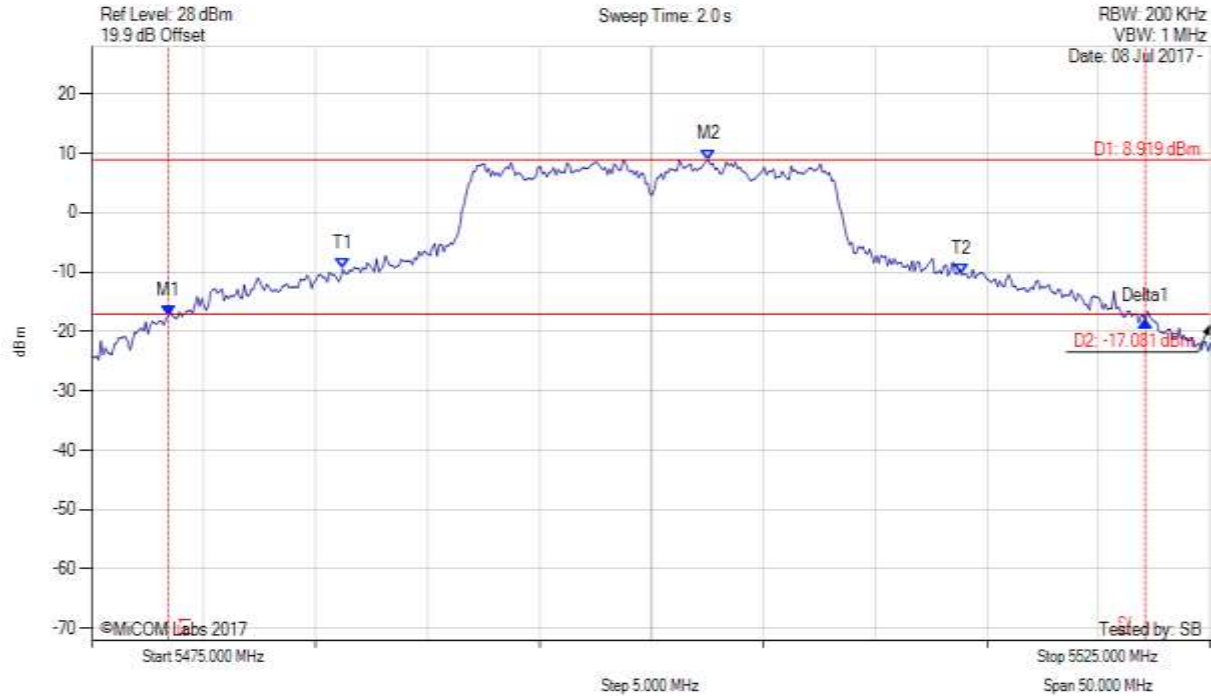
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5557.705 MHz : -18.495 dBm M2 : 5582.555 MHz : 7.750 dBm Delta1 : 44.389 MHz : -0.035 dB T1 : 5565.120 MHz : -10.938 dBm T2 : 5594.479 MHz : -11.438 dBm OBW : 29.359 MHz	Measured 26 dB Bandwidth: 44.389 MHz Measured 99% Bandwidth: 29.359 MHz

[back to matrix](#)



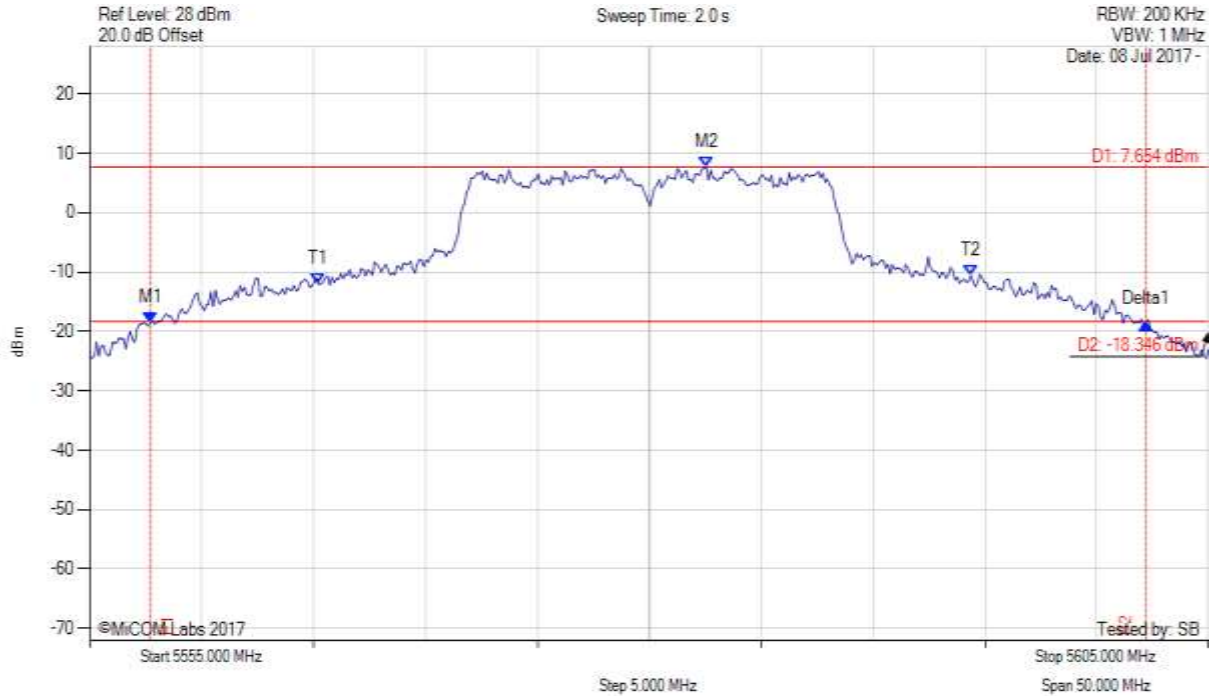
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5698.006 MHz : -18.827 dBm M2 : 5722.555 MHz : 8.305 dBm Delta1 : 44.188 MHz : 1.275 dB T1 : 5705.922 MHz : -11.965 dBm T2 : 5734.379 MHz : -10.692 dBm OBW : 28.457 MHz	Measured 26 dB Bandwidth: 44.188 MHz Measured 99% Bandwidth: 28.457 MHz

[back to matrix](#)



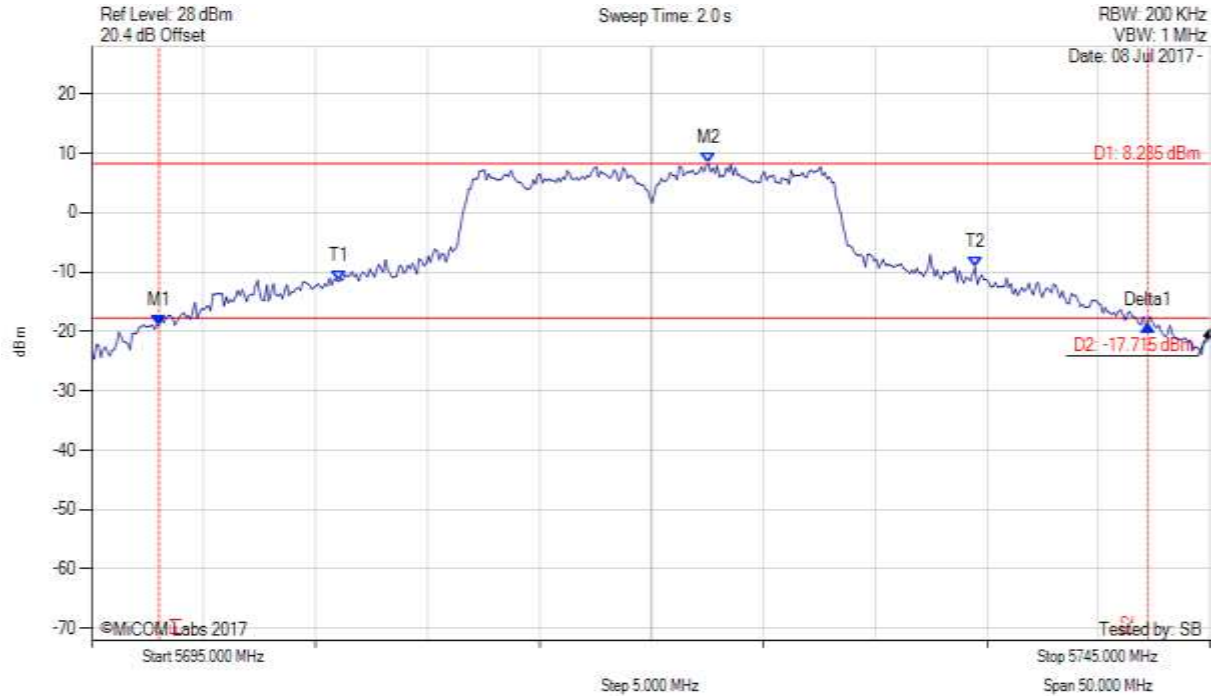
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5478.407 MHz : -17.397 dBm M2 : 5502.555 MHz : 8.919 dBm Delta1 : 43.687 MHz : -0.879 dB T1 : 5486.222 MHz : -9.423 dBm T2 : 5513.878 MHz : -10.452 dBm OBW : 27.655 MHz	Measured 26 dB Bandwidth: 43.687 MHz Measured 99% Bandwidth: 27.655 MHz

[back to matrix](#)



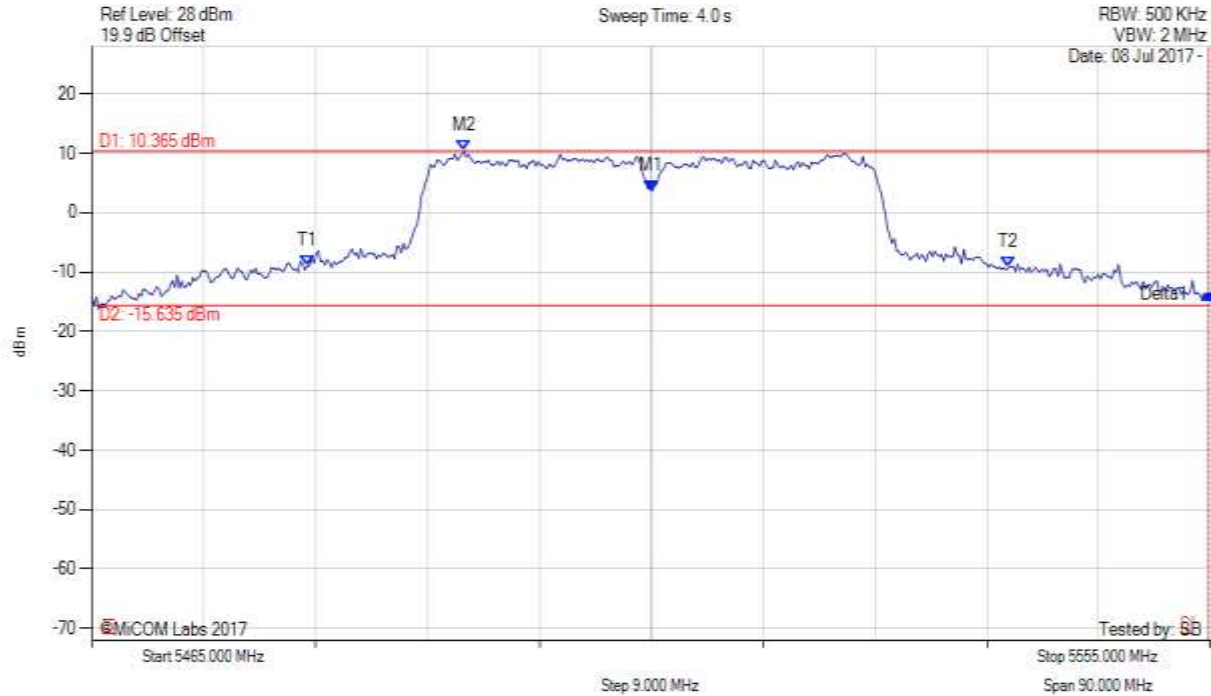
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5557.705 MHz : -18.467 dBm M2 : 5582.555 MHz : 7.654 dBm Delta1 : 44.489 MHz : -0.222 dB T1 : 5565.220 MHz : -12.038 dBm T2 : 5594.379 MHz : -10.596 dBm OBW : 29.158 MHz	Measured 26 dB Bandwidth: 44.489 MHz Measured 99% Bandwidth: 29.158 MHz

[back to matrix](#)



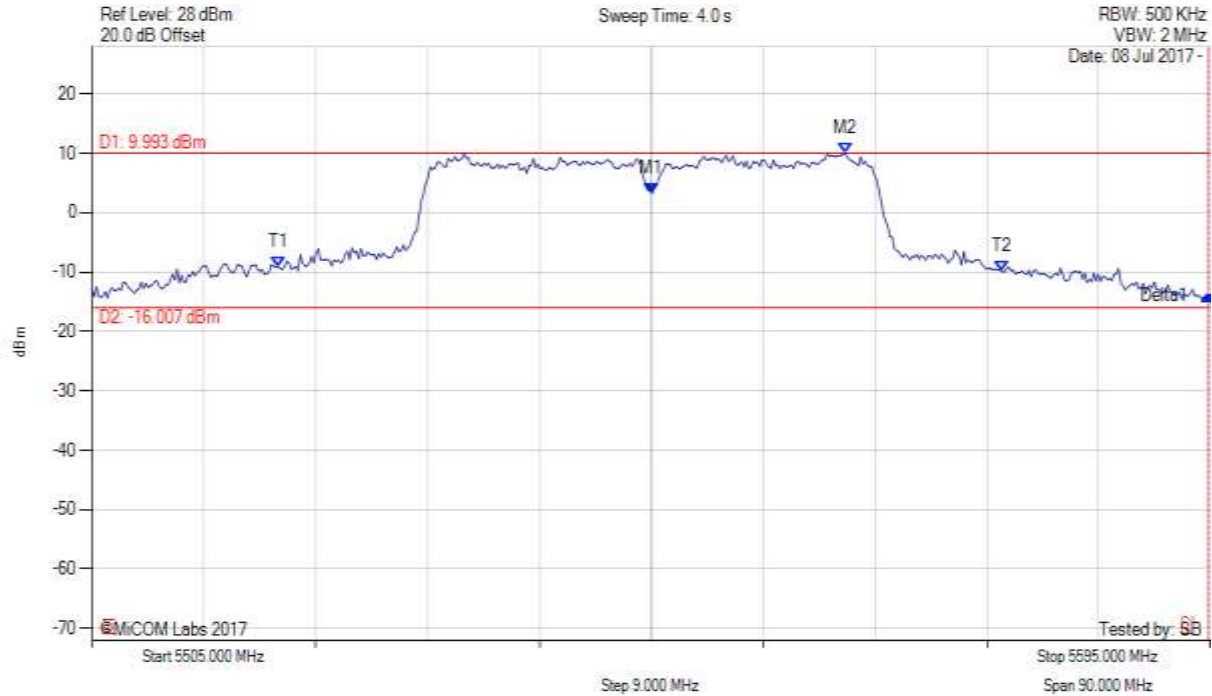
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5698.006 MHz : -19.020 dBm M2 : 5722.555 MHz : 8.285 dBm Delta1 : 44.188 MHz : 0.035 dB T1 : 5706.022 MHz : -11.571 dBm T2 : 5734.479 MHz : -9.165 dBm OBW : 28.457 MHz	Measured 26 dB Bandwidth: 44.188 MHz Measured 99% Bandwidth: 28.457 MHz

[back to matrix](#)



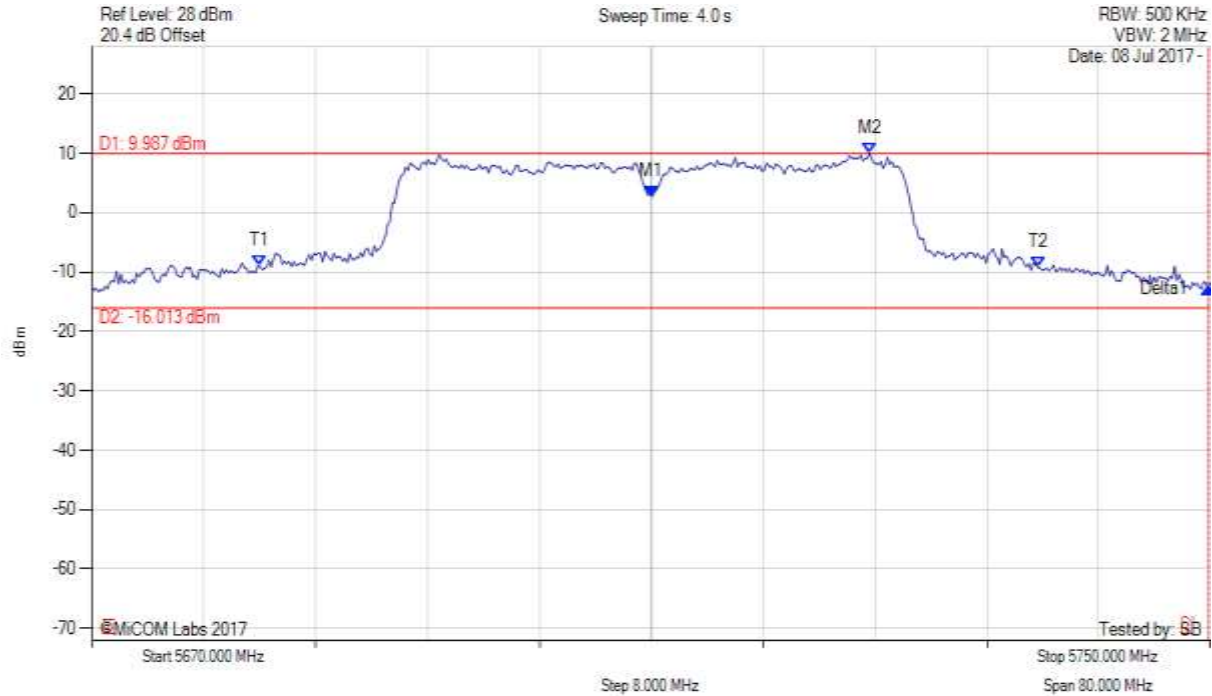
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5510.000 MHz : 3.652 dBm M2 : 5494.940 MHz : 10.365 dBm Delta1 : 44.820 MHz : -17.328 dB T1 : 5482.315 MHz : -8.996 dBm T2 : 5538.768 MHz : -9.169 dBm OBW : 56.453 MHz	Measured 26 dB Bandwidth: 44.820 MHz Measured 99% Bandwidth: 56.453 MHz

[back to matrix](#)



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5550.000 MHz : 3.239 dBm M2 : 5565.601 MHz : 9.993 dBm Delta1 : 44.820 MHz : -17.126 dB T1 : 5519.970 MHz : -9.163 dBm T2 : 5578.226 MHz : -9.795 dBm OBW : 58.257 MHz	Measured 26 dB Bandwidth: 44.820 MHz Measured 99% Bandwidth: 58.257 MHz

[back to matrix](#)



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5710.000 MHz : 2.702 dBm M2 : 5725.631 MHz : 9.987 dBm Delta1 : 39.840 MHz : -15.406 dB T1 : 5682.024 MHz : -9.045 dBm T2 : 5737.655 MHz : -9.222 dBm OBW : 55.631 MHz	Measured 26 dB Bandwidth: 39.840 MHz Measured 99% Bandwidth: 55.631 MHz

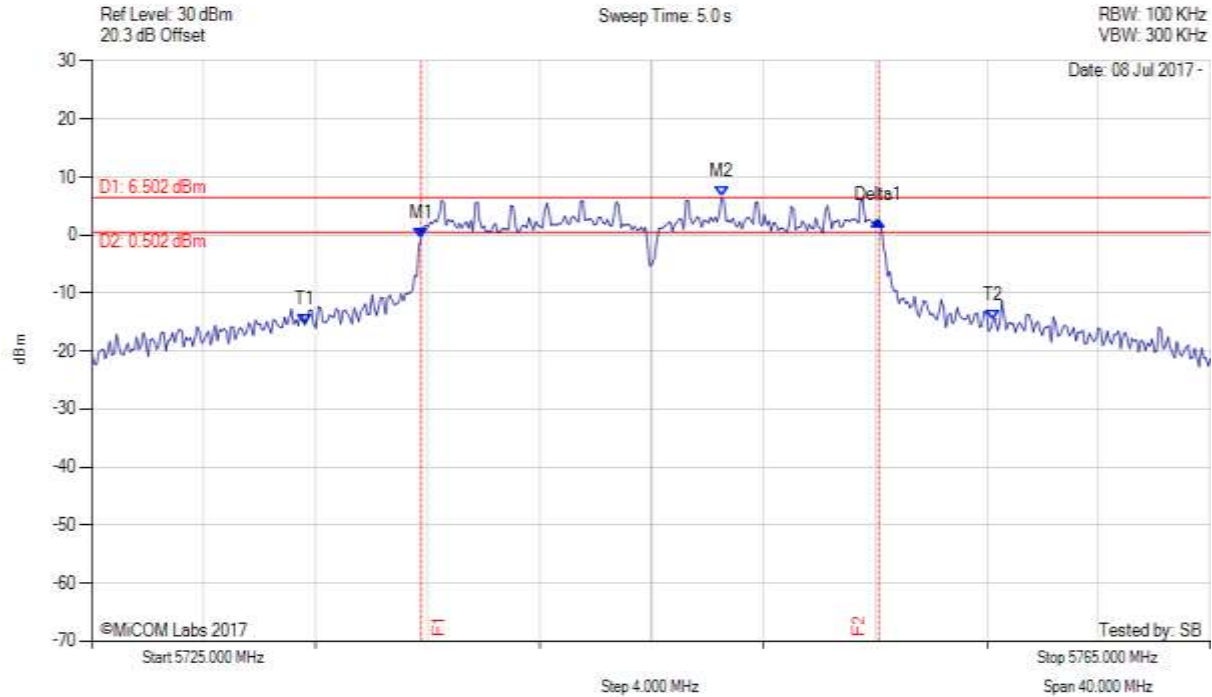
[back to matrix](#)

A.2. 6 dB & 99% Bandwidth



6 dB & 99% BANDWIDTH

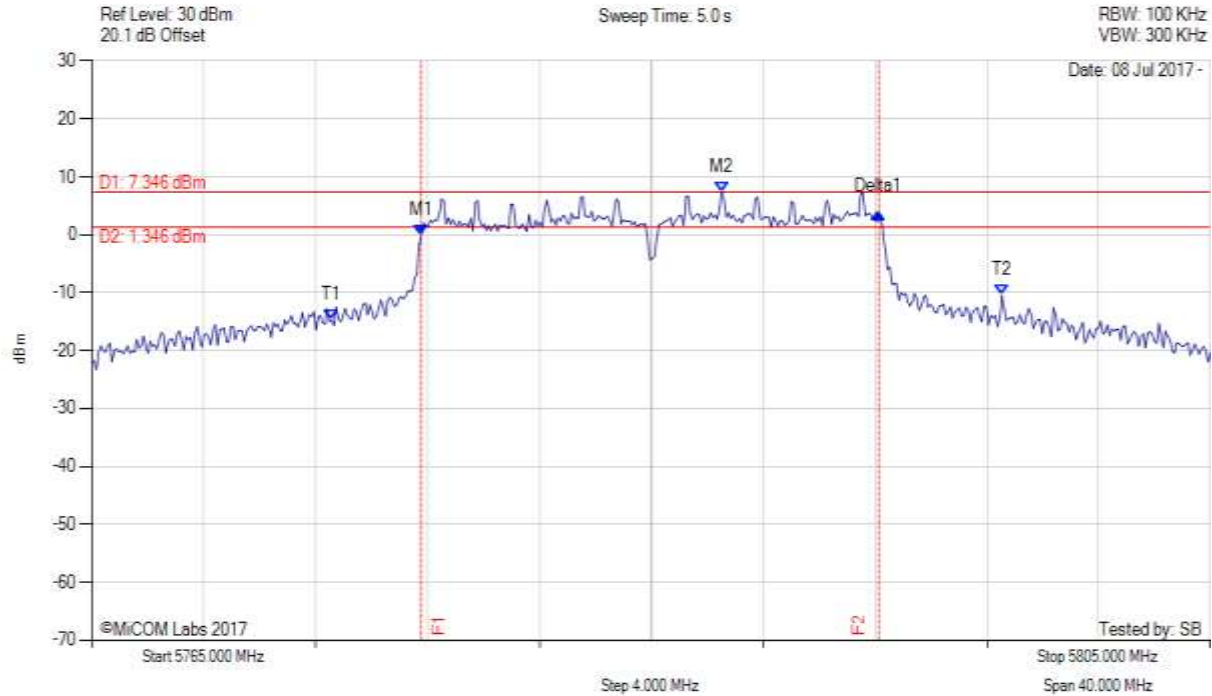
Variant: 802.11a, Channel: 5745.00 MHz, Chain a, Temp: 20, Voltage: Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5736.784 MHz : -0.555 dBm M2 : 5747.525 MHz : 6.502 dBm Delta1 : 16.353 MHz : 3.160 dB T1 : 5732.615 MHz : -15.513 dBm T2 : 5757.224 MHz : -14.799 dBm OBW : 24.609 MHz	Measured 6 dB Bandwidth: 16.353 MHz Measured 99% Bandwidth: 24.609 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 : 5776.784 MHz : -0.187 dBm M2 : 5787.525 MHz : 7.346 dBm Delta1 : 16.353 MHz : 4.031 dB T1 : 5773.577 MHz : -14.736 dBm T2 : 5797.545 MHz : -10.490 dBm OBW : 23.968 MHz	Measured 6 dB Bandwidth: 16.353 MHz Measured 99% Bandwidth: 23.968 MHz

[back to matrix](#)

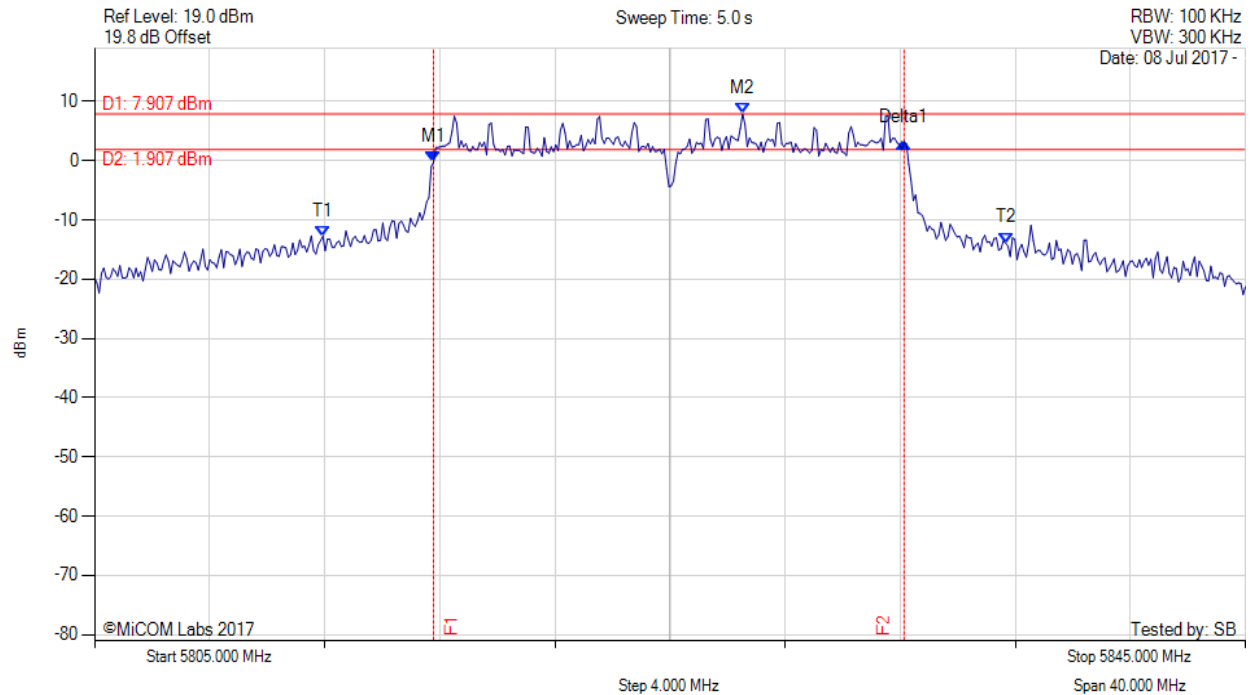


Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 168 of 298



6 dB & 99% BANDWIDTH

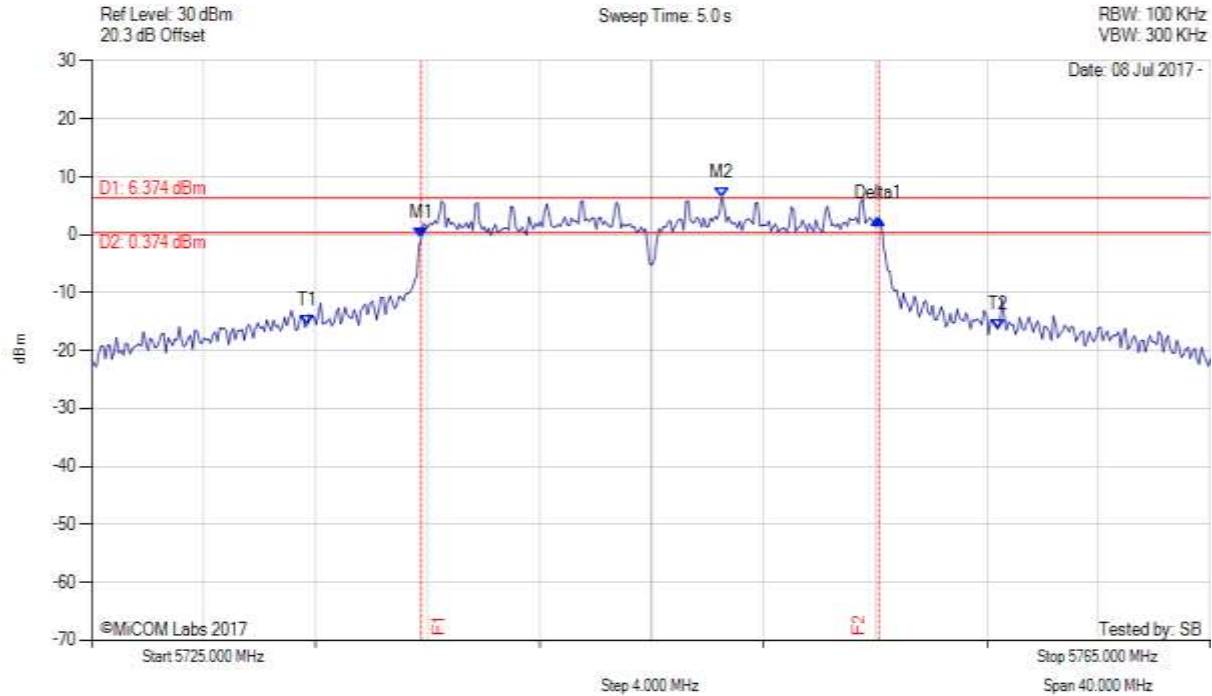
Variant: 802.11a, Channel: 5825.00 MHz, Chain a, Temp: 20, Voltage: Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5816.784 MHz : -0.251 dBm M2 : 5827.525 MHz : 7.907 dBm Delta1 : 16.353 MHz : 3.380 dB T1 : 5812.936 MHz : -12.742 dBm T2 : 5836.663 MHz : -13.861 dBm OBW : 23.727 MHz	Measured 6 dB Bandwidth: 16.353 MHz Measured 99% Bandwidth: 23.727 MHz

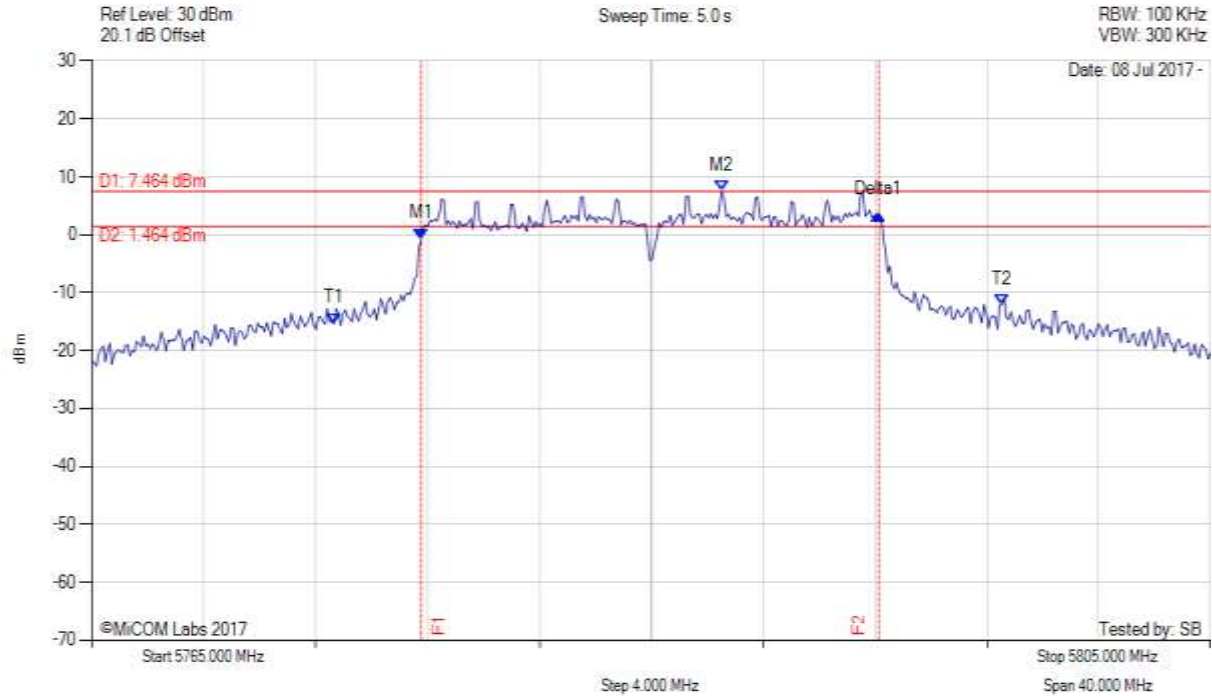
[back to matrix](#)

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 : 5736.784 MHz : -0.571 dBm M2 : 5747.525 MHz : 6.374 dBm Delta1 : 16.353 MHz : 3.272 dB T1 : 5732.695 MHz : -15.588 dBm T2 : 5757.385 MHz : -16.288 dBm OBW : 24.689 MHz	Measured 6 dB Bandwidth: 16.353 MHz Measured 99% Bandwidth: 24.689 MHz

[back to matrix](#)



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5776.784 MHz : -0.699 dBm M2 : 5787.525 MHz : 7.464 dBm Delta1 : 16.353 MHz : 4.263 dB T1 : 5773.657 MHz : -15.324 dBm T2 : 5797.545 MHz : -11.983 dBm OBW : 23.888 MHz	Measured 6 dB Bandwidth: 16.353 MHz Measured 99% Bandwidth: 23.888 MHz

[back to matrix](#)

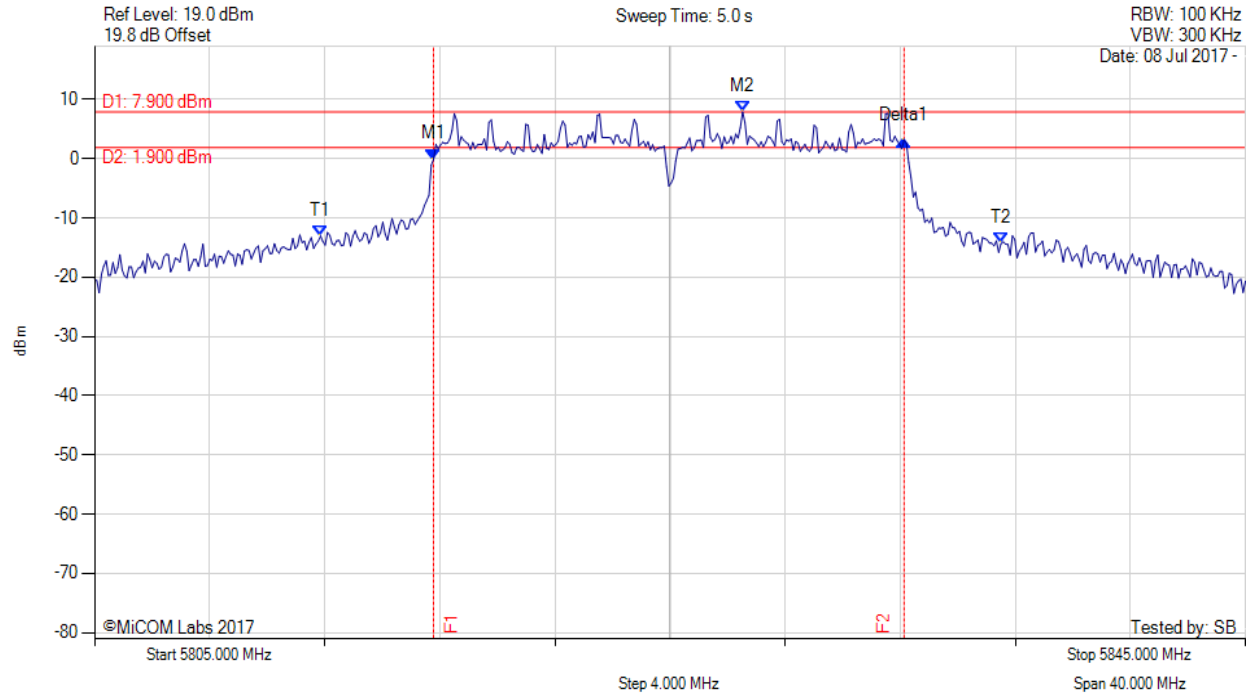


Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 171 of 298



6 dB & 99% BANDWIDTH

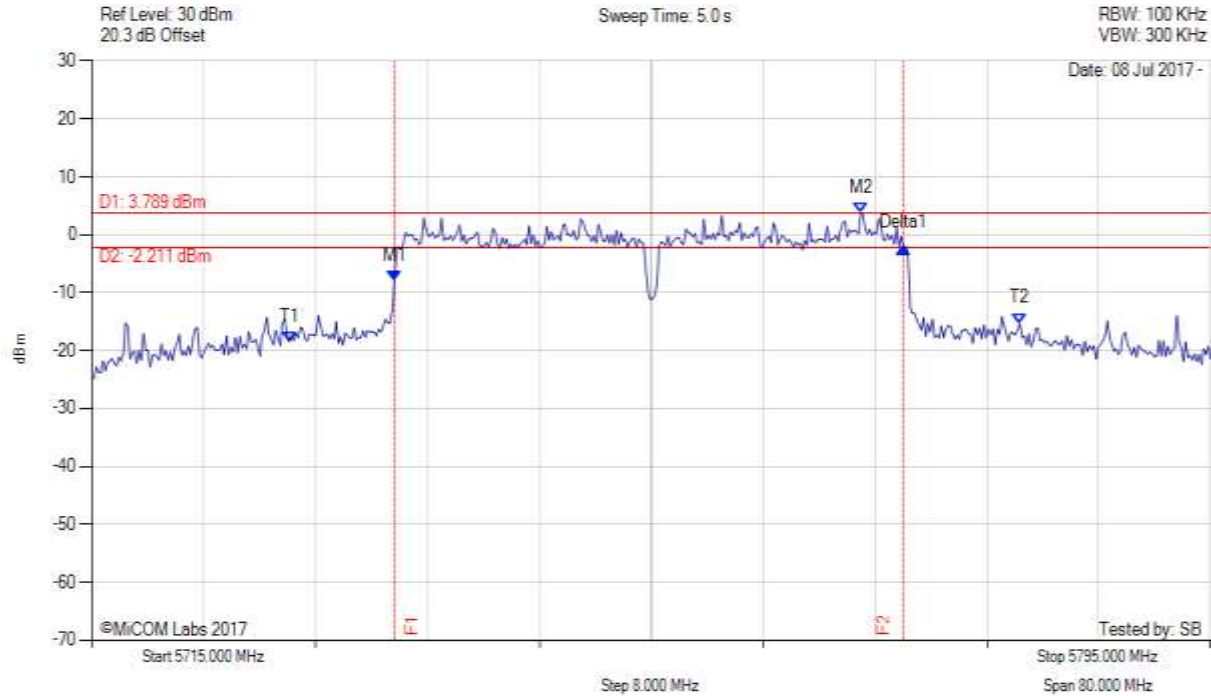
Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain a, Temp: 20, Voltage: Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5816.784 MHz : -0.072 dBm M2 : 5827.525 MHz : 7.900 dBm Delta1 : 16.353 MHz : 3.230 dB T1 : 5812.856 MHz : -13.039 dBm T2 : 5836.503 MHz : -14.318 dBm OBW : 23.647 MHz	Measured 6 dB Bandwidth: 16.353 MHz Measured 99% Bandwidth: 23.647 MHz

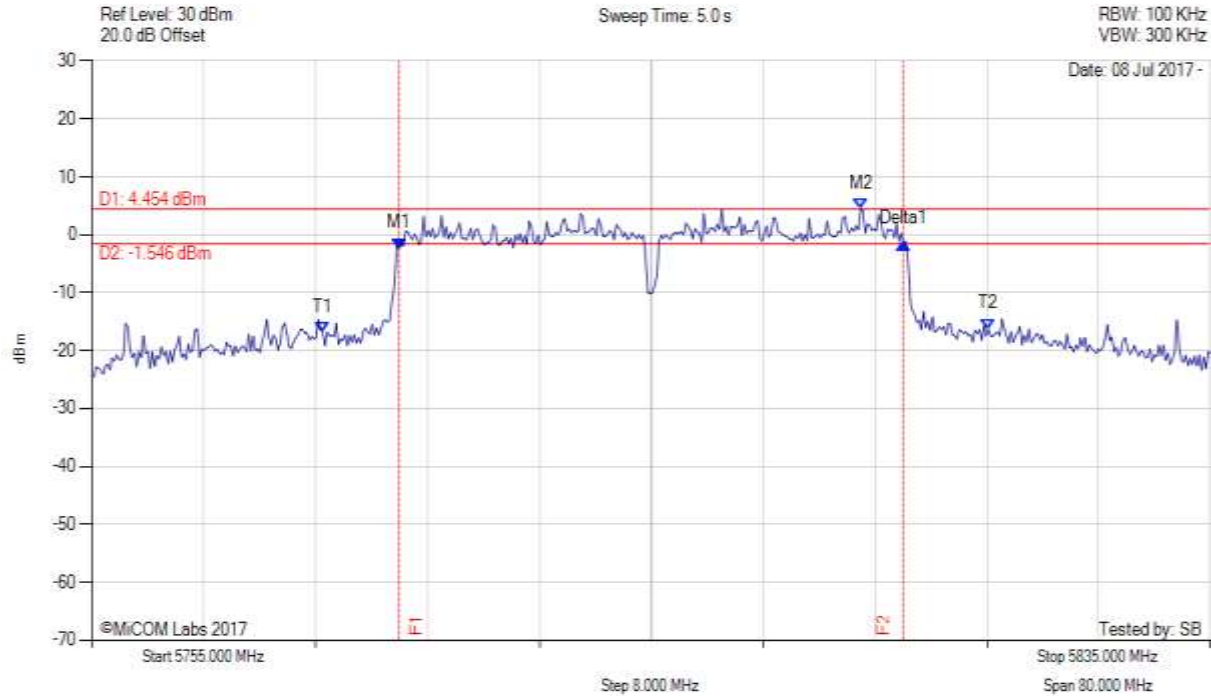
[back to matrix](#)

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 : 5736.643 MHz : -7.996 dBm M2 : 5769.990 MHz : 3.789 dBm Delta1 : 36.393 MHz : 5.664 dB T1 : 5729.108 MHz : -18.466 dBm T2 : 5781.373 MHz : -15.326 dBm OBW : 52.265 MHz	Measured 6 dB Bandwidth: 36.393 MHz Measured 99% Bandwidth: 52.265 MHz

[back to matrix](#)



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = MAX HOLD	M1 : 5776.964 MHz : -2.391 dBm M2 : 5809.990 MHz : 4.454 dBm Delta1 : 36.072 MHz : 0.901 dB T1 : 5771.513 MHz : -16.866 dBm T2 : 5819.128 MHz : -16.266 dBm OBW : 47.615 MHz	Measured 6 dB Bandwidth: 36.072 MHz Measured 99% Bandwidth: 47.615 MHz

[back to matrix](#)



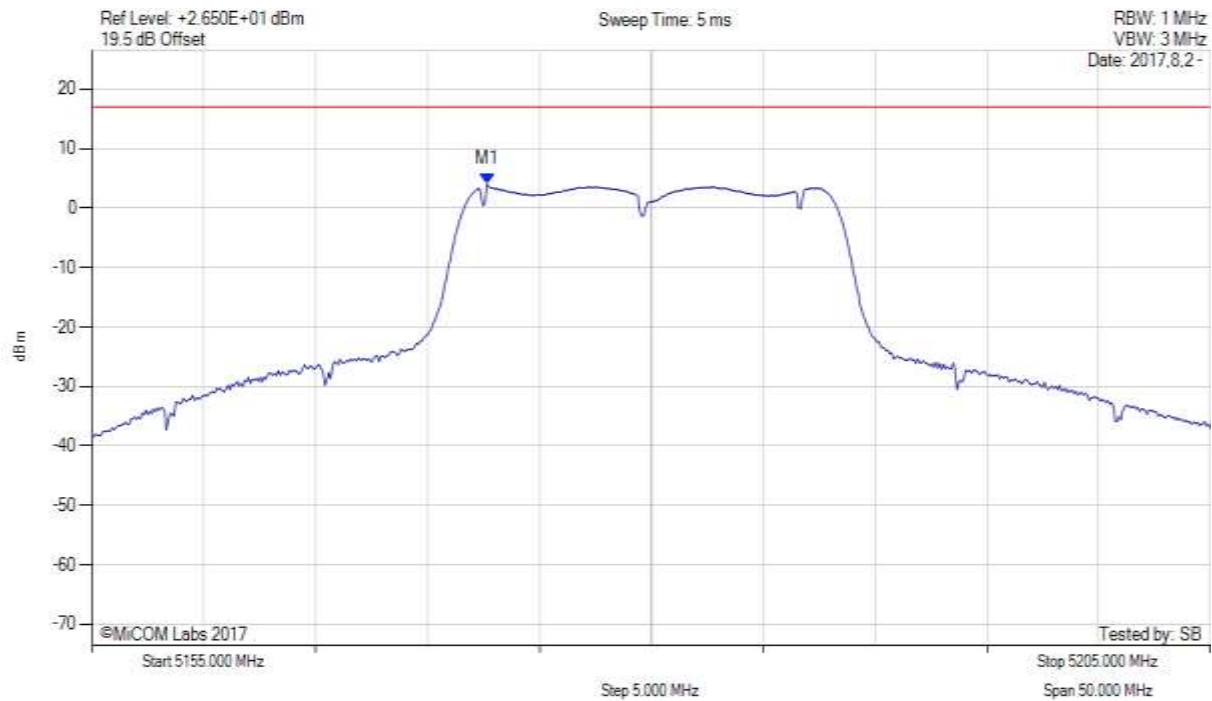
Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 174 of 298

A.3. Power Spectral Density



POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5180.00 MHz, Chain a, Temp: 20, Voltage: 3.3 Vdc



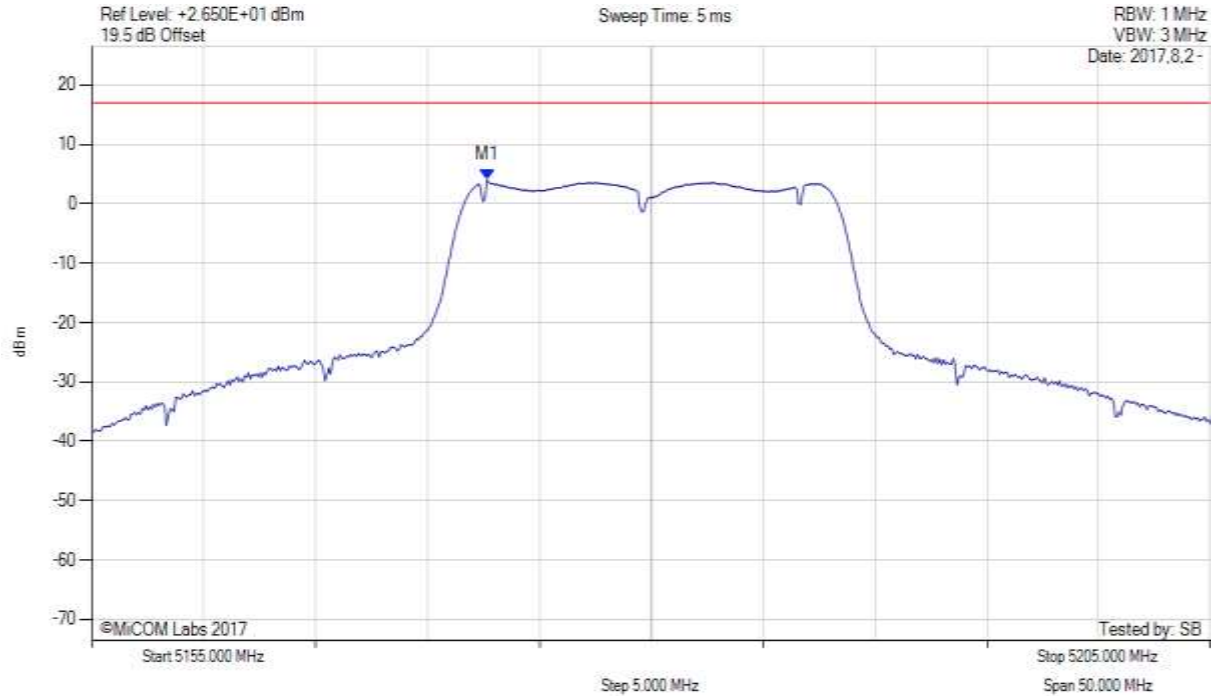
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5172.670 MHz : 4.066 dBm	Limit: ≤ 17.000 dBm

[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: 802.11a, Channel: 5180.00 MHz, SUM, Temp: 20, Voltage: 3.3 Vdc

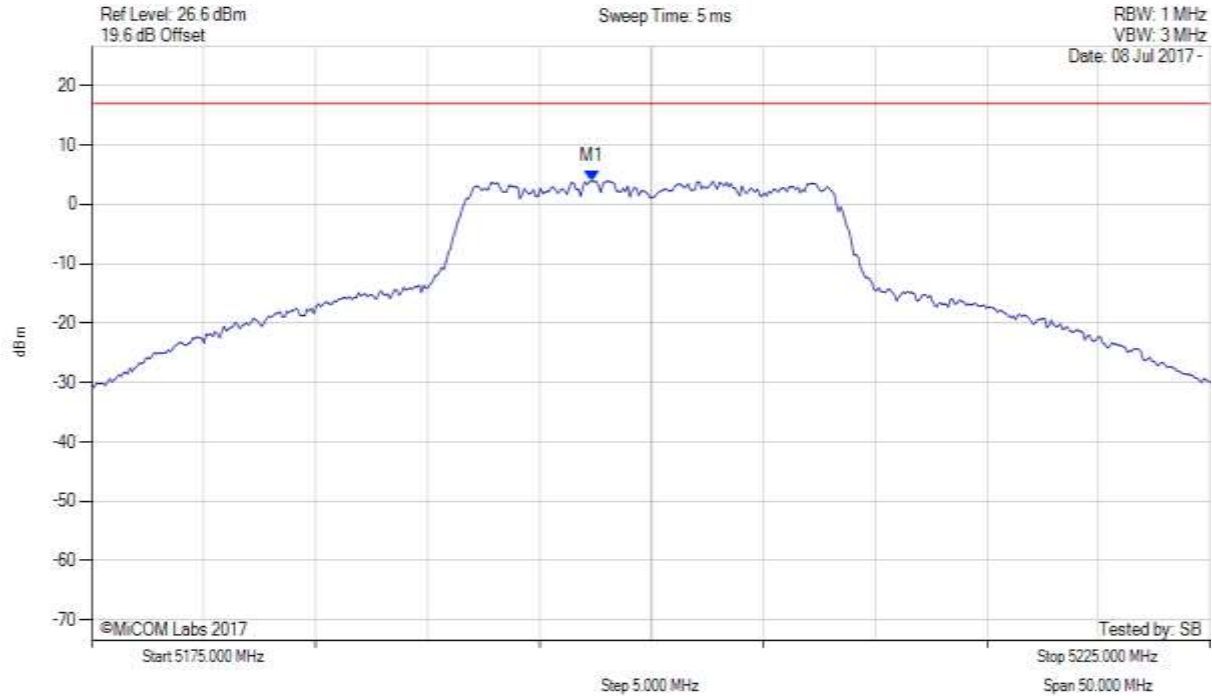


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5172.700 MHz : 4.066 dBm M1 + DCCF : 5172.700 MHz : 4.110 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 17.0 dBm Margin: -12.9 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: Vdc

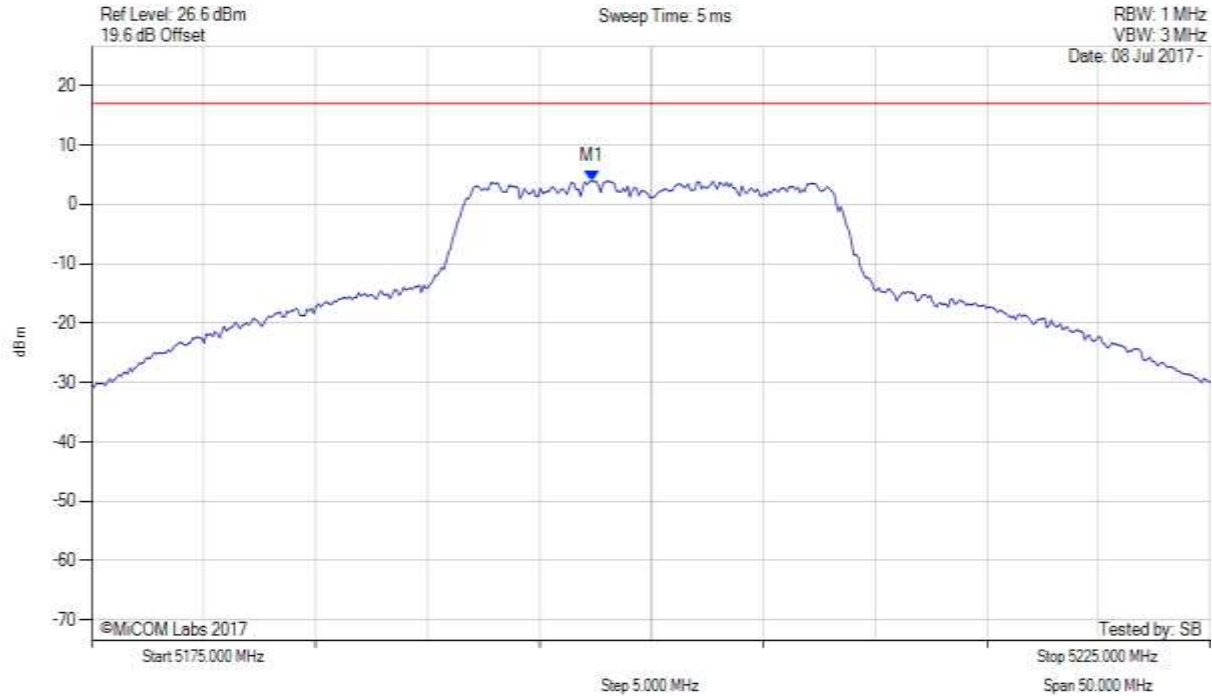


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5197.345 MHz : 3.925 dBm	Limit: ≤ 17.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5200.00 MHz, SUM, Temp: 20, Voltage: Vdc

