Test of Aruba AP-175 802.11a/b/g/n Wireless AP

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

Test Report Serial No.: ARUB111-U1 Rev A

TEST REPORT

FROM

MiCOM Labs

Test of Aruba AP-175 802.11a/b/g/n Wireless AP
to

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

Test Report Serial No.: ARUB111-U1 Rev A

Note: this report contains data with regard to the 5,250 to 5,350 and 5,470 – 5,725 MHz DFS bands for the Aruba Networks, Inc AP-175 Wireless LAN Access Point. 2.4 and 5.8 GHz test data are reported in MiCOM Labs test report ARUB61-U1, and the results for DFS testing are reported in MiCOM Labs test report ARUB111-U2.

This report supersedes None

Applicant: Aruba Networks, Inc
1344 Crossman Avenue
Sunnyvale
CA 94089, USA

Product Function: Wireless LAN Access Point

Copy No: pdf Issue Date: 17th December 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
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www.micomlabs.com

ACCREDITED

TESTING CERTIFICATE #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

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ACCREDITATION, LISTINGS & RECOGNITION

ACCREDITATION - TESTING

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

ilac-MRA

The American Association for Laboratory Accreditation

World Class Accreditation

Accredited Laboratory

A2LA has accredited

MICOM LABS

Pleasanton, CA

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General Requirements for the Competence of Testing and Calibration Laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 27th day of March 2012.

President & CEO
For the Accreditation Council
Certificate Number 2381.01
Valid to November 30, 2013

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

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

United States of America – Telecommunication Certification Body (TCB)
TCB Identifier – US0159

Industry Canada – Certification Body
CAB Identifier – US0159

Europe – Notified Body
Notified Body Identifier - 2280

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

DOCUMENT HISTORY

Document History		
Revision	**Date**	**Comments**
Draft		
Rev A	17th December 2012	Initial Release

1. TEST RESULT CERTIFICATE

Applicant:	Aruba Networks, Inc 1344 Crossman Avenue Sunnyvale CA 94089, USA	Tested By:	MiCOM Labs, Inc. 440 Boulder Court Suite 200 Pleasanton California, 94566, USA
EUT:	802.11a/b/g/n Wireless Access Point	Tel:	+1 925 462 0304
Model:	AP-175	Fax:	+1 925 462 0306
S/N:	AY0009995		
Test Date(s):	27th June - 18th July 2012	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)	Industry Canada RSS-210	Issue 7 June 2007	Low Power License-Exempt Radiocommunication Devices (All Frequency Bands): Category 1 Equipment
(iv)	Industry Canada RSS-Gen	Issue 2 June 2007	General Requirements and Information for the Certification of Radiocommunication Equipment
(v)	ANSI C63.4	2003	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
(vi)	CISPR 22/ EN 55022	1997 1998	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
(vii)	M 3003	Edition 1 Dec. 1997	Expression of Uncertainty and Confidence in Measurements
(viii)	LAB34	Edition 1 Aug 2002	The expression of uncertainty in EMC Testing
(ix)	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
(x)	A2LA	July 2012	Reference to A2LA Accreditation Status – A2LA Advertising Policy
(xi)	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 Aruba AP-175 802.11a/b/g/n Wireless AP in the frequency ranges 5250 to 5350 MHz and 5470 – 5725MHz to FCC Part 15.407 and Industry Canada RSS-210 regulations.
Applicant:	Aruba Networks, Inc 1344 Crossman Avenue Sunnyvale CA 94089, USA
Manufacturer:	As applicant
Laboratory performing the tests:	MiCOM Labs, Inc. 440 Boulder Court, Suite 200 Pleasanton, California 94566 USA
Test report reference number:	ARUB111-U1 Rev A
Date EUT received:	6th June 2012
Standard(s) applied:	FCC 47 CFR Part 15.407 & IC RSS-210
Dates of test (from - to):	27th June - 18th July 201227th June - 18th July 2012
No of Units Tested:	1
Type of Equipment:	802.11a/b/g/n Wireless Access Point, 2x2 Spatial Multiplexing MIMO configuration
Applicants Trade Name:	Aruba Networks, Inc
Model(s):	AP-175
Software Release	AOS Rev 6.2.0.0
Location for use:	Outdoor
Declared Frequency Range(s):	5,250 to 5,350 and 5,470 – 5,725 MHz
Type of Modulation:	Per 802.11 –CCK, BPSK, QPSK, DSSS, OFDM
Declared Nominal Output Power: (Average Power)	802.11a: Legacy +17 dBm 802.11n: HT-20 +17 dBm 802.11n: HT-40 +17 dBm
EUT Modes of Operation:	Legacy 802.11a/b/g, 802.11n HT-20, HT-40
Transmit/Receive Operation:	Time Division Duplex
Rated Input Voltage and Current:	DC: Nominal: 12V DC Current: 1.25 A
Operating Temperature Range:	Nominal: 20 ºC Max: 50 ºC Min: 0 ºC
ITU Emission Designator:	5250 – 5350 MHz 802.11a 17M3D1D 802.11n HT-20 18M5D1D 802.11n HT-40 47M0D1D 5470 – 5725 MHz 802.11a 18M0D1D 802.11n HT-20 19M1D1D 802.11n HT-40 54M0D1D
Frequency Stability:	±20 ppm
Equipment Dimensions:	10.2“ x 10.2” x 4.0” (25.9cm x 25.9cm x 10.2cm)
Weight:	7ibs (3.25 kgs)

Primary function of equipment:	Wireless Access Point for transmitting data and voice

3.2. Scope of Test Program

Testing

The scope of the compliance program was to test the Aruba Networks Inc AP-175P 802.11 a/b/g/n AP wireless Access Point, 2x2 Spatial Multiplexing MIMO configurations in the frequency ranges in the frequency ranges 5,250 – 5,350 and 5,470 – 5,725 MHz for compliance against FCC 47 CFR Part 15.407 and Industry Canada RSS-210 specifications.

The Aruba Networks AP-175P has external antennas with N-type connectors. The device has two radios with two transmit and receive antennae. The antennas used with the AP-175P are detailed in section 3.4 “Antenna Details”.

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

Type (EUT/ Support)	Equipment Description (Including Brand Name)	Mfr	Model No.	Serial No.
EUT	802.11a/b/g/n Wireless Access Point	Aruba Networks , Inc	AP-175	AY0009995
Support	Laptop PC	IBM	Thinkpad	None

3.4. Antenna Details

The following is a description of the EUT antennas.

Antenna Type:	Manufacturer	Model	Gain (dBi)	Frequency Range (MHz)
Dipole	Aruba	AP-ANT-10	6	5150 – 5875
Dipole	Aruba	AP-ANT-86D	9	5150 – 5875
Directional	Aruba	AP-ANT-89	14.0	5150 - 5350
			13.25	5470 – 5875

3.5. Cabling and I/O Ports

Number and type of I/O ports

1. 1000/100/10 Ethernet with POE x 1.
2. USB Local maintenance terminal (LMT) x 1.

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

Operational Mode(s) (802.11)	Variant	Data Rates with Highest Power	Frequencies (MHz)
a,n	Legacy	6 MBit/s	5260, 5300, 5320 5500, 5580, 5700
	HT-20	6.5 MCS	
	HT-40	13.5 MCS	5270, 5310 5510, 5550, 5670

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

11a	11n HT-20	11n HT-40
SE 5260	SE 5260	SE 5270
SE 5300	SE 5300	
SE 5320	SE 5320	SE 5310
BE 5350	BE 5350	BE 5350
BE 5460	BE 5460	BE 5460
SE 5500	SE 5500	SE 5510
SE 5580	SE 5580	SE 5550
SE 5700	SE 5700	SE 5670

KEY:-

SE – Spurious Emissions

BE – Band-Edge

3.7. Equipment Modifications

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

EUT Software Power Settings - Radiated Testing

1. Measurements were made using the highest gain antenna used with the AP-104, Antenna(s): AP-ANT-18; 7.5 dBi, AP-ANT-19; 6.0 dBi, 5150 – 5875 MHz band.

Configured Power Settings for Radiated Tests

Band/Mode	Antenna AP-ANT-10	Antenna AP-ANT-86D	Antenna AP-ANT-89
	ART Power Setting (dBm)		
5250-5350			
802.11a	21	19	19.0
802.11n HT20	21	19	18.5
802.11n HT40	17	16	20.5
5470-5725			
802.11a	21	21	20
802.11n HT20	21	21	20
802.11n HT40	17	21	20

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

1. NONE

4. 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	5.1.1
15.407(a) **A9.2(2)** **4.6**	Transmit Output Power	Power Measurement	Conducted	Complies	5.1.2
15.407(a) **A9.2(2)**	Peak Power Spectral Density	PPSD	Conducted	Complies	5.1.3
15.407(a)(6)	Peak Excursion Ratio	<13dB in any 1MHz bandwidth	Conducted	Complies	5.1.4
15.407(g) **15.31** **2.1** **4.5**	Frequency Stability	Limits: contained within band of operation at all times.	Applicant declaration	Complies	5.1.5
15.407(f) **5.5**	Radio Frequency Radiation Exposure	Exposure to radio frequency energy levels, Maximum Permissible Exposure (MPE)	Conducted	Complies	5.1.6

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		5.1.7
	Transmitter Radiated Spurious Emissions	Emissions above 1 GHz		Complies	*5.1.7.1*
	Radiated Band Edge	Band edge results		Complies	*5.1.7.1*
Industry Canada only **RSS-Gen §4.10, §6**	Receiver Radiated Spurious Emissions	Emissions above 1 GHz		Complies	*5.1.7.2*
15.407(b)(6) **15.205(a)** **15.209(a)** **2.2**	Radiated Emissions	Emissions <1 GHz (30M-1 GHz)		Complies	*5.1.7.3*
15.407(b)(6) **15.207** **7.2.2**	AC Wireline Conducted Emissions 150 kHz–30 MHz	Conducted Emissions	Conducted	Not Applicable EUT is DC powered	N/A

5. TEST RESULTS

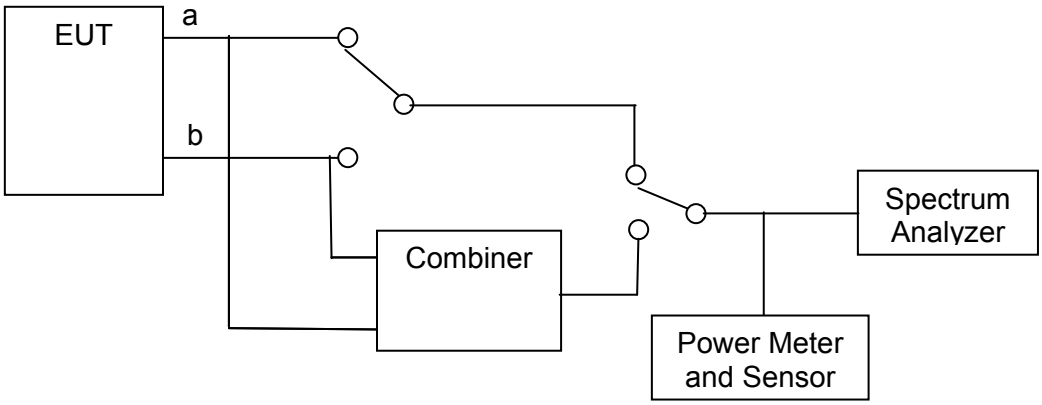
5.1. Device Characteristics

5.1.1. 26 dB and 99 % Bandwidth

FCC, Part 15 Subpart C §15.407(a)
Industry Canada RSS-210 § A9.2(2)
Industry Canada RSS-Gen 4.4

Test Procedure
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.

Test Measurement Set up



Measurement set up for 26 dB and 99 % bandwidth test

Radio Parameters
Duty Cycle: 100%
Output: Modulated Carrier
Power: Maximum Default Power

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

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

TABLE OF RESULTS – **802.11a Legacy (5,250 – 5,350 MHz)**

Test Conditions:	15.247 (a)(2)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11a	**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:**	6 dBi
Applied Voltage:	12.0 Vdc		
Notes 1:			
Notes 2:			

26 dB Bandwidth

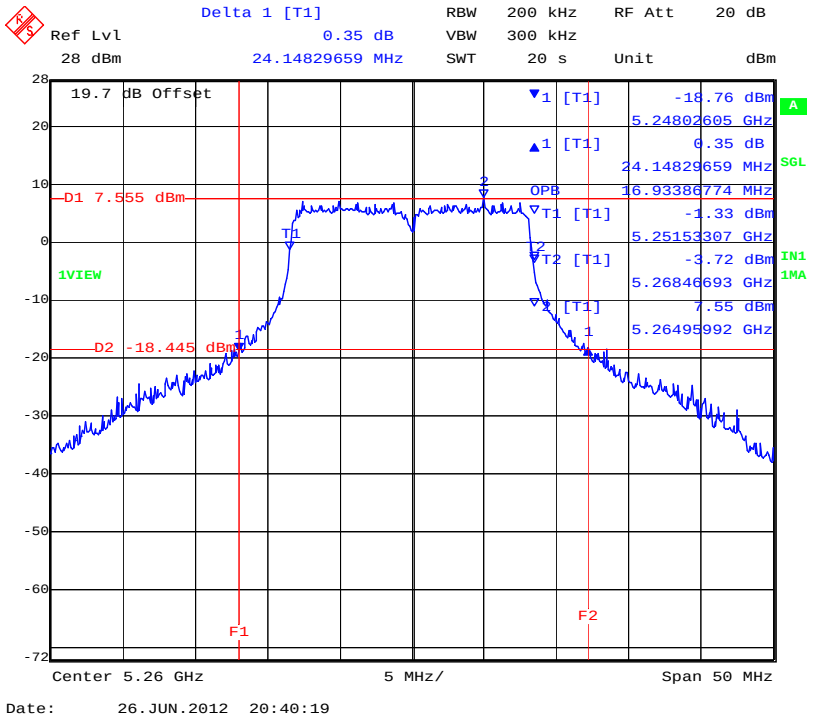
Test Frequency	26 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	**a**	**b**	**c**	**d**	**kHz**	**MHz**	**MHz**
5260	24.148000	27.355000	--	--	500	0.5	-23.648000
5300	25.150000	29.058000	--	--			-24.650000
5320	24.048000	26.453000	--	--			-23.548000

99% Bandwidth

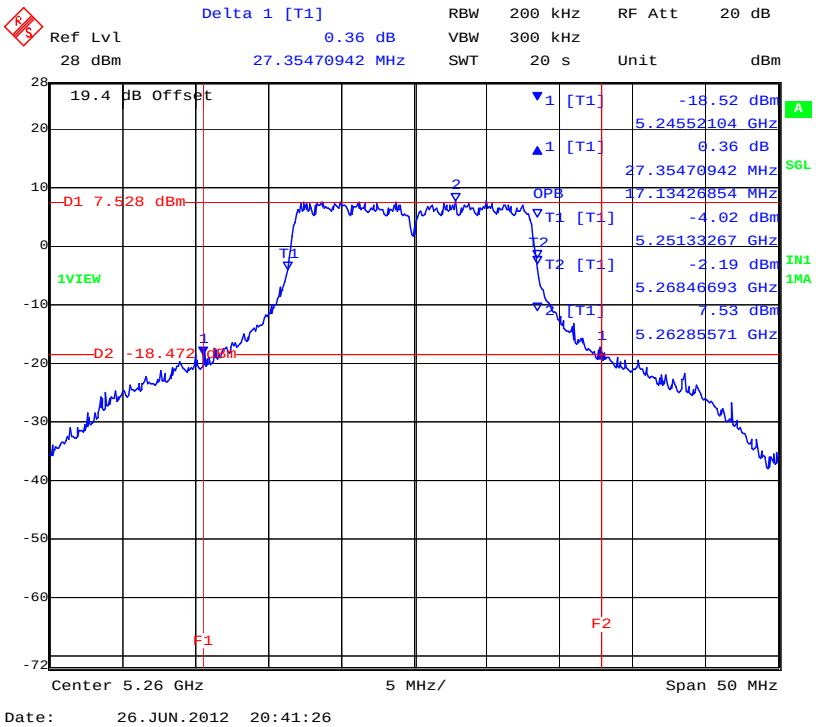
Test Frequency	99 % Bandwidth						
	MHz						
MHz	**a**	**b**	**c**	**d**			
5260	16.934000	17.134000	--	--			
5300	16.934000	17.234000	--	--			
5320	16.834000	17.134000	--	--			

Measurement uncertainty:	±2.81 dB

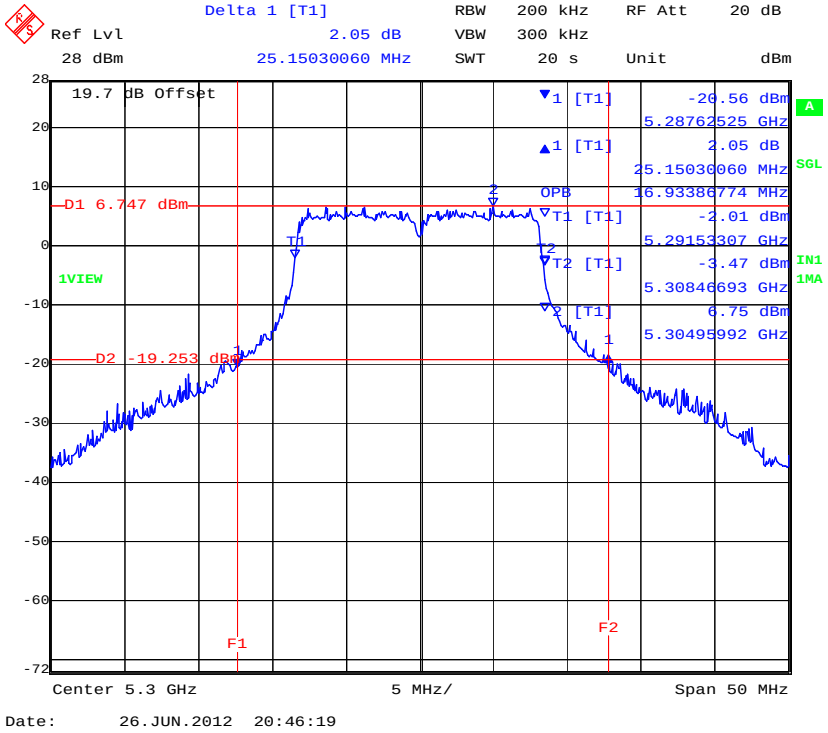
CHAIN A 5,260 MHz 802.11a Legacy 26 dB and 99 % Bandwidth



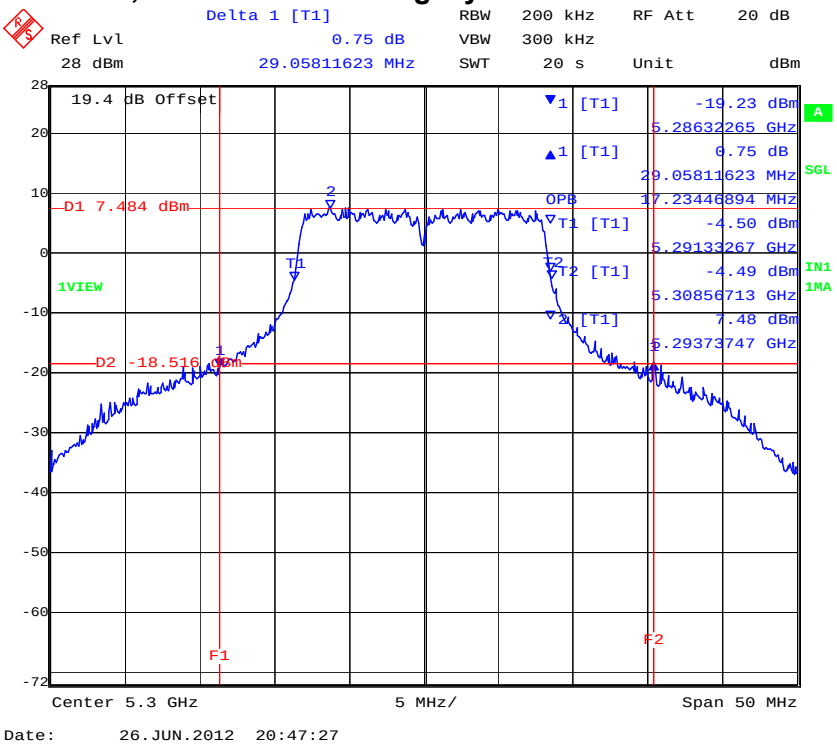
CHAIN B 5,260 MHz 802.11a Legacy 26 dB and 99 % Bandwidth



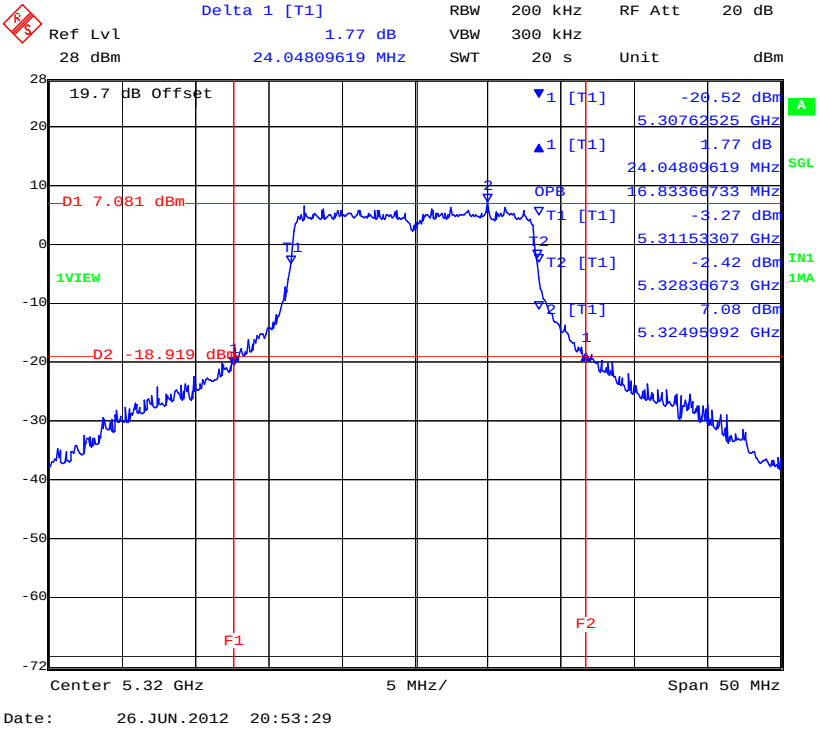
CHAIN A 5,300 MHz 802.11a Legacy 26 dB and 99 % Bandwidth



CHAIN B 5,300 MHz 802.11a Legacy 26 dB and 99 % Bandwidth



CHAIN A 5,320 MHz 802.11a Legacy 26 dB and 99 % Bandwidth



CHAIN B 5,320 MHz 802.11a Legacy 26 dB and 99 % Bandwidth

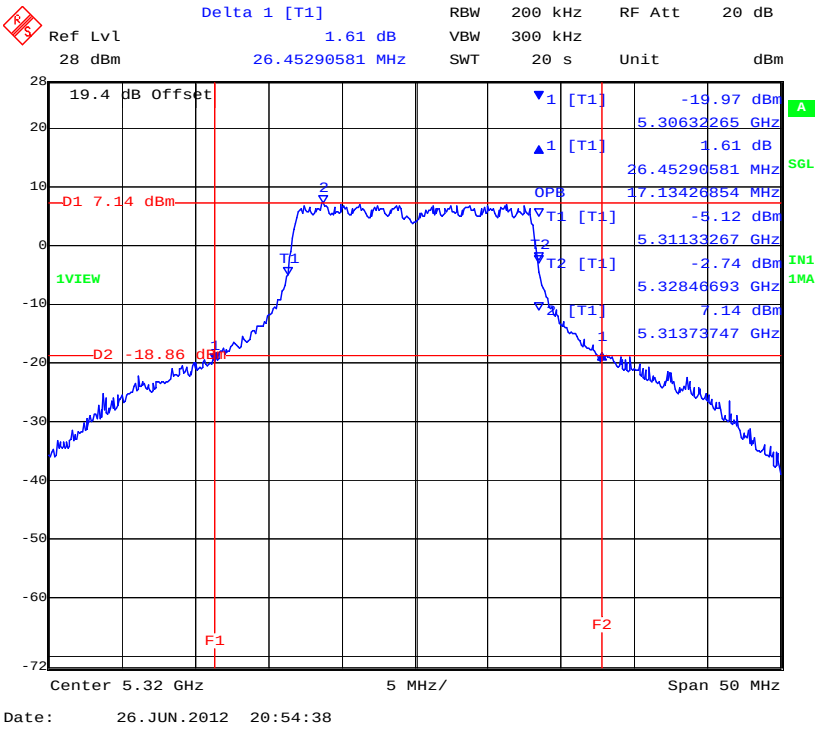


TABLE OF RESULTS – **802.11a Legacy (5,470 – 5,725 MHz)**

Test Conditions:	15.247 (a)(2)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11a	**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:**	6 dBi
Applied Voltage:	12.0 Vdc		
Notes 1:			
Notes 2:			

26 dB Bandwidth

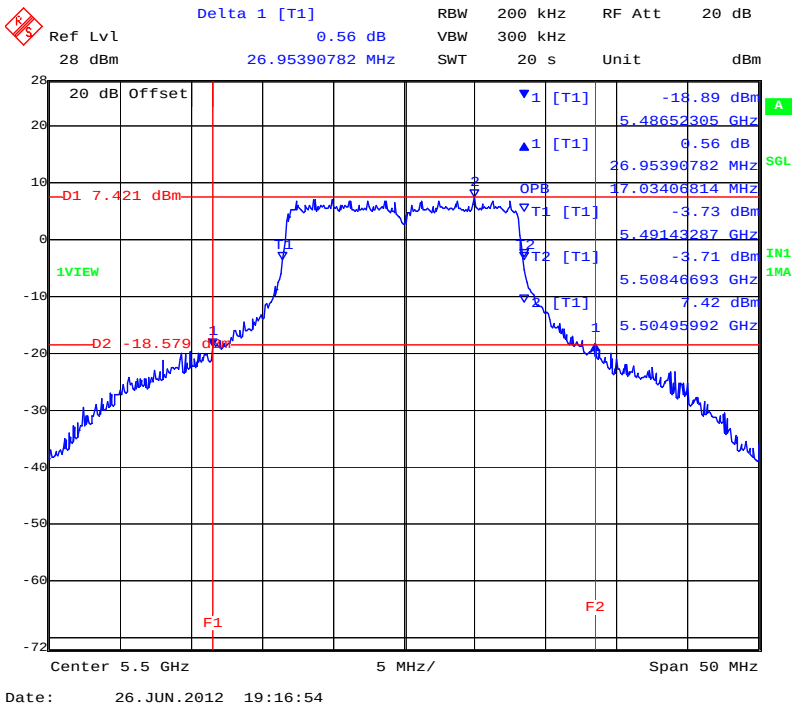
Test Frequency	26 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	**a**	**b**	**c**	**d**	**kHz**	**MHz**	**MHz**
5500	26.954000	31.263000	--	--	500	0.5	-26.454000
5580	25.551000	31.363000	--	--			-25.051000
5700	25.150000	25.752000	--	--			-24.650000

99% Bandwidth

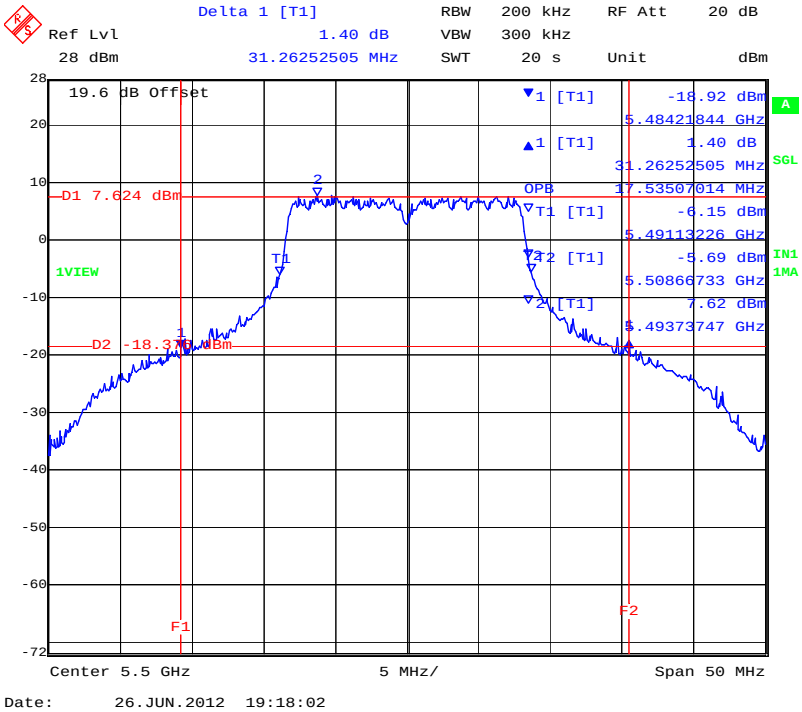
Test Frequency	99 % Bandwidth						
	MHz						
MHz	**a**	**b**	**c**	**d**			
5500	17.034000	17.535000	--	--			
5580	16.934000	17.735000	--	--			
5700	16.834000	17.234000	--	--			

Measurement uncertainty:	±2.81 dB

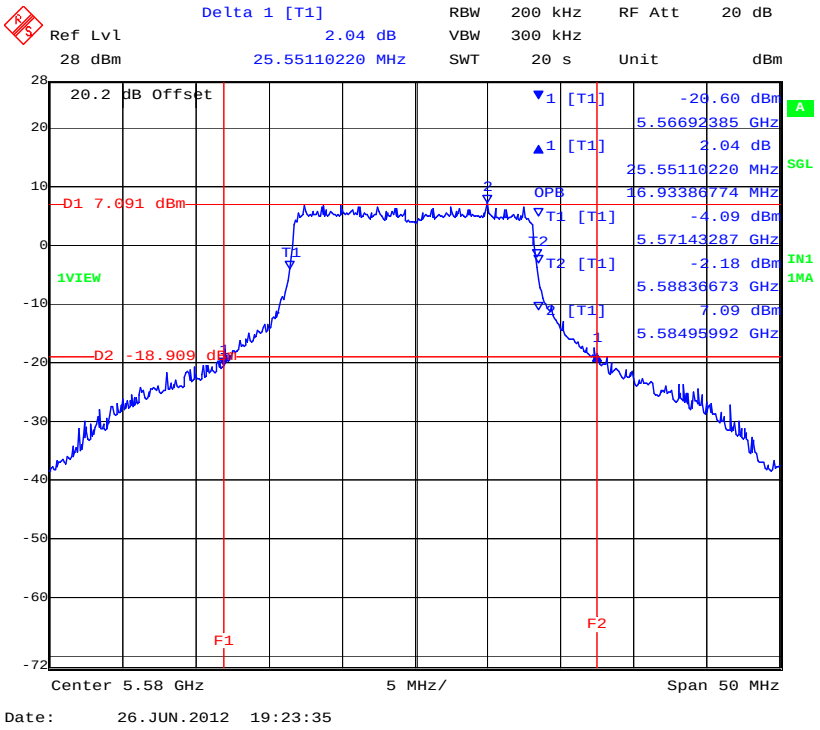
CHAIN A 5,500 MHz 802.11a Legacy 26 dB and 99 % Bandwidth



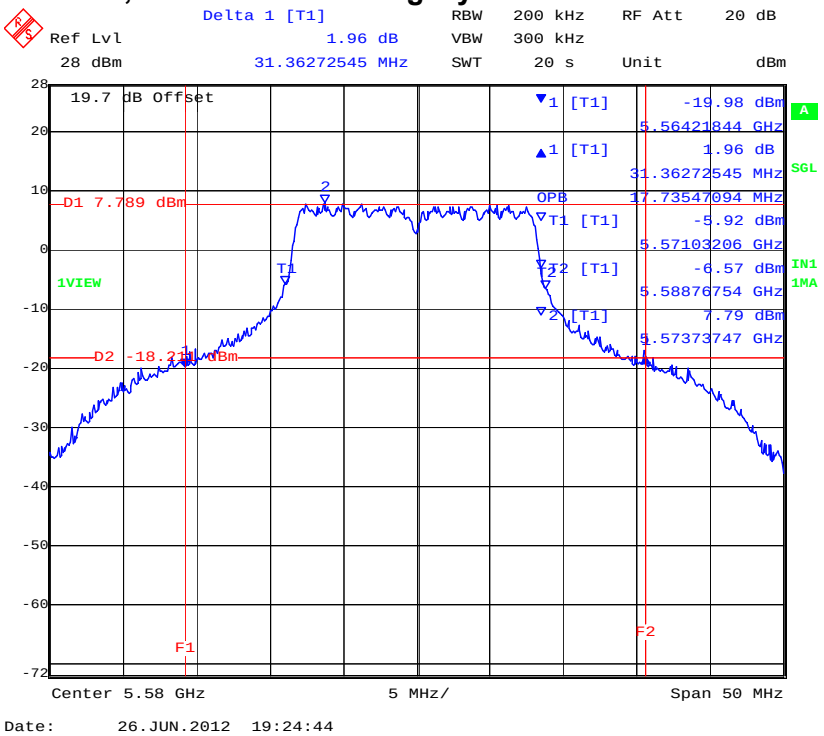
CHAIN B 5,500 MHz 802.11a Legacy 26 dB and 99 % Bandwidth



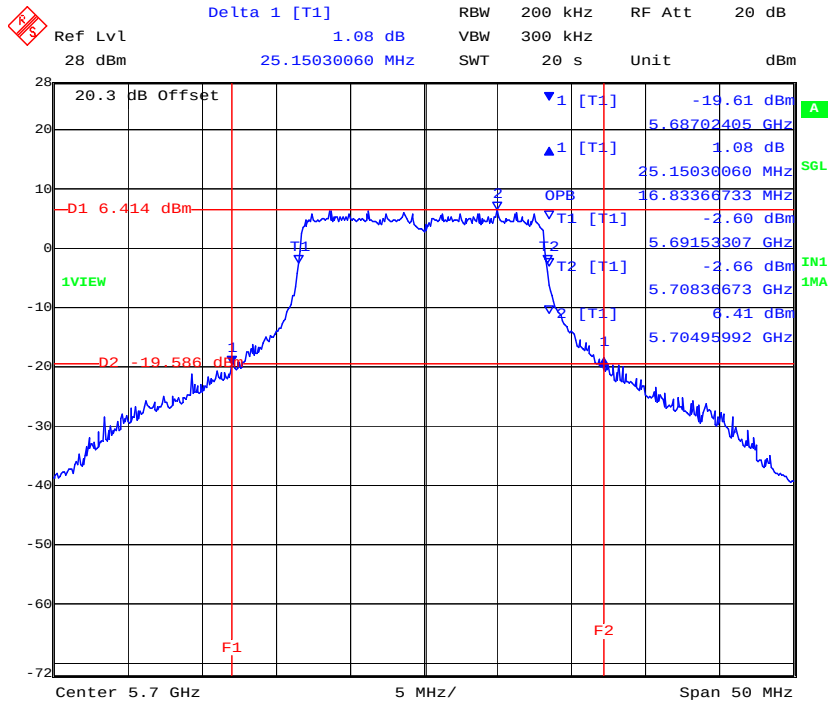
CHAIN A 5,580 MHz 802.11a Legacy 26 dB and 99 % Bandwidth



CHAIN B 5,580 MHz 802.11a Legacy 26 dB and 99 % Bandwidth

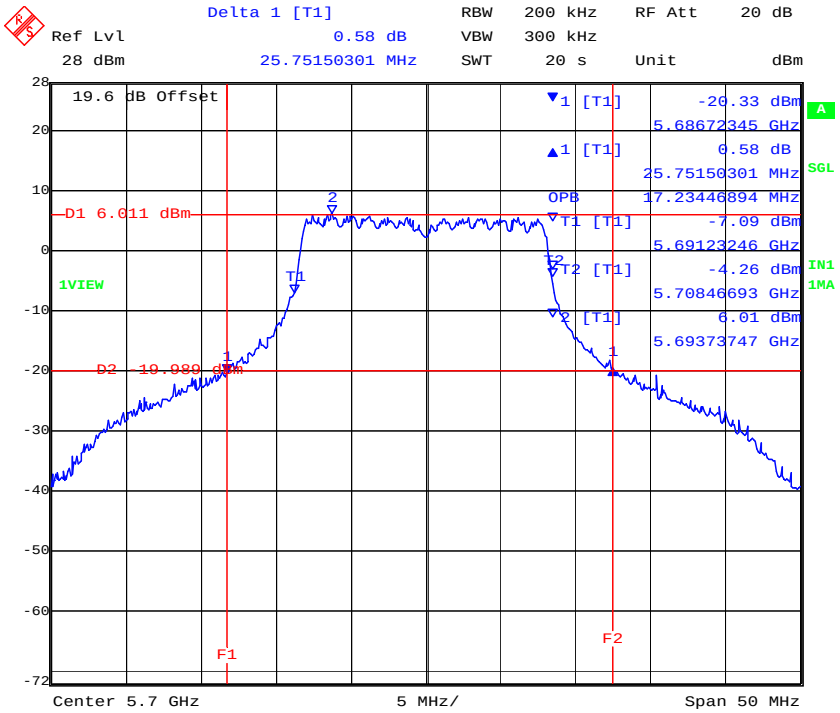


CHAIN A 5,700 MHz 802.11a Legacy 26 dB and 99 % Bandwidth



Date: 26.JUN.2012 19:29:43

CHAIN B 5,700 MHz 802.11a Legacy 26 dB and 99 % Bandwidth



Date: 26.JUN.2012 19:30:51

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

TABLE OF RESULTS – **802.11n HT-20 (5,250 – 5,350 MHz)**

Test Conditions:	15.247 (a)(2)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-20	**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:**	6 dBi
Applied Voltage:	12.0 Vdc		
Notes 1:			
Notes 2:			

26 dB Bandwidth

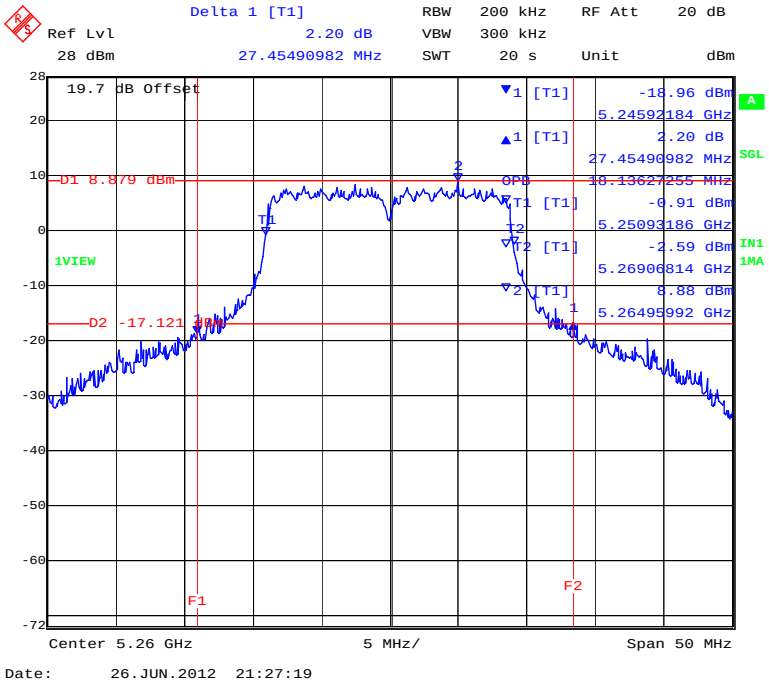
Test Frequency	26 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	**a**	**b**	**c**	**d**	**kHz**	**MHz**	**MHz**
5260	27.455000	30.361000	--	--	500	0.5	-26.955000
5300	26.353000	29.058000	--	--			-25.853000
5320	25.752000	30.661000	--	--			-25.252000

99% Bandwidth

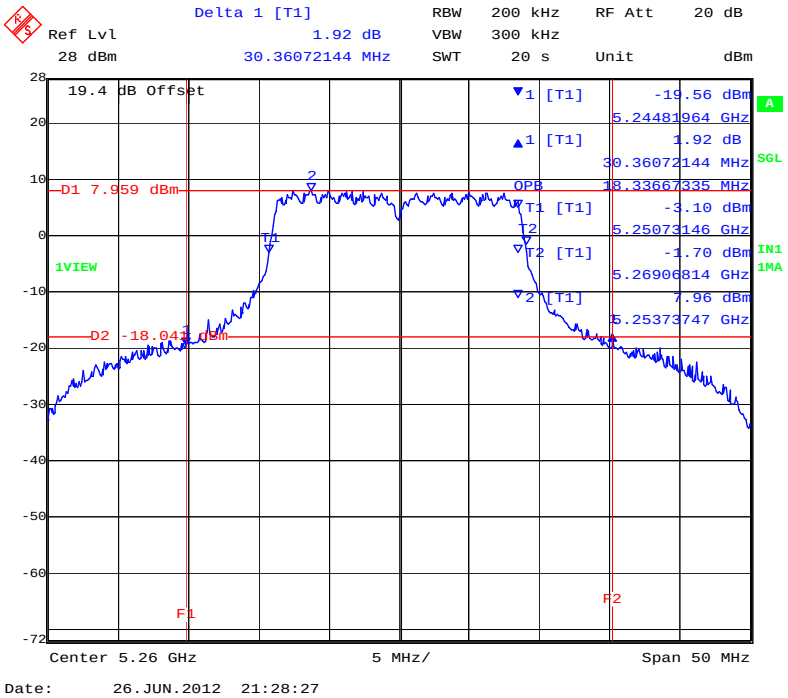
Test Frequency	99 % Bandwidth						
	MHz						
MHz	**a**	**b**	**c**	**d**			
5260	18.136000	18.337000	--	--			
5300	18.136000	18.337000	--	--			
5320	18.036000	18.437000	--	--			

Measurement uncertainty:	±2.81 dB

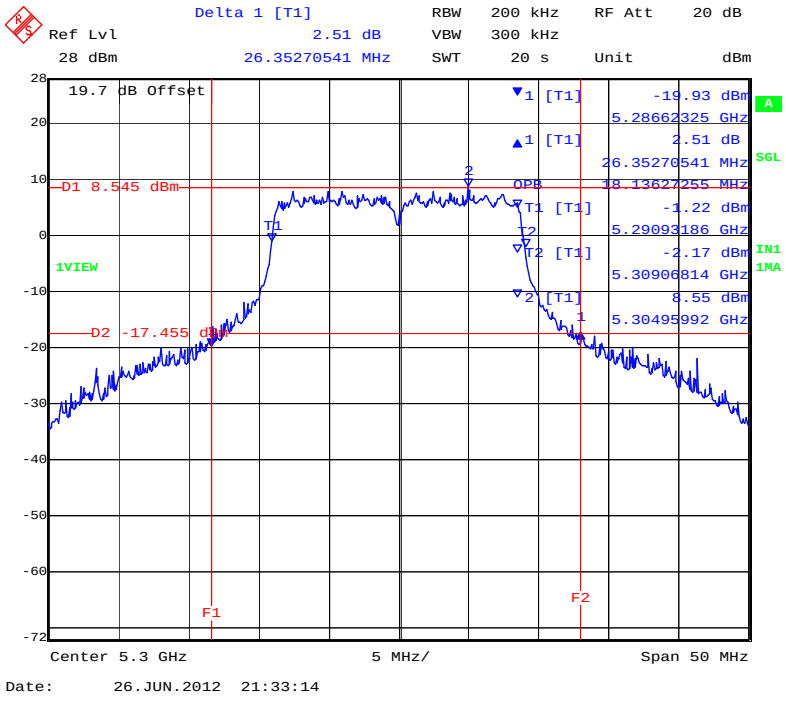
CHAIN A 5,260 MHz 802.11N HT-20 26 dB and 99 % Bandwidth



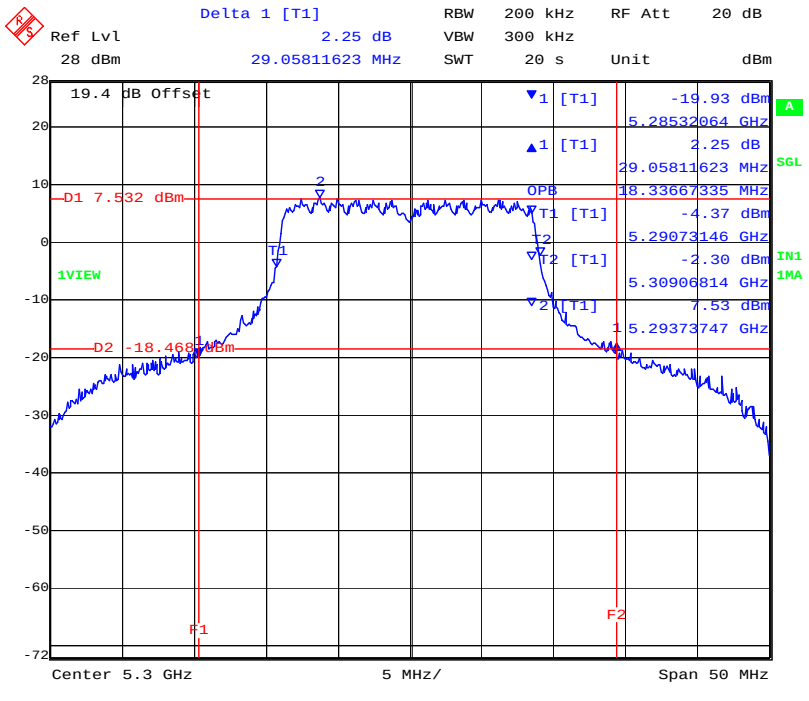
CHAIN B 5,260 MHz 802.11N HT-20 26 dB and 99 % Bandwidth



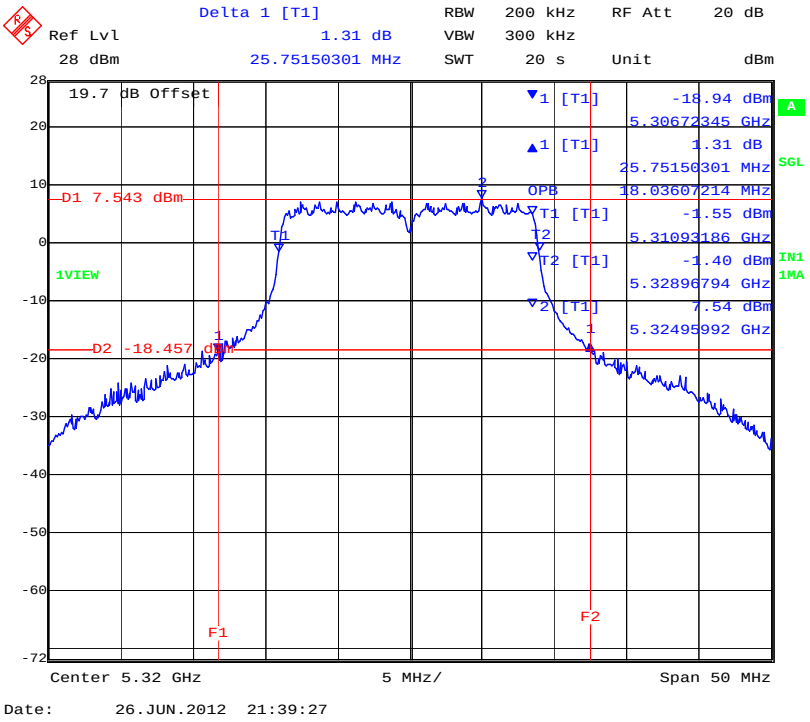
CHAIN A 5,300 MHz 802.11N HT-20 26 dB and 99 % Bandwidth



CHAIN B 5,300 MHz 802.11N HT-20 26 dB and 99 % Bandwidth



CHAIN A 5,320 MHz 802.11N HT-20 26 dB and 99 % Bandwidth



CHAIN B 5,320 MHz 802.11N HT-20 26 dB and 99 % Bandwidth

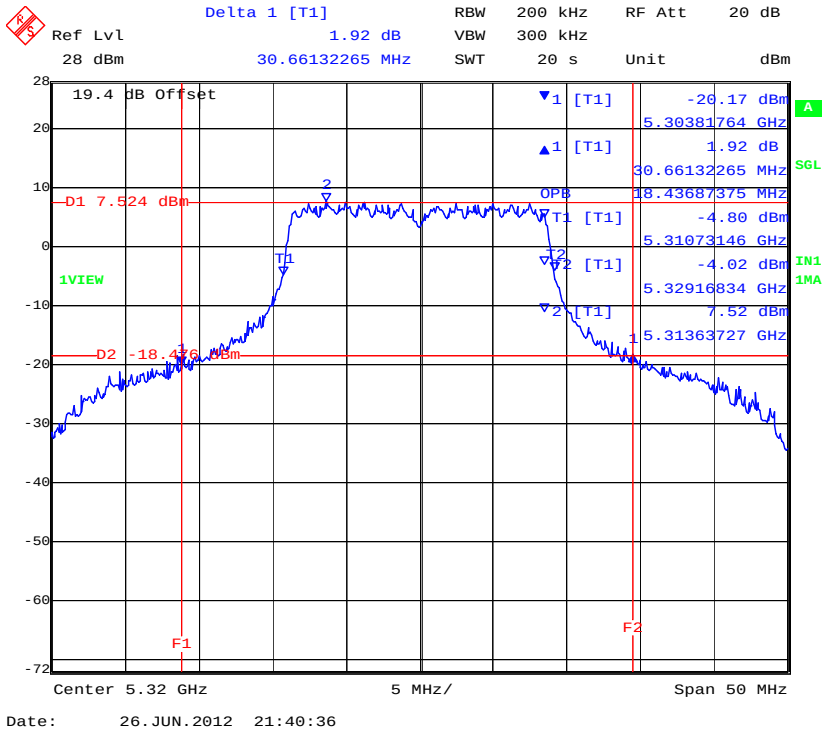


TABLE OF RESULTS – **802.11n HT-20 (5,470 – 5,725 MHz)**

Test Conditions:	15.247 (a)(2)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-20	**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:**	6 dBi
Applied Voltage:	12.0 Vdc		
Notes 1:			
Notes 2:			

