Test of AP0127730, AP0134760

To: FCC 47 CFR Part 15.407 & IC RSS-210

Test Report Serial No.: RDWN12-U2 Rev A

TEST REPORT

FROM

Test of AP0127730, AP0134760

to

To FCC 47 CFR Part 15.407 & IC RSS-210

Test Report Serial No.: RDWN12-U2 Rev A

This report supersedes None

Applicant: RADWIN Ltd
27 Habarzel Street
Tel Aviv, 69710
Israel

Product Function: 5 GHz 2x2 MIMO RF Module

Copy No: pdf Issue Date: 29th November 2012

This Test Report is Issued Under the Authority of;

MiCOM Labs, Inc.
440 Boulder Court, Suite 200
Pleasanton, CA 94566 USA
Phone: +1 (925) 462-0304
Fax: +1 (925) 462-0306
www.micomlabs.com

ACCREDITED
TEST CERTIFICATE #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

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ACCREDITATION, LISTINGS & RECOGNITION

TESTING ACCREDITATION

MiCOM Labs, Inc. is an accredited Electrical testing laboratory per the international standard EN ISO/IEC 17025. 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

RECOGNITION

MiCOM Labs, Inc has widely recognized Electrical testing capabilities. Our international recognition includes Conformity Assessment Body designation by APEC MRA** countries. Our test reports are widely accepted for global type approvals.

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

**APEC MRA – Asia Pacific Economic Community Mutual Recognition Agreement.
Is a 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
N/A – Not Applicable

**EU MRA – European Union Mutual Recognition Agreement.
Is a recognition agreement under which test lab is accredited to regulatory standards of the EU member countries.

**NB – Notified Body

PRODUCT CERTIFICATION

MiCOM Labs, Inc. is an accredited Product Certification Body per the international standard EN ISO/IEC Guide 65. 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

USA Telecommunication Certification Body (TCB) - TCB Identifier – US0159

Industry Canada Certification Body - CAB Identifier – US0159

European Notified Body - Notified Body Identifier - 2280

Japan – Recognized Certification Body (RCB) - RCB Identifier - 210

DOCUMENT HISTORY

Document History		
Revision	**Date**	**Comments**
Draft		
Rev A	29th November 2012	Initial release

1. TEST RESULT CERTIFICATE

Applicant:	RADWIN Ltd 27 Habarzel Street Tel Aviv, 69710 Israel	Tested By:	MiCOM Labs, Inc. 440 Boulder Court Suite 200 Pleasanton California, 94566, USA
EUT:	RF Module operating in the 4.9 – 5.8 GHz bands.	Tel:	+1 925 462 0304
Model:	AP0127730, AP0134760	Fax:	+1 925 462 0306
S/N:	Prototype		
Test Date(s):	10th to 18th September '12	Website:	www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC 47 CFR Part 15.407 & IC RSS-210	EQUIPMENT COMPLIES

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

Notes:

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

Approved & Released for MiCOM Labs, Inc. by:

ACCREDITED
TESTING CERTIFICATE #2381.01

Graeme Grieve
Quality Manager MiCOM Labs,

Gordon Hurst
President & CEO MiCOM Labs, Inc.

2. REFERENCES AND MEASUREMENT UNCERTAINTY

2.1. Normative References

Ref.	Publication	Year	Title
(i)	FCC 47 CFR Part 15.407	2012	Code of Federal Regulations
(ii)	FCC 06-96	June 2006	Memorandum Opinion and Order
(iii)	FCC OET KDB 662911	4th April 2011	Emissions Testing of Transmitters with Multiple Outputs in the Same Band
(iv)	Industry Canada RSS-210	2010	Low Power License-Exempt Radiocommunication Devices (All Frequency Bands): Category 1 Equipment
(v)	Industry Canada RSS-Gen	2010	General Requirements and Information for the Certification of Radiocommunication Equipment
(vi)	ANSI C63.4	2009	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
(vii)	CISPR 22/ EN 55022	2008 2006+A1:2007	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
(viii)	M 3003	Edition 1 Dec. 1997	Expression of Uncertainty and Confidence in Measurements
(ix)	LAB34	Edition 1 Aug 2002	The expression of uncertainty in EMC Testing
(x)	ETSI TR 100 028	2001	Parts 1 and 2 Electromagnetic compatibility and Radio Spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics
(xi)	A2LA	July 2012	Reference to A2LA Accreditation Status – A2LA Advertising Policy
(xii)	FCC Public Notice – DA 02-2138	2002	Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices

2.2. Test and Uncertainty Procedures

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.

3. PRODUCT DETAILS AND TEST CONFIGURATIONS

3.1. Technical Details

Details	Description
Purpose:	Test of the AP0127730, AP0134760 in the frequency ranges 5,250 to 5,350 MHz and 5470 to 5725 MHz to FCC Part 15.407 and Industry Canada RSS-210 regulations.
Applicant:	RADWIN Ltd 27 Habarzel Street Tel Aviv, 69710 Israel
Manufacturer:	As applicant
Laboratory performing the tests:	MiCOM Labs, Inc. 440 Boulder Court, Suite 200 Pleasanton, California 94566 USA
Test report reference number:	RDWN12-U2 Rev A
Date EUT received:	10th September 2012
Standard(s) applied:	FCC 47 CFR Part 15.407 & IC RSS-210
Dates of test (from - to):	10th to 18th September '12
No of Units Tested:	One
Type of Equipment:	5 GHz 2x2 MIMO RF module.
Applicants Trade Name:	RADWIN
Model(s):	AP0127730, AP0134760
Location for use:	Inside outdoor enclosure
Declared Frequency Range(s):	5,250 to 5,350 MHz and 5470 to 5725 MHz
Hardware Rev	Prototype
Software Rev	Prototype
Type of Modulation:	Per 802.11n – BPSK, QPSK, 16QAM, 64QAM, OFDM
Declared Nominal Output Power: (Average Power)	5 MHz: 18.03 dBm (5250-5350 MHz), 17.24 dBm (5470-5725 MHz) 10 MHz: 19.95 dBm (5250-5350 MHz), 20.03 dBm (5470-5725 MHz) 20 MHz: 23.36 dBm (5250-5350 MHz), 23.06 dBm (5470-5725 MHz) 40 MHz: 23.73 dBm (5250-5350 MHz), 23.92 dBm (5470-5725 MHz)
EUT Modes of Operation:	5, 10, 20, 40 MHz
Transmit/Receive Operation:	Time Division Duplex
System Beam Forming:	AP0127730, AP0134760 has no capability for beam forming
Rated Input Voltage and Current:	POE 55 Vdc 1 A
Operating Temperature Range:	Declared range -35° to +60ºC
ITU Emission Designator:	5 MHz 5M00W7W 10 MHz 10M0W7W 20 MHz 20M0W7W 40 MHz 40M0W7W

Equipment Dimensions:	1.9” x 2.0” x 0.3” inches
Weight:	0.042 lb (19 g)
Primary function of equipment:	5 GHz 2x2 MIMO RF module

3.2. Scope of Test Program

AP0127730, AP0134760 RF Testing

The scope of the test program was to test the AP0127730, AP0134760 5 GHz 2x2 MIMO RF module configurations in the frequency range 5250 to 5350 MHz and 5470 to 5725 MHz for compliance against FCC 47 CFR Part 15.407 and Industry Canada RSS-210 specifications.

FCC OET KDB Implementation

This test program implements the following FCC KDB – 662911 4/4/2011;
Emissions Testing of Transmitters with Multiple Outputs in the Same Band

The KDB document provides guidance for measurements of conducted output emissions of devices that employ a single transmitter with multiple outputs in the same band, with the outputs occupying the same or overlapping frequency ranges. It applies to EMC compliance measurements on devices that transmit on multiple antennas simultaneously in the same or overlapping frequency ranges through a coordinated process. Examples include, but are not limited to, devices employing beam forming or multiple-input and multiple-output (MIMO.) This guidance applies to both licensed and unlicensed devices wherever the FCC rules call for conducted output measurements. Guidance is provided for in-band, out-of-band and spurious emission measurements.

This guidance does not apply to the multiple transmitters included in a composite device, such as a device that combines an 802.11 modem with a cell phone in one enclosure with each driving its own antenna.

AP0127730, AP0134760

AP0127730, AP0134760 (Rear)

AP0127730, AP0134760 Label

I

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

Equipment Type	Equipment Description (Including Brand Name)	Mfr	Model No.	Serial No.
EUT	RF module operating in the 4.9-5.8 GHz bands	RADWIN Ltd	AP0127730, AP0134760	None
Support	Laptop PC	DELL	LATITUDE D530	None

3.4. Antenna Details

Radiated emissions testing were performed in the mode with the highest spectral density to verify compliance. Radiated emissions were performed on the highest gain of each type of antenna as identified in the table below;-

Radiated Emission Results (Antenna #)	Antenna Type	Manufaturer	Model Number	Antenna Gain (dBi)	
				5250-5350 MHz	5470-5725 MHz
1	Sector Dual Pole Integrated 120 Deg	RADWIN Ltd.	MT0128930	11	11
	Sector Dual Pole 120 Deg	RADWIN Ltd.	RW-9061-5004	11	11
2	Sector Dual Pole Integrated 95 Deg	RADWIN Ltd.	AM0135060	12	12
	Sector Dual Pole 90 Deg	RADWIN Ltd.	RW-9061-5001	14	14
3	Sector Dual Pole 60 Deg	RADWIN Ltd.	RW-9061-5002	15.5	16.5
	Sector Dual Pole Integrated 90 Deg	RADWIN Ltd.	MT0125250	13	13
	Flat Panel Dual Pole Integrated	RADWIN Ltd.	AM0119960	16	16
4	Flat Panel Dual Pole Integrated	RADWIN Ltd.	AM0111760	16	16.5
	Flat Panel Dual Pole External	RADWIN Ltd.	RW-9612-5001	23	23
5	Flat Panel Dual Pole Integrated	RADWIN Ltd.	MT0070760	23.5	23.5
6	Flat Panel Dual Pole External	RADWIN Ltd.	RW-9622-5001	29	29
	Dual Pole Dish	RADWIN Ltd.	RW-9721-5158	28	29
7	Dual Pole Dish	RADWIN Ltd.	RW-9732-4958	32	32

3.5. Cabling and I/O Ports

Number and type of I/O ports

1. 1 x 10/100/1000 Ethernet (includes POE +55 Vdc)

3.6. Test Configurations

Testing was performed to determine the highest power level versus bit rate. The variant with the highest power was used to exercise the product.

Matrix of test configurations

Channel Bandwidth	Data Rates with Highest Power	Frequencies (MHz)
5 MHz	15 MCS	5255 / 5300 / 5345
10 MHz	15 MCS	5260 / 5300 / 5340
20 MHz	15 MCS	5265 / 5300 / 5335
40 MHz	15 MCS	5275 / 5300 / 5325
5 MHz	15 MCS	5475 / 5595 / 5720
10 MHz	15 MCS	5475 / 5595 / 5720
20 MHz	15 MCS	5480 / 5590 / 5715
40 MHz	15 MCS	5500 / 5570 / 5695

Antenna Test Configurations for Radiated Emissions and Band-Edge
The following measurements were performed on all antenna configurations identified in Section 3.4 Antenna Details.

Spurious Emission and Band-Edge Test Strategy
Bands 5,250 – 5,350 Hz ; 5470 – 5725 MHz

5 MHz
SE 5255
SE 5300
SE 5345
BE 5350
BE 5470
SE 5475
SE 5595
SE 5720

KEY:-

SE – Spurious Emissions

BE – Band-Edge

3.7. Equipment Modifications

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

1. Band-Edge Power Reduction

   The power settings required for each antenna to comply with the requirements are detailed in Section 6.1.1.2 “Maximum Conducted Output Power”

3.8. Deviations from the Test Standard

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

1. NONE

3.9. Subcontracted Testing or Third Party Data

NONE

4. TESTING EQUIPMENT CONFIGURATION(S)

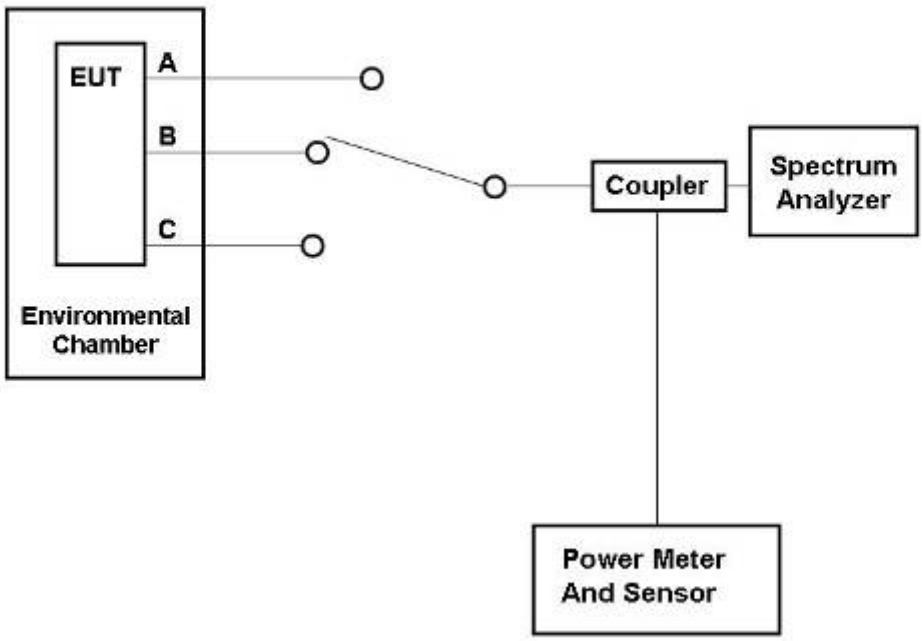
4.1. Conducted RF Emission Test Set-up

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

1. Section 6.1.1.1. 26 dB and 99% Bandwidth
2. Section 6.1.1.2. Maximum Conducted Output Power
3. Section 6.1.1.3. Peak Power Spectral Density
4. Section 6.1.1.4. Peak Excursion Ratio

Conducted Test Set-Up Pictorial Representation

3 - Port Test Configuration

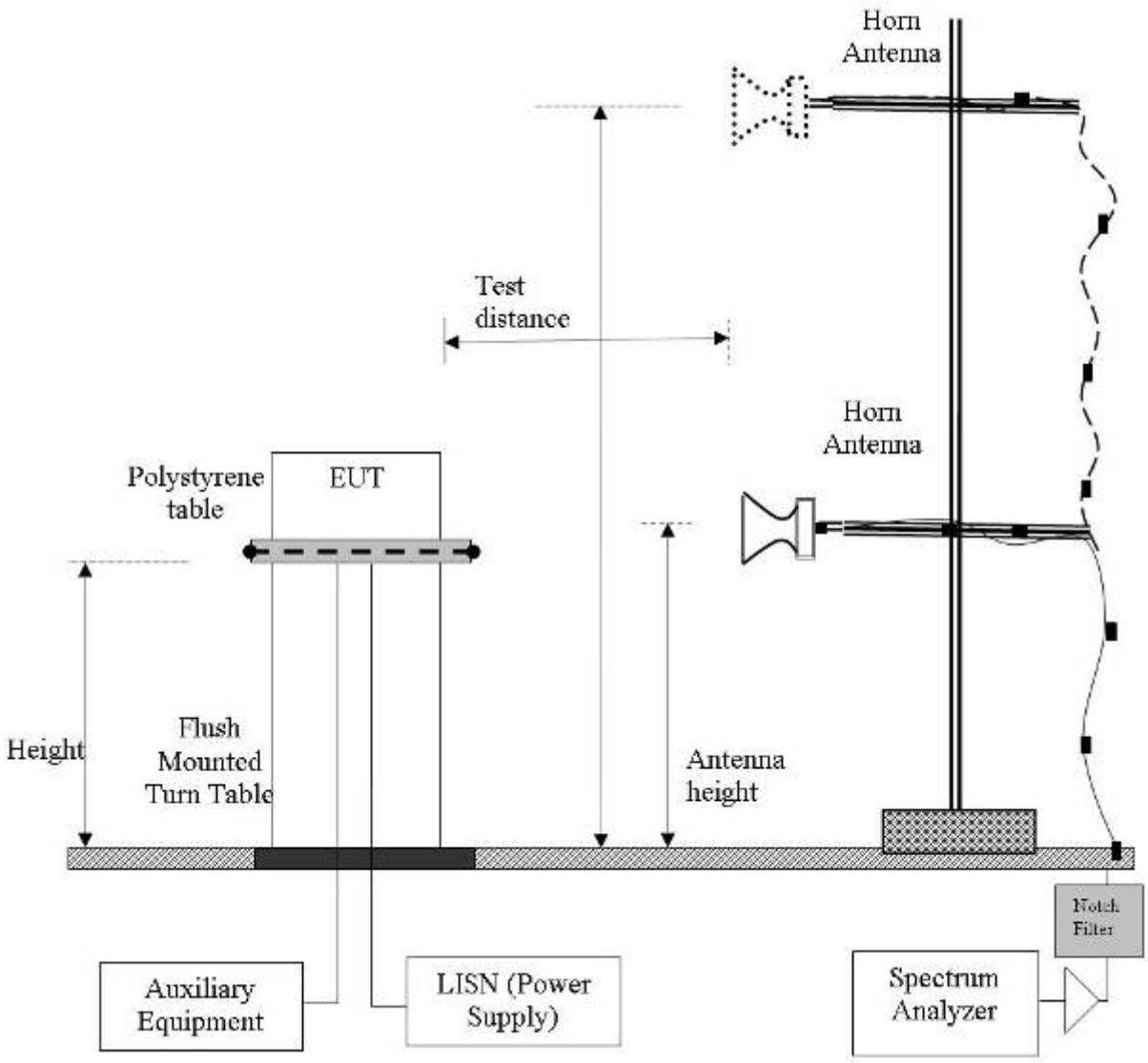


4.2. Radiated Spurious Emission Test Set-up > 1 GHz

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

1. Section 6.1.2.

Radiated Emission Measurement Setup – Above 1 GHz

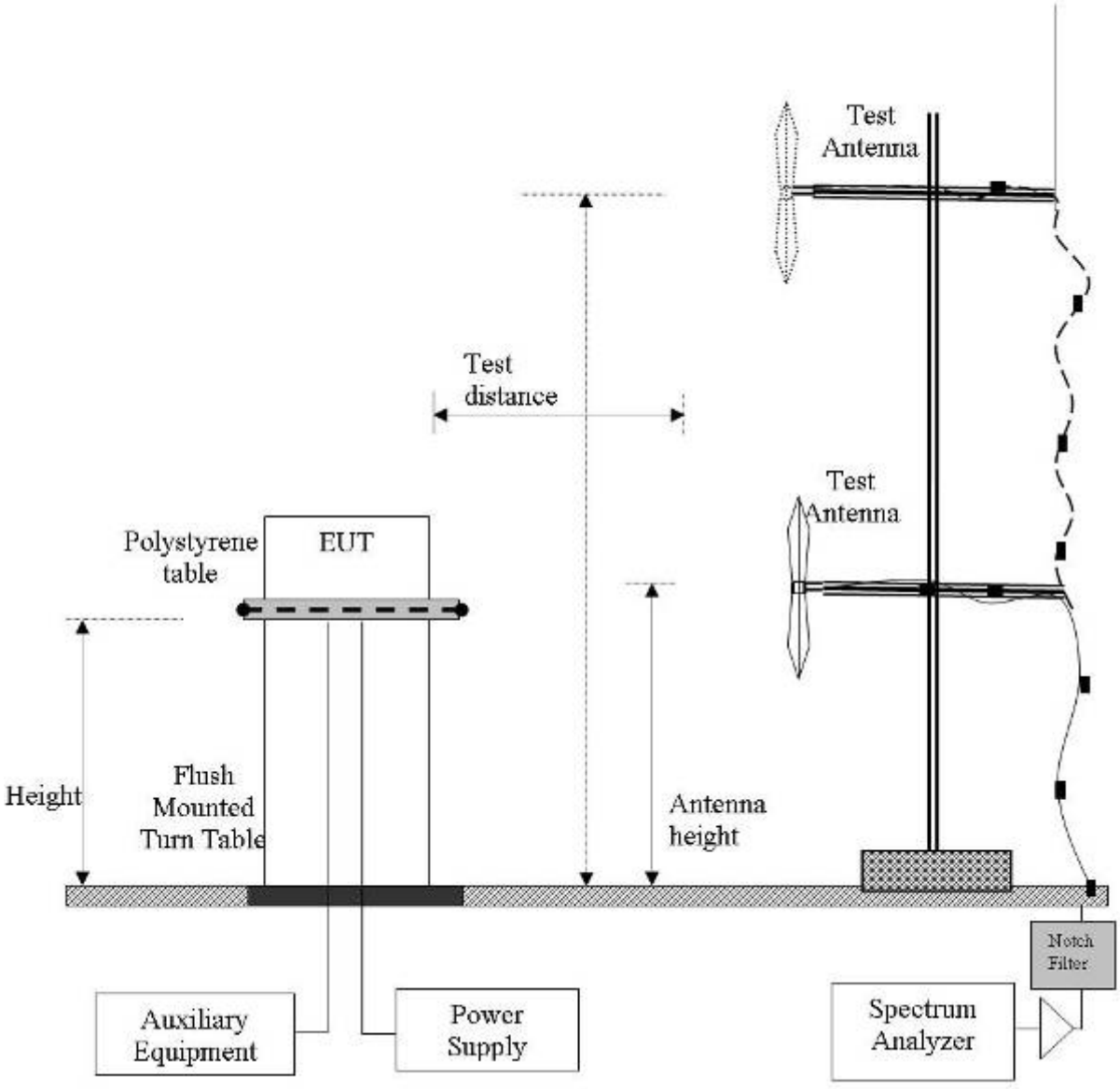


4.3. Digital Emissions Test Set-up (0.03 – 1 GHz)

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

1. Section 6.1.2.4. Digital Emissions

Digital Emission Measurement Setup – Below 1 GHz

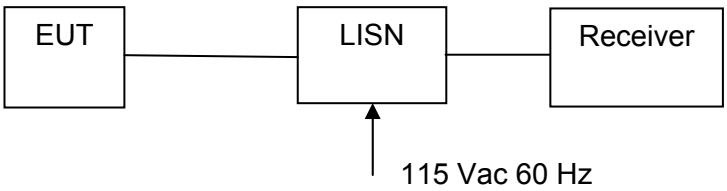


4.4. ac Wireline Emission Test Set-up

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

1. Section 6.1.3 ac Wireline Conducted Emissions

Conducted Test Set-Up Pictorial Representation



Measurement set up for ac Wireline Conducted Emissions Test

5. TEST SUMMARY

List of Measurements

The following table represents the list of measurements required under the **FCC CFR47 Part 15.407** and **Industry Canada RSS-210**.and **Industry Canada RSS-Gen**.

Section(s)	Test Items	Description	Condition	Result	Test Report Section
15.407(a) **A9.2(2)** **4.4**	26dB and 99% Emission BW	Emission bandwidth measurement	Conducted	Complies	6.1.1.1 A.1.1
15.407(a) **A9.2(2)** **4.6**	Maximum Conducted Output Power	Power Measurement	Conducted	Complies	6.1.1.2
15.407(a) **A9.2(2)**	Peak Power Spectral Density	PPSD	Conducted	Complies	6.1.1.3 A.1.2
15.407(a)(6)	Peak Excursion Ratio	<13dB in any 1MHz bandwidth	Conducted	Complies	6.1.1.4 A.1.3
15.407(g) **15.31** **2.1** **4.5**	Frequency Stability	Limits: contained within band of operation at all times.	Applicant declaration	Complies	6.1.1.5
15.407(f) **5.5**	Radio Frequency Radiation Exposure	Exposure to radio frequency energy levels, Maximum Permissible Exposure (MPE)	Conducted	See included MPE exhibit	6.1.1.6

List of Measurements (continued)

The following table represents the list of measurements required under the **FCC CFR47 Part 15.407** and **Industry Canada RSS-210** and **Industry Canada RSS-Gen**.

Section(s)	Test Items	Description	Condition	Result	Test Report Section
15.407(b)(2) **15.205(a)** **15.209(a)** **2.2** **2.6** **A9.3(2)** **4.7**	Radiated Emissions		Radiated		6.1.2
	Transmitter Radiated Spurious Emissions	Emissions above 1 GHz		Complies	6.1.2
	Radiated Band Edge	Band edge results		Complies	6.1.2
4.10 **6**	Radiated Receiver Emissions			Complies	6.1.3
15.407(b)(6) **15.205(a)** **15.209(a)** **2.2**	Digital Radiated Emissions	Emissions <1 GHz (30M-1 GHz)		Complies	6.1.4
15.407(b)(6) **15.207** **7.2.2**	AC Wireline Conducted Emissions 150 kHz–30 MHz	Conducted Emissions	Conducted	N/A EUT is POE powered - not shipped with equipment	6.1.5

Note 1: Test results reported in this document relate only to the items tested

Note 2: The required tests demonstrated compliance as per client declaration of test configuration, monitoring methodology and associated pass/fail criteria

Note 3: Section 3.7 Equipment Modifications highlights the equipment modifications that were required to bring the product into compliance with the above test matrix

6. TEST RESULTS

6.1. Device Characteristics

6.1.1. Conducted Testing

6.1.1.1. 26 dB and 99 % Bandwidth

Conducted Test Conditions for 26 dB and 99% Bandwidth			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	26 dB and 99 % Bandwidth	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.407 (a)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 789033 - D01 DTS General UNII Test Procedures v01		

Test Procedure for 26 dB and 99% Bandwidth Measurement

The bandwidth at 26 dB and 99 % is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate center frequency. KDB 789033 Section 5.1 Emission Bandwidth was used in order to prove compliance. The Resolution Bandwidth was set to approximately 1% of the emission bandwidth.

Measurement Results for 26 dB and 99 % Operational Bandwidth(s)

5250 -5350 MHz

Equipment Configuration for 26 dB 99%			
Variant:	5 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz) Port(s)				26 dB Bandwidth (MHz)			
MHz	a	b	c	d	Highest	Lowest		
5255.0	6.889	7.014			7.014	6.889		
5300.0	6.789	6.889			6.889	6.789		
5345.0	6.713	6.864			6.864	6.713		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	a	b	c	d	Highest	Lowest		
5255.0	4.684	4.684			4.684	4.684		
5300.0	4.684	4.684			4.684	4.684		
5345.0	4.684	4.659			4.684	4.659		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

Equipment Configuration for 26 dB 99%			
Variant:	10 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz) Port(s)				26 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5260.0	11.423	11.022			11.423	11.022		
5300.0	10.922	10.822			10.922	10.822		
5340.0	11.573	10.571			11.573	10.571		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5260.0	9.018	9.068			9.068	9.018		
5300.0	9.018	8.968			9.018	8.968		
5340.0	8.968	8.968			8.968	8.968		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

Equipment Configuration for 26 dB 99%			
Variant:	20 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz) Port(s)				26 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5265.0	23.046	22.545			23.046	22.545		
5300.0	22.745	23.046			23.046	22.745		
5335.0	23.046	22.745			23.046	22.745		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5265.0	17.936	17.936			17.936	17.936		
5300.0	17.936	17.936			17.936	17.936		
5335.0	17.936	17.936			17.936	17.936		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

Equipment Configuration for 26 dB 99%			
Variant:	40 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz) Port(s)				26 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5275.0	44.289	43.687			44.289	43.687		
5300.0	43.287	43.086			43.287	43.086		
5325.0	44.088	42.685			44.088	42.685		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5275.0	36.473	36.473			36.473	36.473		
5300.0	36.473	36.473			36.473	36.473		
5325.0	36.673	36.473			36.673	36.473		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

5470 -5725 MHz

Equipment Configuration for 26 dB 99%			
Variant:	5 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz) Port(s)				26 dB Bandwidth (MHz)			
MHz	a	b	c	d	Highest	Lowest		
5475.0	6.488	6.613			6.613	6.488		
5595.0	6.688	6.638			6.688	6.638		
5720.0	6.288	6.588			6.588	6.288		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	a	b	c	d	Highest	Lowest		
5475.0	4.684	4.684			4.684	4.684		
5595.0	4.659	4.684			4.684	4.659		
5720.0	4.659	4.684			4.684	4.659		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

Equipment Configuration for 26 dB 99%			
Variant:	10 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz) Port(s)				26 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5475.0	11.022	10.371			11.022	10.371		
5595.0	10.972	10.721			10.972	10.721		
5720.0	11.373	11.473			11.473	11.373		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5475.0	9.018	9.018			9.018	9.018		
5595.0	9.018	8.968			9.018	8.968		
5720.0	9.018	9.018			9.018	9.018		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

Equipment Configuration for 26 dB 99%			
Variant:	20 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz) Port(s)				26 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5480.0	23.246	22.745			23.246	22.745		
5590.0	22.745	23.046			23.046	22.745		
5715.0	23.347	23.146			23.347	23.146		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5480.0	17.936	17.936			17.936	17.936		
5590.0	17.936	17.936			17.936	17.936		
5715.0	17.936	17.936			17.936	17.936		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

Equipment Configuration for 26 dB 99%			
Variant:	40 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 26 dB Bandwidth (MHz) Port(s)				26 dB Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5500.0	44.289	43.287			44.289	43.287		
5570.0	43.487	43.888			43.888	43.487		
5695.0	43.687	43.888			43.888	43.687		

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				99% Bandwidth (MHz)			
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**		
5500.0	36.673	36.473			36.673	36.473		
5570.0	36.673	36.673			36.673	36.673		
5695.0	36.473	36.673			36.673	36.473		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

Specification

Limits

FCC, Part 15 §15.407 (a)(1), (a)(2) and Industry Canada RSS-210 § A9.2(2)

(a)(1) For the band 5.15-5.25 GHz the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or +4 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed +4 dBm in any 1 megahertz band.

