

Test of Aruba AP-124,125 802.11a/b/g/n AP

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

Test Report Serial No.: ARUB20-A2 Rev A



TEST REPORT

FROM



Test of Aruba AP-124,125 802.11a/b/g/n AP

to

To FCC 47 CFR Part 15.247 & IC RSS-210

Test Report Serial No.: ARUB20-A2 Rev A

This report supersedes: None

Manufacturer: Aruba Networks
1322 Crossman Avenue
Sunnyvale
California 94089, USA

Product Function: Wireless Access Point

Copy No: pdf **Issue Date:** 11th December 2007

This Test Report is Issued Under the Authority of:

MiCOM Labs, Inc.
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CERTIFICATE #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory



Title: Aruba AP-124,125 802.11a/b/g/n AP
To: FCC 47 CFR Part 15.247 & IC RSS-210
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ACCREDITATION, LISTINGS & RECOGNITION

ACCREDITATION

MiCOM Labs, Inc. an accredited laboratory complies with the international standard BS 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>





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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-LAF Communiqué dated 18 June 2005).



AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION
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SEAL
1978
DISTRICT OF COLUMBIA
A2LA

Presented this 13th day of August 2007.



President
For the Accreditation Council
Certificate Number 2381.01
Valid to February 29, 2008

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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LISTINGS

MiCOM Labs test facilities are listed by the following organizations;

North America

United States of America

Federal Communications Commission (FCC): 102167

Canada

Industry Canada (IC) Listing #:4143A-2

RECOGNITION

APEC MRA (Asia-Pacific Economic Community Mutual Recognition Agreement)

Conformity Assessment Body (CAB) – MiCOM Labs

Test data generated by MiCOM Labs is accepted in the following countries under the APEC MRA.

Country	Recognition Body	Phase	CAB Identification No.
Australia	Australian Communications and Media Authority (ACMA)	I	US0159
Hong Kong	Office of the Telecommunication Authority (OFTA)	I	
Korea	Ministry of Information and Communication Radio Research Laboratory (RRL)	I	
Singapore	Infocomm Development Authority (IDA)	I	
Taiwan	Directorate General of Telecommunications (DGT)	I	
	Bureau of Standards, Metrology and Inspection (BSMI)	I	

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DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft		
Rev A	11 th December '07	Initial Release

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1. TEST RESULT CERTIFICATE

Manufacturer:	Aruba Networks 1322 Crossman Avenue Sunnyvale California 94089, USA	Tested By:	MiCOM Labs, Inc. 440 Boulder Court Suite 200 Pleasanton California, 94566, USA
EUT:	Wireless Access Point	Telephone:	+1 925 462 0304
Model:	AP-124/125	Fax:	+1 925 462 0306
S/N:	AD0000142		
Test Date(s):	7th Nov to 10th Dec 2007	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:



Graeme Grieve
Quality Manager MiCOM Labs,



Gordon Hurst
President & CEO MiCOM Labs, Inc.



CERTIFICATE #2381.01

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2. REFERENCES AND MEASUREMENT UNCERTAINTY

2.1. Normative References

Ref.	Publication	Year	Title
(i)	FCC 47 CFR Part 15.247	2007	Code of Federal Regulations
(ii)	Industry Canada RSS-210	Issue 7 June 2007	Low Power License-Exempt Radiocommunication Devices (All Frequency Bands)
(iii)	Industry Canada RSS-Gen	Issue 2 June 2007	General Requirements and Information for the Certification of Radiocommunication Equipment.
(iv)	ANSI C63.4	2003	American National Standards for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
(v)	CISPR 22/ EN 55022	1997 1998	Limits and Methods of Measurements of Radio Disturbance Characteristics of Information Technology Equipment
(vi)	M 3003	Edition 1 Dec. 1997	Expression of Uncertainty and Confidence in Measurements
(vii)	LAB34	Edition 1 Aug 2002	The expression of uncertainty in EMC Testing
(viii)	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
(ix)	A2LA	14 th September 2005	Reference to A2LA Accreditation Status – A2LA Advertising Policy

2.2. Test and Uncertainty Procedures

Conducted and radiated emission measurements were conducted in accordance with American National Standards Institute ANSI C63.4, listed in the Normative References section of this report.

Measurement uncertainty figures are calculated in accordance with ETSI TR 100 028 Parts 1 and 2.

Measurement uncertainties stated are based on a standard uncertainty multiplied by a coverage factor $k = 2$, providing a level of confidence of approximately 95 % in accordance with UKAS document M 3003 listed in the Normative References section of this report.



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3. PRODUCT DETAILS AND TEST CONFIGURATIONS

3.1. Technical Details

Details	Description
Purpose:	Test of the Aruba AP-124,125 802.11a/b/g/n AP to FCC Part 15.247 and Industry Canada RSS-210 regulations.
Applicant:	As Manufacturer
Manufacturer:	Aruba Networks 1322 Crossman Avenue Sunnyvale California 94089, USA
Laboratory performing the tests:	MiCOM Labs, Inc. 440 Boulder Court, Suite 200 Pleasanton, California 94566 USA
Test report reference number:	ARUB20-A2 Rev A
Date EUT received:	12 TH November 2007
Standard(s) applied:	FCC 47 CFR Part 15.247 & IC RSS-210
Dates of test (from - to):	7th Nov to 10th Dec 2007
No of Units Tested:	1
Type of Equipment:	802.11N Wireless Access Point (2x3)
Manufacturers Trade Name:	Wireless Access Point
Model(s):	AP-124 (integral) and AP-125 (external) antenna
Location for use:	Indoor
Declared Frequency Range(s):	2400 - 2483.5 MHz; 5725 - 5850 MHz
Software Release	3.3.1.0
Type of Modulation:	Per 802.11 –CCK, BPSK, QPSK, DSSS, OFDM
Declared Nominal Average Output Power:	802.11b: +19 dBm 802.11g:Leg. +17dBm,HT-20 +19 dBm,HT-40 +19 dBm 802.11a:Leg. +17dBm,HT-20 +19 dBm,HT-40 +19 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:	5 Vdc, 2.5 A POE 48 Vdc 350 mA
Operating Temperature Range:	Declared range 0 to +40°C
ITU Emission Designator:	802.11b – 15M5W7D 802.11g – Legacy 16M6W7D 802.11g – HT-20 17M9W7D, HT-40 36.7 802.11g – HT-40 36M7W7D 802.11a – Legacy 16M7W7D 802.11a – HT-20 17M8W7D 802.11a – HT-40 36M3W7D
Frequency Stability:	±20 ppm max
Equipment Dimensions:	Retracted 124 x 130 x 51mm (4.9 x 5.13 x 2.0 in.)
Weight:	18oz (0.42 kgs)
Primary function of equipment:	Wireless Access Point for transmitting data and voice

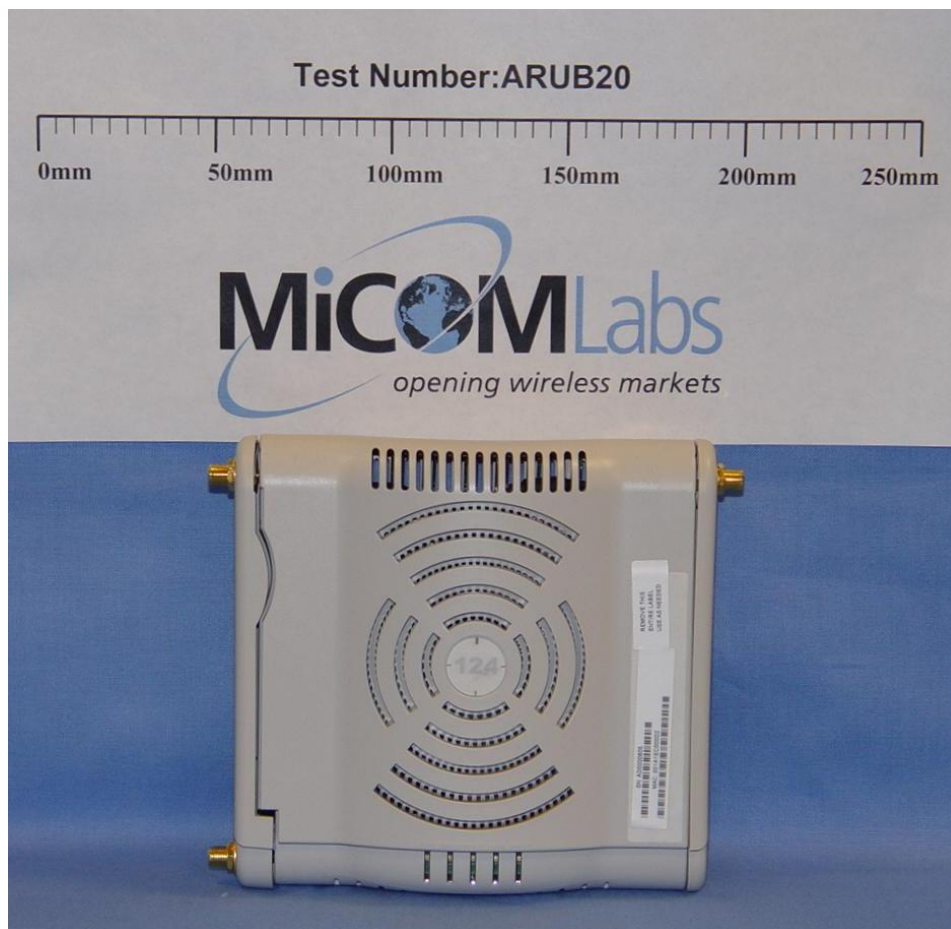
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3.2. Scope of Test Program

The scope of the test program was to test the Aruba Networks AP-124 and 125 wireless Access Points 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.

The Aruba Networks AP-124 has external antennas with reverse SMA connectors while the AP-125 has integral antenna(s). The device has two radios with three antennae (2x3).

Aruba Networks AP-124 Wireless Access Point (Front)



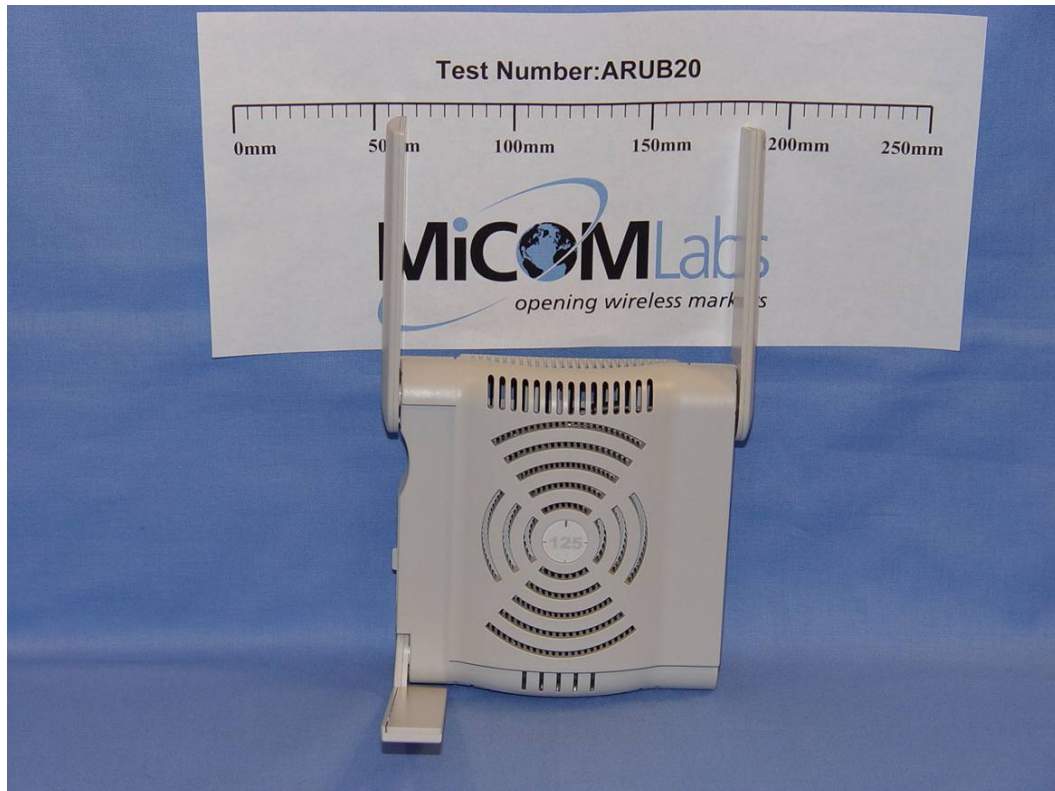
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**Aruba Networks
Wireless Access Point (Underside)**



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**Aruba Networks
AP-125 Wireless Access Point (Integral Antenna)**



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

Type (EUT/Support)	Equipment Description (Including Brand Name)	Mfr	Model No.	Serial No.
EUT	Access Point	Aruba Networks	AP-124/125	AD0000142
Support	Power Over LAN Hub	PowerDsine	PD-6001/AC	A03176040000172
Support	Power Supply	CUI Inc	A1-15S05	
Support	Laptop PC	IBM	Thinkpad	None

Note: the AP-125 access point identified in the above table was converted to an AP-124 for spurious emission testing on integral antenna.

3.4. Antenna Details

1. 2400-2483.5 MHz

- Integral 2.4 – 2.5 GHz Gain: 4.46 dBi
- Cushcraft AP-ANT-7, 12 dBi Directional (Cushcraft P/N: S241290)
- Laird Technologies AP-ANT-8, 5 dBi OMNI (Laird Tech. P/N: CAF 96210)

2. 5725-5850 MHz

- Integral 5.8 GHz Gain: 5.23 dBi
- Cushcraft AP-ANT-10, 6 dBi OMNI (Cushcraft P/N: S5153WBPX)
- Cushcraft AP-ANT-12, 14 dBi Directional (Cushcraft P/N: S51514WP)

3.5. Cabling and I/O Ports

Number and type of I/O ports

1. Gigabit Ethernet (non-screened) x 2
2. 5 Vdc, 4mm supply connector

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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
	Legacy	6 MBit/s	2,437
g	HT-20	6.5 MCS	2,462
	HT-40	13.5 MCS	2,422
			2,437
			2,452
a	Legacy	6 MBit/s	5,745
	HT-20	6.5 MCS	5,785
			5,825
	HT-40	13.5 MCS	5,755
5,815			

Legacy – data rates for 802.11abg products

Results for the above configurations are provided in this report.



Conducted Testing

Conducted test parameters were performed on a single antenna connector. The performance testing was carried out on the transmitter port exhibiting the highest output power. A table of output power V's antenna port for each operational mode is provided below. The power from each transmitter is provided together with the aggregate power for all three transmitters. Complete characterization for each chain has been provided only for the power settings utilized in the generation of this report. Aggregate power measurements are provided for all power settings.

Channel 2,412 MHz

Configuration	ART Power Setting	Tx 1 Measured Pwr (dBm)	Tx 2 Measured Pwr (dBm)	Tx 3 Measured Pwr (dBm)	Aggregate Measured Pwr (dBm)
Legacy b	5				8.8
	6				9.12
	7				10.30
	9				12.16
	10				13.26
	11				14.08
	12				14.23
	13				15.07
	14				16.70
	15				18.28
	16	13.74	13.27	14.33	19.38
	17				19.76
	17.5	15.30	14.72	15.87	20.00
	19	17.01	16.65	17.39	22.68
	Legacy g	5			
6					9.29
7					10.47
9					12.42
10					13.29
11		8.93	8.71	8.91	14.37
12					15.30
13					16.50
13.5		15.39	14.70	16.21	17.00
15					18.56
16					19.42
17		15.08	14.43	15.35	20.37

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Configuration	ART Power Setting	Tx 1 Measured Pwr (dBm)	Tx 2 Measured Pwr (dBm)	Tx 3 Measured Pwr (dBm)	Aggregate Measured Pwr (dBm)
HT-20	5				8.31
	6				9.22
	6.5	4.30	3.57	4.98	9.76
	9				12.37
	10				13.02
	11				14.17
	12	10.00	9.27	10.20	15.22
	13				16.27
	14				17.37
	15				18.36
	16				19.29
	17	15.02	14.31	15.48	20.54
	18				21.25
	19	17.03	16.70	17.34	22.40
Channel 2,422 MHz					
HT-40	5				8.80
	6				9.80
	7	5.60	4.74	5.90	10.88
	9				12.40
	9.5	7.66	7.28	7.68	12.84
	11				14.32
	12				15.42
	13				16.30
	14				17.26
	15	12.97	12.58	13.47	18.19
	16				19.08
	17	14.86	14.43	15.25	20.07
	18				21.35
	19	17.30	16.75	17.39	22.68

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Channel 2437 MHz

Configuration	ART Power Setting	Tx 1 Measured Pwr (dBm)	Tx 2 Measured Pwr (dBm)	Tx 3 Measured Pwr (dBm)	Aggregate Measured Pwr (dBm)	
Legacy b	5				7.29	
	6				8.72	
	7				10.16	
	9				11.43	
	10				12.21	
	11				13.20	
	12				13.27	
	13				15.89	
	14				15.60	
	15				17.70	
	16				18.57	
	17				20.87	
	18				20.39	
	19		16.70	16.20	17.03	21.59
Legacy g	5				8.24	
	6				9.30	
	7				10.40	
	9				11.25	
	10				12.83	
	11				13.93	
	12				14.94	
	13				16.02	
	14				16.85	
	15				18.18	
	16				19.20	
	17		14.71	14.32	15.01	20.40

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Channel 2437 MHz

Configuration	ART Power Setting	Tx 1 Measured Pwr (dBm)	Tx 2 Measured Pwr (dBm)	Tx 3 Measured Pwr (dBm)	Aggregate Measured Pwr (dBm)	
HT-20	5				8.26	
	6				9.27	
	7				10.21	
	9				12.50	
	10				12.75	
	11				13.82	
	12				14.80	
	13				15.99	
	14				16.82	
	15				18.80	
	16				19.94	
	17				20.62	
	18				21.16	
	19		16.79	16.30	17.02	22.36
HT-40	5				8.75	
	6				9.74	
	7				10.66	
	9				12.12	
	10				13.23	
	11				14.19	
	12				15.10	
	13				15.99	
	14				16.06	
	15				17.98	
	16				18.97	
	17		14.67	14.62	15.11	19.02
	18					21.19
	19		17.11	16.53	17.36	22.30

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Channel 2462 MHz

Configuration	ART Power Setting	Tx 1 Measured Pwr (dBm)	Tx 2 Measured Pwr (dBm)	Tx 3 Measured Pwr (dBm)	Aggregate Measured Pwr (dBm)
Legacy b	5				7.97
	6				8.95
	7				9.46
	7.5	5.51	5.27	5.75	10.71
	10				12.77
	11				13.60
	12				14.35
	13				15.95
	14				16.87
	15				18.46
	16	13.94	13.25	14.14	19.10
	17				20.47
	17.5	11.18	10.74	11.17	20.90
	19	16.64	16.78	17.24	22.39
	Legacy g	5			
6					9.38
7					10.29
9					12.27
10					12.82
11					13.82
12					15.01
12.5		10.04	10.92	10.47	15.51
14					17.19
15					19.42
16					20.35
17		14.78	14.58	15.47	21.27

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Channel 2462 MHz

Configuration	ART Power Setting	Tx 1 Measured Pwr (dBm)	Tx 2 Measured Pwr (dBm)	Tx 3 Measured Pwr (dBm)	Aggregate Measured Pwr (dBm)
HT-20	5				8.25
	6				9.25
	7				10.17
	9				12.25
	10	7.49	7.02	7.71	12.63
	11				13.70
	11.5	8.63	8.35	9.30	14.23
	13				15.87
	14				17.68
	15				18.06
	16				19.36
	17				20.06
	18	15.68	15.62	16.26	21.36
	19	16.96	16.67	17.20	22.35

Channel 2,452 MHz

HT-40	3	1.67	0.78	1.70	6.72
	6				9.86
	7				10.61
	9				12.17
	9.5	7.35	6.82	7.67	12.68
	11				14.09
	12				15.15
	13				16.01
	14				17.07
	15				18.27
	16	13.88	13.90	14.50	19.26
	17	14.75	14.80	15.31	20.29
	18				21.36
	19	16.91	16.42	17.80	22.25

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Channel 5745 MHz

Configuration	ART Power Setting	Tx 1 Measured Pwr (dBm)	Tx 2 Measured Pwr (dBm)	Tx 3 Measured Pwr (dBm)	Aggregate Measured Pwr (dBm)
Legacy a	5				8.20
	6				9.16
	7				10.02
	8				10.86
	9				11.75
	10				13.08
	11.5	8.88	8.40	9.36	14.42
	12	9.46	9.83	9.80	14.95
	13	10.21	9.96	10.89	15.91
	14	11.27	11.10	12.03	17.02
	15				18.08
	16	13.10	12.95	14.10	19.02
	17	14.05	13.91	15.12	19.97
	18				20.59
	19				22.78
HT-20	5				8.16
	6				9.06
	7				9.94
	8				10.93
	9				11.74
	10				12.96
	11				13.92
	12	9.42	8.72	9.80	14.86
	12.5	9.83	9.13	10.37	15.38
	13.5	10.58	10.38	11.30	16.45
	14	11.18	11.03	12.01	16.99
	16	13.00	13.00	13.84	18.87
	17	13.95	13.75	15.00	19.98
	18				21.46
	19				22.42

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Channel 5755 MHz

Configuration	ART Power Setting	Tx 1 Measured Pwr (dBm)	Tx 2 Measured Pwr (dBm)	Tx 3 Measured Pwr (dBm)	Aggregate Measured Pwr (dBm)
HT-40	5				8.37
	6				9.24
	7				10.15
	8				10.92
	9				11.86
	10	7.06	6.53	7.73	12.70
	11				13.64
	12	8.67	8.55	9.57	14.58
	13				15.73
	14	10.67	10.65	11.48	16.76
	15				17.63
	16				18.82
	17	13.94	13.67	14.82	19.84
	18				20.89
	19				21.92

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Channel 5785 MHz

Configuration	ART Power Setting	Tx 1 Measured Pwr (dBm)	Tx 2 Measured Pwr (dBm)	Tx 3 Measured Pwr (dBm)	Aggregate Measured Pwr (dBm)
Legacy a	5				8.85
	6				9.57
	7				10.49
	8				11.12
	9				11.83
	10				12.68
	11				13.56
	12	8.90	8.52	9.21	14.50
	13				15.60
	14	10.78	10.62	11.56	16.62
	15				17.79
	16				18.45
	17				19.78
	18				21.89
	19				22.05
HT-20	5				8.80
	6				9.58
	7				10.30
	8				11.01
	9				11.86
	10				12.52
	11				13.45
	12	8.82	8.51	9.11	14.49
	13				15.62
	13.5	10.37	10.18	10.72	16.14
	14	10.87	10.57	11.49	16.66
	16				18.56
	17				19.86
	18				20.76
	19				21.64

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Channel 5785 MHz

Configuration	ART Power Setting	Tx 1 Measured Pwr (dBm)	Tx 2 Measured Pwr (dBm)	Tx 3 Measured Pwr (dBm)	Aggregate Measured Pwr (dBm)	
HT-40	5				8.78	
	6				9.39	
	7				10.16	
	8				10.85	
	9				11.72	
	10				12.30	
	11				13.22	
	12		8.44	8.29	9.12	14.32
	13					15.26
	14					16.34
	15					17.27
	16					18.40
	17		13.62	13.90	14.64	19.60
	18					20.58
	19					21.40

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Channel 5825 MHz

Configuration	ART Power Setting	Tx 1 Measured Pwr (dBm)	Tx 2 Measured Pwr (dBm)	Tx 3 Measured Pwr (dBm)	Aggregate Measured Pwr (dBm)	
Legacy a	5				9.34	
	6				10.20	
	7				10.78	
	8				11.41	
	9				12.23	
	10				12.51	
	11				13.22	
	12		8.43	8.79	9.07	14.35
	13					15.45
	14		10.70	10.54	11.02	16.39
	15					17.44
	16					18.50
	17					19.27
	18					20.35
19					21.82	
HT-20	5				9.32	
	6				10.10	
	7				10.76	
	8				11.33	
	9				12.09	
	10				12.26	
	11.5		7.97	8.27	8.35	13.64
	12		8.48	8.73	8.90	14.12
	12.5		9.06	9.10	9.50	14.69
	14					16.20
	15					17.22
	16					18.20
	17					19.50
	18					20.28
19					21.85	

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Channel 5815 MHz

Configuration	ART Power Setting	Tx 1 Measured Pwr (dBm)	Tx 2 Measured Pwr (dBm)	Tx 3 Measured Pwr (dBm)	Aggregate Measured Pwr (dBm)
HT-40	5				9.15
	6				9.87
	7				10.63
	8				10.15
	9				11.98
	10				12.25
	11				13.07
	11.5	7.63	7.80	8.12	13.53
	12	8.10	8.29	8.70	14.10
	14				16.27
	15				17.25
	16				18.38
	17	13.30	14.00	14.12	19.66
	18				20.49
	19				20.96

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Antenna Test Configurations for Radiated Emissions

Spurious Emission and Band-Edge Test Strategy

When testing radiated spurious emissions and band-edge three identical antennae were connected to the EUT at all times. Transmission during this test process simulated a typical installation. Results for the following configurations are provided in this report.

2,400 – 2483.5 MHz

15.247 ISM AP124 and AP-125			
	AP-ANT-Int	AP-ANT-7	AP-ANT-8
Legacy			
802.11b	b 2412	b 2412	b 2412
	b 2437	b 2437	b 2437
	b 2462	b 2462	b 2462
	BE b 2390	BE b 2390	BE b 2390
	b Pk 2412	b Pk 2412	b Pk 2412
	b Pk 2437	b Pk 2437	b Pk 2437
	b Pk 2462	b Pk 2462	b Pk 2462
	BE b 2483.5	BE b 2483.5	BE b 2483.5
802.11g	g 2412	g 2412	g 2412
	g 2437	g 2437	g 2437
	g 2462	g 2462	g 2462
	BE g 2390	BE g 2390	BE g 2390
	g Pk 2412	g Pk 2412	g Pk 2412
	g Pk 2437	g Pk 2437	g Pk 2437
	g Pk 2462	g Pk 2462	g Pk 2462
	BE g 2483.5	BE g 2483.5	BE g 2483.5
HT-20	g 2412	g 2412	g 2412
	g 2437	g 2437	g 2437
	g 2462	g 2462	g 2462
	BE g 2390	BE g 2390	BE g 2390
	PK g 2412	PK g 2412	PK g 2412
	PK g 2437	PK g 2437	PK g 2437
	PK g 2462	PK g 2462	PK g 2462
	BE g 2483.5	BE g 2483.5	BE g 2483.5
HT-40	g 2422	g 2422	g 2422
	g 2437	g 2437	g 2437
	g 2452	g 2452	g 2452
	BE g 2390	BE g 2390	BE g 2390
	PK g 2422	PK g 2422	PK g 2422
	PK g 2437	PK g 2437	PK g 2437
	PK g 2452	PK g 2452	PK g 2452
	BE g 2483.5	BE g 2483.5	BE g 2483.5

KEY;-

BE – Band-Edge

PK - Peak Emission

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5,725 – 5850 MHz

15.247 ISM AP124 and AP125			
	AP-ANT-Int	AP-ANT-12	AP-ANT-10
Legacy			
802.11a	a 5745	a 5745	a 5745
	a 5785	a 5785	a 5785
	a 5825	a 5825	a 5825
	Pk a 5745	Pk a 5745	Pk a 5745
	Pk a 5785	Pk a 5785	Pk a 5785
	Pk a 5825	Pk a 5825	Pk a 5825
	BE a 5460	BE a 5460	BE a 5460
HT-20	a 5745	a 5745	a 5745
	a 5785	a 5785	a 5785
	a 5825	a 5825	a 5825
	Pk a 5745	Pk a 5745	Pk a 5745
	Pk a 5785	Pk a 5785	Pk a 5785
	Pk a 5825	Pk a 5825	Pk a 5825
	BE a 5460	BE a 5460	BE a 5460
HT-40	a 5755	a 5755	a 5755
	a 5785	a 5785	a 5785
	a 5815	a 5815	a 5815
	Pk a 5755	Pk a 5755	Pk a 5755
	Pk a 5785	Pk a 5785	Pk a 5785
	Pk a 5815	Pk a 5815	Pk a 5815
	BE a 5460	BE a 5460	BE a 5460

KEY;-
 BE – Band-Edge
 PK - Peak Emission

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3.7. Equipment Modifications

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

EUT Software Power Settings - Radiated Testing

1. Reduction in output power to meet band-edge requirements was required in certain circumstances. When testing radiated spurious emissions a matrix has been included identifying the power settings for this scenario. The matrix identifies whether the reduction in power was as a result of band-edge issues or spurious emissions.

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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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 (30MHz - 26 GHz b/g and 30 MHz – 40 GHz a)	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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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 Peak Emissions		Complies	5.1.6.2.
Industry Canada only RSS-Gen §4.8, §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) ac/dc converter POE	Radiated	Complies	5.1.6.4
15.207 7.2.2	AC Wireline Conducted Emissions 150 kHz–30 MHz	Conducted Emissions ac/dc converter POE	Conducted	No Test Requirement	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: Appendix A - 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)

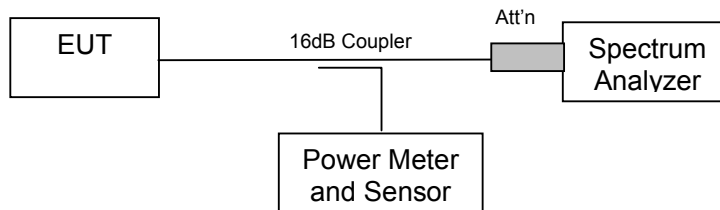
Industry Canada RSS-210 §A8.2

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: Maximum Default Power



Measurement Results for 6 dB Operational Bandwidth(s)

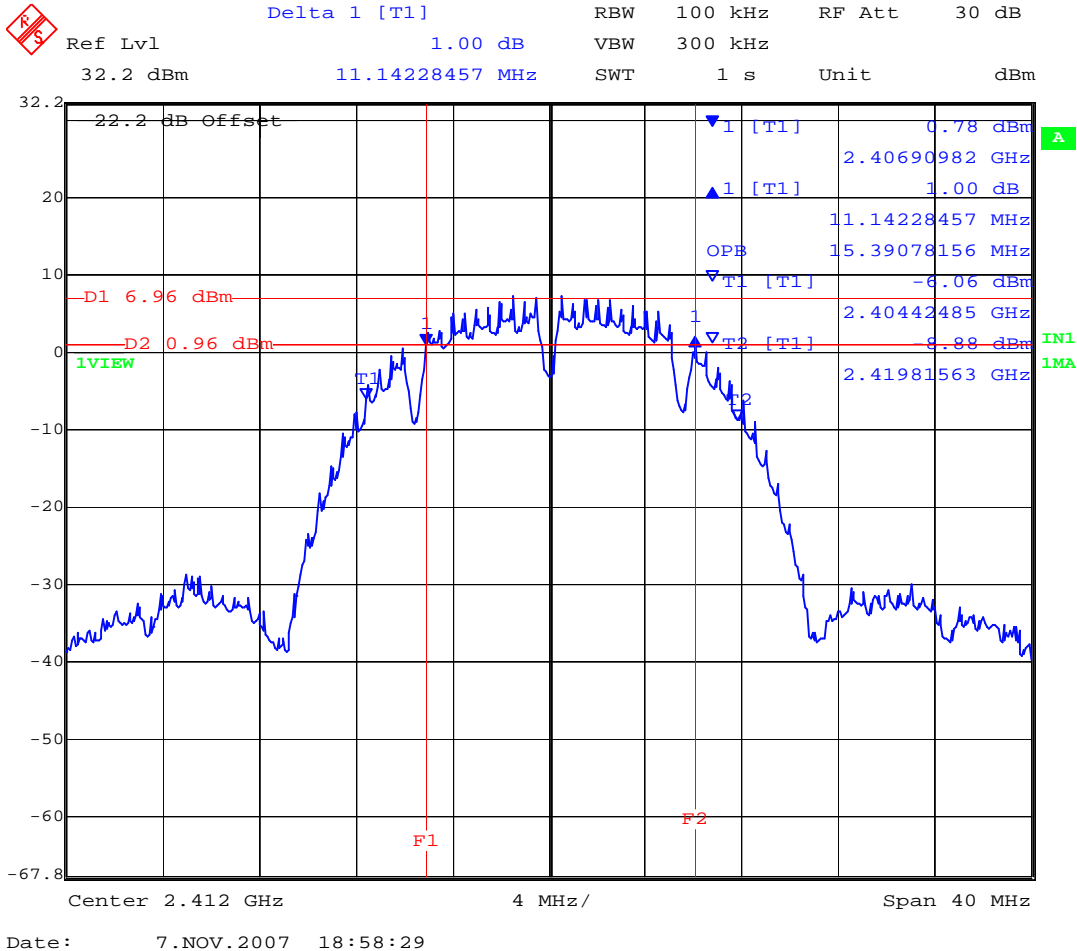
Ambient conditions.

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

TABLE OF RESULTS – 802.11b Legacy

Center Frequency (MHz)	6 dB Bandwidth (MHz)	99% BW (MHz)
2,412	11.142	15.391
2,437	11.142	15.471
2,462	11.062	15.551

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

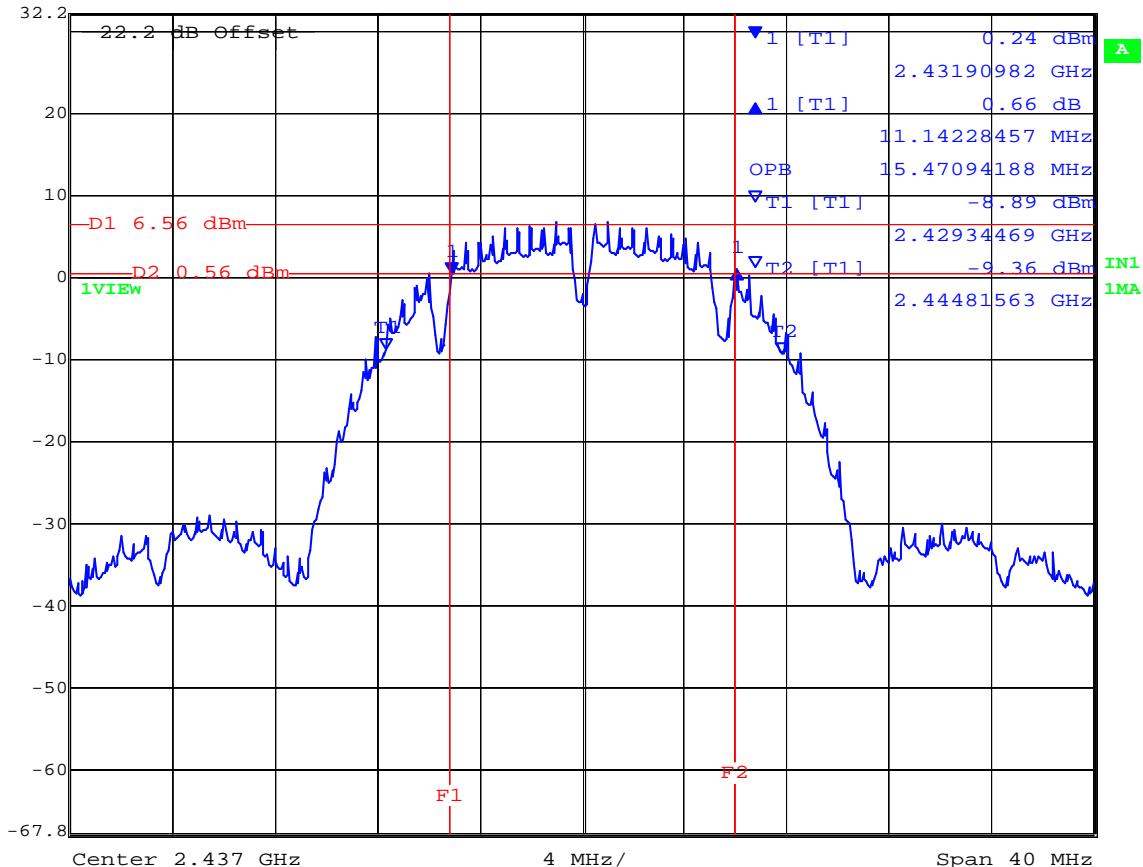


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2,437 MHz 802.11b Legacy 6 dB and 99% Bandwidth

Delta 1 [T1] RBW 100 kHz RF Att 30 dB
 Ref Lvl 0.66 dB VBW 300 kHz
 32.2 dBm 11.14228457 MHz SWT 1 s Unit dBm



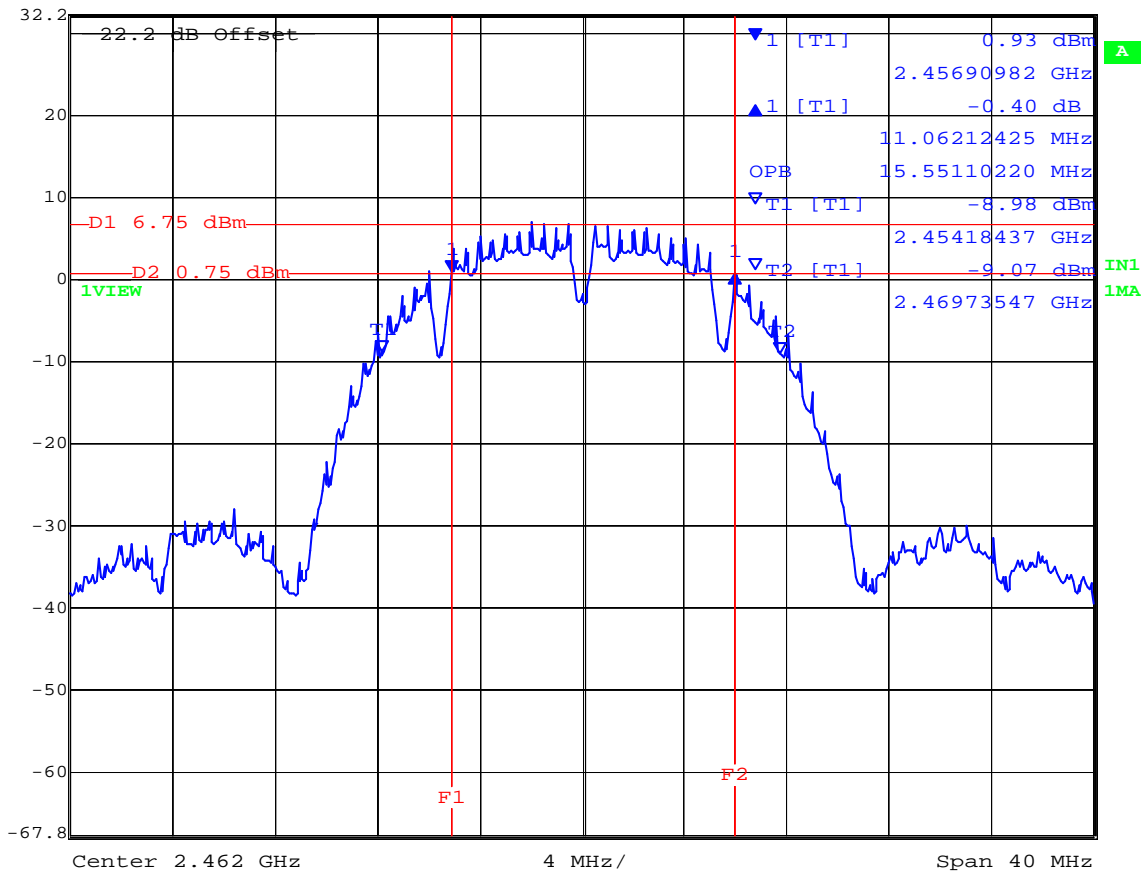
Date: 7.NOV.2007 19:00:22

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

	Delta 1 [T1]	RBW	100 kHz	RF Att	30 dB	
	Ref Lvl	-0.40 dB	VBW	300 kHz		
	32.2 dBm	11.06212425 MHz	SWT	1 s	Unit	dBm



Date: 7.NOV.2007 19:02:14

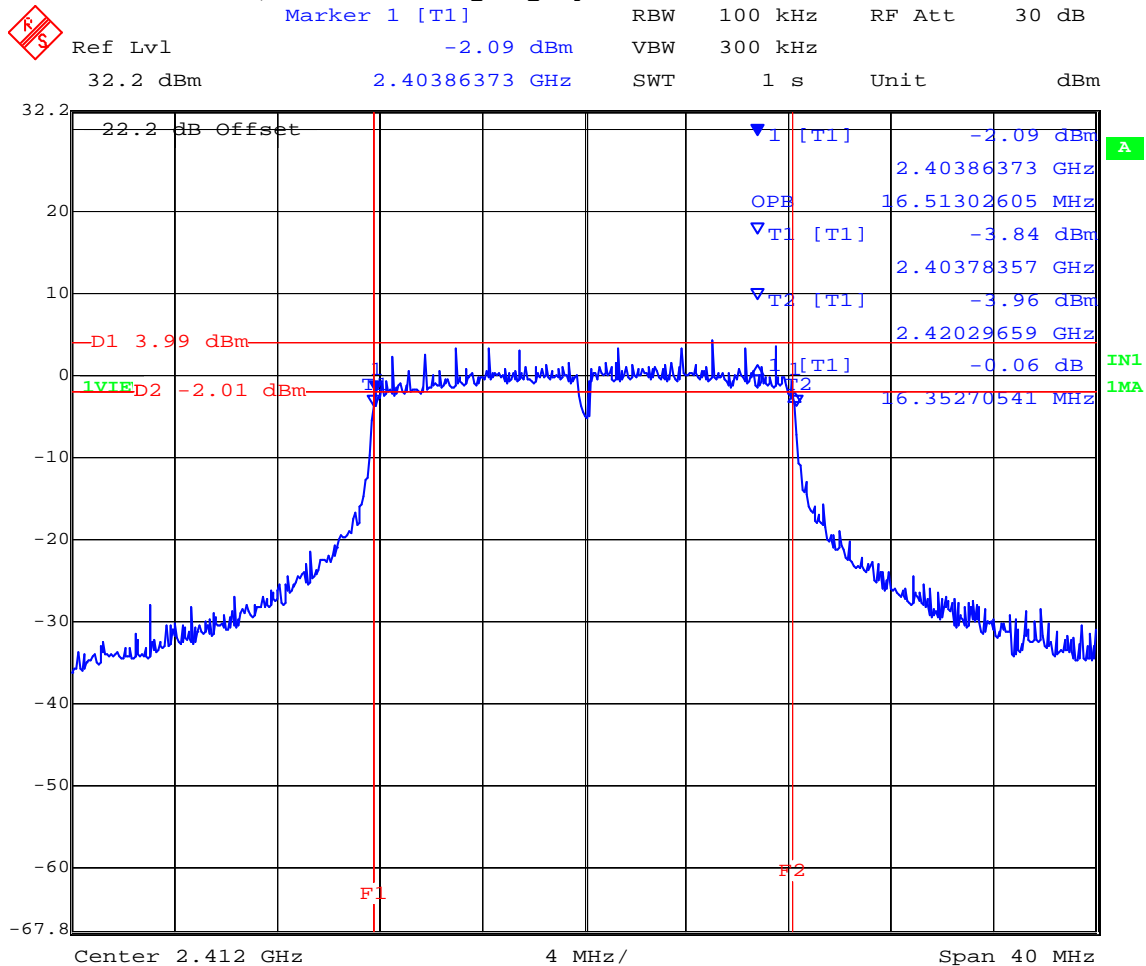
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TABLE OF RESULTS – 802.11g Legacy

Center Frequency (MHz)	6 dB Bandwidth (MHz)	99% BW (MHz)
2,412	16.353	16.513
2,437	16.273	16.513
2,462	16.433	16.593

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

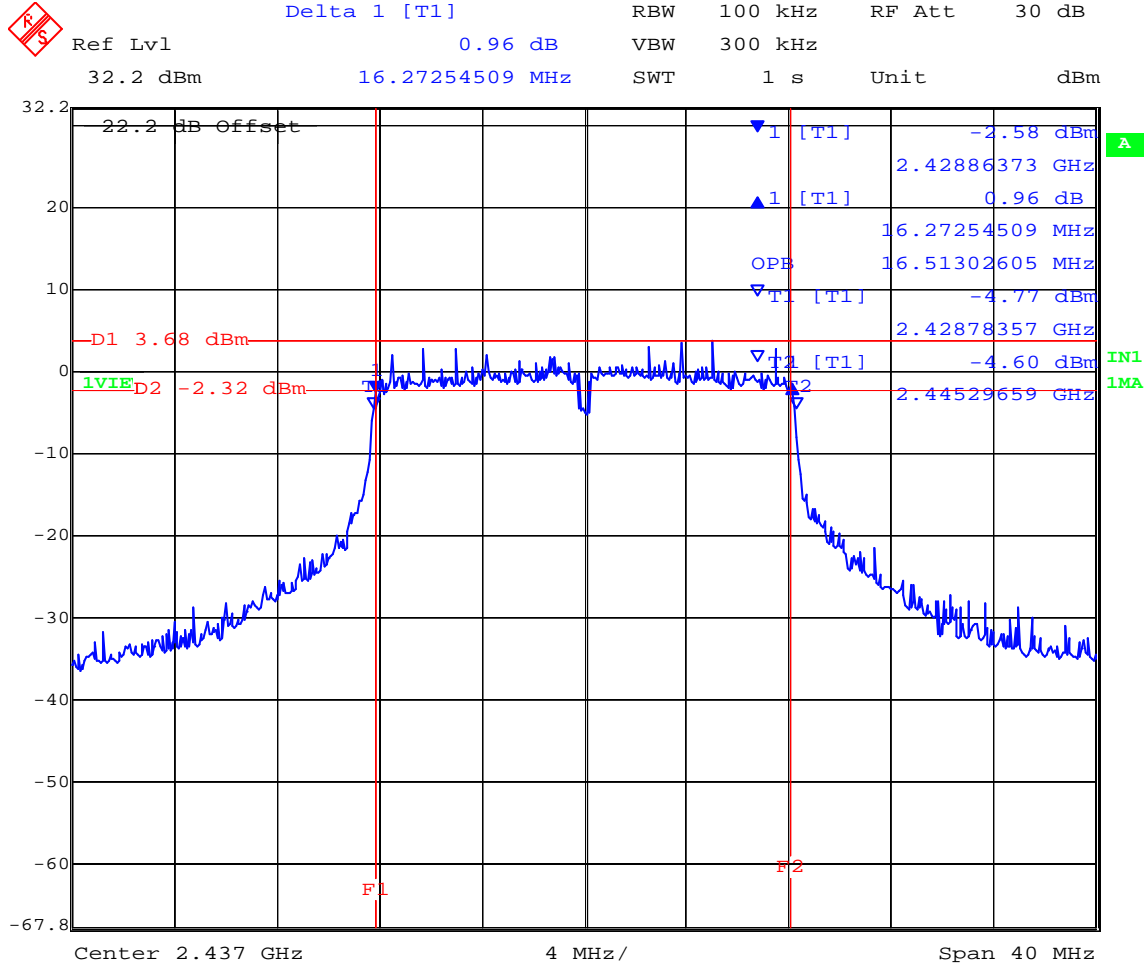


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2,437 MHz 802.11g Legacy 6 dB and 99% Bandwidth