26 dB Bandwidth

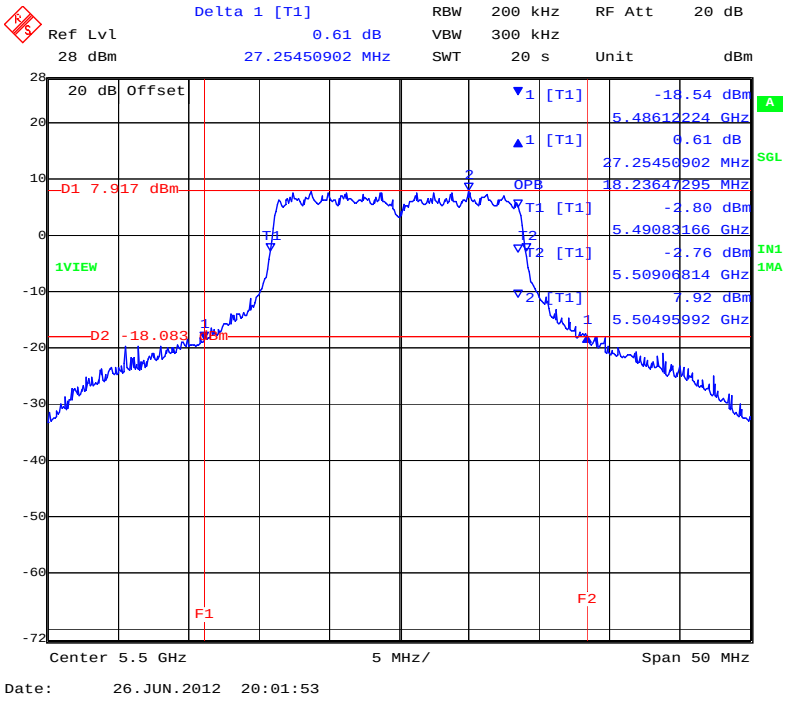
Test Frequency	26 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	**a**	**b**	**c**	**d**	**kHz**	**MHz**	**MHz**
5500	27.255000	31.964000	--	--	500	0.5	-26.755000
5580	26.754000	35.170000	--	--			-26.254000
5700	26.754000	30.461000	--	--			-26.254000

99% Bandwidth

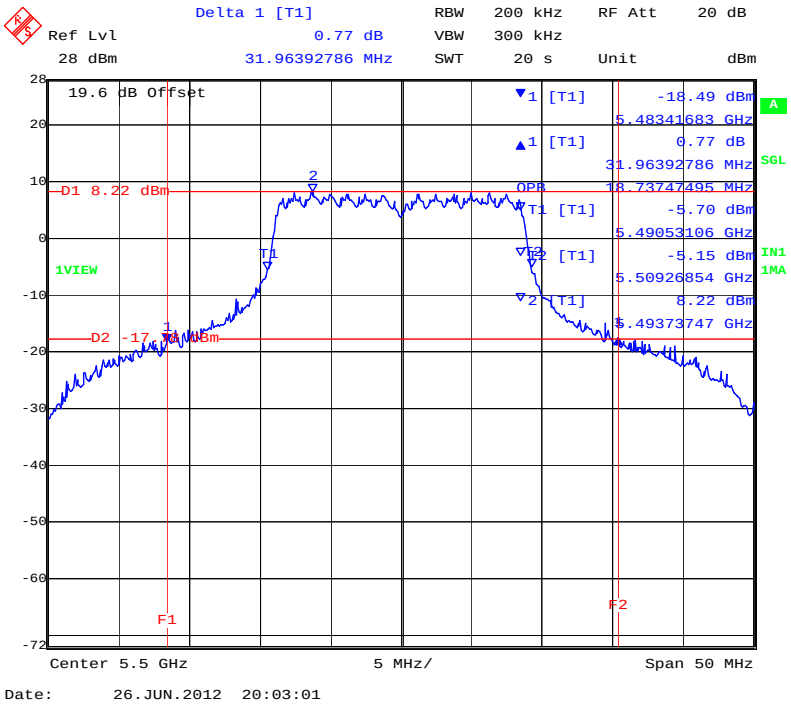
Test Frequency	99 % Bandwidth						
	MHz						
MHz	**a**	**b**	**c**	**d**			
5500	18.236000	18.737000	--	--			
5580	18.136000	19.038000	--	--			
5700	18.036000	18.537000	--	--			

Measurement uncertainty:	±2.81 dB

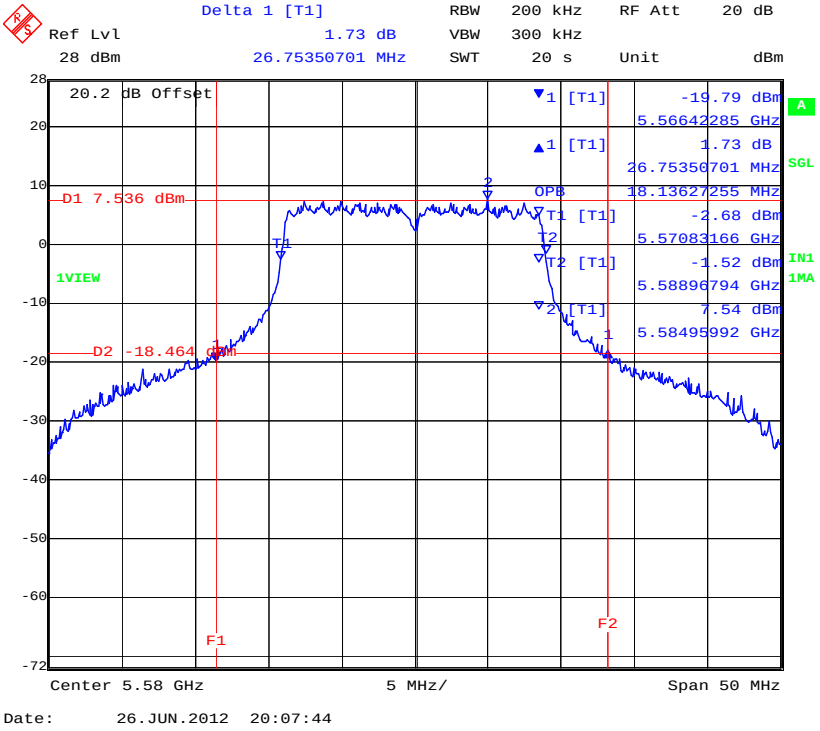
CHAIN A 5,500 MHz 802.11n HT-20 26 dB and 99 % Bandwidth



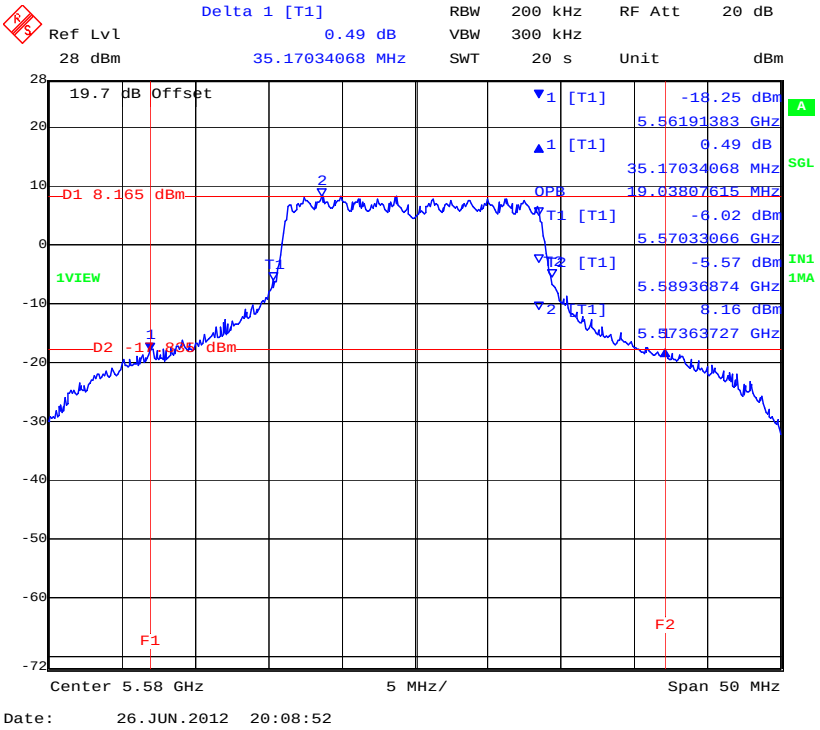
CHAIN B 5,500 MHz 802.11n HT-20 26 dB and 99 % Bandwidth



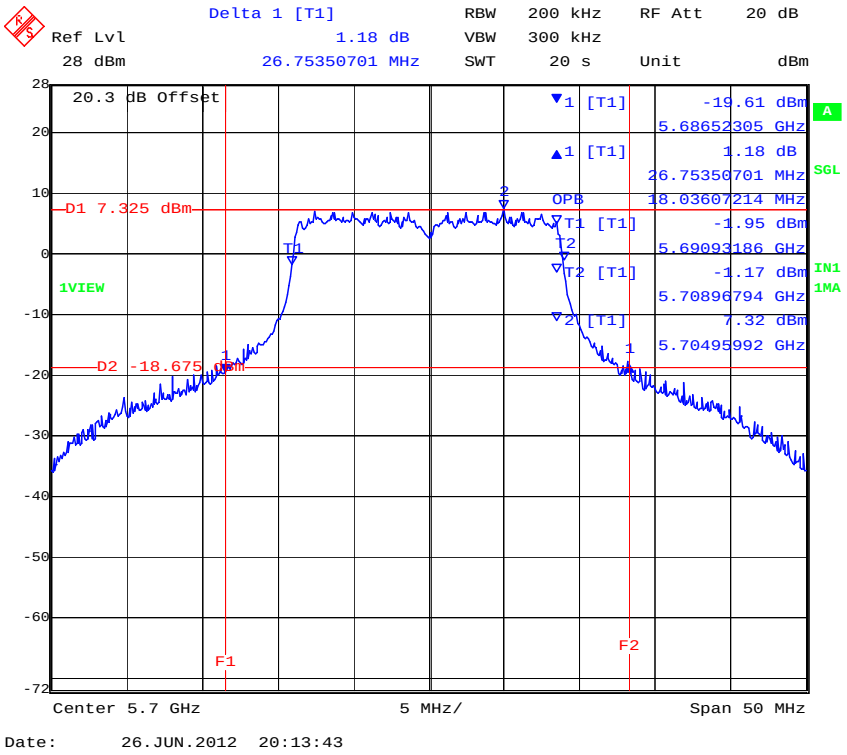
CHAIN A 5,580 MHz 802.11n HT-20 26 dB and 99 % Bandwidth



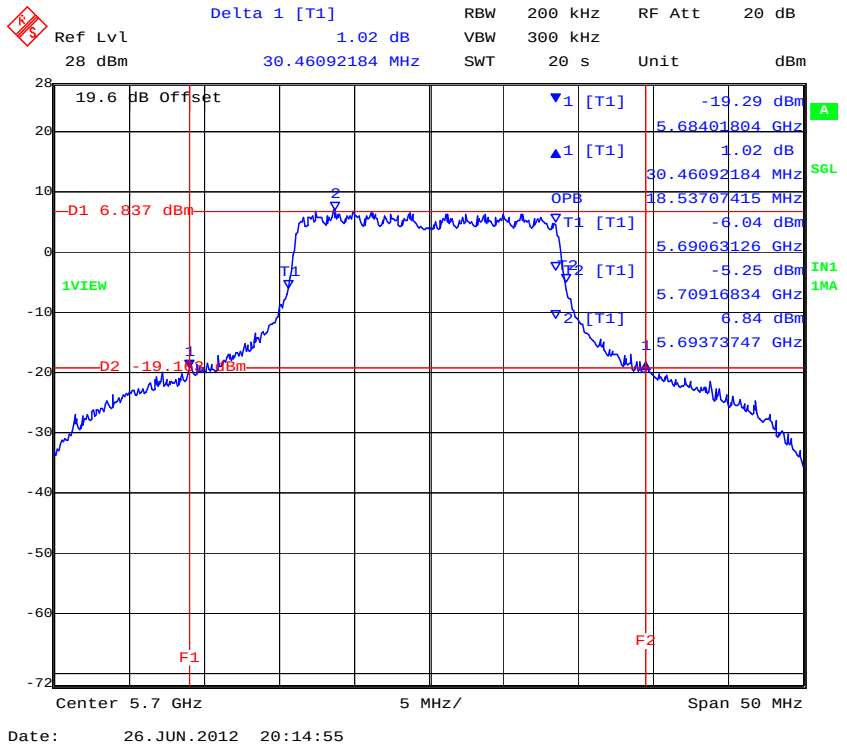
CHAIN B 5,580 MHz 802.11n HT-20 26 dB and 99 % Bandwidth



CHAIN A 5,700 MHz 802.11n HT-20 26 dB and 99 % Bandwidth



CHAIN B 5,700 MHz 802.11n HT-20 26 dB and 99 % Bandwidth



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

TABLE OF RESULTS – **802.11n HT-40**

Test Conditions:	15.247 (a)(2)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-40	**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:**	6 dBi
Applied Voltage:	12.0 Vdc		
Notes 1:			
Notes 2:			

26 dB Bandwidth

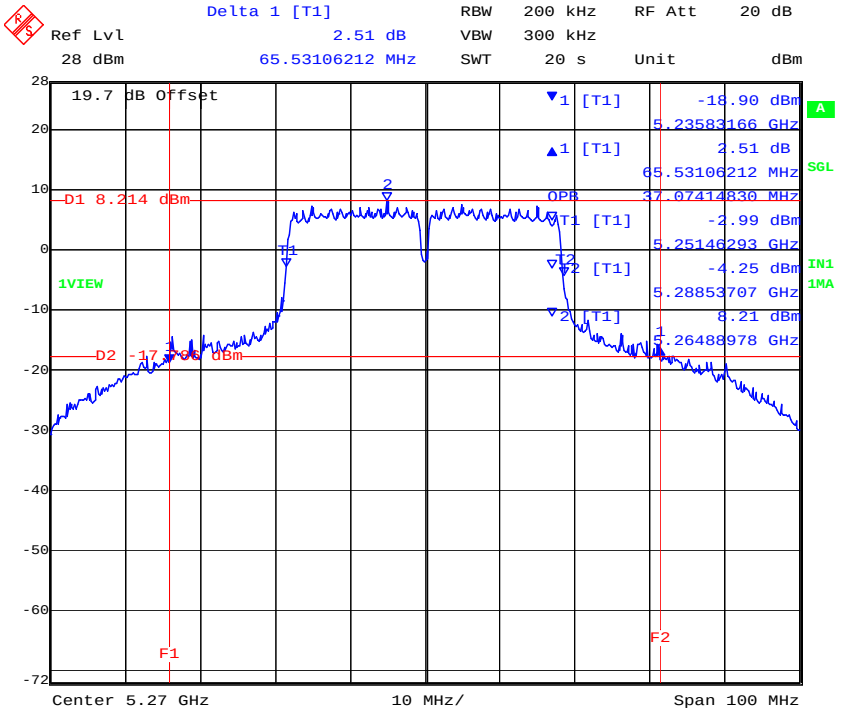
Test Frequency	26 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	**a**	**b**	**c**	**d**	**kHz**	**MHz**	**MHz**
5270	65.531000	84.569000	--	--	500	0.5	-65.031000
5310	66.132000	85.972000	--	--			-65.632000

99% Bandwidth

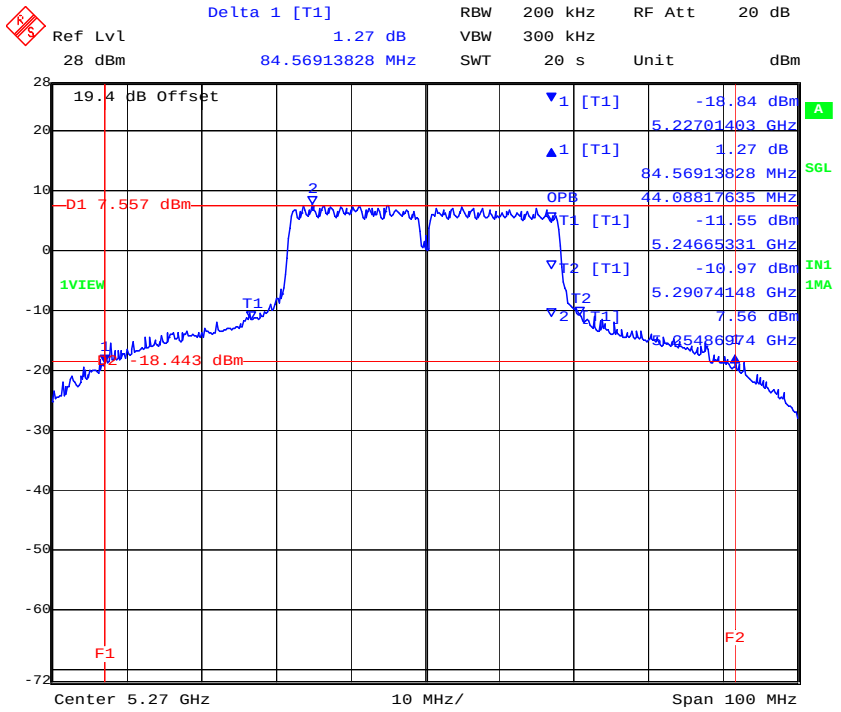
Test Frequency	99 % Bandwidth						
	MHz						
MHz	**a**	**b**	**c**	**d**			
5270	37.074000	44.088000	--	--			
5310	36.874000	46.894000	--	--			

Measurement uncertainty:	±2.81 dB

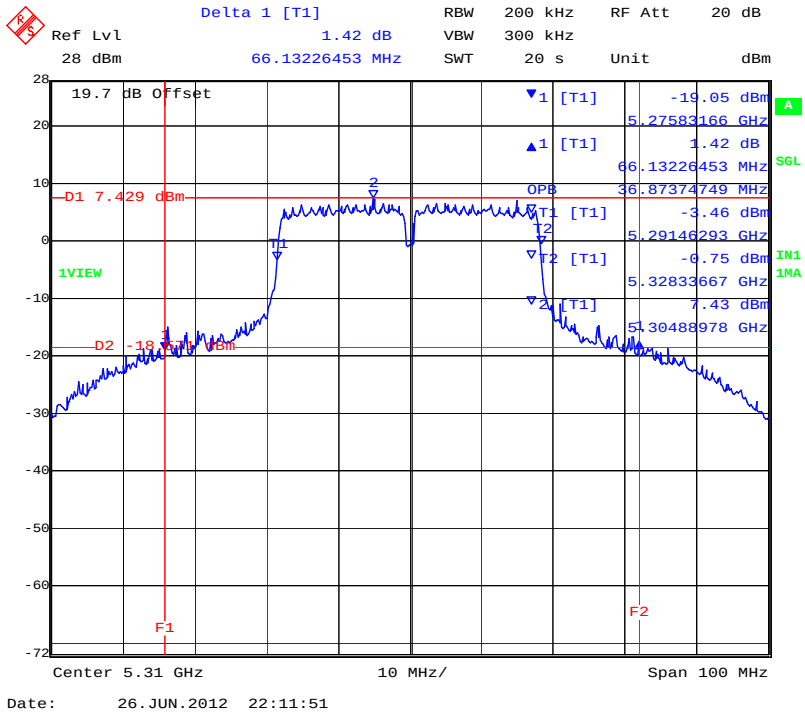
Chain A 5,270 MHz 802.11n HT-40 26 dB and 99 % Bandwidth



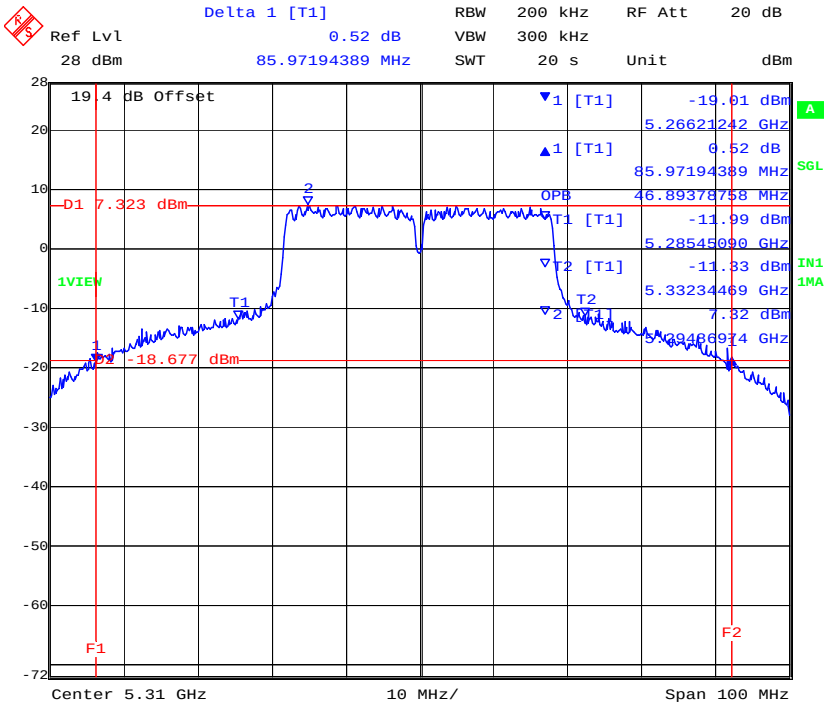
Chain B 5,270 MHz 802.11n HT-40 26 dB and 99 % Bandwidth



Chain A 5,310 MHz 802.11n HT-40 26 dB and 99 % Bandwidth



Chain B 5,310 MHz 802.11n HT-40 26 dB and 99 % Bandwidth



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

TABLE OF RESULTS – **802.11n HT-40 (5470 – 5725 MHz)**

Test Conditions:	15.247 (a)(2)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-40	**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:**	6 dBi
Applied Voltage:	12.0 Vdc		
Notes 1:			
Notes 2:			

26 dB Bandwidth

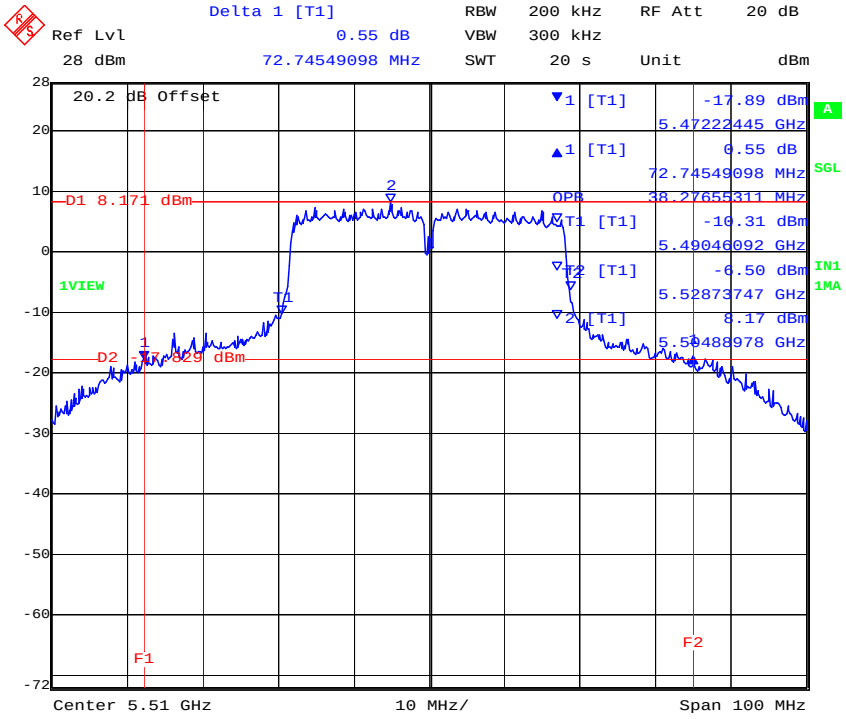
Test Frequency	26 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	**a**	**b**	**c**	**d**	**kHz**	**MHz**	**MHz**
5510	72.745000	87.174000	--	--	500	0.5	-72.245000
5550	76.353000	90.381000	--	--			-75.853000
5670	70.341000	87.575000	--	--			-69.841000

99% Bandwidth

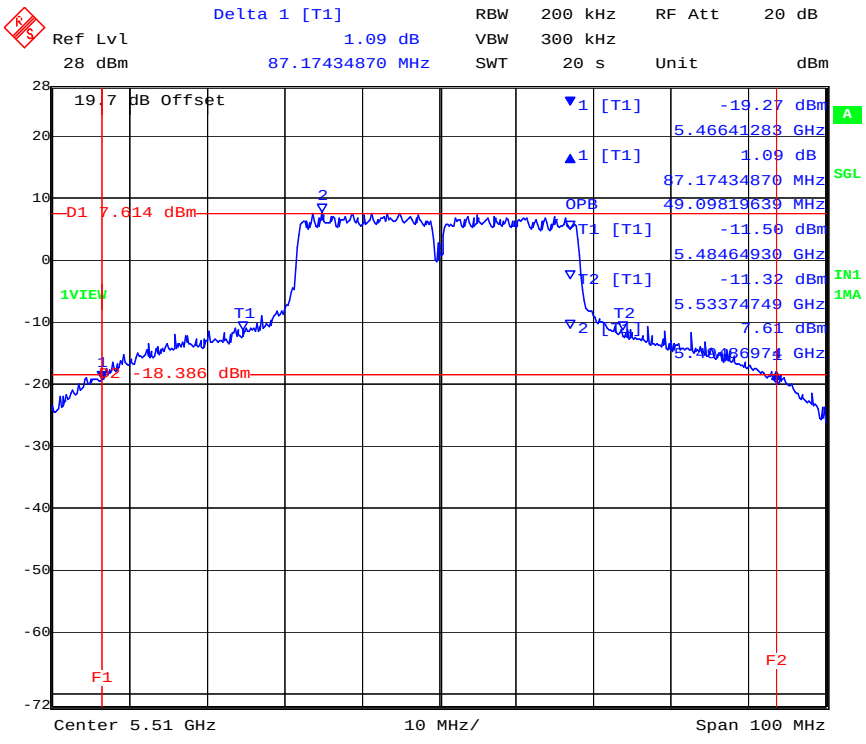
Test Frequency	99 % Bandwidth						
	MHz						
MHz	**a**	**b**	**c**	**d**			
5510	38.277000	49.098000	--	--			
5550	39.679000	53.908000	--	--			
5670	37.475000	49.900000	--	--			

Measurement uncertainty:	±2.81 dB

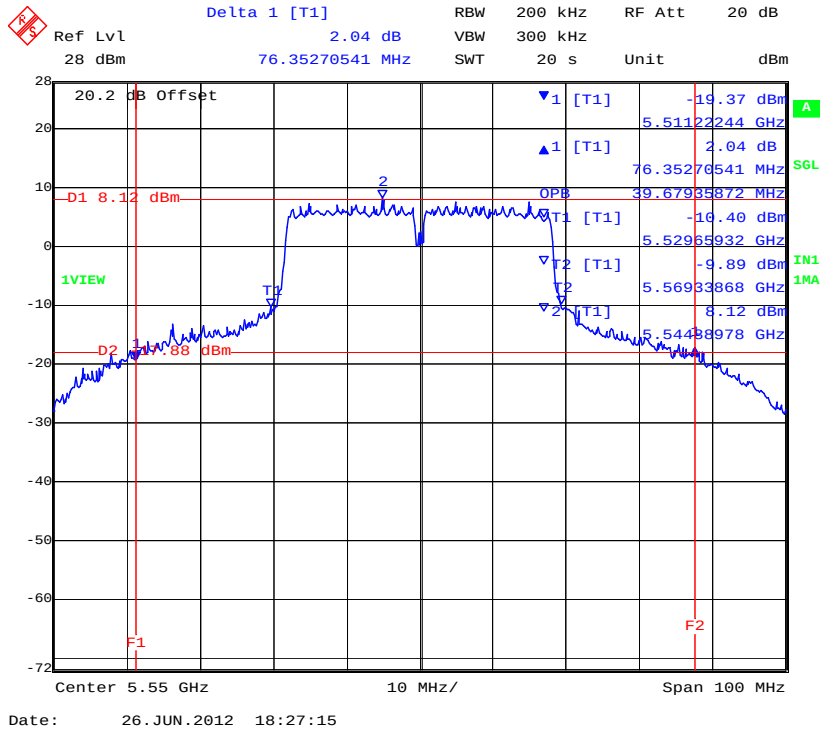
Chain A 5,510 MHz 802.11n HT-40 26 dB and 99 % Bandwidth



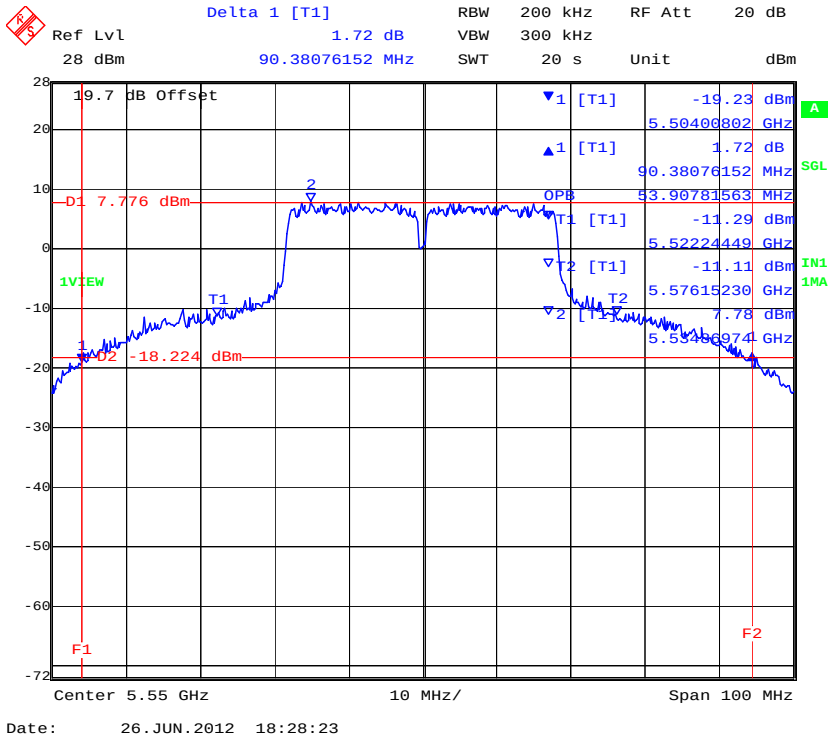
Chain B 5,510 MHz 802.11n HT-40 26 dB and 99 % Bandwidth



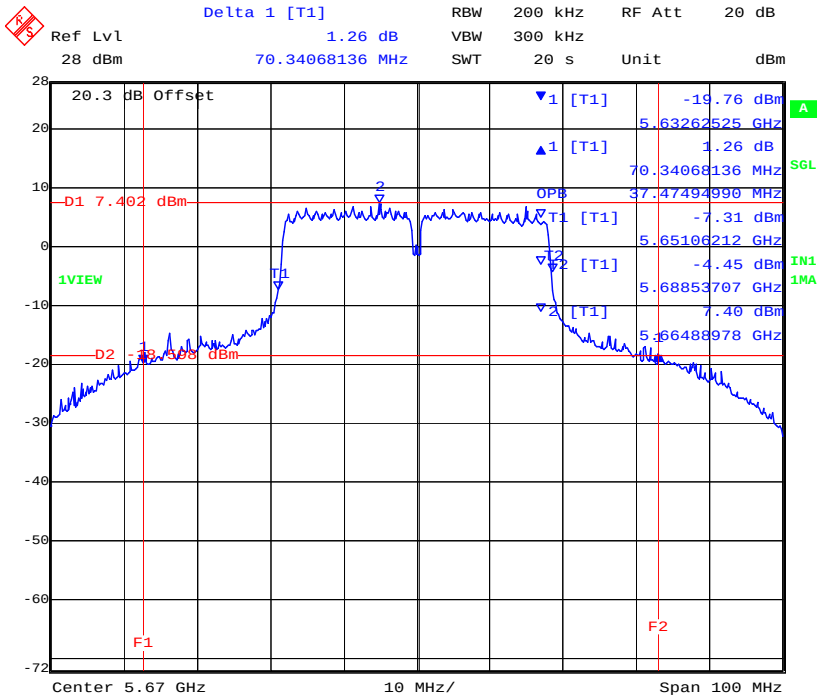
Chain A 5,550 MHz 802.11n HT-40 26 dB and 99 % Bandwidth



Chain B 5,550 MHz 802.11n HT-40 26 dB and 99 % Bandwidth

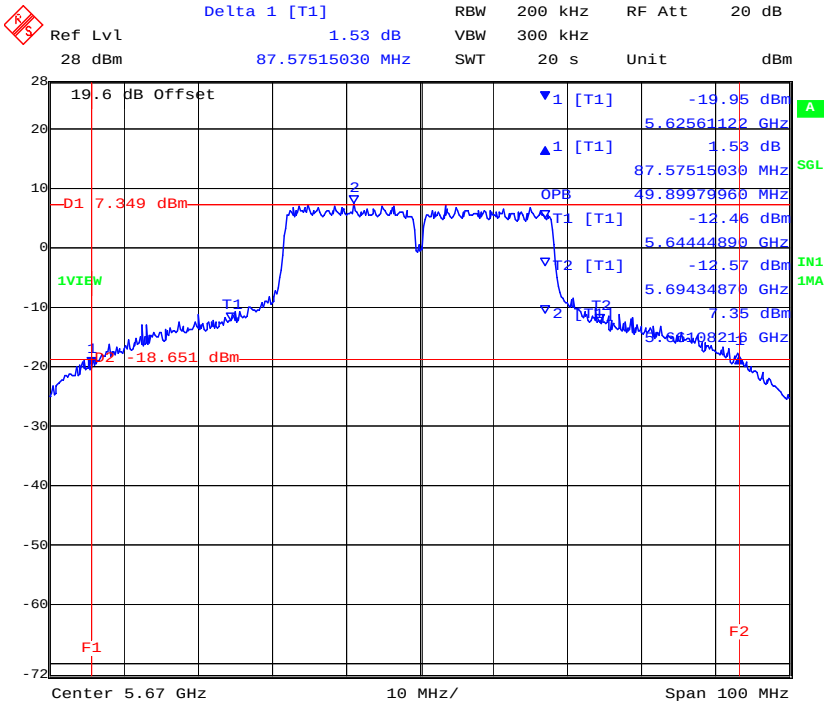


Chain A 5,670 MHz 802.11n HT-40 26 dB and 99 % Bandwidth



Date: 26.JUN.2012 18:31:32

Chain B 5,670 MHz 802.11n HT-40 26 dB and 99 % Bandwidth



Date: 26.JUN.2012 18:32:41

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.

Laboratory Measurement Uncertainty for Spectrum Measurement

Measurement uncertainty	±2.81 dB

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-03 'Measurement of RF Spectrum Mask'	0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117

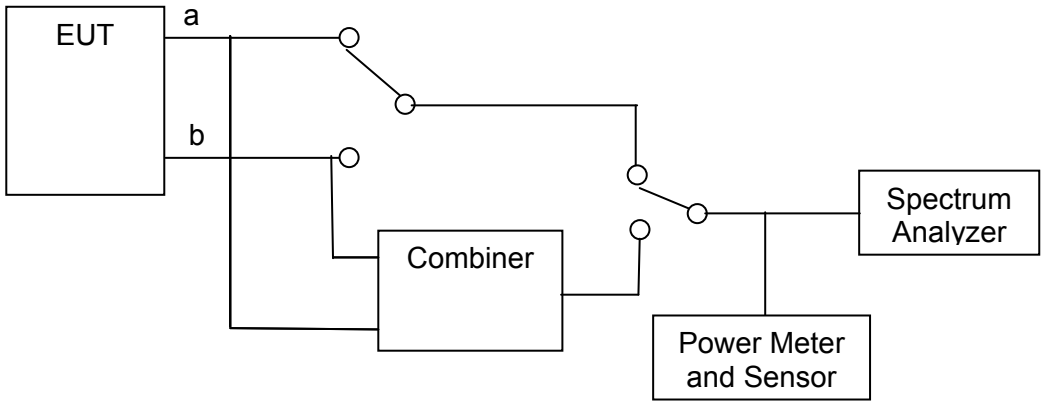
5.1.2. Transmit Output Power

FCC, Part 15 Subpart C §15.407(a)
Industry Canada RSS-210 §9.9(2)
Industry Canada RSS-Gen 4.6

Test Procedure

The transmitter terminal of EUT was connected to the input of an average power meter. Measurements were made while EUT was operating in a continuous transmission mode i.e. 100 % duty cycle at the appropriate center frequency. All cable losses and offsets were taken into consideration in the measured result.

Test Measurement Set up



Measurement set up for Transmitter Output Power

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

EUT parameters.
Power Level: Maximum
Duty Cycle: 100%
Temperature: Ambient

Maximum Permissible Transmit Power

FCC Limits Limits

Bands 5250 – 5350 and 5470 – 5725 MHz

Limit lesser of: 250 mW or 11 dBm + 10 log (B) dBm

Mode	Frequency Range (MHz)	Maximum 26 dB Bandwidth (MHz)	11 + 10 Log (B) (dBm)	Limit (dBm)
a	5250 – 5350 5470 – 5725	31.363	+25.96	+24.00
HT-20		35.170	+26.45	+24.00
HT-40		90.381	+30.56	+24.00

Industry Canada Limits

Bands 5250 – 5350 and 5470 – 5725 MHz

Limit lesser of: 250 mW or 11 dBm + 10 log (B) dBm

Mode	Frequency Range (MHz)	Maximum 99% Bandwidth (MHz)	11 + 10 Log (B) (dBm)	Limit (dBm)
a	5250 – 5350 5470 – 5725	17.735	+23.49	+24.00
HT-20		19.038	+23.80	+24.00
HT-40		53.908	+28.32	+24.00

MIMO Operation 5250-5350 MHz

Antenna	Gain	Max. Allowable Conducted Peak Power (dBm)		Maximum EIRP
(dB)	(dBi)	Non-Beam Forming	Beam Forming	(dBm)
AP-ANT-10	6.0	+24.0	N/A	+30.0
AP-ANT-86D	9.0	+21.0		+30.0
AP-ANT-89	14.0	+16.0		+30.0

Non-MIMO Operation (Legacy) 5250-5350 MHz

Antenna	Gain dBi	Increased Gain V's No. Antenna Ports		Total Gain	Max. Allowable Conducted Peak Power	Maximum EIRP
(dB)		Ports	dB	dBi	(dBm)	(dBm)
AP-ANT-10	6.0	2	3.01	9.01	+20.99	+30.0
AP-ANT-86D	9.0	2	3.01	12.01	+17.99	+30.0
AP-ANT-89	14.0	2	3.01	17.01	+12.99	+30.0

MIMO Operation 5470 – 5725 MHz

Antenna	Gain	Max. Allowable Conducted Peak Power (dBm)		Maximum EIRP
(dB)	(dBi)	Non-Beam Forming	Beam Forming	(dBm)
AP-ANT-10	6.0	+24.0	N/A	+30.0
AP-ANT-86D	9.0	+21.0		+30.0
AP-ANT-89	13.25	+16.75		+30.0

Non-MIMO Operation (Legacy) 5470 – 5725 MHz

Antenna	Gain dBi	Increased Gain V's No. Antenna Ports		Total Gain	Max. Allowable Conducted Peak Power	Maximum EIRP
(dB)		Ports	dB	dBi	(dBm)	(dBm)
AP-ANT-10	6.0	2	3.01	9.01	+20.99	+30.0
AP-ANT-86D	9.0	2	3.01	12.01	+17.99	+30.0
AP-ANT-89	13.25	2	3.01	16.26	+13.74	+30.0

Measurement Results for Transmit Output Power

Ambient conditions.

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

Measurement Results for Transmit Output Power

TABLE OF RESULTS – **802.11a Legacy**

Test Conditions:	15.407 (a)(1)				**Rel. Humidity (%):**	35	to	42
Variant:	802.11a				**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:**	6 dBi		
Applied Voltage:	12.0	Vdc						
Notes 1:								
Notes 2:								

Test Frequency	**Measured Peak Power RF Port (dBm)**				**Total Power (dBm)**		**Limit**	**Margin**
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5260	16.84	17.33	--	--	N/A	20.10	24.00	-3.90
5300	16.35	17.16	--	--	N/A	19.78	24.00	-4.22
5320	16.13	16.84	--	--	N/A	19.51	24.00	-4.49

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)				**Rel. Humidity (%):**	35	to	42
Variant:	802.11a				**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:**	6 dBi		
Applied Voltage:	12.0	Vdc						
Notes 1:								
Notes 2:								

Test Frequency	**Measured Peak Power RF Port (dBm)**				**Total Power (dBm)**		**Limit**	**Margin**
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5500	16.87	17.21	--	--	N/A	20.05	24.00	-3.95
5580	16.64	17.72	--	--	N/A	20.22	24.00	-3.78
5700	16.24	15.86	--	--	N/A	19.06	24.00	-4.94

Measurement uncertainty:	±1.33 dB

TABLE OF RESULTS – **802.11n HT20**

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	802.11n HT-20	**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:**	6 dBi		
Applied Voltage:	12.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5260	17.25	17.76	--	--	N/A	20.52	24.00	-3.48
5300	17.08	17.38	--	--	N/A	20.24	24.00	-3.76
5320	16.83	17.29	--	--	N/A	20.08	24.00	-3.92

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)	**Rel. Humidity (%):**	35	to	42
Variant:	802.11n HT-20	**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:**	6 dBi		
Applied Voltage:	12.0 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5500	17.36	17.71	--	--	N/A	20.55	24.00	-3.45
5580	17.11	18.17	--	--	N/A	20.68	24.00	-3.32
5700	16.69	16.66	--	--	N/A	19.69	24.00	-4.31

Measurement uncertainty:	±1.33 dB

TABLE OF RESULTS – **802.11n HT-40**

Test Conditions:	15.407 (a)(1)		**Rel. Humidity (%):**	35 to 42	
Variant:	802.11n HT-40		**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:**	6 dBi	
Applied Voltage:	12.0	Vdc			
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5270	20.06	20.49	--	--	N/A	23.29	24.00	-0.71
5310	19.37	20.09	--	--	N/A	22.76	24.00	-1.24

Measurement uncertainty:	±1.33 dB

Test Conditions:	15.407 (a)(1)		**Rel. Humidity (%):**	35 to 42	
Variant:	802.11n HT-40		**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:**	6 dBi	
Applied Voltage:	12.0	Vdc			
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5510	19.74	20.42	--	--	N/A	23.10	24.00	-0.90
5550	19.91	20.77	--	--	N/A	23.37	24.00	-0.63
5670	19.17	19.82	--	--	N/A	22.52	24.00	-1.48

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.

Laboratory Measurement Uncertainty for Power Measurements

Measurement uncertainty	±1.33 dB

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-01 'Measuring RF Output Power'	0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117

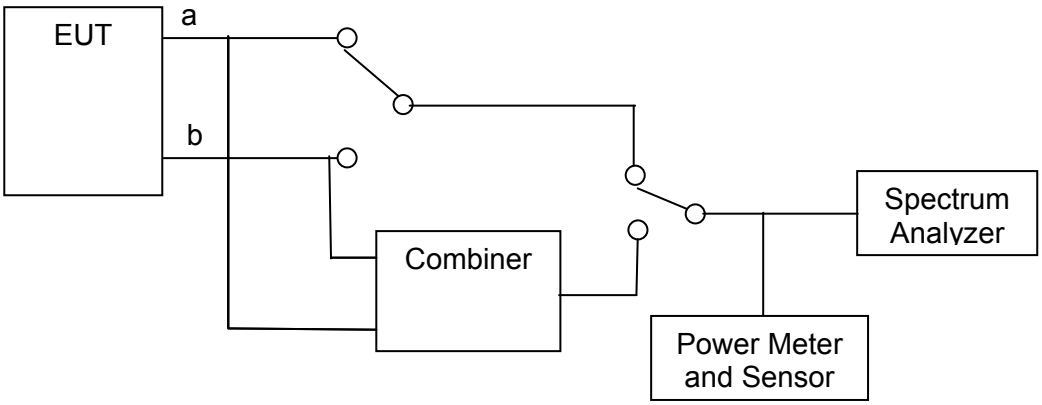
5.1.3. Peak Power Spectral Density

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

Test Procedure

The transmitter output was connected to a spectrum analyzer and the peak power spectral density measured. Method 2 Sample Detection and power averaging, specified in FCC document DA 02-2138 (Normative Reference (ix) Section 2.1 "Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices") was used to determine the peak power spectral density of the emission. The Peak Power Spectral Density is the highest level found across the emission in a 1 MHz resolution bandwidth.

