

Test of Wavion WBSn-2450 Wireless LAN Access
Point

To: FCC 47 CFR Part 15.247 & IC RSS-210

Test Report Serial No.: WAVI01-U1 Rev D



TEST REPORT

FROM



Test of Wavion WBSn-2450-O/-S Wireless LAN Access Point

to

To FCC 47 CFR Part 15.247 & IC RSS-210

Test Report Serial No.: WAVI01-U1 Rev D

Note: this report contains data with regard to the 2400 to 2483.5 MHz and 5725 to 5850 MHz operational modes of the Wavion WBSn-2450 wireless LAN access point.

This report supersedes: WAVI01-U1 Rev C

Applicant: Wavion Ltd
15 Hamada Street
Yoqneam Illit
Israel 20692

Product Function: Wireless LAN Access Point

Copy No: pdf Issue Date: 30th March 2012

This Test Report is Issued Under the Authority of:

MiCOM Labs, Inc.
440 Boulder Court, Suite 200
Pleasanton, CA 94566 USA
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TEST CERTIFICATE #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 3 of 412

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 4 of 412

TABLE OF CONTENTS

ACCREDITATION, LISTINGS & RECOGNITION	5
TESTING ACCREDITATION	5
RECOGNITION	6
PRODUCT CERTIFICATION	7
1. TEST RESULT CERTIFICATE	9
2. REFERENCES AND MEASUREMENT UNCERTAINTY	10
2.1. Normative References	10
2.2. Test and Uncertainty Procedures	11
3. PRODUCT DETAILS AND TEST CONFIGURATIONS	12
3.1. Technical Details	12
3.2. Scope of Test Program	14
3.3. Equipment Model(s) and Serial Number(s)	17
3.4. Antenna Details	17
3.5. Cabling and I/O Ports	18
3.6. Test Configurations	18
3.7. Equipment Modifications	20
3.8. Deviations from the Test Standard	20
3.9. Subcontracted Testing or Third Party Data	20
4. TEST SUMMARY	21
5. TEST RESULTS	23
5.1. Device Characteristics	23
5.1.1. 6 dB and 99 % Bandwidth	23
5.1.2. Peak Output Power	112
5.1.3. Peak Power Spectral Density	127
5.1.4. Maximum Permissible Exposure	216
5.1.5. Conducted Spurious Emissions	217
5.1.6. Radiated Emissions	316
5.1.7. AC Wireline Conducted Emissions (150 kHz – 30 MHz)	402
6. PHOTOGRAPHS	405
6.1. Conducted Test Setup	405
6.2. Radiated Test Setup > 1 GHz	406
7. TEST EQUIPMENT DETAILS	411

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 5 of 412

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>



The American Association for Laboratory Accreditation

Accredited Laboratory

A2LA has accredited

MICOM LABS

Pleasanton, CA

for technical competence in the field of

Electrical Testing

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

Presented this 27th day of March 2012.

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



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

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 6 of 412

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-2
Japan	MIC (Ministry of Internal Affairs and Communication)	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

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 7 of 412

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

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.

Presented this 27th day of March 2012.



President & CEO
For the Accreditation Council
Certificate Number 2381.02
Valid to November 30, 2013

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

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

Industry Canada Certification Body - CAB Identifier – US0159

European Notified Body - Notified Body Identifier - 2280

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

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 8 of 412

DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft		
Rev A	9 th March 2012	Initial release.
Rev B	12 th March 2012	Removing typo's and updating Section 5.1.3 "Peak power spectral density" margin for 2.4 GHz, HT-40 operational mode.
Rev C	14 th March 2012	Removal of typo's
Draft	21 st March 2012	Included 5 & 10 MHz operating modes
Rev D	30 th March 2012	Included 5 & 10 MHz operating modes

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 9 of 412

1. TEST RESULT CERTIFICATE

Manufacturer:	Wavion Ltd 15 Hamada Street Yoqneam Illit Israel 20692	Tested By:	MiCOM Labs, Inc. 440 Boulder Court Suite 200 Pleasanton California, 94566, USA
EUT:	802.11a/b/g/n Wireless LAN Access Point	Telephone:	+1 925 462 0304
Model:	WBSn-2450-O/-S	Fax:	+1 925 462 0306
S/N's:	1153R00131565, 1206R00144608, 1153R00131566		
Test Date(s):	5th July to 19th March 2012	Website:	www.micomlabs.com

STANDARD(S)	TEST RESULTS
FCC 47 CFR Part 15.247 & IC RSS-210	EQUIPMENT COMPLIES

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

Notes:

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

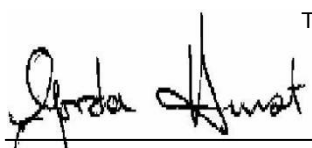
Approved & Released for MiCOM Labs, Inc. by:



TEST CERTIFICATE #2381.01



Graeme Grieve
Quality Manager MiCOM Labs,



Gordon Hurst
President & CEO MiCOM Labs, Inc.

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2. REFERENCES AND MEASUREMENT UNCERTAINTY

2.1. Normative References

REF.	PUBLICATION	YEAR	TITLE
i.	FCC 47 CFR Part 15, Subpart C	2010	Title 47: Telecommunication PART 15—RADIO FREQUENCY DEVICES Subpart C—Intentional Radiators
ii.	RSS-210 Annex 8	2010	Radio Standards Specification 210, Issue 8, Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment
iii.	FCC OET KDB 662911	4 th April 2011	Emissions Testing of Transmitters with Multiple Outputs in the Same Band
iv.	DA 00-705	2000	FCC DA 00-705 "Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems" released March 30, 2000
v.	RSS-GEN	2010	Radio Standards Specification-Gen, Issue 3, General Requirements and Information for the Certification of Radiocommunication Equipment
vi.	FCC 47 CFR Part 15, Subpart B	2010	47 CFR Part 15, SubPart B; Unintentional Radiators
vii.	ICES-003	2004	Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard Digital Apparatus; Issue 4
viii.	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
ix.	CISPR 22/ EN 55022	2008 2006+A1:2007	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
x.	M 3003	Edition 1 Dec. 1997	Expression of Uncertainty and Confidence in Measurements
xi.	LAB34	Edition 1 Aug 2002	The expression of uncertainty in EMC Testing
xii.	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
xiii.	A2LA	9th June 2010	Reference to A2LA Accreditation Status – A2LA Advertising Policy

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 11 of 412

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.



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 12 of 412

3. PRODUCT DETAILS AND TEST CONFIGURATIONS

3.1. Technical Details

Details	Description		
Purpose:	Test of the Wavion WBSn-2450-O/-S Wireless LAN Access Point to FCC Part 15.247 and Industry Canada RSS-210 regulations.		
Applicant:	Wavion Ltd 15 Hamada Street Yoqneam Illit, Israel 20692		
Manufacturer:	As applicant.		
Laboratory performing the tests:	MiCOM Labs, Inc. 440 Boulder Court, Suite 200 Pleasanton, California 94566 USA		
Test report reference number:	WAVI01-U1 Rev D		
Date EUT received:	5 th July 2012		
Standard(s) applied:	FCC 47 CFR Part 15.247 & IC RSS-210		
Dates of test (from - to):	5th July to 19th March 2012		
No of Units Tested:	3 (2 * Conducted, 1 * Radiated)		
Type of Equipment:	802.11a/b/g/n Wireless Access Point, 3x3 Spatial Multiplexing MIMO configuration		
Manufacturers Trade Name:	Wireless Access Point		
Model(s):	WBSn-2450-O/-S		
Location for use:	Indoor/Outdoor		
Declared Frequency Range(s):	2400 - 2483.5 MHz; 5725 - 5850 MHz		
Software Release	NART		
Type of Modulation:	Per 802.11 –CCK, BPSK, QPSK, DSSS, OFDM		
Declared Nominal Average Output Power:	<table><tr><td><u>2.4 GHz</u> 802.11b: +28 dBm 802.11g:Leg. +28 dBm 802.11 n HT-20: +28 dBm 802.11 n HT-40: +28 dBm</td><td><u>5.8 GHz</u> 802.11a: +28 dBm 802.11 n HT-20: +28 dBm 802.11n HT-40: +28 dBm</td></tr></table>	<u>2.4 GHz</u> 802.11b: +28 dBm 802.11g:Leg. +28 dBm 802.11 n HT-20: +28 dBm 802.11 n HT-40: +28 dBm	<u>5.8 GHz</u> 802.11a: +28 dBm 802.11 n HT-20: +28 dBm 802.11n HT-40: +28 dBm
<u>2.4 GHz</u> 802.11b: +28 dBm 802.11g:Leg. +28 dBm 802.11 n HT-20: +28 dBm 802.11 n HT-40: +28 dBm	<u>5.8 GHz</u> 802.11a: +28 dBm 802.11 n HT-20: +28 dBm 802.11n HT-40: +28 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:	POE 55 Vdc		
Operating Temperature Range:	Declared range -40° to +55°C		

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 13 of 412

ITU Emission Designator:	2400 – 2483.5 MHz 802.11b	17M2G1D
	2400 – 2483.5 MHz 802.11g	27M9D1D
	2400 – 2483.5 MHz 802.11n – HT-20	27M8D1D
	2400 – 2483.5 MHz 802.11n – HT-40	51M3D1D
	5725 – 5850 MHz 802.11a 5 MHz	6M8D1D
	5725 – 5850 MHz 802.11a 10 MHz	15M8D1D
	5725 – 5850 MHz 802.11a 20 MHz	34M5D1D
	5725 – 5850 MHz 802.11n – HT-20	35M3D1D
	5725 – 5850 MHz 802.11n – HT-40	69M9D1D
Frequency Stability:	±20 ppm max	
Equipment Dimensions:	38cm x 14cm x 43.5cm (Excluding Antenna's)	
Weight:	3.75 Kg	
Primary function of equipment:	Outdoor WiFi.	

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3.2. Scope of Test Program

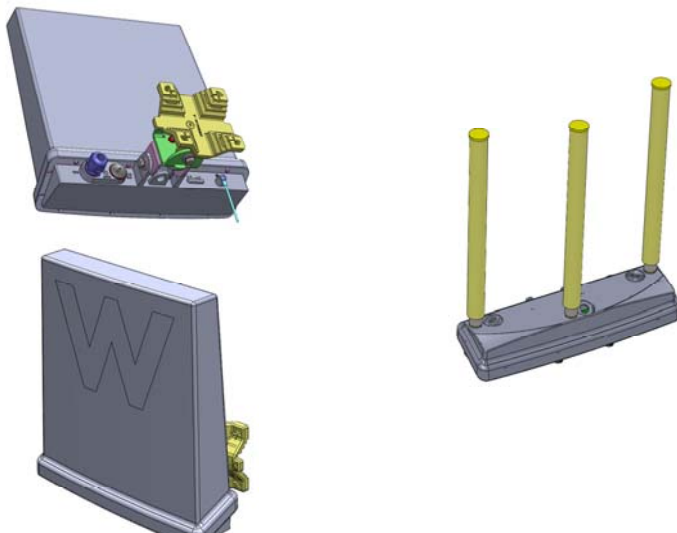
The scope of the test program was to test the Wavion WBSn-2450-O/-S Wireless LAN Access Point 3x3 Spatial Multiplexing MIMO configurations in the frequency ranges 2400 - 2483.5 MHz and 5725 – 5850 MHz for compliance against FCC 47 CFR Part 15.247 and Industry Canada RSS-210 specifications.

Models	Manufacturers Statement of Model Differences
WBSn-2450 Series	
WBSn-2450-S	Integral 3 directional dual band 120 degree sector antennas (SL/SR/V polarization)
WBSn-2450-O	3 omni-directional antennas (V polarization with vertical or mechanically tilted antennas, N-type) dual band Omni antenna:

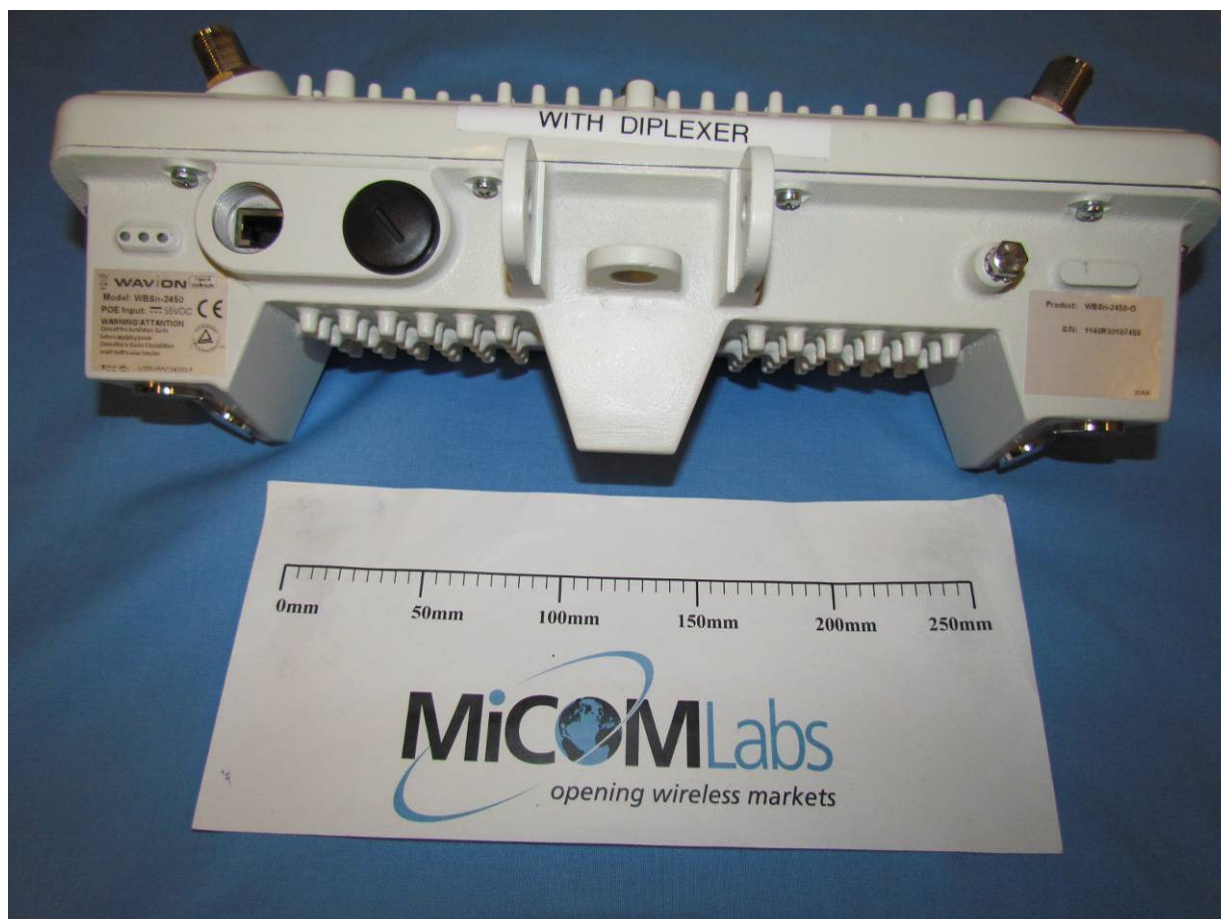
As model differences were restricted to antenna types model WBSn-2450-O was chosen to prove compliance.

Selected Test Suite

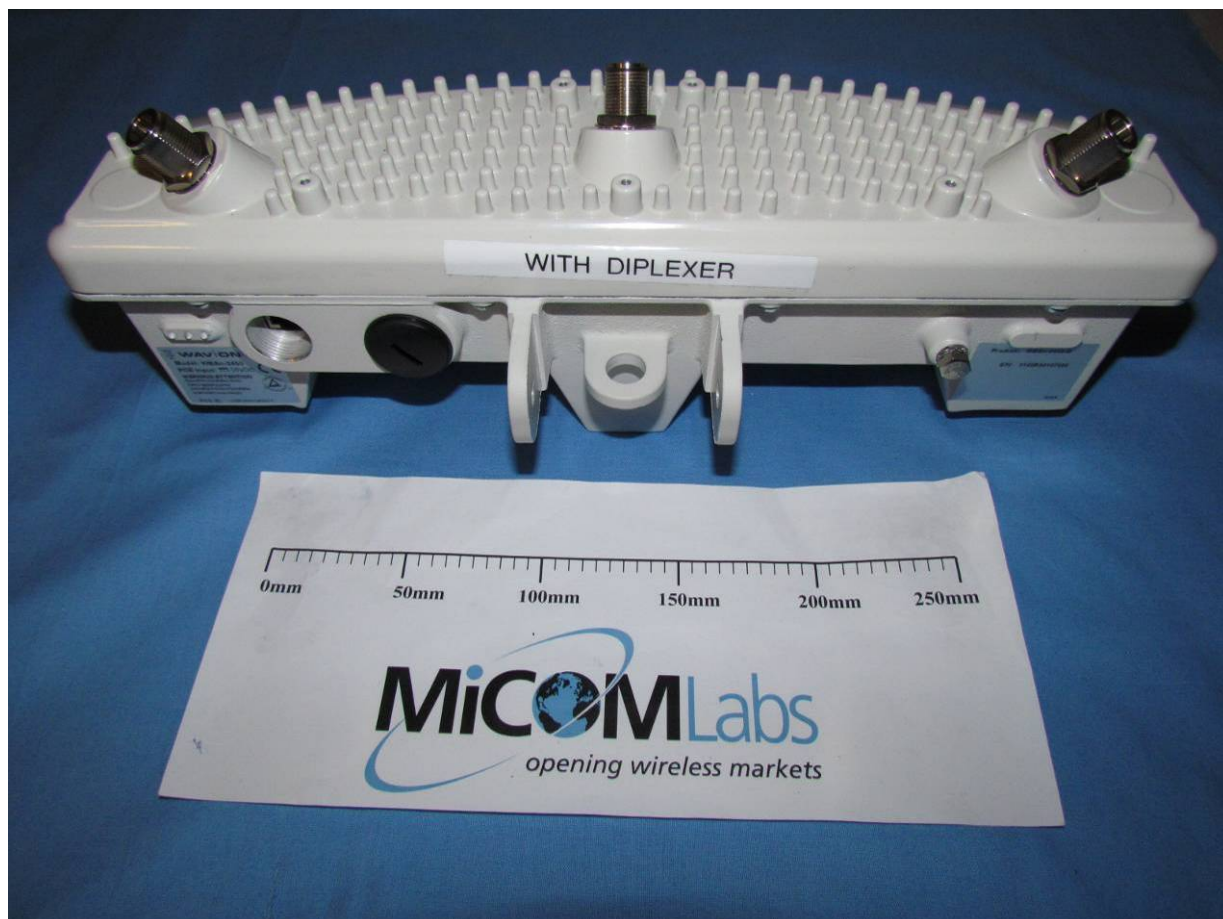
- Left: WBSn-2450-S: Dual band sector antenna
- Right: WBSn-2450-O: Dual band Omni-directional antenna



Wavion Ltd
WBSn-2450-O/-S 802.11 a/b/g/n Wireless Access Point



Wavion Ltd
WBSn-2450-O/-S 802.11 a/b/g/n Wireless Access Point





Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 17 of 412

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	Wavion	WBSn-2450-O	1153R00131565
EUT	802.11a/b/g/n Wireless Access Point	Wavion	WBSn-2450-O	1206R00144608
EUT	802.11a/b/g/n Wireless Access Point	Wavion	WBSn-2450-S	1153R00131566
Support	POE	PhiHong	POE61U-560DG	--
Support	Laptop PC	IBM	Thinkpad	None

3.4. Antenna Details

Antenna Type:	Manufacturer	Model No.	Type	Gain (dBi)	Frequency Range (MHz)
External	MTI Wireless Edge Ltd	MT-952021	Omni	7.4	2400 – 2483.5
Integral	Self	None	Sector	12.0	2400 – 2483.5
External	MTI Wireless Edge Ltd	MT-952021	Omni	8.5	4,900 - 5,900
Integral	Self	None	Sector	14.0	4,900 - 5,900

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3.5. Cabling and I/O Ports

Number and type of I/O ports

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

3.6. Test Configurations

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

Operational Mode(s) (802.11a/b/g/n)	Variant	Data Rate with Highest Power	Frequencies (MHz)
b	Legacy	1 MBit/s	2,412
g	Legacy	6 MBit/s	2,437
n	HT-20	6.5 (MCS 0)	2,462
	HT-40	13.5 (MCS 0)	2,422 2,437 2,452
a, 5 MHz	Legacy	6 MBit/s	5,730.5 5,790.5 5,845.5
a, 10 MHz	Legacy	6 MBit/s	5,735 5,790 5,840
a, 20 MHz	Legacy	6 MBit/s	5,745 5,785
n	HT-20	6.5 (MCS 0)	5,825
	HT-40	13.5 (MCS 0)	5,755 5,795

Legacy – data rates for 802.11abg products

Results for the above configurations are provided in this report.



Antenna Test Configurations for Radiated Emissions

Results for the following configurations are provided in this report.

2,400 – 2483.5 MHz

5,725 – 5850 MHz

15.247	
802.11b	b SE 2412
	b SE 2437
	b SE 2462
	BE b 2390
	BE b 2483.5
802.11g	g SE 2412
	g SE 2437
	g SE 2462
	BE g 2390
	BE g 2483.5
802.11n HT-20	n HT-20 SE 2412
	n HT-20 SE 2437
	n HT-20 SE 2462
	BE n HT-20 2390
	BE n HT-20 2483.5
802.11n HT-40	n HT-40 SE 2422
	n HT-40 SE 2437
	n HT-40 SE 2452
	BE n HT-40 2390
	BE n HT-40 2483.5

15.247	
802.11a, 5 MHz	a SE 5730.5
	a SE 5790.5
	a SE 5845.5
	BE a 5460
802.11a, 10 MHz	a SE 5735
	a SE 5790
	a SE 5840
	BE a 5460
802.11a, 20 MHz	a SE 5745
	a SE 5785
	a SE 5825
	BE a 5460
802.11n HT-20	n HT-20 SE 5745
	n HT-20 SE 5785
	n HT-20 SE 5825
	BE HT-20 5460
802.11n HT-40	n HT-40 SE 5755
	n HT-40 SE 5785
	n HT-40 SE 5815
	BE HT-40 5460

KEY:-

SE – Spurious Emission
BE – Band-Edge



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 20 of 412

3.7. Equipment Modifications

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

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

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 21 of 412

4. TEST SUMMARY

List of Measurements

The following table represents the list of measurements required under the **FCC CFR47 Part 15.247** and **Industry Canada RSS-210** and **Industry Canada RSS-Gen**.

Section(s)	Test Items	Description	Condition	Result	Test Report Section
15.247(a)(2) A8.2(1) 4.4	6 dB and 99 % Bandwidths	≥500 kHz	Conducted	Complies	5.1.1
15.247(b)(3) 15.31(e) A8.4(4)	Peak Output Power Voltage Variation	Shall not exceed 1W Variation of supply voltage 85 % -115 %	Conducted	Complies	5.1.2
15.247(e) A8.2	Peak Power Spectral Density	Shall not be greater than +8 dBm in any 3 kHz band	Conducted	Complies	5.1.3
15.247(i) 5.5	Maximum Permissible Exposure	Exposure to radio frequency energy levels	Conducted	Complies	5.1.4
15.247(d) 15.205 / 15.209 A8.5 2.2 4.7	Spurious Emissions	The radiated emission in any 100 kHz of out-band shall be at least 20 dB below the highest in-band spectral density	Conducted	Complies	5.1.5

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 22 of 412

List of Measurements (continued)

The following table represents the list of measurements required under the **FCC CFR47 Part 15.247**, **Industry Canada RSS-210**, and **Industry Canada RSS-Gen**.

Section(s)	Test Items	Description	Condition	Result	Test Report Section
15.247(d) 15.205 / 15.209 A8.5 2.2 2.6 4.7	Radiated Emissions	Restricted Bands	Radiated	Complies	5.1.6
	Transmitter Radiated Spurious Emissions	Emissions above 1 GHz		Complies	5.1.6.1
	Radiated Band Edge	Band-edge results		Complies	5.1.6.2.
	Peak Emissions				
Industry Canada only RSS-Gen §4.10, §6	Receiver Radiated Spurious Emissions	Emissions above 1 GHz		Complies	5.1.6.3
15.205 / 15.209 2.2	Radiated Spurious Emissions	Emissions <1 GHz (30M-1 GHz)	Radiated	Complies	5.1.6.4
15.207 7.2.2	AC Wireline Conducted Emissions 150 kHz–30 MHz	Conducted Emissions	Conducted	Complies	5.1.7

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

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5. TEST RESULTS

5.1. Device Characteristics

5.1.1. 6 dB and 99 % Bandwidth

FCC, Part 15 Subpart C §15.247(a)(2)

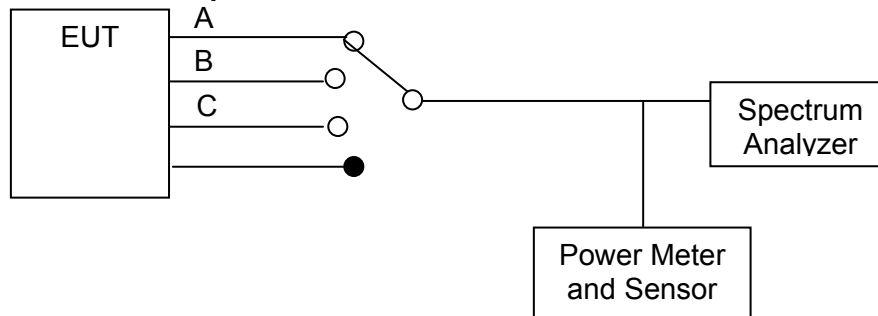
Industry Canada RSS-210 §A8.2

Industry Canada RSS-Gen §4.4

Test Procedure

The bandwidth at 6 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 6 dB and 99 % bandwidth test

Measurement Results for 6 dB & 99% Bandwidth

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: Default, Maximum Power

Test s/w: ART



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 24 of 412

Measurement Results for 6 dB Operational Bandwidth(s) Ambient conditions.

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

TABLE OF RESULTS – 802.11b Legacy

Test Conditions:	15.247 (a)(2)	Rel. Humidity (%):	35 to 42
Variant:	802.11b	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:	48.00 Vdc		
Notes 1:			
Notes 2:			

6 dB Bandwidth

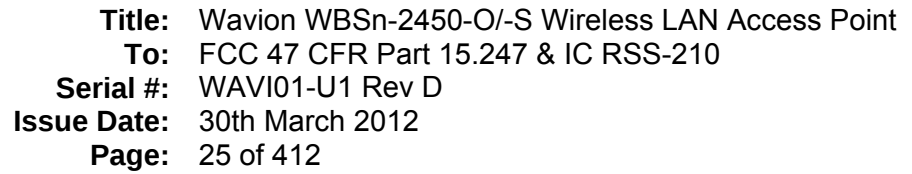
Test Frequency	6 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	a	b	c	d	kHz	MHz	MHz
2412.000	9.218	10.180	10.180	--	500	0.5	-8.718000
2437.000	10.100	10.180	11.142	--			-9.600000
2462.000	10.100	10.581	10.180	--			-9.600000

99% Bandwidth

Test Frequency	99 % Bandwidth						
	MHz						
MHz	a	b	c	d			
2412.000	15.150	14.990	15.311	--			
2437.000	14.589	14.108	14.910	--			
2462.000	15.711	15.070	17.234	--			

Measurement uncertainty:	±2.81 dB
---------------------------------	----------

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Ref Lvl 25 dBm
 Delta 1 [T1] 3.30 dB
 RBW 100 kHz
 VBW 300 kHz
 RF Att 20 dB
 Unit dBm
 15.6 dB Offset
 D1 13.371 dBm
 D2 7.371 dBm
 1VIEW
 T1
 T2
 OPB
 T1 [T1]
 T2 [T1]
 T1 [T1]
 T2 [T1]

Measurement	Value
1 [T1]	4.69 dBm
2 [T1]	2.40787174 GHz
1 [T1]	3.30 dB
9.21843687 MHz	9.21843687 MHz
OPB	15.15030060 MHz
T1 [T1]	-0.59 dBm
T2 [T1]	2.40498597 GHz
T2 [T1]	-3.79 dBm
T1 [T1]	2.42013627 GHz
T2 [T1]	13.37 dBm
T1 [T1]	2.41348297 GHz

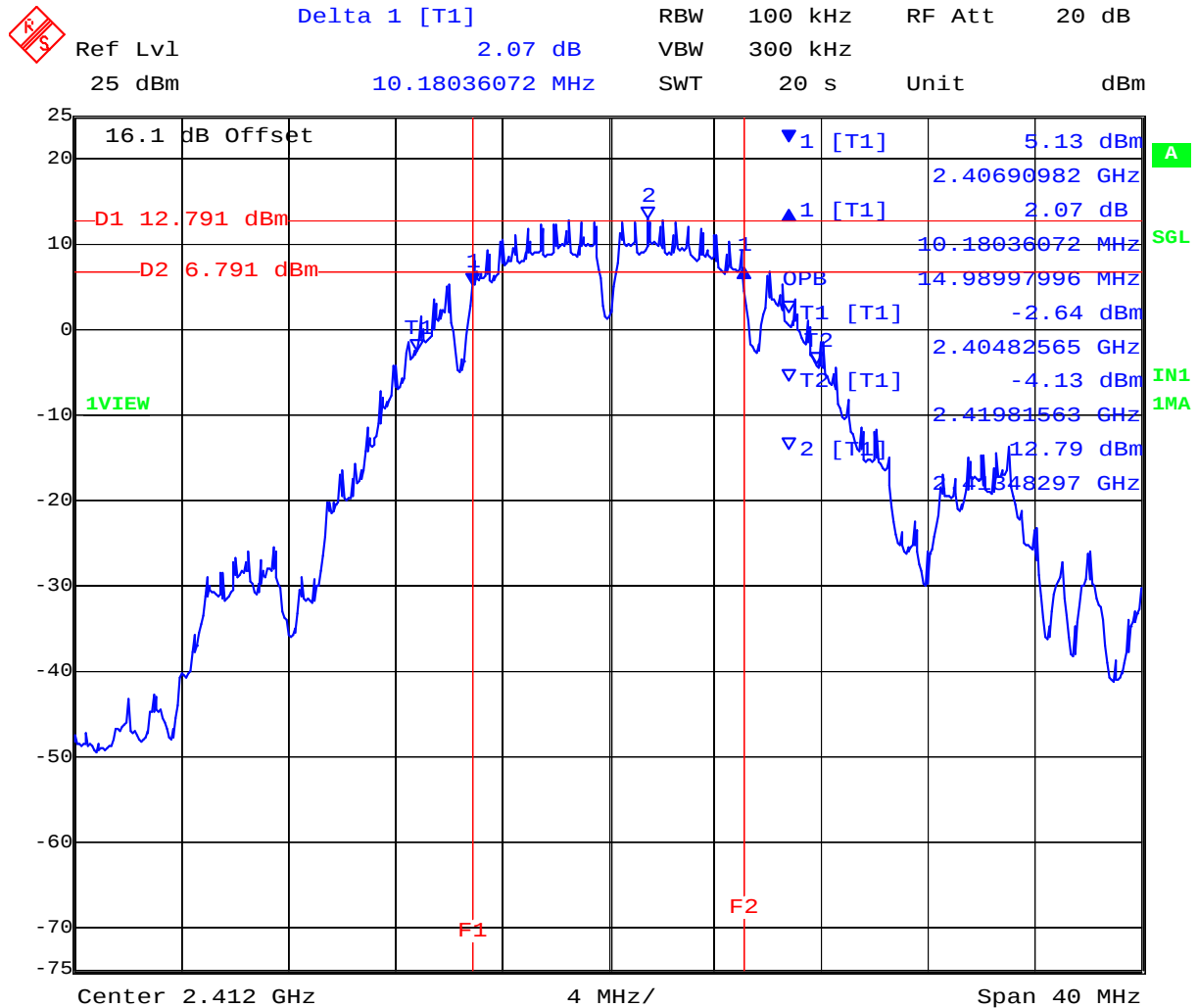
Center 2.412 GHz
 4 MHz/
 Span 40 MHz

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 26 of 412

PORT B 2,412 MHz 802.11b Legacy 6 dB and 99% Bandwidth



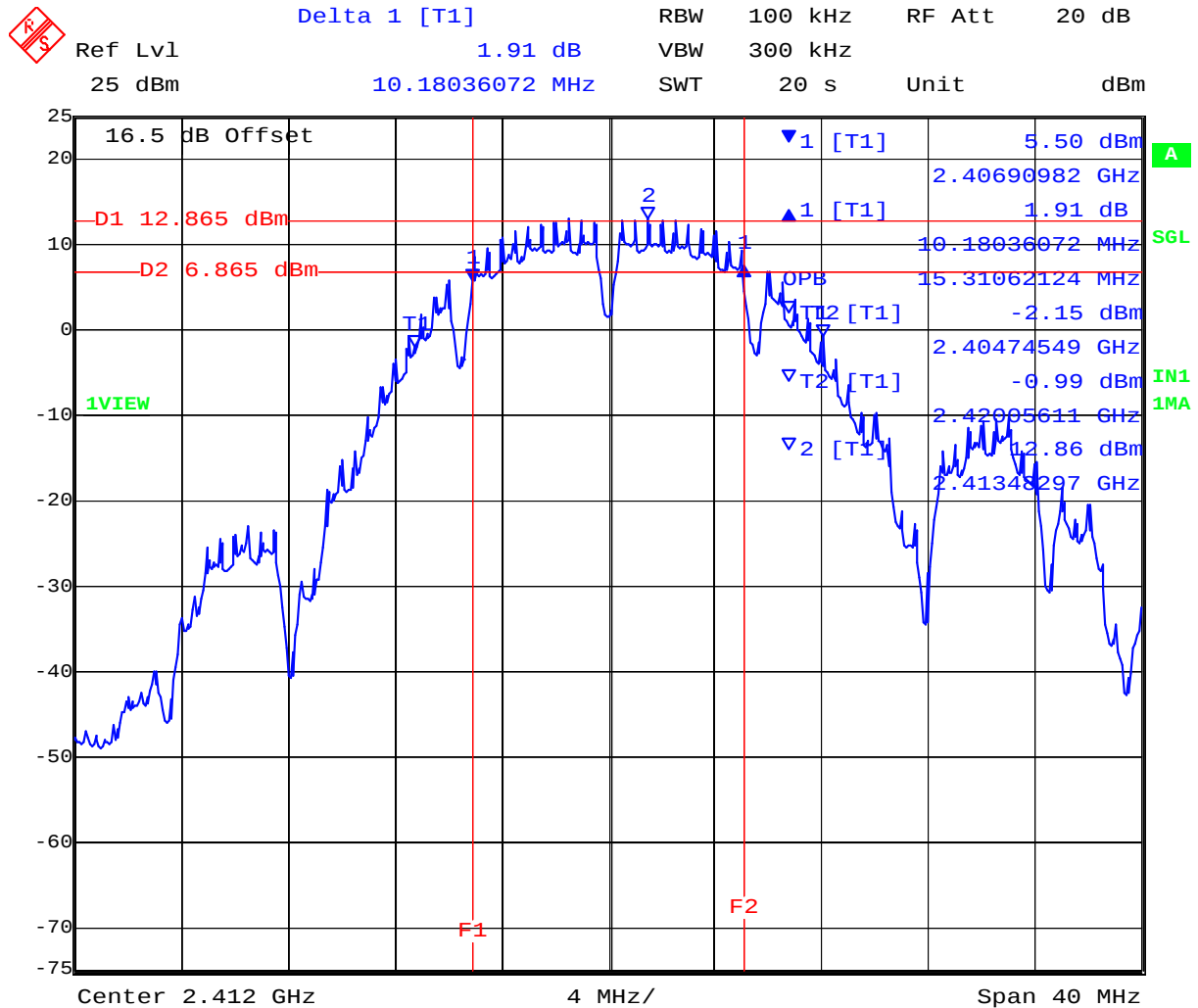
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 27 of 412

PORT C 2,412 MHz 802.11b Legacy 6 dB and 99% Bandwidth



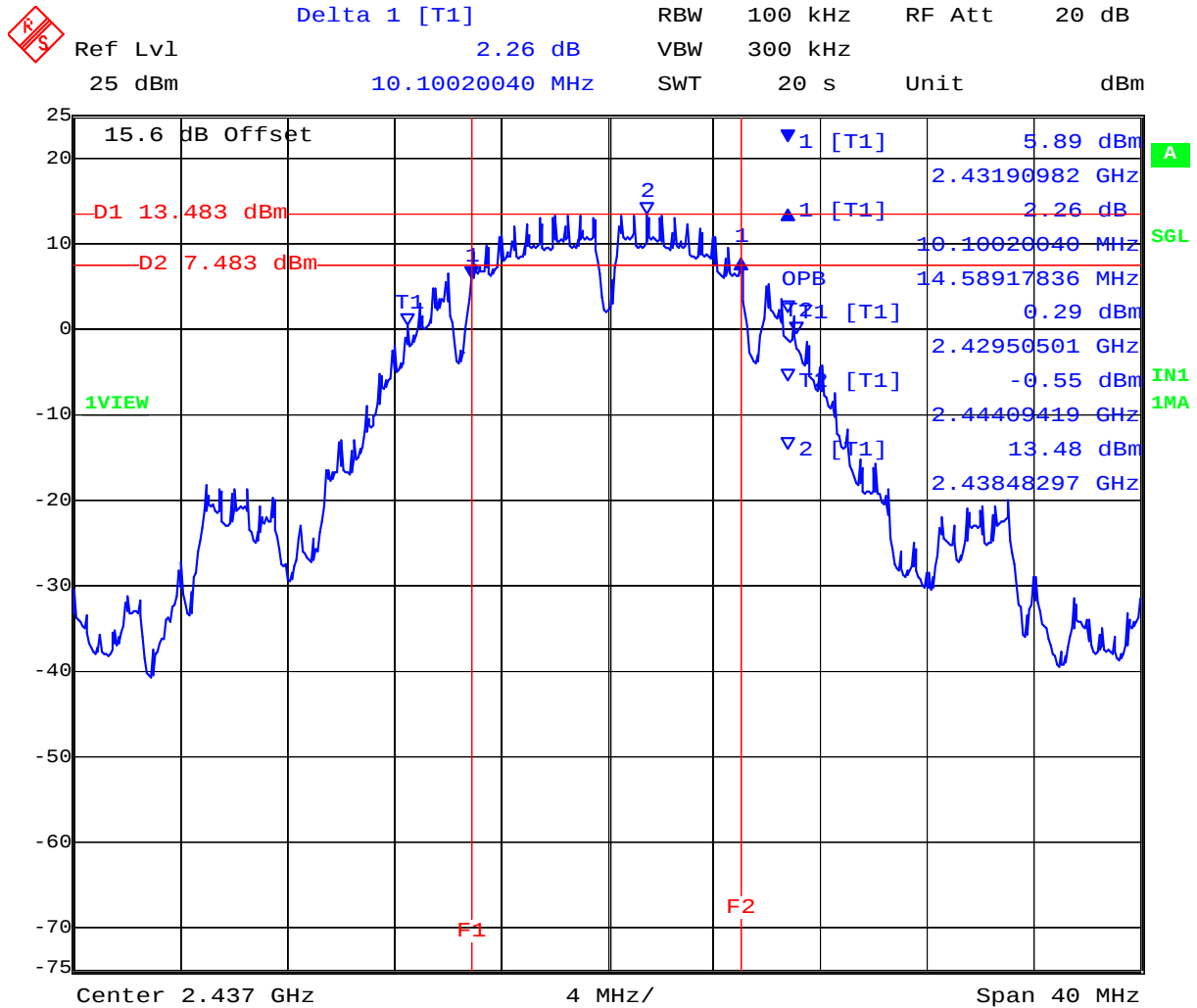
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 28 of 412

PORT A 2,437 MHz 802.11b Legacy 6 dB and 99% Bandwidth



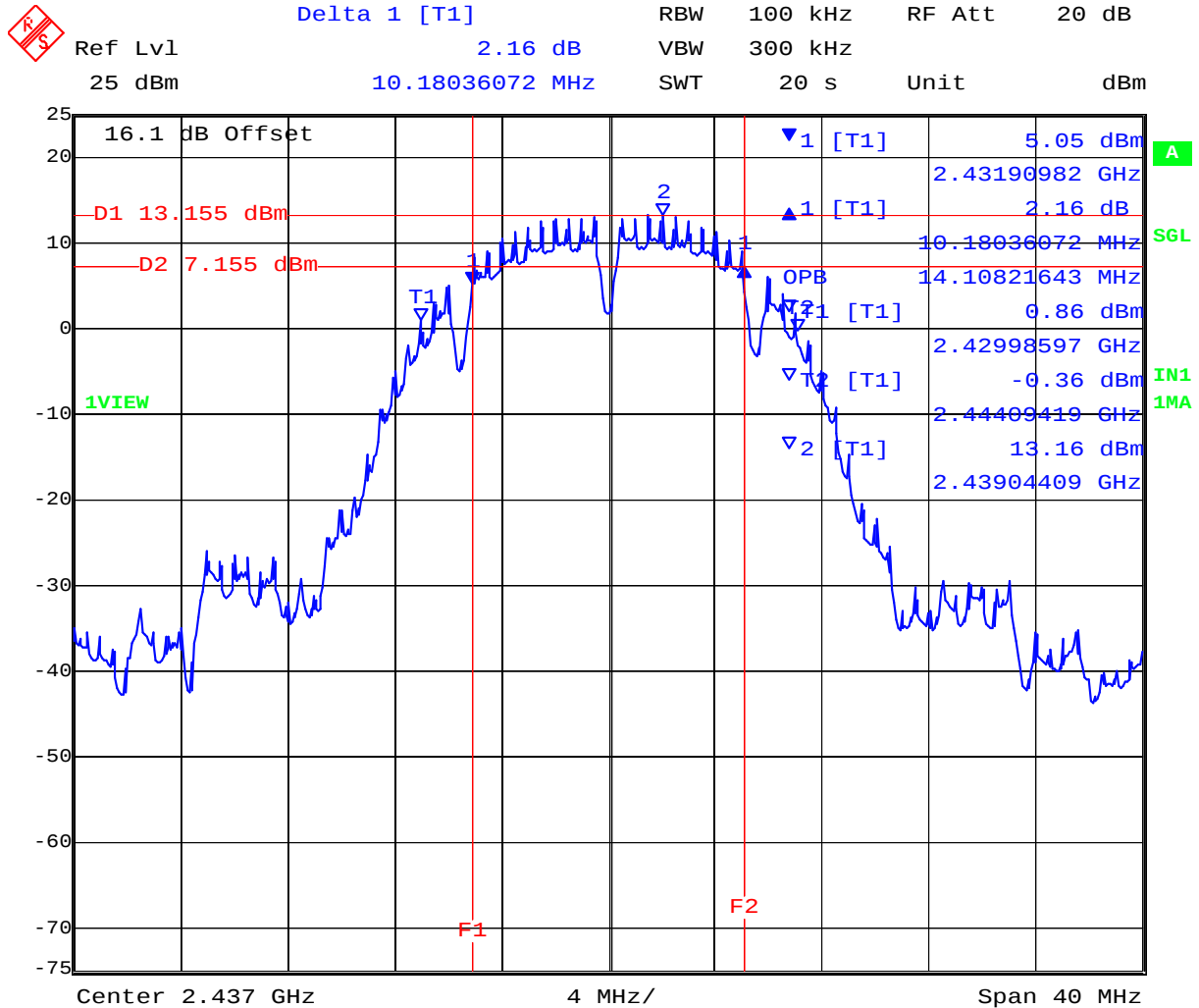
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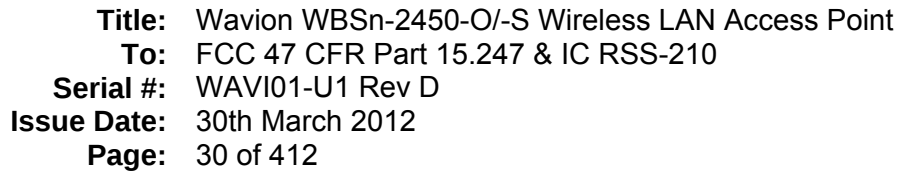
Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 29 of 412

PORT B 2,437 MHz 802.11b Legacy 6 dB and 99% Bandwidth



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Ref Lvl 25 dBm Delta 1 [T1] 0.80 dB RBW 100 kHz RF Att 20 dB

25 dBm 11.14228457 MHz VBW 300 kHz Unit dBm

16.5 dB Offset

D1 12.549 dBm D2 6.549 dBm

1VIEW

▼1 [T1] 5.92 dBm 2.43190982 GHz ▲1 [T1] 0.80 dB 11.14228457 MHz

OPB 14.90981964 MHz

▼T1 [T1] -0.10 dBm 2.42950501 GHz

▼T1 [T1] -2.49 dBm 2.44441483 GHz

▼2 [T1] 12.55 dBm 2.43848297 GHz

F1 F2

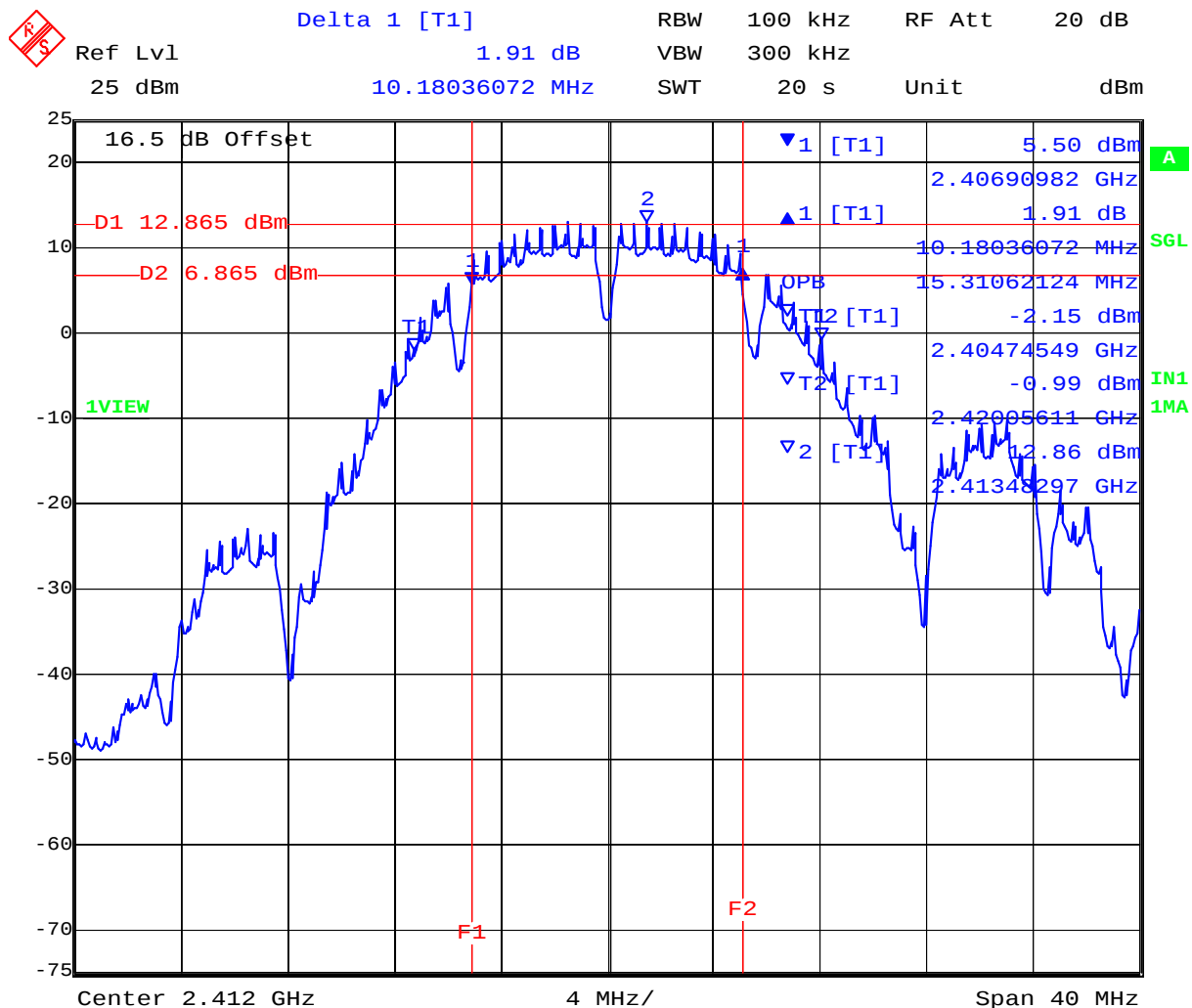
Center 2.437 GHz 4 MHz/ Span 40 MHz

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 31 of 412

PORT A 2,462 MHz 802.11b Legacy 6 dB and 99% Bandwidth



Date: 29.FEB.2012 13:01:22

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 32 of 412

PORT B 2,462 MHz 802.11b Legacy 6 dB and 99% Bandwidth



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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 33 of 412

PORT C 2,462 MHz 802.11b Legacy 6 dB and 99% Bandwidth



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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 34 of 412

TABLE OF RESULTS – 802.11g Legacy

Test Conditions:	15.247 (a)(2)	Rel. Humidity (%):	35	to	42
Variant:	802.11b	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:	48.00 Vdc				
Notes 1:					
Notes 2:					

6 dB Bandwidth

Test Frequency	6 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	a	b	c	d	kHz	MHz	MHz
2412.000	16.032	16.513	16.513	--	500	0.5	-15.532000
2437.000	16.593	16.593	16.673	--			-16.093000
2462.000	16.433	16.273	14.669	--			-14.169000

99% Bandwidth

Test Frequency	99 % Bandwidth						
	MHz						
MHz	a	b	c	d			
2412.000	24.850	24.369	25.491	--			
2437.000	27.896	23.968	27.174	--			
2462.000	24.208	24.529	25.331	--			

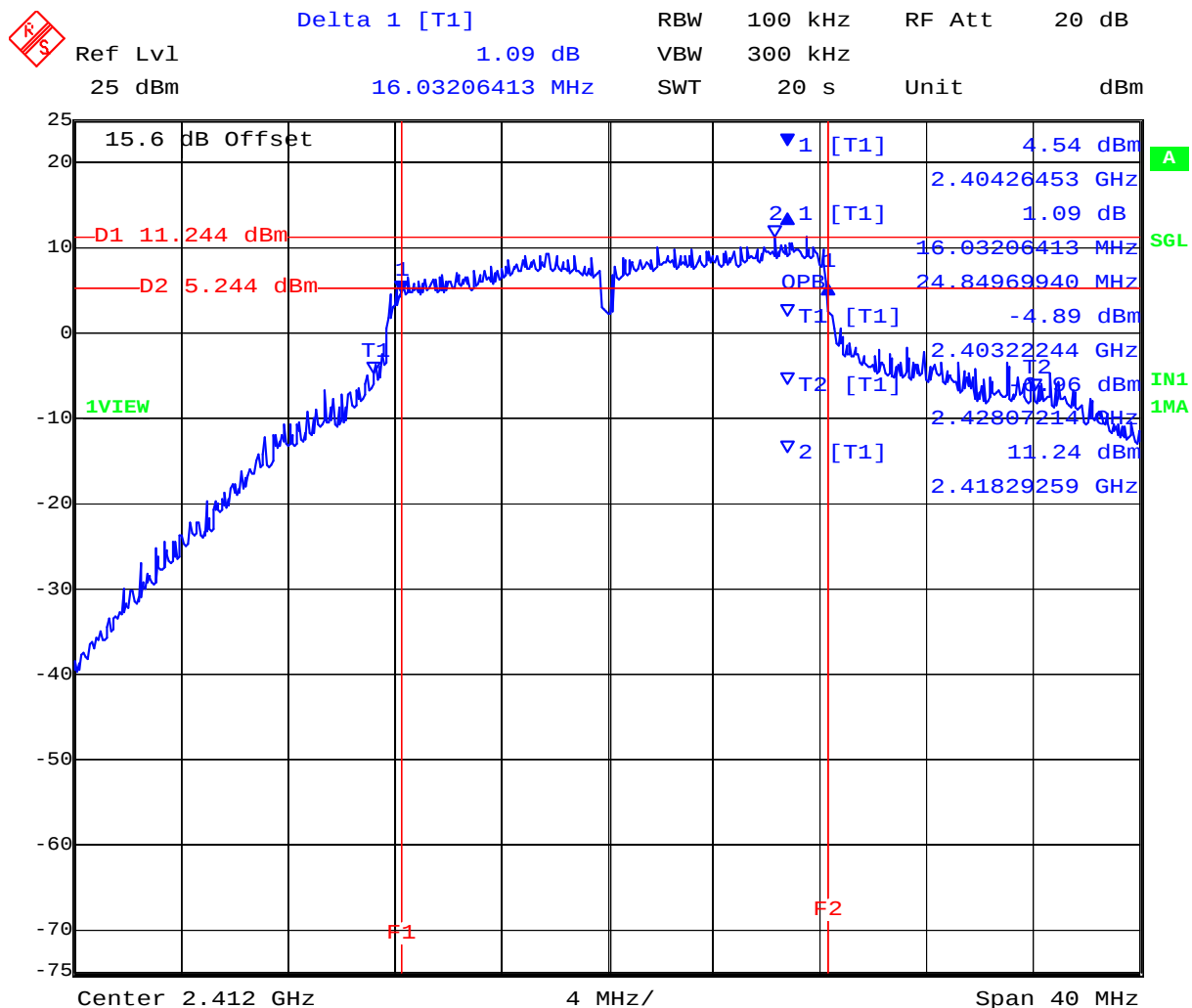
Measurement uncertainty:	±2.81 dB
---------------------------------	----------

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 35 of 412

PORT A 2,412 MHz 802.11g Legacy 6 dB and 99% Bandwidth



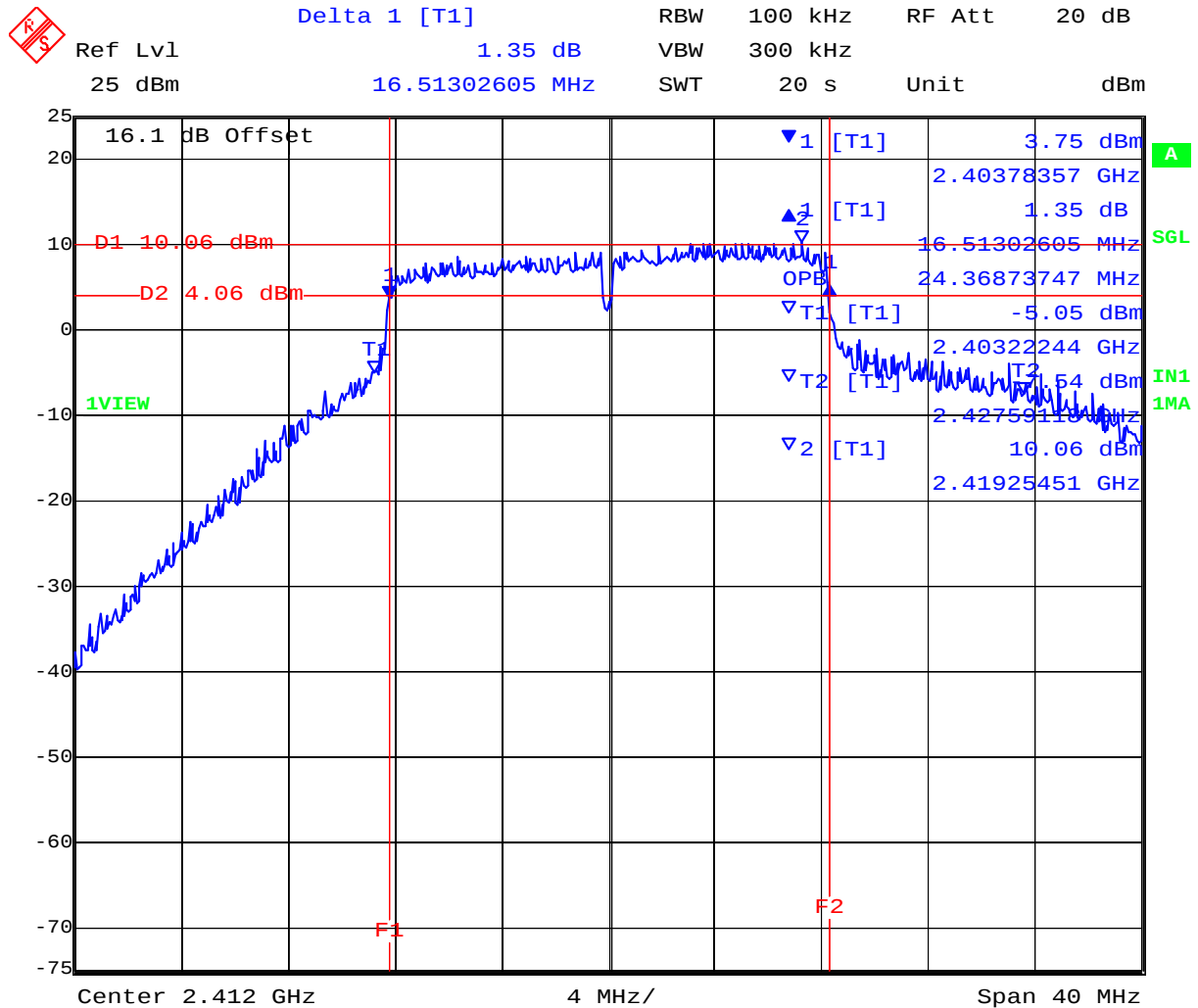
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 36 of 412

PORT B 2,412 MHz 802.11g Legacy 6 dB and 99% Bandwidth



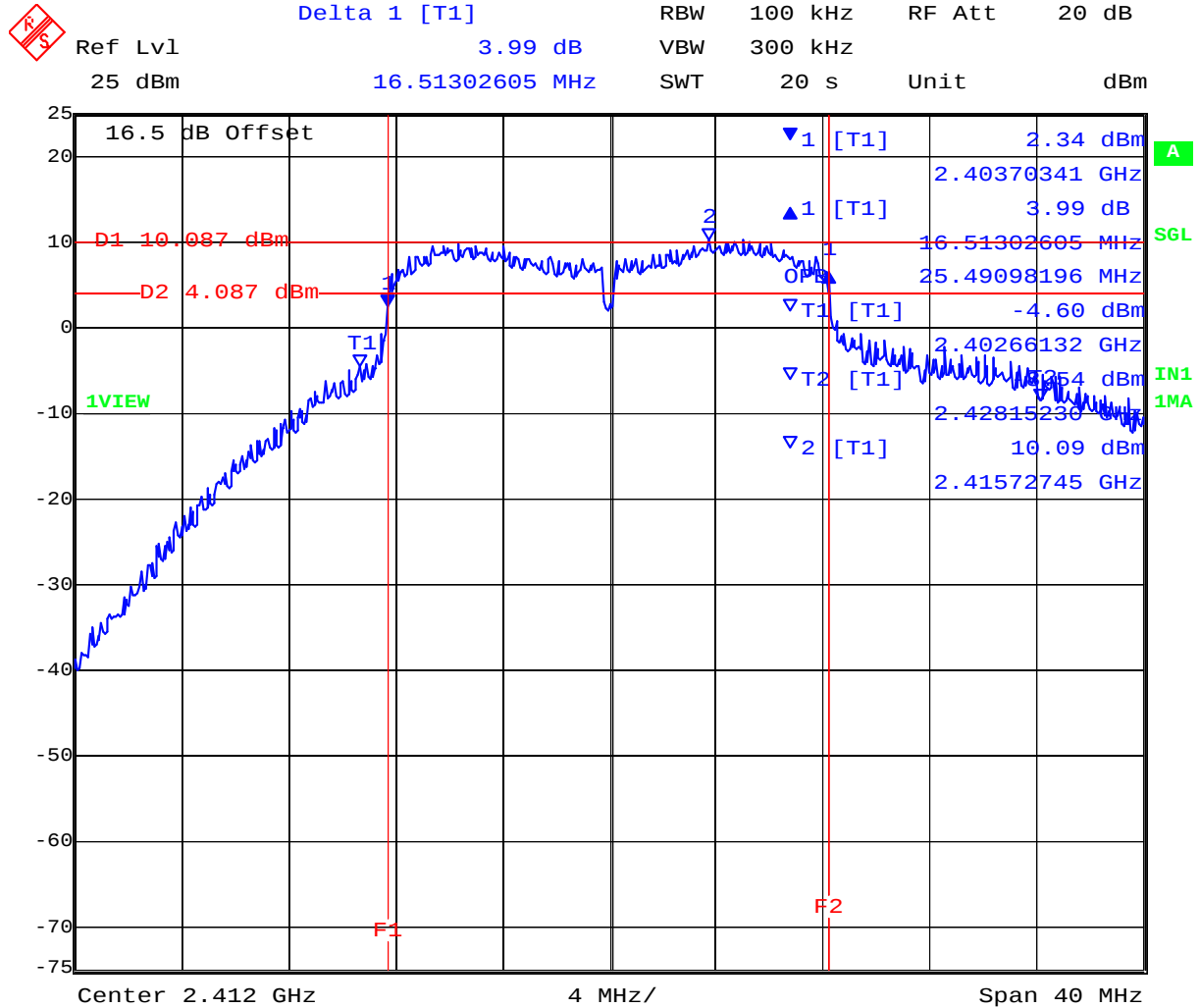
Date: 29.FEB.2012 11:17:58

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 37 of 412

PORT C 2,412 MHz 802.11g Legacy 6 dB and 99% Bandwidth



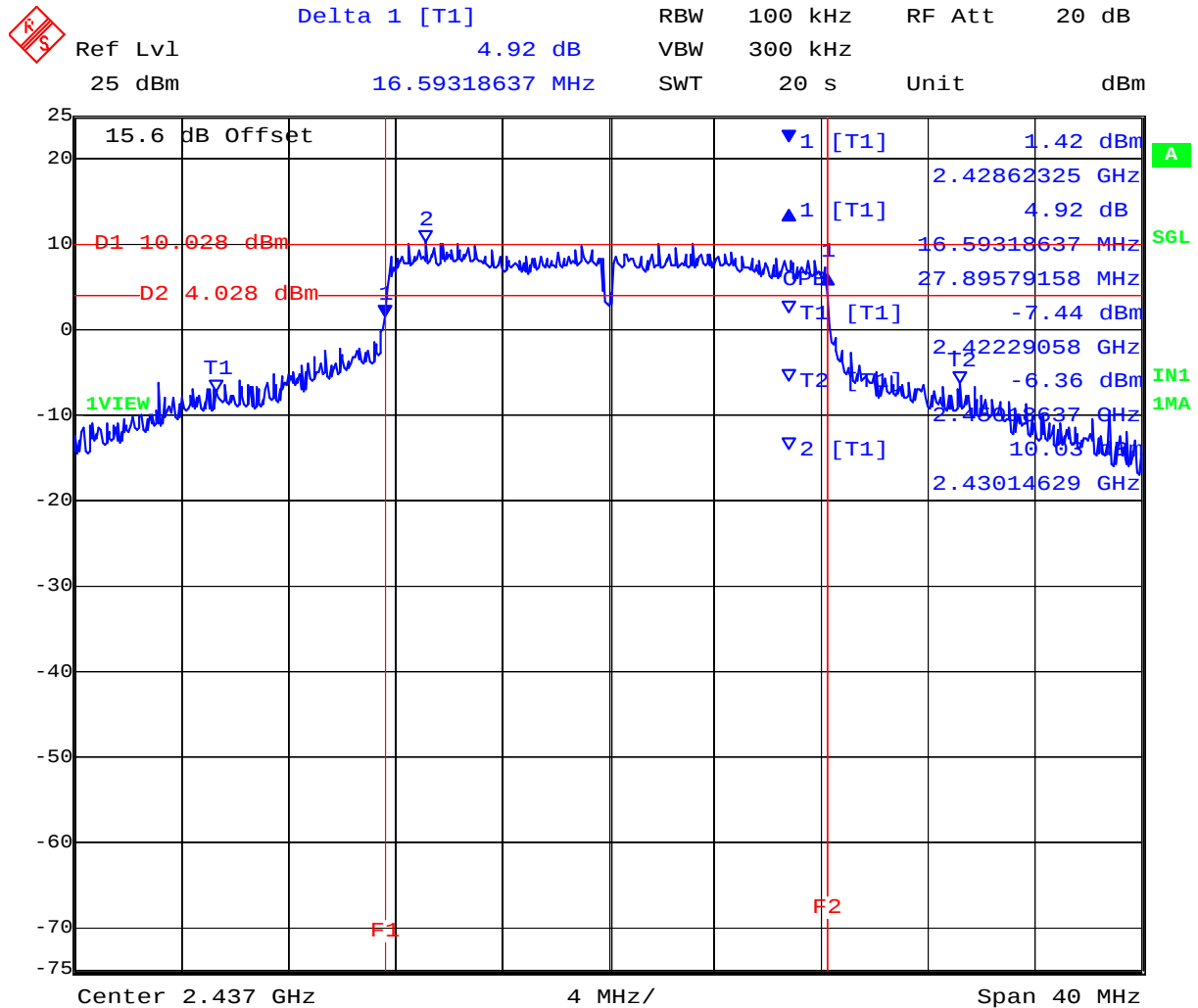
Date: 29.FEB.2012 11:19:01

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 38 of 412

PORT A 2,437 MHz 802.11g Legacy 6 dB and 99% Bandwidth



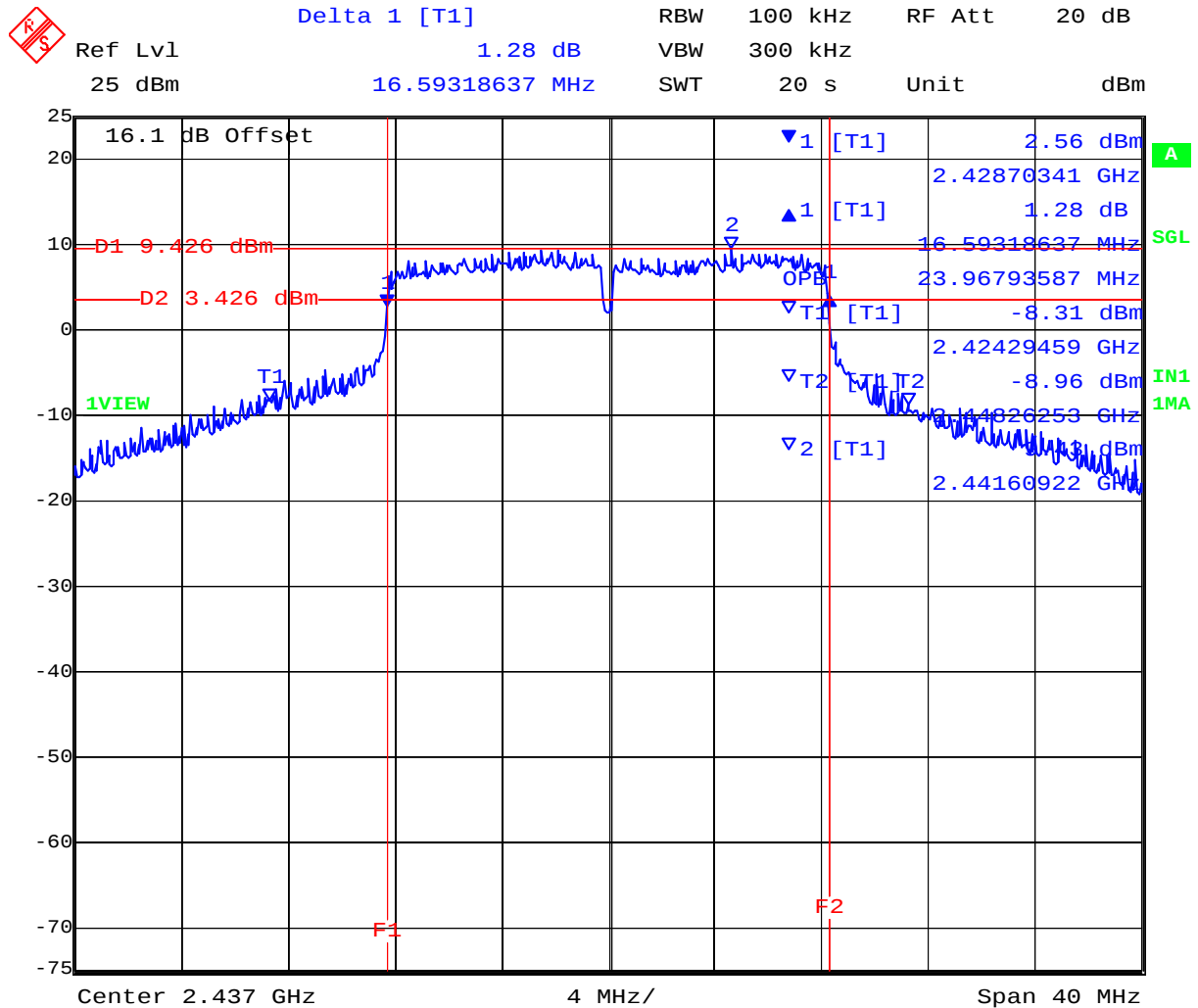
Date: 29.FEB.2012 11:52:23

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 39 of 412

PORT B 2,437 MHz 802.11g Legacy 6 dB and 99% Bandwidth



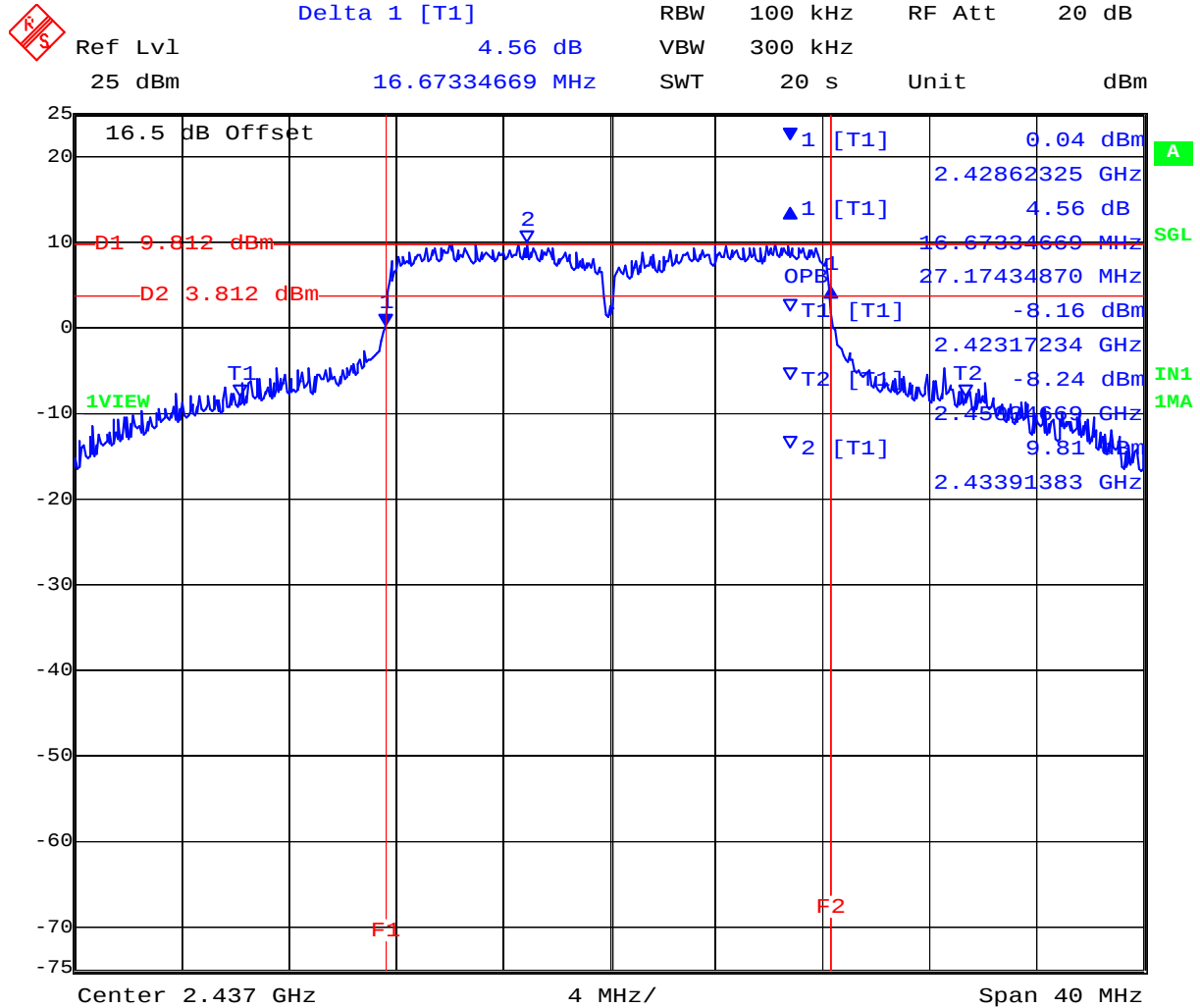
Date: 29.FEB.2012 11:53:28

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 40 of 412

PORT C 2,437 MHz 802.11g Legacy 6 dB and 99% Bandwidth



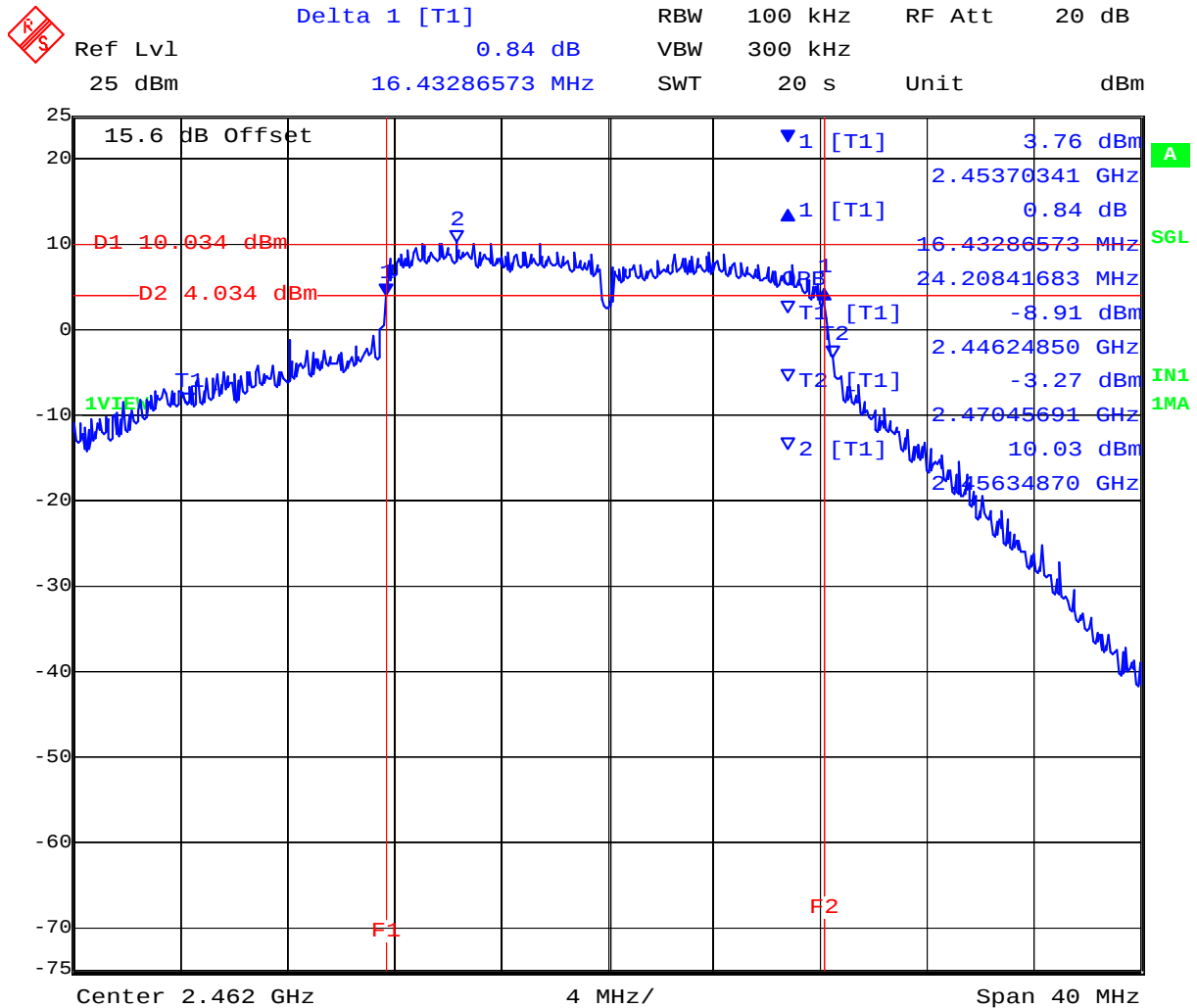
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 41 of 412

PORT A 2,462 MHz 802.11g Legacy 6 dB and 99% Bandwidth



Date: 29.FEB.2012 12:23:59

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 42 of 412

PORT B 2,462 MHz 802.11g Legacy 6 dB and 99% Bandwidth



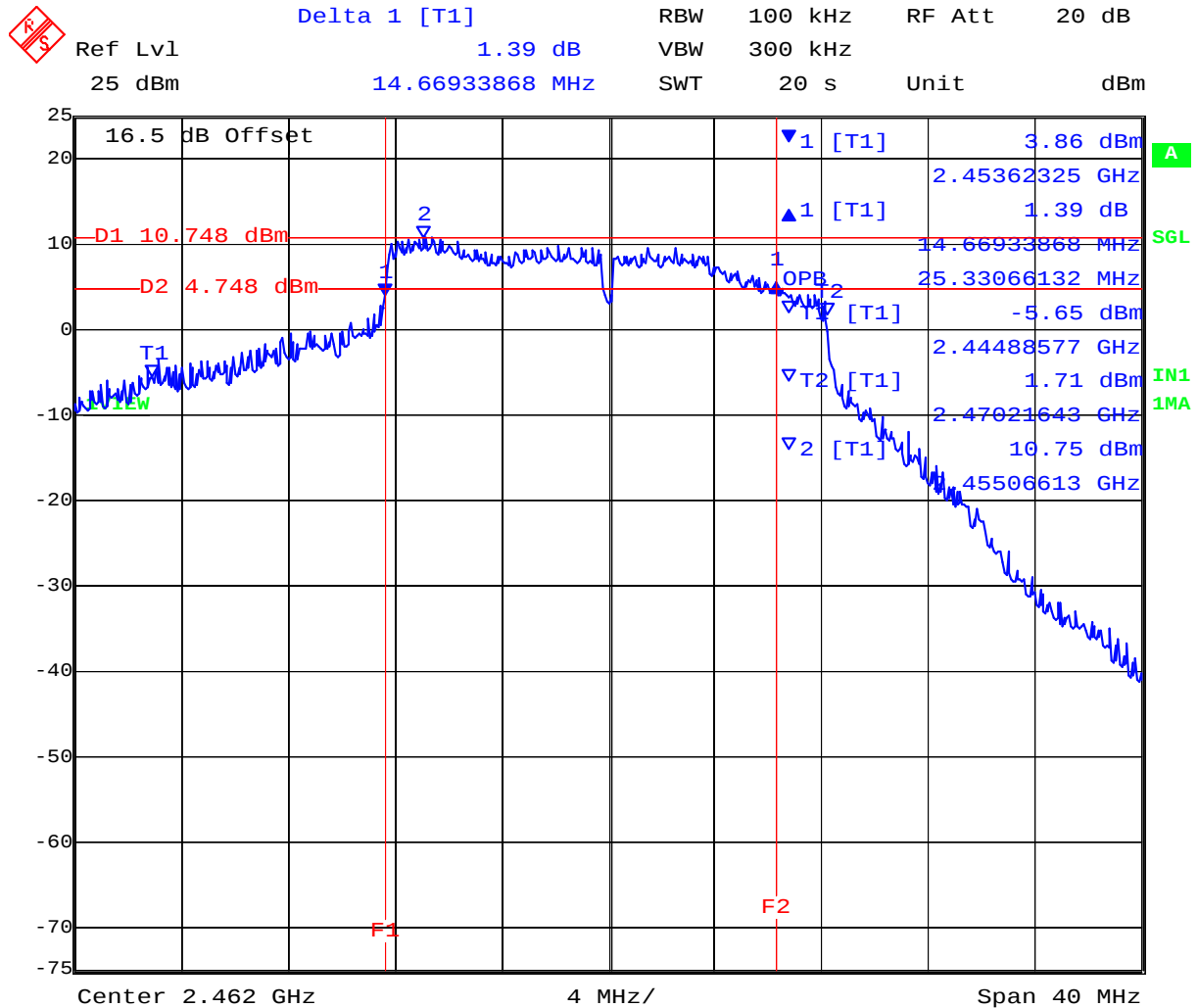
Date: 29.FEB.2012 12:25:06

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 43 of 412

PORT C 2,462 MHz 802.11g Legacy 6 dB and 99% Bandwidth



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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 44 of 412

TABLE OF RESULTS – 802.11n HT-20

Test Conditions:	15.247 (a)(2)	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:	48.00 Vdc				
Notes 1:					
Notes 2:					

6 dB Bandwidth

Test Frequency	6 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	a	b	c	d	kHz	MHz	MHz
2412.000	17.154000	17.796000	17.876000	--	500	0.5	-16.654000
2437.000	17.876000	17.796000	17.876000	--			-17.296000
2462.000	17.796000	17.154000	16.513000	--			-16.013000

99% Bandwidth

Test Frequency	99 % Bandwidth						
	MHz						
MHz	a	b	c	d			
2412.000	24.850000	24.609000	26.212000	--			
2437.000	27.816000	24.369000	27.655000	--			
2462.000	24.609000	25.651000	25.972000	--			

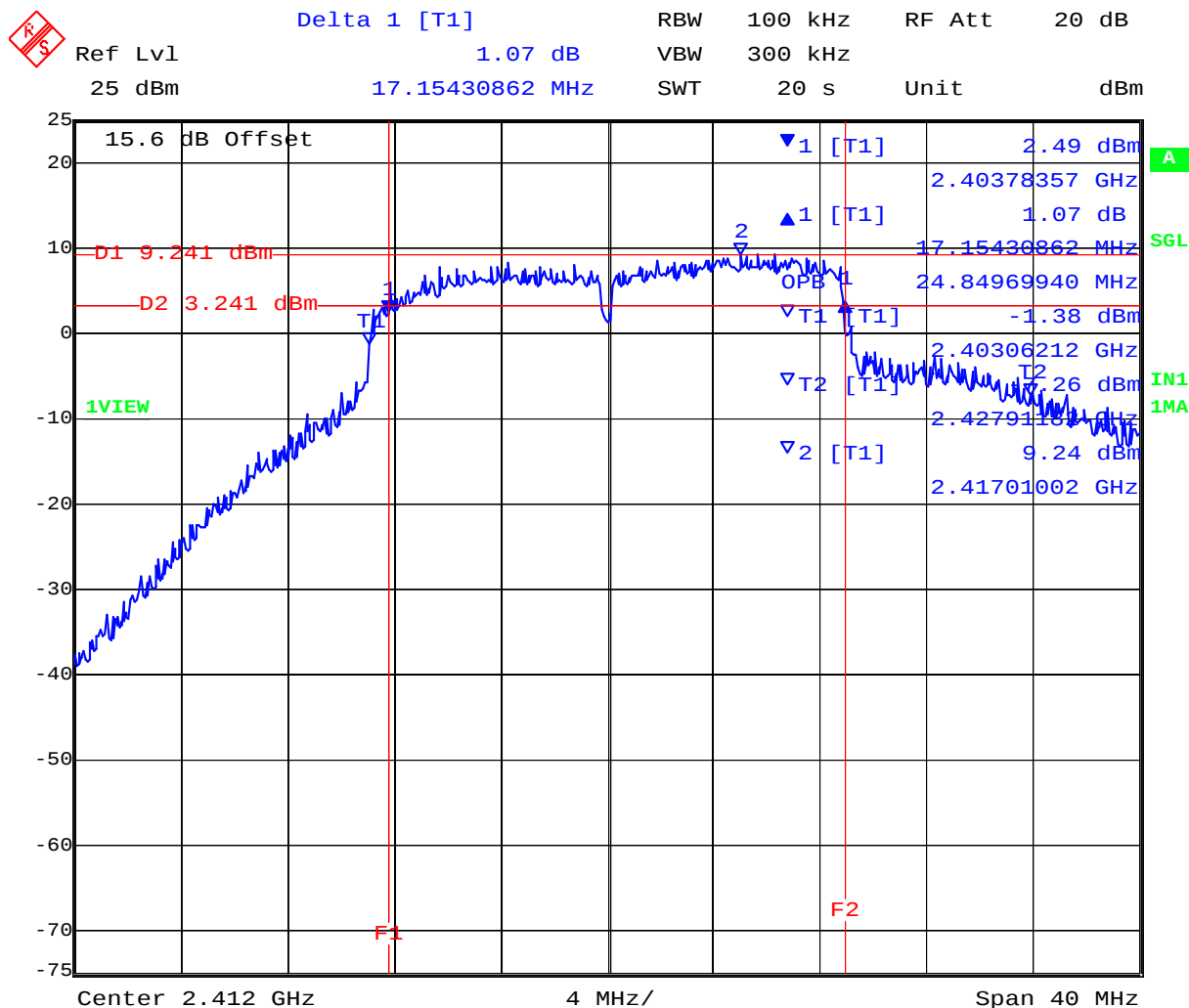
Measurement uncertainty:	±2.81 dB
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 45 of 412

PORT A 2,412 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



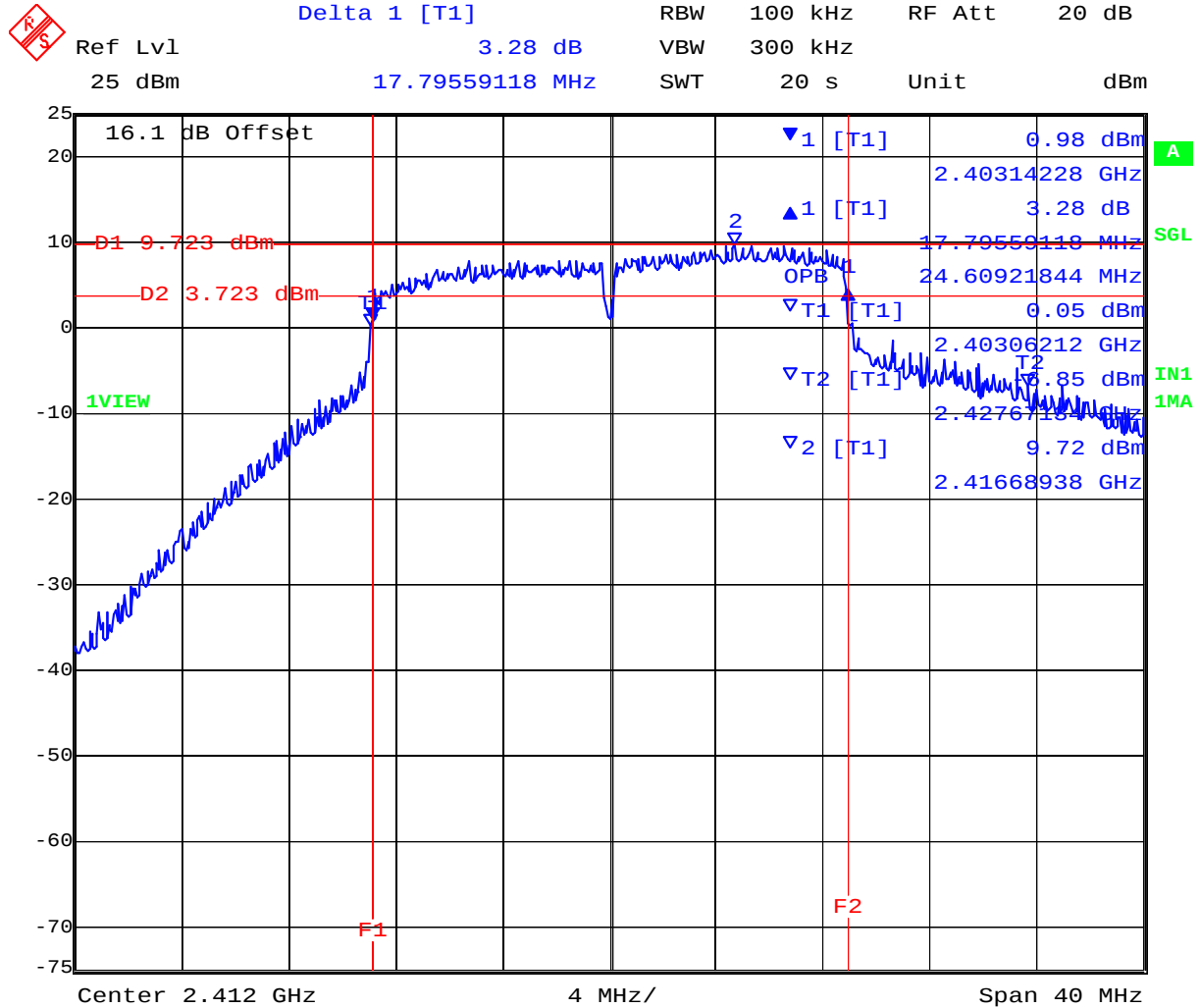
Date: 29.FEB.2012 15:16:42

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Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 46 of 412

PORT B 2,412 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



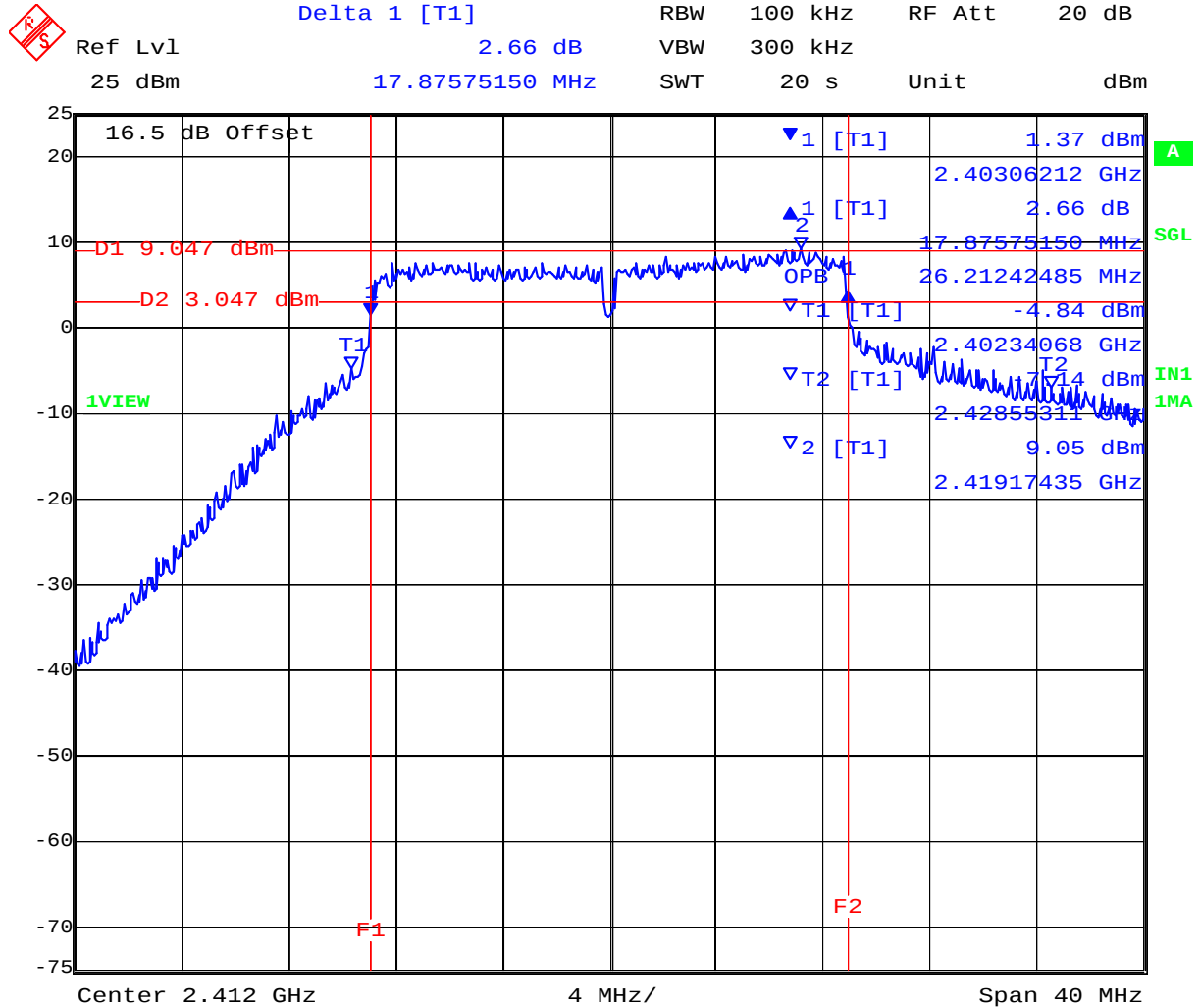
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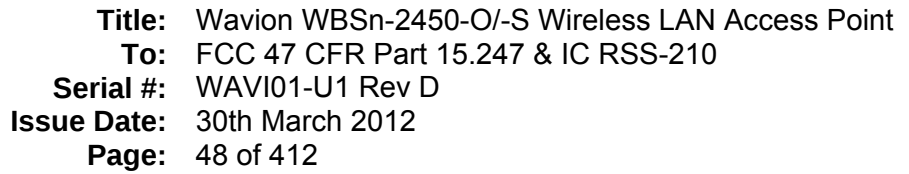
Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 47 of 412

PORT C 2,412 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



Date: 29.FEB.2012 15:18:49

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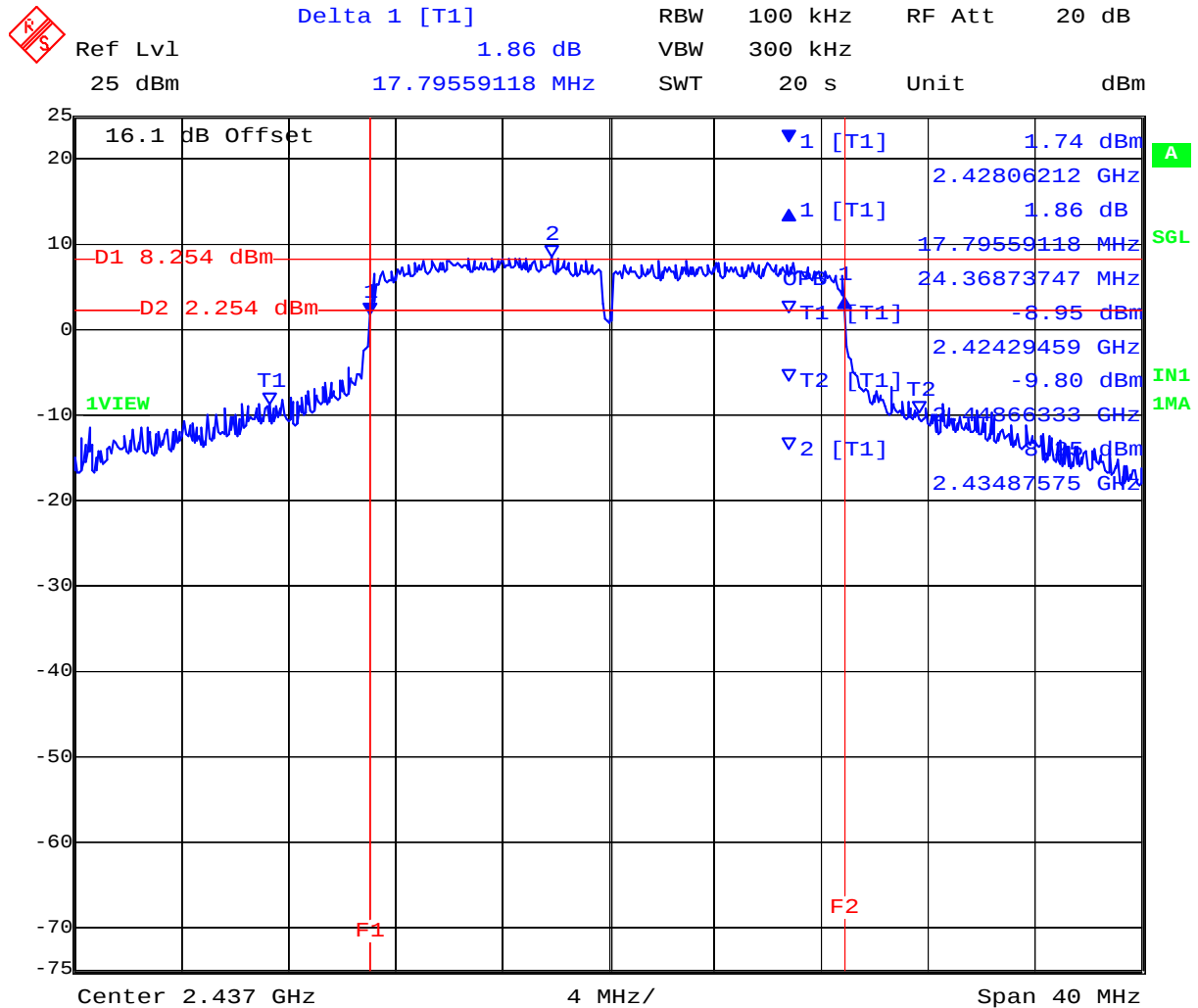
[illegible]

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



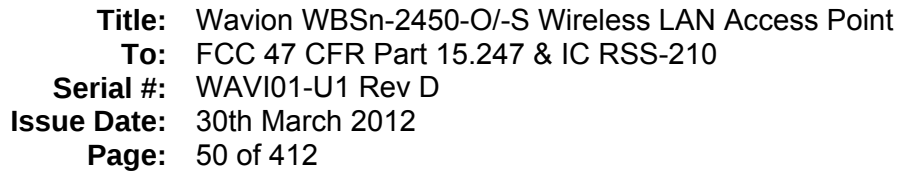
Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 49 of 412

PORT B 2,437 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



Date: 29.FEB.2012 15:30:57

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Ref Lvl 25 dBm Delta 1 [T1] 0.45 dB RBW 100 kHz RF Att 20 dB VBW 300 kHz Unit dBm

16.5 dB Offset

▼1 [T1] 3.07 dBm

▲1 [T1] 0.45 dB

D1 9.281 dBm

D2 3.281 dBm

1VIEW

T1

2

▼T1 [T1] -8.35 dBm

▼T2 [T1] -8.81 dBm

▼2 [T1] 9.281 dBm

2.42806212 GHz

17.87575150 MHz

27.65531062 MHz

2.42285170 GHz

2.43038677 GHz

2.437 GHz

4 MHz/

Span 40 MHz

A

SGL

IN1

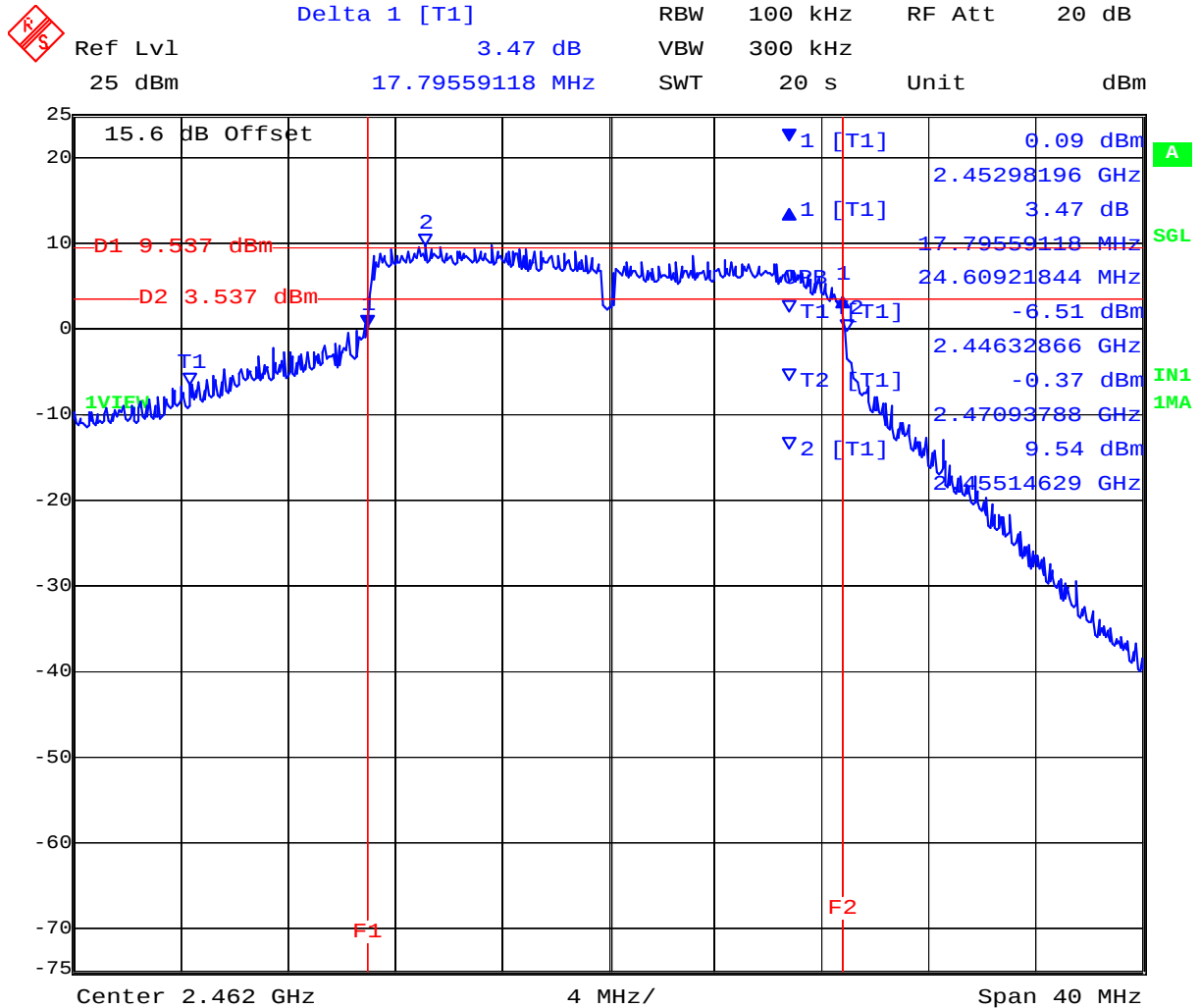
1MA

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



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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 51 of 412

PORT A 2,462 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth

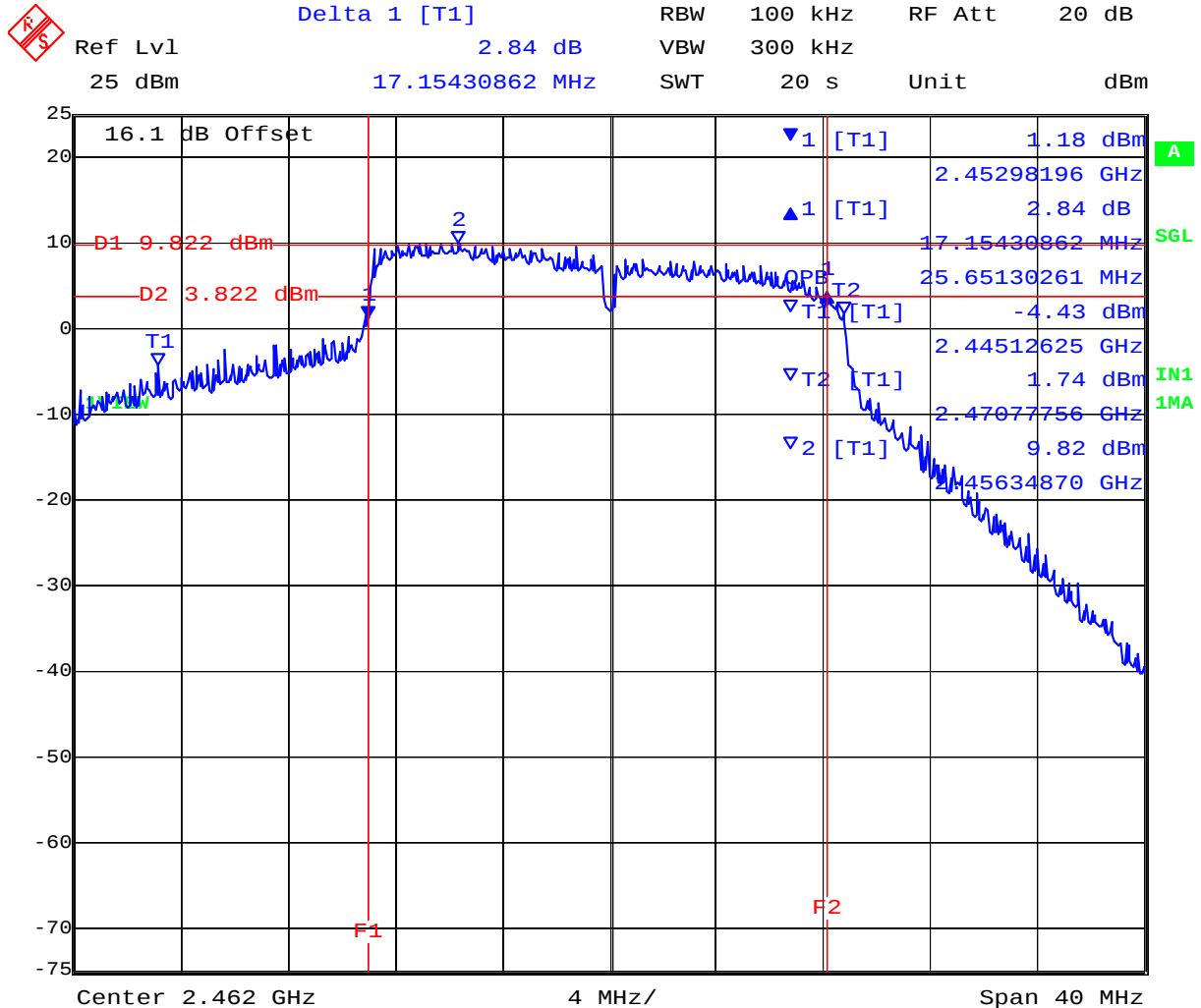


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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 52 of 412

PORT B 2,462 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



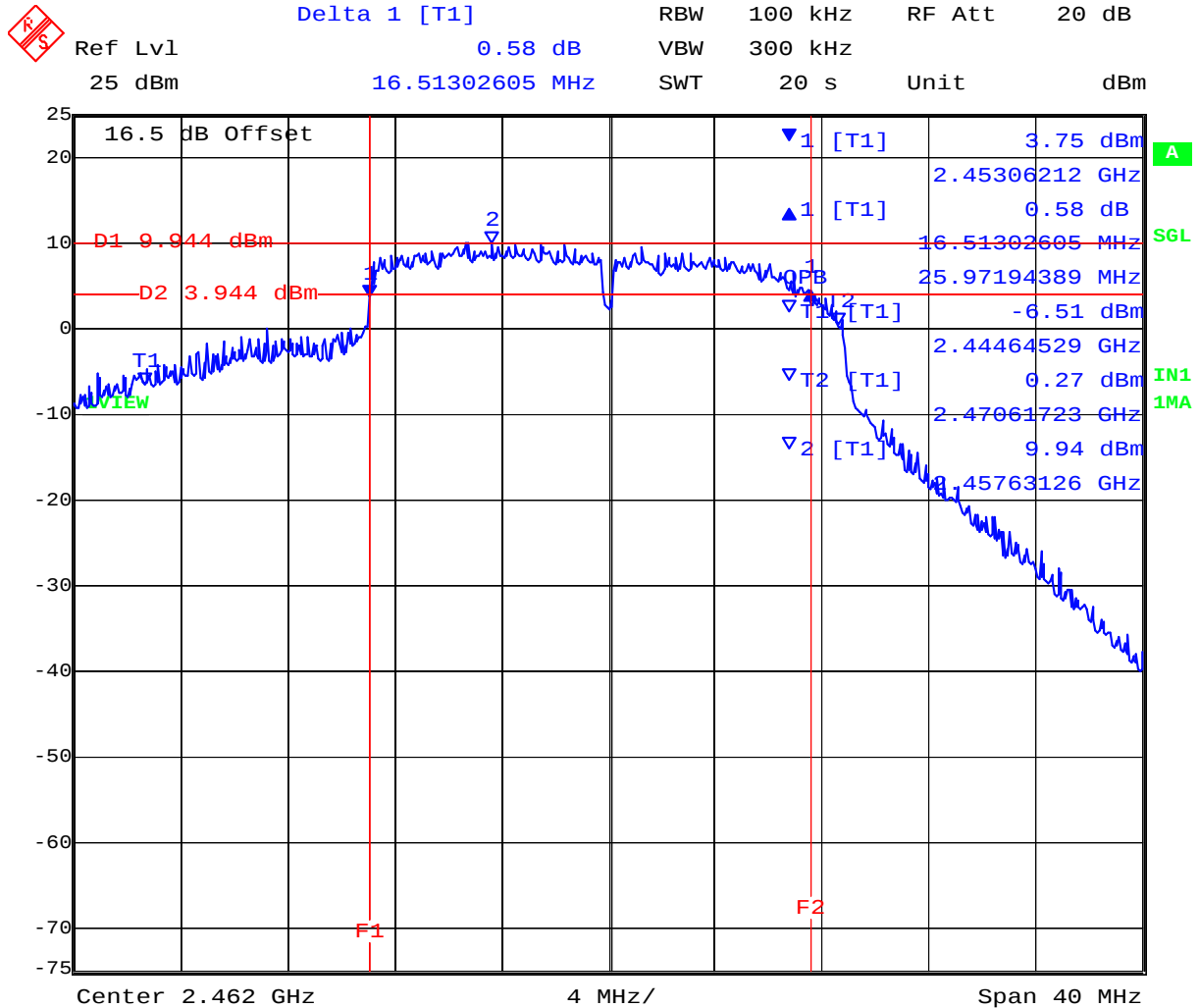
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 53 of 412

PORT C 2,462 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



Date: 29.FEB.2012 16:00:54

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 54 of 412

TABLE OF RESULTS – 802.11n HT-40

Test Conditions:	15.247 (a)(2)	Rel. Humidity (%):	35	to	42
Variant:	802.11n HT-40	Ambient Temp. (°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:	48.00 Vdc				
Notes 1:					
Notes 2:					

6 dB Bandwidth

Test Frequency	6 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	a	b	c	d	kHz	MHz	MHz
2422.000	34.469000	36.232000	36.713000	--	500	0.5	-33.969000
2437.000	36.553000	36.553000	36.874000	--			-36.053000
2452.000	35.912000	34.790000	34.629000	--			-34.129000

99% Bandwidth

Test Frequency	99 % Bandwidth						
	MHz						
MHz	a	b	c	d			
2422.000	51.303000	49.699000	47.134000	--			
2437.000	50.982000	45.371000	45.210000	--			
2452.000	49.699000	47.776000	48.737000	--			

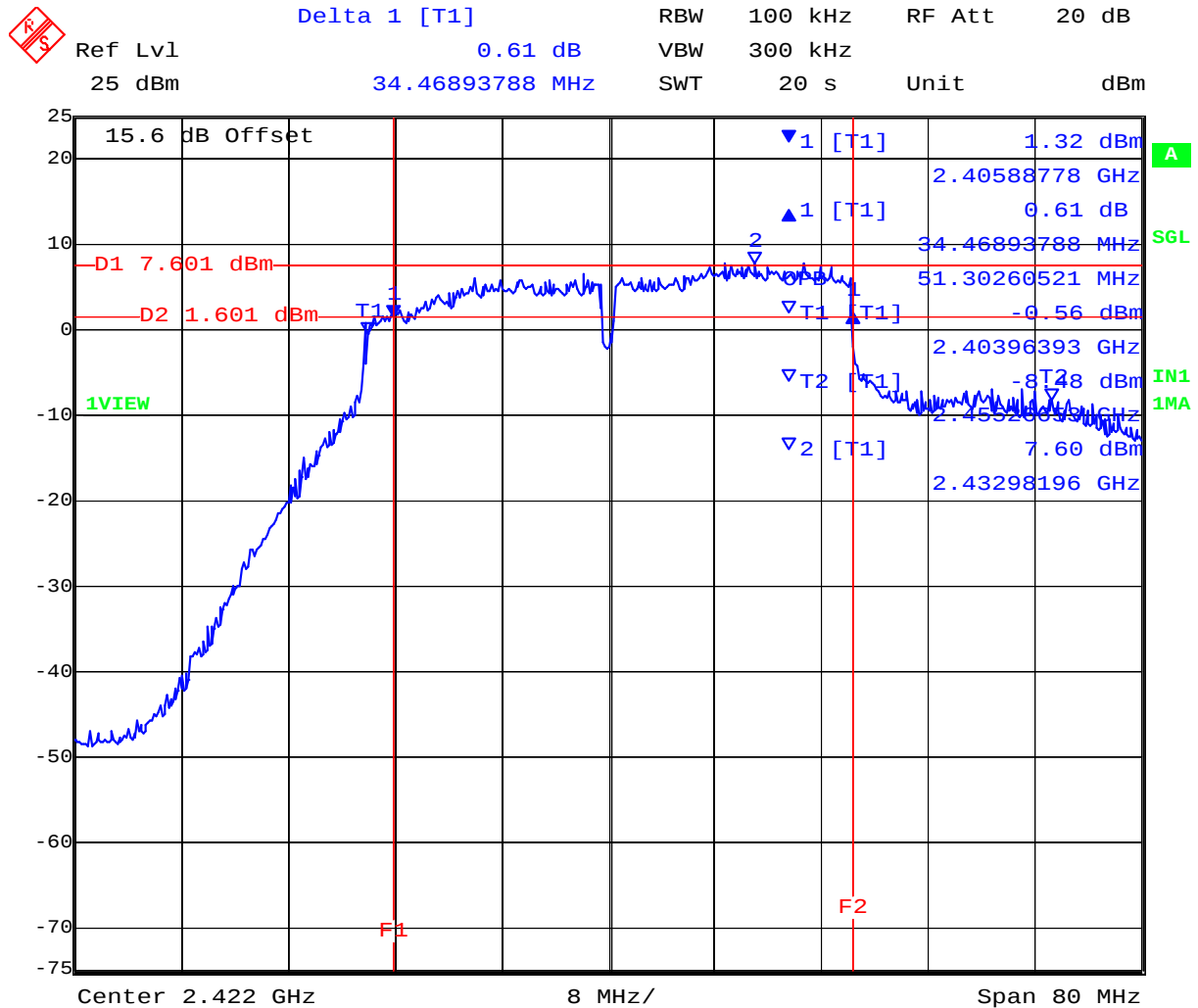
Measurement uncertainty:	±2.81 dB
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 55 of 412

