REGULATORY COMPLIANCE TEST REPORT

FCC Part 15 Subpart 15.247 & ISED RSS-247

Report No.: CATA03-U2 Rev A

Company: Catapult Sports Pty Ltd

Model Name: VA7401

REGULATORY COMPLIANCE TEST REPORT

Company: Catapult Sports Pty Ltd

Model Name: VA7401

To: FCC Part 15 Subpart 15.247 & ISED RSS-247

Test Report Serial No.: CATA03-U2 Rev A

This report supersedes: NONE

Applicant: Catapult Sports Pty Ltd Company
75-83 High St Prahran
Melbourne, Victoria 3181
Australia

Issue Date: 11th June 2020

This Test Report is Issued Under the Authority of:

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

ACCREDITED
TESTING CERT #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

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1. ACCREDITATION, LISTINGS & RECOGNITION

1.1. TESTING ACCREDITATION

MiCOM Labs, Inc. is an accredited Electrical testing laboratory per the international standard ISO/IEC 17025:2017. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.01. MiCOM Labs test schedule is available at the following URL; http://www.a2la.org/scopepdf/2381-01.pdf

Accredited Laboratory

A2LA has accredited

MICOM LABS

Pleasanton, CA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 24th day of February 2020.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2381.01
Valid to November 30, 2021

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

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) Telecommunications Equipment (JATE)	CAB	Japan MRA 2	RCB 210
	VCCI	--	--	A-0012
Europe	European Commission	NB	EU MRA	NB 2280
Australia	Australian Communications and Media Authority (ACMA)	CAB	APEC MRA 1	US0159
Hong Kong	Office of the Telecommunication Authority (OFTA)	CAB	APEC MRA 1	
Korea	Ministry of Information and Communication Radio Research Laboratory (RRL)	CAB	APEC MRA 1	
Singapore	Infocomm Development Authority (IDA)	CAB	APEC MRA 1	
Taiwan	National Communications Commission (NCC) Bureau of Standards, Metrology and Inspection (BSMI)	CAB	APEC MRA 1	
Vietnam	Ministry of Communication (MIC)	CAB	APEC MRA 1	

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

Phase I - recognition for product testing
Phase II – recognition for both product testing and certification

1.3. PRODUCT CERTIFICATION

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

Accredited Product Certification Body

A2LA has accredited

MiCOM LABS

Pleasanton, CA

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

Presented this 24th day of February 2020

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2381.02
Valid to November 30, 2021

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

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

2. DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft	2nd June 2020	Draft for comment New external antenna was added to existing modular certificate.
Rev A	11th June 2020	Initial Release
Initial test report reference number TR 316356 A (DTS)		
-	7th February 2017	TR 316356 A (DTS)

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

3. TEST RESULT CERTIFICATE

Manufacturer:	Catapult Sports Pty Ltd 75-83 High St Prahran Melbourne, Victoria 3181 AUS	**Tested By:**	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Model:	VA7401	**Telephone:**	+1 925 462 0304
Equipment Type:	Mobile & Portable Client Device	**Fax:**	+1 925 462 0306
S/N's:	Radiated Testing: 200416		
Test Date(s):	26th May & 1st June 2020	**Website:**	www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC Part 15 Subpart 15.247 & ISED 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:

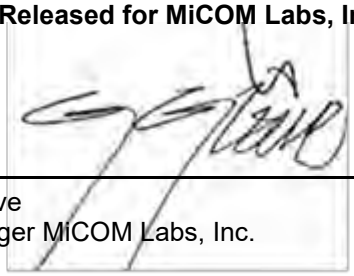
1. This document reports conditions under which testing was conducted and the results of testing performed.

2. Details of test methods used have been recorded and kept on file by the laboratory.

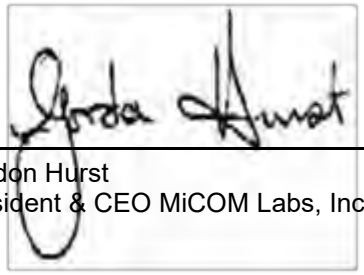
3. Test results apply only to the item(s) tested.

A2LA ACCREDITED
TESTING CERT #2381.01

Approved & Released for MiCOM Labs, Inc. by:



Graeme Grieve
Quality Manager MiCOM Labs, Inc.



Gordon Hurst
President & CEO MiCOM Labs, Inc.

4. REFERENCES AND MEASUREMENT UNCERTAINTY

4.1. Normative References

REF.	PUBLICATION	YEAR	TITLE
I	KDB 789033 D02	14th December 2017	Guidelines for Compliance testing of Unlicensed National Information Infrastructure (U-NII) devices.
II	A2LA	August 2018	R105 - Requirement's When Making Reference to A2LA Accreditation Status
III	ANSI C63.10	2013	American National Standard for Testing Unlicensed Wireless Devices
IV	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
V	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
VI	FCC 47 CFR Part 15.247	2016	Radio Frequency Devices; Subpart C – Intentional Radiators
VII	ICES-003	Issue 6 Jan 2016; Updated April 2019	Information Technology Equipment (Including Digital Apparatus) – Limits and methods of measurement.
VIII	M 3003	Edition 3 Nov.2012	Expression of Uncertainty and Confidence in Measurements
IX	RSS-247 Issue 2	Feb 2017	Digital Transmission Systems (DTSs), Frequency Hopping System (FHSs) and Licence-Exempt Local Area Network (LE-LEN) Devices
X	RSS-Gen Issue 5	March 2019 Amendment 1	General Requirements for Compliance of Radio Apparatus
XI	FCC 47 CFR Part 2.1033	2016	FCC requirements and rules regarding photographs and test setup diagrams.

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.

MiCOM Labs, 575 Boulder Court, Pleasanton, California 94566 USA, Phone: +1 (925) 462 0304, Fax: +1 (925) 462 0306, www.micomlabs.com

5. PRODUCT DETAILS AND TEST CONFIGURATIONS

5.1. Technical Details

Details	Description
Purpose:	Test of the Catapult Sports Pty Ltd VA7401 to FCC Part 15 Subpart 15.247 & ISED RSS-247.
Applicant:	Catapult Sports Pty Ltd 75-83 High St Prahran Melbourne, Victoria 3181 Australia
Manufacturer:	As applicant
Laboratory performing the tests:	MiCOM Labs, Inc. 575 Boulder Court Pleasanton California 94566 USA
Test report reference number:	CATA03-U2 Draft
Date EUT received:	13th May 2020
Standard(s) applied:	FCC CFR 47 Part 15 Subpart E 15.247 ISED RSS-247 Issue 2
Dates of test (from - to):	26th May & 1st June 2020
No of Units Tested:	1
Product Family Name:	Vector
Model(s):	VA7401
Location for use:	Indoors and Outdoors
Declared Frequency Range(s):	2400 - 2483.5 MHz;
Type of Modulation:	CCK/OFDM
EUT Modes of Operation:	802.11b/g/n
Rated Input Voltage and Current:	12 VDC 2.0A, POE: 48VDC 350mA
Operating Temperature Range:	-20C to +85C
Equipment Dimensions:	175 x 130 x 59.5 mm
Weight:	520 g
Hardware Rev:	MP
Software Rev:	7.0.0
Product Application:	Mobile & Portable Client Devices

5.2. Scope Of Test Program

Catapult Sports Pty Ltd Company VA7401

The scope of the test program was to test the Catapult Sports Pty Ltd Company VA7401 configurations in the frequency ranges 2400 - 2483.5 MHz; for compliance against the following specification

FCC CFR 47 Part 15 Subpart C 15.247 (DTS)
Radio Frequency Devices; Subpart C – Intentional Radiators

ISED RSS-247 Issue 2
Digital Transmission Systems (DTSs), Frequency Hopping System (FHSs) and License-Exempt Local Area Network (LE-LEN) Devices

Test Strategy
An additional antenna was added to the device and therefore limited radiated testing was performed in order to prove continued compliance.

Radiated Spurious Emissions 1GHz to 18GHz
Band Edge Emissions

For all other tests please refer to the report listed in the Document History identified in Section 2.

