W66 N220 Commerce Court ● Cedarburg, WI 53012 USA ● Phone: 262.375.4400 ● Fax: 262.375.4248 ● www.lsr.com

ENGINEERING TEST REPORT # TR 314337 B
LSR Job #: C-2089

Compliance Testing of:
8000-WiFi Module

Test Date(s):
May-September, 2015

Prepared For:
Tridium
3951 Westerre Parkway
Richmond, VA 23233

This Test Report is issued under the Authority of:
Peter Feilen, EMC Engineering

Signature: Peter Feilen Date: 11/13/2015

Test Report Reviewed by:	**Report by:**
Thomas T. Smith Signature: Date: 11/13/2015	Peter Feilen, EMC Engineer Signature: Peter Feilen Date: 11/3/15

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iii. LS Research, LLC in Review

As an EMC Testing Laboratory, our Accreditation and Assessments are recognized through the following:

TESTING CERT #1255.01

A2LA – American Association for Laboratory Accreditation

Accreditation based on ISO/IEC 17025: 2005 with Electrical (EMC) Scope of Accreditation
A2LA Certificate Number: 1255.01

Federal Communications Commission (FCC) – USA

Listing of 3 Meter Semi-Anechoic Chamber based on Title 47 CFR – Part 2.948
FCC Registration Number: 90756

Industrie Canada Industry Canada

Canada

Industry Canada

On file, 3 Meter Semi-Anechoic Chamber based on RSS-212 – Issue 1
File Number: IC 3088-A
On file, 3 and 10 Meter OATS based on RSS-212 – Issue 1
File Number: IC 3088

U. S. Conformity Assessment Body (CAB) Validation

Validated by the European Commission as a U. S. Competent Body operating under the U. S./EU, Mutual Recognition Agreement (MRA) operating under the European Union Electromagnetic Compatibility –Council Directive 2004/108/EC (formerly 89/336/EEC, Article 10.2).
Date of Validation: January 16, 2001

Validated by the European Commission as a U.S. Notified Body operating under the U.S. /EU, Mutual Recognition Agreement (MRA) operating under the European Union Telecommunication Equipment – Council Directive 99/5/EC, Annex V.
Date of Validation: November 20, 2002
Notified Body Identification Number: 1243

1.0 Summary of Test Report

In May-November, 2015 the EUT, Titan Controller, as supplied by Tridium was tested and MEETS the following requirements:

Operation in the 5.15 – 5.25 GHz band

FCC Rule Part	IC Standard	Test Description	Measurement Procedure	Test Result
15.407 (a)(1)(iv)	RSS-247 Section 6.2.1	Power Limits	ANSI C63.10-2013 Section 12.3	Pass
15.407 (a)(1) (iv)	RSS-247 Section 6.2.1	Power Spectral Density	ANSI C63.10-2013 Section 12.5	Pass
15.407 (a)(5)	RSS-247 Section 6.2.1	26dB / 99% Bandwidth	ANSI C63.10-2013 Section 12.4	Pass
15.407 (b)(1)	RSS-247 Section 6.2.1	Undesirable emissions Limit	ANSI C63.10-2013 Section 12.7	Pass
15.407 (b)(6)	RSS-GEN	Spurious Emissions below 1GHz & AC Mains	ANSI C63.10-2013 Section 12.7	Pass
15.407 (b)(7)	RSS-GEN	Restricted Bands	ANSI C63.10-2013 Section 12.7	Pass
15.407 (g)	RSS-GEN	Frequency Stability	ANSI C63.10-2013 Section 6.8	Pass
15.109	RSS-GEN	Receive Mode (Digital Device) Radiated Emissions	ANSI C63.4-2014 Section 8	Pass

Operation in the 5.725 – 5.85 GHz band

FCC Rule Part	IC Standard	Test Description	Measurement Procedure	Test Result
15.407 (a)(3)	RSS-247 Section 6.2.4	Power Limits	ANSI C63.10-2013 Section 12.3	Pass
15.407 (a)(3)	RSS-247 Section 6.2.4	Power Spectral Density	ANSI C63.10-2013 Section 12.5	Pass
15.407 (a)(5)	RSS-247 Section 6.2.4	26dB / 99% Bandwidth	ANSI C63.10-2013 Section 12.4	Pass
15.407 (b)(4)	RSS-247 Section 6.2.4	Undesirable emissions Limit	ANSI C63.10-2013 Section 12.7	Pass
15.407 (b)(6)	RSS-GEN	Spurious Emissions below 1GHz & AC Mains	ANSI C63.10-2013 Section 12.7	Pass
15.407 (b)(7)	RSS-GEN	Restricted Bands	ANSI C63.10-2013 Section 12.7	Pass
15.407 (g)	RSS-GEN	Frequency Stability	ANSI C63.10-2013 Section 6.8	Pass
15.407(e)	RSS-247 Section 6.2.4	Minimum 6dB bandwidth	ANSI C63.10-2013 Section 11.8	Pass

2.0 Test Facilities

All testing in this report was performed at:

LS Research, LLC
W66 N220 Commerce Court
Cedarburg, Wisconsin, 53012 USA

LS Research, LLC is accredited by A2LA (American Association for Laboratory Accreditation) to the requirements of ISO/IEC 17025, 2005 "General Requirements for the Competence of Calibration and Testing Laboratories".
LS Research, LLC's scope of accreditation includes all test methods listed herein, unless otherwise noted.

3.0 Client Information

Manufacturer Name:	Tridium
Address:	3951 Westerre Parkway, Suite 350, Richmond, VA 23233
Contact Person:	Gene Allgood

3.1 Equipment Under Test (EUT) Information

The following information has been supplied by the applicant.

Product Name:	Titan 8000-WIFI Module
Model Number:	8000-WIFI
Serial Number:	Eng. Sample
FCC ID:	W98-12977
IC:	8339A-12977

3.2 Product Description

802.11 a/b/g/n device using HT20 channels
802.11 n device using HT40 channels

3.3 Modifications Incorporated In the EUT for Compliance Purposes

None noted at time of test

3.4 Deviations & Exclusions from Test Specifications

None noted at time of test

3.5 Additional Information

EUT programmed for continuous transmit or receive on selectable channel and data rate (modulation) using hyper terminal program connection via programming port on EUT.

4.0 Conditions of Test

Environmental:

Temperature: 20-25º C
Relative Humidity: 30-60%
Atmospheric Pressure: 86-106 kPa

Voltage: 120 VAC 60 Hz

5.0 Test Equipment

All test equipment is calibrated by a calibration laboratory accredited by A2LA to the requirements of ISO 17025. For a complete list of test equipment and calibration dates, see Appendix A. Unless otherwise noted, resolution bandwidth of measuring instrument used during testing for given frequency range, see below.

Frequency Range	Resolution Bandwidth
9 kHz – 150 kHz	200 Hz
150 kHz – 30 MHz	9 kHz
30 MHz – 1000 MHz	120 kHz
Above 1000 MHz	1 MHz

6.0 Conformance Summary

The EUT was found to MEET the requirements as described within the specification of FCC Title 47, CFR Subpart E Part as well as RSS-247 Issue 1 and RSS-GEN Issue 4.

<u>If some emissions are seen to be within 3 dB of their respective limits</u>:
As these levels are within the tolerances of the test equipment and site employed, there is a possibility that this unit, or a similar unit selected out of production may not meet the required limit specification if tested by another agency.

LS Research, LLC certifies that the data contained herein was taken under conditions that meet or exceed the requirements of the test specifications. The results in this Test Report apply only to the item(s) tested on the above-specified dates. Any modifications made to the EUT subsequent to the indicated test date(s) will invalidate the data herein, and void this certification.

Appendix A – Test Equipment

LS RESEARCH LLC
Wireless Product Development
Equipment Calibration

Date : 20-Nov-2015 | Type Test : Conducted measurements | Job # : C-2089

Prepared By: Peter | Customer : Tridium | Quote #: 314337

No.	Asset #	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status
1	EE 960087	44GHz EXA Spectrum Analyzer	Agilent	N9010A	MY53400296	12/11/2014	12/11/2015	Active Calibration
2	EE 960085	N9038A MXE 26.5GHz Receiver	Agilent	N9038A	MY51210148	5/6/2015	5/6/2016	Active Calibration
3	AA 960144	Phaseflex	Gore	EKD01D010720	5800373	Verification	Verification	System
4	AA 960160	UltiFLEX Cable	Micro-Coax	UFC142A-0-0720-2002	218652-001	8/21/2015	8/21/2016	Active Calibration

LS RESEARCH LLC
Wireless Product Development
Equipment Calibration

Date : 20-Nov-2015 | Type Test : Radaited measurements | Job # : C-2089

Prepared By: Peter | Customer : Tridium | Quote #: 314337

No.	Asset #	Description	Manufacturer	Model #	Serial #	Cal Date	Cal Due Date	Equipment Status
1	EE 960085	N9038A MXE 26.5GHz Receiver	Agilent	N9038A	MY51210148	5/6/2015	5/6/2016	Active Calibration
2	EE 960087	44GHz EXA Spectrum Analyzer	Agilent	N9010A	MY53400296	12/11/2014	12/11/2015	Active Calibration
3	EE 960088	8GHz MXE Spectrum Analyzer	Agilent	N9038A	MY51210138	1/9/2015	1/9/2016	Active Calibration
4	AA 960143	Phaseflex	Gore	EKD01D01048.0	5546519	6/26/2015	6/26/2017	Active Calibration
5	AA 960144	Phaseflex	Gore	EKD01D010720	5800373	Verification	Verification	System
6	AA 960160	UltiFLEX Cable	Micro-Coax	UFC142A-0-0720-2002	218652-001	8/21/2015	8/21/2016	Active Calibration
7	AA 960004	Log Periodic Antenna	EMCO	93146	9512-4276	8/18/2015	8/18/2016	Active Calibration
8	AA 960005	Biconical Antenna	EMCO	93110B	9601-2280	8/6/2015	8/6/2016	Active Calibration
9	AA 960158	Double Ridge Horn Antenna	ETS Lindgren	3117	109300	7/9/2015	7/9/2016	Active Calibration
10	AA 960007	Double Ridge Horn Antenna	EMCO	3115	9311-4138	8/4/2015	8/4/2016	Active Calibration
11	AA 960159	10dB Dual Directional Coupler	Narda	3202B-10	7016	Verification	Verification	System
12	AA 960153	2.4GHz High Pass Filter	KWM	HPF-L-14186	7272-04	4/15/2015	4/15/2016	Active Calibration
13	AA 960154	2.4GHz High Pass Filter	KWM	HPF-L-14186	7272-02	8/4/2015	8/4/2016	Active Calibration
14	AA 960137	Standard Gain Horn Ant.	EMCO	3160-10	69259	8/19/2015	8/19/2016	Active Calibration
15	EE 960161	26.5-40GHz LNA	Ducommun Technc	ALN-33144030	1103717-01	8/19/2015	8/19/2016	Active Calibration
16	EE 960146	Std. Gain Horn Ant. w/preamp	Adv. Micro / EMCO	WLA622-4 / 3160-09	123001	8/19/2015	8/19/2016	Active Calibration
17	AA 960161	Highpass Filter	K&L Microwave	11SH10-8000	2	2/6/2015	2/6/2016	Active Calibration
18	EE 960125	SMA Cable	MegaPhase	NC19-S1S1-236	1GVT4 14032106 001	3/6/2015	3/6/2016	Active Verification

Appendix B – Test Data
B.1 – RF Conducted Emissions

Manufacturer	Tridium
Test Location	LS Research, LLC
Rule Part	FCC Subpart E IC RSS-247
General Measurement Procedure	ANSI C63.10 Section 6.7
General Description of Measurement	A direct measurement of the transmitted signal was performed at the antenna port of the EUT via a cable connection to a spectrum analyzer. An attenuator was placed in series with the cable to protect the spectrum analyzer. The loss from the cable and the attenuator were added on the analyzer as gain offset settings there by allowing direct measurements, without the need for any further corrections. The EUT was configured to run in a continuous transmit mode, while being supplied with typical data as a modulation source.

B.1.1 – RF Conducted – Fundamental Bandwidth

Manufacturer	Tridium
Date	May 15th -17th , November 30th 2015
Operator	Peter F, Aidi Z.
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	FCC 15.407 (a)(5) & (e) RSS-247 Section 6
Specific Measurement Procedure	ANSI C63.10-2013 Section 12.4
Additional Description of Measurement	Peak detector used
Additional Notes	Continuous transmit modulated used for this test.

Tables

HT20:

UNII-1

Channel	Freqeuncy (MHz)	Mode (Mbps)	EBW (MHz)	99 % OBW (MHz)
36	5180	6	31.960	18.282
		54	21.620	16.539
		6.5	34.580	19.612
		65	22.760	17.678
40	5200	6	31.130	18.699
		54	22.620	16.482
		6.5	31.550	18.713
		65	22.920	17.612
48	5240	6	31.660	18.296
		54	21.990	16.435
		6.5	32.130	19.114
		65	22.750	17.632

UNII-3

Channel	Freqeuncy (MHz)	Mode (Mbps)	EBW (MHz)	99 % OBW (MHz)	6dB Bandwidth (MHz)
149	5745	6	31.96	18.46	15.11
		54	23.89	16.79	15.05
		6.5	32.31	19.13	15.10
		65	23.79	17.64	15.67
157	5785	6	35.29	20.16	15.13
		54	23.95	16.95	15.13
		6.5	34.74	19.58	13.51
		65	23.72	17.64	15.14
165	5825	6	33.26	18.40	14.13
		54	23.22	16.53	15.14
		6.5	35.45	19.27	15.05
		65	21.77	17.66	15.14

HT40:

UNII-1

Channel	Freqeuncy (MHz)	Mode (Mbps)	EBW (MHz)	99 % OBW (MHz)
38	5190	MCS0	39.57	35.74
		MCS7	39.37	35.76
42	5210	MCS0	39.30	35.65
		MCS7	39.14	35.72
46	5230	MCS0	39.37	35.70
		MCS7	39.29	35.85

UNII-3

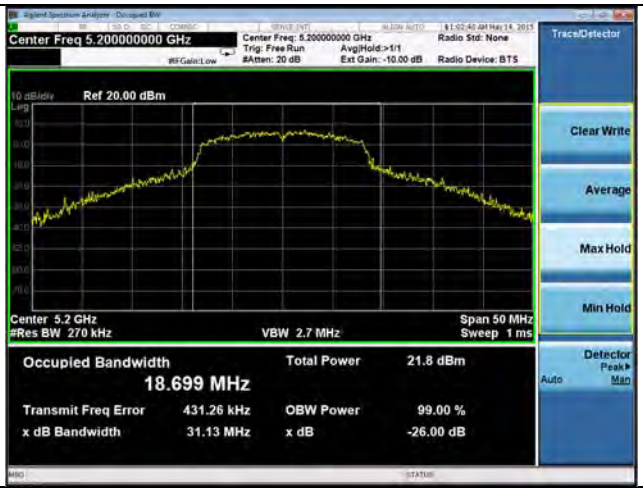
Channel	Freqeuncy (MHz)	Mode (Mbps)	EBW (MHz)	99 % OBW (MHz)	6dB BW (MHz)
151	5755	MCS0	42.48	35.91	35.10
		MCS7	40.65	35.79	35.10
159	5795	MCS0	43.87	35.99	33.80
		MCS7	41.12	35.98	35.40
163	5815	MCS0	43.62	35.99	35.10
		MCS7	42.04	35.96	35.10