PORT A 2,422 MHz 802.11n HT-40 Legacy 6 dB and 99% Bandwidth



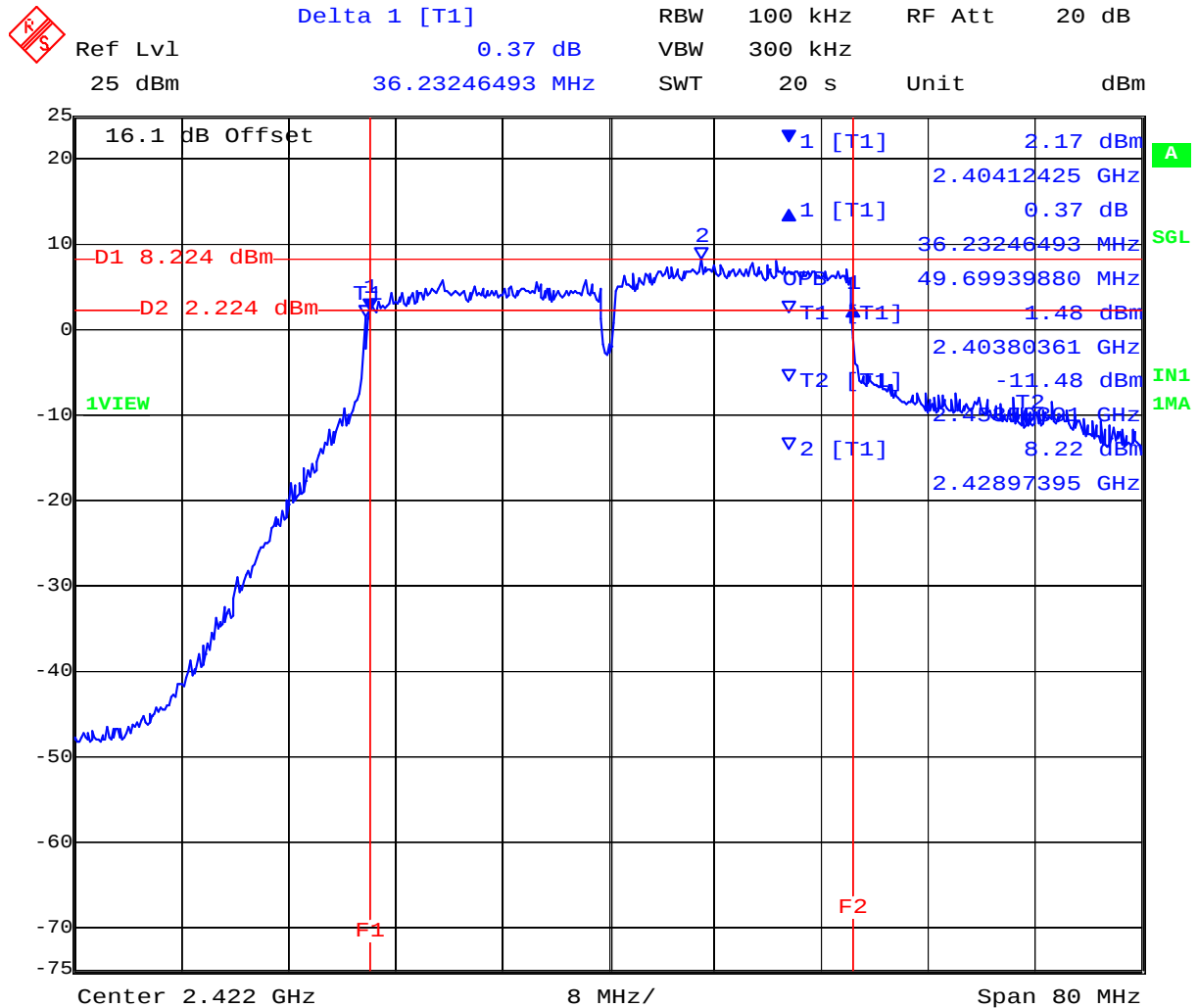
Date: 29.FEB.2012 16:46:06

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 56 of 412

PORT B 2,422 MHz 802.11n HT-40 Legacy 6 dB and 99% Bandwidth



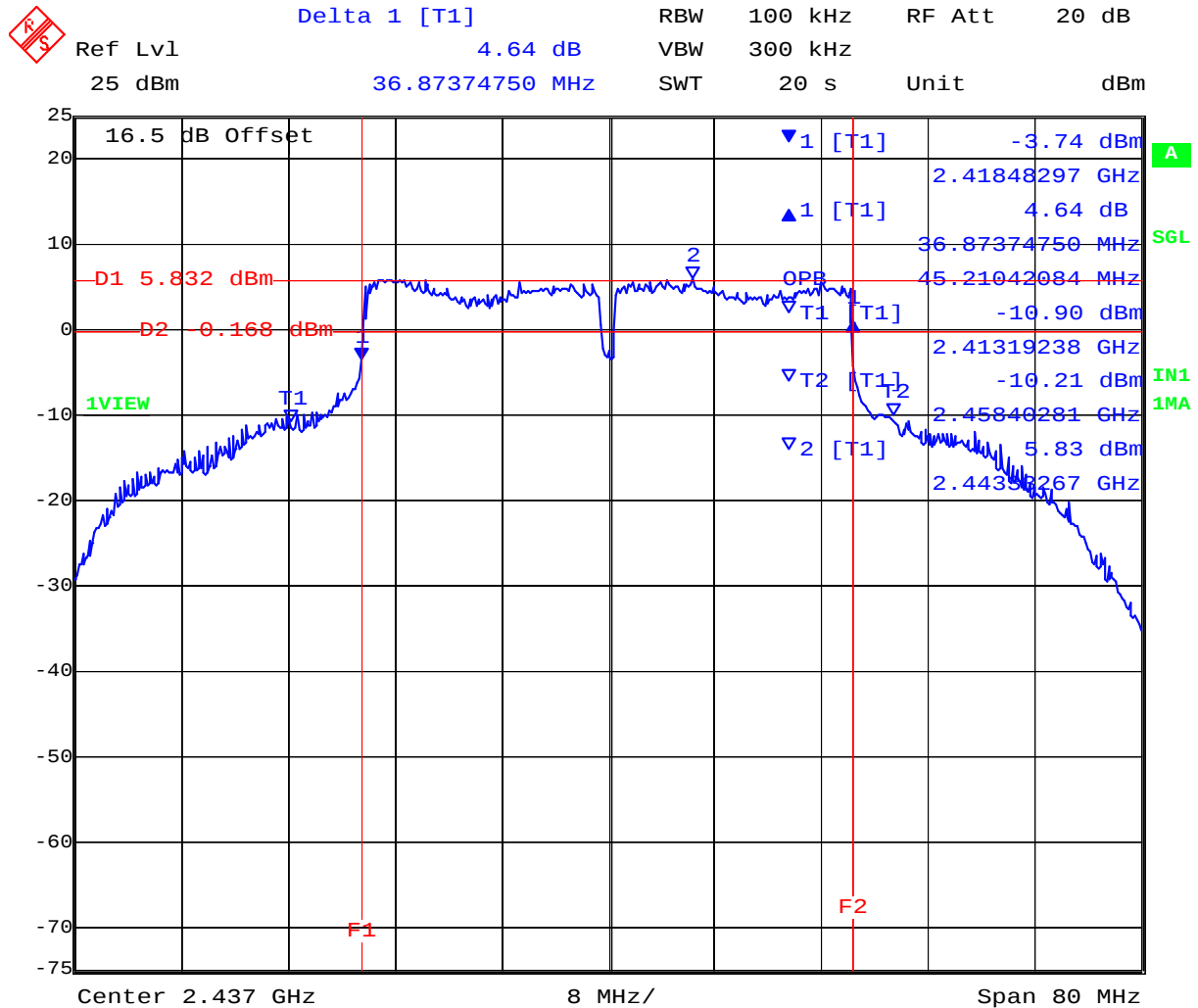
Date: 29.FEB.2012 16:47:12

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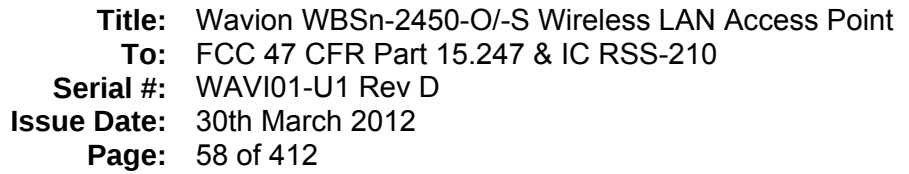
Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 57 of 412

PORT C 2,422 MHz 802.11n HT-40 Legacy 6 dB and 99% Bandwidth

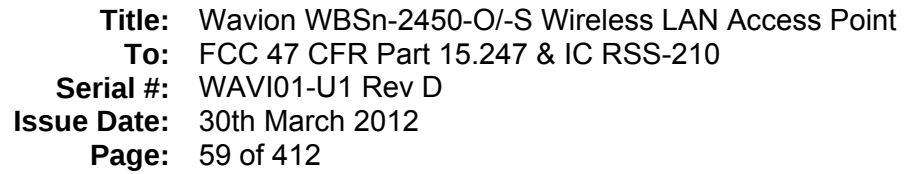


Date: 29.FEB.2012 17:20:55

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[illegible]

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Ref Lvl 25 dBm
 Delta 1 [T1] 3.44 dB
 RBW 100 kHz
 VBW 300 kHz
 RF Att 20 dB
 Unit dBm

16.1 dB Offset
 D1 6.458 dBm
 D2 0.458 dBm
 1VIEW
 T1
 T2
 F1
 F2

0.05 dBm
 2.41864329 GHz
 3.44 dB
 36.55310621 MHz
 45.37074148 MHz
 -11.40 dBm
 2.41351303 GHz
 -11.29 dBm
 2.45888377 GHz
 6.46 dBm
 2.44333267 GHz

Center 2.437 GHz
 8 MHz/
 Span 80 MHz

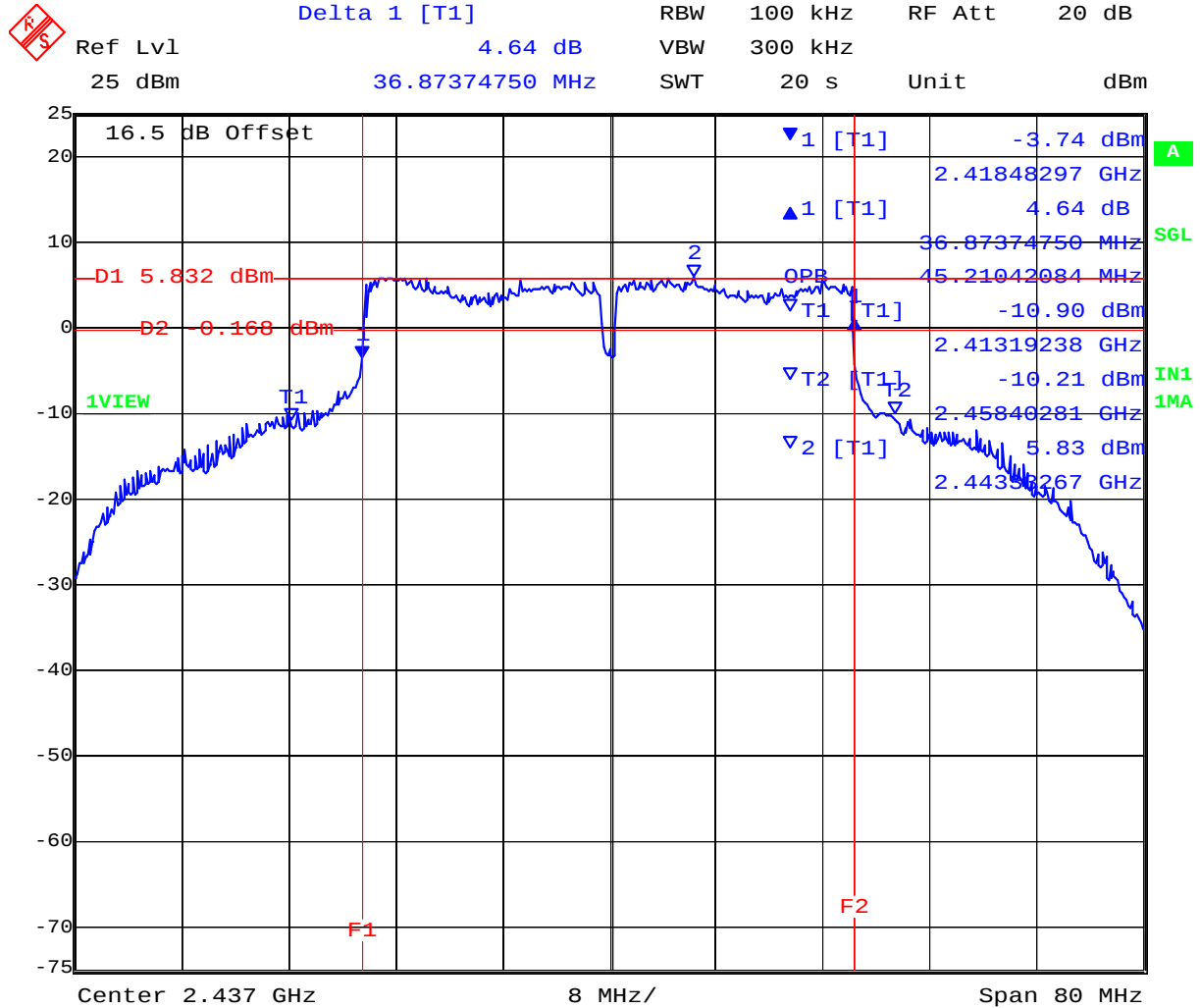
Date: 29.FEB.2012 17:19:53

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 60 of 412

PORT C 2,437 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 61 of 412

PORT A 2,452 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



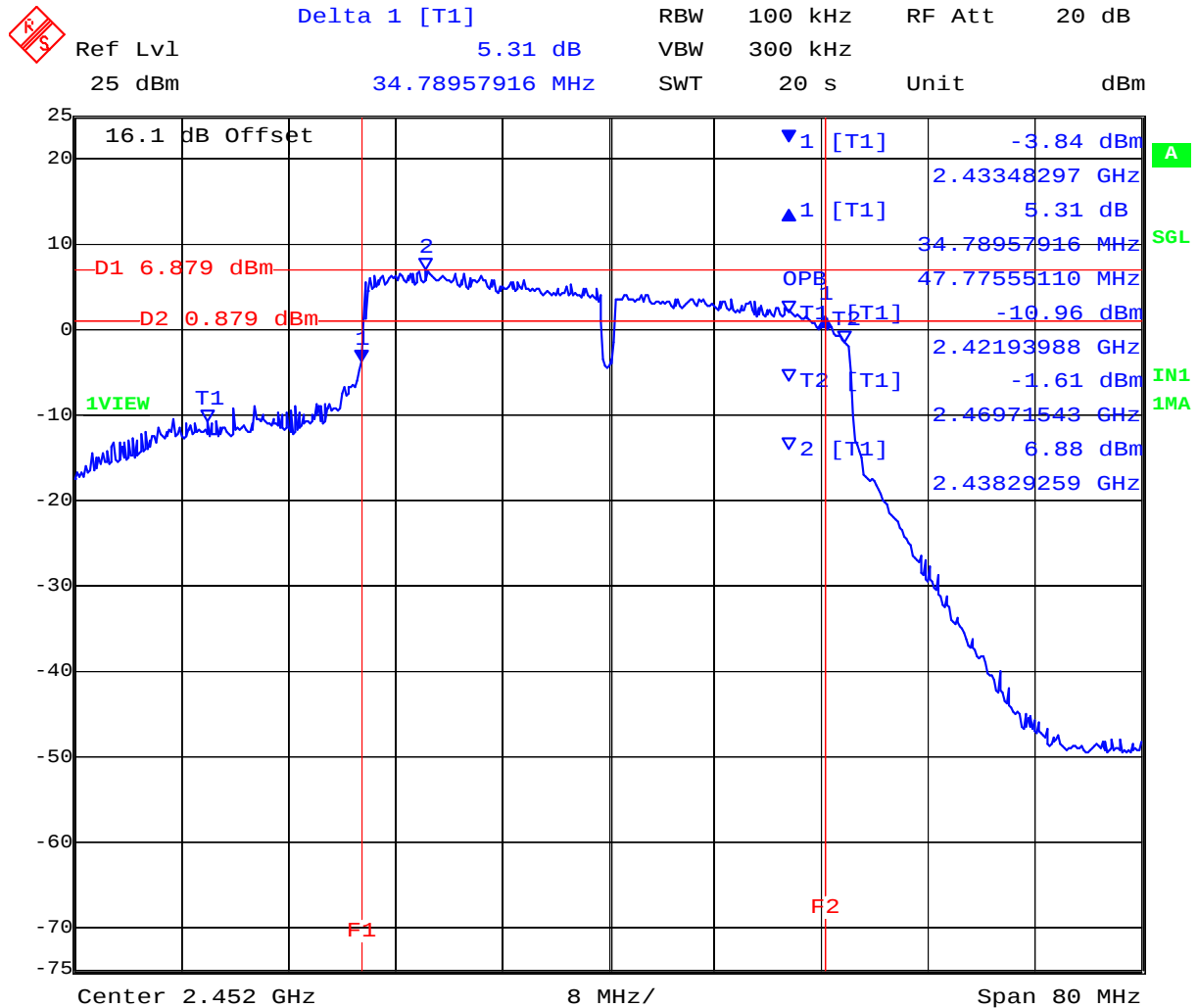
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Title: Wavion WBSn-2450-O/S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 62 of 412

PORT B 2,452 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



Date: 29.FEB.2012 17:50:13

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 63 of 412

PORT C 2,452 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



Date: 29.FEB.2012 17:51:16

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 64 of 412

5.8 GHz

TABLE OF RESULTS – 802.11a – Legacy 5 MHz, 6 MBit/s

Test Conditions:	15.247 (a)(2)	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:	48.00 Vdc				
Notes 1:					
Notes 2:					

6 dB Bandwidth

Test Frequency	6 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	a	b	c	d	kHz	MHz	MHz
5730.500	4.168000	4.148000	4.148000	--	500	0.5	-3.648000
5790.500	4.168000	4.168000	4.168000	--			-3.668000
5845.500	4.188000	4.148000	4.148000	--			-3.648000

99% Bandwidth

Test Frequency	99 % Bandwidth						
	MHz						
MHz	a	b	c	d			
5730.500	4.970000	6.754000	4.870000	--			
5790.500	4.208000	4.188000	4.489000	--			
5845.500	4.489000	4.269000	4.248000	--			

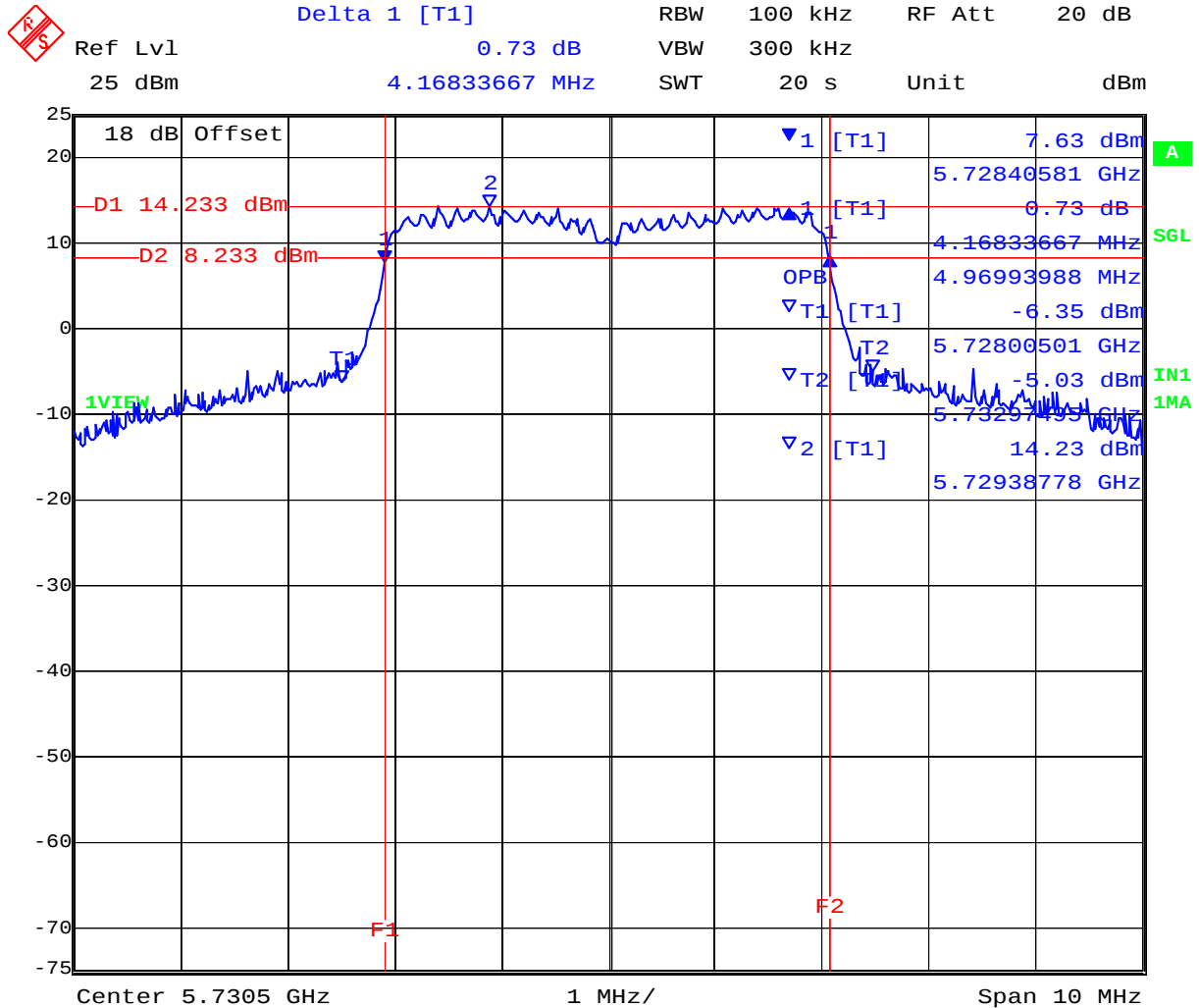
Measurement uncertainty:	±2.81 dB
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 65 of 412

5 MHz PORT A 5,730.5 MHz 802.11a 6 MBit/s Legacy 6 dB and 99% Bandwidth



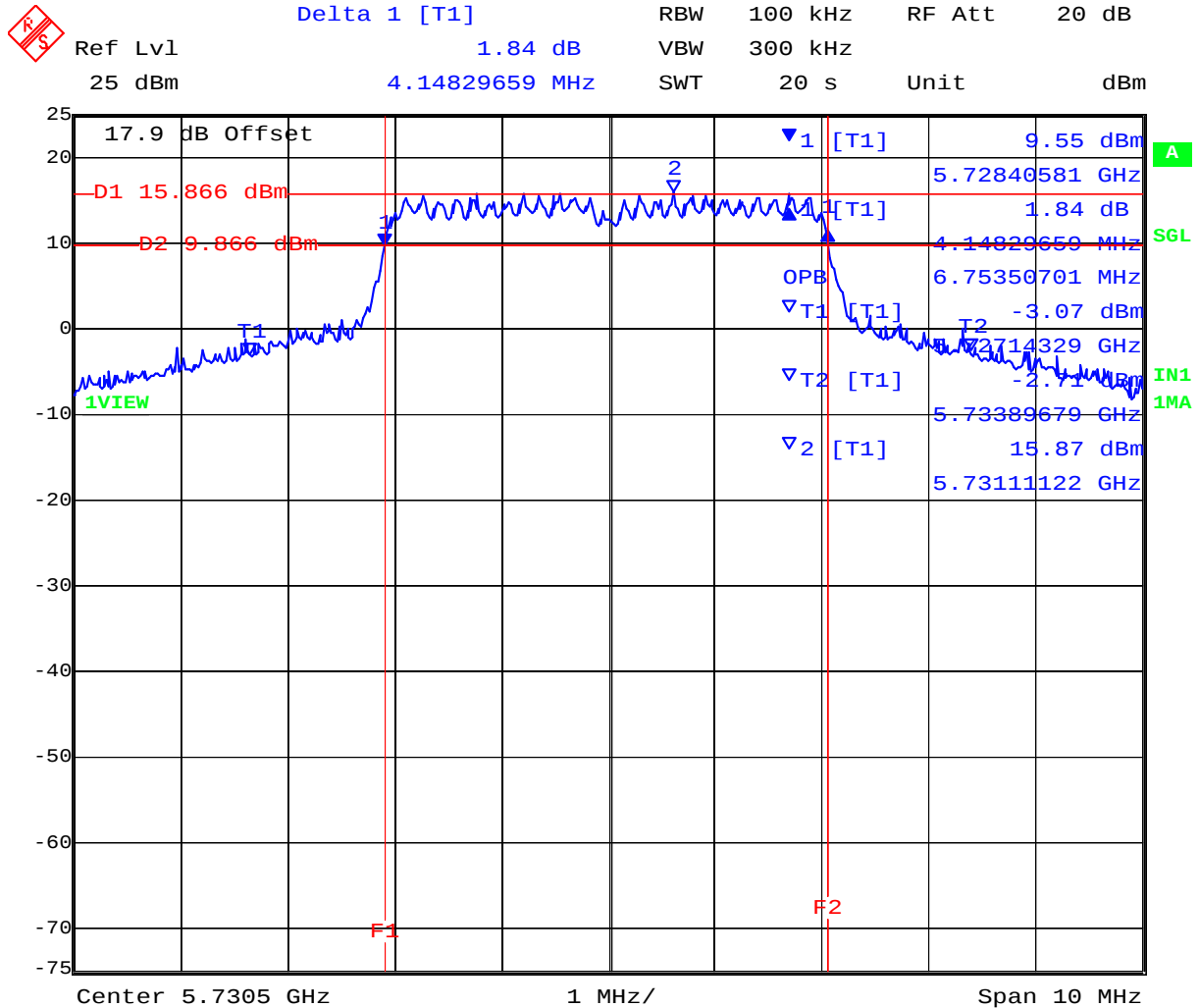
Date: 16.MAR.2012 10:43:38

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 66 of 412

5 MHz PORT B 5,730.5 MHz 802.11a 6 MBit/s Legacy 6 dB and 99% Bandwidth



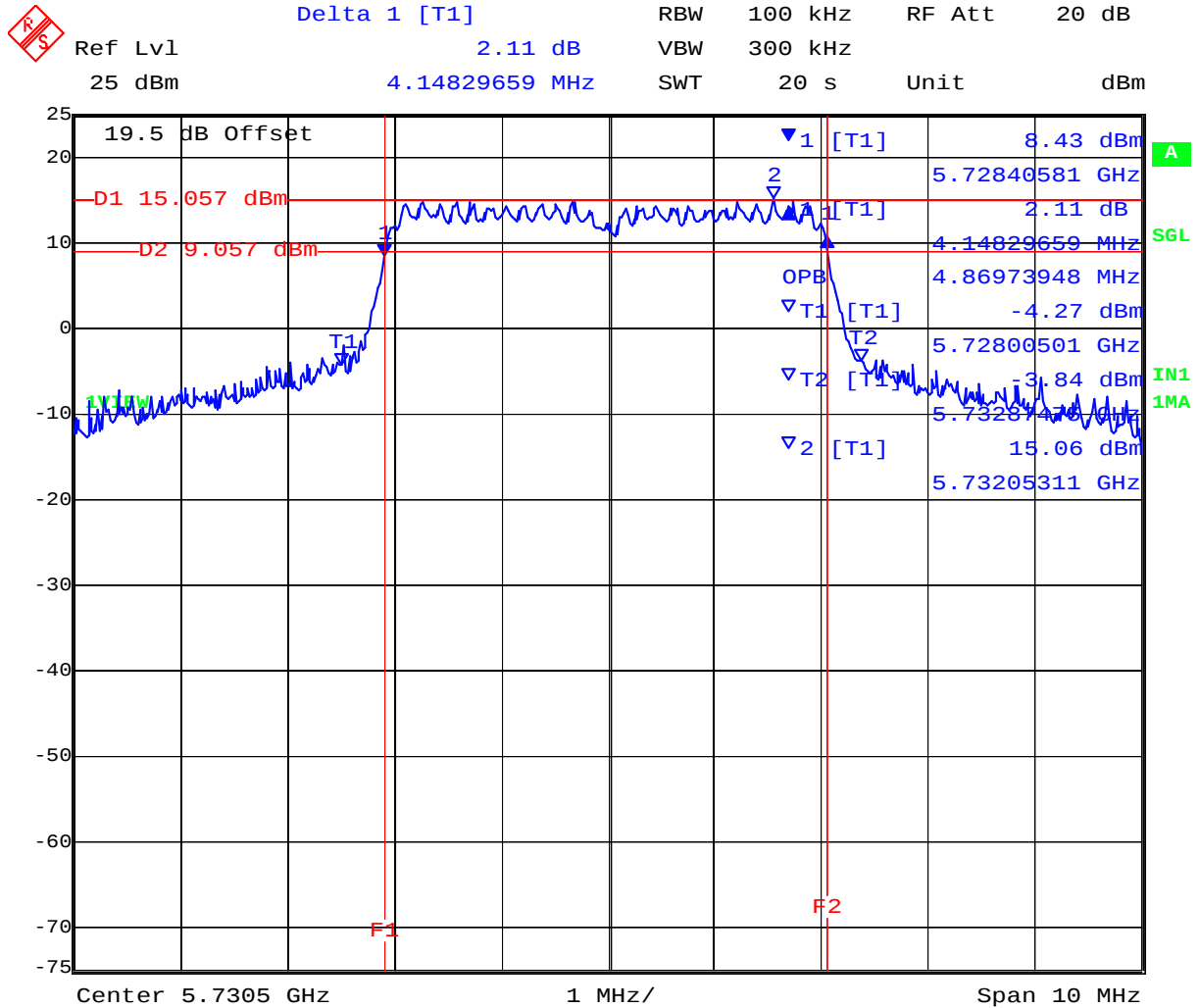
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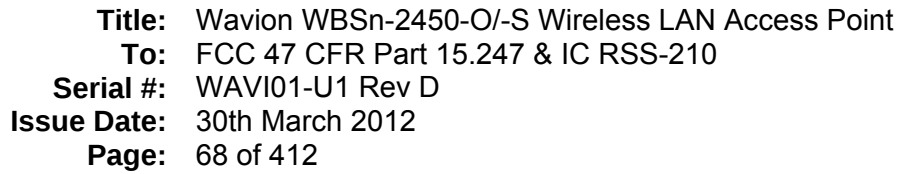
Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 67 of 412

5 MHz PORT C 5,730.5 MHz 802.11a 6 MBit/s Legacy 6 dB and 99% Bandwidth



Date: 16.MAR.2012 10:45:46

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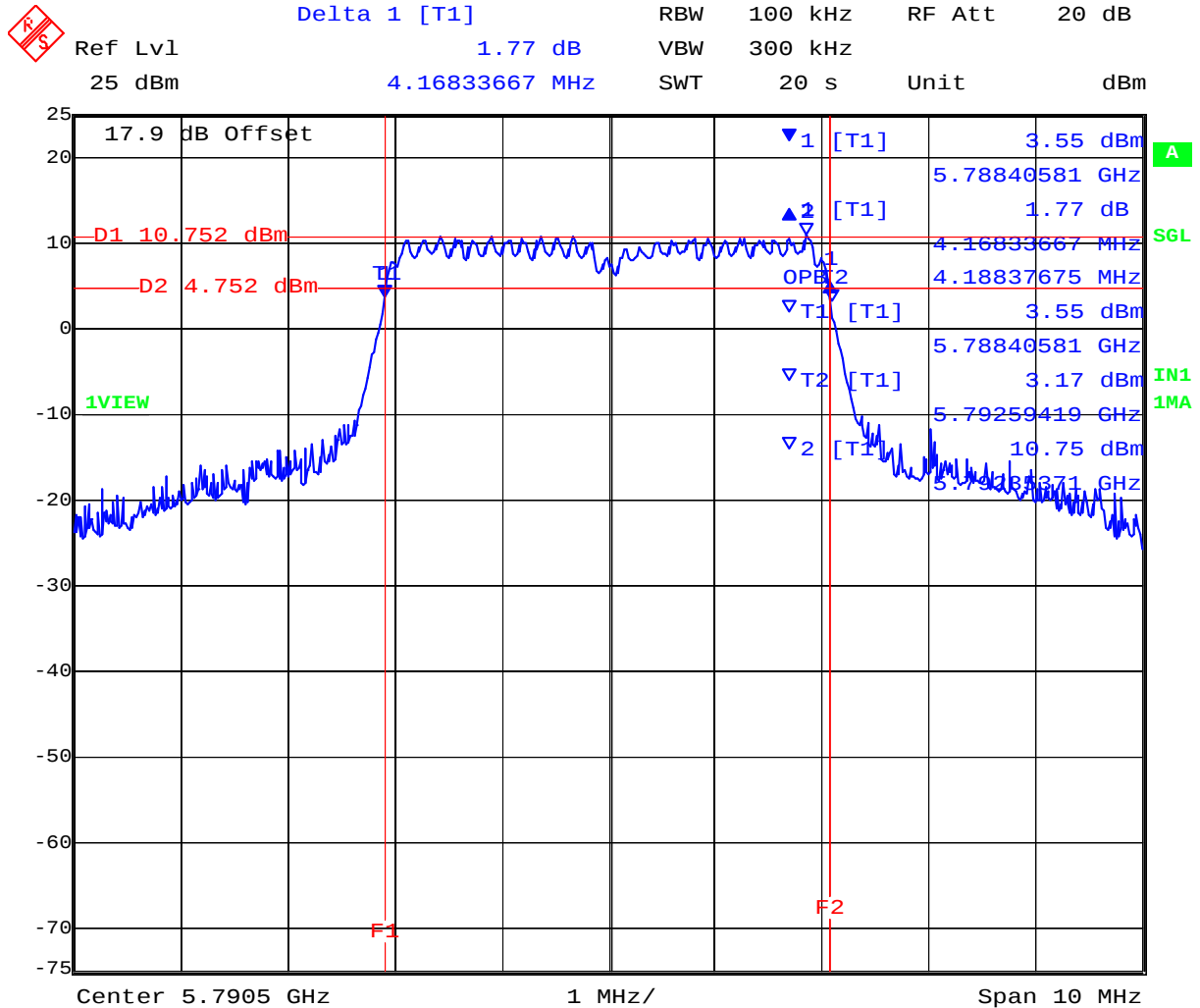
[illegible]

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 69 of 412

5 MHz PORT B 5,790.5 MHz 802.11a 6 MBit/s Legacy 6 dB and 99% Bandwidth



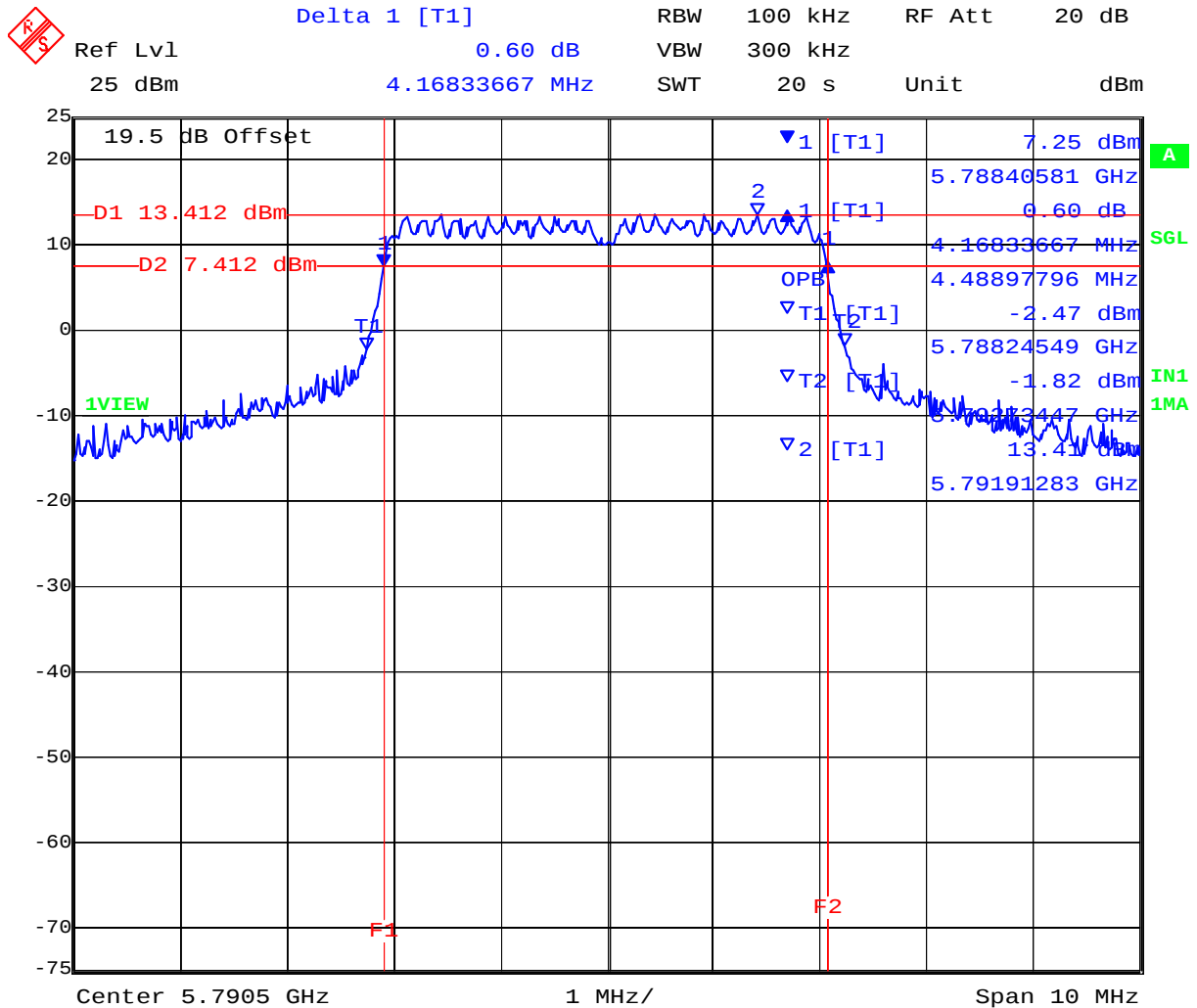
Date: 16.MAR.2012 11:29:17

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 70 of 412

5 MHz PORT C 5,790.5 MHz 802.11a 6 MBit/s Legacy 6 dB and 99% Bandwidth



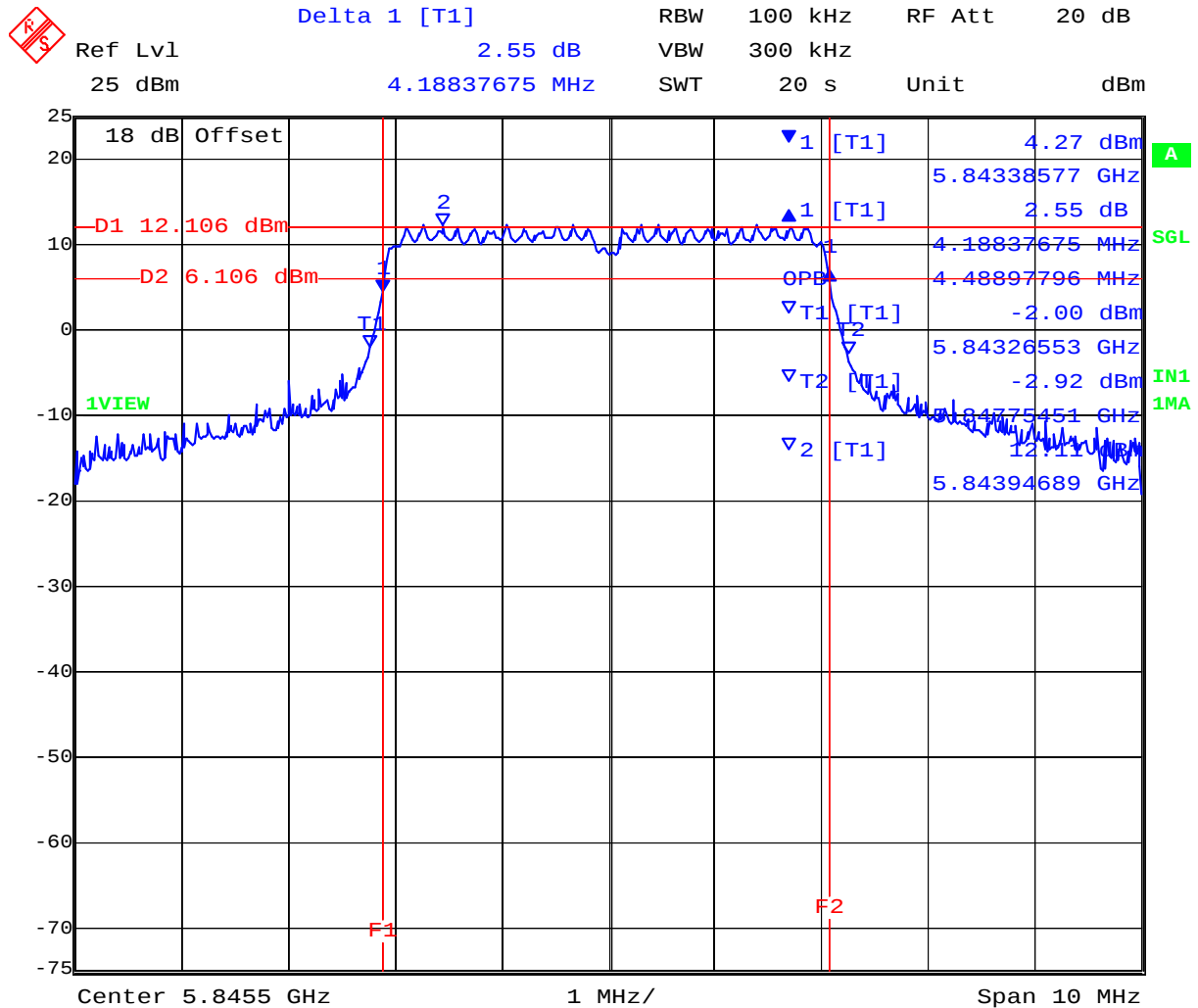
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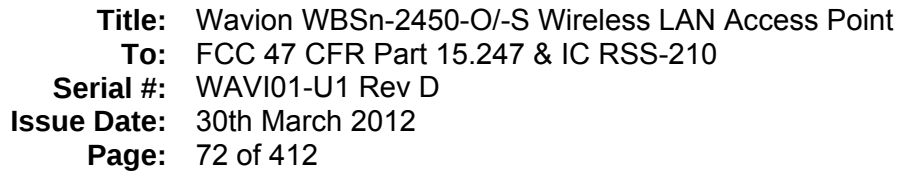
Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 71 of 412

5 MHz PORT A 5,845.5 MHz 802.11a 6 MBit/s Legacy 6 dB and 99% Bandwidth



Date: 16.MAR.2012 12:04:53

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Ref Lvl 25 dBm Delta 1 [T1] 1.86 dB RBW 100 kHz RF Att 20 dB
 25 dBm 4.14829659 MHz SWT 20 s Unit dBm

17.9 dB Offset

D1 10.007 dBm D2 4.007 dBm

1VIEW

▼1 [T1] 3.47 dBm 5.84340581 GHz
 ▲1 [T1] 1.86 dB 4.14829659 MHz
 OPB 1 4.26853707 MHz
 ▼T1 [T1] -0.10 dBm 5.84336573 GHz
 ▼T2 [T1] -0.52 dBm 5.84763427 GHz
 ▼2 [T1] 10.01 dBm 5.84444444 GHz

F1 F2

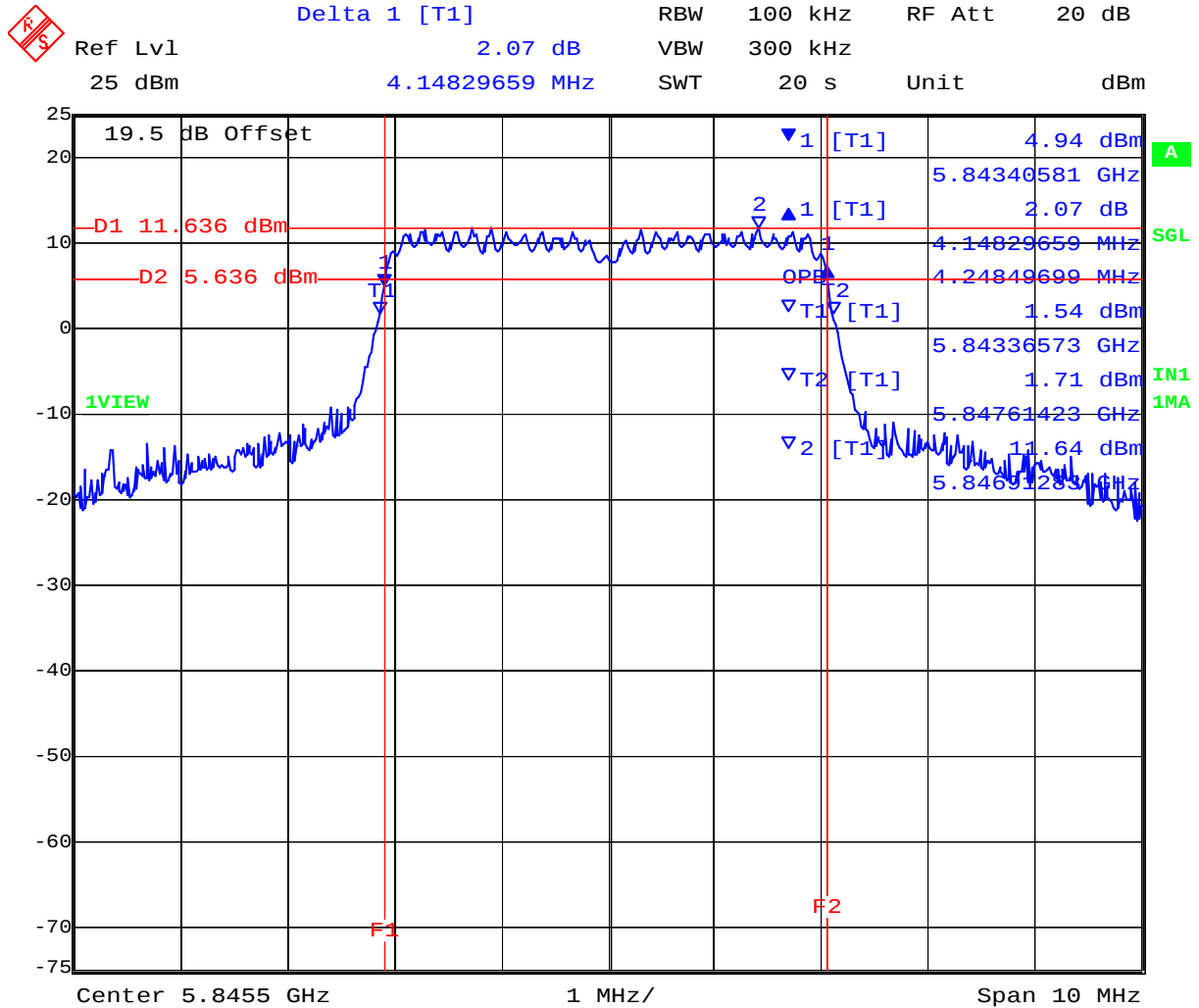
Center 5.8455 GHz 1 MHz/ Span 10 MHz

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 73 of 412

5 MHz PORT C 5,845.5 MHz 802.11a 6 MBit/s Legacy 6 dB and 99% Bandwidth



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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 74 of 412

TABLE OF RESULTS – 802.11a – Legacy 10 MHz, 6 MBit/s

Test Conditions:	15.247 (a)(2)	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:	48.00 Vdc				
Notes 1:					
Notes 2:					

6 dB Bandwidth

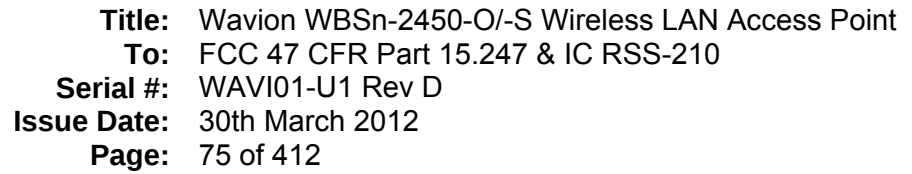
Test Frequency	6 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	a	b	c	d	kHz	MHz	MHz
5735.000	8.257000	8.297000	8.257000	--	500	0.5	-7.757000
5790.000	8.297000	8.297000	8.257000	--			-7.757000
5840.000	8.297000	8.297000	8.297000	--			-7.797000

99% Bandwidth

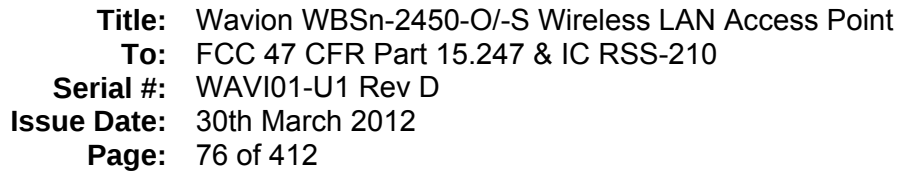
Test Frequency	99 % Bandwidth						
	MHz						
MHz	a	b	c	d			
5735.000	13.948000	15.110000	13.547000	--			
5790.000	12.625000	12.465000	14.990000	--			
5840.000	15.832000	14.990000	15.150000	--			

Measurement uncertainty:	±2.81 dB
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[illegible]

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Ref Lvl 17.9 dB Offset
 25 dBm
 Delta 1 [T1] 3.36 dB
 8.29659319 MHz
 RBW 100 kHz
 VBW 300 kHz
 SWT 20 s
 RF Att 20 dB
 Unit dBm

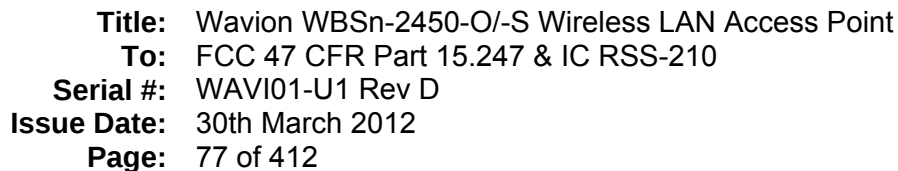
12.619 dBm
 6.619 dBm
 T1
 1 [T1] 5.61 dBm
 5.73081162 GHz
 3.36 dB
 8.29659319 MHz
 OPB 15.11022044 MHz
 T1 [T1] -4.64 dBm
 T2 [T1] 5.72744489 GHz
 -5.48 dBm
 5.74255511 GHz
 12.62 dBm
 5.73433868 GHz

D1
 D2
 F1
 F2

A
 SGL
 IN1
 1MA

Center 5.735 GHz
 2 MHz/
 Span 20 MHz

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Delta 1 [T1] RBW 100 kHz RF Att 20 dB
 Ref Lvl 2.08 dB VBW 300 kHz
 25 dBm 8.25651303 MHz SWT 20 s Unit dBm

19.5 dB Offset
 D1 13.078 dBm
 D2 7.078 dBm
 T1
 1 [T1] 6.98 dBm
 2 [T1] 5.73085170 GHz
 1 [T1] 2.08 dB
 8.25651303 MHz
 13.54709419 MHz
 OPB
 T1 [T1] -4.99 dBm
 5.72808617 GHz
 T2 [T1] -5.70 dBm
 5.74163327 GHz
 2 [T1] 13.08 dBm
 5.73437876 GHz

Center 5.735 GHz 2 MHz/ Span 20 MHz

Date: 16.MAR.2012 14:25:51

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 78 of 412

10 MHz PORT A 5,790 MHz 802.11a 6 MBit/s Legacy 6 dB and 99% Bandwidth



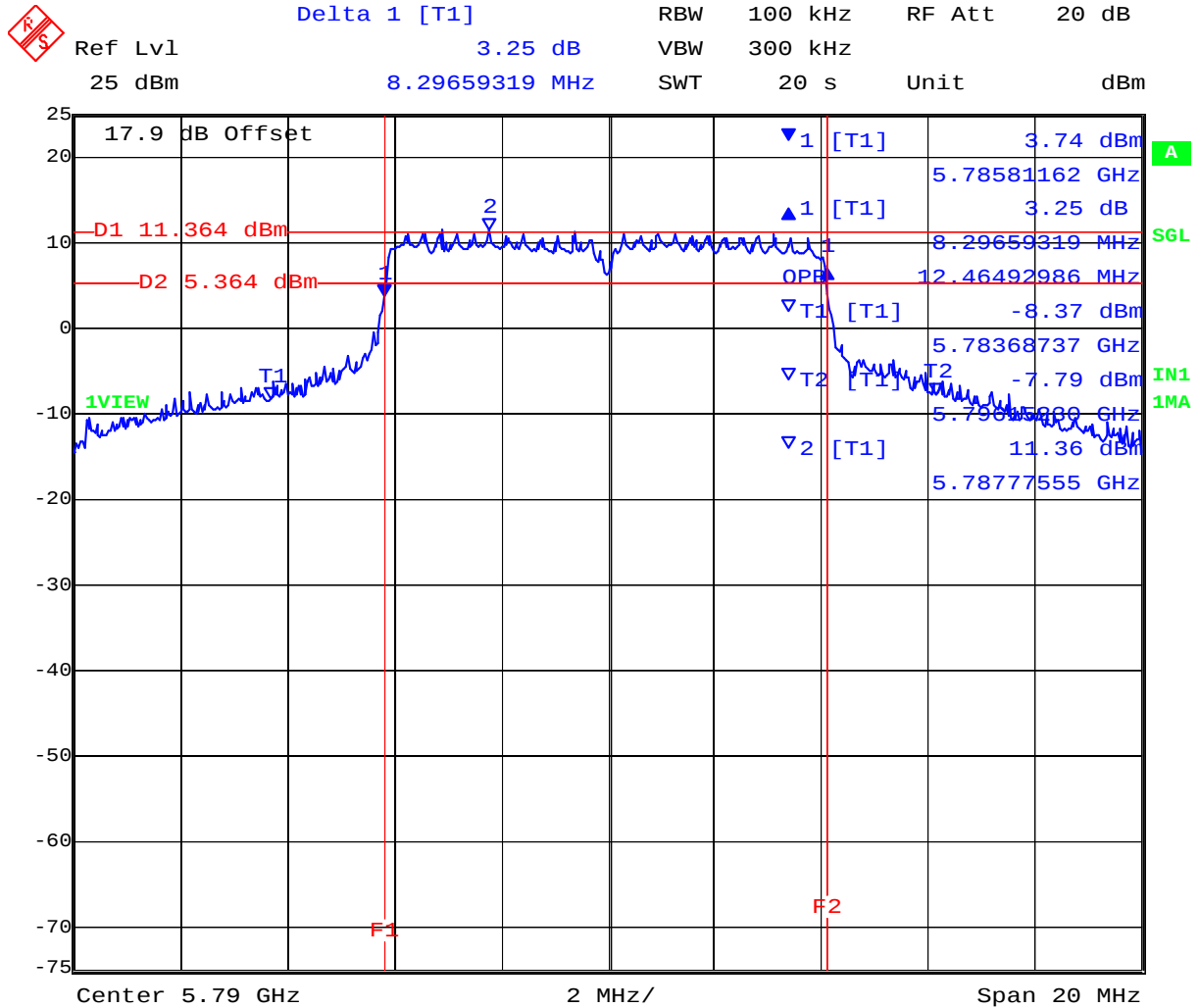
Date: 16.MAR.2012 14:57:06

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 79 of 412

10 MHz PORT B 5,790 MHz 802.11a 6 MBit/s Legacy 6 dB and 99% Bandwidth



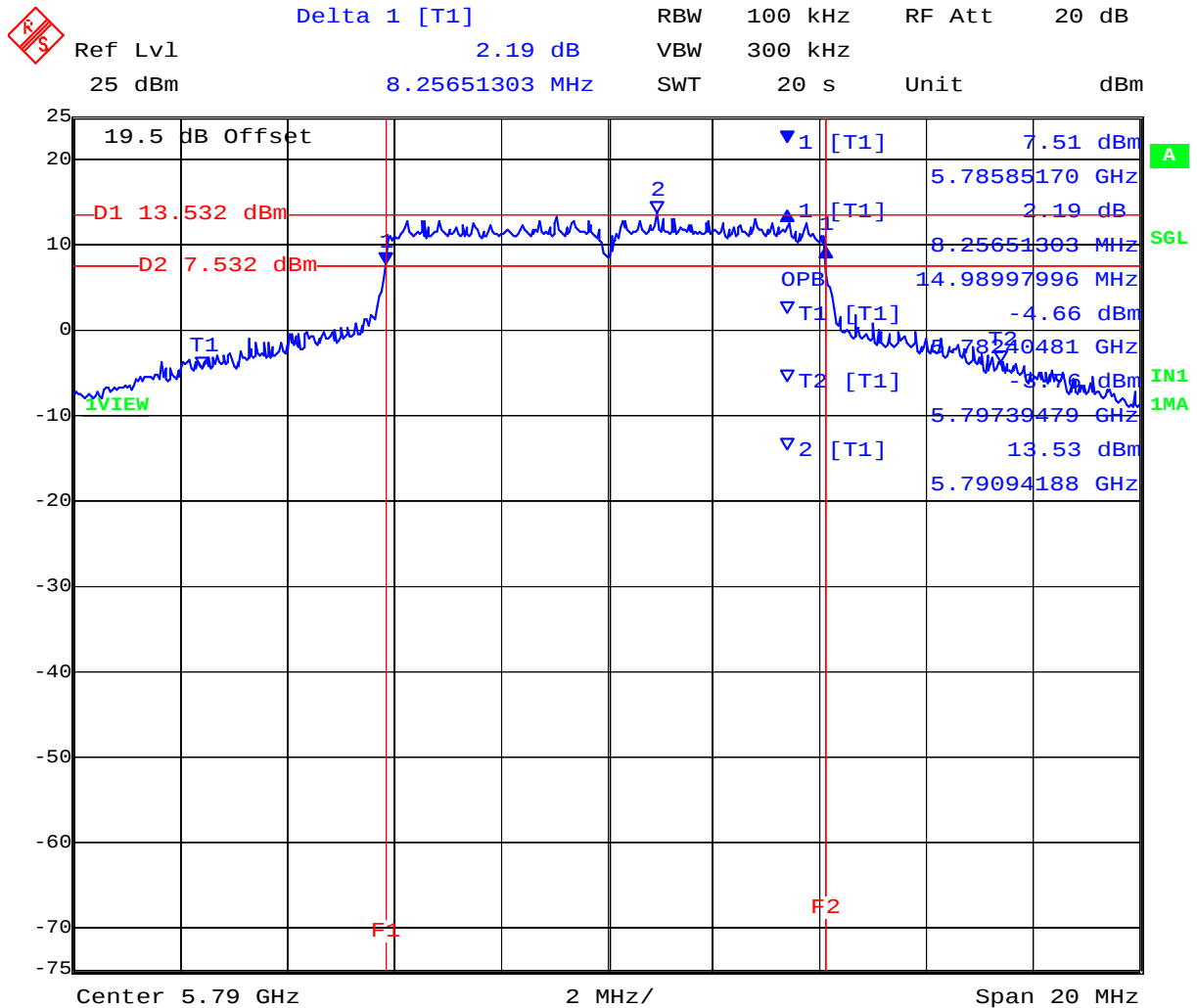
Date: 16.MAR.2012 14:58:11

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Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 80 of 412

10 MHz PORT C 5,790 MHz 802.11a 6 MBit/s Legacy 6 dB and 99% Bandwidth



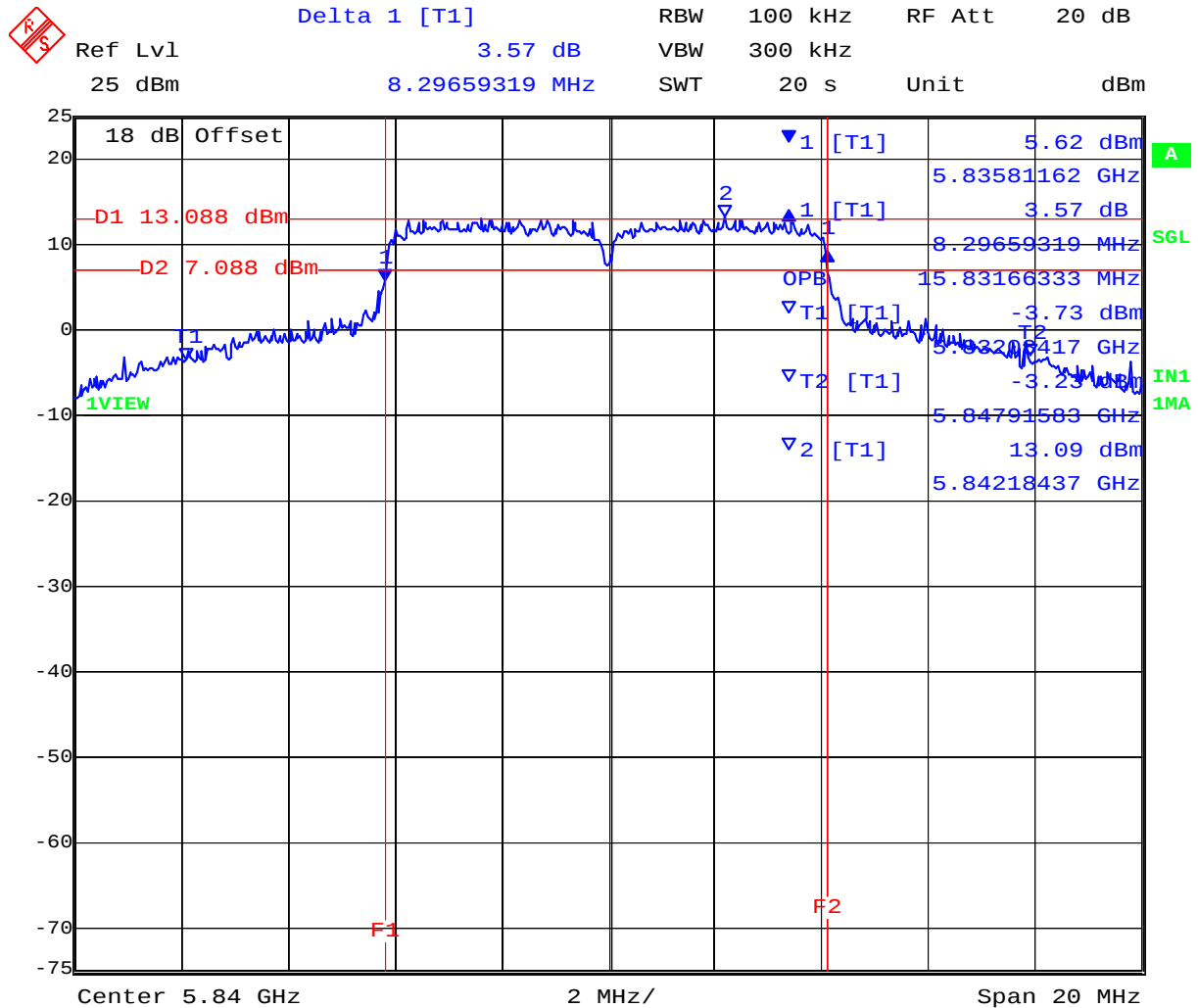
Date: 16.MAR.2012 14:59:14

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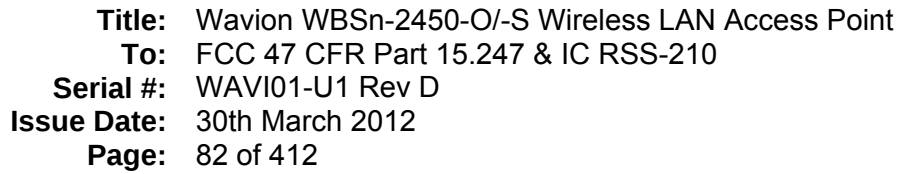
Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 81 of 412

10 MHz PORT A 5,840 MHz 802.11a 6 MBit/s Legacy 6 dB and 99% Bandwidth



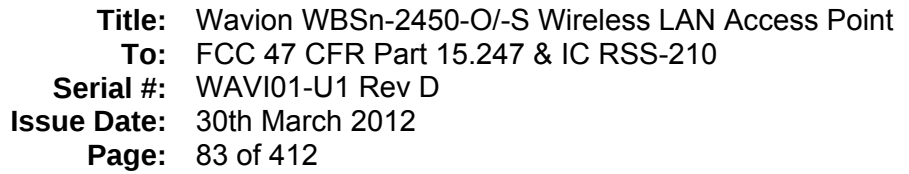
Date: 16.MAR.2012 15:38:14

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Ref Lvl 25 dBm
 Delta 1 [T1] 3.32 dB
 RBW 100 kHz
 VBW 300 kHz
 RF Att 20 dB
 Unit dBm
 17.9 dB Offset
 D1 11.406 dBm
 D2 5.406 dBm
 T1
 T2
 F1
 F2
 1 [T1] 3.42 dBm
 2 [T1] 3.32 dB
 1 8.29659319 MHz
 2 14.98997996 MHz
 T1 [T1] -6.45 dBm
 T2 [T1] 5.83236473 GHz
 T2 [T1] -6.56 dBm
 T2 [T1] 5.84735471 GHz
 2 [T1] 11.41 dBm
 5.83685371 GHz
 A
 SGL
 IN1
 1MA
 Center 5.84 GHz
 2 MHz/
 Span 20 MHz

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Delta 1 [T1] 2.96 dB RBW 100 kHz RF Att 20 dB
 Ref Lvl 25 dBm 8.29659319 MHz SWT 20 s Unit dBm

19.5 dB Offset
 D1 12.964 dBm
 D2 6.964 dBm
 T1
 VIEW
 1 [T1] 5.78 dBm
 2 [T1] 5.83581162 GHz
 1 [T1] 2.96 dB
 8.29659319 MHz
 SGL
 15.15030060 MHz
 T1 [T1] -4.85 dBm
 5.83236473 GHz
 IN1
 1MA
 2 [T1] 12.96 dBm
 5.84751503 GHz
 5.83933868 GHz

Center 5.84 GHz 2 MHz/ Span 20 MHz

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 84 of 412

TABLE OF RESULTS – 802.11a – Legacy 20 MHz

Test Conditions:	15.247 (a)(2)	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:	48.00 Vdc				
Notes 1:					
Notes 2:					

6 dB Bandwidth

Test Frequency	6 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	a	b	c	d	kHz	MHz	MHz
5745.000	16.673000	16.673000	16.673000	--	500	0.5	-16.173000
5785.000	16.673000	16.673000	16.673000	--			-16.173000
5825.000	16.673000	16.914000	16.593000	--			-16.093000

99% Bandwidth

Test Frequency	99 % Bandwidth						
	MHz						
MHz	a	b	c	d			
5745.000	28.537000	31.743000	29.579000	--			
5785.000	33.587000	34.549000	33.026000	--			
5825.000	34.389000	34.389000	33.667000	--			

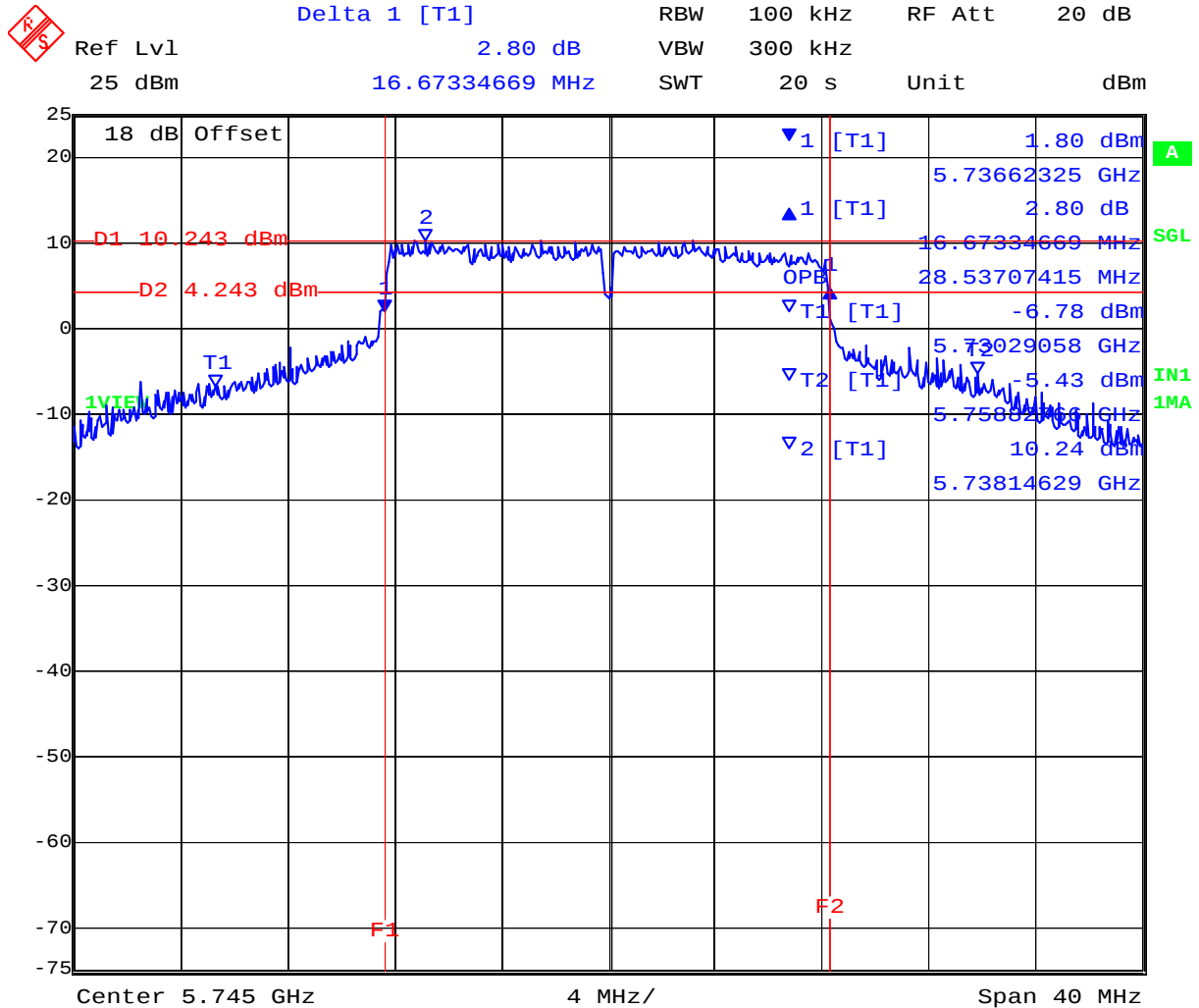
Measurement uncertainty:	±2.81 dB
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 85 of 412

PORT A 5,745 MHz 802.11a Legacy 6 dB and 99% Bandwidth



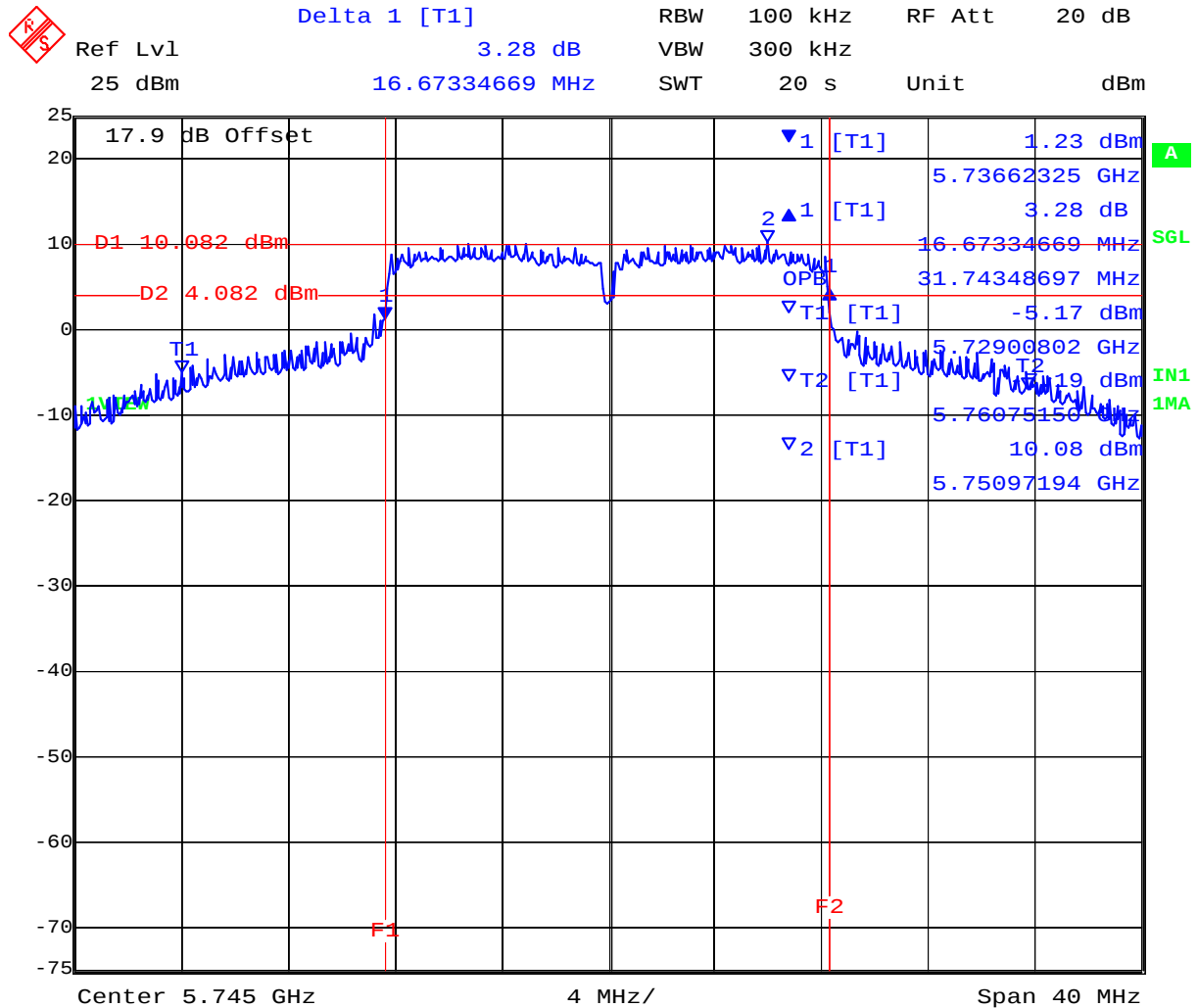
Date: 28.FEB.2012 11:50:34

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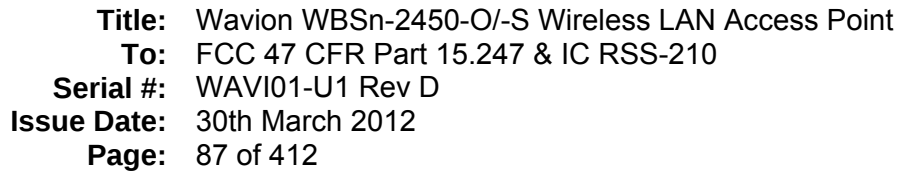
Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 86 of 412

PORT B 5,745 MHz 802.11a Legacy 6 dB and 99% Bandwidth



Date: 28.FEB.2012 11:51:42

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Delta 1 [T1] RBW 100 kHz RF Att 20 dB
 Ref Lvl 4.31 dB VBW 300 kHz
 25 dBm 16.67334669 MHz SWT 20 s Unit dBm

19.5 dB Offset

D1 12.035 dBm
 D2 6.035 dBm

1 [T1] 2.78 dBm
 2 [T1] 5.73662325 GHz
 1 [T1] 4.31 dB
 16.67334669 MHz
 20.57915832 MHz
 T1 [T1] -6.31 dBm
 5.73913026 GHz
 T2 [T1] 5.58 dBm
 5.75076942 GHz
 2 [T1] 12.03 dBm
 5.75001002 GHz

IN1 1MA

F1 F2

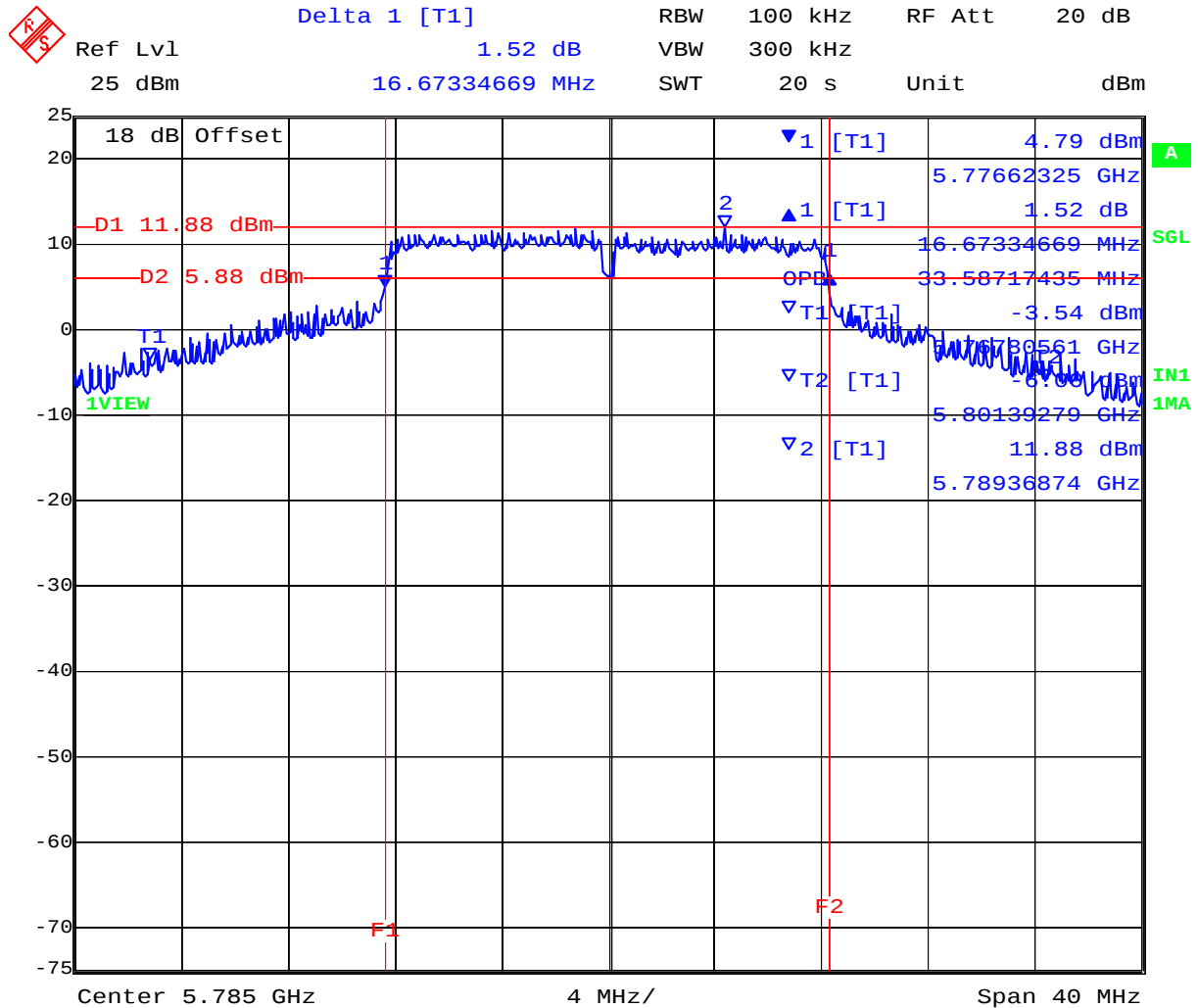
Center 5.745 GHz 4 MHz/ Span 40 MHz

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



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 88 of 412

PORT A 5,785 MHz 802.11a Legacy 6 dB and 99% Bandwidth



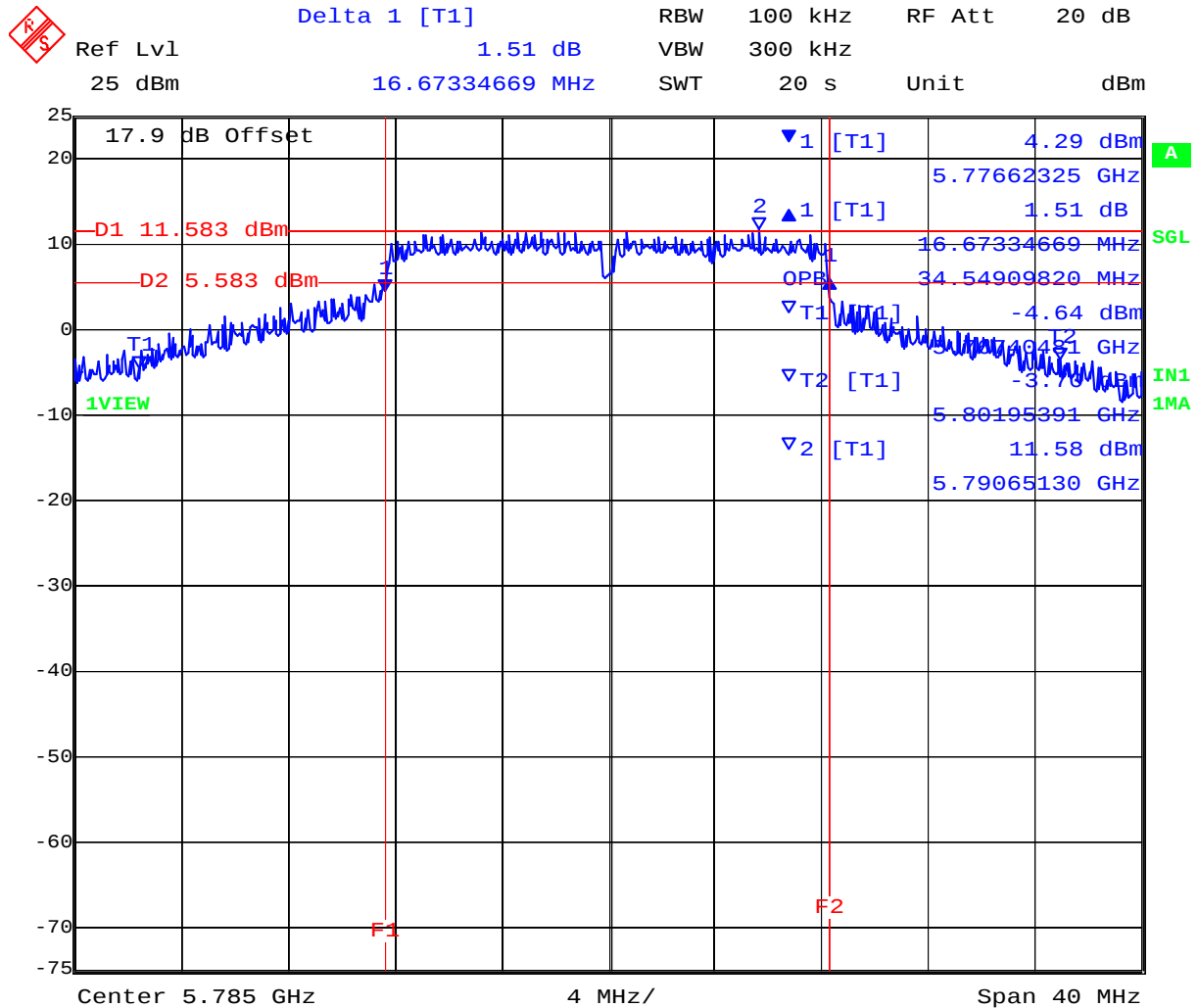
Date: 28.FEB.2012 12:24:01

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 89 of 412

PORT B 5,785 MHz 802.11a Legacy 6 dB and 99% Bandwidth



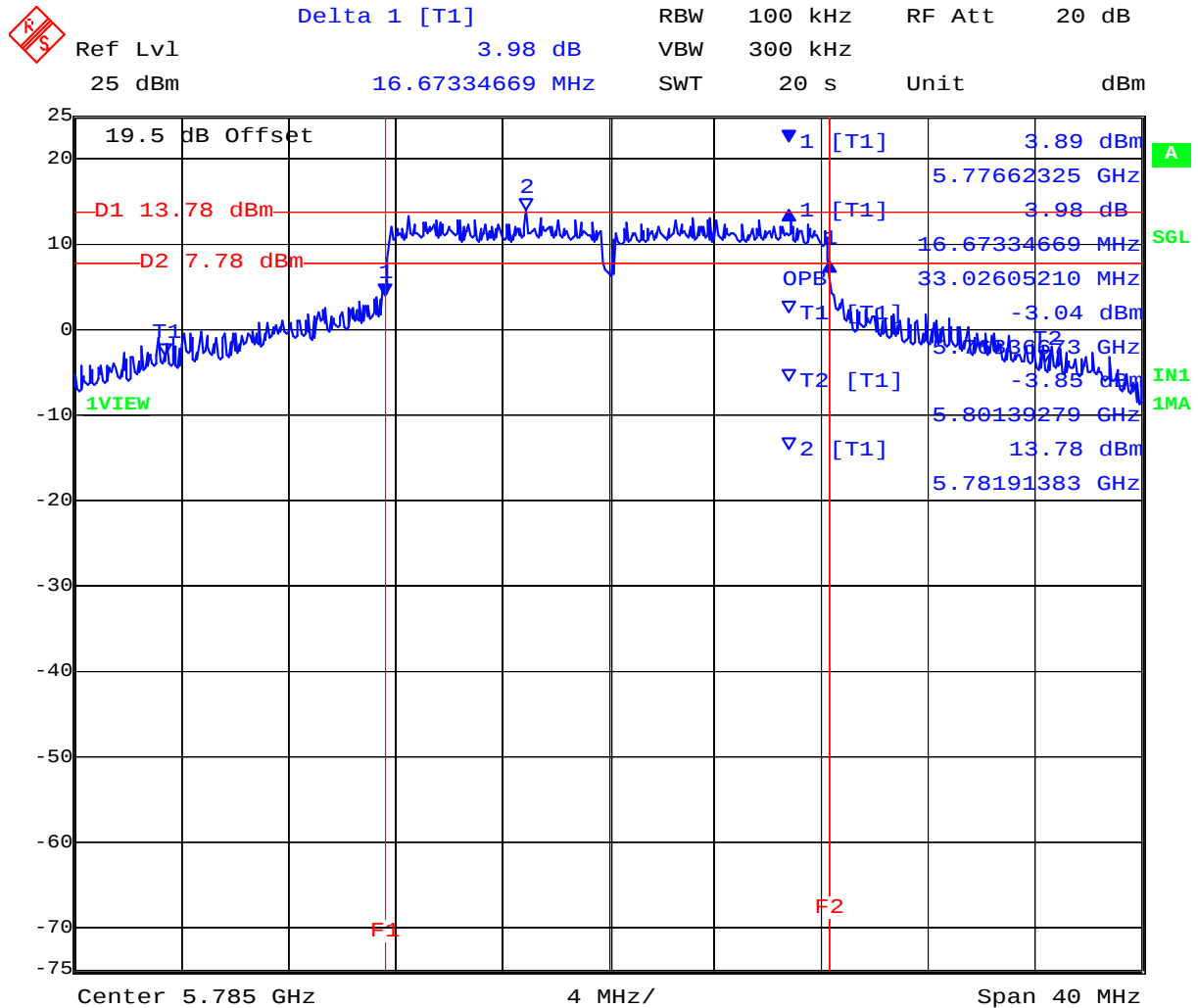
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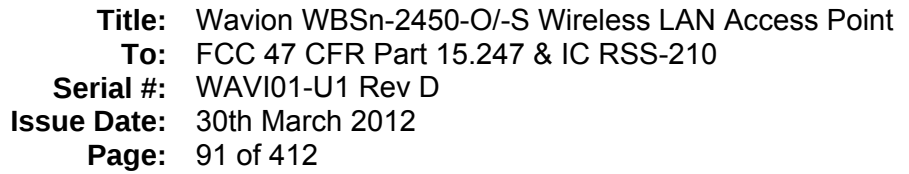
Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 90 of 412

PORT C 5,785 MHz 802.11a Legacy 6 dB and 99% Bandwidth



Date: 28.FEB.2012 12:26:15

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Delta 1 [T1] RBW 100 kHz RF Att 20 dB
 Ref Lvl 2.33 dB VBW 300 kHz
 25 dBm 16.67334669 MHz SWT 20 s Unit dBm

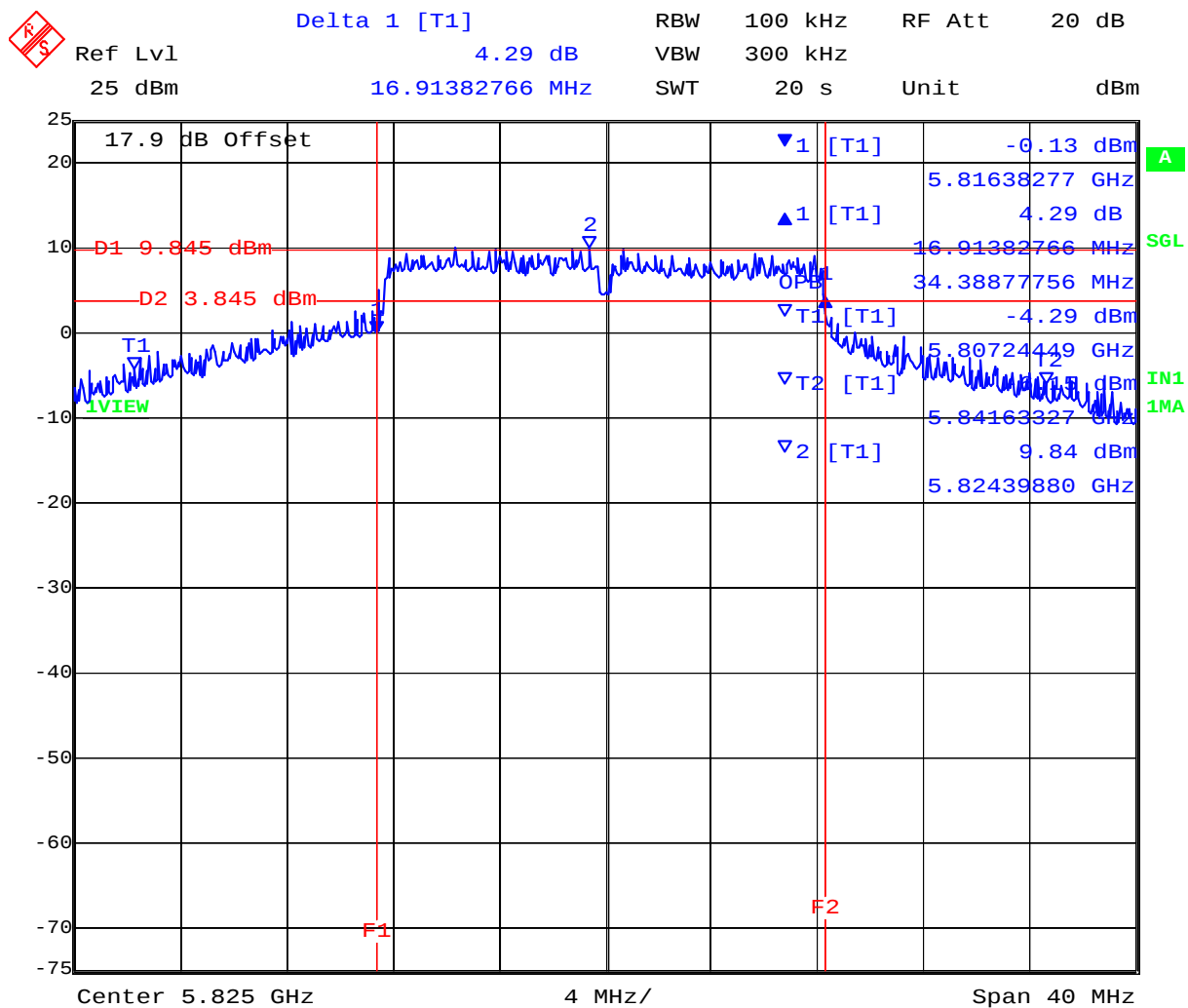
18 dB Offset
 D1 12.159 dBm
 D2 6.159 dBm
 T1
 1VIEW
 1
 2
 1 [T1]
 4.31 dBm
 5.81662325 GHz
 16.67334669 MHz
 34.38877756 MHz
 -1.89 dBm
 5.80718497 GHz
 -2.92 dBm
 5.84187375 GHz
 12.16 dBm
 5.82063126 GHz
 F1
 F2
 A
 SGL
 IN1
 1MA
 Center 5.825 GHz 4 MHz/ Span 40 MHz

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 92 of 412

PORT B 5,825 MHz 802.11a Legacy 6 dB and 99% Bandwidth



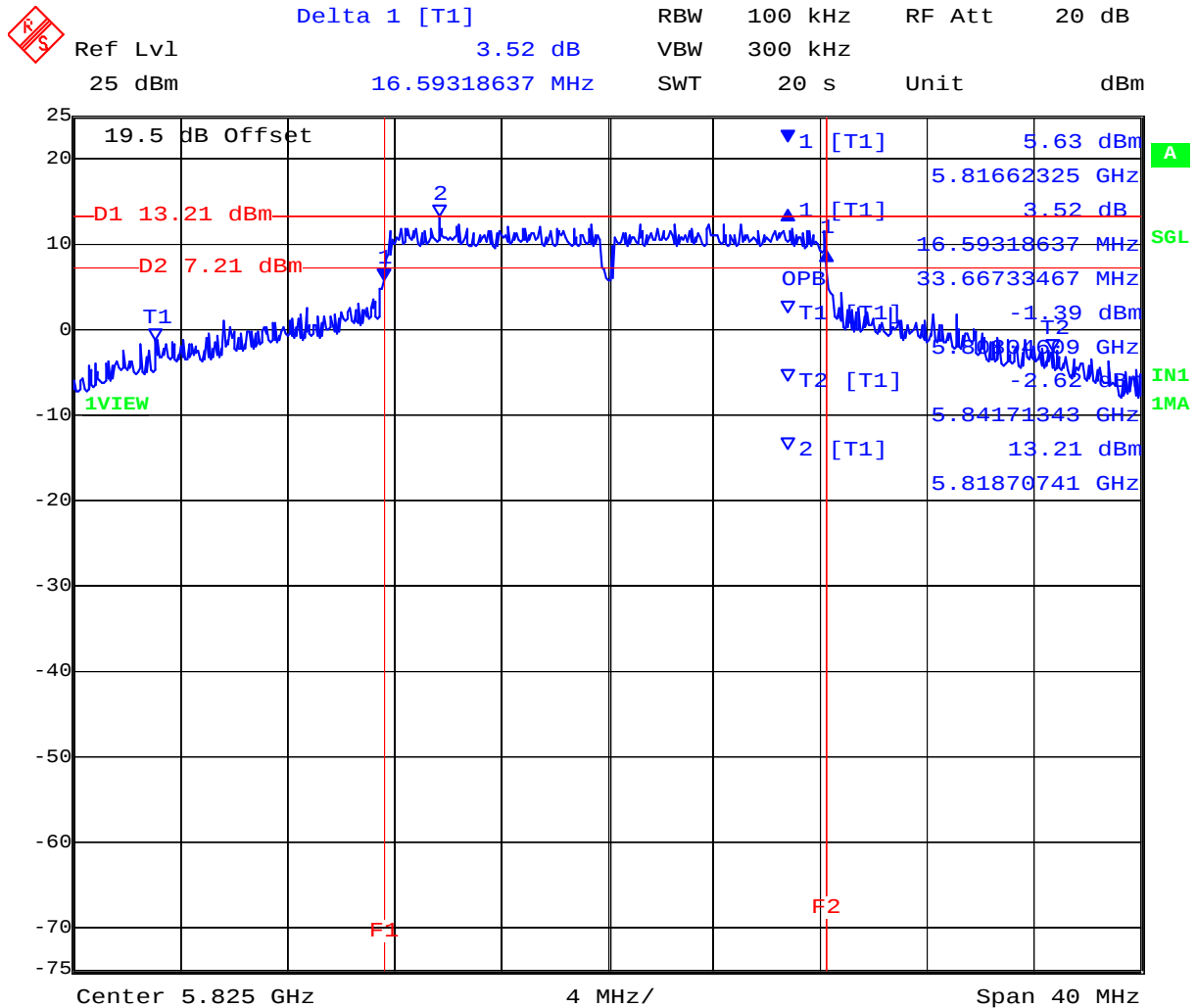
Date: 28.FEB.2012 12:55:34

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 93 of 412

PORT C 5,825 MHz 802.11a Legacy 6 dB and 99% Bandwidth



Date: 28.FEB.2012 12:56:39

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 94 of 412

TABLE OF RESULTS – 802.11n HT-20, 20 MHz

Test Conditions:	15.247 (a)(2)	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:	48.00 Vdc				
Notes 1:					
Notes 2:					

6 dB Bandwidth

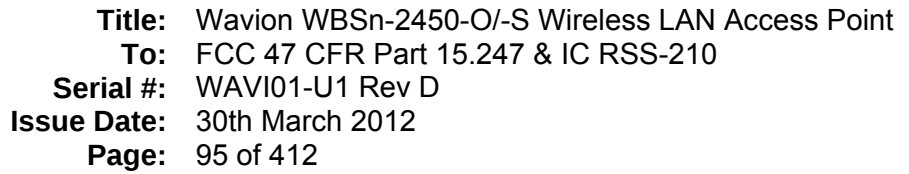
Test Frequency	6 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	a	b	c	d	kHz	MHz	MHz
5745.000	17.956000	17.956000	17.956000	--	500	0.5	-17.456000
5785.000	17.876000	18.116000	17.876000	--			-17.376000
5825.000	17.956000	17.876000	17.956000	--			-17.376000

99% Bandwidth

Test Frequency	99 % Bandwidth						
	MHz						
MHz	a	b	c	d			
5745.000	28.938000	31.663000	29.178000	--			
5785.000	34.309000	35.271000	33.587000	--			
5825.000	33.828000	34.148000	33.106000	--			

Measurement uncertainty:	±2.81 dB
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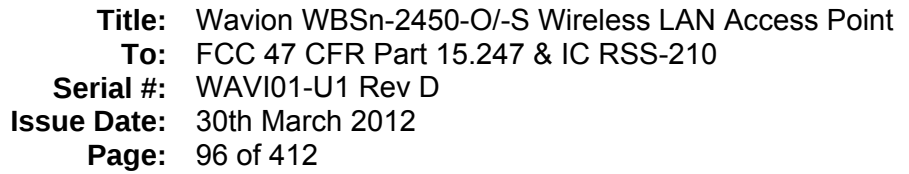
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Ref Lvl 25 dBm Delta 1 [T1] 3.84 dB RBW 100 kHz RF Att 20 dB
 18 dB Offset 17.95591182 MHz VBW 300 kHz Unit dBm
 D1 9.328 dBm D2 3.328 dBm
 T1 T2
 1V1E1
 5.73598196 GHz 5.72996994 GHz 5.74183367 GHz
 5.74591182 GHz
 28.93787575 MHz
 -6.39 dBm
 -10.31 dBm
 9.33 dBm
 F1 F2
 Center 5.745 GHz 4 MHz/ Span 40 MHz

Date: 28.FEB.2012 13:36:12

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Delta 1 [T1] RBW 100 kHz RF Att 20 dB
 Ref Lvl 4.50 dB VBW 300 kHz
 25 dBm 17.95591182 MHz SWT 20 s Unit dBm

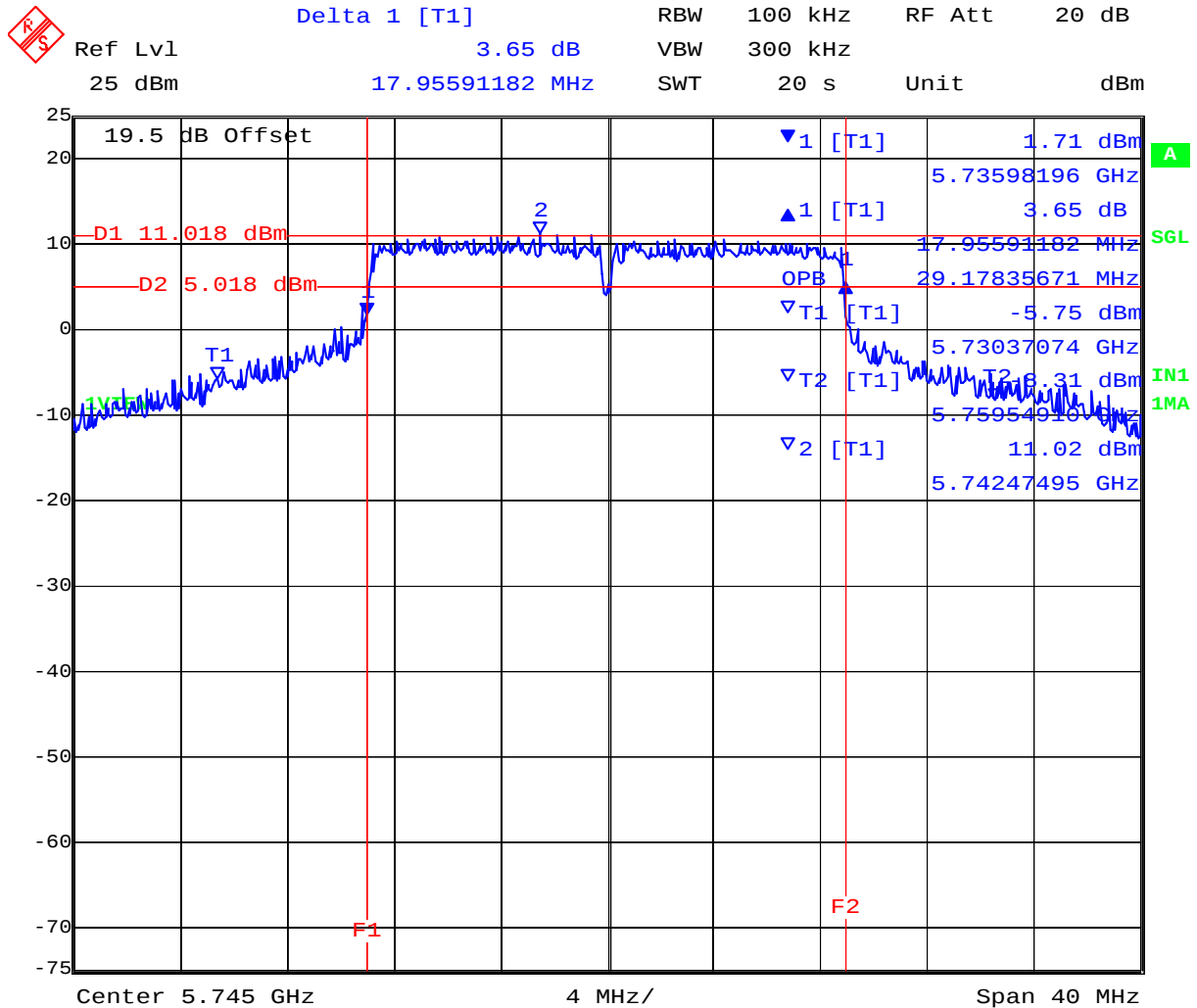
17.9 dB Offset
 D1 9.295 dBm
 D2 3.295 dBm
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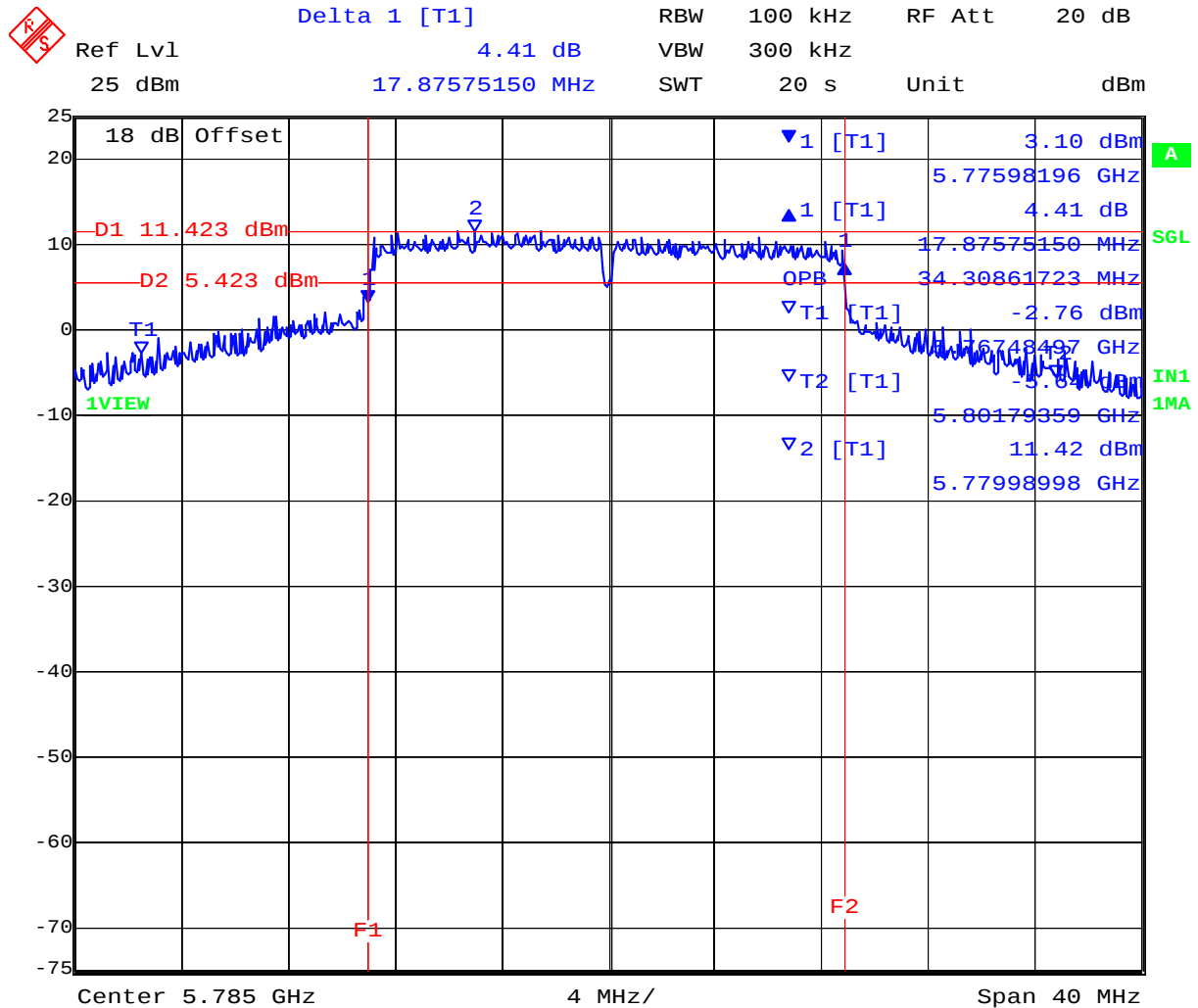
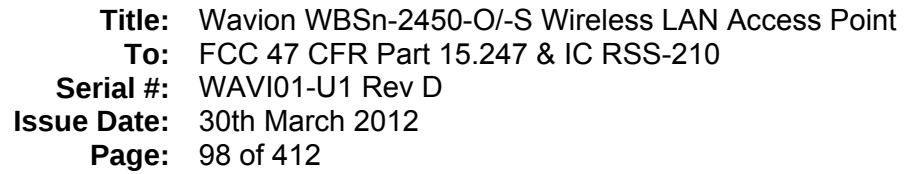
Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 97 of 412

PORT C 5,745 MHz 802.11n HT-20 6 dB and 99% Bandwidth



Date: 28.FEB.2012 13:38:24

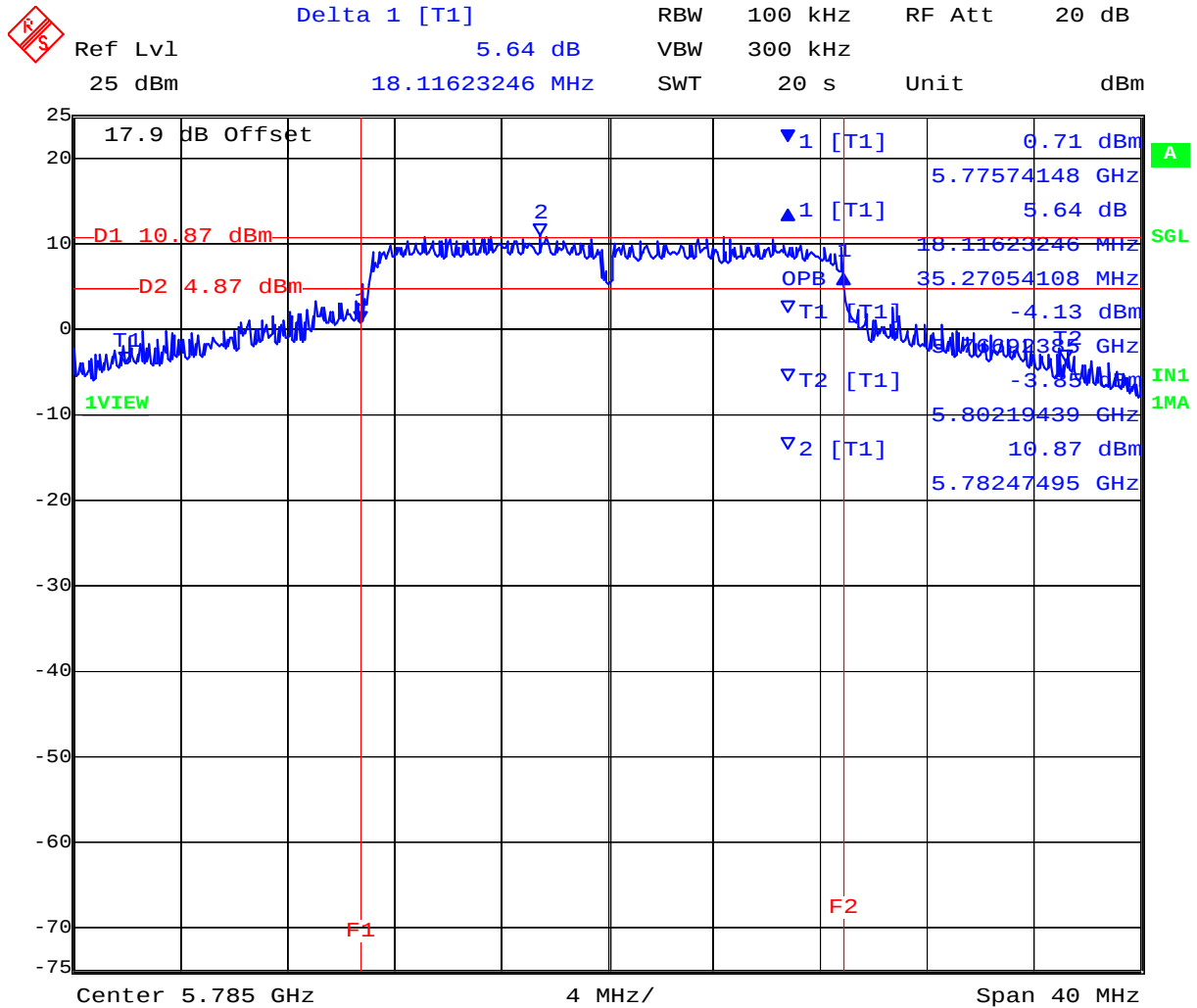
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
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Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 99 of 412

PORT B 5,785 MHz 802.11n HT-20 6 dB and 99% Bandwidth



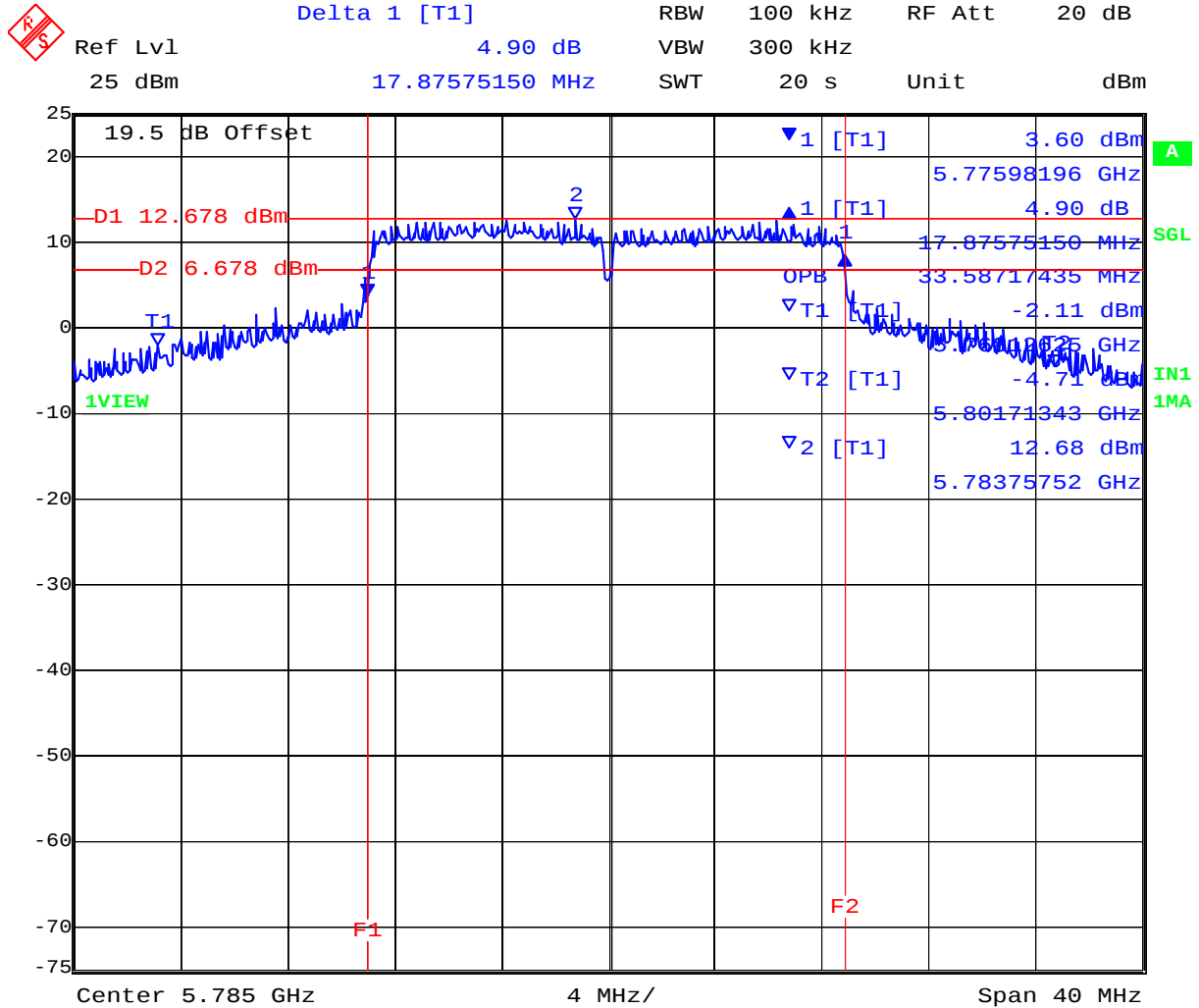
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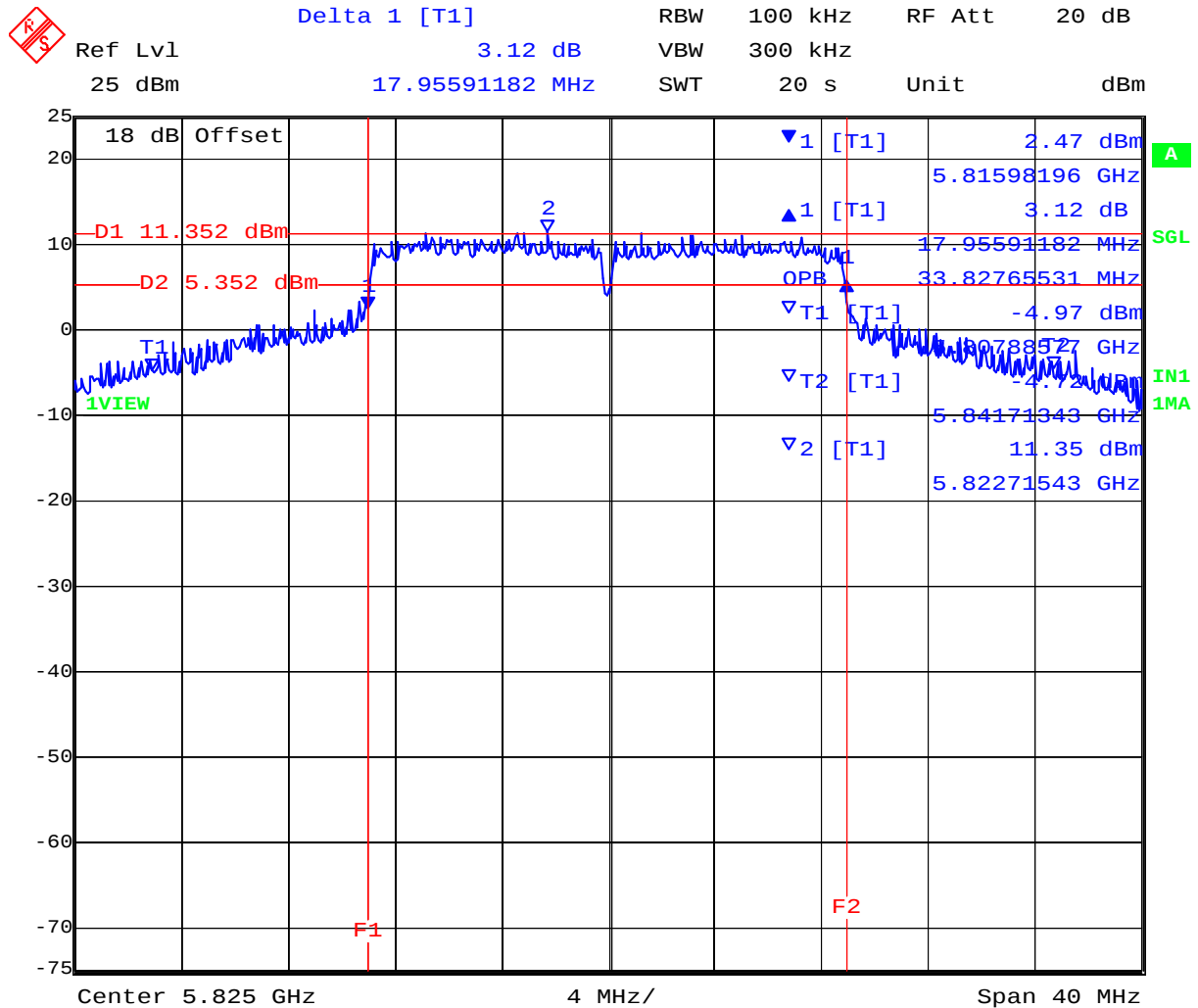
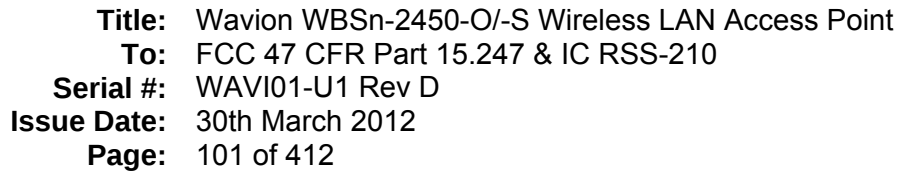
Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 100 of 412