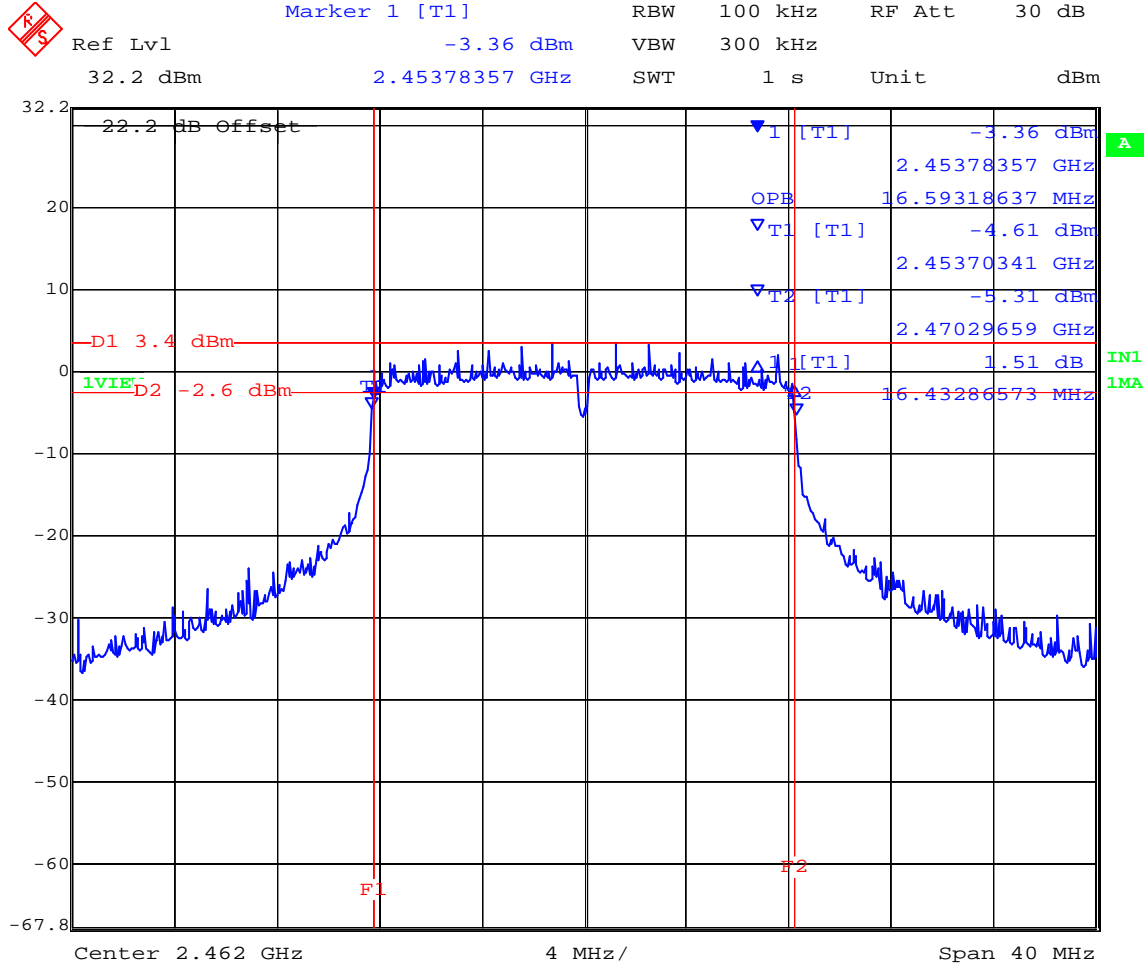


Date: 7.NOV.2007 18:53:04

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



Date: 7.NOV.2007 18:55:02

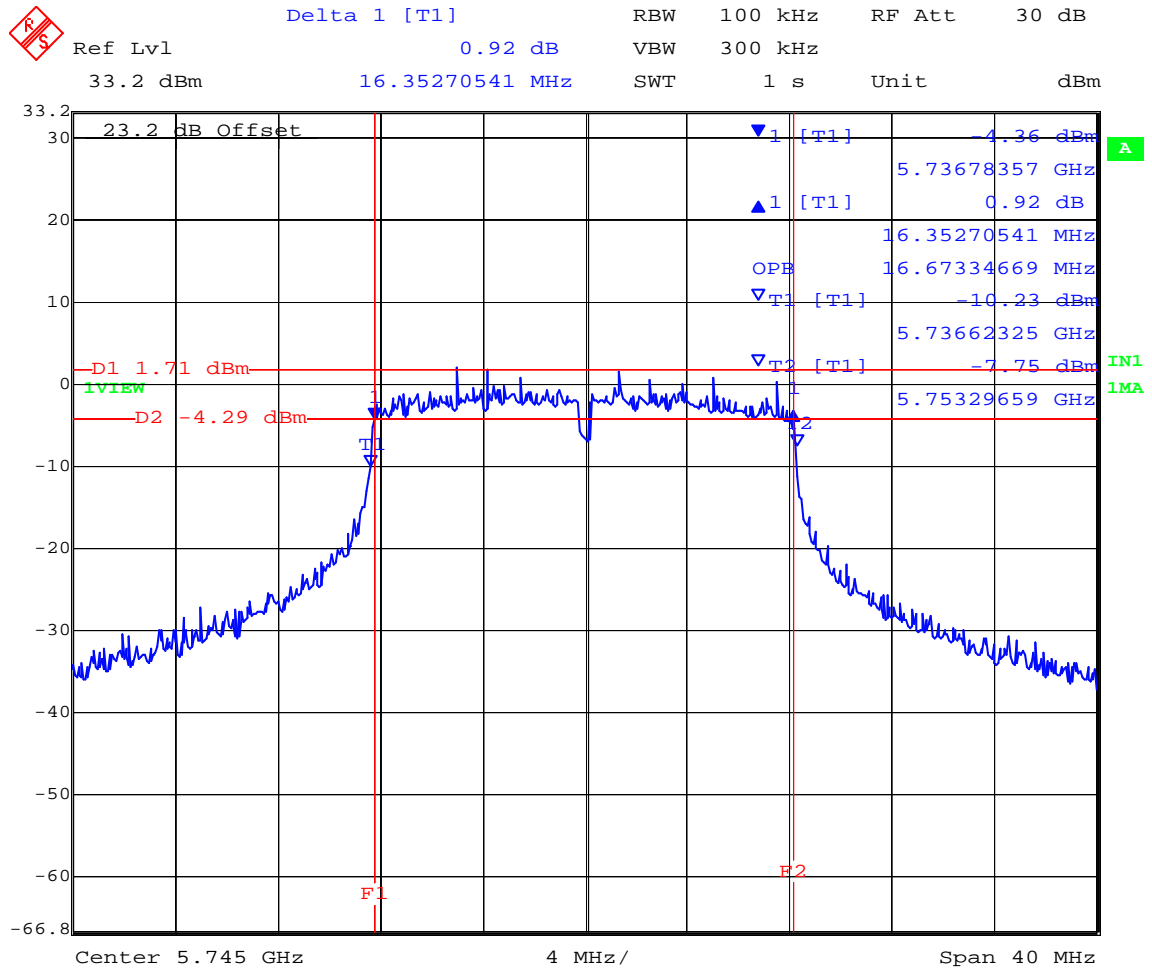
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TABLE OF RESULTS – 802.11a - Legacy

Center Frequency (MHz)	6 dB Bandwidth (MHz)	99% BW (MHz)
5,745	16.353	16.673
5,785	16.112	16.593
5,825	16.112	16.513

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



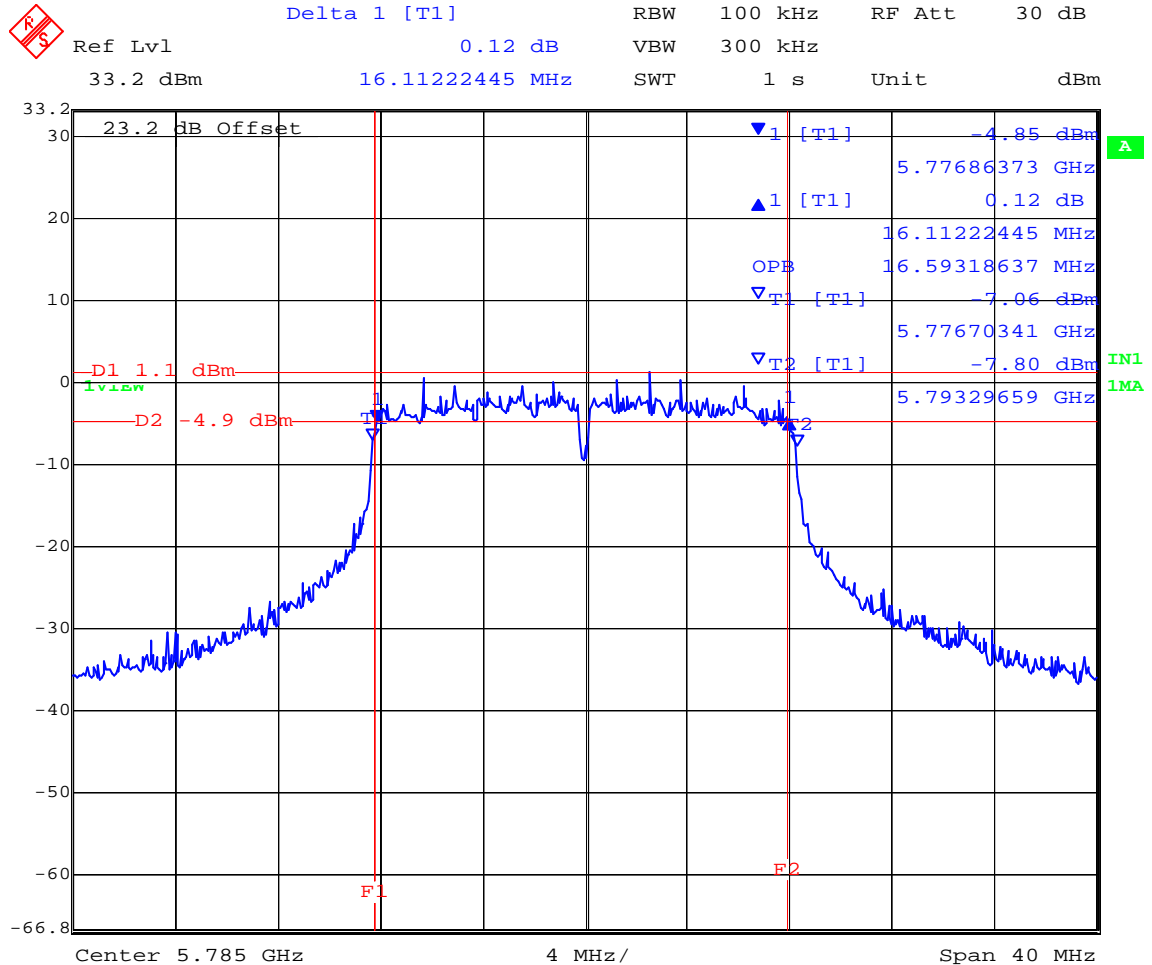
Date: 8.NOV.2007 14:37:58

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



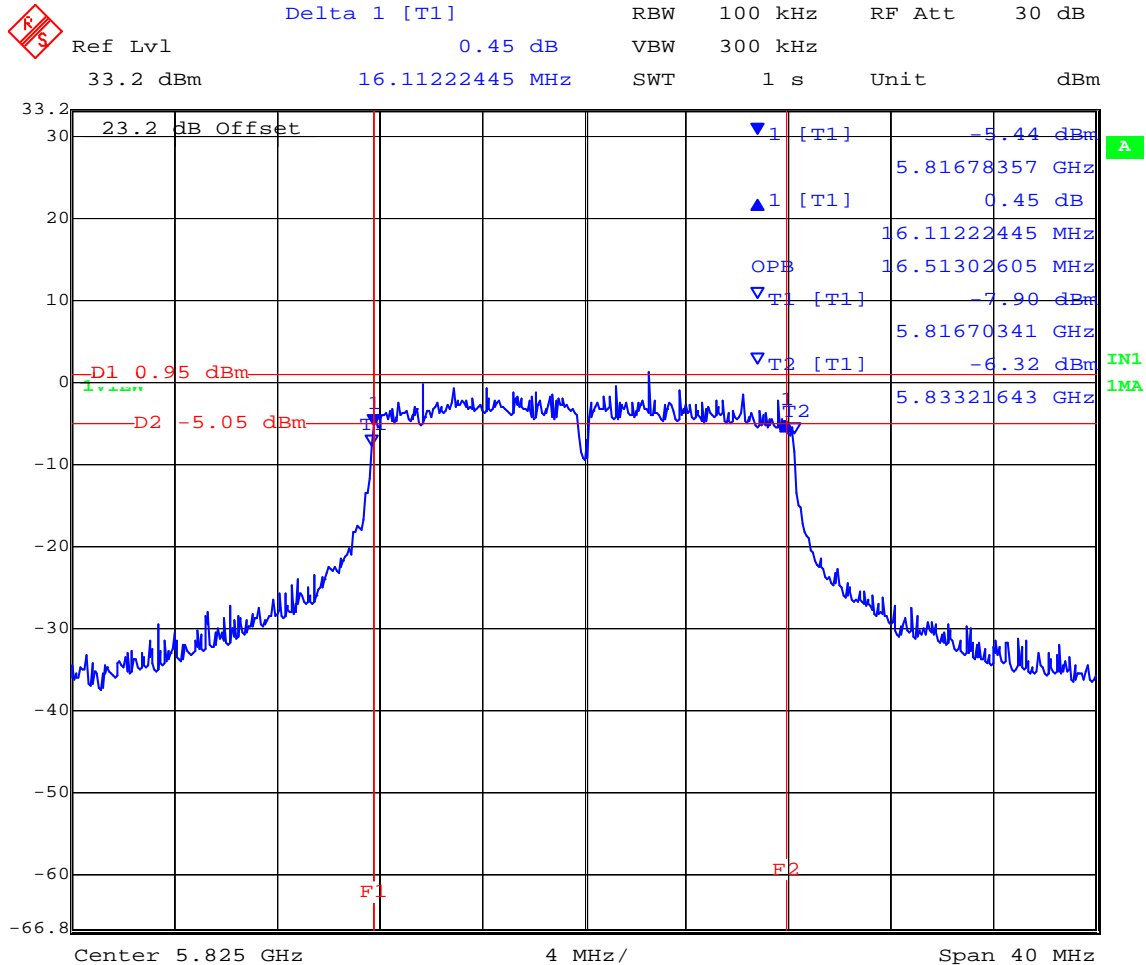
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5,825 MHz 802.11a Legacy 6 dB and 99% Bandwidth



Date: 8.NOV.2007 14:42:14

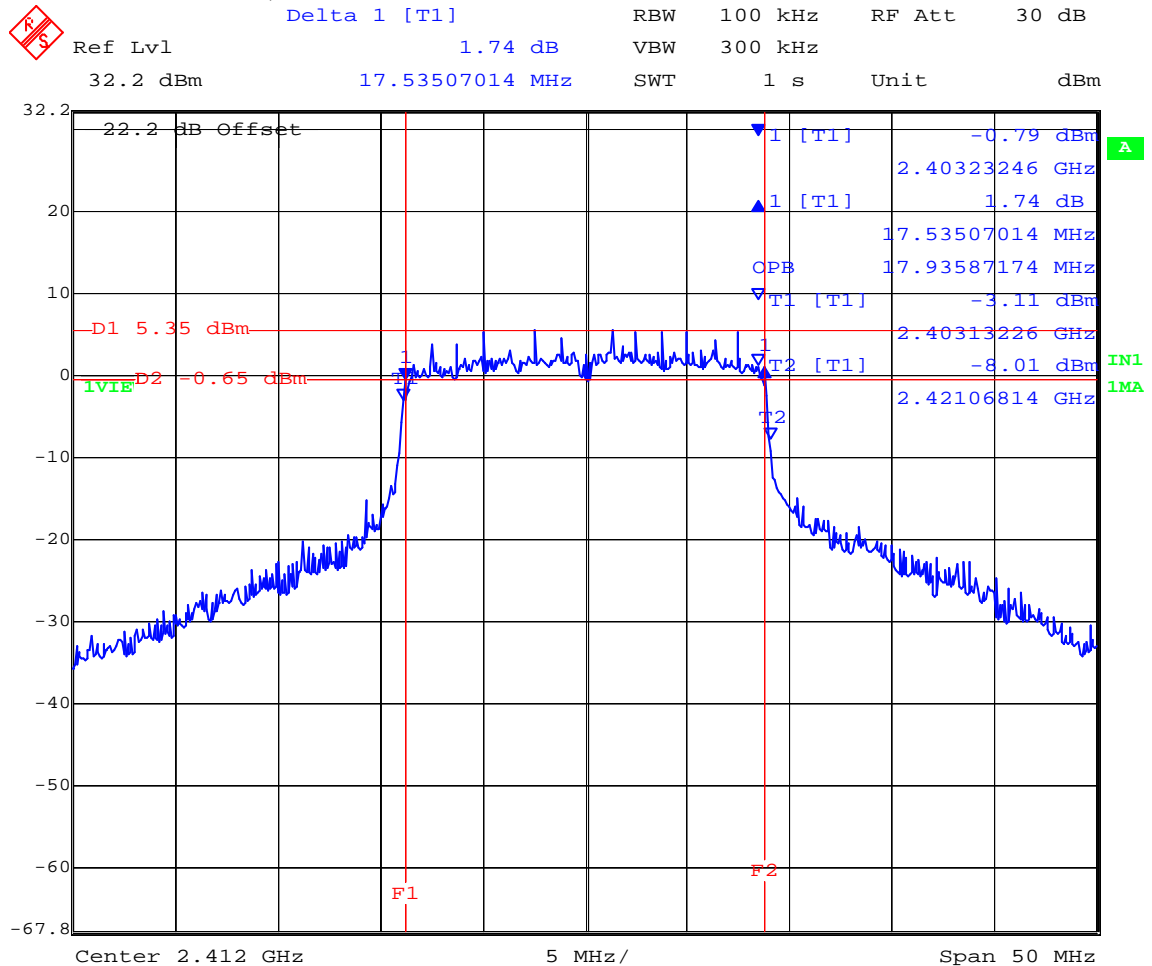
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TABLE OF RESULTS – 802.11N HT-20

Center Frequency (MHz)	6 dB Bandwidth (MHz)	99% BW (MHz)
2,412	17.535	17.936
2,437	17.335	17.836
2,462	17.535	17.936

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

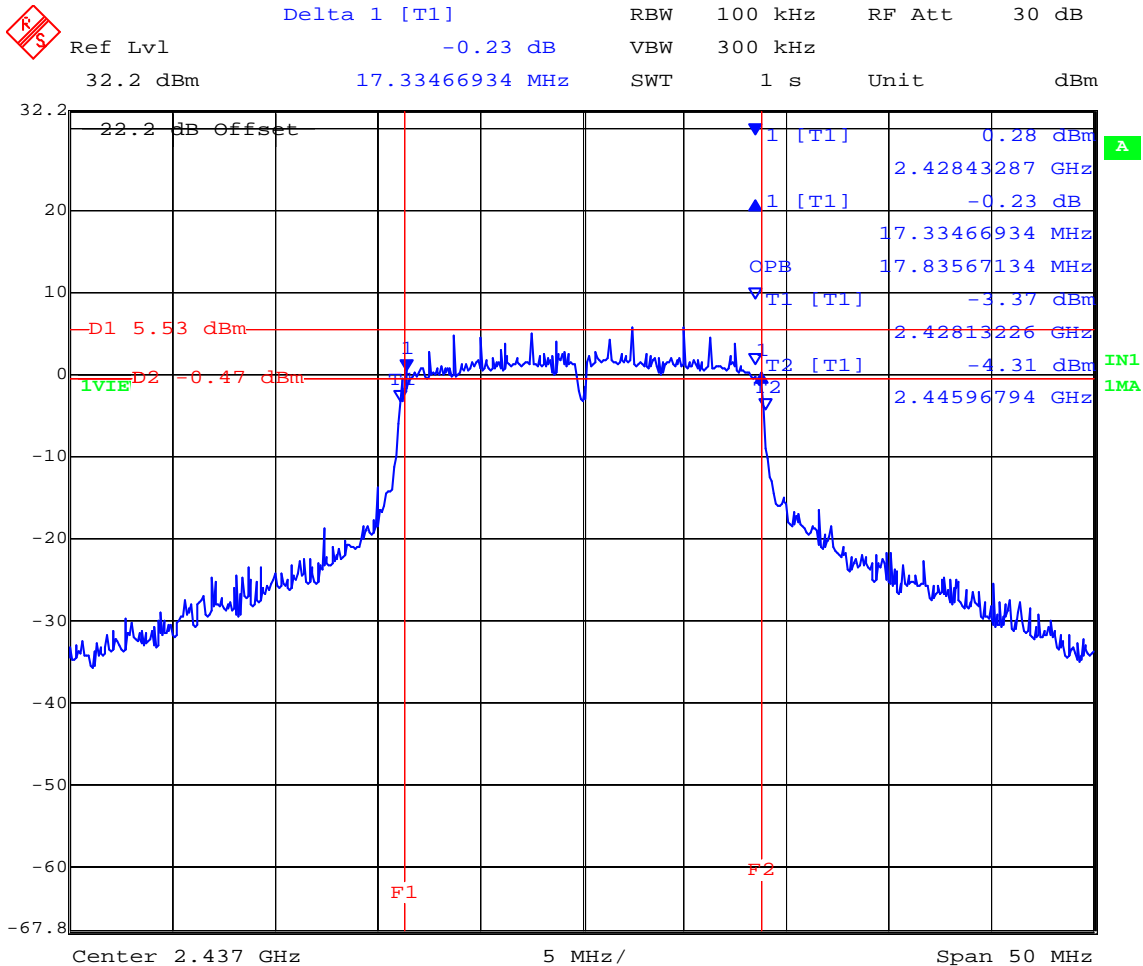


Date: 8.NOV.2007 09:18:43

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

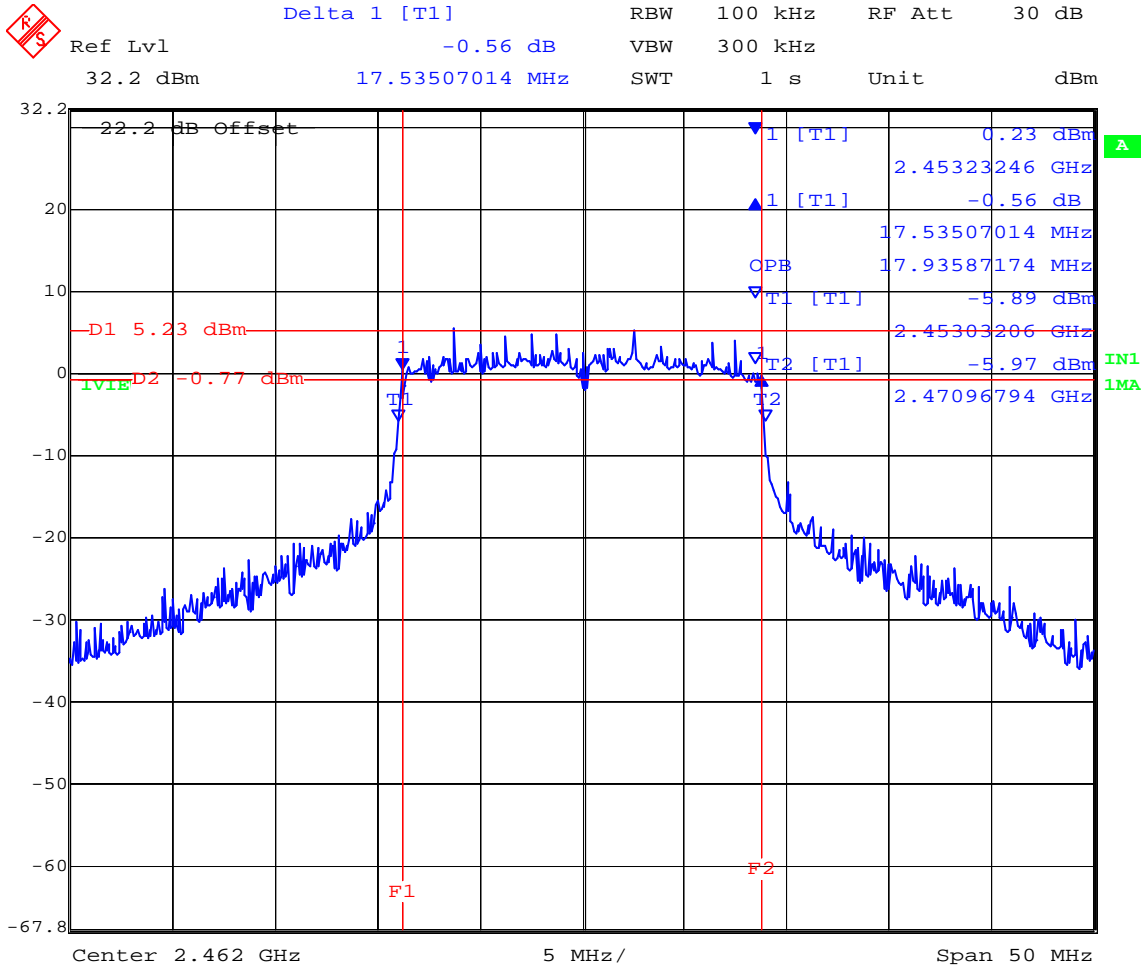


Date: 8.NOV.2007 09:22:13

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



Date: 8.NOV.2007 09:24:16

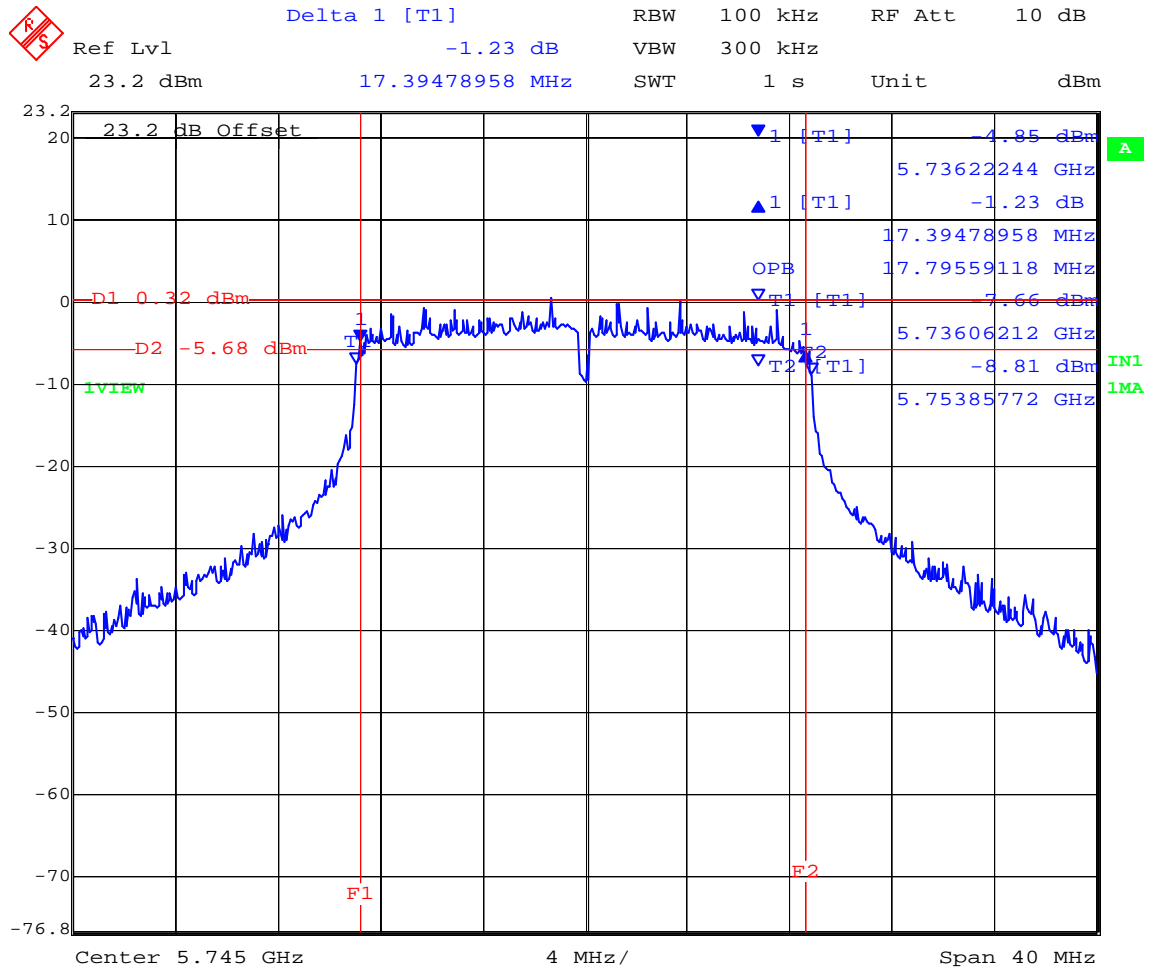
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TABLE OF RESULTS – 802.11a - HT-20

Center Frequency (MHz)	6 dB Bandwidth (MHz)	99% BW (MHz)
5,745	17.395	17.796
5,785	17.315	17.715
5,825	17.315	17.796

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

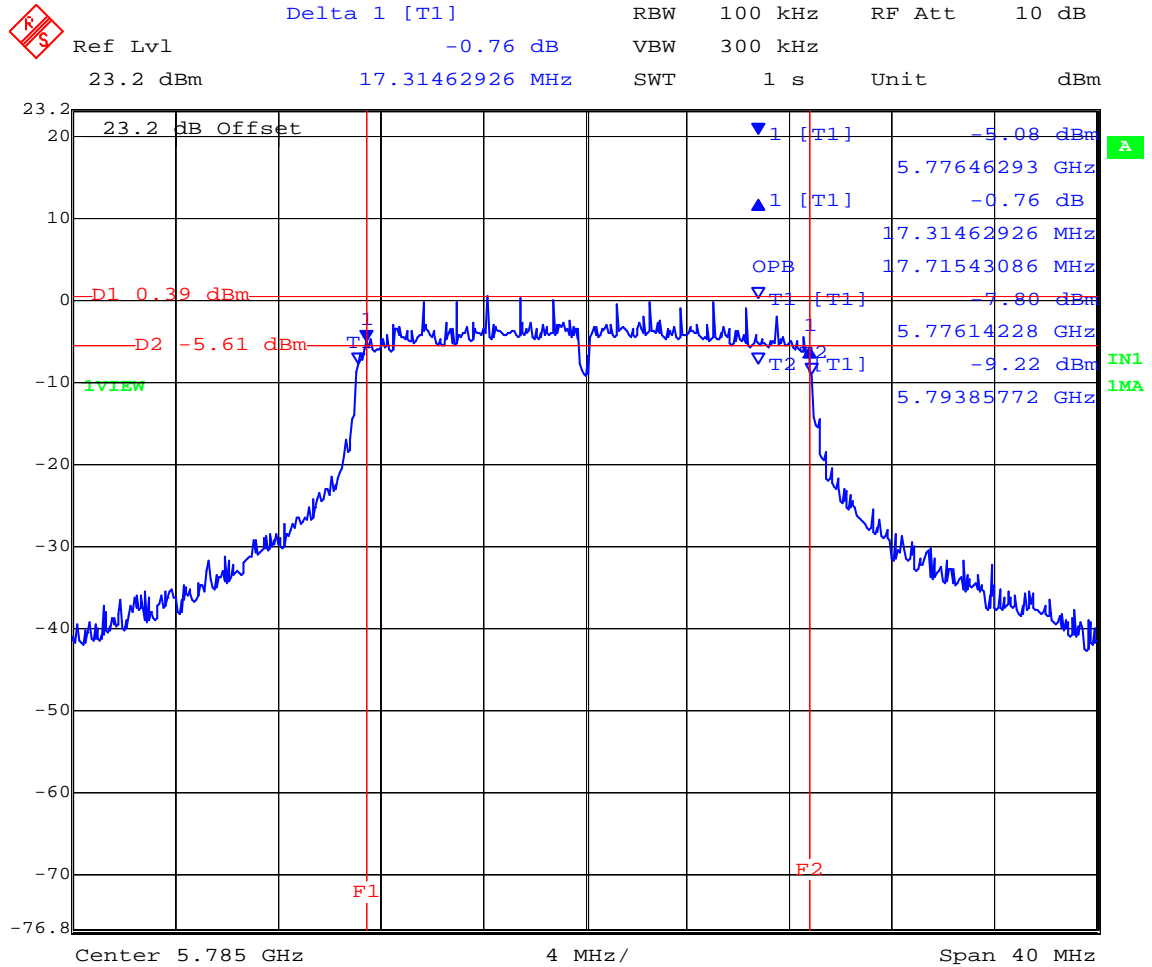


Date: 8.NOV.2007 15:52:58

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

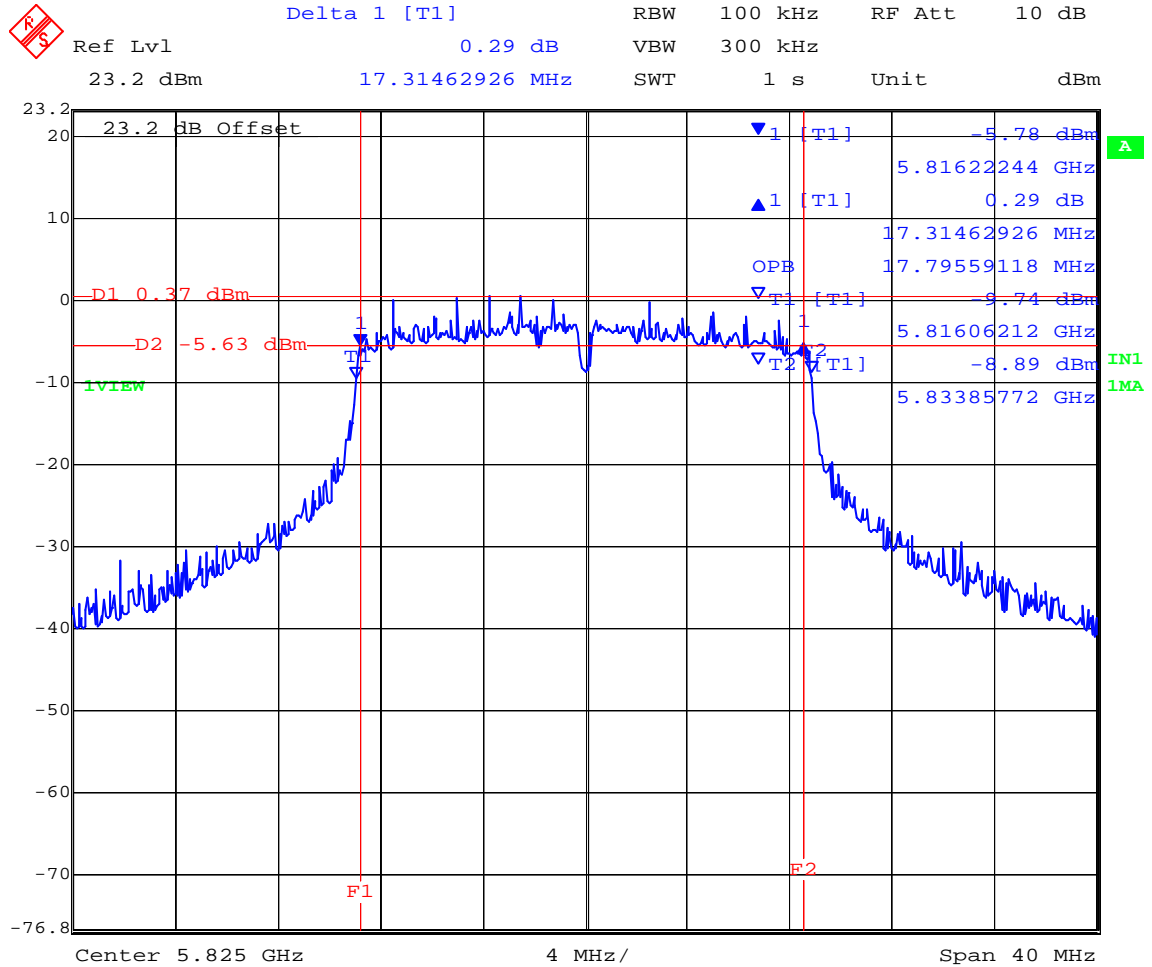


Date: 8.NOV.2007 15:55:17

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



Date: 8.NOV.2007 15:56:55

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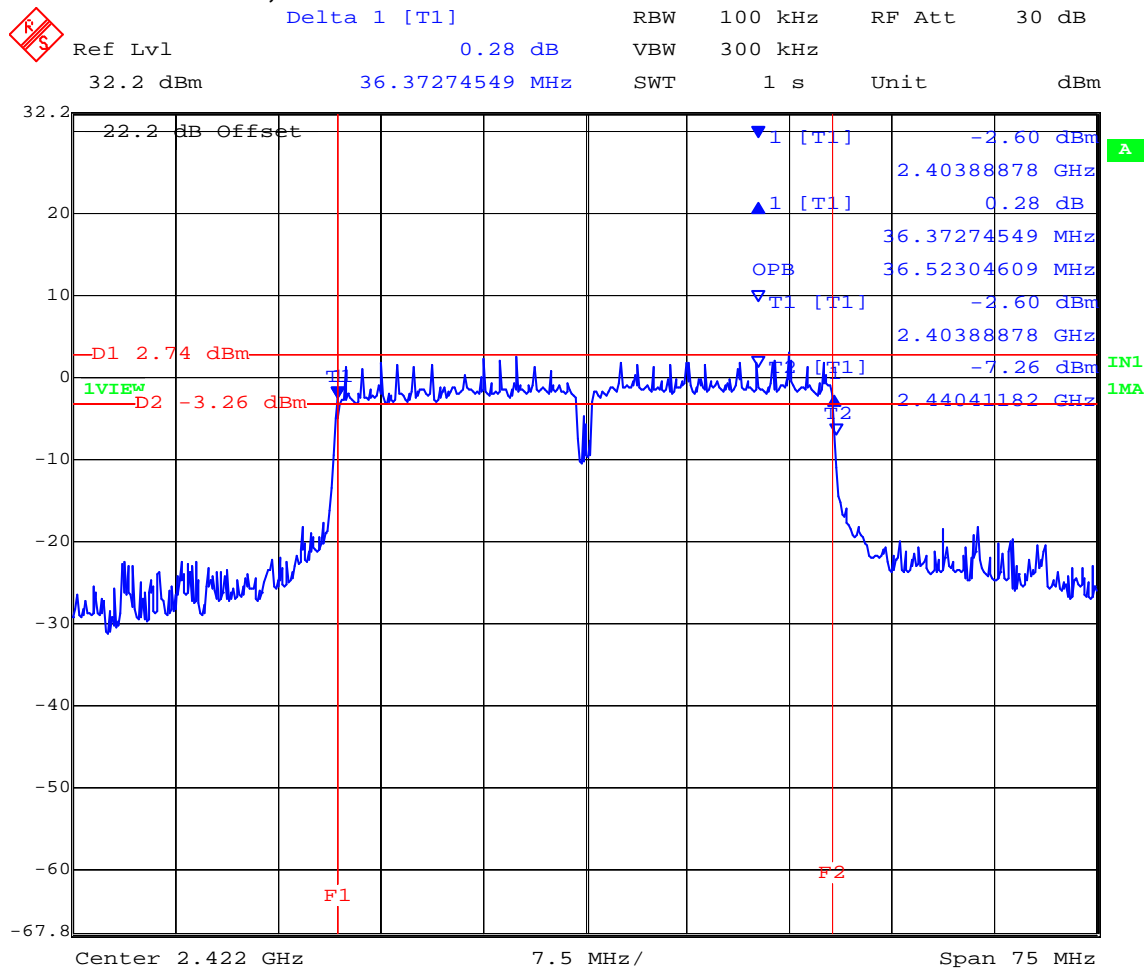


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TABLE OF RESULTS – 802.11N HT-40

Center Frequency (MHz)	6 dB Bandwidth (MHz)	99% BW (MHz)
2,422	36.373	36.523
2,437	36.373	36.673
2,452	36.523	36.673

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



Date: 8.NOV.2007 13:17:23

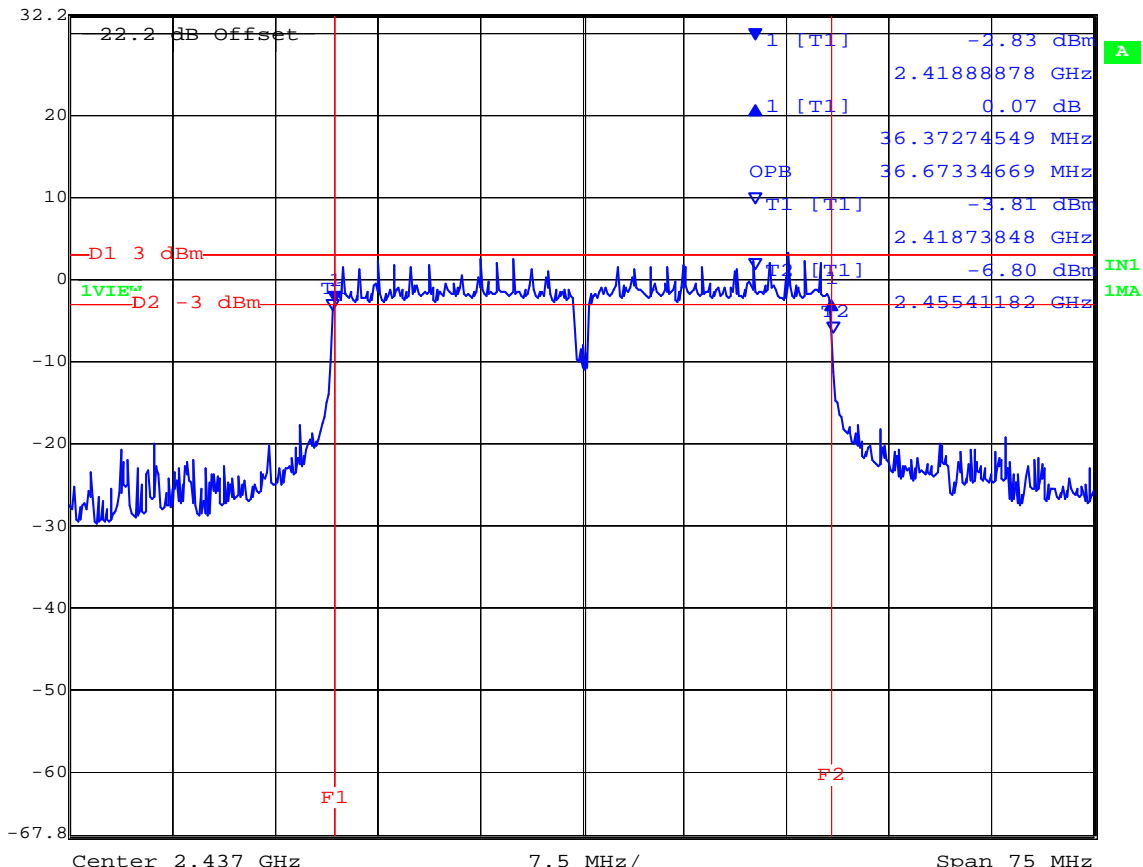
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Title: Aruba AP-124,125 802.11a/b/g/n AP
To: FCC 47 CFR Part 15.247 & IC RSS-210
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2,437 MHz 802.11n HT-40 6 dB and 99% Bandwidth

Delta 1 [T1] RBW 100 kHz RF Att 30 dB
 Ref Lvl 0.07 dB VBW 300 kHz
 32.2 dBm 36.37274549 MHz SWT 1 s Unit dBm

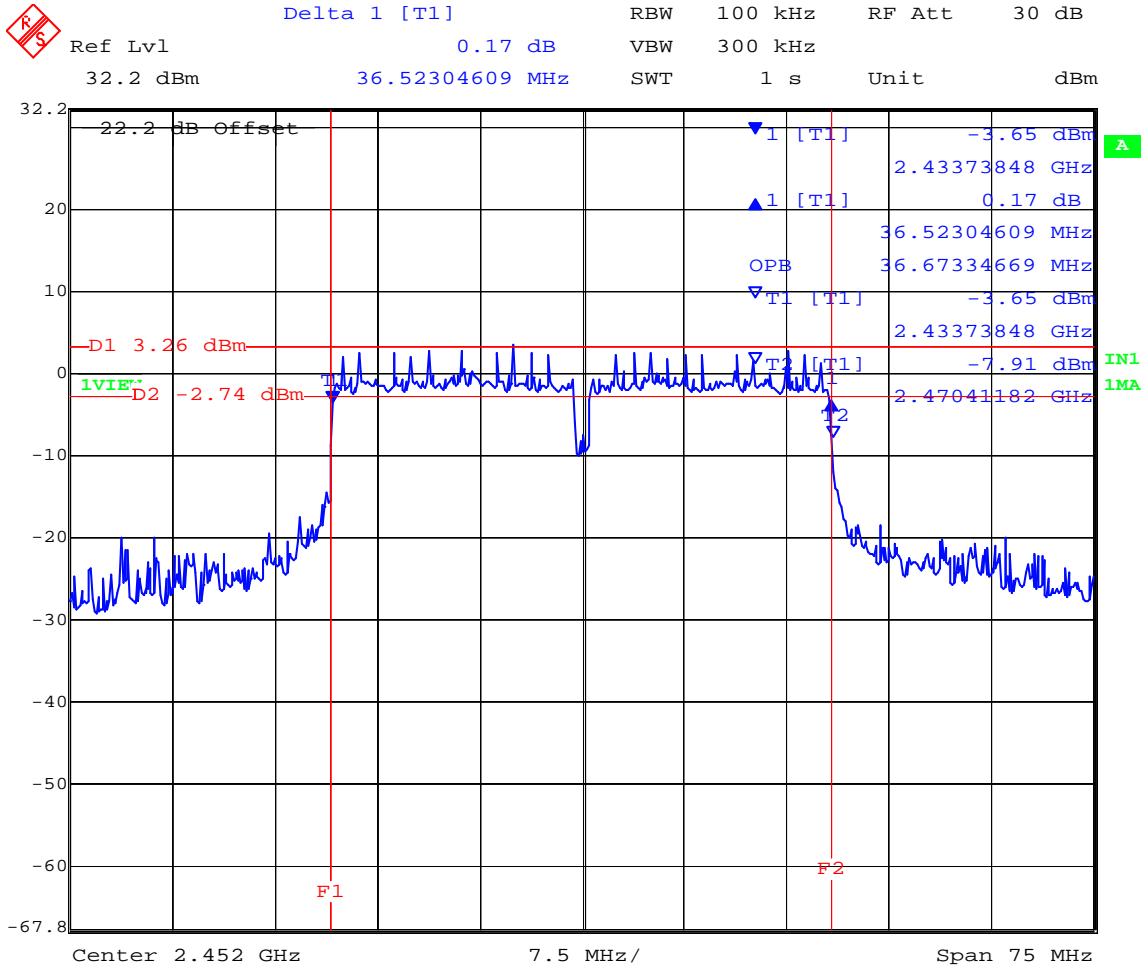


Date: 8.NOV.2007 10:49:53

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2,452 MHz 802.11n HT-40 6 dB and 99% Bandwidth



Date: 8.NOV.2007 13:14:59

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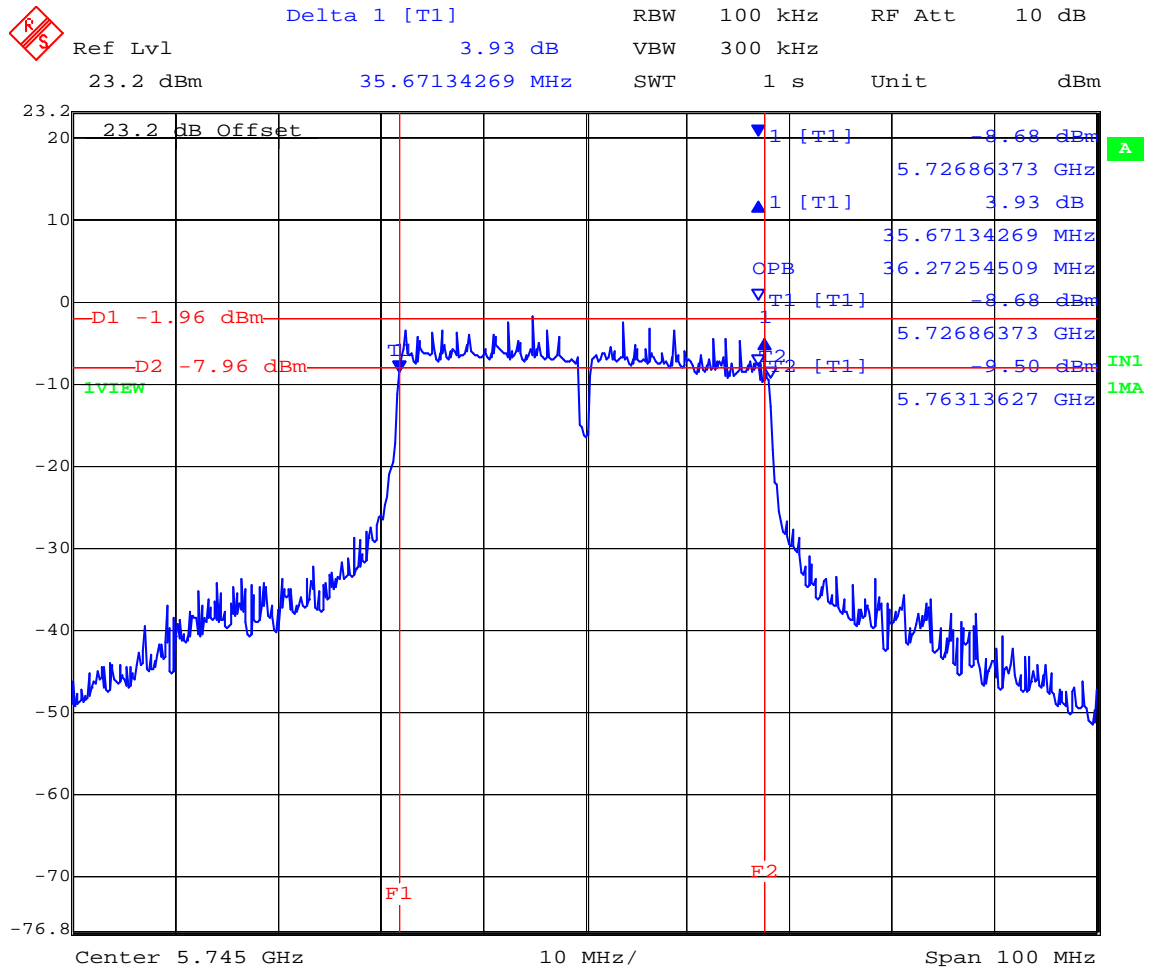