(a)(2) For the 5.25-5.35 GHz band the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or +11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed +11 dBm in any 1 megahertz band.

Industry Canada RSS-Gen 4.4

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

Traceability

Test Equipment Used
0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117

6.1.1.2. Maximum Conducted Output Power

Conducted Test Conditions for Maximum Conducted Output Power			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Maximum Conducted Output Power	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.407 (a)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 789033 - D01 DTS General UNII Test Procedures v01		

Test Procedure for Maximum Conducted Output Power Measurement

Method PM (Measurement using an RF average power meter). Section C) 4) of KDB 789033 defines a methodology using an average wideband power meter. Measurements were made while the EUT was operating in a continuous transmission mode (100% duty cycle) at the appropriate center frequency. All cable losses and offsets were taken into consideration in the measured result. All operational modes and frequency bands were measured independently and the resultant □ calculated. For multiple outputs, the measurements were made simultaneously on each output port and summed in a linear fashion. This technique was used in order to prove compliance.

Antenna Power Levels

15. 407 (a) (2) Operation with directional antenna gains greater than 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. Further FCC KDB 662911 D01 Multiple Transmitter Output v01 requires that the gain of antennas transmitting the same data (legacy 802.11a mode) must be increased by 10 * Log (N) when N is the number of antenna elements.

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

Antenna	Gain	Max. Allowable Conducted Peak Power (dBm)		Maximum EIRP
Model Number	(dBi)	Max. Total Power	Max. Power Per Chain	(dBm)
RW-9732-4958	31*	-1	-4.01	30
RW-9721-5158	27* (5250-5350 MHz)	3	-0.01	30
	28* (5470-5725 MHz)	2	-1.01	30
RW-9622-5001	28*	2	-1.01	30
RW-9612-5001	22*	8	4.99	30
MT0070760	23.5	6.5	3.49	30
AM0111760	16 (5250-5350 MHz)	14	10.99	30
	16.5 (5470-5725 MHz)	13.5	10.49	30
AM0119960	16	14	10.99	30
MT0125250	13	17	13.99	30
RW-9061-5002	14.5* (5250-5350 MHz)	15.5	12.49	30
	15.5* (5470-5725 MHz)	14.5	11.49	30
RW-9061-5001	13*	17	13.99	30
RW-9061-5004	10*	20	16.99	30
MT0128930	11	19	15.99	30
AM0135060	12	18	14.99	30

* The gain includes 1 dB feeder cable loss for external antennas

The AP0127730, AP0134760 has no beam-forming capability. The EUT operates in four different bandwidth modes;- 5 MHz; 10 MHz; 20 MHz; and 40 MHz. The 11 dBm + 10 log B limits are calculated for each mode along with the conducted power measurements for each antenna presented in this section of the test report.

Measurement Results for Maximum Conducted Output Power

Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)		**Rel. Humidity (%):**	35 to	42
Variant:	5 MHz		**Ambient Temp. (ºC):**	19 to	22
TPC:	HIGH		**Pressure (mBars):**	998 to	1003
Modulation:	ON		**Duty Cycle (x):**	100	
Beam Forming Gain (Y):	N/A	dB	**Antenna Gain:**	0 dBi	
Applied Voltage:	55.0	Vdc			
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		26dB Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5255	14.08	14.27	--	--	N/A	17.19	19.27	-2.08
5300	14.09	13.68	--	--	N/A	16.90	19.27	-2.37
5345	15.23	14.80	--	--	N/A	18.03	19.27	-1.24

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)		**Rel. Humidity (%):**	35 to	42
Variant:	10 MHz		**Ambient Temp. (ºC):**	19 to	22
TPC:	HIGH		**Pressure (mBars):**	998 to	1003
Modulation:	ON		**Duty Cycle (x):**	100	
Beam Forming Gain (Y):	N/A	dB	**Antenna Gain:**	0 dBi	
Applied Voltage:	55.0	Vdc			
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		26dB Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5260	16.75	16.32	--	--	N/A	19.55	21.24	-1.69
5300	17.03	16.74	--	--	N/A	19.90	21.24	-1.34
5340	17.14	16.73	--	--	N/A	19.95	21.24	-1.29

Measurement uncertainty:	±1.33 dB

Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)		**Rel. Humidity (%):**	35	to	42
Variant:	20 MHz		**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH		**Pressure (mBars):**	998	to	1003
Modulation:	ON		**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A	dB	**Antenna Gain:**	0 dBi		
Applied Voltage:	55.0	Vdc				
Notes 1:						
Notes 2:						

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		26dB Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5265	20.09	19.40	--	--	N/A	22.77	24.00	-1.23
5300	19.94	19.30	--	--	N/A	22.64	24.00	-1.36
5335	20.43	20.26	--	--	N/A	23.36	24.00	-0.64

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)		**Rel. Humidity (%):**	35	to	42
Variant:	40 MHz		**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH		**Pressure (mBars):**	998	to	1003
Modulation:	ON		**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A	dB	**Antenna Gain:**	0 dBi		
Applied Voltage:	55.0	Vdc				
Notes 1:						
Notes 2:						

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		26 dB Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5275	20.81	20.24	--	--	N/A	23.54	24.00	-0.46
5300	20.82	20.22	--	--	N/A	23.54	24.00	-0.46
5325	21.20	20.18	--	--	N/A	23.73	24.00	-0.27

Measurement uncertainty:	±1.33 dB

Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)		**Rel. Humidity (%):**	35 to 42	
Variant:	5 MHz		**Ambient Temp. (ºC):**	19 to 22	
TPC:	HIGH		**Pressure (mBars):**	998 to 1003	
Modulation:	ON		**Duty Cycle (x):**	100	
Beam Forming Gain (Y):	N/A	dB	**Antenna Gain:**	0 dBi	
Applied Voltage:	55.0	Vdc			
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		26 dB Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5475	14.46	12.70	--	--	N/A	16.68	19.27	-2.59
5595	14.64	13.49	--	--	N/A	17.11	19.27	-2.16
5720	14.57	13.86	--	--	N/A	17.24	19.27	-2.03

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)		**Rel. Humidity (%):**	35 to 42	
Variant:	10 MHz		**Ambient Temp. (ºC):**	19 to 22	
TPC:	HIGH		**Pressure (mBars):**	998 to 1003	
Modulation:	ON		**Duty Cycle (x):**	100	
Beam Forming Gain (Y):	N/A	dB	**Antenna Gain:**	0 dBi	
Applied Voltage:	55.0	Vdc			
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		26 dB Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5475	17.22	15.91	--	--	N/A	19.62	21.24	-1.62
5595	17.25	16.06	--	--	N/A	19.71	21.24	-1.53
5720	17.36	16.66	--	--	N/A	20.03	21.24	-1.21

Measurement uncertainty:	±1.33 dB

Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)		**Rel. Humidity (%):**	35 to 42	
Variant:	20 MHz		**Ambient Temp. (ºC):**	19 to 22	
TPC:	HIGH		**Pressure (mBars):**	998 to 1003	
Modulation:	ON		**Duty Cycle (x):**	100	
Beam Forming Gain (Y):	N/A	dB	**Antenna Gain:**	0 dBi	
Applied Voltage:	55.0	Vdc			
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		26 dB Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5480	20.49	19.55	--	--	N/A	23.06	24.00	-0.94
5590	20.58	19.28	--	--	N/A	22.99	24.00	-1.01
5715	19.96	19.41	--	--	N/A	22.70	24.00	-1.30

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)		**Rel. Humidity (%):**	35 to 42	
Variant:	40 MHz		**Ambient Temp. (ºC):**	19 to 22	
TPC:	HIGH		**Pressure (mBars):**	998 to 1003	
Modulation:	ON		**Duty Cycle (x):**	100	
Beam Forming Gain (Y):	N/A	dB	**Antenna Gain:**	0 dBi	
Applied Voltage:	55.0	Vdc			
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		26 dB Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5500	21.45	20.01	--	--	N/A	23.80	24.00	-0.20
5570	21.66	20.00	--	--	N/A	23.92	24.00	-0.08
5695	21.00	19.78	--	--	N/A	23.44	24.00	-0.56

Measurement uncertainty:	±1.33 dB

Antenna #1; 11dBi Sector Antenna
Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	5 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming	N/A dB	**Antenna Gain:**	11 dBi		
Applied Voltage:	55.0 Vdc		0		
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5255	11.08	11.27	--	--	N/A	14.19	25.19	19.27	25.27	14.27	-0.08	10
5300	11.09	10.68	--	--	N/A	13.90	24.90	19.27	25.27	14.27	-0.37	10
5345	5.16	6.57	--	--	N/A	8.93	19.93	19.27	25.27	14.27	-5.33	**1**

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	10 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming	N/A dB	**Antenna Gain:**	11 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5260	13.31	13.07	--	--	N/A	16.20	27.20	21.24	27.24	16.24	-0.04	15
5300	13.33	12.74	--	--	N/A	16.06	27.06	21.24	27.24	16.24	-0.19	15
5340	8.13	9.37	--	--	N/A	11.80	22.80	21.24	27.24	16.24	-4.44	**7**

Antenna #1; 11dBi Sector Antenna
Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	20 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming	N/A dB	**Antenna Gain:**	11 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5265	16.03	15.85	--	--	N/A	18.95	29.95	24.00	30.00	19.00	-0.05	20
5300	16.04	15.80	--	--	N/A	18.93	29.93	24.00	30.00	19.00	-0.07	20
5335	9.34	9.34	--	--	N/A	12.35	23.35	24.00	30.00	19.00	-6.65	**7**

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	40 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming	N/A dB	**Antenna Gain:**	11 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5275	15.56	16.25	--	--	N/A	18.93	29.93	24.00	30.00	19.00	-0.07	23
5300	15.57	16.35	--	--	N/A	18.99	29.99	24.00	30.00	19.00	-0.01	23
5325	8.97	10.00	--	--	N/A	12.53	23.53	24.00	30.00	19.00	-6.47	**9**

Measurement uncertainty:	±1.33 dB

Antenna #1; 11dBi Sector Antenna
Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	5 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming	N/A dB	**Antenna Gain:**	11 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5475	11.46	10.70	--	--	N/A	14.11	25.11	19.27	25.27	14.27	-0.16	10
5595	11.64	10.49	--	--	N/A	14.11	25.11	19.27	25.27	14.27	-0.15	10
5720	11.57	10.86	--	--	N/A	14.24	25.24	19.27	25.27	14.27	-0.03	10

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	10 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming	N/A dB	**Antenna Gain:**	11 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5475	12.62	12.66	--	--	N/A	15.65	26.65	21.24	27.24	16.24	-0.59	**15**
5595	13.25	12.06	--	--	N/A	15.71	26.71	21.24	27.24	16.24	-0.53	15
5720	13.36	12.66	--	--	N/A	16.03	27.03	21.24	27.24	16.24	-0.21	15

Measurement uncertainty:	±1.33 dB

Antenna #1; 11dBi Sector Antenna
Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	20 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming	N/A dB	**Antenna Gain:**	11 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5480	12.64	12.43	--	--	N/A	15.55	26.55	24.00	30.00	19.00	-3.45	**15**
5590	16.58	15.28	--	--	N/A	18.99	29.99	24.00	30.00	19.00	-0.01	20
5715	15.96	15.41	--	--	N/A	18.70	29.70	24.00	30.00	19.00	-0.30	20

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	40 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming	N/A dB	**Antenna Gain:**	11 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:	(Numbers in Parenthesis are original measured Power vs 30 dBm)				

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5500	16.01	15.85	--	--	N/A	18.94	29.94	24.00	30.00	19.00	-0.06	**15**
5570	16.66	15.00	--	--	N/A	18.92	29.92	24.00	30.00	19.00	-0.08	20
5695	16.00	15.78	--	--	N/A	18.90	29.90	24.00	30.00	19.00	-0.10	20

Measurement uncertainty:	±1.33 dB

Antenna #2; 12dBi Sector Antenna
Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	5 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	12 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5255	10.08	10.27	--	--	N/A	13.19	25.19	19.27	25.27	13.27	-0.08	9
5300	10.09	9.68	--	--	N/A	12.90	24.90	19.27	25.27	13.27	-0.37	9
5345	5.16	6.57	--	--	N/A	8.93	20.93	19.27	25.27	13.27	-4.33	**1**

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	10 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	12 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5260	12.25	11.82	--	--	N/A	15.05	27.05	21.24	27.24	15.24	-0.19	13
5300	12.03	11.74	--	--	N/A	14.90	26.90	21.24	27.24	15.24	-0.34	13
5340	8.13	9.37	--	--	N/A	11.80	23.80	21.24	27.24	15.24	-3.44	**7**

Measurement uncertainty:	±1.33 dB

Antenna #2; 12dBi Sector Antenna
Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	20 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	12 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5265	15.09	14.40	--	--	N/A	17.77	29.77	24.00	30.00	18.00	-0.23	17
5300	14.94	14.30	--	--	N/A	17.64	29.64	24.00	30.00	18.00	-0.36	17
5335	9.34	9.34	--	--	N/A	12.35	24.35	24.00	30.00	18.00	-5.65	**7**

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	40 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	12 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5275	14.66	15.09	--	--	N/A	17.89	29.89	24.00	30.00	18.00	-0.11	20
5300	14.55	15.36	--	--	N/A	17.98	29.98	24.00	30.00	18.00	-0.02	21
5325	9.37	10.47	--	--	N/A	12.97	24.97	24.00	30.00	18.00	-5.03	**10**

Measurement uncertainty:	±1.33 dB

Antenna #2; 12dBi Sector Antenna
Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	5 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	12 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5475	10.46	8.70	--	--	N/A	12.68	24.68	19.27	25.27	13.27	-0.59	8
5595	10.64	9.49	--	--	N/A	13.11	25.11	19.27	25.27	13.27	-0.15	8
5720	10.57	9.86	--	--	N/A	13.24	25.24	19.27	25.27	13.27	-0.03	8

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	10 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	12 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5475	12.27	11.90	--	--	N/A	15.10	27.10	21.24	27.24	15.24	-0.14	15
5595	12.75	11.56	--	--	N/A	15.21	27.21	21.24	27.24	15.24	-0.03	12
5720	12.50	11.90	--	--	N/A	15.22	27.22	21.24	27.24	15.24	-0.02	12

Measurement uncertainty:	±1.33 dB

Antenna #2; 12dBi Sector Antenna
Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	20 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	12 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:	(Numbers in Parenthesis are original measured Power vs 30 dBm)				

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5480	13.52	13.37	--	--	N/A	16.46	28.46	24.00	30.00	18.00	-1.54	17
5590	15.58	14.28	--	--	N/A	17.99	29.99	24.00	30.00	18.00	-0.01	18
5715	14.96	14.41	--	--	N/A	17.70	29.70	24.00	30.00	18.00	-0.30	18

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	40 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	12 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:	(Numbers in Parenthesis are original measured Power vs 30 dBm)				

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5500	15.01	14.90	--	--	N/A	17.97	29.97	24.00	30.00	18.00	-0.03	22
5570	15.66	14.00	--	--	N/A	17.92	29.92	24.00	30.00	18.00	-0.08	18
5695	15.50	14.28	--	--	N/A	17.94	29.94	24.00	30.00	18.00	-0.06	19

Measurement uncertainty:	±1.33 dB

Antenna #3; 16.5 dBi Flat Panel Antenna
Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	5 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Actual Ant Gain**	16 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculate**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5255	6.08	6.27	--	--	N/A	9.19	25.19	19.27	25.27	9.27	-0.08	0
5300	6.09	5.68	--	--	N/A	8.90	24.90	19.27	25.27	9.27	-0.37	0
5345	2.24	4.20	--	--	N/A	6.34	22.34	19.27	25.27	9.27	-2.93	**-3**

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	10 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Actual Ant Gain**	16 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5255	7.21	8.54	--	--	N/A	10.94	26.94	21.24	27.24	11.24	-0.30	6
5300	7.22	8.73	--	--	N/A	11.05	27.05	21.24	27.24	11.24	-0.19	6
5345	6.76	8.08	--	--	N/A	10.48	26.48	21.24	27.24	11.24	-0.76	**4**

Measurement uncertainty:	±1.33 dB

Antenna #3; 16.5 dBi Flat Panel Antenna
Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	20 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Actual Ant Gain**	16 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5265	10.17	11.43	--	--	N/A	13.86	29.86	24.00	30.00	14.00	-0.14	12
5300	10.22	11.63	--	--	N/A	13.99	29.99	24.00	30.00	14.00	-0.01	12
5335	5.80	6.85	--	--	N/A	9.37	25.37	24.00	30.00	14.00	-4.63	**2**

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	40 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Actual Ant Gain**	16 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5275	9.97	11.16	--	--	N/A	13.62	29.62	24.00	30.00	14.00	-0.38	10
5300	10.22	11.57	--	--	N/A	13.96	29.96	24.00	30.00	14.00	-0.04	12
5325	7.63	8.87	--	--	N/A	11.30	27.30	24.00	30.00	14.00	-2.70	**7**

Measurement uncertainty:	±1.33 dB

Antenna #3; 16.5 dBi Flat Panel Antenna
Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)		**Rel. Humidity (%):**	35 to	42
Variant:	5 MHz		**Ambient Temp. (ºC):**	19 to	22
TPC:	HIGH		**Pressure (mBars):**	998 to	1003
Modulation:	ON		**Duty Cycle (x):**	100	
Beam Forming Gain (Y):	N/A	dB	**Actual Ant Gain**	16.5 dBi	
Applied Voltage:	55.0	Vdc			
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5475	6.46	4.70	--	--	N/A	8.68	25.18	19.27	25.27	8.77	-0.09	0
5595	6.14	5.00	--	--	N/A	8.62	25.12	19.27	25.27	8.77	-0.15	0
5720	6.07	5.36	--	--	N/A	8.74	25.24	19.27	25.27	8.77	-0.03	0

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)		**Rel. Humidity (%):**	35 to	42
Variant:	10 MHz		**Ambient Temp. (ºC):**	19 to	22
TPC:	HIGH		**Pressure (mBars):**	998 to	1003
Modulation:	ON		**Duty Cycle (x):**	100	
Beam Forming Gain (Y):	N/A	dB	**Actual Ant Gain**	16.5 dBi	
Applied Voltage:	55.0	Vdc			
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5475	7.84	7.05	--	--	N/A	10.47	26.97	21.24	27.24	10.74	-0.27	5
5595	7.83	7.54	--	--	N/A	10.70	27.20	21.24	27.24	10.74	-0.04	6
5720	7.62	7.71	--	--	N/A	10.68	27.18	21.24	27.24	10.74	-0.07	5

Measurement uncertainty:	±1.33 dB

Antenna #3; 16.5 dBi Flat Panel Antenna
Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	20 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Actual Ant Gain**	16.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5480	10.76	10.11	--	--	N/A	13.46	29.96	24.00	30.00	13.50	-0.04	11
5590	10.56	10.07	--	--	N/A	13.33	29.83	24.00	30.00	13.50	-0.17	11
5715	10.30	10.42	--	--	N/A	13.37	29.87	24.00	30.00	13.50	-0.13	11

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	40 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Actual Ant Gain**	16.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5500	10.27	10.22	--	--	N/A	13.26	29.76	24.00	30.00	13.50	-0.24	11
5570	10.39	9.57	--	--	N/A	13.01	29.51	24.00	30.00	13.50	-0.49	11
5695	10.34	9.80	--	--	N/A	13.09	29.59	24.00	30.00	13.50	-0.41	11

Measurement uncertainty:	±1.33 dB

Antenna #4; 16.5 dBi Flat Panel Sector Antenna
Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	5 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain - Feeder Loss:**	14.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5255	7.58	7.77	--	--	N/A	10.69	25.19	19.27	25.27	10.77	-0.08	3
5300	7.97	7.50	--	--	N/A	10.75	25.25	19.27	25.27	10.77	-0.02	3
5345	0.96	2.46	--	--	N/A	4.78	19.28	19.27	25.27	10.77	-5.98	**-6**

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	10 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain - Feeder Loss:**	14.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5260	8.71	10.04	--	--	N/A	12.44	26.94	21.24	27.24	12.74	-0.30	11
5300	8.72	10.13	--	--	N/A	12.49	26.99	21.24	27.24	12.74	-0.25	11
5340	4.23	5.43	--	--	N/A	7.88	22.38	21.24	27.24	12.74	-4.86	**3**

Measurement uncertainty:	±1.33 dB

Antenna #4; 16.5 dBi Flat Panel Sector Antenna
Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	20 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain	N/A dB	**Ant Gain - Feeder**	14.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5265	11.67	12.93	--	--	N/A	15.36	29.86	24.00	30.00	15.50	-0.14	14
5300	11.72	13.13	--	--	N/A	15.49	29.99	24.00	30.00	15.50	-0.01	14
5335	2.59	4.26	--	--	N/A	6.52	21.02	24.00	30.00	15.50	-8.98	**-3**

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	40 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain	N/A dB	**Ant Gain - Feeder**	14.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5275	11.47	12.66	--	--	N/A	15.12	29.62	24.00	30.00	15.50	-0.38	14
5300	11.72	13.07	--	--	N/A	15.46	29.96	24.00	30.00	15.50	-0.04	15
5325	5.69	6.78	--	--	N/A	9.28	23.78	24.00	30.00	15.50	-6.22	**-3**

Measurement uncertainty:	±1.33 dB

Antenna #4; 16.5 dBi Flat Panel Sector Antenna
Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	5 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain - Feeder Loss:**	15.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5475	7.46	5.70	--	--	N/A	9.68	25.18	19.27	25.27	9.77	-0.09	2
5595	7.14	6.00	--	--	N/A	9.62	25.12	19.27	25.27	9.77	-0.15	2
5720	7.10	6.33	--	--	N/A	9.74	25.24	19.27	25.27	9.77	-0.02	2

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	10 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain - Feeder Loss:**	15.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5475	8.56	8.47	--	--	N/A	11.53	27.03	21.24	27.24	11.74	-0.22	7
5595	8.83	8.54	--	--	N/A	11.70	27.20	21.24	27.24	11.74	-0.04	8
5720	8.62	8.71	--	--	N/A	11.68	27.18	21.24	27.24	11.74	-0.07	**7**

Measurement uncertainty:	±1.33 dB

Antenna #4; 16.5 dBi Flat Panel Sector Antenna
Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	20 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain - Feeder Loss:**	15.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5480	9.19	8.94	--	--	N/A	12.08	27.58	24.00	30.00	14.50	-2.42	**8**
5590	11.50	11.17	--	--	N/A	14.35	29.85	24.00	30.00	14.50	-0.15	13
5715	11.30	11.42	--	--	N/A	14.37	29.87	24.00	30.00	14.50	-0.13	12

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	40 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain - Feeder Loss:**	15.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5500	11.27	11.22	--	--	N/A	14.26	29.76	24.00	30.00	14.50	-0.24	13
5570	11.39	10.57	--	--	N/A	14.01	29.51	24.00	30.00	14.50	-0.49	13
5695	11.34	10.80	--	--	N/A	14.09	29.59	24.00	30.00	14.50	-0.41	13

Measurement uncertainty:	±1.33 dB

Antenna #5; 23.5 dBi Flat Panel Antenna
Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	5 MHz	**Ambient Temp. (°C):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Actual Antenna Gain**	23.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5255	-1.52	-1.00	--	--	N/A	1.76	25.26	19.27	25.27	1.77	-0.01	-11
5300	-1.89	-0.80	--	--	N/A	1.70	25.20	19.27	25.27	1.77	-0.07	-11
5345	-7.64	-5.02	--	--	N/A	-3.13	20.37	19.27	25.27	1.77	-4.89	**-23**

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	10 MHz	**Ambient Temp. (°C):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Actual Antenna Gain**	23.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5260	0.00	1.12	--	--	N/A	3.61	27.11	21.24	27.24	3.74	-0.13	-7
5300	-0.07	1.39	--	--	N/A	3.73	27.23	21.24	27.24	3.74	-0.01	-7
5340	-2.89	-0.84	--	--	N/A	1.27	24.77	21.24	27.24	3.74	-2.48	**-14**

Measurement uncertainty:	±1.33 dB

Antenna #5; 23.5 dBi Flat Panel Antenna
Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	20 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Actual Antenna Gain**	23.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5265	2.77	3.71	--	--	N/A	6.28	29.78	24.00	30.00	6.50	-0.22	-2
5300	2.72	3.86	--	--	N/A	6.34	29.84	24.00	30.00	6.50	-0.16	-2
5335	-3.73	-1.87	--	--	N/A	0.31	23.81	24.00	30.00	6.50	-6.19	**-16**

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	40 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Actual Antenna Gain**	23.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5275	2.30	3.61	--	--	N/A	6.01	29.51	24.00	30.00	6.50	-0.49	-2
5300	2.01	4.52	--	--	N/A	6.45	29.95	24.00	30.00	6.50	-0.05	0
5325	0.59	2.05	--	--	N/A	4.39	27.89	24.00	30.00	-5.00	9.39	**-6**

Measurement uncertainty:	±1.33 dB

Antenna #5; 23.5 dBi Flat Panel Antenna
Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	5 MHz	**Ambient Temp. (°C):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Actual Antenna Gain**	23.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5475	-1.58	-1.65	--	--	N/A	1.40	24.90	19.27	25.27	1.77	-0.37	-13
5595	-1.13	-1.55	--	--	N/A	1.68	25.18	19.27	25.27	1.77	-0.09	-12
5720	-0.76	-2.09	--	--	N/A	1.64	25.14	19.27	25.27	1.77	-0.13	-12

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	10 MHz	**Ambient Temp. (°C):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Actual Antenna Gain**	23.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5475	0.34	0.95	--	--	N/A	3.67	27.17	21.24	27.24	3.74	-0.07	-13
5595	0.68	0.56	--	--	N/A	3.63	27.13	21.24	27.24	3.74	-0.11	-12
5720	0.76	0.58	--	--	N/A	3.68	27.18	21.24	27.24	3.74	-0.06	-12

Measurement uncertainty:	±1.33 dB

Antenna #5; 23.5 dBi Flat Panel Antenna
Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	20 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Actual Antenna Gain**	23.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5480	1.59	1.95	--	--	N/A	4.78	28.28	24.00	30.00	6.50	-1.72	-6
5590	3.81	3.09	--	--	N/A	6.48	29.98	24.00	30.00	6.50	-0.02	-3
5715	3.55	2.83	--	--	N/A	6.22	29.72	24.00	30.00	6.50	-0.28	-3

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	40 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Actual Antenna Gain**	23.5 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5500	3.43	3.49	--	--	N/A	6.47	29.97	24.00	30.00	6.50	-0.03	-2
5570	3.86	2.84	--	--	N/A	6.39	29.89	24.00	30.00	6.50	-0.11	-2
5695	4.07	2.76	--	--	N/A	6.47	29.97	24.00	30.00	6.50	-0.03	-2

Measurement uncertainty:	±1.33 dB

Antenna #6; 29 dBi Flat Panel Antenna
Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	5 MHz	**Ambient Temp. (°C):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain - Feeder Loss**	28 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5255	-6.40	-5.34	--	--	N/A	-2.83	25.17	19.27	25.27	-2.73	-0.09	-20
5300	-6.70	-5.16	--	--	N/A	-2.85	25.15	19.27	25.27	-2.73	-0.12	-20
5345	-6.70	-5.77	--	--	N/A	-3.20	24.80	19.27	25.27	-2.73	-0.47	-22

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	10 MHz	**Ambient Temp. (°C):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain - Feeder Loss**	28 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5260	-5.05	-3.48	--	--	N/A	-1.18	26.82	21.24	27.24	-0.76	-0.42	-18
5300	-4.85	-3.42	--	--	N/A	-1.07	26.93	21.24	27.24	-0.76	-0.31	-18
5340	-4.62	-3.39	--	--	N/A	-0.95	27.05	21.24	27.24	-0.76	-0.19	-20

Measurement uncertainty:	±1.33 dB

Antenna #6; 29 dBi Flat Panel Antenna
Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	20 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain - Feeder Loss**	28 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5265	-2.08	-0.82	--	--	N/A	1.61	29.61	24.00	30.00	2.00	-0.39	-13
5300	-2.04	-0.88	--	--	N/A	1.59	29.59	24.00	30.00	2.00	-0.41	-13
5335	-2.00	-0.93	--	--	N/A	1.58	29.58	24.00	30.00	2.00	-0.42	-15

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	40 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain - Feeder Loss**	28 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5275	-1.97	-0.68	--	--	N/A	1.73	29.73	24.00	30.00	2.00	-0.27	-12
5300	-2.12	-0.84	--	--	N/A	1.58	29.58	24.00	30.00	2.00	-0.42	-12
5325	-1.88	-0.77	--	--	N/A	1.72	29.72	24.00	30.00	2.00	-0.28	-13

Measurement uncertainty:	±1.33 dB

Antenna #6; 29 dBi Flat Panel Antenna
Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	5 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain - Feeder Loss**	28 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5475	-6.54	-5.62	--	--	N/A	-3.05	24.95	19.27	25.27	-2.73	-0.31	-21
5595	-5.86	-5.69	--	--	N/A	-2.76	25.24	19.27	25.27	-2.73	-0.03	-20
5720	-6.43	-5.51	--	--	N/A	-2.94	25.06	19.27	25.27	-2.73	-0.20	-20