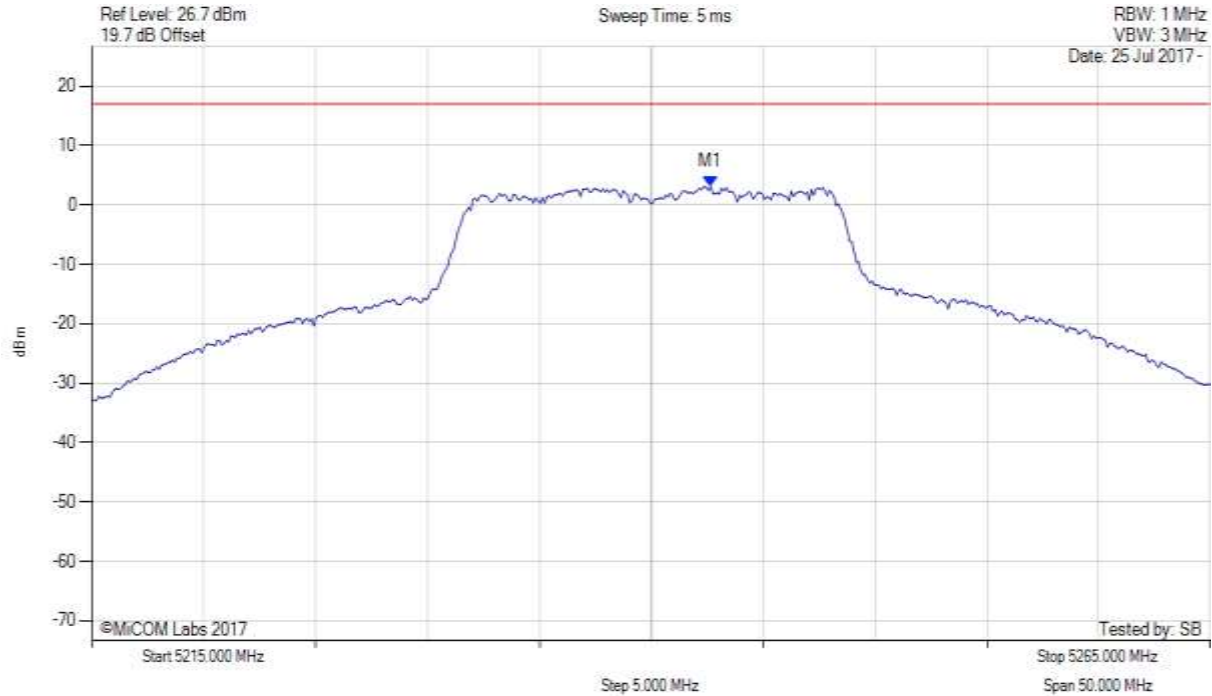


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5197.300 MHz : 3.925 dBm M1 + DCCF : 5197.300 MHz : 3.969 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 17.0 dBm Margin: -13.0 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5240.00 MHz, Chain a, Temp: 20, Voltage: 3.3 Vdc

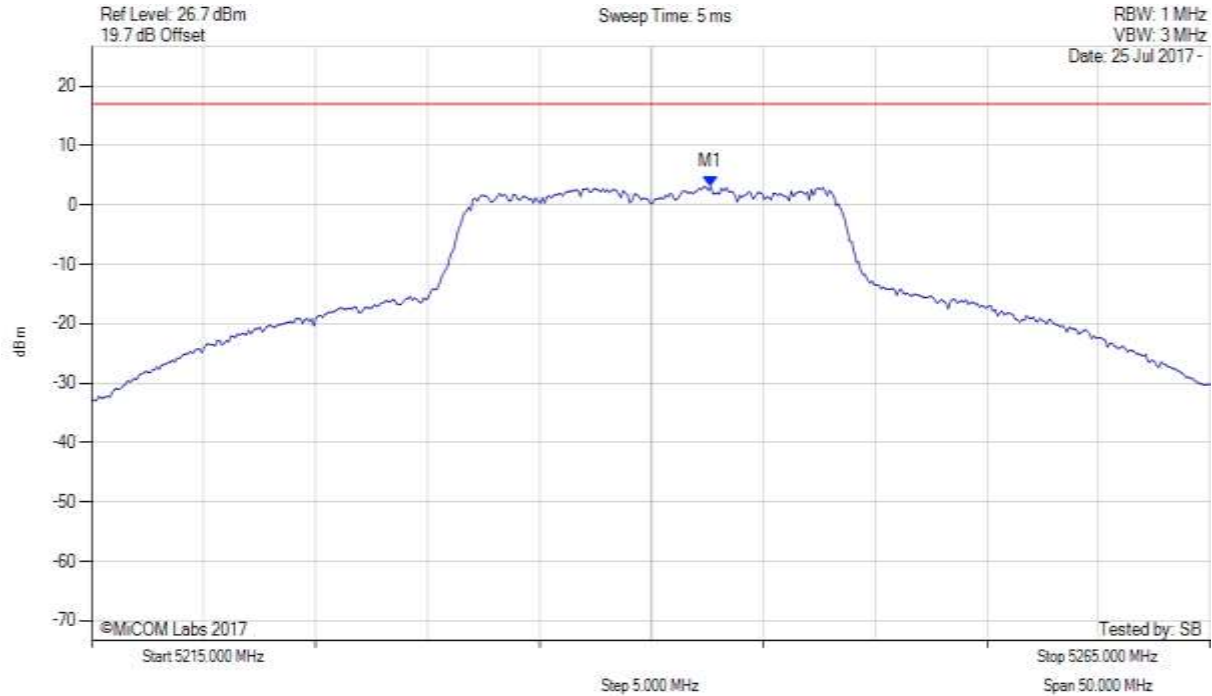


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5242.655 MHz : 3.112 dBm	Limit: ≤ 17.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5240.00 MHz, SUM, Temp: 20, Voltage: 3.3 Vdc

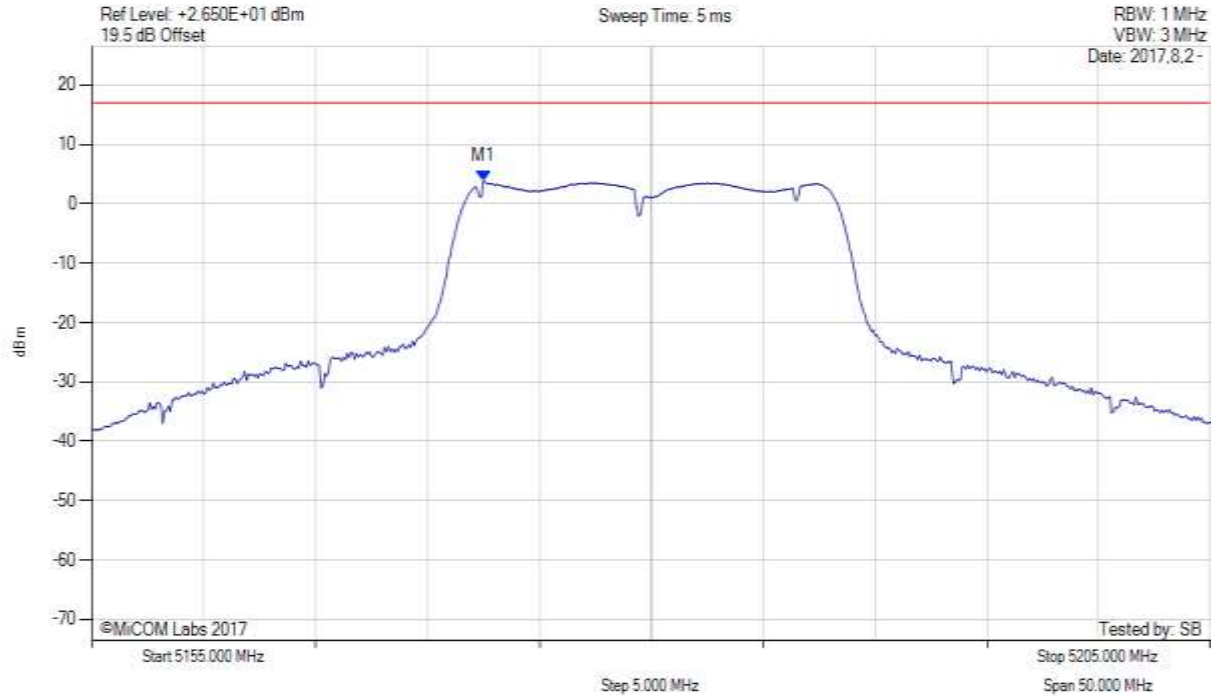


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5242.700 MHz : 3.112 dBm M1 + DCCF : 5242.700 MHz : 3.156 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 17.0 dBm Margin: -13.8 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5180.00 MHz, Chain a, Temp: 20, Voltage: 3.3 Vdc

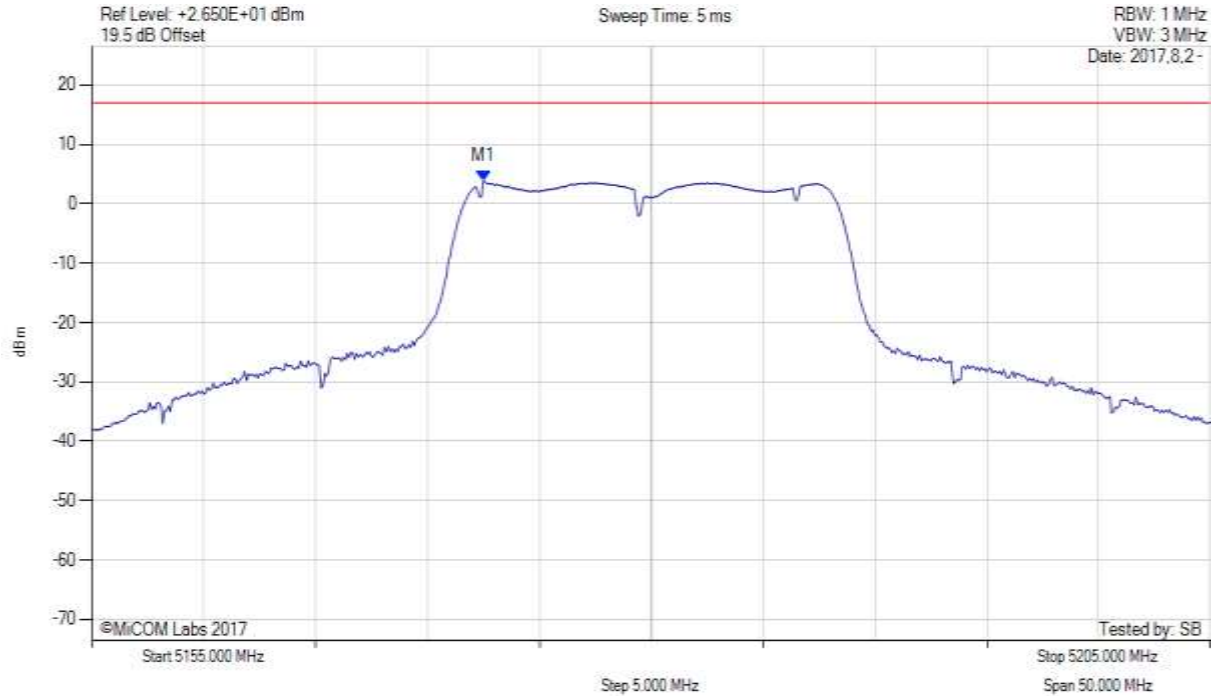


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5172.500 MHz : 3.837 dBm	Limit: ≤ 17.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5180.00 MHz, SUM, Temp: 20, Voltage: 3.3 Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5172.500 MHz : 3.837 dBm M1 + DCCF : 5172.500 MHz : 3.881 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 17.0 dBm Margin: -13.1 dB

[back to matrix](#)

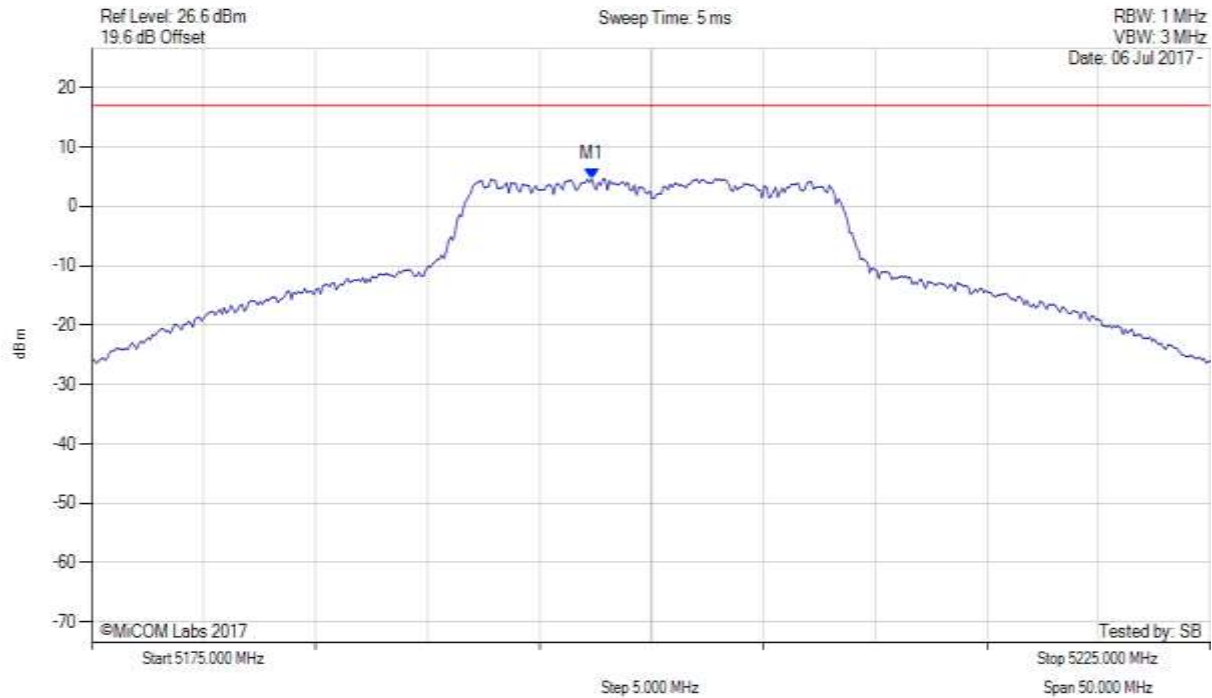


Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 182 of 298



POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5200.00 MHz, Chain a, Temp: 20, Voltage: Vdc



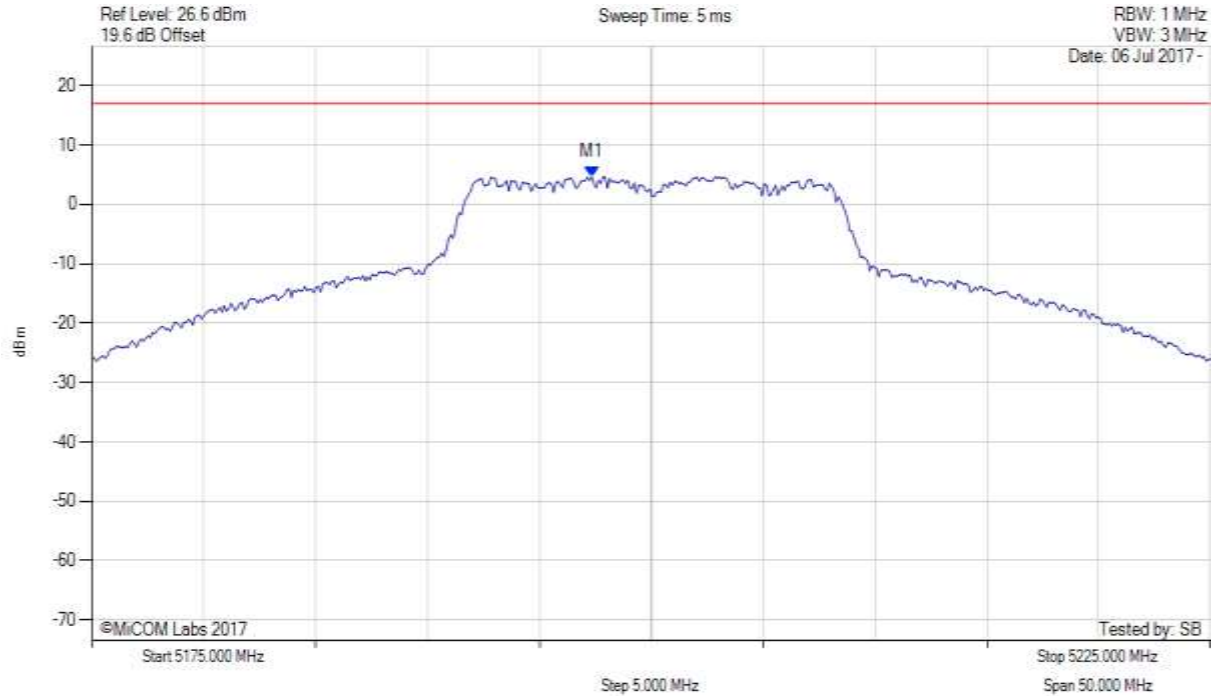
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5197.345 MHz : 4.652 dBm	Limit: ≤ 17.000 dBm

[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: 802.11n HT-20, Channel: 5200.00 MHz, SUM, Temp: 20, Voltage: Vdc

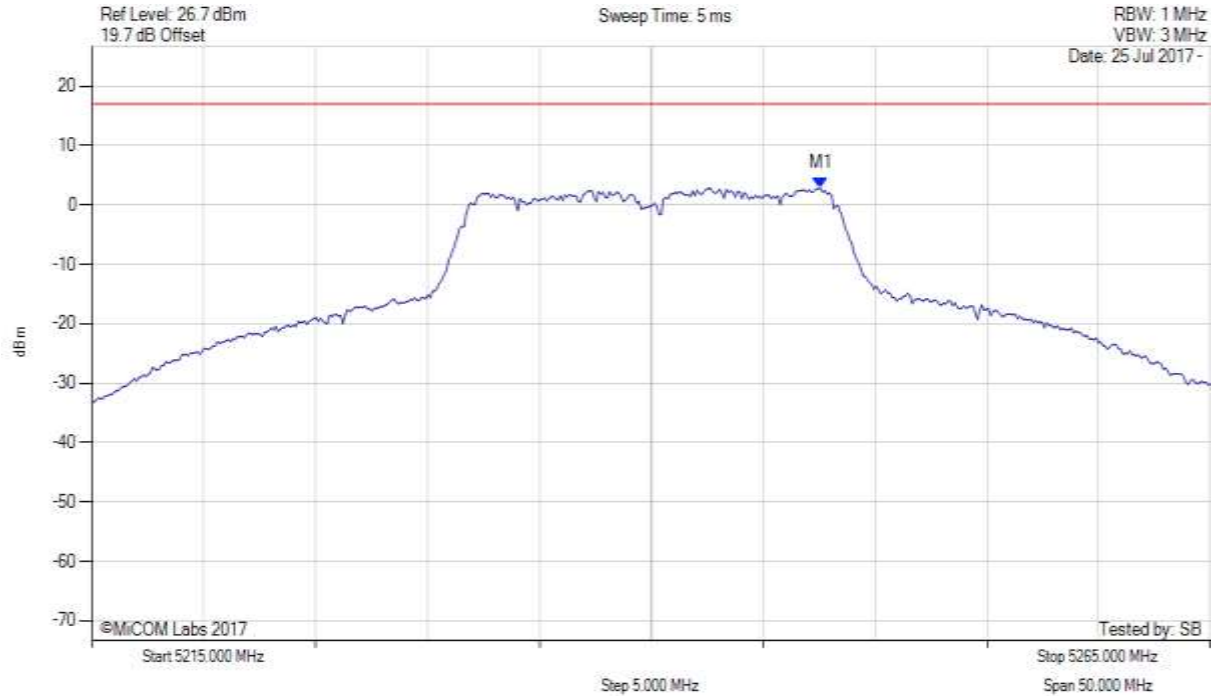


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5197.300 MHz : 4.652 dBm M1 + DCCF : 5197.300 MHz : 4.696 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 17.0 dBm Margin: -12.3 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5240.00 MHz, Chain a, Temp: 20, Voltage: 3.3 Vdc

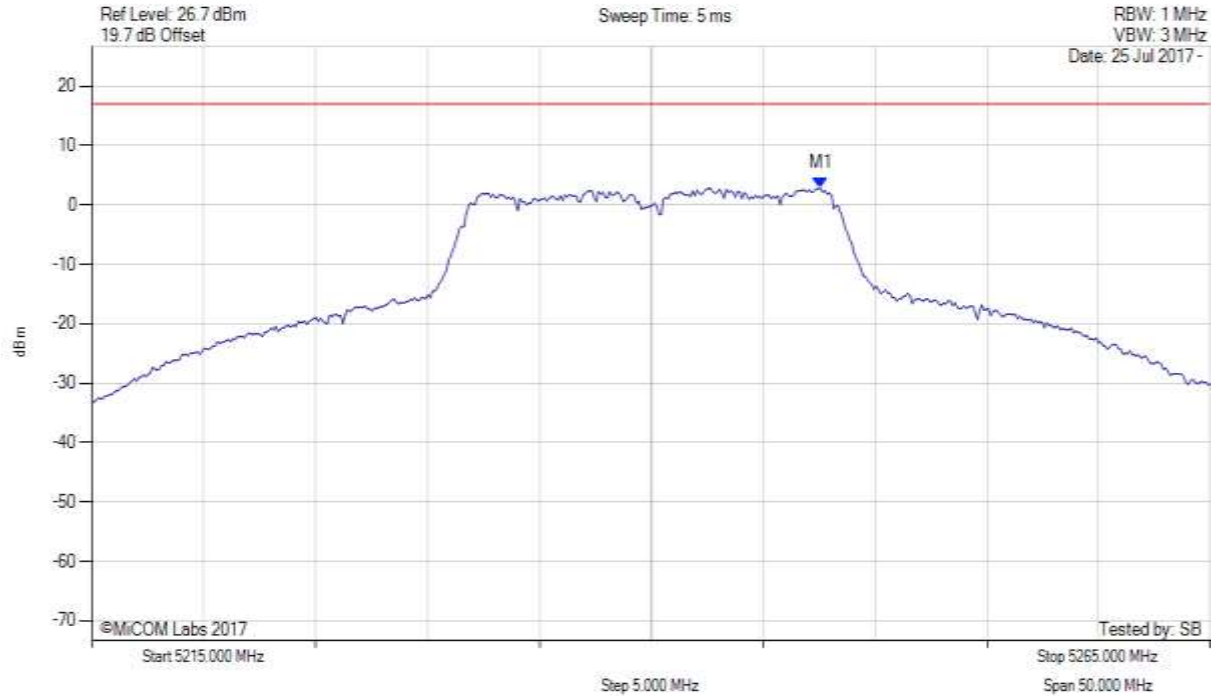


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5247.565 MHz : 2.808 dBm	Limit: ≤ 17.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5240.00 MHz, SUM, Temp: 20, Voltage: 3.3 Vdc

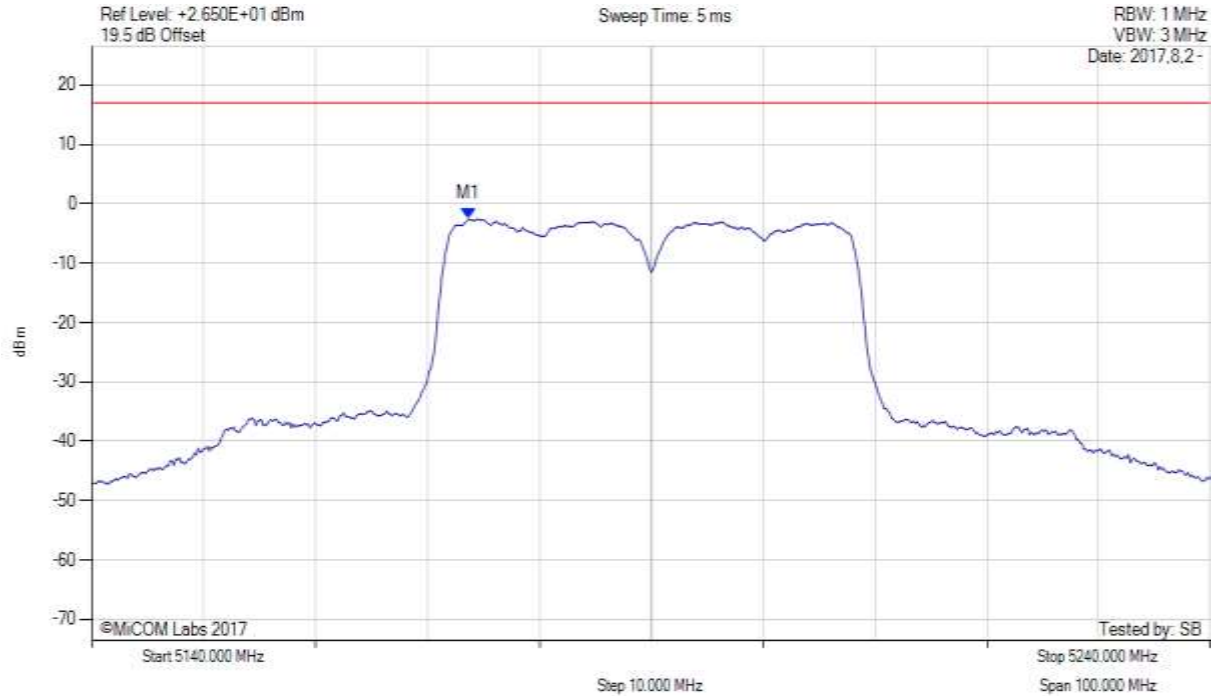


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5247.600 MHz : 2.808 dBm M1 + DCCF : 5247.600 MHz : 2.852 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 17.0 dBm Margin: -14.1 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5190.00 MHz, Chain a, Temp: 20, Voltage: 3.3 Vdc

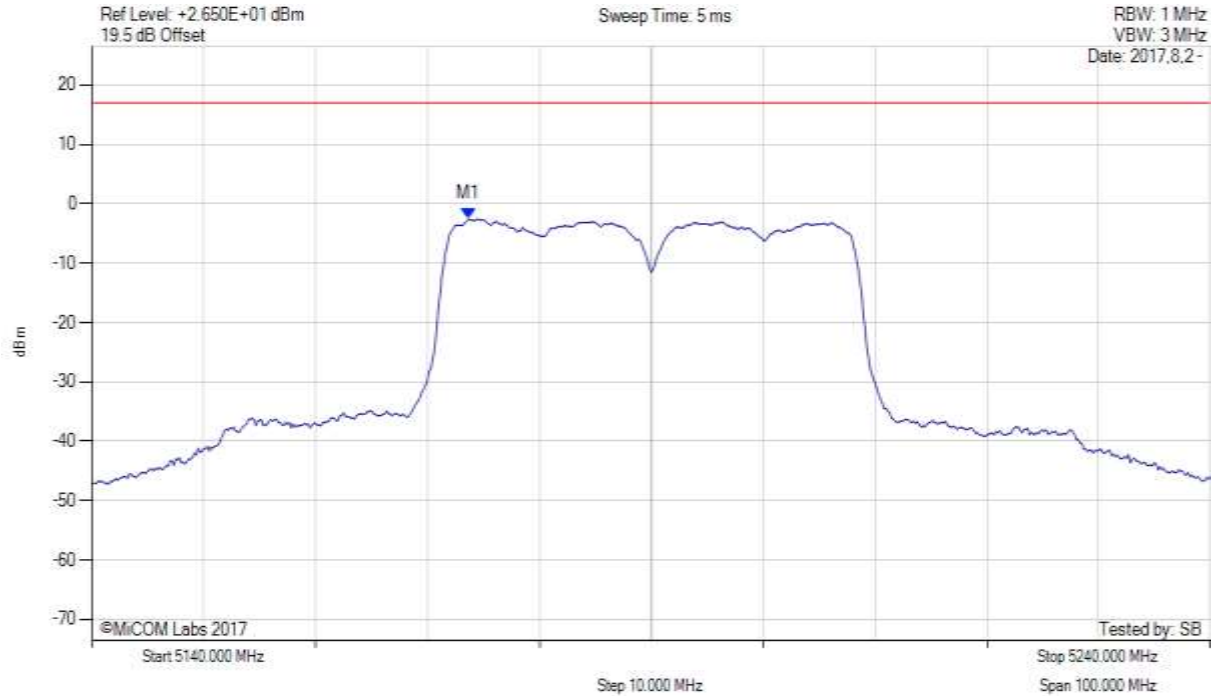


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5173.670 MHz : -2.497 dBm	Limit: ≤ 17.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5190.00 MHz, SUM, Temp: 20, Voltage: 3.3 Vdc

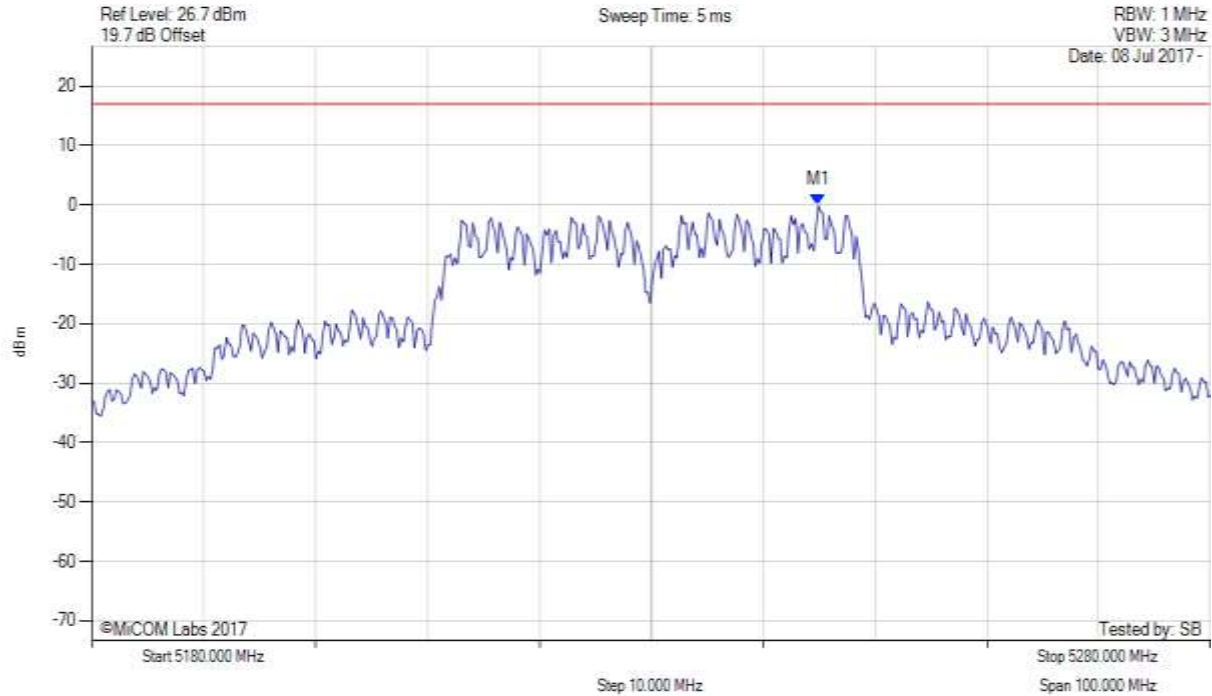


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5173.700 MHz : -2.497 dBm M1 + DCCF : 5173.700 MHz : -1.740 dBm Duty Cycle Correction Factor : +0.76 dB	Limit: ≤ 17.0 dBm Margin: -18.7 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5230.00 MHz, Chain a, Temp: 20, Voltage: Vdc

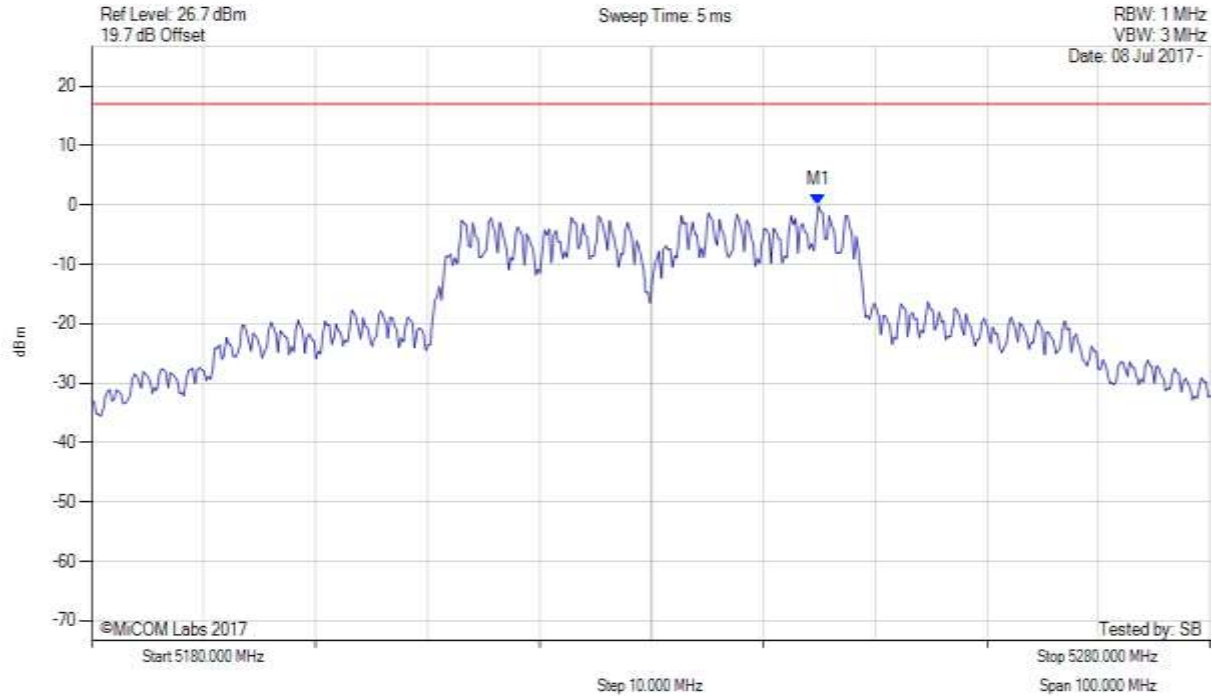


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5244.930 MHz : -0.071 dBm	Limit: ≤ 17.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5230.00 MHz, SUM, Temp: 20, Voltage: Vdc

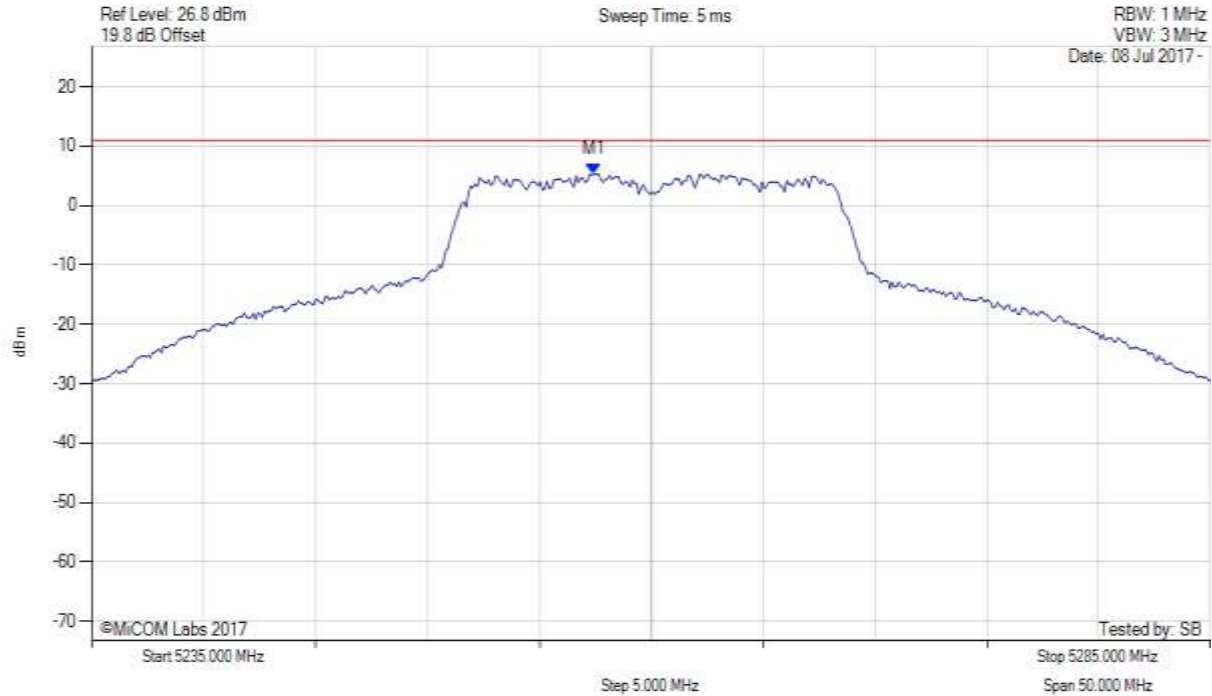


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5244.900 MHz : -0.071 dBm M1 + DCCF : 5244.900 MHz : 0.686 dBm Duty Cycle Correction Factor : +0.76 dB	Limit: ≤ 17.0 dBm Margin: -16.3 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5260.00 MHz, Chain a, Temp: 20, Voltage: Vdc



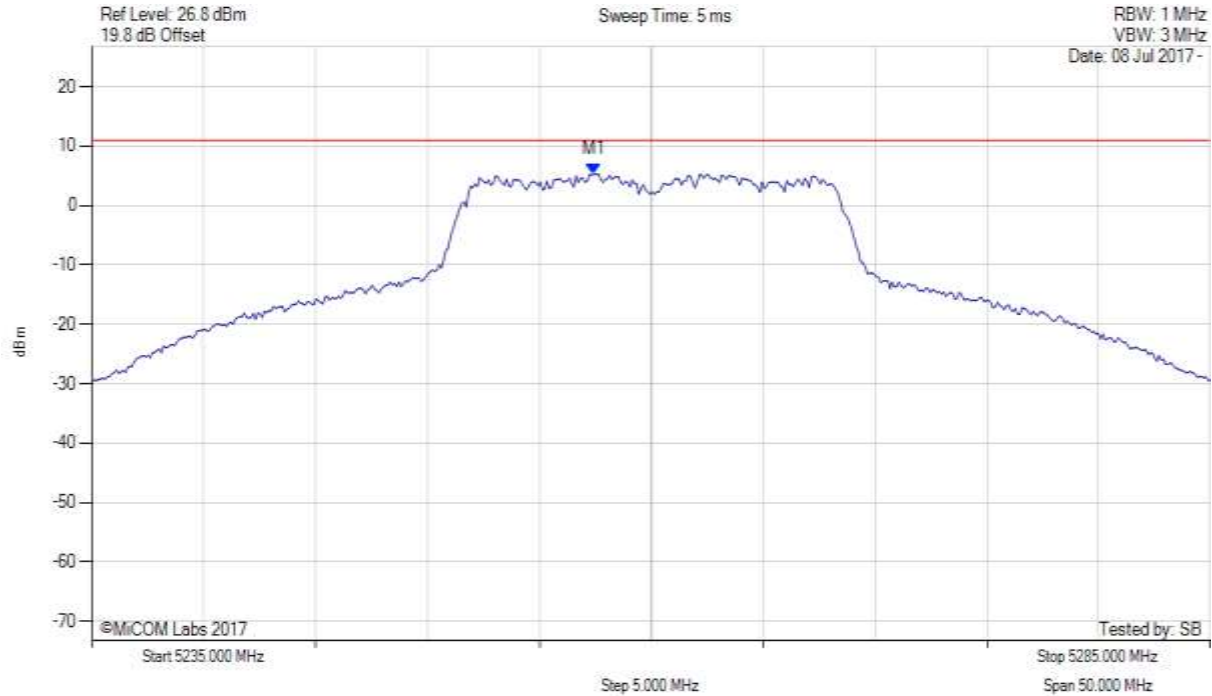
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5257.445 MHz : 5.263 dBm	Limit: ≤ 11.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY



Variant: 802.11a, Channel: 5260.00 MHz, SUM, Temp: 20, Voltage: Vdc



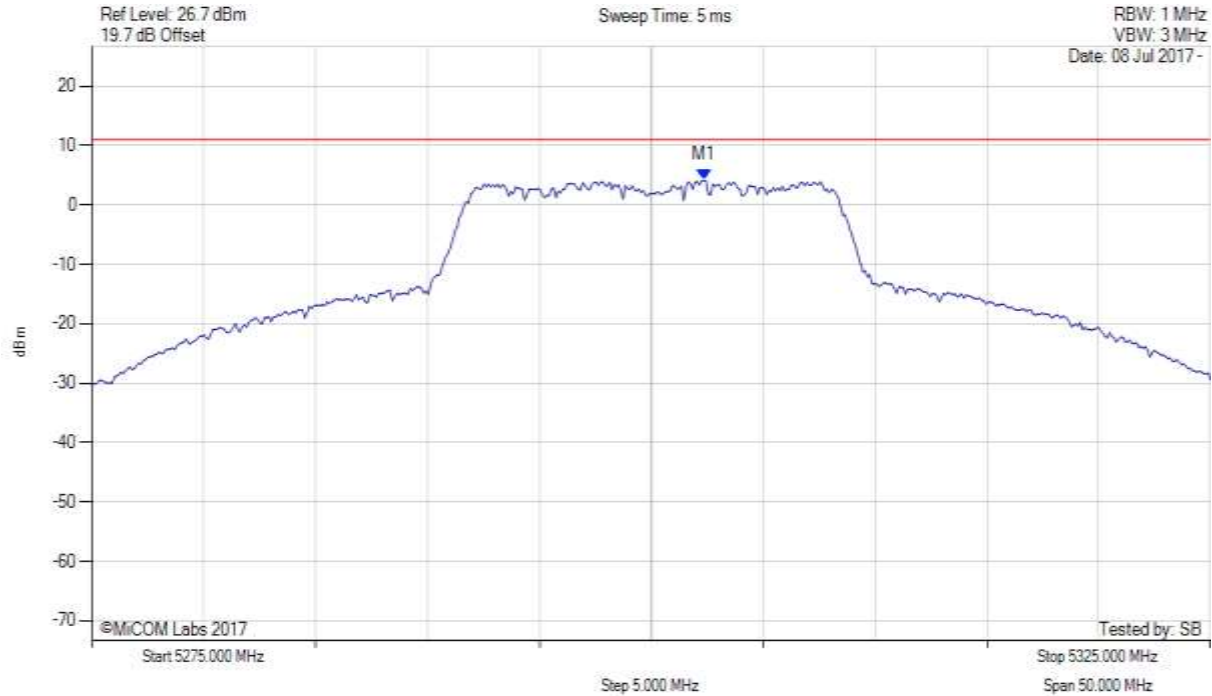
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5257.400 MHz : 5.263 dBm M1 + DCCF : 5257.400 MHz : 5.307 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -5.7 dB

[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.

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5300.00 MHz, Chain a, Temp: 20, Voltage: Vdc



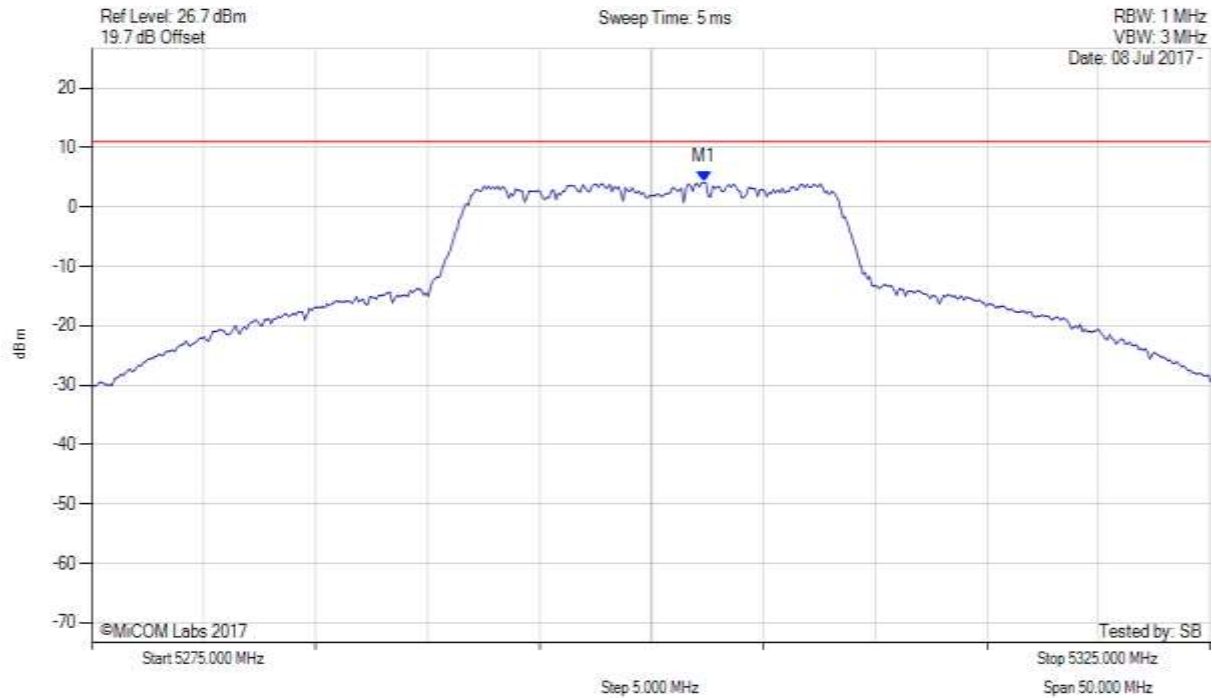
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5302.355 MHz : 4.139 dBm	Limit: ≤ 11.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY



Variant: 802.11a, Channel: 5300.00 MHz, SUM, Temp: 20, Voltage: Vdc



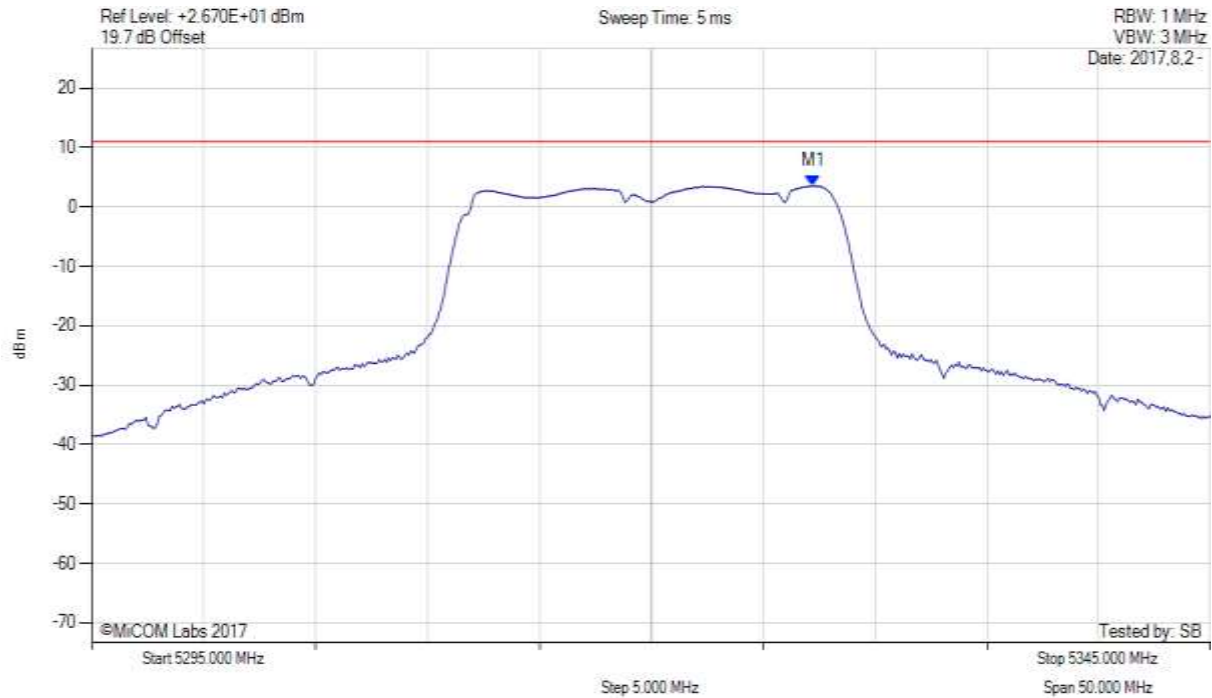
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5302.400 MHz : 4.139 dBm M1 + DCCF : 5302.400 MHz : 4.183 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -6.8 dB

[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.