HT20

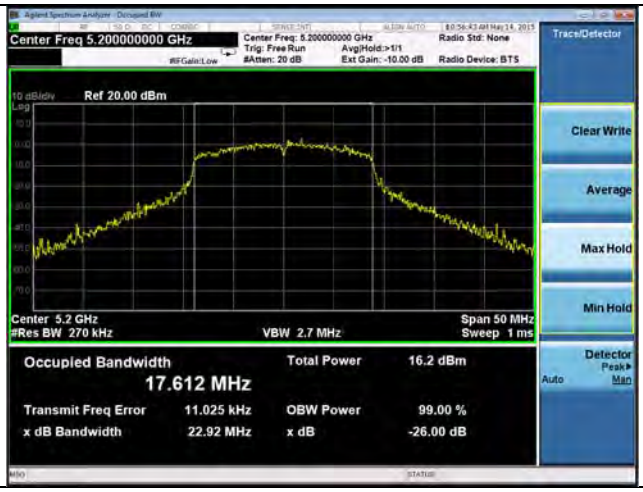
Plots – UNII-1

Channel 36 – 802.11a

Channel 36 – 802.11n



Channel 40 – 802.11a



Channel 40 – 802.11n

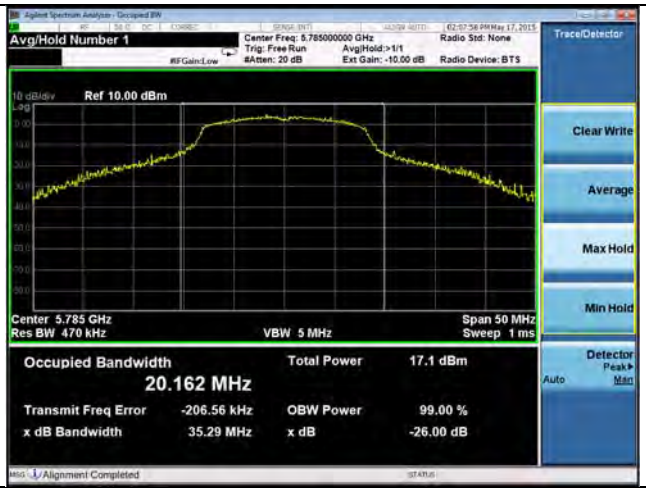
Channel 48 – 802.11a

Channel 48 – 802.11n

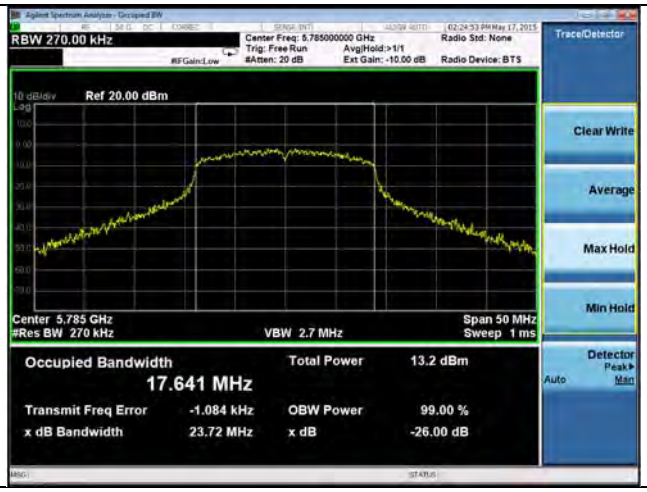
Plots – UNII-3 (EBW)

Channel 149 – 802.11a

Channel 149 – 802.11n

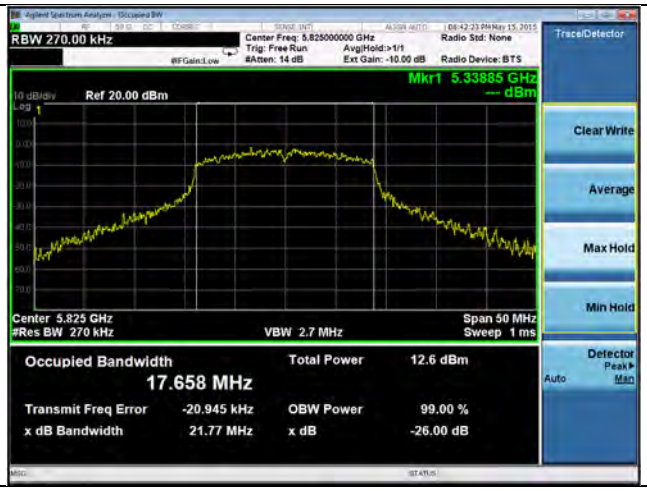


Channel 157 – 802.11a



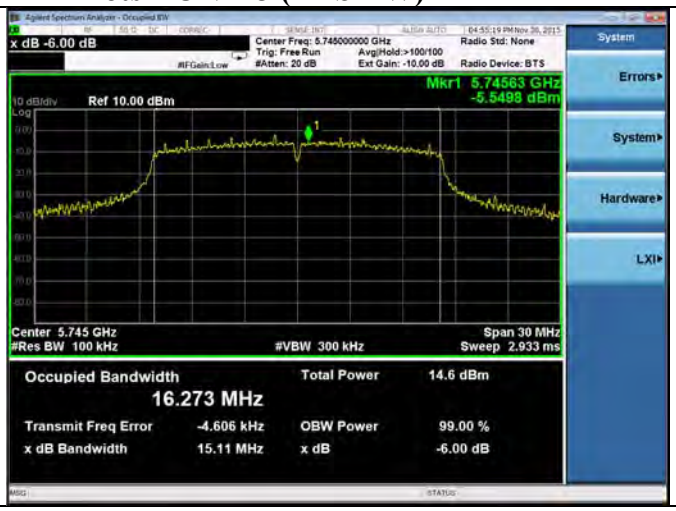
Channel 157 – 802.11n

Channel 165 – 802.11a



Channel 165 – 802.11n

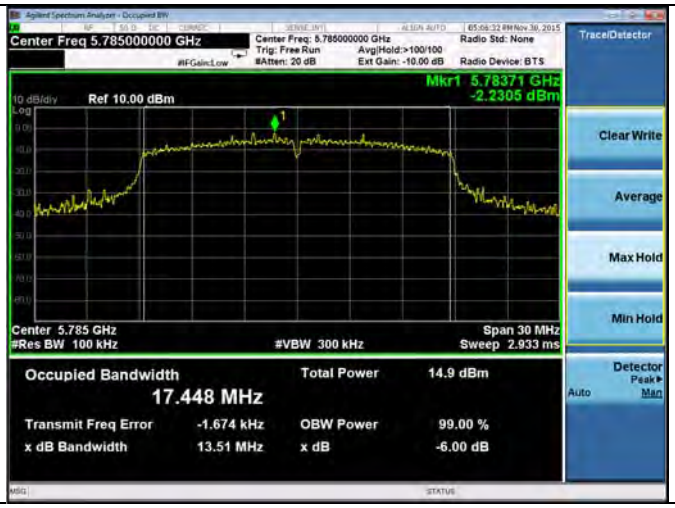
Plots – UNII-3 (DTS BW)



Channel 149 – 802.11a

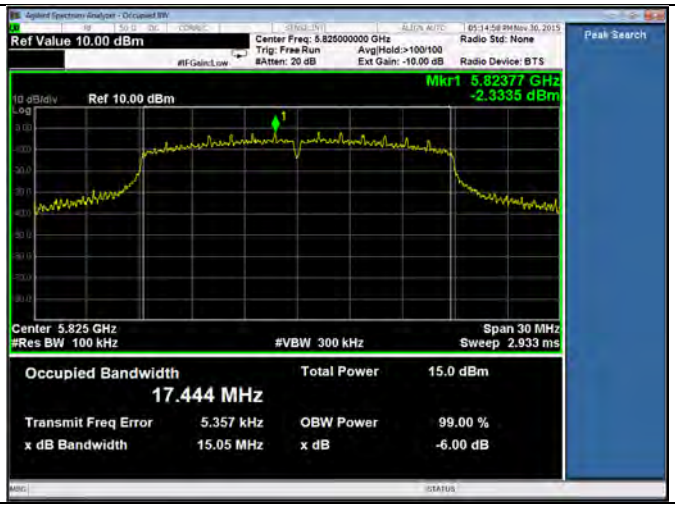
Channel 149 – 802.11n

Channel 157 – 802.11a



Channel 157 – 802.11n

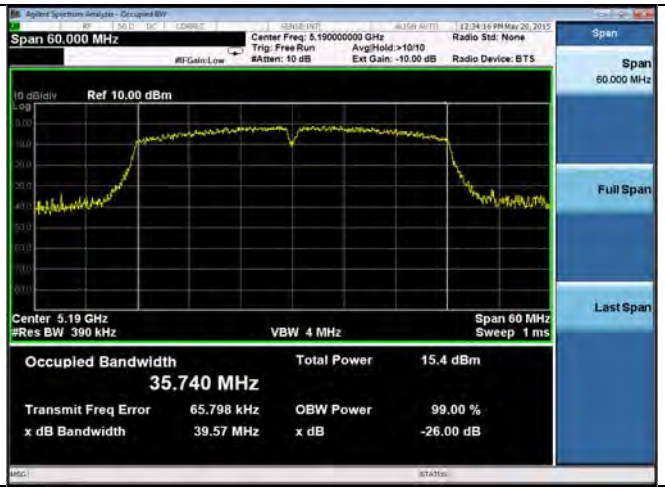
Channel 165 – 802.11a



Channel 165 – 802.11n

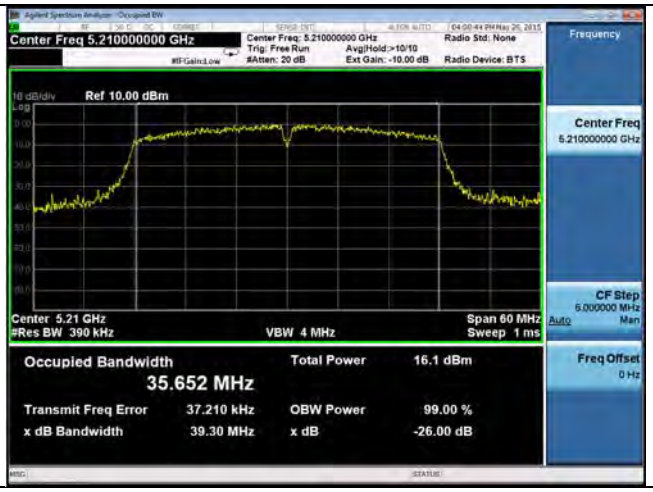
HT40

Plots – UNII-1



Channel 38 – 802.11a

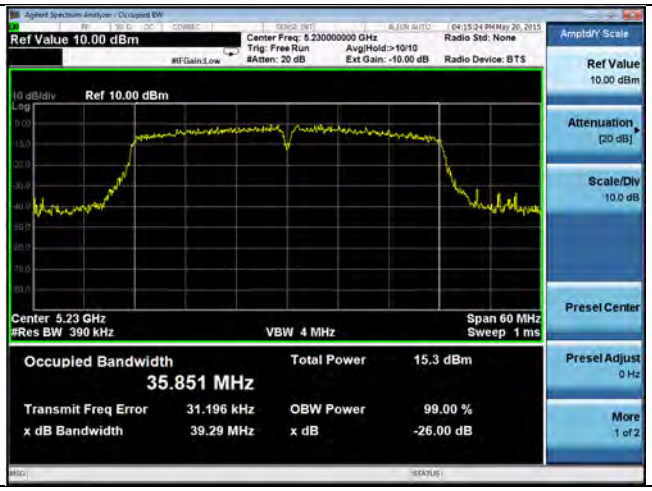
Channel 38 – 802.11n



Channel 42 – 802.11a

Channel 42 – 802.11n

Channel 46 – 802.11a



Channel 46 – 802.11n

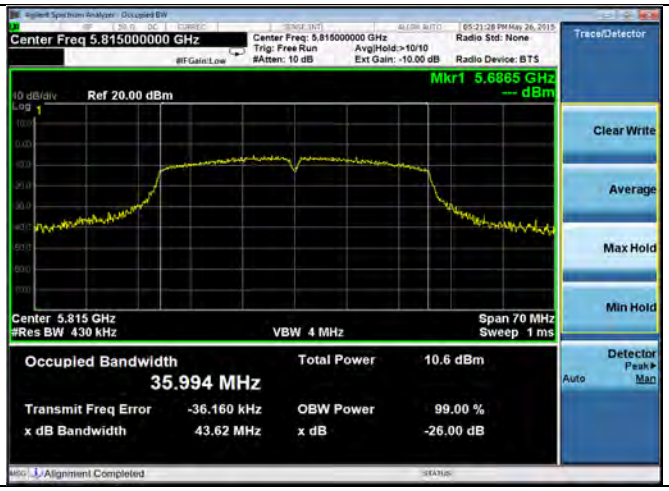
Plots – UNII-3 (EBW)

Channel 151 – 802.11a

Channel 151 – 802.11n

Channel 159 – 802.11a

Channel 159 – 802.11n



Channel 163

Channel 163

Plots – UNII-3 (DTS BW)

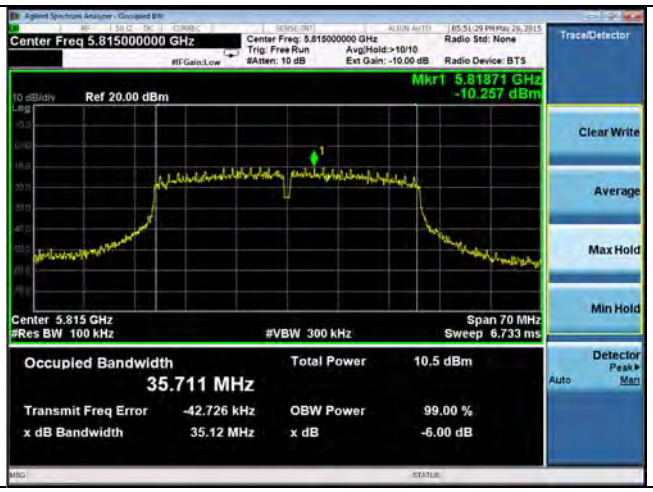
Channel 151 – 802.11a

Channel 151 – 802.11n

Channel 159 – 802.11a

Channel 159 – 802.11n

Channel 163 – 802.11a



Channel 163 – 802.11n

B.1.2 – RF Conducted – Duty Cycle

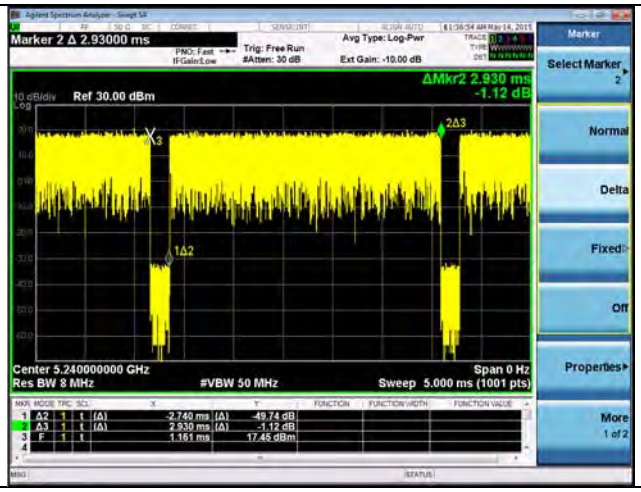
Manufacturer	Tridium
Date	May 14, 2015
Operator	Aidi Z.
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	N/A
Specific Measurement Procedure	ANSI C63.10-2013 Section 12.2
Additional Description of Measurement	RF Conducted Measurement
Additional Notes	1. Duty cycle consistent between all channels. 2. Duty cycle is the same between 20MHz and 40 MHz channels.

Table

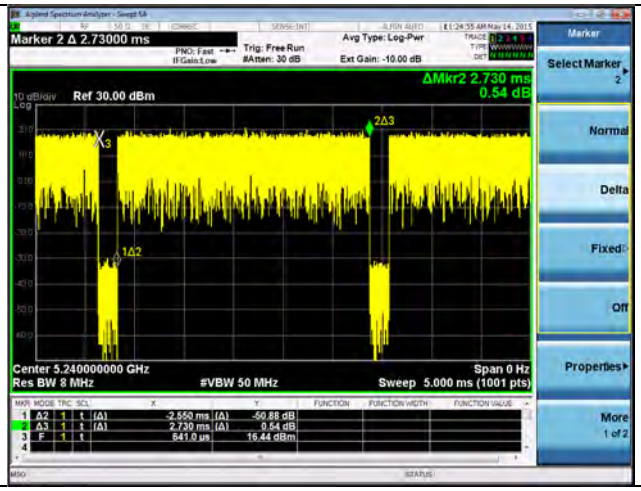
Duty-Cycle Correction

Mode (802.11)	Mode (Mbps)	On-time (ms)	Total Time (ms)	Duty Cycle	Duty Cycle Correction (dB)	1/Duty Cycle	Sweeps
a	6	2.74	2.93	0.94	0.29	1.07	107
	12	1.385	1.57	0.88	0.54	1.13	113
	24	0.702	0.896	0.78	1.06	1.28	128
	54	0.325	0.52	0.63	2.04	1.60	160
n	6.5	2.55	2.73	0.93	0.30	1.07	107
	65	0.289	0.484	0.60	2.24	1.67	167

Plots



802.11a



802.11n

B.1.3 – RF Conducted – Fundamental Power and Spectral Density

Manufacturer	Tridium
Date	May 14-20, 2015
Operator	Peter F.
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	FCC 15.407 (a)(1)(iv) & (a)(2) & (a)(3) IC RSS-247
Specific Measurement Procedure	ANSI C63.10-2013 Section 12.3.2.4 (Power Method SA-2) & 12.5
Additional Description of Measurement	Average methods used
Additional Notes	Continuous transmit modulated used for this test.