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	10 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain - Feeder Loss**	28 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5475	-4.06	-4.08	--	--	N/A	-1.06	26.94	21.24	27.24	-0.76	-0.30	-18
5595	-3.92	-4.20	--	--	N/A	-1.05	26.95	21.24	27.24	-0.76	-0.29	-17
5720	-3.99	-3.95	--	--	N/A	-0.96	27.04	21.24	27.24	-0.76	-0.20	-18

Measurement uncertainty:	±1.33 dB

Antenna #6; 29 dBi Flat Panel Antenna
Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	20 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain - Feeder Loss**	28 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5480	-0.99	-1.74	--	--	N/A	1.66	29.66	24.00	30.00	2.00	-0.34	-13
5590	-1.27	-1.59	--	--	N/A	1.58	29.58	24.00	30.00	2.00	-0.42	-12
5715	-1.20	-1.36	--	--	N/A	1.73	29.73	24.00	30.00	2.00	-0.27	-13

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	40 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain - Feeder Loss**	28 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5500	-1.25	-1.54	--	--	N/A	1.62	29.62	24.00	30.00	2.00	-0.38	-12
5570	-1.12	-1.80	--	--	N/A	1.56	29.56	24.00	30.00	2.00	-0.44	-12
5695	-1.20	-1.79	--	--	N/A	1.53	29.53	24.00	30.00	2.00	-0.47	-12

Measurement uncertainty:	±1.33 dB

Antenna #7; 32 dBi Dish Antenna
Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	5 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain- Feeder Loss**	31 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5255	-10.14	-8.32	--	--	N/A	-6.13	24.87	19.27	25.27	-5.73	-0.39	-26
5300	-10.43	-8.22	--	--	N/A	-6.18	24.82	19.27	25.27	-5.73	-0.44	-26
5345	-10.26	-8.22	--	--	N/A	-6.11	24.89	19.27	25.27	-5.73	-0.38	-26

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	10 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain- Feeder Loss**	31 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5260	-8.99	-5.73	--	--	N/A	-4.05	26.95	21.24	27.24	-3.76	-0.29	-21
5300	-8.94	-5.77	--	--	N/A	-4.06	26.94	21.24	27.24	-3.76	-0.30	-21
5340	-7.56	-6.74	--	--	N/A	-4.12	26.88	21.24	27.24	-3.76	-0.36	-23

Measurement uncertainty:	±1.33 dB

Antenna #7; 32 dBi Dish Antenna
Output Power 5250 – 5350 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	20 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain- Feeder Loss**	31 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:	**Bold = Reduced Power Levels to meet Band Edge requirements**				
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5265	-5.31	-3.03	--	--	N/A	-1.01	29.99	24.00	30.00	-1.00	-0.01	-16
5300	-5.45	-3.26	--	--	N/A	-1.21	29.79	24.00	30.00	-1.00	-0.21	-17
5335	-5.35	-3.44	--	--	N/A	-1.28	29.72	24.00	30.00	-1.00	-0.28	-21

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	40 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain- Feeder Loss**	31 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	a	b	c	d	Comb	Calculated	Calculated	dBm	dBm	dBm	dB	PS
5275	-5.24	-3.09	--	--	N/A	-1.02	29.98	24.00	30.00	-1.00	-0.02	-15
5300	-5.46	-3.39	--	--	N/A	-1.29	29.71	24.00	30.00	-1.00	-0.29	-16
5325	-4.91	-4.38	--	--	N/A	-1.63	29.37	24.00	30.00	-1.00	-0.63	-17

Measurement uncertainty:	±1.33 dB

Antenna #7; 32 dBi Dish Antenna
Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	5 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain- Feeder Loss**	31 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5475	-10.18	-9.50	--	--	N/A	-6.82	24.18	19.27	25.27	-5.73	-1.08	-28
5595	-10.07	-9.58	--	--	N/A	-6.81	24.19	19.27	25.27	-5.73	-1.08	-29
5720	-10.15	-10.06	--	--	N/A	-7.09	23.91	19.27	25.27	-5.73	-1.36	-32

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	10 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain- Feeder Loss**	31 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5475	-7.18	-6.44	--	--	N/A	-3.78	27.22	21.24	27.24	-3.76	-0.02	-28
5595	-7.18	-6.51	--	--	N/A	-3.82	27.18	21.24	27.24	-3.76	-0.06	-29
5720	-7.24	-7.10	--	--	N/A	-4.16	26.84	21.24	27.24	-3.76	-0.40	-32

Measurement uncertainty:	±1.33 dB

Antenna #7; 32 dBi Dish Antenna
Output Power 5470 – 5725 MHz

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	20 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain- Feeder Loss**	31 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5480	-4.41	-3.73	--	--	N/A	-1.05	29.95	24.00	30.00	-1.00	-0.05	-18
5590	-4.62	-4.08	--	--	N/A	-1.33	29.67	24.00	30.00	-1.00	-0.33	-19
5715	-4.11	-4.09	--	--	N/A	-1.09	29.91	24.00	30.00	-1.00	-0.09	-20

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	40 MHz	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (x):**	100		
Beam Forming Gain (Y):	N/A dB	**Ant Gain- Feeder Loss**	31 dBi		
Applied Voltage:	55.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		EIRP dBm	26 dB Limit	EIRP Limit	Power Limit	Margin	Radwin
MHz	**a**	**b**	**c**	**d**	**Comb**	**Calculated**	**Calculated**	**dBm**	**dBm**	**dBm**	**dB**	**PS**
5500	-4.77	-3.81	--	--	N/A	-1.25	29.75	24.00	30.00	-1.00	-0.25	-17
5570	-4.50	-4.43	--	--	N/A	-1.45	29.55	24.00	30.00	-1.00	-0.45	-18
5695	-4.01	-4.62	--	--	N/A	-1.29	29.71	24.00	30.00	-1.00	-0.29	-19

Measurement uncertainty:	±1.33 dB

Specification Limits

FCC, Part 15 §15.407 (a)(1), (a)(2) and Industry Canada RSS-210 § A9.2(2)

(a)(1) For the band 5.15-5.25 GHz the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or +4 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed +4 dBm in any 1 megahertz band.

(a)(2) For the 5.25-5.35 and 5470-5725 MHz GHz band the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 250 mW or +11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the peak power spectral density shall not exceed +11 dBm in any 1 megahertz band.

Industry Canada RSS-210 §A9.2(2)

For the band 5150-5250 MHz, the maximum equivalent isotropically radiated power (e.i.r.p.) shall not exceed 200 mW or 10 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

For the band 5250-5350 MHz and 5470-5725 MHz, the maximum conducted output power shall not exceed 250 mW or 11 + 10 log10 B, dBm, whichever power is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band. The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

Industry Canada RSS-Gen 4.4

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

Traceability

Test Equipment Used
0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117

6.1.1.3. Peak Power Spectral Density

Conducted Test Conditions for Power Spectral Density			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Power Spectral Density	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.247 (a)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 789033 - D01 DTS General UNII Test Procedures v01		

Test Procedure for Power Spectral Density

The In-Band power spectral density was measured using the measure and sum approach per FCC KDB 662911 (D01 Multiple Transmitter Output v01.)

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

Calculated Power = A + 10 log (1/x) dBm

A = Total Power Spectral Density [10 Log10 (10a/10 + 10 b/10 + 10c/10 + 10d/10)]

x = Duty Cycle

5250 – 5350 MHz

Equipment Configuration for power density

Variant:	5 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm) Port(s)				Calculated Total Power Spectral Density (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**S Port(s)**	**Conversion to 3 kHz RBW**	**dBm**	**dB**
5255.0	7.675	8.267			10.991	N/A	11	-0.01
5300.0	7.448	6.856			10.172	N/A	11	-0.83
5345.0	8.407	7.529			11.000	N/A	11	0.00

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for power density

Variant:	10 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm) Port(s)				Calculated Total Power Spectral Density (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**S Port(s)**	**Conversion to 3 kHz RBW**	**dBm**	**dB**
5260.0	8.006	7.578			10.808	N/A	11	-0.19
5300.0	8.003	7.642			10.837	N/A	11	-0.16
5340.0	7.990	7.575			10.798	N/A	11	-0.20

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

5250 – 5350 MHz

Equipment Configuration for power density			
Variant:	20 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm) Port(s)				Calculated Total Power Spectral Density (dBm)		Limit	Margin
MHz	a	b	c	d	S Port(s)	Conversion to 3 kHz RBW	dBm	dB
5265.0	8.147	7.468			10.831	N/A	11	-0.17
5300.0	8.086	7.478			10.803	N/A	11	-0.20
5335.0	8.289	8.045			10.952	N/A	11	-0.05

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for power density			
Variant:	40 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm) Port(s)				Calculated Total Power Spectral Density (dBm)		Limit	Margin
MHz	a	b	c	d	S Port(s)	Conversion to 3 kHz RBW	dBm	dB
5275.0	5.916	5.299			8.629	N/A	11	-2.37
5300.0	6.174	5.382			8.806	N/A	11	-2.19
5325.0	6.114	5.075			8.636	N/A	11	-2.36

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

5470 – 5725 MHz

Equipment Configuration for power density			
Variant:	5 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm) Port(s)				Calculated Total Power Spectral Density (dBm)		Limit	Margin
MHz	a	b	c	d	S Port(s)	Conversion to 3 kHz RBW	dBm	dB
5475.0	7.889	6.472			10.248	N/A	11	-0.75
5595.0	8.161	6.982			10.622	N/A	11	-0.38
5720.0	8.397	7.608			10.987	N/A	11	-0.01

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for power density			
Variant:	10 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm) Port(s)				Calculated Total Power Spectral Density (dBm)		Limit	Margin
MHz	a	b	c	d	S Port(s)	Conversion to 3 kHz RBW	dBm	dB
5475.0	7.985	6.909			10.491	N/A	11	-0.51
5595.0	7.843	6.639			10.293	N/A	11	-0.71
5720.0	8.191	7.472			10.857	N/A	11	-0.14

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

5470 – 5725 MHz

Equipment Configuration for power density			
Variant:	20 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm) Port(s)				Calculated Total Power Spectral Density (dBm)		Limit	Margin
MHz	a	b	c	d	S Port(s)	Conversion to 3 kHz RBW	dBm	dB
5480.0	8.239	7.330			10.819	N/A	11	-0.18
5590.0	8.336	6.809			10.650	N/A	11	-0.35
5715.0	7.844	7.348			10.613	N/A	11	-0.39

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for power density			
Variant:	40 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm) Port(s)				Calculated Total Power Spectral Density (dBm)		Limit	Margin
MHz	a	b	c	d	S Port(s)	Conversion to 3 kHz RBW	dBm	dB
5500.0	6.343	4.831			8.663	N/A	11	-2.34
5570.0	6.694	4.910			8.903	N/A	11	-2.10
5695.0	5.974	5.055			8.549	N/A	11	-2.45

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

Specification

FCC, Part 15 §15.407 (a)(1), (a)(2)
5150 – 5250 MHz
(a)(1) The peak power spectral density shall not exceed +4 dBm in any 1 megahertz band.

5250 – 5350 MHz & 5470 – 5725 MHz
(a)(2) The peak power spectral density shall not exceed +11 dBm in any 1 megahertz band.

Industry Canada RSS-210 § **A9.2(1), A9.2(2)**
5150 – 5250 MHz
§ **A9.2(1)** The eirp spectral density shall not exceed +10 dBm in any 1 MHz band

5250 – 5350 MHz & 5470 – 5725 MHz
§ **A9.2(2)** The power spectral density shall not exceed +11 dBm in any 1 MHz band

Traceability

Test Equipment Used
0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117

6.1.1.4. Peak Excursion Ratio

Conducted Test Conditions for Peak Excursion Ratio			
Standard:	FCC CFR 47:15.407	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Peak Excursion Ratio	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.407 (a)(6)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 789033 - D01 DTS General UNII Test Procedures v01		

Test Procedure for Peak Excursion Ratio

Compliance with the peak excursion requirement is demonstrated by confirming the ratio of the maximum of the peak-hold spectrum to the maximum of the average spectrum during continuous transmission. Section F) of KDB 789033 was used in order to prove compliance. This is a conducted measurement using a spectrum analyzer using dual traces. Peak Excursion Ratio is the difference in amplitude (dB) between both traces; The following identifies two spectrum traces on the same plot. Trace 1 is the max hold Peak detector, and Trace 2 is the recalled trace data from Peak Power Spectral Density measurements. Each frequency and operational mode is recalled in order to prove compliance.

5250 – 5350 MHz

Equipment Configuration for peak excursion			
Variant:	5 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**	**dB**	**MHz**
5255.0	12.58	10.65			12.58	10.65	-13.0	-0.42
5300.0	12.63	11.62			12.63	11.62	-13.0	-0.37
5345.0	12.50	11.57			12.50	11.57	-13.0	-0.50

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for peak excursion			
Variant:	10 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**	**dB**	**MHz**
5260.0	11.14	11.71			11.71	11.14	-13.0	-1.29
5300.0	11.80	11.83			11.83	11.80	-13.0	-1.17
5340.0	12.18	11.65			12.18	11.65	-13.0	-0.82

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

5250 – 5350 MHz

Equipment Configuration for peak excursion			
Variant:	20 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**	**dB**	**MHz**
5265.0	10.80	11.55			11.55	10.80	-13.0	-1.45
5300.0	10.81	10.94			10.94	10.81	-13.0	-2.06
5335.0	10.98	10.83			10.98	10.83	-13.0	-2.02

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for peak excursion			
Variant:	40 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	**a**	**b**	**c**	**d**	**Highest**	**Lowest**	**dB**	**MHz**
5275.0	10.56	11.07			11.07	10.56	-13.0	-1.93
5300.0	10.81	10.56			10.81	10.56	-13.0	-2.19
5325.0	10.94	10.72			10.94	10.72	-13.0	-2.06

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

5470 – 5725 MHz

Equipment Configuration for peak excursion			
Variant:	5 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5475.0	11.93	11.61			11.93	11.61	-13.0	-1.07
5595.0	11.93	11.51			11.93	11.51	-13.0	-1.07
5720.0	11.34	11.60			11.60	11.34	-13.0	-1.40

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for peak excursion			
Variant:	10 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5475.0	11.44	11.21			11.44	11.21	-13.0	-1.56
5595.0	11.71	11.69			11.71	11.69	-13.0	-1.29
5720.0	11.27	11.12			11.27	11.12	-13.0	-1.73

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

5470 – 5725 MHz

Equipment Configuration for peak excursion			
Variant:	20 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5480.0	10.78	10.73			10.78	10.73	-13.0	-2.22
5590.0	10.99	10.85			10.99	10.85	-13.0	-2.01
5715.0	11.34	10.89			11.34	10.89	-13.0	-1.66

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for peak excursion			
Variant:	40 MHz	**Duty Cycle (%):**	100
Data Rate:	15 MCS	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Peak Excursion (dB) Port(s)				Ratio (dB)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	dB	MHz
5500.0	11.06	11.02			11.06	11.02	-13.0	-1.94
5570.0	10.48	10.85			10.85	10.48	-13.0	-2.15
5695.0	11.77	10.53			11.77	10.53	-13.0	-1.23

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Click on the links above to see the plot

Specification

Limits

§15.407 (a)(6) The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the peak transmit power (measured as specified in this paragraph) shall not exceed 13dB across any 1MHz bandwidth or the emission bandwidth whichever is less

Traceability

Test Equipment Used
0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117

6.1.1.5. Frequency Stability

FCC, Part 15 Subpart C §15.407(g)
Industry Canada RSS-210 §2.1

Test Procedure

The manufacturer of the equipment is responsible for ensuring that the frequency stability is such that emissions are always maintained within the band of operation under all conditions.

Manufacturer Declaration

The frequency stability of the reference oscillator sets the frequency stability of the RF transceiver signals. Therefore all of the RF signals should have ±20ppm stability.
This stability accounts for room temp tolerance of the crystal oscillator circuit, frequency variation across temperature, and crystal ageing.

±20ppm at 5.250 GHz translates to a maximum frequency shift of ±105 KHz. As the edge of the channels is at least one MHz from either of the band edges, ±105 KHz is more than sufficient to guarantee that the intentional emission will remain in the band over the entire operating range of the EUT.

Specification

Limits

§15.407 (g) Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

6.1.1.6. Maximum Permissible Exposure

FCC, Part 15 Subpart C §15.407(f)
Industry Canada RSS-Gen §5.6

Calculations for Maximum Permissible Exposure Levels

Power Density = Pd (mW/cm^2) = $EIRP/(4\pi d^2)$

EIRP = P * G

P = Peak output power (mW)

G = Antenna numeric gain (numeric)

d = Separation distance (cm)

Numeric Gain = 10 ^ (G (dBi)/10)

Because the EUT belongs to the General Population/Uncontrolled Exposure the limit of power density is 1.0 mW/cm^2

Note: for mobile or fixed location transmitters the minimum separation distance is 20cm, even if calculations indicate the MPE distance to be less.

Specification
Maximum Permissible Exposure Limits

FCC §1.1310 Limit = 1mW / cm^2 from 1.310 Table 1 **RSS-Gen §5.6** Category I and Category II equipment shall comply with the applicable requirements of RSS-102.

Laboratory Measurement Uncertainty for Power Measurements

Measurement uncertainty	±1.33 dB

5250 – 5350 MHz

Antenna Model	Type	Ant Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Safe Distance @ 1mW/cm^2 Limit(cm)	Power Density @ 20cm (mW/cm^2)
MT0128930	Sector Dual Pole Integrated 120 Deg	11	13	18.99	79.25	8.91	0.20
RW-9061-5004	Sector Dual Pole 120 Deg	11	13	18.99	79.25	8.91	0.20
AM0135060	Sector Dual Pole Integrated 95 Deg	12	16	17.98	62.81	8.90	0.20
RW-9061-5001	Sector Dual Pole 90 Deg	14	25	15.49	35.40	8.41	0.18
RW-9061-5002	Sector Dual Pole 60 Deg	15.5	35	15.49	35.40	10.00	0.25
MT0125250	Sector Dual Pole Integrated 90 Deg	13	20	15.49	35.40	7.50	0.14
AM0119960	Flat Panel Dual Pole Integrated	16	40	13.99	25.06	8.91	0.20
AM0111760	Flat Panel Dual Pole Integrated	16	40	13.99	25.06	8.91	0.20
RW-9612-5001	Flat Panel Dual Pole External	23	200	6.45	4.42	8.37	0.18
MT0070760	Flat Panel Dual Pole Integrated	23.5	224	6.45	4.42	8.87	0.20
RW-9622-5001	Flat Panel Dual Pole External	29	794	1.73	1.49	9.70	0.24
RW-9721-5158	Dual Pole Dish	28	631	1.73	1.49	8.65	0.19
RW-9732-4958	Dual Pole Dish	32	1585	-1.01	0.79	10.00	0.25

5470 – 5725 MHz

Antenna Model	Type	Ant Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Safe Distance @ 1mW/cm^2 Limit(cm)	Power Density @ 20cm (mW/cm^2)
MT0128930	Sector Dual Pole Integrated 120 Deg	11	13	18.99	79.25	8.91	0.20
RW-9061-5004	Sector Dual Pole 120 Deg	11	13	18.99	79.25	8.91	0.20
AM0135060	Sector Dual Pole Integrated 95 Deg	12	16	17.99	62.95	8.91	0.20
RW-9061-5001	Sector Dual Pole 90 Deg	14	25	14.37	27.35	7.39	0.14
RW-9061-5002	Sector Dual Pole 60 Deg	16.5	45	14.37	27.35	9.86	0.24
MT0125250	Sector Dual Pole Integrated 90 Deg	13	20	14.37	27.35	6.59	0.11
AM0119960	Flat Panel Dual Pole Integrated	16	40	13.46	22.18	8.38	0.18
AM0111760	Flat Panel Dual Pole Integrated	16.5	45	13.46	22.18	8.88	0.20
RW-9612-5001	Flat Panel Dual Pole External	23	200	6.48	4.45	8.40	0.18
MT0070760	Flat Panel Dual Pole Integrated	23.5	224	6.48	4.45	8.90	0.20
RW-9622-5001	Flat Panel Dual Pole External	29	794	1.73	1.49	9.70	0.24
RW-9721-5158	Dual Pole Dish	29	794	1.73	1.49	9.70	0.24
RW-9732-4958	Dual Pole Dish	32	1585	-1.05	0.79	9.95	0.25

6.1.2. Radiated Emission Testing

FCC, Part 15 Subpart C §15.407(b)(2), §15.205(a)/15.209(a)
Industry Canada RSS-210 §A9.3(2); §2.2; §2.6; RSS-Gen §4.7

Test Procedure

Testing was performed in a 3-meter anechoic chamber. Preliminary radiated emissions were measured on every azimuth and with the receiving antenna in both horizontal and vertical polarizations. Preliminary emissions were recorded with in Spectrum Analyzer mode, using a maximum peak detector while in peak hold mode. Depending on the frequency band spanned a notch filter and/or waveguide filter was used to remove the fundamental frequency.

Emissions nearest the limits were chosen for maximization and formal measurement using a CISPR compliant receiver. Emissions above 1000 MHz are measured utilizing a CISPR compliant average detector with a tuned receiver, using a bandwidth of 1 MHz. Emissions from 30 MHz – 1000 MHz are measured utilizing a CISPR compliant quasi-peak detector with a tuned receiver, using a bandwidth of 120 kHz. Only the highest emissions relative to the limit are listed.

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

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

Field Strength Calculation Example:

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

FS = 51.5 + 8.5 + 1.3 - 26.0 +1 = 36.3 dBμV/m

Conversion between dBμV/m (or dBμV) and μV/m (or μV) are done as:

Level (dBμV/m) = 20 * Log (level (μV/m))

40 dBμV/m = 100 μV/m
48 dBμV/m = 250 μV/m

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

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

where P is the EIRP in Watts

Therefore: -27 dBm/MHz = 68.23 dBuV/m

Note: The data in this Section identifies that the EUT is in compliance with the -27dBm/MHz EIRP limit (68.23 dBµV/m) for out of band emissions. All out of band emissions are less than 68.23 dB µV/m.

Specification

Radiated Spurious Emissions

15.407 (b)(2). All emissions outside of the 5,150-5,350MHz band shall not exceed an EIRP of -27dBm/MHz.

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

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

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

RSS-210 §A9.3(2) For transmitters operating in the 5250-5350 MHz band, all emissions outside the 5150-5350 MHz band shall not exceed -27 dBm/MHz e.i.r.p. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band shall not exceed out of band emission limit of 27 dBm/MHz e.i.r.p. in the 5150-5250 MHz band in order to operate indoor/outdoor, or alternatively shall comply with the spectral power density for operation within the 5150-5250 MHz band and shall be labeled “for indoor use only”.

RSS-Gen §4.10 the search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g.. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is higher, to at least 3 times the highest tuneable or local oscillator frequency, whichever is higher, without exceeding 40 GHz.

For emissions below 1000 MHz, measurements shall be performed using a CISPR quasi-peak detector and the related measurement bandwidth. As an alternative to CISPR quasi-peak measurement, compliance with the emission limit can be demonstrated using measuring equipment employing a peak detector function properly adjusted for factors such as pulse desensitization as required, with an equal or greater measurement bandwidth relative to the applicable CISPR quasi-peak bandwidth.

Above 1000 MHz, measurements shall be performed using an average detector with a minimum resolution bandwidth of 1 MHz.

Table 1: FCC 15.209 & RSS-Gen Spurious Emissions Limits

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

Traceability:

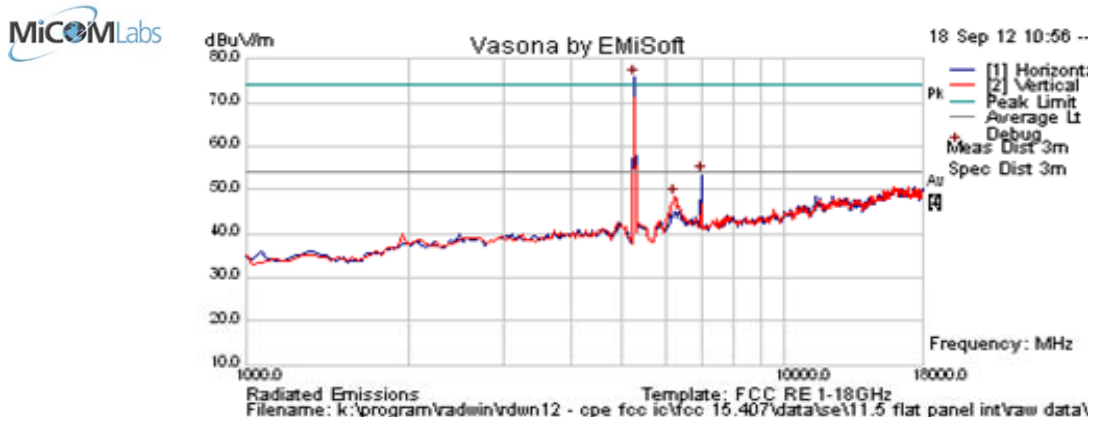
Test Equipment Used
0088, 0158, 0134, 0304, 0311, 0315, 0310, 0312

6.1.2.1. Antenna # 1

5250 -5350 MHz

Low

Test Freq.	5255 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	16	**Press. (mBars)**	1004
Antenna	11dBi Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



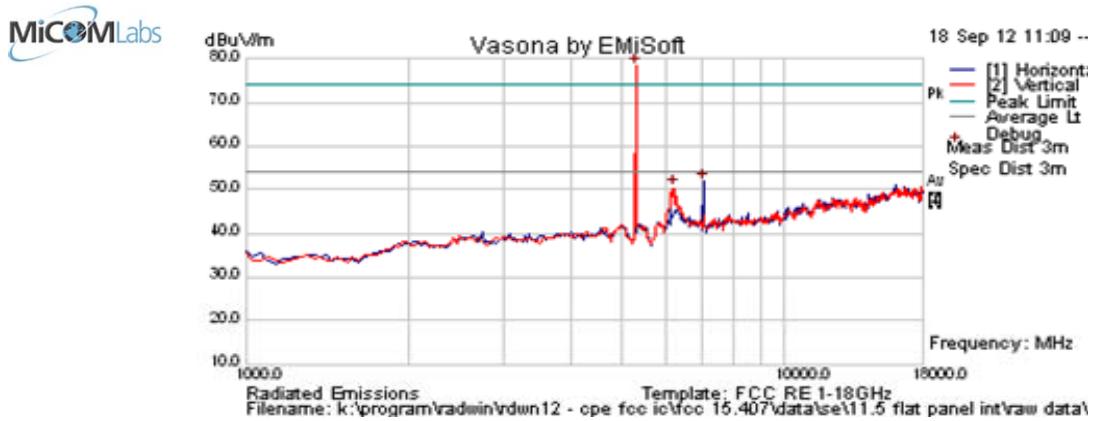
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5258.517	80.8	4.6	-9.7	75.7	Peak [Scan]	H	100	0				FUND
6995.991984	54.2	5.4	-6.4	53.2	Peak [Scan]	H	100	0				NRB
6246.493	50.9	5.0	-7.6	48.3	Peak [Scan]	V	100	0				NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Mid

Test Freq.	5300 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	16	**Press. (mBars)**	1004
Antenna	11dBi Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



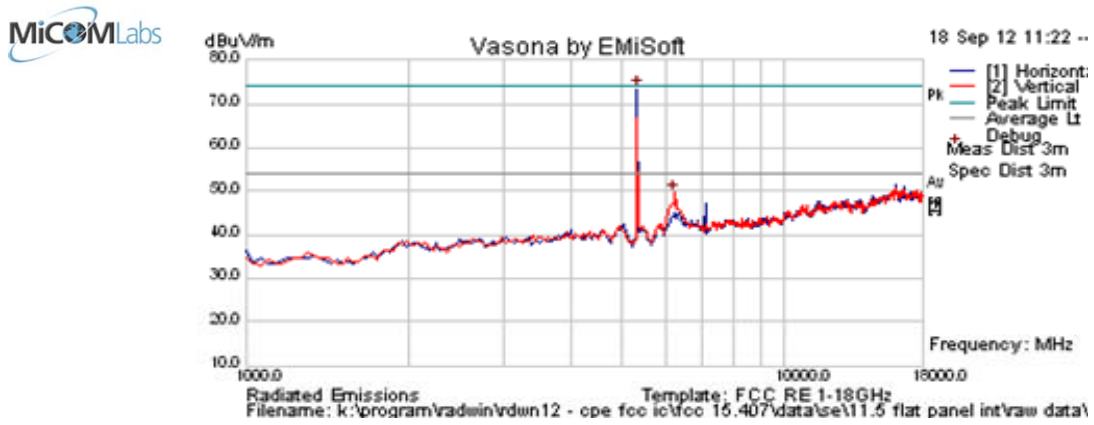
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5292.585	83.4	4.6	-9.6	78.4	Peak [Scan]	V	100	0				FUND
7064.128257	52.5	5.4	-6.1	51.8	Peak [Scan]	H	100	0				NRB
6246.493	52.9	5.0	-7.6	50.3	Peak [Scan]	V	100	0				NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

High

Test Freq.	5345 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	16	**Press. (mBars)**	1004
Antenna	11dBi Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

