Test of Aruba AP-92/93 802.11a/b/g/n Wireless AP

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

Test Report Serial No.: ARUB89-U2 Rev A

TEST REPORT

FROM

Test of Aruba Networks, Inc AP-92/93 802.11a/b/g/n Wireless AP
to

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

Test Report Serial No.: ARUB89-U2 Rev A

Note: this report contains data with regard to DFS Bands 5,250 to 5,350 MHz and 5,470 – 5,725 MHz bands. Data for the Aruba Networks, Inc AP-92 & AP-93 Wireless Access Point. 5.15 – 5.25 GHz are reported in MiCOM Labs test report ARUB51-U2. 2.4 and 5.8 GHz test data are reported in MiCOM Labs test report ARUB51-U1.

This report supersedes None

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

Product Function: Wireless Access Point

Copy No: pdf Issue Date: 2nd September 2011

This Test Report is Issued Under the Authority of;

MiCOM Labs, Inc.
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ACCREDITED
TESTING CERTIFICATE #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

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TABLE OF CONTENTS

ACCREDITATION, LISTINGS & RECOGNITION

TESTING ACCREDITATION

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

RECOGNITION

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

Country	Recognition Body	Status	Phase	Identification No.
USA	Federal Communications Commission (FCC)	TCB	-	Listing #: 102167
Canada	Industry Canada (IC)	FCB	APEC MRA 2	Listing #: 4143A
Japan	MIC	CAB	APEC MRA 2	210
	VCCI	--	--	No. 2959
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

The American Association for Laboratory Accreditation

World Class Accreditation

Accredited Product Certification Body

A2LA has accredited

MICOM LABS

Pleasanton, CA

for technical competence as a

Product Certification Body

This product certification body is accredited in accordance with the recognized International Standard ISO/IEC Guide 65:1996 *General requirements for bodies operating product certification systems*. This accreditation demonstrates technical competence for a defined scope and the operation of a quality management system for a Telecommunications Certification Body (TCB) meeting FCC (U.S.), and IC (Canada) requirements.

Presented this 24th day of June 2010.

President & CEO
For the Accreditation Council
Certificate Number 2381.02
Valid to November 30, 2011

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

United States of America – Telecommunication Certification Body (TCB)
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	2nd September 2011	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-92 & AP-93	Fax:	+1 925 462 0306
S/N:	AP-92 AN0000393 (Conducted) AP-92 AN0000393 (Radiated) AP-93 AN0000330 (Radiated)		
Test Date(s):	3rd to 28th April 2010 & 29th July	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.

ACCREDITED
TESTING CERTIFICATE #2381.01

Approved & Released for MiCOM Labs, Inc. by:

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 SubPart E 15.407	2010	Title 47: Telecommunication PART 15—RADIO FREQUENCY DEVICES Subpart E—Unlicensed National Information Infrastructure Devices
ii.	FCC KDB # 662911	2011 V01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band (e.g. MIMO, Smart Antenna, etc)
iii.	RSS-210 Annex 9	2010	Radio Standards Specification 210, Issue 8, Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment,
iv.	RSS-GEN	2010	Radio Standards Specification-Gen, Issue 3, General Requirements and Information for the Certification of Radiocommunication Equipment,
v.	47 CFR Part 15, SubPart B	2010	47 CFR Part 15, SubPart B; Unintentional Radiators
vi.	ICES-003	2004	Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard Digital Apparatus; Issue 4
vii.	ANSI C63.4	2009	American National Standards for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
viii.	CISPR 22/ EN 55022	2008 2006+A1:2007	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
ix.	M 3003	Edition 1 Dec. 1997	Expression of Uncertainty and Confidence in Measurements
x.	LAB34	Edition 1 Aug 2002	The expression of uncertainty in EMC Testing
xi.	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
xii.	A2LA	9th June 2010	Reference to A2LA Accreditation Status – A2LA Advertising Policy

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-92/93 802.11a/b/g/n Wireless AP in the frequency ranges 5250 to 5350 MHz and 5470 - 5725 MHz 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:	ARUB89-U2 Rev A
Date EUT received:	5th June 2011
Standard(s) applied:	FCC 47 CFR Part 15.407 & IC RSS-210
Dates of test (from - to):	5th June - 12th August 2011
No of Units Tested:	Two units; AP-92 radiated & conducted a AP-93 radiated
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-92 (external antenna), AP-93 (integral antenna)
Software Release	6.1.2.2
Location for use:	Indoor
Declared Frequency Range(s):	5,250 to 5,350 MHz 5,470 to 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 ENET: Nominal: 48 V DC Current: 0.350 A
Operating Temperature Range:	Nominal: 20 ºC Max: 50 ºC Min: 0 ºC
ITU Emission Designator:	802.11a 18M5D1D 802.11n HT-20 19M5D1D 802.11n HT-40 39M9D1D
Frequency Stability:	±20 ppm
Equipment Dimensions:	12.0 cm x 12.7 cm x 3.2 cm
Weight:	375 grams
Primary function of equipment:	Wireless Access Point for transmitting data and voice

3.2. Scope of Test Program

RF Testing

The scope of the compliance program was to test the Aruba AP-92 and AP-93 wireless Access Point, 2x2 Spatial Multiplexing MIMO configurations in the DFS frequency ranges 5250 - 5350 and 5470 – 5725 MHz for compliance against FCC 47 CFR Part 15.407 and Industry Canada RSS-210 specifications.

The Aruba Networks, Inc AP-92 has external reverse SMA connectors which utilize external antennas while the AP-93 has integral antenna(s). The antennas used with the AP-92 and AP-93 are detailed in section 3.4 “Antenna Details”.

NOTE: FCC KDB 662911 vO1 Multiple Transmitter Output v01 has been incorporated into this test report.

Aruba AP-92, AP-93 Access Point

The AP-92 and AP-93 are high-speed, affordable, and reliable 802.11n access points for indoor environments. Designed for both ceiling and wall mounting, the compact AP-92 and AP-93 deliver wire-like performance at data rates up to 300Mbps. The AP-92 and AP-93 are built to deliver years of trouble-free operation and are backed by Aruba’s limited lifetime warranty program.

Working in conjunction with Aruba’s line of centralized Mobility Controllers, the AP-92 and AP-93 deliver high-speed, secure network services that let users finally move to a “wireless where possible, wired where necessary” network access model. The network can then be rightsized, with unnecessary ports eliminated to lower operating costs. The key to rightsizing is Aruba’s unique Adaptive Radio Management technology, which manages channel, power, and wireless client behavior to deliver wire-like performance and reliability. By rightsizing network infrastructure, organizations significantly enhance user mobility and efficiency while lowering total cost of ownership.

The multifunction AP-92 and AP-93 can be configured through the controller to provide wireless LAN access, air monitoring, remote networking, secure enterprise mesh, and wireless intrusion detection and prevention over the 2.4GHz and 5GHz RF spectrum. The AP-92 and AP-93 feature a 100/1000Base-T Ethernet interface and operate from either standard 802.3af Power over Ethernet (PoE) sources or a 12VDC power supply.

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-92 AP-92 AP-93	AN0000393 (Conducted Testing) AN0000393 (Radiated Testing) AN0000330 (Radiated Testing)
Support	Laptop PC	IBM	Thinkpad	None

3.4. Antenna Details

Antenna Type	Manufacturer	Model	Gain (dBi / dBd)	Frequency Range (MHz)
Integral	Aruba Networks, Inc	Integral Antenna	5.8	4900 - 5875
External	Aruba Networks, Inc	AP-ANT-10	6	4900 - 5875
External	Aruba Networks, Inc	AP-ANT-12	14	4900 - 5875

3.5. Cabling and I/O Ports

Number and type of I/O ports

Description	Type	Length	Additional Information
ENET	RJ-45 Ethernet Port	Greater than 10m	Ethernet connection; Only non-shielded CAT-5 cable was used during testing. Port not connected to public utility/telecommunication network.
CONSOLE	RJ-45 Serial Port	Greater than 10m	For EUT setup only, not connected during typical EUT operation; Only non-shielded CAT-5 cable was used during testing.
DC Power	DC Power Port	Less than 3m	AC adaptor with attached DC cable supplied with EUT
AC Power	AC Adaptor	Less than 3m	AC adaptor and mains cable supplied with EUT

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	5,260 5,300 5,320	5,500 5,600 5,700
	HT-20	6.5 MCS		
	HT-40	13.5 MCS	5,270 5,310	5,510 5,590 5,690

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
Pk 5260	Pk 5260	Pk 5270
Pk 5300	Pk 5300	
Pk 5320	Pk 5320	Pk 5310
SE 5500	SE 5500	SE 5510
SE 5600	SE 5600	SE 5590
SE 5700	SE 5700	SE 5690
BE 5460	BE 5460	BE 5460
Pk 5500	Pk 5500	Pk 5510
Pk 5600	Pk 5600	Pk 5590
Pk 5700	Pk 5700	Pk 5690

KEY:-

SE – Spurious Emissions

BE – Band-Edge

PK - Peak Emission

3.7. Equipment Modifications

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

1. NONE

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	Complies	5.1.8

List of Measurements (cont'd)

Dynamic Frequency Selection (DFS)

The following table represents the list of measurements required under the **FCC CFR47 Part 15.407(h)(2)** and **FCC Memorandum Opinion and Order FCC 06-96 (Compliance Measurement procedures for Unlicensed National Information Infrastructure devices operating in the 5250-5350 MHz and 5470-5725 MHz bands incorporating dynamic frequency selection).**

Tests performed on Master Device

Section	Test Items	Description	Condition	Result	Test Report Section
7.8.1	Detection Bandwidth	UNII Detection Bandwidth	Conducted	Complies	6.2.1
7.8.2.1	Performance Requirements Check	Initial Channel Availability Check Time	Conducted	Complies	6.2.2
7.8.2.2		Radar Burst at the Beginning of the Channel Availability Check Time	Conducted	Complies	6.2.3
7.8.2.3		Radar Burst at the End of the Channel Availability Check Time	Conducted	Complies	6.2.4
7.8.3	In-Service Monitoring	In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period	Conducted	Complies	6.2.5
7.8.4	Radar Detection	Statistical Performance Check	Conducted	Complies	6.2.6

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

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

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

5. TEST RESULTS

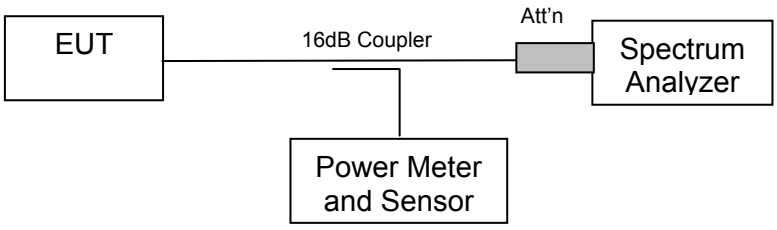
5.1. Device Characteristics

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

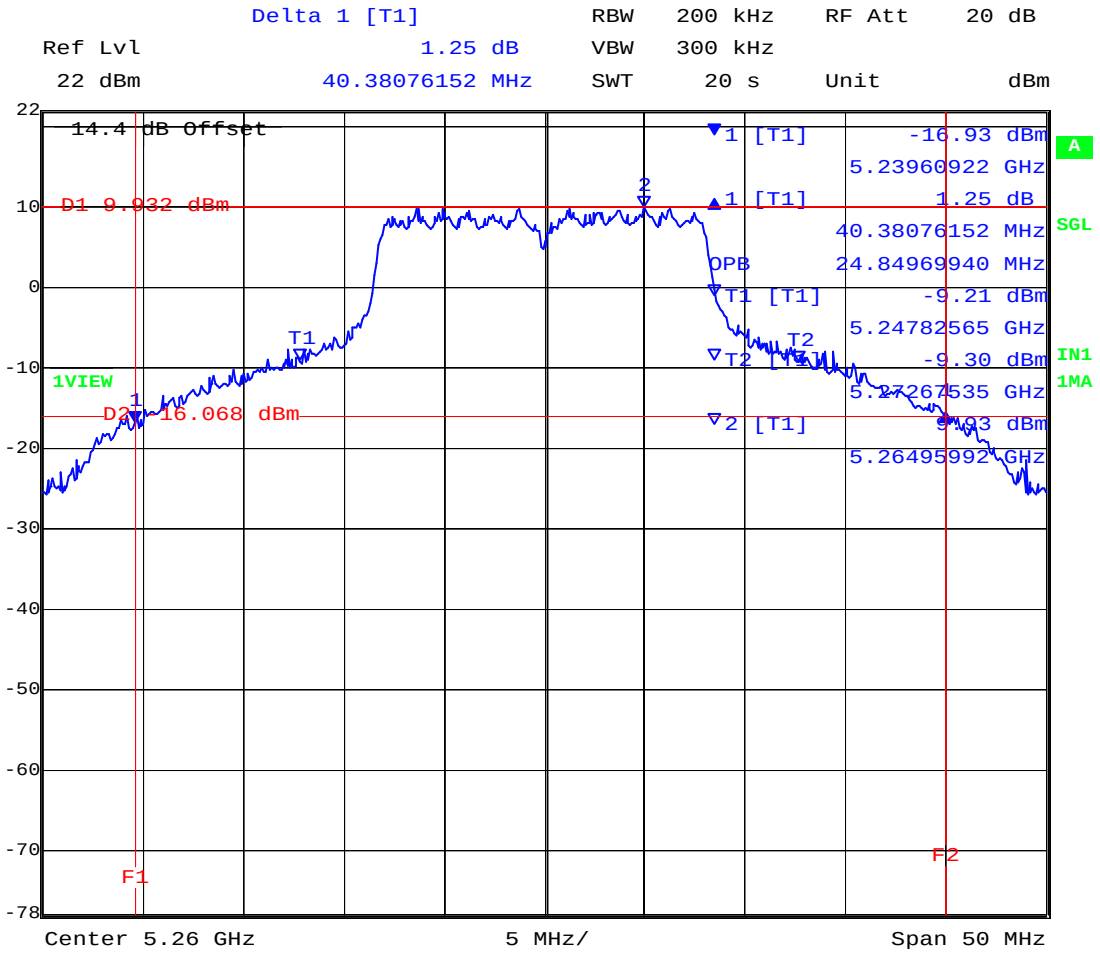
Measurement Results for 26 dB and 99 % Operational Bandwidth(s)

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

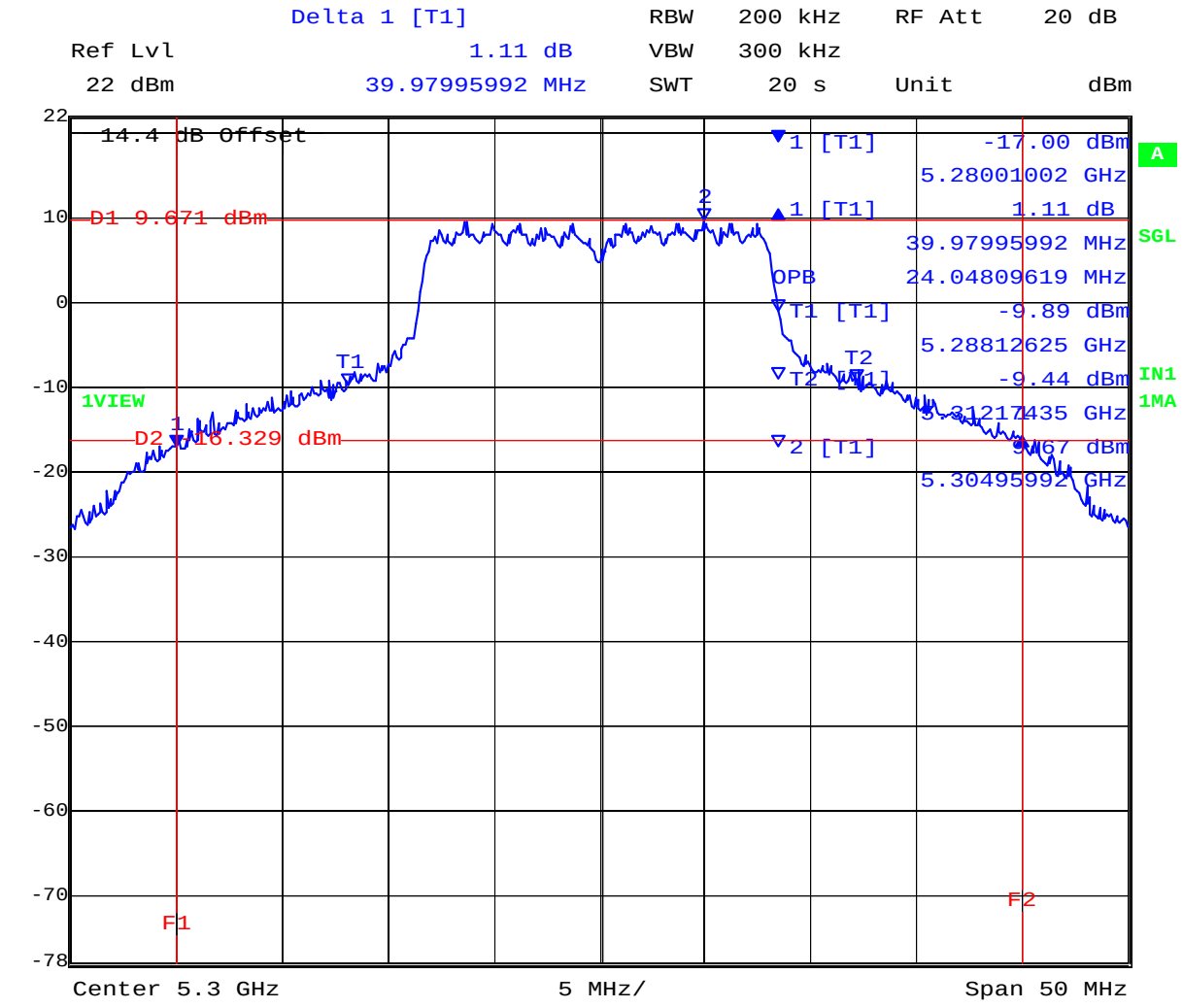
TABLE OF RESULTS – **802.11a Legacy**

Center Frequency (MHz)	26 dB Bandwidth (MHz)	99 % BW (MHz)
5,260	24.850	40.381
5,300	24.048	39.980
5,320	24.248	39.379

5260 MHz 802.11a Legacy 26 dB and 99 % Bandwidth



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



D

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

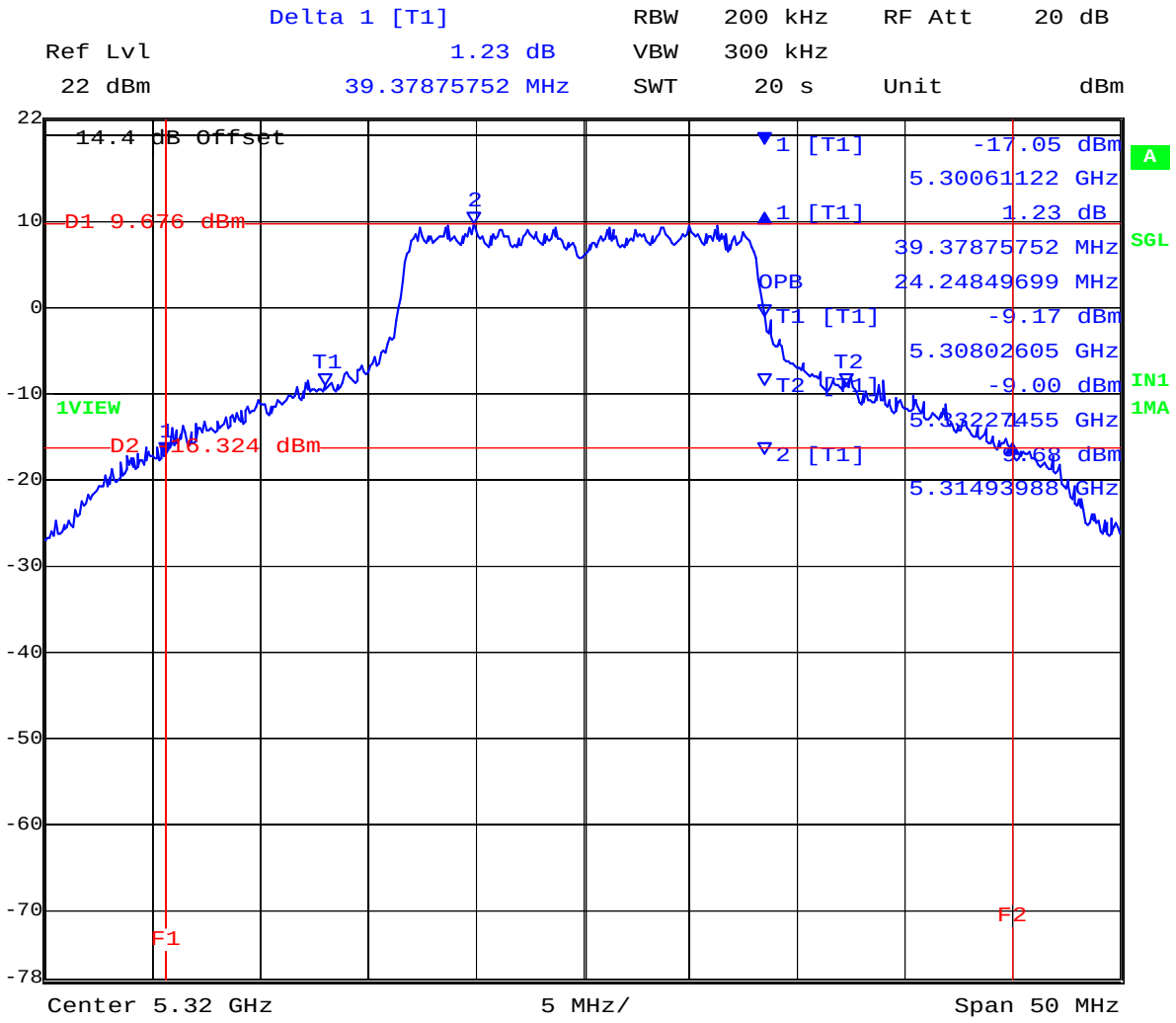
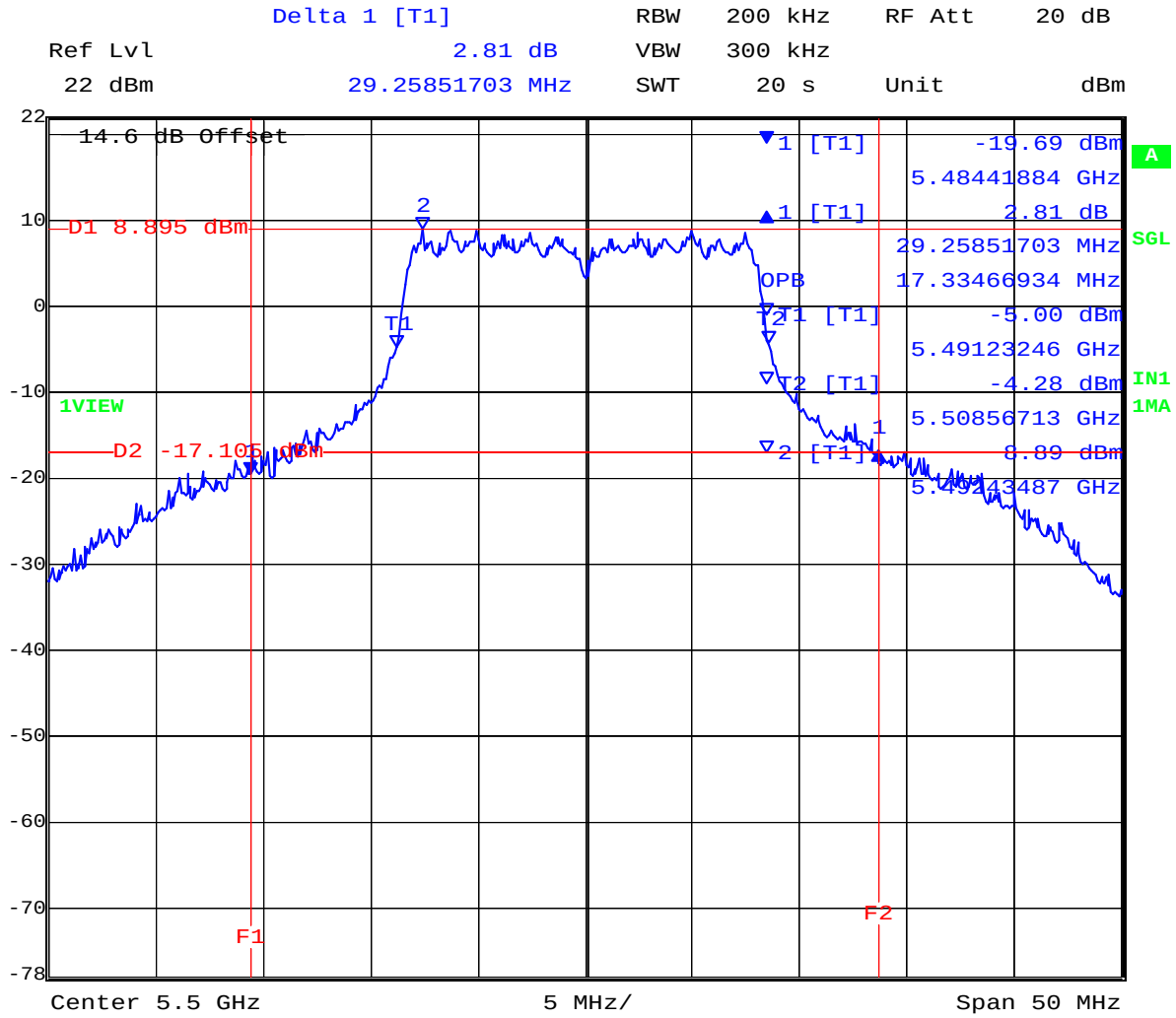


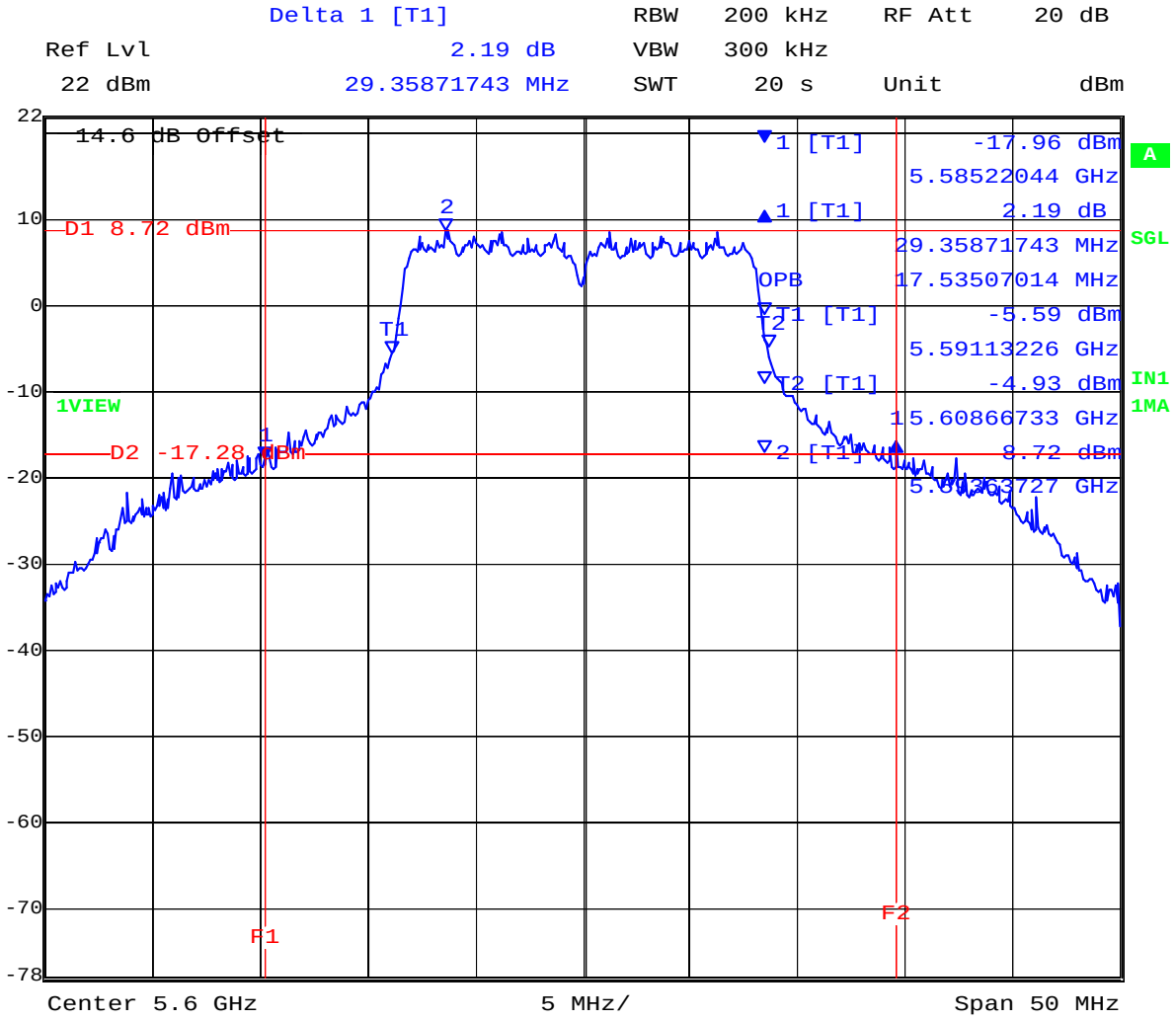
TABLE OF RESULTS – **802.11a Legacy**

Center Frequency (MHz)	26 dB Bandwidth (MHz)	99 % BW (MHz)
5,550	17.335	29.259
5,600	17.535	29.359
5,700	19.138	34.870

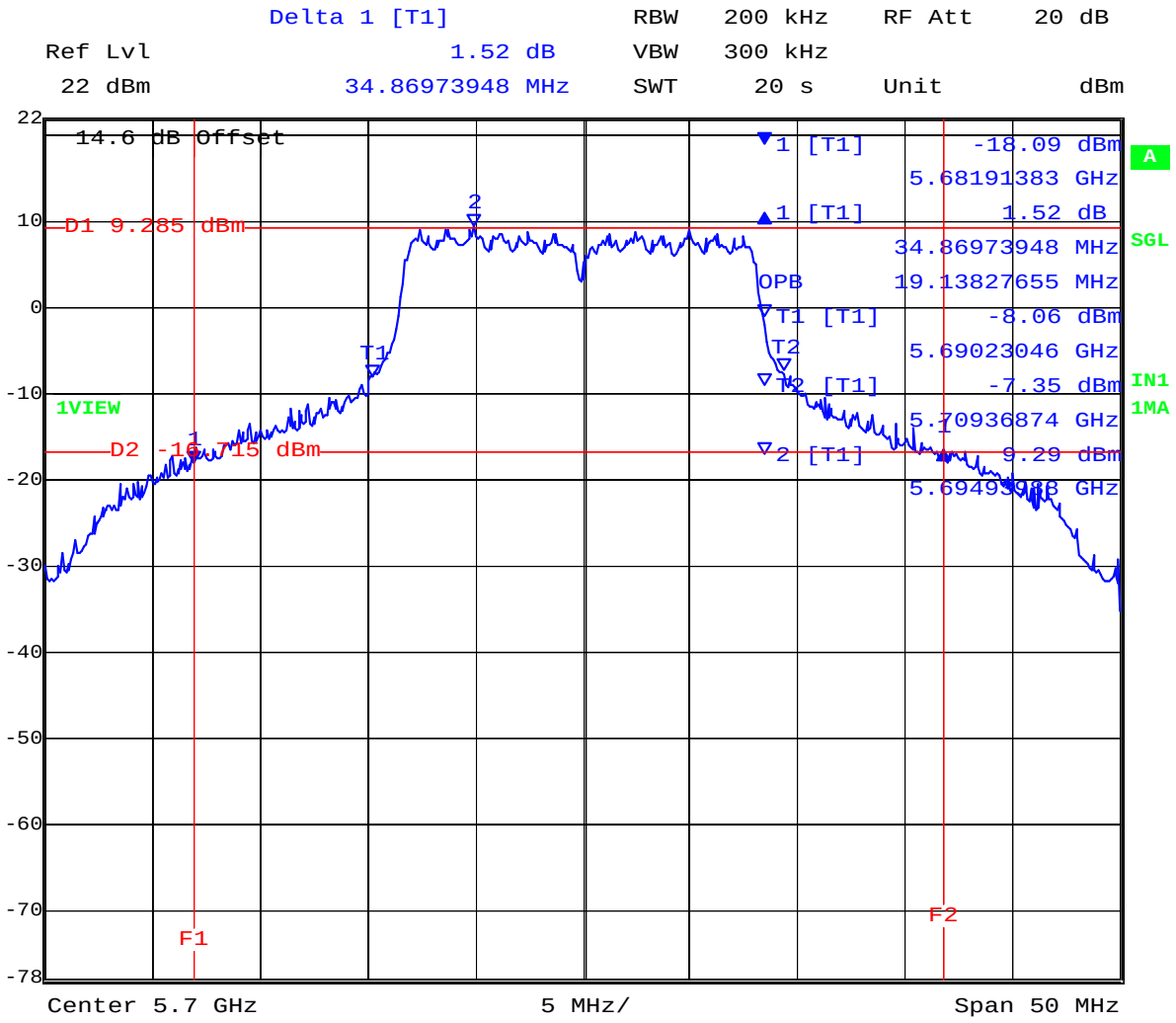
5500 MHz 802.11a Legacy 26 dB and 99 % Bandwidth



5,600 MHz 802.11a Legacy 26 dB and 99 % Bandwidth



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

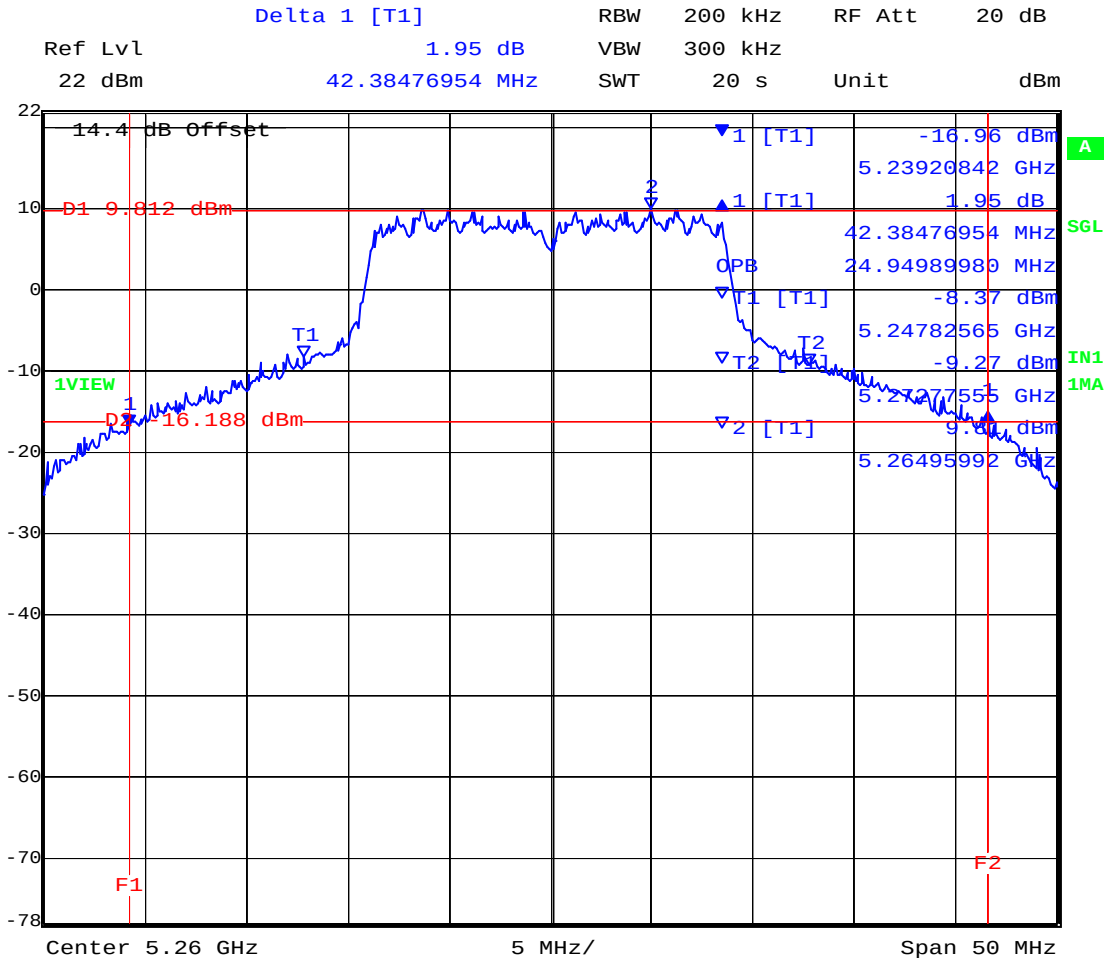


Measurement Results for 26 dB and 99 % Operational Bandwidth(s) -Continue

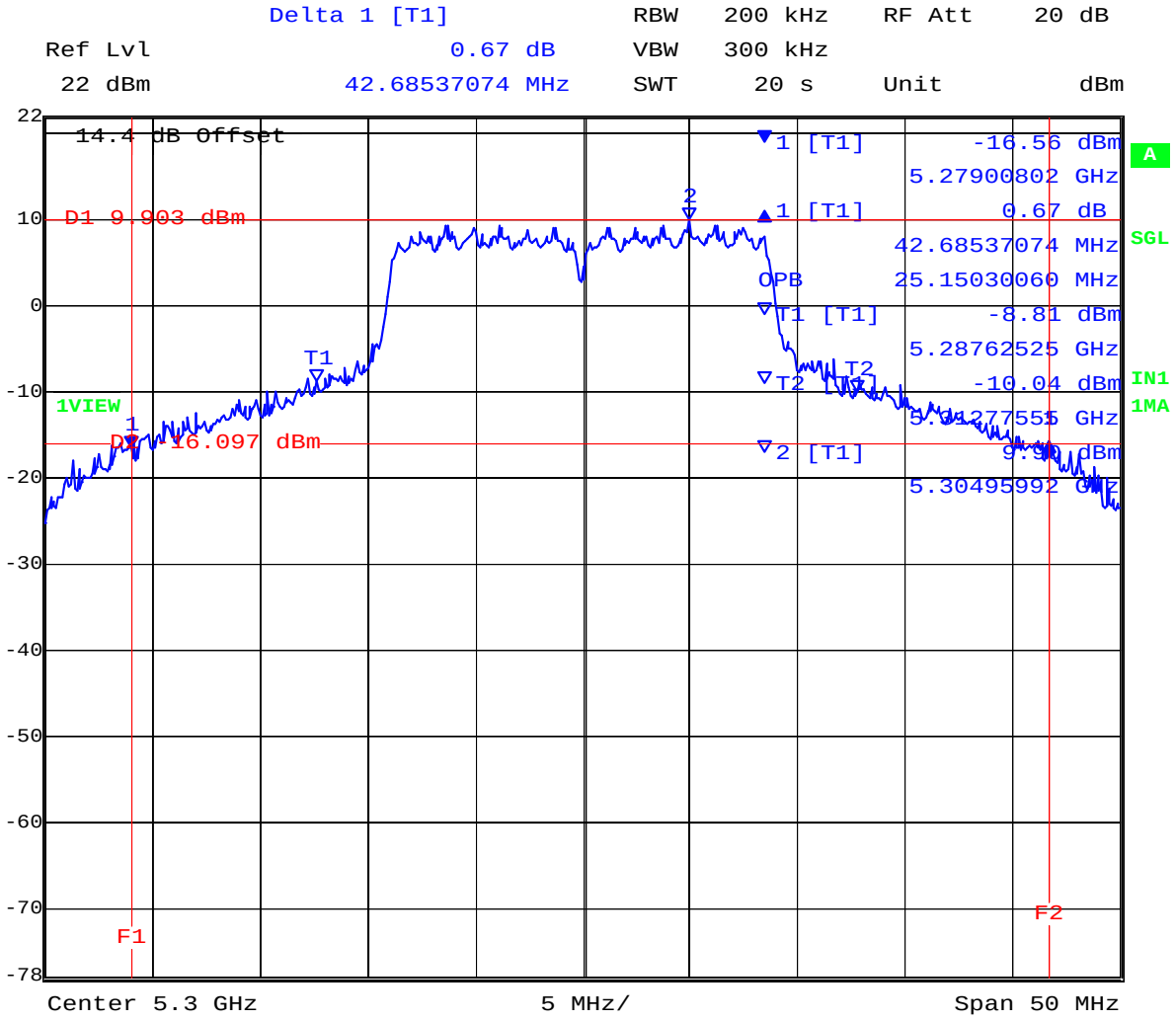
TABLE OF RESULTS – **802.11n HT20**

Center Frequency (MHz)	26 dB Bandwidth (MHz)	99 % BW (MHz)
5,260	42.385	24.950
5,300	42.685	25.150
5,320	43.186	25.250

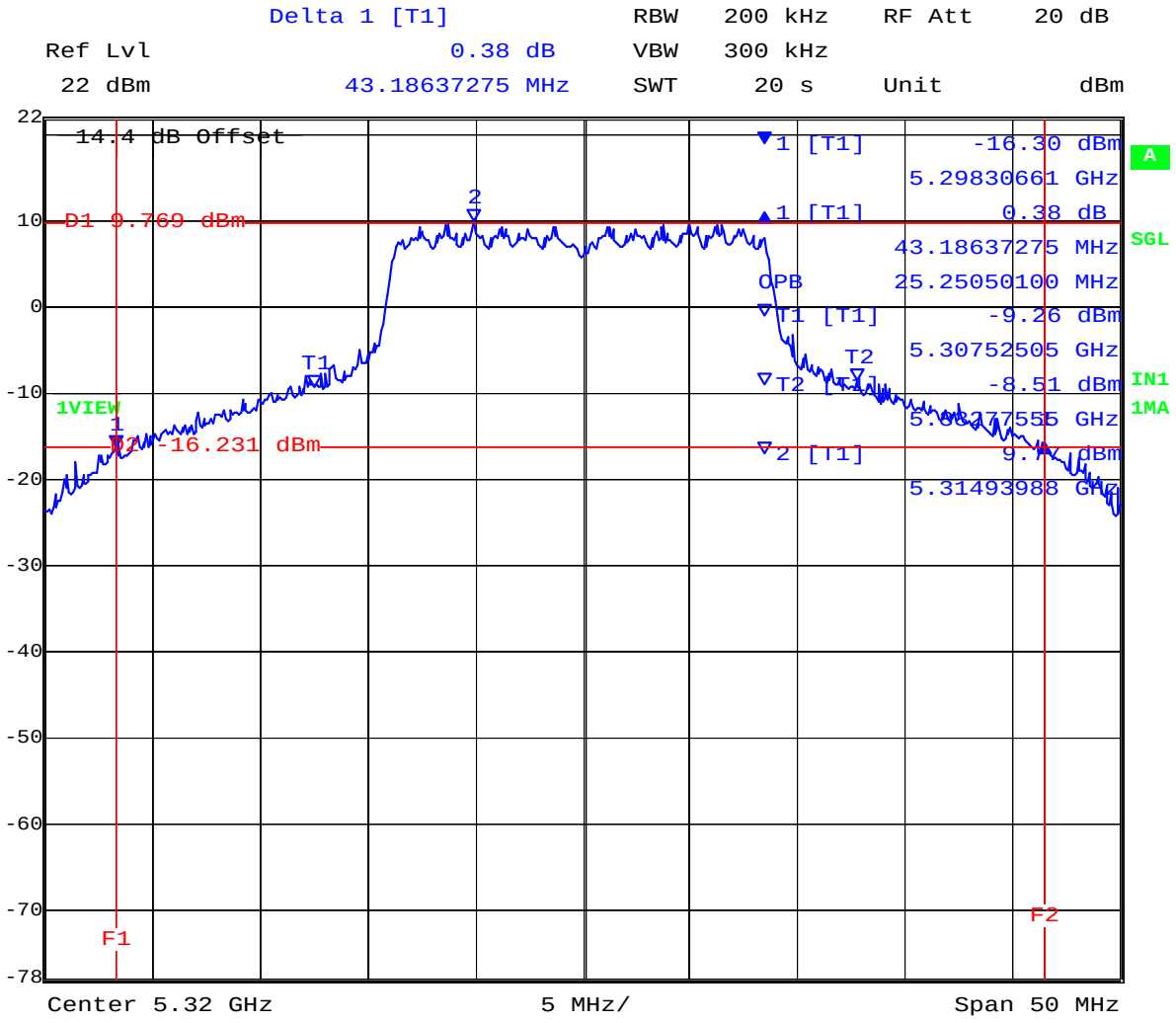
5,260 MHz 802.11n HT20 26 dB and 99 % Bandwidth



5,300 MHz 802.11n HT20 26 dB and 99 % Bandwidth



5,320 MHz 802.11n HT20 26 dB and 99 % Bandwidth

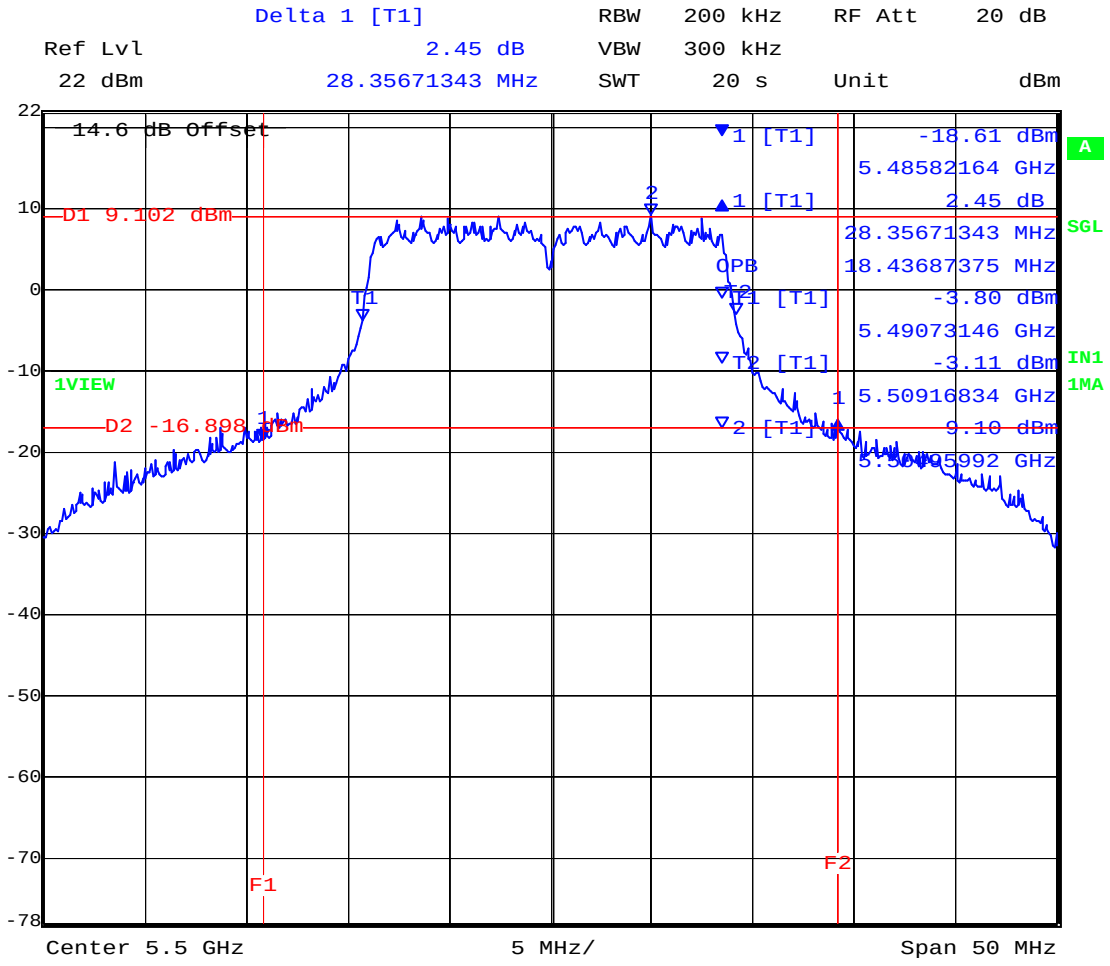


Measurement Results for 26 dB and 99 % Operational Bandwidth(s) -Continue

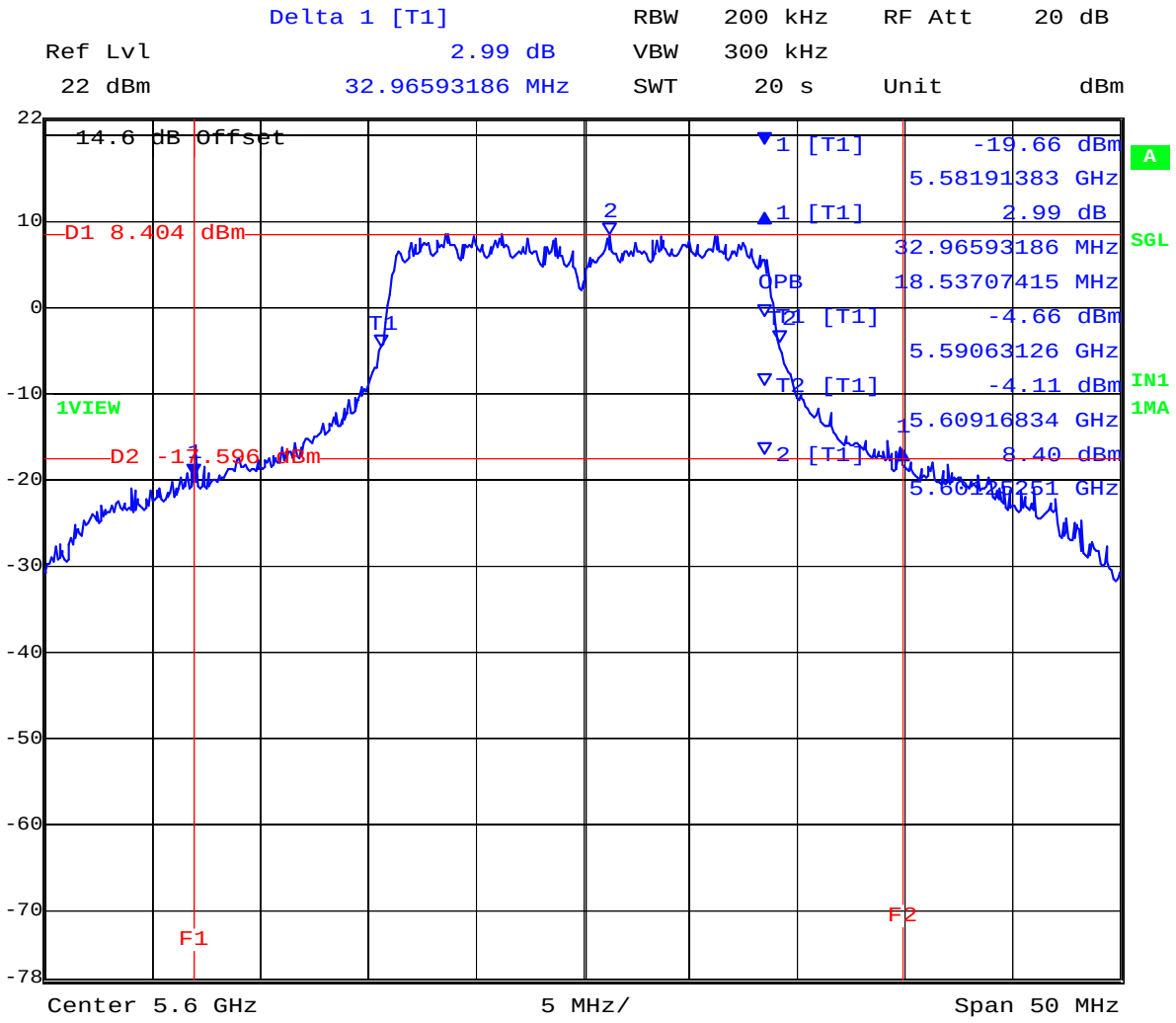
TABLE OF RESULTS – **802.11n HT-20**

Center Frequency (MHz)	26 dB Bandwidth (MHz)	99 % BW (MHz)
5,550	28.357	18.437
5,600	32.966	18.537
5,700	37.074	19.940

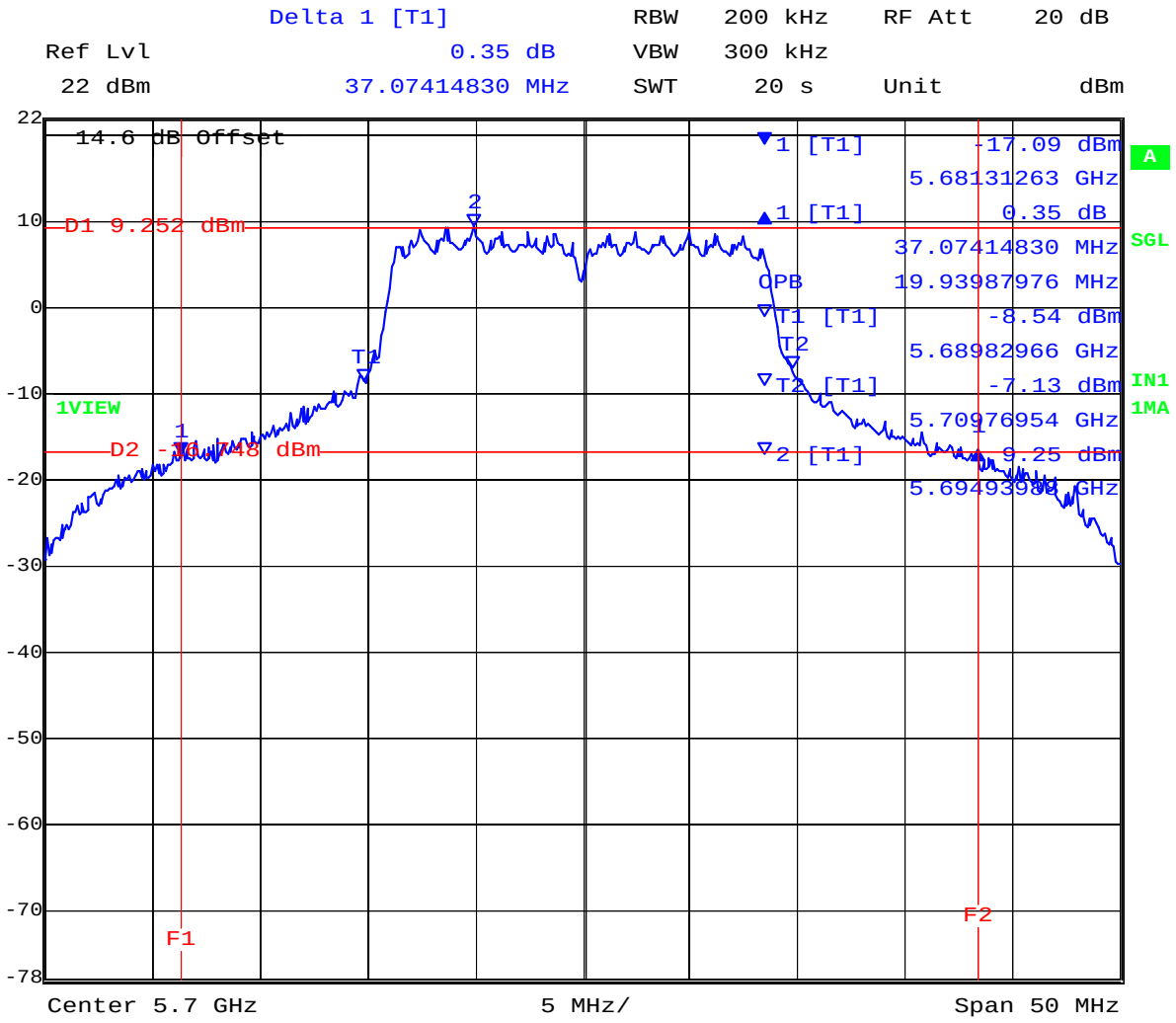
5500 MHz 802.11a HT-20 26 dB and 99 % Bandwidth



5,600 MHz 802.11a HT-20 26 dB and 99 % Bandwidth



5,700 MHz 802.11a HT-20 26 dB and 99 % Bandwidth

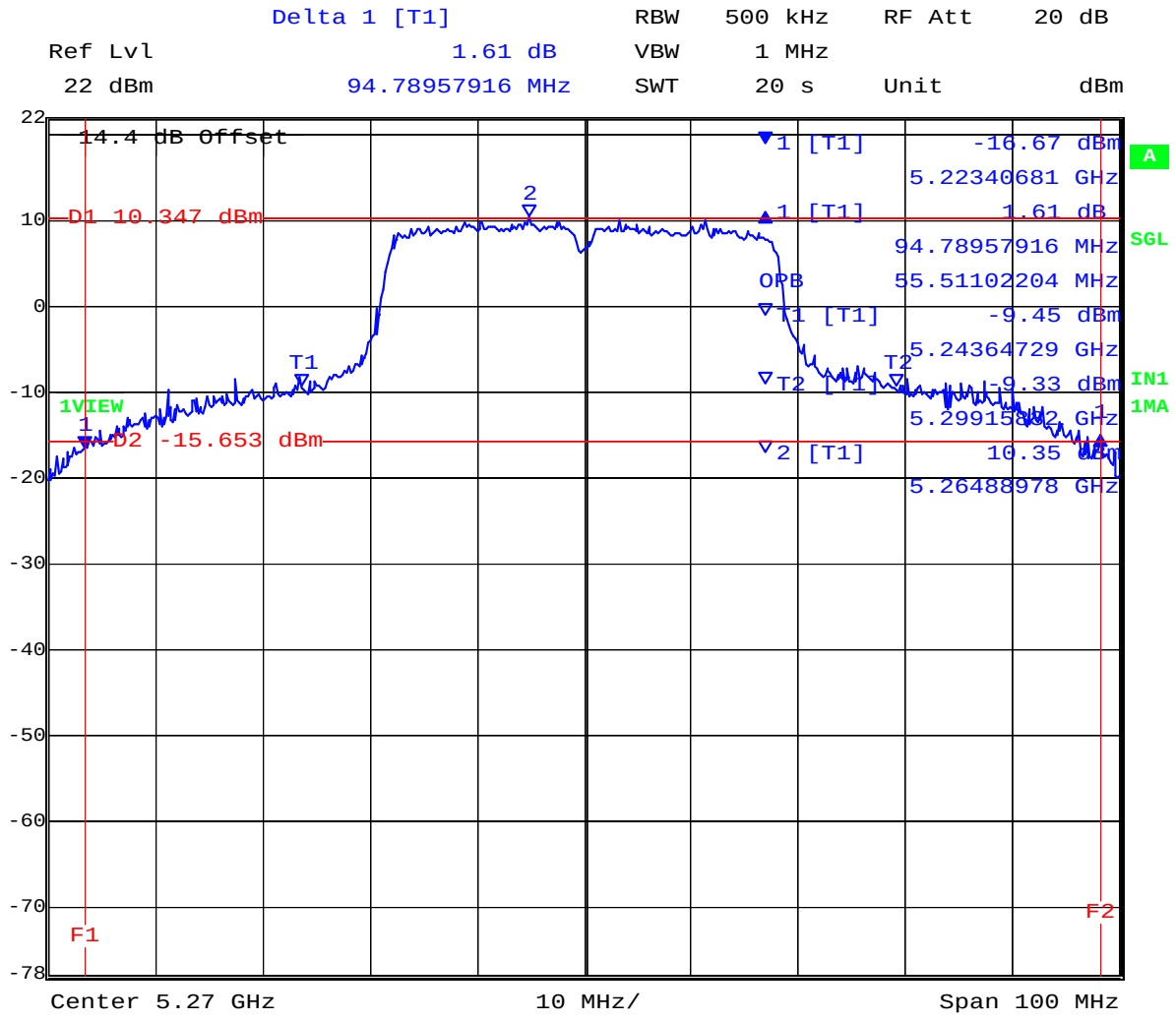


Measurement Results for 26 dB and 99 % Operational Bandwidth(s) -Continued

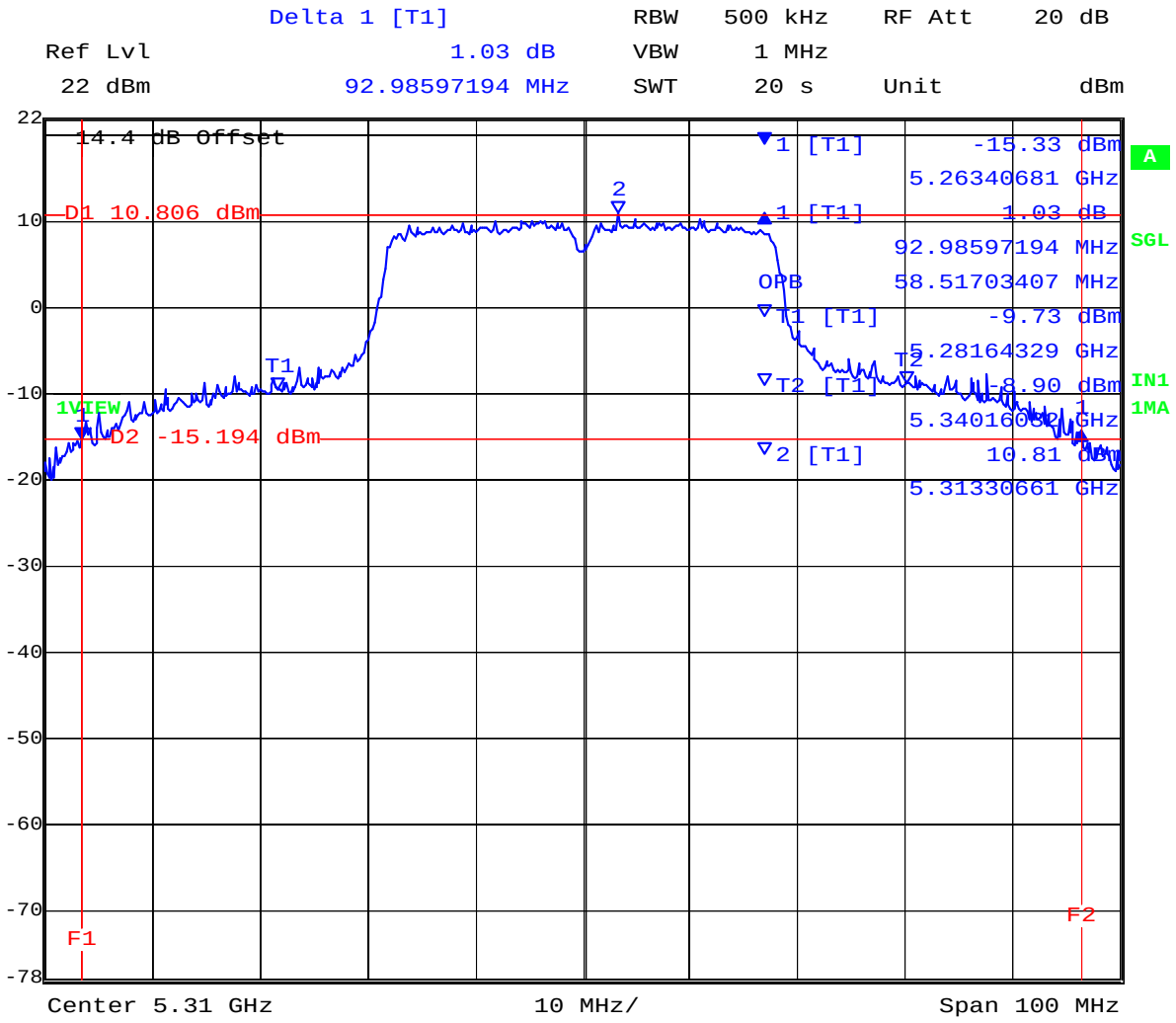
TABLE OF RESULTS – **802.11n HT40**

Center Frequency (MHz)	26 dB Bandwidth (MHz)	99 % BW (MHz)
5,270	94.790	55.511
5,310	92.986	58.517

5,270 MHz 802.11n HT40 26 dB and 99 % Bandwidth



5,310 MHz 802.11n HT40 26 dB and 99 % Bandwidth

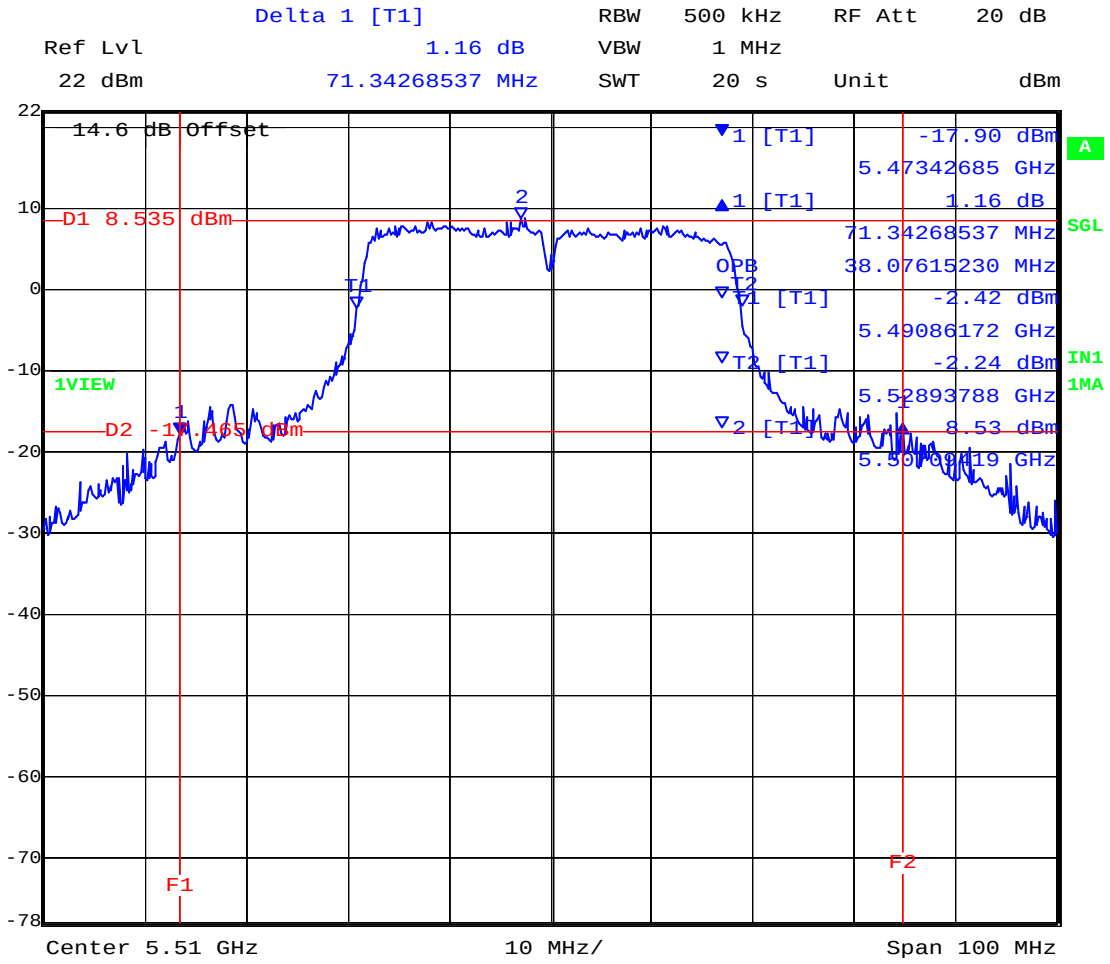


Measurement Results for 26 dB and 99 % Operational Bandwidth(s) -Continued

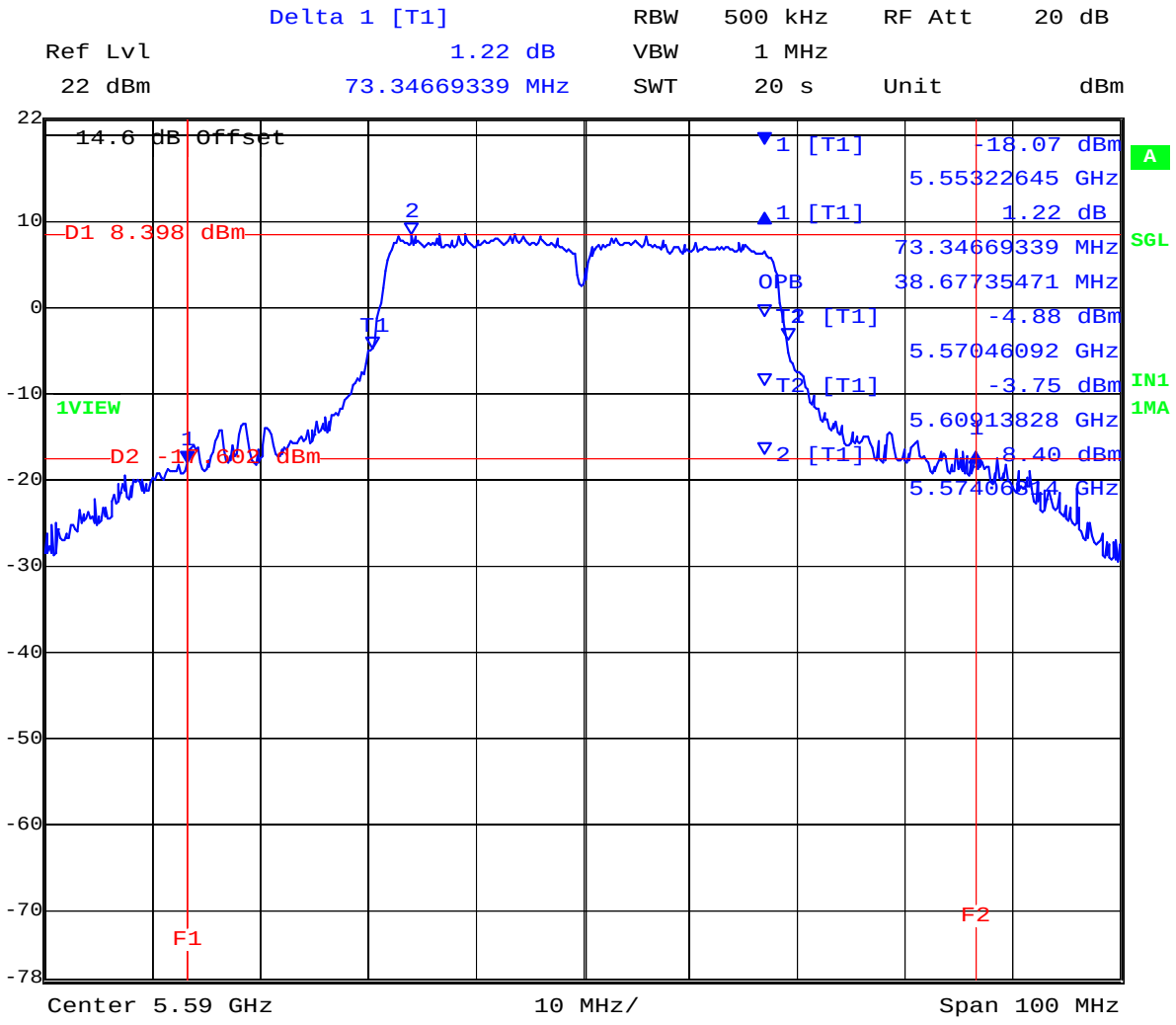
TABLE OF RESULTS – **802.11n HT40**

Center Frequency (MHz)	26 dB Bandwidth (MHz)	99 % BW (MHz)
5,510	71.343	38.076
5,590	73.347	38.677
5,690	81.764	40.281

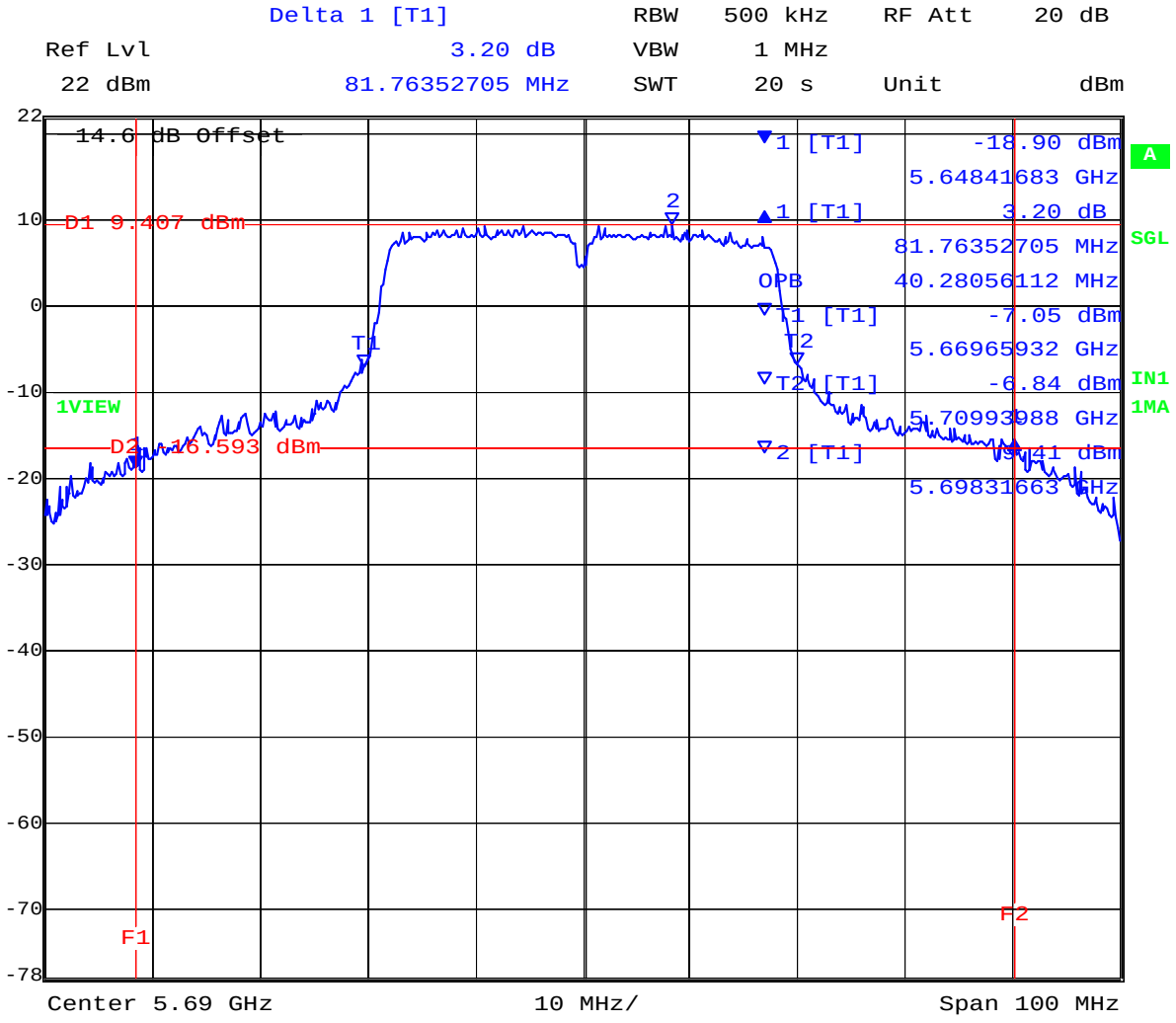
5,510 MHz 802.11n HT40 26 dB and 99 % Bandwidth



5,590 MHz 802.11n HT40 26 dB and 99 % Bandwidth



5,690 MHz 802.11n HT40 26 dB and 99 % Bandwidth



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

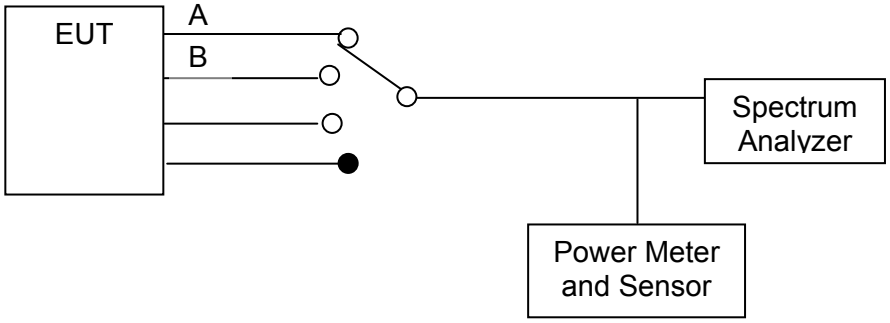
5.1.2. Transmit Output Power

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

Test Procedure
The transmitter terminal of EUT was connected to the input of the spectrum analyzer set to measure peak power. Output power was measured following the latest FCC KDB 662911 D01 Multiple Transmitter Output v01.