Sample Calculations:

Adj Power (dBm) = Measured Power (dBm) + Duty Cycle (dB)

Adj PSD (dBm/MHz) = Measured PSD (dBm/MHz) + Duty Cycle (dB)

HT20

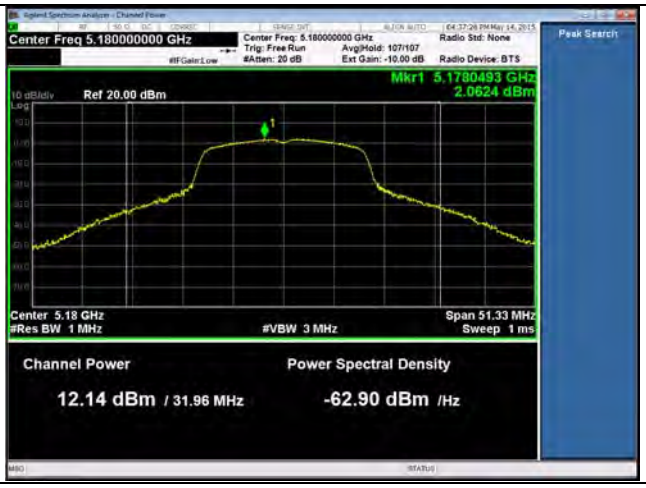
Table
UNII-1

Channel	Freqeuncy (MHz)	Mode (Mbps)	EBW (MHz)	99 % OBW (MHz)	Duty Cycle Correction (dB)	Measured Power (dBm)	Corrected Power (dBm)	Measured PSD (dBm/MHz)	Corrected PSD (dBm/MHz)	EIRP (dBm)	EIRP (mW)	EIRP Limit (mW)	Margin (mW)
36	5180	6	31.960	18.282	0.29	12.14	12.43	2.06	2.35	17.03	50.48	125.00	74.52
		12	30.460	17.703	0.54	11.80	12.34	2.01	2.56	16.94	49.48	125.00	75.52
		24	27.490	16.959	1.06	11.19	12.25	1.56	2.62	16.85	48.41	125.00	76.59
		54	21.620	16.539	2.04	8.84	10.88	-0.98	1.06	15.48	35.33	125.00	89.67
		6.5	34.580	19.612	0.30	13.93	14.23	3.93	4.23	18.83	76.32	125.00	48.68
		65	22.760	17.678	2.24	7.88	10.12	-2.24	0.00	14.72	29.64	125.00	95.36
40	5200	6	31.130	18.699	0.29	12.27	12.56	2.21	2.50	17.16	52.01	125.00	72.99
		12	30.810	17.922	0.54	12.32	12.86	2.29	2.83	17.46	55.78	125.00	69.22
		24	28.390	16.821	1.06	11.83	12.89	1.89	2.95	17.49	56.10	125.00	68.90
		54	22.620	16.482	2.04	9.35	11.39	-0.61	1.43	15.99	39.73	125.00	85.27
		6.5	31.550	18.713	0.30	14.51	14.81	4.53	4.82	19.41	87.22	125.00	37.78
		65	22.920	17.612	2.24	8.52	10.76	-1.51	0.73	15.36	34.35	125.00	90.65
48	5240	6	31.660	18.296	0.29	11.92	12.21	2.08	2.37	16.81	47.99	125.00	77.01
		12	31.540	17.685	0.54	11.83	12.37	1.66	2.20	16.97	49.83	125.00	75.17
		24	26.970	16.784	1.06	11.45	12.51	1.34	2.40	17.11	51.40	125.00	73.60
		54	21.990	16.435	2.04	9.21	11.25	-0.58	1.46	15.85	38.47	125.00	86.53
		6.5	32.130	19.114	0.30	14.46	14.76	4.16	4.45	19.36	86.22	125.00	38.78
		65	22.750	17.632	2.24	7.98	10.22	-2.27	-0.03	14.82	30.34	125.00	94.66

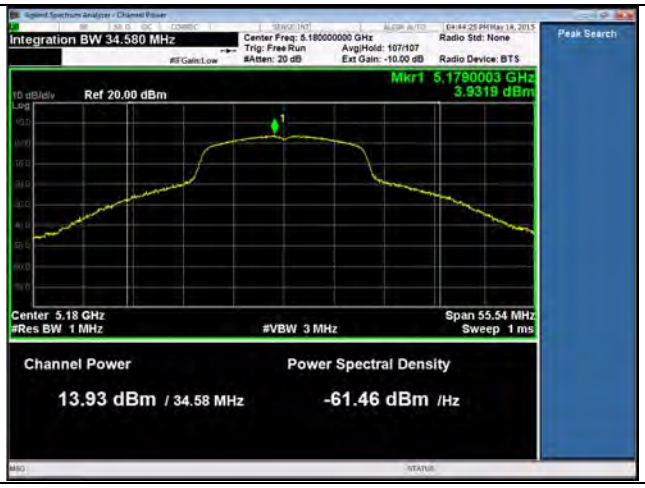
UNII-3

Channel	Freqeuncy (MHz)	Mode (Mbps)	EBW (MHz)	99 % OBW (MHz)	Duty Cycle Correction (dB)	Measured Power (dBm)	Corrected Power (dBm)	Measured PSD (dBm/MHz)	Corrected PSD (dBm/MHz)	EIRP (dBm)	EIRP (mW)	EIRP Limit (mW)	EIRP Margin (mW)
149	5745	6	31.960	18.461	0.29	4.54	4.83	-5.59	-5.30	9.43	8.77	1000.00	991.23
		12	30.390	17.486	0.54	4.16	4.70	-6.15	-5.61	9.30	8.52	1000.00	991.48
		24	29.050	17.276	1.06	3.70	4.76	-6.22	-5.16	9.36	8.63	1000.00	991.37
		54	23.890	16.793	2.04	2.62	4.66	-7.46	-5.42	9.26	8.44	1000.00	991.56
		6.5	32.310	19.125	0.30	4.90	5.20	-5.41	-5.11	9.80	9.54	1000.00	990.46
		65	23.790	17.639	2.24	2.64	4.88	-7.48	-5.24	9.48	8.87	1000.00	991.13
157	5785	6	35.290	20.162	0.29	4.12	4.41	-5.79	-5.50	9.01	7.96	1000.00	992.04
		12	30.230	18.404	0.54	4.16	4.70	-5.94	-5.39	9.30	8.52	1000.00	991.48
		24	30.690	17.849	1.06	3.40	4.46	-6.68	-5.62	9.06	8.05	1000.00	991.95
		54	23.950	16.954	2.04	2.29	4.33	-7.55	-5.51	8.93	7.82	1000.00	992.18
		6.5	34.740	19.584	0.30	4.36	4.66	-5.85	-5.56	9.26	8.43	1000.00	991.57
		65	23.720	17.641	2.24	2.14	4.38	-7.62	-5.38	8.98	7.91	1000.00	992.09
165	5825	6	33.260	18.401	0.29	3.55	3.84	-6.47	-6.18	8.44	6.98	1000.00	993.02
		12	30.710	17.977	0.54	3.31	3.85	-6.58	-6.03	8.45	7.01	1000.00	992.99
		24	30.550	17.342	1.06	2.81	3.87	-7.06	-6.00	8.47	7.03	1000.00	992.97
		54	23.220	16.528	2.04	1.49	3.53	-8.77	-6.73	8.13	6.50	1000.00	993.50
		6.5	35.450	19.269	0.30	3.62	3.92	-6.71	-6.42	8.52	7.11	1000.00	992.89
		65	21.770	17.658	2.24	1.51	3.75	-8.91	-6.67	8.35	6.84	1000.00	993.16

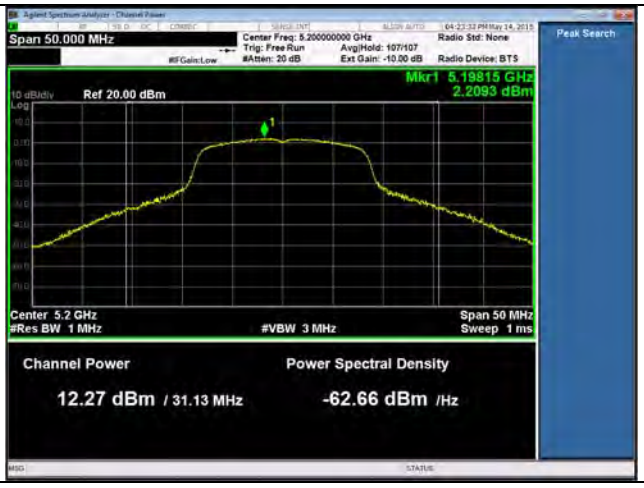
HT20 Plots – UNII-1



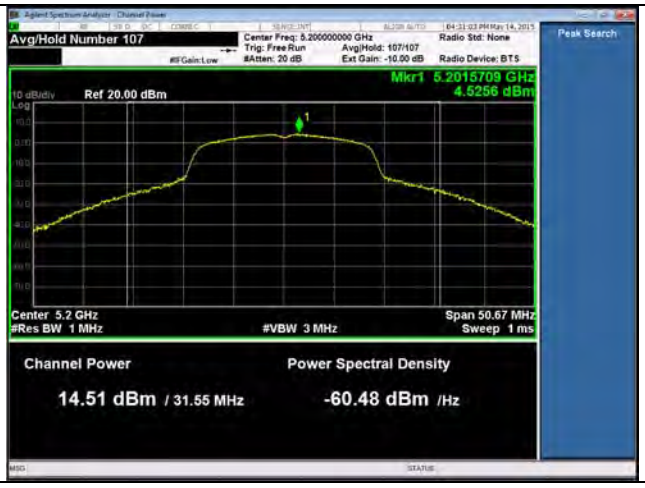
Channel 36 – 802.11a



Channel 36 – 802.11n

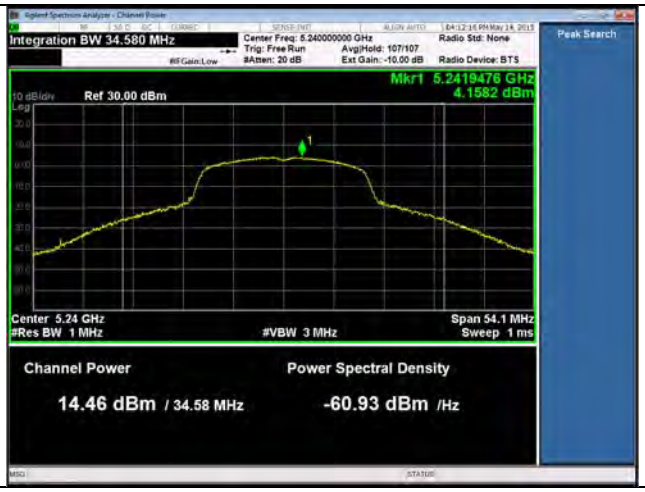


Channel 40 – 802.11a



Channel 40 – 802.11n

Channel 44 – 802.11a



Channel 44 – 802.11n

HT20 Plots – UNII-3

Channel 149 – 802.11a

Channel 149 – 802.11n

Channel 157 – 802.11a

Channel 157 – 802.11n

Channel 165 – 802.11a

Channel 165 – 802.11n

HT40

Tables

UNII-1

Channel	Freqeuncy (MHz)	Mode (Mbps)	EBW (MHz)	99 % OBW (MHz)	Duty Cycle Correction (dB)	Measured Power (dBm)	Corrected Power (dBm)	Measured PSD (dBm/MHz)	Corrected PSD (dBm/MHz)	EIRP (dBm)	EIRP (mW)
38	5190	MCS0	39.57	35.74	0.30	9.1	9.4	-4.1	-3.8	14.0	24.982
		MCS7	39.37	35.76	2.24	5.3	7.5	-7.1	-4.9	12.1	16.366
42	5210	MCS0	39.30	35.65	0.30	9.5	9.8	-3.3	-3.0	14.4	27.228
		MCS7	39.14	35.72	2.24	5.6	7.8	-6.9	-4.7	12.4	17.384
46	5230	MCS0	39.37	35.70	0.30	9.3	9.6	-3.3	-3.0	14.2	26.153
		MCS7	39.29	35.85	2.24	5.5	7.7	-7.0	-4.8	12.3	17.012

UNII-3

Channel	Freqeuncy (MHz)	Mode (Mbps)	EBW (MHz)	99 % OBW (MHz)	Duty Cycle Correction (dB)	Measured Power (dBm)	Corrected Power (dBm)	Measured PSD (dBm/MHz)	Corrected PSD (dBm/MHz)	EIRP (dBm)	EIRP (mW)
151	5755	MCS0	42.48	35.91	0.30	5.1	5.4	-7.9	-7.6	10.0	9.891
		MCS7	40.65	35.79	2.24	2.0	4.2	-10.5	-8.3	8.8	7.625
159	5795	MCS0	43.87	35.99	0.30	3.7	4.0	-9.0	-8.7	8.6	7.246
		MCS7	41.12	35.98	2.24	0.8	3.0	-11.9	-9.7	7.6	5.743
163	5815	MCS0	43.62	35.99	0.30	3.1	3.4	-9.3	-9.0	8.0	6.251
		MCS7	42.04	35.96	2.24	0.2	2.5	-12.6	-10.3	7.1	5.075