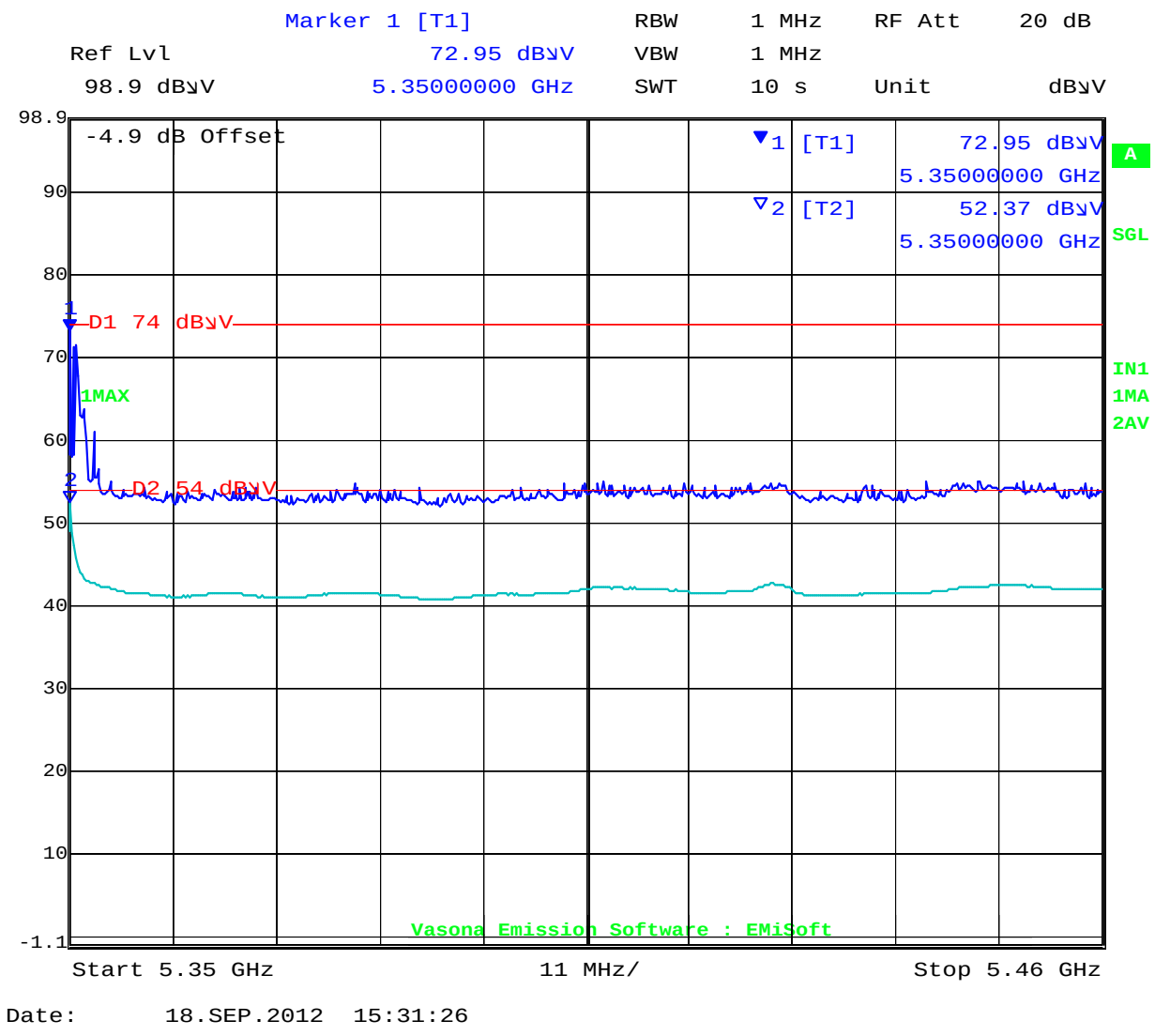


Formally measured emission peaks

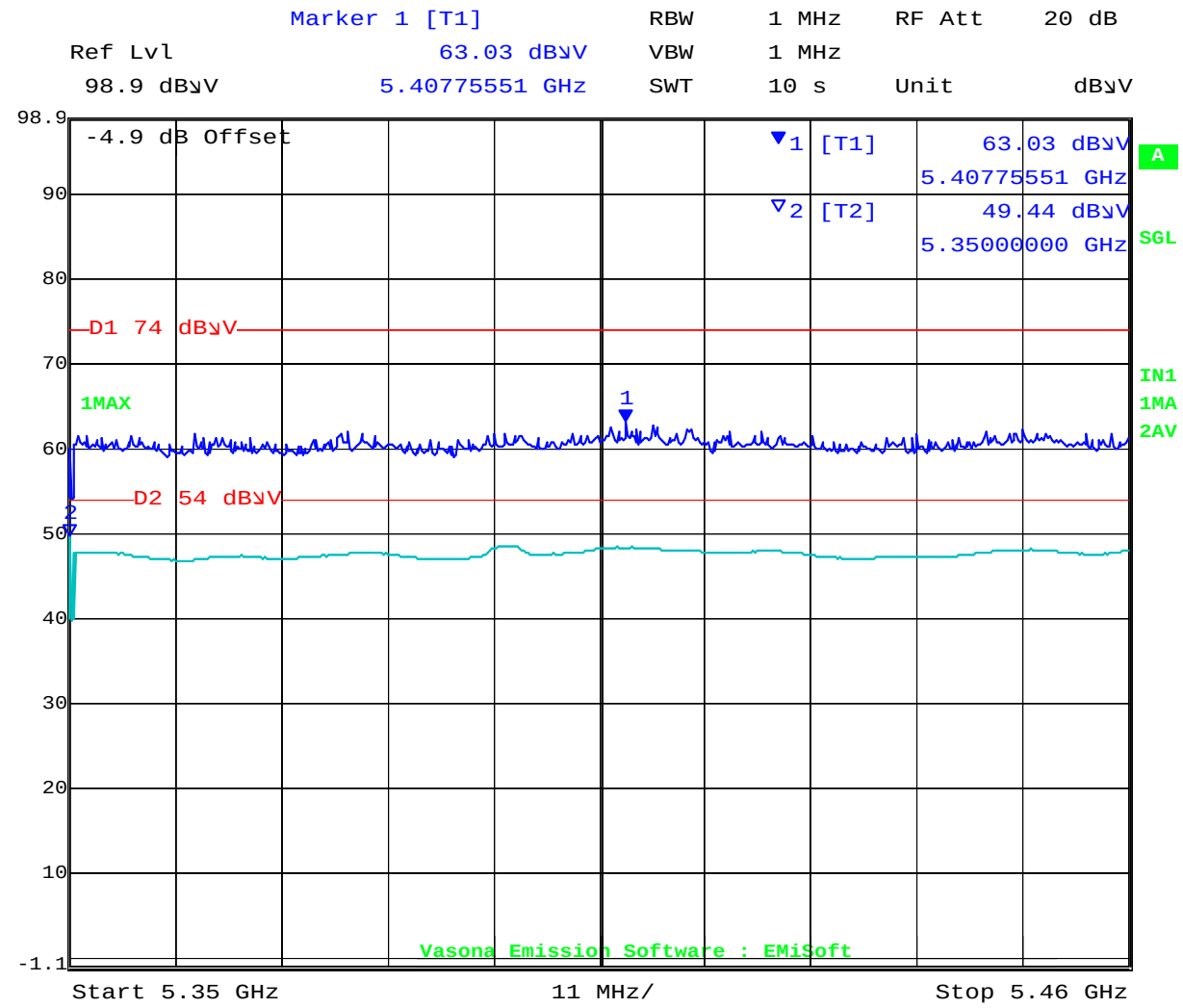
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5326.653	78.2	4.6	-9.5	73.3	Peak [Scan]	H	100	0				FUND
6246.492986	52.1	5.0	-7.6	49.6	Peak [Scan]	V	100	0				NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

5 MHz 5345 MHz 5350 – 5460 Restricted Band-edge Power Setting = 1



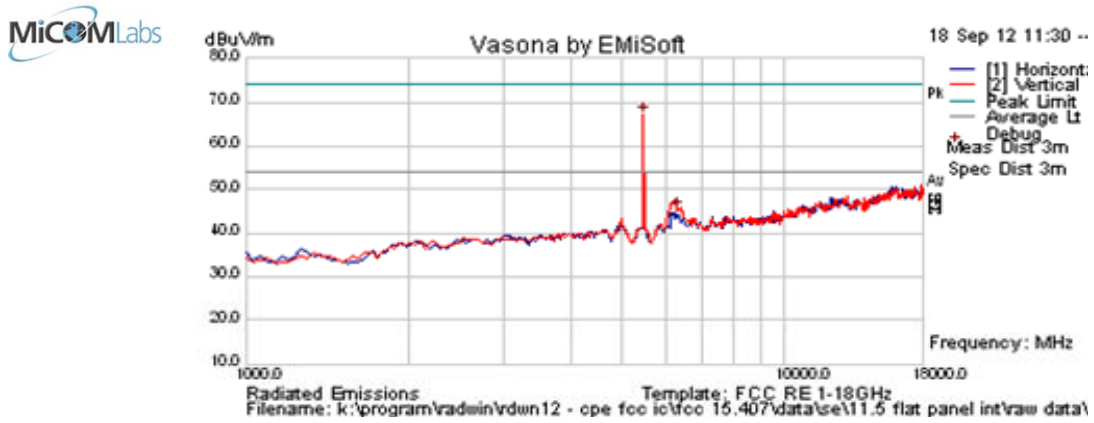
5 MHz 5475 MHz 5350 – 5460 Restricted Band-edge Power Setting = 15



5470 -5725 MHz

Low

Test Freq.	5475 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	16	**Press. (mBars)**	1004
Antenna	11 dBi Flat Panel 120d Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



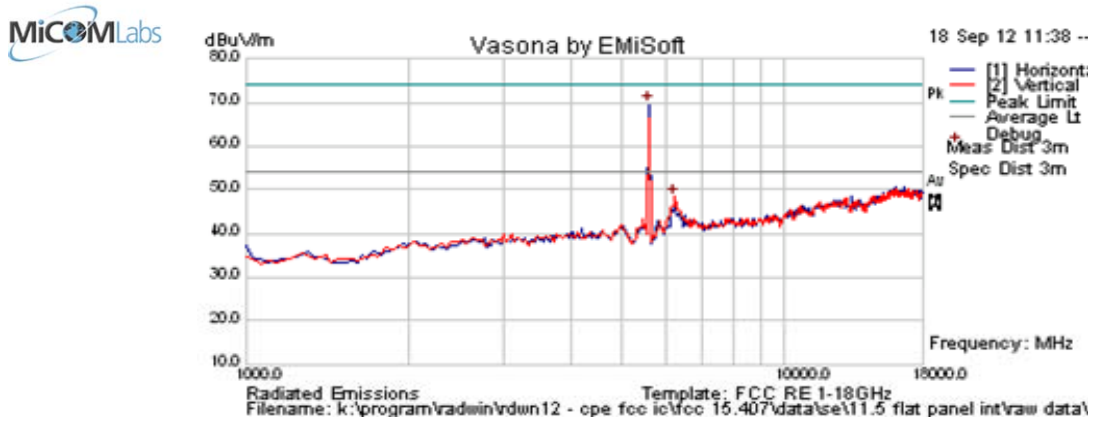
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5462.926	72.2	4.6	-9.7	67.2	Peak [Scan]	V	100	0				FUND
6349.606	47.6	5.1	-7.4	45.3	Peak [Scan]	V	98	0				NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Mid

Test Freq.	5595 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	16	**Press. (mBars)**	1004
Antenna	11 dBi Flat Panel 120d Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



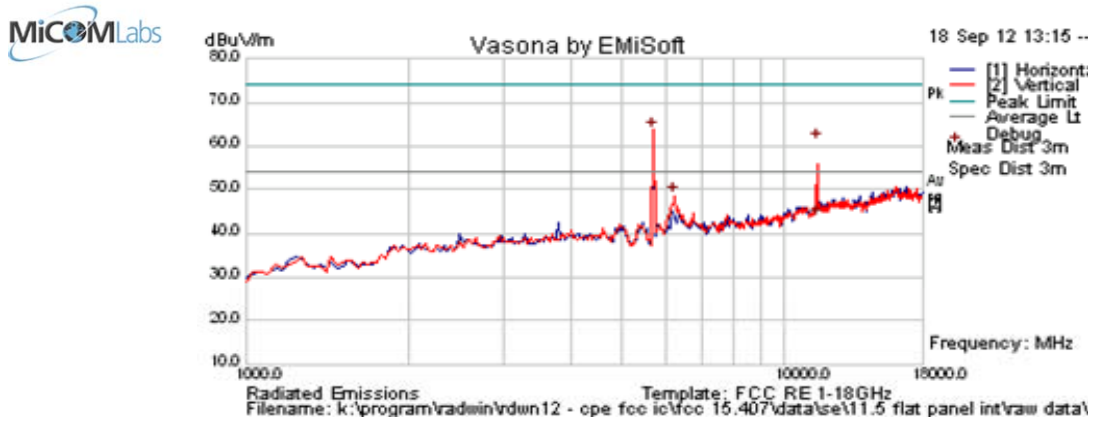
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5599.198	74.5	4.7	-9.7	69.5	Peak [Scan]	H	100	0				FUND
6246.492986	50.9	5.0	-7.6	48.3	Peak [Scan]	V	100	0				NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

High

Test Freq.	5720 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	16	**Press. (mBars)**	1004
Antenna	11 dBi Flat Panel 120d Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5701.403	68.5	4.7	-9.6	63.7	Peak [Scan]	V	100	0				FUND
6246.492986	51.1	5.0	-7.6	48.5	Peak [Scan]	V	100	0				NRB
11440.251	56.6	6.8	-2.1	61.3	Peak Max	V	126	220	74	-12.8	Pass	RB
11440.251	39.0	6.8	-2.1	43.7	Average Max	V	126	220	54	-10.3	Pass	RB

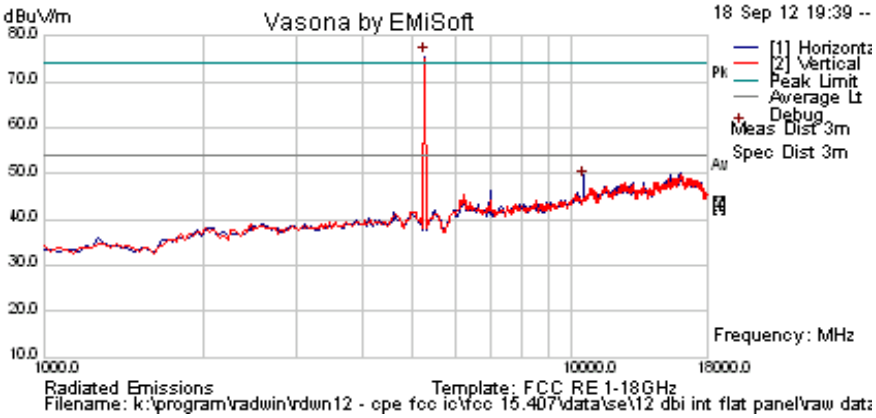
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

6.1.2.2. Antenna # 2

5250 -5350 MHz

Low

Test Freq.	5255 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	16	**Press. (mBars)**	1004
Antenna	12 dBi Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



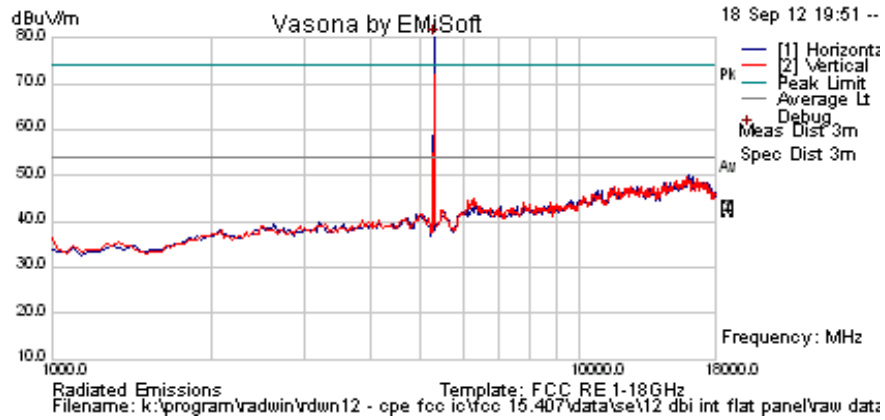
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5258.517	80.7	4.6	-9.7	75.6	Peak [Scan]	H	100	0				FUND
10510.329	44.3	6.8	-2.4	48.7	Peak [Scan]	V	98	0				NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Mid

Test Freq.	5300 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	16	**Press. (mBars)**	1004
Antenna	12 dBi Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



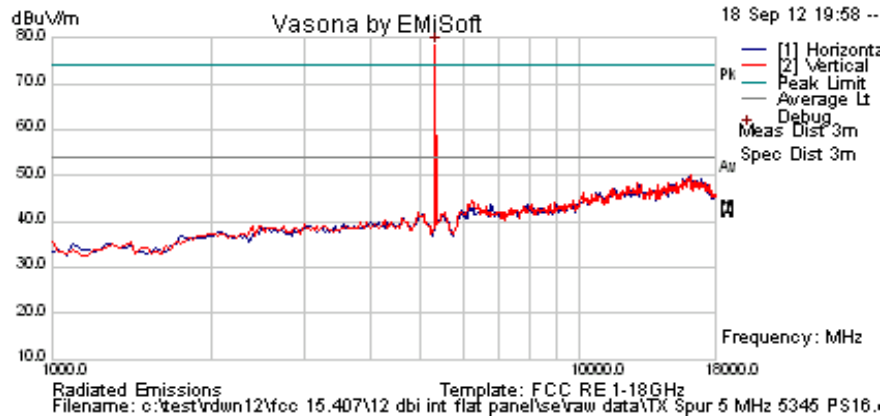
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5292.585	85.1	4.6	-9.6	80.1	Peak [Scan]	H	100	0				FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

High

Test Freq.	5345 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	16	**Press. (mBars)**	1004
Antenna	12 dBi Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

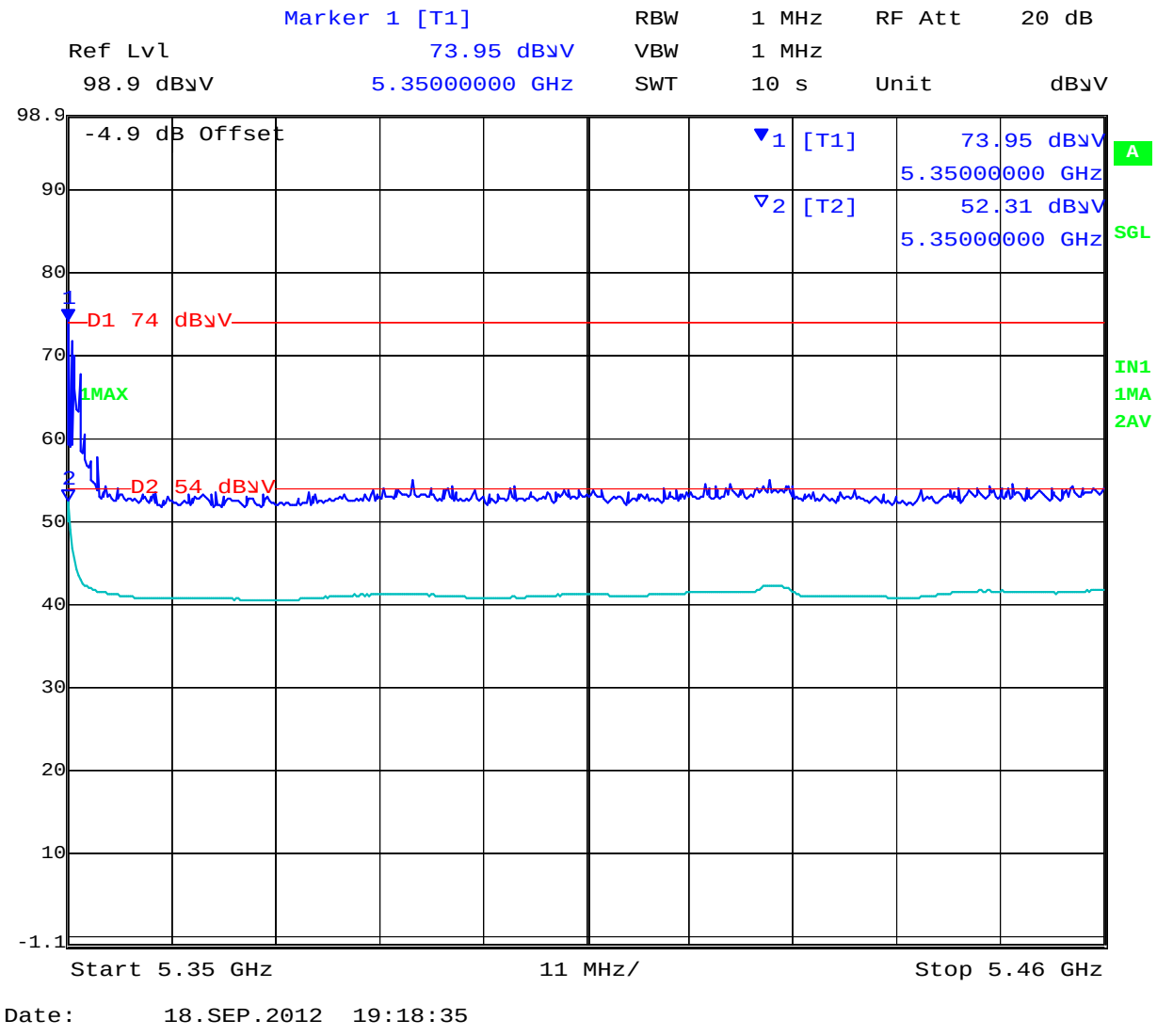


Formally measured emission peaks

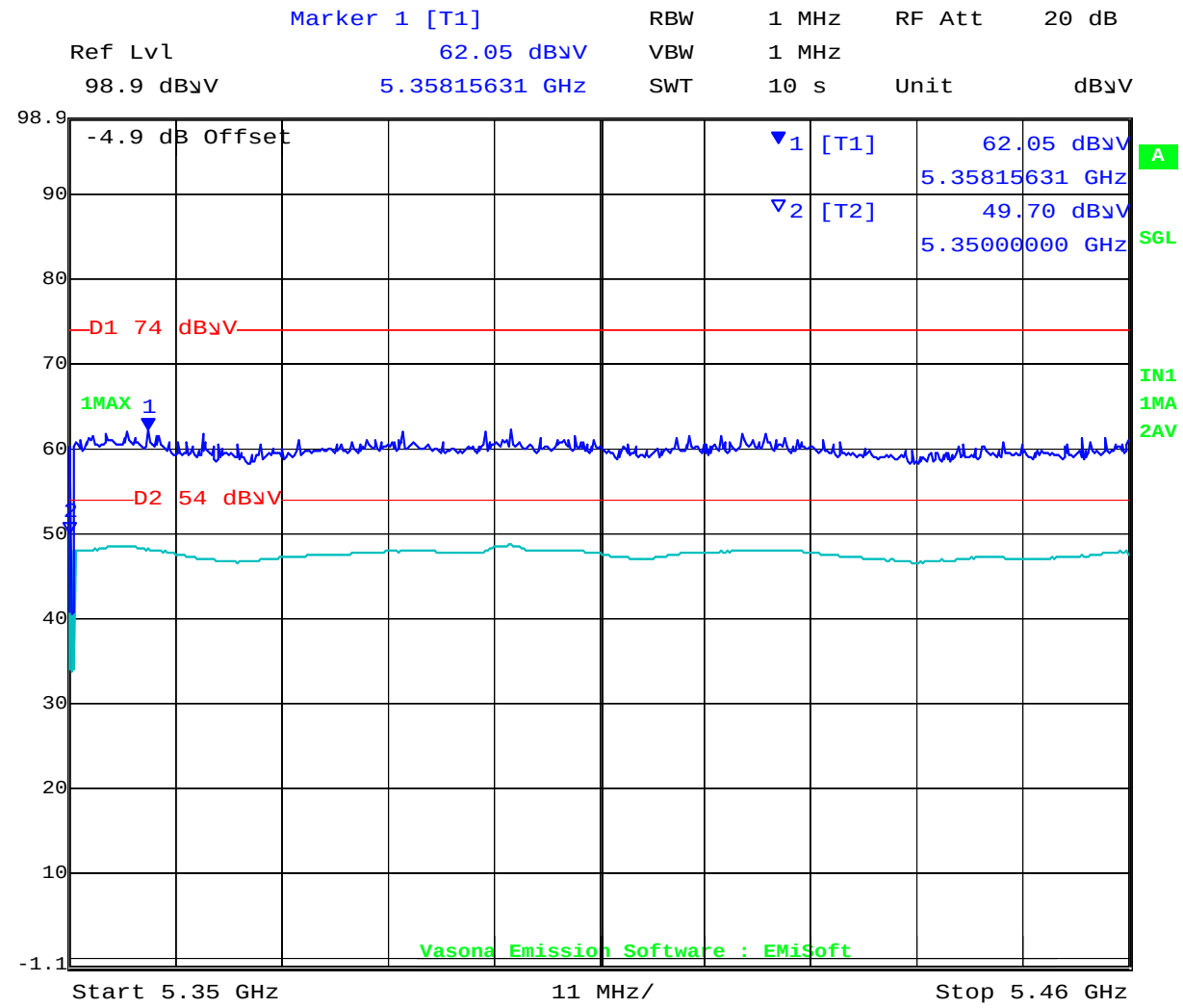
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5326.653	83.2	4.6	-9.5	78.3	Peak [Scan]	V	100	0				FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

5 MHz 5345 MHz 5350 – 5460 Restricted Band-edge Power Setting = 1



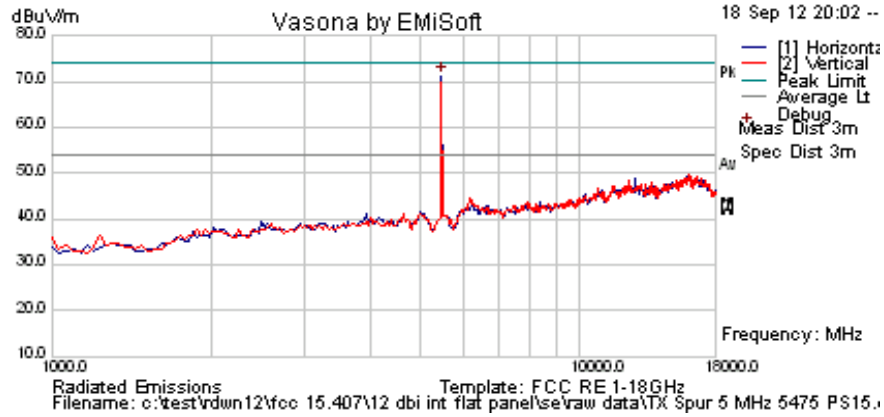
5 MHz 5475 MHz 5350 – 5460 Restricted Band-edge Power Setting = 15



5470 -5725 MHz

Low

Test Freq.	5475 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	15	**Press. (mBars)**	1004
Antenna	12 dBi Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



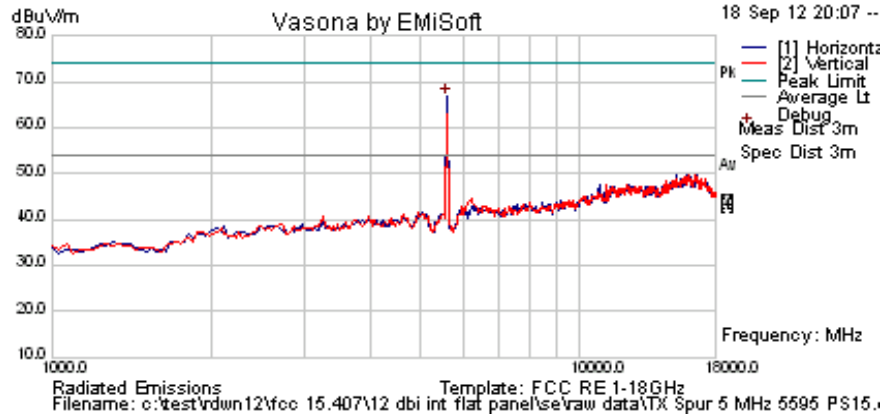
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5462.926	76.3	4.6	-9.7	71.3	Peak [Scan]	H	150	0				FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Mid

Test Freq.	5595 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	16	**Press. (mBars)**	1004
Antenna	12 dBi Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



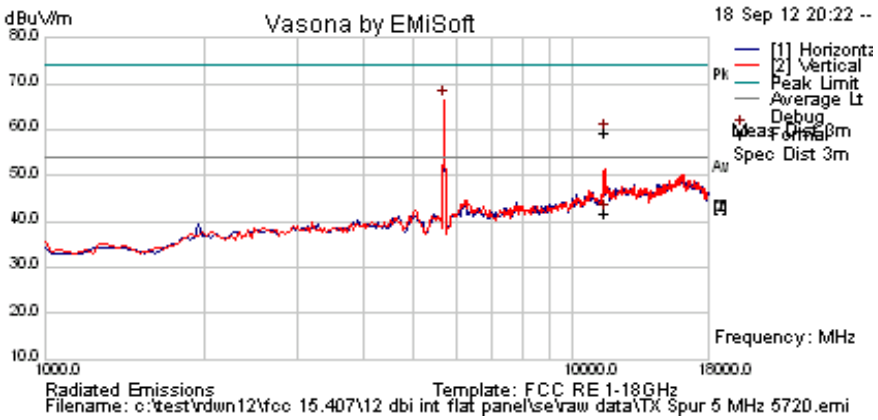
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5599.198	71.8	4.7	-9.7	66.7	Peak [Scan]	H	150	0				FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