Title: Aruba AP-124,125 802.11a/b/g/n AP
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: ARUB20-A2 Rev A
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TABLE OF RESULTS – 802.11a - HT-40

Center Frequency (MHz)	6 dB Bandwidth (MHz)	99% BW (MHz)
5,745	35.671	36.273
5,785	36.072	36.273
5,825	35.872	36.273

5,745 MHz 802.11n HT-40 6 dB and 99% Bandwidth

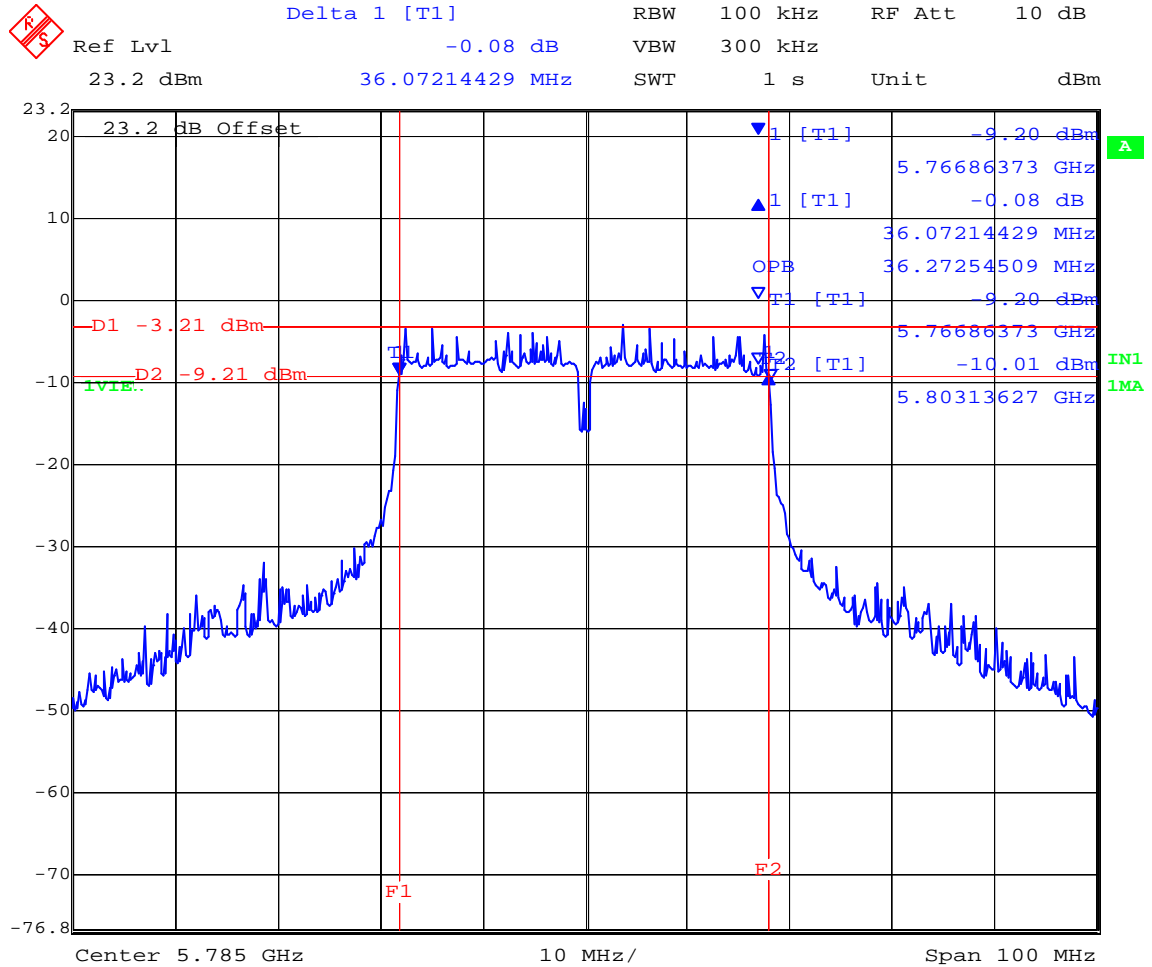


Date: 8.NOV.2007 18:27:21

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5,785 MHz 802.11n HT-40 6 dB and 99% Bandwidth

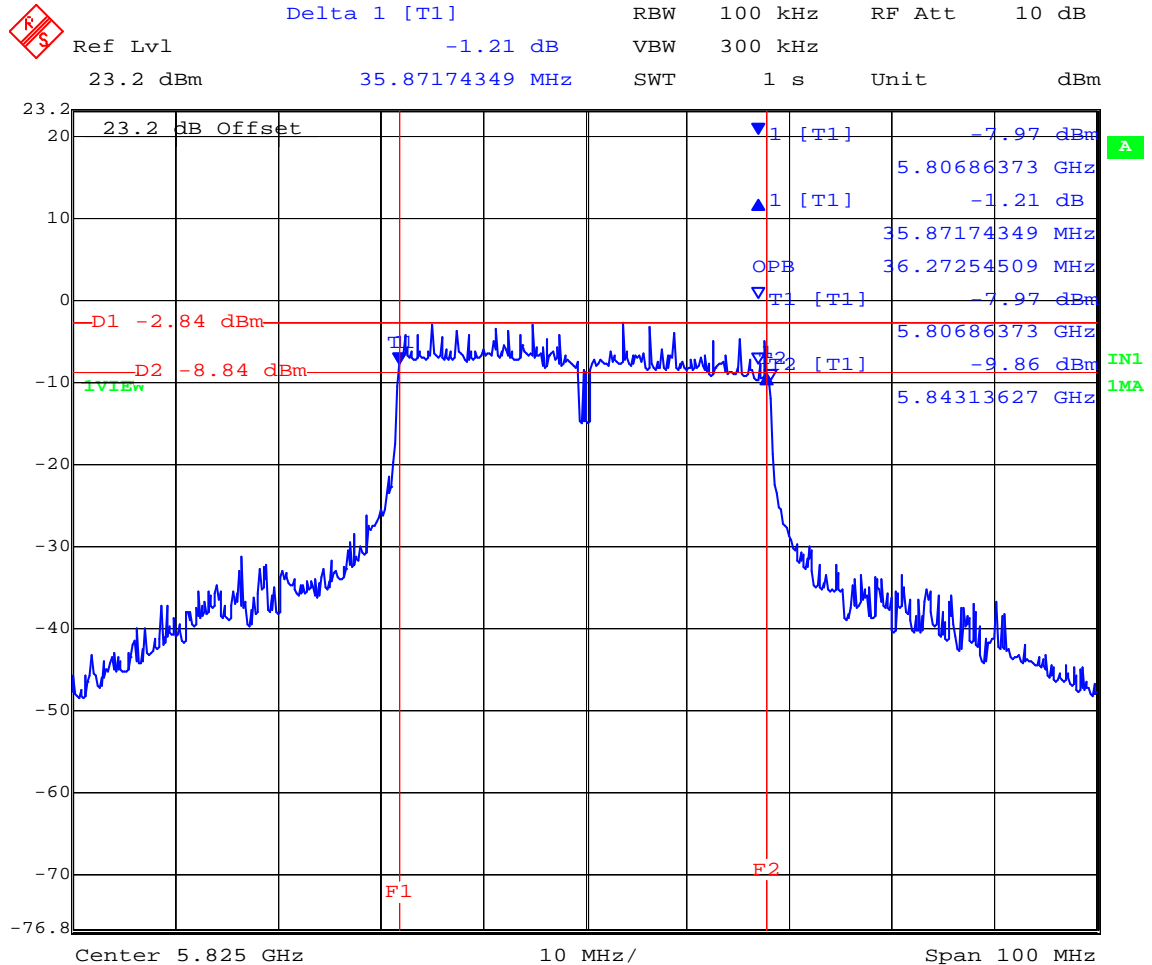


Date: 8.NOV.2007 18:25:28

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5,825 MHz 802.11n HT-40 6 dB and 99% Bandwidth



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Title: Aruba AP-124,125 802.11a/b/g/n AP
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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, 0193, 0252, 0313, 0314, 0070, 0116, 0117

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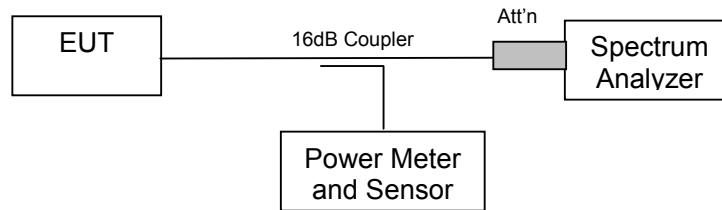
5.1.2. Peak Output Power

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

b/g (2.4 GHz) Maximum Antenna Gain = AP-ANT-7, +12 dBi

a (5.8 GHz) Maximum Antenna Gain = AP-ANT-12, +14 dBi

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

If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Type	Gain (dBi)	Antenna Gain >6dBi (dB)	Power Reduction (dB)	Max. Allowable Conducted Peak Power (dBm)	Maximum EIRP (dBm)
(2.4 GHz) AP-ANT-7	+12	6	6	+24	+36
(5 GHz) AP-ANT-12	+14	8	8	+22	+36

Radio Parameters

Duty Cycle: 100%

Output: Modulated Carrier

Power: Maximum Default Power

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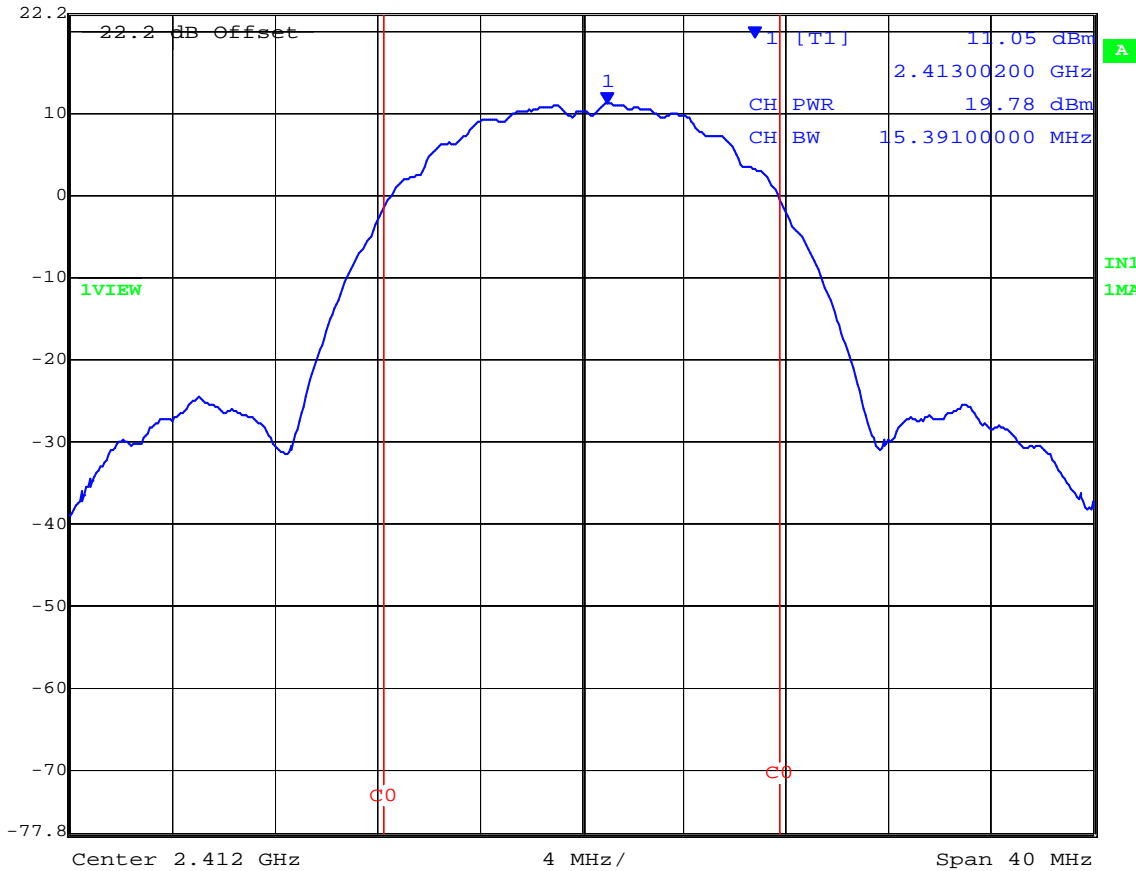
TABLE OF RESULTS – 802.11b – Legacy

Maximum Conducted Power

Center Frequency (MHz)	Software Setting	99% Measurement Bandwidth (MHz)	Average Power (dBm)	Peak Power (dBm)	EIRP (dBm) 0dBi Antenna
2,412	19	15.391	+17.02	+19.78	+19.78
2,437	19	15.471	+16.66	+18.96	+18.96
2,462	19	15.551	+16.80	+19.20	+19.20

2,412 MHz 802.11b Legacy - Peak Power (dBm)

Marker 1 [T1] RBW 1 MHz RF Att 10 dB
 Ref Lvl 11.05 dBm VBW 1 MHz
 22.2 dBm 2.41300200 GHz SWT 5 ms Unit dBm



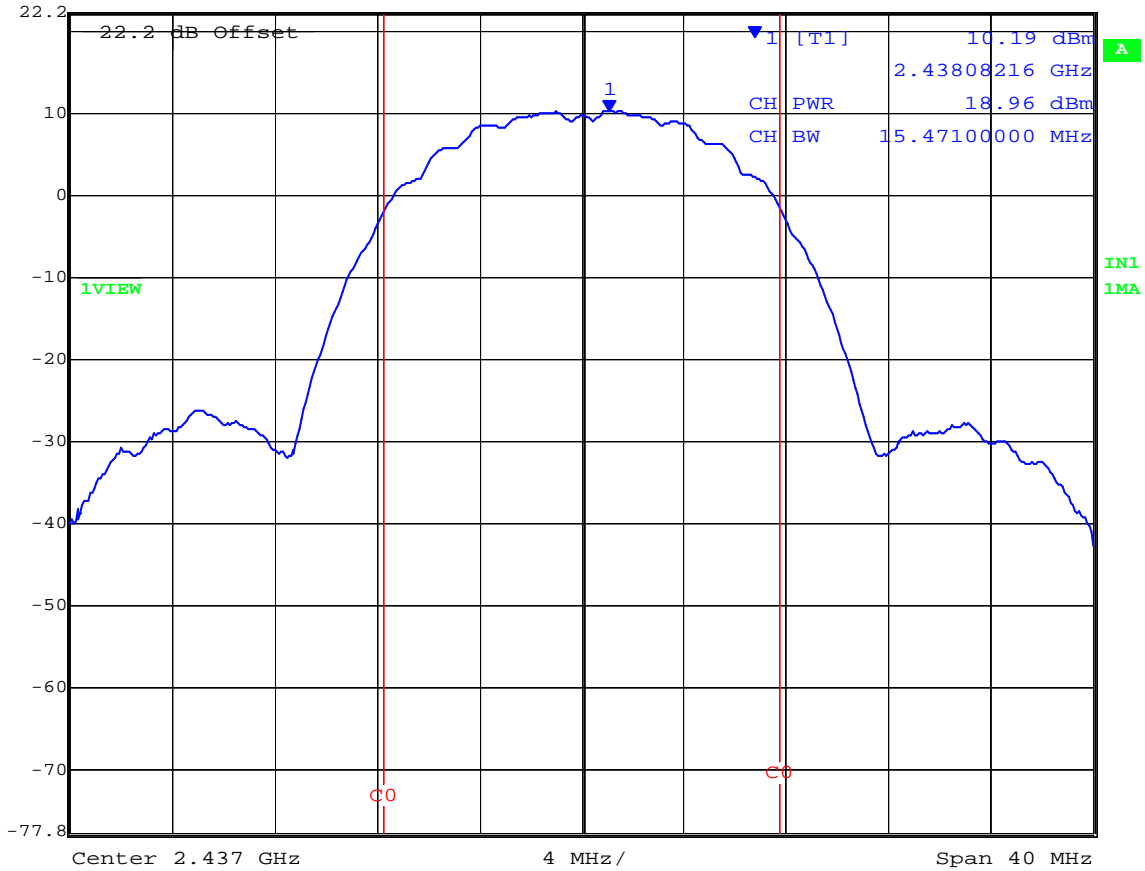
Date: 8.NOV.2007 08:56:50

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2,437 MHz 802.11b Legacy - Peak Power (dBm)

Ref Lvl	22.2 dBm	Marker 1 [T1]	10.19 dBm	RBW	1 MHz	RF Att	10 dB
			2.43808216 GHz	VBW	1 MHz		
				SWT	5 ms	Unit	dBm



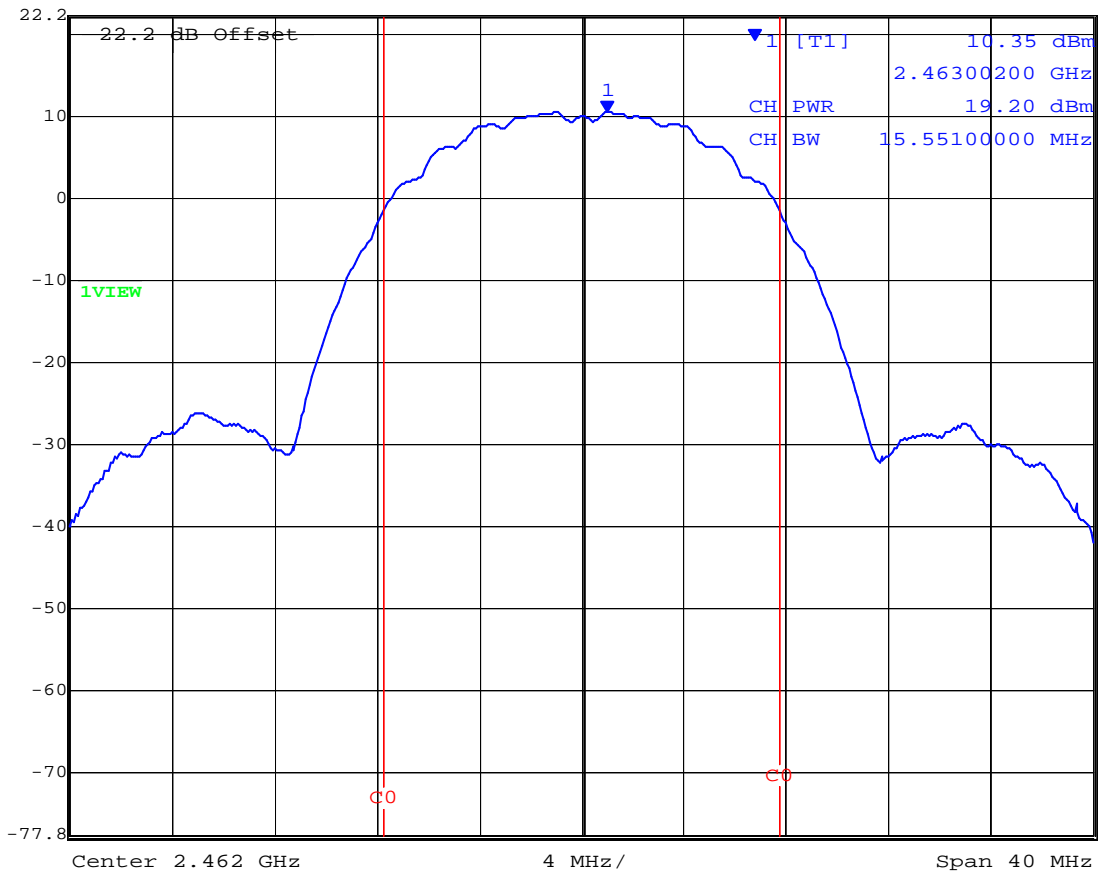
Date: 8.NOV.2007 08:58:30

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2,462 MHz 802.11b Legacy - Peak Power (dBm)

	Ref Lvl	22.2 dBm	Marker 1 [T1]	10.35 dBm	RBW	1 MHz	RF Att	10 dB
			2.46300200 GHz		VBW	1 MHz		
					SWT	5 ms	Unit	dBm



Date: 8.NOV.2007 08:59:32

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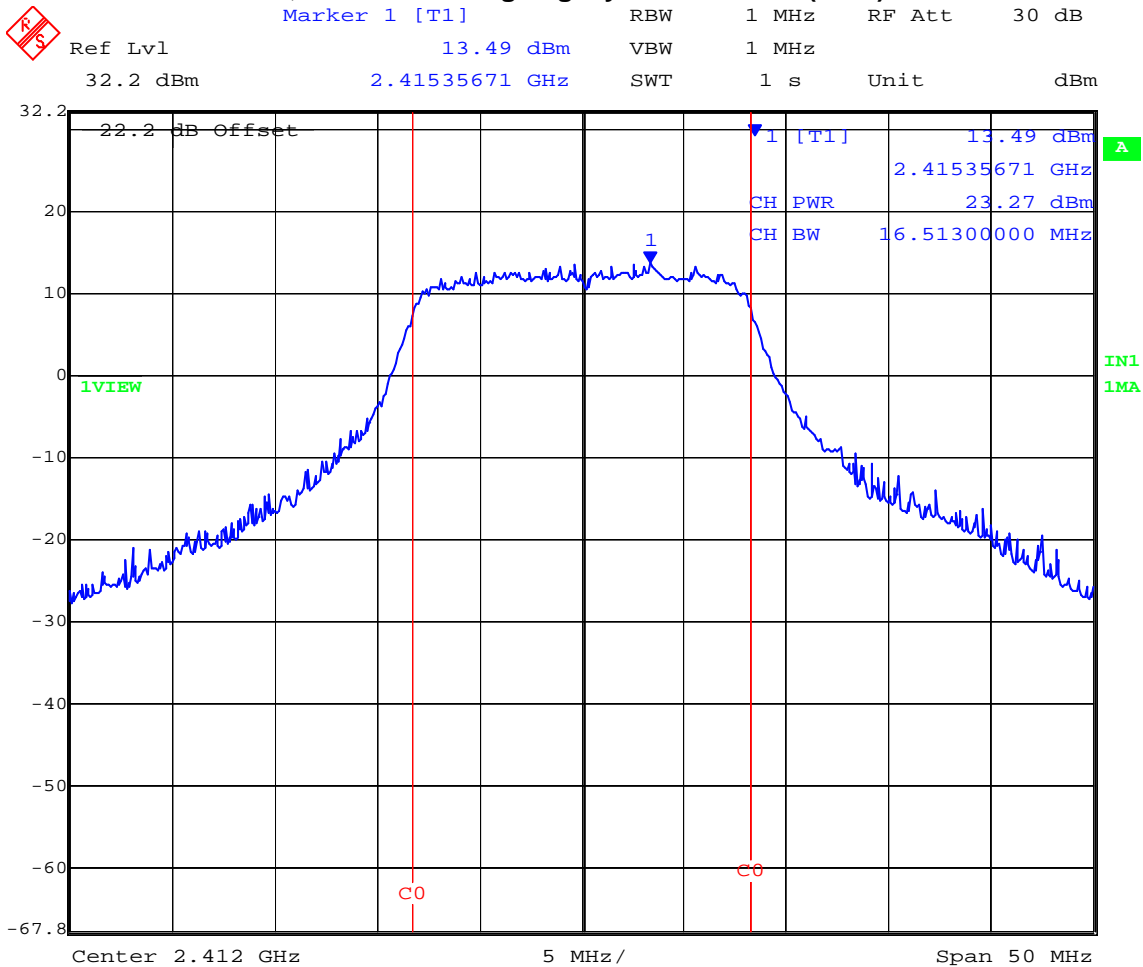


TABLE OF RESULTS – 802.11g – Legacy

Maximum Conducted Power

Center Frequency (MHz)	Software Setting	99% Measurement Bandwidth (MHz)	Average Power (dBm)	Peak Power (dBm)	EIRP (dBm) 0dBi Antenna
2,412	17	16.513	+15.01	+23.27	+23.27
2,437	17	16.513	+14.67	+22.94	+22.94
2,462	17	16.593	+14.88	+23.18	+23.18

2,412 MHz 802.11g Legacy - Peak Power (dBm)




Date: 8.NOV.2007 09:04:42

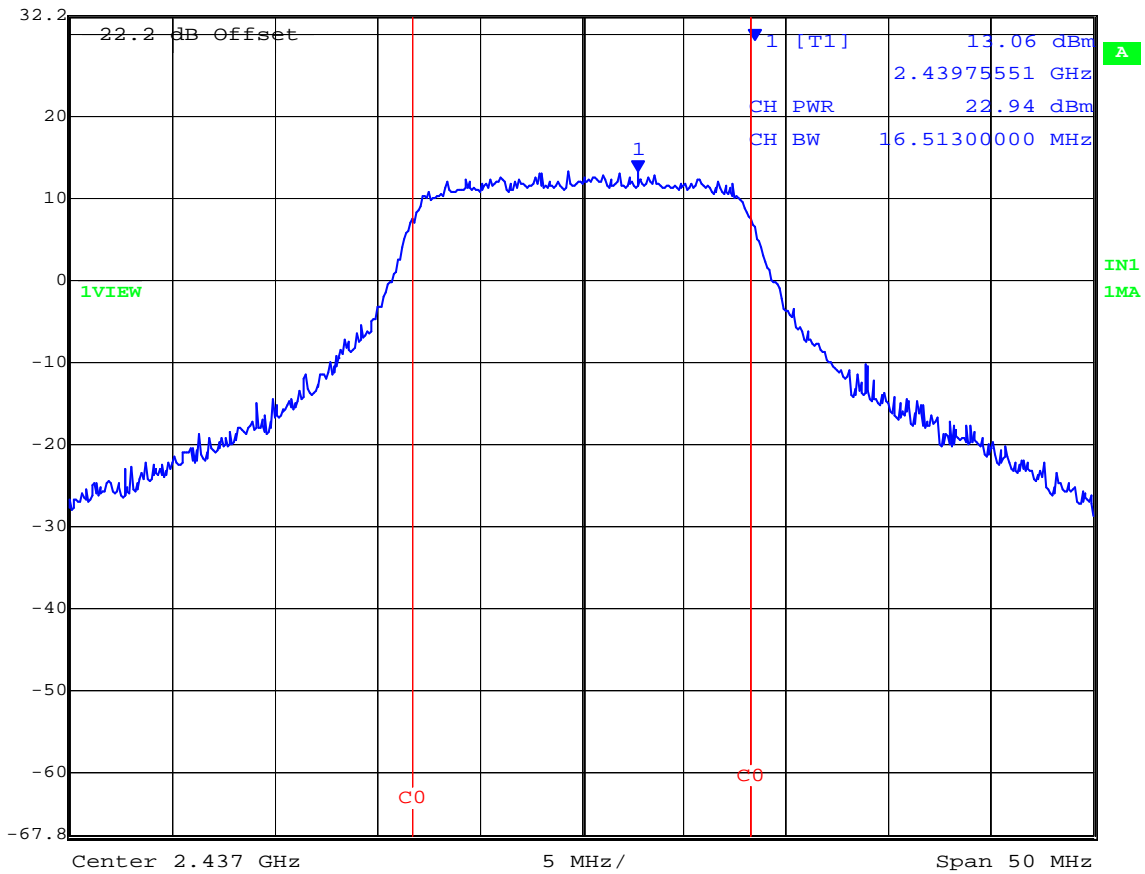
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Title: Aruba AP-124,125 802.11a/b/g/n AP
To: FCC 47 CFR Part 15.247 & IC RSS-210
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2,437 MHz 802.11g Legacy - Peak Power (dBm)

 Ref Lvl 32.2 dBm
Marker 1 [T1] 13.06 dBm
2.43975551 GHz
RBW 1 MHz RF Att 30 dB
VBW 1 MHz
SWT 1 s Unit dBm




Date: 8.NOV.2007 09:03:51

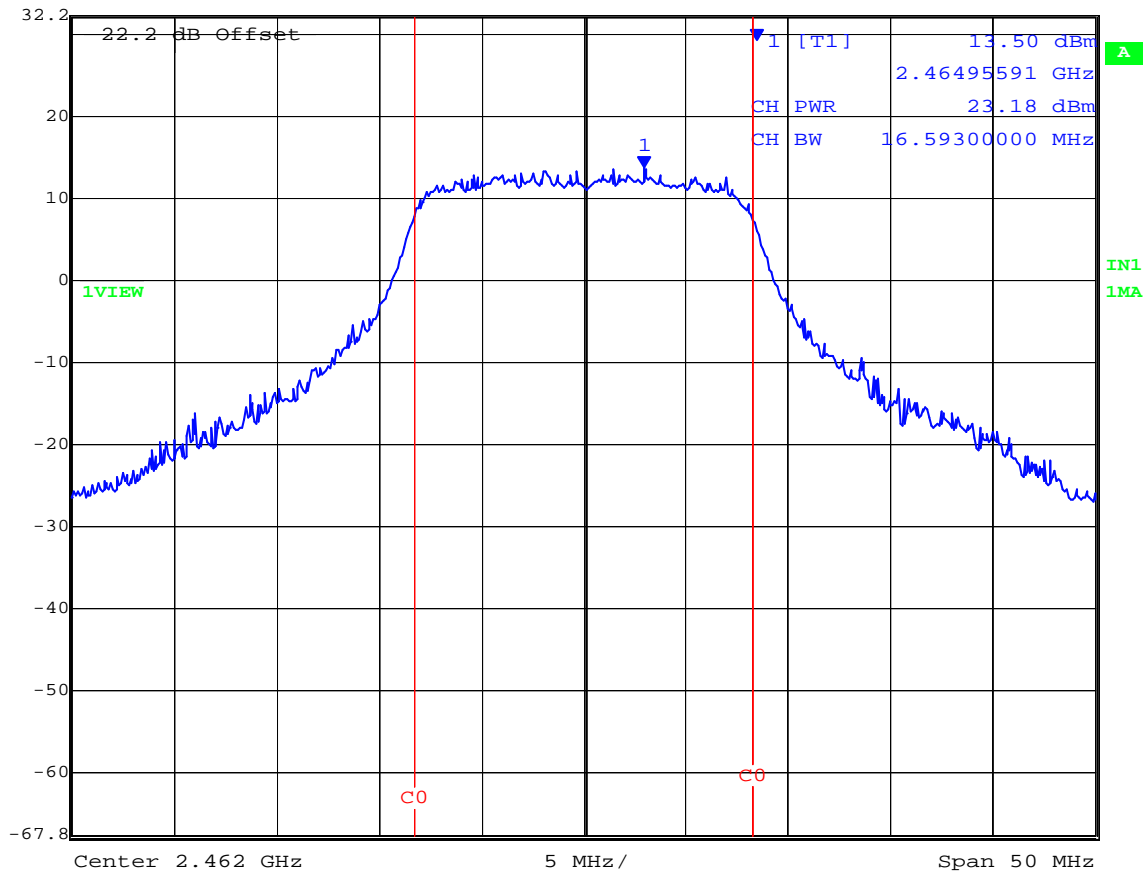
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Title: Aruba AP-124,125 802.11a/b/g/n AP
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2,462 MHz 802.11g Legacy - Peak Power (dBm)

 Ref Lvl 32.2 dBm
Marker 1 [T1] 2.46495591 GHz
RBW 1 MHz RF Att 30 dB
VBW 1 MHz
SWT 1 s Unit dBm



Date: 8.NOV.2007 09:02:54

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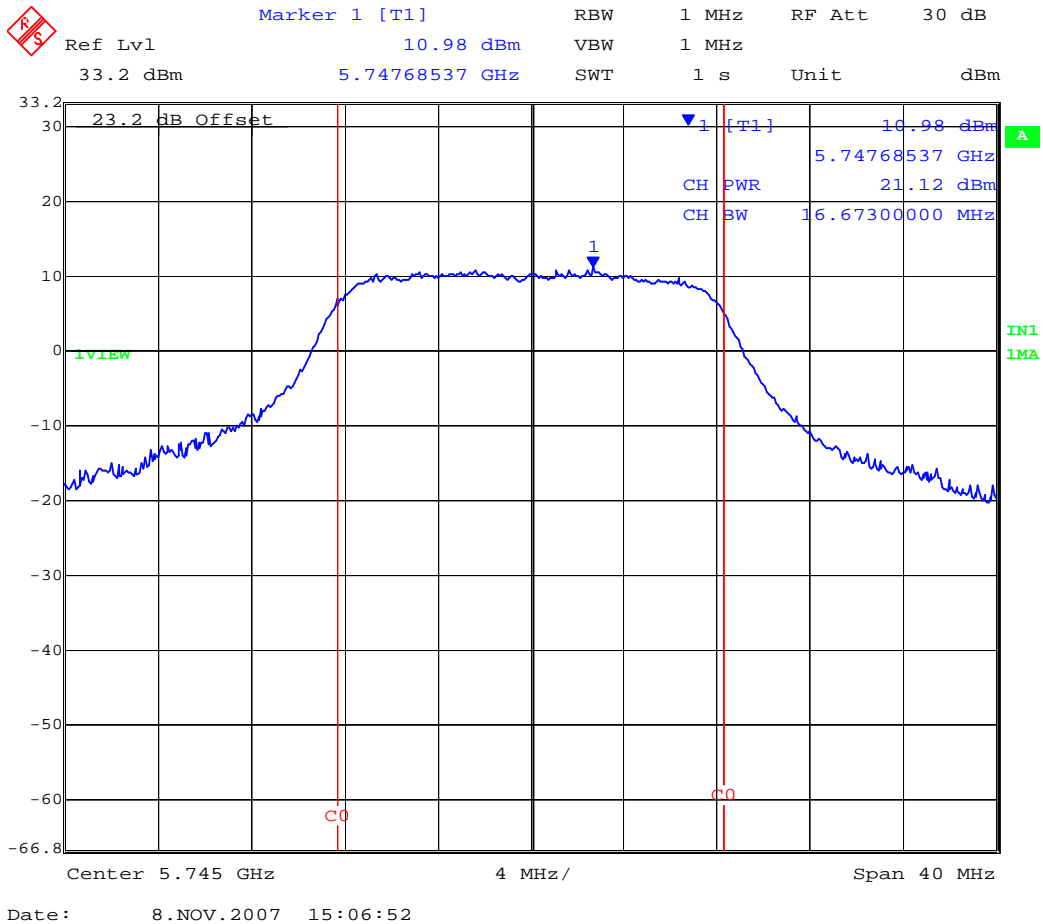


TABLE OF RESULTS – 802.11a – Legacy

Maximum Conducted Power

Center Frequency (MHz)	Software Setting	99% Measurement Bandwidth (MHz)	Average Power (dBm)	Peak Power (dBm)	EIRP (dBm) 0dBi Antenna
5,745	19	16.673	+13.00	+21.12	+21.12
5,785	19	16.593	+11.83	+20.31	+20.31
5,825	19	16.513	+11.68	+19.77	+19.77

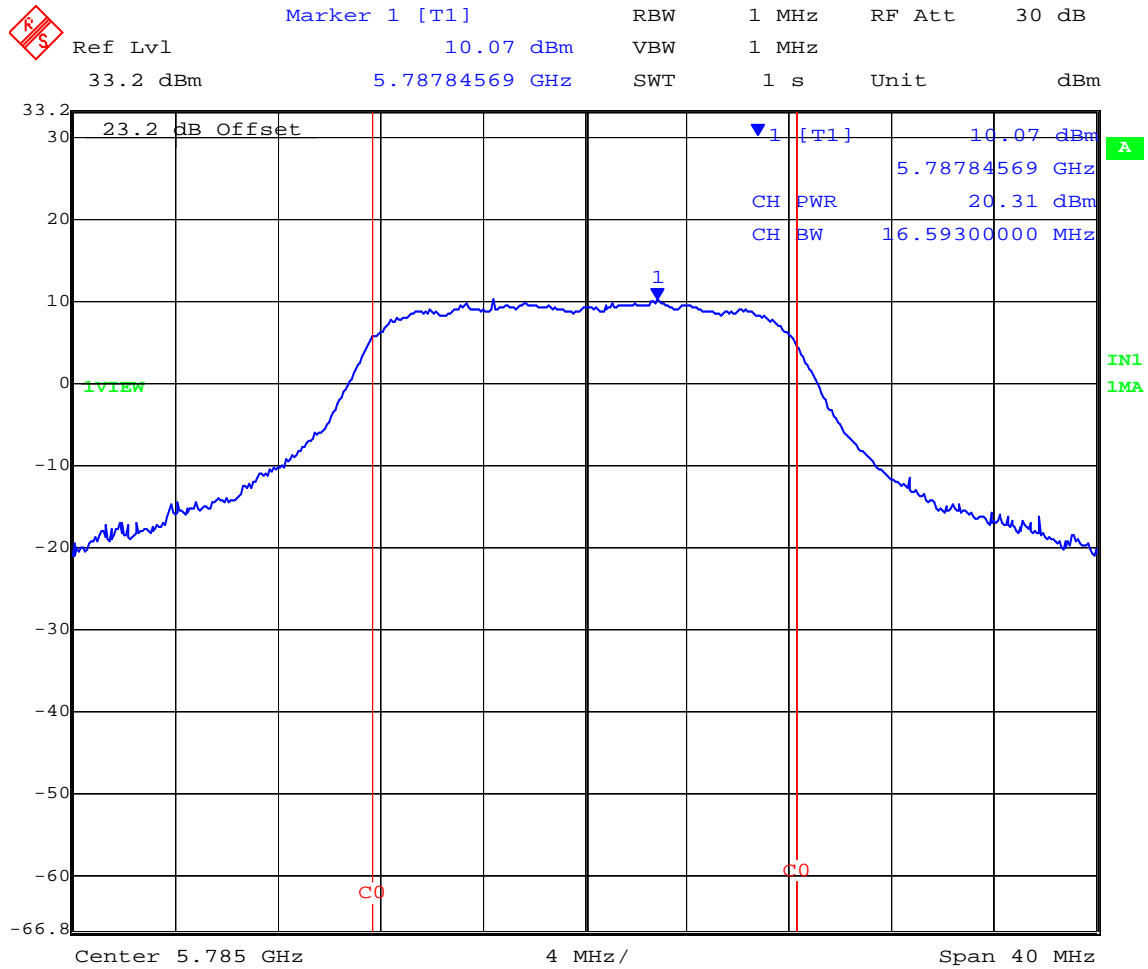
5,745 MHz 802.11a Legacy Peak Power (dBm)



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5,785 MHz 802.11a Legacy Peak Power (dBm)

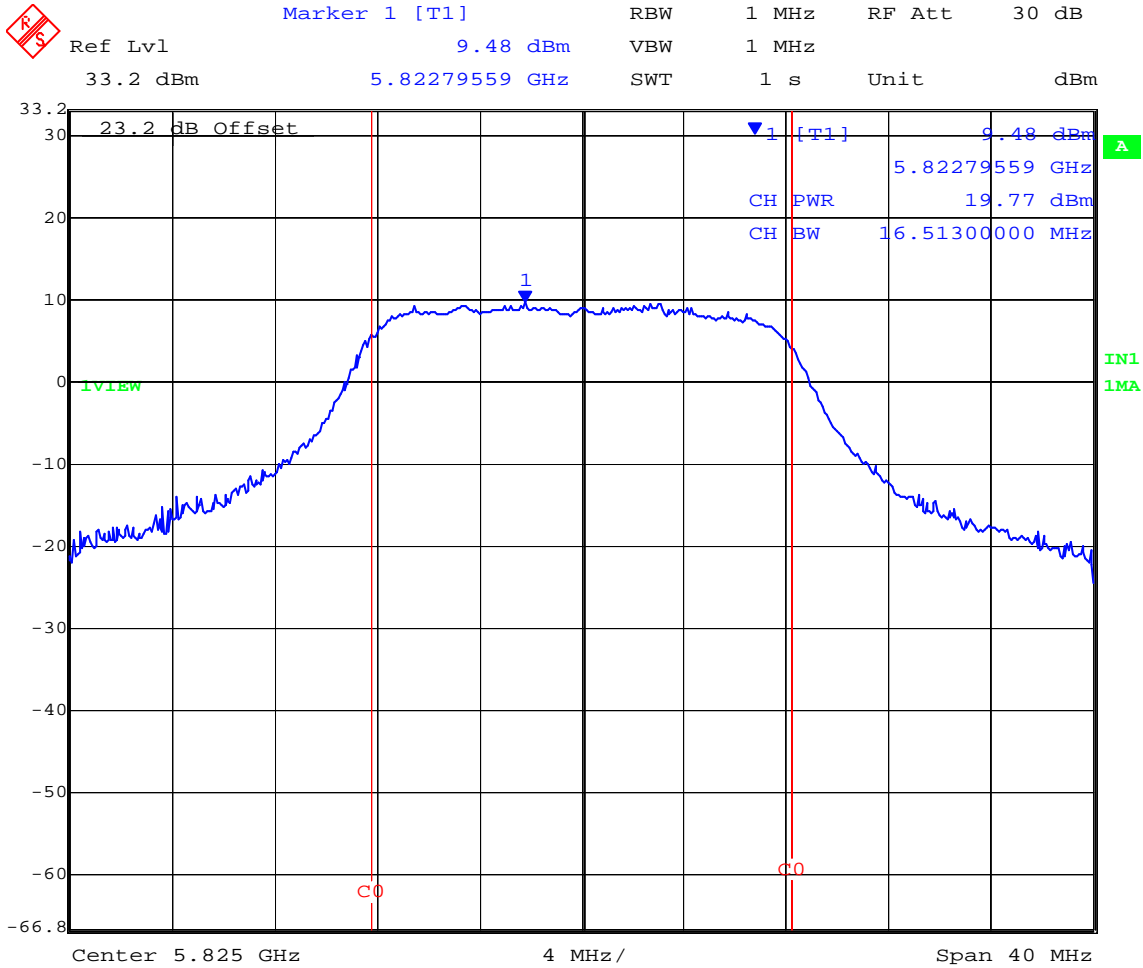


Date: 8.NOV.2007 14:55:47

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5,825 MHz 802.11a Legacy Peak Power (dBm)



Date: 8.NOV.2007 14:47:02

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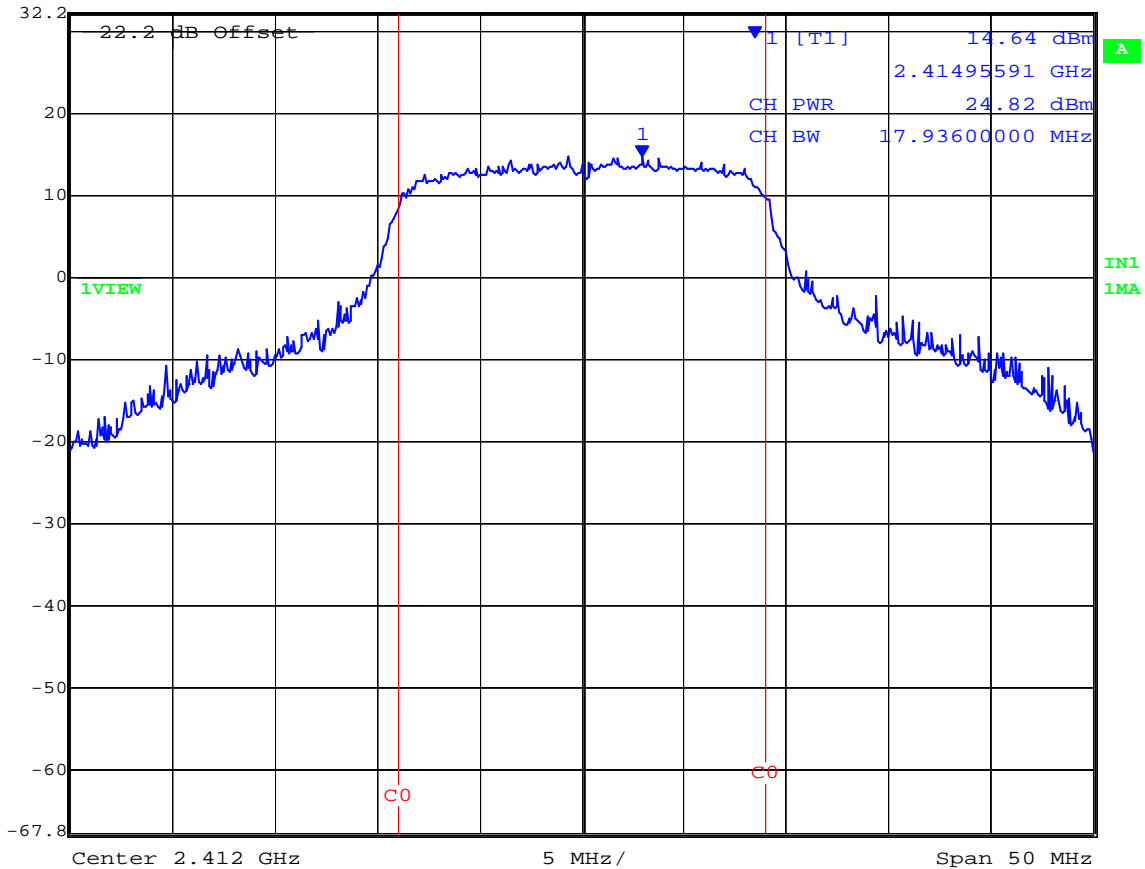
TABLE OF RESULTS – 802.11n – HT-20

Maximum Conducted Power

Center Frequency (MHz)	Software Setting	99% Measurement Bandwidth (MHz)	Average Power (dBm)	Peak Power (dBm)	EIRP (dBm) 0dBi Antenna
2,412	19	17.936	+16.85	+24.82	+24.82
2,437	19	17.836	+16.52	+24.43	+24.43
2,462	19	17.936	+16.66	+24.55	+24.55

2,412 MHz 802.11n HT-20 - Peak Power (dBm)

Marker 1 [T1] RBW 1 MHz RF Att 30 dB
 Ref Lvl 14.64 dBm VBW 1 MHz
 32.2 dBm 2.41495591 GHz SWT 1 s Unit dBm