HT40 – Power Plots

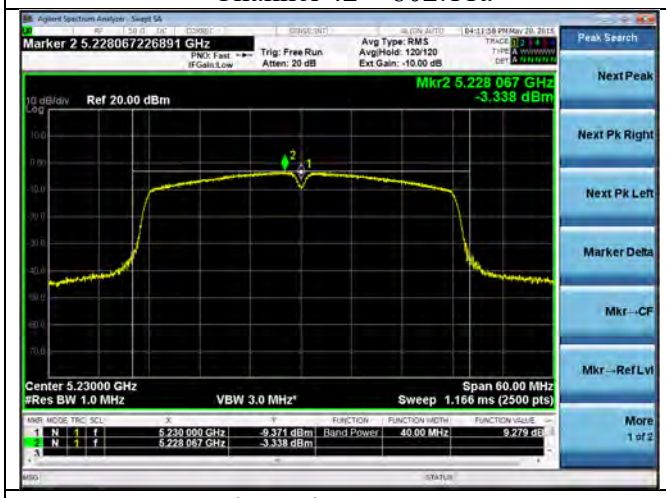
Plots – UNII-1

Channel 38 – 802.11a

Channel 38 – 802.11n

Channel 42 – 802.11a

Channel 42 – 802.11n



Channel 46 – 802.11a

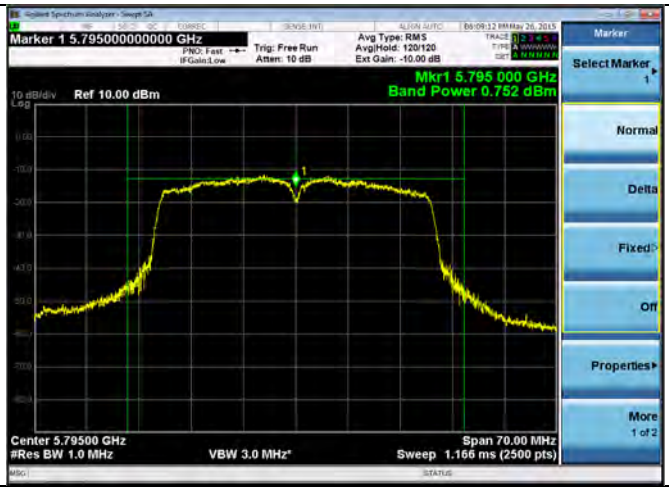
Channel 46 – 802.11n

HT 40 Plots – UNII-3 – Power

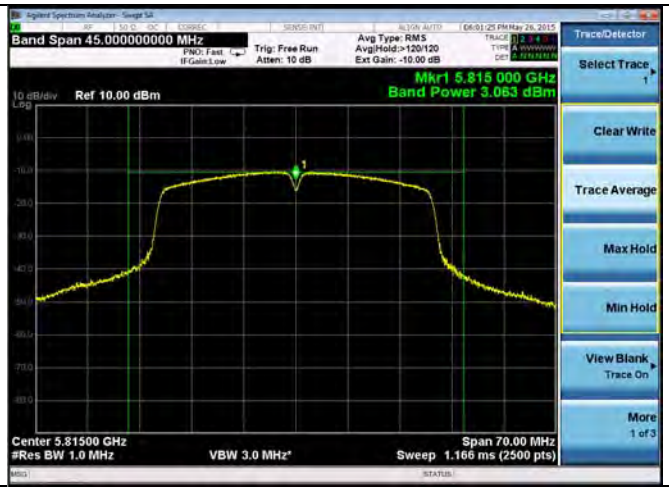
Channel 149 – 802.11a

Channel 149 – 802.11n

Channel 157 – 802.11a



Channel 157 – 802.11n

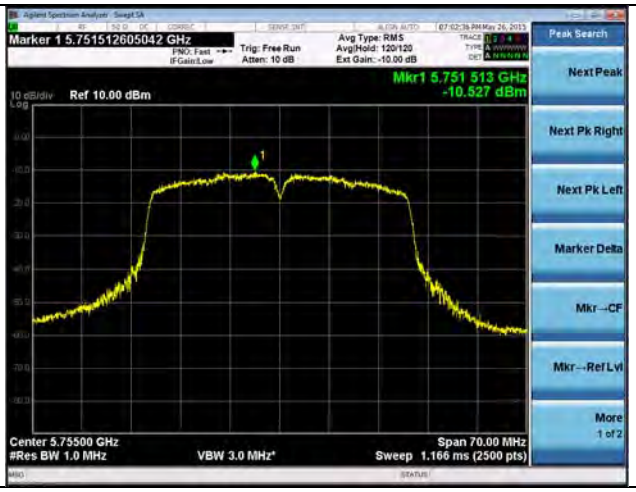


Channel 165 – 802.11a

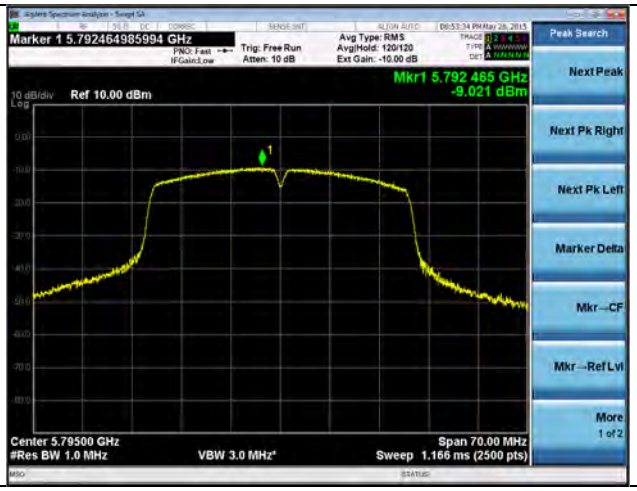
Channel 165 – 802.11n

HT 40 Plots – UNII-3 – PSD

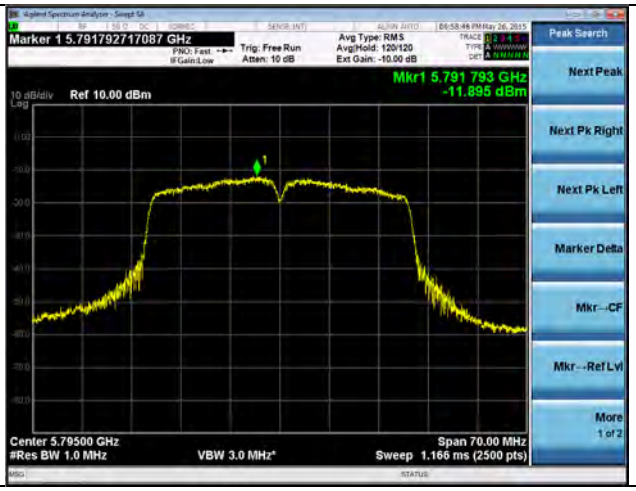
Channel 149 – 802.11a



Channel 149 – 802.11n



Channel 157 – 802.11a



Channel 157 – 802.11n

Channel 165 – 802.11a

Channel 165 – 802.11n

B.1.4 – RF Conducted – Undesirable Emissions (Band-Edge)

Manufacturer	Tridium
Date	May – November 2015
Operator	Peter F / Aidi
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	15.407
Specific Measurement Procedure	ANSI C63.10 -2013 Section 12.7.4.2
Additional Description of Measurement	RF Conducted Measurements with antenna gain added and conversion from dBm to dBµV/m @ 3m to compare to restricted band limit where applicable.
Additional Notes	1. Manufacture stated antenna gain = 4.6 dBi 2. For antenna port conducted measurements of spurious emissions in the restricted band, the peak and average limit was converted from field strength to power limits: Example: EIRP = E (electric field strength in dBµV/m) + 20log(d)-104.8 E = EIRP – 20log(d) + 104.8 Sample conversion: For EIRP = -56.6 dBm, E (dBµV/m) = -56.6 – 20log(3m) +104.8 = 38.7 dBµV/m For EIRP = -60.9 dBm, E (dBµV/m) = -60.9 – 20log(3m) + 104.8 = 34.4 dBµV/m **Above 1 GHz Peak and average limit for RF conducted measurements** Peak limit : EIRP = 74.0 dBuV/m + 20log(3m) – 104.8 = -21.2dBm Average limit : EIRP = 54.0 dBuV/m + 20log(3m) – 104.8 = -41.2dBm

UNII-1
HT 20
Lower band-edge restricted band
Peak

Mode (802.11)	Mode (Mbps)	Frequency (GHz)	Meas (dBm)	Antenna Gain (dBi)	Conversion to (dBµV/m)	Average (dBµV/m)	Limit	Margin
a	6	5.1500	-37.41	4.60	95.26	62.45	74	11.5
	12	5.1490	-38.44	4.60	95.26	61.42		12.6
	24	5.1482	-33.71	4.60	95.26	66.15		7.9
	54	5.1499	-34.98	4.60	95.26	64.88		9.1
n	6.5	5.1493	-27.54	4.60	95.26	72.32		1.7
	65	5.1499	-37.10	4.60	95.26	62.76		11.2

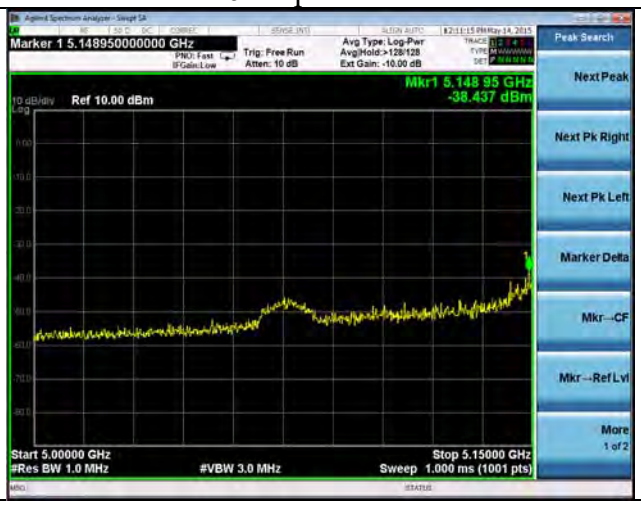
Average

Mode (802.11)	Mode (Mbps)	Frequency (GHz)	Average Meas (dBm)	Antenna Gain (dBi)	Duty Cycle Correction	Conversion to (dBµV/m)	Average (dBµV/m)	Limit	Margin
a	6	5.1500	-55.43	4.60	0.29	95.26	44.72	54	9.3
	12	5.1494	-55.45	4.60	0.54	95.26	44.95		9.1
	24	5.1496	-49.11	4.60	1.06	95.26	51.81		2.2
	54	5.1500	-54.86	4.60	2.04	95.26	47.04		7.0
n	6.5	5.1499	-48.02	4.60	0.30	95.26	52.13		1.9
	65	5.1499	-57.52	4.60	2.24	95.26	44.58		9.4

Plots

6 Mbps - Peak

6 Mbps - Average



12 Mbps - Peak

12 Mbps - Average

24 Mbps - Peak

24 Mbps - Average

54 Mbps - Peak

6 Mbps - Average

MCS 0 - Peak

MCS 0 - Average

MCS 7 - Peak

MCS 7 - Average

UNII-1
HT 40
Lower band-edge restricted band
Peak

Mode (Mbps)	Frequency (GHz)	Meas (dBm)	Antenna Gain (dBi)	Conversion to (dBµV/m)	Peak (dBµV/m)	Limit	Margin
MCS0	5.1500	-42.36	4.60	95.26	57.49	74	16.5
MCS7	5.1500	-36.61	4.60	95.26	63.24		10.8

Average

Mode (Mbps)	Frequency (GHz)	Average Meas (dBm)	Antenna Gain (dBi)	Duty Cycle Correction	Conversion to (dBµV/m)	Average (dBµV/m)	Limit	Margin
MCS0	5.1500	-53.52	4.60	0.30	95.26	46.64	54	7.4
MCS7	5.1497	-56.27	4.60	2.24	95.26	45.82		8.2

MCS 0 - Peak

MCS 0 - Average

MCS 7 - Peak	MCS 7 - Average

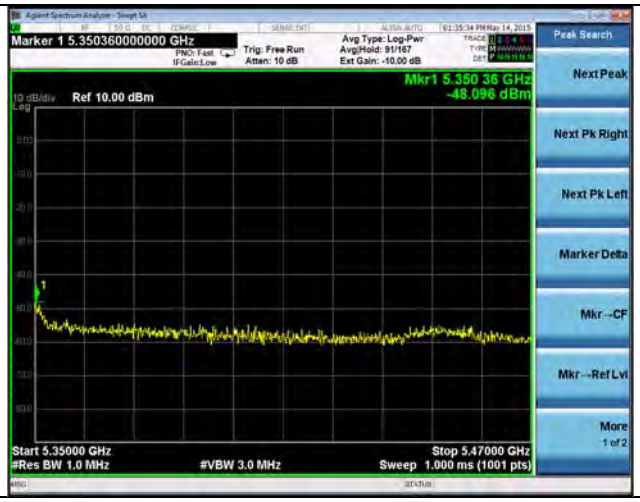
UNII-1
HT 20
Upper band-edge restricted band
Peak

Mode (802.11)	Mode (Mbps)	Frequency (GHz)	Meas (dBm)	Antenna Gain (dBi)	Conversion to (dBµV/m)	Average (dBµV/m)	Limit	Margin
a	6	5.3504	-48.10	4.60	95.26	51.76	74	22.2
	12	5.3507	-48.24	4.60	95.26	51.62		22.4
	24	5.3506	-47.90	4.60	95.26	51.95		22.0
	54	5.3500	-47.45	4.60	95.26	52.41		21.6
n	6.5	5.3510	-46.86	4.60	95.26	53.00		21.0
	65	5.3507	-48.81	4.60	95.26	51.05		23.0

Average

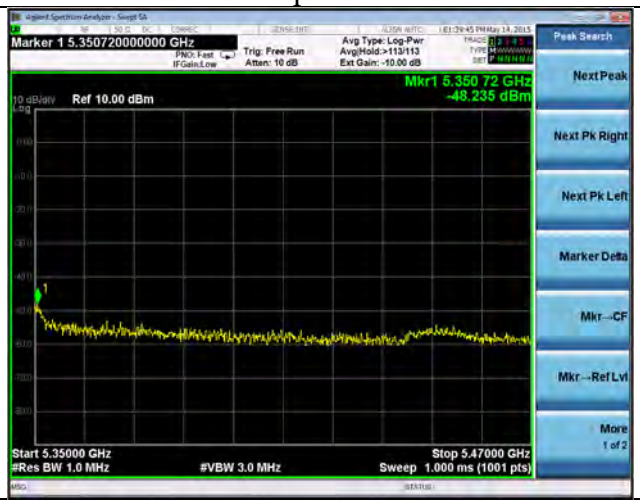
Mode (802.11)	Mode (Mbps)	Frequency (GHz)	Average Meas (dBm)	Antenna Gain (dBi)	Duty Cycle Correction	Conversion to (dBµV/m)	Average (dBµV/m)	Limit	Margin
a	6	5.3504	-56.05	4.60	0.29	95.26	44.10	54	9.9
	12	5.3504	-57.87	4.60	0.54	95.26	42.53		11.5
	24	5.3500	-57.59	4.60	1.06	95.26	43.33		10.7
	54	5.3500	-59.20	4.60	2.04	95.26	42.70		11.3
n	6.5	5.3500	-56.30	4.60	0.30	95.26	43.85		10.1
	65	5.3500	-60.13	4.60	2.24	95.26	41.97		12.0

Plots



6 Mbps - Peak

6 Mbps - Average



12 Mbps - Peak

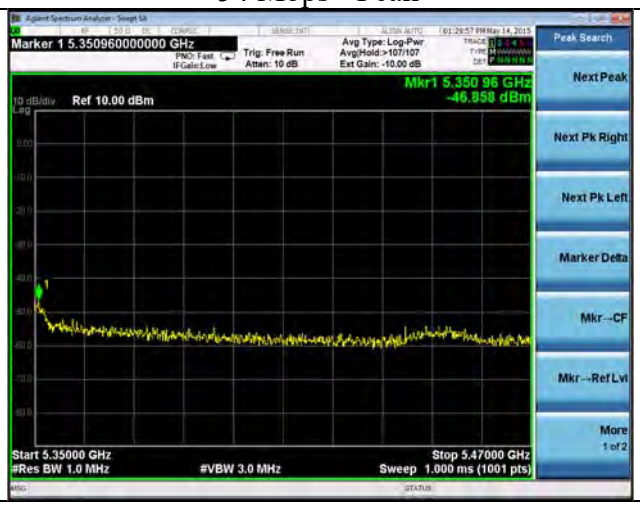
12 Mbps - Average

24 Mbps - Peak

24 Mbps - Average

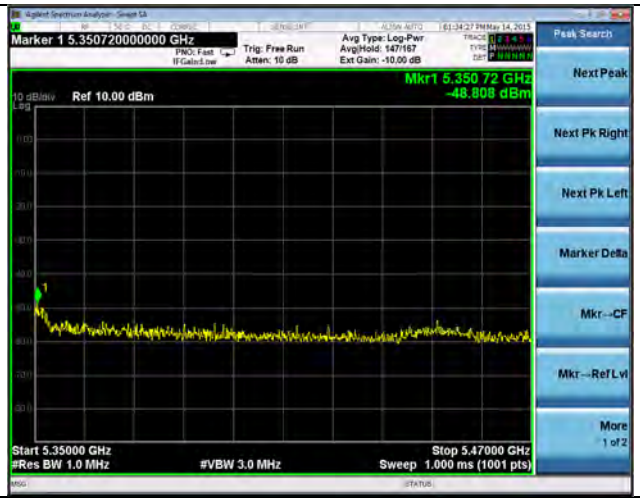
54 Mbps - Peak

6 Mbps - Average



MCS 0 - Peak

MCS 0 - Average



MCS 7 - Peak

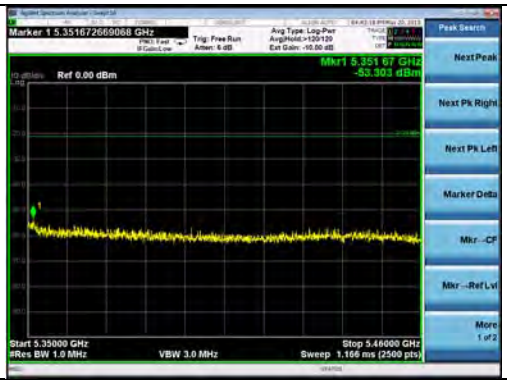
MCS 7 - Average

UNII-1
HT 40
Upper band-edge restricted band
Peak

Mode (802.11)	Mode (Mbps)	Frequency (GHz)	Meas (dBm)	Antenna Gain (dBi)	Conversion to (dBµV/m)	Average (dBµV/m)	Limit	Margin
n	MCS0	5.3517	-53.30	4.60	95.26	46.56	74	27.4
	MCS7	5.3574	-53.48	4.60	95.26	46.37		27.6