PORT C 5,785 MHz 802.11n HT-20 6 dB and 99% Bandwidth



Date: 28.FEB.2012 14:13:10

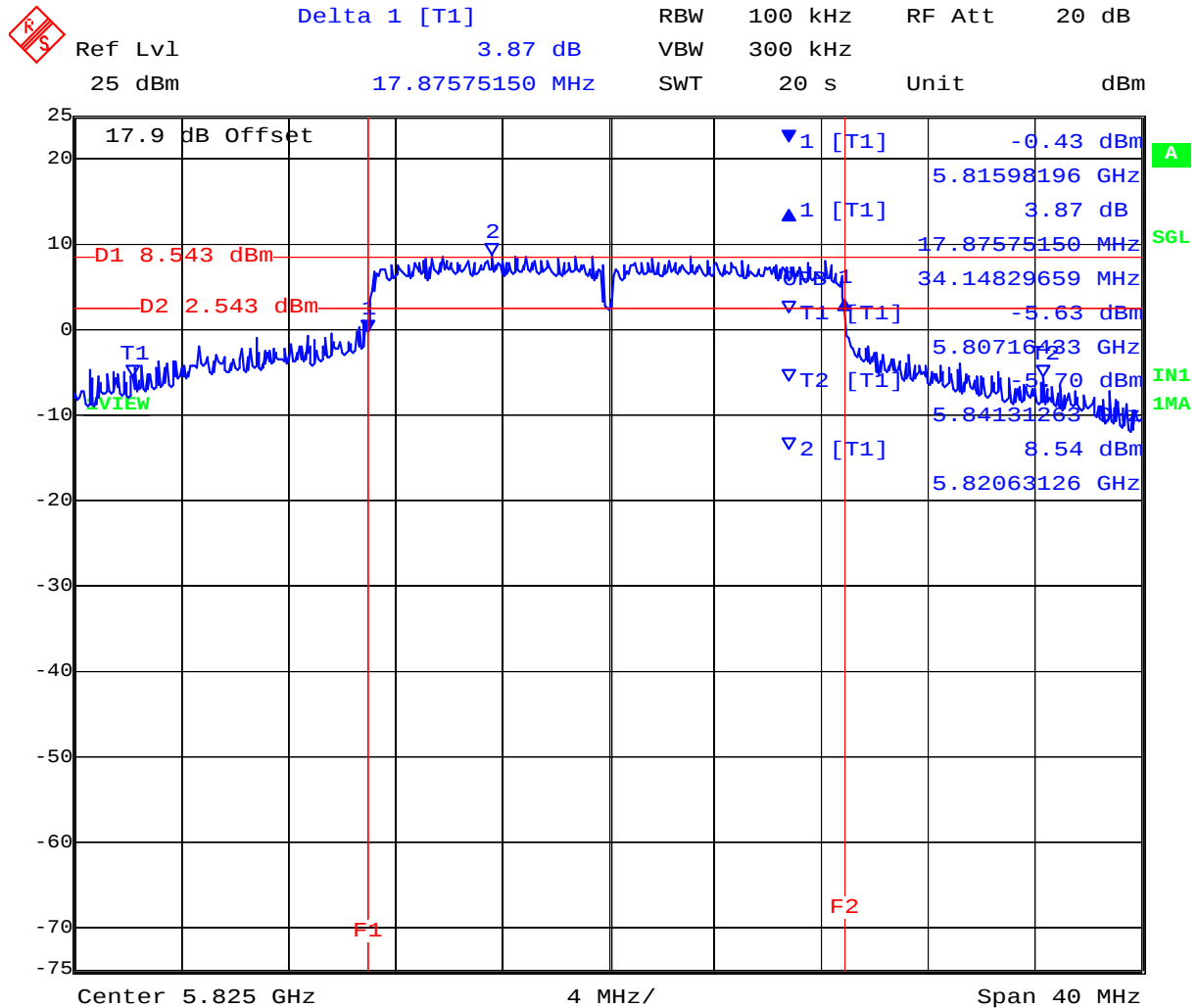
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Title: Wavion WBSn-2450-O/S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 102 of 412

PORT B 5,825 MHz 802.11n HT-20 6 dB and 99% Bandwidth



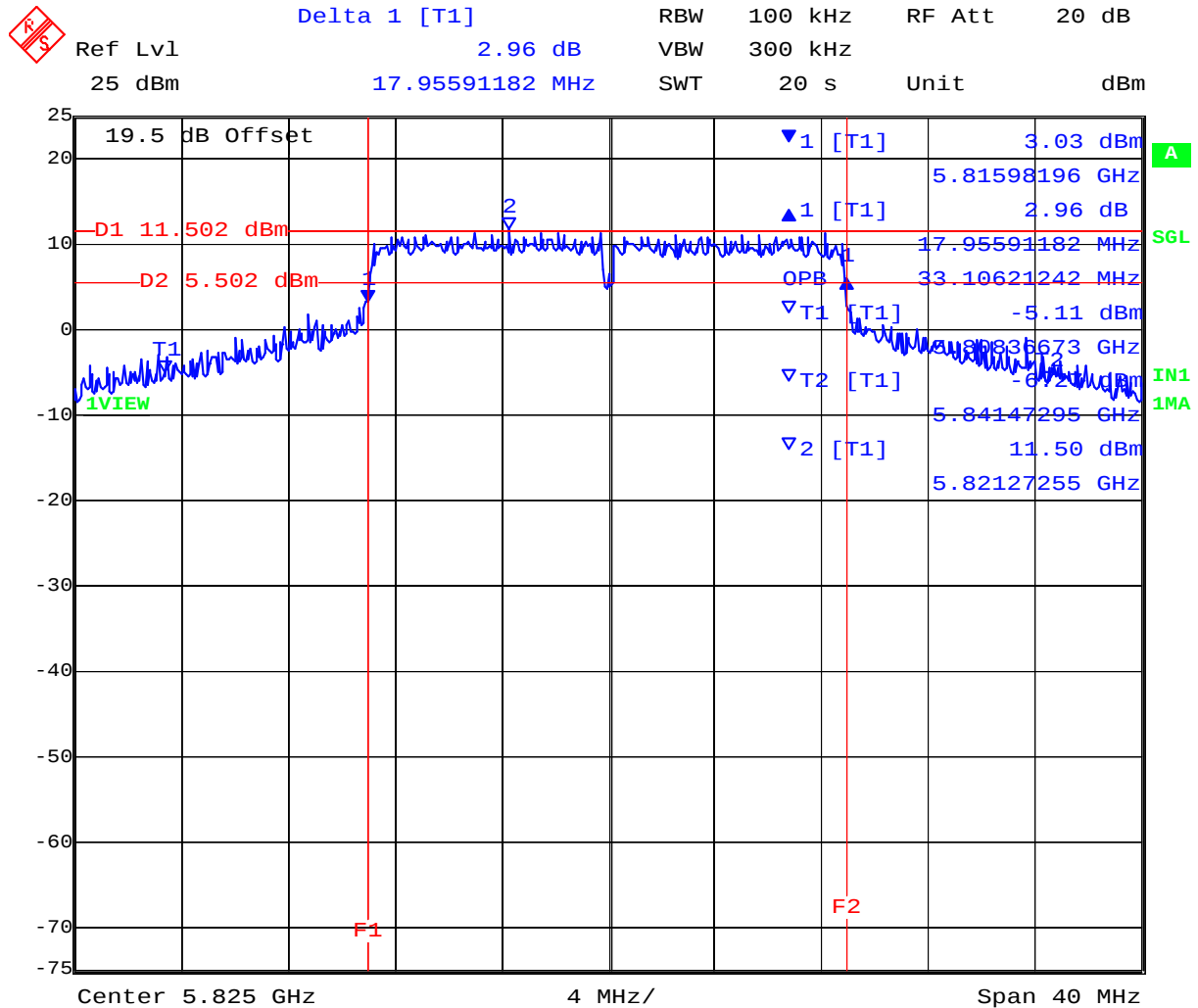
Date: 28.FEB.2012 14:49:15

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 103 of 412

PORT C 5,825 MHz 802.11n HT-20 6 dB and 99% Bandwidth



Date: 28.FEB.2012 14:50:21

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 104 of 412

TABLE OF RESULTS – 802.11n - HT-40, 20 MHz

Test Conditions:	15.247 (a)(2)	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:	48.00 Vdc				
Notes 1:					
Notes 2:					

6 dB Bandwidth

Test Frequency	6 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	a	b	c	d	kHz	MHz	MHz
5755.000	36.713000	36.713000	36.713000	--	500	0.5	-36.213000
5795.000	36.713000	36.713000	36.713000	--			-36.213000

99% Bandwidth

Test Frequency	99 % Bandwidth						
	MHz						
MHz	a	b	c	d			
5755.000	39.599000	54.830000	42.966000	--			
5795.000	69.098000	69.900000	67.976000	--			

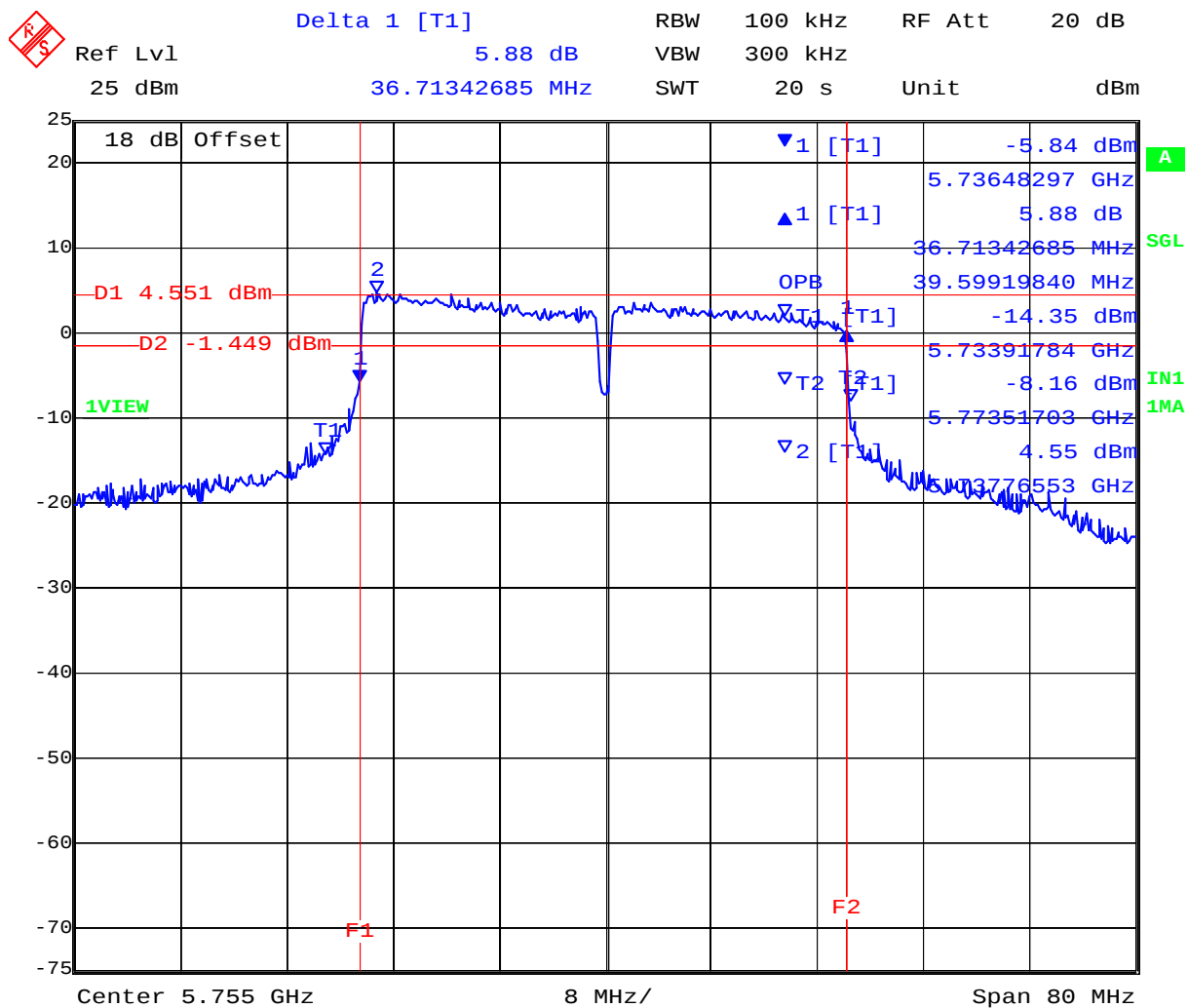
Measurement uncertainty:	±2.81 dB
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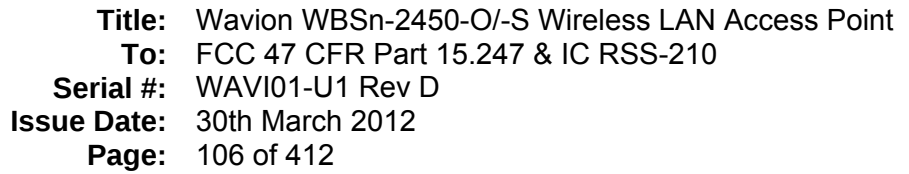
Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 105 of 412

PORTA 5,755 MHz 802.11n HT-40 6 dB and 99% Bandwidth



Date: 28.FEB.2012 15:43:48

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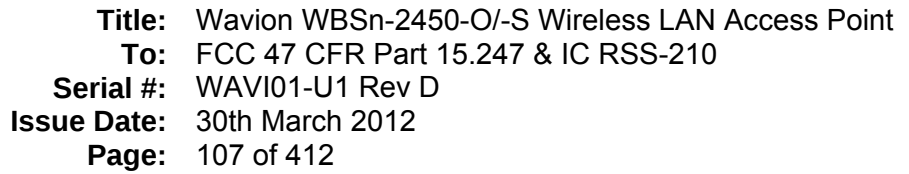
Ref Lvl 25 dBm
 Delta 1 [T1] 0.88 dB
 RBW 100 kHz
 VBW 300 kHz
 RF Att 20 dB
 Unit dBm
 17.9 dB Offset
 36.71342685 MHz
 SWT 20 s

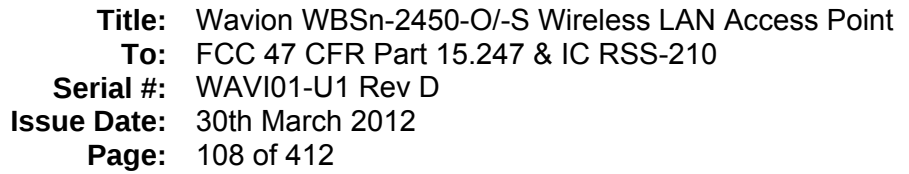
1VIEW
 D1 4.418 dBm
 D2 -1.582 dBm
 T1
 T2
 F1
 F2

1 [T1] -1.64 dBm
 1 [T1] 0.88 dB
 36.71342685 MHz
 OPB 54.82965932 MHz
 T1 [T1] -13.25 dBm
 T2 [T1] -12.37 dBm
 T2 [T1] 5.72702405 GHz
 T2 [T1] 5.728185371 GHz
 T2 [T1] 5.74417836 GHz

Center 5.755 GHz
 8 MHz/
 Span 80 MHz

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

[illegible]



Delta 1 [T1] 4.00 dB RBW 100 kHz RF Att 20 dB
 Ref Lvl 25 dBm 36.71342685 MHz VBW 300 kHz Unit dBm
 18 dB Offset

D1 8.663 dBm D2 2.663 dBm
 T1 1VIEW
 1 1.11 dBm 5.77648297 GHz
 2 4.00 dB 36.71342685 MHz
 1 69.09819639 MHz
 T1 -5.20 dBm 5.75836673 GHz
 T2 18.227 dBm 5.82746493 GHz
 2 8.66 dBm 5.78642285 GHz

F1 F2

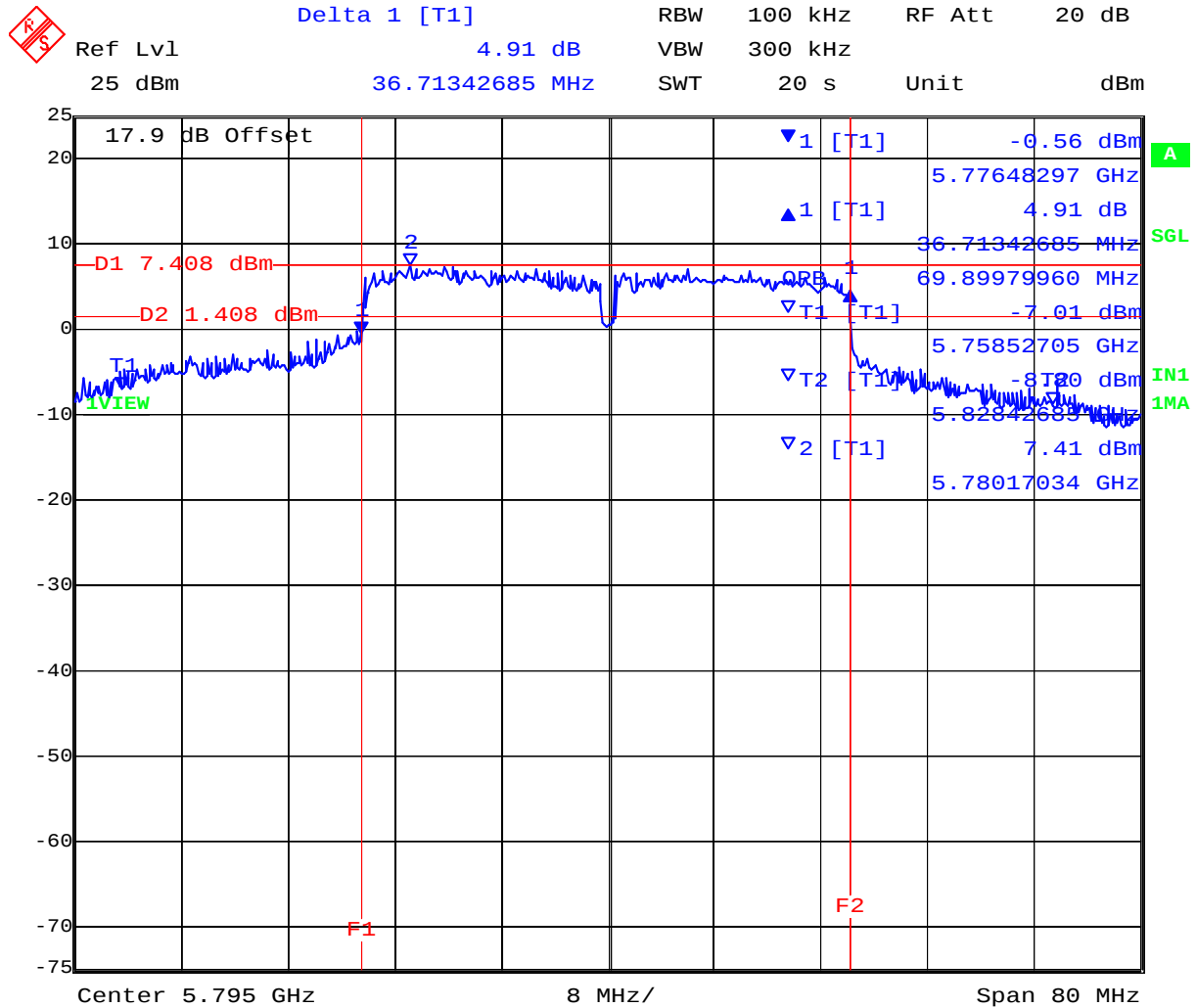
Center 5.795 GHz 8 MHz/ Span 80 MHz

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



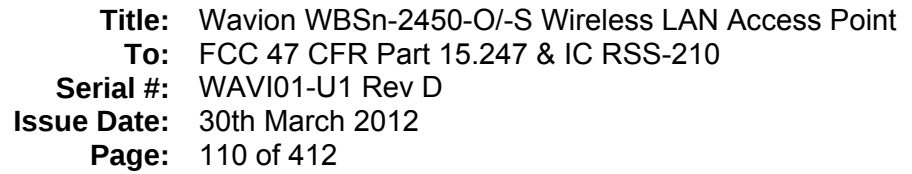
Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 109 of 412

PORT B 5,795 MHz 802.11n HT-40 6 dB and 99% Bandwidth



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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 111 of 412

Specification

Limits

§15.247 (a)(2) & RSS-210 §A8.2(1)

The minimum 6 dB bandwidth shall be at least 500 kHz.

§ IC RSS-Gen 4.4.1 Occupied Bandwidth 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.

§ IC RSS-Gen 4.4.2 6 dB Bandwidth Where indicated, the 6 dB bandwidth is measured at the points when the spectral density of the signal is 6 dB down from the in-band spectral density of the modulated signal, with the transmitter modulated by a representative signal.

Laboratory Measurement Uncertainty for Spectrum Measurement

Measurement uncertainty	±2.81 dB
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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

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5.1.2. Peak Output Power

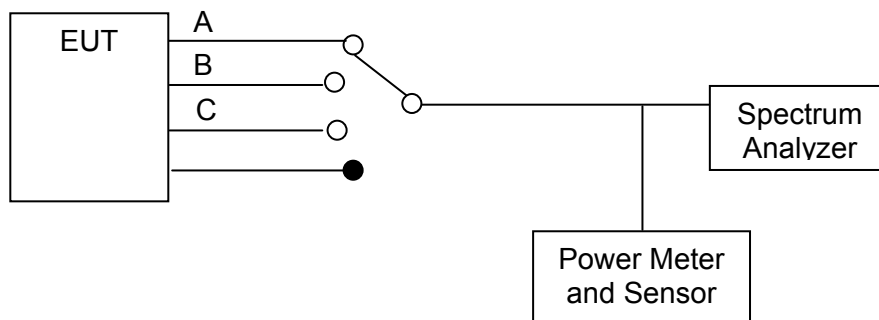
FCC, Part 15 Subpart C §15.247(b)(3), §15.31(e)

Industry Canada RSS-210 §A8.4(4)

Test Procedure

The transmitter terminal of EUT was connected to the input of the spectrum analyzer set to measure peak power. The resolution filter bandwidth was set to 6 dB, peak detector selected and the analyzer built-in power function was used to measure peak power over the 99 % bandwidth.

Test Measurement Set up



Measurement set up for Transmitter Peak Output Power

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

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

A = Total Power [$10 \log_{10} (10^{a/10} + 10^{b/10} + 10^{c/10})$], 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.



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 113 of 412

5.1.2.1. Limits Peak Output Power

(b) The maximum peak conducted output power of the intentional radiator shall not exceed the following:

(3) For systems using digital modulation in the 2400–2483.5 MHz, and band: 1 Watt. As an alternative to a peak power measurement, compliance with the 1 Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the *maximum conducted output power* is the highest total transmit power occurring in any mode.

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c), if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(i) Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

(ii) Systems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted output power.

(iii) Fixed, point-to-point operation, as used in paragraphs (b)(3)(i) of this section, excludes the use of point-to-multipoint systems, omni-directional applications, and multiple co-located intentional radiators transmitting the same information. The operator of the spread spectrum intentional radiator or, if the equipment is professionally installed, the installer is responsible for ensuring that the system is used exclusively for fixed, point-to-point operations. The instruction manual furnished with the intentional radiator shall contain language in the installation instructions informing the operator and the installer of this responsibility.

(c) Operation with directional antenna gains greater than 6 dBi.

(1) Fixed point-to-point operation:

(i) Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.



(ii) Systems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted output power.

(iii) Fixed, point-to-point operation, as used in paragraphs (c)(1)(i) of this section, excludes the use of point-to-multipoint systems, omni-directional applications, and multiple co-located intentional radiators transmitting the same information. The operator of the spread spectrum or digitally modulated intentional radiator or, if the equipment is professionally installed, the installer is responsible for ensuring that the system is used exclusively for fixed, point-to-point operations. The instruction manual furnished with the intentional radiator shall contain language in the installation instructions informing the operator and the installer of this responsibility.

(2) In addition to the provisions in paragraphs (b)(3), (b)(4) and (c)(1)(i) of this section, transmitters operating in the 2400–2483.5 MHz band that emit multiple directional beams, simultaneously or sequentially, for the purpose of directing signals to individual receivers or to groups of receivers provided the emissions comply with the following:

(i) Different information must be transmitted to each receiver.

(ii) If the transmitter employs an antenna system that emits multiple directional beams but does not do emit multiple directional beams simultaneously, the total output power conducted to the array or arrays that comprise the device, i.e., the sum of the power supplied to all antennas, antenna elements, staves, etc. and summed across all carriers or frequency channels, shall not exceed the limit specified in paragraph (b)(3) of this section, as applicable. However, the total conducted output power shall be reduced by 1 dB below the specified limits for each 3 dB that the directional gain of the antenna/antenna array exceeds 6 dBi. The directional antenna gain shall be computed as follows:

(A) The directional gain shall be calculated as the sum of $10 \log$ (number of array elements or staves) plus the directional gain of the element or stave having the highest gain.

(B) A lower value for the directional gain than that calculated in paragraph (c)(2)(ii)(A) of this section will be accepted if sufficient evidence is presented, e.g., due to shading of the array or coherence loss in the beam-forming.

(iii) If a transmitter employs an antenna that operates simultaneously on multiple directional beams using the same or different frequency channels, the power supplied to each emission beam is subject to the power limit specified in paragraph (c)(2)(ii) of this section. If transmitted beams overlap, the power shall be reduced to ensure that their aggregate power does not exceed the limit specified in paragraph (c)(2)(ii) of this section. In addition, the aggregate power transmitted simultaneously on all beams shall not exceed the limit specified in paragraph (c)(2)(ii) of this section by more than 8 dB.

(iv) Transmitters that emit a single directional beam shall operate under the provisions of paragraph (c)(1) of this section.



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 115 of 412

WBSn-2450 - 802.11a/b/g/n Wireless Access Point, 3x3 Spatial Multiplexing MIMO configuration

2.4 GHz Operation

Antenna	Gain (dBi)	Maximum Total Conducted Peak Power (dBm)	
		Total	Per Chain
OMNI	7.4	+28.0	+23.23
SECTOR	12.0	+26.4	+21.63

Per chain value = Maximum Total Conducted Peak Power – 4.77 dB

5.8 GHz Operation

Antenna	Gain (dBi)	Maximum Total Conducted Peak Power (dBm)	
		Total	Per Chain
OMNI	8.5	+30.0	+25.23
SECTOR	14.0	+30.0	+25.23

Per chain value = Maximum Total Conducted Peak Power – 4.77 dB

Power Reduction Required

It was found that power reduction was required on some operational modes. The following matrix takes this criteria into consideration and reports both individual chain power and total summed power for the reduced levels where required.

Output power measurements were performed on the OMNI (N-Type connector) device. Assumption: both the OMNI and SECTOR (integral antenna) power settings were identical.



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 116 of 412

5.1.2.2. 2.4 GHz 802.11b

TABLE OF RESULTS – 802.11b – Legacy OMNI ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	Rel. Humidity (%):	35	to	42
Variant:	802.11b	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:	7.4 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
2412	21.68	21.44	21.59	--	N/A	26.34	28.00	-1.66
2437	22.01	21.55	21.45	--	N/A	26.45	28.00	-1.55
2462	21.24	21.40	21.27	--	N/A	26.08	28.00	-1.92

Measurement uncertainty:	±1.33 dB
---------------------------------	----------

SECTOR ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	Rel. Humidity (%):	35	to	42
Variant:	802.11b	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:	12 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
2412	19.71	20.17	19.11	--	N/A	24.46	26.40	-1.94
2437	21.04	21.23	20.53	--	N/A	25.71	26.40	-0.69
2462	20.60	21.43	20.69	--	N/A	25.69	26.40	-0.71

Measurement uncertainty:	±1.33 dB
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 117 of 412

5.1.2.3. 2.4 GHz 802.11g

TABLE OF RESULTS – 802.11g – Legacy OMNI ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	Rel. Humidity (%):	35	to	42
Variant:	802.11g	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:	7.4 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
2412	20.85	20.95	20.83	--	N/A	25.65	28.00	-2.35
2437	20.97	20.94	21.53	--	N/A	25.93	28.00	-2.07
2462	20.73	20.98	21.03	--	N/A	25.69	28.00	-2.31

Measurement uncertainty:	±1.33 dB
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SECTOR ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	Rel. Humidity (%):	35	to	42
Variant:	802.11g	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:	12 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
2412	20.84	21.14	20.68	--	N/A	25.66	26.40	-0.74
2437	21.23	21.16	20.70	--	N/A	25.81	26.40	-0.59
2462	21.01	21.13	20.96	--	N/A	25.81	26.40	-0.59

Measurement uncertainty:	±1.33 dB
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 118 of 412

5.1.2.4. 2.4 GHz 802.11n HT-20

TABLE OF RESULTS – 802.11n – HT-20 OMNI ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	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:	7.4 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
2412	20.82	20.95	20.55	--	N/A	25.55	28.00	-2.45
2437	21.17	20.94	21.21	--	N/A	25.88	28.00	-2.12
2462	21.08	21.74	21.36	--	N/A	26.17	28.00	-1.83

Measurement uncertainty:	±1.33 dB
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SECTOR ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	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:	12 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
2412	20.81	21.16	20.55	--	N/A	25.62	26.40	-0.78
2437	21.21	20.95	20.64	--	N/A	25.71	26.40	-0.69
2462	20.11	20.48	20.12	--	N/A	25.01	26.40	-1.39

Measurement uncertainty:	±1.33 dB
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 119 of 412

5.1.2.5. 2.4 GHz 802.11n HT-40

TABLE OF RESULTS – 802.11n – HT-40 OMNI ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	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:	7.4 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)				Combined	Calculated		
MHz	a	b	c	d			dBm	dB
2422	22.18	21.86	22.16	--	N/A	26.84	28.00	-1.16
2437	21.74	21.75	21.27	--	N/A	26.36	28.00	-1.64
2452	21.10	20.87	21.00	--	N/A	25.76	28.00	-2.24

Measurement uncertainty:	±1.33 dB
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SECTOR ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	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:	12 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)				Combined	Calculated		
MHz	a	b	c	d			dBm	dB
2422	21.51	20.78	21.22	--	N/A	25.95	26.40	-0.45
2437	21.45	21.04	21.11	--	N/A	25.97	26.40	-0.43
2452	20.64	20.93	20.36	--	N/A	25.42	26.40	-0.98

Measurement uncertainty:	±1.33 dB
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 120 of 412

5.1.2.6. 5.8 GHz 802.11a 5 MHz

TABLE OF RESULTS – 802.11a – Legacy 5 MHz OMNI ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	Rel. Humidity (%):	35	to	42
Variant:	802.11a, 5 MHz	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:	8.5 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
5730.5	18.15	19.66	18.66	--	N/A	23.64	30.00	-6.36
5790.5	17.17	16.90	18.81	--	N/A	22.48	30.00	-7.52
5845.5	17.88	15.10	16.53	--	N/A	21.42	30.00	-8.58

Measurement uncertainty:	±1.33 dB
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SECTOR ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	Rel. Humidity (%):	35	to	42
Variant:	802.11a, 5 MHz	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:	14 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
5730.5	18.15	19.66	18.66	--	N/A	23.64	30.00	-6.36
5790.5	17.17	16.90	18.81	--	N/A	22.48	30.00	-7.52
5845.5	18.17	15.33	17.00	--	N/A	21.76	30.00	-8.24

Measurement uncertainty:	±1.33 dB
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 121 of 412

5.1.2.7. 5.8 GHz 802.11a 10 MHz

TABLE OF RESULTS – 802.11a – Legacy 10 MHz OMNI ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	Rel. Humidity (%):	35	to	42
Variant:	802.11a, 10 MHz	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:	8.5 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
5735.0	21.63	21.46	21.90	--	N/A	26.44	30.00	-3.56
5790.0	21.20	20.79	22.08	--	N/A	26.16	30.00	-3.84
5840.0	21.56	19.88	20.45	--	N/A	25.46	30.00	-4.54

Measurement uncertainty:	±1.33 dB
--------------------------	----------

SECTOR ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	Rel. Humidity (%):	35	to	42
Variant:	802.11a, 10 MHz	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:	14 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
5735.0	21.63	21.46	21.90	--	N/A	26.44	30.00	-3.56
5790.0	21.20	20.79	22.08	--	N/A	26.16	30.00	-3.84
5840.0	22.14	20.29	21.96	--	N/A	26.31	30.00	-3.69

Measurement uncertainty:	±1.33 dB
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 122 of 412

5.1.2.8. 5.8 GHz 802.11a 20 MHz

TABLE OF RESULTS – 802.11a – Legacy OMNI ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	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:	8.5 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
5745	21.77	21.24	23.16	--	N/A	26.91	30.00	-3.09
5785	22.94	22.30	24.20	--	N/A	27.99	30.00	-2.01
5825	23.17	20.64	23.61	--	N/A	27.43	30.00	-2.57

Measurement uncertainty:	±1.33 dB
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SECTOR ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	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:	14 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
5745	21.34	21.10	23.24	--	N/A	26.77	30.00	-3.23
5785	22.29	21.93	23.69	--	N/A	27.48	30.00	-2.52
5825	22.48	20.16	23.19	--	N/A	26.89	30.00	-3.11

Measurement uncertainty:	±1.33 dB
---------------------------------	----------

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 123 of 412

5.1.2.9. 5.8 GHz 802.11n HT-20

TABLE OF RESULTS – 802.11n – HT-20 OMNI ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	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:	8.5 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
5745	20.70	20.30	22.15	--	N/A	25.90	30.00	-4.10
5785	22.89	22.21	24.14	--	N/A	27.93	30.00	-2.07
5825	22.95	20.30	23.20	--	N/A	27.10	30.00	-2.90

Measurement uncertainty:	±1.33 dB
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SECTOR ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	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:	14 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
5745	20.70	20.30	22.15	--	N/A	25.90	30.00	-4.10
5785	22.15	22.11	23.57	--	N/A	27.44	30.00	-2.56
5825	22.37	20.36	22.71	--	N/A	26.70	30.00	-3.30

Measurement uncertainty:	±1.33 dB
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 124 of 412

5.1.2.10.5.8 GHz 802.11n HT-40

TABLE OF RESULTS – 802.11n – HT-40 OMNI ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	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:	8.5 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
5755	17.70	18.57	19.57	--	N/A	23.45	30.00	-6.55
5795	22.97	21.91	23.97	--	N/A	27.80	30.00	-2.20

Measurement uncertainty:	±1.33 dB
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SECTOR ANTENNA MEASUREMENT RESULTS

Test Conditions:	15.247 (b)	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:	14 dBi		
Applied Voltage:	48.00 Vdc				
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power				Total Power (dBm)		Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	Combined	Calculated	dBm	dB
5755	17.70	18.57	19.57	--	N/A	23.45	30.00	-6.55
5795	22.42	21.76	23.69	--	N/A	27.47	30.00	-2.53

Measurement uncertainty:	±1.33 dB
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 125 of 412

Specification

Limits

§15.247 (b) The maximum peak output power of the intentional radiator shall not exceed the following:

§15.247 (b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands: 1.0 watt.

15.247 (b) (4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

15.247 (c) Operation with directional antenna gains greater than 6 dBi.

(1) Fixed point-to-point operation:

(i) Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

(ii) Systems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted output power.

§15.31 (e) For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

§ RSS-210 A8.4(4) For systems employing digital modulation techniques operating in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands the maximum peak conducted power shall not exceed 1 watt.



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 126 of 412

Laboratory Measurement Uncertainty for Power Measurements

Measurement uncertainty	± 1.33 dB
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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

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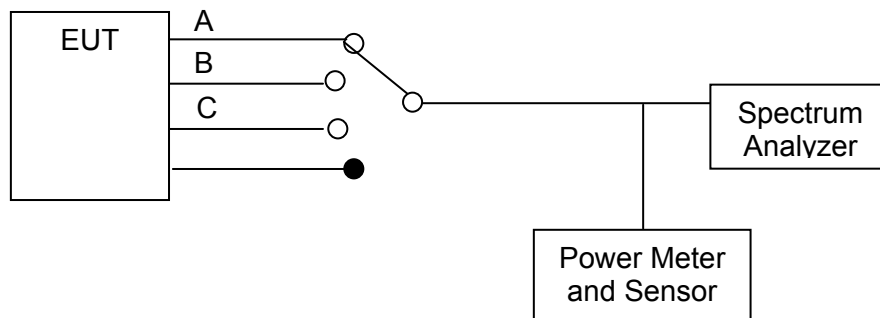
5.1.3. Peak Power Spectral Density

FCC, Part 15 Subpart C §15.247(e)
Industry Canada RSS-210 §A8.2

Test Procedure

The transmitter output was connected to a spectrum analyzer and the maximum level in a 3 kHz bandwidth was measured. A peak value was found over the full emission bandwidth and the frequency span reduced to obtain enhanced resolution. Sweep time $\geq$ span / 3 kHz with video averaging turned off. The Peak Power Spectral Density is the highest level found across the emission in a 3 kHz 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

NOTE: KDB 662911 was implemented for In-band power spectral density (PSD) measurements.
Option (2) Measure and add 10 log (N) dB was implemented



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 128 of 412

Peak Power Spectral Density

TABLE OF RESULTS – 802.11b

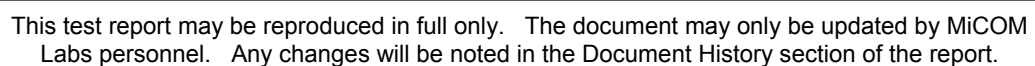
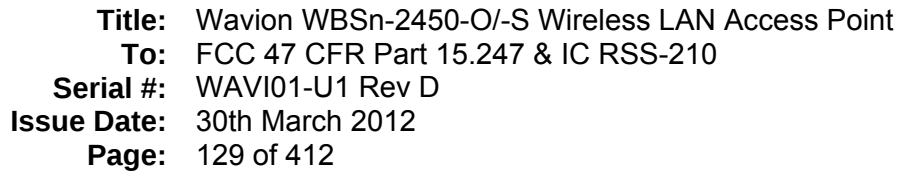
Test Conditions:	15.247 (e)	Rel. Humidity (%):	35	to	42
Variant:	802.11b	Ambient Temp. (°C):	19	to	22
TPC:	HIGH	Pressure (mBars):	998	to	1003
Modulation:	ON	Duty Cycle (%):	100		
Beam Forming Gain (Y):	N/A dB	Antenna Gain:			
Applied Voltage:	48.00 Vdc	Antenna Ports (N):	3		
Notes 1:					
Notes 2:					

Test Frequency	Measured Power Density				Correction factor	Σ Power Spectral Density	Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	10Log(N)	dBm	dBm	dB
2412	1.43	0.61	2.05	--	4.77	6.82	3.23	-1.18
2437	1.16	0.71	0.72	--	4.77	5.93	3.23	-2.07
2462	0.33	0.75	0.38	--	4.77	5.52	3.23	-2.48

Measurement uncertainty:	± 1.33 dB
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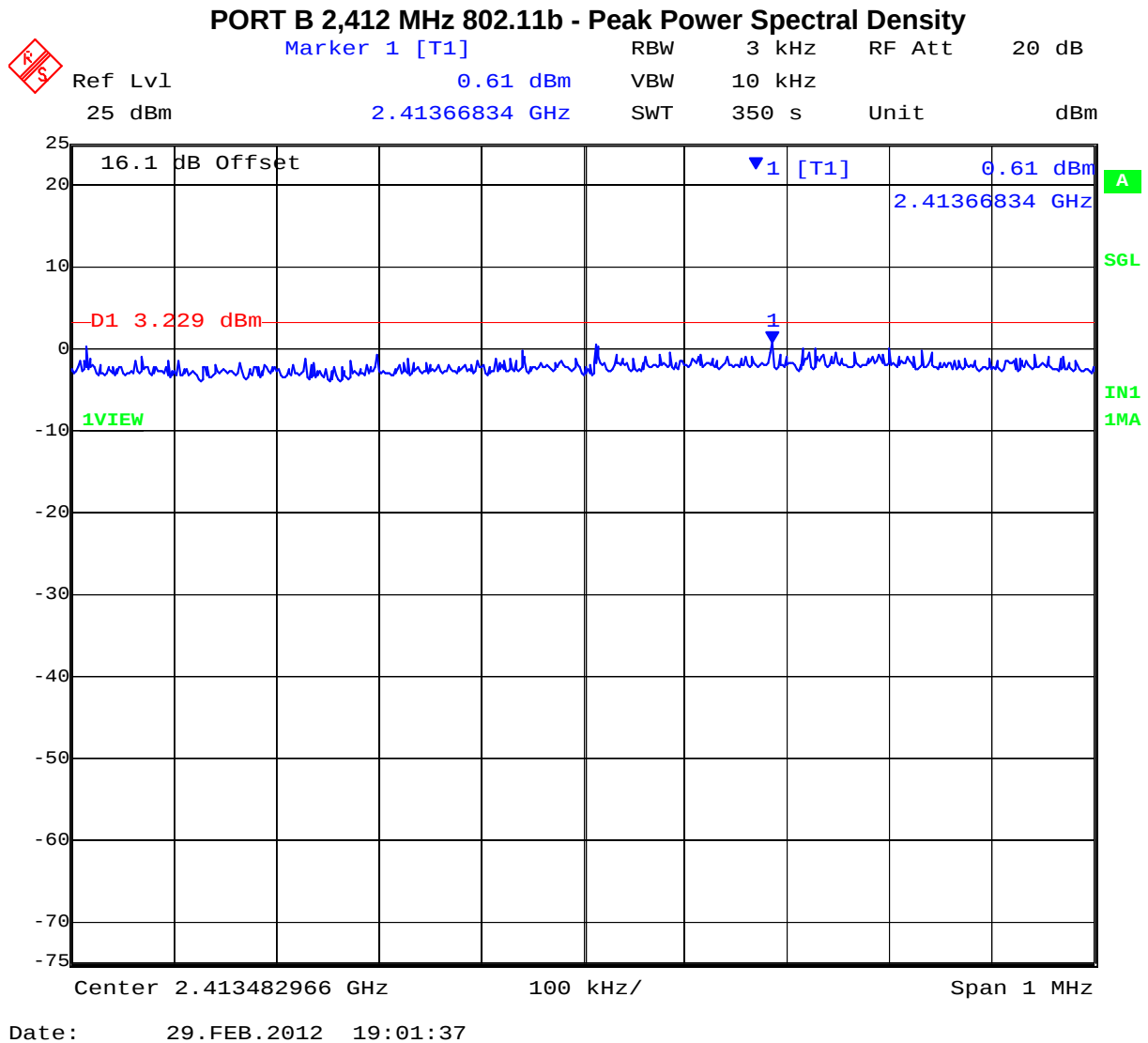
NOTE: above margin is calculated from the highest Power Density returned from Chain A or B or C

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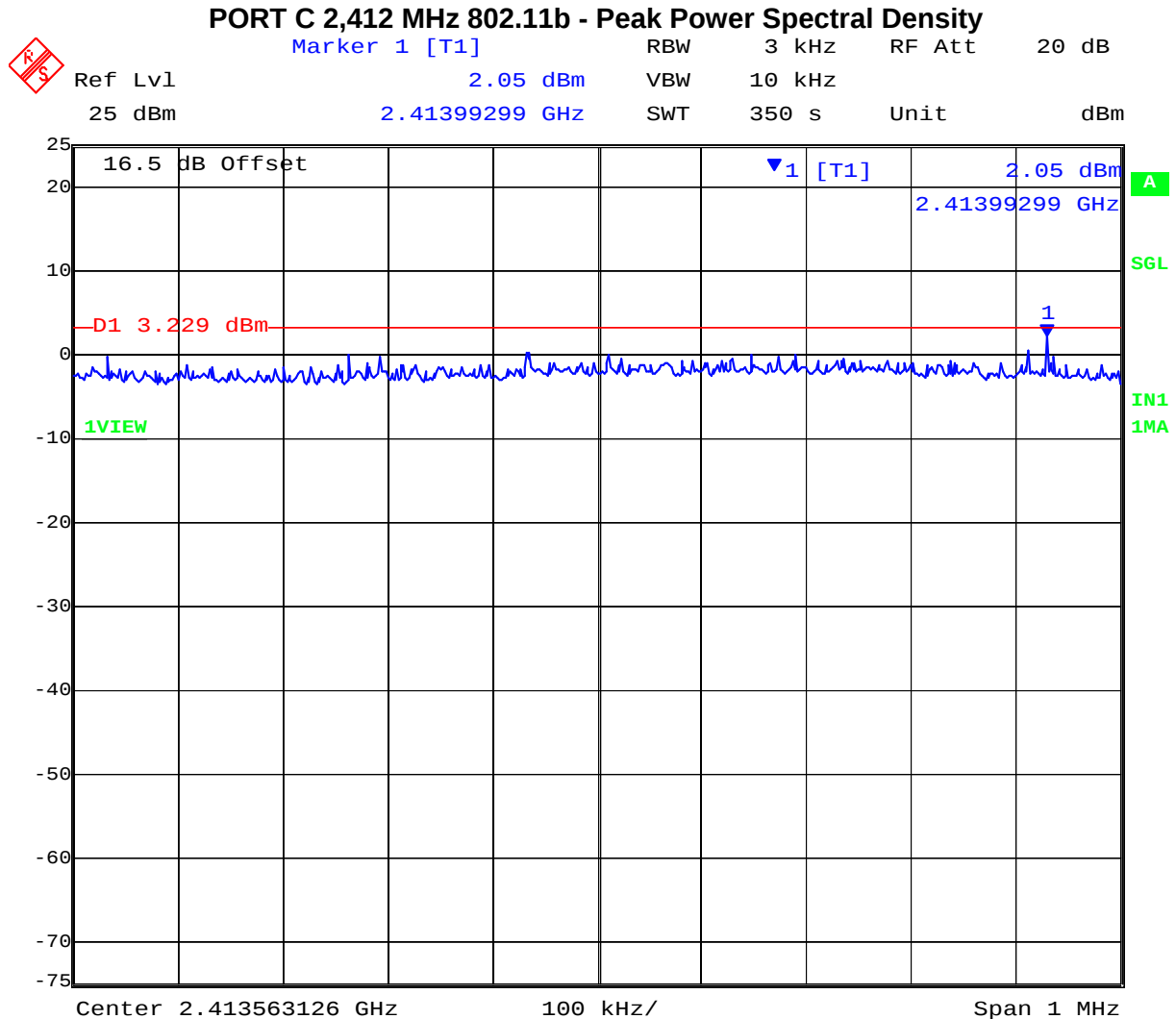
Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 130 of 412



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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 131 of 412



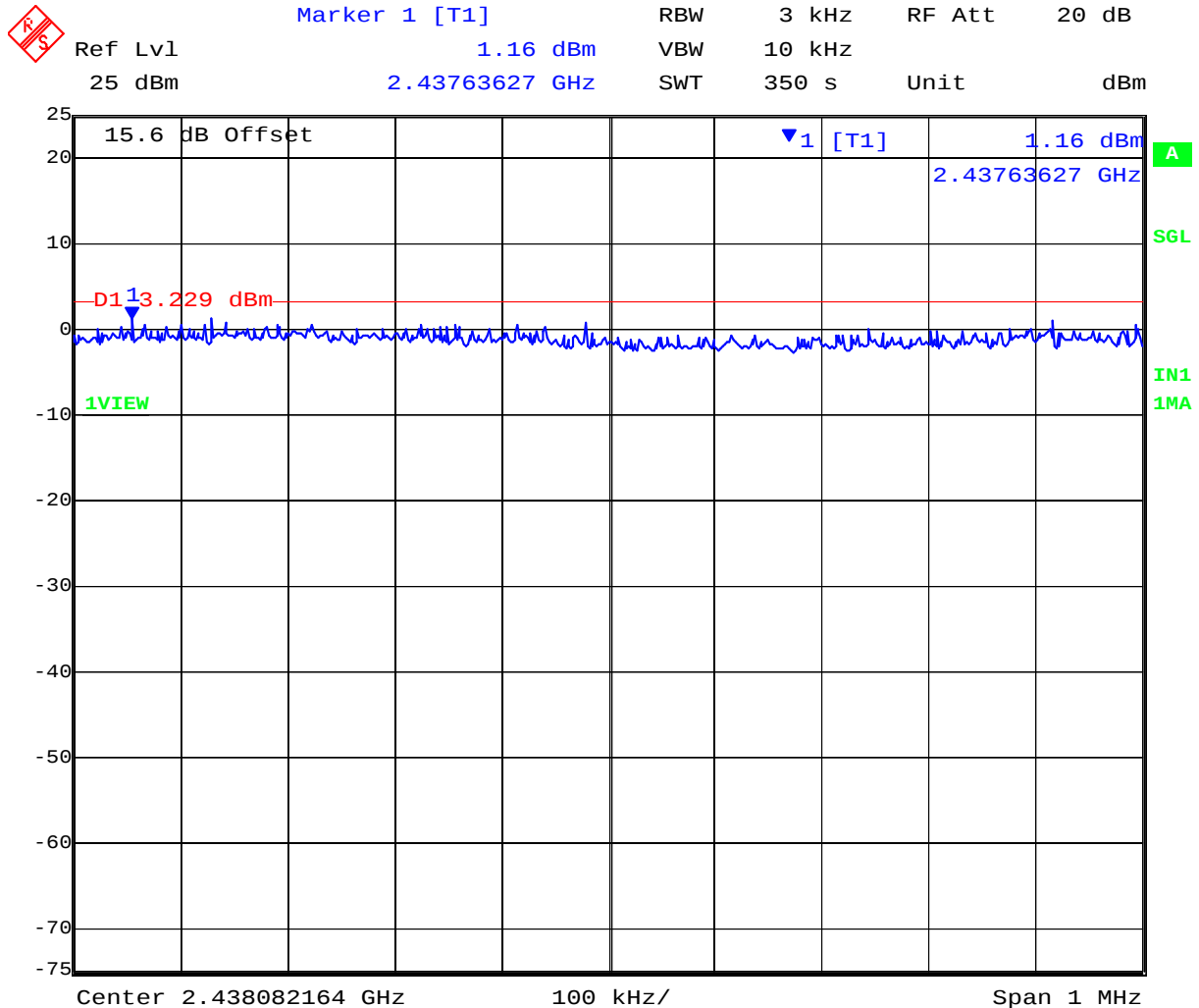
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 132 of 412

PORT A 2,437 MHz 802.11b - Peak Power Spectral Density



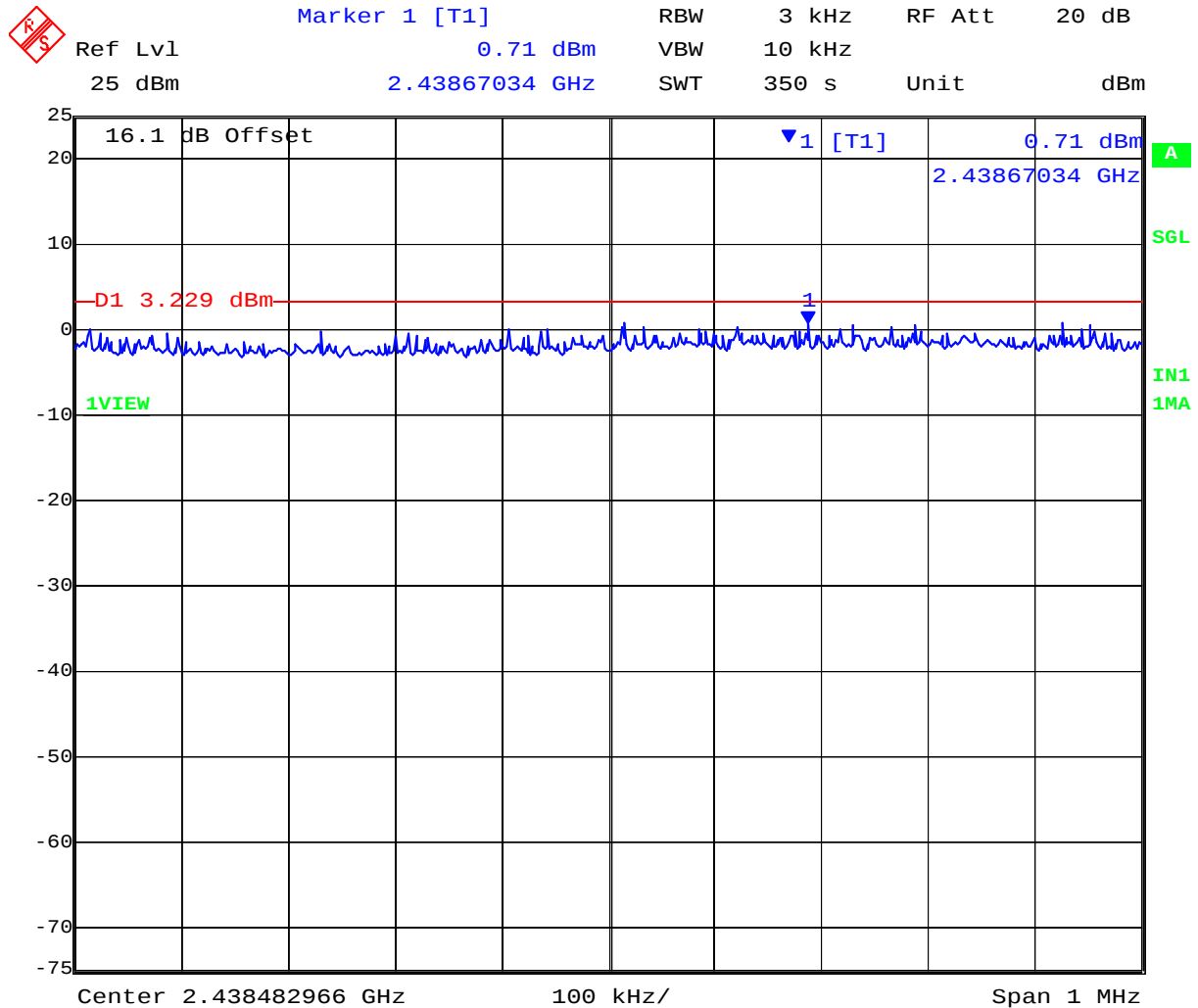
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 133 of 412

PORT B 2,437 MHz 802.11b - Peak Power Spectral Density



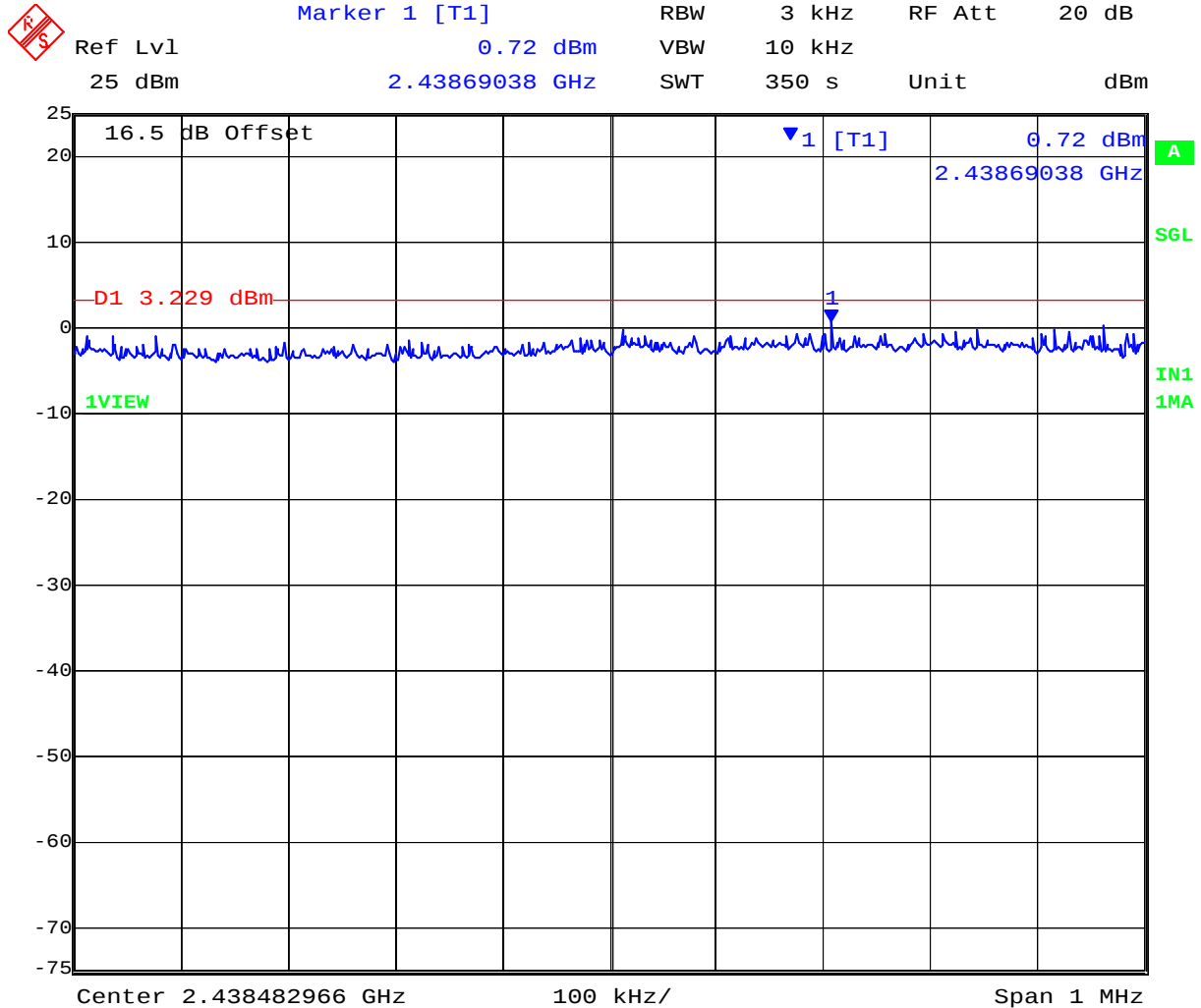
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 134 of 412

PORT C 2,437 MHz 802.11b - Peak Power Spectral Density



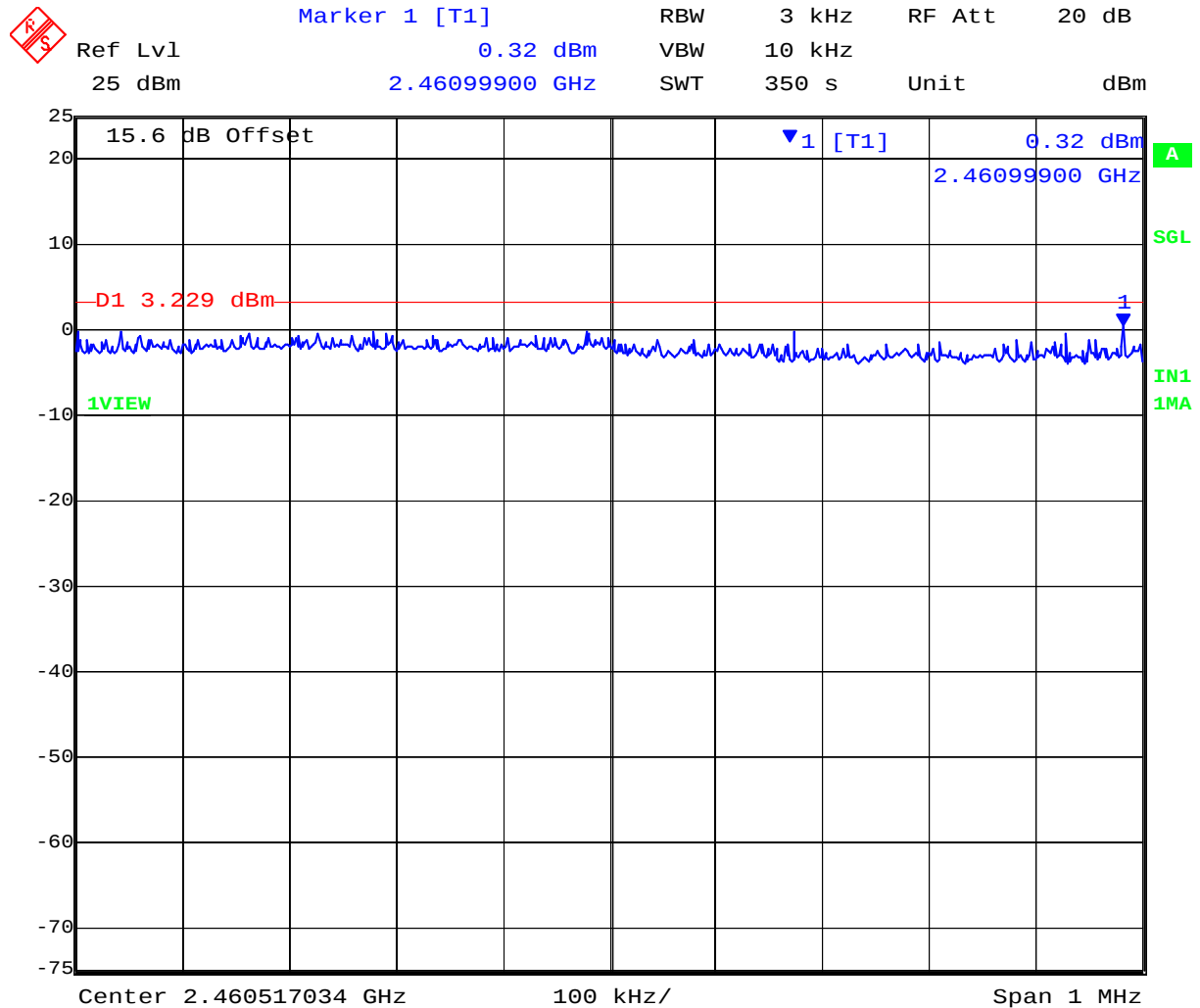
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 135 of 412

PORT A 2,462 MHz 802.11b - Peak Power Spectral Density

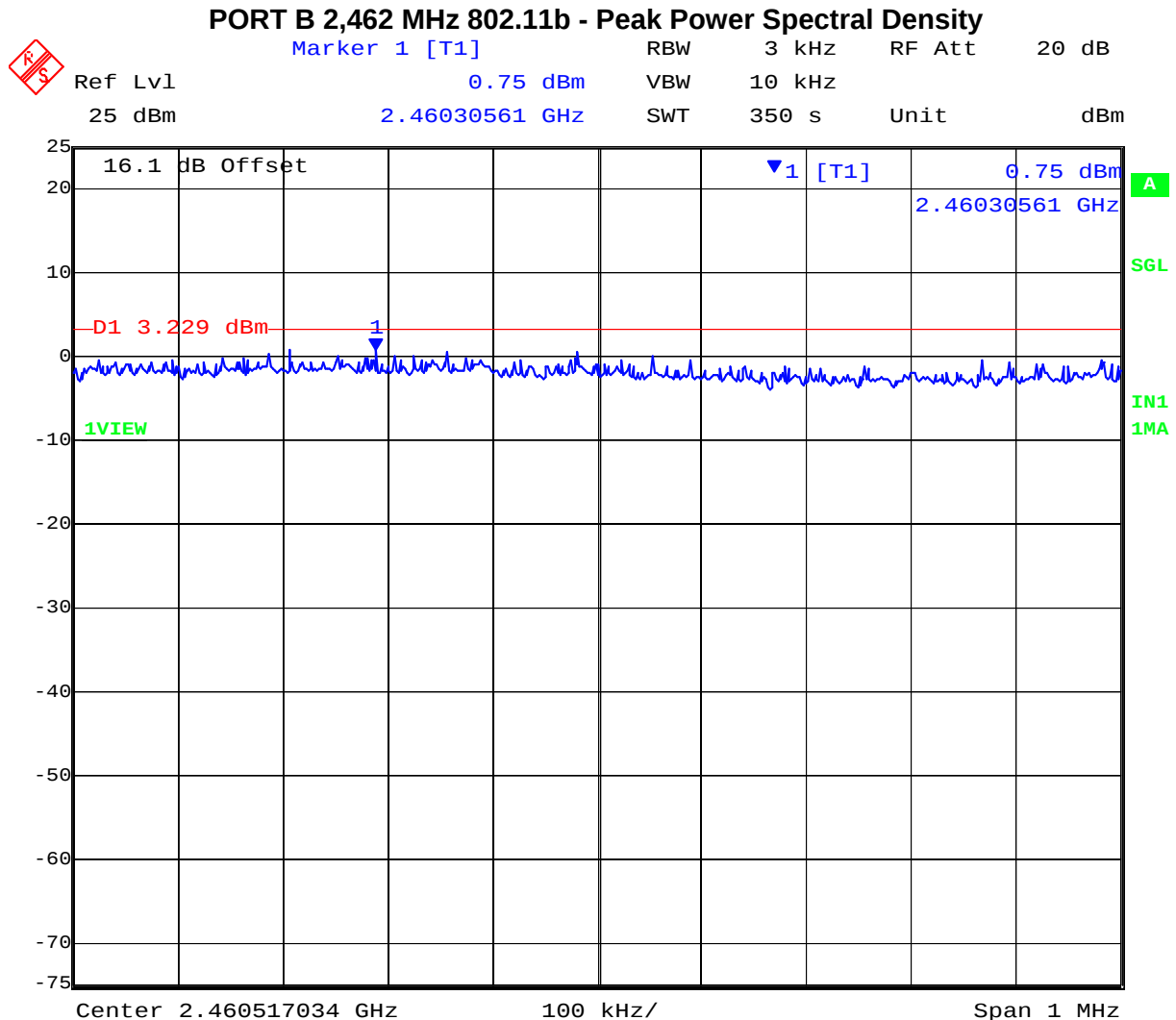


Date: 29.FEB.2012 19:15:47

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 136 of 412



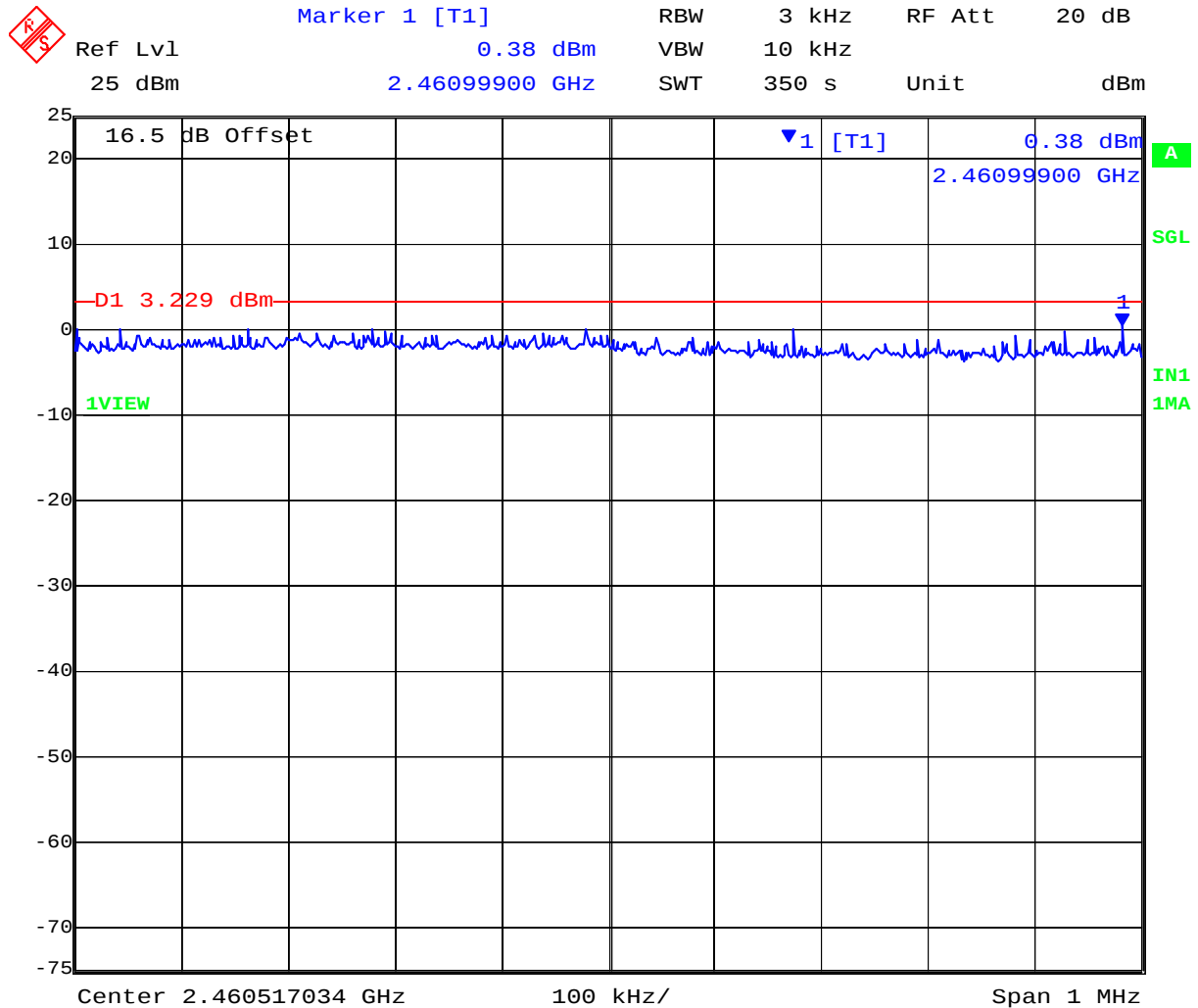
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 137 of 412

PORT C 2,462 MHz 802.11b - Peak Power Spectral Density



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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 138 of 412

Peak Power Spectral Density

TABLE OF RESULTS – 802.11g Legacy

Test Conditions:	15.247 (e)	Rel. Humidity (%):	35	to	42
Variant:	802.11g	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:			
Applied Voltage:	48.00 Vdc	Antenna Ports (N):	3		
Notes 1:					
Notes 2:					

Test Frequency	Measured Power Density				Correction factor	Σ Power Spectral Density	Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	10Log(N)	dBm	dBm	dB
2412	0.48	-0.80	-0.86	--	4.77	5.25	3.23	-2.75
2437	-0.73	-2.21	-0.41	--	4.77	4.36	3.23	-3.64
2462	-0.98	-0.82	0.06	--	4.77	4.84	3.23	-3.17

Measurement uncertainty:	± 1.33 dB
---------------------------------	---------------

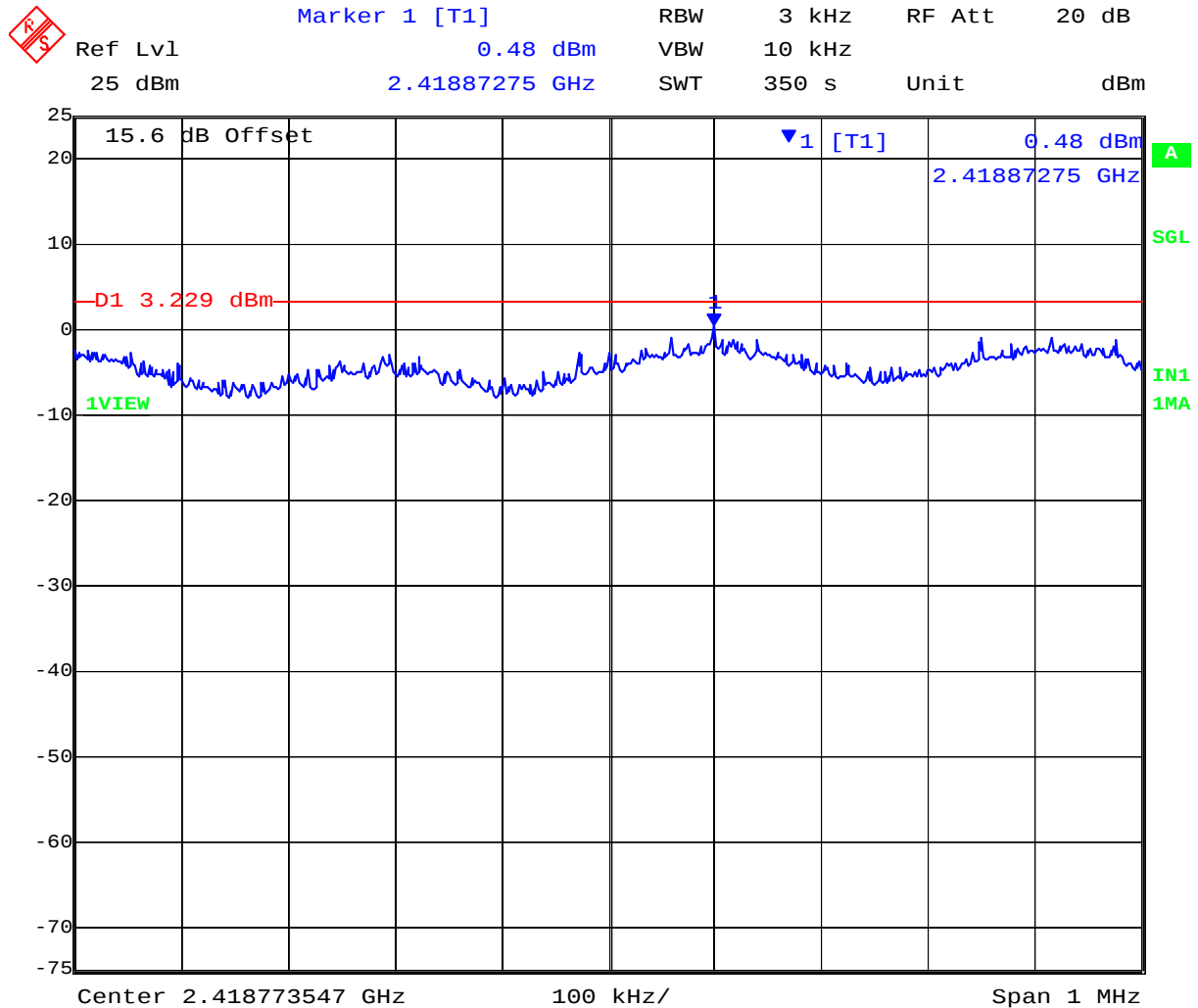
NOTE: above margin is calculated from the highest Power Density returned from Chain A or B or C

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 139 of 412

PORT A 2,412 MHz 802.11g Legacy - Peak Power Spectral Density

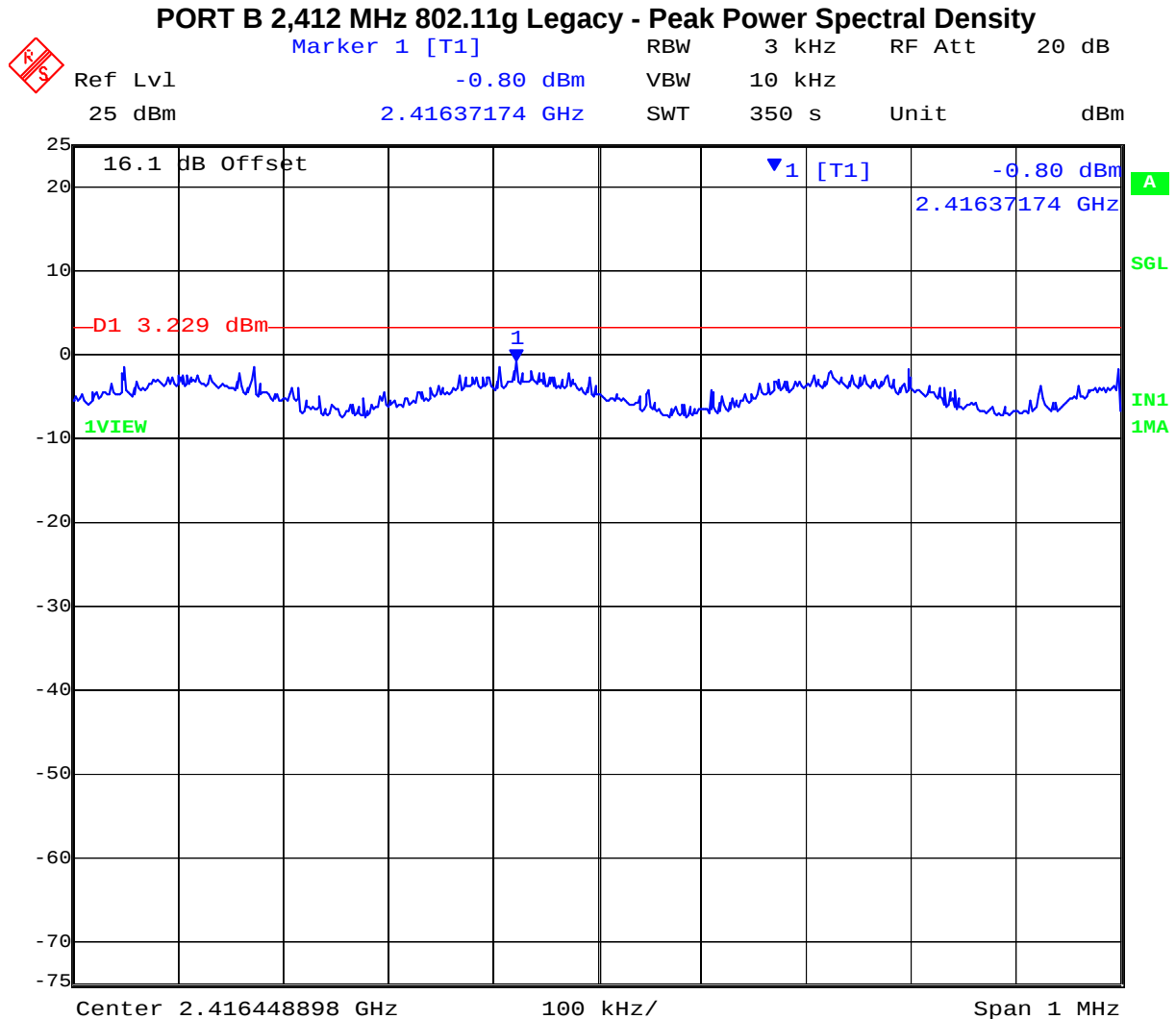


Date: 29.FEB.2012 11:29:29

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 140 of 412



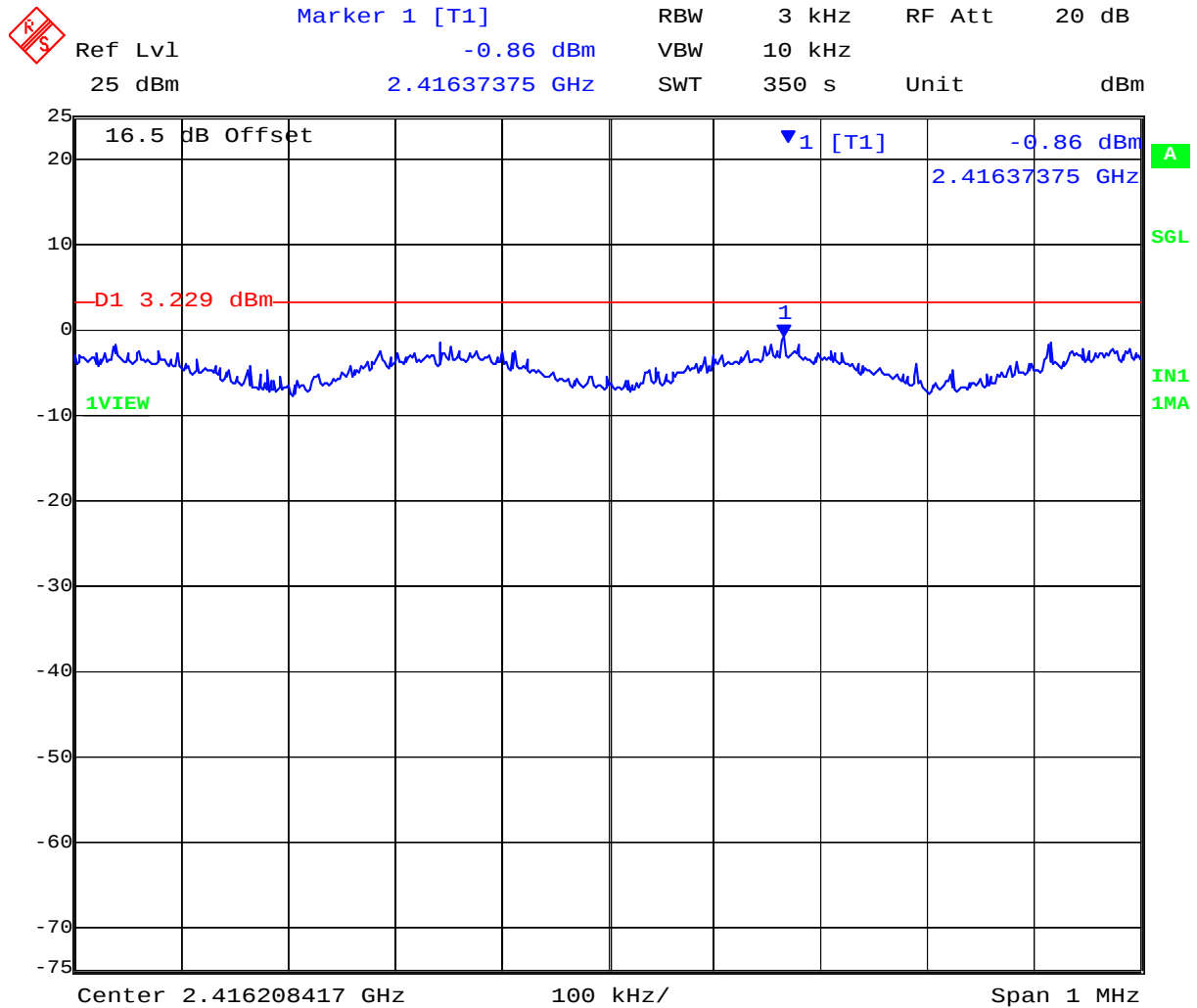
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 141 of 412

PORT C 2,412 MHz 802.11g Legacy - Peak Power Spectral Density



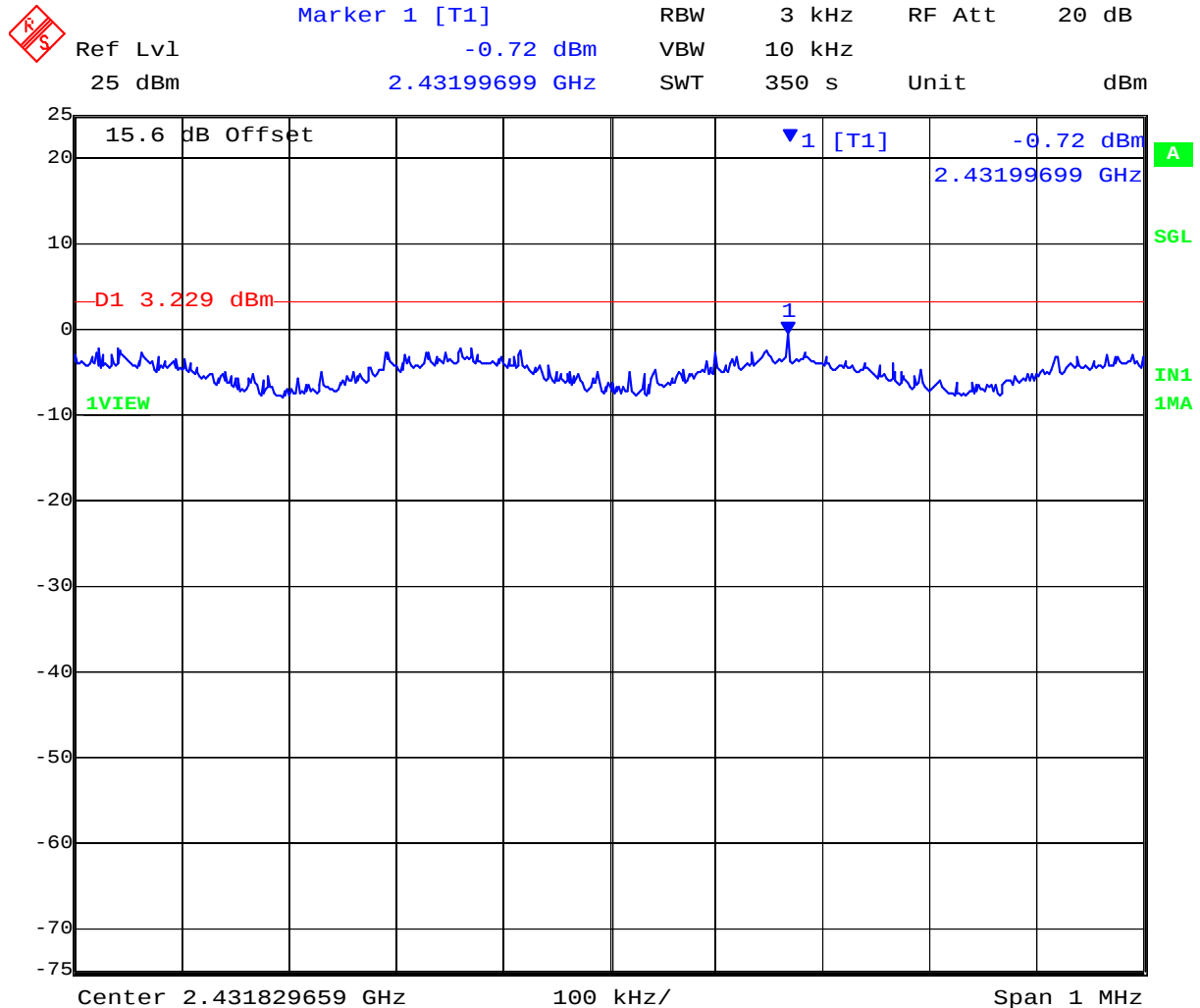
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 142 of 412

PORT A 2,437 MHz 802.11g Legacy - Peak Power Spectral Density



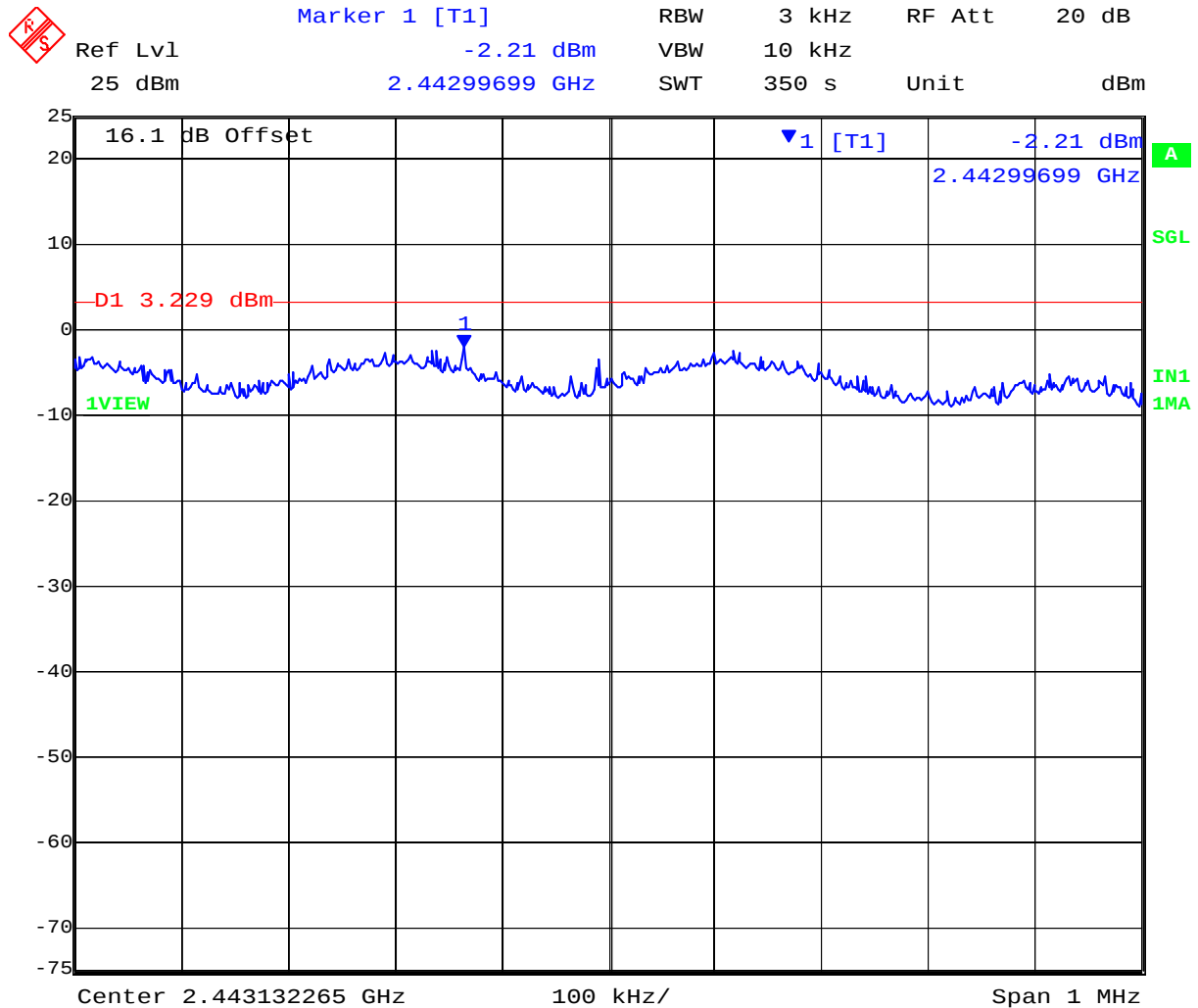
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 143 of 412

PORT B 2,437 MHz 802.11g Legacy - Peak Power Spectral Density



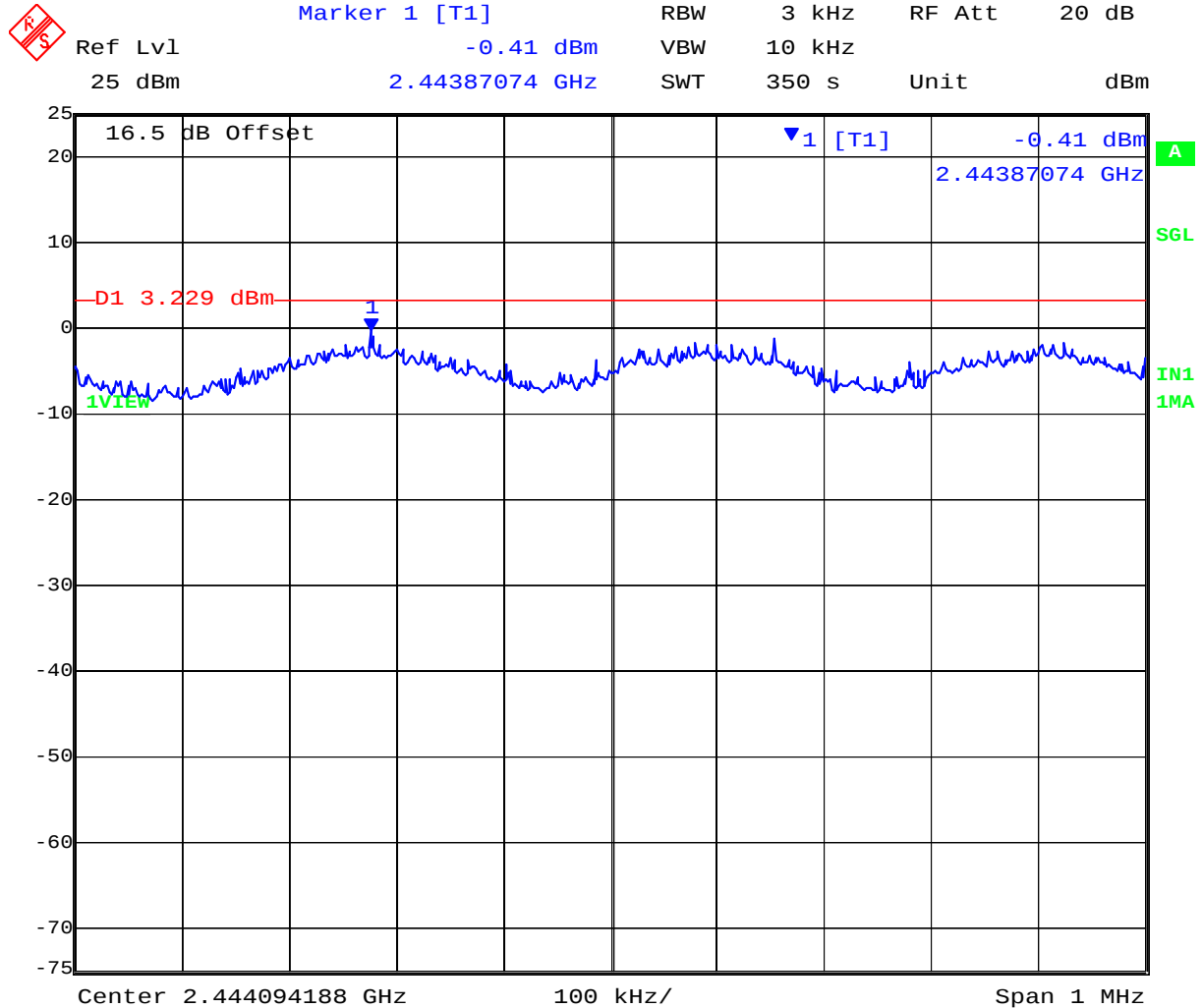
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 144 of 412

PORT C 2,437 MHz 802.11g Legacy - Peak Power Spectral Density



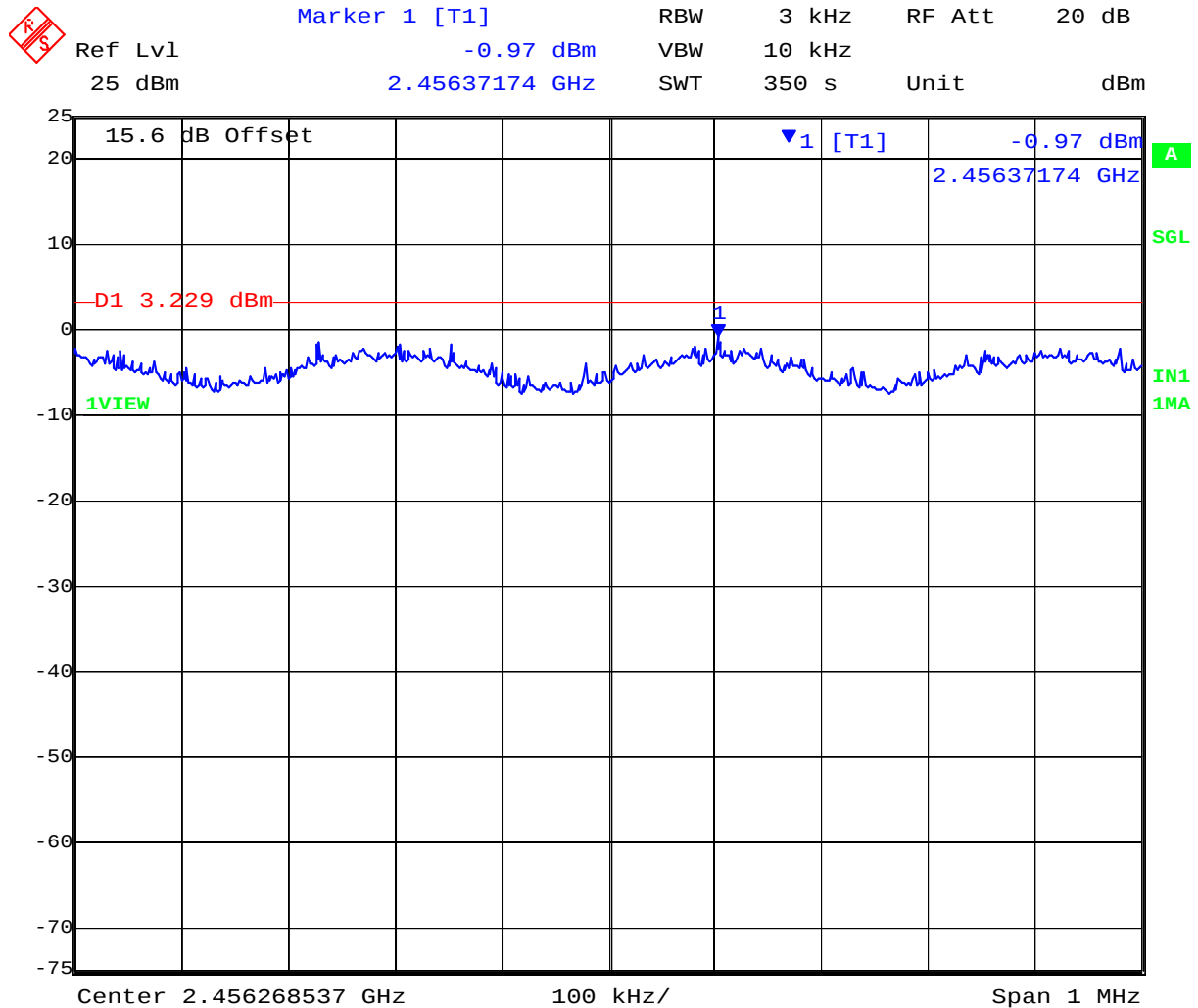
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 145 of 412

PORT A 2,462 MHz 802.11g Legacy - Peak Power Spectral Density



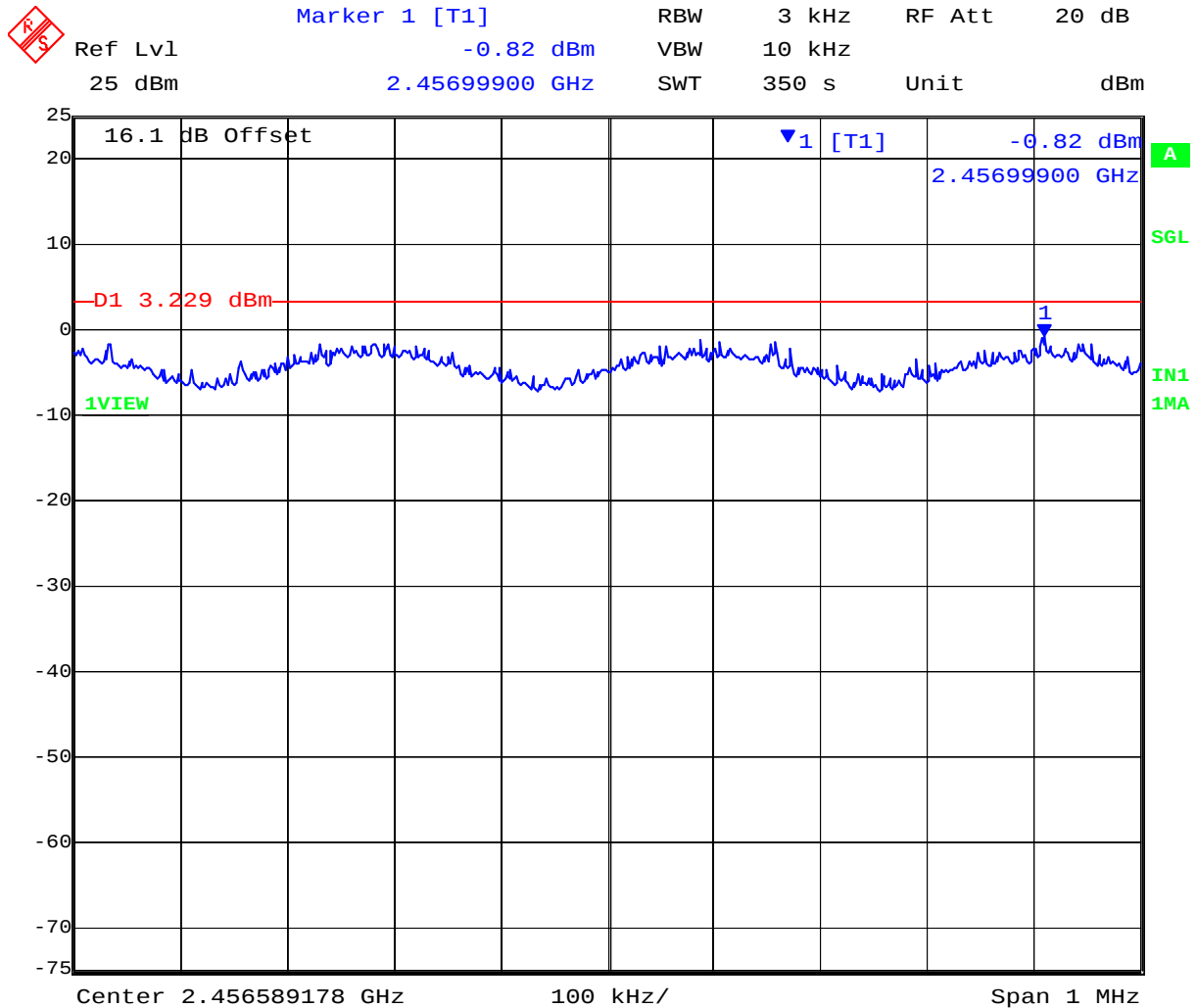
Date: 29.FEB.2012 12:36:44

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 146 of 412

PORT B 2,462 MHz 802.11g Legacy - Peak Power Spectral Density



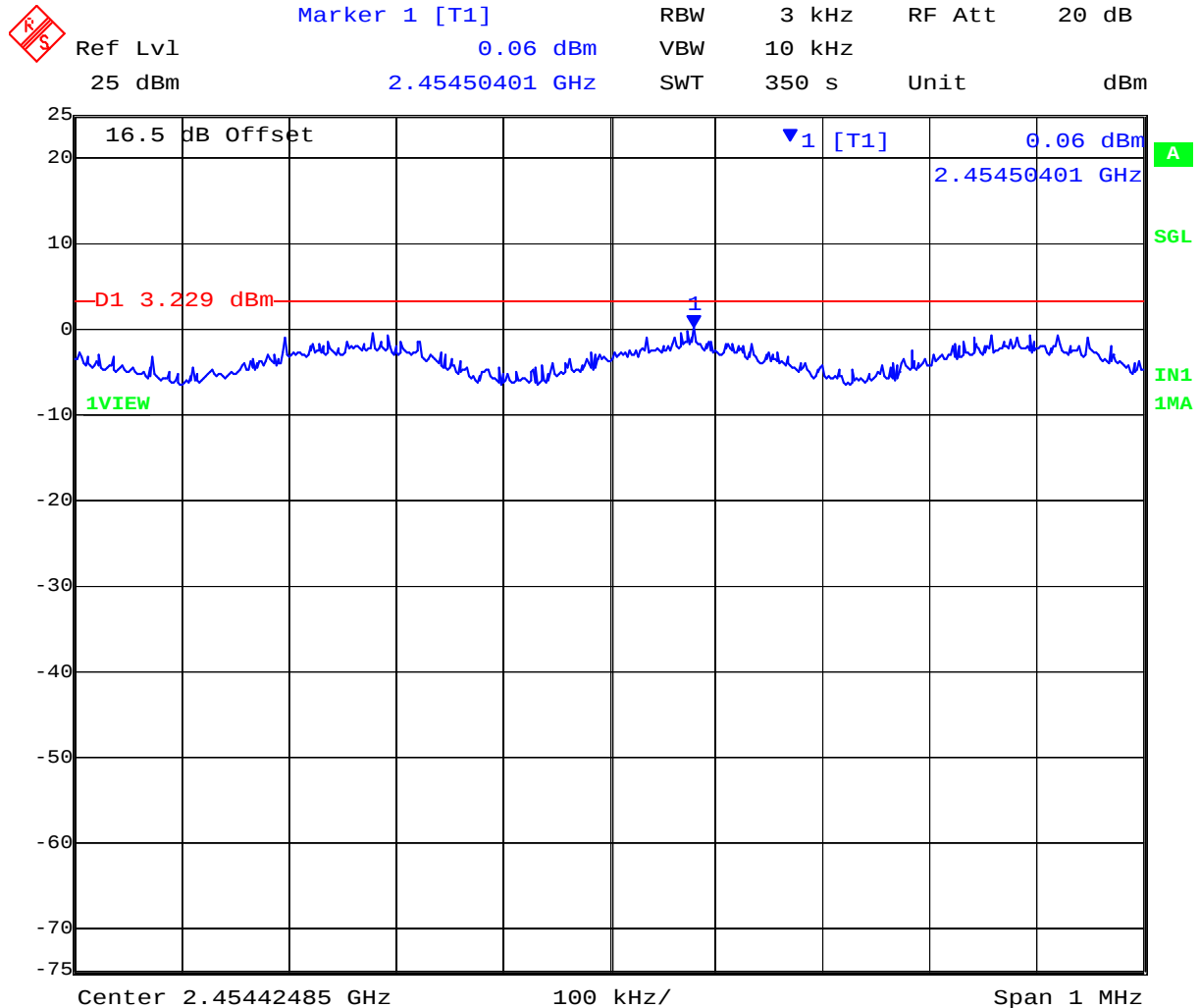
Date: 29.FEB.2012 12:43:17

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 147 of 412

PORT C 2,462 MHz 802.11g Legacy - Peak Power Spectral Density



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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 148 of 412

Peak Power Spectral Density

TABLE OF RESULTS – 802.11n HT-20

Test Conditions:	15.247 (e)	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:			
Applied Voltage:	48.00 Vdc	Antenna Ports (N):	3		
Notes 1:					
Notes 2:					

Test Frequency	Measured Power Density				Correction factor	Peak Power Spectral Density	Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	10Log(N)	dBm	dBm	dB
2412	-1.97	-1.49	-2.55	--	4.77	3.29	3.23	-4.72
2437	-2.41	-2.16	-2.29	--	4.77	2.61	3.23	-5.39
2462	-1.79	-0.25	-1.05	--	4.77	4.53	3.23	-3.48

Measurement uncertainty:	± 1.33 dB
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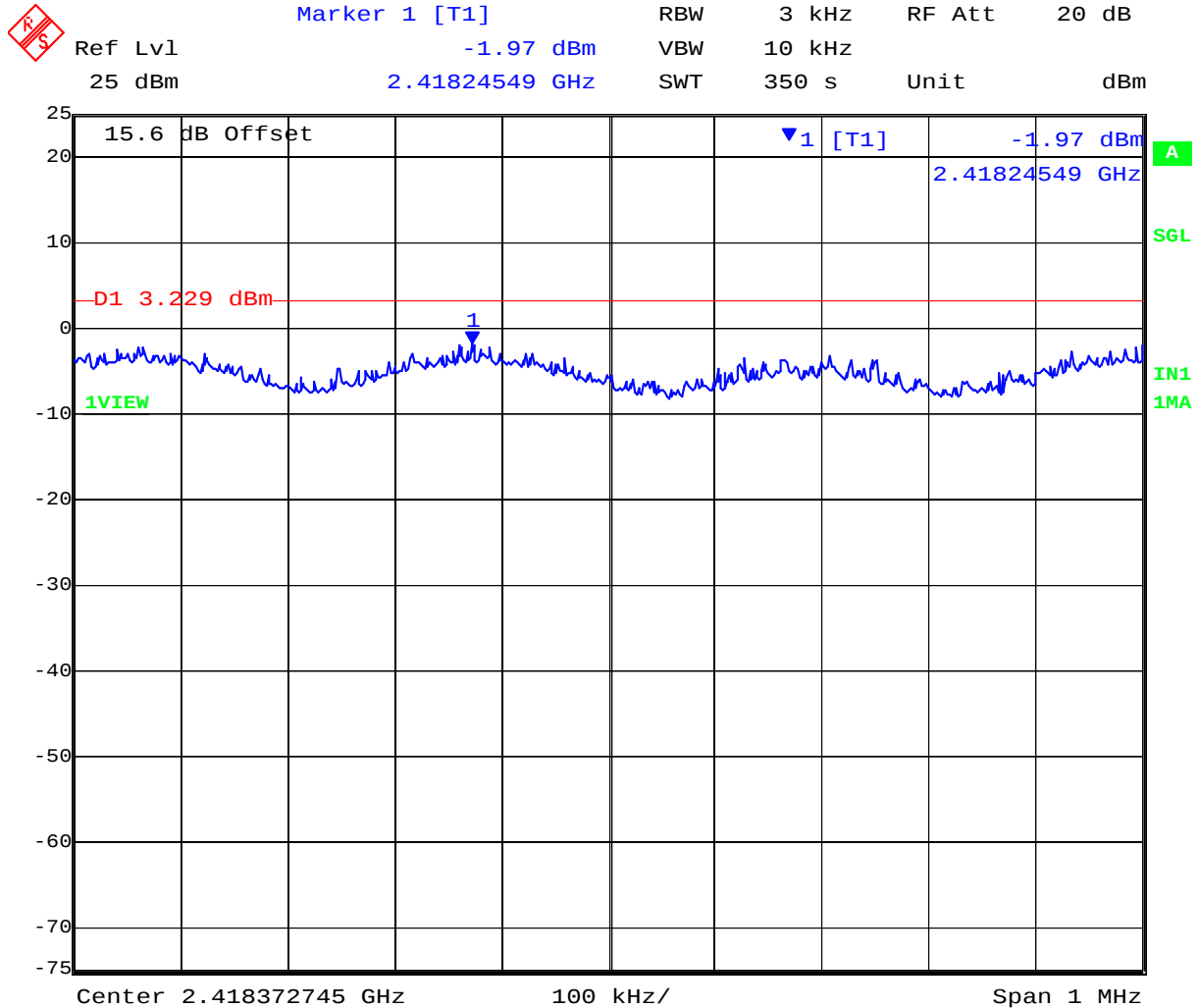
NOTE: above margin is calculated from the highest Power Density returned from Chain A or B or C

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 149 of 412

PORT A 2,412 MHz 802.11n HT-20 - Peak Power Spectral Density



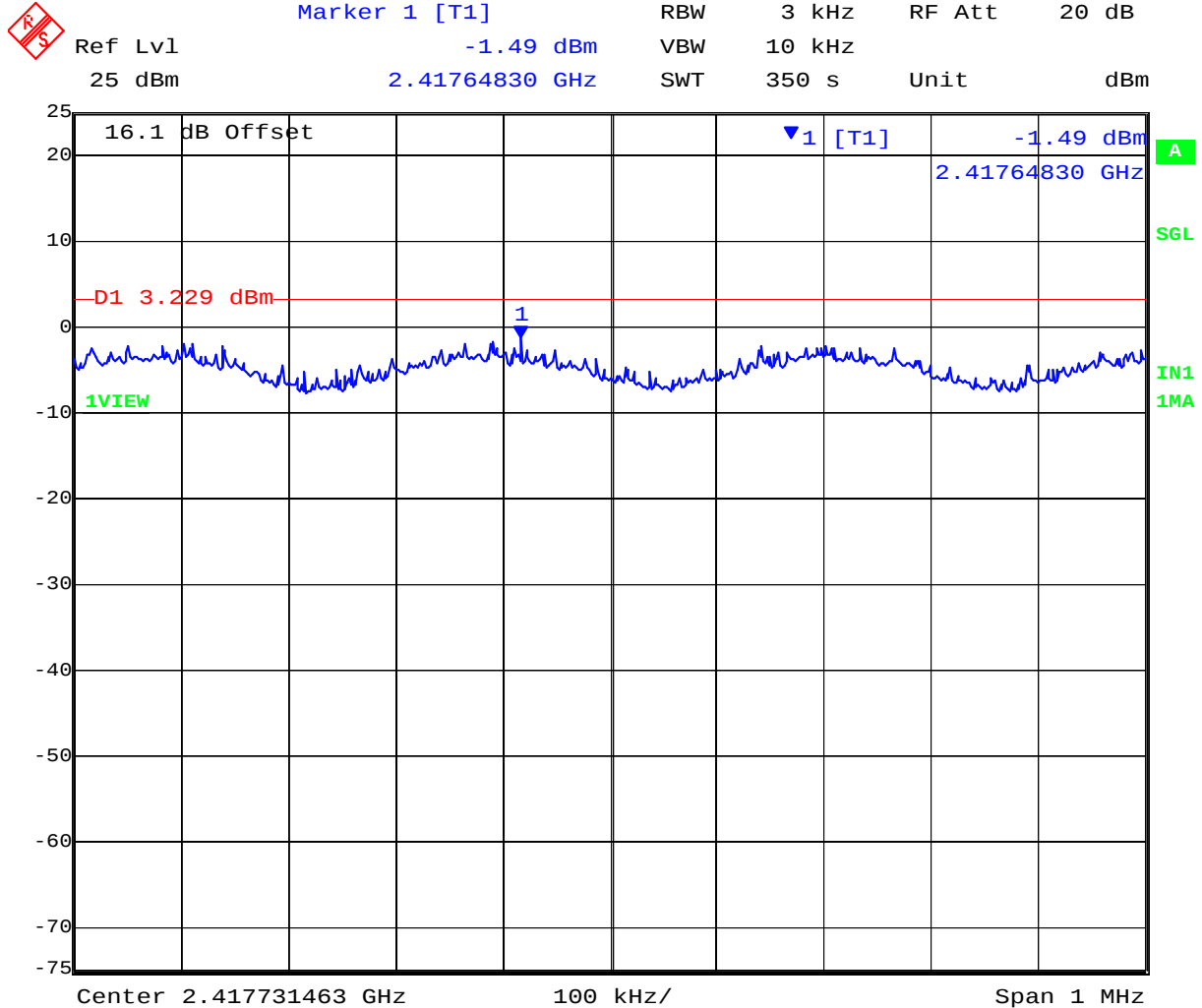
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 150 of 412

PORT B 2,412 MHz 802.11n HT-20 - Peak Power Spectral Density



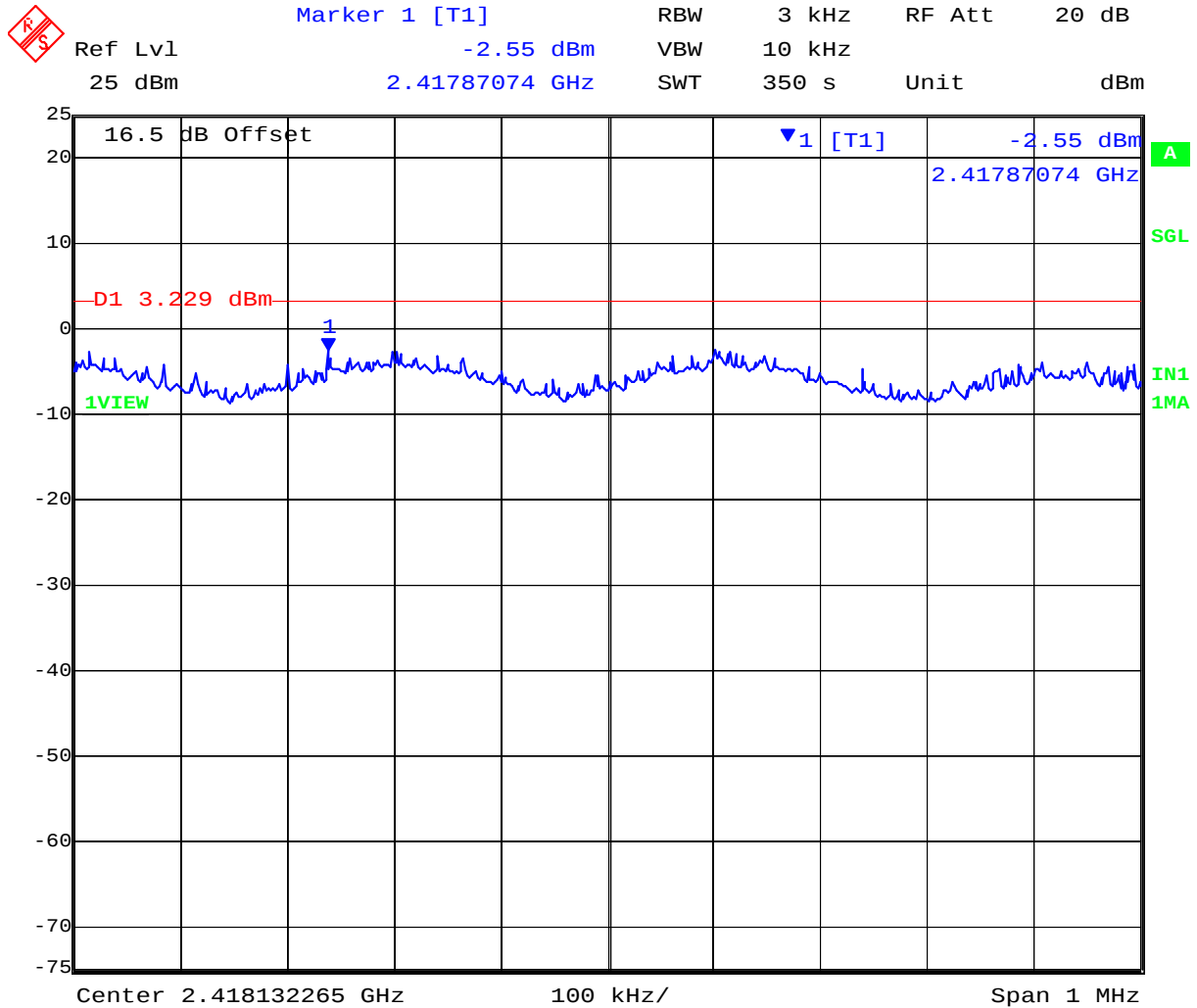
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 151 of 412