Date: 8.NOV.2007 10:04:37

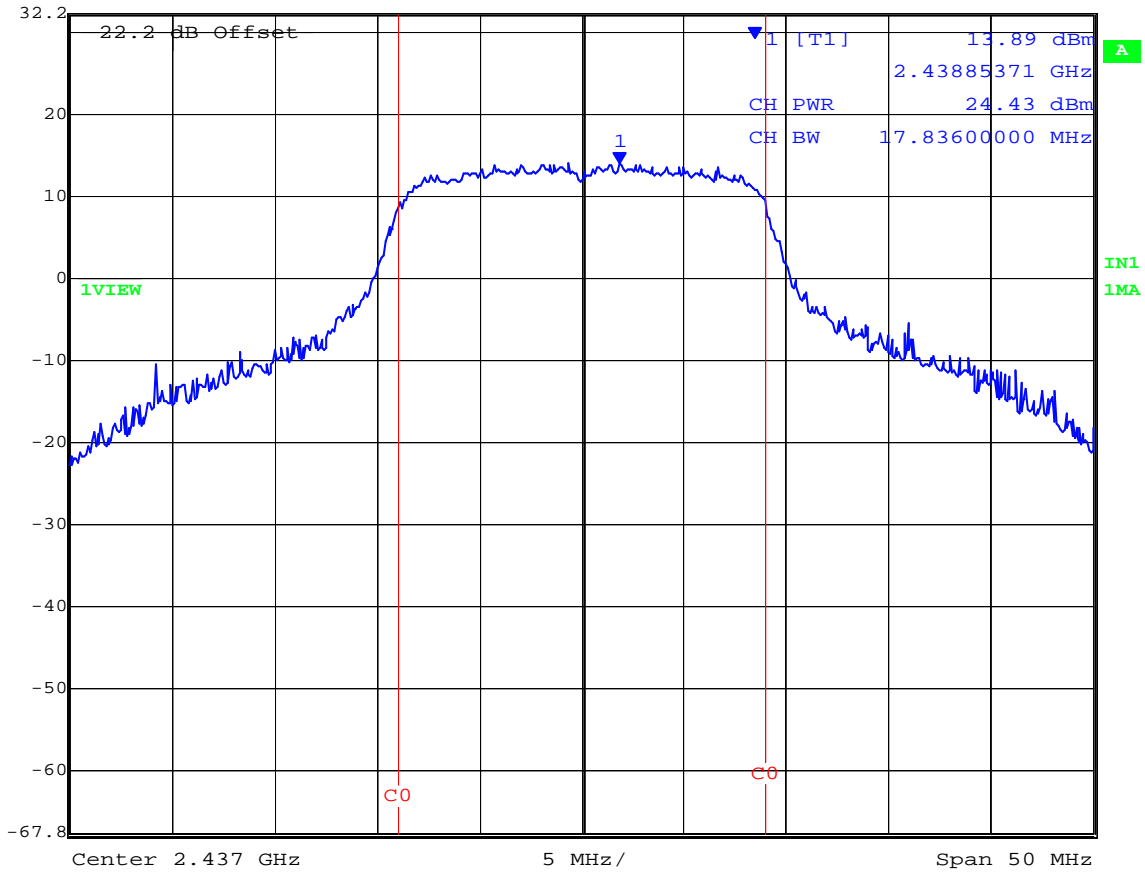
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Title: Aruba AP-124,125 802.11a/b/g/n AP
To: FCC 47 CFR Part 15.247 & IC RSS-210
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2,437 MHz 802.11n HT-20 - Peak Power (dBm)

 Ref Lvl 32.2 dBm
Marker 1 [T1] 2.43885371 GHz
RBW 1 MHz RF Att 30 dB
VBW 1 MHz
SWT 1 s Unit dBm



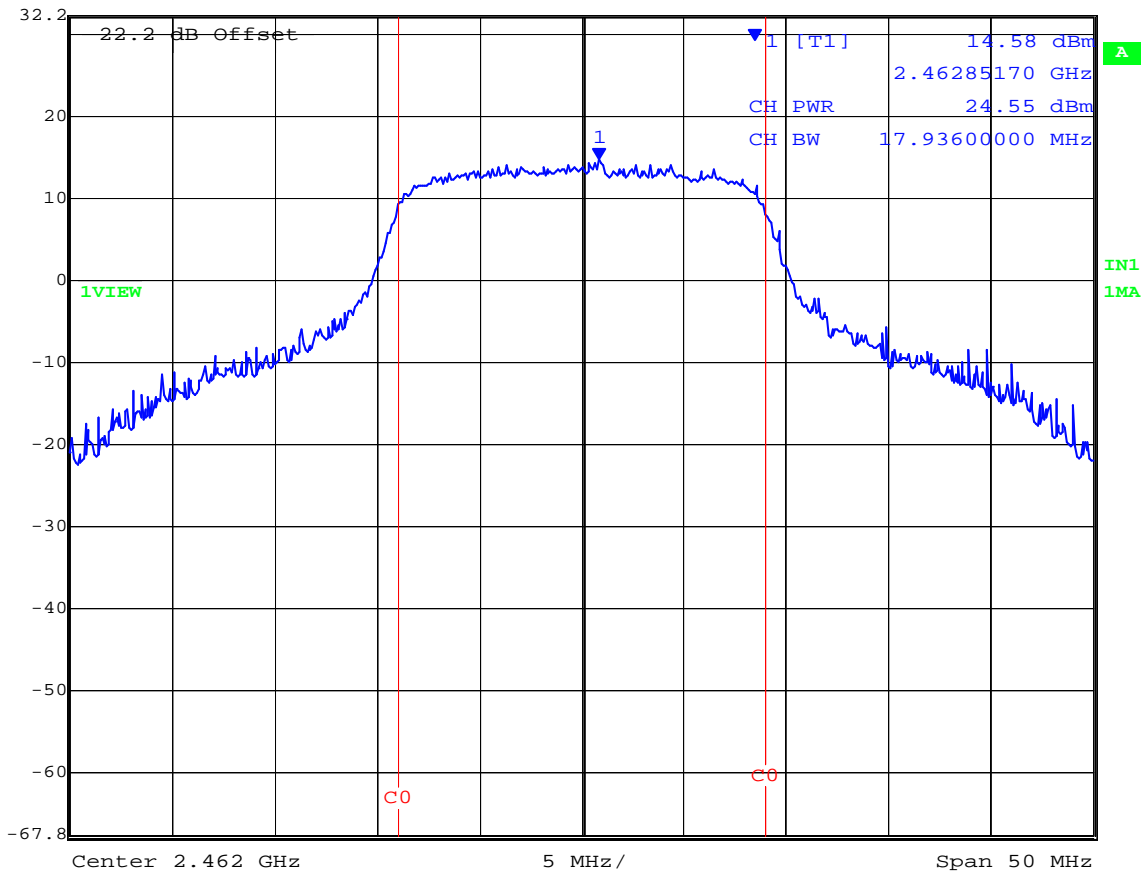
Date: 8.NOV.2007 10:06:41

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2,462 MHz 802.11n HT-20 - Peak Power (dBm)

	Ref Lvl	32.2 dBm	Marker 1 [T1]	14.58 dBm	RBW	1 MHz	RF Att	30 dB
			2.46285170 GHz		VBW	1 MHz		
					SWT	1 s	Unit	dBm



Date: 8.NOV.2007 10:05:50

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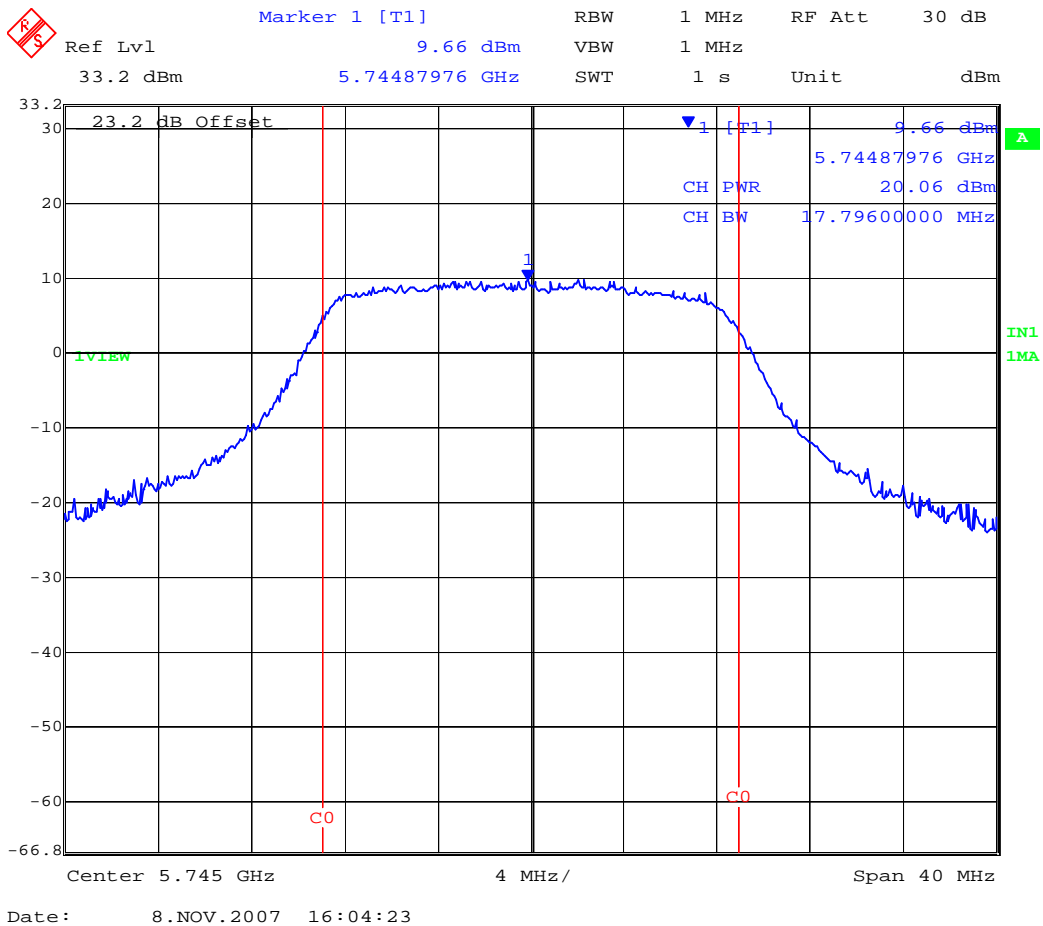


TABLE OF RESULTS – 802.11n – HT-20

Maximum Conducted Power

Center Frequency (MHz)	Software Setting	99% Measurement Bandwidth (MHz)	Average Power (dBm)	Peak Power (dBm)	EIRP (dBm) 0dBi Antenna
5,745	19	17.796	+11.90	+20.06	+20.06
5,785	19	17.715	+11.50	+19.72	+19.72
5,825	19	17.796	+11.60	+20.01	+20.01

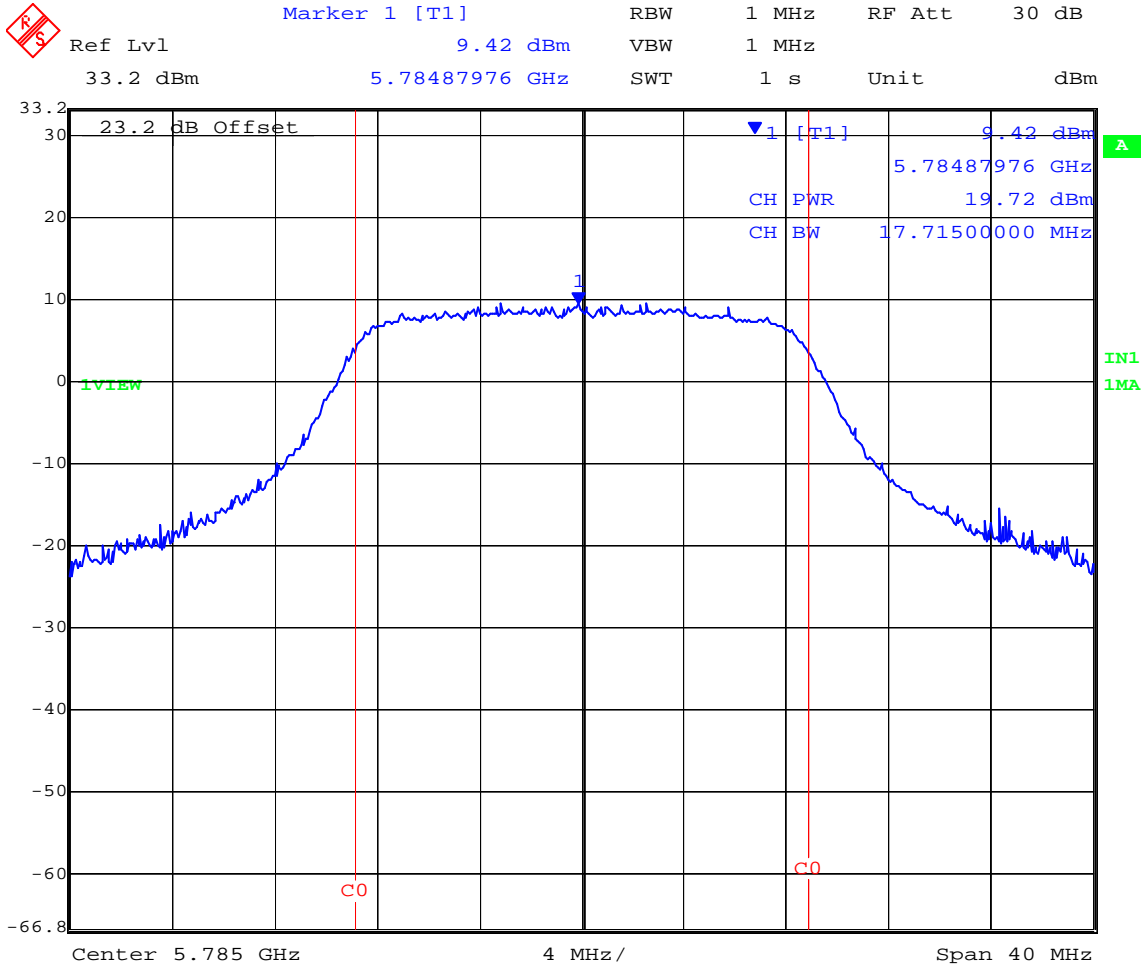
5,745 MHz 802.11n HT-20 Peak Power (dBm)



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5,785 MHz 802.11n HT-20 Peak Power (dBm)

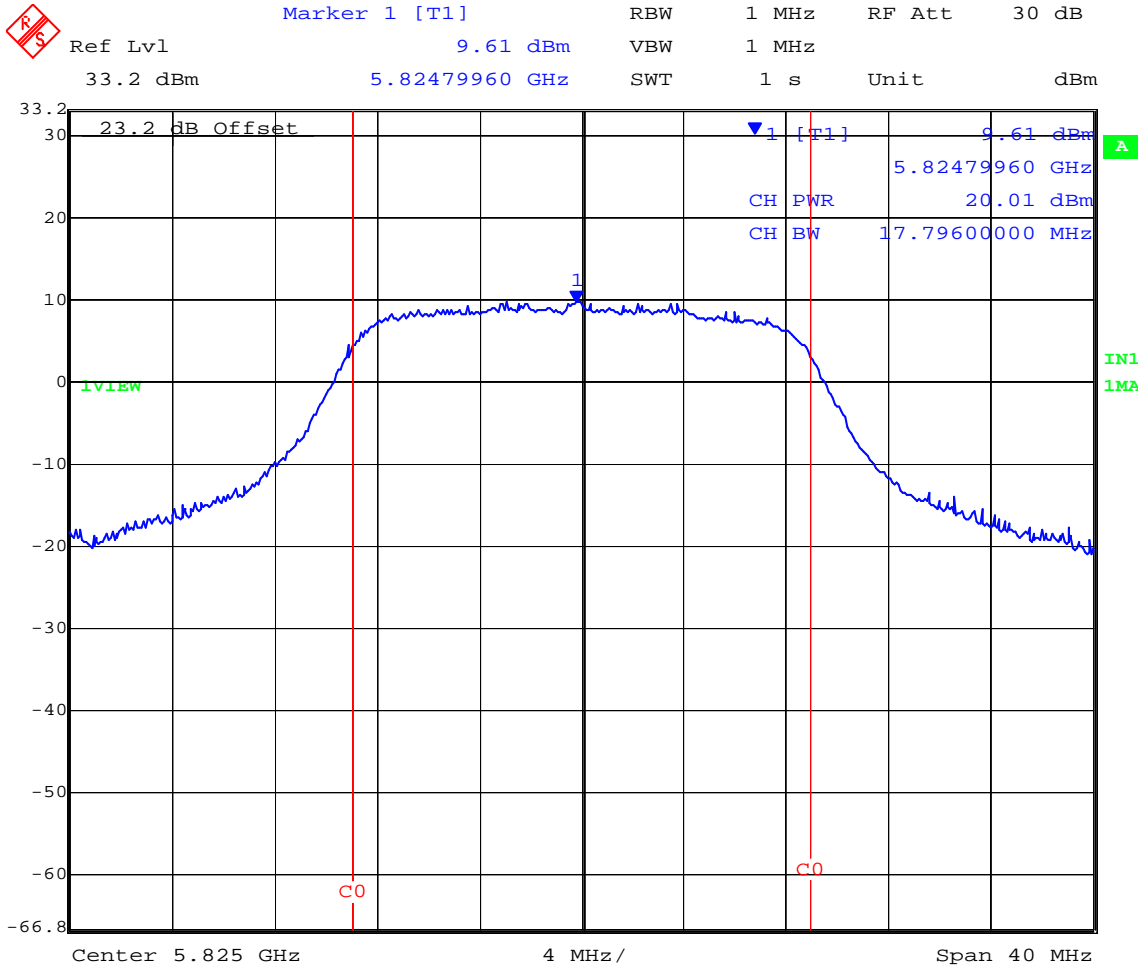


Date: 8.NOV.2007 16:06:16

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5,825 MHz 802.11n HT-20 Peak Power (dBm)



Date: 8.NOV.2007 16:02:09

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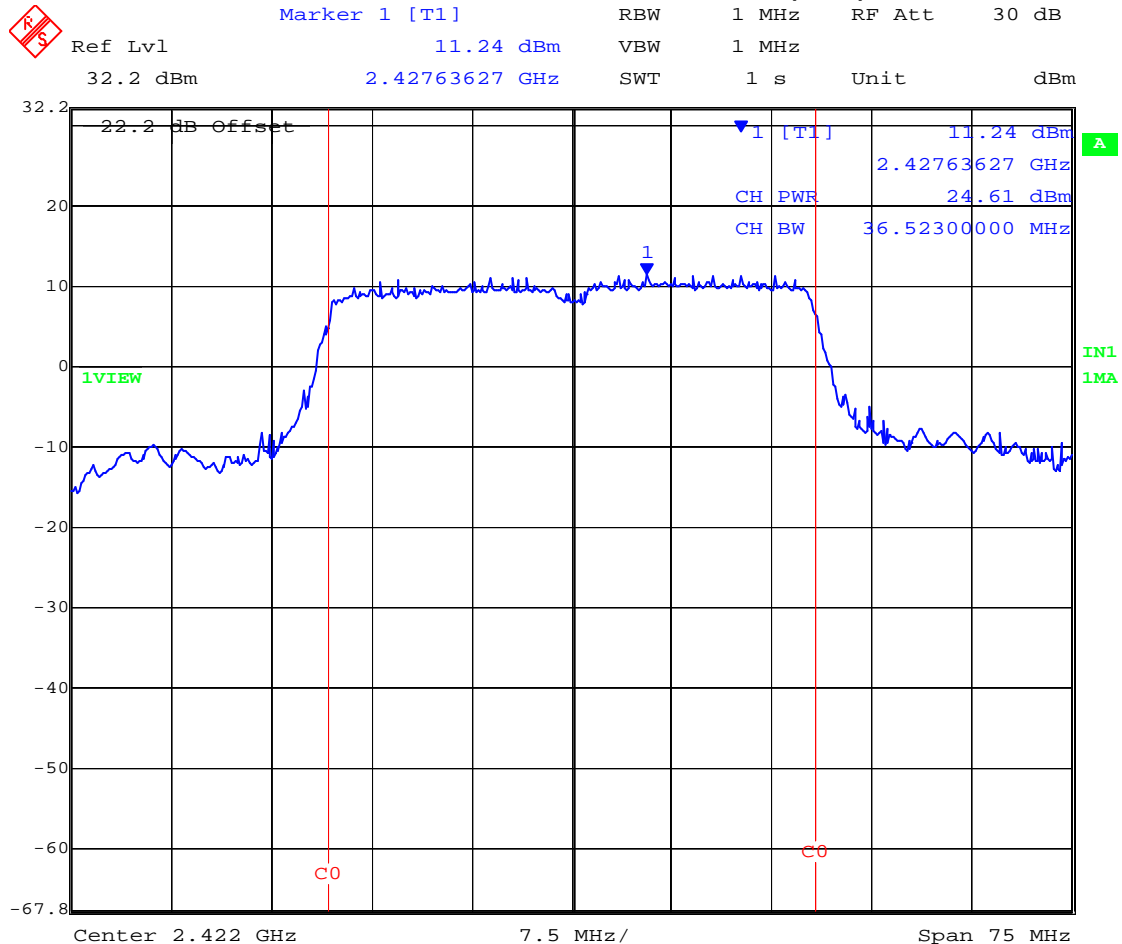


TABLE OF RESULTS – 802.11n – HT-40

Maximum Conducted Power

Center Frequency (MHz)	Software Setting	99% Measurement Bandwidth (MHz)	Average Power (dBm)	Peak Power (dBm)	EIRP (dBm) 0dBi Antenna
2,422	19	36.523	+16.82	+24.61	+24.61
2,437	19	36.673	+16.90	+24.88	+24.88
2,452	19	36.673	+17.02	+24.99	+24.99

2,422 MHz 802.11n HT-40 - Peak Power (dBm)




Date: 8.NOV.2007 13:21:45

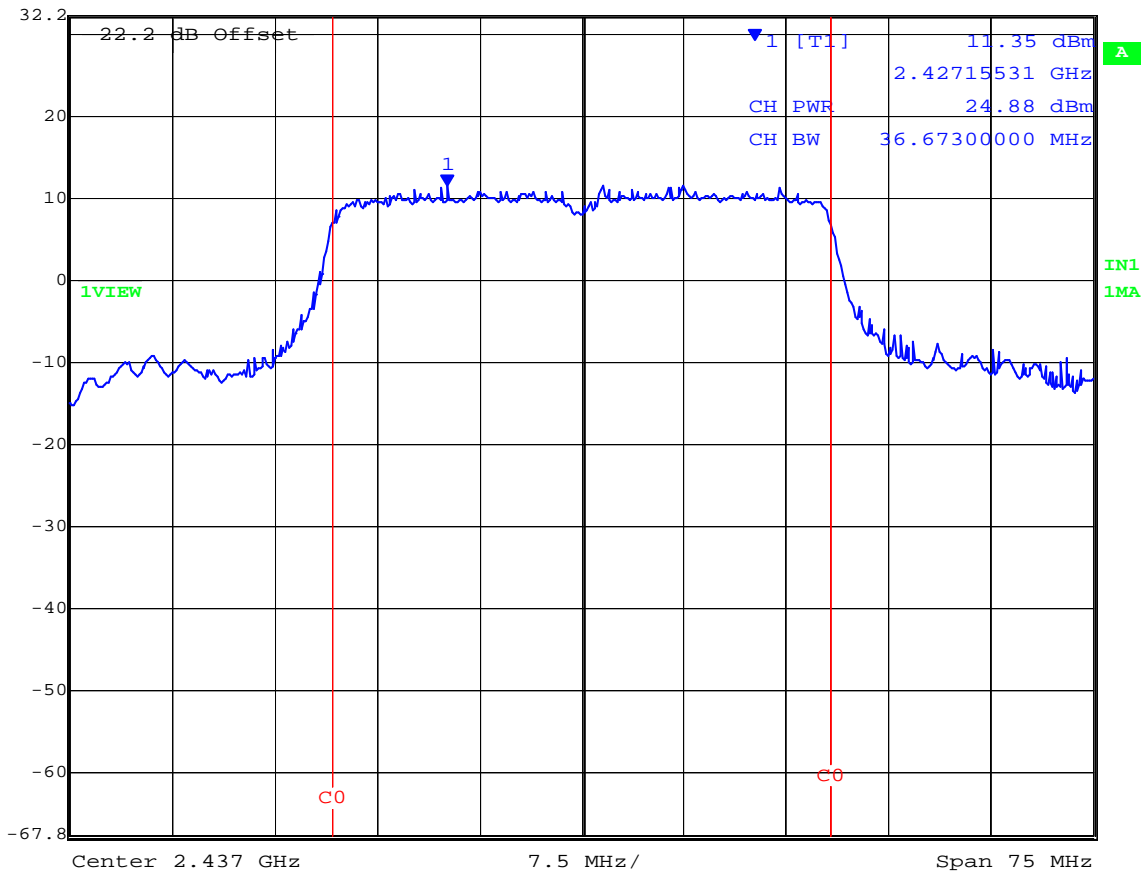
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Title: Aruba AP-124,125 802.11a/b/g/n AP
To: FCC 47 CFR Part 15.247 & IC RSS-210
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2,437 MHz 802.11n HT-40 - Peak Power (dBm)

 Ref Lvl 32.2 dBm
Marker 1 [T1] 11.35 dBm
2.42715531 GHz
RBW 1 MHz RF Att 30 dB
VBW 1 MHz
SWT 1 s Unit dBm



Date: 8.NOV.2007 11:58:55

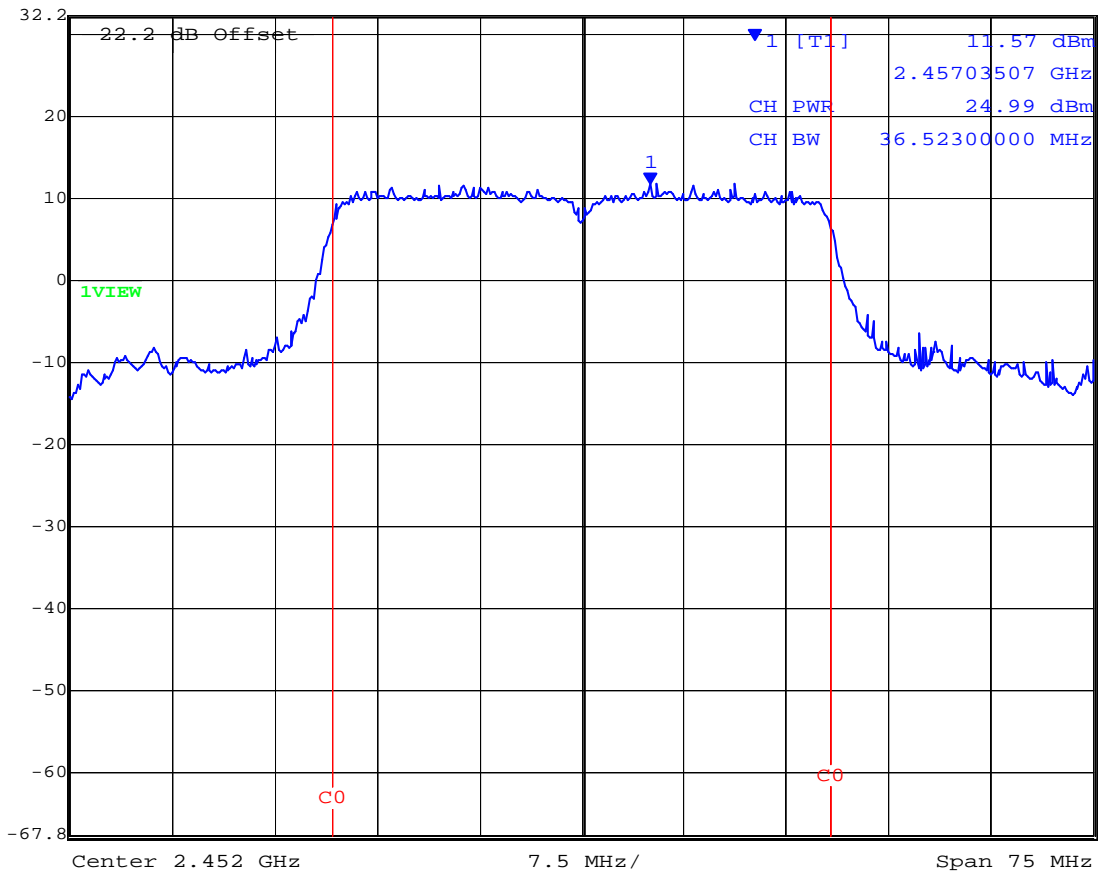
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Title: Aruba AP-124,125 802.11a/b/g/n AP
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2,452 MHz 802.11n HT-40 - Peak Power (dBm)

	Ref Lvl	11.57 dBm	RBW	1 MHz	RF Att	30 dB
	32.2 dBm	2.45703507 GHz	VBW	1 MHz		
			SWT	1 s	Unit	dBm



Date: 8.NOV.2007 13:22:42

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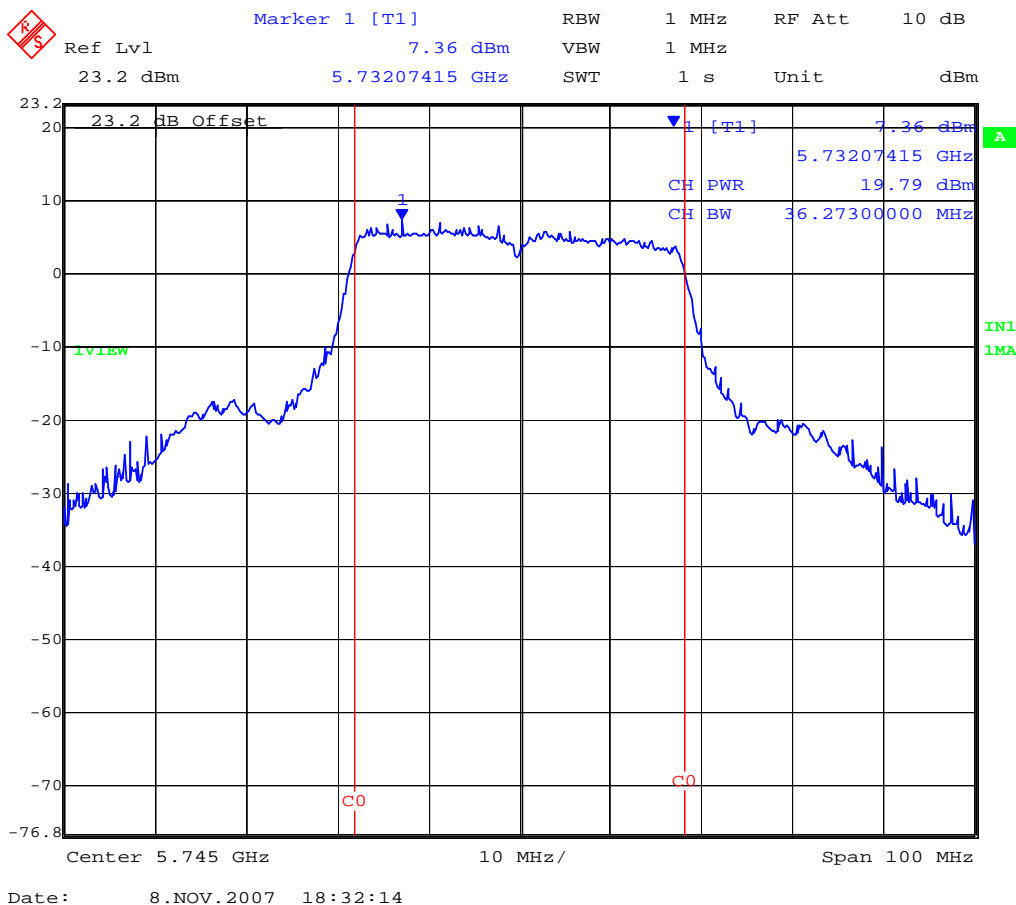
Title: Aruba AP-124,125 802.11a/b/g/n AP
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TABLE OF RESULTS – 802.11n – HT-40

Maximum Conducted Power

Center Frequency (MHz)	Software Setting	99% Measurement Bandwidth (MHz)	Average Power (dBm)	Peak Power (dBm)	EIRP (dBm) 0dBi Antenna
5,745	19	36.273	+11.51	+19.79	+19.79
5,785	19	36.273	+11.01	+19.03	+19.03
5,825	19	36.273	+11.33	+19.15	+19.15

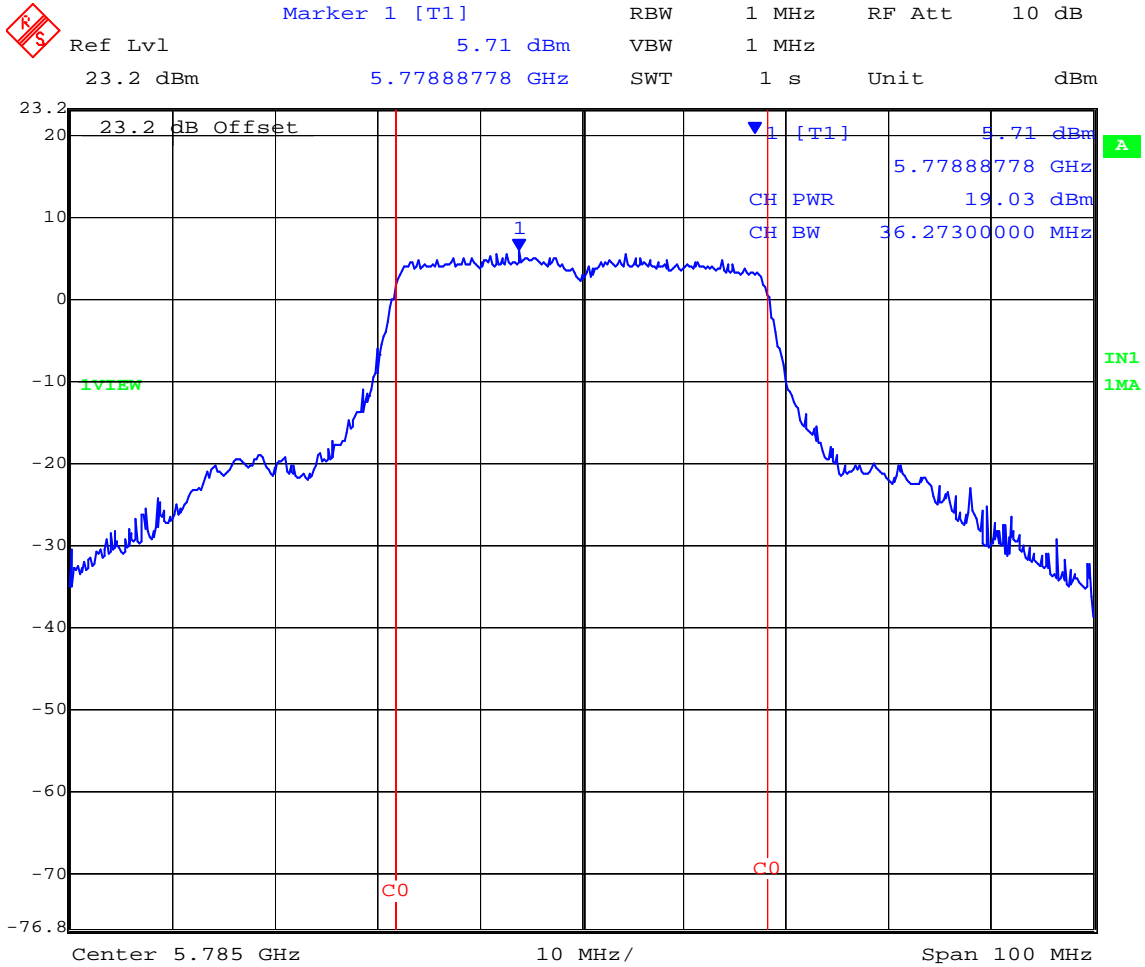
5,745 MHz 802.11n HT-40 Peak Power (dBm)



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5,785 MHz 802.11a HT-40 Peak Power (dBm)

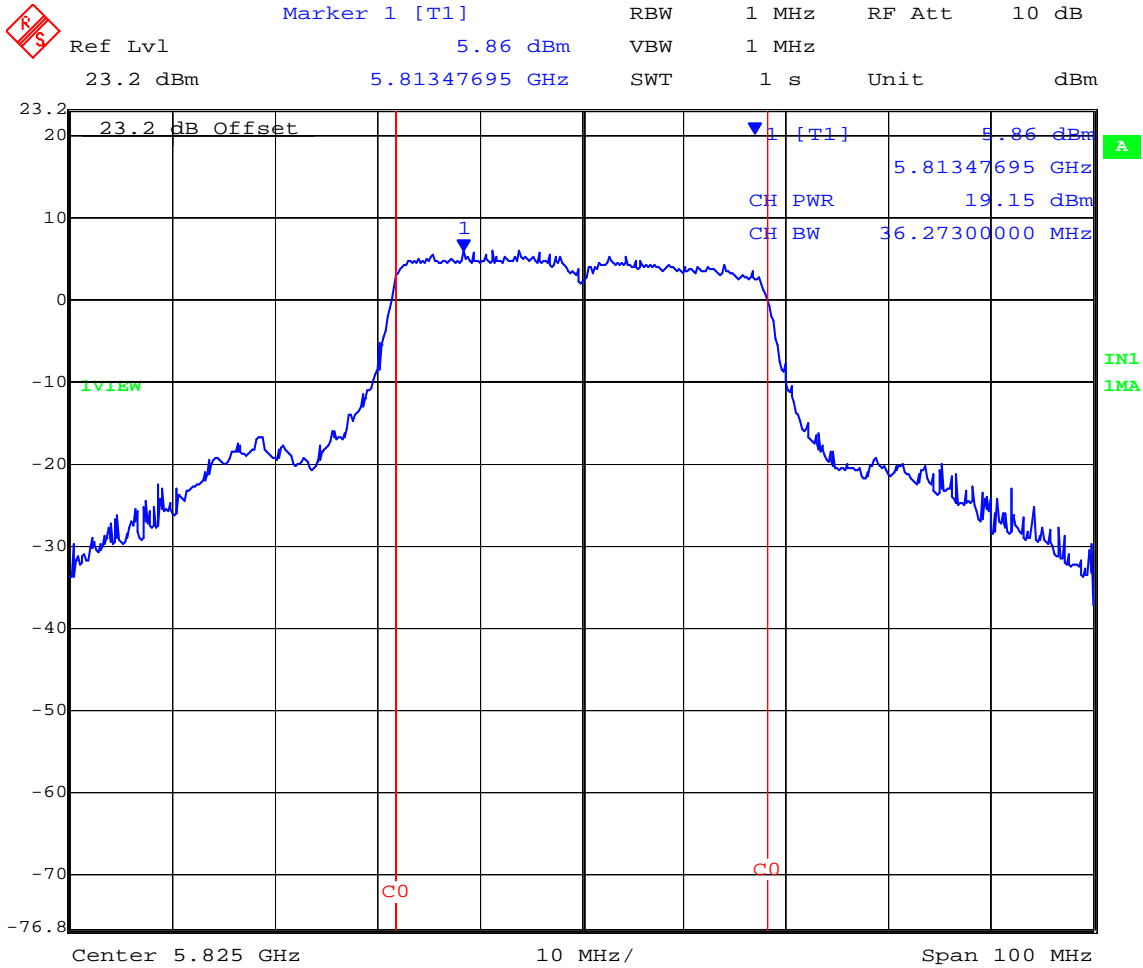


Date: 8.NOV.2007 18:33:16

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5,825 MHz 802.11a HT-40 Peak Power (dBm)



Date: 8.NOV.2007 18:34:06

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Title: Aruba AP-124,125 802.11a/b/g/n AP
To: FCC 47 CFR Part 15.247 & IC RSS-210
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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.

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Title: Aruba AP-124,125 802.11a/b/g/n AP
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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, 0193, 0252, 0313, 0314, 0070, 0116, 0117

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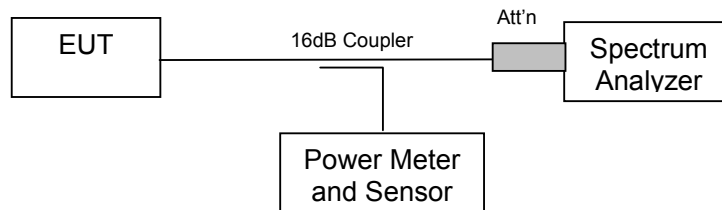
5.1.3. Peak Power Spectral Density

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

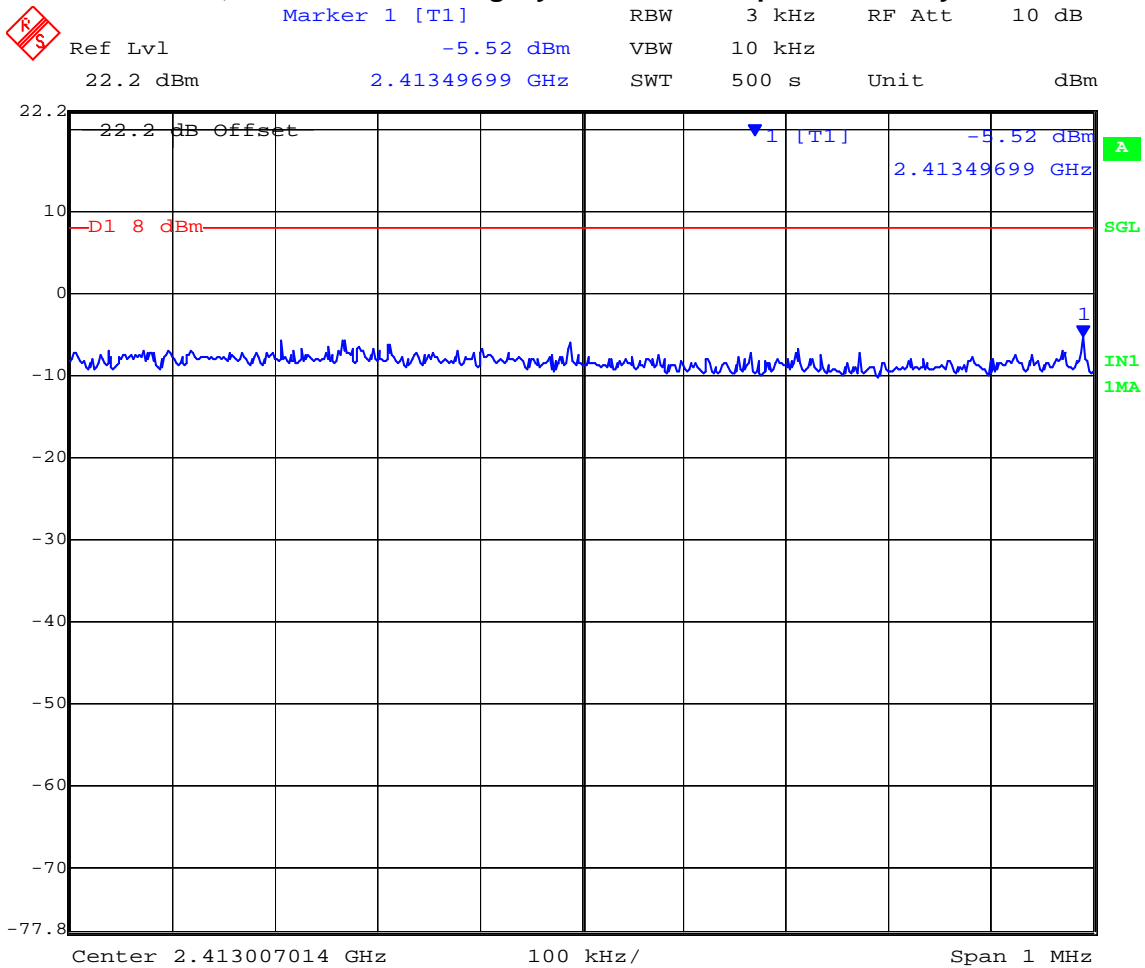


Peak Power Spectral Density

TABLE OF RESULTS – 802.11b – Legacy

Center Frequency (MHz)	Peak Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dBm)
2,412	2413.49699	-5.52	+8	-13.52
2,437	2438.49699	-6.02	+8	-14.02
2,462	2463.49599	-5.91	+8	-13.91

2,412 MHz 802.11b Legacy - Peak Power Spectral Density

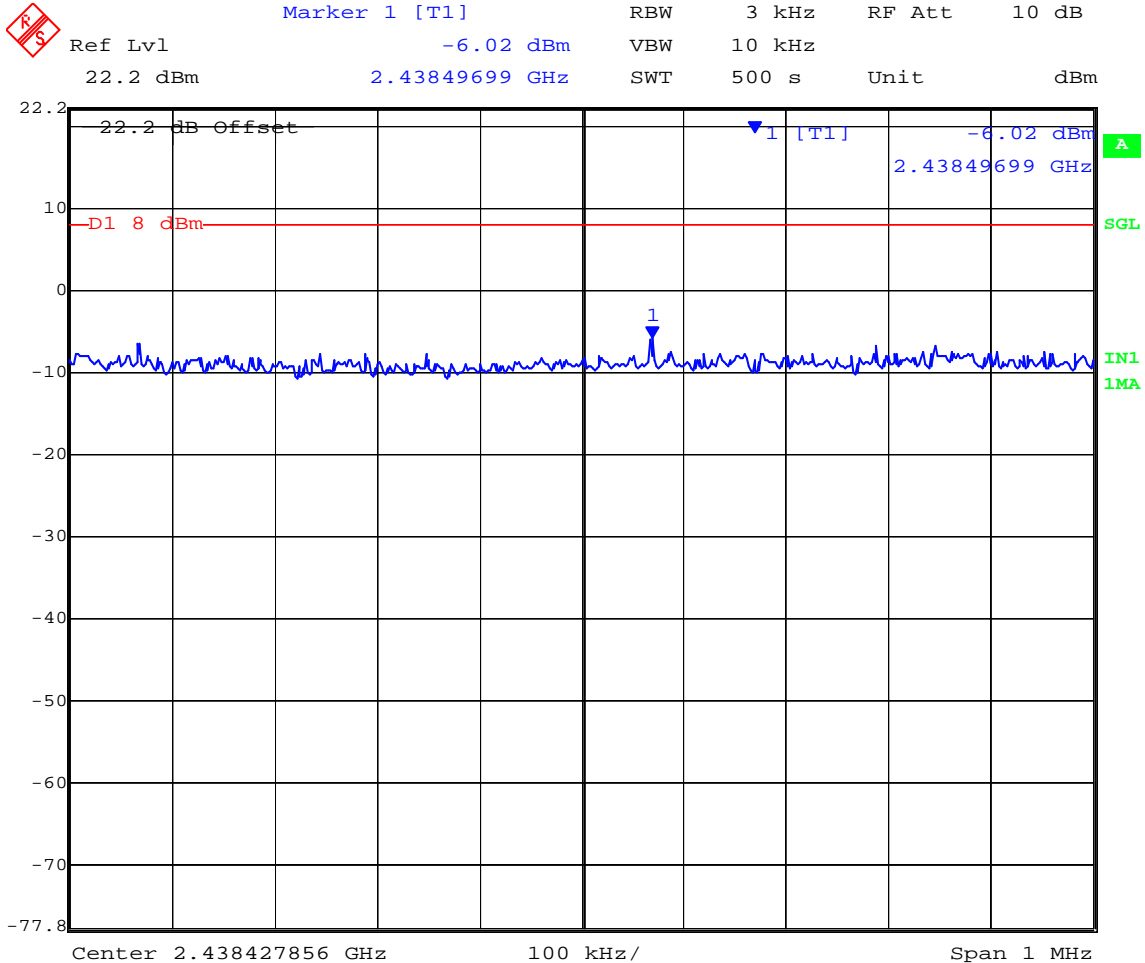


Date: 7.NOV.2007 20:00:39

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2,437 MHz 802.11b Legacy - Peak Power Spectral Density