Test Measurement Set up



Measurement set up for Peak Power Spectral Density

Measurement Results for Peak Power Spectral Density

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

Radio Parameters
Duty Cycle: 100%
Output: Modulated Carrier
Power: Maximum Default Power

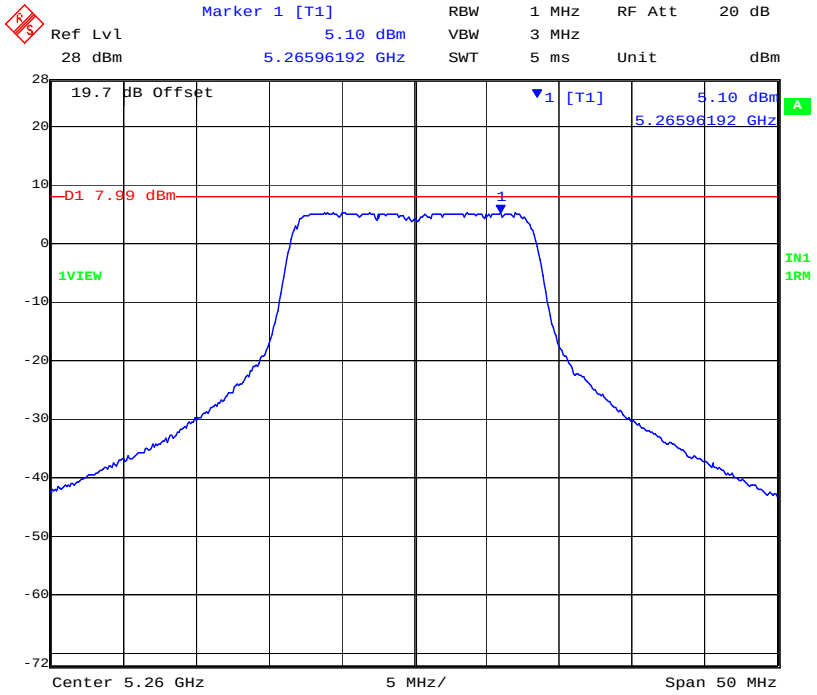
TABLE OF RESULTS – **802.11a Legacy (5250 – 5350 MHz)**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11a	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	6 dBi
Applied Voltage:	12.0 Vdc	**Antenna Ports (N):**	2
Notes 1:			
Notes 2:			

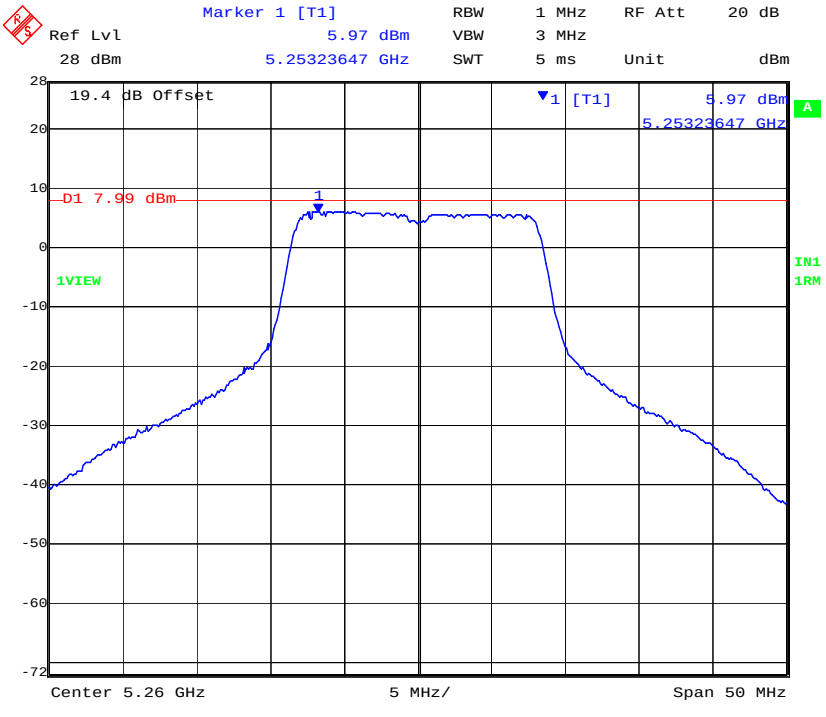
Test Frequency	Measured Peak Power RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**10Log(N)**	**dBm**	**dBm**	**dB**
5260	5.10	5.97	--	--	3.01	8.98	11.00	-2.02
5300	4.52	5.41	--	--	3.01	8.42	11.00	-2.58
5320	4.44	5.10	--	--	3.01	8.11	11.00	-2.89

Measurement uncertainty:	±1.33 dB

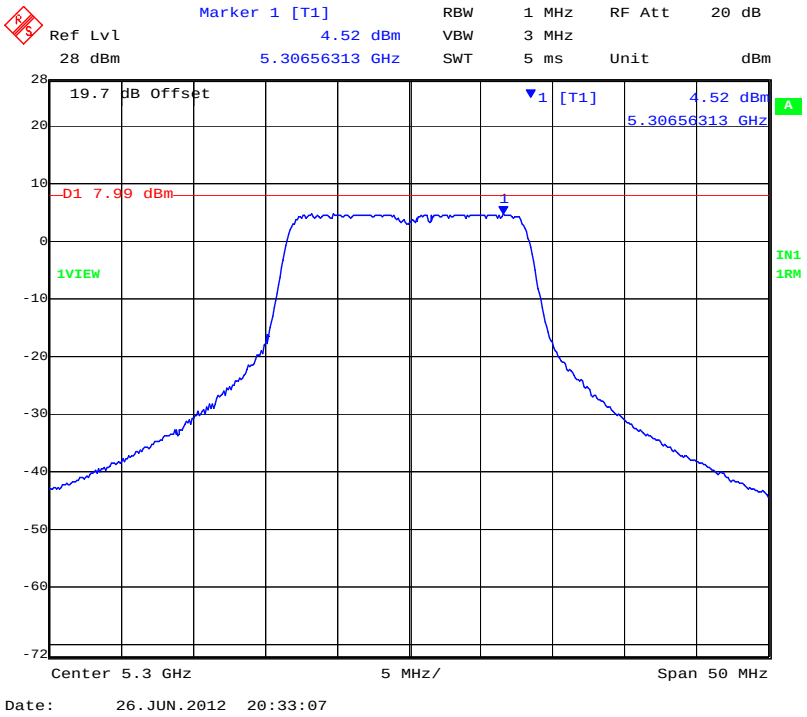
CHAIN A 5,260 MHz 802.11a Legacy Peak Power Spectral Density



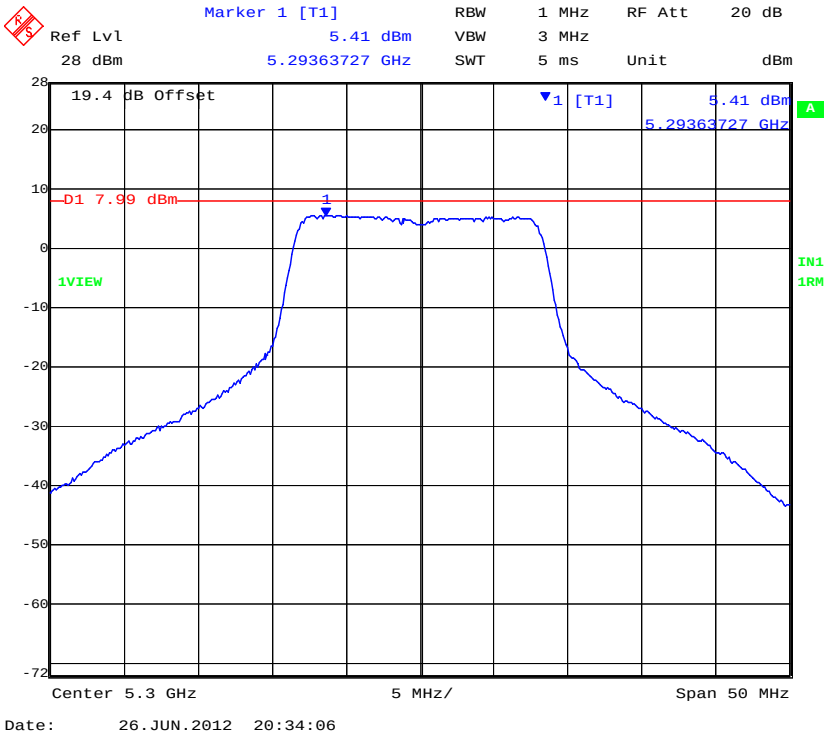
CHAIN B 5,260 MHz 802.11a Legacy Peak Power Spectral Density



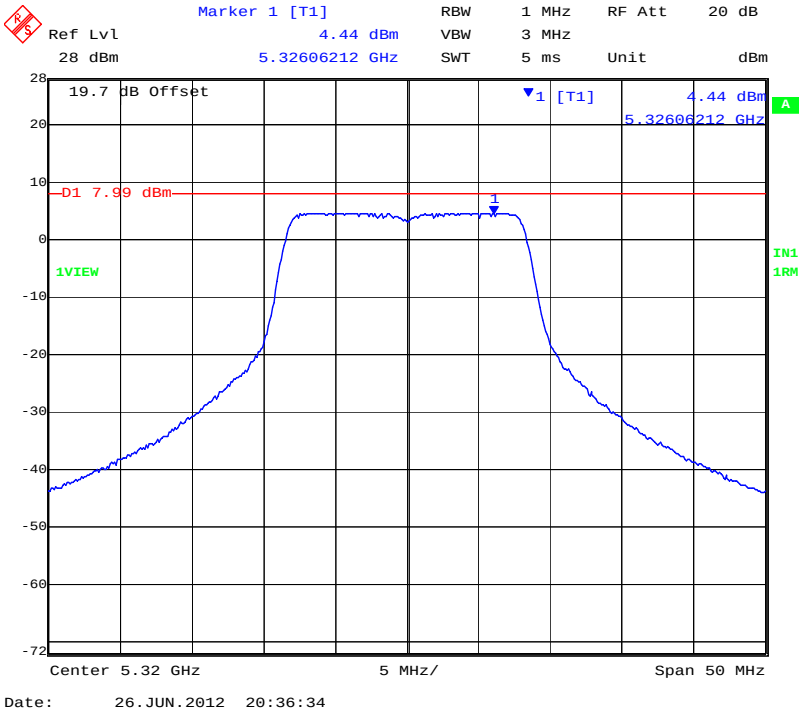
CHAIN A 5,300 MHz 802.11a Legacy Peak Power Spectral Density



CHAIN B 5,300 MHz 802.11a Legacy Peak Power Spectral Density



Chain A 5,320 MHz 802.11a Legacy Peak Power Spectral Density



Chain B 5,320 MHz 802.11a Legacy Peak Power Spectral Density

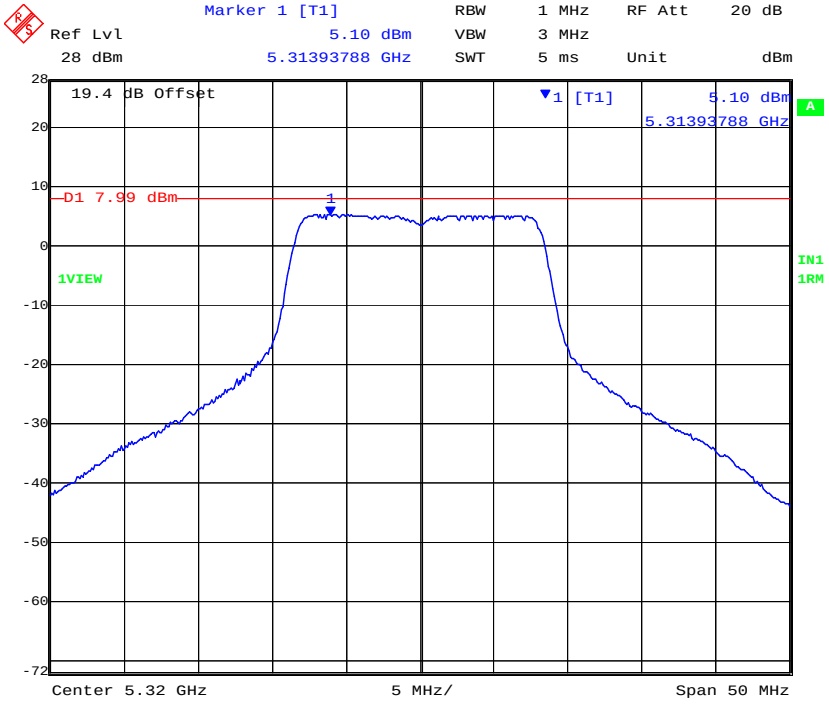


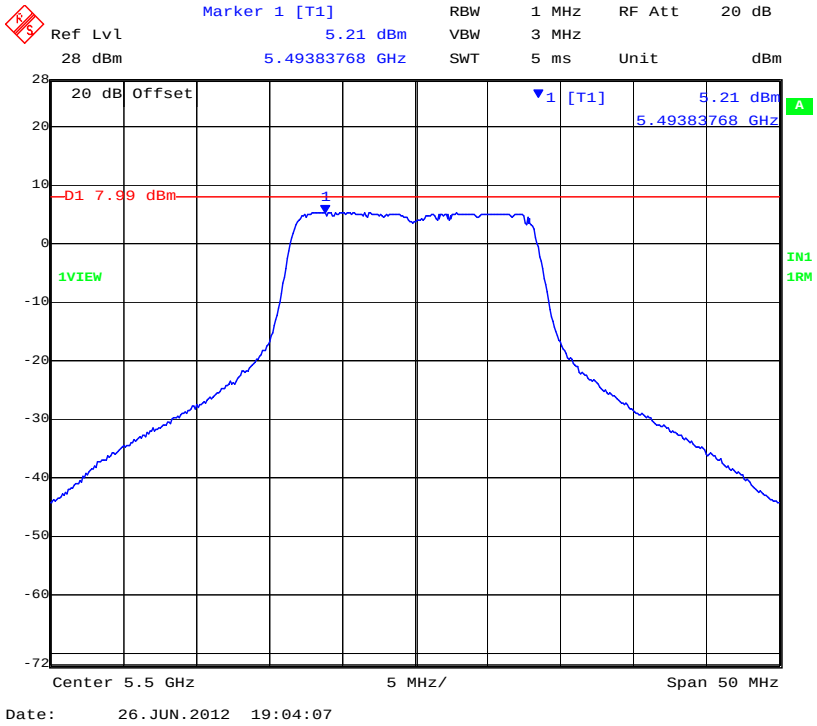
TABLE OF RESULTS – **802.11a Legacy (5470 – 5725 MHz)**

Test Conditions:	15.407 (a)		**Rel. Humidity (%):**	35 to 42	
Variant:	802.11a		**Ambient Temp. (ºC):**	19 to 22	
TPC:	HIGH		**Pressure (mBars):**	998 to 1003	
Modulation:	ON		**Duty Cycle (%):**	100	
Beam Forming Gain (Y):	N/A	dB	**Antenna Gain:**	6 dBi	
Applied Voltage:	12.0	Vdc	**Antenna Ports (N):**	2	
Notes 1:					
Notes 2:					

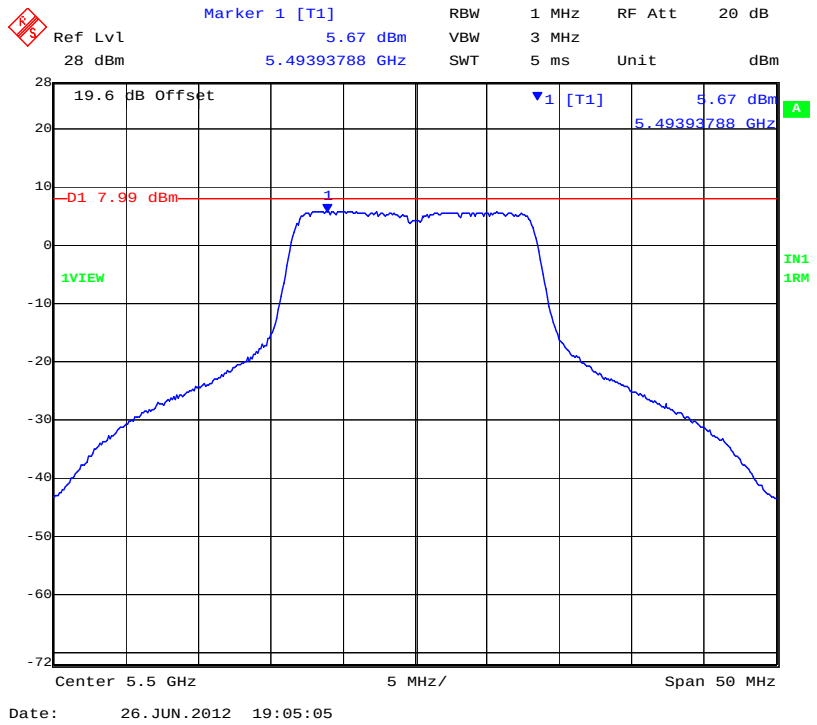
Test Frequency	**Measured Peak Power**				**Correction factor**	**Peak Power Spectral Density**	**Limit**	**Margin**
	RF Port (dBm)							
MHz	**a**	**b**	**c**	**d**	**10Log(N)**	**dBm**	**dBm**	**dB**
5500	5.21	5.67	--	--	3.01	8.68	11.00	-2.32
5580	4.92	5.81	--	--	3.01	8.82	11.00	-2.18
5700	4.46	4.21	--	--	3.01	7.47	11.00	-3.53

Measurement uncertainty:	±1.33 dB

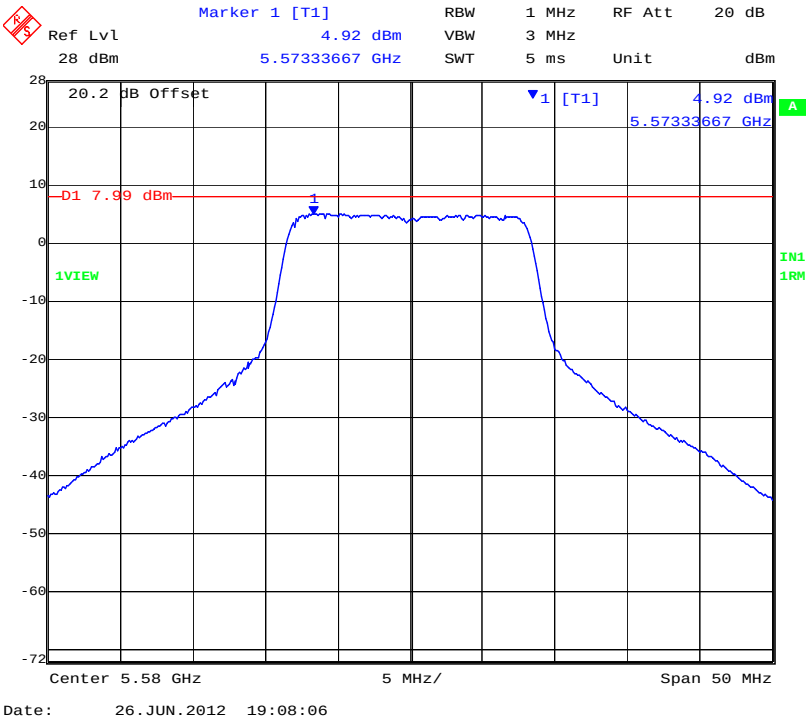
CHAIN A 5,500 MHz 802.11a Legacy Peak Power Spectral Density



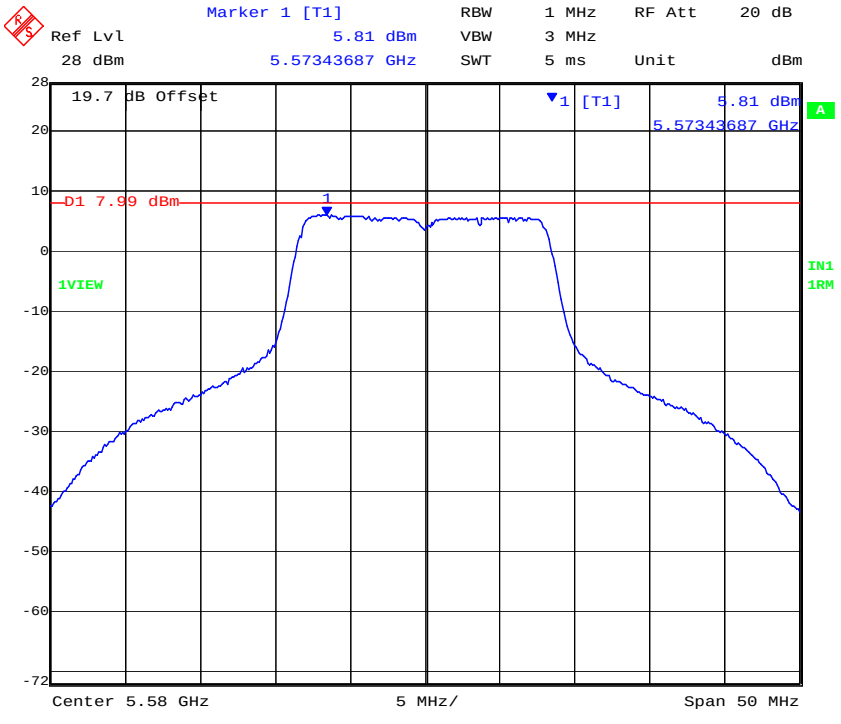
CHAIN B 5,500 MHz 802.11a Legacy Peak Power Spectral Density



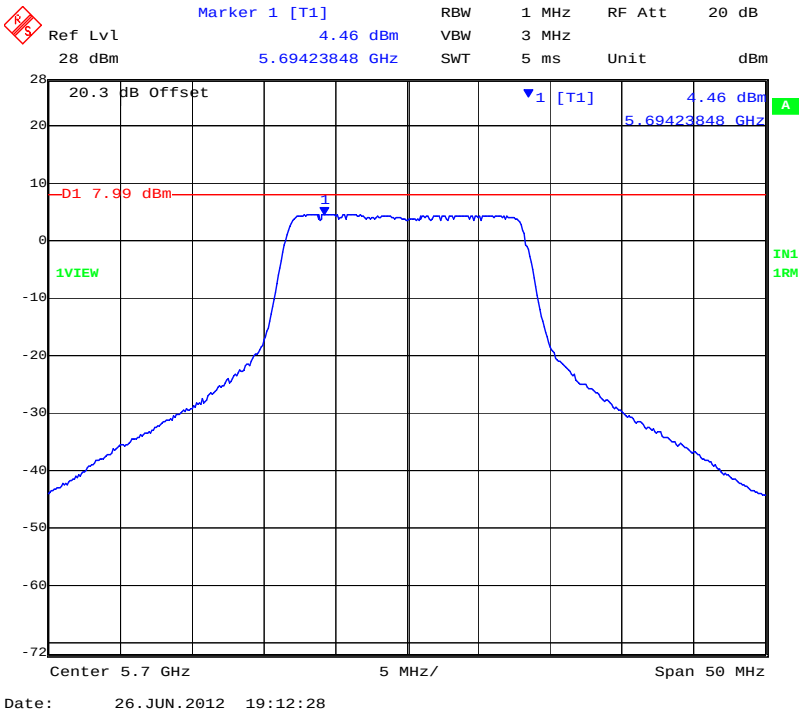
CHAIN A 5,580 MHz 802.11a Legacy Peak Power Spectral Density



CHAIN B 5,580 MHz 802.11a Legacy Peak Power Spectral Density



Chain A 5,700 MHz 802.11a Legacy Peak Power Spectral Density



Chain B 5,700 MHz 802.11a Legacy Peak Power Spectral Density

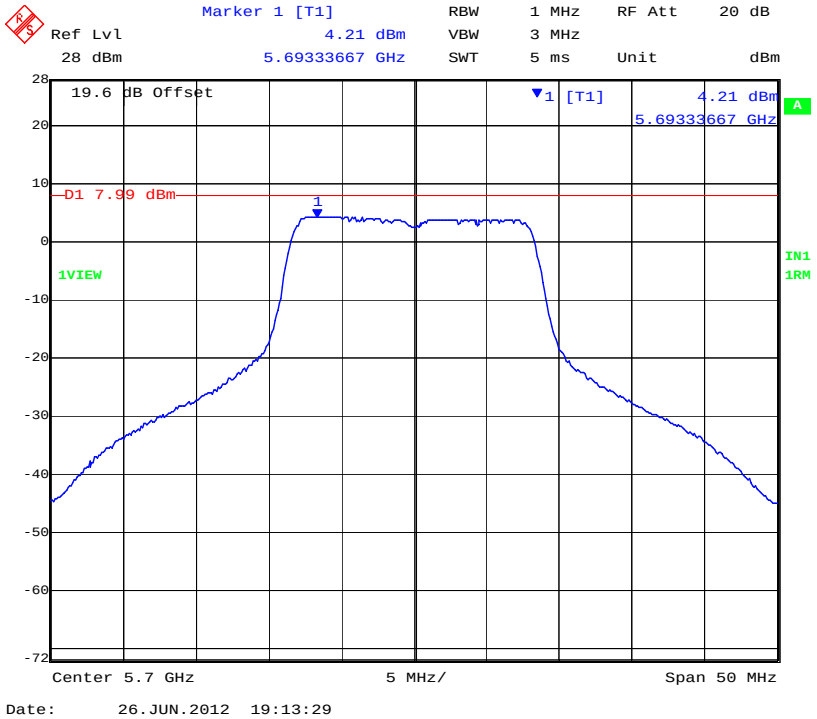


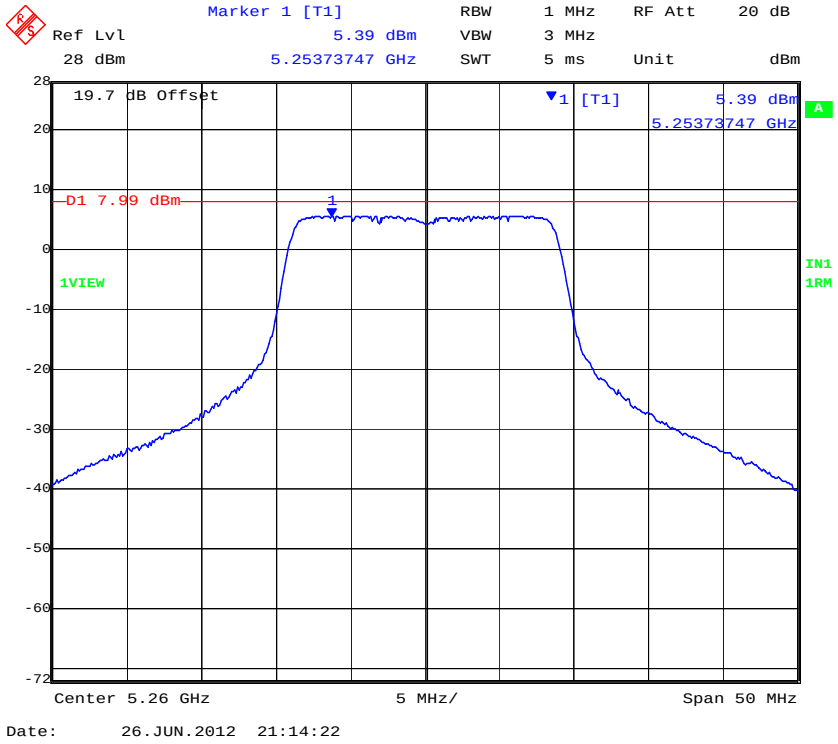
TABLE OF RESULTS – **802. 11n HT-20 (5250 – 5350 MHz)**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-20	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	6 dBi
Applied Voltage:	12.0 Vdc	**Antenna Ports (N):**	2
Notes 1:			
Notes 2:			

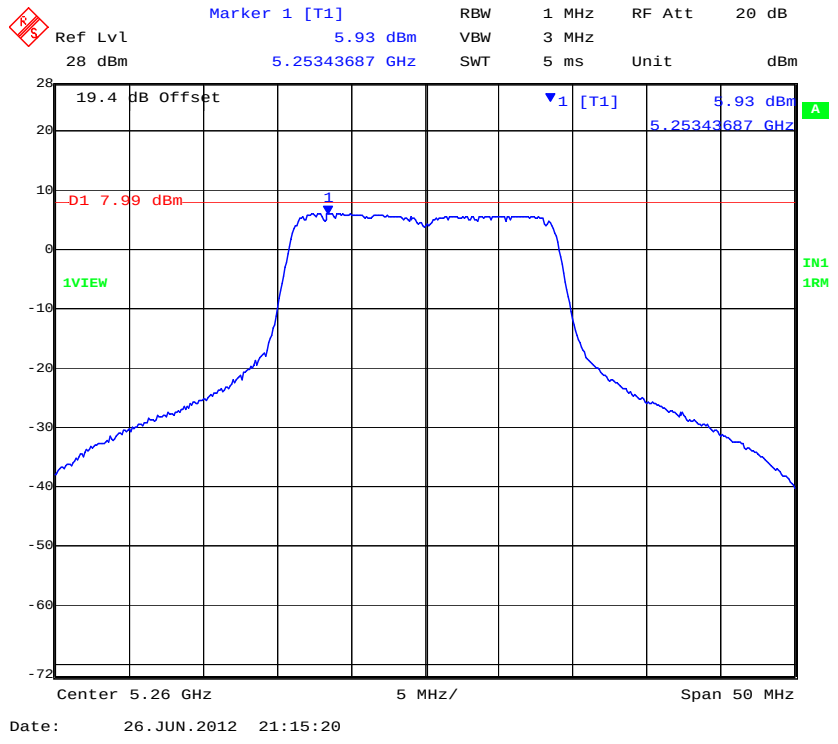
Test Frequency	Measured Peak Power RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**10Log(N)**	**dBm**	**dBm**	**dB**
5260	5.39	5.93	--	--	3.01	8.94	11.00	-2.06
5300	5.00	5.33	--	--	3.01	8.34	11.00	-2.66
5320	4.82	5.24	--	--	3.01	8.25	11.00	-2.75

Measurement uncertainty:	±1.33 dB

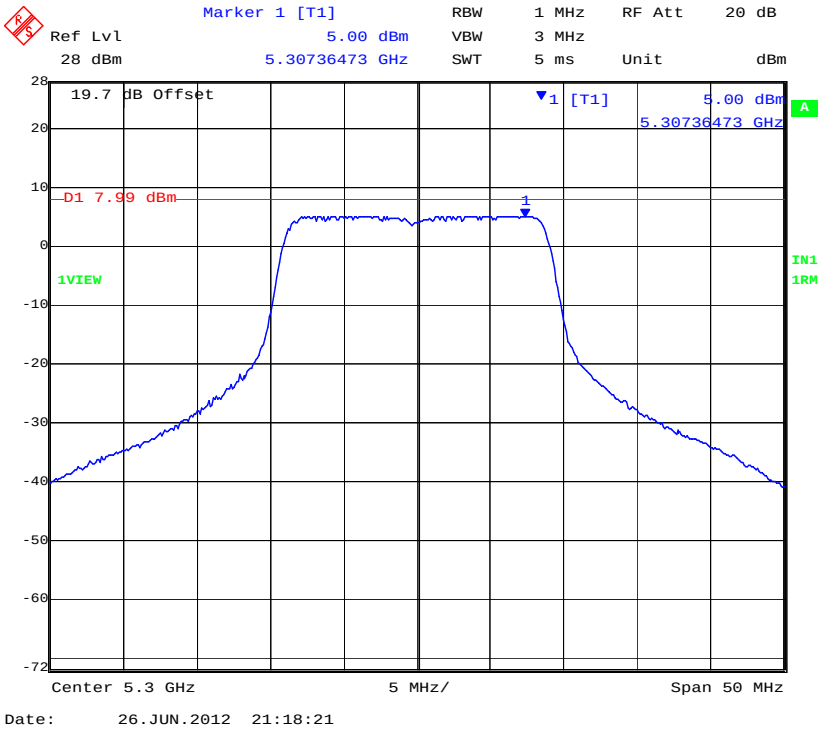
CHAIN A 5,260 MHz 802. 11n HT-20 Peak Power Spectral Density



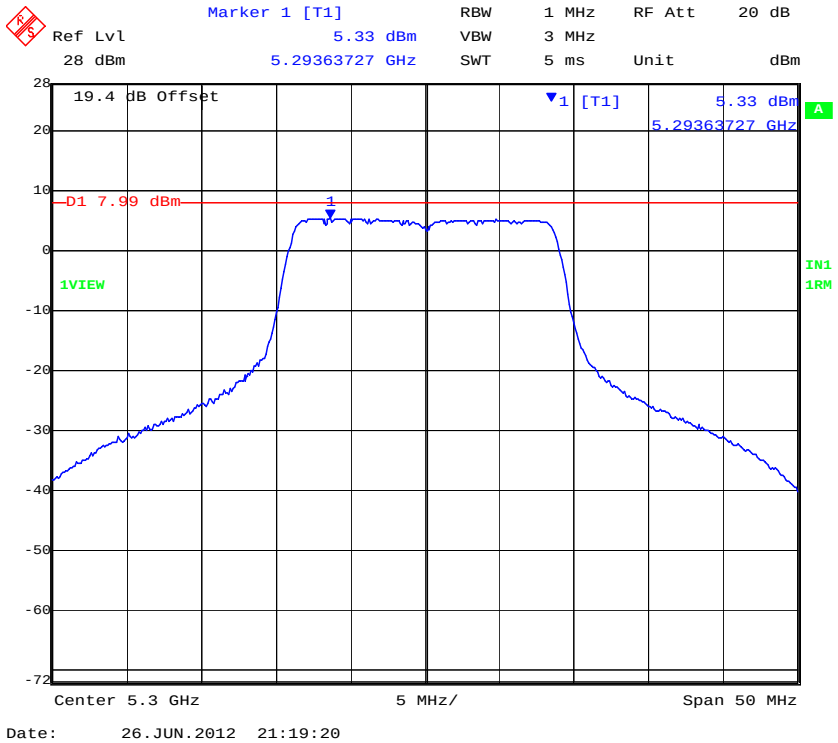
CHAIN B 5,260 MHz 802. 11n HT-20 Peak Power Spectral Density



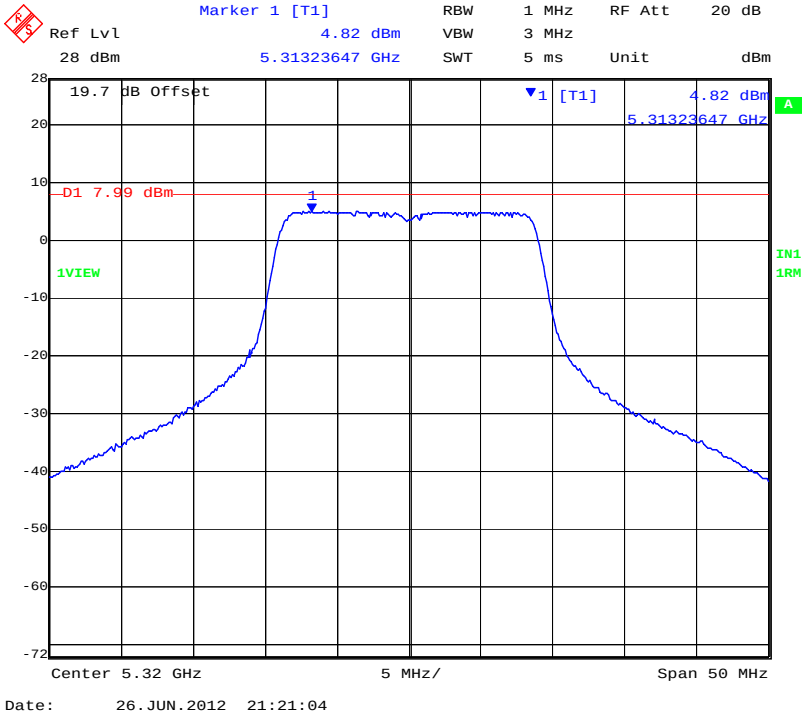
CHAIN A 5,300 MHz 802. 11n HT-20 Peak Power Spectral Density



CHAIN B 5,300 MHz 802. 11n HT-20 Peak Power Spectral Density



Chain A 5,320 MHz 802. 11n HT-20 Peak Power Spectral Density



Chain B 5,320 MHz 802. 11n HT-20 Peak Power Spectral Density

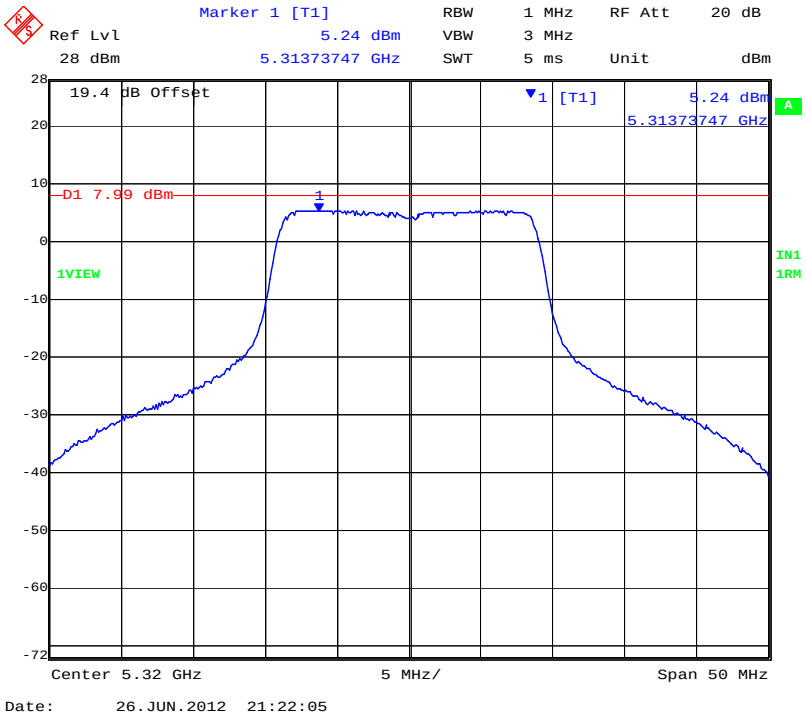


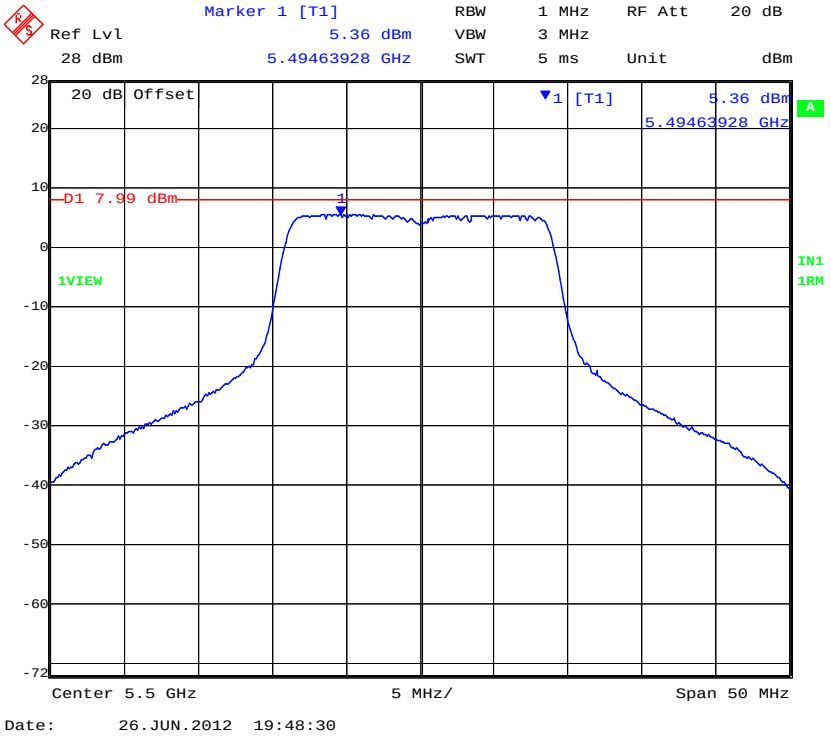
TABLE OF RESULTS – **802. 11n HT-20 (5470 – 5725 MHz)**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35	to	42
Variant:	802.11n HT-20	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (%):**	100		
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	6 dBi		
Applied Voltage:	12.0 Vdc	**Antenna Ports (N):**	2		
Notes 1:					
Notes 2:					

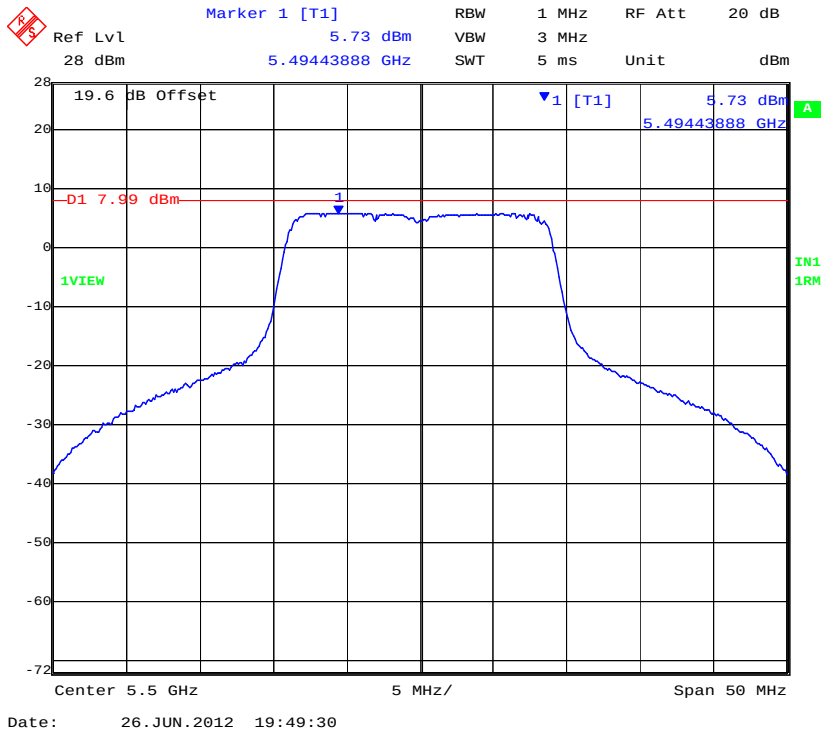
Test Frequency	**Measured Peak Power RF Port (dBm)**				**Correction factor**	**Peak Power Spectral Density**	**Limit**	**Margin**
MHz	**a**	**b**	**c**	**d**	**10Log(N)**	**dBm**	**dBm**	**dB**
5500	5.36	5.73	--	--	3.01	8.74	11.00	-2.26
5580	5.18	6.09	--	--	3.01	9.10	11.00	-1.90
5700	4.56	4.73	--	--	3.01	7.74	11.00	-3.26

Measurement uncertainty:	±1.33 dB

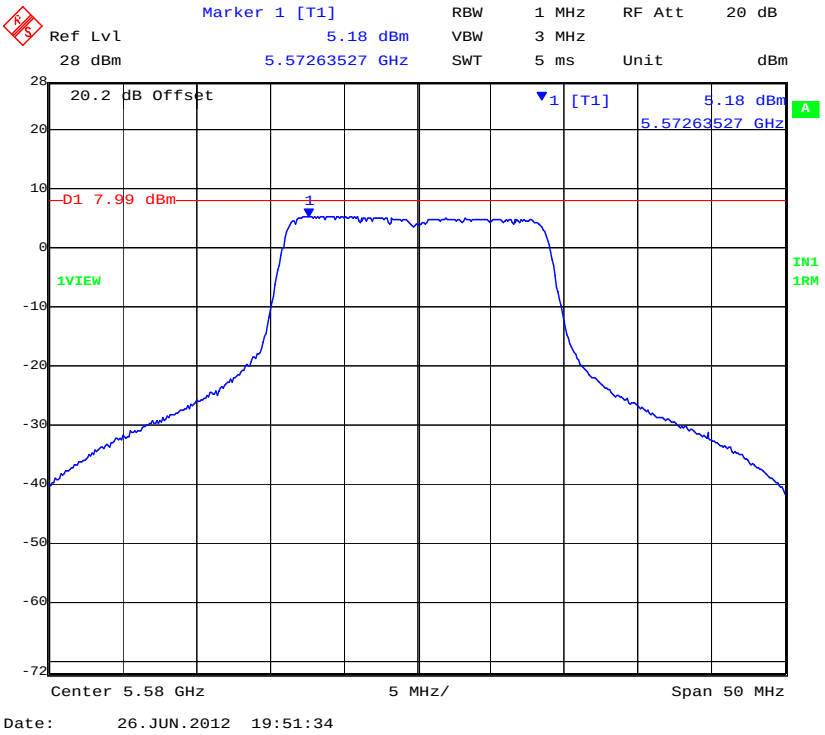
CHAIN A 5,500 MHz 802. 11n HT-20 Peak Power Spectral Density



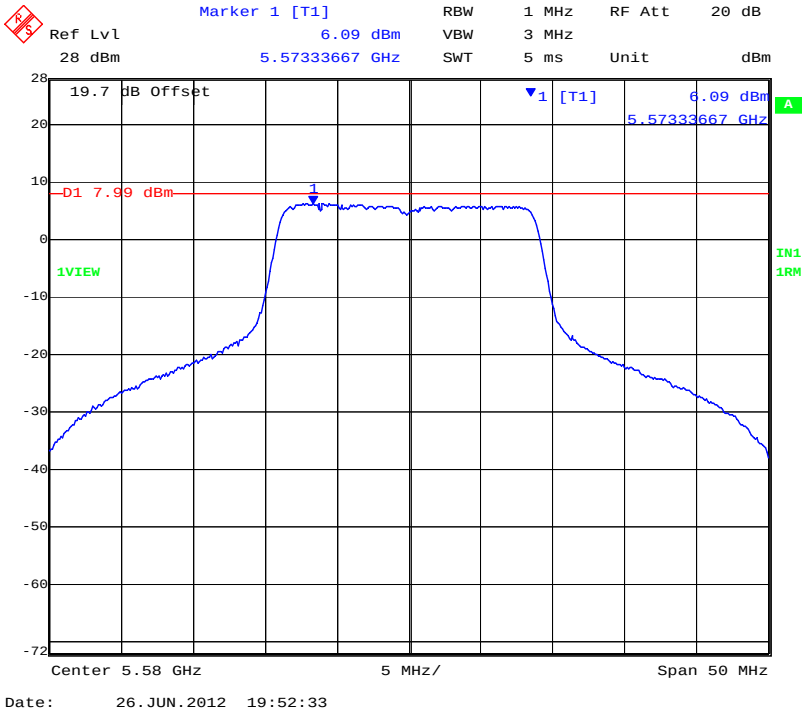
CHAIN B 5,500 MHz 802. 11n HT-20 Peak Power Spectral Density



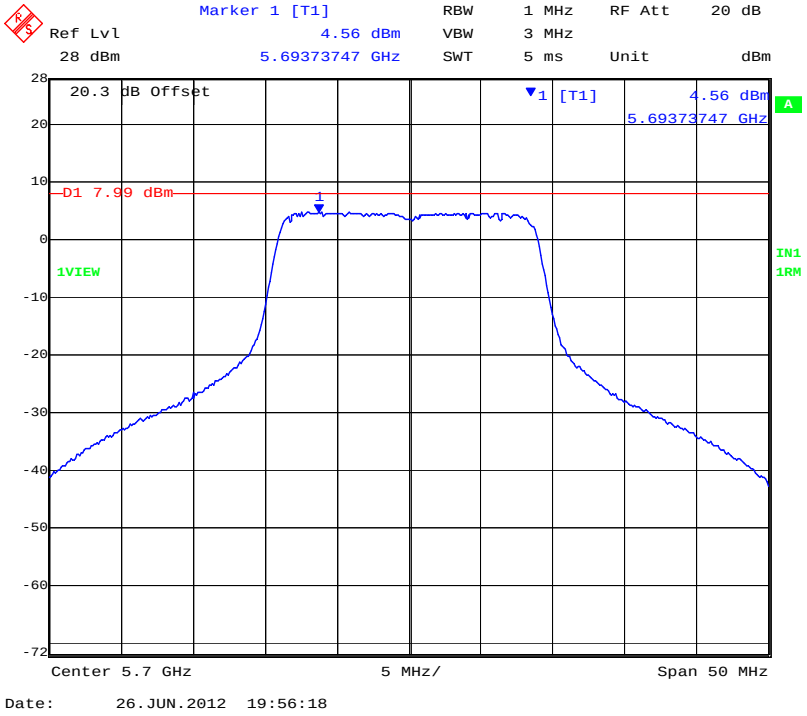
CHAIN A 5,580 MHz 802. 11n HT-20 Peak Power Spectral Density



CHAIN B 5,580 MHz 802. 11n HT-20 Peak Power Spectral Density



Chain A 5,700 MHz 802.11n HT-20 Peak Power Spectral Density



Chain B 5,700 MHz 802. 11n HT-20 Peak Power Spectral Density

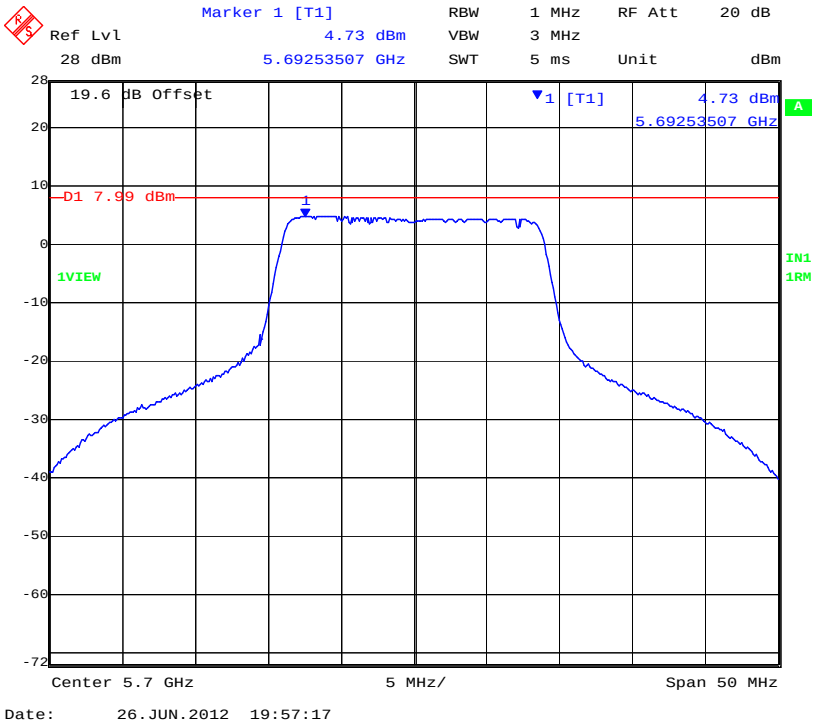


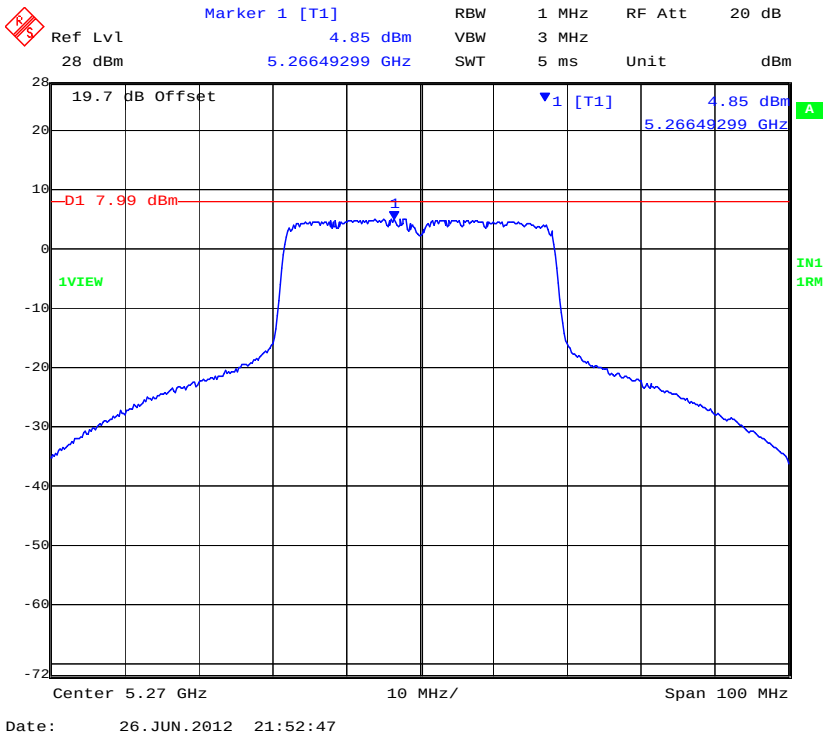
TABLE OF RESULTS – **802. 11n HT-40 (5250 – 5350 MHz)**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-40	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	6 dBi
Applied Voltage:	12.0 Vdc	**Antenna Ports (N):**	2
Notes 1:			
Notes 2:			

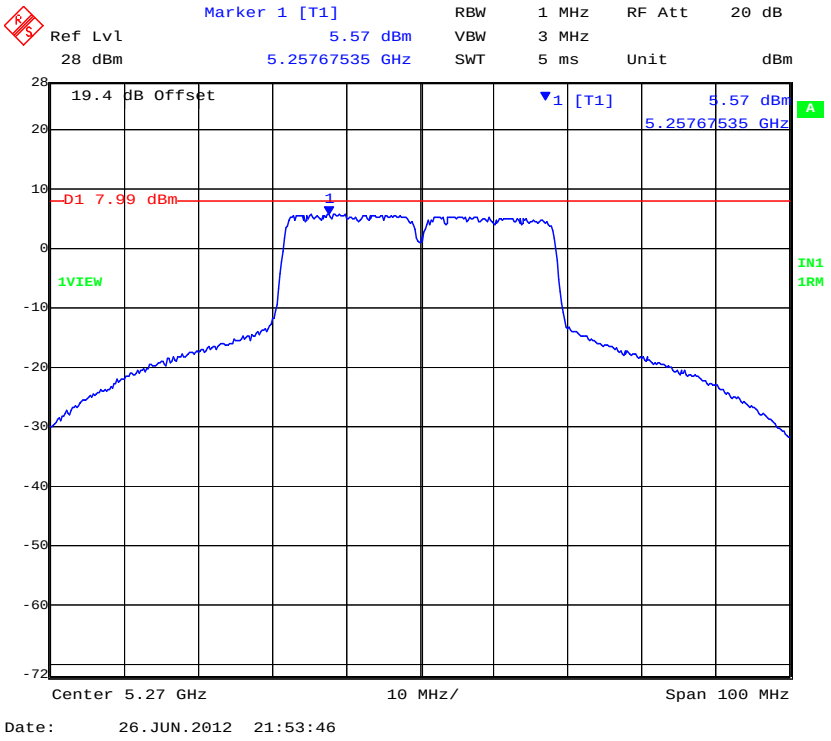
Test Frequency	Measured Peak Power RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**10Log(N)**	**dBm**	**dBm**	**dB**
5270	4.86	5.57	--	--	3.01	8.58	11.00	-2.42
5310	4.41	4.91	--	--	3.01	7.92	11.00	-3.08

Measurement uncertainty:	±1.33 dB

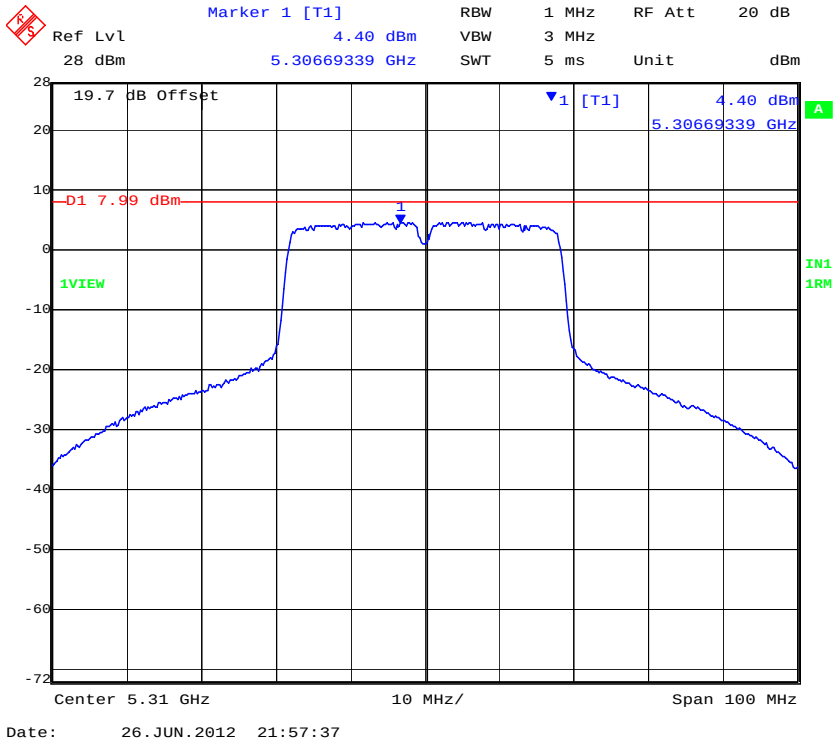
CHAIN A 5,270 MHz 802. 11n HT-40 Peak Power Spectral Density