PORT C 2,412 MHz 802.11n HT-20 - Peak Power Spectral Density



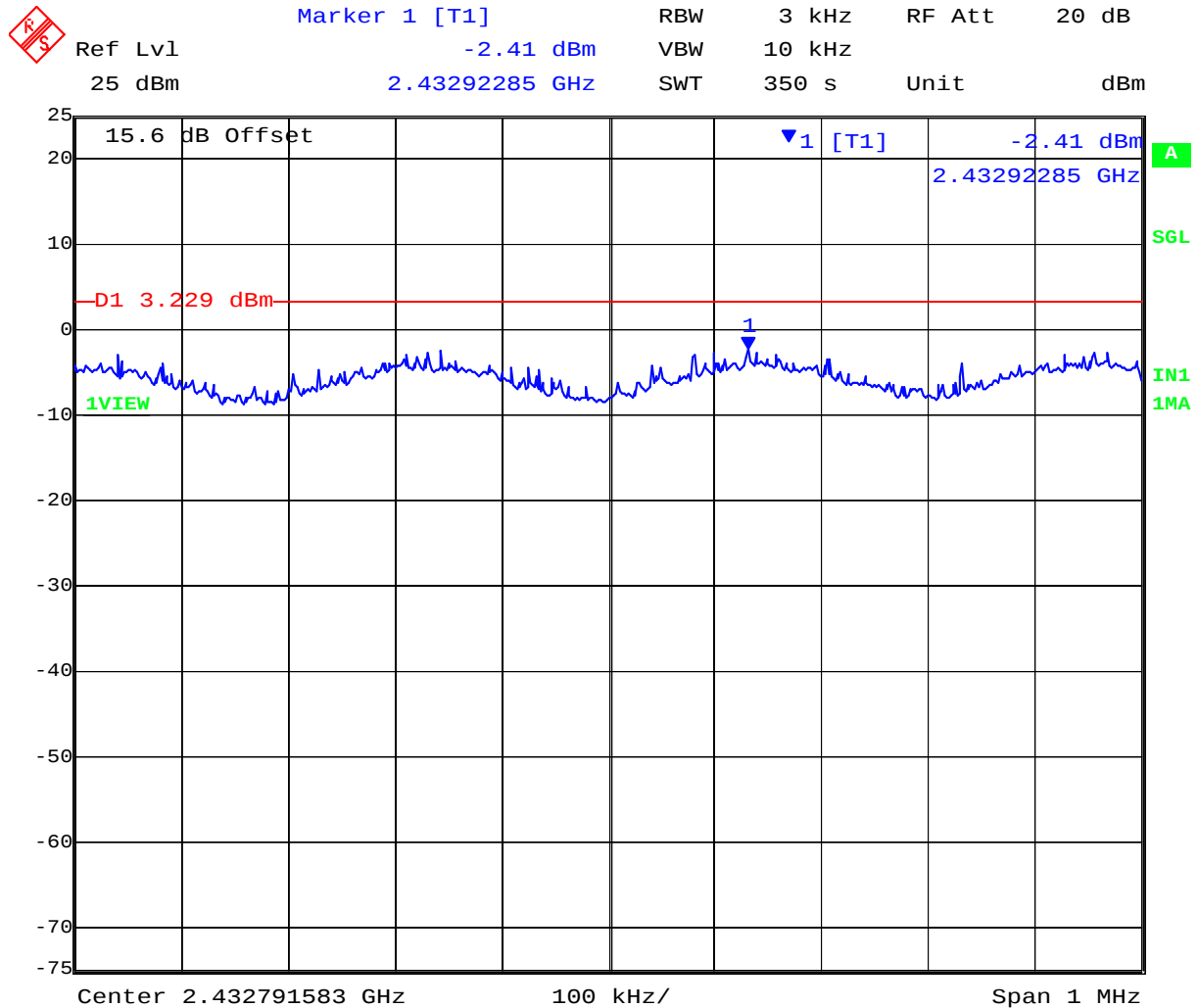
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 152 of 412

PORT A 2,437 MHz 802.11n HT-20 - Peak Power Spectral Density



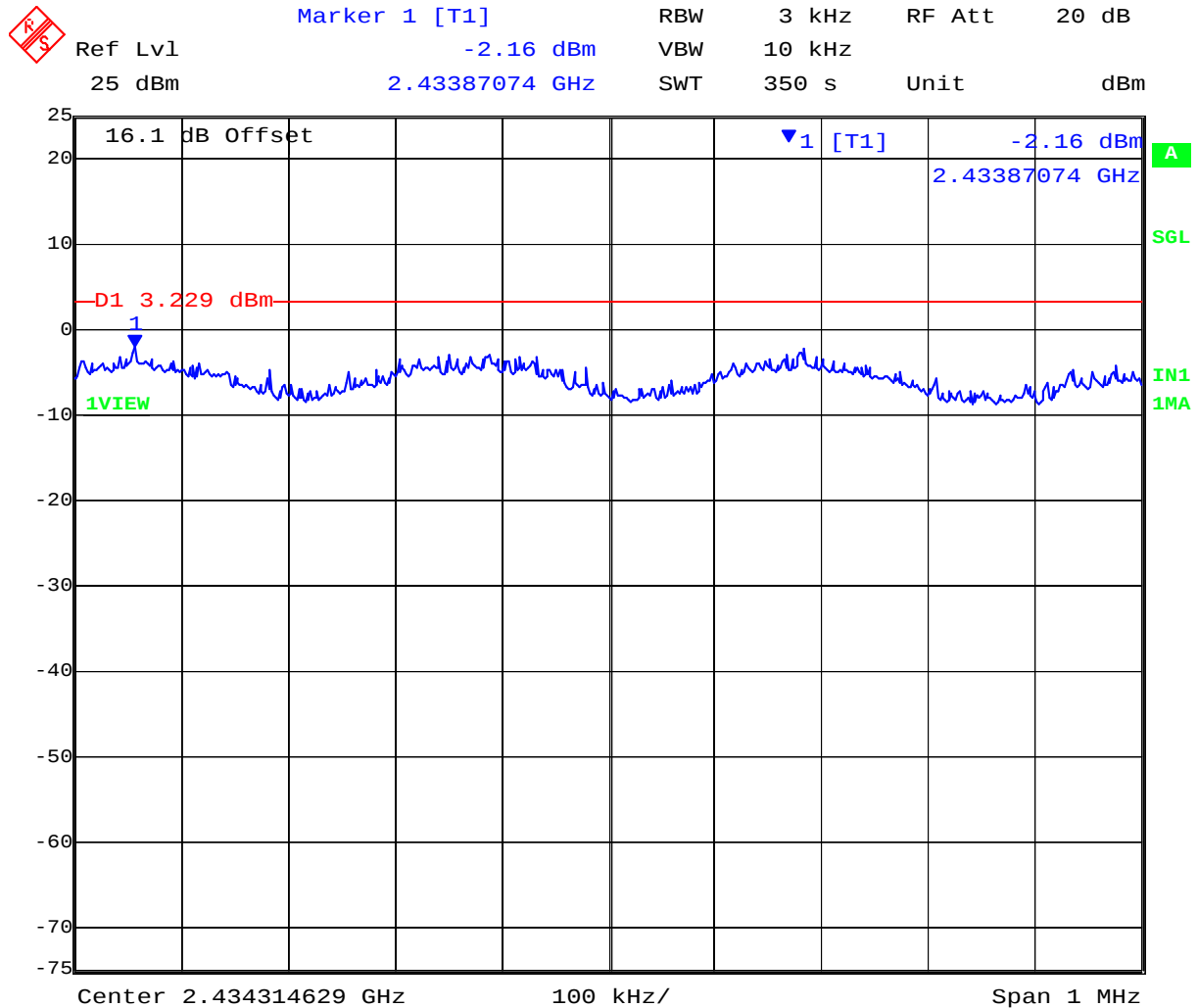
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 153 of 412

PORT B 2,437 MHz 802.11n HT-20 - Peak Power Spectral Density



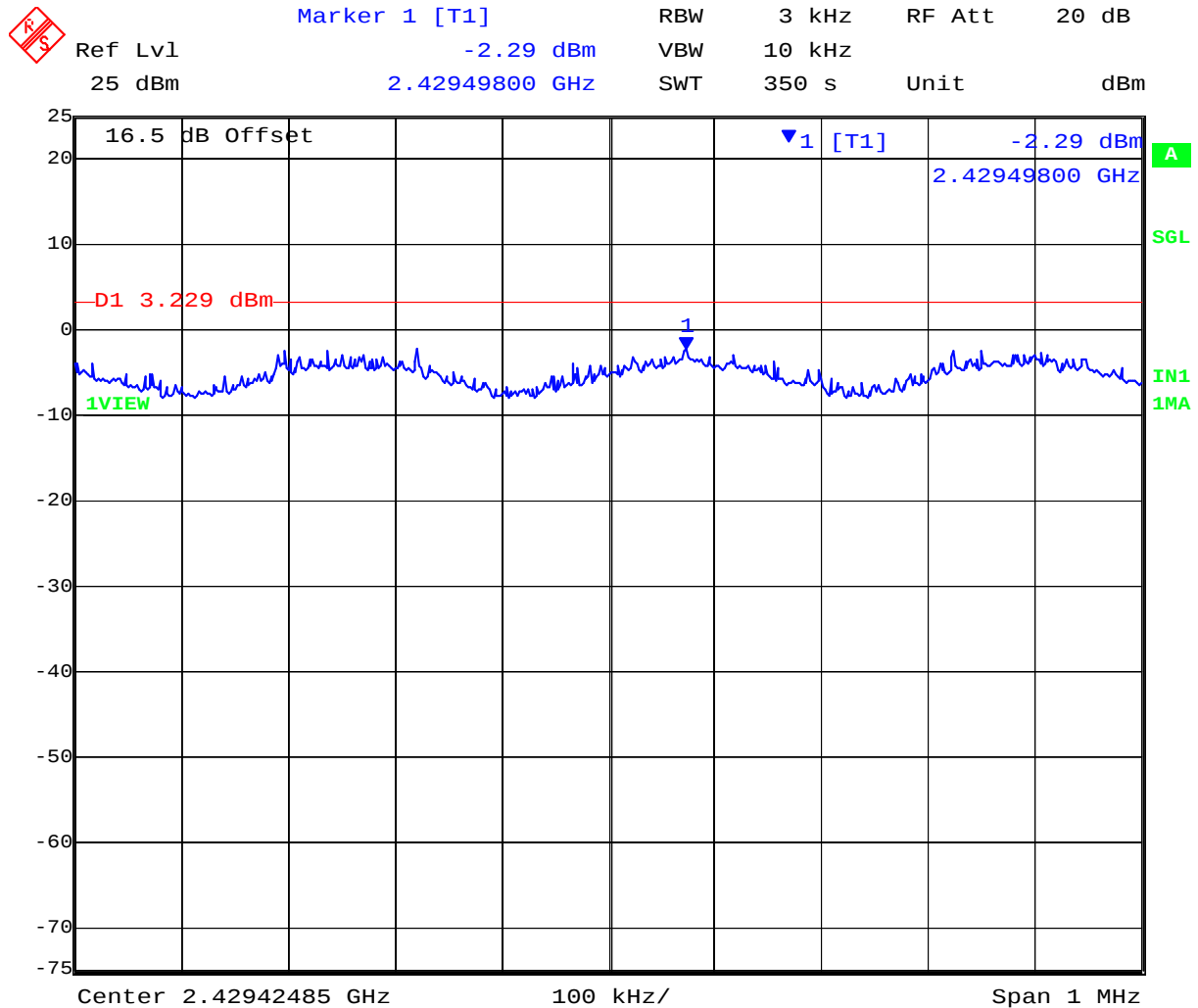
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 154 of 412

PORT C 2,437 MHz 802.11n HT-20 - Peak Power Spectral Density



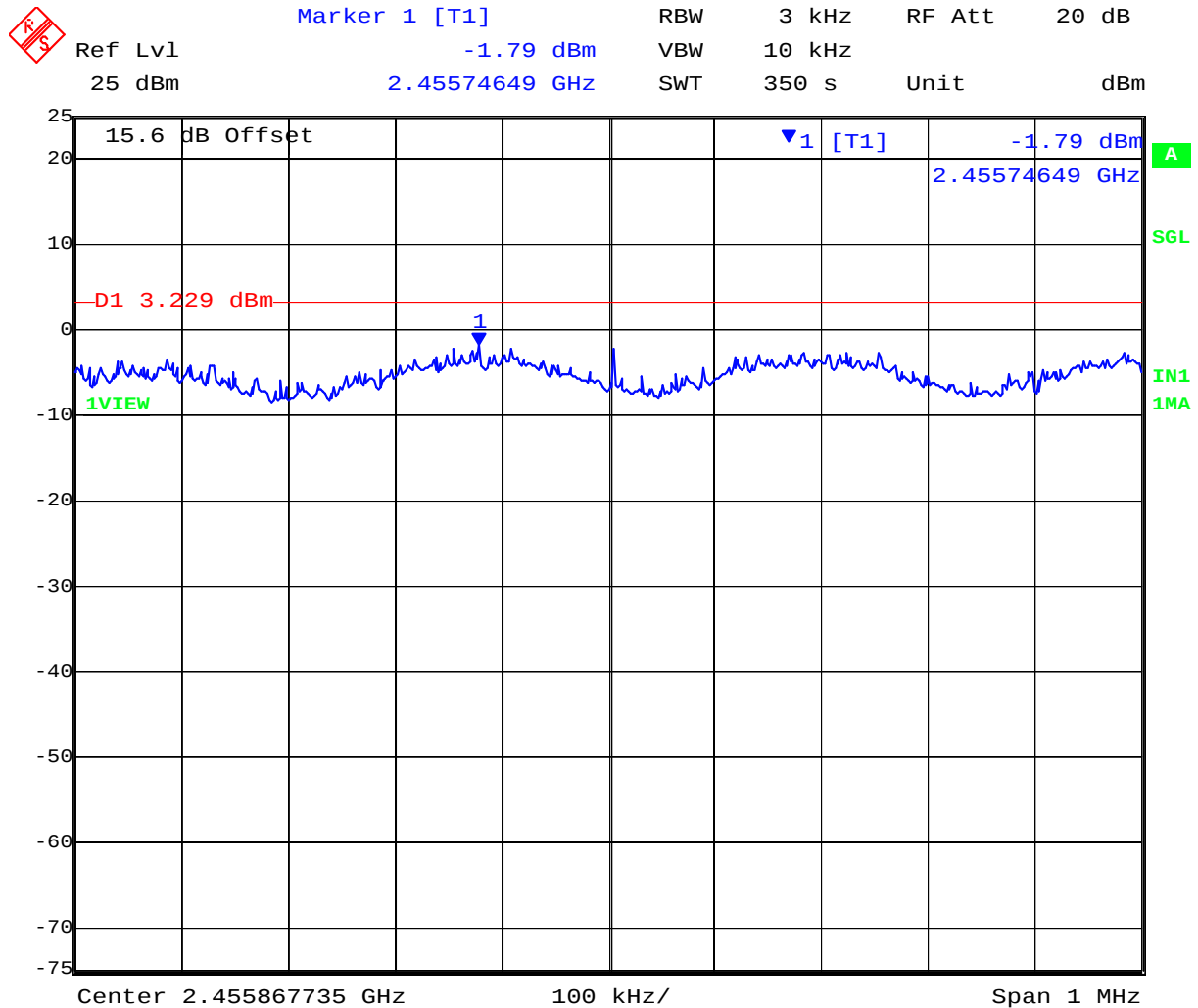
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 155 of 412

PORT A 2,462 MHz 802.11n HT-20 - Peak Power Spectral Density



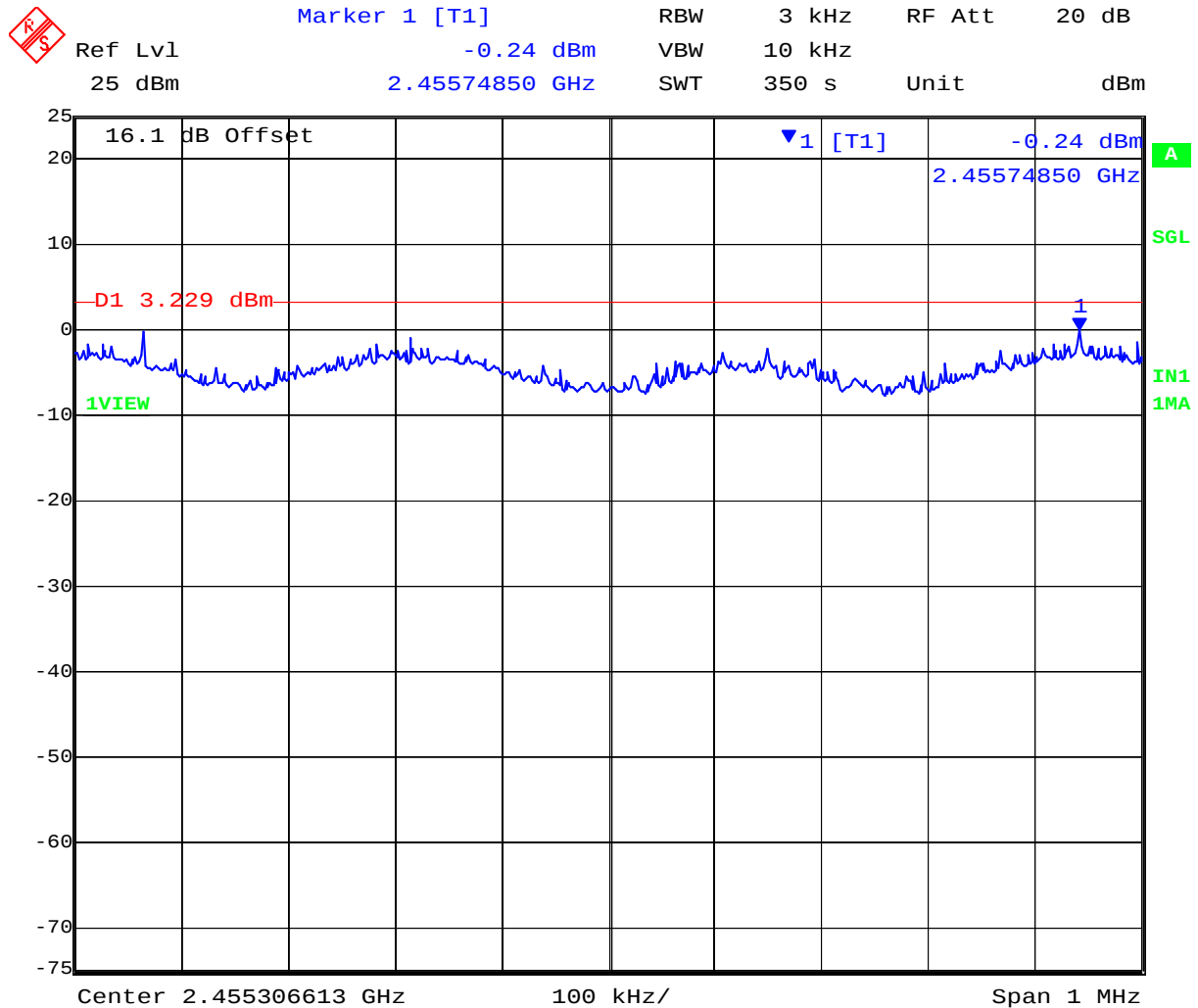
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 156 of 412

PORT B 2,462 MHz 802.11n HT-20 - Peak Power Spectral Density



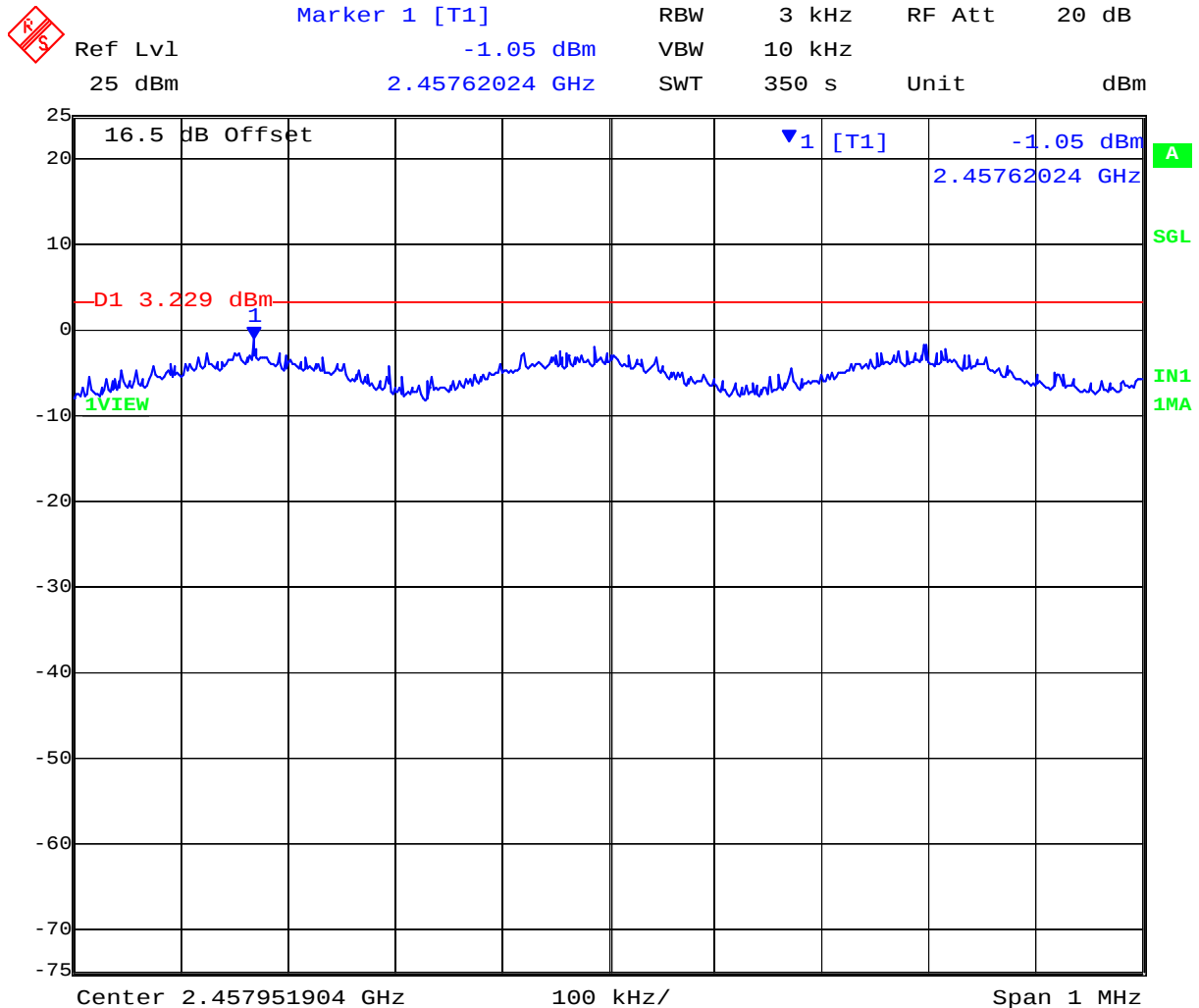
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 157 of 412

PORT C 2,462 MHz 802.11n HT-20 - Peak Power Spectral Density



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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 158 of 412

Peak Power Spectral Density

TABLE OF RESULTS – 802.11n HT-40

Test Conditions:	15.247 (e)	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:			
Applied Voltage:	48.00 Vdc	Antenna Ports (N):	3		
Notes 1:					
Notes 2:					

Test Frequency	Measured Power Density				Correction factor	Peak Power Spectral Density	Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	10Log(N)	dBm	dBm	dB
2422	-4.47	-2.84	-4.50	--	4.77	1.93	3.23	-6.07
2437	-3.26	-4.61	-3.99	--	4.77	1.52	3.23	-6.49
2452	-4.69	-4.06	-3.92	--	4.77	0.86	3.23	-7.15

Measurement uncertainty:	± 1.33 dB
---------------------------------	-----------

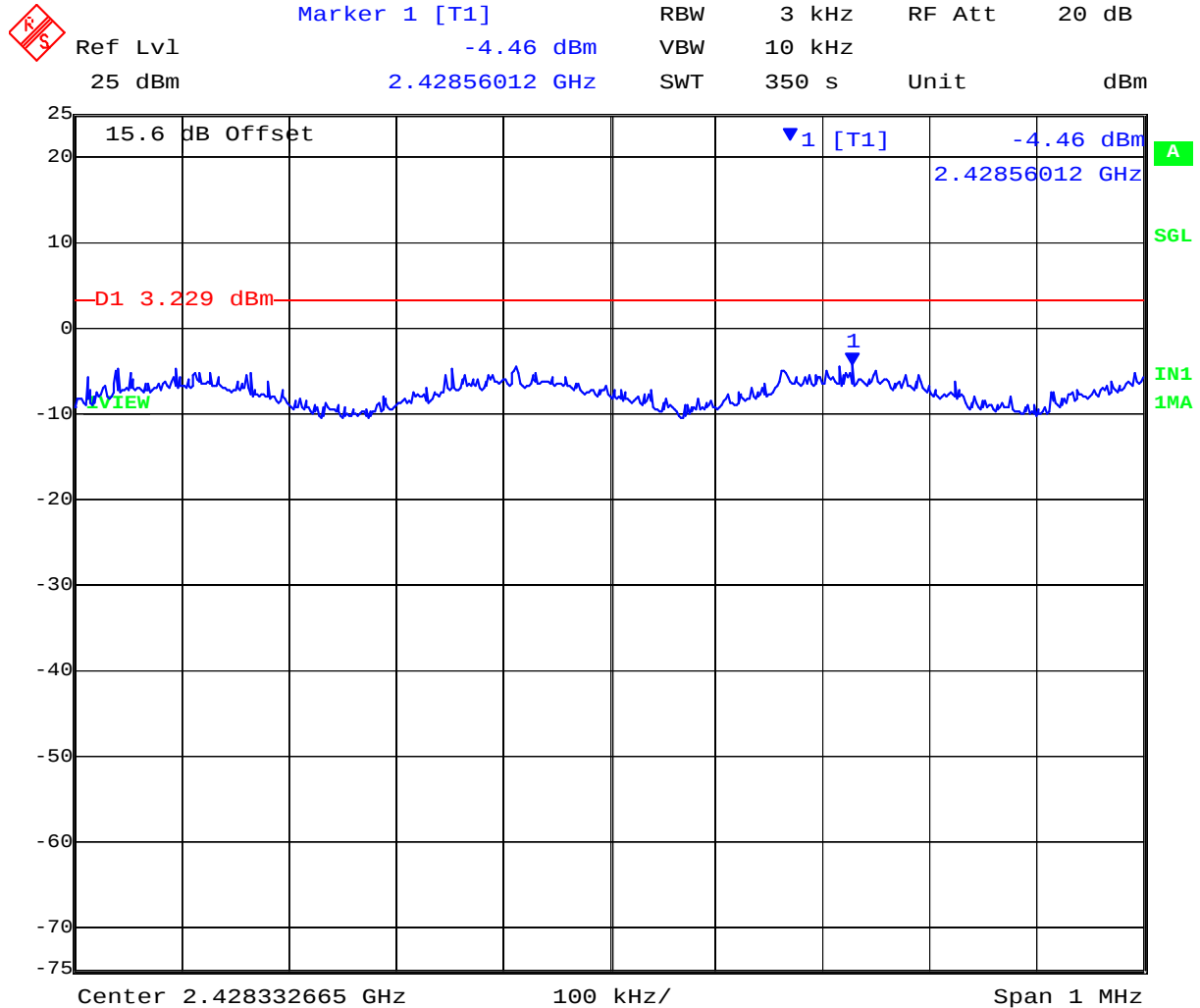
NOTE: above margin is calculated from the highest Power Density returned from Chain A or B or C

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 159 of 412

PORT A 2,422 MHz 802.11n HT-40 - Peak Power Spectral Density



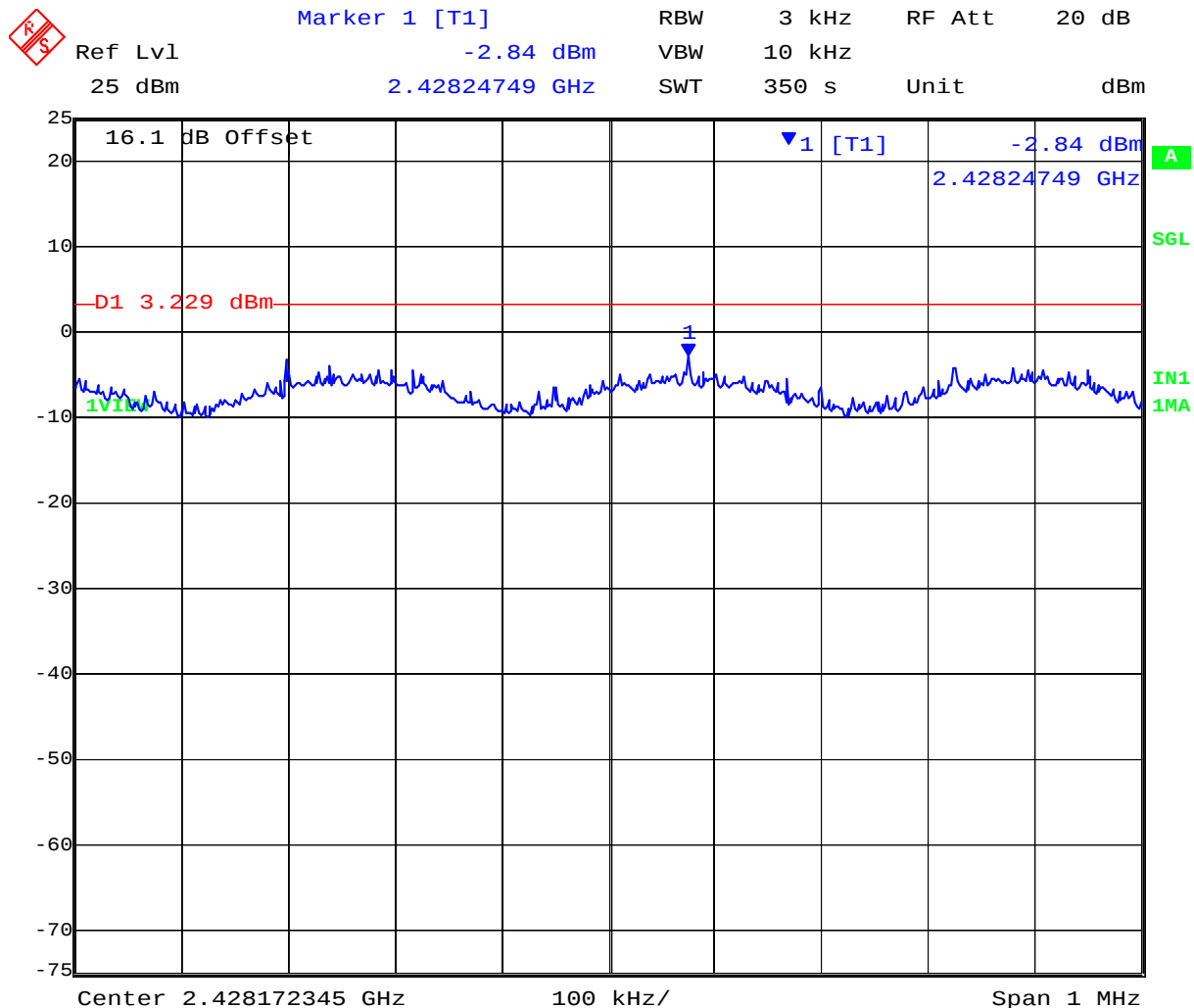
Date: 29.FEB.2012 16:58:36

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 160 of 412

PORT B 2,422 MHz 802.11n HT-40 - Peak Power Spectral Density



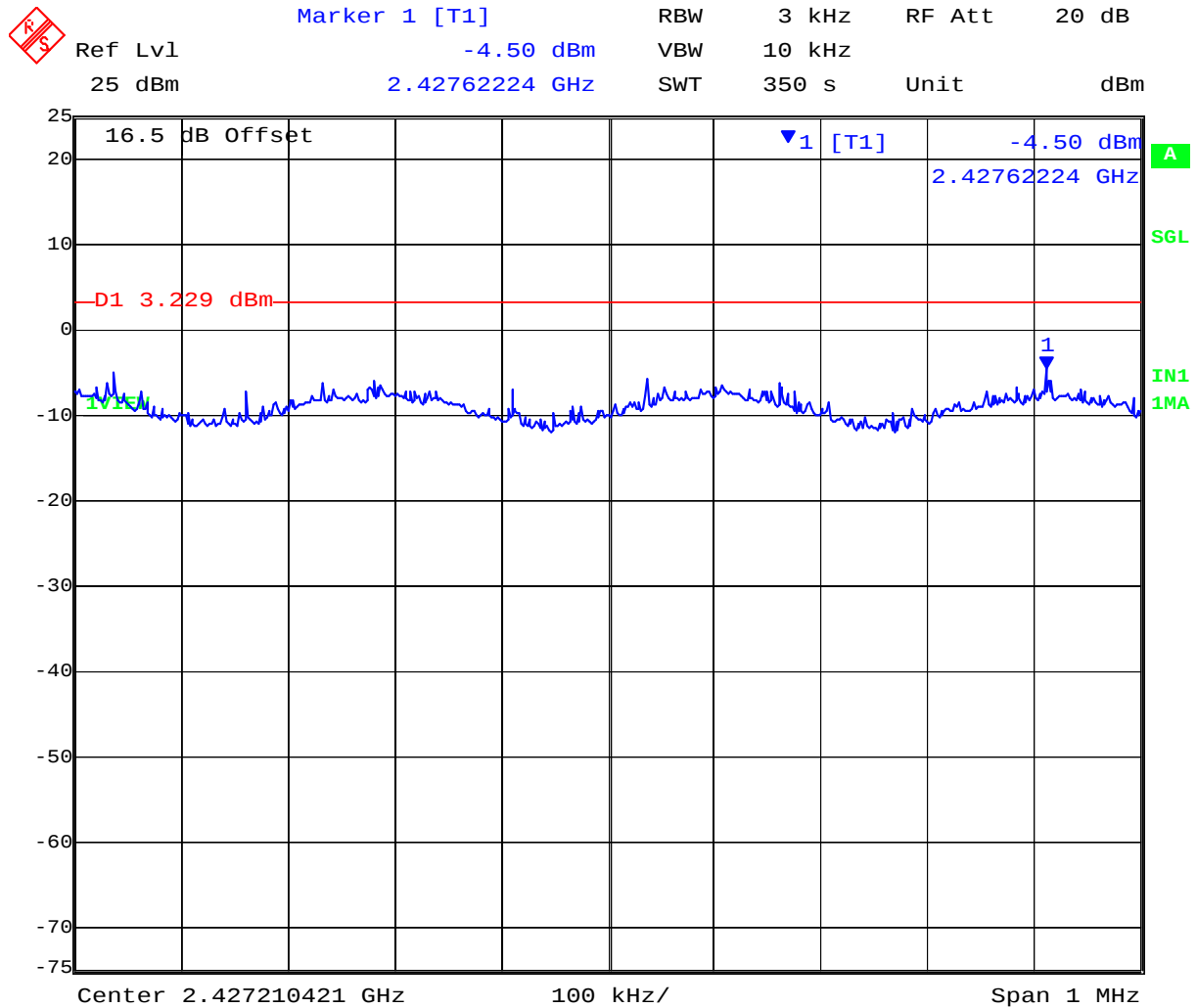
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 161 of 412

PORT C 2,422 MHz 802.11n HT-40 - Peak Power Spectral Density



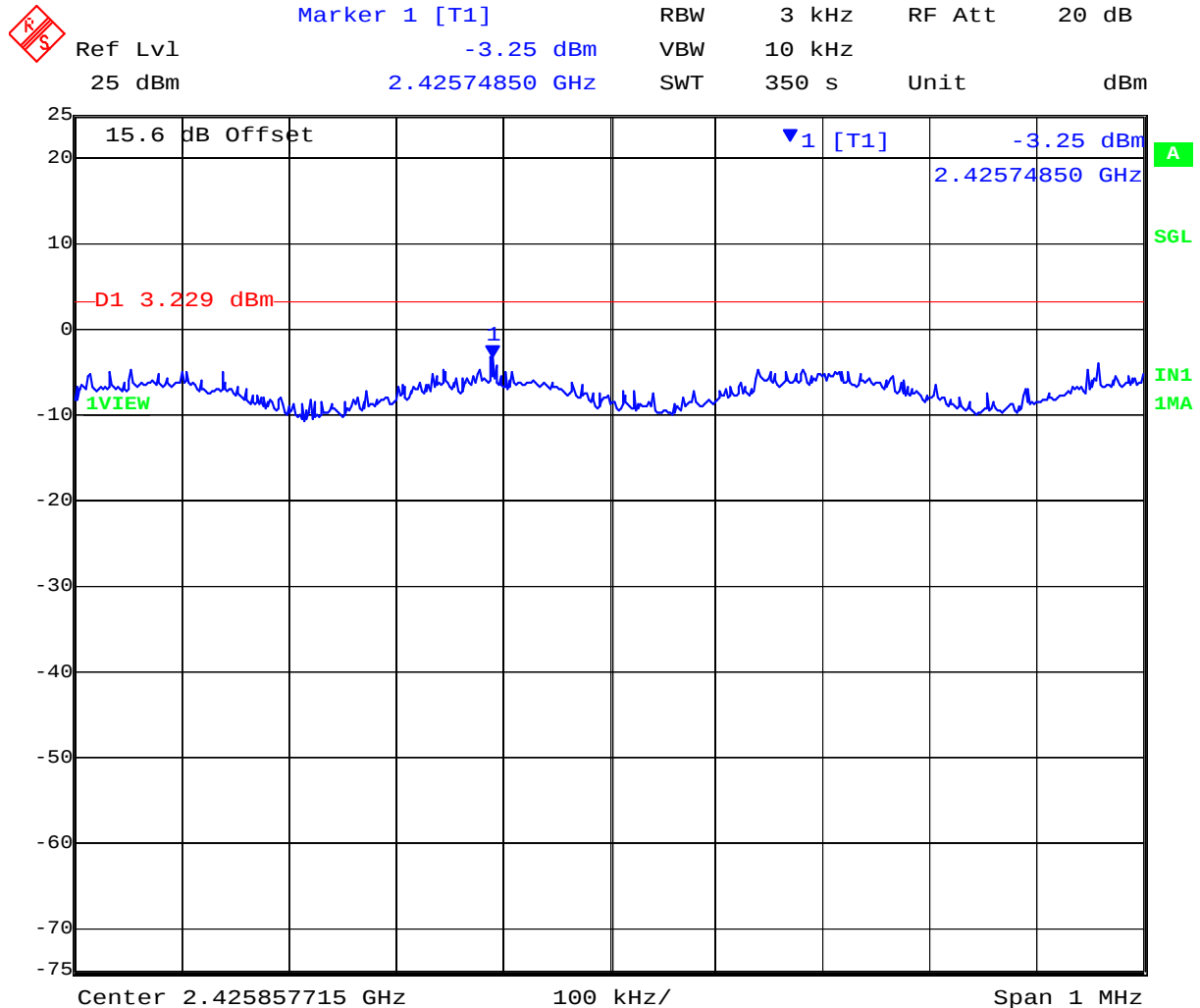
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 162 of 412

PORT A 2,437 MHz 802.11n HT-40 - Peak Power Spectral Density



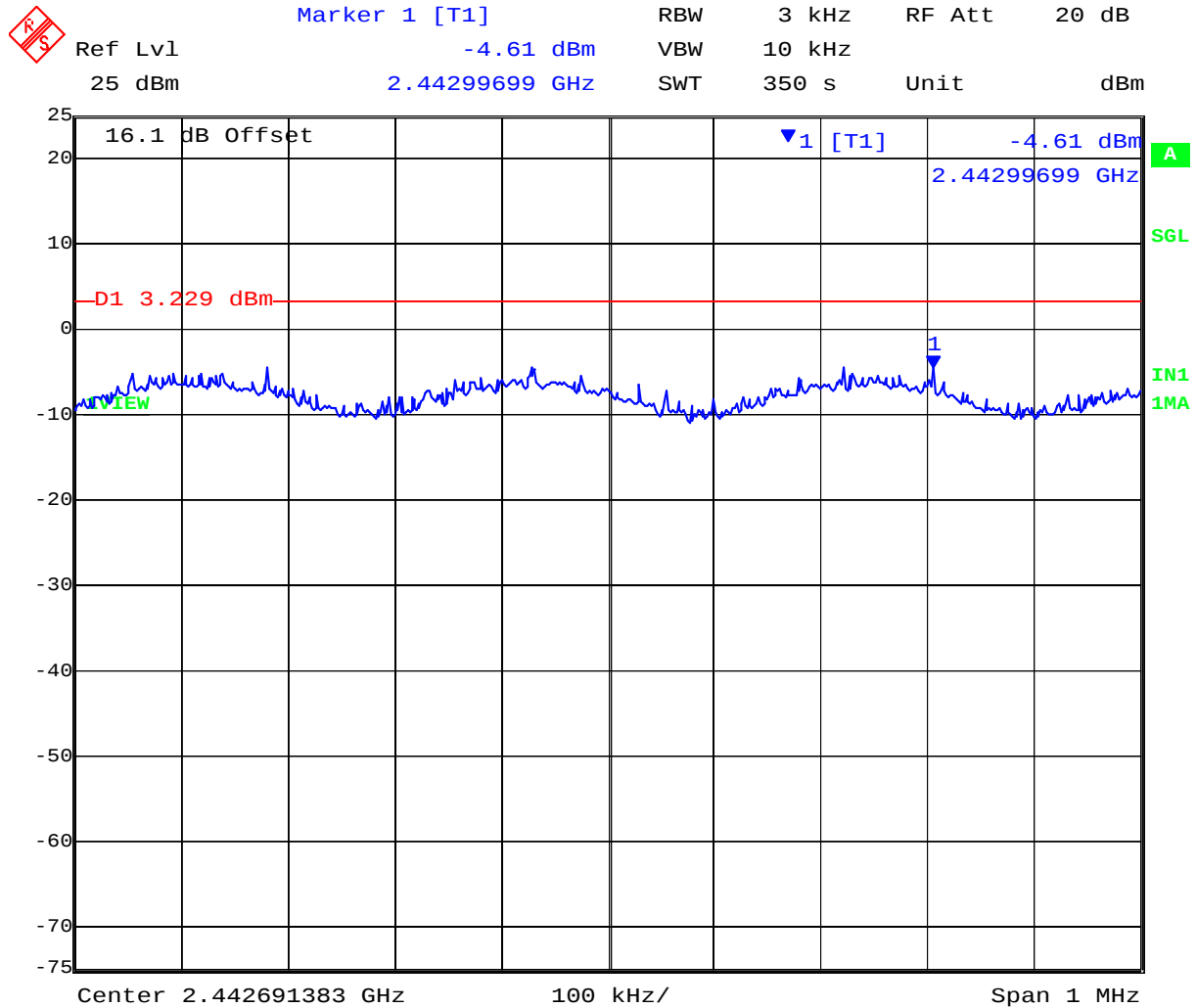
Date: 29.FEB.2012 17:27:29

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 163 of 412

PORT B 2,437 MHz 802.11n HT-40 - Peak Power Spectral Density



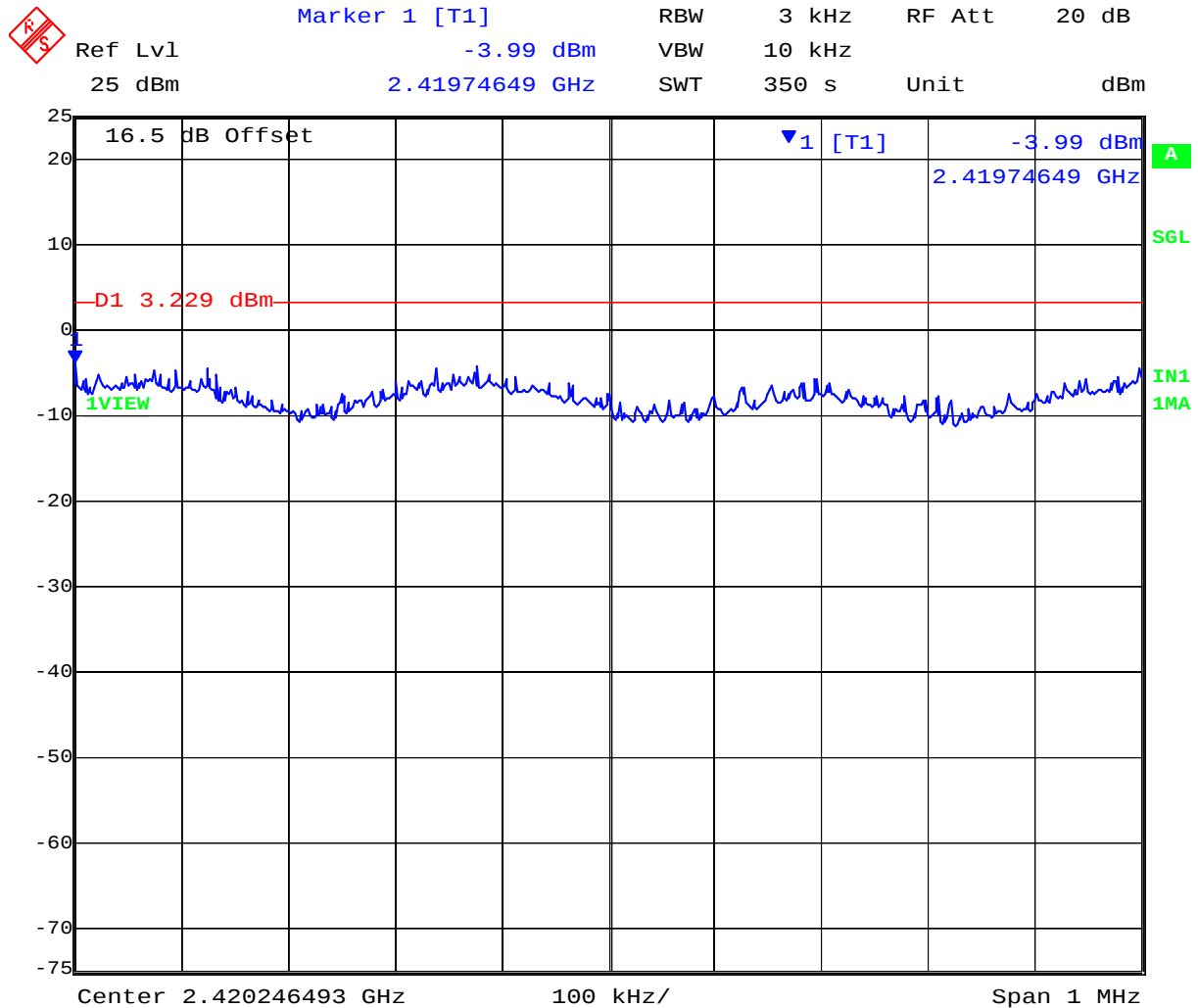
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 164 of 412

PORT C 2,437 MHz 802.11n HT-40 - Peak Power Spectral Density



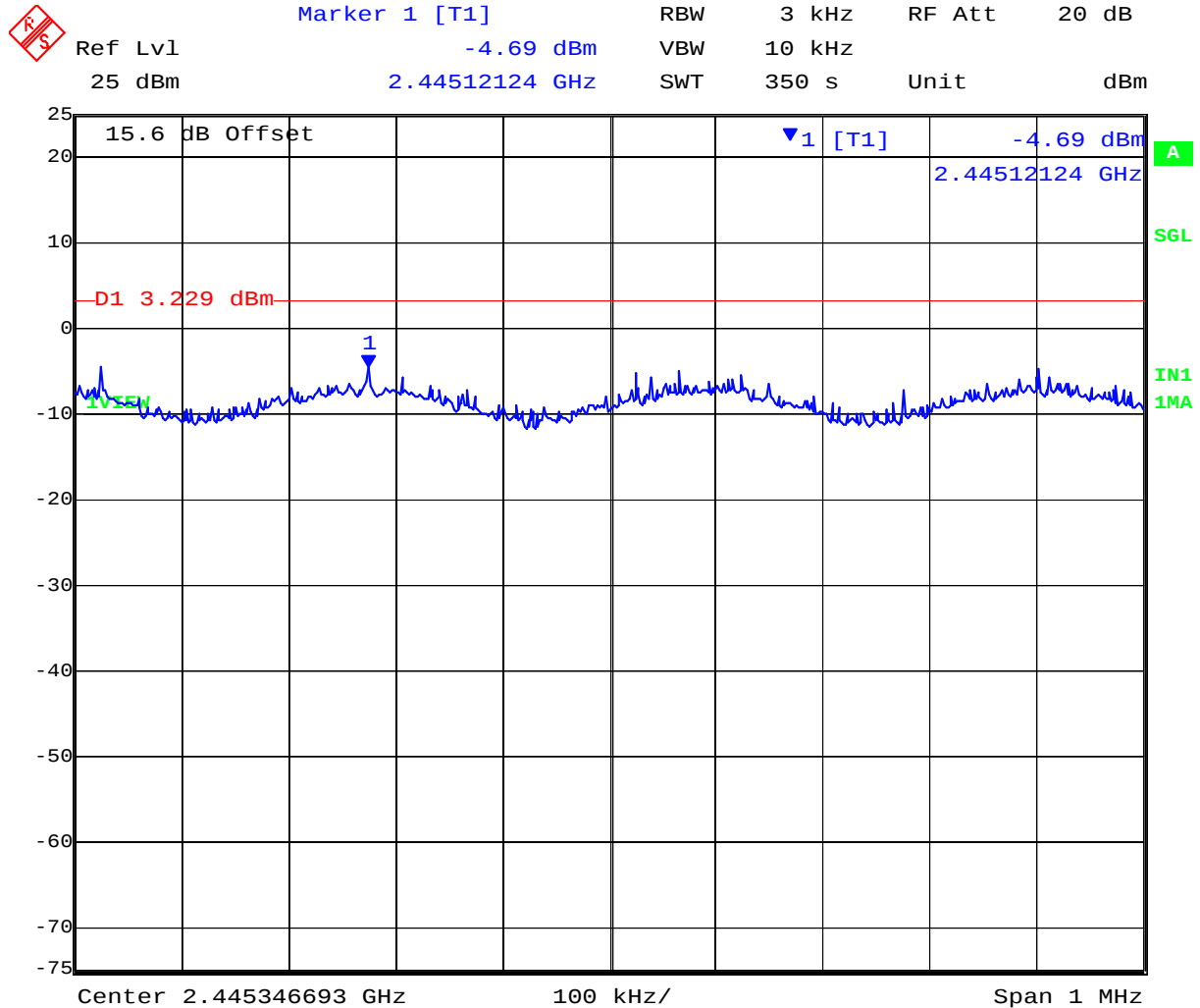
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 165 of 412

PORT A 2,452 MHz 802.11n HT-40 - Peak Power Spectral Density



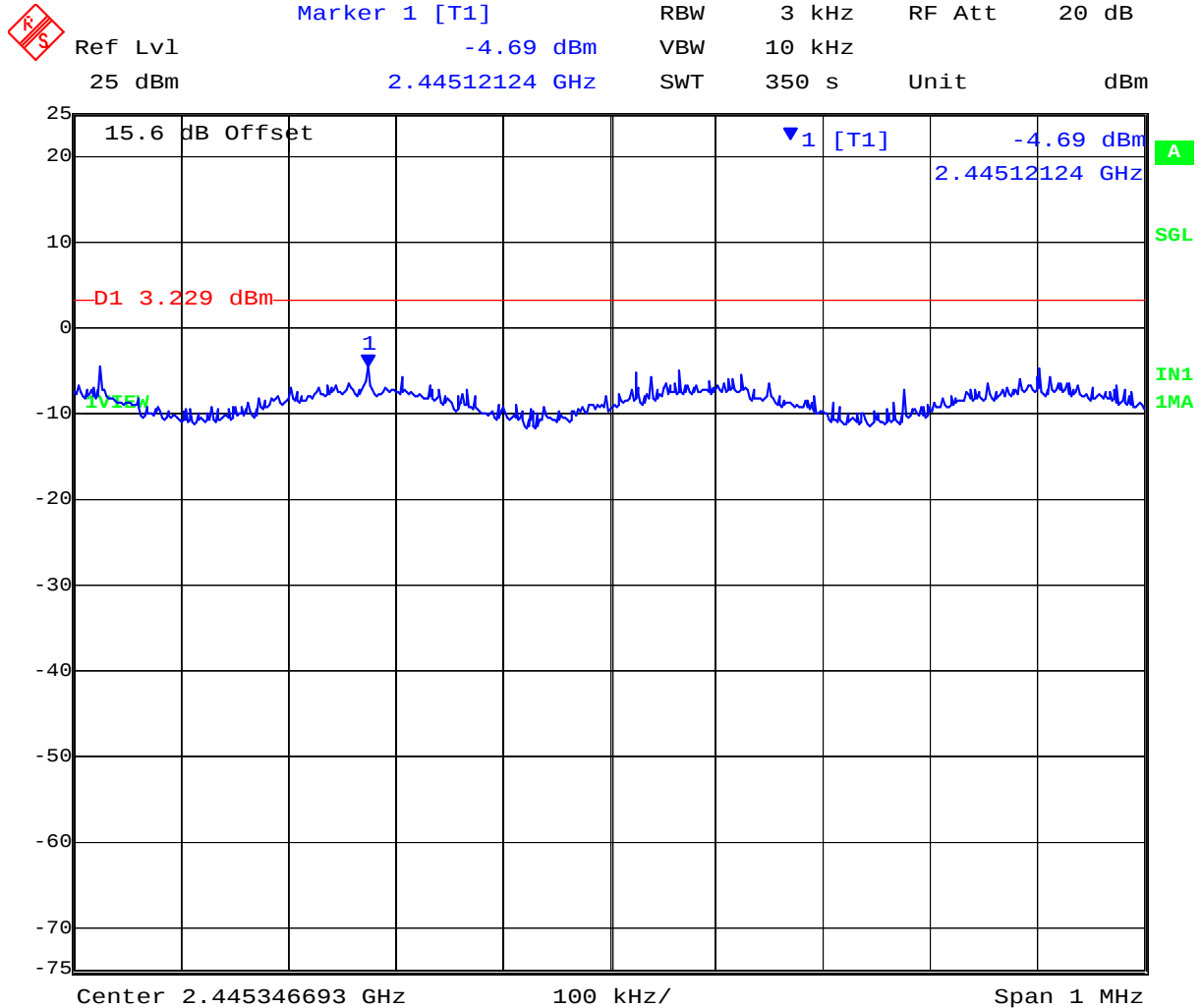
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 166 of 412

PORT B 2,452 MHz 802.11n HT-40 - Peak Power Spectral Density



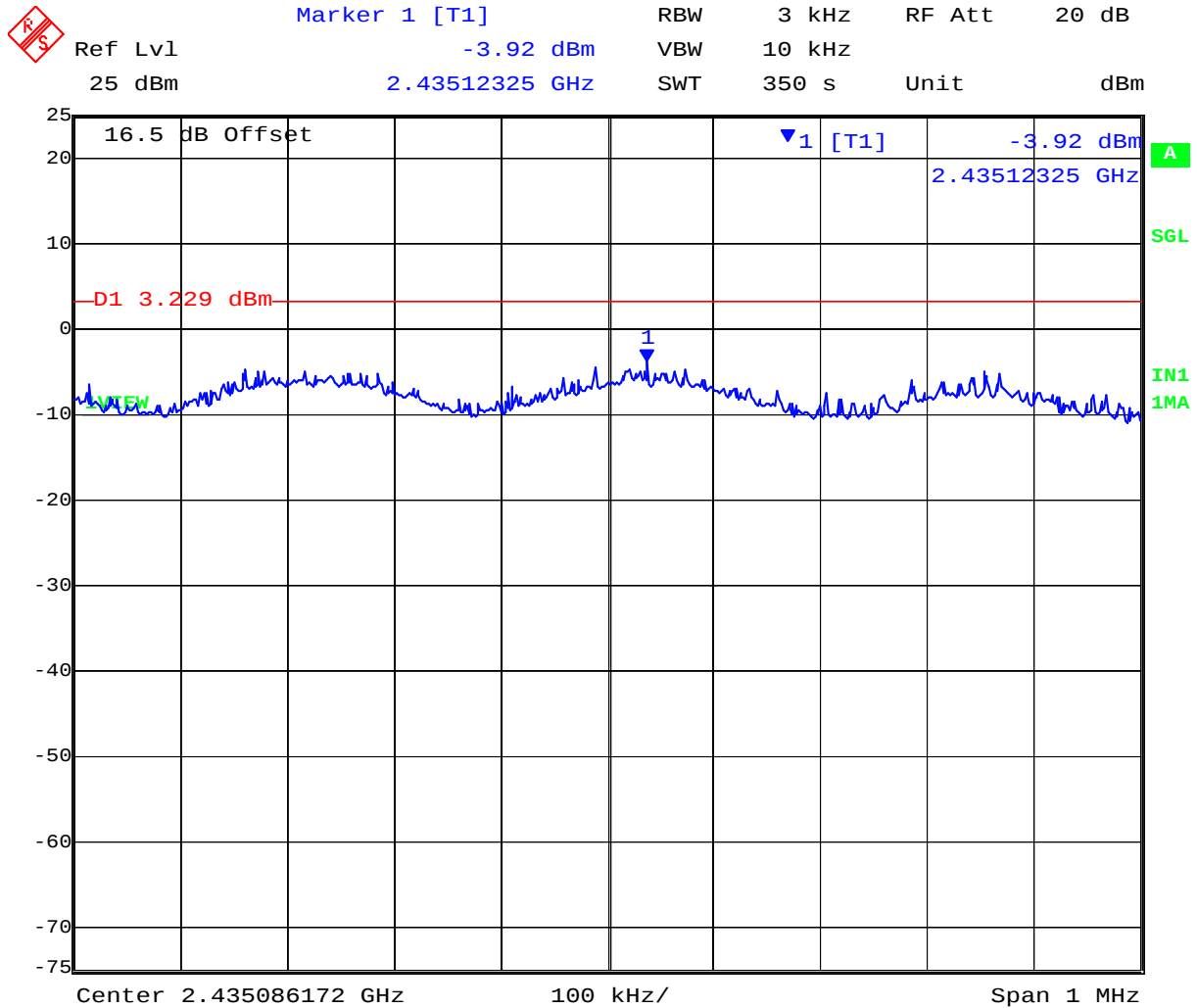
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 167 of 412

PORT C 2,452 MHz 802.11n HT-40 - Peak Power Spectral Density



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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 168 of 412

TABLE OF RESULTS – 802.11a Legacy 5 MHz, 6 MBit/s

Test Conditions:	15.247 (e)	Rel. Humidity (%):	35	to	42
Variant:	802.11a, 5 MHz	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:	N/A	dBi
Applied Voltage:	48.00	Vdc	Antenna Ports (N):	3	
Notes 1:					
Notes 2:					

Test Frequency	Measured Power Density				Correction factor	Maximum Peak Power Spectral Density	Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	10Log(N)	dBm	dBm	dB
5730.500	2.36	3.20	1.85	--	4.77	3.20	3.23	-0.03
5790.500	-0.01	0.03	1.91	--	4.77	1.91	3.23	-1.32
5845.500	0.86	-2.03	0.13	--	4.77	0.86	3.23	-2.37

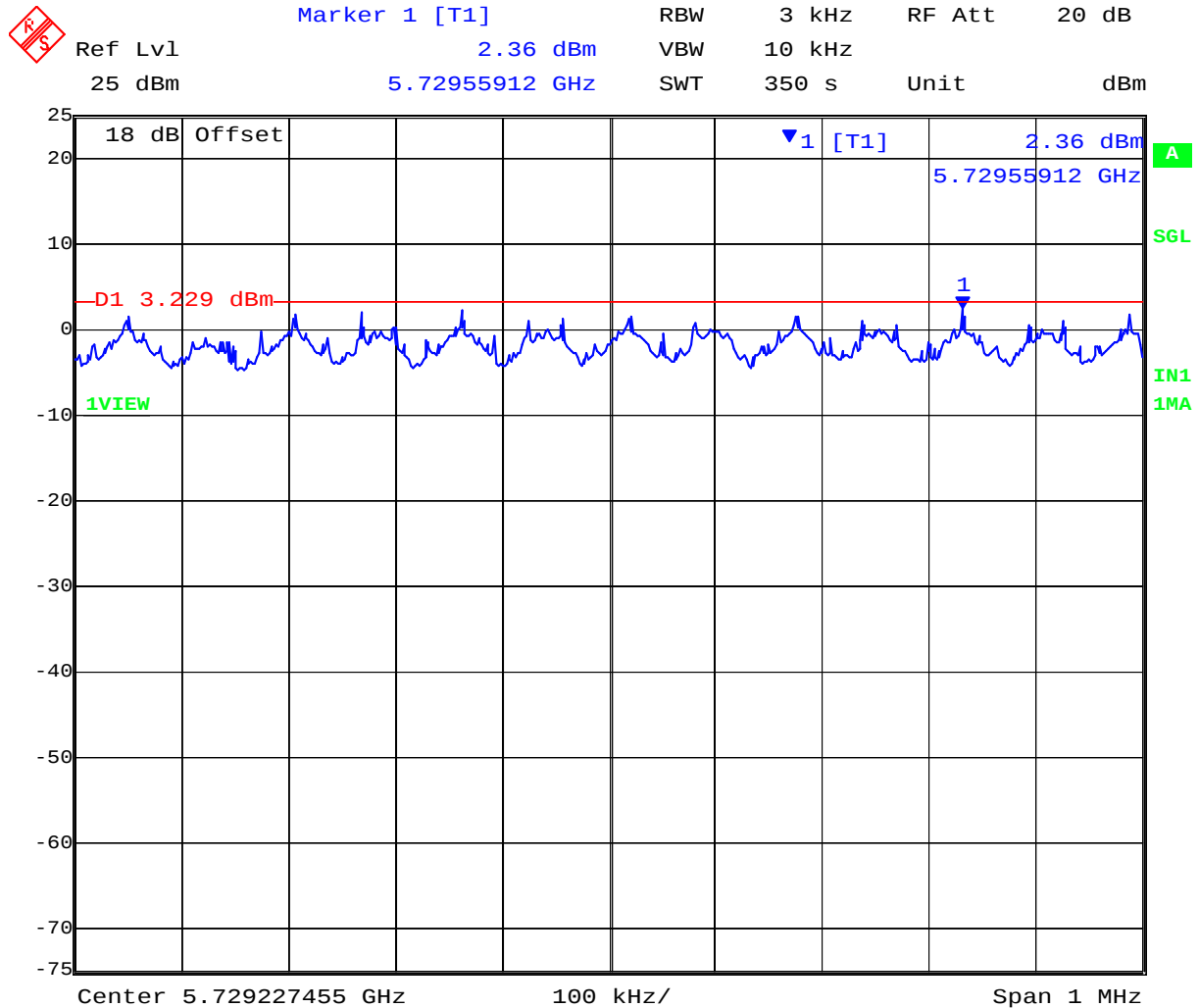
Measurement uncertainty:	± 1.33 dB
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 169 of 412

5 MHz PORT A 5,730.5 MHz 802.11a 6 MBits - Peak Power Spectral Density



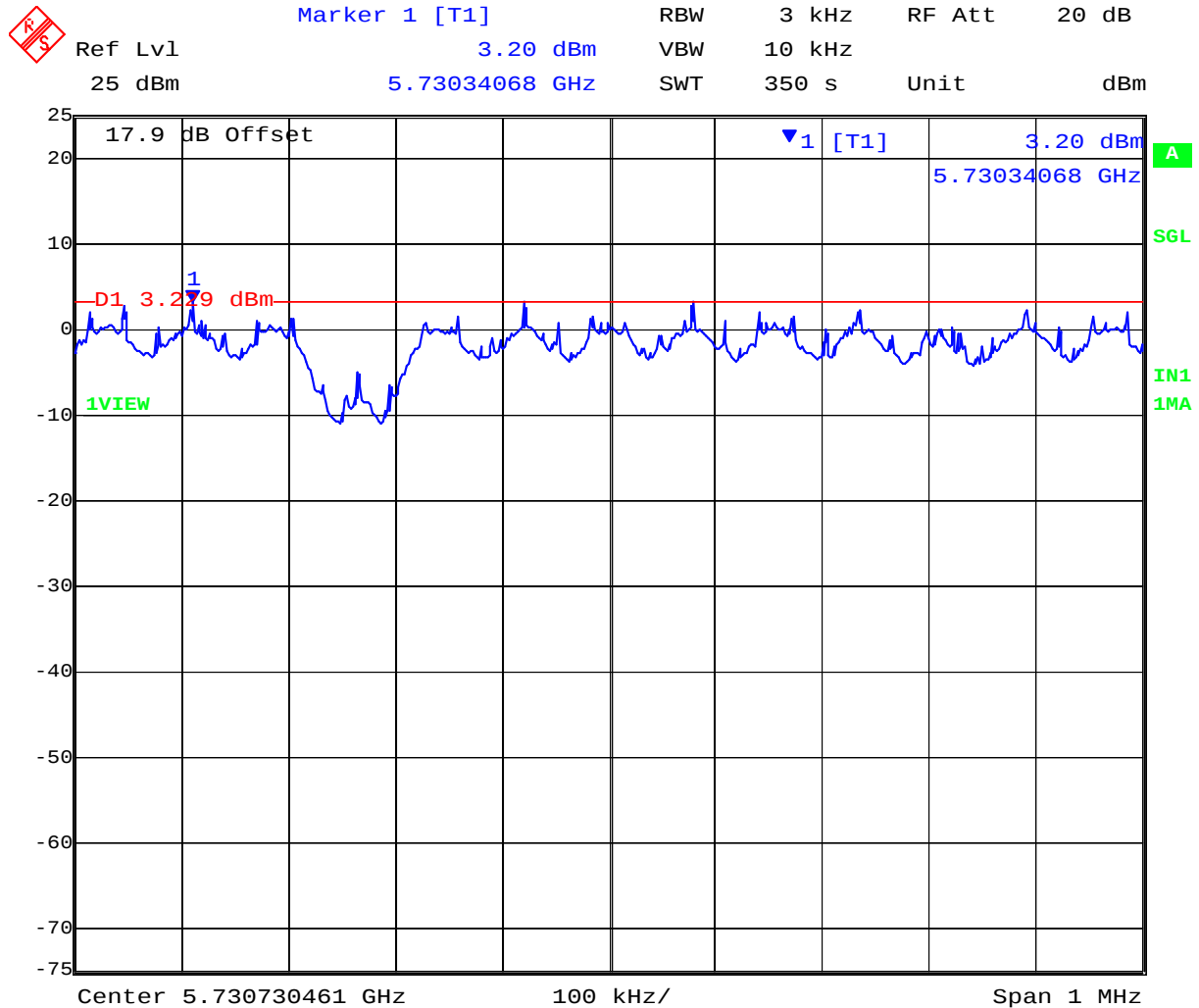
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 170 of 412

5 MHz PORT B 5,730.5 MHz 802.11a 6 MBits - Peak Power Spectral Density



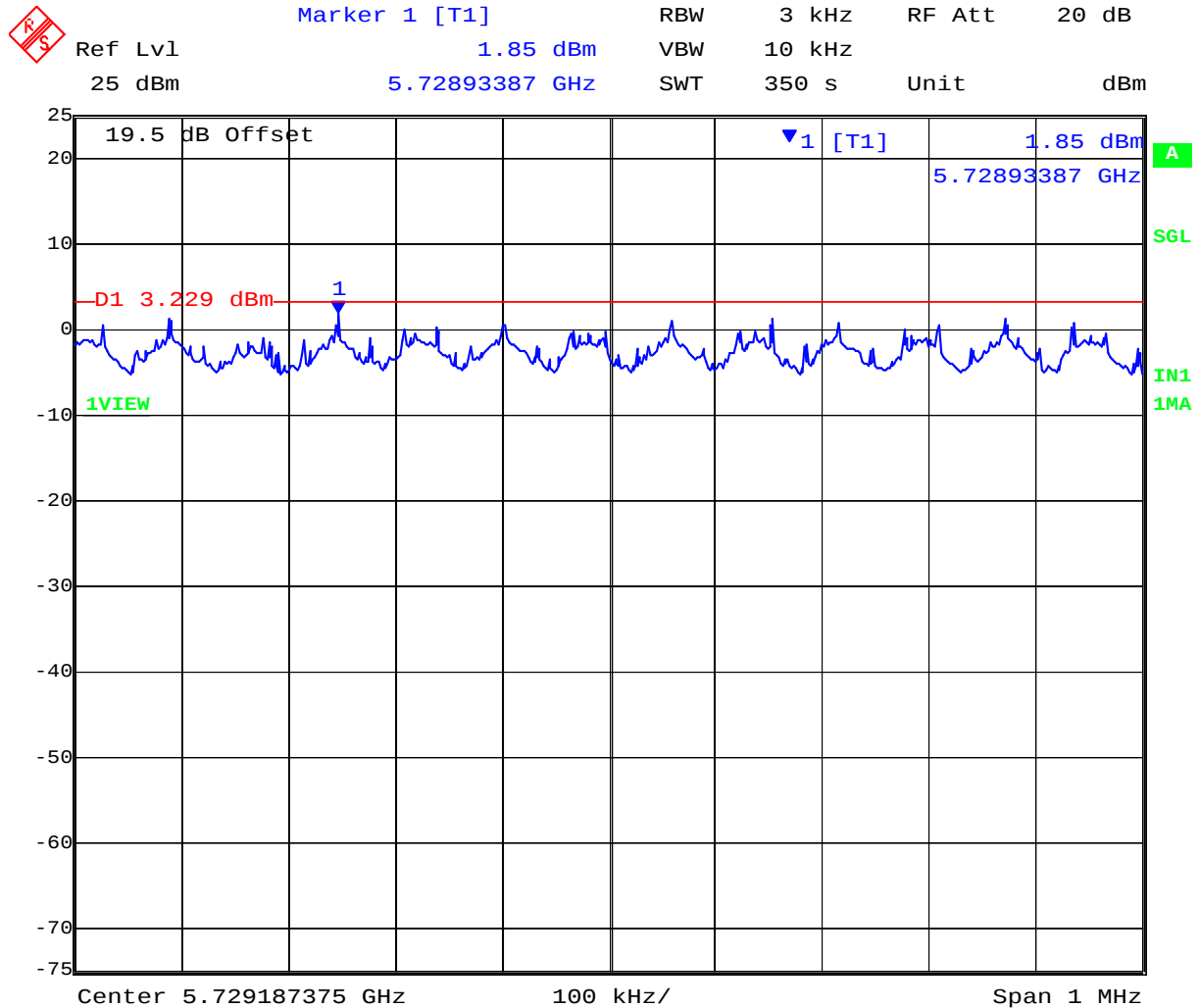
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 171 of 412

5 MHz PORT C 5,730.5 MHz 802.11a 6 MBits - Peak Power Spectral Density



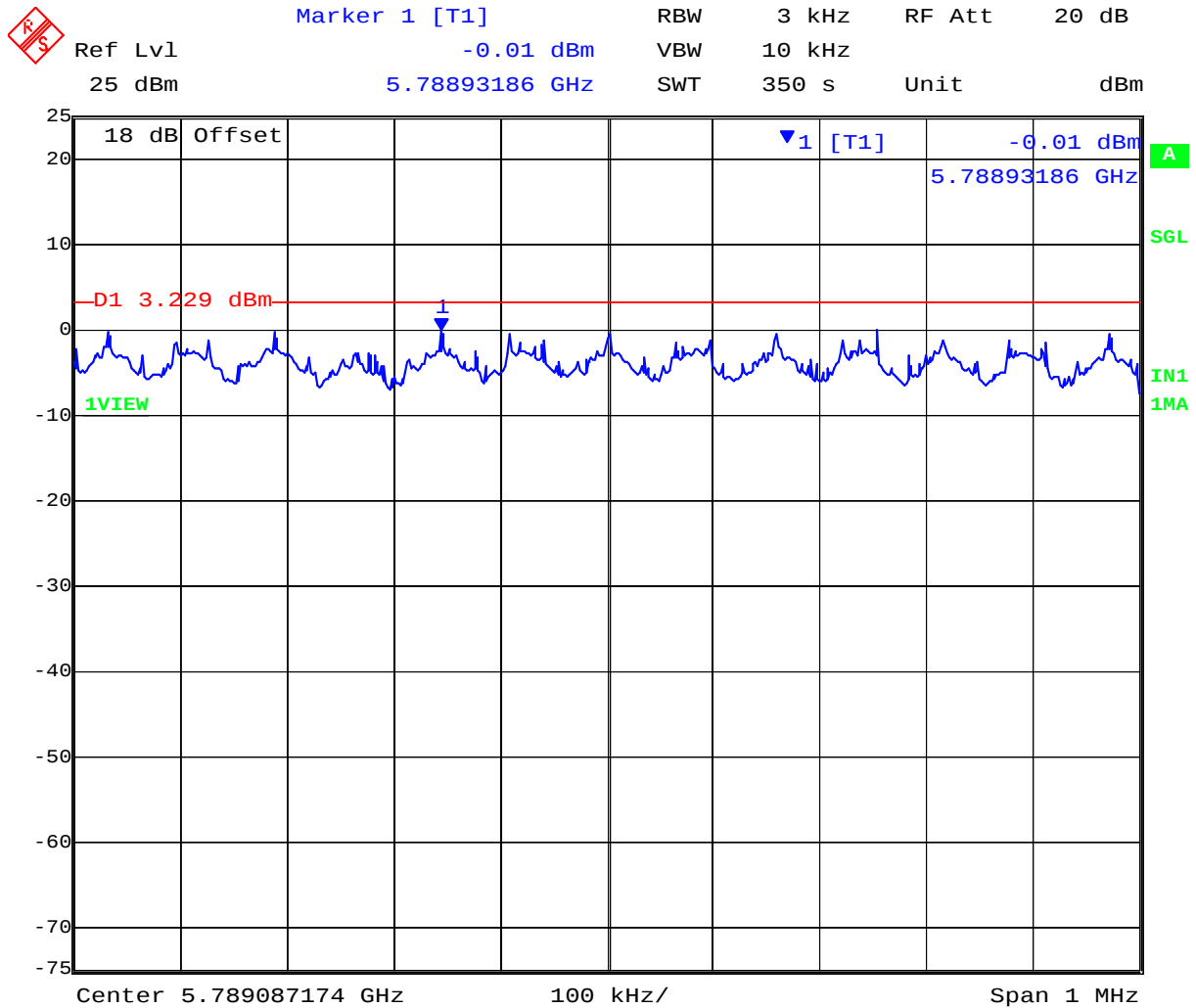
Date: 16.MAR.2012 11:18:19

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 172 of 412

5 MHz PORT A 5,790.5 MHz 802.11a 6 MBits - Peak Power Spectral Density



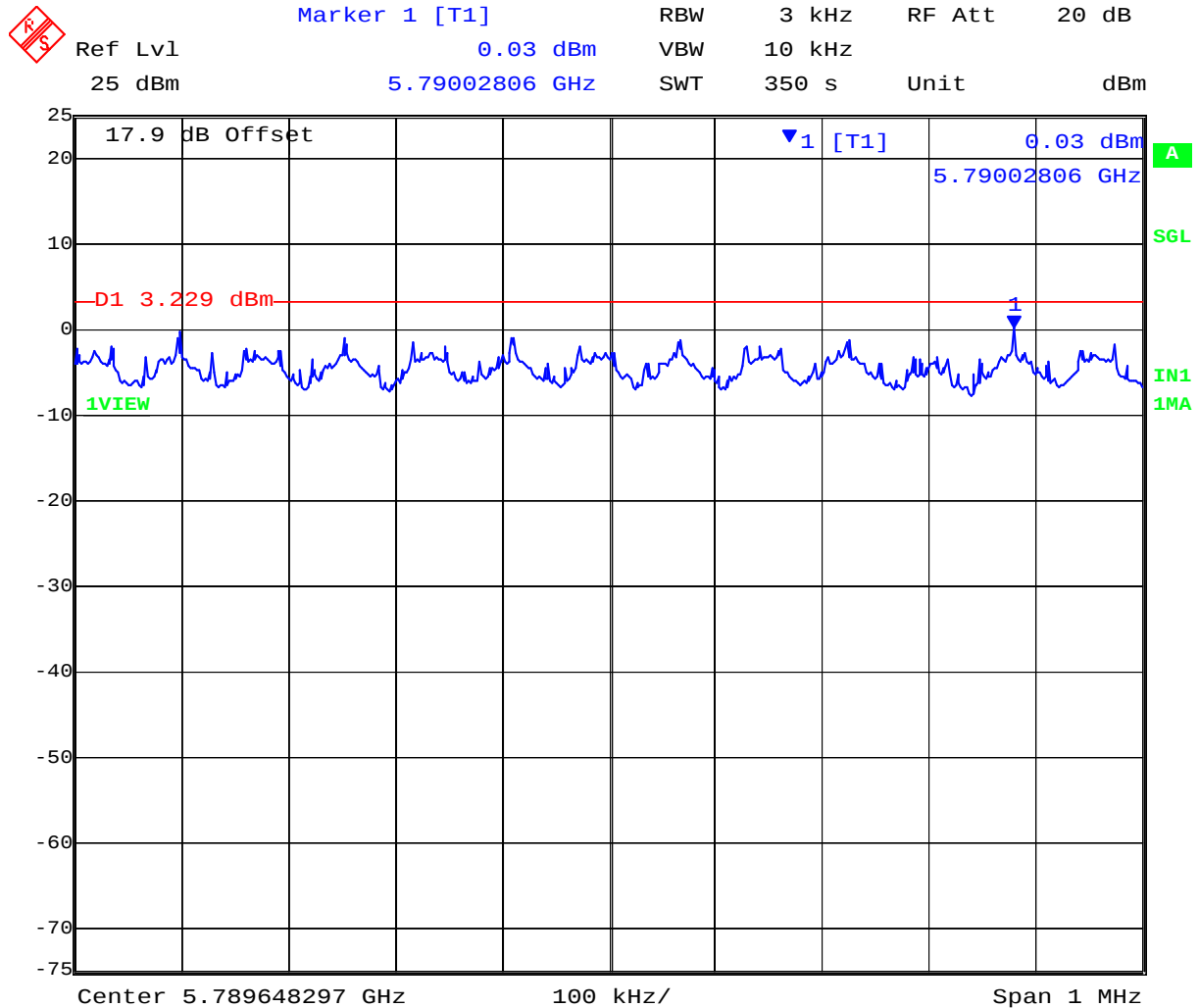
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 173 of 412

5 MHz PORT B 5,790.5 MHz 802.11a 6 MBits - Peak Power Spectral Density



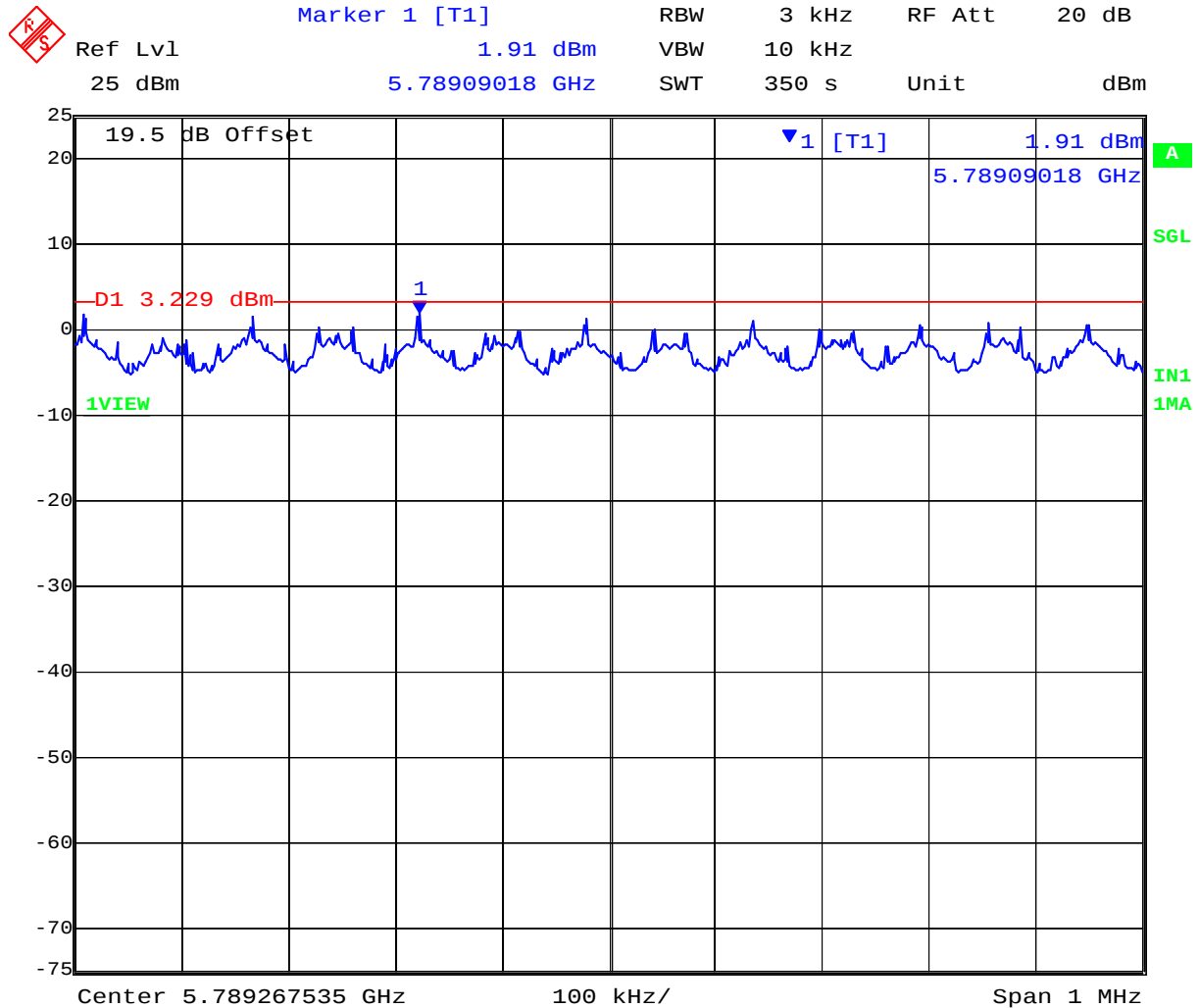
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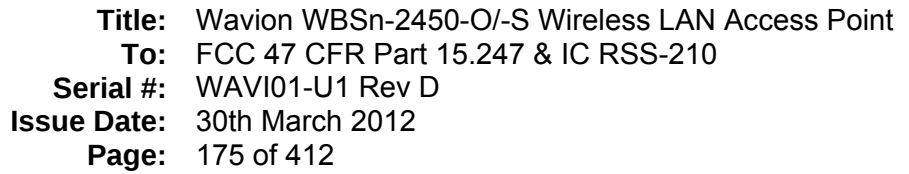
Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 174 of 412

5 MHz PORT C 5,790.5 MHz 802.11a 6 MBits - Peak Power Spectral Density



Date: 16.MAR.2012 11:49:54

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Ref Lvl 25 dBm Marker 1 [T1] 0.86 dBm RBW 3 kHz RF Att 20 dB
 25 dBm 5.84565130 GHz VBW 10 kHz SWT 350 s Unit dBm

18 dB Offset ▼1 [T1] 0.86 dBm
 5.84565130 GHz

D1 3.229 dBm

1VIEW

A
 SGL
 IN1 1MA

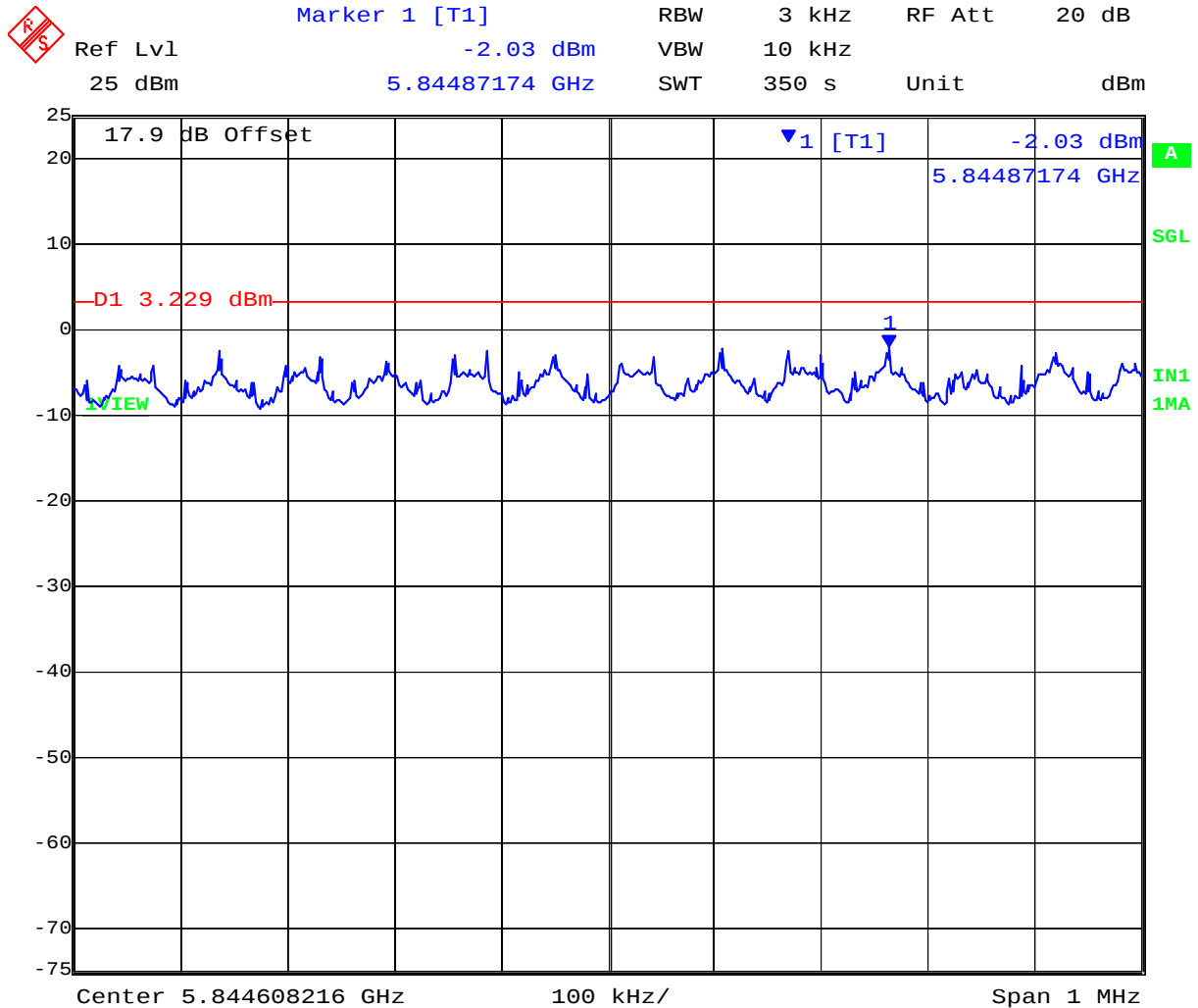
Center 5.845970942 GHz 100 kHz/ Span 1 MHz

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



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 176 of 412

5 MHz PORT B 5,845.5 MHz 802.11a 6 MBits - Peak Power Spectral Density



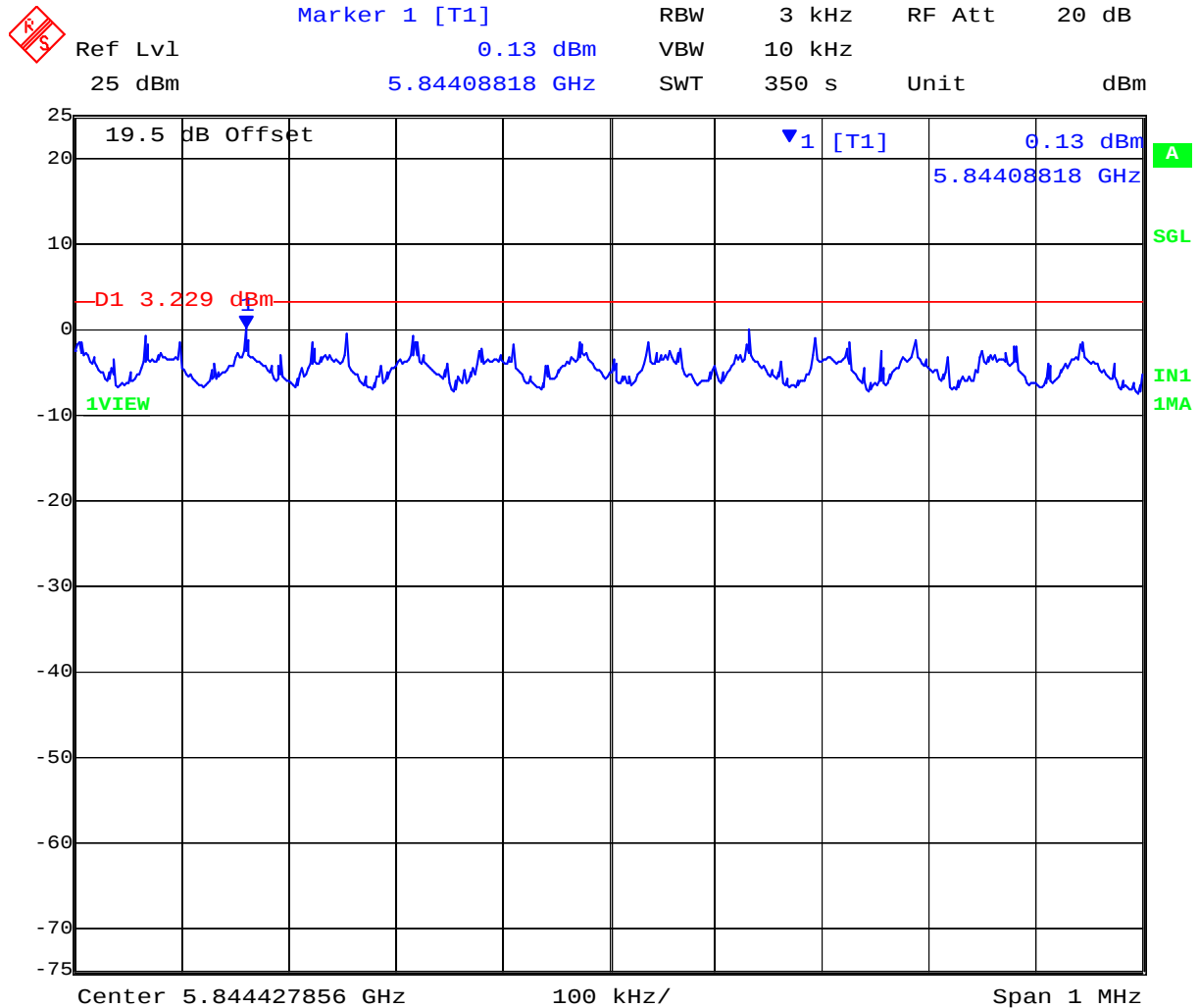
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 177 of 412

5 MHz PORT C 5,845.5 MHz 802.11a 6 MBits - Peak Power Spectral Density



Date: 16.MAR.2012 12:30:41

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 178 of 412

TABLE OF RESULTS – 802.11a Legacy 10 MHz, 6 MBit/s

Test Conditions:	15.247 (e)	Rel. Humidity (%):	35	to	42
Variant:	802.11a, 10 MHz	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:	N/A	dBi
Applied Voltage:	48.00	Vdc	Antenna Ports (N):	3	
Notes 1:					
Notes 2:					

Test Frequency	Measured Power Density				Correction factor	Maximum Peak Power Spectral Density	Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	10Log(N)	dBm	dBm	dB
5735.000	1.52	1.61	1.42	--	4.77	1.61	3.23	-1.62
5790.000	1.53	1.00	2.87	--	4.77	2.87	3.23	-0.36
5840.000	2.04	0.75	1.78	--	4.77	2.04	3.23	-1.19

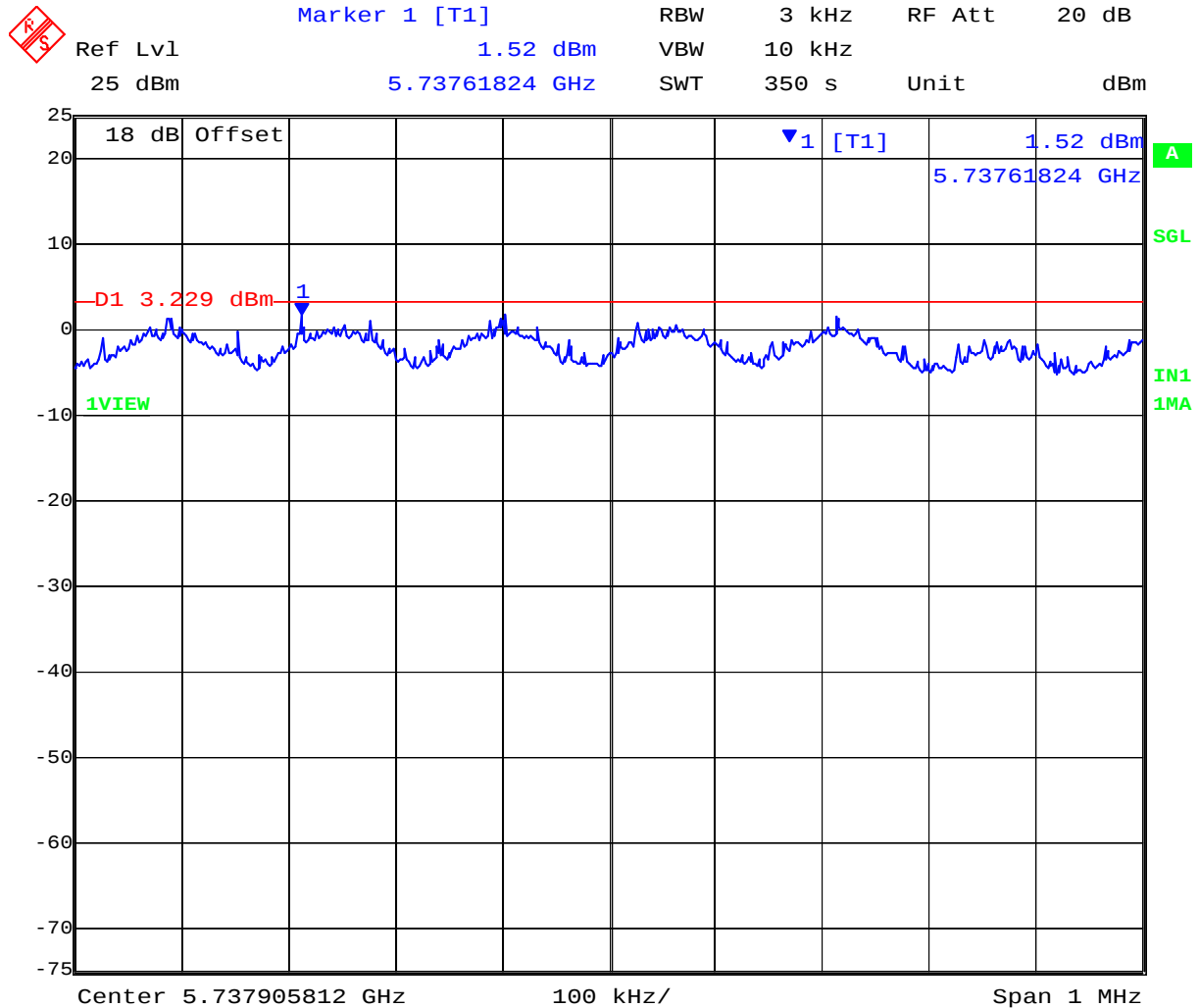
Measurement uncertainty:	± 1.33 dB
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 179 of 412

10 MHz PORT A 5,735 MHz 802.11a 6 Mbits - Peak Power Spectral Density



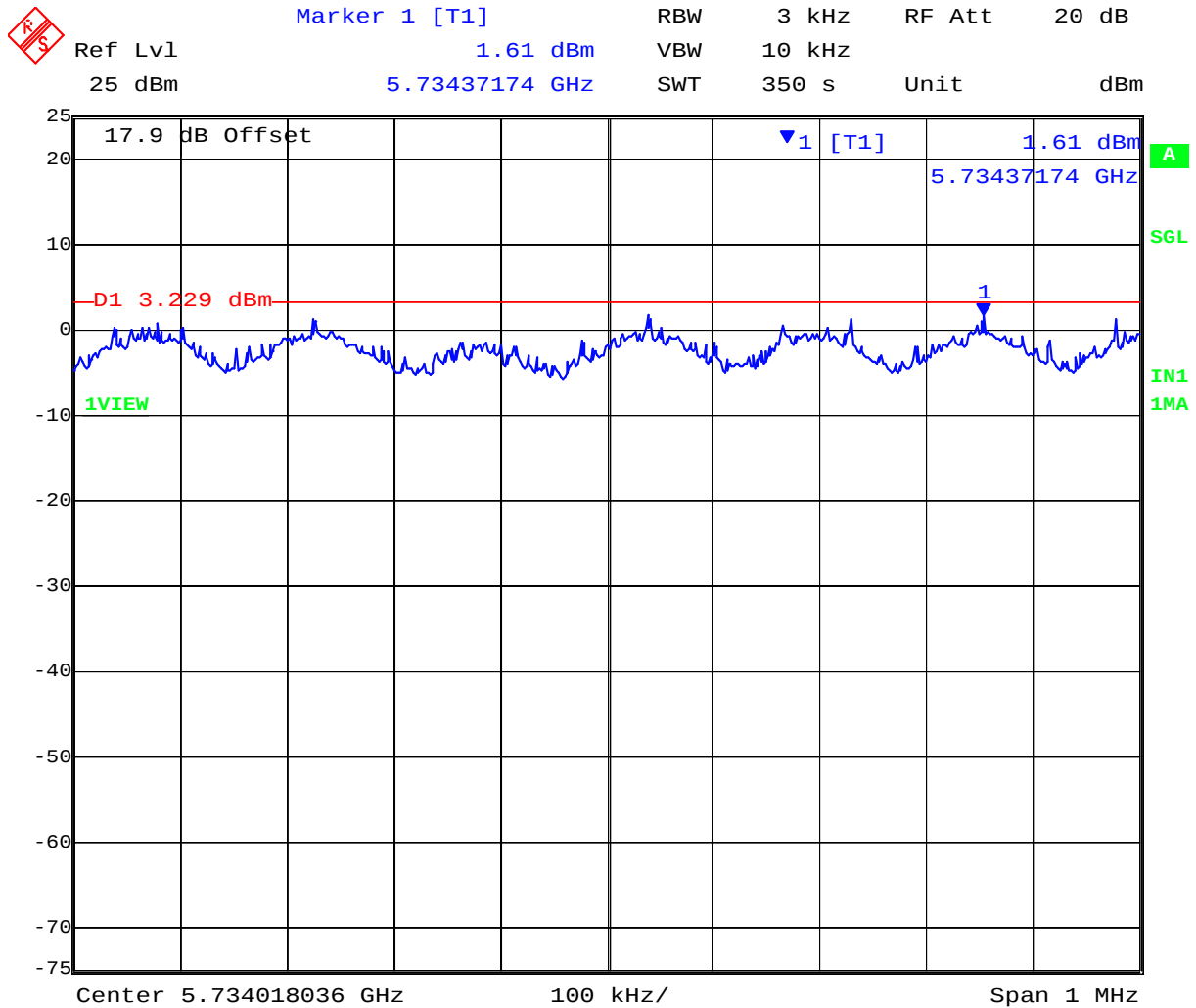
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 180 of 412

10 MHz PORT B 5,735 MHz 802.11a 6 Mbits - Peak Power Spectral Density



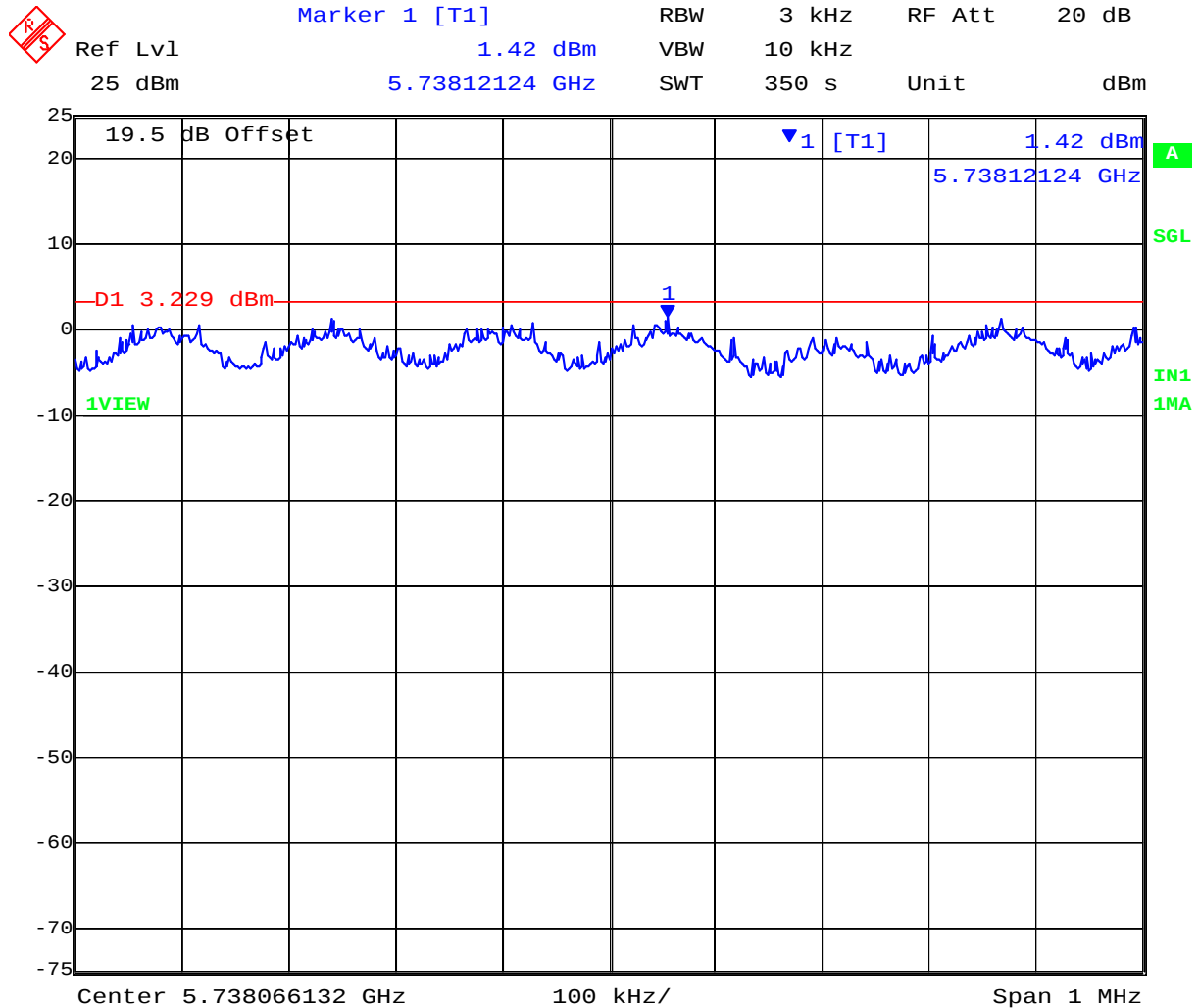
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 181 of 412

10 MHz PORT C 5,735 MHz 802.11a 6 MBits - Peak Power Spectral Density



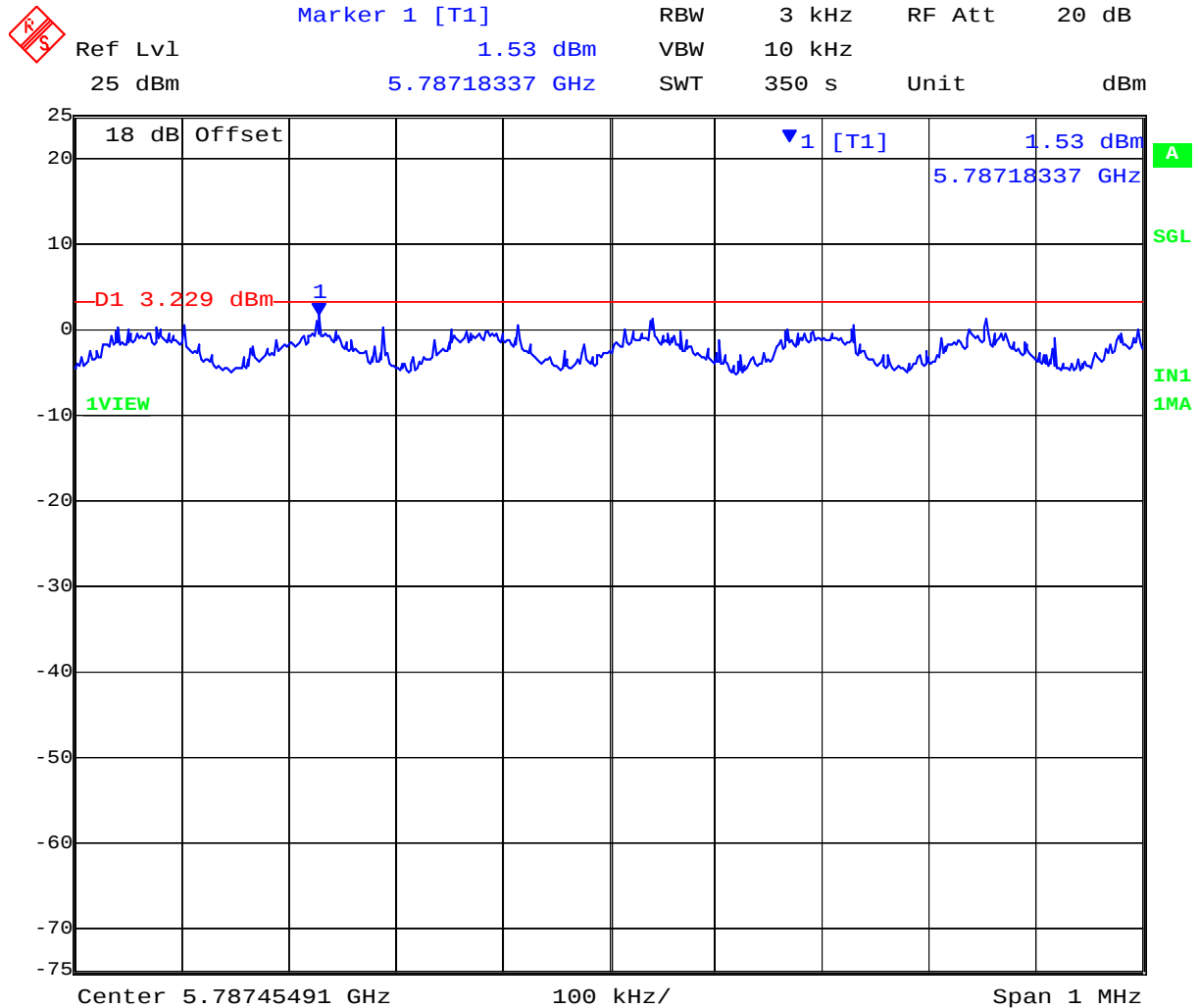
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 182 of 412

10 MHz PORT A 5,790 MHz 802.11a 6 MBits - Peak Power Spectral Density



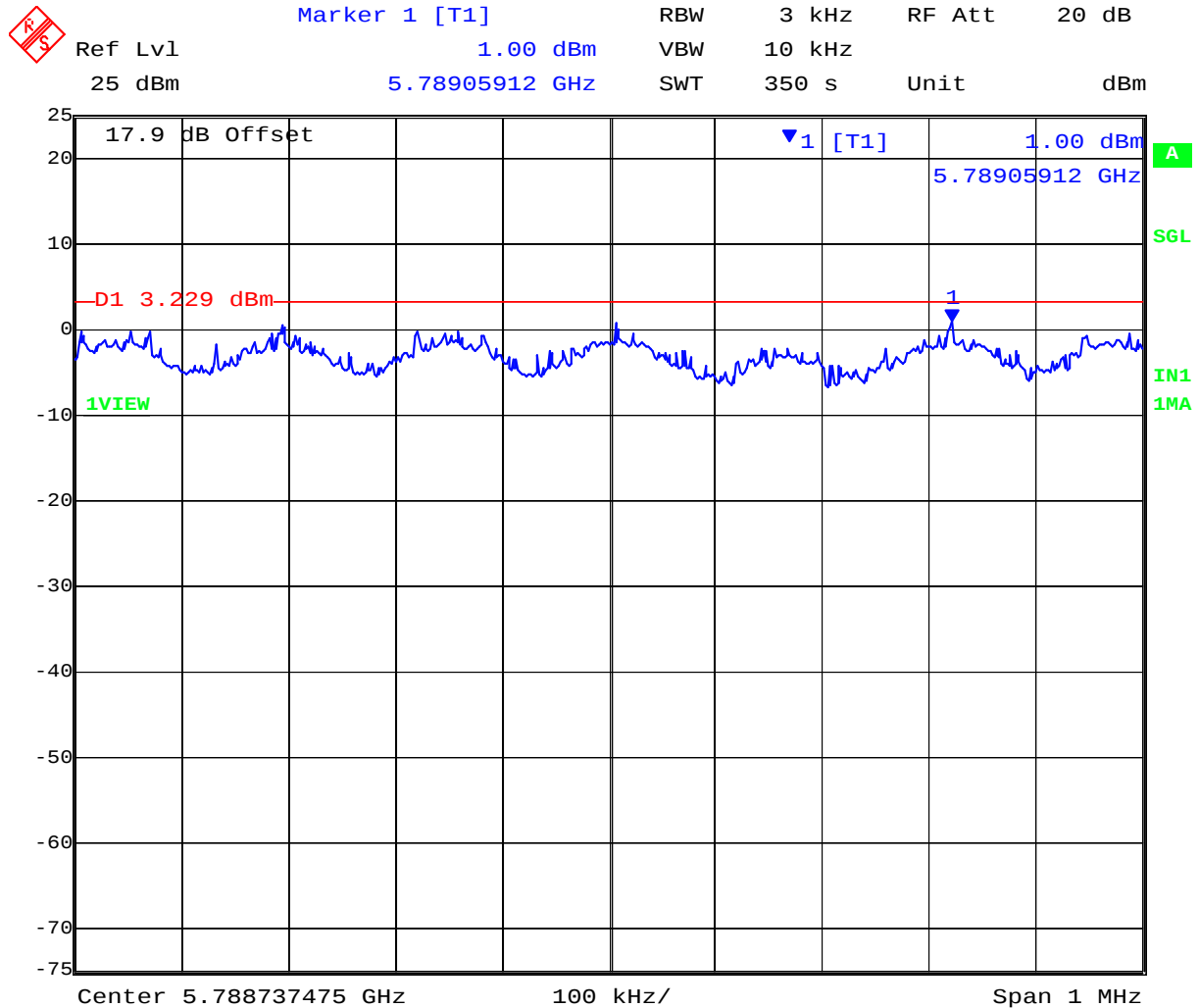
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 183 of 412

10 MHz PORT B 5,790 MHz 802.11a 6 Mbits - Peak Power Spectral Density



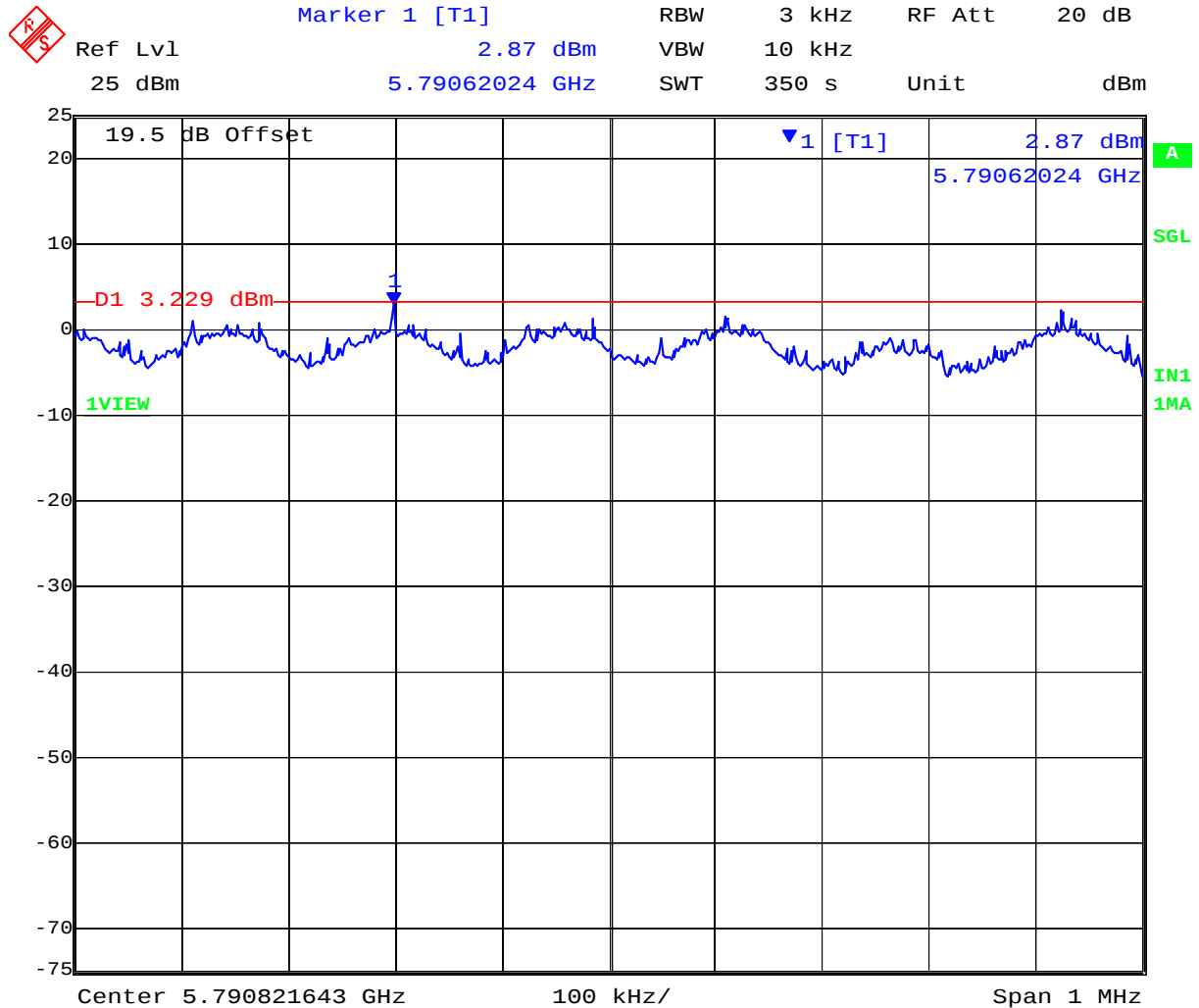
Date: 16.MAR.2012 15:12:19

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 184 of 412

10 MHz PORT C 5,790 MHz 802.11a 6 Mbits - Peak Power Spectral Density



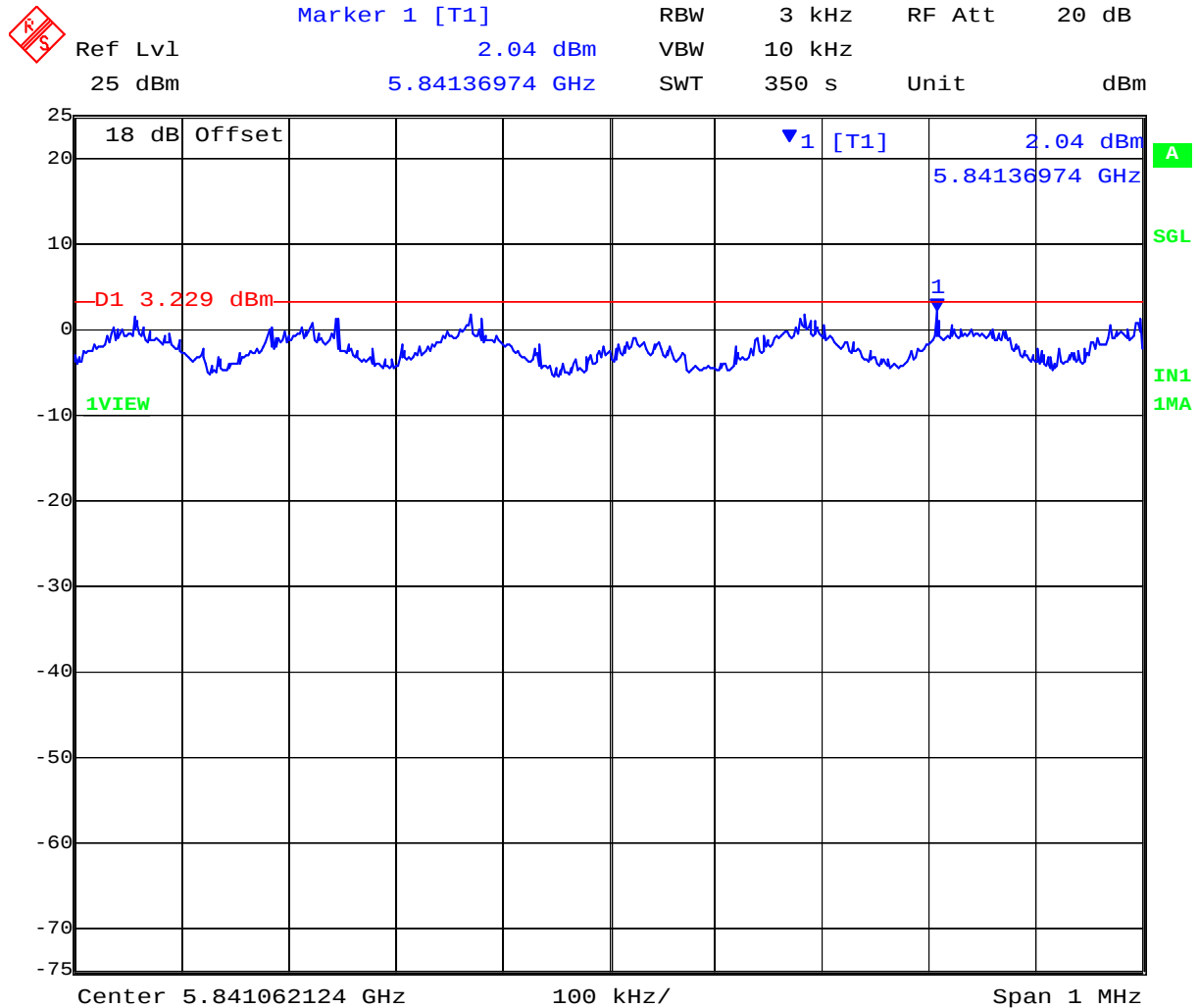
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 185 of 412