Power measurement results are provided for individual ports and a calculated power is provided taking all ports into consideration. All cable losses and offsets were taken into consideration in the final result.

Test Measurement Set up



Measurement set up for Transmitter Output Power

Ambient test 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

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

A = Total Power [10 Log_{10} ($10^{a/10}$ + $10^{b/10}$)], G = Antenna Gain,
x = Duty Cycle

NOTE: KDB 662911 was implemented for In-band power measurements. The measure and sum technique was implemented in all cases.

Maximum Transmit (Conducted) Power, FCC Limits and 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 26 dB Bandwidth (MHz)	11 + 10 Log (B) (dBm)	Limit (dBm)
a	5250 – 5350 5470 – 5725	24.850	+24.95	+24.00
HT-20		43.186	+27.35	+24.00
HT-40		94.790	+30.77	+24.00

15. 407 (a)(1), (a) (2) Operation with directional antenna gains greater than 6 dBi.

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

MIMO Operation 5250-5350 and 5470 – 5725 MHz

Antenna	Gain	Max. Allowable Conducted Peak Power (dBm)		Maximum EIRP
(dB)	(dBi)	Non-Beam Forming	Beam Forming	(dBm)
Integral	+5.8	+24.0	N/A	+30.0
AP-ANT-10	+6.0	+24.0		+30.0
AP-ANT-12	+14.0	+16.0		+30.0

Non-MIMO Operation (Legacy) 5250-5350 and 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)
Integral	+5.8	2	3.01	8.81	+21.19	+30.0
AP-ANT-10	+6.0	2	3.01	9.01	+20.99	+30.0
AP-ANT-12	+14.0	2	3.01	17.01	+12.99	+30.0

5250 - 5350 GHz 11a mode Conducted Power

Test Conditions:	15.407 (a)(1)		**Rel. Humidity (%):**	35 to 42	
Variant:	802.11 a		**Ambient Temp. (ºC):**	19 to 22	
TPC:	HIGH		**Pressure (mBars):**	998 to 1003	
Modulation:	ON		**Duty Cycle (x):**	100	
Beam Forming Gain (Y):	N/A	dB	**Antenna Gain:**	0 dBi	
Applied Voltage:	12.0	Vdc			

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5260	19.02	17.42	--	--	N/A	21.30	24.00	-2.70
5300	19.45	16.65	--	--	N/A	21.28	24.00	-2.72
5320	19.84	16.73	--	--	N/A	21.57	24.00	-2.43

Measurement uncertainty:	±1.33 dB

5250 - 5350 GHz HT-20 mode Conducted Power

Test Conditions:	15.407 (a)(1)		**Rel. Humidity (%):**	35 to 42	
Variant:	802.11 n 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:**	0 dBi	
Applied Voltage:	12.0	Vdc			

Test Frequency	**Measured Peak Power RF Port (dBm)**				**Total Power (dBm)**		**Limit**	**Margin**
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5260.00	19.20	17.70	--	--	N/A	21.52	24.00	-2.48
5300.00	19.44	17.08	--	--	N/A	21.43	24.00	-2.57
5320.00	19.76	16.93	--	--	N/A	21.58	24.00	-2.42

Measurement uncertainty:	±1.33 dB

5250 - 5350 GHz HT-40 mode Conducted Power

Test Conditions:	15.407 (a)(1)		**Rel. Humidity (%):**	35 to 42	
Variant:	802.11 n 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:**	0 dBi	
Applied Voltage:	12.0 Vdc				

Test Frequency	**Measured Peak Power RF Port (dBm)**				**Total Power (dBm)**		**Limit**	**Margin**
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5270.00	19.59	17.16	--	--	N/A	21.55	24.00	-2.45
5310.00	20.08	16.57	--	--	N/A	21.68	24.00	-2.32

Measurement uncertainty:	±1.33 dB

5470 - 5725 GHz 11a mode Conducted Power

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:**	0 dBi
Applied Voltage:	12.0 Vdc		

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5500	16.55	16.10	--	--	N/A	19.34	24.00	-4.66
5600	17.70	16.18	--	--	N/A	20.02	24.00	-3.98
5700	17.58	15.99	--	--	N/A	19.87	24.00	-4.13

Measurement uncertainty:	±1.33 dB

5470 - 5725 GHz HT-20 mode Conducted Power

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:**	0 dBi	
Applied Voltage:	12.0	Vdc			

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5500	17.96	18.07	--	--	N/A	21.03	24.00	-2.97
5600	18.39	18.60	--	--	N/A	21.51	24.00	-2.49
5700	18.28	19.02	--	--	N/A	21.68	24.00	-2.32

Measurement uncertainty:	±1.33 dB

5470 - 5725 GHz HT-40 mode Conducted Power

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:**	0 dBi	
Applied Voltage:	12.0	Vdc			

Test Frequency	**Measured Peak Power RF Port (dBm)**				**Total Power (dBm)**		**Limit**	**Margin**
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5510.00	17.24	17.51	--	--	N/A	20.39	24.00	-3.61
5610.00	17.50	18.04	--	--	N/A	20.79	24.00	-3.21
5690.00	17.59	18.05	--	--	N/A	20.84	24.00	-3.16

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. If directional antennas greater than 6 dBi are used both the maximum conducted power and the peak power spectral density shall be reduced by the amount in dB that exceeds the directional gain.

(a)(2) For the 5.25-5.35 and 5.47–5.725 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. If directional antennas greater than 6 dBi are used both the maximum conducted power and the peak power spectral density shall be reduced by the amount in dB that exceeds the directional gain.

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.

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

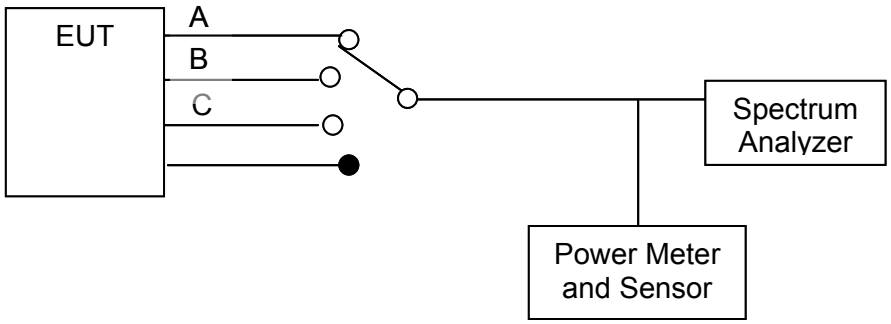
5.1.3. Peak Power Spectral Density

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

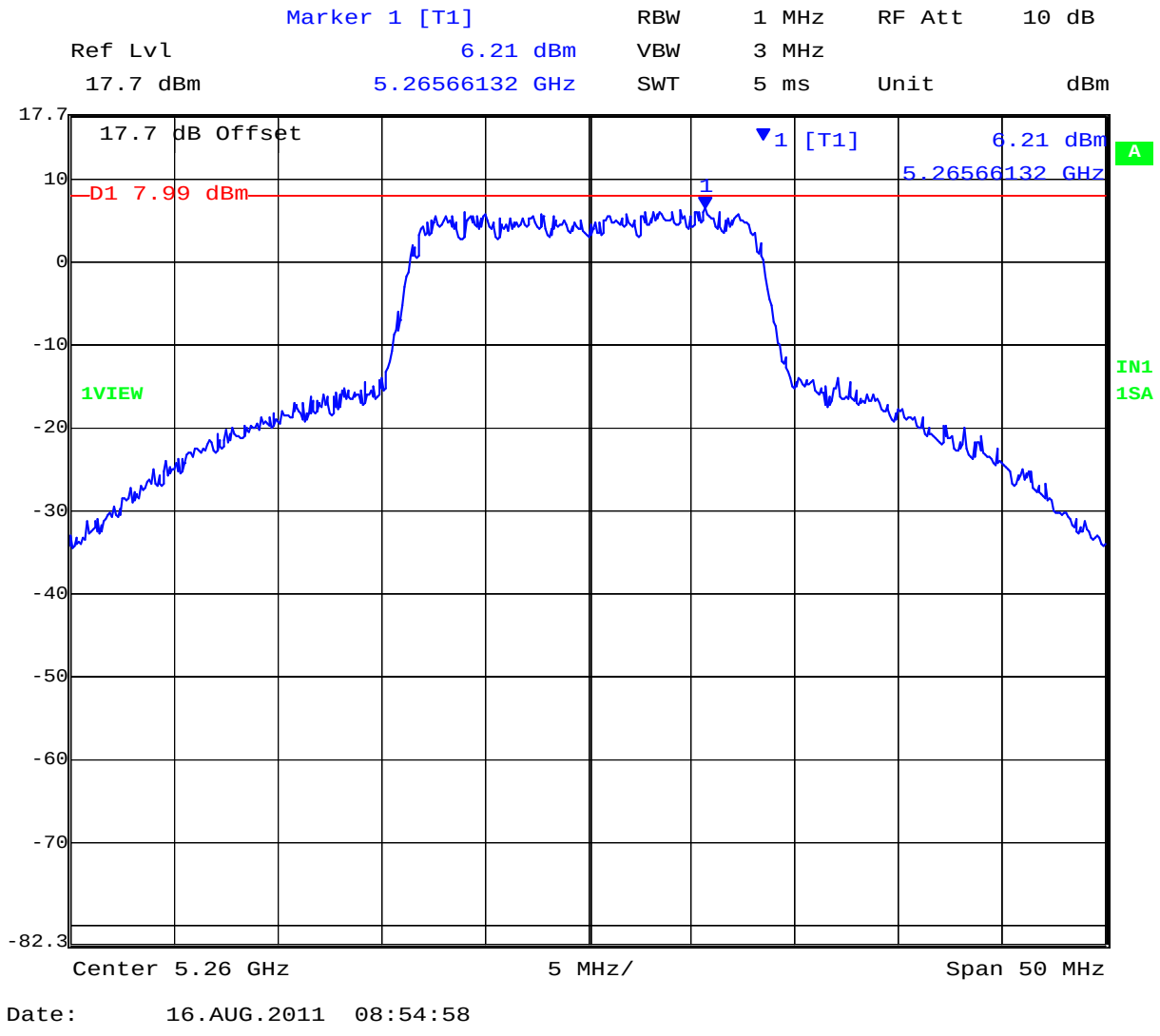
TABLE OF RESULTS – **802.11a**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11 a	**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:**	0 dBi
Applied Voltage:	12.0 Vdc	**Antenna Ports (N):**	2

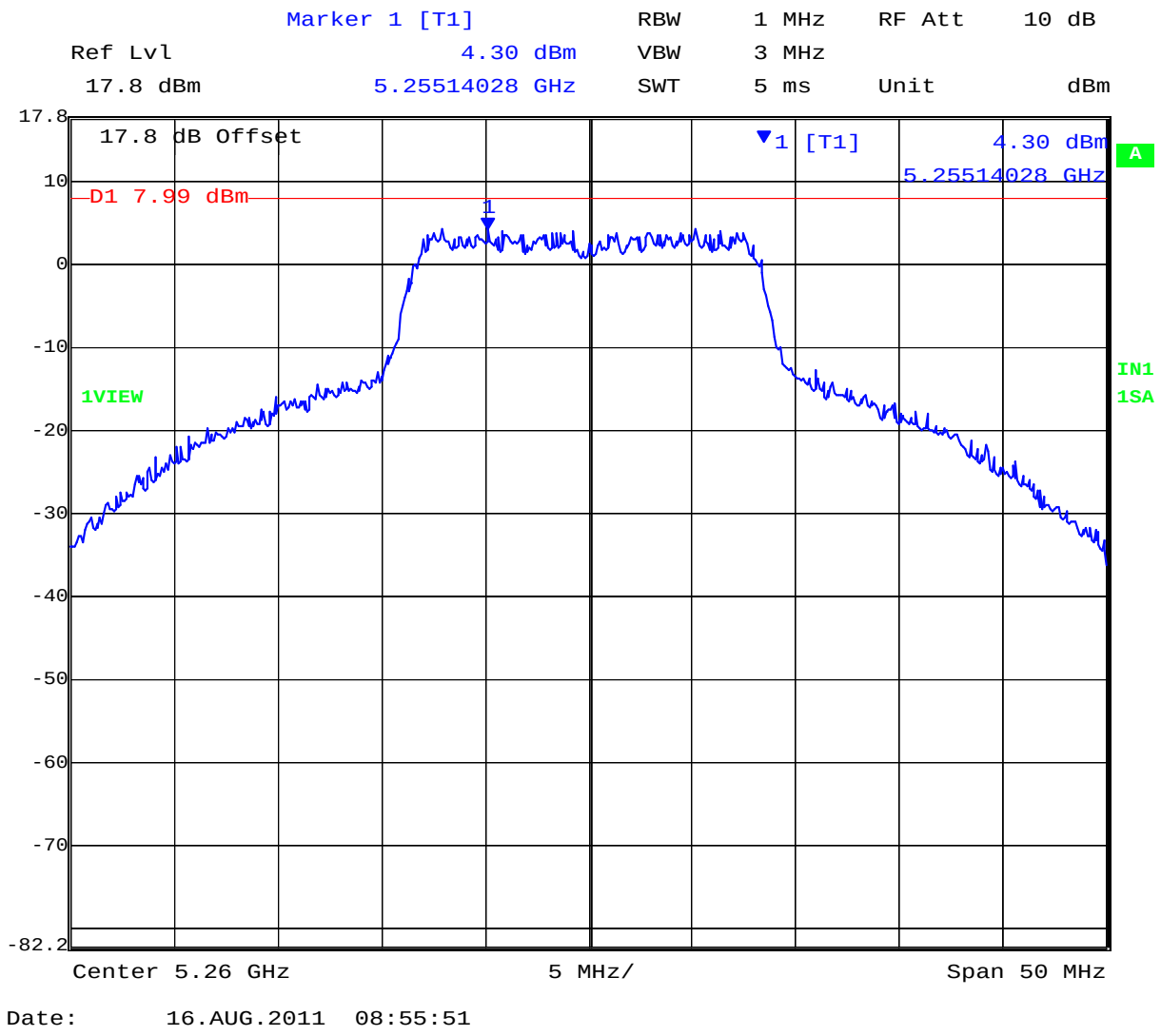
Test Frequency	Measured Peak Power RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	a	b	c	d	10Log(N)	dBm	dBm	dB
5260.00	6.21	4.30	--	--	3.01	6.21	7.99	-1.78
5300.00	6.67	3.93	--	--	3.01	6.67	7.99	-1.32
5320.00	6.50	3.68	--	--	3.01	6.50	7.99	-1.49

Measurement uncertainty:	±1.33 dB

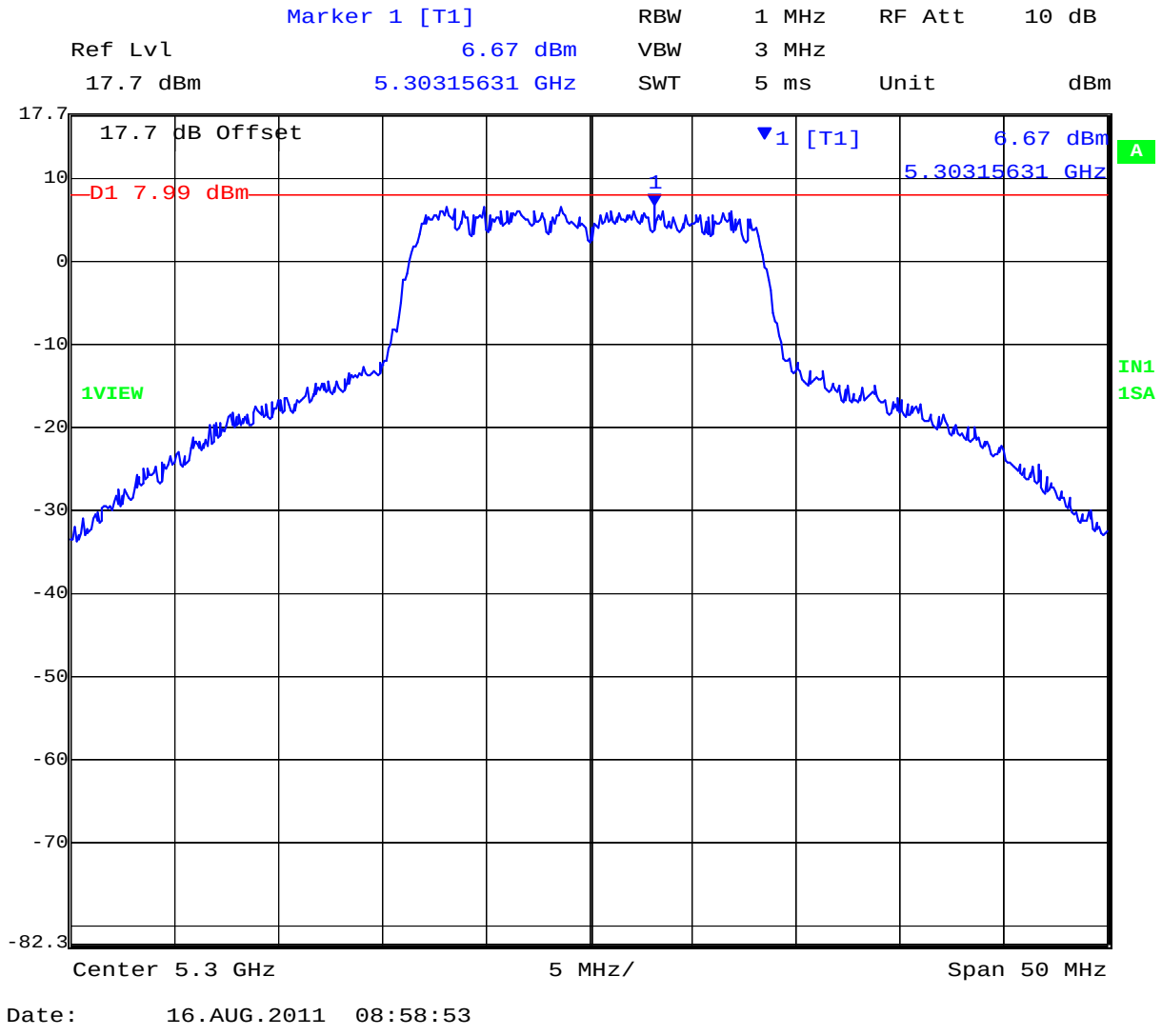
5,260 MHz 802.11a Port a Peak Power Spectral Density



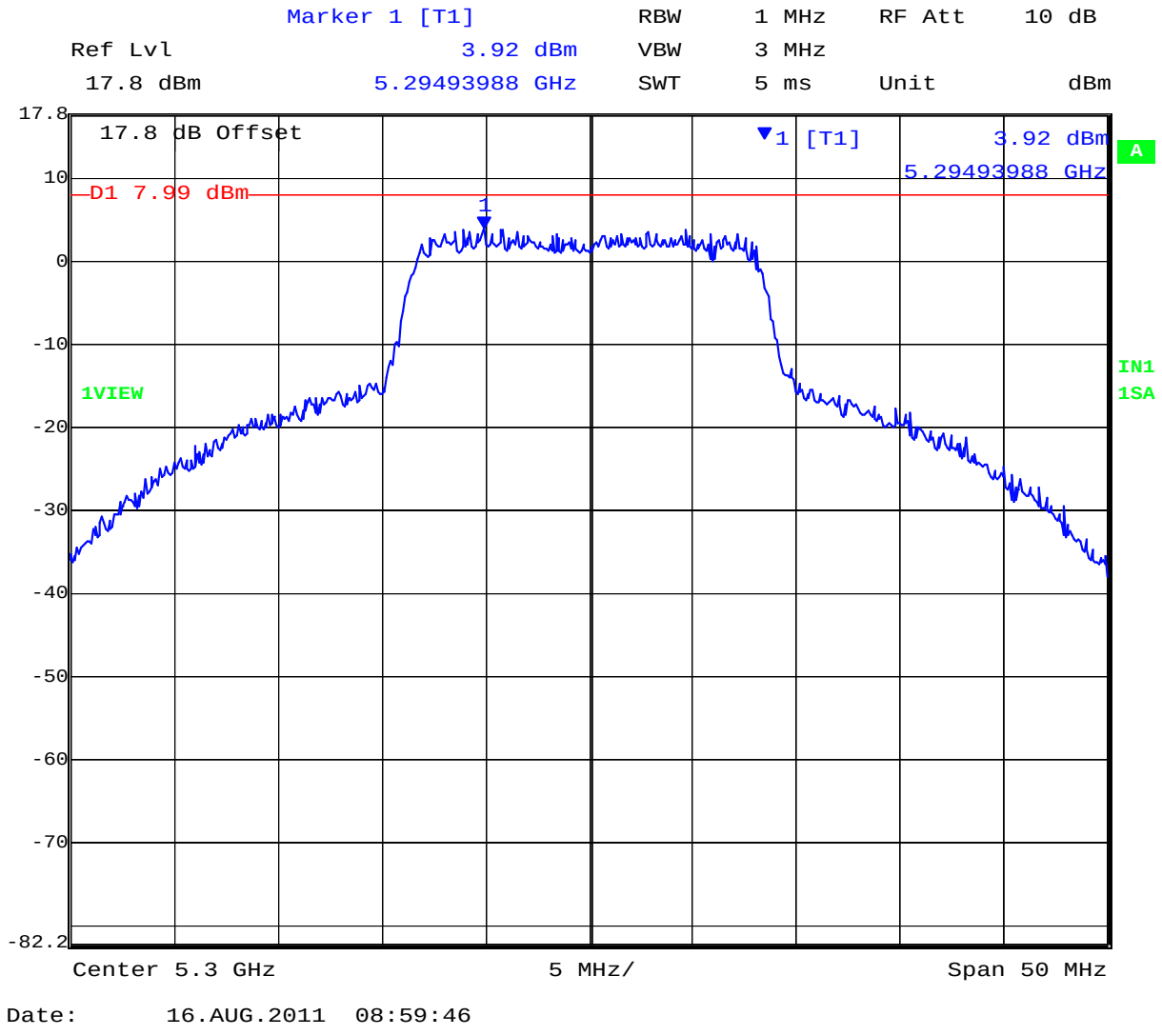
5,260 MHz 802.11a Port b Peak Power Spectral Density



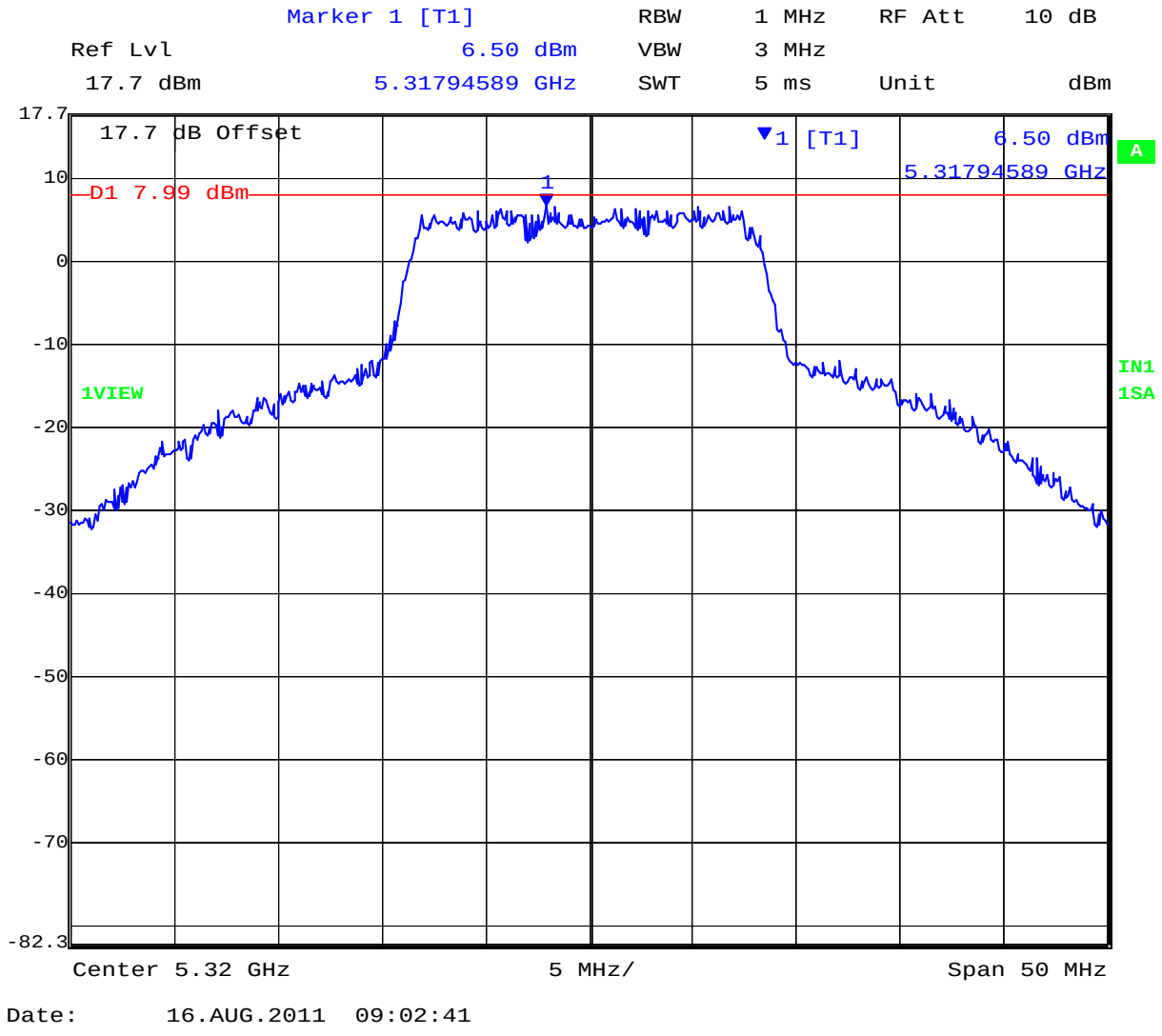
5,300 MHz 802.11a Port a Peak Power Spectral Density



5,300 MHz 802.11a Port b Peak Power Spectral Density



5,320 MHz 802.11a Port a Peak Power Spectral Density



5,320 MHz 802.11a Port b Peak Power Spectral Density

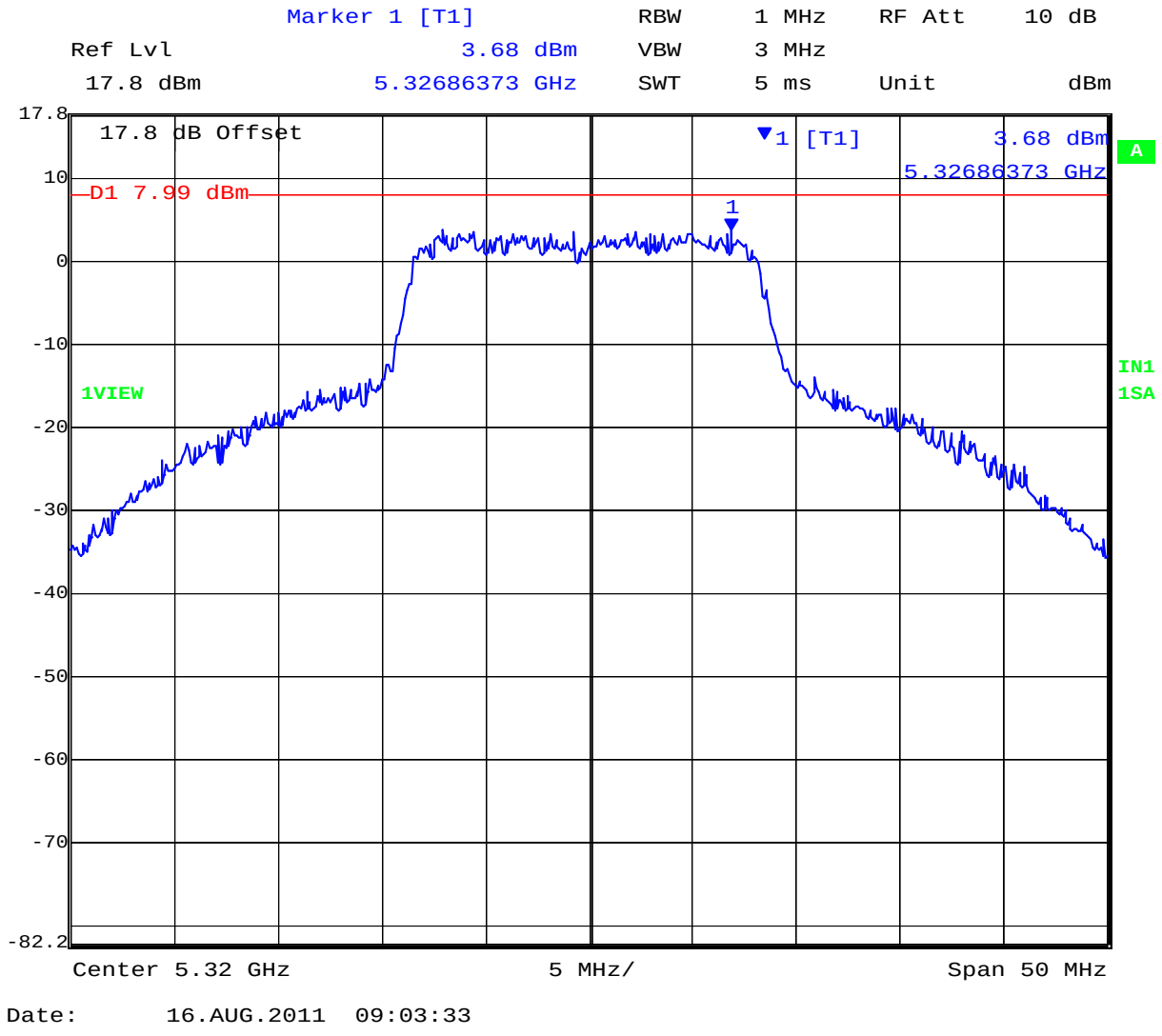


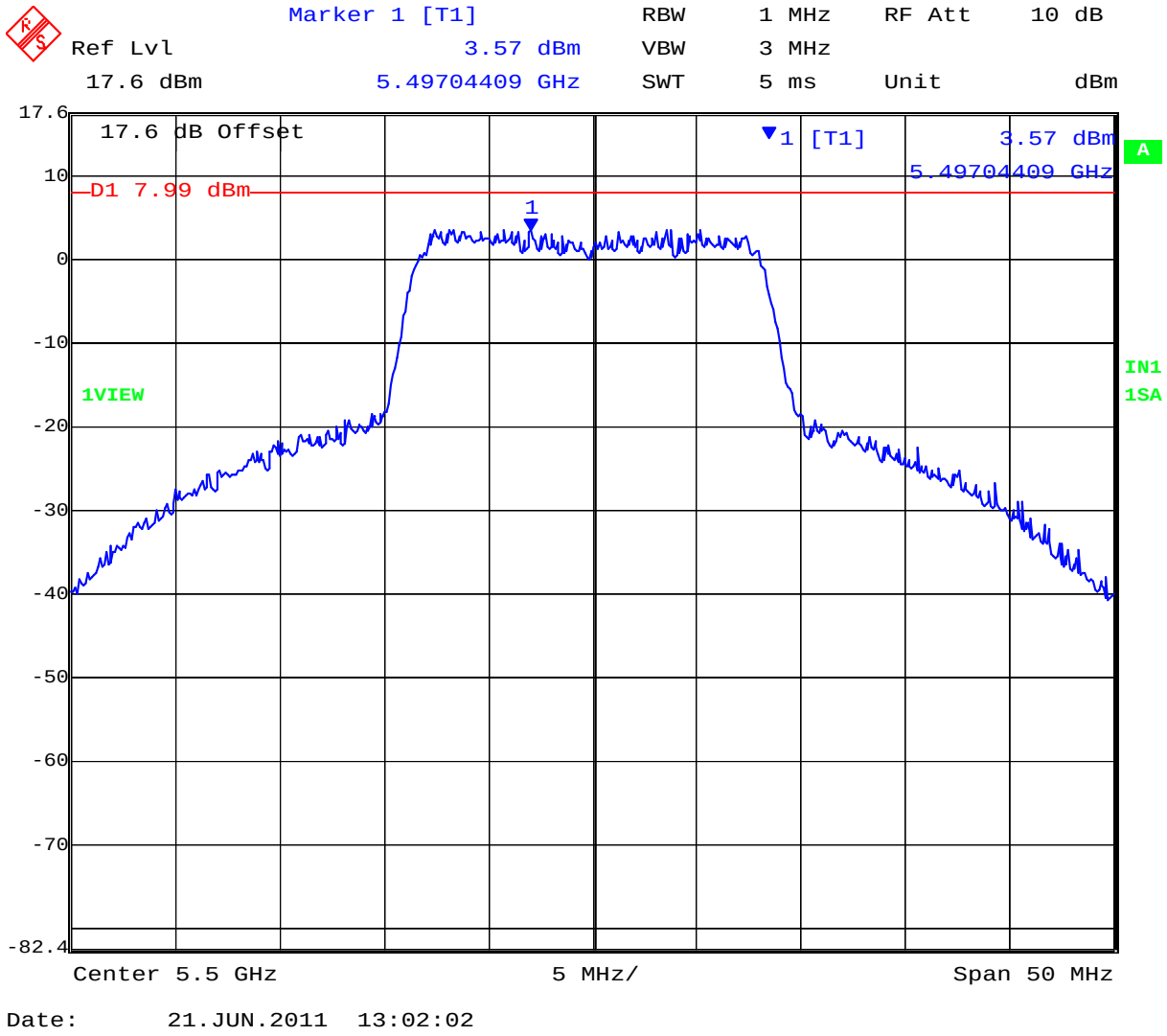
TABLE OF RESULTS – **802.11a**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11a	**Ambient Temp. (°C):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	0 dBi
Applied Voltage:	12.0 Vdc	**Antenna Ports (N):**	2

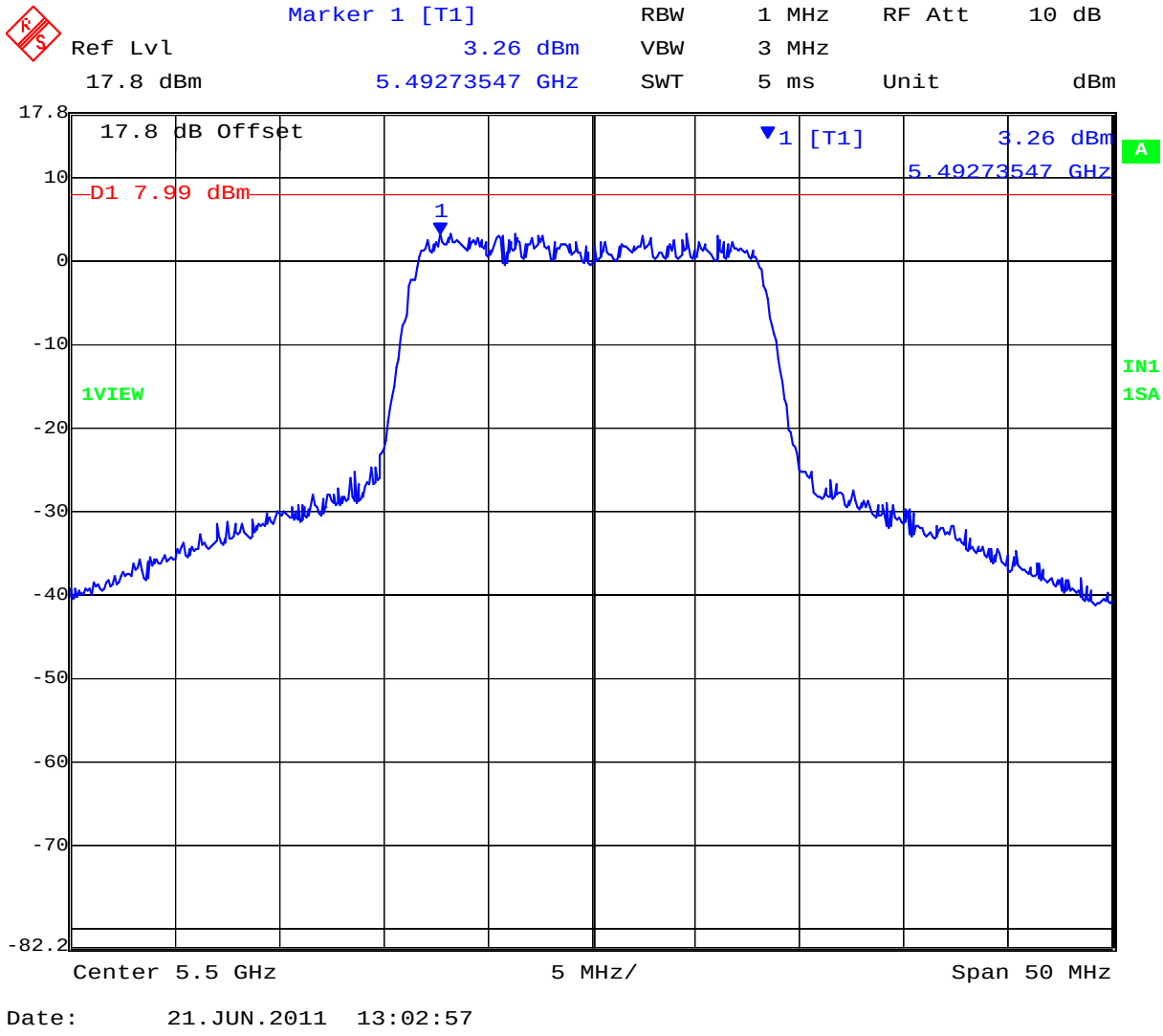
Test Frequency	Measured Peak Power RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	a	b	c	d	10Log(N)	dBm	dBm	dB
5500.00	3.58	3.26	--	--	3.01	3.58	7.99	-4.41
5600.00	4.94	4.08	--	--	3.01	4.94	7.99	-3.05
5700.00	4.70	3.07	--	--	3.01	4.70	7.99	-3.29

Measurement uncertainty:	±1.33 dB

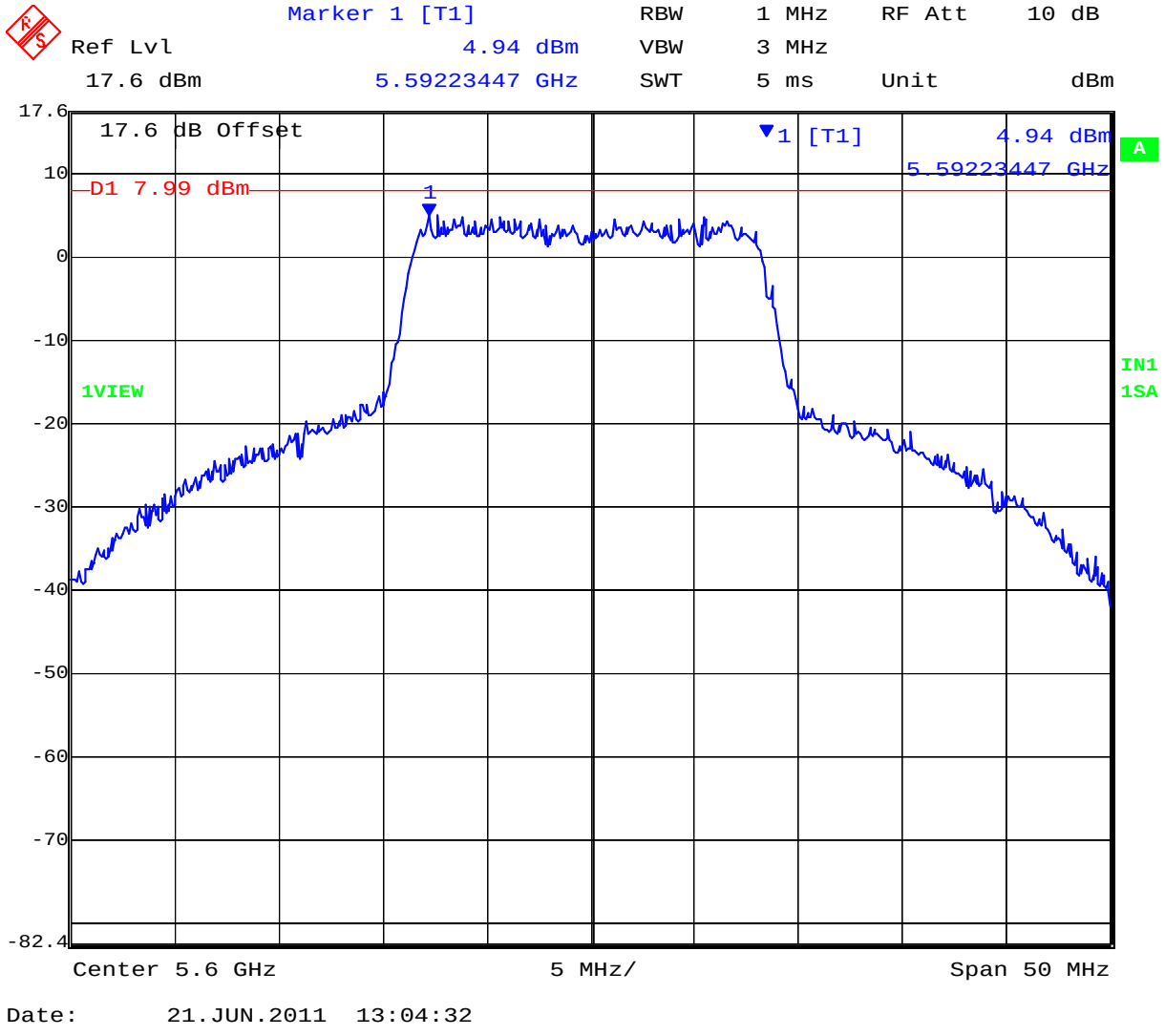
5,500 MHz 802.11a Port a Peak Power Spectral Density



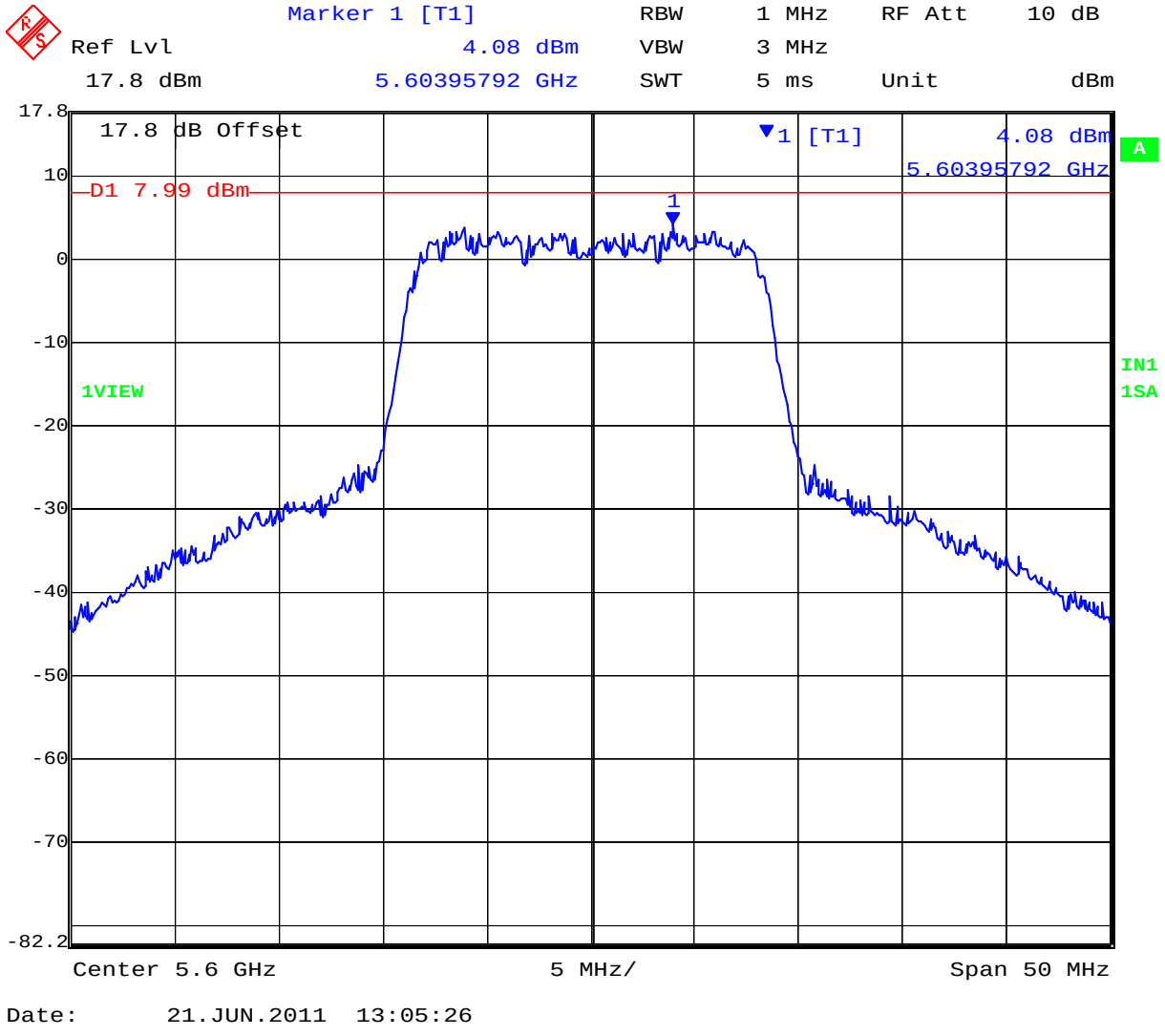
5,500 MHz 802.11a Port b Peak Power Spectral Density



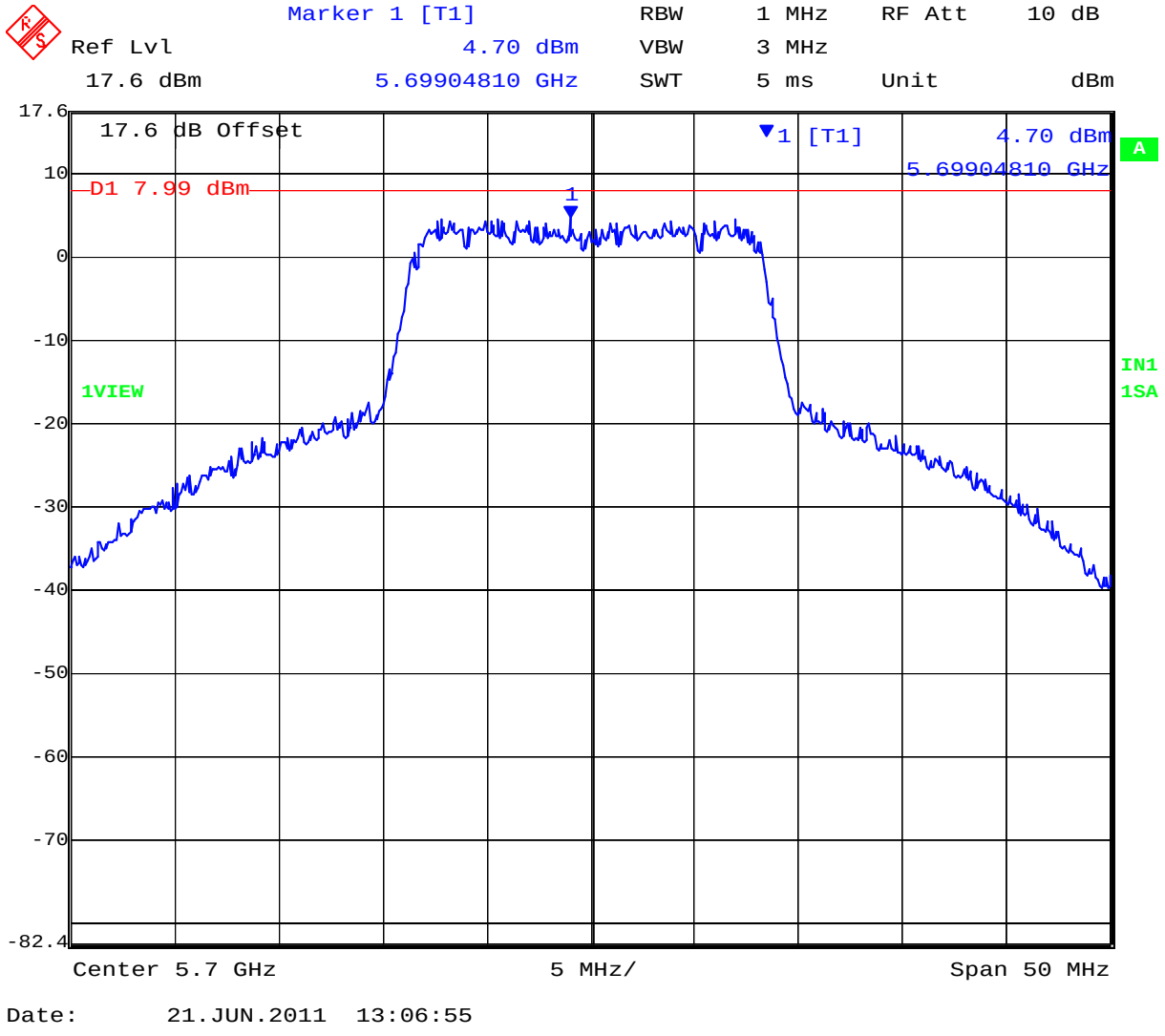
5,600 MHz 802.11a Port a Peak Power Spectral Density



5,600 MHz 802.11a Port b Peak Power Spectral Density



5,700 MHz 802.11a Port a Peak Power Spectral Density



5,700 MHz 802.11a Port b Peak Power Spectral Density

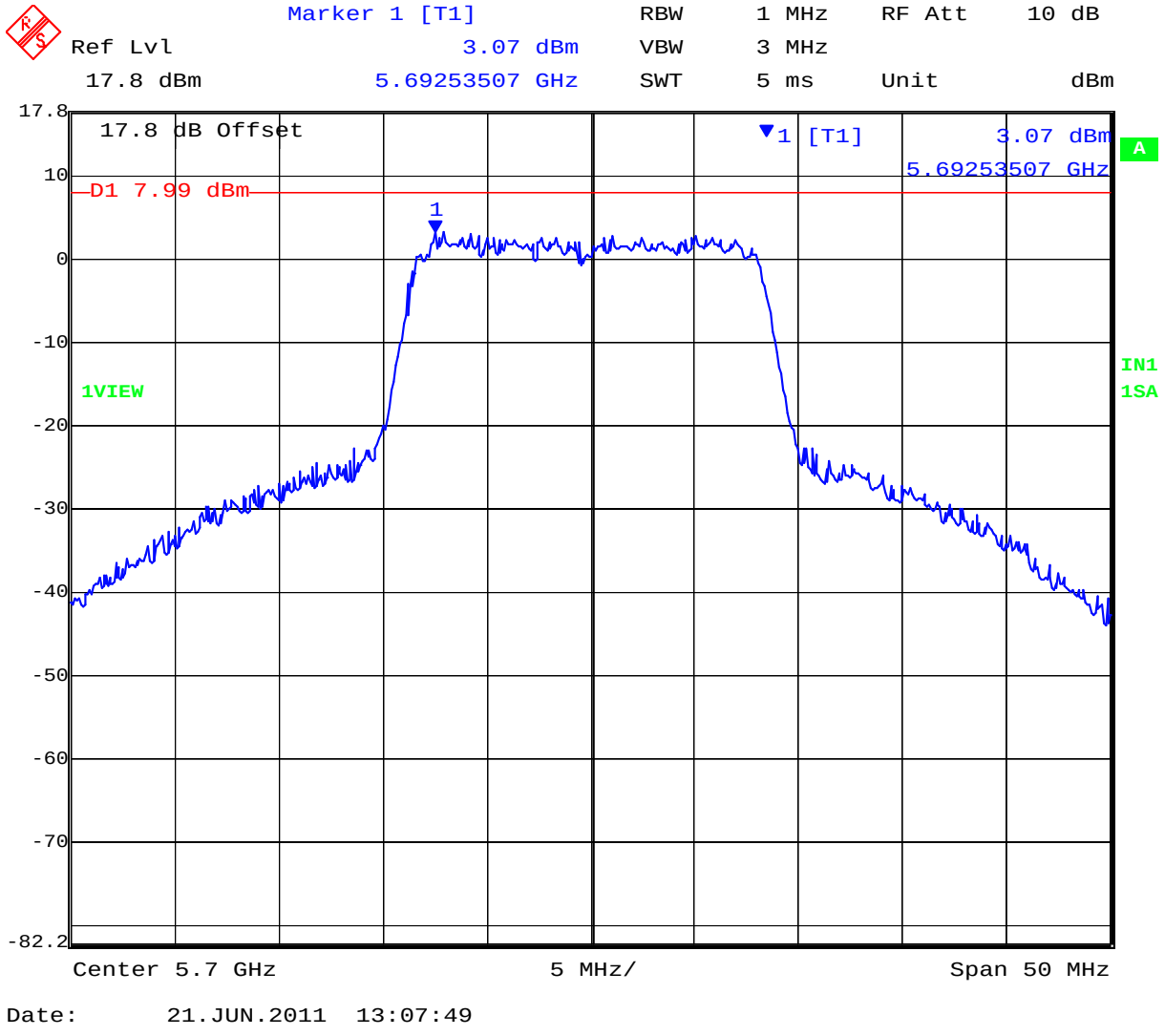


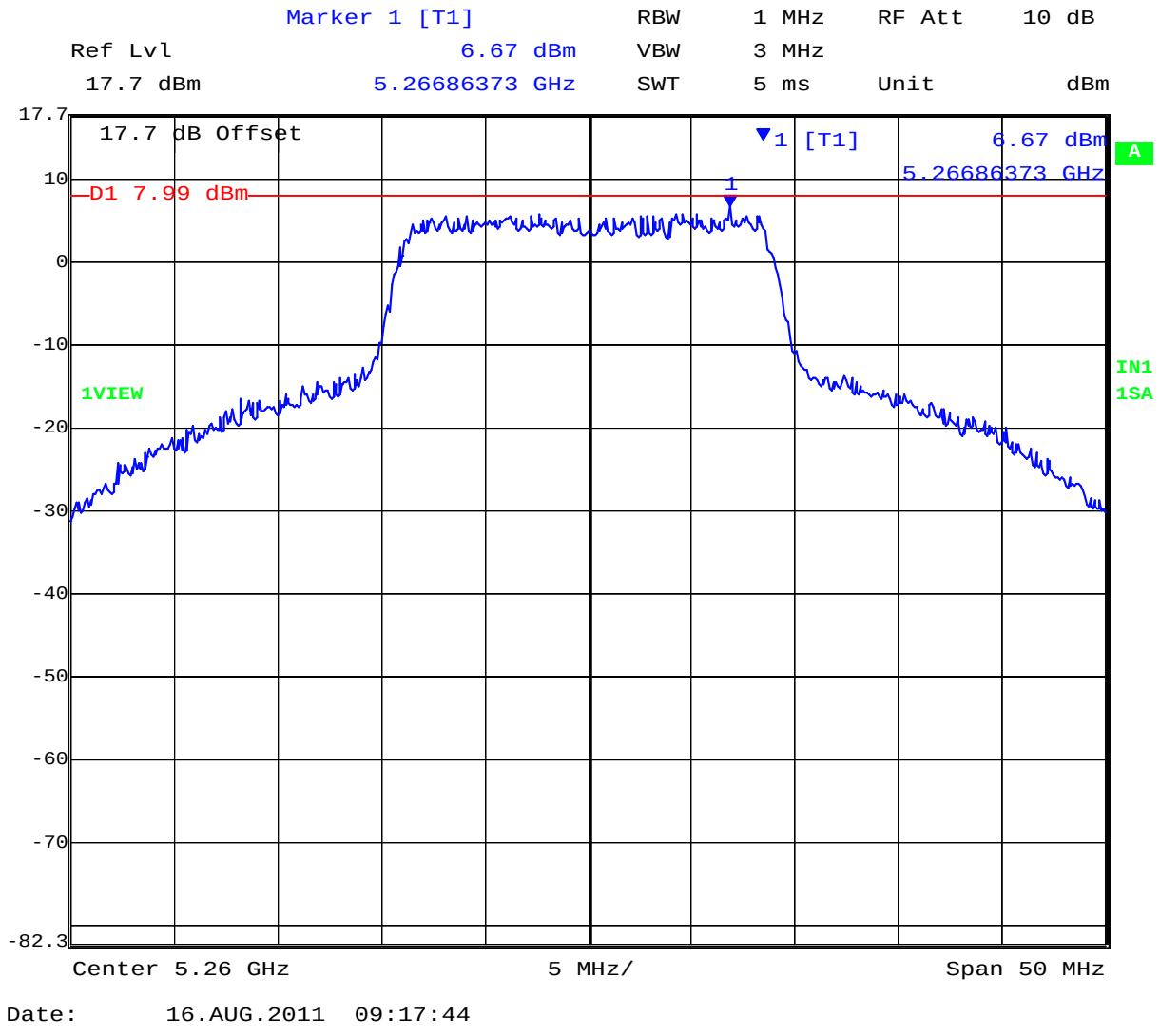
TABLE OF RESULTS – **802.11n HT20**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11 n HT-20	**Ambient Temp. (°C):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	0 dBi
Applied Voltage:	12.0 Vdc	**Antenna Ports (N):**	2