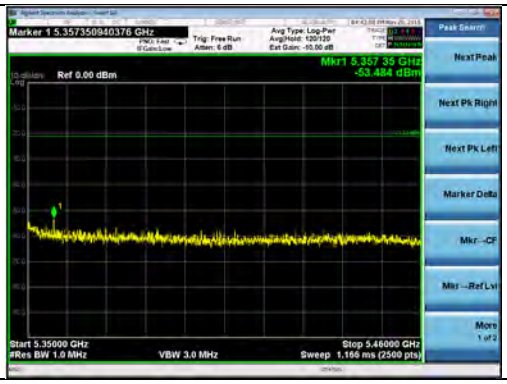
Average

Mode (802.11)	Mode (Mbps)	Frequency (GHz)	Average Meas (dBm)	Antenna Gain (dBi)	Duty Cycle Correction	Conversion to (dBµV/m)	Average (dBµV/m)	Limit	Margin
n	MCS0	5.3500	-64.10	4.60	0.30	95.26	36.05	54	17.9
	MCS7	5.3503	-65.92	4.60	2.24	95.26	36.18		17.8

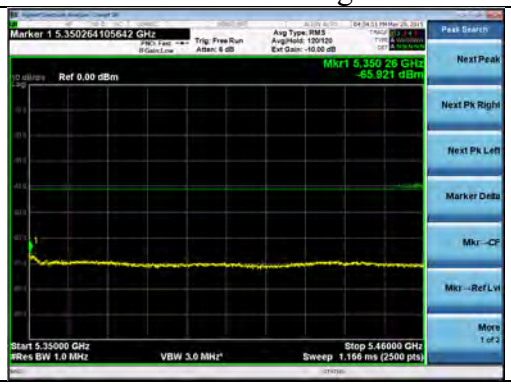


MCS 0 - Peak

MCS 0 - Average



MCS 7 - Peak



MCS 7 - Average

UNII-3
HT 20

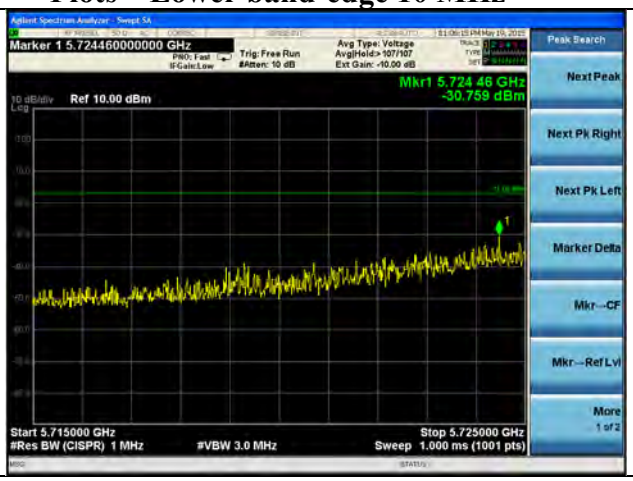
Lower band-edge 10 MHz

Mode (802.11)	Mode (Mbps)	Frequency (GHz)	Meas (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin
a	6	5.7245	-30.76	4.60	-26.16	-17	9.2
	12	5.7247	-31.41	4.60	-26.81		14.4
	24	5.7242	-33.91	4.60	-29.31		12.3
	54	5.7249	-37.32	4.60	-32.72		15.7
n	6.5	5.7248	-29.34	4.60	-24.74		7.7
	65	5.7250	-36.36	4.60	-31.76		14.8

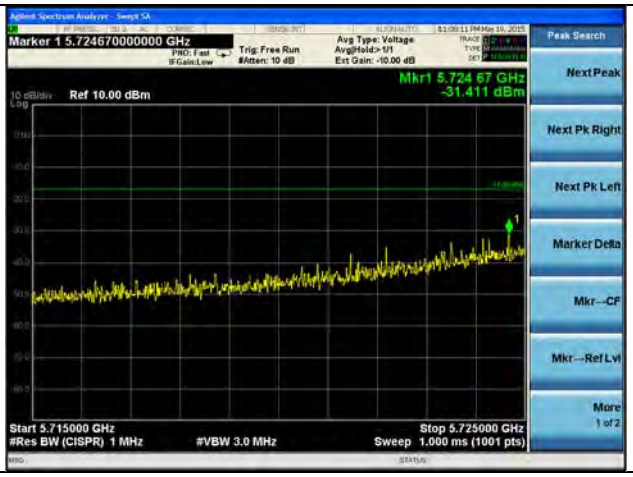
Upper band-edge 10 MHz

Mode (802.11)	Mode (Mbps)	Frequency (GHz)	Meas (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin
a	6	5.8502	-35.70	4.60	-31.10	-17	14.1
	12	5.8507	-39.23	4.60	-34.63	-17	17.6
	24	5.8512	-36.41	4.60	-31.81	-17	14.8
	54	5.8507	-37.94	4.60	-33.34	-17	16.3
n	6.5	5.8503	-34.36	4.60	-29.76	-17	12.8
	65	5.8500	-40.63	4.60	-36.03	-17	19.0

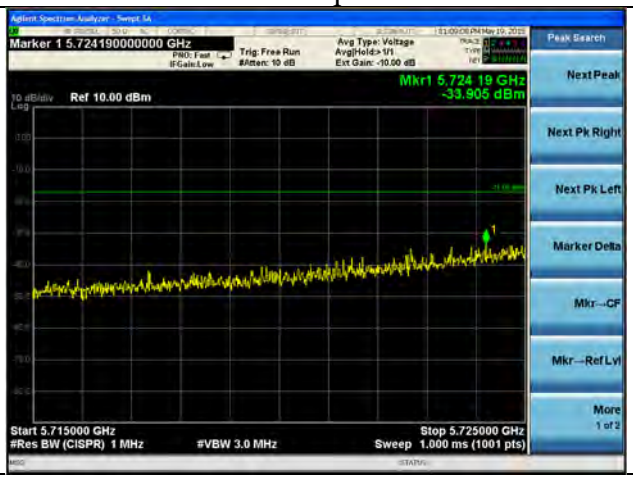
Plots – Lower band-edge 10 MHz



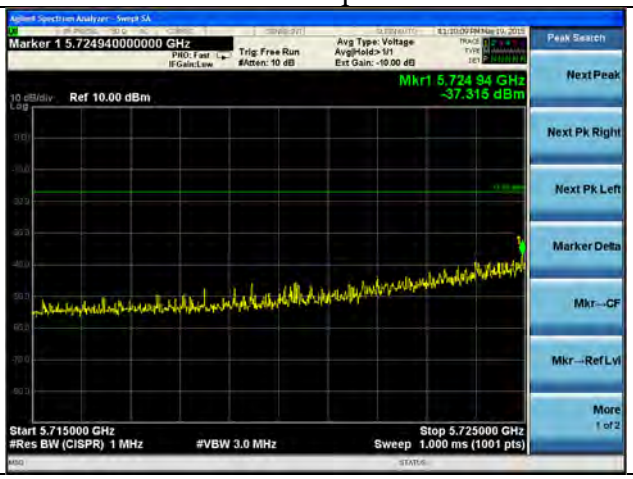
6 Mbps



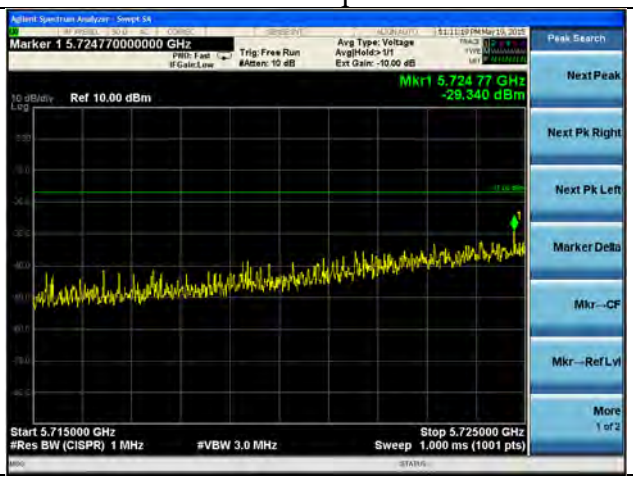
12 Mbps



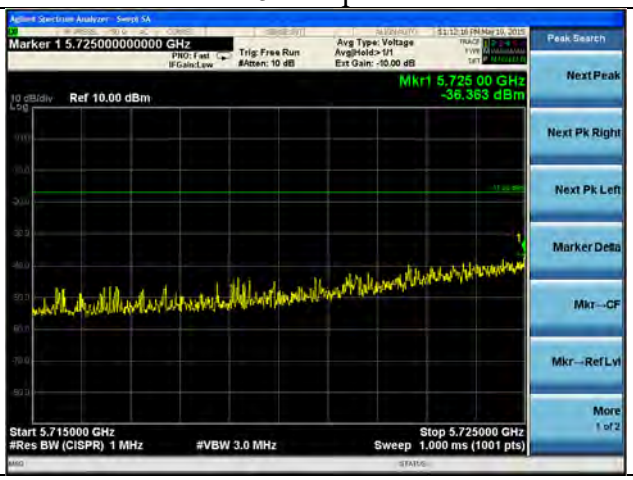
24 Mbps



54 Mbps

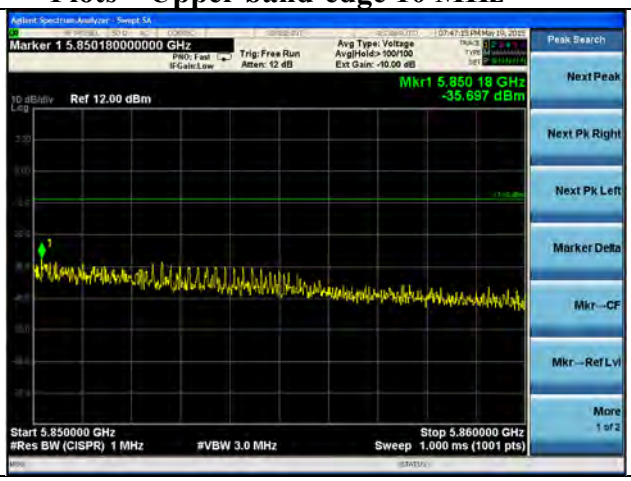


MCS 0

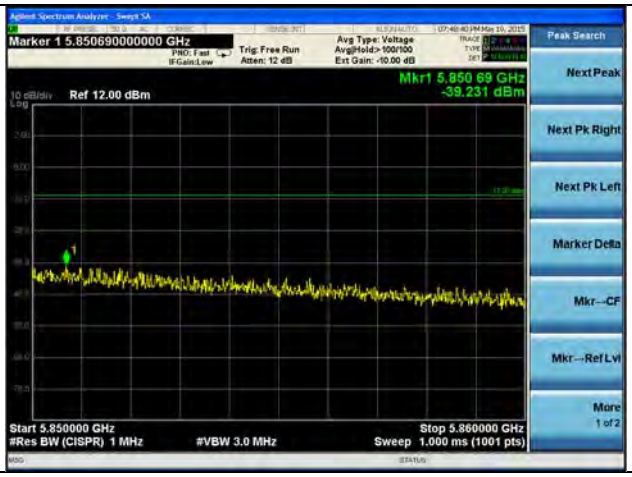


MCS 7

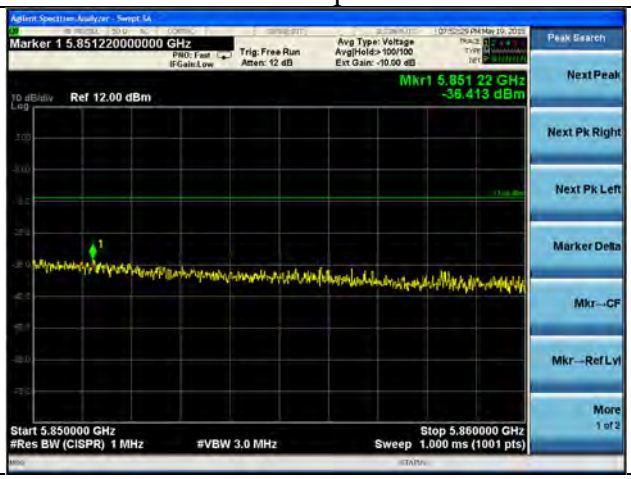
Plots – Upper band-edge 10 MHz



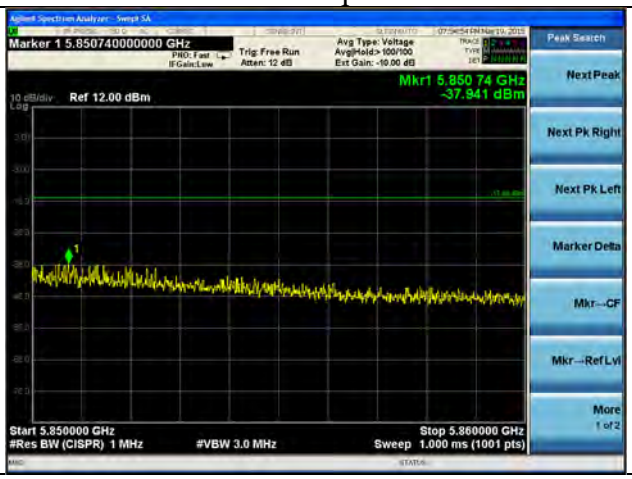
6 Mbps



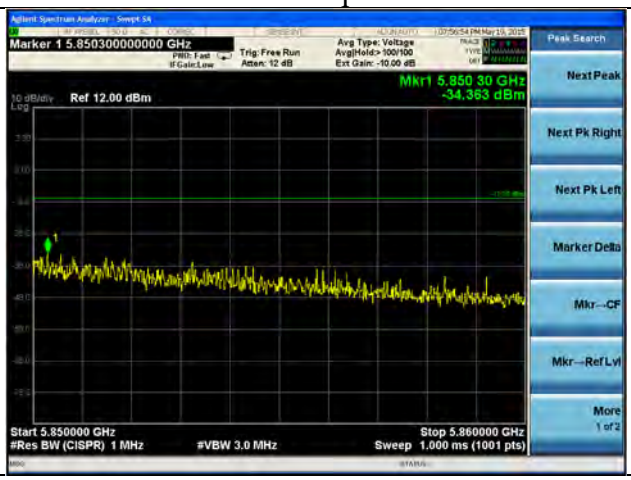
12 Mbps



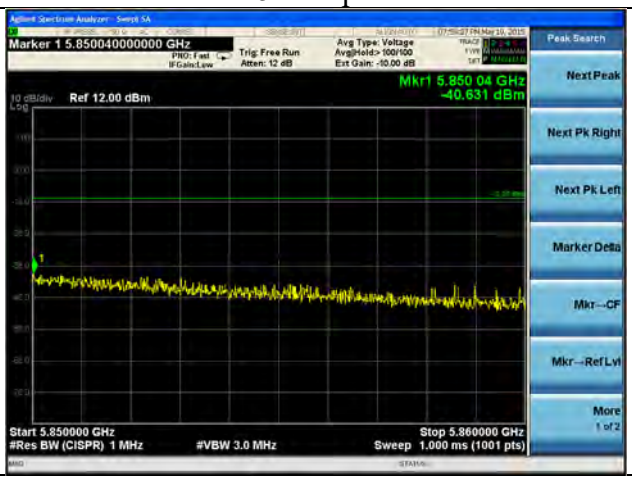
24 Mbps



54 Mbps



MCS 0



MCS 7

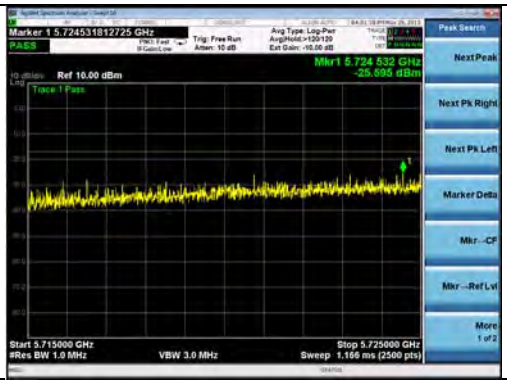
UNII-3
HT 40

Lower band-edge 10 MHz

Mode (802.11)	Mode (Mbps)	Frequency (GHz)	Meas (dBm)	Antenna Gain (dBi)	Conversion to (dBµV/m)	Peak (dBµV/m)	Limit	Margin
n	MCS0	5.7245	-25.60	4.60	95.26	74.26	78.2	3.9
	MCS7	5.7236	-29.37	4.60	95.26	70.49		7.7