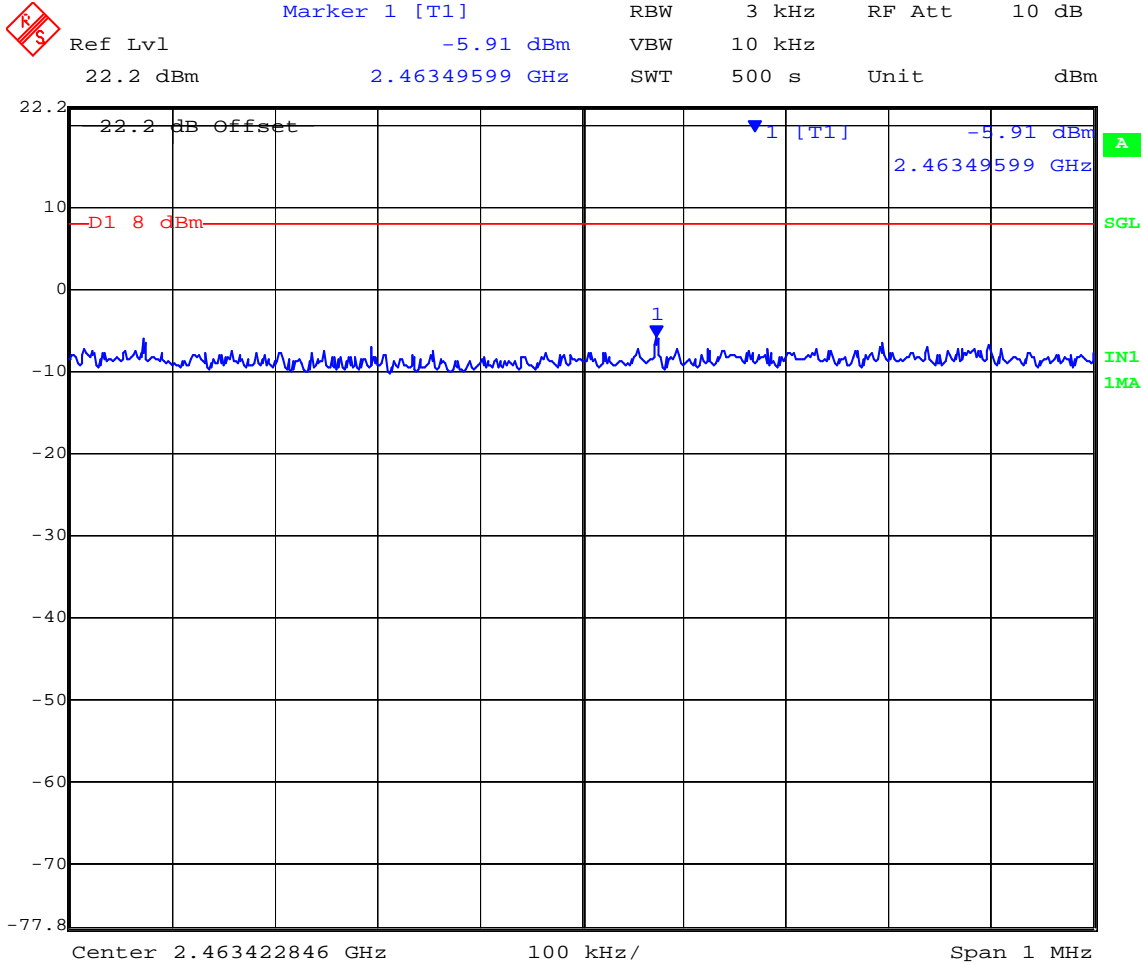


Date: 7.NOV.2007 20:12:47

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2,462 MHz 802.11b Legacy - Peak Power Spectral Density



Date: 7.NOV.2007 20:31:24

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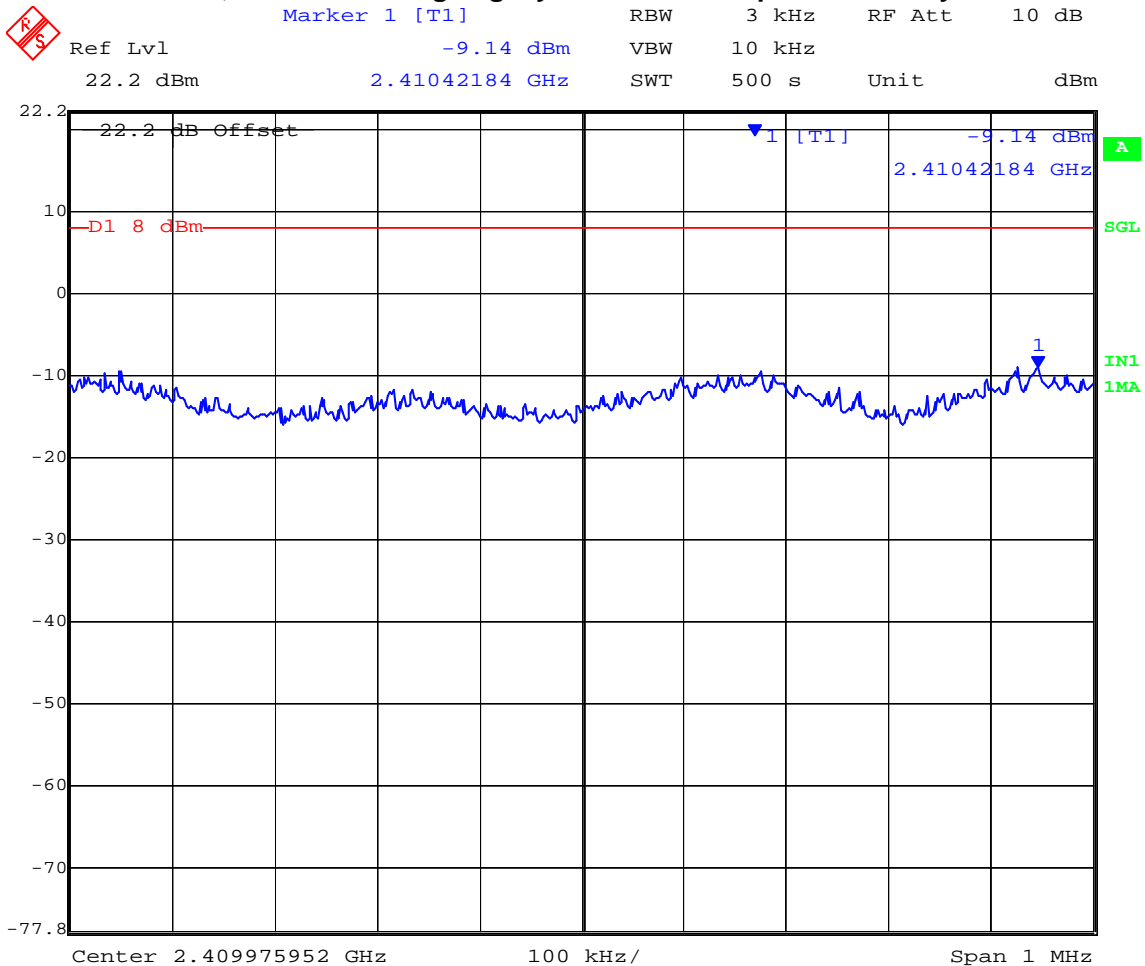


Peak Power Spectral Density

TABLE OF RESULTS – 802.11g – Legacy

Center Frequency (MHz)	Peak Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dBm)
2,412	2410.42184	-9.14	+8	-17.14
2,437	2439.49198	-9.18	+8	-17.18
2,462	2463.87275	-8.86	+8	-16.86

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

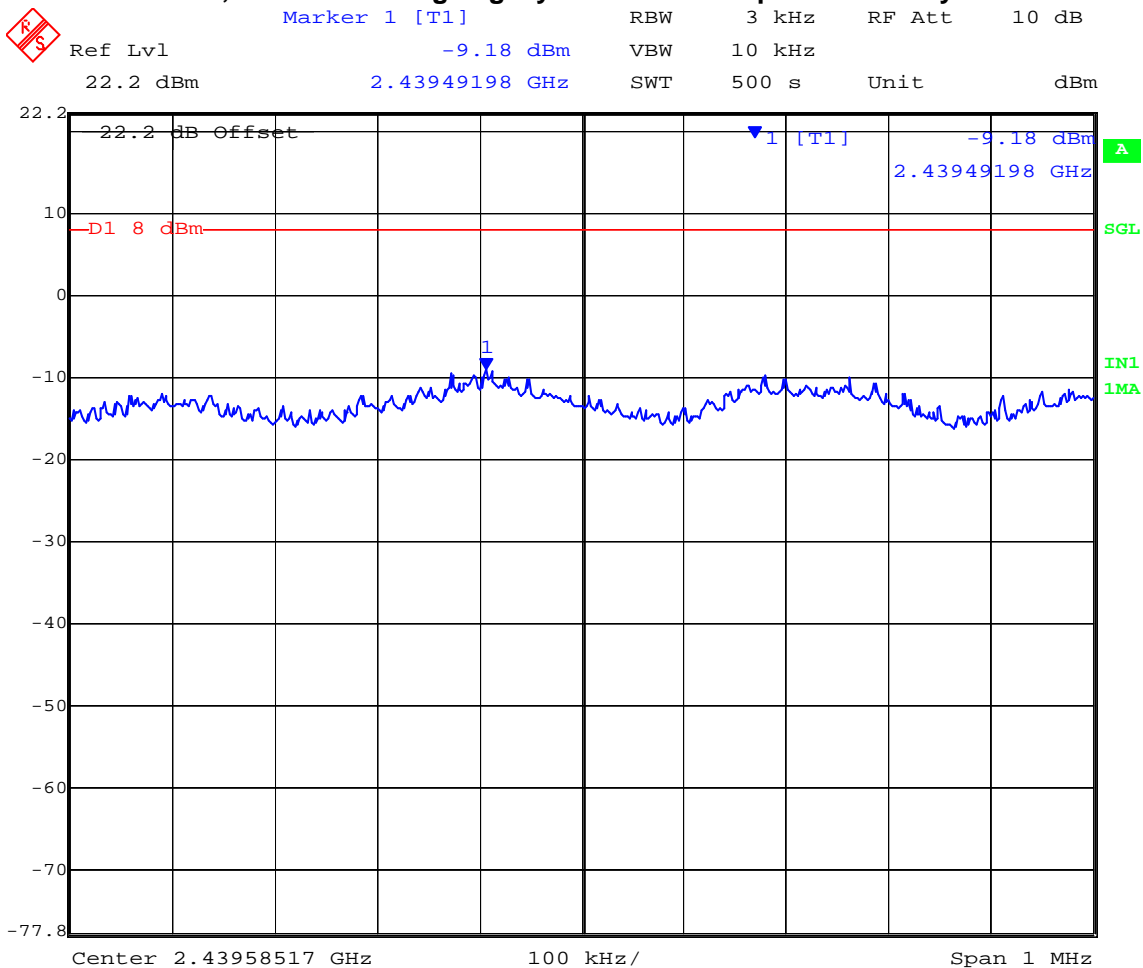


Date: 7.NOV.2007 19:50:46

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

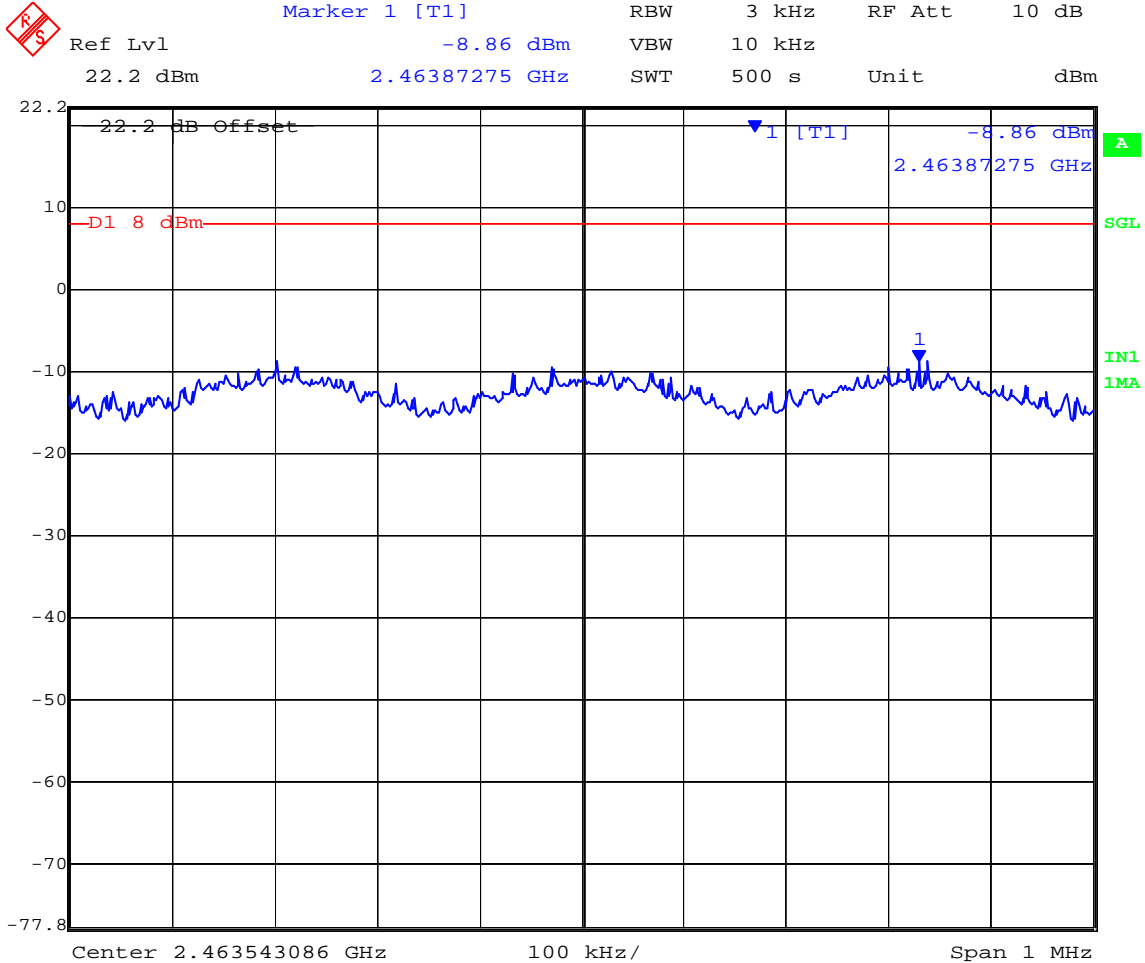


Date: 7.NOV.2007 19:40:52

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



Date: 7.NOV.2007 19:29:53

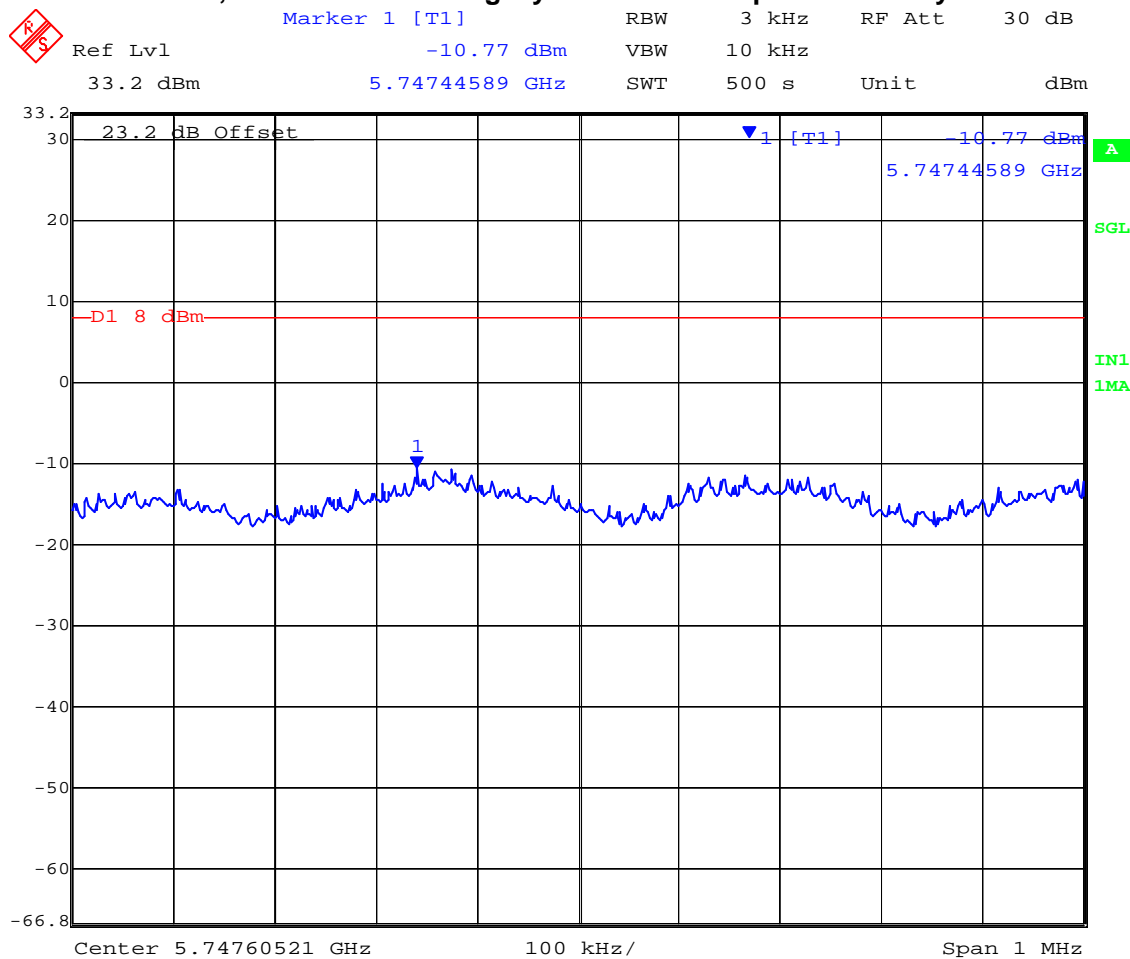
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TABLE OF RESULTS – 802.11a Legacy

Center Frequency (MHz)	Peak Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dBm)
5,745	5747.44589	-10.77	+8	-18.77
5,785	5786.21343	-11.25	+8	-19.25
5,825	5822.51202	-11.98	+8	-19.98

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

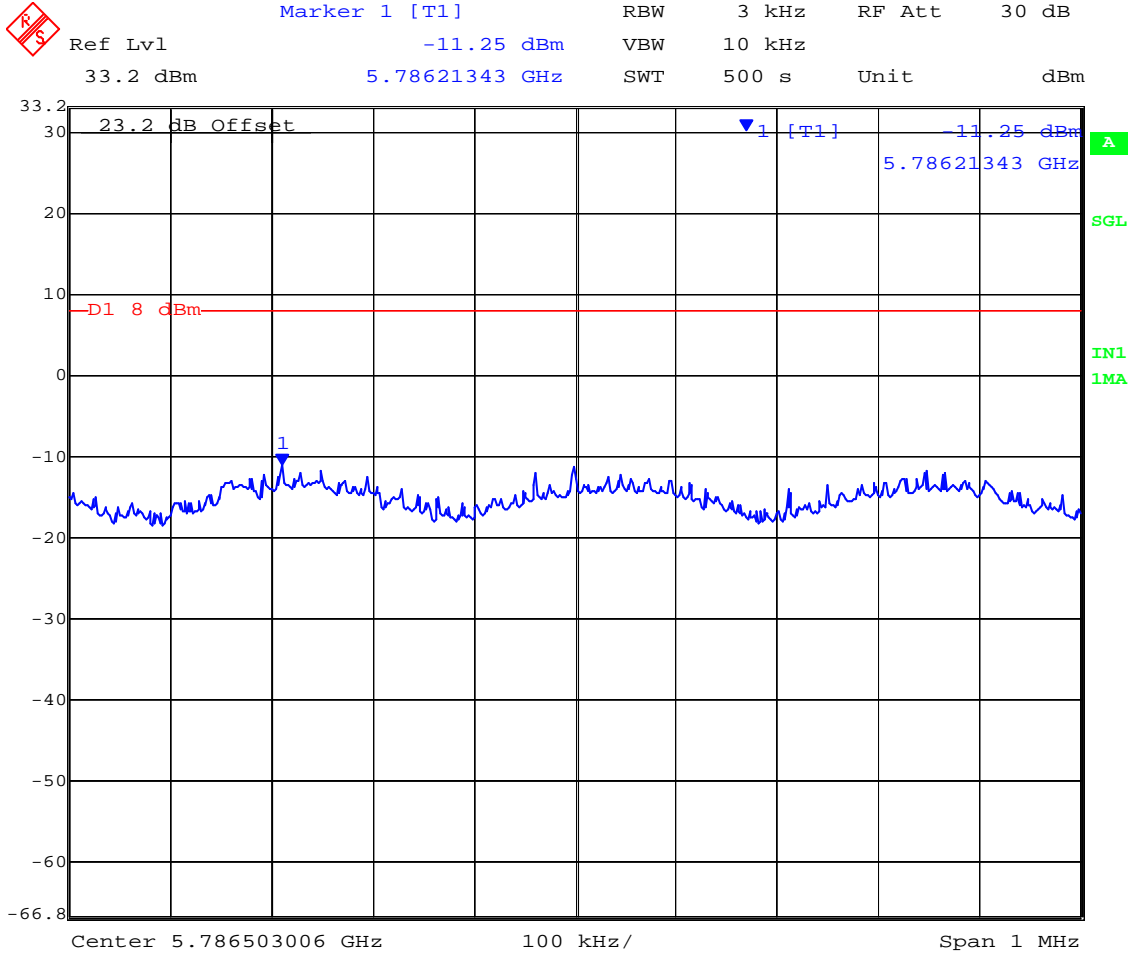


Date: 8.NOV.2007 15:18:07

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

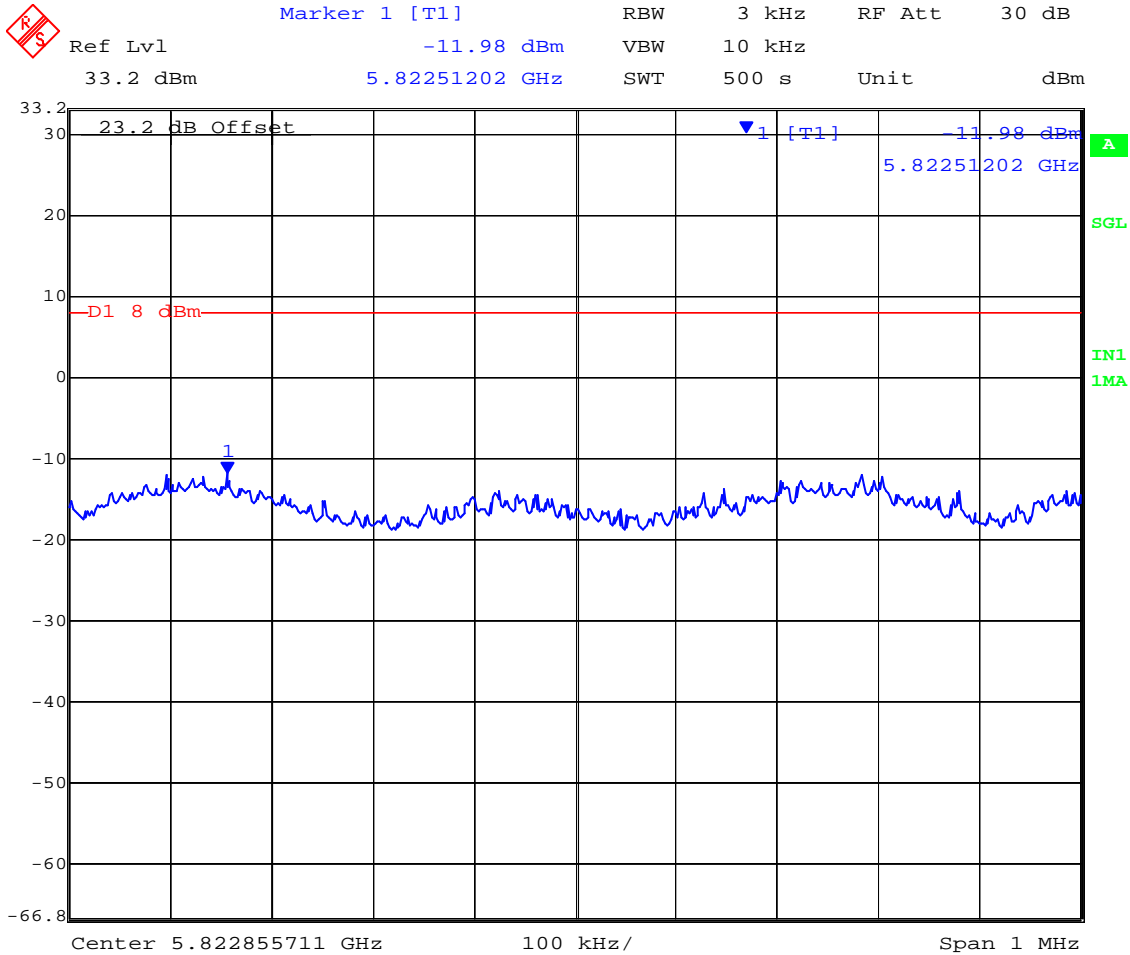


Date: 8.NOV.2007 15:28:33

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



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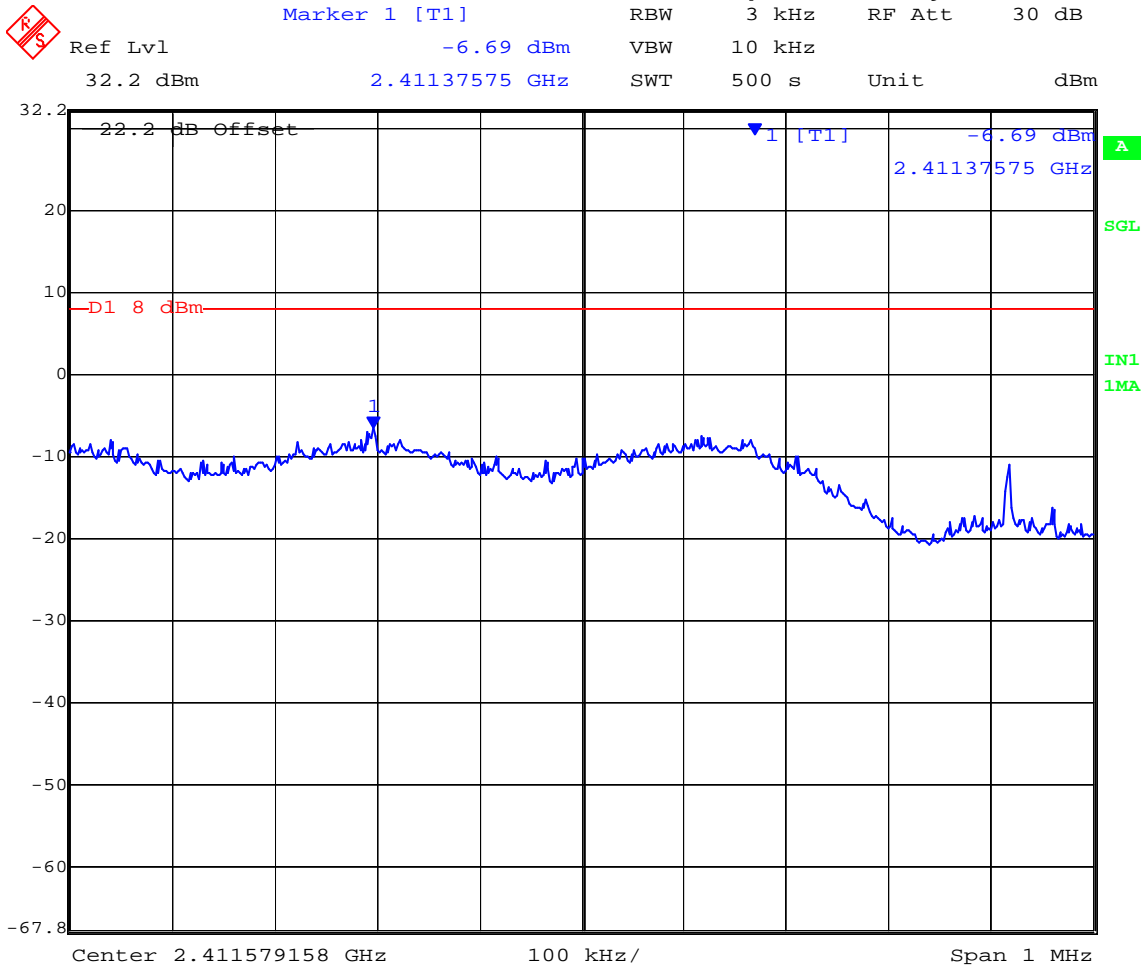


Peak Power Spectral Density

TABLE OF RESULTS – 802.11n – HT-20

Center Frequency (MHz)	Peak Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dBm)
2,412	2411.37575	-6.69	+8	-14.69
2,437	2437.62024	-7.18	+8	-15.18
2,462	2462.62024	-6.94	+8	-14.94

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




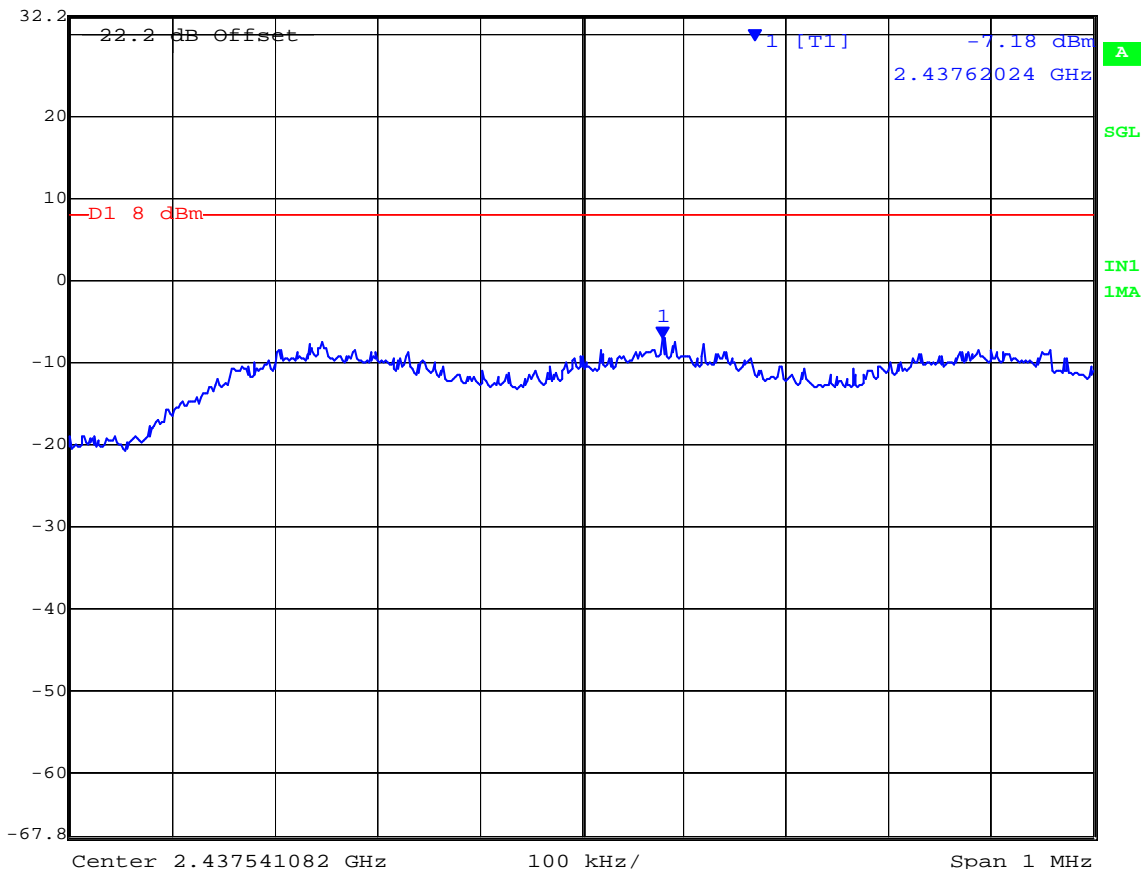
Date: 8.NOV.2007 09:58:16

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

 Marker 1 [T1] RBW 3 kHz RF Att 30 dB
Ref Lvl 32.2 dBm -7.18 dBm VBW 10 kHz
2.43762024 GHz SWT 500 s Unit dBm

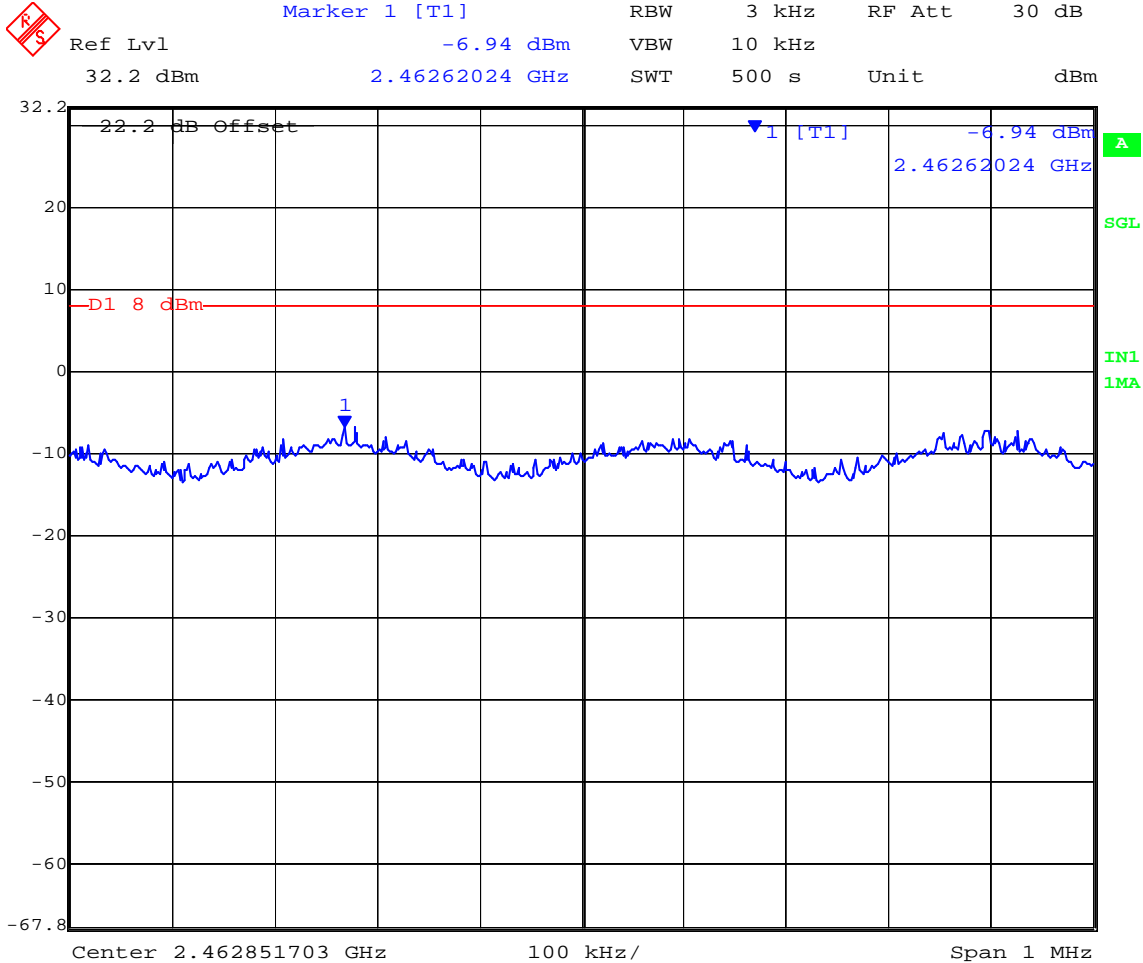


Date: 8.NOV.2007 09:45:40

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



Date: 8.NOV.2007 09:34:47

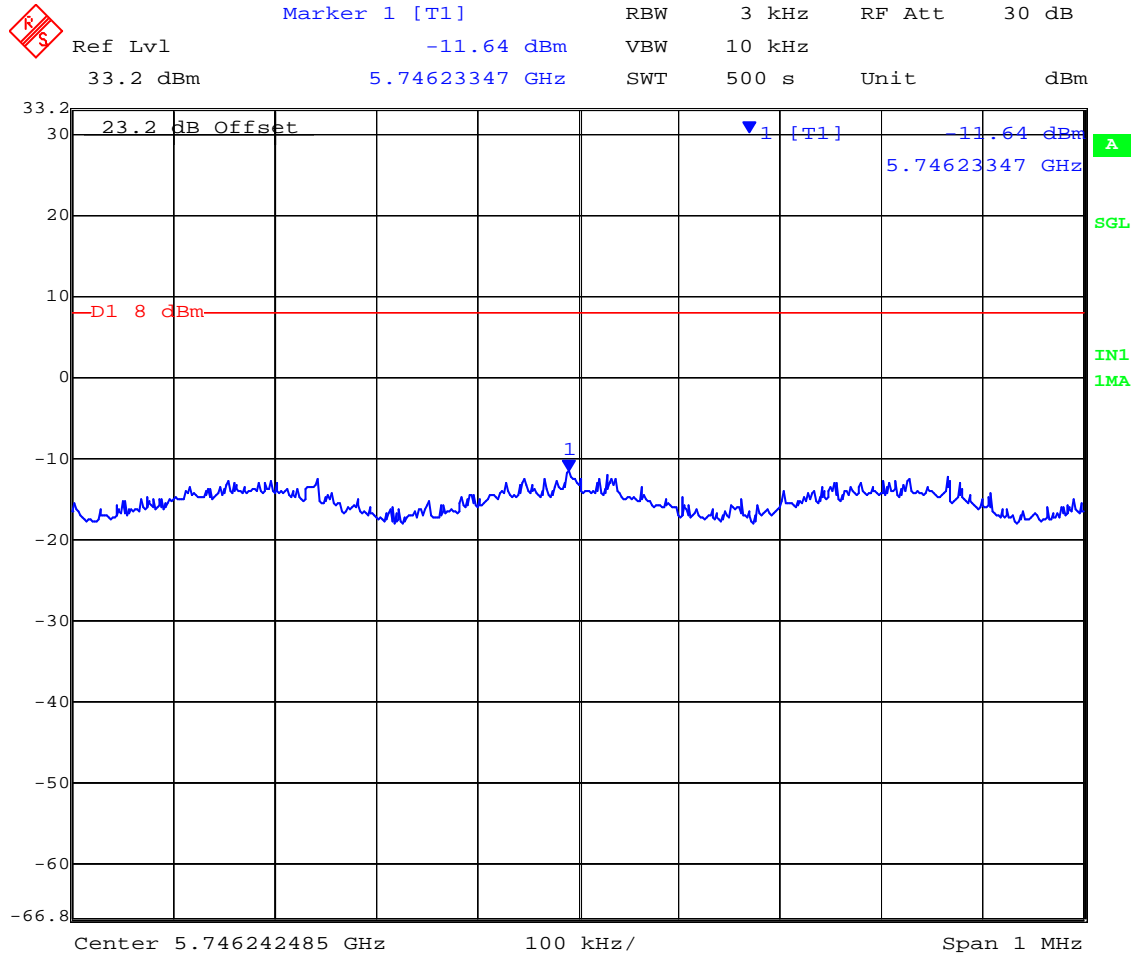
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TABLE OF RESULTS – 802.11n HT-20

Center Frequency (MHz)	Peak Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dBm)
5,745	5746.23347	-11.64	+8	-19.64
5,785	5788.73246	-12.70	+8	-20.70
5,825	5826.23146	-11.91	+8	-19.91

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




Date: 8.NOV.2007 16:20:00

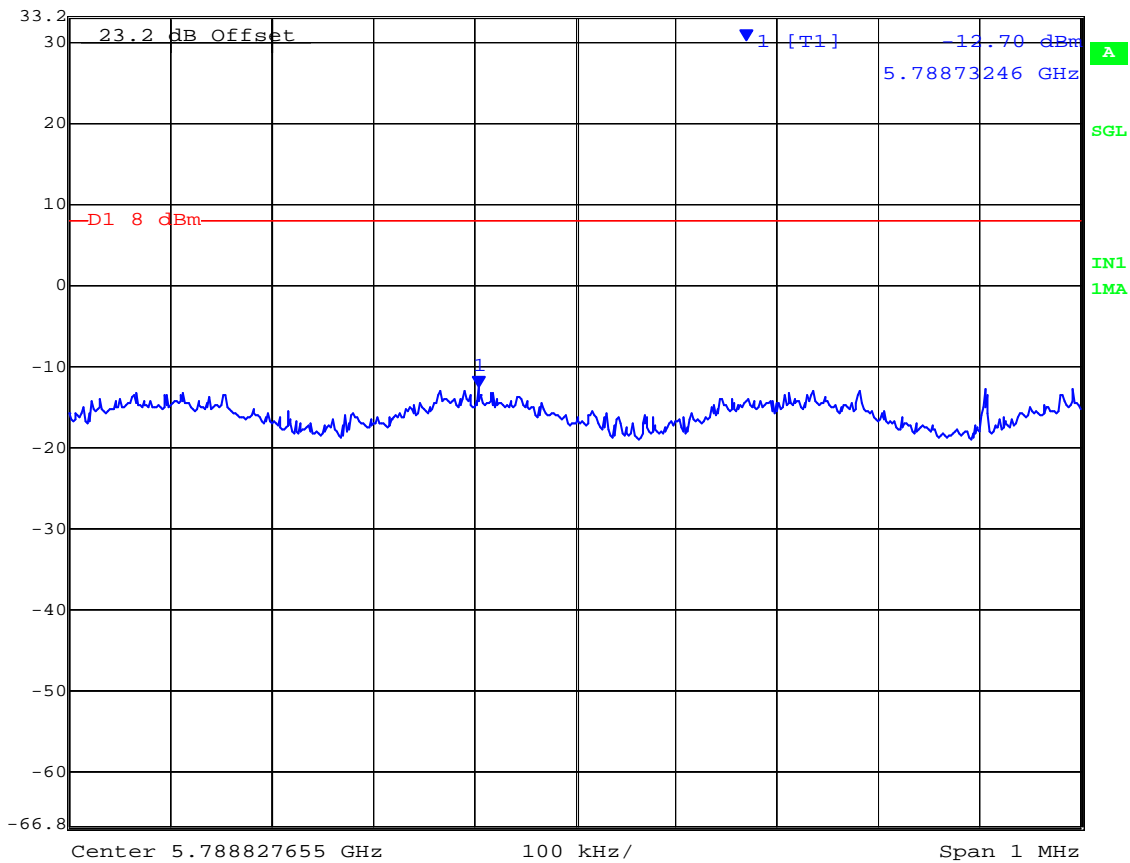
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Title: Aruba AP-124,125 802.11a/b/g/n AP
To: FCC 47 CFR Part 15.247 & IC RSS-210
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5,785 MHz 802.11n HT-20 - Peak Power Spectral Density

 **Marker 1 [T1]** RBW 3 kHz RF Att 30 dB
Ref Lvl -12.70 dBm VBW 10 kHz
33.2 dBm 5.78873246 GHz SWT 500 s Unit dBm

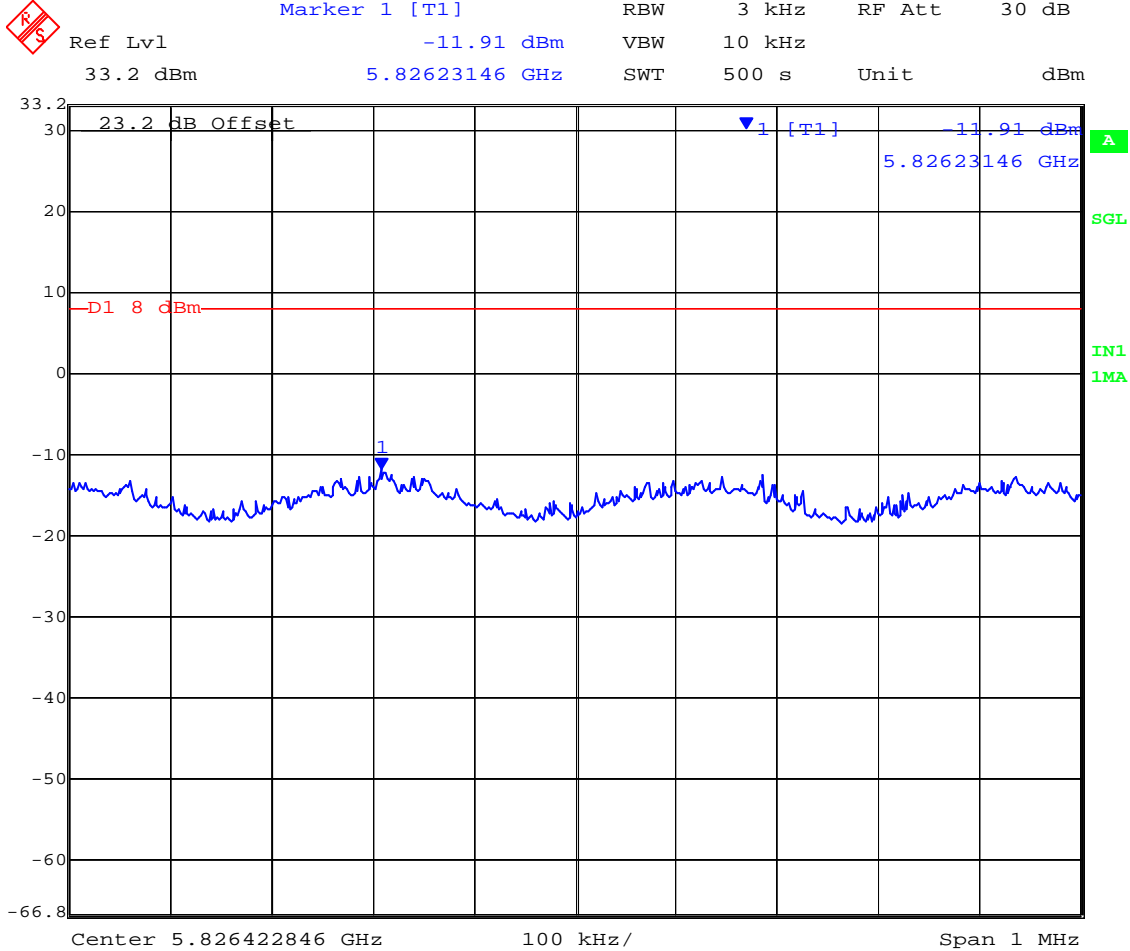


Date: 8.NOV.2007 16:32:38

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



Date: 8.NOV.2007 16:42:50

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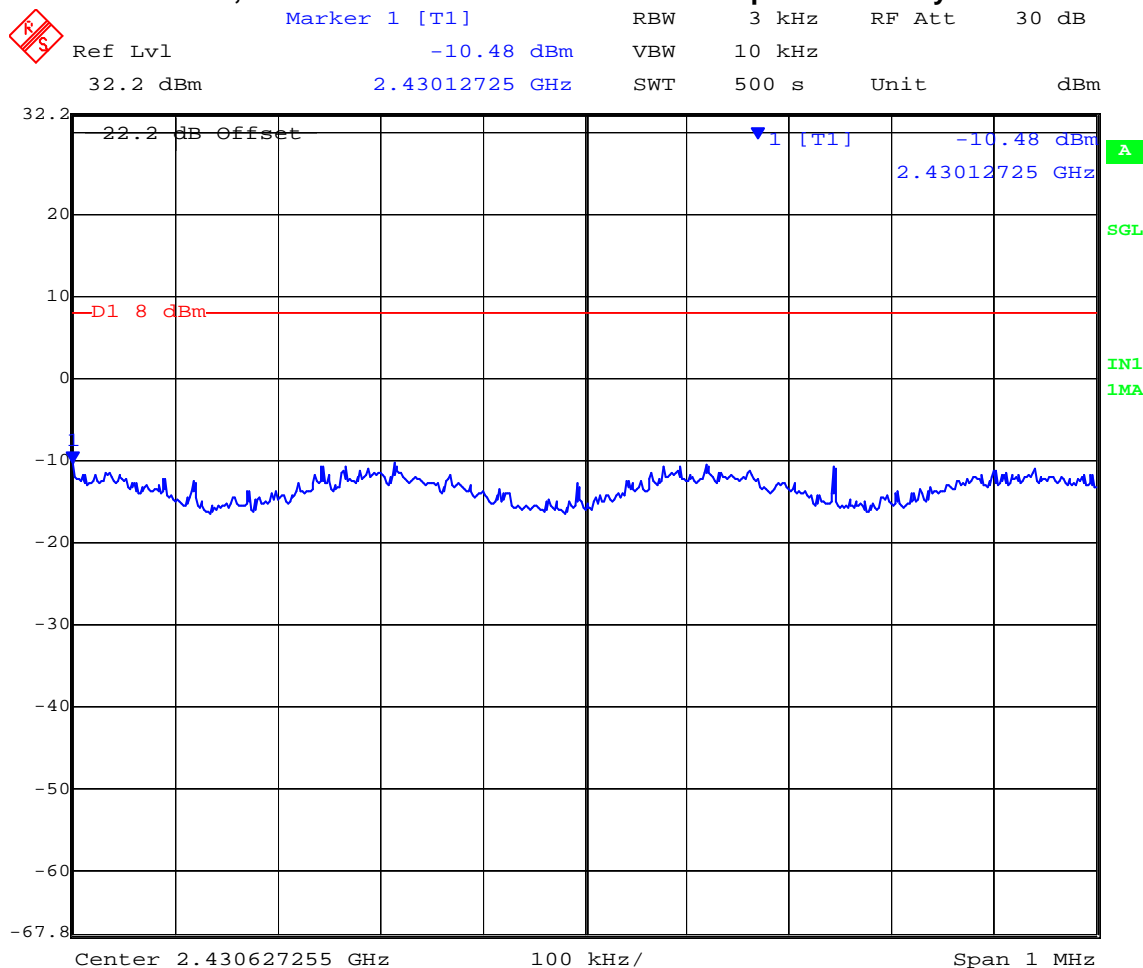
Title: Aruba AP-124,125 802.11a/b/g/n AP
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: ARUB20-A2 Rev A
Issue Date: 11th December 2007
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Peak Power Spectral Density

