Test of Fluke Networks Sensor4 Wireless Client

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

Test Report Serial No.: AMGT14-U1 Rev C

TEST REPORT

FROM

Test of Fluke Networks Sensor4 Wireless Client

to

To FCC 47 CFR Part 15.247 & IC RSS-210

Test Report Serial No.: AMGT14-U1 Rev C

Note: this report contains data with regard to the 2400 to 2483.5 MHz and 5725 to 5850 MHz operational modes of the Fluke Networks Sensor4 wireless client. FCC 15.407 test data is reported in MiCOM Labs test report AMGT14-U2

This report supersedes: AMGT14-U1 Rev B

Applicant: Fluke Networks
2575 Augustine Dr.
Santa Clara
California 95054, USA

Product Function: Wireless LAN Client

Copy No: pdf Issue Date: 27th August 2013

This Test Report is Issued Under the Authority of;

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ACCREDITED
TEST CERTIFICATE #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

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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 13
3.3. Equipment Model(s) and Serial Number(s) 16
3.4. Antenna Details 16
3.5. Cabling and I/O Ports 16
3.6. Test Configurations 17
3.7. Equipment Modifications 19
3.8. Deviations from the Test Standard 23
3.9. Subcontracted Testing or Third Party Data 23
4. TEST SUMMARY 24
5. TEST RESULTS 26
5.1. Device Characteristics 26
5.1.1. 6 dB and 99 % Bandwidth 26
5.1.2. Peak Output Power 95
5.1.3. Peak Power Spectral Density 108
5.1.4. Maximum Permissible Exposure 177
5.1.5. Conducted Spurious Emissions 178
5.1.6. Radiated Emissions 254
5.1.7. AC Wireline Conducted Emissions (150 kHz – 30 MHz) 331
6. PHOTOGRAPHS 334
6.1. Conducted Test Setup 334
6.2. Radiated Test Setup > 1 GHz (Integral Antenna) 335
6.3. Radiated Test Setup > 1 GHz (External Antenna) 336
6.4. Radiated Test Table-top Setup (Integral Antenna) 337
6.5. Radiated Test Setup < 1 GHz (External Antenna) 338
6.6. Radiated Test Table-top Setup (External Antenna) 339
6.7. ac Wireline Emissions 340
7. TEST EQUIPMENT DETAILS 341

ACCREDITATION, LISTINGS & RECOGNITION

TESTING ACCREDITATION

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

RECOGNITION

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

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

PRODUCT CERTIFICATION

MiCOM Labs, Inc. is an accredited Product Certification Body per the international standard EN ISO/IEC Guide 65. The company is accredited by the American Association for Laboratory Accreditation (A2LA) www.a2la.org test laboratory number 2381.02. MiCOM Labs test schedule is available at the following URL; http://www.a2la.org/scopepdf/2381-02.pdf

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

Industry Canada Certification Body - CAB Identifier – US0159

European Notified Body - Notified Body Identifier - 2280

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

DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft		
Rev A	4th June 2012	Initial release.
Rev B	20th June 2012	Clarification of antenna details.
Rev C	27th August 2013	Included reference to:- a).. Single transmitting radio module FCC ID (RD7-SENSOR4X1) b).. dual transmitting radio module FCC ID: RD7-SENSOR4X

1. TEST RESULT CERTIFICATE

Manufacturer:	Fluke Networks 2575 Augustine Dr. Santa Clara California 95054, USA	Tested By:	MiCOM Labs, Inc. 440 Boulder Court Suite 200 Pleasanton California, 94566, USA
EUT:	802.11a/b/g/n Wireless LAN Client	Telephone:	+1 925 462 0304
Model:	Sensor4	Fax:	+1 925 462 0306
S/N's:	Engineering samples: Integral NG5-x & External NG5-y		
Test Date(s):	7th February - 17th May 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.

ACCREDITED
TEST CERTIFICATE #2381.01

Approved & Released for MiCOM Labs, Inc. by:

Graeme Grieve
Quality Manager MiCOM Labs,

Gordon Hurst
President & CEO MiCOM Labs, Inc.

2. REFERENCES AND MEASUREMENT UNCERTAINTY

2.1. Normative References

REF.	PUBLICATION	YEAR	TITLE
i.	FCC 47 CFR Part 15, Subpart 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	4th 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	March 2012	Reference to A2LA Accreditation Status – A2LA Advertising Policy

2.2. Test and Uncertainty Procedures

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

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

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

3. PRODUCT DETAILS AND TEST CONFIGURATIONS

3.1. Technical Details

Details	Description
Purpose:	Test of the Fluke Networks Sensor4 Wireless Client to FCC Part 15.247 and Industry Canada RSS-210 regulations.
Applicant:	Fluke Networks 2575 Augustine Dr. Santa Clara California 95054, USA
Manufacturer:	As applicant.
Laboratory performing the tests:	MiCOM Labs, Inc. 440 Boulder Court, Suite 200 Pleasanton, California 94566 USA
Test report reference number:	AMGT14-U1 Rev C
Date EUT received:	7th February 2012
Standard(s) applied:	FCC 47 CFR Part 15.247 & IC RSS-210
Dates of test (from - to):	7th February - 17th May 2012
No of Units Tested:	Two
Type of Equipment:	802.11a/b/g/n Wireless LAN Client, 3x3 Spatial Multiplexing MIMO configuration
Manufacturers Trade Name:	Wireless Client
Model(s):	Sensor4
Location for use:	Indoor
Declared Frequency Range(s):	2400 - 2483.5 MHz; 5725 - 5850 MHz
Software Release	Build 26809
Hardware Release:	assembly rev 5, pcb rev 3
Type of Modulation:	Per 802.11 –CCK, BPSK, QPSK, DSSS, OFDM
Declared Nominal Average Output Power:	802.11b: +25.0 dBm 802.11g:Leg. +23dBm,HT-20 +23 dBm,HT-40 +22 dBm 802.11a:Leg. +21dBm,HT-20 +21 dBm,HT-40 +21 dBm
EUT Modes of Operation:	Legacy 802.11a/b/g, 802.11n HT-20, HT-40
Transmit/Receive Operation:	Time Division Duplex
System Beam Forming:	Sensor4 has no capability for beam forming
Rated Input Voltage and Current:	12 Vdc 0.65 A: POE 48 Vdc 0.2A
Operating Temperature Range:	Declared range 0° to +50ºC
ITU Emission Designator:	2400 – 2483.5 MHz 802.11b 14M9G1D 2400 – 2483.5 MHz 802.11g 17M6D1D 2400 – 2483.5 MHz 802.11n – HT-20 18M7D1D 2400 – 2483.5 MHz 802.11n – HT-40 37M7D1D 5725 – 5850 MHz 802.11a 17M2D1D 5725 – 5850 MHz 802.11n – HT-20 17M9D1D 5725 – 5850 MHz 802.11n – HT-40 36M7D1D
Equipment Dimensions:	7.5" x 7.5" x 1.5"
Weight:	1 lb (0.454 Kg)
Primary function of equipment:	WiFi scanning
Secondary function of equipment:	Spectrum analyzer

3.2. Scope of Test Program

Fluke Networks Sensor4 Wireless Client
The scope of the test program was to test the Fluke Networks Sensor4 11a/b/g/n Wireless 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.

The Sensor4 wireless client will be can be marketed using a number of different models. The host can be configured differently therefore two DCC ID's were provided to cover all options. There are two separate FCC ID's for this family of devices;

Sensor Model	Features
[1]SENSOR4-R1S0-I	AIRMAGNET SENSOR, 4TH GEN, 1 X 11N RADIO, INTERNAL ANTENNA.
[1]SENSOR4-R1S1-I	AIRMAGNET SPECTRUM SENSOR, 4TH GEN, 1 X 11N RADIO, INTERNAL ANTENNA.
[2]SENSOR4-R2S0-I	AIRMAGNET SENSOR, 4TH GEN, 2 X 11N RADIO, INTERNAL ANTENNA.
[2]SENSOR4-R2S1-I	AIRMAGNET SPECTRUM SENSOR, 4TH GEN, 2 X 11N RADIO, INTERNAL ANTENNA.
[1]SENSOR4-R1S0-E	AIRMAGNET SENSOR, 4TH GEN, 1 X 11N RADIO 4 EXTERNAL ANTENNAS.
[1]SENSOR4-R1S1-E	AIRMAGNET SPECTRUM SENSOR, 4TH GEN, 1 X 11N RADIO 4 EXTERNAL ANTENNAS.
[2]SENSOR4-R2S0-E	AIRMAGNET SENSOR, 4TH GEN, 2 X 11N RADIO 8 EXTERNAL ANTENNAS.
[2]SENSOR4-R2S1-E	AIRMAGNET SPECTRUM SENSOR, 4TH GEN, 2 X 11N RADIO 8 EXTERNAL ANTENNAS.

a).. [1]Single transmitting radio module FCC ID: RD7-SENSOR4X1

b).. [2]Dual transmitting radio module FCC ID: RD7-SENSOR4X

The test results reported in this document test worst case fully loaded dual radio configuration;

SENSOR4-R2S1-I (integral antenna)

SENSOR4-R2S1-E (external antenna)

Sensor4 802.11 a/b/g/n Wireless Client
Integral Antenna

Sensor4 802.11 a/b/g/n Wireless Client
External Antenna

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	Fluke Networks	Sensor4	Engineering samples: Integral NG5-x & External NG5-y
EUT	POE	PowerDSine	PD-3501/AC	--
EUT	ac/dc Adaptor	Fairway Electronic 100-240Vac 50-60Hz 12Vdc, 1.66A	VE20-120	--
Support	Laptop PC	Dell	--	None

3.4. Antenna Details

Type	Model	Gain (dBi)	Frequency Range (MHz)
External	Omni Rubber Duck: Wanshih SQ1WFI0001A	2.0	2400 – 2483.5
		2.3	5150 - 5350
		1.0	5725 - 5850
Integral	Laird NanoGreen	0.9	2400 – 2483.5
		3.1	5150 - 5350
		4.8	5725 - 5850

3.5. Cabling and I/O Ports

Number and type of I/O ports

1)..	DB9	RS-232 serial console port
2)..	RJ-45	Ethernet + PoE
3)..	Dc jack	12Vdc power in
4)..	reset	reset push button
5)..	RP-TNC	Reverse polarity - TNC RF antenna connector

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 2,437 2,462
g	Legacy	6 MBit/s	
n	HT-20	6.5 (MCS 0)	
	HT-40	13.5 (MCS 0)	2,422 2,437 2,452
a	Legacy	6 MBit/s	5,745 5,785 5,825
n	HT-20	6.5 (MCS 0)	
	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

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

5,725 – 5850 MHz

15.247	
802.11a	a SE 5745
	a SE 5785
	a SE 5825
802.11n HT-20	n HT-20 SE 5745
	n HT-20 SE 5785
	n HT-20 SE 5825
802.11n HT-40	n HT-40 SE 5755
	n HT-40 SE 5795

KEY;-

SE – Spurious Emission
BE – Band-Edge

3.7. Equipment Modifications

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

1. Output Power Settings

   The output power values reported in section 5.1.2 Peak Output Power take into account any power reduction due to radiated spurious emissions and radiated band-edge measurement results.

2. Power Fluctuation

   When the EUT operates within the 2.4GHz band, the second harmonic of the fundamental would exhibit an unusual behavior where it would pulse repeatedly and slowly creep up for a small duration before dropping in power.

3. Spurious Emissions V's Antenna Installation Positioning

   It was found that the positioning of the external antennas was crucial in the reduction and control of spurious emissions. The device antennas were tested per the following client supplied document. Any deviation from this installation will result in non-compliant operation.

Fluke Networks Sensor4 External Antenna Model Installation instructions

1. Screw on the supplied antennas to the RP-TNC connectors on the sensor side plates.
2. Position the antenna angles as shown in Figures 1 thru 5.
3. Hand tighten the antenna to the sensor while maintaining the angles depicted.
4. Apply a small amount of Loctite or similar adhesive in the antenna joint (elbow) to maintain antenna angle positioning during and after sensor installation.

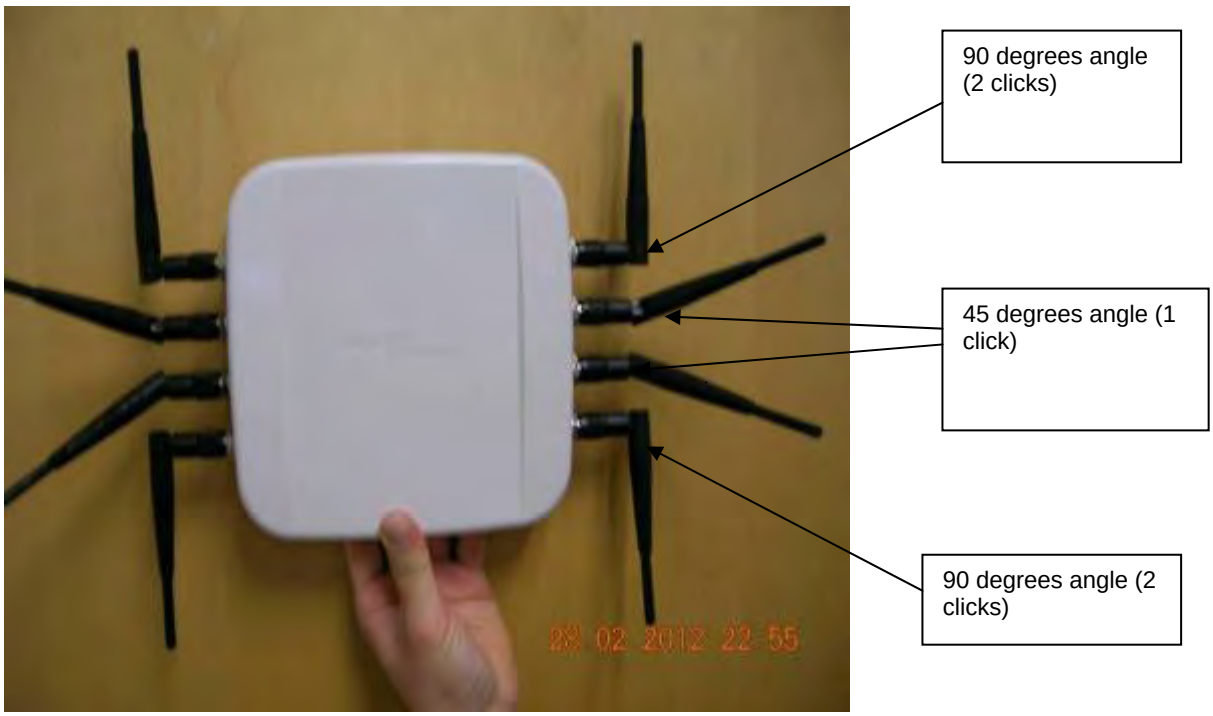
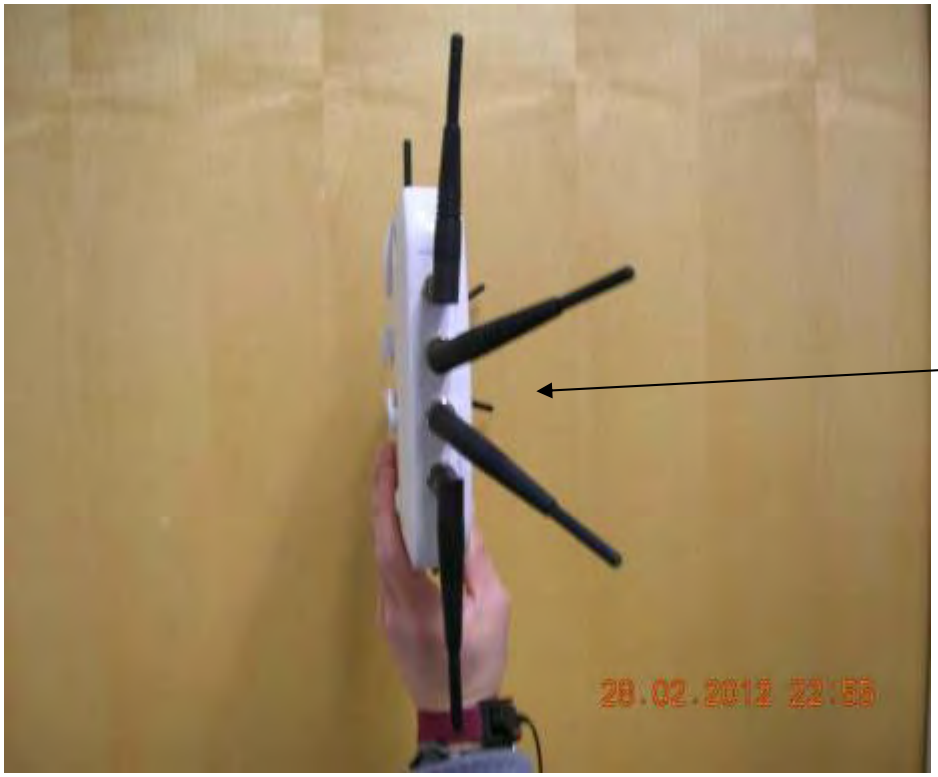


Figure 1: Top view

Figure 2: Front View

Figure 3: Diagonal view



90 degrees angle between the 2 antennas

Figure 4: Side view left.

Figure 5: Side view right

3.8. Deviations from the Test Standard

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

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

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

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

3.9. Subcontracted Testing or Third Party Data

1. NONE

4. TEST SUMMARY

List of Measurements

The following table represents the list of measurements required under the **FCC CFR47 Part 15.247** 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

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 §4.10, §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 - Class A Device	*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*

5. TEST RESULTS

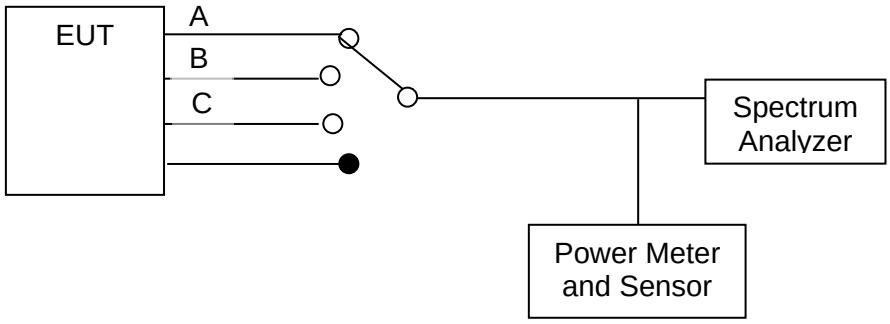
5.1. Device Characteristics

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

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. (ºC):**	19 to 22	
TPC:	HIGH		**Pressure (mBars):**	998 to 1003	
Modulation:	ON		**Duty Cycle (%):**	100	
Beam Forming Gain (Y):	N/A	dB	**Antenna Gain:**	2 dBi	
Applied Voltage:	48.00	Vdc			
Notes 1:					
Notes 2:					

6 dB Bandwidth

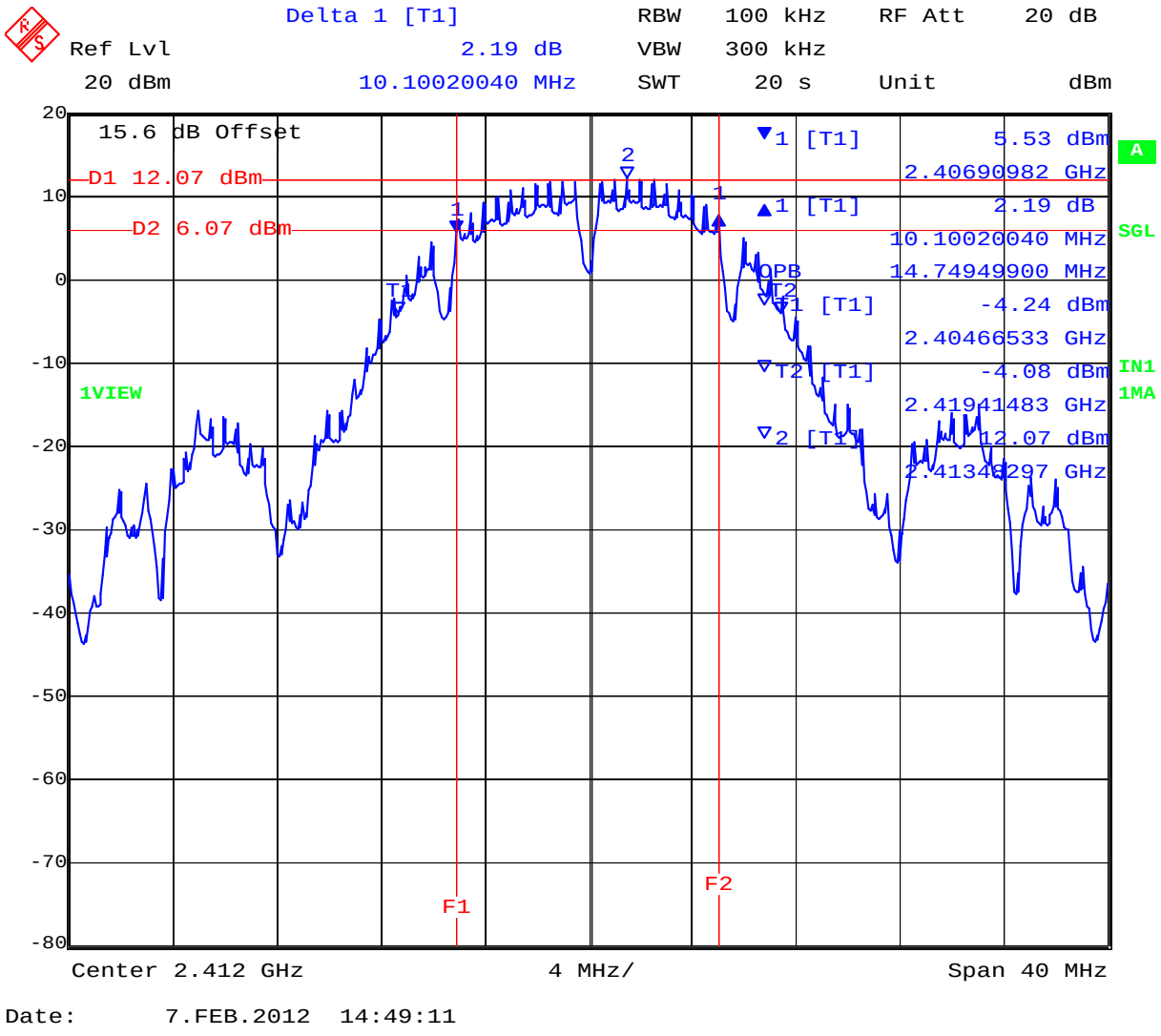
Test Frequency	**6 dB Bandwidth**				**Minimum 6dB Bandwidth Limit**		**Margin**
	MHz						
MHz	**a**	**b**	**c**	**d**	**kHz**	**MHz**	**MHz**
2412.000	10.100000	10.180000	10.180000	--	500	0.5	-9.600000
2437.000	10.180000	10.100000	10.100000	--			-9.600000
2462.000	10.180000	10.180000	10.180000	--			-9.680000

99% Bandwidth

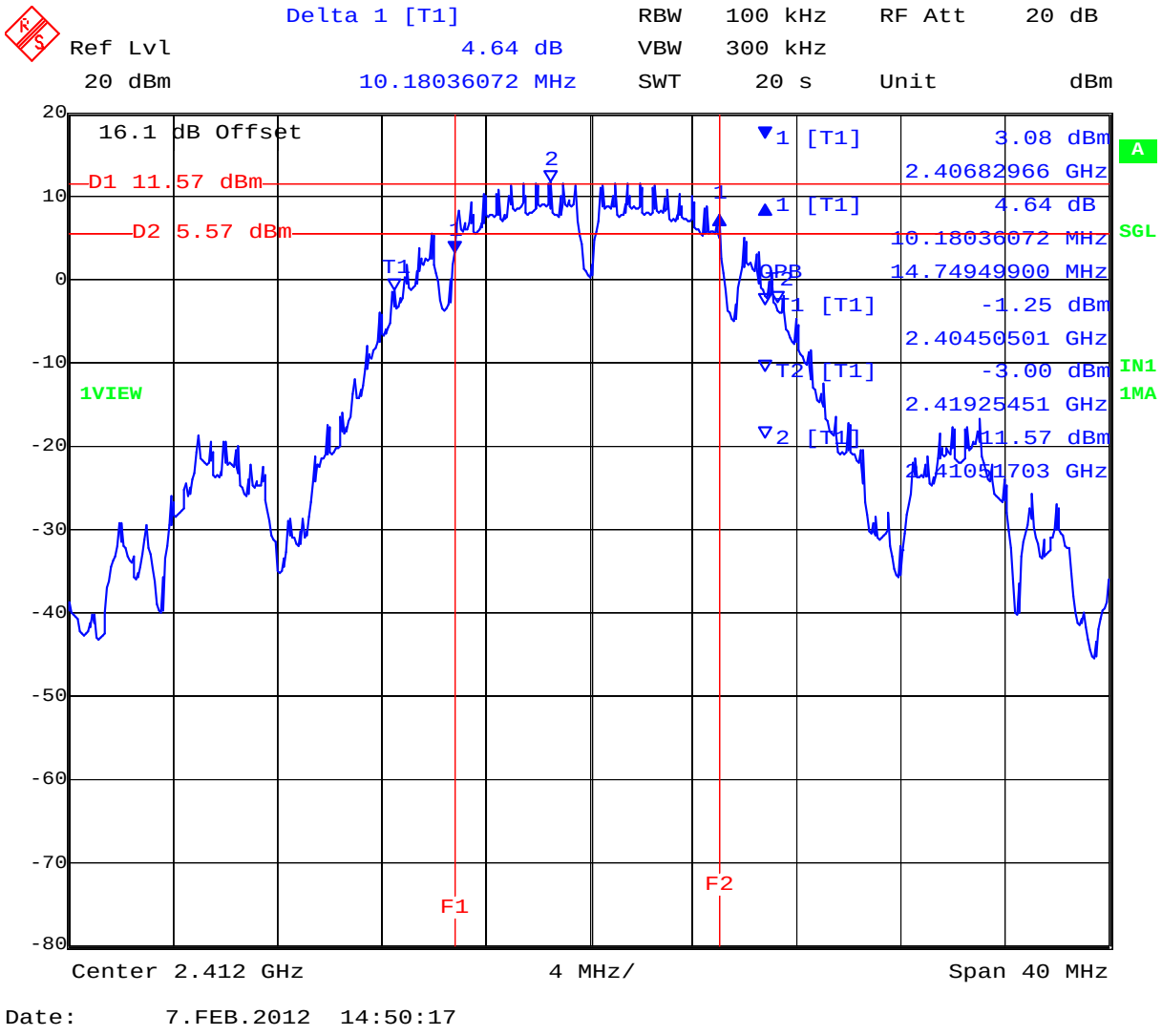
Test Frequency	**99 % Bandwidth**						
	MHz						
MHz	**a**	**b**	**c**	**d**			
2412.000	14.749000	14.749000	14.910000	--			
2437.000	14.749000	14.269000	14.509000	--			
2462.000	14.509000	14.589000	14.830000	--			

Measurement uncertainty:	±2.81 dB

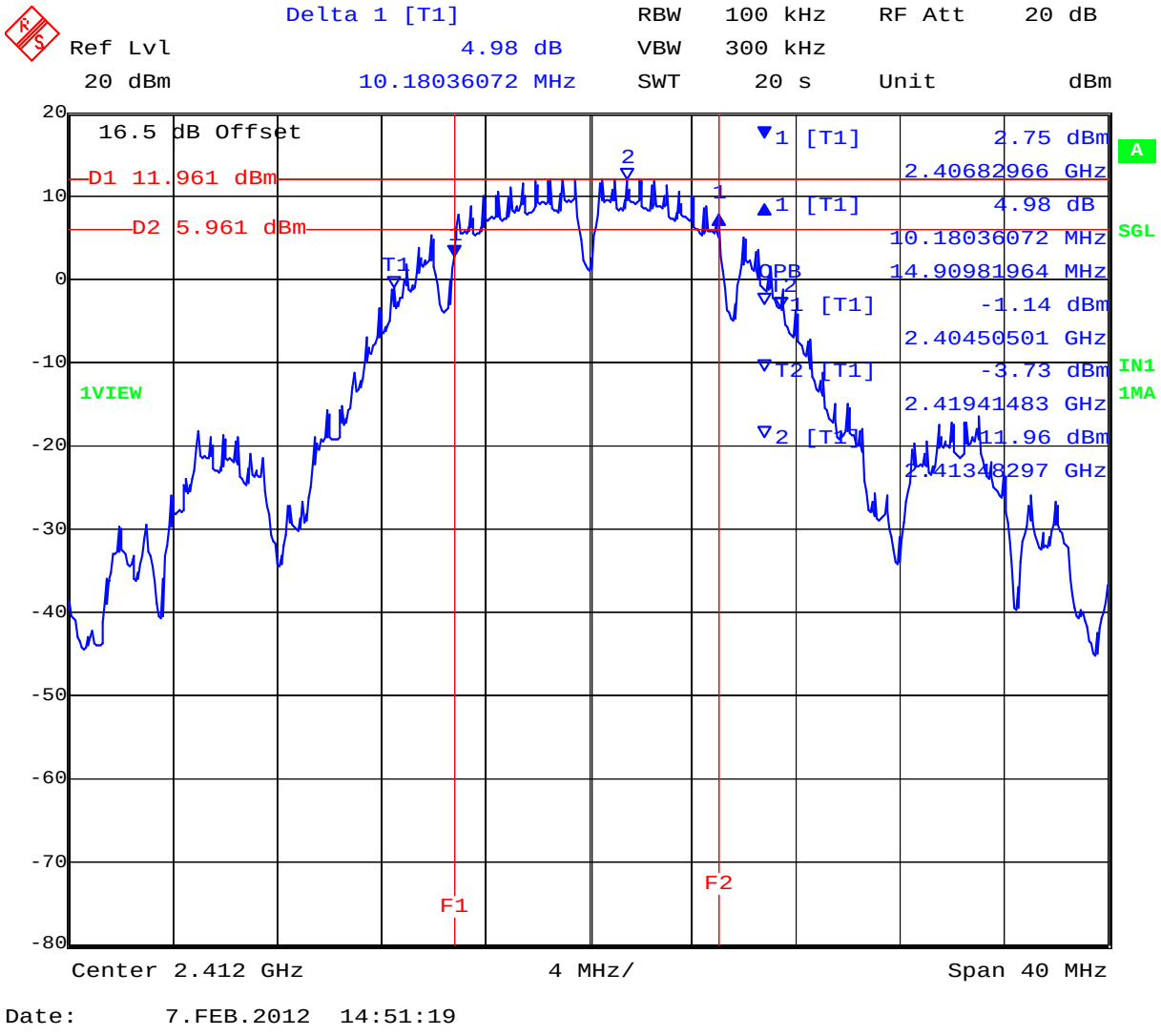
PORT A 2,412 MHz 802.11b Legacy 6 dB and 99% Bandwidth



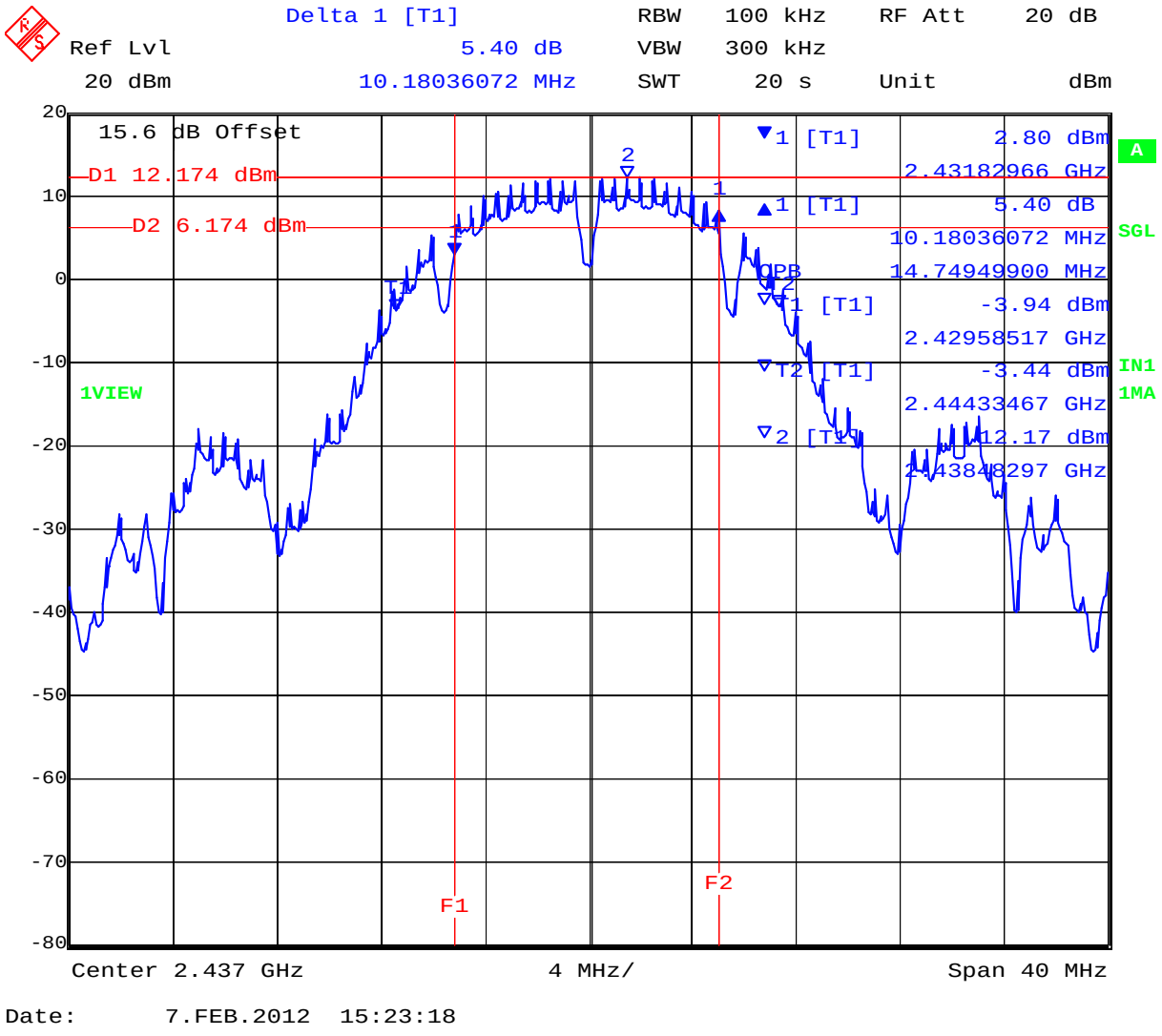
PORT B 2,412 MHz 802.11b Legacy 6 dB and 99% Bandwidth



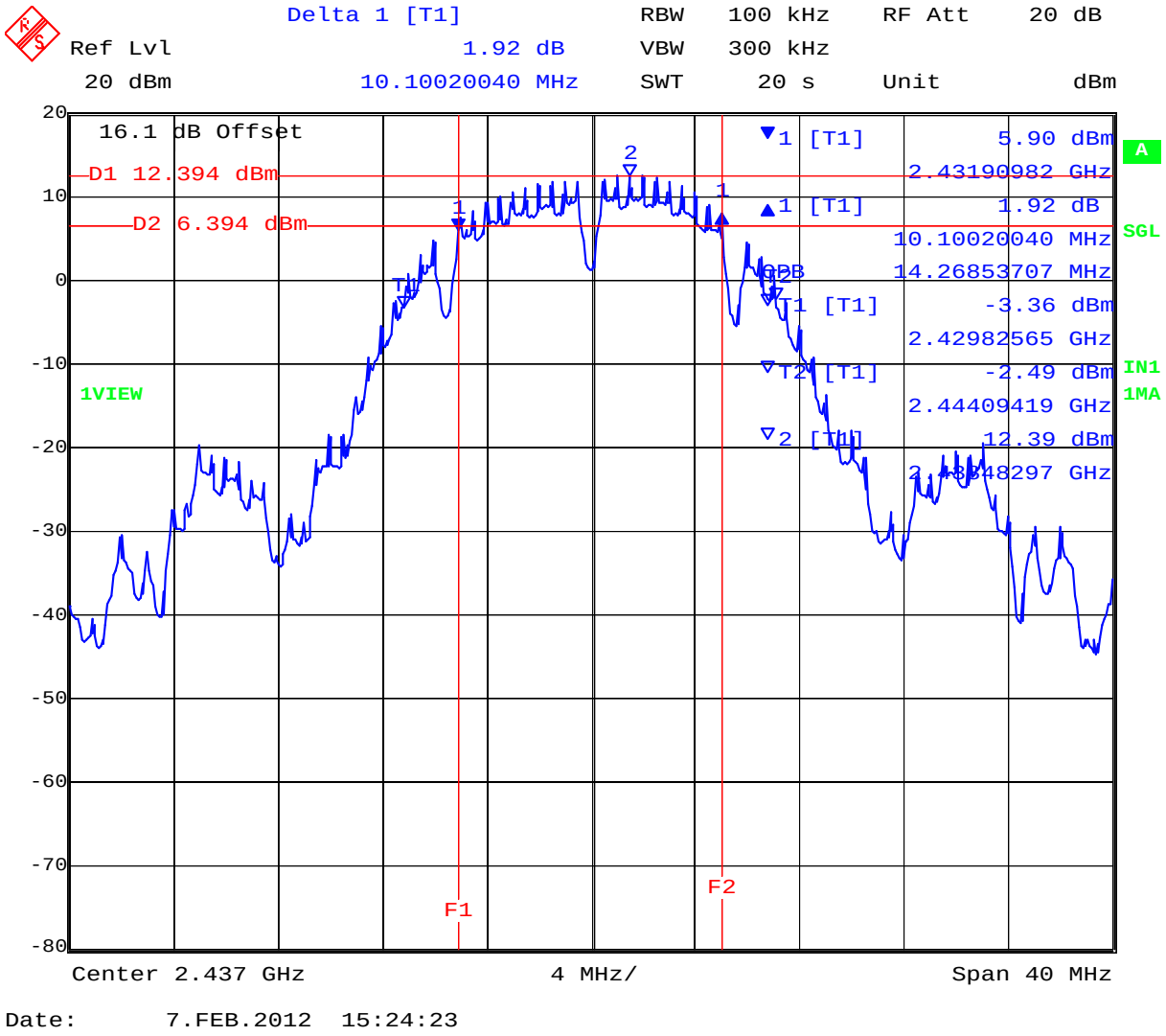
PORT C 2,412 MHz 802.11b Legacy 6 dB and 99% Bandwidth



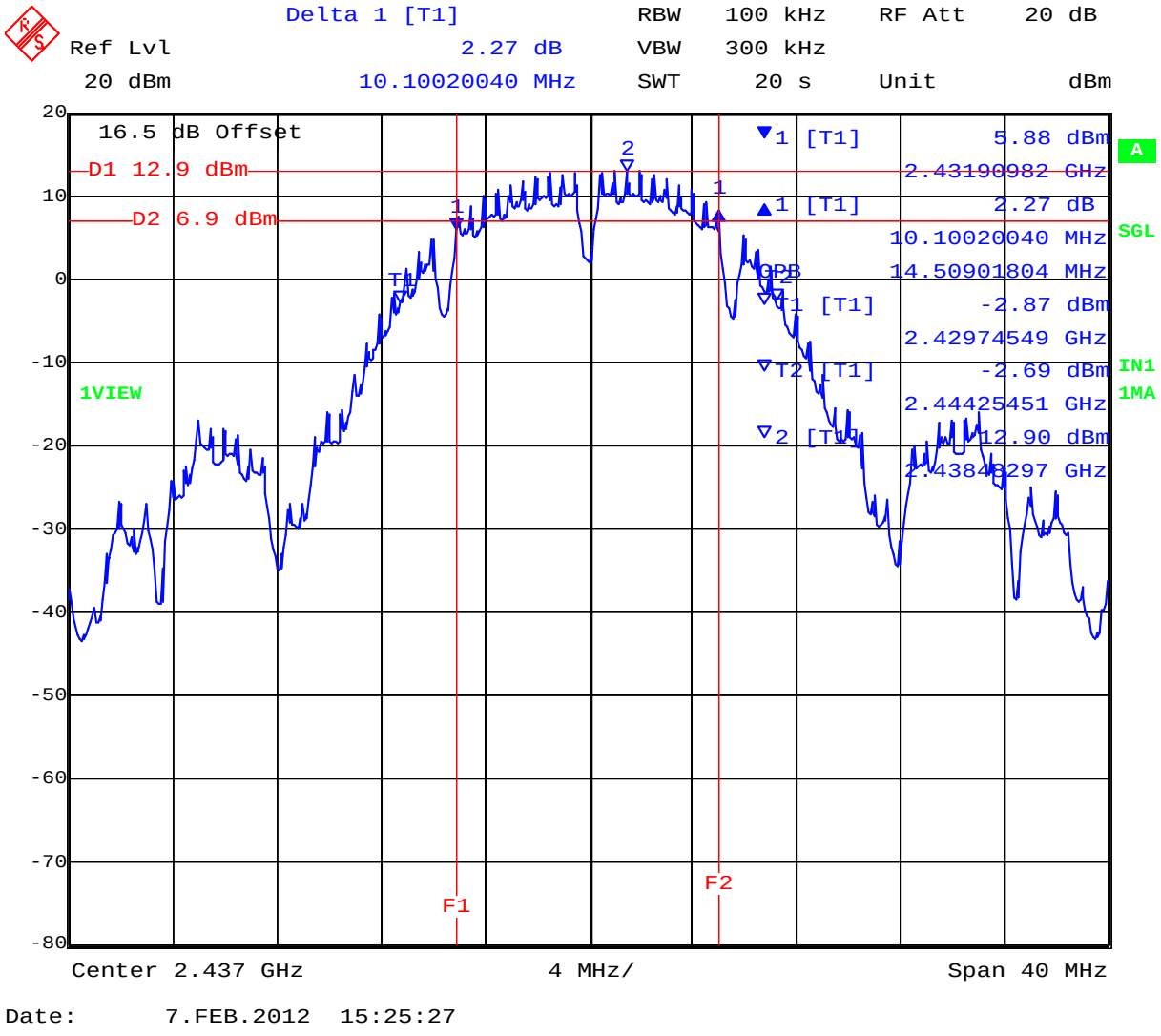
PORT A 2,437 MHz 802.11b Legacy 6 dB and 99% Bandwidth



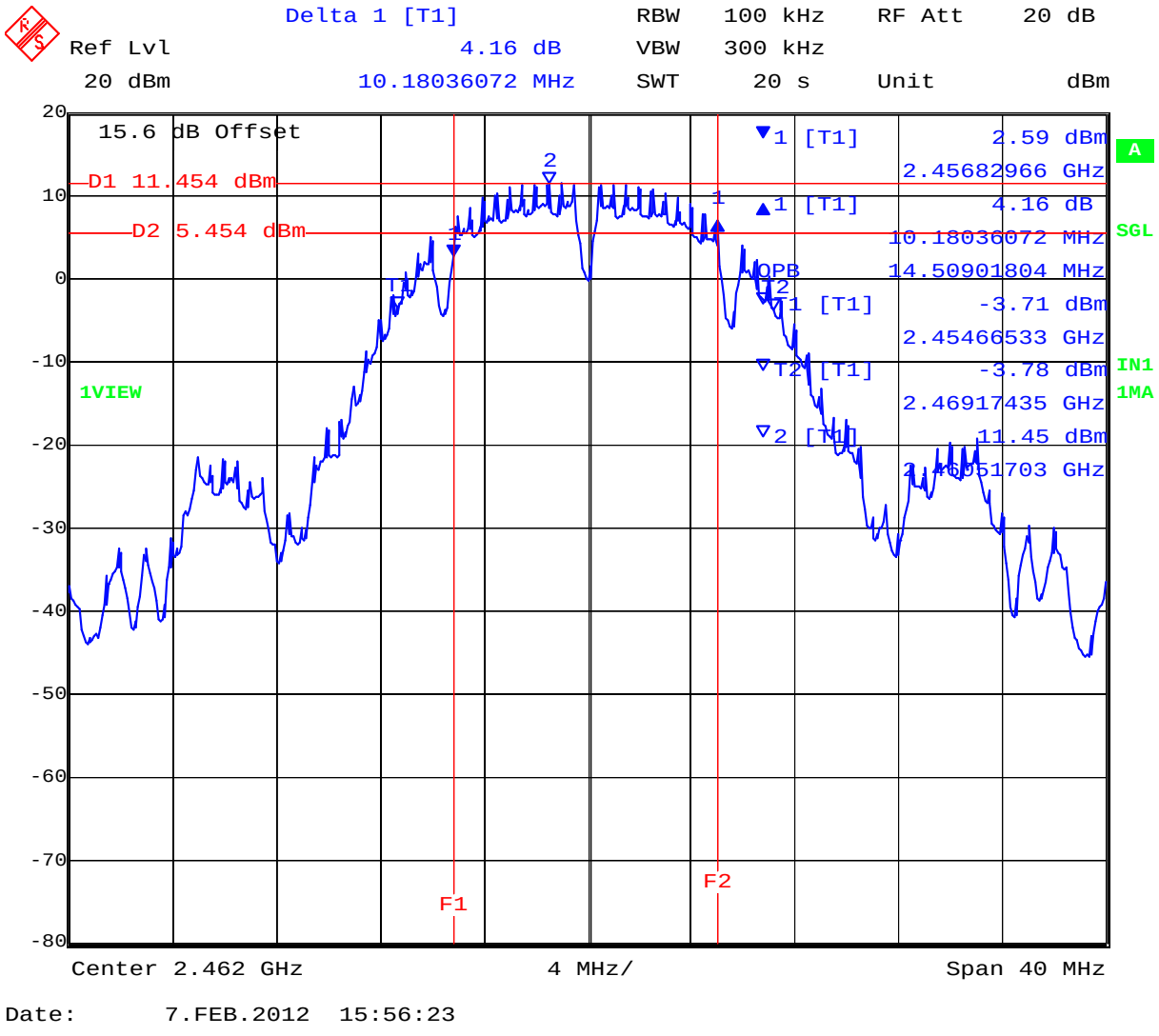
PORT B 2,437 MHz 802.11b Legacy 6 dB and 99% Bandwidth