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5320.00 MHz, Chain a, Temp: 20, Voltage: 3.3 Vdc

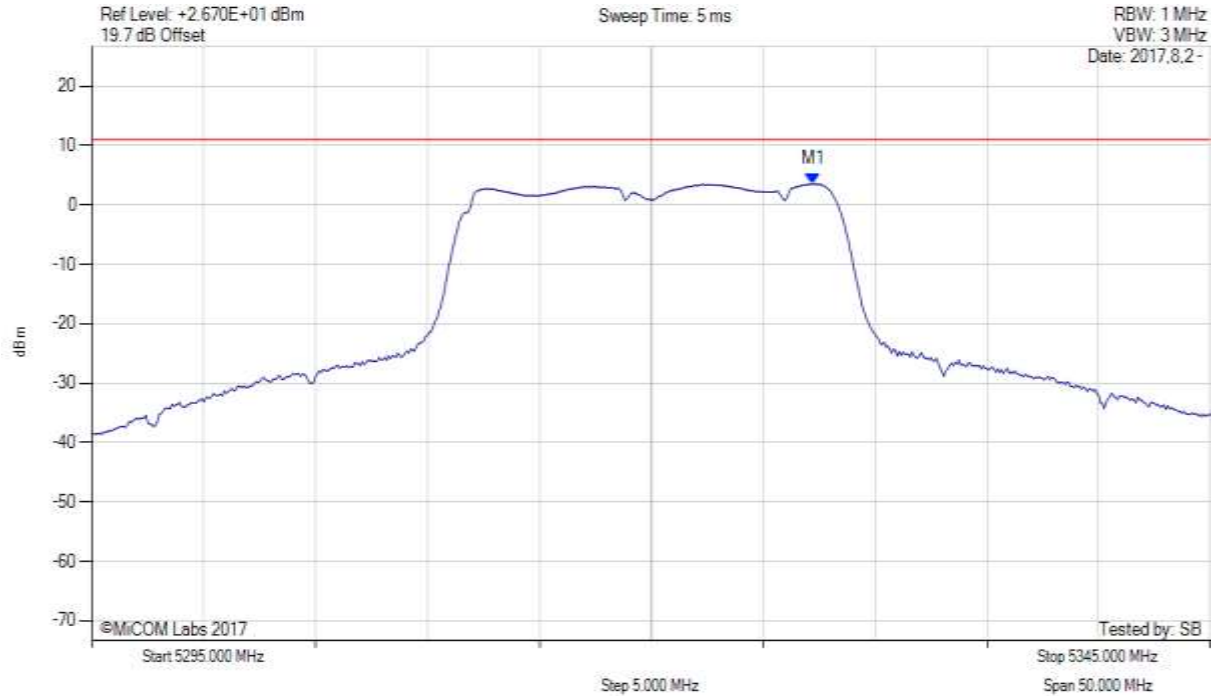


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5327.250 MHz : 3.550 dBm	Limit: ≤ 11.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5320.00 MHz, SUM, Temp: 20, Voltage: 3.3 Vdc

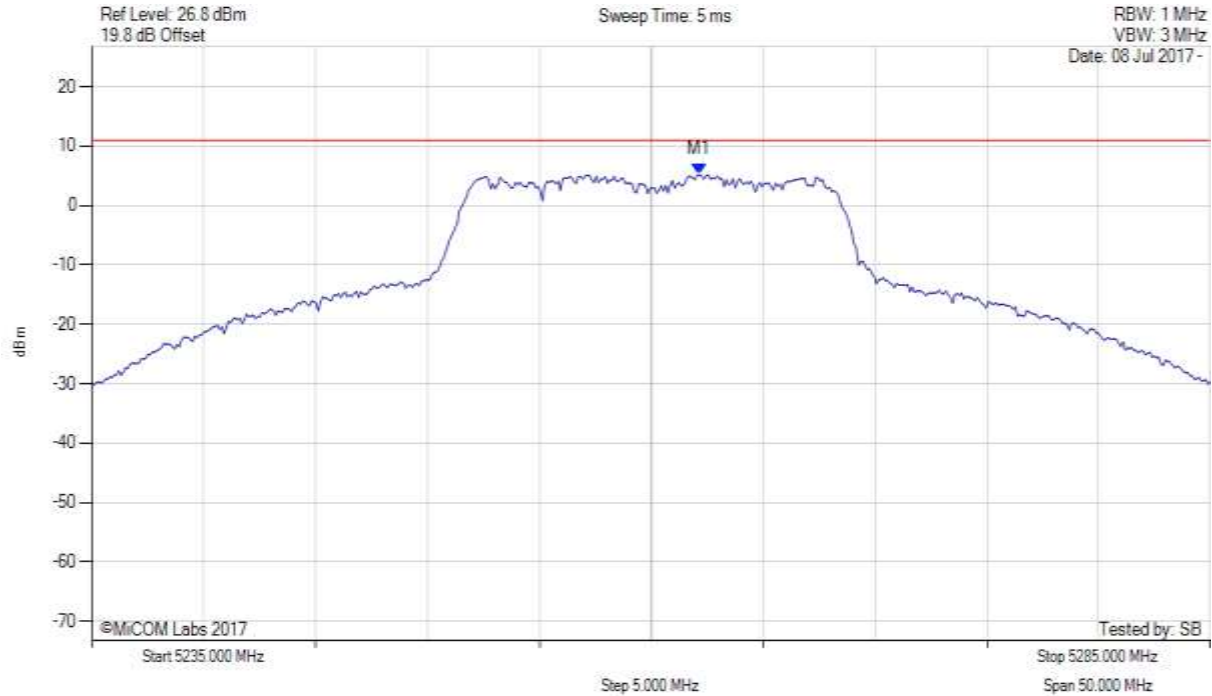


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5327.300 MHz : 3.550 dBm M1 + DCCF : 5327.300 MHz : 3.594 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -7.4 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5260.00 MHz, Chain a, Temp: 20, Voltage: Vdc

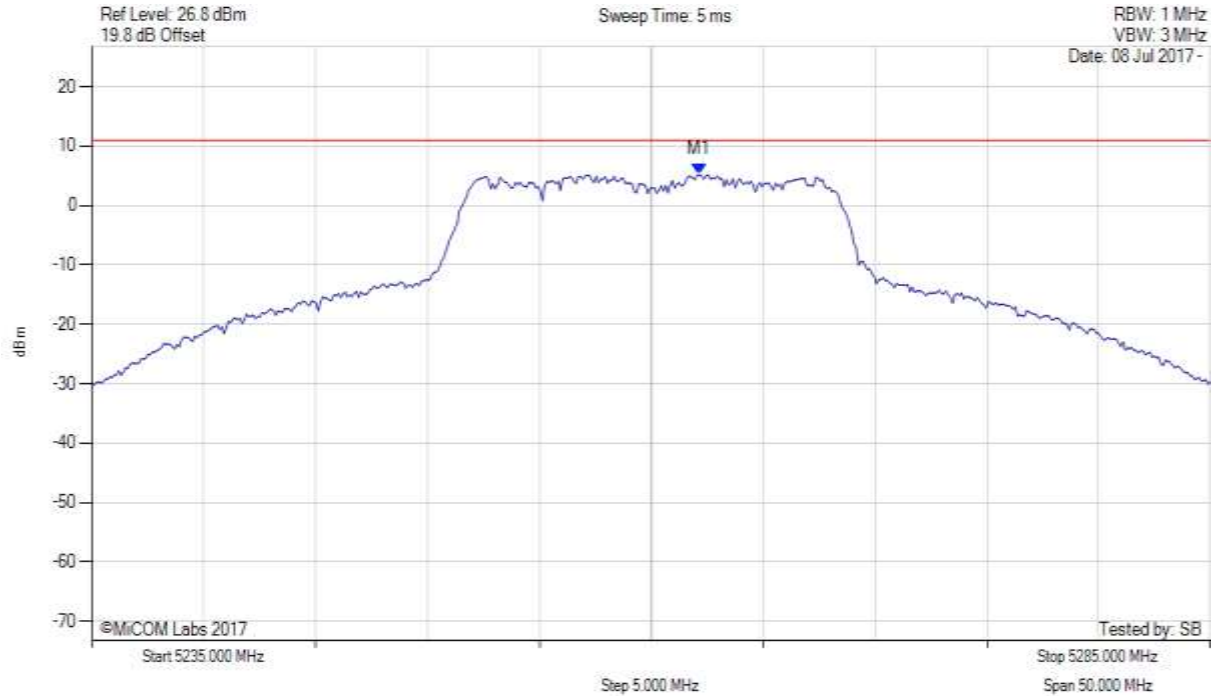


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5262.154 MHz : 5.184 dBm	Limit: ≤ 11.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5260.00 MHz, SUM, Temp: 20, Voltage: Vdc

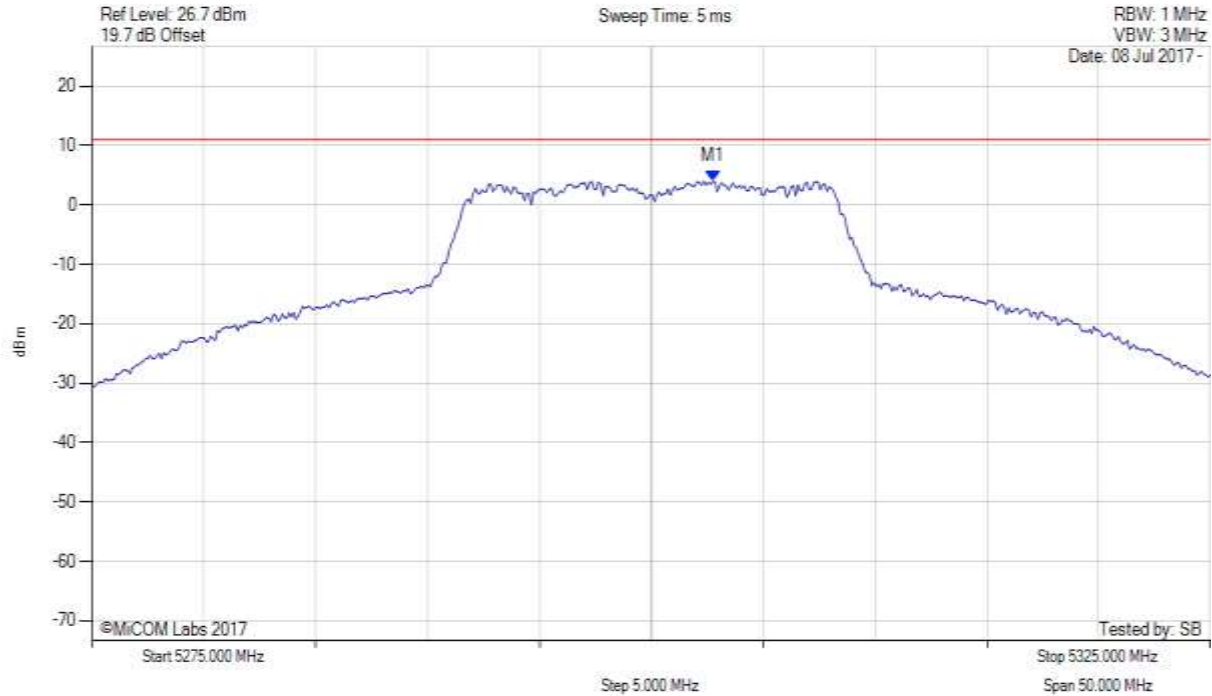


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5262.200 MHz : 5.184 dBm M1 + DCCF : 5262.200 MHz : 5.228 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -5.8 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5300.00 MHz, Chain a, Temp: 20, Voltage: Vdc

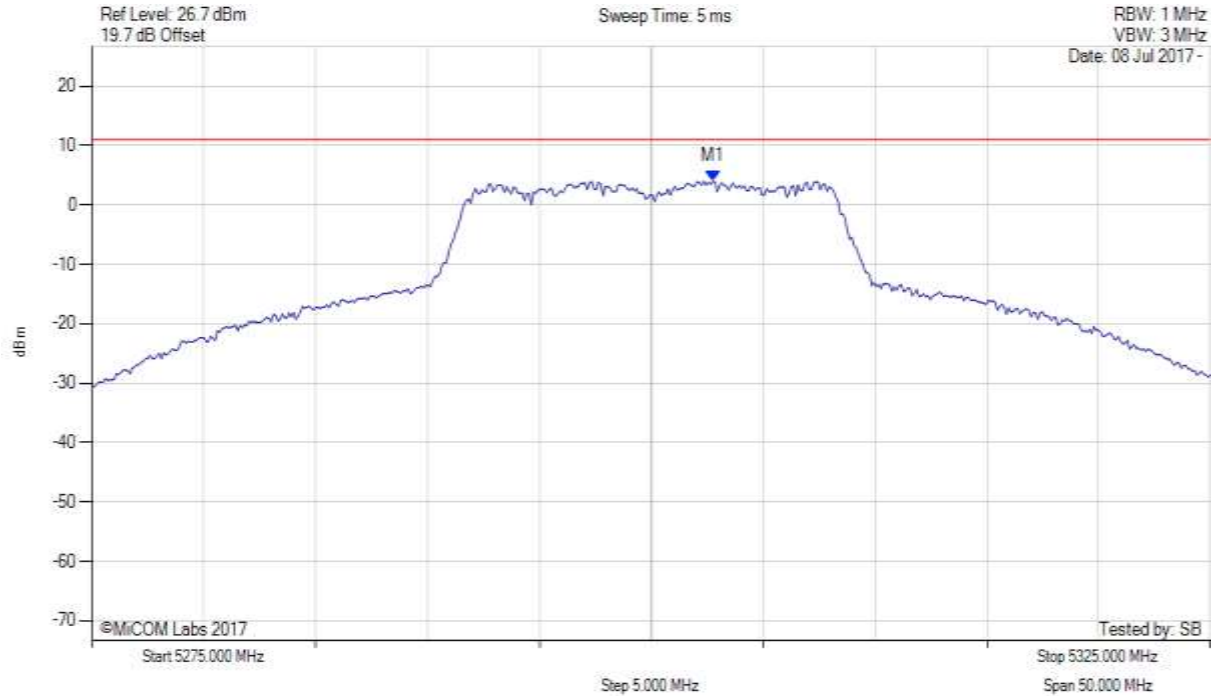


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5302.756 MHz : 4.017 dBm	Limit: ≤ 11.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5300.00 MHz, SUM, Temp: 20, Voltage: Vdc

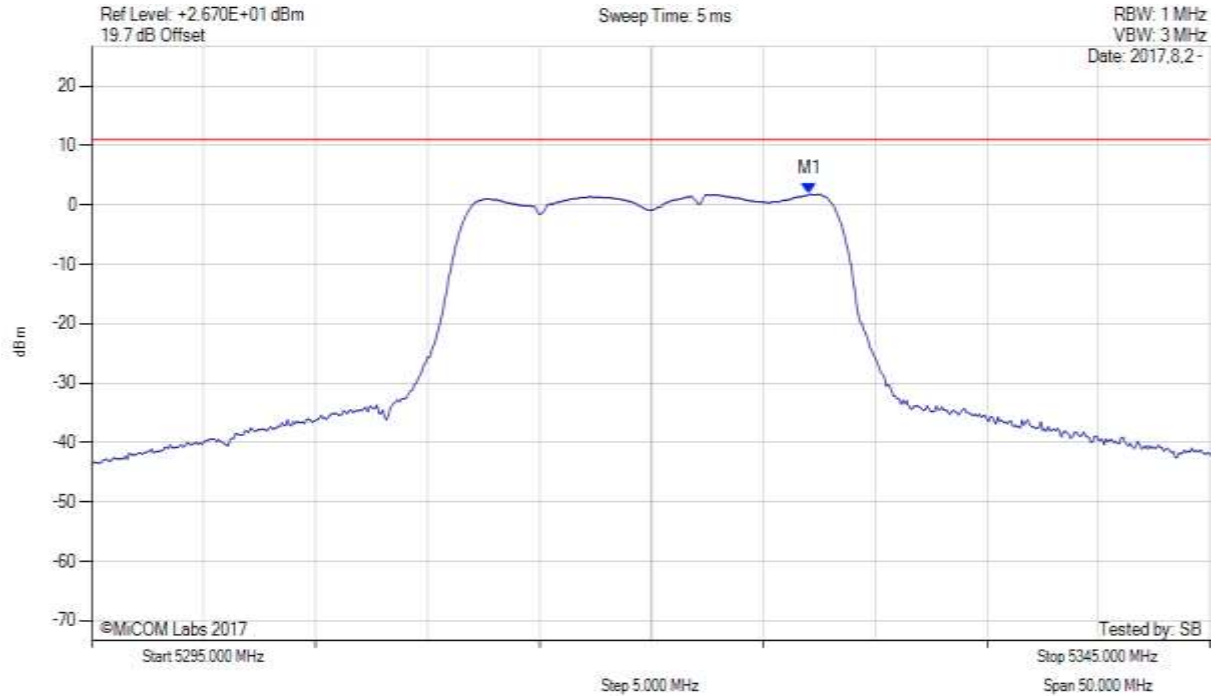


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5302.800 MHz : 4.017 dBm M1 + DCCF : 5302.800 MHz : 4.061 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -6.9 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5320.00 MHz, Chain a, Temp: 20, Voltage: 3.3 Vdc

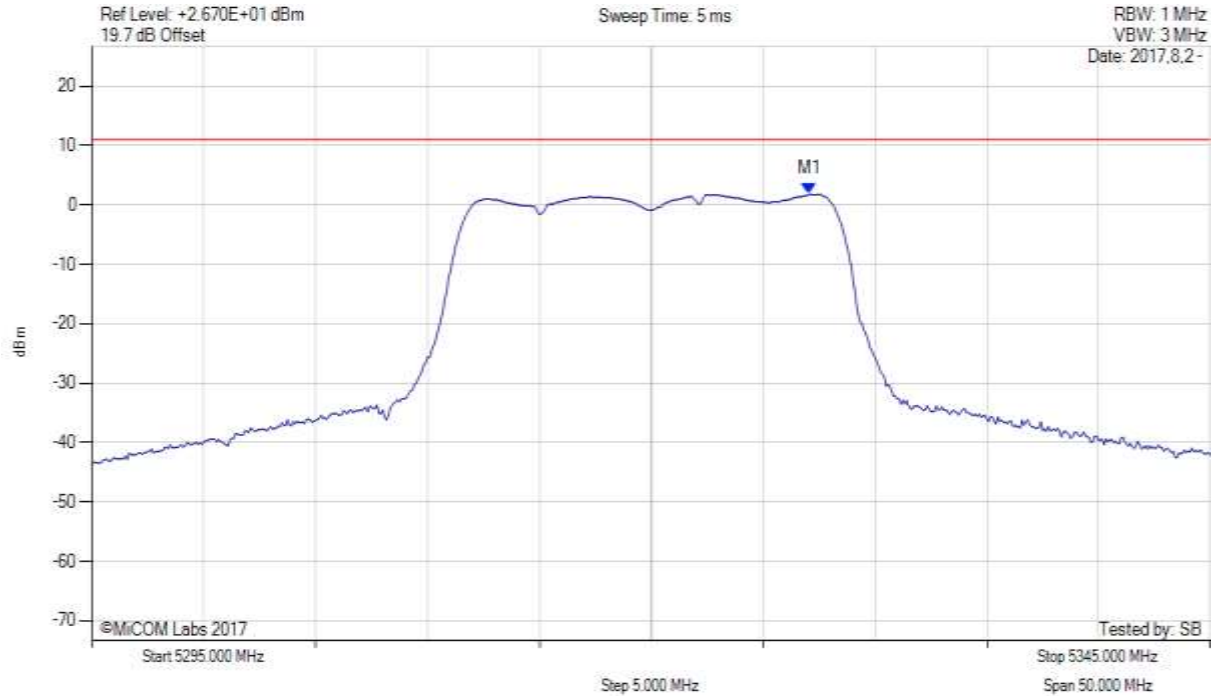


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5327.080 MHz : 1.817 dBm	Limit: ≤ 11.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5320.00 MHz, SUM, Temp: 20, Voltage: 3.3 Vdc

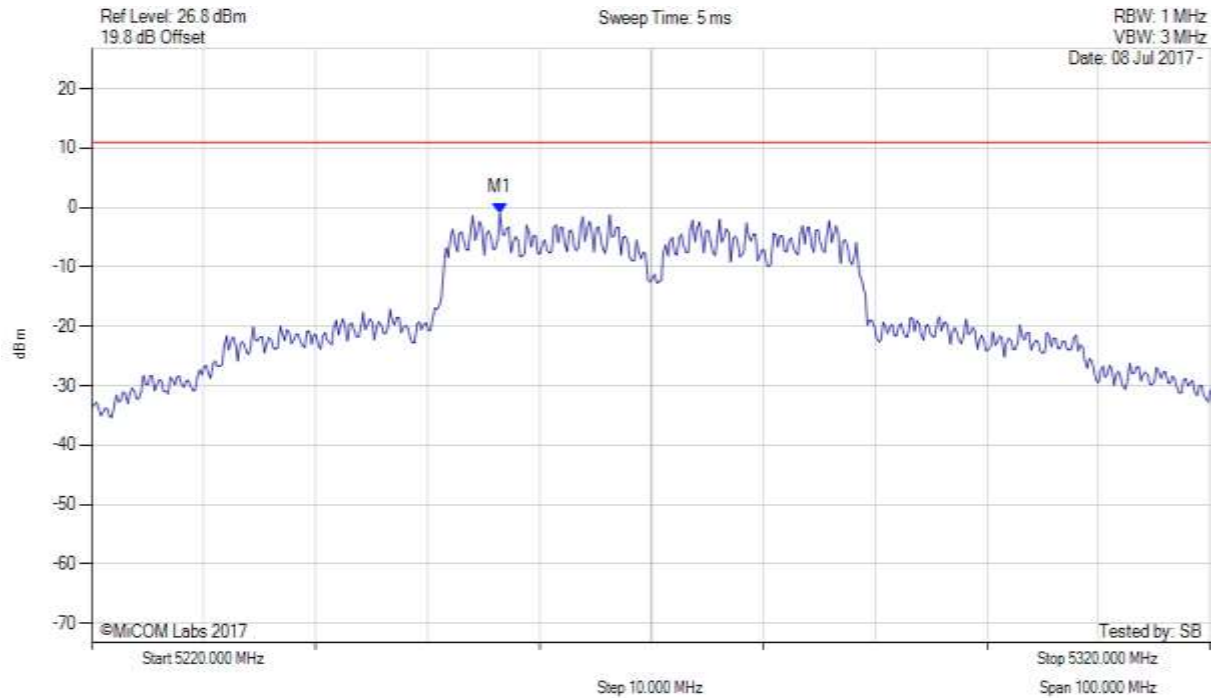


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5327.100 MHz : 1.817 dBm M1 + DCCF : 5327.100 MHz : 1.861 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -9.1 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5270.00 MHz, Chain a, Temp: 20, Voltage: Vdc

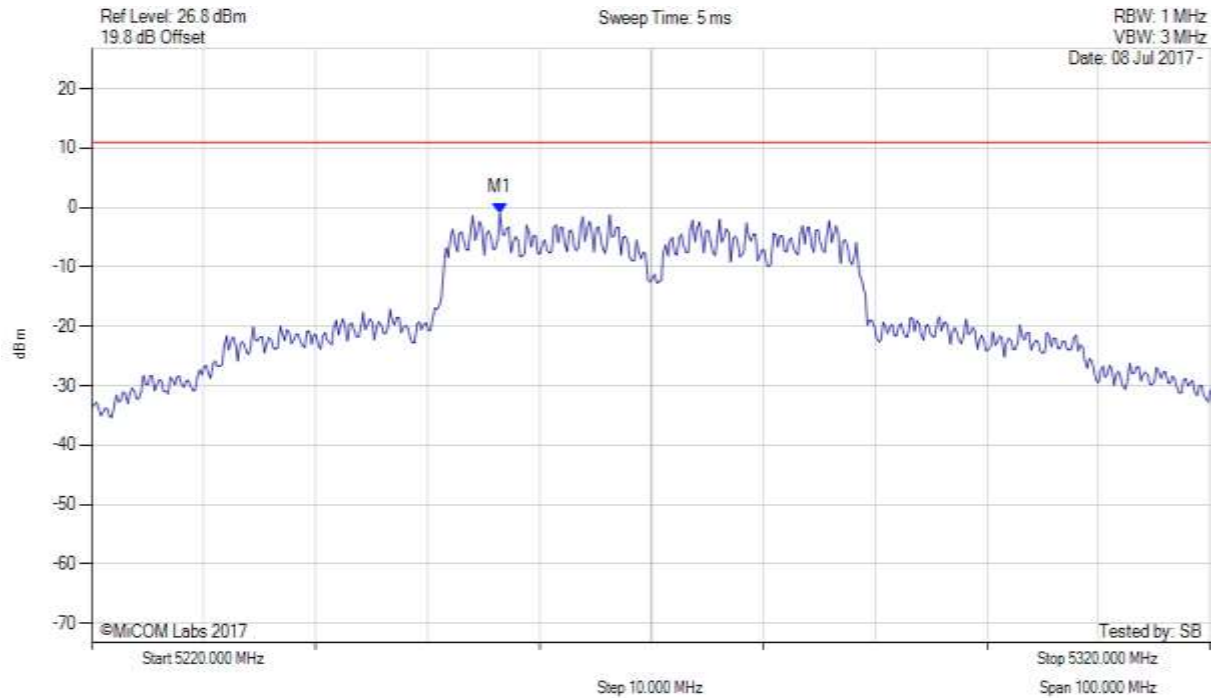


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5256.473 MHz : -0.937 dBm	Limit: ≤ 11.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5270.00 MHz, SUM, Temp: 20, Voltage: Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5256.500 MHz : -0.937 dBm M1 + DCCF : 5256.500 MHz : -0.180 dBm Duty Cycle Correction Factor : +0.76 dB	Limit: ≤ 11.0 dBm Margin: -11.2 dB

[back to matrix](#)

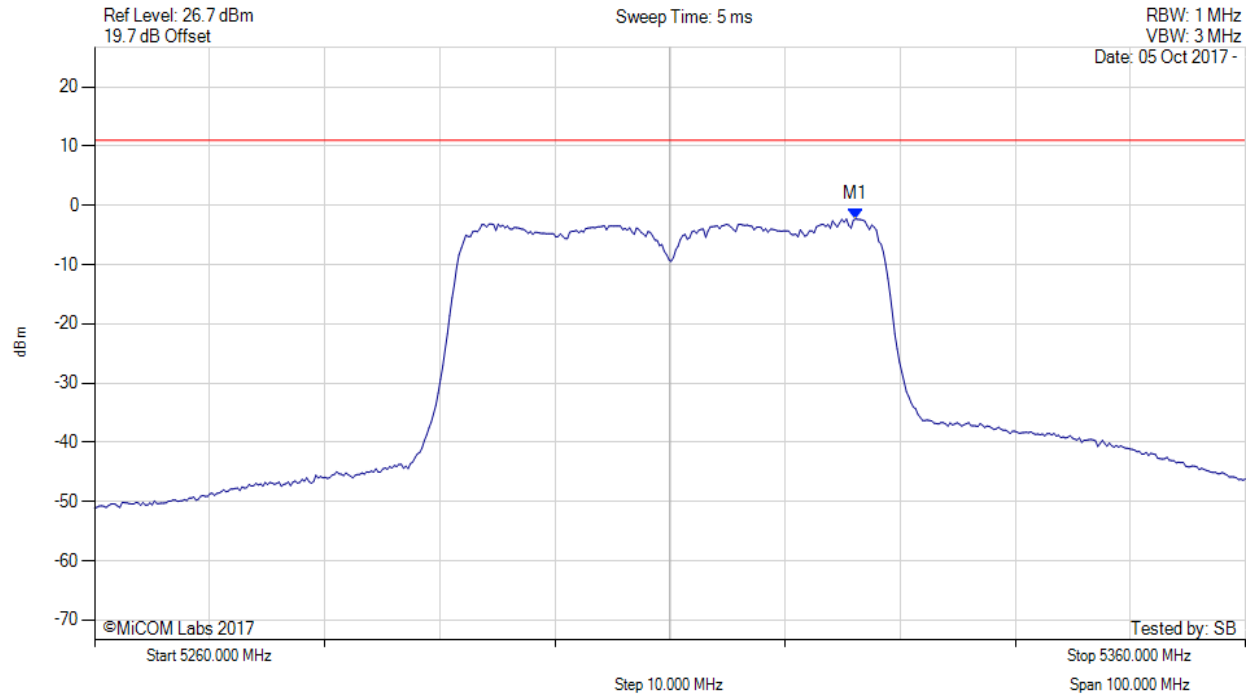


Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 204 of 298



POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5310.00 MHz, , Temp: 20, Voltage: 3.3 Vdc



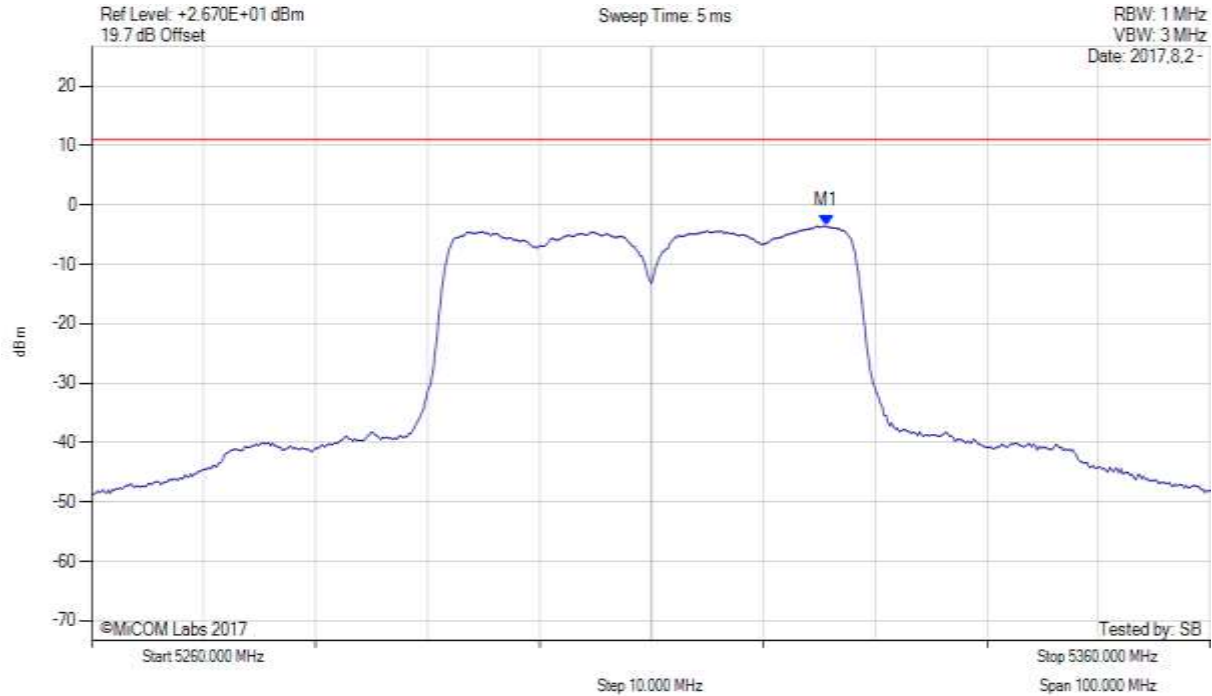
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5326.132 MHz : -2.282 dBm	Channel Frequency: 5310.00 MHz

[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.

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5310.00 MHz, SUM, Temp: 20, Voltage: 3.3 Vdc

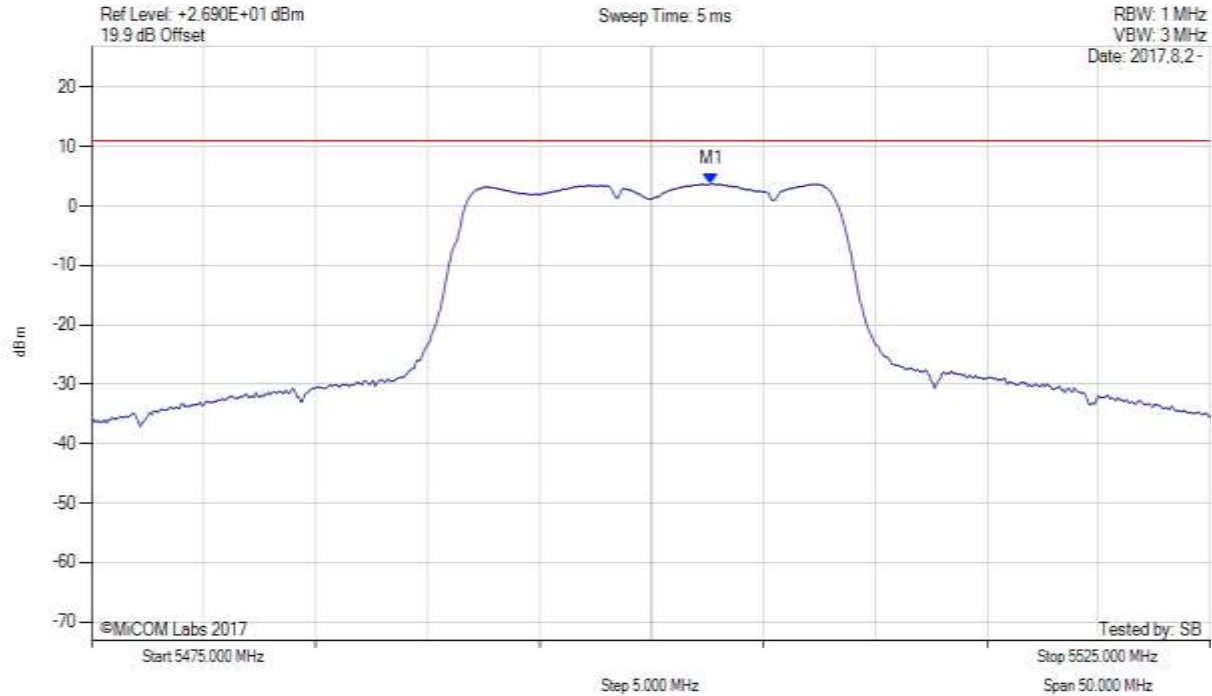


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5325.700 MHz : -3.534 dBm M1 + DCCF : 5325.700 MHz : -2.777 dBm Duty Cycle Correction Factor : +0.76 dB	Limit: ≤ 11.0 dBm Margin: -13.8 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5500.00 MHz, Chain a, Temp: 20, Voltage: 3.3 Vdc

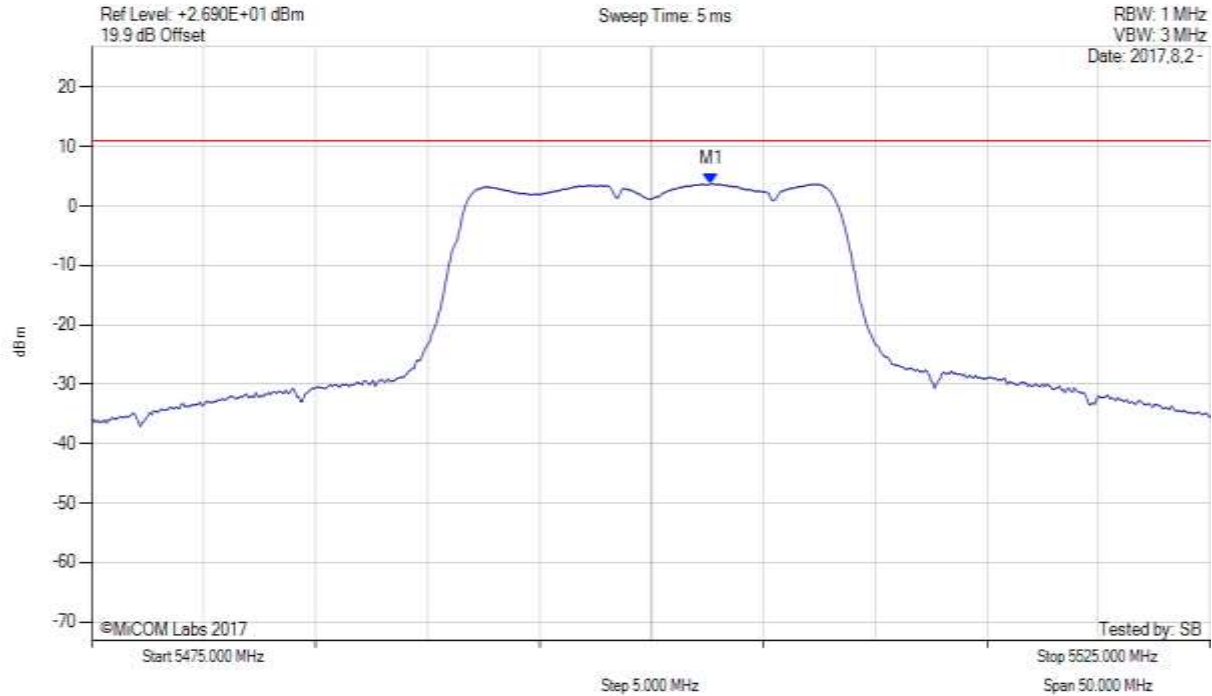


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5502.670 MHz : 3.768 dBm	Limit: ≤ 11.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5500.00 MHz, SUM, Temp: 20, Voltage: 3.3 Vdc

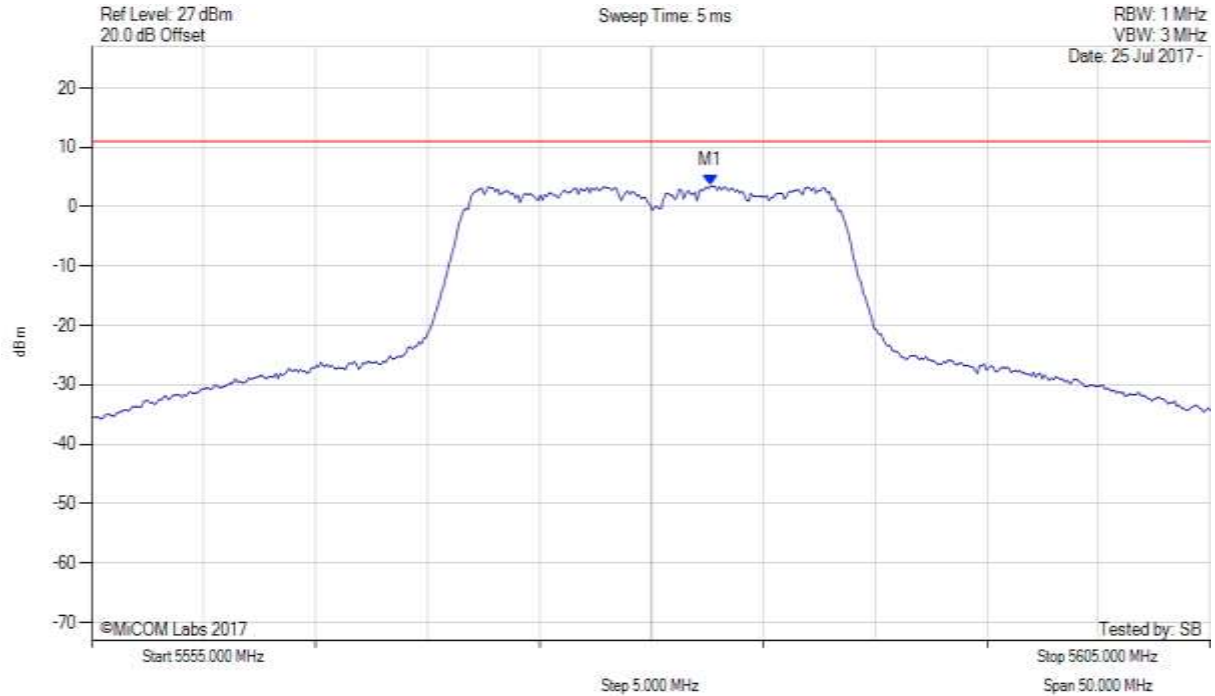


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5502.700 MHz : 3.768 dBm M1 + DCCF : 5502.700 MHz : 3.812 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -7.2 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5580.00 MHz, Chain a, Temp: 20, Voltage: 3.3 Vdc

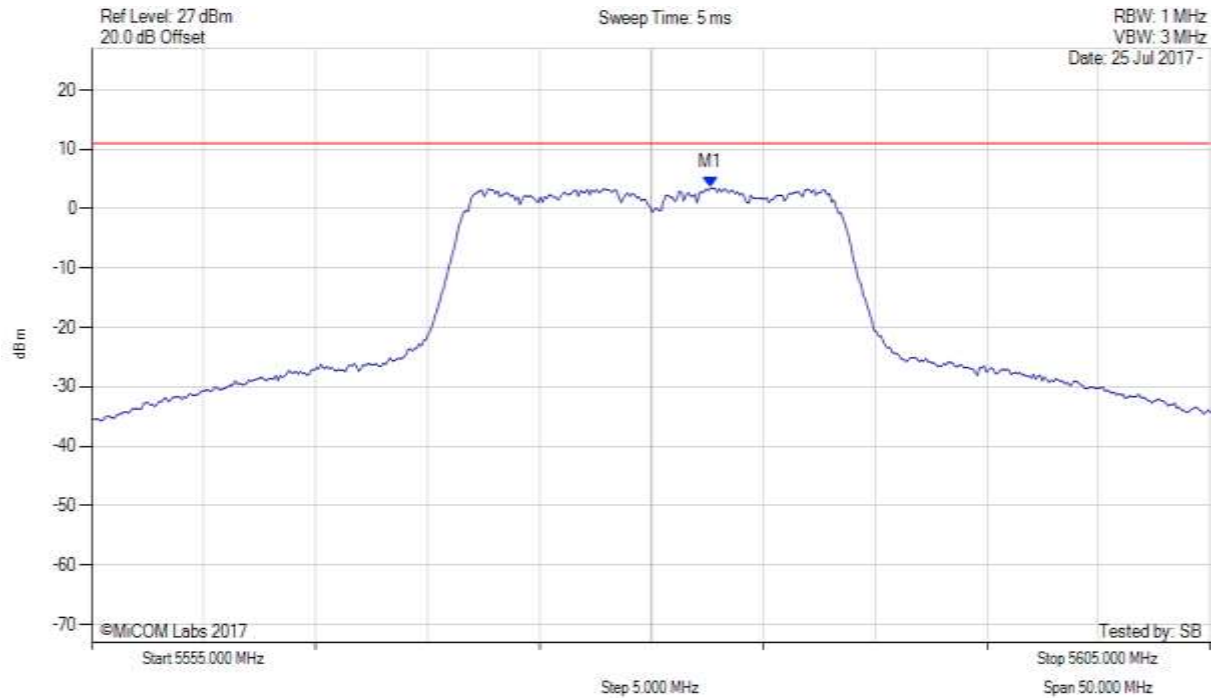


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5582.655 MHz : 3.515 dBm	Limit: ≤ 11.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5580.00 MHz, SUM, Temp: 20, Voltage: 3.3 Vdc

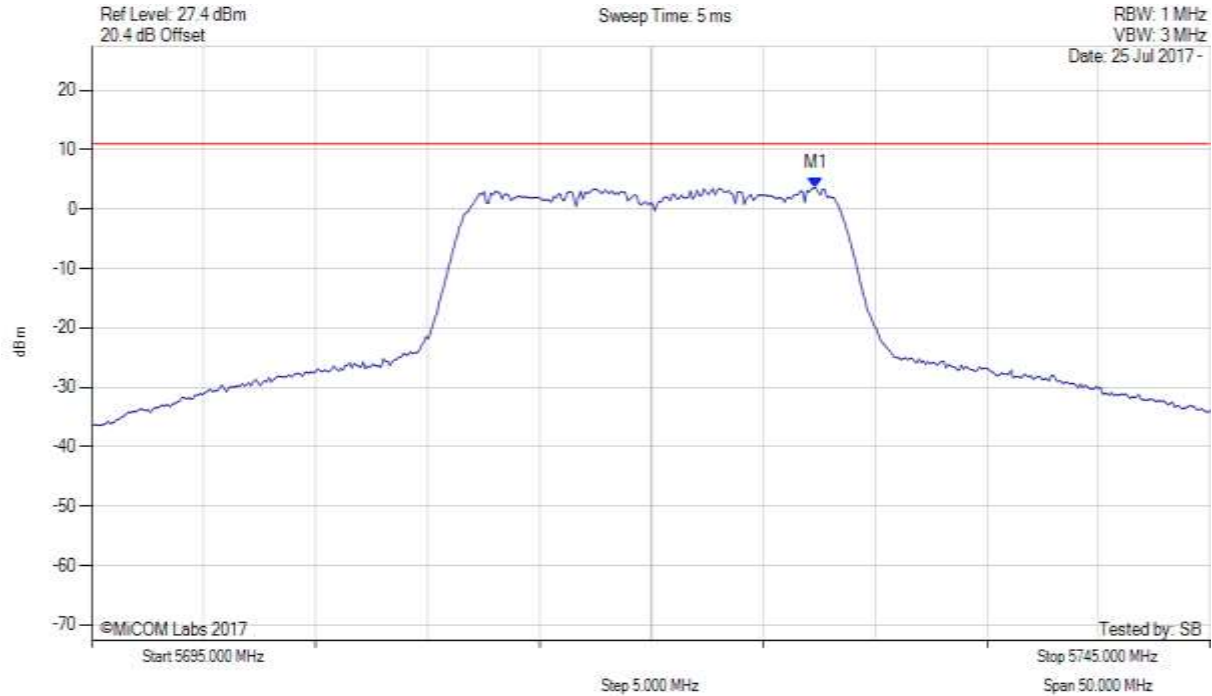


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5582.700 MHz : 3.515 dBm M1 + DCCF : 5582.700 MHz : 3.559 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -7.4 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5720.00 MHz, Chain a, Temp: 20, Voltage: 3.3 Vdc

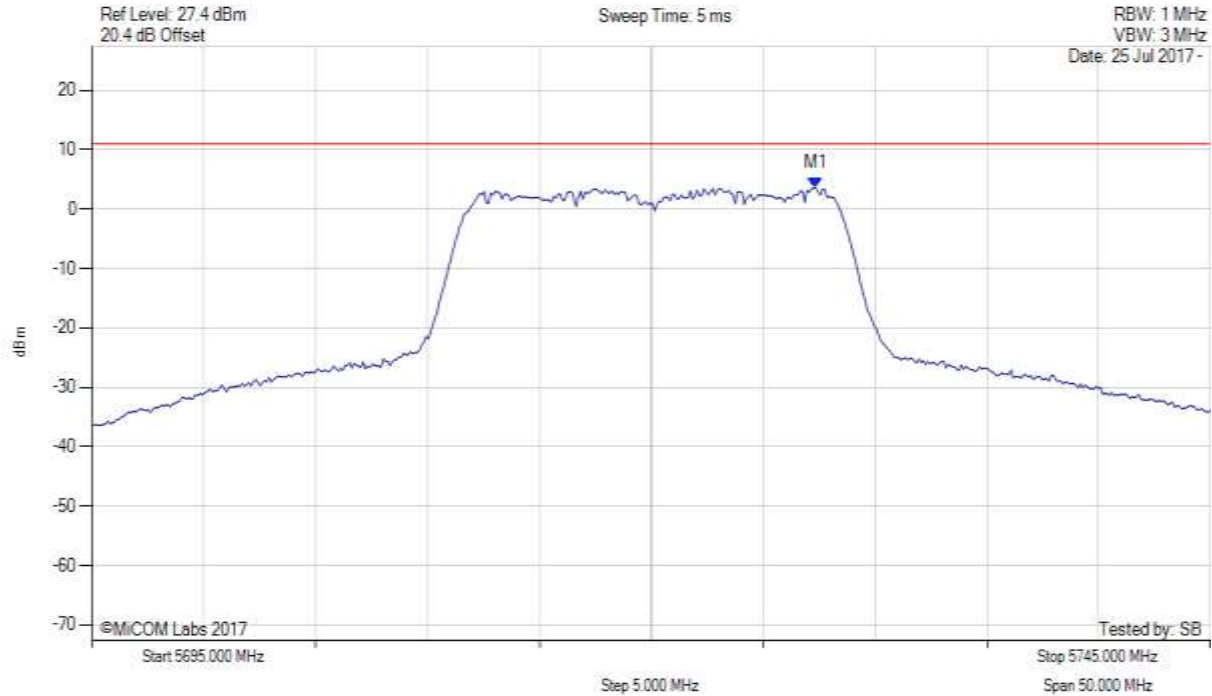


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5727.365 MHz : 3.581 dBm	Limit: ≤ 11.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5720.00 MHz, SUM, Temp: 20, Voltage: 3.3 Vdc

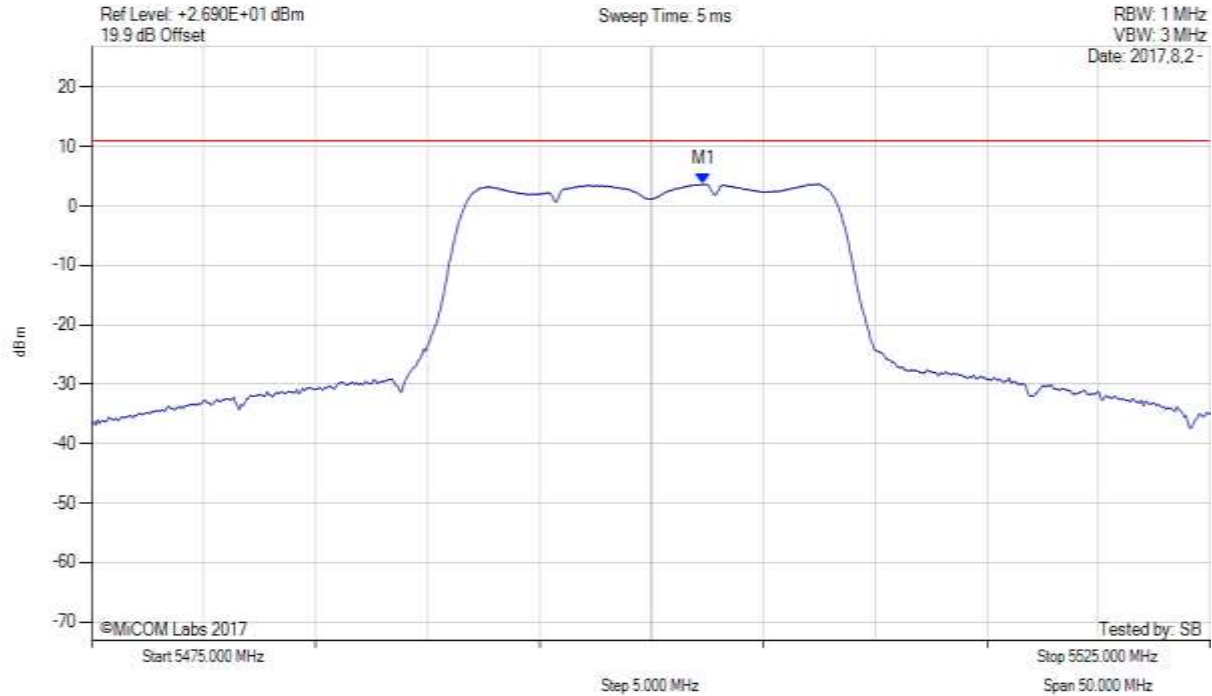


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5727.400 MHz : 3.581 dBm M1 + DCCF : 5727.400 MHz : 3.625 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -7.4 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5500.00 MHz, Chain a, Temp: 20, Voltage: 3.3 Vdc

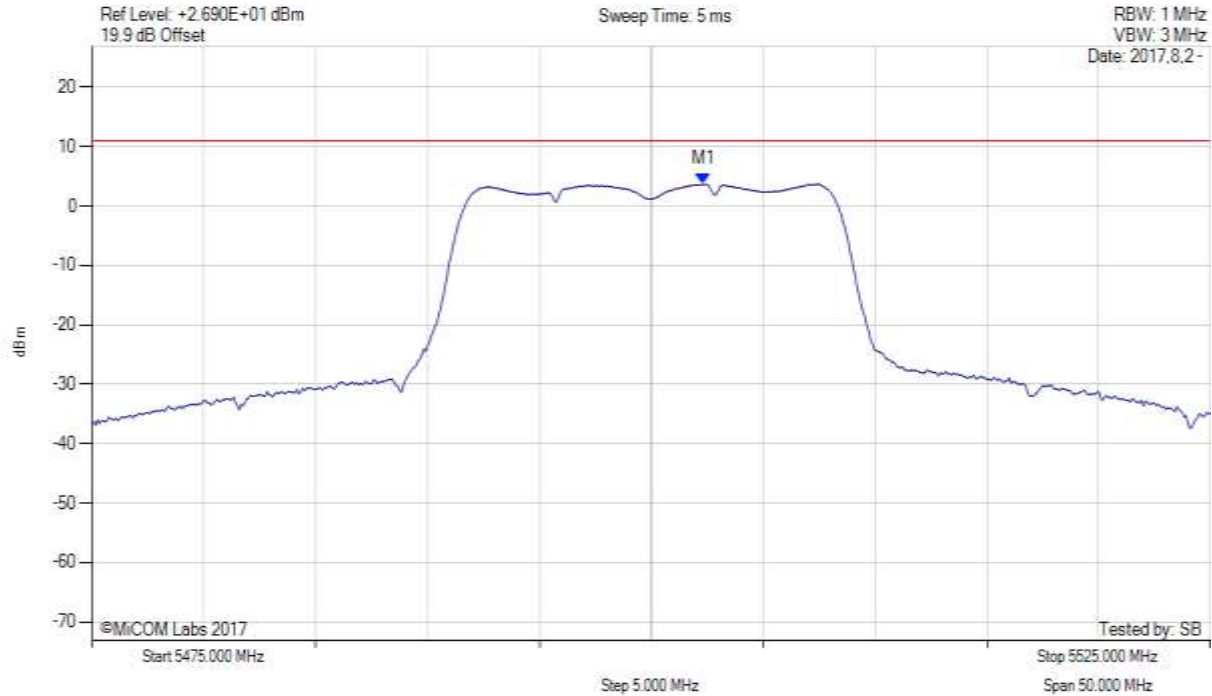


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5502.330 MHz : 3.700 dBm	Limit: ≤ 11.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5500.00 MHz, SUM, Temp: 20, Voltage: 3.3 Vdc

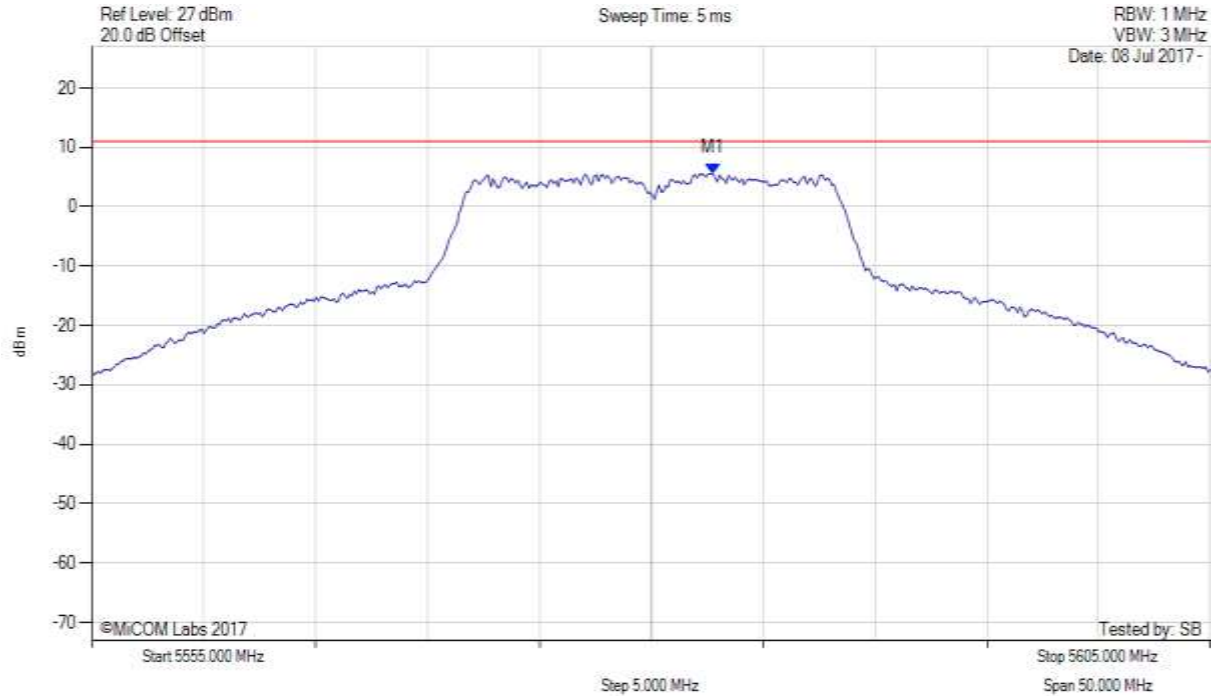


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5502.300 MHz : 3.700 dBm M1 + DCCF : 5502.300 MHz : 3.744 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -7.3 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5580.00 MHz, Chain a, Temp: 20, Voltage: Vdc

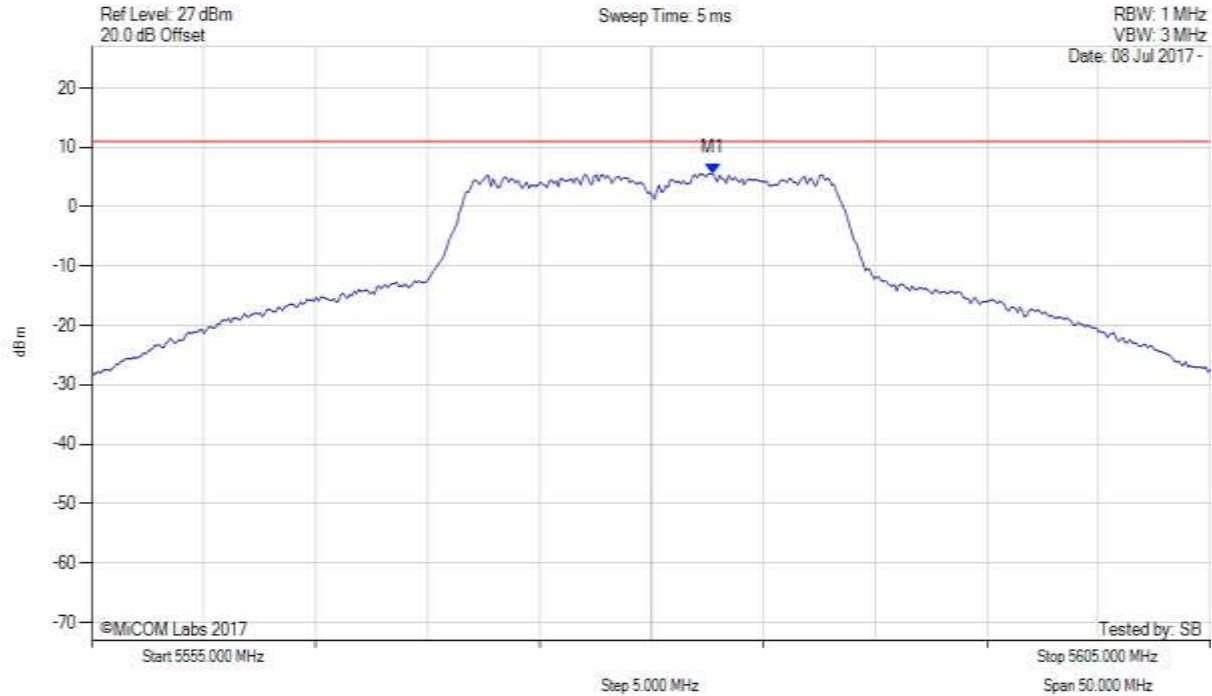


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5582.756 MHz : 5.577 dBm	Limit: ≤ 11.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5580.00 MHz, SUM, Temp: 20, Voltage: Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5582.800 MHz : 5.577 dBm M1 + DCCF : 5582.800 MHz : 5.621 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -5.4 dB