10 MHz PORT A 5,840 MHz 802.11a 6 Mbits - Peak Power Spectral Density



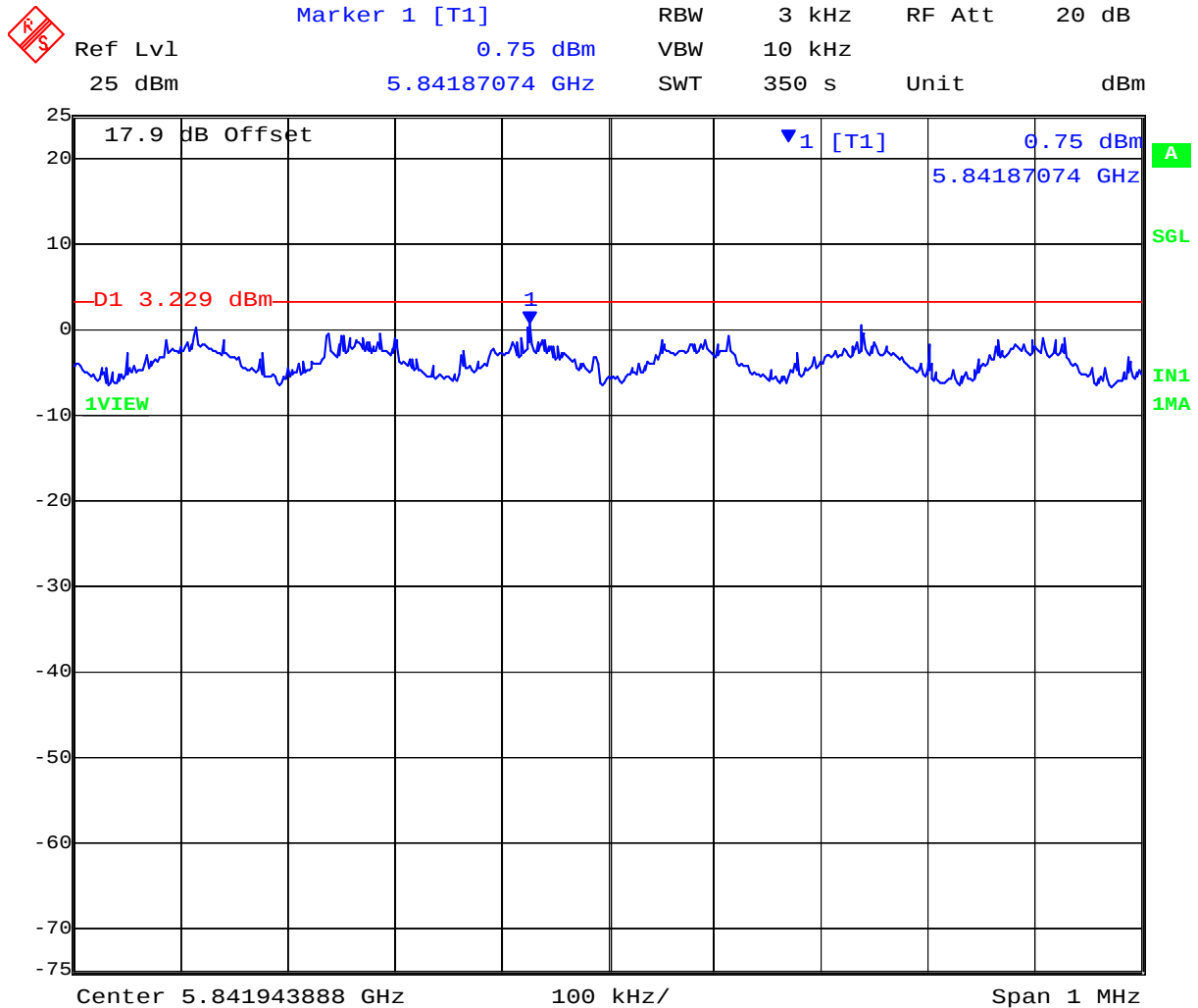
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 186 of 412

10 MHz PORT B 5,840 MHz 802.11a 6 Mbits - Peak Power Spectral Density



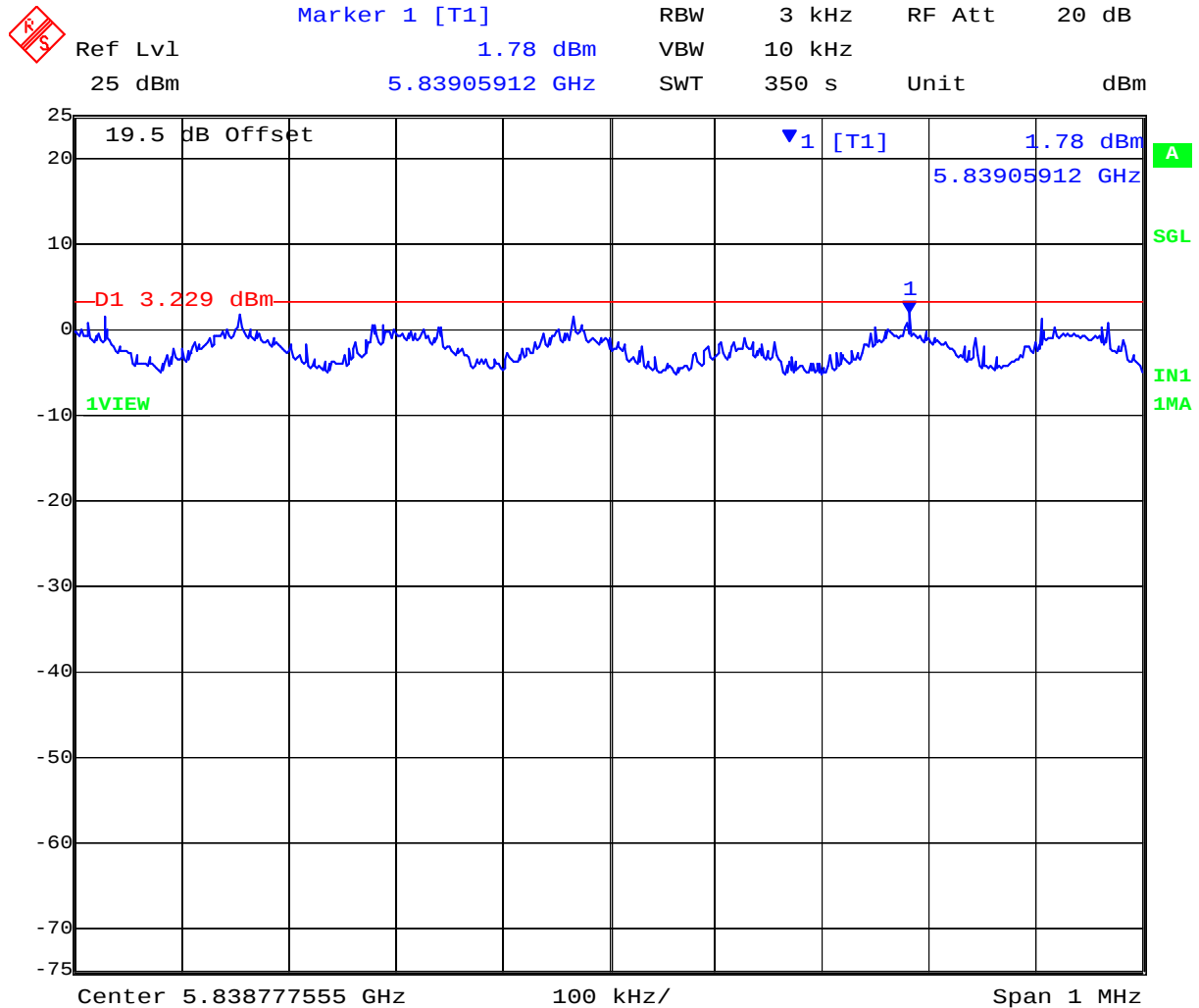
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 187 of 412

10 MHz PORT C 5,840 MHz 802.11a 6 Mbits - Peak Power Spectral Density



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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 188 of 412

TABLE OF RESULTS – 802.11a Legacy

Test Conditions:	15.247 (e)	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:			
Applied Voltage:	48.00 Vdc	Antenna Ports (N):	3		
Notes 1:					
Notes 2:					

Test Frequency	Measured Power Density				Correction factor	Σ Power Spectral Density	Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	10Log(N)	dBm	dBm	dB
5745	-0.63	-1.09	1.17	--	4.77	5.94	3.23	-2.06
5785	0.56	-1.84	1.92	--	4.77	6.69	3.23	-1.31
5825	-0.43	-2.98	0.11	--	4.77	4.88	3.23	-3.12

Measurement uncertainty:	± 1.33 dB
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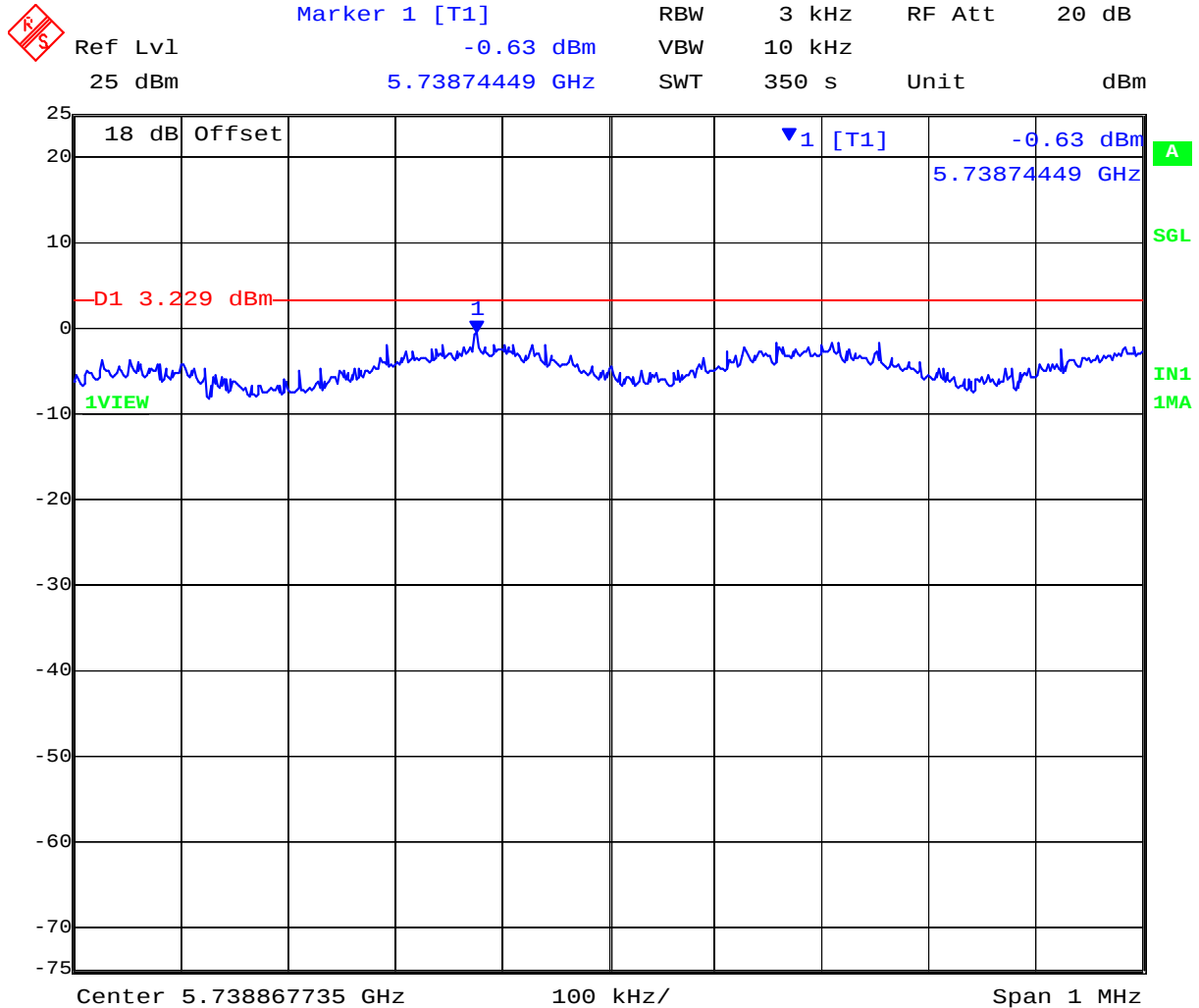
NOTE: above margin is calculated from the highest Power Density returned from Chain A or B or C

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 189 of 412

PORT A 5,745 MHz 802.11a Legacy - Peak Power Spectral Density



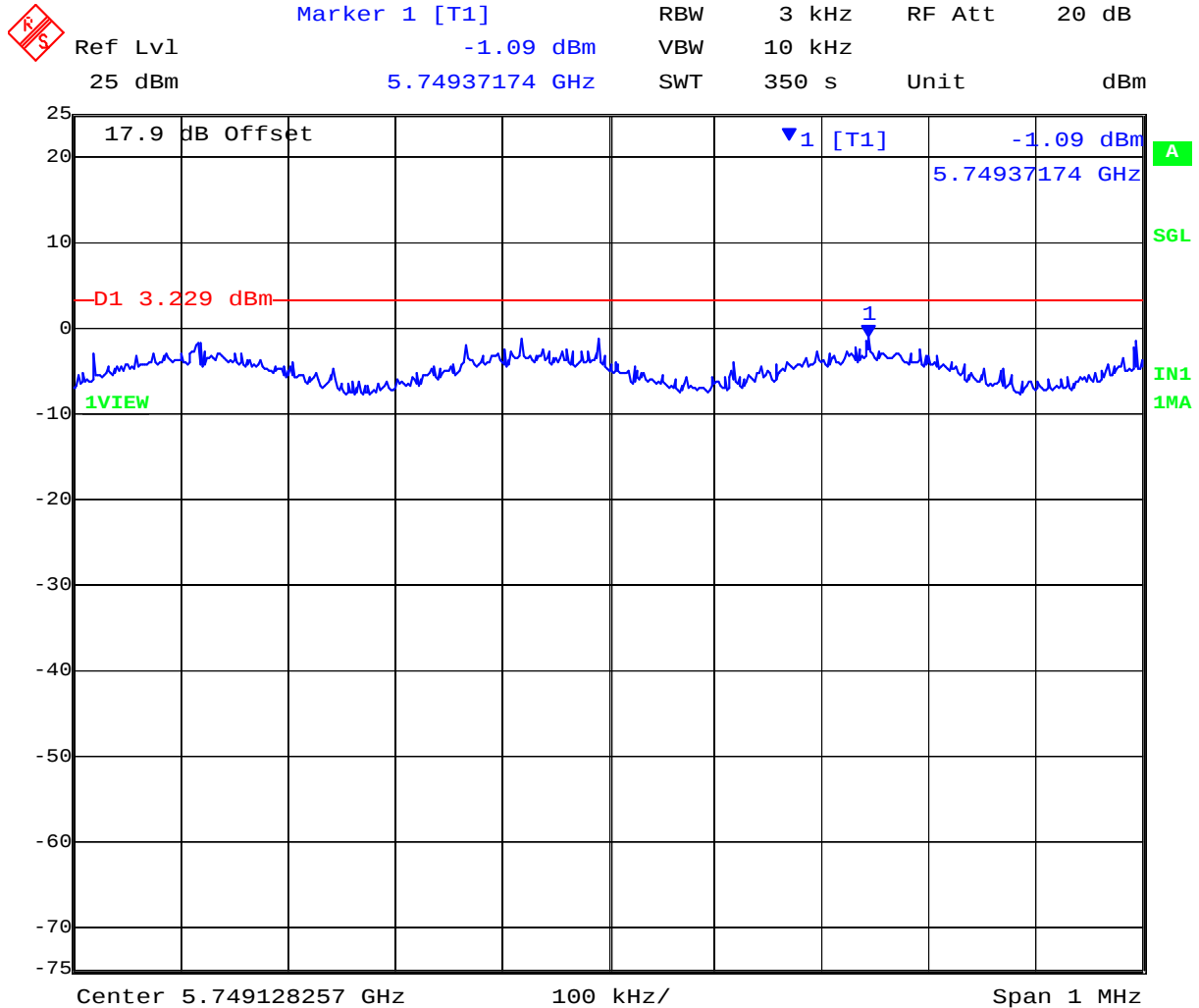
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 190 of 412

PORT B 5,745 MHz 802.11a Legacy - Peak Power Spectral Density



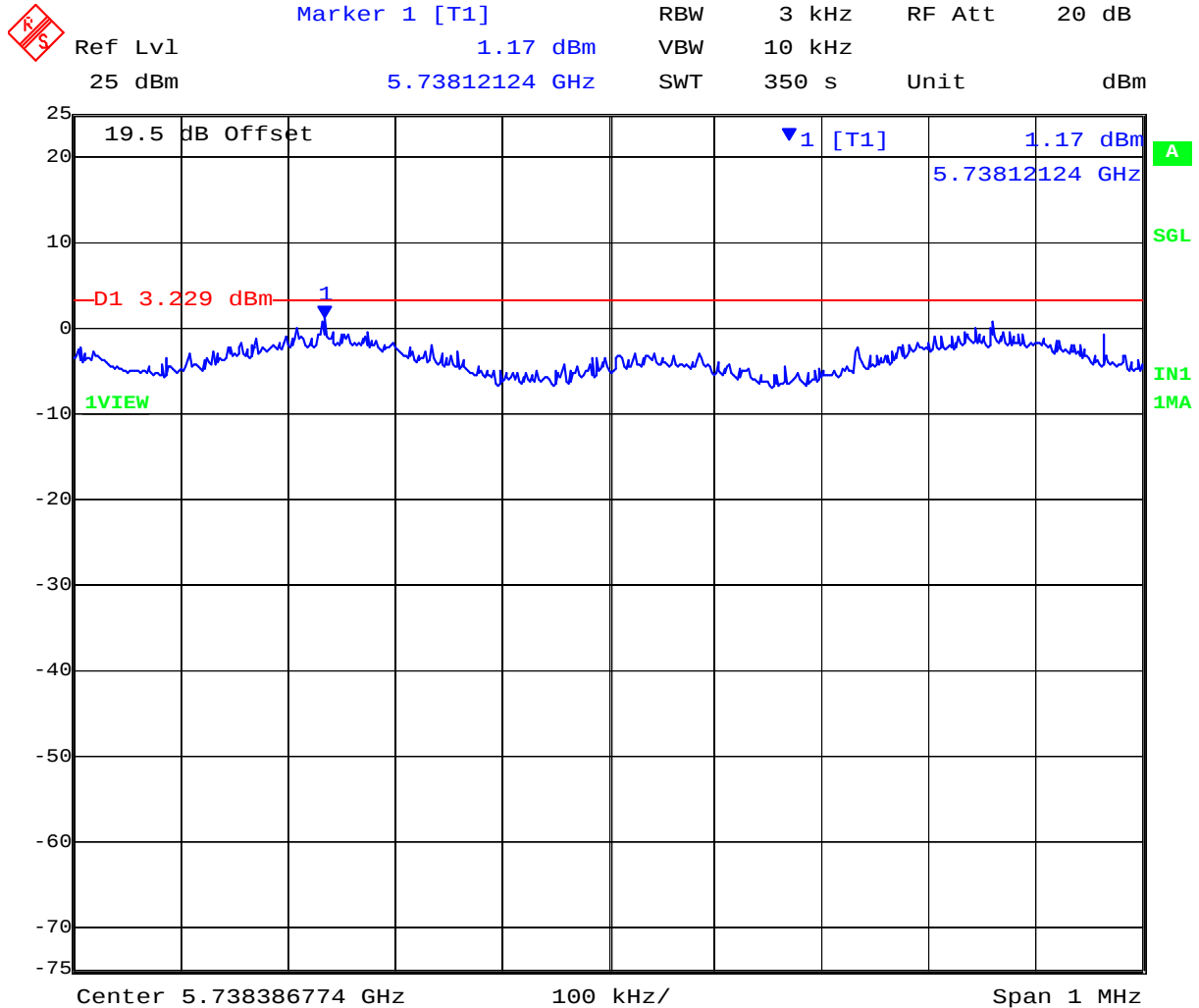
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 191 of 412

PORT C 5,745 MHz 802.11a Legacy - Peak Power Spectral Density



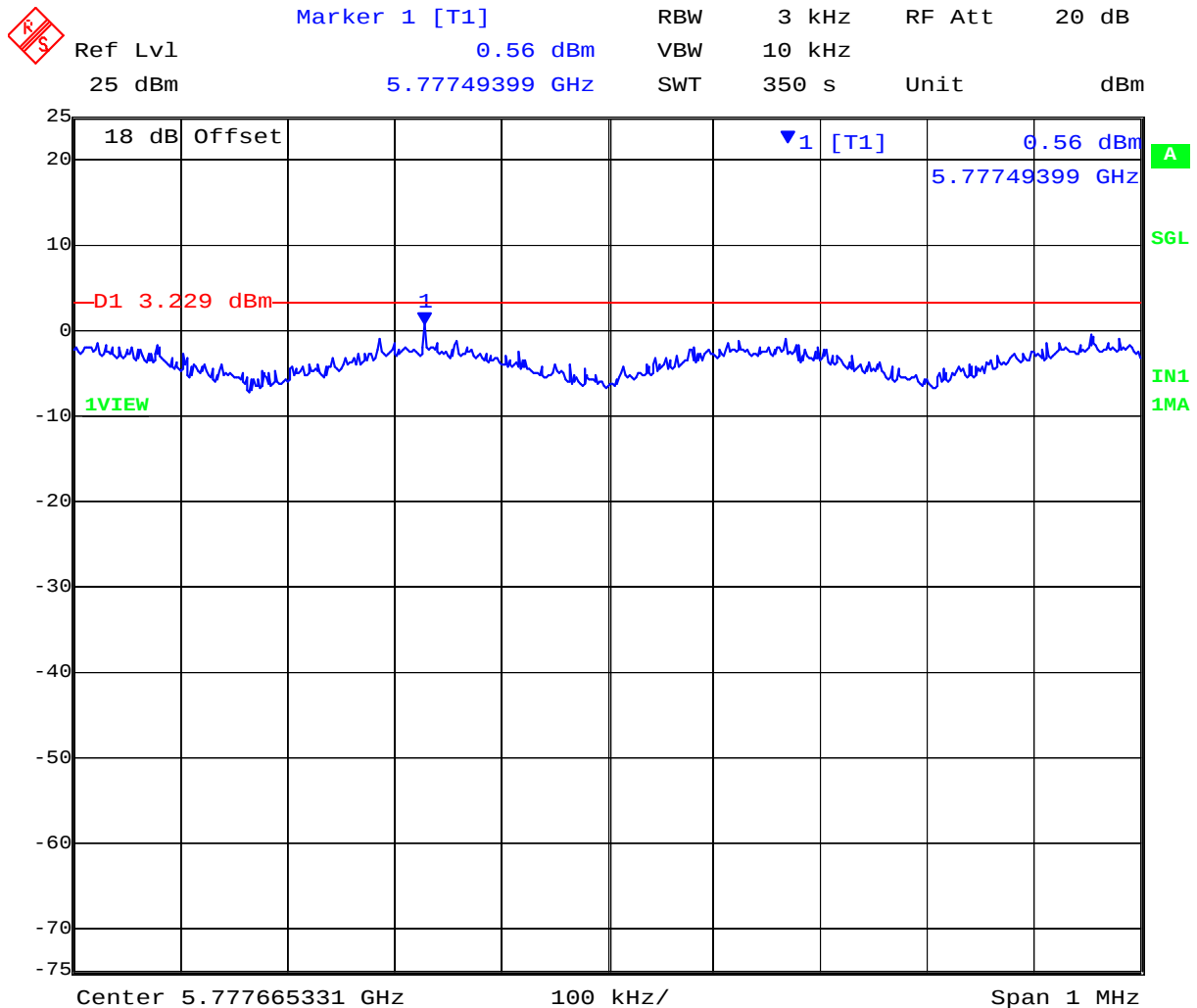
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 192 of 412

PORT A 5,785 MHz 802.11a Legacy - Peak Power Spectral Density



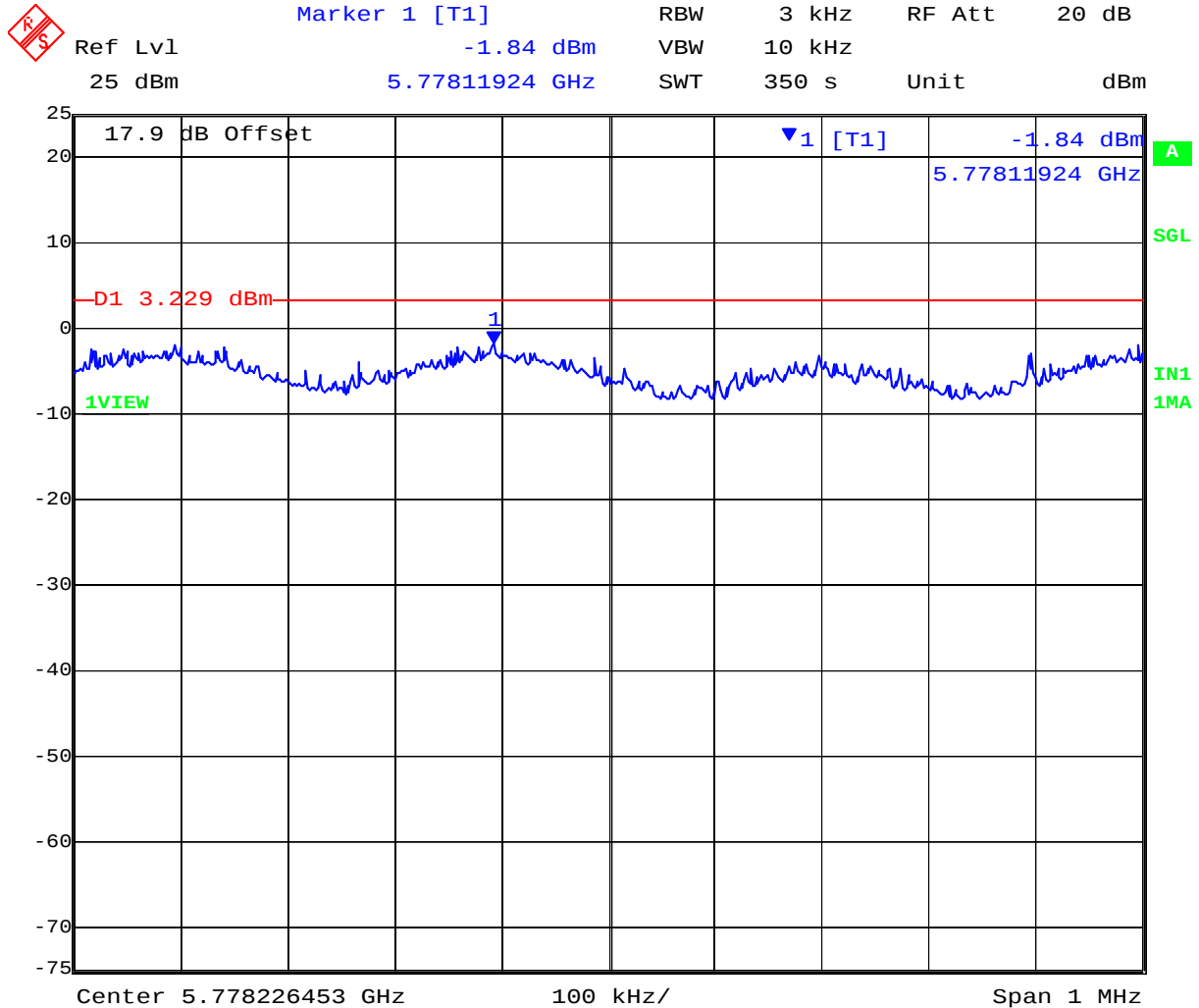
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 193 of 412

PORT B 5,785 MHz 802.11a Legacy - Peak Power Spectral Density



Date: 28.FEB.2012 12:39:24

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 194 of 412

PORT C 5,785 MHz 802.11a Legacy - Peak Power Spectral Density



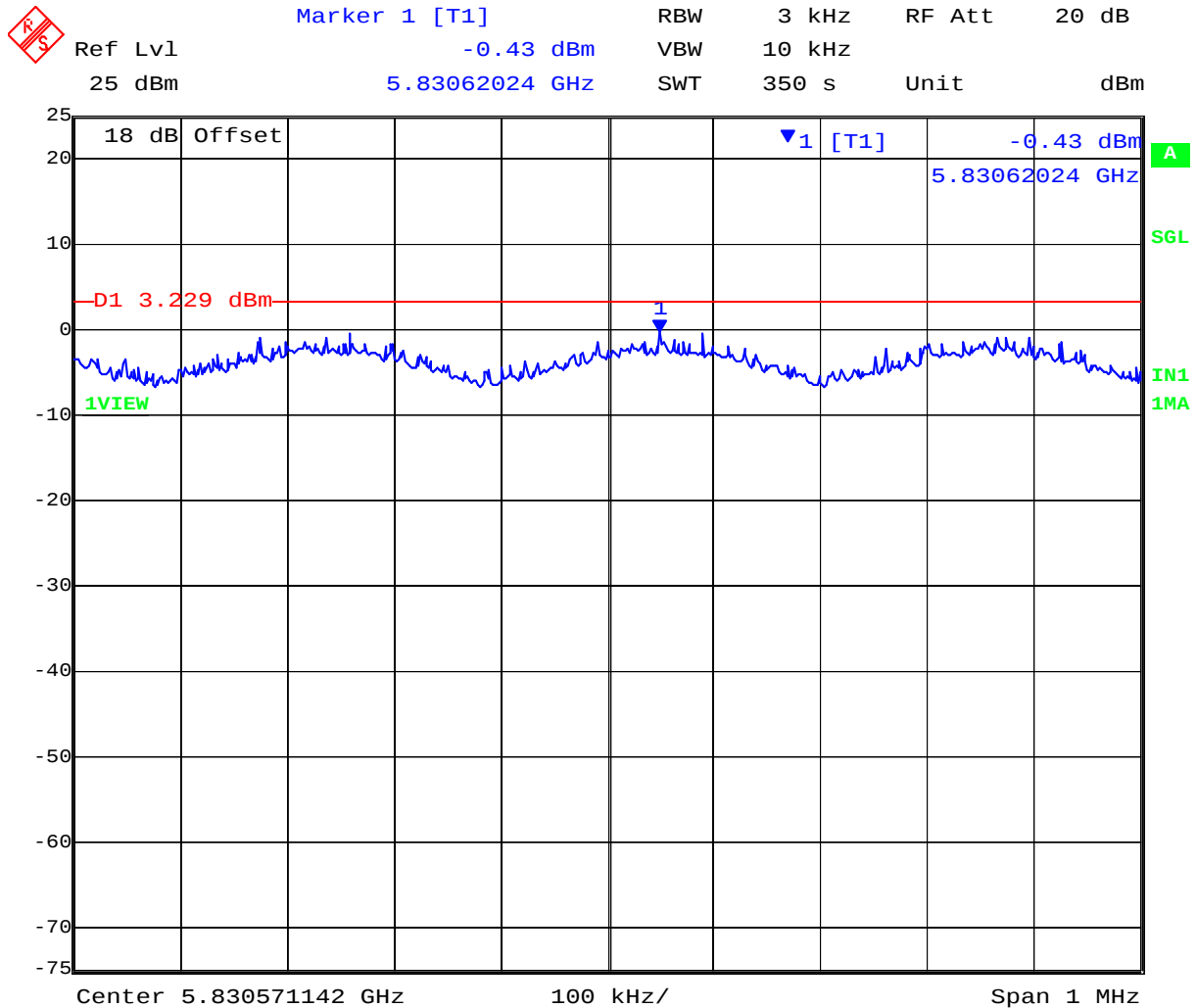
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 195 of 412

PORT A 5,825 MHz 802.11a Legacy - Peak Power Spectral Density



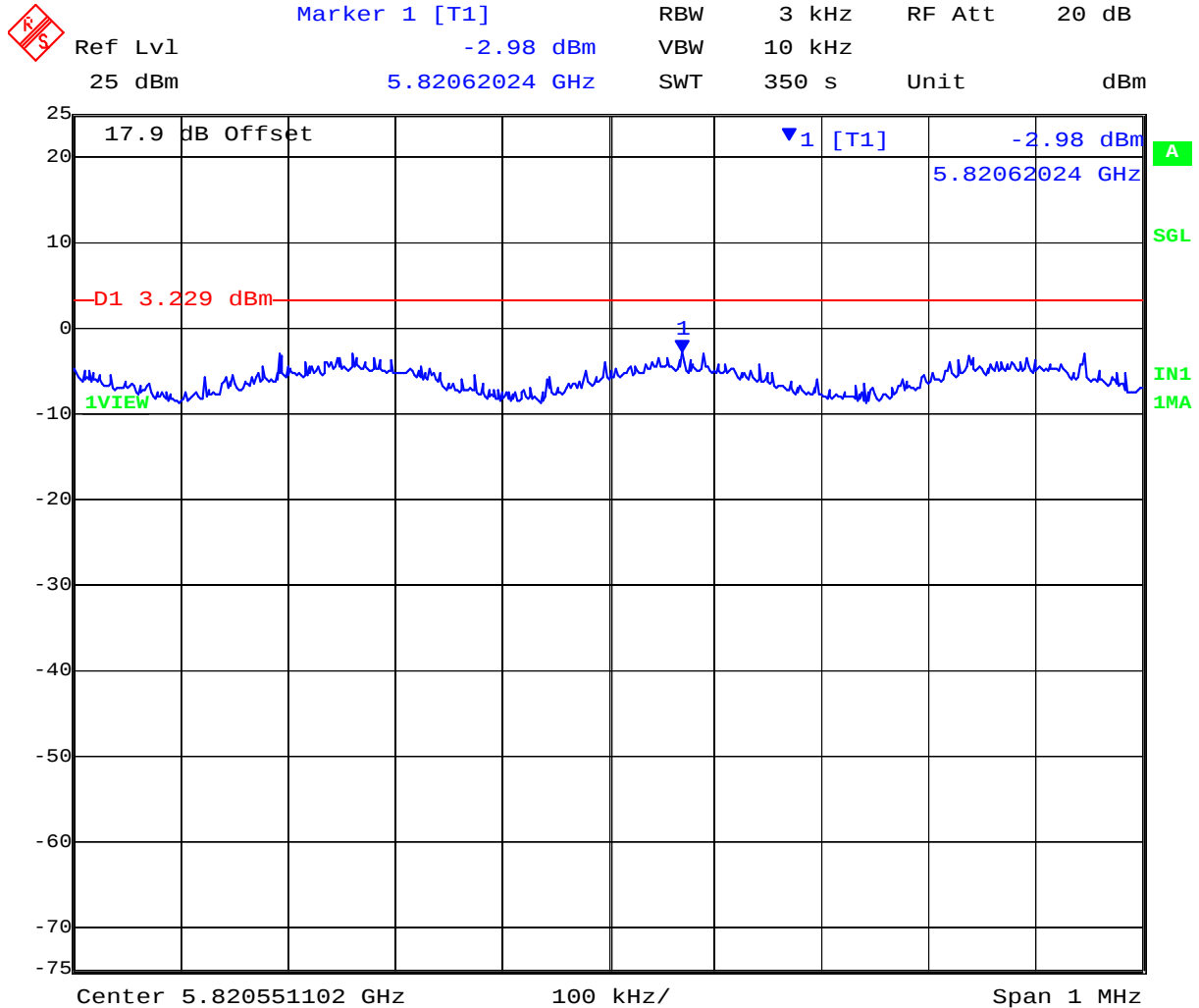
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 196 of 412

PORT B 5,825 MHz 802.11a Legacy - Peak Power Spectral Density



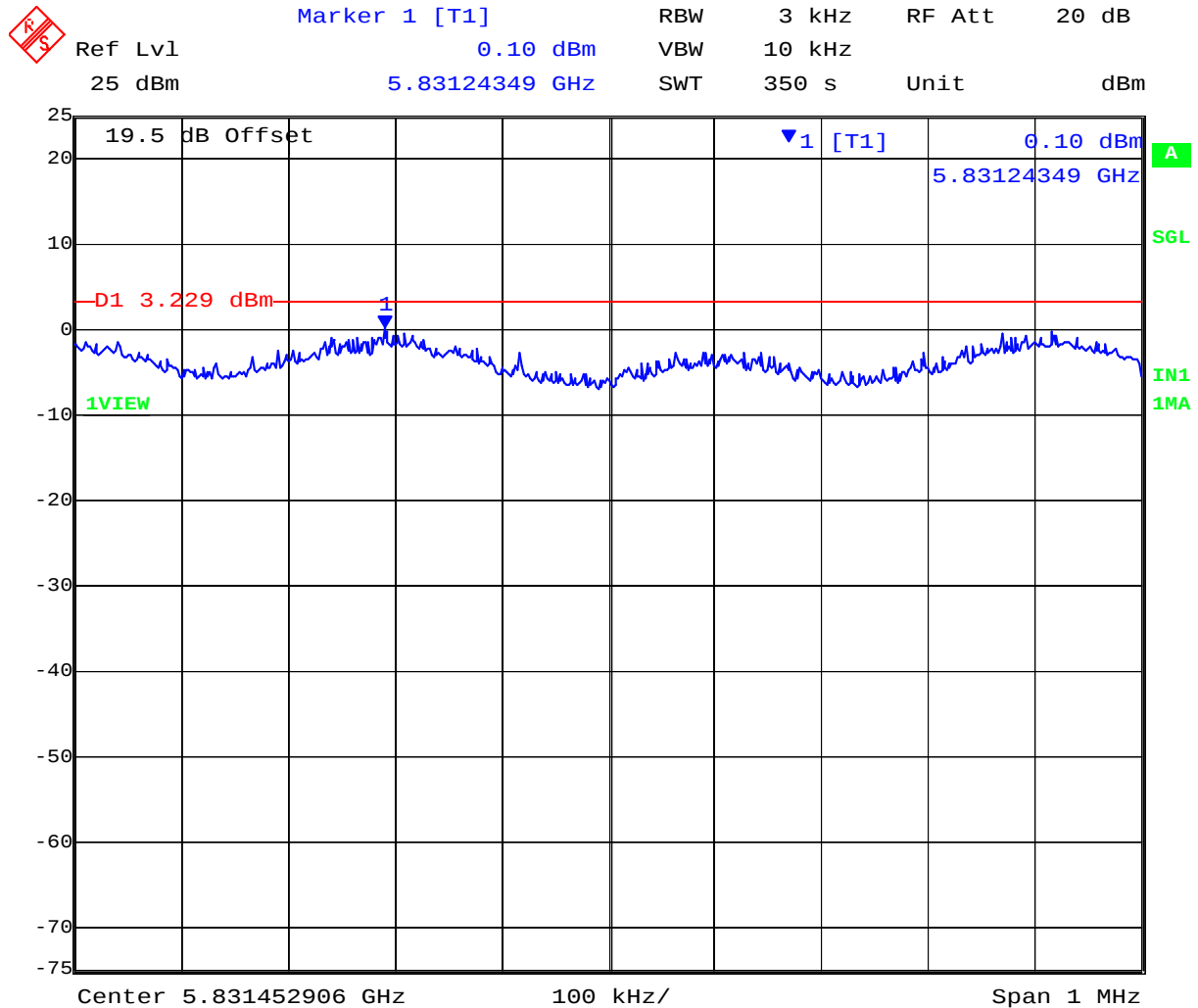
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 197 of 412

PORT C 5,825 MHz 802.11a Legacy - Peak Power Spectral Density



Date: 28.FEB.2012 13:20:30

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 198 of 412

TABLE OF RESULTS – 802.11n HT-20

Test Conditions:	15.247 (e)	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:			
Applied Voltage:	48.00 Vdc	Antenna Ports (N):	3		
Notes 1:					
Notes 2:					

Test Frequency	Measured Power Density				Correction factor	Σ Power Spectral Density	Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	10Log(N)	dBm	dBm	dB
5745	-1.50	-2.04	-0.06	--	4.77	4.71	3.23	-3.29
5785	-0.17	-1.84	1.10	--	4.77	5.87	3.23	-2.13
5825	0.08	-2.28	-0.37	--	4.77	4.85	3.23	-3.28

Measurement uncertainty:	± 1.33 dB
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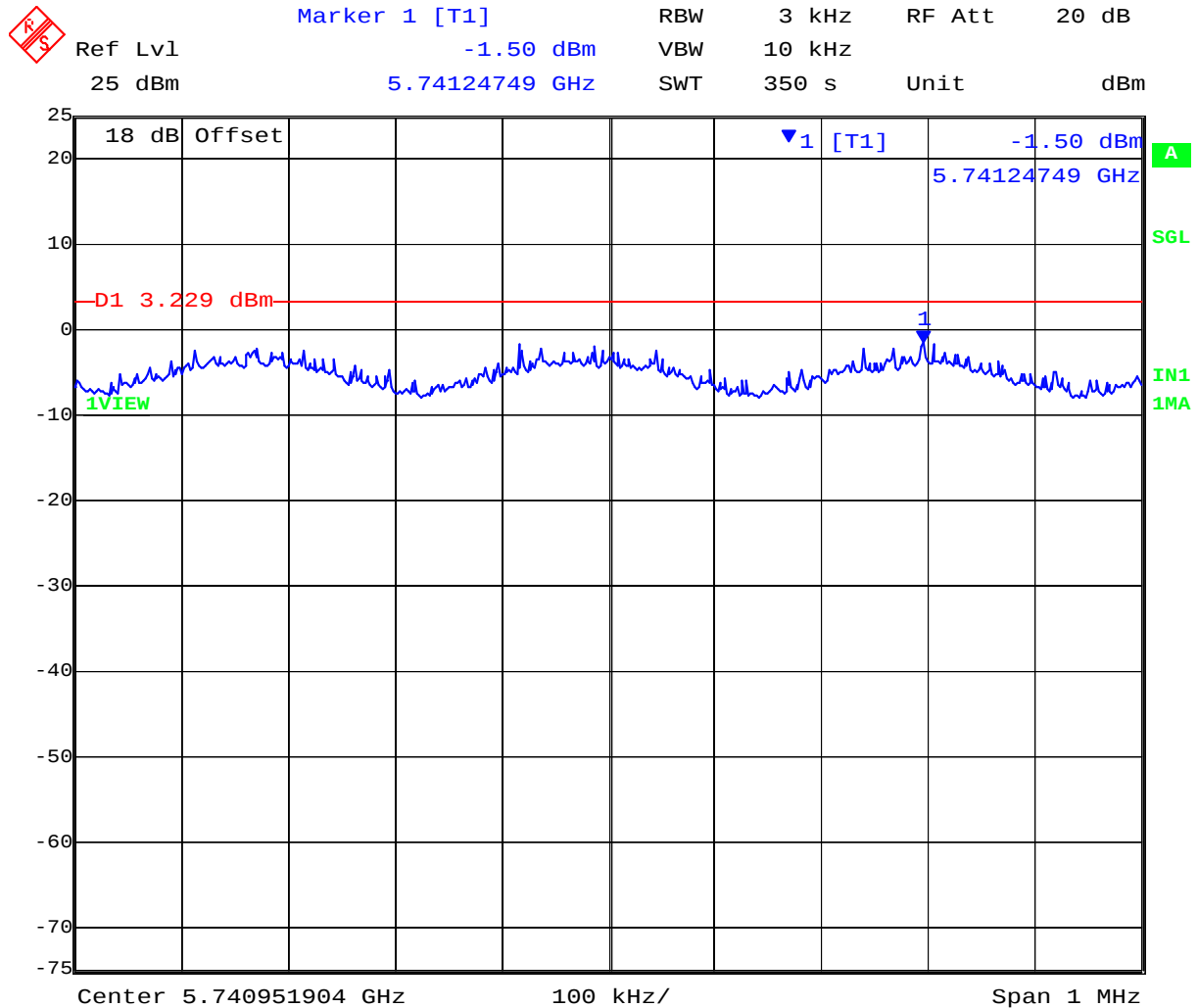
NOTE: above margin is calculated from the highest Power Density returned from Chain A or B or C

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 199 of 412

PORT A 5,745 MHz 802.11n HT-20 - Peak Power Spectral Density



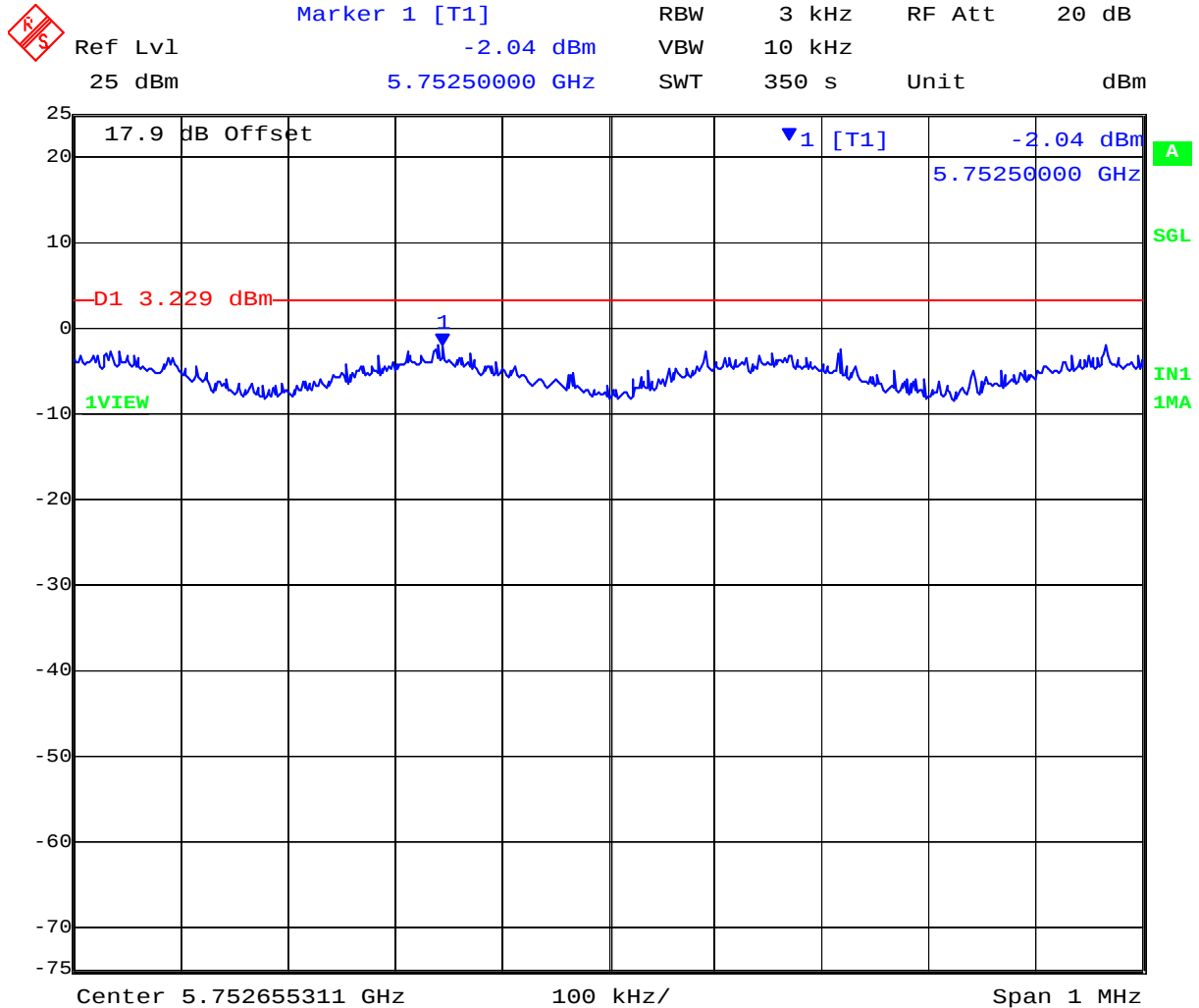
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 200 of 412

PORT B 5,745 MHz 802.11n HT-20 - Peak Power Spectral Density



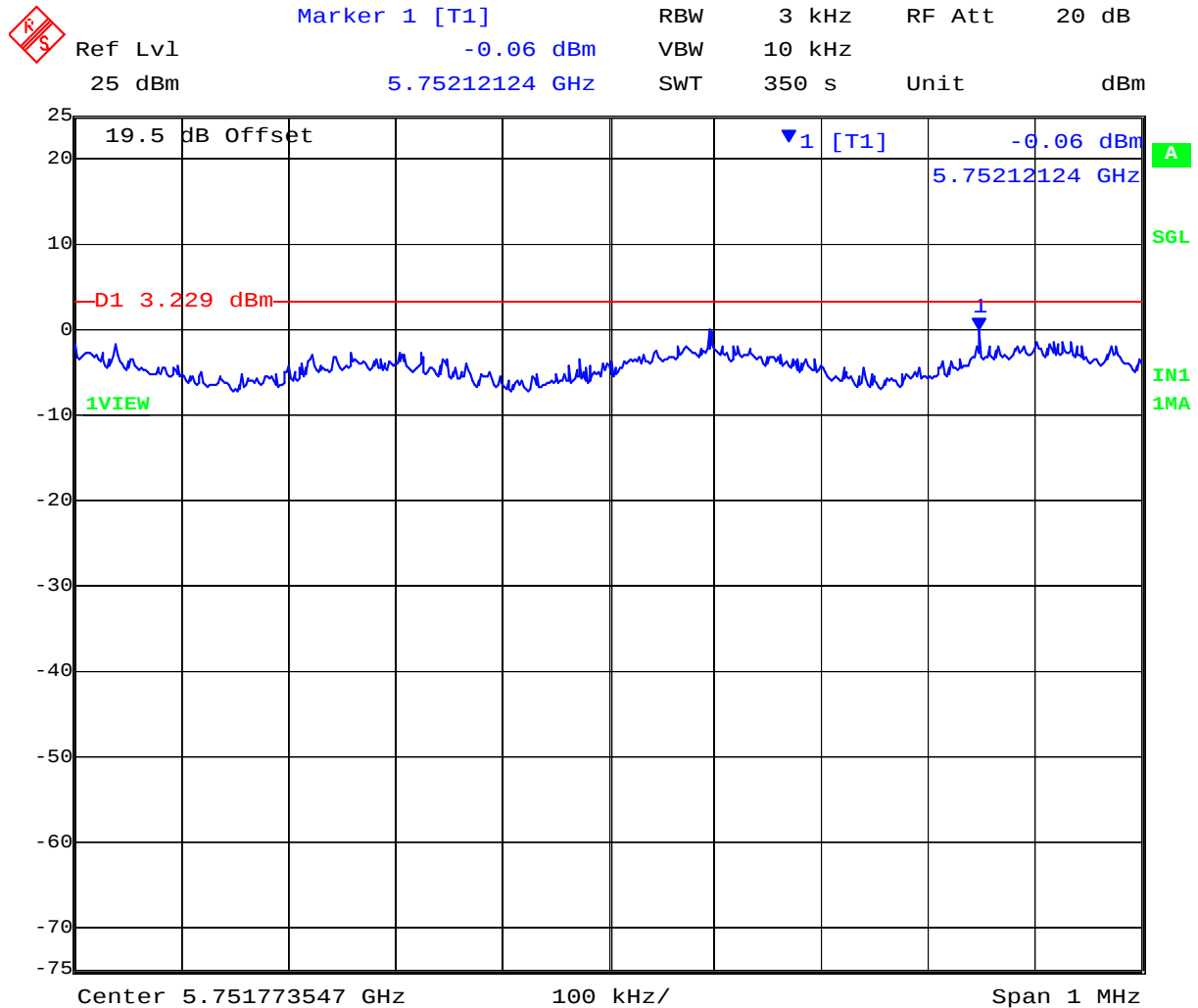
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 201 of 412

PORT C 5,745 MHz 802.11n HT-20 - Peak Power Spectral Density



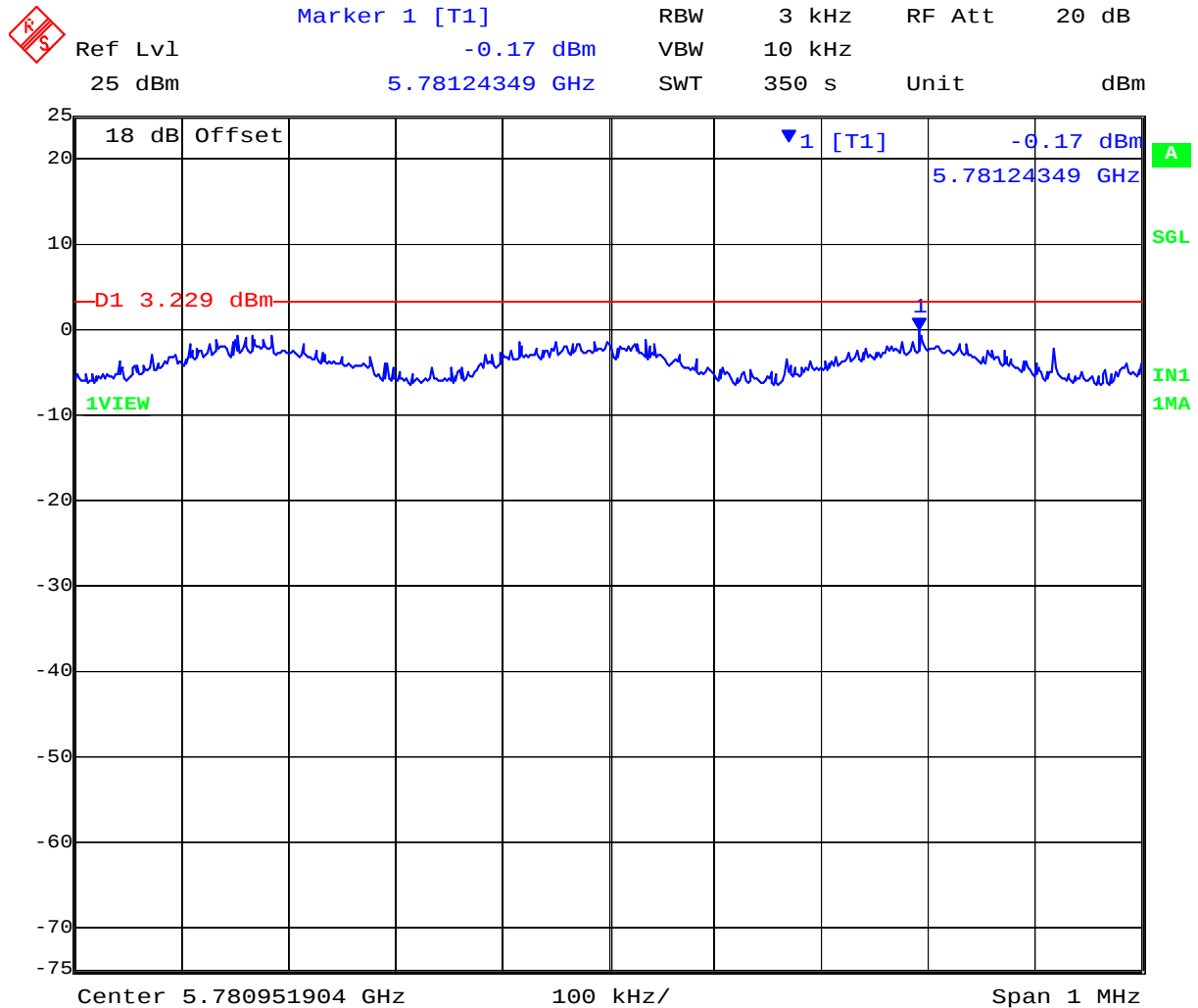
Date: 28.FEB.2012 14:01:58

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 202 of 412

PORT A 5,785 MHz 802.11n HT-20 - Peak Power Spectral Density



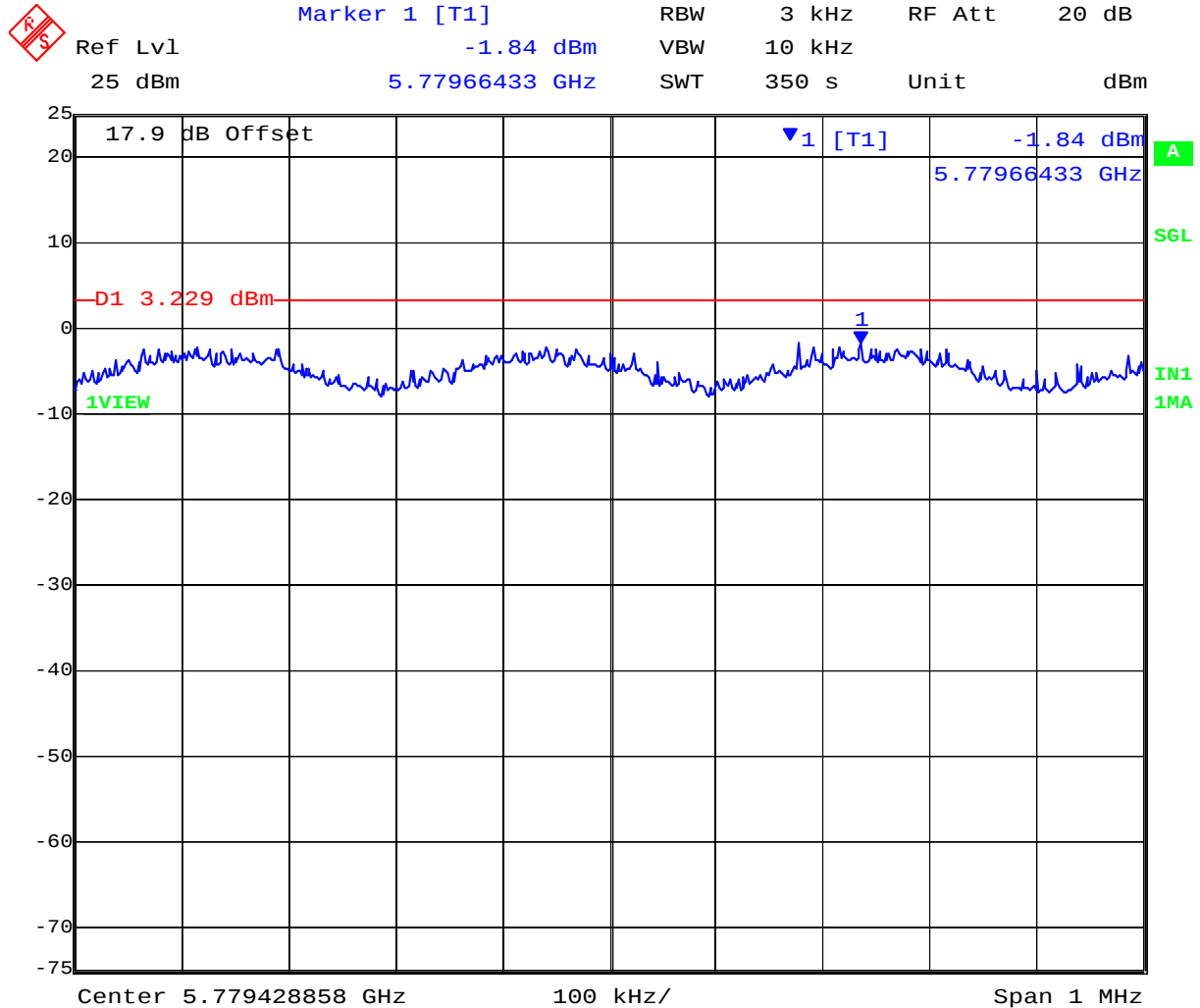
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 203 of 412

PORT B 5,785 MHz 802.11n HT-20 - Peak Power Spectral Density



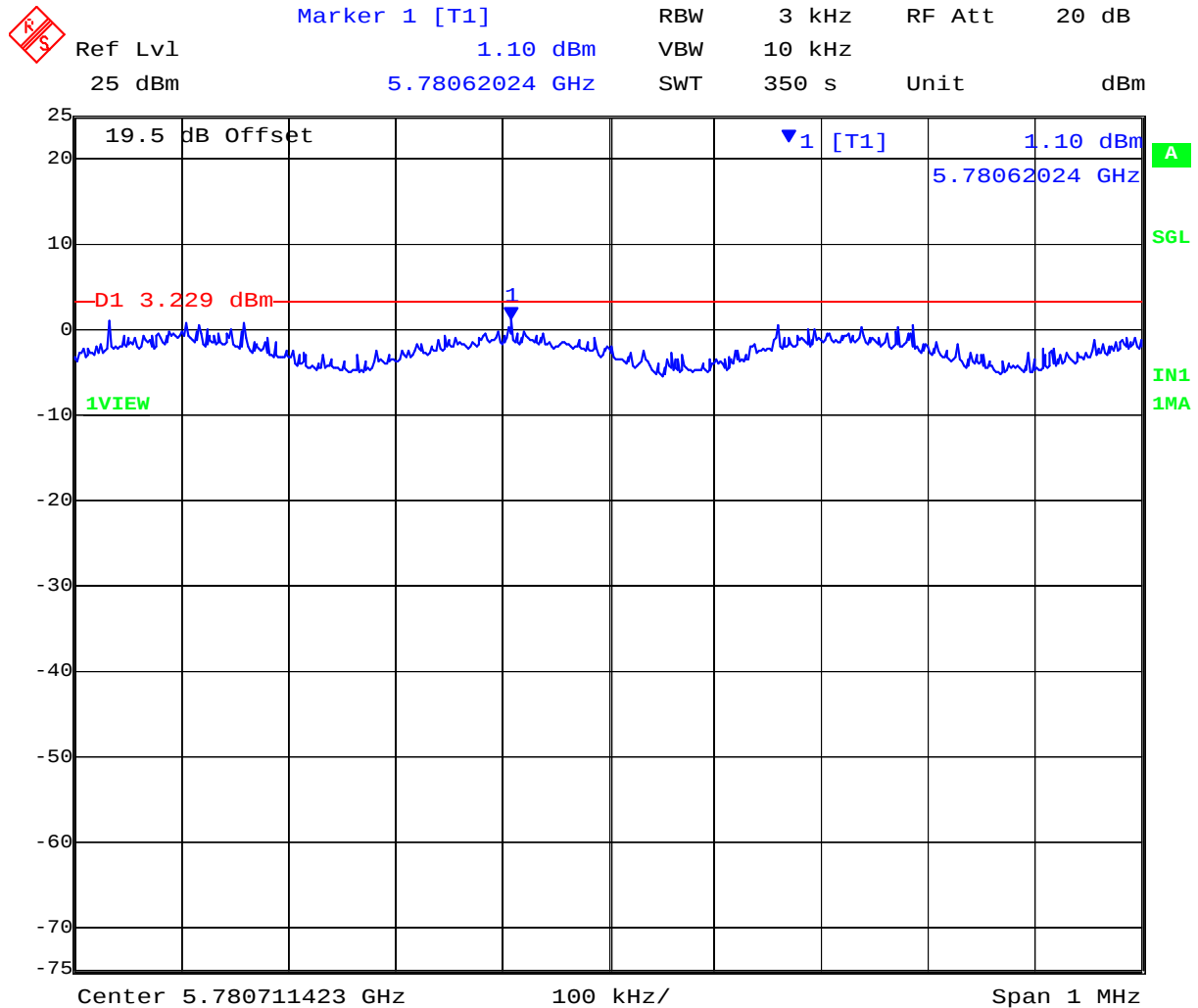
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 204 of 412

PORT C 5,785 MHz 802.11n HT-20 - Peak Power Spectral Density



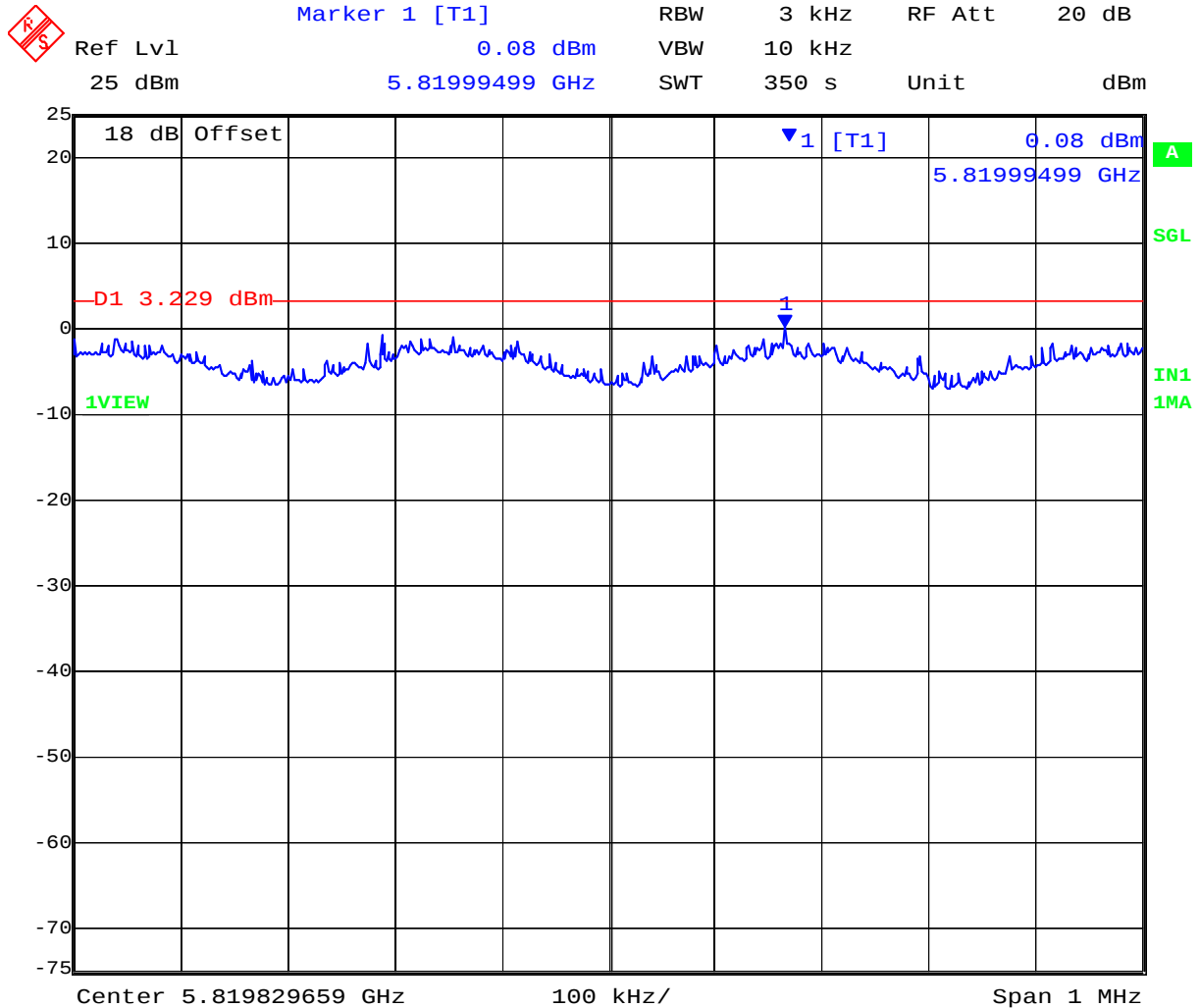
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 205 of 412

PORT A 5,825 MHz 802.11n HT-20 - Peak Power Spectral Density



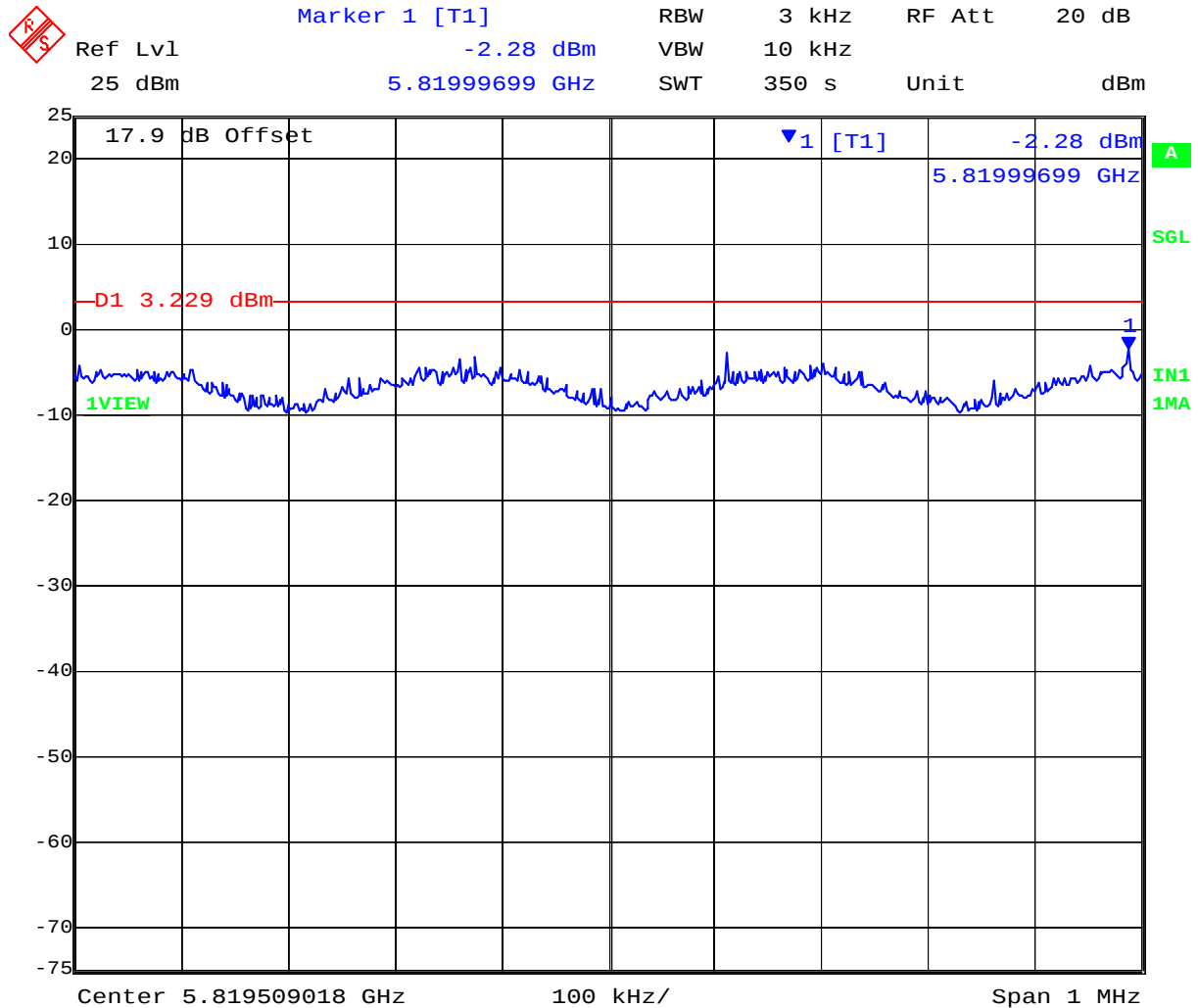
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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 206 of 412

PORT B 5,825 MHz 802.11n HT-20 - Peak Power Spectral Density



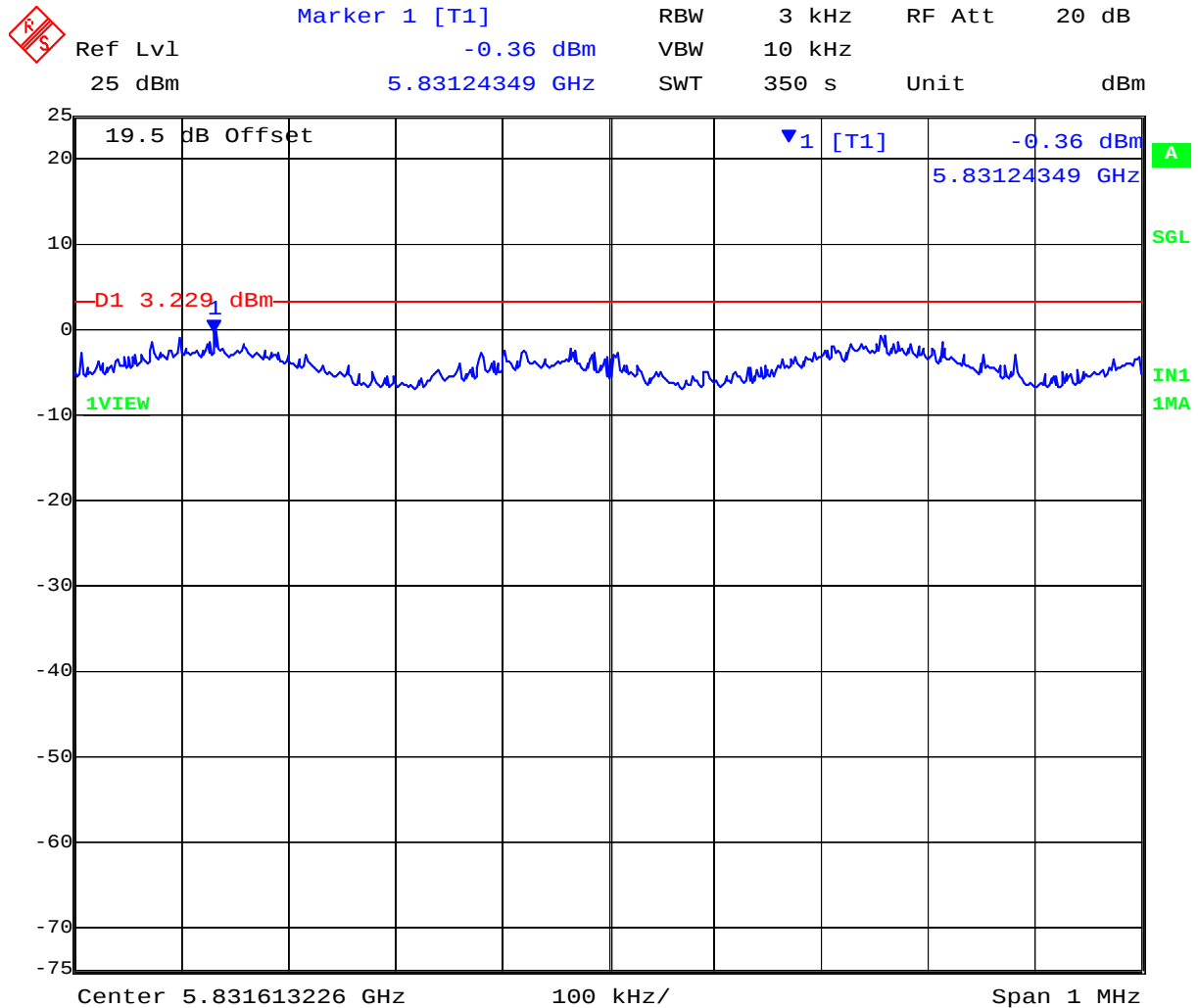
Date: 28.FEB.2012 15:07:39

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 207 of 412

PORT C 5,825 MHz 802.11n HT-20 - Peak Power Spectral Density



Date: 28.FEB.2012 15:14:11

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 208 of 412

TABLE OF RESULTS – 802.11n HT-40

Test Conditions:	15.247 (e)	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:			
Applied Voltage:	48.00 Vdc	Antenna Ports (N):	3		
Notes 1:					
Notes 2:					

Test Frequency	Measured Power Density				Correction factor	Peak Power Spectral Density	Limit	Margin
	RF Port (dBm)							
MHz	a	b	c	d	10Log(N)	dBm	dBm	dB
5755	-5.18	-6.27	-3.99	--	4.77	0.78	3.23	-7.22
5795	-3.46	-4.28	-0.96	--	4.77	3.81	3.23	-4.19

Measurement uncertainty:	± 1.33 dB
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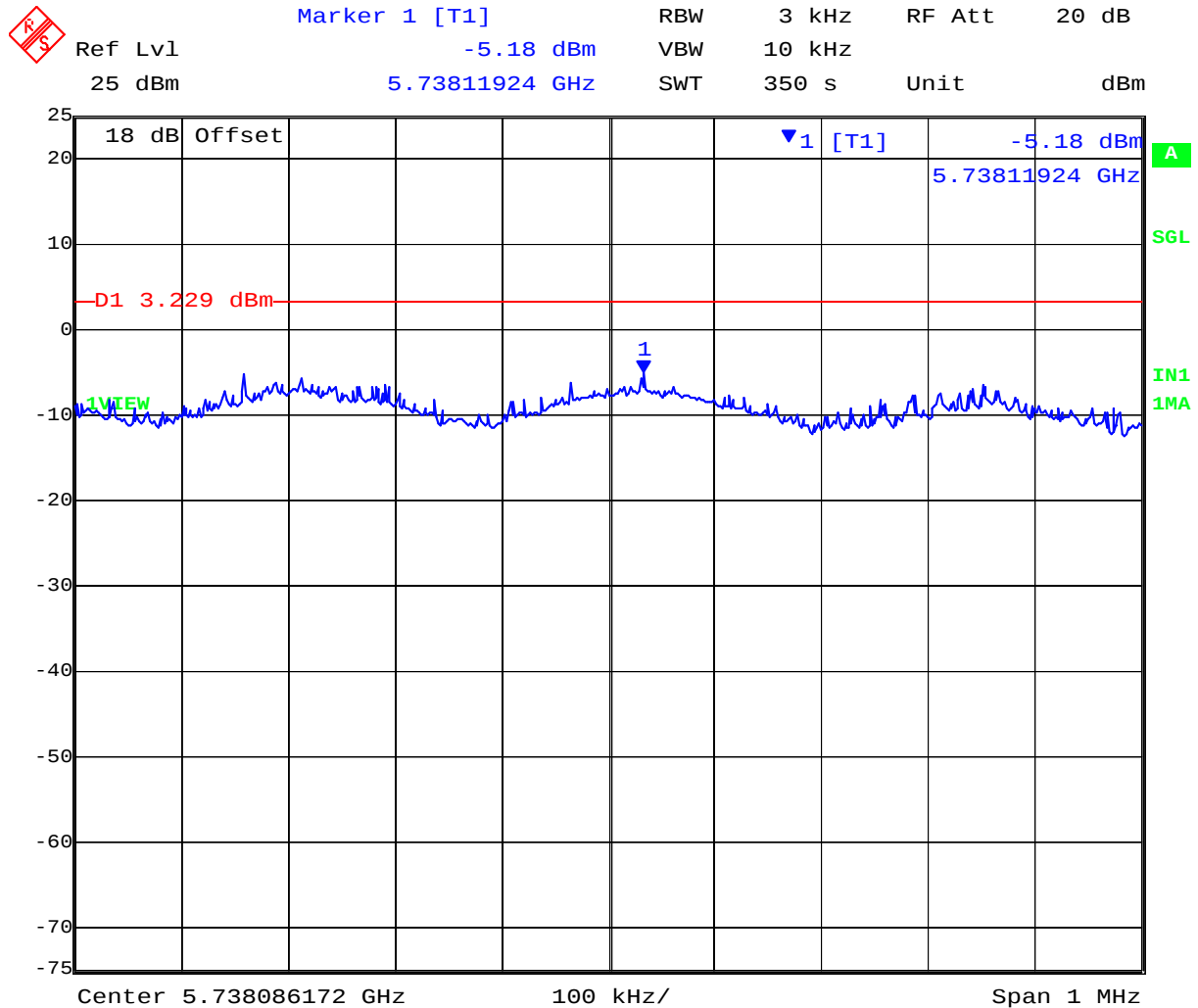
NOTE: above margin is calculated from the highest Power Density returned from Chain A or B or C

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 209 of 412

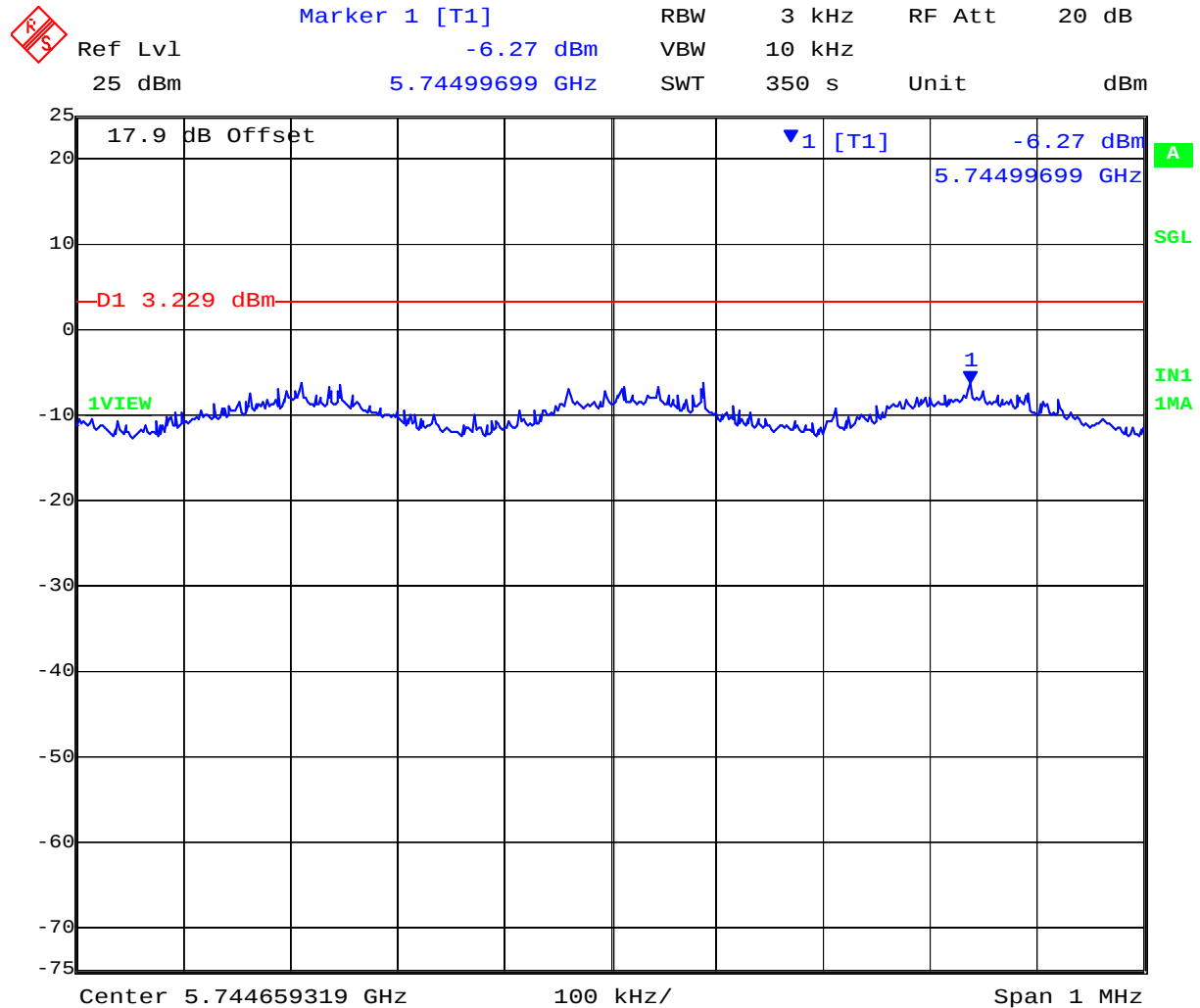
PORT A 5,755 MHz 802.11n HT-40 - Peak Power Spectral Density



Date: 28.FEB.2012 15:56:25

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PORT B 5,755 MHz 802.11n HT-40 - Peak Power Spectral Density



Date: 28.FEB.2012 16:02:59

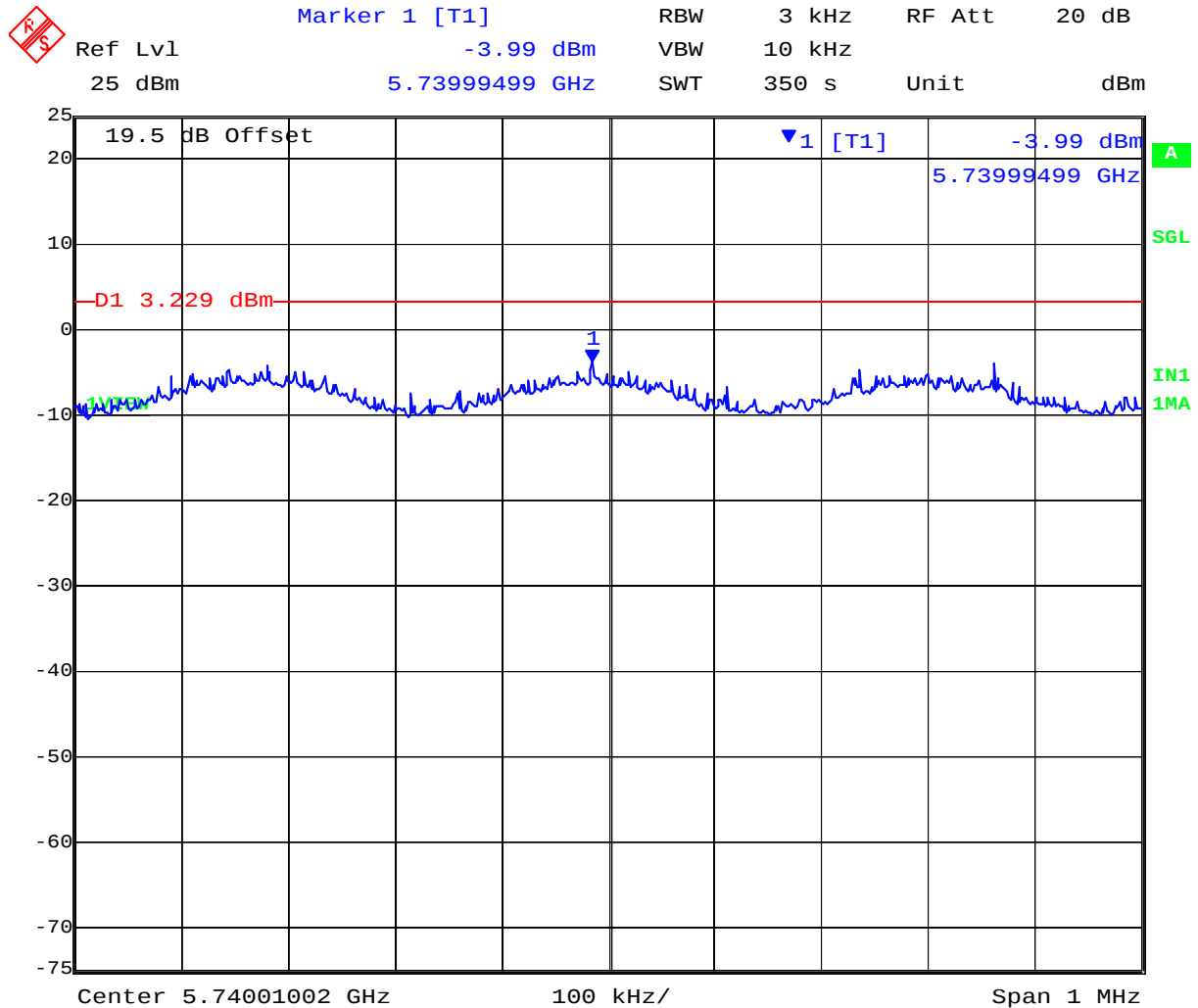
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 211 of 412

PORT C 5,755 MHz 802.11n HT-40 - Peak Power Spectral Density



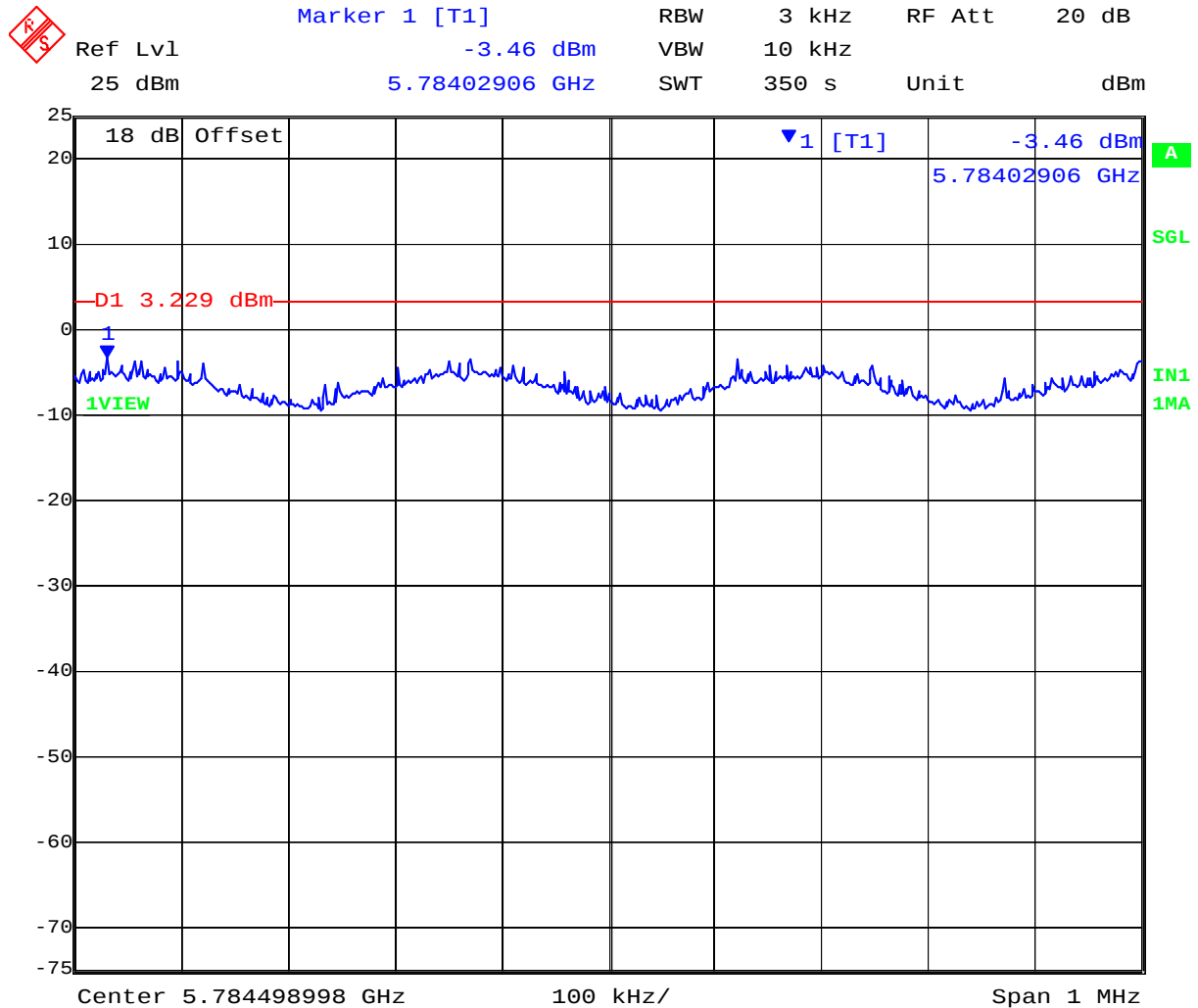
Date: 28.FEB.2012 16:09:29

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 212 of 412

PORT A 5,795 MHz 802.11n HT-40 - Peak Power Spectral Density



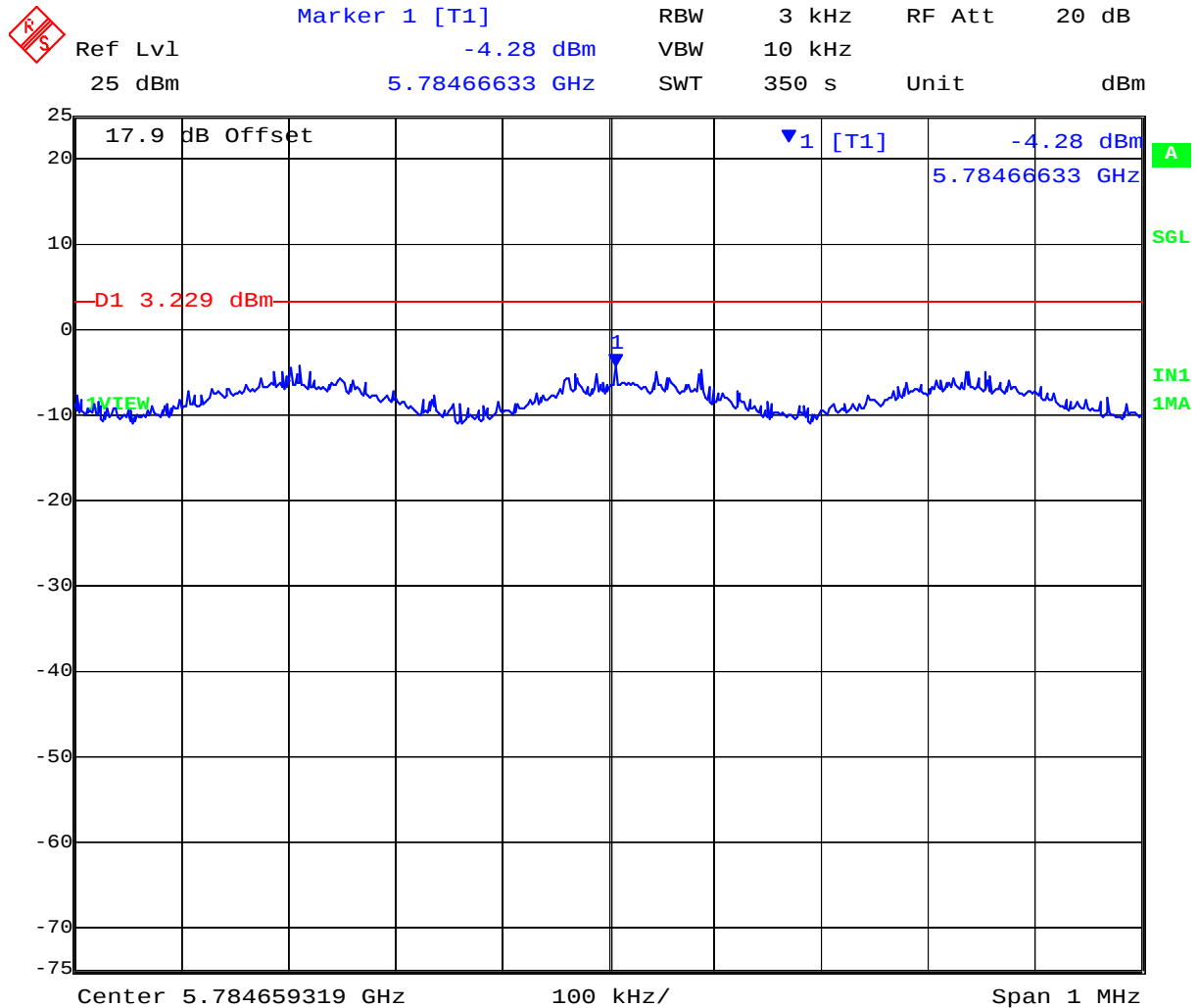
Date: 28.FEB.2012 16:29:53

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 213 of 412

PORT B 5,795 MHz 802.11n HT-40 - Peak Power Spectral Density



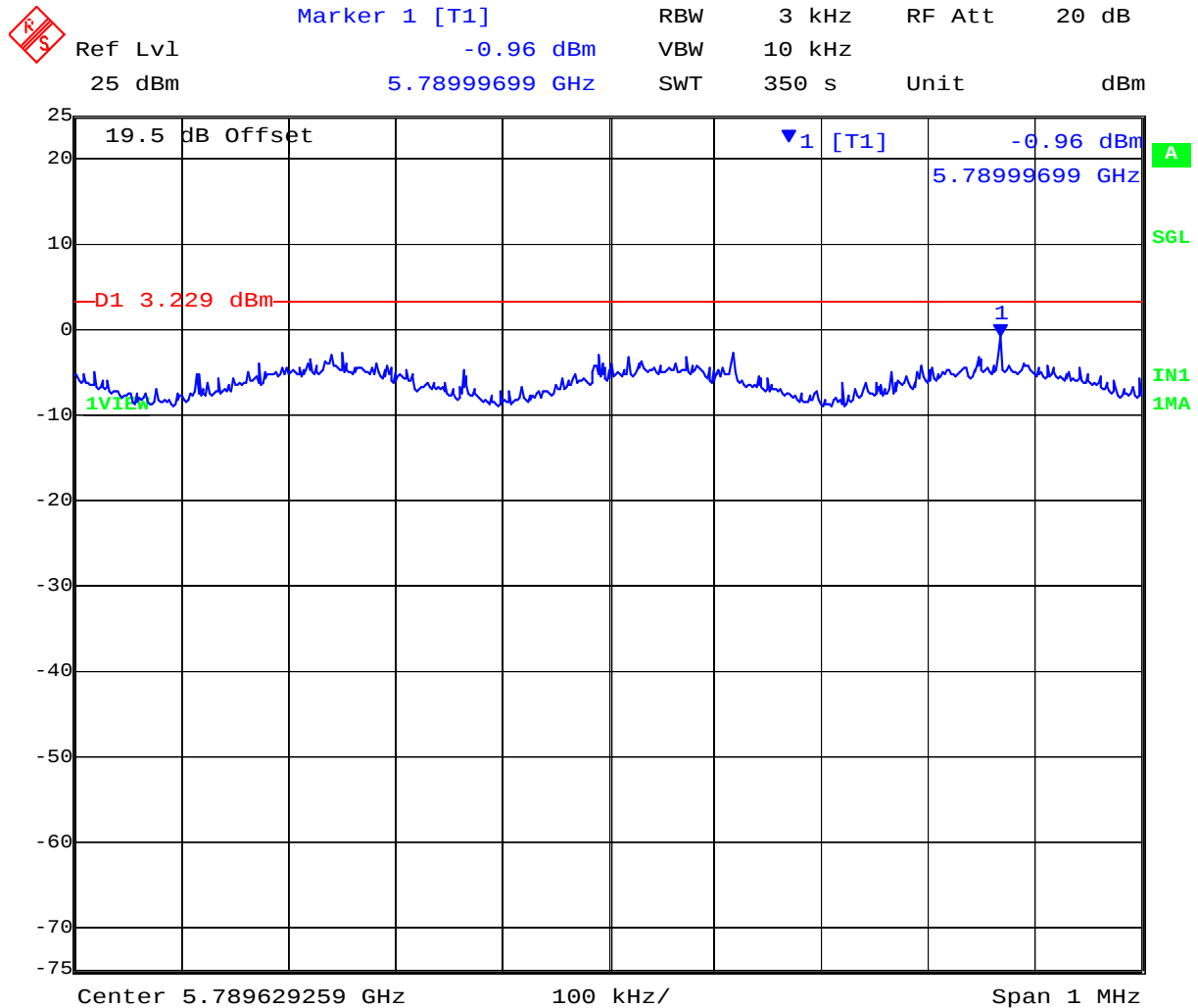
Date: 28.FEB.2012 16:36:29

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 214 of 412

PORT C 5,795 MHz 802.11n HT-40 - Peak Power Spectral Density



Date: 28.FEB.2012 16:43:01

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 215 of 412

Specification

Peak Power Spectral Density Limits

§15.247(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than +8 dBm in any 3 kHz band during any time interval of continuous transmission

RSS-210 §A8.2(2) The transmitter power spectral density (into the antenna) shall not be greater than +8 dBm in any 3 kHz band during any time interval of continuous transmission or over 1.0 second if the transmission exceeds 1.0 second duration.

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

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 216 of 412

5.1.4. Maximum Permissible Exposure

FCC, Part 15 Subpart C §15.247(i)

Industry Canada RSS-Gen §5.5

Calculations for Maximum Permissible Exposure Levels

Power Density = Pd (mW/cm²) = EIRP/(4πd²)

EIRP = P * G

P = Peak output power (mW)

G = Antenna numeric gain (numeric)

d = Separation distance (cm)

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

The Wavion WBSn-2450-O/-S Wireless LAN Access Point has three transmitters in each frequency band. The peak power in the table below is calculated by assuming a worst case scenario where all transmitters are operating simultaneously on the same channel therefore the Σ of all chain power was used to calculate MPE.

Because the EUT belongs to the General Population/Uncontrolled Exposure the limit of power density is 1.0 mW/cm²

Freq. Band (GHz)	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)
2.4 OMNI	7.4	5.5	+26.84	483.1	14.54	20.0*
2.4 SECTOR	12.0	15.8	+26.28	424.6	23.11	23.11
5.8 OMNI	8.5	7.1	+27.99	629.5	18.86	20.0*
5.8 SECTOR	14.0	25.1	+27.48	559.8	33.34	33.34

*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

§15.247(i) Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency levels in excess of the Commission's guidelines.

FCC §1.1310 Limit = 1mW / cm² from 1.310 Table 1

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

Laboratory Measurement Uncertainty for Power Measurements

Measurement uncertainty

±1.33 dB

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5.1.5. Conducted Spurious Emissions

FCC, Part 15 Subpart C §15.247(d); 15.205; 15.209

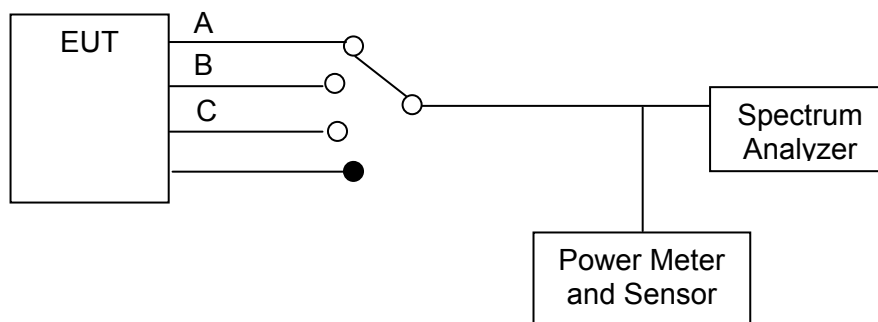
Industry Canada RSS-210 §A8.5, §2.2

Industry Canada RSS-Gen 4.7

Test Procedure

Conducted emissions were measured at a limit of 20 dB below the highest in-band spectral density measured with a spectrum analyzer connected to the antenna terminal. Emissions at the band edge were measured and recorded. Measurements were made while EUT was operating in transmit mode of operation at the appropriate center frequency.

Test Measurement Set up



Band-edge measurement test configuration

Measurement Results of Conducted Spurious Emissions

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

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



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 218 of 412

Conducted Spurious Emission Results

Measurements were performed with the transmitter tuned to the channel closest to the band-edge being measured. All emissions were maximized during measurement. Limits which were derived from the band-edge measurements provided below are drawn on each plot.