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

Type (EUT/ Support)	Equipment Description	Manufacturer	Model No.	Serial No.
EUT Radiated	Mobile & Portable Client Device	Catapult Sports Pty Ltd	VA7401	200416
PSU	Power Supply	Analog Devices Inc.	LT8650S	--
POE Adapter	POE	Power Dsine	3501G	--
Laptop	Support	HP	--	--

5.4. Antenna Details

Type	Manufacturer	Model	Family	Gain (dBi)	BF Gain	Dir BW	X-Pol	Frequency Band (MHz)
External	Cisco	AIR-ANT2547V-N	OMNI	4.0	--	30	--	2400-2483.5

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

5.5. Cabling and I/O Ports

Port Type	Max Cable Length	# of Ports	Screened	Connector Type	Data Type	Data Rate(s)
USB	5m	1	Yes	USB	Digital	Unknown
POE	5m	1	Yes	Power/Data	Digital	10/100/1000
DC Jack	3m	1	No	Power	--	--

5.6. Test Configurations

Results for the following configurations are provided in this report:

Operational Mode(s)	Data Rate with Highest Power MBit/s	Channel Frequency (MHz)		
		Low	Mid	High
		2400 - 2483.5 MHz		
b	1	2412.00	2442.00	2472.00
g	6	2412.00	--	2472.00
802.11n HT20	6.5	2412.00	--	2472.00
802.11n HT40	13.5	2422.00	--	2462.00

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

6. TEST SUMMARY

List of Measurements

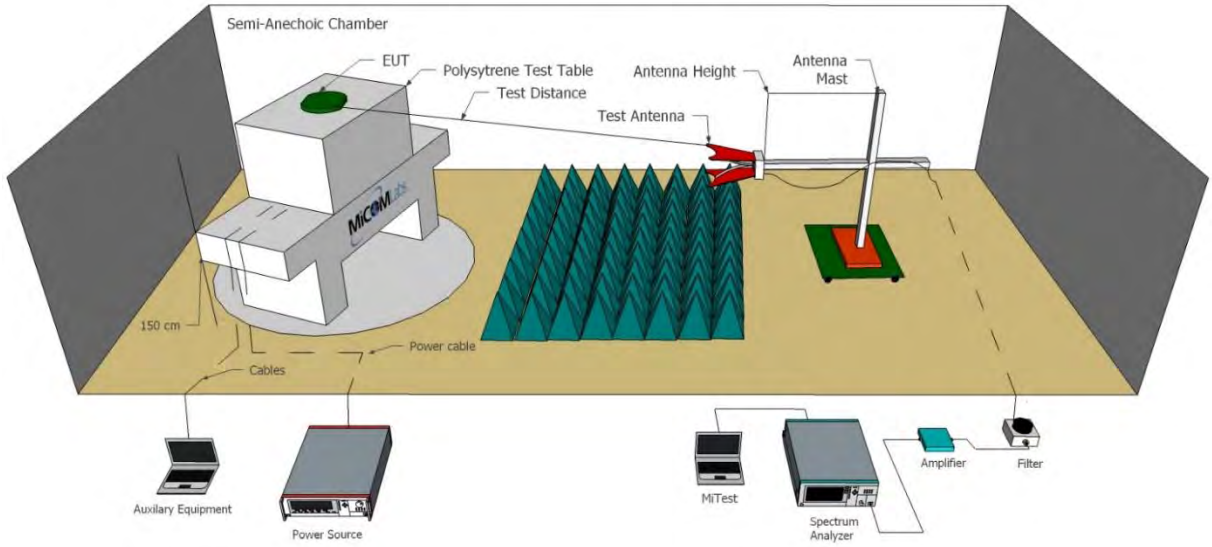
Test Header	Result	Data Link
Radiated Spurious Emission	Complies	View Data
Restricted Band-Edge Emissions	Complies	View Data
Comments: None		

7. TEST EQUIPMENT CONFIGURATION(S)

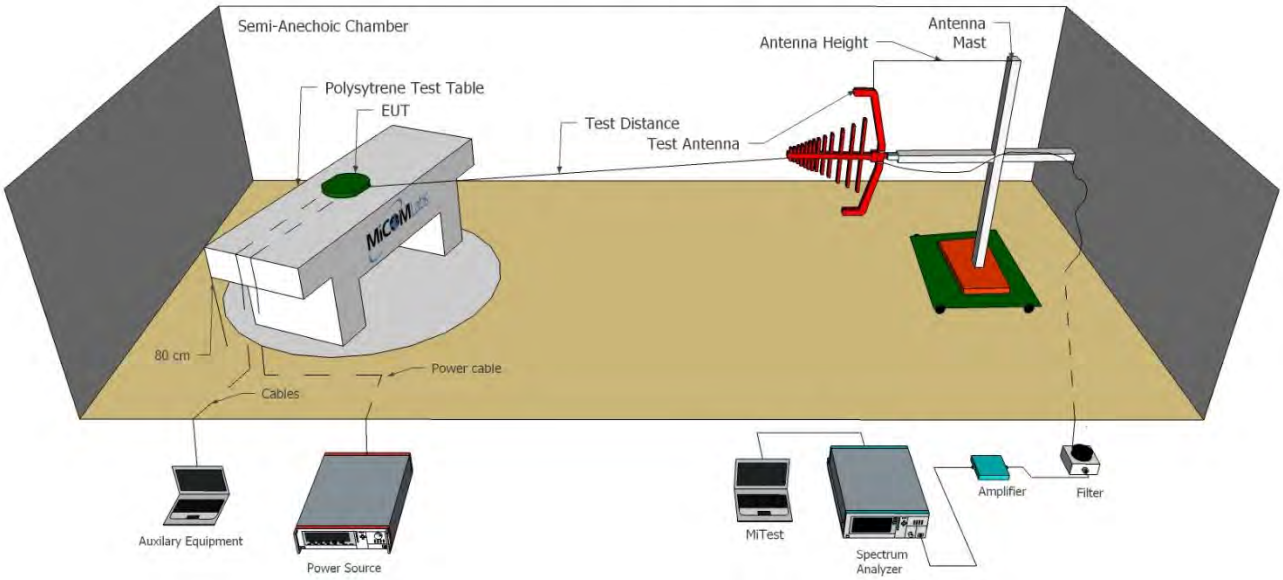
7.1. Radiated Emissions - 3m Chamber

Radiated emissions above and below 1GHz.

Radiated Emissions Above 1GHz Test Setup



Radiated Emissions Below 1GHz Test Setup



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

Asset#	Description	Manufacturer	Model#	Serial#	Calibration Due Date
170	Video System Controller for Semi Anechoic Chamber	Panasonic	WV-CU101	04R08507	Not Required
287	Rohde & Schwarz 40 GHz Receiver	Rhode & Schwarz	ESIB40	100201	8 Oct 2020
298	3M Radiated Emissions Chamber Maintenance Check	MiCOM	3M Chamber	298	26 Feb 2020
330	Variac 0-280 Vac	Staco Energy Co	3PN1020B	0546	Cal when used
338	Sunol 30 to 3000 MHz Antenna	Sunol	JB3	A052907	4 Apr 2020
373	26III RMS Multimeter	Fluke	Fluke 26 series III	76080720	21 Sep 2020
377	Band Rejection Filter 5150 to 5880MHz	Microtronics	BRM50716	034	3 Sep 2020
378	Rohde & Schwarz 40 GHz Receiver with Generator	Rhode & Schwarz	ESIB40	100107/040	12 Oct 2020
396	2.4 GHz Notch Filter	Microtronics	BRM50701	001	3 Mar 2020
397	Amp 10 - 2500MHz	MiCOM Labs	Amp 10 - 2500 MHz	NA	6 Sep 2020
399	ETS 1-18 GHz Horn Antenna	ETS	3117	00154575	12 Oct 2020
406	Amplifier for Radiated Emissions	MiCOM Labs	40dB 1 to 18GHz Amp	0406	9 Sep 2020
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
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	5 Sep 2020
463	Schwarzbeck cable from Amplifier to Bulkhead.	Schwarzbeck	AK 9513	463	5 Sep 2020
464	Schwarzbeck cable from Bulkhead to Receiver	Schwarzbeck	AK 9513	464	9 Sep 2020