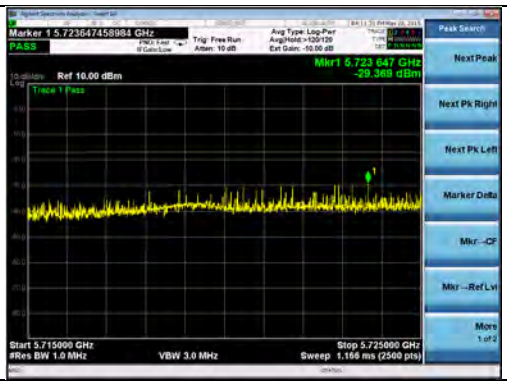
Upper band-edge 10 MHz

Mode (802.11)	Mode (Mbps)	Frequency (GHz)	Meas (dBm)	Antenna Gain (dBi)	Conversion to (dBµV/m)	Peak (dBµV/m)	Limit	Margin
n	MCS0	5.8501	-32.27	4.60	95.26	67.59	78.2	10.6
	MCS7	5.8502	-36.60	4.60	95.26	63.25		14.9

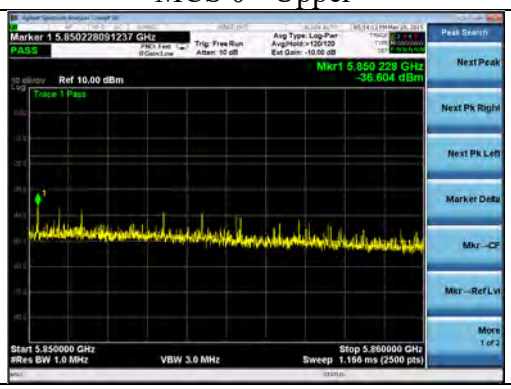


MCS 0 - Lower

MCS 0 - Upper



MCS 7 – Lower



MCS 7 - Upper

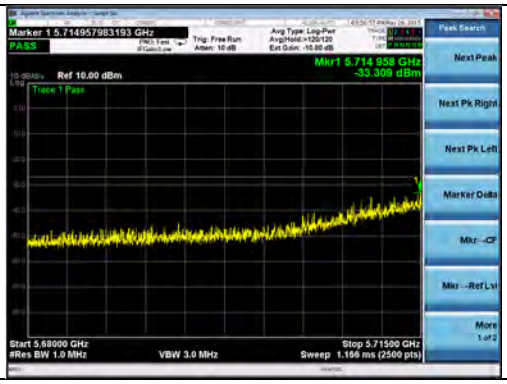
UNII-3
HT 40

Lower band-edge greater than 10 MHz

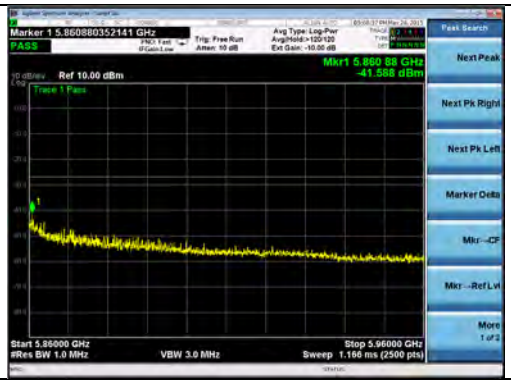
Mode (802.11)	Mode (Mbps)	Frequency (GHz)	Meas (dBm)	Antenna Gain (dBi)	Conversion to (dBµV/m)	Peak (dBµV/m)	Limit	Margin
n	MCS0	5.7150	-33.31	4.60	95.26	66.55	68.2	1.7
	MCS7	5.7137	-35.27	4.60	95.26	64.59		3.6

Upper band-edge greater than 10 MHz

Mode (802.11)	Mode (Mbps)	Frequency (GHz)	Meas (dBm)	Antenna Gain (dBi)	Conversion to (dBµV/m)	Peak (dBµV/m)	Limit	Margin
n	MCS0	5.8609	-41.59	4.60	95.26	58.27	68.2	9.9
	MCS7	5.8611	-46.64	4.60	95.26	53.22		15.0

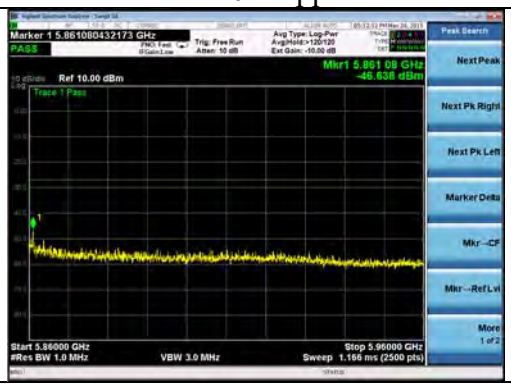


MCS 0 - Lower



MCS 0 - Upper

MCS 7 – Lower

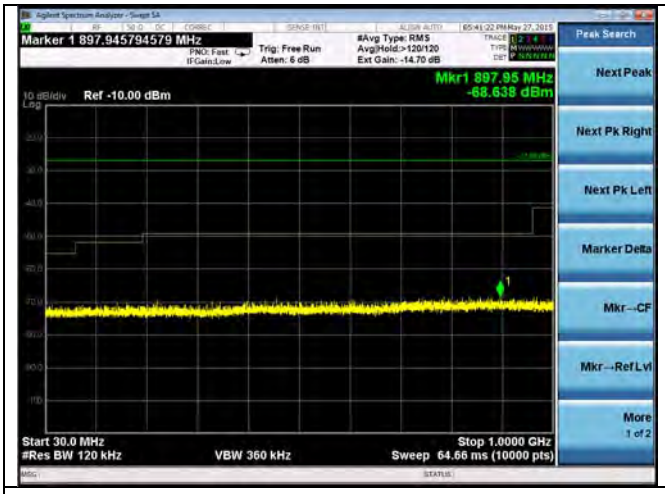


MCS 7 - Upper

B.1.5 – RF Conducted – Undesirable Emissions (Spurious)

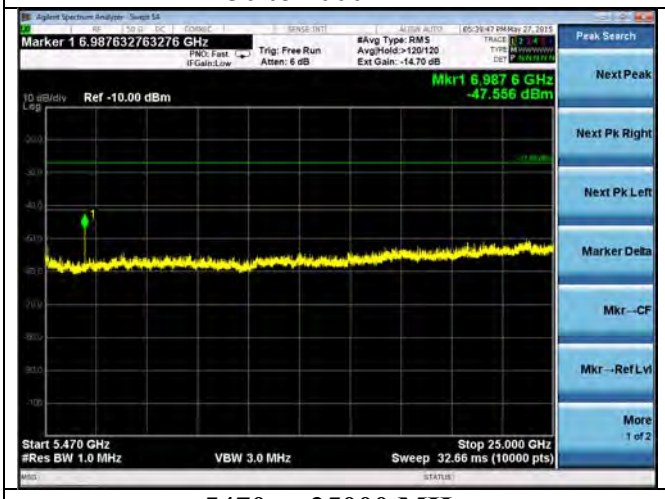
Manufacturer	Tridium
Date	5-27-15
Operator	Peter F / Aidi
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	15.407
Specific Measurement Procedure	ANSI C63.10 -2013 Section 12.7.4.2
Additional Description of Measurement	RF Conducted Measurements
Additional Notes	3. Manufacture stated antenna gain = 4.6 dBi and was added as an external pre-amp gain into the receiver for above 1 GHz measurement. This is reflected in the plots below. 4. For antenna port conducted measurements of spurious emissions in the restricted band, the peak and average limit was converted from field strength to power limits: Example: EIRP = E (electric field strength in dBµV/m) + 20log(d)-104.8 E = EIRP – 20log(d) + 104.8 Sample conversion: For EIRP = -56.6 dBm, E (dBµV/m) = -56.6 – 20log(3m) +104.8 = 38.7 dBµV/m For EIRP = -60.9 dBm, E (dBµV/m) = -60.9 – 20log(3m) + 104.8 = 34.4 dBµV/m **Above 1 GHz Peak and average limit for RF conducted measurements** Peak limit : EIRP = 74.0 dBuV/m + 20log(3m) – 104.8 = -21.2dBm Average limit : EIRP = 54.0 dBuV/m + 20log(3m) – 104.8 = -41.2dBm

UNII-1



30 to 1000 MHz

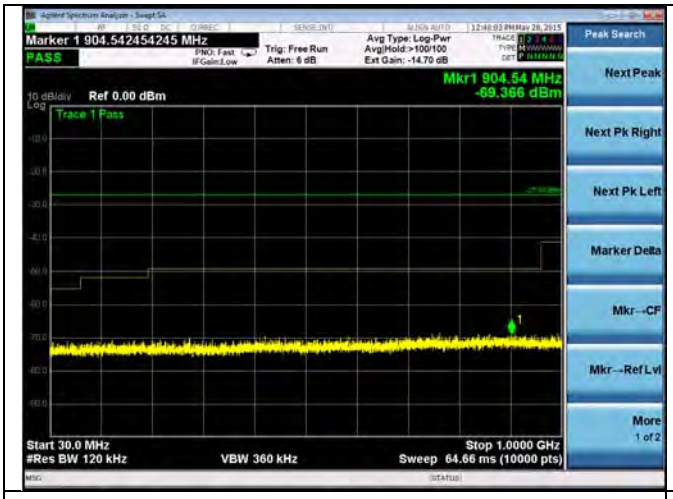
1000 to 5000 MHz



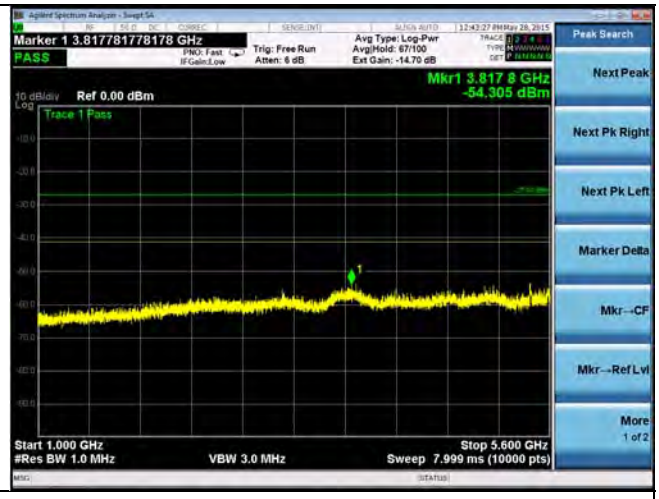
5470 to 25000 MHz

25000 to 40000 MHz

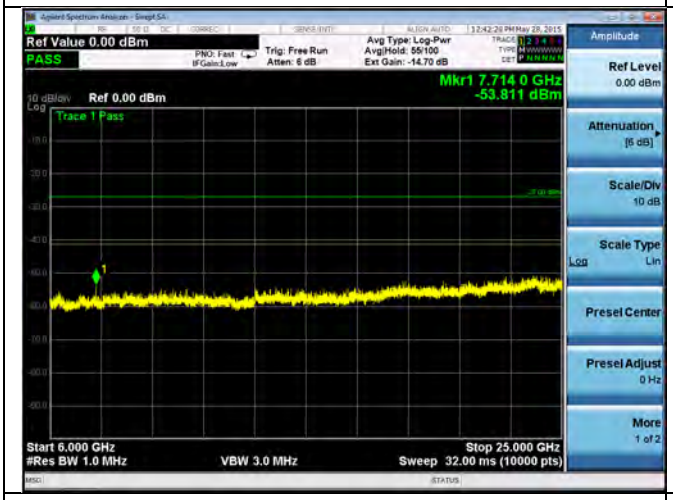
UNII-3



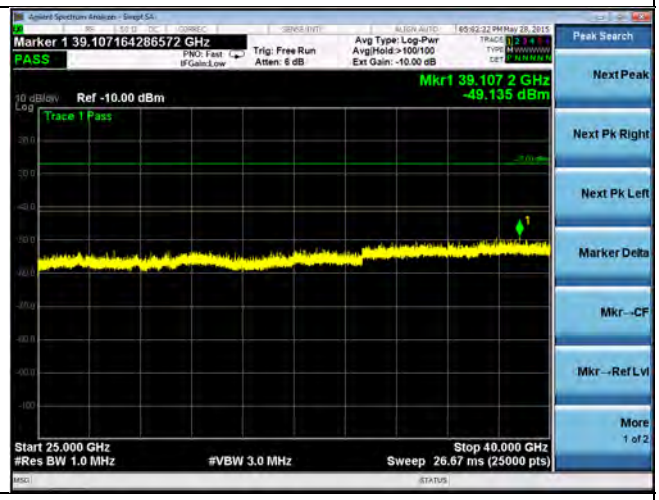
30 to 1000 MHz



1000 to 5600 MHz



6000 to 25000 MHz



25000 to 40000 MHz

B.1.6 – RF Conducted – Frequency Stability

Manufacturer	Tridium
Date	11/29/15
Operator	Aidi Zainal
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	15.407
Specific Measurement Procedure	ANSI C63.10-2009
Additional Description of Measurement	RF Conducted Measurement
Additional Notes	1. Continuous transmit modulated used for this test. 2. Better than 1 PPM stability

	-20°C		
	Frequency (Hz)		
	20.4 VDC	24.0 VDC	26.0VDC
Chan 44	5220000791	5220000821	5220000849
Chan 157	5785001043	5785001022	5785001058
Chan 165	5825000815	5825000772	5825000811

	22°C		
	Frequency (Hz)		
	20.4 VDC	24.0 VDC	26.0VDC
Chan 44	5220000195	5220000197	5220000201
Chan 157	5785000290	5785000291	5785000286
Chan 165	5825000019	5825000031	5825000032

	50°C		
	Frequency (Hz)		
	20.4 VDC	24.0 VDC	26.0VDC
Chan 44	5220000027	5220000028	5220000054
Chan 157	5785000083	5785000062	5785000087
Chan 165	5824999889	5824999888	5824999893