High

Test Freq.	5720 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	16	**Press. (mBars)**	1004
Antenna	12 dBi Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5701.403	71.3	4.7	-9.6	66.5	Peak [Scan]	V	100	0				FUND
11440.04	54.6	6.8	-2.1	59.3	Peak Max	V	112	208	74.0	-14.7	Pass	RB
11440.040	37.2	6.8	-2.1	41.9	Average Max	V	112	208	54	-12.1	Pass	RB

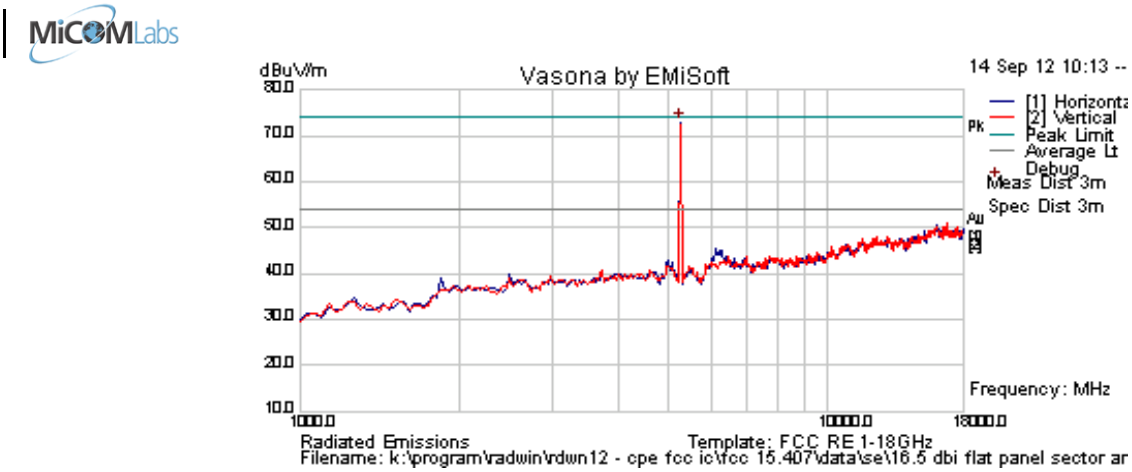
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

6.1.2.3. Antenna # 3

5250 -5350 MHz

Low

Test Freq.	5255 MHz	**Engineer**	SB
Variant	5 MHz	**Temp (ºC)**	23
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	16	**Press. (mBars)**	1008
Antenna	16.5 dBi Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



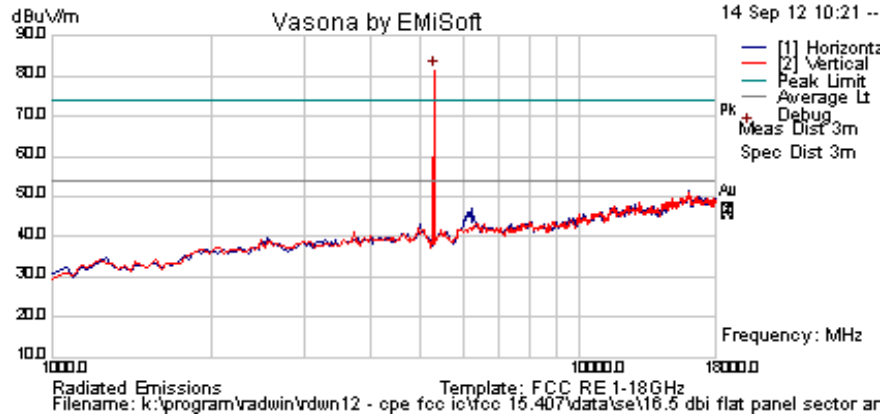
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5258.517	78.1	4.6	-9.7	73.0	Peak [Scan]	H	100	0				FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Mid

Test Freq.	5300 MHz	**Engineer**	SB
Variant	5 MHz	**Temp (ºC)**	23
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	16	**Press. (mBars)**	1008
Antenna	16.5 dBi Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



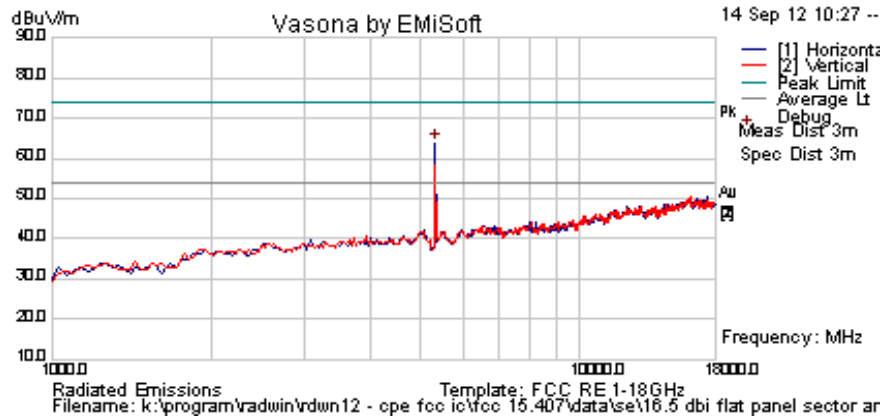
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5292.585	86.5	4.6	-9.6	81.5	Peak [Scan]	V	100	0				FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

High

Test Freq.	5345 MHz	**Engineer**	SB
Variant	5 MHz	**Temp (ºC)**	23
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	16	**Press. (mBars)**	1008
Antenna	16.5 dBi Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

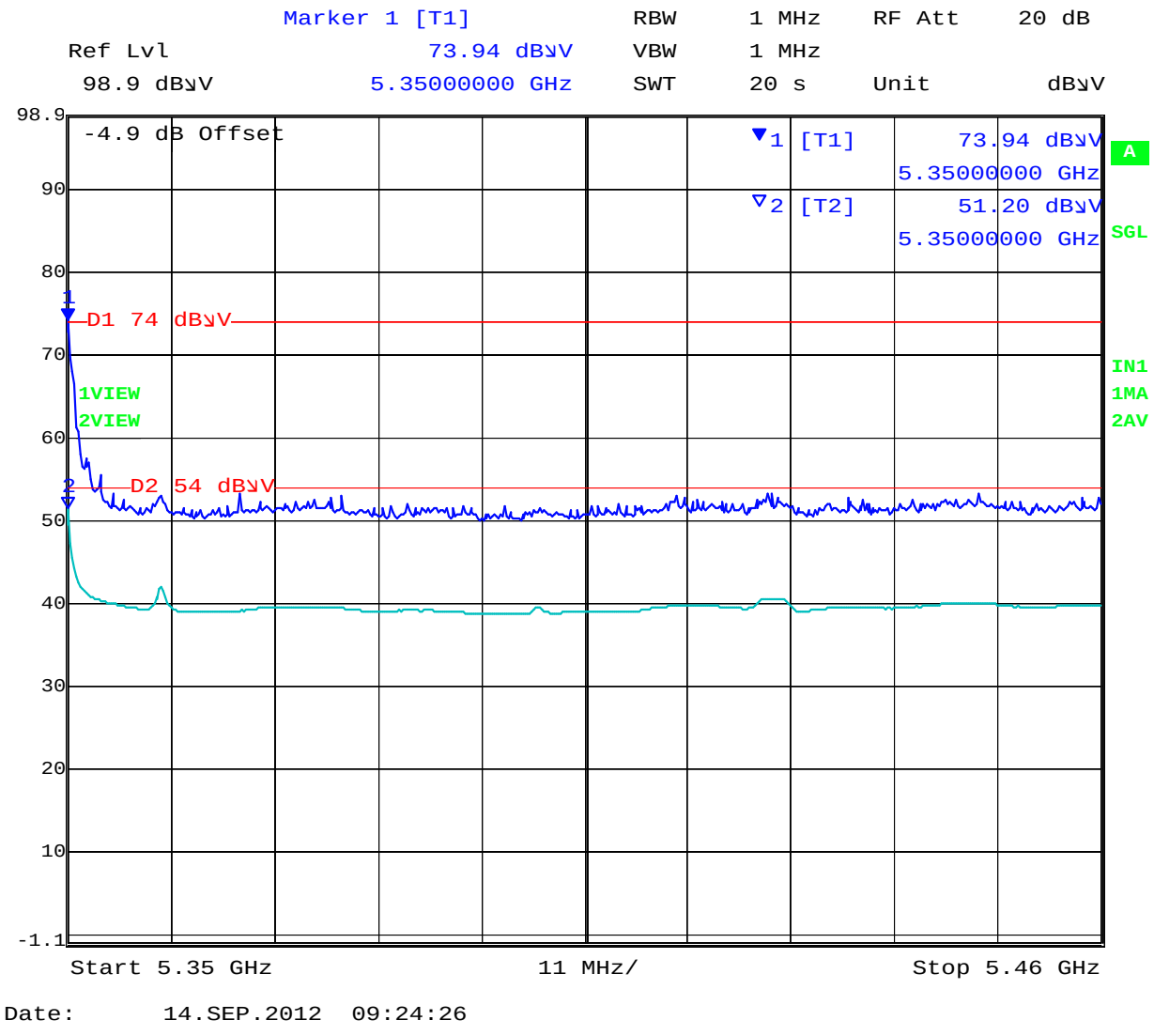


Formally measured emission peaks

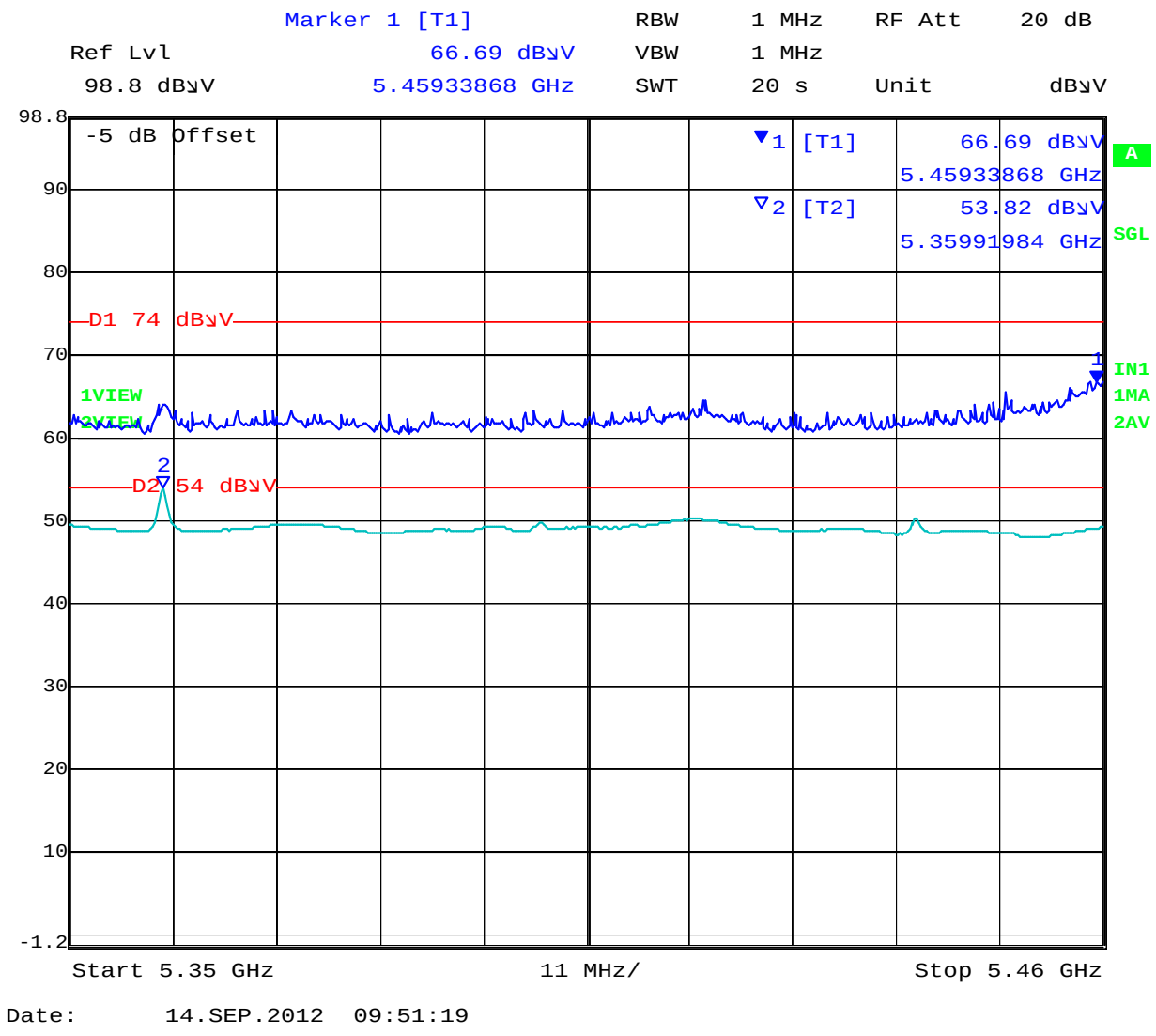
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5326.653	68.7	4.6	-9.5	63.8	Peak [Scan]	H	100	0				FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

5 MHz 5345 MHz 5350 – 5460 Restricted Band-edge Power Setting = -6



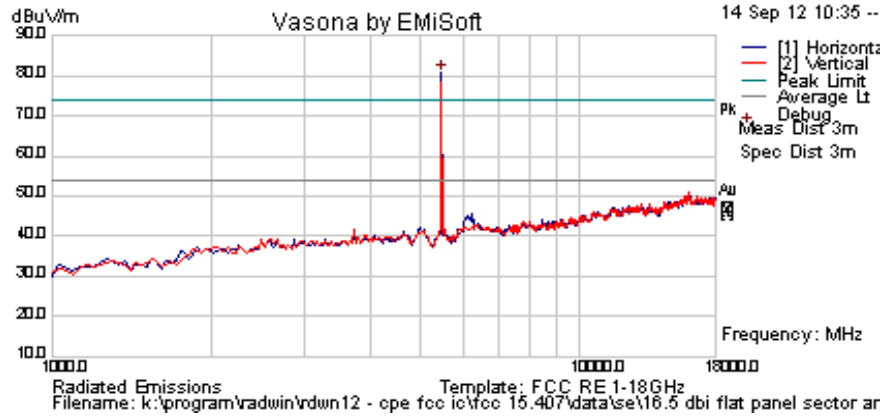
5 MHz 5475 MHz 5350 – 5460 Restricted Band-edge Power Setting = 16



5470 -5725 MHz

Low

Test Freq.	5475 MHz	**Engineer**	SB
Variant	5 MHz	**Temp (ºC)**	23
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	16	**Press. (mBars)**	1008
Antenna	16.5 dBi Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



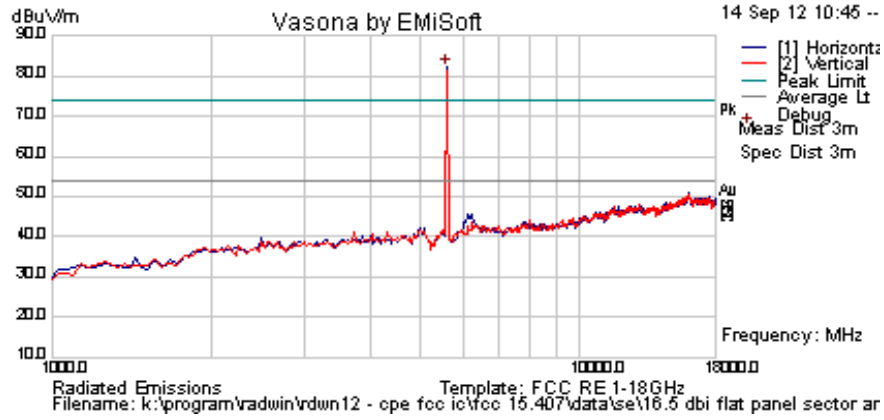
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5462.926	85.8	4.6	-9.7	80.7	Peak [Scan]	H	100	0				FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Mid

Test Freq.	5595 MHz	**Engineer**	SB
Variant	5 MHz	**Temp (ºC)**	23
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	16	**Press. (mBars)**	1008
Antenna	16.5 dBi Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



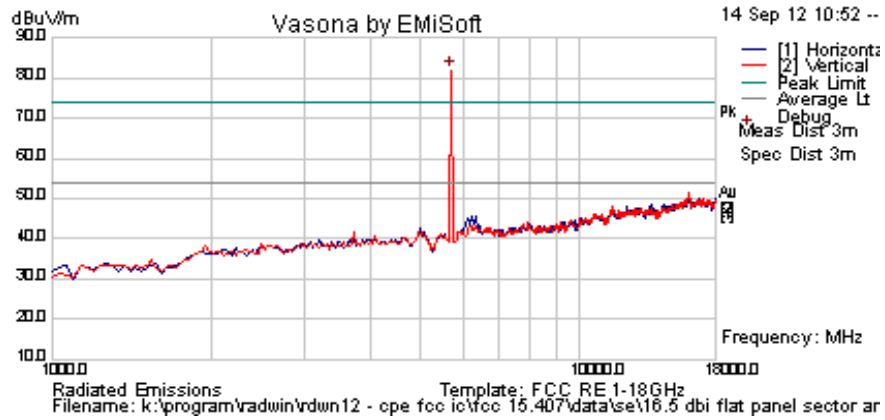
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5599.198	87.2	4.7	-9.7	82.1	Peak [Scan]	H	150	0				FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

High

Test Freq.	5720 MHz	**Engineer**	SB
Variant	5 MHz	**Temp (ºC)**	23
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	16	**Press. (mBars)**	1008
Antenna	16.5 dBi Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5701.403	86.8	4.7	-9.6	81.9	Peak [Scan]	H	100	0				FUND

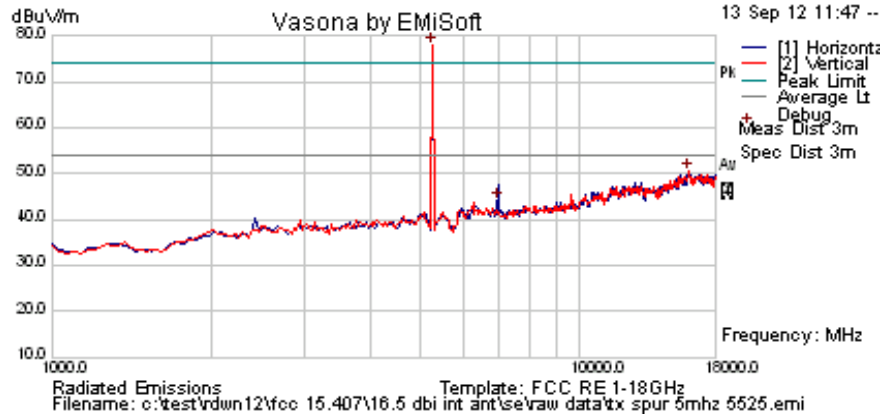
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

6.1.2.4. Antenna # 4

5250 -5350 MHz

Low

Test Freq.	5255 MHz	**Engineer**	jmh
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	16	**Press. (mBars)**	1006
Antenna	16.5 dBi INT Flat Panel	**Duty Cycle (%)**	100
Test Notes 1	Data rate MCS 15		
Test Notes 2			



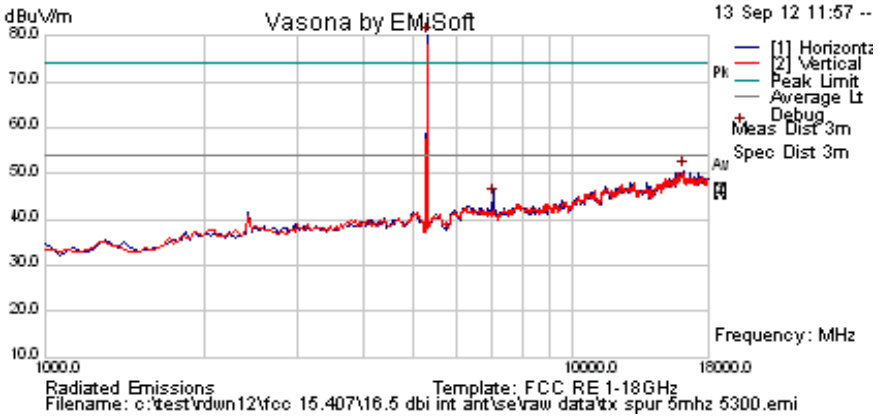
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5258.517	83.0	4.6	-9.7	77.9	Peak [Scan]	V						FUND
16058.116	41.1	9.0	0.3	50.4	Peak [Scan]	V	100	0	54.0	-3.6	Pass	Noise
7006.683	44.9	5.4	-6.3	44.0	Peak [Scan]	H	98	360	54.0	-10.0	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Mid

Test Freq.	5300 MHz	**Engineer**	jmh
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	16	**Press. (mBars)**	1006
Antenna	16.5 dBi INT Flat Panel	**Duty Cycle (%)**	100
Test Notes 1	Data rate MCS 15		
Test Notes 2			



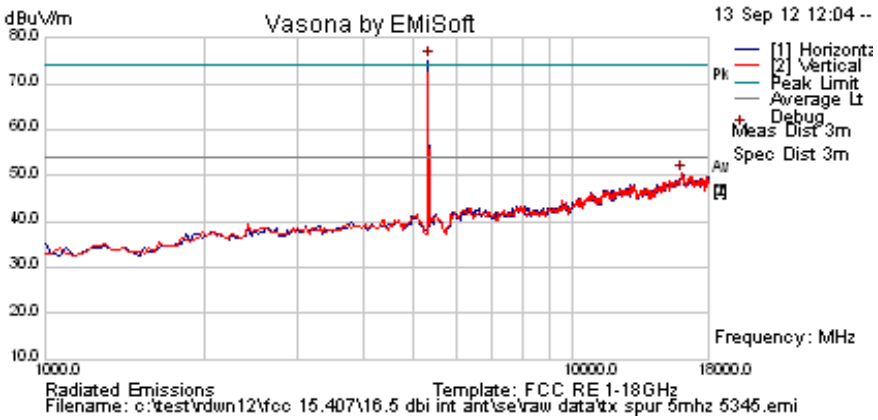
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5292.585	85.1	4.6	-9.6	80.2	Peak [Scan]	H						FUND
16228.457	41.5	8.9	0.1	50.6	Peak [Scan]	H						Noise
7076.516	45.4	5.4	-6.1	44.7	Peak [Scan]	V	98	0	54.0	-9.3	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

High

Test Freq.	5345 MHz	**Engineer**	jmh
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	16	**Press. (mBars)**	1006
Antenna	16.5 dBi INT Flat Panel	**Duty Cycle (%)**	100
Test Notes 1	Data rate MCS 15		
Test Notes 2			

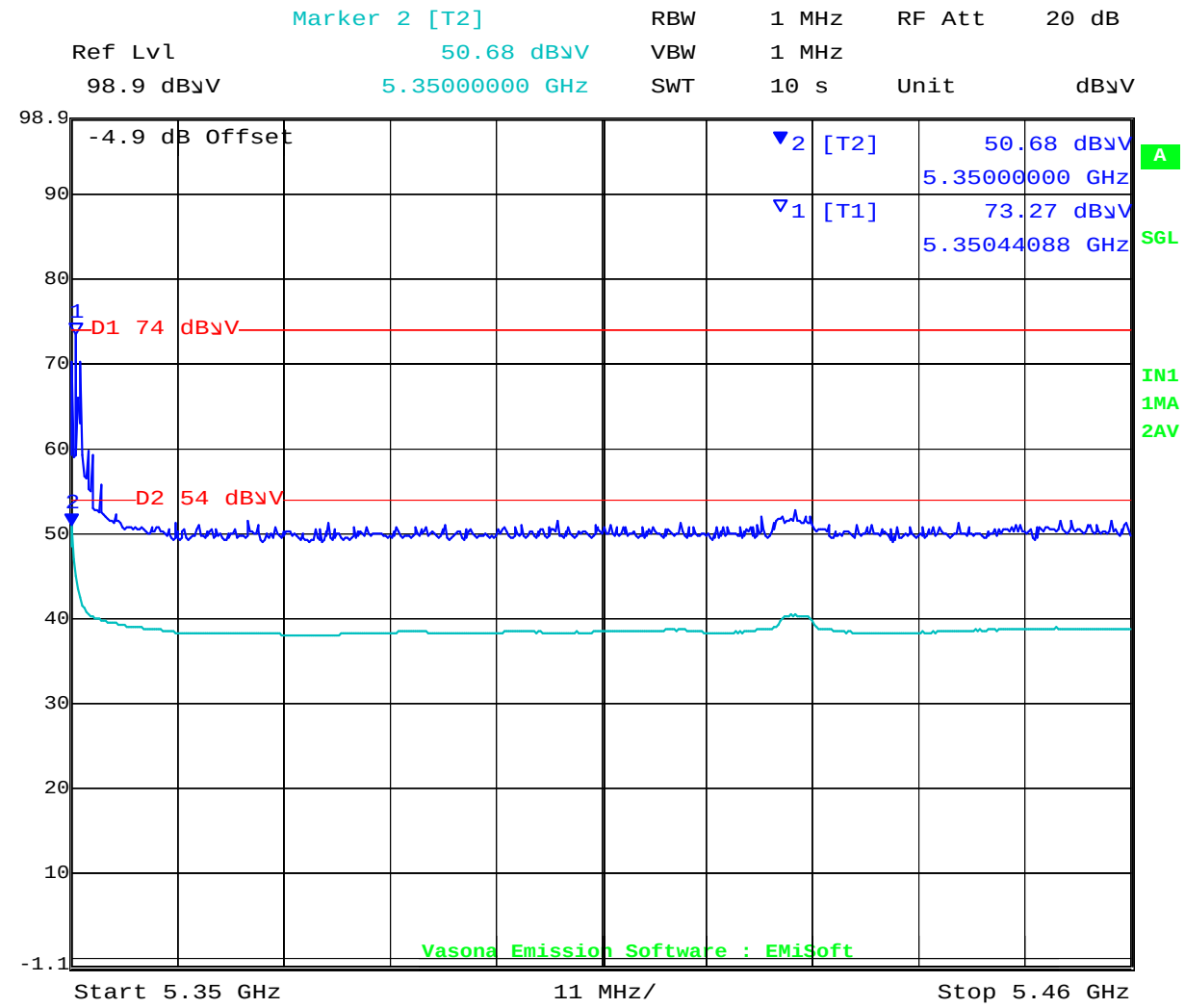


Formally measured emission peaks

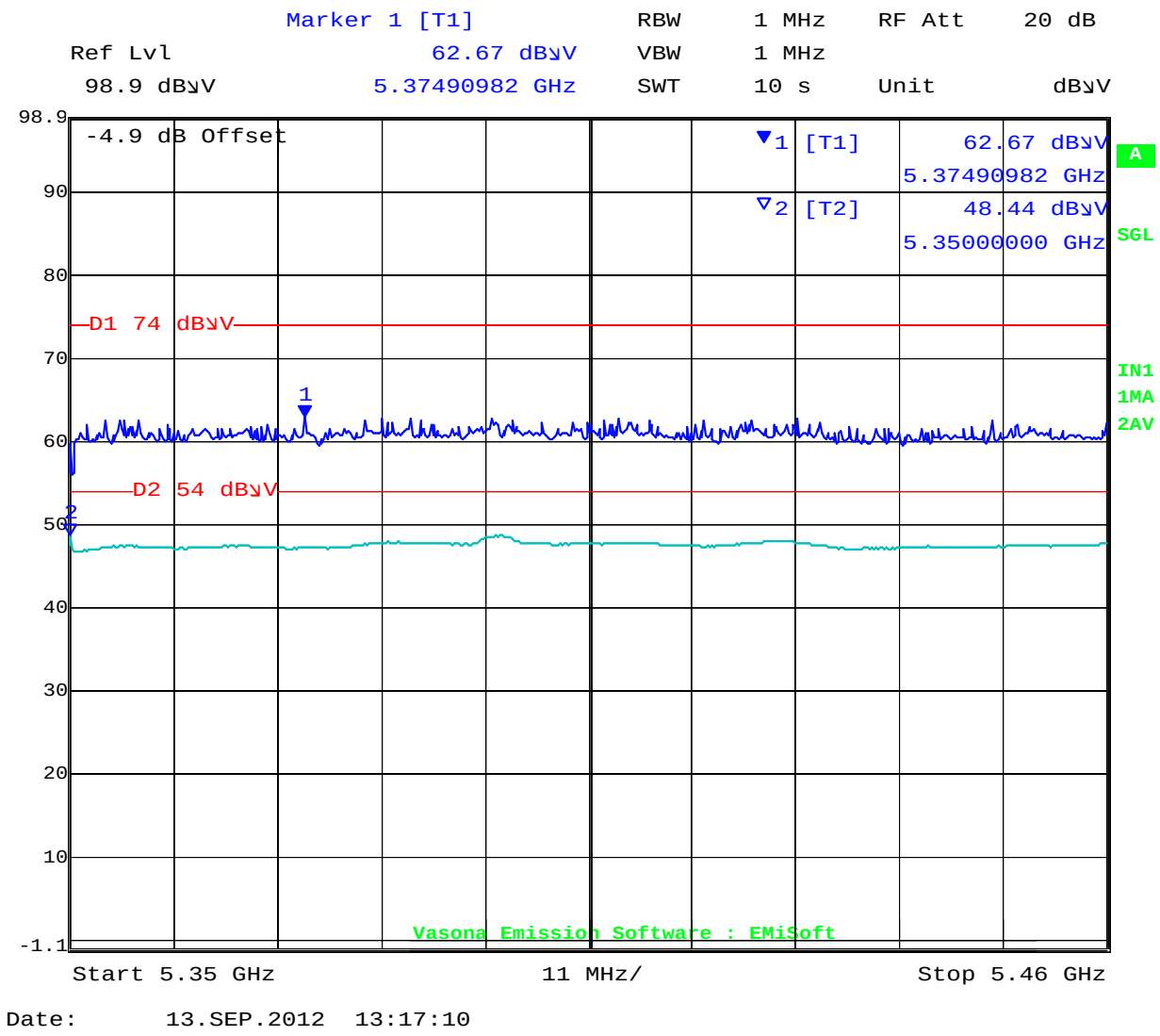
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5326.653	80.0	4.6	-9.5	75.1	Peak [Scan]	H						FUND
16058.116	41.2	9.0	0.3	50.4	Peak [Scan]	V	100	0	54.0	-3.6	Pass	Noise