TABLE OF RESULTS – 802.11b – Legacy

Test Conditions:	15.247 (a)(2)	Rel. Humidity (%):	35	to	42
Variant:	802.11b	Ambient Temp. (°C):	19	to	22
TPC:	HIGH	Pressure (mBars):	998	to	1003
Modulation:	ON	Duty Cycle (%):	100		
Beam Forming Gain	N/A dB	Antenna Gain:	N/A	dBi	
Applied Voltage:	48.00 Vdc	Antenna Ports (N):			
Notes 1:					
Notes 2:					

Conducted Spurious Measurement

Test Freq.	Start Freq.	Stop Freq.	Port A		Port B		Port C		Port D	
MHz	MHz	MHz	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm
2412.000	30.00	26000.00	-42.15	-7.50	-42.49	-8.38	-42.31	-7.92		
2437.000	30.00	26000.00	-43.13	-6.84	-42.55	-8.87	-42.69	-8.85		
2462.000	30.00	26000.00	-43.06	-8.03	-43.35	-7.83	-42.67	-7.01		

SE: Maximum spurious emission found

Band-edge Measurement

Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
2412.000	2400.00	-35.99	-6.99	-33.97	-7.39	-36.28	-7.29		
2462.000	2483.50	-49.30	-6.75	-49.27	-6.67	-48.61	-6.07		

BE: Maximum Band edge emission found

Measurement uncertainty:	±2.81 dB
---------------------------------	----------

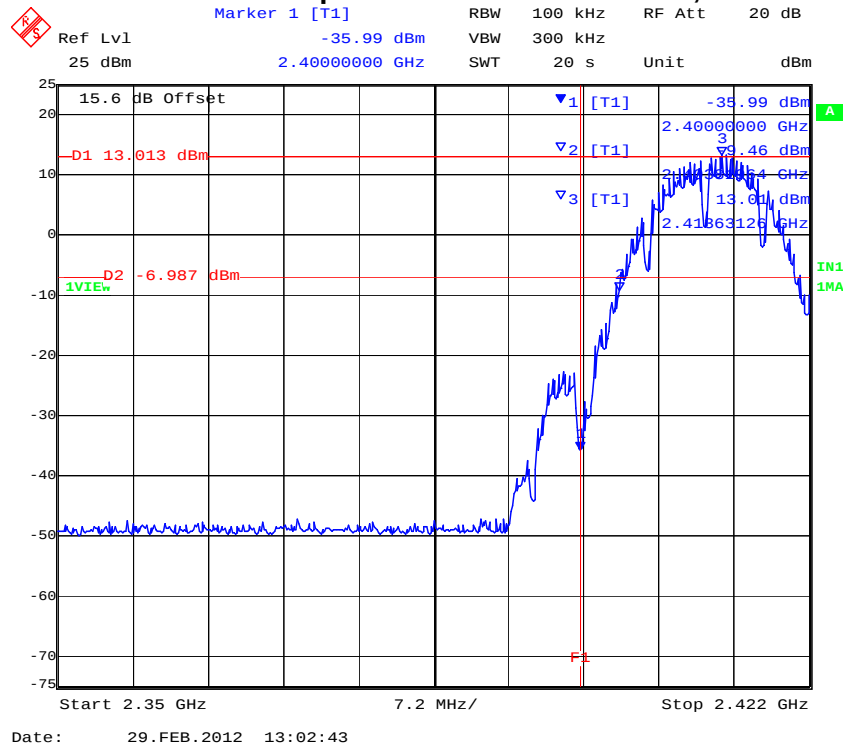
Note: Limit is based on 20dB down from fundamental emissions

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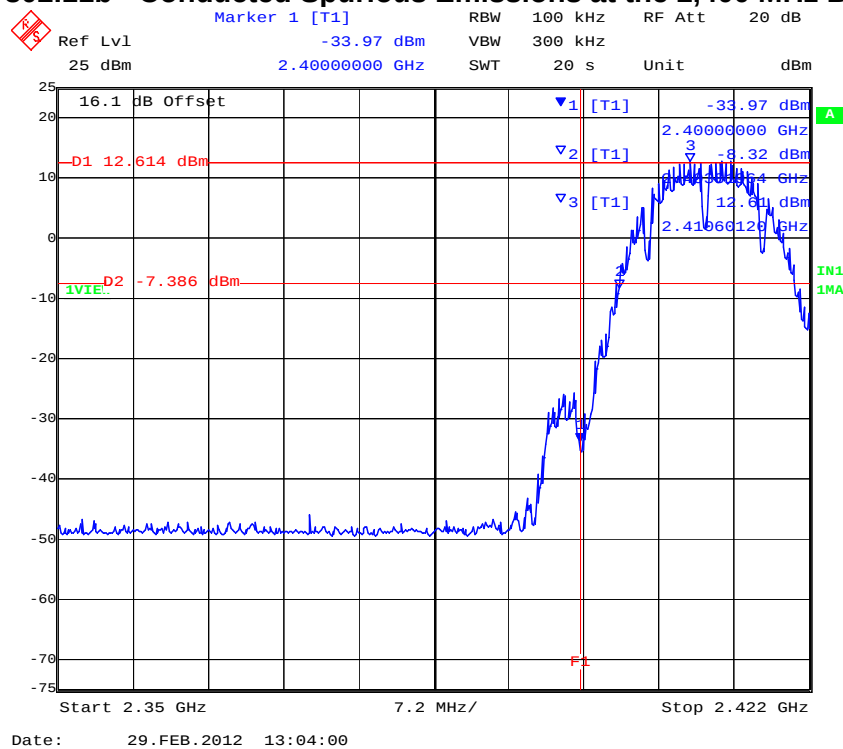


Title: Wavion WBSn-2450-O/S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 219 of 412

PORT A 802.11b - Conducted Spurious Emissions at the 2,400 MHz Band Edge



PORT B 802.11b - Conducted Spurious Emissions at the 2,400 MHz Band Edge



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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 220 of 412

PORT C 802.11b - Conducted Spurious Emissions at the 2,400 MHz Band Edge

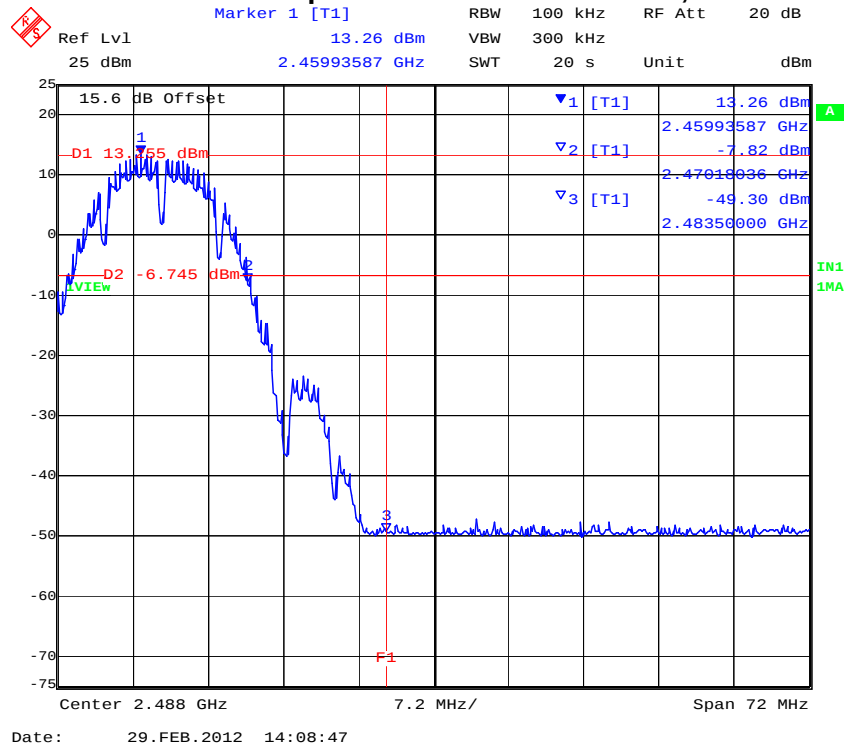


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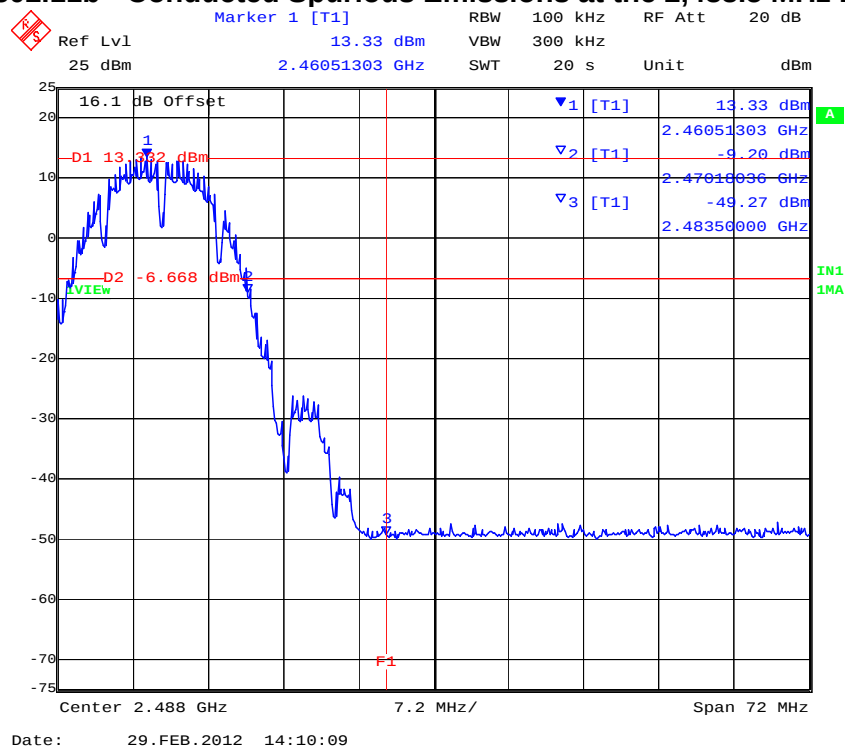


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 221 of 412

PORT A 802.11b - Conducted Spurious Emissions at the 2,483.5 MHz Band Edge



PORT B 802.11b - Conducted Spurious Emissions at the 2,483.5 MHz Band Edge

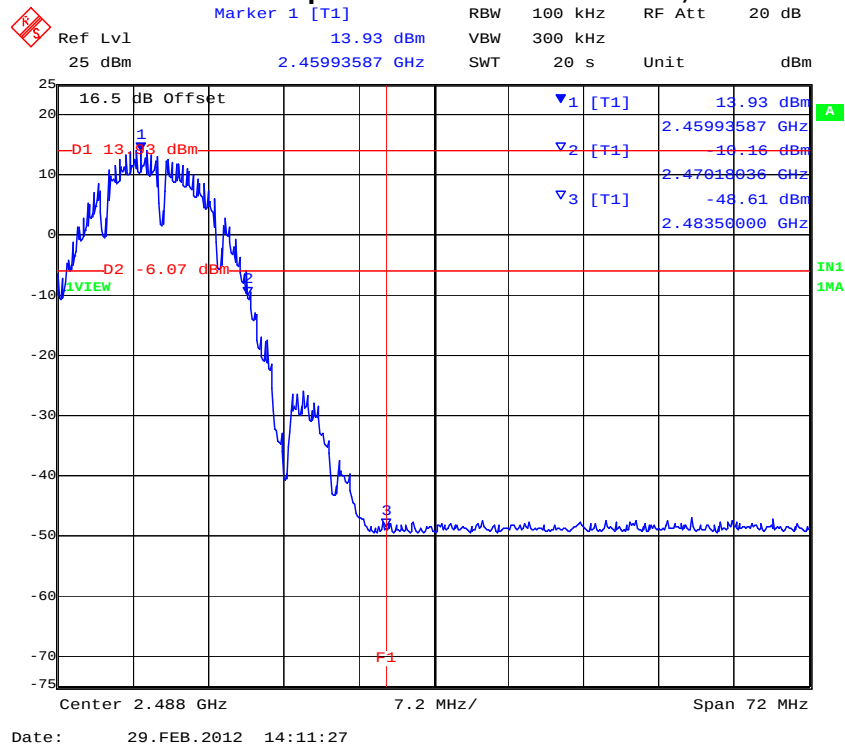


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 222 of 412

PORT C 802.11b - Conducted Spurious Emissions at the 2,483.5 MHz Band Edge

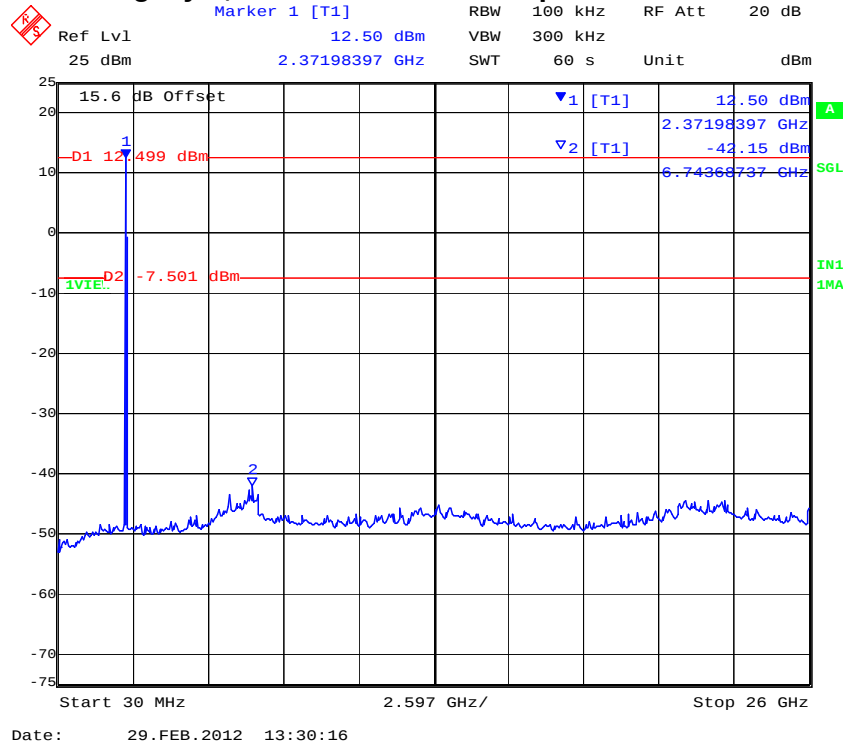


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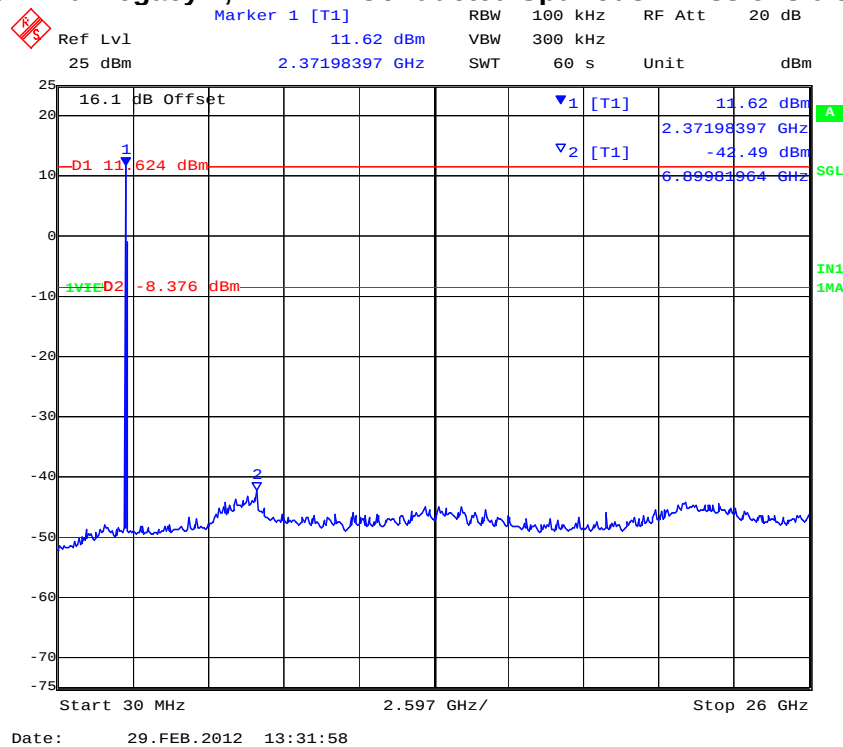


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 223 of 412

PORT A 802.11b-Legacy 2,412 MHz Conducted Spurious Emissions 0.30 to 26 GHz



PORT B 802.11b-Legacy 2,412 MHz Conducted Spurious Emissions 0.30 to 26 GHz

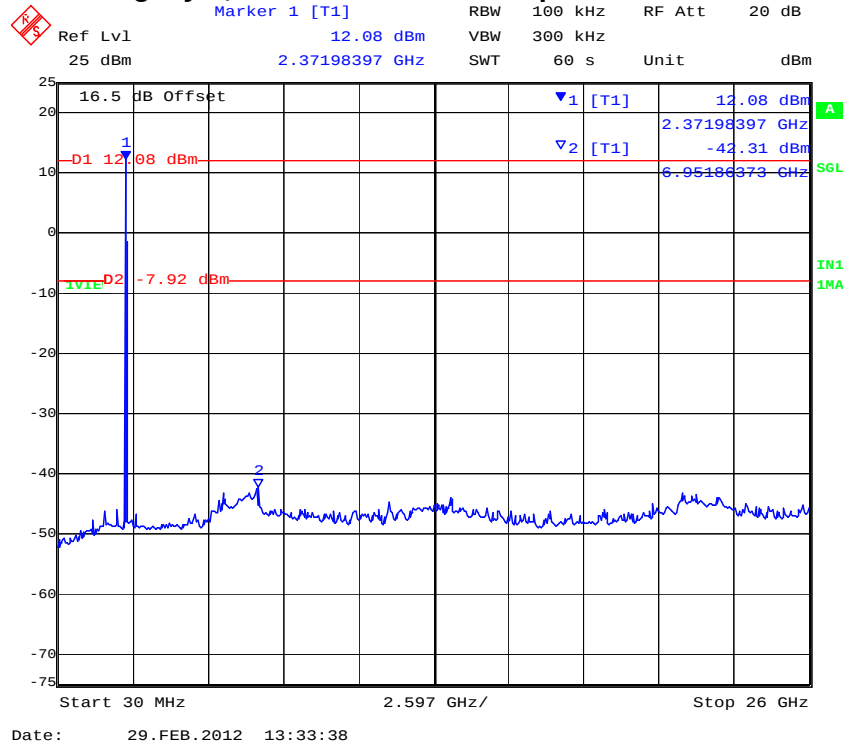


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 224 of 412

PORT C 802.11b-Legacy 2,412 MHz Conducted Spurious Emissions 0.30 to 26 GHz

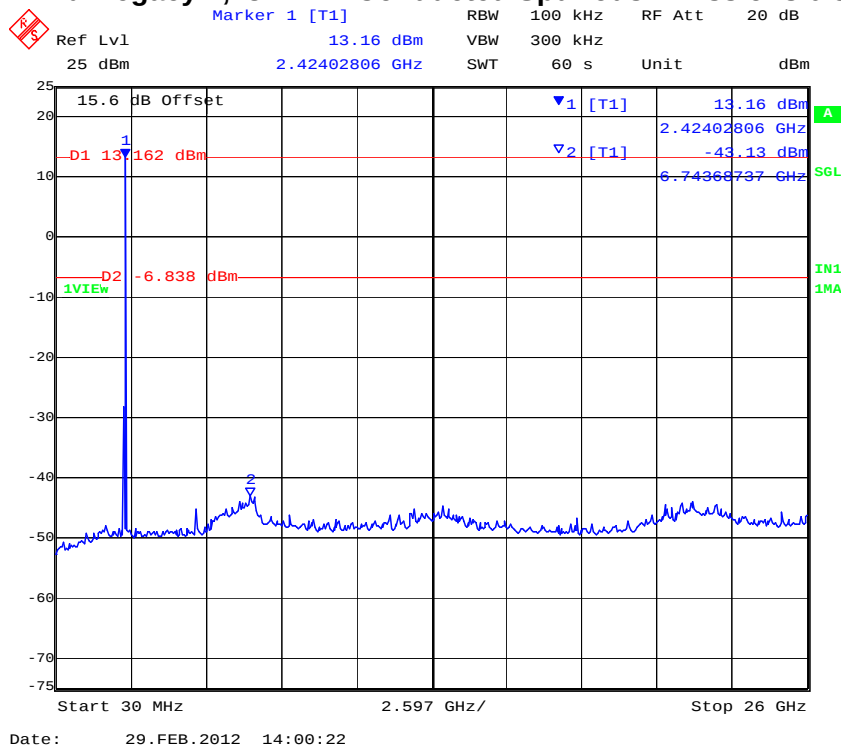


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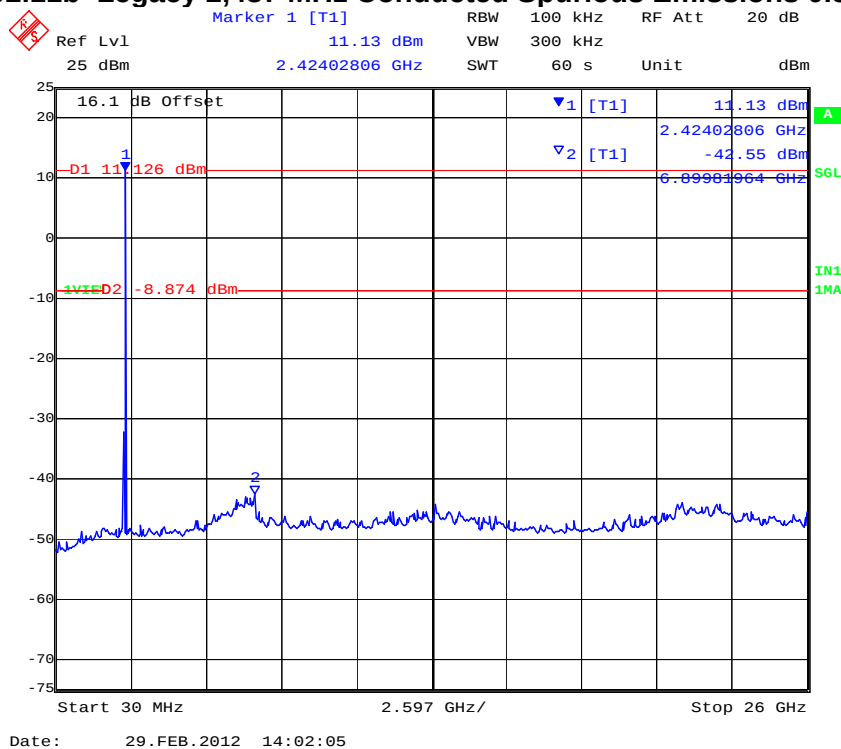


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 225 of 412

PORT A 802.11b-Legacy 2,437 MHz Conducted Spurious Emissions 0.30 to 26 GHz



PORT B 802.11b-Legacy 2,437 MHz Conducted Spurious Emissions 0.30 to 26 GHz

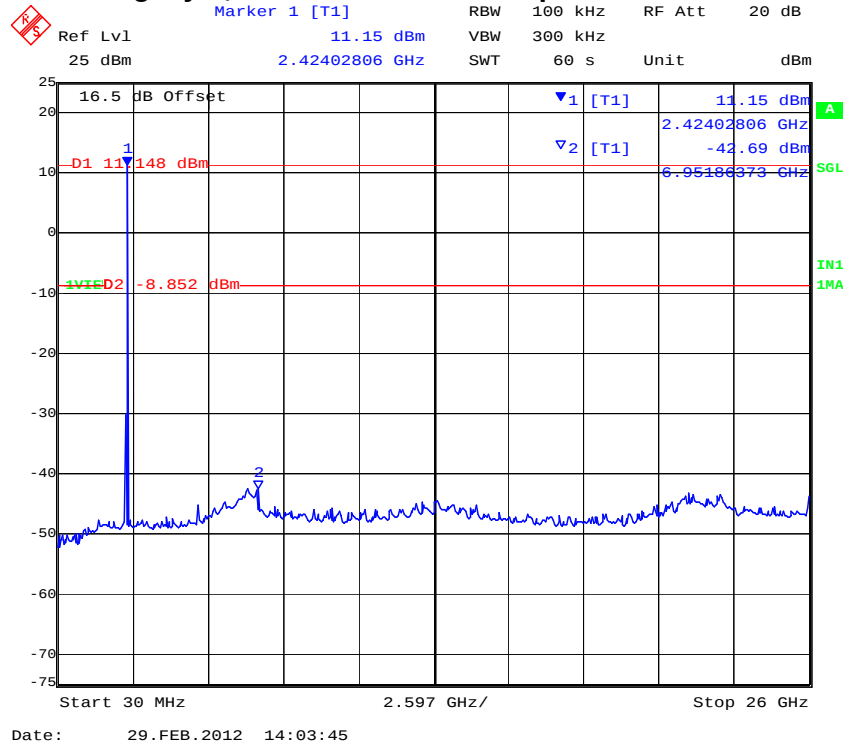


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 226 of 412

PORT C 802.11b-Legacy 2,437 MHz Conducted Spurious Emissions 0.30 to 26 GHz

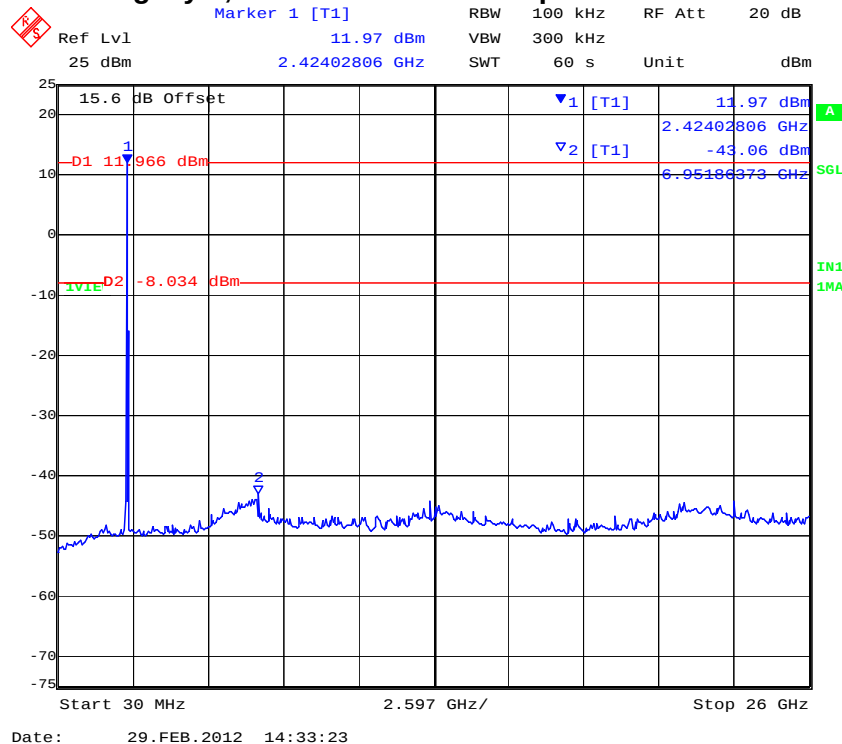


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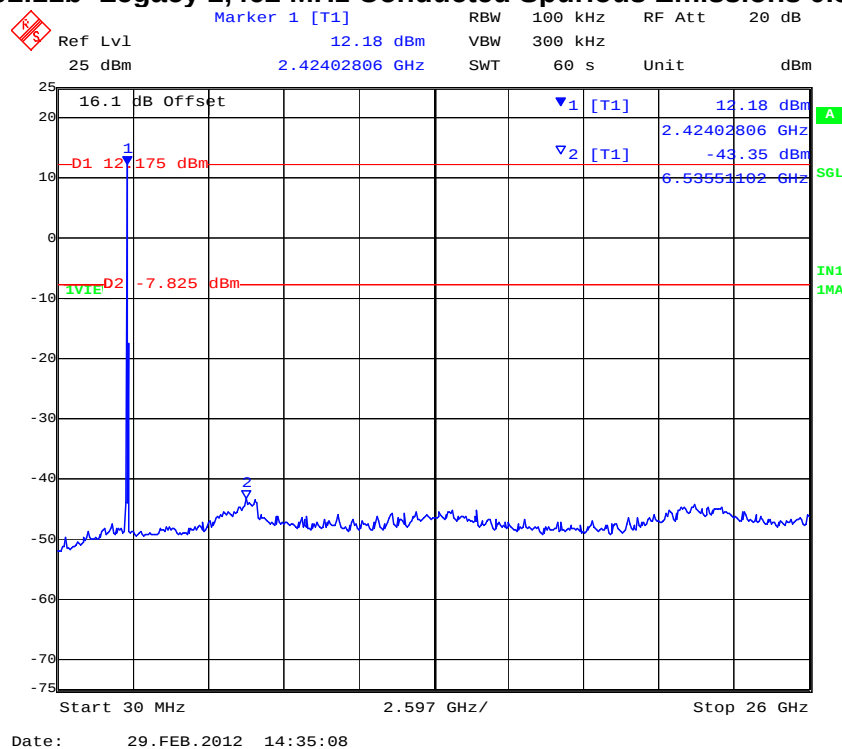


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 227 of 412

PORT A 802.11b-Legacy 2,462 MHz Conducted Spurious Emissions 0.30 to 26 GHz



PORT B 802.11b-Legacy 2,462 MHz Conducted Spurious Emissions 0.30 to 26 GHz

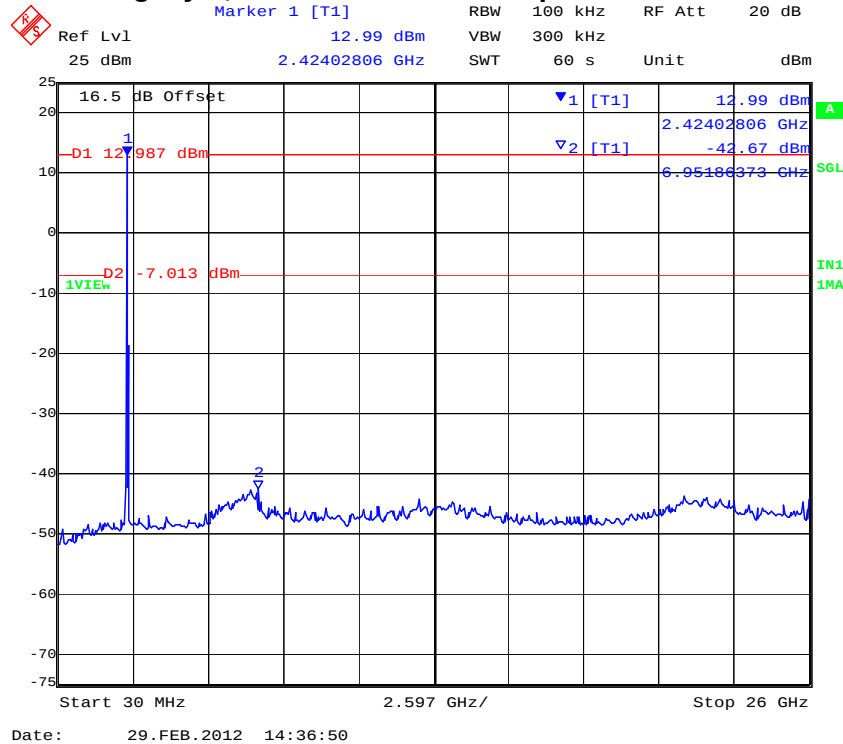


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 228 of 412

PORT C 802.11b-Legacy 2,462 MHz Conducted Spurious Emissions 0.30 to 26 GHz



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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 229 of 412

Conducted Spurious Emission Results

TABLE OF RESULTS – 802.11g Legacy

Test Conditions:	15.247 (a)(2)	Rel. Humidity (%):	35	to	42
Variant:	802.11b	Ambient Temp. (°C):	19	to	22
TPC:	HIGH	Pressure (mBars):	998	to	1003
Modulation:	ON	Duty Cycle (%):	100		
Beam Forming Gain	N/A dB	Antenna Gain:	N/A		dBi
Applied Voltage:	48.00 Vdc	Antenna Ports (N):			
Notes 1:					
Notes 2:					

Conducted Spurious Measurement

Test Freq.	Start Freq.	Stop Freq.	Port A		Port B		Port C		Port D	
MHz	MHz	MHz	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm
2412.000	30.00	26000.00	-43.00	-11.26	-43.51	-11.76	-42.73	-11.32		
2437.000	30.00	26000.00	-43.35	-11.51	-42.93	-12.45	-42.43	-11.55		
2462.000	30.00	26000.00	-43.21	-11.27	-42.72	-10.82	-42.31	-11.21		

SE: Maximum spurious emission found

Band-edge Measurement

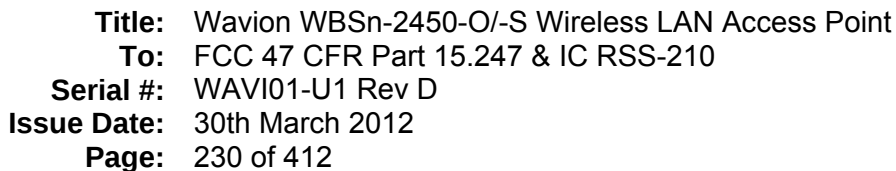
Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
2412.000	2400.00	-12.05	-9.40	-13.47	-10.36	-11.28	-10.02		
2462.000	2483.50	-44.24	-10.46	-47.69	-9.37	-44.91	-8.92		

BE: Maximum Band edge emission found

Measurement uncertainty:	±2.81 dB
---------------------------------	----------

Note: Limit is based on 20dB down from fundamental emissions

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Ref Lvl 25 dBm

Marker 1 [T1] -12.05 dBm

RBW 100 kHz

VBW 300 kHz

SWT 20 s

RF Att 20 dB

Unit dBm

15.6 dB Offset

D1 10.599 dBm

D2 -9.401 dBm

Marker 2 [T1] -11.62 dBm

Marker 3 [T1] -10.60 dBm

2.4000000 GHz

2.41767134 GHz

Start 2.35 GHz

7.2 MHz/

Stop 2.422 GHz

Date: 29.FEB.2012 11:20:20

The screenshot displays a Keysight Spectrum Analyzer interface. At the top, a red 'K' logo is visible. The main display area shows a blue signal trace on a grid. The y-axis represents power in dBm, ranging from -75 to 25. The x-axis represents frequency in GHz, with a span of 7.2 MHz centered around 2.4 GHz. A red vertical line marks the center frequency at 2.4 GHz. Three markers are placed on the trace: Marker 1 (T1) at -13.47 dBm, Marker 2 (T1) at -11.22 dBm, and Marker 3 (T1) at -9.64 dBm. A red horizontal line is drawn at -10.359 dBm. The signal trace shows a rising slope between 2.35 GHz and 2.422 GHz. The bottom status bar indicates the start frequency is 2.35 GHz, the stop frequency is 2.422 GHz, and the date is 29.FEB.2012.

Marker	Frequency (GHz)	Power (dBm)
1 [T1]	2.40000000	-13.47
2 [T1]	2.40000000	-11.22
3 [T1]	2.41637275	-9.64

Start 2.35 GHz 7.2 MHz/ Stop 2.422 GHz

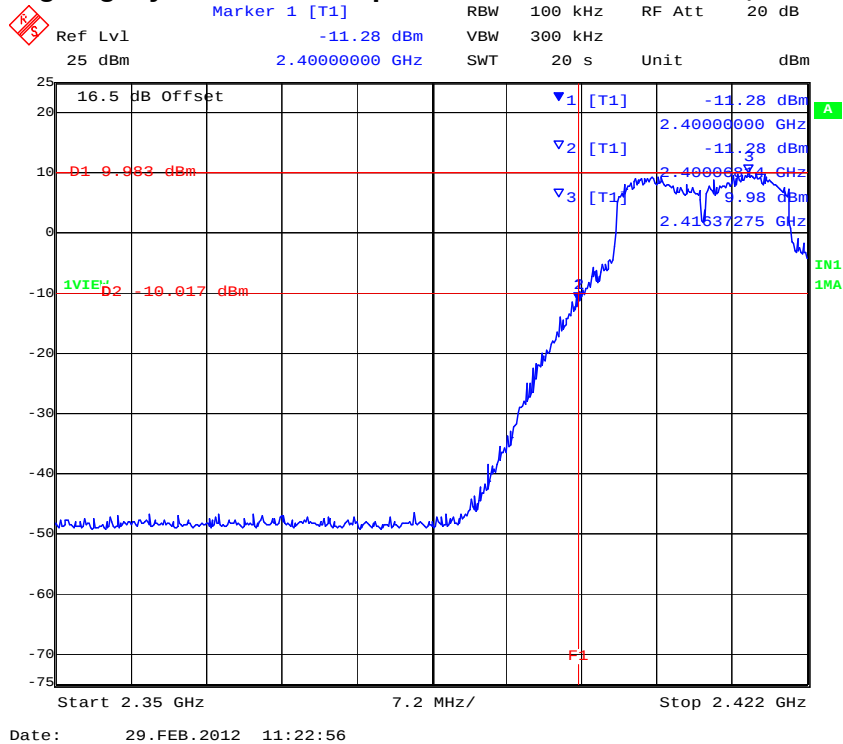
Date: 29.FEB.2012 11:21:40

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



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 231 of 412

PORT C 802.11g Legacy - Conducted Spurious Emissions at the 2,400 MHz Band Edge

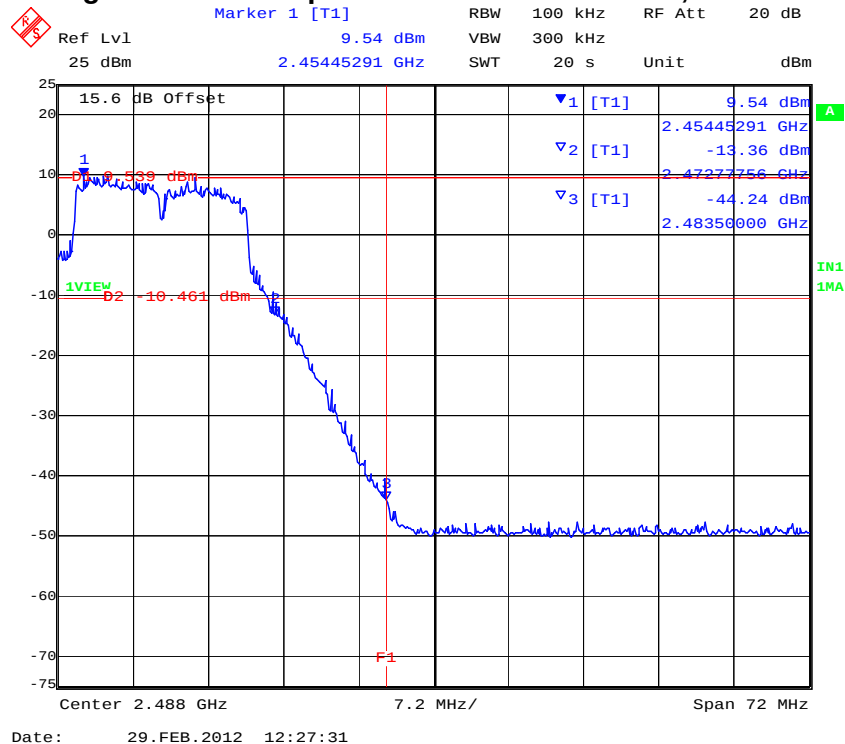


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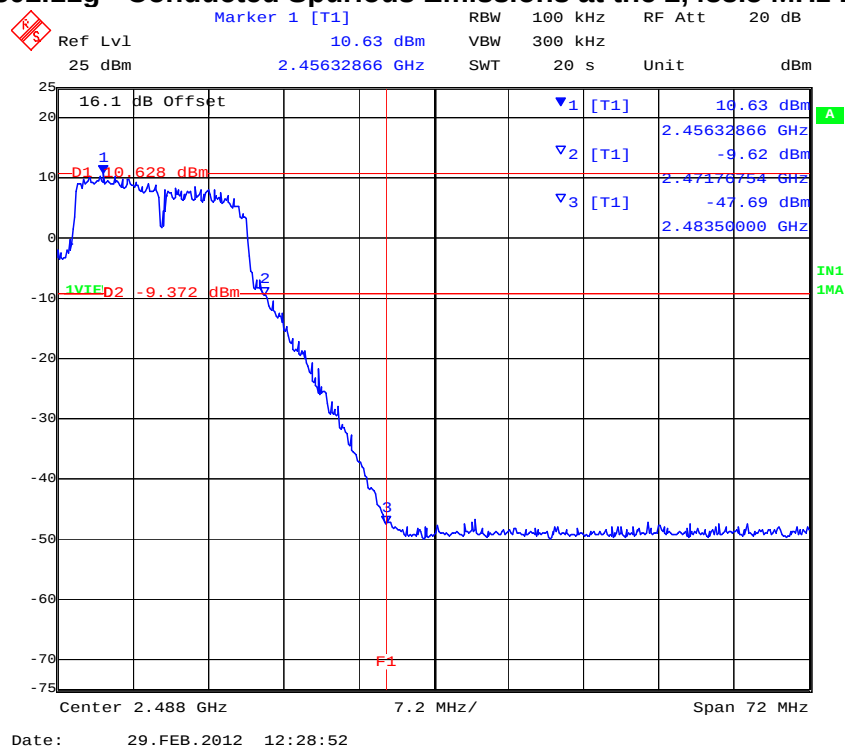


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 232 of 412

PORT A 802.11g - Conducted Spurious Emissions at the 2,483.5 MHz Band Edge



PORT B 802.11g - Conducted Spurious Emissions at the 2,483.5 MHz Band Edge

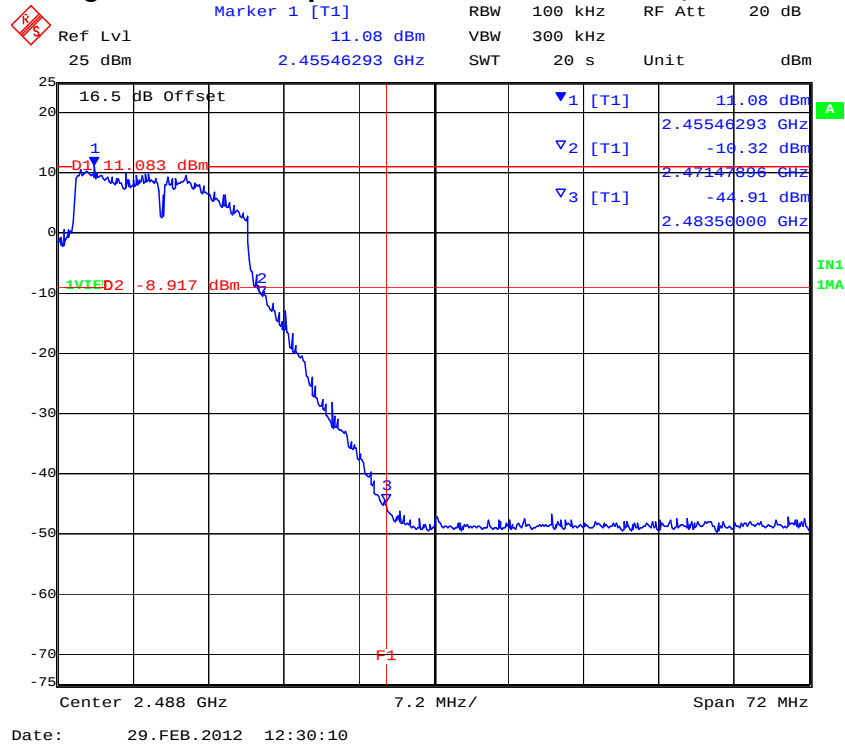


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 233 of 412

PORT C 802.11g - Conducted Spurious Emissions at the 2,483.5 MHz Band Edge

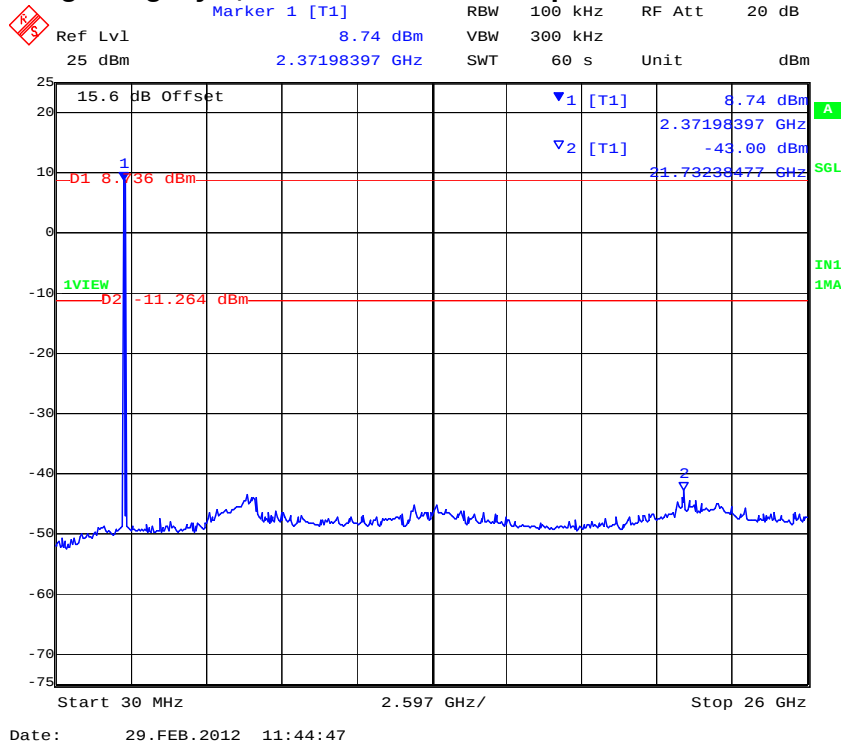


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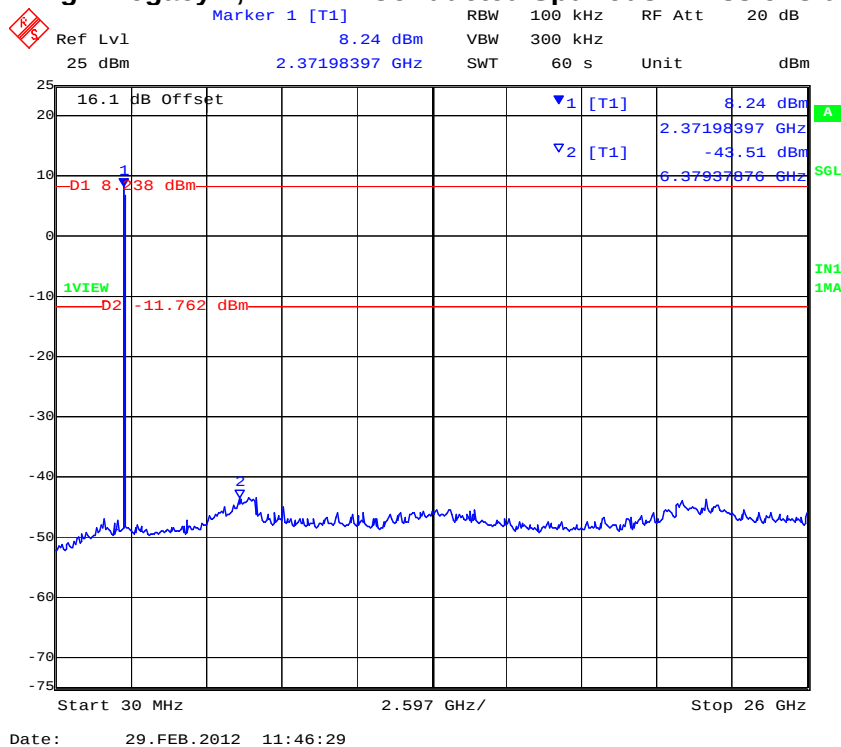


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 234 of 412

PORT A 802.11g – Legacy 2,412 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11g – Legacy 2,412 MHz Conducted Spurious Emissions 0.03 – 26 GHz

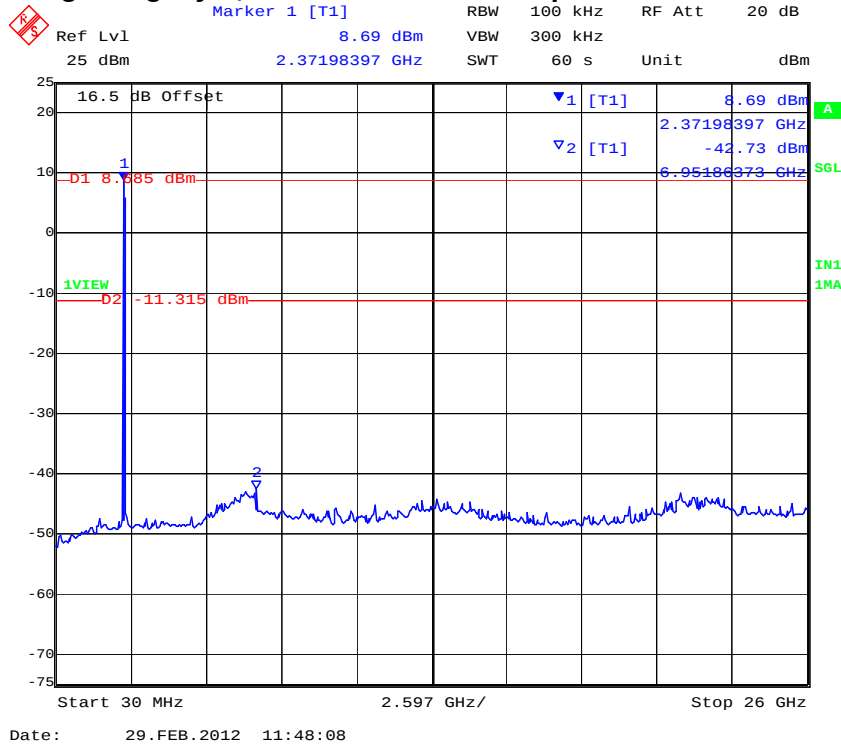


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 235 of 412

PORT C 802.11g – Legacy 2,412 MHz Conducted Spurious Emissions 0.03 – 26 GHz

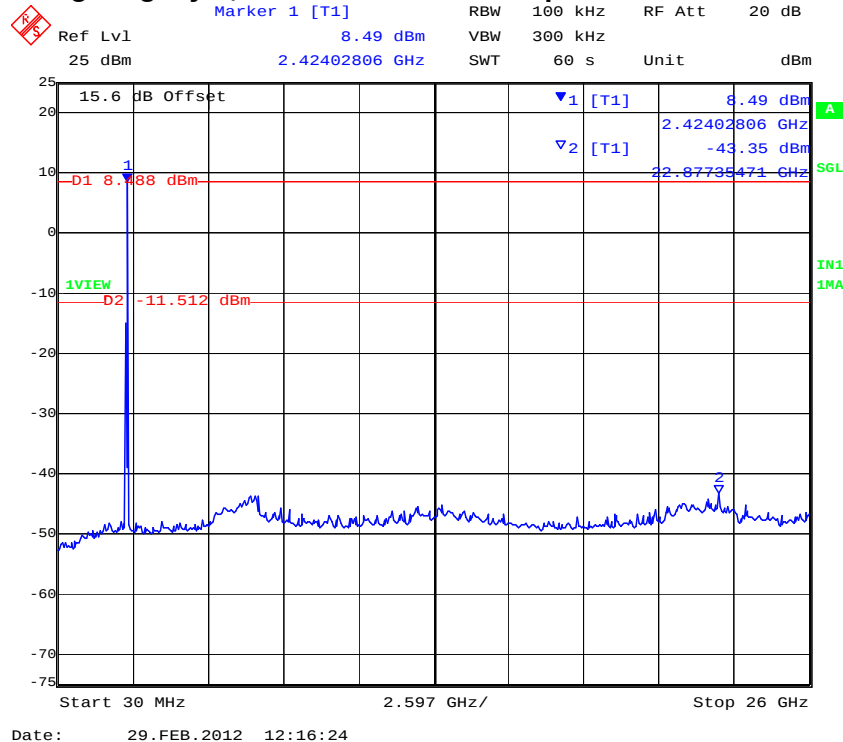


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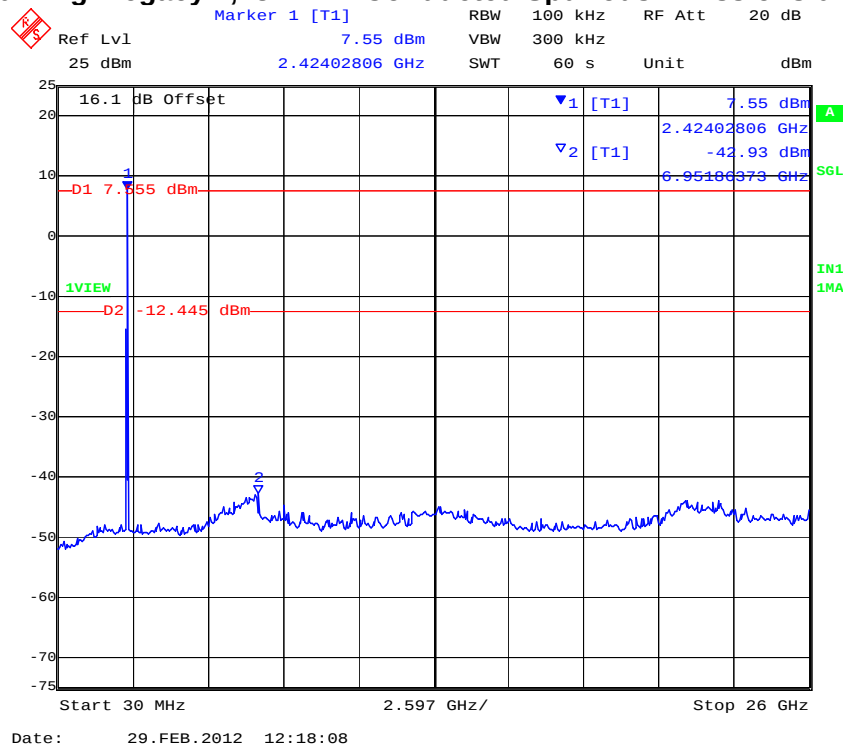


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 236 of 412

PORT A 802.11g-Legacy 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11g-Legacy 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz

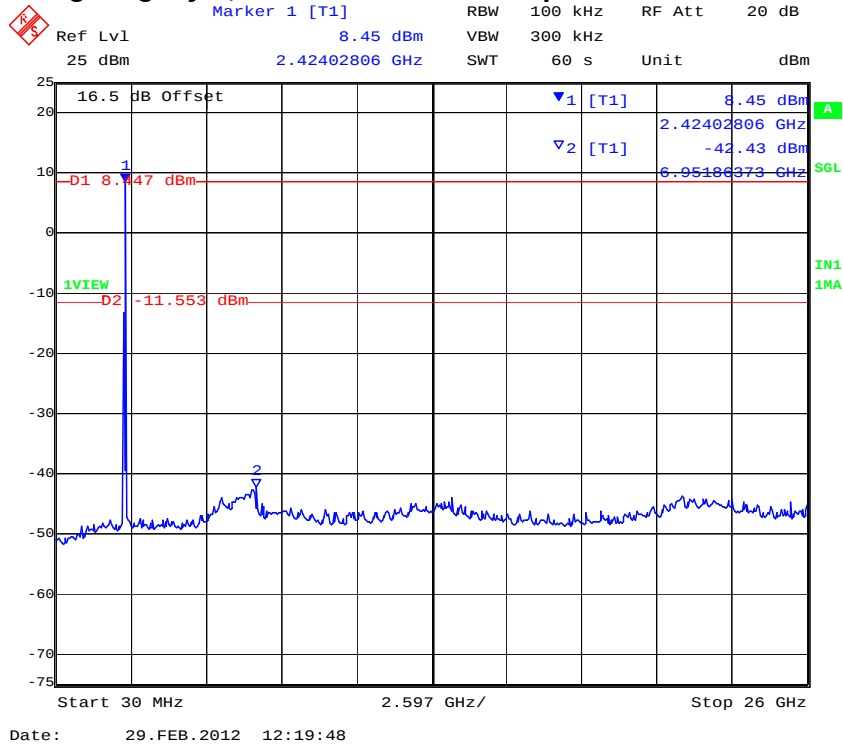


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 237 of 412

PORT C 802.11g-Legacy 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz

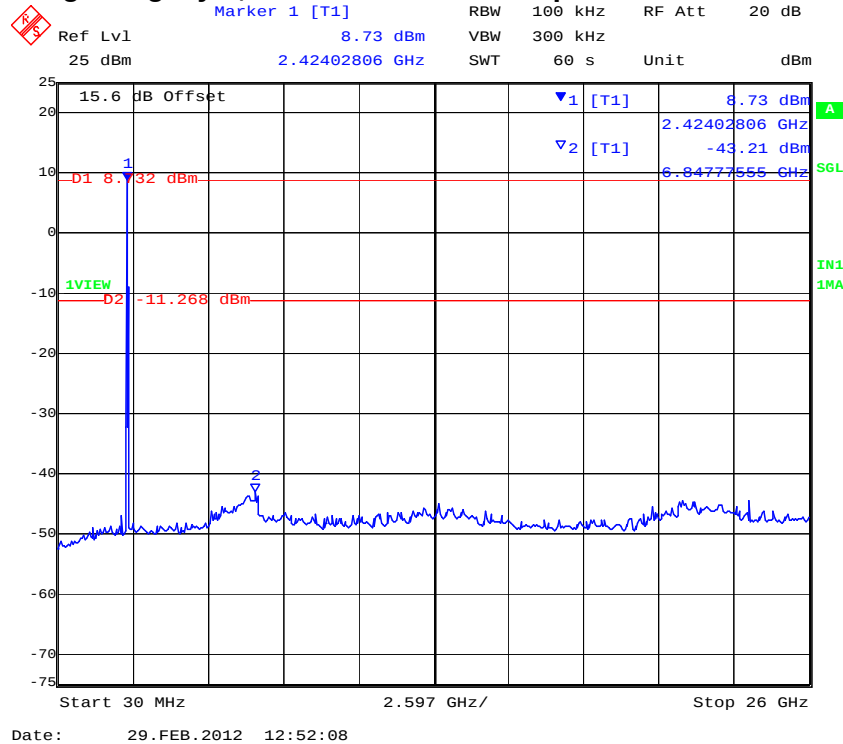


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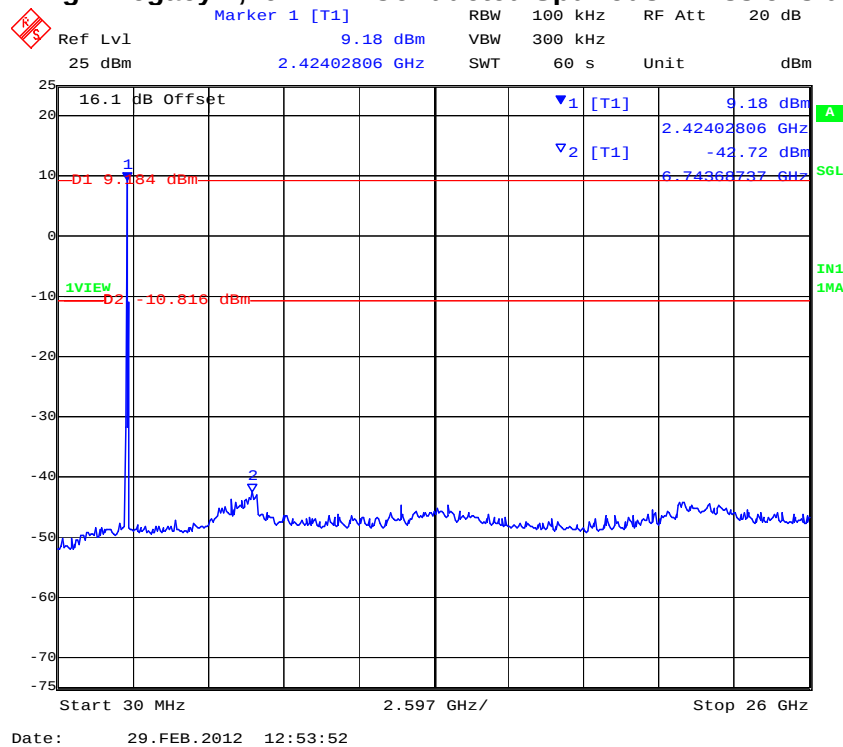


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 238 of 412

PORT A 802.11g – Legacy 2,462 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11g – Legacy 2,462 MHz Conducted Spurious Emissions 0.03 – 26 GHz

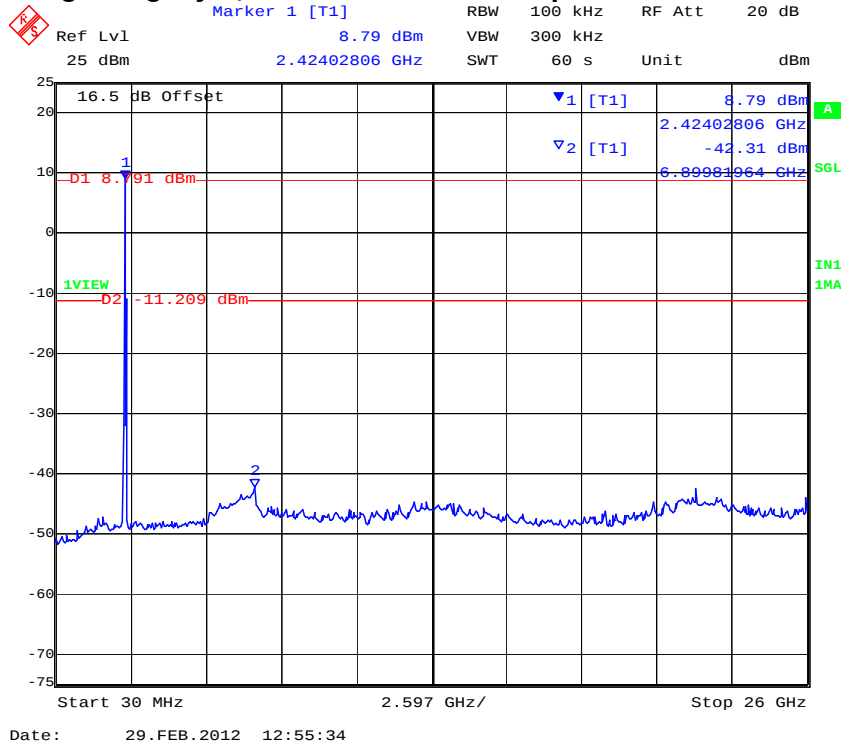


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 239 of 412

PORT C 802.11g – Legacy 2,462 MHz Conducted Spurious Emissions 0.03 – 26 GHz



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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 240 of 412

Conducted Spurious Emission Results

TABLE OF RESULTS – 802.11n HT-20

Test Conditions:	15.247 (a)(2)	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	N/A dB	Antenna Gain:	N/A		dBi
Applied Voltage:	48.00 Vdc	Antenna Ports (N):			
Notes 1:					
Notes 2:					

Conducted Spurious Measurement

Test Freq.	Start Freq.	Stop Freq.	Port A		Port B		Port C		Port D	
MHz	MHz	MHz	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm
2412.000	30.00	26000.00	-43.45	-11.44	-42.47	-11.84	-42.83	-11.24		
2437.000	30.00	26000.00	-43.83	-12.38	-42.50	-12.54	-42.68	-11.84		
2462.000	30.00	26000.00	-43.35	-12.26	-43.00	-11.47	-42.82	-12.25		

SE: Maximum spurious emission found

Band-edge Measurement

Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
2412.000	2400.00	-13.93	-10.69	-13.60	-10.63	-10.85	-10.83		
2462.000	2483.50	-44.15	-10.14	-45.74	-9.40	-44.19	-10.33		

BE: Maximum Band edge emission found

Measurement uncertainty:	±2.81 dB
---------------------------------	----------

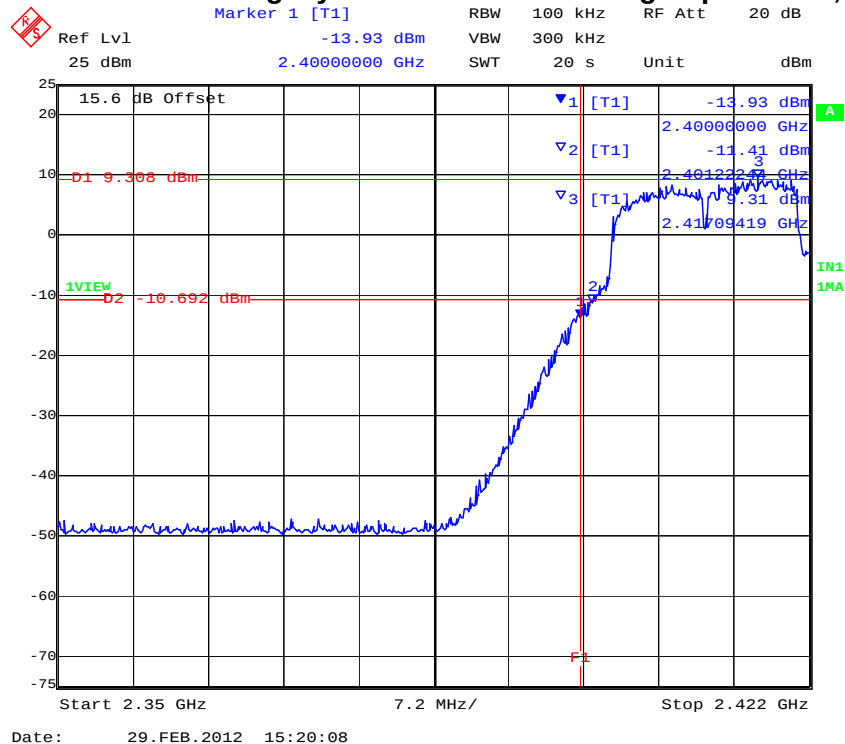
Note: Limit is based on 20dB down from fundamental emissions

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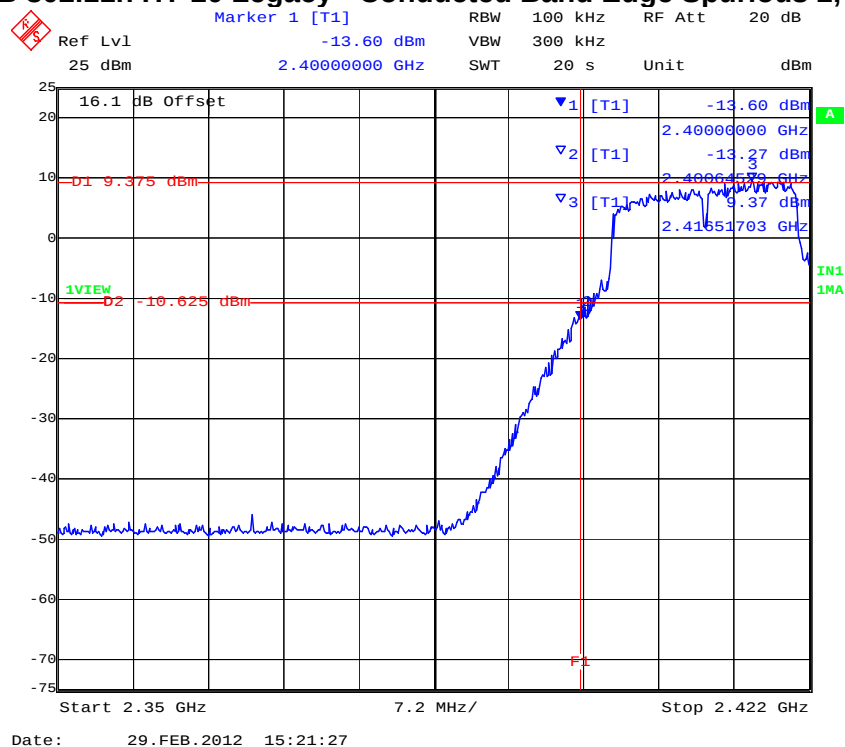


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 241 of 412

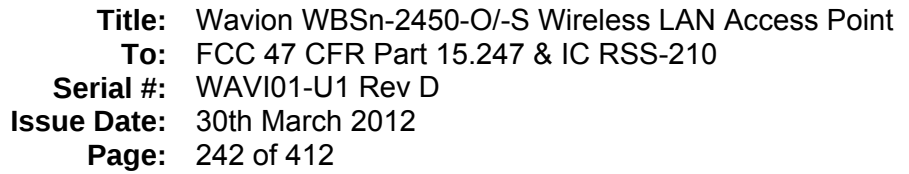
PORT A 802.11n HT-20 Legacy - Conducted Band Edge Spurious 2,400 MHz



PORT B 802.11n HT-20 Legacy - Conducted Band Edge Spurious 2,400 MHz



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Ref Lvl 25 dBm Marker 1 [T1] -10.85 dBm RBW 100 kHz VBW 300 kHz RF Att 20 dB Unit dBm

2.40000000 GHz 2.40000000 GHz 2.40000000 GHz 2.41795992 GHz

16.5 dB Offset

1 [T1] -10.85 dBm

2 [T1] -10.85 dBm

3 [T1] -10.85 dBm

4 [T1] -10.85 dBm

5 [T1] -10.85 dBm

6 [T1] -10.85 dBm

7 [T1] -10.85 dBm

8 [T1] -10.85 dBm

9 [T1] -10.85 dBm

10 [T1] -10.85 dBm

11 [T1] -10.85 dBm

12 [T1] -10.85 dBm

13 [T1] -10.85 dBm

14 [T1] -10.85 dBm

15 [T1] -10.85 dBm

16 [T1] -10.85 dBm

17 [T1] -10.85 dBm

18 [T1] -10.85 dBm

19 [T1] -10.85 dBm

20 [T1] -10.85 dBm

21 [T1] -10.85 dBm

22 [T1] -10.85 dBm

23 [T1] -10.85 dBm

24 [T1] -10.85 dBm

25 [T1] -10.85 dBm

26 [T1] -10.85 dBm

27 [T1] -10.85 dBm

28 [T1] -10.85 dBm

29 [T1] -10.85 dBm

30 [T1] -10.85 dBm

31 [T1] -10.85 dBm

32 [T1] -10.85 dBm

33 [T1] -10.85 dBm

34 [T1] -10.85 dBm

35 [T1] -10.85 dBm

36 [T1] -10.85 dBm

37 [T1] -10.85 dBm

38 [T1] -10.85 dBm

39 [T1] -10.85 dBm

40 [T1] -10.85 dBm

41 [T1] -10.85 dBm

42 [T1] -10.85 dBm

43 [T1] -10.85 dBm

44 [T1] -10.85 dBm

45 [T1] -10.85 dBm

46 [T1] -10.85 dBm

47 [T1] -10.85 dBm

48 [T1] -10.85 dBm

49 [T1] -10.85 dBm

50 [T1] -10.85 dBm

51 [T1] -10.85 dBm

52 [T1] -10.85 dBm

53 [T1] -10.85 dBm

54 [T1] -10.85 dBm

55 [T1] -10.85 dBm

56 [T1] -10.85 dBm

57 [T1] -10.85 dBm

58 [T1] -10.85 dBm

59 [T1] -10.85 dBm

60 [T1] -10.85 dBm

61 [T1] -10.85 dBm

62 [T1] -10.85 dBm

63 [T1] -10.85 dBm

64 [T1] -10.85 dBm

65 [T1] -10.85 dBm

66 [T1] -10.85 dBm

67 [T1] -10.85 dBm

68 [T1] -10.85 dBm

69 [T1] -10.85 dBm

70 [T1] -10.85 dBm

71 [T1] -10.85 dBm

72 [T1] -10.85 dBm

73 [T1] -10.85 dBm

74 [T1] -10.85 dBm

75 [T1] -10.85 dBm

76 [T1] -10.85 dBm

77 [T1] -10.85 dBm

78 [T1] -10.85 dBm

79 [T1] -10.85 dBm

80 [T1] -10.85 dBm

81 [T1] -10.85 dBm

82 [T1] -10.85 dBm

83 [T1] -10.85 dBm

84 [T1] -10.85 dBm

85 [T1] -10.85 dBm

86 [T1] -10.85 dBm

87 [T1] -10.85 dBm

88 [T1] -10.85 dBm

89 [T1] -10.85 dBm

90 [T1] -10.85 dBm

91 [T1] -10.85 dBm

92 [T1] -10.85 dBm

93 [T1] -10.85 dBm

94 [T1] -10.85 dBm

95 [T1] -10.85 dBm

96 [T1] -10.85 dBm

97 [T1] -10.85 dBm

98 [T1] -10.85 dBm

99 [T1] -10.85 dBm

100 [T1] -10.85 dBm

101 [T1] -10.85 dBm

102 [T1] -10.85 dBm

103 [T1] -10.85 dBm

104 [T1] -10.85 dBm

105 [T1] -10.85 dBm

106 [T1] -10.85 dBm

107 [T1] -10.85 dBm

108 [T1] -10.85 dBm

109 [T1] -10.85 dBm

110 [T1] -10.85 dBm

111 [T1] -10.85 dBm

112 [T1] -10.85 dBm

113 [T1] -10.85 dBm

114 [T1] -10.85 dBm

115 [T1] -10.85 dBm

116 [T1] -10.85 dBm

117 [T1] -10.85 dBm

118 [T1] -10.85 dBm

119 [T1] -10.85 dBm

120 [T1] -10.85 dBm

121 [T1] -10.85 dBm

122 [T1] -10.85 dBm

123 [T1] -10.85 dBm

124 [T1] -10.85 dBm

125 [T1] -10.85 dBm

126 [T1] -10.85 dBm

127 [T1] -10.85 dBm

128 [T1] -10.85 dBm

129 [T1] -10.85 dBm

130 [T1] -10.85 dBm

131 [T1] -10.85 dBm

132 [T1] -10.85 dBm

133 [T1] -10.85 dBm

134 [T1] -10.85 dBm

135 [T1] -10.85 dBm

136 [T1] -10.85 dBm

137 [T1] -10.85 dBm

138 [T1] -10.85 dBm

139 [T1] -10.85 dBm

140 [T1] -10.85 dBm

141 [T1] -10.85 dBm

142 [T1] -10.85 dBm

143 [T1] -10.85 dBm

144 [T1] -10.85 dBm

145 [T1] -10.85 dBm

146 [T1] -10.85 dBm

147 [T1] -10.85 dBm

148 [T1] -10.85 dBm

149 [T1] -10.85 dBm

150 [T1] -10.85 dBm

151 [T1] -10.85 dBm

152 [T1] -10.85 dBm

153 [T1] -10.85 dBm

154 [T1] -10.85 dBm

155 [T1] -10.85 dBm

156 [T1] -10.85 dBm

157 [T1] -10.85 dBm

158 [T1] -10.85 dBm

159 [T1] -10.85 dBm

160 [T1] -10.85 dBm

161 [T1] -10.85 dBm

162 [T1] -10.85 dBm

163 [T1] -10.85 dBm

164 [T1] -10.85 dBm

165 [T1] -10.85 dBm

166 [T1] -10.85 dBm

167 [T1] -10.85 dBm

168 [T1] -10.85 dBm

169 [T1] -10.85 dBm

170 [T1] -10.85 dBm

171 [T1] -10.85 dBm

172 [T1] -10.85 dBm

173 [T1] -10.85 dBm

174 [T1] -10.85 dBm

175 [T1] -10.85 dBm

176 [T1] -10.85 dBm

177 [T1] -10.85 dBm

178 [T1] -10.85 dBm

179 [T1] -10.85 dBm

180 [T1] -10.85 dBm

181 [T1] -10.85 dBm

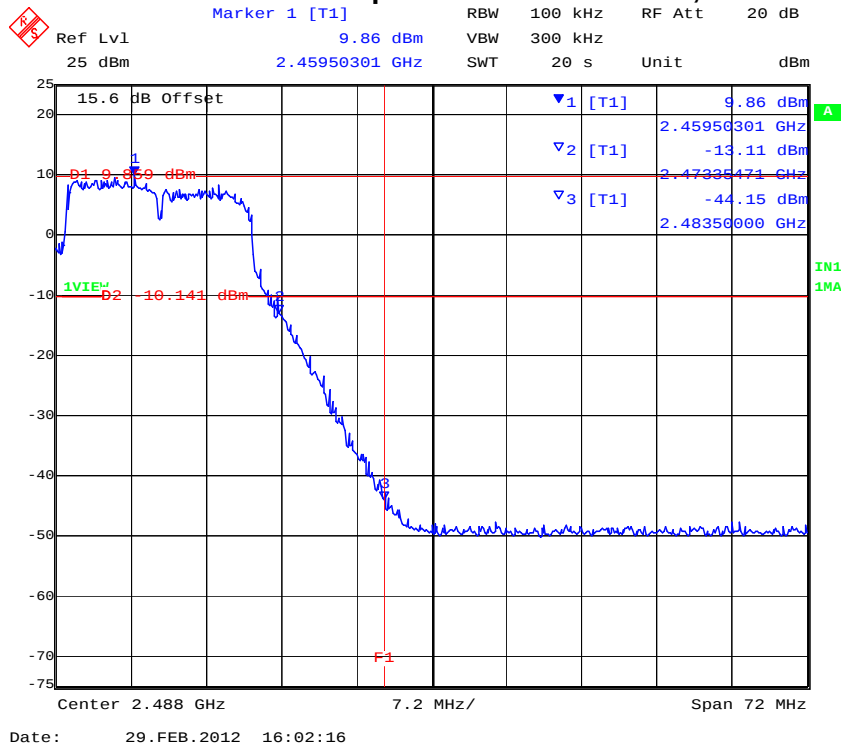
182 [T1] -10.85

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

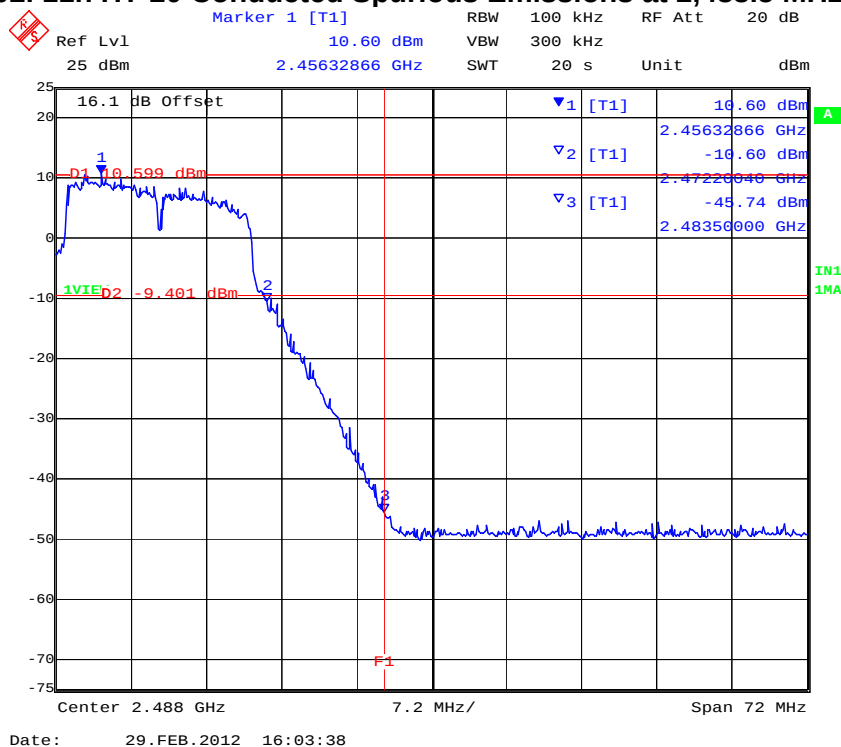


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 243 of 412

PORT A 802.11n HT-20 Conducted Spurious Emissions at 2,483.5 MHz Band Edge



PORT B 802.11n HT-20 Conducted Spurious Emissions at 2,483.5 MHz Band Edge

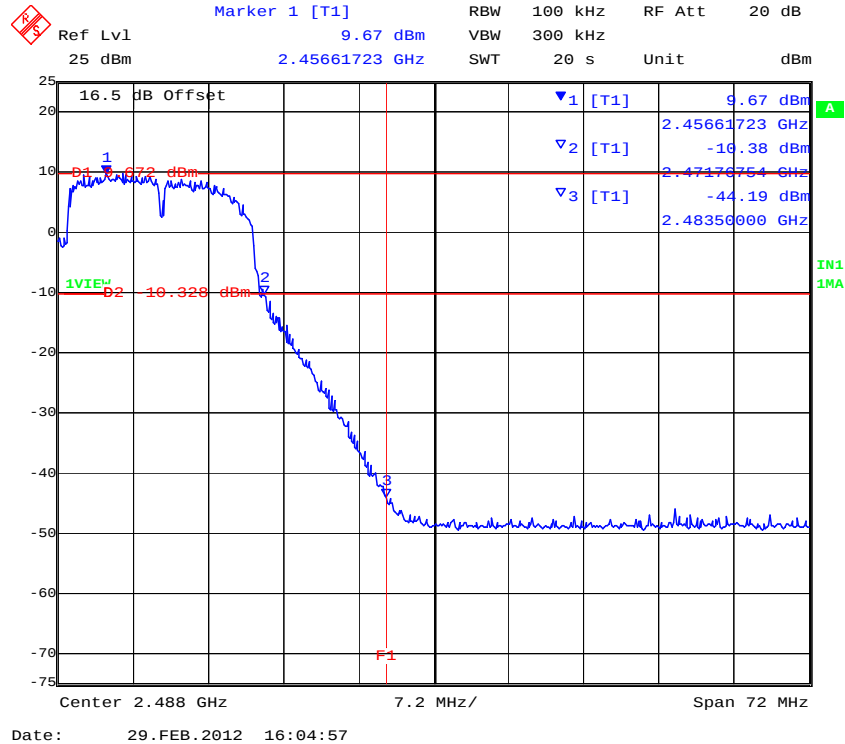


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Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 244 of 412

PORT C 802. 11n HT-20 Conducted Spurious Emissions at 2,483.5 MHz Band Edge

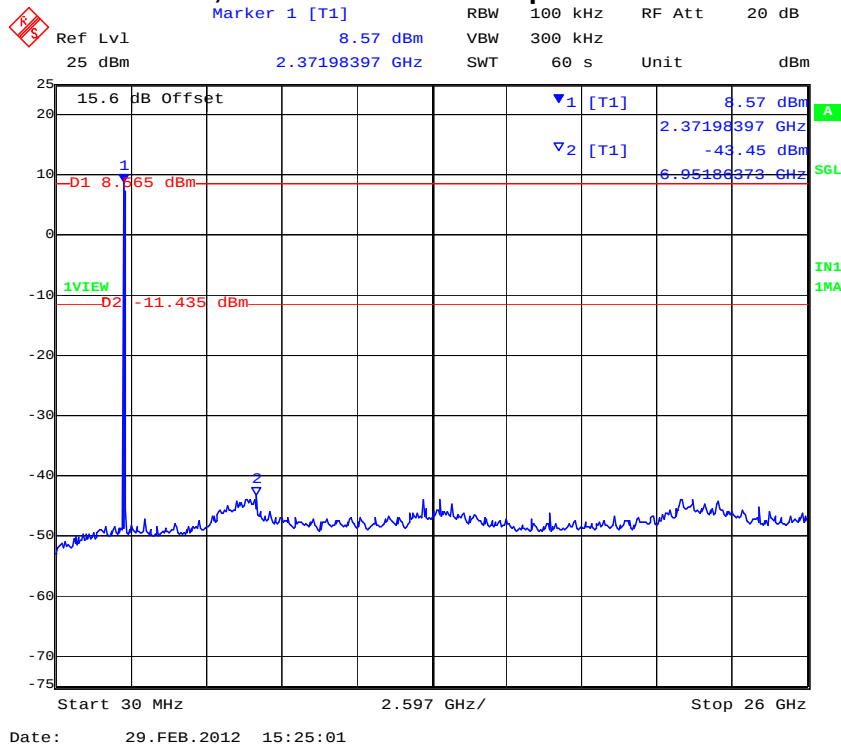


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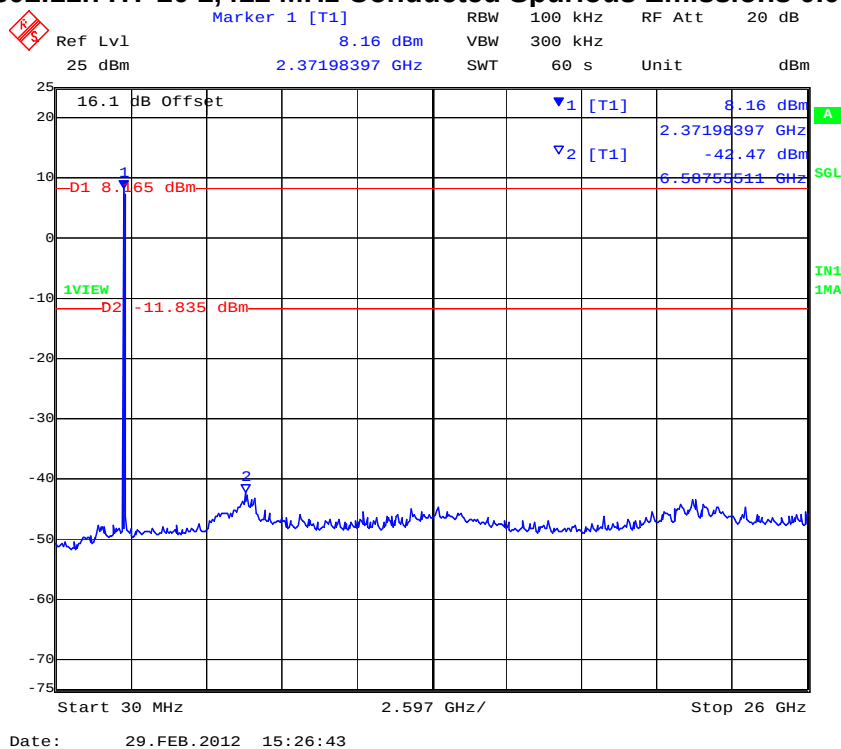


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 245 of 412

PORT A 802.11n HT-20 2,412 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11n HT-20 2,412 MHz Conducted Spurious Emissions 0.03 – 26 GHz

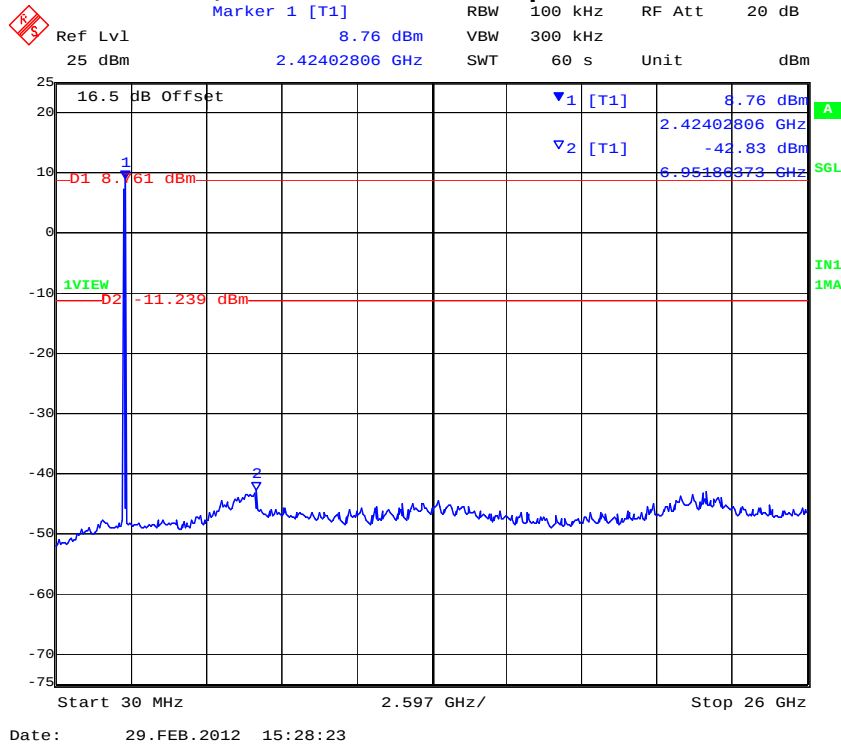


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Issue Date: 30th March 2012
Page: 246 of 412

PORT C 802.11n HT-20 2,412 MHz Conducted Spurious Emissions 0.03 – 26 GHz

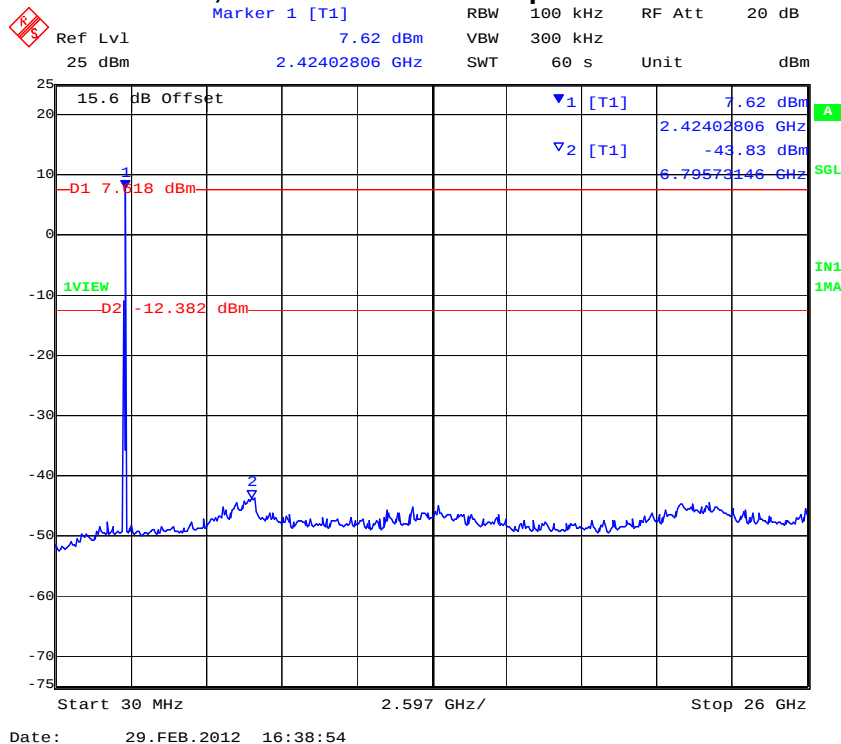


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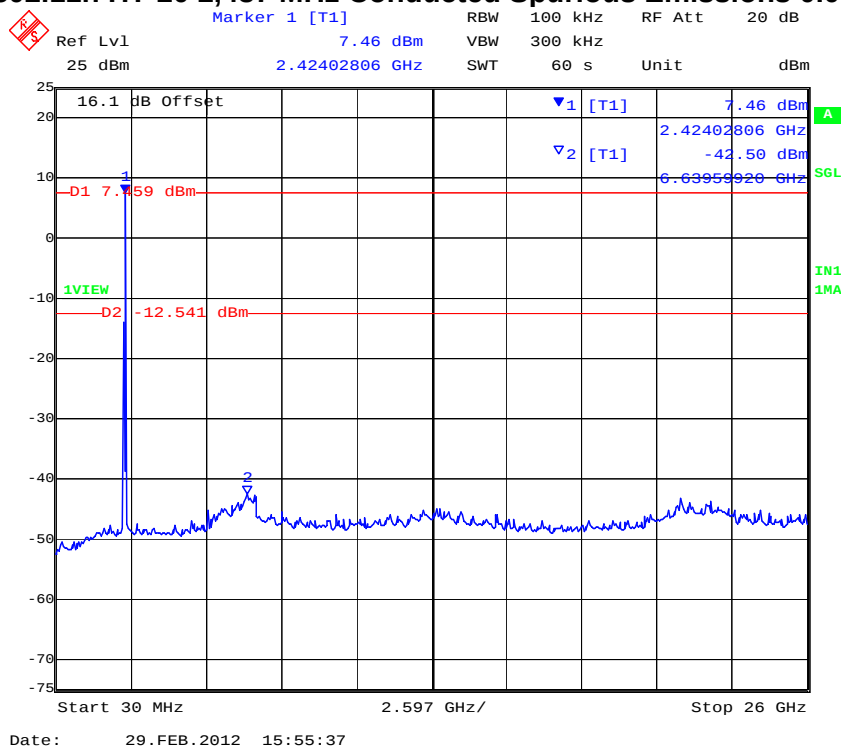


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 247 of 412

PORT A 802.11n HT-20 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11n HT-20 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz

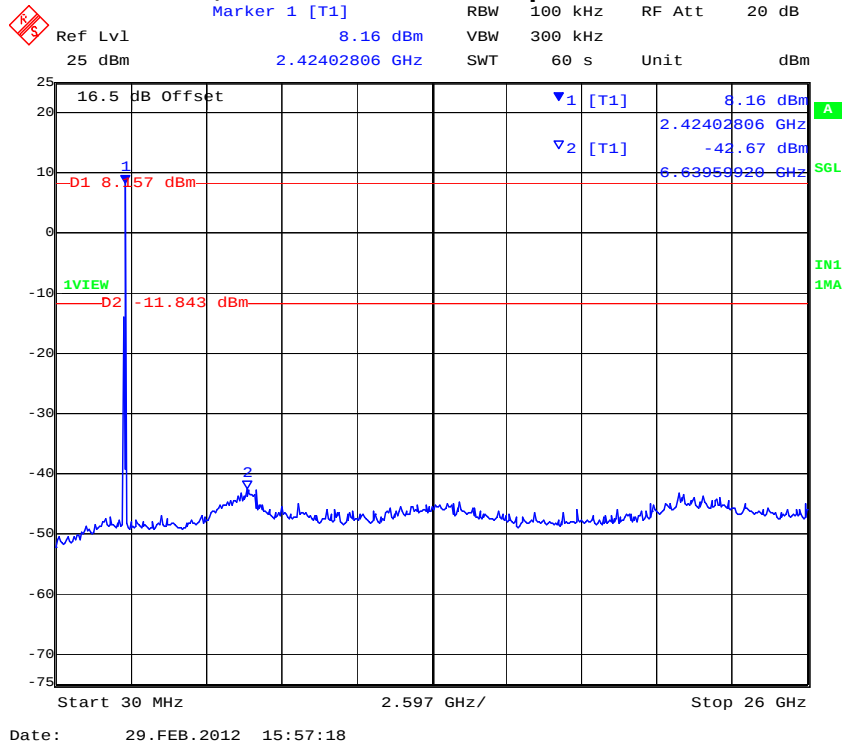


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To: FCC 47 CFR Part 15.247 & IC RSS-210
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Issue Date: 30th March 2012
Page: 248 of 412

PORT C 802.11n HT-20 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz

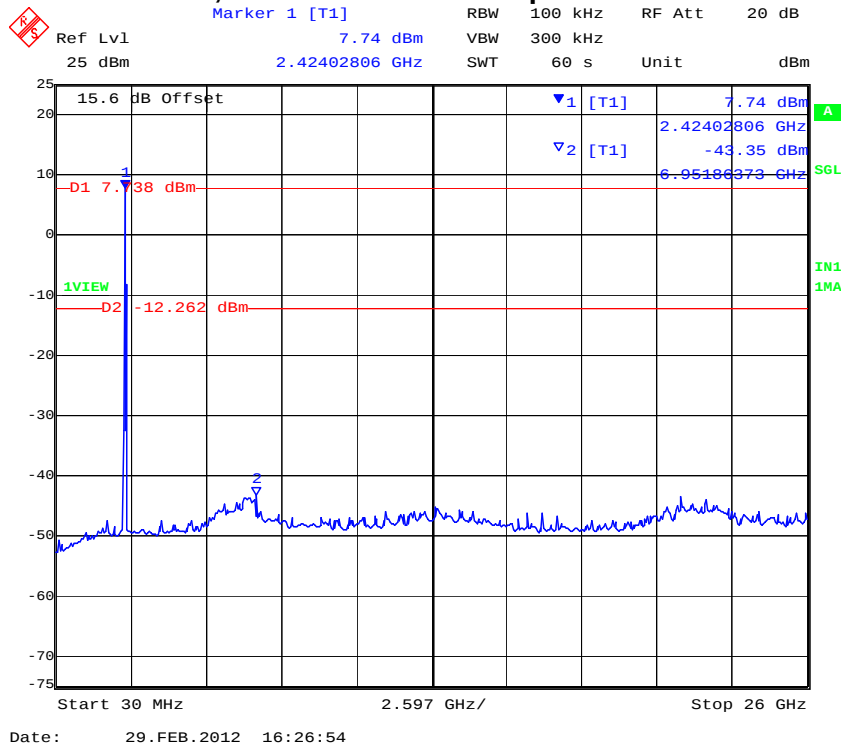


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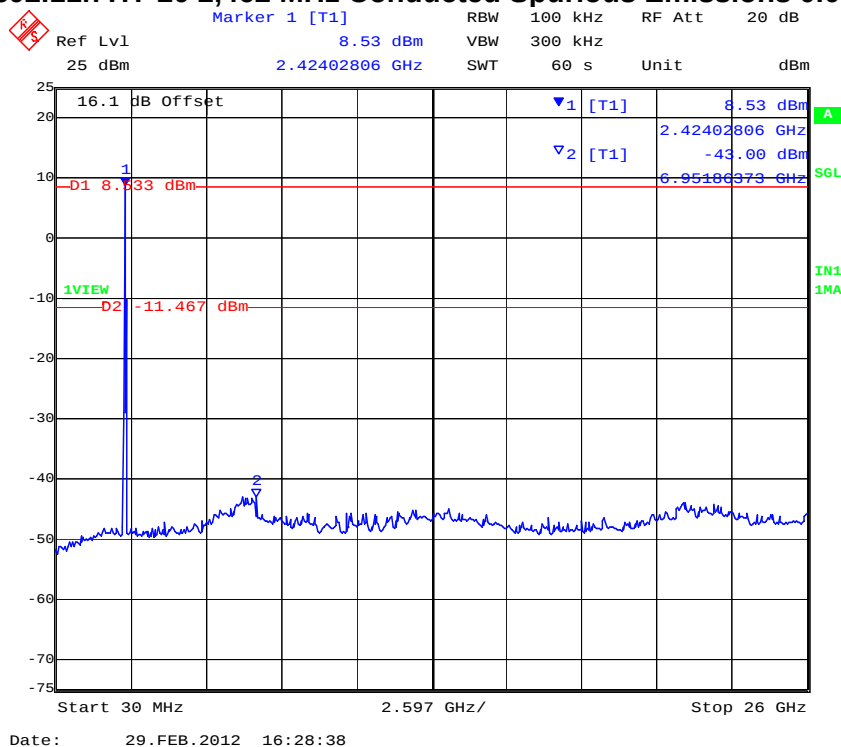


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 249 of 412

PORT A 802.11n HT-20 2,462 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11n HT-20 2,462 MHz Conducted Spurious Emissions 0.03 – 26 GHz

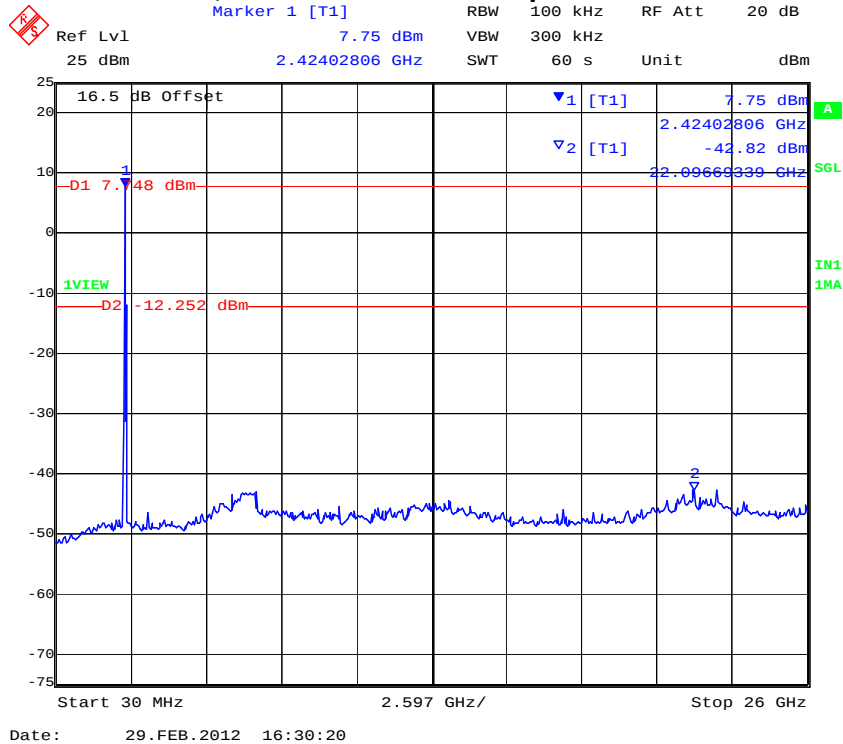


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 250 of 412

PORT C 802.11n HT-20 2,462 MHz Conducted Spurious Emissions 0.03 – 26 GHz



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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 251 of 412

Conducted Spurious Emission Results

TABLE OF RESULTS – 802.11N HT-40

Test Conditions:	15.247 (a)(2)	Rel. Humidity (%):	35	to	42
Variant:	802.11n HT-40	Ambient Temp. (°C):	19	to	22
TPC:	HIGH	Pressure (mBars):	998	to	1003
Modulation:	ON	Duty Cycle (%):	100		
Beam Forming Gain	N/A dB	Antenna Gain:	N/A	dBi	
Applied Voltage:	48.00 Vdc	Antenna Ports (N):			
Notes 1:					
Notes 2:					

Conducted Spurious Measurement

Test Freq.	Start Freq.	Stop Freq.	Port A		Port B		Port C		Port D	
MHz	MHz	MHz	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm
2422.000	30.00	26000.00	-43.07	-13.51	-42.66	-13.02	-43.00	-14.96		
2437.000	30.00	26000.00	-43.39	-14.06	-42.16	-14.65	-42.52	-14.39		
2452.000	30.00	26000.00	-43.66	-14.62	-42.41	-14.64	-42.72	-14.24		

SE: Maximum spurious emission found

Band-edge Measurement

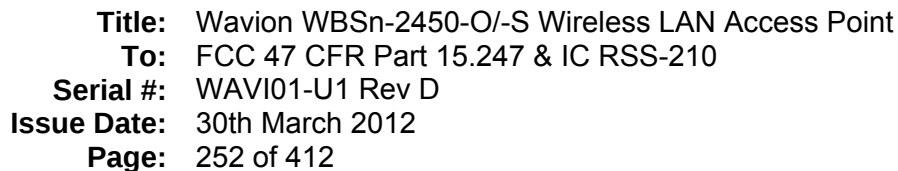
Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
2422.000	2400.00	-13.99	-12.87	-16.45	-12.28	-16.21	-14.41		
2452.000	2483.50	-45.20	-13.16	-45.65	-13.51	-45.81	-13.61		

BE: Maximum Band edge emission found

Measurement uncertainty:	±2.81 dB
---------------------------------	----------

Note: Limit is based on 20dB down from fundamental emissions

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Ref Lvl 25 dBm

Marker 1 [T1] -13.99 dBm

RBW 100 kHz

VBW 300 kHz

SWT 20 s

RF Att 20 dB

Unit dBm

15.6 dB Offset

D1 7.132 dBm

D2 -12.868 dBm

1VIEW

IN1 1MA

Start 2.292 GHz

15 MHz/

Stop 2.442 GHz

Date: 29.FEB.2012 16:49:33

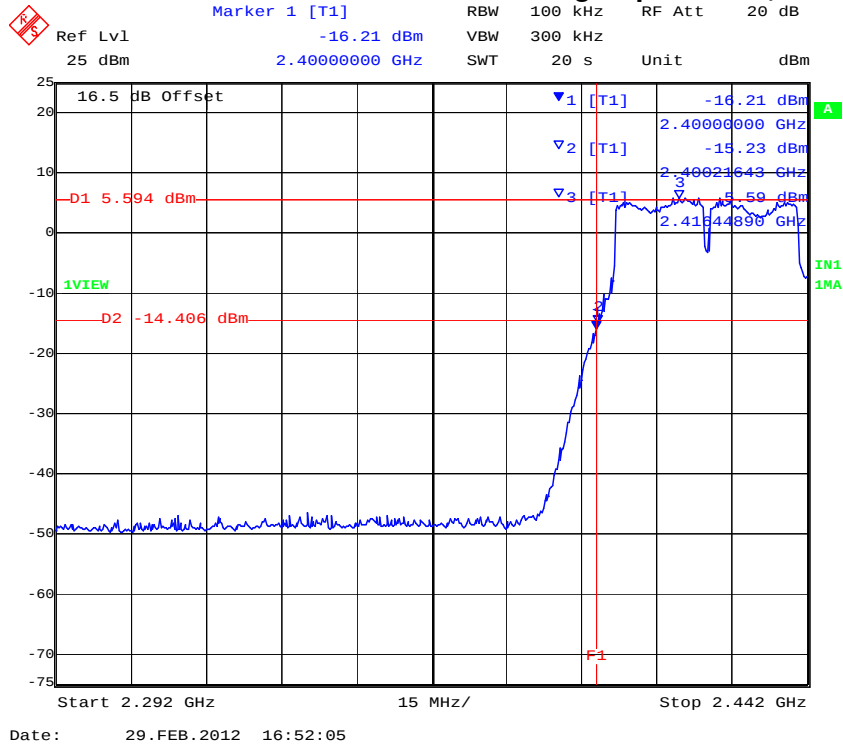
RBW 100 kHz VBW 300 kHz SWT 20 s Unit dBm
 Ref Lvl 25 dBm
 Marker 1 [T1] -16.45 dBm
 2.4000000 GHz
 16.1 dB Offset
 D1 7.721 dBm
 D2 -12.279 dBm
 1VIEW
 IN1 1MA
 Start 2.292 GHz 15 MHz/ Stop 2.442 GHz
 Date: 29.FEB.2012 16:50:51

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



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 253 of 412

PORT C 802.11n HT-40 Conducted Band Edge Spurious 2,400 MHz



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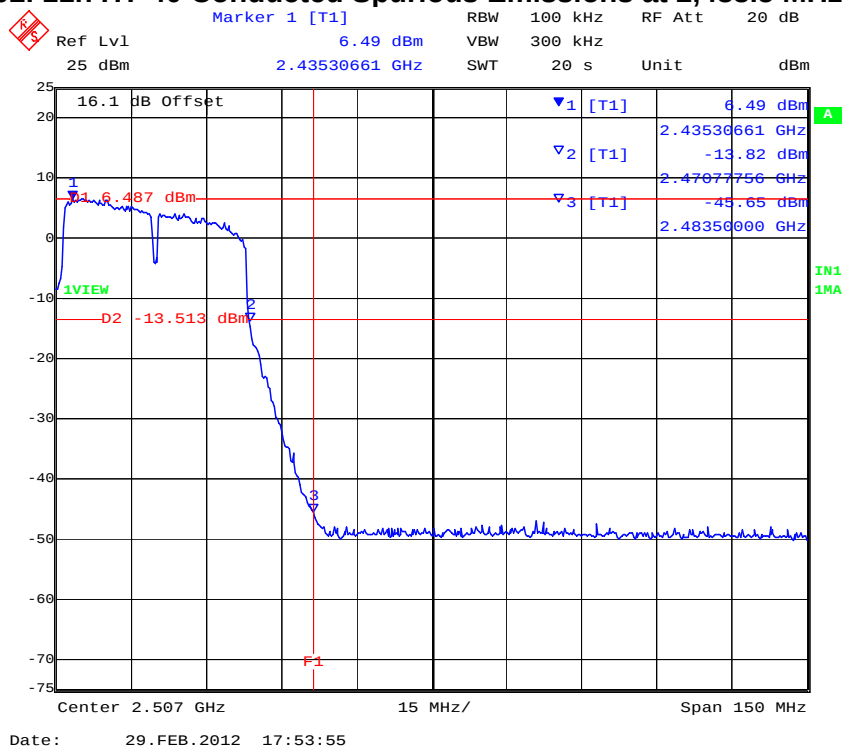


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 254 of 412

PORT A 802.11n HT-40 Conducted Spurious Emissions at 2,483.5 MHz Band Edge



PORT B 802.11n HT-40 Conducted Spurious Emissions at 2,483.5 MHz Band Edge



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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 255 of 412

PORT C 802. 11n HT-40 Conducted Spurious Emissions at 2,483.5 MHz Band Edge

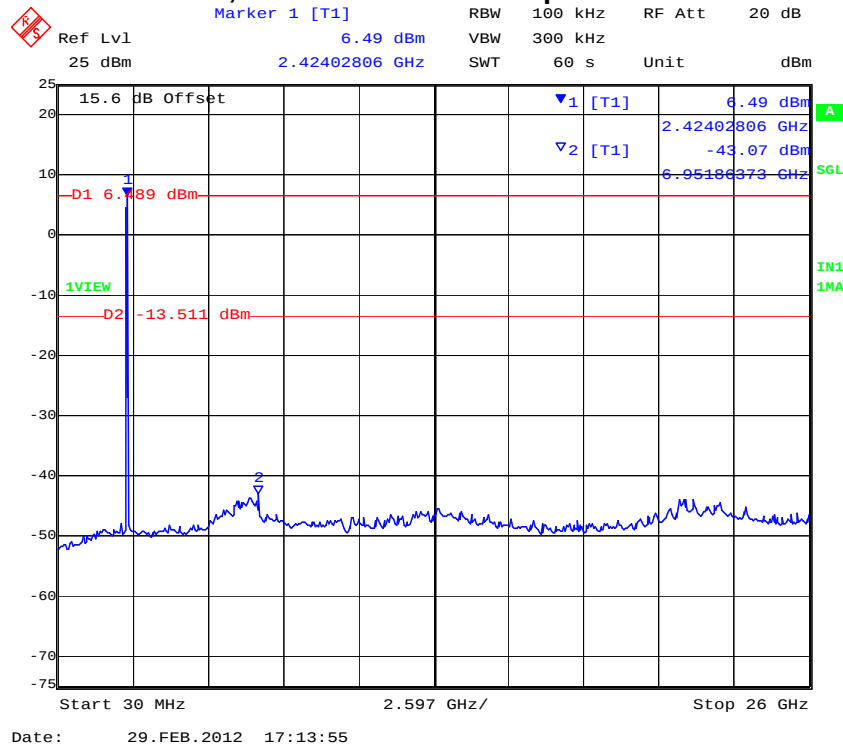


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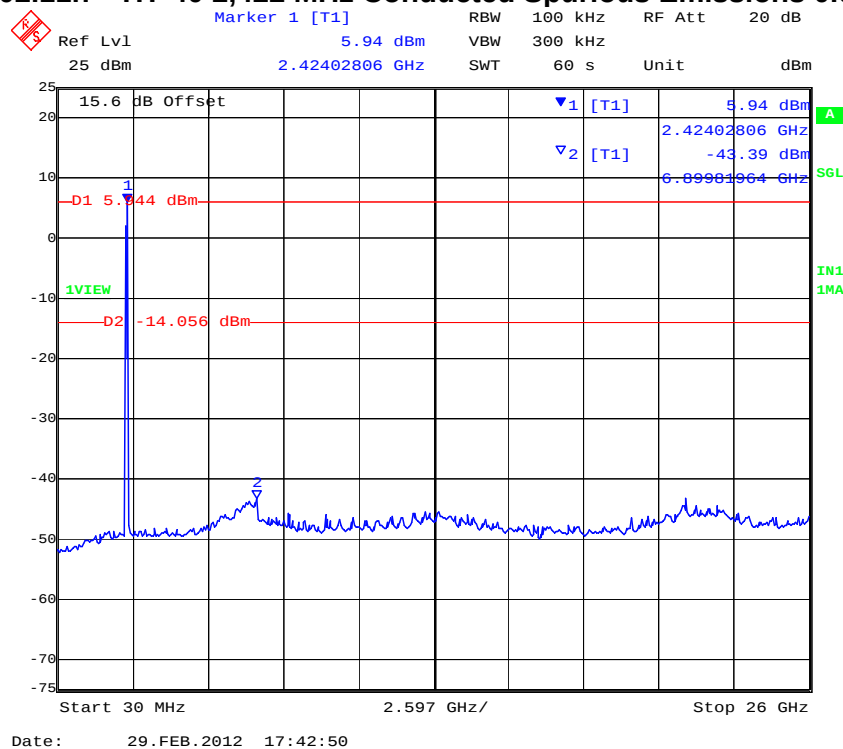


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 256 of 412

PORT A 802.11n – HT-40 2,422 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11n – HT-40 2,422 MHz Conducted Spurious Emissions 0.03 – 26 GHz

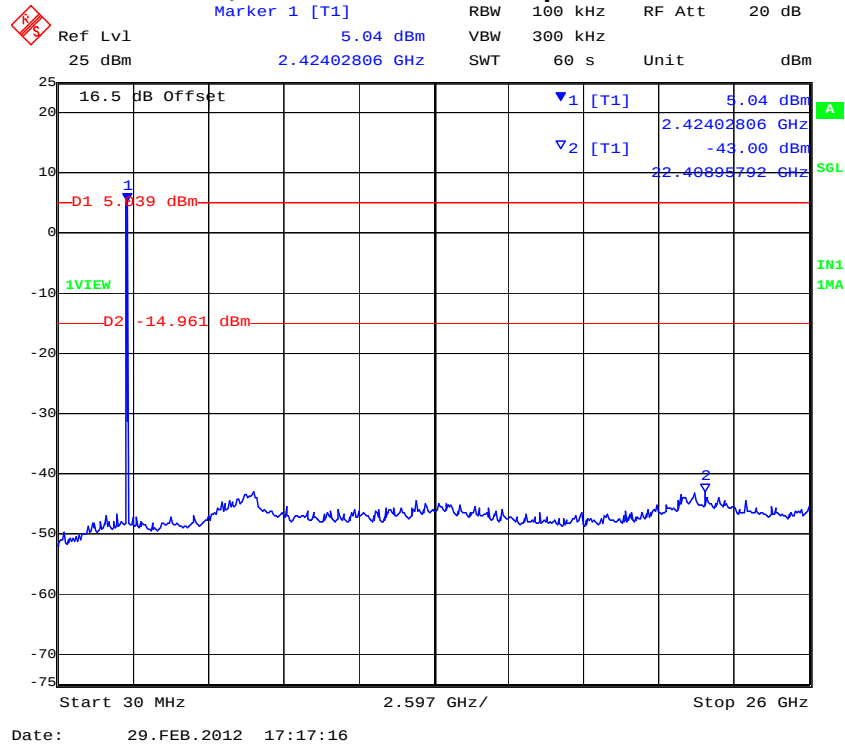


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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 257 of 412

PORT C 802.11n – HT-40 2,422 MHz Conducted Spurious Emissions 0.03 – 26 GHz

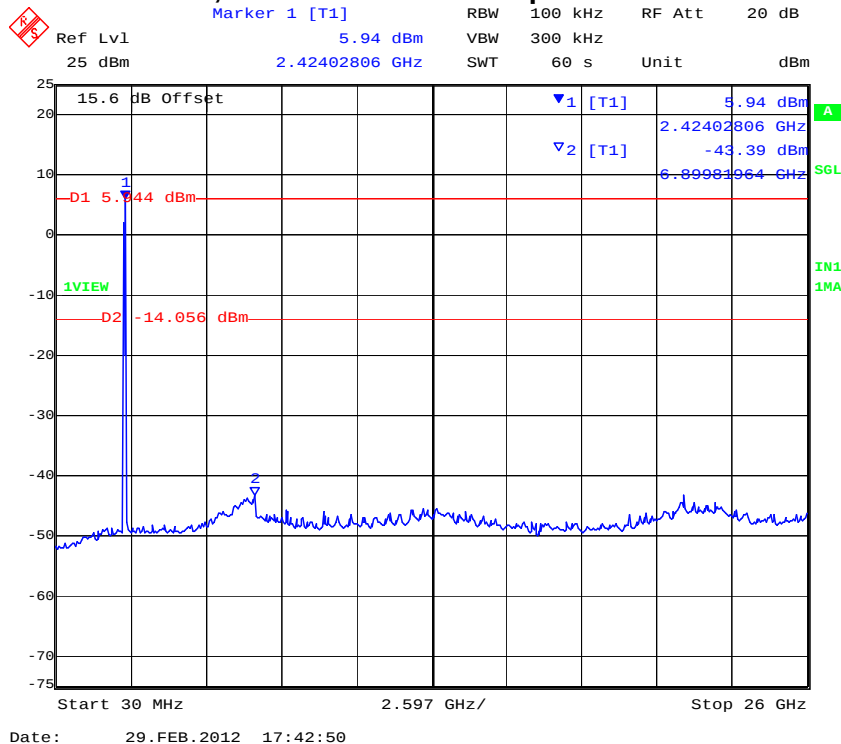


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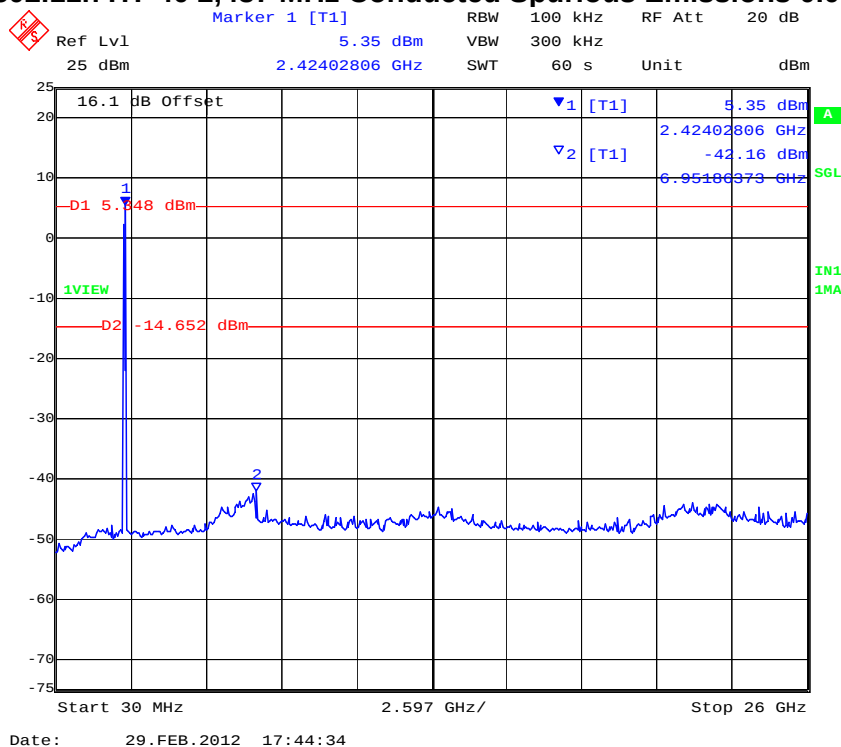


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 258 of 412

PORT A 802.11n HT-40 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11n HT-40 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz

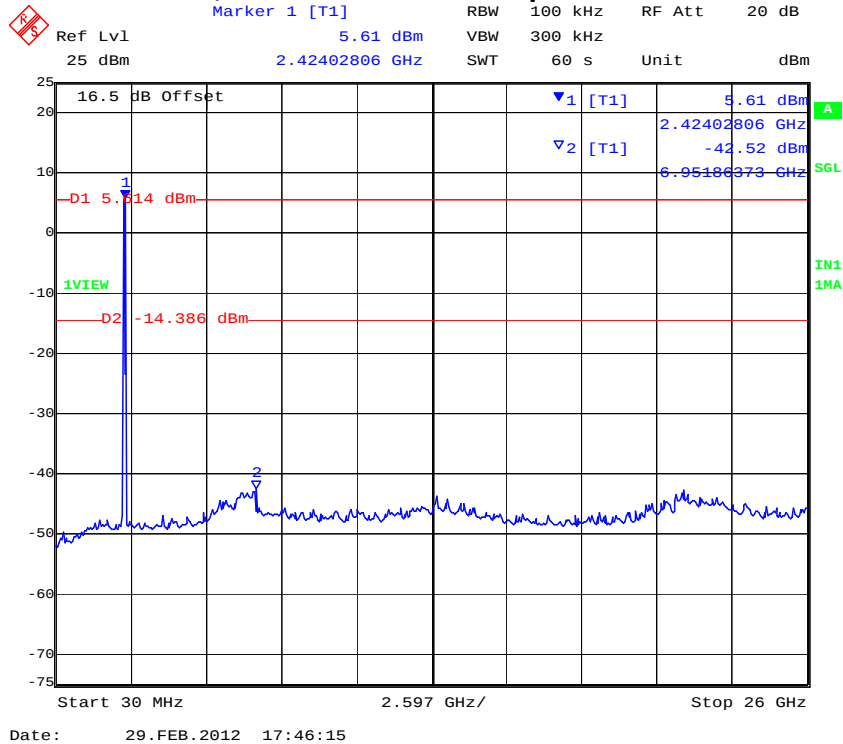


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 259 of 412

PORT C 802.11n HT-40 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz

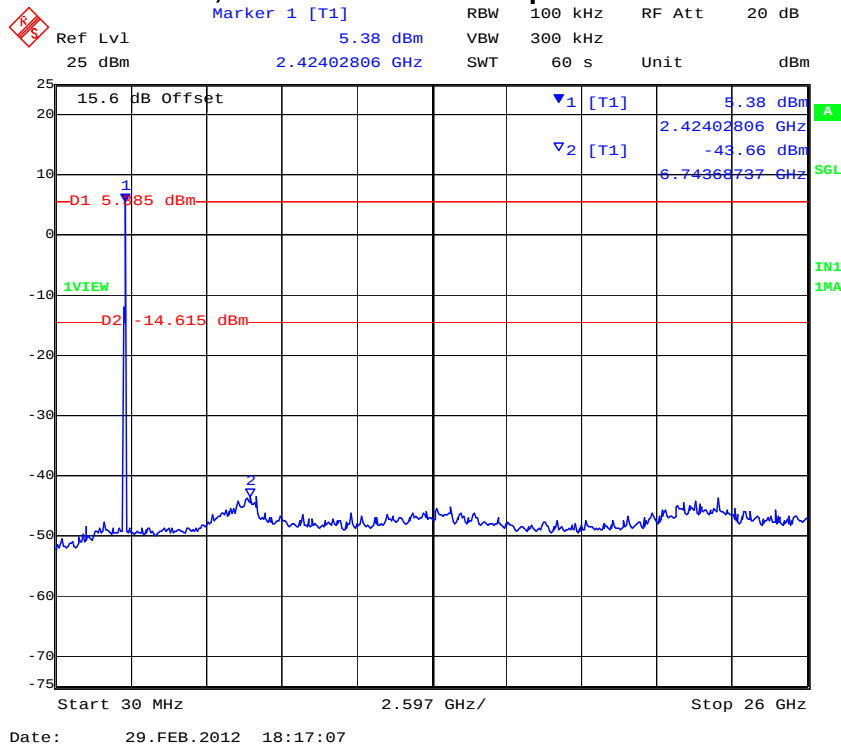


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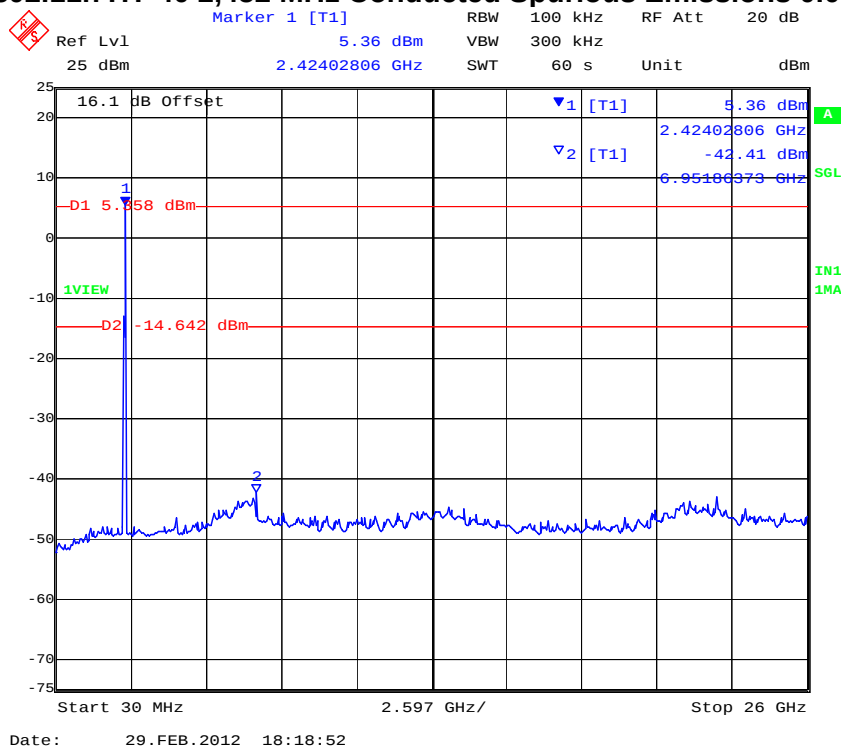


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 260 of 412

PORT A 802.11n HT-40 2,452 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11n HT-40 2,452 MHz Conducted Spurious Emissions 0.03 – 26 GHz

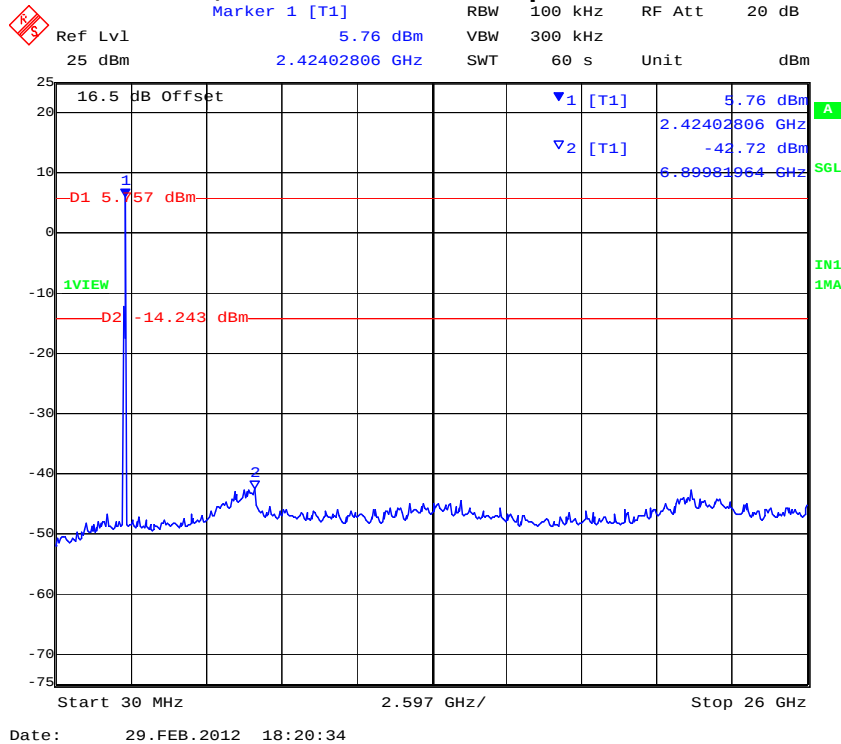


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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 261 of 412

PORT C 802.11n HT-40 2,452 MHz Conducted Spurious Emissions 0.03 – 26 GHz



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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 262 of 412

Conducted Spurious Emission Results

TABLE OF RESULTS – 802.11a Legacy 5 MHz, 6 MBit/s

Test Conditions:	15.247 (a)(2)	Rel. Humidity (%):	35	to	42
Variant:	802.11a, 5 MHz	Ambient Temp. (°C):	19	to	22
TPC:	HIGH	Pressure (mBars):	998	to	1003
Modulation:	ON	Duty Cycle (%):	100		
Beam Forming Gain	N/A dB	Antenna Gain:	N/A		dBi
Applied Voltage:	48.00 Vdc	Antenna Ports (N):			
Notes 1:					
Notes 2:					

Conducted Spurious Measurement

Test Freq.	Start Freq.	Stop Freq.	Port A		Port B		Port C		Port D	
MHz	MHz	MHz	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm
5730.500	30.00	26000.00	-42.05	-8.91	-41.29	-7.08	-42.03	-8.59		
5790.500	30.00	26000.00	-42.14	-9.91	-41.33	-9.64	-41.56	-8.13		
5845.500	30.00	26000.00	-41.05	-9.82	-41.20	-11.84	-41.22	-10.06		

SE: Maximum spurious emission found

Band-edge Measurement

Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
5730.500	5725.00	-16.23	-5.96	-11.23	-4.35	-14.05	-5.33		
5845.500	5850.00	-13.59	-8.08	-18.25	-10.02	-17.26	-8.46		

BE: Maximum Band edge emission found

Measurement uncertainty:	±2.81 dB
---------------------------------	----------

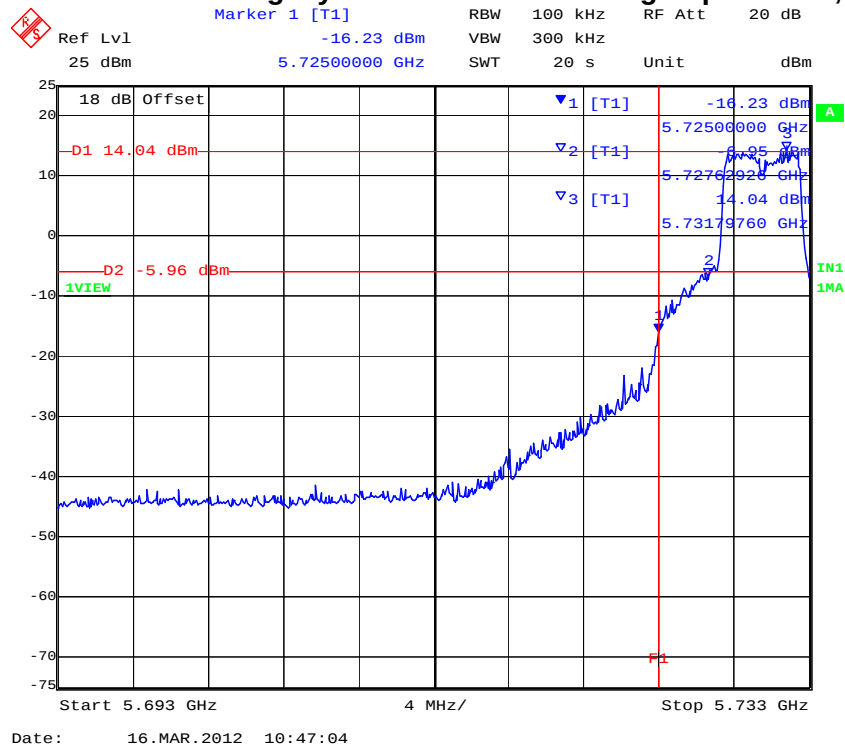
Note: Limit is based on 20dB down from fundamental emission