[back to matrix](#)

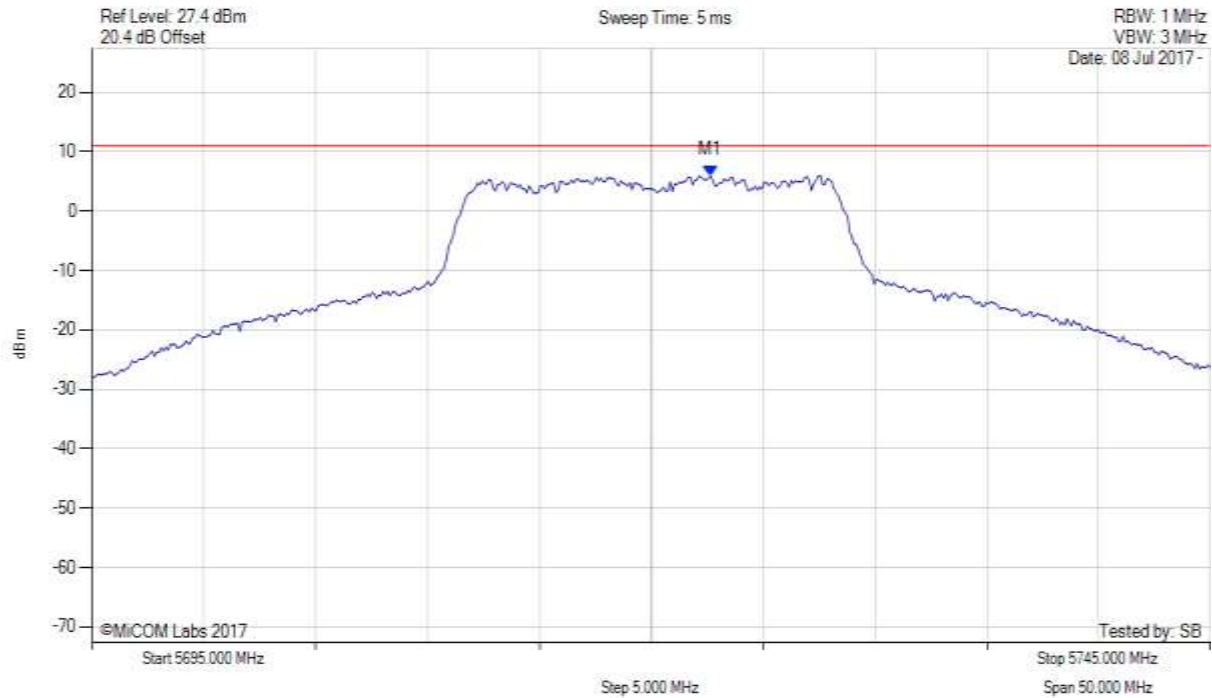


Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 216 of 298



POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5720.00 MHz, Chain a, Temp: 20, Voltage: Vdc



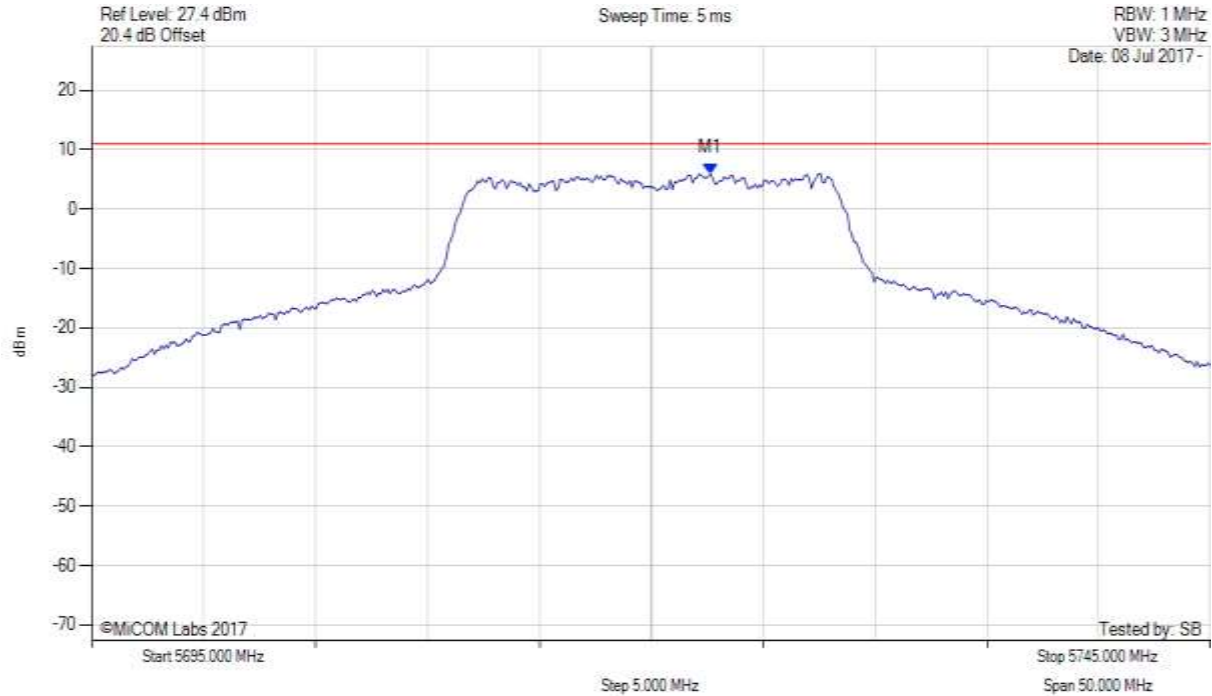
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5722.655 MHz : 5.991 dBm	Limit: ≤ 11.000 dBm

[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: 802.11n HT-20, Channel: 5720.00 MHz, SUM, Temp: 20, Voltage: Vdc

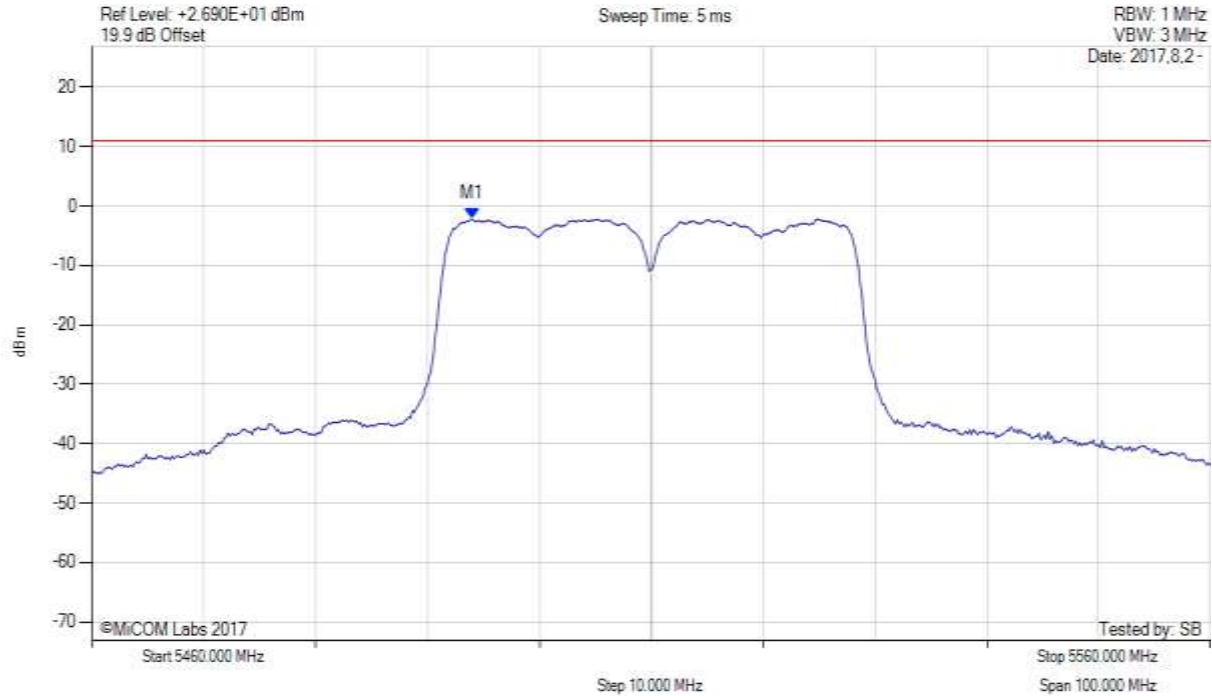


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5722.700 MHz : 5.991 dBm M1 + DCCF : 5722.700 MHz : 6.035 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 11.0 dBm Margin: -5.0 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5510.00 MHz, Chain a, Temp: 20, Voltage: 3.3 Vdc

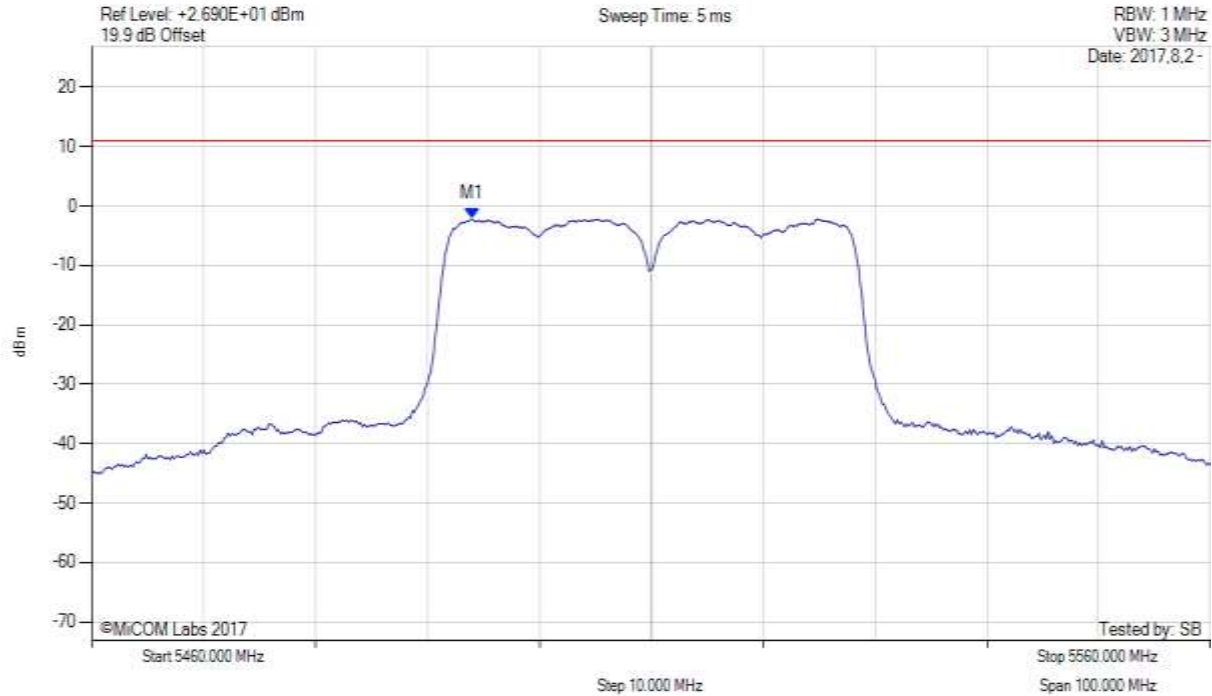


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5494.000 MHz : -2.174 dBm	Limit: ≤ 11.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5510.00 MHz, SUM, Temp: 20, Voltage: 3.3 Vdc

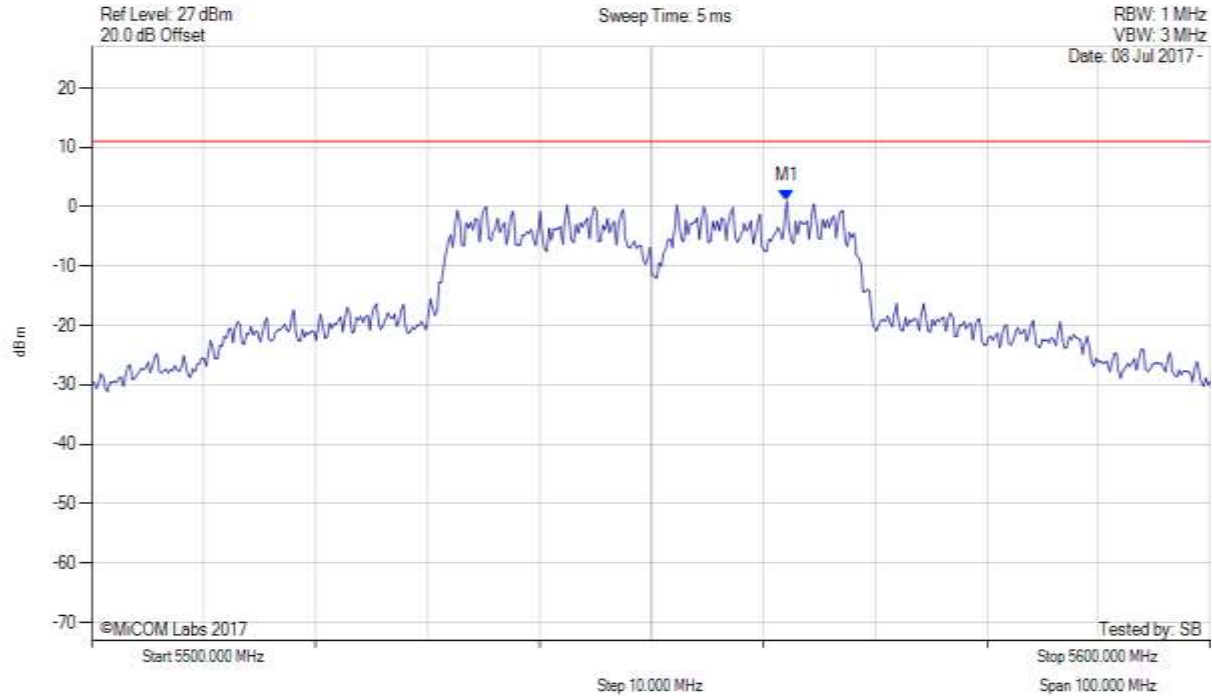


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = AVER Sweep Count = +100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5494.000 MHz : -2.174 dBm M1 + DCCF : 5494.000 MHz : -1.417 dBm Duty Cycle Correction Factor : +0.76 dB	Limit: ≤ 11.0 dBm Margin: -12.4 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5550.00 MHz, Chain a, Temp: 20, Voltage: Vdc

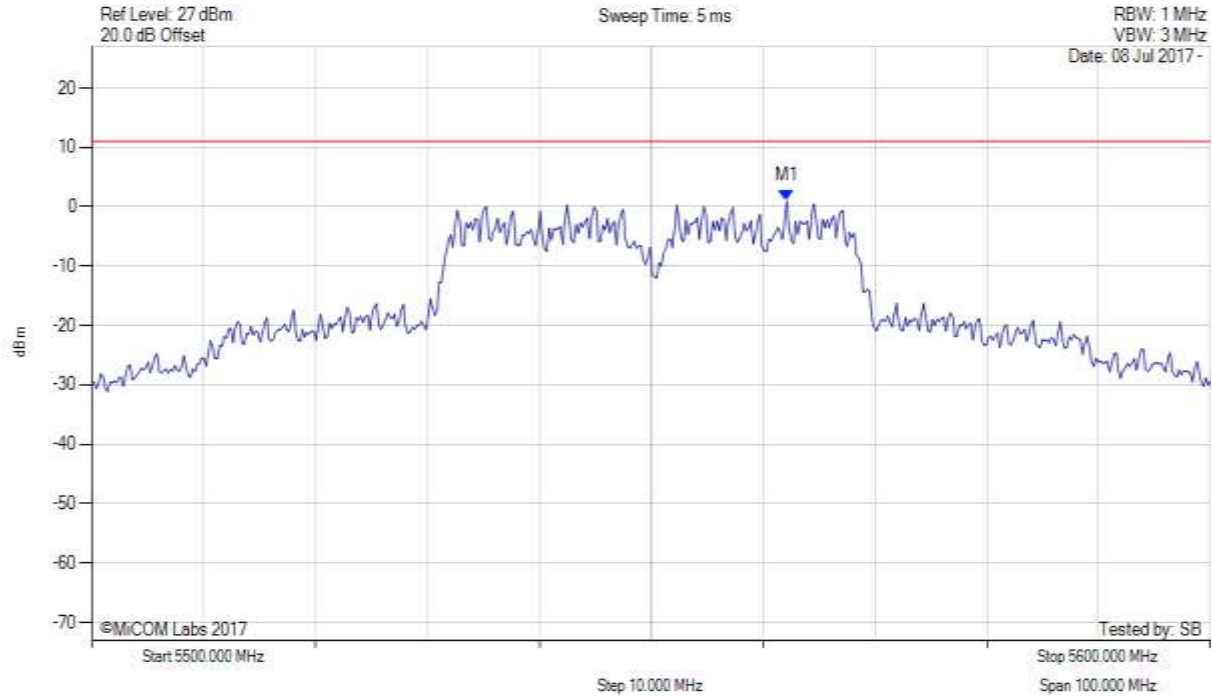


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5562.124 MHz : 0.994 dBm	Limit: ≤ 11.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5550.00 MHz, SUM, Temp: 20, Voltage: Vdc

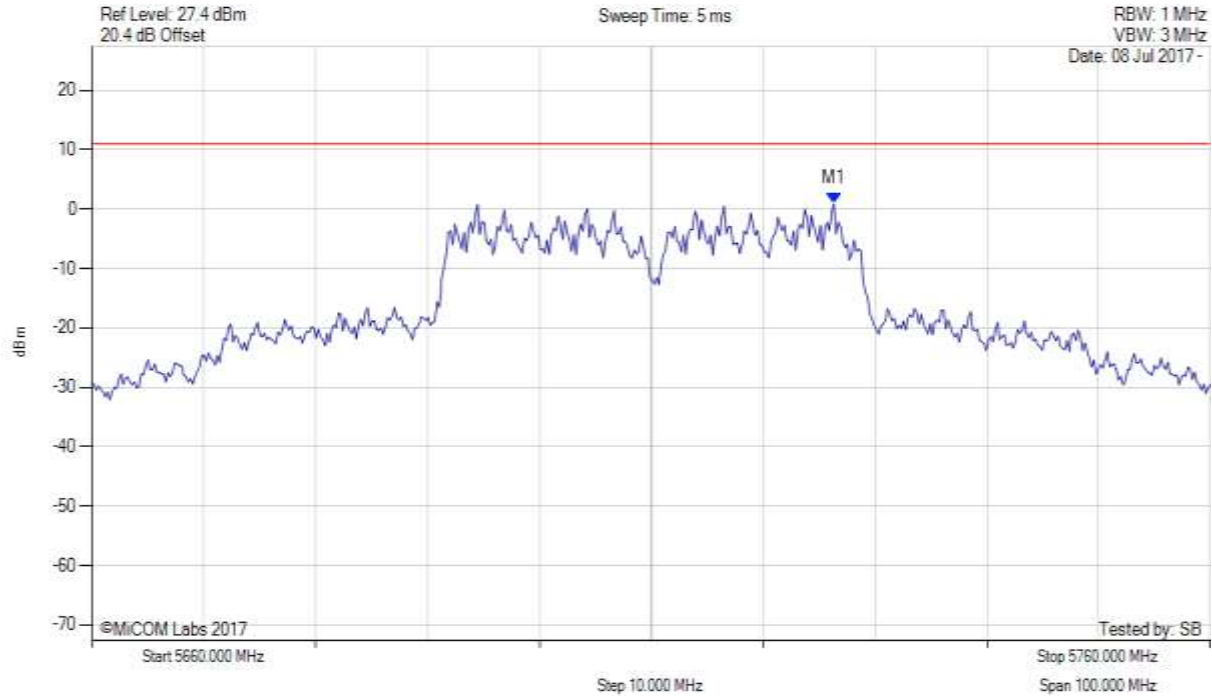


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5562.100 MHz : 0.994 dBm M1 + DCCF : 5562.100 MHz : 1.751 dBm Duty Cycle Correction Factor : +0.76 dB	Limit: ≤ 11.0 dBm Margin: -9.2 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5710.00 MHz, Chain a, Temp: 20, Voltage: Vdc

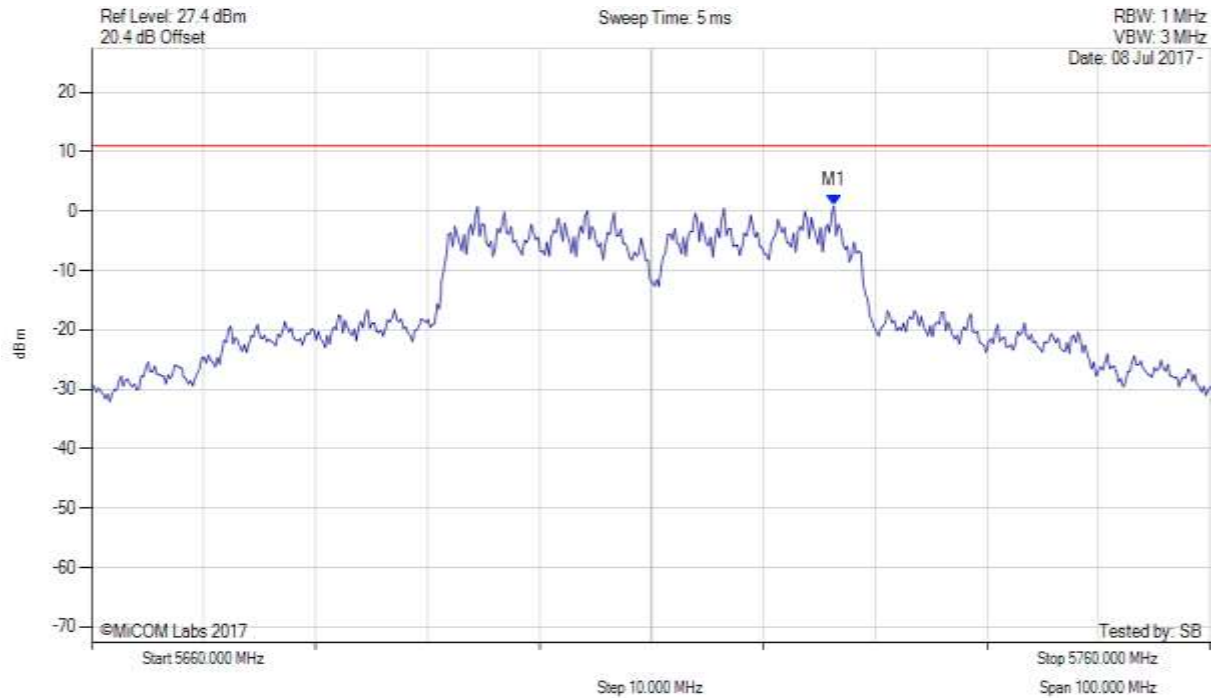


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5726.333 MHz : 0.863 dBm	Limit: ≤ 11.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5710.00 MHz, SUM, Temp: 20, Voltage: Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5726.300 MHz : 0.863 dBm M1 + DCCF : 5726.300 MHz : 1.620 dBm Duty Cycle Correction Factor : +0.76 dB	Limit: ≤ 11.0 dBm Margin: -9.4 dB

[back to matrix](#)

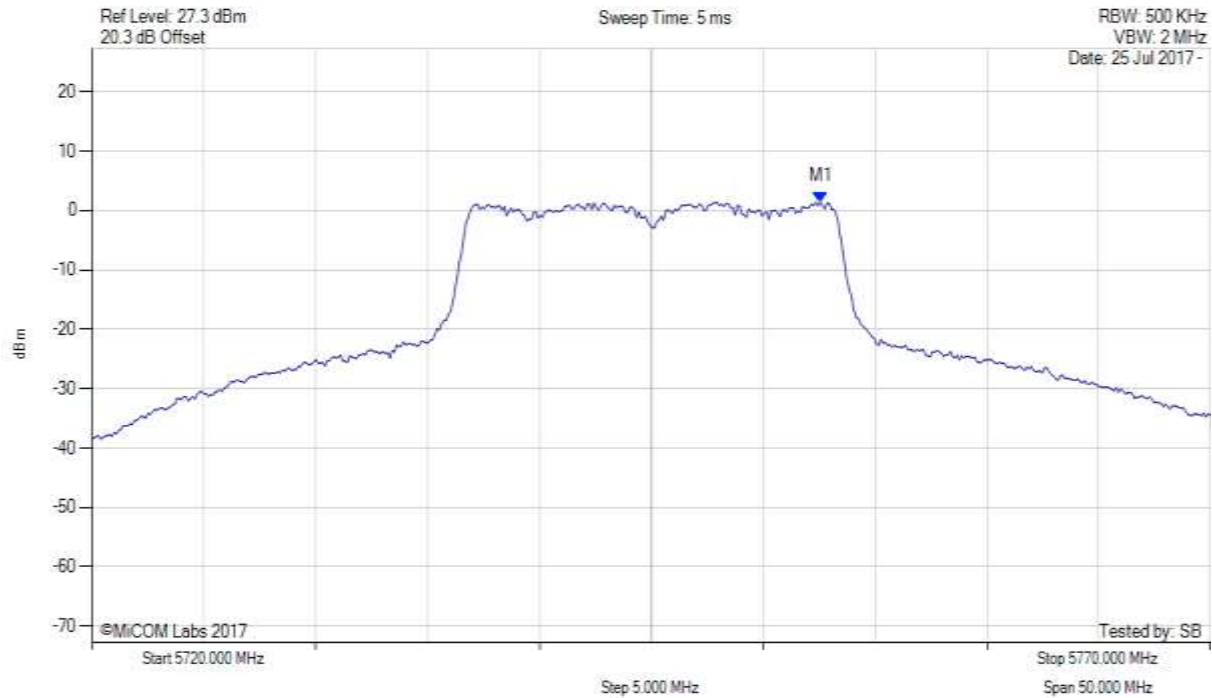


Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 224 of 298



POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5745.00 MHz, Chain a, Temp: 20, Voltage: 3.3 Vdc



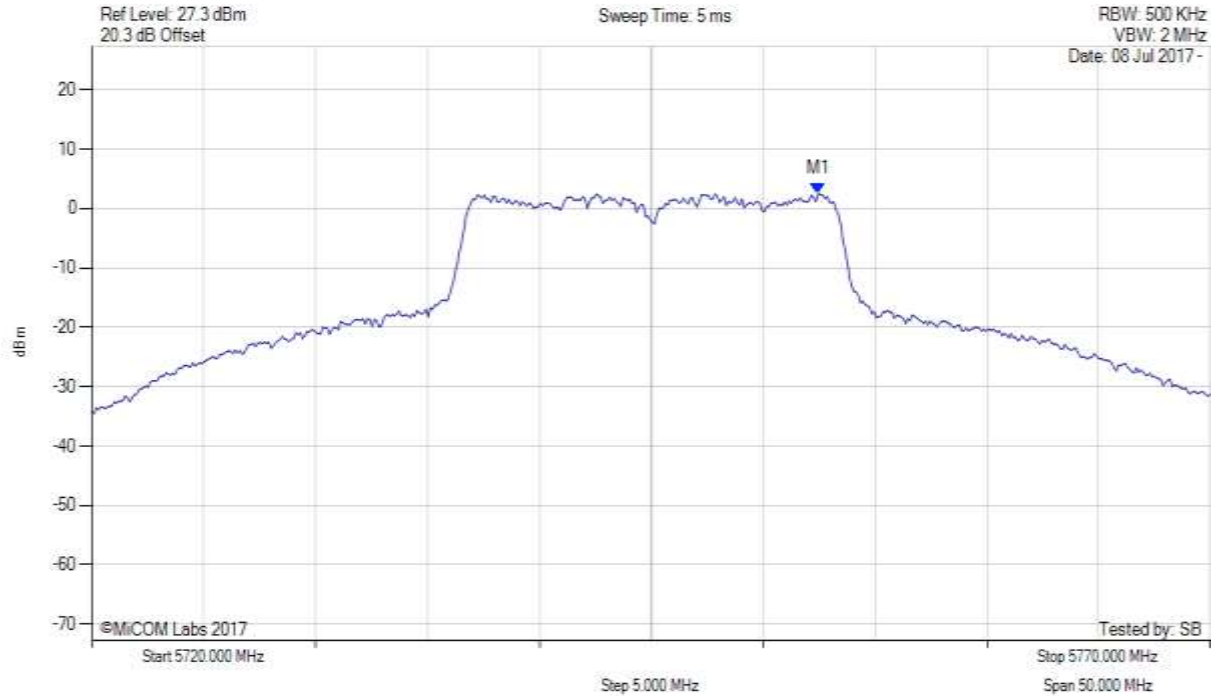
Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5752.565 MHz : 1.445 dBm	Limit: ≤ 30.000 dBm

[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: 802.11a, Channel: 5745.00 MHz, Chain a, Temp: 20, Voltage: Vdc

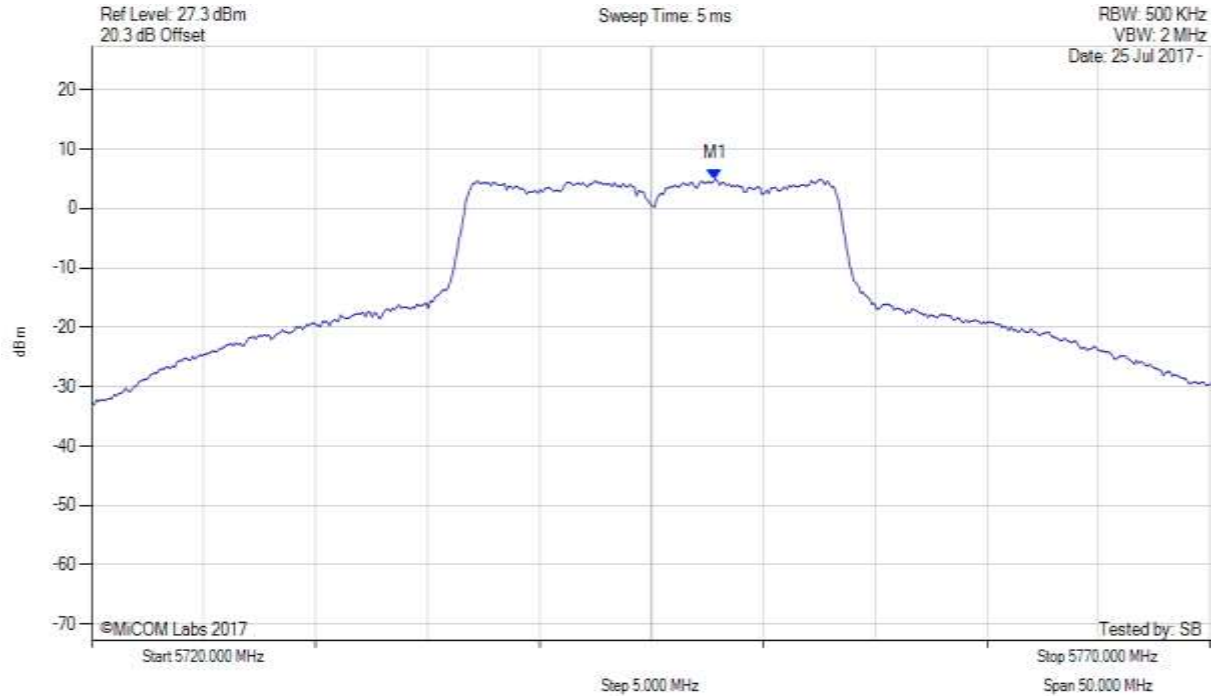


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5752.465 MHz : 2.518 dBm	Channel Frequency: 5745.00 MHz

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5745.00 MHz, SUM, Temp: 20, Voltage: 3.3 Vdc

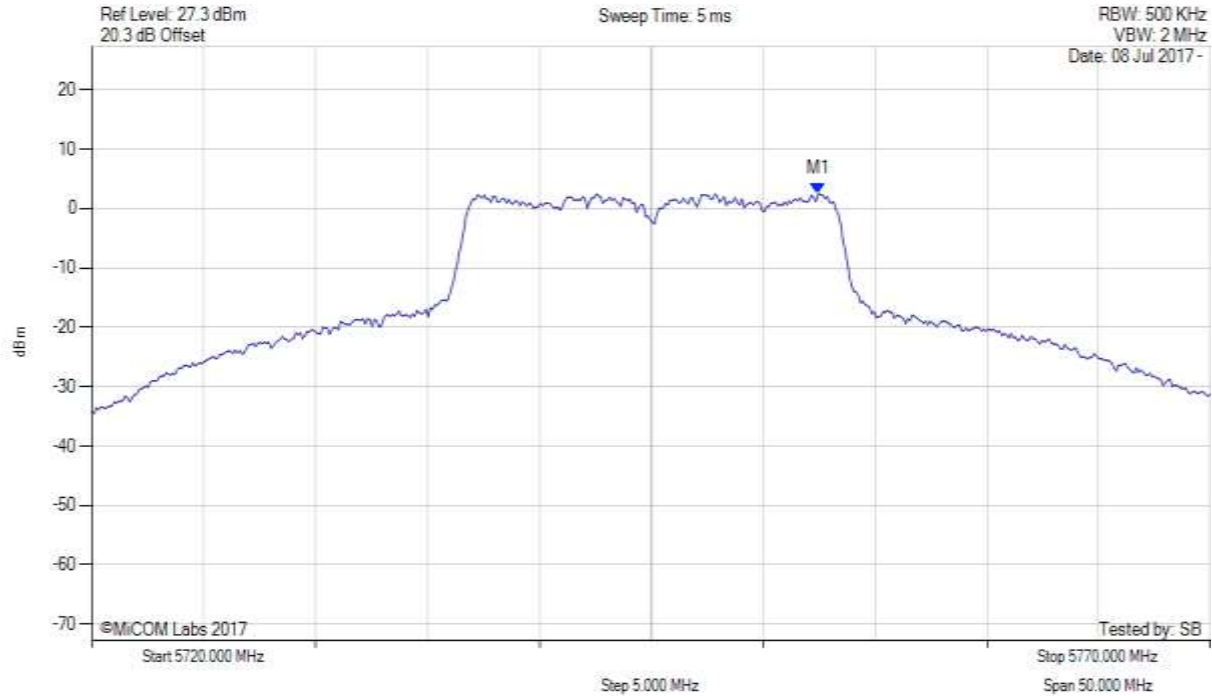


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5747.900 MHz : 4.946 dBm M1 + DCCF : 5747.900 MHz : 4.990 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -25.0 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5745.00 MHz, SUM, Temp: 20, Voltage: Vdc

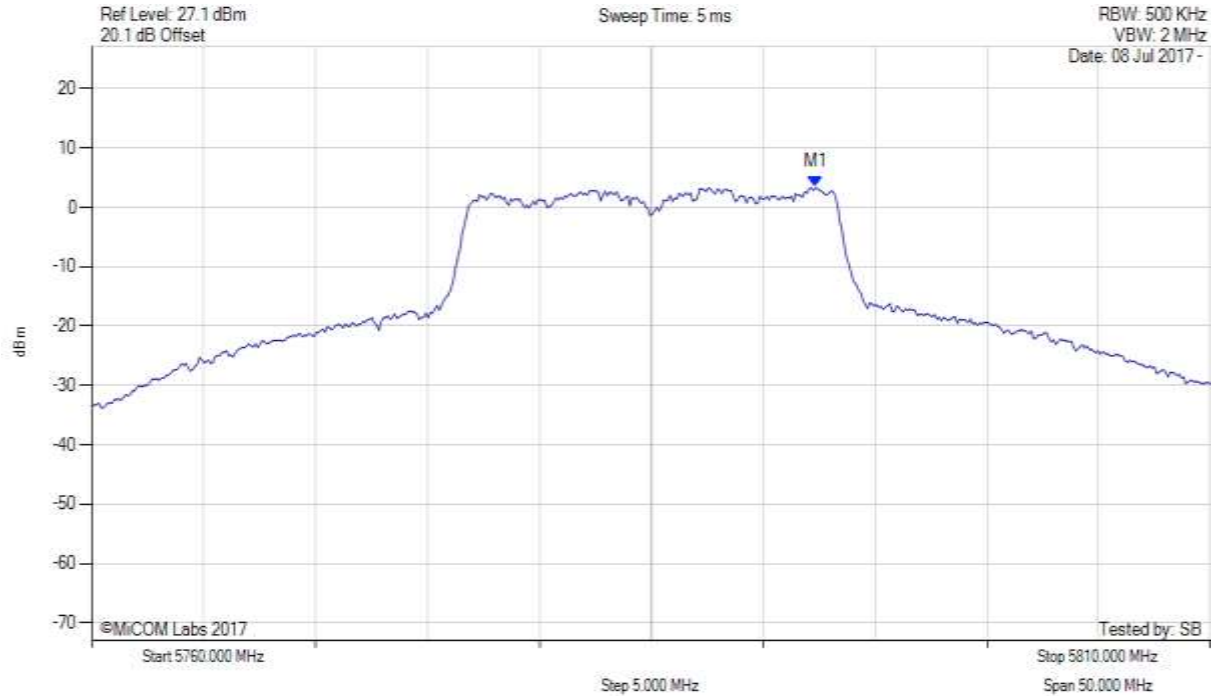


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5752.500 MHz : 2.518 dBm M1 + DCCF : 5752.500 MHz : 2.562 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -27.4 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5785.00 MHz, Chain a, Temp: 20, Voltage: Vdc

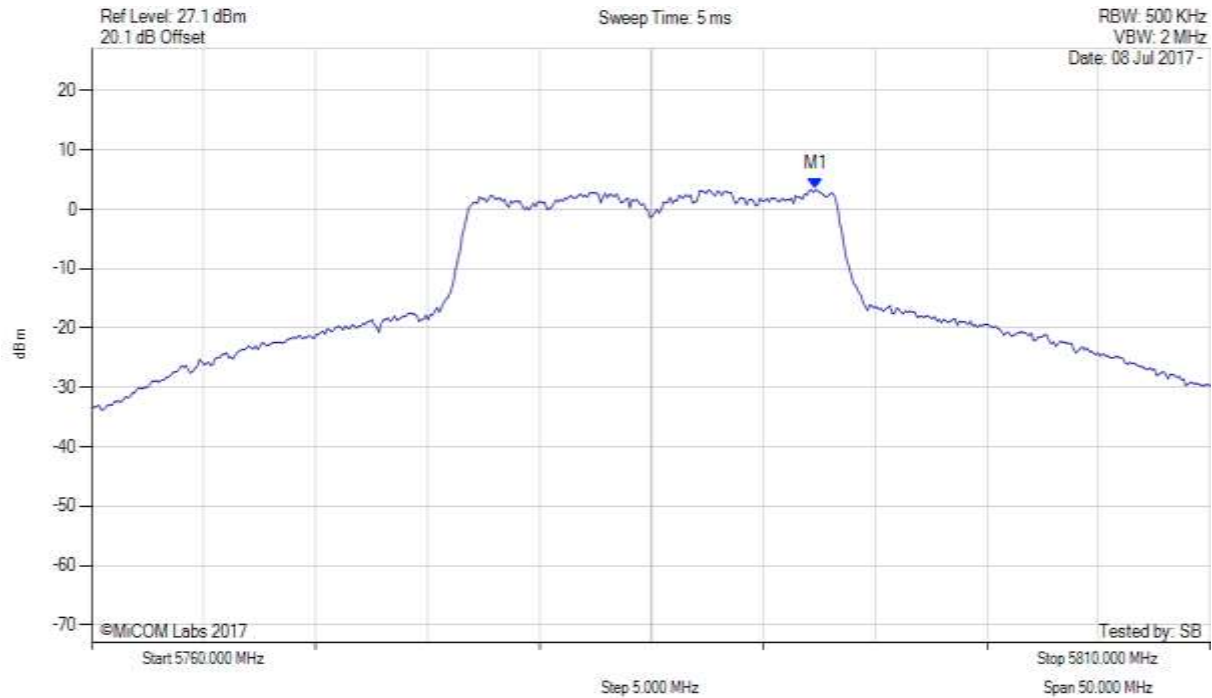


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5792.365 MHz : 3.397 dBm	Limit: ≤ 30.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5785.00 MHz, SUM, Temp: 20, Voltage: Vdc

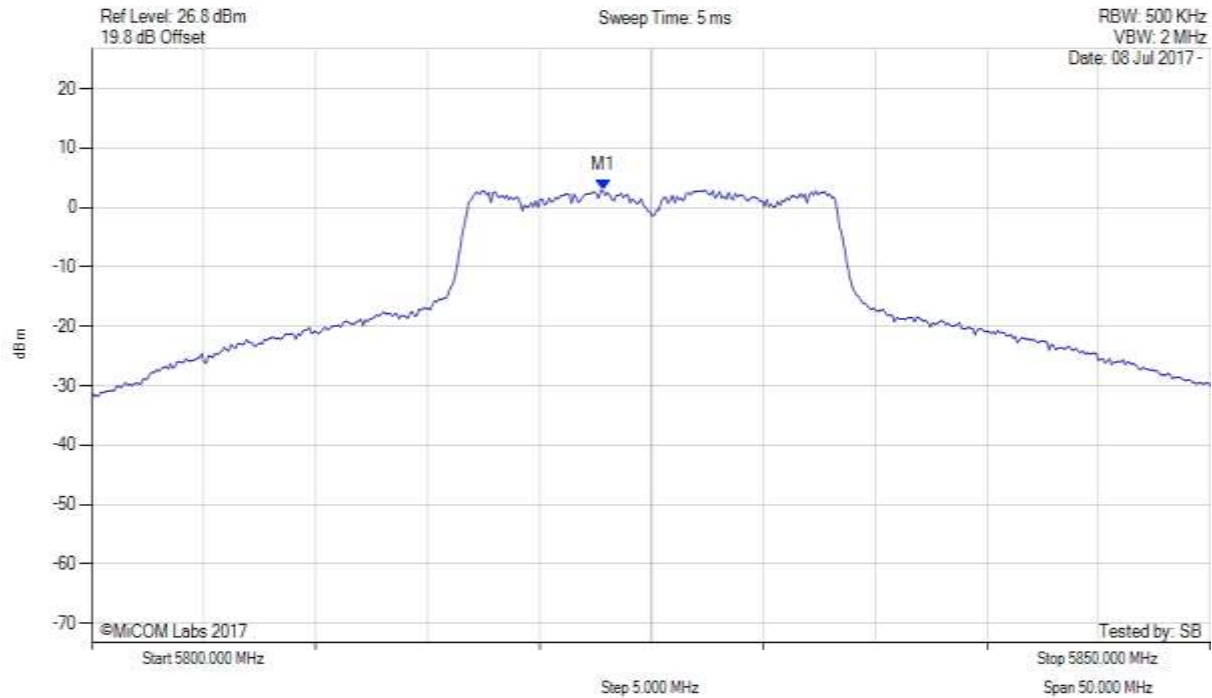


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5792.400 MHz : 3.397 dBm M1 + DCCF : 5792.400 MHz : 3.441 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -26.6 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5825.00 MHz, Chain a, Temp: 20, Voltage: Vdc

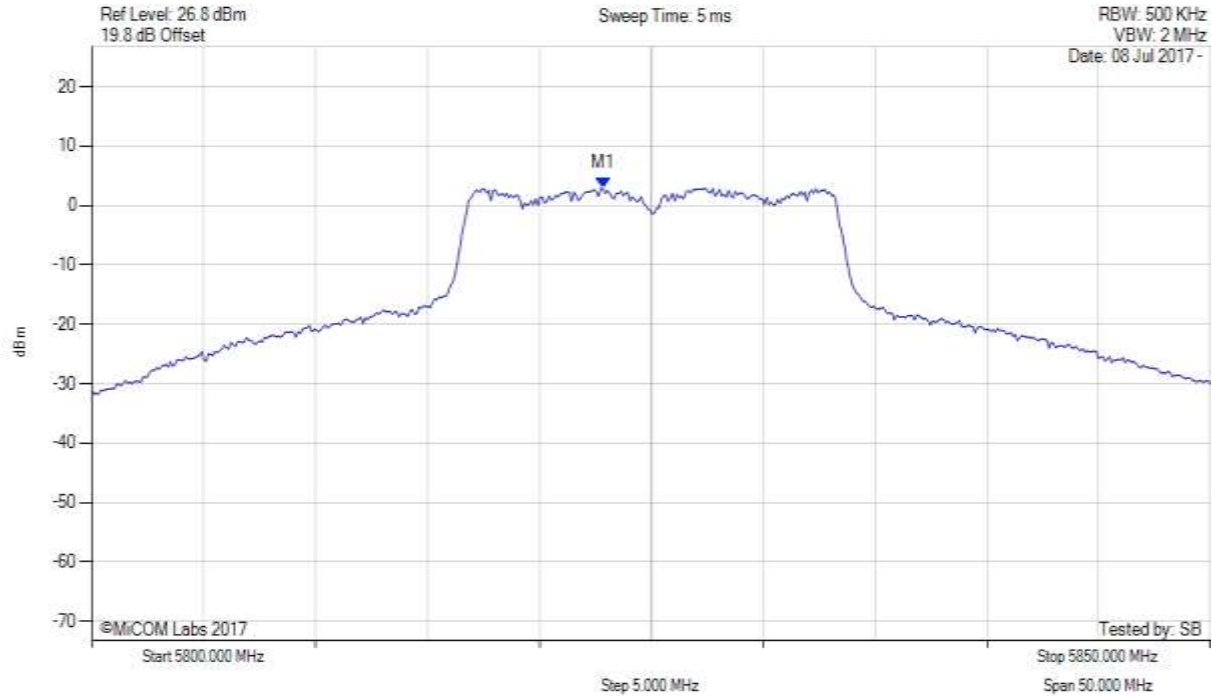


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5822.846 MHz : 2.888 dBm	Limit: ≤ 30.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11a, Channel: 5825.00 MHz, SUM, Temp: 20, Voltage: Vdc

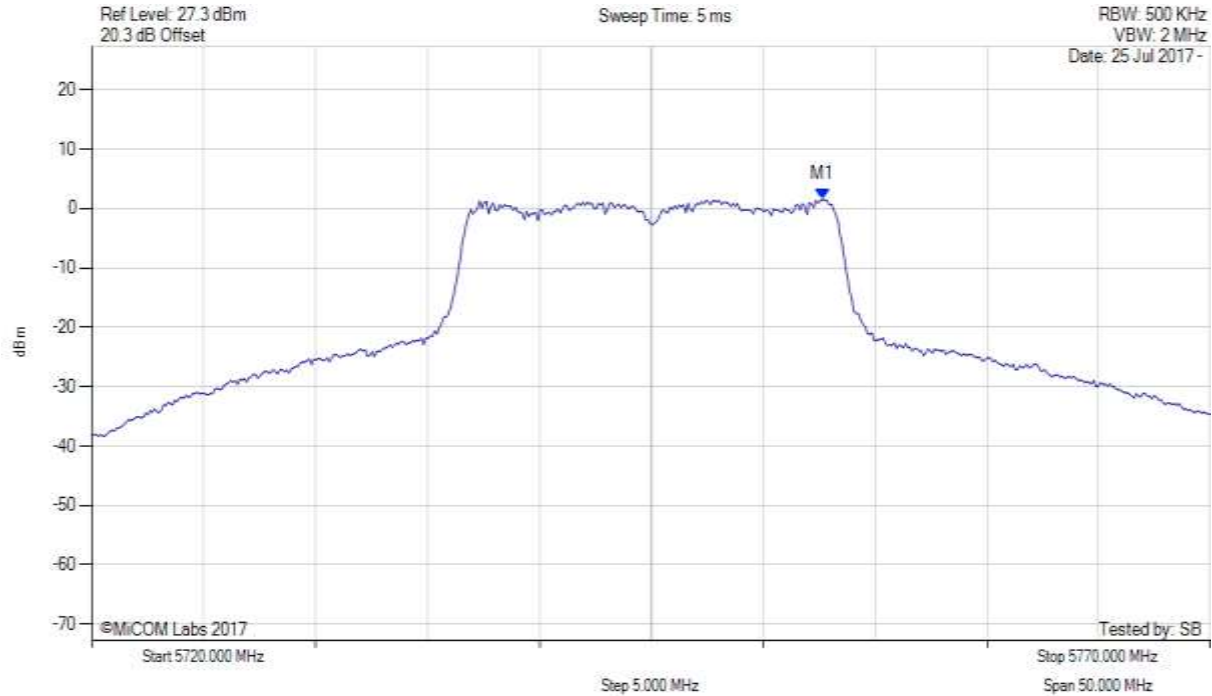


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5822.800 MHz : 2.888 dBm M1 + DCCF : 5822.800 MHz : 2.932 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -27.1 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5745.00 MHz, Chain a, Temp: 20, Voltage: 3.3 Vdc

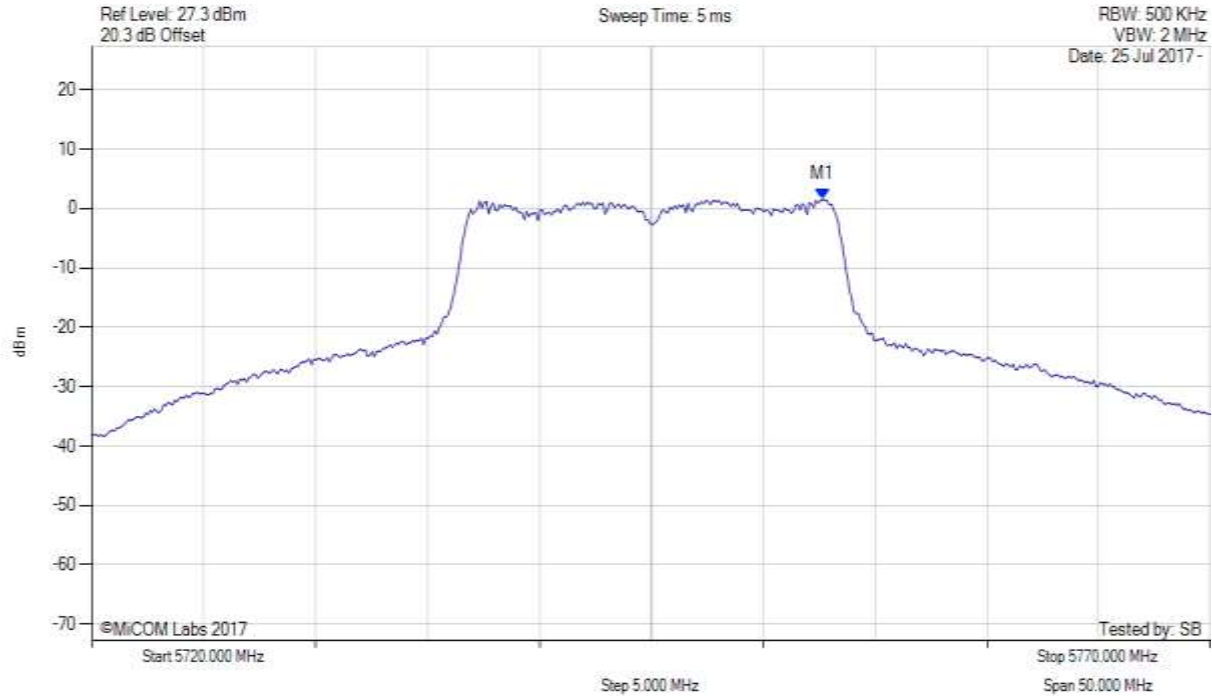


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5752.665 MHz : 1.494 dBm	Limit: ≤ 30.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5745.00 MHz, SUM, Temp: 20, Voltage: 3.3 Vdc

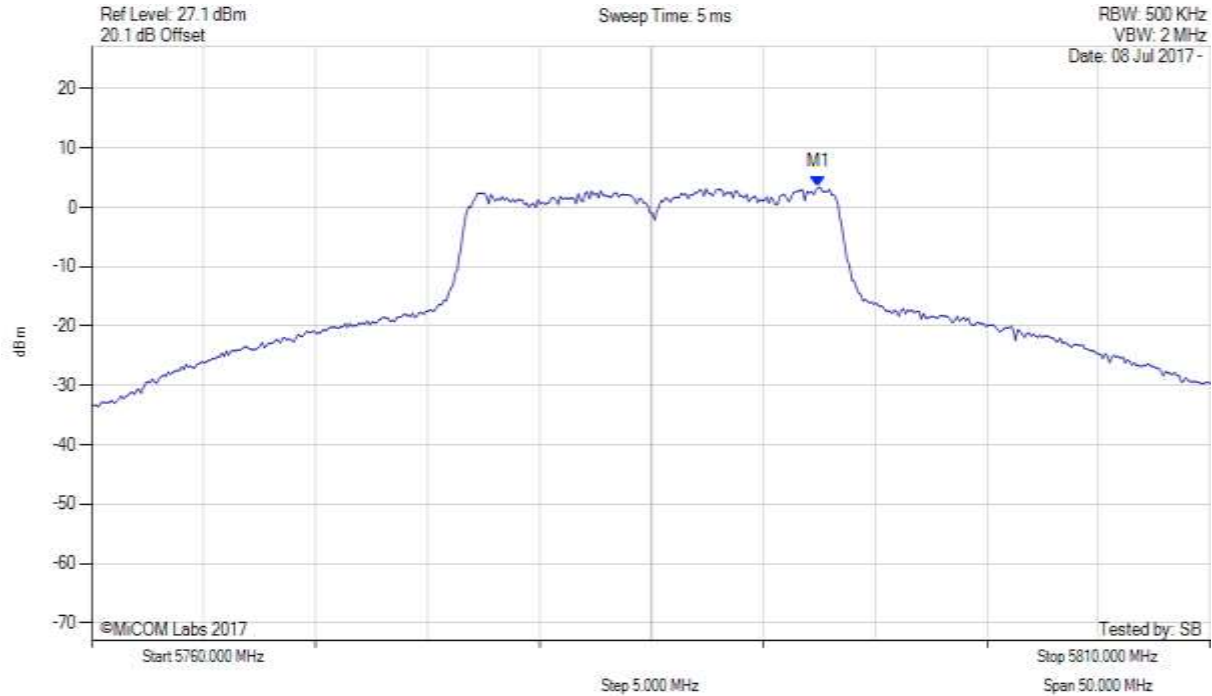


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5752.700 MHz : 1.494 dBm M1 + DCCF : 5752.700 MHz : 1.538 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -28.5 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5785.00 MHz, Chain a, Temp: 20, Voltage: Vdc