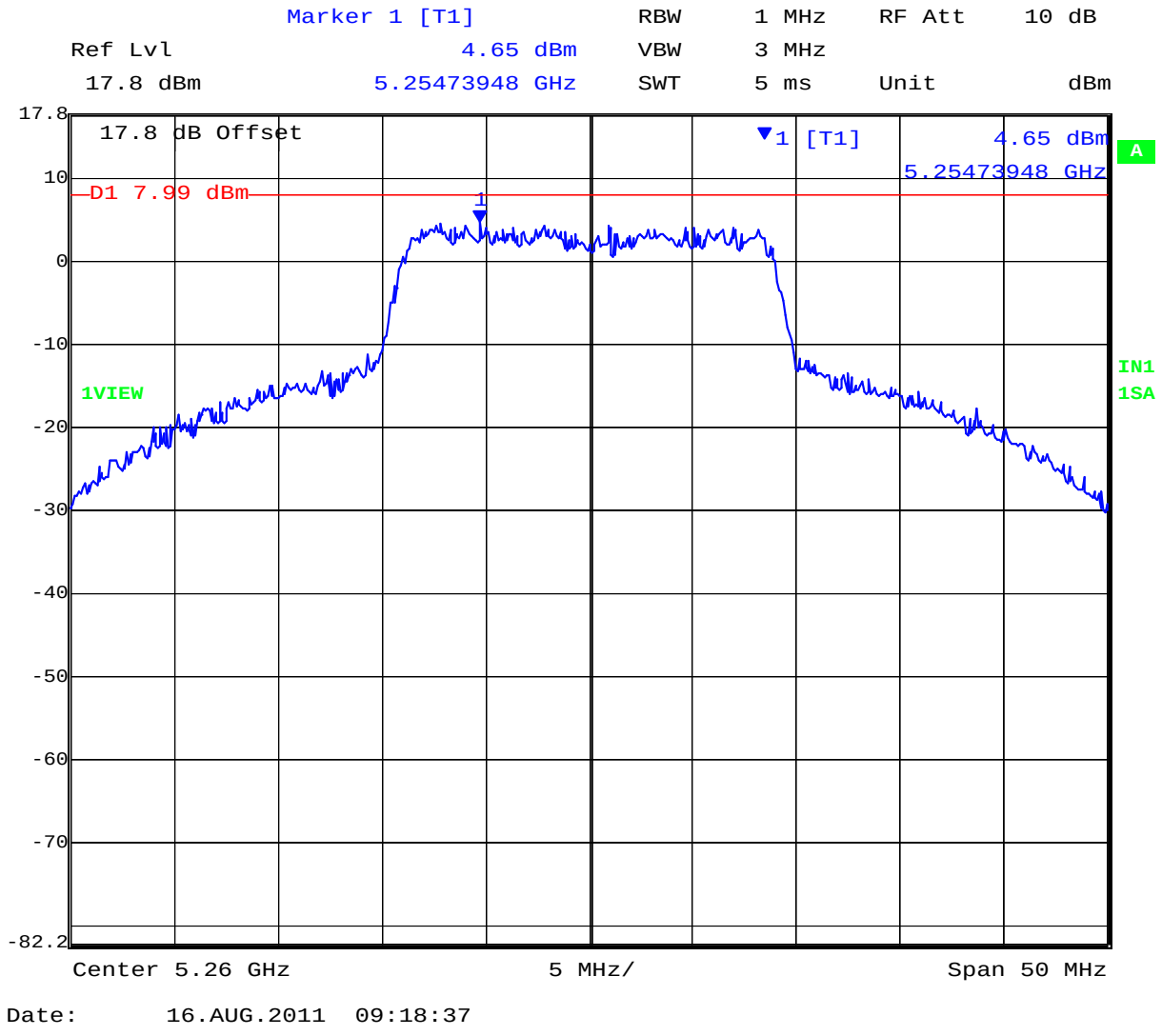
Test Frequency	Measured Peak Power RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	a	b	c	d	10Log(N)	dBm	dBm	dB
5260.00	6.67	4.65	--	--	3.01	6.67	7.99	-1.32
5300.00	6.27	3.84	--	--	3.01	6.27	7.99	-1.72
5320.00	6.36	3.61	--	--	3.01	6.36	7.99	-1.63

Measurement uncertainty:	±1.33 dB

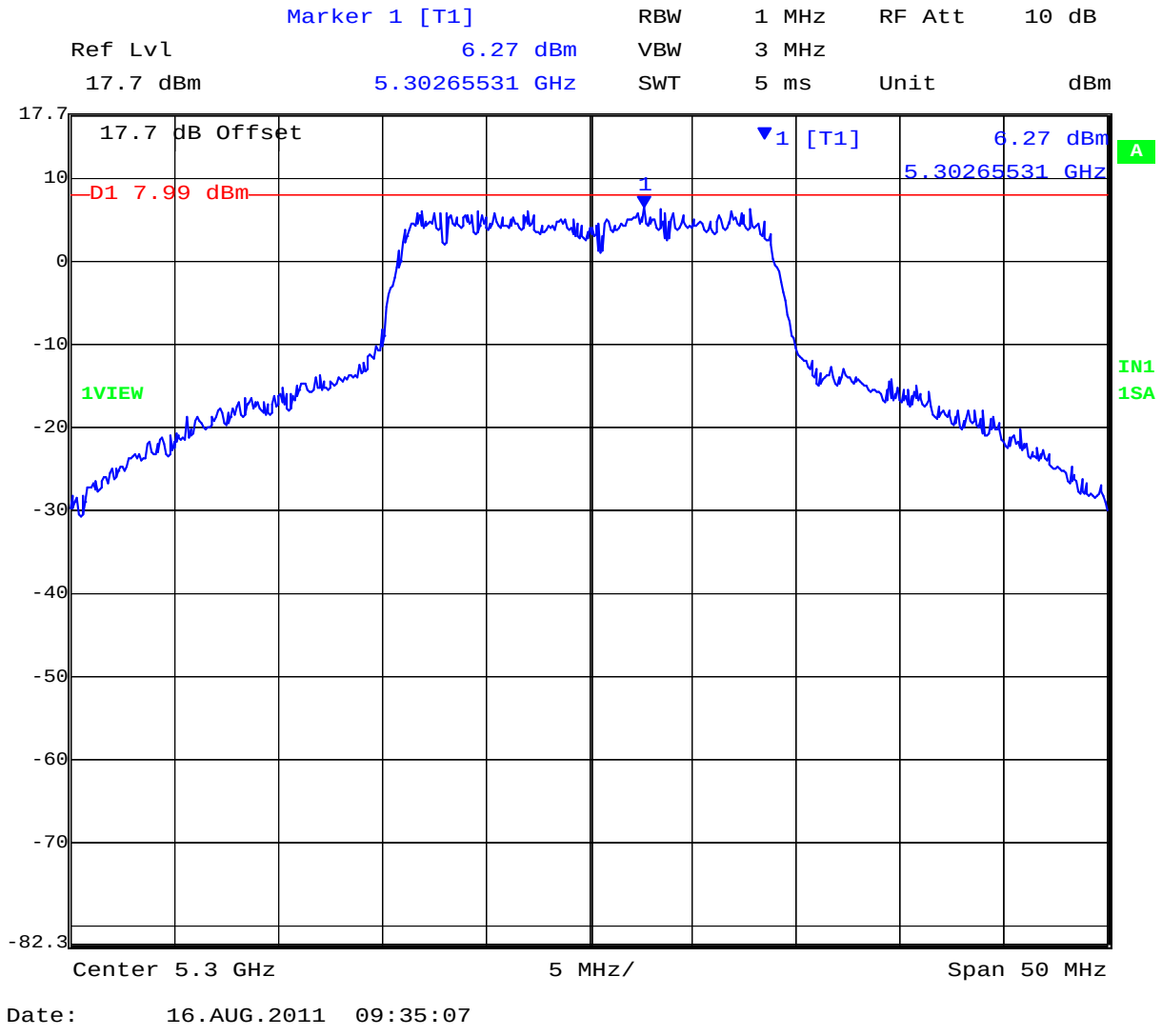
5,260 MHz 802.11n HT20 Port a Peak Power Spectral Density



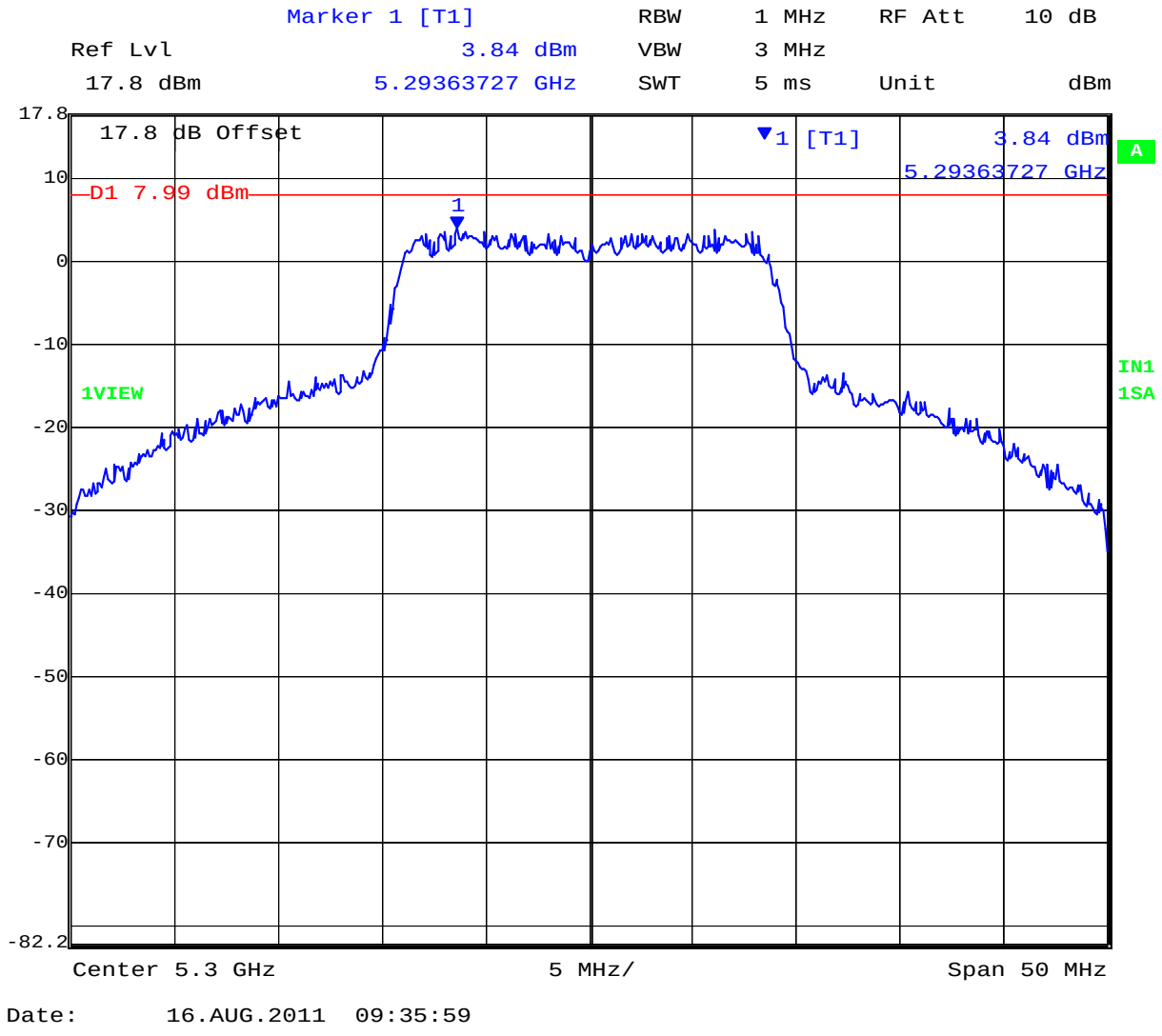
5,260 MHz 802.11n HT20 Port b Peak Power Spectral Density



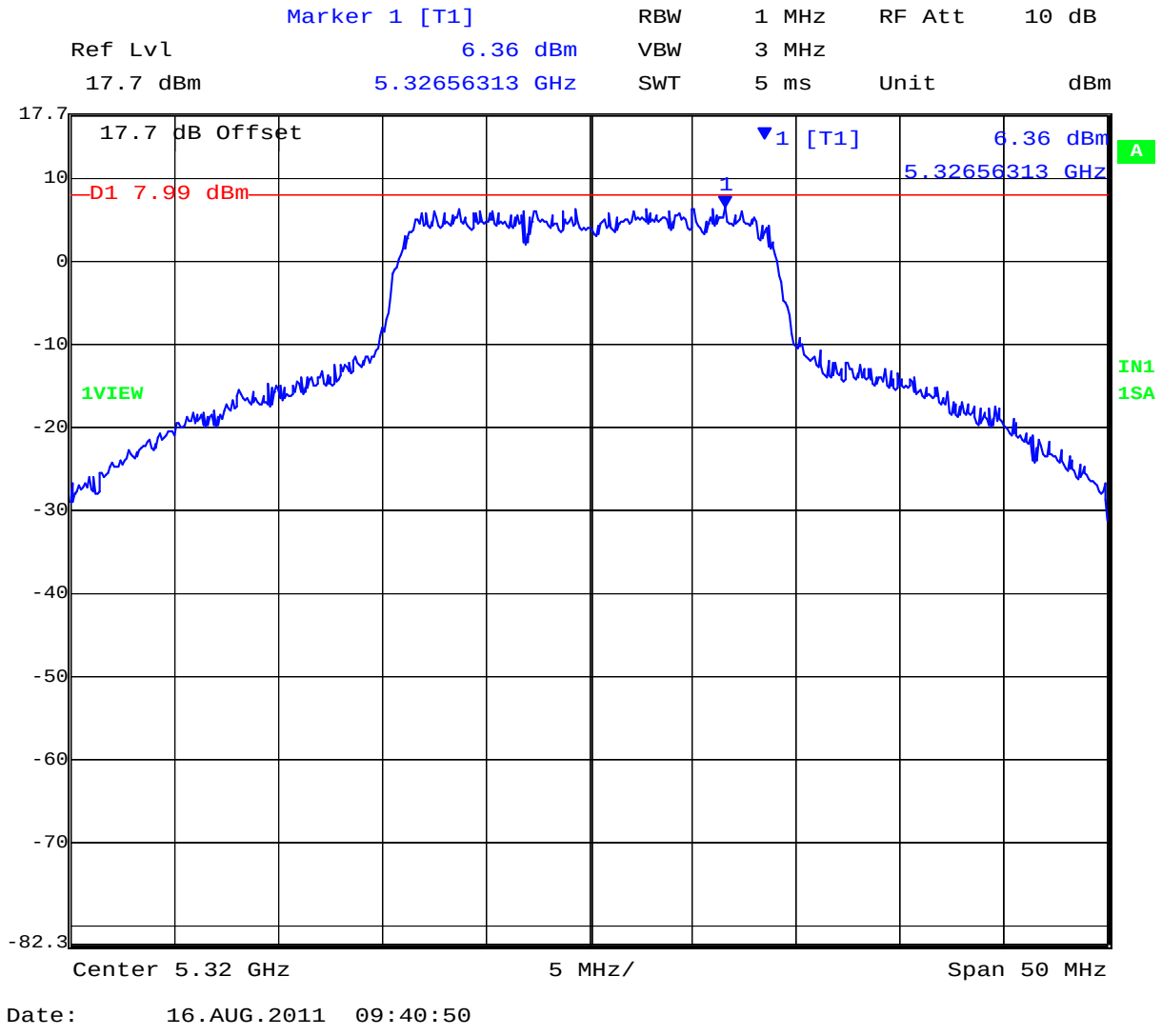
5,300 MHz 802.11n HT20 Port a Peak Power Spectral Density



5,300 MHz 802.11n HT20 Port b Peak Power Spectral Density



5,320 MHz 802.11n HT20 Port a Peak Power Spectral Density



5,320 MHz 802.11n HT20 Port b Peak Power Spectral Density

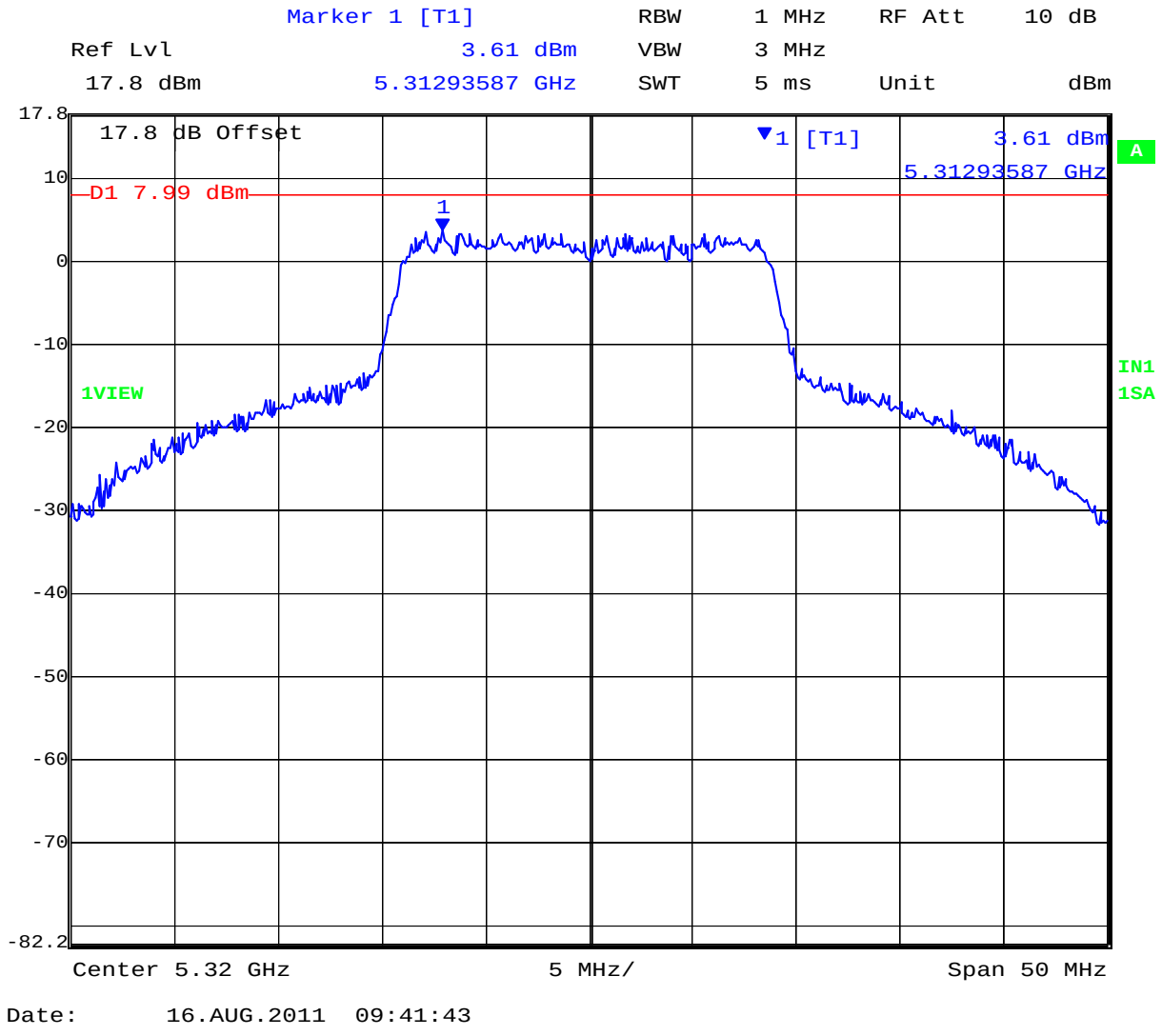


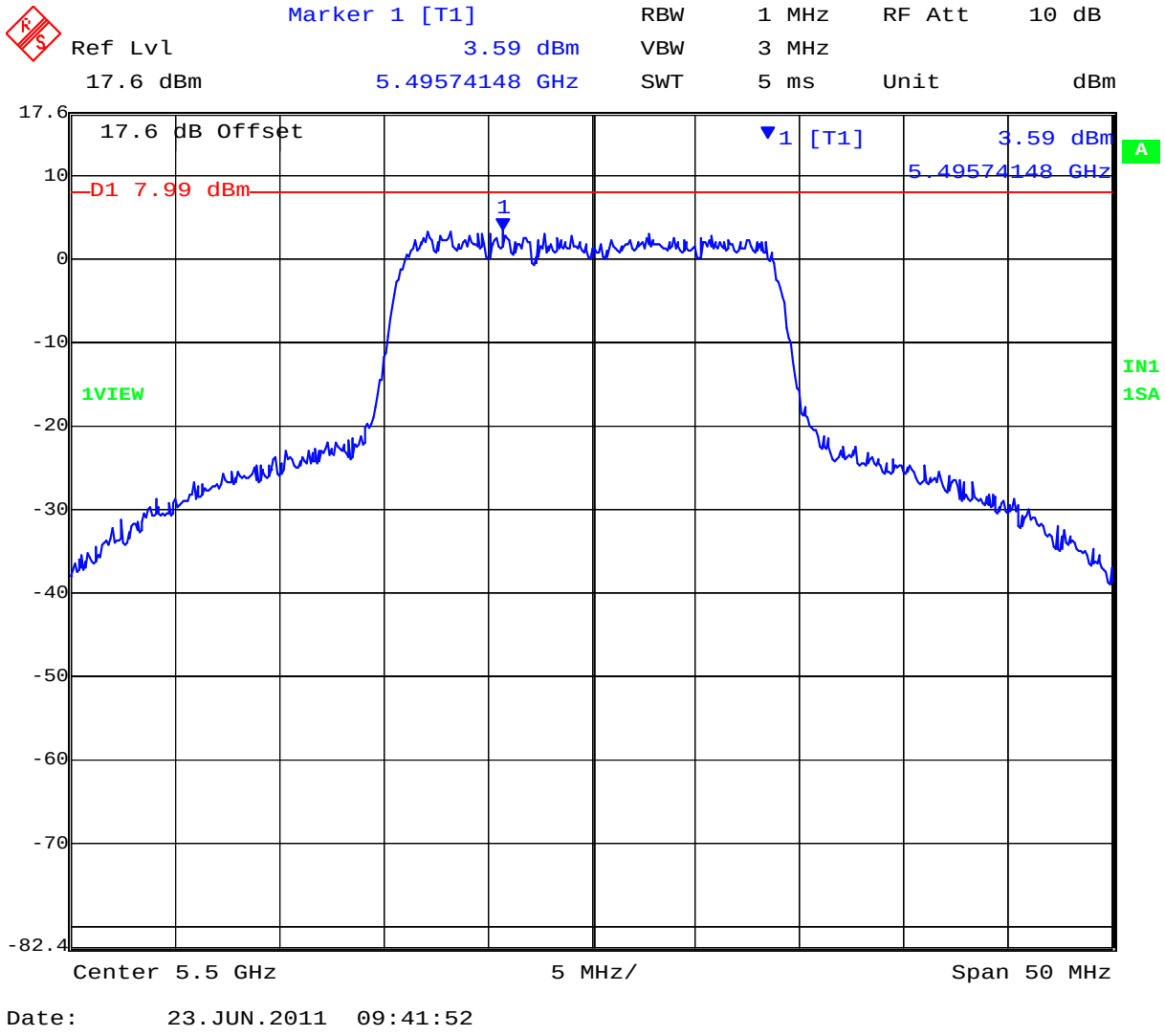
TABLE OF RESULTS – **802.11n HT20**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-20	**Ambient Temp. (°C):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	0 dBi
Applied Voltage:	12.0 Vdc	**Antenna Ports (N):**	2

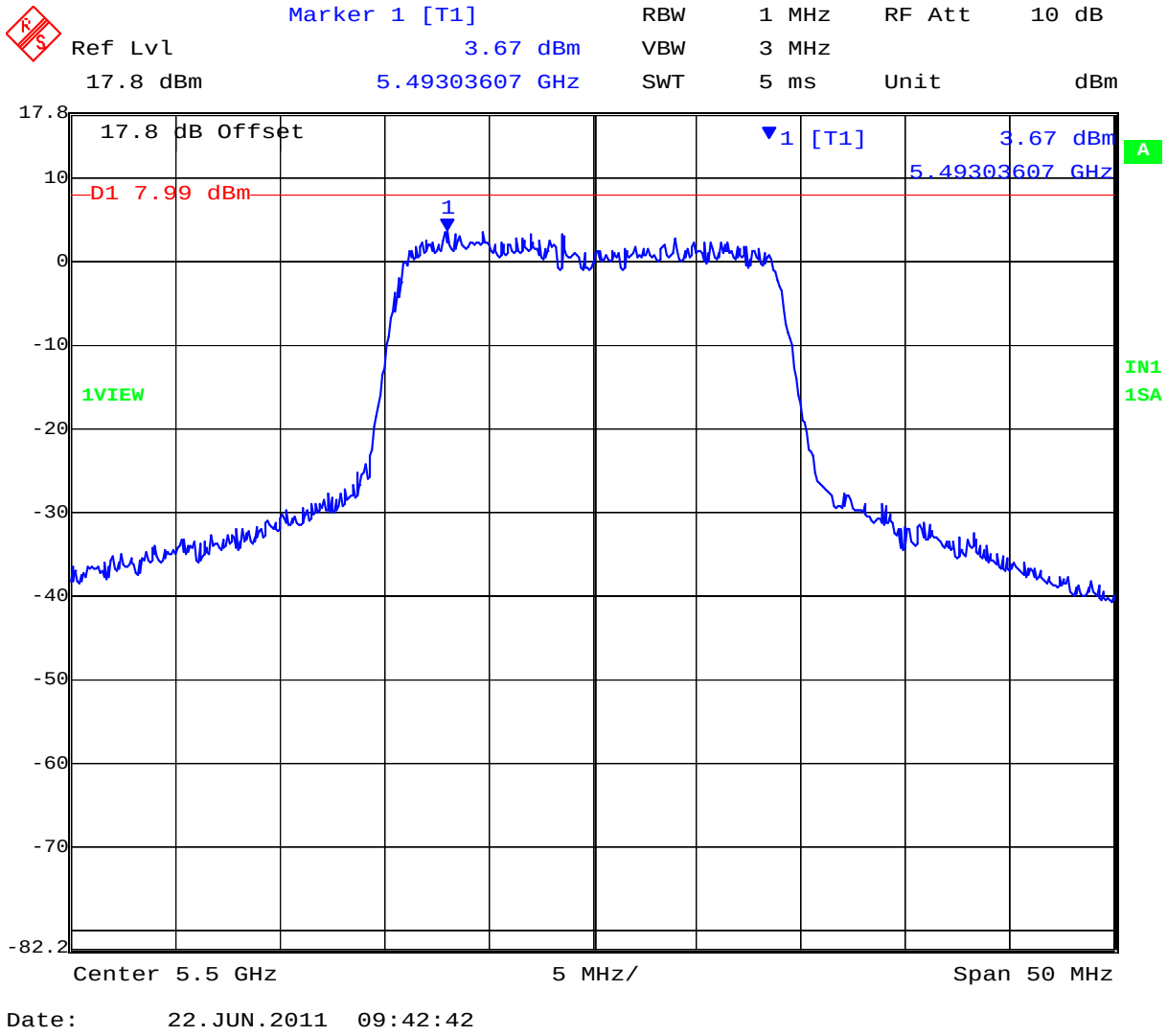
Test Frequency	Measured Peak Power RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	a	b	c	d	10Log(N)	dBm	dBm	dB
5500.00	3.59	3.67	--	--	3.01	3.67	7.99	-4.32
5600.00	4.47	2.98	--	--	3.01	4.47	7.99	-3.52
5700.00	4.59	2.85	--	--	3.01	4.59	7.99	-3.40

Measurement uncertainty:	±1.33 dB

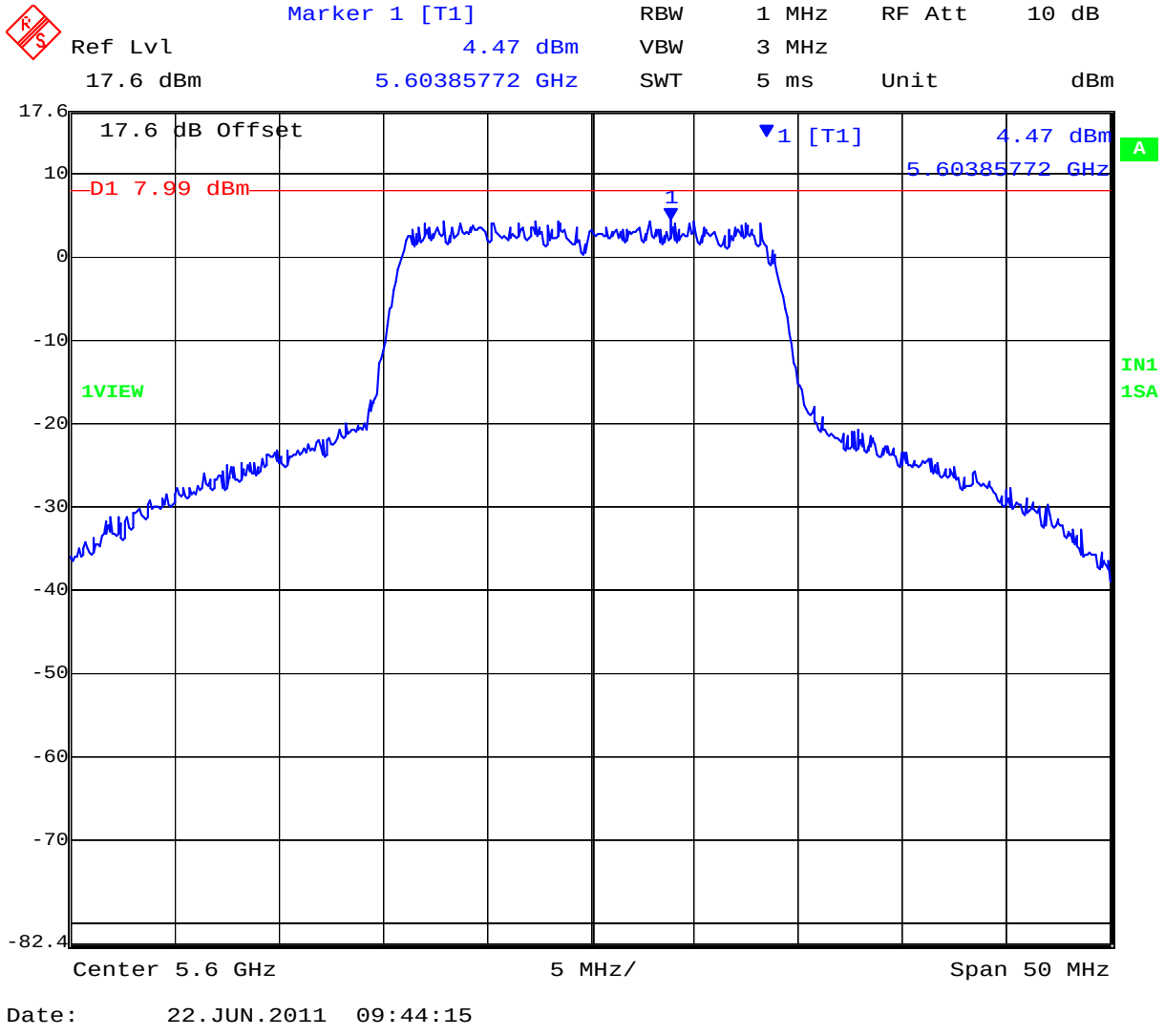
5,500 MHz 802.11n HT20 Port a Peak Power Spectral Density



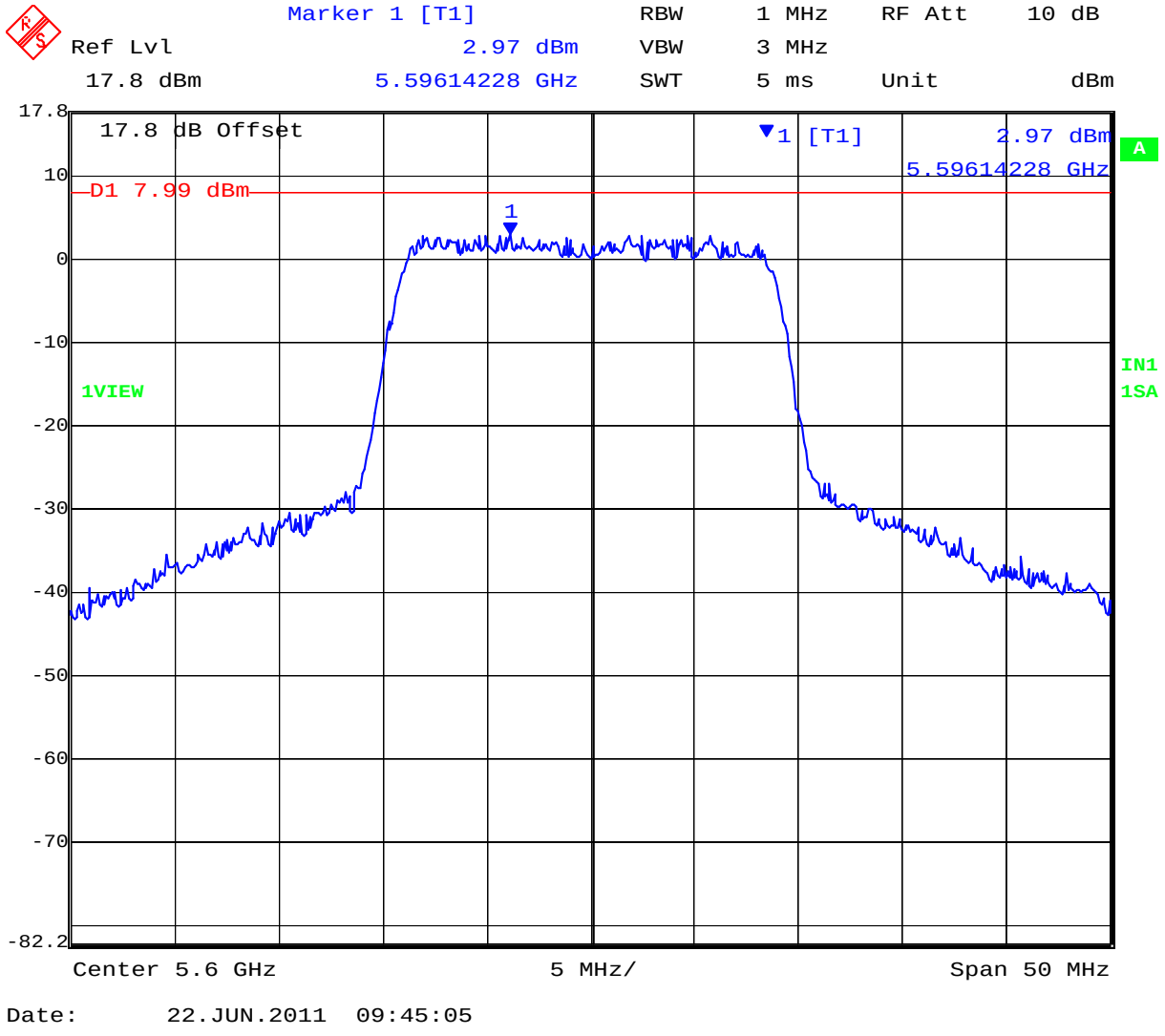
5,500 MHz 802.11n HT20 Port b Peak Power Spectral Density



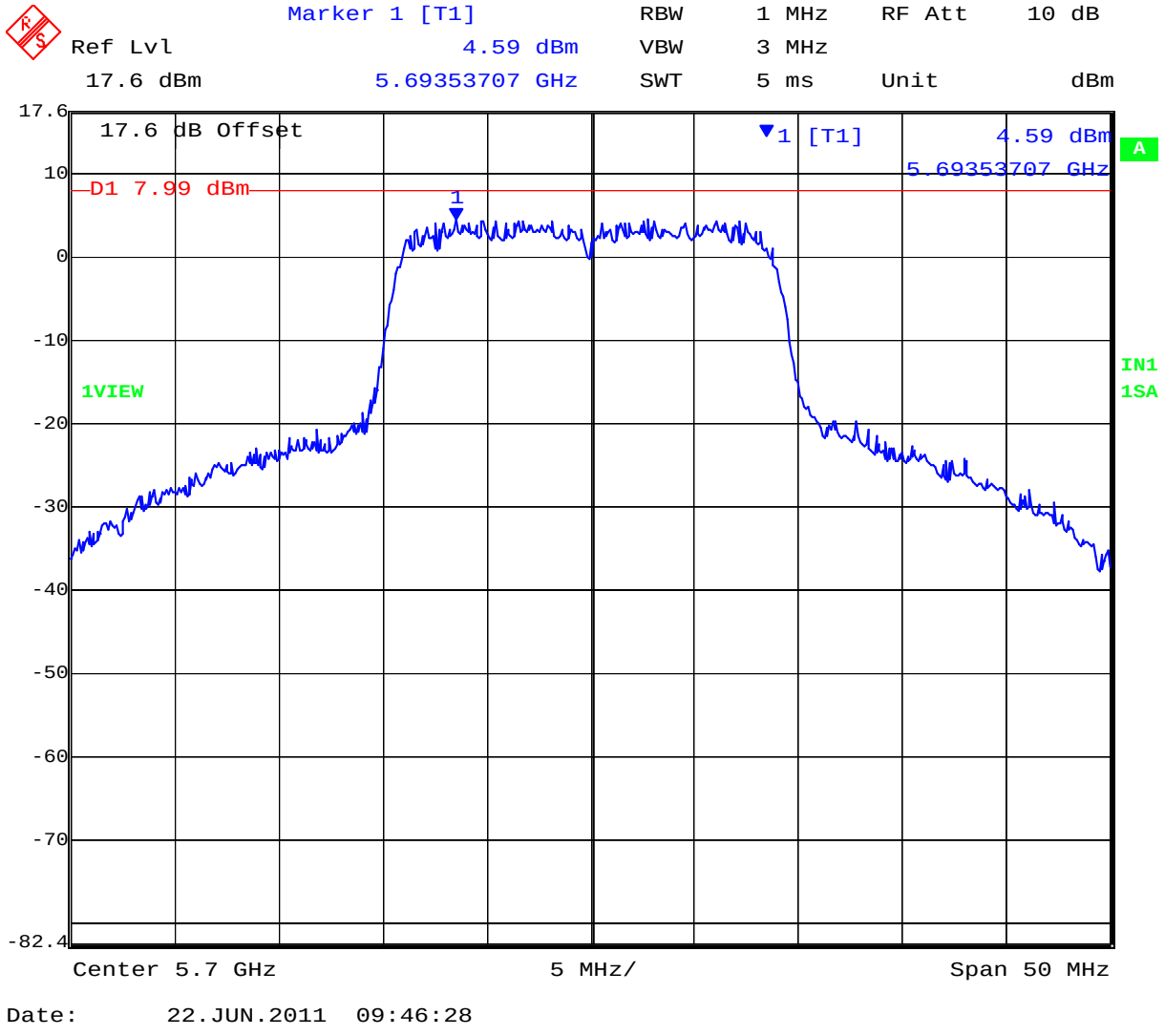
5,600 MHz 802.11n HT20 Port a Peak Power Spectral Density



5,600 MHz 802.11n HT20 Port b Peak Power Spectral Density



5,700 MHz 802.11n HT20 Port a Peak Power Spectral Density



5,700 MHz 802.11n HT20 Port b Peak Power Spectral Density

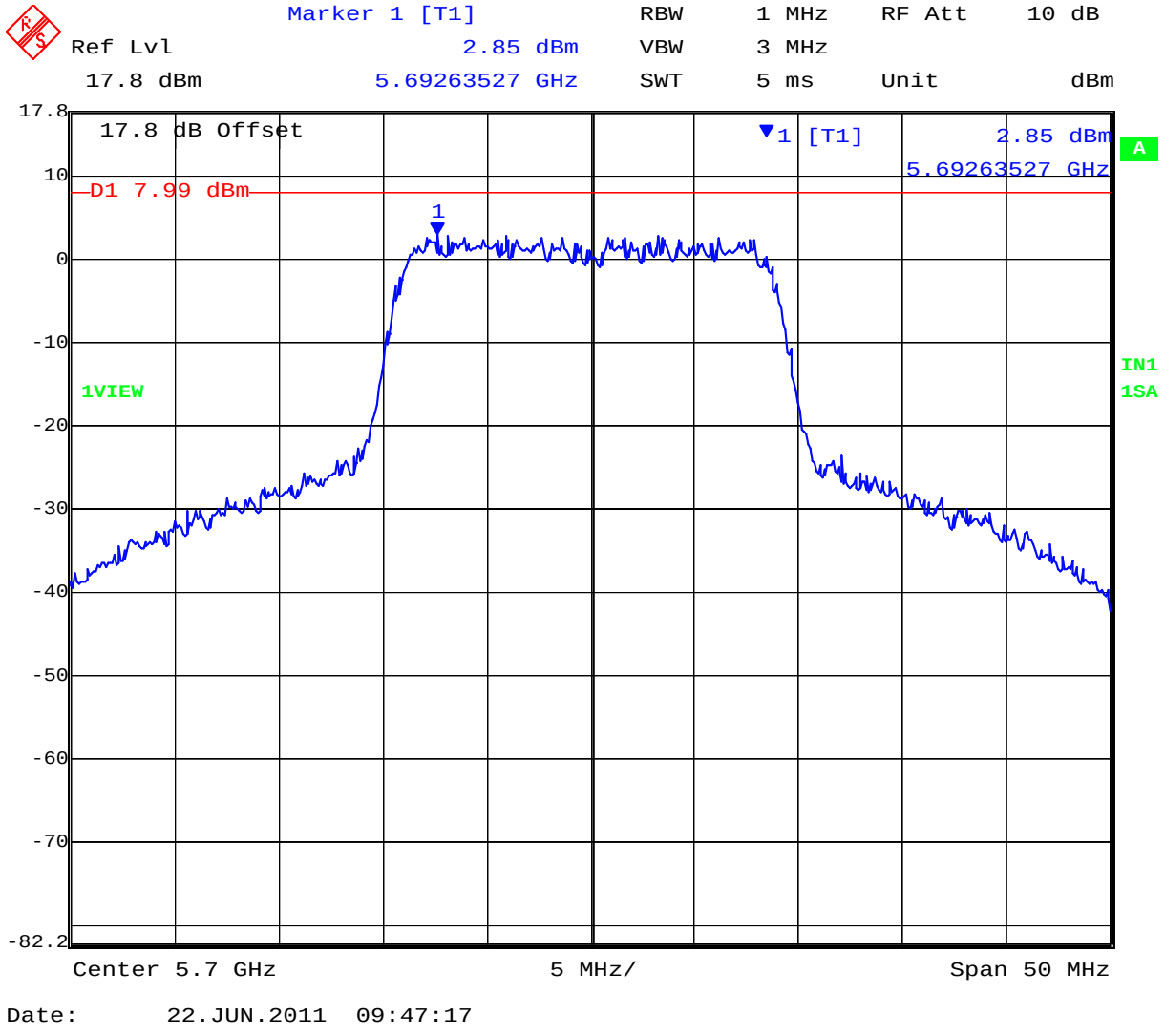


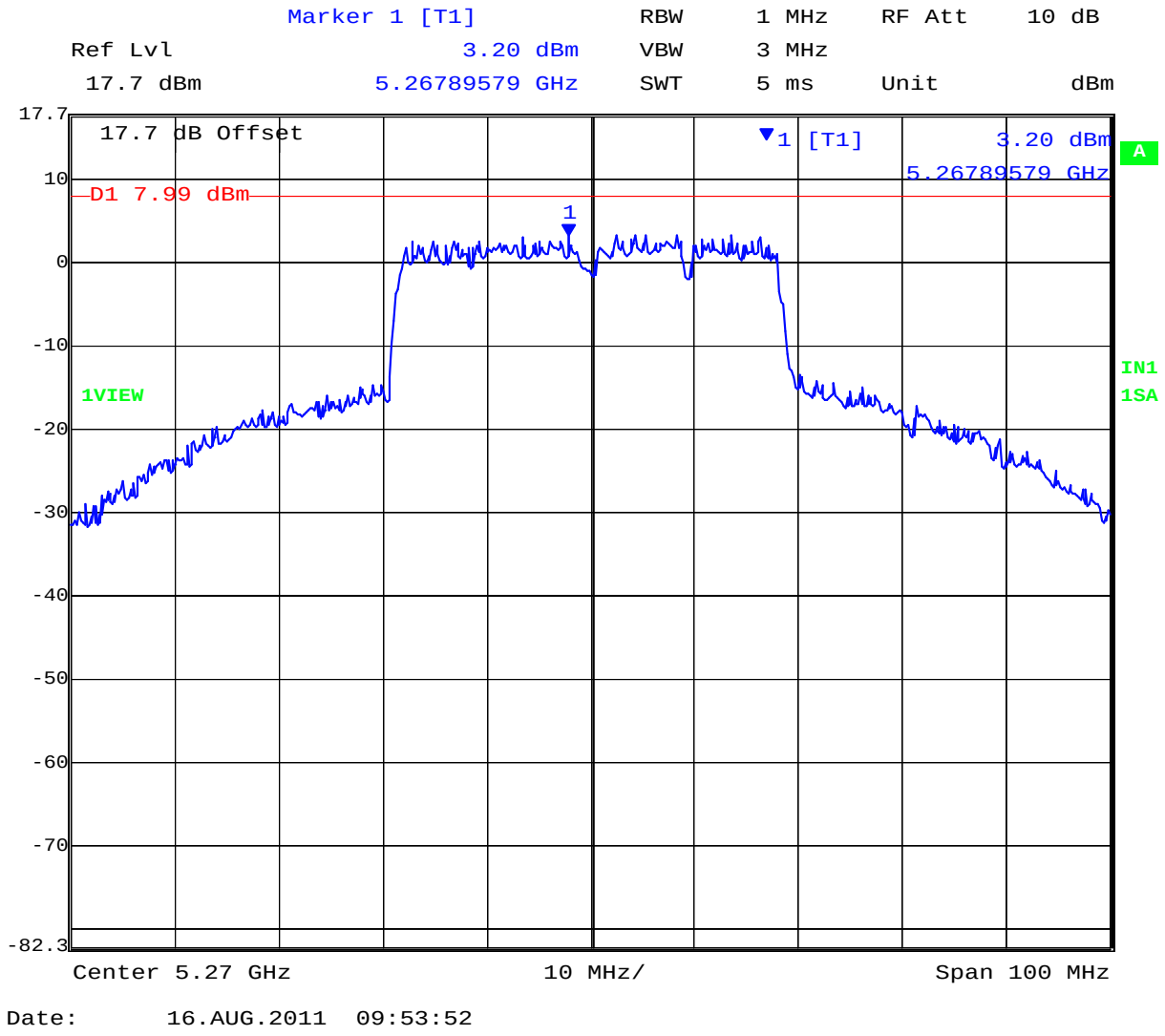
TABLE OF RESULTS – **802.11n HT40**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11 n 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:**	0 dBi
Applied Voltage:	Vdc	**Antenna Ports (N):**	2

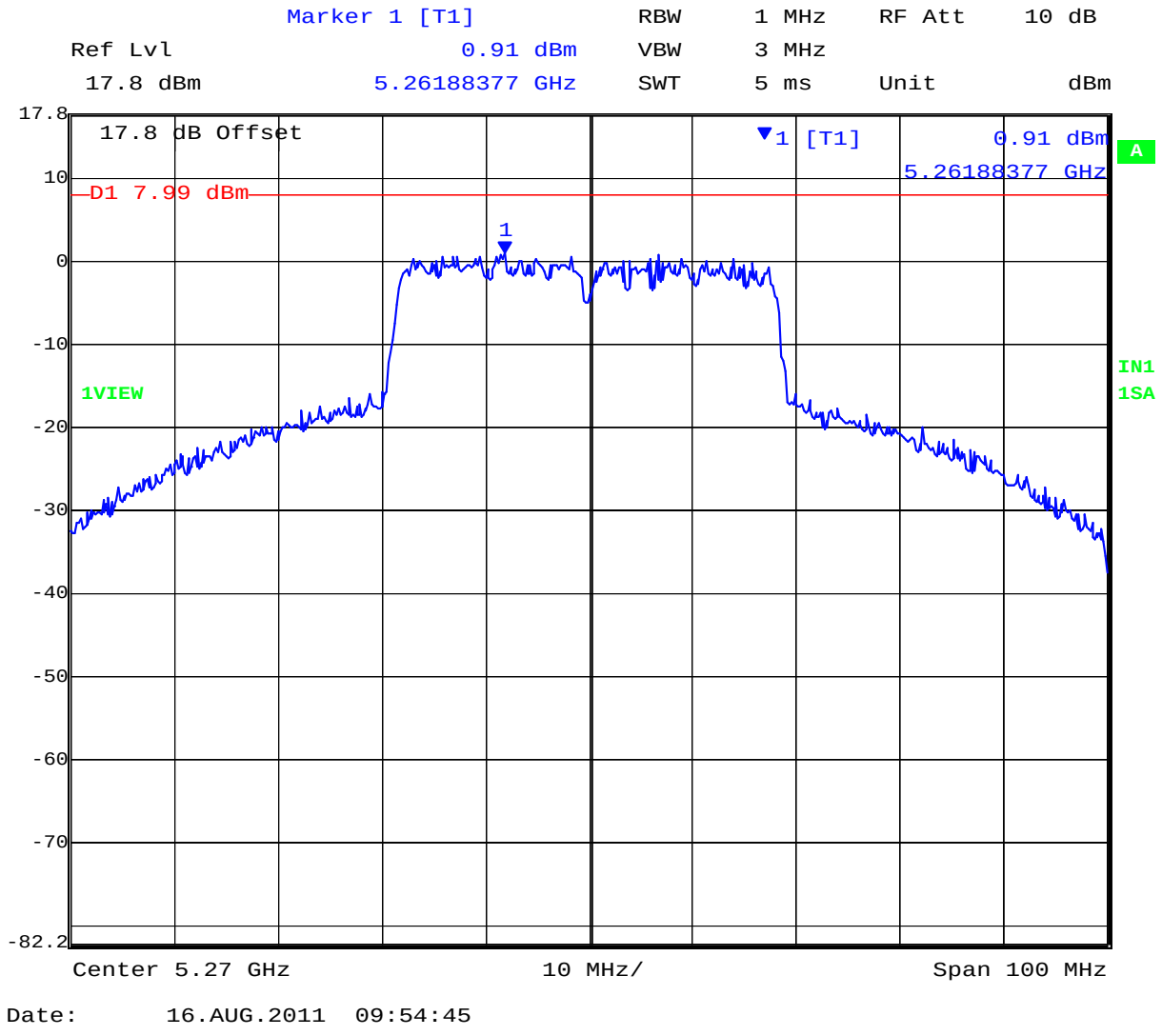
Test Frequency	Measured Peak Power RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**10Log(N)**	**dBm**	**dBm**	**dB**
5270.00	3.20	0.91	--	--	3.01	3.20	7.99	-4.79
5310.00	3.64	0.47	--	--	3.01	3.64	7.99	-4.35

Measurement uncertainty:	±1.33 dB

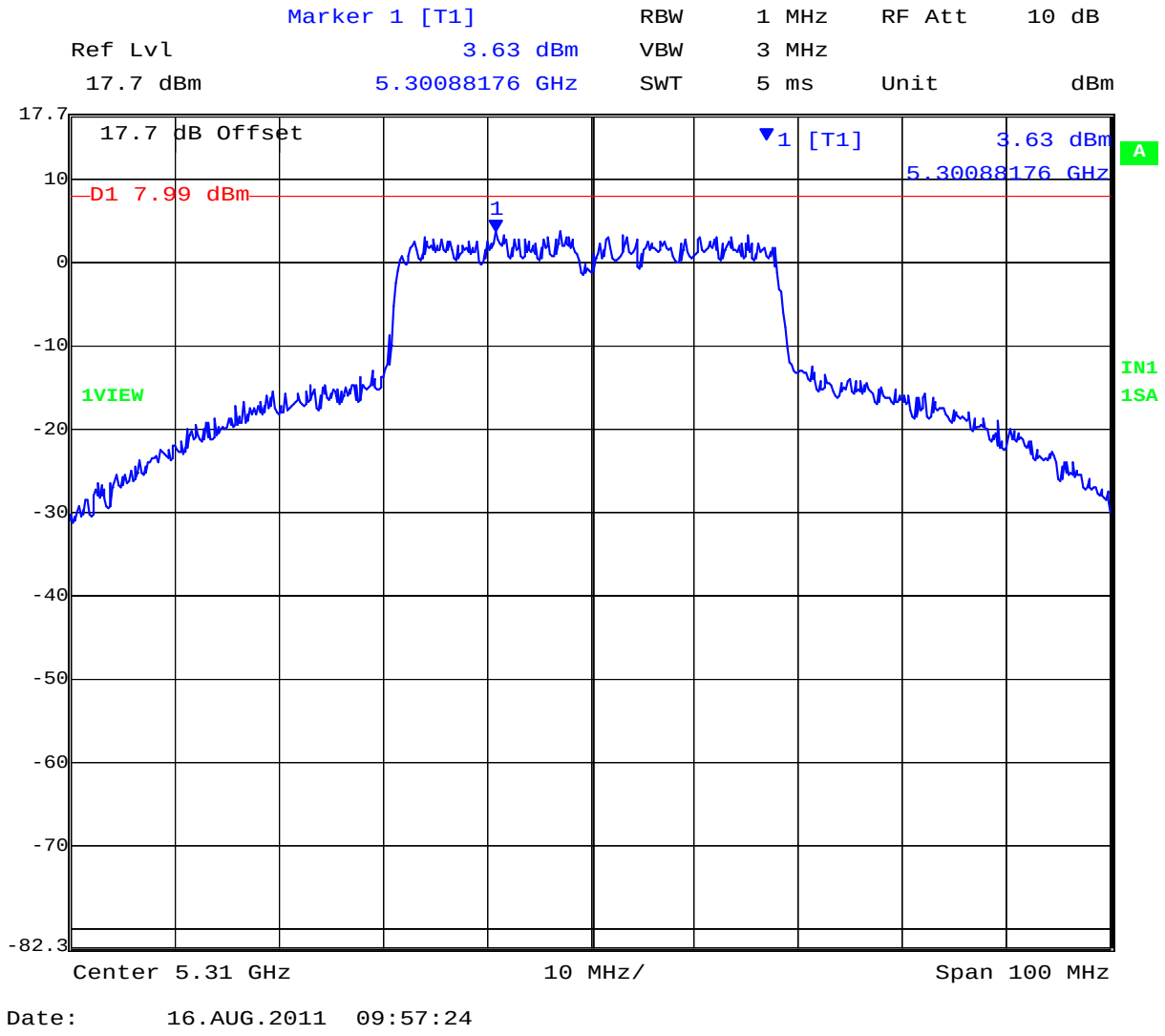
5,270 MHz 802.11n HT40 Port a Peak Power Spectral Density



5,270 MHz 802.11n HT40 Port b Peak Power Spectral Density



5,310 MHz 802.11n HT40 Port a Peak Power Spectral Density



5,310 MHz 802.11n HT40 Port b Peak Power Spectral Density

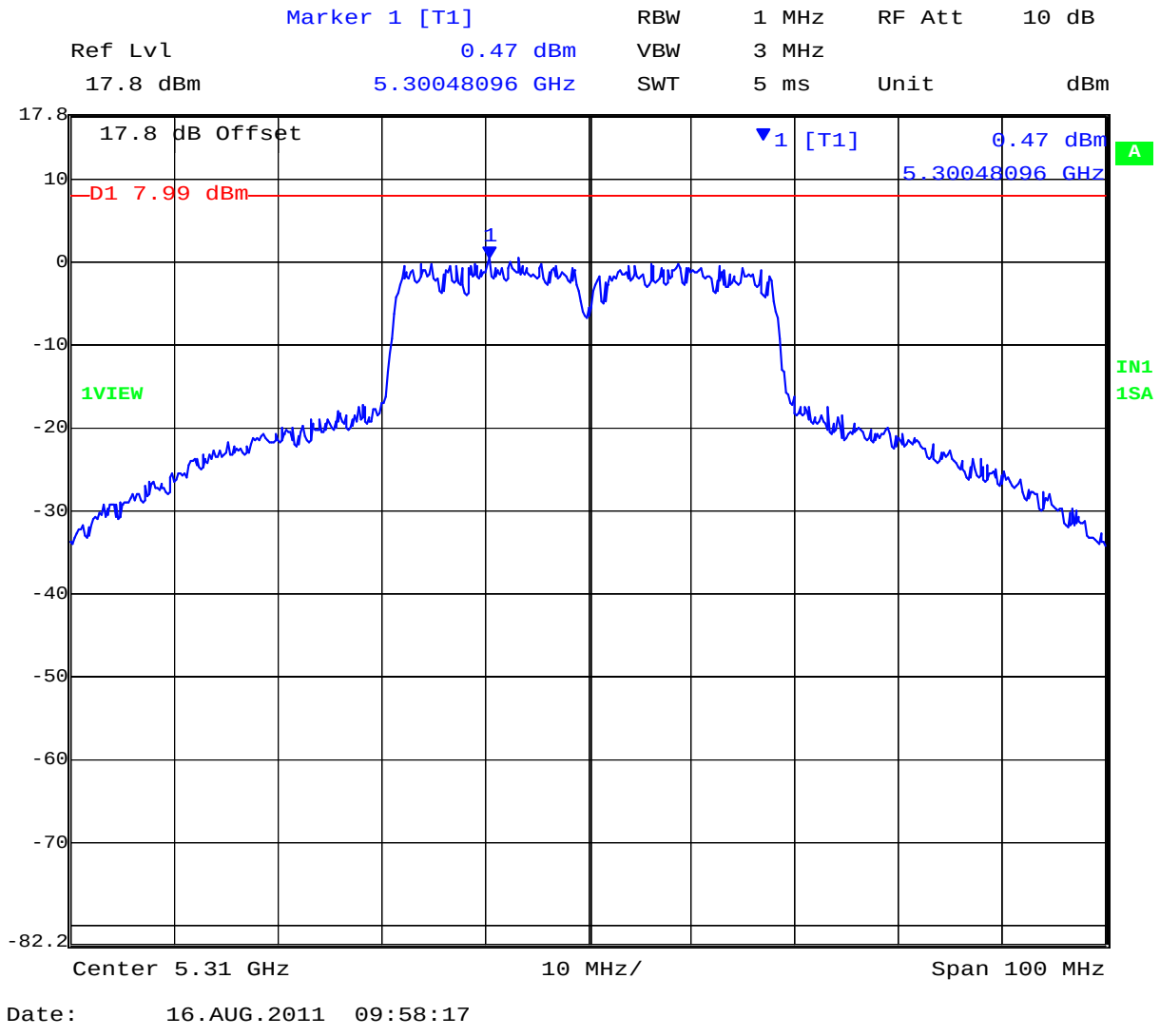


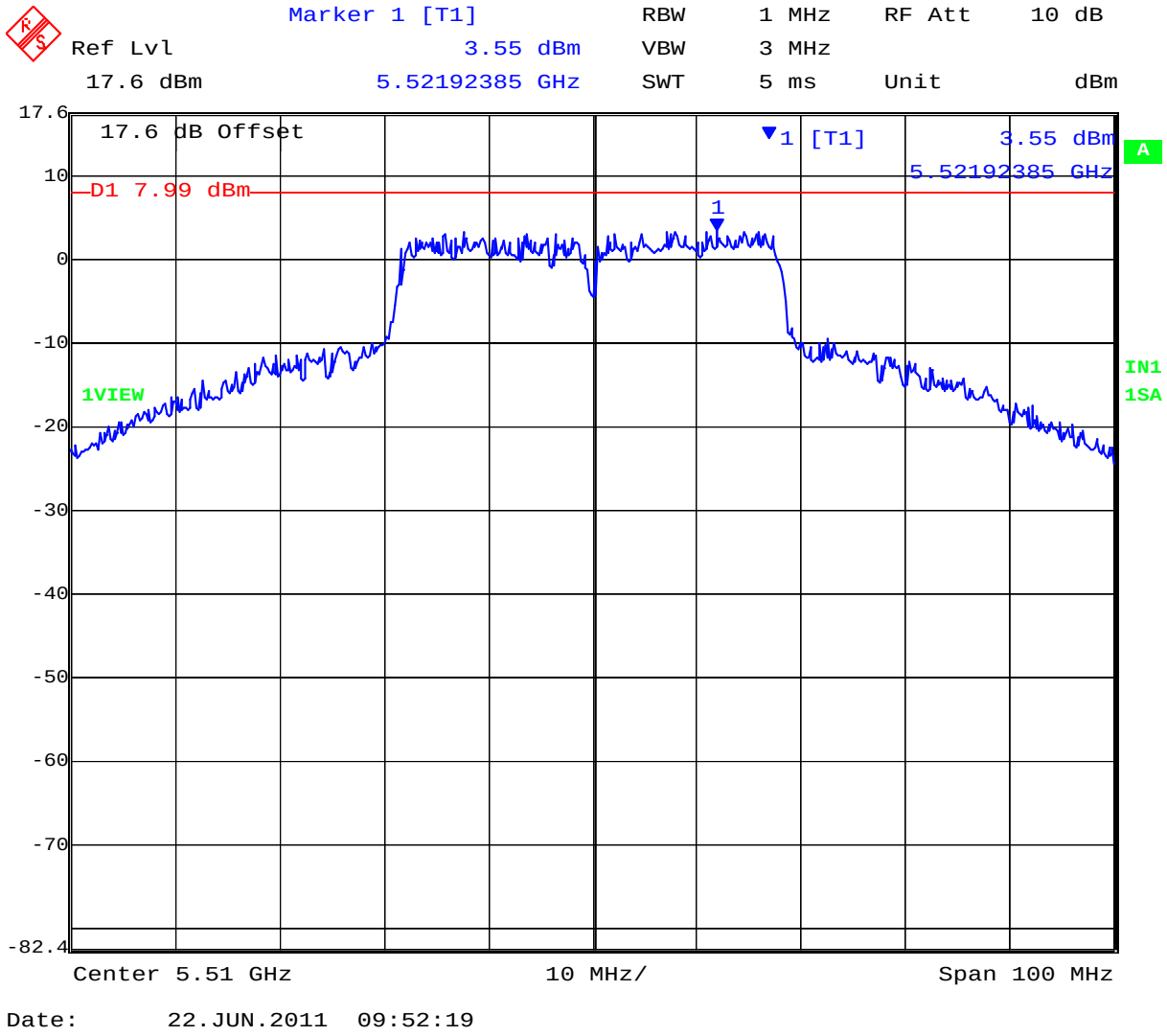
TABLE OF RESULTS – **802.11n HT40**

Test Conditions:	15.407 (a)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-40	**Ambient Temp. (°C):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	0 dBi
Applied Voltage:	12.0 Vdc	**Antenna Ports (N):**	2

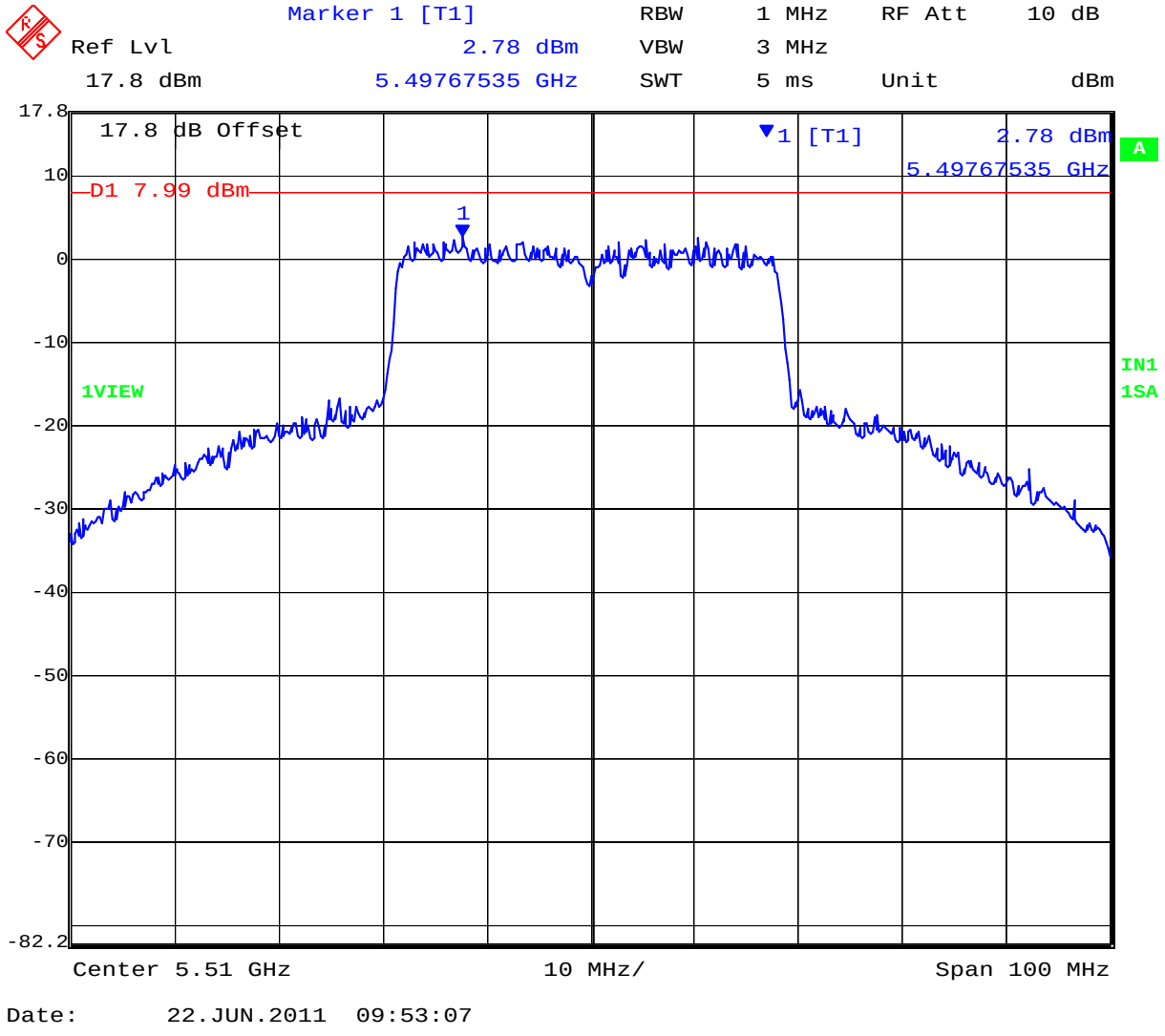
Test Frequency	Measured Peak Power RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	a	b	c	d	10Log(N)	dBm	dBm	dB
5510.00	3.55	2.78	--	--	3.01	3.55	7.99	-4.44
5610.00	3.65	3.09	--	--	3.01	3.65	7.99	-4.34
5690.00	2.31	1.96	--	--	3.01	2.31	7.99	-5.68