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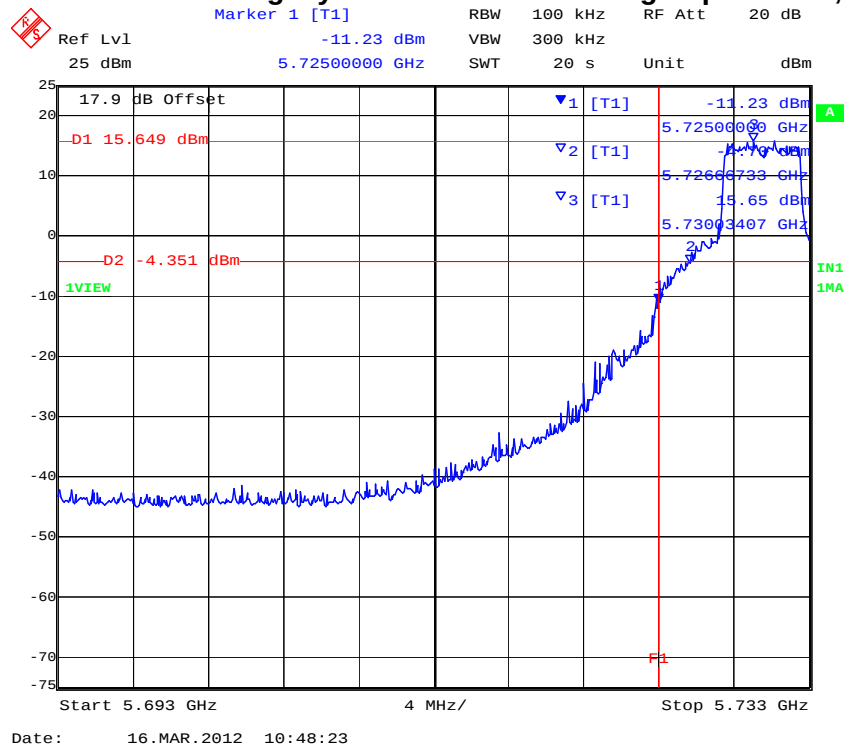


Title: Wavion WBSn-2450-O/S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 263 of 412

5 MHz PORT A 802.11a Legacy - Conducted Band Edge Spurious 5,725 MHz



5 MHz PORT B 802.11a Legacy - Conducted Band Edge Spurious 5,725 MHz

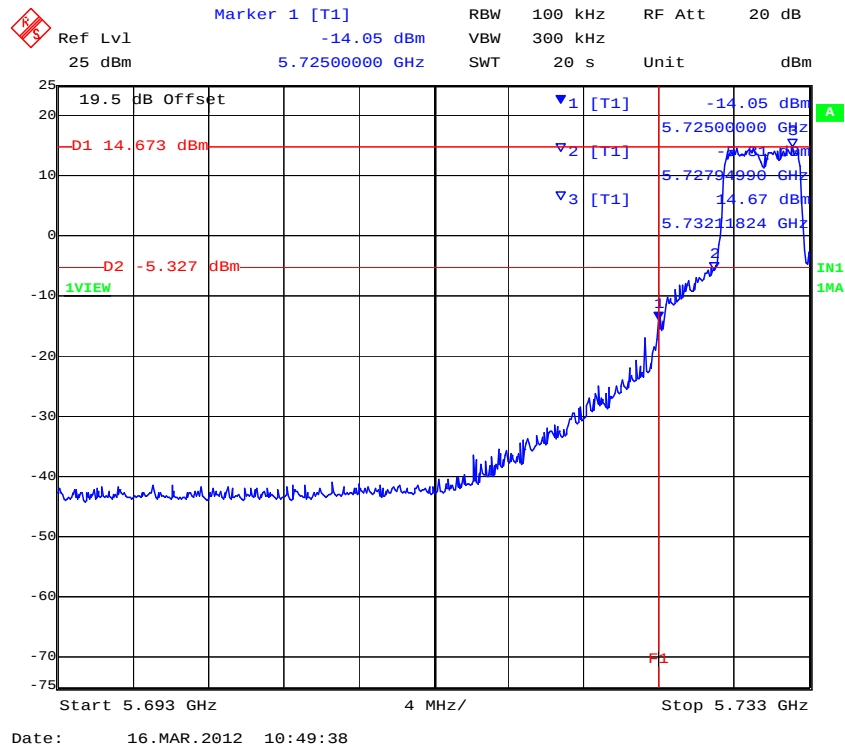


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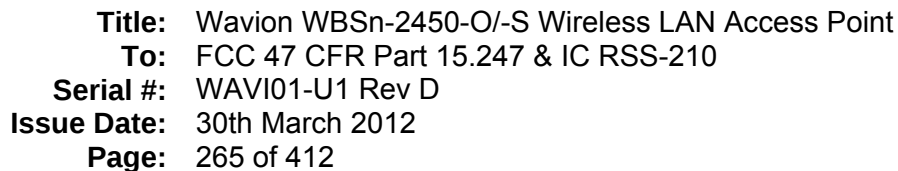


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 264 of 412

5 MHz PORT C 802.11a Legacy - Conducted Band Edge Spurious 5,725 MHz



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Ref Lvl 25 dBm

Marker 1 [T1] 11.92 dBm

RBW 100 kHz

VBW 300 kHz

SWT 20 s

Unit dBm

20 dB

18 dB Offset

11.923 dBm

5.84500401 GHz

5.84500401 GHz

5.84821042 GHz

5.85000000 GHz

-9.63 dBm

-13.59 dBm

Center 5.863 GHz

4 MHz/

Span 40 MHz

Date: 16.MAR.2012 12:08:24

Ref Lvl 25 dBm
 Marker 1 [T1] 9.98 dBm
 RBW 100 kHz
 VBW 300 kHz
 SWT 20 s
 Unit dBm

17.9 dB Offset
 9.98 dBm
 5.84716834 GHz
 -12.30 dBm
 5.84700078 GHz
 -18.25 dBm
 5.85000000 GHz

IN1
 1MA

Center 5.863 GHz
 4 MHz/
 Span 40 MHz

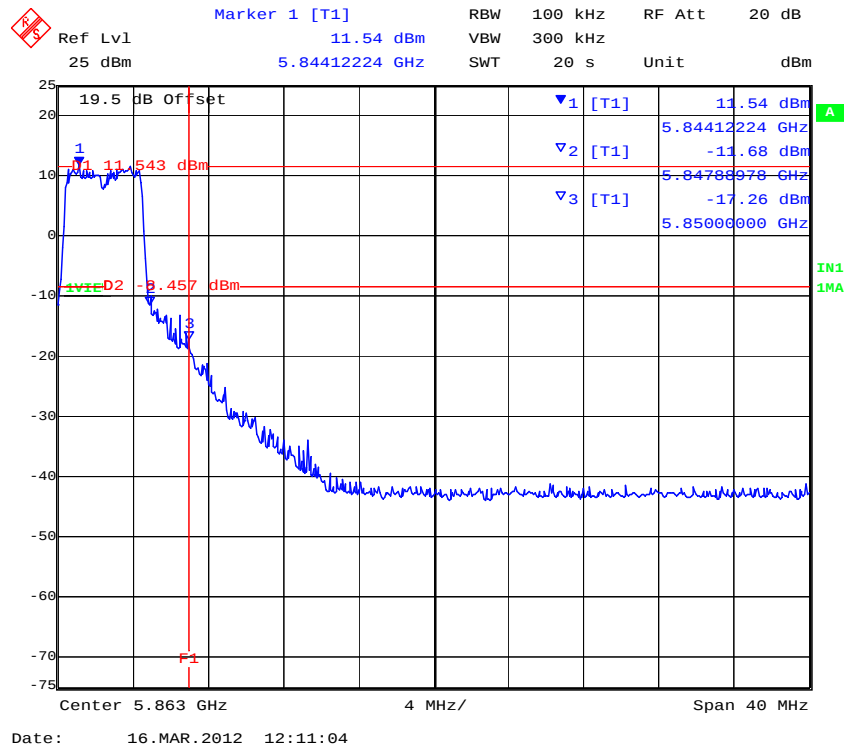
Date: 16.MAR.2012 12:09:45

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



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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 266 of 412

5 MHz PORT C 802.11a Legacy - Conducted Band Edge Spurious 5,850 MHz

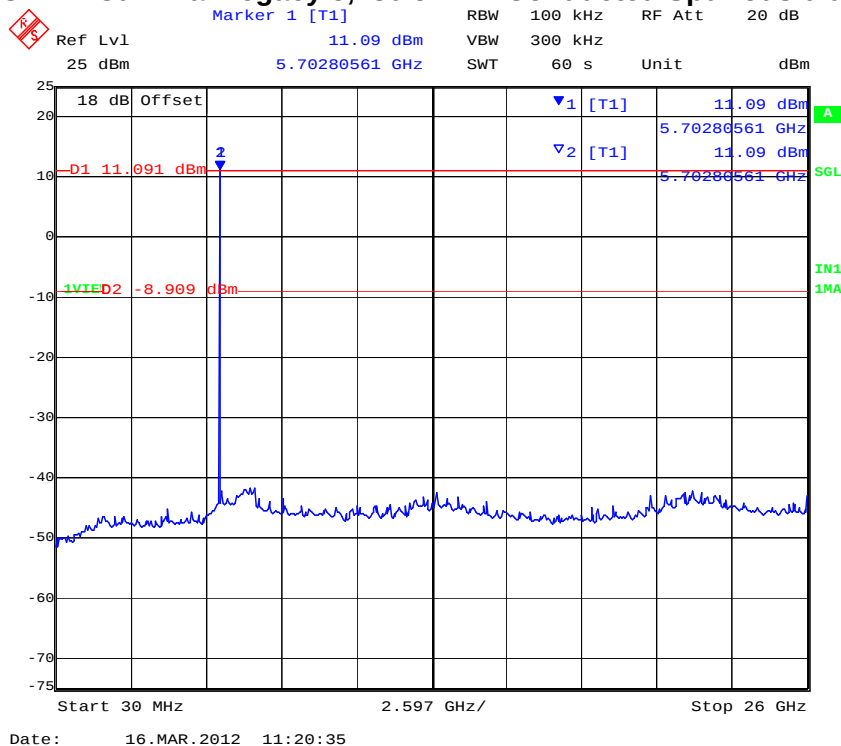


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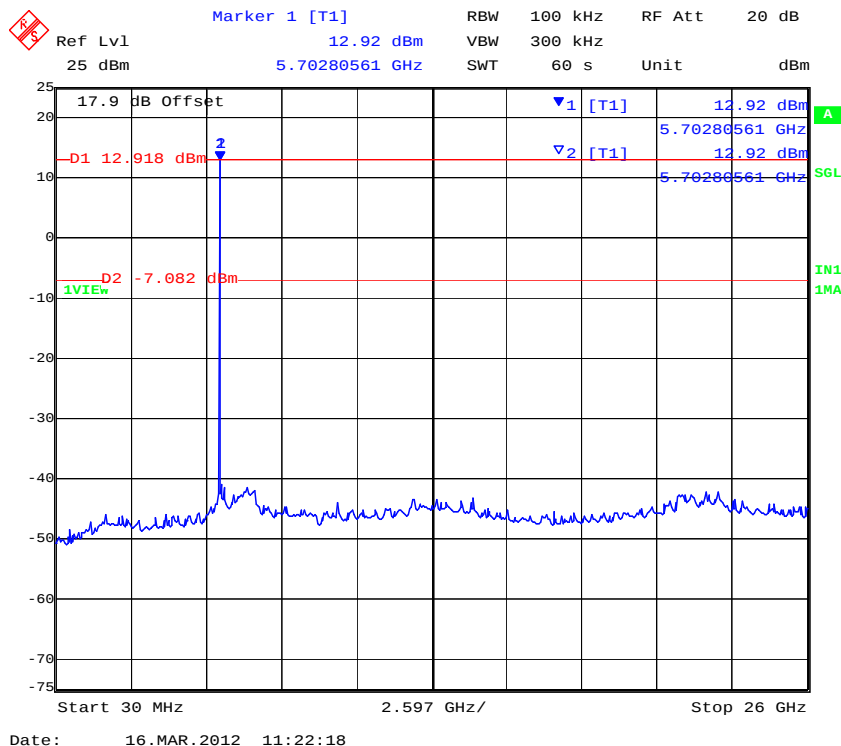


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 267 of 412

5 MHz PORT A 802.11a-Legacy 5,730.5 MHz Conducted Spurious 0.03-26 GHz



5 MHz PORT B 802.11a-Legacy 5,730.5 MHz Conducted Spurious 0.03-26 GHz

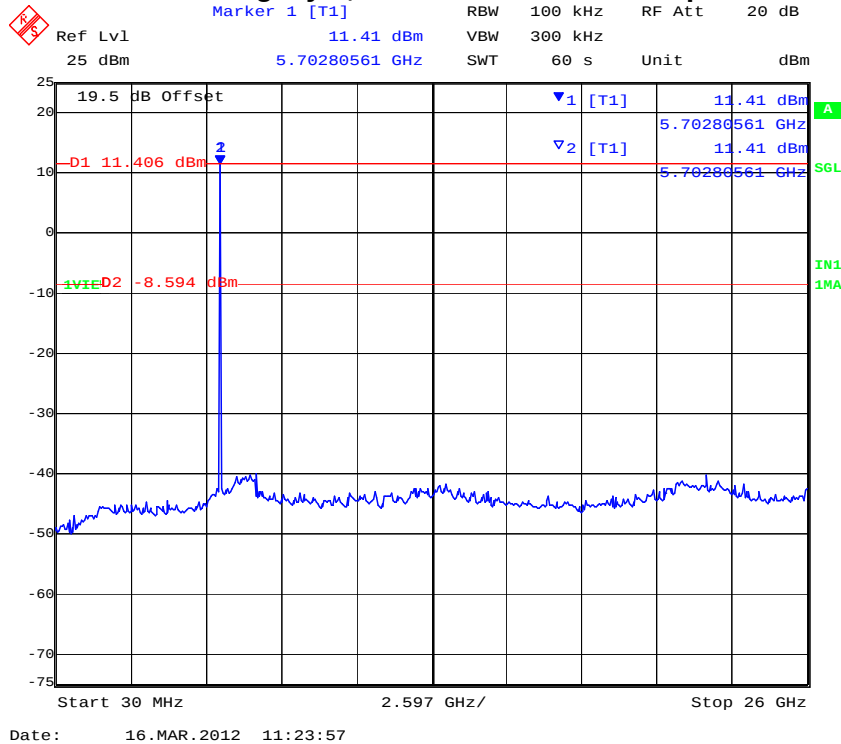


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 268 of 412

5 MHz PORT C 802.11a-Legacy 5,730.5 MHz Conducted Spurious 0.03-26 GHz

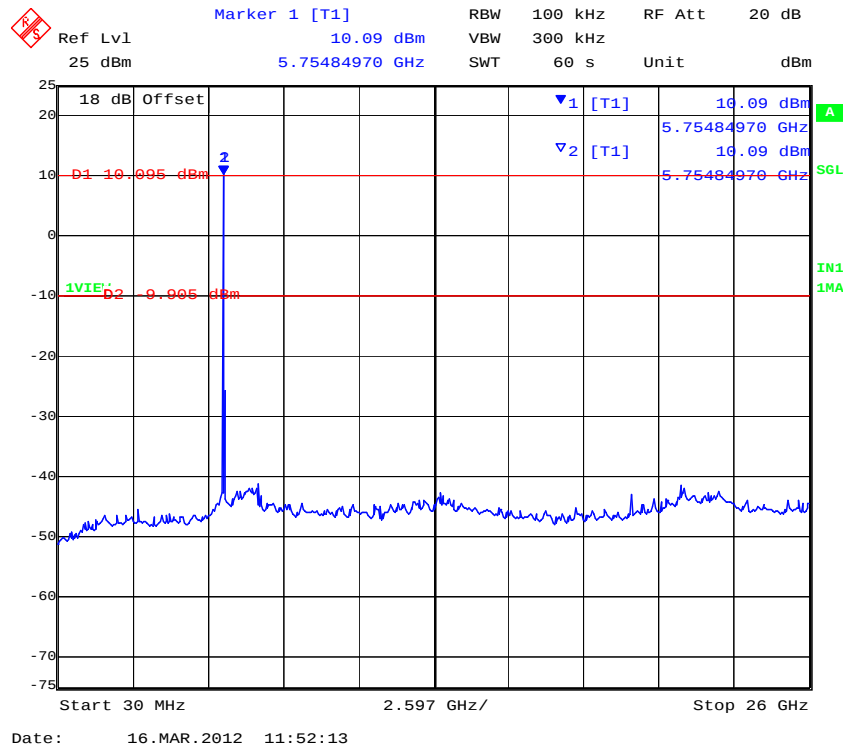


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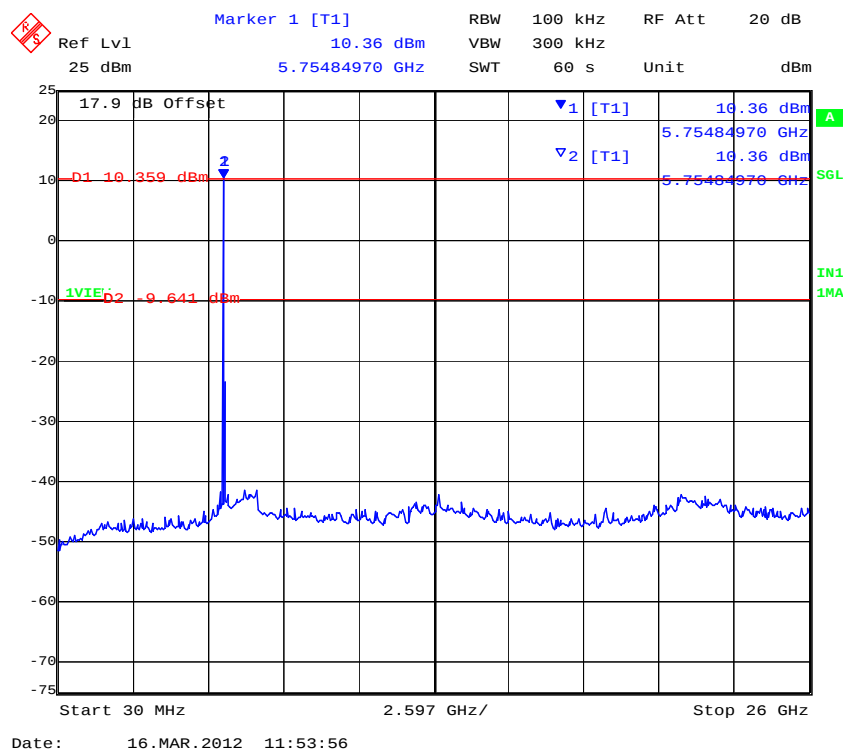


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 269 of 412

5 MHz PORT A 802.11a-Legacy 5,790.5 MHz Conducted Spurious 0.03-26 GHz



5 MHz PORT B 802.11a-Legacy 5,790.5 MHz Conducted Spurious 0.03-26 GHz

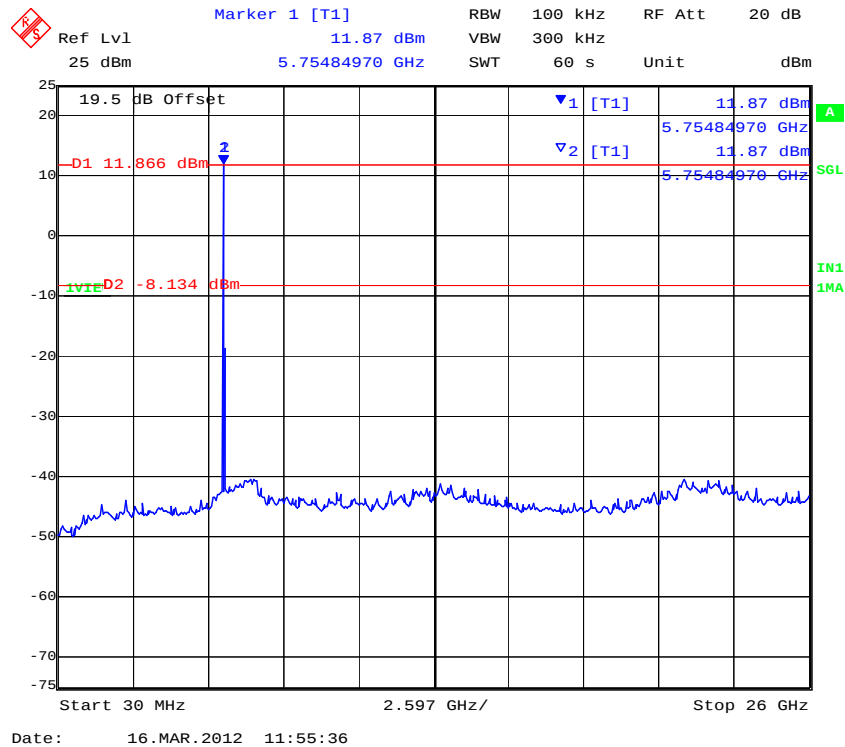


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 270 of 412

5 MHz PORT C 802.11a-Legacy 5,790.5 MHz Conducted Spurious 0.03-26 GHz

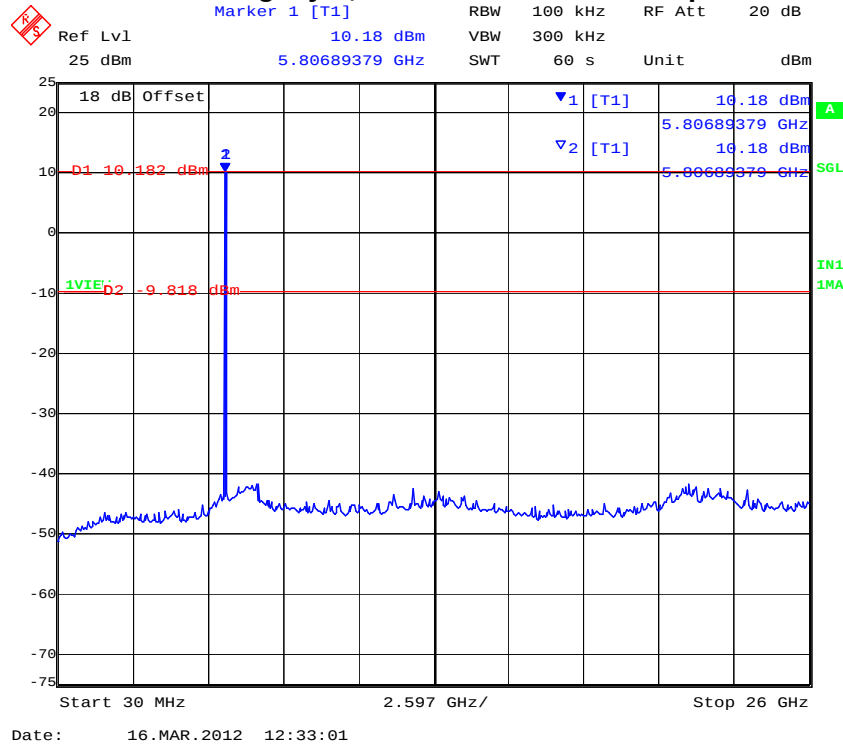


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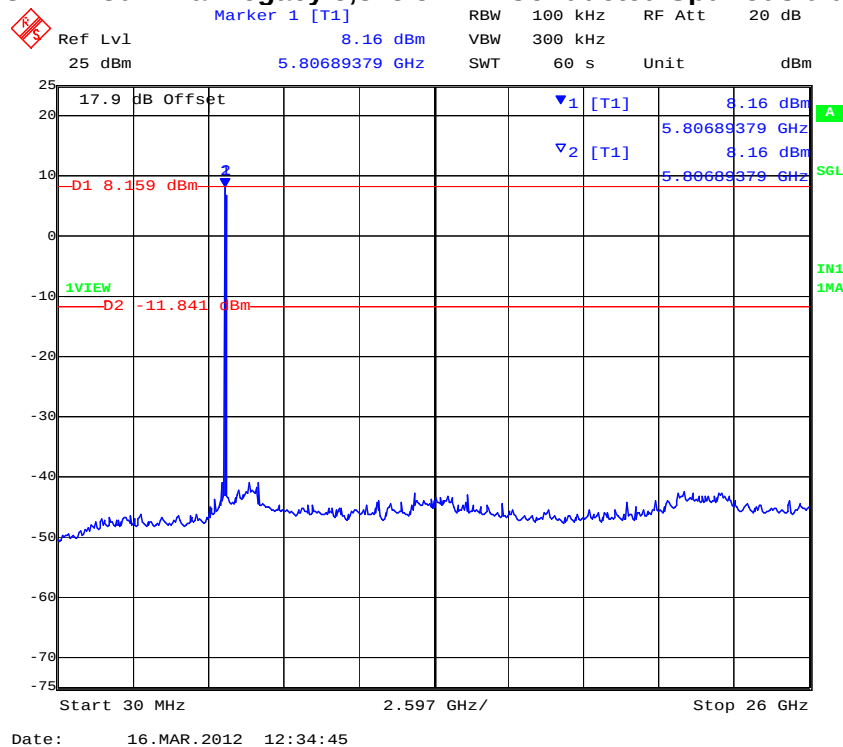


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 271 of 412

5 MHz PORT A 802.11a-Legacy 5,845.5 MHz Conducted Spurious 0.03-26 GHz



5 MHz PORT B 802.11a-Legacy 5,845.5 MHz Conducted Spurious 0.03-26 GHz

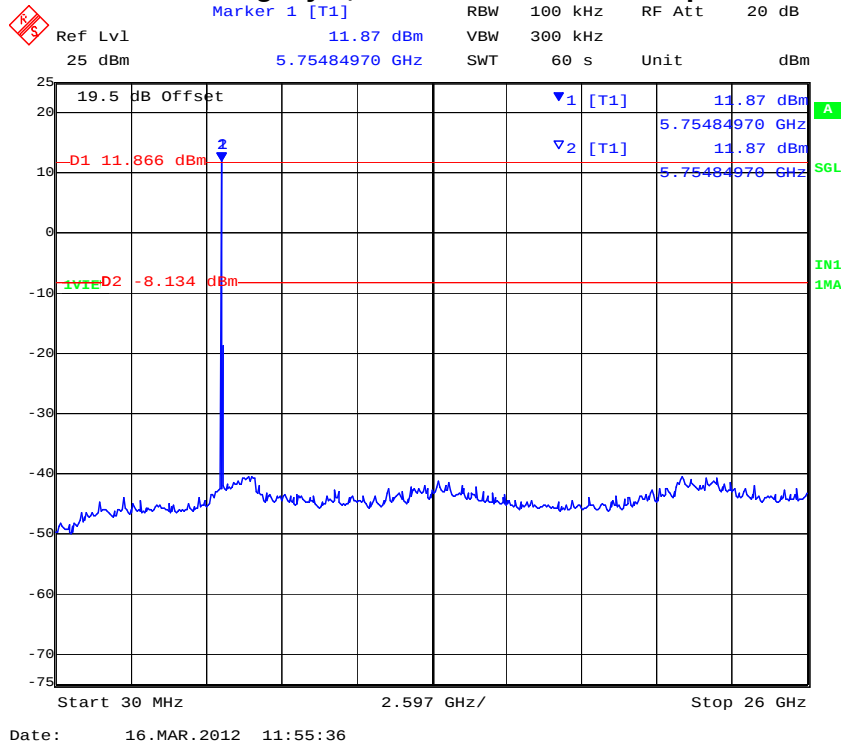


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 272 of 412

5 MHz PORT C 802.11a-Legacy 5,845.5 MHz Conducted Spurious 0.03-26 GHz



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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 273 of 412

TABLE OF RESULTS – 802.11a Legacy 10 MHz, 6 MBit/s

Test Conditions:	15.247 (a)(2)	Rel. Humidity (%):	35	to	42
Variant:	802.11a, 10 MHz	Ambient Temp. (°C):	19	to	22
TPC:	HIGH	Pressure (mBars):	998	to	1003
Modulation:	ON	Duty Cycle (%):	100		
Beam Forming Gain	N/A dB	Antenna Gain:	N/A		dBi
Applied Voltage:	48.00 Vdc	Antenna Ports (N):			
Notes 1:					
Notes 2:					

Conducted Spurious Measurement

Test Freq.	Start Freq.	Stop Freq.	Port A		Port B		Port C		Port D	
MHz	MHz	MHz	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm
5735.000	30.00	26000.00	-41.36	-8.99	-41.83	-8.69	-40.05	-9.01		
5790.000	30.00	26000.00	-41.37	-9.73	-41.44	-9.58	-39.53	-8.14		
5840.000	30.00	26000.00	-41.89	-8.53	-41.54	-9.69	-40.25	-8.82		

SE: Maximum spurious emission found

Band-edge Measurement

Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
5735.000	5725.00	-10.78	-7.10	-9.61	-7.42	-11.64	-7.28		
5840.000	5850.00	-7.66	-7.10	-12.20	-8.93	-8.51	-7.34		

BE: Maximum Band edge emission found

Measurement uncertainty:	±2.81 dB
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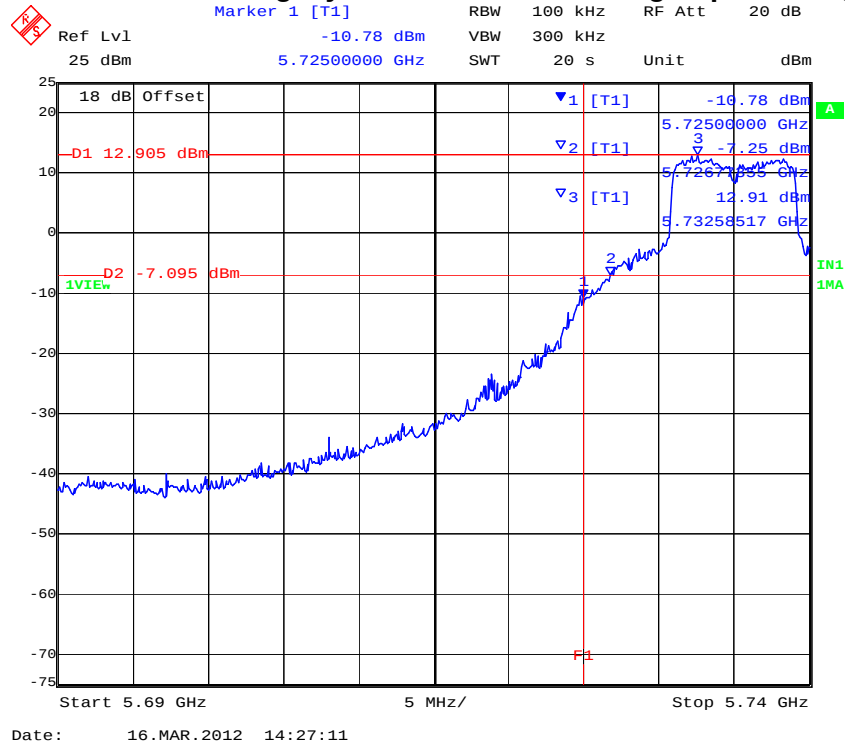
Note: Limit is based on 20dB down from fundamental emission

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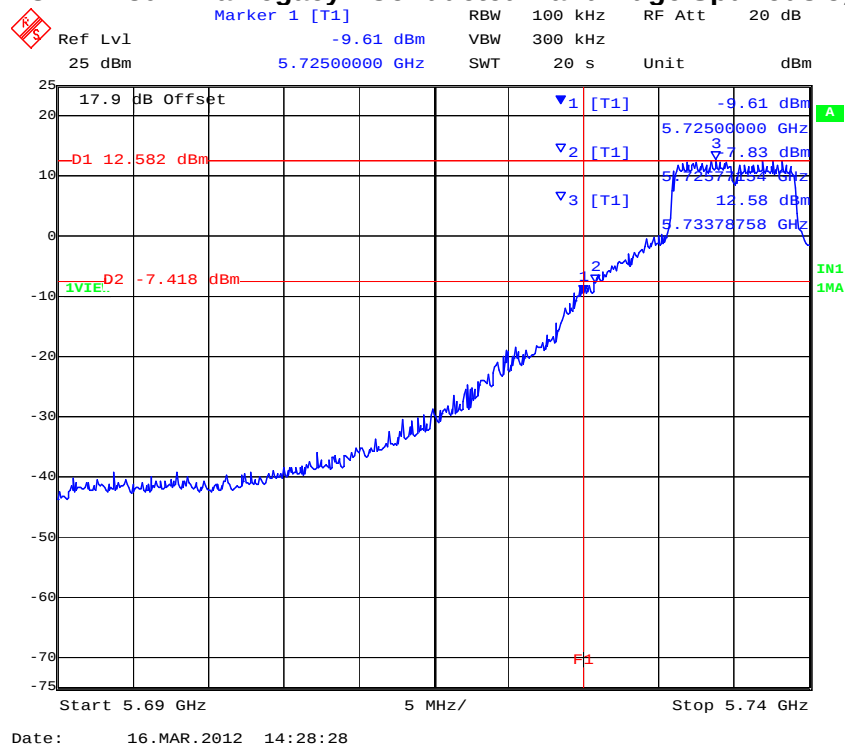


Title: Wavion WBSn-2450-O/S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 274 of 412

10 MHz PORT A 802.11a Legacy - Conducted Band Edge Spurious 5,725 MHz



10 MHz PORT B 802.11a Legacy - Conducted Band Edge Spurious 5,725 MHz

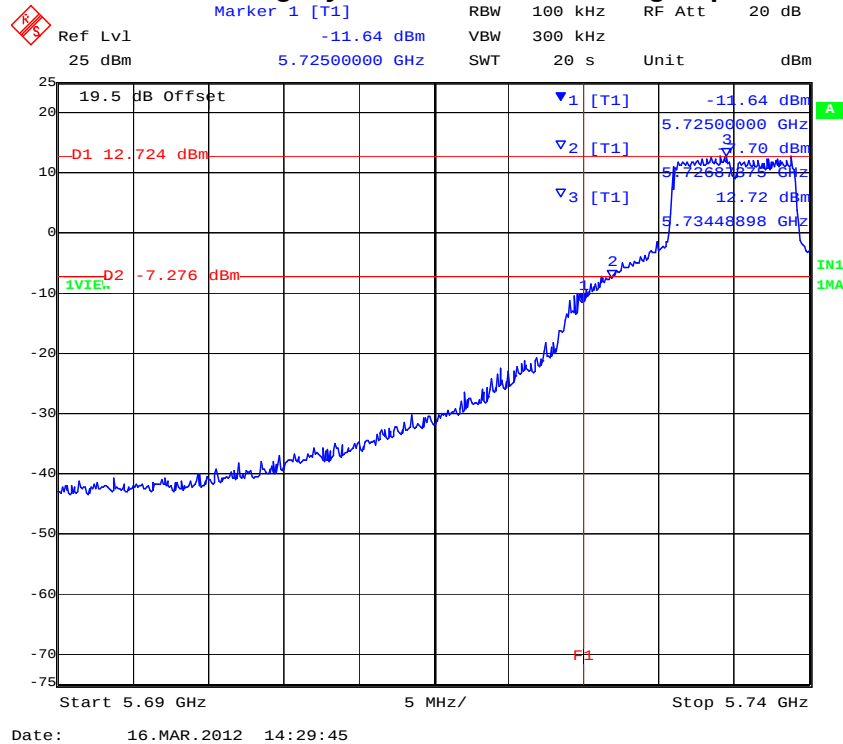


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 275 of 412

10 MHz PORT C 802.11a Legacy - Conducted Band Edge Spurious 5,725 MHz

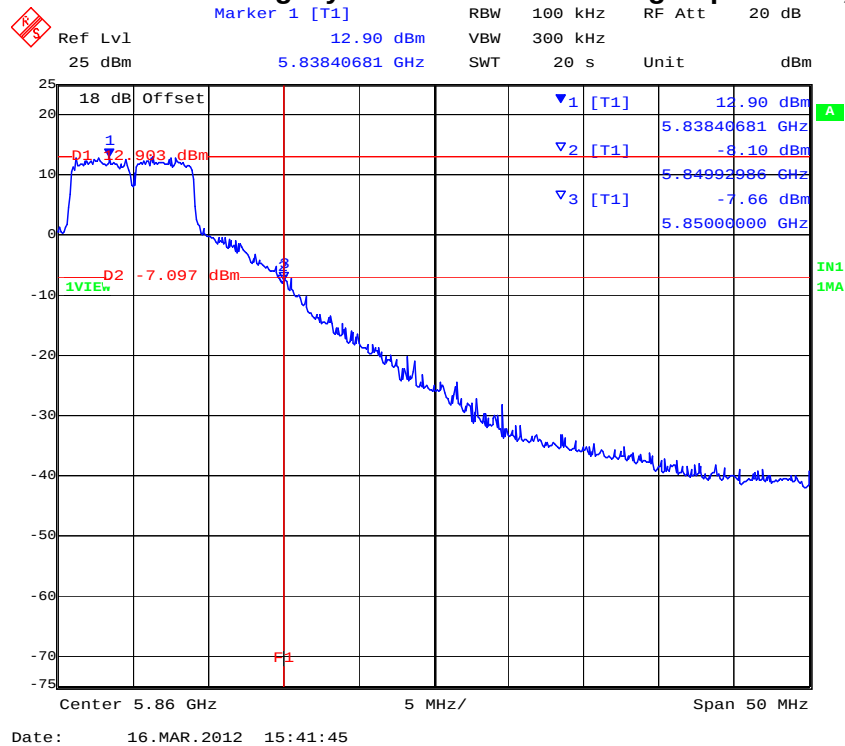


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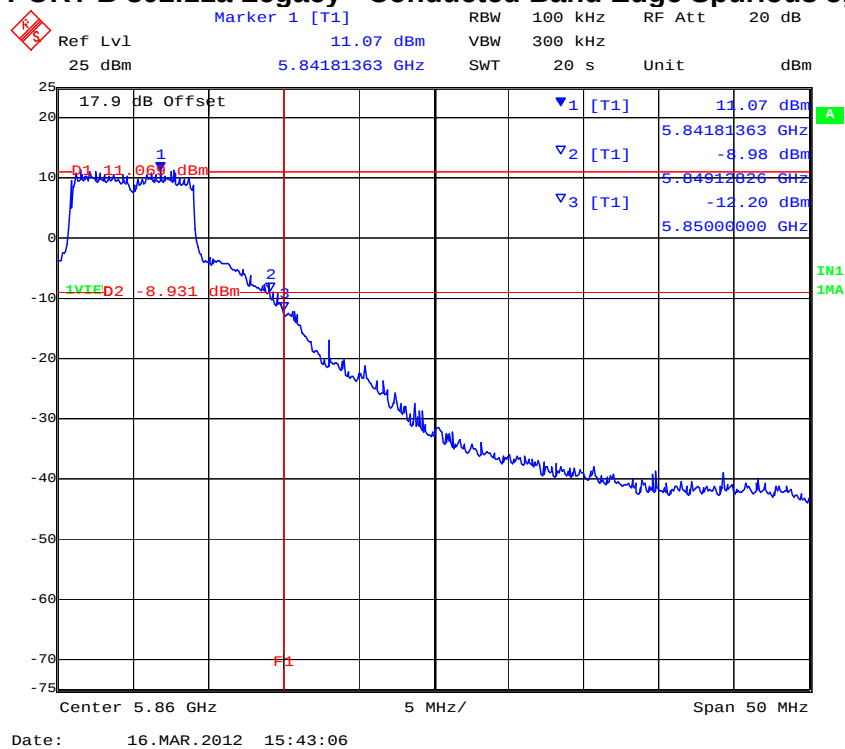


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 276 of 412

10 MHz PORT A 802.11a Legacy - Conducted Band Edge Spurious 5,850 MHz



10 MHz PORT B 802.11a Legacy - Conducted Band Edge Spurious 5,850 MHz

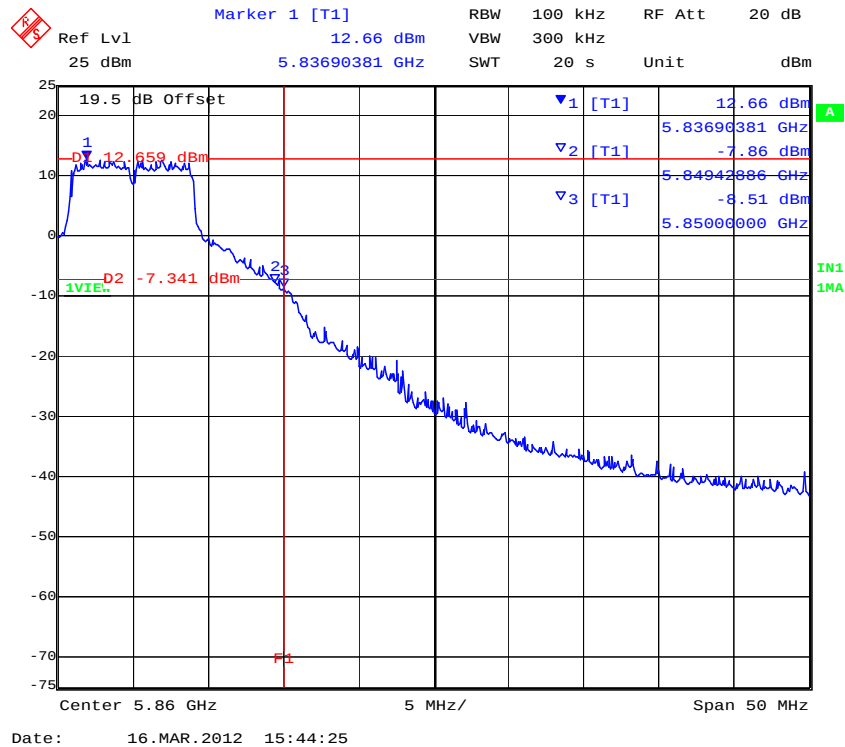


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 277 of 412

10 MHz PORT C 802.11a Legacy - Conducted Band Edge Spurious 5,850 MHz

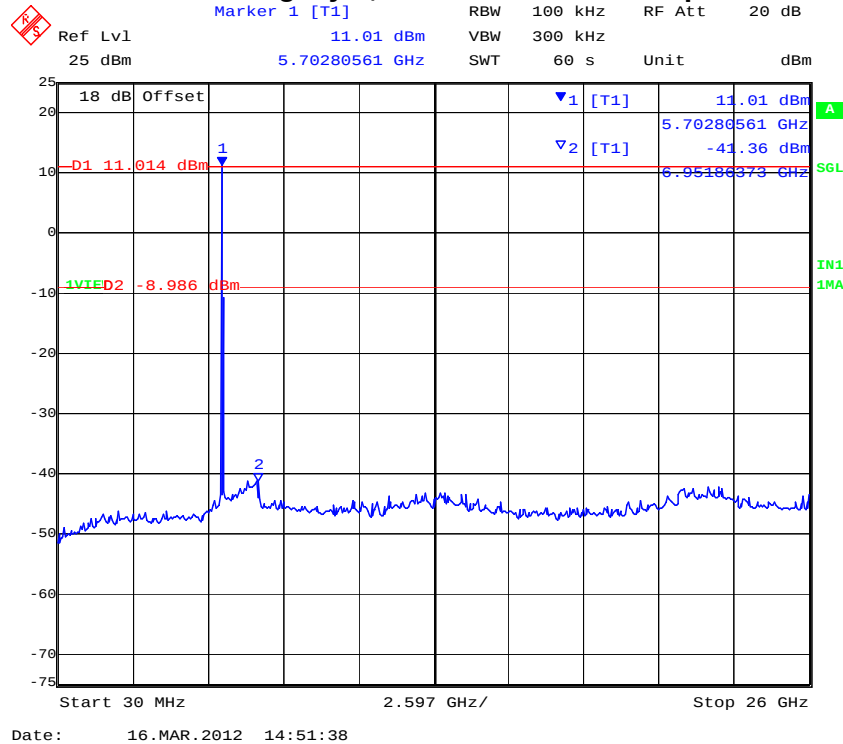


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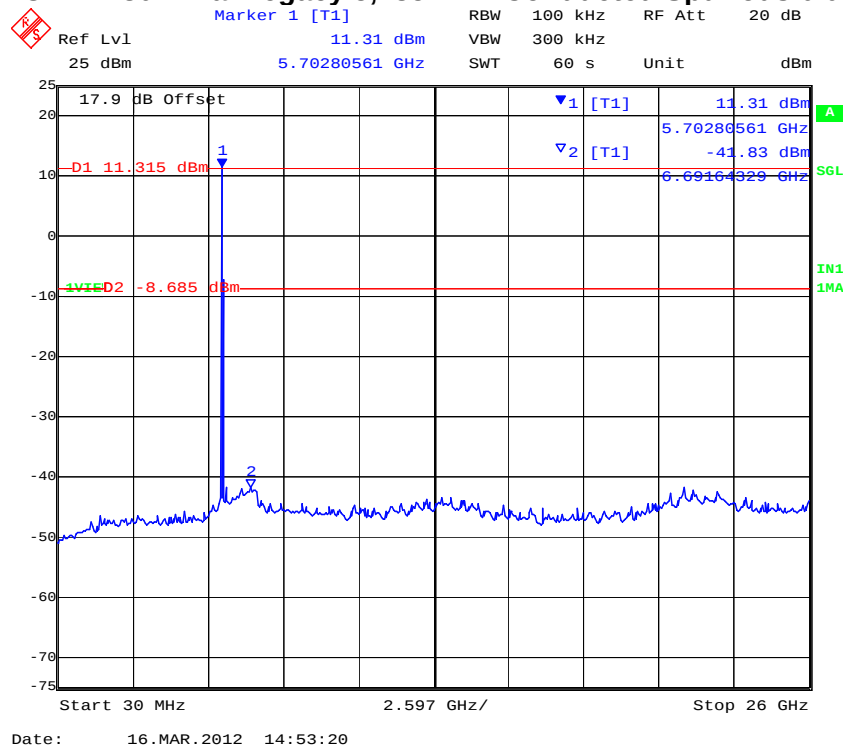


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 278 of 412

10 MHz PORT A 802.11a-Legacy 5,735 MHz Conducted Spurious 0.03-26 GHz



10 MHz PORT B 802.11a-Legacy 5,735 MHz Conducted Spurious 0.03-26 GHz

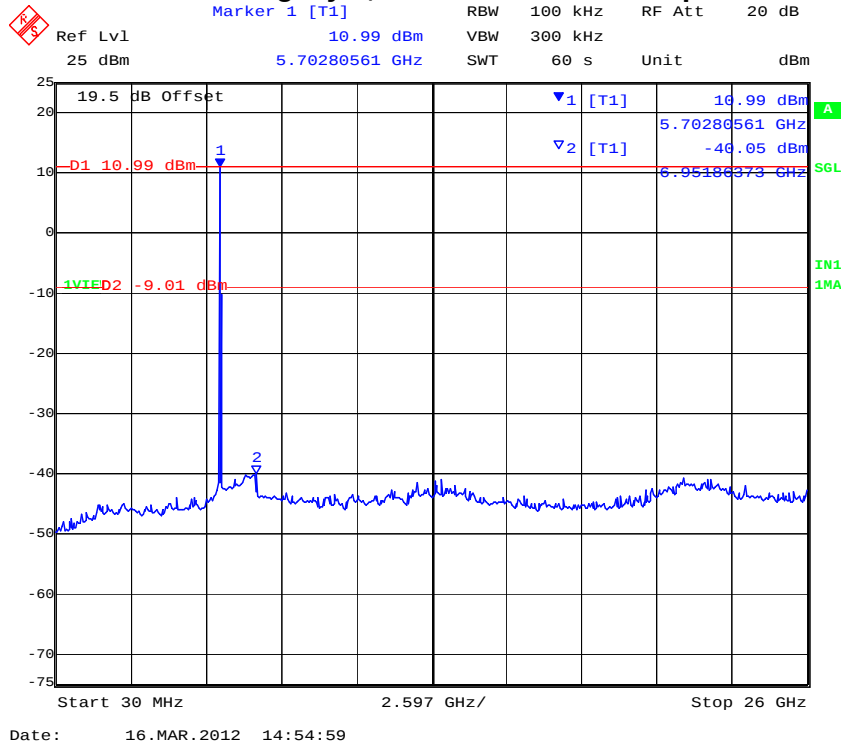


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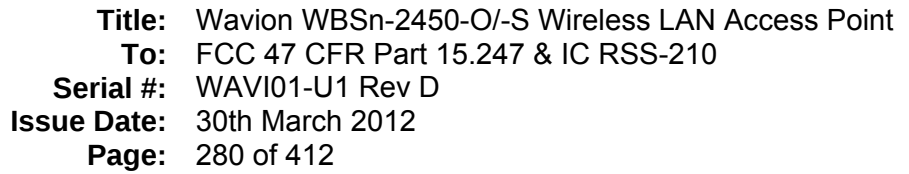


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 279 of 412

10 MHz PORT C 802.11a-Legacy 5,735 MHz Conducted Spurious 0.03-26 GHz



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Ref Lvl 25 dBm
 Marker 1 [T1] 10.27 dBm
 RBW 100 kHz
 VBW 300 kHz
 SWT 60 s
 Unit dBm

18 dB Offset
 10.27 dBm
 5.75484970 GHz
 -41.37 dBm
 -9.73 dBm

Start 30 MHz
 2.597 GHz/
 Stop 26 GHz

Date: 16.MAR.2012 15:21:08

Ref Lvl 25 dBm RBW 100 kHz VBW 300 kHz SWT 60 s RF Att 20 dB

Marker 1 [T1] 10.42 dBm

5.75484970 GHz

Unit dBm

17.9 dB Offset

1 [T1] 10.42 dBm

2 [T1] -41.44 dBm

Start 30 MHz Stop 26 GHz

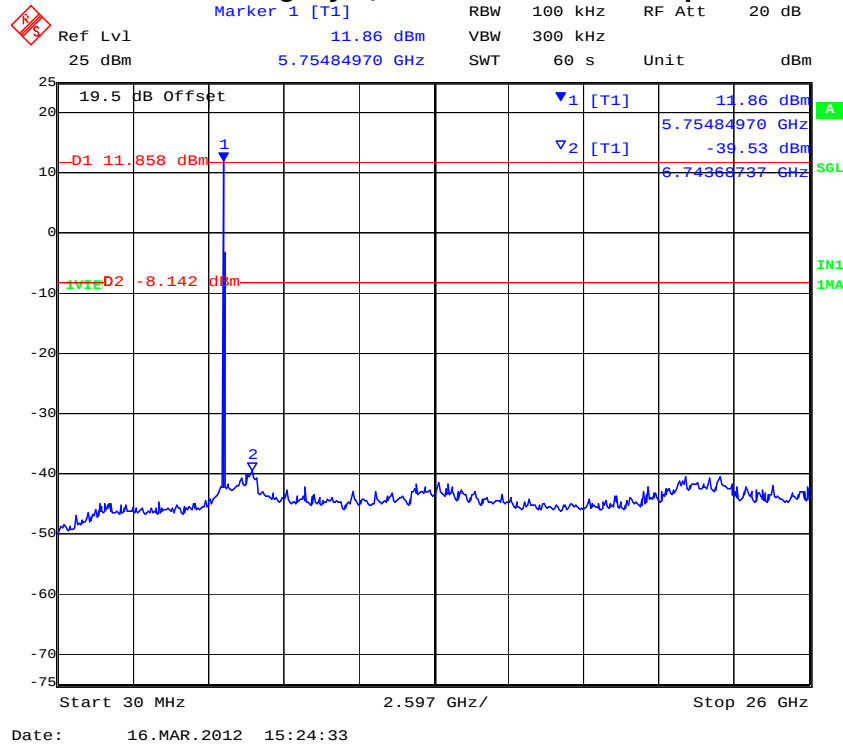
Date: 16.MAR.2012 15:22:52

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



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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 281 of 412

10 MHz PORT C 802.11a-Legacy 5,790 MHz Conducted Spurious 0.03-26 GHz

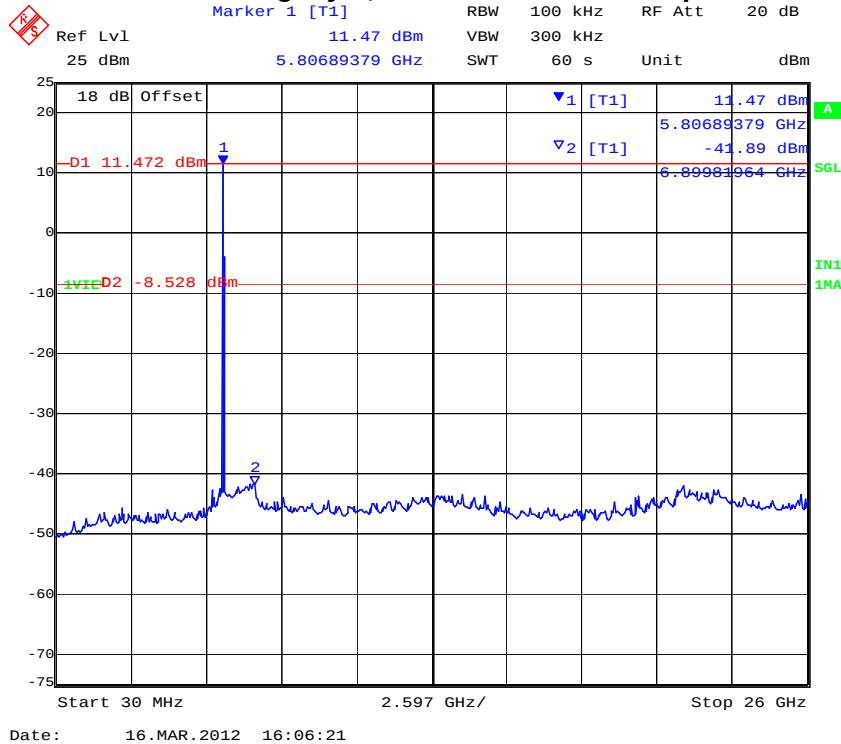


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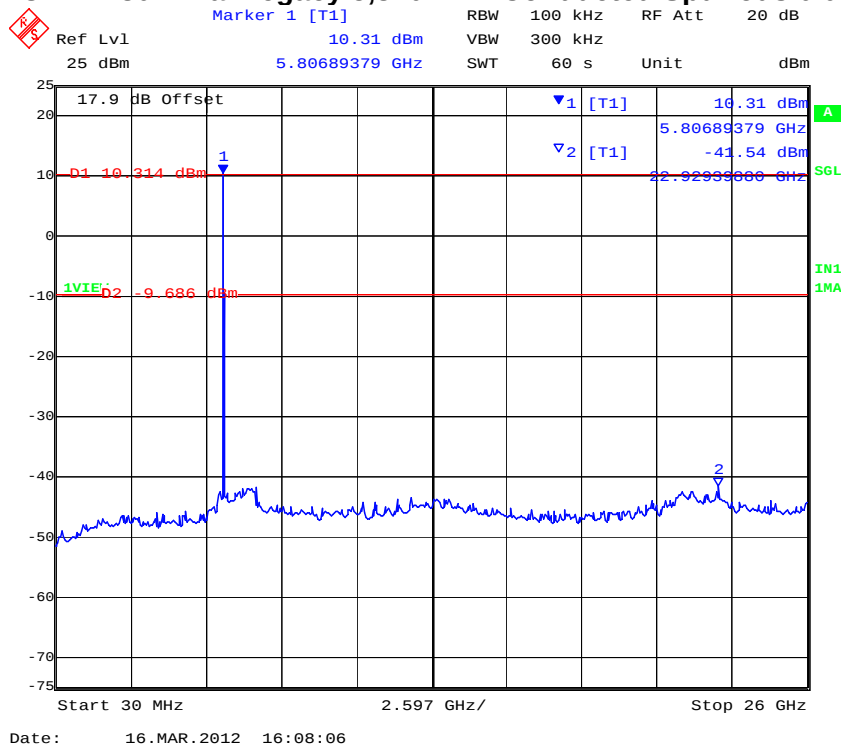


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 282 of 412

10 MHz PORT A 802.11a-Legacy 5,840 MHz Conducted Spurious 0.03-26 GHz



10 MHz PORT B 802.11a-Legacy 5,840 MHz Conducted Spurious 0.03-26 GHz

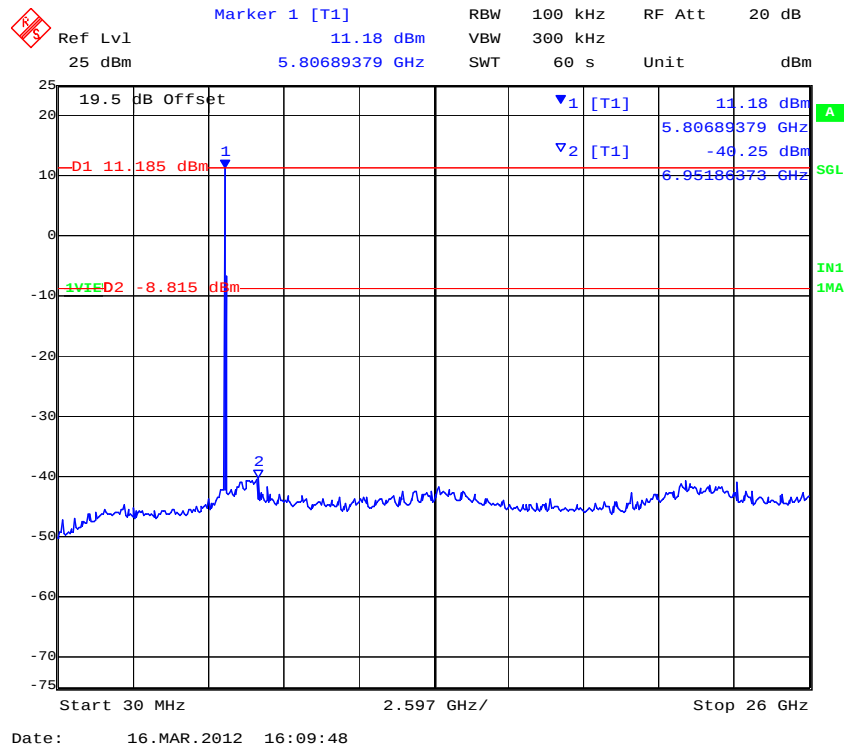


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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 283 of 412

10 MHz PORT C 802.11a-Legacy 5,840 MHz Conducted Spurious 0.03-26 GHz



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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 284 of 412

TABLE OF RESULTS – 802.11a Legacy

Test Conditions:	15.247 (a)(2)	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	N/A dB	Antenna Gain:	N/A		dBi
Applied Voltage:	48.00 Vdc	Antenna Ports (N):			
Notes 1:					
Notes 2:					

Conducted Spurious Measurement

Test Freq.	Start Freq.	Stop Freq.	Port A		Port B		Port C		Port D	
MHz	MHz	MHz	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm
5745.000	30.00	26000.00	-41.24	-11.69	-42.05	-12.16	-40.08	-9.81		
5785.000	30.00	26000.00	-40.99	-9.70	-41.78	-10.68	-39.60	-7.29		
5825.000	30.00	26000.00	-38.38	-9.19	-41.29	-11.24	-40.13	-9.36		

SE: Maximum spurious emission found

Band-edge Measurement

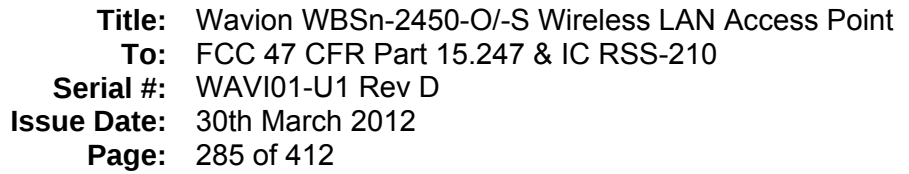
Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
5745.000	5725.00	-13.00	-9.88	-10.38	-9.81	-9.68	-7.81		
5825.000	5850.00	-11.64	-8.27	-16.14	-10.27	-11.35	-7.62		

BE: Maximum Band edge emission found

Measurement uncertainty:	±2.81 dB
---------------------------------	----------

Note: Limit is based on 20dB down from fundamental emission

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Ref Lvl 25 dBm
 Marker 1 [T1] 5.72500000 GHz -13.00 dBm
 RBW 100 kHz
 VBW 300 kHz
 SWT 20 s
 RF Att 20 dB
 Unit dBm

18 dB Offset
 D1 10.119 dBm
 D2 0.881 dBm
 T1 [T1] -13.00 dBm
 T2 [T1] -13.71 dBm
 T3 [T1] -16.12 dBm
 IN1
 1MA

Start 5.683 GHz
 7.2 MHz/
 Stop 5.755 GHz

K

Ref Lvl
25 dBm

Marker 1 [T1]
-10.38 dBm
5.7250000 GHz

RBW 100 kHz
VBW 300 kHz
RF Att 20 dB
Unit dBm

Label	Freq (GHz)	Power (dBm)
D1	5.683	10.19
D2	5.683	-9.81
F1	5.725	-75
T1	5.725	-10.38
T2	5.735	-16.16
T3	5.745	-16.19

Start 5.683 GHz 7.2 MHz/ Stop 5.755 GHz

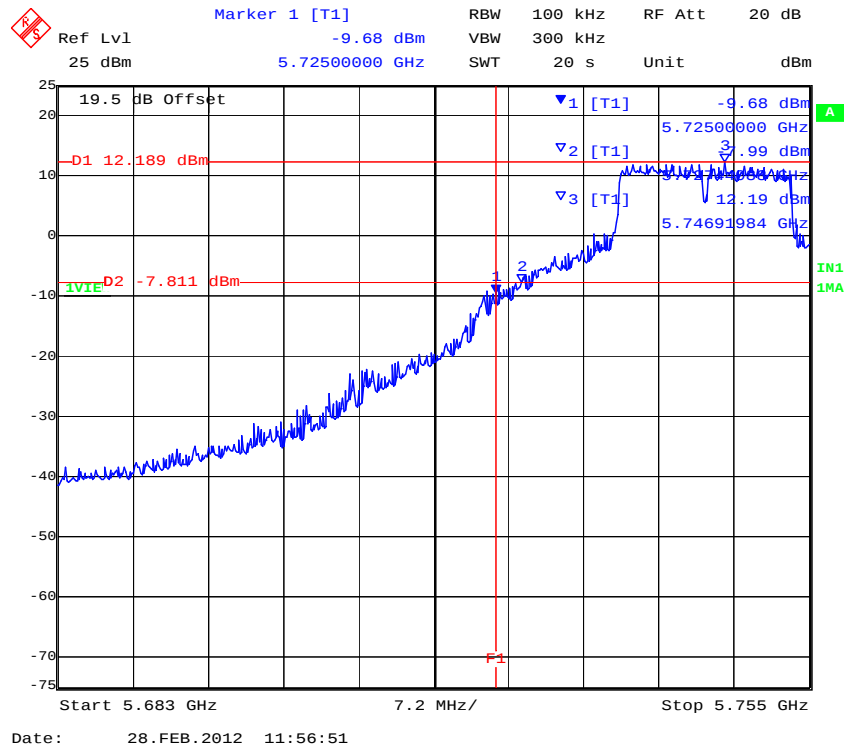
Date: 28.FEB.2012 11:55:33

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 286 of 412

PORT C 802.11a Legacy - Conducted Band Edge Spurious 5,725 MHz

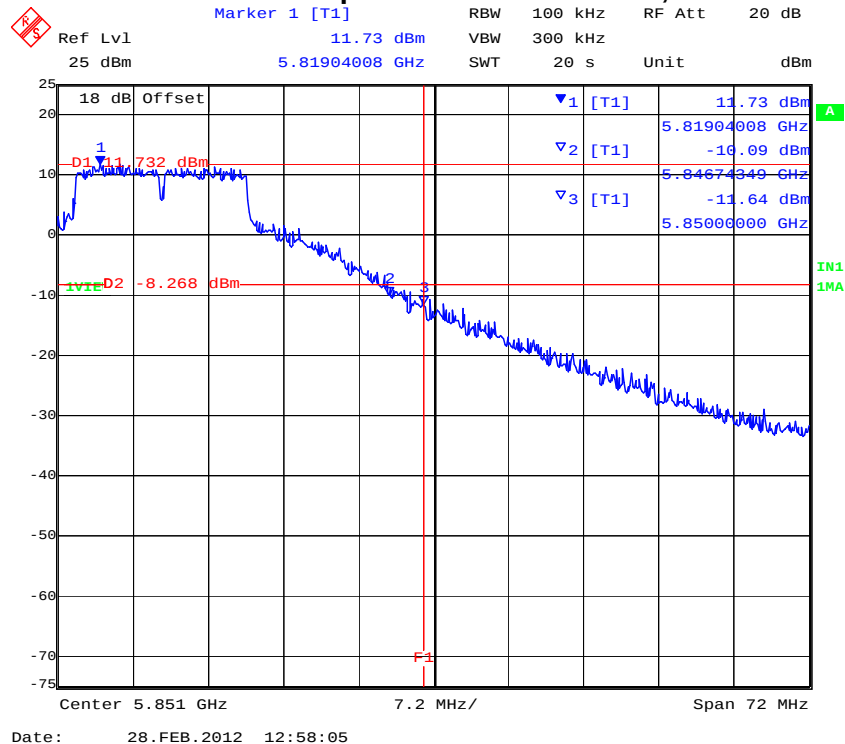


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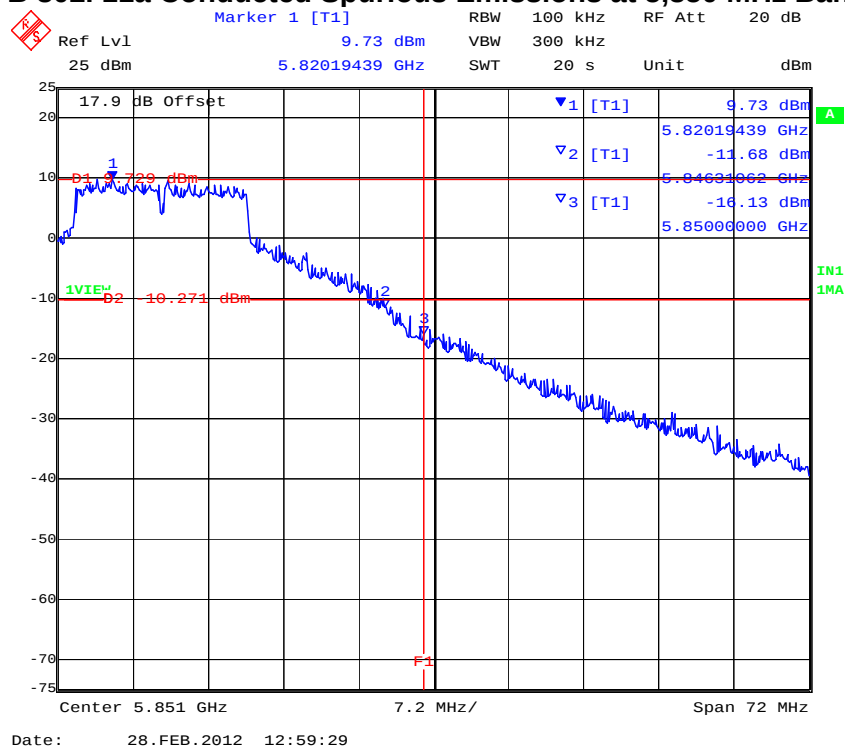


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 287 of 412

PORT A 802.11a Conducted Spurious Emissions at 5,850 MHz Band Edge



PORT B 802.11a Conducted Spurious Emissions at 5,850 MHz Band Edge

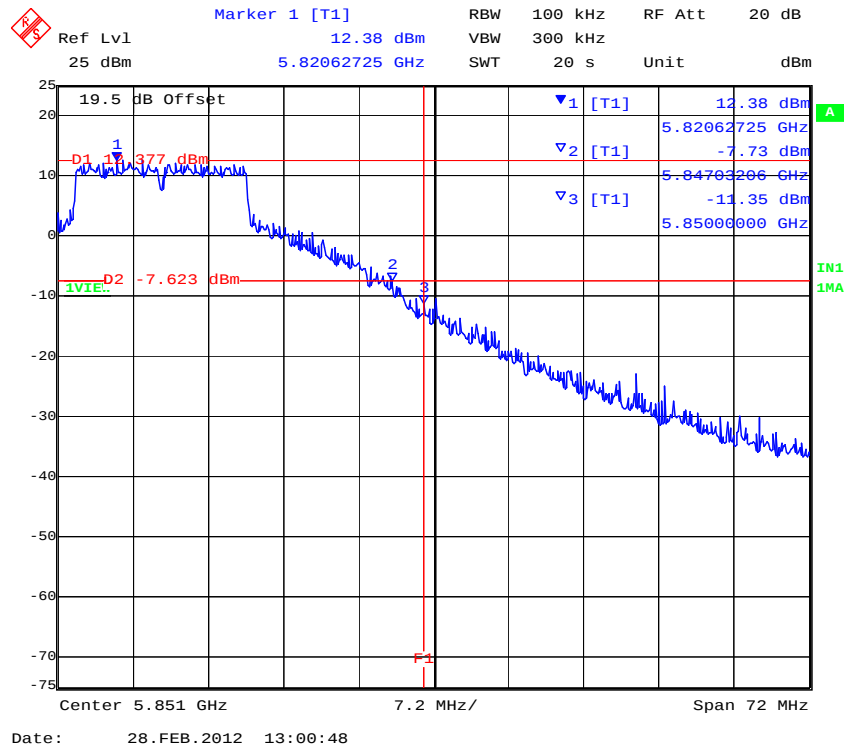


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 288 of 412

PORT C 802.11a Conducted Spurious Emissions at 5,850 MHz Band Edge

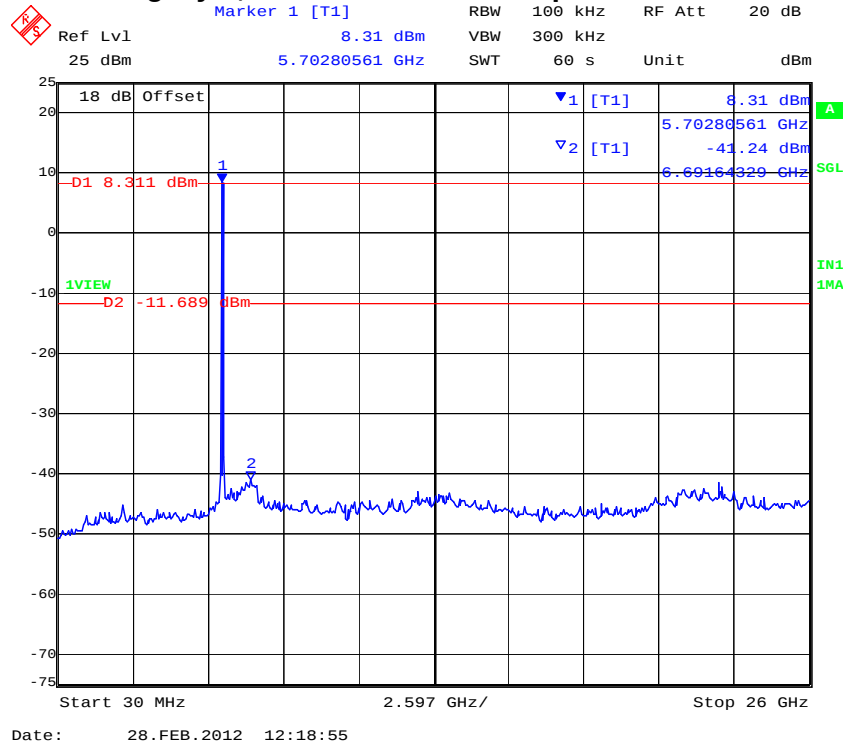


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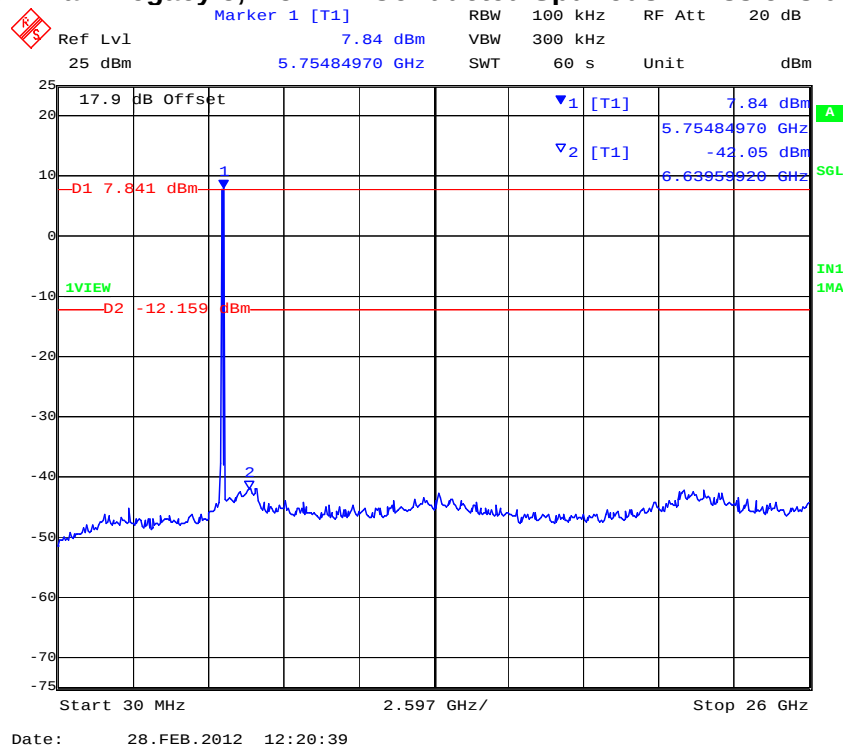


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 289 of 412

PORT A 802.11a – Legacy 5,745 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11a – Legacy 5,745 MHz Conducted Spurious Emissions 0.03 – 26 GHz

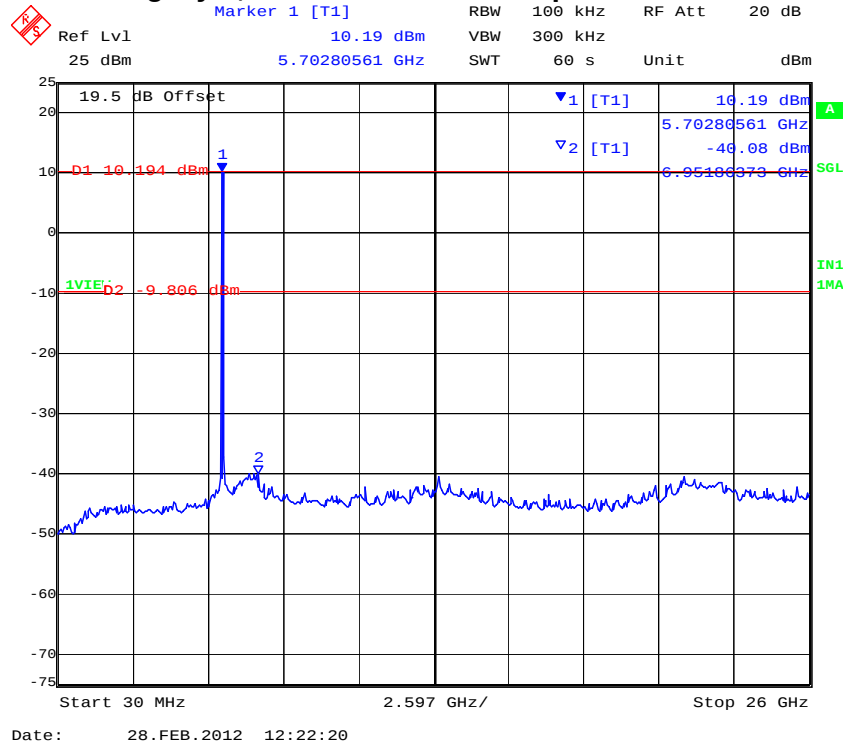


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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 290 of 412

PORT C 802.11a – Legacy 5,745 MHz Conducted Spurious Emissions 0.03 – 26 GHz

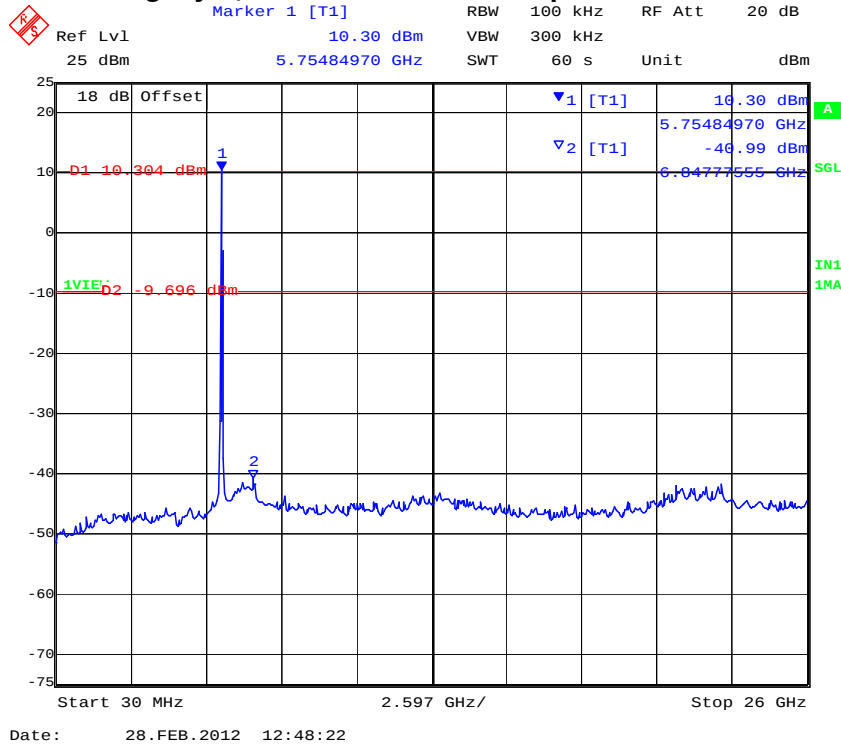


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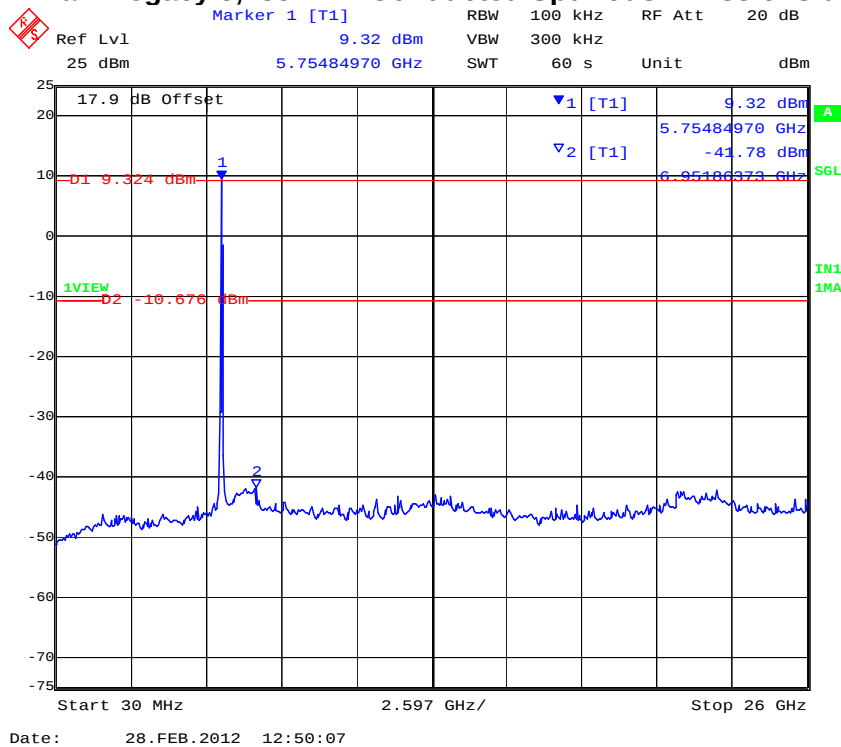


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 291 of 412

PORT A 802.11a – Legacy 5,785 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11a – Legacy 5,785 MHz Conducted Spurious Emissions 0.03 – 26 GHz

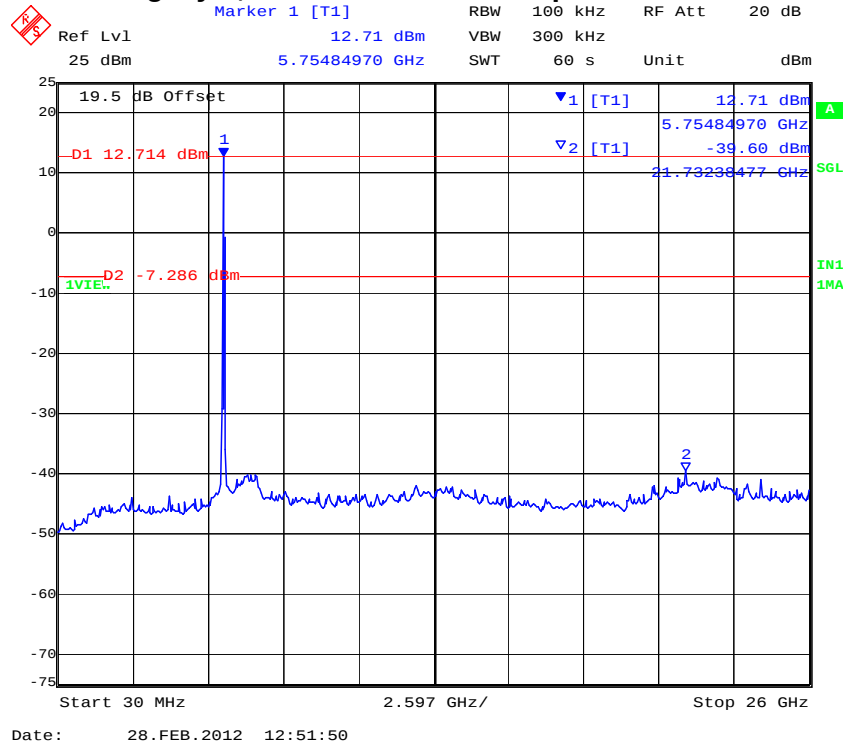


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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 292 of 412

PORT C 802.11a – Legacy 5,785 MHz Conducted Spurious Emissions 0.03 – 26 GHz

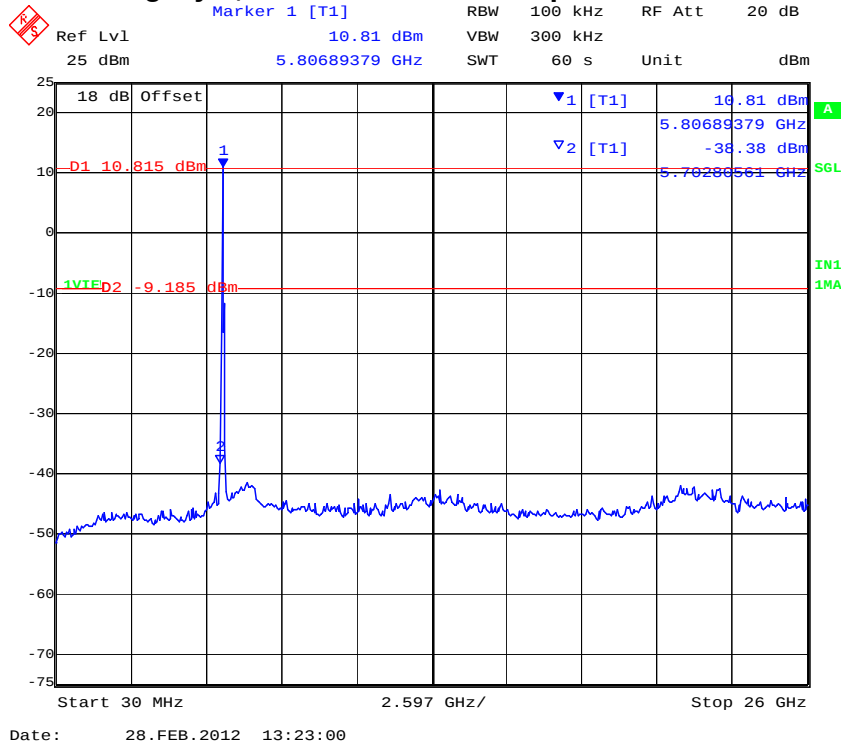


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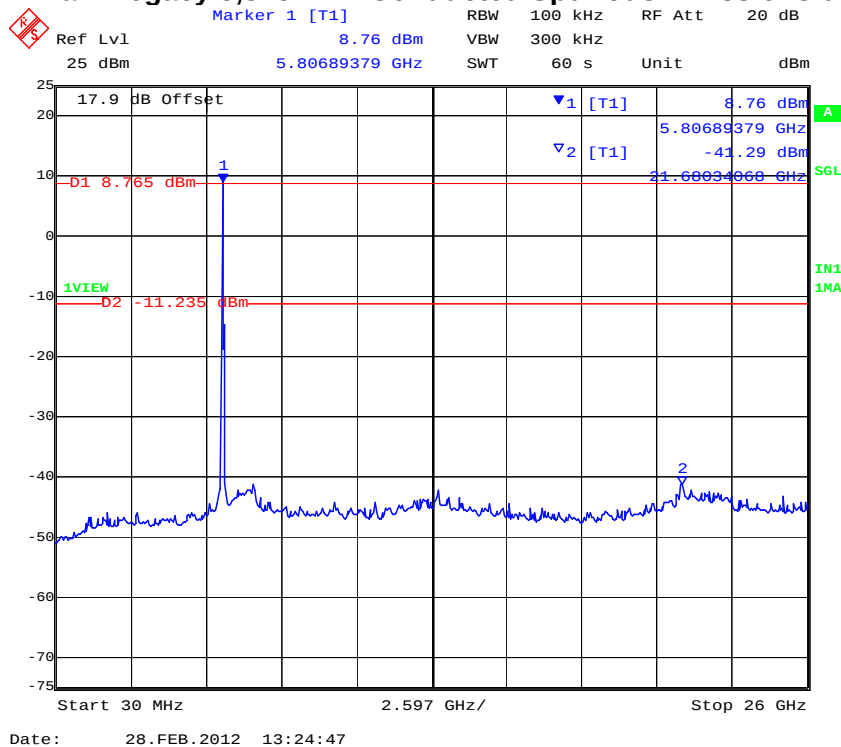


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 293 of 412

PORT A 802.11a – Legacy 5,825 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11a – Legacy 5,825 MHz Conducted Spurious Emissions 0.03 – 26 GHz

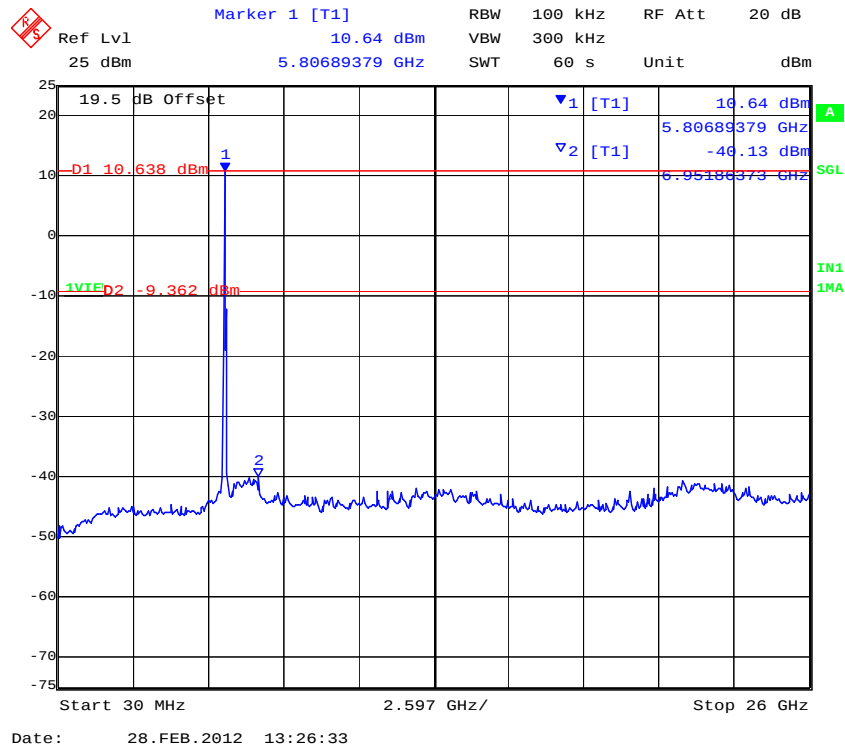


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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 294 of 412

PORT C 802.11a – Legacy 5,825 MHz Conducted Spurious Emissions 0.03 – 26 GHz



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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 295 of 412

Conducted Spurious Emission Results

TABLE OF RESULTS – 802.11n HT-20

Test Conditions:	15.247 (a)(2)	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	N/A dB	Antenna Gain:	N/A	dBi	
Applied Voltage:	48.00 Vdc	Antenna Ports (N):			
Notes 1:					
Notes 2:					

Conducted Spurious Measurement

Test Freq.	Start Freq.	Stop Freq.	Port A		Port B		Port C		Port D	
MHz	MHz	MHz	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm
5745.000	30.00	26000.00	-41.14	-12.04	-41.33	-12.21	-39.68	-10.40		
5785.000	30.00	26000.00	-41.31	-9.51	-40.81	-10.16	-40.18	-8.40		
5825.000	30.00	26000.00	-39.25	-9.70	-41.17	-12.82	-39.43	-9.68		

SE: Maximum spurious emission found

Band-edge Measurement

Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
5745.000	5725.00	-14.55	-11.72	-12.75	-11.99	-12.73	-10.34		
5825.000	5850.00	-12.66	-7.79	-16.74	-11.12	-14.75	-8.82		

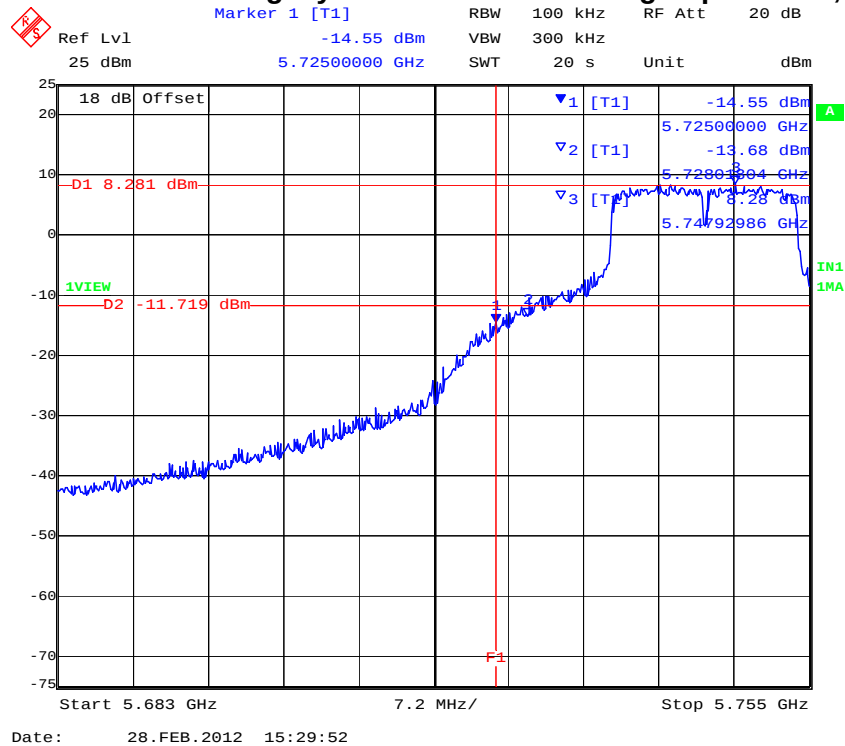
BE: Maximum Band edge emission found

Measurement uncertainty:	±2.81 dB
---------------------------------	----------

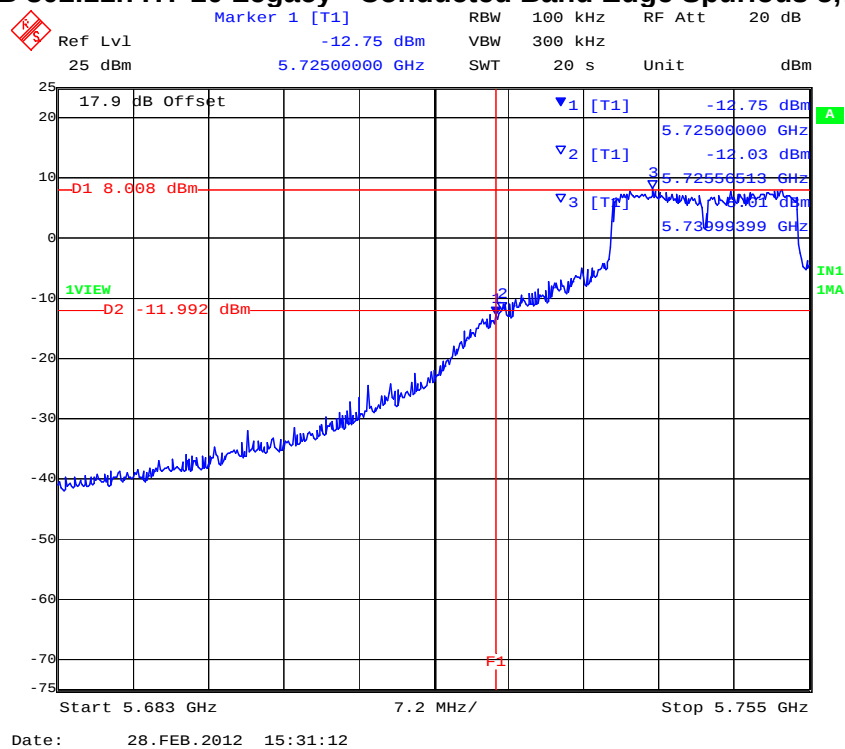
Note: Limit is based on 20dB down from fundamental emission

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PORT A 802.11n HT-20 Legacy - Conducted Band Edge Spurious 5,725 MHz



PORT B 802.11n HT-20 Legacy - Conducted Band Edge Spurious 5,725 MHz

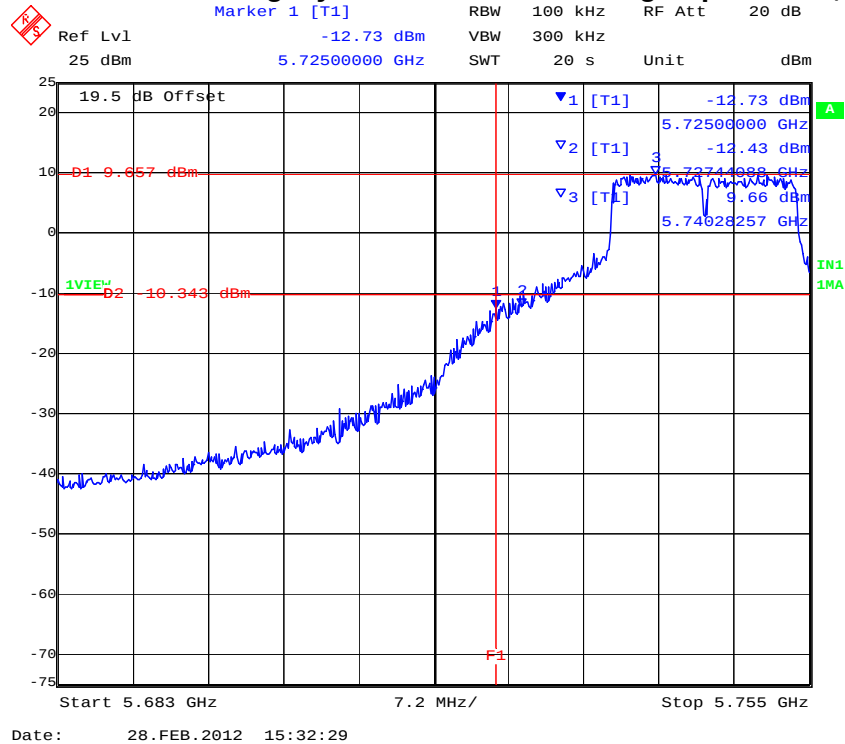


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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 297 of 412

PORT C 802.11n HT-20 Legacy - Conducted Band Edge Spurious 5,725 MHz

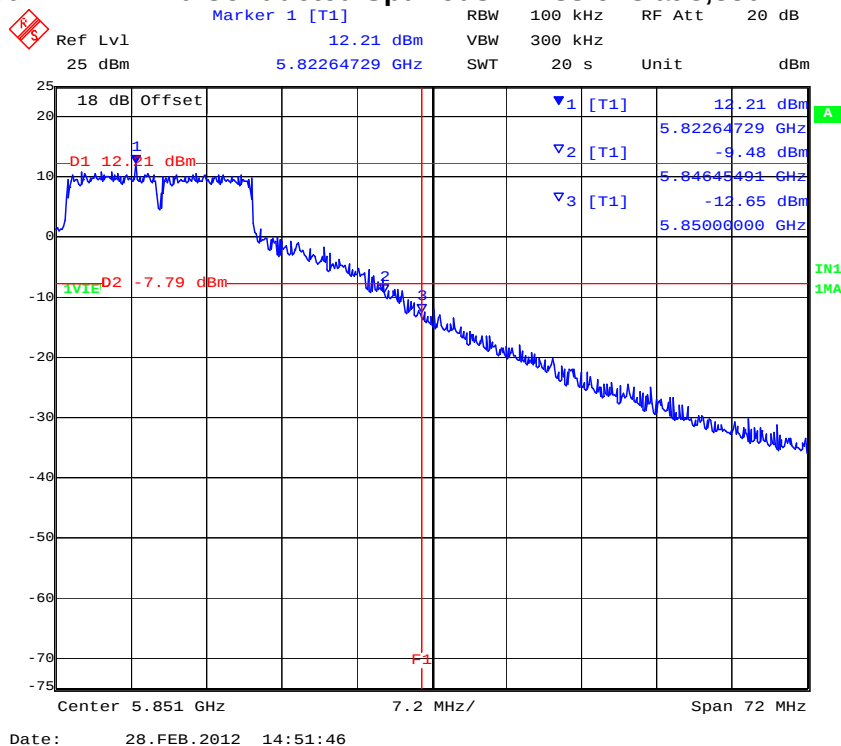


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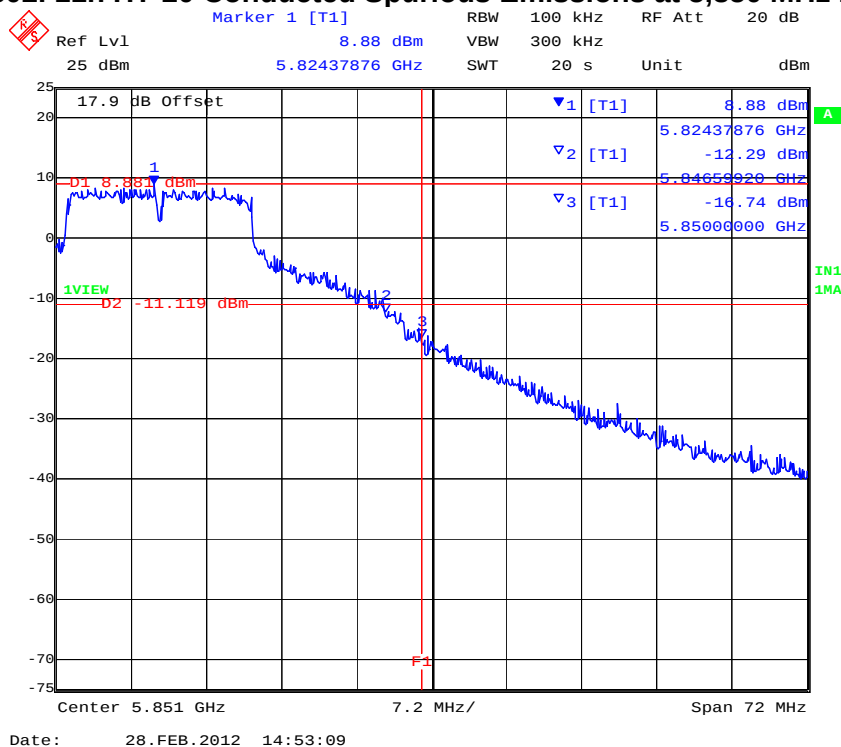


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 298 of 412

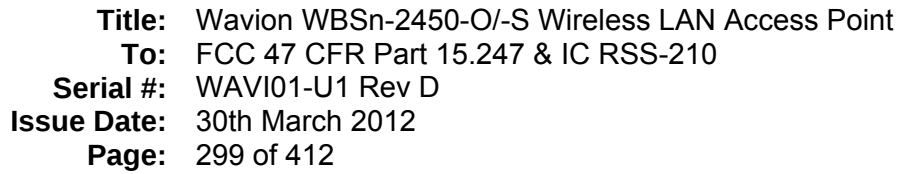
PORT A 802.11n HT-20 Conducted Spurious Emissions at 5,850 MHz Band Edge



PORT B 802.11n HT-20 Conducted Spurious Emissions at 5,850 MHz Band Edge



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Ref Lvl 25 dBm

Marker 1 [T1] 11.18 dBm

RBW 100 kHz RF Att 20 dB

VBW 300 kHz

SWT 20 s Unit dBm

19.5 dB Offset

D1 11.181 dBm

1

2

3

F1

▼1 [T1] 11.18 dBm

▼2 [T1] -16.25 dBm

▼3 [T1] -14.75 dBm

5.83188176 GHz

5.84648491 GHz

5.85000000 GHz

-10 dBm

-8.819 dBm

Center 5.851 GHz

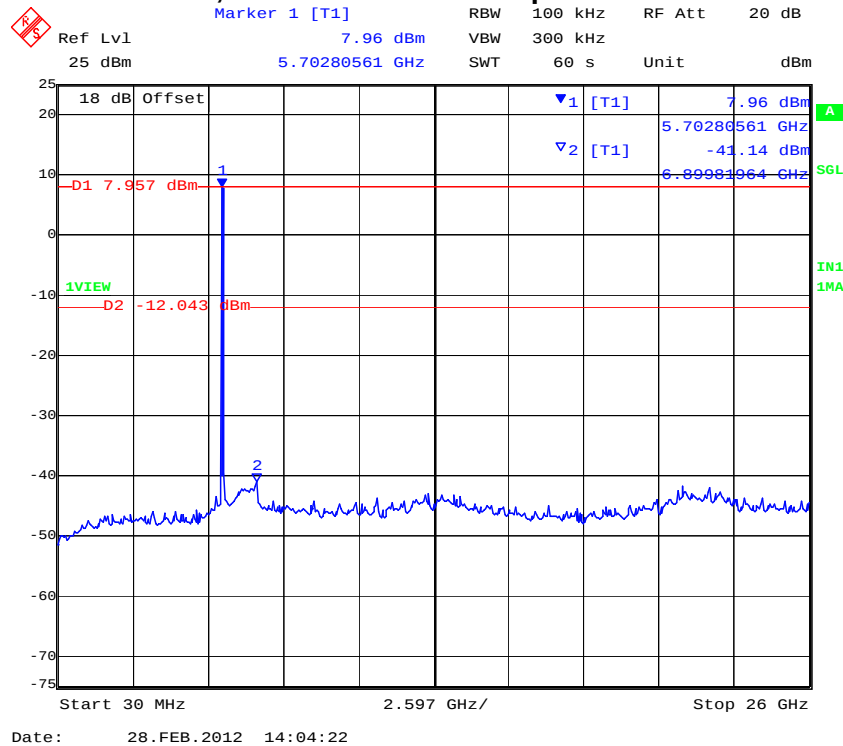
7.2 MHz/

Span 72 MHz

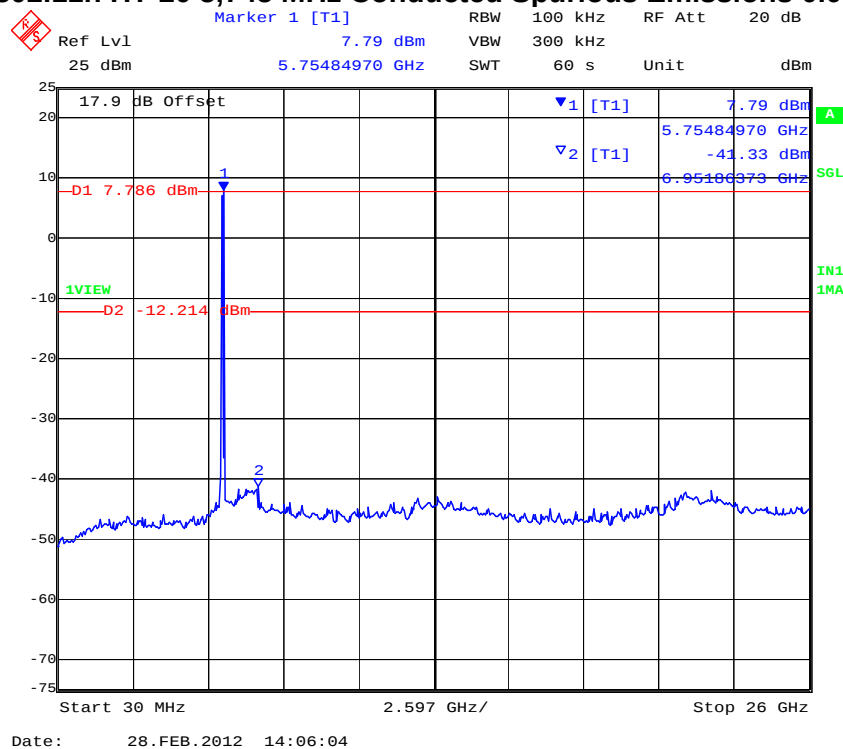
Date: 28.FEB.2012 14:54:29

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

PORT A 802.11n HT-20 5,745 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11n HT-20 5,745 MHz Conducted Spurious Emissions 0.03 – 26 GHz

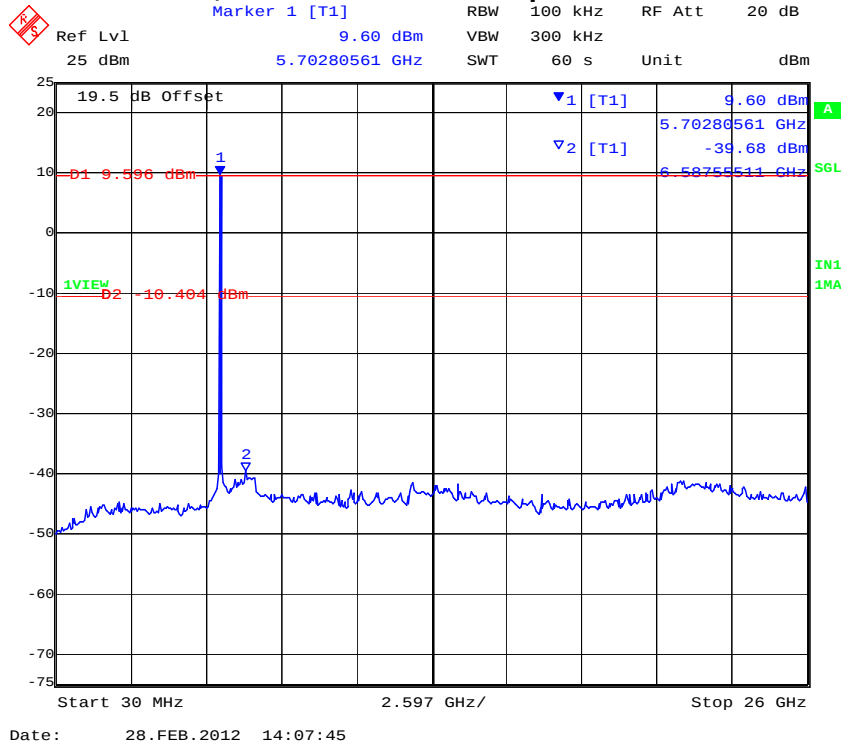


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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 301 of 412

PORT C 802.11n HT-20 5,745 MHz Conducted Spurious Emissions 0.03 – 26 GHz

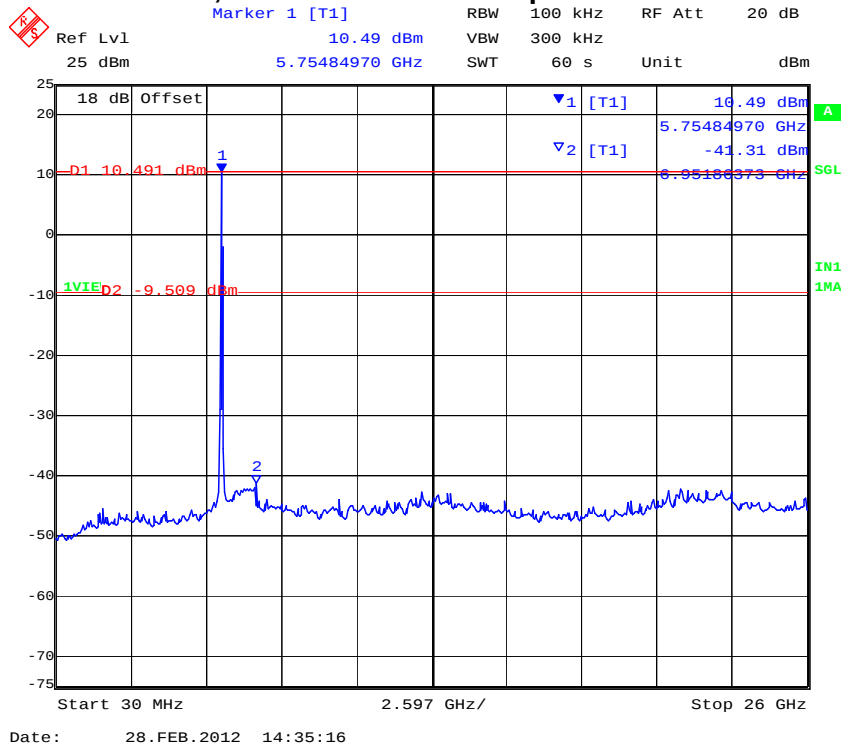


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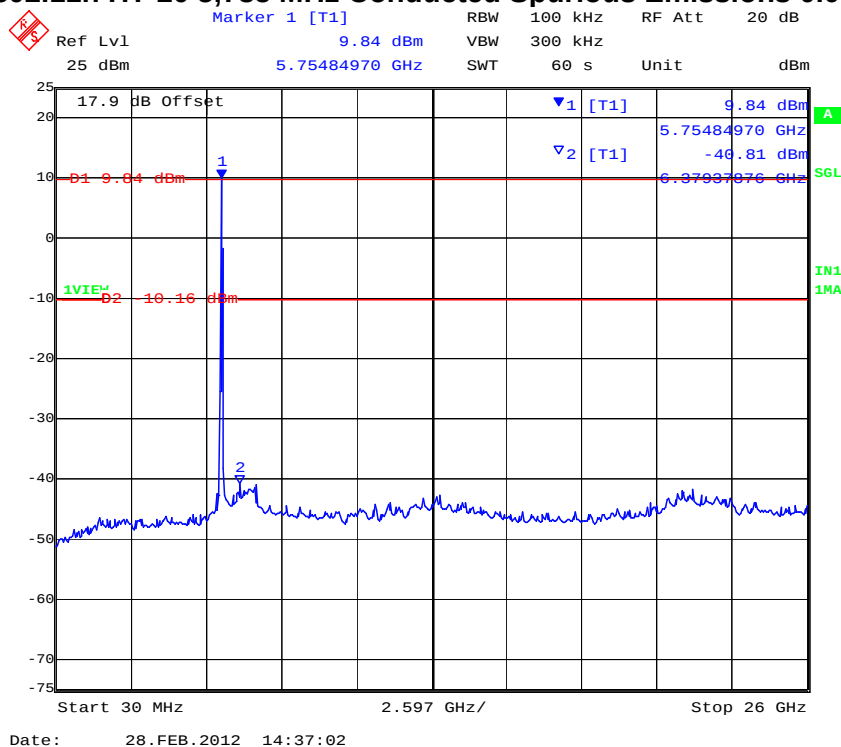


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 302 of 412

PORT A 802.11n HT-20 5,785 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11n HT-20 5,785 MHz Conducted Spurious Emissions 0.03 – 26 GHz

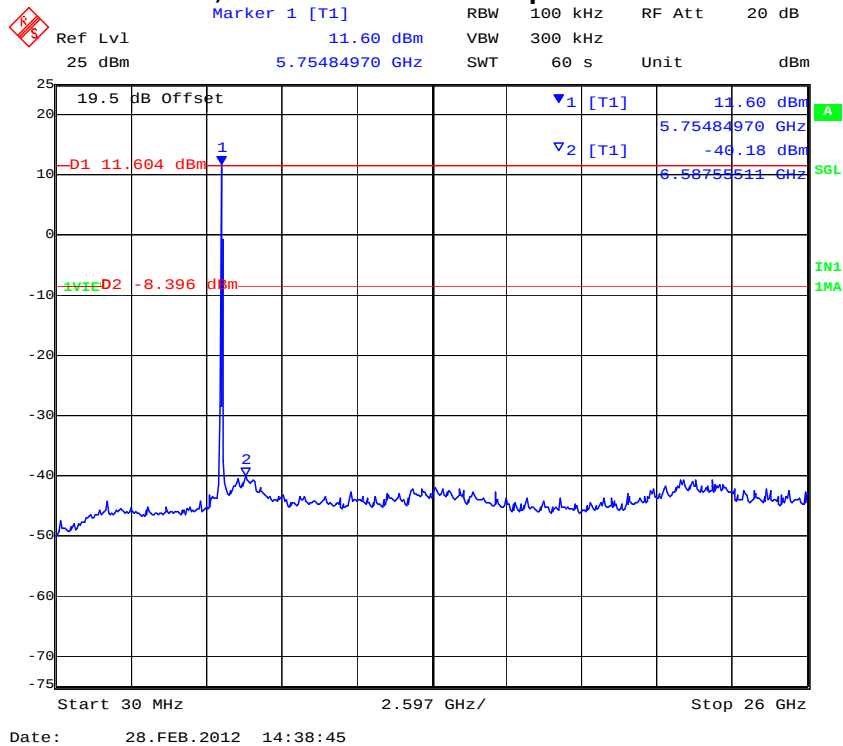


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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 303 of 412

PORT C 802.11n HT-20 5,785 MHz Conducted Spurious Emissions 0.03 – 26 GHz

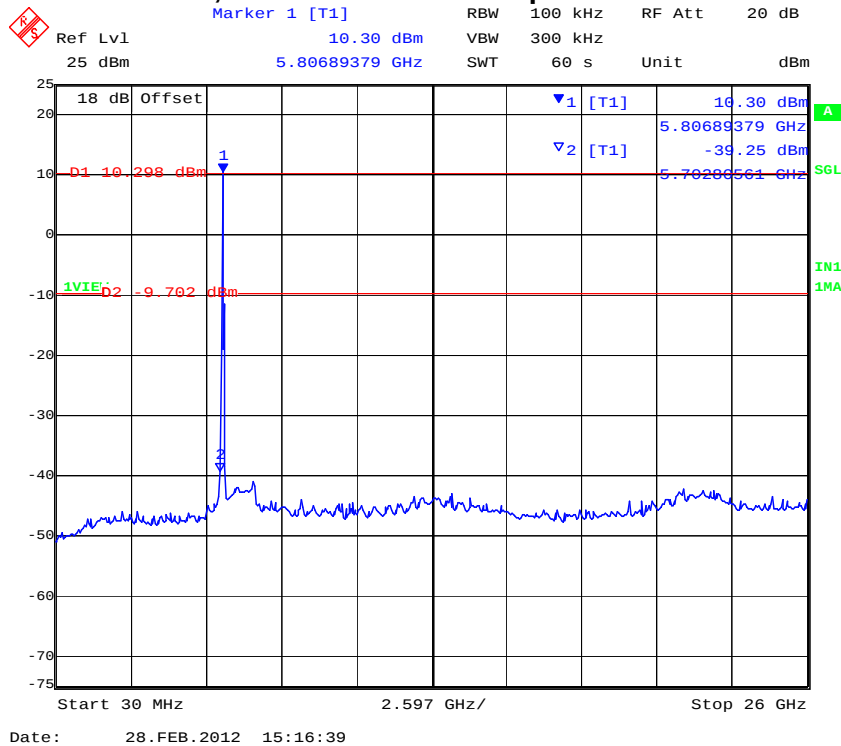


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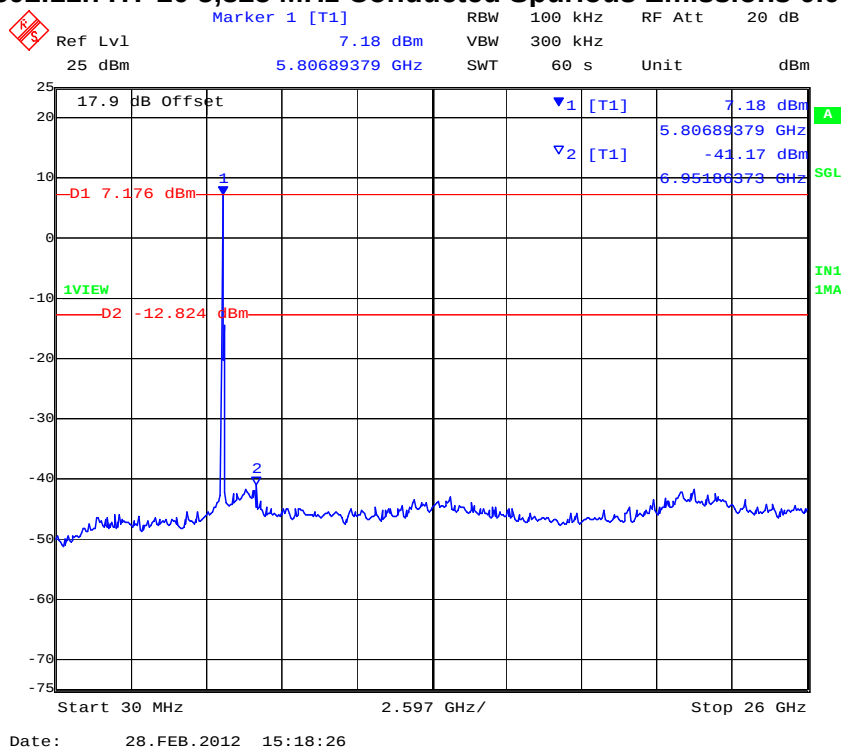


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 304 of 412

PORT A 802.11n HT-20 5,825 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11n HT-20 5,825 MHz Conducted Spurious Emissions 0.03 – 26 GHz