CHAIN B 5,270 MHz 802. 11n HT-40 Peak Power Spectral Density



Chain A 5,310 MHz 802. 11n HT-40 Peak Power Spectral Density



Chain B 5,310 MHz 802. 11n HT-40 Peak Power Spectral Density

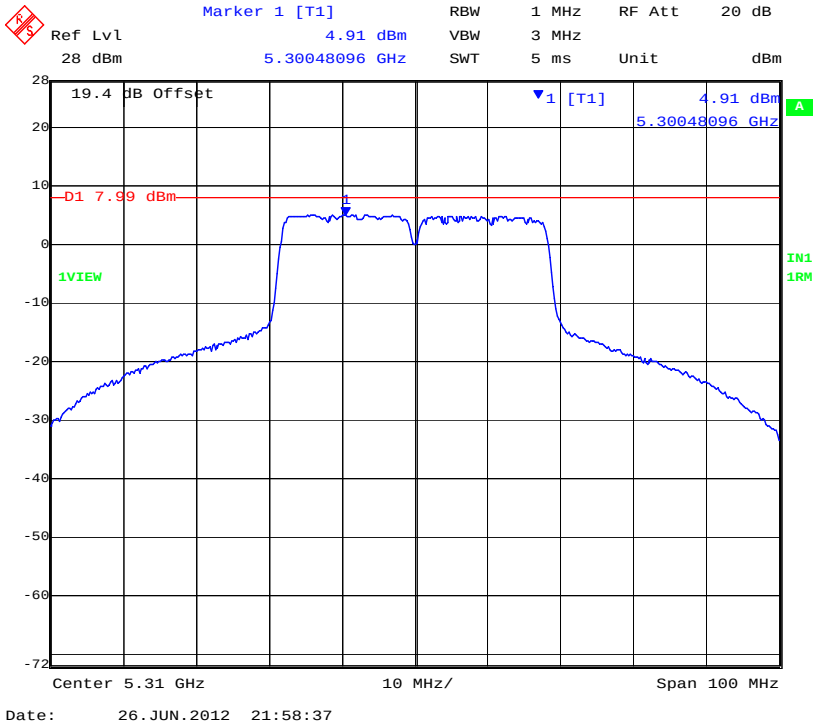


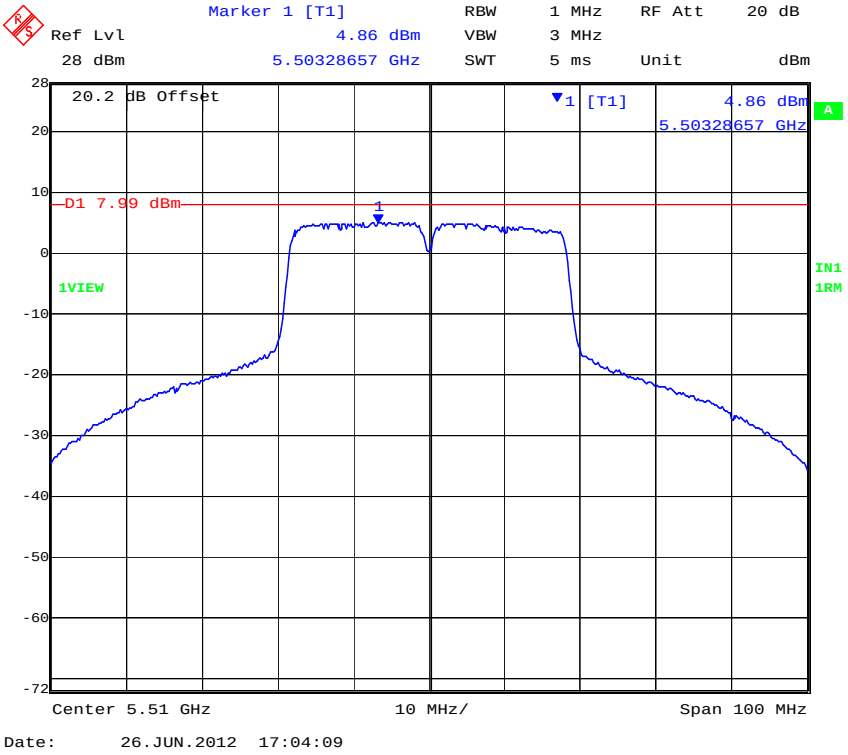
TABLE OF RESULTS – **802. 11n HT-40 (5470 – 5725 MHz)**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-40	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	6 dBi
Applied Voltage:	12.0 Vdc	**Antenna Ports (N):**	2
Notes 1:			
Notes 2:			

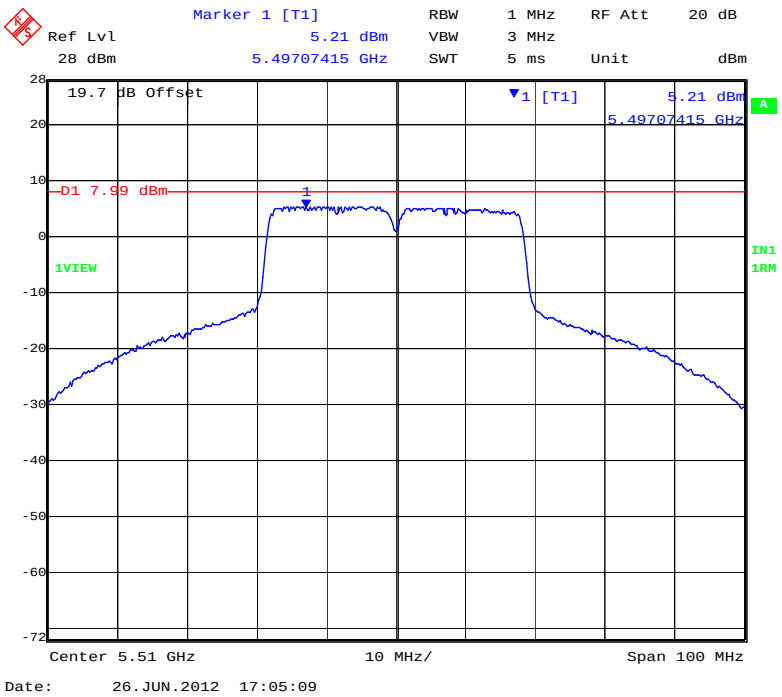
Test Frequency	Measured Peak Power RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**10Log(N)**	**dBm**	**dBm**	**dB**
5510	4.86	5.21	--	--	3.01	8.22	11.00	-2.78
5550	4.87	5.64	--	--	3.01	8.65	11.00	-2.35
5670	4.20	4.89	--	--	3.01	7.90	11.00	-3.10

Measurement uncertainty:	±1.33 dB

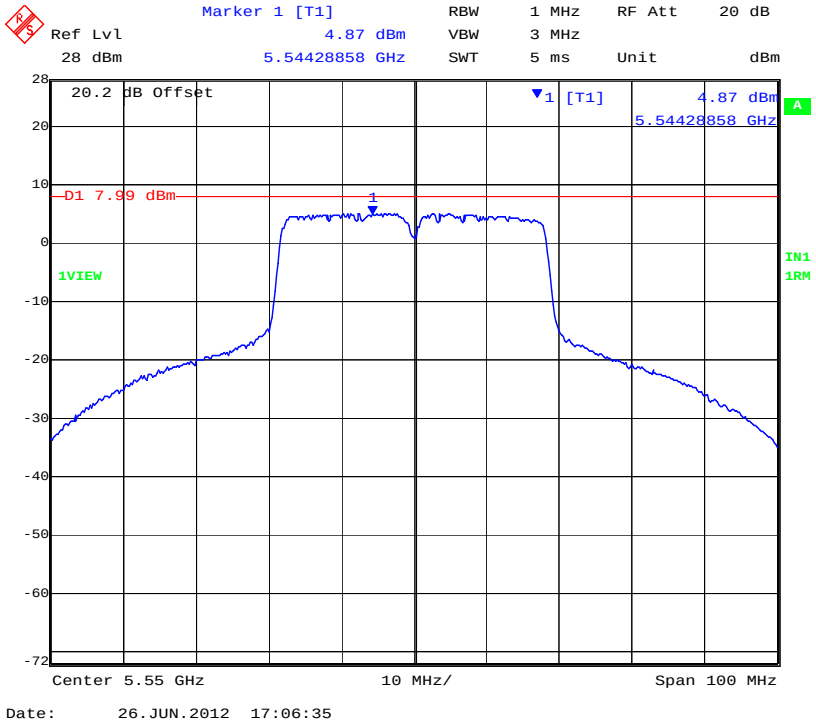
CHAIN A 5,510 MHz 802. 11n HT-40 Peak Power Spectral Density



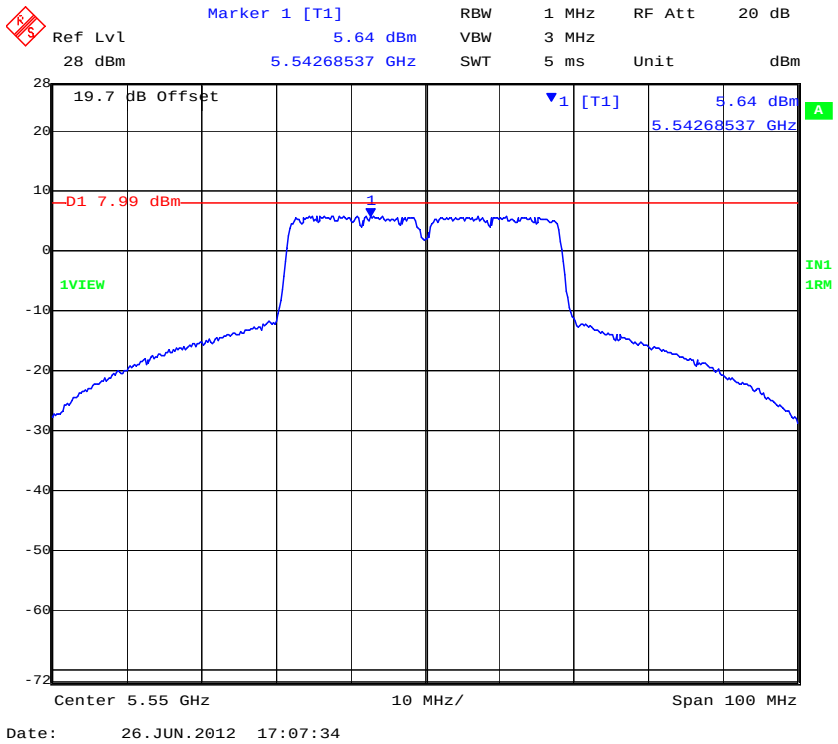
CHAIN B 5,510 MHz 802. 11n HT-40 Peak Power Spectral Density



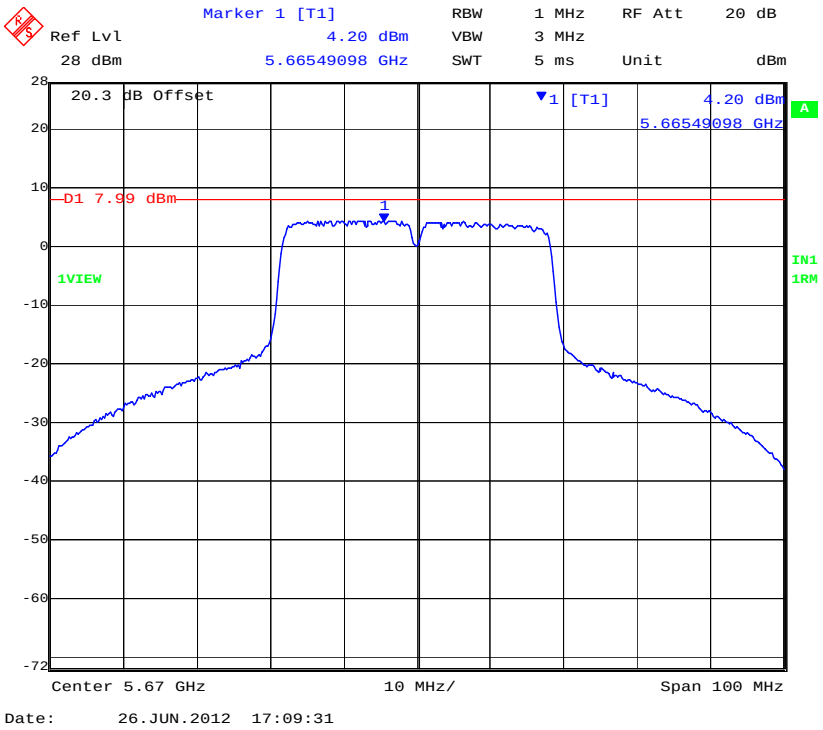
CHAIN A 5,550 MHz 802. 11n HT-40 Peak Power Spectral Density



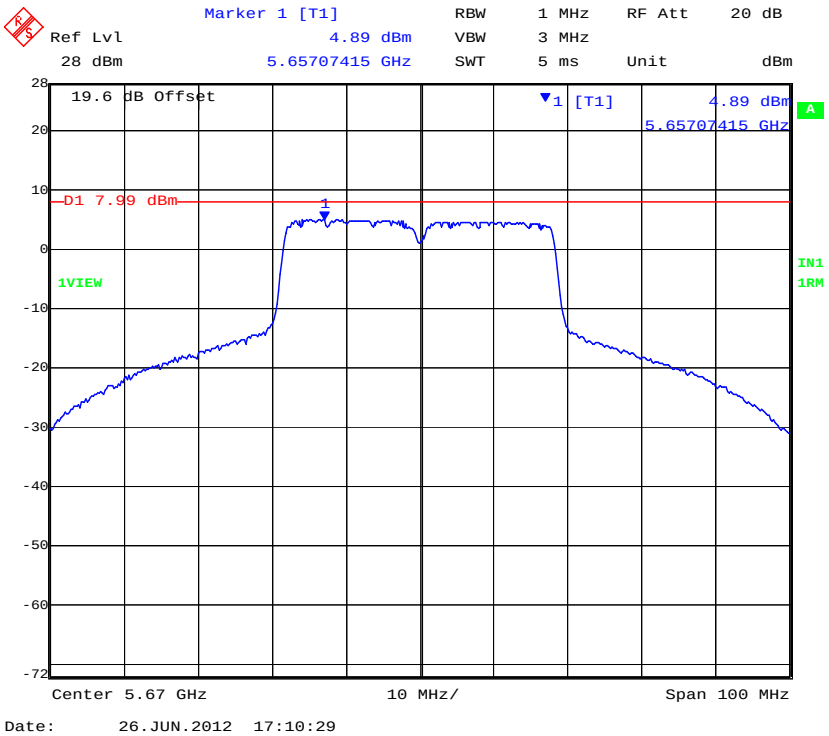
CHAIN B 5,550 MHz 802. 11n HT-40 Peak Power Spectral Density



Chain A 5,670 MHz 802.11n HT-40 Peak Power Spectral Density



Chain B 5,670 MHz 802. 11n HT-40 Peak Power Spectral Density



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

Laboratory Measurement Uncertainty for Spectral Density

Measurement uncertainty	±1.33 dB

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-01 'Measuring RF Output Power'	0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117

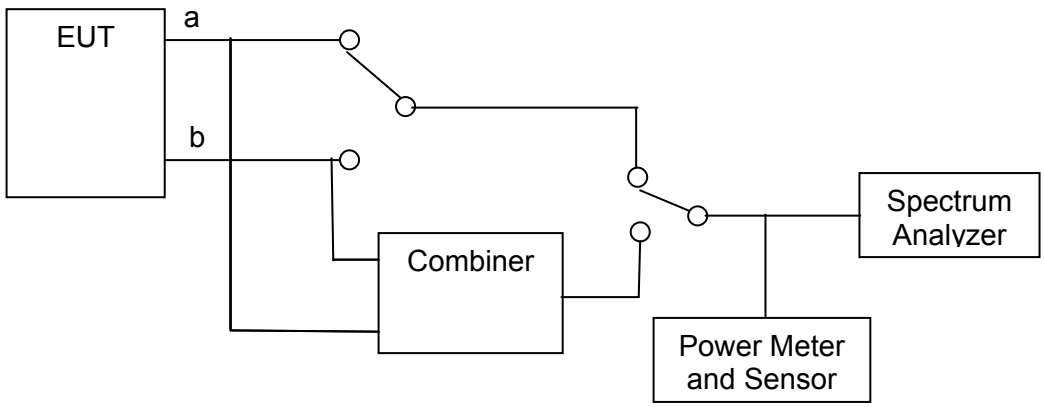
5.1.4. Peak Excursion Ratio

FCC, Part 15 Subpart C §15.407(a)(6)

Test Procedure

Normative Reference (xi) Section 2.1 Measurement Procedure DA 02-2138 "Measurement Procedure Updated for Peak Transmit Power in the UNII Bands" was implemented to determine the Peak Excursion Ratio. This is a conducted measurement using a spectrum analyzer. The Peak Excursion Ratio is the difference in amplitude (dB) between the two traces.

Test Measurement Set up



Measurement set up for Peak Excursion Ratio

Measurement Results for Peak Excursion Ratio

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

Radio Parameters
Duty Cycle: 100%
Output: Modulated Carrier
Power: Maximum Default Power

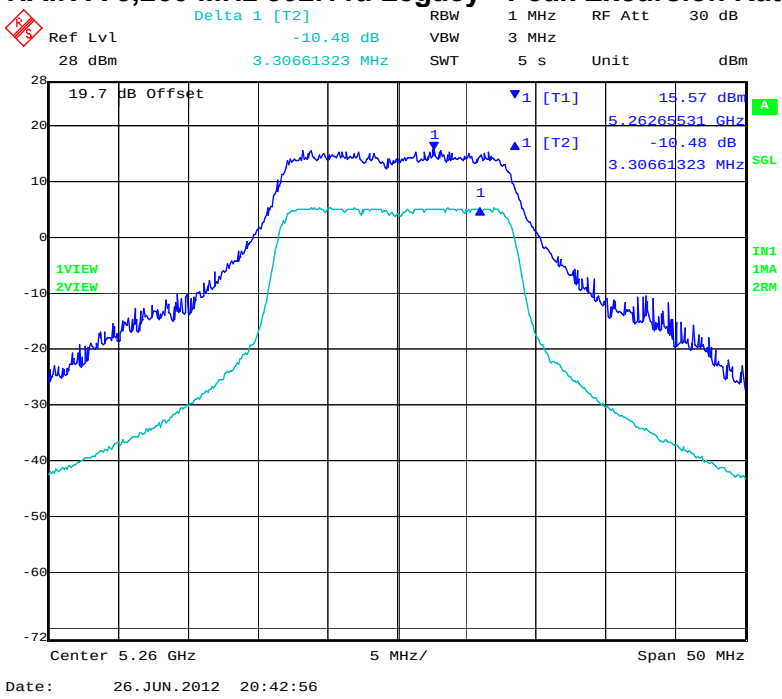
TABLE OF RESULTS – **802.11a Legacy (5250 – 5350 MHz)**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11a	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	6 dBi
Applied Voltage:	12.0 Vdc		
Notes 1:			
Notes 2:			

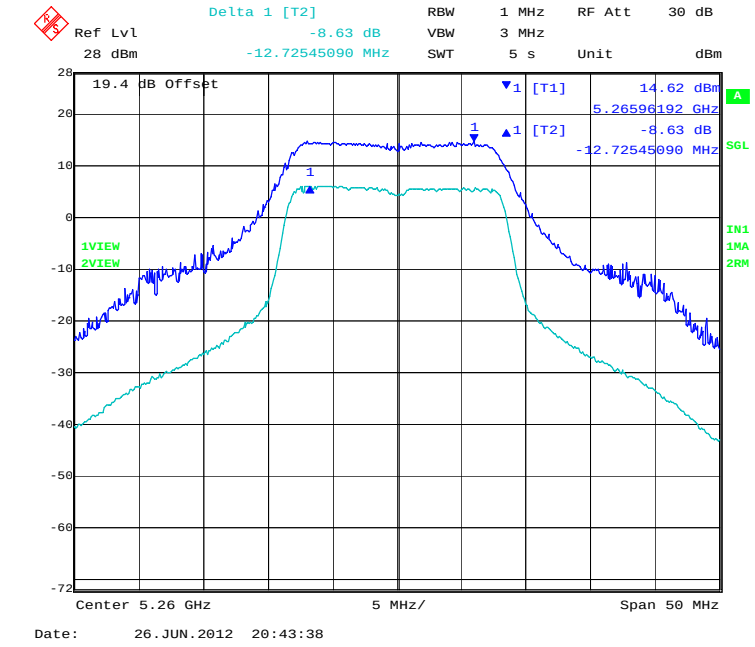
Test Frequency	Trace Δ Marker				Limit	Margin
	Port A	Port B	Port C	Port D		
MHz	dB	dB	dB	dB	dB	dB
5260	-10.48	-8.63	--	--	-13.00	-2.52
5300	-10.34	-9.04	--	--		-2.67
5320	-10.55	-9.40	--	--		-2.45

Measurement uncertainty:	±1.33 dB

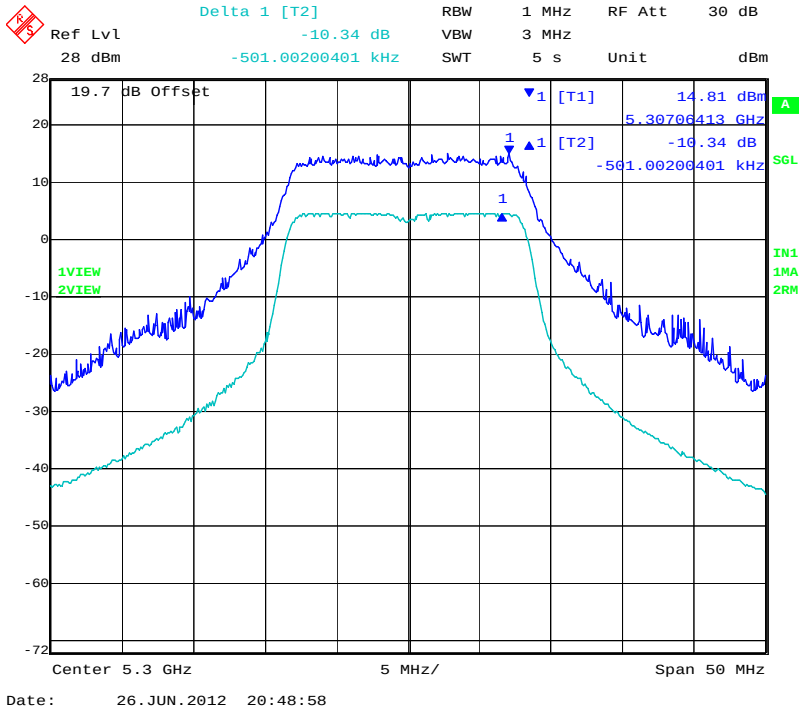
CHAIN A 5,260 MHz 802.11a Legacy - Peak Excursion Ratio



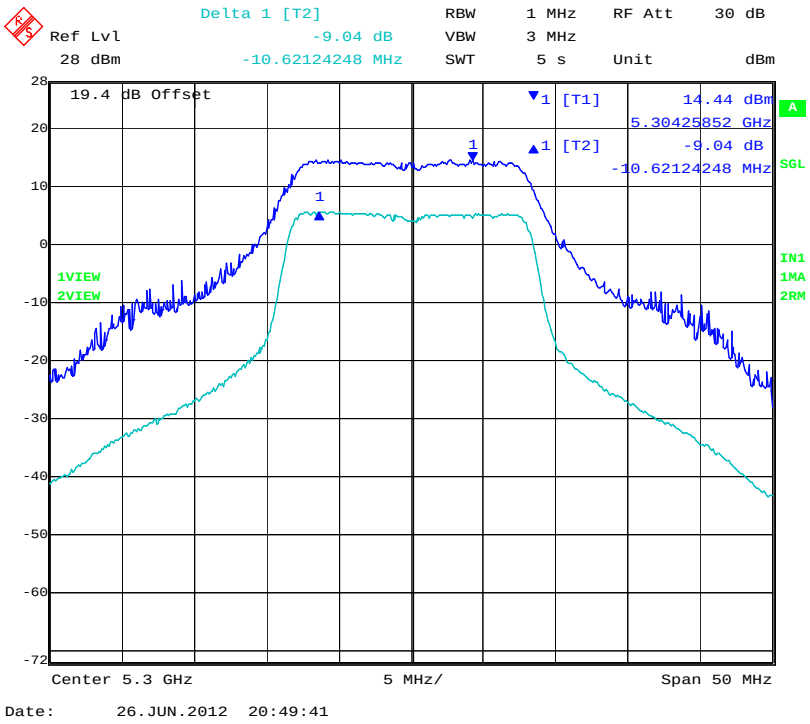
CHAIN B 5,260 MHz 802.11a Legacy - Peak Excursion Ratio



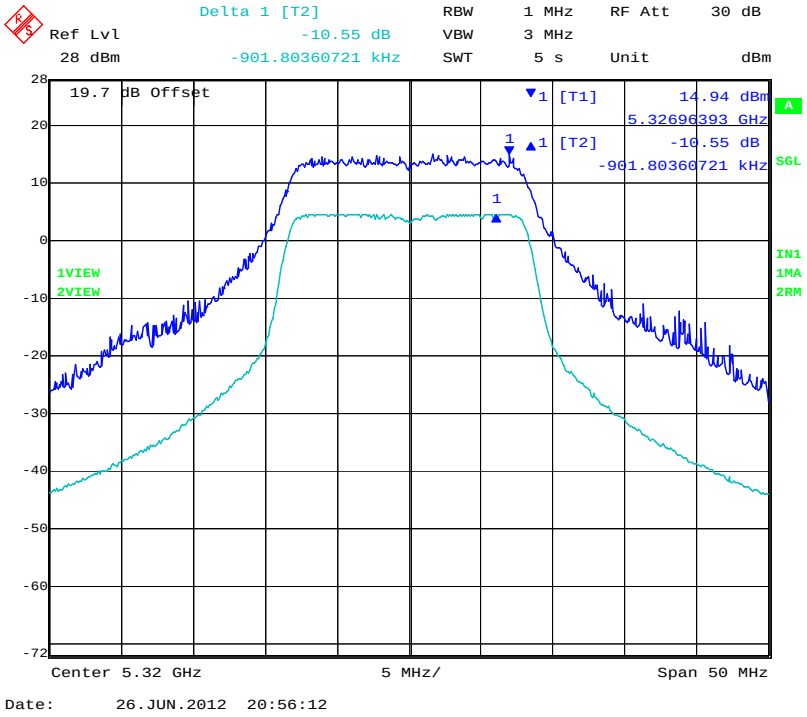
CHAIN A 5,300 MHz 802.11a Legacy - Peak Excursion Ratio



CHAIN B 5,300 MHz 802.11a Legacy - Peak Excursion Ratio



CHAIN A 5,320 MHz 802.11a Legacy - Peak Excursion Ratio



CHAIN B 5,320 MHz 802.11a Legacy - Peak Excursion Ratio

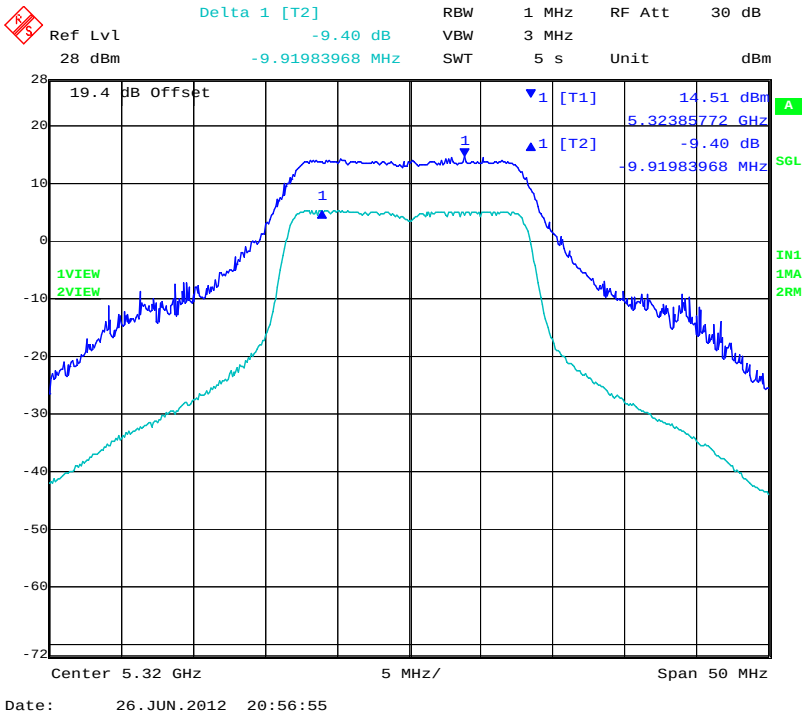


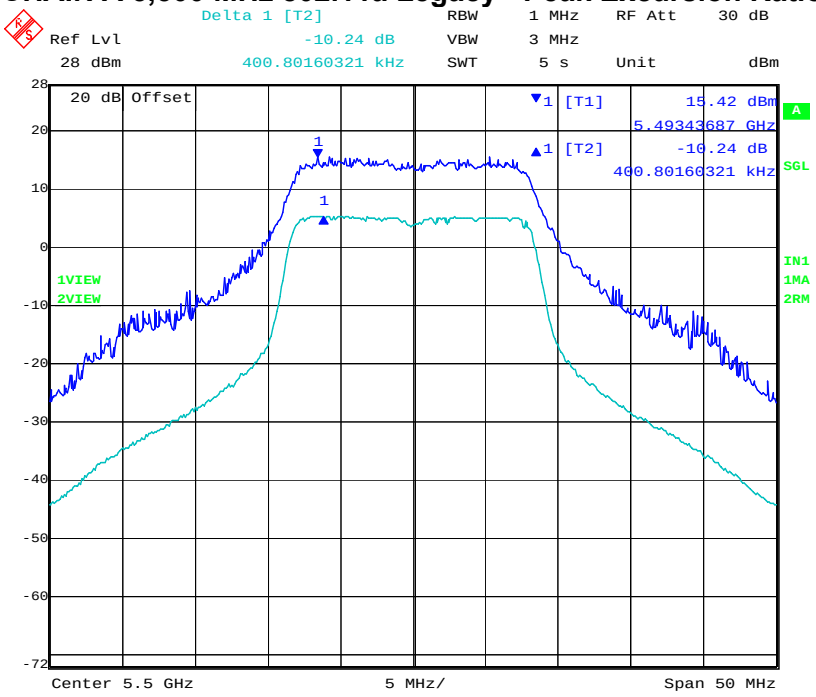
TABLE OF RESULTS – **802.11a Legacy (5470 – 5725 MHz)**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11a	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	6 dBi
Applied Voltage:	12.0 Vdc		
Notes 1:			
Notes 2:			

Test Frequency	Trace Δ Marker				Limit	Margin
	Port A	Port B	Port C	Port D		
MHz	dB	dB	dB	dB	dB	dB
5500	-10.24	-9.07	--	--	-13.00	-2.76
5580	-10.26	-9.06	--	--		-2.74
5700	-10.70	-9.18	--	--		-2.30

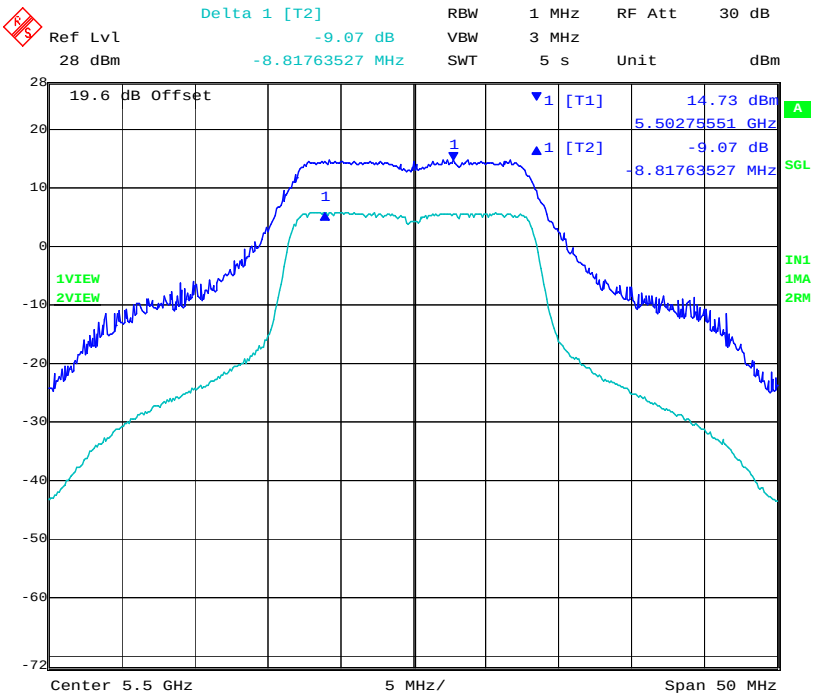
Measurement uncertainty:	±1.33 dB

CHAIN A 5,500 MHz 802.11a Legacy - Peak Excursion Ratio



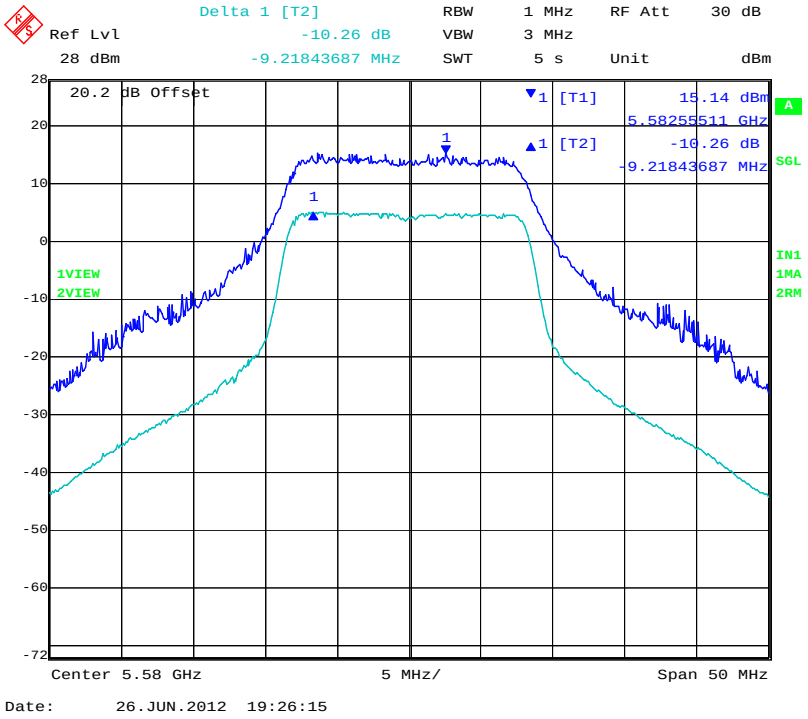
Date: 26.JUN.2012 19:19:32

CHAIN B 5,500 MHz 802.11a Legacy - Peak Excursion Ratio



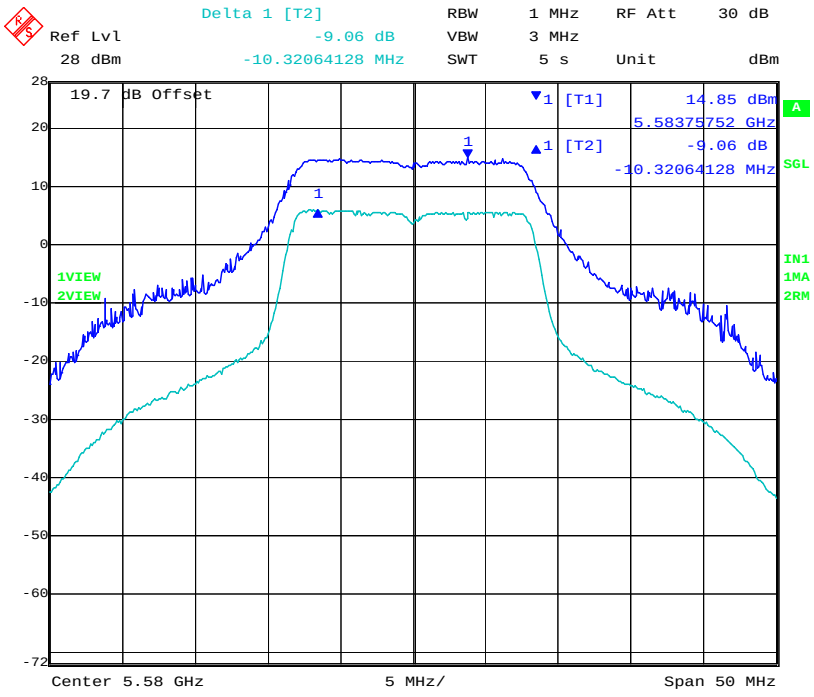
Date: 26.JUN.2012 19:20:15

CHAIN A 5,580 MHz 802.11a Legacy - Peak Excursion Ratio



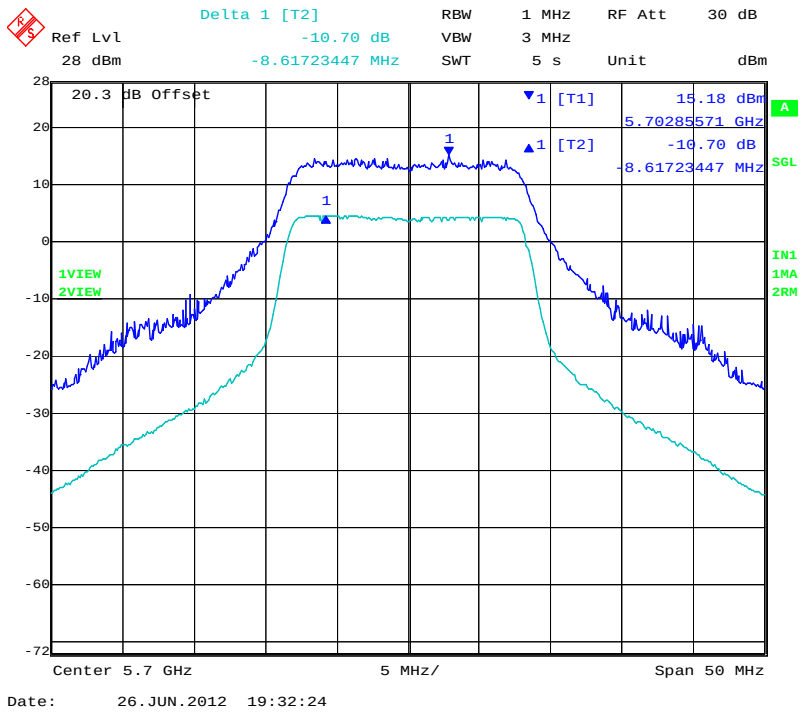
Date: 26.JUN.2012 19:26:15

CHAIN B 5,580 MHz 802.11a Legacy - Peak Excursion Ratio



Date: 26.JUN.2012 19:26:58

CHAIN A 5,700 MHz 802.11a Legacy - Peak Excursion Ratio



CHAIN B 5,700 MHz 802.11a Legacy - Peak Excursion Ratio

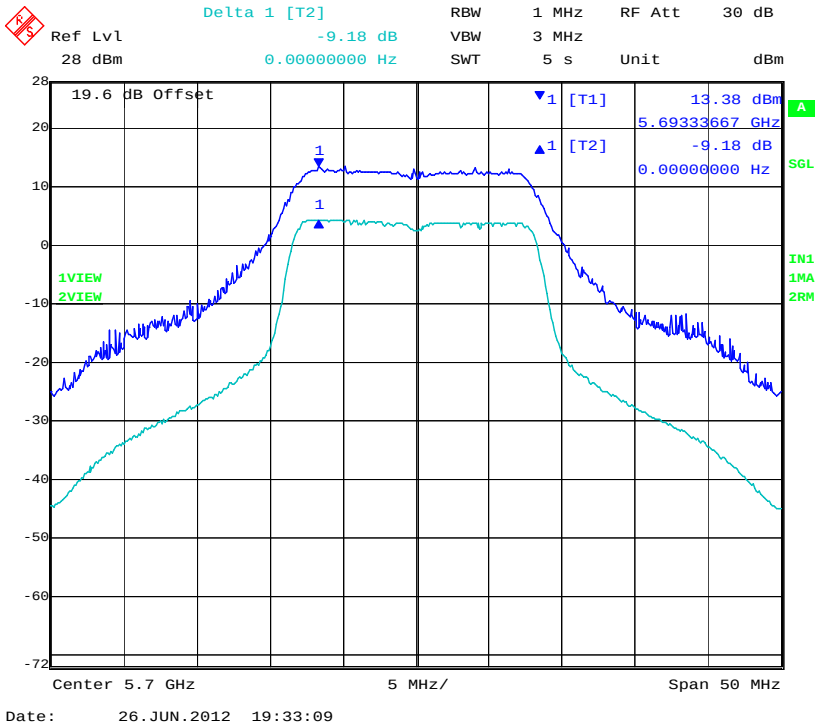


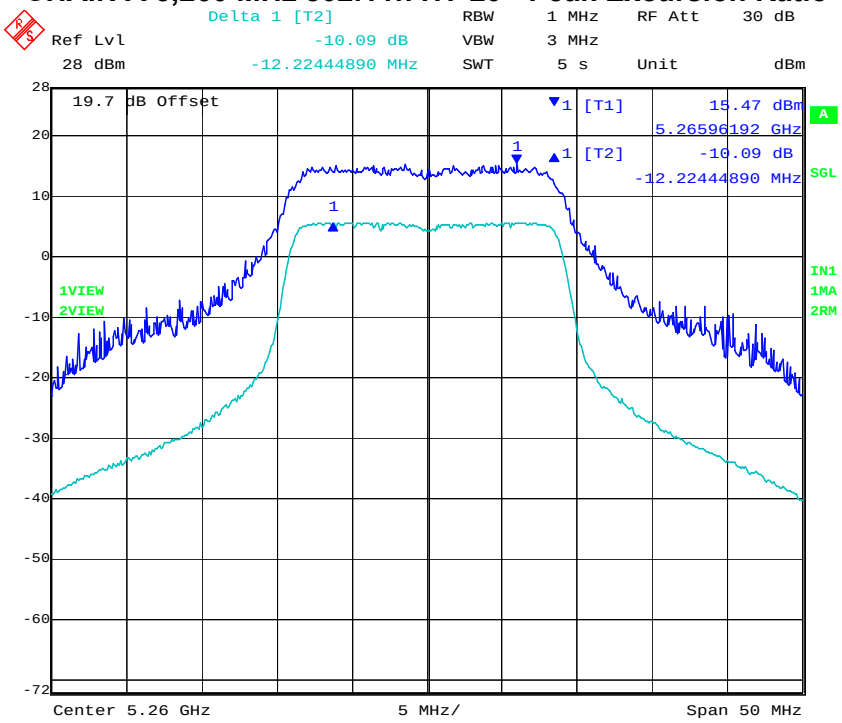
TABLE OF RESULTS – **802. 11n HT-20 (5250 – 5350 MHz)**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-20	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	6 dBi
Applied Voltage:	12.0 Vdc		
Notes 1:			
Notes 2:			

Test Frequency	Trace Δ Marker				Limit	Margin
	Port A	Port B	Port C	Port D		
MHz	dB	dB	dB	dB	dB	dB
5260	-10.09	-8.88	--	--	-13.00	-2.91
5300	-10.36	-8.95	--	--		-2.64
5320	-9.71	-9.61	--	--		-3.29

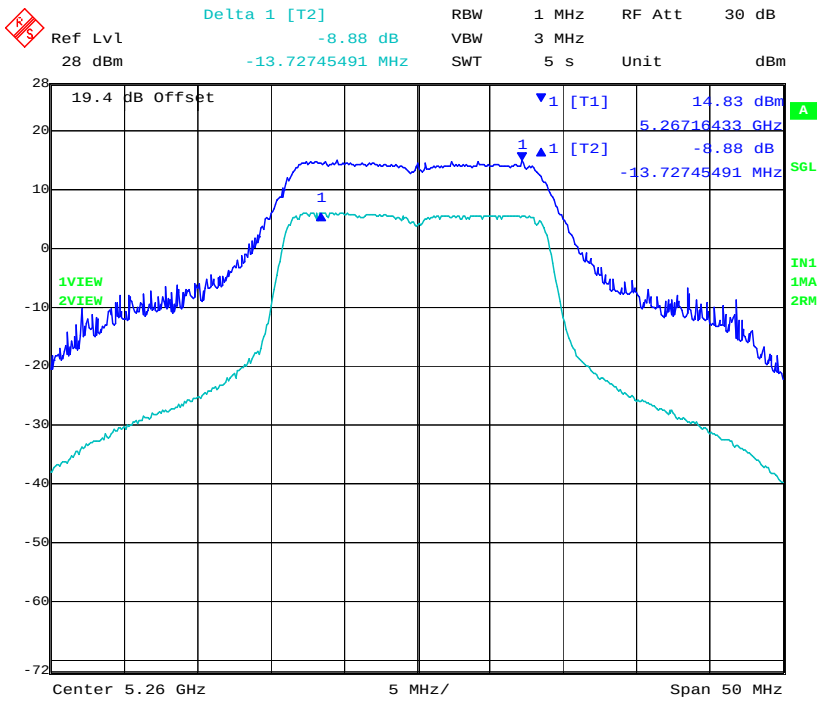
Measurement uncertainty:	±1.33 dB

CHAIN A 5,260 MHz 802.11n HT-20 - Peak Excursion Ratio



Date: 26.JUN.2012 21:29:56

CHAIN B 5,260 MHz 802.11n HT-20 - Peak Excursion Ratio



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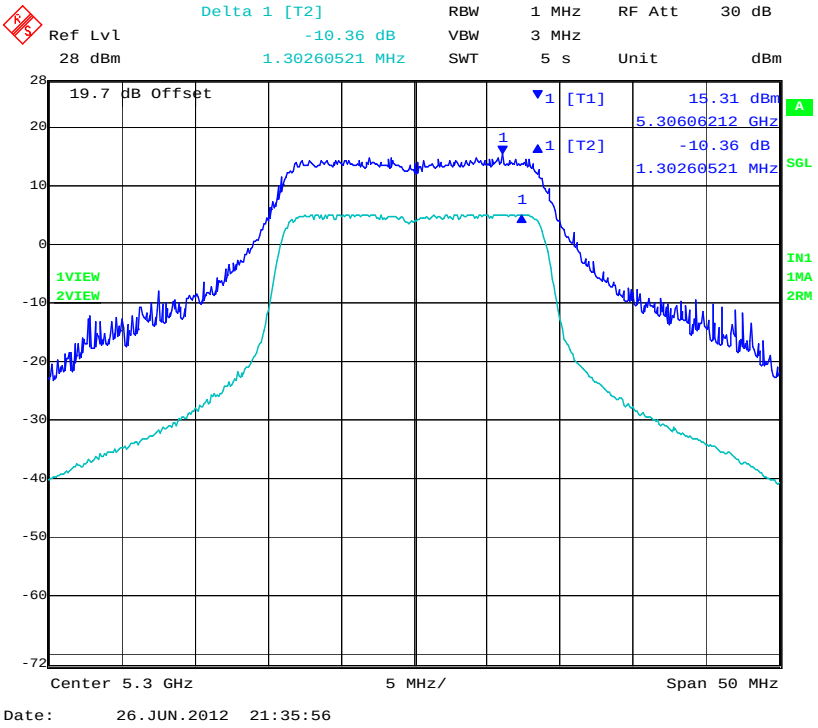
CHAIN A 5,300 MHz 802.11n HT-20 - Peak Excursion Ratio



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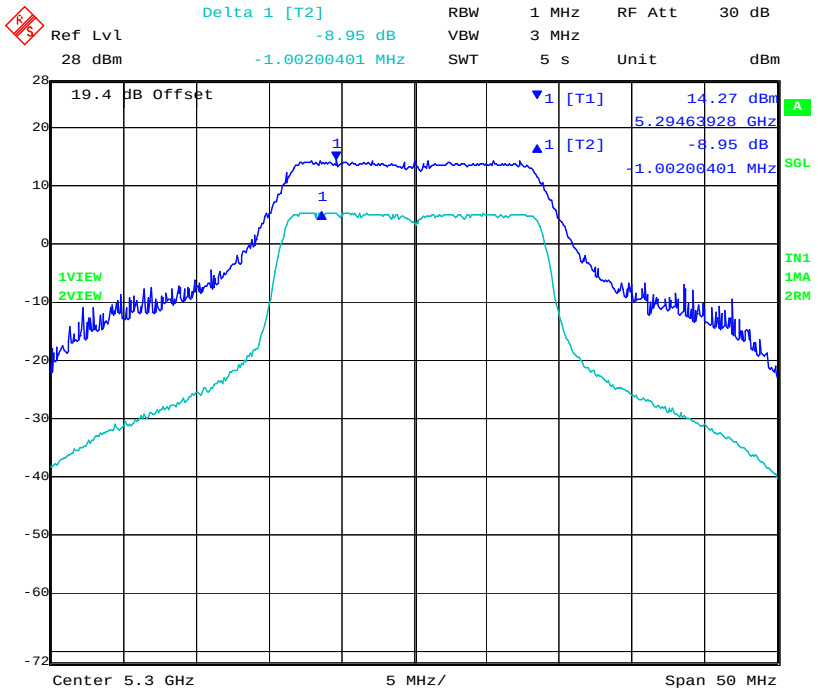
CHAIN B 5,300 MHz 802.11n HT-20 - Peak Excursion Ratio



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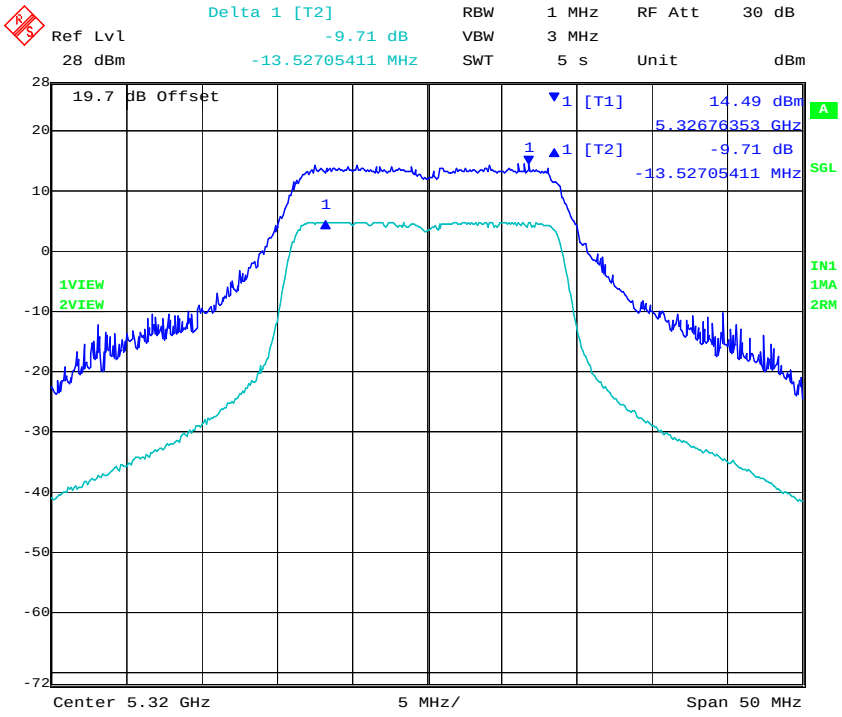
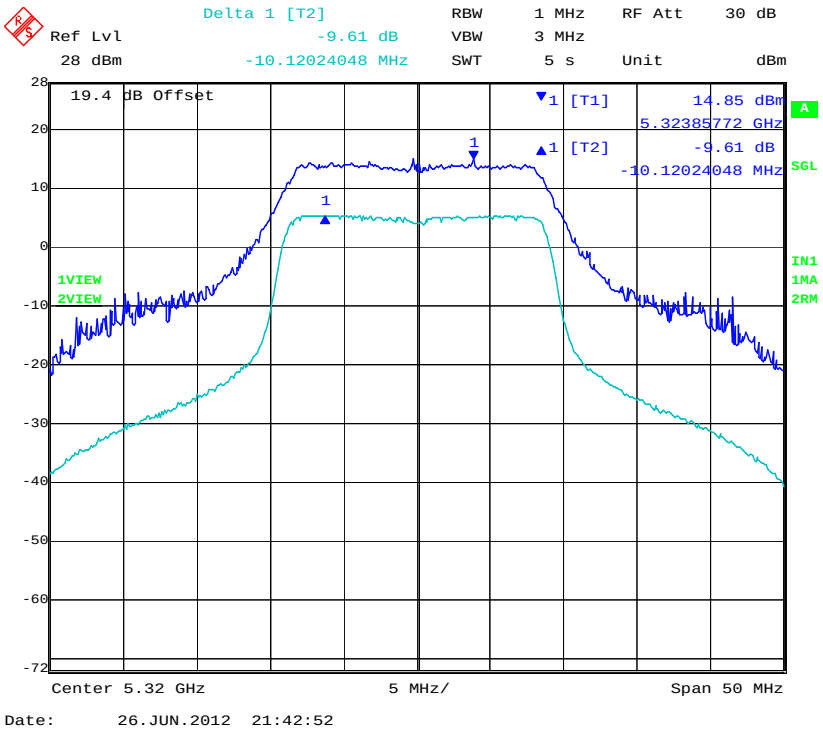
CHAIN A 5,320 MHz 802.11n HT-20 - Peak Excursion Ratio