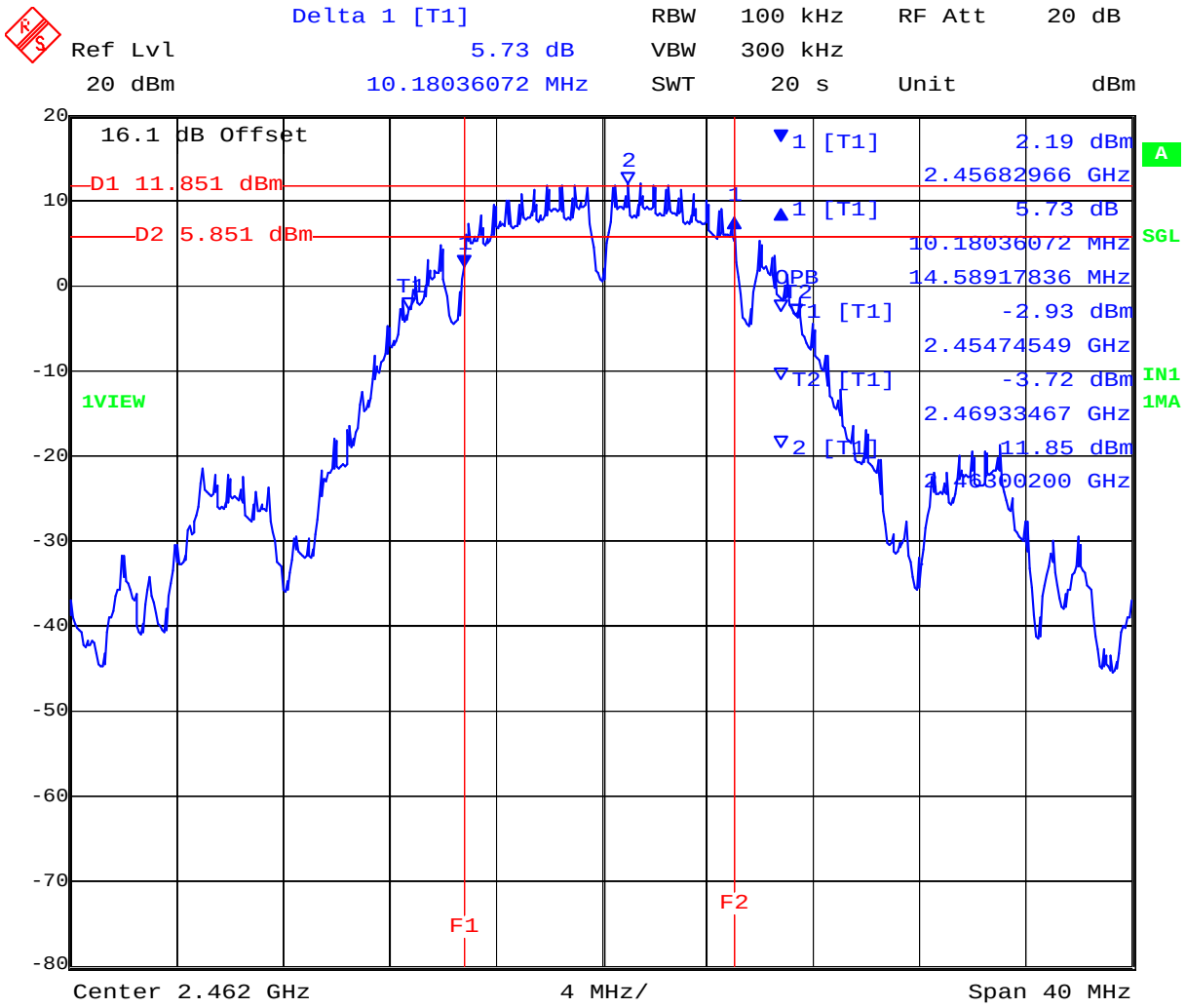
PORT C 2,437 MHz 802.11b Legacy 6 dB and 99% Bandwidth



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



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



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

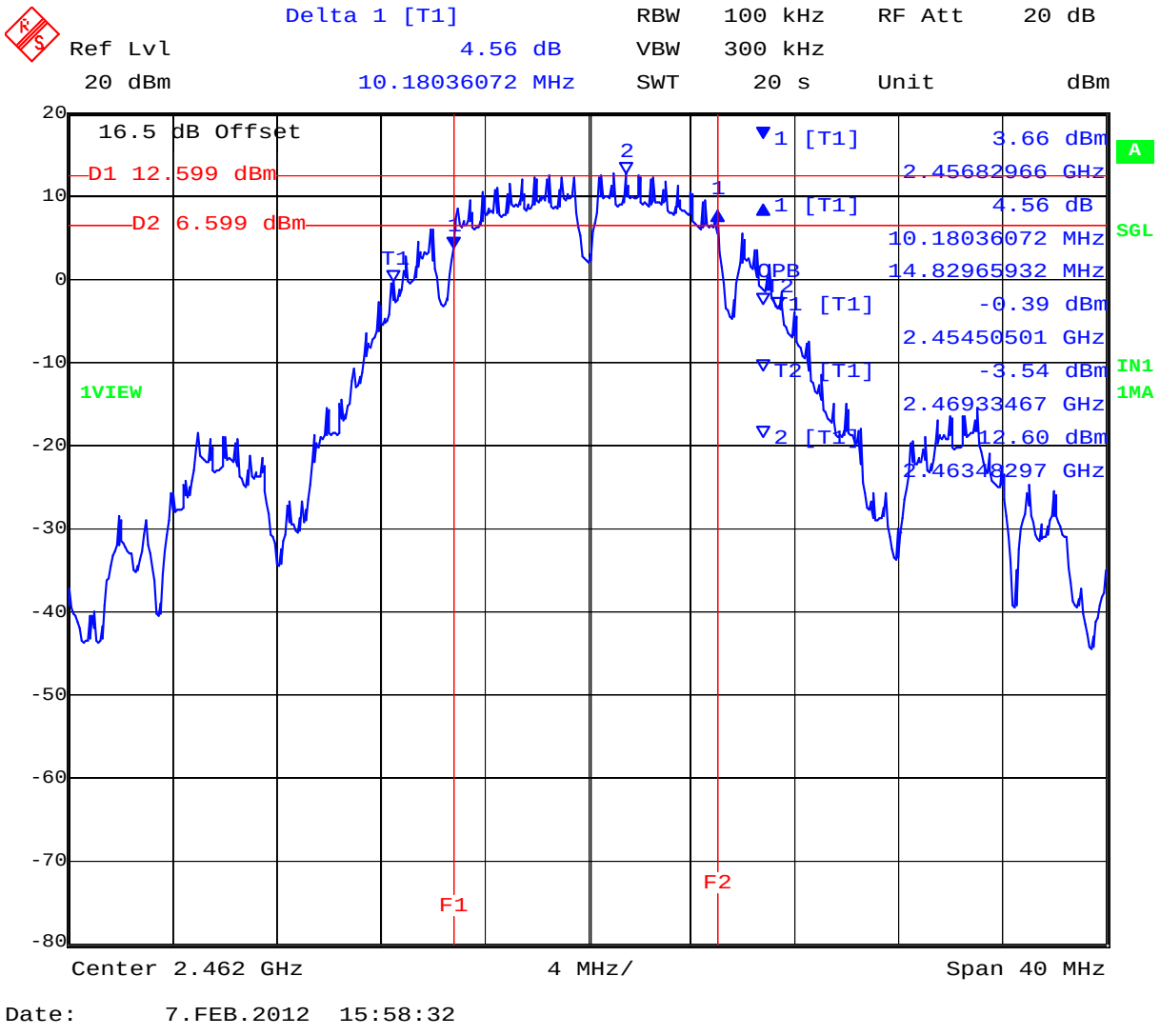


TABLE OF RESULTS – **802.11g Legacy**

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

6 dB Bandwidth

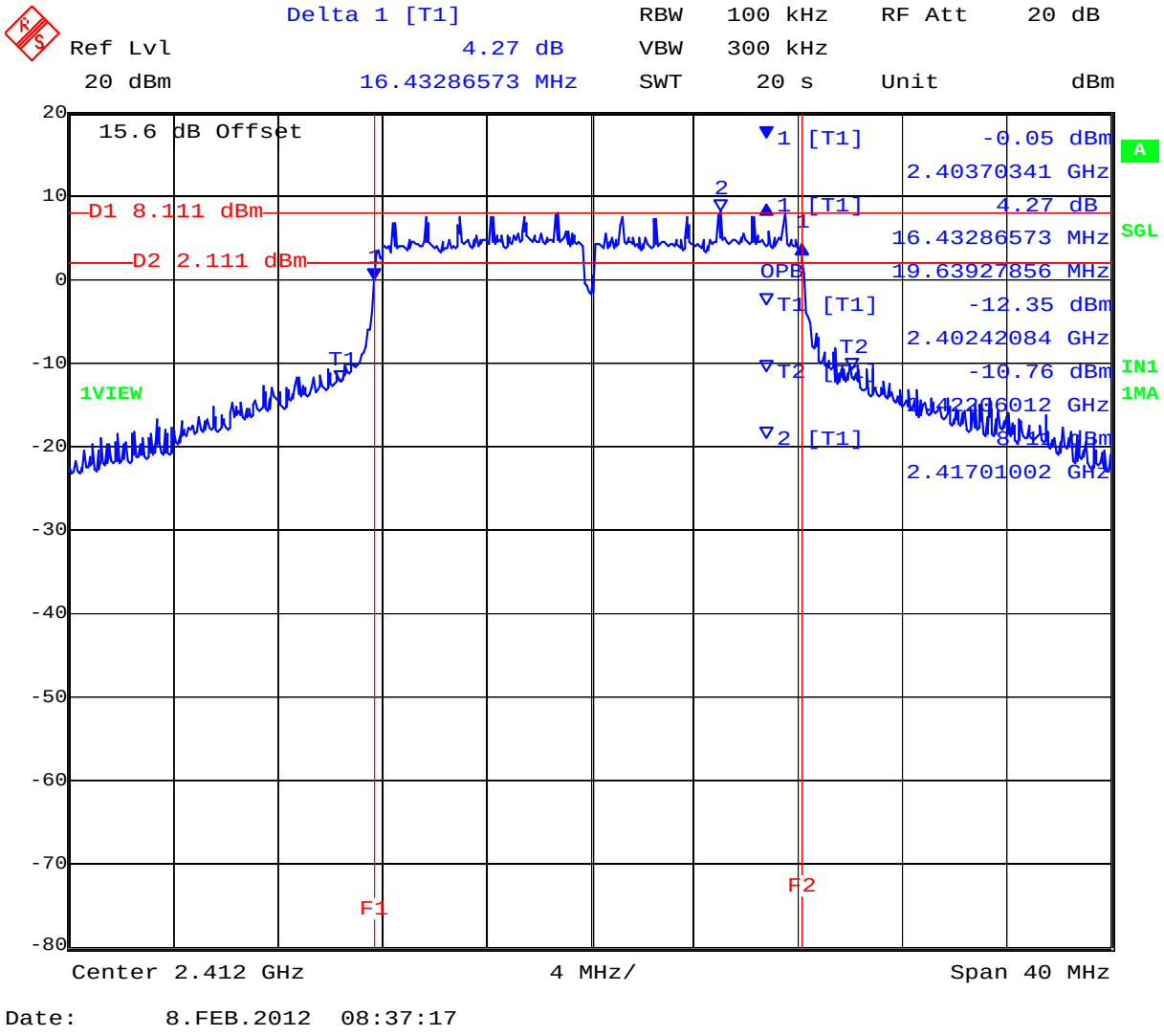
Test Frequency	6 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	**a**	**b**	**c**	**d**	**kHz**	**MHz**	**MHz**
2412.000	16.433000	16.433000	16.353000	--	500	0.5	-15.853000
2437.000	16.353000	16.353000	16.433000	--			-15.853000
2462.000	16.433000	16.433000	16.433000	--			-15.933000

99% Bandwidth

Test Frequency	99 % Bandwidth						
	MHz						
MHz	**a**	**b**	**c**	**d**			
2412.000	19.639000	17.635000	17.635000	--			
2437.000	17.635000	16.834000	17.956000	--			
2462.000	17.234000	16.994000	17.315000	--			

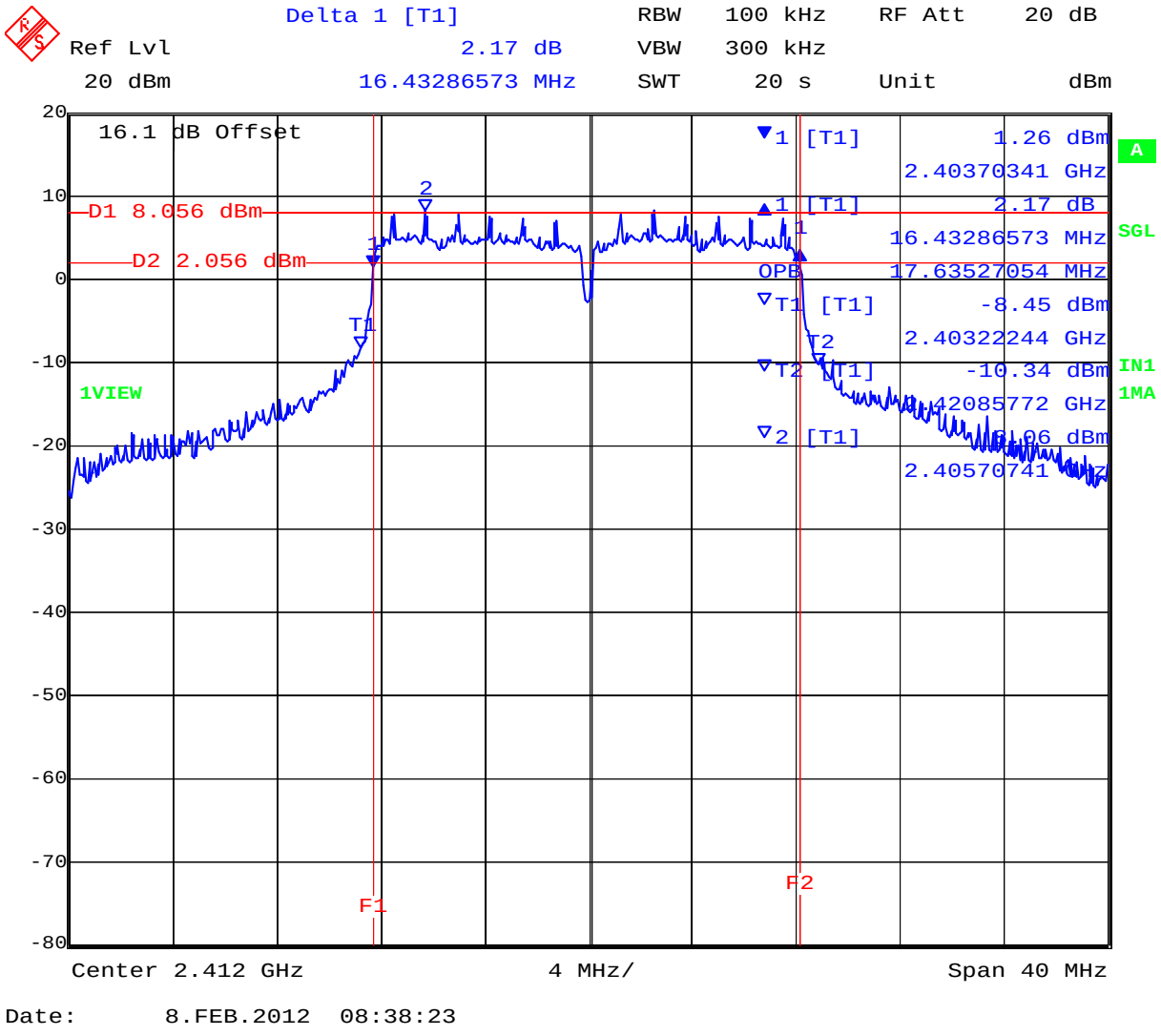
Measurement uncertainty:	±2.81 dB

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

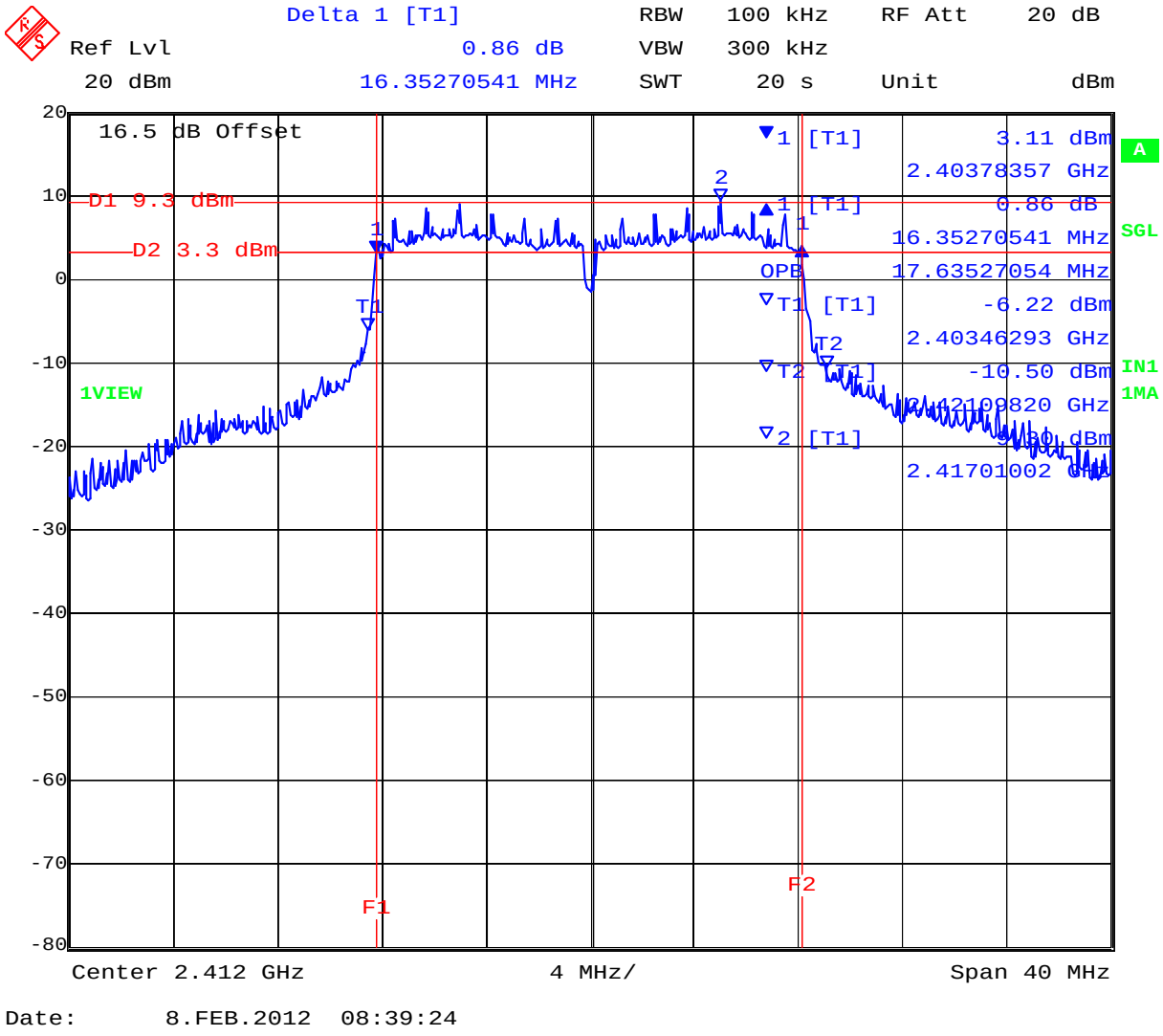


Date: 8.FEB.2012 08:37:17

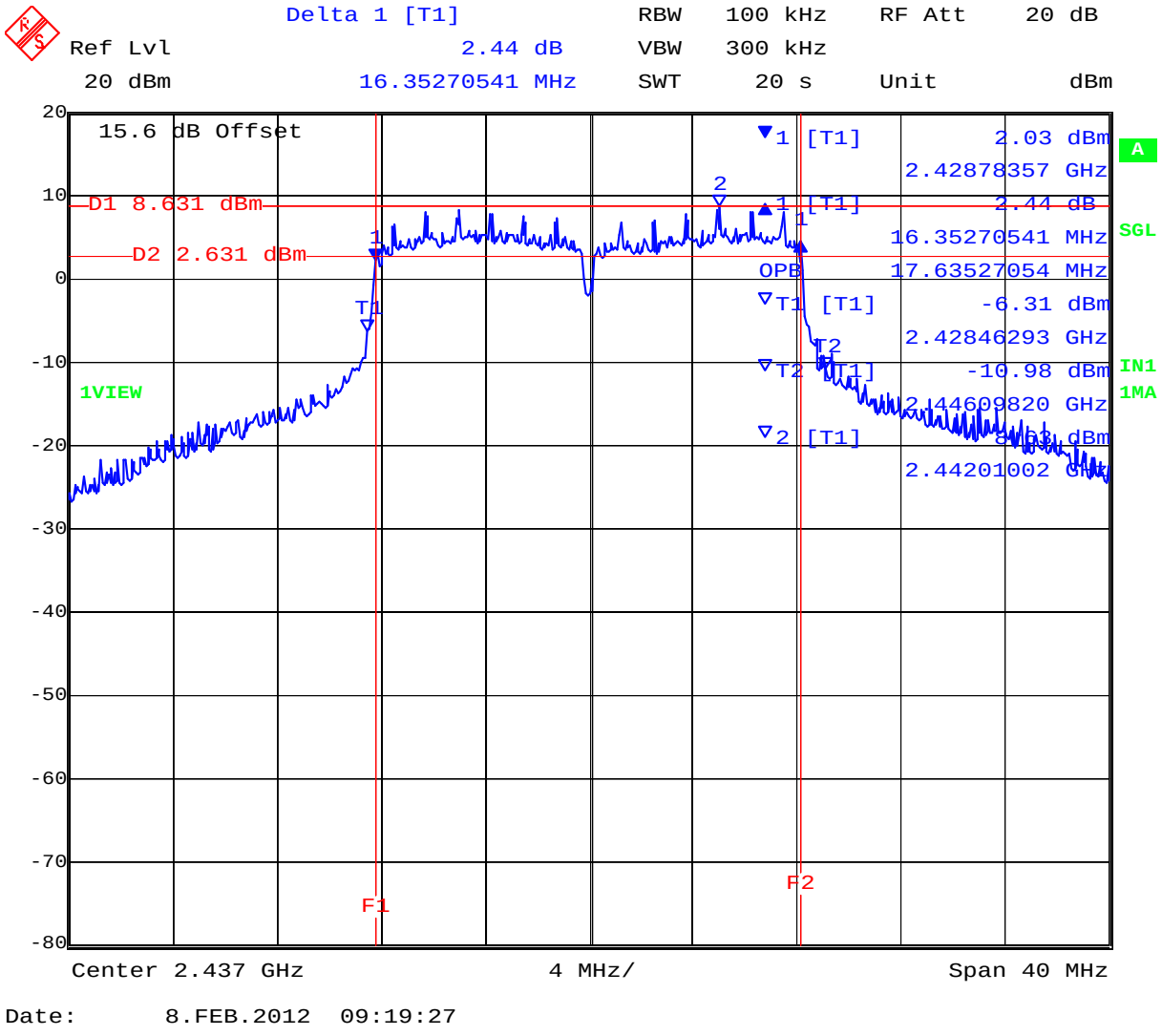
PORT B 2,412 MHz 802.11g Legacy 6 dB and 99% Bandwidth



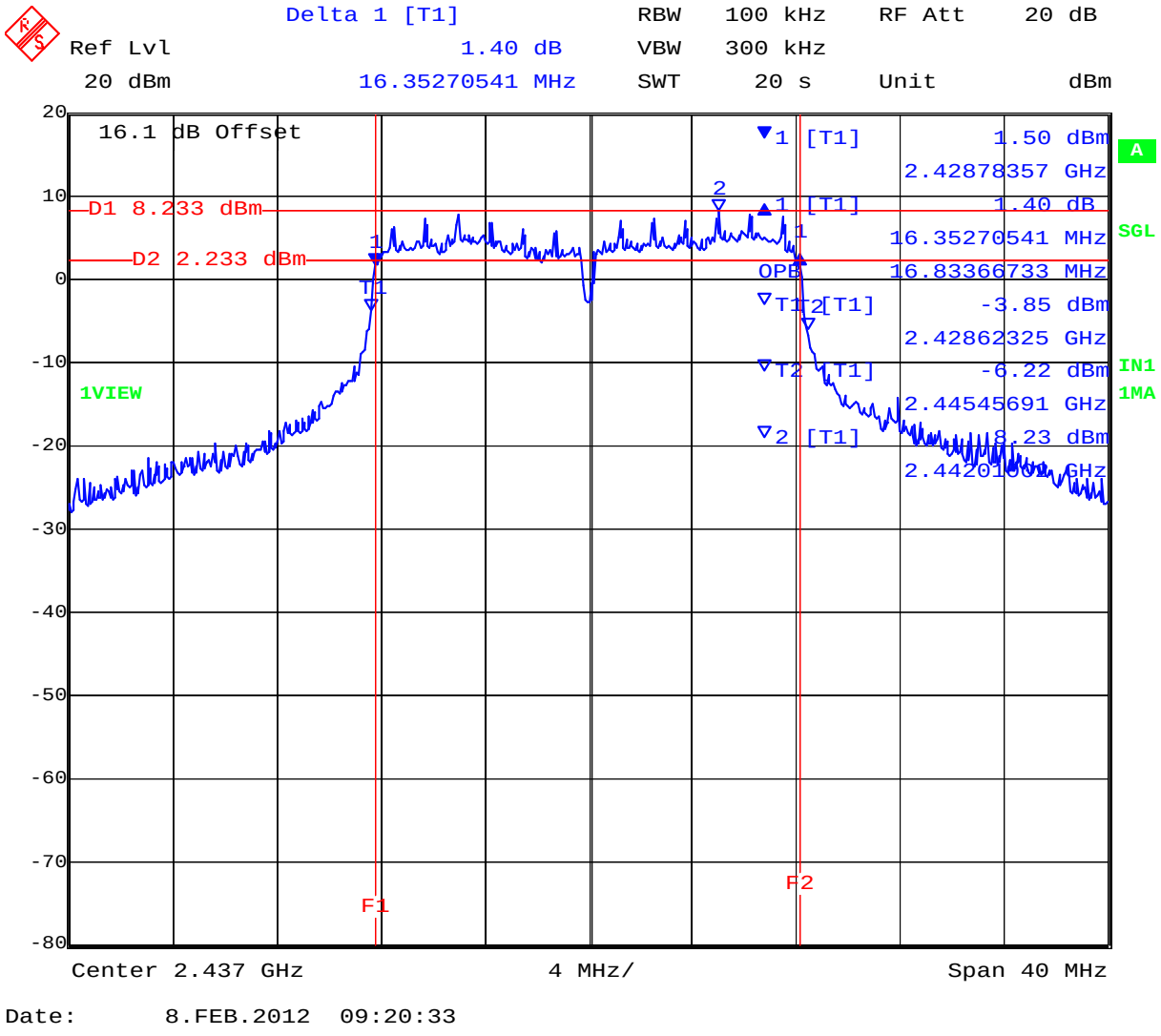
PORT C 2,412 MHz 802.11g Legacy 6 dB and 99% Bandwidth



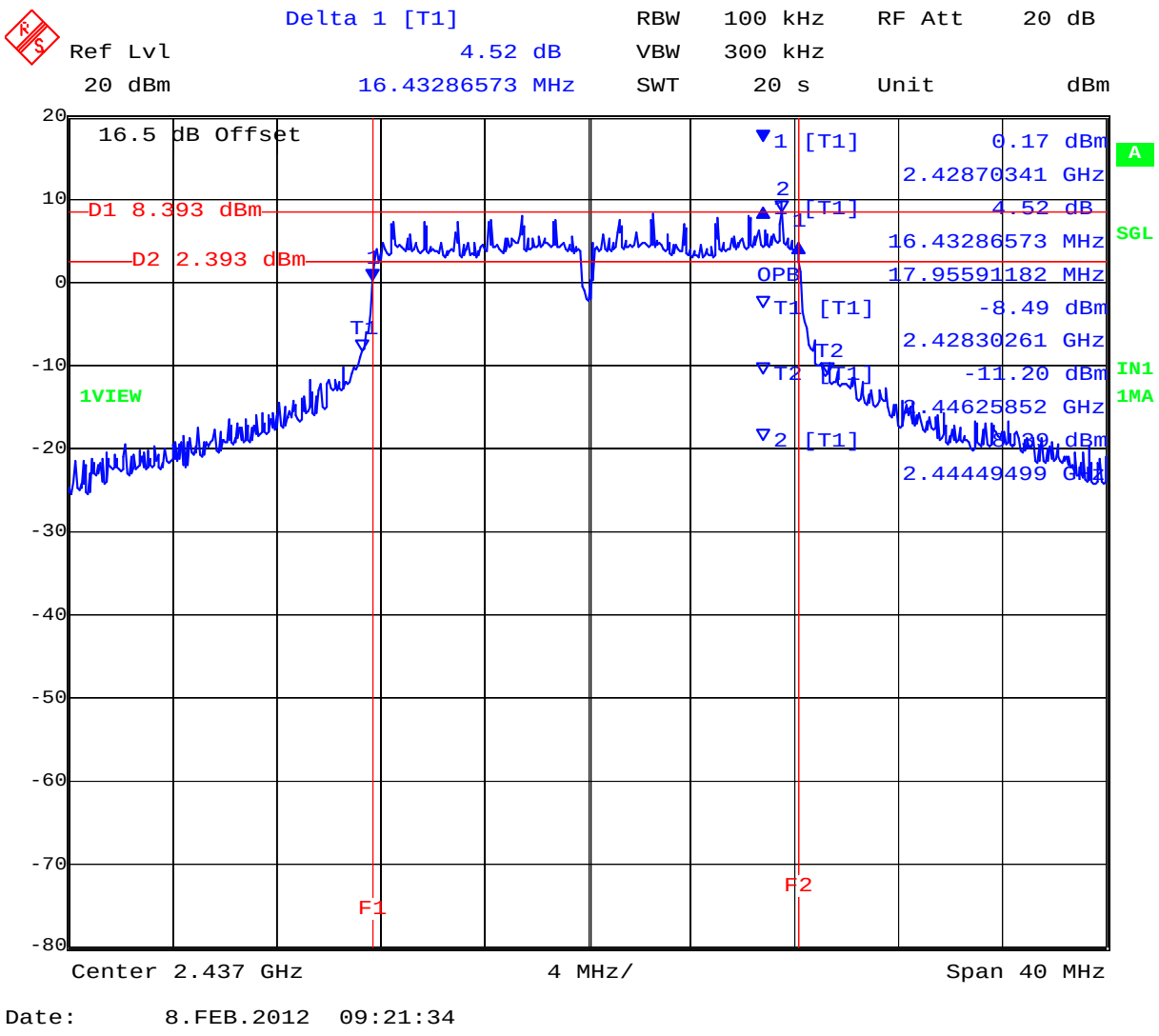
PORT A 2,437 MHz 802.11g Legacy 6 dB and 99% Bandwidth



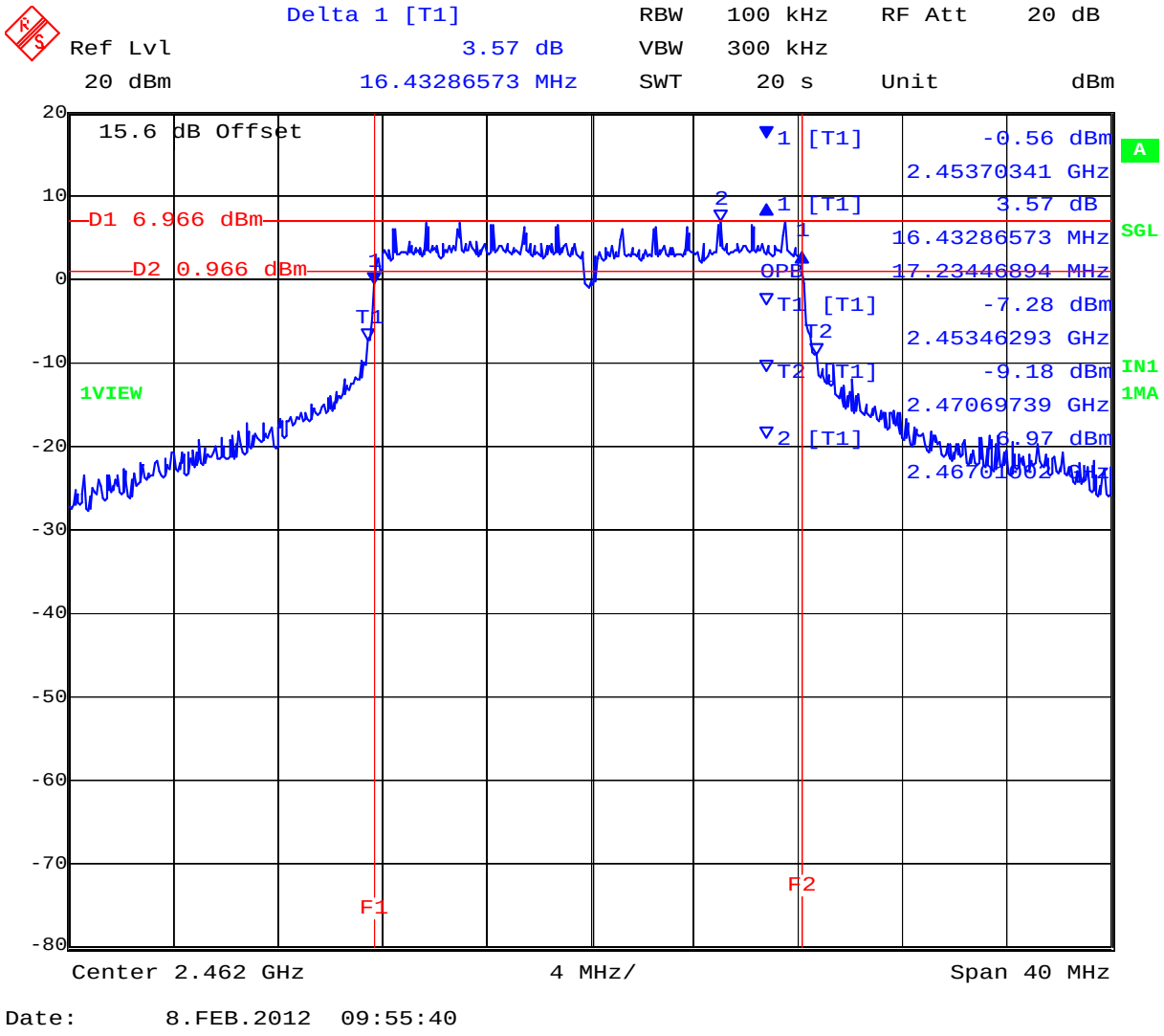
PORT B 2,437 MHz 802.11g Legacy 6 dB and 99% Bandwidth



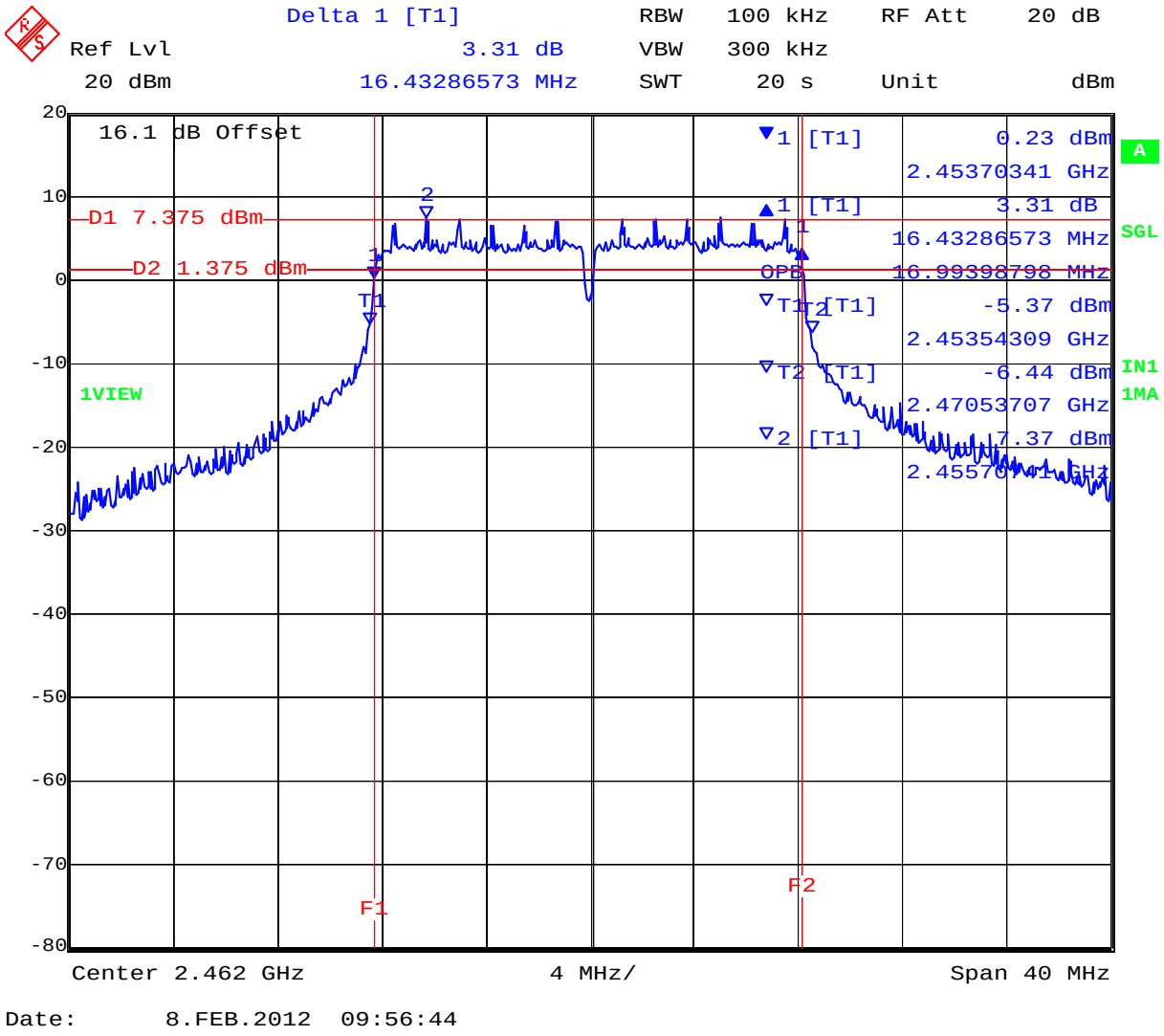
PORT C 2,412 MHz 802.11g Legacy 6 dB and 99% Bandwidth



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



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



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

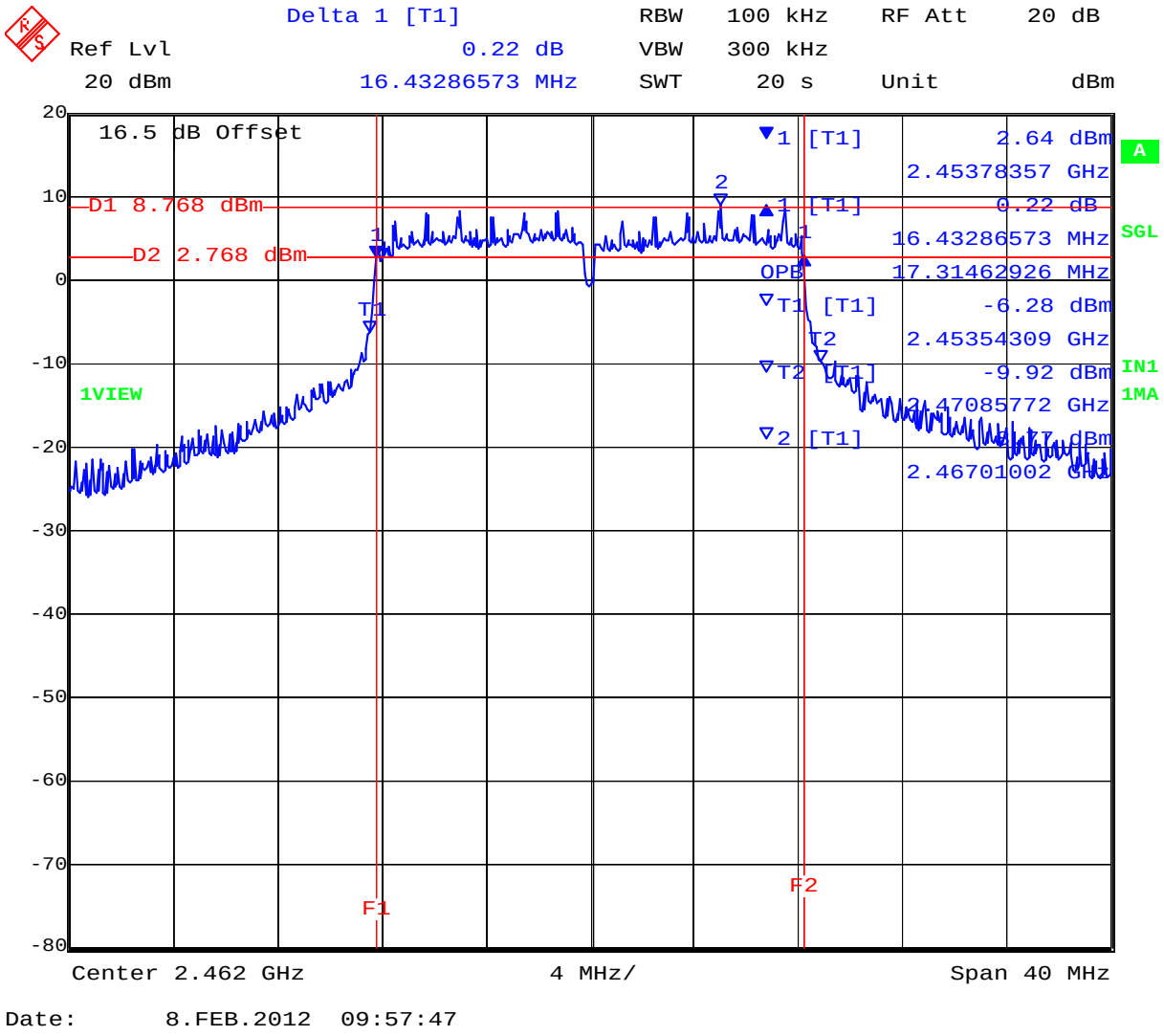


TABLE OF RESULTS – **802.11n HT-20 Legacy**

Test Conditions:	15.247 (a)(2)		**Rel. Humidity (%):**	35 to 42	
Variant:	802.11n HT-20		**Ambient Temp. (ºC):**	19 to 22	
TPC:	HIGH		**Pressure (mBars):**	998 to 1003	
Modulation:	ON		**Duty Cycle (%):**	100	
Beam Forming Gain (Y):	N/A	dB	**Antenna Gain:**	2 dBi	
Applied Voltage:	48.00	Vdc			
Notes 1:					
Notes 2:					

6 dB Bandwidth

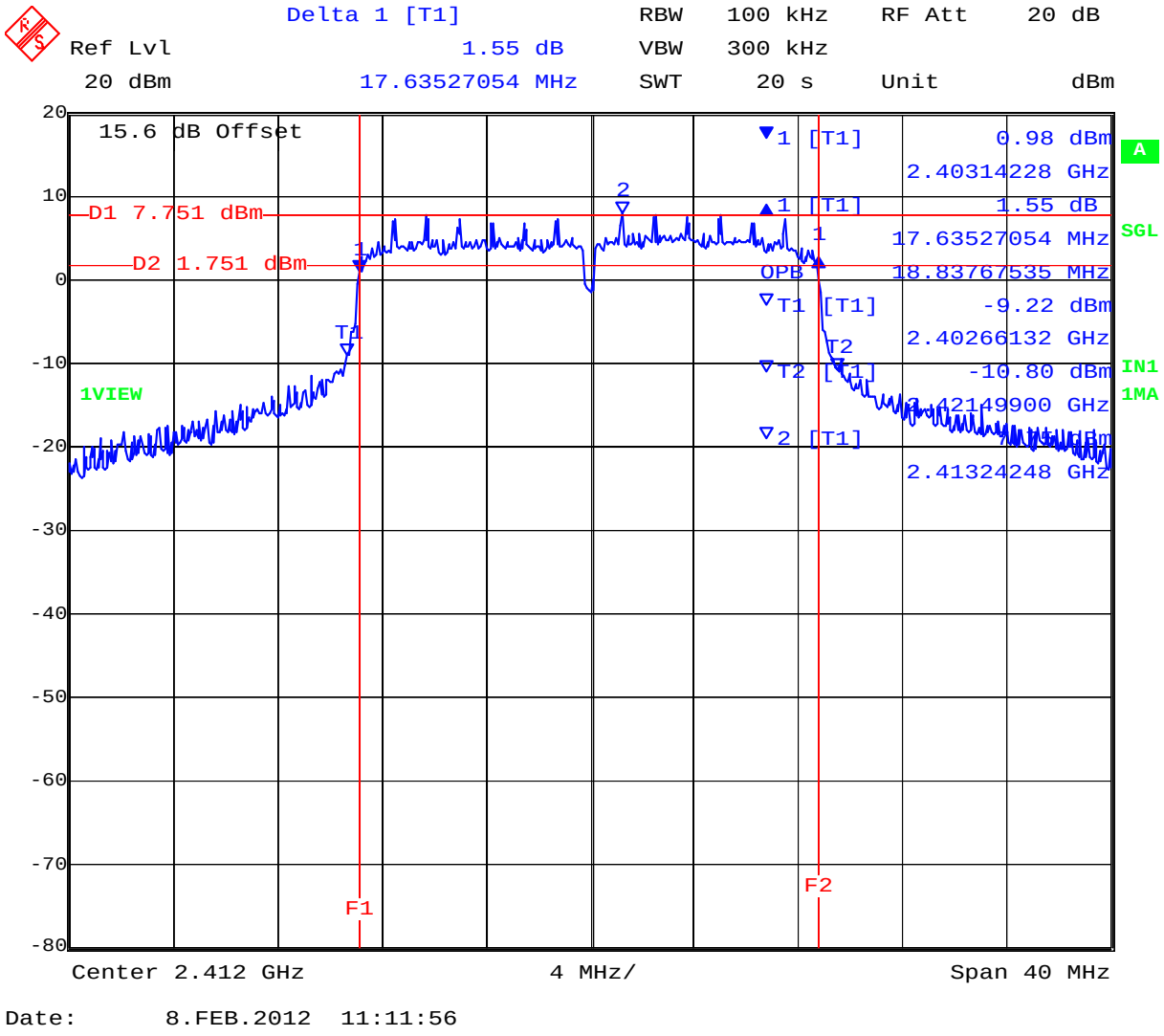
Test Frequency	6 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	**a**	**b**	**c**	**d**	**kHz**	**MHz**	**MHz**
2412.000	17.635000	17.635000	17.635000	--	500	0.5	-17.135000
2437.000	17.635000	17.395000	17.395000	--			-16.895000
2462.000	17.635000	17.635000	17.635000	--			-17.135000