466	Low Pass Filter DC-1500 MHz	Mini-Circuits	NLP-1750+	VUU10401438	3 Sep 2020
468	Low pass filter	Mini Circuits	SLP-550	None	3 Sep 2020
480	Cable - Bulkhead to Amp	SRC Haverhill	157-3050360	480	9 Sep 2020
481	Cable - Bulkhead to Receiver	SRC Haverhill	151-3050787	481	9 Sep 2020
510	Barometer/Thermometer	Control Company	68000-49	170871375	20 Dec 2020
518	Cable - Amp to Antenna	SRC Haverhill	157-3051574	518	9 Sep 2020

8. MEASUREMENT AND PRESENTATION OF TEST DATA

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

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

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

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

9. TEST RESULTS

9.1. Radiated Emissions

9.1.1.1. TX Spurious & Restricted Band Emissions

Radiated Test Conditions for Radiated Spurious and Band-Edge Emissions (Restricted Bands)			
Standard:	FCC 15.247 (DTS) ISED RSS-247 Issue 2 ISED RSS-Gen Issue 4	**Ambient Temp. (ºC):**	20.0 - 24.5
Test Heading:	Radiated Spurious and Band-Edge Emissions	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.205, 15.209, 15.247 RSS-247 5.5 RSS-Gen 8.10	**Pressure (mBars):**	999 - 1001
Reference Document(s):	See Normative References		

Test Procedure for Radiated Spurious and Band-Edge Emissions (Restricted Bands)
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 and waveguide 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 Radiated Spurious and Band-Edge Measurement were per the Radiated Test Set-up specified in this document.

Limits for Restricted Bands
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
R = Measured Spectrum analyzer Input Amplitude
AF = Antenna Factor
CORR = Correction Factor = CL – AG + NFL
CL = Cable Loss
AG = Amplifier Gain
FO = Distance Falloff Factor
NFL = Notch Filter Loss or Waveguide Loss

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

FS = 51.5 + 8.5 + 1.3 - 26.0 +1 = 36.3 dBmV/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 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).

MiCOM Labs, 575 Boulder Court, Pleasanton, California 94566 USA, Phone: +1 (925) 462 0304, Fax: +1 (925) 462 0306, www.micomlabs.com

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Cisco AIR-ANT2547V-N	**Variant:**	802.11b
Antenna Gain (dBi):	4.00	**Modulation:**	CCK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2412.00	**Data Rate:**	1.00 MBit/s
Power Setting:	10	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2412.91	51.54	2.00	-12.57	40.97	Fundamental	Vertical	151	331	--	--	
#2	4823.97	58.72	2.86	-12.46	49.12	Max Peak	Vertical	152	223	74.0	-24.9	Pass
#3	4823.97	51.67	2.86	-12.46	42.07	Max Avg	Vertical	152	223	54.0	-11.9	Pass
#4	7235.08	54.00	3.61	-7.95	49.66	Peak (NRB)	Vertical	151	247	--	--	Pass
Test Notes: EUT powered by POE. 2.4G notch in front of amp to prevent overload.												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Cisco AIR-ANT2547V-N	**Variant:**	802.11b
Antenna Gain (dBi):	4.00	**Modulation:**	CCK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2437.00	**Data Rate:**	1.00 MBit/s
Power Setting:	10	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2439.07	55.55	2.00	-12.22	45.33	Fundamental	Vertical	151	87	--	--	
#2	4874.03	59.79	2.92	-12.52	50.19	Max Peak	Vertical	151	158	74.0	-23.8	Pass
#3	4874.03	53.86	2.92	-12.52	44.26	Max Avg	Vertical	151	158	54.0	-9.7	Pass
#4	7312.05	56.48	3.62	-7.84	52.26	Max Peak	Vertical	155	240	74.0	-21.7	Pass
#5	7312.05	48.43	3.62	-7.84	44.21	Max Avg	Vertical	155	240	54.0	-9.8	Pass
Test Notes: EUT powered by POE. 2.4G notch in front of amp to prevent overload.												

Equipment Configuration for TX Spurious & Restricted Band Emissions

Antenna:	Cisco AIR-ANT2547V-N	**Variant:**	802.11b
Antenna Gain (dBi):	4.00	**Modulation:**	CCK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2462.00	**Data Rate:**	1.00 MBit/s
Power Setting:	10	**Tested By:**	JMH

Test Measurement Results

1000.00 - 18000.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2463.11	56.77	2.04	-12.43	46.38	Fundamental	Vertical	100	108	--	--	
#2	4923.92	62.30	2.98	-12.53	52.75	Max Peak	Vertical	115	340	74.0	-21.3	Pass
#3	4923.92	58.22	2.98	-12.53	48.67	Max Avg	Vertical	115	340	54.0	-5.3	Pass
#4	7385.10	58.36	3.59	-7.82	54.13	Max Peak	Vertical	103	302	74.0	-19.9	Pass
#5	7385.10	50.51	3.59	-7.82	46.28	Max Avg	Vertical	103	302	54.0	-7.7	Pass
Test Notes: EUT powered by POE. 2.4G notch in front of amp to prevent overload.												

9.1.1.2. Restricted Band-Edge Emissions

Lower Band-Edge Emissions

Cisco AIR-ANT2547V-N		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
802.11b	2412.00	2390.00	60.99	53.26	13
802.11g	2412.00	2390.00	67.91	53.01	17
802.11n HT-20	2412.00	2390.00	67.79	53.28	17
802.11n HT-40	2422.00	2390.00	67.30	53.43	23

Upper Band-Edge Emissions

Cisco AIR-ANT2547V-N		Band-Edge Freq	Limit 74.0dBµV/m	Limit 54.0dBµV/m	Power Setting
Operational Mode	Operating Frequency (MHz)	MHz	dBµV/m	dBµV/m	
802.11b	2462.00	2483.50	60.71	53.10	20
802.11g	2462.00	2483.50	67.96	53.25	24
802.11n HT-20	2462.00	2483.50	67.37	52.81	25
802.11n HT-40	2452.00	2483.50	67.29	53.35	23

Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	Cisco AIR-ANT2547V-N	**Variant:**	802.11b
Antenna Gain (dBi):	Not Applicable	**Modulation:**	CCK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2412.00	**Data Rate:**	1.00 MBit/s
Power Setting:	13	**Tested By:**	JMH

Test Measurement Results

2310.00 - 2422.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2385.96	27.04	2.01	31.94	60.99	Max Peak	Vertical	195	260	74.0	-13.0	Pass
#2	2387.31	19.31	2.01	31.94	53.26	Max Avg	Vertical	195	260	54.0	-0.7	Pass
#3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by POE												

Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	Cisco AIR-ANT2547V-N	**Variant:**	802.11g
Antenna Gain (dBi):	Not Applicable	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	93.5
Channel Frequency (MHz):	2412.00	**Data Rate:**	6.00 MBit/s
Power Setting:	17	**Tested By:**	JMH

Test Measurement Results

2310.00 - 2422.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2389.55	33.93	2.02	31.96	67.91	Max Peak	Vertical	195	260	74.0	-6.1	Pass
#2	2390.00	19.03	2.02	31.96	53.01	Max Avg	Vertical	195	260	54.0	-1.0	Pass
#3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by POE												

Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	Cisco AIR-ANT2547V-N	**Variant:**	802.11n HT-20
Antenna Gain (dBi):	Not Applicable	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	91.6
Channel Frequency (MHz):	2412.00	**Data Rate:**	6.50 MBit/s
Power Setting:	17	**Tested By:**	JMH

Test Measurement Results

2310.00 - 2422.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2389.55	33.81	2.02	31.96	67.79	Max Peak	Vertical	195	260	74.0	-6.2	Pass
#2	2390.00	19.30	2.02	31.96	53.28	Max Avg	Vertical	195	260	54.0	-0.7	Pass
#3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by POE												

Equipment Configuration for Radiated - Lower Restricted Band-Edge Emissions

Antenna:	Cisco AIR-ANT2547V-N	**Variant:**	802.11n HT-40
Antenna Gain (dBi):	4.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	79.5
Channel Frequency (MHz):	2422.00	**Data Rate:**	13.50 MBit/s
Power Setting:	23	**Tested By:**	JMH

Test Measurement Results

2310.00 - 2422.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2387.53	33.33	2.02	31.95	67.30	Max Peak	Vertical	194	275	74.0	-6.7	Pass
#2	2390.00	19.45	2.02	31.96	53.43	Max Avg	Vertical	194	275	54.0	-0.6	Pass
#3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by POE. DCCF +1 added to average measurement												

Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions

Antenna:	Cisco AIR-ANT2547V-N	**Variant:**	802.11b
Antenna Gain (dBi):	4.00	**Modulation:**	CCK
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	99
Channel Frequency (MHz):	2462.00	**Data Rate:**	1.00 MBit/s
Power Setting:	20	**Tested By:**	JMH

Test Measurement Results

2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2483.50	18.74	2.03	32.33	53.10	Max Avg	Vertical	194	260	54.0	-0.9	Pass
#2	2483.50	26.35	2.03	32.33	60.71	Max Peak	Vertical	194	260	74.0	-13.3	Pass
#3	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by POE. Unable to turn off bluetooth												

Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions

Antenna:	Cisco AIR-ANT2547V-N	**Variant:**	802.11g
Antenna Gain (dBi):	Not Applicable	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	93.5
Channel Frequency (MHz):	2462.00	**Data Rate:**	6.00 MBit/s
Power Setting:	24	**Tested By:**	JMH

Test Measurement Results

2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2483.50	18.89	2.03	32.33	53.25	Max Avg	Vertical	194	260	54.0	-0.8	Pass
#2	2483.50	33.60	2.03	32.33	67.96	Max Peak	Vertical	194	260	74.0	-6.0	Pass
#3	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by POE. Unable to turn off bluetooth												

Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions

Antenna:	Cisco AIR-ANT2547V-N	**Variant:**	802.11n HT-20
Antenna Gain (dBi):	4.00	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	91.6
Channel Frequency (MHz):	2462.00	**Data Rate:**	6.50 MBit/s
Power Setting:	25	**Tested By:**	JMH

Test Measurement Results

2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2483.50	18.45	2.03	32.33	52.81	Max Avg	Vertical	194	260	54.0	-1.2	Pass
#3	2484.32	33.01	2.03	32.33	67.37	Max Peak	Vertical	194	260	74.0	-6.6	Pass
#2	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by POE. Unable to turn off bluetooth												

Equipment Configuration for Radiated - Upper Restricted Band-Edge Emissions			
Antenna:	Cisco AIR-ANT2547V-N	**Variant:**	802.11n HT-40
Antenna Gain (dBi):	Not Applicable	**Modulation:**	OFDM
Beam Forming Gain (Y):	Not Applicable	**Duty Cycle (%):**	79.5
Channel Frequency (MHz):	2452.00	**Data Rate:**	13.50 MBit/s
Power Setting:	23	**Tested By:**	JMH

Test Measurement Results

2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
#1	2483.50	18.99	2.03	32.33	53.35	Max Avg	Vertical	194	275	54.0	-0.7	Pass
#3	2488.25	32.93	2.03	32.33	67.29	Max Peak	Vertical	194	275	74.0	-6.7	Pass
#2	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--
Test Notes: EUT powered by POE. +1 dB DCCF added to average measurement												

APPENDIX A - GRAPHICAL IMAGES

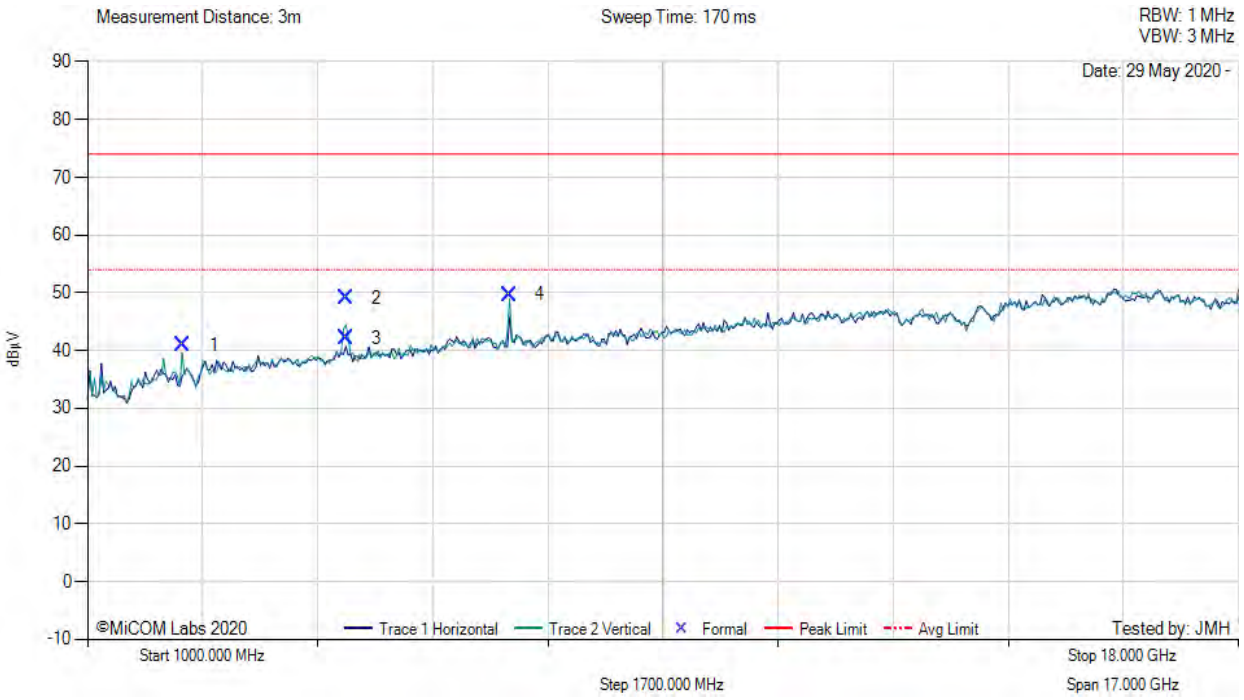
A.1. Emissions

A.1.1. Radiated Emissions

A.1.1.1. TX Spurious & Restricted Band Emissions

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11b, Test Freq: 2412.00 MHz, Antenna: Cisco AIR-ANT2547V-N, Power Setting: 10, Duty Cycle (%): 99



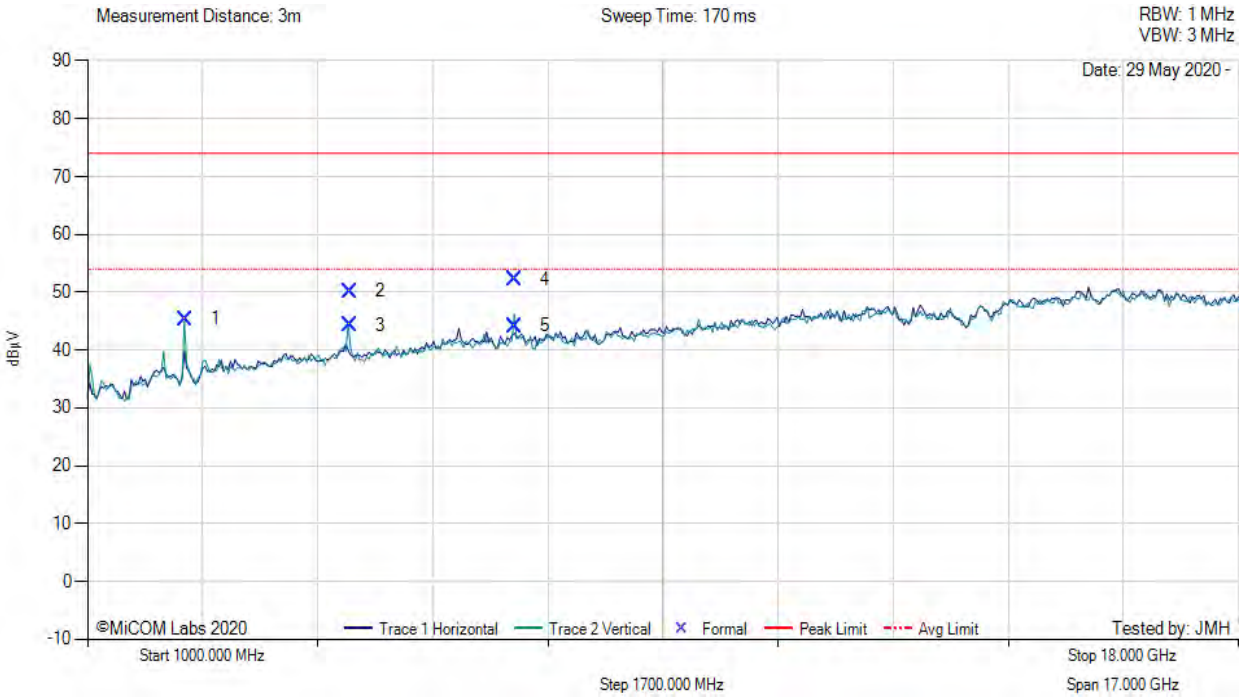
1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	2412.91	51.54	2.00	-12.57	40.97	Fundamental	Vertical	151	331	--	--	
2	4823.97	58.72	2.86	-12.46	49.12	Max Peak	Vertical	152	223	74.0	-24.9	Pass
3	4823.97	51.67	2.86	-12.46	42.07	Max Avg	Vertical	152	223	54.0	-11.9	Pass
4	7235.08	54.00	3.61	-7.95	49.66	Peak (NRB)	Vertical	151	247	--	--	Pass