Measurement uncertainty:	±1.33 dB

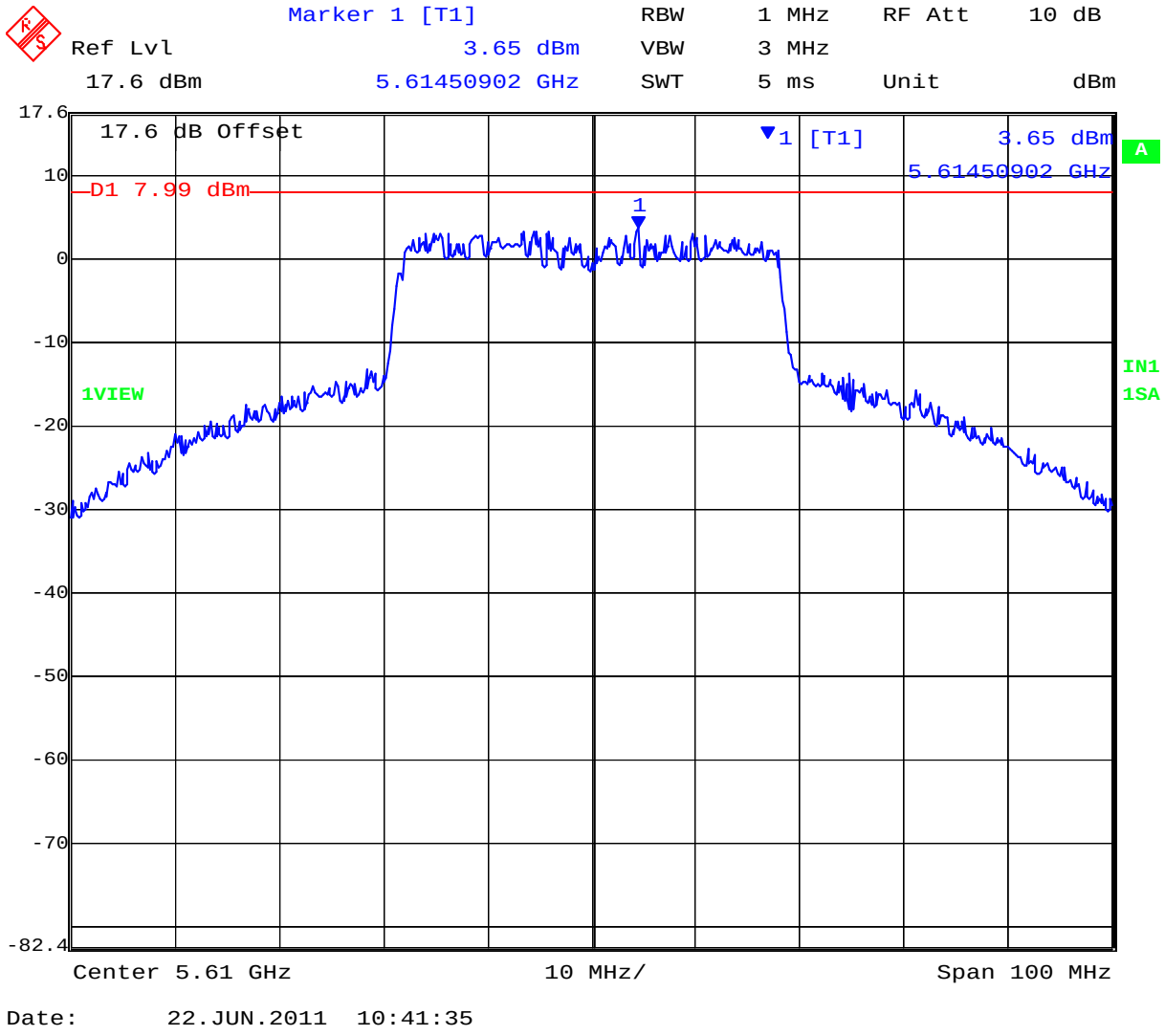
5,510 MHz 802.11n HT40 Port a Peak Power Spectral Density



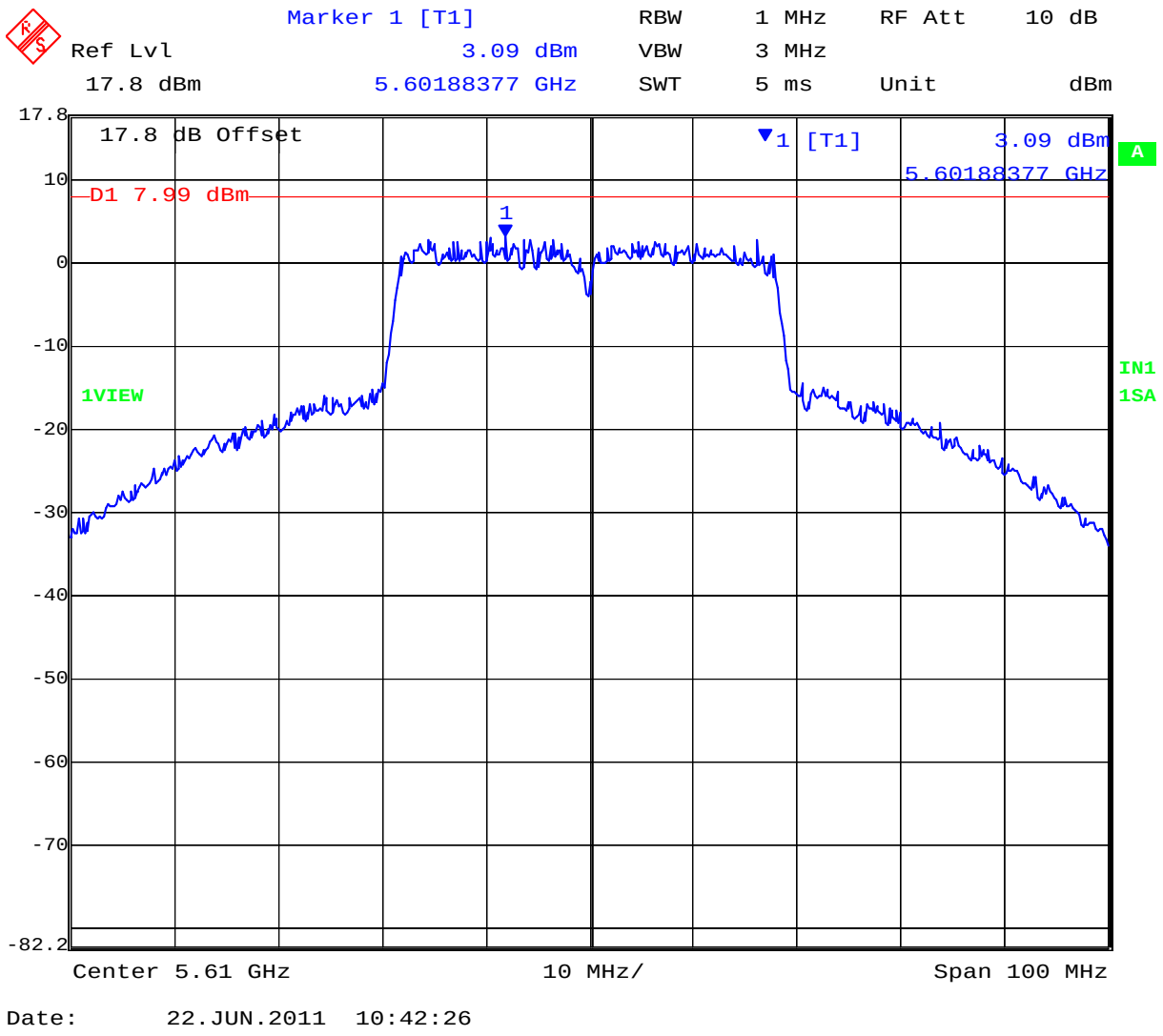
5,510 MHz 802.11n HT40 Port b Peak Power Spectral Density



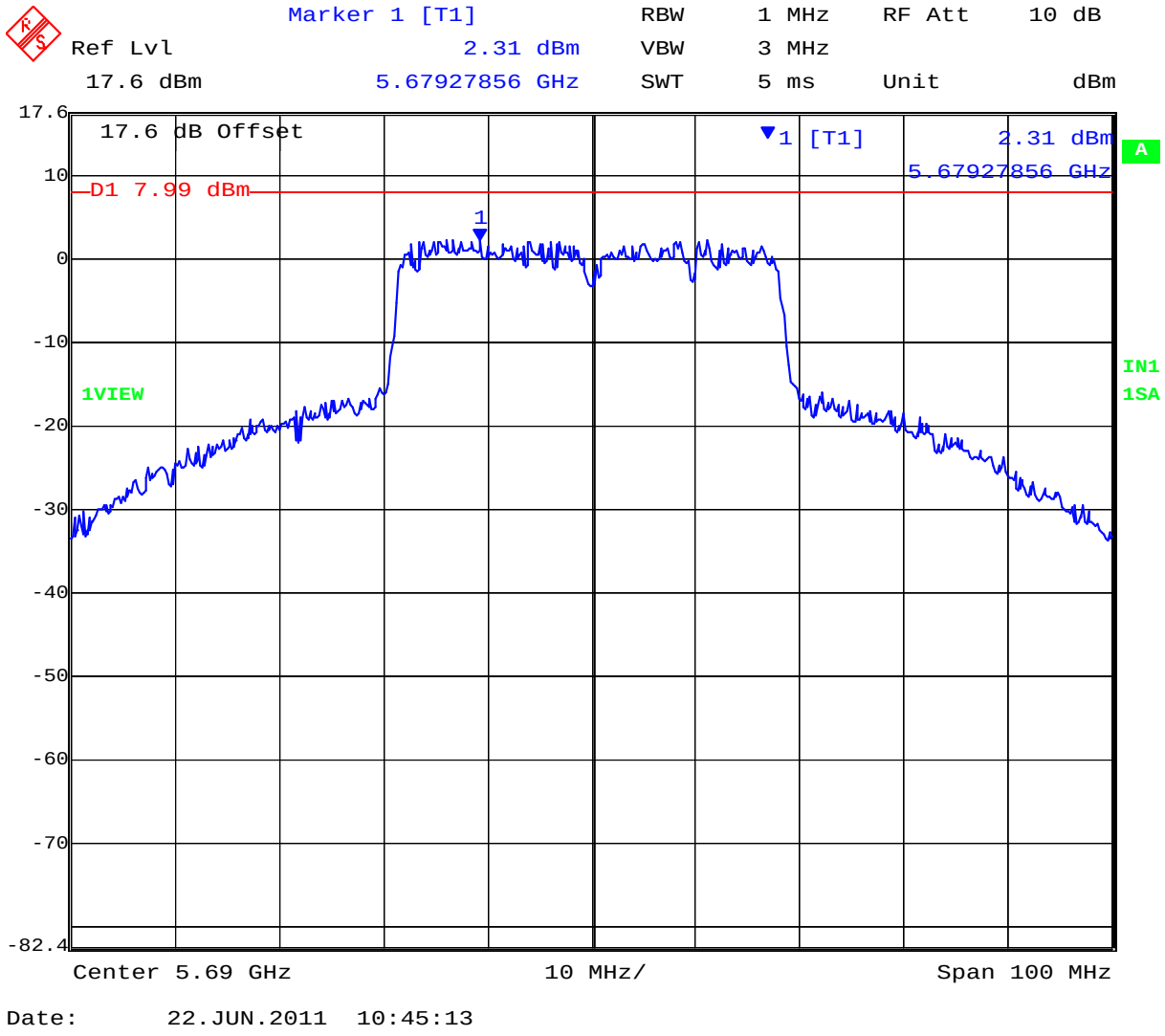
5,610 MHz 802.11n HT40 Port a Peak Power Spectral Density



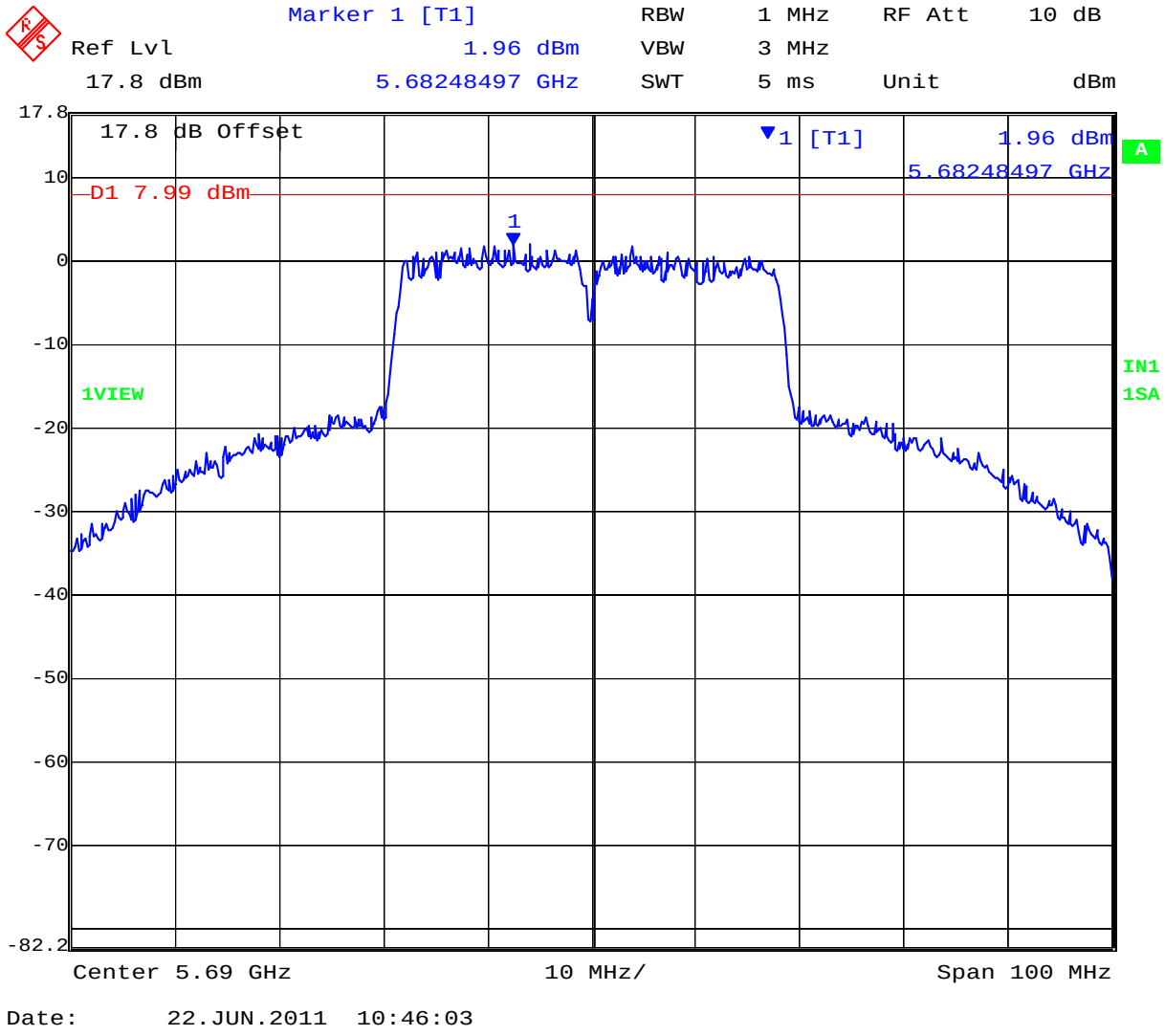
5,610 MHz 802.11n HT40 Port b Peak Power Spectral Density



5,690 MHz 802.11n HT40 Port a Peak Power Spectral Density



5,690 MHz 802.11n HT40 Port b Peak Power Spectral Density



Specification

FCC, Part 15 §15.407 (a)(1), (a)(2)

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)**

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

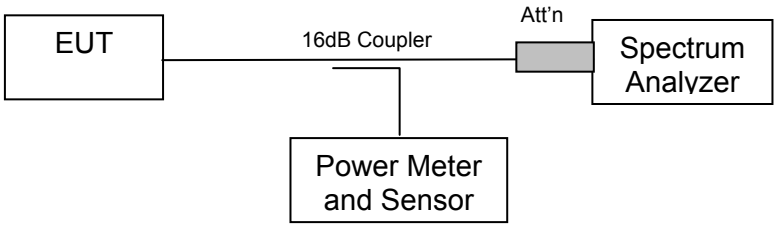
5.1.4. Peak Excursion Ratio

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

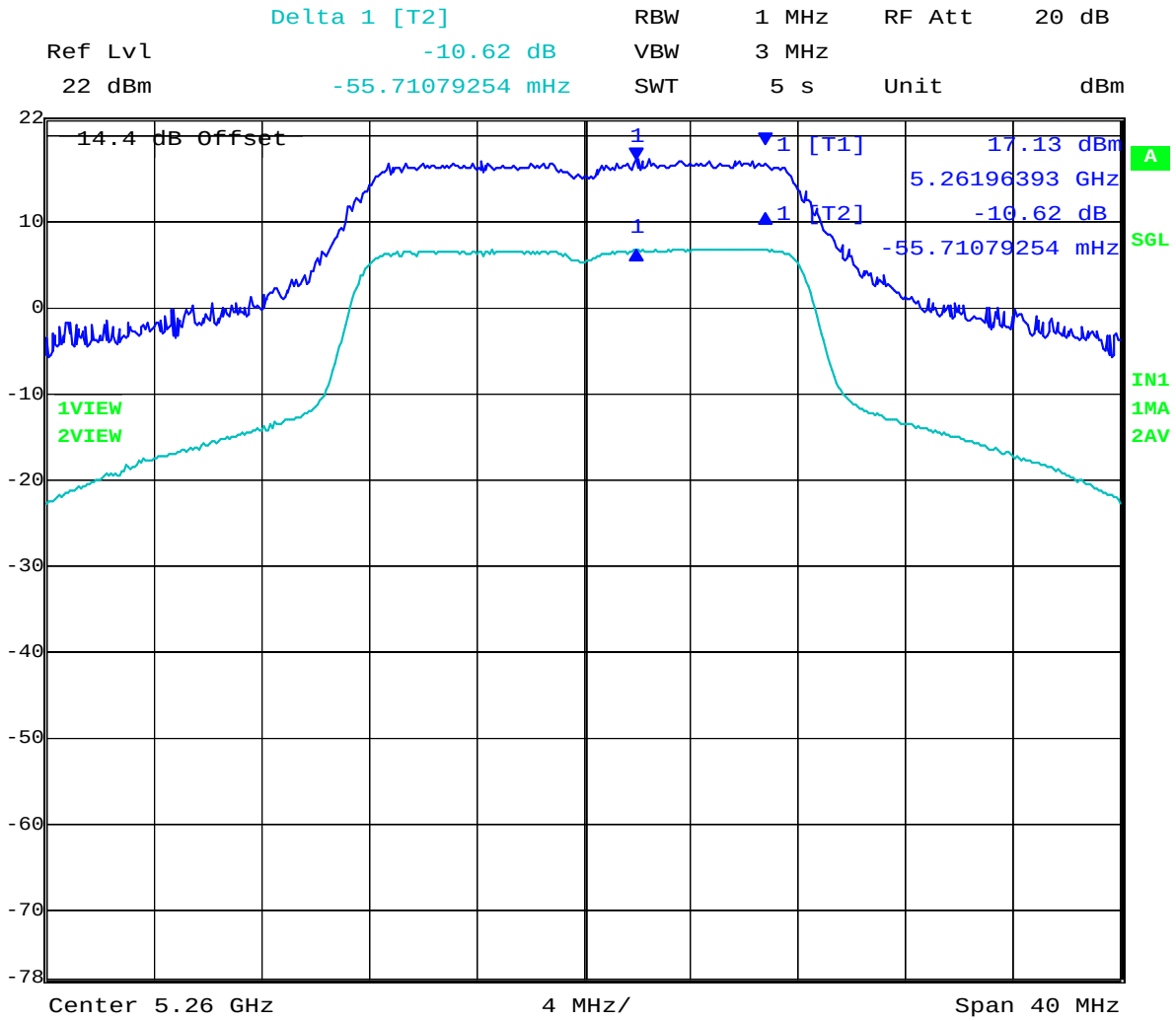
Ambient conditions.
Temperature: 17 to 23 °C Relative humidity: 31 to 57% Pressure: 999 to 1012 mbar

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

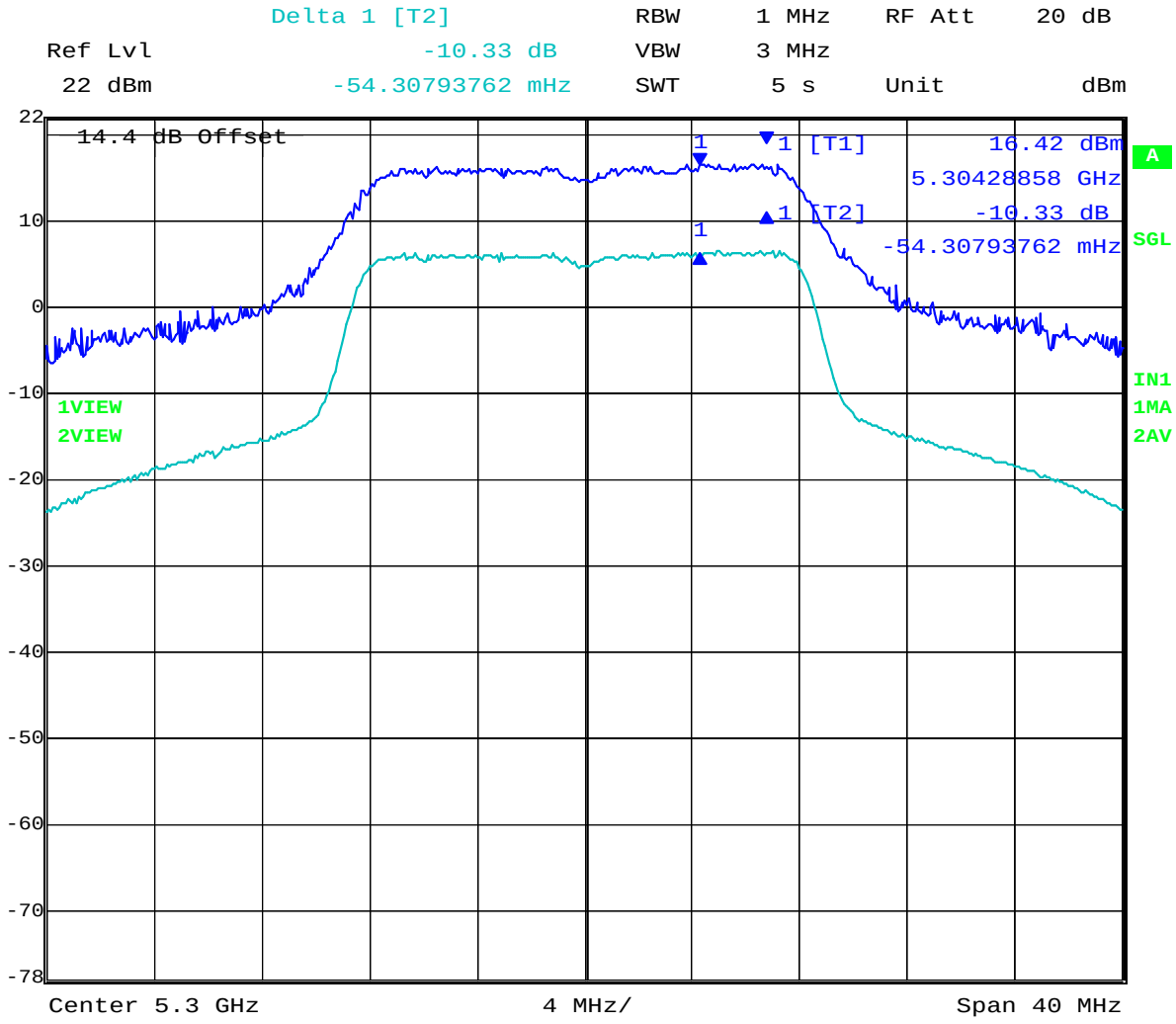
TABLE OF RESULTS – **802.11a**

Centre Frequency (MHz)	Peak Excursion Ratio (dB)	Margin (dB)
5,260	-10.62	-2.38
5,300	-10.33	-2.67
5,320	-10.74	-2.26

5,260 MHz 802.11a Legacy - Peak Excursion Ratio



5,300 MHz 802.11a Legacy - Peak Excursion Ratio



5,320 MHz 802.11a Legacy - Peak Excursion Ratio

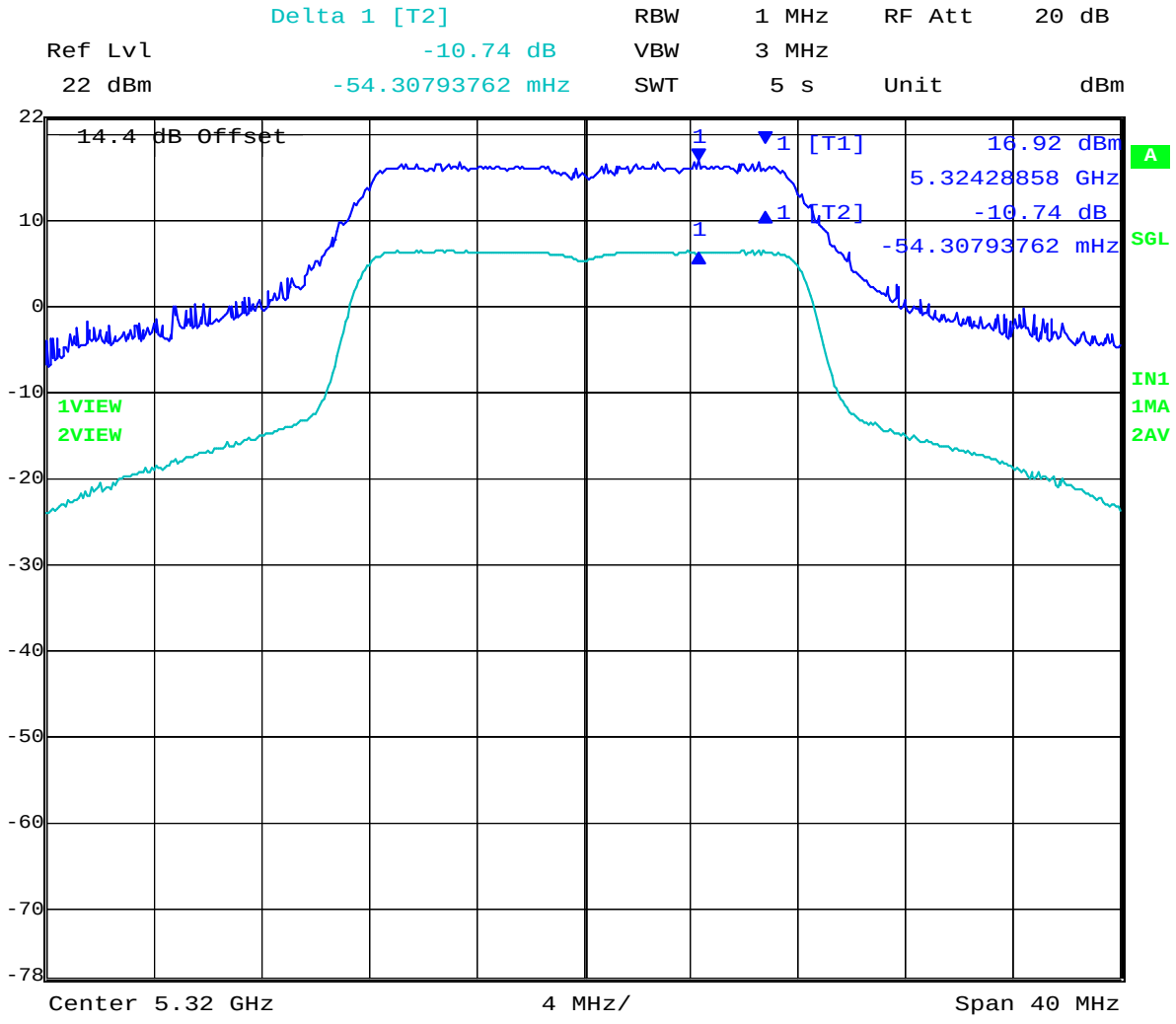
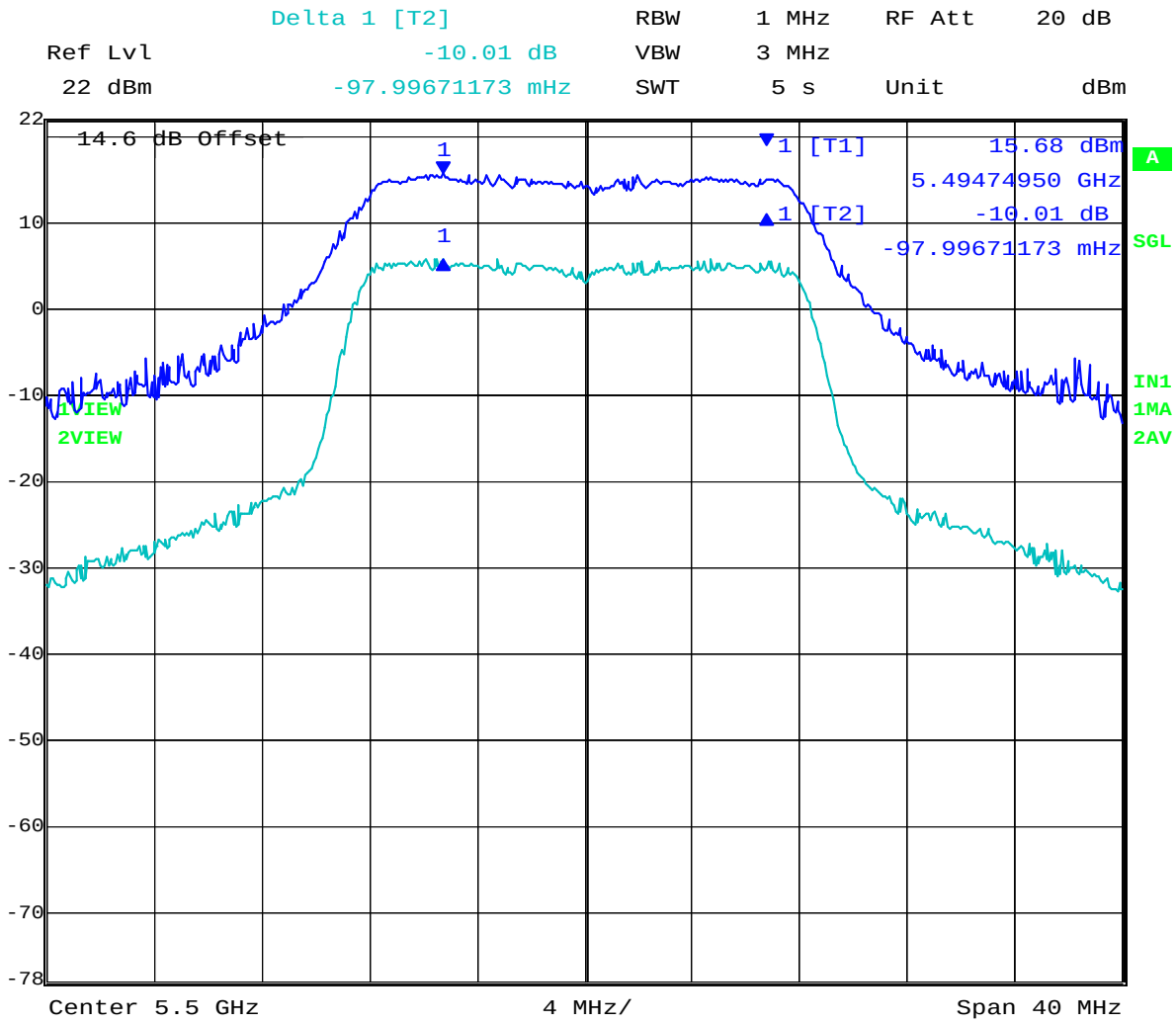


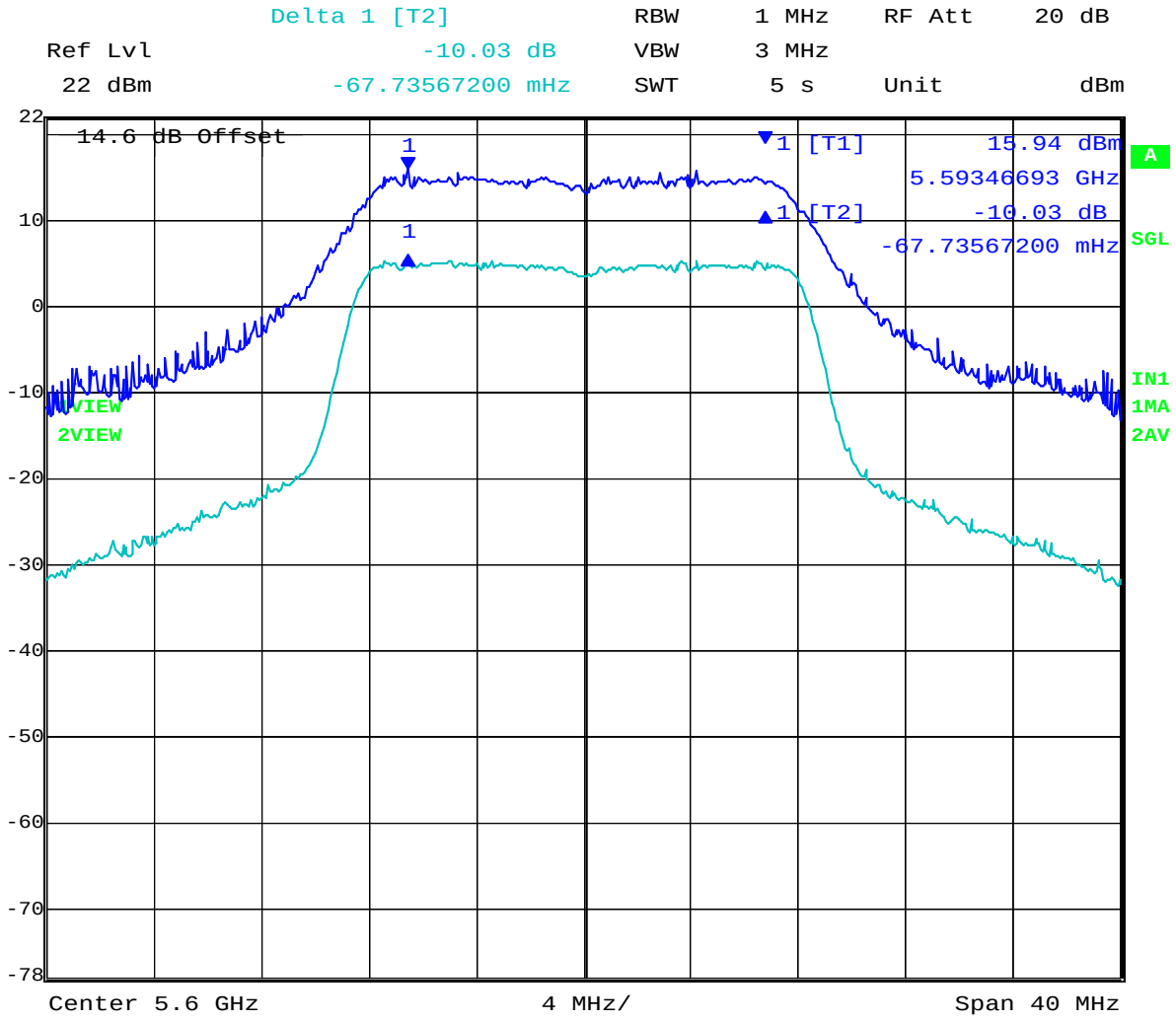
TABLE OF RESULTS – **802.11a Legacy**

Centre Frequency (MHz)	Peak Excursion Ratio (dB)	Margin (dB)
5,500	-10.01	-2.99
5,600	-10.03	-2.97
5,700	-10.54	-2.46

5,500 MHz 802.11a Legacy - Peak Excursion Ratio



5,600 MHz 802.11a Legacy - Peak Excursion Ratio



5,700 MHz 802.11a Legacy - Peak Excursion Ratio

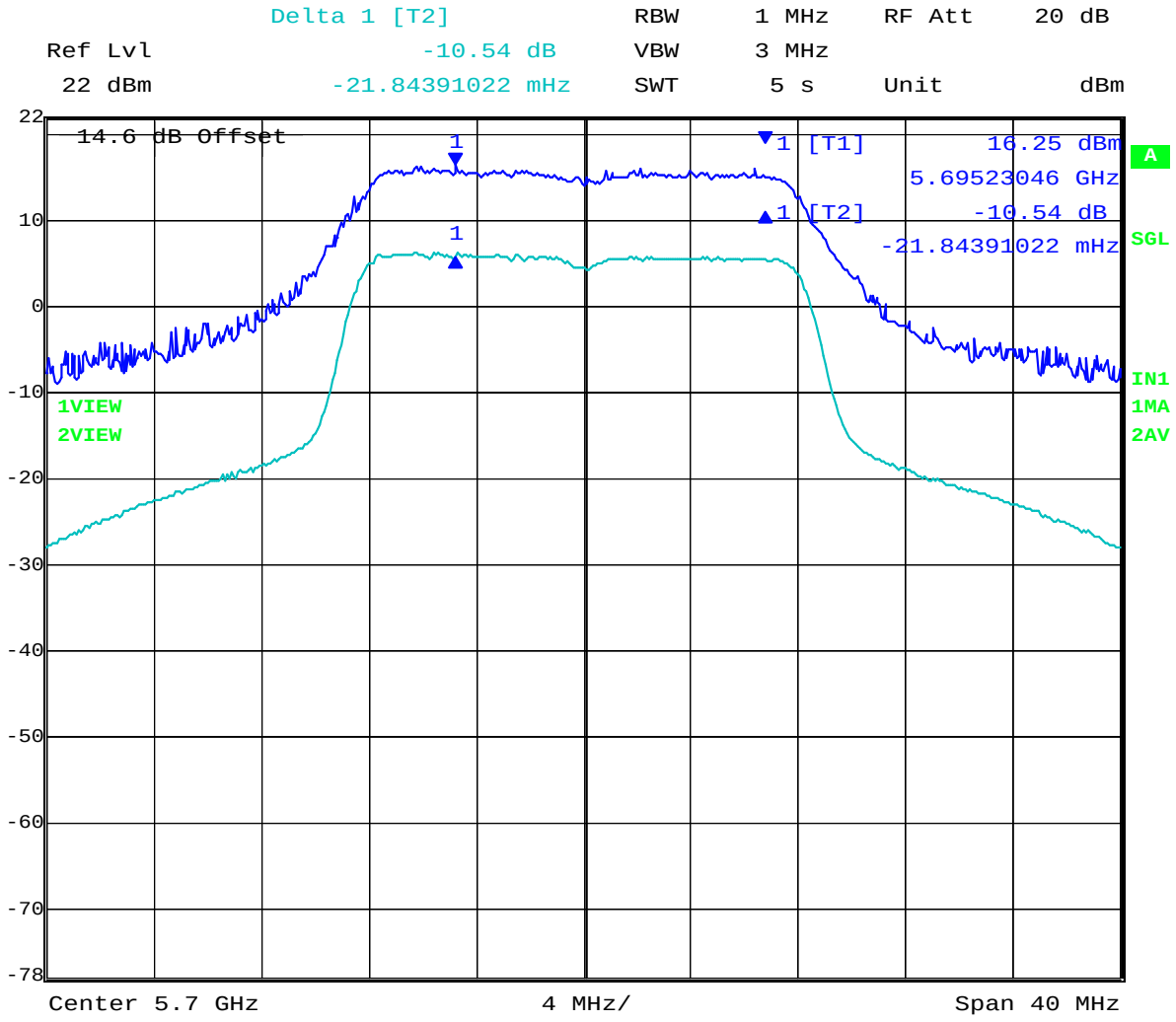
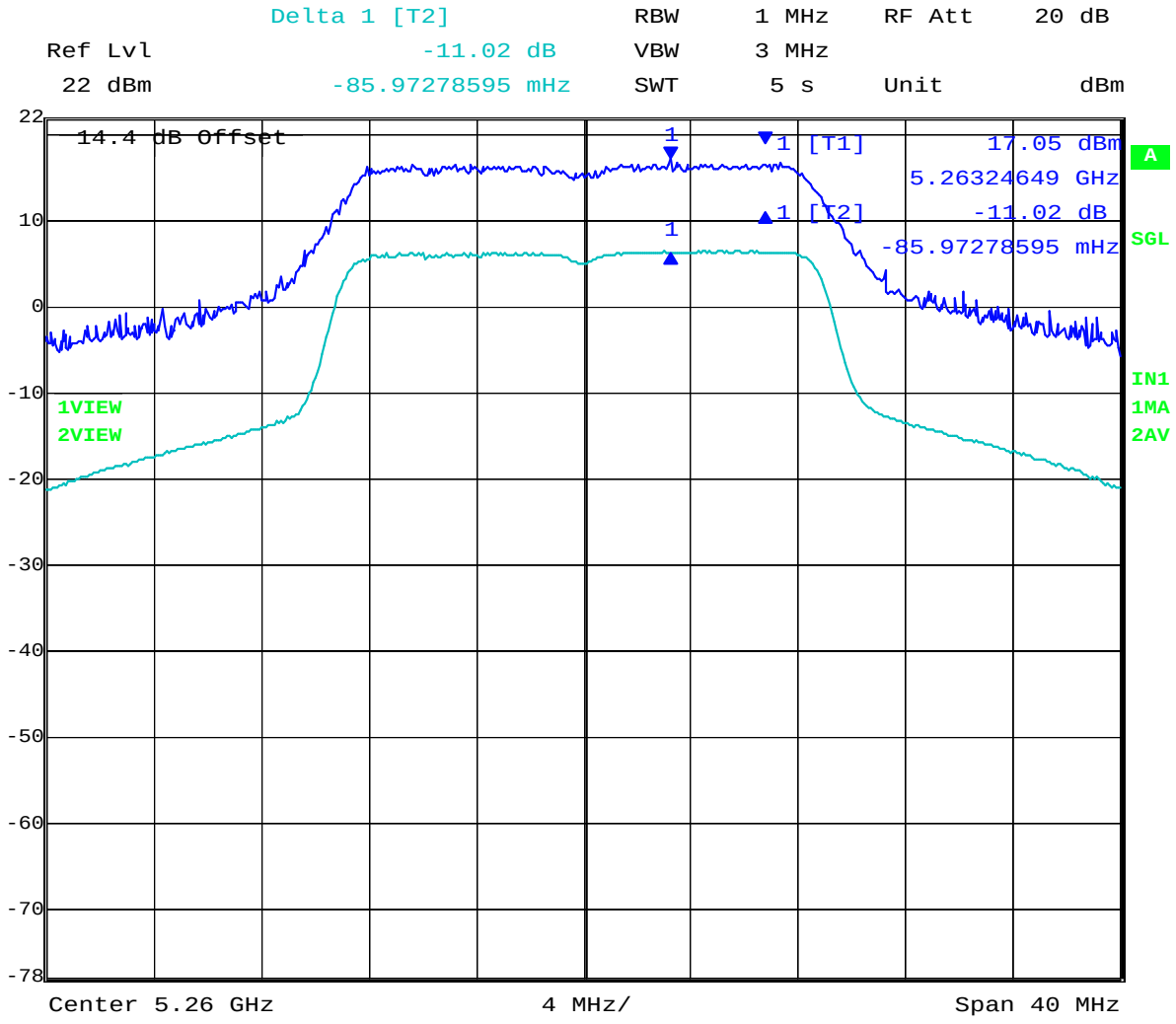


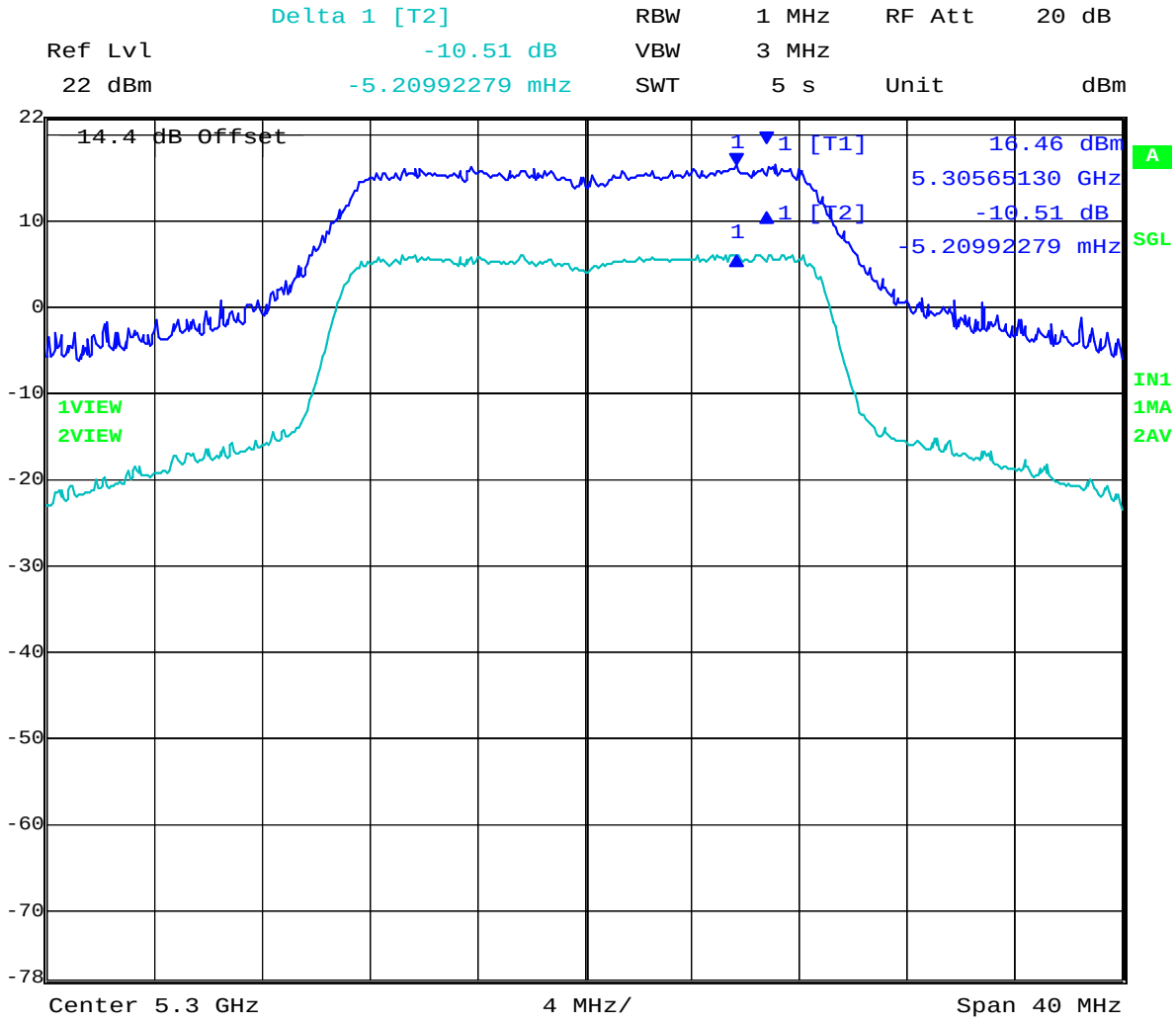
TABLE OF RESULTS – **802.11n HT20**

Centre Frequency (MHz)	Peak Excursion Ratio (dB)	Margin (dB)
5,260	-11.02	-1.98
5,300	-10.51	-2.49
5,320	-10.61	-2.39

5,260 MHz 802.11n HT20 - Peak Excursion Ratio



5,300 MHz 802.11n HT20 - Peak Excursion Ratio



5,320 MHz 802.11n HT20 - Peak Excursion Ratio

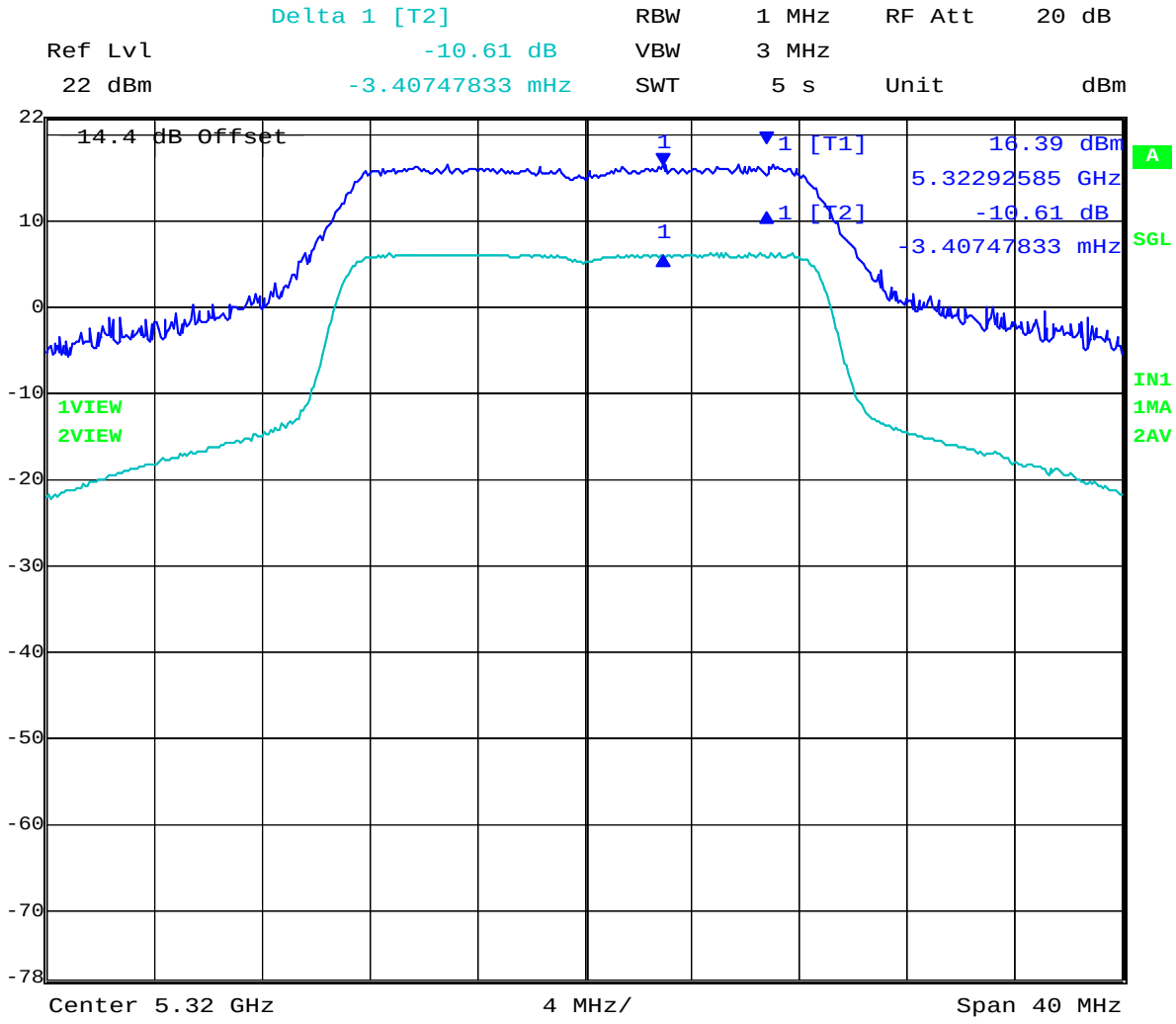
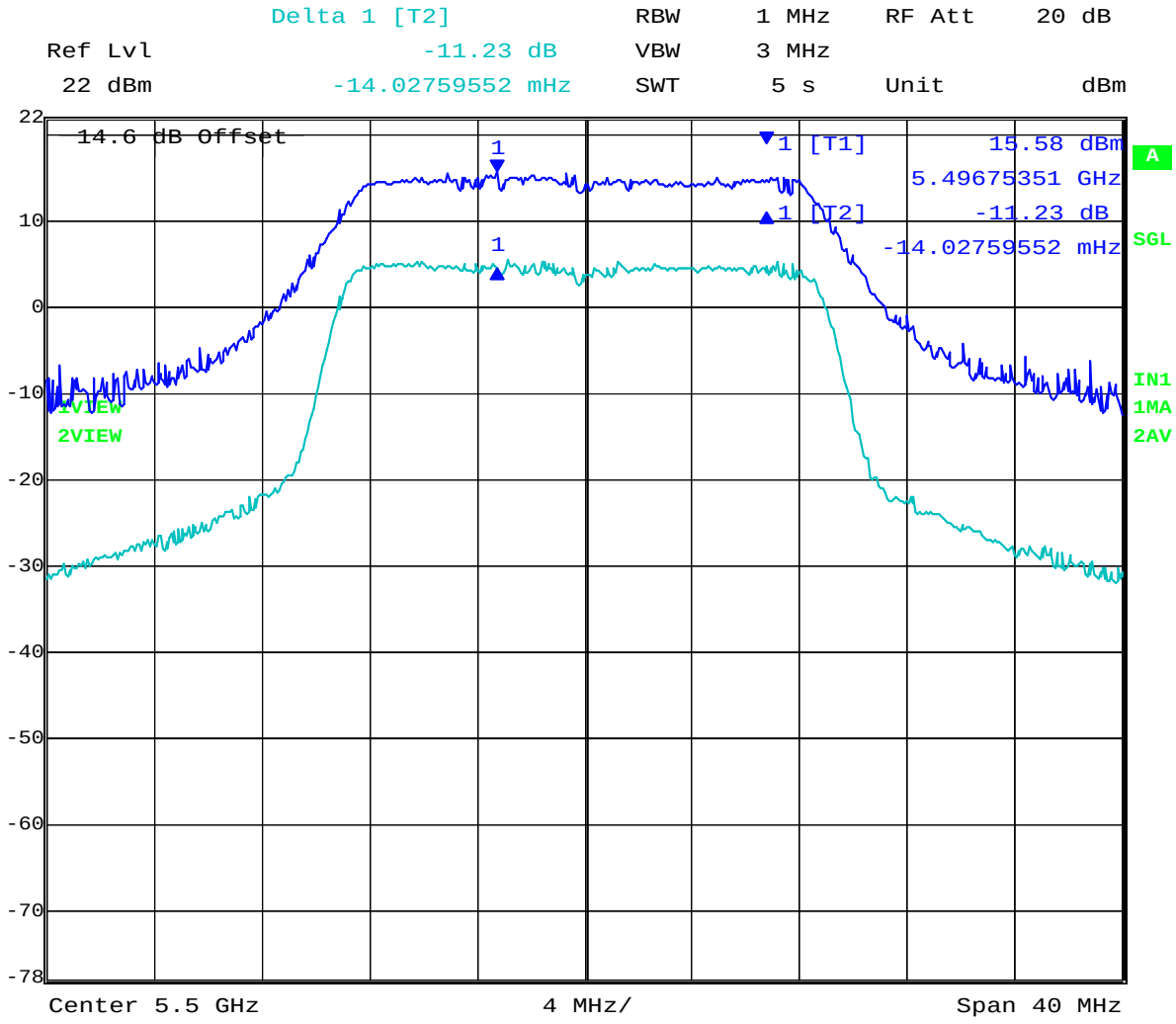


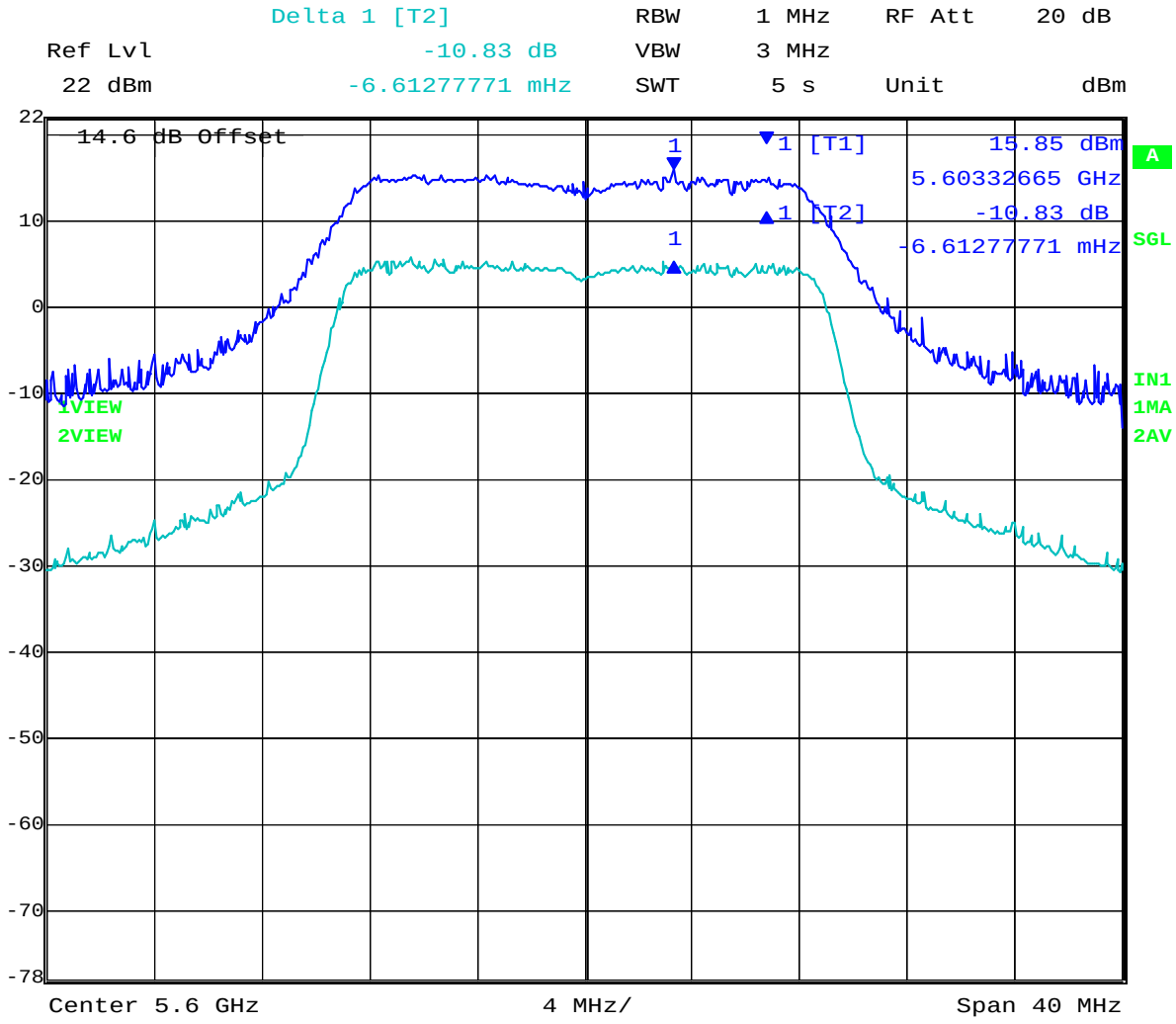
TABLE OF RESULTS – **802.11n HT20**

Centre Frequency (MHz)	Peak Excursion Ratio (dB)	Margin (dB)
5,500	-11.23	-1.77
5,600	-10.83	-2.17
5,700	-10.73	-2.27

5,500 MHz 802.11n HT20 - Peak Excursion Ratio



5,600 MHz 802.11n HT20 - Peak Excursion Ratio



5,700 MHz 802.11n HT20 - Peak Excursion Ratio

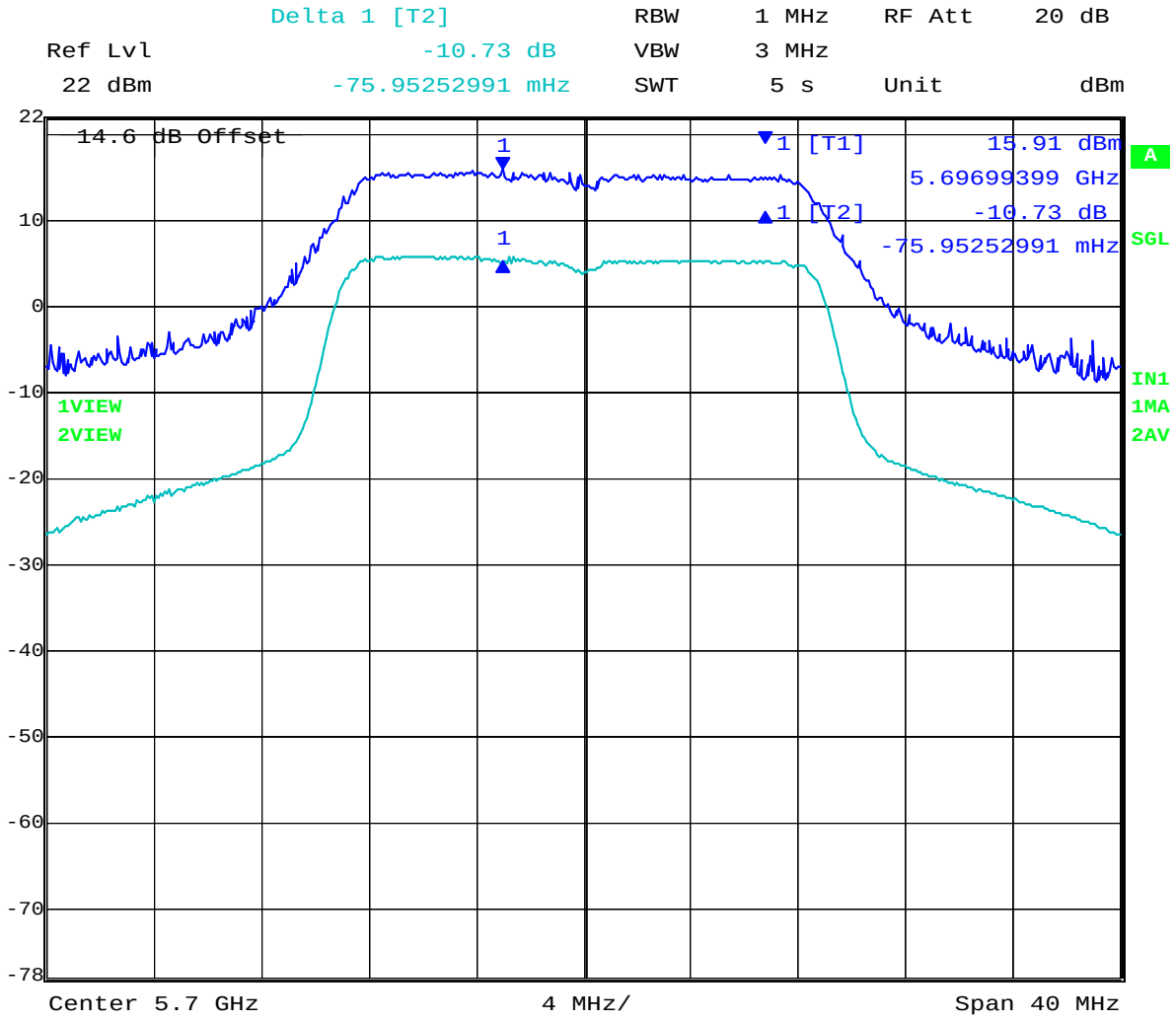
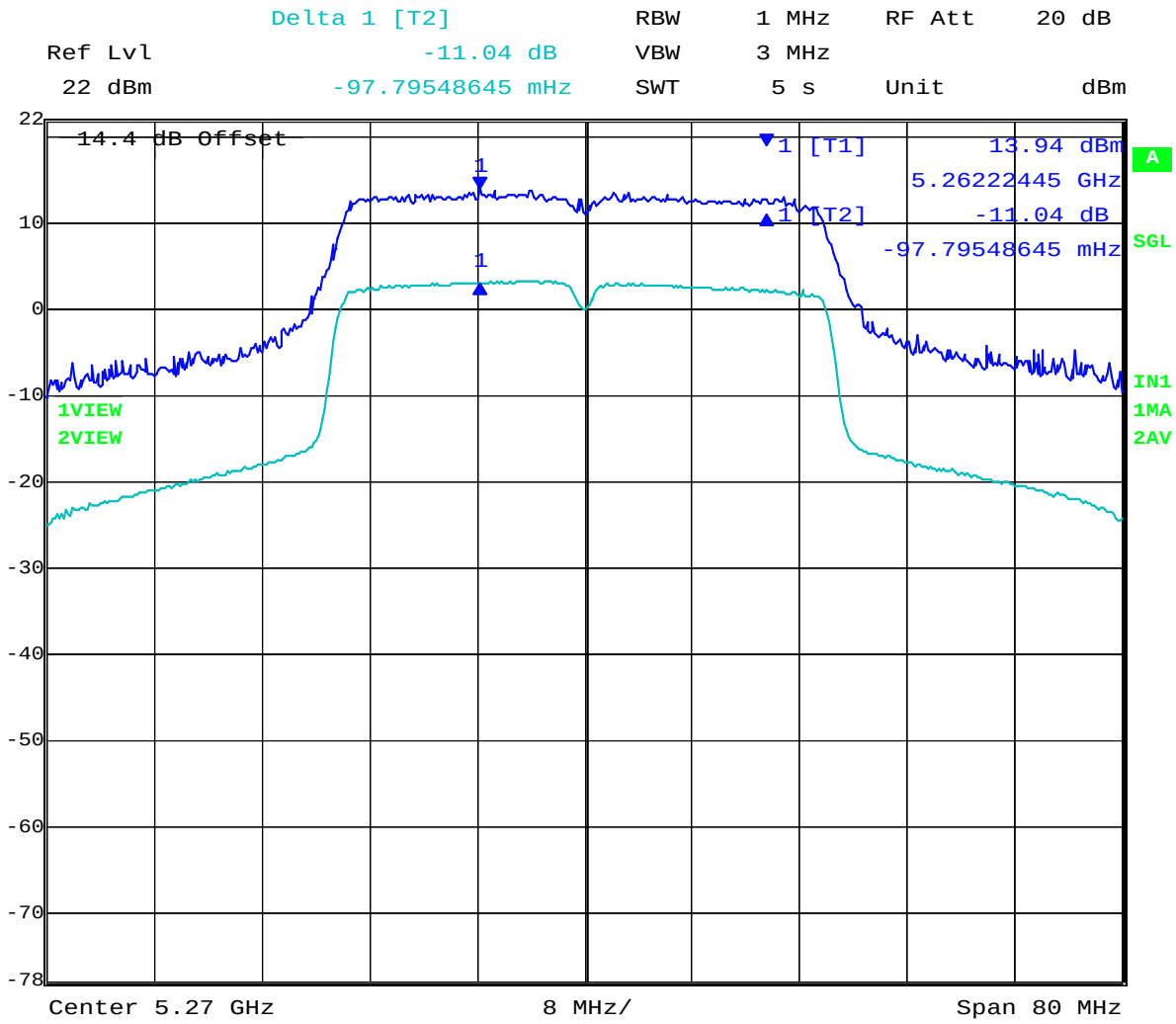