99% Bandwidth

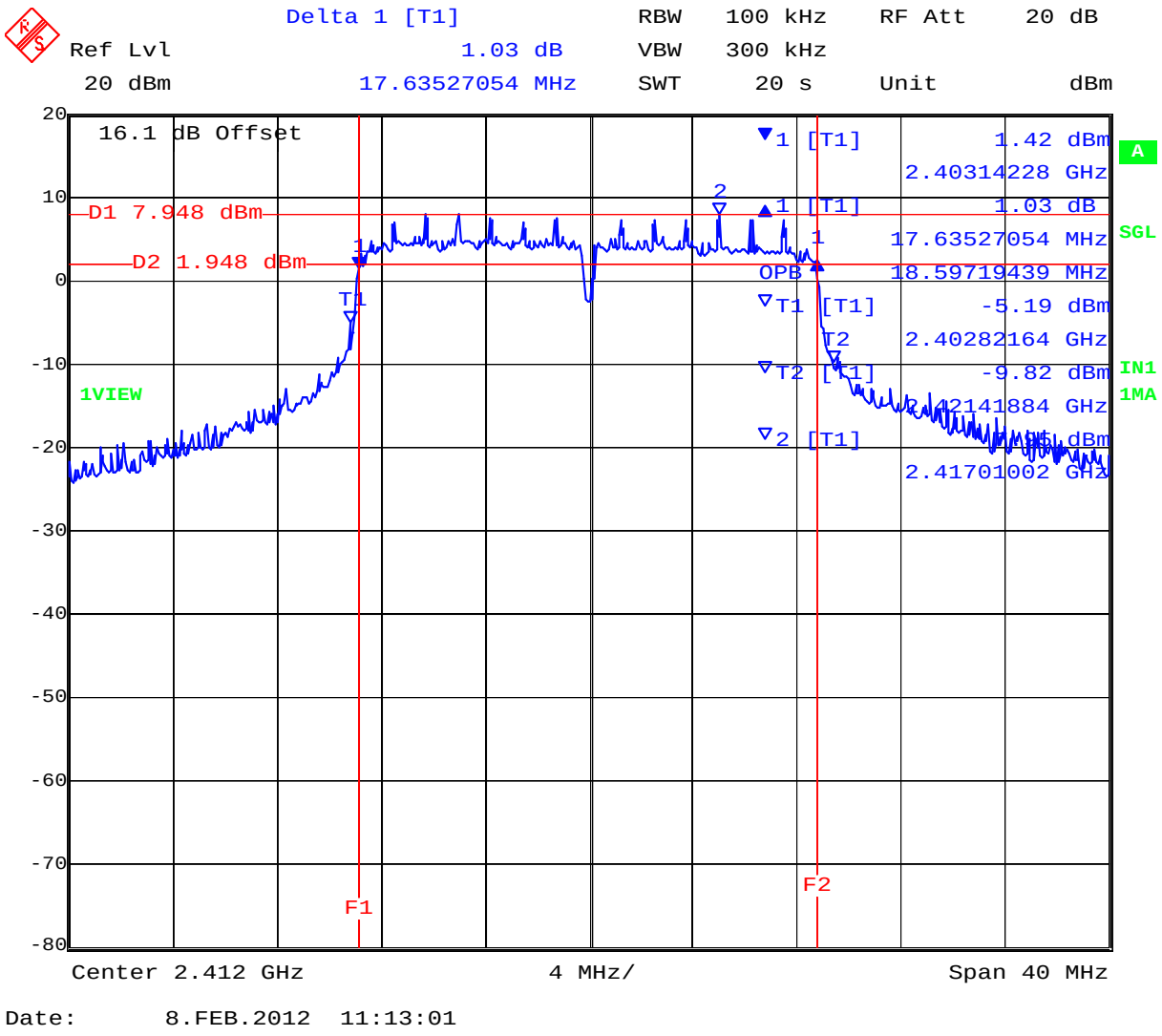
Test Frequency	99 % Bandwidth						
	MHz						
MHz	**a**	**b**	**c**	**d**			
2412.000	18.838000	18.597000	18.677000	--			
2437.000	18.677000	18.036000	18.918000	--			
2462.000	17.956000	17.956000	18.196000	--			

Measurement uncertainty:	±2.81 dB

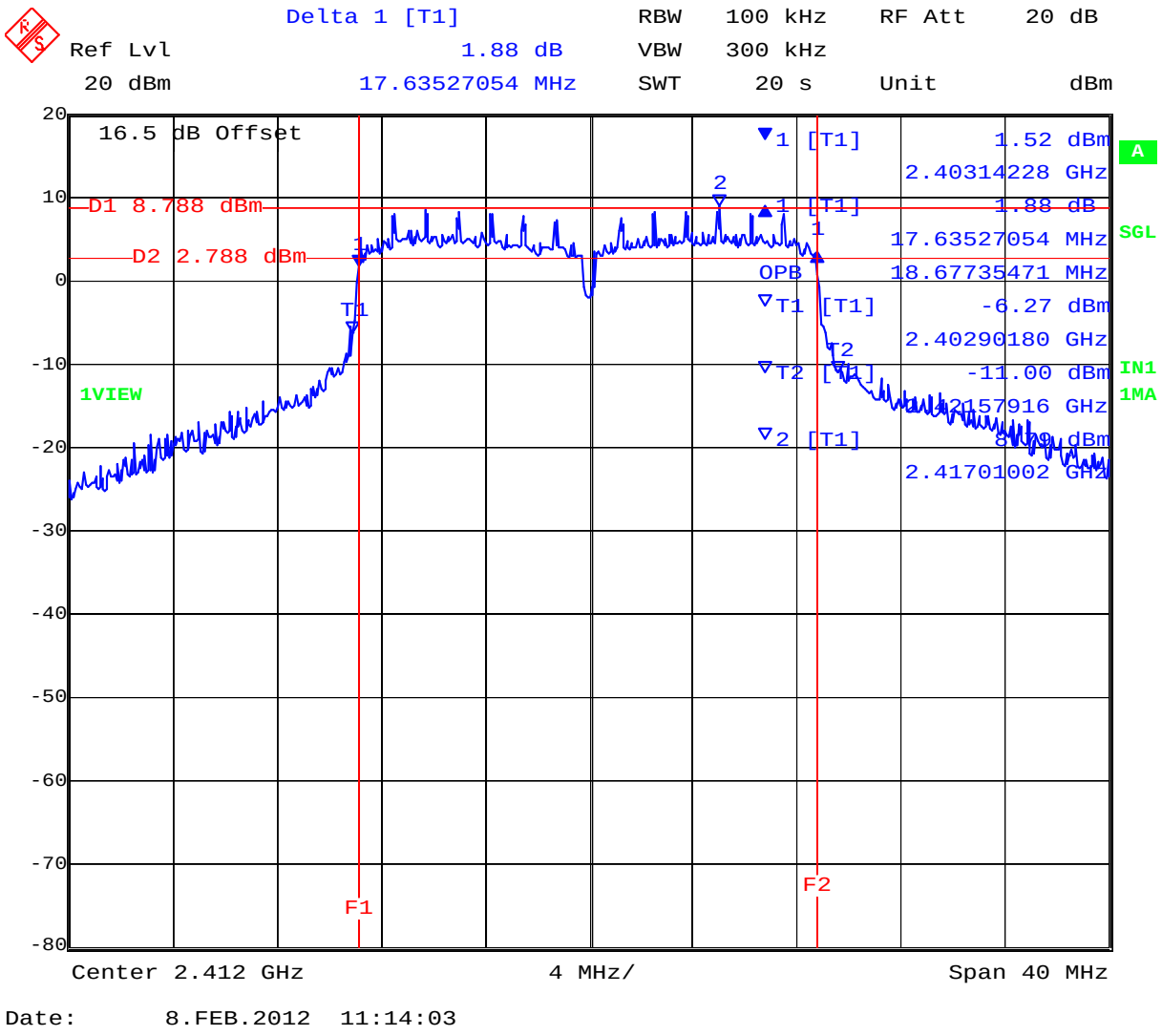
PORT A 2,412 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



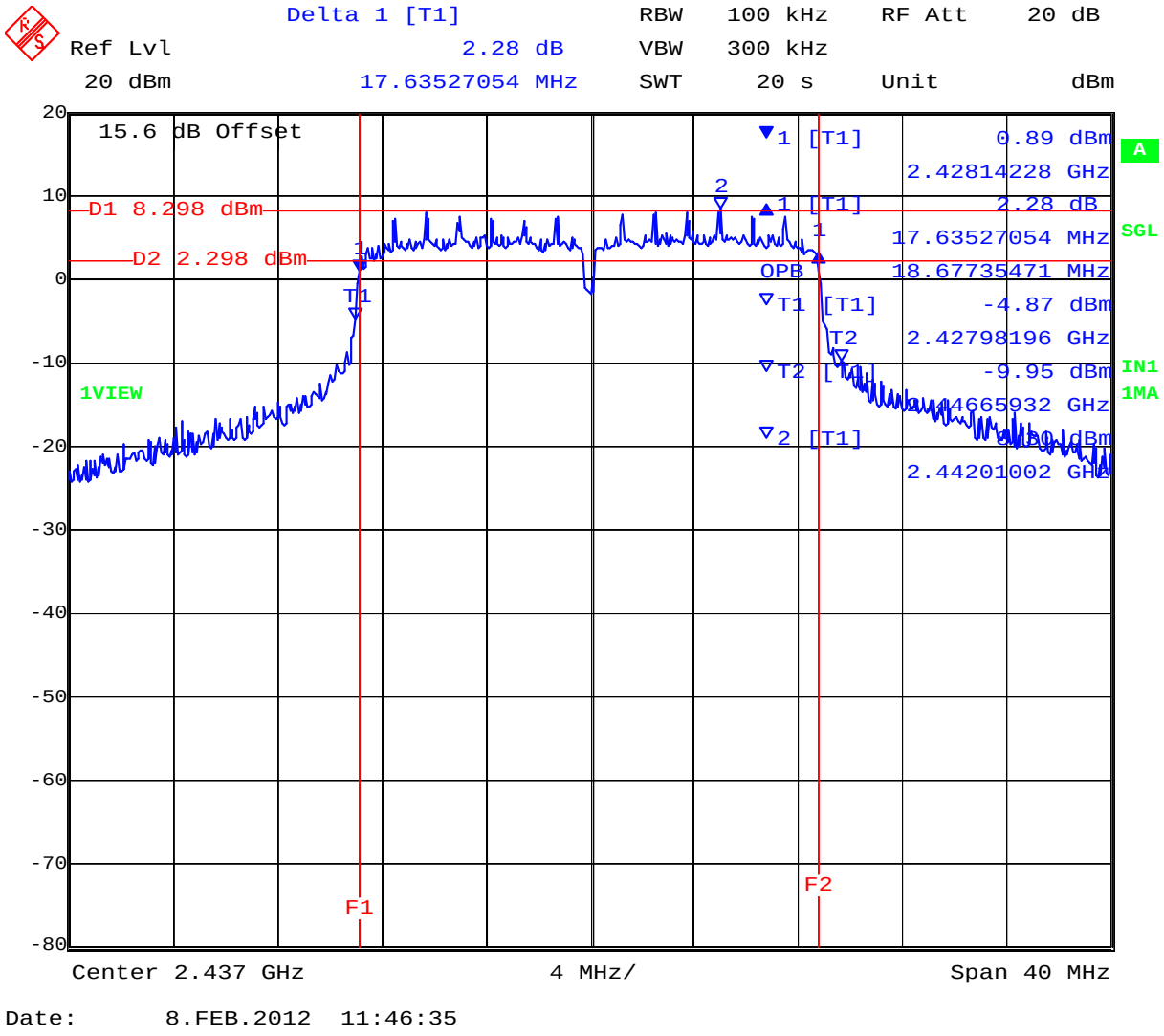
PORT B 2,412 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



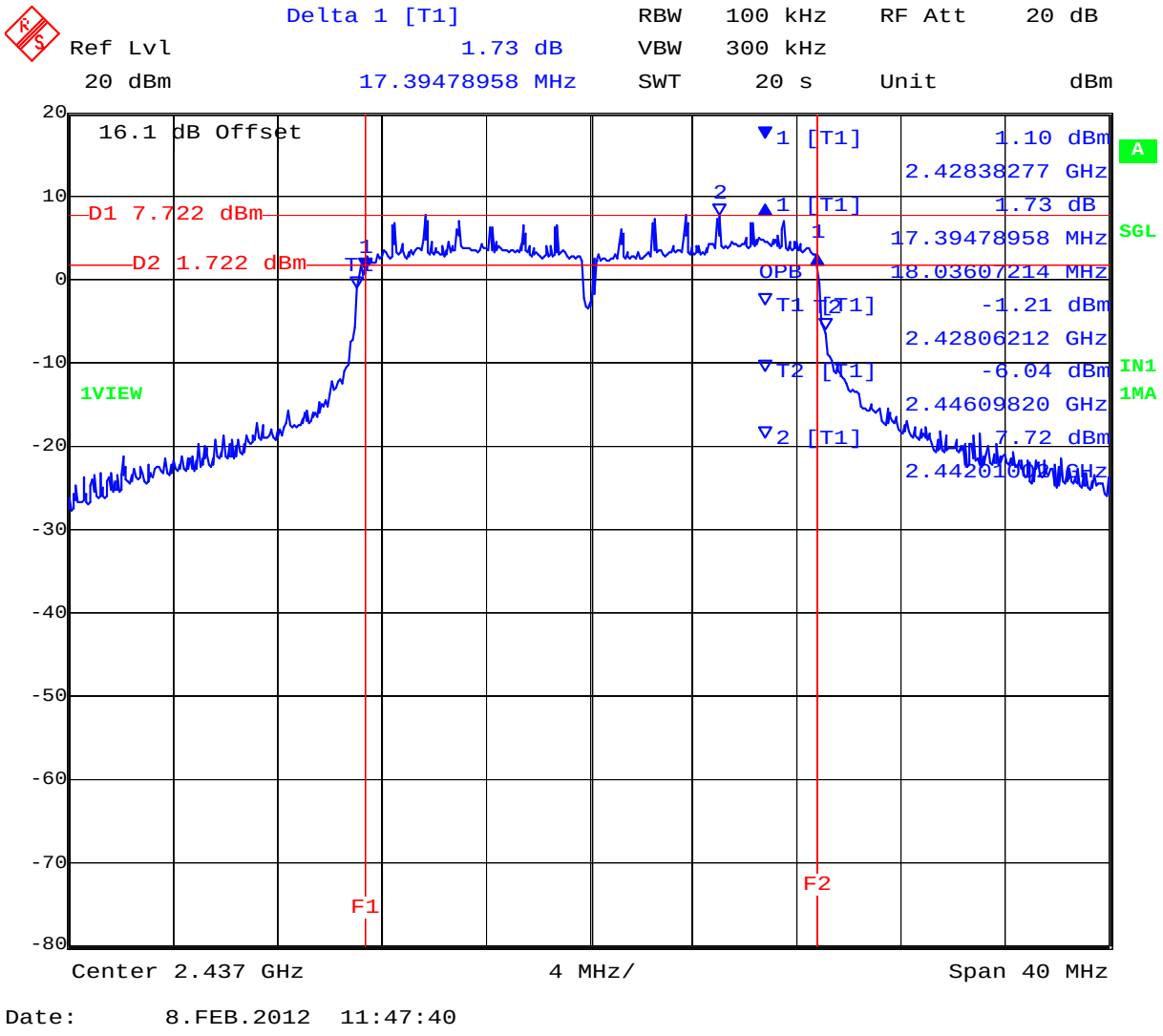
PORT C 2,412 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



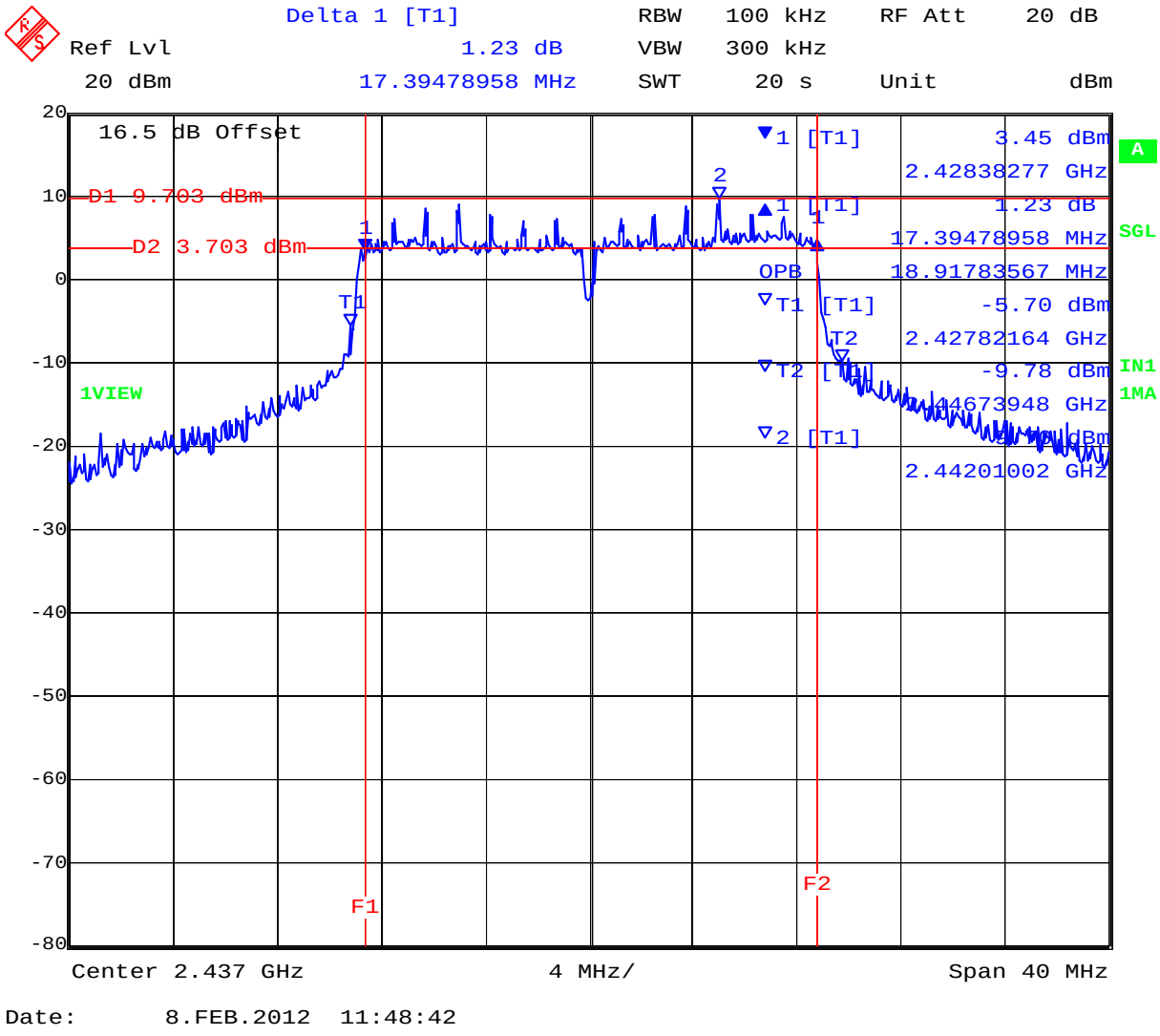
PORT A 2,437 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



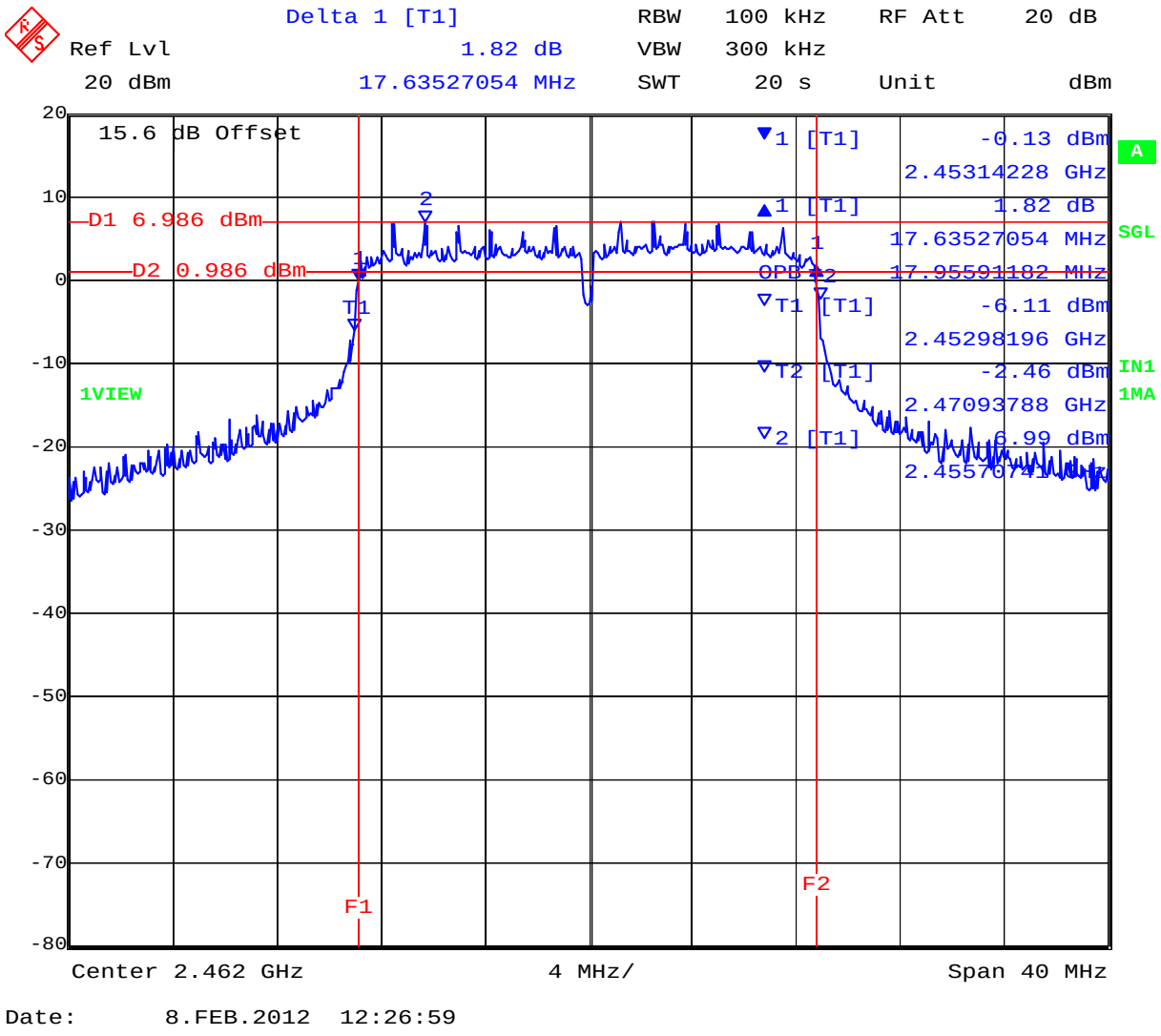
PORT B 2,437 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



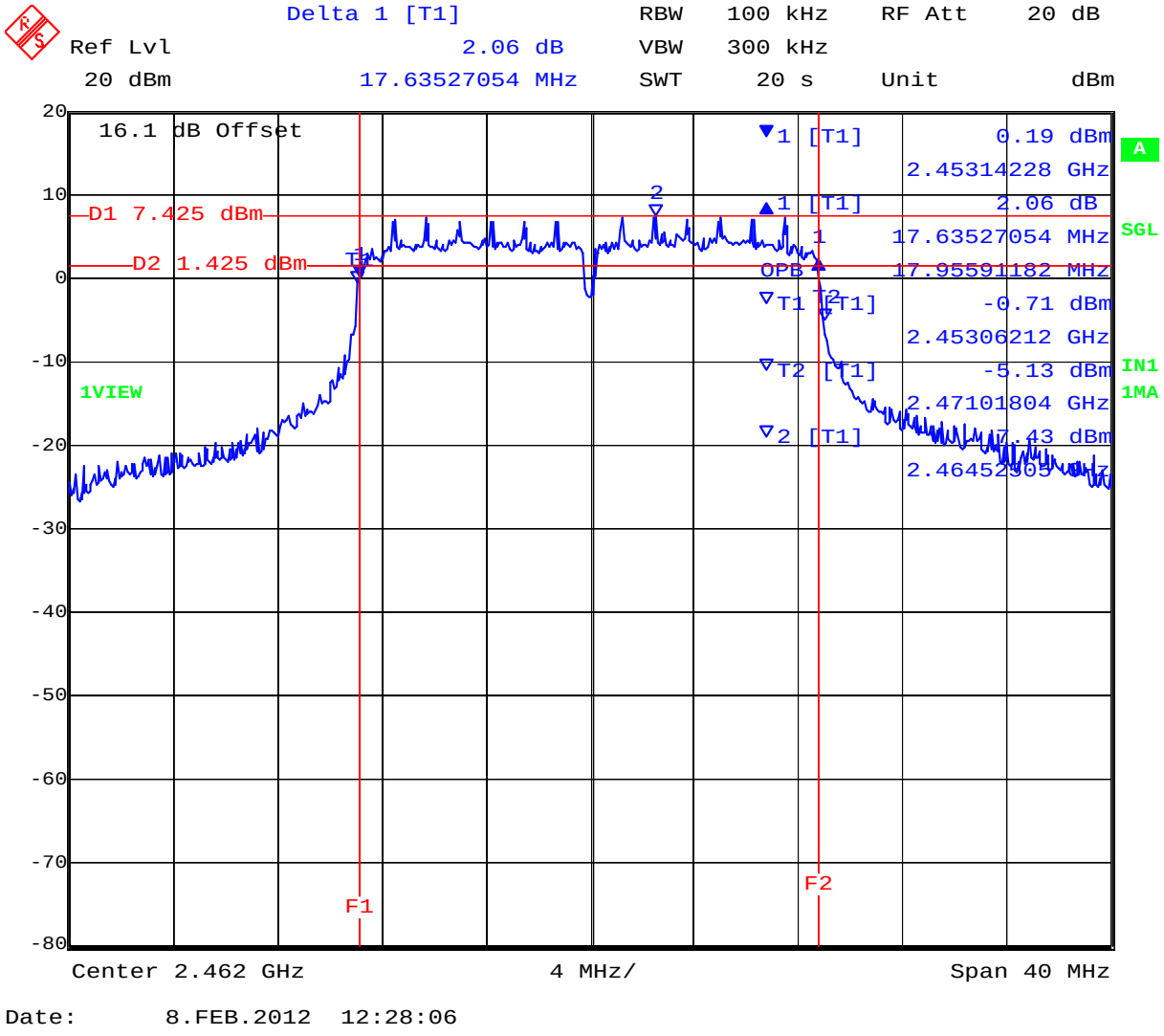
PORT C 2,437 MHz 802.11n HT-20 Legacy 6 dB and 99% Bandwidth



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



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



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

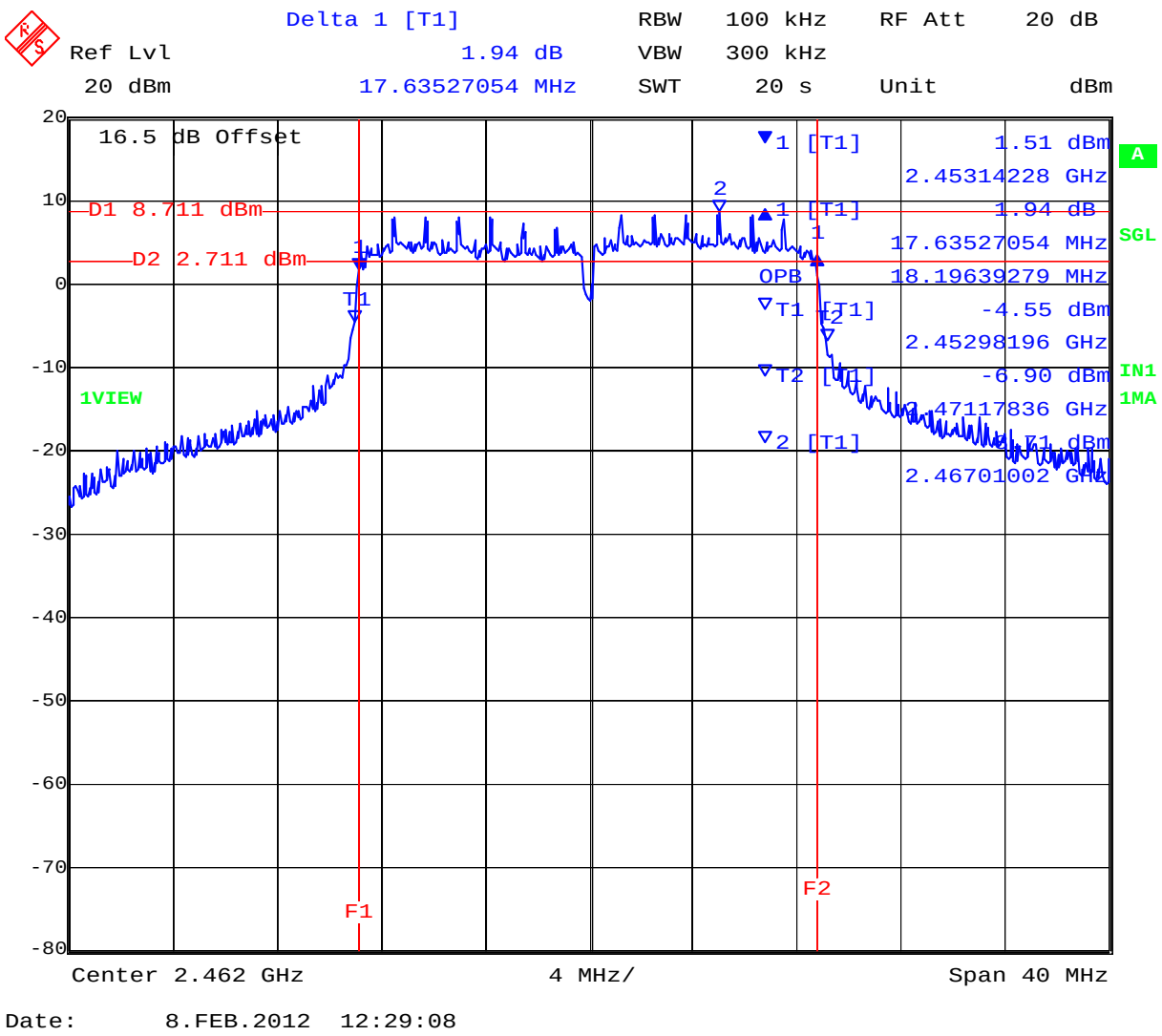


TABLE OF RESULTS – **802.11n HT-40 Legacy**

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

6 dB Bandwidth

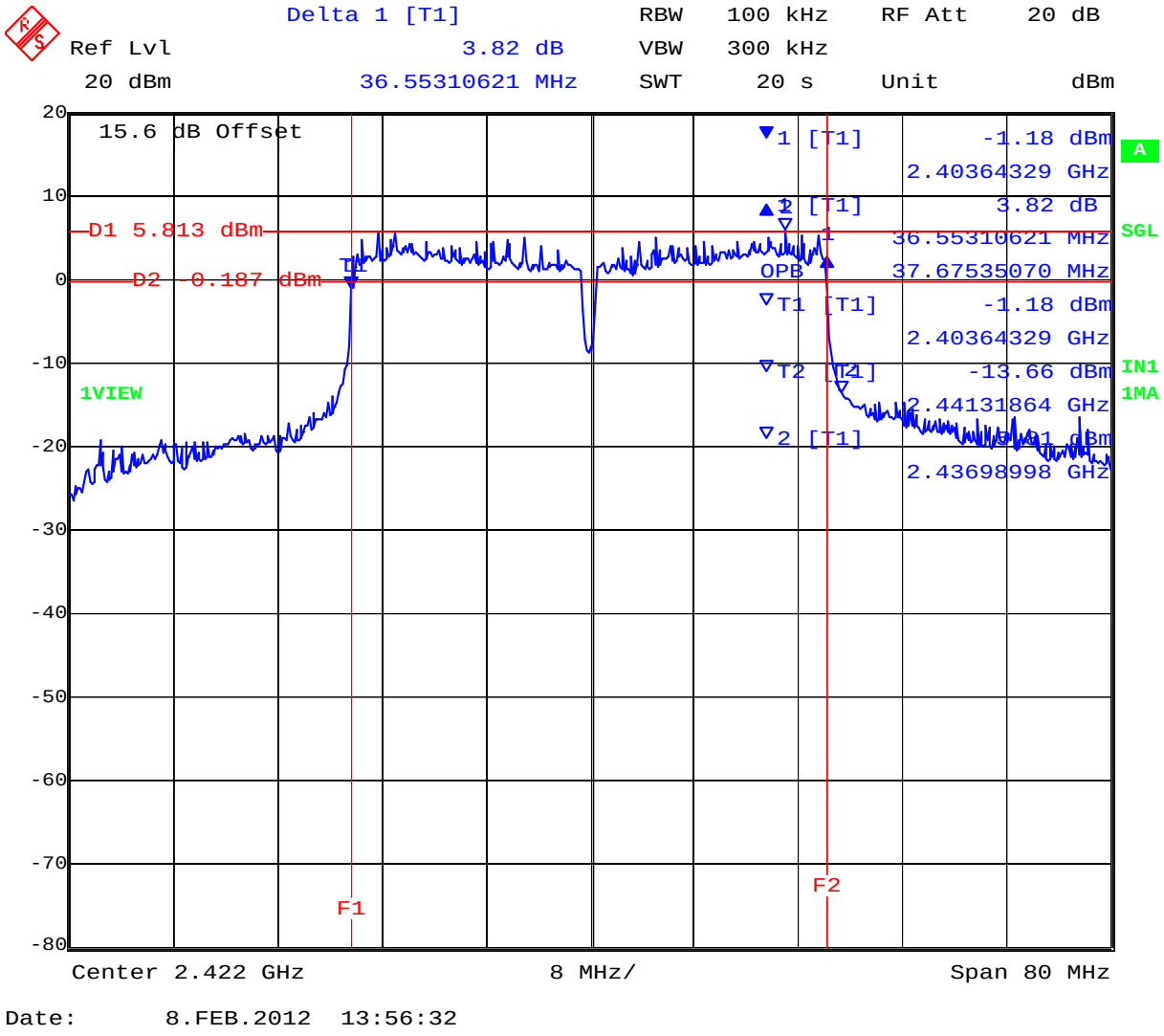
Test Frequency	6 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	**a**	**b**	**c**	**d**	**kHz**	**MHz**	**MHz**
2422.000	36.553000	36.713000	36.874000	--	500	0.5	-36.053000
2437.000	36.553000	36.713000	36.713000	--			-36.053000
2452.000	36.713000	36.553000	36.553000	--			-36.053000

99% Bandwidth

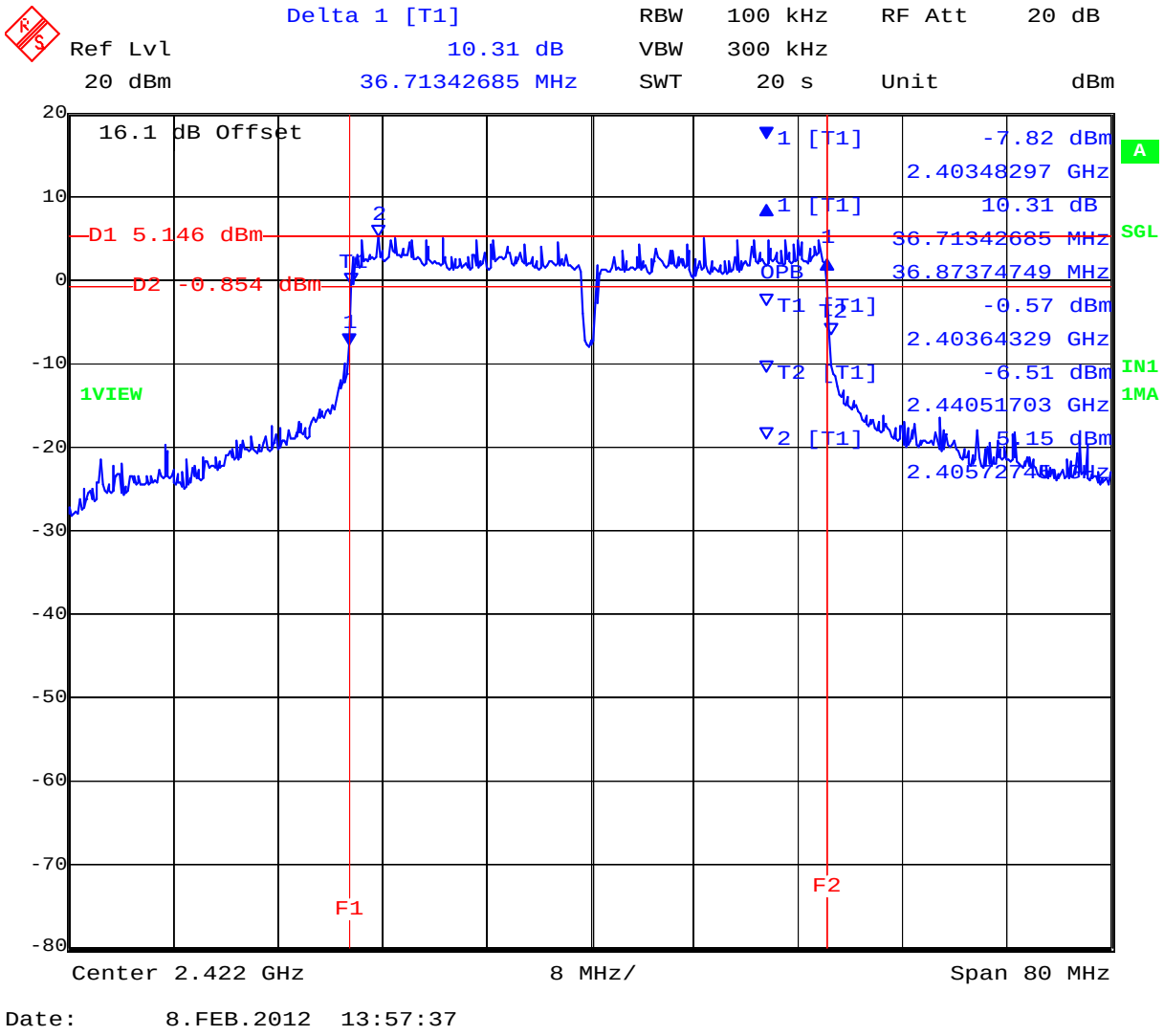
Test Frequency	99 % Bandwidth						
	MHz						
MHz	**a**	**b**	**c**	**d**			
2422.000	37.675000	36.874000	37.355000	--			
2437.000	36.713000	36.713000	36.874000	--			
2452.000	36.874000	36.553000	37.034000	--			

Measurement uncertainty:	±2.81 dB

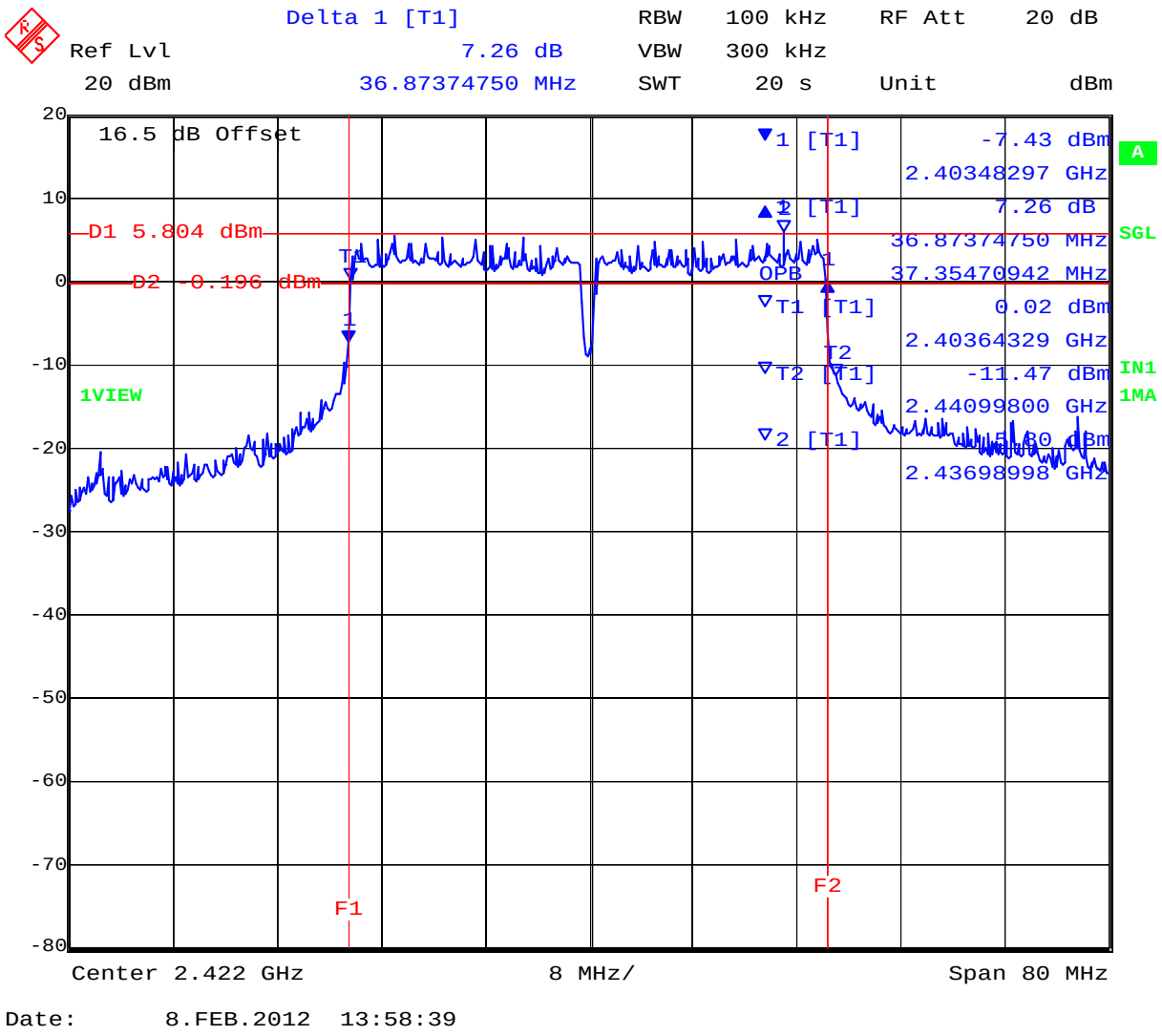
PORT A 2,422 MHz 802.11n HT-40 Legacy 6 dB and 99% Bandwidth



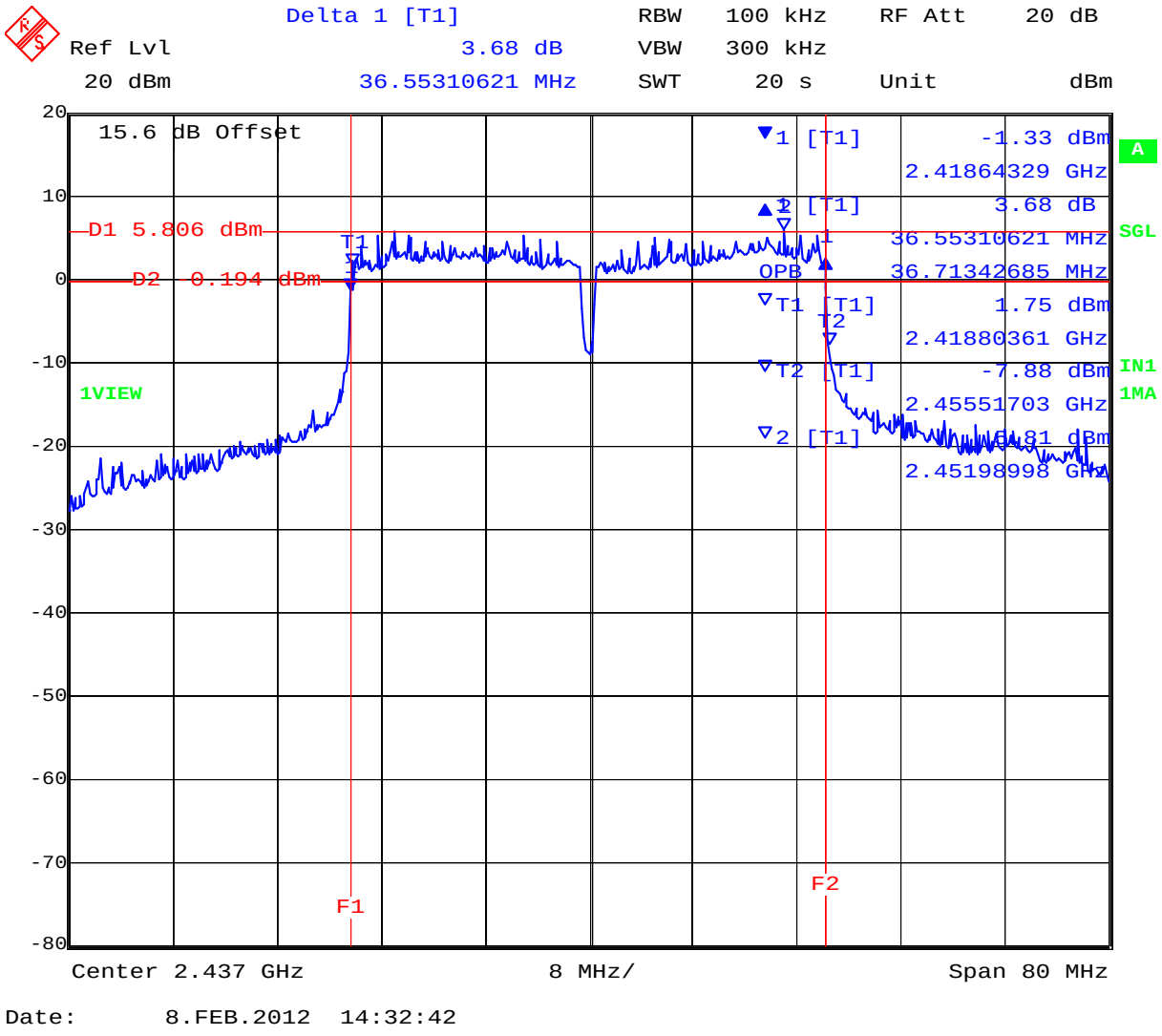
PORT B 2,422 MHz 802.11n HT-40 Legacy 6 dB and 99% Bandwidth



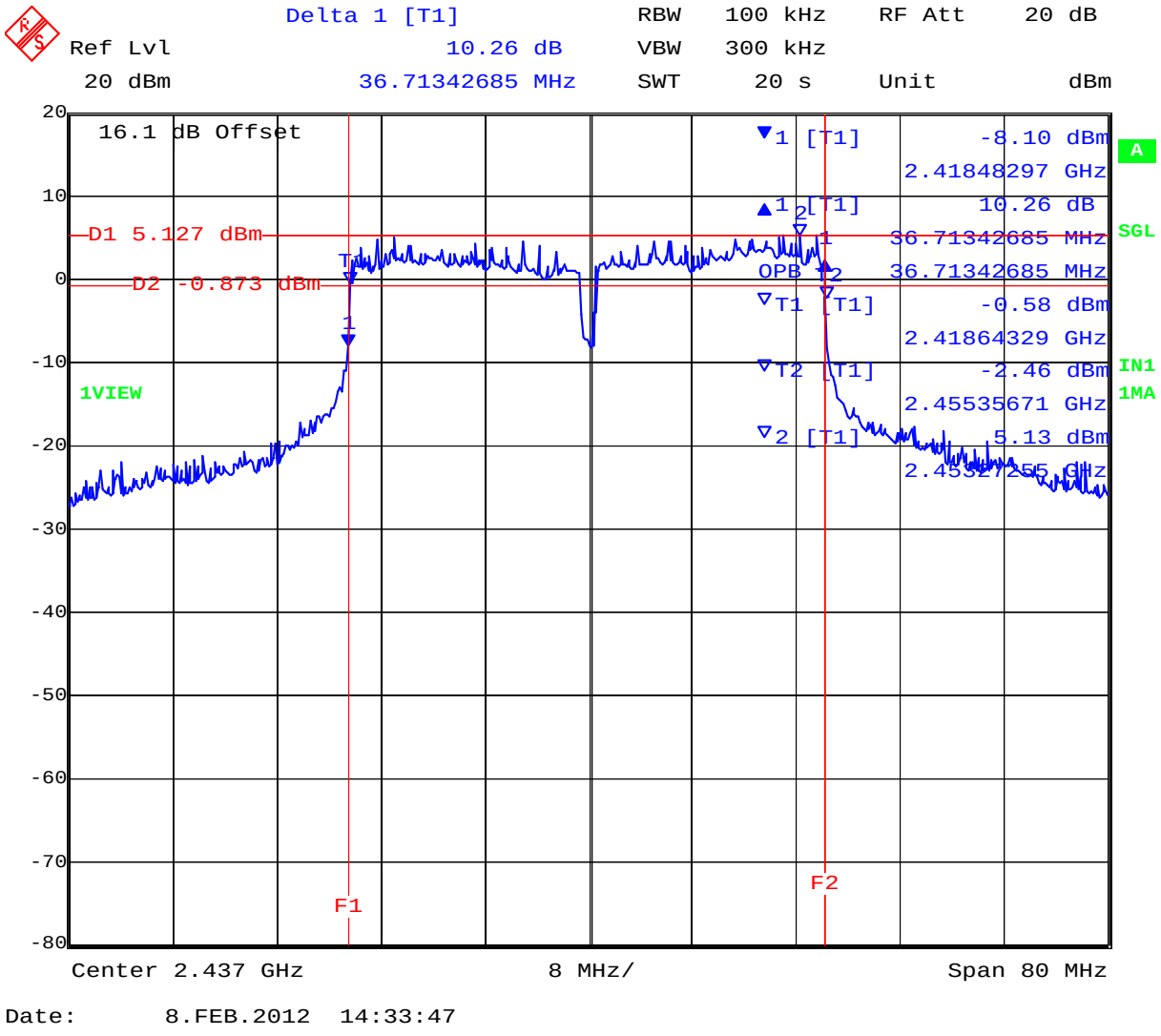
PORT C 2,422 MHz 802.11n HT-40 Legacy 6 dB and 99% Bandwidth