	Drift (Hz)
Chan 44	822
Chan 157	996
Chan 165	927

B.2 – Transmitter Radiated Emissions

Rule Part(s)	FCC: 15.407 / 15.205 / 15.209 IC: RSS-GEN			
Measurement Procedure	ANSI C63.10 – 2013 Section 12.7			
Test Location	LS Research, LLC – FCC/IC Listed 3 meter Chamber			
Test Distance	See data section			
EUT Placement	Above 1 GHz: 150 cm height non-conductive table above reference ground plane covered with absorbers Below 1 GHz: 80 cm height non-conductive table above reference ground plane			
Frequency Range of Measurement	Biconical: 30-300 MHz	Log Periodic Dipole Array: 300-1000 MHz	Double-Ridged Waveguide Horn: 1-18 GHz	Standard Gain Horn: 18-26GHz
Measurement Detectors	30-1000MHz RBW: 120 kHz VBW: At least 300 kHz		1 - 40 GHz: RBW : 1MHz VBW: At least 3 MHz Peak VBW: 30 Hz Average	
Description of Measurement	1) The antenna, cable, pre-amp, and other necessary measurement system correction factors are loaded onto the EMI receiver / spectrum analyzer when the measurements are preformed. The data is gathered and reported as the corrected values. 2) The EUT is placed on a non-conductive pedestal centered on a turn-table in the test location with the antenna at the test distance from the EUT 3) Maximum radiated RF emissions are determined by rotation of azimuth and scanning the sense antenna between 1 and 4 meters in height using both horizontal and vertical antenna polarities. Maximized levels are manually noted at degree values of azimuth and at sense antenna height.			
Example Calculations	Reported Measurement data = Raw receiver measurement + Antenna Correction Factor + Cable factor (dB) - amplification factor (when applicable) + Additional factor (when applicable)			

Limits:

Frequency (MHz)	3 m Limit (µV/m)	3 m Limit (dBµV/m)	Type
30-88	100	40.0	Quasi-Peak
88-216	150	43.5	Quasi-Peak
216-960	200	46.0	Quasi-Peak
Above 960	500	54.0	Average (>1 GHz)

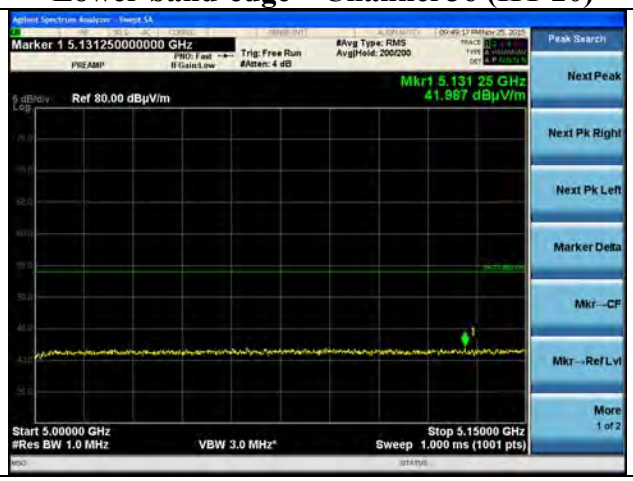
B.2.1 – Radiated Band-Edge

Manufacturer	Tridium
Date	11-25-15
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	FCC 15.407 / 15.205 / 15.209 IC RSS-247 Section 6 / RSS-GEN
Measurement Procedure	ANSI C63.10-2013 Section 12.7
Test Distance	3 meter
EUT Placement	150 cm height non-conductive table centered on turn-table , absorbers covering ground plane
Detectors	Final Measurements: RBW 1 MHz, 3 MHz (Detector = Peak or RMS w/ trace average)
Additional Notes	EUT maximized in orientation, azimuth, and antenna height with maximum results reported. UNII-1 lower band-edge restricted band limits UNII-3 band-edge meets -27 dBm / MHz limit Terminated antenna method

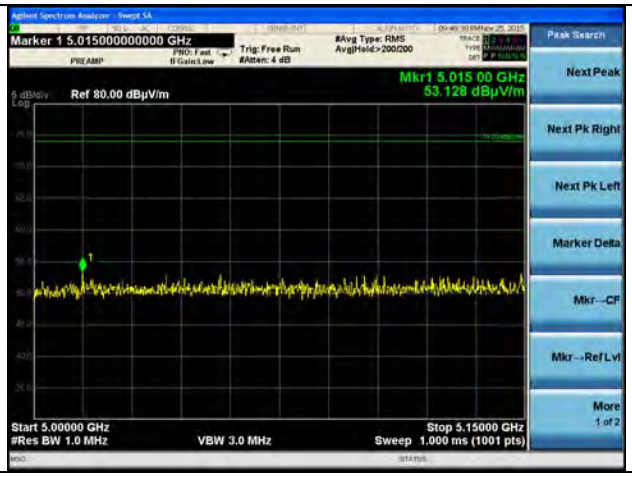
Example Calculation:

-27 dBm/MHz + 95.2 (Conversion to dBµV/m) = 68.2 dBµV/m
-17 dBm/MHz + 95.2 (Conversion to dBµV/m) = 78.2 dBµV/m

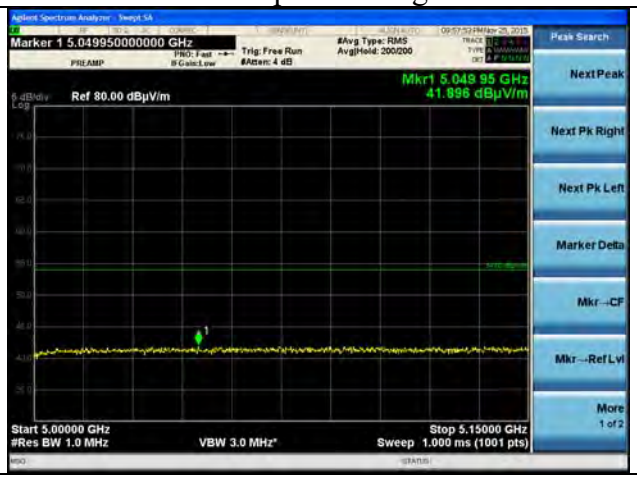
Plots
UNII-1
Lower band-edge – Channel 36 (HT 20)



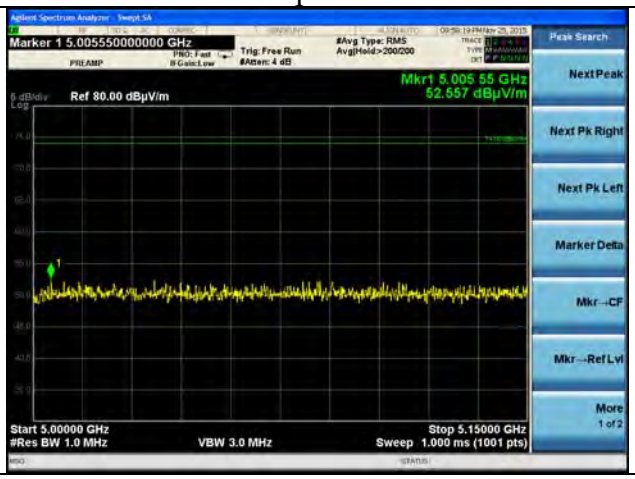
24 Mbps – Average



24 Mbps – Peak



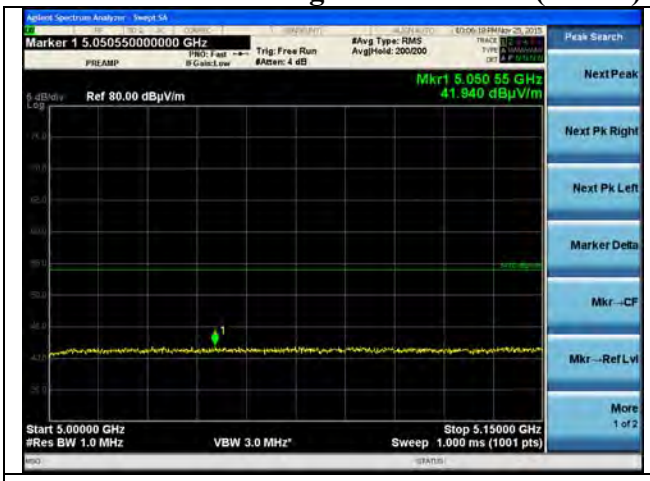
MCS 0 – Average



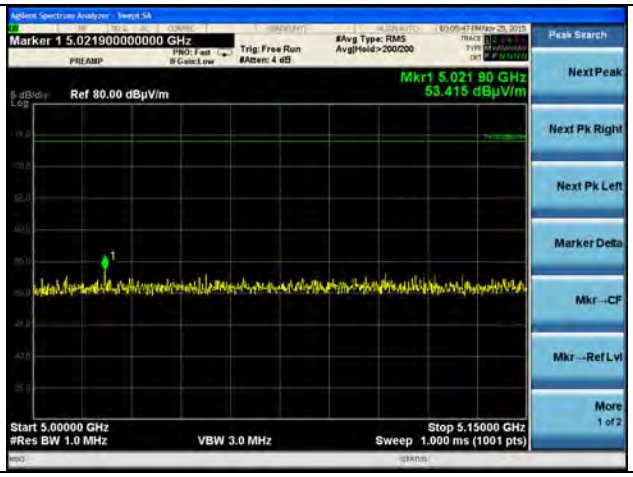
MCS 0 – Peak

UNII-1

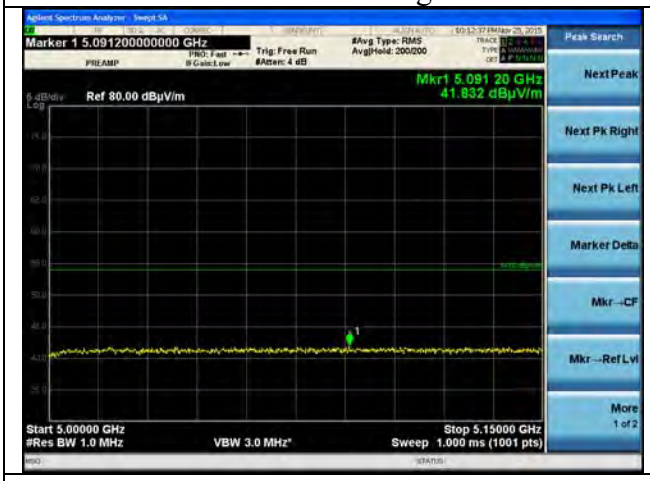
Lower band-edge – Channel 38 (HT 40)



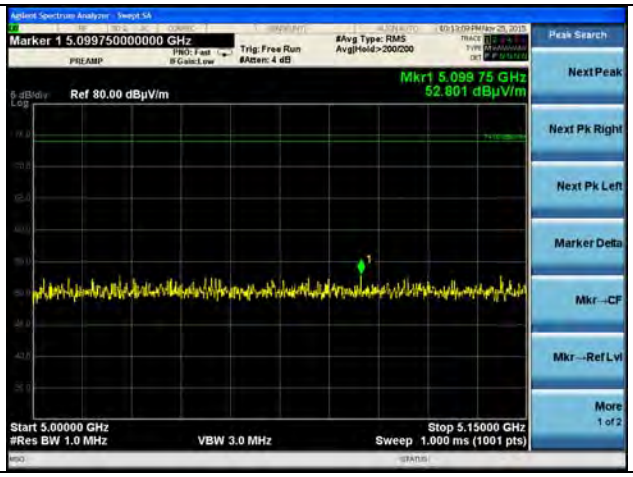
MCS 0 – Average



MCS 0 – Peak



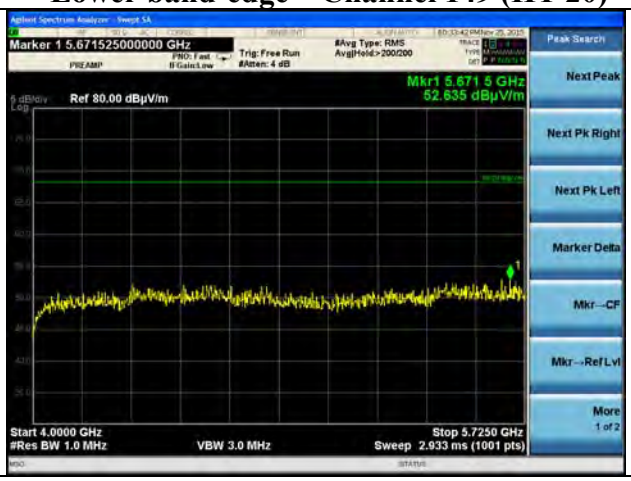
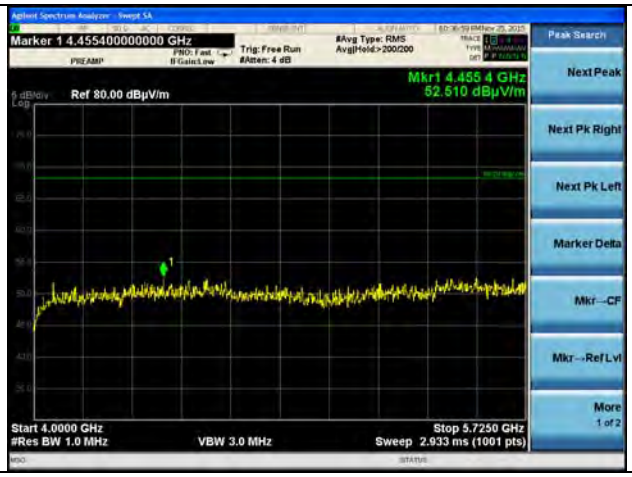
MCS 7 – Average



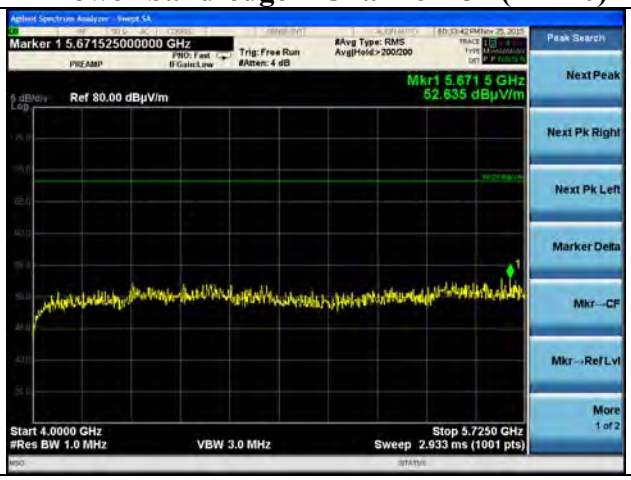
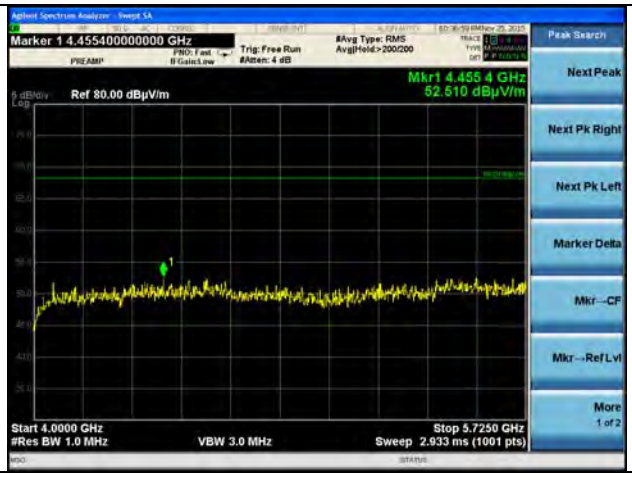
MCS 7 – Peak

UNII-3

Lower band-edge – Channel 149 (HT 20)

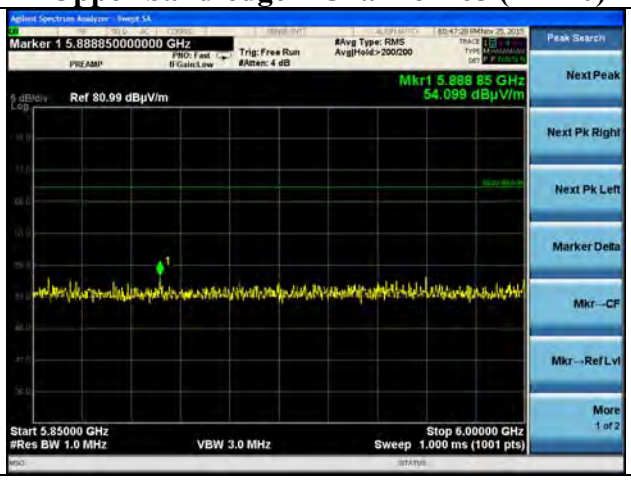
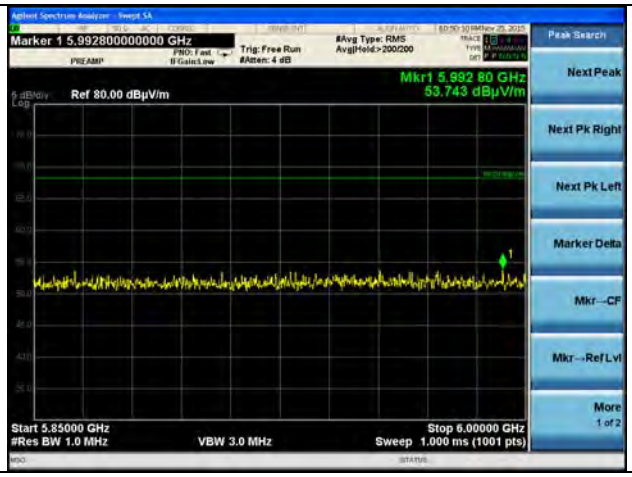
	