TABLE OF RESULTS – **802.11n HT40**

Centre Frequency (MHz)	Peak Excursion Ratio (dB)	Margin (dB)
5,270	-11.04	-1.96
5,310	-10.90	-2.10

5,270 MHz 802.11n HT40 - Peak Excursion Ratio



5,310 MHz 802.11n HT40 - Peak Excursion Ratio

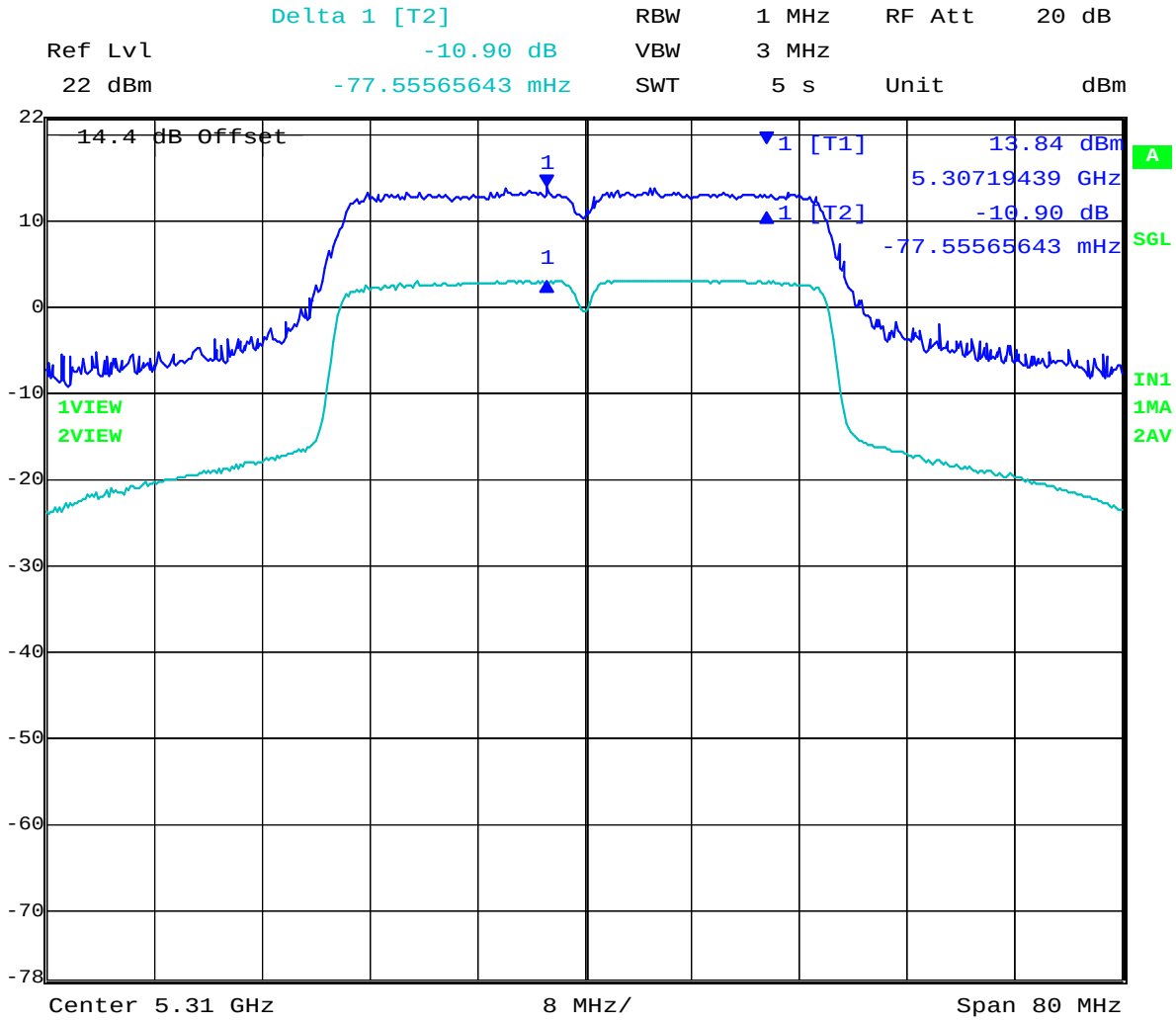
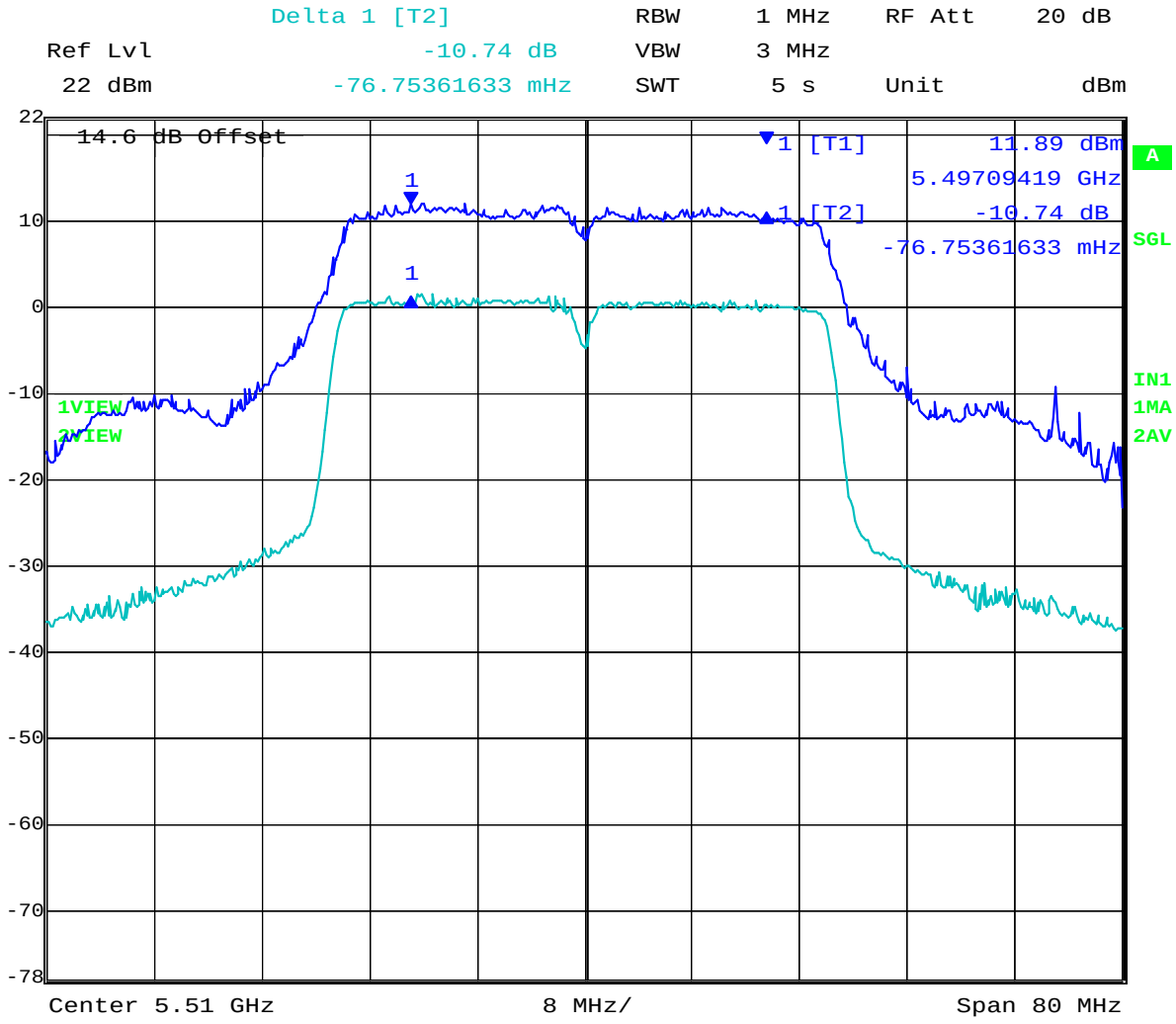


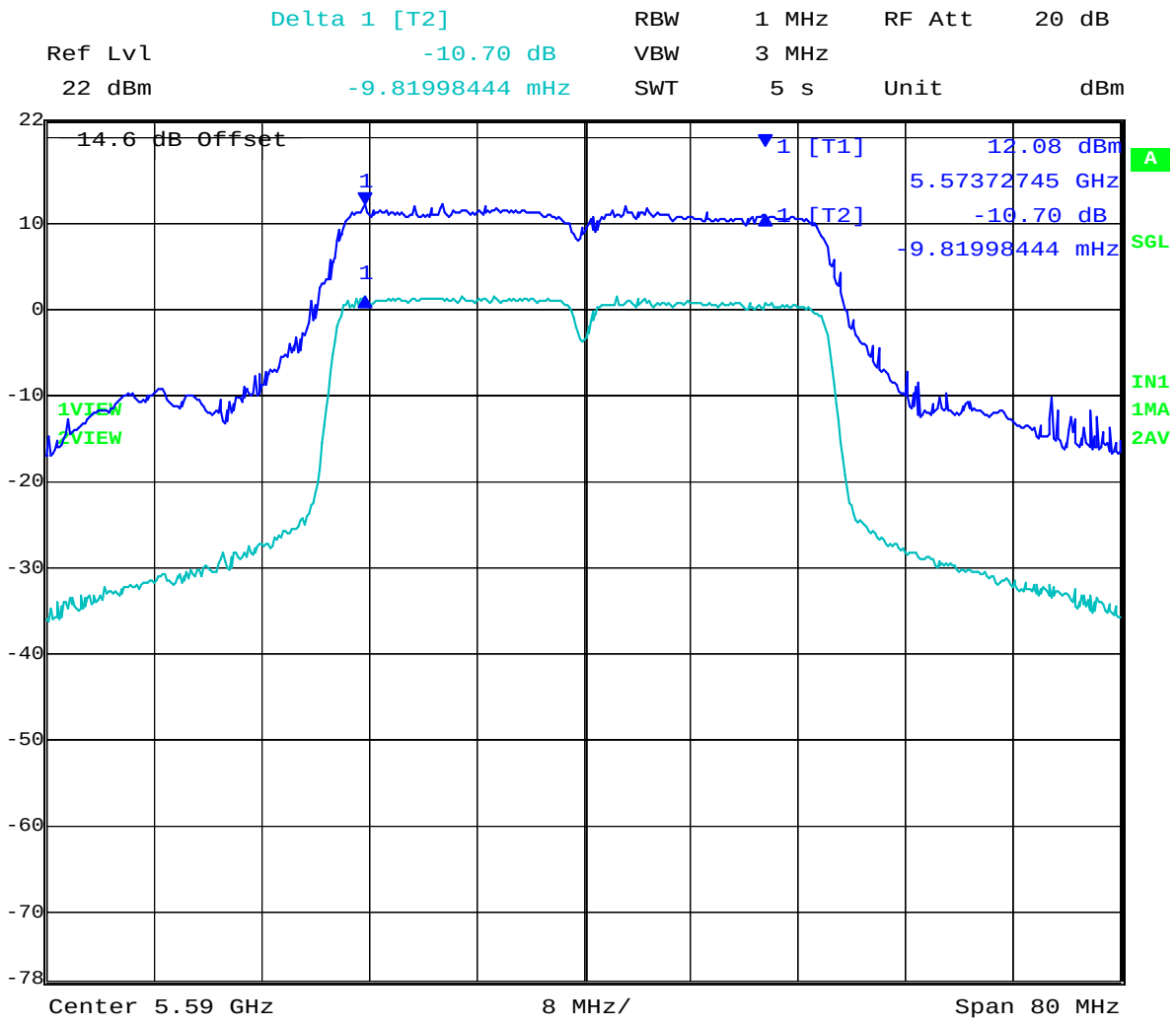
TABLE OF RESULTS – **802.11n HT40**

Centre Frequency (MHz)	Peak Excursion Ratio (dB)	Margin (dB)
5,510	-10.74	-2.26
5,590	-10.70	-2.30
5,690	-10.62	-2.38

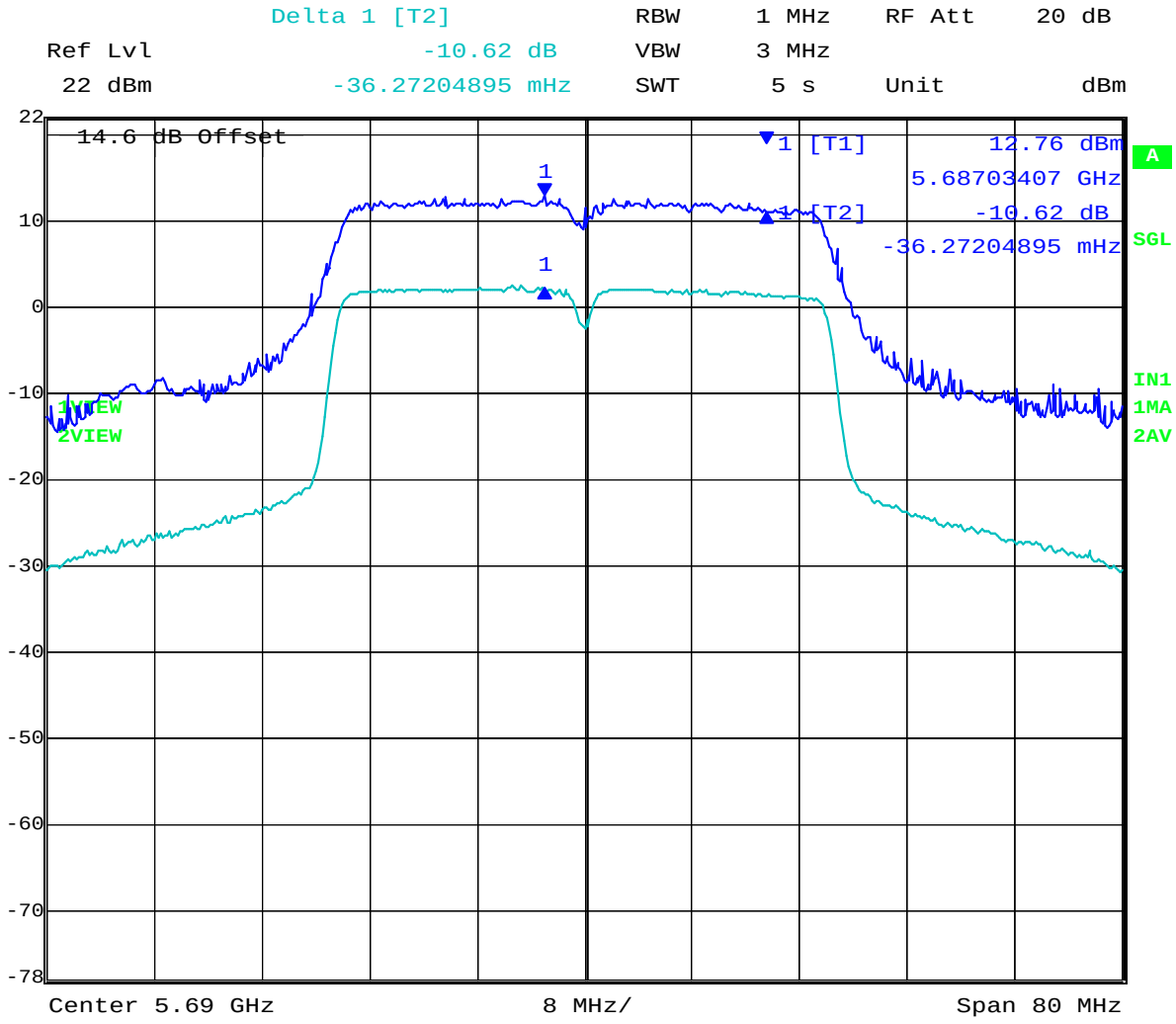
5,510 MHz 802.11n HT40 - Peak Excursion Ratio



5,590 MHz 802.11n HT40 - Peak Excursion Ratio



5,690 MHz 802.11n HT40 - Peak Excursion Ratio



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 §5.5

Calculations for Maximum Permissible Exposure Levels

Power Density = Pd (mW/cm^2) = EIRP/(4πd^2)

EIRP = P * G * 2

P = Peak output power (mW)

G = Antenna numeric gain (numeric)

d = Separation distance (cm)

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

The Aruba AP92 / AP93 has two transmitters. The peak power in the table below is calculated by assuming a worst case scenario where the two transmitters are operating simultaneously in the same band. The Peak Power in mW is calculated by taking the maximum allowable conducted power for each antenna to meet the EIRP requirments.

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

Antenna Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Safe Distance @ 1mW/cm^2 Limit(cm)	Minimum Separation Distance (cm)
5.8	3.8	+21.19	131.5	6.3	20.00
6.0	4.0	+20.99	125.6	6.3	20.00
14.0	25.1	+12.99	19.9	6.3	20.00

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 §5.5 Before equipment certification is granted, the application requirements of RSS-102 shall be met.

Laboratory Measurement Uncertainty for Power Measurements

Measurement uncertainty	±1.33 dB

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. 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

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

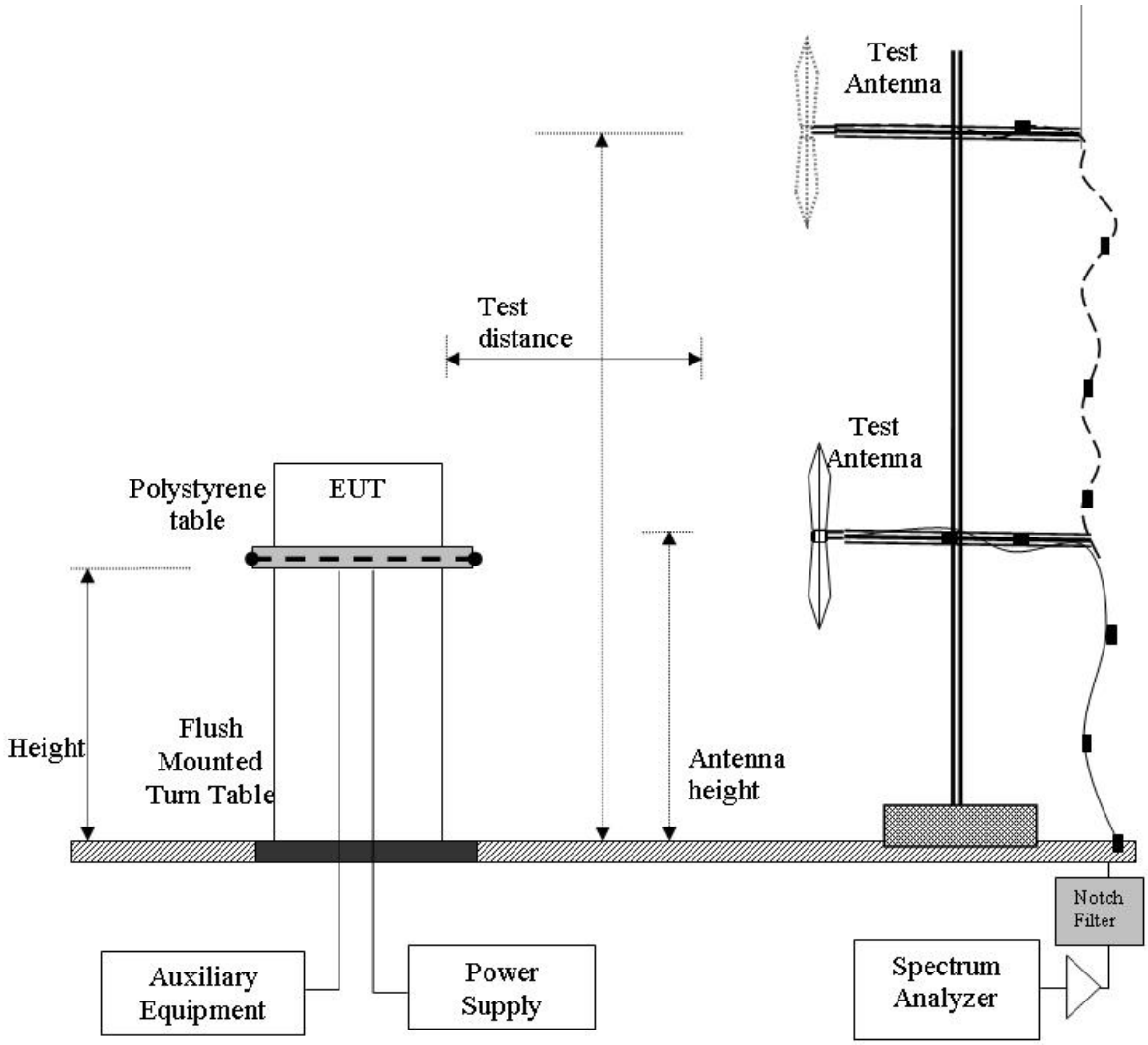
$$E = {1000000 \times \sqrt{30P}}/{3} \text{ µV/m}$$

where P is the EIRP in Watts

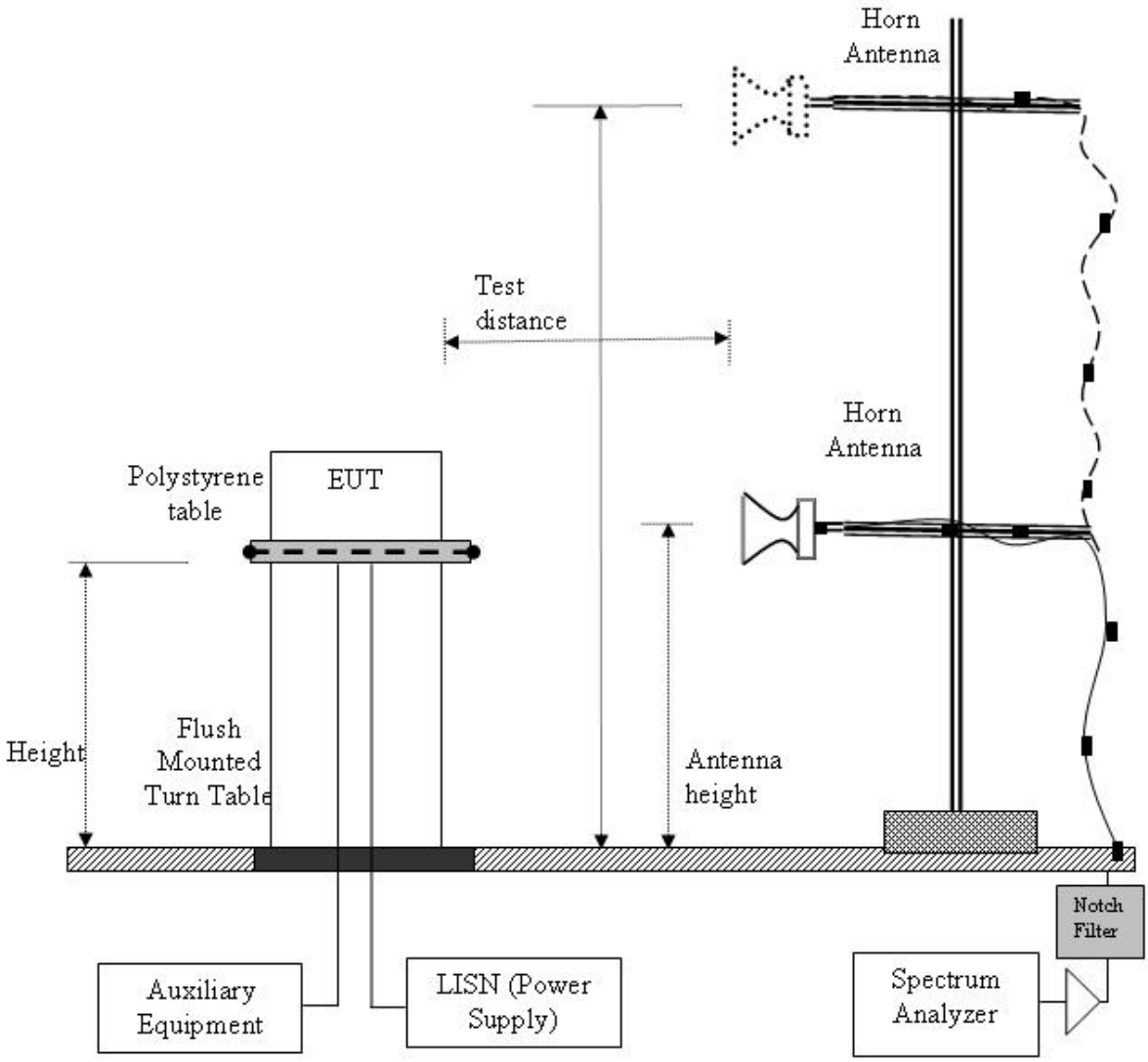
Therefore: -27 dBm/MHz = 68.23 dBuV/m

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.

Test Measurement Set Up < 1 GHz



Test Measurement Set Up > 1 GHz



Transmitter Spurious Emission measurement test configuration

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

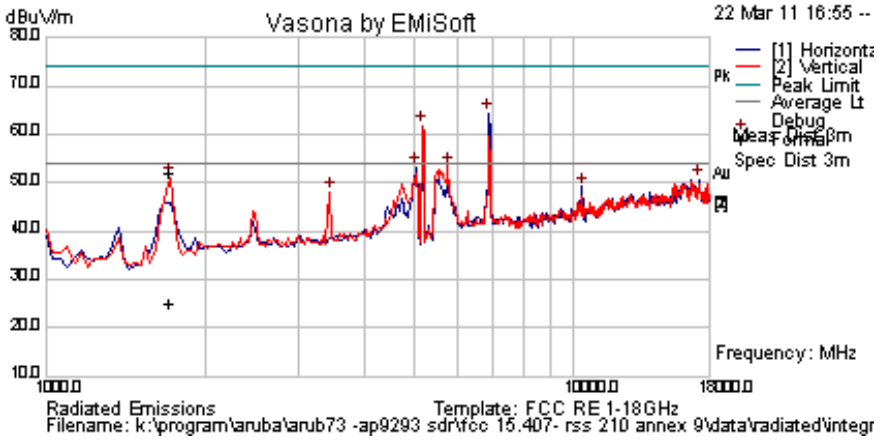
Measurement Uncertainty	+5.6/ -4.5 dB

Traceability:

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

5.1.7.1. Integral Antenna – Radiated Spurious Emissions – Above 1 GHz

Test Freq.	5260 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbit/s	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37%
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

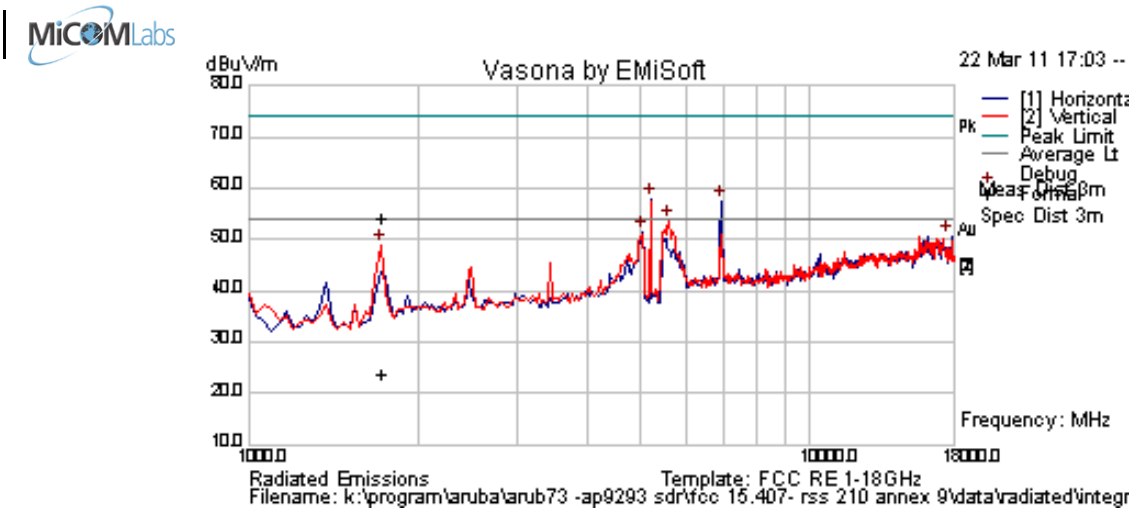


Formally measured emission peaks

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
1720.100	62.9	2.6	-13.3	52.1	Peak Max	V	101	0	74.0	-21.9	Pass	RB
1720.100	35.8	2.6	-13.3	25.0	Average Max	V	101	0	54.0	-29.0	Pass	RB
6906.934	64.7	5.3	-5.5	64.5	Peak [Scan]	H	100					NRB
5256.313	66.2	4.6	-9.0	61.9	Peak [Scan]	V	100					FUND
5769.539	57.0	4.8	-8.3	53.4	Peak [Scan]	V	100	0	54	-0.6	Pass	NRB
5320.040	57.8	4.6	-9.1	53.3	Peak [Scan]	H	100	0	54	-0.7	Pass	BE
17250.501	40.5	8.6	1.6	50.7	Peak [Scan]	H	100	0	54	-3.3	Pass	NRB
10358.757	44.4	6.7	-2.1	49.1	Peak [Scan]	H	100	0	54	-4.9	Pass	NRB
3447.986	56.0	3.6	-11.5	48.1	Peak [Scan]	V	100	0	54	-6.0	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5300 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbit/s	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	0.37
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

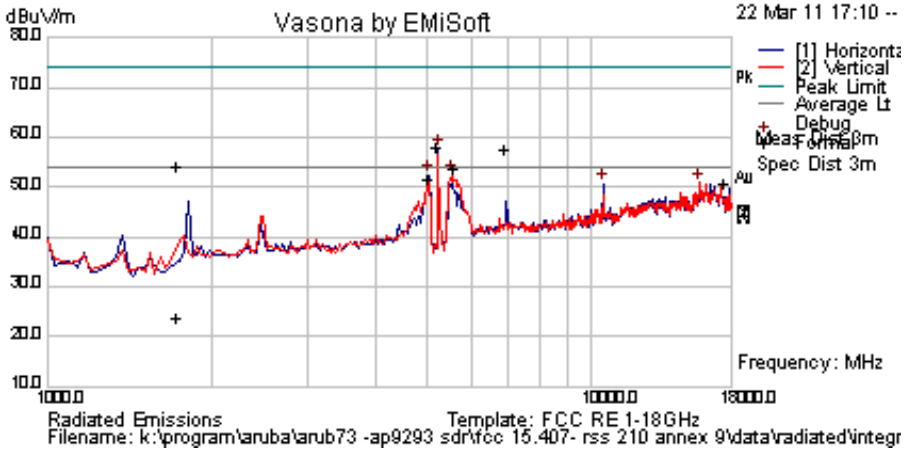


Formally measured emission peaks

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
1731.623	64.8	2.6	-13.2	54.2	Peak Max	V	101	73	74.0	-19.8	Pass	RB
1731.623	34.3	2.6	-13.2	23.7	Average Max	V	101	73	54.0	-30.4	Pass	RB
5290.381	62.5	4.6	-9.2	58.0	Peak [Scan]	H	100					FUND
6927.856	57.8	5.4	-5.5	57.6	Peak [Scan]	H	100				Pass	NRB
5599.198	57.6	4.7	-8.6	53.6	Peak [Scan]	V	100	0	54	-0.4	Pass	NRB
5320.040	55.9	4.6	-9.1	51.5	Peak [Scan]	H	100	0	54	-2.5	Pass	BE
17497.796	40.6	8.8	1.4	50.7	Peak [Scan]	H	100	0	54	-3.3	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5320 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbit/s	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	0.37
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

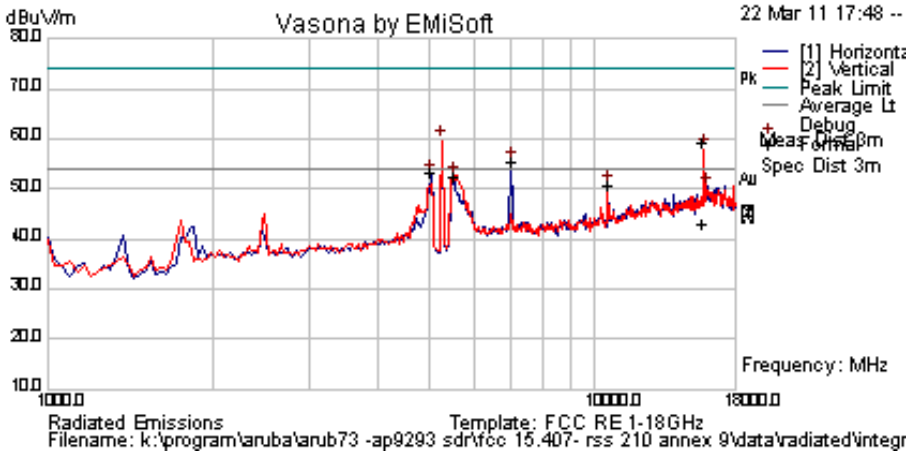


Formally measured emission peaks

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
5304.449	62.4	4.6	-9.4	57.6	Peak [Scan]	H	100					FUND
5531.06212	56.6	4.6	-8.7	52.6	Peak [Scan]	V	100	0	54.0	-1.4	Pass	NRB
5320.040	56.8	4.6	-9.1	52.3	Peak [Scan]	H	100	0	54	-1.7	Pass	BE
17651.503	41.3	8.8	0.8	50.8	Peak [Scan]	V	100	0	54	-3.2	Pass	NRB
10470.942	46.6	6.8	-2.6	50.8	Peak [Scan]	H	100	0	54	-3.2	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5260 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

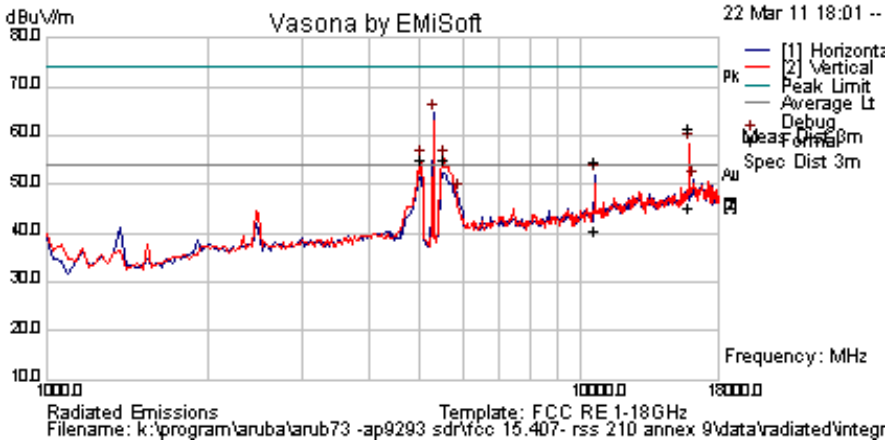


Formally measured emission peaks

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
15789.739	50.7	8.7	0.1	59.5	Peak Max	V	101	1	74.0	-14.5	Pass	RB
15789.739	34.1	8.7	0.1	42.9	Average Max	V	101	1	54.0	-11.1	Pass	RB
7030.060	55.2	5.4	-5.2	55.4	Peak [Scan]	H	100				Pass	NRB
5020.040	57.6	4.6	-9.1	53.1	Peak [Scan]	H	100				Pass	NRB
5531.062	56.6	4.6	-8.7	52.6	Peak [Scan]	V	100				Pass	NRB
10539.078	46.6	6.8	-2.6	50.9	Peak [Scan]	H	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5300 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

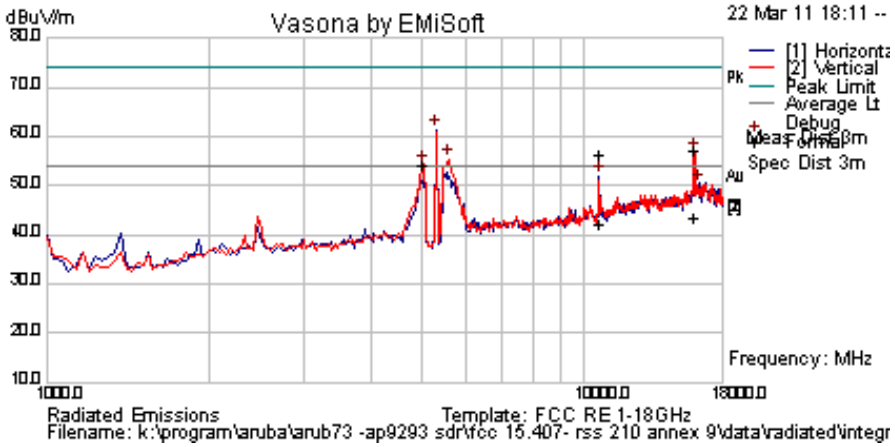


Formally measured emission peaks

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
15904.389	52.9	8.9	-0.2	61.5	Peak Max	V	101	0	74.0	-12.5	Pass	RB
10602.705	50.2	6.8	-2.3	54.7	Peak Max	H	101	41	74.0	-19.3	Pass	RB
15904.389	36.4	8.9	-0.2	45.0	Average Max	V	101	0	54	-9.0	Pass	RB
10602.705	36.0	6.8	-2.3	40.5	Average Max	H	101	41	54	-13.5	Pass	RB
5020.040	59.4	4.6	-9.1	55.0	Peak [Scan]	V	100				Pass	BE

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5320 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

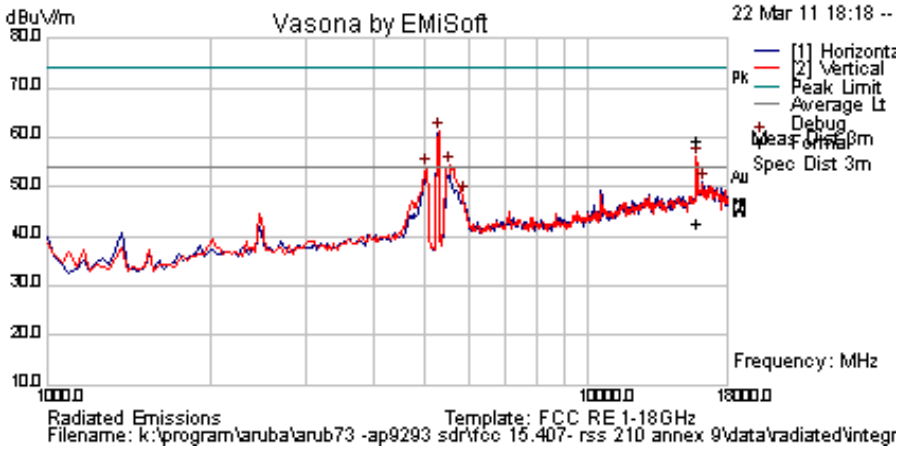


Formally measured emission peaks

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
15958.099	47.8	9.0	0.4	57.1	Peak Max	V	101	1	74.0	-16.9	Pass	RB
10642.796	51.9	6.8	-2.2	56.5	Peak Max	H	101	1	74.0	-17.5	Pass	RB
15958.099	34.0	9.0	0.4	43.4	Average Max	V	101	1	54	-10.6	Pass	RB
10642.796	37.4	6.8	-2.2	42.0	Average Max	H	101	1	54	-12.0	Pass	RB
5020.040	58.7	4.6	-9.1	54.3	Peak [Scan]	V	100				Pass	BE

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5270 MHz	**Engineer**	GMH
Variant	802.11n; HT-40; 13.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

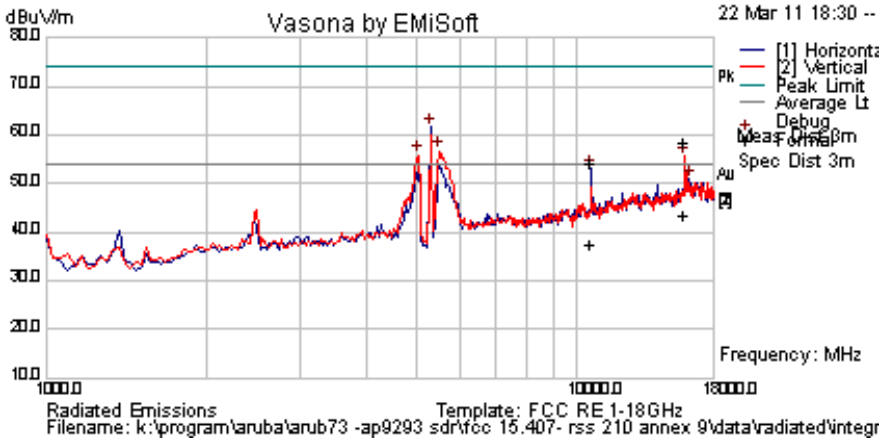


Formally measured emission peaks

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
15821.763	50.8	8.7	-0.2	59.4	Peak Max	V	101	3	74.0	-14.6	Pass	RB
15821.763	34.0	8.7	-0.2	42.6	Average Max	V	101	3	54.0	-11.4	Pass	RB
5020.040	58.2	4.6	-9.1	53.8	Peak [Scan]	V	100	0	54	-0.3	Pass	BE

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5310 MHz	**Engineer**	GMH
Variant	802.11n; HT-40; 13.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna		**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

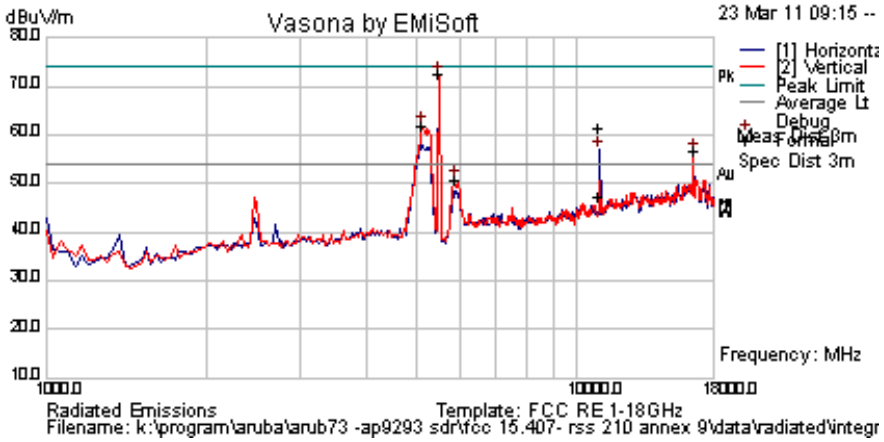


Formally measured emission peaks

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
15924.394	49.6	8.9	0.1	58.6	Peak Max	V	101	0	74.0	-15.4	Pass	RB
10610.814	49.4	6.8	-2.2	54.0	Peak Max	H	101	19	74.0	-20.0	Pass	RB
15924.394	34.5	8.9	0.1	43.4	Average Max	V	101	0	54	-10.6	Pass	RB
10610.814	32.9	6.8	-2.2	37.5	Average Max	H	101	19	54	-16.5	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5500 MHz	**Engineer**	SB
Variant	802.11a; 6 MBit/s	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37%
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

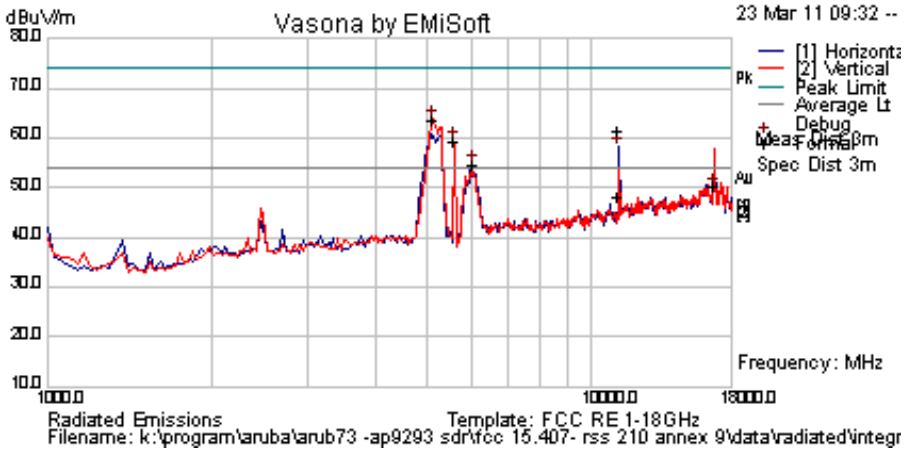


Formally measured emission peaks

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
11000.721	57.3	7.0	-2.9	61.3	Peak Max	H	100	35	74.0	-12.7	Pass	RB
11000.721	43.2	7.0	-2.9	47.3	Average Max	H	100	35	54.0	-6.7	Pass	RB
5496.994	76.6	4.6	-8.7	72.4	Peak [Scan]	V	100					FUND
5162.244	66.1	4.6	-9.0	61.8	Peak [Scan]	V	100				Pass	NRB
16535.070	47.3	8.8	0.4	56.6	Peak [Scan]	H	100				Pass	NRB
5871.743	54.6	4.8	-8.6	50.8	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5600 MHz	**Engineer**	SB
Variant	802.11a; 6.MBit/s	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	0.37
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

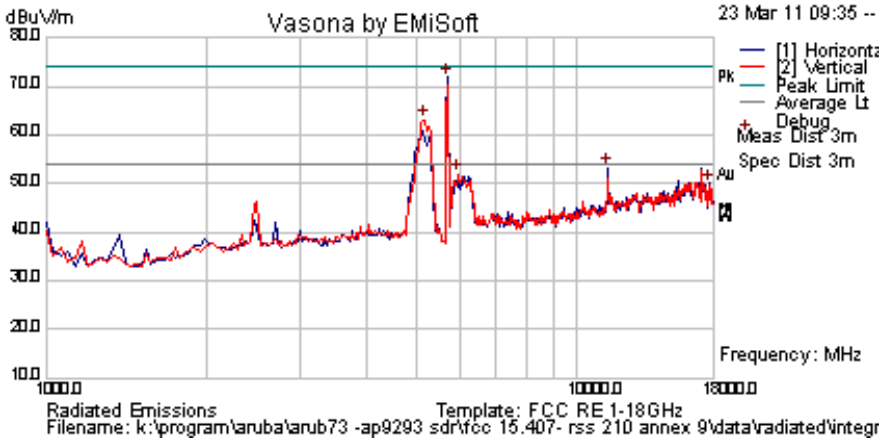


Formally measured emission peaks

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
11201.764	57.5	6.9	-3.0	61.4	Peak Max	H	100	30	74.0	-12.6	Pass	RB
11201.764	44.3	6.9	-3.0	48.2	Average Max	H	100	30	54.0	-5.8	Pass	RB
5162.244	67.9	4.6	-9.0	63.6	Peak [Scan]	V	100				Pass	NRB
5599.198	63.2	4.7	-8.6	59.3	Peak [Scan]	V	100					FUND
6042.084	57.8	4.9	-8.2	54.5	Peak [Scan]	V	100				Pass	NRB
16797.756	40.1	8.6	1.4	50.2	Peak [Scan]	V	100	0	54	-3.8	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5700 MHz	**Engineer**	SB
Variant	802.11a; 6 MBit/s	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	0.37
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

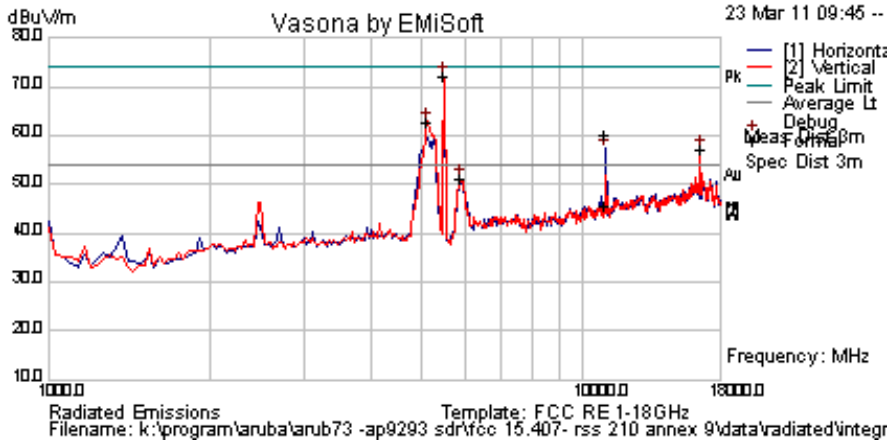


Formally measured emission peaks

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	75.3	4.7	-8.1	71.9	Peak [Scan]	H	100					FUND
5156.31263	67.4	4.6	-9.0	63.1	Peak [Scan]	V	100				Pass	NRB
11390.782	47.9	6.8	-1.6	53.2	Peak [Scan]	H	100	0	54	-0.8	Pass	RB
5973.948	55.3	4.9	-8.2	51.9	Peak [Scan]	V	100	0	54	-2.1	Pass	NRB
17693.387	40.4	8.8	0.8	50.0	Peak [Scan]	H	100	0	54	-4.0	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5500 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

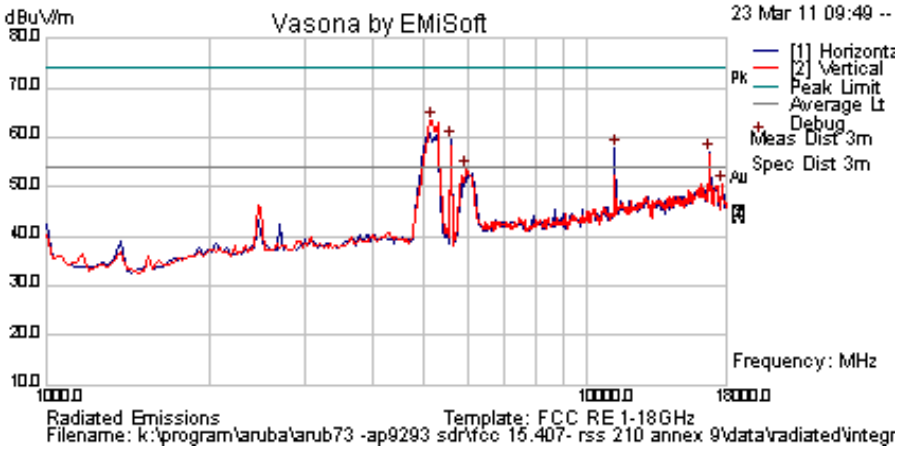


Formally measured emission peaks

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
11001.763	56.3	7.0	-2.9	60.3	Peak Max	H	100	44	74.0	-13.7	Pass	RB
11001.763	41.5	7.0	-2.9	45.6	Average Max	H	100	44	54.0	-8.4	Pass	RB
5496.994	76.2	4.6	-8.7	72.1	Peak [Scan]	V	100					FUND
5162.244	67.2	4.6	-9.0	62.8	Peak [Scan]	V	100				Pass	NRB
16535.070	47.9	8.8	0.4	57.1	Peak [Scan]	V	100				Pass	NRB
5871.743	55.2	4.8	-8.6	51.4	Peak [Scan]	V	100	0	54	-2.6	Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5600 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

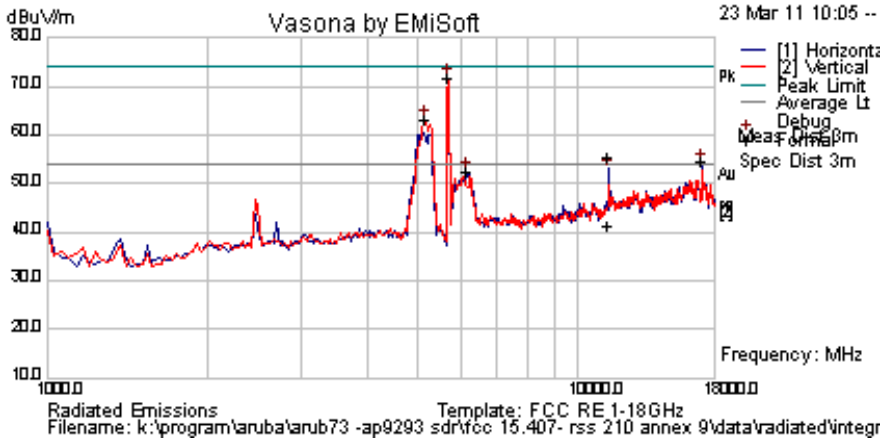


Formally measured emission peaks

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
11205.852	59.1	6.9	-3.1	63.0	Peak Max	H	100	26	74.0	-11.0	Pass	RB
11205.852	44.0	6.9	-3.1	47.8	Average Max	H	100	26	54.0	-6.2	Pass	RB
5156.313	67.8	4.6	-9.0	63.5	Peak [Scan]	V	100				Pass	NRB
5599.198	63.4	4.7	-8.6	59.5	Peak [Scan]	H	100					FUND
16807.615	46.8	8.6	1.6	57.0	Peak [Scan]	H	100				Pass	NRB
5973.948	56.8	4.9	-8.2	53.4	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5700 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

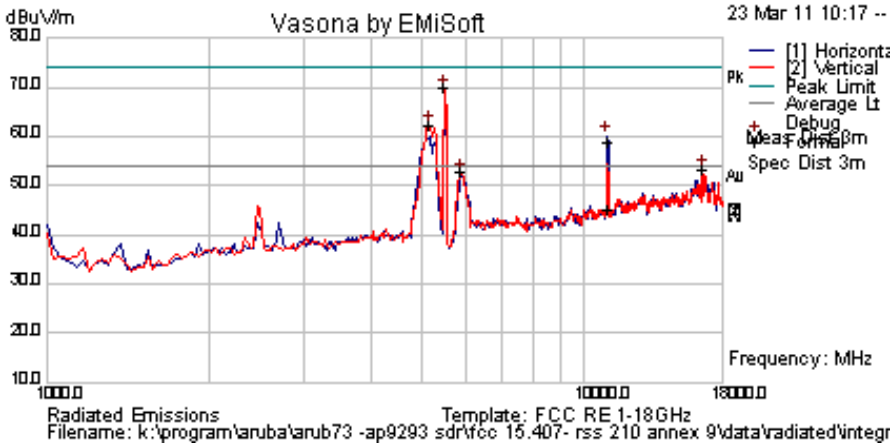


Formally measured emission peaks

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
11402.566	50.5	6.8	-1.6	55.7	Peak Max	H	100	34	74.0	-18.4	Pass	RB
11402.566	36.1	6.8	-1.6	41.3	Average Max	H	100	34	54.0	-12.7	Pass	RB
5701.403	75.0	4.7	-8.1	71.7	Peak [Scan]	V	100					FUND
5156.313	67.4	4.6	-9.0	63.1	Peak [Scan]	V	100				Pass	NRB
17114.228	45.1	8.5	0.8	54.4	Peak [Scan]	H	100				Pass	NRB
6144.289	54.9	5.0	-7.3	52.6	Peak [Scan]	H	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5510 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

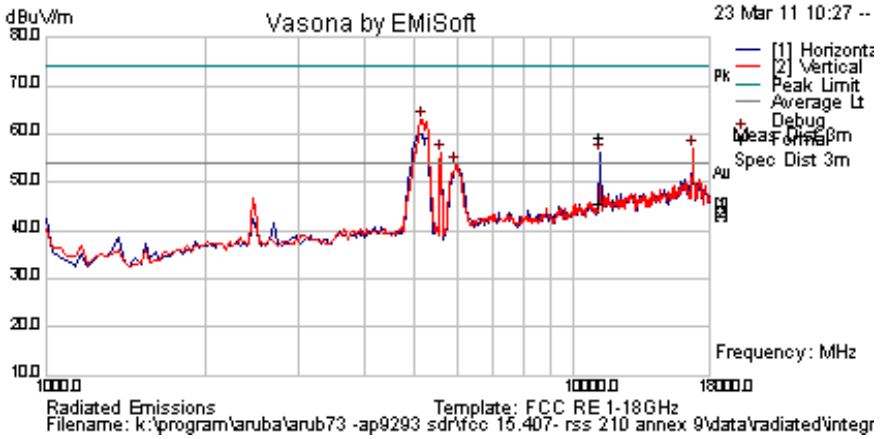


Formally measured emission peaks

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
11024.850	54.7	7.0	-2.9	58.8	Peak Max	H	100	40	74.0	-15.2	Pass	RB
11024.85	41.0	7.0	-2.9	45.1	Average Max	H	100	40	54.0	-8.9	Pass	RB
5496.994	74.0	4.6	-8.7	69.9	Peak [Scan]	V	100					FUND
5156.313	66.7	4.6	-9.0	62.3	Peak [Scan]	V	100				Pass	NRB
16535.070	44.1	8.8	0.4	53.3	Peak [Scan]	V	100				Pass	NRB
5905.812	56.6	4.8	-8.7	52.7	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5590 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

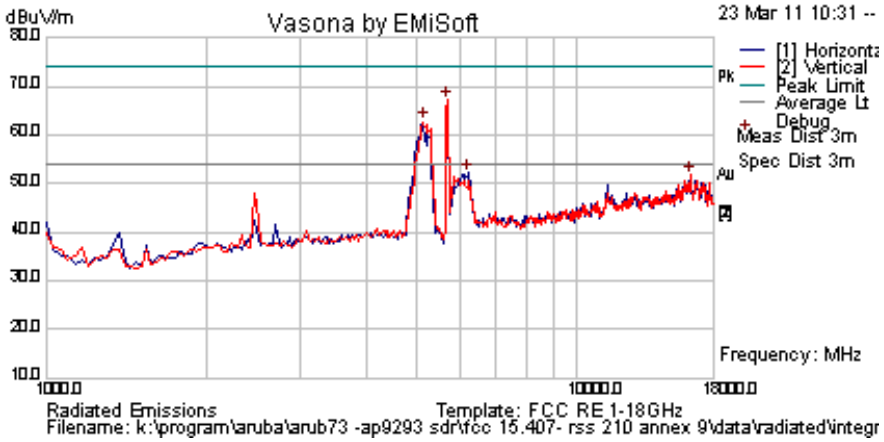


Formally measured emission peaks

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
11165.692	55.6	6.9	-3.4	59.2	Peak Max	H	100	30	74.0	-14.8	Pass	RB
11165.692	42.0	6.9	-3.4	45.6	Average Max	H	100	30	54.0	-8.4	Pass	RB
5162.244	67.3	4.6	-9.1	62.9	Peak [Scan]	V	100				Pass	NRB
16773.547	46.5	8.6	1.7	56.8	Peak [Scan]	V	100				Pass	NRB
5599.198	60.1	4.7	-8.6	56.2	Peak [Scan]	V	100					FUND
5973.948	56.9	4.9	-8.2	53.6	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5690 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	Intergral 5.8 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



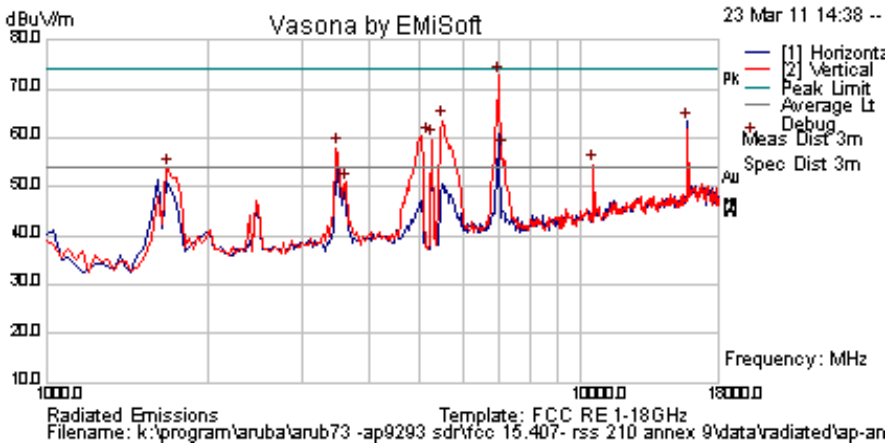
Formally measured emission peaks

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	70.7	4.7	-8.1	67.3	Peak [Scan]	V	100				Pass	FUND
5162.24449	67.1	4.6	-9.1	62.6	Peak [Scan]	V	100				Pass	NRB
6246.493	53.9	5.0	-6.7	52.2	Peak [Scan]	H	100				Pass	NRB
16364.729	42.4	8.9	0.4	51.7	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

5.1.7.2. External Antenna AP-ANT-10 – Radiated Spurious Emissions – Above 1 GHz

Test Freq.	5260 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37%
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

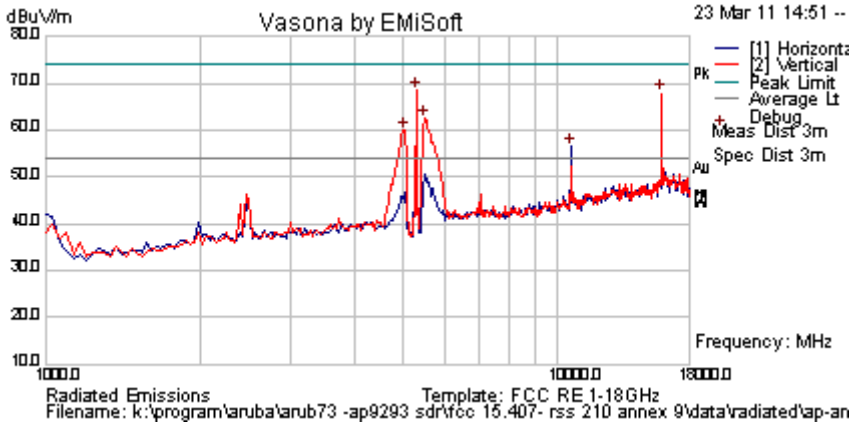


Formally measured emission peaks

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
15787.014	54.3	8.7	0.2	63.2	Peak Max	H	100	90	74.0	-10.8	Pass	RB
1716.954	53.3	2.6	-13.3	42.5	Peak Max	V	100	89	74.0	-31.5	Pass	RB
3510.060	68.0	3.6	-11.5	60.1	Peak Max	V	100	207	74	-13.9	Pass	RB
15787.014	38.3	8.7	0.2	47.2	Average Max	H	100	90	54	-6.8	Pass	RB
1716.954	44.8	2.6	-13.3	34.0	Average Max	V	100	89	54	-20.0	Pass	RB
3510.060	47.2	3.6	-11.5	39.3	Average Max	V	100	207	54	-14.7	Pass	RB
6995.992	72.5	5.4	-5.1	6	Peak [Scan]	V	100				Pass	NRB
5496.994	67.7	4.6	-8.7	63.6	Peak [Scan]	V	100				Pass	NRB
5258.517	64.6	4.6	-9.5	59.7	Peak [Scan]	V	100					FUND
10520.641	50.3	6.8	-2.6	54.5	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5300 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	0.37
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

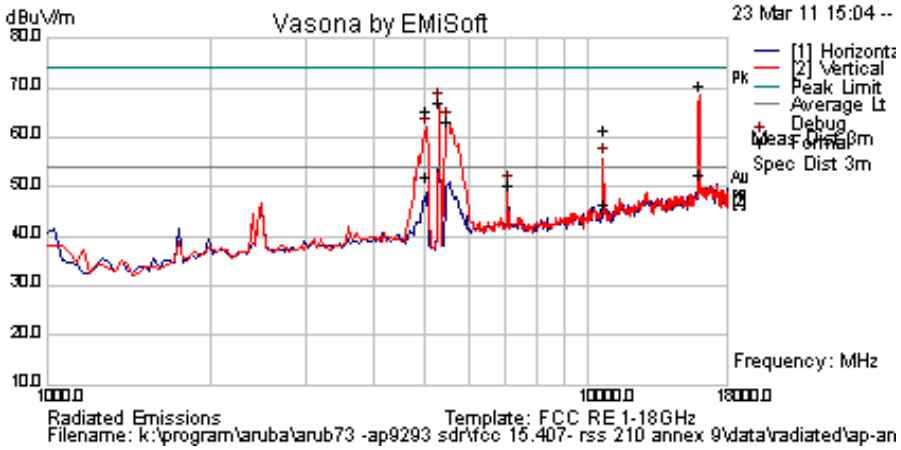


Formally measured emission peaks

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
15890.581	58.7	8.8	-0.1	67.4	Peak Max	V	100	29	74.0	-6.6	Pass	RB
5015.23	70.1	4.6	-9.0	65.7	Peak Max	V	100	26	74.0	-8.3	Pass	RB
10600.881	56.0	6.8	-2.4	60.5	Peak Max	H	100	1	74	-13.5	Pass	RB
15890.581	41.5	8.8	-0.1	50.2	Average Max	V	100	29	54	-3.8	Pass	RB
5015.230	56.7	4.6	-9.0	52.3	Average Max	V	100	26	54	-1.7	Pass	RB
10600.881	41.2	6.8	-2.4	45.7	Average Max	H	100	1	54	-8.3	Pass	RB
5292.585	73.3	4.6	-9.5	68.4	Peak [Scan]	V	100					FUND
5496.994	66.6	4.6	-8.7	62.5	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5320 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	0.37
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

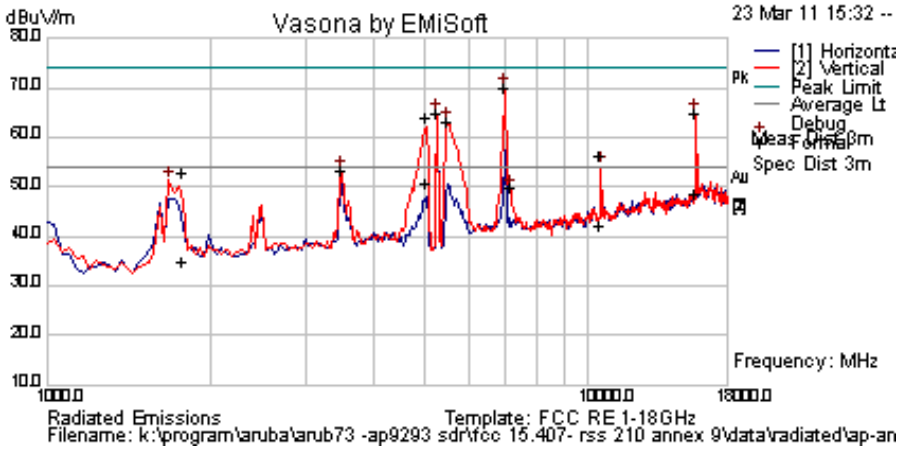


Formally measured emission peaks

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
15967.375	61.3	9.0	0.3	70.6	Peak Max	V	100	79	74.0	-3.4	Pass	RB
5018.437	70.0	4.6	-9.1	65.5	Peak Max	V	100	26	74	-8.5	Pass	RB
10641.043	56.8	6.8	-2.2	61.4	Peak Max	H	100	1	74.0	-12.6	Pass	RB
15967.375	43.2	9.0	0.3	52.4	Average Max	V	100	79	54	-1.6	Pass	RB
5018.437	56.3	4.6	-9.1	51.9	Average Max	V	100	26	54	-2.2	Pass	RB
10641.043	42.0	6.8	-2.2	46.6	Average Max	H	100	1	54	-7.4	Pass	RB
5292.585	71.9	4.6	-9.5	67.0	Peak [Scan]	V	100					FUND
5496.994	67.3	4.6	-8.7	63.2	Peak [Scan]	V	100				Pass	NRB
7098.196	50.3	5.4	-5.2	50.5	Peak [Scan]	H	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5260 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