Test Notes: EUT powered by POE. 2.4G notch in front of amp to prevent overload.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11b, Test Freq: 2437.00 MHz, Antenna: Cisco AIR-ANT2547V-N, Power Setting: 10, Duty Cycle (%): 99



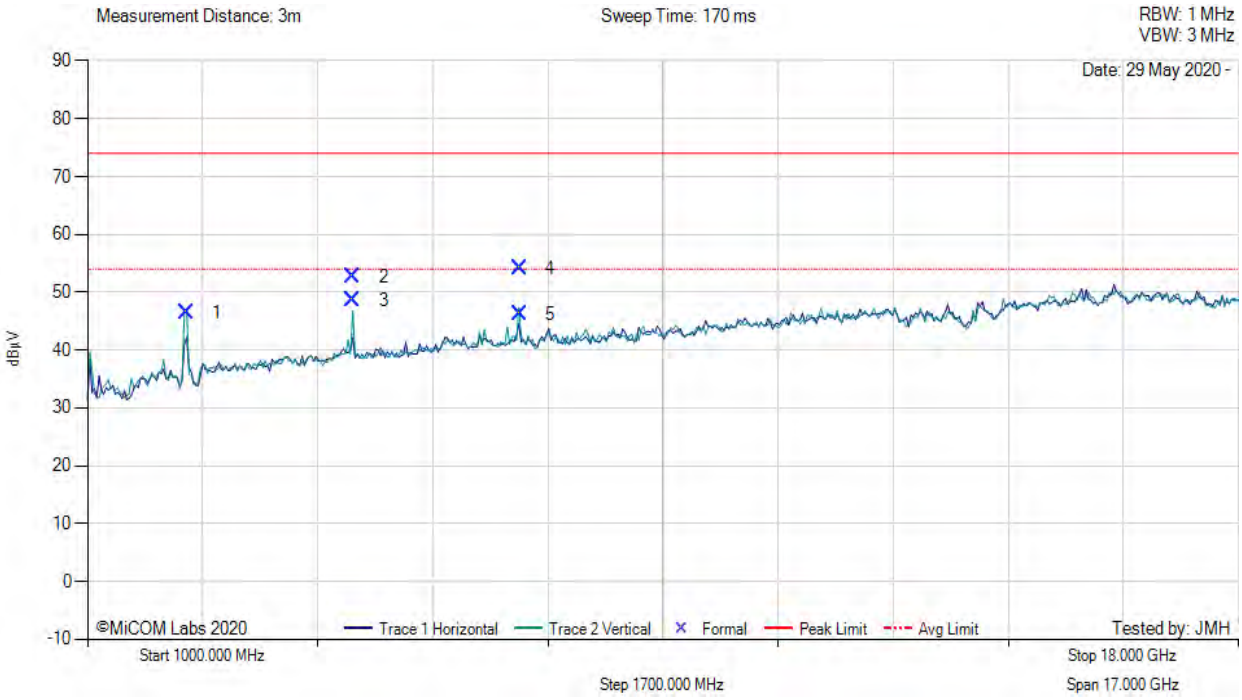
1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	2439.07	55.55	2.00	-12.22	45.33	Fundamental	Vertical	151	87	--	--	
2	4874.03	59.79	2.92	-12.52	50.19	Max Peak	Vertical	151	158	74.0	-23.8	Pass
3	4874.03	53.86	2.92	-12.52	44.26	Max Avg	Vertical	151	158	54.0	-9.7	Pass
4	7312.05	56.48	3.62	-7.84	52.26	Max Peak	Vertical	155	240	74.0	-21.7	Pass
5	7312.05	48.43	3.62	-7.84	44.21	Max Avg	Vertical	155	240	54.0	-9.8	Pass

Test Notes: EUT powered by POE. 2.4G notch in front of amp to prevent overload.

back to matrix

TX SPURIOUS & RESTRICTED BAND EMISSIONS

Variant: 802.11b, Test Freq: 2462.00 MHz, Antenna: Cisco AIR-ANT2547V-N, Power Setting: 10, Duty Cycle (%): 99



1000.00 - 18000.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	2463.11	56.77	2.04	-12.43	46.38	Fundamental	Vertical	100	108	--	--	
2	4923.92	62.30	2.98	-12.53	52.75	Max Peak	Vertical	115	340	74.0	-21.3	Pass
3	4923.92	58.22	2.98	-12.53	48.67	Max Avg	Vertical	115	340	54.0	-5.3	Pass
4	7385.10	58.36	3.59	-7.82	54.13	Max Peak	Vertical	103	302	74.0	-19.9	Pass
5	7385.10	50.51	3.59	-7.82	46.28	Max Avg	Vertical	103	302	54.0	-7.7	Pass

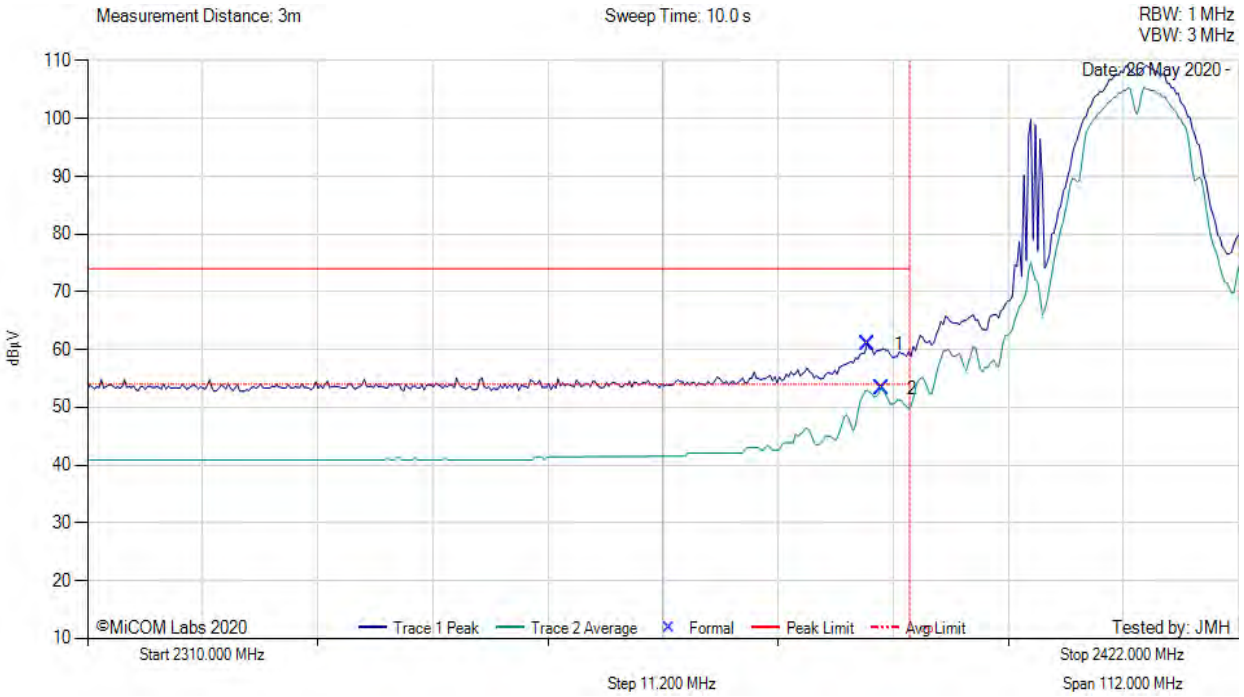
Test Notes: EUT powered by POE. 2.4G notch in front of amp to prevent overload.