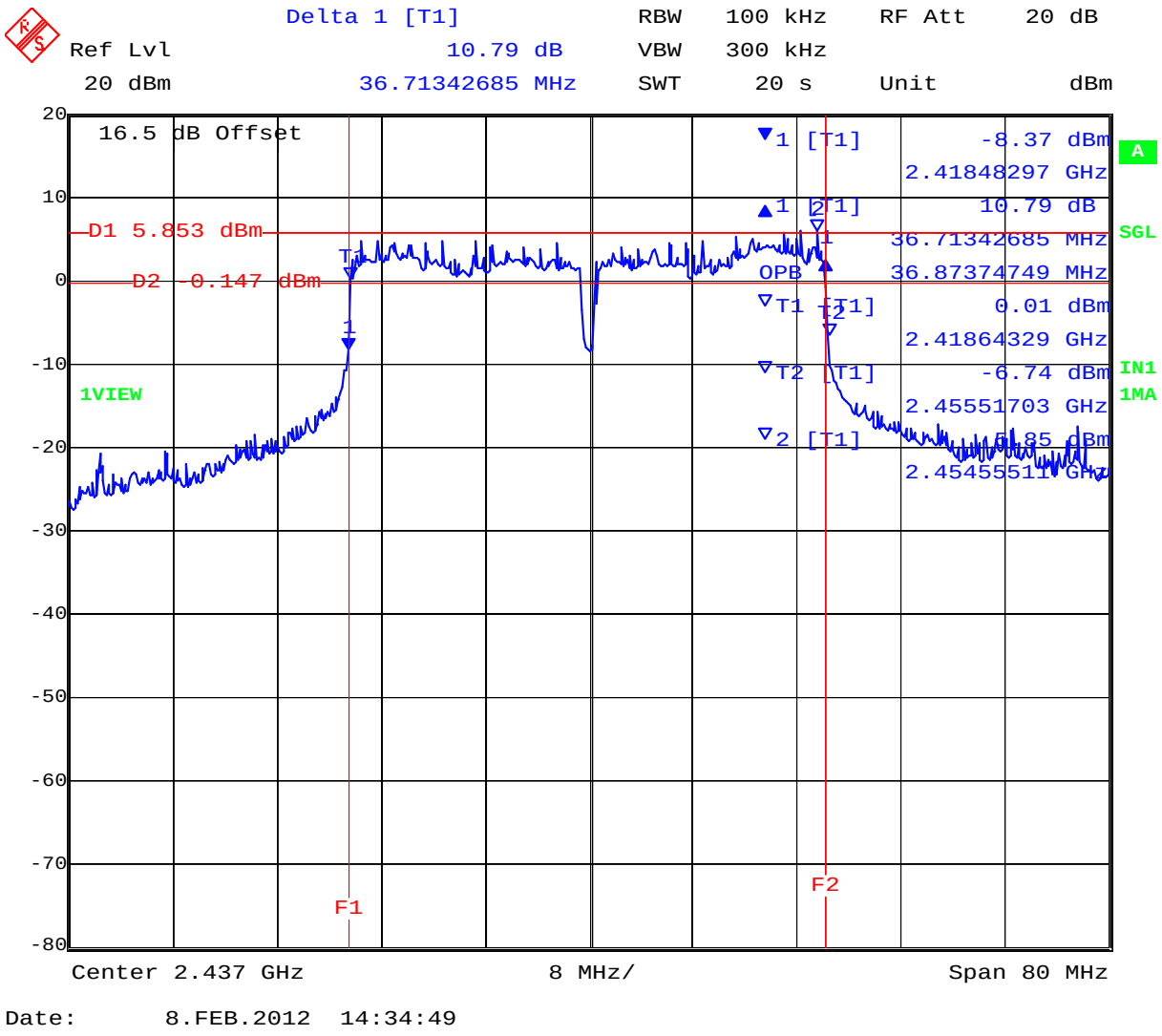
PORT A 2,437 MHz 802.11n HT-40 Legacy 6 dB and 99% Bandwidth



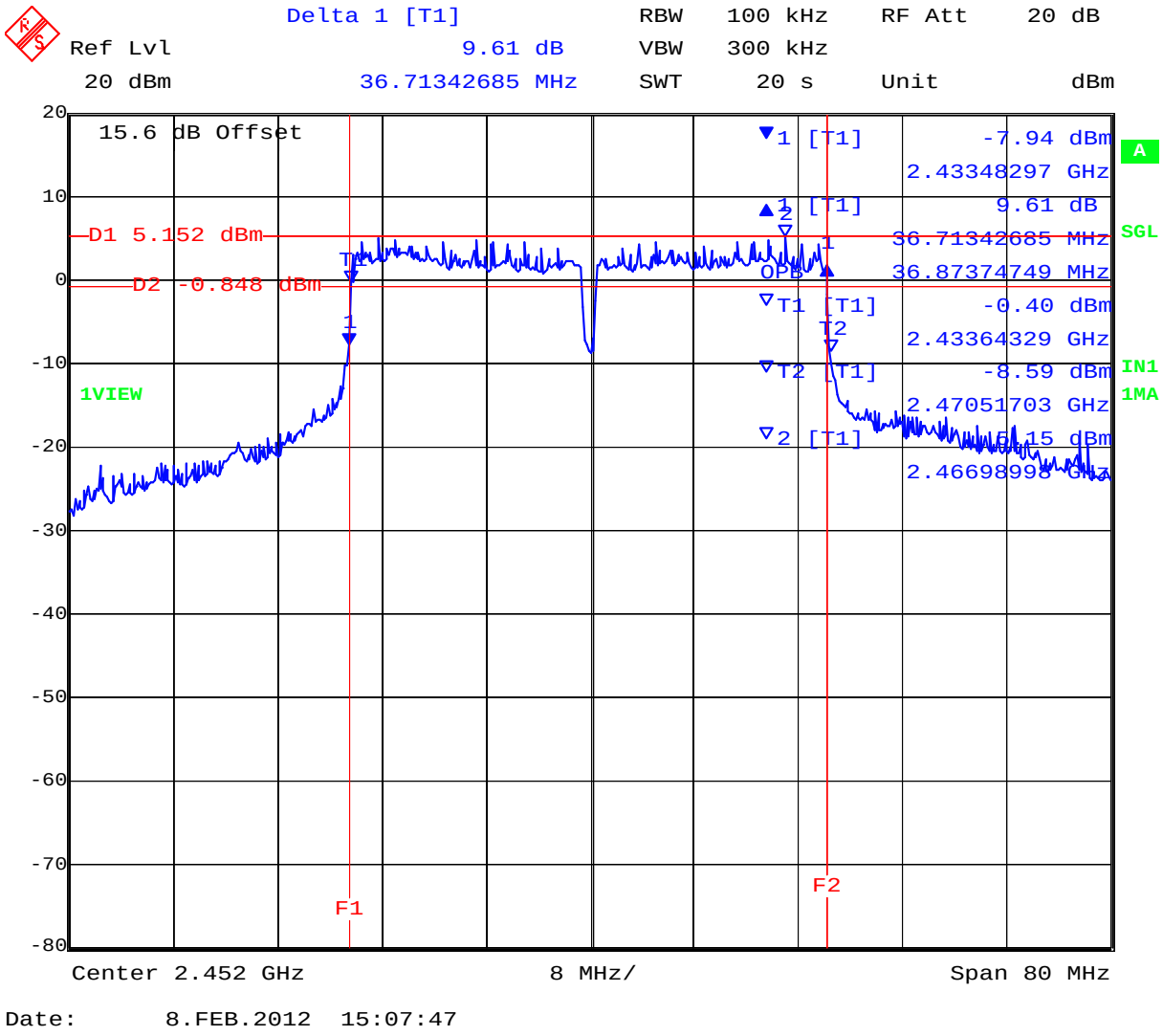
PORT B 2,437 MHz 802.11n HT-40 Legacy 6 dB and 99% Bandwidth



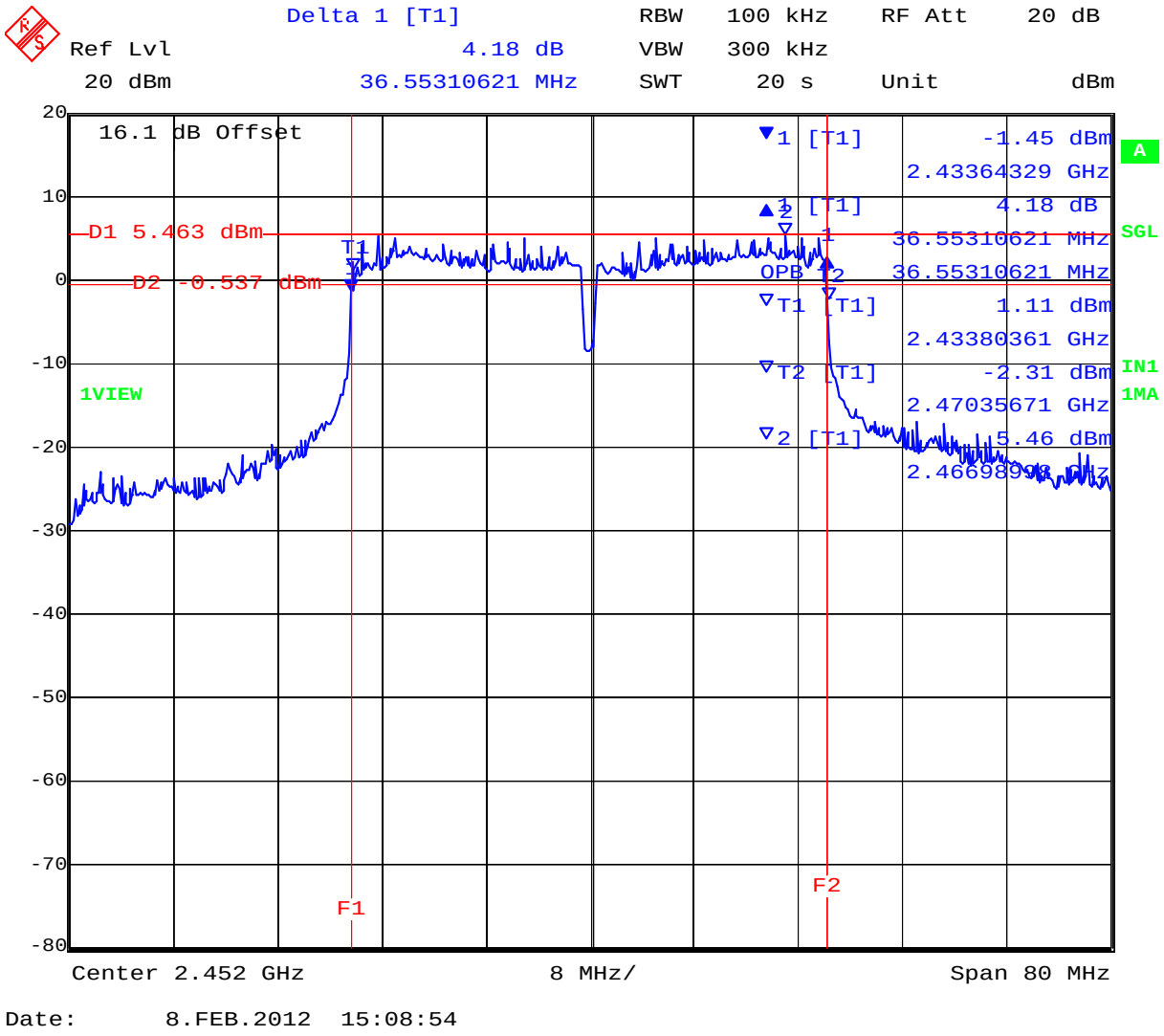
PORT C 2,437 MHz 802.11n HT-40 Legacy 6 dB and 99% Bandwidth



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



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



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

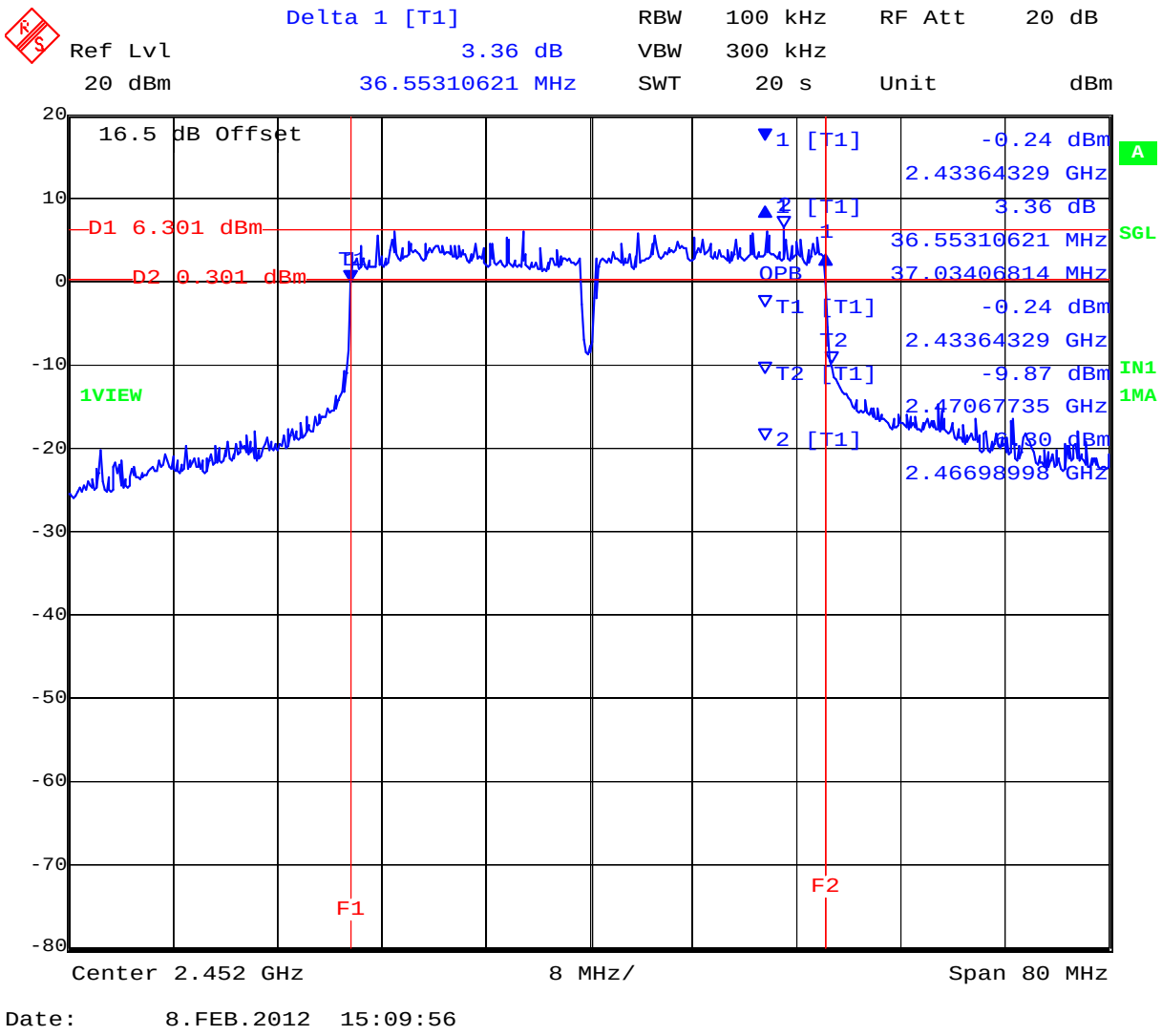


TABLE OF RESULTS – **802.11a - Legacy**

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

6 dB Bandwidth

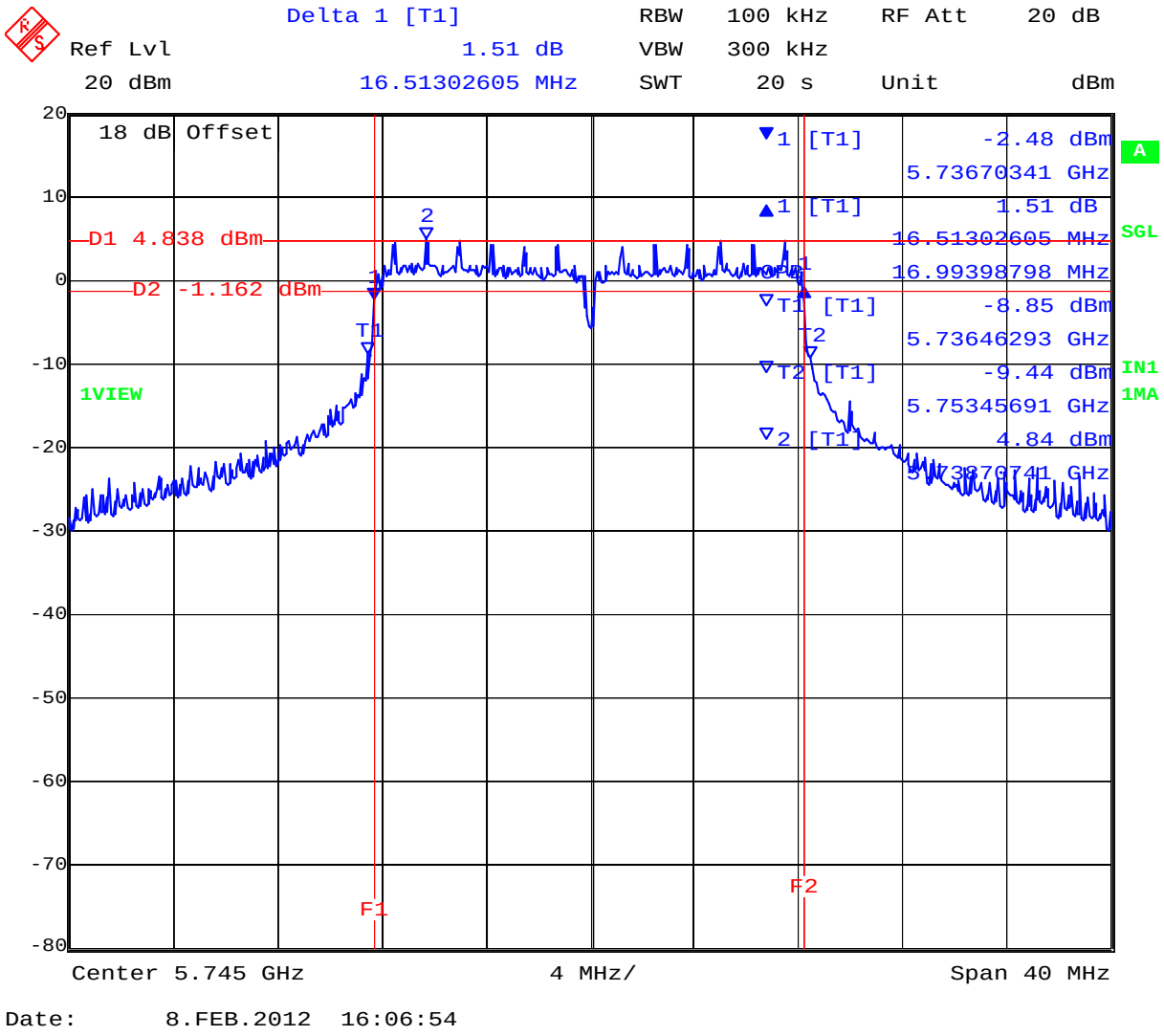
Test Frequency	**6 dB Bandwidth**				**Minimum 6dB Bandwidth Limit**		**Margin**
	MHz						
MHz	**a**	**b**	**c**	**d**	**kHz**	**MHz**	**MHz**
5745.000	16.513000	16.353000	16.433000	--	500	0.5	-15.853000
5785.000	16.433000	16.353000	16.433000	--			-15.853000
5825.000	16.433000	16.433000	16.433000	--			-15.933000

99% Bandwidth

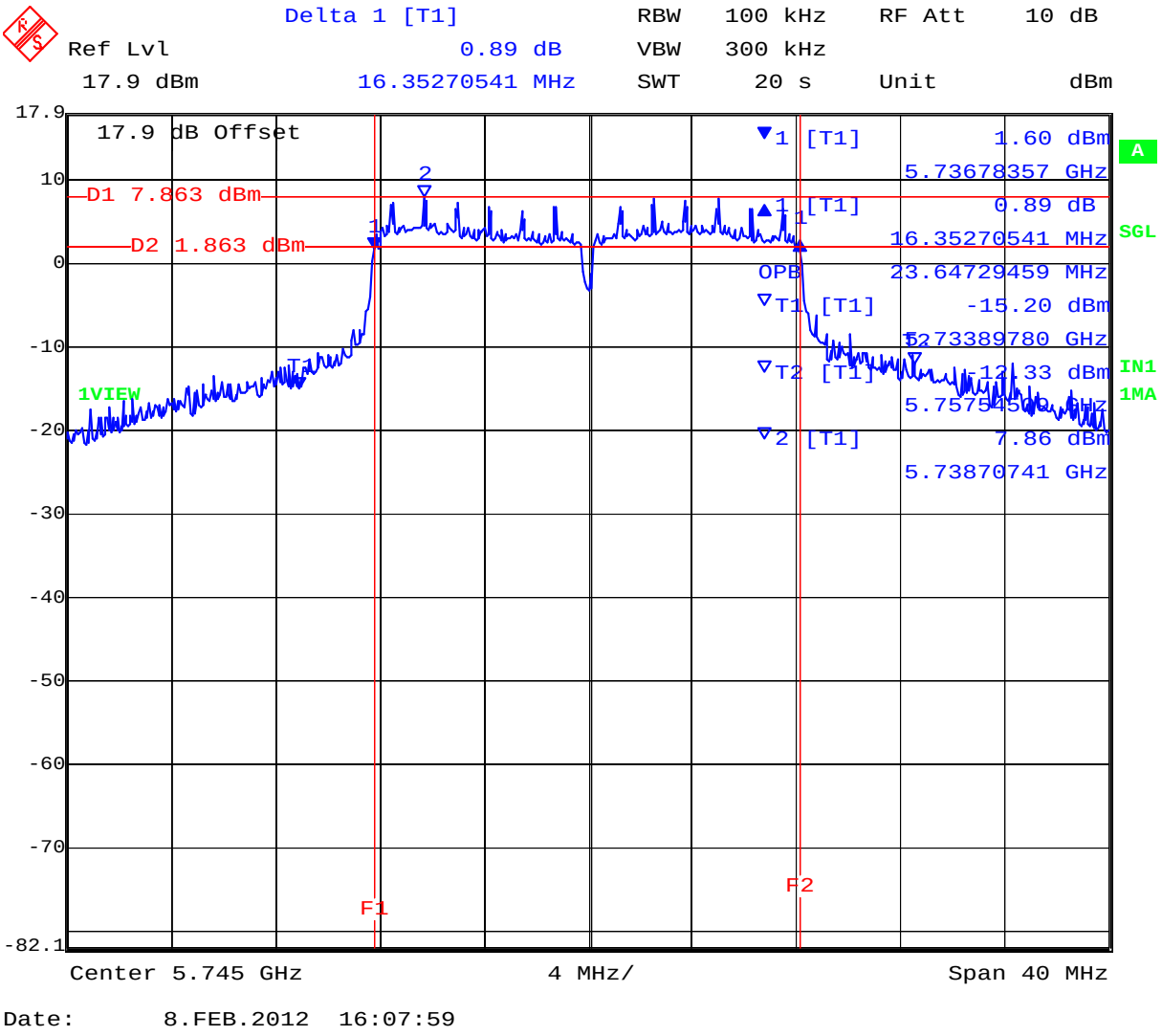
Test Frequency	**99 % Bandwidth**						
	MHz						
MHz	**a**	**b**	**c**	**d**			
5745.000	16.994000	23.647000	17.234000	--			
5785.000	16.994000	27.335000	19.238000	--			
5825.000	16.914000	28.136000	20.922000	--			

Measurement uncertainty:	±2.81 dB

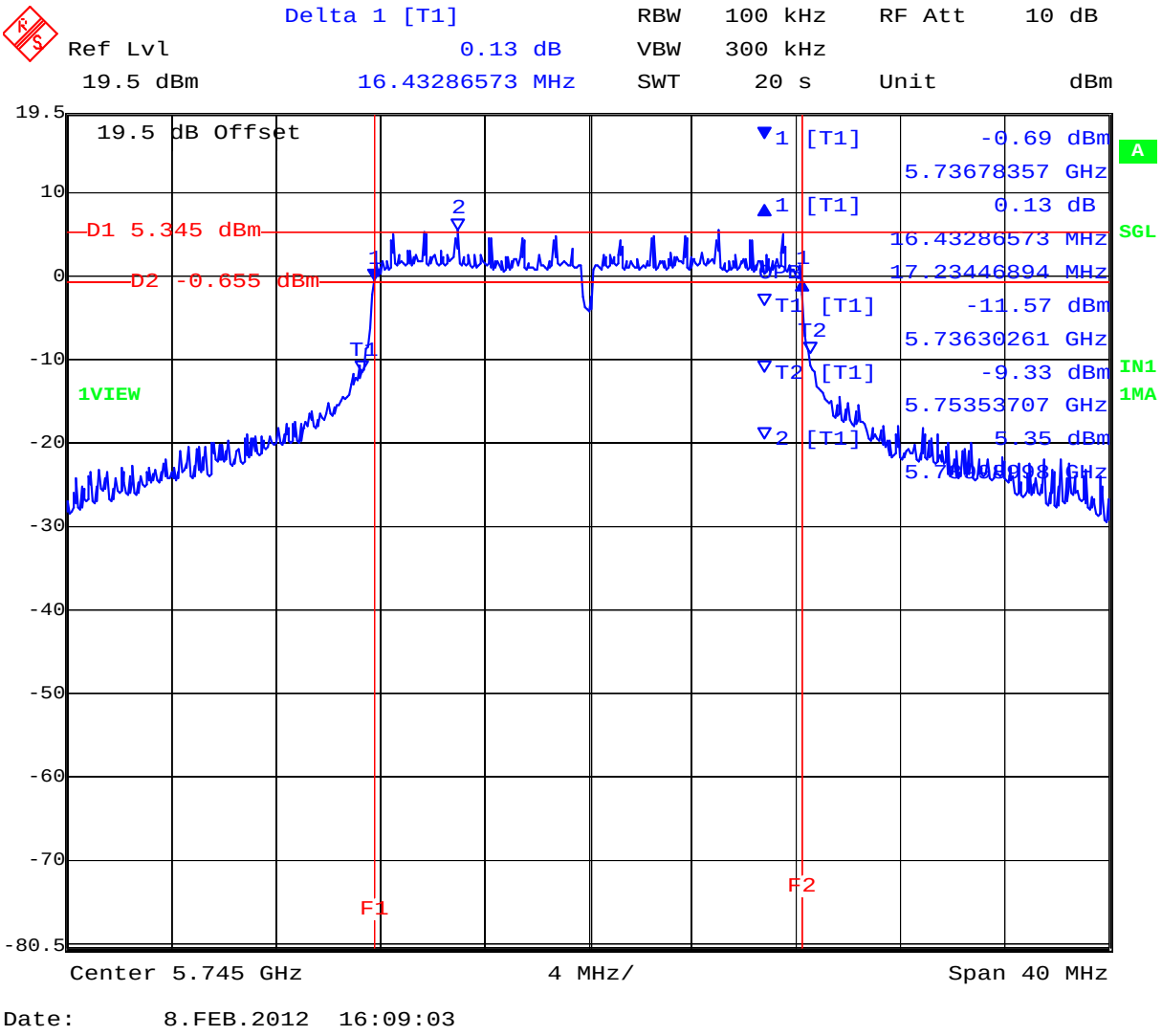
PORT A 5,745 MHz 802.11a Legacy 6 dB and 99% Bandwidth



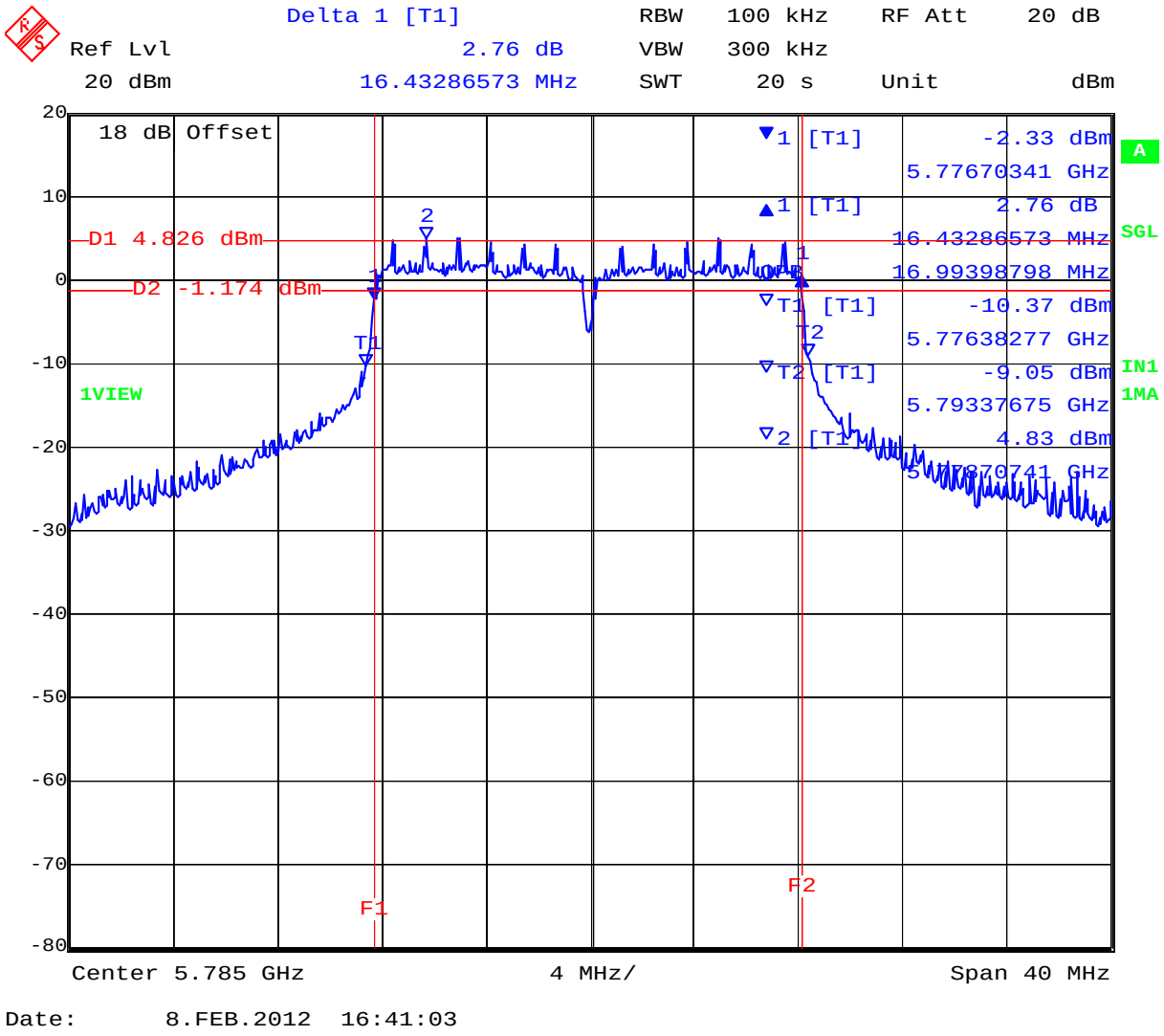
PORT B 5,745 MHz 802.11a Legacy 6 dB and 99% Bandwidth



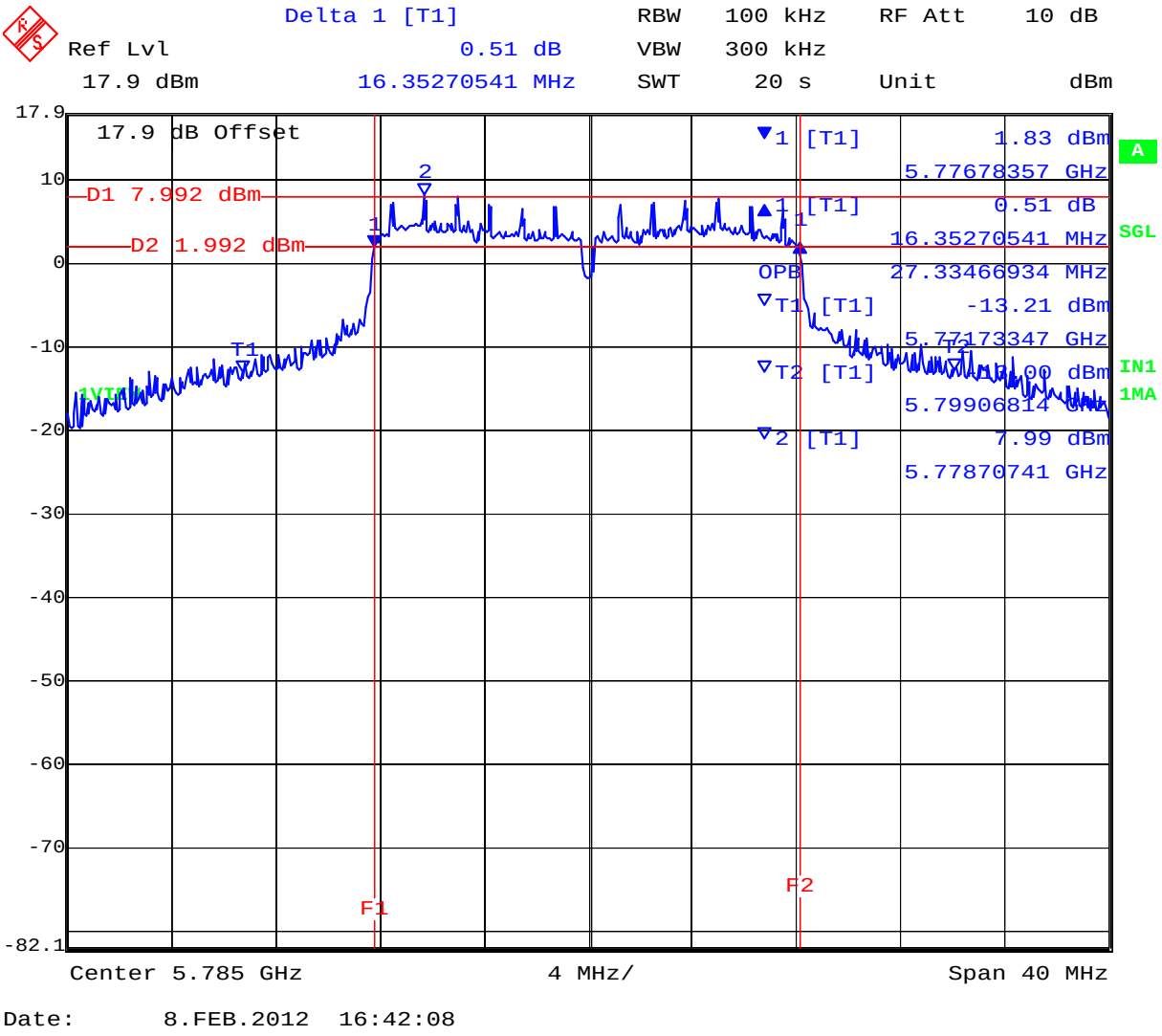
PORT C 5,745 MHz 802.11a Legacy 6 dB and 99% Bandwidth



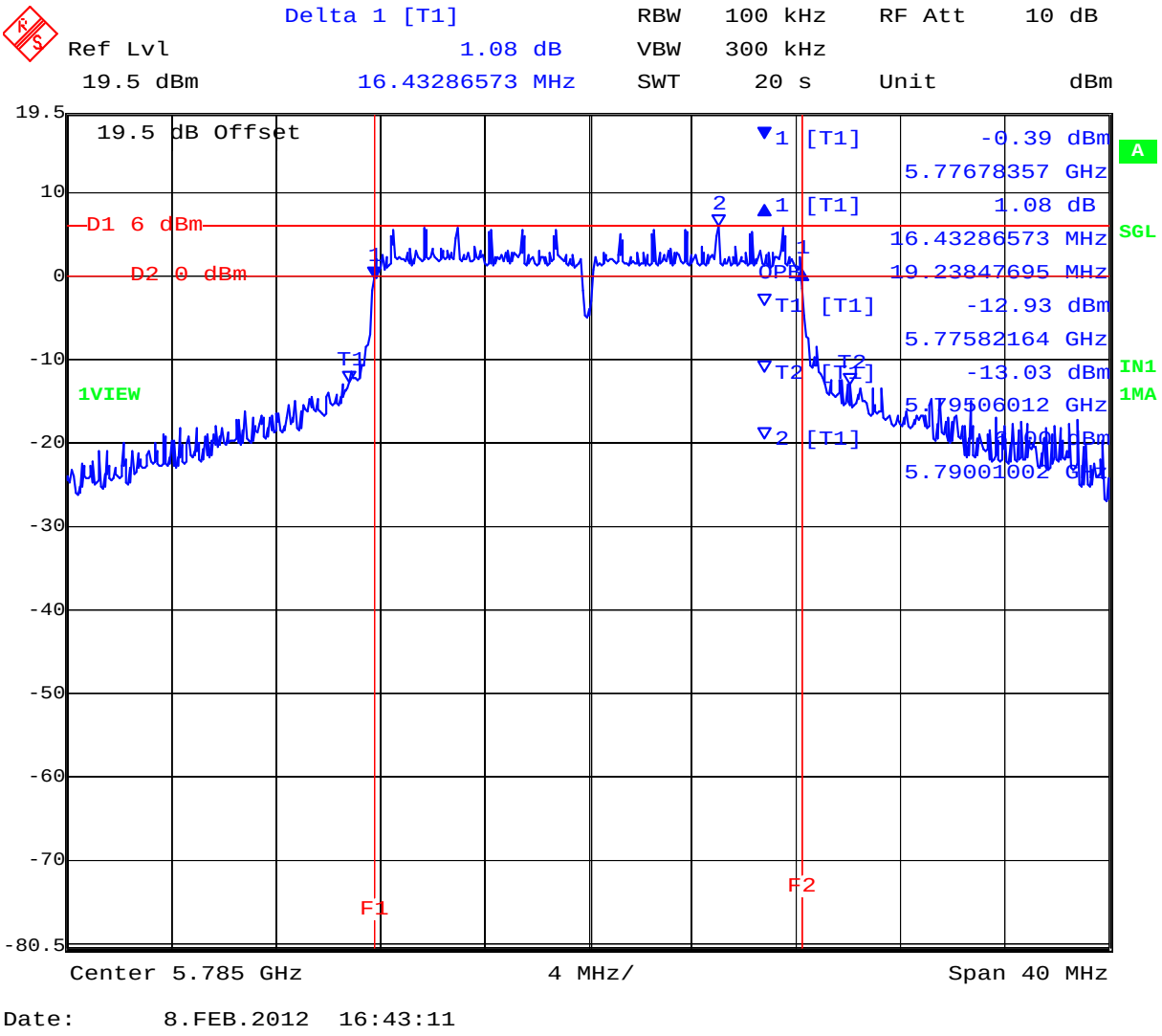
PORT A 5,785 MHz 802.11a Legacy 6 dB and 99% Bandwidth



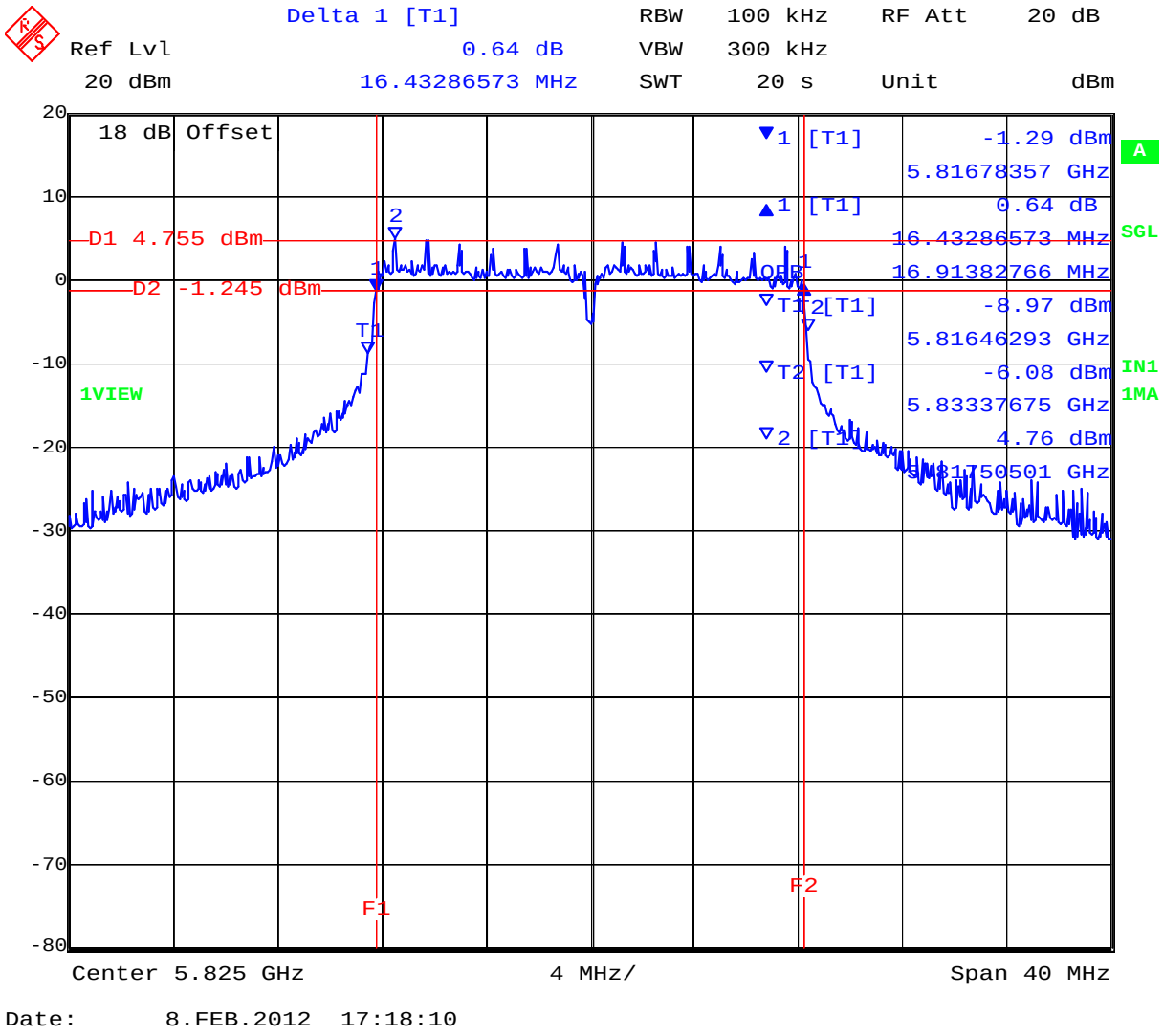
PORT B 5,785 MHz 802.11a Legacy 6 dB and 99% Bandwidth



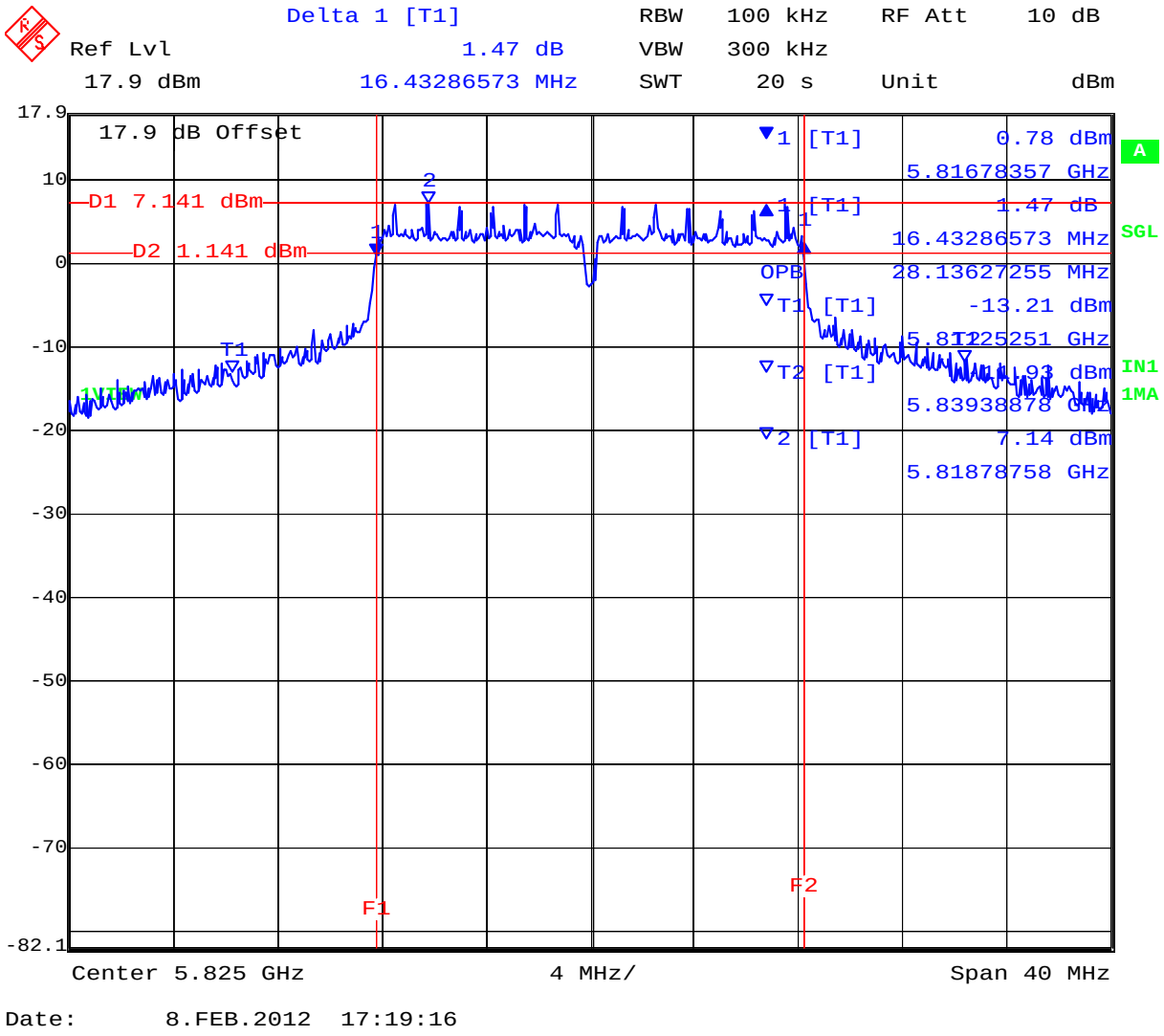
PORT C 5,785 MHz 802.11a Legacy 6 dB and 99% Bandwidth