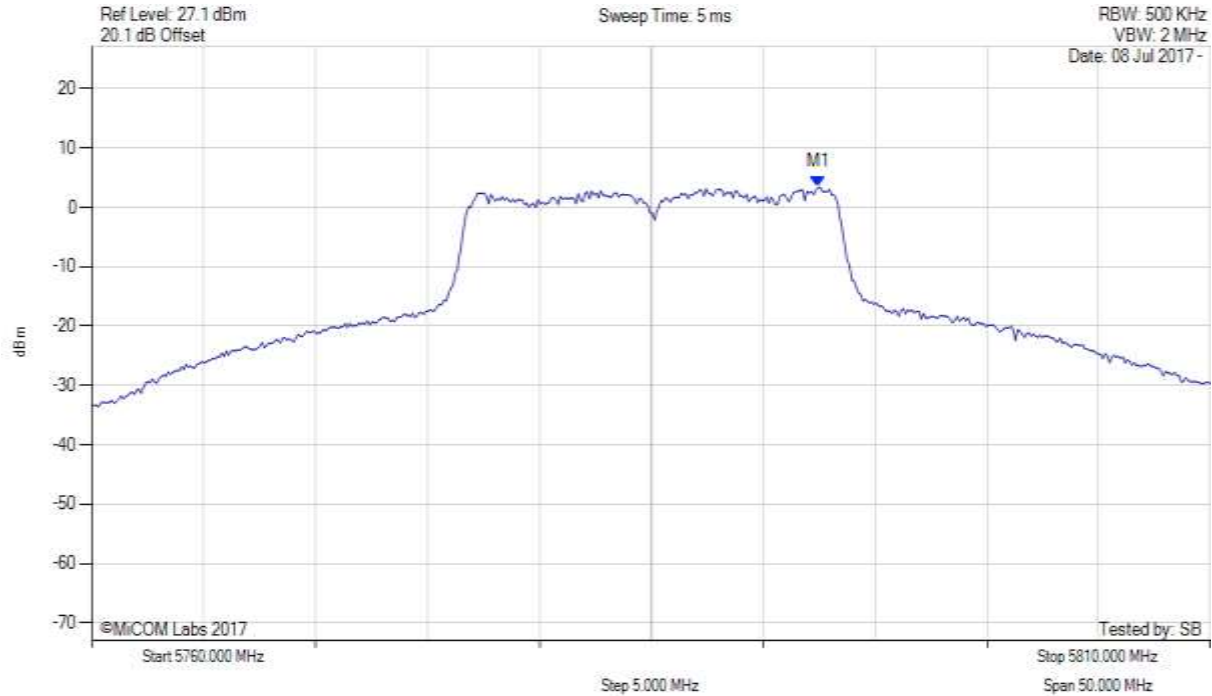


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5792.465 MHz : 3.369 dBm	Limit: ≤ 30.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5785.00 MHz, SUM, Temp: 20, Voltage: Vdc

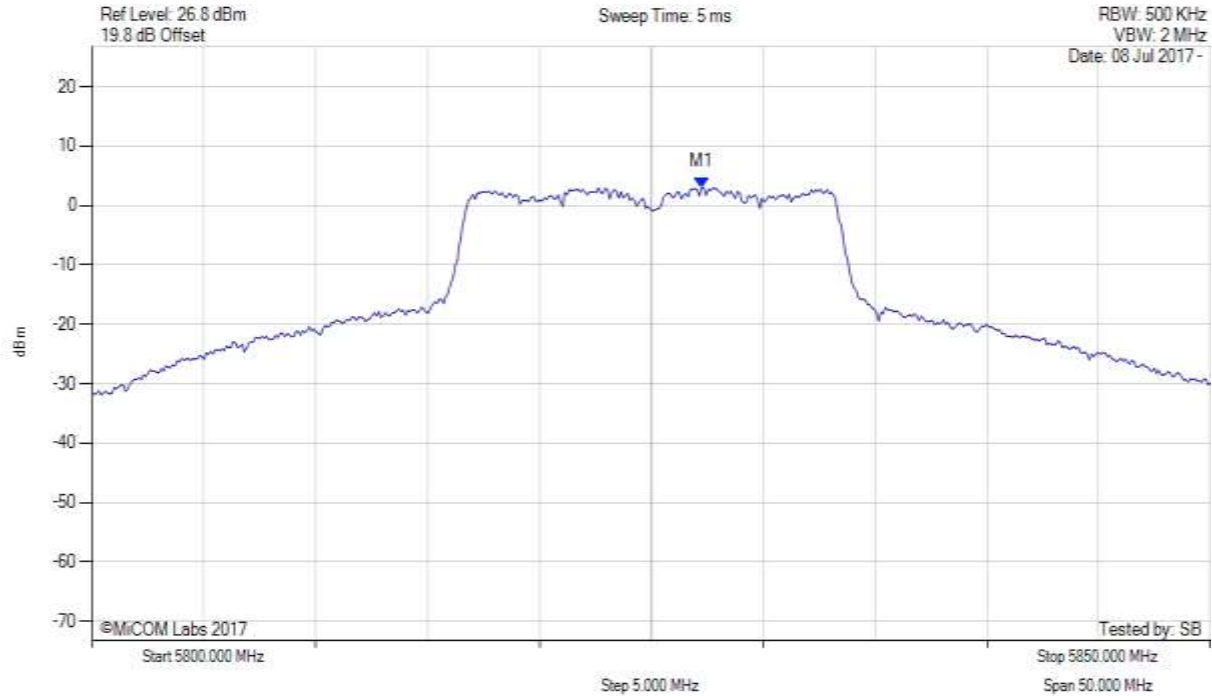


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5792.500 MHz : 3.369 dBm M1 + DCCF : 5792.500 MHz : 3.413 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -26.6 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5825.00 MHz, Chain a, Temp: 20, Voltage: Vdc

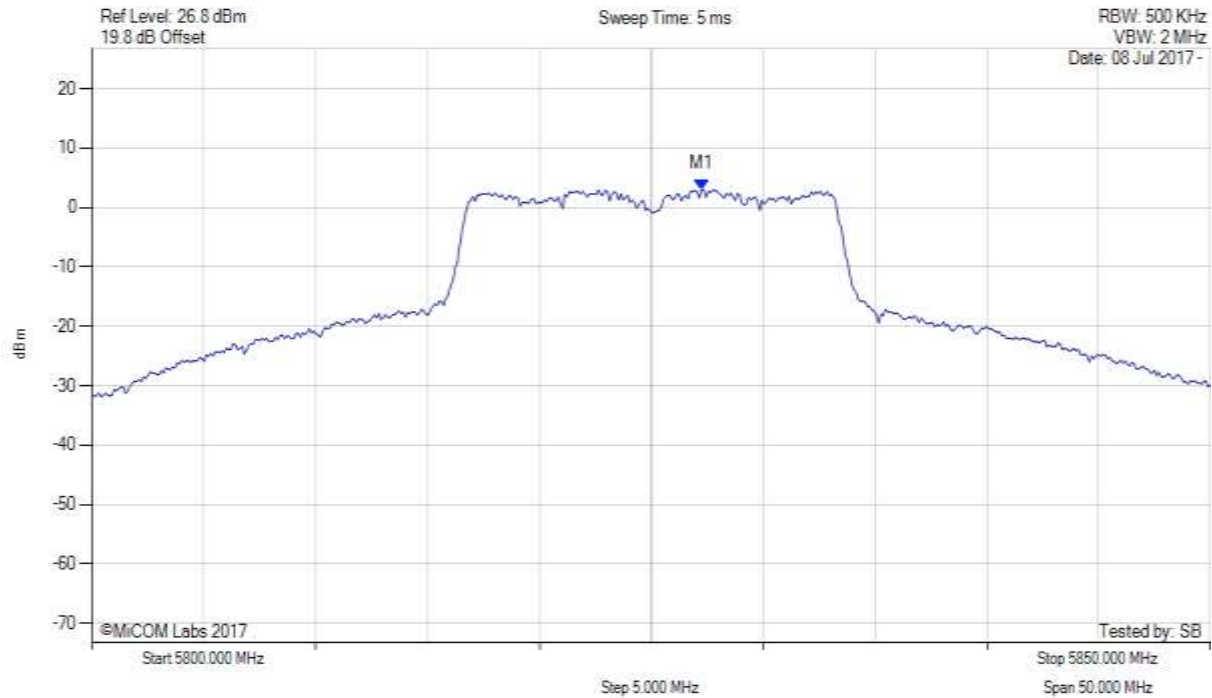


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5827.255 MHz : 3.046 dBm	Limit: ≤ 30.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-20, Channel: 5825.00 MHz, SUM, Temp: 20, Voltage: Vdc

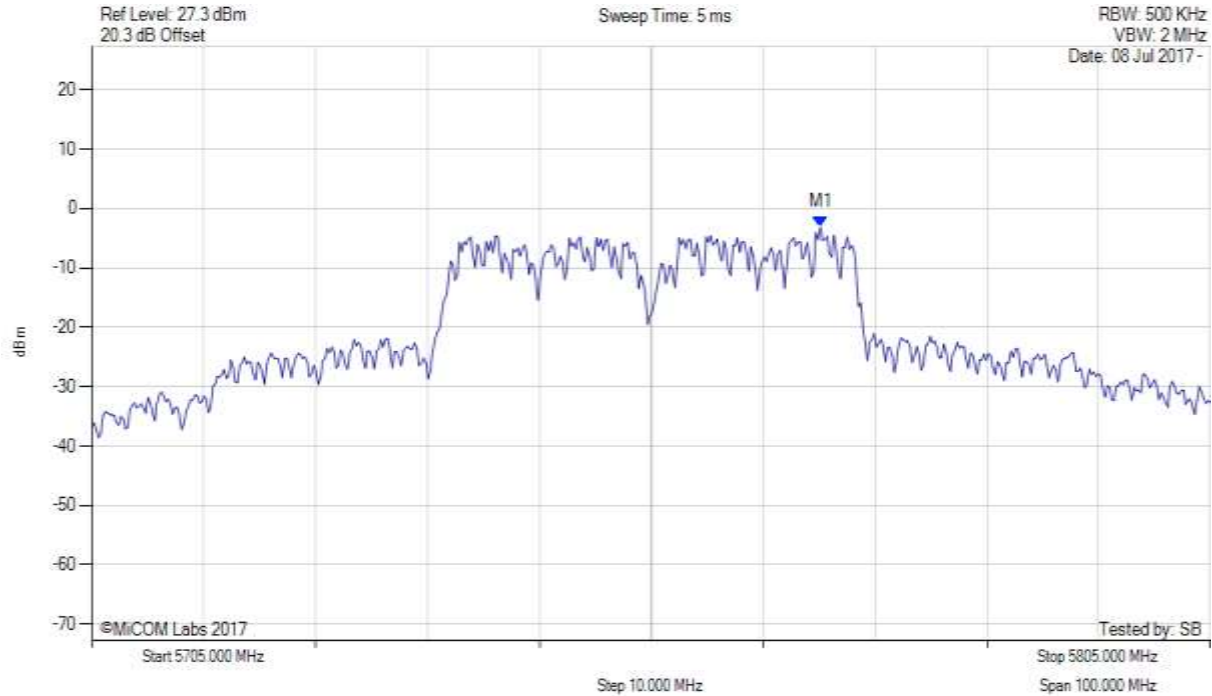


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5827.300 MHz : 3.046 dBm M1 + DCCF : 5827.300 MHz : 3.090 dBm Duty Cycle Correction Factor : +0.04 dB	Limit: ≤ 30.0 dBm Margin: -26.9 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5755.00 MHz, Chain a, Temp: 20, Voltage: Vdc

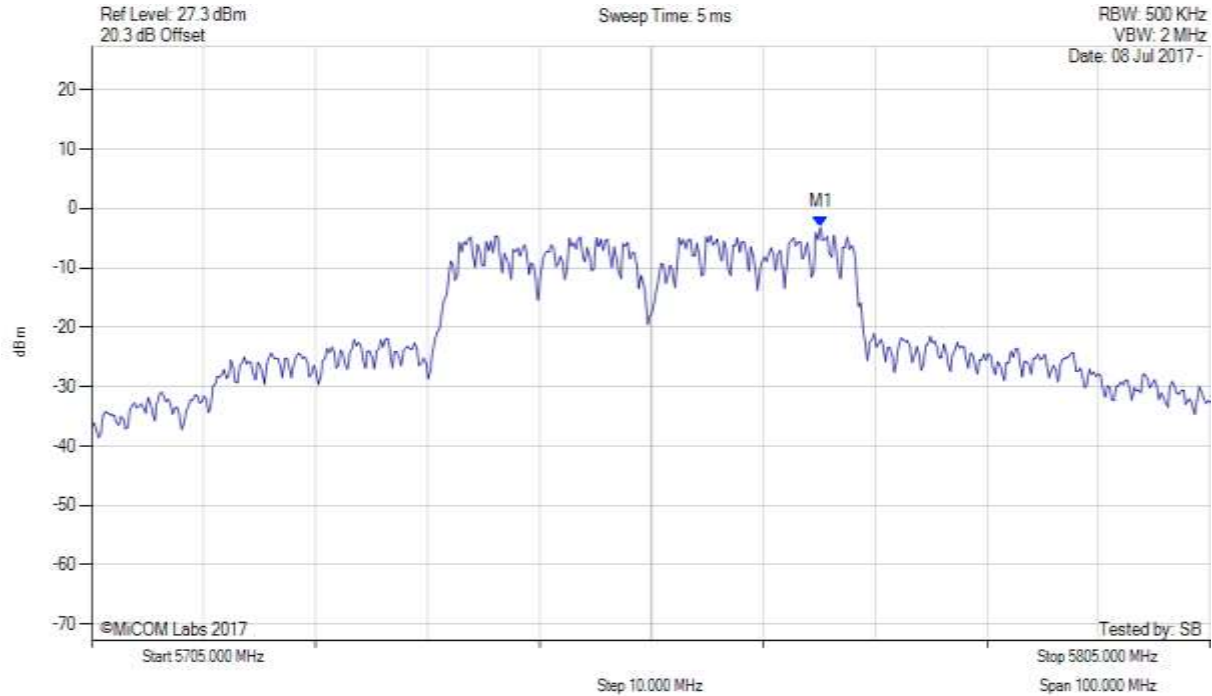


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5770.130 MHz : -3.169 dBm	Limit: ≤ 30.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5755.00 MHz, SUM, Temp: 20, Voltage: Vdc

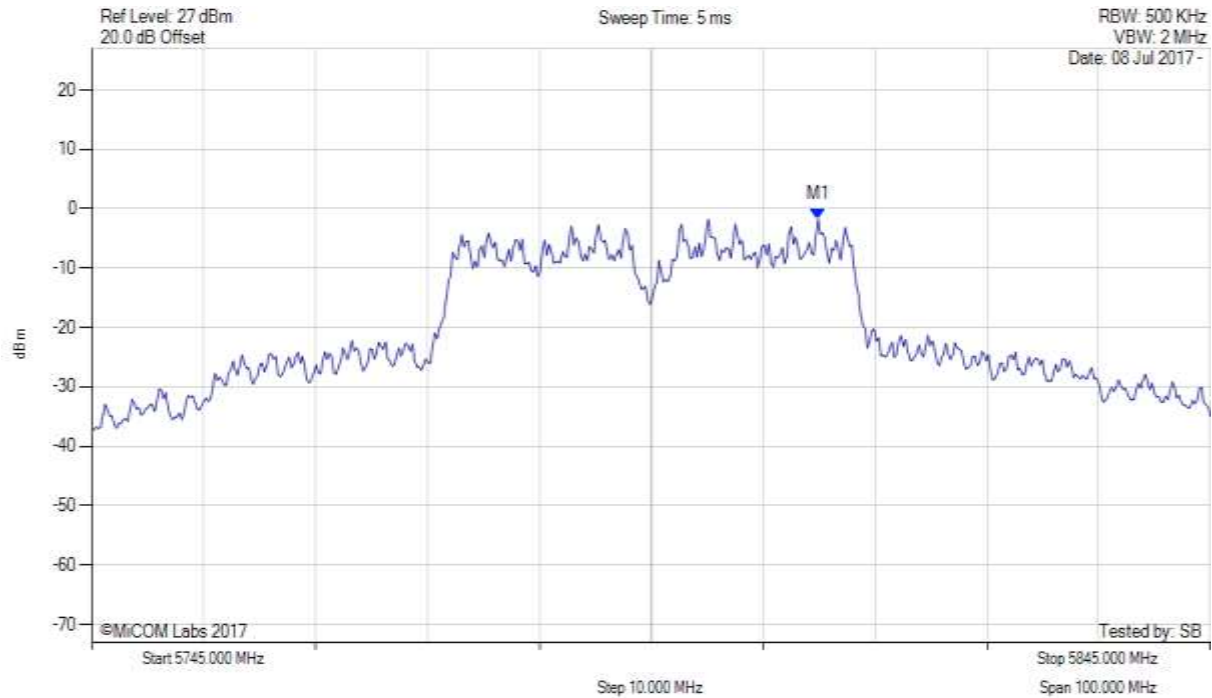


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5770.100 MHz : -3.169 dBm M1 + DCCF : 5770.100 MHz : -2.412 dBm Duty Cycle Correction Factor : +0.76 dB	Limit: ≤ 30.0 dBm Margin: -32.4 dB

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5795.00 MHz, Chain a, Temp: 20, Voltage: Vdc

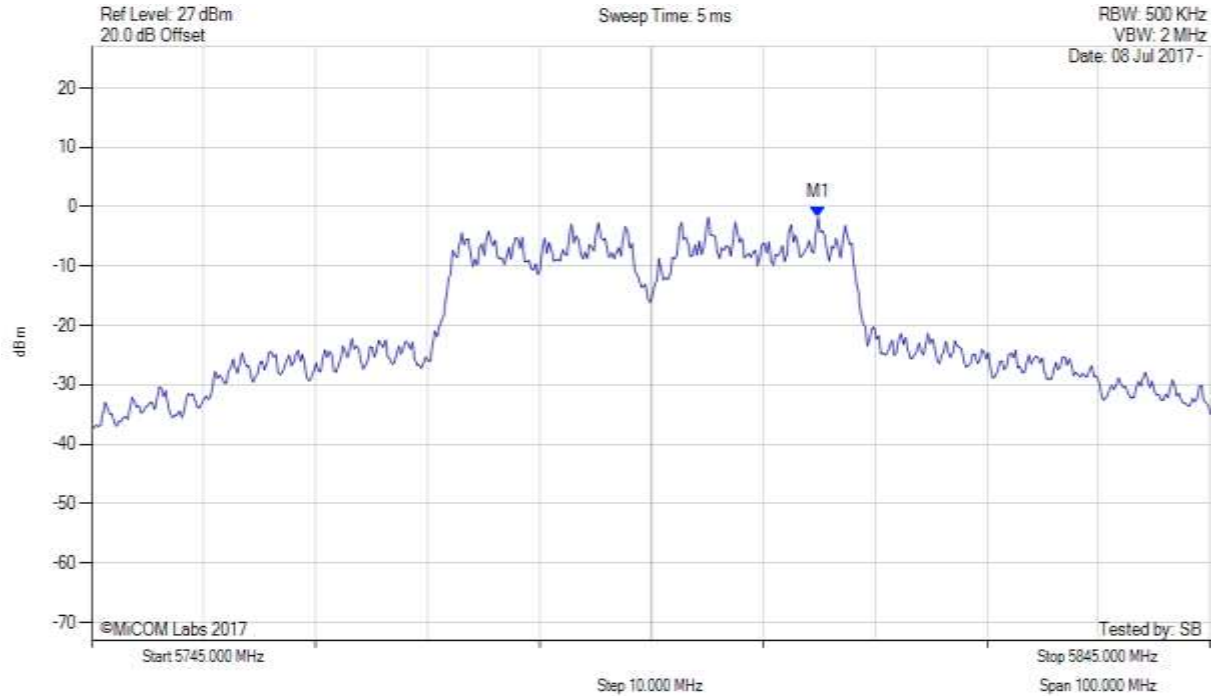


Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5809.930 MHz : -1.760 dBm	Limit: ≤ 30.000 dBm

[back to matrix](#)

POWER SPECTRAL DENSITY

Variant: 802.11n HT-40, Channel: 5795.00 MHz, SUM, Temp: 20, Voltage: Vdc



Analyzer Setup	Marker:Frequency:Amplitude	Test Results
Detector = RMS Sweep Count = 100 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5809.900 MHz : -1.760 dBm M1 + DCCF : 5809.900 MHz : -1.003 dBm Duty Cycle Correction Factor : +0.76 dB	Limit: ≤ 30.0 dBm Margin: -31.0 dB

[back to matrix](#)

A.4. Radiated

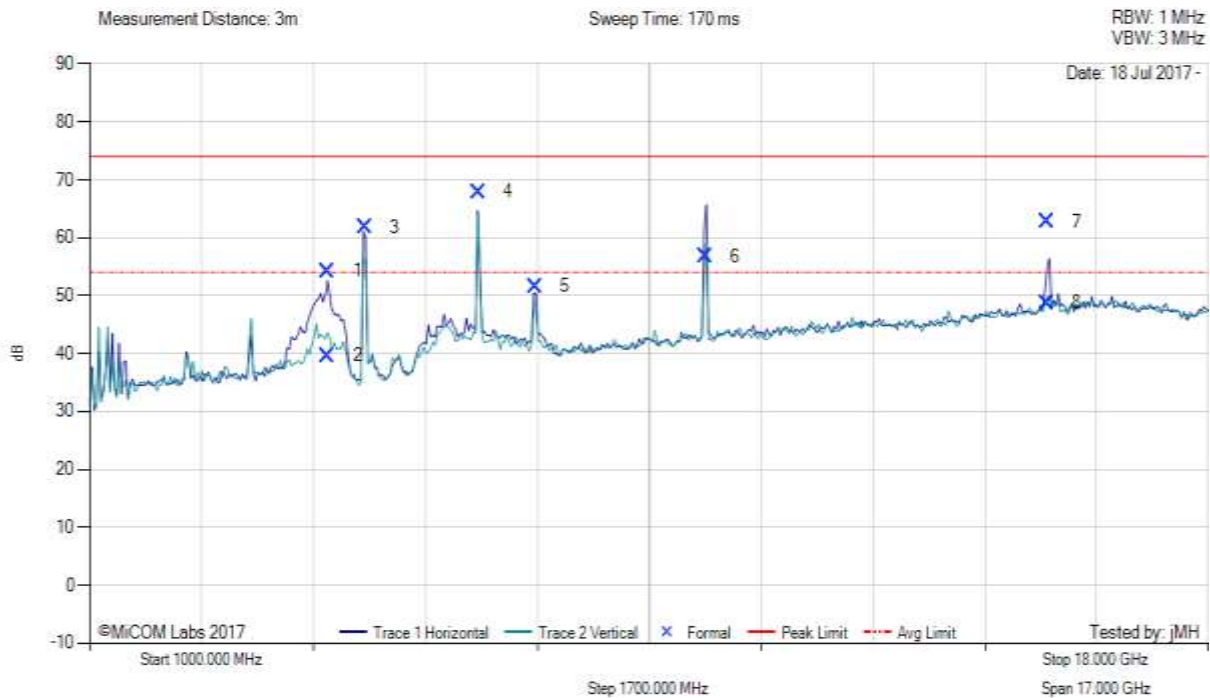
A.4.1. TX Spurious & Restricted Band Emissions

A.4.1.1. Integral



TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5180.00 MHz, Antenna: Integral, Power Setting: 17, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dB	Cable Loss dB	AF dB	Level dB	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dB	Margin dB	Pass /Fail
1	4616.68	62.01	3.53	-11.34	54.20	Max Peak	Horizontal	98	5	74.0	-19.8	Pass
2	4616.68	47.39	3.53	-11.34	39.58	Max Avg	Horizontal	98	5	54.0	-14.4	Pass
3	5176.98	69.53	3.69	-11.51	61.71	Fundamental	Horizontal	100	0	--	--	
4	6906.74	71.30	4.11	-7.54	67.87	Peak (NRB)	Horizontal	100	0	--	--	Pass
5	7770.36	53.88	4.42	-6.71	51.59	Peak (NRB)	Horizontal	100	0	--	--	Pass
6	10360.64	56.37	5.57	-5.26	56.68	Peak (NRB)	Vertical	100	0	--	--	Pass
7	15544.55	57.28	5.97	-0.55	62.70	Max Peak	Horizontal	197	335	74.0	-11.3	Pass
8	15544.55	43.30	5.97	-0.55	48.72	Max Avg	Horizontal	197	335	54.0	-5.3	Pass

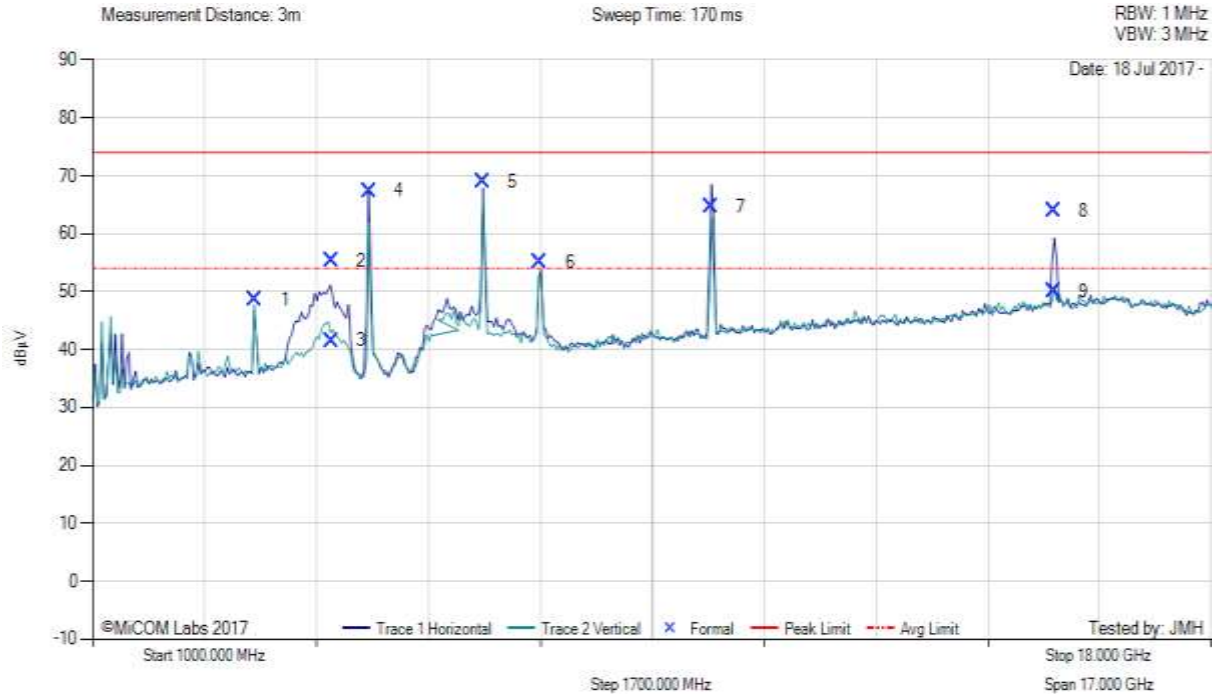
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits

[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.

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5200.00 MHz, Antenna: Integral, Power Setting: 22, Duty Cycle (%): 99



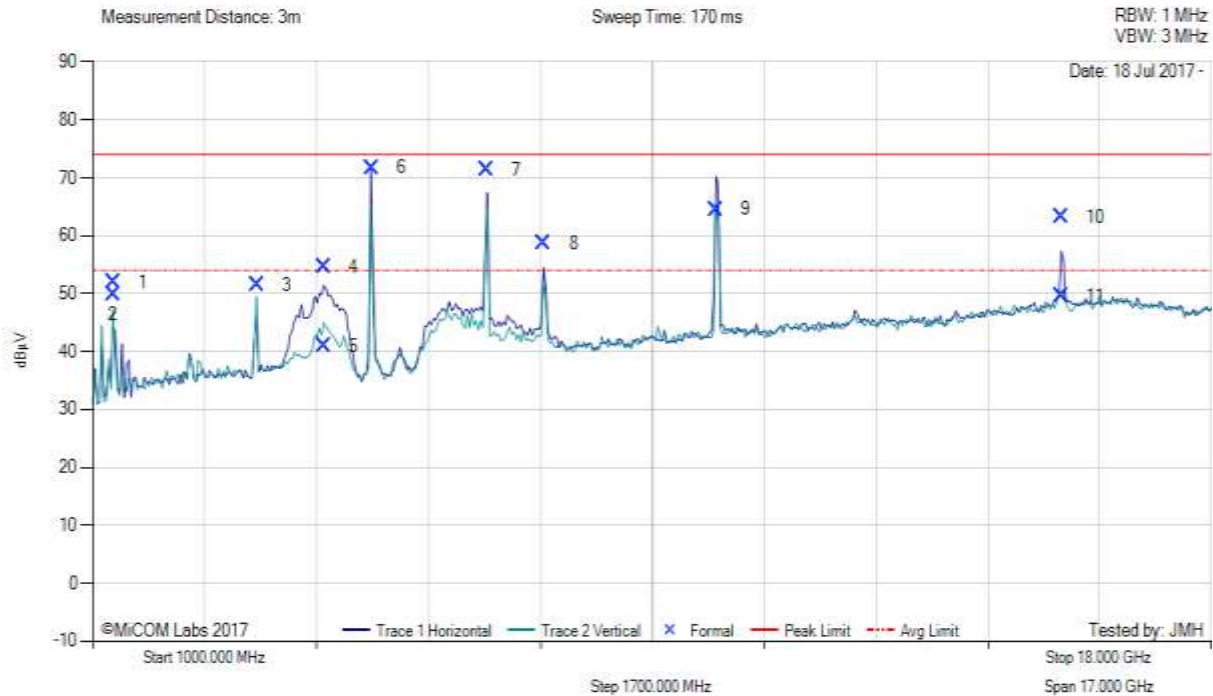
1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	3466.74	56.72	3.11	-11.25	48.58	Peak (NRB)	Vertical	100	0	--	--	Pass
2	4621.31	63.07	3.55	-11.34	55.28	Max Peak	Horizontal	131	349	74.0	-18.7	Pass
3	4621.31	49.31	3.55	-11.34	41.52	Max Avg	Horizontal	131	349	54.0	-12.5	Pass
4	5204.76	75.23	3.65	-11.45	67.43	Fundamental	Horizontal	100	0	--	--	
5	6927.81	71.28	4.11	-7.35	69.04	Peak (NRB)	Horizontal	100	0	--	--	Pass
6	7798.81	57.28	4.46	-6.71	55.03	Peak (NRB)	Horizontal	100	0	--	--	Pass
7	10400.22	64.30	5.41	-5.03	64.68	Peak (NRB)	Horizontal	100	27	--	--	Pass
8	15607.50	58.09	6.01	-0.20	63.90	Max Peak	Horizontal	190	342	74.0	-10.1	Pass
9	15607.50	44.22	6.01	-0.20	50.03	Max Avg	Horizontal	190	342	54.0	-4.0	Pass

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

[back to matrix](#)

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5240.00 MHz, Antenna: Integral, Power Setting: 22, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1309.98	64.61	2.21	-14.83	51.99	Max Peak	Vertical	98	111	74.0	-22.0	Pass
2	1309.98	62.58	2.21	-14.83	49.96	Max Avg	Vertical	98	111	54.0	-4.0	Pass
3	3493.31	59.60	3.11	-11.26	51.45	Peak (NRB)	Vertical	100	0	--	--	Pass
4	4511.17	62.64	3.53	-11.56	54.61	Max Peak	Horizontal	120	356	74.0	-19.4	Pass
5	4511.17	48.92	3.53	-11.56	40.89	Max Avg	Horizontal	120	356	54.0	-13.1	Pass
6	5236.96	79.51	3.63	-11.37	71.77	Fundamental	Horizontal	100	0	--	--	
7	6986.68	74.69	4.13	-7.45	71.37	Peak (NRB)	Horizontal	100	0	--	--	Pass
8	7856.68	61.01	4.48	-6.75	58.74	Peak (NRB)	Horizontal	100	0	--	--	Pass
9	10476.73	63.56	5.44	-4.48	64.52	Peak (NRB)	Horizontal	100	0	--	--	Pass
10	15717.00	56.99	6.05	0.18	63.22	Max Peak	Horizontal	197	342	74.0	-10.8	Pass
11	15717.00	43.38	6.05	0.18	49.61	Max Avg	Horizontal	197	342	54.0	-4.4	Pass

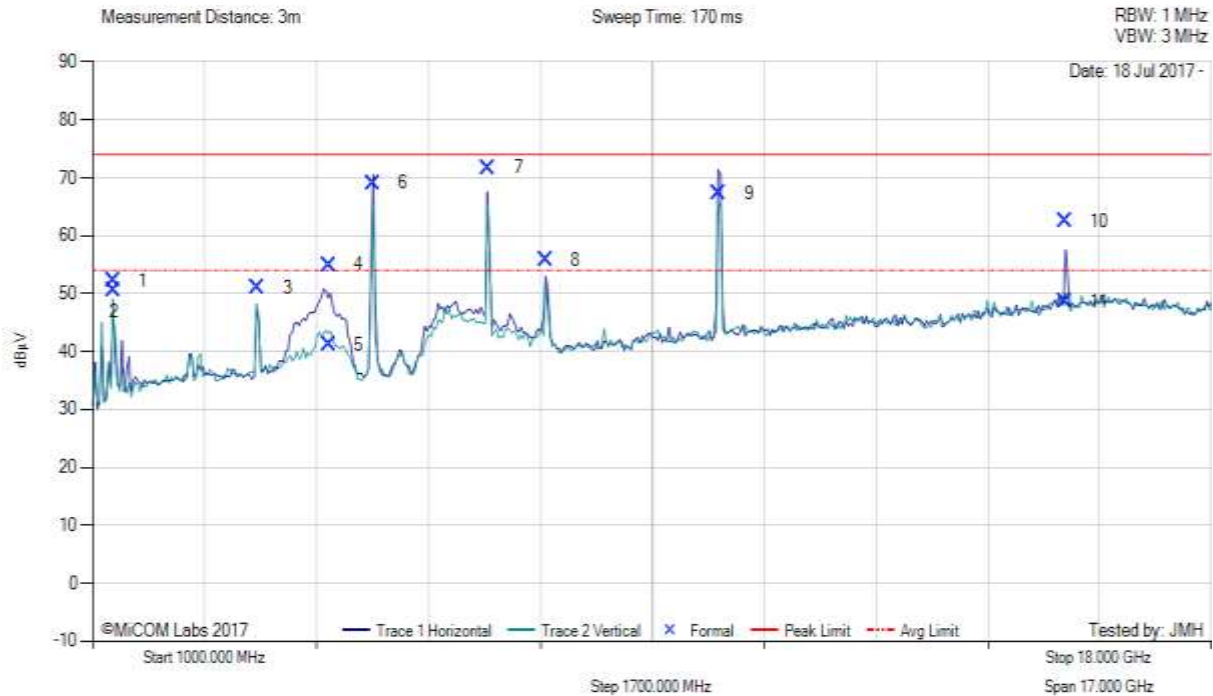
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

[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.

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5260.00 MHz, Antenna: Integral, Power Setting: 22, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1314.86	64.89	2.22	-14.88	52.23	Max Peak	Vertical	98	108	74.0	-21.8	Pass
2	1314.86	63.11	2.22	-14.88	50.45	Max Avg	Vertical	98	108	54.0	-3.6	Pass
3	3506.75	59.11	3.11	-11.25	50.97	Peak (NRB)	Vertical	100	0	--	--	Pass
4	4590.11	62.78	3.55	-11.39	54.94	Max Peak	Horizontal	129	347	74.0	-19.1	Pass
5	4590.11	49.00	3.55	-11.39	41.16	Max Avg	Horizontal	129	347	54.0	-12.8	Pass
6	5261.22	76.72	3.66	-11.29	69.09	Fundamental	Horizontal	100	0	--	--	
7	7013.35	74.98	4.18	-7.42	71.74	Peak (NRB)	Horizontal	100	0	--	--	Pass
8	7886.89	58.12	4.54	-6.79	55.87	Peak (NRB)	Vertical	100	0	--	--	Pass
9	10518.18	65.99	5.44	-4.21	67.22	Peak (NRB)	Horizontal	100	0	--	--	Pass
10	15772.73	56.46	5.97	0.11	62.54	Max Peak	Horizontal	197	342	74.0	-11.5	Pass
11	15772.73	42.47	5.97	0.11	48.55	Max Avg	Horizontal	197	342	54.0	-5.5	Pass

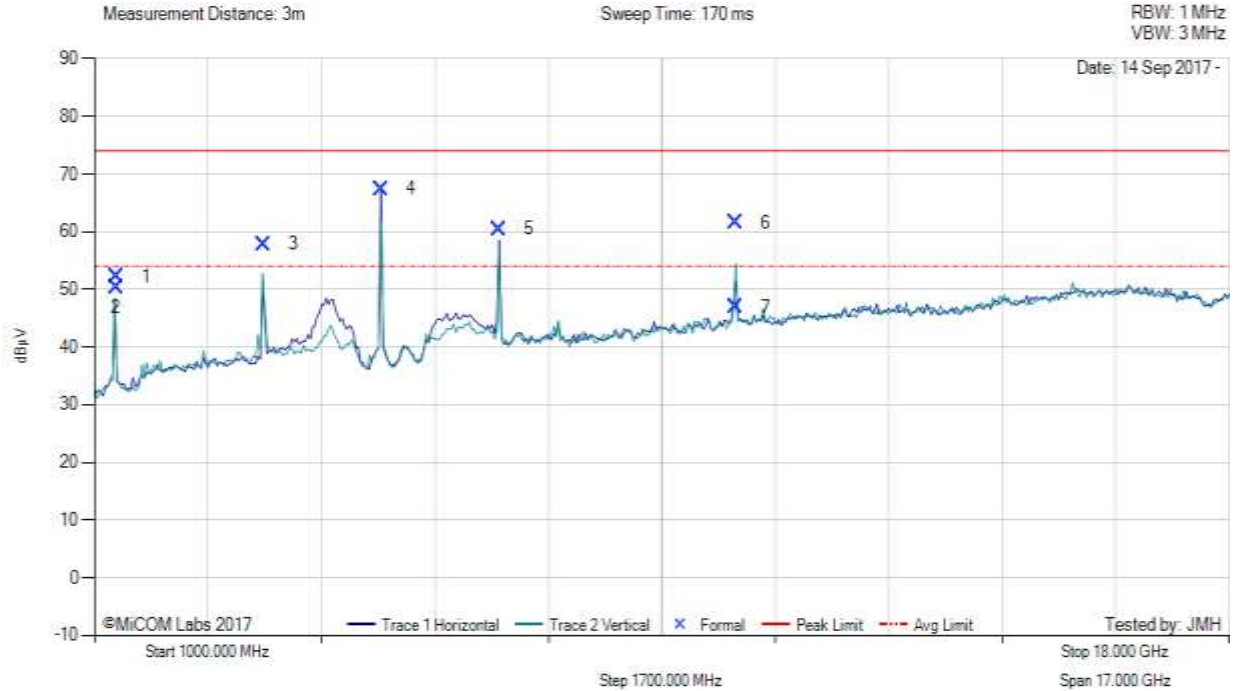
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

[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.

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5300.00 MHz, Antenna: Integral, Power Setting: 16, Duty Cycle (%): 99



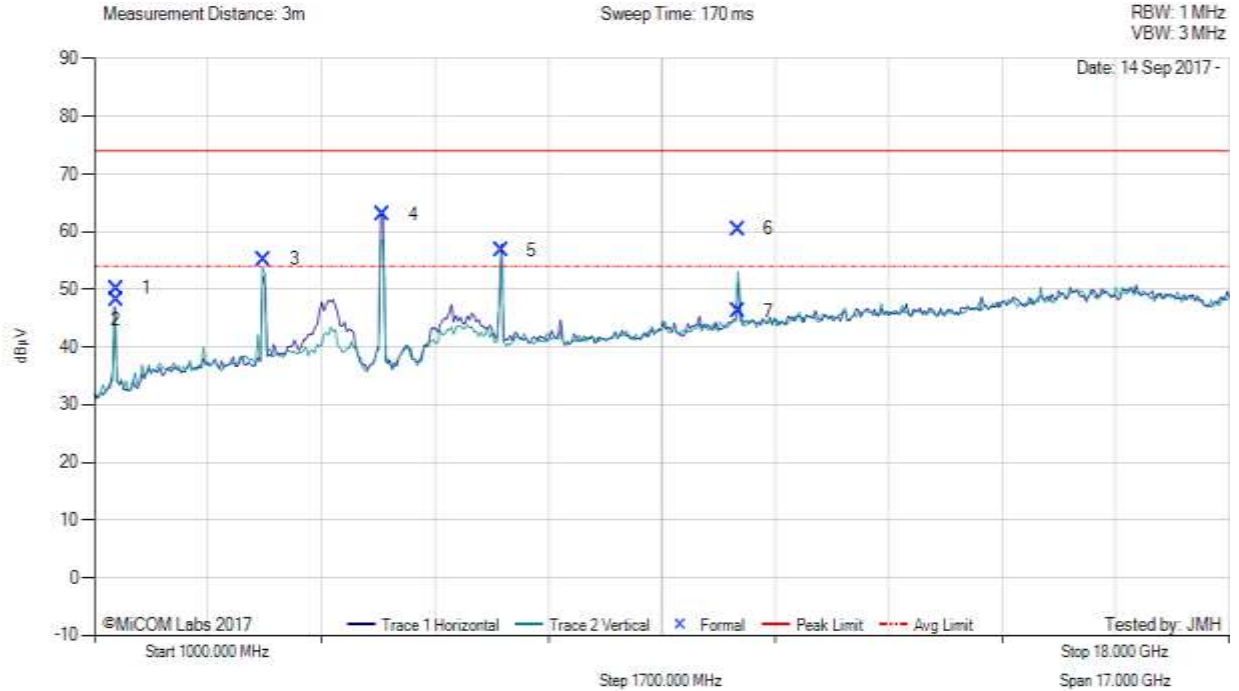
1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	1324.97	64.99	2.24	-14.97	52.26	Max Peak	Vertical	111	71	74.0	-21.7	Pass
2	1324.97	63.14	2.24	-14.97	50.41	Max Avg	Vertical	111	71	54.0	-3.6	Pass
3	3533.60	65.95	3.13	-11.25	57.83	Peak (NRB)	Vertical	100	0	--	--	Pass
4	5297.93	74.69	3.81	-11.10	67.40	Fundamental	Horizontal	100	0	--	--	
5	7066.57	63.63	4.18	-7.34	60.47	Peak (NRB)	Horizontal	100	0	--	--	Pass
6	10600.44	59.86	5.58	-3.93	61.51	Max Peak	Vertical	101	340	74.0	-12.5	Pass
7	10600.44	45.35	5.58	-3.93	47.00	Max Avg	Vertical	101	340	54.0	-7.0	Pass

Test Notes: EUT connected to laptop inside chamber and powered by 5V. Short shielded interface cable.

[back to matrix](#)

TX SPURIOUS & RESTRICTED BAND EMISSIONS

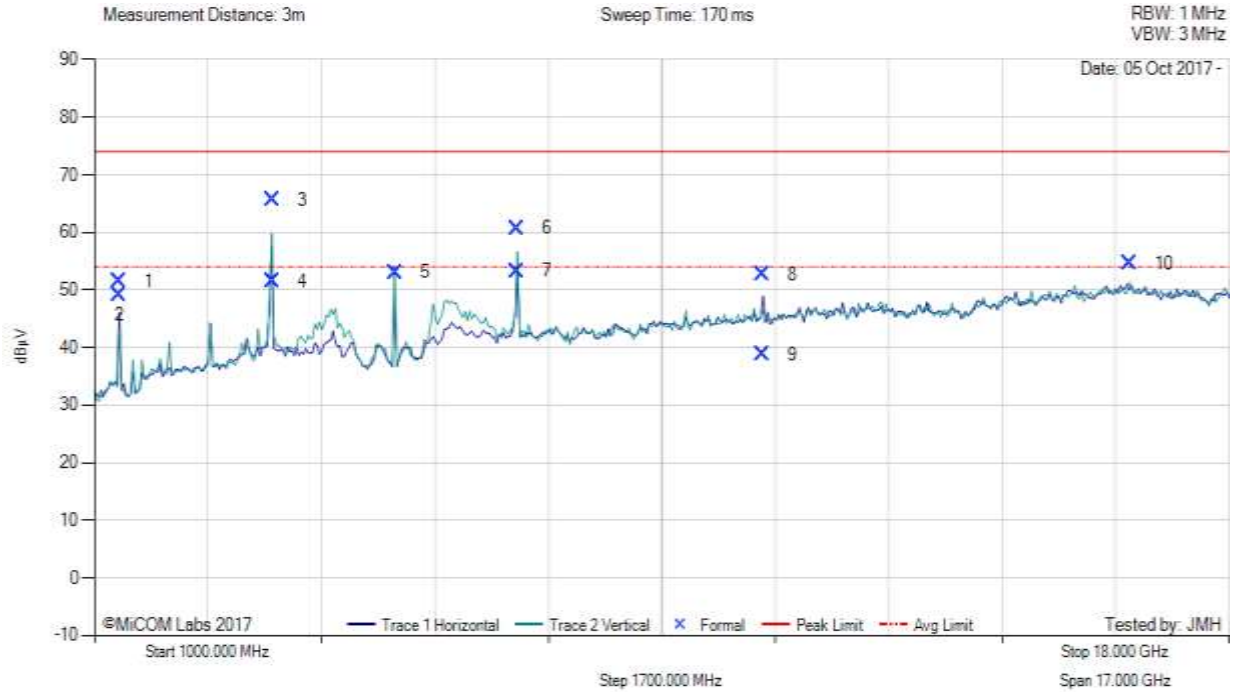
Variant: 802.11a, Test Freq: 5320.00 MHz, Antenna: Integral, Power Setting: 16, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1330.03	62.94	2.24	-15.02	50.16	Max Peak	Horizontal	134	238	74.0	-23.8	Pass
2	1330.03	61.05	2.24	-15.02	48.27	Max Avg	Horizontal	134	238	54.0	-5.7	Pass
3	3546.87	63.30	3.14	-11.24	55.20	Peak (NRB)	Vertical	100	31	--	--	Pass
4	5327.26	70.25	3.71	-11.05	62.91	Peak (NRB)	Horizontal	100	0	--	--	Pass
5	7093.29	59.85	4.24	-7.34	56.75	Peak (NRB)	Horizontal	100	0	--	--	Pass
6	10640.29	58.96	5.39	-3.89	60.46	Max Peak	Vertical	110	338	74.0	-13.5	Pass
7	10640.29	44.78	5.39	-3.89	46.28	Max Avg	Vertical	110	338	54.0	-7.7	Pass

Test Notes: EUT connected to laptop inside chamber and powered by 5V. Short shielded interface cable. In 1 channel to try higher power

[back to matrix](#)



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1375.04	67.48	2.26	-18.20	51.54	Max Peak	Horizontal	143	233	74.0	-22.5	Pass
2	1375.04	65.10	2.26	-18.20	49.16	Max Avg	Horizontal	143	233	54.0	-4.8	Pass
3	3667.06	73.35	3.17	-10.83	65.69	Max Peak	Vertical	190	61	74.0	-8.3	Pass
4	3667.06	59.07	3.17	-10.83	51.41	Max Avg	Vertical	190	61	54.0	-2.6	Pass
5	5506.95	58.68	3.75	-9.42	53.01	Fundamental	Vertical	151	0	--	--	
6	7333.32	61.66	4.28	-5.21	60.73	Max Peak	Vertical	164	72	74.0	-13.3	Pass
7	7333.32	54.18	4.28	-5.21	53.25	Max Avg	Vertical	164	72	54.0	-0.8	Pass
8	11000.95	48.11	5.59	-1.06	52.64	Max Peak	Horizontal	128	355	74.0	-21.4	Pass
9	11000.95	34.23	5.59	-1.06	38.76	Max Avg	Horizontal	128	355	54.0	-15.2	Pass
10	16499.71	47.62	6.02	0.99	54.63	Peak (NRB)	Vertical	151	44	--	--	Pass

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Host PCB shielded with silver tape. Transmitter module connected to host PCB with shielded ribbon cable instead of directly to board

[back to matrix](#)

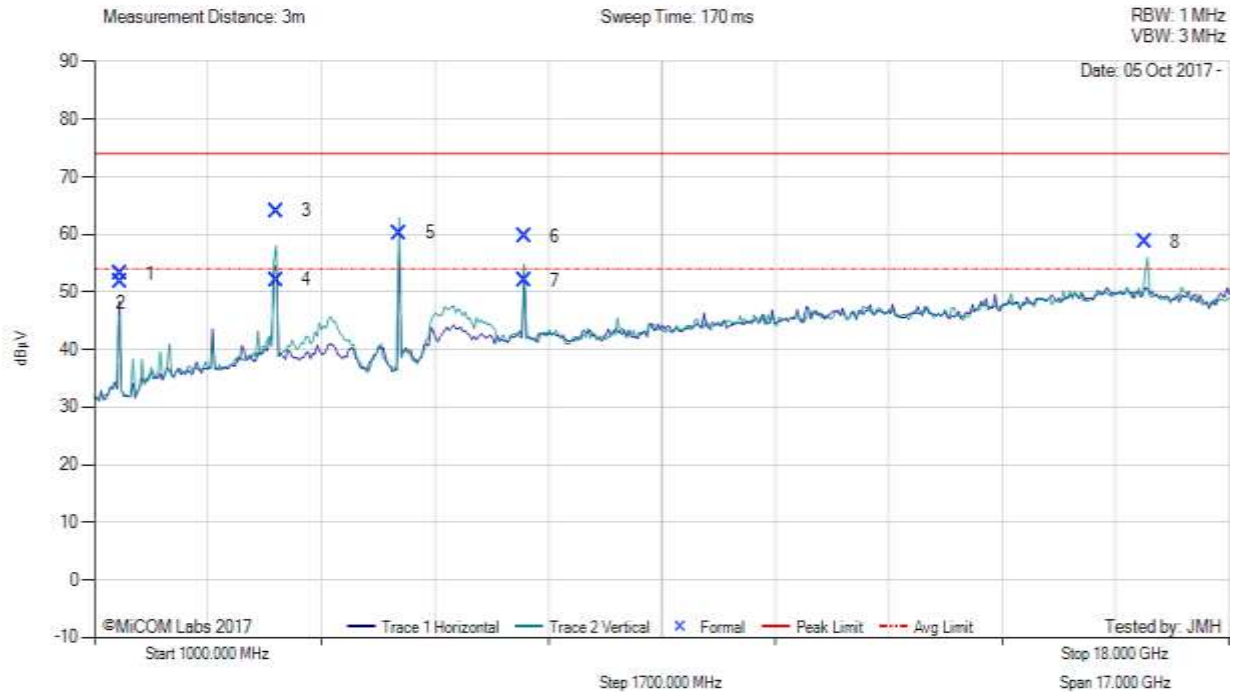
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.



Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 249 of 298



Variant: 802.11a, Test Freq: 5580.00 MHz, Power Setting: 15, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1394.99	69.06	2.25	-18.09	53.22	Max Peak	Horizontal	139	239	74.0	-20.8	Pass
2	1394.99	67.56	2.25	-18.09	51.72	Max Avg	Horizontal	139	239	54.0	-2.3	Pass
3	3720.26	71.56	3.21	-10.67	64.10	Max Peak	Vertical	138	76	74.0	-9.9	Pass
4	3720.26	59.52	3.21	-10.67	52.06	Max Avg	Vertical	138	76	54.0	-1.9	Pass
5	5577.09	65.62	3.81	-9.24	60.19	Peak (NRB)	Vertical	100	0	--	--	Pass
6	7439.98	60.33	4.30	-4.97	59.66	Max Peak	Vertical	103	200	74.0	-14.3	Pass
7	7439.98	52.67	4.30	-4.97	52.00	Max Avg	Vertical	103	200	54.0	-2.0	Pass
8	16739.07	51.58	6.08	1.07	58.73	Peak (NRB)	Vertical	150	177	--	--	Pass

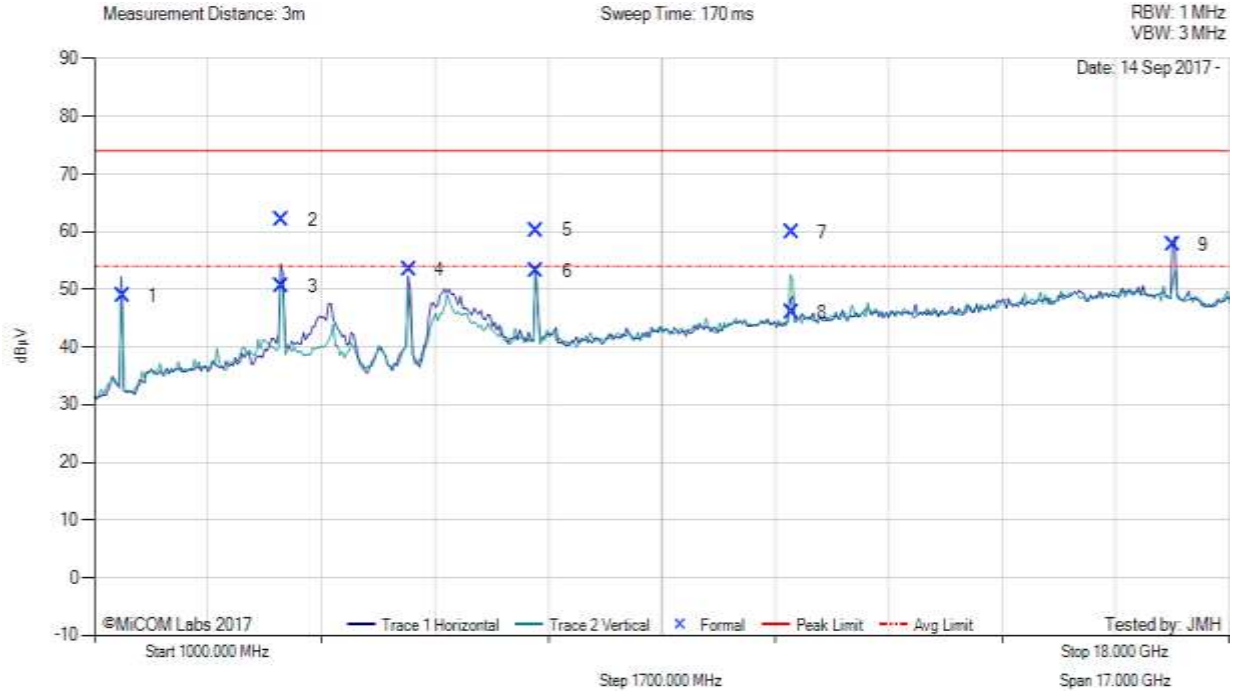
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Host PCB shielded with silver tape. Transmitter module connected to host PCB with shielded ribbon cable instead of directly to board

[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.