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

5 MHz 5345 MHz 5350 – 5460 Restricted Band-edge Power Setting = -3



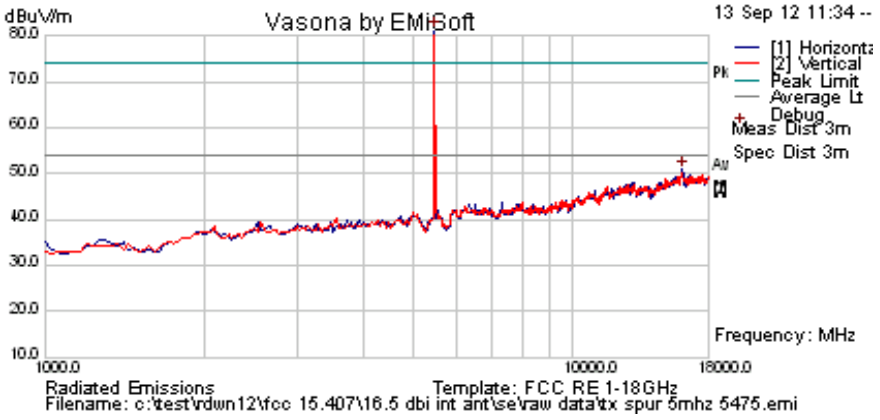
5 MHz 5475 MHz 5350 – 5460 Restricted Band-edge Power Setting = 15



5470 -5725 MHz

Low

Test Freq.	5475 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	15	**Press. (mBars)**	1005
Antenna	16.5 dBi Int Flat Panel	**Duty Cycle (%)**	100
Test Notes 1	Data Rate MCS 15		
Test Notes 2			



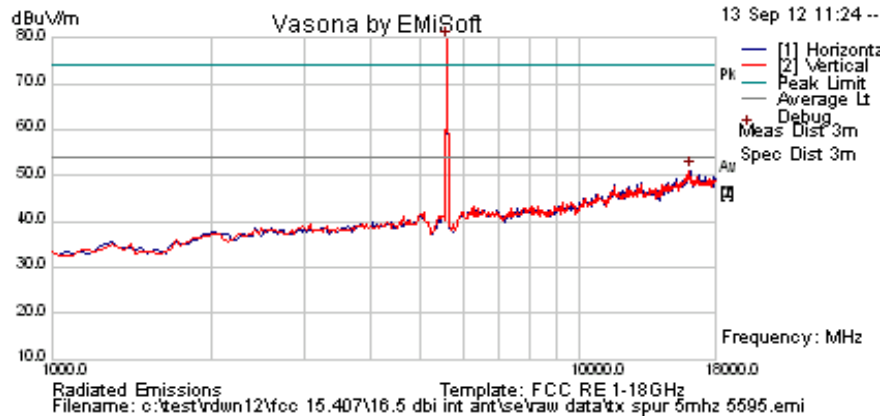
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5462.926	86.1	4.6	-9.7	81.1	Peak [Scan]	H						FUND
16092.184	41.7	9.0	0.3	50.9	Peak [Scan]	H						Noise

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Mid

Test Freq.	5595 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	15	**Press. (mBars)**	1005
Antenna	16.5 dBi Int Flat Panel	**Duty Cycle (%)**	100
Test Notes 1	Data Rate MCS 15		
Test Notes 2			



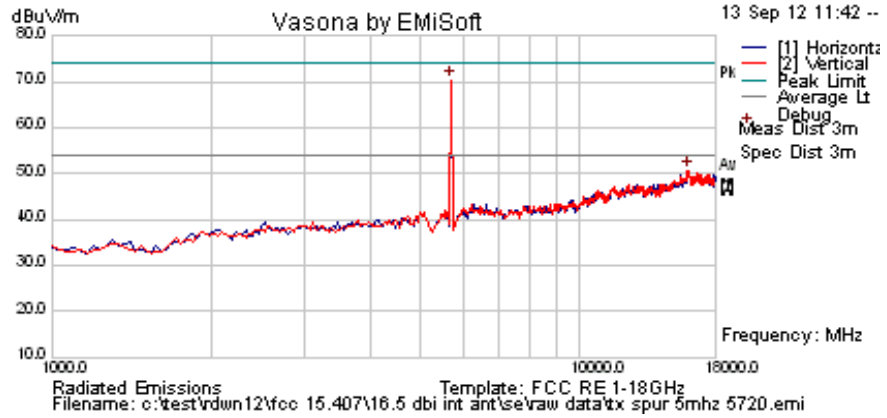
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5599.198	84.5	4.7	-9.7	79.5	Peak [Scan]	V						FUND
16092.184	41.9	9.0	0.3	51.1	Peak [Scan]	V						Noise

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

High

Test Freq.	5720 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	15	**Press. (mBars)**	1005
Antenna	16.5 dBi Int Flat Panel	**Duty Cycle (%)**	100
Test Notes 1	Data Rate MCS 15		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5701.403	75.3	4.7	-9.6	70.4	Peak [Scan]	V						FUND
16058.116	41.3	9.0	0.3	50.6	Peak [Scan]	V						Noise

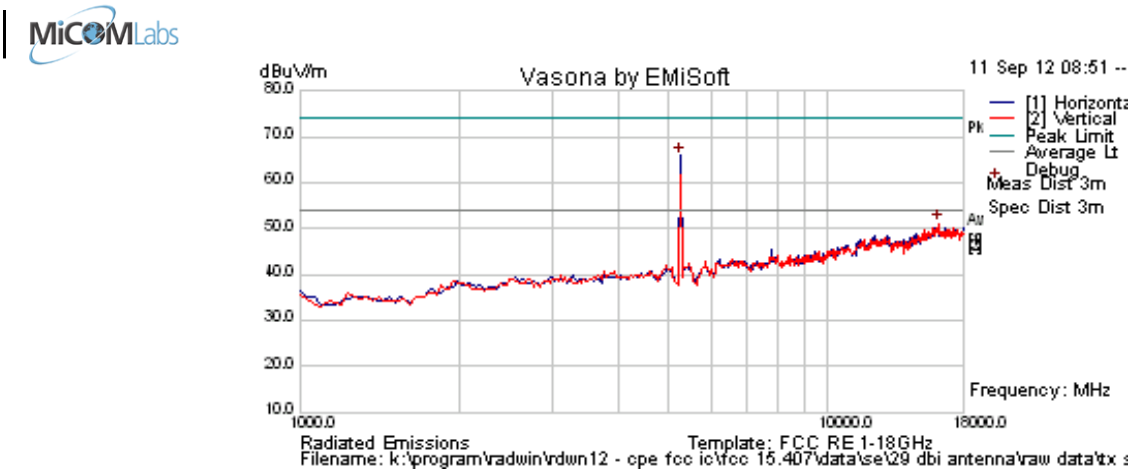
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

6.1.2.5. Antenna # 5

5250 -5350 MHz

Low

Test Freq.	5255 MHz	**Engineer**	jmh
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	16	**Press. (mBars)**	1006
Antenna	24 dBi INT Flat Panel	**Duty Cycle (%)**	100
Test Notes 1	Data rate MCS 15		
Test Notes 2			



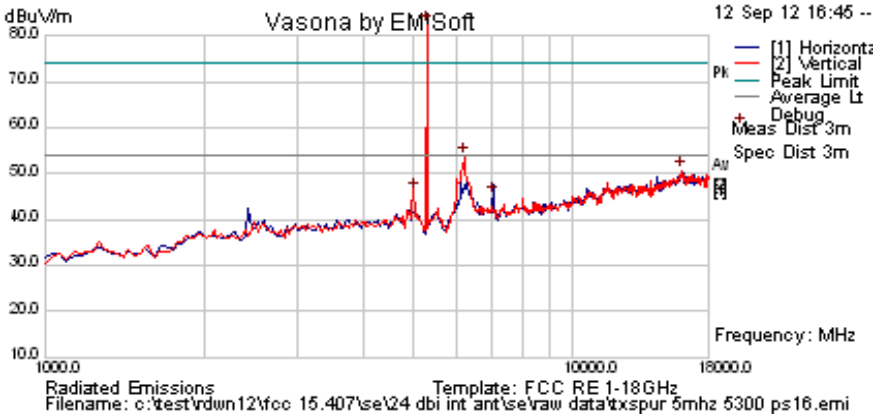
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5258.517	84.4	4.6	-9.7	79.3	Peak [Scan]	H						FUND
6212.42485	53.8	5.0	-7.8	51.0	Peak [Scan]	V						NRB
16092.184	41.2	9.0	0.3	50.4	Peak [Scan]	H	100	0	54.0	-3.6	Pass	Noise
6995.992	50.8	5.4	-6.4	49.8	Peak [Scan]	H						NRB
5000.414	50.2	4.6	-9.9	44.9	Peak [Scan]	V	98	0	54.0	-9.1	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Mid

Test Freq.	5300 MHz	**Engineer**	jmh
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	16	**Press. (mBars)**	1006
Antenna	24 dBi INT Flat Panel	**Duty Cycle (%)**	100
Test Notes 1	Data rate MCS 15		
Test Notes 2			



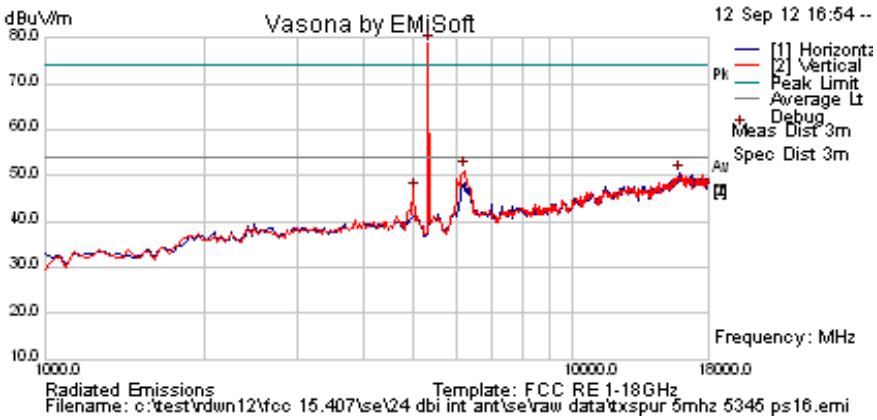
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5292.585	87.4	4.6	-9.6	82.4	Peak [Scan]	V						FUND
6212.42485	56.5	5.0	-7.8	53.7	Peak [Scan]	V						NRB
15989.980	41.6	9.0	0.1	50.7	Peak [Scan]	V	200	0	54.0	-3.3	Pass	Noise
7076.516	46.1	5.4	-6.1	45.4	Peak [Scan]	V						NRB
5000.254	51.4	4.6	-9.9	46.1	Peak [Scan]	V	98	0	54.0	-7.9	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

High

Test Freq.	5345 MHz	**Engineer**	jmh
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	16	**Press. (mBars)**	1006
Antenna	24 dBi INT Flat Panel	**Duty Cycle (%)**	100
Test Notes 1	Data rate MCS 15		
Test Notes 2			

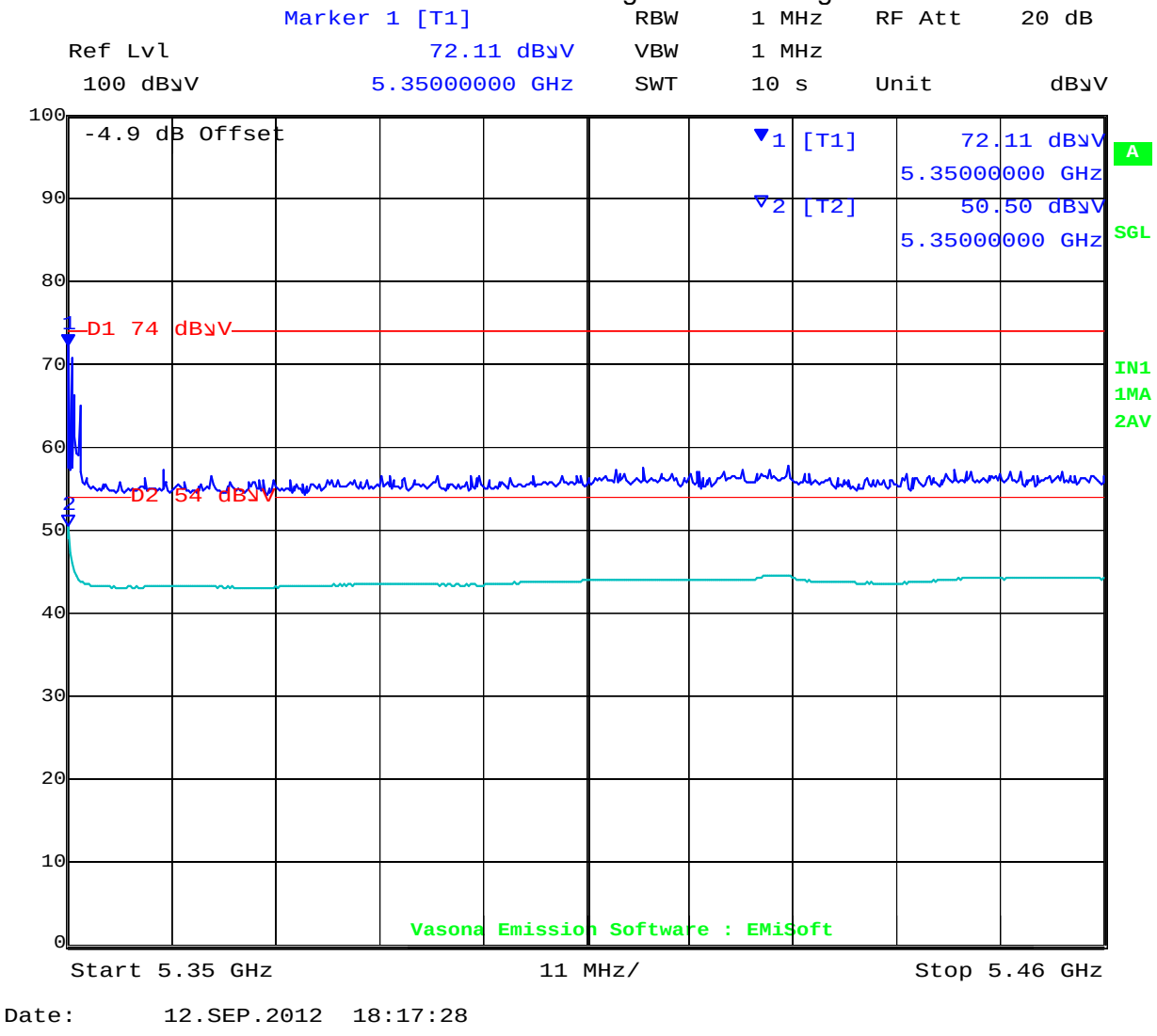


Formally measured emission peaks

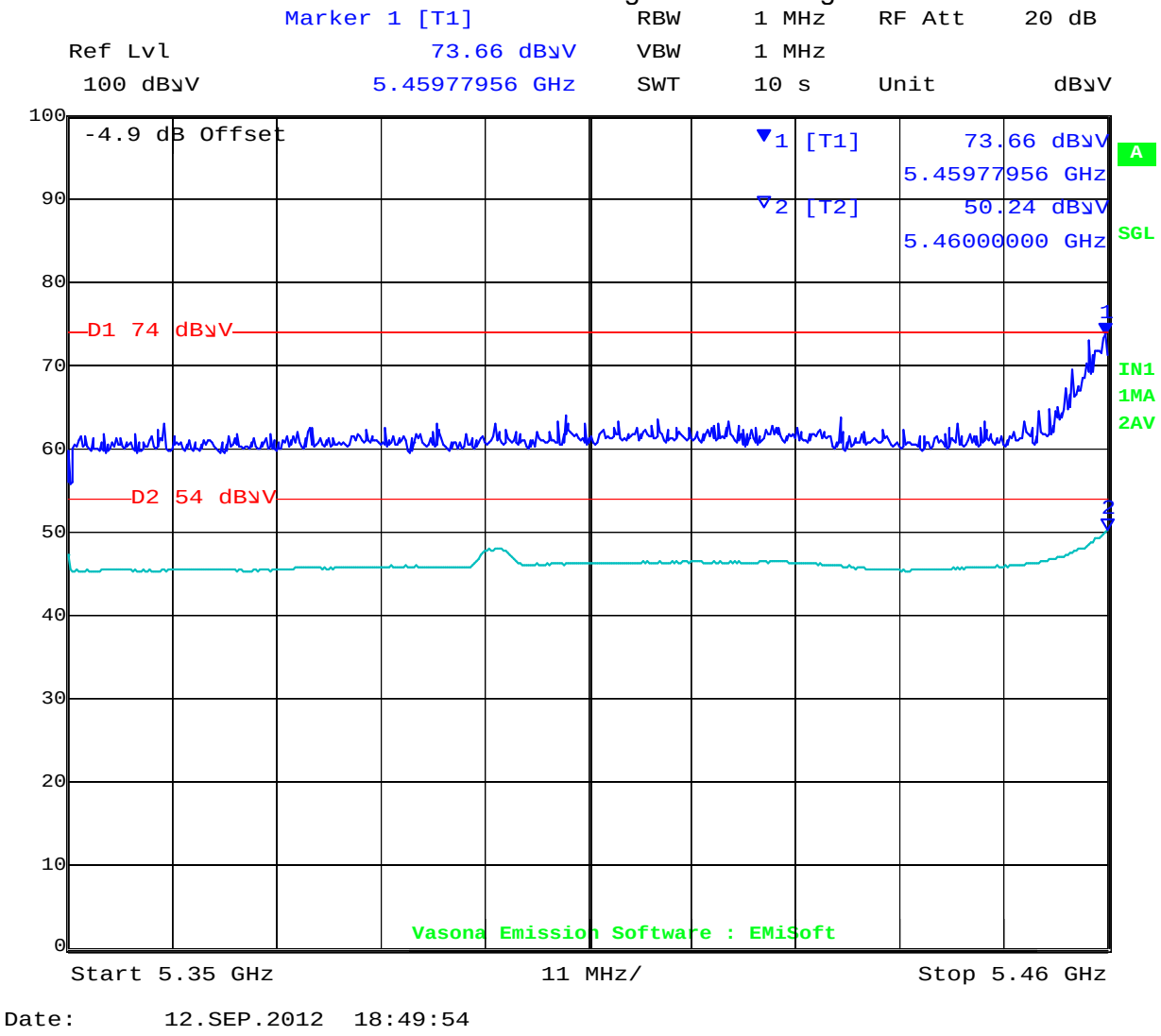
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5326.653	83.7	4.6	-9.5	78.8	Peak [Scan]	V						FUND
6212.42485	53.9	5.0	-7.8	51.1	Peak [Scan]	V						NRB
15921.844	41.7	8.9	-0.1	50.5	Peak [Scan]	H	200	0	54.0	-3.5	Pass	Noise
5000.013	51.7	4.6	-9.9	46.4	Peak [Scan]	V	98	0	54	-7.6	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

5 MHz 5345 MHz 5350 – 5460 Restricted Band-edge Power Setting = -23



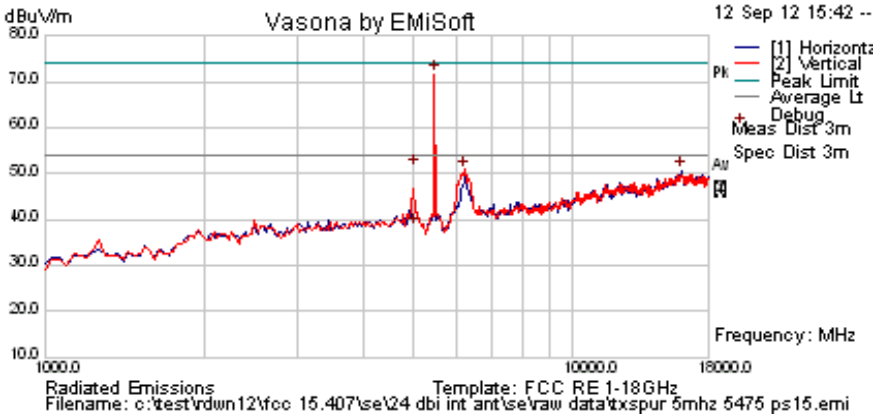
5 MHz 5475 MHz 5350 – 5460 Restricted Band-edge Power Setting = 7



5470 -5725 MHz

Low

Test Freq.	5475 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	15	**Press. (mBars)**	1005
Antenna	24 dBi Int Flat Panel	**Duty Cycle (%)**	100
Test Notes 1	Data Rate MCS 15		
Test Notes 2			



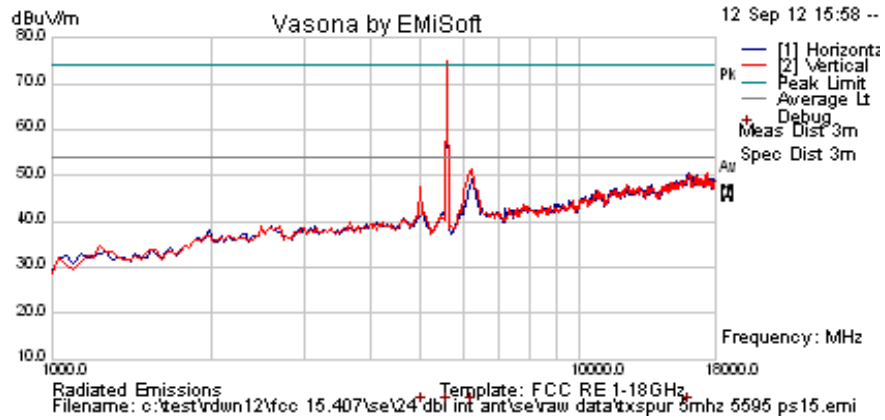
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5462.926	76.7	4.6	-9.7	71.7	Peak [Scan]	V						FUND
6212.42485	53.6	5.0	-7.8	50.8	Peak [Scan]	V						NRB
15989.980	41.5	9.0	0.1	50.6	Peak [Scan]	H	100	0	54	-3.4	Pass	Noise
5000.895	56.5	4.6	-9.9	51.2	Peak Max	V	99	9	74	-22.8	Pass	RB
5000.895	43.6	4.6	-9.9	38.4	Average Max	V	99	9	54	-15.6	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Mid

Test Freq.	5595 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	15	**Press. (mBars)**	1005
Antenna	24 dBi Int Flat Panel	**Duty Cycle (%)**	100
Test Notes 1	Data Rate MCS 15		
Test Notes 2			



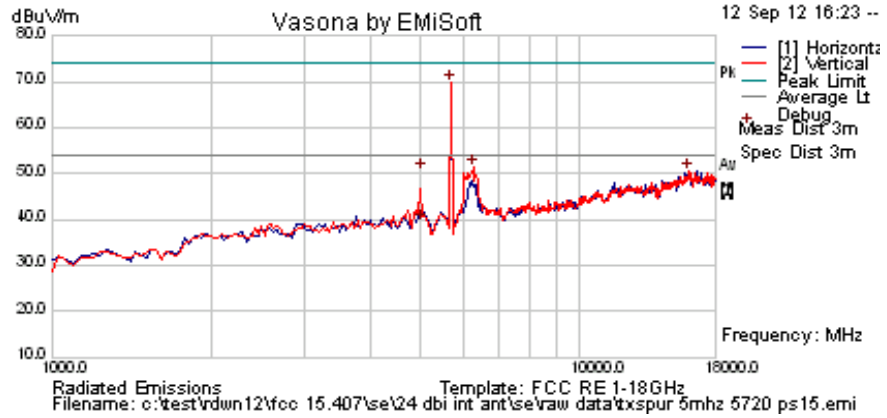
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5599.198	80.1	4.7	-9.7	75.1	Peak [Scan]	V						FUND
6246.492986	53.9	5.0	-7.6	51.3	Peak [Scan]	V						NRB
15989.980	41.5	9.0	0.1	50.6	Peak [Scan]	H	150	0	54	-3.4	Pass	Noise
5000.735	56.1	4.6	-9.9	50.8	Peak Max	V	98	8	74.0	-23.2	Pass	RB
5000.735	44.3	4.6	-9.9	39.0	Average Max	V	98	8	54	-15.0	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

High

Test Freq.	5720 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	15	**Press. (mBars)**	1005
Antenna	24 dBi Int Flat Panel	**Duty Cycle (%)**	100
Test Notes 1	Data Rate MCS 15		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5701.403	74.5	4.7	-9.6	69.7	Peak [Scan]	V						FUND
6280.561122	53.9	5.0	-7.5	51.4	Peak [Scan]	V						NRB
16058.116	41.3	9.0	0.3	50.6	Peak [Scan]	V	150	0	54	-3.4	Pass	Noise
5000.174	55.7	4.6	-9.9	50.5	Peak Max	V	98	9	74.0	-23.6	Pass	RB
5000.174	44.5	4.6	-9.9	39.3	Average Max	V	98	9	54	-14.7	Pass	RB

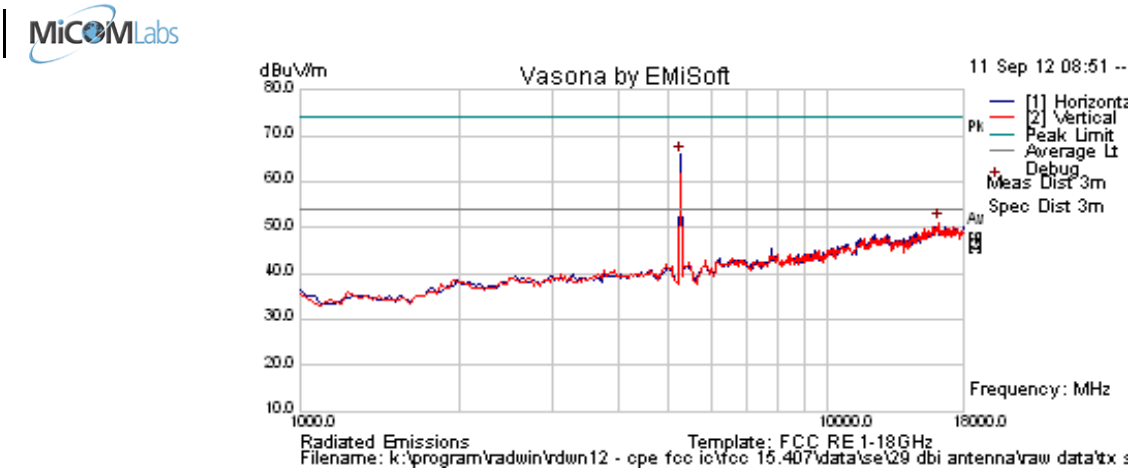
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

6.1.2.6. Antenna # 6

5250 -5350 MHz

Low

Test Freq.	5255 MHz	**Engineer**	jmh
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	20	**Press. (mBars)**	1006
Antenna	29 dBi Flat	**Duty Cycle (%)**	100
Test Notes 1	Data rate MCS 15		
Test Notes 2			



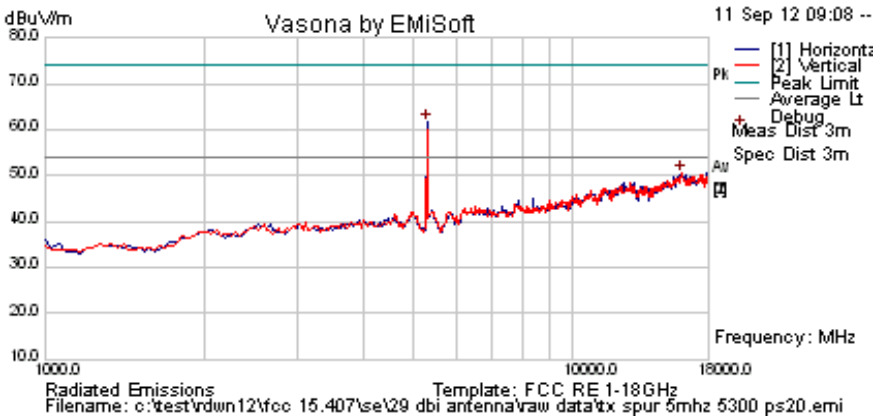
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5258.517	71.1	4.6	-9.7	66.0	Peak [Scan]	H						FUND
16126.253	41.9	9.0	0.2	51.1	Peak [Scan]	V					Pass	Noise

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Mid

Test Freq.	5300 MHz	**Engineer**	jmh
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	20	**Press. (mBars)**	1006
Antenna	29 dBi Flat	**Duty Cycle (%)**	100
Test Notes 1	Data rate MCS 15		
Test Notes 2			