Date: 26.JUN.2012 21:42:09

CHAIN B 5,320 MHz 802.11n HT-20 - Peak Excursion Ratio



Date: 26.JUN.2012 21:42:52

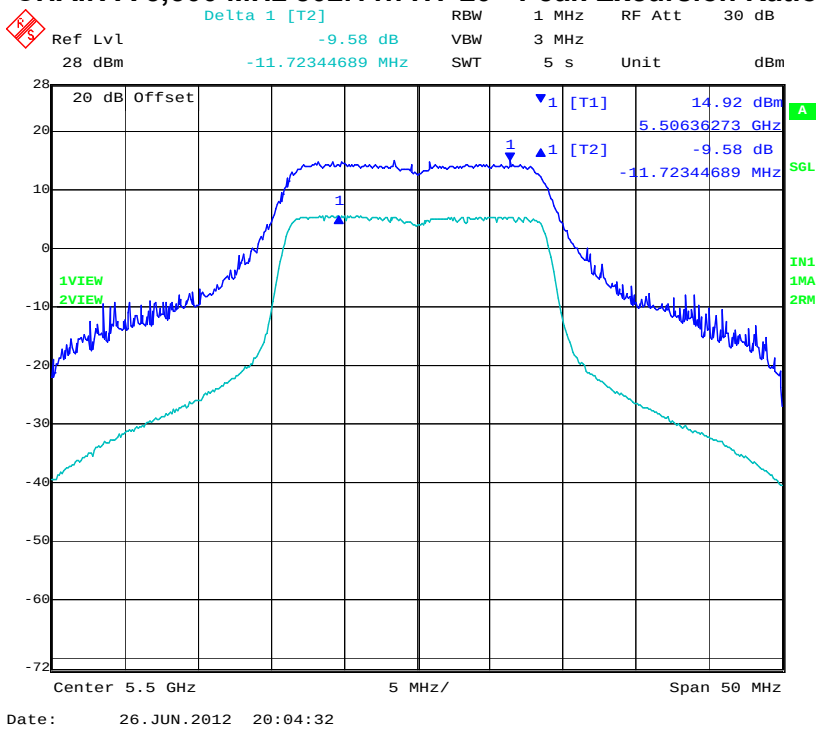
TABLE OF RESULTS – **802.11n HT-20 (5470 – 5725 MHz)**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-20	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	6 dBi
Applied Voltage:	12.0 Vdc		
Notes 1:			
Notes 2:			

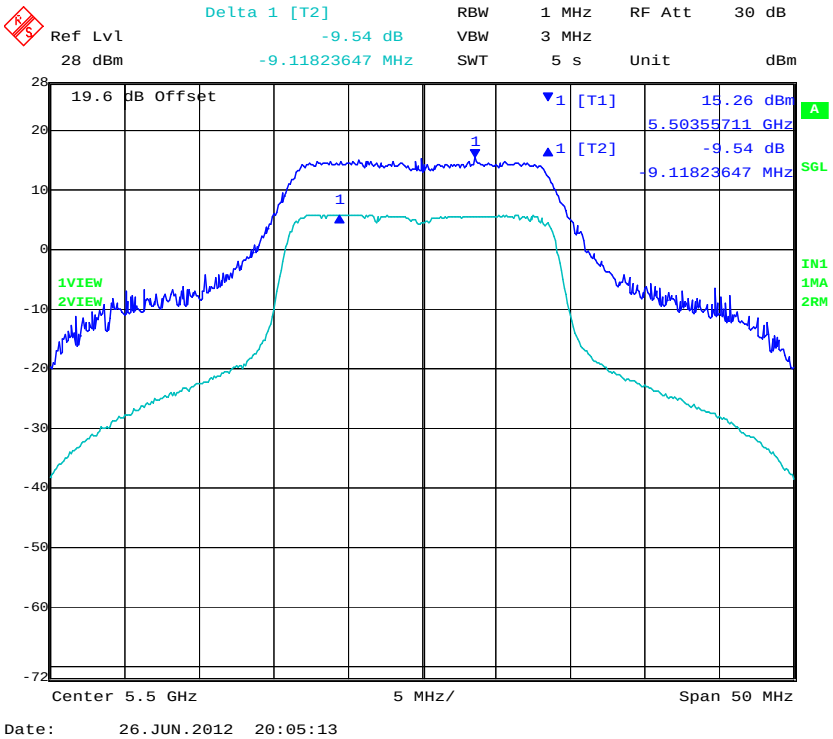
Test Frequency	Trace Δ Marker				Limit	Margin
	Port A	Port B	Port C	Port D		
MHz	dB	dB	dB	dB	dB	dB
5500	-9.58	-9.54	--	--	-13.00	-3.42
5580	-9.77	-9.23	--	--		-3.23
5700	-9.76	-9.22	--	--		-3.24

Measurement uncertainty:	±1.33 dB

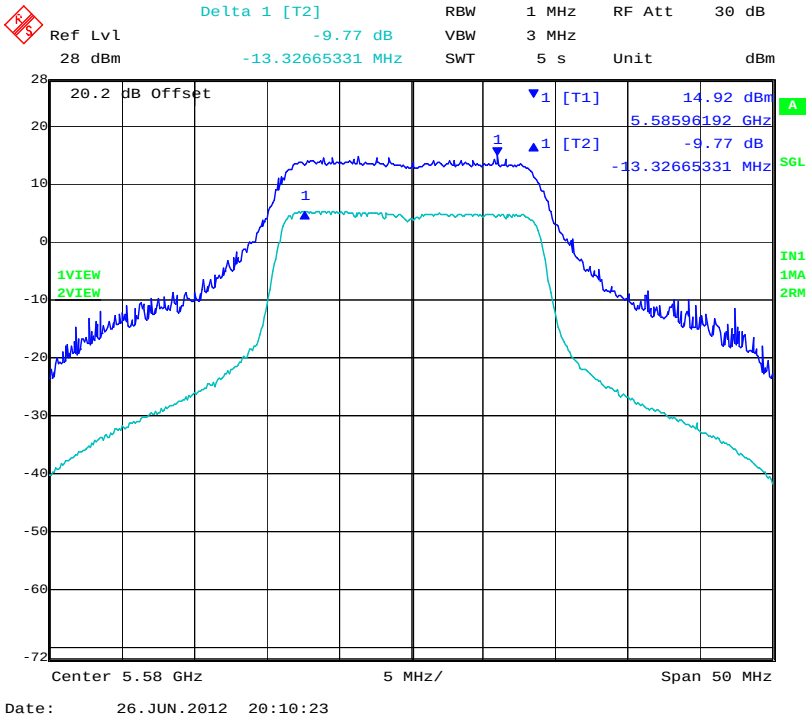
CHAIN A 5,500 MHz 802.11n HT-20 - Peak Excursion Ratio



CHAIN B 5,500 MHz 802.11n HT-20 - Peak Excursion Ratio

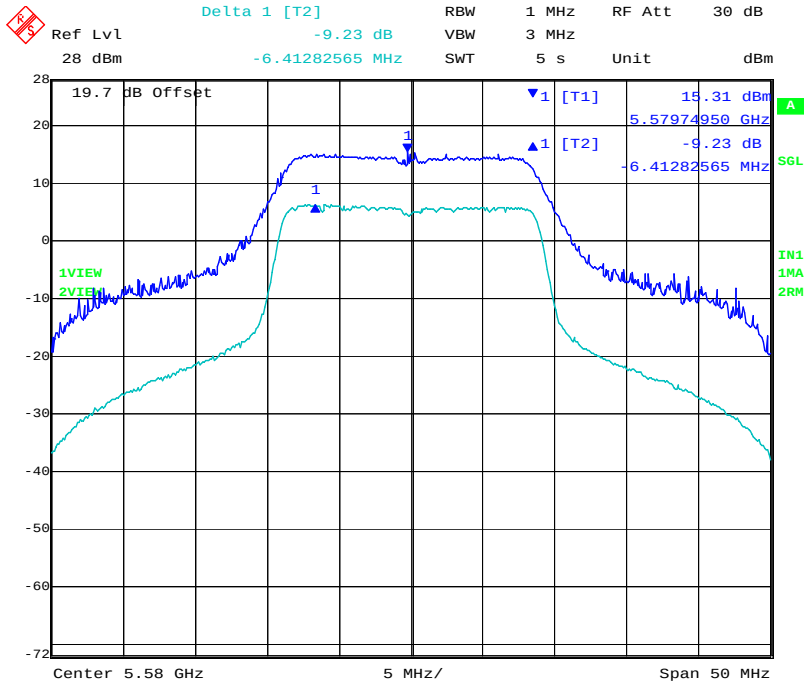


CHAIN A 5,580 MHz 802.11n HT-20 - Peak Excursion Ratio



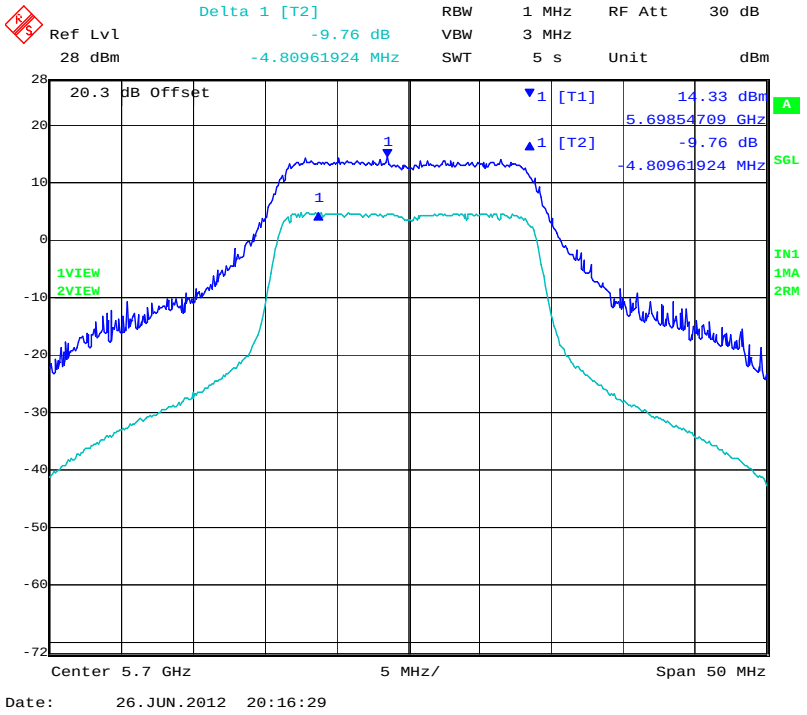
Date: 26.JUN.2012 20:10:23

CHAIN B 5,580 MHz 802.11n HT-20 - Peak Excursion Ratio



Date: 26.JUN.2012 20:11:06

CHAIN A 5,700 MHz 802.11n HT-20 - Peak Excursion Ratio



CHAIN B 5,700 MHz 802.11n HT-20 - Peak Excursion Ratio

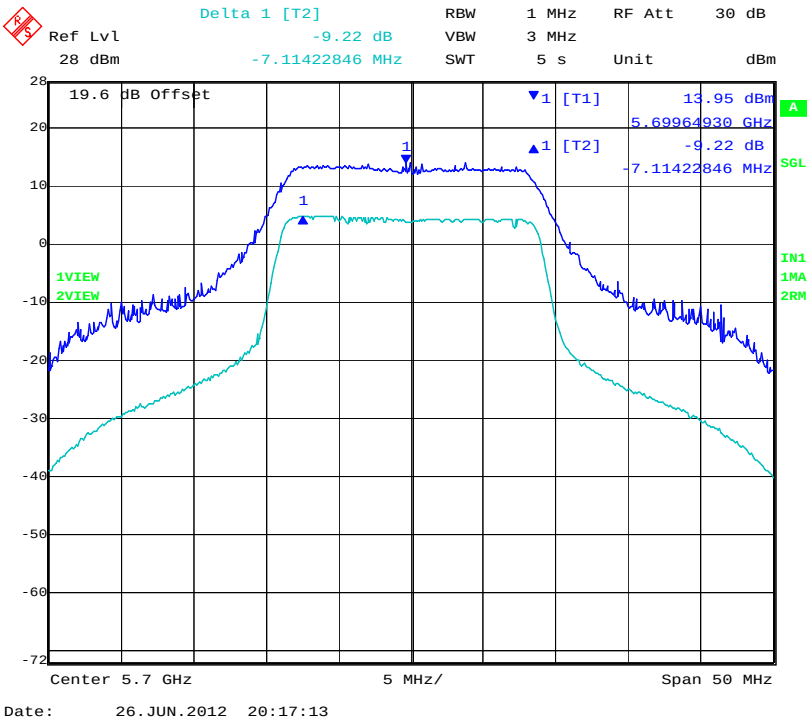


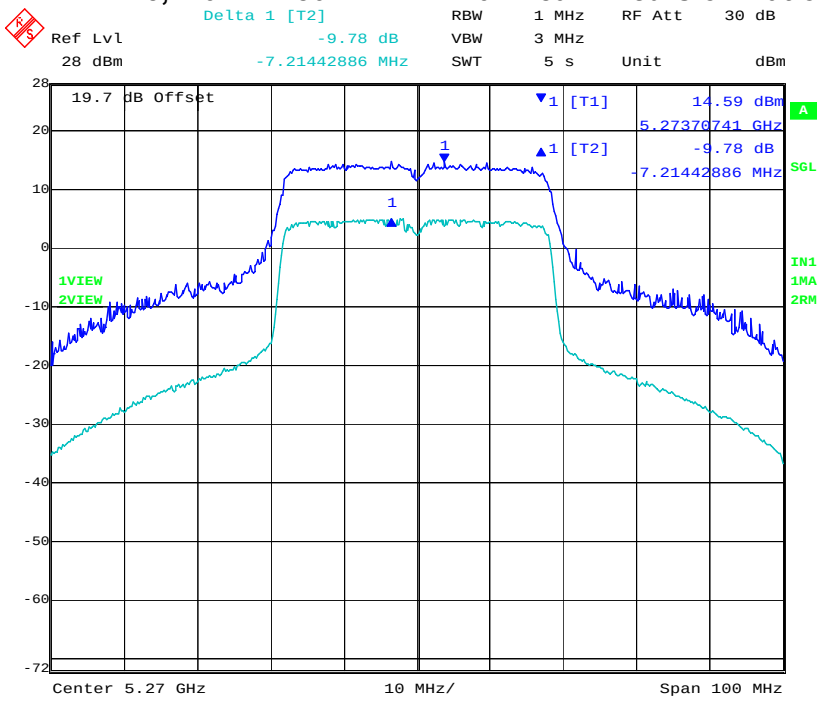
TABLE OF RESULTS – **802. 11n HT-40 (5250 – 5350 MHz)**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-40	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	6 dBi
Applied Voltage:	12.0 Vdc		
Notes 1:			
Notes 2:			

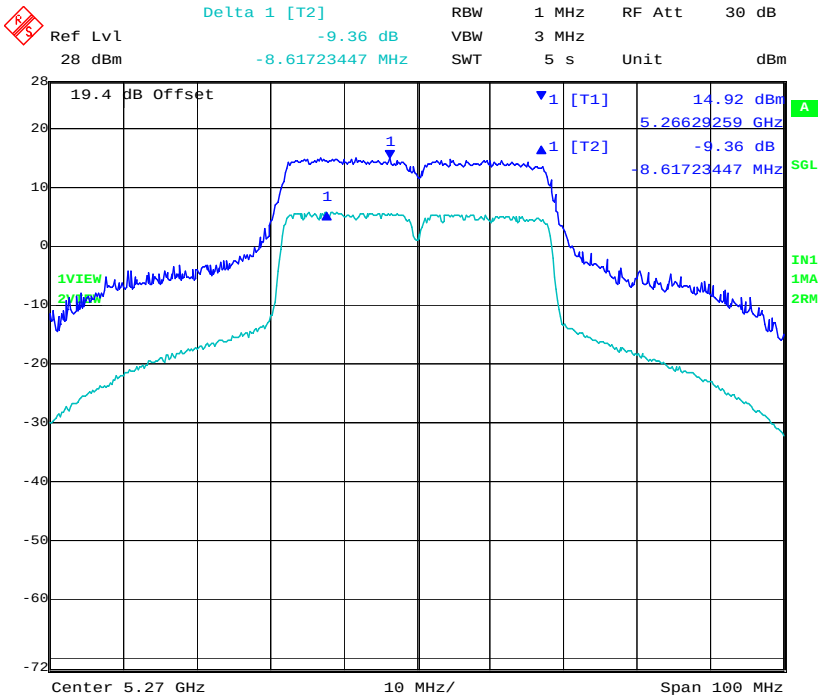
Test Frequency	Trace Δ Marker				Limit	Margin
	Port A	Port B	Port C	Port D		
MHz	dB	dB	dB	dB	dB	dB
5270	-9.78	-9.36	--	--	-13.00	-3.22
5310	-9.96	-9.59	--	--		-3.04

Measurement uncertainty:	±1.33 dB

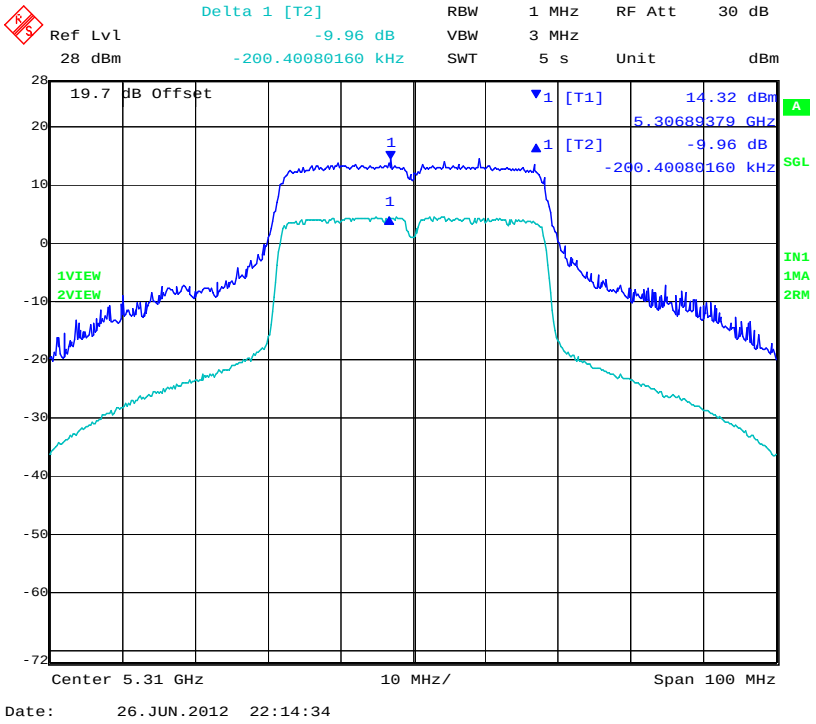
CHAIN A 5,270 MHz 802.11n HT-40 - Peak Excursion Ratio



CHAIN B 5,270 MHz 802.11n HT-40 - Peak Excursion Ratio



CHAIN A 5,310 MHz 802.11n HT-40 - Peak Excursion Ratio



CHAIN B 5,310 MHz 802.11n HT-40 - Peak Excursion Ratio

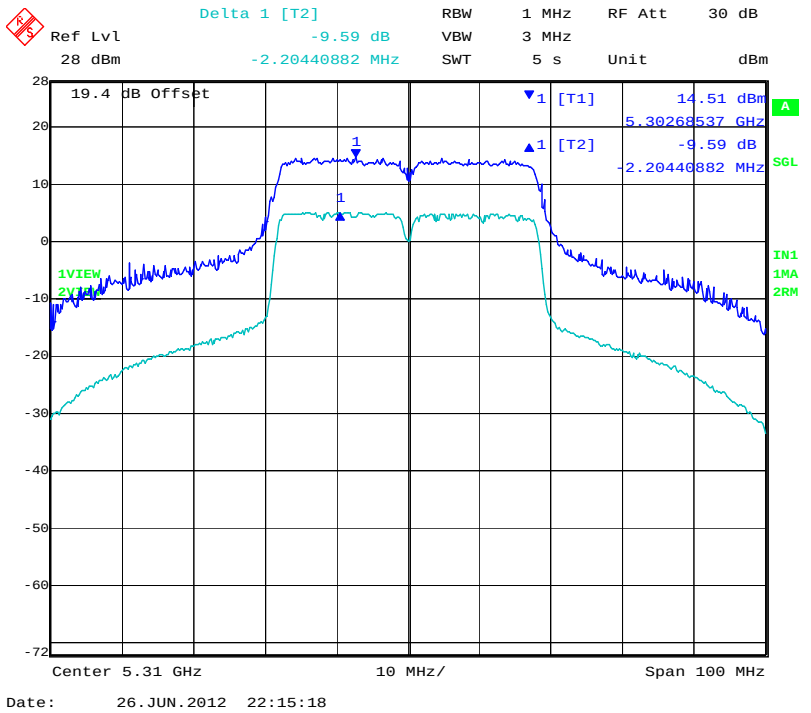


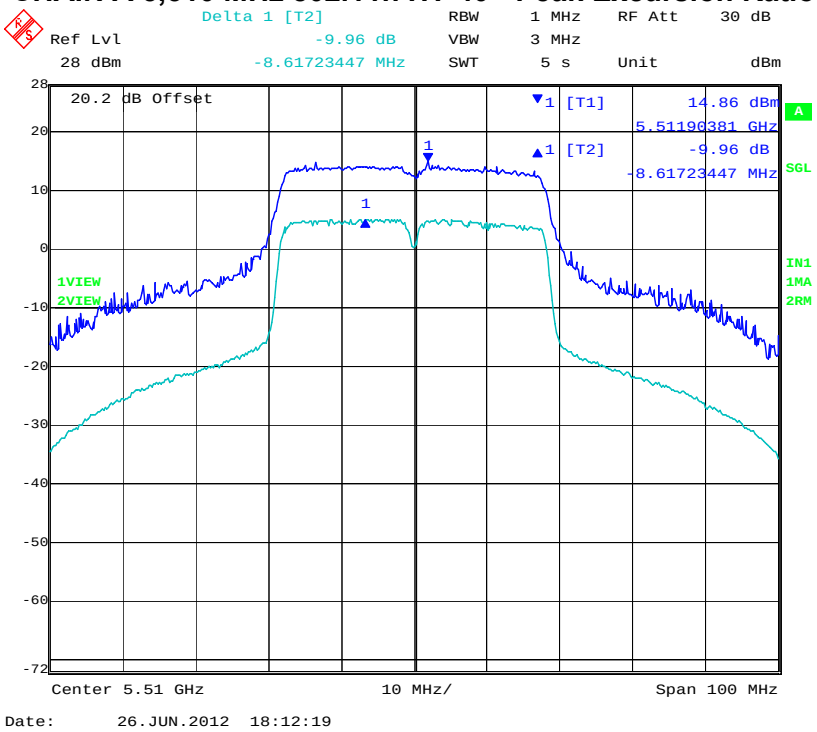
TABLE OF RESULTS – **802.11n HT-40 (5470 – 5725 MHz)**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-40	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	6 dBi
Applied Voltage:	12.0 Vdc		
Notes 1:			
Notes 2:			

Test Frequency	Trace Δ Marker				Limit	Margin
	Port A	Port B	Port C	Port D		
MHz	dB	dB	dB	dB	dB	dB
5510	-9.96	-9.31	--	--	-13.00	-3.04
5550	-9.94	-9.68	--	--		-3.06
5670	-9.54	-9.49	--	--		-3.46

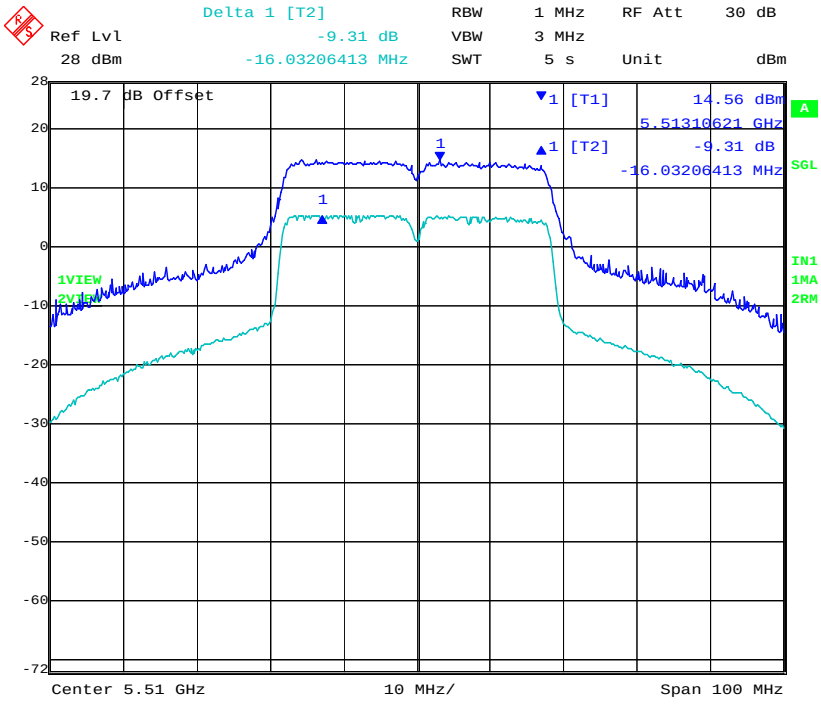
Measurement uncertainty:	±1.33 dB

CHAIN A 5,510 MHz 802.11n HT-40 - Peak Excursion Ratio



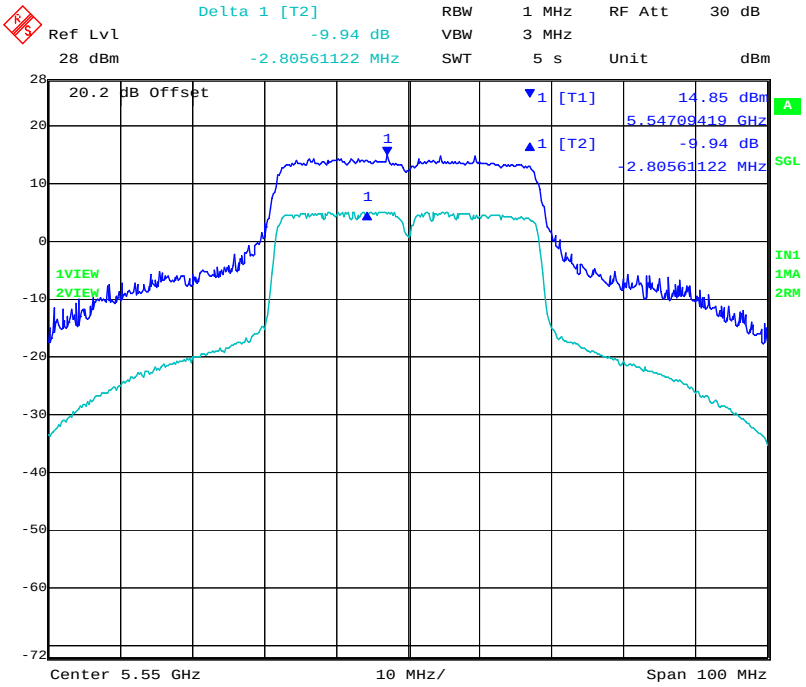
Date: 26.JUN.2012 18:12:19

CHAIN B 5,510 MHz 802.11n HT-40 - Peak Excursion Ratio



Date: 26.JUN.2012 18:13:01

CHAIN A 5,550 MHz 802.11n HT-40 - Peak Excursion Ratio



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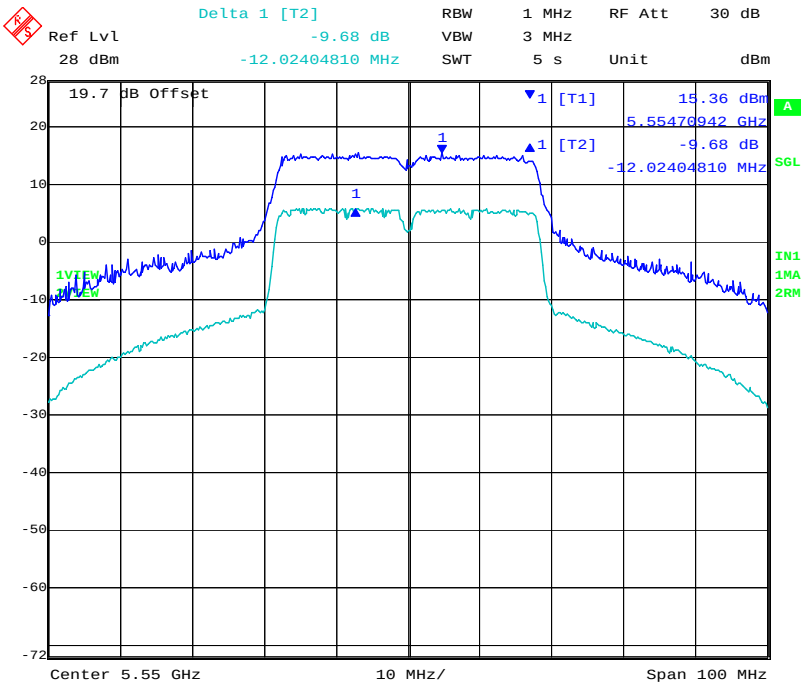
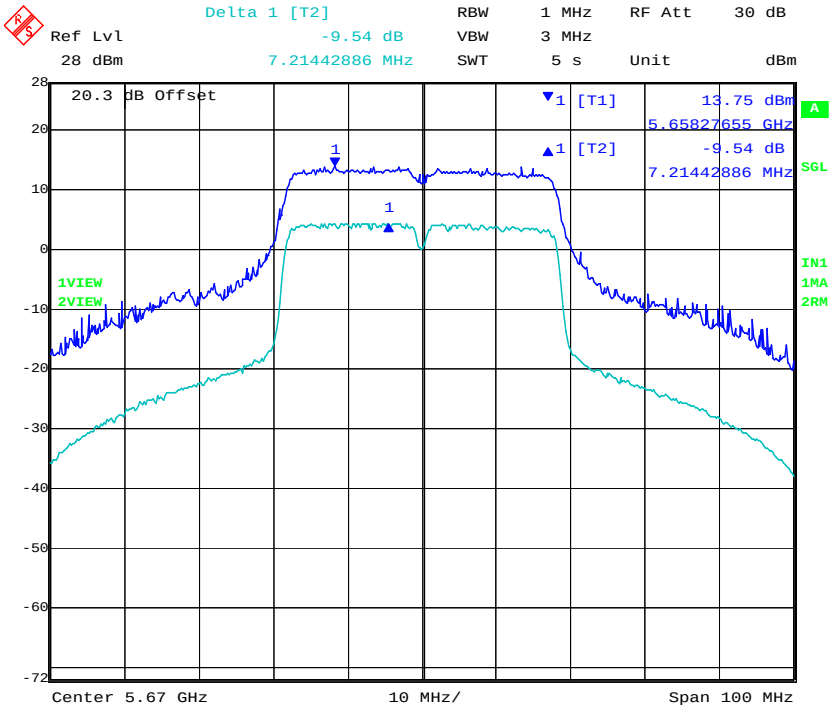
CHAIN B 5,550 MHz 802.11n HT-40 - Peak Excursion Ratio



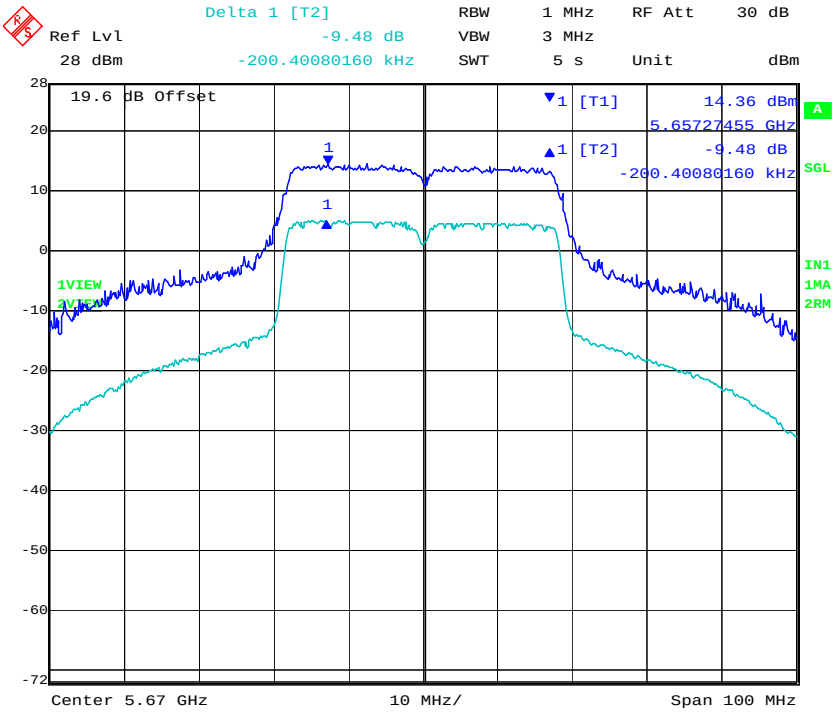
Date: 26.JUN.2012 18:29:57

CHAIN A 5,670 MHz 802.11n HT-40 - Peak Excursion Ratio



Date: 26.JUN.2012 18:33:32

CHAIN B 5,670 MHz 802.11n HT-40 - Peak Excursion Ratio



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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

Laboratory Measurement Uncertainty for Spectrum Measurement

Measurement uncertainty	± 2.81dB

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-03 'Measurement of RF Spectrum Mask'	0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117

5.1.5. 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.

5.1.6. 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/cm2) = EIRP/(4πd2)

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/cm2

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)
AP-ANT-10	Dipole	6	4	23.29	213.30	8.22	0.17
AP-ANT-86D	Dipole	9	8	21	125.89	8.92	0.20
AP-ANT-89	Directional	14.0	25	16	39.81	8.92	0.20

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)
AP-ANT-10	Dipole	6	4	23.37	217.27	8.30	0.17
AP-ANT-86D	Dipole	9	8	21	125.89	8.92	0.20
AP-ANT-89	Directional	13.25	21	16.75	47.32	8.92	0.20

5.1.7. Radiated Emissions

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);

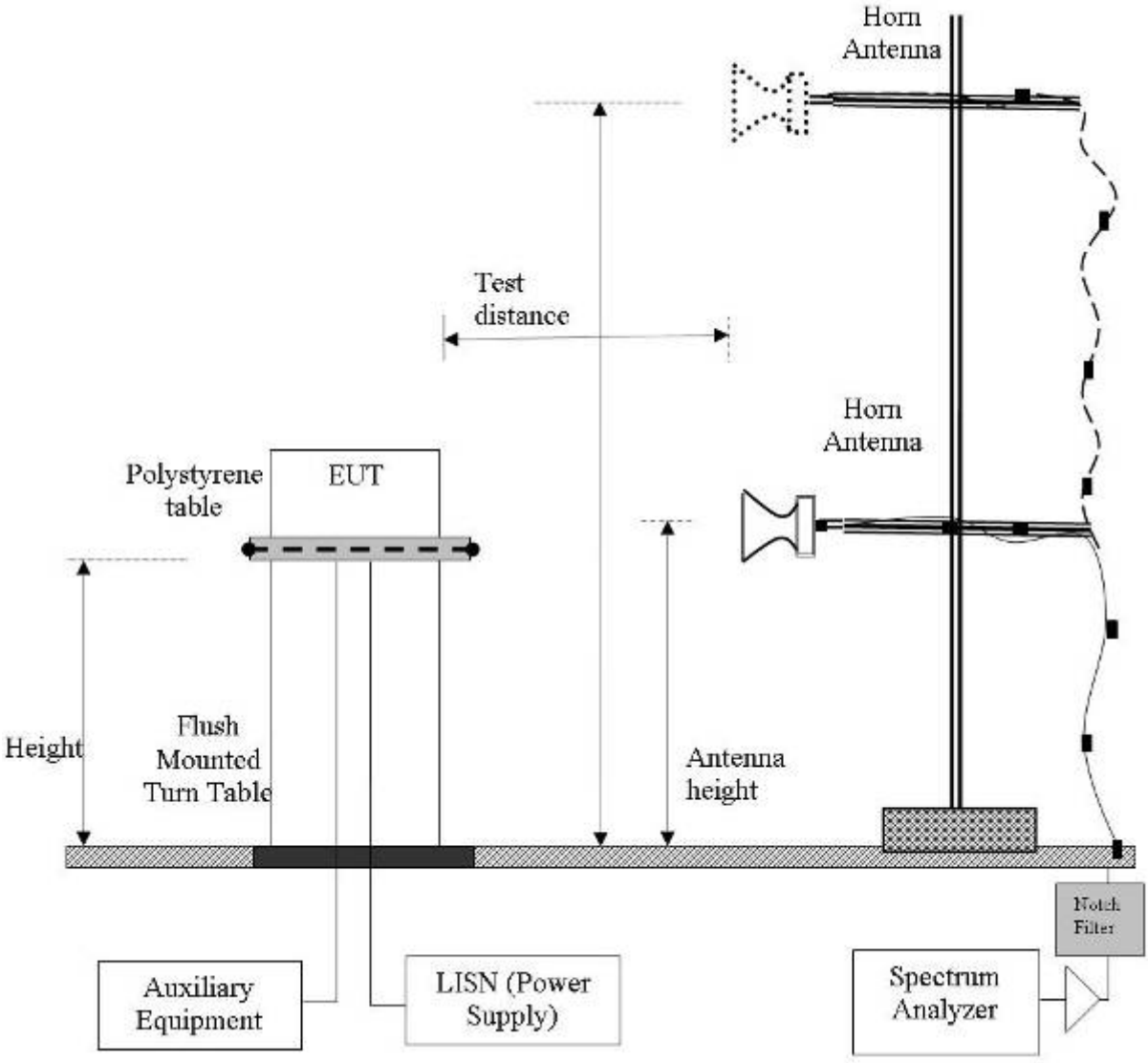
$$E = 1000000 \times \sqrt{30P} / 3 \ \mu V/m$$

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.

Radiated Emission Measurement Setup – Above 1 GHz



NOTE: KDB 662911 was implemented for Out-of-Band measurements. Where necessary Option (2) Measure and add 10 log (N) dB was implemented

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 §4.7 The search for unwanted emissions shall be from the lowest frequency internally generated or used in the device (local oscillator, intermediate of carrier frequency), or from 30 MHz , whichever is the lowest frequency, to the 5^{th} harmonic of the highest frequency generated without exceeding 40 GHz.

RSS-Gen §6 Receiver Spurious Emission Standard
If a radiated measurement is made, all spurious emissions shall comply with the limits of the following Table. The resolution bandwidth of the spectrum analyzer shall be 100 kHz for spurious emission measurements below 1.0 GHz and 1.0 MHz for measurements above 1.0 GHz

Table 1: FCC 15.209 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

Laboratory Measurement Uncertainty for Spectrum Measurement

Measurement Uncertainty	+5.6/ -4.5 dB

Traceability:

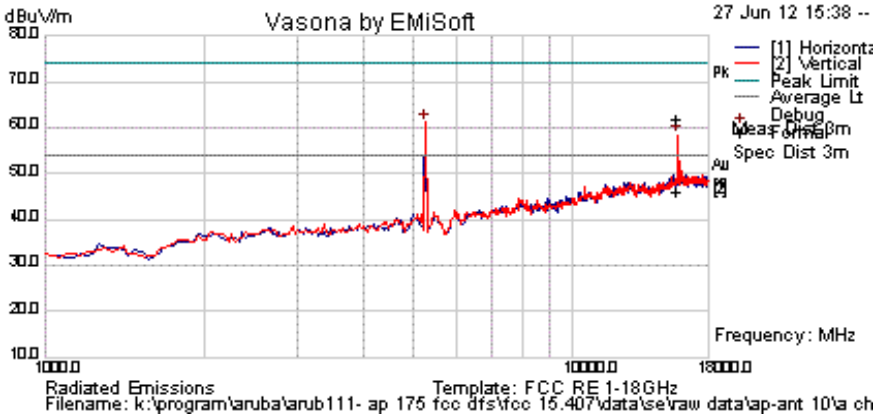
Method	Test Equipment Used
Work instruction WI-03	0088, 0158, 0134, 0304, 0311, 0315, 0310, 0312

5.1.7.1. Radiated Spurious Emissions – Above 1 GHz

Antenna AP-ANT-10

5250 – 5350 MHz, 802.11a Legacy

Test Freq.	5260 MHz	**Engineer**	JMH
Variant	802.11a; 6 Mbs	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

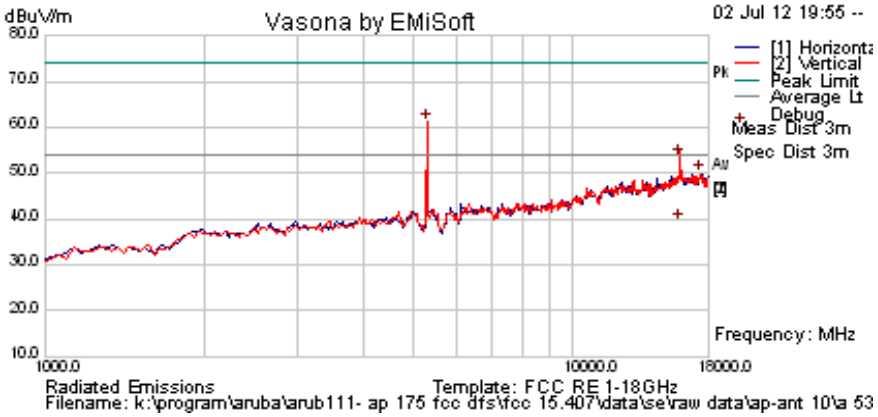


Formally measured emission peaks

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	63.4	4.6	-9.7	58.3	Peak [Scan]							FUND
16773.547	41.1	8.6	0.9	50.7	Peak [Scan]	V	200	0	54.0	-3.3	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

Test Freq.	5300 MHz	**Engineer**	JMH
Variant	802.11a; 6 Mbs	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

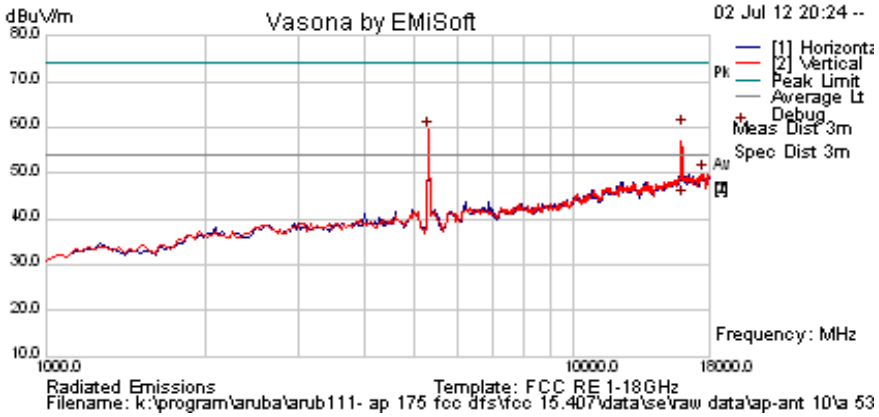


Formally measured emission peaks

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	66.2	4.6	-9.6	61.3	Peak [Scan]							FUND
17352.705	39.9	8.7	1.3	49.9	Peak [Scan]	V	100	0	54.0	-4.1	Pass	Noise
15920.164	44.4	8.9	-0.1	53.2	Peak Max	V	98	203	74	-20.8	Pass	
15920.164	30.6	8.9	-0.1	39.4	Average Max	V	98	203	54	-14.7	Pass	

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

Test Freq.	5320 MHz	**Engineer**	JMH
Variant	802.11a; 6 Mbs	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



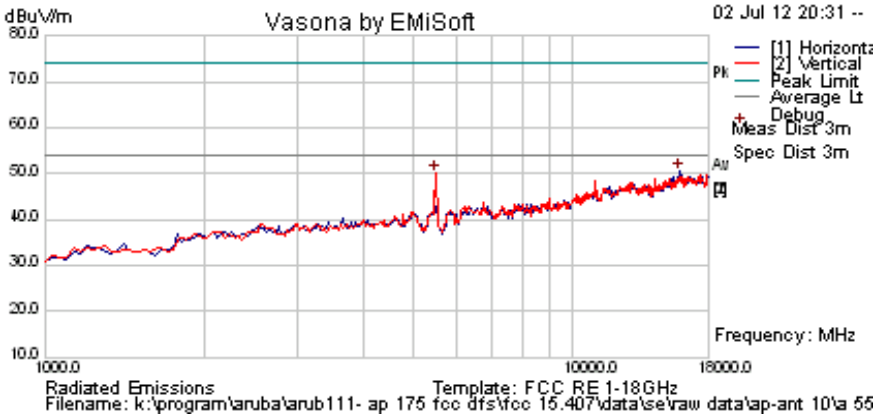
Formally measured emission peaks

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	64.5	4.6	-9.6	59.5	Peak [Scan]							FUND
17523.046	40.1	8.8	0.9	49.8	Peak [Scan]	V	200	0	54.0	-4.2	Pass	Noise
15960.321	50.7	9.0	0.0	59.7	Peak Max	V	98	284	74	-14.3	Pass	
15960.321	35.2	9.0	0.0	44.2	Average Max	V	98	284	54	-9.8	Pass	

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

5470 – 5725 MHz, 802.11a Legacy

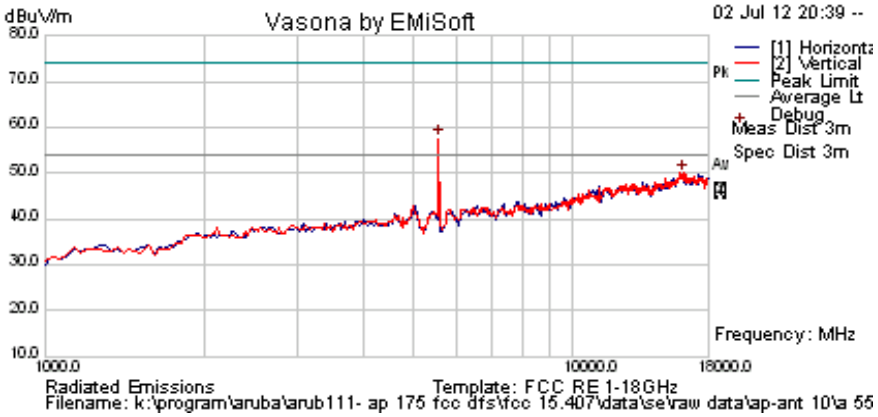
Test Freq.	5500 MHz	**Engineer**	JMH
Variant	802.11a; 6 Mbs	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



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
15921.844	41.6	8.9	-0.1	50.4	Peak [Scan]	H	150	0	54.0	-3.6	Pass	Noise
5496.993988	55.1	4.6	-9.6	50.1	Peak [Scan]							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											

Test Freq.	5580 MHz	**Engineer**	JMH
Variant	802.11a; 6 Mbs	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

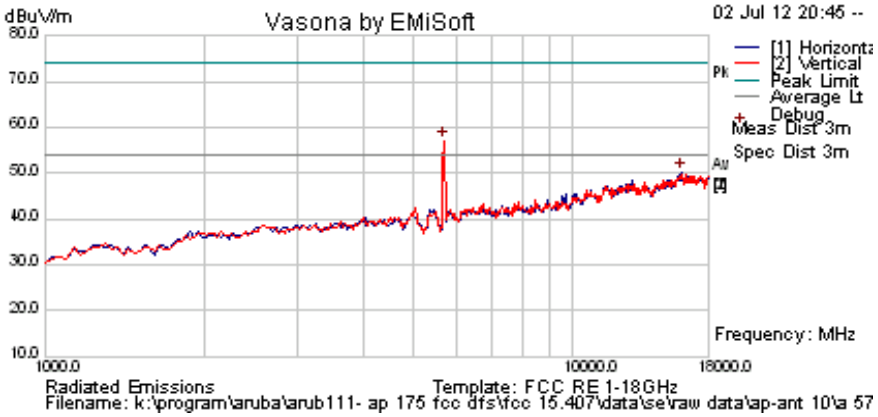


Formally measured emission peaks

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
5565.130	62.6	4.7	-9.7	57.6	Peak [Scan]							FUND
16160.321	40.9	9.0	0.2	50.0	Peak [Scan]	V	200	0	54.0	-4.0	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

Test Freq.	5700 MHz	**Engineer**	JMH
Variant	802.11a; 6 Mbs	**Temp (ºC)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