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



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



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

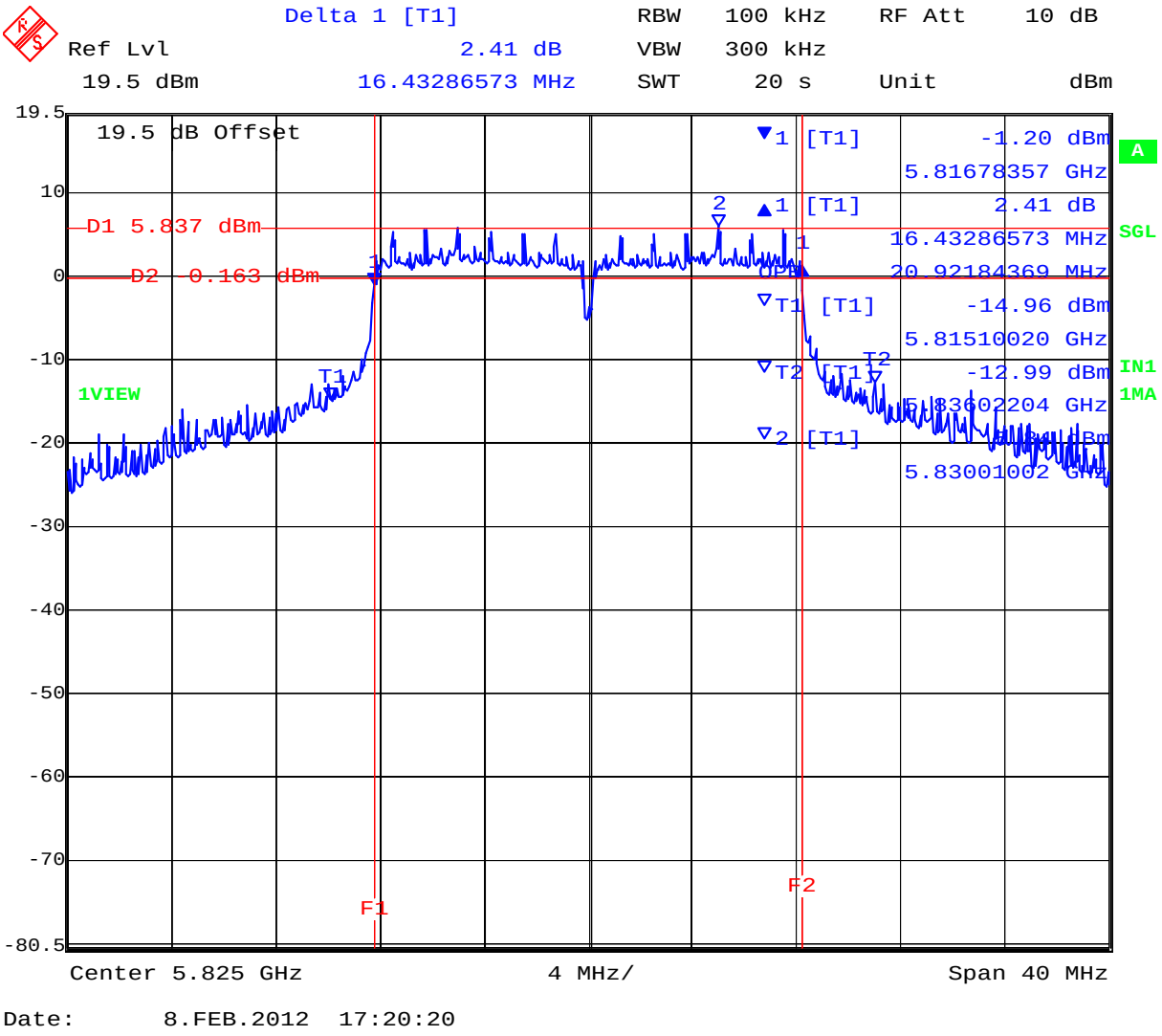


TABLE OF RESULTS – **802.11n HT-20**

Test Conditions:	15.247 (a)(2)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-20	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	2 dBi
Applied Voltage:	48.00 Vdc		
Notes 1:			
Notes 2:			

6 dB Bandwidth

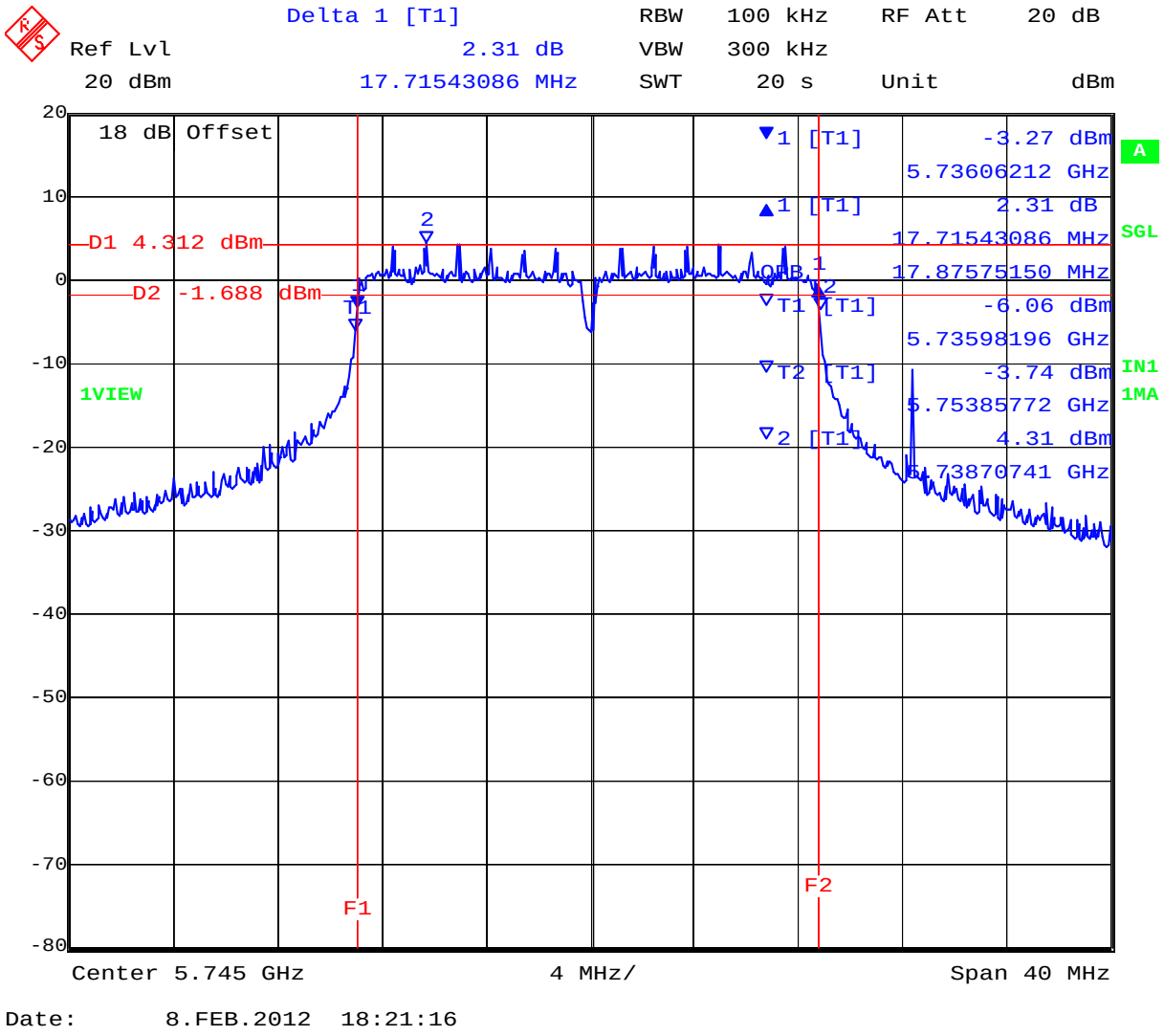
Test Frequency	6 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	**a**	**b**	**c**	**d**	**kHz**	**MHz**	**MHz**
5745.000	17.715000	17.635000	17.635000	--	500	0.5	-17.135000
5785.000	17.715000	17.635000	17.635000	--			-17.135000
5825.000	17.635000	17.635000	17.635000	--			-17.135000

99% Bandwidth

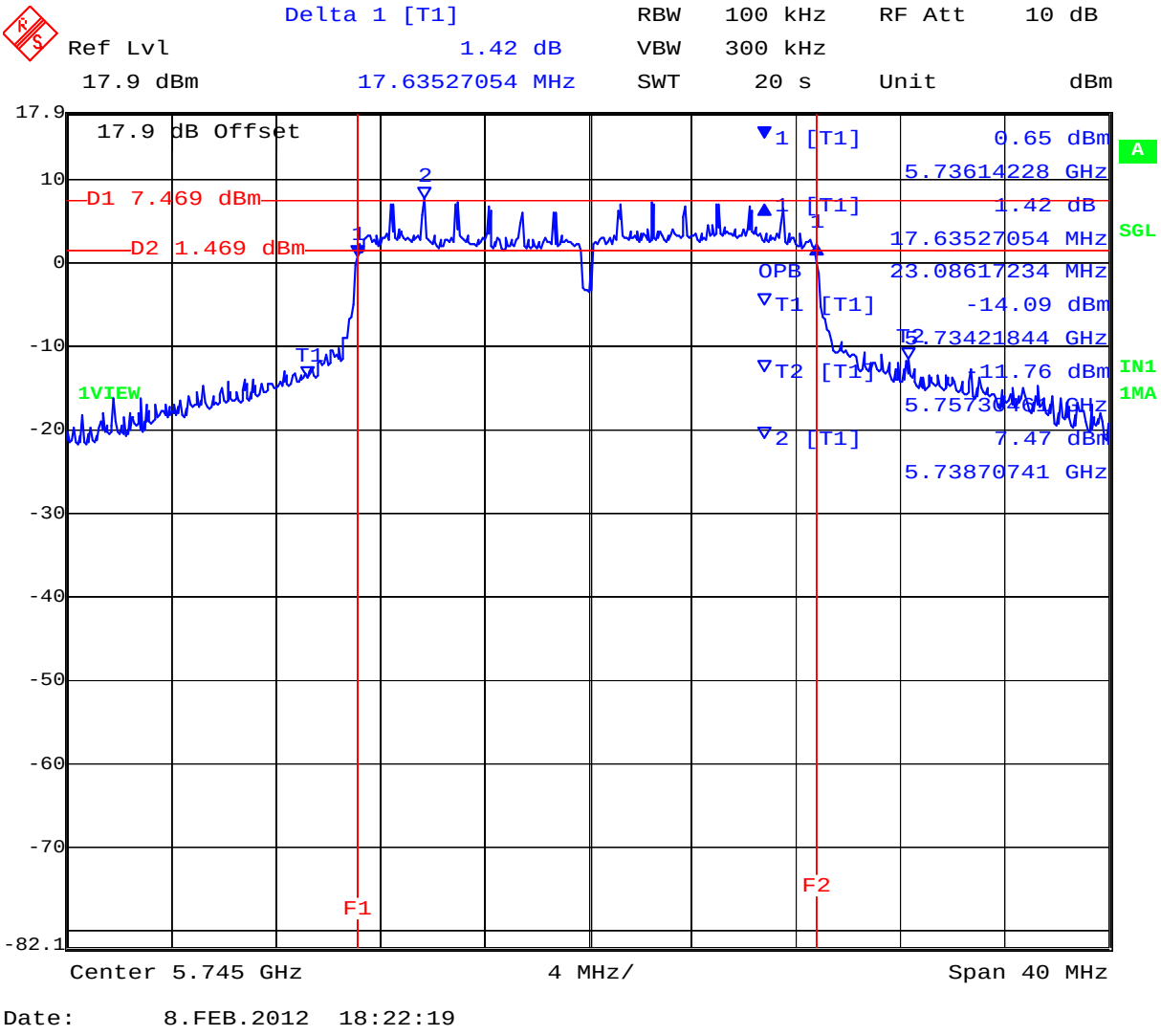
Test Frequency	99 % Bandwidth						
	MHz						
MHz	**a**	**b**	**c**	**d**			
5745.000	17.876000	23.086000	18.036000	--			
5785.000	17.956000	26.693000	19.319000	--			
5825.000	17.956000	28.216000	19.960000	--			

Measurement uncertainty:	±2.81 dB

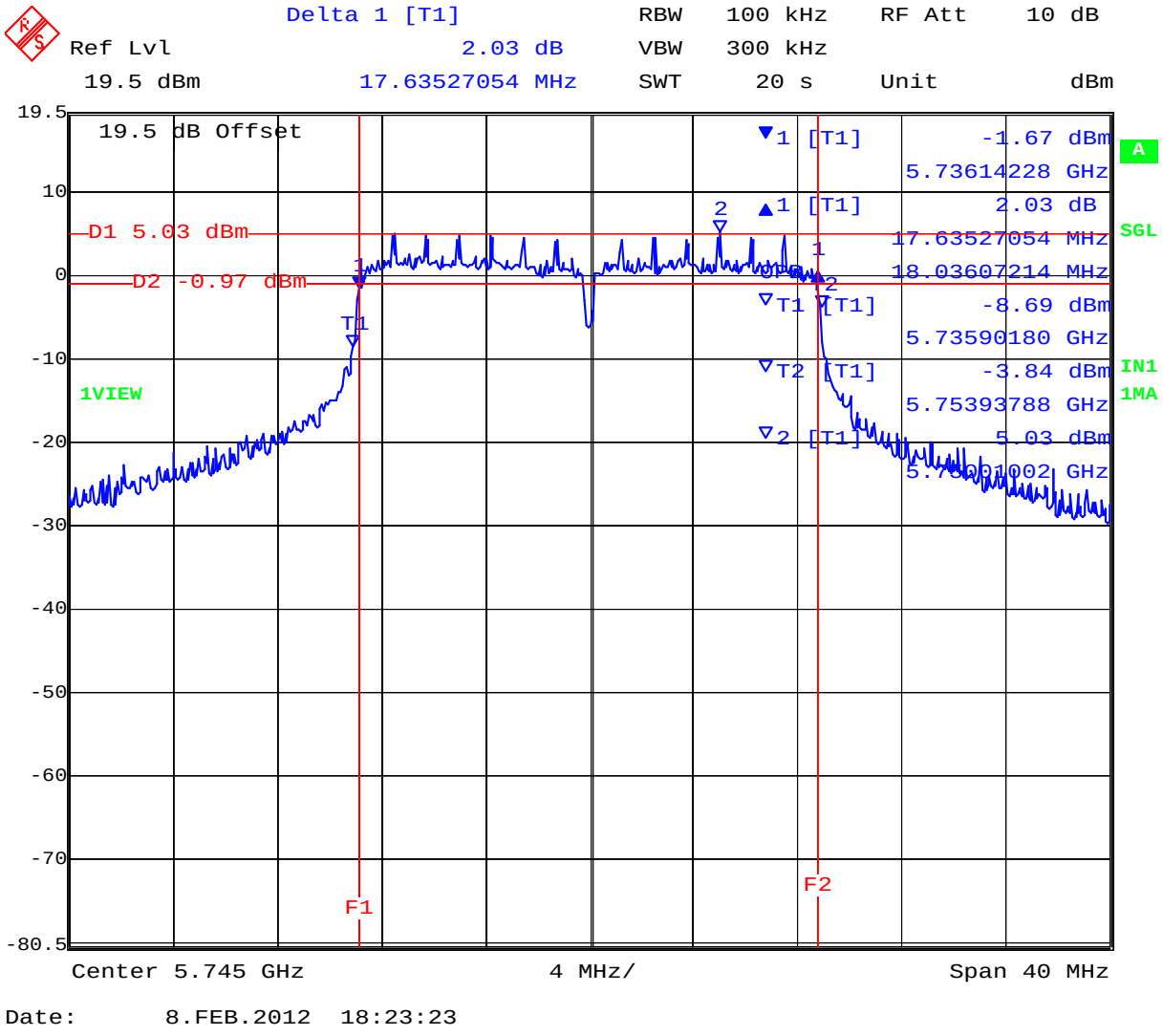
PORT A 5,745 MHz 802.11n HT-20 6 dB and 99% Bandwidth



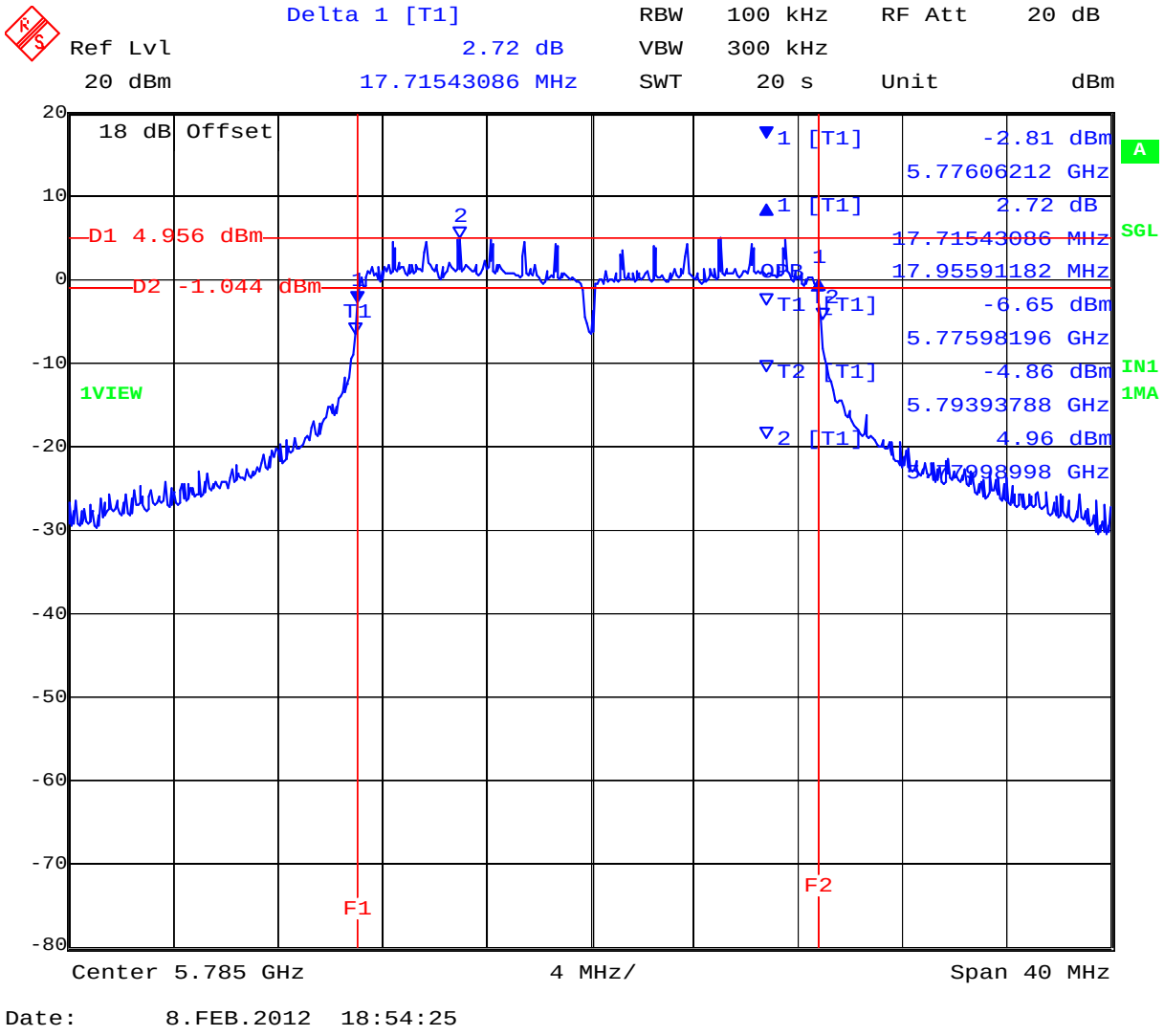
PORT B 5,745 MHz 802.11n HT-20 6 dB and 99% Bandwidth



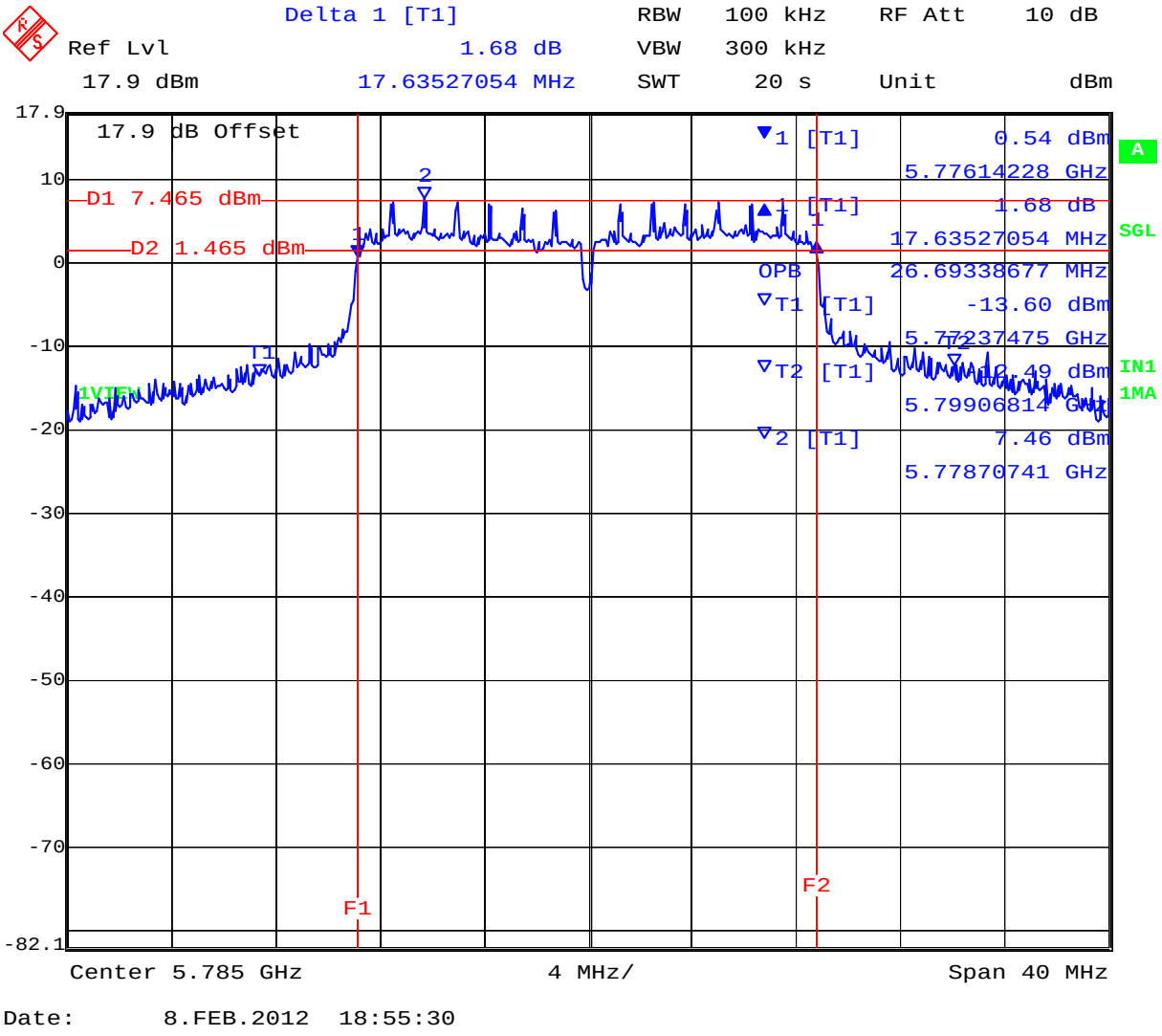
PORT C 5,745 MHz 802.11n HT-20 6 dB and 99% Bandwidth



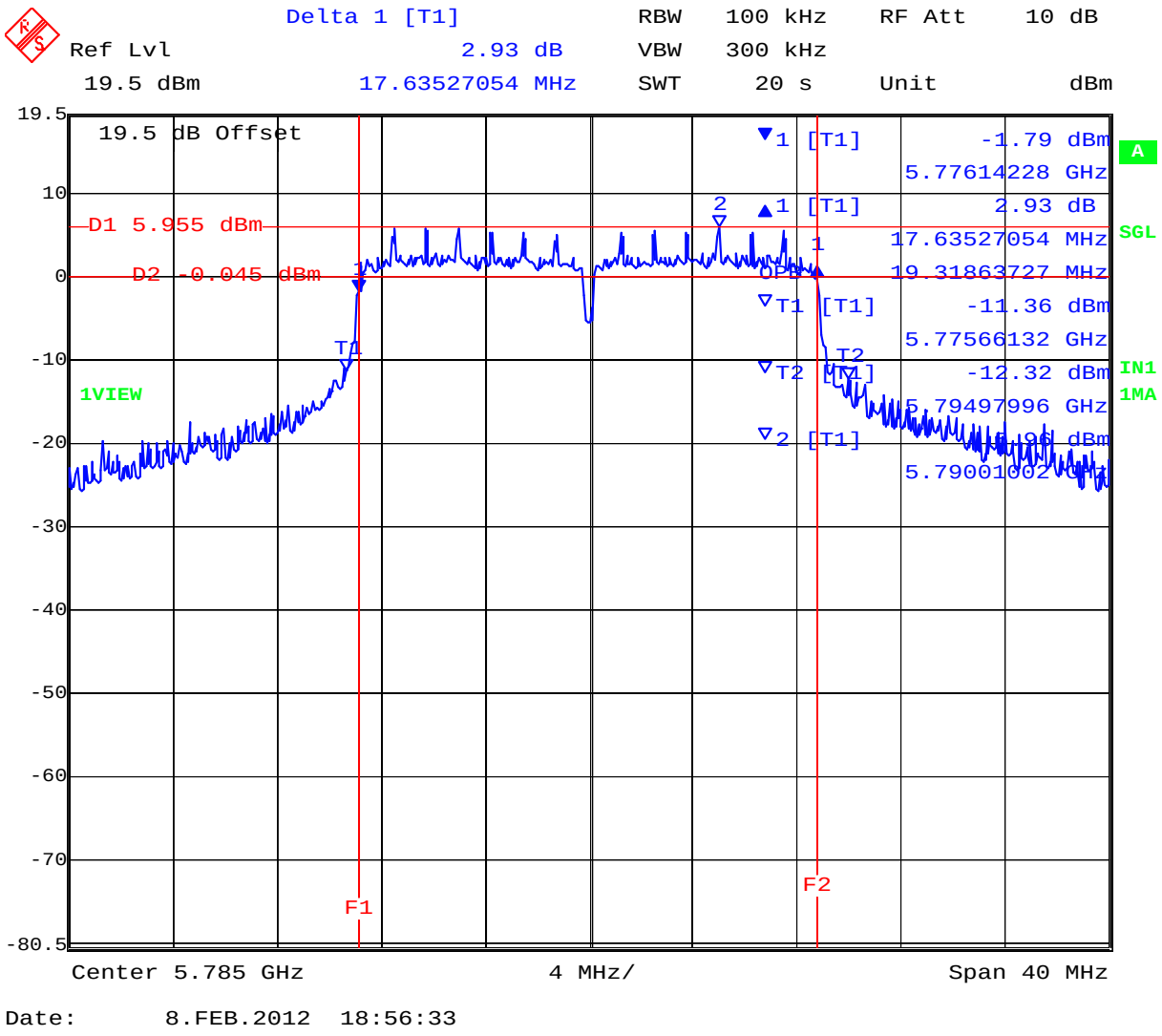
PORT A 5,785 MHz 802.11n HT-20 6 dB and 99% Bandwidth



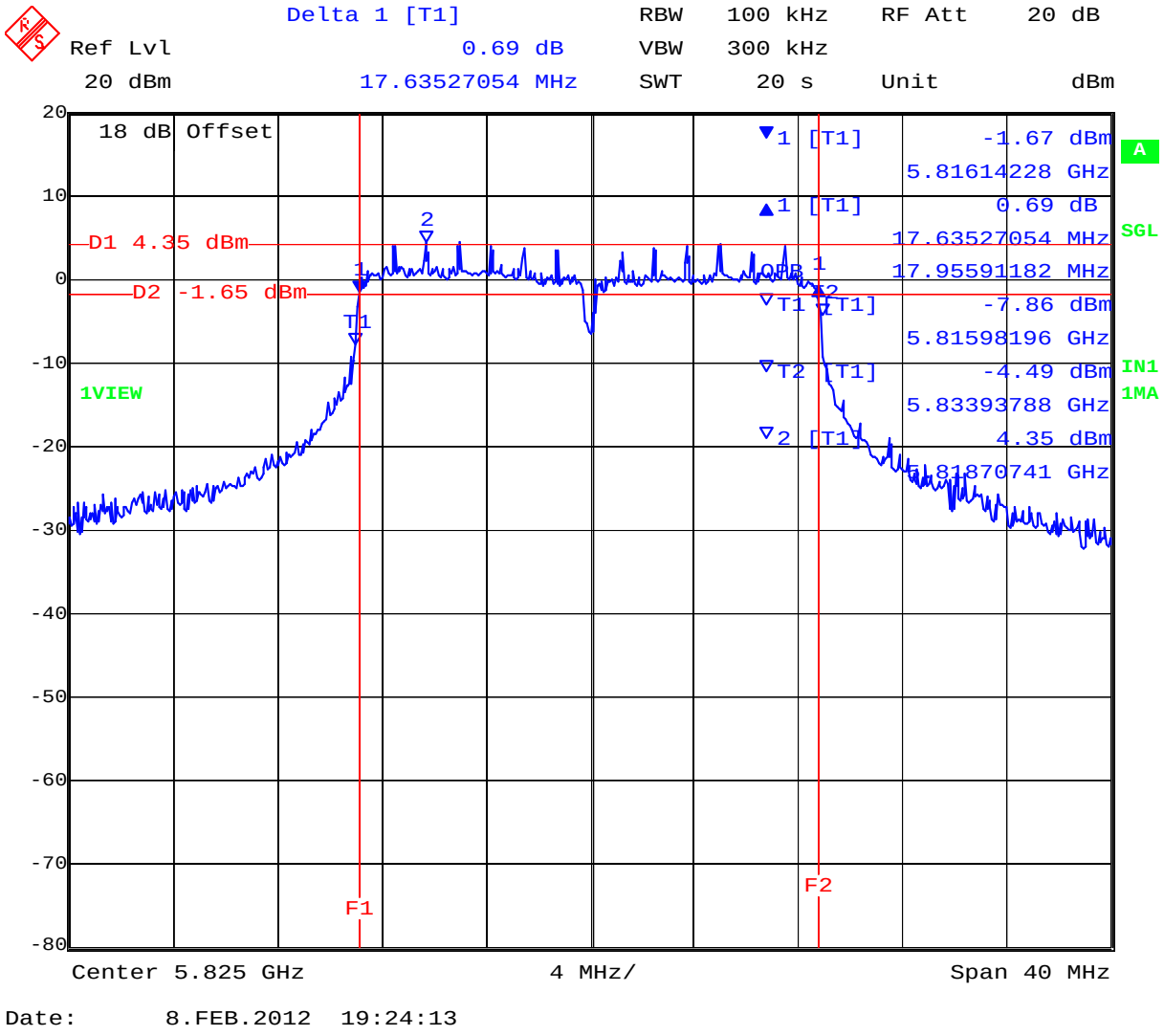
PORT B 5,785 MHz 802.11n HT-20 6 dB and 99% Bandwidth



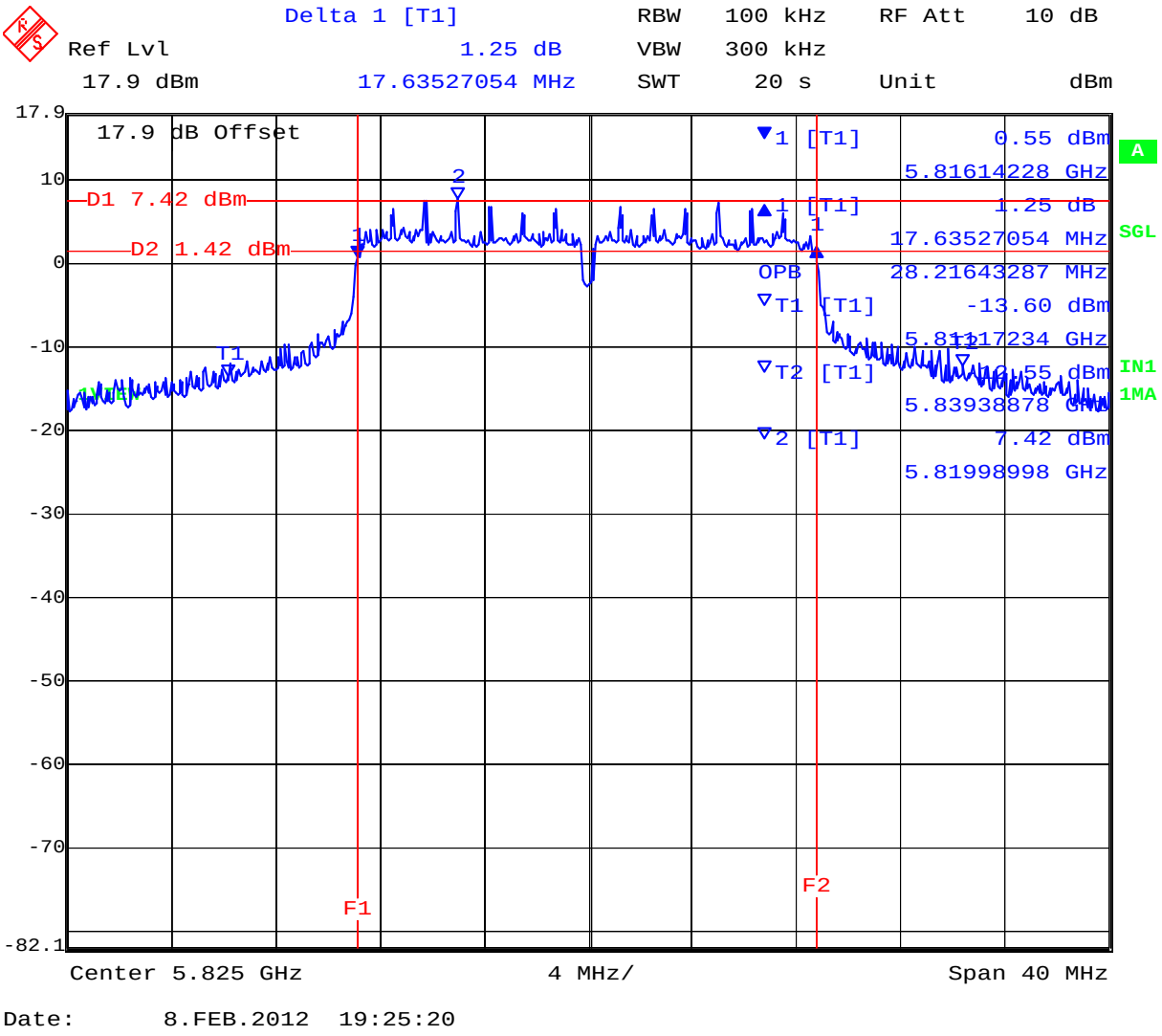
PORT C 5,785 MHz 802.11n HT-20 6 dB and 99% Bandwidth



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



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



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

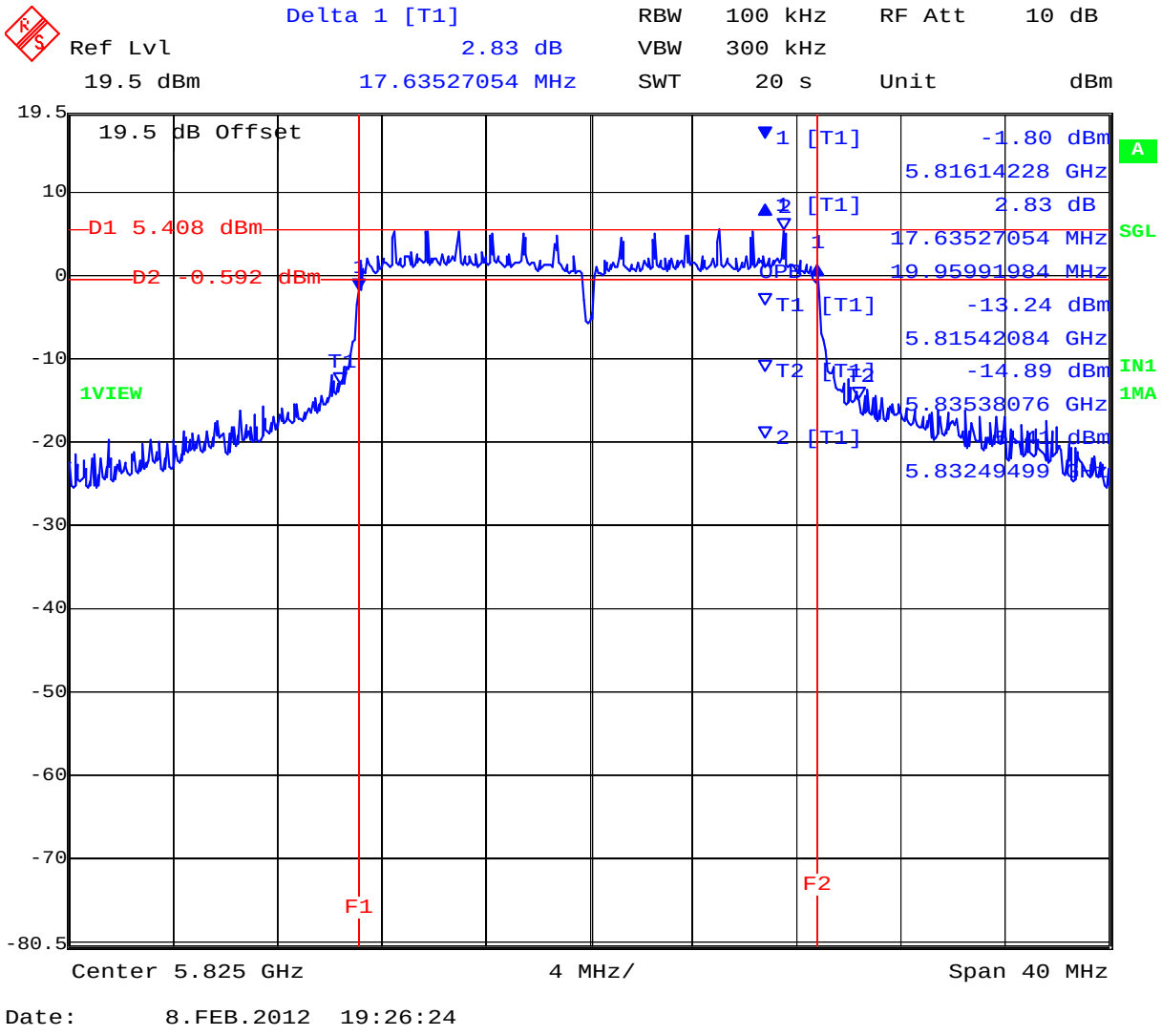


TABLE OF RESULTS – **802.11n - HT-40**

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

6 dB Bandwidth

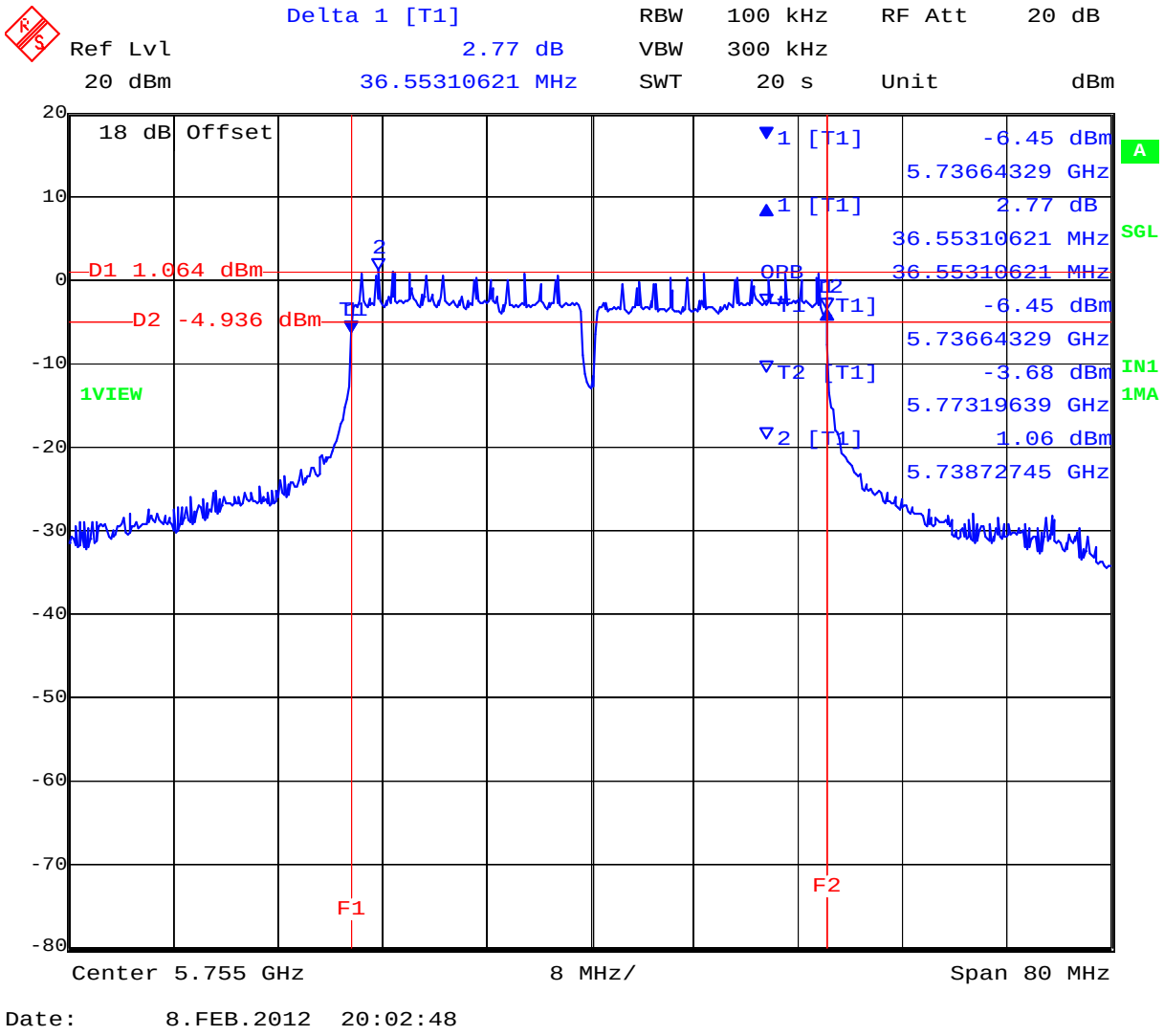
Test Frequency	6 dB Bandwidth				Minimum 6dB Bandwidth Limit		Margin
	MHz						
MHz	**a**	**b**	**c**	**d**	**kHz**	**MHz**	**MHz**
5755.000	36.553000	36.232000	36.553000	--	500	0.5	-35.732000
5795.000	36.553000	36.232000	36.553000	--			-35.732000

99% Bandwidth

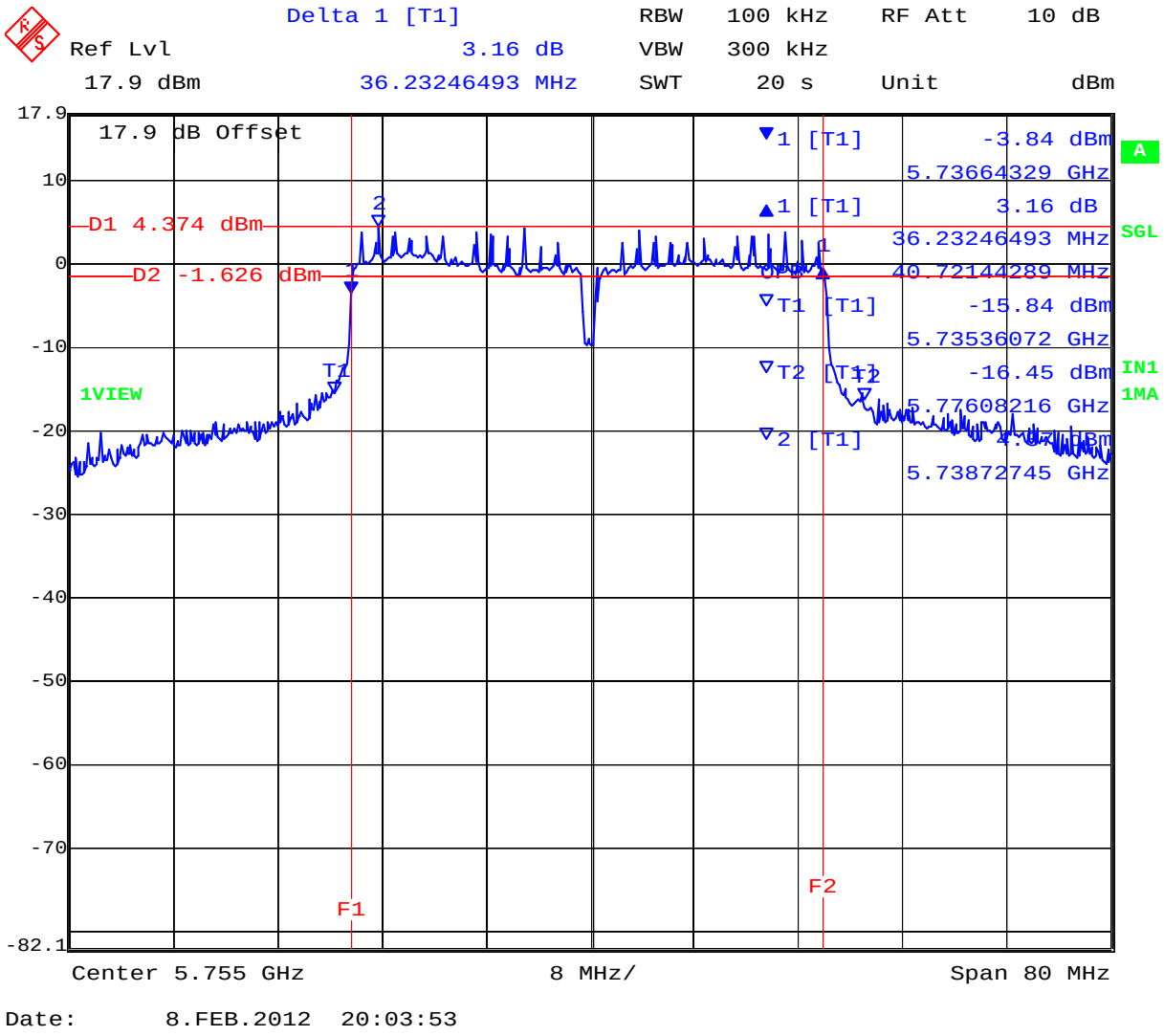
Test Frequency	99 % Bandwidth						
	MHz						
MHz	**a**	**b**	**c**	**d**			
5755.000	36.553000	40.721000	36.553000	--			
5795.000	36.553000	51.303000	36.713000	--			