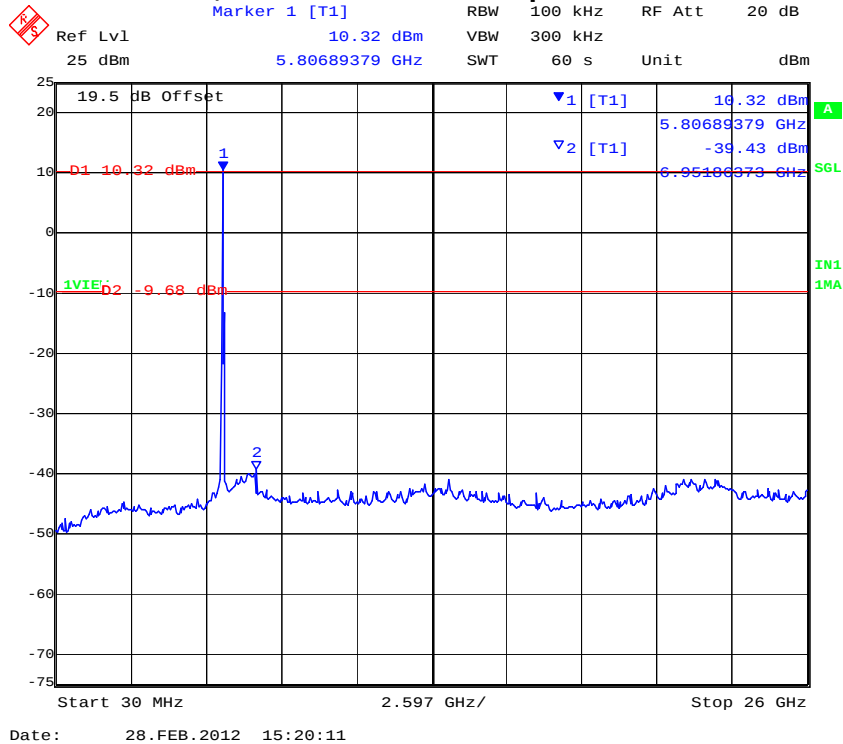


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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 305 of 412

PORT C 802.11n HT-20 5,825 MHz Conducted Spurious Emissions 0.03 – 26 GHz



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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 306 of 412

Conducted Spurious Emission Results

TABLE OF RESULTS – 802.11N HT-40

Test Conditions:	15.247 (a)(2)	Rel. Humidity (%):	35	to	42
Variant:	802.11n HT-40	Ambient Temp. (°C):	19	to	22
TPC:	HIGH	Pressure (mBars):	998	to	1003
Modulation:	ON	Duty Cycle (%):	100		
Beam Forming Gain	N/A dB	Antenna Gain:	N/A		dBi
Applied Voltage:	48.00 Vdc	Antenna Ports (N):			
Notes 1:					
Notes 2:					

Conducted Spurious Measurement

Test Freq.	Start Freq.	Stop Freq.	Port A		Port B		Port C		Port D	
MHz	MHz	MHz	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm	SE dBm	Limit dBm
5755.000	30.00	26000.00	-41.29	-15.39	-41.76	-16.52	-39.27	-14.68		
5795.000	30.00	26000.00	-40.99	-12.27	-40.67	-12.97	-39.82	-11.37		

SE: Maximum spurious emission found

Band-edge Measurement

Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
5755.000	5725.00	-25.10	-16.96	-17.78	-17.06	-22.86	-15.51		
5795.000	5850.00	-18.98	-12.06	-20.13	-13.02	-18.76	-10.50		

BE: Maximum Band edge emission found

Measurement uncertainty:	±2.81 dB
---------------------------------	----------

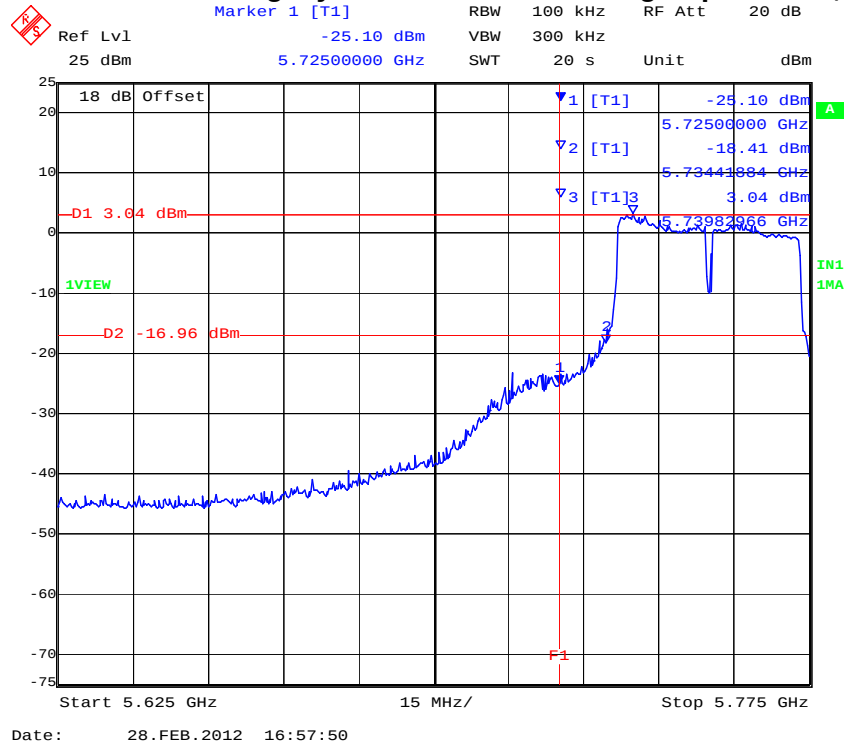
Note: Limit is based on 20dB down from fundamental emission

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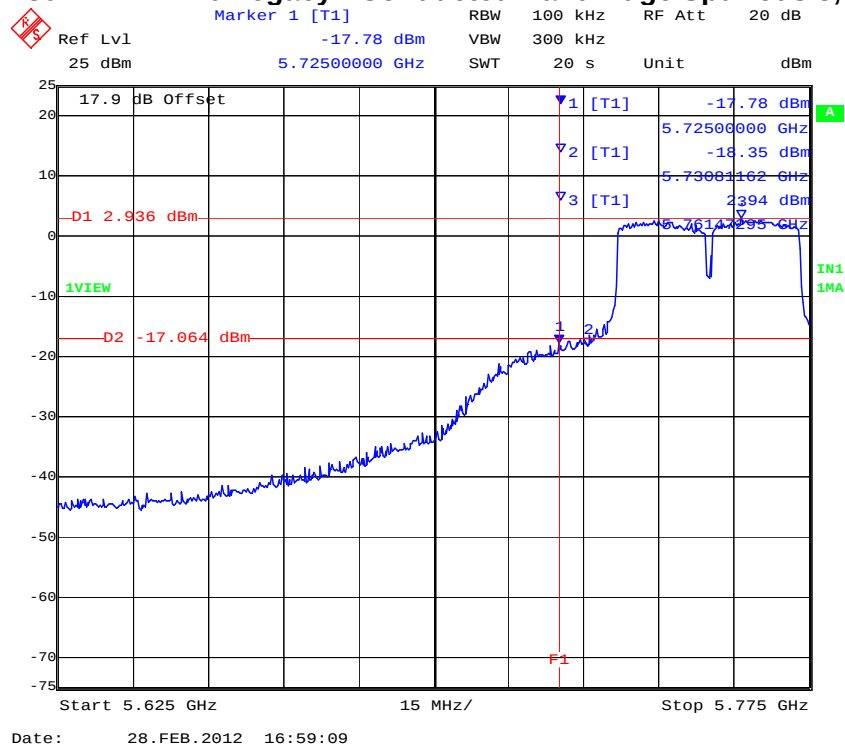


Title: Wavion WBSn-2450-O/S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 307 of 412

PORT A 802.11n HT-40 Legacy - Conducted Band Edge Spurious 5,725 MHz



PORT B 802.11n HT-40 Legacy - Conducted Band Edge Spurious 5,725 MHz

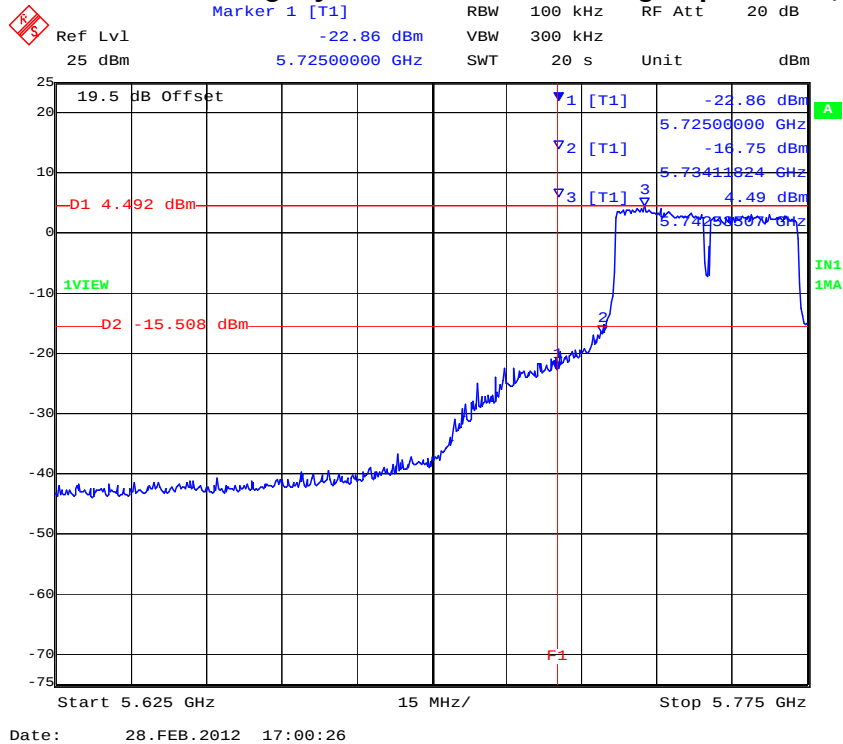


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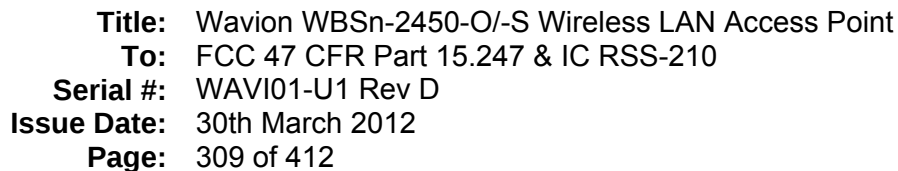


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 308 of 412

PORT C 802.11n HT-40 Legacy - Conducted Band Edge Spurious 5,725 MHz



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Ref Lvl 25 dBm

Marker 1 [T1] 7.94 dBm

RBW 100 kHz

RF Att 20 dB

VBW 300 kHz

SWT 20 s

Unit dBm

18 dB Offset

▼1 [T1] 7.94 dBm

▼2 [T1] 5.77950902 GHz -13.63 dBm

▼3 [T1] 5.83872745 GHz -18.98 dBm

5.85000000 GHz

IN1 1MA

D2 -12.057 dBm

Center 5.85 GHz

15 MHz/

Span 150 MHz

Date: 28.FEB.2012 16:20:39

Ref Lvl 25 dBm
 Marker 1 [T1] 6.99 dBm
 5.78191383 GHz
 RBW 100 kHz
 VBW 300 kHz
 SWT 20 s
 Unit dBm

17.9 dB Offset

▼1 [T1] 6.99 dBm
 ▼2 [T1] 5.78191383 GHz
 -13.99 dBm
 ▼3 [T1] 5.85000000 GHz
 -20.13 dBm

D2 -6.985 dBm
 D2 -13.015 dBm

Center 5.85 GHz
 15 MHz/
 Span 150 MHz

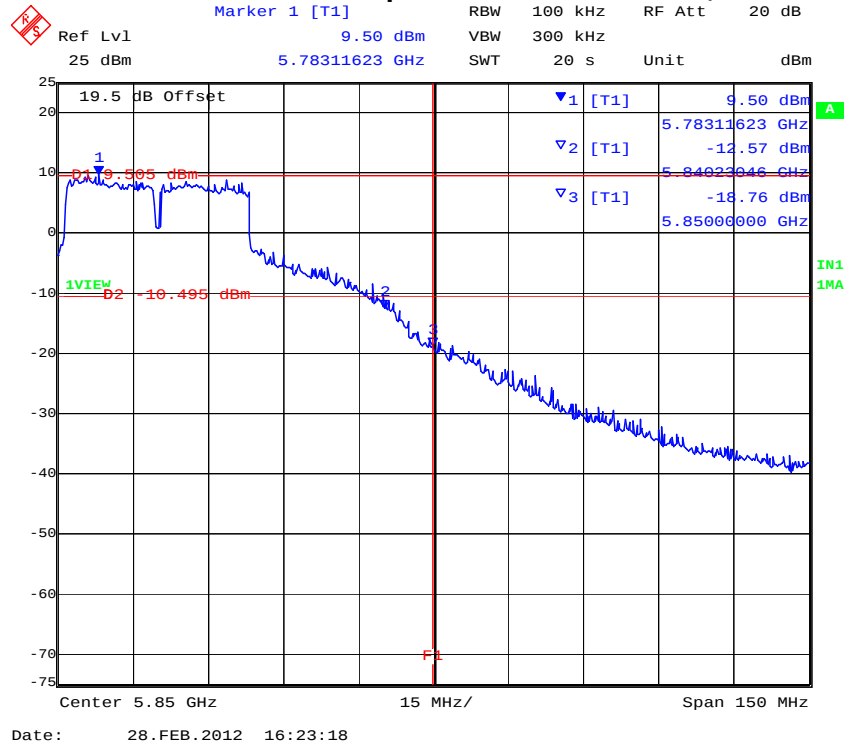
IN1
 1MA

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



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 310 of 412

PORT C 802.11n HT-40 Conducted Spurious Emissions at 5,850 MHz Band Edge

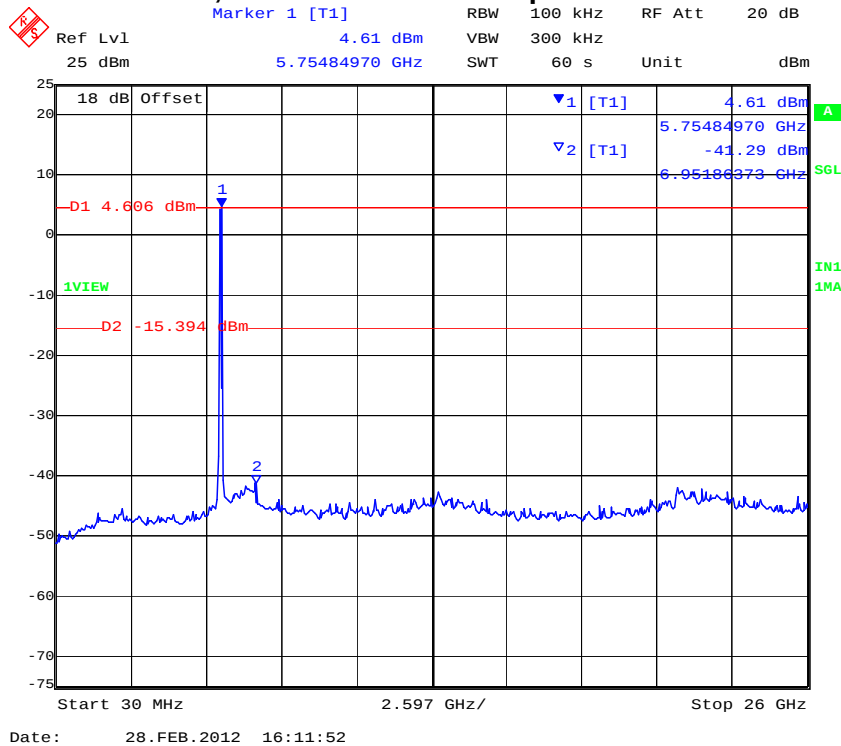


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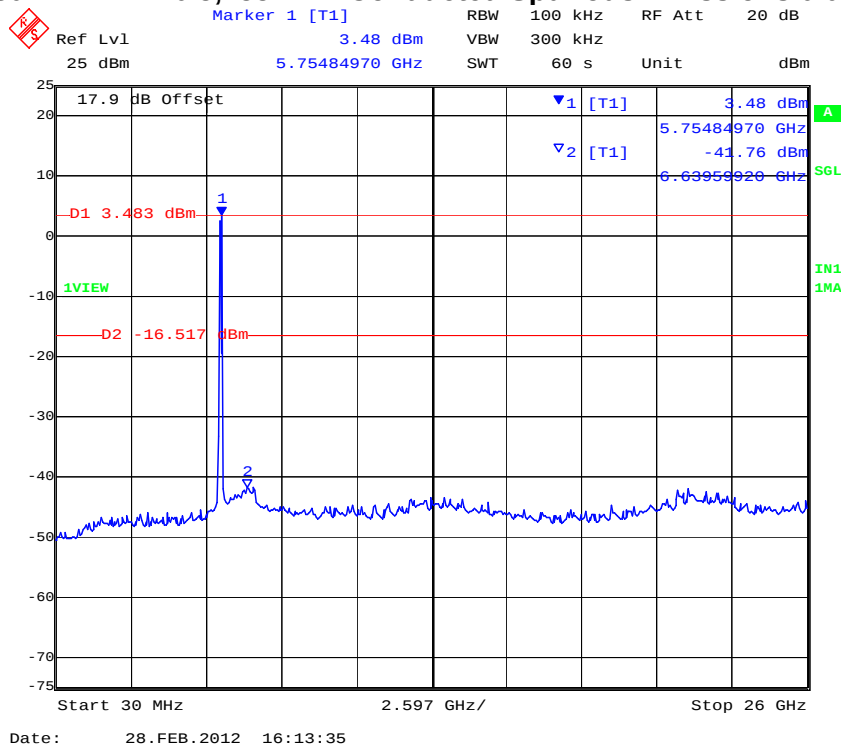


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 311 of 412

PORT A 802.11n HT-40 5,755 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11n HT-40 5,755 MHz Conducted Spurious Emissions 0.03 – 26 GHz

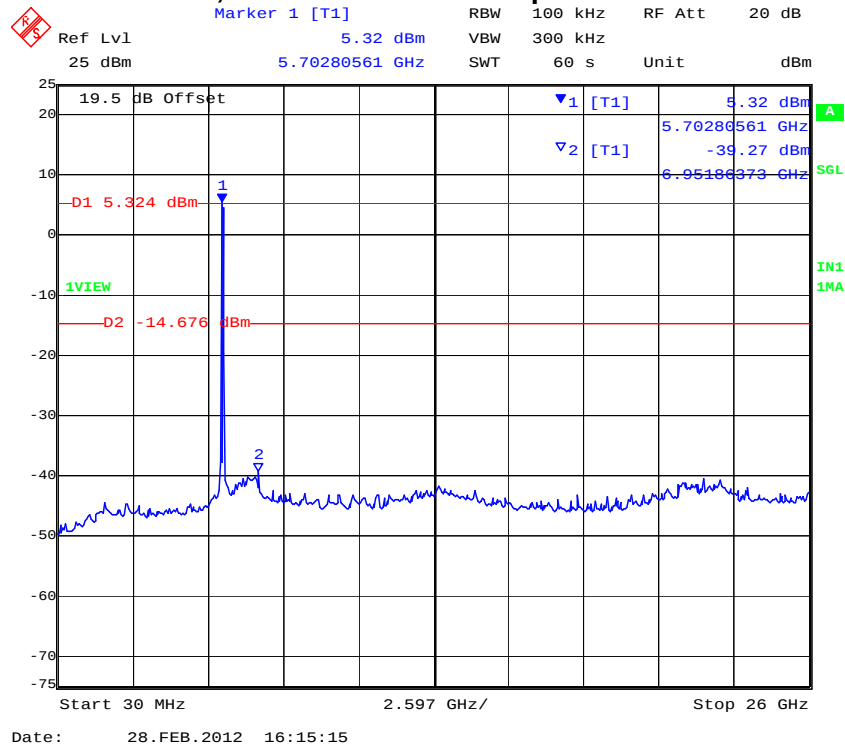


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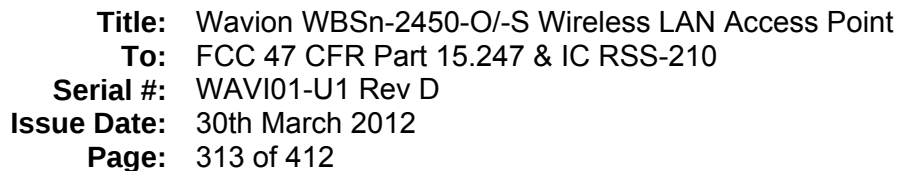


Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 312 of 412

PORT C 802.11n HT-40 5,755 MHz Conducted Spurious Emissions 0.03 – 26 GHz



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Ref Lvl 25 dBm

Marker 1 [T1] 7.73 dBm

RBW 100 kHz

VBW 300 kHz

SWT 60 s

Unit dBm

18 dB Offset

D1 7.727 dBm

D2 -12.273 dBm

1 [T1] 7.73 dBm

2 [T1] -46.99 dBm

5.75484970 GHz

6.74368737 GHz

Start 30 MHz

2.597 GHz/

Stop 26 GHz

Date: 28.FEB.2012 16:45:29

Marker 1 [T1]

Ref Lvl 25 dBm

7.03 dBm

5.75484970 GHz

SWT 60 s Unit dBm

17.9 dB Offset

▼1 [T1] 7.03 dBm

▼2 [T1] 5.75484970 GHz -46.67 dBm

D1 7.03 dBm

D2 -12.97 dBm

1VIEW

IN1 1MA

Start 30 MHz 2.597 GHz/ Stop 26 GHz

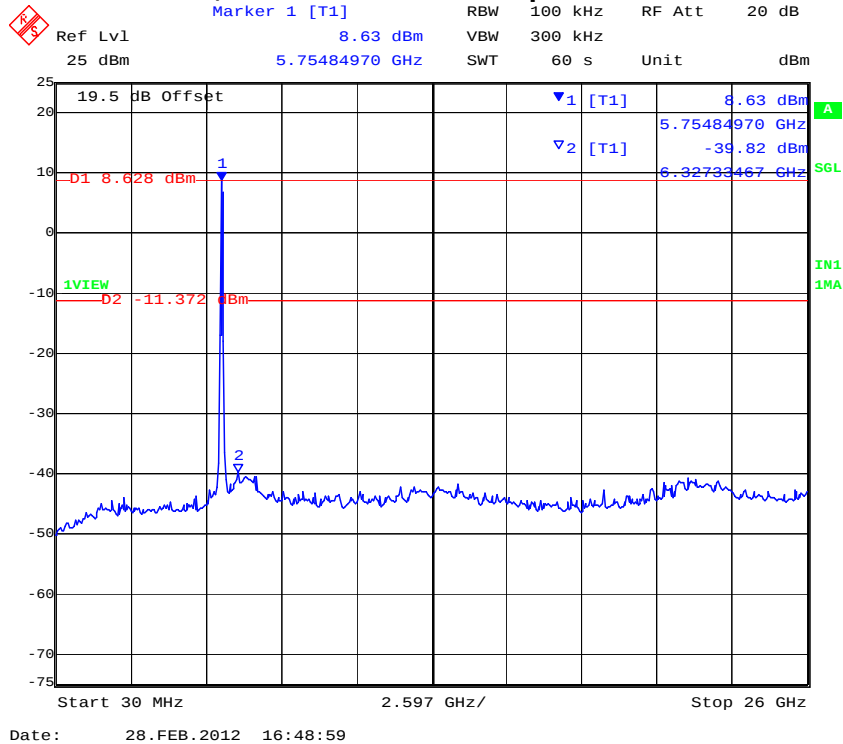
Date: 28.FEB.2012 16:47:16

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



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 314 of 412

PORT C 802.11n HT-40 5,795 MHz Conducted Spurious Emissions 0.03 – 26 GHz



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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 315 of 412

Specification

Limits Band-Edge

Lower Limit Band-edge	Upper Limit Band-edge	Limit below highest level of desired power
2,400 MHz	2,483.5 MHz	≥ 20 dB
5725 MHz	5850 MHz	

§15.247(d) and RSS-210 §A8.5 In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

§15.247(d)

If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section §15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(a)).

RSS-210 §A8.5 If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required. In addition, radiated emissions which fall in the restricted bands of Table 1 must also comply with the radiated emission limits specified in Tables 2 and 3.

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 5th harmonic of the highest frequency generated without exceeding 40 GHz.

Laboratory Measurement Uncertainty for Conducted Spurious Emissions

Measurement uncertainty	±2.37 dB
-------------------------	----------

Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-05 'Measurement of Spurious Emissions'	0088, 0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117.

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 316 of 412

5.1.6. Radiated Emissions

Transmitter Radiated Spurious Emissions (above 1 GHz); Peak Field Strength Measurements; and Radiated Band Edge Measurements – Restricted Bands

FCC, Part 15 Subpart C §15.247(d) 15.205; 15.209

Industry Canada RSS-210 §A8.5, §2.2, §2.6

Industry Canada RSS-Gen §4.7

Test Procedure

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

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

Field Strength Calculation

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

$$FS = R + AF + CORR - FO$$

where: FS = Field Strength

R = Measured Spectrum analyzer Input Amplitude

AF = Antenna Factor

CORR = Correction Factor = CL – AG + NFL

CL = Cable Loss

AG = Amplifier Gain

FO = Distance Falloff Factor

NFL = Notch Filter Loss or Waveguide Loss

For example:

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

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

Conversion between dB μ V/m (or dB μ V) and μ V/m (or μ V) are done as:

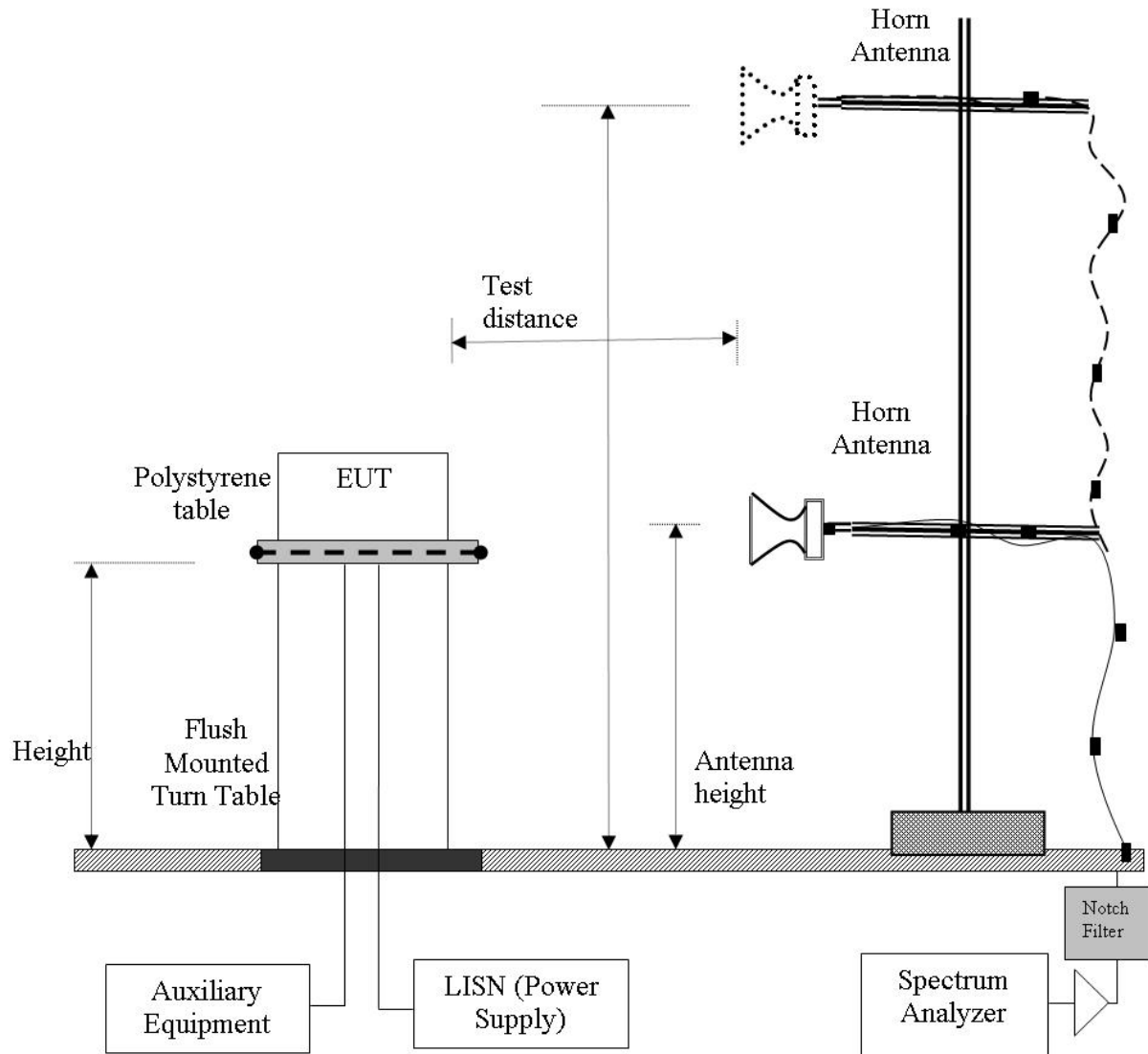
$$\text{Level (dB}\mu\text{V/m)} = 20 * \text{Log (level (\mu V/m))}$$

$$40 \text{ dB}\mu\text{V/m} = 100 \mu\text{V/m}$$

$$48 \text{ dB}\mu\text{V/m} = 250 \mu\text{V/m}$$

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Radiated Emission Measurement Setup – Above 1 GHz



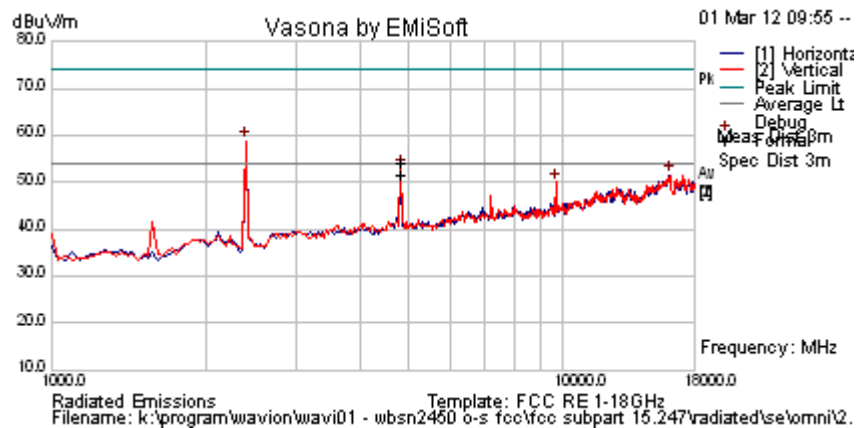
NOTE: KDB 662911 was implemented for Out-of-Band measurements. Where necessary Option (2) Measure and add $10 \log(N)$ dB was implemented



Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 318 of 412

5.1.6.1. Omni Antenna

Test Freq.	2412 MHz	Engineer	GMH
Variant	802.11b; 1 Mbs	Temp (°C)	19.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	33
Power Setting	23	Press. (mBars)	1011
Antenna	OMNI 7.4 dBi	Duty Cycle (%)	100
Test Notes 1			
Test Notes 2			



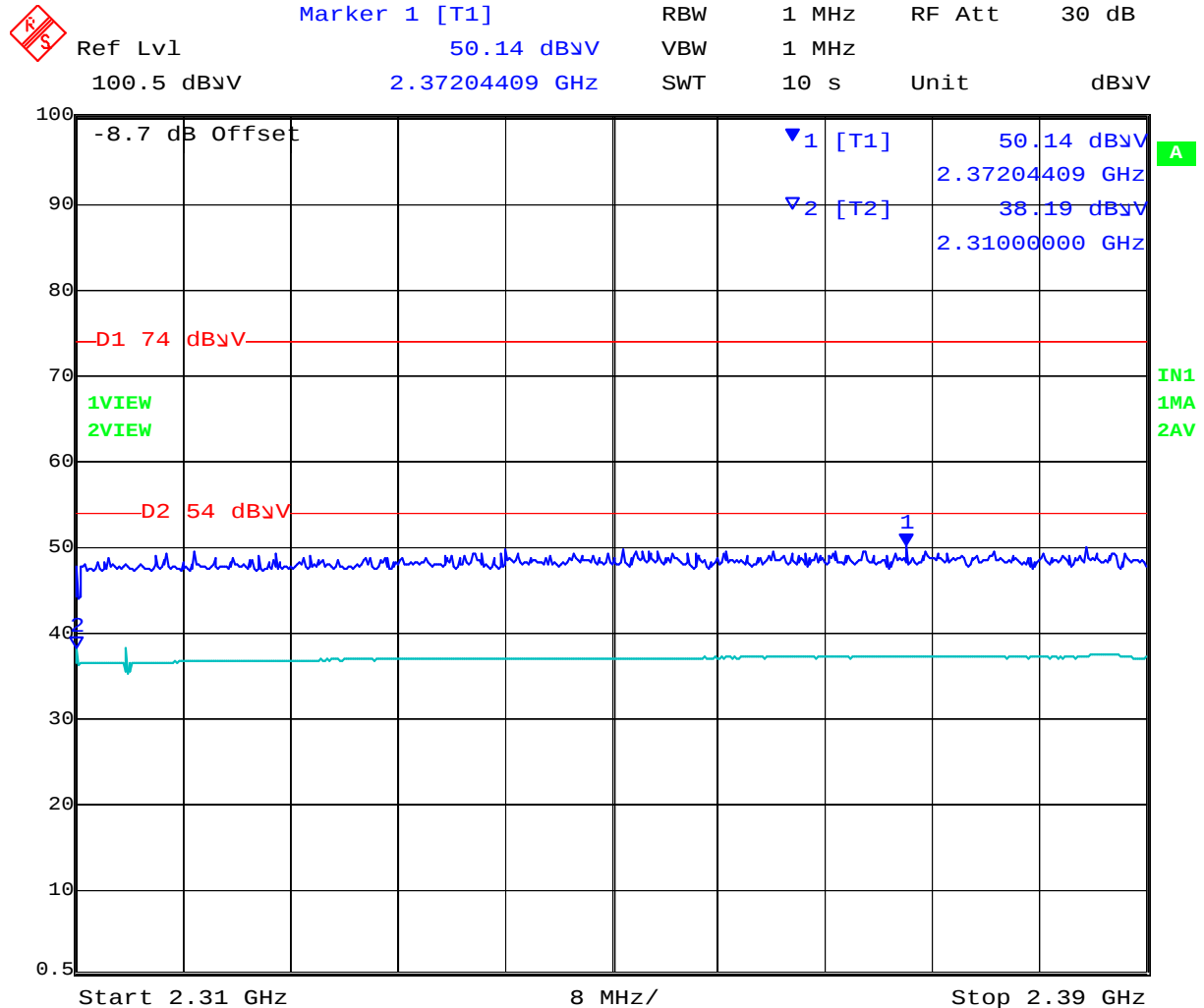
Formally measured emission peaks

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
4824.000	59.5	4.5	-9.7	54.3	Peak Max	V	109	8	74.0	-19.7	Pass	RB
4824.00001	56.9	4.5	-9.7	51.7	Average Max	V	109	8	54.0	-2.3	Pass	RB
2396.794	67.4	3.0	-11.7	58.7	Peak [Scan]	H						FUND
16126.253	42.3	9.0	0.2	51.5	Peak [Scan]	V	200	0	54.0	-2.5	Pass	NOISE
9653.307	47.2	6.3	-3.5	50.0	Peak [Scan]	H					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												

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 319 of 412



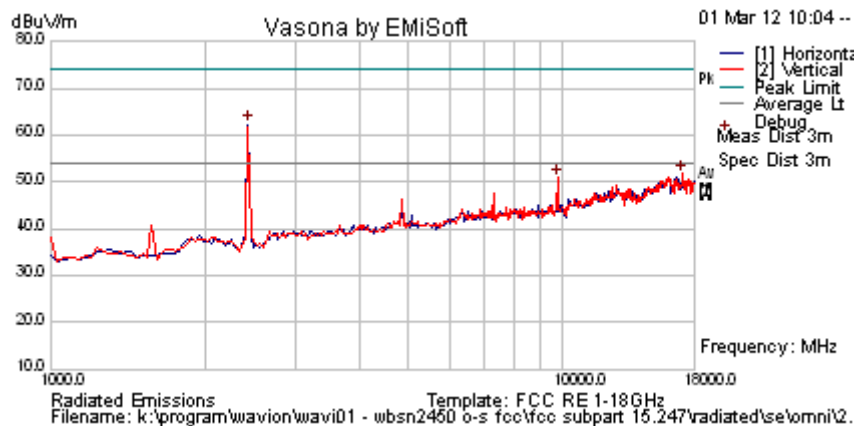
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 320 of 412

Test Freq.	2437 MHz	Engineer	GMH
Variant	802.11b; 1 Mbs	Temp (°C)	19.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	33
Power Setting	23	Press. (mBars)	1011
Antenna	OMNI 7.4 dBi	Duty Cycle (%)	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

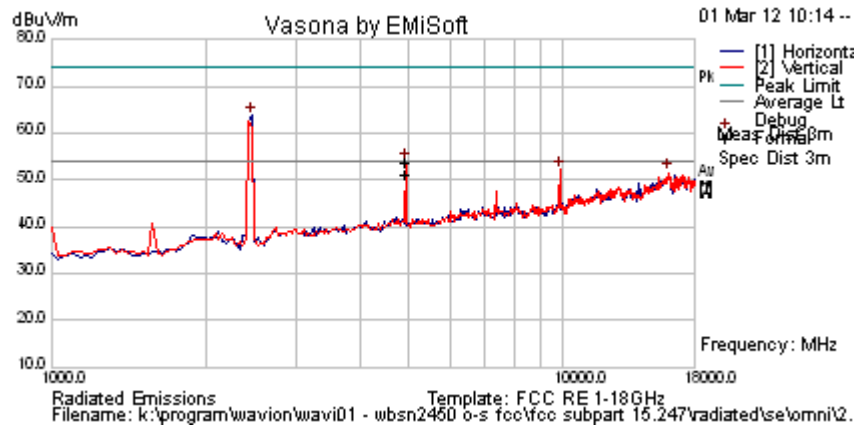
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
2430.862	70.8	3.0	-11.6	62.2	Peak [Scan]	H						
17114.228	42.8	8.5	0.5	51.8	Peak [Scan]	V	150	0	54.0	-2.3	Pass	NOISE
9755.511	48.4	6.4	-3.7	51.0	Peak [Scan]	V	100	0	54.0	-3.0	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												

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 321 of 412

Test Freq.	2462 MHz	Engineer	GMH
Variant	802.11b; 1 Mbs	Temp (°C)	19.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	33
Power Setting	23	Press. (mBars)	1011
Antenna	OMNI 7.4 dBi	Duty Cycle (%)	100
Test Notes 1			
Test Notes 2			



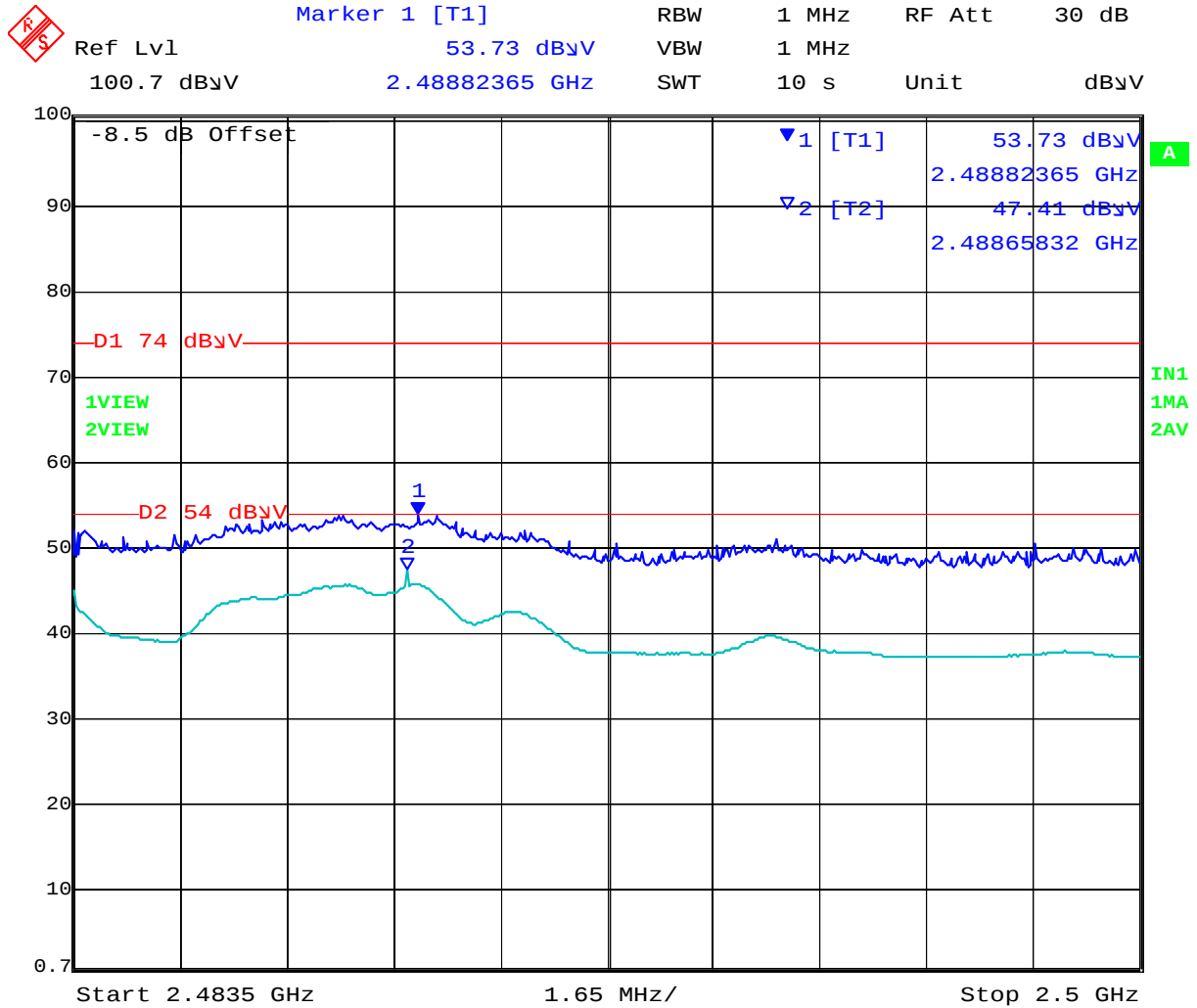
Formally measured emission peaks

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
4923.989	59.1	4.6	-9.8	53.9	Peak Max	V	98	67	74.0	-20.1	Pass	
4923.989	56.4	4.6	-9.8	51.1	Average Max	V	98	67	54.0	-2.9	Pass	
2464.930	72.2	3.0	-11.5	63.7	Peak [Scan]	H	150	0	54.0	9.7	Fail	
9857.715	49.2	6.4	-3.5	52.1	Peak [Scan]	V	150	0	54.0	-1.9	Pass	
16058.116	42.2	9.0	0.3	51.5	Peak [Scan]	V	100	0	54.0	-2.5	Pass	
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												

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 322 of 412



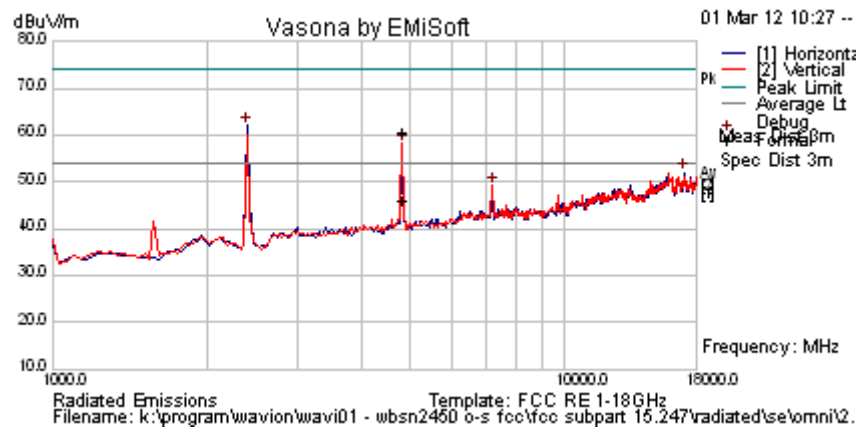
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 323 of 412

Test Freq.	2412 MHz	Engineer	GMH
Variant	802.11g; 6 Mbs	Temp (°C)	20.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	33
Power Setting	22.5 (Power Reduction)	Press. (mBars)	1010
Antenna	OMNI 7.4 dBi	Duty Cycle (%)	100
Test Notes 1			
Test Notes 2			



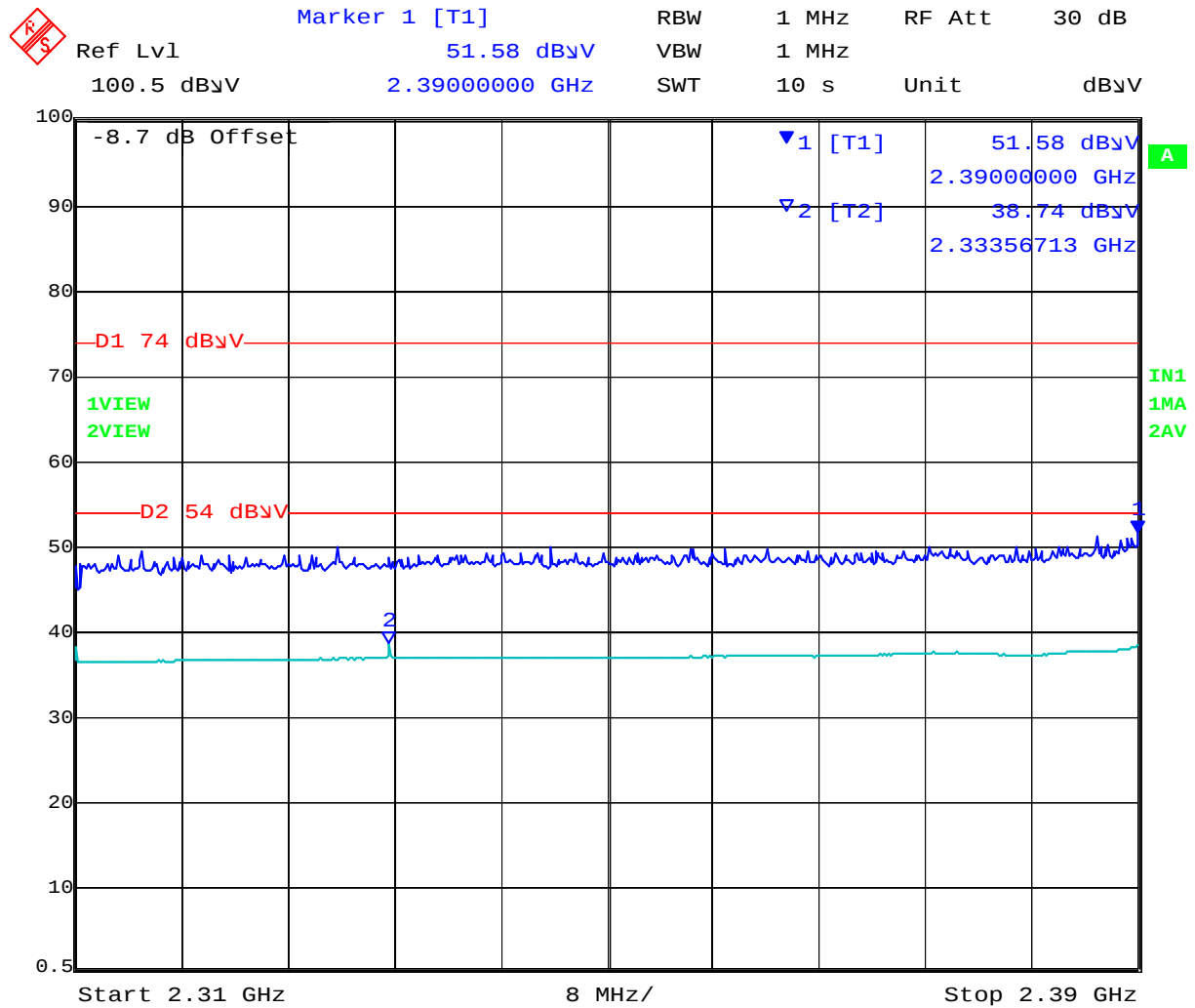
Formally measured emission peaks

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
4821.976	65.9	4.5	-9.7	60.7	Peak Max	V	121	10	74.0	-13.3	Pass	RB
4821.976	51.3	4.5	-9.7	46.1	Average Max	V	121	10	54.0	-7.9	Pass	RB
2396.794	70.7	3.0	-11.7	62.0	Peak [Scan]	H						FUND
17080.160	43.0	8.5	0.4	51.9	Peak [Scan]	H	200	0	54.0	-2.1	Pass	NOISE
7234.469	49.5	5.4	-5.8	49.1	Peak [Scan]	V	150	0	54.0	-4.9	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												

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 324 of 412



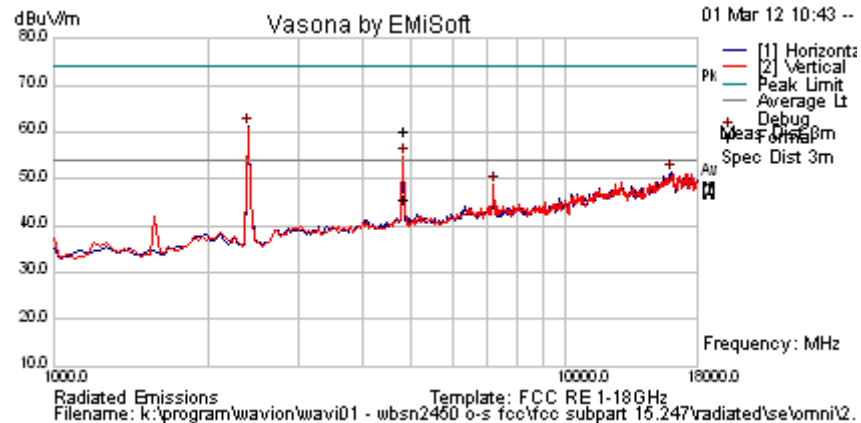
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 325 of 412

Test Freq.	2437 MHz	Engineer	GMH
Variant	802.11g; 6 Mbs	Temp (°C)	20.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	33
Power Setting	22.5 (Power Reduction)	Press. (mBars)	1010
Antenna	OMNI 7.4 dBi	Duty Cycle (%)	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

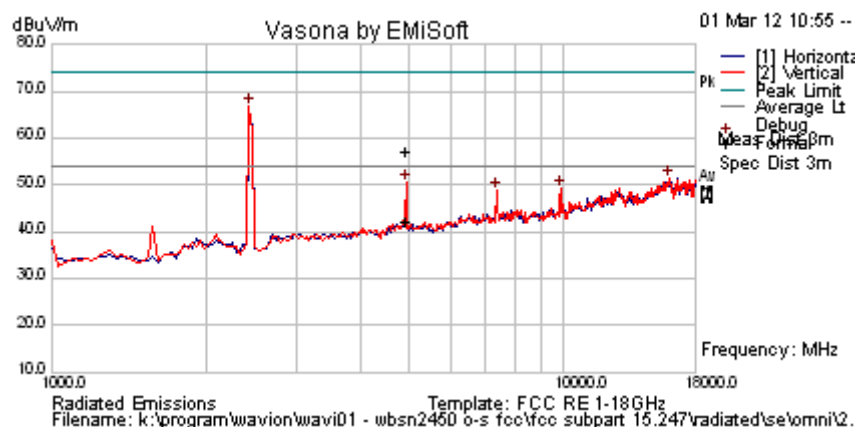
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
4822.382	65.6	4.5	-9.7	60.4	Peak Max	V	98	8	74.0	-13.6	Pass	RB
4822.382	50.8	4.5	-9.7	45.6	Average Max	V	98	8	54.0	-8.4	Pass	RB
2396.794	70.0	3.0	-11.7	61.3	Peak [Scan]	H						FUND
16058.116	42.0	9.0	0.3	51.2	Peak [Scan]	H	100	0	54.0	-2.8	Pass	NOISE
7234.469	49.2	5.4	-5.8	48.8	Peak [Scan]	V	200	0	54.0	-5.2	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												

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Title: Wavion WBSn-2450-O/S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 326 of 412

Test Freq.	2462 MHz	Engineer	GMH
Variant	802.11g; 6 Mbs	Temp (°C)	20.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	33
Power Setting	22.5 (Power Reduction)	Press. (mBars)	1010
Antenna	OMNI 7.4 dBi	Duty Cycle (%)	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

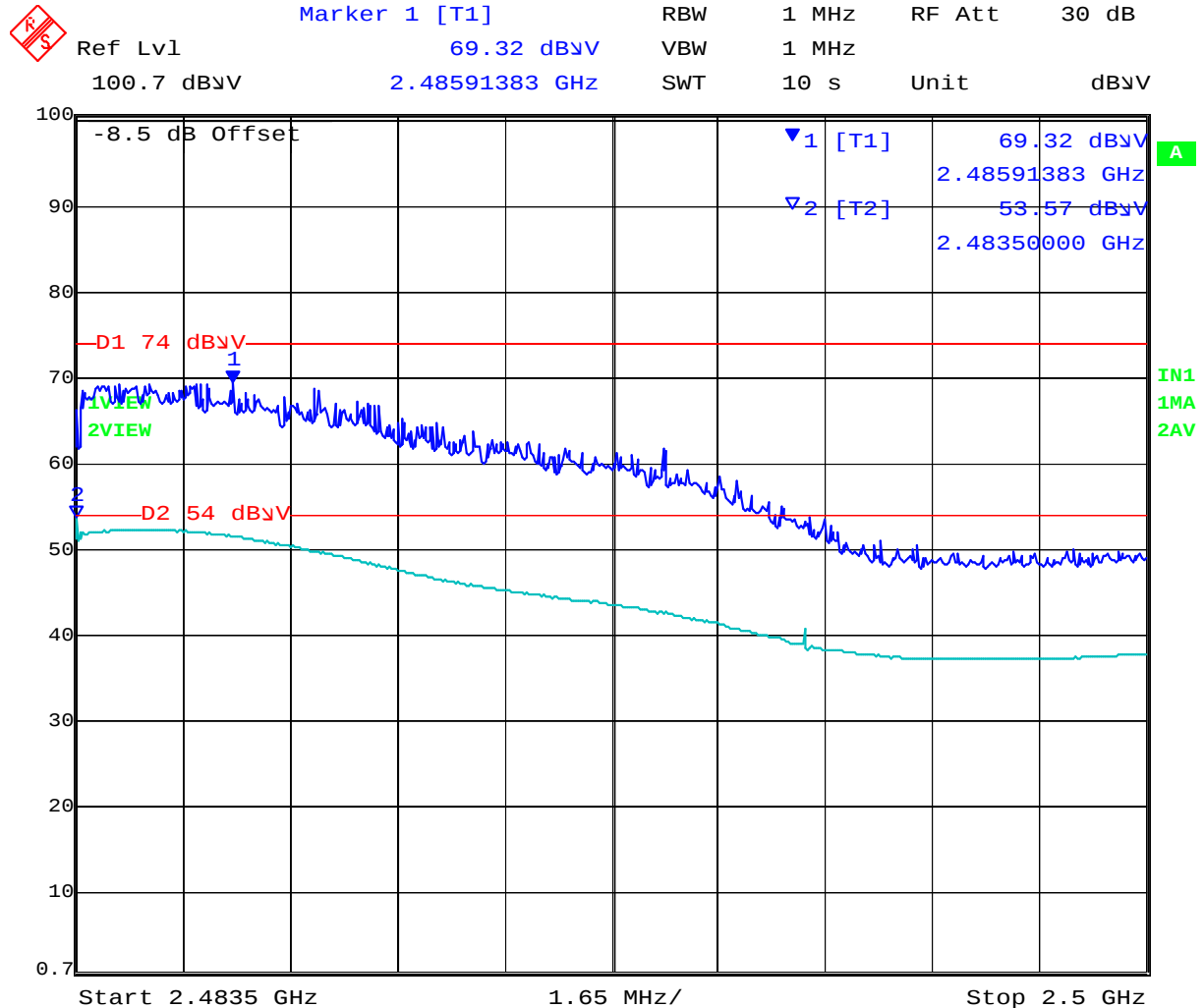
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
4924.138	62.3	4.6	-9.8	57.1	Peak Max	V	126	57	74.0	-16.9	Pass	RB
4924.138	47.3	4.6	-9.8	42.1	Average Max	V	126	57	54.0	-11.9	Pass	RB
2430.862	75.2	3.0	-11.6	66.7	Peak [Scan]							FUND
16024.048	42.1	9.0	0.2	51.3	Peak [Scan]	V	200	0	54.0	-2.7	Pass	NOISE
9857.715	46.3	6.4	-3.5	49.2	Peak [Scan]	V	100	0	54.0	-4.8	Pass	NRB
7382.856	50.7	5.5	-5.5	50.7	Peak Max	V	190	20	74.0	-23.3	Pass	RB
7382.856	36.4	5.5	-5.5	36.4	Average Max	V	190	20	54.0	-17.6	Pass	RB

Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 327 of 412



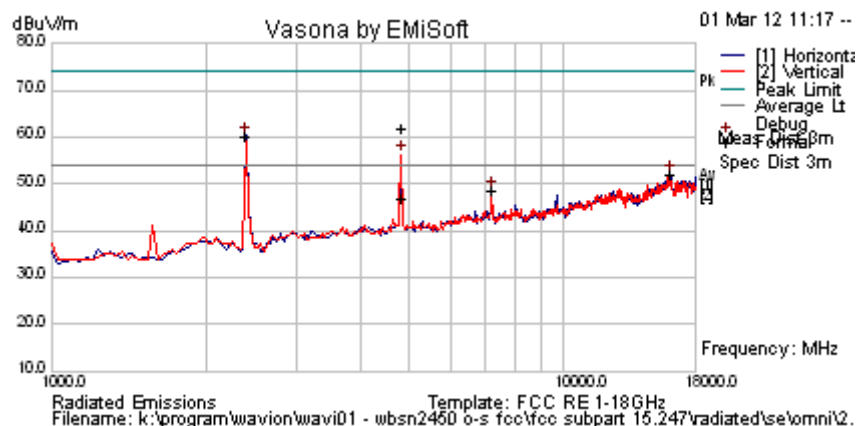
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 328 of 412

Test Freq.	2412 MHz	Engineer	GMH
Variant	802.11n; HT-20; 6.5 MCS	Temp (°C)	20.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	33
Power Setting	23	Press. (mBars)	1010
Antenna	OMNI 7.4 dBi	Duty Cycle (%)	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

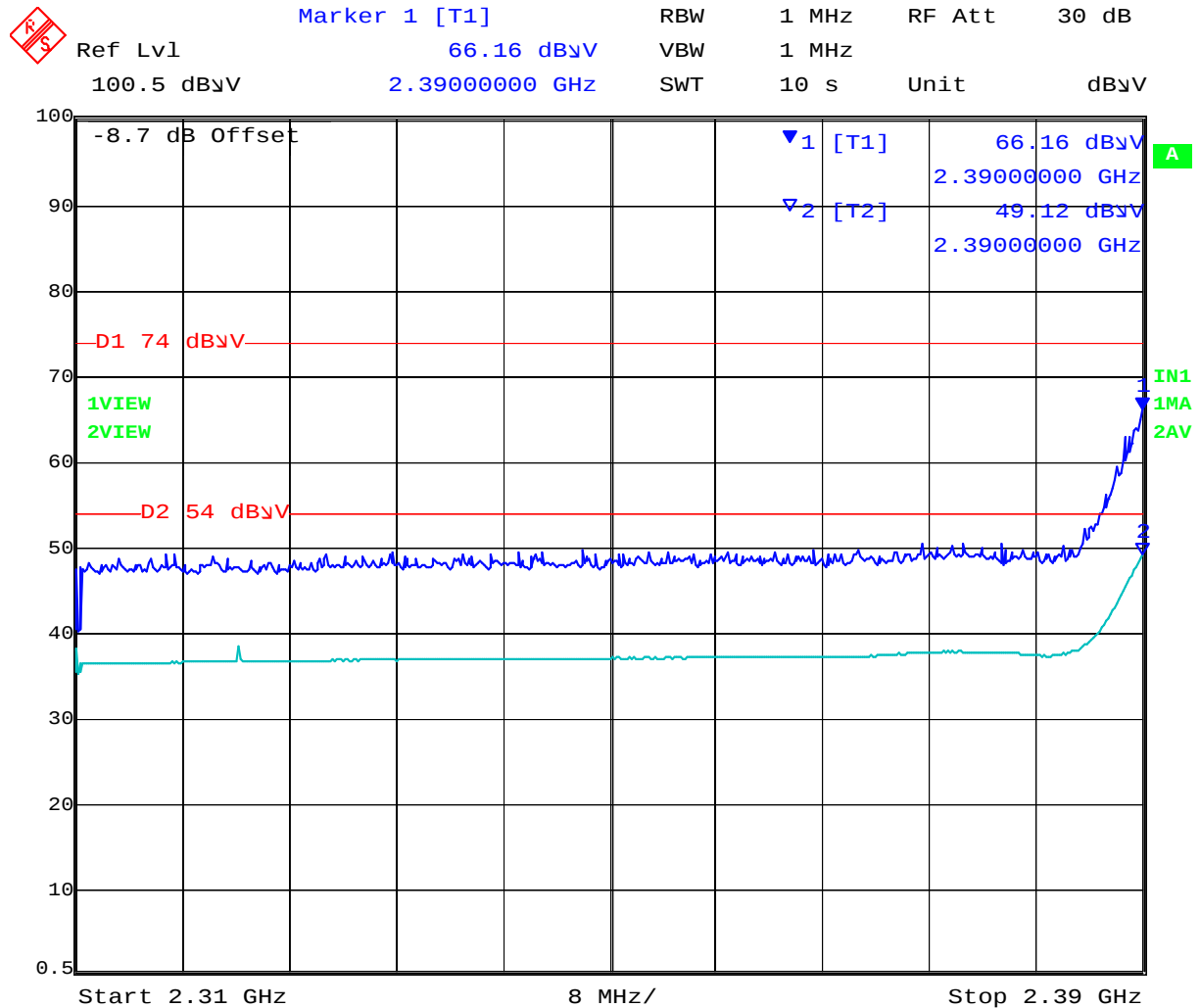
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
4820.847	67.2	4.5	-9.7	62.0	Peak Max	V	121	313	74.0	-12.0	Pass	RB
4820.847	52.0	4.5	-9.7	46.8	Average Max	V	121	313	54.0	-7.2	Pass	RB
2396.794	68.9	3.0	-11.7	60.2	Peak [Scan]	H						FUND
16126.253	42.8	9.0	0.2	51.9	Peak [Scan]	H	100	0	54.0	-2.1	Pass	NOISE
7234.469	49.0	5.4	-5.8	48.6	Peak [Scan]	V	150	0	54.0	-5.4	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												

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 329 of 412

Band Edge



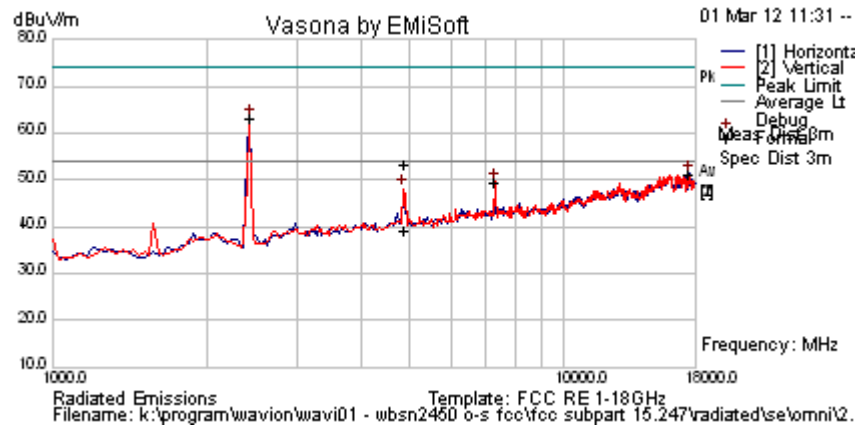
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 330 of 412

Test Freq.	2437 MHz	Engineer	GMH
Variant	802.11n; HT-20; 6.5 MCS	Temp (°C)	20.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	33
Power Setting	23	Press. (mBars)	1010
Antenna	OMNI 7.4 dBi	Duty Cycle (%)	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

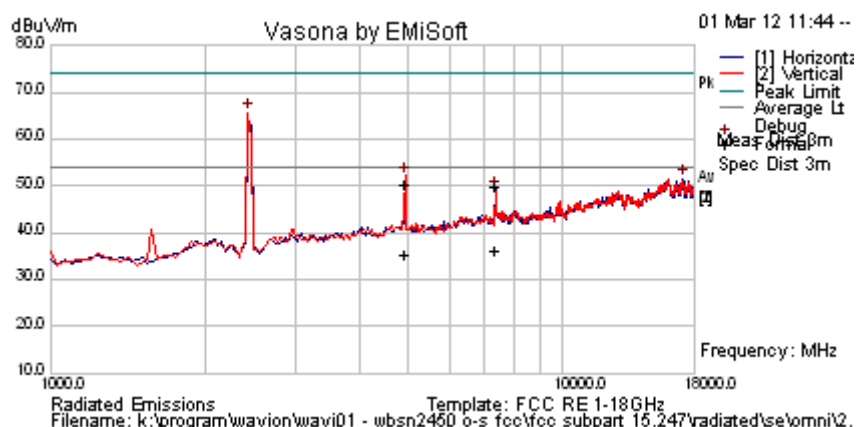
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
4869.835	58.6	4.5	-9.7	53.4	Peak Max	V	98	4	74.0	-20.6	Pass	RB
4869.835	44.5	4.5	-9.7	39.4	Average Max	V	98	4	54.0	-14.7	Pass	RB
2430.862	71.8	3.0	-11.6	63.2	Peak [Scan]	H	150	0	54.0	9.2	Fail	FUND
17591.182	41.8	8.8	0.6	51.2	Peak [Scan]	H	100	0	54.0	-2.8	Pass	NOISE
7302.605	49.8	5.4	-5.7	49.5	Peak [Scan]	V	200	0	54.0	-4.5	Pass	RB
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission												
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 331 of 412

Test Freq.	2462 MHz	Engineer	GMH
Variant	802.11n; HT-20; 6.5 MCS	Temp (°C)	20.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	33
Power Setting	21 (Power Reduction)	Press. (mBars)	1010
Antenna	OMNI 7.4 dBi	Duty Cycle (%)	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

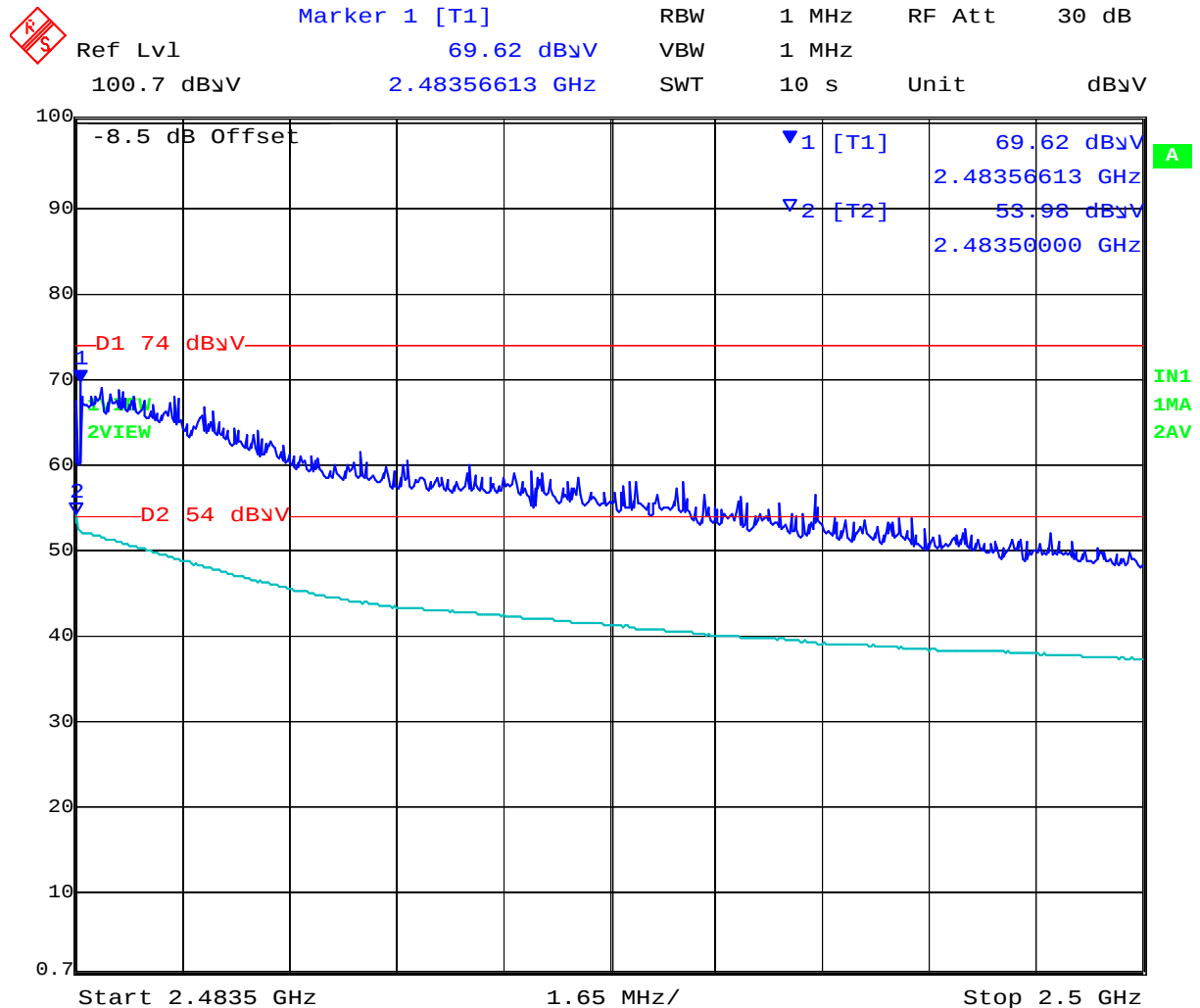
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
4920.631	55.8	4.6	-9.8	50.5	Peak Max	V	132	20	74.0	-23.5	Pass	RB
7381.723	49.9	5.5	-5.5	49.9	Peak Max	H	98	351	74.0	-24.1	Pass	RB
4920.631	40.7	4.6	-9.8	35.5	Average Max	V	132	20	54.0	-18.5	Pass	RB
7381.723	36.4	5.5	-5.5	36.3	Average Max	H	98	351	54.0	-17.7	Pass	RB
2430.862	74.4	3.0	-11.6	65.8	Peak [Scan]	V						FUND
17148.297	42.5	8.6	0.5	51.6	Peak [Scan]	H	100	0	54.0	-2.4	Pass	NOISE
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												

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 332 of 412

Band Edge



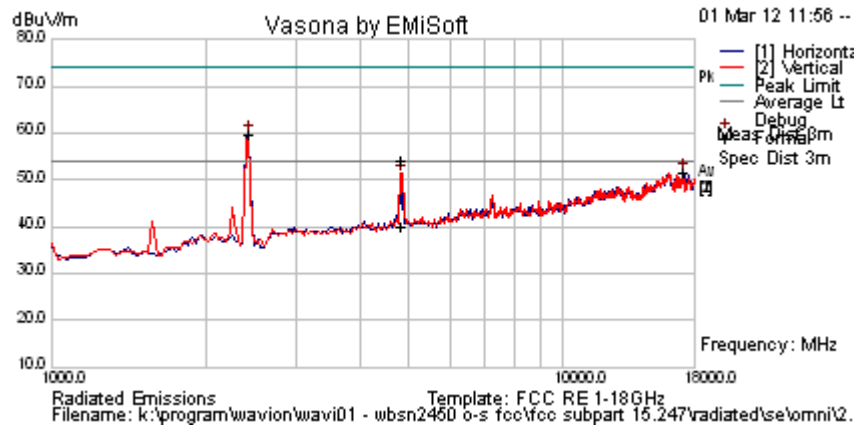
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 333 of 412

Test Freq.	2422 MHz	Engineer	GMH
Variant	802.11n; HT-40; 13.5 MCS	Temp (°C)	21
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	33
Power Setting	21.5 (Power Reduction)	Press. (mBars)	1010
Antenna	OMNI 7.4 dBi	Duty Cycle (%)	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

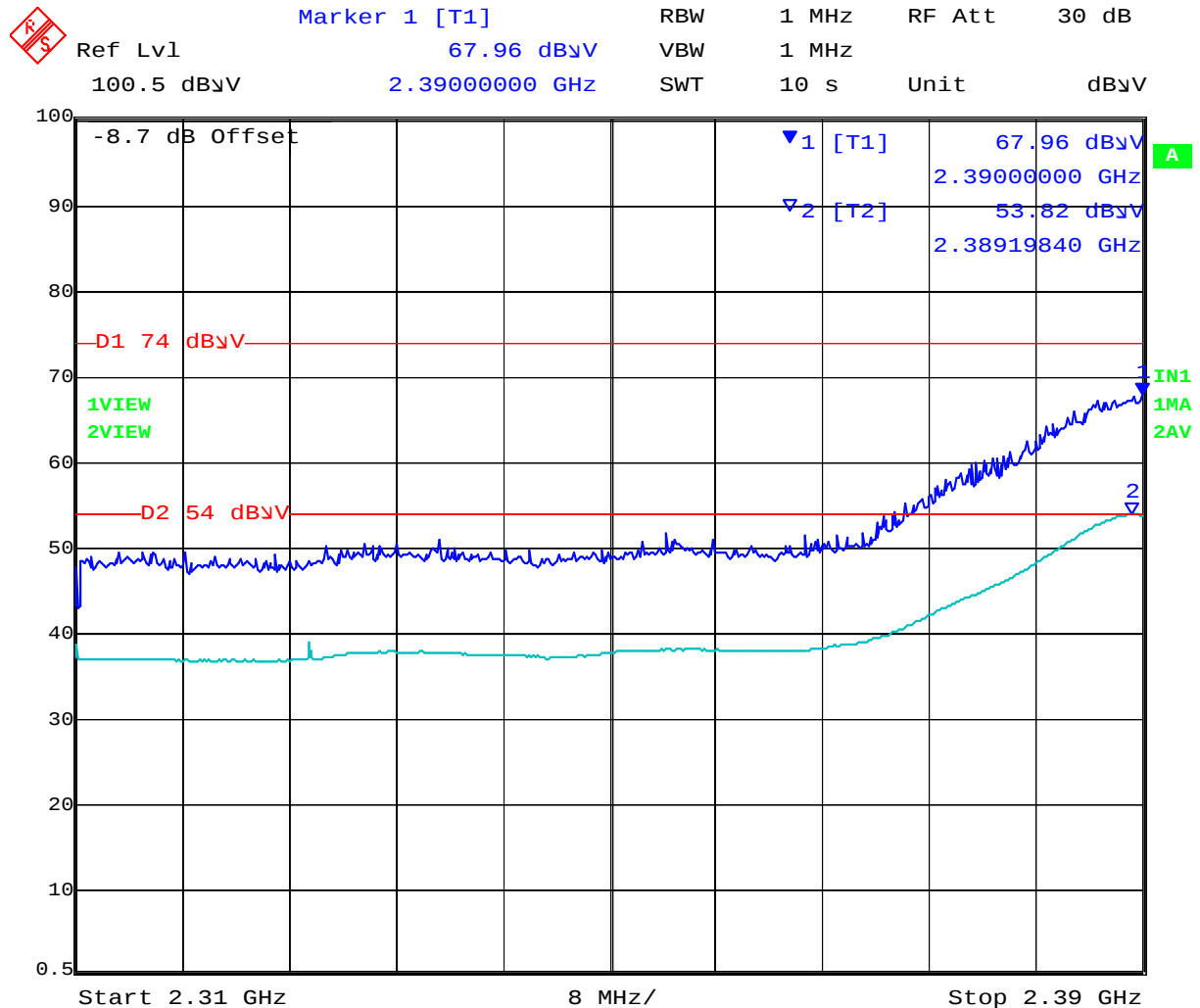
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
4839.379	59.3	4.5	-9.7	54.1	Peak Max	V	122	9	74.0	-19.9	Pass	RB
4839.379	45.1	4.5	-9.7	40.0	Average Max	V	122	9	54.0	-14.1	Pass	RB
2430.862	68.5	3.0	-11.6	59.9	Peak [Scan]	H						FUND
17148.297	42.7	8.6	0.5	51.8	Peak [Scan]	H	100	0	54.0	-2.2	Pass	NOISE
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												

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 334 of 412

Band Edge



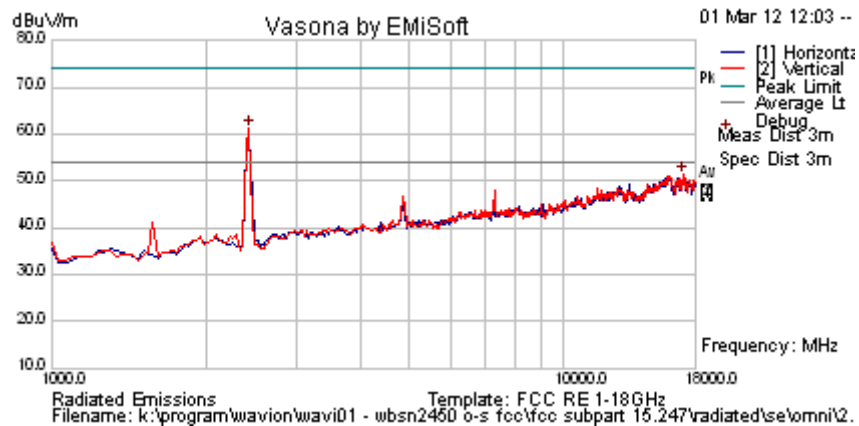
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 335 of 412

Test Freq.	2437 MHz	Engineer	GMH
Variant	802.11n; HT-40; 13.5 MCS	Temp (°C)	21
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	33
Power Setting	23	Press. (mBars)	1010
Antenna	OMNI 7.4 dBi	Duty Cycle (%)	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

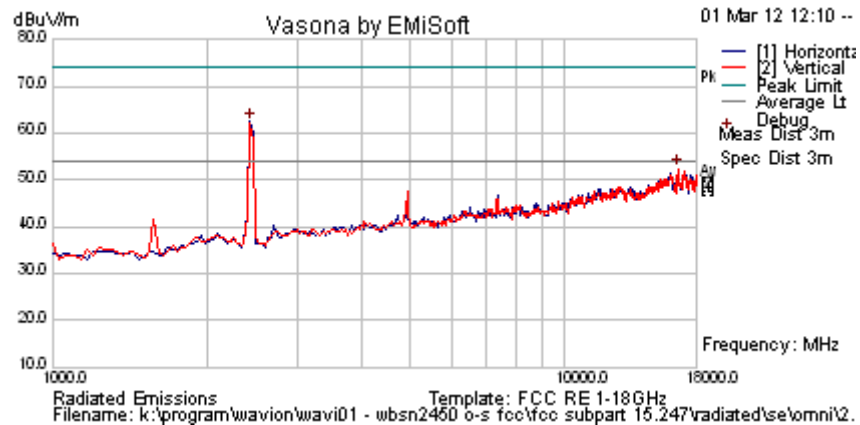
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
2430.862	69.8	3.0	-11.6	61.2	Peak [Scan]	V						FUND
17114.228	42.3	8.5	0.5	51.3	Peak [Scan]	V	200	0	54.0	-2.7	Pass	NOISE
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak												

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 336 of 412

Test Freq.	2452 MHz	Engineer	GMH
Variant	802.11n; HT-40; 13.5 MCS	Temp (°C)	21
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	33
Power Setting	23	Press. (mBars)	1010
Antenna	OMNI 7.4 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
2430.862	71.0	3.0	-11.6	62.4	Peak [Scan]	H						FUND
16569.138	43.1	8.8	0.5	52.3	Peak [Scan]	V	150	0	54.0	-1.7	Pass	NOISE

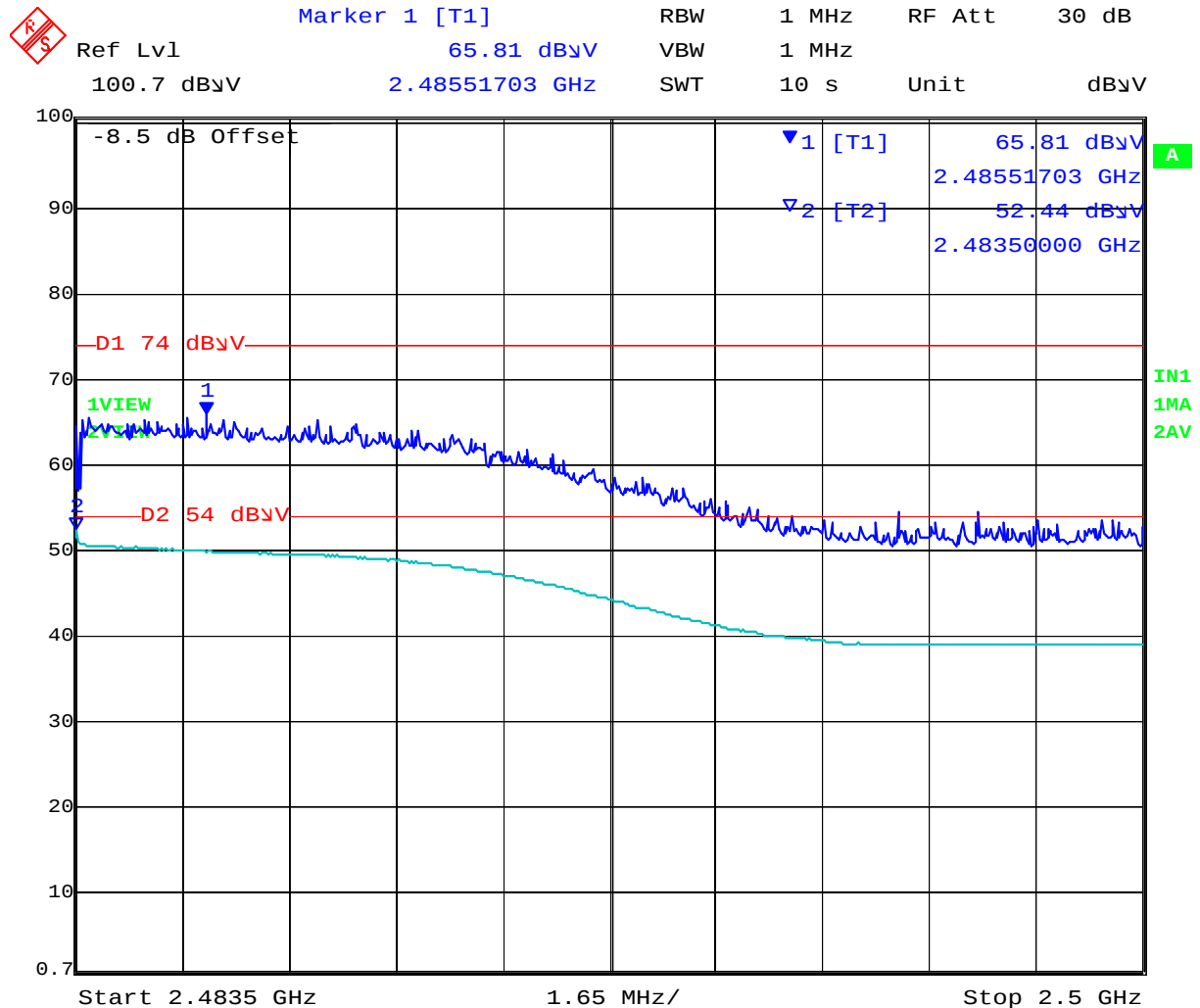
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 337 of 412

Band Edge



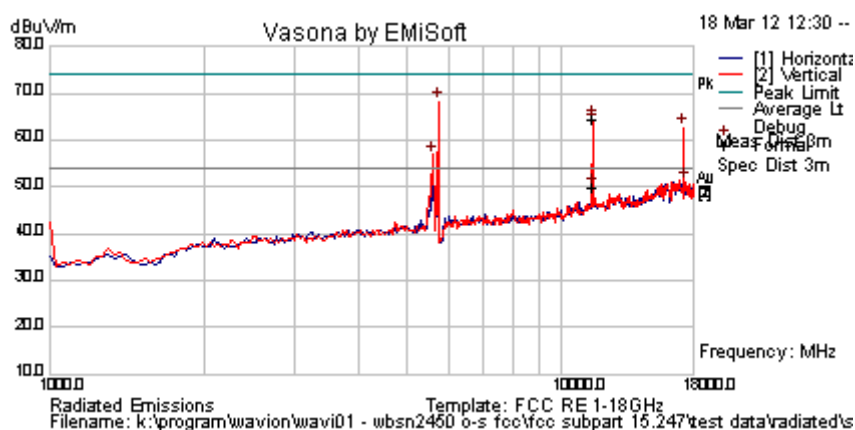
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 338 of 412

Test Freq.	5730.5 MHz	Engineer	GMH
Variant	5 MHz Bandwidth 6 Mbs	Temp (°C)	18.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	36
Power Setting	15	Press. (mBars)	995
Antenna	8.5 dBi Omni	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
5735.471	73.0	4.8	-9.5	68.2	Peak [Scan]	V						FUND
17216.433	53.3	8.6	0.9	62.7	Peak [Scan]	V					Pass	NRB
5599.198	61.9	4.7	-9.7	56.9	Peak [Scan]	V					Pass	BE
17386.774	41.0	8.7	1.4	51.1	Peak [Scan]	V	100	0	54	-2.9	Pass	NOISE
11459.740	59.9	6.8	-2.1	64.7	Peak Max	V	100	0	74	-9.3	Pass	RB
11459.740	45.4	6.8	-2.1	50.1	Average Max	V	100	0	54	-3.9	Pass	RB

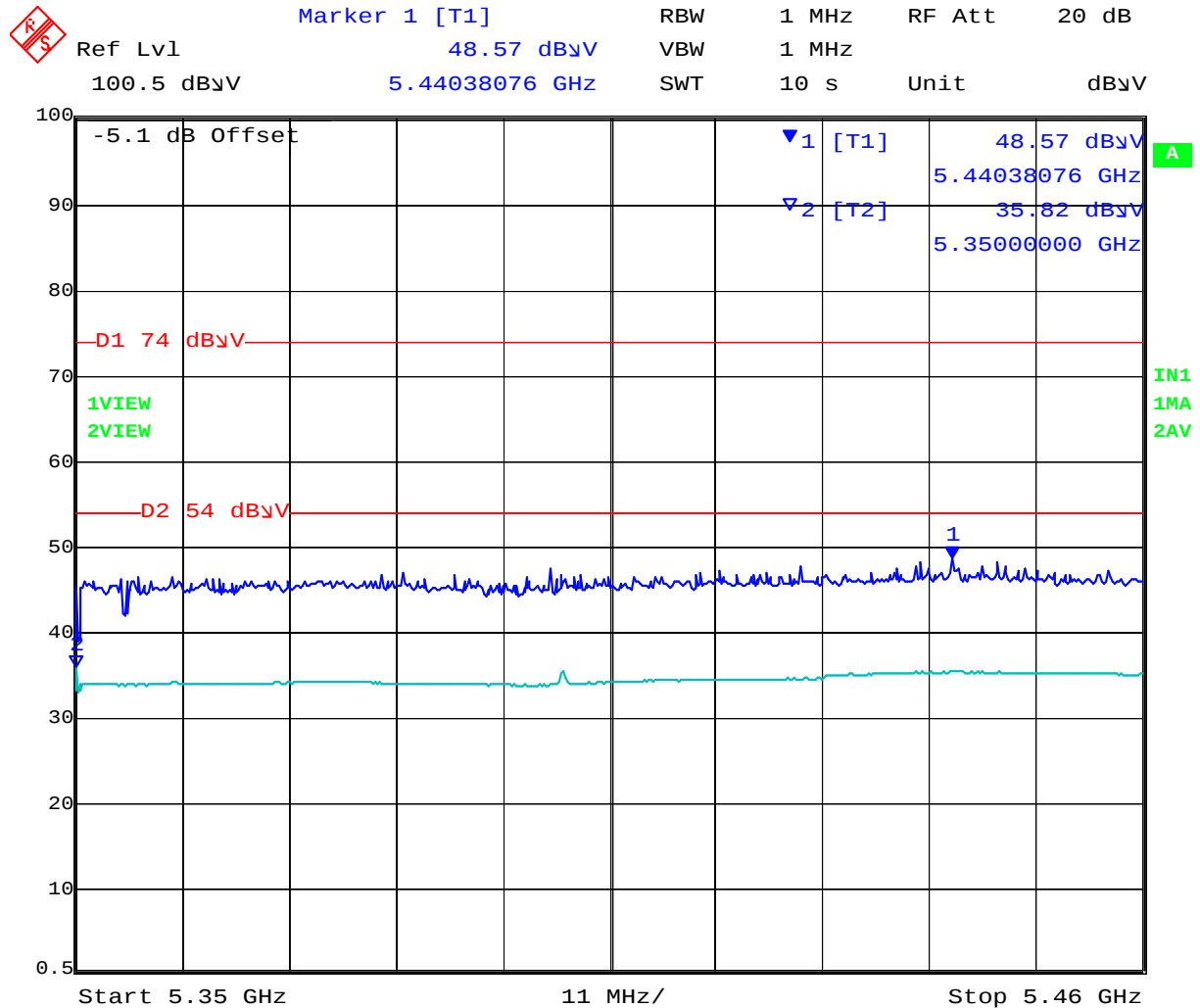
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
 RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 339 of 412

5,350 – 5,460 MHz Restricted Band



Date: 19.MAR.2012 19:38:09

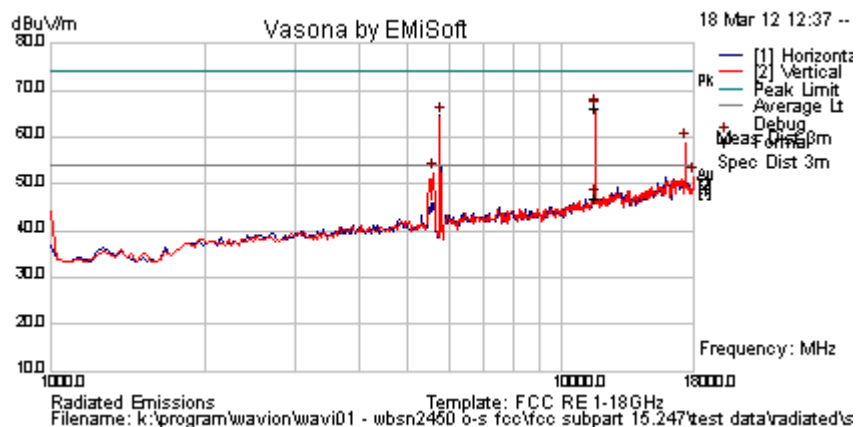
5 MHz Band-Edge EUT Transmitting 5730.5 MHz

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 340 of 412

Test Freq.	5790.5 MHz	Engineer	GMH
Variant	5 MHz Bandwidth 6 Mbs	Temp (°C)	18.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	36
Power Setting	16	Press. (mBars)	995
Antenna	8.5 dBi Omni	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
5769.53908	69.2	4.8	-9.5	64.5	Peak [Scan]	H						FUND
17386.774	48.6	8.7	1.4	58.7	Peak [Scan]	V					Pass	NRB
5599.198	57.4	4.7	-9.7	52.4	Peak [Scan]	V					Pass	BE
18000.000	42.1	8.8	0.7	51.6	Peak [Scan]	V	100	0	54	-2.4	Pass	NOISE
11582.124	61.6	6.8	-2.0	66.4	Peak Max	V	98	1	74	-7.6	Pass	RB
11582.124	42.1	6.8	-2.0	46.9	Average Max	V	98	1	54	-7.1	Pass	RB

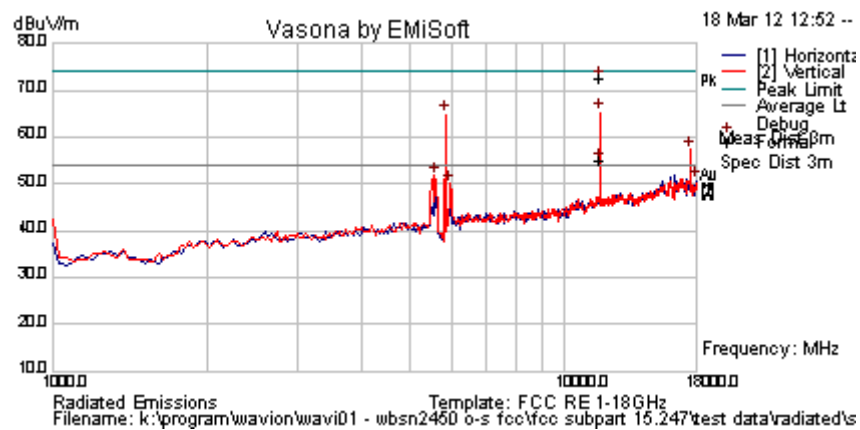
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
 RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

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Title: Wavion WBSn-2450-O/S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 341 of 412

Test Freq.	5845.5 MHz	Engineer	GMH
Variant	5 MHz Bandwidth 6 Mbs	Temp (°C)	18.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	36
Power Setting	15.5	Press. (mBars)	995
Antenna	8.5 dBi Omni	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
5837.675	69.3	4.8	-9.3	64.8	Peak [Scan]	V						FUND
17557.114	47.8	8.8	0.8	57.4	Peak [Scan]	V					Pass	NRB
5565.130	56.7	4.7	-9.7	51.7	Peak [Scan]	V					Pass	BE
18000.000	41.3	8.8	0.7	50.8	Peak [Scan]	H	100	0	54	-3.2	Pass	NOISE
5973.948	53.9	4.9	-8.7	50.0	Peak [Scan]	V					Pass	BE
11690.489	67.8	6.8	-2.4	72.2	Peak Max	V	99	3	74.0	-1.8	Pass	RB
11690.489	49.2	6.8	-2.4	53.6	Average Max	V	99	3	54.0	-0.4	Pass	RB

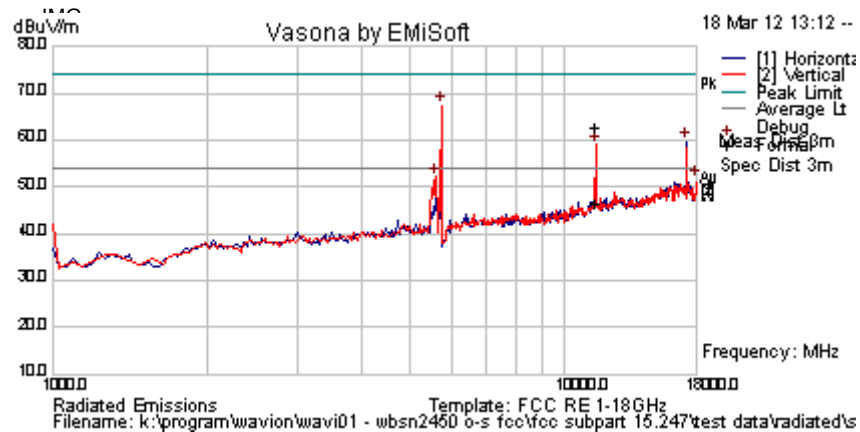
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
 RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

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Title: Wavion WBSn-2450-O/S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 342 of 412

Test Freq.	5735 MHz	Engineer	GMH
Variant	10 MHz Bandwidth 6 Mbs	Temp (°C)	19
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	35
Power Setting	19	Press. (mBars)	995
Antenna	8.5 dBi Omni	Duty Cycle (%)	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

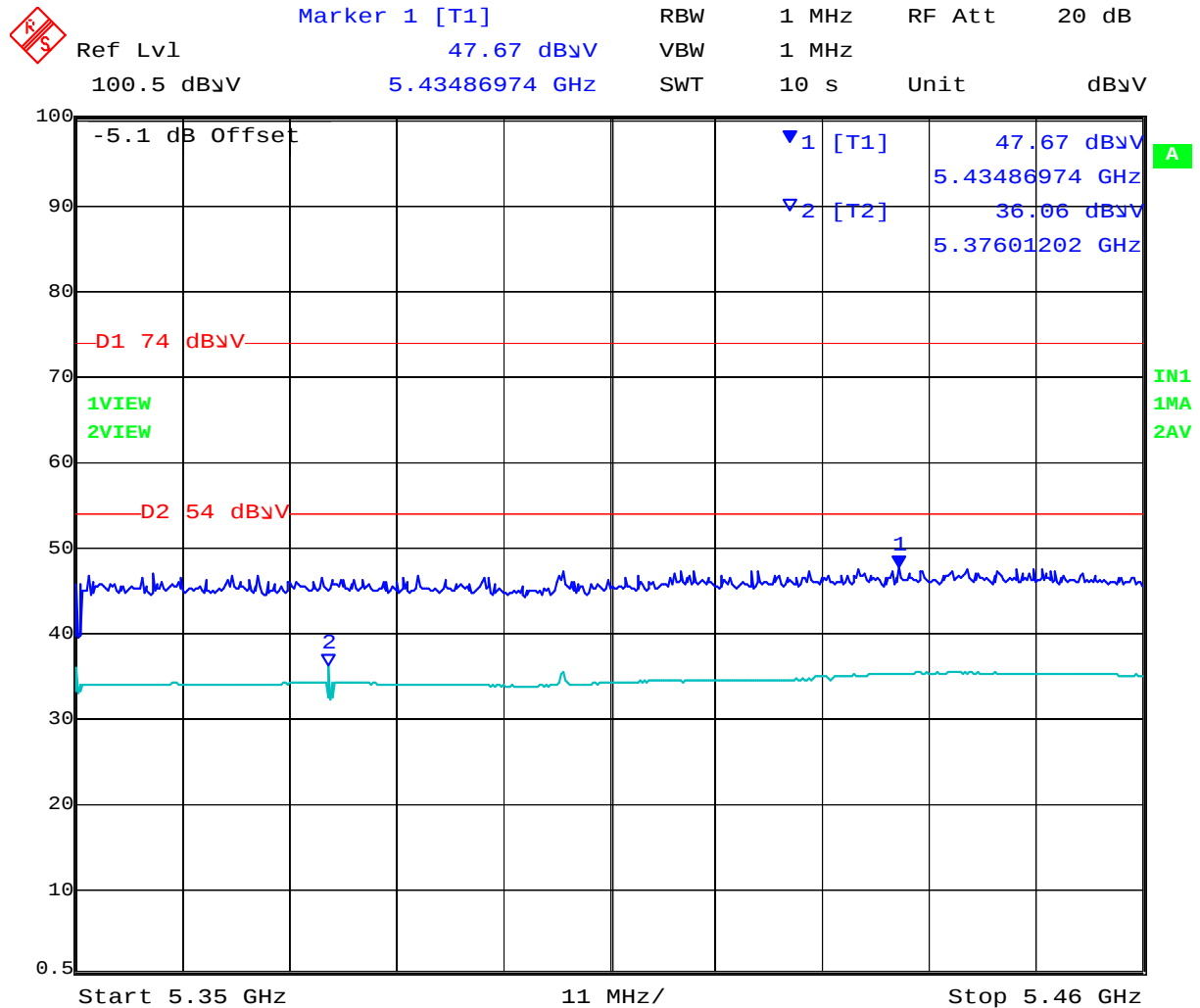
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5735.471	72.3	4.8	-9.5	67.5	Peak [Scan]	V						FUND
17216.433	50.3	8.6	0.9	59.7	Peak [Scan]	H					Pass	NRB
5599.198	57.2	4.7	-9.7	52.2	Peak [Scan]	V					Pass	BE
18000.000	42.0	8.8	0.7	51.5	Peak [Scan]	V	100	0	54	-2.5	Pass	NOISE
11466.212	58.1	6.8	-2.1	62.8	Peak Max	V	98	0	74	-11.2	Pass	RB
11466.212	41.6	6.8	-2.1	46.4	Average Max	V	98	0	54	-7.6	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												

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 343 of 412

Restricted Band 5,350 – 5,460 MHz



Date: 19.MAR.2012 19:37:10

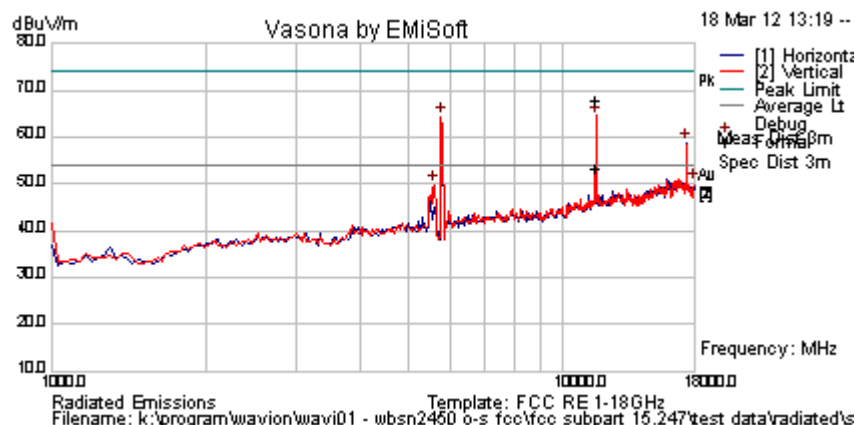
10MHz Band-Edge EUT Transmitting 5735 MHz

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 344 of 412

Test Freq.	5785 MHz	Engineer	GMH
Variant	10 MHz Bandwidth 6 Mbs	Temp (°C)	19
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	35
Power Setting	21	Press. (mBars)	995
Antenna	8.5 dBi Omni	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
5769.53908	69.1	4.8	-9.5	64.4	Peak [Scan]	V						FUND
17386.774	48.7	8.7	1.4	58.9	Peak [Scan]	H					Pass	NRB
18000.000	40.8	8.8	0.7	50.3	Peak [Scan]	H	100	0	54	-3.7	Pass	NOISE
5599.198	54.8	4.7	-9.7	49.8	Peak [Scan]	V					Pass	BE
11580.801	63.3	6.8	-2.0	68.0	Peak Max	V	98	0	74	-6.0	Pass	RB
11580.801	48.5	6.8	-2.0	53.3	Average Max	V	98	0	54	-0.7	Pass	RB

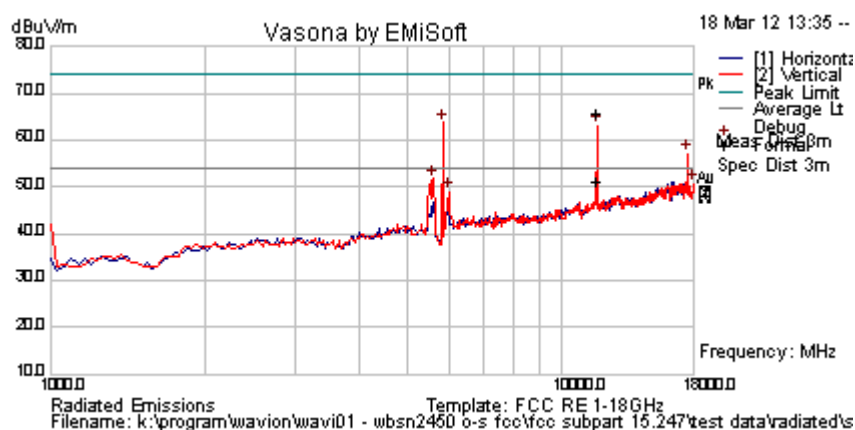
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 345 of 412

Test Freq.	5840 MHz	Engineer	GMH
Variant	10 MHz Bandwidth 6 Mbs	Temp (°C)	19
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	35
Power Setting	19 Reduction	Press. (mBars)	995
Antenna	8.5 dBi Omni	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
5837.675	68.2	4.8	-9.3	63.8	Peak [Scan]	V						FUND
17523.046	47.5	8.8	0.9	57.1	Peak [Scan]	V					Pass	NRB
5599.198	56.8	4.7	-9.7	51.8	Peak [Scan]	V					Pass	BE
18000.000	41.4	8.8	0.7	50.9	Peak [Scan]	V	100	0	54	-3.1	Pass	NOISE
6008.016	52.8	4.9	-8.6	49.0	Peak [Scan]	V					Pass	BE
11678.597	61.2	6.8	-2.4	65.7	Peak Max	V	153	0	74	-8.3	Pass	RB
11678.597	46.6	6.8	-2.4	51.1	Average Max	V	153	0	54	-3.0	Pass	RB

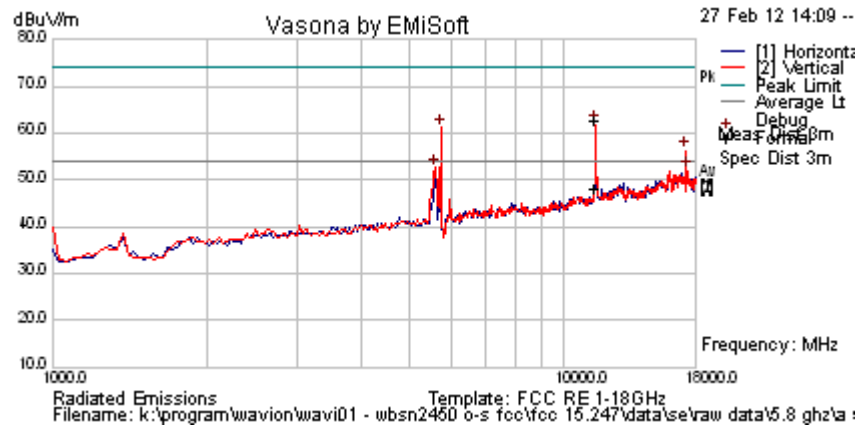
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
 RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 346 of 412

Test Freq.	5745 MHz	Engineer	GMH
Variant	802.11a; 6 Mbs	Temp (°C)	21.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	31
Power Setting	25	Press. (mBars)	995
Antenna	8.5 dBi Omni	Duty Cycle (%)	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

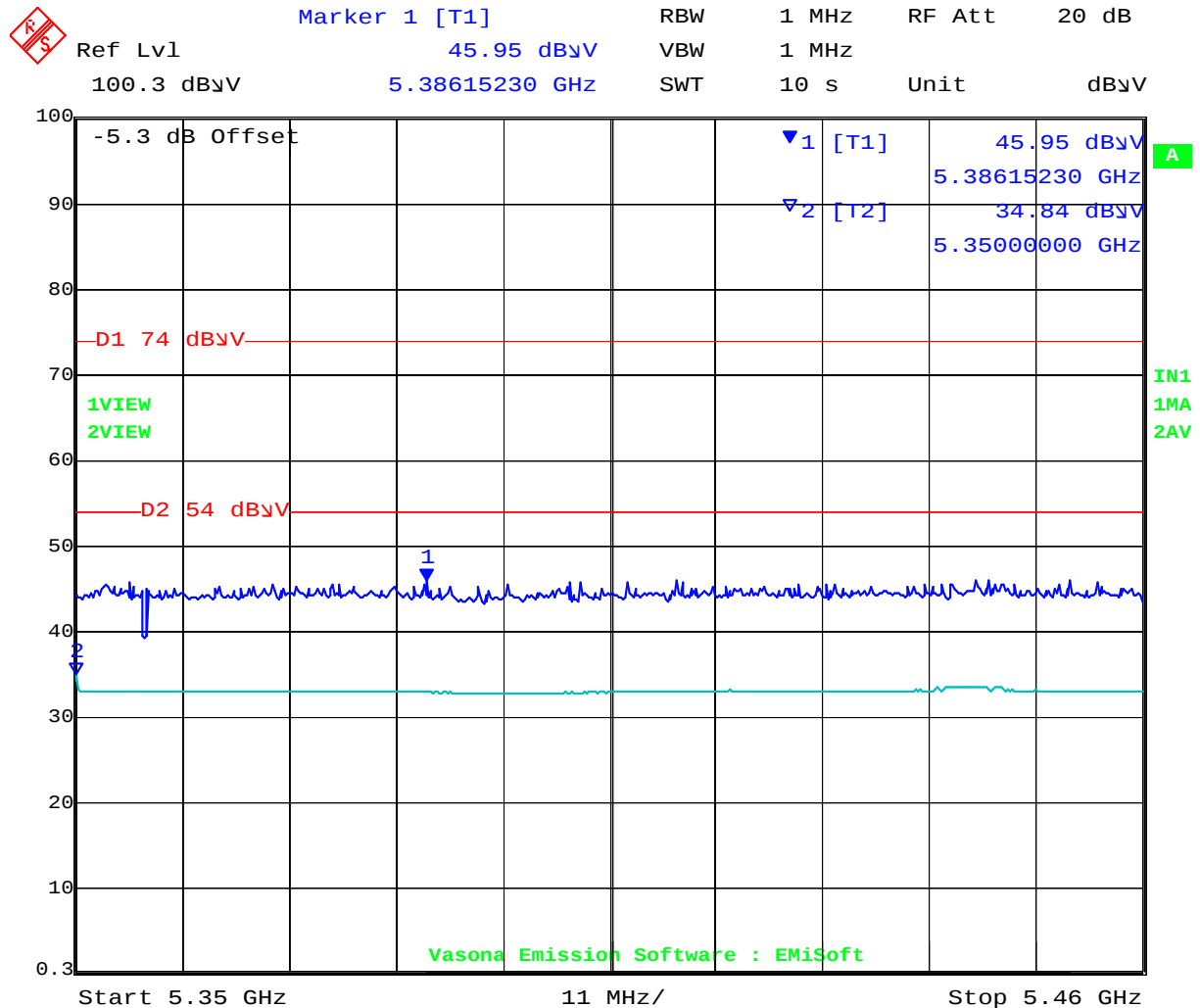
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
11484.760	57.8	6.8	-2.0	62.6	Peak Max	V	98	0	74.0	-11.4	Pass	RB
11484.76	43.6	6.8	-2.0	48.4	Average Max	V	98	0	54.0	-5.6	Pass	RB
5735.471	65.9	4.8	-9.5	61.1	Peak [Scan]	V						FUND
5599.198	57.7	4.7	-9.7	52.7	Peak [Scan]	V					Pass	BE
17352.705	41.9	8.7	1.3	52.0	Peak [Scan]	V					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												

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To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 347 of 412

Band Edge



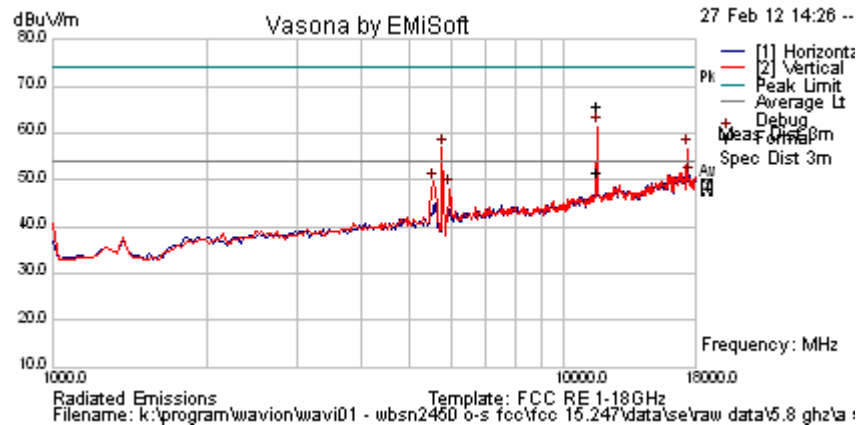
Date: 27.FEB.2012 16:06:46

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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 348 of 412

Test Freq.	5785 MHz	Engineer	GMH
Variant	802.11a; 6 Mbs	Temp (°C)	21.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	31
Power Setting	25	Press. (mBars)	995
Antenna	8.5 dBi Omni	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
11573.887	60.9	6.8	-2.0	65.7	Peak Max	V	115	0	74.0	-8.3	Pass	RB
11573.887	46.8	6.8	-2.0	51.6	Average Max	V	115	0	54.0	-2.4	Pass	RB
5769.539	61.6	4.8	-9.5	56.9	Peak [Scan]	V						FUND
17352.705	46.6	8.7	1.3	56.6	Peak [Scan]	V					Pass	NRB
5531.062	54.7	4.6	-9.7	49.7	Peak [Scan]	V	100	0	54	-4.3	Pass	BE
5973.948	52.0	4.9	-8.7	48.1	Peak [Scan]	V	200	0	54	-5.9	Pass	BE

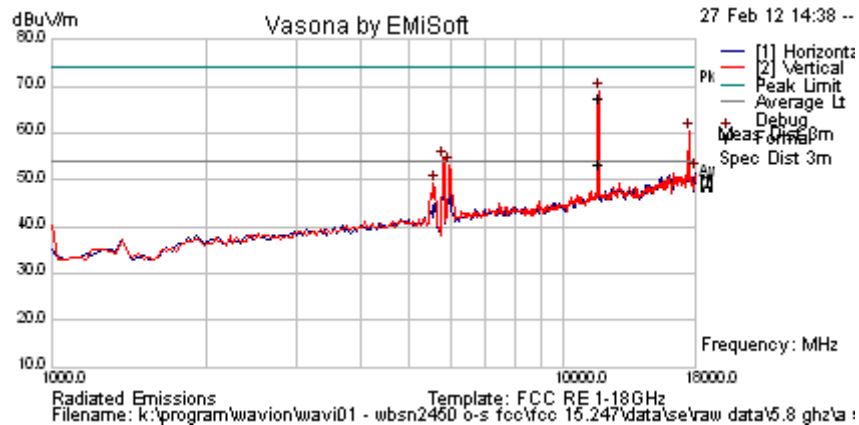
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 349 of 412

Test Freq.	5825 MHz	Engineer	GMH
Variant	802.11a; 6 Mbs	Temp (°C)	21.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	31
Power Setting	25	Press. (mBars)	995
Antenna	8.5 dBi Omni	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
11651.303	62.7	6.8	-2.3	67.3	Peak	V	98	0	74.0	-6.7	Pass	RB
11651.303	49.0	6.8	-2.3	53.5	Average	V	98	0	54.0	-0.5	Pass	RB
17488.978	50.6	8.8	1.0	60.4	Peak [Scan]	V					Pass	NRB
5803.607	58.9	4.8	-9.4	54.4	Peak [Scan]	V						FUND
18000.000	42.2	8.8	0.7	51.7	Peak [Scan]	H	200	0	54	-2.3	Pass	NOISE
5565.130	54.4	4.7	-9.7	49.3	Peak [Scan]	V					Pass	BE

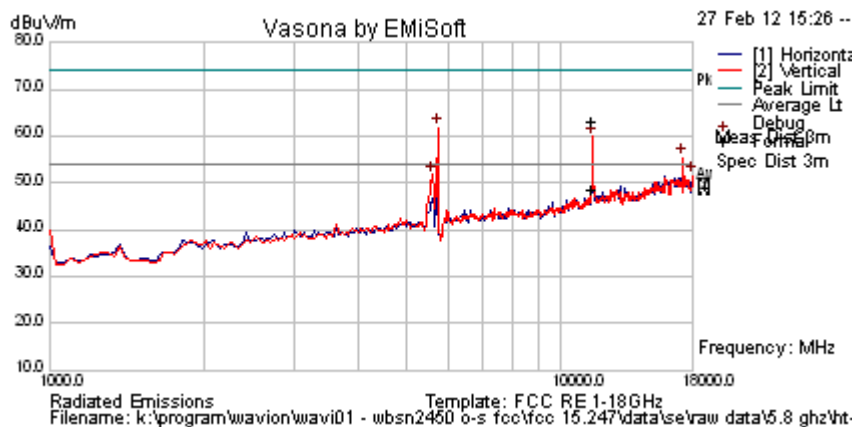
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
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Title: Wavion WBSn-2450-O/-S Wireless LAN Access Point
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: WAVI01-U1 Rev D
Issue Date: 30th March 2012
Page: 350 of 412

Test Freq.	5745 MHz	Engineer	GMH
Variant	802.11n; HT-20; 6.5 Mbit/s, MCS0	Temp (°C)	21.5
Freq. Range	1000 MHz - 18000 MHz	Rel. Hum.(%)	31
Power Setting	25	Press. (mBars)	995
Antenna	8.5dBi Omni	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
11483.056	58.6	6.8	-2.0	63.4	Peak Max	V	150	3	74.0	-10.6	Pass	RB
11483.056	43.9	6.8	-2.0	48.7	Average Max	V	150	3	54.0	-5.3	Pass	RB
5735.471	66.6	4.8	-9.5	61.8	Peak [Scan]	V						FUND
17250.501	45.8	8.6	1.0	55.4	Peak [Scan]	V					Pass	NRB
18000.000	42.4	8.8	0.7	51.9	Peak [Scan]	V	150	0	54	-2.1	Pass	NOISE
5599.198	56.7	4.7	-9.7	51.7	Peak [Scan]	V	200	0	54	-2.4	Pass	BE
Legend: TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission												
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