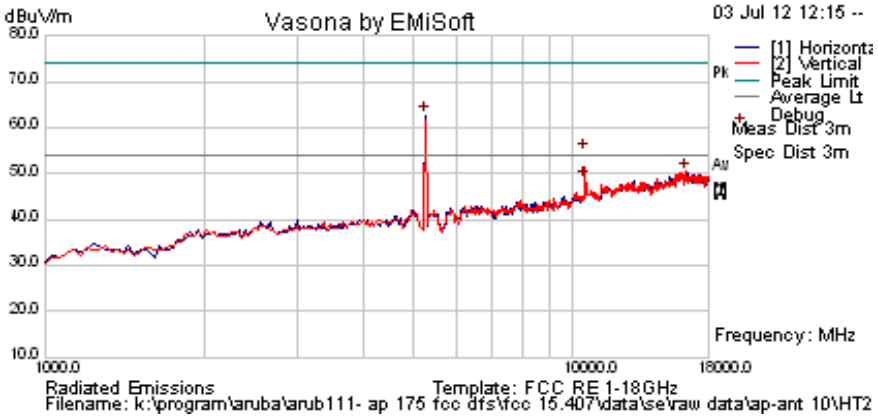
Formally measured emission peaks

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	62.0	4.7	-9.6	57.2	Peak [Scan]							FUND
16024.048	40.9	9.0	0.2	50.2	Peak [Scan]	H	100	0	54.0	-3.8	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

5250 – 5350 MHz, 802.11n HT-20

Test Freq.	5260 MHz	**Engineer**	JMH
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

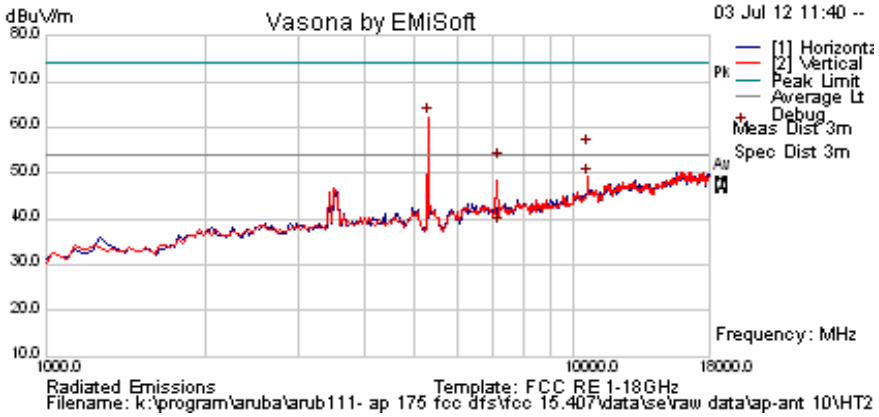


Formally measured emission peaks

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	67.9	4.6	-9.7	62.8	Peak [Scan]							Fund
16364.729	41.3	8.9	0.2	50.4	Peak [Scan]	V	200	0	54.0	-3.6	Pass	Noise
10520.000	50.2	6.8	-2.4	54.5	Peak Max	V	98	309	74	-19.5	Pass	
10520.000	44.5	6.8	-2.4	48.8	Average Max	V	98	309	54	-5.2	Pass	

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

Test Freq.	5300 MHz	**Engineer**	JMH
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

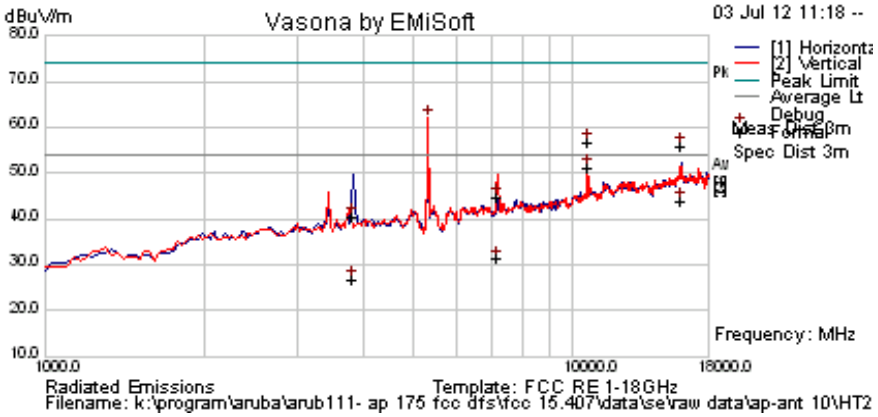


Formally measured emission peaks

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	67.1	4.6	-9.6	62.2	Peak [Scan]							Fund
7161.372	38.9	5.4	-6.0	38.3	Average Max	V	98	278	54.0	-15.7	Pass	
7161.372	53.3	5.4	-6.0	52.7	Peak Max	V	98	278	74	-21.3	Pass	
10600.077	51.2	6.8	-2.4	55.5	Peak Max	V	98	278	74	-18.5	Pass	
10600.077	44.7	6.8	-2.4	49.1	Average Max	V	98	278	54	-5.0	Pass	

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

Test Freq.	5320 MHz	**Engineer**	JMH
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



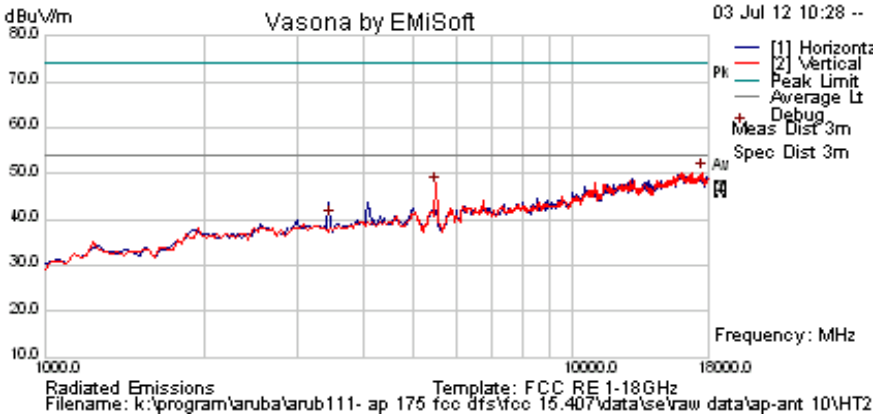
Formally measured emission peaks

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	67.1	4.6	-9.5	62.2	Peak [Scan]							Fund
3827.655311	47.5	3.8	-10.9	40.4	Peak Max	H	155	42	74.0	-33.6	Pass	
3827.655	34.0	3.8	-10.9	26.9	Average Max	H	155	42	54	-27.1	Pass	
7200.401	45.1	5.4	-5.9	44.7	Peak Max	V	123	229	74	-29.3	Pass	
7200.401	31.7	5.4	-5.9	31.3	Average Max	V	123	229	54	-22.7	Pass	
10639.840	46.8	6.8	-2.4	51.3	Average Max	V	100	281	54	-2.7	Pass	
10639.840	52.5	6.8	-2.4	56.9	Peak Max	V	100	281	74	-17.1	Pass	
15960.000	34.9	9.0	0.0	43.9	Average Max	H	116	267	54	-10.1	Pass	
15960.000	46.9	9.0	0.0	55.9	Peak Max	H	116	267	74	-18.1	Pass	

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

5470 – 5725 MHz, 802.11n HT-20

Test Freq.	5500 MHz	**Engineer**	JMH
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

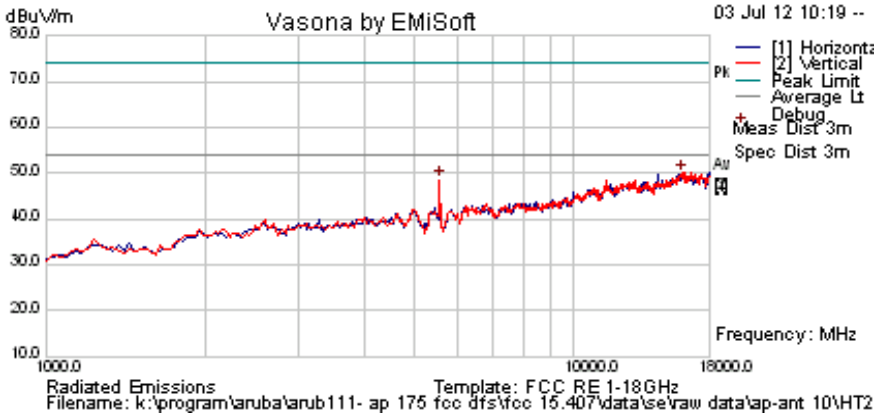


Formally measured emission peaks

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
17523.046	40.6	8.8	0.9	50.3	Peak [Scan]	V	100	0	54.0	-3.7	Pass	Noise
5495.195	52.5	4.6	-9.6	47.5	Peak [Scan]							Fund
3475.541	48.5	3.6	-11.8	40.3	Peak [Scan]	V	98	360	54	-13.7	Pass	

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

Test Freq.	5580 MHz	**Engineer**	JMH
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	ANT 10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

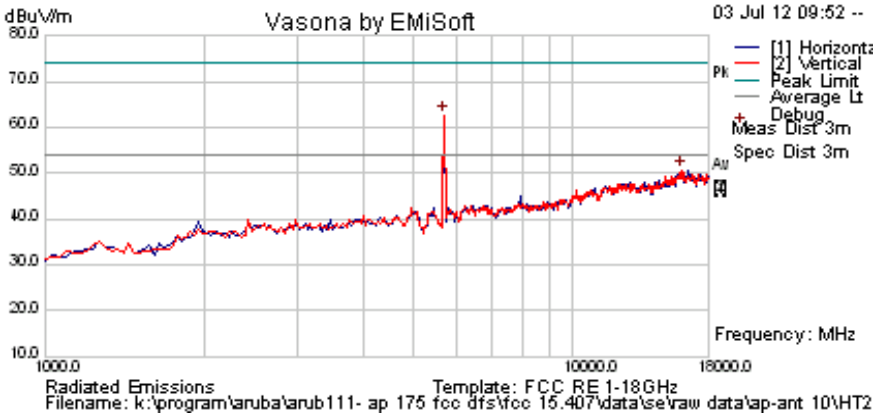


Formally measured emission peaks

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
16058.116	40.8	9.0	0.3	50.0	Peak [Scan]	V	200	0	54.0	-4.0	Pass	Noise
5565.130261	53.6	4.7	-9.7	48.6	Peak [Scan]							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

Test Freq.	5700 MHz	**Engineer**	JMH
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna		**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



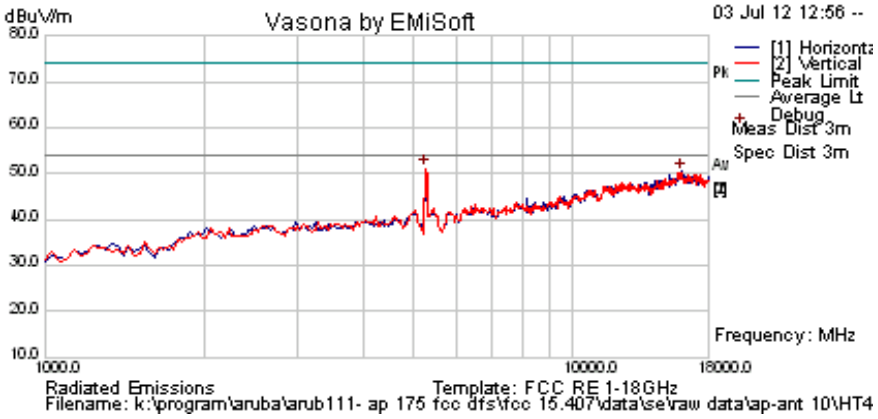
Formally measured emission peaks

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	67.6	4.7	-9.6	62.8	Peak [Scan]							Fund
15989.98	41.6	9.0	0.1	50.7	Peak [Scan]	V	100	0	54.0	-3.3	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

5250 – 5350 MHz, 802.11n HT-40

Test Freq.	5270 MHz	**Engineer**	JMH
Variant	802.11n HT-40; 13.5 MCS	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	17	**Press. (mBars)**	1008
Antenna	AP-ANT10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

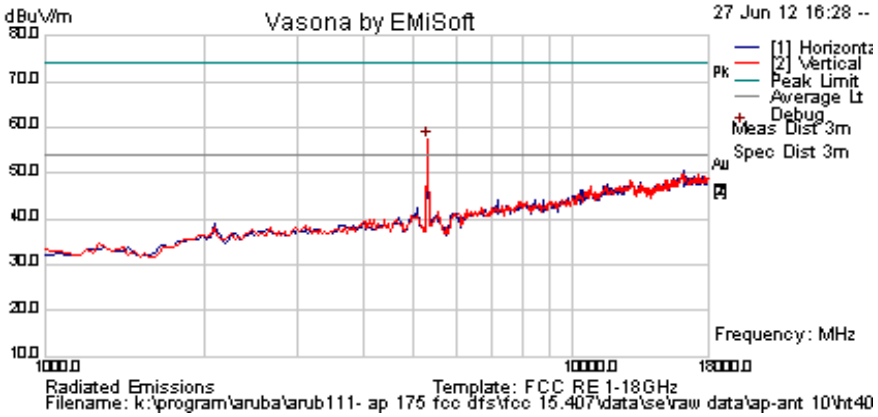


Formally measured emission peaks

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	56.3	4.6	-9.7	51.2	Peak [Scan]							FUND
15989.98	41.4	9.0	0.1	50.5	Peak [Scan]	H	150	0	54.0	-3.5	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

Test Freq.	5310 MHz	**Engineer**	JMH
Variant	802.11n HT-40; 13.5 MCS	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	17	**Press. (mBars)**	1008
Antenna	AP-ANT10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



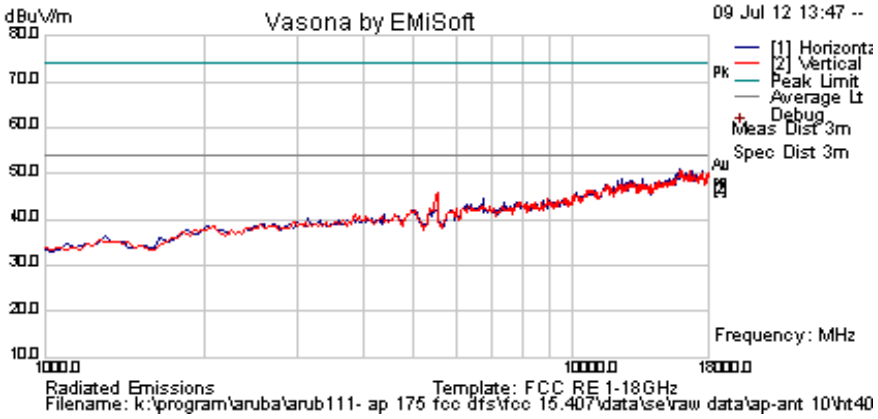
Formally measured emission peaks

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	57.5	4.6	-9.6	52.5	Peak [Scan]							FUND
15921.844	49.1	8.9	-0.1	57.9	Peak Max	V	98	258	74.0	-16.1	Pass	
15921.844	33.2	8.9	-0.1	42.0	Average Max	V	98	258	54	-12.0	Pass	

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

5470 – 5725 MHz, 802.11n HT-40

Test Freq.	5510 MHz	**Engineer**	SB
Variant	802.11n HT-40; 13.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

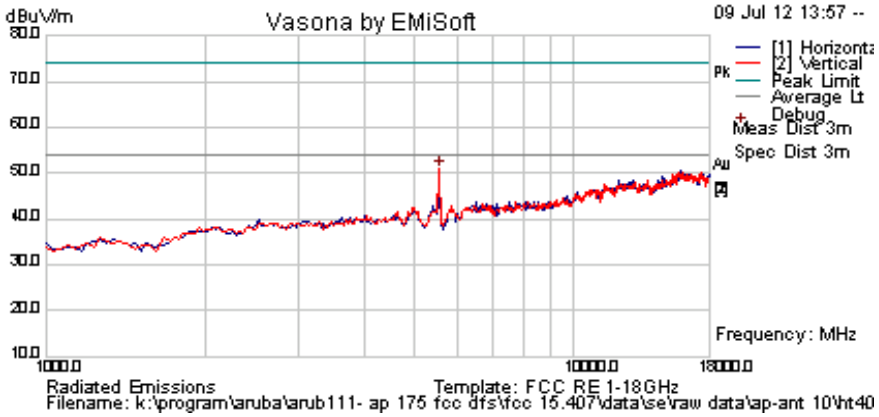


Formally measured emission peaks

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

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

Test Freq.	5550 MHz	**Engineer**	SB
Variant	802.11n HT-40; 13.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

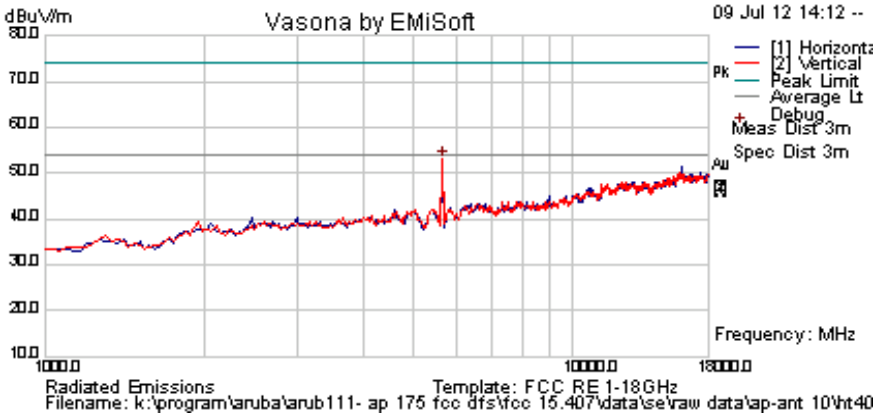


Formally measured emission peaks

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
5565.130	56.0	4.7	-9.7	50.9	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

Test Freq.	5670 MHz	**Engineer**	SB
Variant	802.11n HT-40; 13.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT10	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



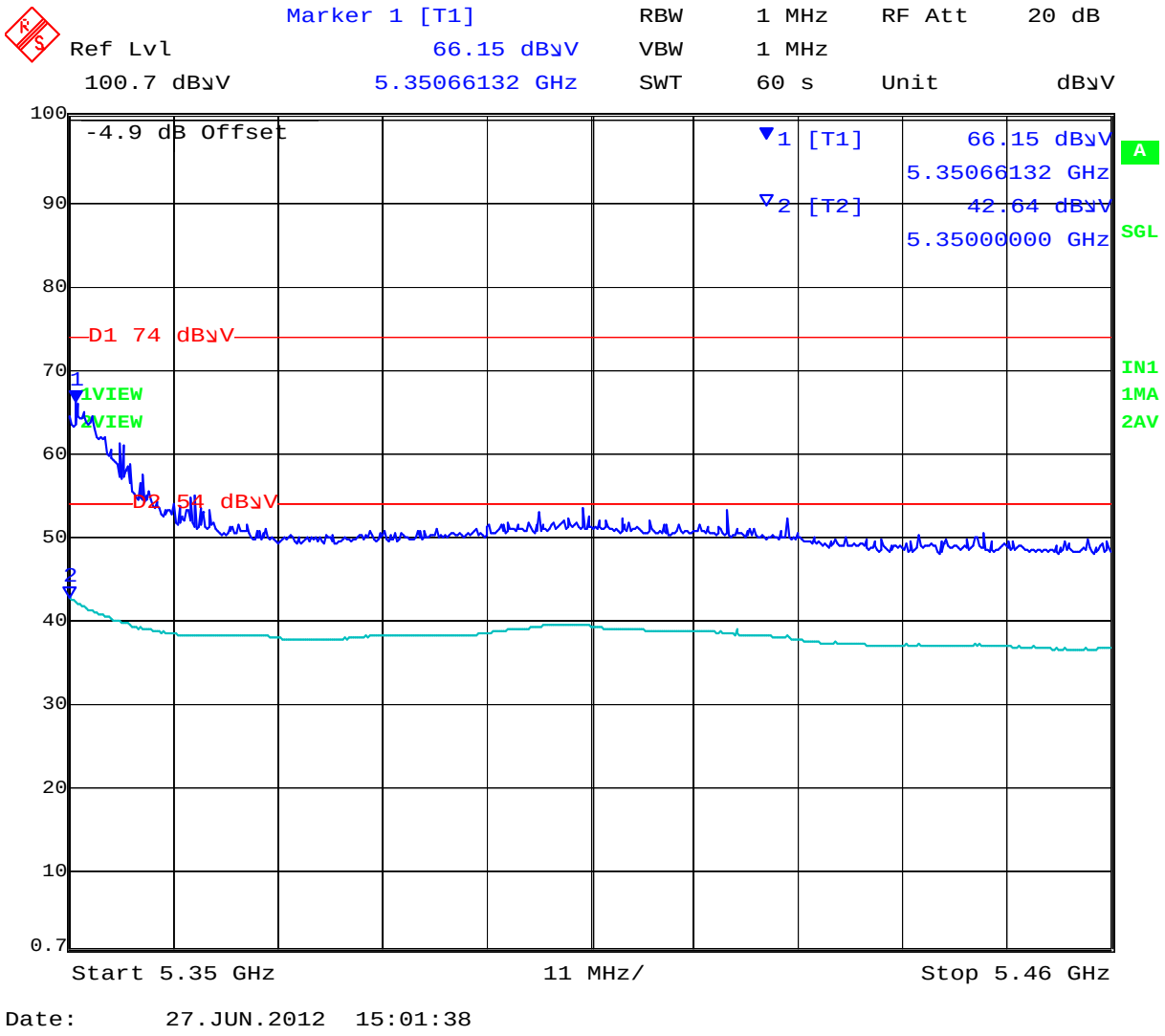
Formally measured emission peaks

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
5667.335	58.1	4.7	-9.7	53.1	Peak [Scan]	V	100	0				FUND

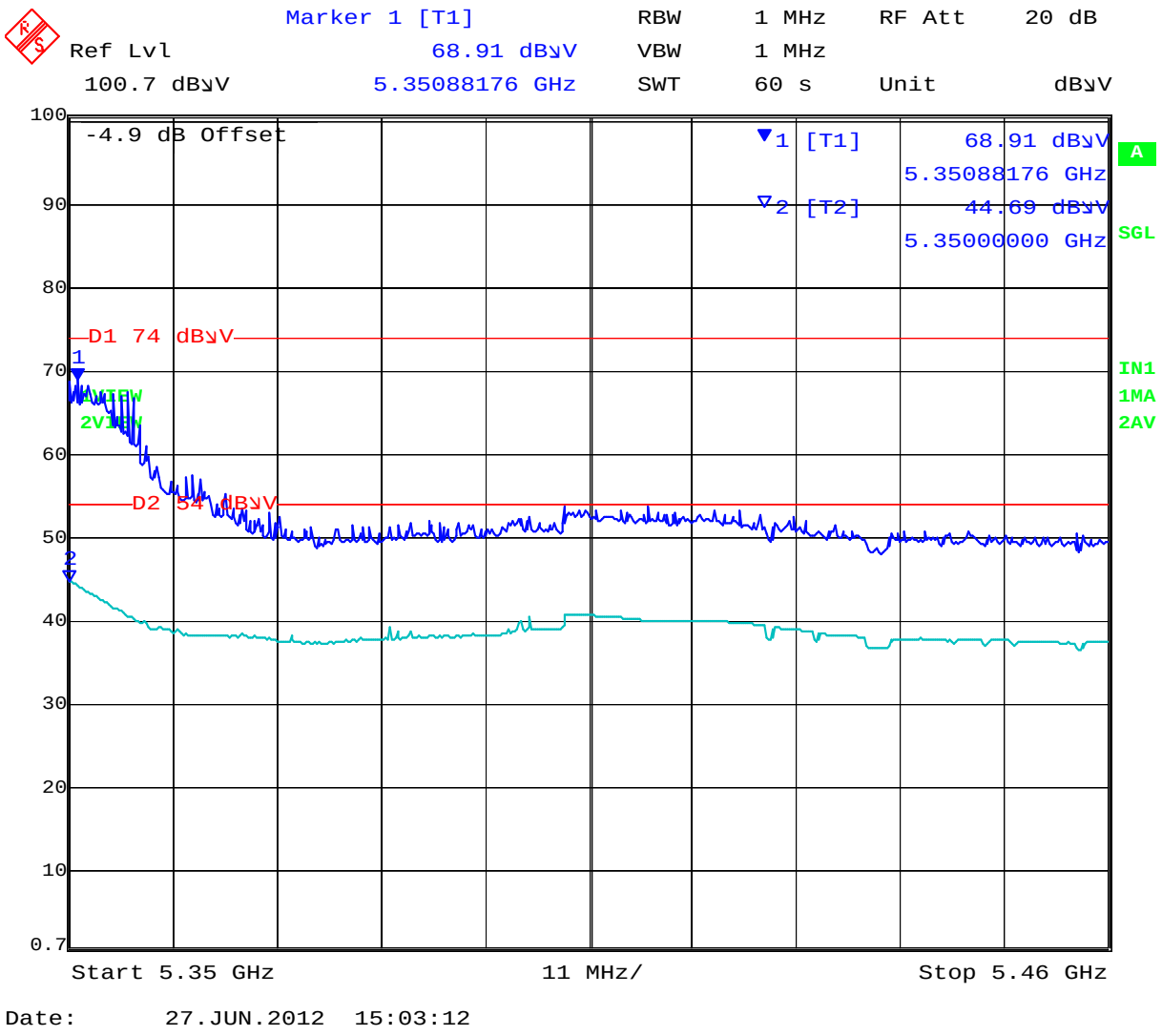
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Radiated Band-Edge spurious emissions Antenna AP-ANT-10

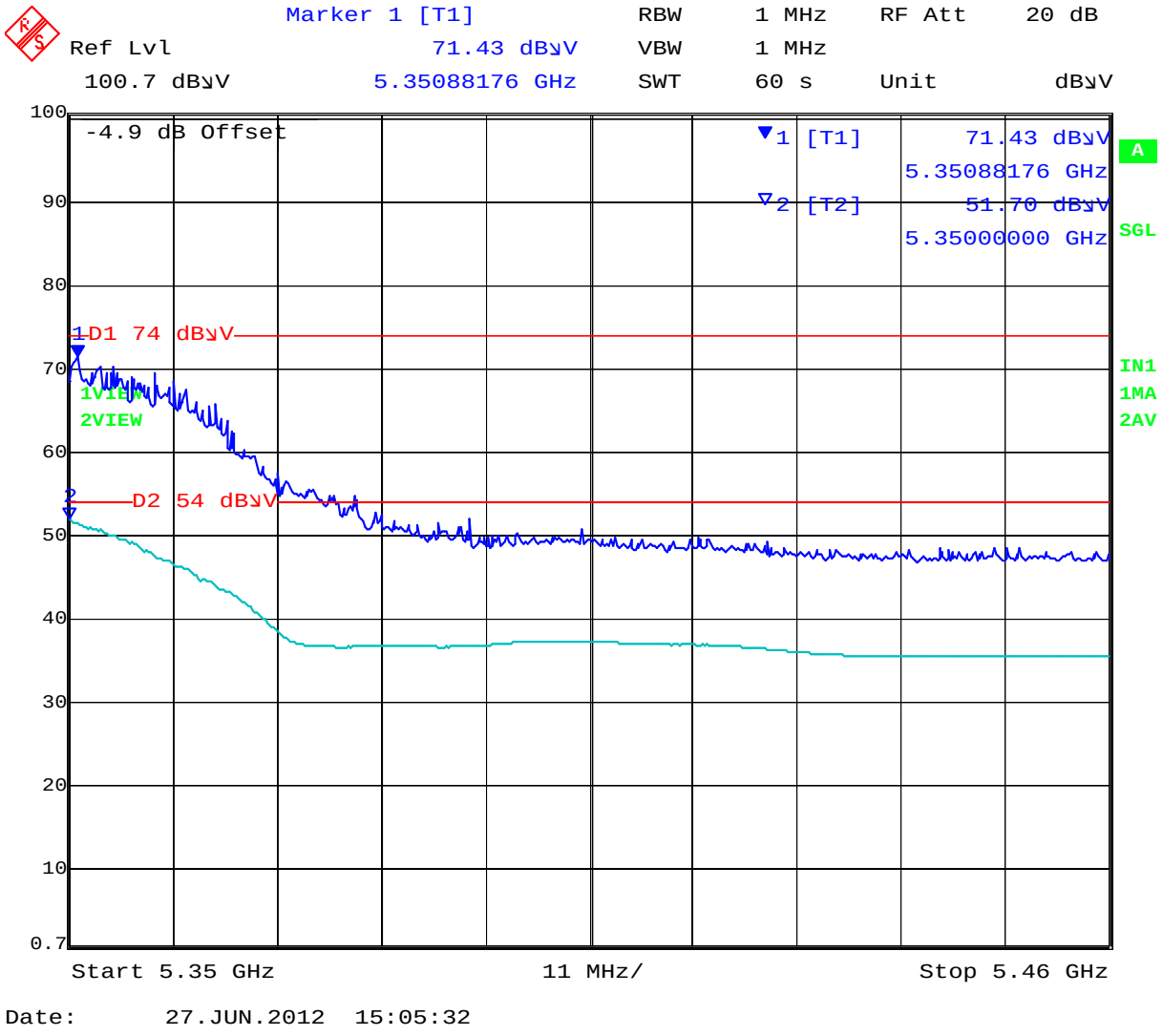
5320 MHz - 802.11a Legacy 5350 - 5460 MHz



5320 MHz - 802.11n HT-20 5350 - 5460 MHz

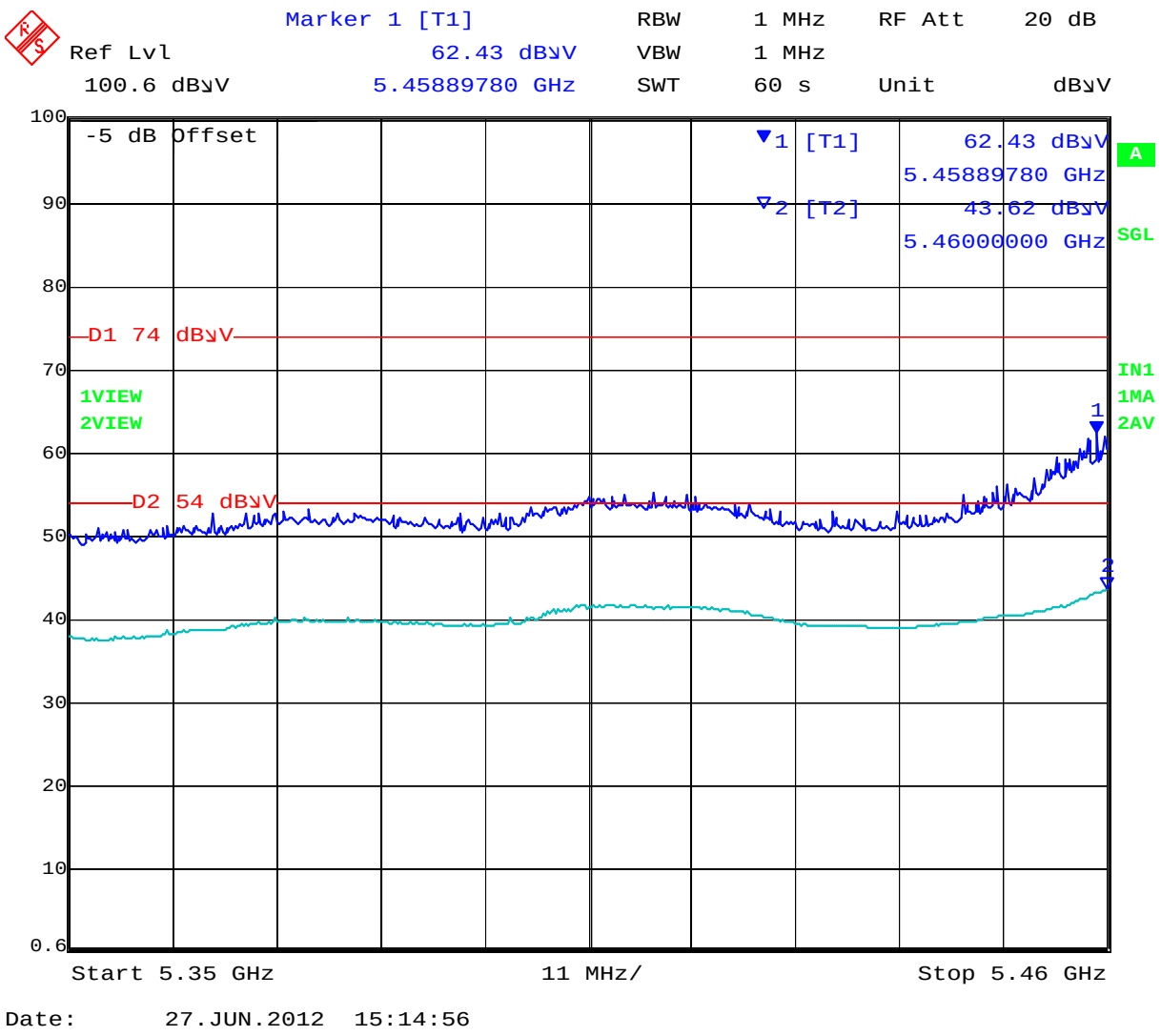


5310 MHz - 802.11n HT-40 5350 - 5460 MHz

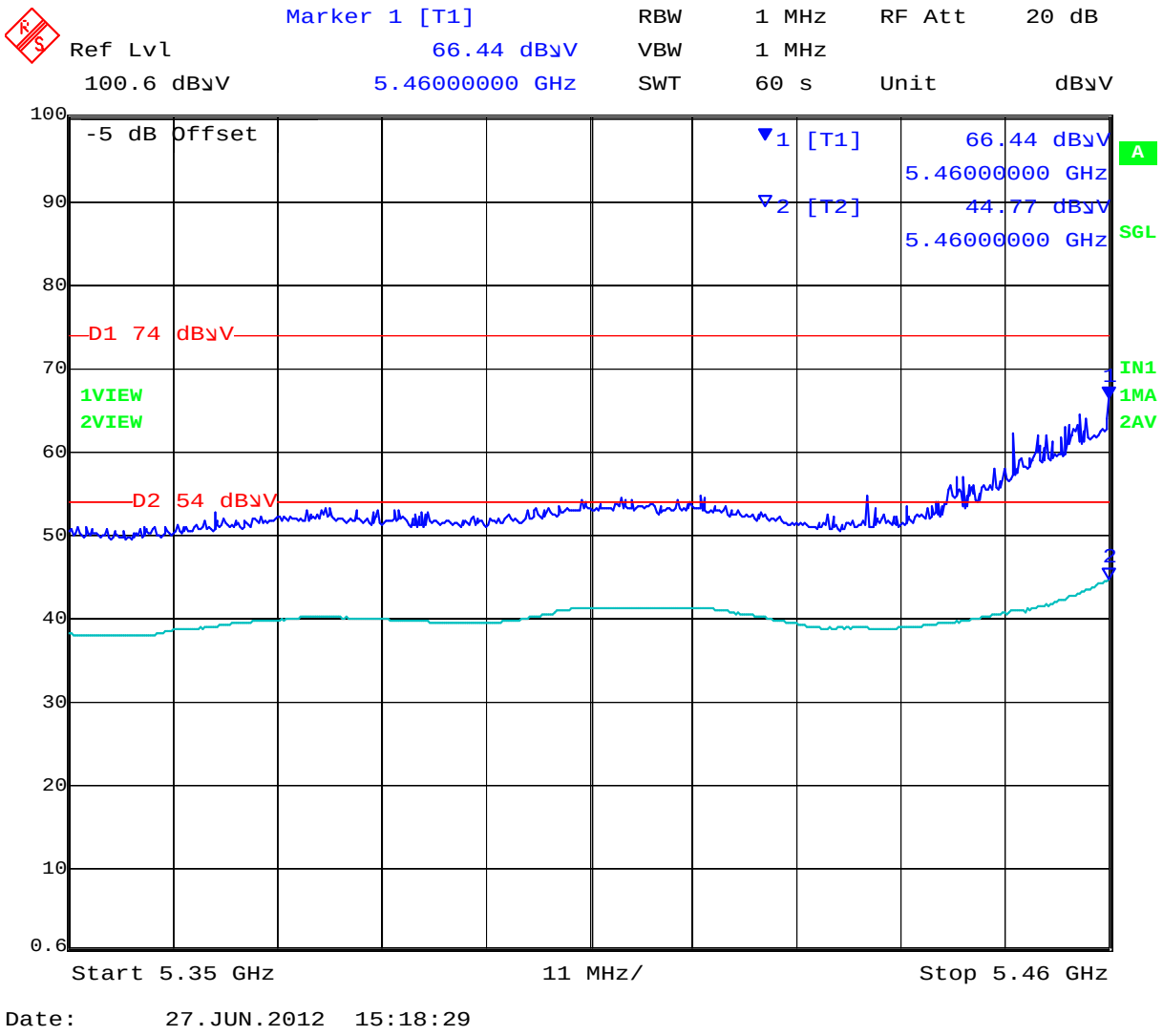


NOTE: Power Reduction Required ART = 17

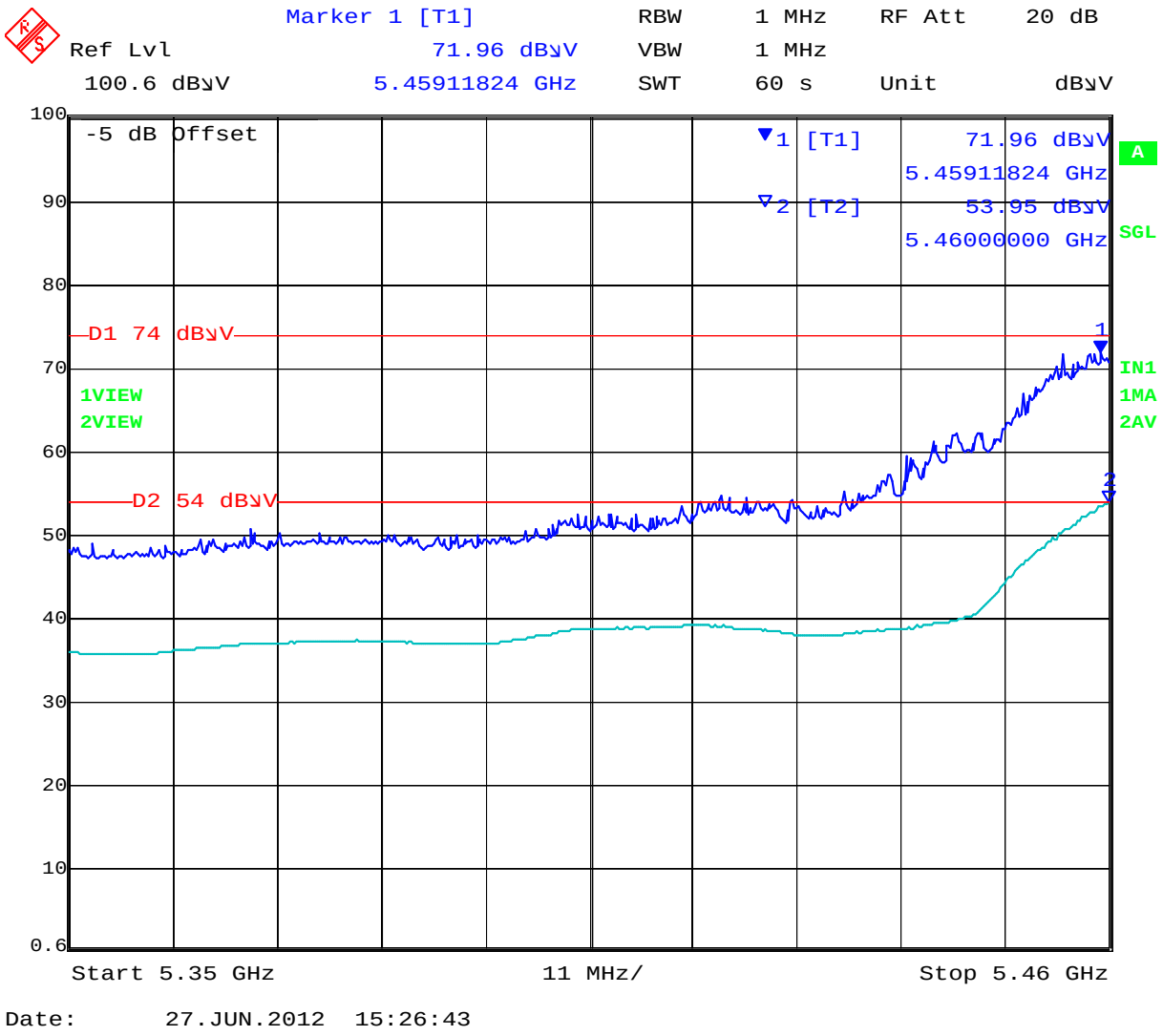
5500 MHz - 802.11a Legacy 5350 - 5460 MHz



5500 MHz - 802.11n HT-20 5350 - 5460 MHz



5510 MHz - 802.11n HT-40 5350 - 5460 MHz



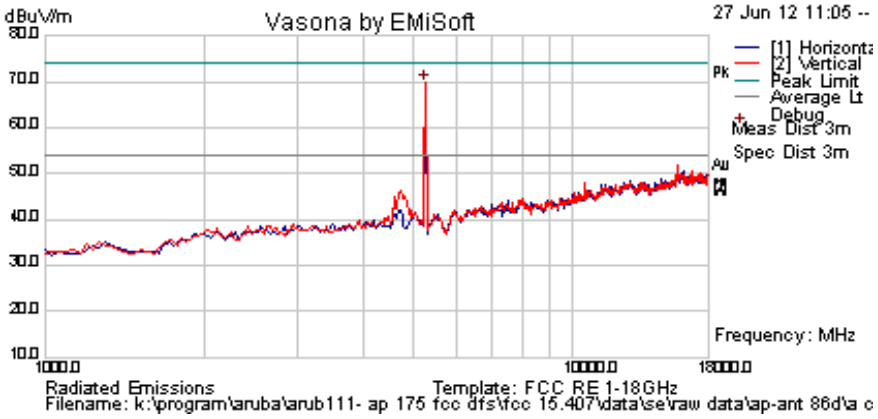
NOTE: Power Reduction Required ART = 17

Radiated Spurious Emissions – Above 1 GHz

Antenna AP-ANT-86D

5250 – 5350 MHz, 802.11a Legacy

Test Freq.	5260 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	19	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

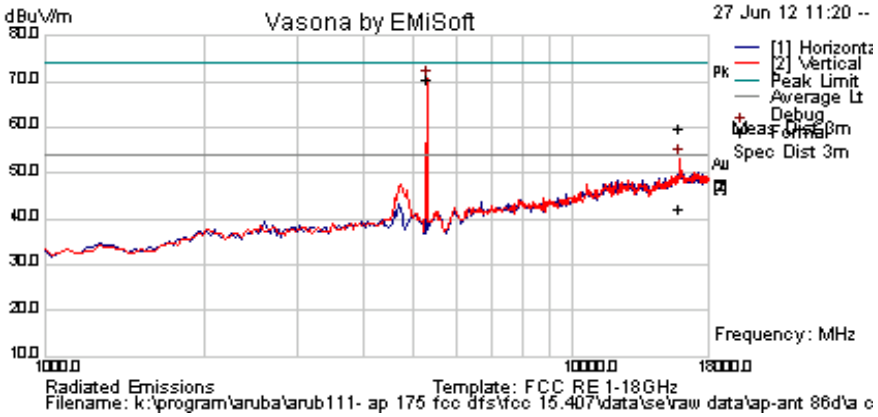


Formally measured emission peaks

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	74.8	4.6	-9.7	69.7	Peak [Scan]	V	150					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

Test Freq.	5300 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	19	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

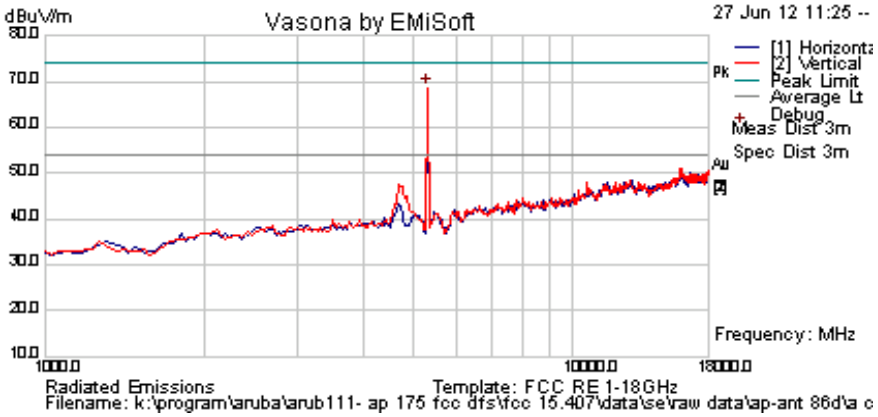


Formally measured emission peaks

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
15898.037	51.1	8.9	-0.2	59.8	Peak Max	V	139	74	74.0	-14.2	Pass	
15898.037	33.4	8.9	-0.2	42.1	Average Max	V	139	74	54.0	-11.9	Pass	
5292.585	75.5	4.6	-9.6	70.5	Peak [Scan]	V	150					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

Test Freq.	5320 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	19	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



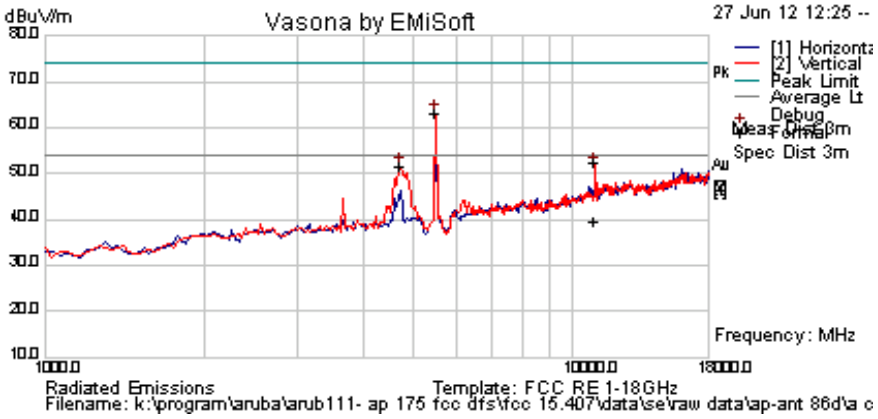
Formally measured emission peaks

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	73.6	4.6	-9.6	68.7	Peak [Scan]	V	150					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

5470 – 5725 MHz, 802.11a Legacy

Test Freq.	5500 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

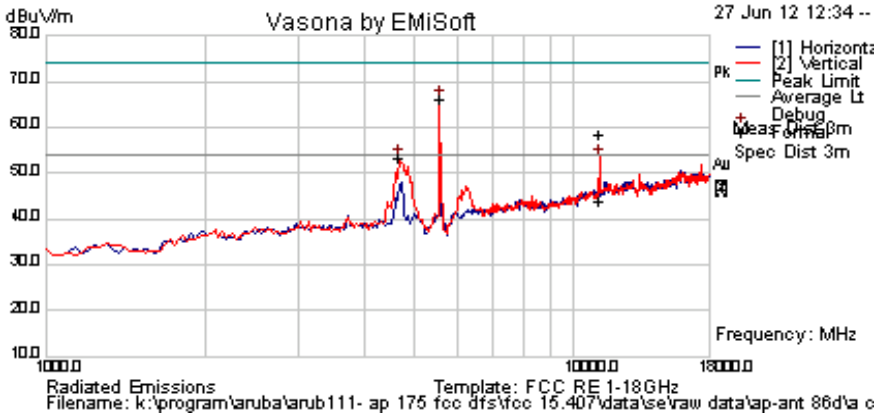


Formally measured emission peaks

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
10997.755	48.7	7.0	-3.1	52.6	Peak Max	V	141	319	74.0	-21.5	Pass	
10997.755	35.8	7.0	-3.1	39.7	Average Max	V	141	319	54.0	-14.3	Pass	
5496.994	68.1	4.6	-9.6	63.1	Peak [Scan]	V	150					FUND
4713.427	56.9	4.4	-9.8	51.5	Peak [Scan]	V	150					BE

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

Test Freq.	5580 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

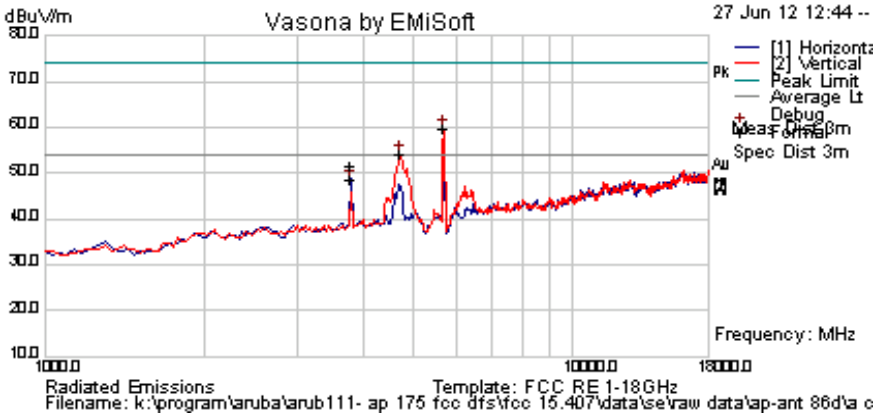


Formally measured emission peaks

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
11162.245	54.3	6.9	-3.0	58.3	Peak Max	V	132	271	74.0	-15.7	Pass	
11162.245	40.0	6.9	-3.0	43.9	Average Max	V	132	271	54.0	-10.1	Pass	
5565.130	71.2	4.7	-9.7	66.2	Peak [Scan]	V	150					FUND
4679.359	58.7	4.3	-9.9	53.2	Peak [Scan]	V	150					BE

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

Test Freq.	5700 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



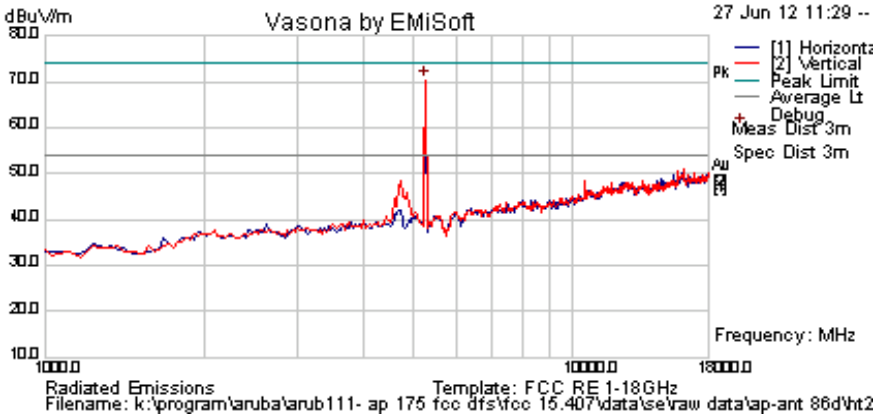
Formally measured emission peaks

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
3799.948	58.9	3.8	-10.9	51.8	Peak Max	H	101	347	74.0	-22.3	Pass	
3799.947976	55.7	3.8	-10.9	48.5	Average Max	H	101	347	54.0	-5.5	Pass	
5701.403	64.6	4.7	-9.6	59.7	Peak [Scan]	V	150					FUND
4713.427	59.5	4.4	-9.8	54.1	Peak [Scan]	V	150					BE