back to matrix

A.1.1.2. Restricted Edge & Band-Edge Emissions

RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11b, Test Freq: 2412.00 MHz, Antenna: Cisco AIR-ANT2547V-N, Power Setting: 13, Duty Cycle (%): 99



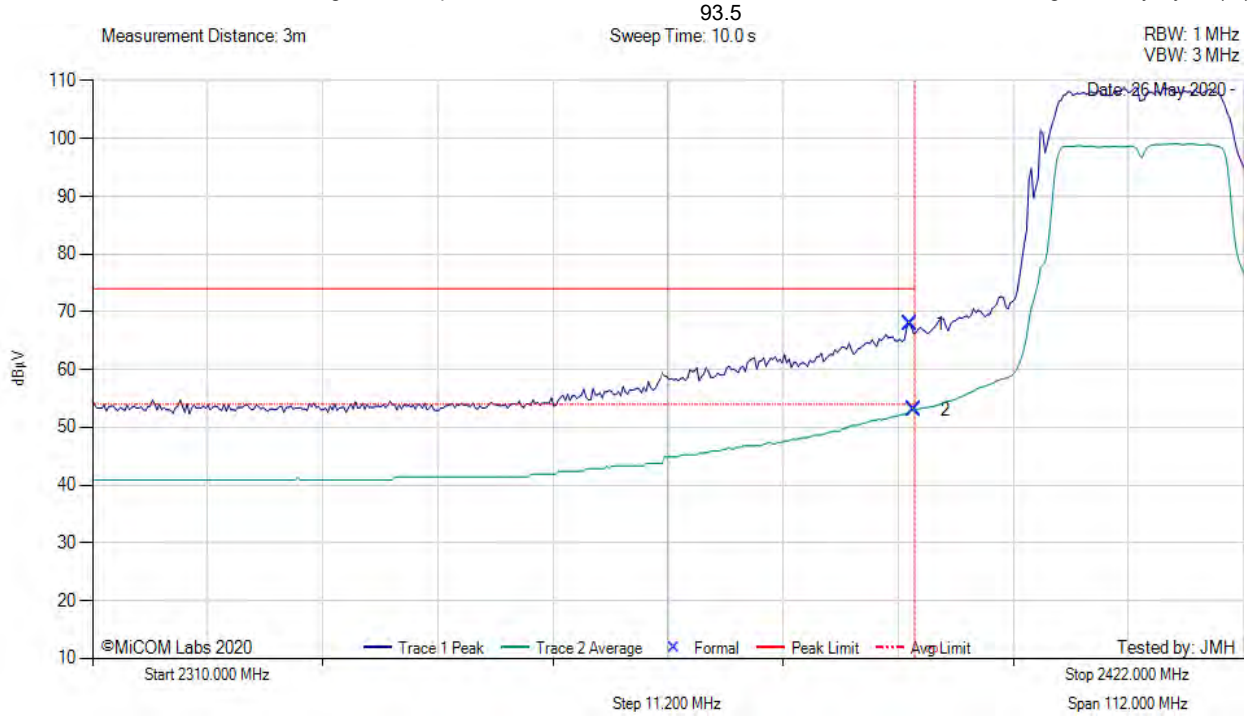
2310.00 - 2422.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	2385.96	27.04	2.01	31.94	60.99	Max Peak	Vertical	195	260	74.0	-13.0	Pass
2	2387.31	19.31	2.01	31.94	53.26	Max Avg	Vertical	195	260	54.0	-0.7	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE

back to matrix

RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11g, Test Freq: 2412.00 MHz, Antenna: Cisco AIR-ANT2547V-N, Power Setting: 17, Duty Cycle (%): 93.5



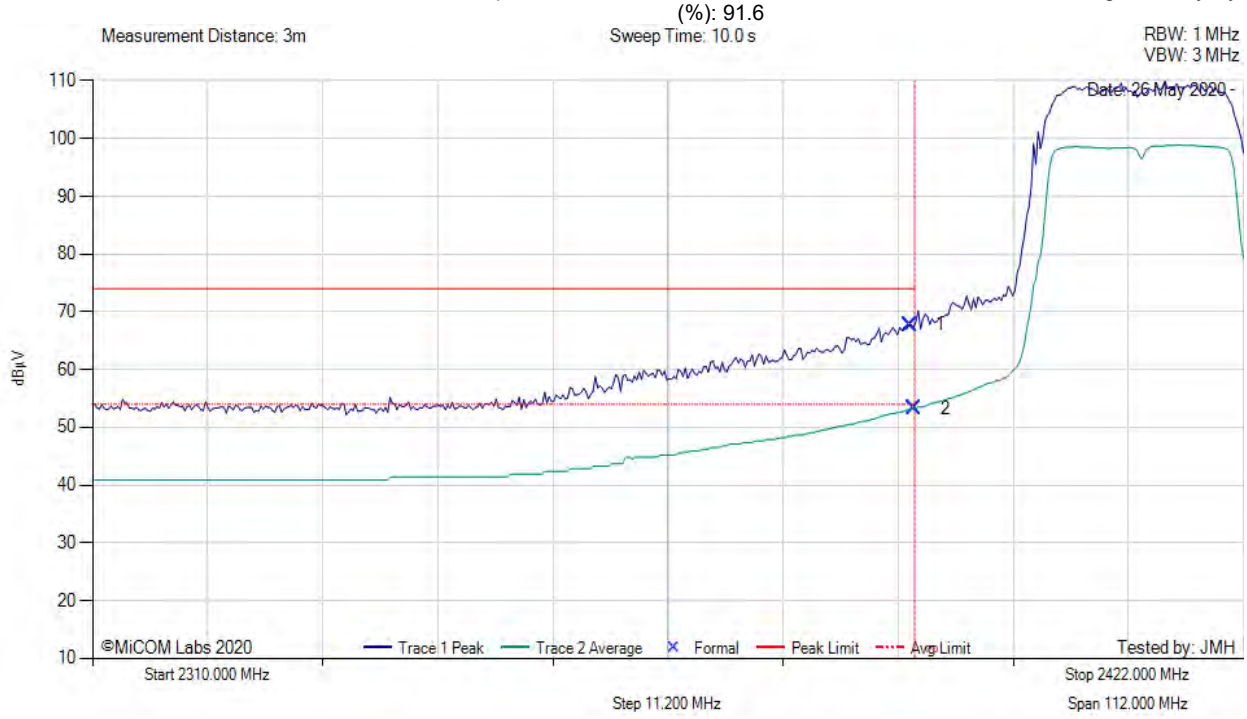
2310.00 - 2422.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2389.55	33.93	2.02	31.96	67.91	Max Peak	Vertical	195	260	74.0	-6.1	Pass
2	2390.00	19.03	2.02	31.96	53.01	Max Avg	Vertical	195	260	54.0	-1.0	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE

back to matrix

RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 2412.00 MHz, Antenna: Cisco AIR-ANT2547V-N, Power Setting: 17, Duty Cycle (%): 91.6