Measurement uncertainty:	±2.81 dB

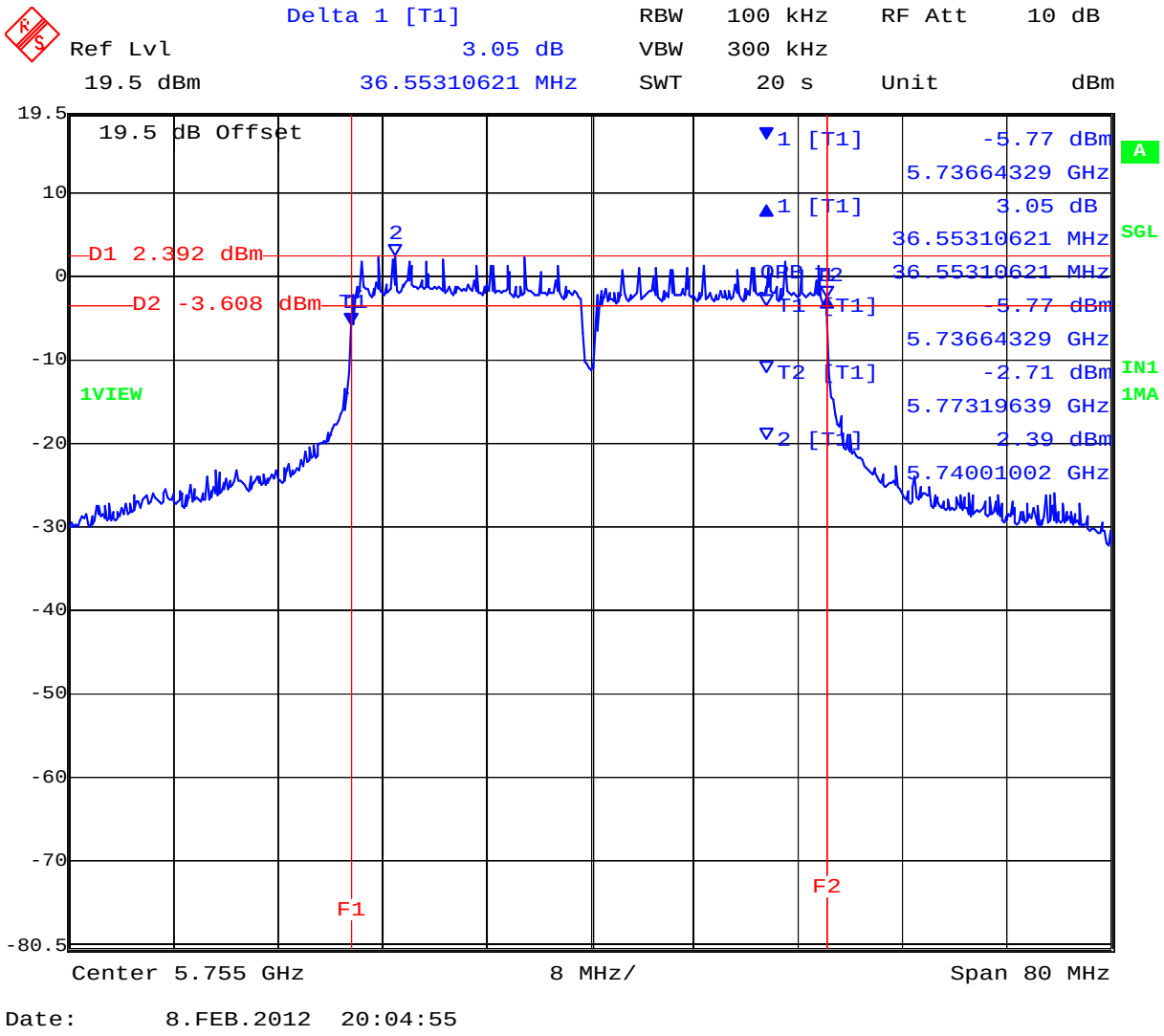
PORTA 5,755 MHz 802.11n HT-40 6 dB and 99% Bandwidth



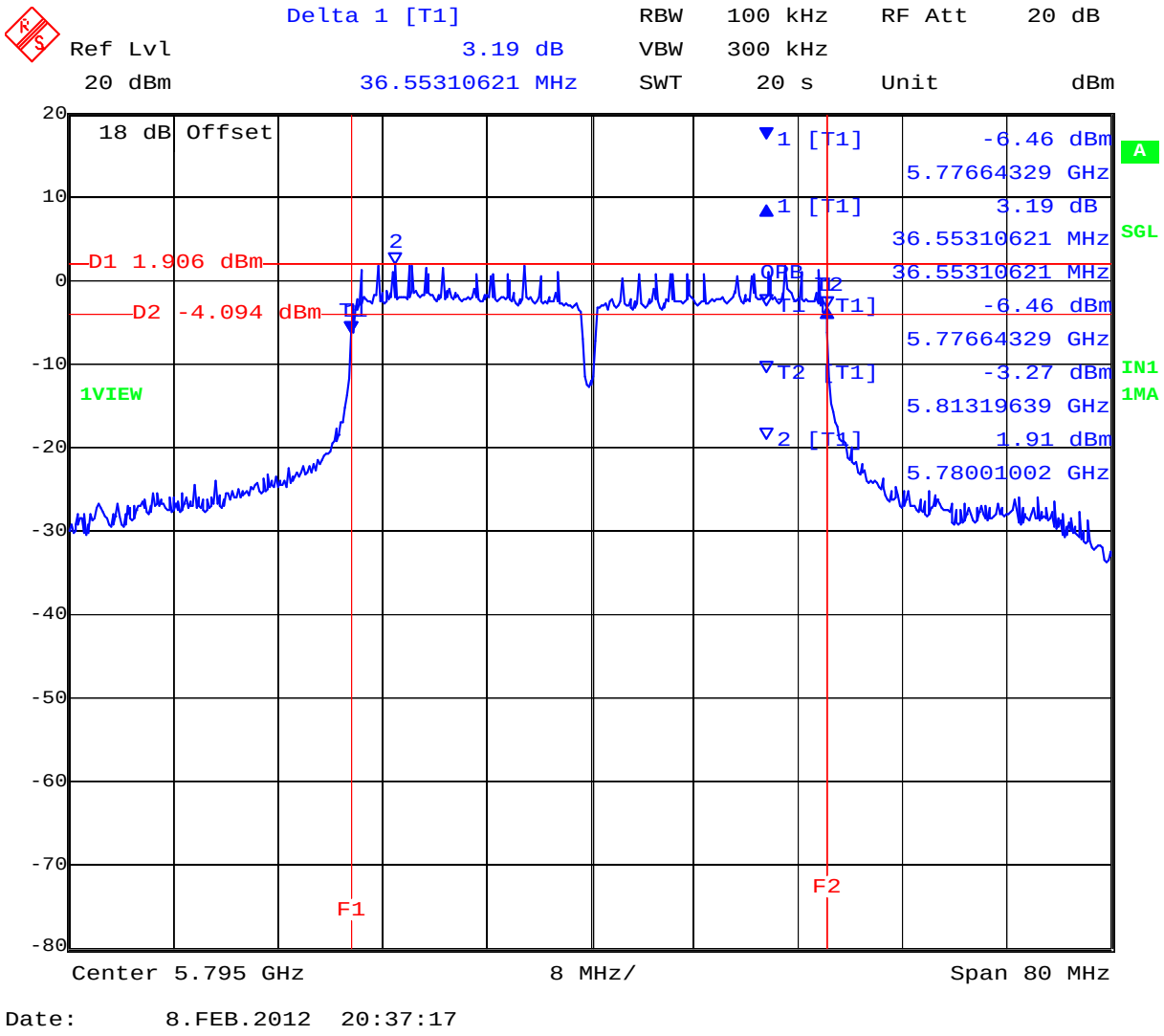
PORTB 5,755 MHz 802.11n HT-40 6 dB and 99% Bandwidth



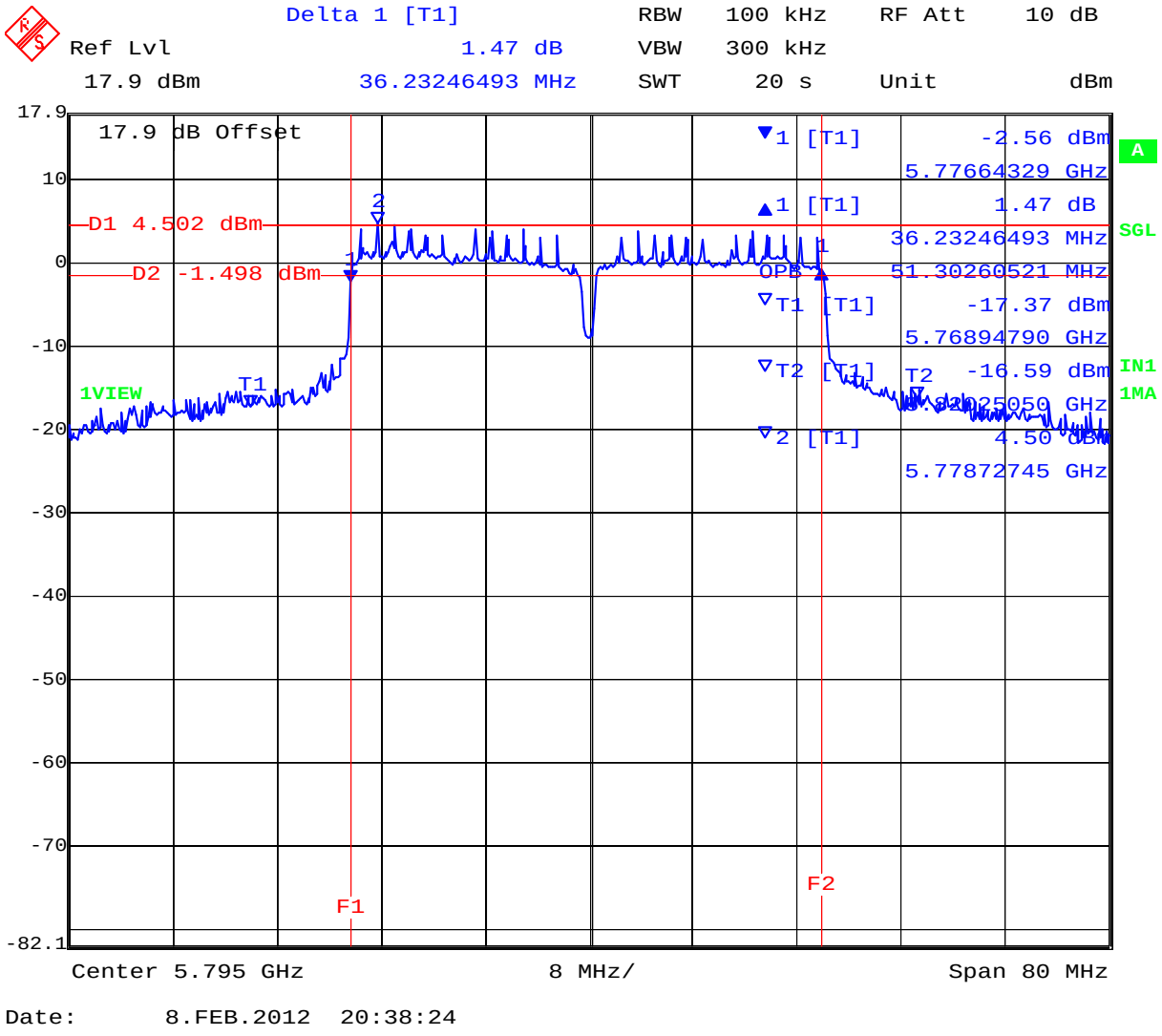
PORT C 5,755 MHz 802.11n HT-40 6 dB and 99% Bandwidth



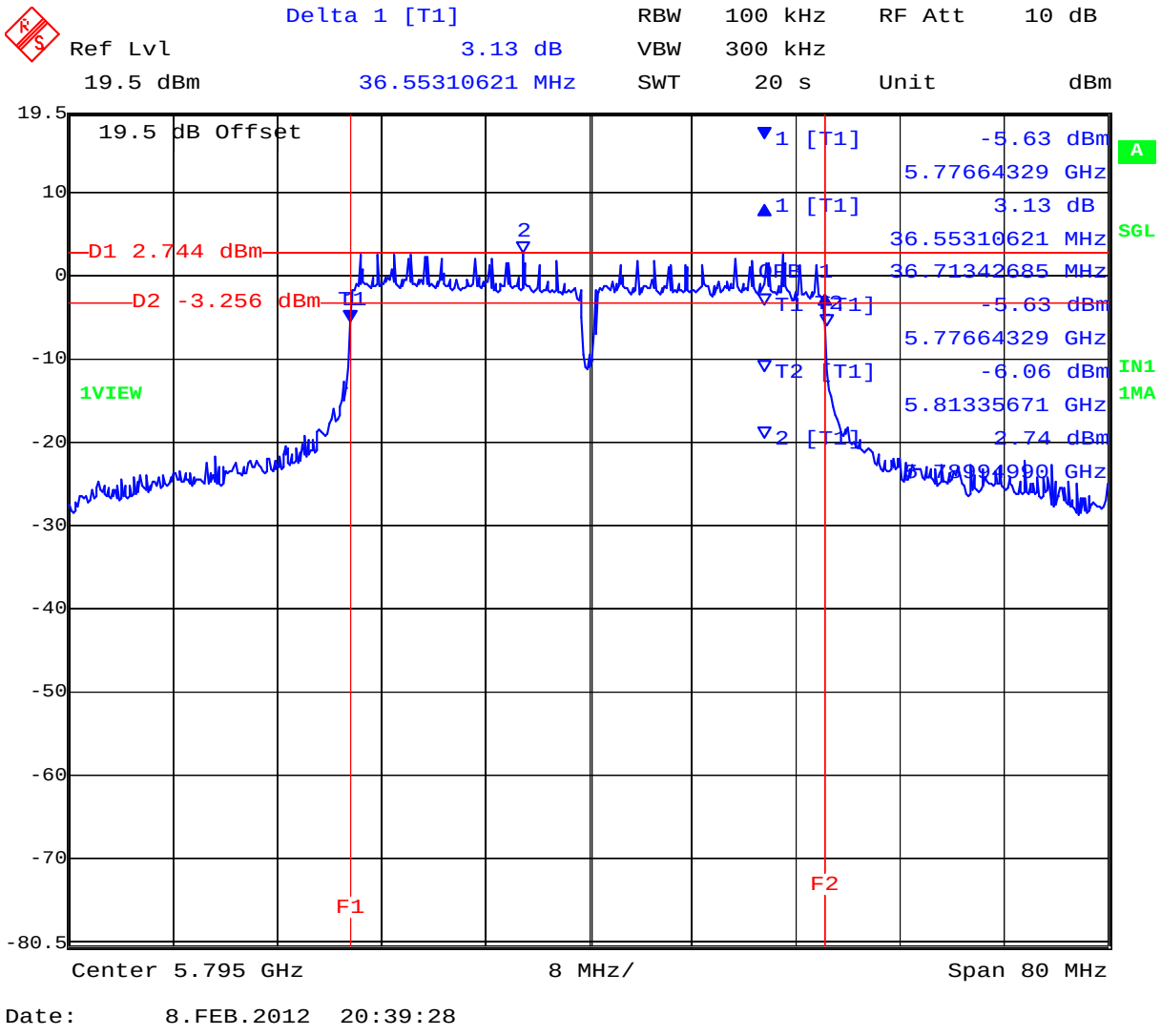
PORT A 5,795 MHz 802.11n HT-40 6 dB and 99% Bandwidth



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



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



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

Traceability

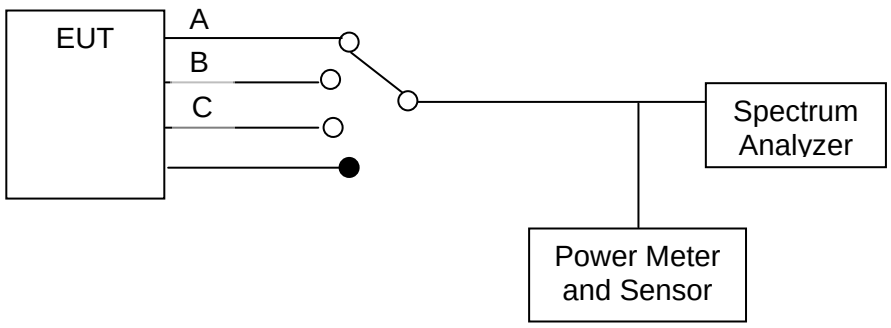
Method	Test Equipment Used
Measurements were made per work instruction WI-03 'Measurement of RF Spectrum Mask'	0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117

5.1.2. 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

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

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

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

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.

MIMO Operation

2.4 GHz MIMO (Non-Legacy Operation)

Antenna	Gain	Max. Allowable Conducted Peak Power (dBm)		Maximum EIRP
(dB)	(dBi)	Non-Beam Forming	Beam Forming	(dBm)
Integral	4.8	+30.0	N/A	+36.0
Integral	4.8	+30.0	N/A	+36.0

5.8 GHz MIMO Operation (Non-Legacy Operation)

Antenna	Gain	Max. Allowable Conducted Peak Power (dBm)		Maximum EIRP
(dB)	(dBi)	Non-Beam Forming	Beam Forming	(dBm)
Integral	4.8	+30.0	N/A	+36.0
Integral	4.8	+30.0	N/A	+36.0

Non-MIMO Operation

2.4 GHz Non-MIMO Operation (Legacy)

Antenna	Gain dBi	Antenna Gain Increase V's No. Antenna Ports		Total Gain	Max. Allowable Conducted Peak Power	Maximum EIRP
(dB)		Ports	dB	dBi	(dBm)	(dBm)
Integral	4.8	3	4.77	9.57	+26.43	+36.0
Integral	4.8	3	4.77	9.57	+26.43	+36.0

5.8 GHz Non-MIMO Operation (Legacy)

Antenna	Gain dBi	Antenna Gain Increase V's No. Antenna Ports		Total Gain	Max. Allowable Conducted Peak Power	Maximum EIRP
(dB)		Ports	dB	dBi	(dBm)	(dBm)
Integral	2.0	3	4.77	6.77	+29.23	+36.0
Integral	2.0	3	4.77	6.77	+29.23	+36.0

TABLE OF RESULTS – **802.11b – Legacy**

Output Power Conditions for Integral Antenna

Test Conditions:	15.247 (b)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11b	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	4.8 dBi
Applied Voltage:	N/A Vdc		
Notes 1:			
Notes 2:			

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
2412	15.78	15.99	15.64	--	N/A	20.58	30.00	-9.42
2437	20.37	20.64	20.36	--	N/A	25.23	30.00	-4.77
2462	18.30	18.67	17.32	--	N/A	22.90	30.00	-7.10

Measurement uncertainty:	±1.33 dB

Output Power Conditions for External Antenna

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

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
2412	14.89	14.54	15.15	--	N/A	19.64	30.00	-10.36
2437	19.00	19.52	19.56	--	N/A	24.14	30.00	-5.86
2462	18.30	18.67	17.32	--	N/A	22.90	30.00	-7.10

Measurement uncertainty:	±1.33 dB

TABLE OF RESULTS – **802.11g – Legacy**

Output Power Conditions for Integral Antenna

Test Conditions:	15.247 (b)		**Rel. Humidity (%):**	35 to 42	
Variant:	802.11g		**Ambient Temp. (ºC):**	19 to 22	
TPC:	HIGH		**Pressure (mBars):**	998 to 1003	
Modulation:	ON		**Duty Cycle (%):**	100	
Beam Forming Gain (Y):	N/A	dB	**Antenna Gain:**	4.8 dBi	
Applied Voltage:	N/A	Vdc			
Notes 1:					
Notes 2:					

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
2412	15.06	14.74	15.16	--	N/A	19.76	30.00	-10.24
2437	18.01	18.28	18.52	--	N/A	23.05	30.00	-6.95
2462	14.63	13.45	14.88	--	N/A	19.13	30.00	-10.87

Measurement uncertainty:	±1.33 dB

Output Power Conditions for External Antenna

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

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
2412	15.06	14.74	15.16	--	N/A	19.76	30.00	-10.24
2437	16.44	16.62	16.87	--	N/A	21.42	30.00	-8.58
2462	14.63	13.45	14.88	--	N/A	19.13	30.00	-10.87

Measurement uncertainty:	±1.33 dB

TABLE OF RESULTS – **802.11n – HT-20**

Output Power Conditions for Integral Antenna

Test Conditions:	15.247 (b)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-20	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	4.8 dBi
Applied Voltage:	N/A Vdc		
Notes 1:			
Notes 2:			

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
2412	15.66	15.97	15.74	--	N/A	20.56	30.00	-9.44
2437	17.81	18.49	18.59	--	N/A	23.08	30.00	-6.92
2462	13.16	12.32	13.48	--	N/A	17.78	30.00	-12.22

Measurement uncertainty:	±1.33 dB

Output Power Conditions for External Antenna

Test Conditions:	15.247 (b)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-20	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	2 dBi
Applied Voltage:	N/A Vdc		
Notes 1:			
Notes 2:			

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
2412	15.66	15.97	15.74	--	N/A	20.56	30.00	-9.44
2437	17.82	17.58	17.80	--	N/A	22.51	30.00	-7.49
2462	14.64	14.32	15.11	--	N/A	19.47	30.00	-10.53

Measurement uncertainty:	±1.33 dB

TABLE OF RESULTS – **802.11n – HT-40**

Output Power Conditions for Integral Antenna

Test Conditions:	15.247 (b)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-40	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	4.8 dBi
Applied Voltage:	N/A Vdc		
Notes 1:			
Notes 2:			

Test Frequency	**Measured Peak Power RF Port (dBm)**				**Total Power (dBm)**		**Limit**	**Margin**
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
2422	16.22	16.12	16.44	--	N/A	21.03	30.00	-8.97
2437	20.23	20.31	20.11	--	N/A	24.99	30.00	-5.01
2452	13.75	12.90	14.19	--	N/A	18.42	30.00	-11.58

Measurement uncertainty:	±1.33 dB

Output Power Conditions for External Antenna

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

Test Frequency	**Measured Peak Power RF Port (dBm)**				**Total Power (dBm)**		**Limit**	**Margin**
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
2422	15.39	15.43	15.85	--	N/A	20.33	30.00	-9.67
2437	17.65	17.62	18.22	--	N/A	22.61	30.00	-7.39
2452	14.91	14.54	15.42	--	N/A	19.74	30.00	-10.26

Measurement uncertainty:	±1.33 dB

2.4 GHz Power Settings

	Integral Antenna Settings				External AntennaSettings		
	b	g	HT-20		b	g	HT-20
2412	**14**	**13**	**14**		**13**	**13**	**14**
2437	**20**	**17**	**17**		**18**	**15**	**16**
2462	**17**	**13**	**12**		**17**	**13**	**14**

	HT-40		HT-40
2422	**14**		**13**
2437	**20**		**16**
2452	**12**		**13**

5.8 GHz Band

TABLE OF RESULTS – **802.11a – Legacy**

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

Test Frequency	**Measured Peak Power RF Port (dBm)**				**Total Power (dBm)**		**Limit**	**Margin**
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5745	14.84	17.52	15.65	--	N/A	20.92	30.00	-9.08
5785	15.07	17.48	16.16	--	N/A	21.12	30.00	-8.88
5825	14.77	17.11	16.00	--	N/A	20.84	30.00	-9.16

Measurement uncertainty:	±1.33 dB

NOTE: Power settings for both the integral and external antennas are the same and use the above power values

TABLE OF RESULTS – **802.11n – HT-20**
Maximum Conducted Power

Test Conditions:	15.247 (b)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-20	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	2 dBi
Applied Voltage:	48.00 Vdc		
Notes 1:			
Notes 2:			

Test Frequency	**Measured Peak Power RF Port (dBm)**				**Total Power (dBm)**		**Limit**	**Margin**
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5745	14.44	17.10	15.34	--	N/A	20.54	30.00	-9.46
5785	14.97	17.39	16.13	--	N/A	21.05	30.00	-8.95
5825	14.36	17.01	15.99	--	N/A	20.69	30.00	-9.31

Measurement uncertainty:	±1.33 dB

NOTE: Power settings for both the integral and external antennas are the same and use the above power values

TABLE OF RESULTS – **802.11n – HT-40**
Maximum Conducted Power

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

Test Frequency	Measured Peak Power RF Port (dBm)				Total Power (dBm)		Limit	Margin
MHz	**a**	**b**	**c**	**d**	**Combined**	**Calculated**	**dBm**	**dB**
5755	14.11	17.05	15.11	--	N/A	20.37	30.00	-9.63
5795	14.76	17.25	15.91	--	N/A	20.86	30.00	-9.14

Measurement uncertainty:	±1.33 dB

NOTE: Power settings for both the integral and external antennas are the same and use the above power values

5.8 GHz Power Settings

	Integral Antenna Settings			External Antenna Settings	
	a	HT-20		a	HT-20
5745	**20**	**20**		**20**	**20**
5785	**20**	**20**		**20**	**20**
5825	**20**	**20**		**20**	**20**

	HT-40		HT-40
5755	**20**		**20**
5795	**20**		**20**

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.

Laboratory Measurement Uncertainty for Power Measurements

Measurement uncertainty	±1.33 dB

Traceability

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

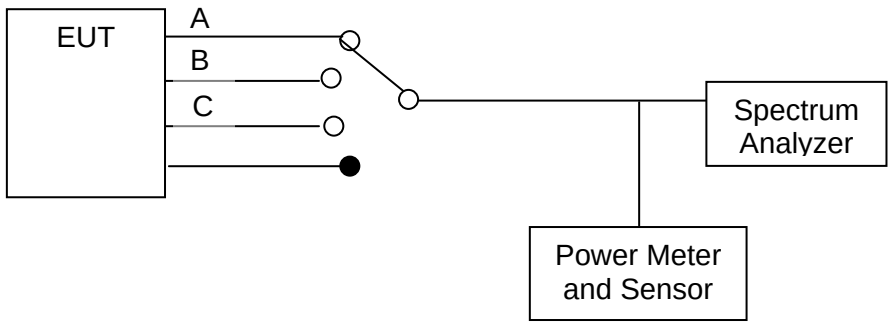
5.1.3. Peak Power Spectral Density

FCC, Part 15 Subpart C §15.247(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 ≥ 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

Peak Power Spectral Density

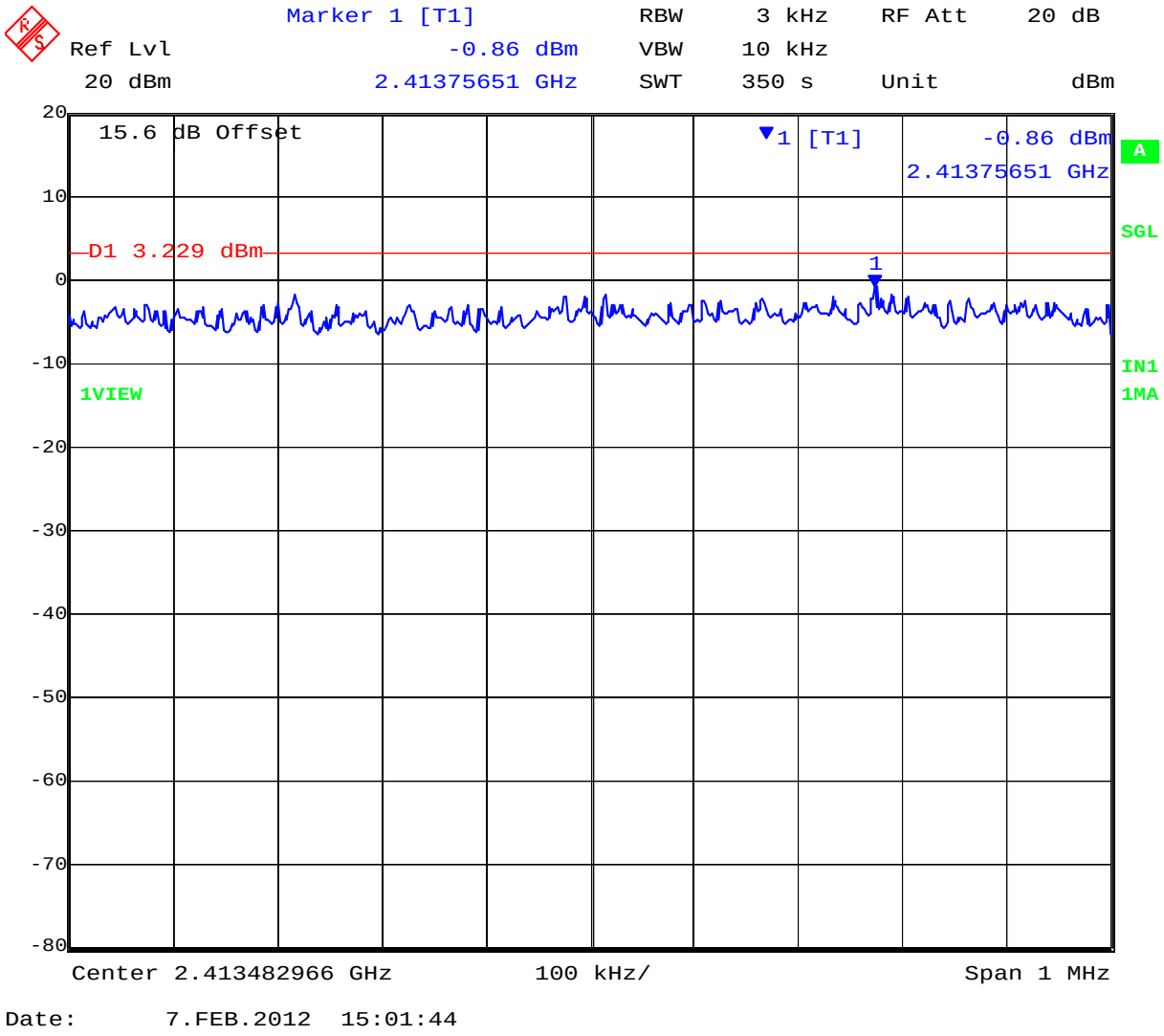
TABLE OF RESULTS – **802.11b**

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

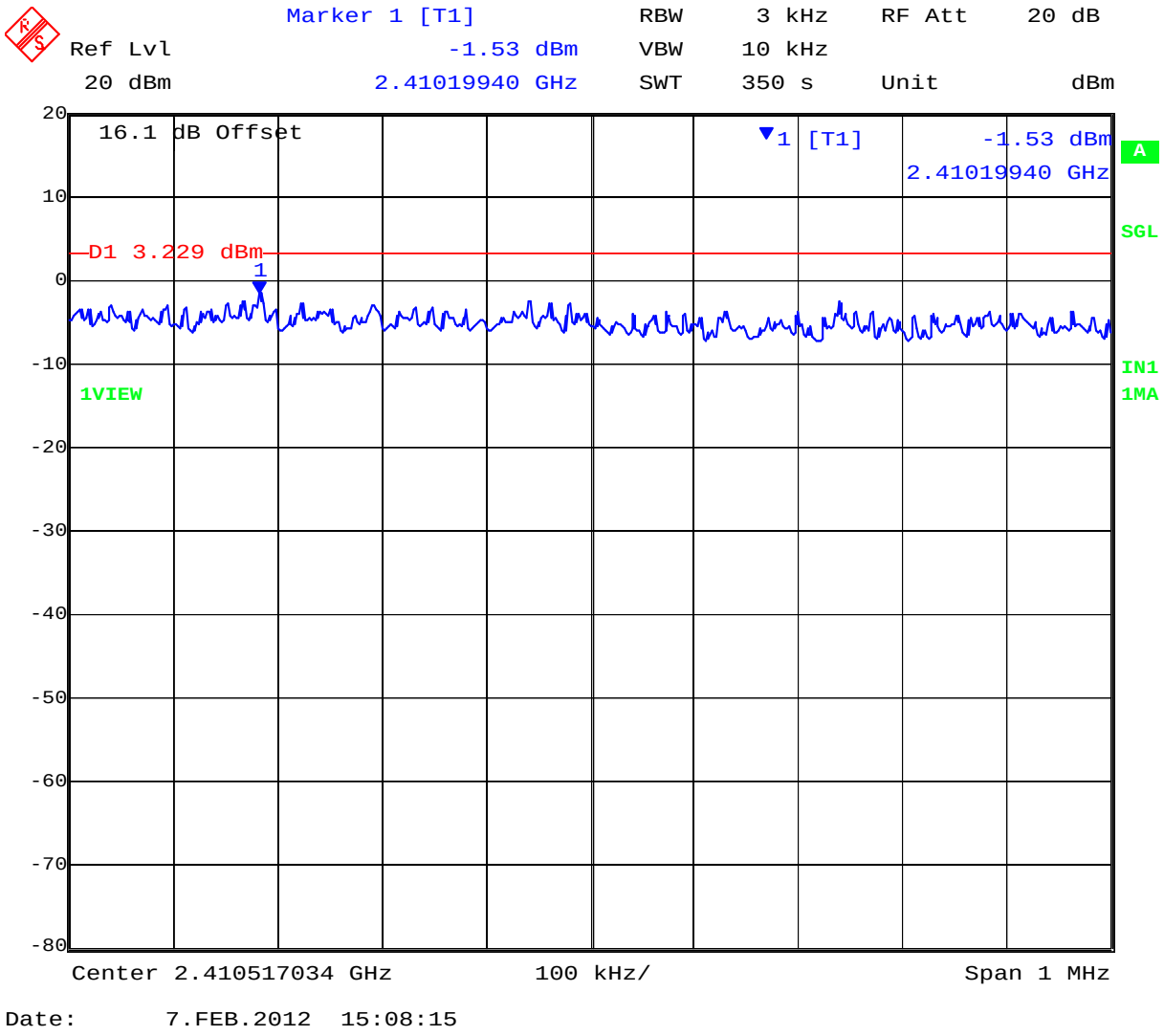
Test Frequency	Measured Power Density RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**10Log(N)**	**dBm**	**dBm**	**dB**
2412.000	-0.86	-1.53	-0.95	--	4.77	3.91	8.00	-4.09
2437.000	-1.15	-1.12	-0.38	--	4.77	4.40	8.00	-3.60
2462.000	-2.02	-1.38	-0.66	--	4.77	4.11	8.00	-3.89

Measurement uncertainty:	± 1.33 dB

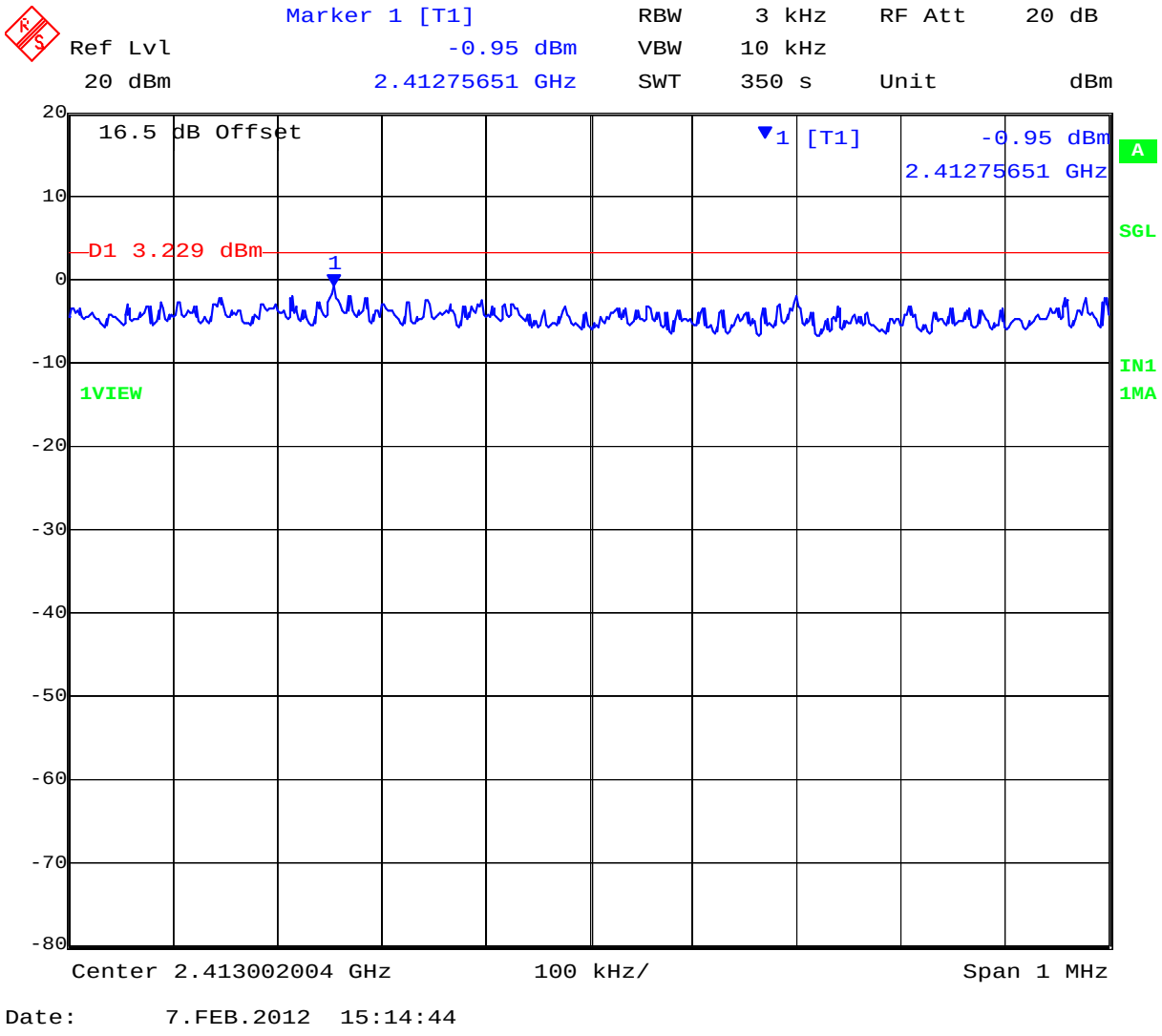
PORT A 2,412 MHz 802.11b - Peak Power Spectral Density



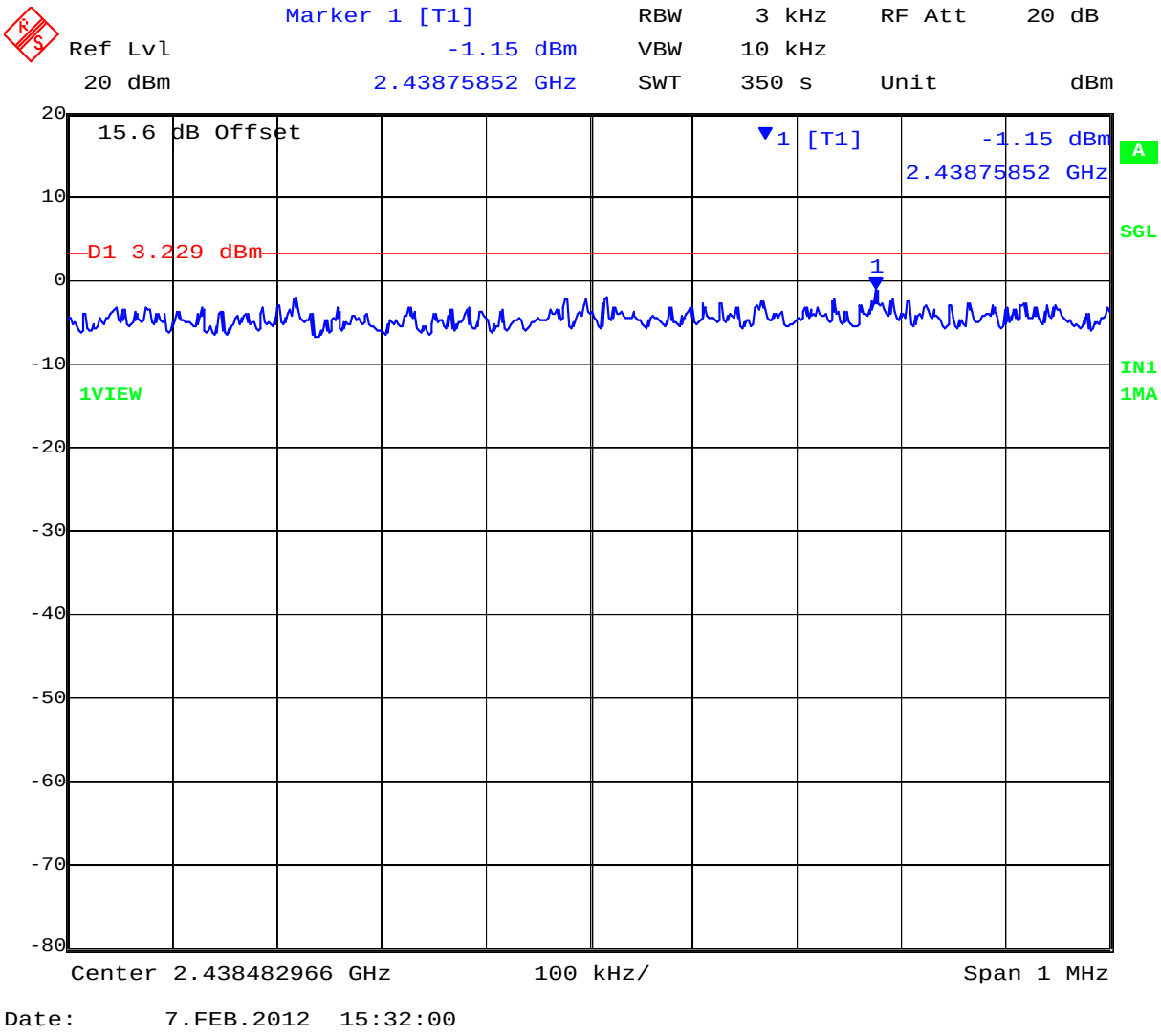
PORT B 2,412 MHz 802.11b - Peak Power Spectral Density



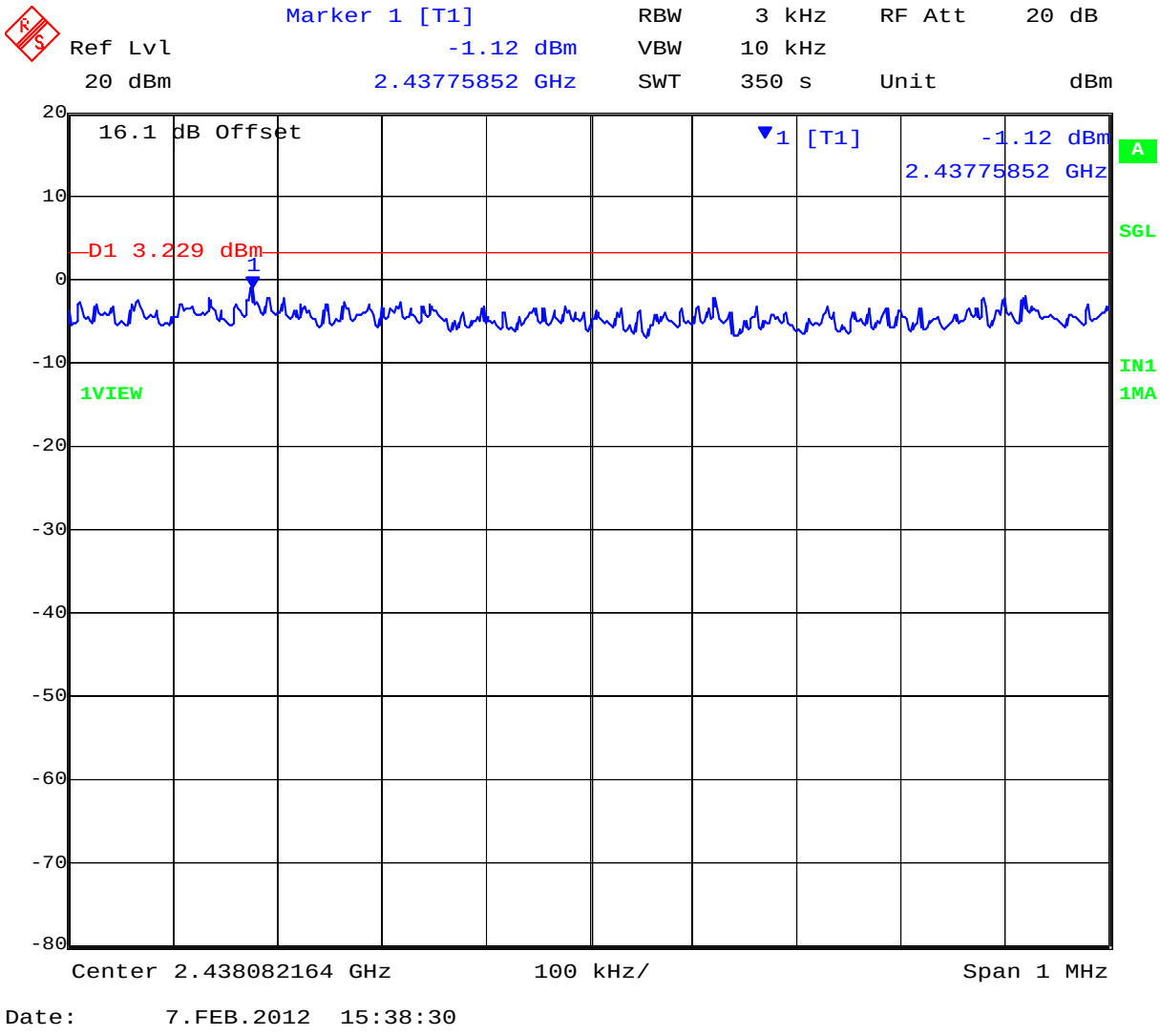
PORT C 2,412 MHz 802.11b - Peak Power Spectral Density



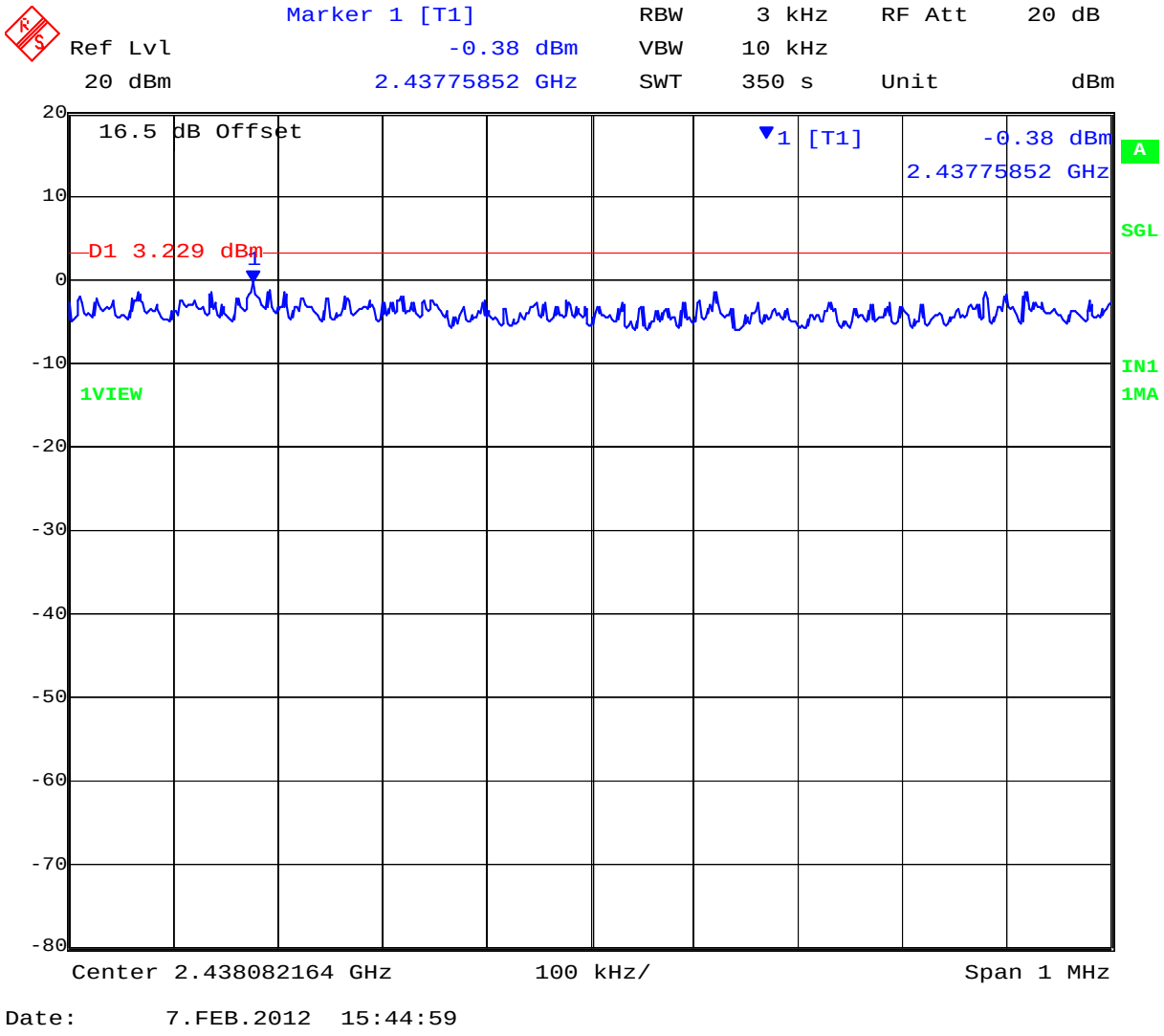
PORT A 2,437 MHz 802.11b - Peak Power Spectral Density