TABLE OF RESULTS – 802.11n – HT-40

Center Frequency (MHz)	Peak Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dBm)
2,422	2430.12725	-10.48	+8	-18.48
2,437	2444.24549	-9.13	+8	-17.13
2,452	2445.12124	-9.25	+8	-17.25

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




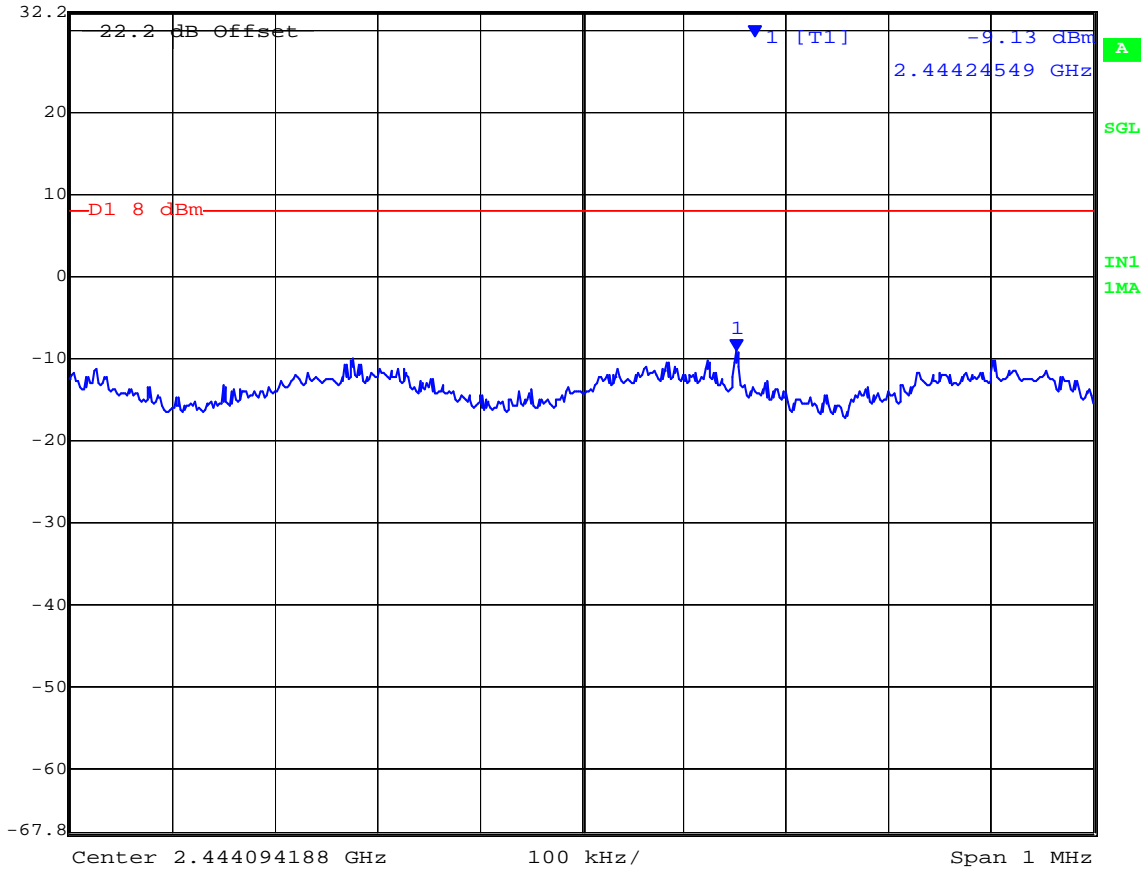
Date: 8.NOV.2007 12:27:31

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

 **Marker 1 [T1]** RBW 3 kHz RF Att 30 dB
Ref Lvl 32.2 dBm -9.13 dBm VBW 10 kHz
2.44424549 GHz SWT 500 s Unit dBm




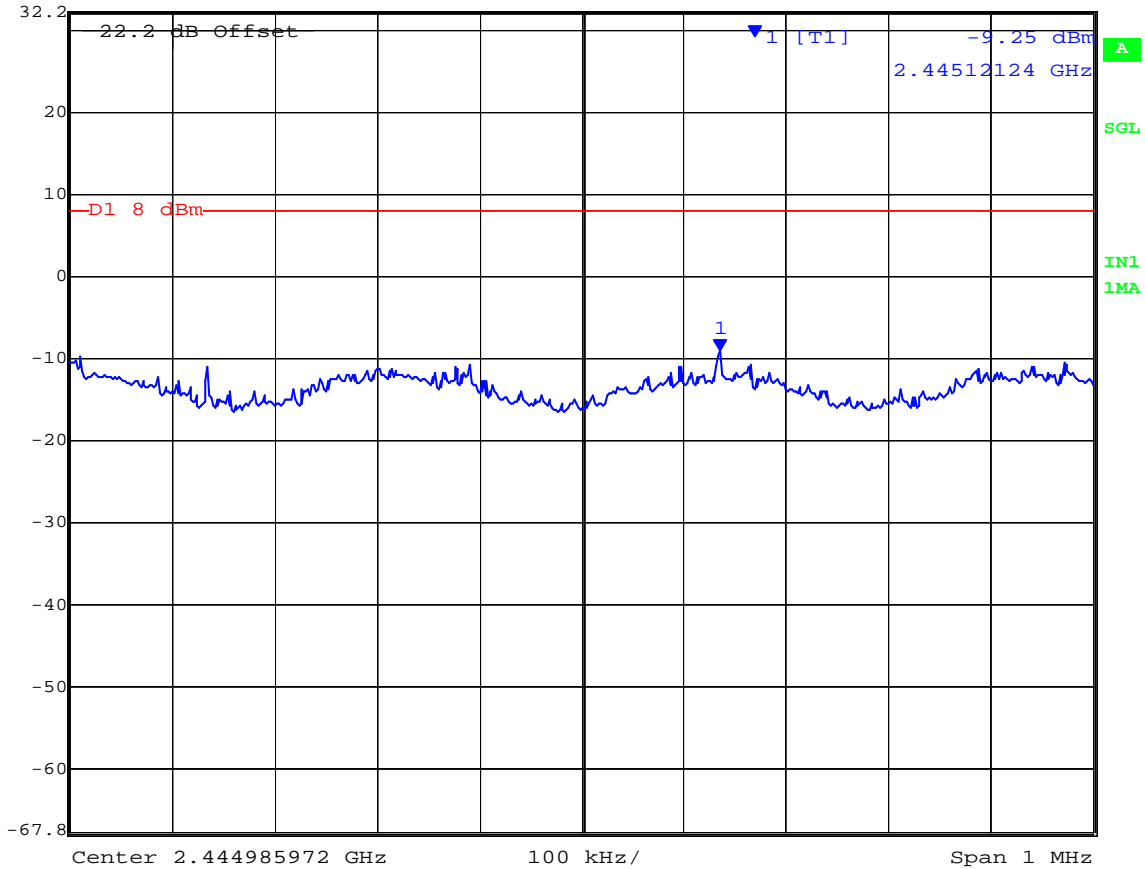
Date: 8.NOV.2007 11:42:05

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

 Marker 1 [T1] RBW 3 kHz RF Att 30 dB
Ref Lvl -9.25 dBm VBW 10 kHz
32.2 dBm 2.44512124 GHz SWT 500 s Unit dBm



Date: 8.NOV.2007 13:10:03

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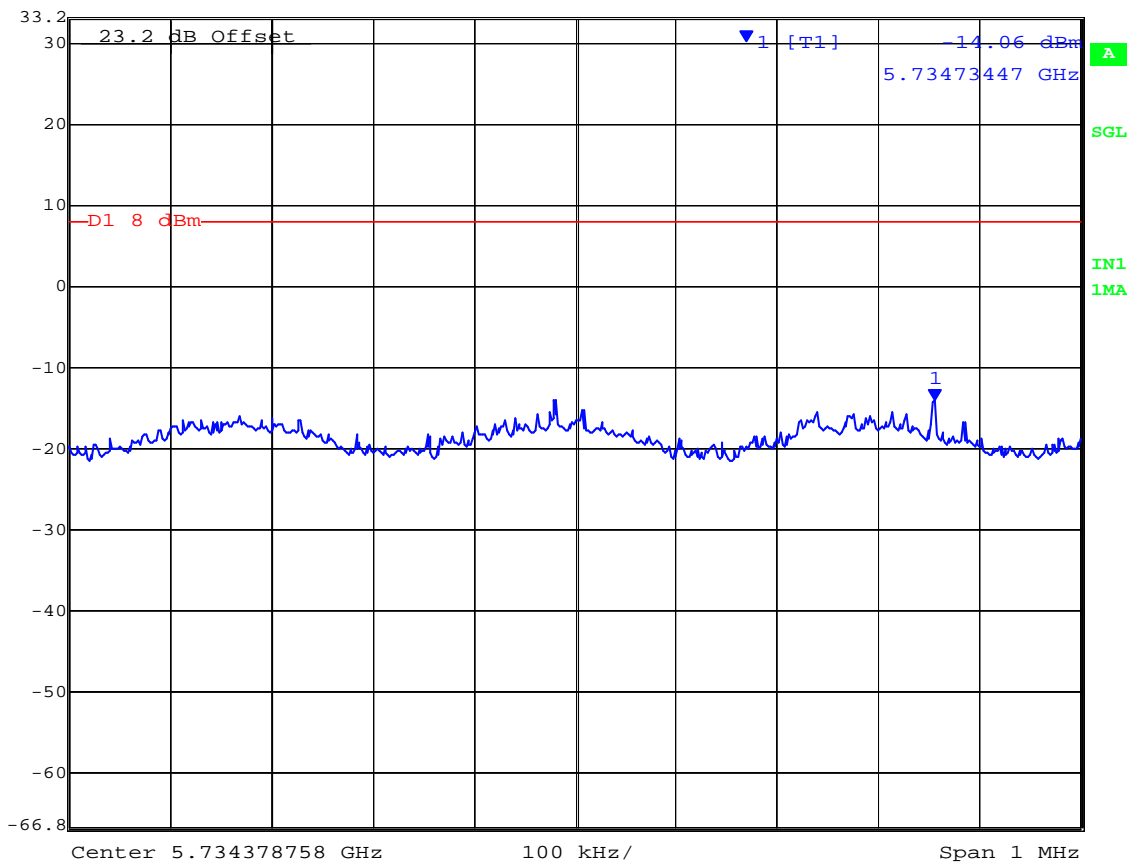
Title: Aruba AP-124,125 802.11a/b/g/n AP
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TABLE OF RESULTS – 802.11n HT-40

Center Frequency (MHz)	Peak Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dBm)
5,745	5734.73447	-14.06	+8	-22.06
5,785	5778.98297	-14.71	+8	-22.71
5,825	5815.98297	-14.68	+8	-22.68

5,745 MHz 802.11n HT-40 - Peak Power Spectral Density

Marker 1 [T1] RBW 3 kHz RF Att 30 dB
 Ref Lvl -14.06 dBm VBW 10 kHz
 33.2 dBm 5.73473447 GHz SWT 500 s Unit dBm



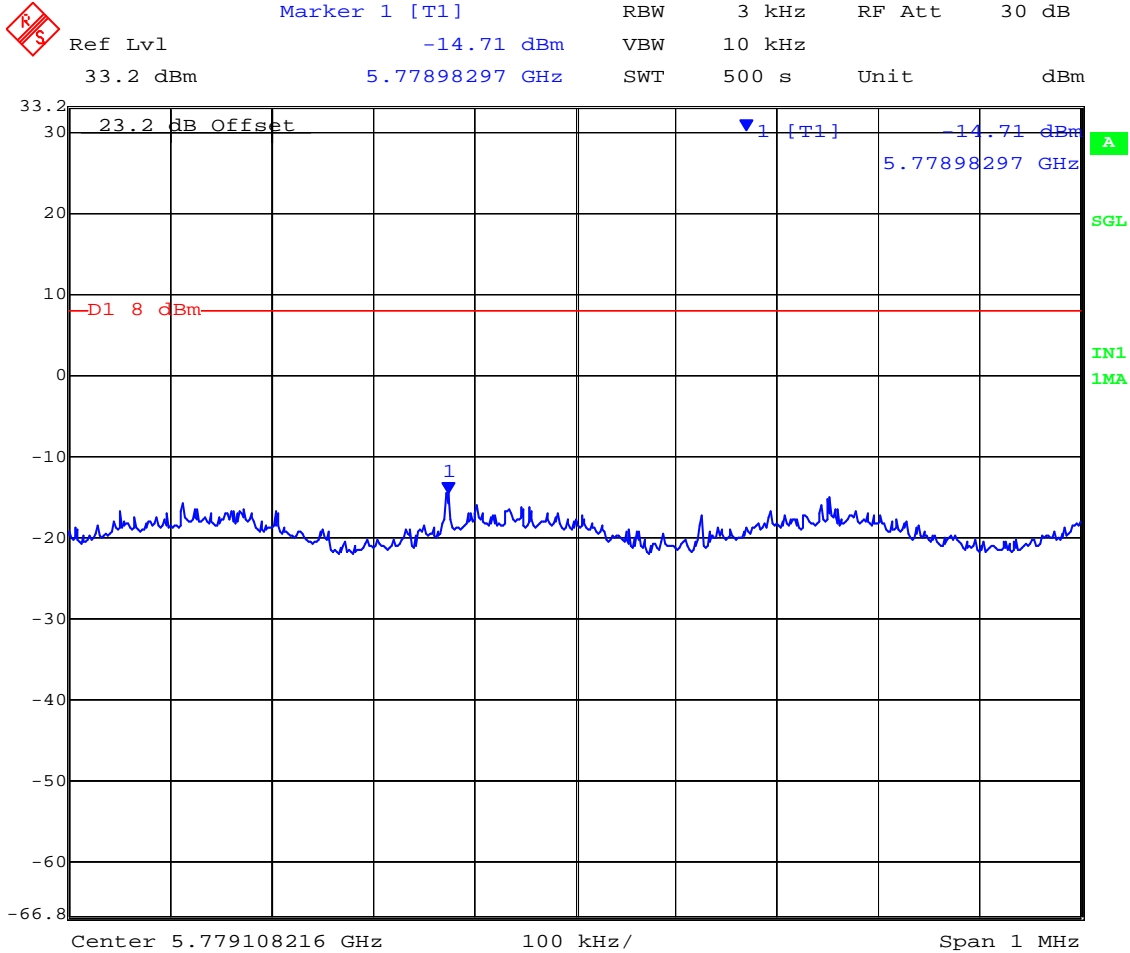
Date: 8.NOV.2007 19:22:32

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5,785 MHz 802.11n HT-40 - Peak Power Spectral Density



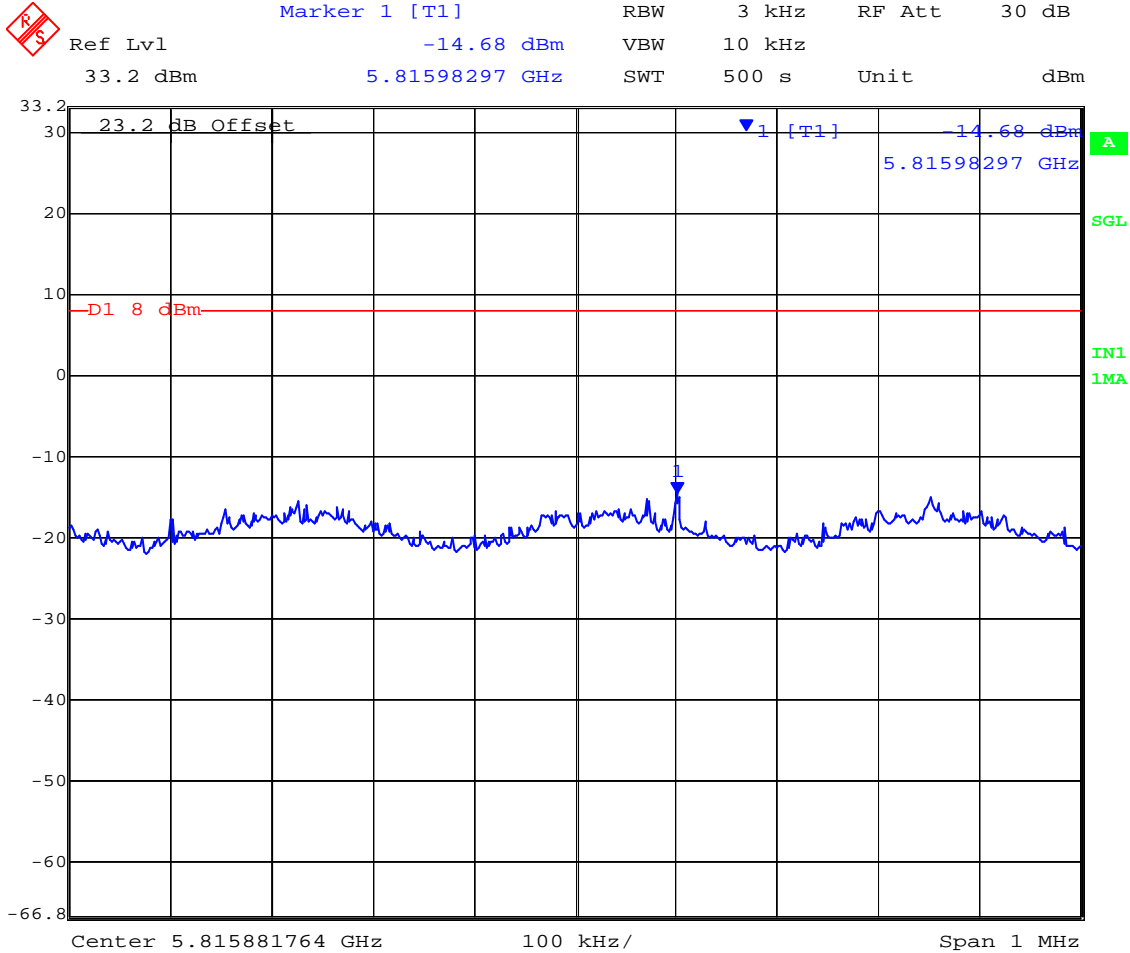
Date: 8.NOV.2007 19:12:41

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5,825 MHz 802.11n HT-40 - Peak Power Spectral Density



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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, 0193, 0252, 0313, 0314, 0070, 0116, 0117

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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

$$\text{Power Density} = P_d \text{ (mW/cm}^2\text{)} = \text{EIRP}/(4\pi d^2)$$

$$\text{EIRP} = P * G$$

P = Peak output power (mW)

G = Antenna numeric gain (numeric)

d = Separation distance (cm)

$$\text{Numeric Gain} = 10 ^ (G \text{ (dBi)}/10)$$

The Aruba AP-124,125 has three transmitters. The peak power in the table below is calculated by assuming a worst case scenario where the three transmitters are operating simultaneously in the same band. The Peak Power in mW is calculated by taking the maximum allowable conducted power measured in each band and multiplying by 3.

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	12	15.85	24.00	753.6	30.83	30.83
5.8	14	25.11	21.12	388.26	27.85	27.85

*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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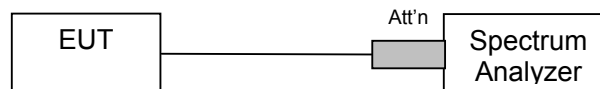
5.1.5. Conducted Spurious Emissions

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



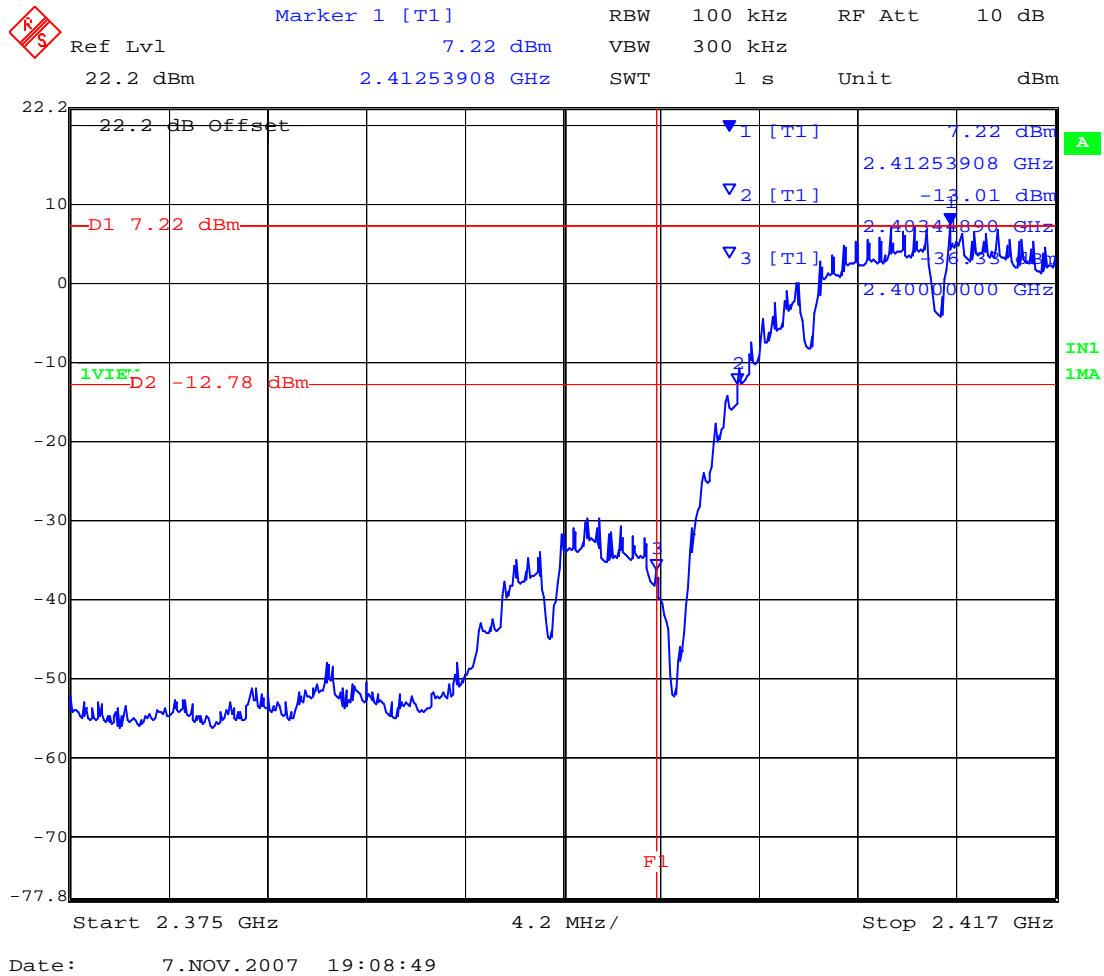
Conducted Band-Edge Results

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

Center Frequency (MHz)	Band edge Frequency (MHz)	Limit (20 dB below peak of fundamental)	Amplitude @ Band edge (dBm)	Margin (dB)
2,412	2,400	-12.78	-36.33	-23.55
2,462	2,483.5	-13.61	-53.41	-39.80

Legacy - Conducted Spurious Emissions at the 2,400 MHz Band Edge



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Conducted Spurious Emissions at the 2,483.5 MHz Band Edge



Date: 7.NOV.2007 19:06:15

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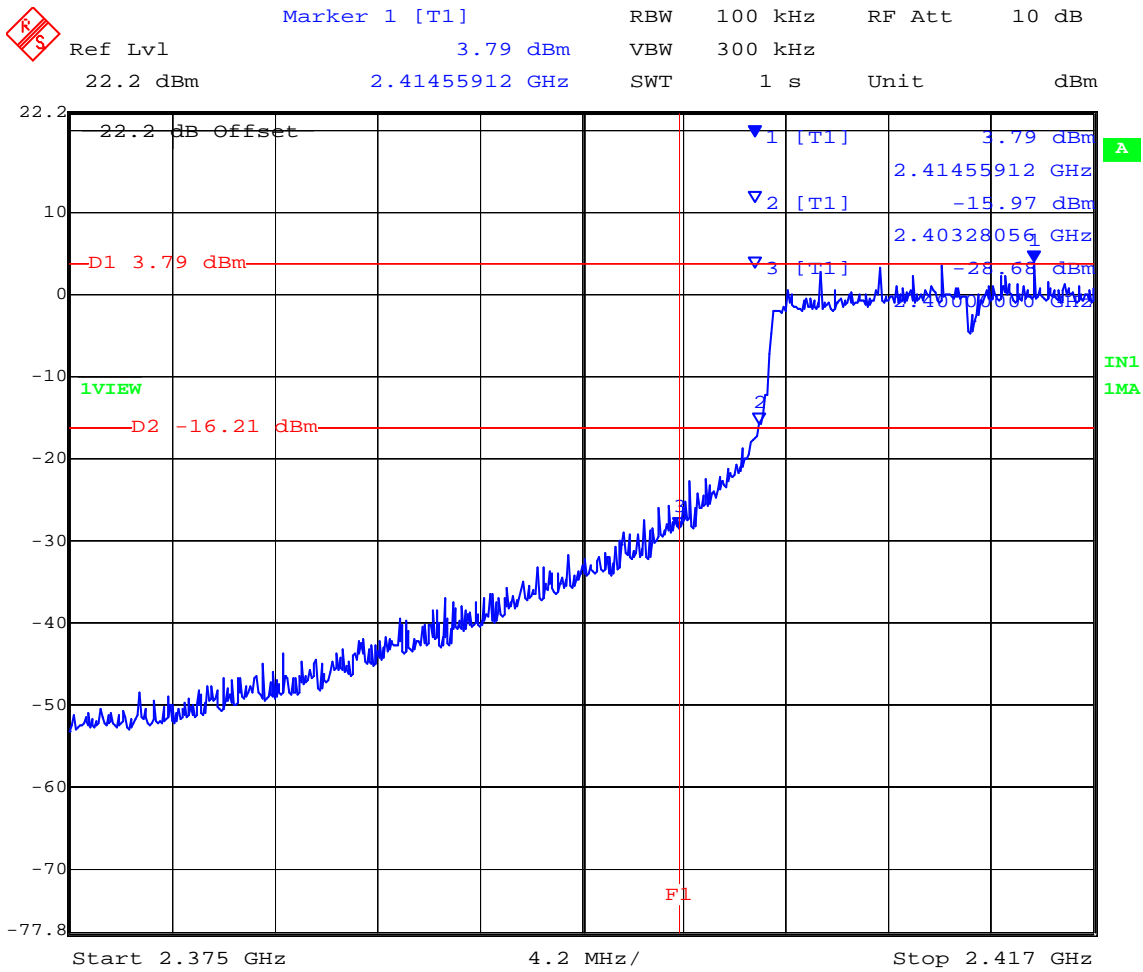


Conducted Band-Edge Results

TABLE OF RESULTS – 802.11g – Legacy

Center Frequency (MHz)	Band edge Frequency (MHz)	Limit (20 dB below peak of fundamental)	Amplitude @ Band edge (dBm)	Margin (dB)
2,412	2,400	-16.21	-28.68	-12.47
2,462	2,483.5	-16.83	-39.42	-22.59

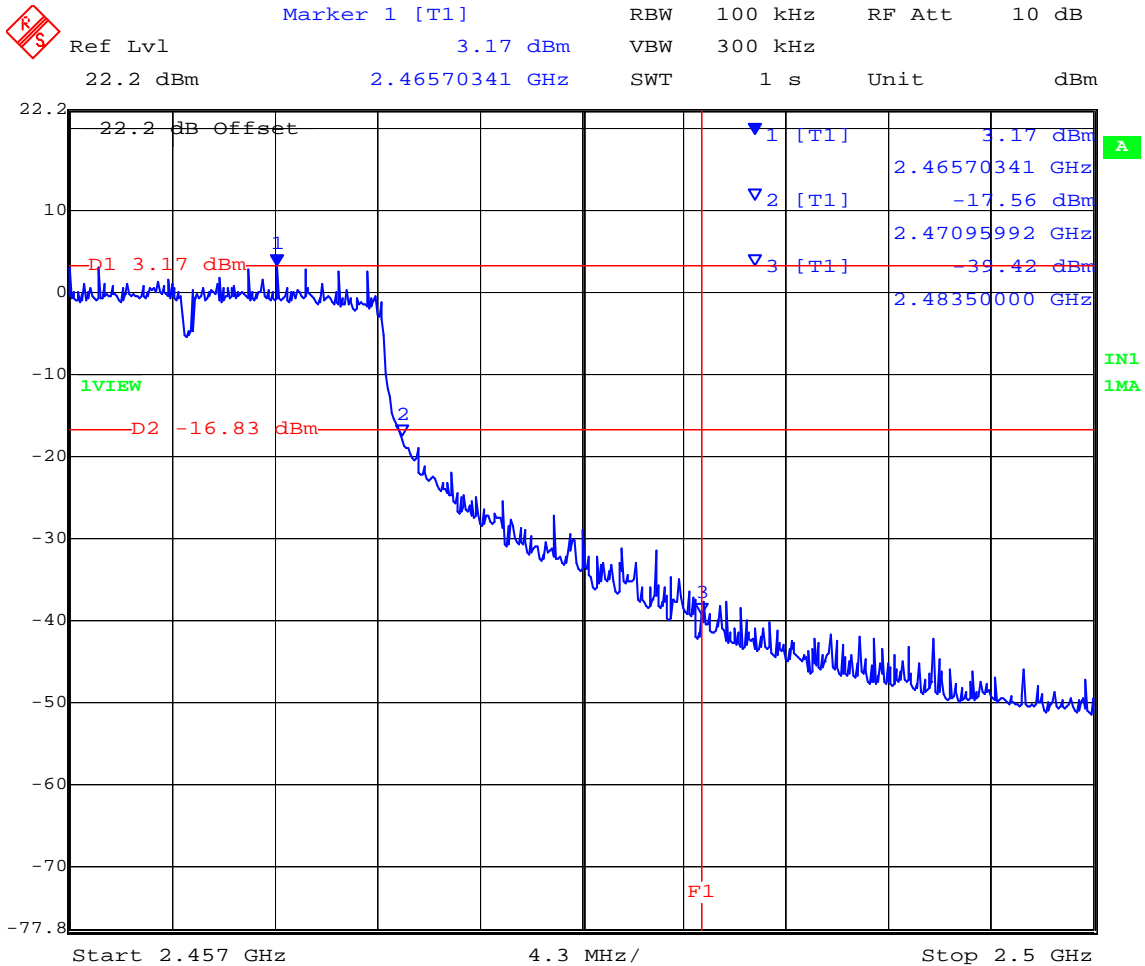
Conducted Spurious Emissions at the 2,400 MHz Band Edge



Date: 7.NOV.2007 19:10:43

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Conducted Spurious Emissions at the 2,483.5 MHz Band Edge



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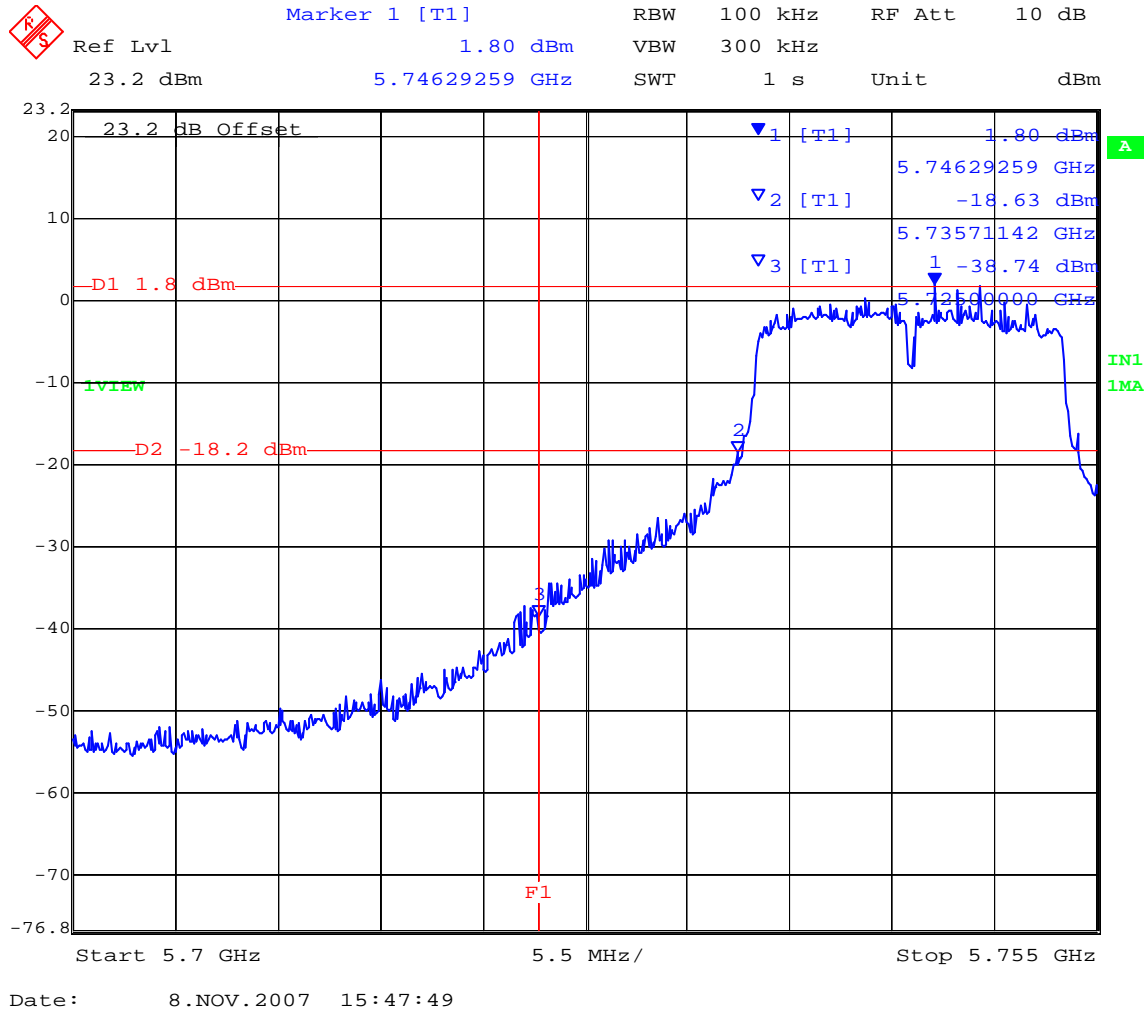


Title: Aruba AP-124,125 802.11a/b/g/n AP
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TABLE OF RESULTS – 802.11a – Legacy

Center Frequency (MHz)	Band edge Frequency (MHz)	Limit (20 dB below peak of fundamental)	Amplitude @ Band edge (dBm)	Margin (dB)
5,745	5,725	-18.20	-38.74	-20.54
5,825	5,850	-20.18	-47.11	-26.93

Conducted Spurious Emissions at the 5,725 MHz Band Edge

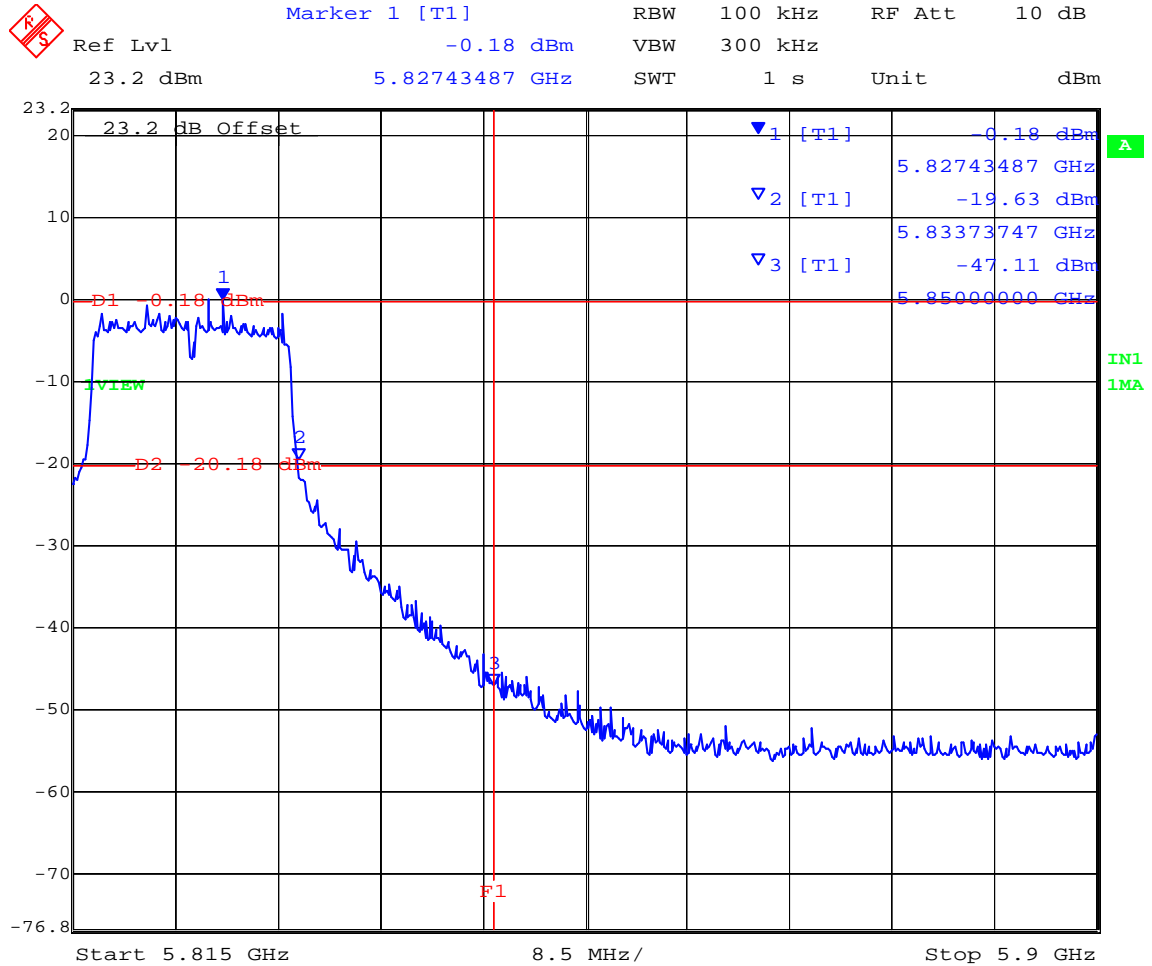


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Conducted Spurious Emissions at the 5,850 MHz Band Edge



Date: 8.NOV.2007 15:44:07

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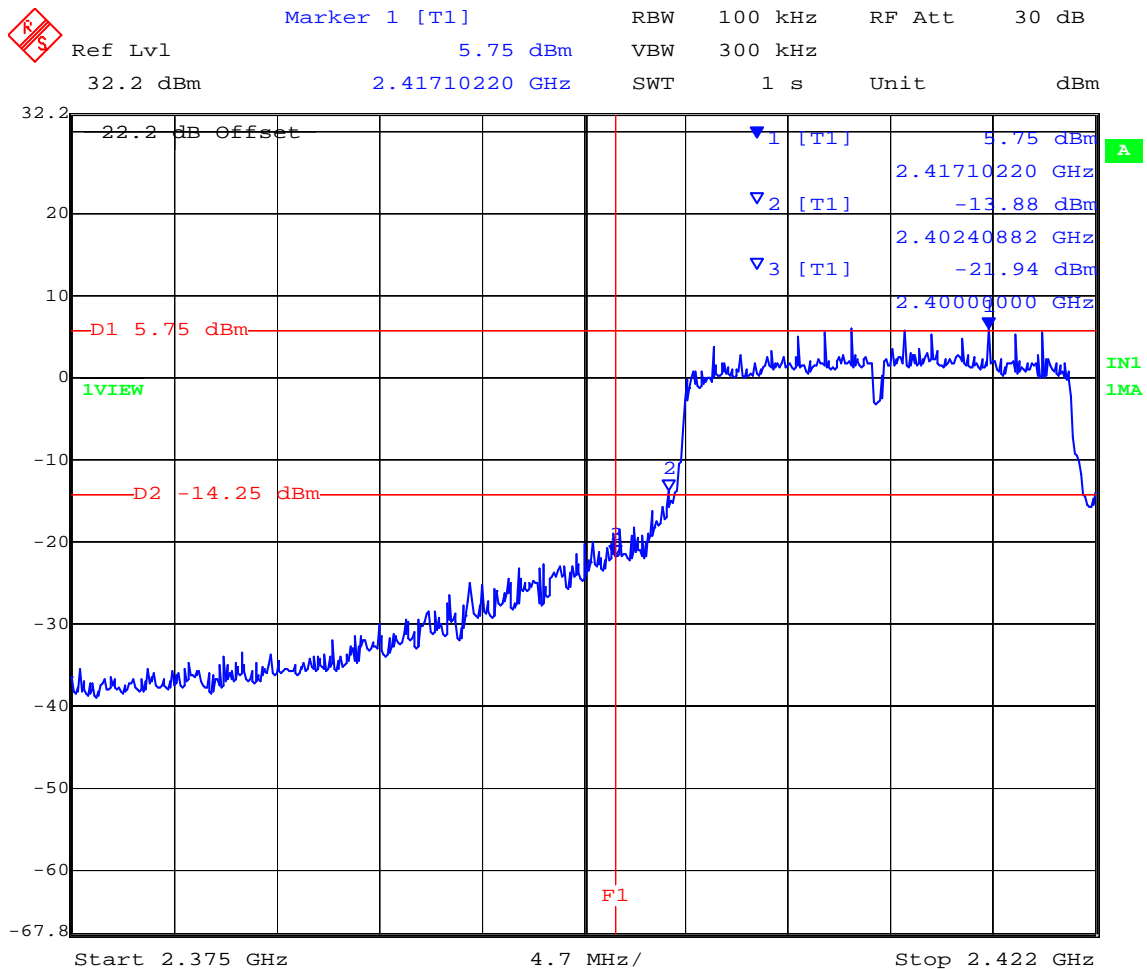


Conducted Band-Edge Results

TABLE OF RESULTS – 802.11n – HT-20

Center Frequency (MHz)	Band edge Frequency (MHz)	Limit (20 dB below peak of fundamental)	Amplitude @ Band edge (dBm)	Margin (dB)
2,412	2,400	-14.25	-21.94	-7.69
2,462	2,483.5	-14.94	-33.16	-18.22

Conducted Spurious Emissions at the 2,400 MHz Band Edge

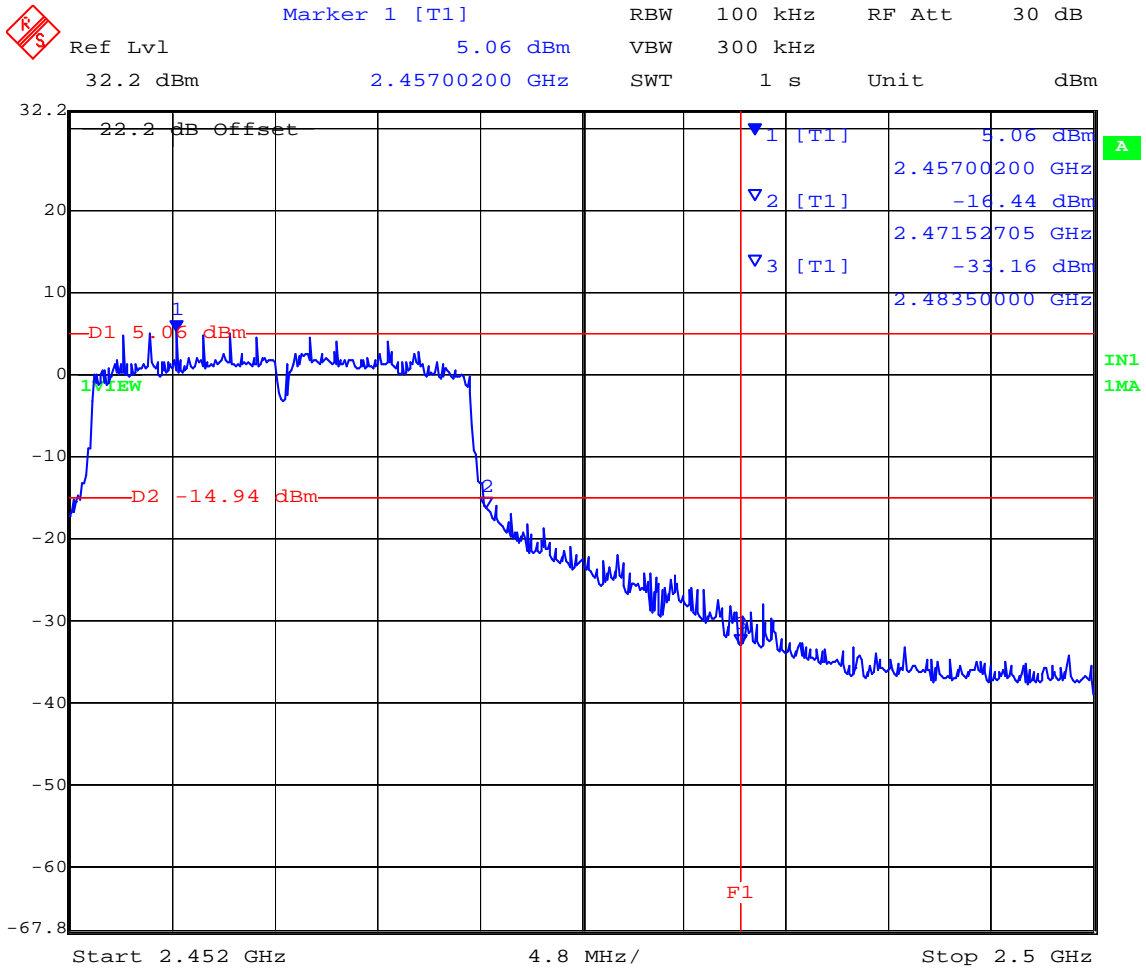


Date: 8.NOV.2007 10:16:22

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Conducted Spurious Emissions at the 2,483.5 MHz Band Edge



Date: 8.NOV.2007 10:19:39

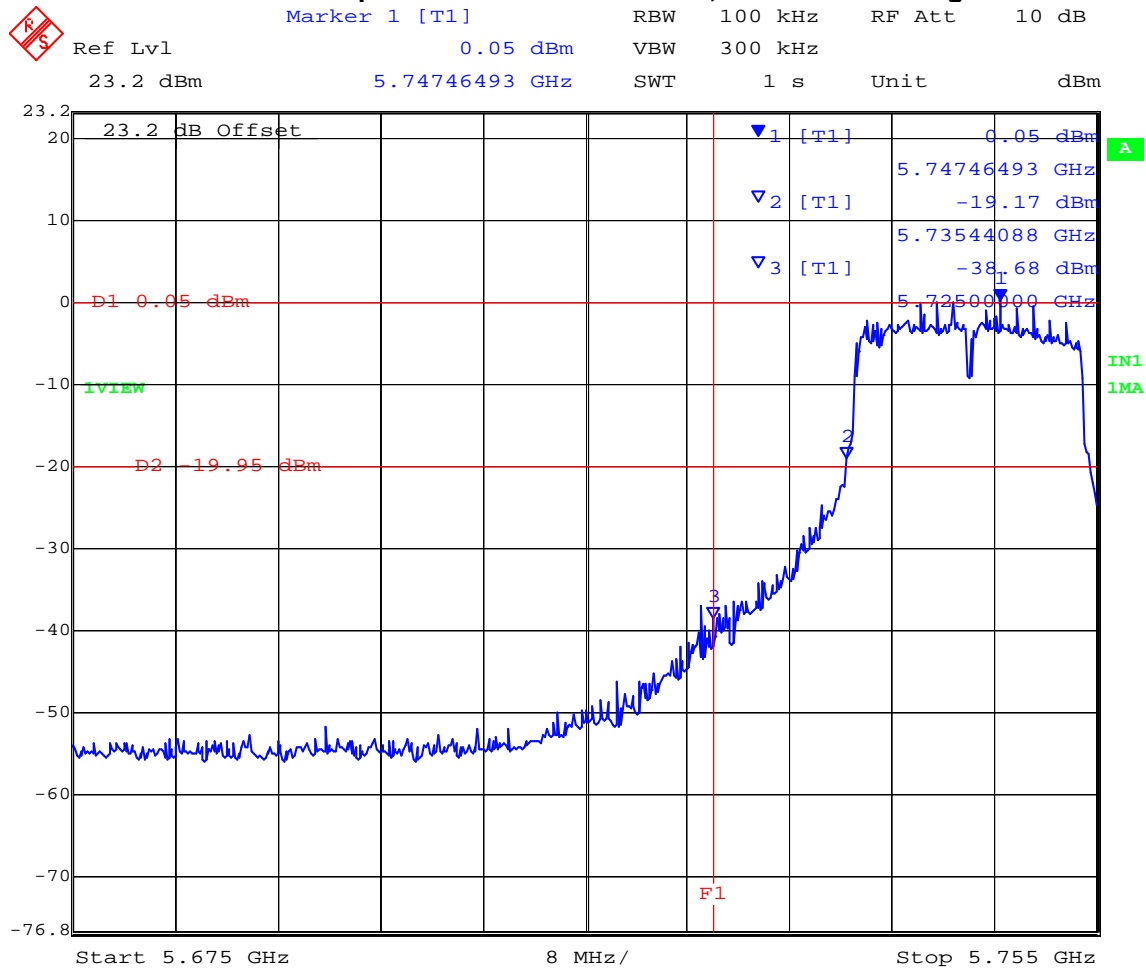
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TABLE OF RESULTS – 802.11n – HT-20