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5720.00 MHz, Antenna: Integral, Power Setting: 16, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1429.98	62.31	2.29	-15.74	48.86	Peak (NRB)	Horizontal	100	0	--	--	Pass
2	3813.17	69.66	3.24	-10.85	62.05	Max Peak	Horizontal	98	338	74.0	-12.0	Pass
3	3813.17	58.06	3.24	-10.85	50.45	Max Avg	Horizontal	98	338	54.0	-3.6	Pass
4	5712.49	60.32	3.83	-10.77	53.38	Fundamental	Horizontal	100	0	--	--	
5	7626.76	62.83	4.38	-6.97	60.24	Max Peak	Vertical	141	250	74.0	-13.8	Pass
6	7626.76	55.72	4.38	-6.97	53.13	Max Avg	Vertical	141	250	54.0	-0.9	Pass
7	11440.71	59.41	5.36	-4.92	59.85	Max Peak	Vertical	105	338	74.0	-14.2	Pass
8	11440.71	45.53	5.36	-4.92	45.97	Max Avg	Vertical	105	338	54.0	-8.0	Pass
9	17151.09	50.95	6.34	0.39	57.68	Peak (NRB)	Horizontal	100	182	--	--	Pass

Test Notes: EUT connected to laptop inside chamber and powered by 5V. Short shielded interface cable.

[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.

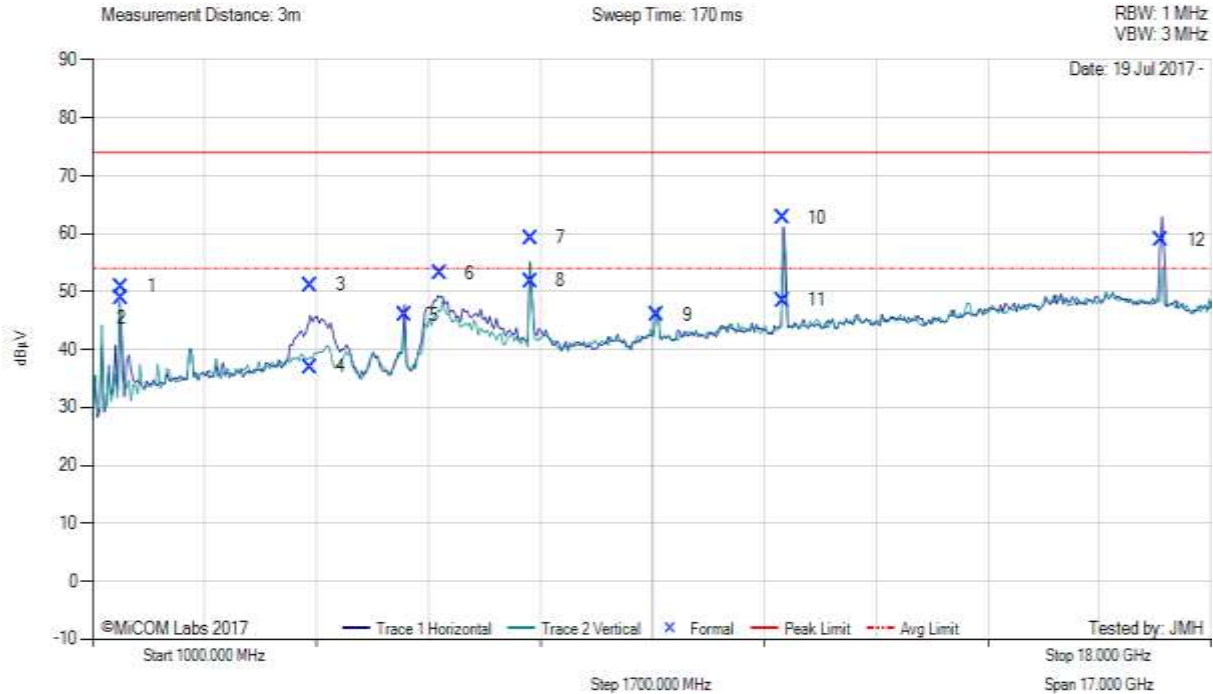


Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 251 of 298



TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5745.00 MHz, Antenna: Integral, Power Setting: 16, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1436.32	64.36	2.28	-15.77	50.87	Max Peak	Horizontal	177	133	74.0	-23.1	Pass
2	1436.32	62.46	2.28	-15.77	48.97	Max Avg	Horizontal	177	133	54.0	-5.0	Pass
3	4309.29	59.25	3.39	-11.48	51.16	Max Peak	Horizontal	98	343	74.0	-22.8	Pass
4	4309.29	45.08	3.39	-11.48	36.99	Max Avg	Horizontal	98	343	54.0	-17.0	Pass
5	5737.40	52.84	3.82	-10.67	45.99	Fundamental	Horizontal	151	0	--	--	
6	6273.11	57.69	3.92	-8.50	53.11	Peak (NRB)	Horizontal	151	0	--	--	Pass
7	7660.08	61.87	4.38	-6.95	59.30	Max Peak	Vertical	128	231	74.0	-14.7	Pass
8	7660.08	54.45	4.38	-6.95	51.88	Max Avg	Vertical	128	231	54.0	-2.1	Pass
9	9578.01	46.72	5.26	-5.98	46.00	Peak (NRB)	Horizontal	151	0	--	--	Pass
10	11490.62	62.16	5.45	-4.84	62.77	Max Peak	Horizontal	184	26	74.0	-11.2	Pass
11	11490.62	47.90	5.45	-4.84	48.51	Max Avg	Horizontal	184	26	54.0	-5.5	Pass
12	17240.75	52.10	6.47	0.34	58.91	Peak (NRB)	Horizontal	151	0	--	--	Pass

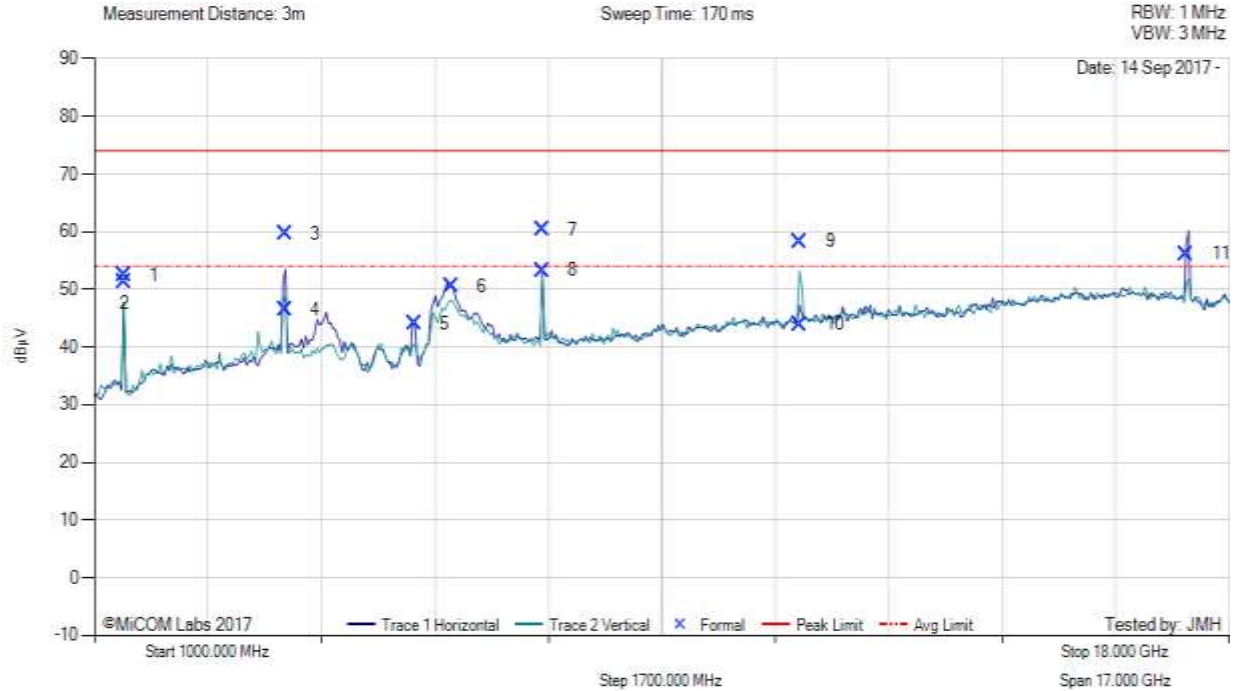
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power reduced to meet TX Spurious Limit.

[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.

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5785.00 MHz, Antenna: Integral, Power Setting: 16, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1446.24	66.04	2.28	-15.83	52.49	Max Peak	Horizontal	122	230	74.0	-21.5	Pass
2	1446.24	64.73	2.28	-15.83	51.18	Max Avg	Horizontal	122	230	54.0	-2.8	Pass
3	3856.60	67.17	3.23	-10.81	59.59	Max Peak	Horizontal	118	339	74.0	-14.4	Pass
4	3856.60	54.03	3.23	-10.81	46.45	Max Avg	Horizontal	118	339	54.0	-7.6	Pass
5	5792.96	50.71	3.78	-10.40	44.09	Fundamental	Horizontal	100	0	--	--	
6	6352.61	54.70	3.95	-8.18	50.47	Peak (NRB)	Horizontal	100	0	--	--	Pass
7	7713.38	62.72	4.41	-6.85	60.28	Max Peak	Horizontal	130	346	74.0	-13.7	Pass
8	7713.38	55.75	4.41	-6.85	53.31	Max Avg	Horizontal	130	346	54.0	-0.7	Pass
9	11569.50	57.47	5.46	-4.64	58.29	Max Peak	Vertical	110	334	74.0	-15.7	Pass
10	11569.50	43.15	5.46	-4.64	43.97	Max Avg	Vertical	110	334	54.0	-10.0	Pass
11	17358.34	49.92	6.28	-0.04	56.16	Peak (NRB)	Horizontal	100	360	--	--	Pass

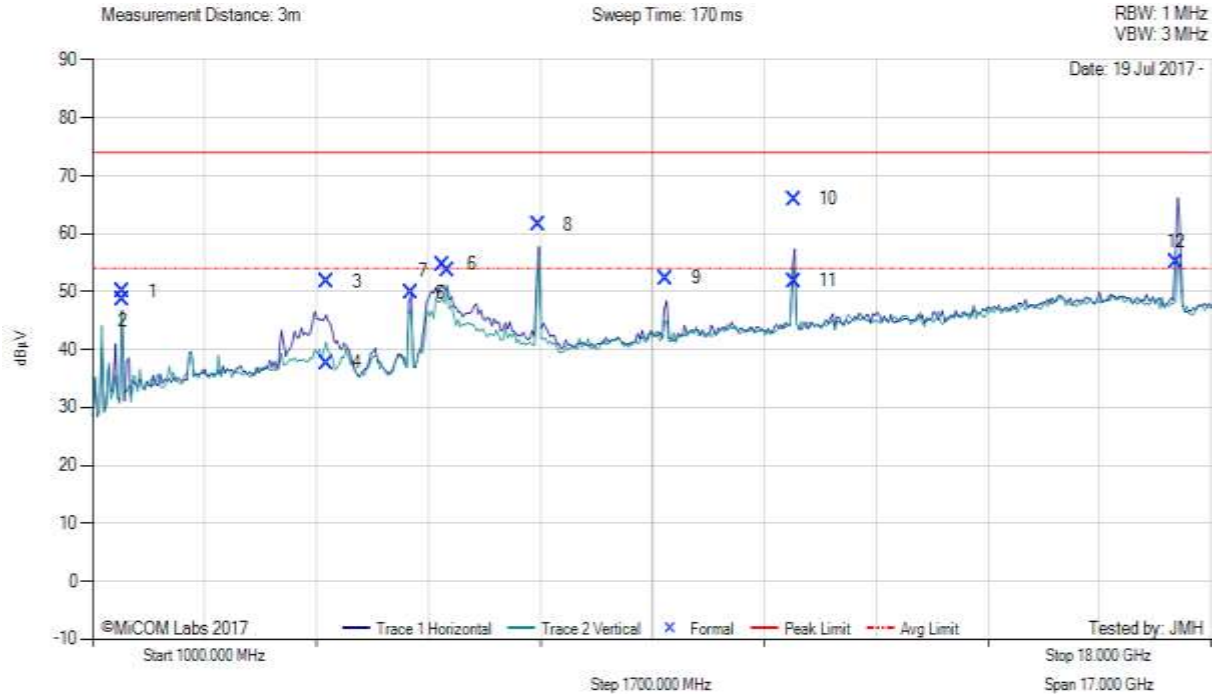
Test Notes: EUT connected to laptop inside chamber and powered by 5V. Short shielded interface cable.

[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.

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5825.00 MHz, Antenna: Integral, Power Setting: 19, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1456.28	63.73	2.29	-15.91	50.11	Max Peak	Horizontal	112	208	74.0	-23.9	Pass
2	1456.28	62.19	2.29	-15.91	48.57	Max Avg	Horizontal	112	208	54.0	-5.4	Pass
3	4560.67	59.60	3.45	-11.39	51.66	Max Peak	Horizontal	138	346	74.0	-22.3	Pass
4	4560.67	45.61	3.45	-11.39	37.67	Max Avg	Horizontal	138	346	54.0	-16.3	Pass
5	5831.89	56.14	3.84	-10.22	49.76	Fundamental	Horizontal	100	0	--	--	
6	6316.23	59.09	3.93	-8.34	54.68	Peak (NRB)	Horizontal	100	0	--	--	Pass
7	6388.56	57.77	3.99	-8.08	53.68	Peak (NRB)	Horizontal	100	0	--	--	Pass
8	7766.70	63.78	4.43	-6.71	61.50	Peak (NRB)	Horizontal	100	0	--	--	Pass
9	9714.99	53.14	5.41	-6.24	52.31	Peak (NRB)	Horizontal	100	0	--	--	Pass
10	11650.60	65.01	5.46	-4.47	66.00	Max Peak	Horizontal	196	310	74.0	-8.0	Pass
11	11650.60	50.82	5.46	-4.47	51.81	Max Avg	Horizontal	196	310	54.0	-2.2	Pass
12	17472.83	49.44	6.23	-0.57	55.10	Peak (NRB)	Vertical	100	0	--	--	Pass

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power reduced to meet TX Spurious Limit.

[back to matrix](#)

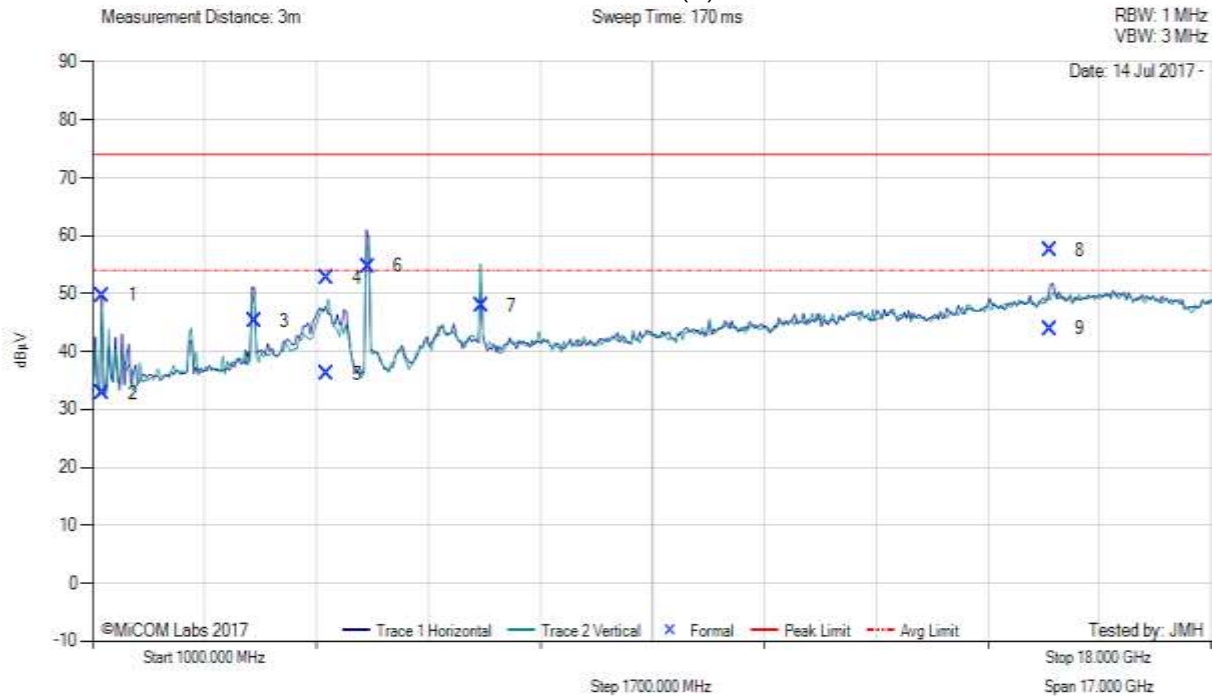
This test report may be reproduced in full only. The document may only be updated by MiCOM Labs personnel. All changes will be noted in the Document History section of the report.

A.4.1.2. YAGEO ANT300P002B24553



TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5180.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 18, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1149.33	64.43	2.12	-16.82	49.73	Max Peak	Horizontal	156	197	74.0	-24.3	Pass
2	1149.33	47.49	2.12	-16.82	32.79	Max Avg	Horizontal	156	197	54.0	-21.2	Pass
3	3453.45	53.48	3.09	-11.25	45.32	Peak (NRB)	Horizontal	151	0	--	--	Pass
4	4560.01	60.64	3.45	-11.39	52.70	Max Peak	Vertical	178	61	74.0	-21.3	Pass
5	4560.01	44.04	3.45	-11.39	36.10	Max Avg	Vertical	178	61	54.0	-17.9	Pass
6	5176.98	62.56	3.69	-11.51	54.74	Fundamental	Horizontal	151	0	--	--	
7	6906.70	51.27	4.11	-7.54	47.84	Peak (NRB)	Vertical	150	360	--	--	Pass
8	15541.70	52.01	5.96	-0.57	57.40	Max Peak	Horizontal	174	309	74.0	-16.6	Pass
9	15541.70	38.59	5.96	-0.57	43.98	Max Avg	Horizontal	174	309	54.0	-10.0	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

[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.

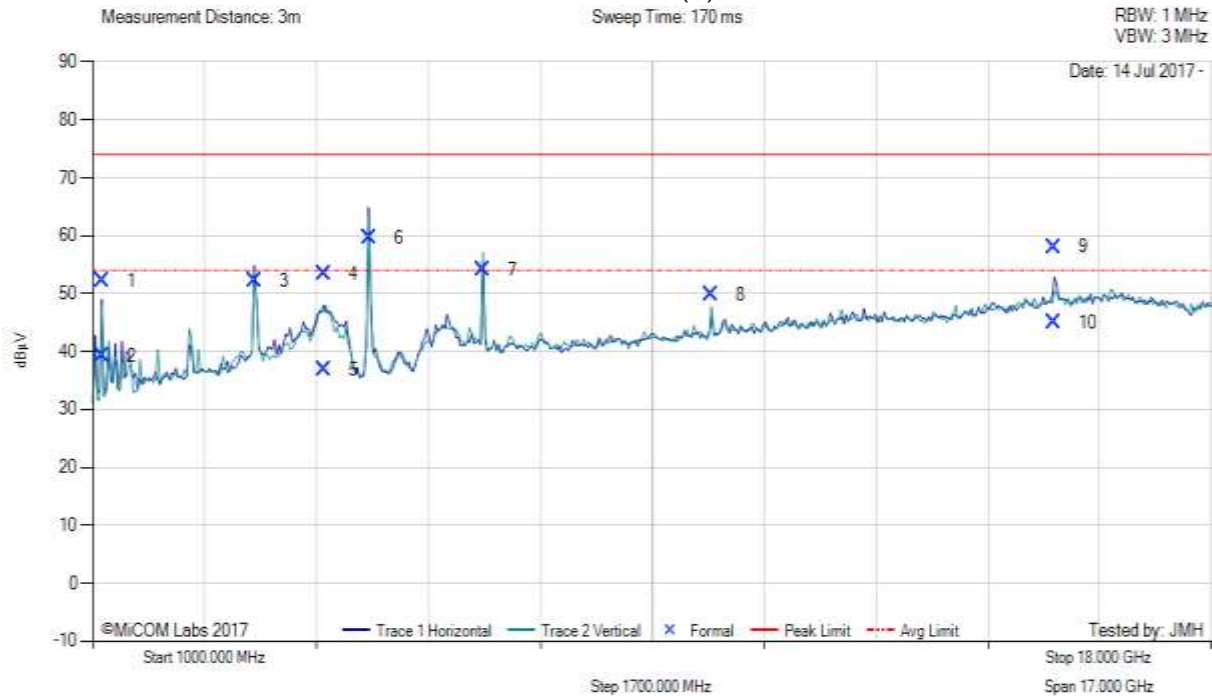


Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 255 of 298



TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5200.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 22, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1147.02	66.97	2.12	-16.83	52.26	Max Peak	Horizontal	101	129	74.0	-21.7	Pass
2	1147.02	53.91	2.12	-16.83	39.20	Max Avg	Horizontal	101	129	54.0	-14.8	Pass
3	3464.42	60.41	3.10	-11.25	52.26	Peak (NRB)	Horizontal	100	0	--	--	Pass
4	4517.23	61.42	3.52	-11.53	53.41	Max Peak	Horizontal	121	192	74.0	-20.6	Pass
5	4517.23	44.93	3.52	-11.53	36.92	Max Avg	Horizontal	121	192	54.0	-17.1	Pass
6	5202.34	67.46	3.66	-11.46	59.66	Fundamental	Horizontal	100	0	--	--	
7	6933.40	57.57	4.11	-7.49	54.19	Peak (NRB)	Vertical	151	360	--	--	Pass
8	10400.55	49.42	5.41	-5.03	49.80	Peak (NRB)	Vertical	151	330	--	--	Pass
9	15599.96	52.28	6.04	-0.25	58.07	Max Peak	Horizontal	191	182	74.0	-15.9	Pass
10	15599.96	39.17	6.04	-0.25	44.96	Max Avg	Horizontal	191	182	54.0	-9.0	Pass

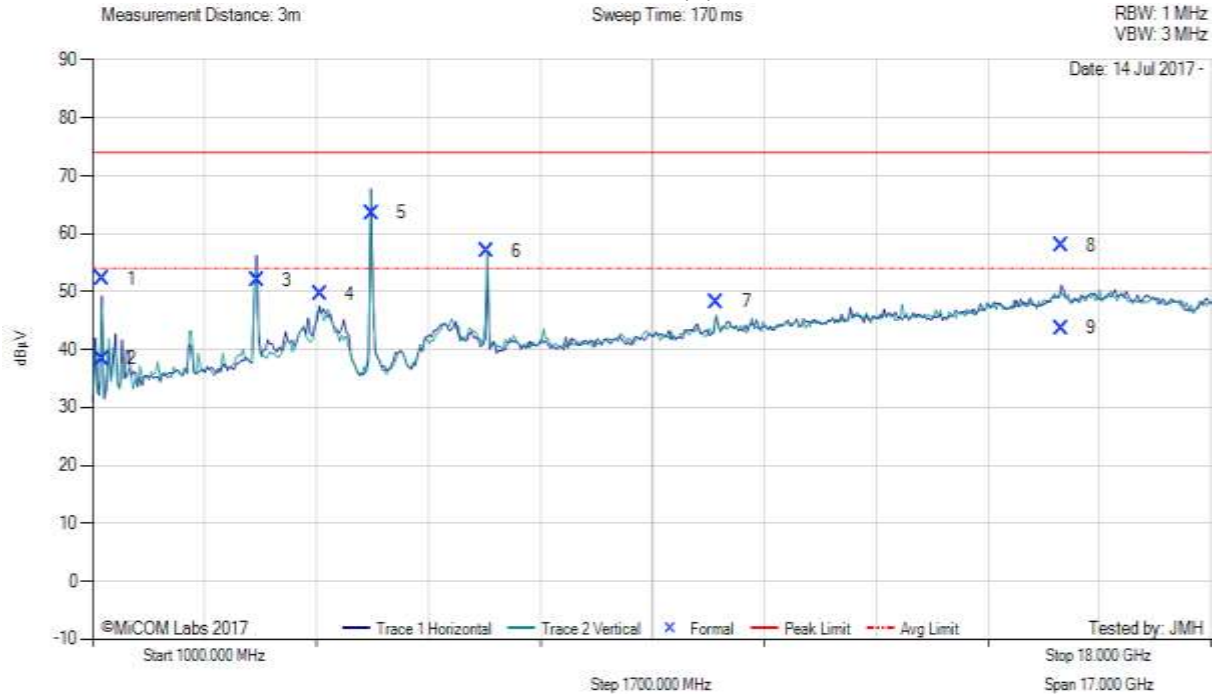
Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

[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.

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5240.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 22, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1145.36	66.95	2.12	-16.83	52.24	Max Peak	Horizontal	98	131	74.0	-21.8	Pass
2	1145.36	53.15	2.12	-16.83	38.44	Max Avg	Horizontal	98	131	54.0	-15.6	Pass
3	3493.75	60.16	3.11	-11.26	52.01	Peak (NRB)	Horizontal	100	0	--	--	Pass
4	4459.67	57.66	3.52	-11.60	49.58	Peak (NRB)	Horizontal	100	173	--	--	Pass
5	5237.73	71.30	3.63	-11.37	63.56	Fundamental	Horizontal	100	0	--	--	
6	6986.64	60.35	4.13	-7.45	57.03	Peak (NRB)	Horizontal	100	173	--	--	Pass
7	10479.15	47.31	5.42	-4.46	48.27	Peak (NRB)	Vertical	100	173	--	--	Pass
8	15716.49	51.71	6.04	0.18	57.93	Max Peak	Horizontal	194	187	74.0	-16.1	Pass
9	15716.49	37.49	6.04	0.18	43.71	Max Avg	Horizontal	194	187	54.0	-10.3	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

[back to matrix](#)

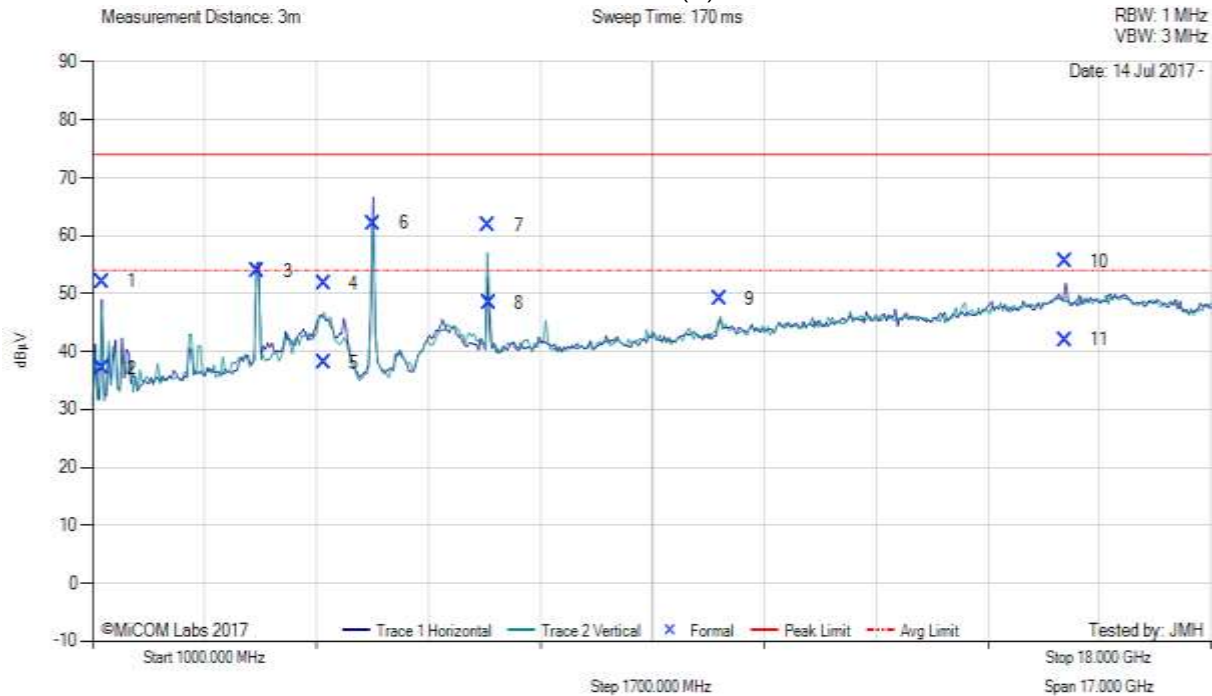


Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 257 of 298



TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5260.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 22, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1145.14	66.83	2.12	-16.83	52.12	Max Peak	Horizontal	104	130	74.0	-21.9	Pass
2	1145.14	51.79	2.12	-16.83	37.08	Max Avg	Horizontal	104	130	54.0	-16.9	Pass
3	3506.99	61.95	3.11	-11.25	53.81	Peak (NRB)	Horizontal	100	0	--	--	Pass
4	4512.11	59.80	3.53	-11.55	51.78	Max Peak	Vertical	164	185	74.0	-22.2	Pass
5	4512.11	46.07	3.53	-11.55	38.05	Max Avg	Vertical	164	185	54.0	-16.0	Pass
6	5267.50	69.70	3.68	-11.25	62.13	Fundamental	Horizontal	100	0	--	--	
7	7013.46	65.07	4.18	-7.42	61.83	Peak (NRB)	Vertical	151	188	--	--	Pass
8	7029.07	51.59	4.17	-7.39	48.37	Peak (NRB)	Vertical	151	0	--	--	Pass
9	10520.51	47.92	5.43	-4.21	49.14	Peak (NRB)	Vertical	151	309	--	--	Pass
10	15774.71	49.48	5.98	0.10	55.56	Max Peak	Horizontal	185	164	74.0	-18.4	Pass
11	15774.71	35.95	5.98	0.10	42.03	Max Avg	Horizontal	185	164	54.0	-12.0	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

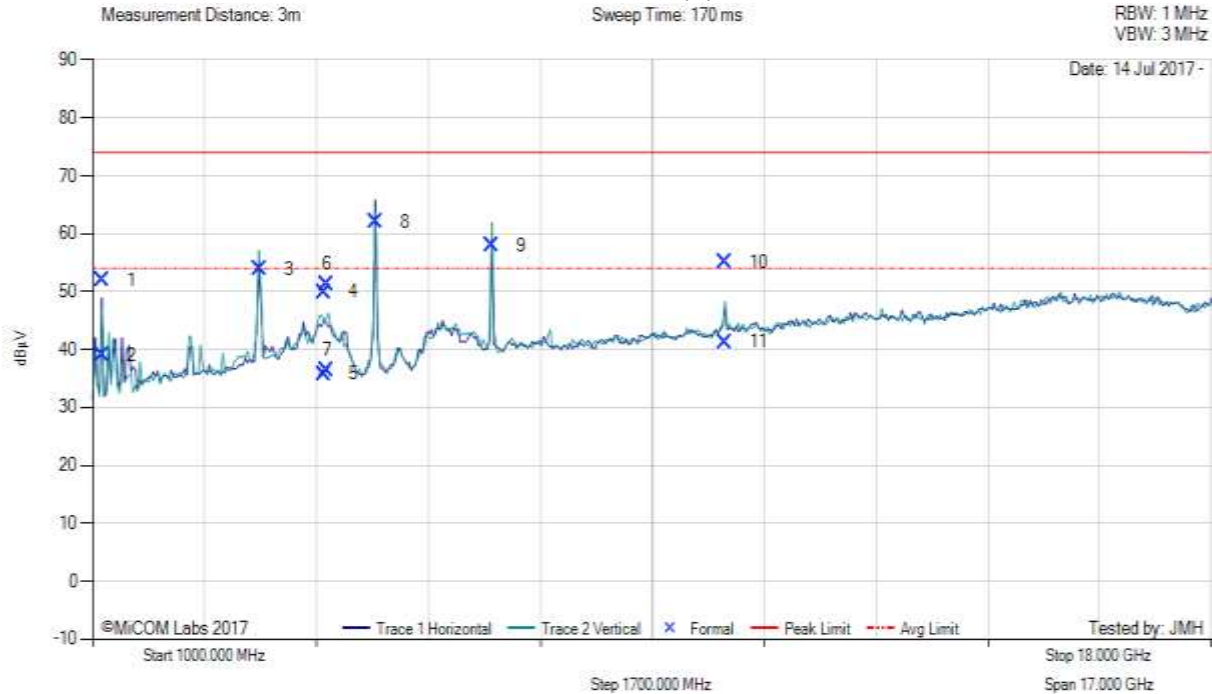
[back to matrix](#)

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.

TX SPURIOUS & RESTRICTED BAND EMISSIONS



Variant: 802.11a, Test Freq: 5300.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 22, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1146.69	66.72	2.12	-16.83	52.01	Max Peak	Horizontal	98	136	74.0	-22.0	Pass
2	1146.69	53.66	2.12	-16.83	38.95	Max Avg	Horizontal	98	136	54.0	-15.1	Pass
3	3533.88	61.96	3.13	-11.25	53.84	Peak (NRB)	Horizontal	100	0	--	--	Pass
4	4517.51	57.92	3.52	-11.53	49.91	Max Peak	Vertical	98	230	74.0	-24.1	Pass
5	4517.51	43.81	3.52	-11.53	35.80	Max Avg	Vertical	98	230	54.0	-18.2	Pass
6	4557.14	59.24	3.44	-11.40	51.28	Max Peak	Vertical	115	207	74.0	-22.7	Pass
7	4557.14	44.36	3.44	-11.40	36.40	Max Avg	Vertical	115	207	54.0	-17.6	Pass
8	5297.38	69.29	3.80	-11.11	61.98	Fundamental	Horizontal	100	0	--	--	
9	7066.61	61.10	4.18	-7.34	57.94	Peak (NRB)	Horizontal	100	191	--	--	Pass
10	10600.49	53.46	5.58	-3.93	55.11	Max Peak	Vertical	119	293	74.0	-18.9	Pass
11	10600.49	39.68	5.58	-3.93	41.33	Max Avg	Vertical	119	293	54.0	-12.7	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

[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.

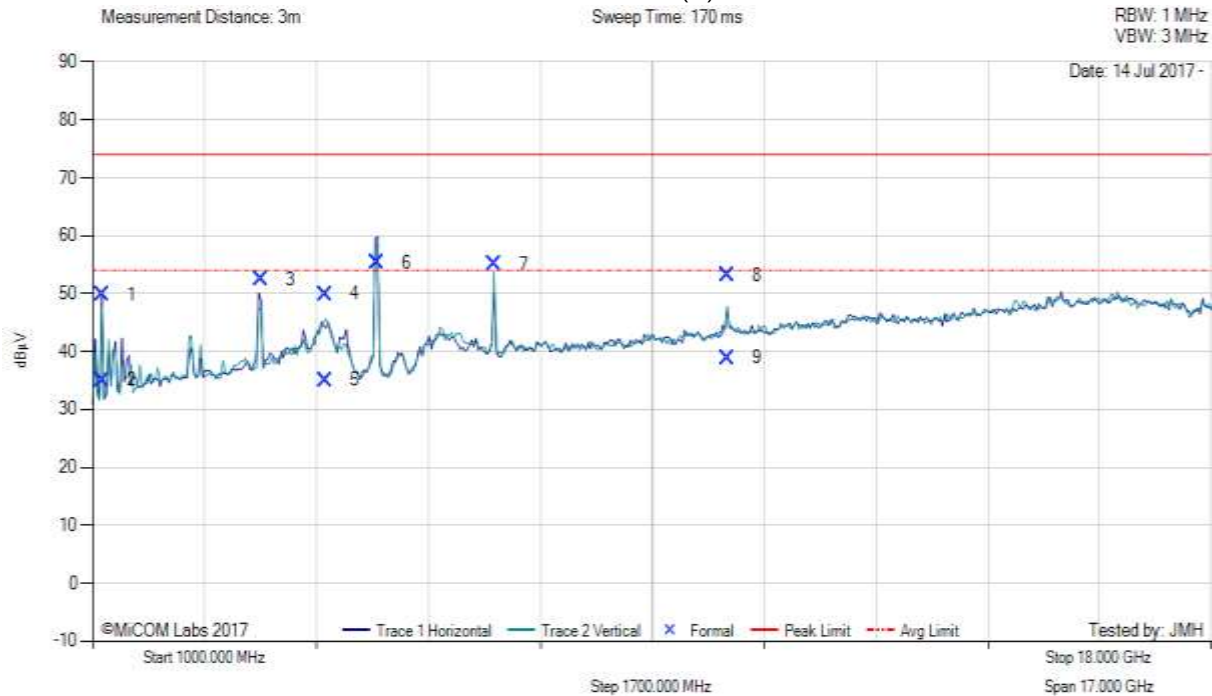


Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 259 of 298



TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5320.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 18, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1145.20	64.53	2.12	-16.83	49.82	Max Peak	Horizontal	147	199	74.0	-24.2	Pass
2	1145.20	49.77	2.12	-16.83	35.06	Max Avg	Horizontal	147	199	54.0	-18.9	Pass
3	3547.66	60.47	3.14	-11.24	52.37	Peak (NRB)	Horizontal	100	189	--	--	Pass
4	4528.71	57.95	3.47	-11.48	49.94	Max Peak	Vertical	146	288	74.0	-24.1	Pass
5	4528.71	43.08	3.47	-11.48	35.07	Max Avg	Vertical	146	288	54.0	-18.9	Pass
6	5316.57	62.60	3.76	-11.07	55.29	Fundamental	Horizontal	100	0	--	--	
7	7093.41	58.24	4.24	-7.34	55.14	Peak (NRB)	Horizontal	151	0	--	--	Pass
8	10640.67	51.73	5.39	-3.89	53.23	Max Peak	Horizontal	164	184	74.0	-20.8	Pass
9	10640.67	37.40	5.39	-3.89	38.90	Max Avg	Horizontal	164	184	54.0	-15.1	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

[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.

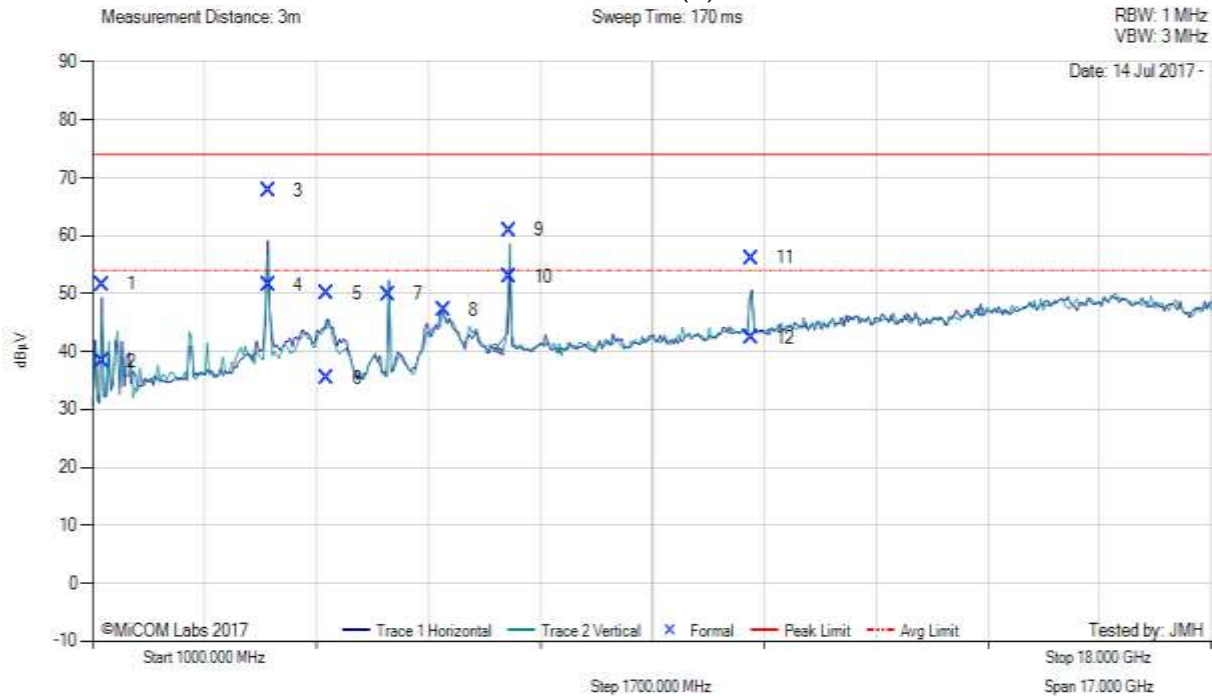


Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 260 of 298

TX SPURIOUS & RESTRICTED BAND EMISSIONS



Variant: 802.11a, Test Freq: 5500.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 17, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1145.80	66.33	2.12	-16.83	51.62	Max Peak	Horizontal	103	133	74.0	-22.4	Pass
2	1145.80	53.06	2.12	-16.83	38.35	Max Avg	Horizontal	103	133	54.0	-15.7	Pass
3	3667.07	75.62	3.17	-11.02	67.77	Max Peak	Horizontal	113	180	74.0	-6.2	Pass
4	3667.07	59.26	3.17	-11.02	51.41	Max Avg	Horizontal	113	180	54.0	-2.6	Pass
5	4558.36	57.96	3.45	-11.39	50.02	Max Peak	Horizontal	129	182	74.0	-24.0	Pass
6	4558.36	43.34	3.45	-11.39	35.40	Max Avg	Horizontal	129	182	54.0	-18.6	Pass
7	5496.61	57.34	3.73	-11.17	49.90	Fundamental	Horizontal	100	27	--	--	
8	6334.64	51.52	3.95	-8.26	47.21	Peak (NRB)	Vertical	100	0	--	--	Pass
9	7333.44	63.88	4.28	-7.24	60.92	Max Peak	Horizontal	106	217	74.0	-13.1	Pass
10	7333.44	55.92	4.28	-7.24	52.96	Max Avg	Horizontal	106	217	54.0	-1.0	Pass
11	11000.10	54.83	5.59	-4.24	56.18	Max Peak	Horizontal	133	323	74.0	-17.8	Pass
12	11000.10	41.01	5.59	-4.24	42.36	Max Avg	Horizontal	133	323	54.0	-11.6	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

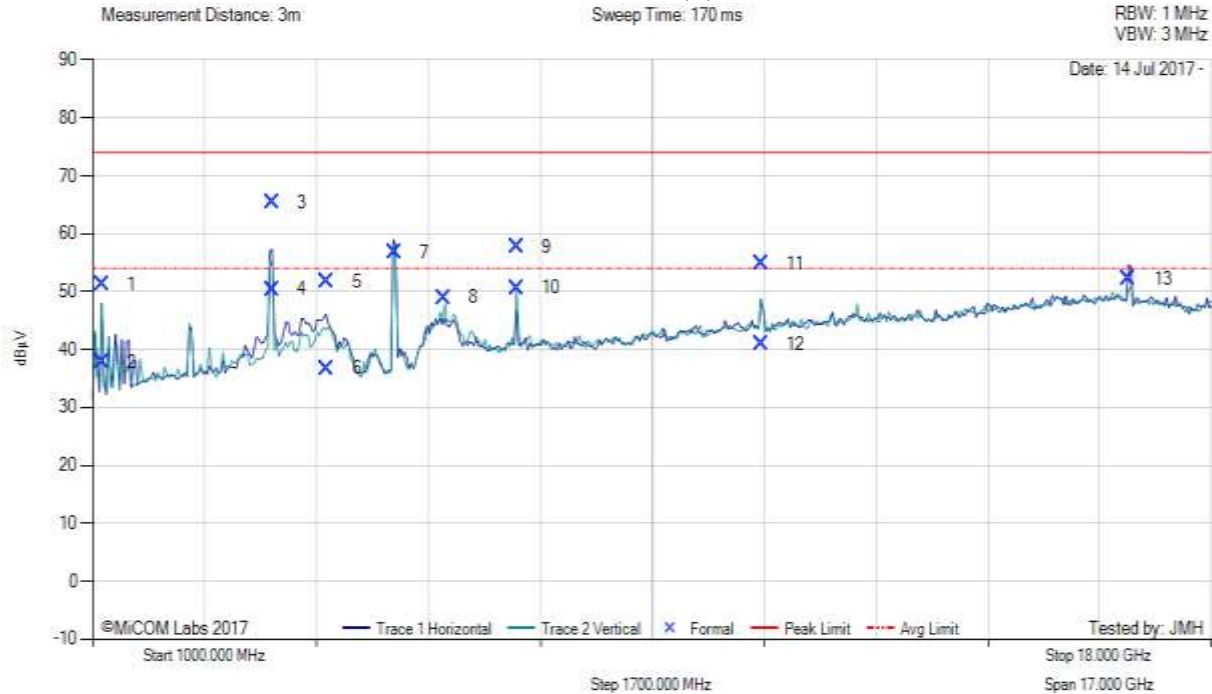
[back to matrix](#)

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.

TX SPURIOUS & RESTRICTED BAND EMISSIONS



Variant: 802.11a, Test Freq: 5580.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 18, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1145.58	65.95	2.12	-16.83	51.24	Max Peak	Vertical	98	251	74.0	-22.8	Pass
2	1145.58	52.52	2.12	-16.83	37.81	Max Avg	Vertical	98	251	54.0	-16.2	Pass
3	3720.33	73.08	3.21	-10.90	65.39	Max Peak	Horizontal	115	177	74.0	-8.6	Pass
4	3720.33	58.13	3.21	-10.90	50.44	Max Avg	Horizontal	115	177	54.0	-3.6	Pass
5	4558.25	59.72	3.45	-11.39	51.78	Max Peak	Horizontal	142	181	74.0	-22.2	Pass
6	4558.25	44.68	3.45	-11.39	36.74	Max Avg	Horizontal	142	181	54.0	-17.3	Pass
7	5587.45	64.23	3.78	-11.19	56.82	Fundamental	Horizontal	100	0	--	--	
8	6335.97	53.29	3.95	-8.25	48.99	Peak (NRB)	Vertical	100	275	--	--	Pass
9	7440.00	60.54	4.30	-7.13	57.71	Max Peak	Vertical	108	5	74.0	-16.3	Pass
10	7440.00	53.47	4.30	-7.13	50.64	Max Avg	Vertical	108	5	54.0	-3.4	Pass
11	11160.73	53.17	5.81	-4.07	54.91	Max Peak	Vertical	104	294	74.0	-19.1	Pass
12	11160.73	39.19	5.81	-4.07	40.93	Max Avg	Vertical	104	294	54.0	-13.1	Pass
13	16742.84	44.65	6.07	1.50	52.22	Peak (NRB)	Horizontal	100	275	--	--	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

[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.

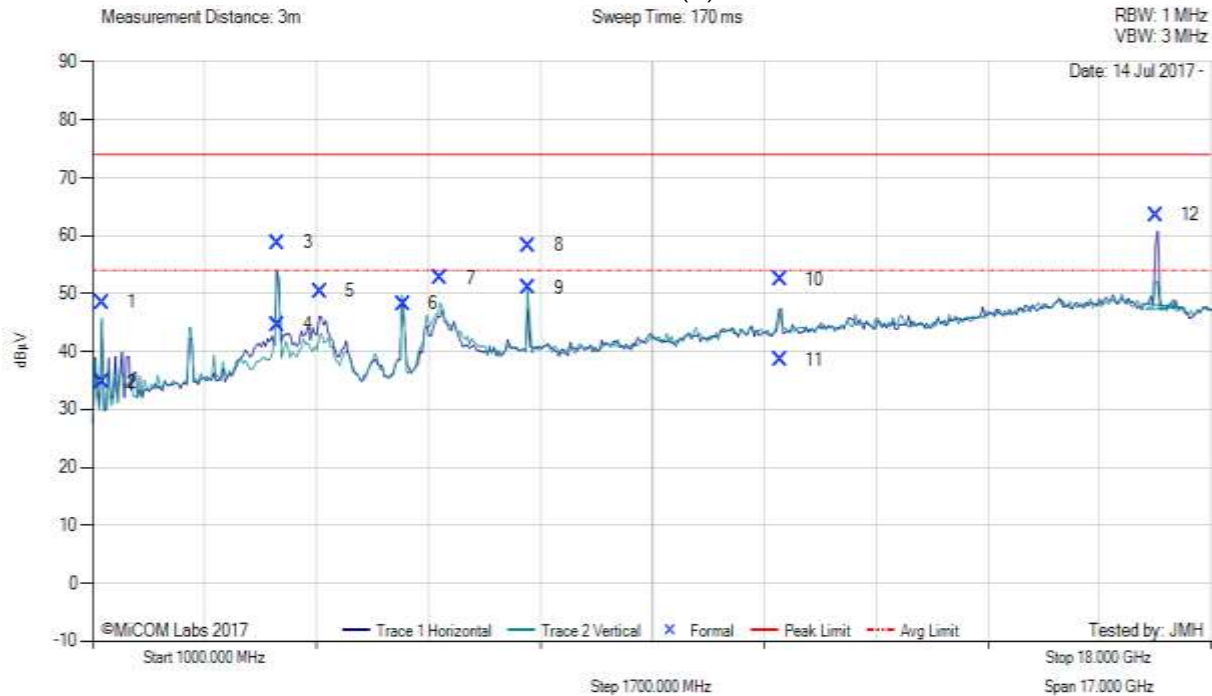


Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 262 of 298



TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5720.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 18, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1145.47	63.24	2.12	-16.83	48.53	Max Peak	Vertical	101	259	74.0	-25.5	Pass
2	1145.47	49.49	2.12	-16.83	34.78	Max Avg	Vertical	101	259	54.0	-19.2	Pass
3	3814.14	66.43	3.24	-10.85	58.82	Max Peak	Vertical	115	208	74.0	-15.2	Pass
4	3814.14	52.29	3.24	-10.85	44.68	Max Avg	Vertical	115	208	54.0	-9.3	Pass
5	4448.76	58.52	3.46	-11.59	50.39	Peak (NRB)	Horizontal	151	207	--	--	Pass
6	5712.23	55.18	3.83	-10.77	48.24	Fundamental	Horizontal	100	21	--	--	
7	6284.47	57.29	3.92	-8.47	52.74	Peak (NRB)	Vertical	151	324	--	--	Pass
8	7626.62	60.91	4.38	-6.97	58.32	Max Peak	Vertical	145	179	74.0	-15.7	Pass
9	7626.62	53.62	4.38	-6.97	51.03	Max Avg	Vertical	145	179	54.0	-3.0	Pass
10	11440.13	51.94	5.36	-4.92	52.38	Max Peak	Horizontal	187	309	74.0	-21.6	Pass
11	11440.13	38.16	5.36	-4.92	38.60	Max Avg	Horizontal	187	309	54.0	-15.4	Pass
12	17159.05	56.86	6.35	0.39	63.60	Peak (NRB)	Horizontal	151	224	--	--	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

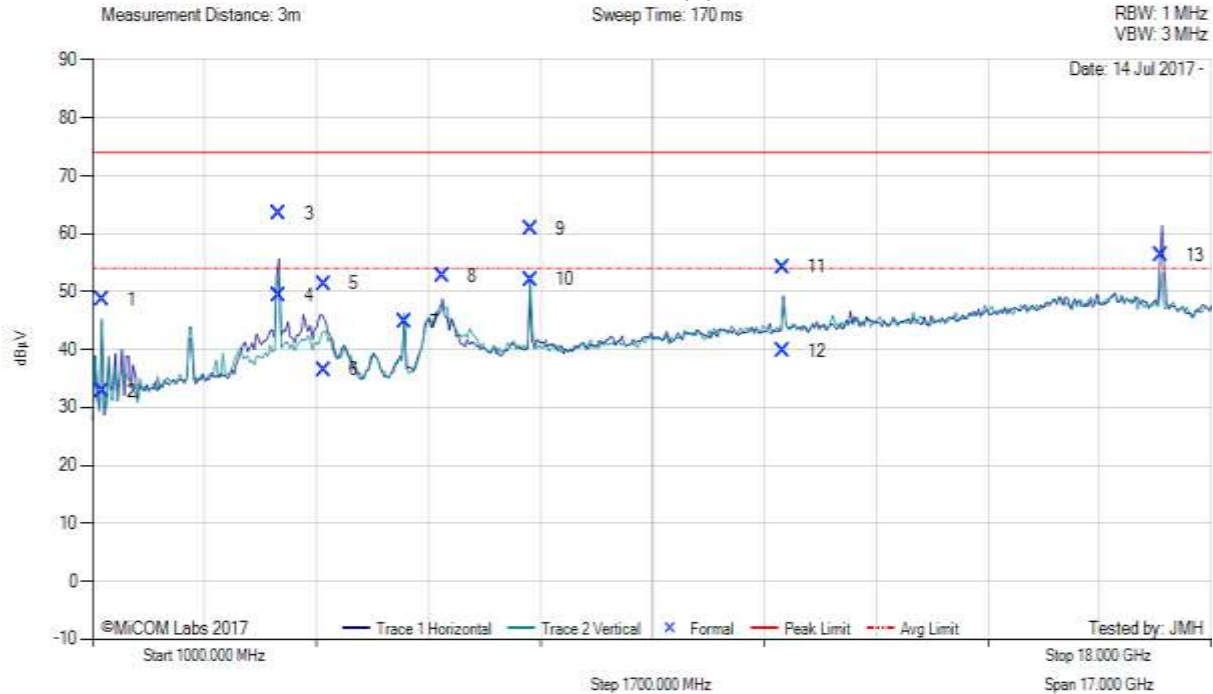
[back to matrix](#)

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.