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

5250 – 5350 MHz, 802.11n HT-20

Test Freq.	5260 MHz	**Engineer**	SB
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	19	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

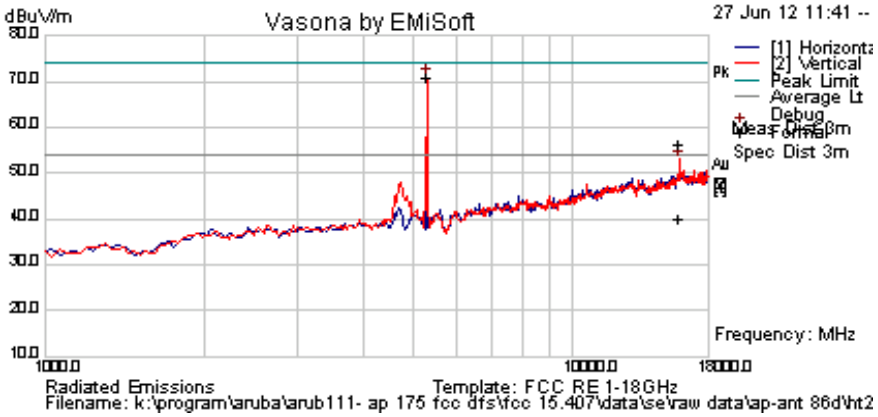


Formally measured emission peaks

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	75.5	4.6	-9.7	70.3	Peak [Scan]	V	150					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

Test Freq.	5300 MHz	**Engineer**	SB
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	19	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

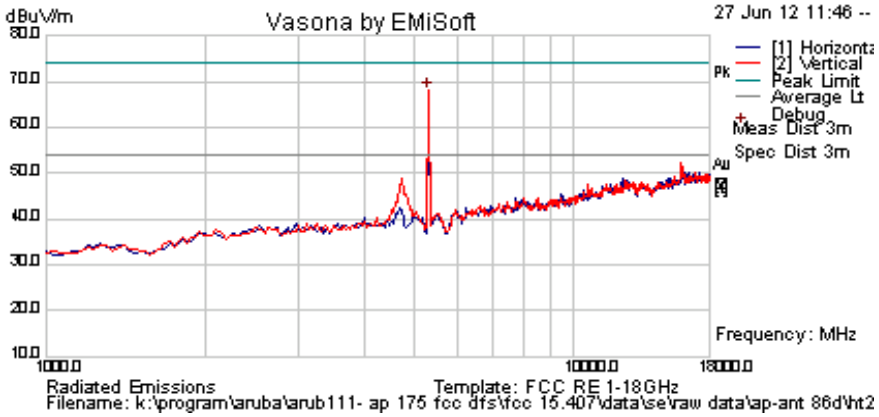


Formally measured emission peaks

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
15891.383	47.6	8.9	-0.2	56.3	Peak Max	V	105	202	74.0	-17.7	Pass	
15891.383	31.3	8.9	-0.2	40.0	Average Max	V	105	202	54.0	-14.0	Pass	
5292.585	75.8	4.6	-9.6	70.8	Peak [Scan]	V	150					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

Test Freq.	5320 MHz	**Engineer**	SB
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	19	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



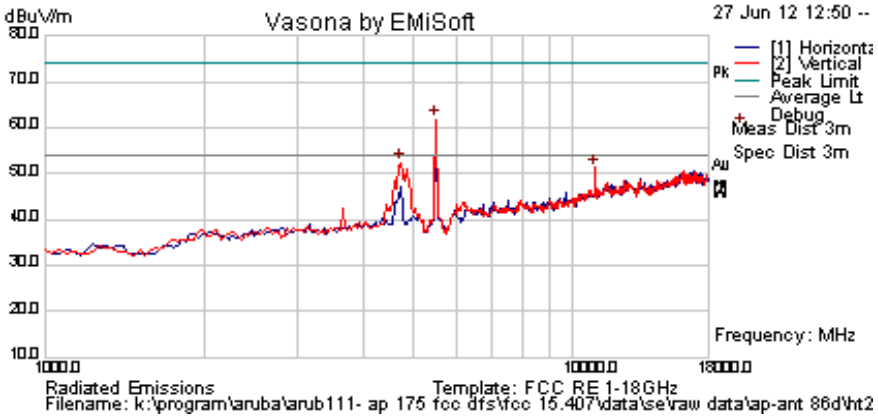
Formally measured emission peaks

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	73.1	4.6	-9.6	68.1	Peak [Scan]	V	150					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

5470 – 5725 MHz, 802.11n HT-20

Test Freq.	5500 MHz	**Engineer**	SB
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

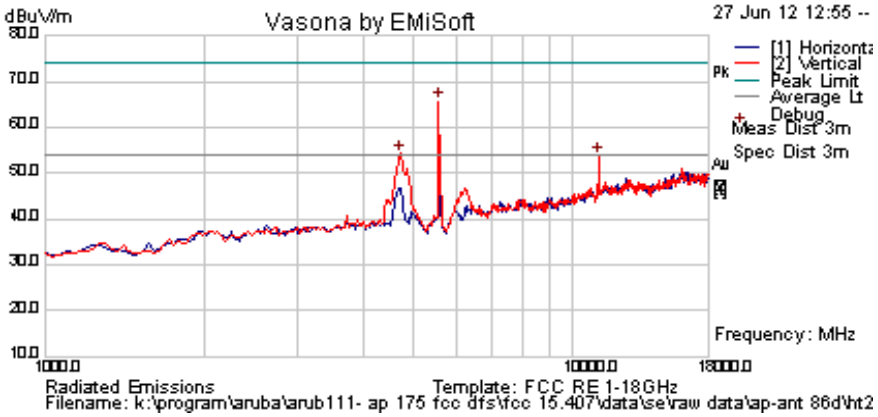


Formally measured emission peaks

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
10981.964	48.7	7.0	-3.1	52.6	Peak Max	V	141	319	74.0	-21.5	Pass	
10981.964	35.8	7.0	-3.1	39.7	Average Max	V	141	319	54.0	-14.3	Pass	
5496.994	66.9	4.6	-9.6	61.9	Peak [Scan]	V	150					FUND
4713.426854	57.9	4.4	-9.8	52.5	Peak [Scan]	V	150					BE

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

Test Freq.	5580 MHz	**Engineer**	SB
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

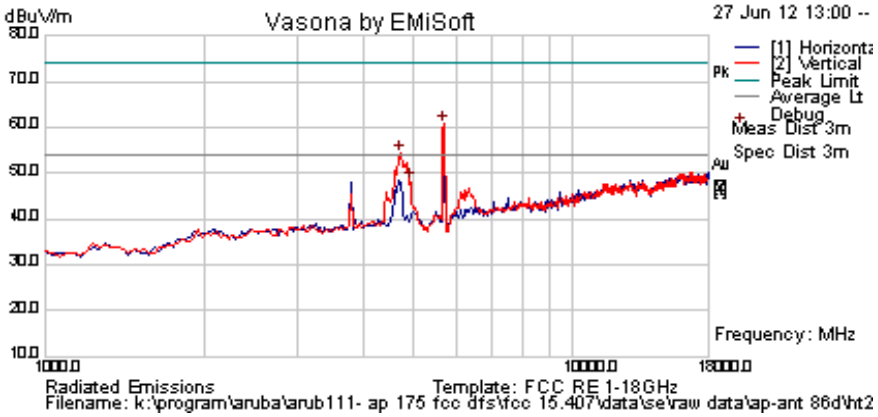


Formally measured emission peaks

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
11186.373	54.3	6.9	-3.0	58.3	Peak Max	V	132	271	74.0	-15.7	Pass	
11186.373	40.0	6.9	-3.0	43.9	Average Max	V	132	271	54.0	-10.1	Pass	
5565.130	70.8	4.7	-9.7	65.7	Peak [Scan]	V	150					FUND
4713.427	59.8	4.4	-9.8	54.4	Peak [Scan]	V	150					BE

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

Test Freq.	5700 MHz	**Engineer**	SB
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



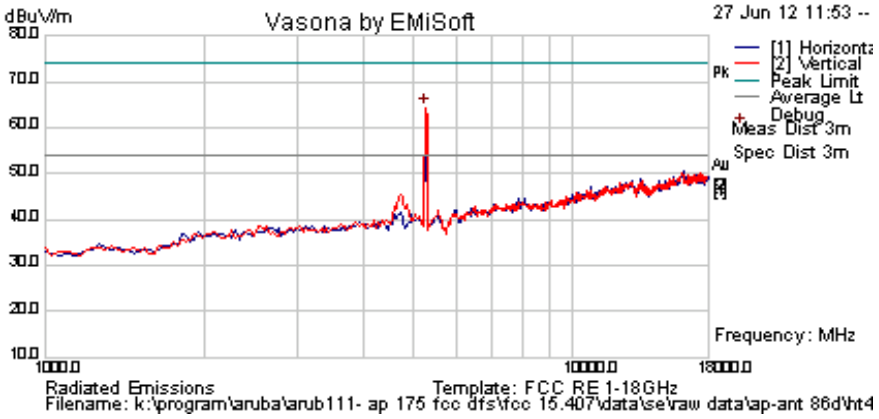
Formally measured emission peaks

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	65.5	4.7	-9.6	60.7	Peak [Scan]	V	150					FUND
4713.426854	59.8	4.4	-9.8	54.4	Peak [Scan]	V	150					BE

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

5250 – 5350 MHz, 802.11n HT-40

Test Freq.	5270 MHz	**Engineer**	SB
Variant	802.11n HT-40; 13.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	16	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

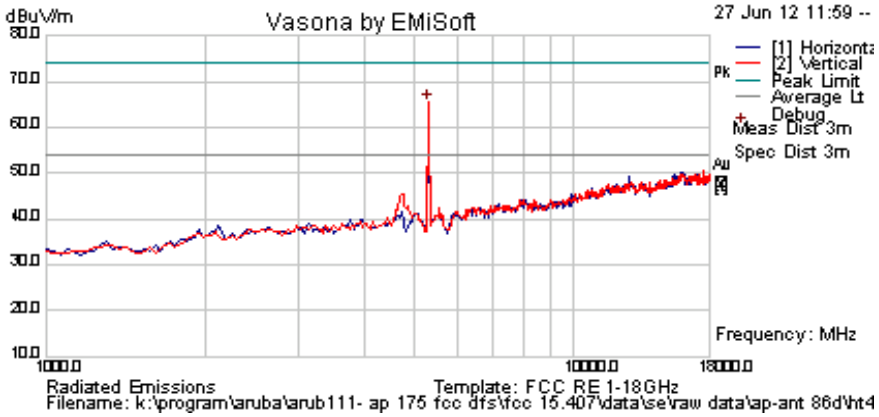


Formally measured emission peaks

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	69.6	4.6	-9.7	64.5	Peak [Scan]	V	150					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

Test Freq.	5310 MHz	**Engineer**	SB
Variant	802.11n HT-40; 13.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	16	**Press. (mBars)**	1008
Antenna		**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



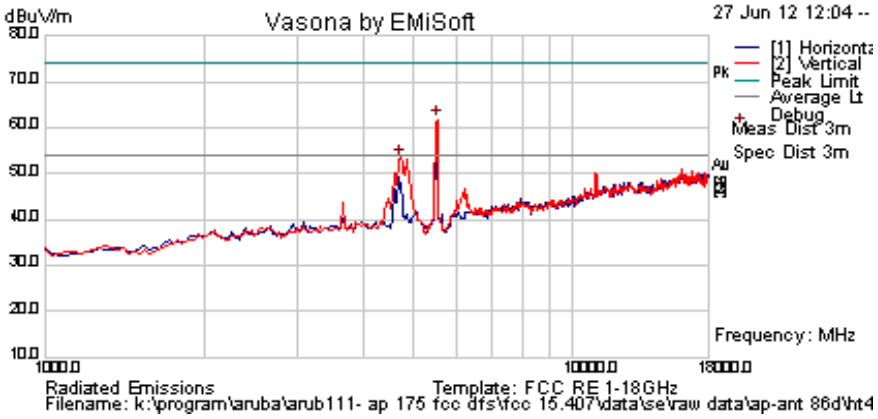
Formally measured emission peaks

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	70.4	4.6	-9.6	65.4	Peak [Scan]	V	150					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

5470 – 5725 MHz, 802.11n HT-40

Test Freq.	5510 MHz	**Engineer**	SB
Variant	802.11n HT-40; 13.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

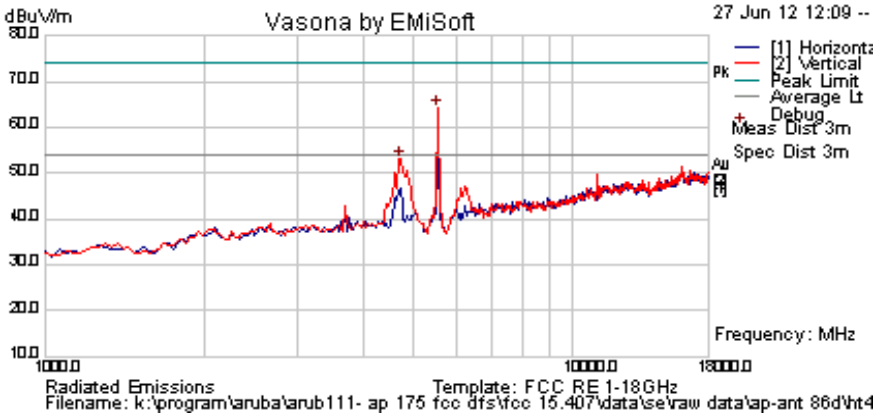


Formally measured emission peaks

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
5531.062	66.8	4.6	-9.7	61.8	Peak [Scan]	V	150					FUND
4713.426854	58.9	4.4	-9.8	53.4	Peak [Scan]	V	150					BE

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

Test Freq.	5550 MHz	**Engineer**	SB
Variant	802.11n HT-40; 13.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

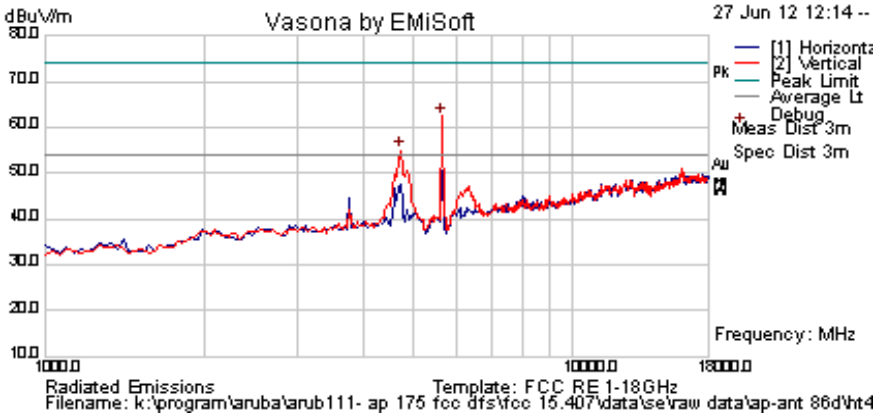


Formally measured emission peaks

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
5531.062	69.3	4.6	-9.7	64.3	Peak [Scan]	V	150					FUND
4713.426854	58.6	4.4	-9.8	53.2	Peak [Scan]	V	150					BE

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

Test Freq.	5670 MHz	**Engineer**	SB
Variant	802.11n HT-40; 13.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT86D	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



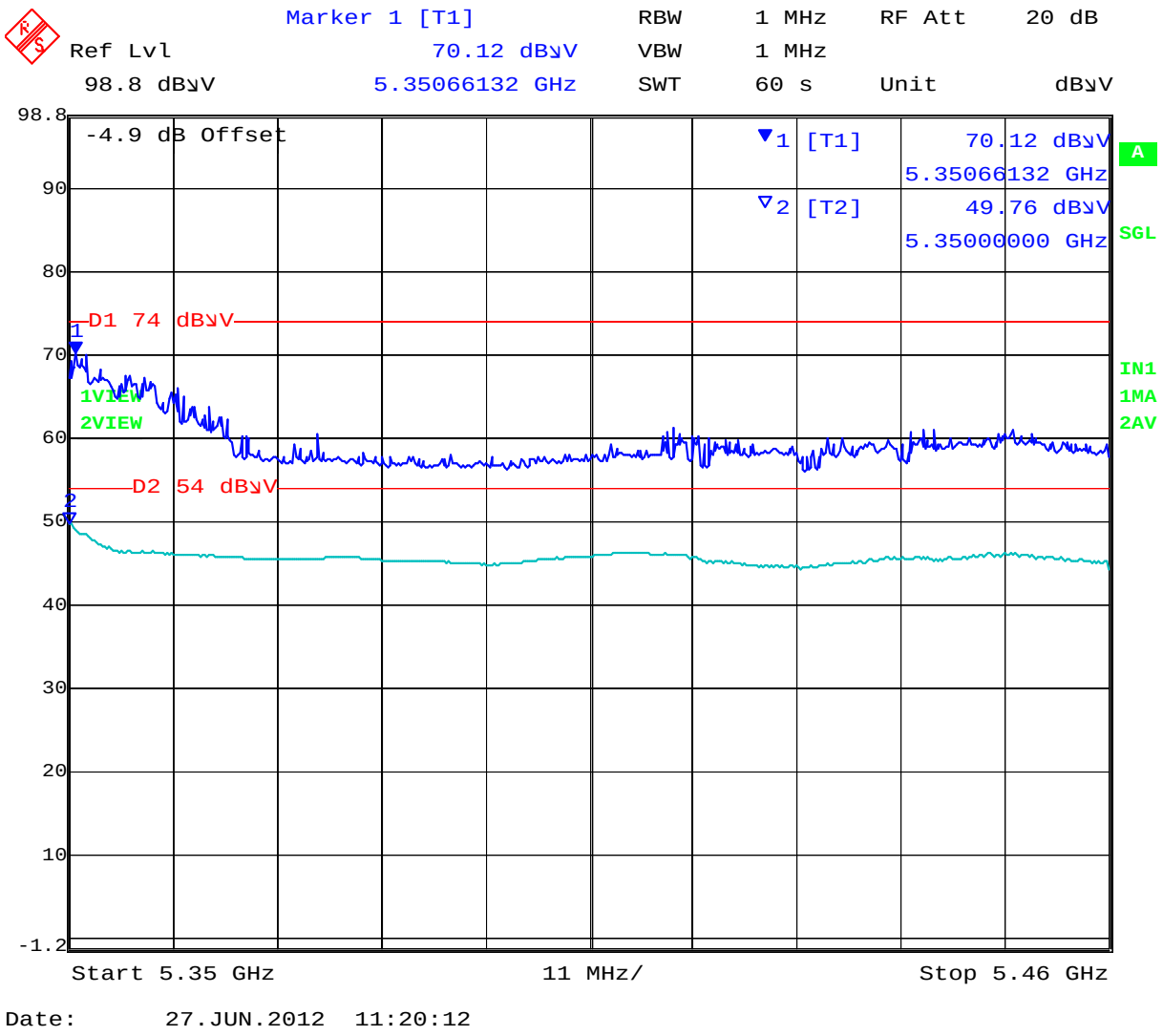
Formally measured emission peaks

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
5633.267	67.6	4.7	-9.7	62.5	Peak [Scan]	V	150					FUND
4713.426854	60.4	4.4	-9.8	55.0	Peak [Scan]	V	150					BE

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

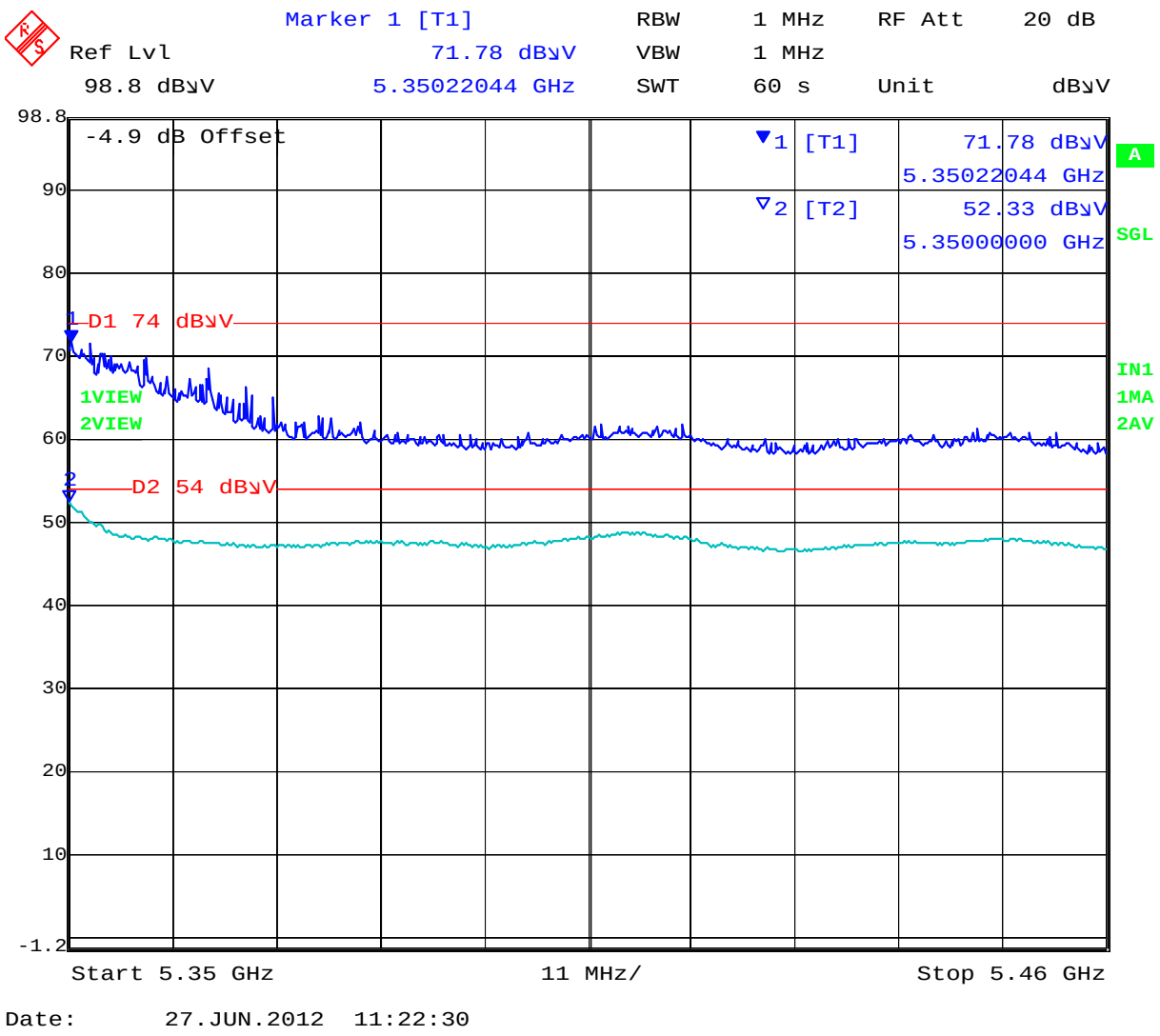
5.1.7.2. Radiated Band-Edge spurious emissions

5320 MHz - 802.11a Legacy 5350 - 5460 MHz



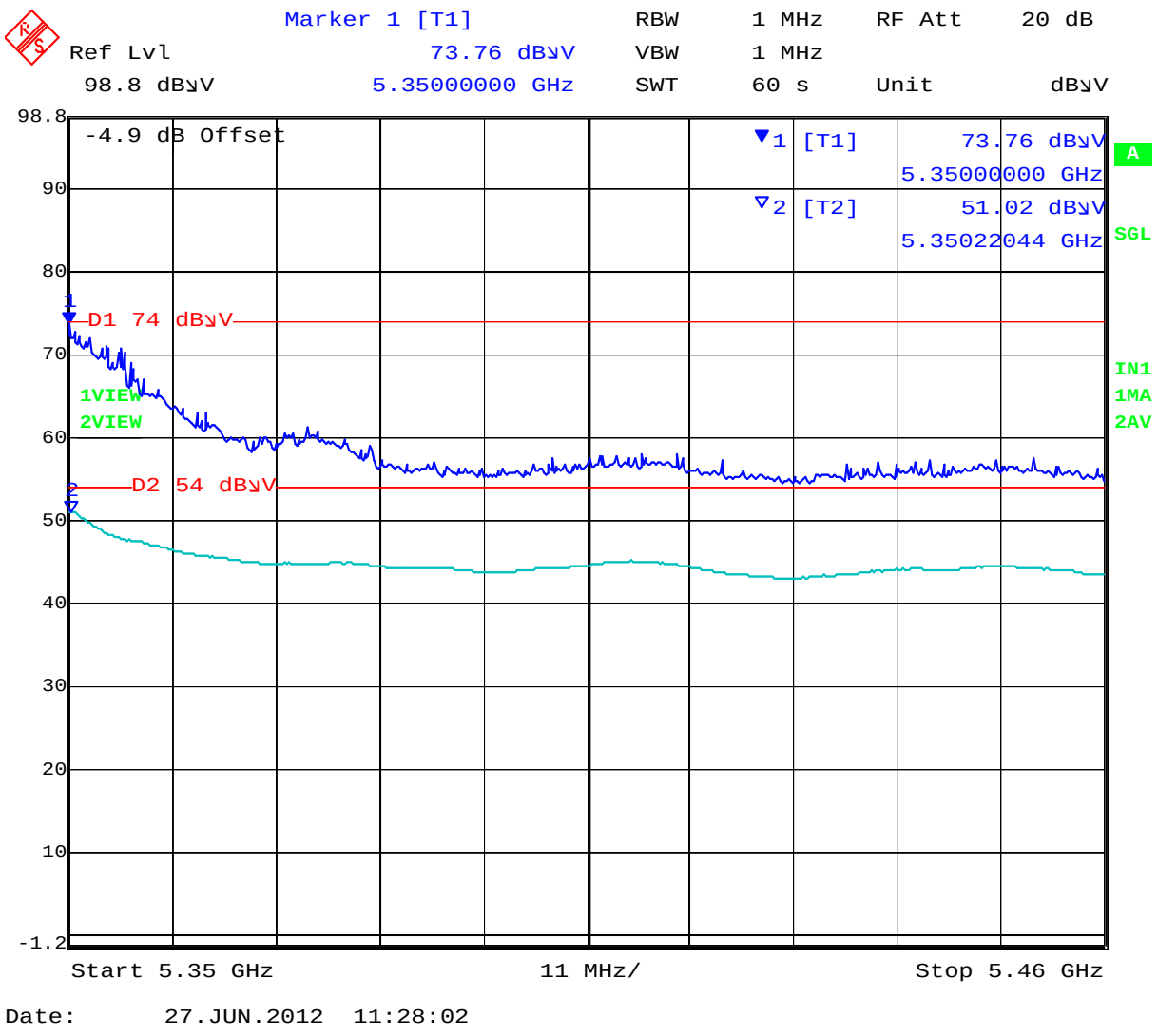
NOTE: Power Reduction Required ART = 19

5320 MHz - 802.11n HT-20 5350 - 5460 MHz



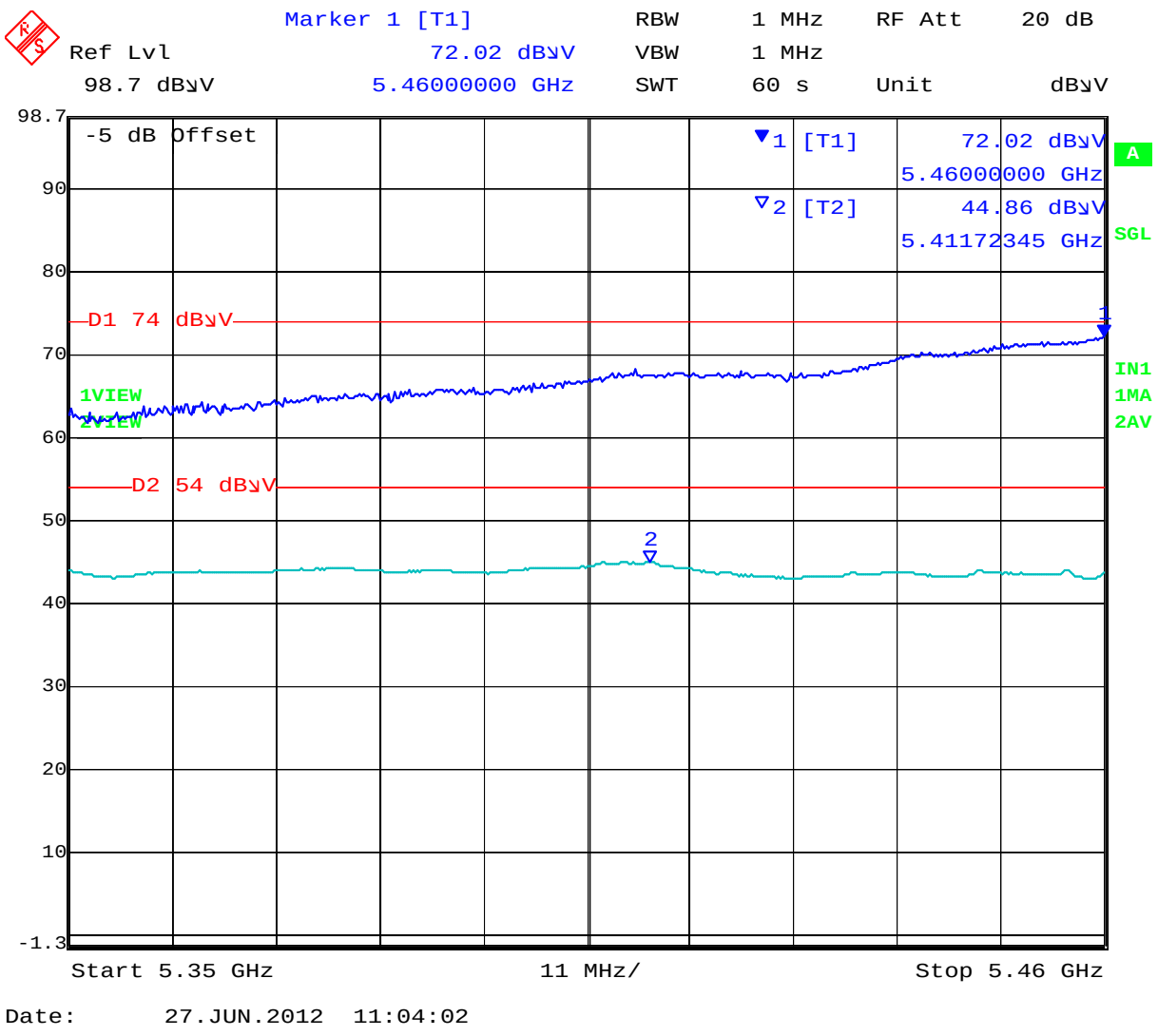
NOTE: Power Reduction Required ART = 19

5310 MHz - 802.11n HT-40 5350 - 5460 MHz

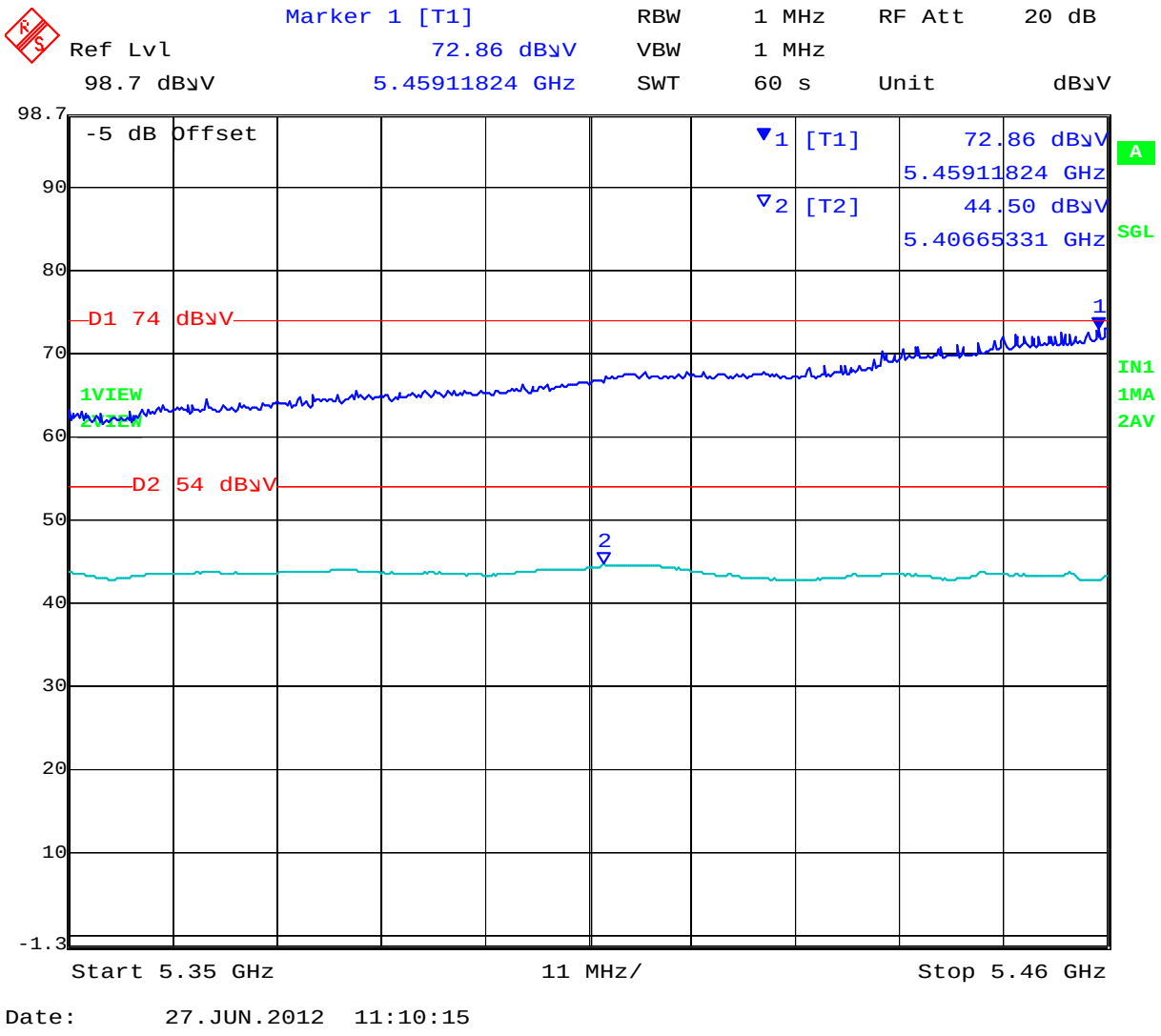


NOTE: Power Reduction Required ART = 16

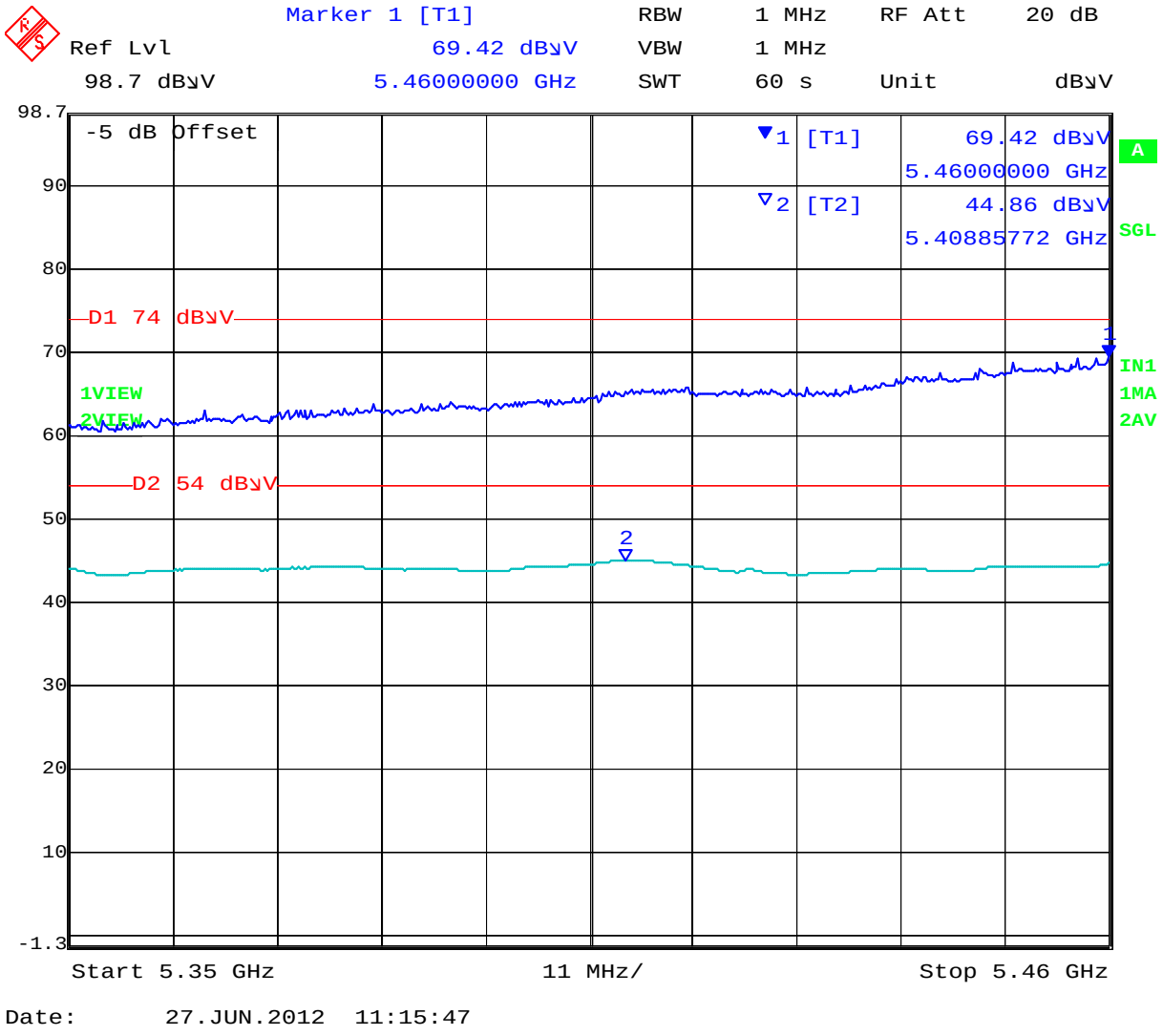
5500 MHz - 802.11a Legacy 5350 - 5460 MHz



5500 MHz - 802.11n HT-20 5350 - 5460 MHz



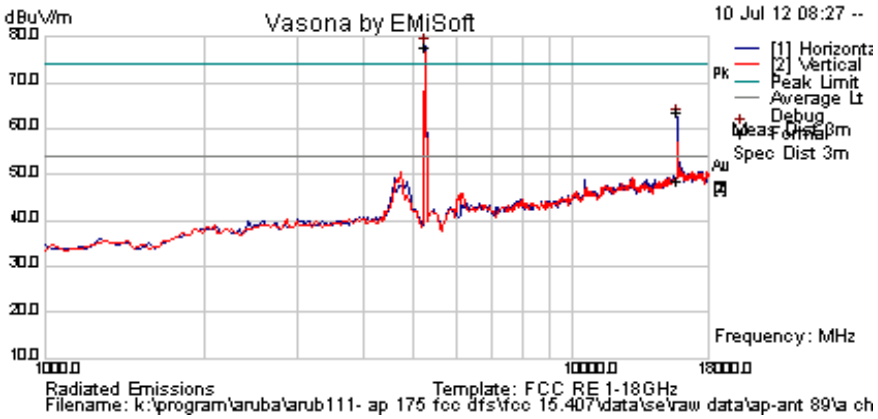
5510 MHz - 802.11n HT-40 5350 - 5460 MHz



Antenna AP-ANT-89

5250 – 5350 MHz, 802.11a Legacy

Test Freq.	5260 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

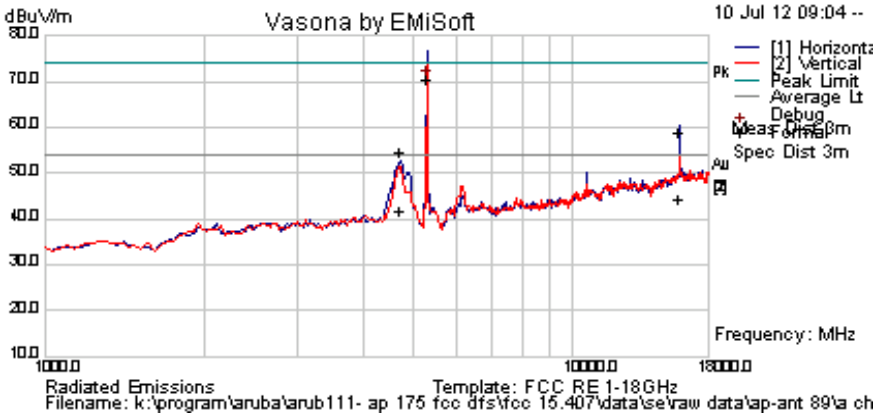


Formally measured emission peaks

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	83.0	4.6	-9.7	77.9	Peak [Scan]	H	150					FUND
15772.906	40.3	8.7	-0.3	48.6	Average Max	H	118	330	54.0	-5.4	Pass	
15772.906	55.2	8.7	-0.3	63.6	Peak Max	H	118	330	74	-10.4	Pass	

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

Test Freq.	5300 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

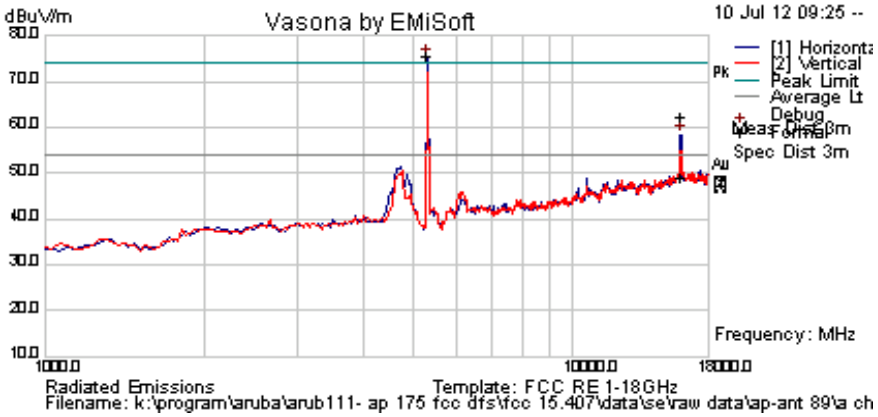


Formally measured emission peaks

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
15891.784	50.3	8.9	-0.2	59.0	Peak Max	H	125	3	74.0	-15.0	Pass	
4705.09	60.3	4.4	-9.8	54.8	Peak Max	H	98	354	74.0	-19.2	Pass	
15891.784	35.5	8.9	-0.2	44.2	Average Max	H	125	3	54	-9.8	Pass	
4705.090	47.1	4.4	-9.8	41.7	Average Max	H	98	354	54	-12.3	Pass	
5300.200	75.6	4.6	-9.6	70.7	Peak [Scan]	V	98					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

Test Freq.	5320 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



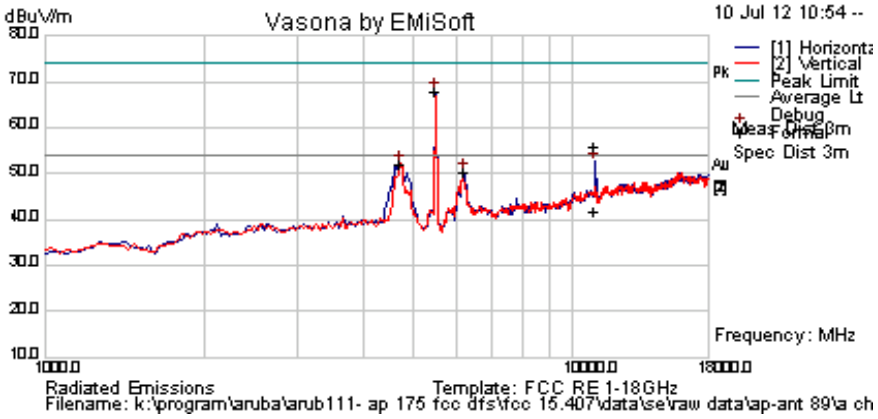
Formally measured emission peaks

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
15956.633	53.2	9.0	0.0	62.2	Peak Max	H	109	330	74.0	-11.9	Pass	
15956.633	40.0	9.0	0.0	49.0	Average Max	H	109	330	54.0	-5.1	Pass	
5292.585	80.4	4.6	-9.6	75.4	Peak [Scan]	H	150					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

5470 – 5725 MHz, 802.11a Legacy

Test Freq.	5500 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

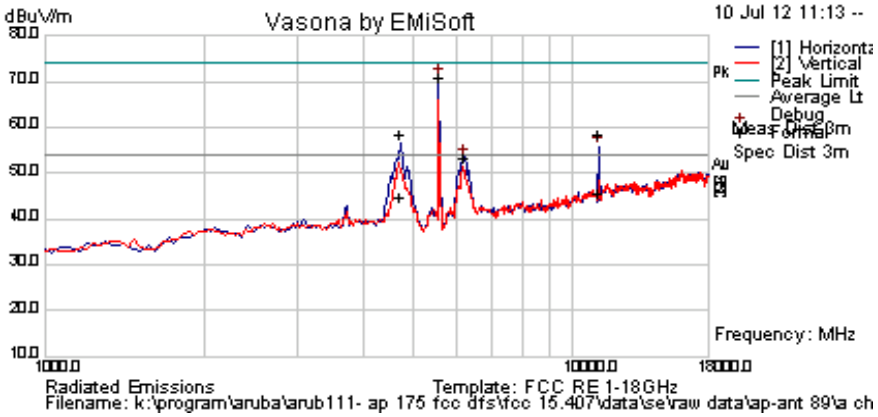


Formally measured emission peaks

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
10994.790	51.9	7.0	-3.1	55.8	Peak Max	H	101	346	74.0	-18.3	Pass	
10994.79	38.0	7.0	-3.1	41.9	Average Max	H	101	346	54.0	-12.1	Pass	
5496.994	72.8	4.6	-9.6	67.8	Peak [Scan]	H	150					FUND
4713.427	57.5	4.4	-9.8	52.1	Peak [Scan]	V	100	0	54	-1.9	Pass	BE
6212.425	53.1	5.0	-7.8	50.3	Peak [Scan]	H	100	0	54	-3.7	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

Test Freq.	5580 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

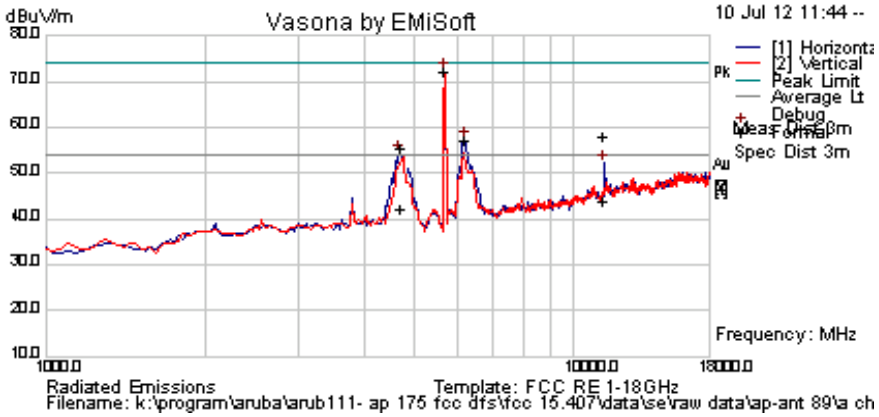


Formally measured emission peaks

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
4708.938	64.0	4.4	-9.8	58.6	Peak Max	H	102	350	74.0	-15.4	Pass	BE
4708.938	50.3	4.4	-9.8	44.8	Average Max	H	102	350	54.0	-9.2	Pass	BE
11160.000	54.4	6.9	-3.0	58.4	Peak Max	H	98	325	74	-15.6	Pass	
11160.000	41.6	6.9	-3.0	45.6	Average Max	H	98	325	54	-8.5	Pass	
5565.130	76.1	4.7	-9.7	71.0	Peak [Scan]	H	150					FUND
6212.425	56.3	5.0	-7.8	53.5	Peak [Scan]	H	100	0	54	-0.5	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

Test Freq.	5700 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



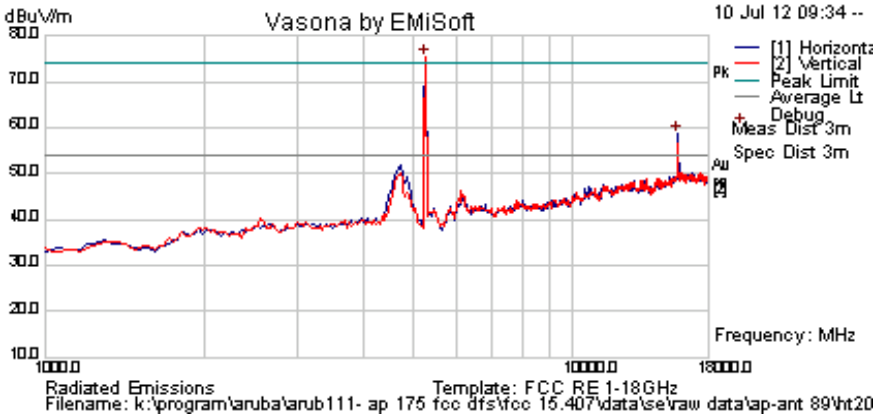
Formally measured emission peaks

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
4708.858	60.8	4.4	-9.8	55.4	Peak Max	H	130	360	74.0	-18.6	Pass	BE
11399.359	53.3	6.8	-2.3	57.9	Peak Max	H	98	323	74.0	-16.1	Pass	
4708.858	47.4	4.4	-9.8	42.0	Average Max	H	130	360	54	-12.0	Pass	BE
11399.359	39.5	6.8	-2.3	44.0	Average Max	H	98	323	54	-10.0	Pass	
5701.403	77.0	4.7	-9.6	72.1	Peak [Scan]	V	100	0				FUND
6246.493	59.7	5.0	-7.6	57.1	Peak [Scan]	H	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

5250 – 5350 MHz, 802.11n HT-20

Test Freq.	5260 MHz	**Engineer**	SB
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