Center Frequency (MHz)	Band edge Frequency (MHz)	Limit (20 dB below peak of fundamental)	Amplitude @ Band edge (dBm)	Margin (dB)
5,745	5,725	-19.95	-38.68	-18.73
5,825	5,850	-20.22	-44.69	-24.47

Conducted Spurious Emissions at the 5,725 MHz Band Edge

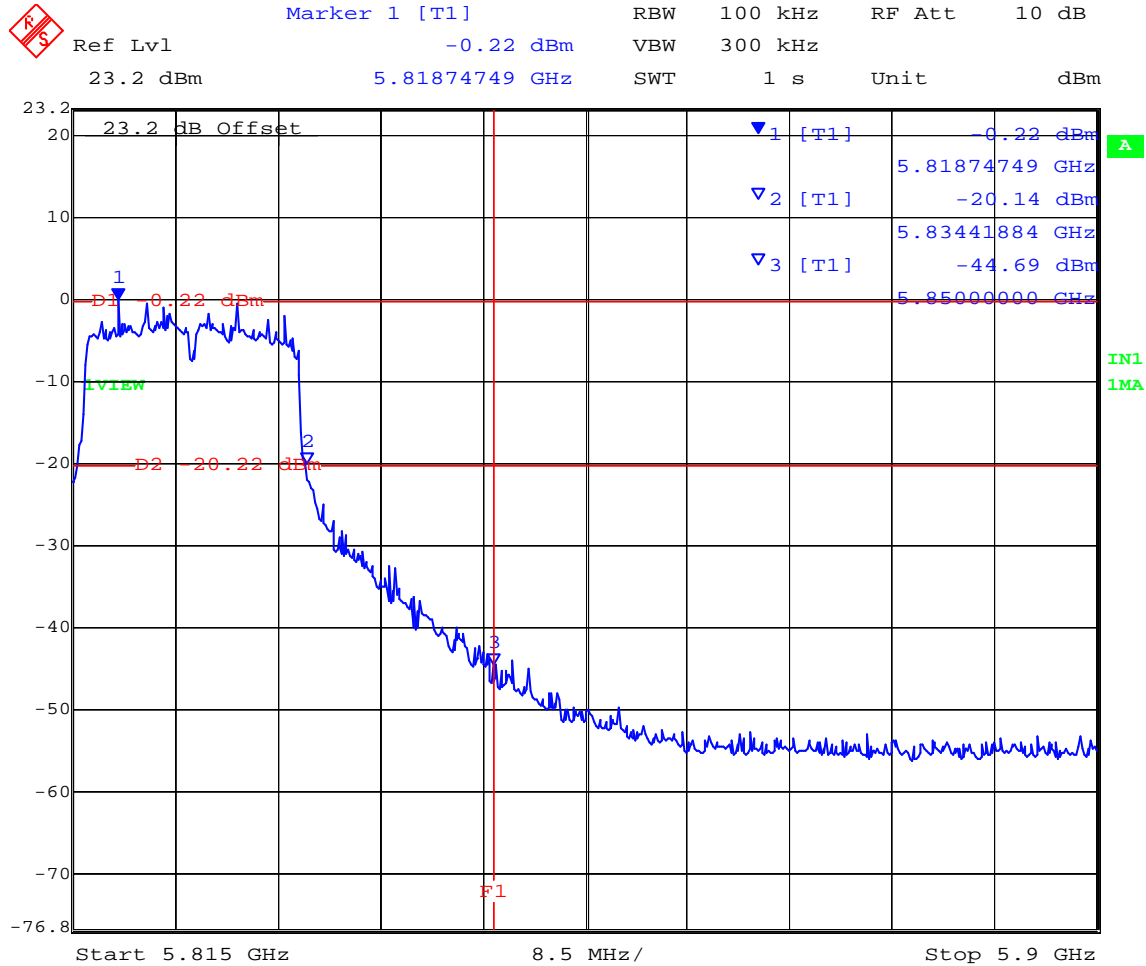


Date: 8.NOV.2007 16:52:42

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Conducted Spurious Emissions at the 5,850 MHz Band Edge



Date: 8.NOV.2007 16:49:54

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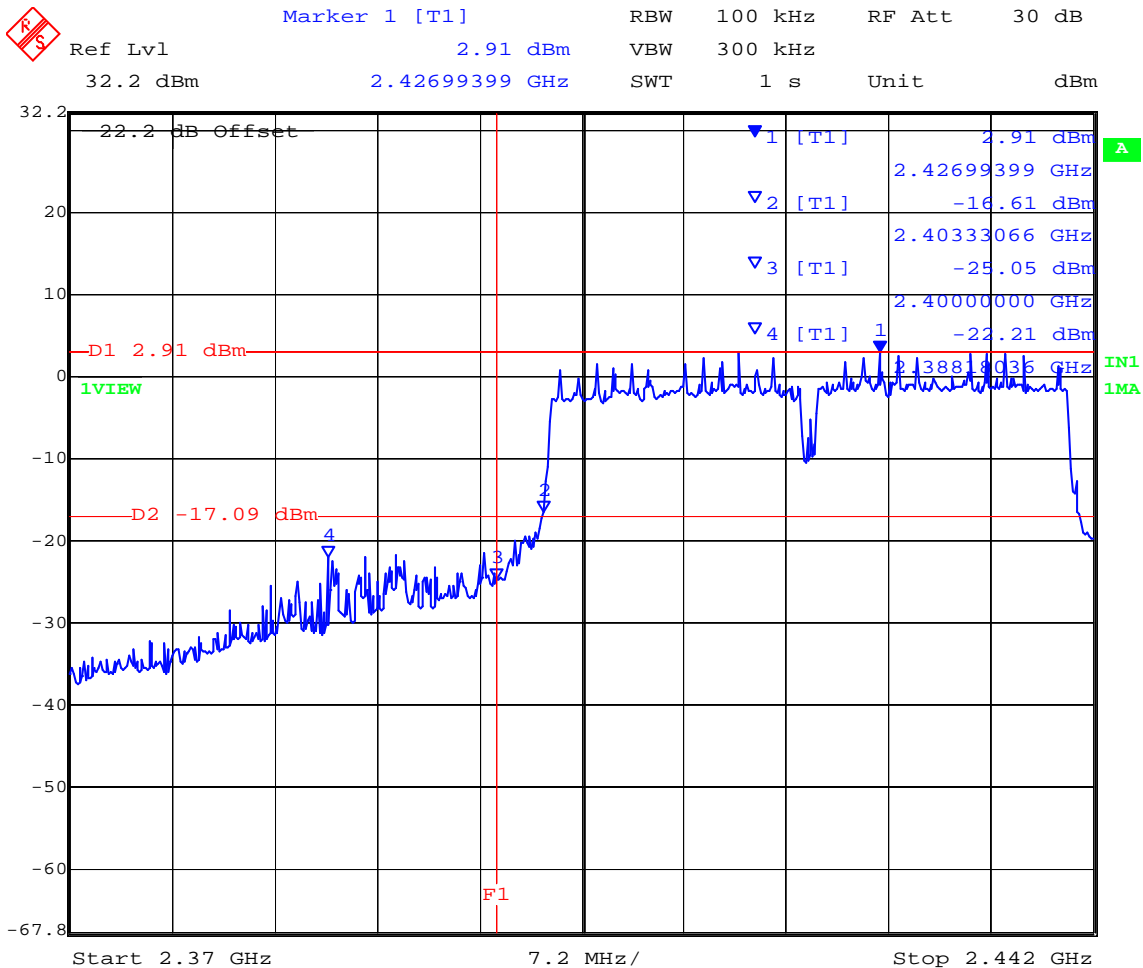


Conducted Band-Edge Results

TABLE OF RESULTS – 802.11n – HT-40

Center Frequency (MHz)	Band edge Frequency (MHz)	Limit (20 dB below peak of fundamental)	Amplitude @ Band edge (dBm)	Margin (dB)
2,422	2,400	-17.09	-25.05	-7.96
2,452	2,483.5	-17.34	-26.20	-8.86

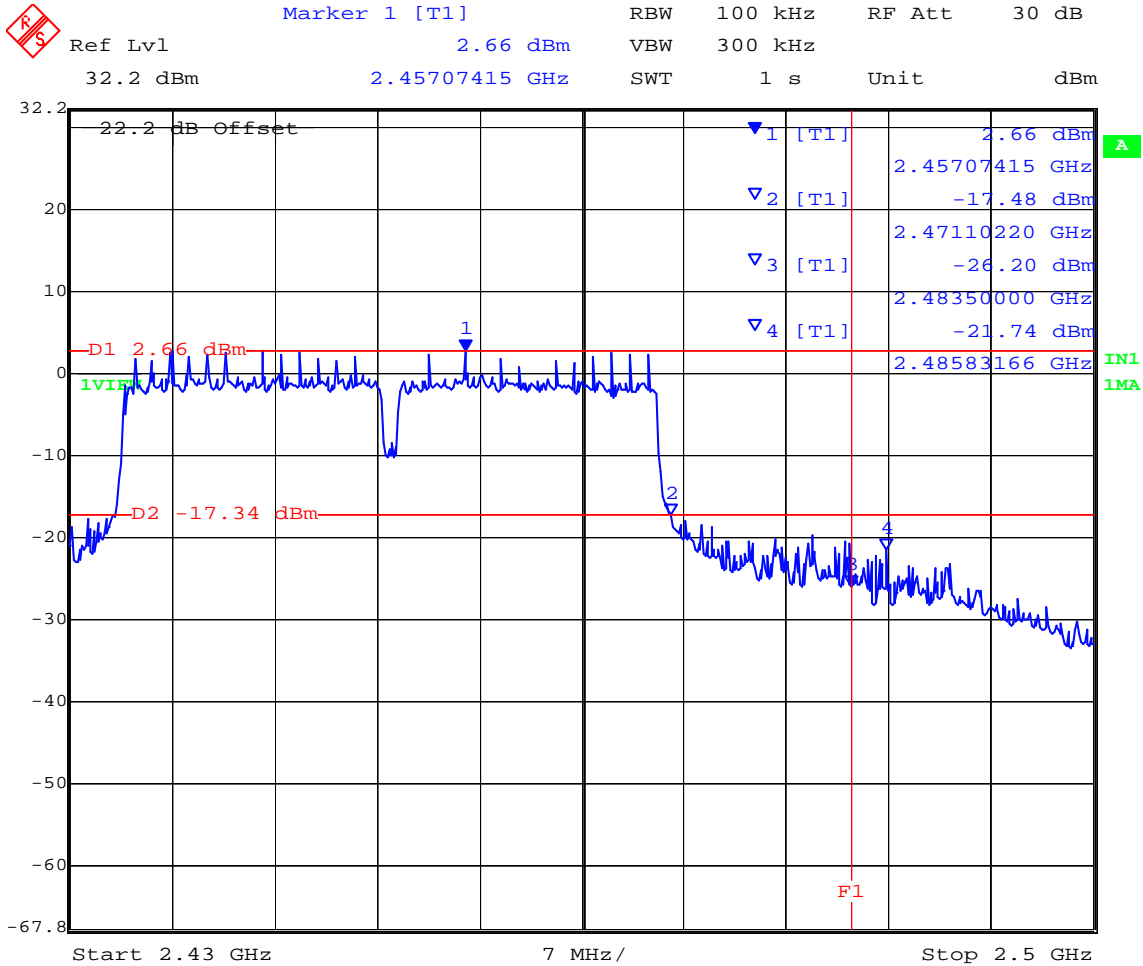
Conducted Spurious Emissions at the 2,400 MHz Band Edge



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Conducted Spurious Emissions at the 2,483.5 MHz Band Edge



Date: 8.NOV.2007 12:09:39

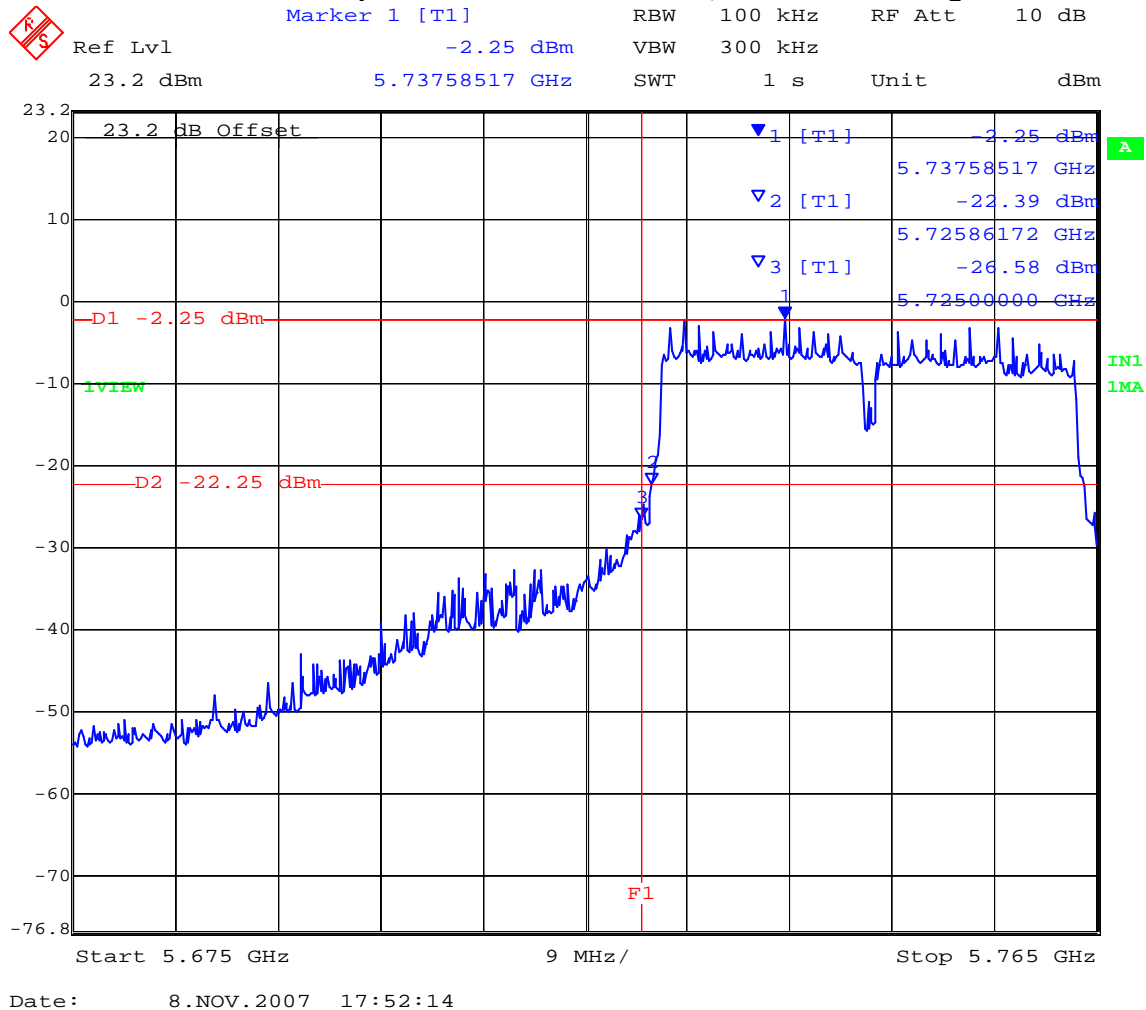
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TABLE OF RESULTS – 802.11n – HT-40

Center Frequency (MHz)	Band edge Frequency (MHz)	Limit (20 dB below peak of fundamental)	Amplitude @ Band edge (dBm)	Margin (dB)
5,745	5,725	-22.25	-26.58	-4.33
5,825	5,850	-22.55	-32.99	-10.44

Conducted Spurious Emissions at the 5,725 MHz Band Edge

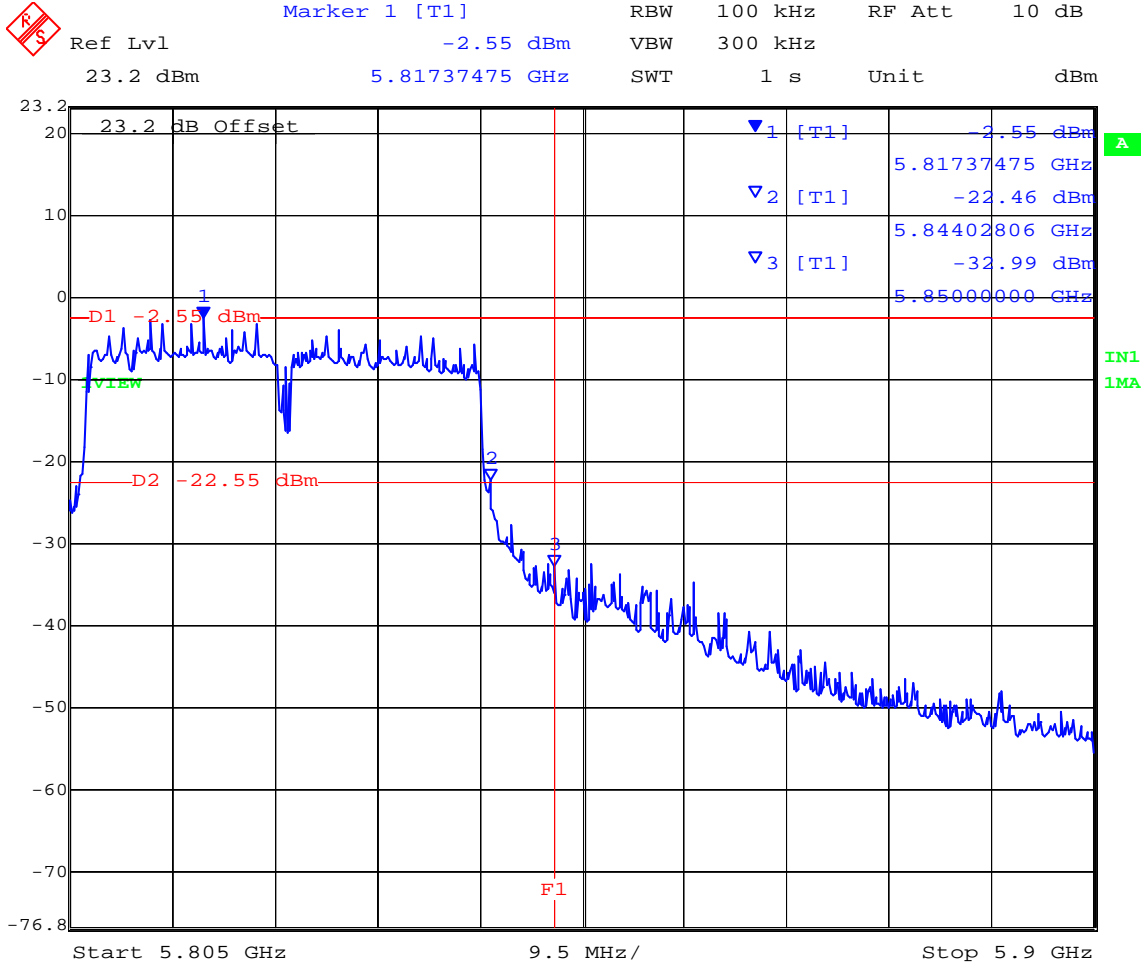


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Title: Aruba AP-124,125 802.11a/b/g/n AP
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: ARUB20-A2 Rev A
Issue Date: 11th December 2007
Page: 118 of 268

Conducted Spurious Emissions at the 5,850 MHz Band Edge



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Title: Aruba AP-124,125 802.11a/b/g/n AP
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: ARUB20-A2 Rev A
Issue Date: 11th December 2007
Page: 119 of 268

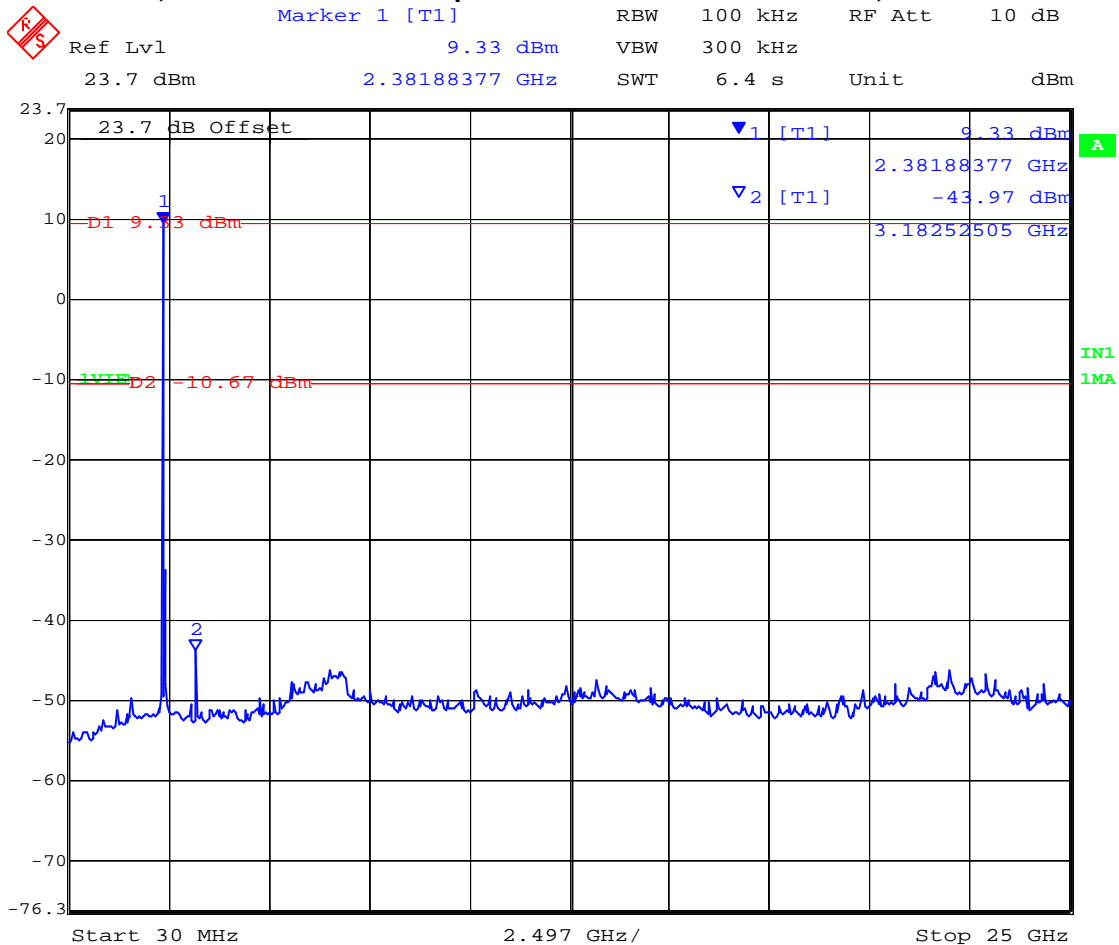
Spurious Emissions (30 - 25,000 MHz)

TABLE OF RESULTS – 802.11b – Legacy

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
2,412	30	25,000	-43.97	-10.67	-33.30

802.11b – Legacy

2,412 MHz Conducted Spurious Emissions 30 MHz to 25,000 MHz



Date: 12.NOV.2007 20:49:13

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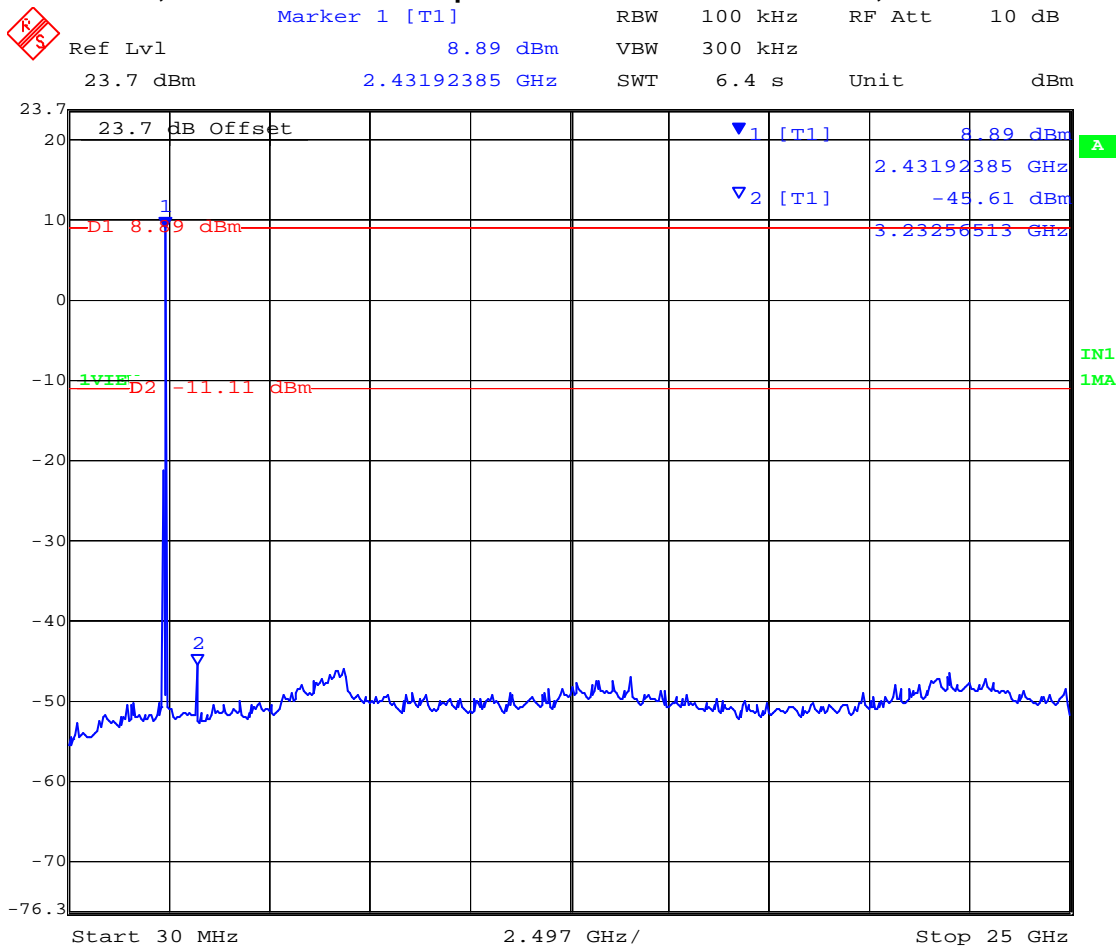
Spurious Emissions (30 - 25,000 MHz)

TABLE OF RESULTS – 802.11b – Legacy

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
2,437	30	25,000	-45.61	-11.11	-34.50

802.11b – Legacy

2,437 MHz Conducted Spurious Emissions 30 MHz to 25,000 MHz



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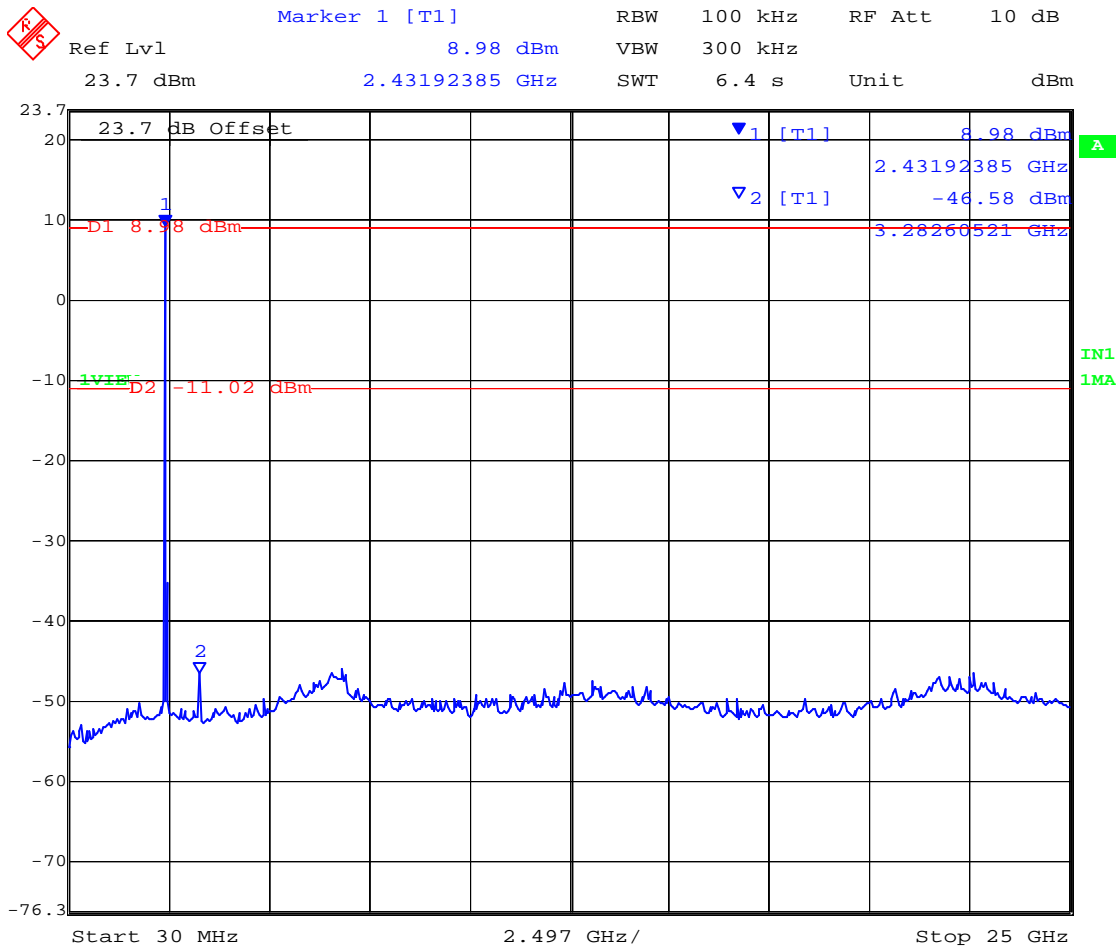
Spurious Emissions (30 - 25,000 MHz)

TABLE OF RESULTS – 802.11b – Legacy

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
2,462	30	25,000	-46.58	-11.02	-35.56

802.11b – Legacy

2,462 MHz Conducted Spurious Emissions 30 MHz to 25,000 MHz



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Title: Aruba AP-124,125 802.11a/b/g/n AP
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: ARUB20-A2 Rev A
Issue Date: 11th December 2007
Page: 122 of 268

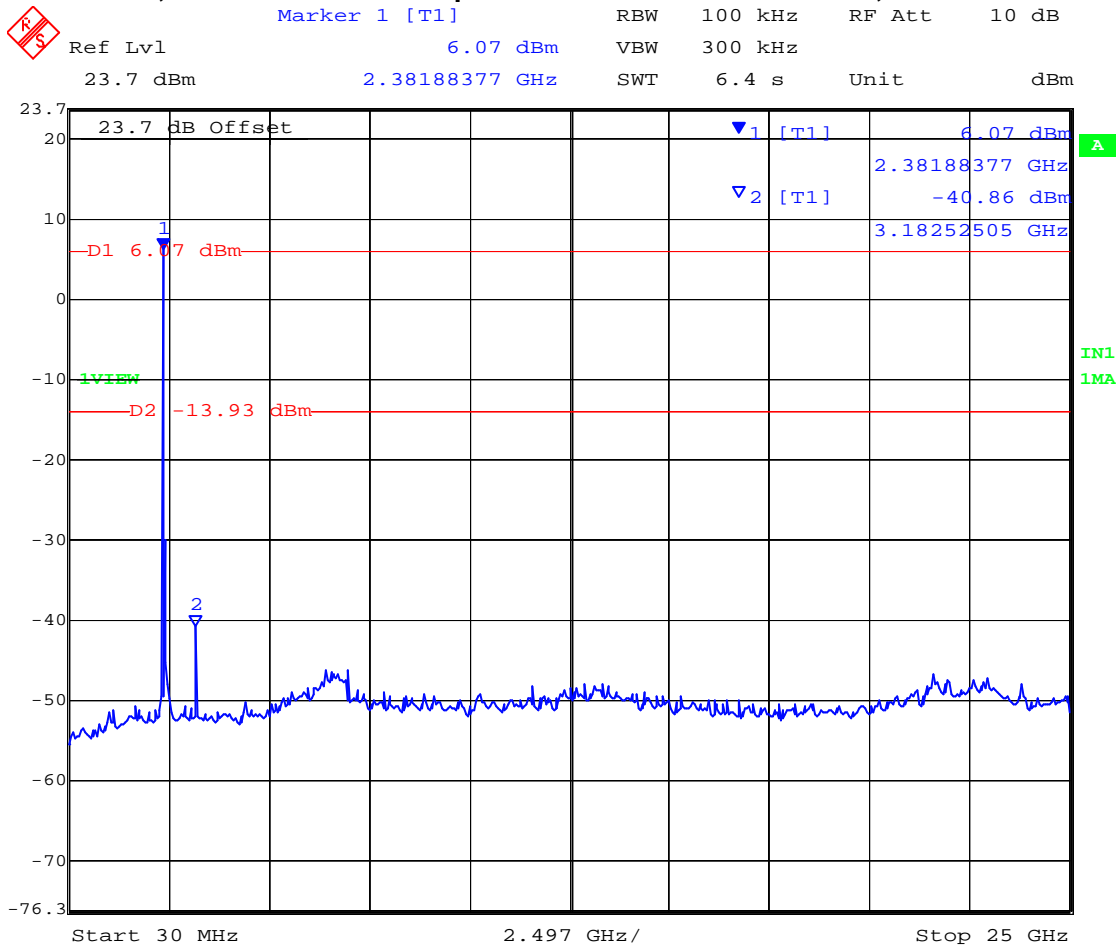
Spurious Emissions (30 - 25,000 MHz)

TABLE OF RESULTS – 802.11g – Legacy

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
2,412	30	25,000	-40.86	-13.93	-26.93

802.11g – Legacy

2,412 MHz Conducted Spurious Emissions 30 MHz to 25,000 MHz



Date: 12.NOV.2007 20:41:04

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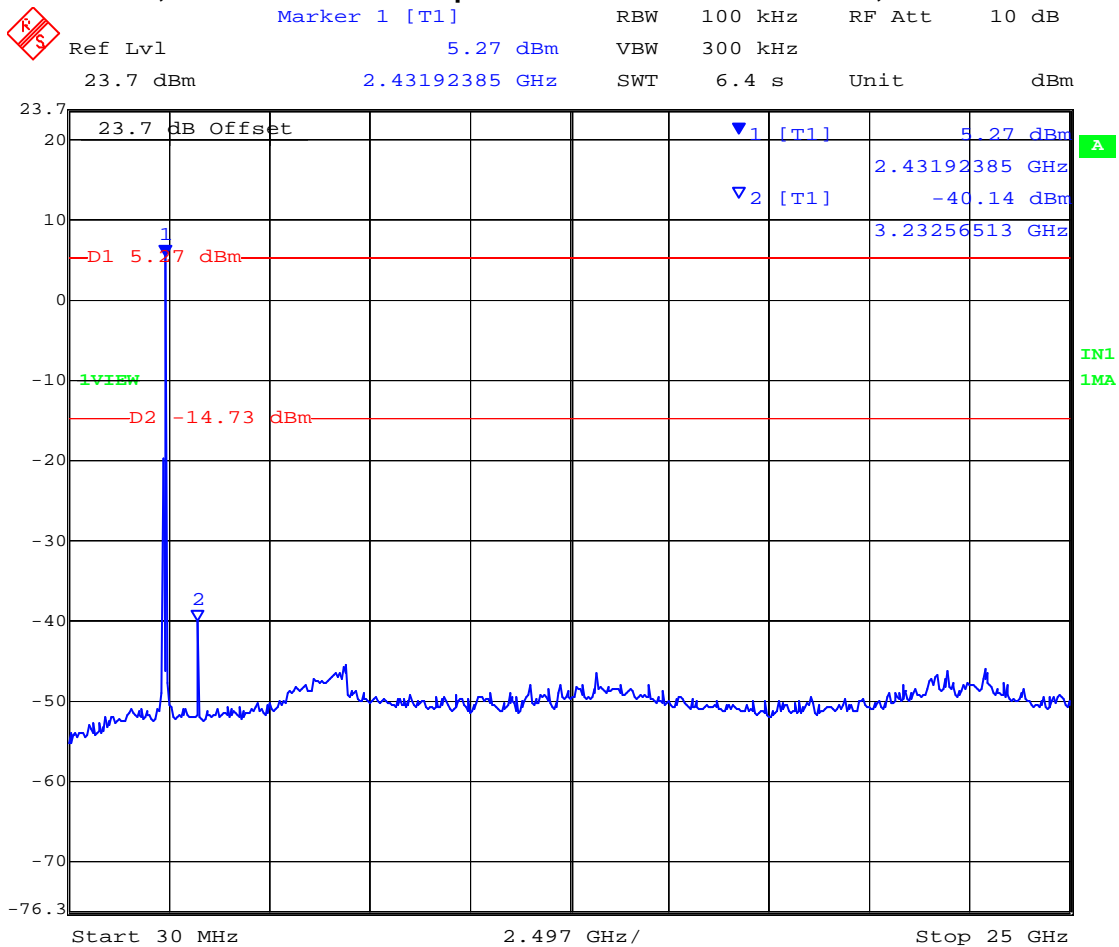
Spurious Emissions (30 - 25,000 MHz)

TABLE OF RESULTS – 802.11g – Legacy

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
2,437	30	25,000	-40.14	-14.73	-25.41

802.11g – Legacy

2,437 MHz Conducted Spurious Emissions 30 MHz to 25,000 MHz



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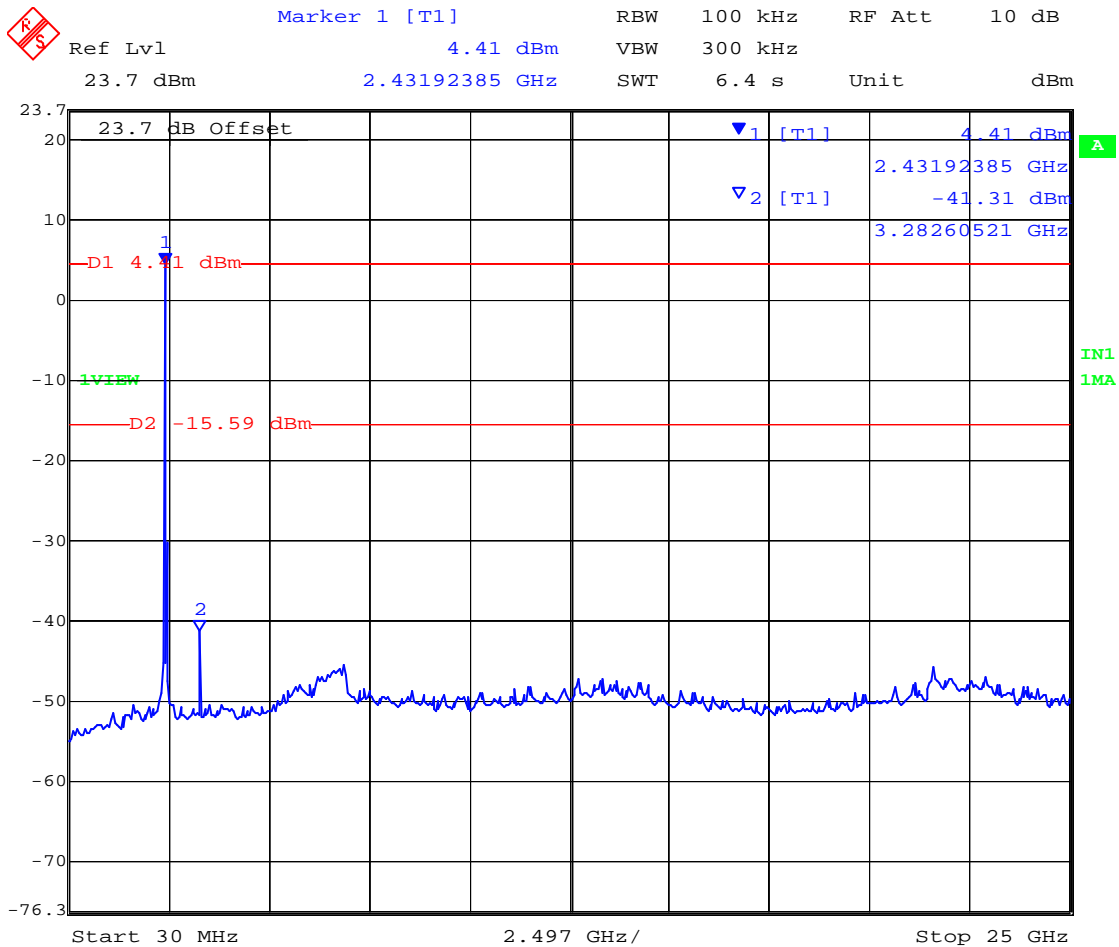
Spurious Emissions (30 - 25,000 MHz)

TABLE OF RESULTS – 802.11g – Legacy

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
2,462	30	25,000	-41.31	-15.59	-25.72

802.11g – Legacy

2,462 MHz Conducted Spurious Emissions 30 MHz to 25,000 MHz



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Spurious Emissions (30 - 40,000 MHz)

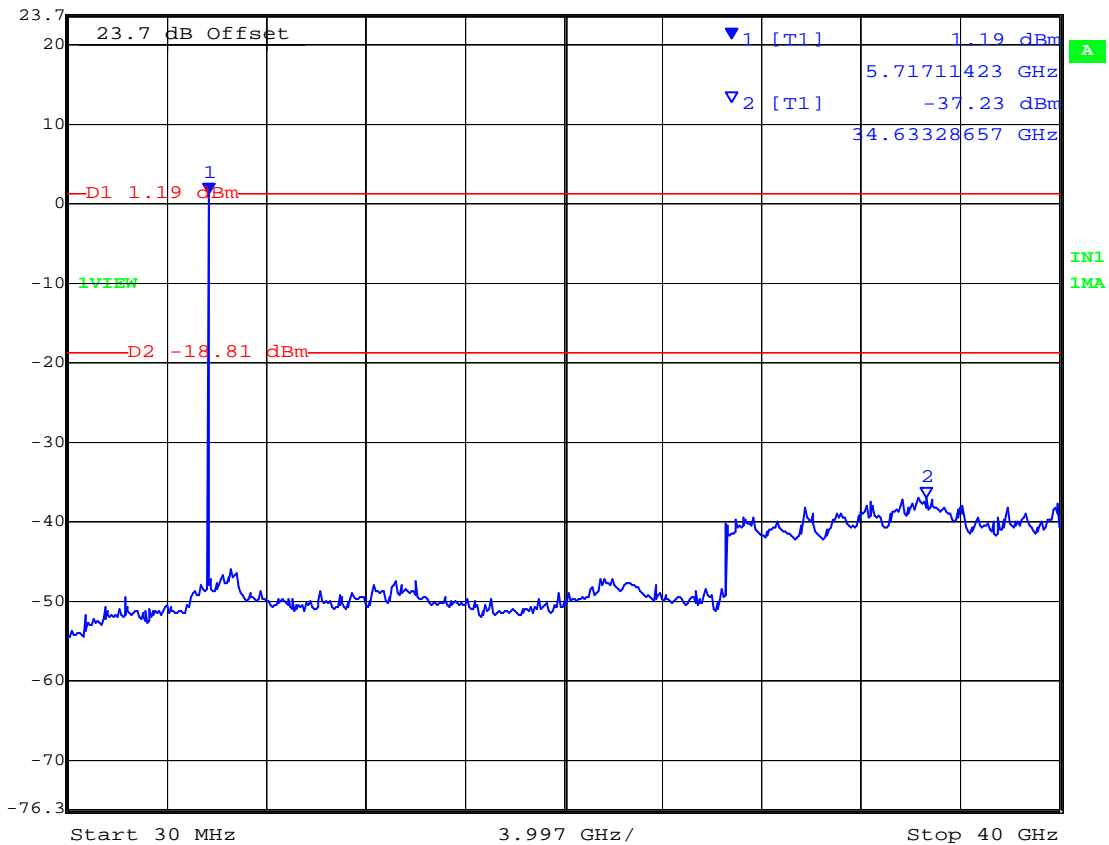
TABLE OF RESULTS – 802.11a – Legacy

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
5,745	30	40,000	-37.23	-18.81	-18.42

802.11a – Legacy

5,745 MHz Conducted Spurious Emissions 30 MHz to 40,000 MHz


 Marker 1 [T1] RBW 100 kHz RF Att 10 dB
 Ref Lvl 23.7 dBm 1.19 dBm VBW 300 kHz
 5.71711423 GHz SWT 10 s Unit dBm



Date: 12.NOV.2007 21:25:54

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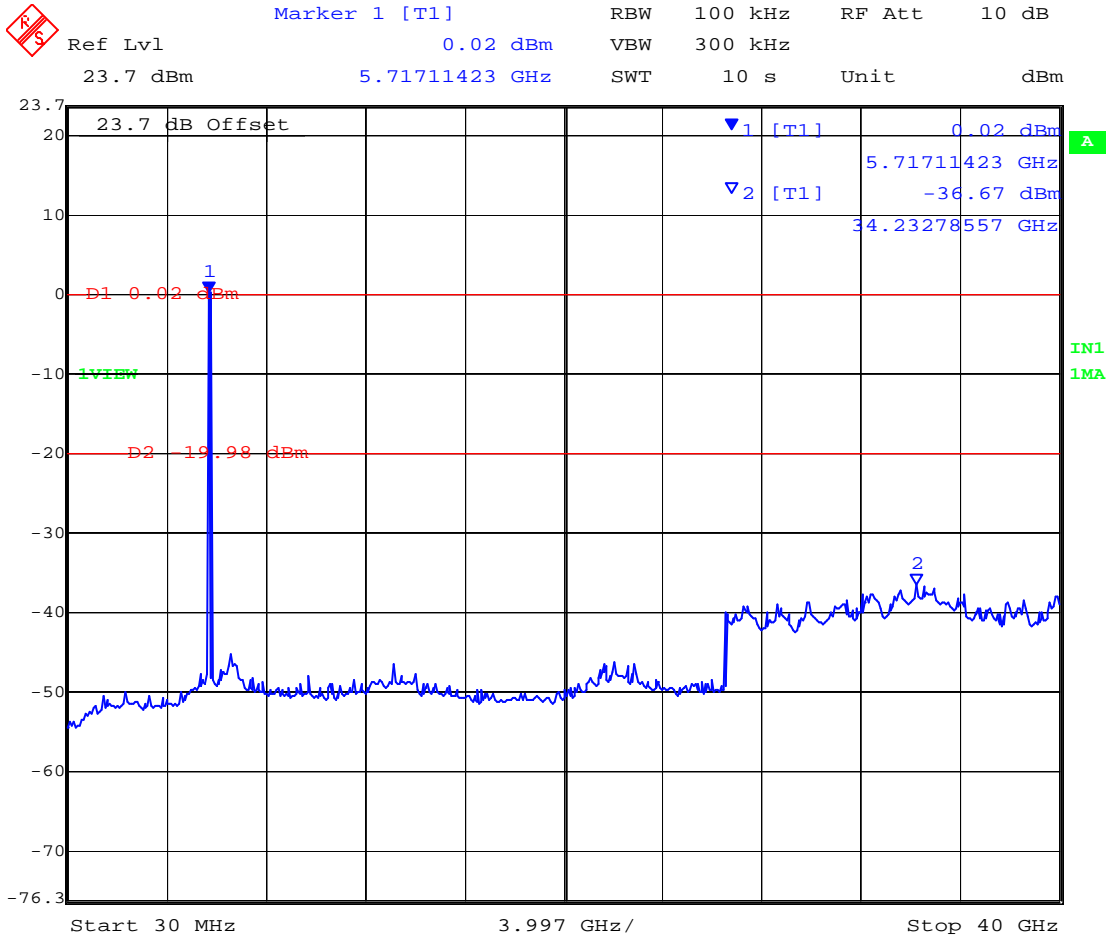
Spurious Emissions (30 - 40,000 MHz)