TX SPURIOUS & RESTRICTED BAND EMISSIONS



Variant: 802.11a, Test Freq: 5745.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 20, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1145.03	63.37	2.12	-16.83	48.66	Max Peak	Vertical	98	243	74.0	-25.3	Pass
2	1145.03	47.51	2.12	-16.83	32.80	Max Avg	Vertical	98	243	54.0	-21.2	Pass
3	3830.69	71.02	3.21	-10.83	63.40	Max Peak	Horizontal	98	185	74.0	-10.6	Pass
4	3830.69	56.90	3.21	-10.83	49.28	Max Avg	Horizontal	98	185	54.0	-4.7	Pass
5	4507.64	59.46	3.51	-11.57	51.40	Max Peak	Horizontal	98	180	74.0	-22.6	Pass
6	4507.64	44.60	3.51	-11.57	36.54	Max Avg	Horizontal	98	180	54.0	-17.5	Pass
7	5737.51	51.63	3.82	-10.67	44.78	Fundamental	Horizontal	100	45	--	--	
8	6315.02	57.08	3.93	-8.34	52.67	Peak (NRB)	Horizontal	100	149	--	--	Pass
9	7659.94	63.35	4.37	-6.95	60.77	Max Peak	Vertical	114	199	74.0	-13.2	Pass
10	7659.94	55.48	4.37	-6.95	52.09	Max Avg	Vertical	114	199	54.0	-1.0	Pass
11	11490.62	53.66	5.45	-4.84	54.27	Max Peak	Horizontal	110	225	74.0	-19.7	Pass
12	11490.62	39.11	5.45	-4.84	39.72	Max Avg	Horizontal	110	225	54.0	-14.3	Pass
13	17237.88	49.41	6.47	0.34	56.22	Peak (NRB)	Vertical	100	244	--	--	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

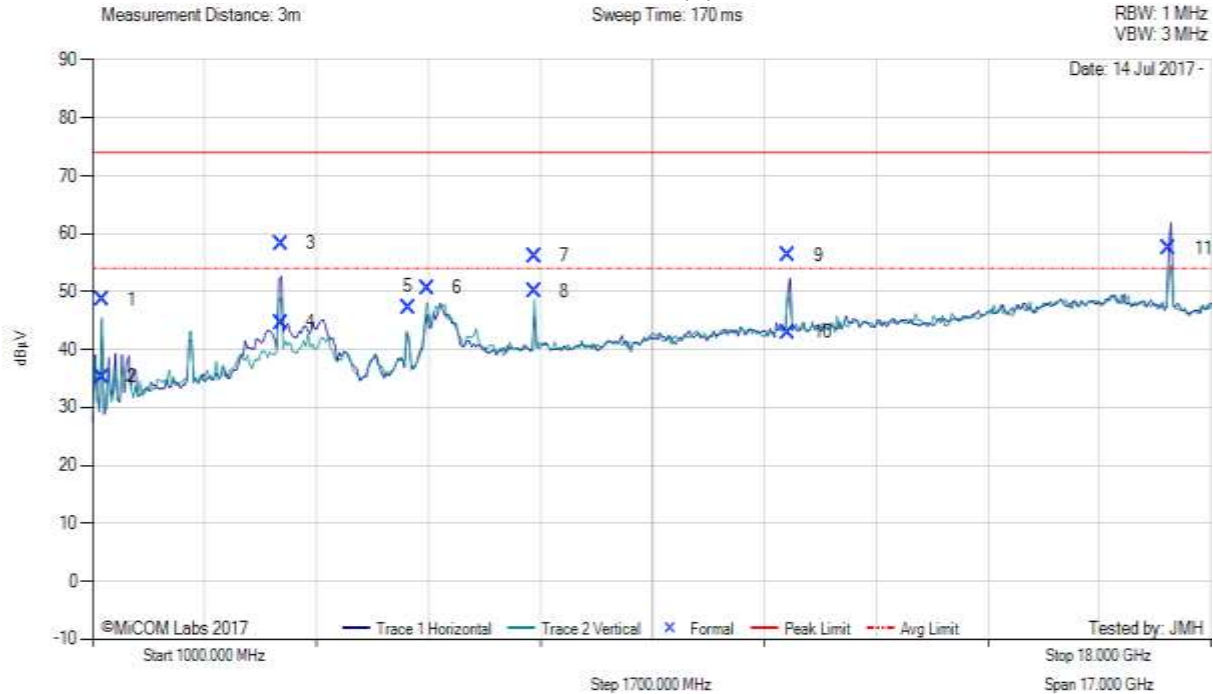
[back to matrix](#)

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.

TX SPURIOUS & RESTRICTED BAND EMISSIONS



Variant: 802.11a, Test Freq: 5785.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 21, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1147.79	63.39	2.12	-16.83	48.68	Max Peak	Vertical	98	253	74.0	-25.3	Pass
2	1147.79	50.00	2.12	-16.83	35.29	Max Avg	Vertical	98	253	54.0	-18.7	Pass
3	3857.15	65.92	3.23	-10.81	58.34	Max Peak	Horizontal	106	186	74.0	-15.7	Pass
4	3857.15	52.24	3.23	-10.81	44.66	Max Avg	Horizontal	106	186	54.0	-9.3	Pass
5	5792.55	53.94	3.78	-10.40	47.32	Fundamental	Vertical	100	306	--	--	
6	6081.05	56.35	3.86	-9.57	50.64	Peak (NRB)	Vertical	100	303	--	--	Pass
7	7713.34	58.61	4.41	-6.85	56.17	Max Peak	Vertical	113	200	74.0	-17.8	Pass
8	7713.34	52.53	4.41	-6.85	50.09	Max Avg	Vertical	113	200	54.0	-3.9	Pass
9	11571.43	55.53	5.42	-4.63	56.32	Max Peak	Vertical	128	273	74.0	-17.7	Pass
10	11571.43	42.23	5.42	-4.63	43.02	Max Avg	Vertical	128	273	54.0	-11.0	Pass
11	17358.01	51.18	6.28	-0.04	57.42	Peak (NRB)	Horizontal	100	151	--	--	Pass

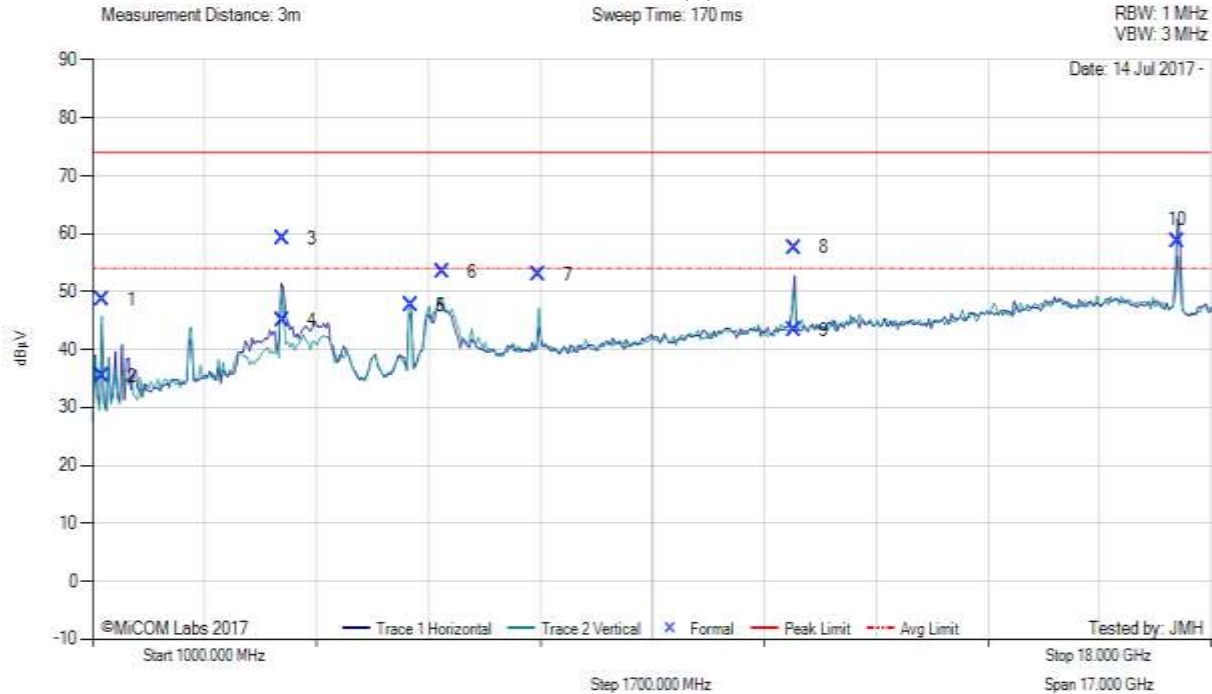
Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

[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.

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11a, Test Freq: 5825.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 22, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	1146.58	63.38	2.12	-16.83	48.67	Max Peak	Vertical	98	250	74.0	-25.3	Pass
2	1146.58	50.19	2.12	-16.83	35.48	Max Avg	Vertical	98	250	54.0	-18.5	Pass
3	3882.50	66.68	3.25	-10.76	59.17	Max Peak	Horizontal	112	185	74.0	-14.8	Pass
4	3882.50	52.57	3.25	-10.76	45.06	Max Avg	Horizontal	112	185	54.0	-8.9	Pass
5	5832.66	54.07	3.84	-10.21	47.70	Fundamental	Vertical	100	195	--	--	
6	6315.46	57.75	3.93	-8.34	53.34	Peak (NRB)	Vertical	100	239	--	--	Pass
7	7766.72	55.14	4.43	-6.71	52.86	Peak (NRB)	Vertical	100	167	--	--	Pass
8	11650.50	56.57	5.46	-4.47	57.56	Max Peak	Vertical	122	267	74.0	-16.4	Pass
9	11650.50	42.28	5.46	-4.47	43.27	Max Avg	Vertical	122	267	54.0	-10.7	Pass
10	17484.29	52.99	6.41	-0.63	58.77	Peak (NRB)	Horizontal	100	185	--	--	Pass

Test Notes: EUT powered by 5V supply and connected to laptop via SD slot. Antenna Port B

[back to matrix](#)

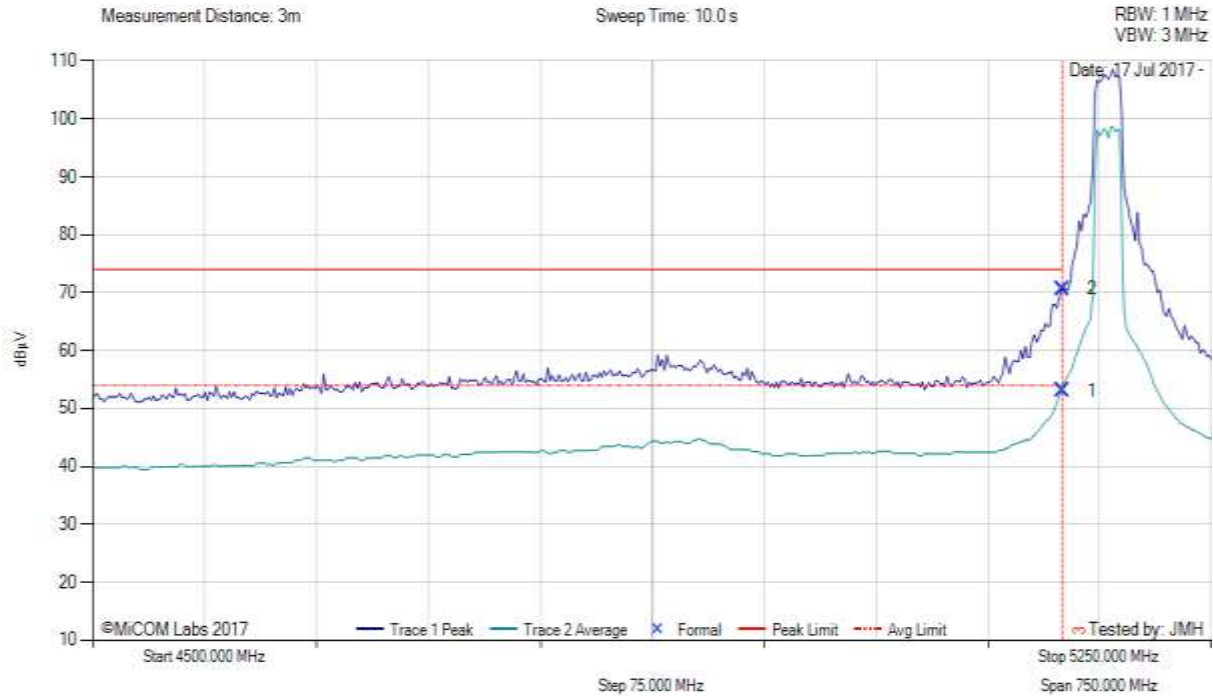
A.4.2. Restricted Edge & Band-Edge Emissions

A.4.2.3. Integral



RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11a, Test Freq: 5180.00 MHz, Antenna: Integral, Power Setting: 17, Duty Cycle (%): 99



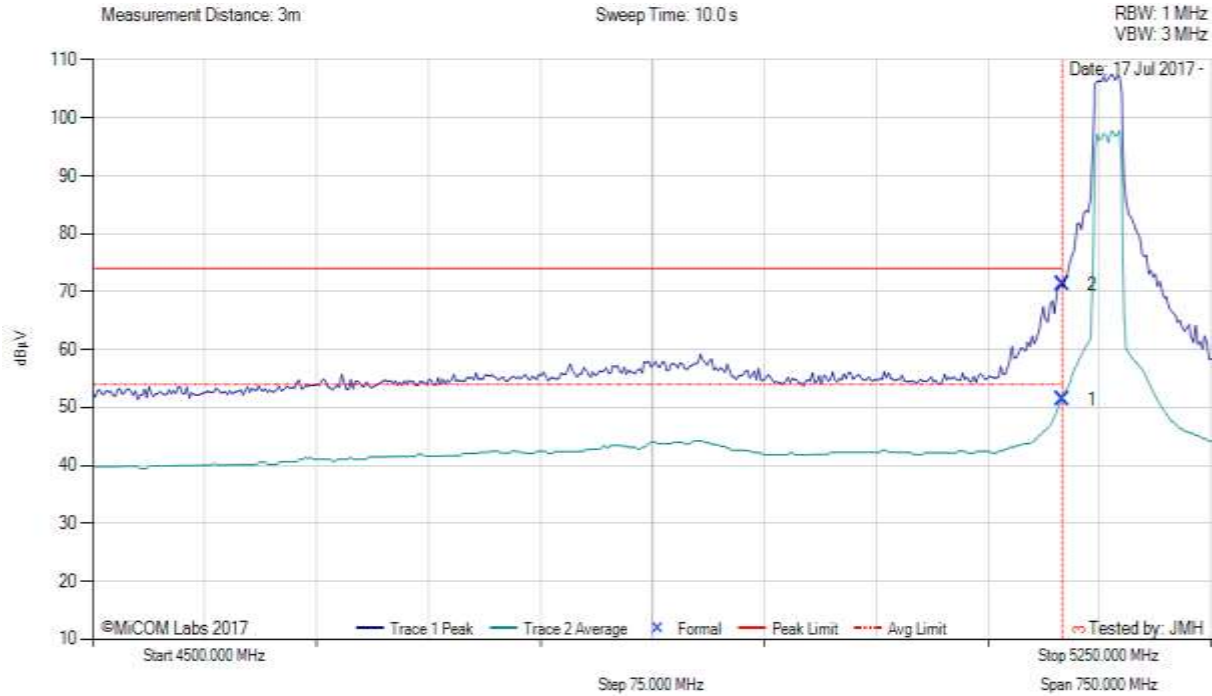
4500.00 - 5250.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5150.00	15.27	3.67	34.11	53.05	Max Avg	Horizontal	102	158	54.0	-1.0	Pass
2	5150.00	32.83	3.67	34.11	70.61	Max Peak	Horizontal	102	158	74.0	-3.4	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits

[back to matrix](#)

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 5180.00 MHz, Antenna: Integral, Power Setting: 16, Duty Cycle (%): 99



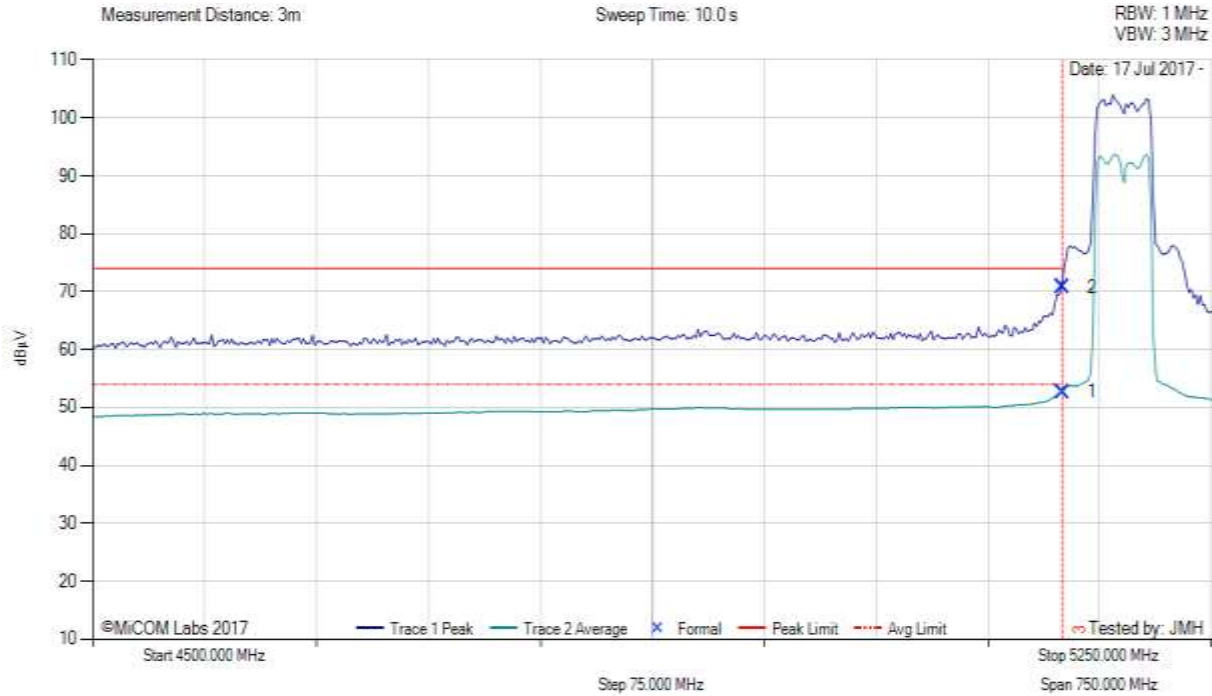
4500.00 - 5250.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5150.00	13.51	3.67	34.11	51.29	Max Avg	Horizontal	102	158	54.0	-2.7	Pass
2	5150.00	33.53	3.67	34.11	71.31	Max Peak	Horizontal	102	158	74.0	-2.7	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits

[back to matrix](#)

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 5190.00 MHz, Antenna: Integral, Power Setting: 14, Duty Cycle (%): 99



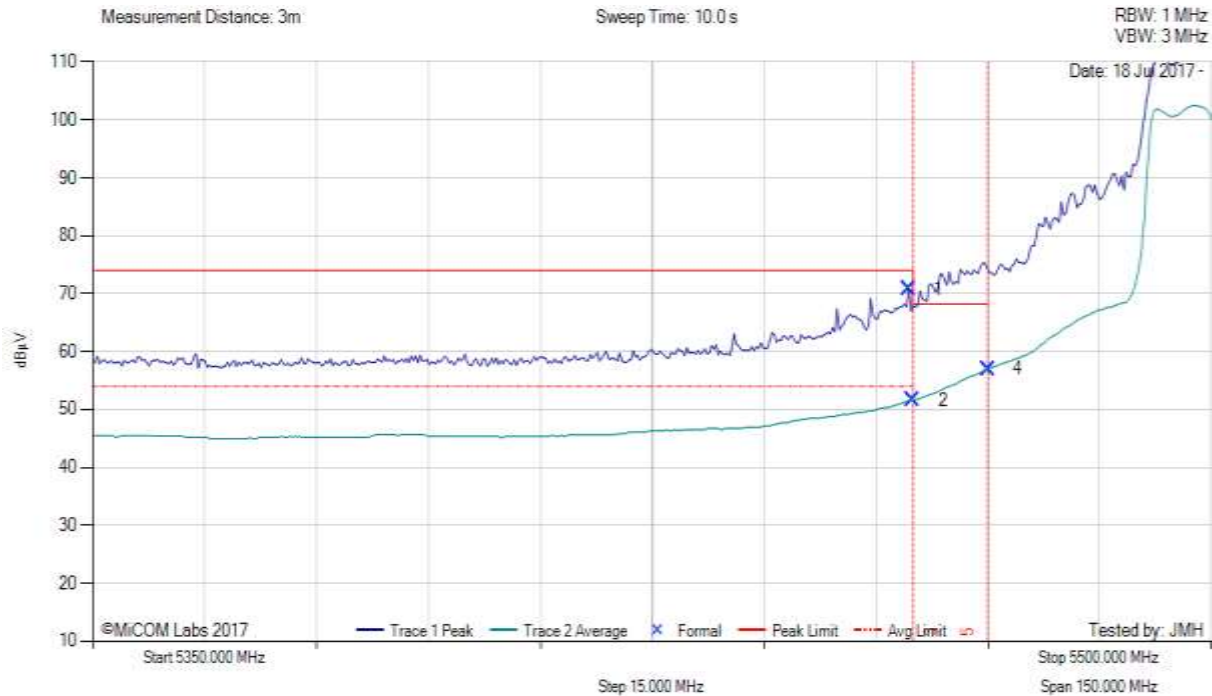
4500.00 - 5250.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5150.00	14.86	3.67	34.11	52.64	Max Avg	Horizontal	102	158	54.0	-1.4	Pass
2	5150.00	32.97	3.67	34.11	70.75	Max Peak	Horizontal	102	158	74.0	-3.3	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits

[back to matrix](#)

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11a, Test Freq: 5500.00 MHz, Antenna: Integral, Power Setting: 17, Duty Cycle (%): 99



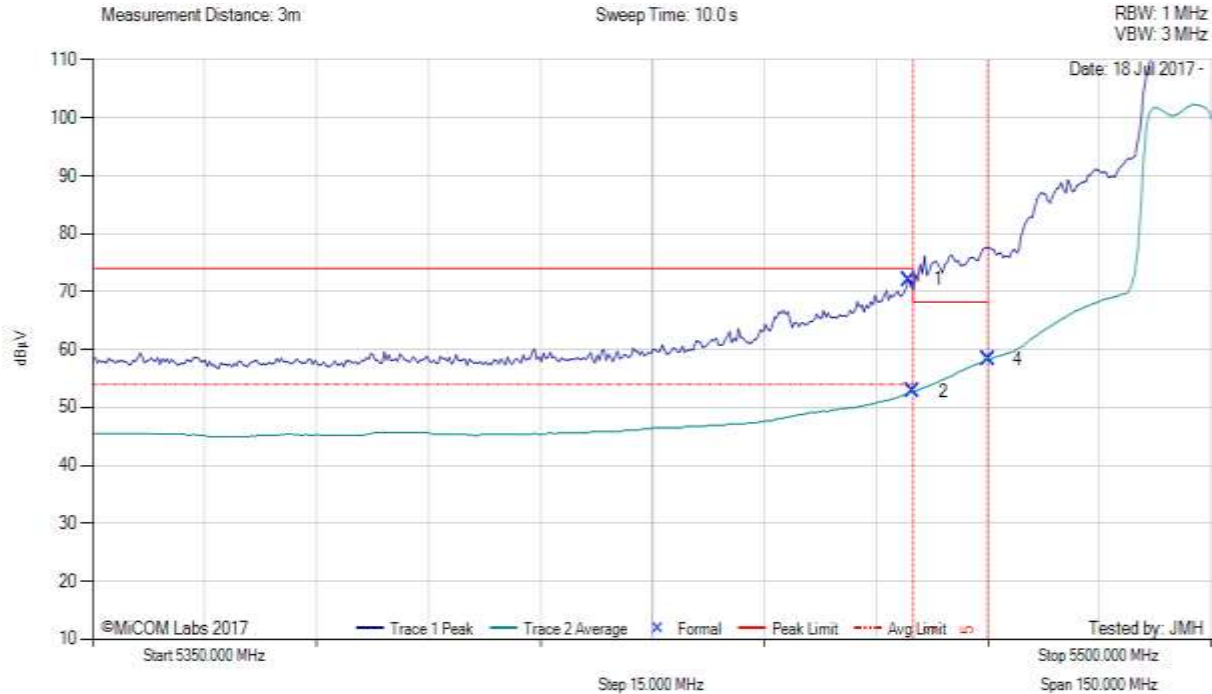
5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5459.40	32.69	3.79	34.31	70.79	Max Peak	Horizontal	111	353	74.0	-3.2	Pass
2	5460.00	13.55	3.79	34.31	51.65	Max Avg	Horizontal	111	353	54.0	-2.4	Pass
4	5470.00	18.91	3.76	34.32	56.99	Max Avg	Horizontal	111	353	68.2	-11.2	Pass
3	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
5	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits

[back to matrix](#)

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 5500.00 MHz, Antenna: Integral, Power Setting: 17, Duty Cycle (%): 99



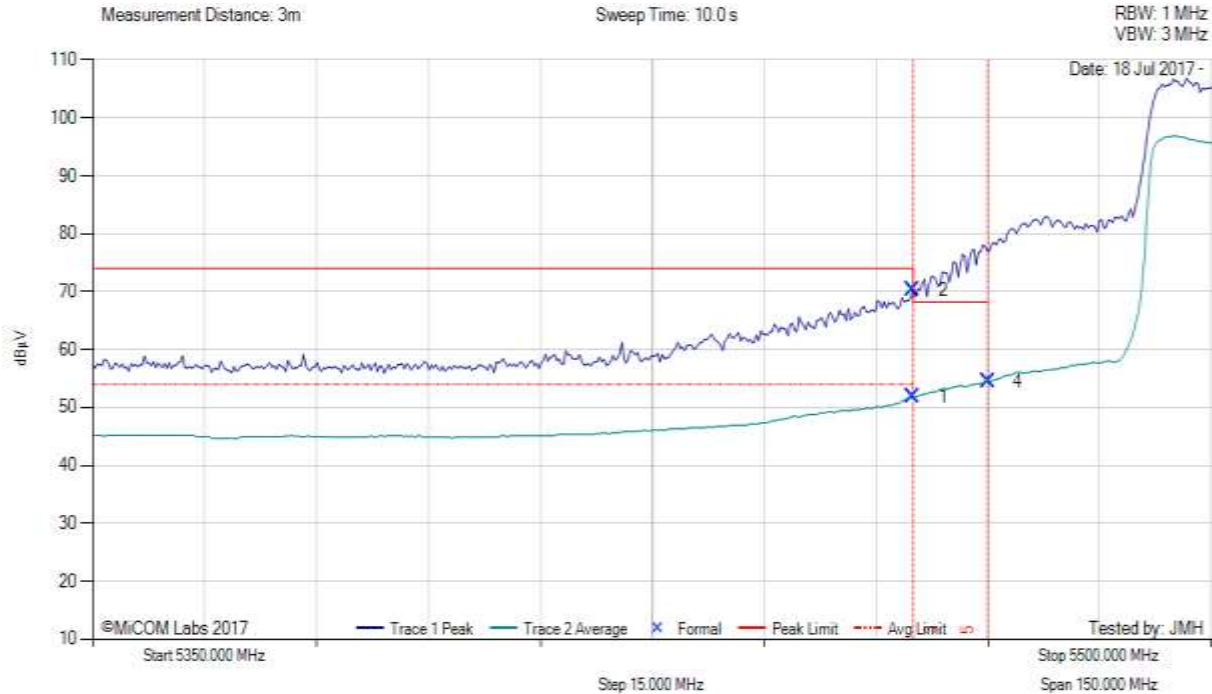
5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5459.40	34.02	3.79	34.31	72.12	Max Peak	Horizontal	111	353	74.0	-1.9	Pass
2	5460.00	14.68	3.79	34.31	52.78	Max Avg	Horizontal	111	353	54.0	-1.2	Pass
4	5470.00	20.18	3.76	34.32	58.26	Max Avg	Horizontal	111	353	68.2	-9.9	Pass
3	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
5	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits

[back to matrix](#)

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 5510.00 MHz, Antenna: Integral, Power Setting: 15, Duty Cycle (%): 99



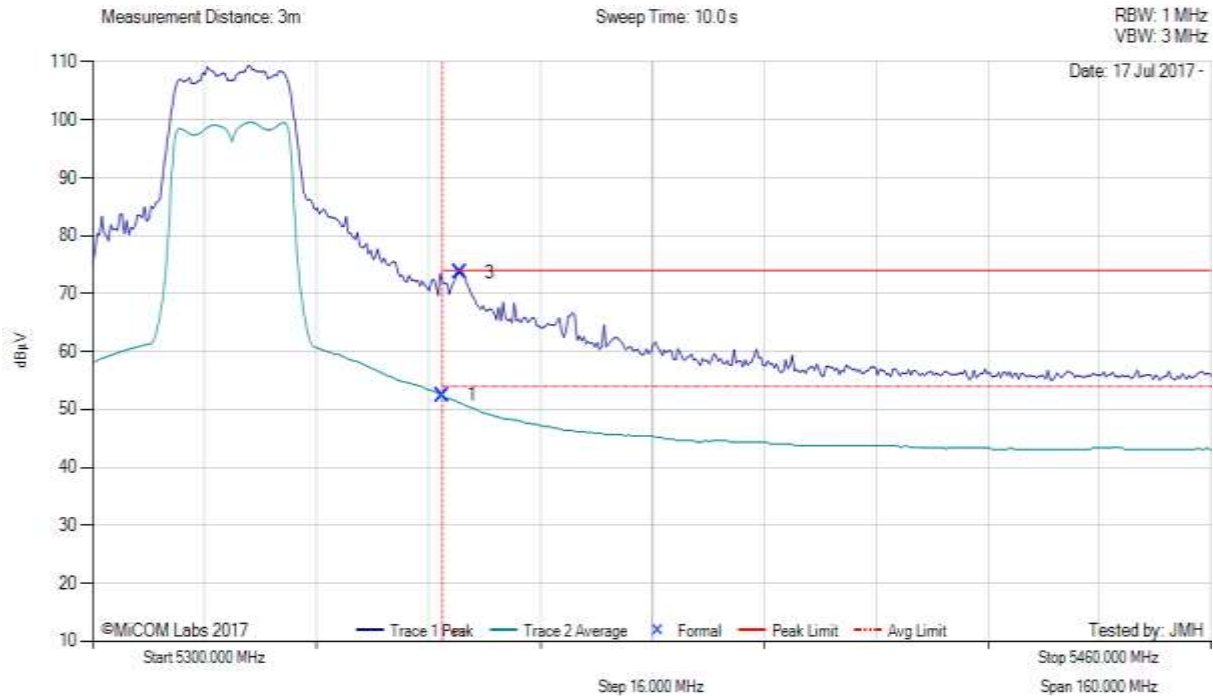
5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5460.00	13.67	3.79	34.31	51.77	Max Avg	Horizontal	111	353	54.0	-2.2	Pass
2	5460.00	32.24	3.79	34.31	70.34	Max Peak	Horizontal	111	353	74.0	-3.7	Pass
4	5470.00	16.35	3.76	34.32	54.43	Max Avg	Horizontal	111	353	68.2	-13.8	Pass
3	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
5	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits

[back to matrix](#)

RESTRICTED UPPER BAND-EDGE EMISSIONS

Variant: 802.11a, Test Freq: 5320.00 MHz, Antenna: Integral, Power Setting: 16, Duty Cycle (%): 99



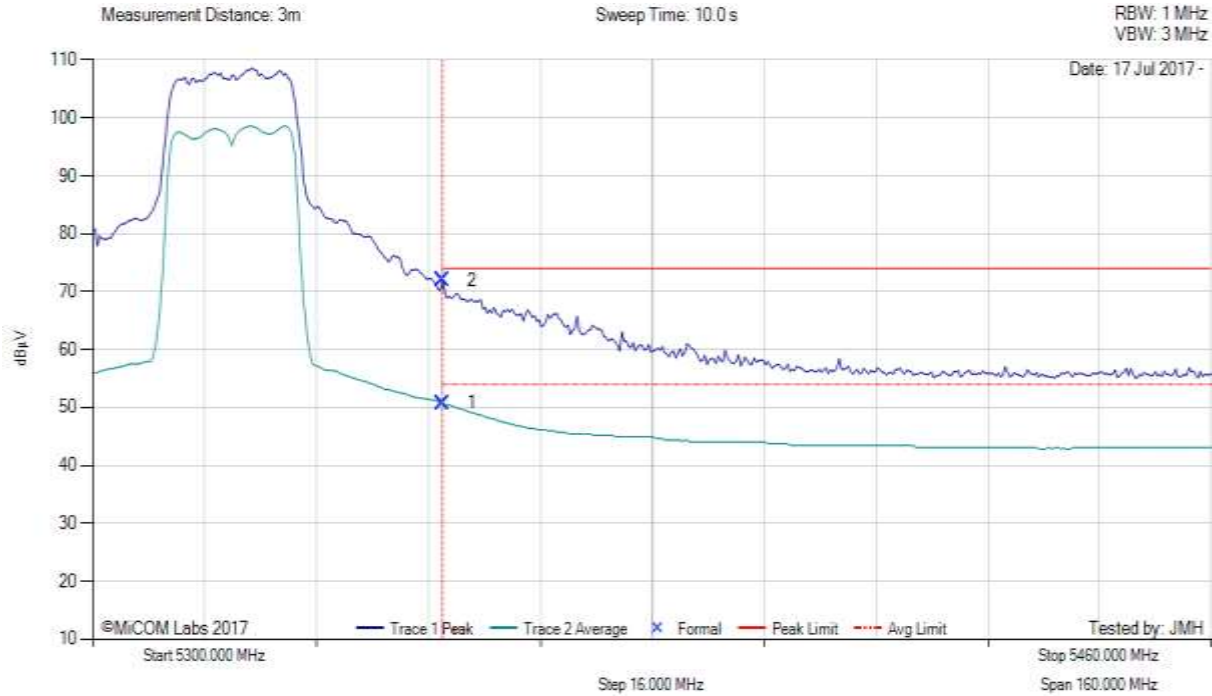
5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5350.00	14.23	3.70	34.51	52.44	Max Avg	Horizontal	140	337	54.0	-1.6	Pass
3	5352.57	35.45	3.71	34.50	73.66	Max Peak	Horizontal	140	337	74.0	-0.3	Pass
2	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits

[back to matrix](#)

RESTRICTED UPPER BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 5320.00 MHz, Antenna: Integral, Power Setting: 15, Duty Cycle (%): 99



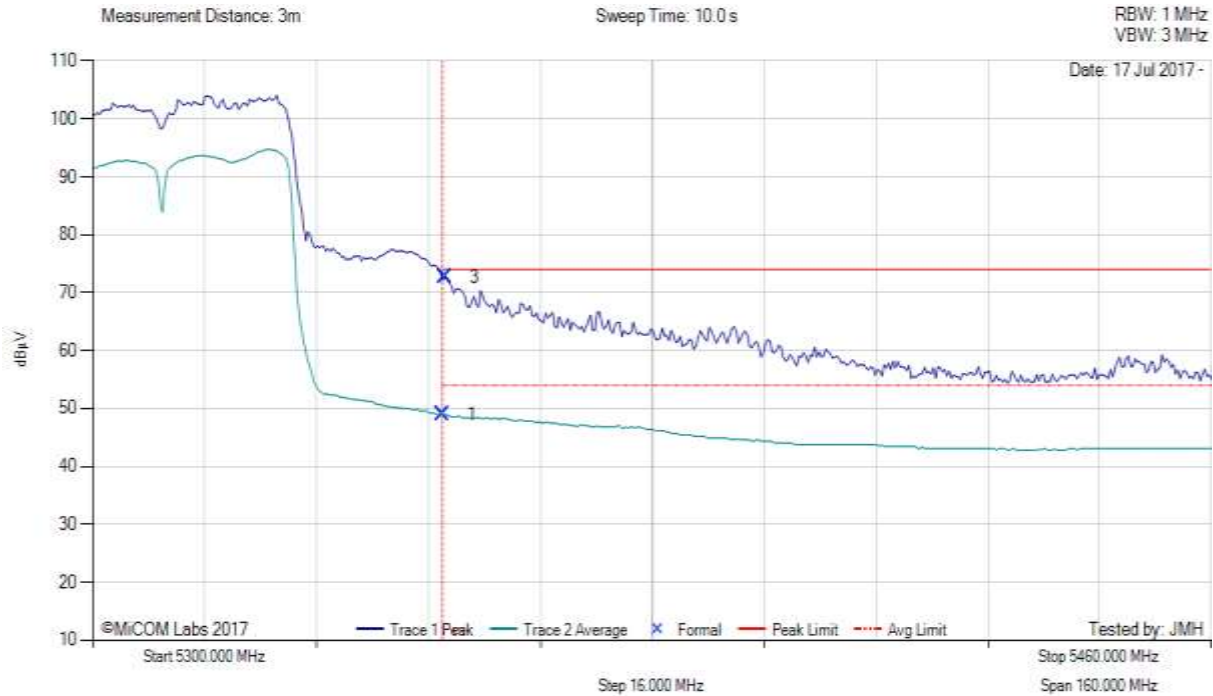
5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5350.00	12.51	3.70	34.51	50.72	Max Avg	Horizontal	140	337	54.0	-3.3	Pass
2	5350.00	33.77	3.70	34.51	71.98	Max Peak	Horizontal	140	337	74.0	-2.0	Pass
3	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits

[back to matrix](#)

RESTRICTED UPPER BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 5310.00 MHz, Antenna: Integral, Power Setting: 14, Duty Cycle (%): 99



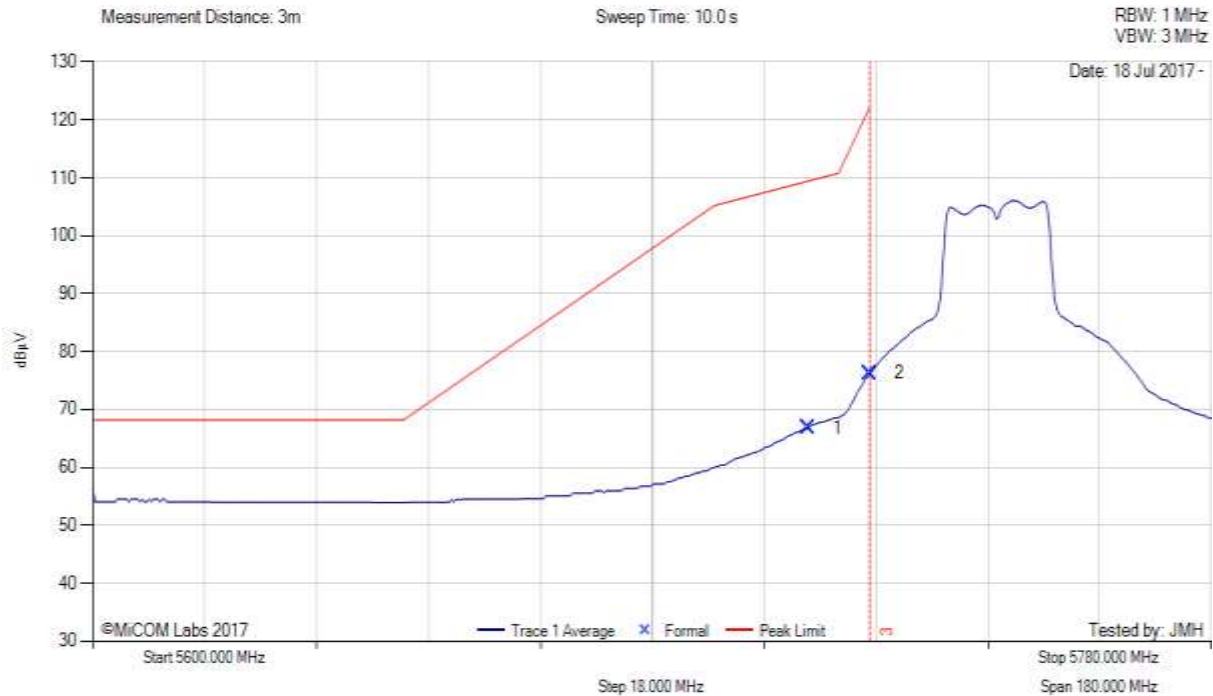
5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5350.00	10.71	3.70	34.51	48.92	Max Avg	Horizontal	140	337	54.0	-5.1	Pass
3	5350.32	34.45	3.70	34.51	72.66	Max Peak	Horizontal	140	337	74.0	-1.3	Pass
2	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Power Reduced to meet Band Edge limits

[back to matrix](#)

5725 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11a, Test Freq: 5745.00 MHz, Antenna: Integral, Power Setting: 22, Duty Cycle (%): 99



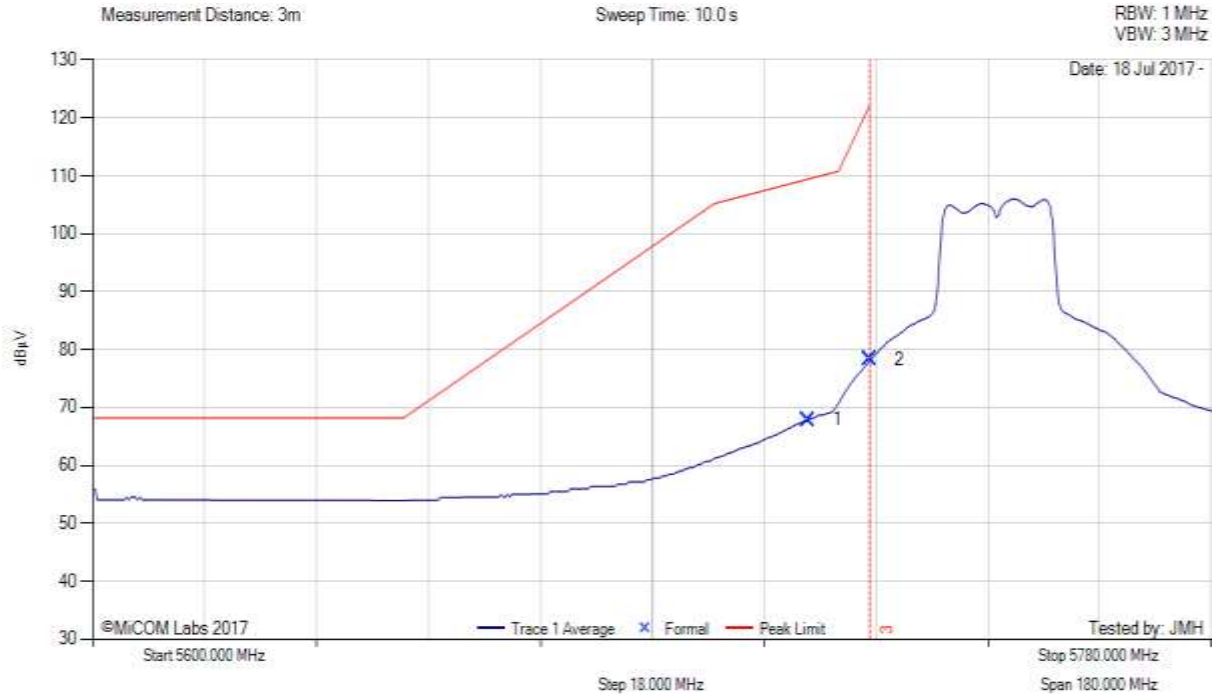
5600.00 - 5780.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5715.00	28.69	3.81	34.34	66.84	Max Avg	Horizontal	119	6	109.4	-42.6	Pass
2	5725.00	38.10	3.79	34.35	76.24	Max Avg	Horizontal	119	6	122.2	-46.0	Pass
3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

[back to matrix](#)

5725 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 5745.00 MHz, Antenna: Integral, Power Setting: 22, Duty Cycle (%): 99



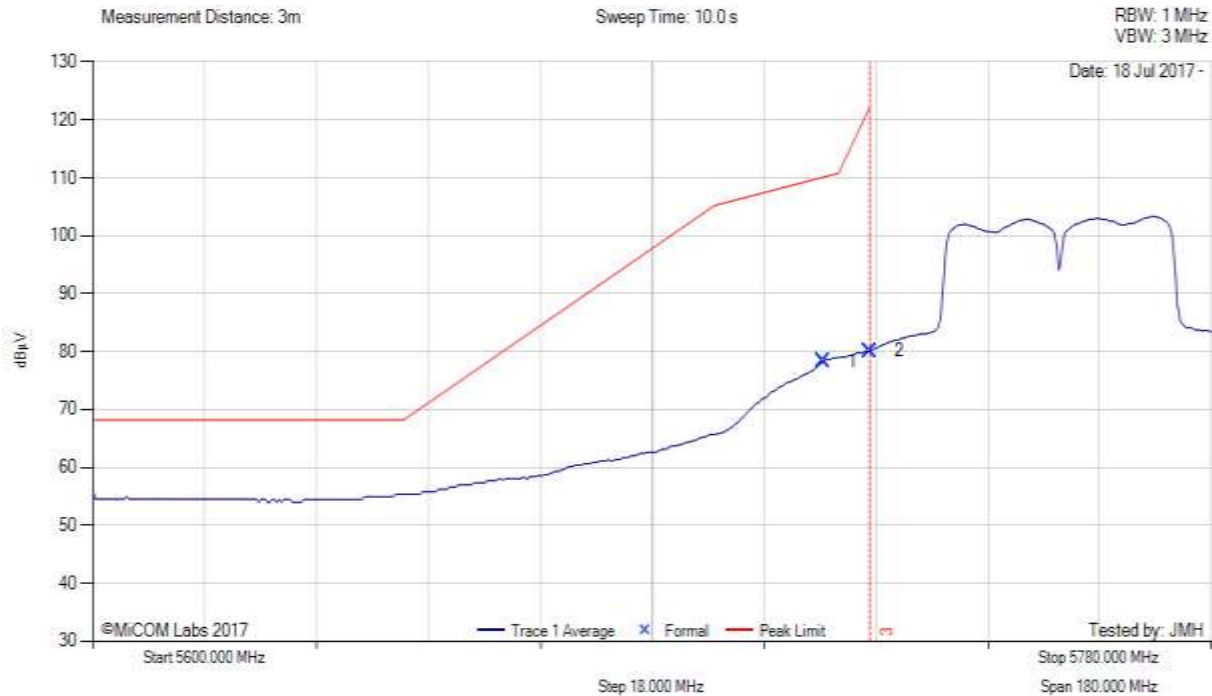
5600.00 - 5780.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5715.00	29.70	3.81	34.34	67.85	Max Avg	Horizontal	119	6	109.4	-41.6	Pass
2	5725.00	40.14	3.79	34.35	78.28	Max Avg	Horizontal	119	6	122.2	-43.9	Pass
3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

[back to matrix](#)

5725 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 5755.00 MHz, Antenna: Integral, Power Setting: 22, Duty Cycle (%): 99



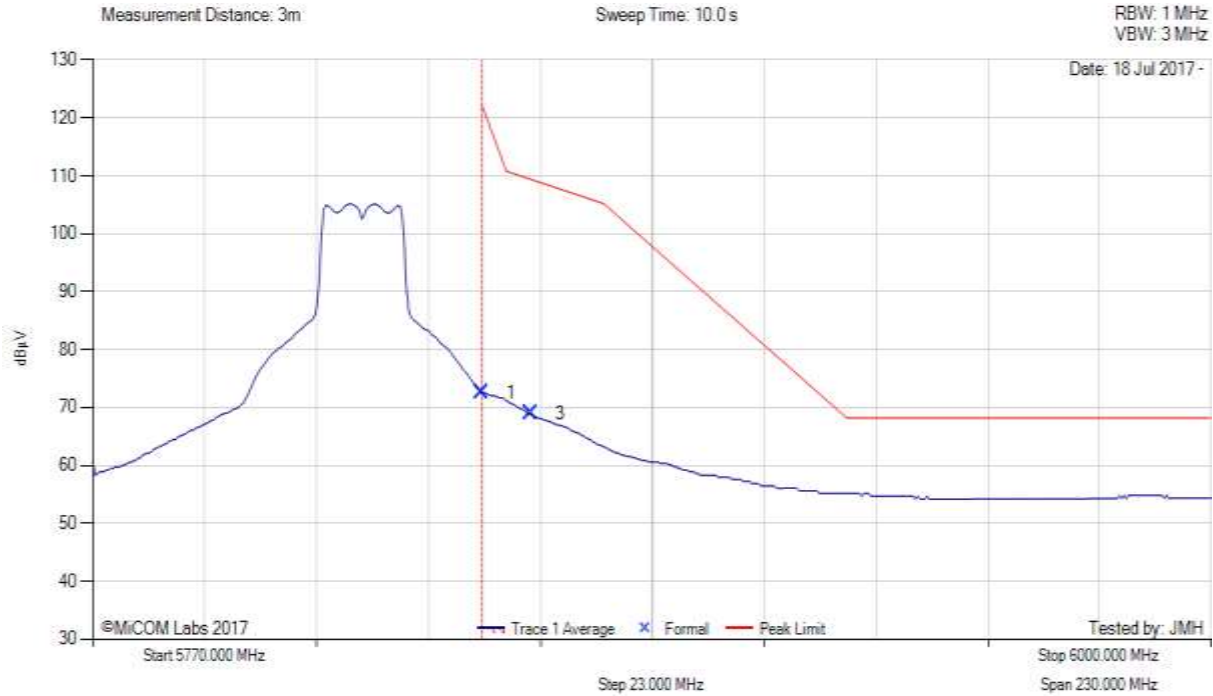
5600.00 - 5780.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5717.53	40.21	3.81	34.34	78.36	Max Avg	Horizontal	119	6	110.2	-31.9	Pass
2	5725.00	42.00	3.79	34.35	80.14	Max Avg	Horizontal	119	6	122.2	-42.1	Pass
3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

[back to matrix](#)

5850 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11a, Test Freq: 5825.00 MHz, Antenna: Integral, Power Setting: 22, Duty Cycle (%): 99



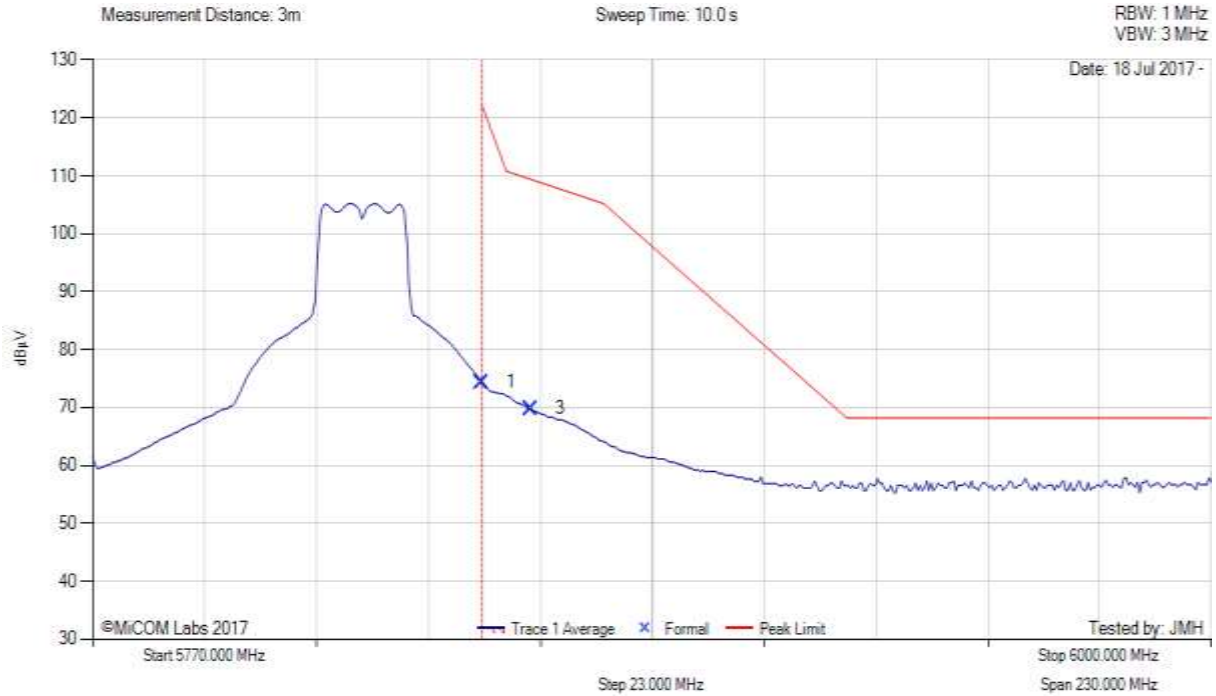
5770.00 - 6000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5850.00	34.14	3.81	34.63	72.58	Max Avg	Horizontal	119	6	122.2	-49.6	Pass
3	5860.00	30.42	3.86	34.65	68.93	Max Avg	Horizontal	119	6	109.4	-40.5	Pass
2	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

[back to matrix](#)

5850 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 5825.00 MHz, Antenna: Integral, Power Setting: 22, Duty Cycle (%): 99



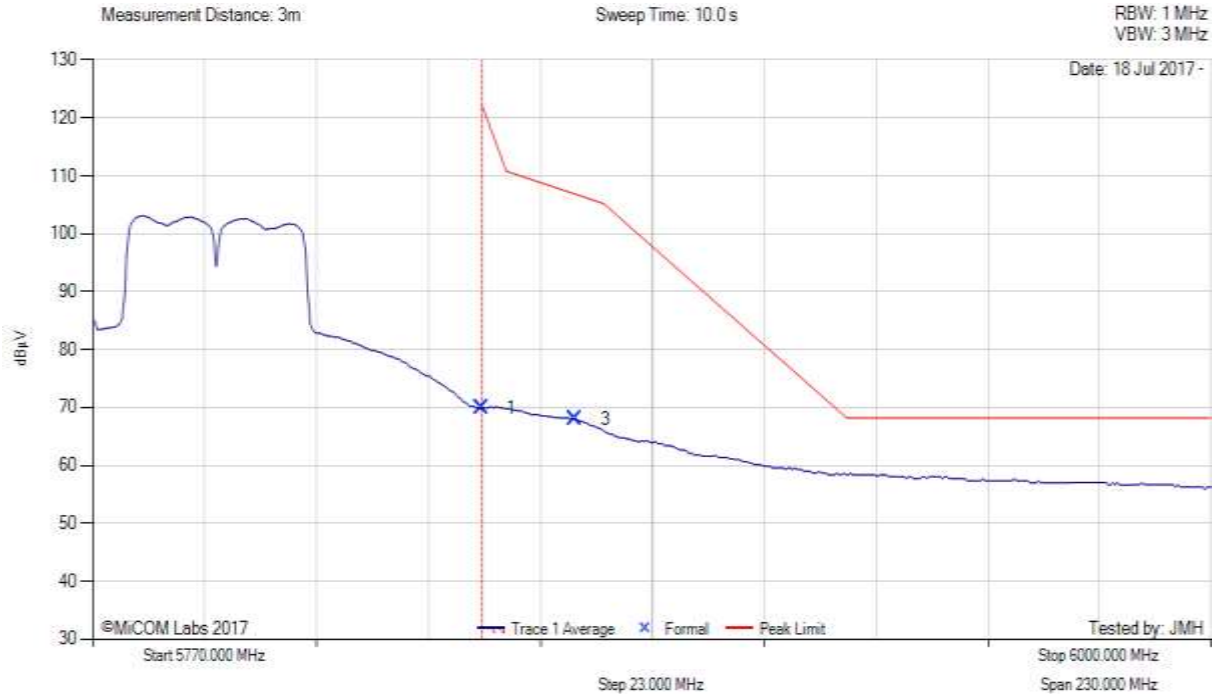
5770.00 - 6000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5850.00	35.88	3.81	34.63	74.32	Max Avg	Horizontal	119	6	122.2	-47.9	Pass
3	5860.00	31.25	3.86	34.65	69.76	Max Avg	Horizontal	119	6	109.4	-39.6	Pass
2	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

[back to matrix](#)

5850 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 5795.00 MHz, Antenna: Integral, Power Setting: 22, Duty Cycle (%): 99



5770.00 - 6000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5850.00	31.47	3.81	34.63	69.91	Max Avg	Horizontal	119	6	122.2	-52.3	Pass
3	5869.22	29.52	3.82	34.68	68.02	Max Avg	Horizontal	119	6	106.9	-38.9	Pass
2	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

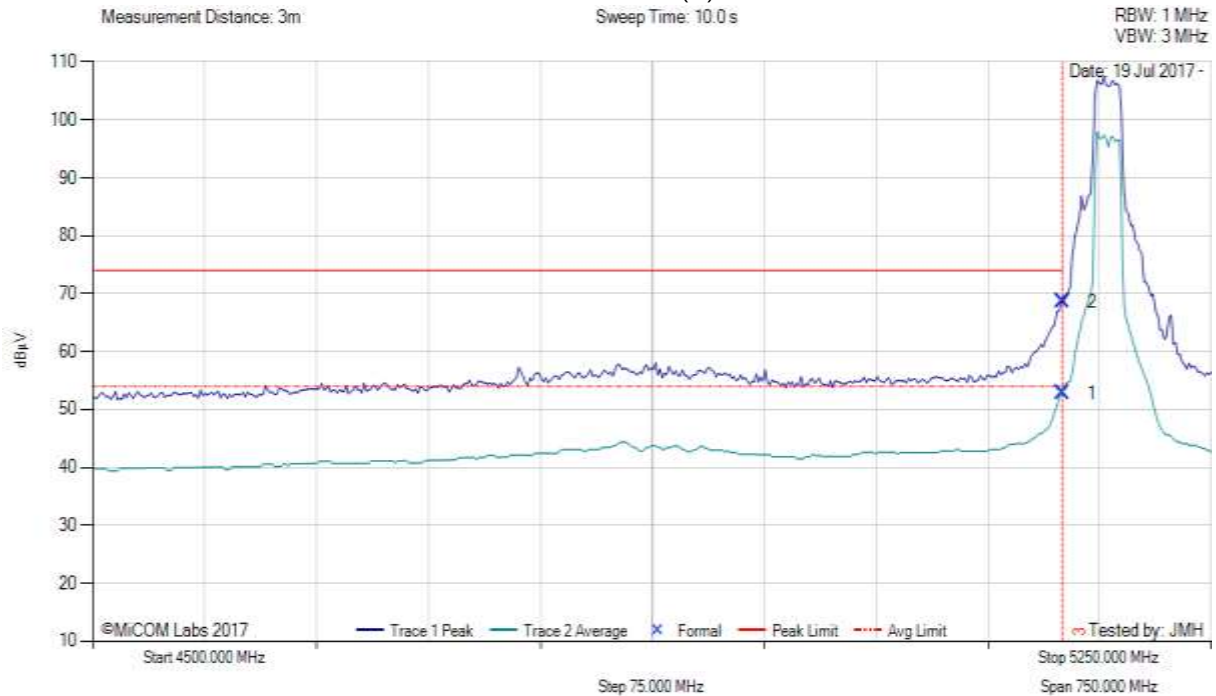
[back to matrix](#)

A.4.2.4. YAGEO ANT300P002B24553



RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11a, Test Freq: 5180.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 17, Duty Cycle (%): 99



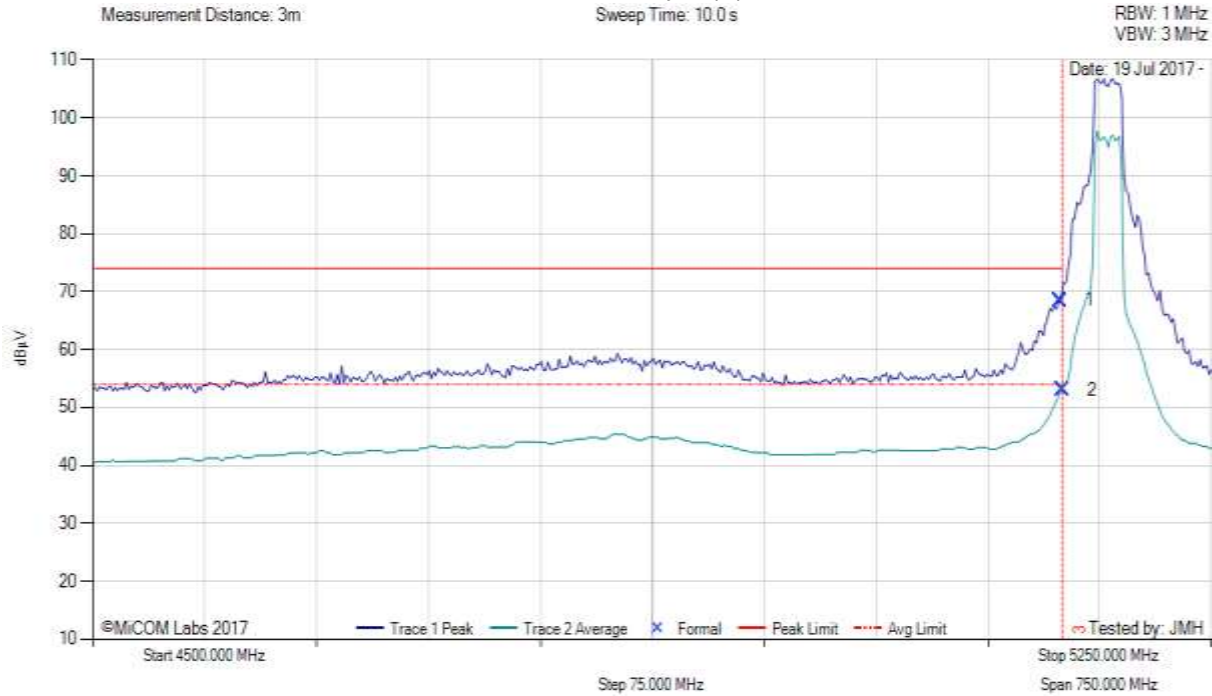
4500.00 - 5250.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5150.00	15.07	3.67	34.11	52.85	Max Avg	Vertical	179	178	54.0	-1.2	Pass
2	5150.00	30.89	3.67	34.11	68.67	Max Peak	Vertical	179	178	74.0	-5.3	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.