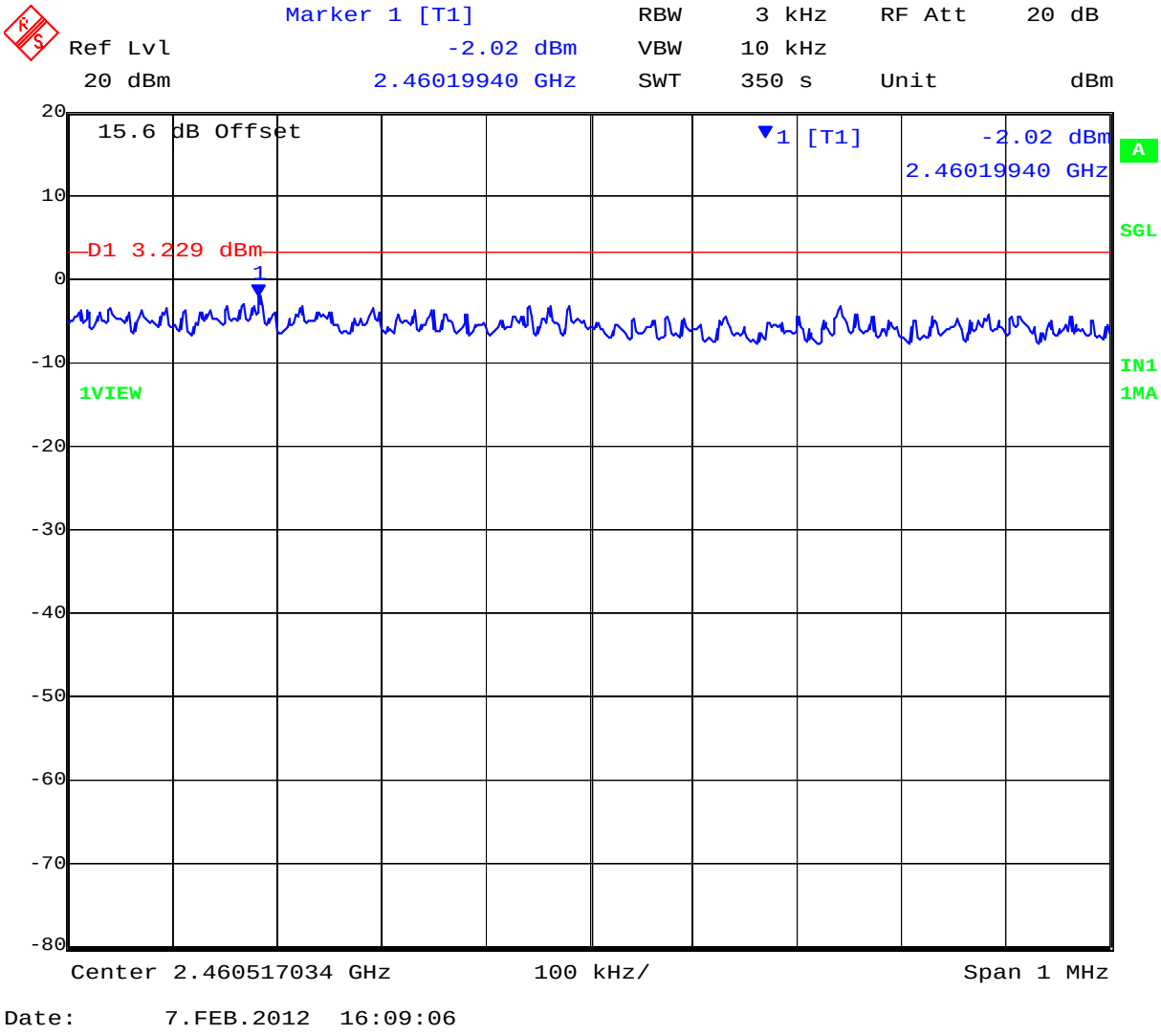
PORT B 2,437 MHz 802.11b - Peak Power Spectral Density



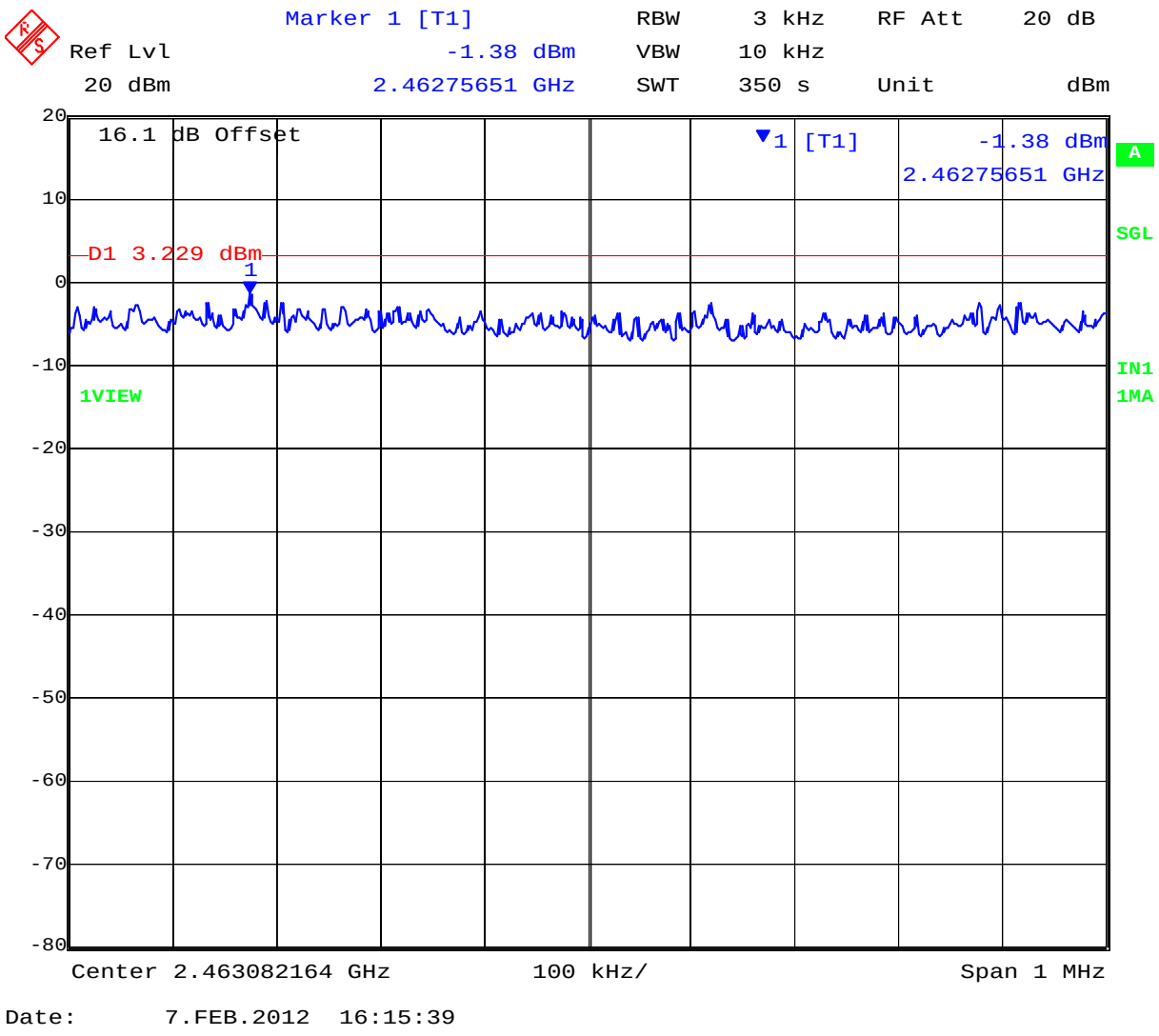
PORT C 2,437 MHz 802.11b - Peak Power Spectral Density



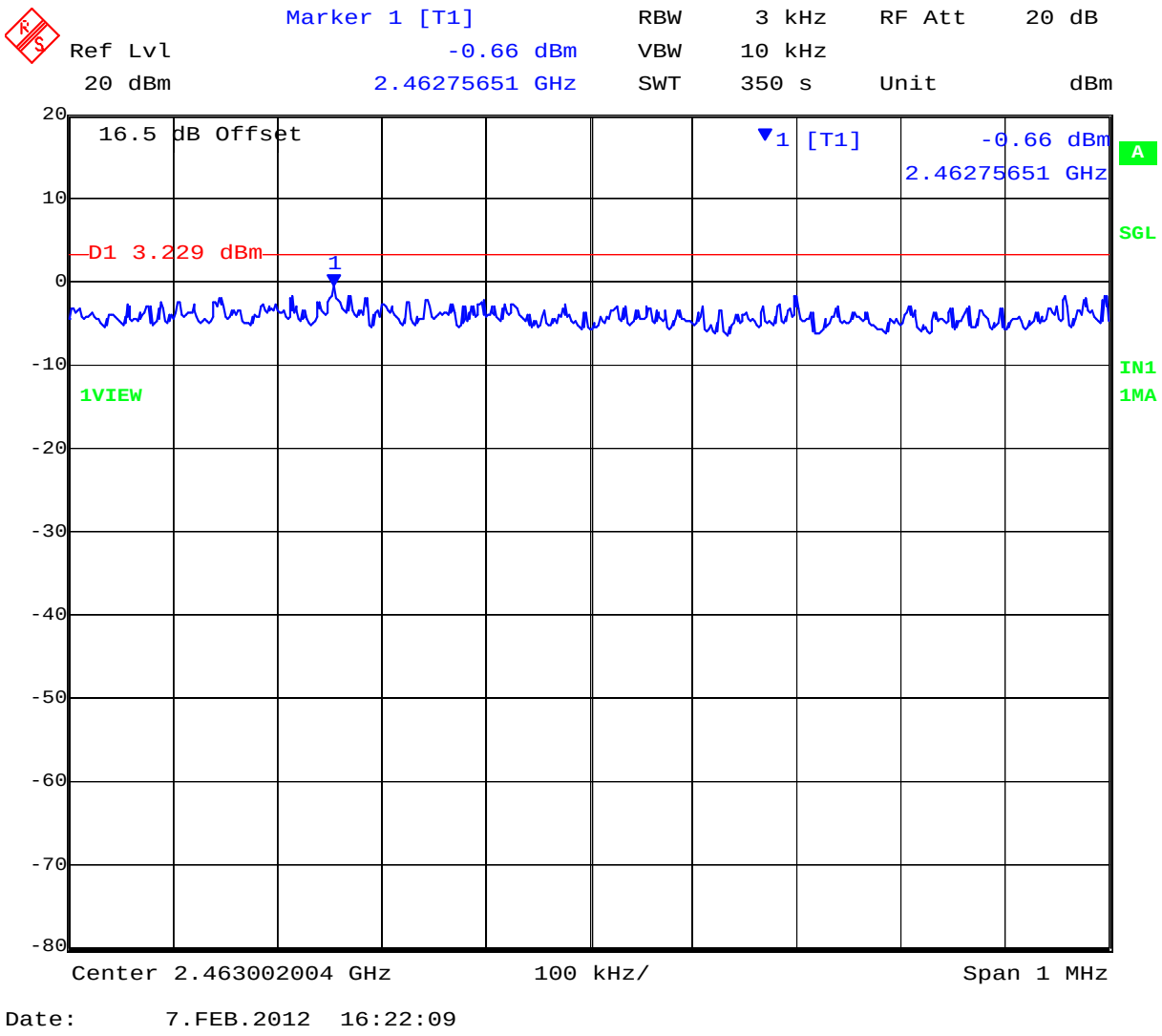
PORT A 2,462 MHz 802.11b - Peak Power Spectral Density



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



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



Peak Power Spectral Density

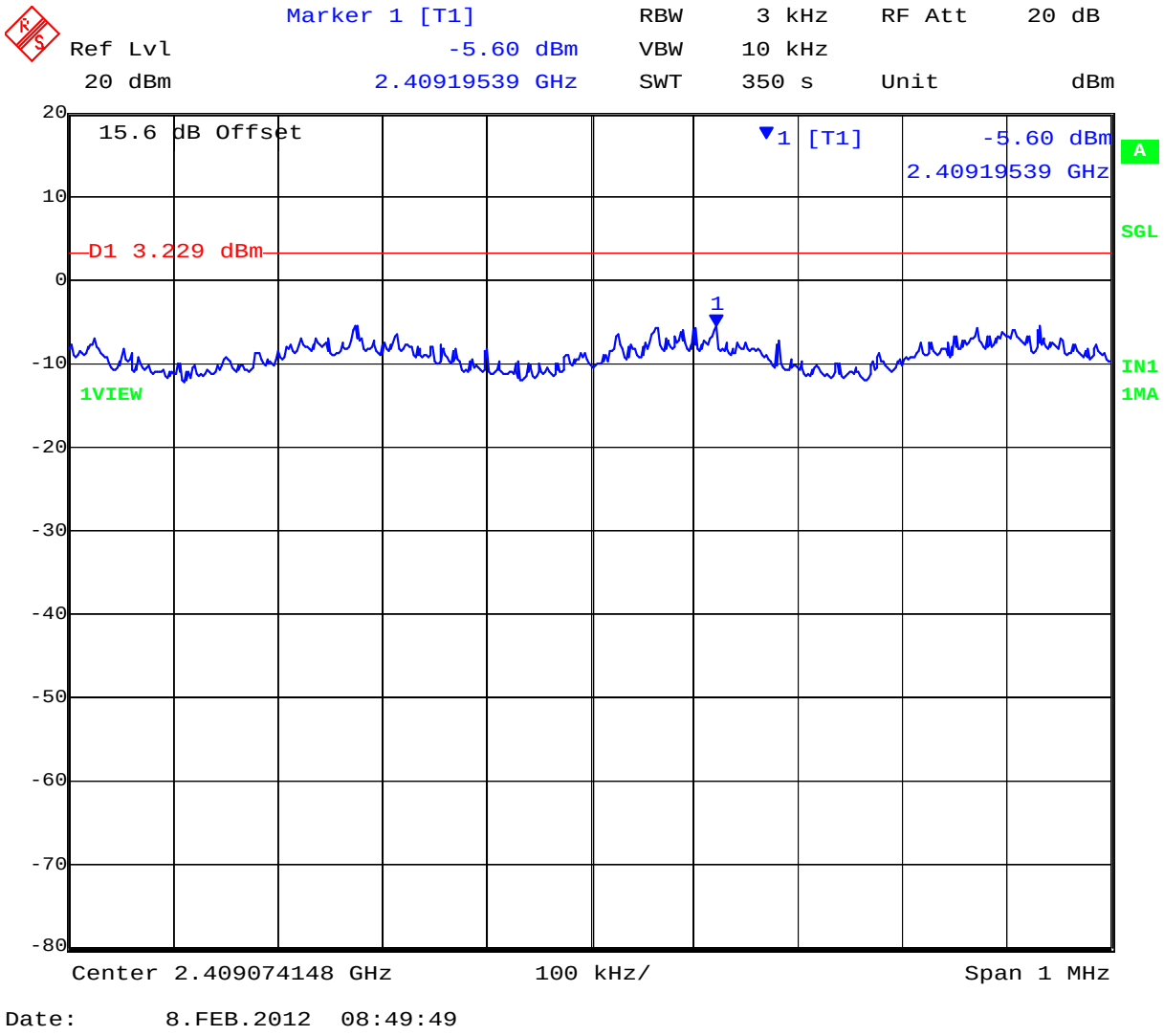
TABLE OF RESULTS – **802.11g Legacy**

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

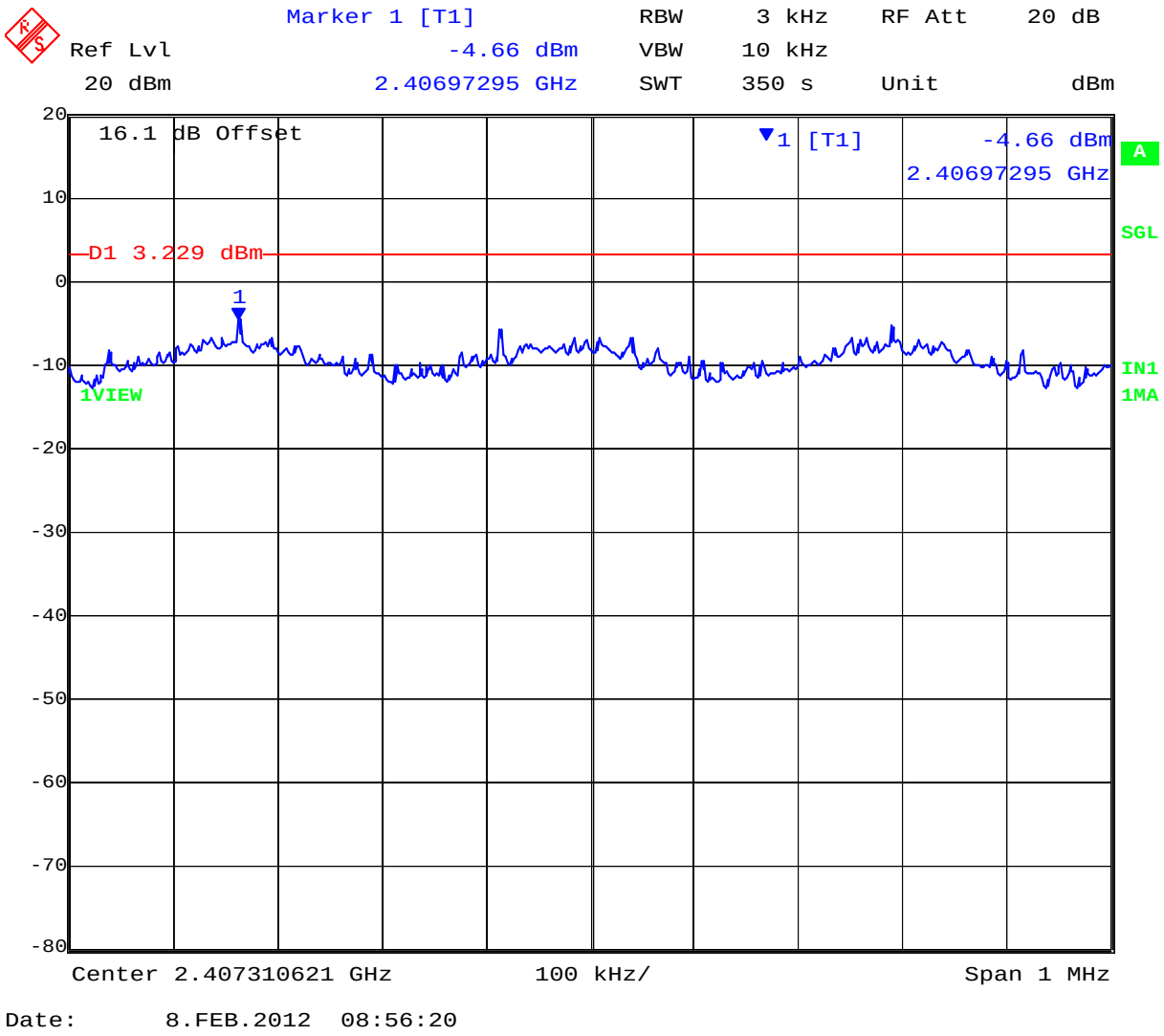
Test Frequency	Measured Power Density RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**10Log(N)**	**dBm**	**dBm**	**dB**
2412.000	-5.60	-4.66	-5.68	--	4.77	0.12	8.00	-7.88
2437.000	-6.14	-6.26	-4.54	--	4.77	0.23	8.00	-7.77
2462.000	-6.62	-6.50	-4.91	--	4.77	-0.13	8.00	-8.13

Measurement uncertainty:	± 1.33 dB

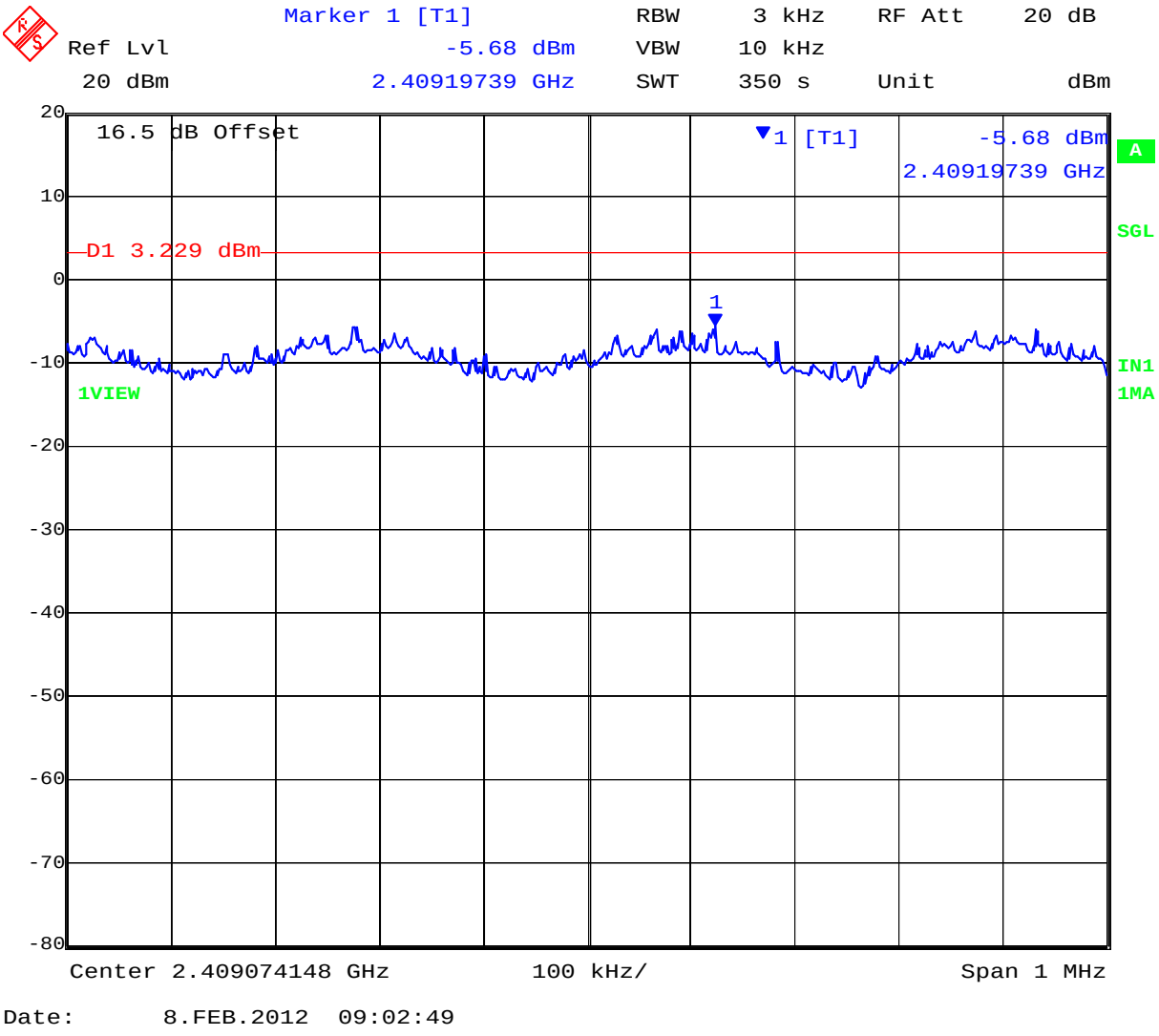
PORT A 2,412 MHz 802.11g Legacy - Peak Power Spectral Density



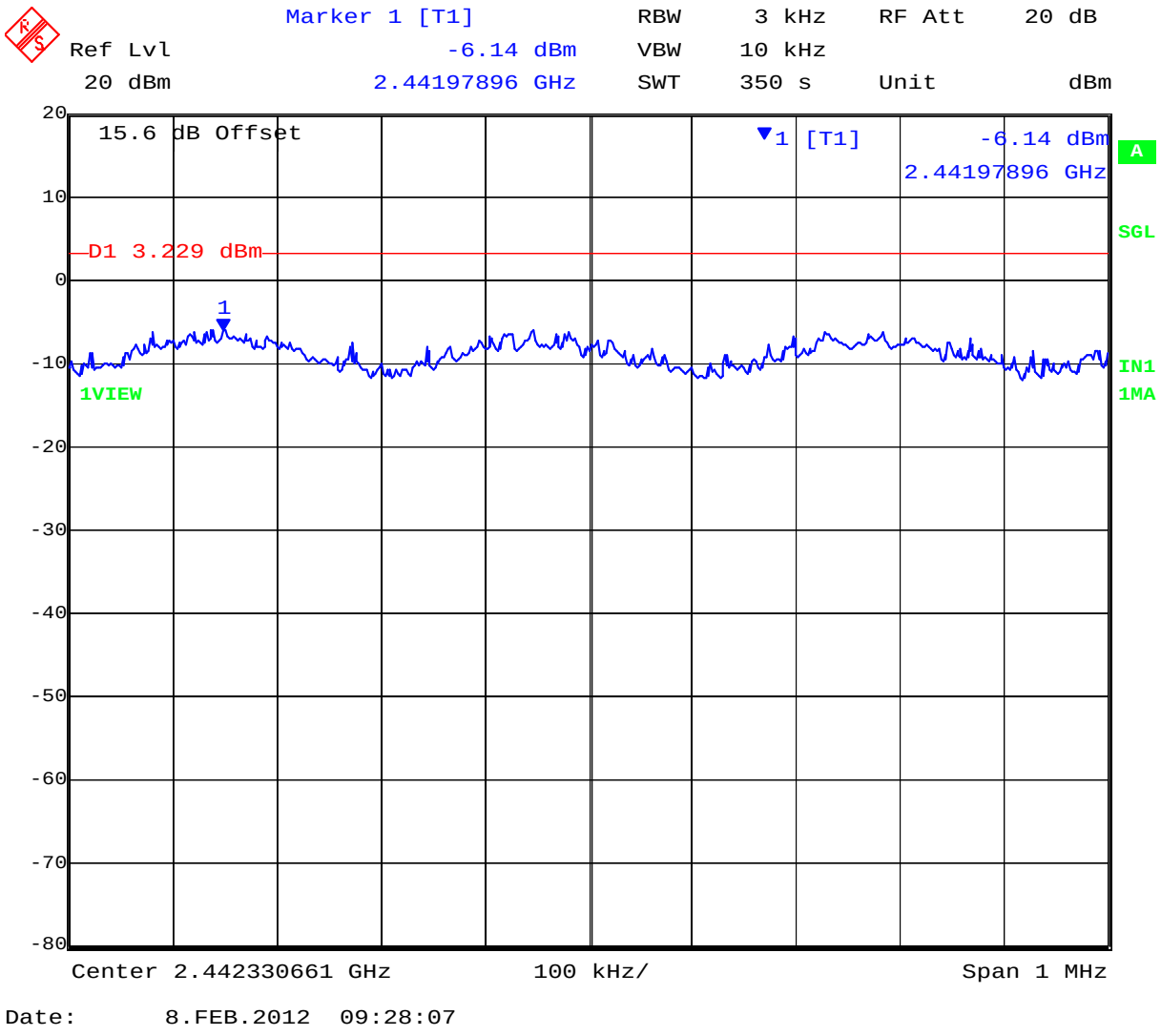
PORT B 2,412 MHz 802.11g Legacy - Peak Power Spectral Density



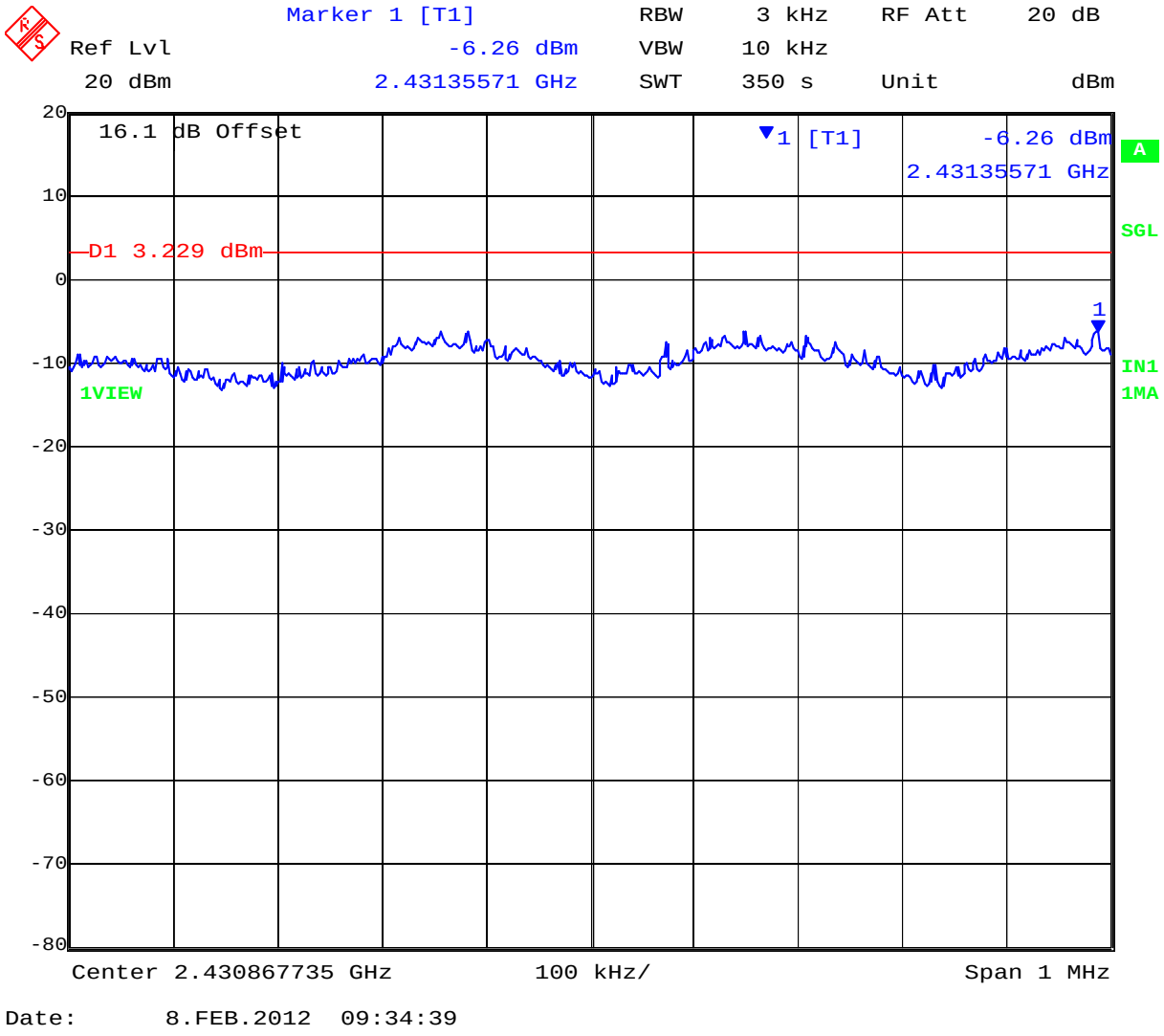
PORT C 2,412 MHz 802.11g Legacy - Peak Power Spectral Density



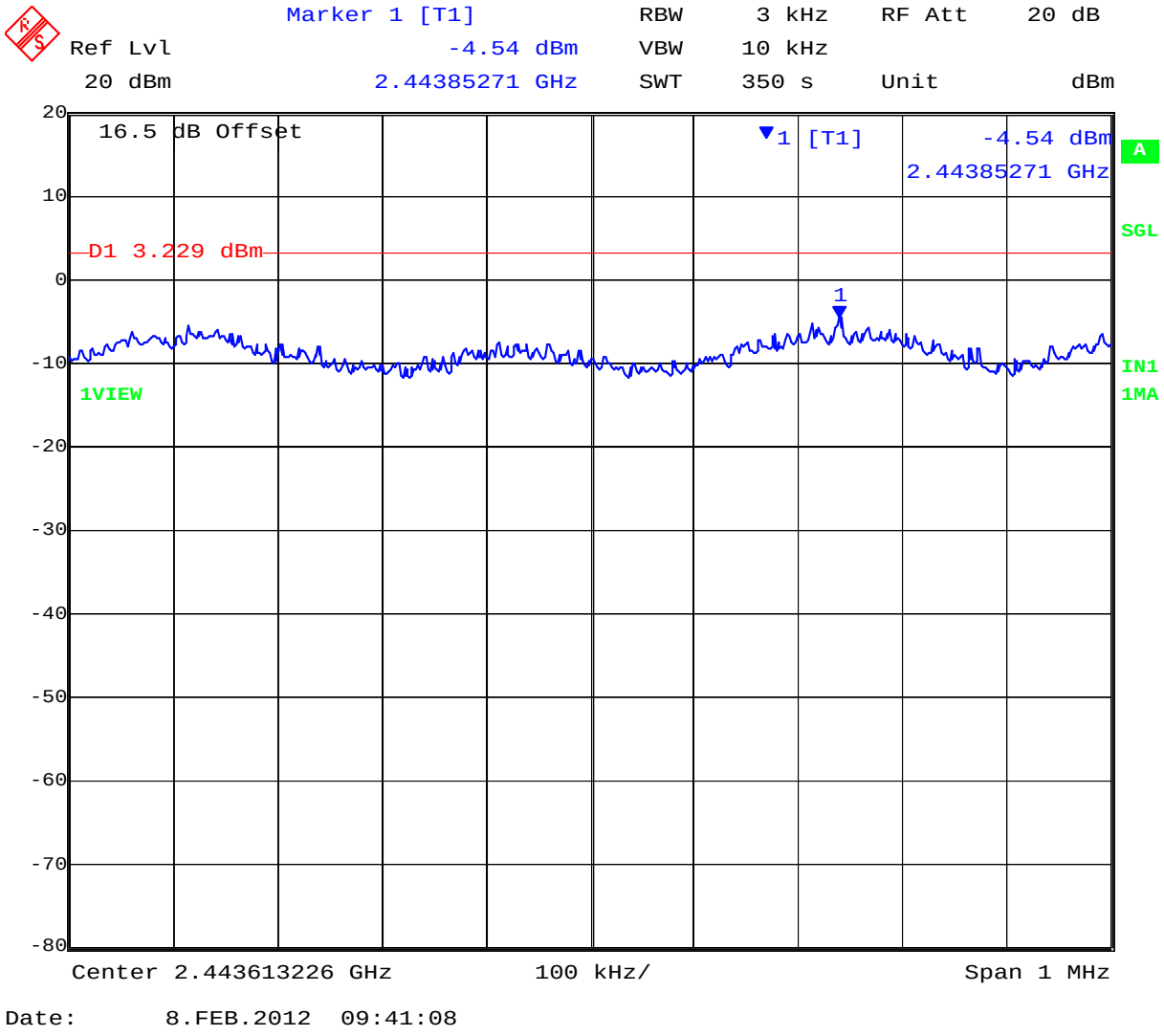
PORT A 2,437 MHz 802.11g Legacy - Peak Power Spectral Density



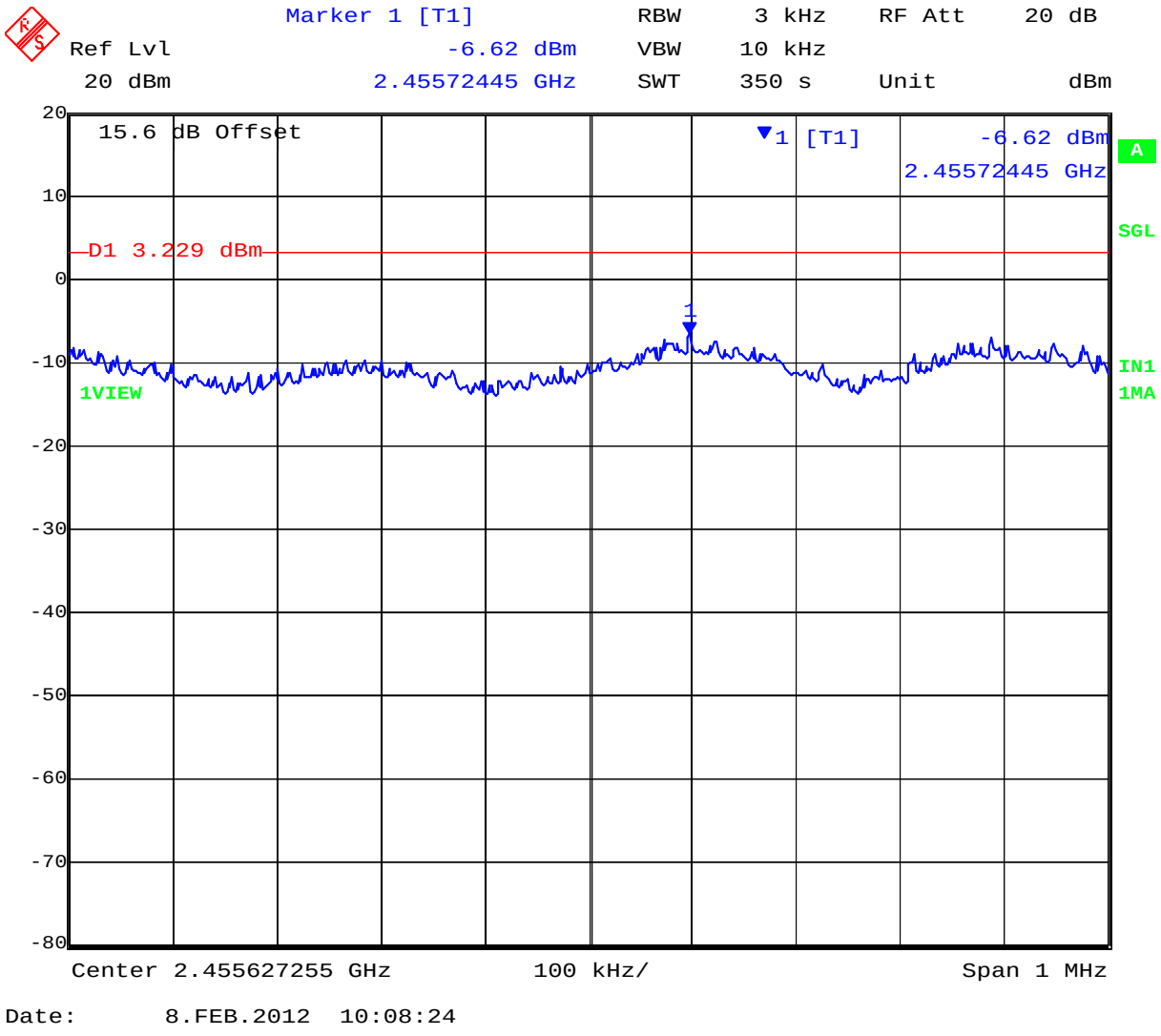
PORT B 2,437 MHz 802.11g Legacy - Peak Power Spectral Density



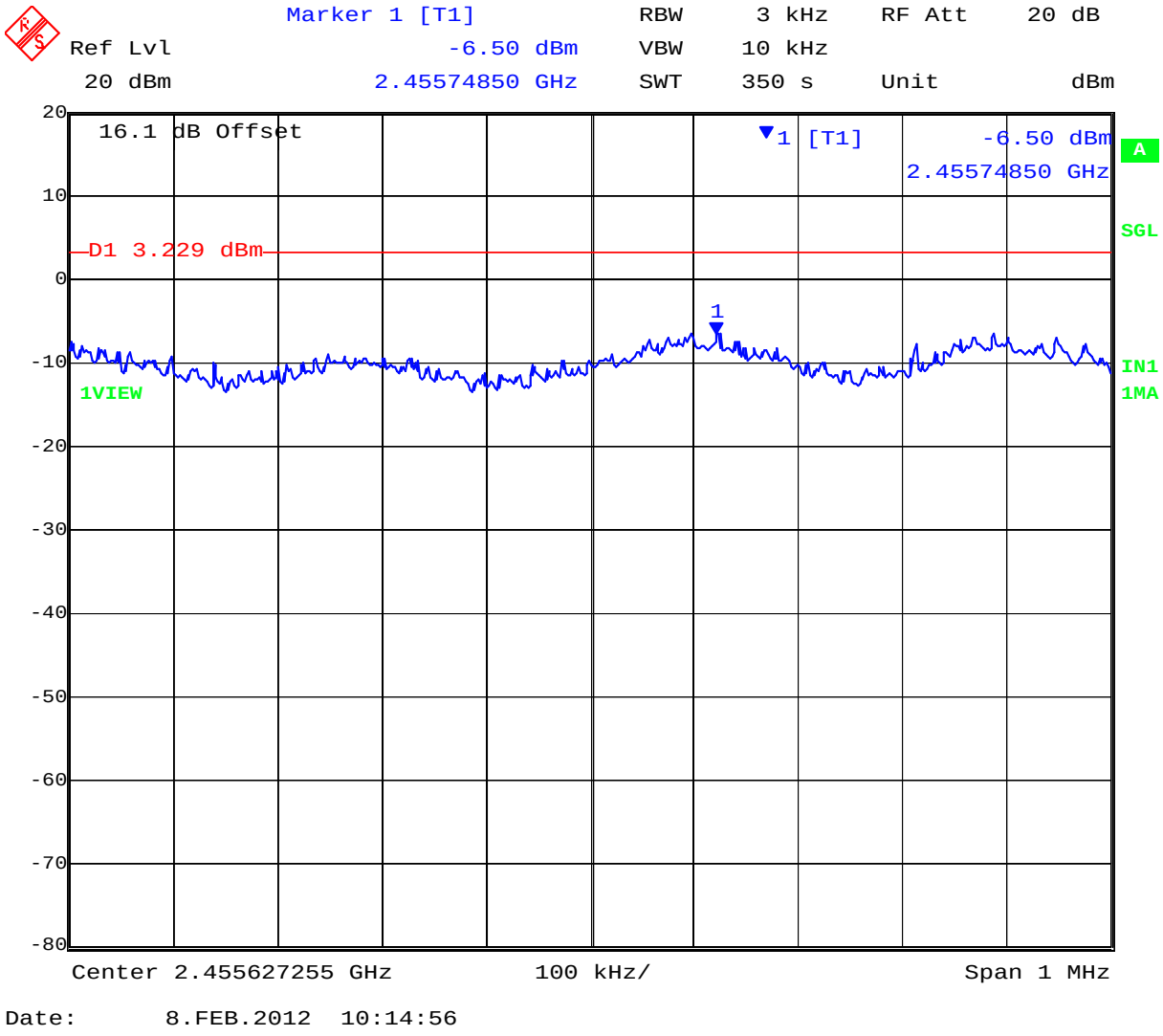
PORT C 2,437 MHz 802.11g Legacy - Peak Power Spectral Density



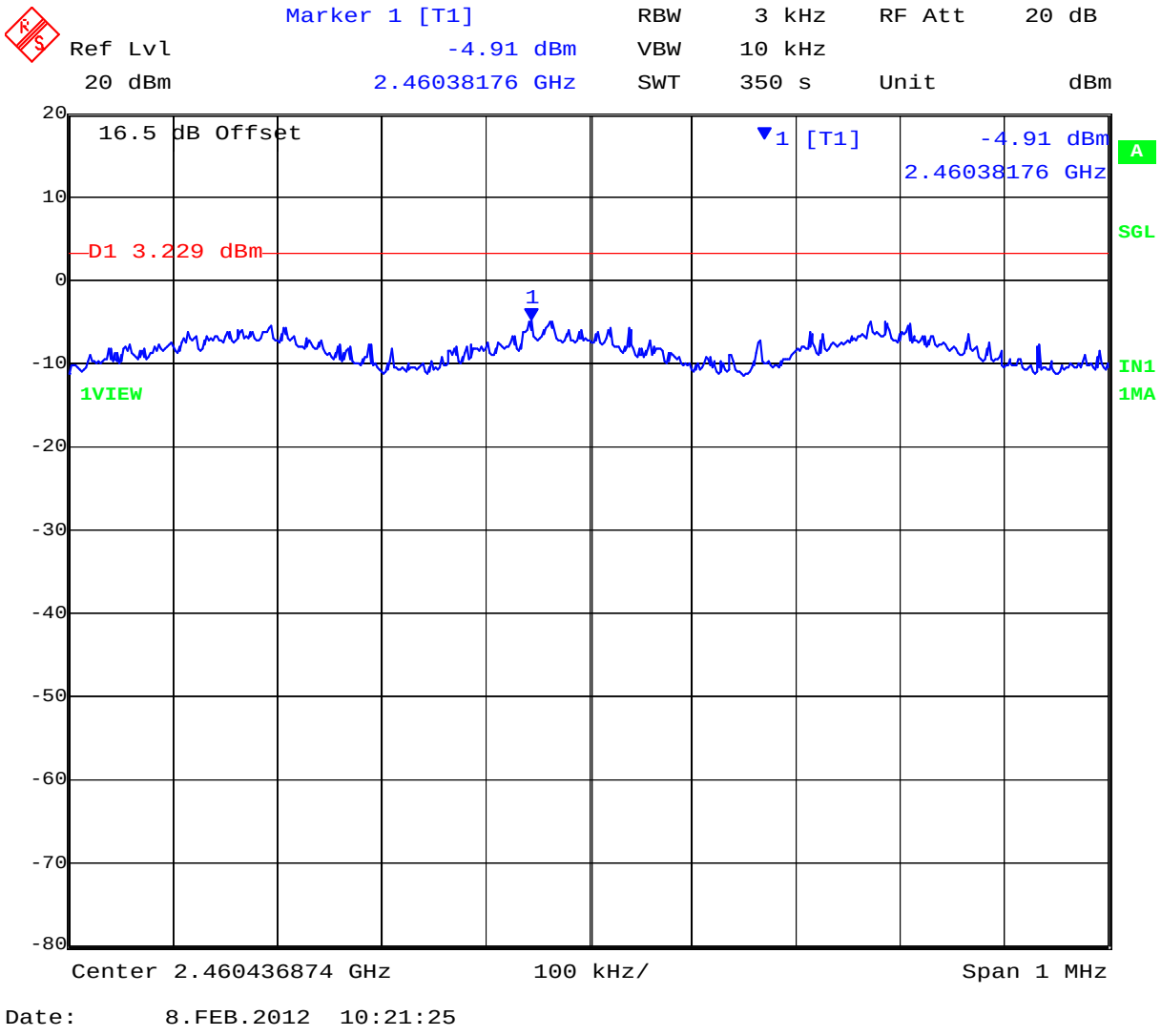
PORT A 2,462 MHz 802.11g Legacy - Peak Power Spectral Density