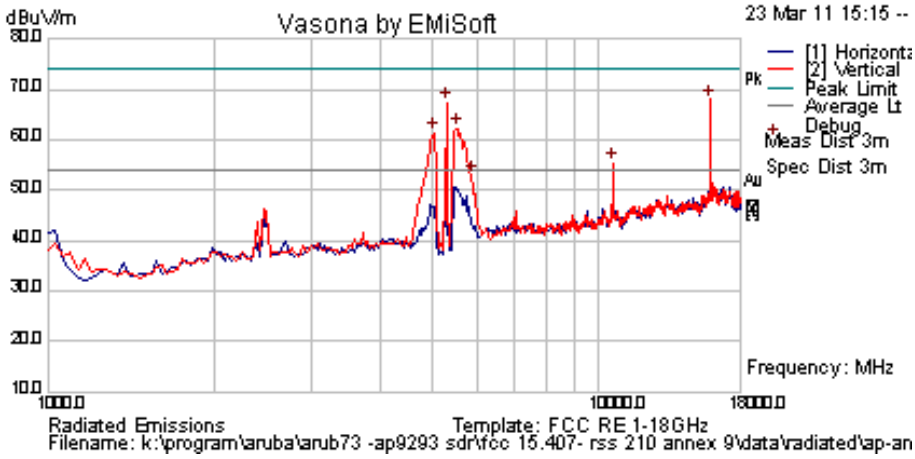


Formally measured emission peaks

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
15783.807	56.1	8.7	0.0	64.8	Peak Max	V	100	15	74	-9.2	Pass	RB
5016.513	68.5	4.6	-9.0	64.1	Peak Max	V	100	31	74	-9.9	Pass	RB_
10524.248	52.3	6.8	-2.6	56.5	Peak Max	V	100	21	74	-17.5	Pass	RB
1783.647	63.1	2.6	-12.9	52.8	Peak Max	V	100	0	74	-21.2	Pass	RB
15783.807	39.8	8.7	0.0	48.5	Average Max	V	100	15	54	-5.5	Pass	RB
5016.513	55.2	4.6	-9.0	50.8	Average Max	V	100	31	54	-3.2	Pass	RB
10524.248	38.2	6.8	-2.6	42.4	Average Max	V	100	21	54	-11.6	Pass	RB
1783.647	45.1	2.6	-12.9	34.7	Average Max	V	100	0	54	-19.3	Pass	RB
6995.992	69.8	5.4	-5.1	67.9	Peak [Scan]	V	100				Pass	NRB
5258.517	69.7	4.6	-9.5	64.8	Peak [Scan]	H	100					FUND
5462.926	67.7	4.6	-9.0	63.3	Peak [Scan]	V	100				Pass	NRB
3486.974	61.3	3.6	-11.6	53.310	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5300 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

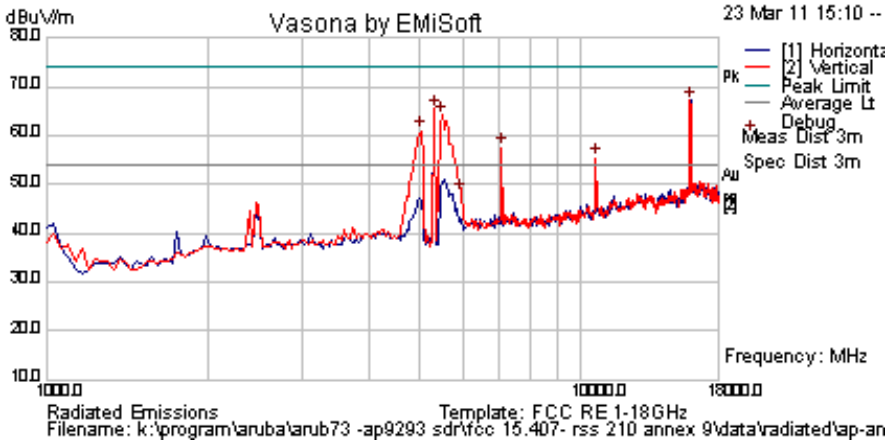


Formally measured emission peaks

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	58.7	8.8	-0.1	67.4	Peak Max	V	100	29	74.0	-6.6	Pass	RB
5020.040	70.1	4.6	-9.0	65.7	Peak Max	V	100	26	74.0	-8.3	Pass	RB
10607.214	56.0	6.8	-2.4	60.5	Peak Max	H	100	1	74	-13.5	Pass	RB
15921.844	41.5	8.8	-0.1	50.2	Average Max	V	100	29	54	-3.8	Pass	RB
5020.040	56.7	4.6	-9.0	52.3	Average Max	V	100	26	54	-1.7	Pass	RB
10607.214	41.2	6.8	-2.4	45.7	Average Max	H	100	1	54	-8.3	Pass	RB
5292.58517	72.3	4.6	-9.5	67.4	Peak [Scan]	V	100					FUND
5531.062	66.4	4.6	-8.7	62.3	Peak [Scan]	V	100				Pass	NRB
5871.743	56.6	4.8	-8.6	52.8	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5320 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

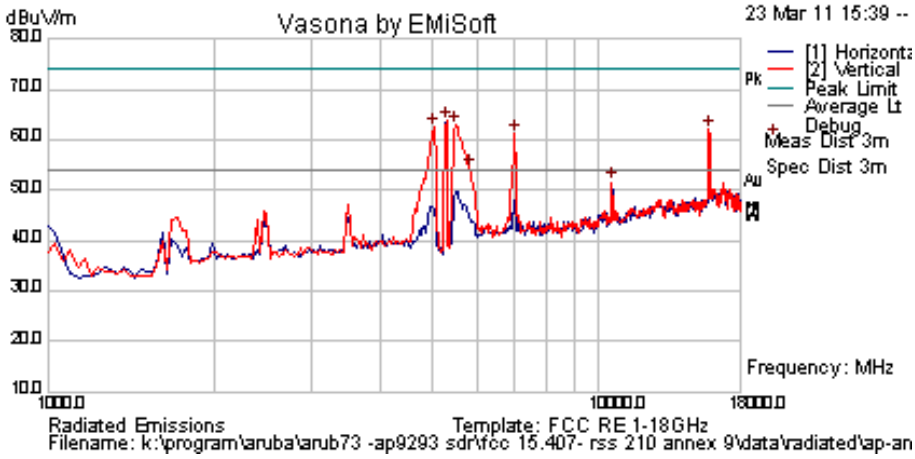


Formally measured emission peaks

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
15967.375	61.3	9.0	0.3	70.6	Peak Max	V	100	79	74.0	-3.4	Pass	RB
5018.437	70.0	4.6	-9.1	65.5	Peak Max	V	100	26	74	-8.5	Pass	RB
15967.375	43.2	9.0	0.3	52.4	Average Max	V	100	79	54	-1.6	Pass	RB
5018.437	56.3	4.6	-9.1	51.9	Average Max	V	100	26	54	-2.2	Pass	RB
7098.19639	57.4	5.4	-5.2	57.6	Peak [Scan]	V	100				Pass	NRB
5496.994	68.3	4.6	-8.7	64.2	Peak [Scan]	V	100				Pass	NRB
5326.653	70.5	4.6	-9.5	65.6	Peak [Scan]	H	100					FUND
10641.283	50.8	6.8	-2.2	55.5	Peak [Scan]	V	100				Pass	NRB
5973.948	51.7	4.9	-8.2	48.3	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5270 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

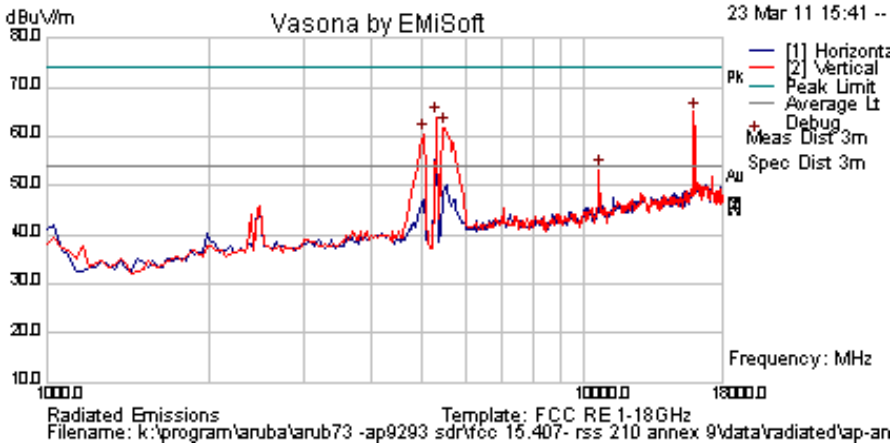


Formally measured emission peaks

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
15819.639	56.1	8.7	0.0	64.8	Peak Max	V	100	15	74.0	-9.2	Pass	RB
5020.040	68.5	4.6	-9.0	64.1	Peak Max	V	100	31	74.0	-9.9	Pass	RB
10539.078	52.3	6.8	-2.6	56.5	Peak Max	V	100	21	74	-17.5	Pass	RB
15819.639	39.8	8.7	0.0	48.5	Average Max	V	100	15	54	-5.5	Pass	RB
5020.040	55.2	4.6	-9.0	50.8	Average Max	V	100	31	54	-3.2	Pass	RB
10539.078	38.2	6.8	-2.6	42.4	Average Max	V	100	21	54	-11.6	Pass	RB
5292.585	68.6	4.6	-9.5	63.7	Peak [Scan]	V	100					FUND
5496.99399	67.1	4.6	-8.7	62.9	Peak [Scan]	V	100				Pass	NRB
7030.060	61.1	5.4	-5.2	61.3	Peak [Scan]	V	100				Pass	NRB
5837.675	58.0	4.8	-8.6	54.2	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5310 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

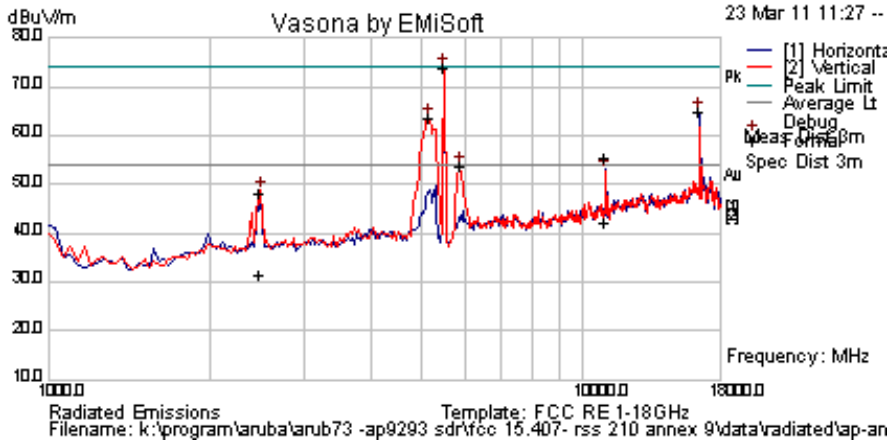


Formally measured emission peaks

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
15967.375	61.3	9.0	0.3	70.6	Peak Max	V	100	79	74.0	-3.4	Pass	RB
5020.04	70.0	4.6	-9.1	65.5	Peak Max	V	100	26	74	-8.5	Pass	RB
10641.283	52.3	6.8	-2.6	56.5	Peak Max	V	100	21	74	-17.5	Pass	RB
15967.375	43.2	9.0	0.3	52.4	Average Max	V	100	79	54	-1.6	Pass	RB
5020.04	56.3	4.6	-9.1	51.9	Average Max	V	100	26	54	-2.2	Pass	RB
10641.283	38.2	6.8	-2.6	42.4	Average Max	V	100	21	54	-11.6	Pass	RB
5292.58517	68.9	4.6	-9.5	64.0	Peak [Scan]	H	100					FUND
5478.858	66.2	4.6	-9.0	61.9	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5500 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37%
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

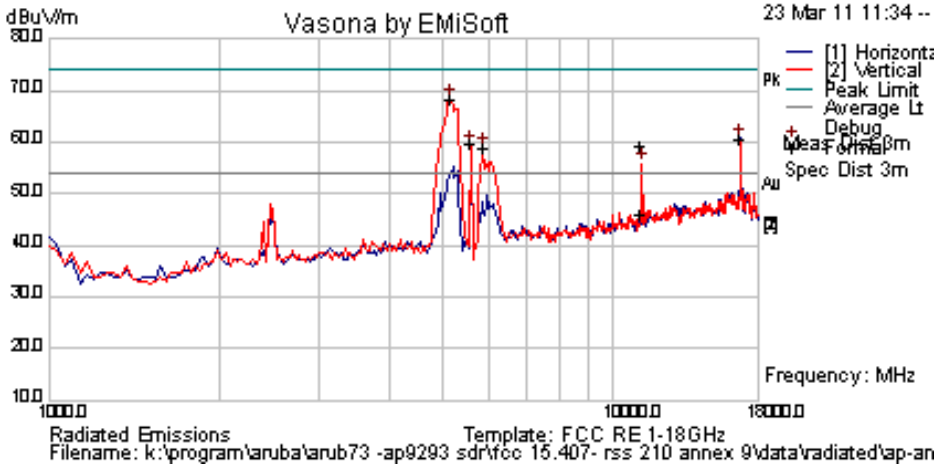


Formally measured emission peaks

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
11000.481	51.6	7.0	-2.9	55.7	Peak Max	H	100	287	74.0	-18.3	Pass	RB
2494.95	56.5	3.0	-11.1	48.4	Peak Max	V	100	46	74.0	-25.6	Pass	RB
11000.481	38.2	7.0	-2.9	42.2	Average Max	H	100	287	54	-11.8	Pass	RB
2494.950	39.4	3.0	-11.1	31.3	Average Max	V	100	46	54	-22.7	Pass	RB
5496.994	78.0	4.6	-8.7	73.9	Peak [Scan]	V	100					FUND
16501.002	55.7	8.8	0.3	64.9	Peak [Scan]	H	100				Pass	NRB
5162.244	68.1	4.6	-9.1	63.6	Peak [Scan]	V	100				Pass	NRB
5871.743	57.7	4.8	-8.6	53.9	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5600 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	0.37
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

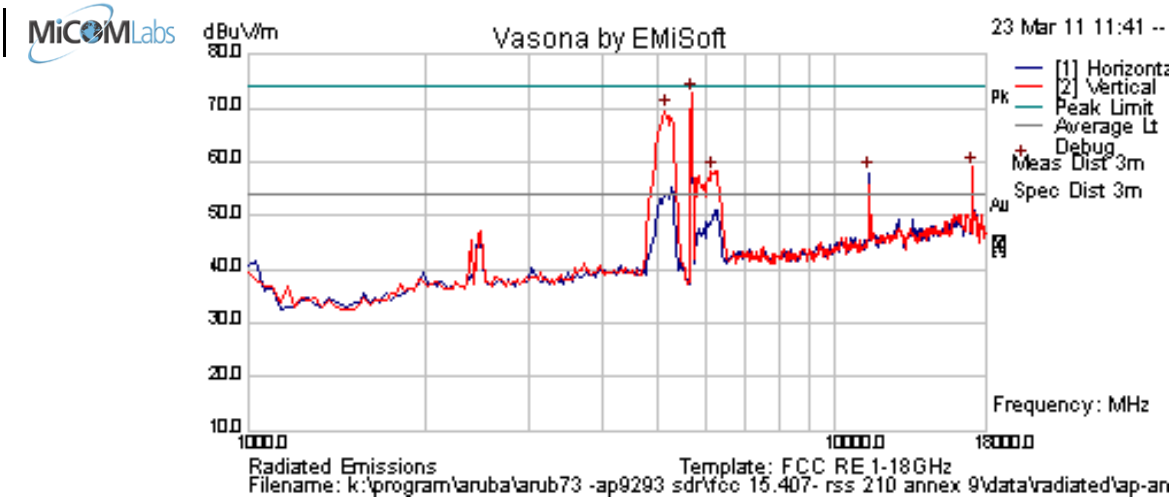


Formally measured emission peaks

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
11202.004	55.3	6.9	-3.0	59.2	Peak Max	V	100	33	74.0	-14.9	Pass	RB
11202.004	42.1	6.9	-3.0	46.0	Average Max	V	100	33	54.0	-8.0	Pass	RB
5162.244	73.0	4.6	-9.1	68.5	Peak [Scan]	V	100				Pass	NRB
16807.615	50.5	8.6	1.6	60.7	Peak [Scan]	H	100				Pass	NRB
5599.198	63.5	4.7	-8.6	57.9	Peak [Scan]	V	100					FUND
5871.743	62.7	4.8	-8.6	58.9	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5700 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	0.37
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

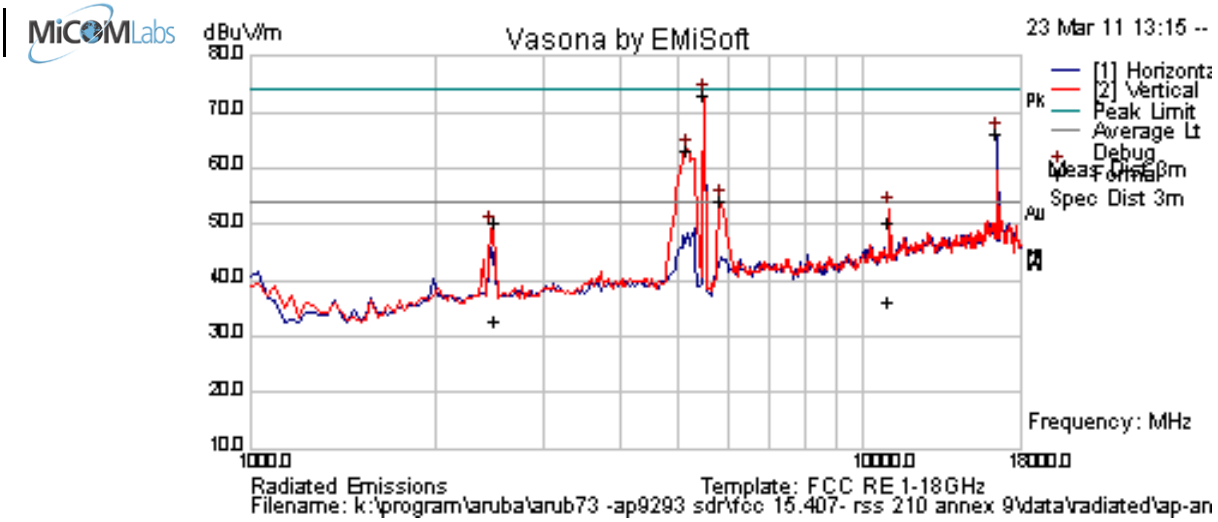


Formally measured emission peaks

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
11020.481	51.6	7.0	-2.9	55.7	Peak Max	H	100	287	74.0	-18.3	Pass	RB
11020.481	38.2	7.0	-2.9	42.2	Average Max	H	100	287	54	-11.8	Pass	RB
5701.403	76.1	4.7	-8.1	72.8	Peak [Scan]	V	100					FUND
5162.244	74.0	4.6	-9.1	68.1	Peak [Scan]	V	100				Pass	NRB
17114.228	49.8	8.5	0.8	59.1	Peak [Scan]	V	100				Pass	NRB
6144.289	60.6	5.0	-7.3	58.3	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5500 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

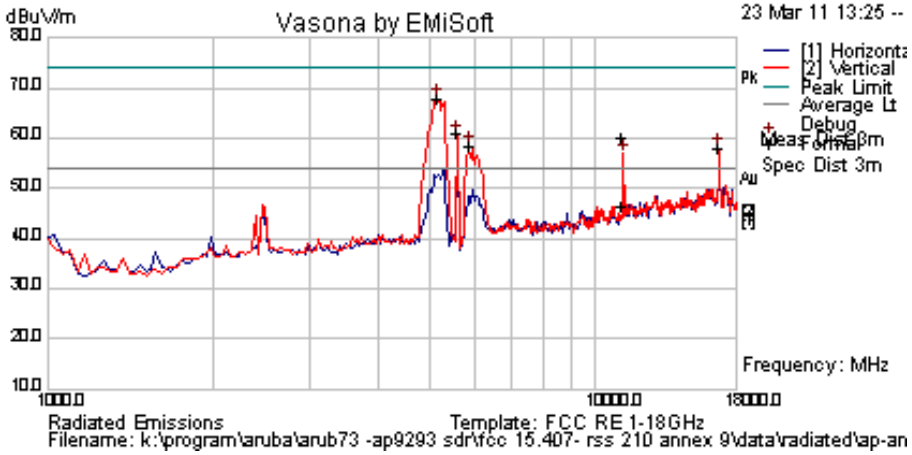


Formally measured emission peaks

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
11016.032	46.3	7.0	-3.0	50.3	Peak Max	V	100	306	74.0	-23.7	Pass	RB
2495.391	58.3	3.0	-11.1	50.2	Peak Max	V	100	37	74.0	-23.8	Pass	RB
11016.032	32.1	7.0	-3.0	36.1	Average Max	V	100	306	54	-17.9	Pass	RB
2495.391	40.8	3.0	-11.1	32.6	Average Max	V	100	37	54	-21.4	Pass	RB
5496.994	77.0	4.6	-8.7	72.9	Peak [Scan]	V	100					FUND
16501.002	57.1	8.8	0.3	66.2	Peak [Scan]	H	100				Pass	NRB
5162.244	67.7	4.6	-9.1	63.3	Peak [Scan]	V	100				Pass	BE
5837.675	57.8	4.8	-8.6	54.0	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5600 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

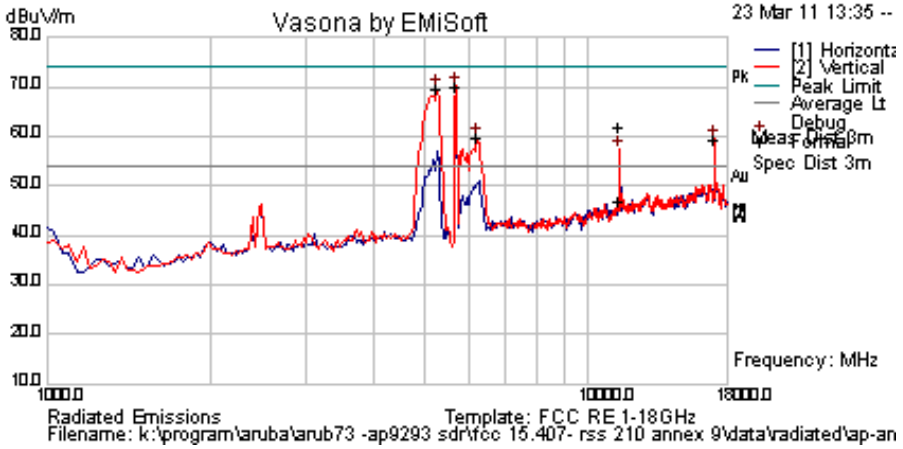


Formally measured emission peaks

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
11208.497	56.3	6.9	-3.1	60.1	Peak Max	V	100	31	74.0	-13.9	Pass	RB
11208.497	42.6	6.9	-3.1	46.4	Average Max	V	100	31	54.0	-7.6	Pass	RB
5162.244	72.4	4.6	-9.1	68.0	Peak [Scan]	V	100				Pass	NRB
5599.198	64.8	4.7	-8.6	60.8	Peak [Scan]	V	100					FUND
5871.743	62.3	4.8	-8.6	58.5	Peak [Scan]	V	100				Pass	NRB
16807.615	47.8	8.6	1.6	58.0	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5700 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

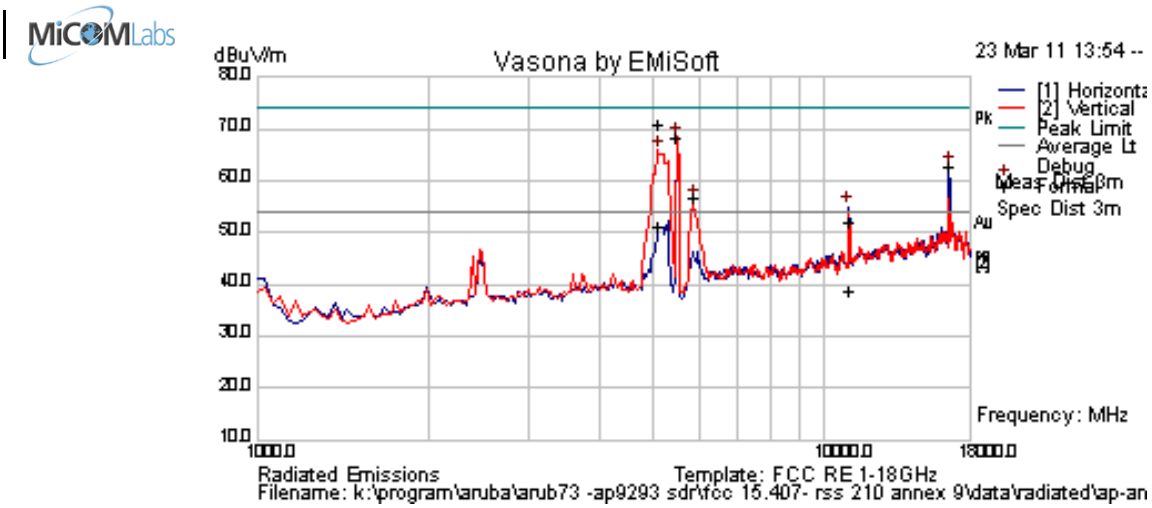


Formally measured emission peaks

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
11400.100	56.5	6.8	-1.6	61.7	Peak Max	V	100	22	74.0	-12.3	Pass	RB
11400.1	41.6	6.8	-1.6	46.8	Average Max	V	100	22	54.0	-7.2	Pass	RB
5701.403	73.6	4.7	-8.1	70.3	Peak [Scan]	V	100					FUND
5258.517	74.3	4.6	-9.5	68.1	Peak [Scan]	V	100				Pass	NRB
6212.425	61.8	5.0	-7.0	59.7	Peak [Scan]	V	100				Pass	NRB
17114.228	50.1	8.5	0.8	59.4	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5510 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

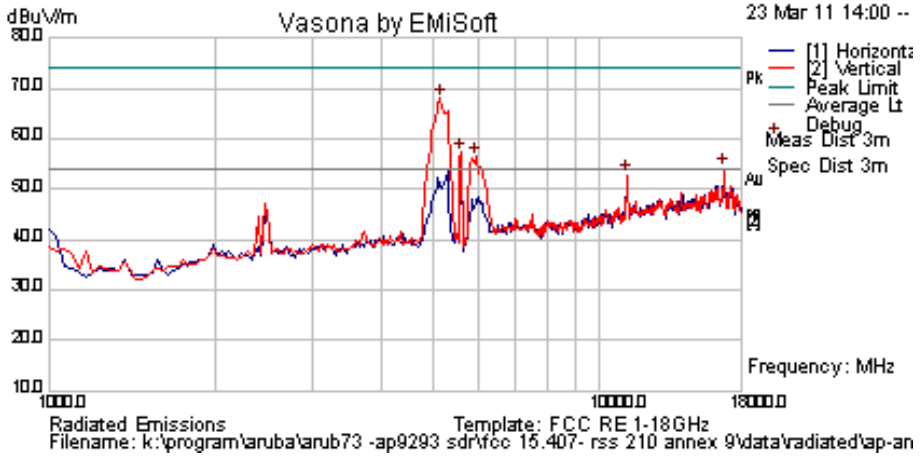


Formally measured emission peaks

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
5118.317	75.1	4.6	-9.0	70.7	Peak Max	V	100	15	74.0	-3.3	Pass	RB
11024.529	48.0	7.0	-2.9	52.1	Peak Max	H	100	289	74.0	-21.9	Pass	RB
5118.318	55.7	4.6	-9.0	51.3	Average	V	100	289	54	-2.7	Pass	RB
11024.529	34.9	7.0	-2.9	38.9	Average Max	H	100	289	54	-15.1	Pass	RB
5496.994	72.5	4.6	-8.7	68.4	Peak [Scan]	V	100					FUND
16535.070	53.4	8.8	0.4	62.7	Peak [Scan]	H	100				Pass	NRB
5871.743	60.4	4.8	-8.6	56.6	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5590 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

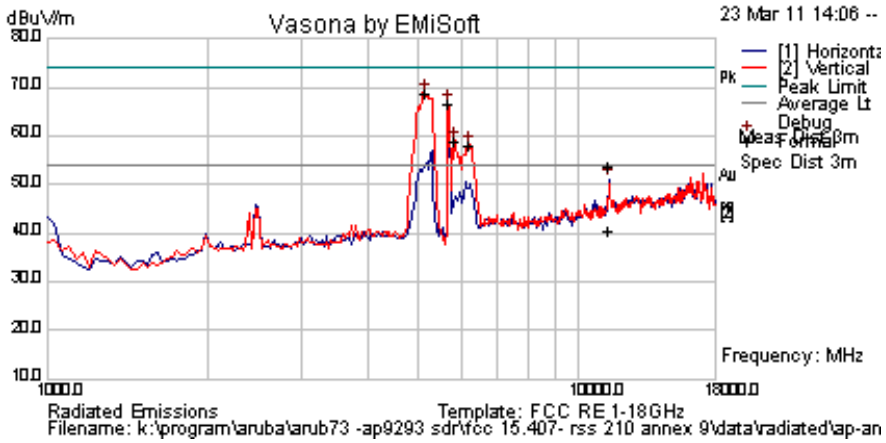


Formally measured emission peaks

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
11202.004	55.3	6.9	-3.0	59.2	Peak Max	V	100	33	74.0	-14.9	Pass	RB
11202.004	42.1	6.9	-3.0	46.0	Average Max	V	100	33	54.0	-8.0	Pass	RB
5162.244	72.5	4.6	-9.1	68.1	Peak [Scan]	V	100				Pass	NRB
5599.1984	61.3	4.7	-8.6	57.4	Peak [Scan]	V	100					FUND
5973.948	59.8	4.9	-8.2	56.4	Peak [Scan]	V	100				Pass	NRB
16773.547	43.8	8.6	1.7	54.1	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5690 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	18	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



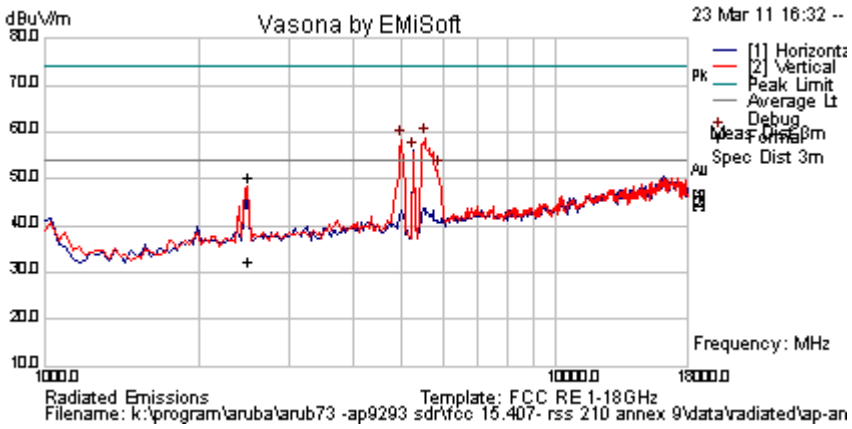
Formally measured emission peaks

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
11368.578	48.8	6.8	-1.8	53.8	Peak Max	H	100	301	74.0	-20.2	Pass	RB
11368.578	35.6	6.8	-1.8	40.6	Average Max	H	100	301	54.0	-13.4	Pass	RB
5162.244	73.4	4.6	-9.1	68.1	Peak [Scan]	V	100				Pass	NRB
5701.403	69.9	4.7	-8.1	66.5	Peak [Scan]	V	100					FUND
5837.675	62.9	4.8	-8.6	59.1	Peak [Scan]	V	100				Pass	NRB
6246.493	59.8	5.0	-6.7	58.1	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

5.1.7.3. External Antenna AP-ANT-12 – Radiated Spurious Emissions – Above 1 GHz

Test Freq.	5260 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37%
Power Setting	8	**Press. (mBars)**	1002
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

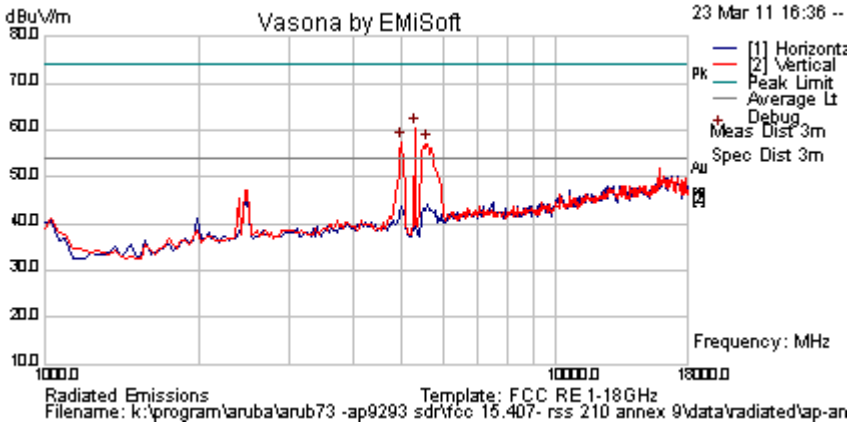


Formally measured emission peaks

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	62.9	4.6	-8.7	58.9	Peak [Scan]	V	100	0			Pass	NRB
4985.97194	62.9	4.6	-9.1	58.4	Peak [Scan]	V	100	0			Pass	BE
5258.517	61.0	4.6	-9.5	56.1	Peak [Scan]	H	100	0				FUND
5871.743	55.9	4.8	-8.6	52.0	Peak [Scan]	V	100	0			Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5300 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	0.37
Power Setting	8	**Press. (mBars)**	1002
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

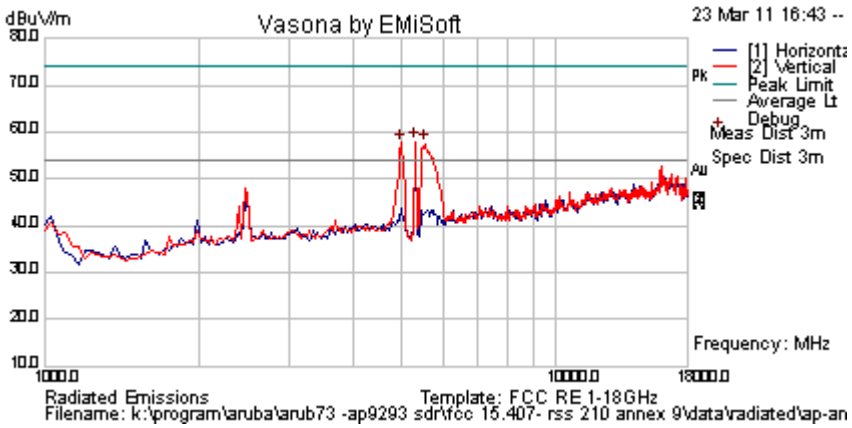


Formally measured emission peaks

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	65.4	4.6	-9.5	60.6	Peak [Scan]	V	100	0				FUND
4985.97194	62.0	4.6	-9.1	57.5	Peak [Scan]	V	100	0			Pass	BE
5599.198	61.0	4.7	-8.6	57.1	Peak [Scan]	V	100	0			Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5320 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	0.37
Power Setting	8	**Press. (mBars)**	1002
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

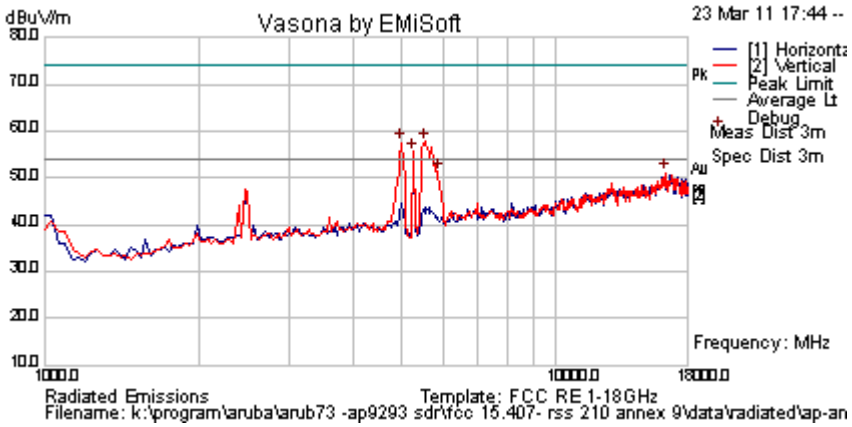


Formally measured emission peaks

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	62.8	4.6	-9.5	58.0	Peak [Scan]	V	100					FUND
4985.972	62.4	4.6	-9.1	57.8	Peak [Scan]	V	100				Pass	BE
5531.062	61.6	4.6	-8.7	57.6	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5260 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	41
Power Setting	8	**Press. (mBars)**	995
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

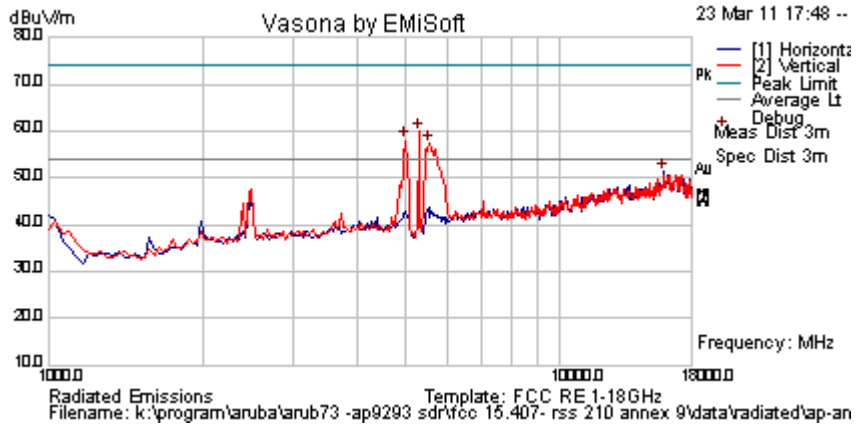


Formally measured emission peaks

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	61.8	4.6	-8.7	57.8	Peak [Scan]	V	100	0			Pass	BE
4985.97194	62.1	4.6	-9.1	57.6	Peak [Scan]	V	100	0			Pass	BE
5258.517	60.4	4.6	-9.5	55.5	Peak [Scan]	V	100					FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5300 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	41
Power Setting	8	**Press. (mBars)**	995
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

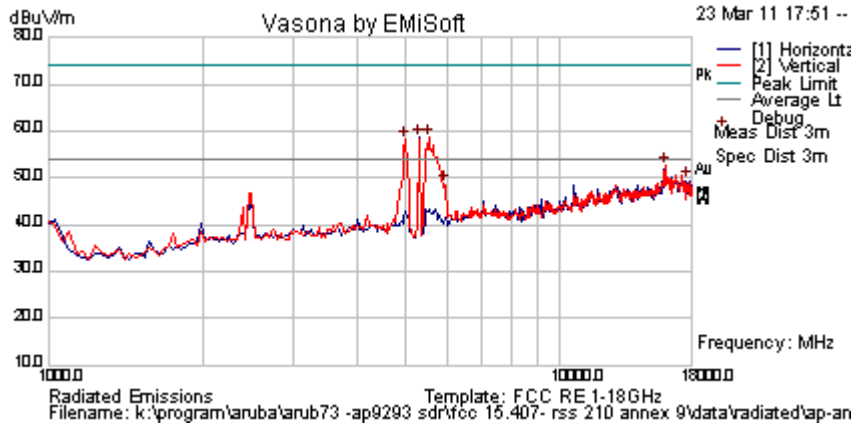


Formally measured emission peaks

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	64.9	4.6	-9.5	60.0	Peak [Scan]	V	100				Pass	FUND
4985.972	62.5	4.6	-9.1	58.0	Peak [Scan]	V	100				Pass	BE

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5320 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	20.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	41
Power Setting	8	**Press. (mBars)**	995
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

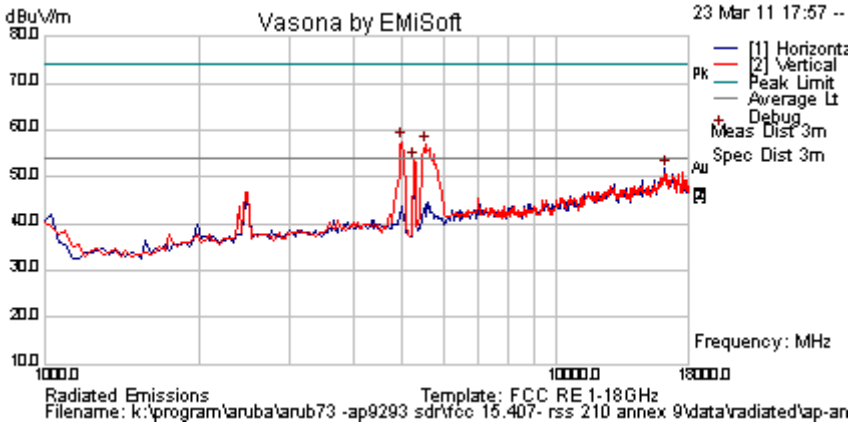


Formally measured emission peaks

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	62.6	4.6	-8.7	58.6	Peak [Scan]	V	100				Pass	BE
5292.585	63.4	4.6	-9.5	58.5	Peak [Scan]	H	100				Pass	FUND
4985.972	62.7	4.6	-9.1	58.1	Peak [Scan]	V	100				Pass	BE

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5270 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	8	**Press. (mBars)**	1002
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

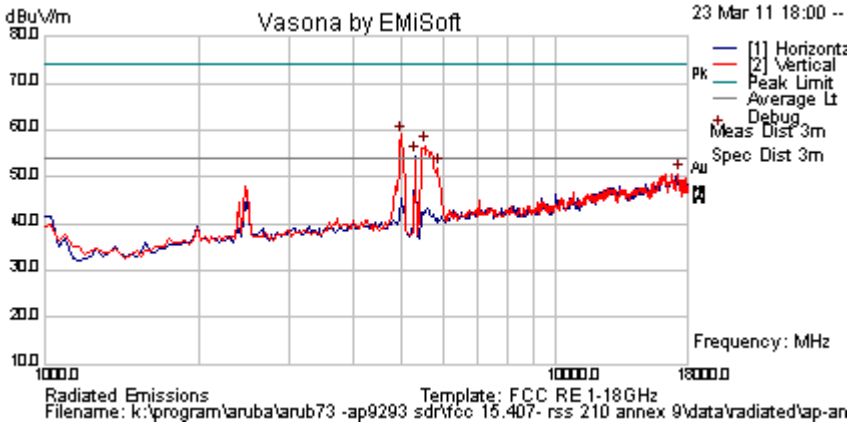


Formally measured emission peaks

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
4985.972	62.1	4.6	-9.1	57.6	Peak [Scan]	V	100				Pass	BE
5531.062	60.8	4.6	-8.7	56.8	Peak [Scan]	V	100				Pass	BE
5258.517	58.3	4.6	-9.5	53.4	Peak [Scan]	V	100				Pass	FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5310 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	8	**Press. (mBars)**	1002
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

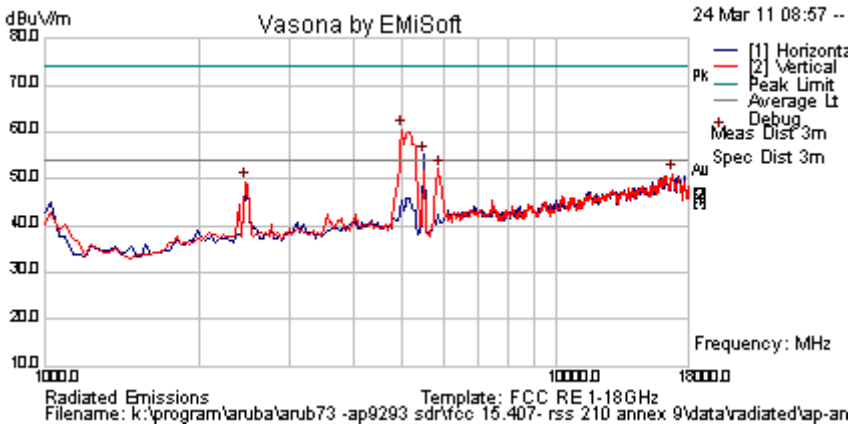


Formally measured emission peaks

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
4985.972	63.6	4.6	-9.1	59.1	Peak [Scan]	V	100				Pass	BE
5531.06212	60.7	4.6	-8.7	56.6	Peak [Scan]	V	100				Pass	BE
5292.585	59.4	4.6	-9.5	54.6	Peak [Scan]	H	100					FUND

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5500 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (ºC)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37%
Power Setting	8	**Press. (mBars)**	1002
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

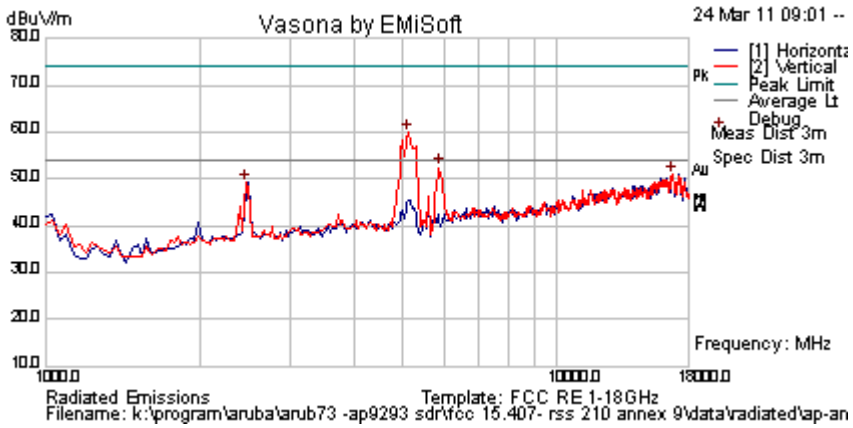


Formally measured emission peaks

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
4985.972	65.1	4.6	-9.1	60.5	Peak [Scan]	V	100				Pass	BE
5496.99399	59.2	4.6	-8.7	55.1	Peak [Scan]	H	100					FUND
5871.743	56.0	4.8	-8.6	52.2	Peak [Scan]	V	100				Pass	NRB
16773.547	40.7	8.6	1.7	51.0	Peak [Scan]	V	100				Pass	NRB
2464.930	57.5	3.0	-11.1	49.4	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5600 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	0.37
Power Setting	8	**Press. (mBars)**	1002
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

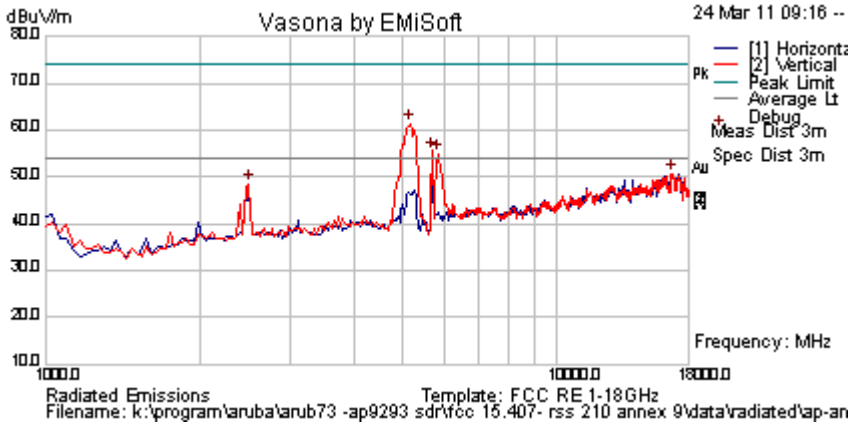


Formally measured emission peaks

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
5122.244	64.2	4.6	-9.0	59.8	Peak [Scan]	V	100				Pass	BE
5871.74349	56.2	4.8	-8.6	52.4	Peak [Scan]	V	100				Pass	NRB
16807.615	40.8	8.6	1.6	51.0	Peak [Scan]	V	100				Pass	NRB
2464.930	57.3	3.0	-11.1	49.2	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5700 MHz	**Engineer**	SB
Variant	802.11a; 6 Mbs	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	0.37
Power Setting	8	**Press. (mBars)**	1002
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

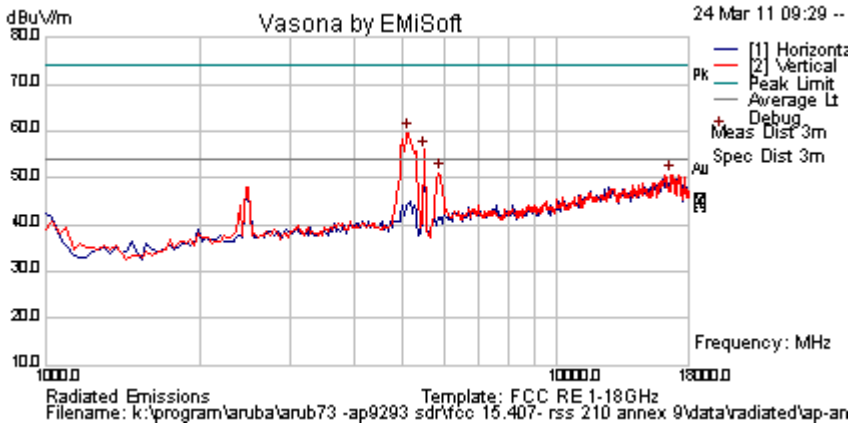


Formally measured emission peaks

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
2495.110	56.4	3.0	-11.1	48.3	Peak Max	V	97	47	74.0	-25.7	Pass	RB
2495.110	39.2	3.0	-11.1	31.1	Average Max	V	97	47	54	-22.9	Pass	RB
5156.313	65.8	4.6	-9.0	61.5	Peak [Scan]	V	100				Pass	NRB
5701.403	59.0	4.7	-8.1	55.7	Peak [Scan]	V	100					FUND
5837.675	58.7	4.8	-8.6	55.0	Peak [Scan]	V	100				Pass	NRB
16739.479	40.5	8.7	1.5	50.7	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5500 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	8	**Press. (mBars)**	1002
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

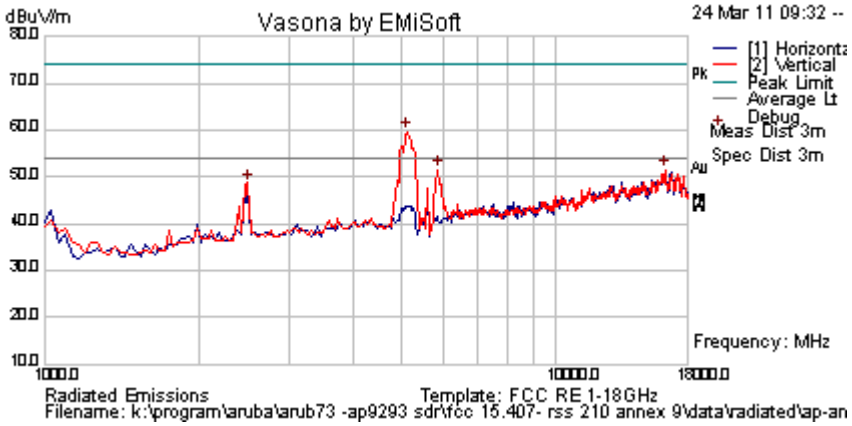


Formally measured emission peaks

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
5122.244	64.0	4.6	-9.0	59.7	Peak [Scan]	V	100				Pass	BE
5496.99399	60.2	4.6	-8.7	56.0	Peak [Scan]	V	100					FUND
5871.743	55.0	4.8	-8.6	51.2	Peak [Scan]	V	100				Pass	NRB
16671.343	40.3	8.7	1.7	50.7	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5600 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	8	**Press. (mBars)**	1002
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

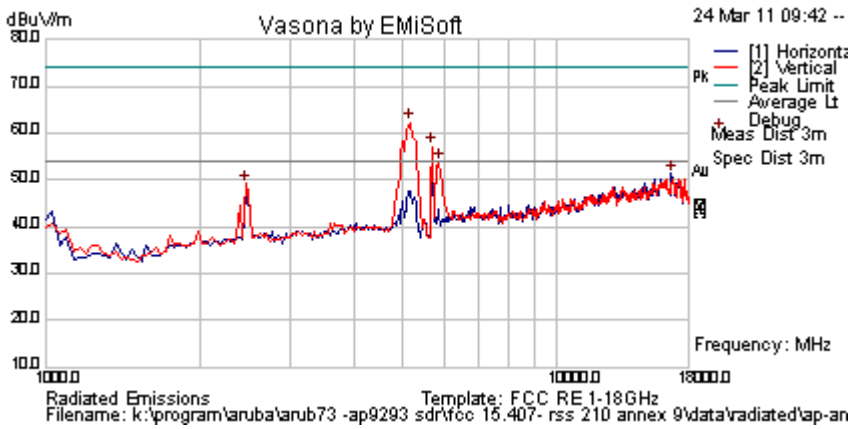


Formally measured emission peaks

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
2495.872	59.0	3.0	-11.1	50.9	Peak Max	V	97	33	74.0	-23.2	Pass	RB
2495.872	41.0	3.0	-11.1	32.9	Average Max	V	97	33	54.0	-21.1	Pass	RB
5122.244	64.0	4.6	-9.0	59.6	Peak [Scan]	V	100				Pass	BE
5871.743	55.4	4.8	-8.6	51.6	Peak [Scan]	V	100				Pass	NRB
16296.593	41.9	8.9	0.7	51.5	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5700 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	8	**Press. (mBars)**	1002
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

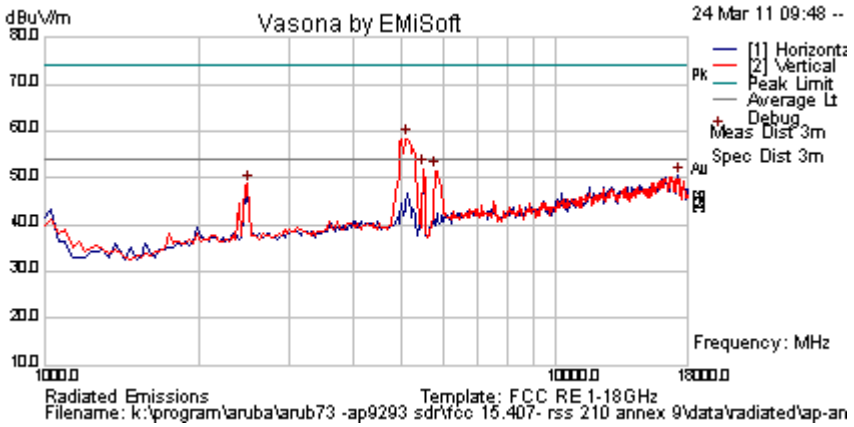


Formally measured emission peaks

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
5156.313	66.7	4.6	-9.0	62.3	Peak [Scan]	V	100				Pass	NRB
5701.40281	60.6	4.7	-8.1	57.2	Peak [Scan]	V	100					FUND
5871.743	57.5	4.8	-8.6	53.7	Peak [Scan]	V	100				Pass	NRB
16705.411	41.2	8.7	1.4	51.3	Peak [Scan]	H	100				Pass	NRB
2464.930	57.2	3.0	-11.1	49.1	Peak [Scan]	V	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5510 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	8	**Press. (mBars)**	1002
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

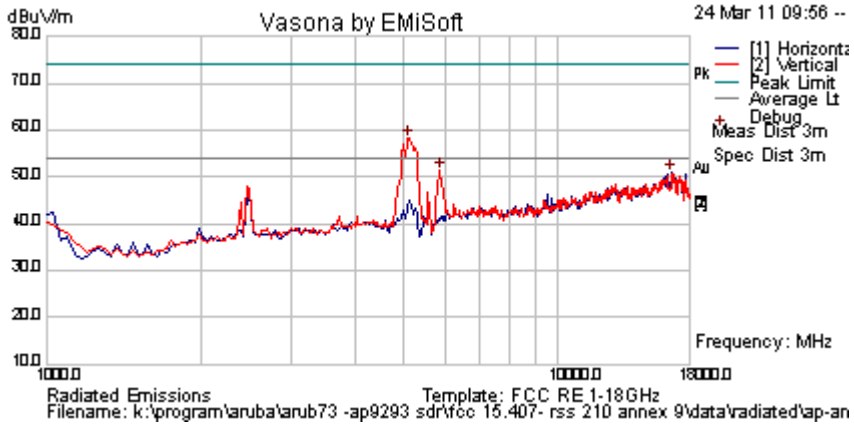


Formally measured emission peaks

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
2498.998	56.4	3.0	-11.1	48.3	Peak Max	V	97	47	74.0	-25.7	Pass	RB
2498.998	39.2	3.0	-11.1	31.1	Average Max	V	97	47	54	-22.9	Pass	RB
5088.176	62.5	4.6	-8.8	58.4	Peak [Scan]	V	100				Pass	BE
5496.99399	56.1	4.6	-8.7	52.0	Peak [Scan]	V	100					FUND
5803.607	55.1	4.8	-8.3	51.6	Peak [Scan]	V	100				Pass	NRB
17284.569	40.3	8.6	1.6	50.5	Peak [Scan]	H	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5590 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	8	**Press. (mBars)**	1002
Antenna	AP-ANT-12 14 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

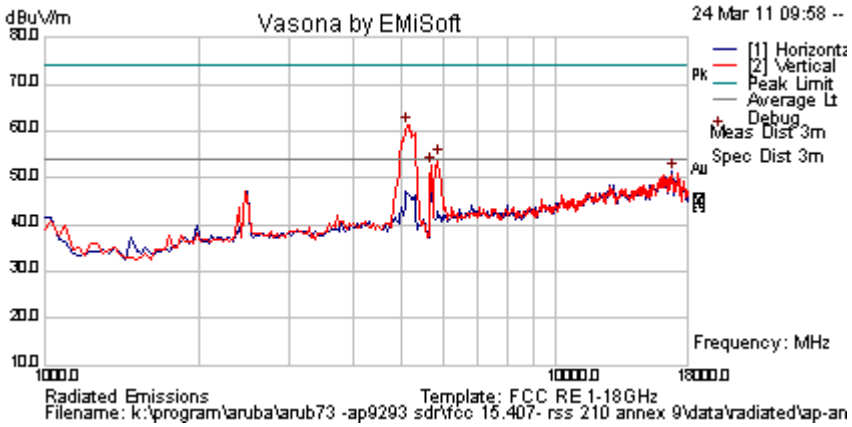


Formally measured emission peaks

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
5088.176	62.4	4.6	-8.8	58.2	Peak [Scan]	V	100				Pass	BE
5871.74349	55.3	4.8	-8.6	51.4	Peak [Scan]	V	100				Pass	NRB
16671.343	40.4	8.7	1.7	50.8	Peak [Scan]	H	100				Pass	NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	5690 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (°C)**	21.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	37
Power Setting	8	**Press. (mBars)**	1002
Antenna	AP-ANT-10 6 dBi	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



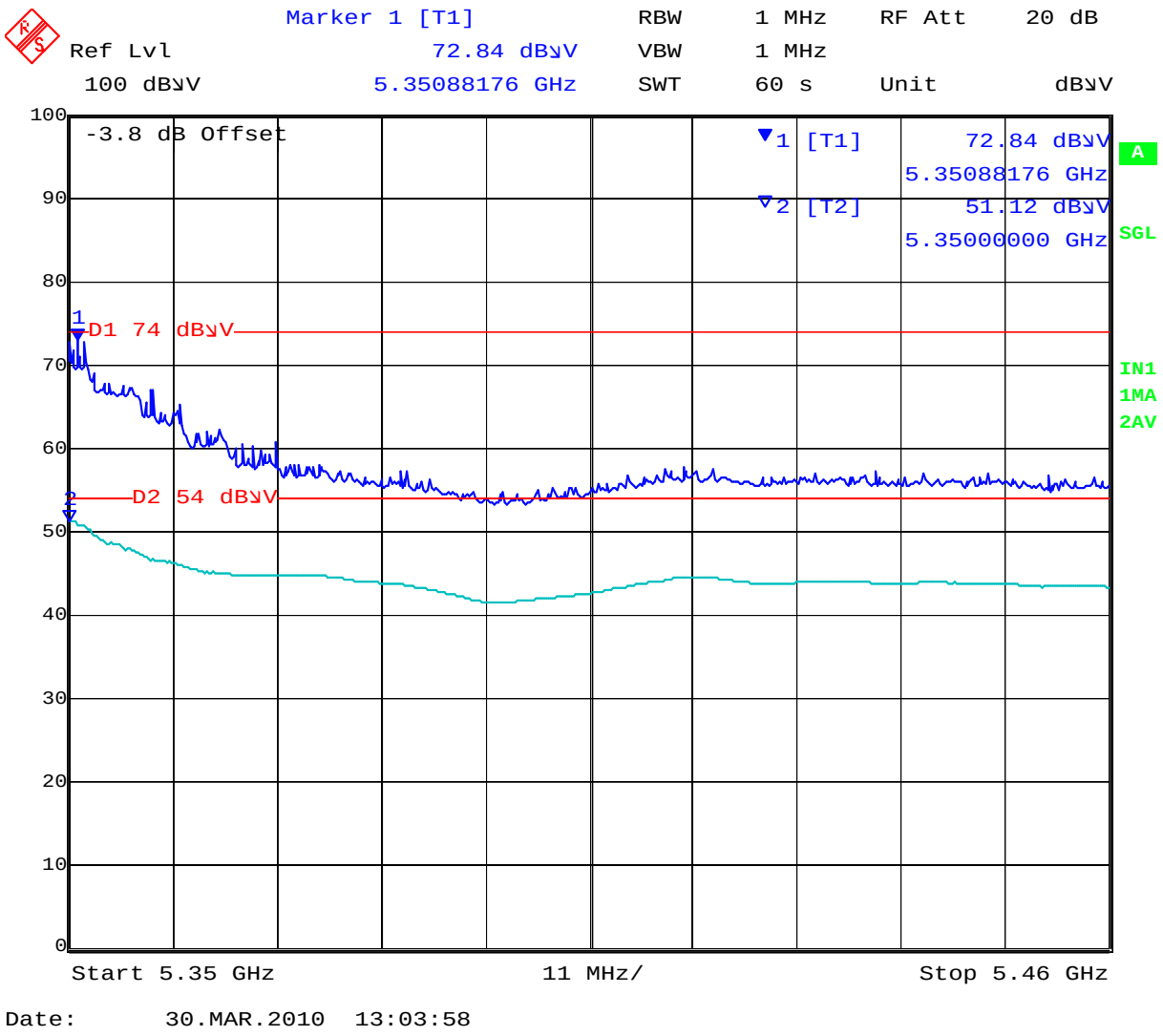
Formally measured emission peaks

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
5122.244	65.6	4.6	-9.0	61.3	Peak [Scan]	V	100				Pass	BE
5871.74349	57.9	4.8	-8.6	54.0	Peak [Scan]	V	100				Pass	NRB
5701.403	56.1	4.7	-8.1	52.7	Peak [Scan]	V	100					FUND
16841.683	41.0	8.6	1.8	51.4	Peak [Scan]	H	100				Pass	NRB

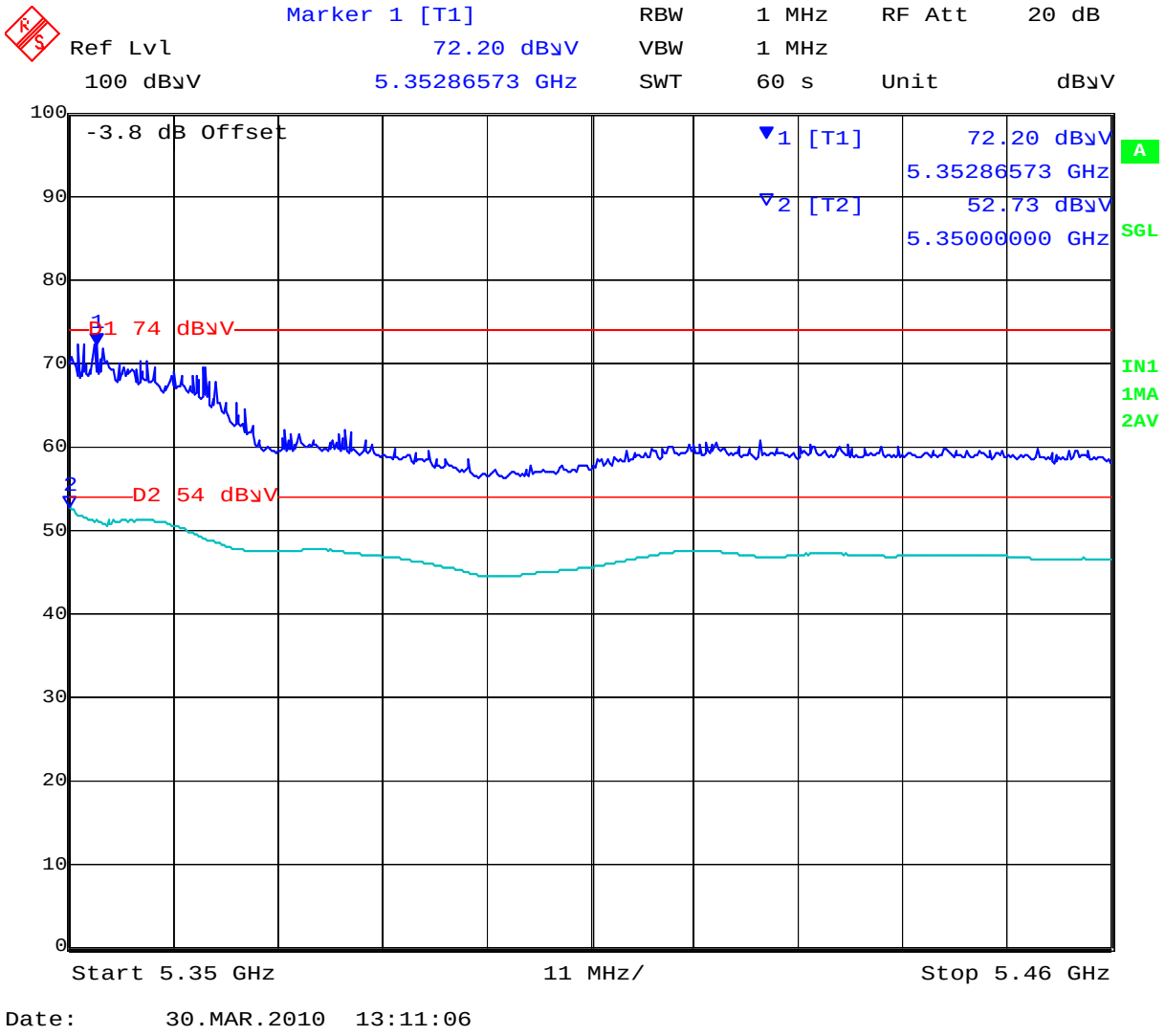
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