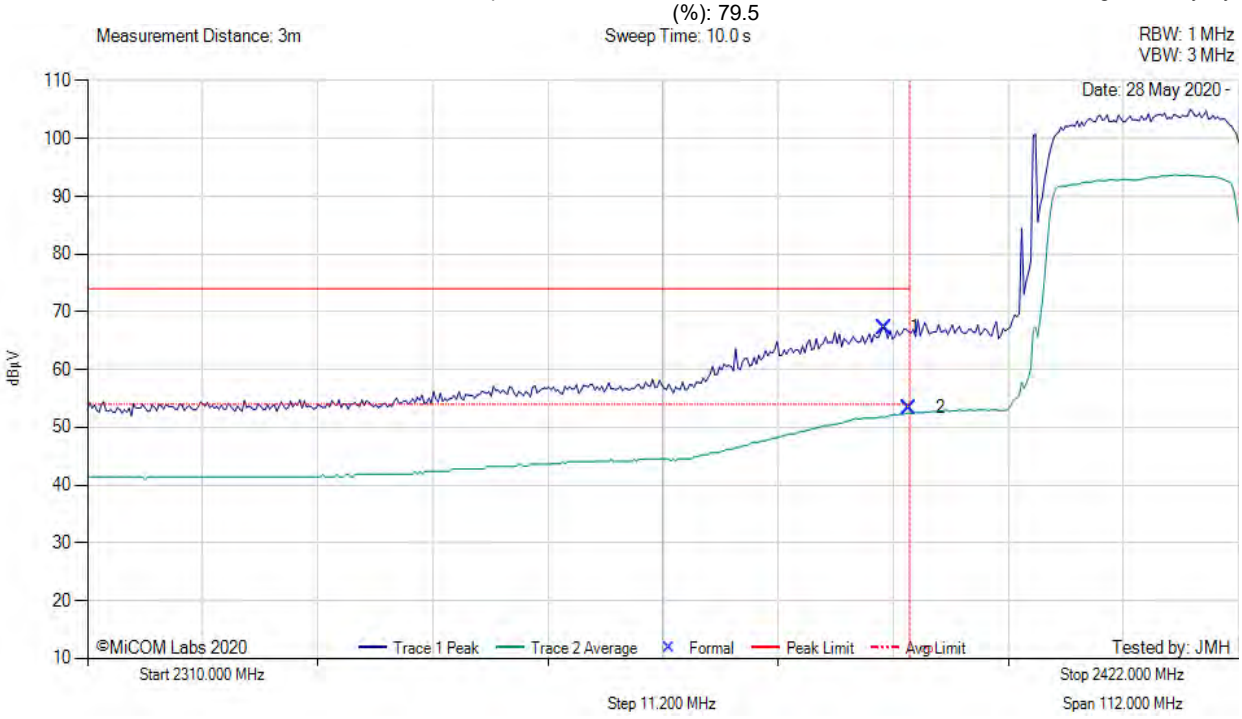
2310.00 - 2422.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	2389.55	33.81	2.02	31.96	67.79	Max Peak	Vertical	195	260	74.0	-6.2	Pass
2	2390.00	19.30	2.02	31.96	53.28	Max Avg	Vertical	195	260	54.0	-0.7	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE

back to matrix

RADIATED - LOWER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 2422.00 MHz, Antenna: Cisco AIR-ANT2547V-N, Power Setting: 23, Duty Cycle (%): 79.5



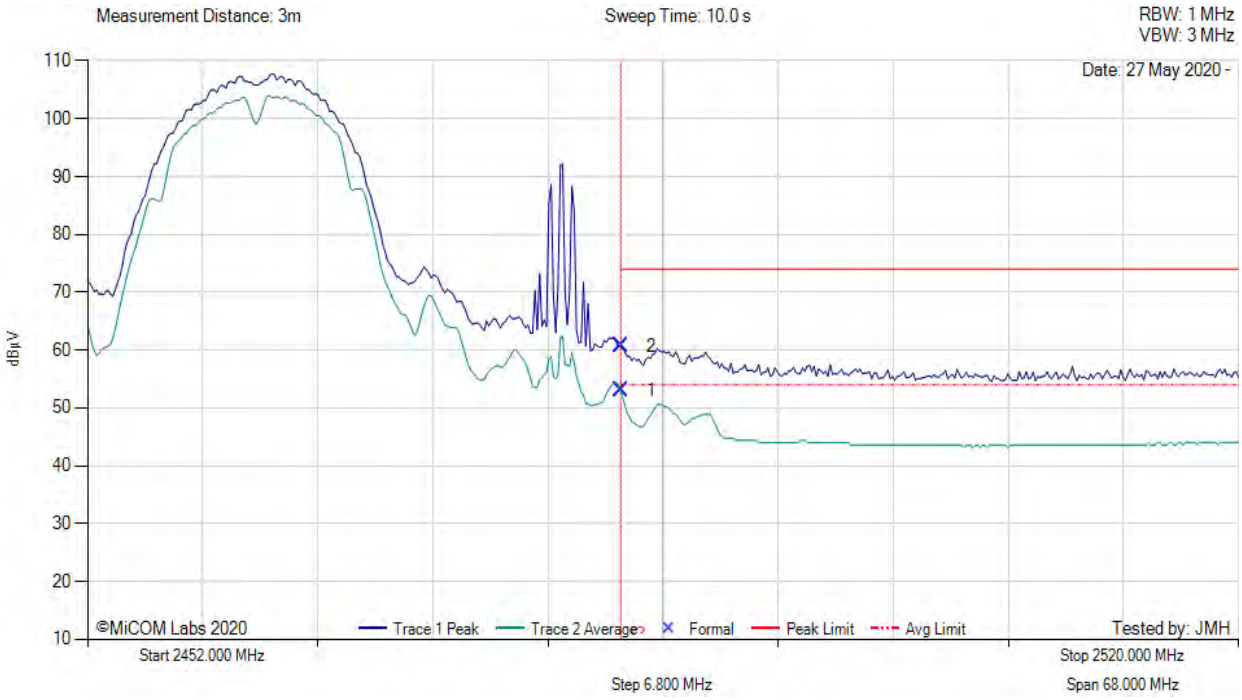
2310.00 - 2422.00 MHz												
Num	Frequency MHz	Raw dBµV	Cable Loss dB	AF dB/m	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
1	2387.53	33.33	2.02	31.95	67.30	Max Peak	Vertical	194	275	74.0	-6.7	Pass
2	2390.00	19.45	2.02	31.96	53.43	Max Avg	Vertical	194	275	54.0	-0.6	Pass
3	2390.00	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE. DCCF +1 added to average measurement

back to matrix

RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11b, Test Freq: 2462.00 MHz, Antenna: Cisco AIR-ANT2547V-N, Power Setting: 20, Duty Cycle (%): 99



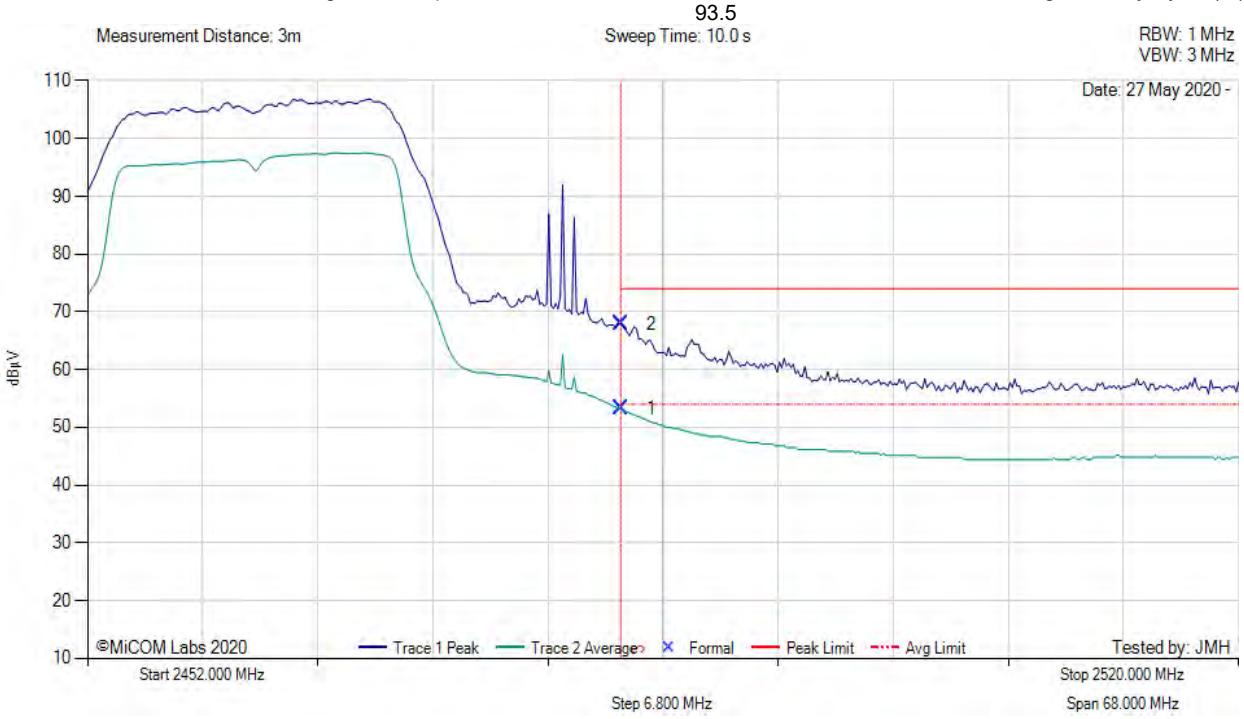
2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2483.50	18.74	2.03	32.33	53.10	Max Avg	Vertical	194	260	54.0	-0.9	Pass
2	2483.50	26.35	2.03	32.33	60.71	Max Peak	Vertical	194	260	74.0	-13.3	Pass
3	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE. Unable to turn off bluetooth

back to matrix

RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11g, Test Freq: 2462.00 MHz, Antenna: Cisco AIR-ANT2547V-N, Power Setting: 24, Duty Cycle (%): 93.5