TABLE OF RESULTS – 802.11a – Legacy

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
5,785	30	40,000	-36.67	-19.98	-16.69

802.11a – Legacy

5,785 MHz Conducted Spurious Emissions 30 MHz to 40,000 MHz



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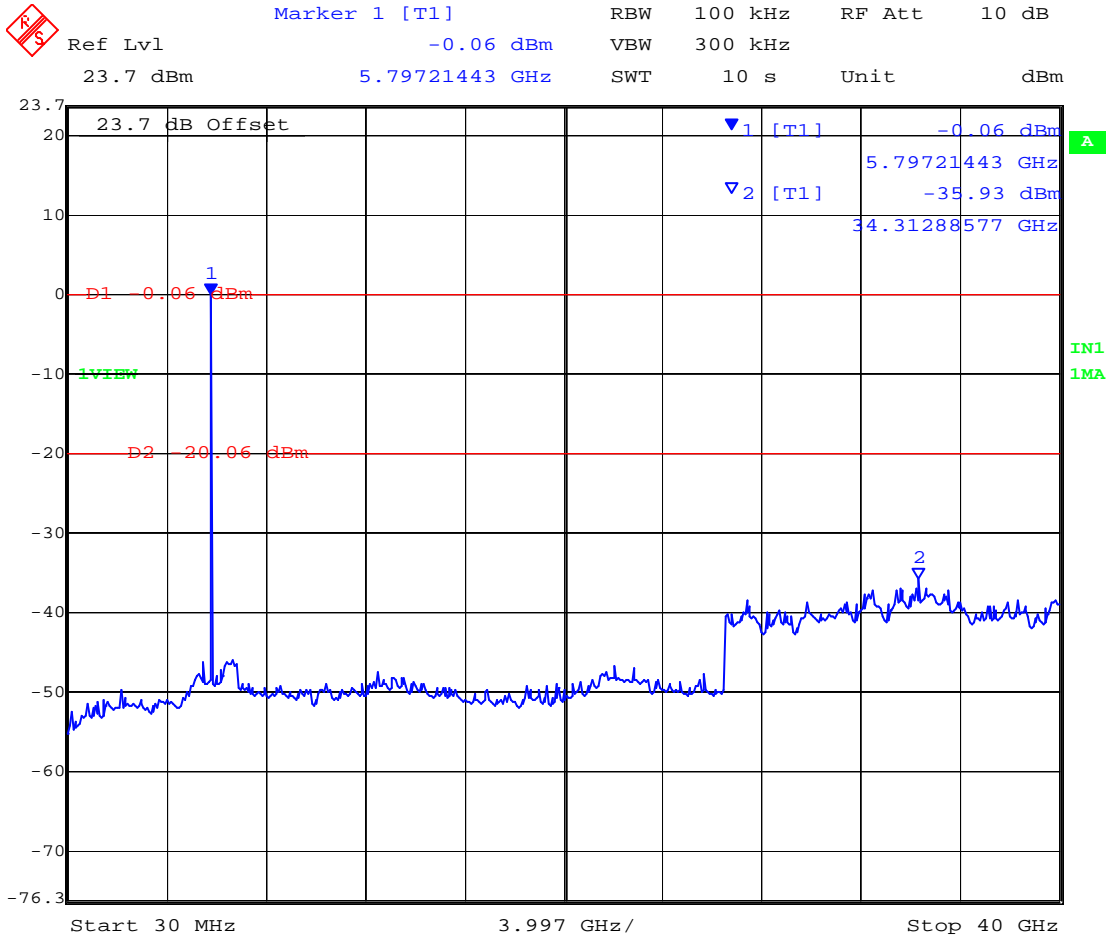
Spurious Emissions (30 - 40,000 MHz)

TABLE OF RESULTS – 802.11a – Legacy

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
5,825	30	40,000	-35.93	-20.06	-15.87

802.11a – Legacy

5,825 MHz Conducted Spurious Emissions 30 MHz to 40,000 MHz



Date: 12.NOV.2007 21:30:20

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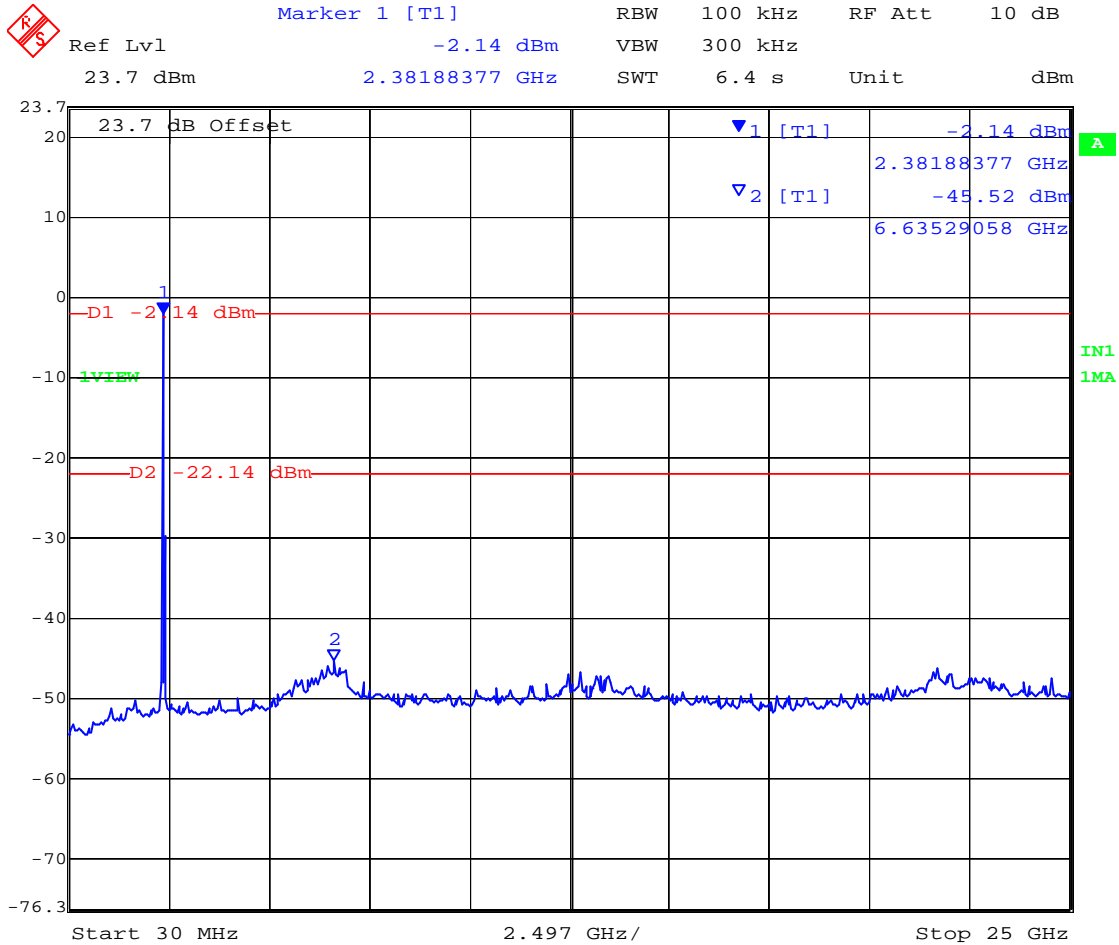
Spurious Emissions (30 - 25,000 MHz)

TABLE OF RESULTS – 802.11g – HT-20

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
2,412	30	25,000	-45.52	-22.14	-23.38

802.11n – HT-20

2,412 MHz Conducted Spurious Emissions 30 MHz to 25,000 MHz



Date: 12.NOV.2007 20:52:16

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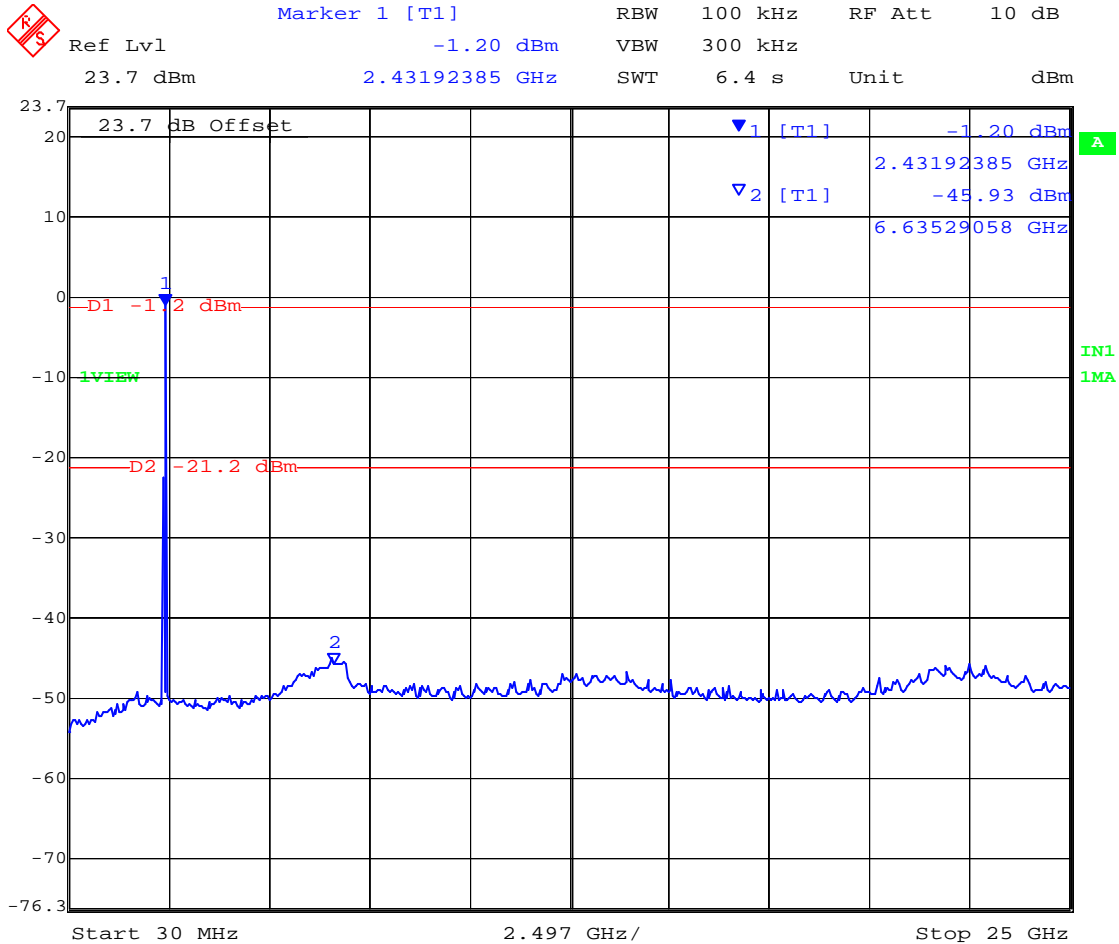
Spurious Emissions (30 - 25,000 MHz)

TABLE OF RESULTS – 802.11g – HT-20

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
2,437	30	25,000	-45.93	-21.20	-24.73

802.11n – HT-20

2,437 MHz Conducted Spurious Emissions 30 MHz to 25,000 MHz



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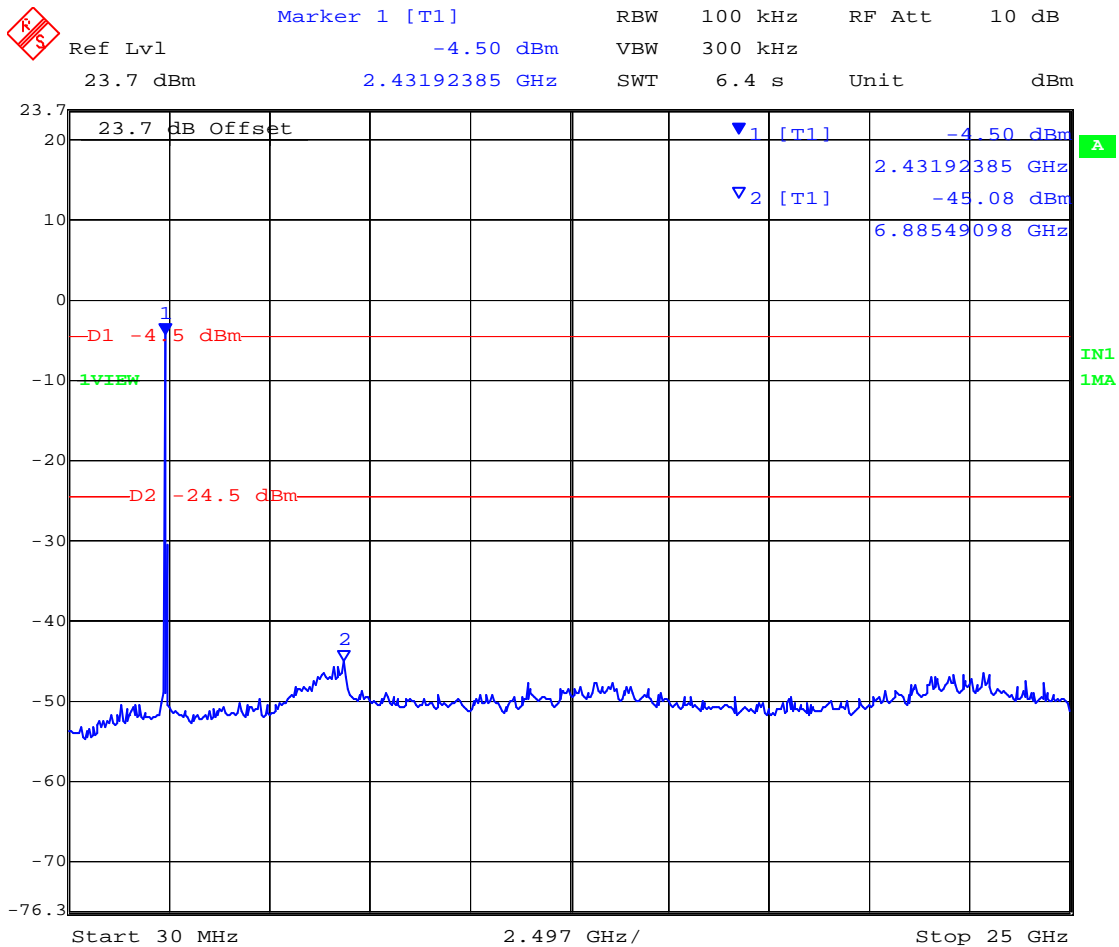
Spurious Emissions (30 - 25,000 MHz)

TABLE OF RESULTS – 802.11n – HT-20

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
2,462	30	25,000	-45.08	-24.50	-20.53

802.11n – HT-20

2,462 MHz Conducted Spurious Emissions 30 MHz to 25,000 MHz



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Spurious Emissions (30 - 40,000 MHz)

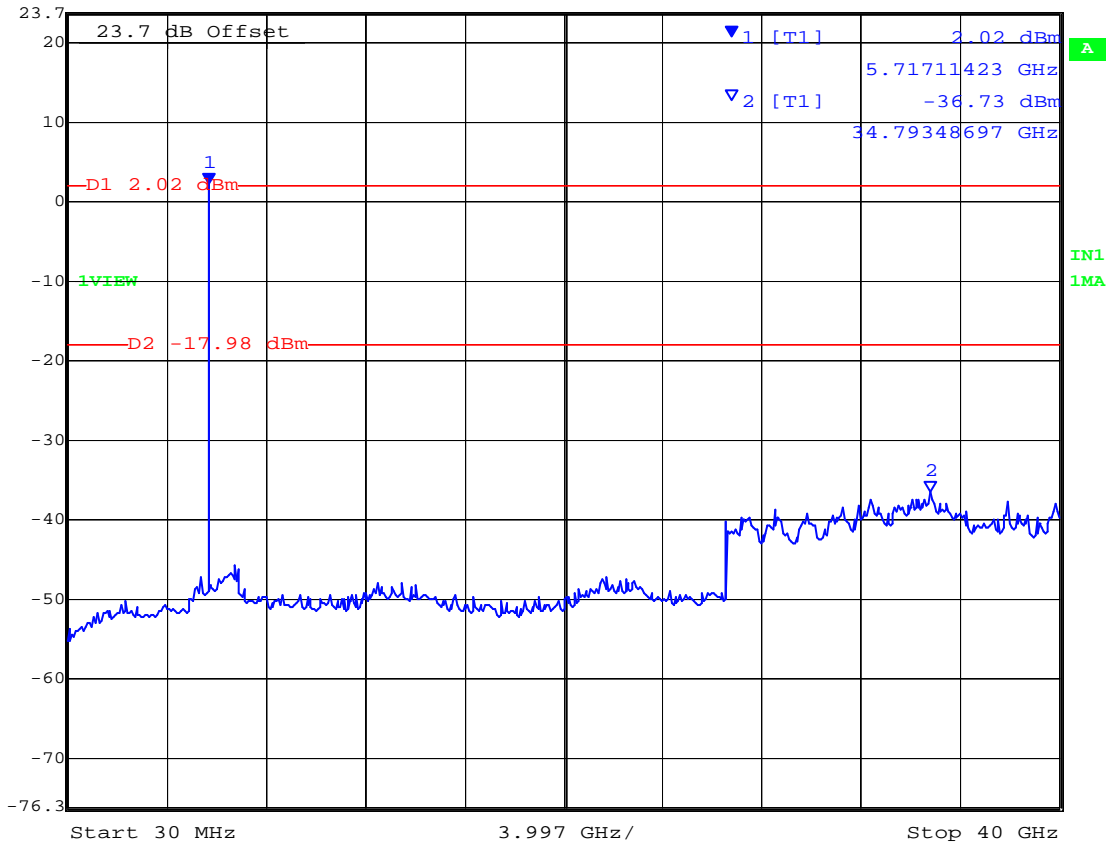
TABLE OF RESULTS – 802.11n – HT-20

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
5,745	30	40,000	-36.73	-17.98	-18.75

802.11n – HT-20

5,745 MHz Conducted Spurious Emissions 30 MHz to 40,000 MHz


 Marker 1 [T1] RBW 100 kHz RF Att 10 dB
 Ref Lvl 23.7 dBm 2.02 dBm VBW 300 kHz
 23.7 dBm 5.71711423 GHz SWT 10 s Unit dBm



Date: 12.NOV.2007 21:35:33

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Spurious Emissions (30 - 40,000 MHz)

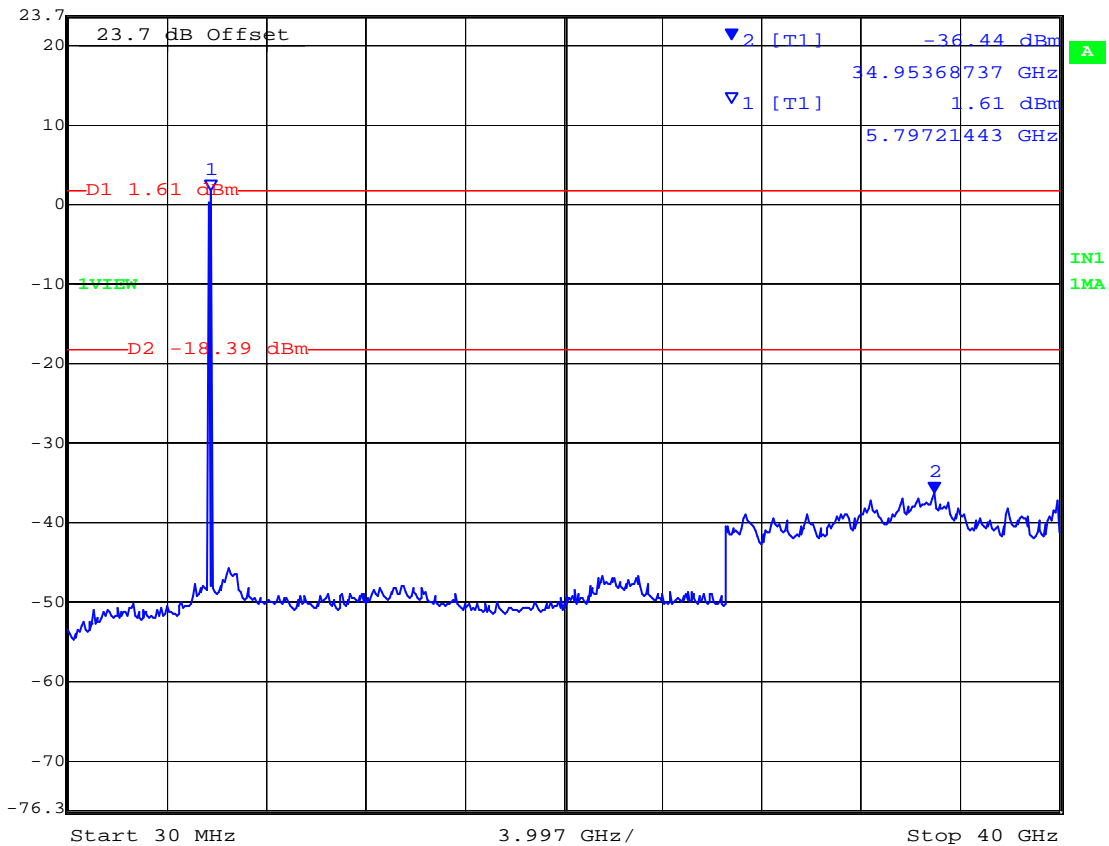
TABLE OF RESULTS – 802.11n – HT-20

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
5,785	30	40,000	-36.44	-18.39	-18.05

802.11n – HT-20

5,785 MHz Conducted Spurious Emissions 30 MHz to 40,000 MHz


 Marker 2 [T1] RBW 100 kHz RF Att 10 dB
 Ref Lvl -36.44 dBm VBW 300 kHz
 23.7 dBm 34.95368737 GHz SWT 10 s Unit dBm



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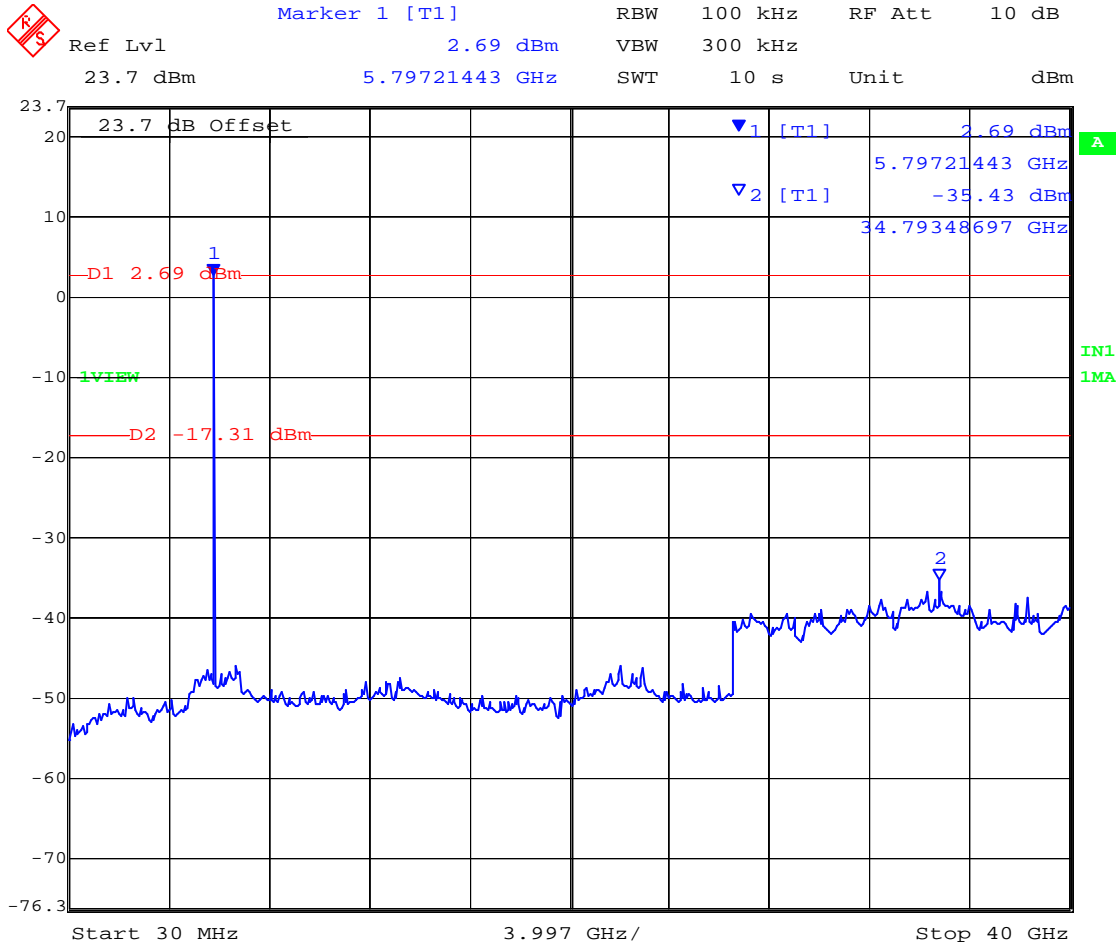
Spurious Emissions (30 - 40,000 MHz)

TABLE OF RESULTS – 802.11n – HT-20

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
5,825	30	40,000	-35.43	-17.31	-18.12

802.11n – HT-20

5,825 MHz Conducted Spurious Emissions 30 MHz to 40,000 MHz



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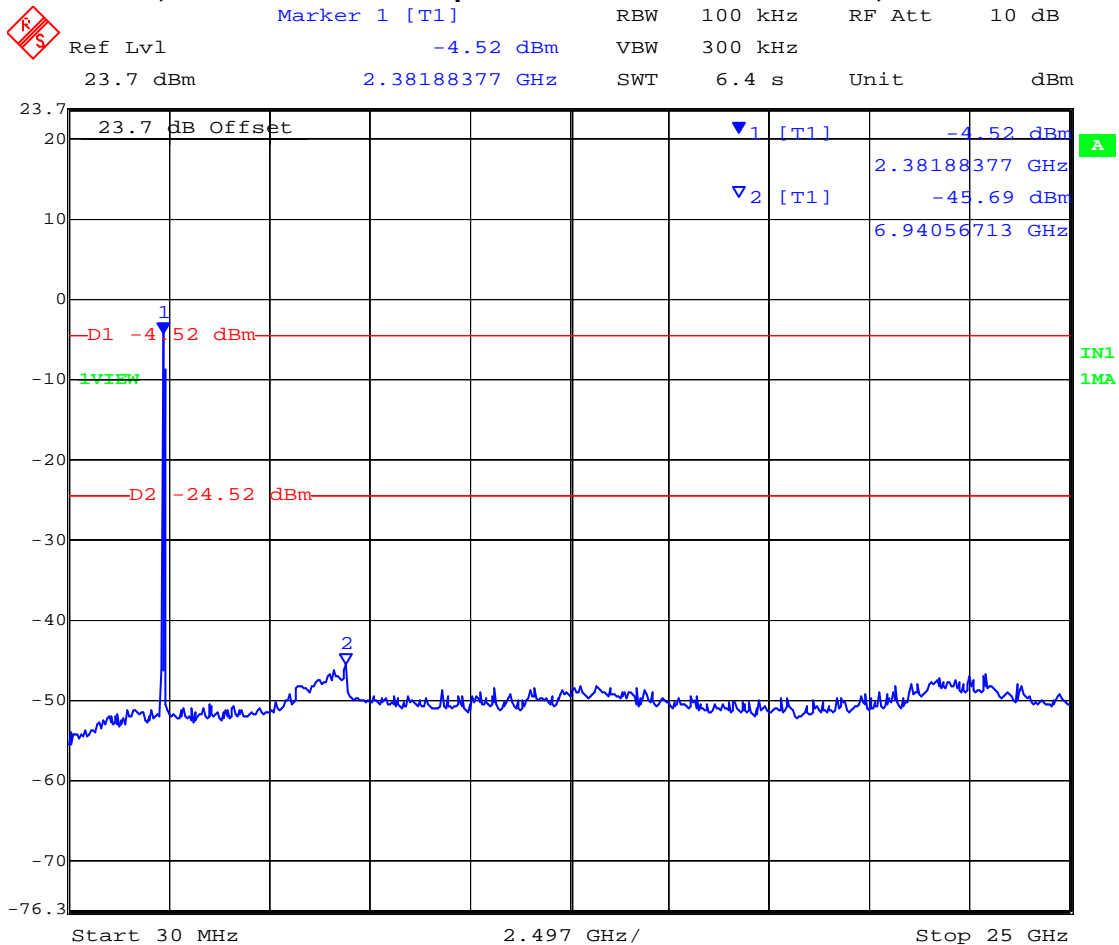
Spurious Emissions (30 - 25,000 MHz)

TABLE OF RESULTS – 802.11n – HT-40

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
2,422	30	25,000	-45.69	-24.52	-21.17

802.11n – HT-40

2,422 MHz Conducted Spurious Emissions 30 MHz to 25,000 MHz



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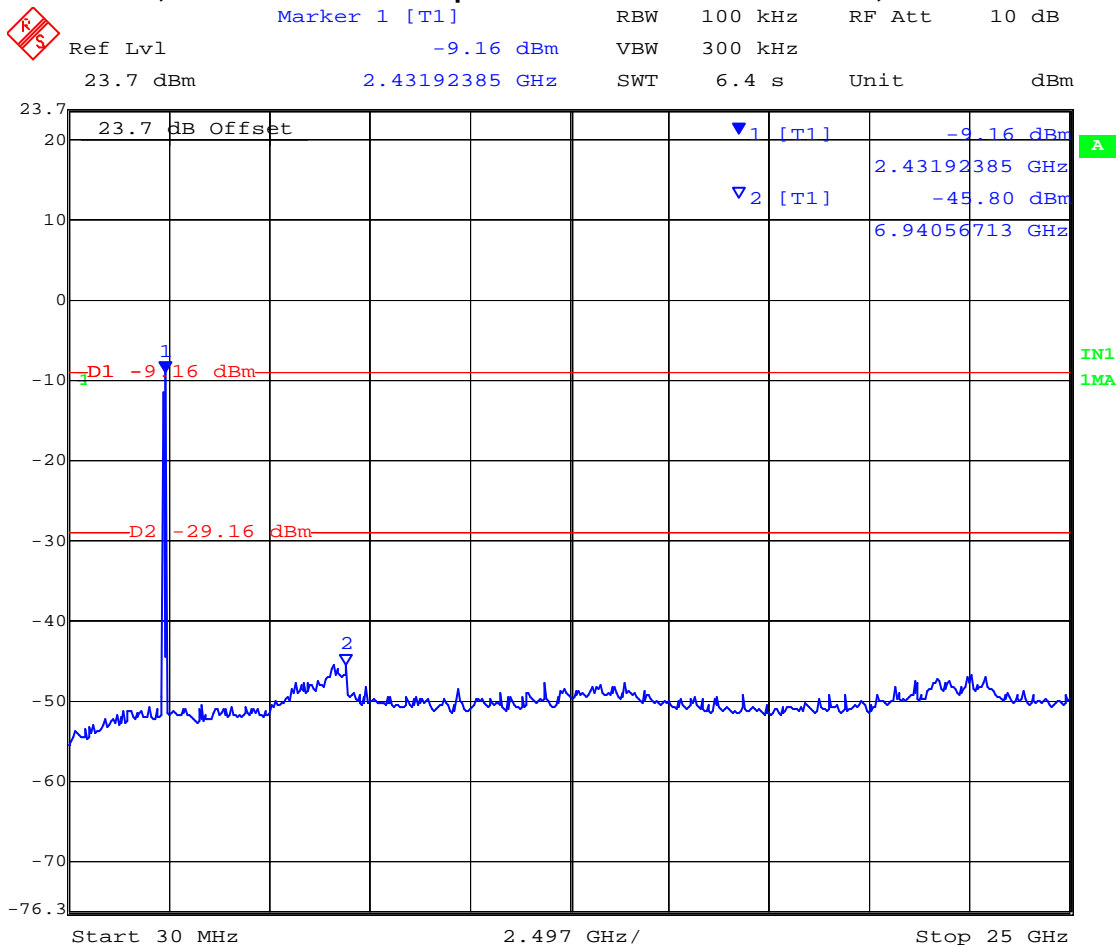
Spurious Emissions (30 - 25,000 MHz)

TABLE OF RESULTS – 802.11n – HT-40

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
2,437	30	25,000	-45.80	-29.16	-16.64

802.11n – HT-40

2,437 MHz Conducted Spurious Emissions 30 MHz to 25,000 MHz



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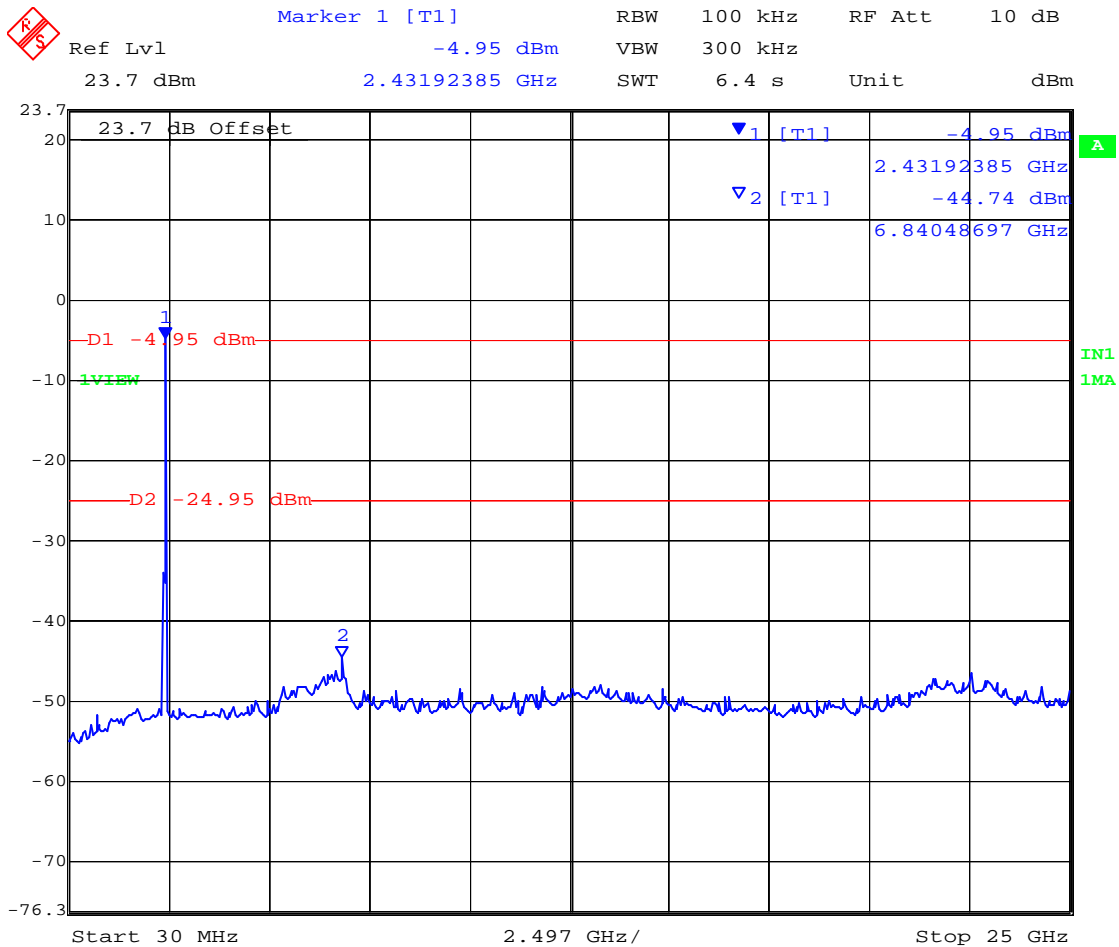
Spurious Emissions (30 - 25,000 MHz)

TABLE OF RESULTS – 802.11n – HT-40

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
2,452	30	25,000	-44.74	-24.95	-19.79

802.11n – HT-40

2,452 MHz Conducted Spurious Emissions 30 MHz to 25,000 MHz



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Spurious Emissions (30 - 40,000 MHz)

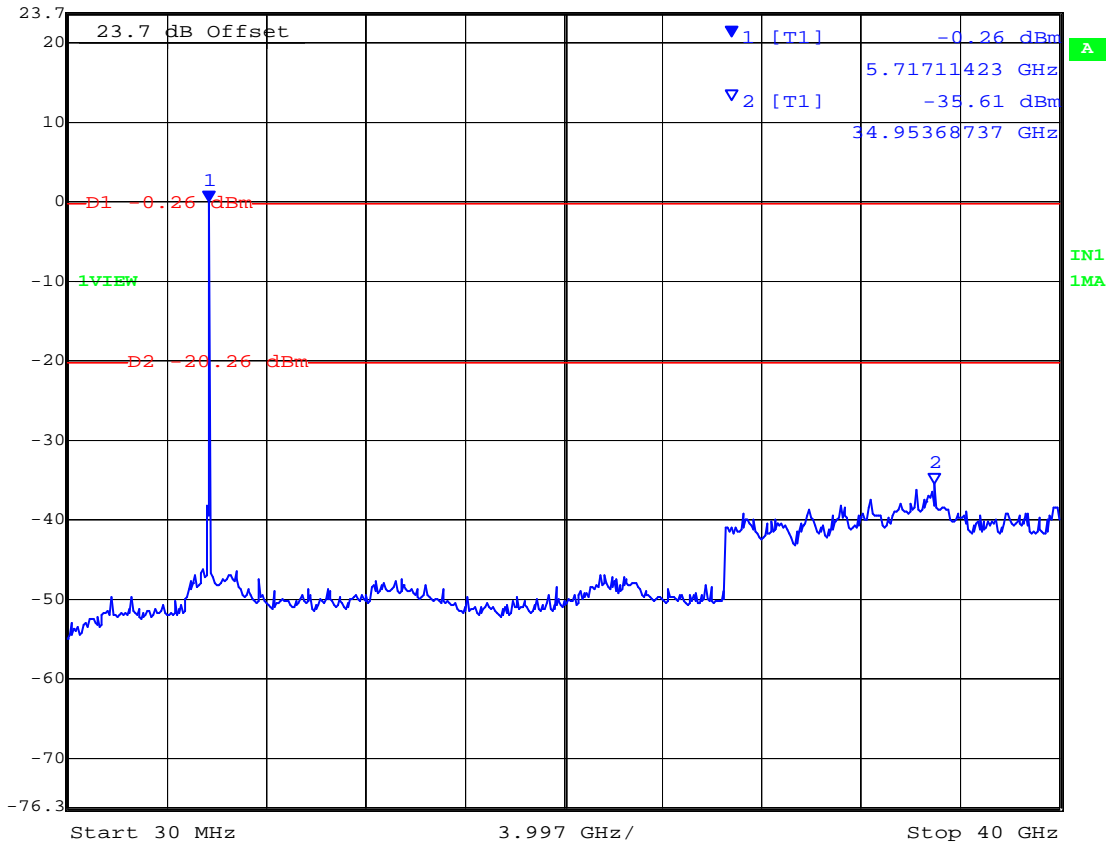
TABLE OF RESULTS – 802.11n – HT-40

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
5,745	30	40,000	-35.61	-20.26	-15.35

802.11n – HT-40

5,745 MHz Conducted Spurious Emissions 30 MHz to 40,000 MHz


 Marker 1 [T1] RBW 100 kHz RF Att 10 dB
 Ref Lvl 23.7 dBm -0.26 dBm VBW 300 kHz
 5.71711423 GHz SWT 10 s Unit dBm



Date: 12.NOV.2007 21:37:58

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Spurious Emissions (30 - 40,000 MHz)

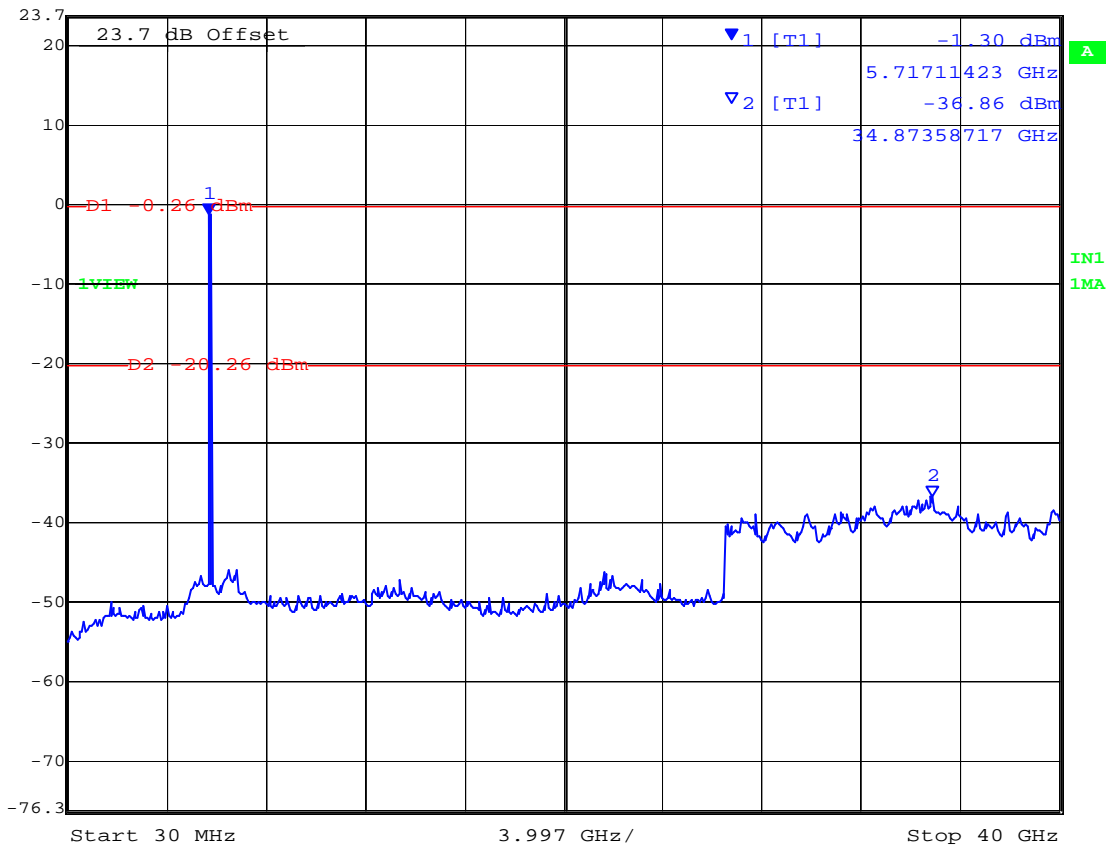
TABLE OF RESULTS – 802.11n – HT-40

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
5,785	30	40,000	-36.86	-20.26	-16.60

802.11n – HT-40

5,785 MHz Conducted Spurious Emissions 30 MHz to 40,000 MHz


 Marker 1 [T1] RBW 100 kHz RF Att 10 dB
 Ref Lvl -1.30 dBm VBW 300 kHz
 23.7 dBm 5.71711423 GHz SWT 10 s Unit dBm



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Spurious Emissions (30 - 40,000 MHz)

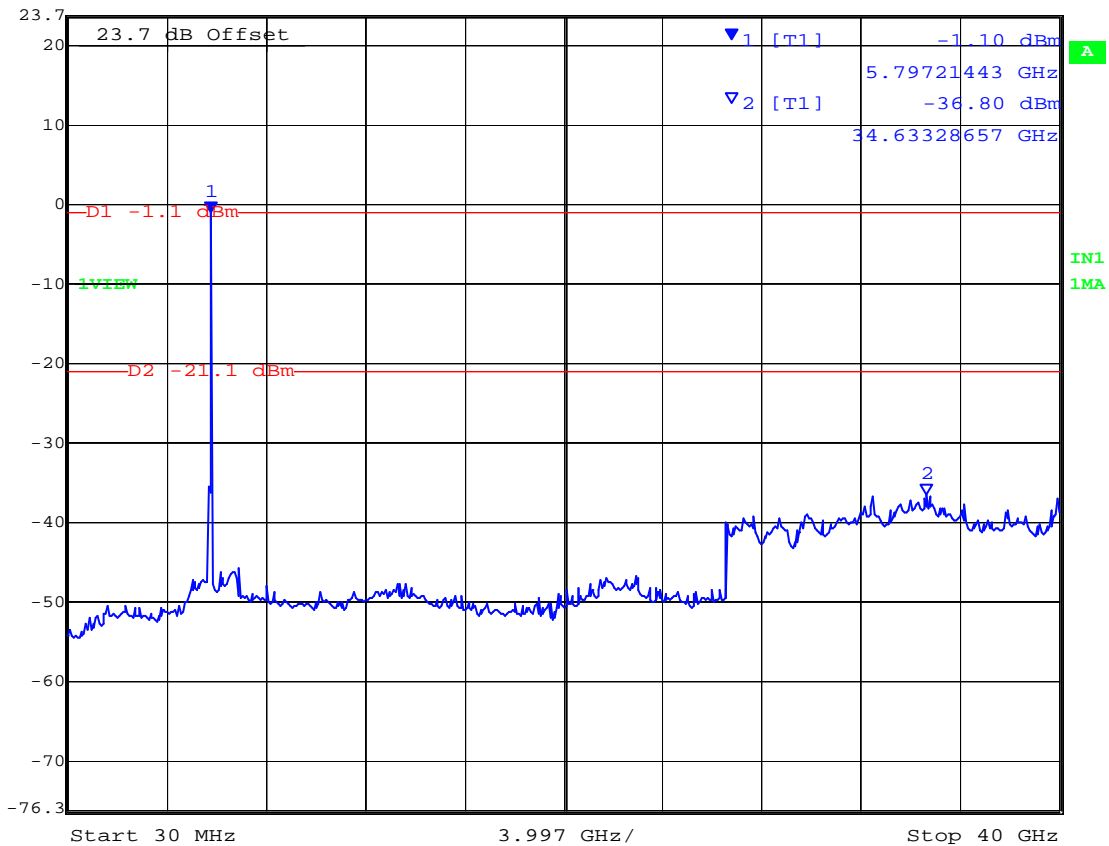
TABLE OF RESULTS – 802.11n – HT-40

Channel Centre Frequency (MHz)	Start Frequency (MHz)	Stop Frequency (MHz)	Maximum Emission Observed (dBm)	Limit (dBm)	Margin (dB)
5,825	30	40,000	-36.80	-21.10	-15.70

802.11n – HT-40

5,825 MHz Conducted Spurious Emissions 30 MHz to 40,000 MHz


 Marker 1 [T1] RBW 100 kHz RF Att 10 dB
 Ref Lvl -1.10 dBm VBW 300 kHz
 23.7 dBm 5.79721443 GHz SWT 10 s Unit dBm



Date: 12.NOV.2007 21:41:33

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Title: Aruba AP-124,125 802.11a/b/g/n AP
To: FCC 47 CFR Part 15.247 & IC RSS-210
Serial #: ARUB20-A2 Rev A
Issue Date: 11th December 2007
Page: 140 of 268

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
xx		

§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
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Traceability

Method	Test Equipment Used
Measurements were made per work instruction WI-05 'Measurement of Spurious Emissions'	0088, 0158, 0193, 0252, 0313, 0314, 0070, 0116, 0117.

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