24 Mbps	MCS 0

Lower band-edge – Channel 151 (HT 40)

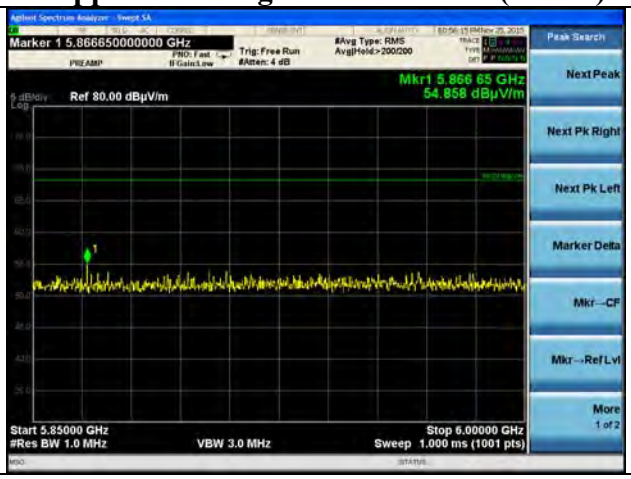
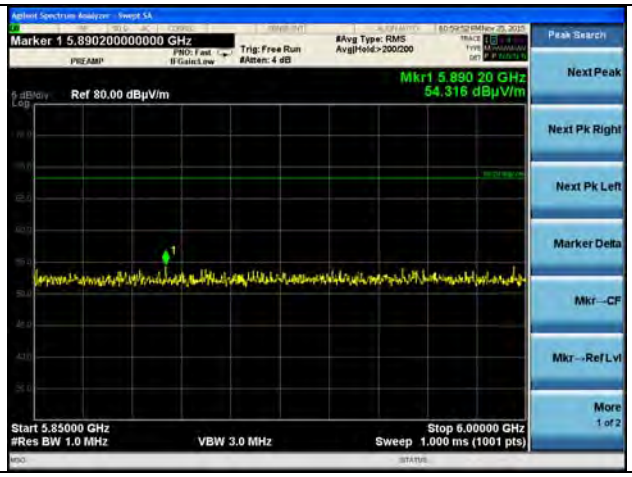
	
MCS 0	MCS 7

UNII-3

Upper band-edge – Channel 165 (HT 20)

	
24 Mbps	MCS 0

Upper band-edge – Channel 163 (HT 40)

	
MCS 0	MCS 7

B.2.2 – Radiated Emissions (>1 GHz)

Manufacturer	Tridium
Date	May 27-29, 2015
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	FCC 15.407 / 15.205 / 15.209 IC RSS-247 Section 6 / RSS-GEN
Measurement Procedure	ANSI C63.10-2013 Section 12.7
Test Distance	3 meter 1-18 GHz; 1 meter 18-40 GHz
EUT Placement	150 cm height non-conductive table centered on turn-table , absorbers covering ground plane
Detectors	Final Measurements: Peak
Additional Notes	1) EUT maximized in orientation, azimuth, and antenna height with maximum results reported. 2) No emissions found associated with transmit channel or modulation. 3) Terminated antenna method

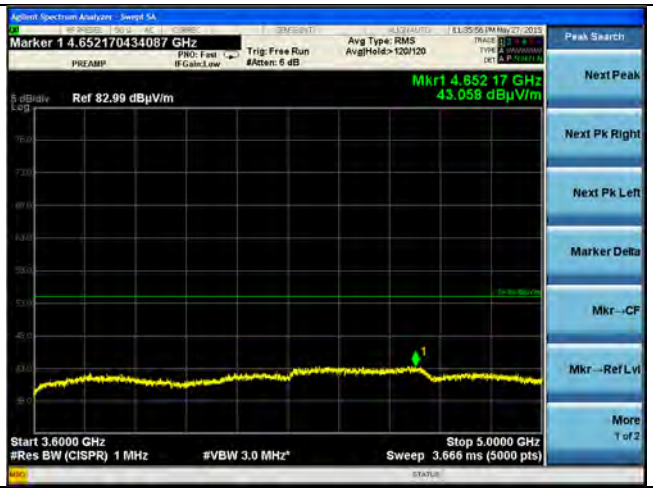
Plots

1-3.6 GHz

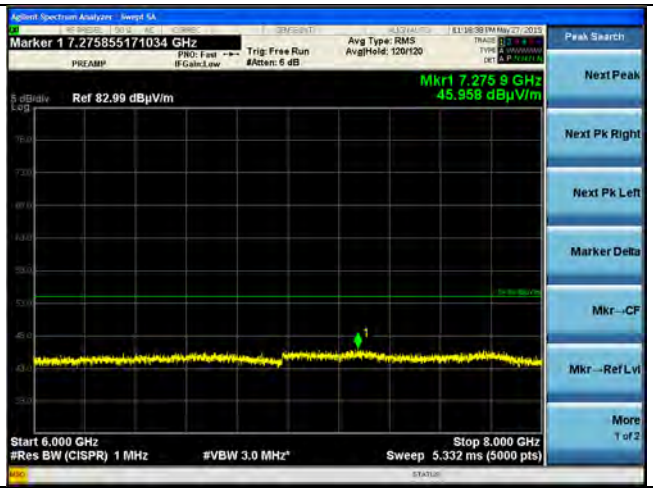
Average

Peak

3.6-8 GHz



Average



Peak

8-25 GHz

8-18 GHz

18-25 GHz

25-40 GHz

B.2.3 – Radiated Spurious Emissions Transmit Mode (30-1000 MHz)

Manufacturer	Tridium
Date	5/29/15
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	FCC 15.407/ 15.205 / 15.209 IC RSS-247 Section 6 / RSS-GEN
Measurement Procedure	ANSI C63.10-2013 Section 12.7
Test Distance	3 meter 30-1000 MHz
EUT Placement	80 cm height non-conductive table centered on turn-table (no absorbers on ground plane)
Detectors	Peak; RBW 120 kHz
Additional Notes	1) Tested in continuous transmit modulated mode with EUT in three orientations at maximum power. 2) Emissions not effected by channel or modulation.

Example Calculation:

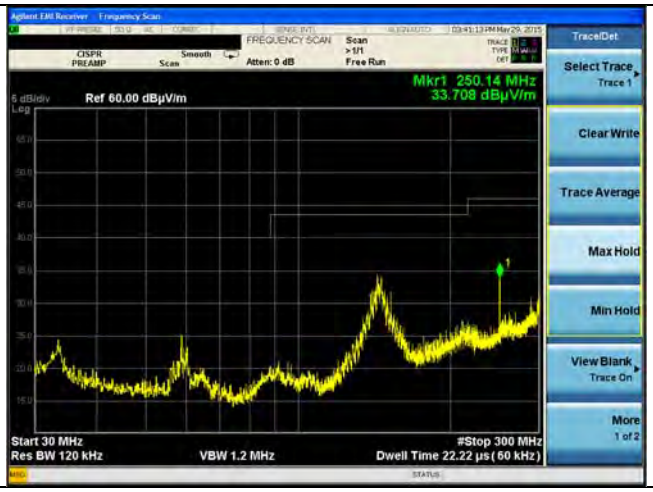
Limit (dBµV/m) – Reading (dBµV/m) = Margin

Table

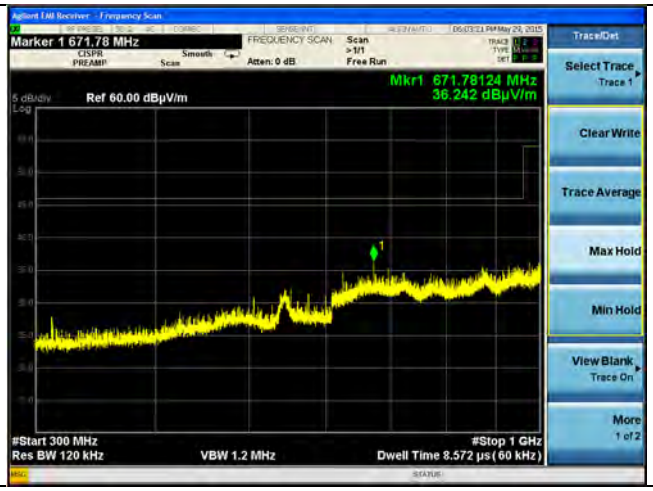
Frequency (MHz)	Height (m)	Azimuth (degree)	Quasi Peak Reading (dBµV/m)	Quasi Peak Limit (dBµV/m)	Margin (dB)	Antenna Polarity	EUT orientation
250.0	1.47	0	35.45	46.0	10.6	H	TT
145.7	2.00	227	38.3	43.5	5.2	H	TT
58.7	1.00	0	26.1	40.0	13.9	H	TT

Plots

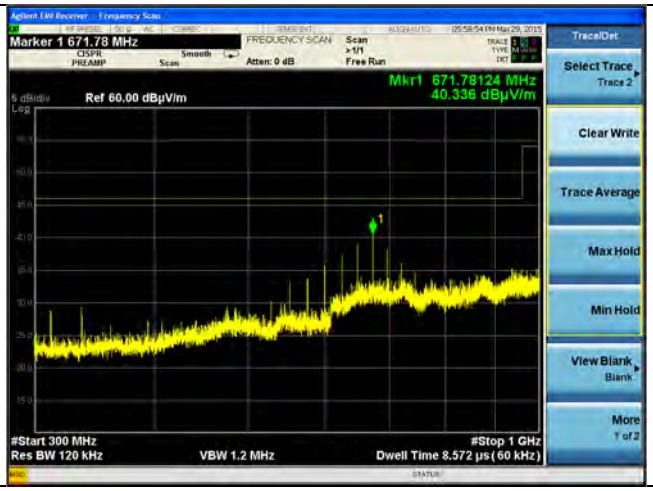
30-300 MHz Vertical



30-300 MHz Horizontal



300-1000 MHz Vertical



300-1000 MHz Horizontal

B.3 – AC Mains Conducted Emissions

Rule Part(s)	FCC: 15.207 IC: RSS-247 / RSS-GEN
Measurement Procedure	ANSI C63.4 - 2014 ANSI C63.10 – 2013
Test Location	LS Research, LLC – Conducted Emissions Area
Test Voltage	120 VAC 60 Hz
EUT Placement	80 cm height non-conductive table above reference ground plane
Frequency Range of Measurement	150 kHz – 30 MHz
Measurement Detectors	Peak, Quasi-Peak, Average RBW: 9 kHz VBW: At least 27 kHz
Description of Measurement	1) The LISN, cable, limiter, and other necessary measurement system correction factors are loaded onto the EMI receiver / spectrum analyzer when the measurements are performed. The data is gathered and reported as the corrected values. 2) The EUT is placed on a non-conductive pedestal at appropriate distance from ground planes and plugged into LISN. The LISN used has the ability to terminate the unused port with a 50Ω (ohm) load when switched to either L1 (line) or L2 (neutral). 3) Maximum emissions are determined with peak detector and measurements at select points are made with quasi-peak and average detectors. Results are recorded and compared to limit.
Example Calculations	Reported Measurement data = Raw receiver measurement + LISN Factor + Cable factor (dB) + Additional factor (when applicable)

Limits of Conducted Emissions at the AC Mains Ports:

Frequency Range (MHz)	Class B Limits (dBµV)	
	Quasi-Peak	Average
0.150 -0.50 *	66-56	56-46
0.5 – 5.0	56	46
5.0 – 30	60	50
* The limit decreases linearly with the logarithm of the frequency in this range.		

B.3.1 – AC Mains Conducted Emissions

Manufacturer	Tridium
Date	11-3-15
Operator	Peter Feilen
Temp. / R.H.	20 - 25º C / 30-60% R.H.
Rule Part	15.207 / RSS-GEN
Measurement Procedure	ANSI C63.4 - 2014 ANSI C63.10 - 2013 Section 6.2
Test Voltage	120 VAC 60 Hz supplied to AC adapter supplied by applicant for use with EUT
EUT Placement	80 cm height non-conductive table, 40 cm from vertical ground plane
Detectors	Peak; RBW 9 kHz Quasi-Peak and Average
Additional Notes	Tested in continuous transmit with no significant difference between operating modes

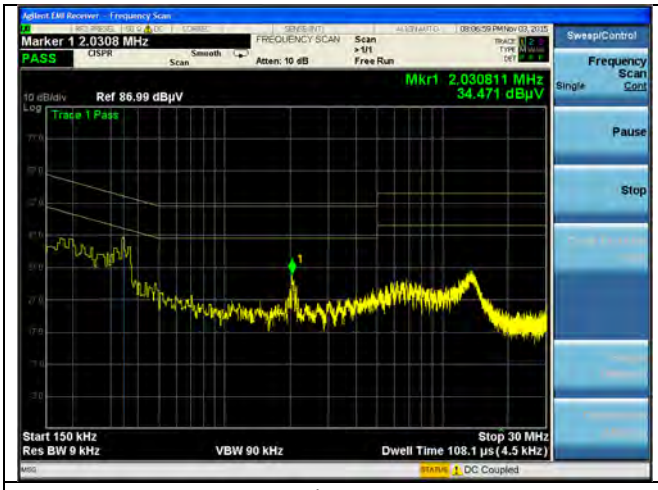
Example Calculation:

Margin (dB) = Limit (dBµV) – Reading (dBµV)

Data Table

		Quasi-Peak			Average		
Frequency (MHz)	Line	Q-Peak Reading (dBµV)	Q-Peak Limit (dBµV)	Quasi-Peak Margin (dB)	Average Reading (dBµV)	Average Limit (dBµV)	Average Margin (dB)
0.177	1	44.2	64.6	20.4	35.6	54.6	19.0
0.341	1	45.1	59.2	14.1	37.3	49.2	11.9
2.031	1	34.2	56.0	21.8	30.7	46.0	15.3
0.343	2	44.2	59.1	14.9	36.3	49.1	12.8
2.044	2	29.7	56.0	26.3	19.2	46.0	26.8
13.532	2	35.9	60.0	24.1	30.6	50.0	19.4

Plots



Line 1

Line 2

Appendix C - Uncertainty Summary

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level, using a coverage factor of k=2.

Table of Expanded Uncertainty Values, (K=2) for Specified Measurements

Measurement Type	Particular Configuration	Uncertainty Values
Radiated Emissions	3 – Meter chamber, Biconical Antenna	4.82 dB
Radiated Emissions	3-Meter Chamber, Log Periodic Antenna	4.88 dB
Radiated Emissions	3-Meter Chamber, Horn Antenna	4.85 dB
Absolute Conducted Emissions	Agilent PSA/ESA Series	1.38 dB
AC Line Conducted Emissions	Shielded Room/EMCO LISN	3.20 dB
Radiated Immunity	3 Volts/Meter in 3-Meter Chamber	2.05 Volts/Meter
Conducted Immunity	3 Volts level	2.33 V
EFT Burst, Surge, VDI	230 VAC	54.4 V
ESD Immunity	Discharge at 15kV	3200 V
Temperature/Humidity	Thermo-hygrometer	0.64° / 2.88 %RH

Appendix D - References

Publication	Year	Title
FCC CFR Parts 0-15	2015	Code of Federal Regulations – Telecommunications
RSS-247 Issue 1	2015	Digital Transmissions Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
RSS-GEN Issue 4	2014	General Requirements and Information for the Certification of Radio Apparatus
ANSI C63.4	2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
ANSI C63.10	2013	American National Standard of Procedures for Compliance Testing Unlicensed Wireless Devices

END OF REPORT