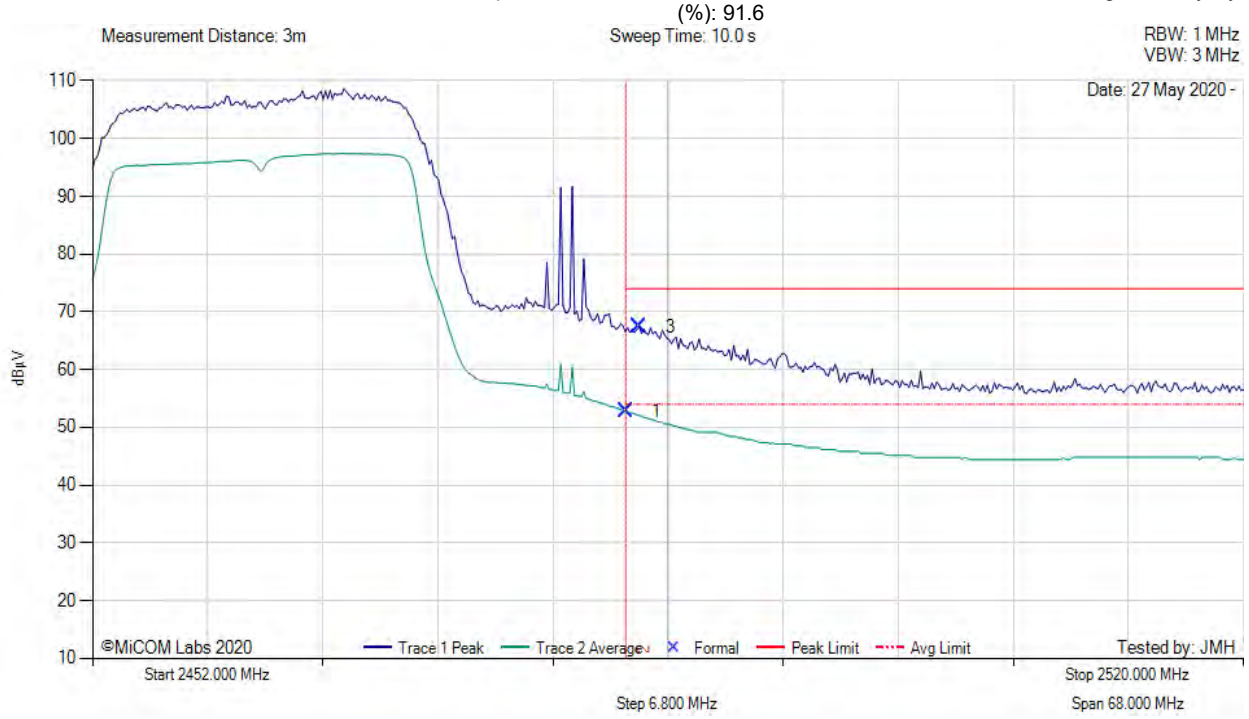
2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2483.50	18.89	2.03	32.33	53.25	Max Avg	Vertical	194	260	54.0	-0.8	Pass
2	2483.50	33.60	2.03	32.33	67.96	Max Peak	Vertical	194	260	74.0	-6.0	Pass
3	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE. Unable to turn off bluetooth

back to matrix

RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11n HT-20, Test Freq: 2462.00 MHz, Antenna: Cisco AIR-ANT2547V-N, Power Setting: 25, Duty Cycle (%): 91.6



2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2483.50	18.45	2.03	32.33	52.81	Max Avg	Vertical	194	260	54.0	-1.2	Pass
3	2484.32	33.01	2.03	32.33	67.37	Max Peak	Vertical	194	260	74.0	-6.6	Pass
2	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE. Unable to turn off bluetooth

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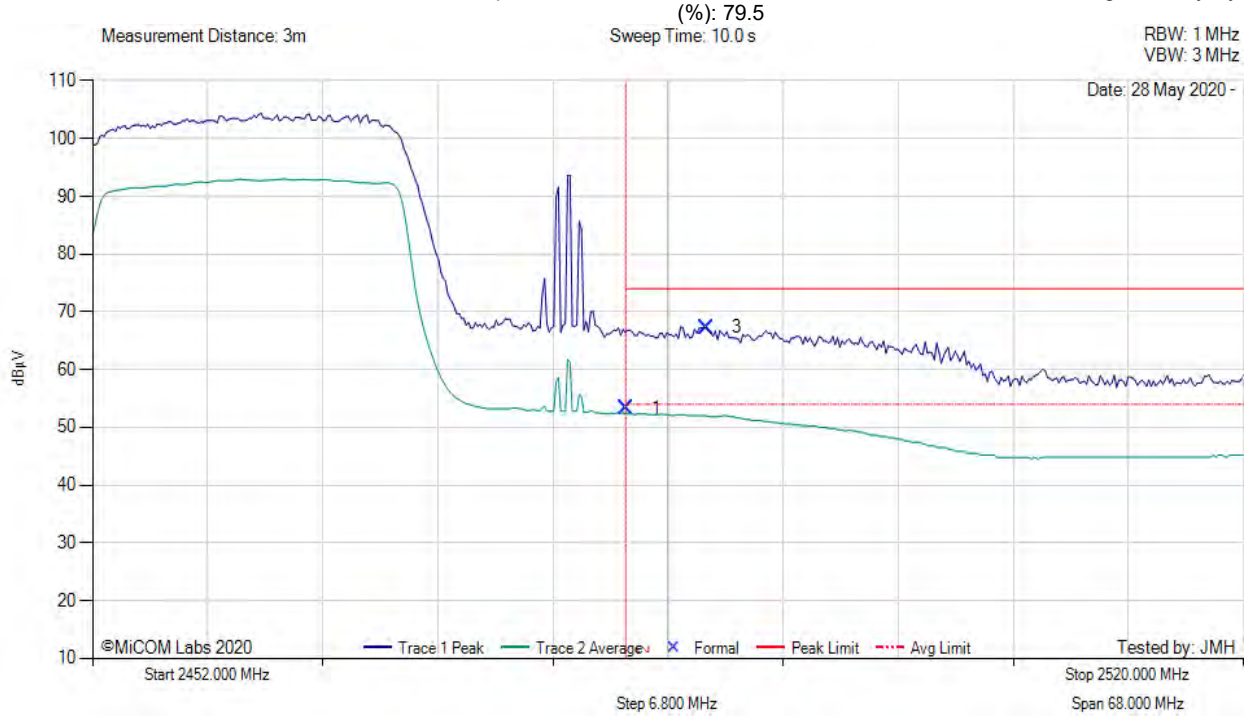
RADIATED - UPPER RESTRICTED BAND-EDGE EMISSIONS

Variant: 802.11n HT-40, Test Freq: 2452.00 MHz, Antenna: Cisco AIR-ANT2547V-N, Power Setting: 23, Duty Cycle (%): 79.5



2452.00 - 2520.00 MHz												
Num	**Frequency MHz**	**Raw dBµV**	**Cable Loss dB**	**AF dB/m**	**Level dBµV/m**	**Measurement Type**	**Pol**	**Hgt cm**	**Azt Deg**	**Limit dBµV/m**	**Margin dB**	**Pass /Fail**
1	2483.50	18.99	2.03	32.33	53.35	Max Avg	Vertical	194	275	54.0	-0.7	Pass
3	2488.25	32.93	2.03	32.33	67.29	Max Peak	Vertical	194	275	74.0	-6.7	Pass
2	2483.50	--	--	--	--	Restricted-Band	--	--	--	--	--	--

Test Notes: EUT powered by POE. +1 dB DCCF added to average measurement

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