5.1.7.4. Integral Antenna – Radiated Band-Edge

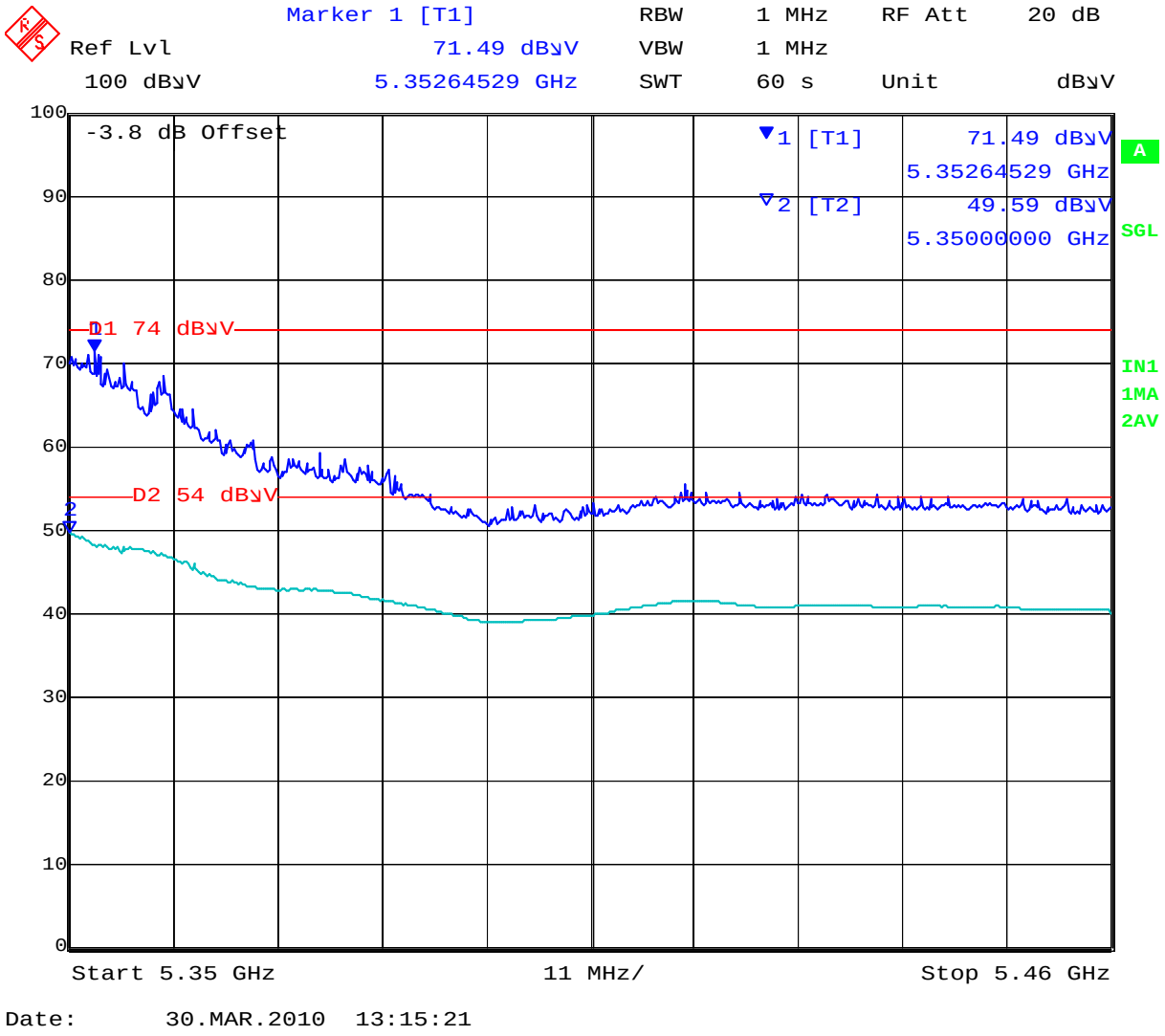
Channel 5320: 5250 – 5350 MHz: 802.11a



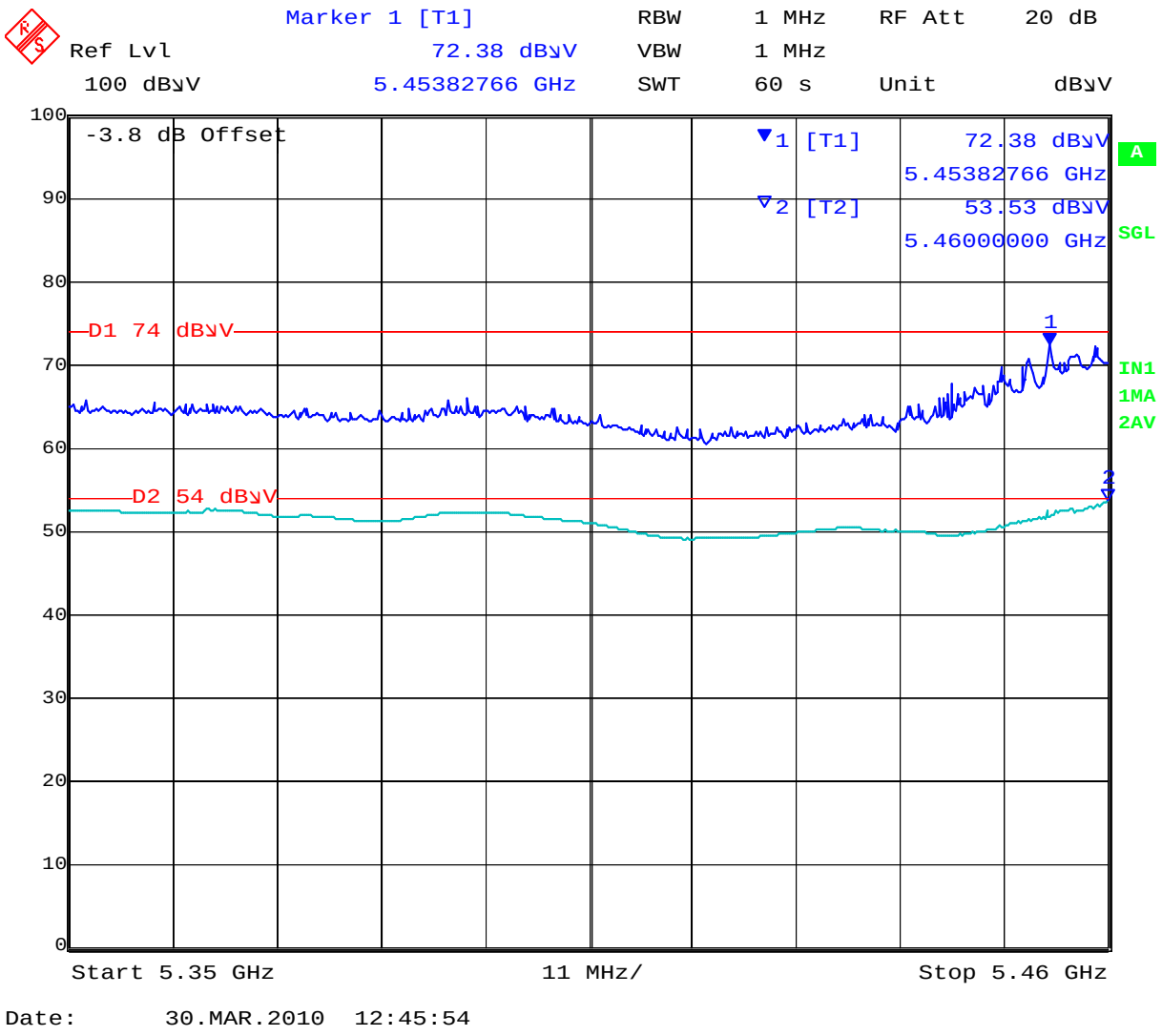
Integral Antenna Channel 5320: 5250 – 5350 MHz: 802.11n HT-20



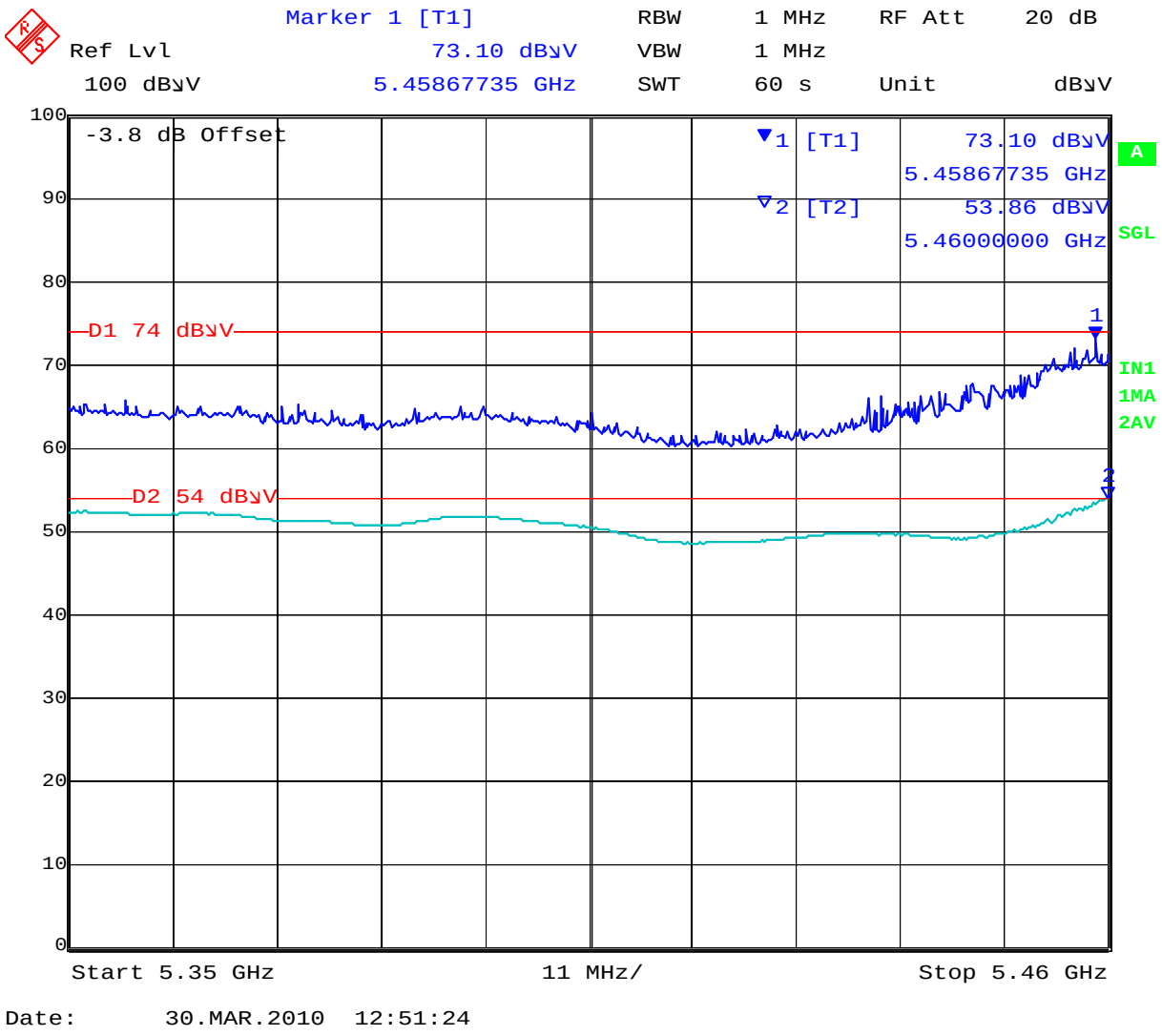
Integral Antenna Channel 5310: 5250 – 5350 MHz: 802.11n HT-40



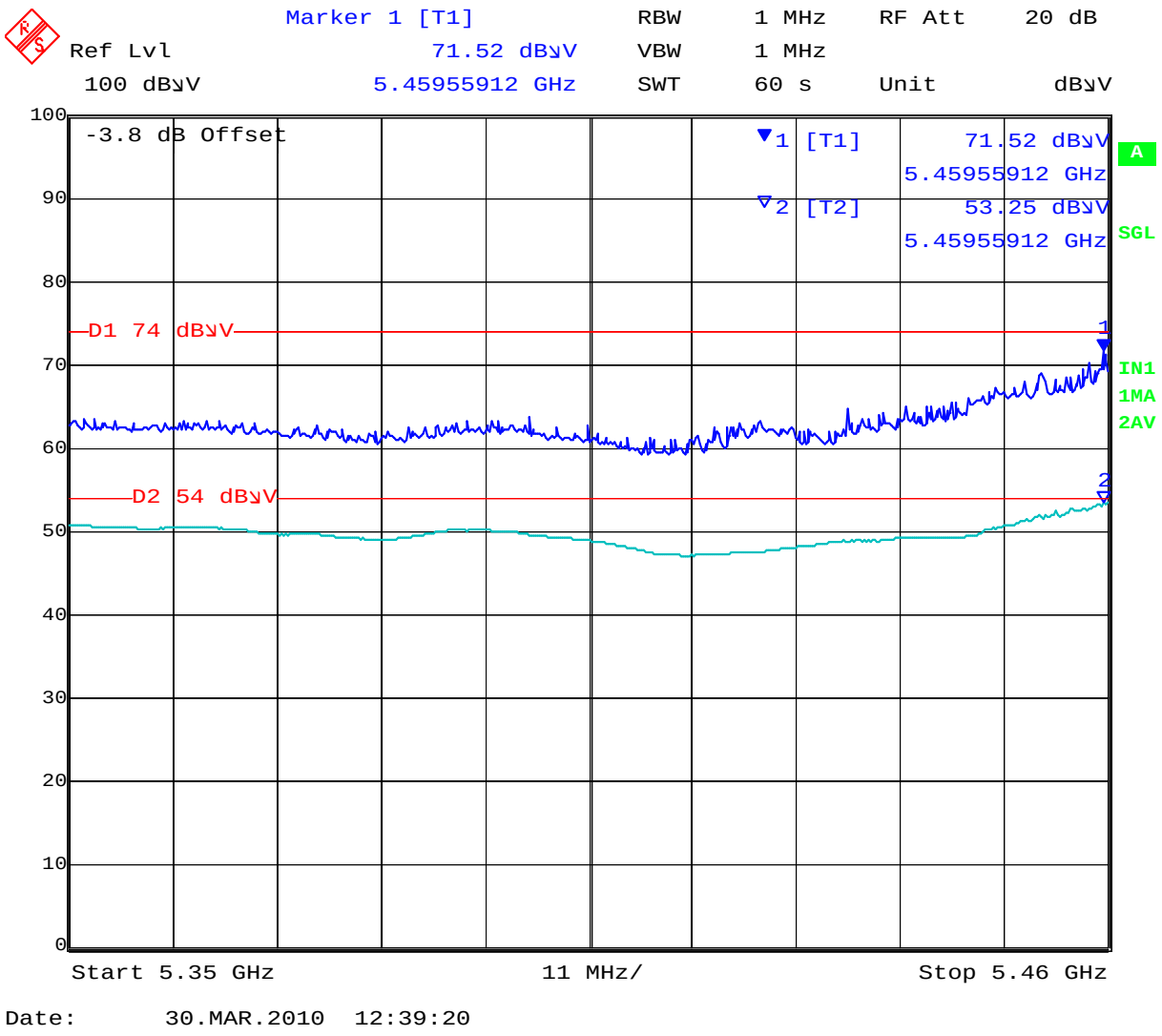
Integral Antenna Channel 5500: 5470 – 5725 MHz: 802.11a



Integral Antenna Channel 5500: 5470 – 5725 MHz: 802.11n HT-20

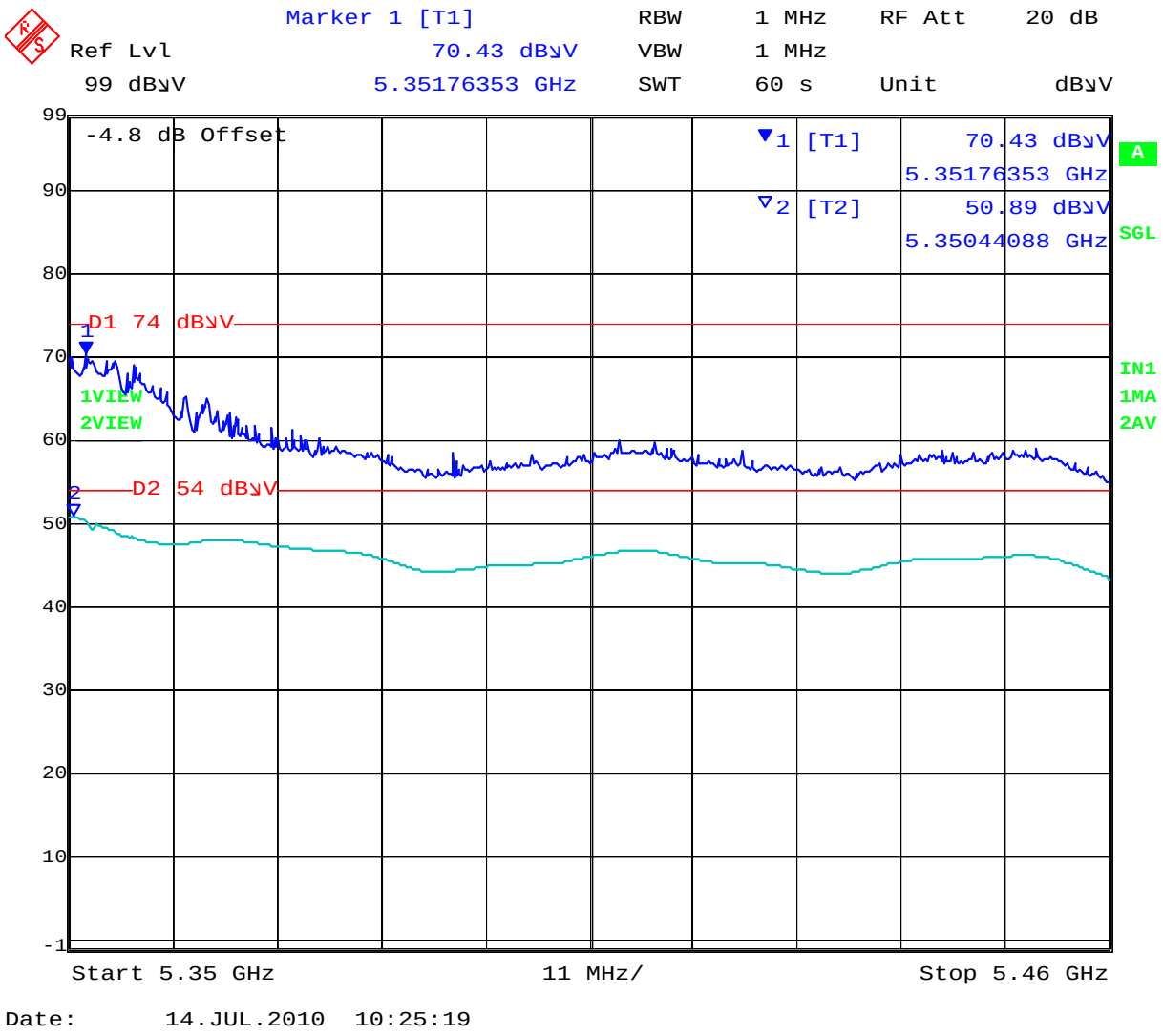


Integral Antenna Channel 5510: 5470 – 5725 MHz: 802.11n HT-40

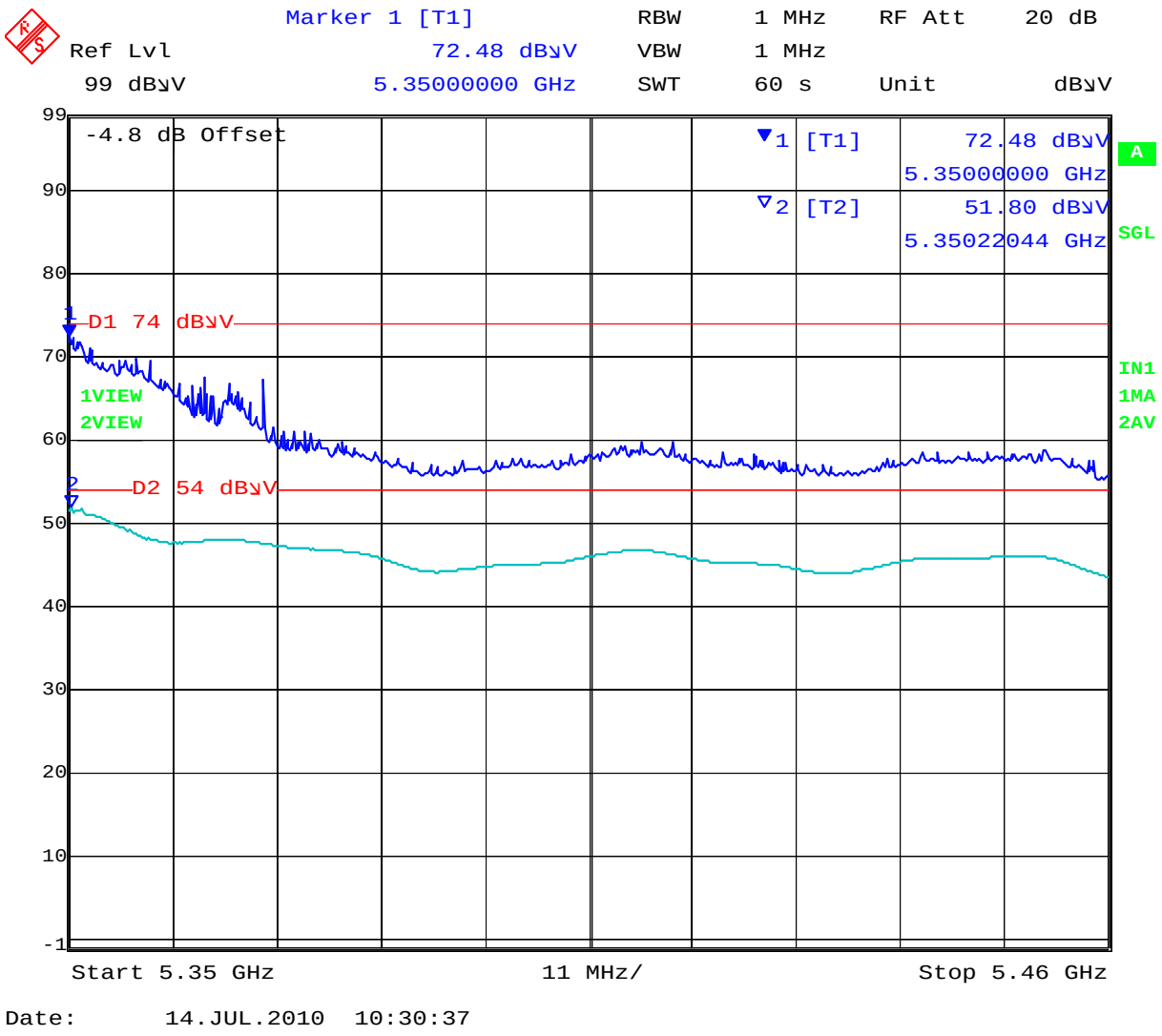


5.1.7.5. AP-ANT-10 – Radiated Band-Edge

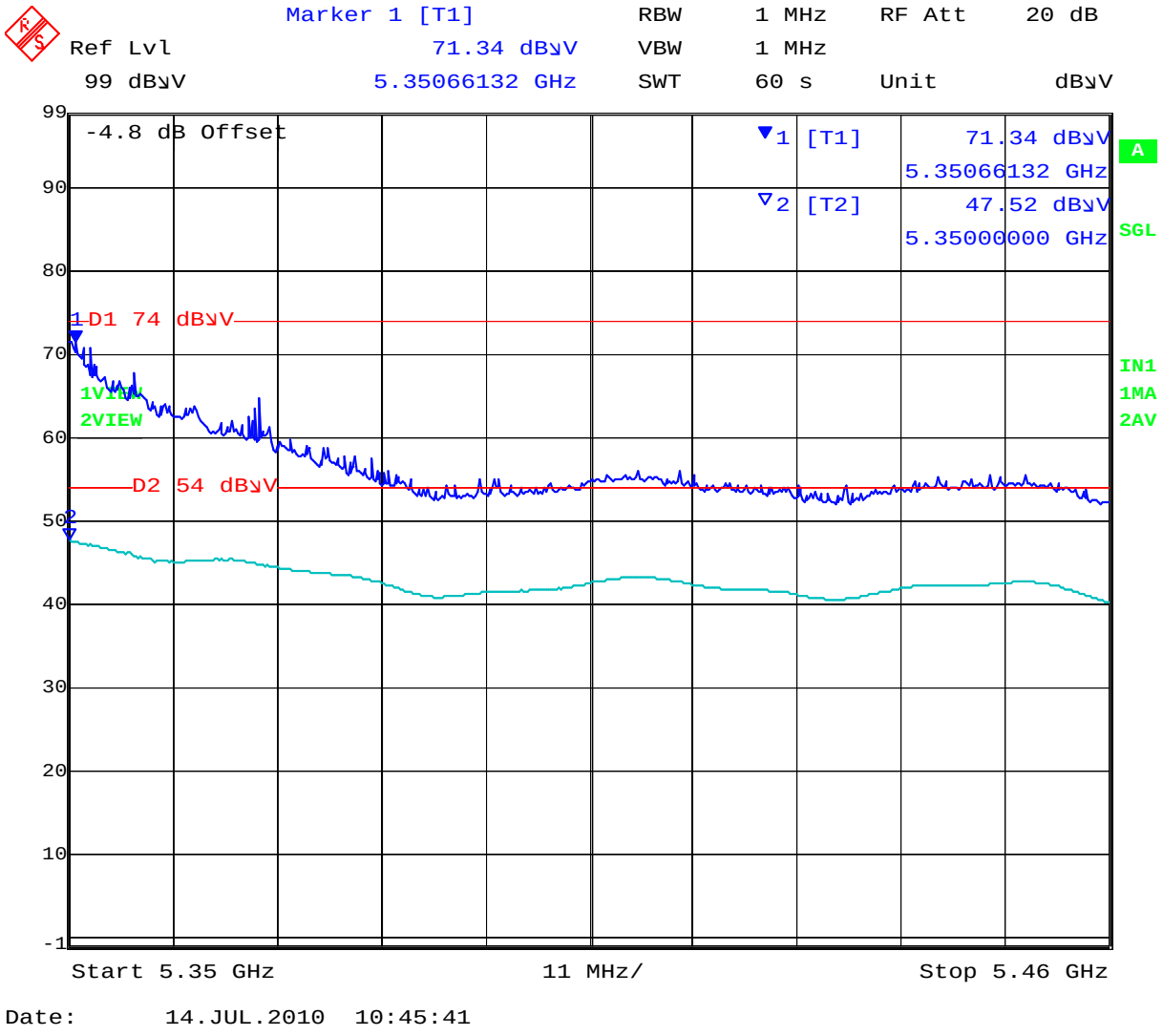
AP-ANT-10 Channel 5320: 5250 – 5350 MHz: 802.11a



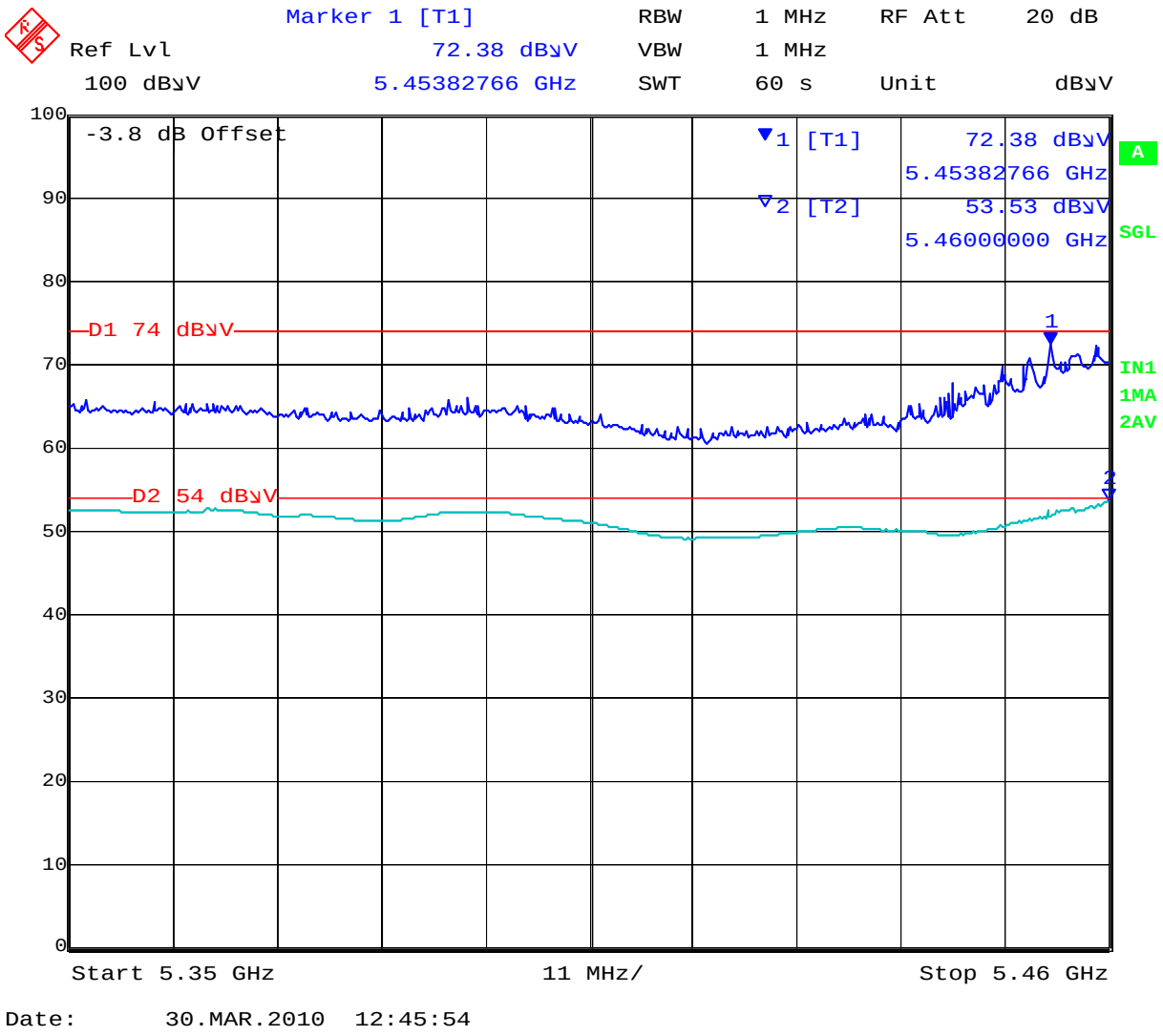
AP-ANT-10 Channel 5320: 5250 – 5350 MHz: 802.11n HT-20



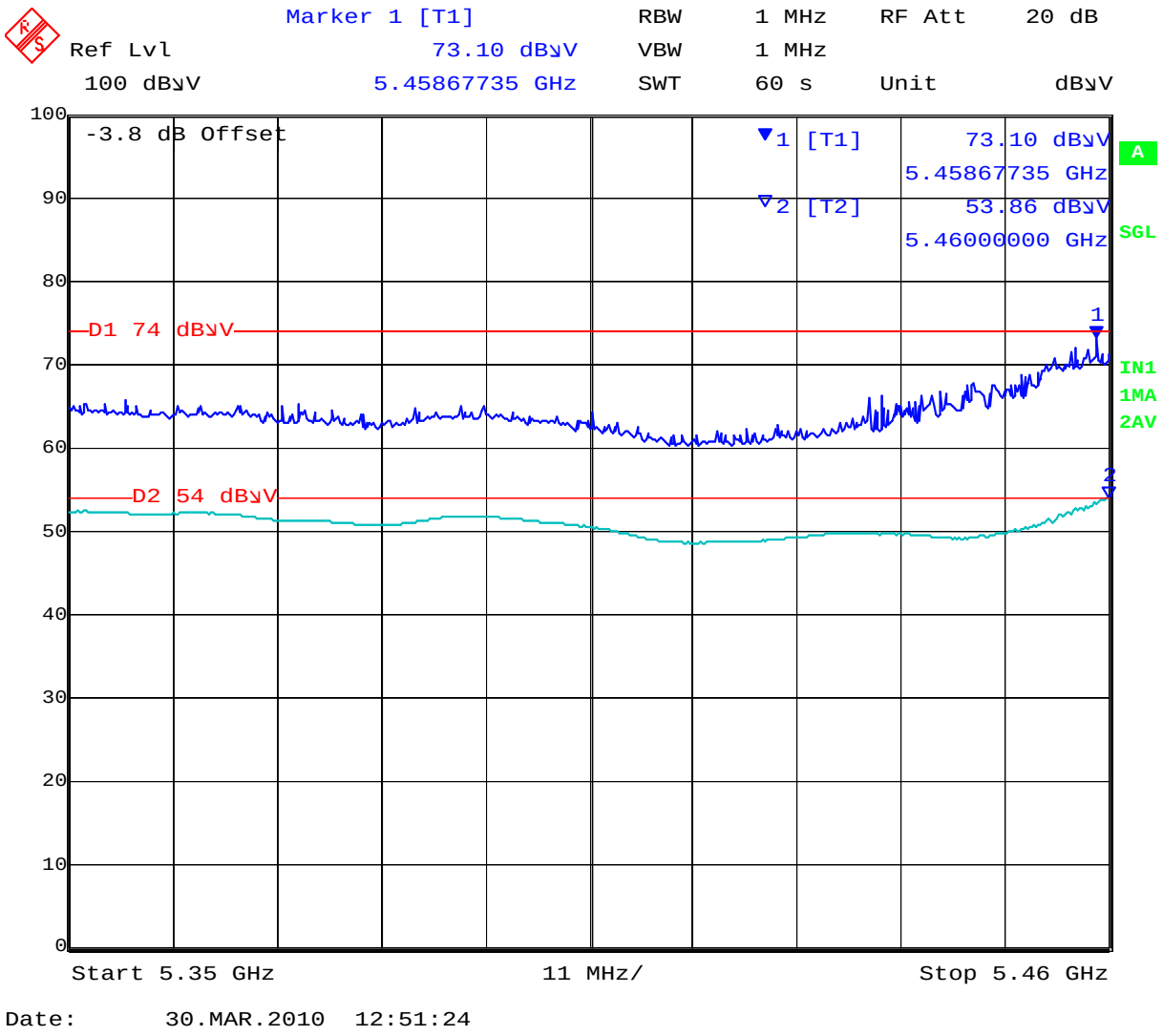
AP-ANT-10 Channel 5310: 5250 – 5350 MHz: 802.11n HT-40



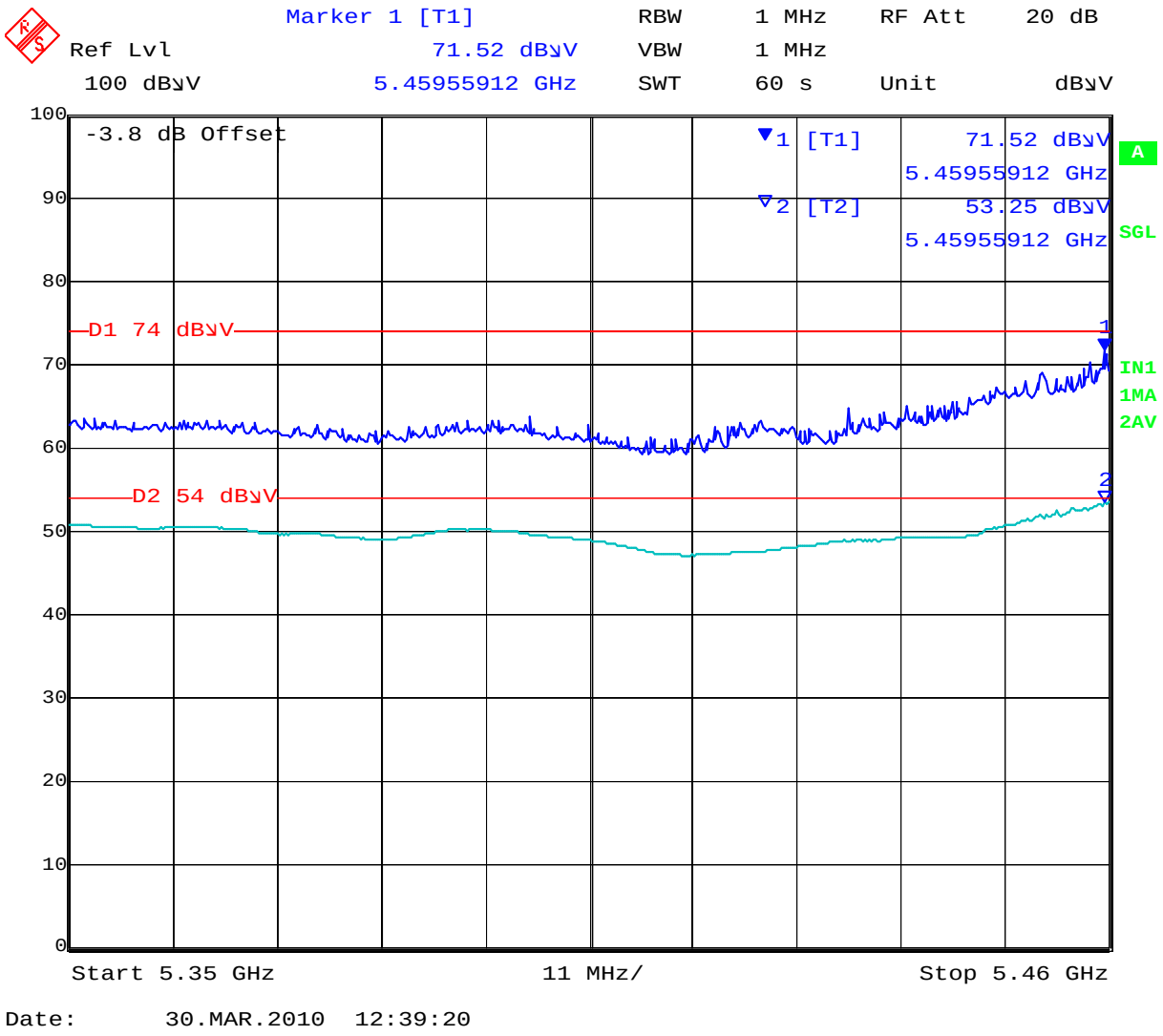
AP-ANT-10 Channel 5500: 5470 – 5725 MHz: 802.11a



AP-ANT-10 Channel 5500: 5470 – 5725 MHz: 802.11n HT-20

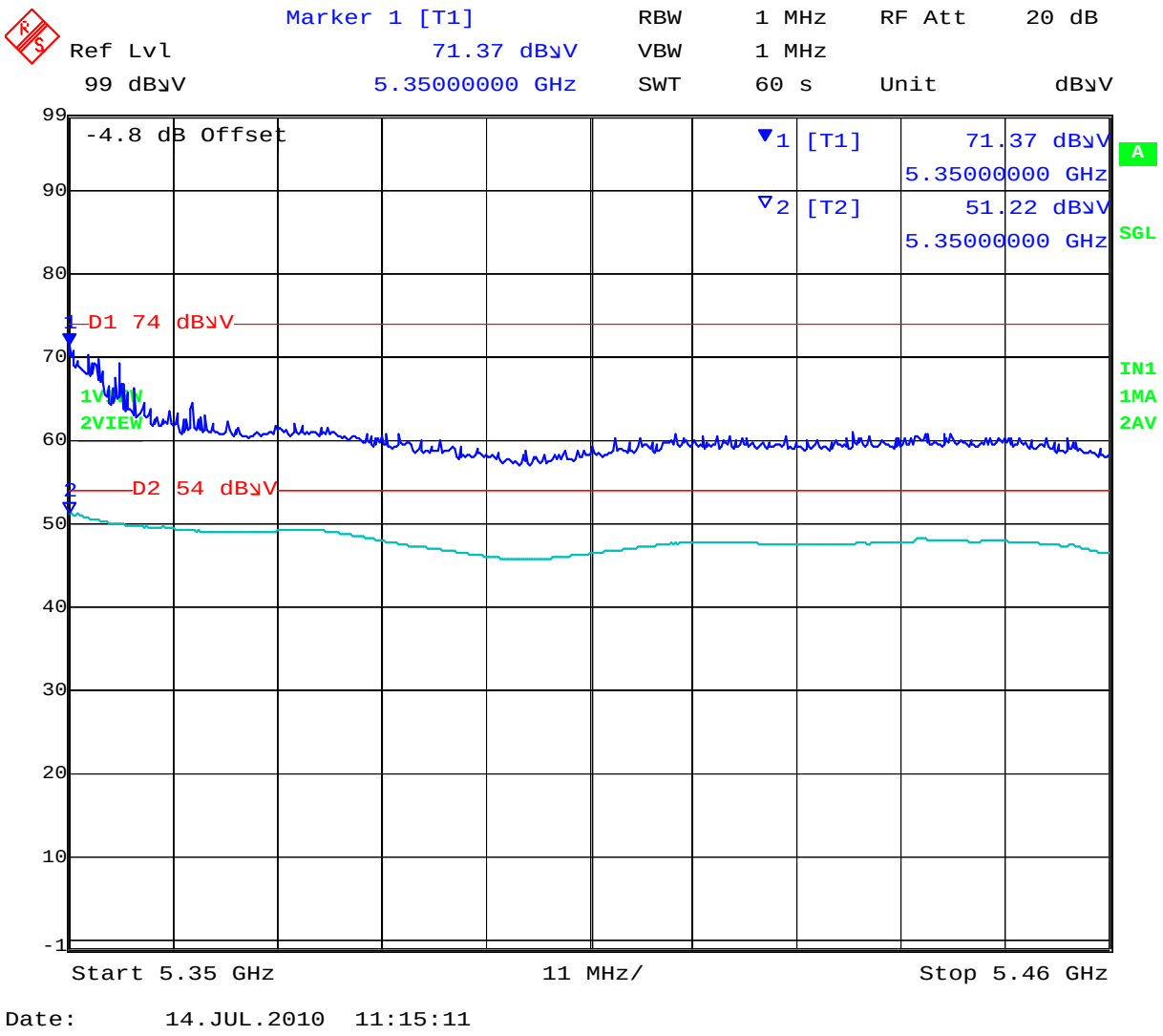


AP-ANT-10 Channel 5510: 5470 – 5725 MHz: 802.11n HT-40

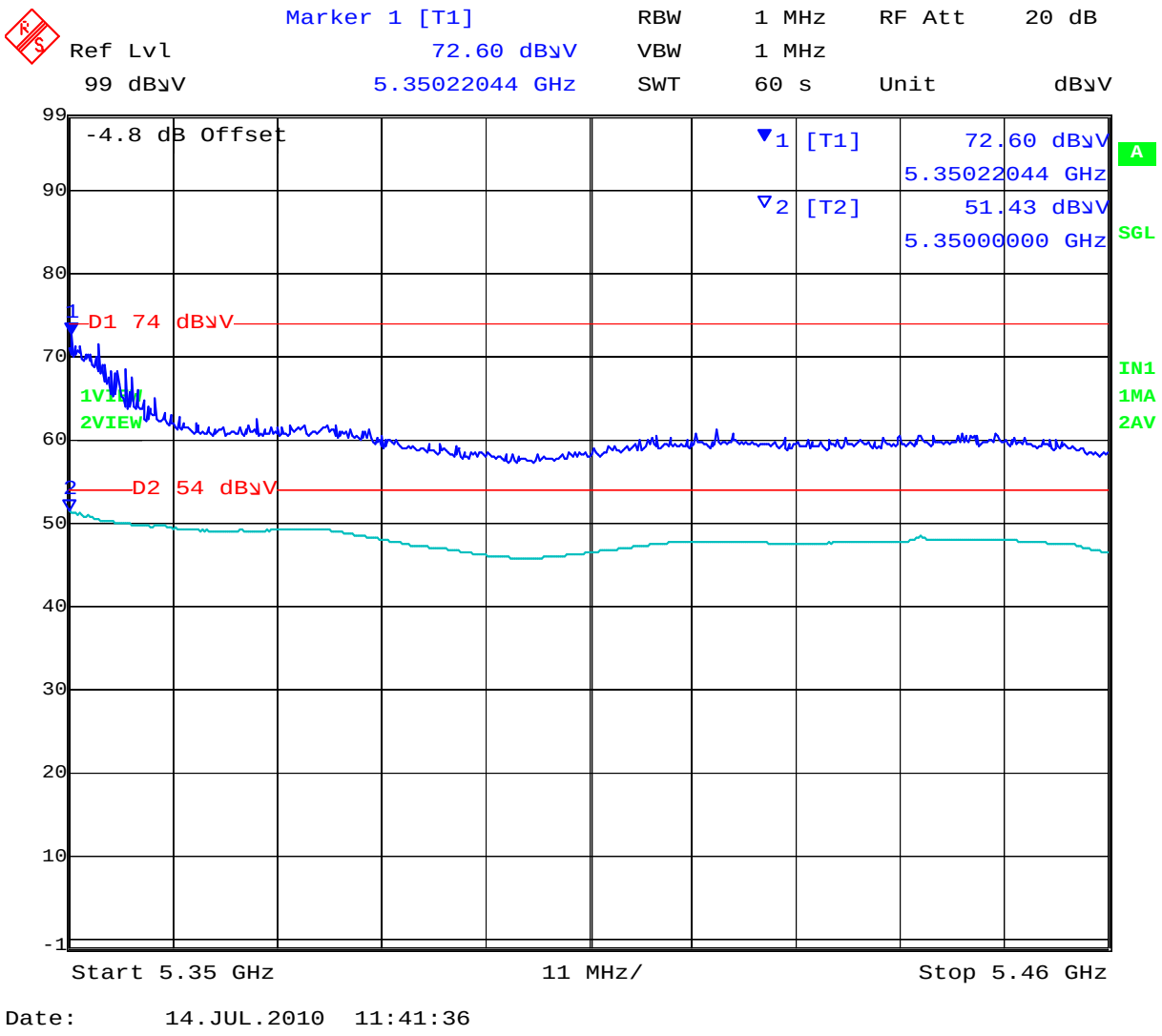


5.1.7.6. AP-ANT-12 – Radiated Band-Edge

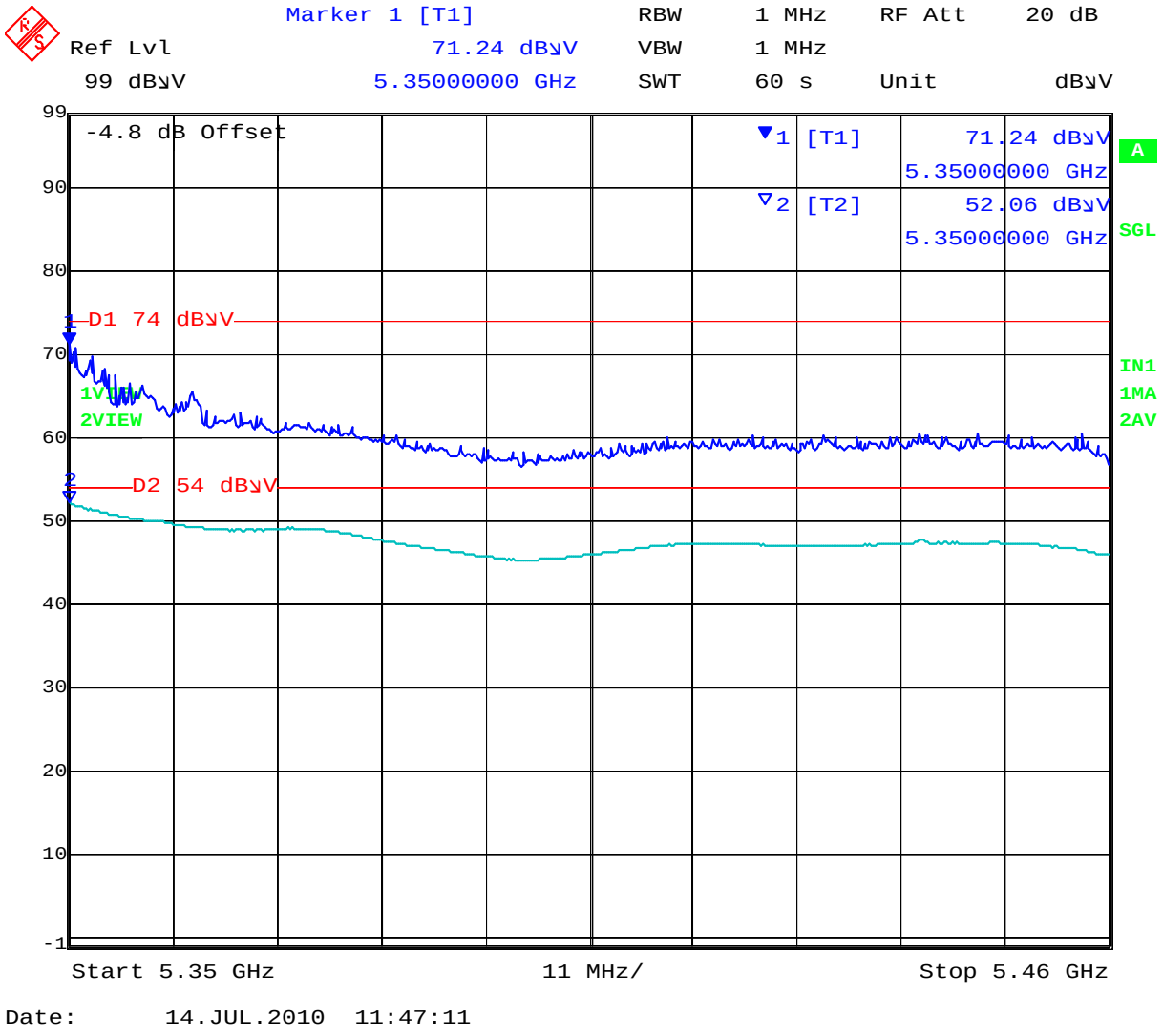
AP-ANT-12 Channel 5320: 5250 – 5350 MHz: 802.11a



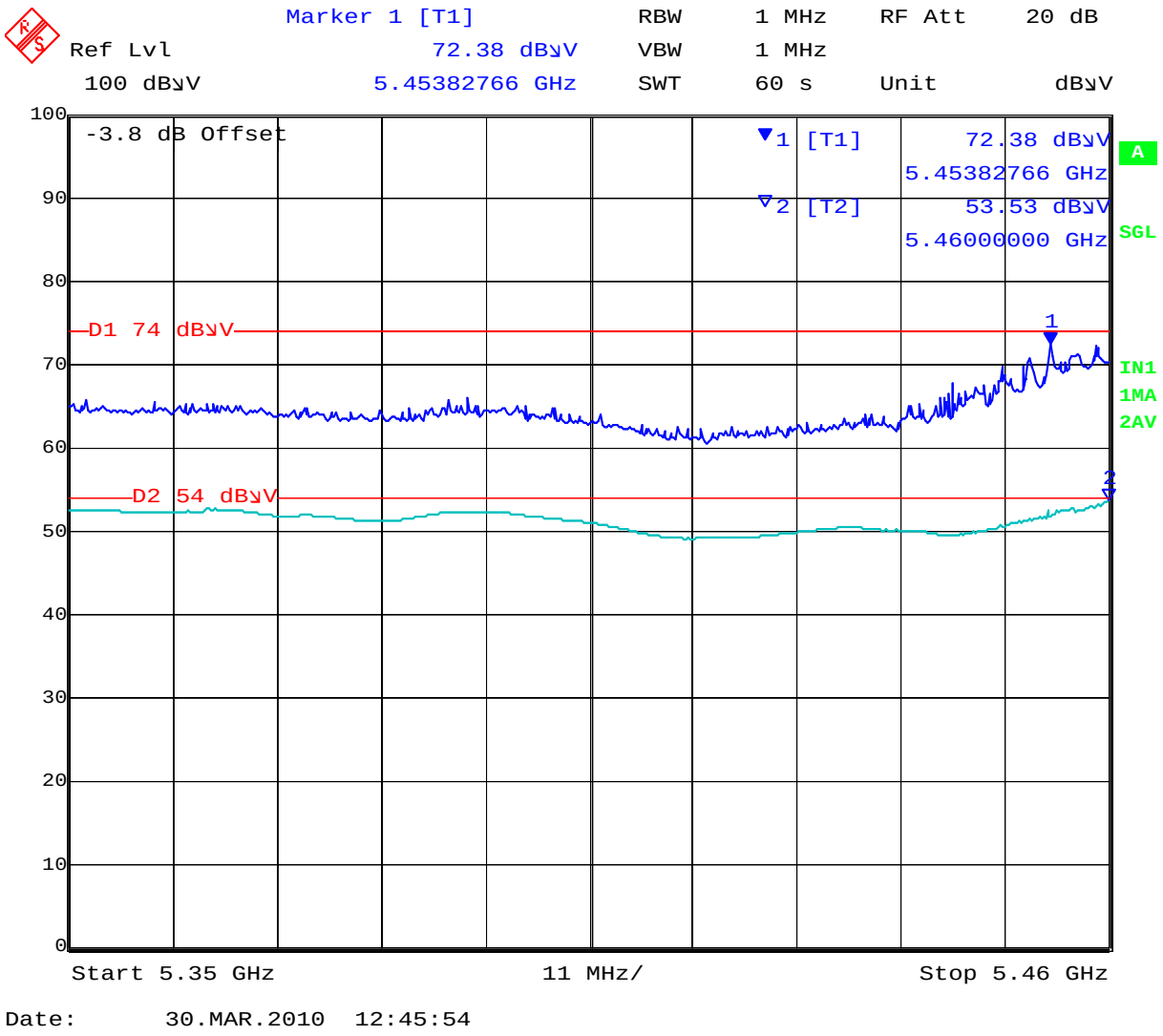
AP-ANT-12 Channel 5320: 5250 – 5350 MHz: 802.11n HT-20



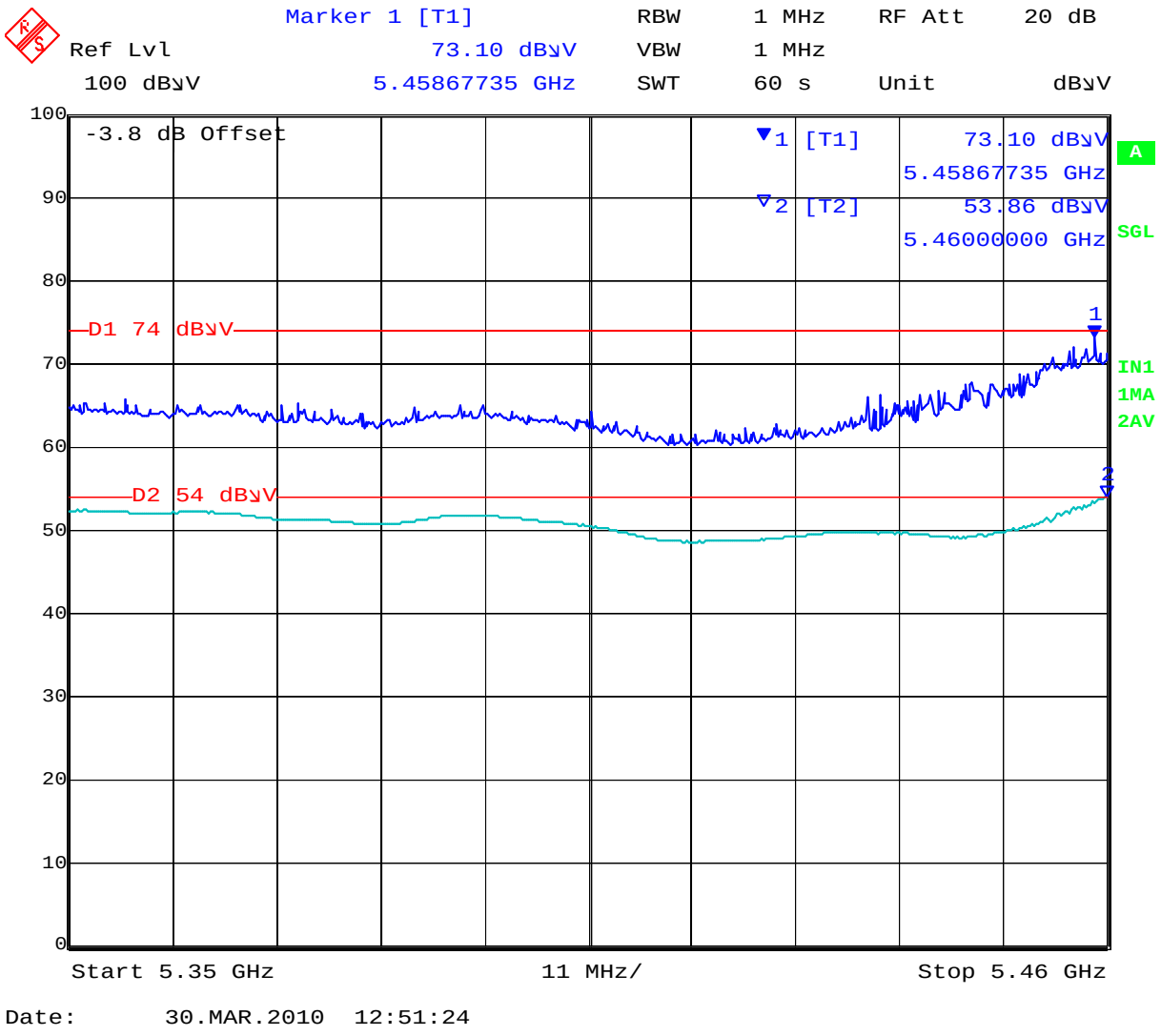
AP-ANT-12 Channel 5310: 5250 – 5350 MHz: 802.11n HT-40



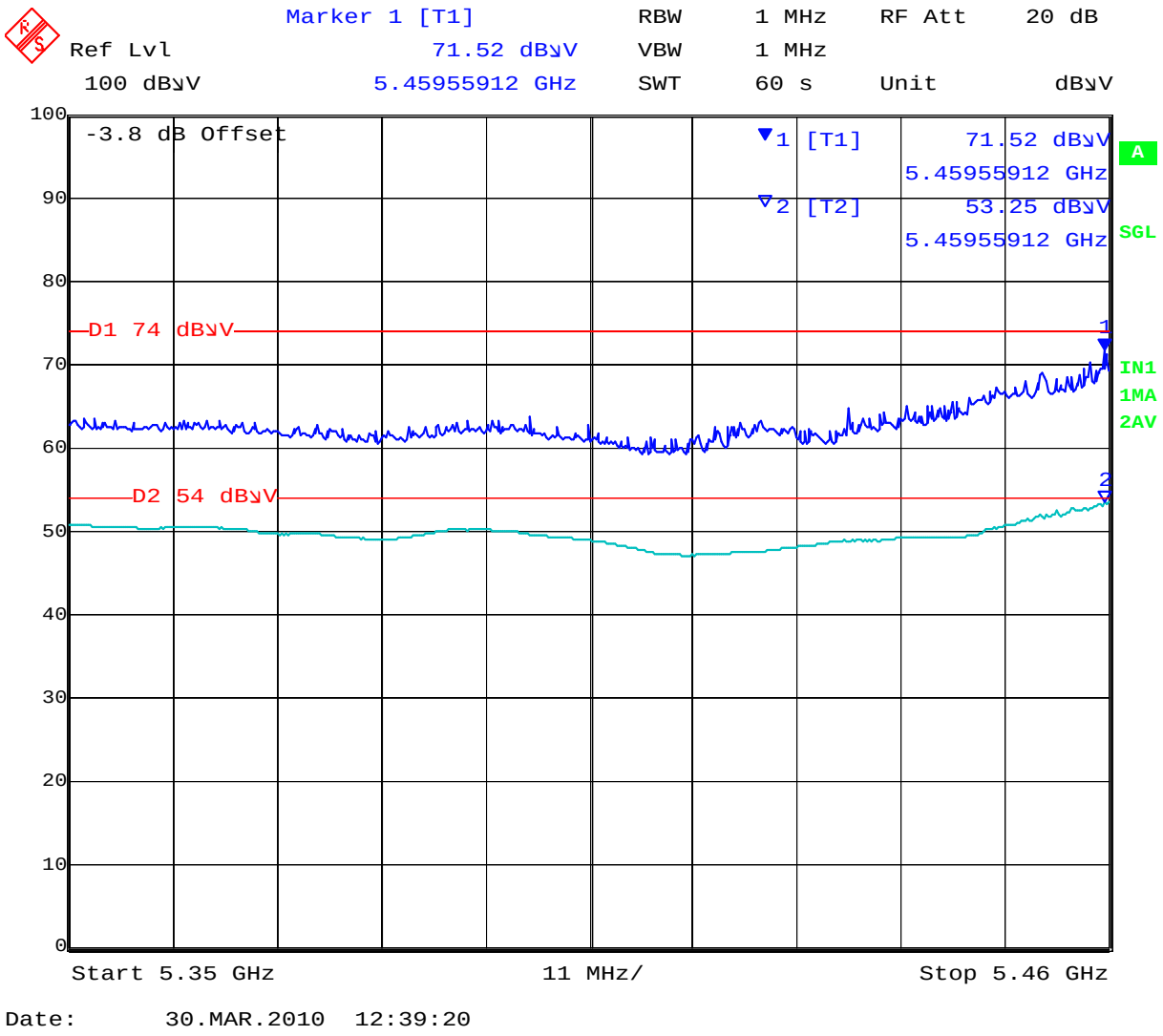
AP-ANT-12 Channel 5500: 5470 – 5725 MHz: 802.11a



AP-ANT-12 Channel 5500: 5470 – 5725 MHz: 802.11n HT-20

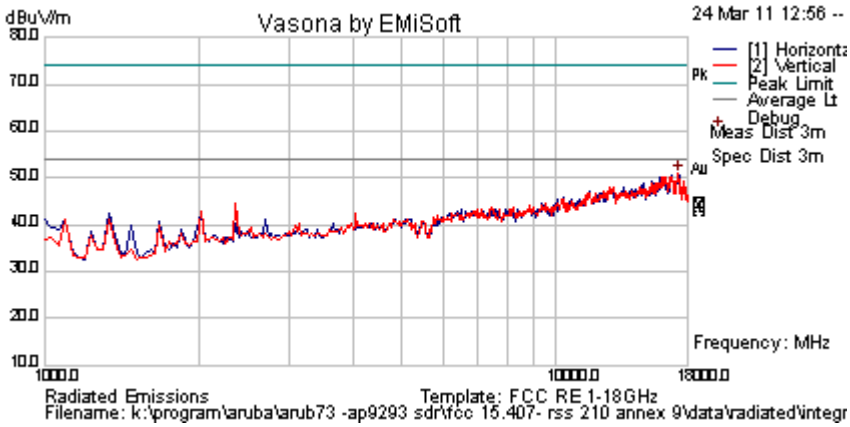


AP-ANT-12 Channel 5510: 5470 – 5725 MHz: 802.11n HT-40



5.1.7.7. Receiver Radiated Spurious Emissions

Test Freq.	5600 MHz	**Engineer**	GMH
Variant	Receive in Test Utility	**Temp (ºC)**	19.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	38
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	993
Antenna	Integral Antenna		
Test Notes 1			
Test Notes 2			

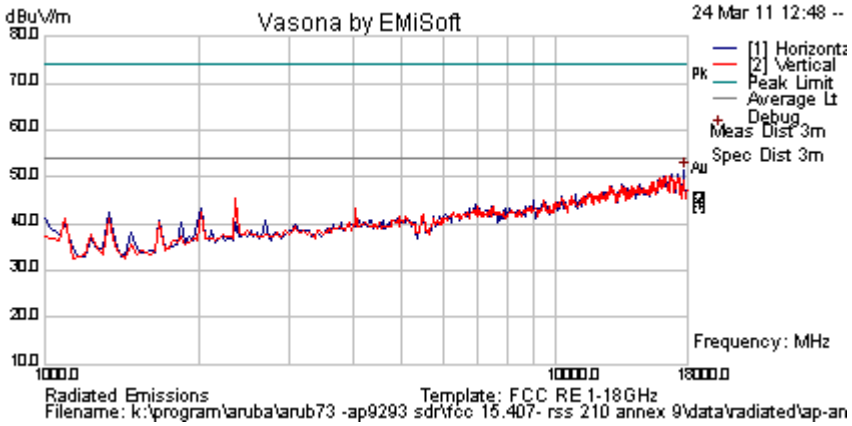


Formally measured emission peaks

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
No Receiver Emissions within 6dB of limit.												

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

Test Freq.	5600 MHz	**Engineer**	GMH
Variant	Receive in Test Utility	**Temp (°C)**	19.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	38
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	993
Antenna	AP-ANT-10 6dBi		
Test Notes 1			
Test Notes 2			

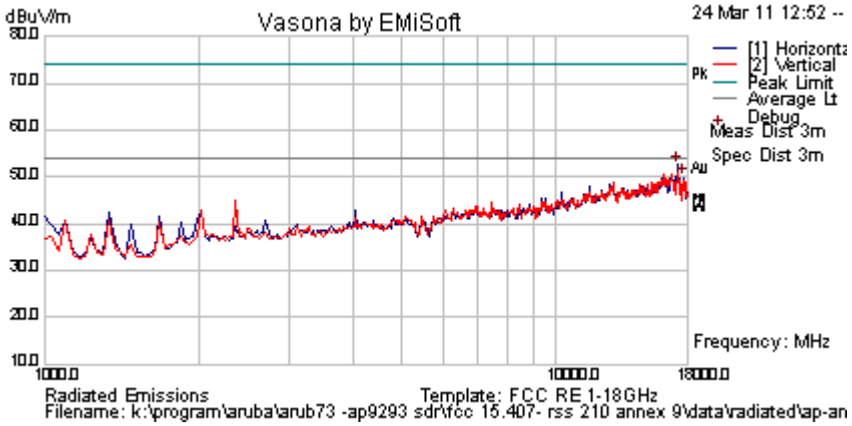


Formally measured emission peaks

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
No Receiver Emissions within 6dB of limit.												

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

Test Freq.	5600 MHz	**Engineer**	GMH
Variant	Receive in Test Utility	**Temp (°C)**	19.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	38
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	993
Antenna	AP-ANT-12 14 dBi		
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
No Receiver Emissions within 6dB of limit.												