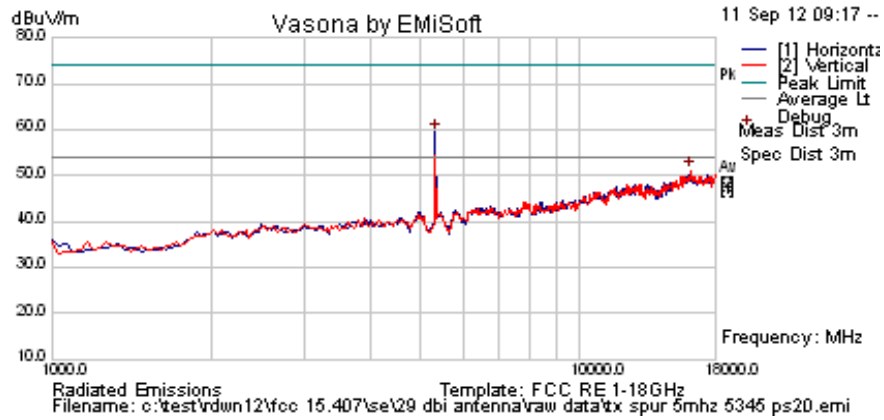
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5292.585	66.6	4.6	-9.6	61.6	Peak [Scan]	H						FUND
15989.98	41.3	9.0	0.1	50.5	Peak [Scan]	V					Pass	Noise

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

High

Test Freq.	5345 MHz	**Engineer**	jmh
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	20	**Press. (mBars)**	1006
Antenna	29 dBi Flat	**Duty Cycle (%)**	100
Test Notes 1	Data rate MCS 15		
Test Notes 2			

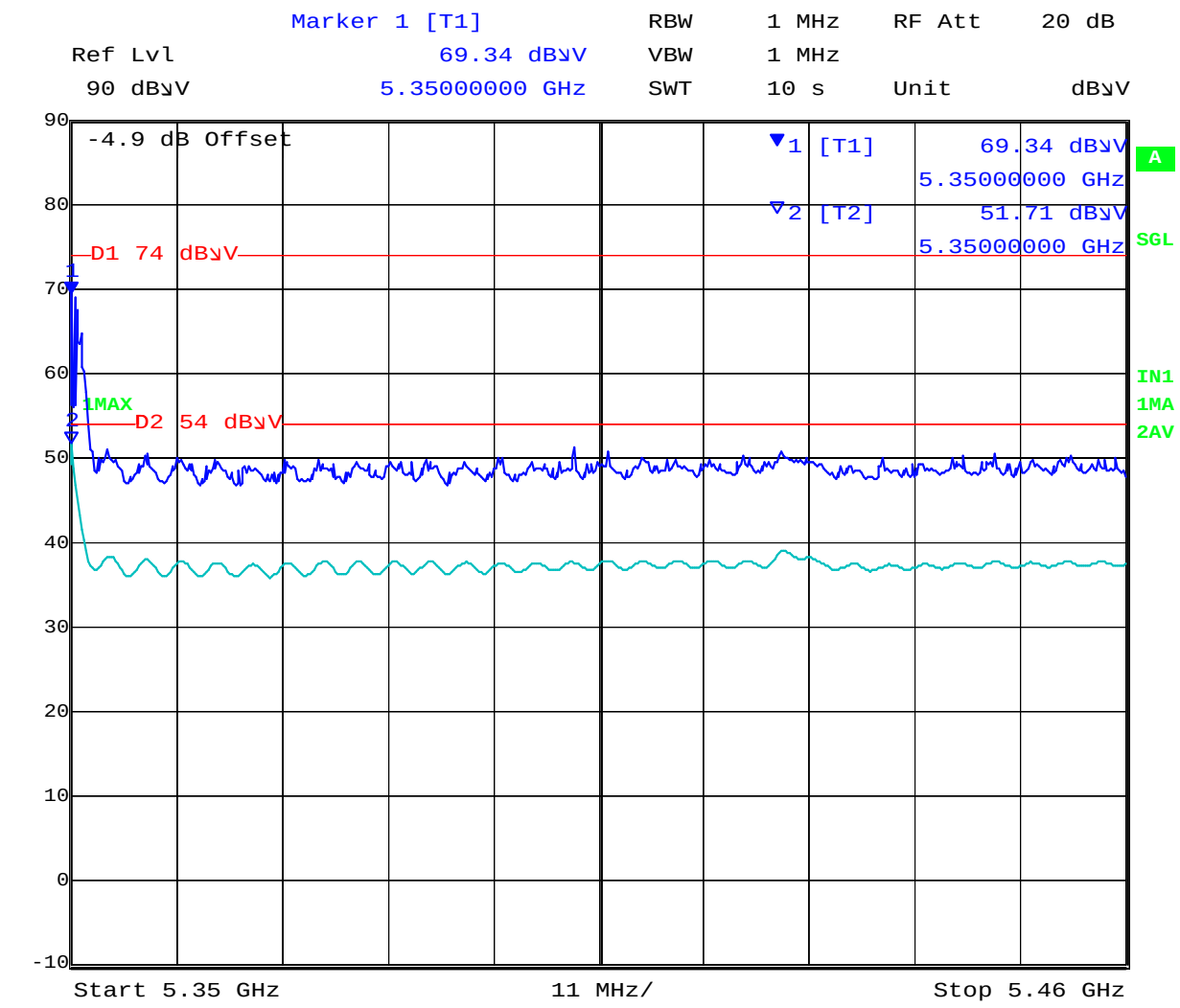


Formally measured emission peaks

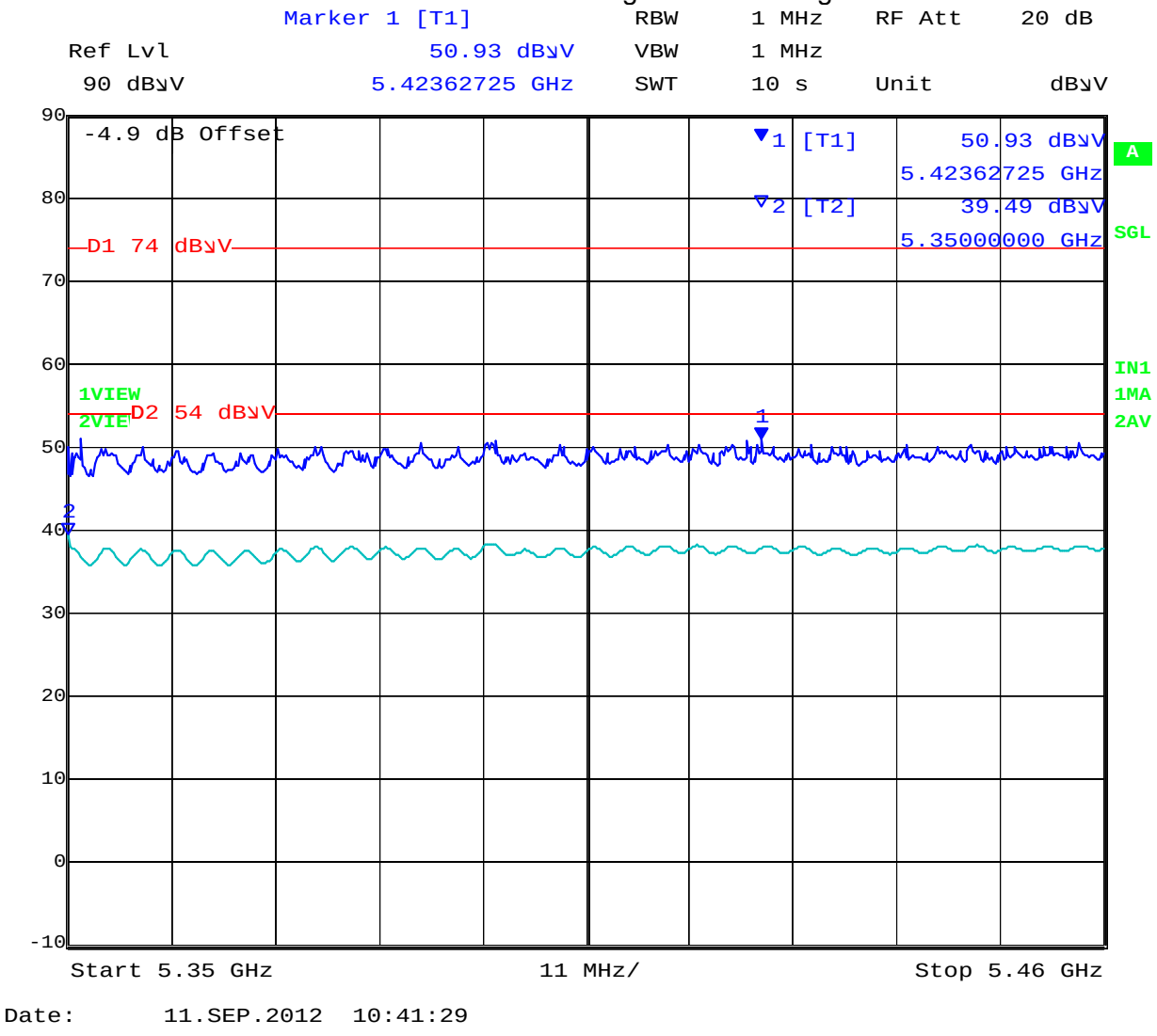
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5326.653	64.3	4.6	-9.5	59.4	Peak [Scan]	H						FUND
16194.389	42.0	8.9	0.2	51.1	Peak [Scan]	V					Pass	Noise

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

5 MHz 5345 MHz 5350 – 5460 Restricted Band-edge Power Setting = 20



5 MHz 5475 MHz 5350 – 5460 Restricted Band-edge Power Setting = 21



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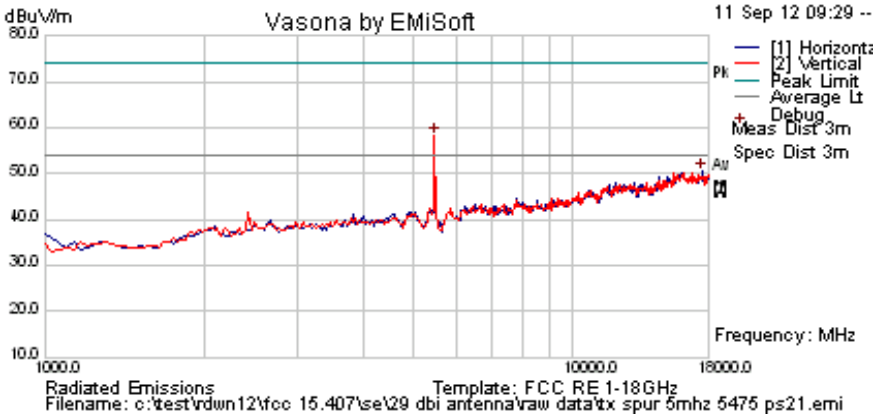
5470 -5725 MHz

Low

Test Freq.	5475 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	21	**Press. (mBars)**	1005
Antenna	29 dBi Flat	**Duty Cycle (%)**	100
Test Notes 1	Data Rate MCS 15		
Test Notes 2			



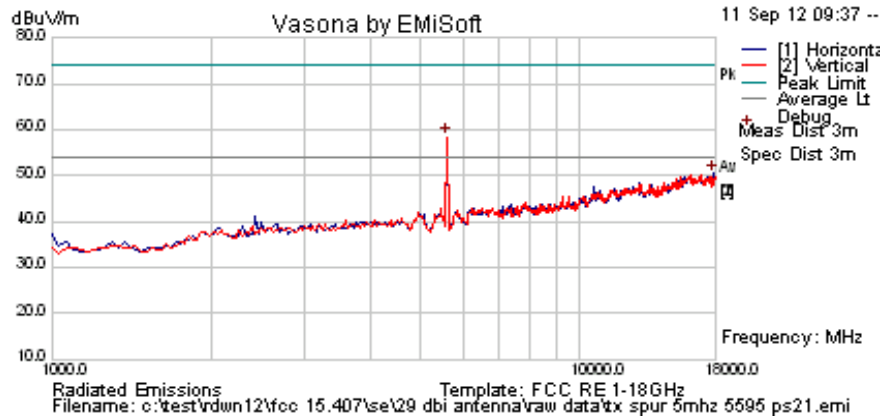
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5462.926	63.2	4.6	-9.7	58.1	Peak [Scan]	V						FUND
17557.114	40.8	8.8	0.8	50.4	Peak [Scan]	H					Pass	Noise

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Mid

Test Freq.	5595 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	21	**Press. (mBars)**	1005
Antenna	29 dBi Flat	**Duty Cycle (%)**	100
Test Notes 1	Data Rate MCS 15		
Test Notes 2			



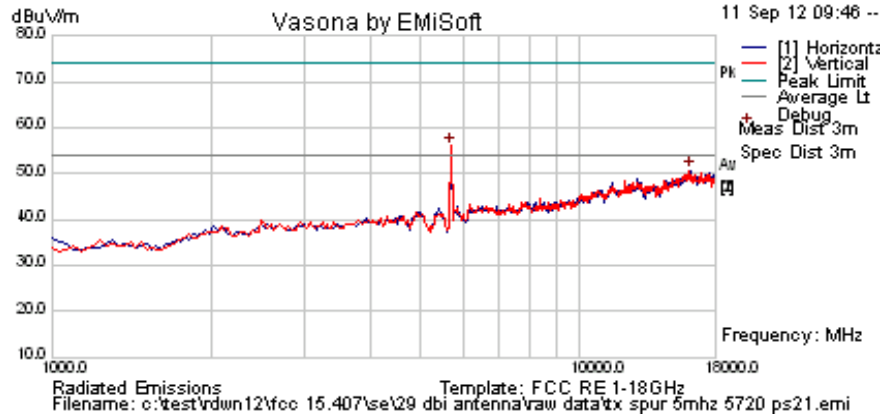
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5599.198	63.4	4.7	-9.7	58.4	Peak [Scan]	V						FUND
17863.727	41.4	8.8	0.3	50.5	Peak [Scan]	H					Pass	Noise

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

High

Test Freq.	5720 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	21	**Press. (mBars)**	1005
Antenna	29 dBi Flat	**Duty Cycle (%)**	100
Test Notes 1	Data Rate MCS 15		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5701.403	60.8	4.7	-9.6	56.0	Peak [Scan]	V						FUND
16126.253	41.5	9.0	0.2	50.6	Peak [Scan]	H					Pass	Noise

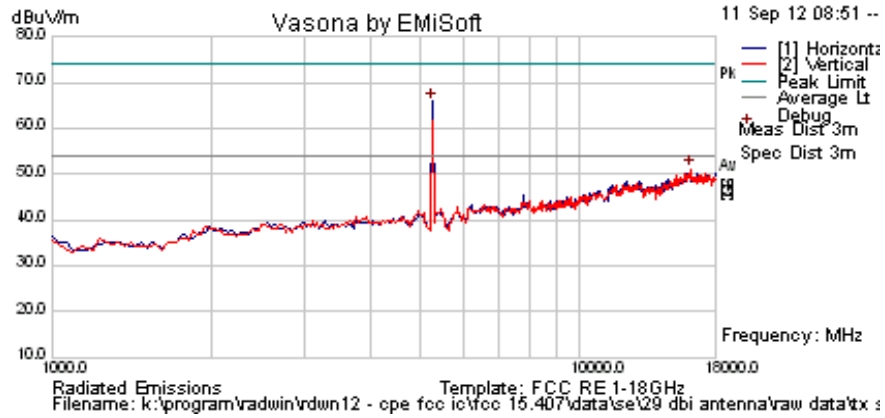
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

6.1.2.7. Antenna # 7

5250 -5350 MHz

Low

Test Freq.	5255 MHz	**Engineer**	jmh
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	16	**Press. (mBars)**	1006
Antenna	32 dBi Dish	**Duty Cycle (%)**	100
Test Notes 1	Data rate MCS 15		
Test Notes 2			



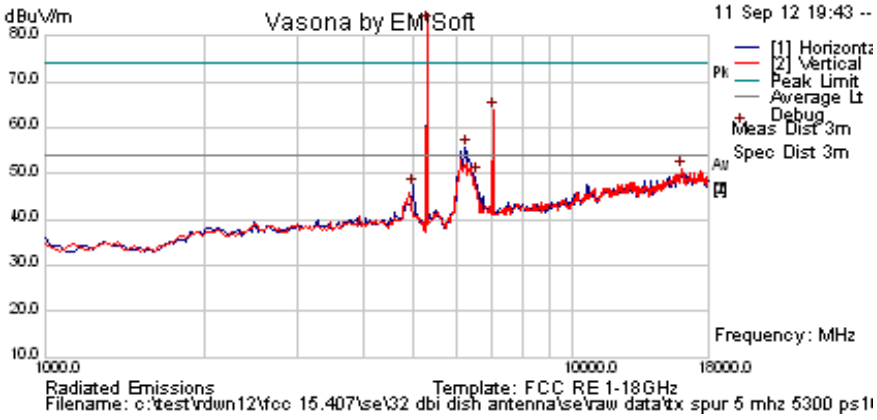
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5258.517	87.6	4.6	-9.7	82.5	Peak [Scan]	V						FUND
7006.613	64.2	5.4	-6.3	63.3	Peak [Scan]	V						NRB
6246.493	61.1	5.0	-7.6	58.5	Peak [Scan]	H						NRB
6348.697	56.7	5.1	-7.4	54.4	Peak [Scan]	H						NRB
16092.184	41.2	9.0	0.3	50.5	Peak [Scan]	H	150	0	54.0	-3.5	Pass	Noise
6553.106	50.3	5.2	-7.0	48.4	Peak [Scan]	V						NRB
4804.110	50.5	4.5	-9.7	45.3	Peak [Scan]	V	100	0	54.0	-4.7	Pass	RB
2446.284	53.6	3.0	-11.5	45.1	Peak [Scan]	H						NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Mid

Test Freq.	5300 MHz	**Engineer**	jmh
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	16	**Press. (mBars)**	1006
Antenna	32 dBi Dish	**Duty Cycle (%)**	100
Test Notes 1	Data rate MCS 15		
Test Notes 2			



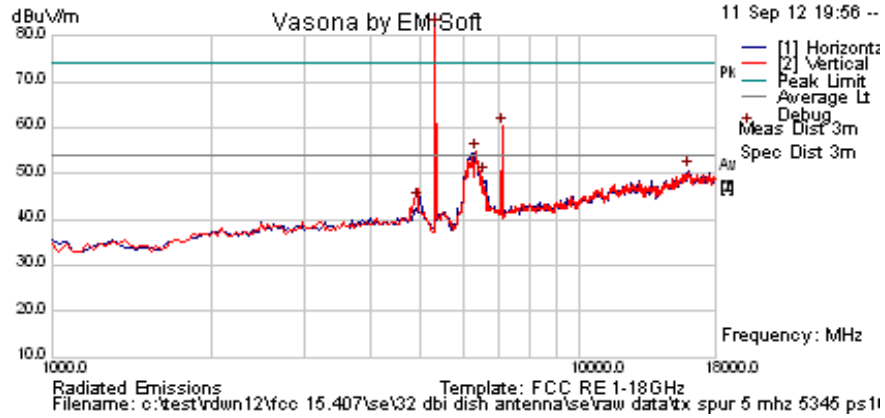
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5292.585	87.7	4.6	-9.6	82.7	Peak [Scan]	V						FUND
7066.743	64.6	5.4	-6.1	63.8	Peak [Scan]	V						NRB
6251.222	58.3	5.0	-7.6	55.7	Peak [Scan]	H						NRB
15989.980	41.7	9.0	0.1	50.8	Peak [Scan]	V						Noise
6553.106	51.2	5.2	-7.0	49.4	Peak [Scan]	H						NRB
4980.855	52.3	4.6	-9.9	47.0	Peak [Scan]	H	98	0	54	-7.0	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

High

Test Freq.	5345 MHz	**Engineer**	jmh
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	16	**Press. (mBars)**	1006
Antenna	32 dBi Dish	**Duty Cycle (%)**	100
Test Notes 1	Data rate MCS 15		
Test Notes 2			

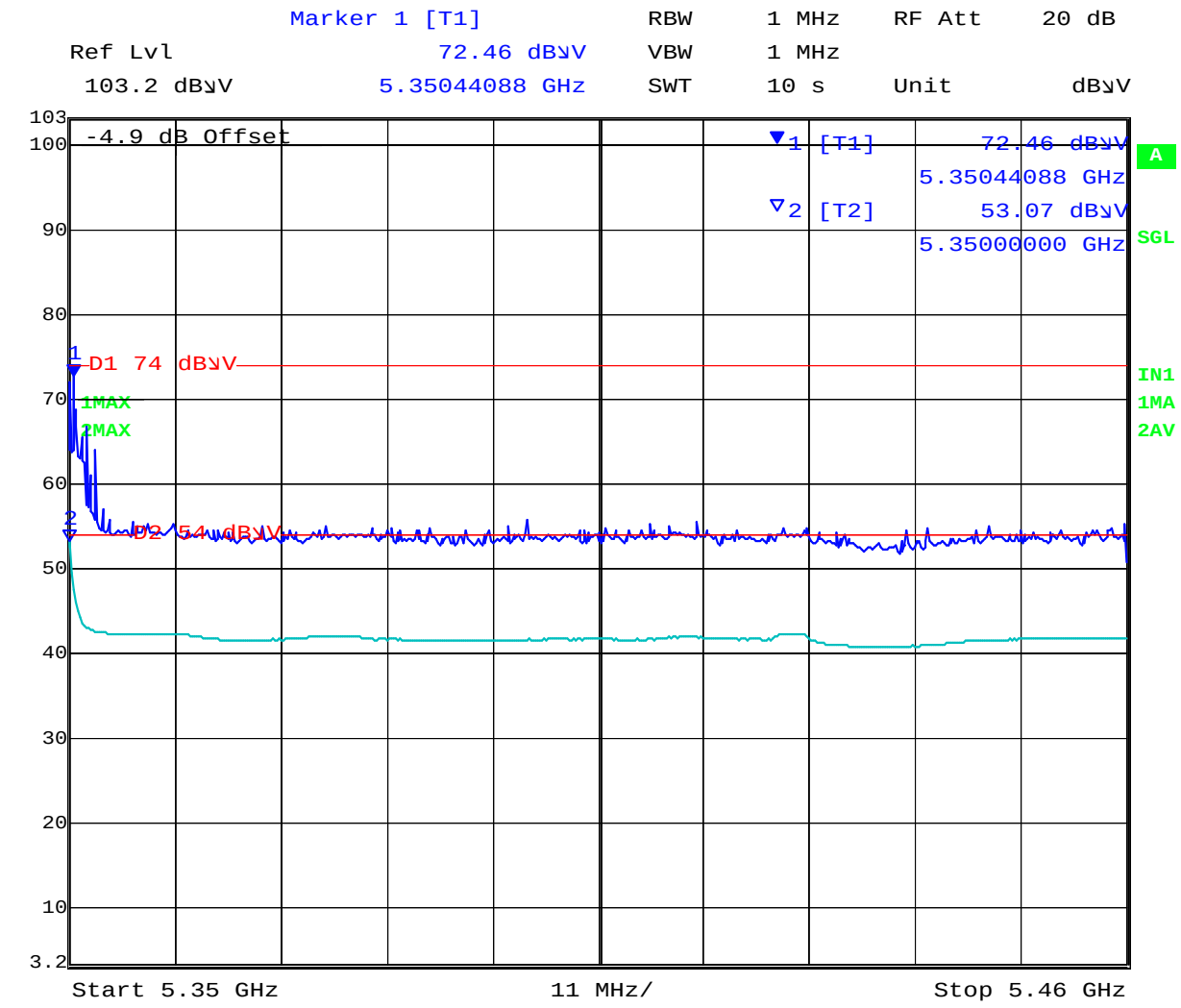


Formally measured emission peaks

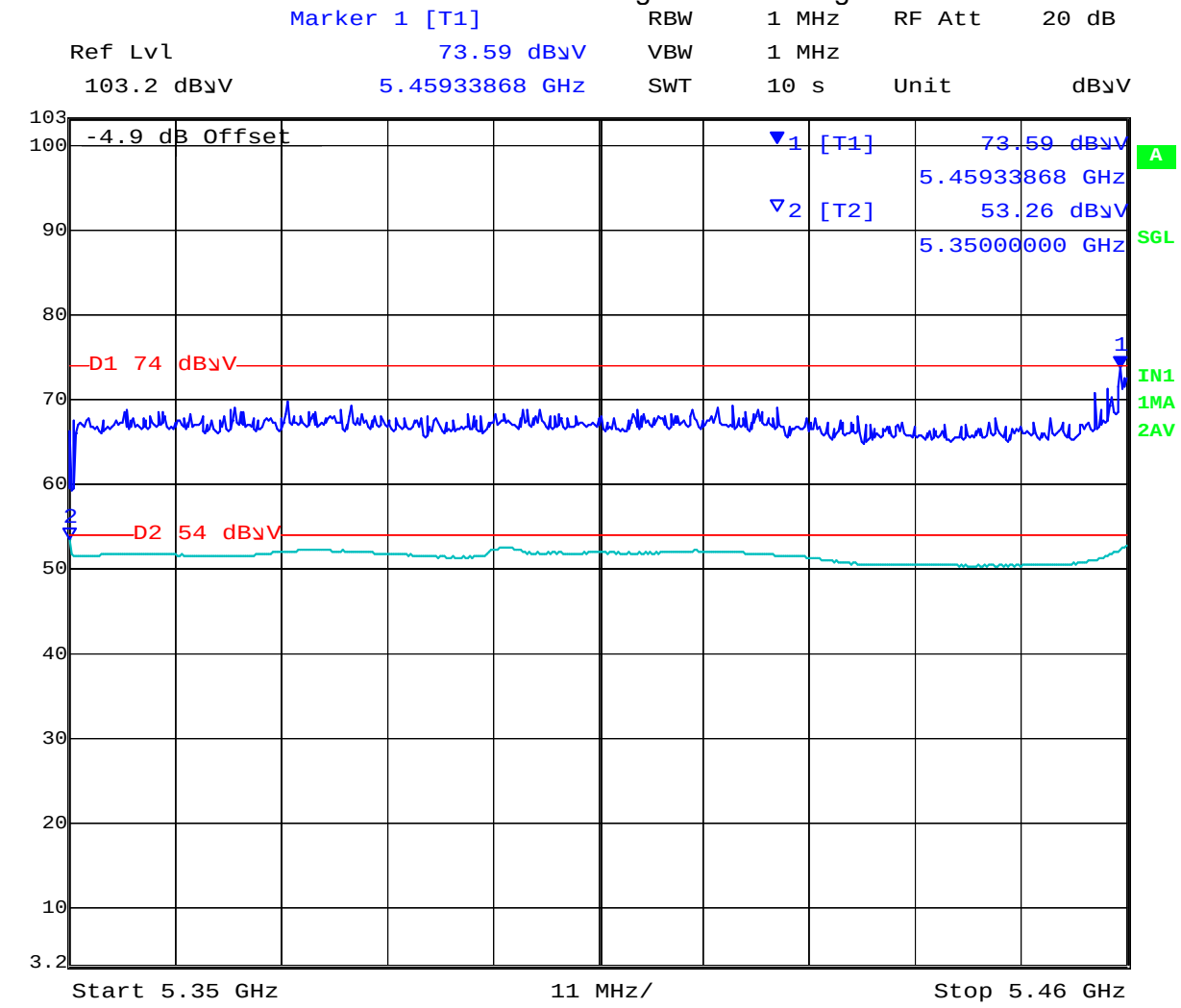
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5326.653	86.8	4.6	-9.5	81.9	Peak [Scan]	V						FUND
7126.633	60.9	5.4	-6.0	60.2	Peak [Scan]	V						NRB
6348.697	57.0	5.1	-7.4	54.7	Peak [Scan]	V						NRB
16058.116	41.4	9.0	0.3	50.7	Peak [Scan]	H	200	0	54	-3.4	Pass	Noise
6553.106	51.3	5.2	-7.0	49.5	Peak [Scan]	H						NRB
4937.852	49.4	4.6	-9.8	44.1	Peak [Scan]	V	98	0	54	-9.9	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

5 MHz 5345 MHz 5350 – 5460 Restricted Band-edge Power Setting = -17



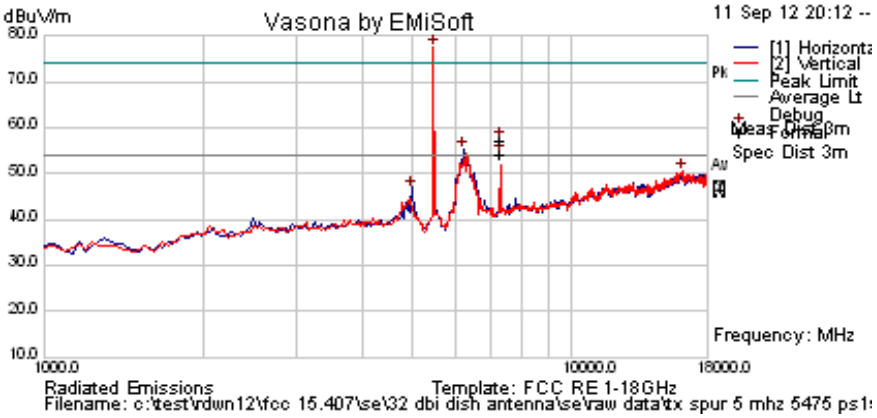
5 MHz 5475 MHz 5350 – 5460 Restricted Band-edge Power Setting = 15