[back to matrix](#)

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 5180.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 17, Duty Cycle (%): 99



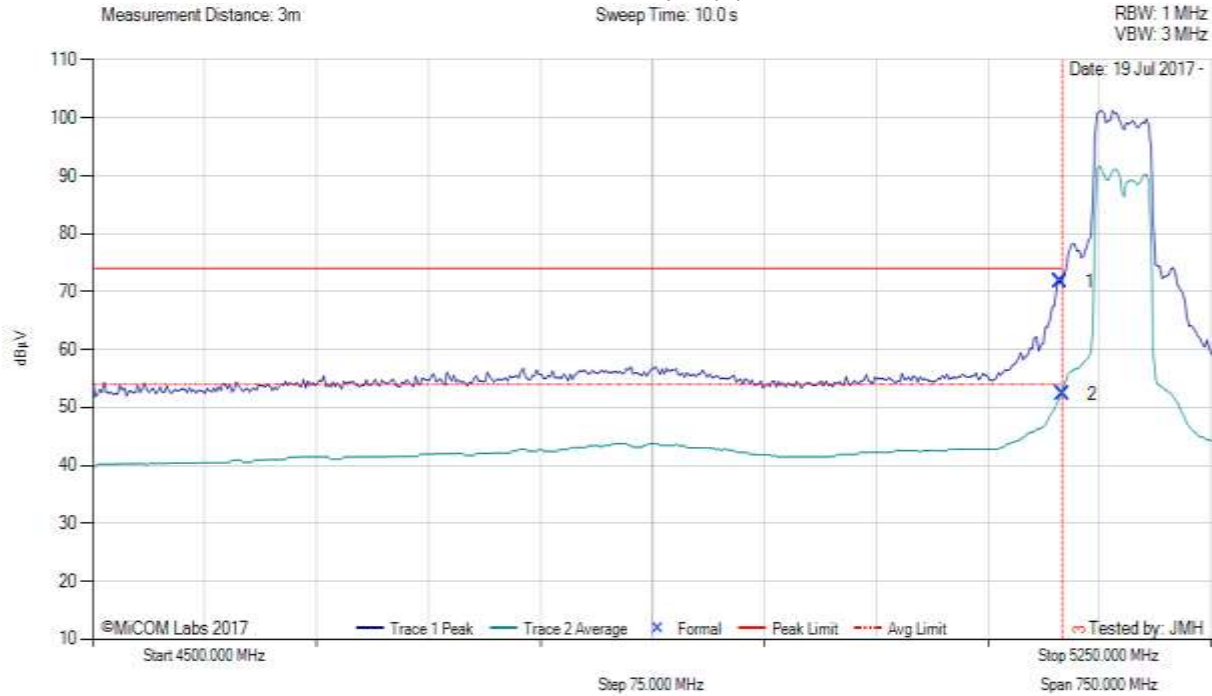
4500.00 - 5250.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5148.50	30.71	3.68	34.11	68.50	Max Peak	Horizontal	179	178	74.0	-5.5	Pass
2	5150.00	15.27	3.67	34.11	53.05	Max Avg	Horizontal	179	178	54.0	-1.0	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.

[back to matrix](#)

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 5190.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 14, Duty Cycle (%): 99



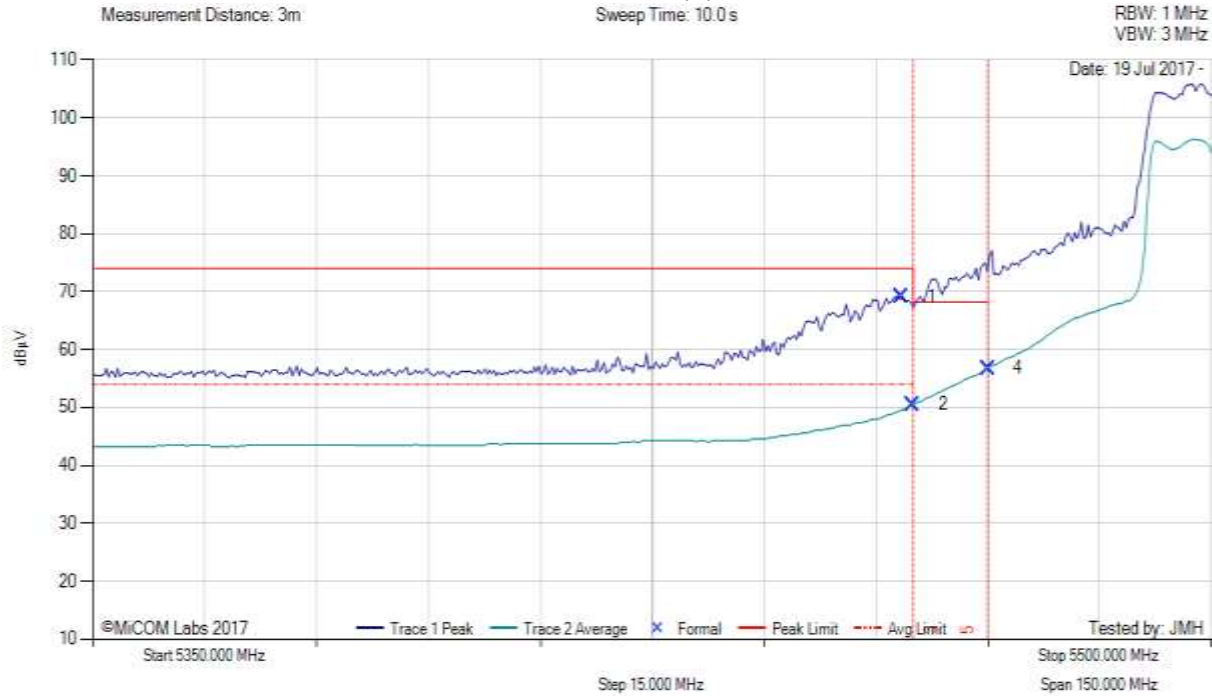
4500.00 - 5250.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5148.50	33.95	3.68	34.11	71.74	Max Peak	Horizontal	179	178	74.0	-2.3	Pass
2	5150.00	14.55	3.67	34.11	52.33	Max Avg	Horizontal	179	178	54.0	-1.7	Pass
3	5150.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.

[back to matrix](#)

RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11a, Test Freq: 5500.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 16, Duty Cycle (%): 99



5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5458.50	31.05	3.80	34.30	69.15	Max Peak	Vertical	191	180	74.0	-4.9	Pass
2	5460.00	12.39	3.79	34.31	50.49	Max Avg	Vertical	191	180	54.0	-3.5	Pass
4	5470.00	18.71	3.76	34.32	56.79	Max Avg	Vertical	191	180	68.2	-11.4	Pass
3	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
5	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.

[back to matrix](#)

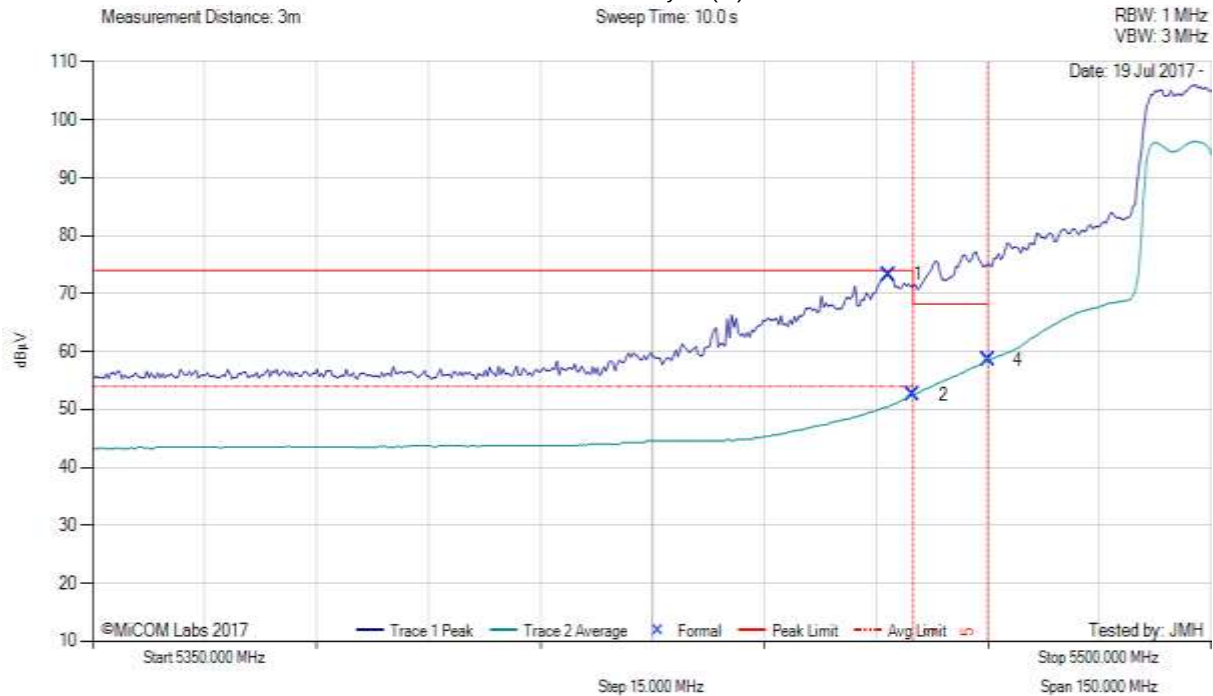


Title: HP Inc. 0960-4025 and 0960-4034
To: FCC CFR 47 Part 15.407 & RSS-247
Serial #: MARS11-U9 Rev B WiFi/BT Module
Issue Date: 27th October 2017
Page: 285 of 298



RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 5500.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 16, Duty Cycle (%): 99



5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5456.69	35.18	3.80	34.30	73.28	Max Peak	Vertical	191	180	74.0	-0.7	Pass
2	5460.00	14.47	3.79	34.31	52.57	Max Avg	Vertical	191	180	54.0	-1.4	Pass
4	5470.00	20.41	3.76	34.32	58.49	Max Avg	Vertical	191	180	68.2	-9.7	Pass
3	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
5	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.

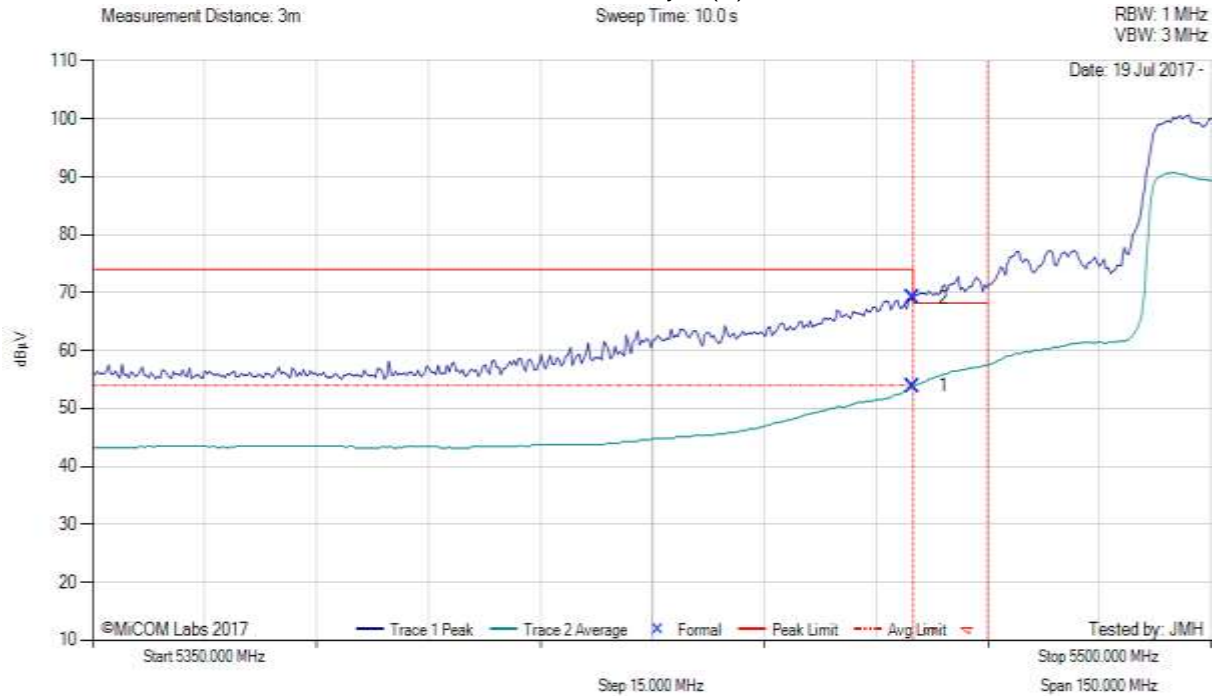
[back to matrix](#)

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.



RESTRICTED LOWER BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 5510.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 14, Duty Cycle (%): 99



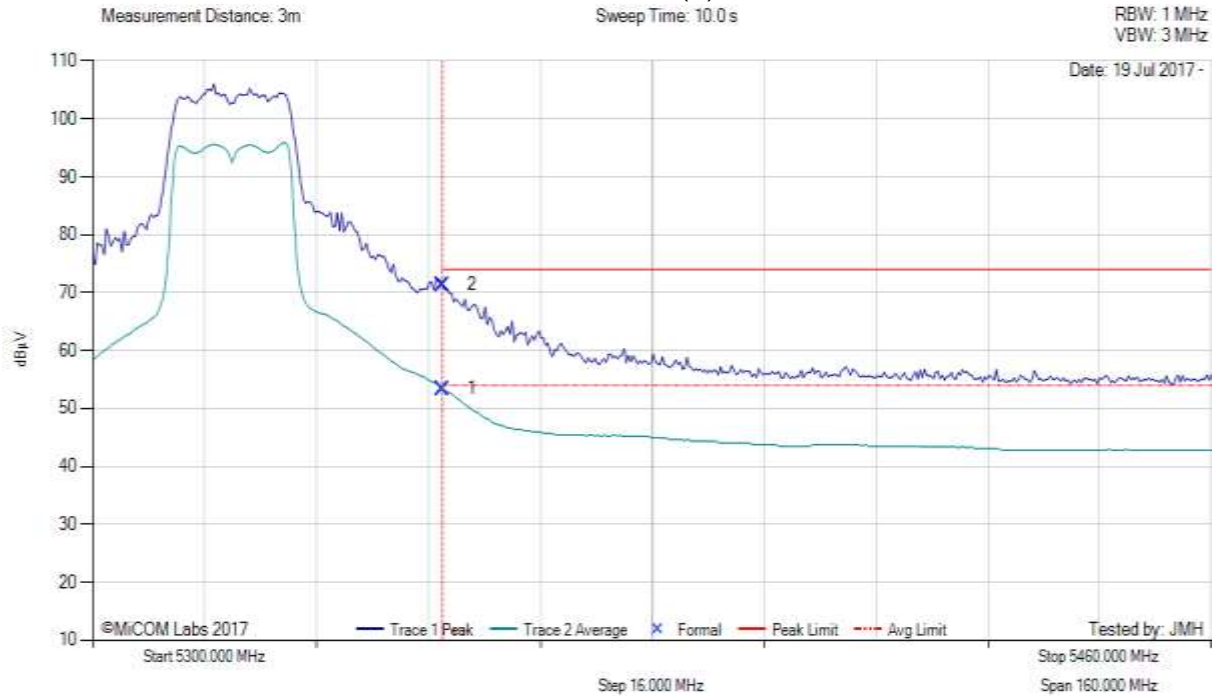
5350.00 - 5500.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5460.00	15.78	3.79	34.31	53.88	Max Avg	Vertical	191	180	54.0	-0.1	Pass
2	5460.00	31.05	3.79	34.31	69.15	Max Peak	Vertical	191	180	74.0	-4.9	Pass
3	5460.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
4	5470.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.

[back to matrix](#)

RESTRICTED UPPER BAND-EDGE EMISSIONS

Variant: 802.11a, Test Freq: 5320.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 16, Duty Cycle (%): 99



5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5350.00	15.18	3.70	34.51	53.39	Max Avg	Horizontal	199	181	54.0	-0.6	Pass
2	5350.00	33.17	3.70	34.51	71.38	Max Peak	Horizontal	199	181	74.0	-2.6	Pass
3	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

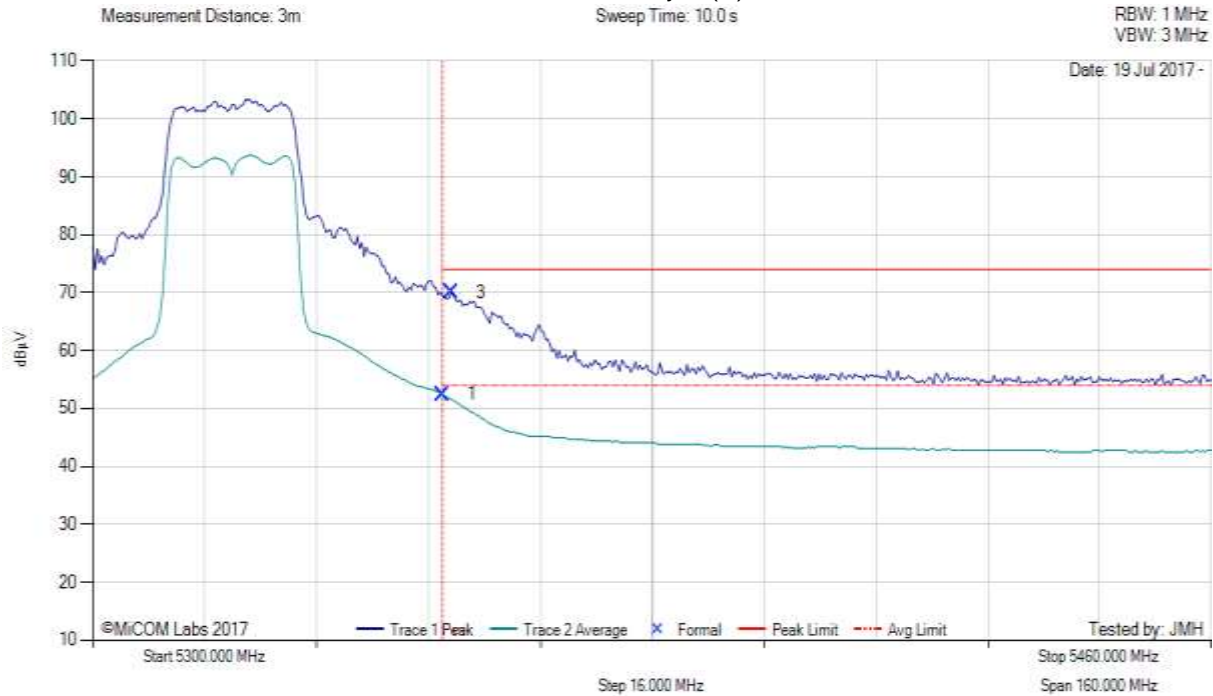
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.

[back to matrix](#)



RESTRICTED UPPER BAND-EDGE EMISSIONS

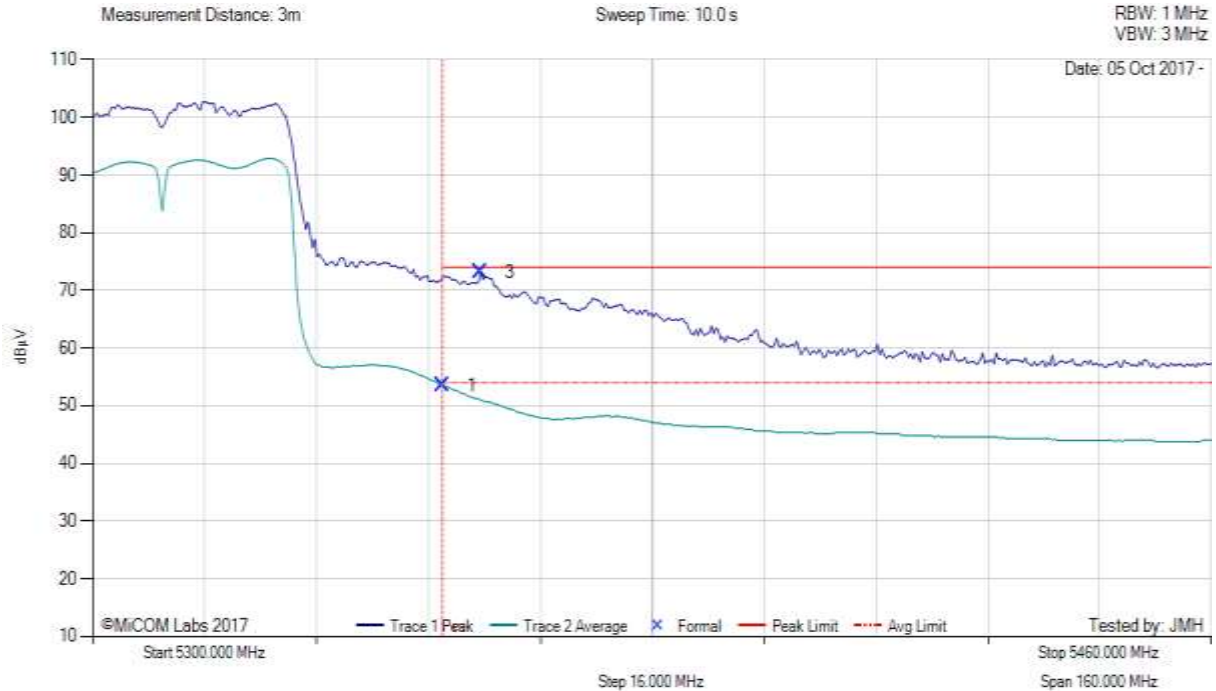
Variant: 802.11n HT-20, Test Freq: 5320.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 15, Duty Cycle (%): 99



5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5350.00	14.23	3.70	34.51	52.44	Max Avg	Horizontal	199	181	54.0	-1.6	Pass
3	5351.28	31.87	3.71	34.51	70.09	Max Peak	Horizontal	199	181	74.0	-3.9	Pass
2	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B. Power reduced to meet Band Edge Limit.

[back to matrix](#)



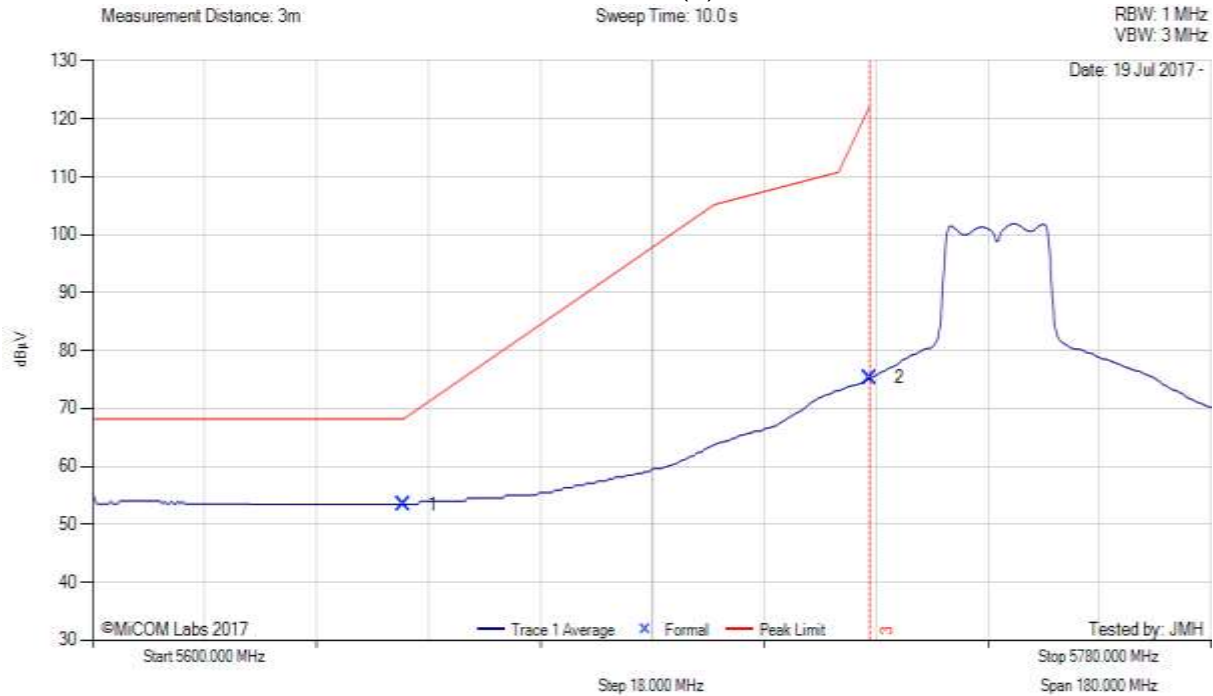
5300.00 - 5460.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5350.00	14.08	3.70	35.80	53.58	Max Avg	Vertical	158	291	54.0	-0.4	Pass
3	5355.45	33.65	3.71	35.80	73.16	Max Peak	Vertical	158	291	74.0	-0.8	Pass
2	5350.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot.

[back to matrix](#)

5725 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11a, Test Freq: 5745.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 20, Duty Cycle (%): 99



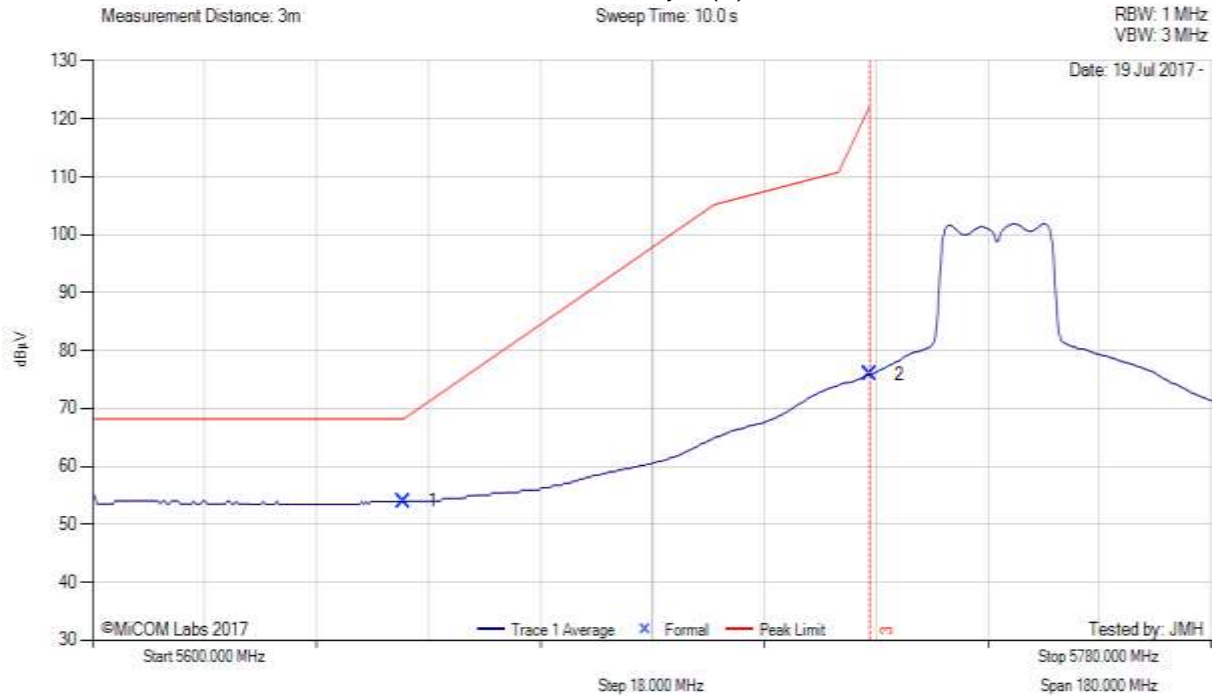
5600.00 - 5780.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5650.00	15.52	3.75	34.18	53.45	Max Avg	Horizontal	122	179	68.2	-14.8	Pass
2	5725.00	37.16	3.79	34.35	75.30	Max Avg	Horizontal	122	179	122.2	-46.9	Pass
3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B.

[back to matrix](#)

5725 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 5745.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 20, Duty Cycle (%): 99



5600.00 - 5780.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5650.00	16.05	3.75	34.18	53.98	Max Avg	Horizontal	122	179	68.2	-14.3	Pass
2	5725.00	37.81	3.79	34.35	75.95	Max Avg	Horizontal	122	179	122.2	-46.3	Pass
3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

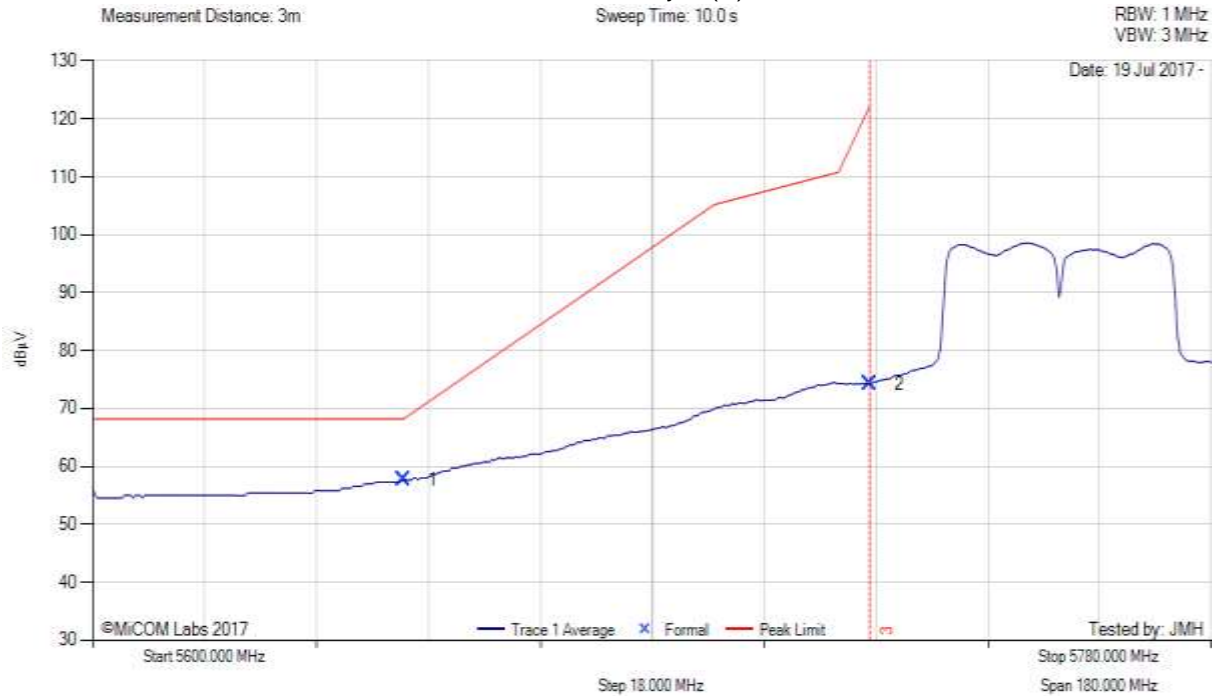
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B.

[back to matrix](#)



5725 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 5755.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 20, Duty Cycle (%): 99



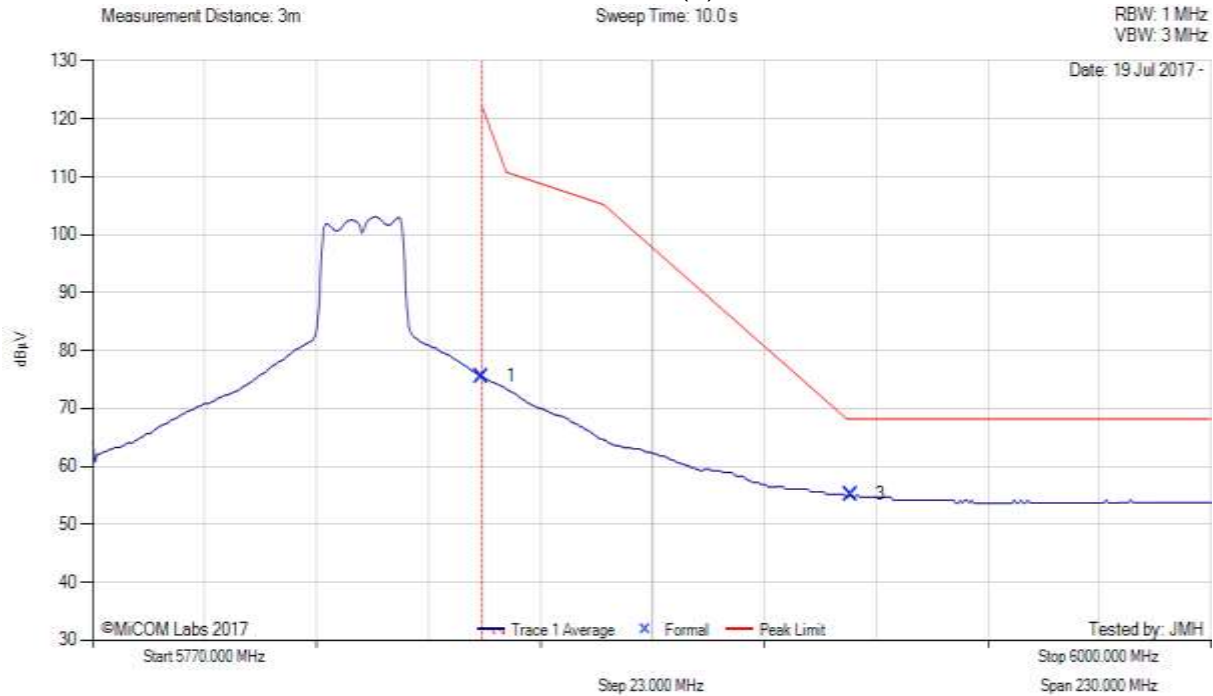
5600.00 - 5780.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5650.00	19.74	3.75	34.18	57.67	Max Avg	Horizontal	122	179	68.2	-10.6	Pass
2	5725.00	36.16	3.79	34.35	74.30	Max Avg	Horizontal	122	179	122.2	-47.9	Pass
3	5725.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B.

[back to matrix](#)

5850 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11a, Test Freq: 5825.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 22, Duty Cycle (%): 99



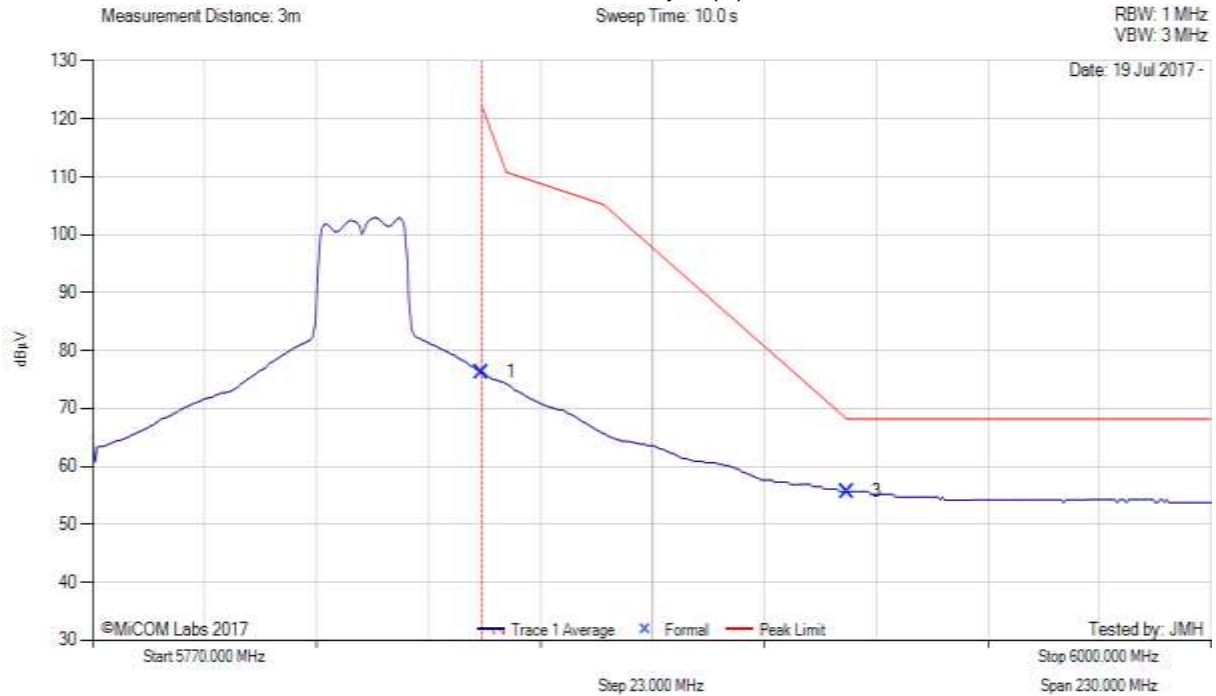
5770.00 - 6000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5850.00	37.09	3.81	34.63	75.53	Max Avg	Horizontal	122	179	122.2	-46.7	Pass
3	5925.92	16.54	3.84	34.82	55.20	Max Avg	Horizontal	122	179	68.2	-13.0	Pass
2	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B.

[back to matrix](#)

5850 MHz RADIATED BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 5825.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 22, Duty Cycle (%): 99



5770.00 - 6000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5850.00	37.79	3.81	34.63	76.23	Max Avg	Horizontal	122	179	122.2	-46.0	Pass
3	5925.00	17.00	3.84	34.82	55.66	Max Avg	Horizontal	122	179	68.2	-12.6	Pass
2	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

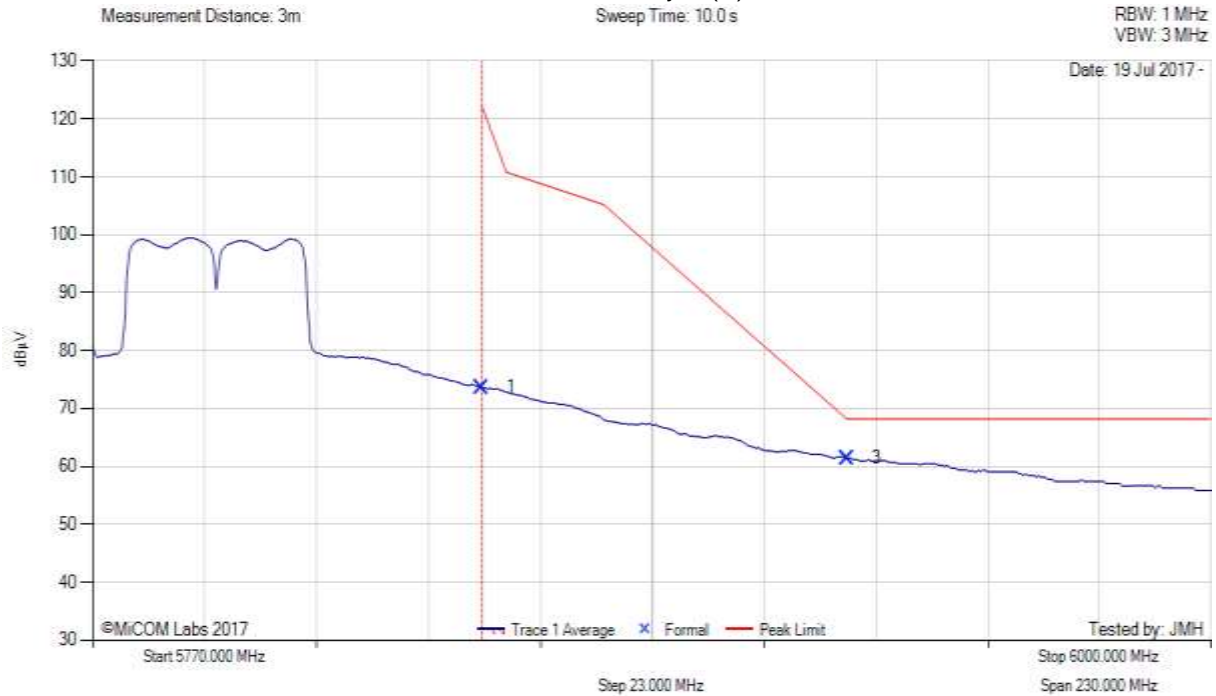
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B.

[back to matrix](#)

5850 MHz RADIATED BAND-EDGE EMISSIONS



Variant: 802.11n HT-40, Test Freq: 5795.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 22, Duty Cycle (%): 99



5770.00 - 6000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	5850.00	35.17	3.81	34.63	73.61	Max Avg	Horizontal	122	179	122.2	-48.6	Pass
3	5925.00	22.79	3.84	34.82	61.45	Max Avg	Horizontal	122	179	68.2	-6.8	Pass
2	5850.00	--	--	--	--	Band-Edge	--	--	--	--	--	--

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Port B.

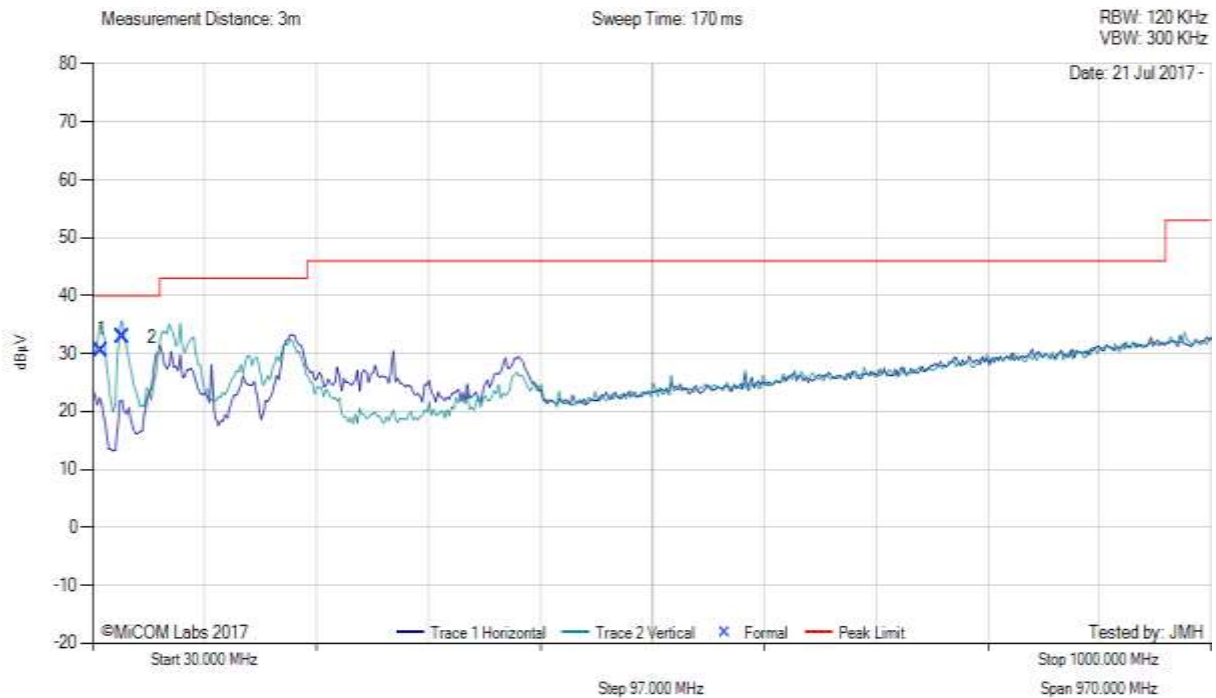
[back to matrix](#)

A.4.3. Digital Emissions



DIGITAL EMISSIONS

Variant: 802.11a, Test Freq: 5745.00 MHz, Antenna: Integral, Power Setting: 22, Duty Cycle (%): 99



30.00 - 1000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	37.10	43.16	3.48	-16.06	30.58	MaxQP	Vertical	107	189	40.0	-9.4	Pass
2	55.44	53.35	3.61	-24.13	32.83	MaxQP	Vertical	101	281	40.0	-7.2	Pass

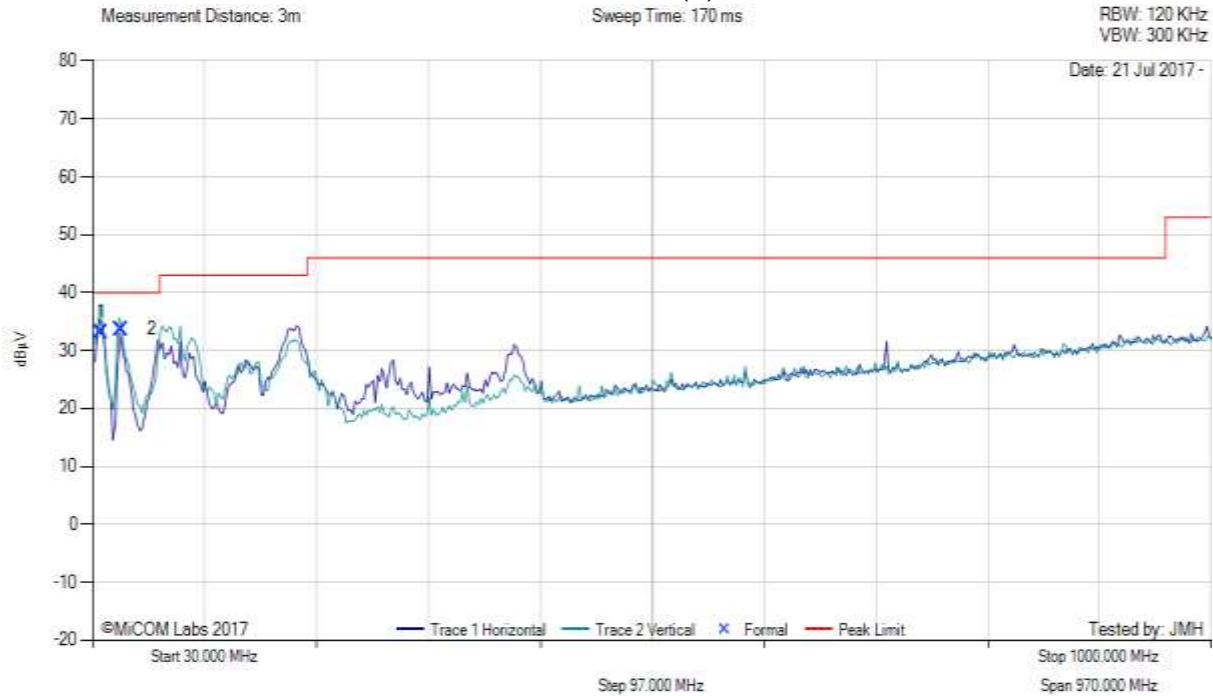
Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Laptop put into suspend mode to limit 50 MHz harmonics from support equipment. TX on 5745

[back to matrix](#)



DIGITAL EMISSIONS

Variant: 802.11a, Test Freq: 5745.00 MHz, Antenna: YAGEO ANT300P002B24553, Power Setting: 22, Duty Cycle (%): 99



30.00 - 1000.00 MHz												
Num	Frequency MHz	Raw dBμV	Cable Loss dB	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
1	37.29	45.69	3.48	-16.06	33.11	MaxQP	Vertical	98	215	40.0	-6.9	Pass
2	55.00	54.26	3.61	-24.13	33.74	MaxQP	Vertical	100	287	40.0	-6.3	Pass

Test Notes: EUT powered by 5V ps, connected to Laptop via SD slot. Laptop put into suspend mode to limit 50 MHz harmonics from support equipment. TX on 5745

[back to matrix](#)



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