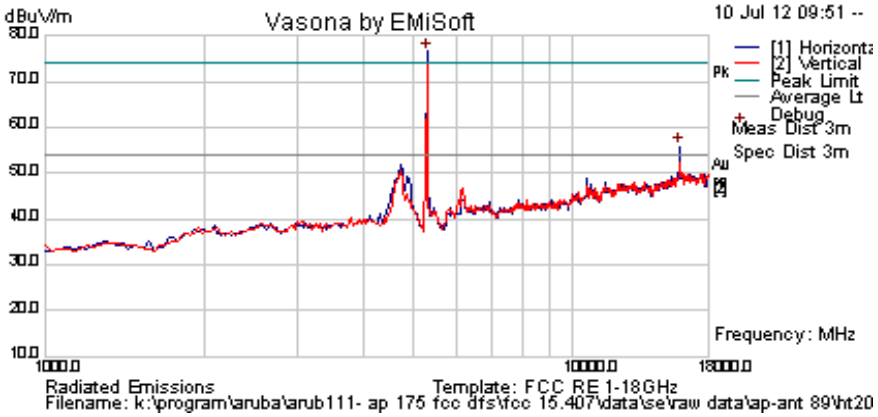


Formally measured emission peaks

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	80.5	4.6	-9.7	75.4	Peak [Scan]	H	150					FUND
15785.571	40.3	8.7	-0.3	48.6	Average Max	H	118	330	54.0	-5.4	Pass	
15785.571	55.2	8.7	-0.3	63.6	Peak Max	H	118	330	74	-10.4	Pass	

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

Test Freq.	5300 MHz	**Engineer**	SB
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

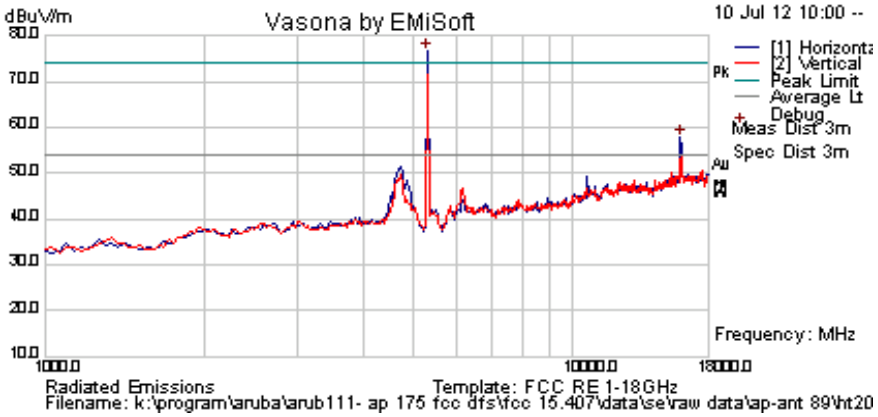


Formally measured emission peaks

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	81.6	4.6	-9.6	76.6	Peak [Scan]	H	150					FUND
15887.776	50.3	8.9	-0.2	59.0	Peak Max	H	125	3	74.0	-15.0	Pass	
15887.776	38.1	8.8	-0.2	46.6	Average Max	H	121	328	54.0	-7.4	Pass	

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

Test Freq.	5320 MHz	**Engineer**	SB
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna		**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



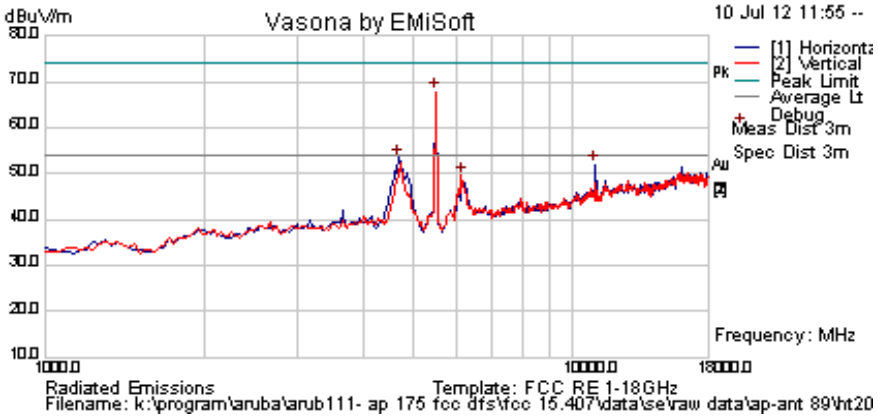
Formally measured emission peaks

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	81.6	4.6	-9.6	76.7	Peak [Scan]	H	150					FUND
15955.912	53.2	9.0	0.0	62.2	Peak Max	H	109	330	74.0	-11.9	Pass	
15955.912	40.0	9.0	0.0	49.0	Average Max	H	109	330	54.0	-5.1	Pass	

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

5470 – 5725 MHz, 802.11n HT-20

Test Freq.	5500 MHz	**Engineer**	SB
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

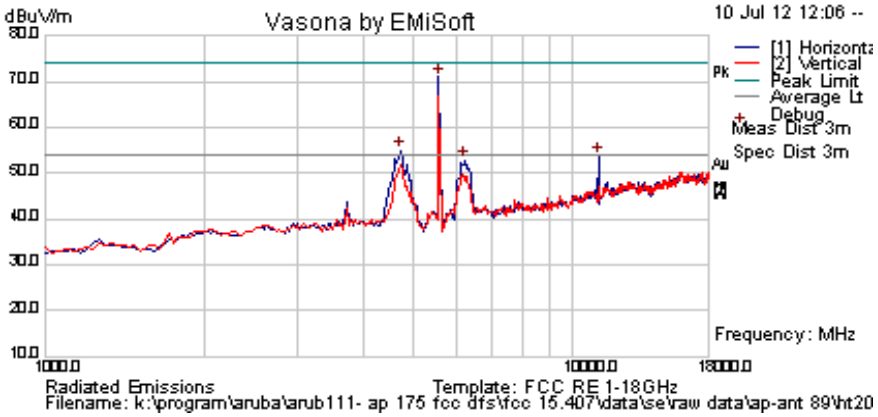


Formally measured emission peaks

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
4679.359	58.9	4.3	-9.9	53.4	Peak [Scan]	H	150	0	54.0	-0.6	Pass	BE
5496.993988	72.8	4.6	-9.6	67.8	Peak [Scan]	V	100					FUND
6144.289	52.6	5.0	-8.1	49.5	Peak [Scan]	V	100	0	54	-4.5	Pass	NRB
11016.032	51.9	7.0	-3.1	55.8	Peak Max	H	101	346	74.0	-18.3	Pass	
11016.032	38.0	7.0	-3.1	41.9	Average Max	H	101	346	54.0	-12.1	Pass	

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

Test Freq.	5580 MHz	**Engineer**	SB
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

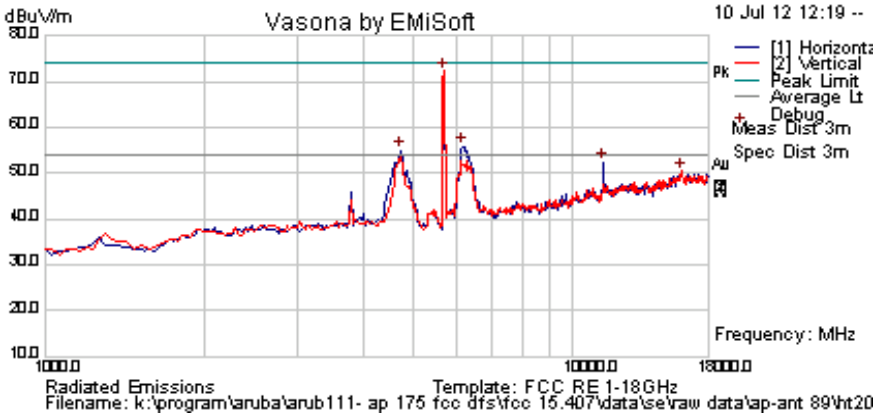


Formally measured emission peaks

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
4713.427	64.0	4.4	-9.8	58.6	Peak Max	H	102	350	74.0	-15.4	Pass	BE
4713.427	50.3	4.4	-9.8	44.8	Average Max	H	102	350	54.0	-9.2	Pass	BE
11186.373	54.4	6.9	-3.0	58.4	Peak Max	H	98	325	74	-15.6	Pass	
11186.373	41.6	6.9	-3.0	45.6	Average Max	H	98	325	54	-8.5	Pass	
5565.130261	76.1	4.7	-9.7	71.0	Peak [Scan]	H	100					FUND
6246.493	55.4	5.0	-7.6	52.8	Peak [Scan]	H	100	0	54	-1.2	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

Test Freq.	5700 MHz	**Engineer**	SB
Variant	802.11n HT-20; 6.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	21	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



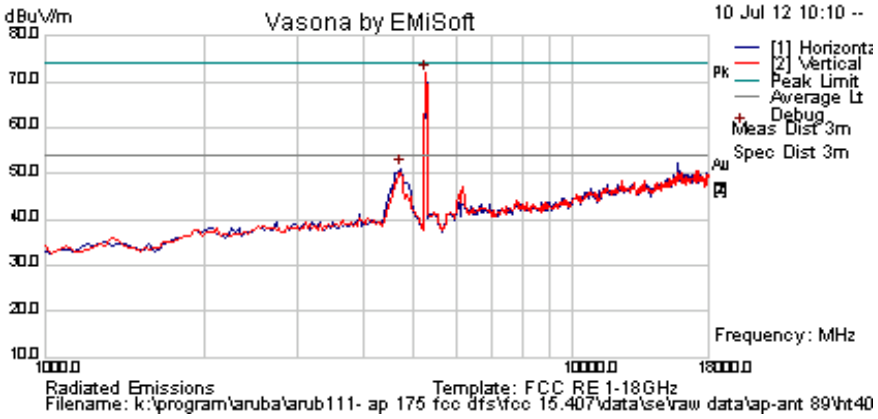
Formally measured emission peaks

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
4713.427	60.8	4.4	-9.8	55.4	Peak Max	H	130	360	74.0	-18.6	Pass	BE
11390.782	53.3	6.8	-2.3	57.9	Peak Max	H	98	323	74.0	-16.1	Pass	
4713.427	47.4	4.4	-9.8	42.0	Average Max	H	130	360	54	-12.0	Pass	BE
11390.782	39.5	6.8	-2.3	44.0	Average Max	H	98	323	54	-10.0	Pass	
5701.402806	77.1	4.7	-9.6	72.2	Peak [Scan]	V	200					FUND
6178.357	58.8	5.0	-7.9	55.9	Peak [Scan]	H	100					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

5250 – 5350 MHz, 802.11n HT-40

Test Freq.	5270 MHz	**Engineer**	SB
Variant	802.11n HT-40; 13.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	19	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

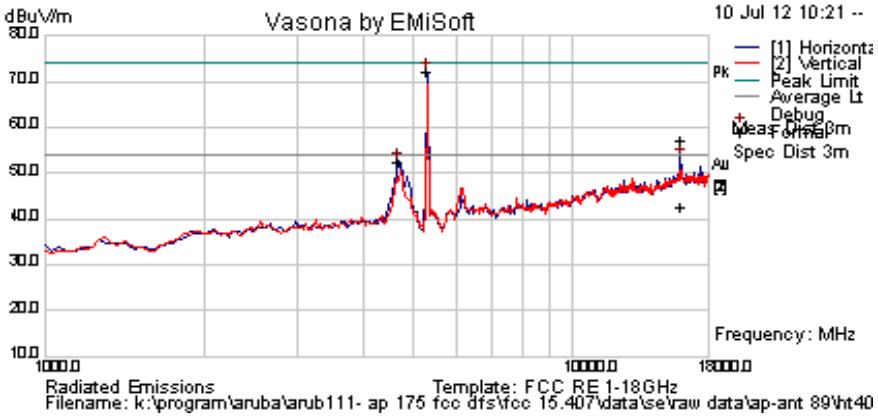


Formally measured emission peaks

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	77.0	4.6	-9.7	71.8	Peak [Scan]	V	150					FUND
4713.426854	56.6	4.4	-9.8	51.2	Peak [Scan]	H	150	0	54.0	-2.8	Pass	BE

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

Test Freq.	5310 MHz	**Engineer**	SB
Variant	802.11n HT-40; 13.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	19	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

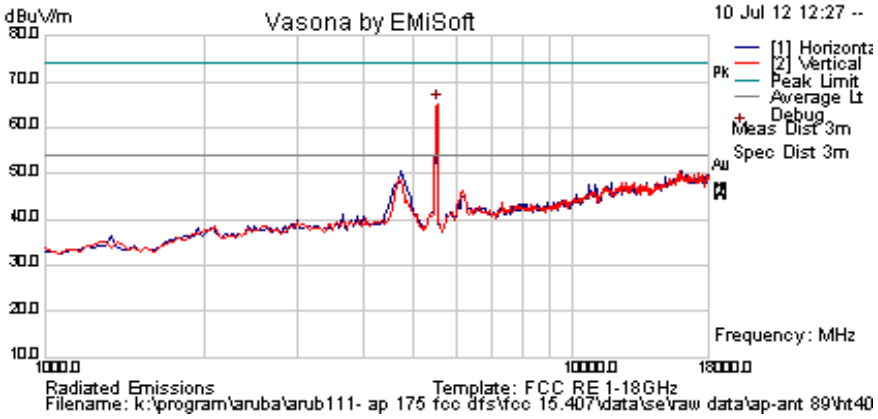


Formally measured emission peaks

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
15955.271	48.1	9.0	0.0	57.1	Peak Max	H	118	334	74.0	-16.9	Pass	
15955.271	33.5	9.0	0.0	42.4	Average Max	H	118	334	54.0	-11.6	Pass	
5292.585	77.1	4.6	-9.6	72.1	Peak [Scan]	H	150					FUND
4679.359	58.2	4.3	-9.9	52.7	Peak [Scan]	H	100	0	54	-1.4	Pass	
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											

5470 – 5725 MHz, 802.11n HT-40

Test Freq.	5510 MHz	**Engineer**	SB
Variant	802.11n HT-40; 13.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	19	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

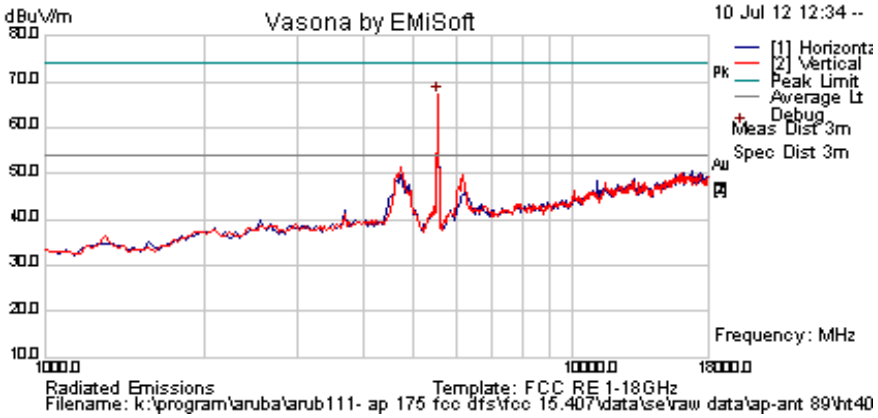


Formally measured emission peaks

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
5531.062	70.3	4.6	-9.7	65.3	Peak [Scan]	V	100					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

Test Freq.	5550 MHz	**Engineer**	SB
Variant	802.11n HT-40; 13.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	19	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

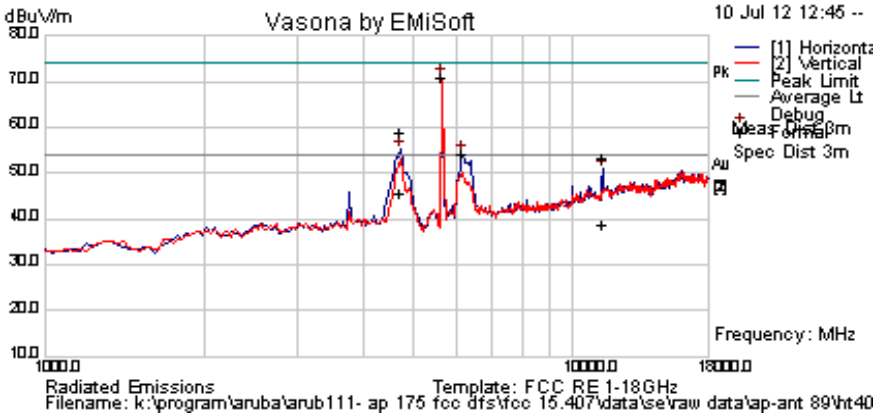


Formally measured emission peaks

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
5531.062	72.3	4.6	-9.7	67.2	Peak [Scan]	V	100					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

Test Freq.	5670 MHz	**Engineer**	SB
Variant	802.11n HT-40; 13.5 MCS	**Temp (ºC)**	26.6
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	31
Power Setting	19	**Press. (mBars)**	1008
Antenna	AP-ANT89	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



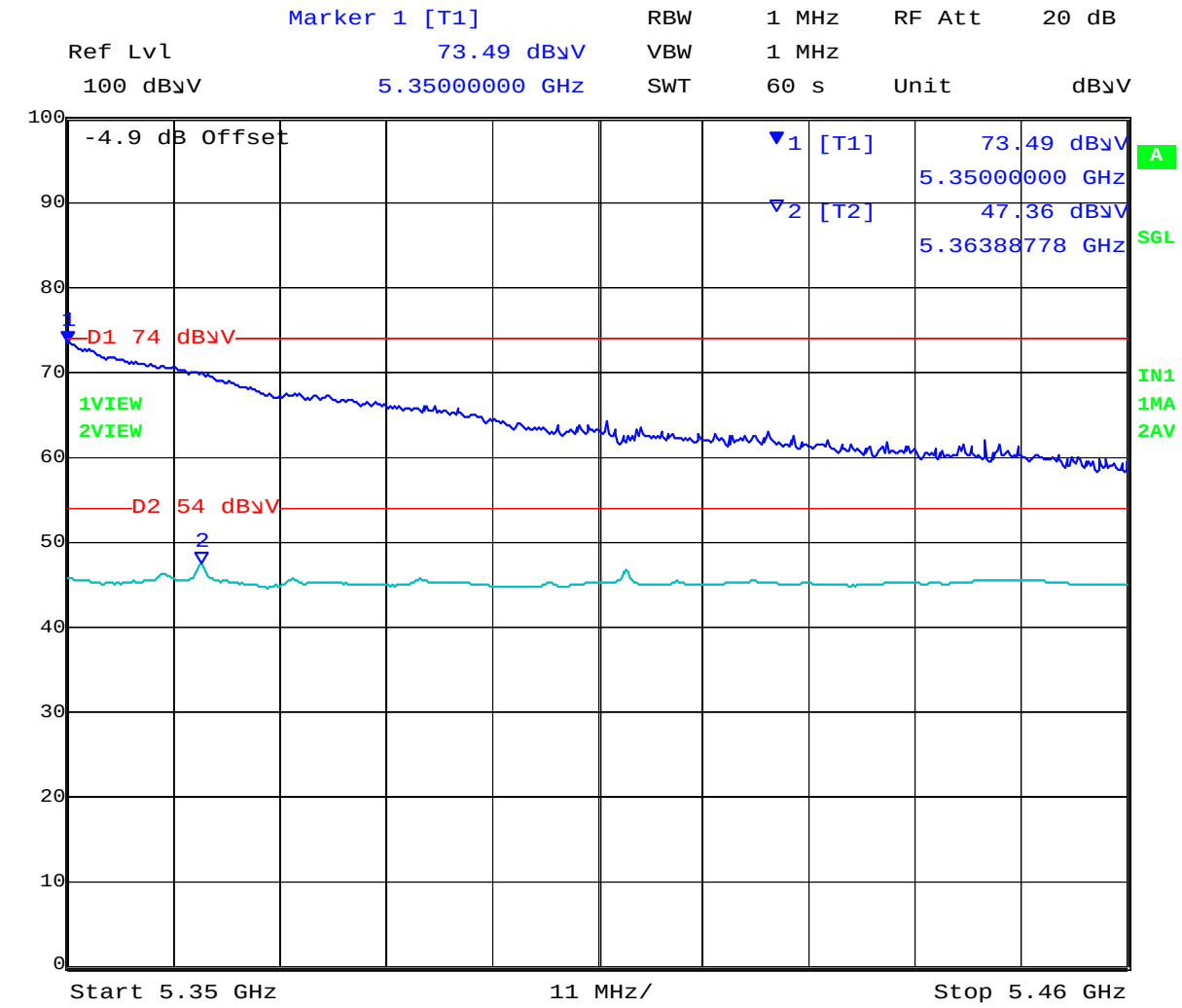
Formally measured emission peaks

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
4712.144	64.4	4.4	-9.8	59.0	Peak Max	H	115	349	74.0	-15.0	Pass	BE
11336.833	49.0	6.9	-2.4	53.4	Peak Max	H	133	322	74.0	-20.7	Pass	
4712.144	51.0	4.4	-9.8	45.6	Average Max	H	115	349	54	-8.4	Pass	BE
11336.833	34.5	6.9	-2.4	39.0	Average Max	H	133	322	54	-15.1	Pass	
5633.267	75.9	4.7	-9.7	70.9	Peak [Scan]	V	100					FUND
6178.357	57.1	5.0	-7.9	54.2	Peak [Scan]	H	100					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

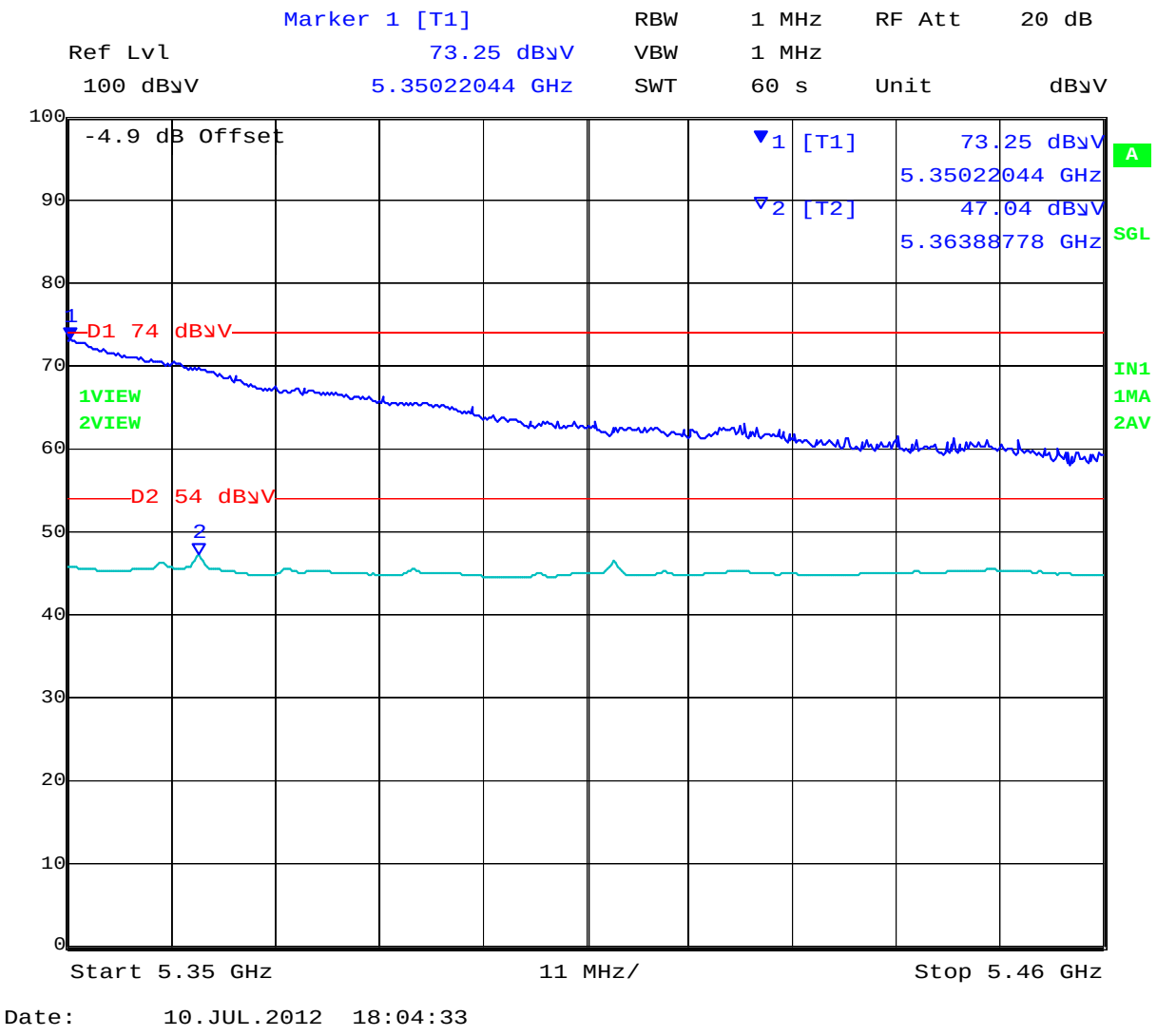
5.1.7.3. Radiated Band-Edge spurious emissions

5320 MHz - 802.11a Legacy 5350 - 5460 MHz



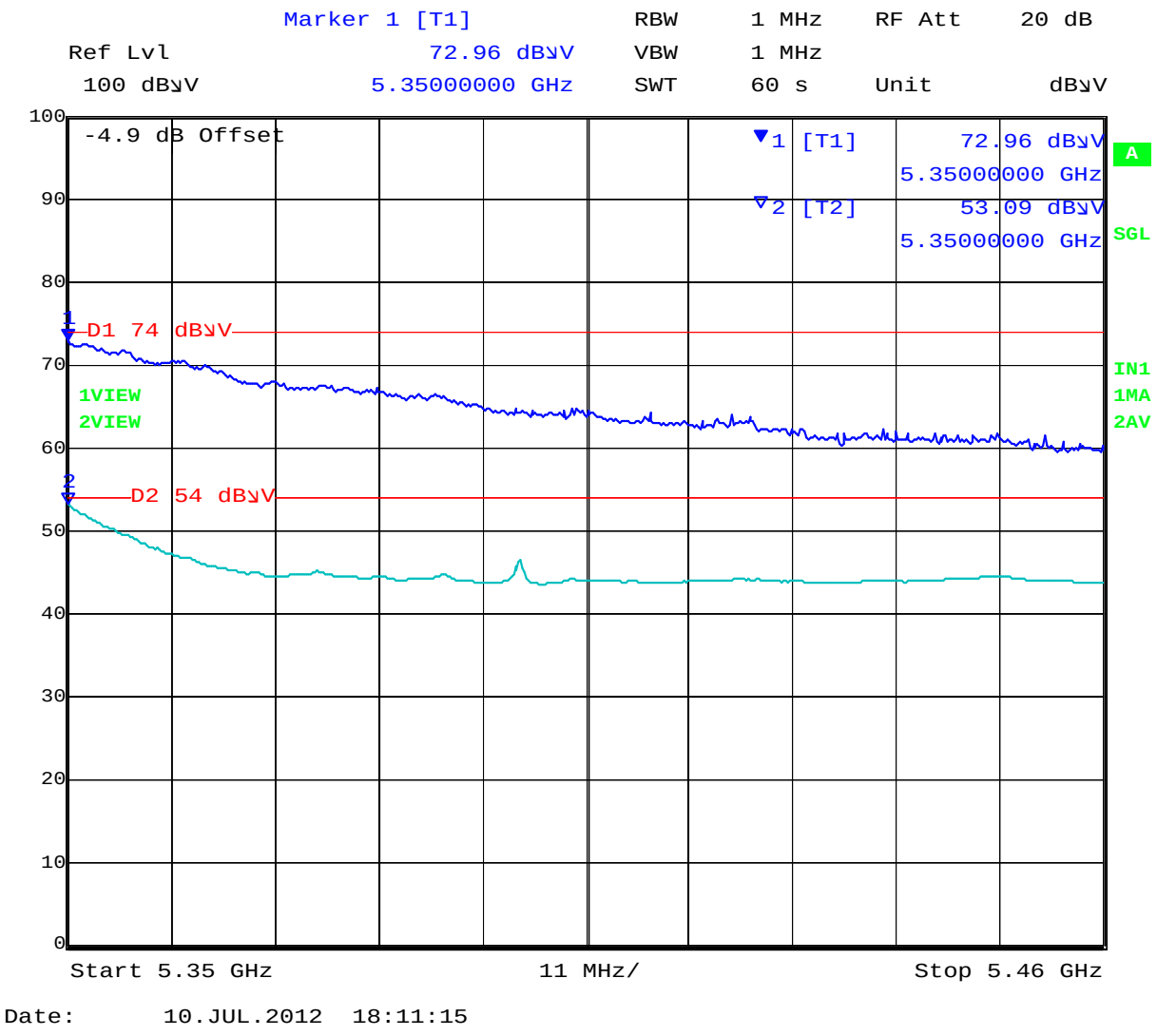
NOTE: Power Reduction Required ART = 19

5320 MHz - 802.11n HT-20 5350 - 5460 MHz



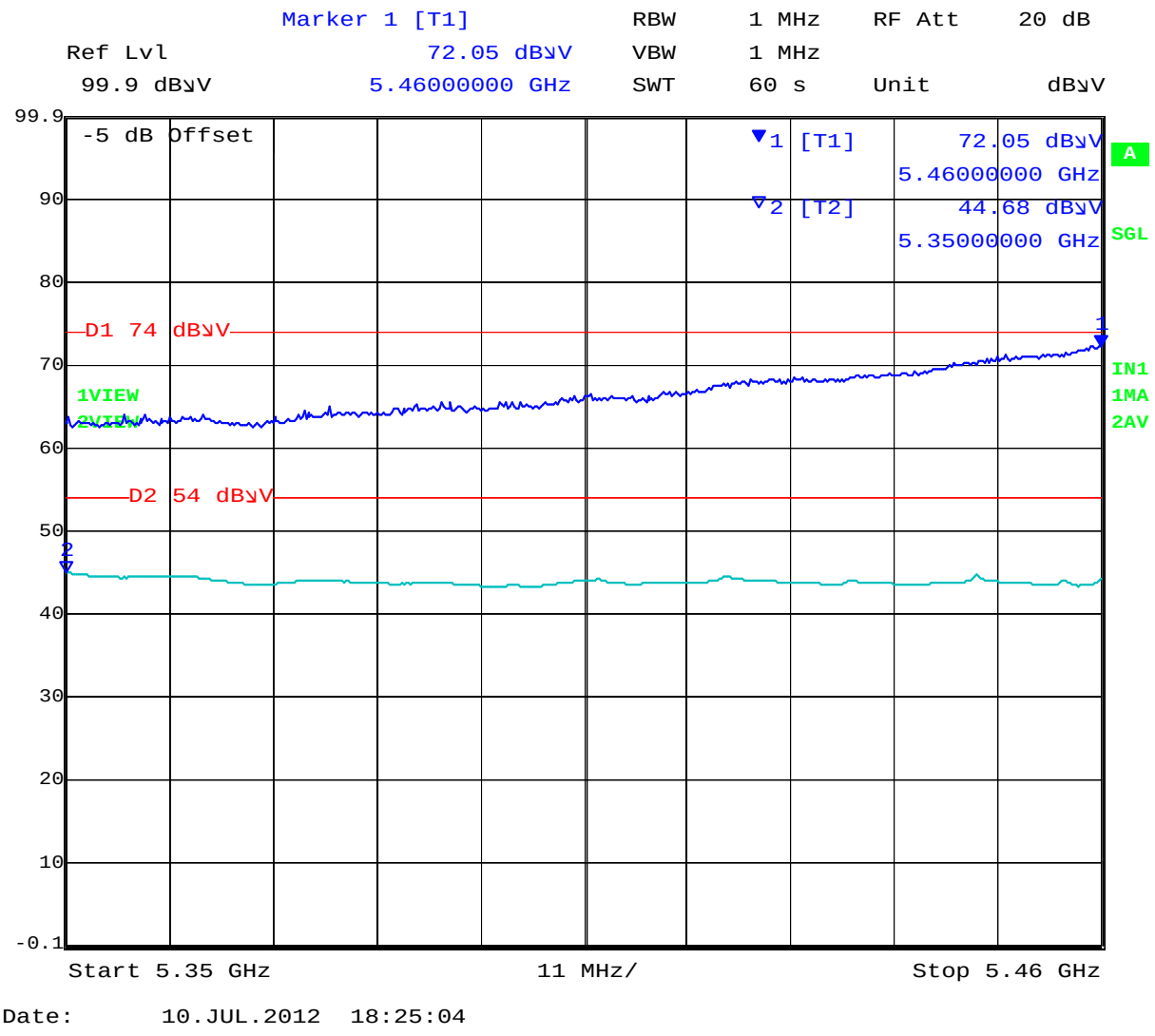
NOTE: Power Reduction Required ART = 18.5

5310 MHz - 802.11n HT-40 5350 - 5460 MHz



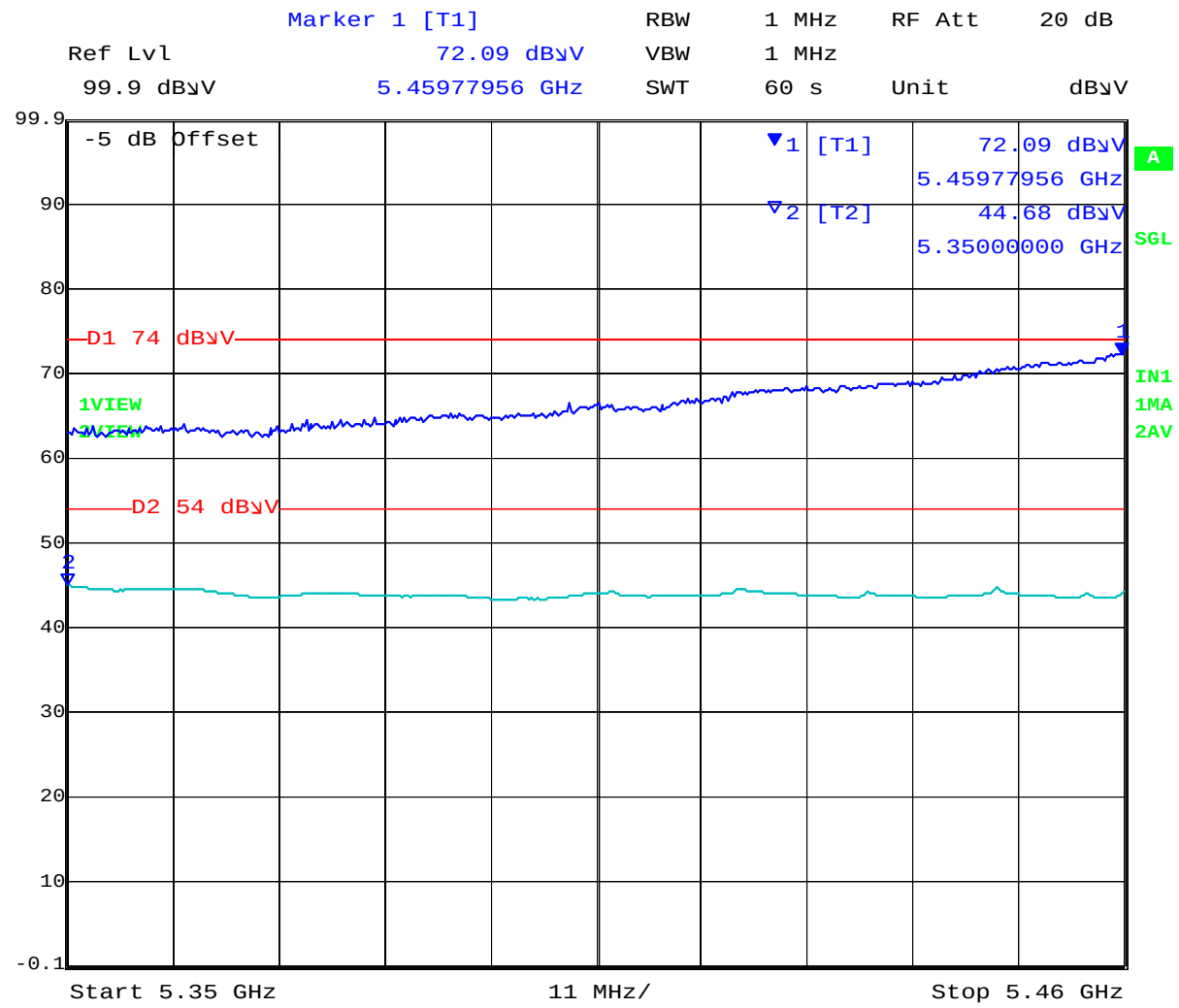
NOTE: Power Reduction Required ART = 20.5

5500 MHz - 802.11a Legacy 5350 - 5460 MHz



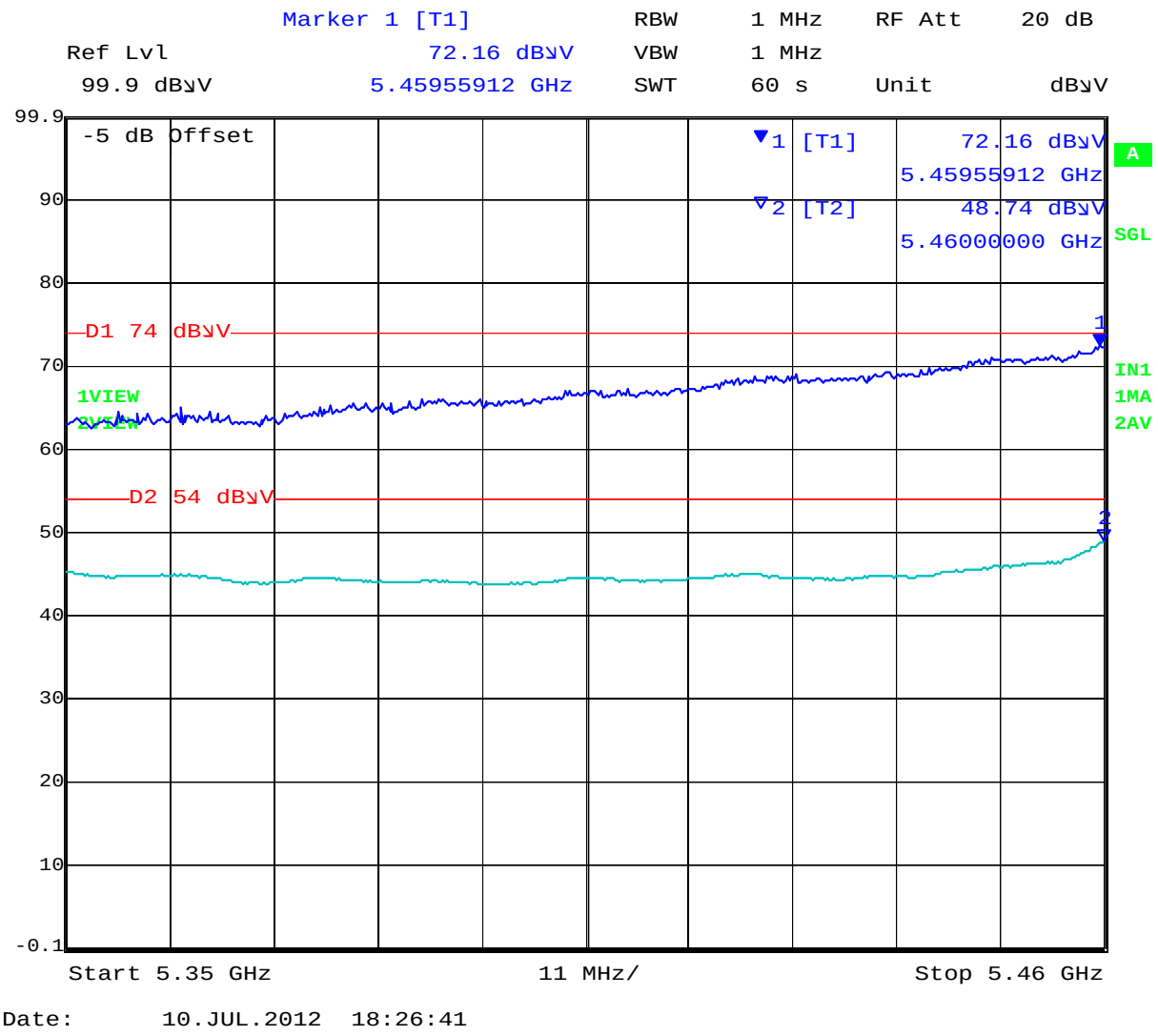
NOTE: Power Reduction Required ART = 20

5500 MHz - 802.11n HT-20 5350 - 5460 MHz



NOTE: Power Reduction Required ART = 20

5510 MHz - 802.11n HT-40 5350 - 5460 MHz



NOTE: Power Reduction Required ART = 20

Specification

Limits

§15.407(b)(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209.

§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.

RSS-210 §2.2 refers to Section 2.7 Table 2 below;-

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

5.1.7.4. Radiated Spurious Emissions – 30MHz – 1000MHz

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:

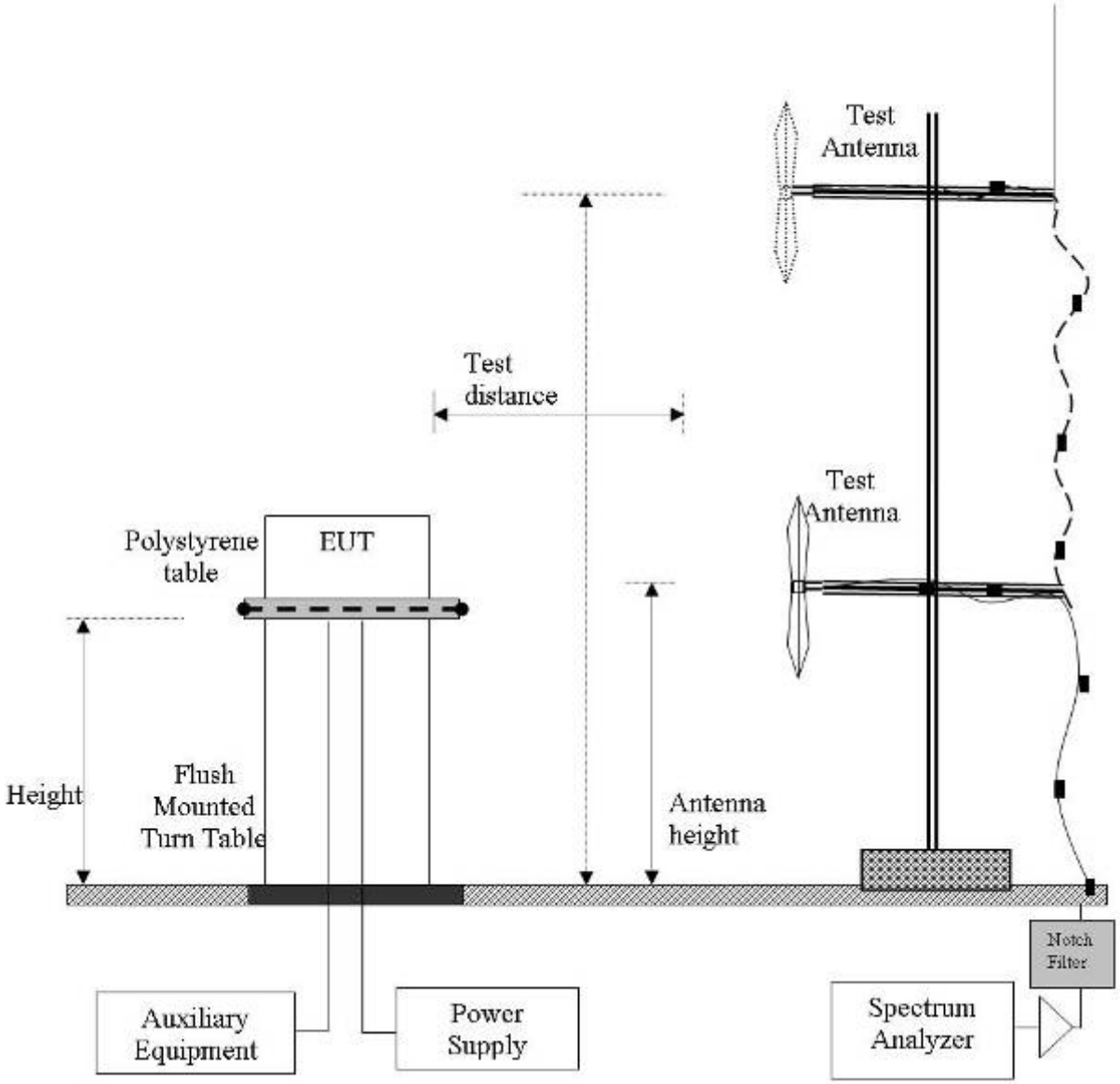
$$FS = 51.5 + 8.5 + 1.3 - 26.0 + 1 = 36.3 dB\mu V/m$$

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

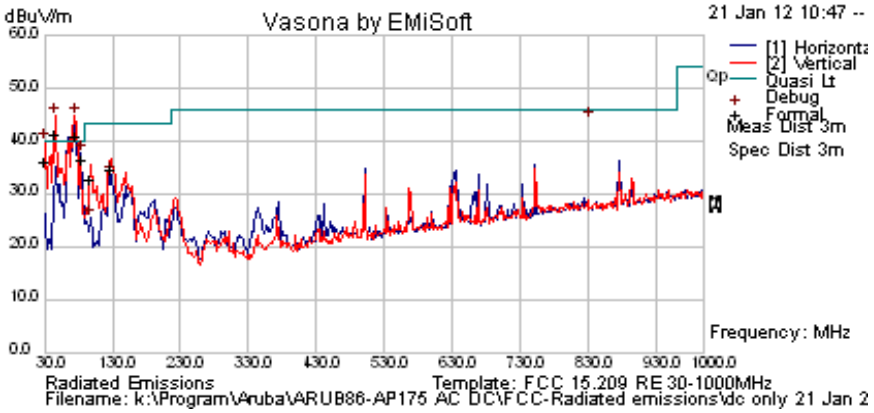
$$Level\ (dB\mu V/m) = 20 * Log\ (level\ (\mu V/m))$$

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

Radiated Emission Measurement Setup – Below 1 GHz



Test Freq.	N/A	**Engineer**	GMH
Variant	AP-175DC	**Temp (ºC)**	18
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	43
Power Setting	48 Vdc	**Press. (mBars)**	1001
Antenna	4 x 1' meter N-Type cable with 50 Ohm loads terminates antenna port		
Test Notes 1	EUT grounded to turntable. Shielded Ethernet cable connected and terminated.		
Test Notes 2	AP-175DC powered via 48Vdc (The Beast): Class B limit used to prove compliance		



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
46.920	57.3	3.7	-21.3	39.7	Quasi Max	V	101	235	40	-0.3	Pass	
76.236	58.3	3.9	-22.8	39.4	Quasi Max	V	184	305	40	-0.6	Pass	
30.091	41.8	3.4	-9.2	36.1	Quasi Max	V	100	188	40	-3.9	Pass	
84.807	56.0	4.0	-23.5	36.5	Quasi Max	H	362	123	40	-3.5	Pass	
127.540	47.1	4.4	-16.8	34.6	Quasi Max	V	100	252	43.5	-8.9	Pass	
98.125	49.8	4.1	-21.3	32.6	Quasi Max	V	98	82	43.5	-10.9	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

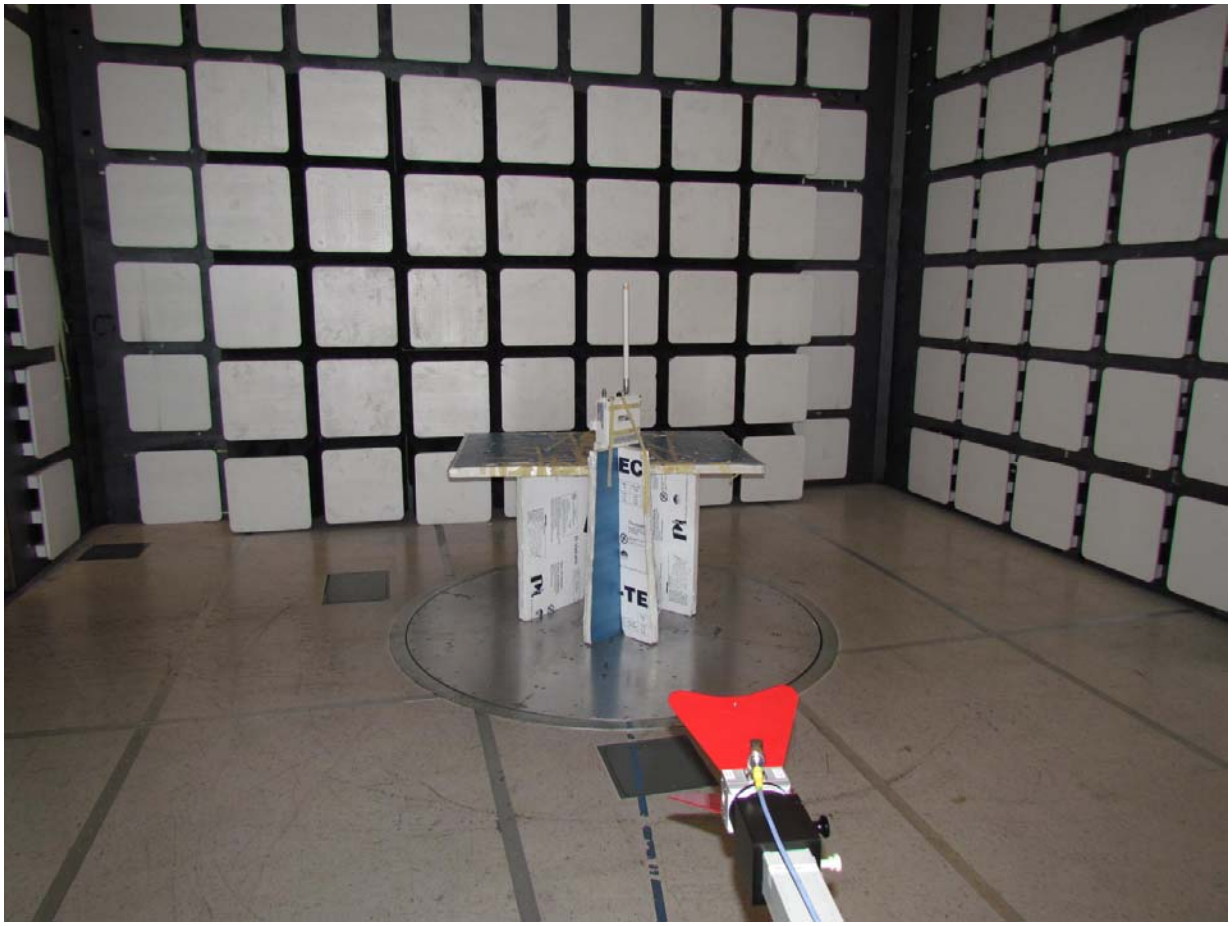
Measurement uncertainty	+5.6/ -4.5 dB

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. PHOTOGRAPHS

6.1. Radiated Emissions > 1GHz



7. TEST EQUIPMENT DETAILS

Asset #	Instrument	Manufacturer	Part #	Serial #	Calibration Due Date
0070	Power Meter	Hewlett Packard	437B	3125U11552	28th Nov 13
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 13
0158	Barometer /Thermometer	Control Co.	4196	E2846	8th Jan 13
0193	EMI Receiver	Rhode & Schwartz	ESI 7	838496/007	2nd Dec 13
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

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