5470 -5725 MHz

Low

Test Freq.	5475 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	15	**Press. (mBars)**	1005
Antenna	32 dBi Dish	**Duty Cycle (%)**	100
Test Notes 1	Data Rate MCS 15		
Test Notes 2			



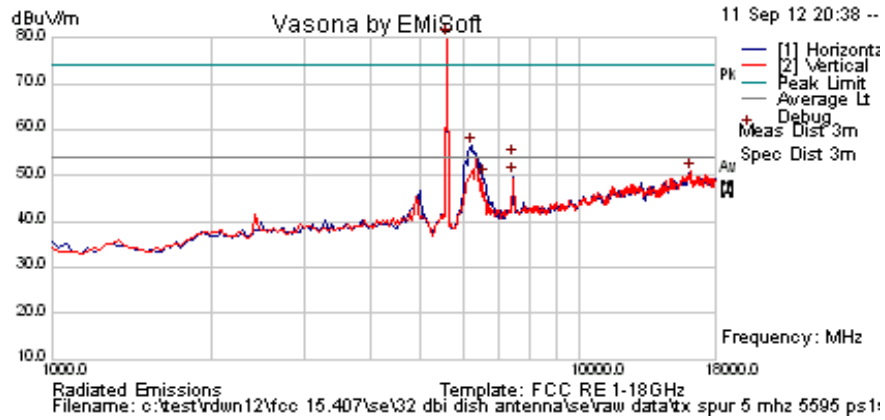
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5462.926	82.5	4.6	-9.7	77.5	Peak [Scan]	V						FUND
6246.492986	57.7	5.0	-7.6	55.1	Peak [Scan]	H						NRB
16126.253	41.4	9.0	0.2	50.6	Peak [Scan]	V	100	0	54	-3.4	Pass	Noise
4980.855	51.6	4.6	-9.9	46.4	Peak [Scan]	H	98	0	54	-7.6	Pass	RB
7300.140	57.4	5.4	-5.7	57.2	Peak Max	V	98	11	74	-16.9	Pass	RB
7300.140	54.3	5.4	-5.7	54.0	Average Max	V	98	11	54	0.0	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Mid

Test Freq.	5595 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	15	**Press. (mBars)**	1005
Antenna	32 dBi Dish	**Duty Cycle (%)**	100
Test Notes 1	Data Rate MCS 15		
Test Notes 2			



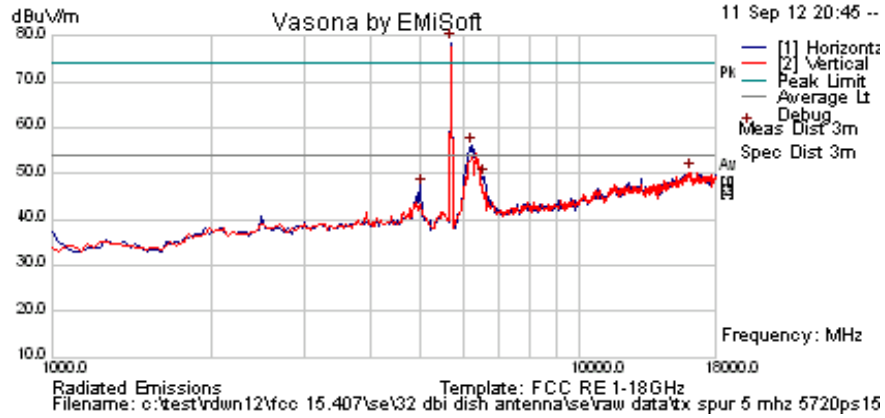
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5599.198	84.9	4.7	-9.7	79.9	Peak [Scan]	V						FUND
6246.492986	59.0	5.0	-7.6	56.4	Peak [Scan]	H						NRB
16194.389	41.8	8.9	0.2	50.9	Peak [Scan]	V	200	0	54	-3.1	Pass	Noise
6587.174	51.2	5.2	-7.0	49.4	Peak [Scan]	H						NRB
7459.880	53.8	5.5	-5.3	53.9	Peak Max	H	104	10	74	-20.1	Pass	RB
7459.880	49.7	5.5	-5.3	49.9	Average Max	H	104	10	54	-4.1	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

High

Test Freq.	5720 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	21	**Press. (mBars)**	1005
Antenna	32 dBi Dish	**Duty Cycle (%)**	100
Test Notes 1	Data Rate MCS 15		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5701.403	83.4	4.7	-9.6	78.5	Peak [Scan]	H						FUND
6212.42485	58.8	5.0	-7.8	56.0	Peak [Scan]	H						NRB
16126.253	41.1	9.0	0.2	50.3	Peak [Scan]	V	200	0	54	-3.7	Pass	Noise
6587.174	51.0	5.2	-7.0	49.3	Peak [Scan]	H						NRB
5001.296	52.3	4.6	-9.9	47.1	Peak [Scan]	H	98	0	54	-6.9	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

6.1.3. Receiver Radiated Spurious Emissions (above 1 GHz)

Industry Canada RSS-Gen §4.10, §6

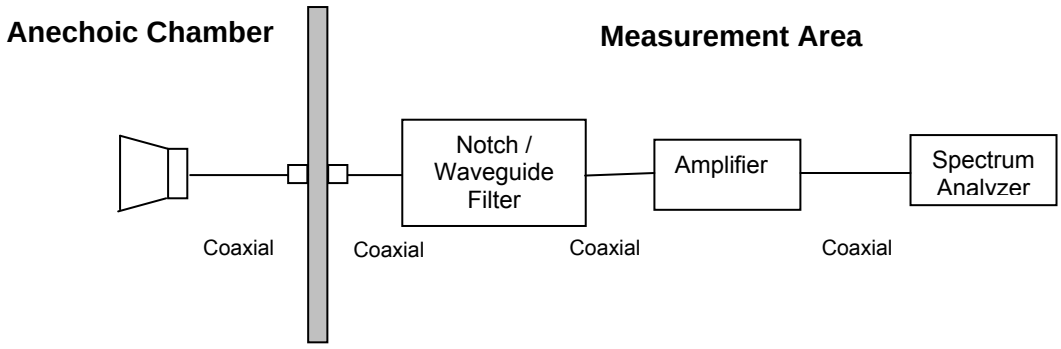
Test Procedure

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

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

All Sectors of the EUT were tested simultaneously

Test Measurement Set up



Measurement set up for Radiated Emission Test

Field Strength Calculation

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

FS = R + AF + CORR - FO

where: FS = Field Strength
R = Measured Spectrum analyzer Input Amplitude
AF = Antenna Factor
CORR = Correction Factor = CL – AG + NFL
CL = Cable Loss
AG = Amplifier Gain
FO = Distance Falloff Factor
NFL = Notch Filter Loss or Waveguide Loss

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

FS = 51.5 + 8.5 + 1.3 - 26.0 +1 = 36.3 dBμV/m

Conversion between dBμV/m (or dBμV) and μV/m (or μV) are done as:

Level (dBμV/m) = 20 * Log (level (μV/m))

40 dBμV/m = 100 μV/m
48 dBμV/m = 250 μV/m

Specification

Radiated Receiver Spurious Emissions

RSS-Gen §4.10 the search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g.. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is higher, to at least 3 times the highest tunable or local oscillator frequency, whichever is higher, without exceeding 40 GHz.

For emissions below 1000 MHz, measurements shall be performed using a CISPR quasi-peak detector and the related measurement bandwidth. As an alternative to CISPR quasi-peak measurement, compliance with the emission limit can be demonstrated using measuring equipment employing a peak detector function properly adjusted for factors such as pulse desensitization as required, with an equal or greater measurement bandwidth relative to the applicable CISPR quasi-peak bandwidth.

Above 1000 MHz, measurements shall be performed using an average detector with a minimum resolution bandwidth of 1 MHz.

RSS-Gen §6 Receiver Spurious Radiated Limits
Spurious emissions from receivers shall not exceed the radiated limits shown in the table below:

RSS-Gen Spurious Emissions Limits

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

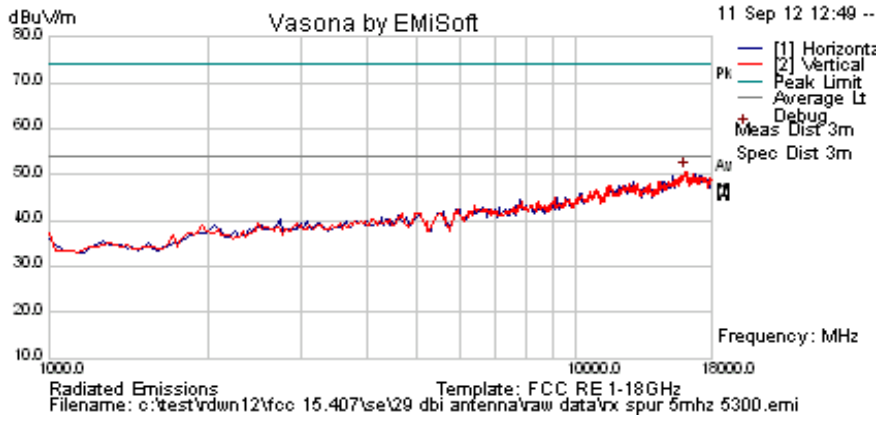
Traceability:

Test Equipment Used
0088, 0158, 0134, 0304, 0311, 0315, 0310, 0312

Receiver Radiated Spurious Emissions above 1 GHz

Radiated receiver testing was performed on antennas with the highest gains; 29 dBi Flat Panel and 32 dBi Dish antennas

Test Freq.	5300 MHz	**Engineer**	JMH
Variant	Receive in Test Utility	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	1002
Antenna	29 dBi Flat Panel		
Test Notes 1			
Test Notes 2			

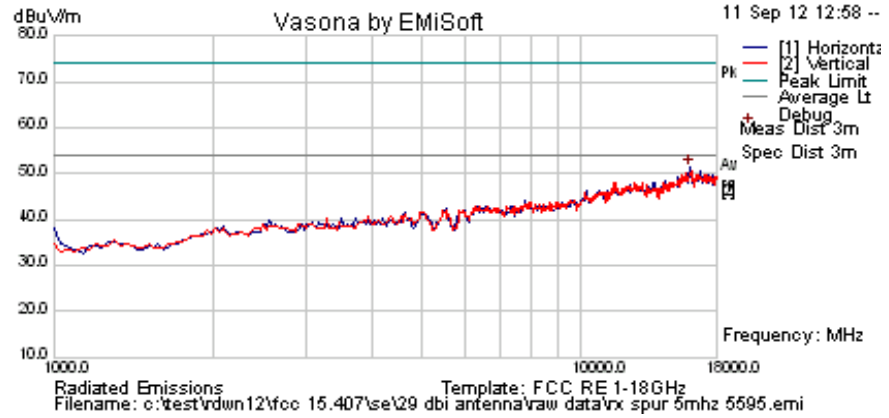


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
16058.116	41.5	9.0	0.3	50.7	Peak [Scan]	V	200	0	54	-3.3	Pass	Noise

Legend:	RB = Restricted Band; NRB = Non-Restricted Band; FUND = Fundamental Freq.
	BE = Emission in Restricted Band Nearest Transmission Band Edge;

Test Freq.	5595 MHz	**Engineer**	JMH
Variant	Receive in Test Utility	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	1002
Antenna	29 dBi Flat Panel		
Test Notes 1			
Test Notes 2			



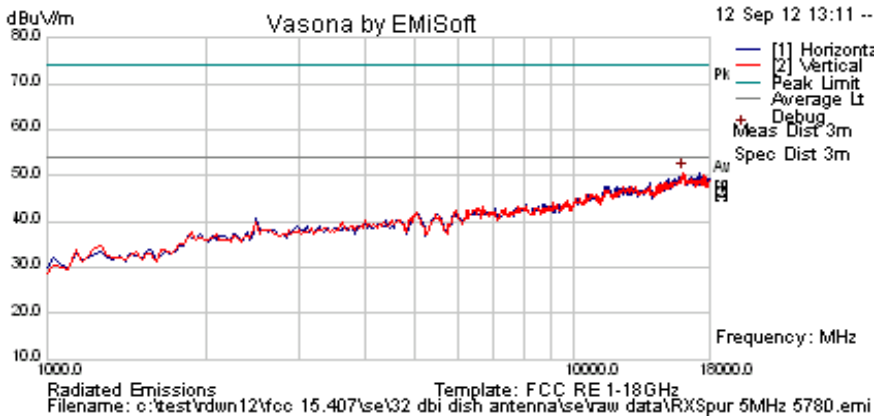
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
15989.980	42.22	9	0.12	51.34	Peak [Scan]	H	100	0	54	-2.66	Pass	

Legend:	RB = Restricted Band; NRB = Non-Restricted Band; FUND = Fundamental Freq.
	BE = Emission in Restricted Band Nearest Transmission Band Edge;

32 dBi Dish antenna

Test Freq.	5300 MHz	**Engineer**	JMH
Variant	Receive in Test Utility	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	1006
Antenna	32 dBi Dish		
Test Notes 1			
Test Notes 2			

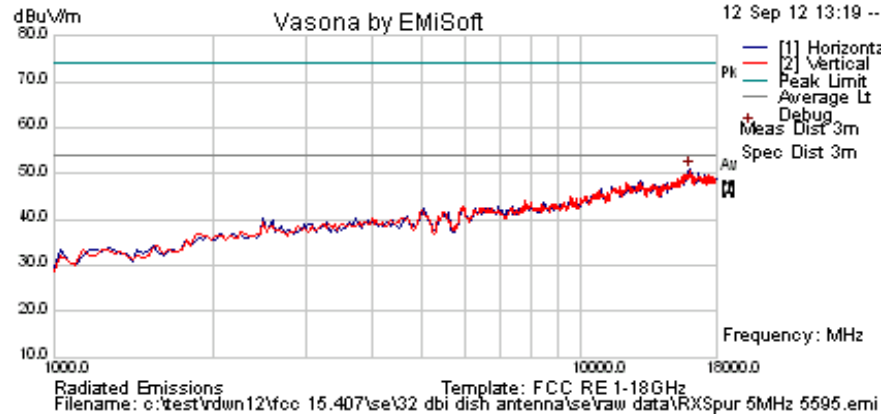


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
16058.116	41.4	9.0	0.3	50.7	Peak [Scan]	V	150	0	54	-3.3	Pass	Noise

Legend:	RB = Restricted Band; NRB = Non-Restricted Band; FUND = Fundamental Freq.
	BE = Emission in Restricted Band Nearest Transmission Band Edge;

Test Freq.	5595 MHz	**Engineer**	JMH
Variant	Receive in Test Utility	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	1006
Antenna	32 dBi Dish		
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
15989.980	41.66	9	0.12	50.78	Peak [Scan]	H	100	0	54	-3.22	Pass	

Legend:	RB = Restricted Band; NRB = Non-Restricted Band; FUND = Fundamental Freq.
	BE = Emission in Restricted Band Nearest Transmission Band Edge;

6.1.4. Digital Emissions (30M-1 GHz)

FCC, Part 15 Subpart C §15.205/ §15.209
Industry Canada RSS-210 §2.2

Test Procedure

Testing 30M-1 GHz was performed in a 3-meter anechoic chamber using a CISPR compliant receiver. Preliminary radiated emissions were measured on every azimuth and with the receiving antenna in both horizontal and vertical polarizations. To further maximize emissions the receive antenna was varied between 1 and 4 meters. The emissions are recorded with receiver in peak hold mode. Emissions closest to the limits are measured in the quasi-peak mode with the tuned receiver using a bandwidth of 120 kHz. Only the highest emissions relative to the limit are listed. The anechoic chamber test set-up is identified in Section 6 Test Set-Up Photographs.

The EUT had two methods of powering on ac/dc converter and Power over Ethernet (POE). Both modes were tested for emissions below 1GHz.

Field Strength Calculation

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

$$FS = R + AF + CORR$$

where:

FS = Field Strength
R = Measured Receiver Input Amplitude
AF = Antenna Factor
CORR = Correction Factor = CL – AG + NFL
CL = Cable Loss
AG = Amplifier Gain

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

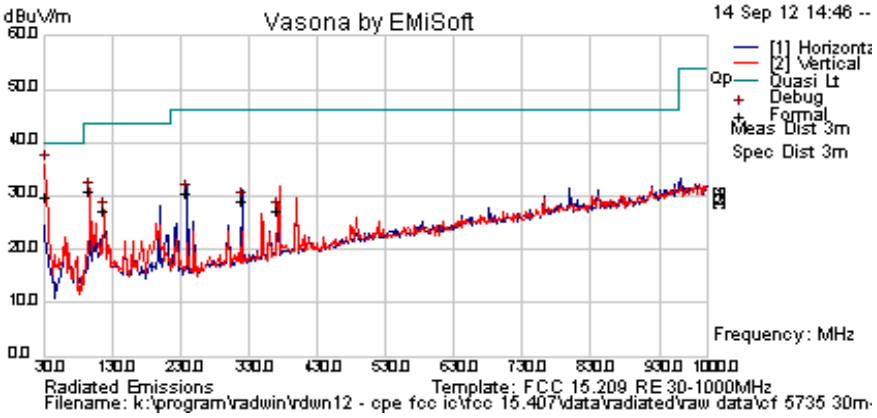
FS = 51.5 + 8.5 + 1.3 - 26.0 +1 = 36.3dBμV/m

Conversion between dBμV/m (or dBμV) and μV/m (or μV) are done as:

Level (dBμV/m) = 20 * Log (level (μV/m))

40 dBμV/m = 100μV/m
48 dBμV/m = 250μV/m

Test Freq.	N/A	**Engineer**	SB
Variant	Digital Emissions	**Temp (ºC)**	23
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	33
Power Setting	25	**Press. (mBars)**	1008
Antenna	16.5 dBi Flat Panel Sector		
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
33.058	38.4	3.5	-12.1	29.7	Quasi Max	V	104	261	40	-10.3	Pass	
240.136	44.7	4.8	-19.0	30.5	Peak [Scan]	H	104	261	46	-15.5	Pass	
319.958	40.5	5.2	-16.7	29.1	Peak [Scan]	H	104	261	46	-16.9	Pass	
97.912	48.8	4.1	-21.9	31.0	Peak [Scan]	V	104	261	43.5	-12.5	Pass	
119.199	40.7	4.2	-17.5	27.4	Peak [Scan]	V	104	261	43.5	-16.1	Pass	
372.410	37.1	5.4	-15.3	27.2	Peak [Scan]	V	104	261	46	-18.8	Pass	

Legend:	DIG = Digital Device Emission; TX = Transmitter Emission; FUND = Fundamental Frequency
	NRB = Non-Restricted Band, Limit is 20 dB below Fundamental; RB = Restricted Band

Specification

Limits

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

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

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

§15.209 (a) and **RSS-Gen §2.2** Limit Matrix

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

Laboratory Measurement Uncertainty for Radiated Emissions

Measurement uncertainty	+5.6/ -4.5 dB

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-03 'Measurement of Radiated Emissions'	0088, 0158, 0134, 0304, 0311, 0315, 0310, 0312

6.1.5. AC Wireline Conducted Emissions (150 kHz – 30 MHz)

FCC, Part 15 Subpart C §15.207
Industry Canada RSS-Gen §7.2.2

Test Procedure

The EUT is configured in accordance with ANSI C63.4. The conducted emissions are measured in a shielded room with a spectrum analyzer in peak hold in the first instance. Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation. The highest emissions relative to the limit are listed.

Measurement Results for AC Wireline Conducted Emissions (150 kHz – 30 MHz)

Ambient conditions.
Temperature: 17 to 23 °C Relative humidity: 31 to 57 % Pressure: 999 to 1012 mbar

Not required - EUT is POE only.

Specification

Limit

§15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μΩ line impedance stabilization network (LISN), see §15.207 (a) matrix below. Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

RSS-Gen §7.2.2
The radio frequency voltage that is conducted back into the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in the table below. The tighter limit applies at the frequency range boundaries.

§15.207 (a) and **RSS-Gen §7.2.2** Limit Matrix
The lower limit applies at the boundary between frequency ranges

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency

Laboratory Measurement Uncertainty for Conducted Emissions

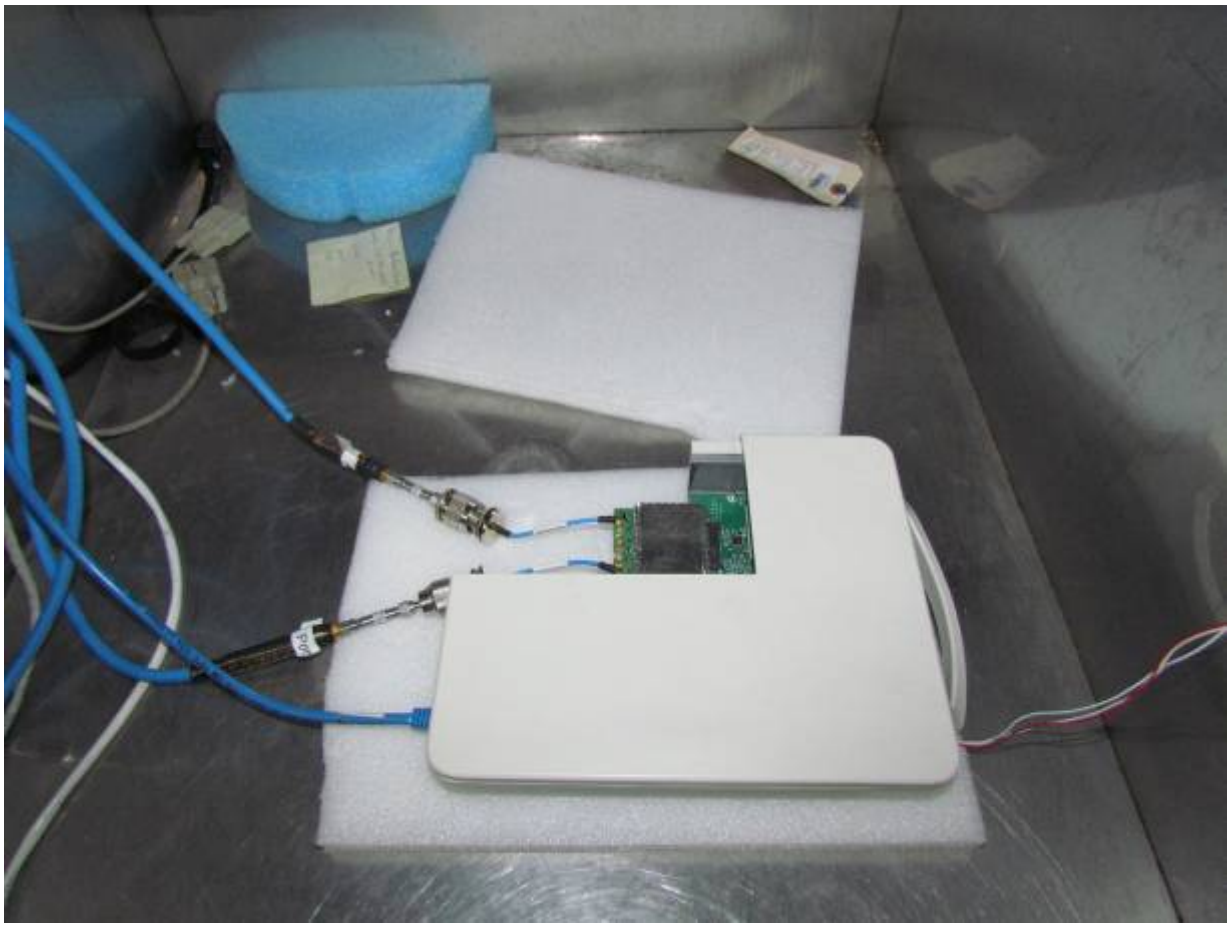
Measurement uncertainty	±2.64 dB

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-EMC-01 'Measurement of Conducted Emissions'	0158, 0184, 0287, 0190, 0293, 0307

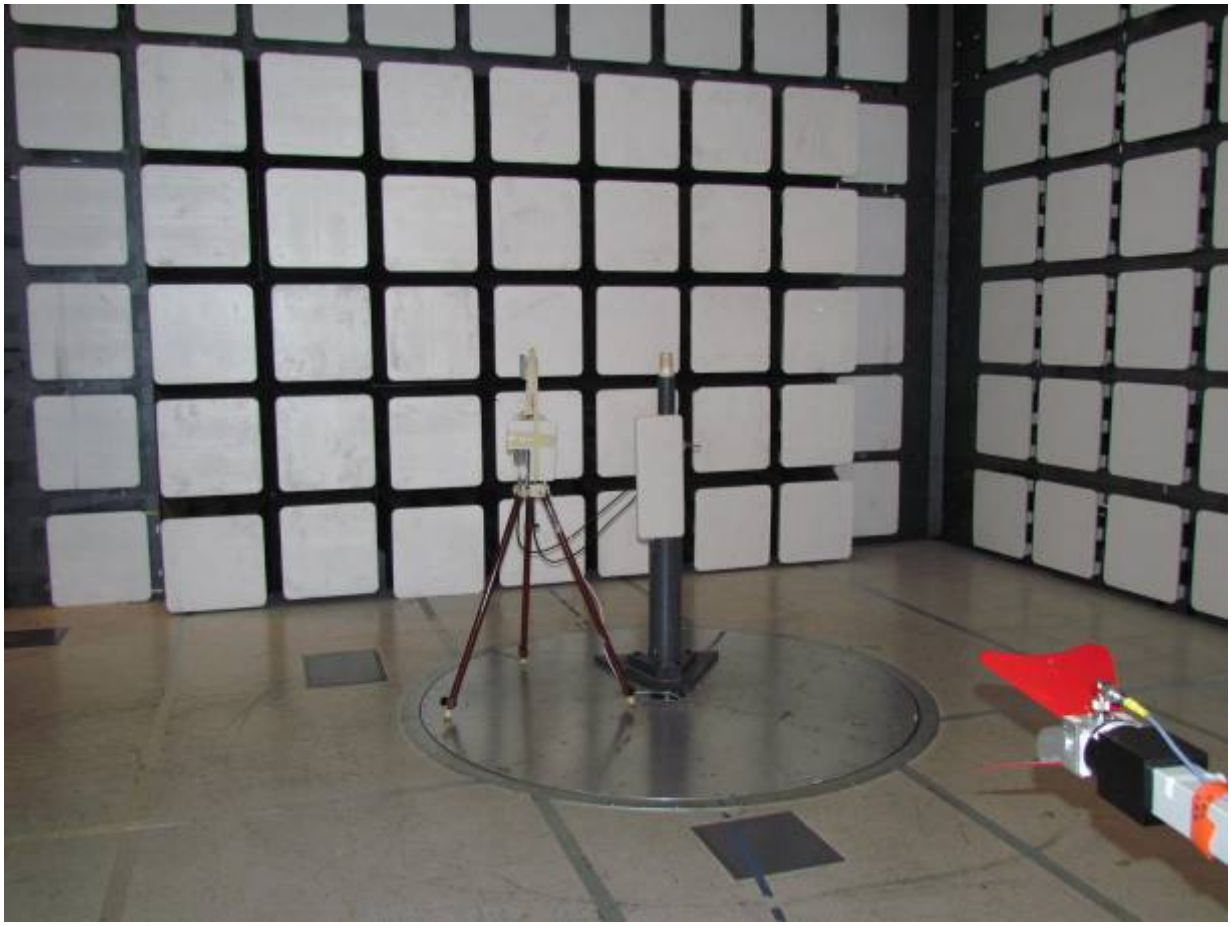
7. PHOTOGRAPHS

7.1. Conducted Test Setup



7.2. Test Setup - Digital Emissions below 1 GHz

7.3. Radiated Emissions Test Setup >1 GHz



8. TEST EQUIPMENT DETAILS

Asset #	Instrument	Manufacturer	Part #	Serial #	Calibration Due Date
0070	Power Meter	Hewlett Packard	437B	3125U11552	28th Nov 12
0117	Power Sensor	Hewlett Packard	8487D	3318A00371	15th Nov 13
0223	Power Meter	Hewlett Packard	EPM-442A	US37480256	15th Nov 13
0374	Power Sensor	Hewlett Packard	8485A	3318A19694	29th Nov 12
0158	Barometer /Thermometer	Control Co.	4196	E2846	8th Dec 12
0193	EMI Receiver	Rhode & Schwartz	ESI 7	838496/007	2nd Dec 12
0287	EMI Receiver	Rhode & Schwartz	ESIB40	100201	16th Nov 13
0338	30 - 3000 MHz Antenna	Sunol	JB3	A052907	8th Nov 13
0335	1-18 GHz Horn Antenna	EMCO	3117	00066580	7th Nov 13
0252	SMA Cable	Megaphase	Sucoflex 104	None	N/A
0293	BNC Cable	Megaphase	1689 1GVT4	15F50B001	N/A
0307	BNC Cable	Megaphase	1689 1GVT4	15F50B002	N/A
0310	2m SMA Cable	Micro-Coax	UFA210A-0-0787-3G03G0	209089-001	N/A
0312	3m SMA Cable	Micro-Coax	UFA210A-1-1181-3G0300	209092-001	N/A
0314	30dB N-Type Attenuator	ARRA	N9444-30	1623	N/A
	EMC Test Software	EMISoft	Vasona	5.0051	N/A
	RF Conducted Test Software	National Instruments	Labview	Version 8.2	N/A
	RF Conducted Test Software	MiCOM Labs ATS		Version 1.5	N/A