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

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

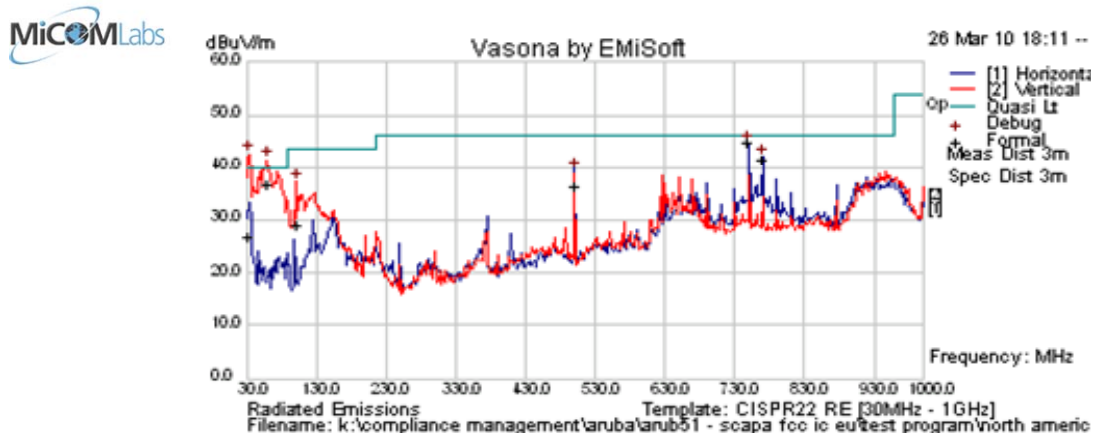
Traceability

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

5.1.7.8. Radiated Spurious Emissions – 30MHz – 1000MHz

Note: No radio emissions were present below 1 GHz. Emissions were investigated while the unit was transmitting at maximum power and in receive mode for both AC Adaptor powered and POE (Power Over Ethernet) configuration.

Test Freq.	2437 MHz	**Engineer**	CSB
Variant	Digital Emissions	**Temp (°C)**	23
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	38
Power Setting	N/A - Receive Mode	**Press. (mBars)**	1013
Antenna	Integral Antennas		
Test Notes 1	AC Power - 120V AC; 60 Hz		
Test Notes 2			

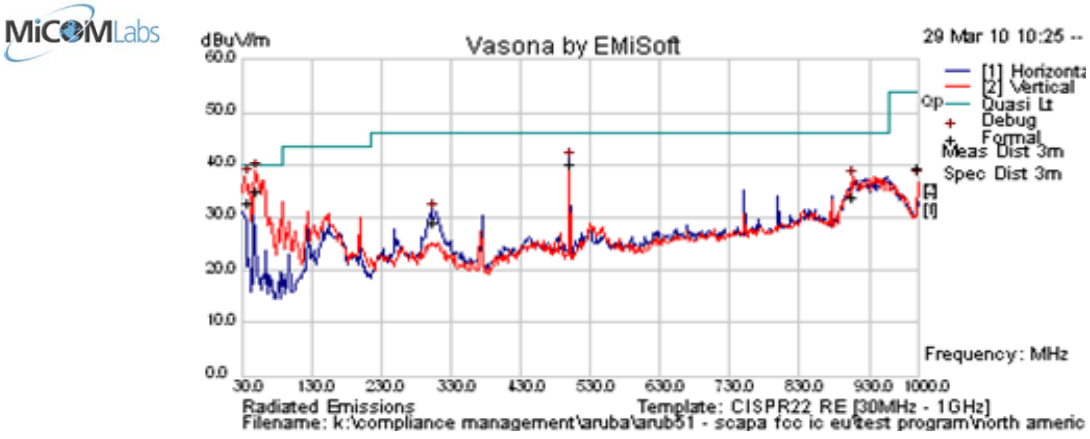


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
33.051	35.2	3.4	-11.8	26.8	Quasi Max	V	261	113	40	-13.2	Pass	DIG
60.938	56.8	3.8	-23.8	36.9	Quasi Max	V	134	77	40	-3.1	Pass	DIG
103.311	44.8	4.2	-19.9	29.1	Quasi Max	V	98	102	43.5	-14.4	Pass	DIG
499.984	42.8	6.0	-12.6	36.3	Quasi Max	H	98	142	46	-9.8	Pass	DIG
749.984	46.9	6.9	-9.0	44.8	Quasi Max	H	109	350	46	-1.2	Pass	DIG
769.990	43.2	7.0	-8.8	41.4	Quasi Max	H	109	353	46	-4.6	Pass	DIG

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

Test Freq.	2437 MHz - Rx Mode	**Engineer**	CSB
Variant	Digital Emissions	**Temp (ºC)**	21.5
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	36
Power Setting	N/A	**Press. (mBars)**	1008
Antenna	Integral Antenna		
Test Notes 1	EUT powered via PoE (Power Over Ethernet) - PowerDsine 7001G		
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
40.261	46.0	3.6	-17.0	32.6	Quasi Max	V	101	176	40	-7.4	Pass	DIG
50.782	54.4	3.7	-23.2	35.0	Quasi Max	V	98	113	40	-5.0	Pass	DIG
305.043	40.3	5.2	-16.7	28.9	Quasi Max	H	99	48	46	-17.1	Pass	DIG
499.989	46.8	6.0	-12.6	40.2	Quasi Max	V	116	228	46	-5.8	Pass	DIG
906.845	33.7	7.3	-7.2	33.9	Quasi Max	V	132	14	46	-12.1	Pass	DIG
999.988	37.7	7.7	-6.1	39.2	Quasi Max	V	108	353	54	-14.8	Pass	DIG

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

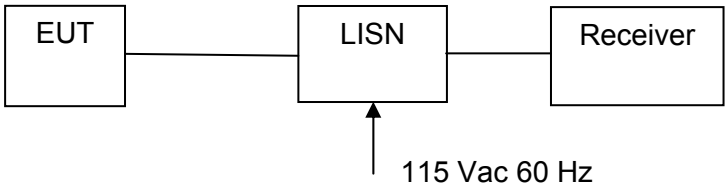
5.1.8. AC Wireline Conducted Emissions (150 kHz – 30 MHz)

FCC, Part 15 Subpart C §15.407(b)(6)/15.207
Industry Canada RSS-Gen §7.2.2

Test Procedure

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

Test Measurement Set up



Measurement set up for AC Wireline Conducted Emissions Test

Specification

Limit

§15.407 (b)(6); Any U-NII devices using an AC power line are required to comply also with the limits set forth in Section 15.207.

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

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

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

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

* Decreases with the logarithm of the frequency

Laboratory Measurement Uncertainty for Conducted Emissions

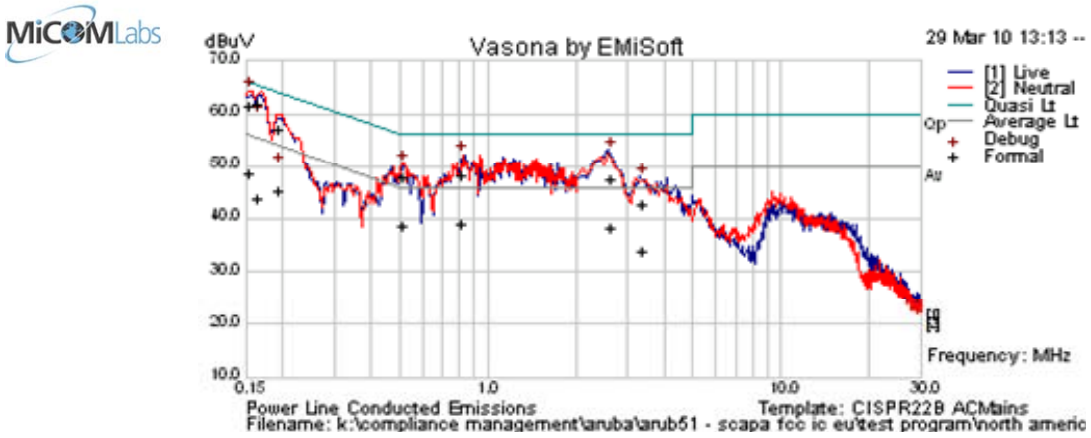
Measurement uncertainty	±2.64 dB

Traceability

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

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

Test Freq.	2437 - Rx Mode	**Engineer**	CSB
Variant	AC Line Emissions	**Temp (ºC)**	22
Freq. Range	0.150 MHz - 30 MHz	**Rel. Hum.(%)**	38
Power Setting	N/A	**Press. (mBars)**	1006
Antenna	Integral Antennas		
Test Notes 1	AC Powered - 120V AC 60Hz		
Test Notes 2			

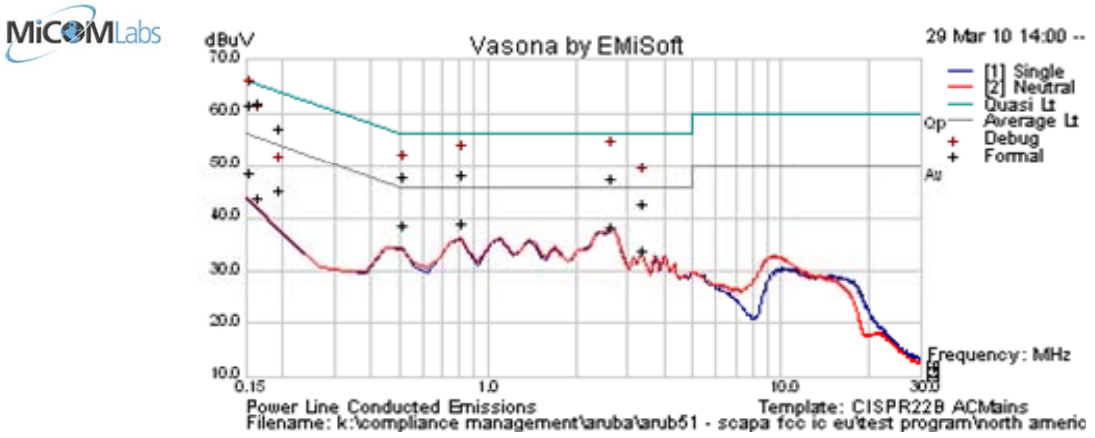


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	Factors dB	Level dBuV	Measurement Type	Line	Limit dBuV	Margin dB	Pass /Fail	Comments
0.155	38.8	9.9	0.1	48.8	Average	Neutral	55.73	-7.0	Pass	DIG
0.155	51.6	9.9	0.1	61.6	Quasi Peak	Neutral	65.73	-4.2	Pass	DIG
0.167	33.8	9.9	0.1	43.7	Average	Neutral	55.11	-11.4	Pass	DIG
0.167	51.7	9.9	0.1	61.7	Quasi Peak	Neutral	65.11	-3.4	Pass	DIG
0.194	35.4	9.9	0.1	45.3	Average	Neutral	53.86	-8.5	Pass	DIG
0.194	47.2	9.9	0.1	57.1	Quasi Peak	Neutral	63.86	-6.7	Pass	DIG
0.516	28.6	9.9	0.1	38.6	Average	Neutral	46	-7.4	Pass	DIG
0.516	37.8	9.9	0.1	47.9	Quasi Peak	Neutral	56	-8.2	Pass	DIG
0.828	38.4	9.9	0.1	48.4	Quasi Peak	Neutral	56	-7.6	Pass	DIG
0.828	29.1	9.9	0.1	39.1	Average	Neutral	46	-6.9	Pass	DIG
2.661	28.2	10.1	0.1	38.4	Average	Live	46	-7.6	Pass	DIG
2.661	37.3	10.1	0.1	47.6	Quasi Peak	Live	56	-8.5	Pass	DIG

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

Test Freq.	2437 - Rx Mode		CSB
Variant	AC Line Emissions		22
Freq. Range	0.150 MHz - 30 MHz		38
Power Setting	N/A		1006
Antenna	Integral Antennas		
Test Notes 1	AC Powered - 120V AC 60Hz		
Test Notes 2	Red trace = Neautral, AVG Detector; Blue trace = Live, AVG Detector		



6. Dynamic Frequency Selection (DFS)

6.1. Test Procedure and Setup

FCC, Part 15 Subpart C §15.407(h)
FCC 06-96 Memorandum Opinion and Order
Industry Canada RSS-210 A9.4

6.1.1. Interference Threshold values, Master or Client incorporating In-Service Monitoring

Maximum Transmit Power	Value (see note)
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna	

6.1.2. DFS Response requirement values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 80% of the 99% power bandwidth See Note 3.

Note 1: The instant that the *Channel Move Time* and the *Channel Closing Transmission Time* begins is as follows:

- For the Short pulse radar Test Signals this instant is the end of the *Burst*.
- For the Frequency Hopping radar Test Signal, this instant is the end of the last radar *Burst* generated.
- For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission.

Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate *Channel* changes (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 1 is used and for each frequency step the minimum percentage of detection is 90%. Measurements are performed with no data traffic.

6.1.3. Radar Test Waveforms

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

Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Trials
1	1	1428	18	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

A minimum of 30 unique waveforms are required for each of the short pulse radar types 2 through 4. For short pulse radar type 1, the same waveform is used a minimum of 30 times. If more than 30 waveforms are used for short pulse radar types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. The aggregate is the average of the percentage of successful detections of short pulse radar types 1-4.

Long Pulse Radar Test Waveform

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

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

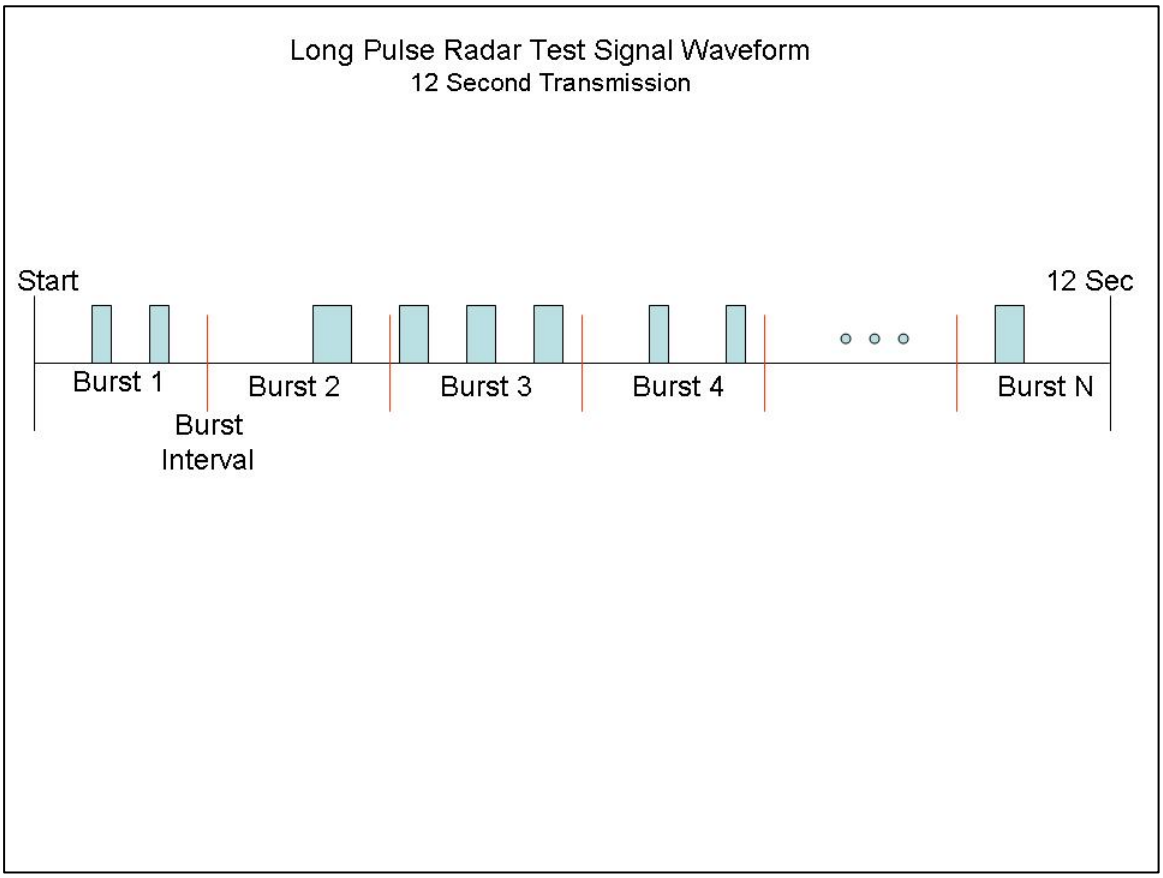
Each waveform is defined as follows:

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

A representative example of a Long Pulse radar test waveform:

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

Graphical representation of the Long Pulse radar Test Waveform.



6.1.4. Frequency Hopping Radar Test Waveform

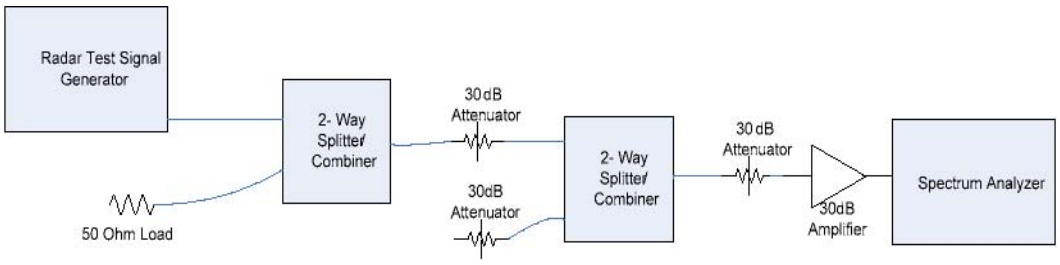
Frequency Hopping Radar Test Waveform

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

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

6.1.5. Radar Waveform Calibration

The following equipment setup was used to calibrate the conducted Radar Waveform. A spectrum analyzer was used to establish the test signal level for each radar type. During this process there were no transmissions by either the Master or Client Device. The spectrum analyzer was switched to the zero span (Time Domain) mode at the frequency of the Radar Waveform generator. Peak detection was utilized. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3 MHz.
The signal generator amplitude was set so that the power level measured at the spectrum analyzer was -61dBm (Ref Section 5.1). The 30dB amplifier gain was entered as an amplitude offset on the spectrum analyzer.



Conducted Calibration Setup

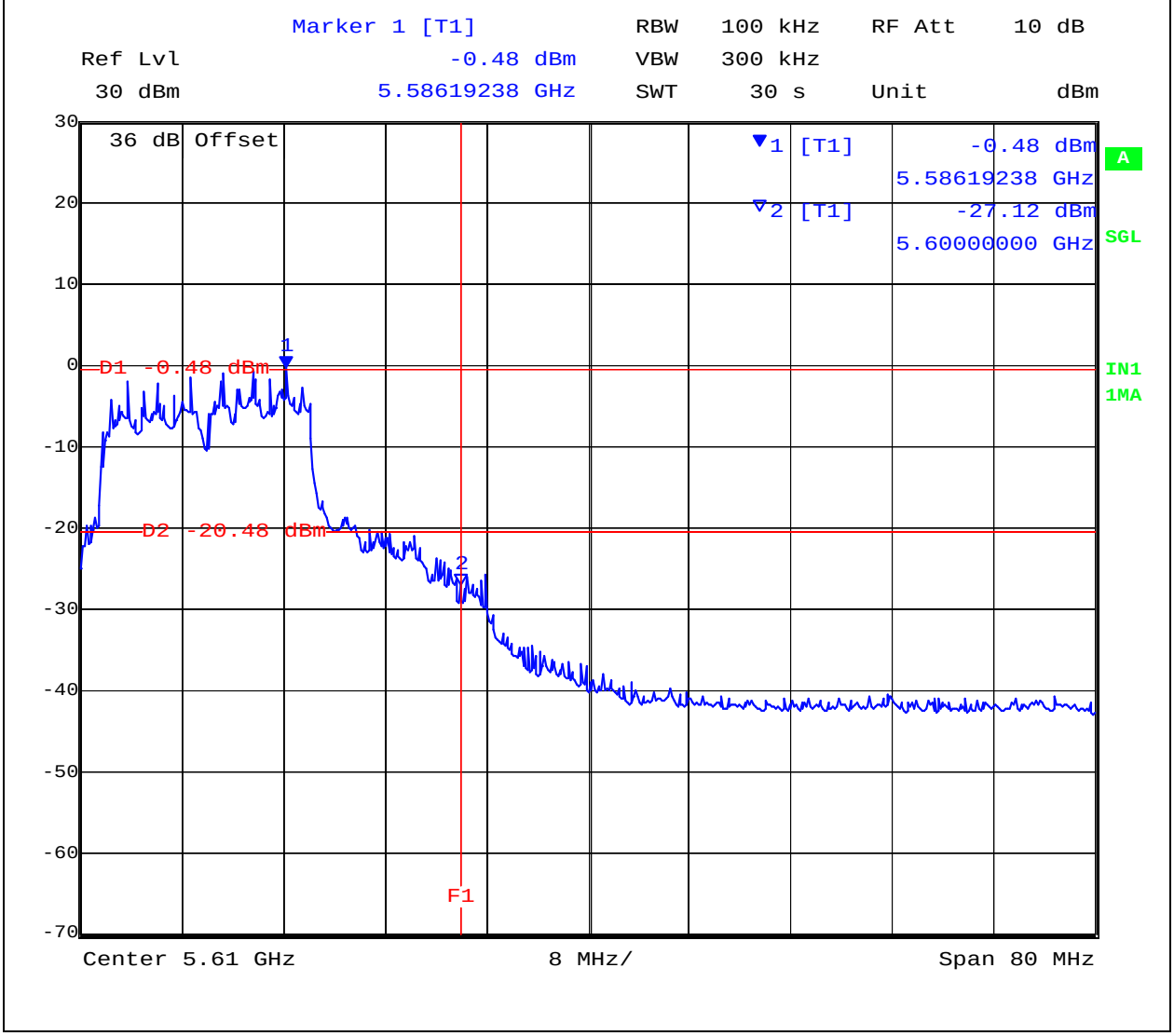
6.1.6. Verification of Non-Operation in the weather radar band 5600 – 5650 MHz

The AP-92, AP-93 does not operate in the weather radar band 5600 – 5650 MHz.

The emissions levels were measured with the EUT in both 11a and HT-40 modes transmitting on the channels closest to the band edges of the 5600 – 5650 MHz band to verify compliance.

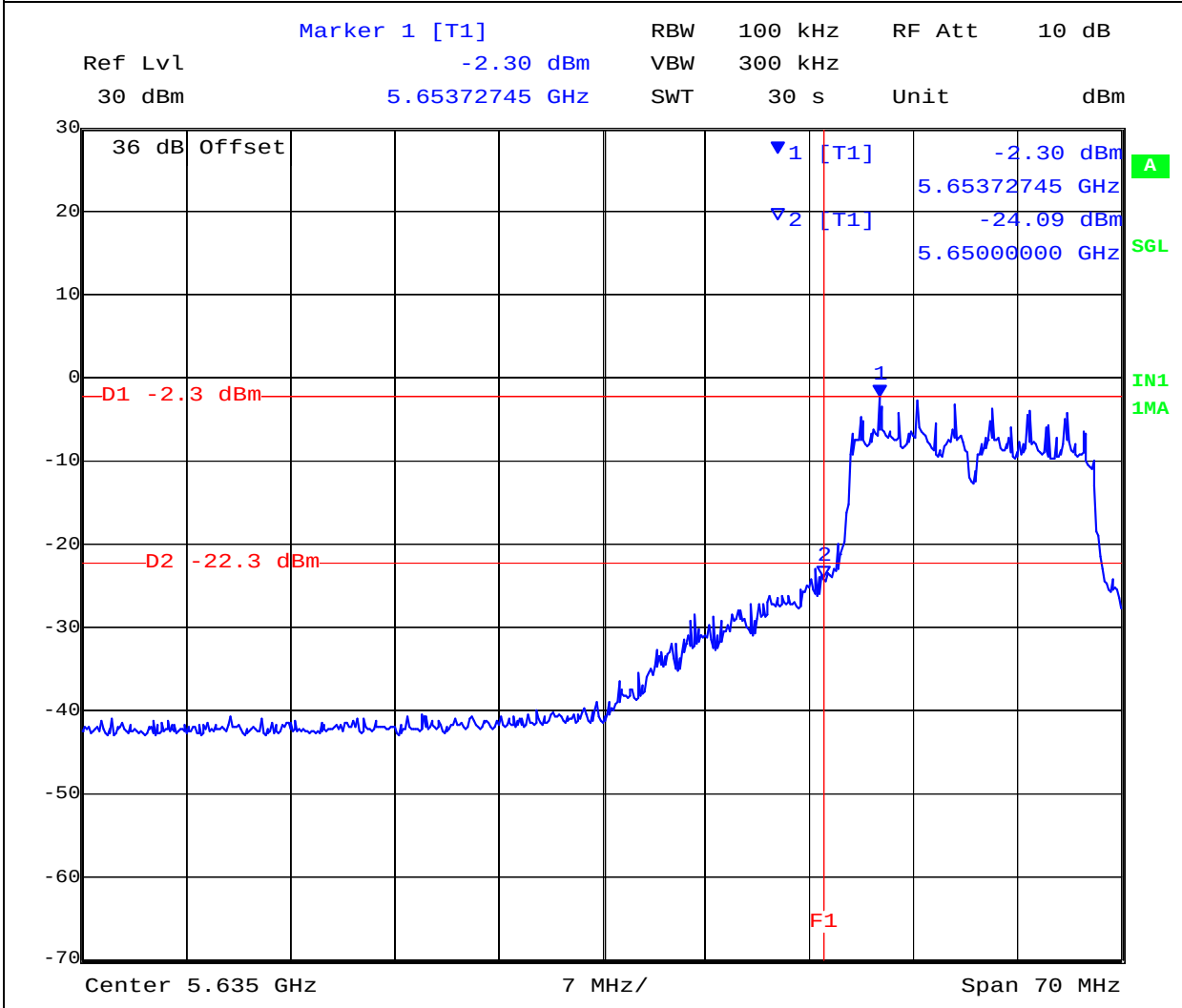
5600 – 5650 MHz Lower Band Edge

11a mode Ch 5,580 MHz



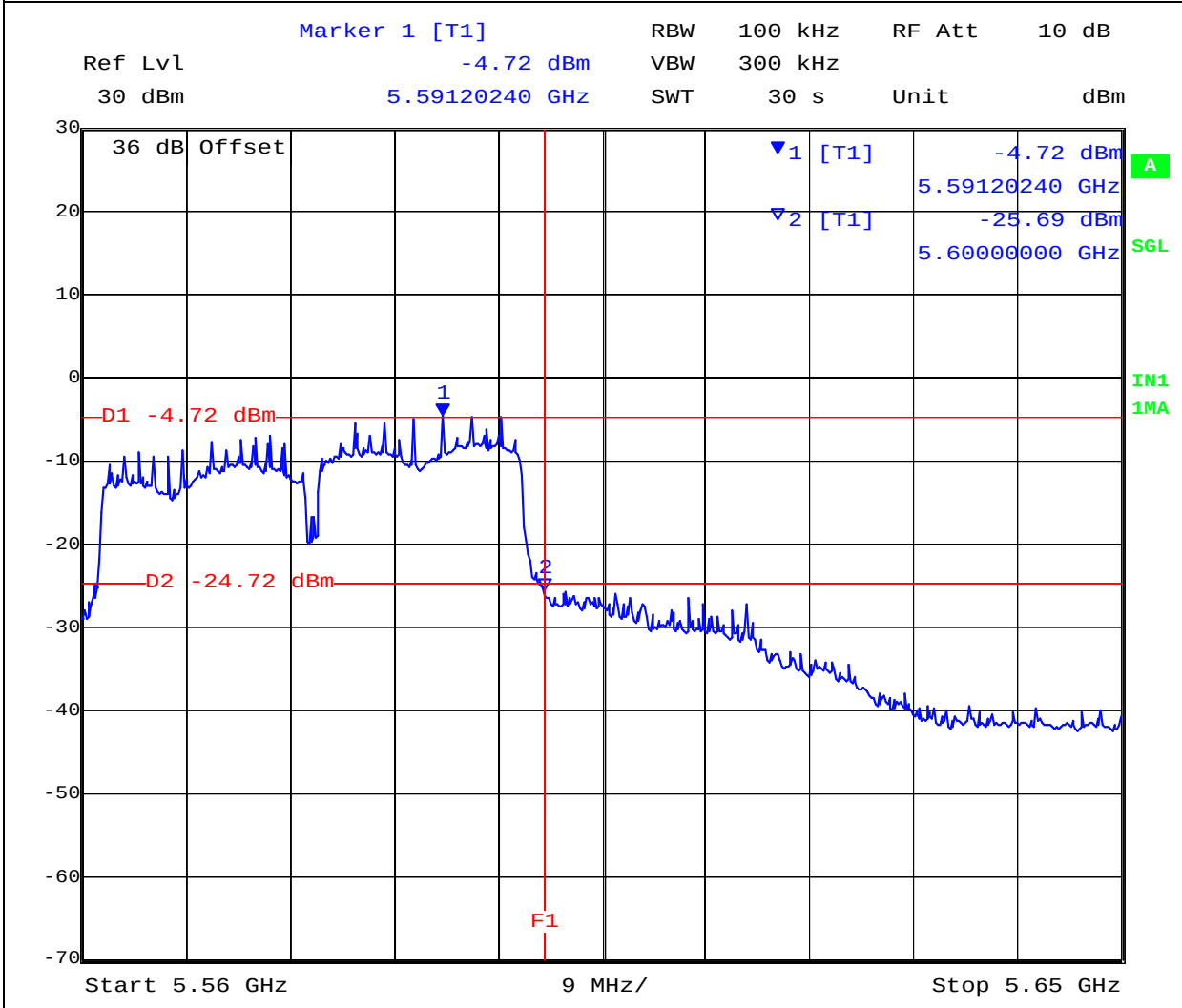
5600 – 5650 MHz Upper Band Edge

11a mode Ch 5,660 MHz



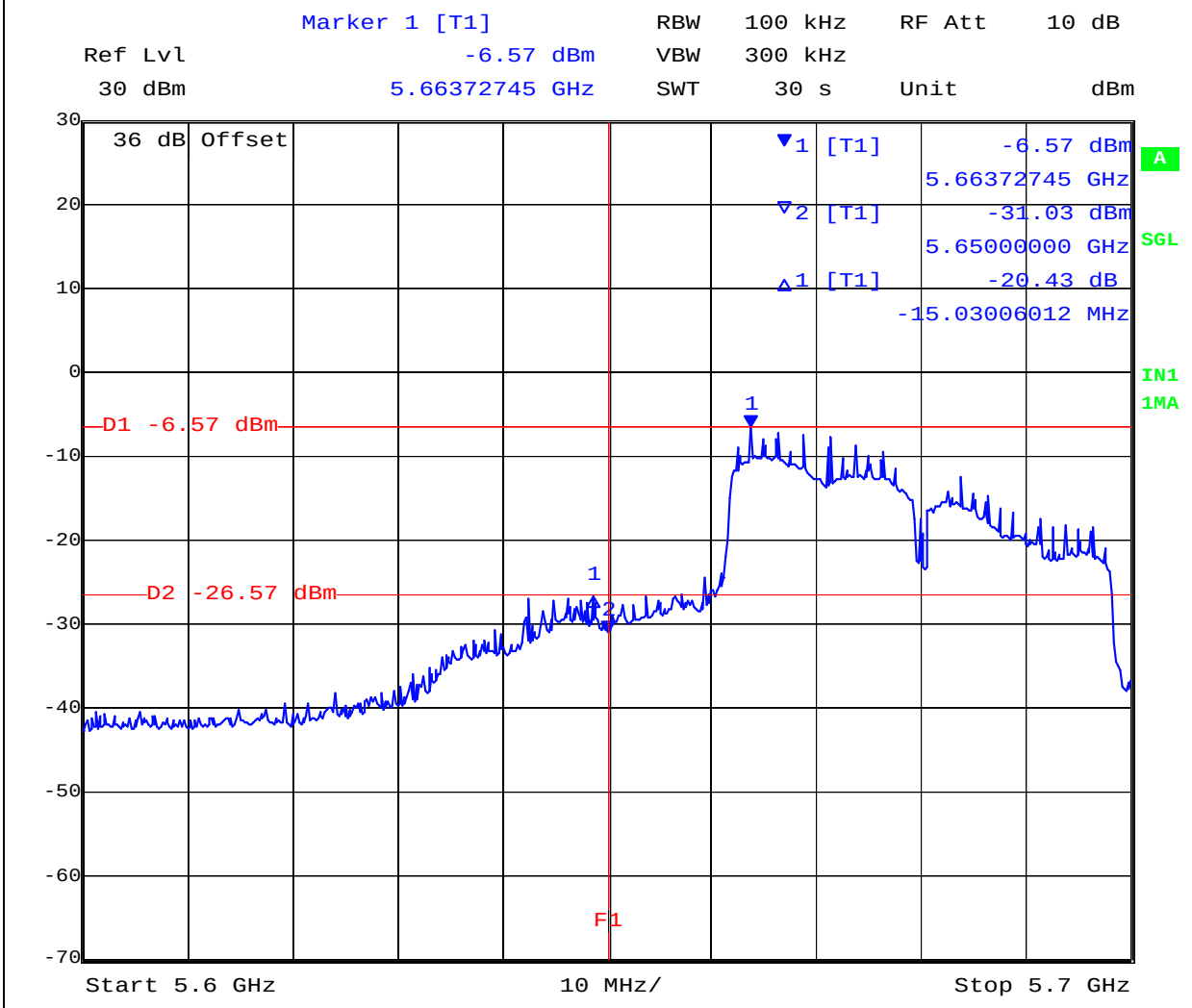
5600 – 5650 MHz Lower Band Edge

11n HT-40 mode Ch 5,580 MHz



5600 – 5650 MHz Upper Band Edge

11n HT-40 mode Ch 5,680 MHz

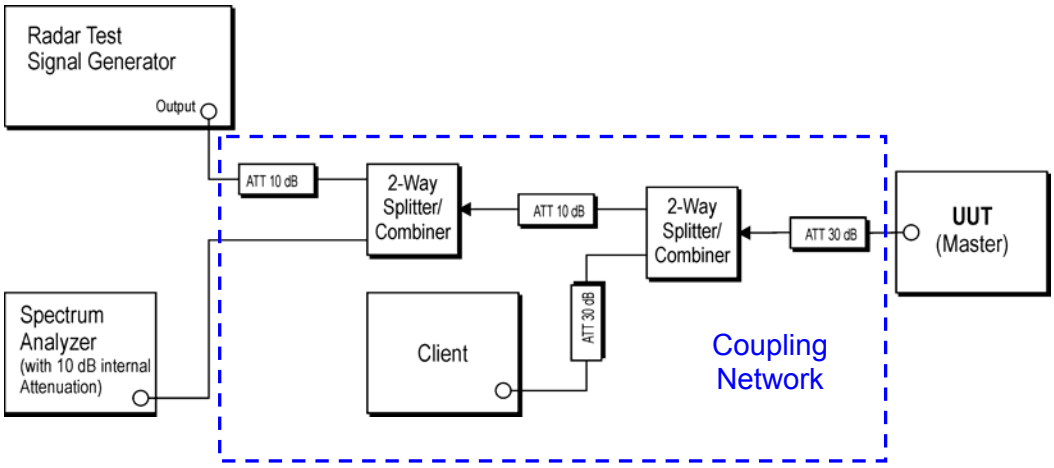


MiCOM Labs, 440 Boulder Court, Suite 200, Pleasanton, CA 94566 USA, Phone: 925.462.0304, Fax: 925.462.0306, www.micomlabs.com

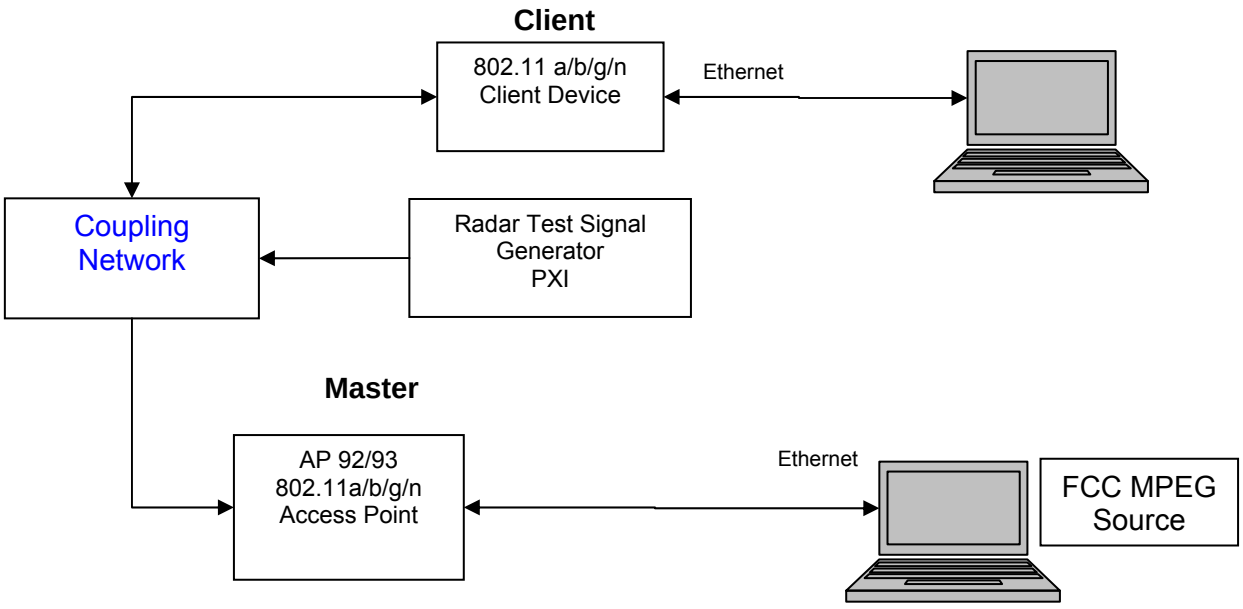
6.1.7. Test Set Up:

Block Diagram(s) of Test Setup

Setup for Conducted Measurements where the EUT is the Master with injection of Radar Test Waveforms at the Master.



Support Equipment Configuration



The EUT is a Master Device with radar detection.

Applicability of DFS Requirements Prior to Use of a Channel

(Ref Table 1 of FCC 06-96)

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
Uniform Spreading	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Applicability of DFS requirements during normal operation

(Ref Table 2 of FCC 06-96)

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required	Yes

For the frequency band 5,470 – 5,725 MHz, the Master device provides, on aggregate, uniform loading of the spectrum across all devices by selecting an operating channel among the available channels using a random algorithm. The EUT was tested in 11a and HT-40 modes.

Declared minimum antenna gain 0 dBi. ;

Radar receive signal level = -62 dBm + minimum antenna gain + 1 dB

= -62 + 0 + 1

Radar receive signal level = -61 dBm

Measurement Results - Dynamic Frequency Selection (DFS)

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

Radio parameters.
Test methodology: Conducted
Device Type: Master
Transmit Power: Maximum

Operational Details - Dynamic Frequency Selection (DFS)

Operational Modes: 802.11a and 802.11n HT40

Data Rates: 6mpbs 802.11a/ 0 MCS 802.11n

Note; No video pixilation was observed during the video stream at these rates. Video frames per second were noted to be at 30fps.

Video Streaming Method - Dynamic Frequency Selection (DFS)

Using the VideoLan player a video stream was setup on the master laptop with the destination being the client laptop. The video profile chosen for the video stream is “MPEG-2 + MPGA (TS)”. On the client laptop the VideoLan player was setup to listen to an incoming video stream from the master device.

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

6.2. Dynamic Frequency Selection (DFS) Test Results

6.2.1. UNII Detection Bandwidth:

All UNII channels for this device have identical channel bandwidths and DFS testing was completed on channel 5,500 MHz (802.11a) and 5510MHz (HT40).

The generating equipment is configured as shown in the Conducted Test Setup above. A single Burst of the short pulse radar Type 1 through 6 was produced at 5,500 MHz (802.11a) and 5,510 MHz (802.11n HT40) at a level of -61 dBm (Ref Section 5.1). The EUT is set up as a standalone device (no associated Client and no traffic).

A single radar Burst is generated for a minimum of 10 trials, and the response of the EUT is noted. The EUT must detect the Radar Waveform 90% or more of the time.

The radar frequency is increased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The highest frequency at which detection is greater than or equal to 90% is denoted as F_H.

The radar frequency is decreased in 1 MHz steps, repeating the above test sequence, until the detection rate falls below 90%. The lowest frequency at which detection is greater than or equal to 90% is denoted as F_L.

The U-NII Detection Bandwidth is calculated as follows:

U-NII Detection Bandwidth = $F_H - F_L$

The U-NII Detection Bandwidth must be at least 80% of the EUT transmitter 99% power
Table of results are continued on the next page.

EUT Frequency= 5,500 MHz 802.11a (Detection = √, No Detection = 0)											
Radar Frequency (MHz)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Detection Rate (%)**
-20											%
-19											%
-18											%
-17											%
-16											%
-15											%
-14											%
-13											%
-12											%
-11	0	0									<90%
-10	√	√	√	√	√	√	0	√	√	0	<90%
-9	√	√	√	√	√	√	√	√	0	0	<90%
-8	√	√	√	√	√	√	√	√	√	√	100%
-7	√	√	√	√	√	√	√	√	√	√	100%
-6	√	√	√	√	√	√	√	√	√	√	100%
-5	√	√	√	√	√	√	√	√	√	√	100%
-4	√	√	√	√	√	√	√	√	√	√	100%
-3	√	√	√	√	√	√	√	√	√	√	100%
-2	√	√	√	√	√	√	√	√	√	√	100%
-1	√	√	√	√	√	√	√	√	√	√	100%
F_0	√	√	√	√	√	√	√	√	√	√	100%
+1	√	√	√	√	√	√	√	√	√	√	100%
+2	√	√	√	√	√	√	√	√	√	√	100%
+3	√	√	√	√	√	√	√	√	√	√	100%
+4	√	√	√	√	√	√	√	√	√	√	100%
+5	√	√	√	√	√	√	√	√	√	√	100%
+6	√	√	√	√	√	√	√	√	√	√	100%
+7	√	√	√	√	√	√	√	√	√	√	100%
+8	√	√	√	√	√	√	0	√	√	√	90%
+9	√	√	√	√	√	√	√	√	√	√	100%
+10	√	√	√	0	√	√	√	√	√	0	<90%
+11	0	0	0	√	√	0					<90%
+12											%
+13											%
+14											%
+15											%
+16											%
+17											%
Detection Bandwidth = F_H-F_L = 5590-5510 = 20 MHz											
EUT 99% Bandwidth = 17.335 MHz (ref. bandwidth channel 5500 MHz)											
17.335 MHz *80% = 13.868 MHz											
For each frequency step the minimum percentage detection is 90%											

EUT Frequency= 5,510 MHz 802.11n HT40 (Detection = √, No Detection = 0)											
Radar Frequency (MHz)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Detection Rate (%)**
-21	0	0									<90%
-20	√	√	√	√	√	√	√	√	√	√	100%
-19	√	√	√	√	√	√	√	√	√	√	100%
-18	√	√	√	√	√	√	√	√	√	√	100%
-17	√	√	√	√	√	√	√	√	√	√	100%
-16	√	√	√	√	√	√	√	√	√	√	100%
-15	√	√	√	√	√	√	√	√	√	√	100%
-14	√	√	√	√	√	√	√	√	√	√	100%
-13	√	√	√	√	√	√	√	√	√	√	100%
-12	√	√	√	√	√	√	√	√	√	√	100%
-11	√	√	√	√	√	√	√	√	√	√	100%
-10	√	√	√	√	√	√	√	√	√	√	100%
-9	√	√	√	√	√	√	√	√	√	√	100%
-8	√	√	√	√	√	√	√	√	√	√	100%
-7	√	√	√	√	√	√	√	√	√	√	100%
-6	√	√	√	√	√	√	√	√	√	√	100%
-5	√	√	√	√	√	√	√	√	√	√	100%
-4	√	√	√	√	√	√	√	√	√	√	100%
-3	√	√	√	√	√	√	√	√	√	√	100%
-2	√	√	√	√	√	√	√	√	√	√	100%
-1	√	√	√	√	√	√	√	√	√	√	100%
F_0	√	√	√	√	√	√	√	√	√	√	100%

EUT Frequency= 5,510 MHz 802.11n HT40 (Detection = √, No Detection = 0)											
Radar Frequency (MHz)	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Detection Rate (%)**
F_0	√	√	√	√	√	√	√	√	√	√	100%
+1	√	√	√	√	√	√	√	√	√	√	100%
+2	√	√	√	√	√	√	√	√	√	√	100%
+3	√	√	√	√	√	√	√	√	√	√	100%
+4	√	√	√	√	√	√	√	√	√	√	100%
+5	√	√	√	√	√	√	√	√	√	√	100%
+6	√	√	√	√	√	√	√	√	√	√	100%
+7	√	√	√	√	√	√	√	√	√	√	100%
+8	√	√	√	√	√	√	√	√	√	√	100%
+9	√	√	√	√	√	√	√	√	√	√	100%
+10	√	√	√	√	√	√	√	√	√	√	100%
+11	√	√	√	√	√	√	√	√	√	√	100%
+12	√	√	√	√	√	√	√	√	√	√	100%
+13	√	√	√	√	√	√	√	√	√	√	100%
+14	√	√	√	√	√	√	√	√	√	√	100%
+15	√	√	√	√	√	√	√	√	√	√	100%
+16	√	√	√	√	√	√	√	√	√	√	100%
+17	√	√	√	√	√	√	√	√	√	√	100%
+18	√	√	√	√	√	√	√	√	√	√	100%
+19	√	√	√	√	√	√	√	√	√	√	100%
+20	√	√	√	√	√	√	√	√	√	√	100%
+21	0	0									<90%
Detection Bandwidth = F_H-F_L = 5590-5530 = 40 MHz											
EUT 99% Bandwidth = 37.074 MHz (ref. bandwidth channel 5510 MHz)											
37.074 MHz *80% = 29.659 MHz											

For each frequency step the minimum percentage detection is 90%

6.2.2. Initial Channel Availability Check Time

This test verifies that the EUT does not emit pulse, control, or data signals on the test Channel until the power-up sequence has been completed and the U-NII device checks for Radar Waveforms for one minute on the test Channel. This test does not use any Radar Waveforms.

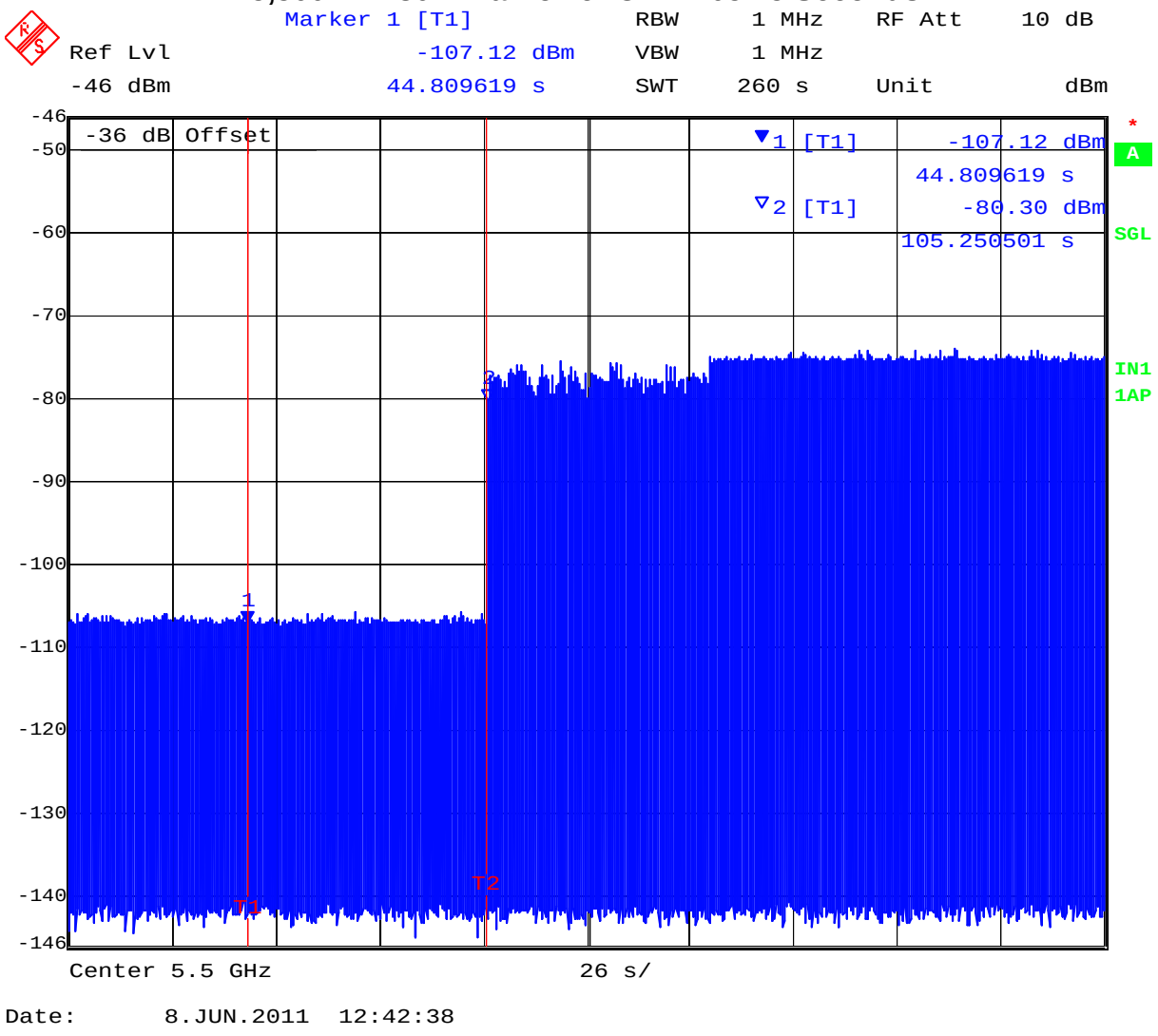
The U-NII device is powered on and be instructed to operate at 5,500 MHz 802.11a and 5510 802.11n HT40. At the same time the EUT is powered on, the spectrum analyzer is set for zero span with a 1 MHz resolution bandwidth at 5,500 & 5510 MHz with a 260 second sweep time. The analyzer's sweep will be started the same time power is applied to the U-NII device.

The EUT should not transmit any pulse or data transmissions until at least 1 minute after the completion of the power-on cycle.

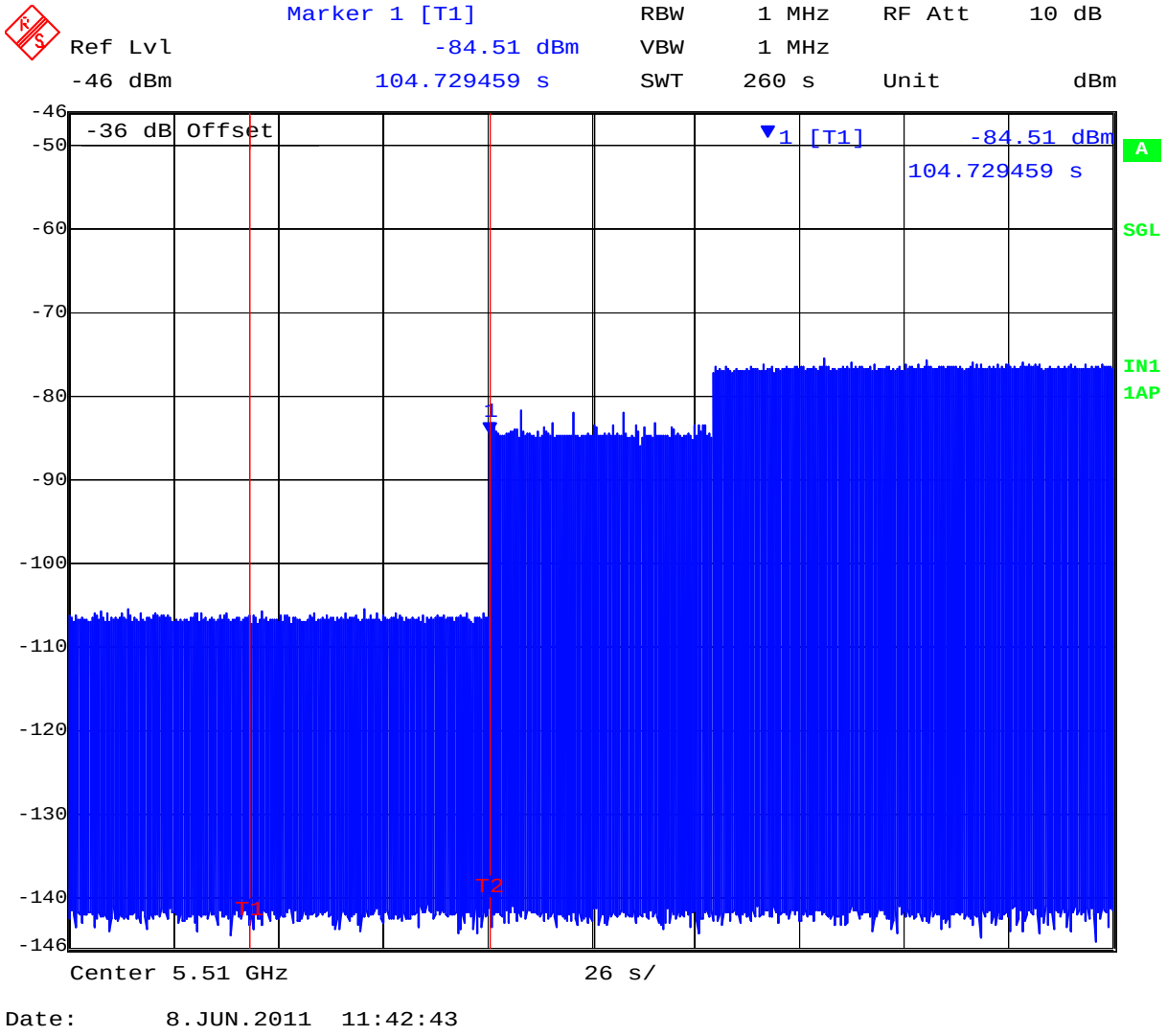
The first red marker line shown on the following plot denotes the instant when the EUT starts its power-up sequence i.e. T_0 (as defined within the FCC's MO&O 06-96 Normative Reference 2). The power-up reference T_0 is determined by the time it takes for the EUT to start "beaconing" i.e. initial beacon – 60 secs = end of power-up.

The Channel Availability Check Time commences at instant T_0 and will end no sooner than T_0 + 60 seconds.

EUT power up and Initial Channel Availability Check Time
5,500MHz 802.11a Power On = 105.25 Seconds



EUT power up and Initial Channel Availability Check Time
5,510MHz 802.11n HT40 Power On = 104.73 Seconds



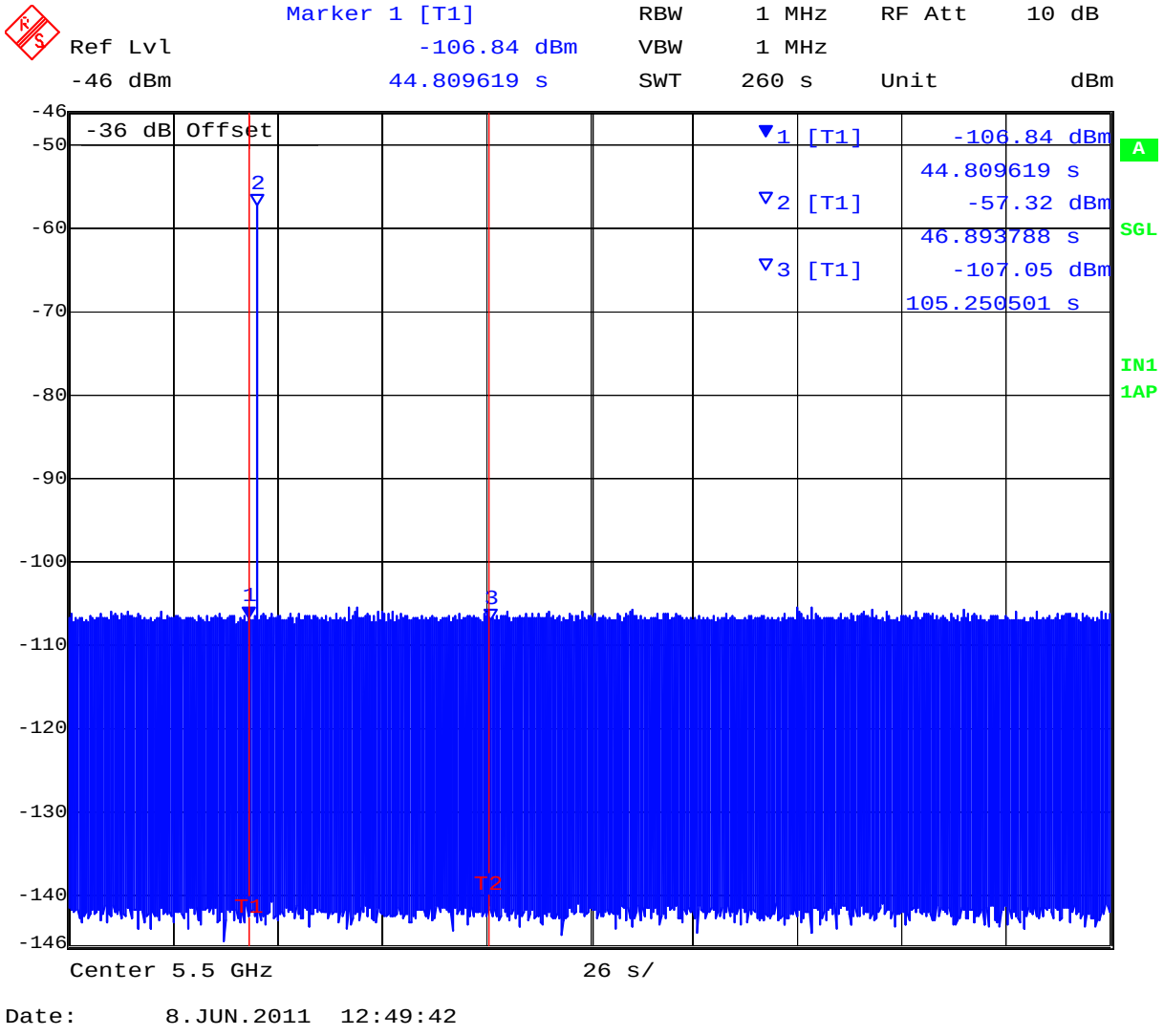
6.2.3. Radar Burst at the Beginning of the Channel Availability Check Time:

The steps below define the procedure to verify successful radar detection on the selected Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar Burst with a level equal to the DFS Detection Threshold +6 dB (-62 dBm Ref Section 5.1.7) occurs at the beginning of the Channel Availability Check Time.

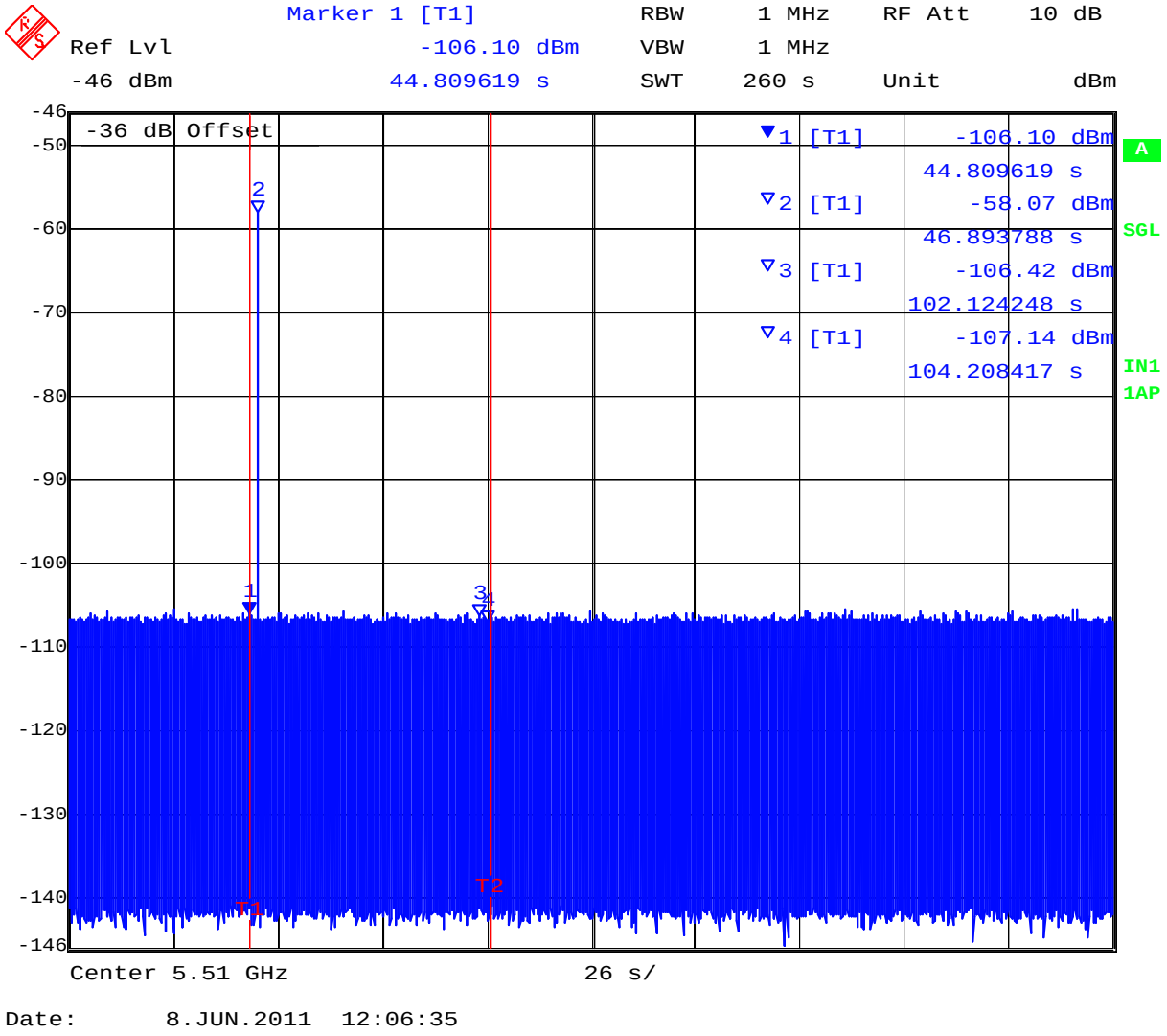
A single Burst of short pulse of radar Type 1 will commence within a 6 second window starting at T0 (first red marker line on the following plot).

Visual indication on the EUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions at 5,500MHz 802.11a & 5,510MHz 802.11n HT40 will continue for 2.5 minutes after the radar burst has been generated.

Channel Availability Check Time at the start T0 + 6 seconds Check Time 5,500MHz 802.11a



Channel Availability Check Time at the start T0 + 6 seconds Check Time 5,510MHz 802.11n HT40



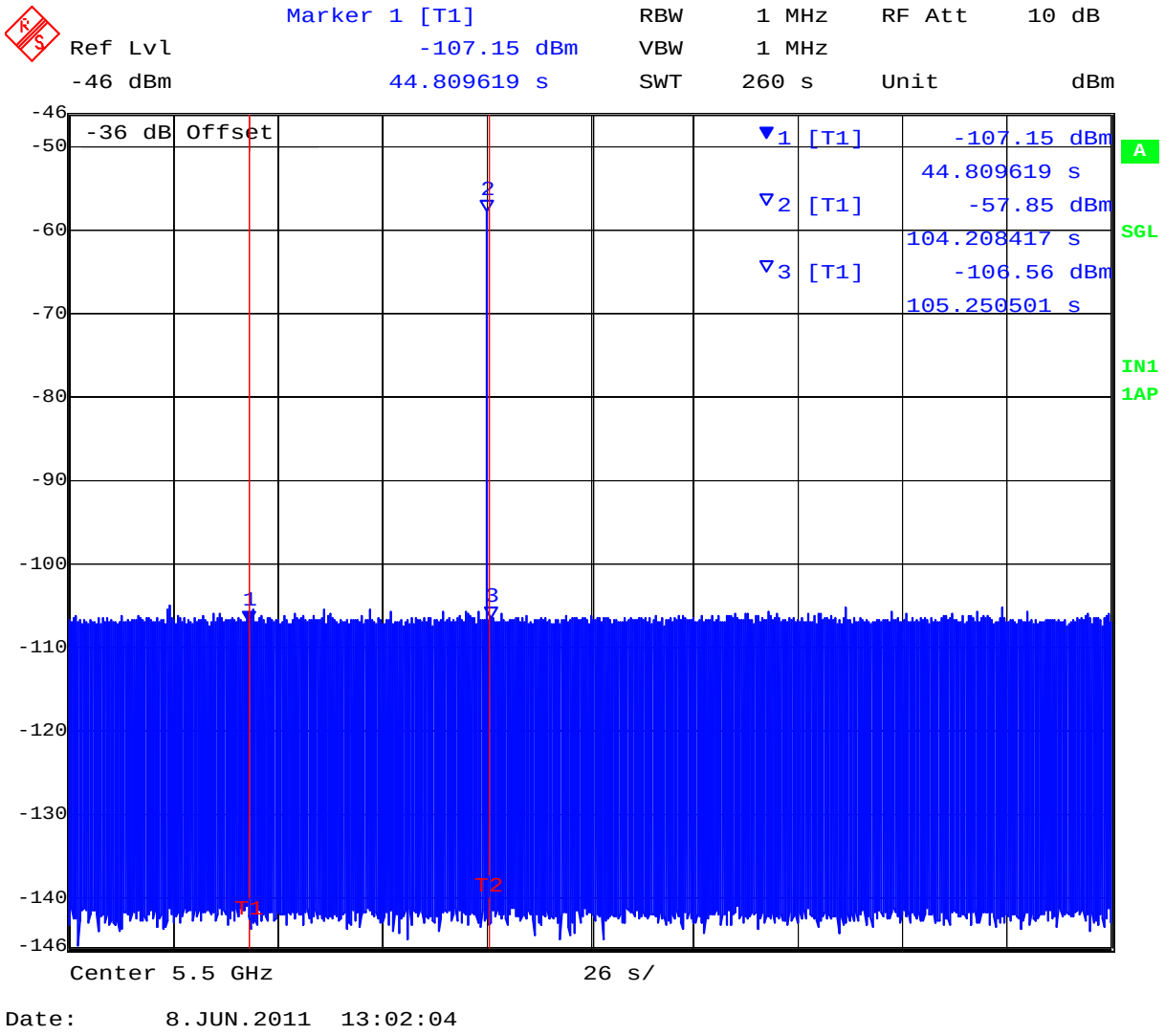
6.2.4. Radar Burst at the End of the Channel Availability Check Time:

The steps below define the procedure to verify successful radar detection on the selected Channel during a period equal to the Channel Availability Check Time and avoidance of operation on that Channel when a radar burst with a level equal to the DFS Detection Threshold occurs at the end of the Channel Availability Check Time.

A single Burst of short pulse of radar type 1 will commence within a 6 second window starting at T_0+ 54 seconds. The window will commence at marker 3 and end at the red line T_2.

Visual indication on the EUT of successful detection of the radar Burst will be recorded and reported. Observation of emissions at 5,500MHz 802.11a & 5510 MHz 802.11n HT40 will continue for 2.5 minutes after the radar burst has been generated.

Channel Availability Check Time at T0 + 54 seconds Check Time
5,500MHz 802.11a



Channel Availability Check Time at T0 + 54 seconds Check Time
5,510MHz 802.11n HT40