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



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



Peak Power Spectral Density

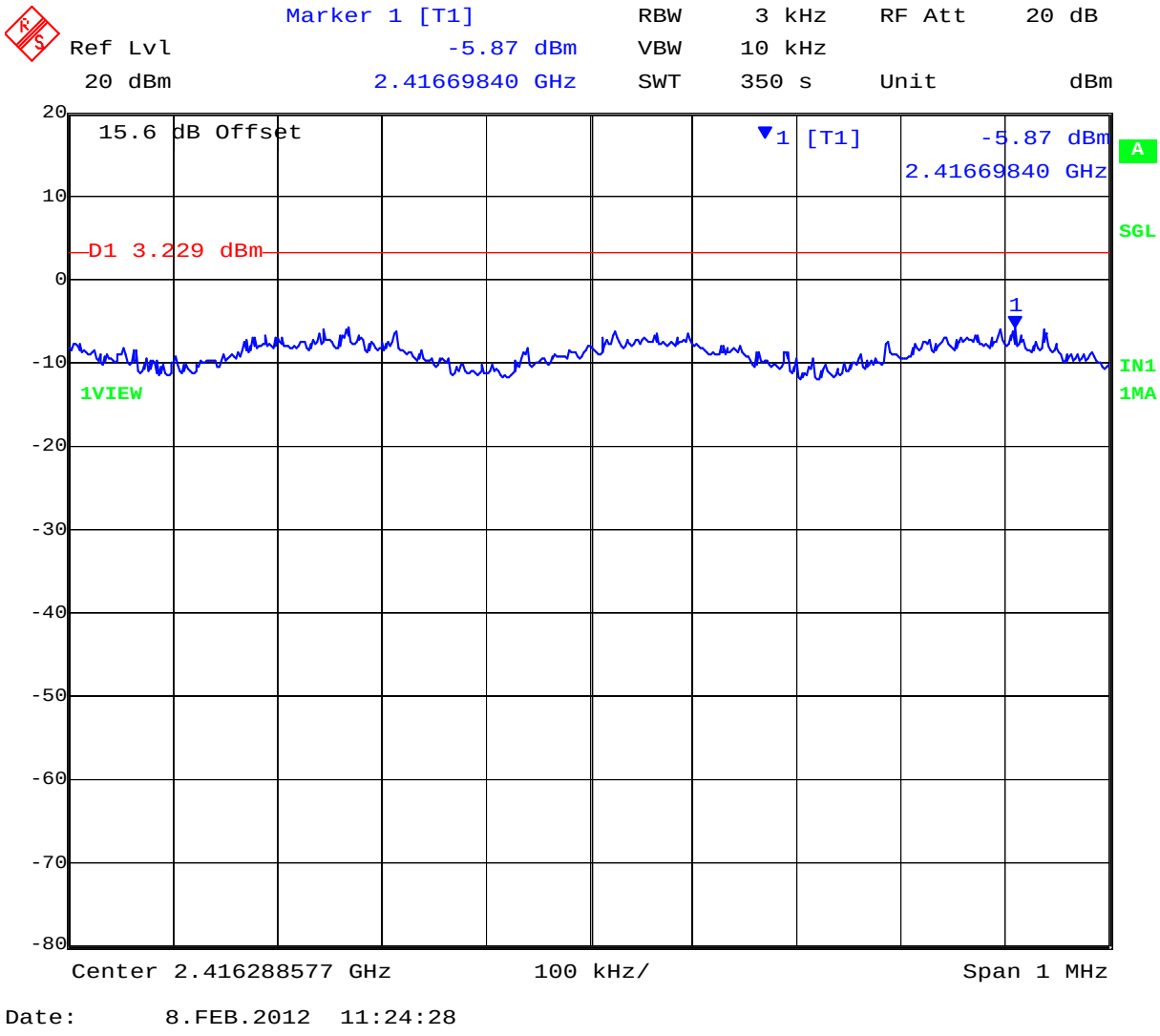
TABLE OF RESULTS – **802.11n HT-20**

Test Conditions:	15.247 (e)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-20	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	2 dBi
Applied Voltage:	48.00 Vdc	**Antenna Ports (N):**	3
Notes 1:			
Notes 2:			

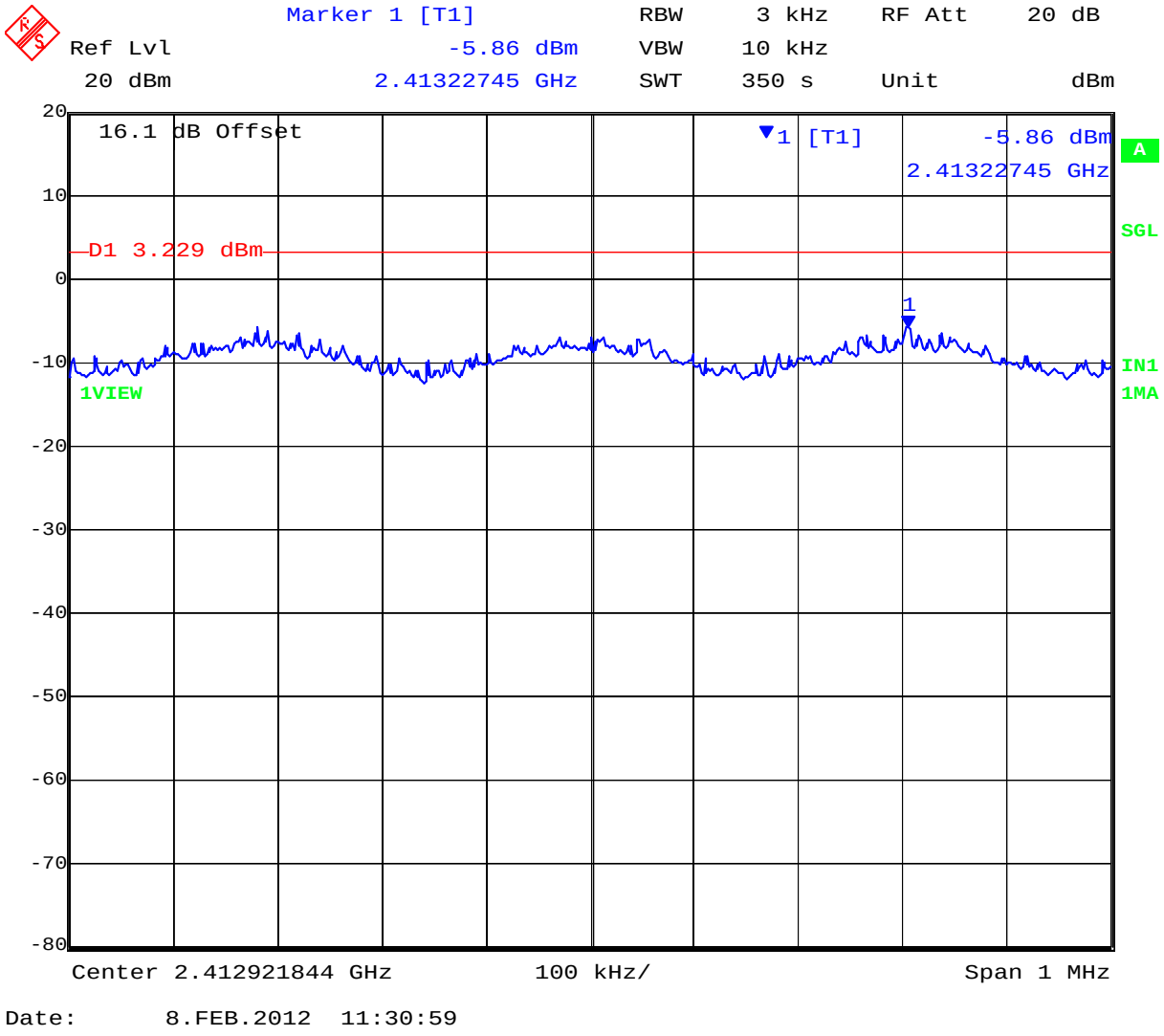
Test Frequency	Measured Power Density RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**10Log(N)**	**dBm**	**dBm**	**dB**
2412.000	-5.87	-5.86	-5.12	--	4.77	-0.35	8.00	-8.35
2437.000	-5.20	-6.77	-4.55	--	4.77	0.23	8.00	-7.77
2462.000	-6.23	-6.09	-4.57	--	4.77	0.20	8.00	-7.80

Measurement uncertainty:	± 1.33 dB

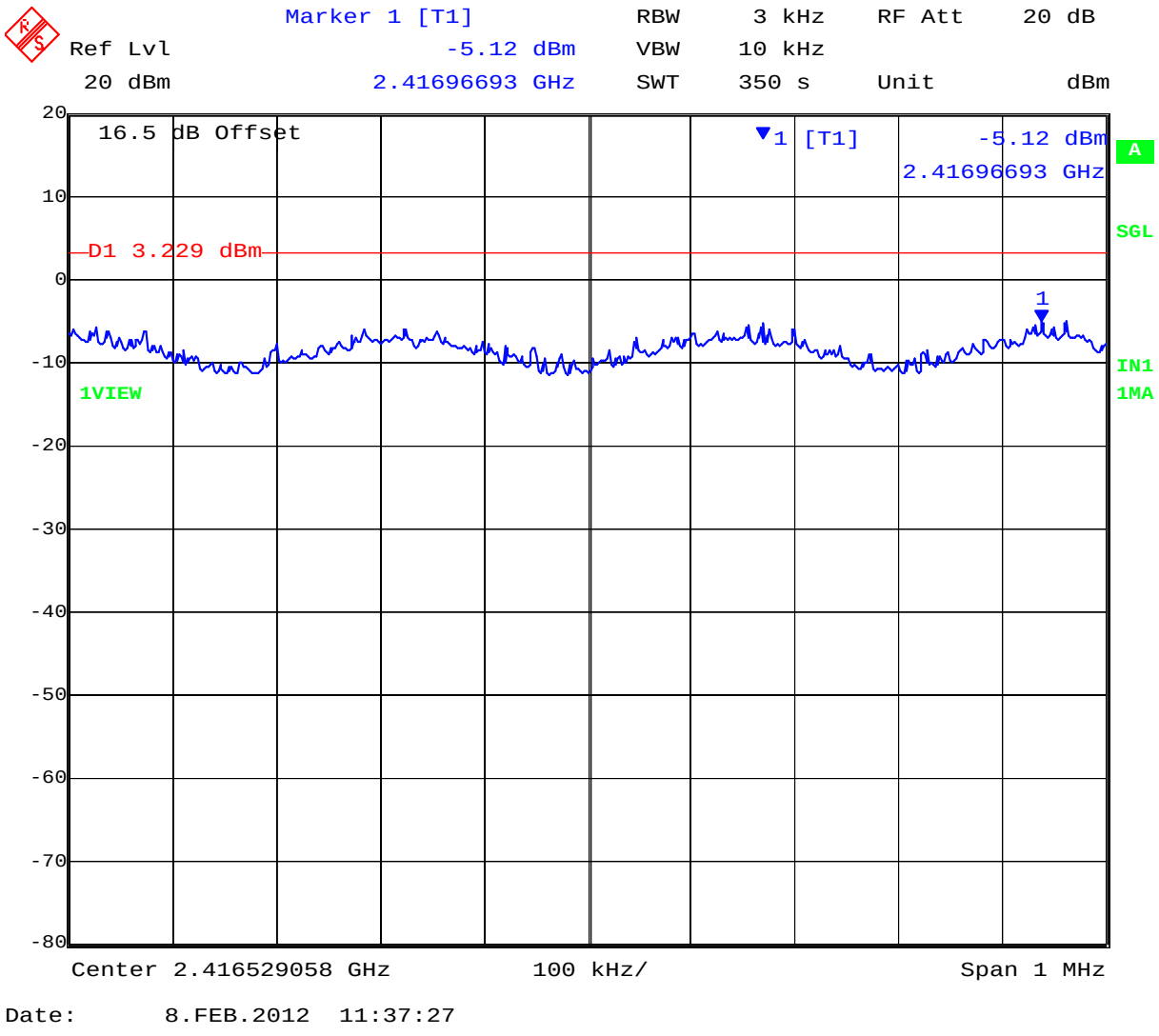
PORT A 2,412 MHz 802.11n HT-20 - Peak Power Spectral Density



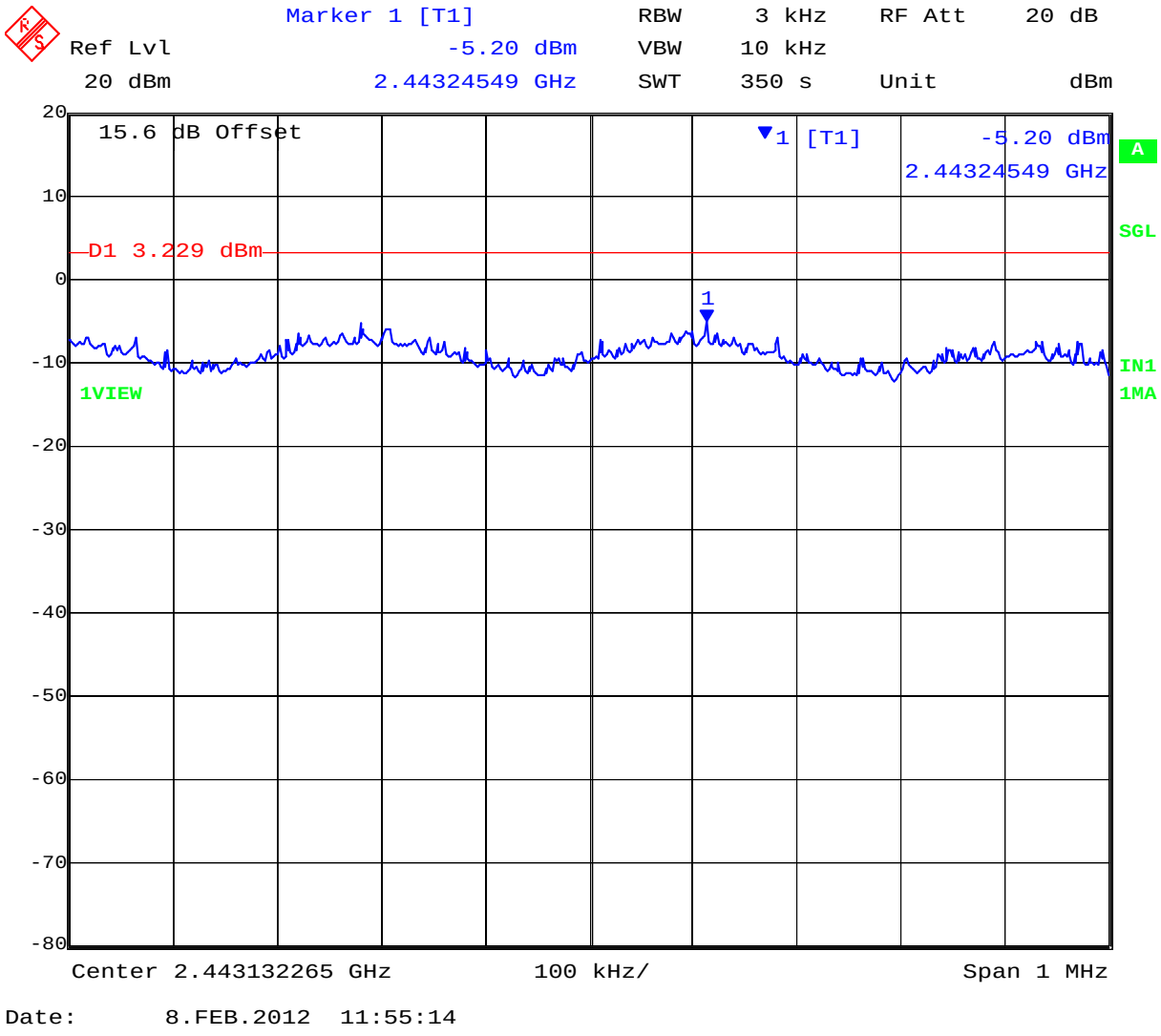
PORT B 2,412 MHz 802.11n HT-20 - Peak Power Spectral Density



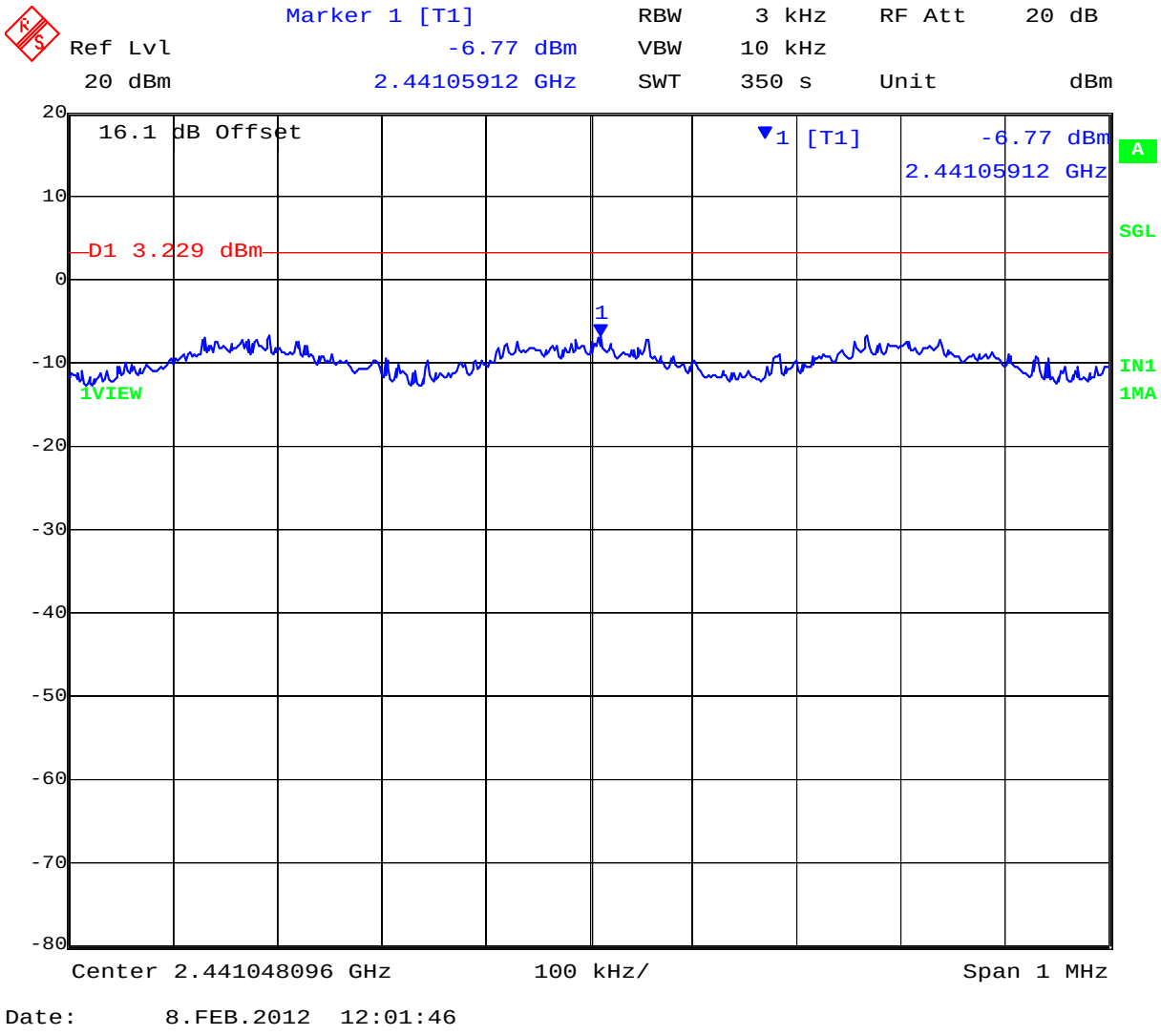
PORT C 2,412 MHz 802.11n HT-20 - Peak Power Spectral Density



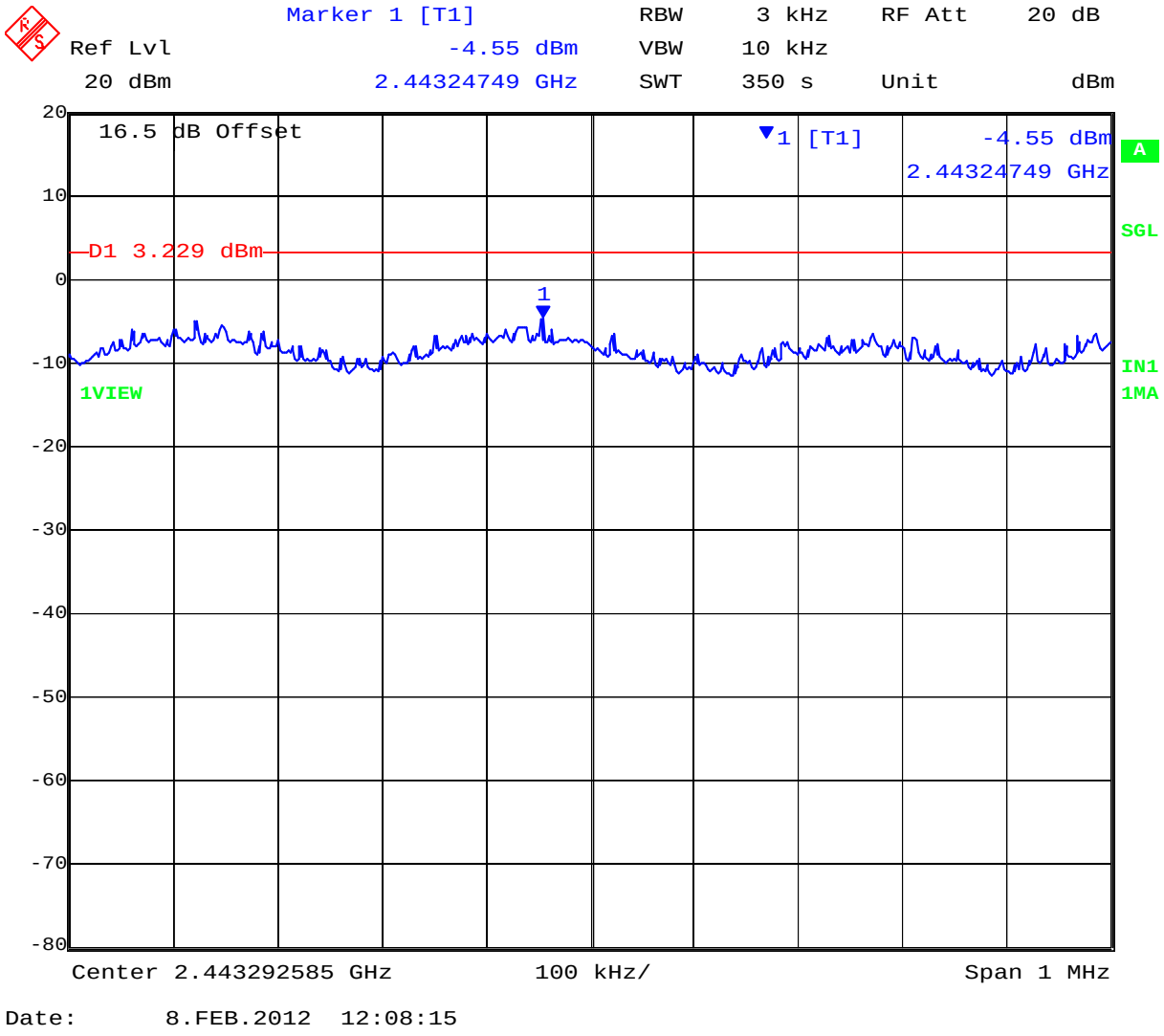
PORT A 2,437 MHz 802.11n HT-20 - Peak Power Spectral Density



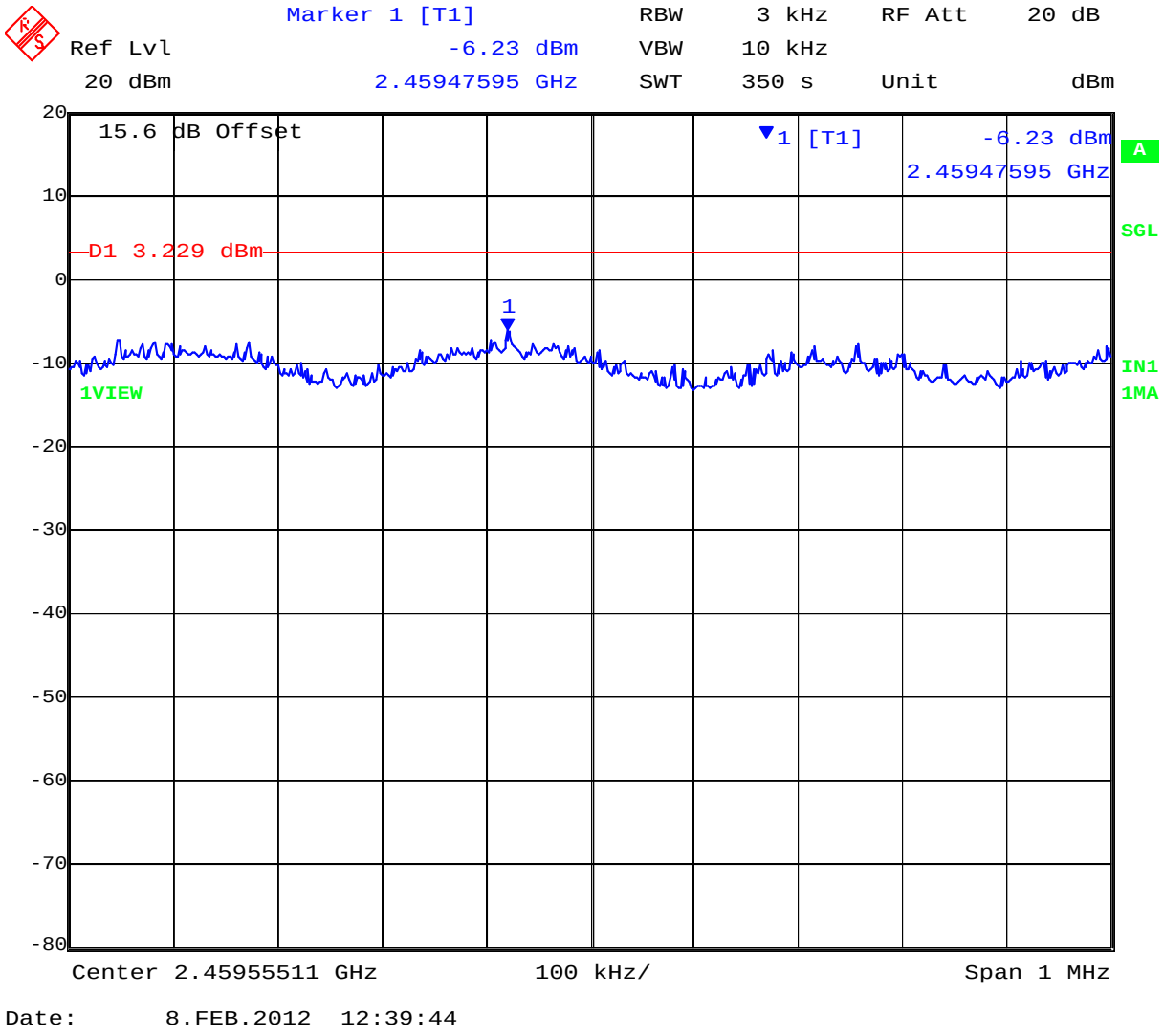
PORT B 2,437 MHz 802.11n HT-20 - Peak Power Spectral Density



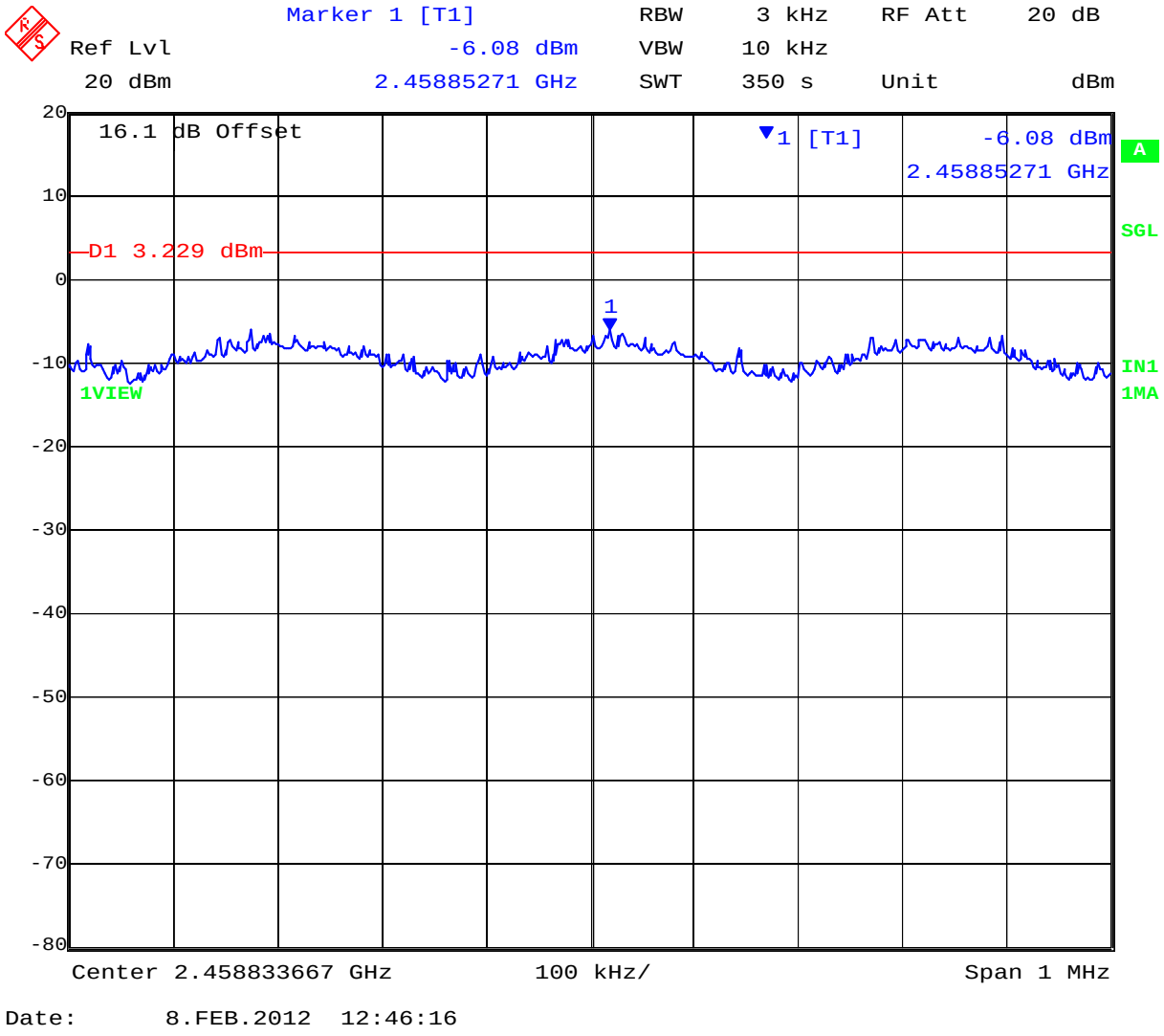
PORT C 2,437 MHz 802.11n HT-20 - Peak Power Spectral Density



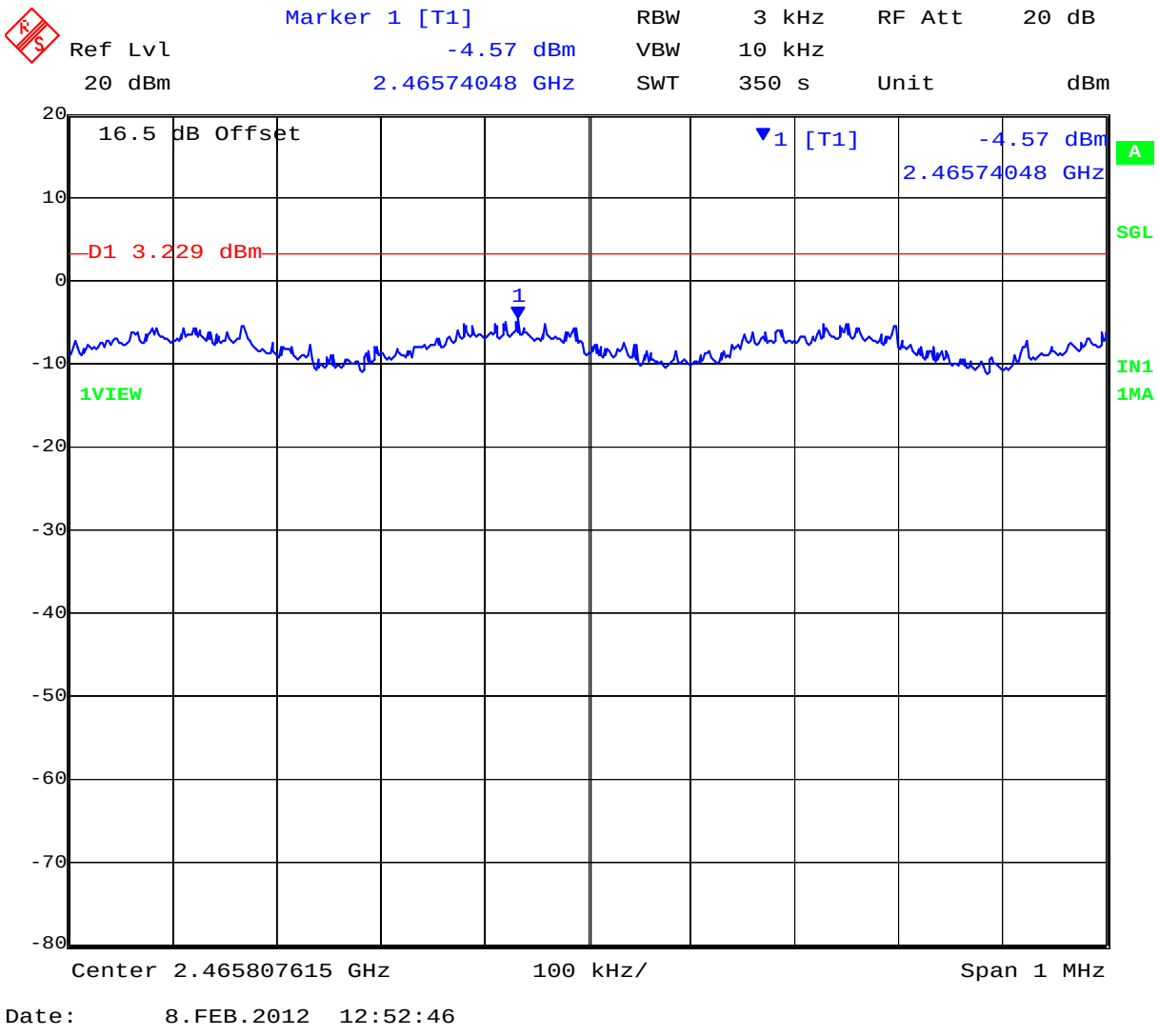
PORT A 2,462 MHz 802.11n HT-20 - Peak Power Spectral Density



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



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



Peak Power Spectral Density

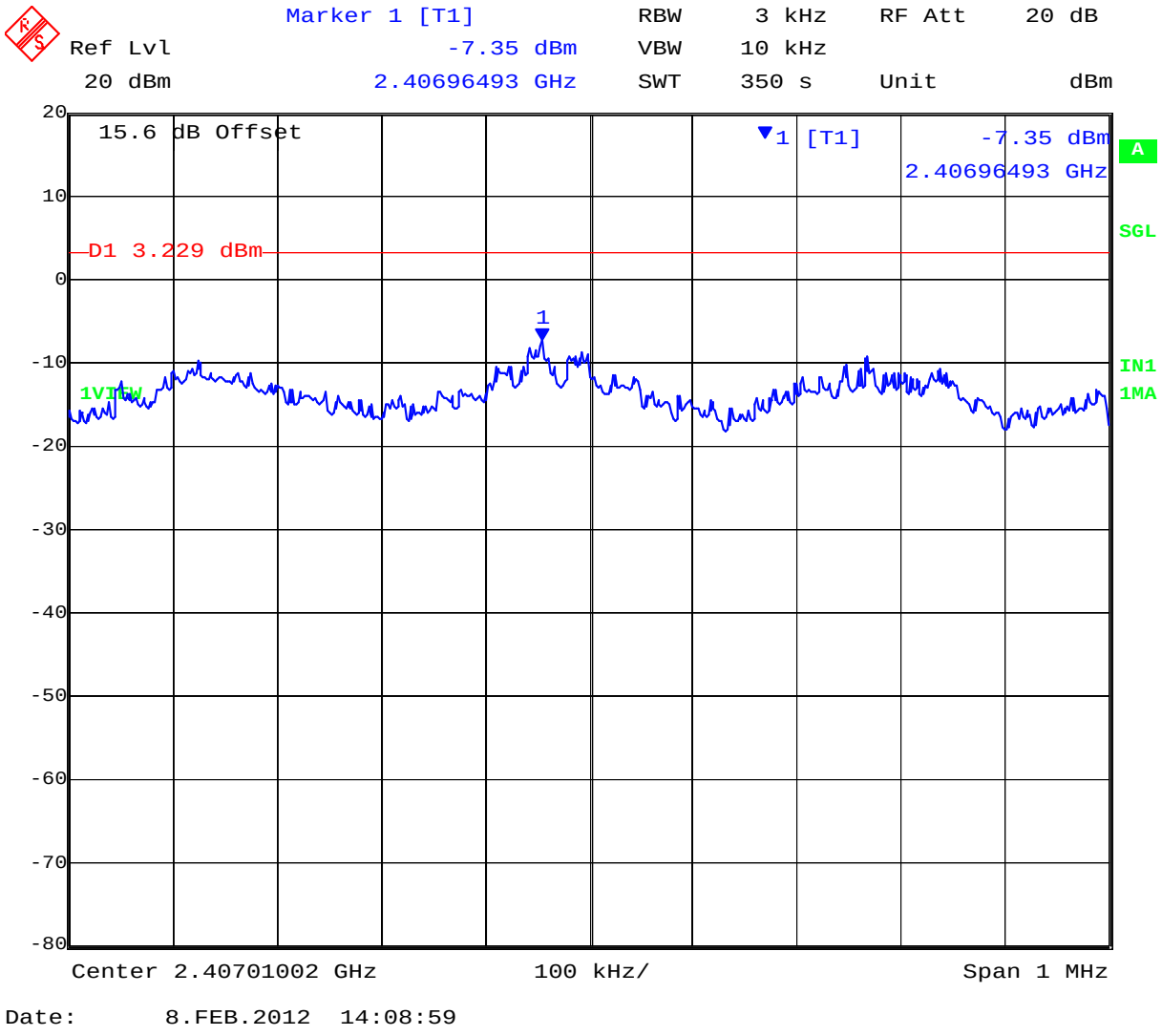
TABLE OF RESULTS – **802.11n HT-40**

Test Conditions:	15.247 (e)	**Rel. Humidity (%):**	35 to 42
Variant:	802.11n HT-40	**Ambient Temp. (ºC):**	19 to 22
TPC:	HIGH	**Pressure (mBars):**	998 to 1003
Modulation:	ON	**Duty Cycle (%):**	100
Beam Forming Gain (Y):	N/A dB	**Antenna Gain:**	2 dBi
Applied Voltage:	48.00 Vdc	**Antenna Ports (N):**	3
Notes 1:			
Notes 2:			

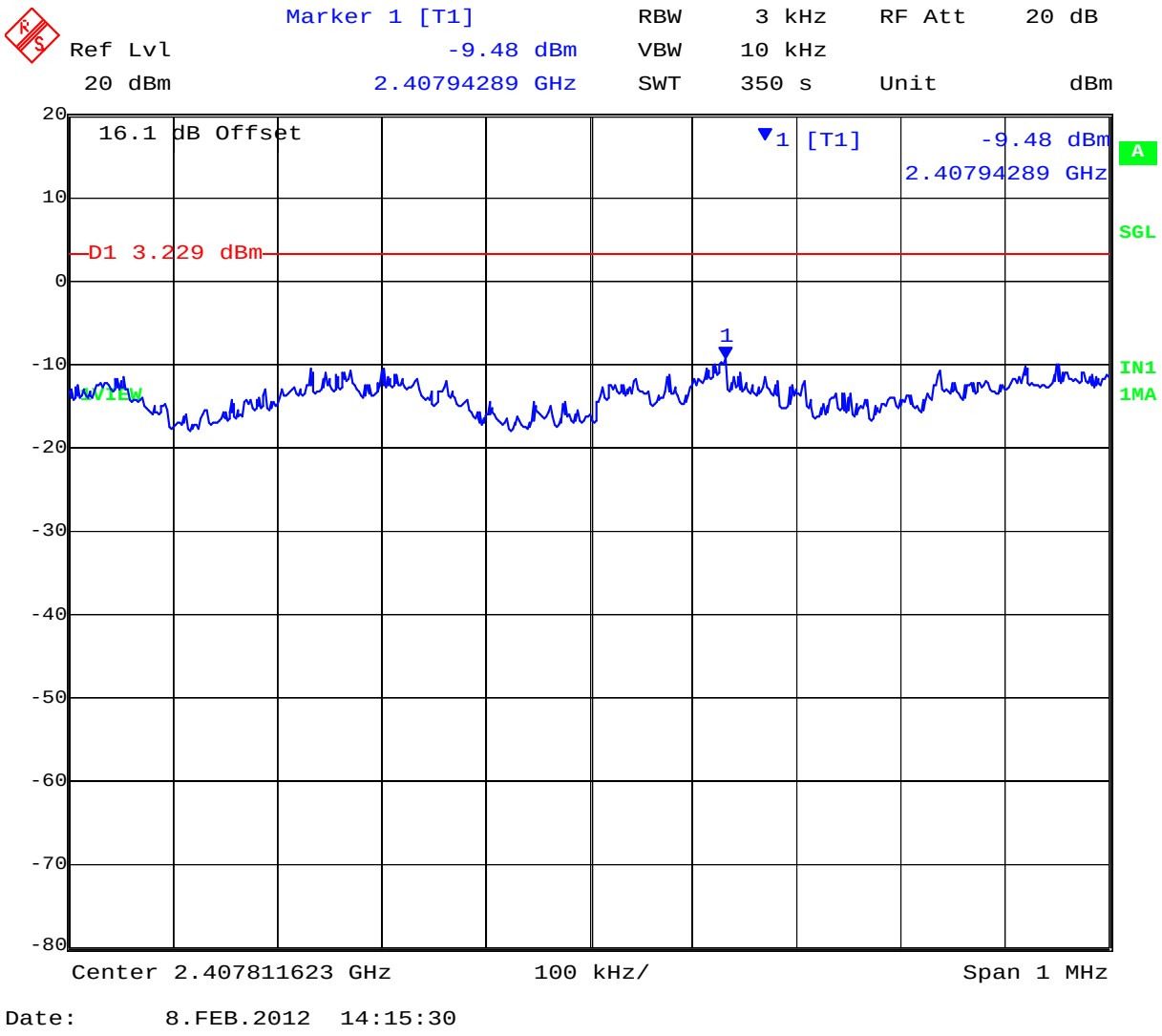
Test Frequency	Measured Power Density RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**10Log(N)**	**dBm**	**dBm**	**dB**
2422.000	-7.35	-9.48	-9.12	--	4.77	-2.58	8.00	-10.58
2437.000	-7.52	-8.23	-7.83	--	4.77	-2.75	8.00	-10.75
2452.000	-9.80	-9.54	-8.40	--	4.77	-3.63	8.00	-11.63

Measurement uncertainty:	± 1.33 dB

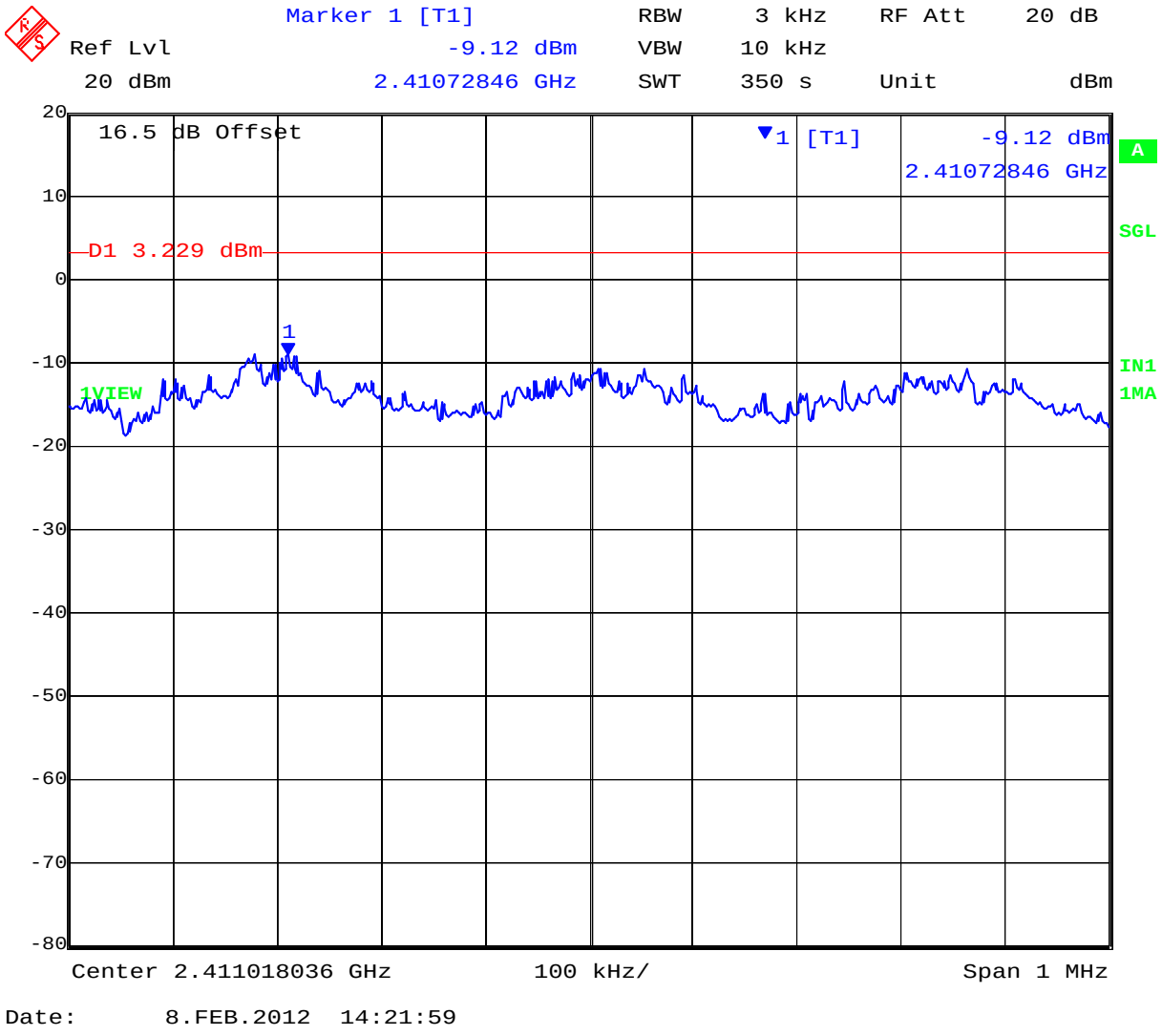
PORT A 2,422 MHz 802.11n HT-40 - Peak Power Spectral Density



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

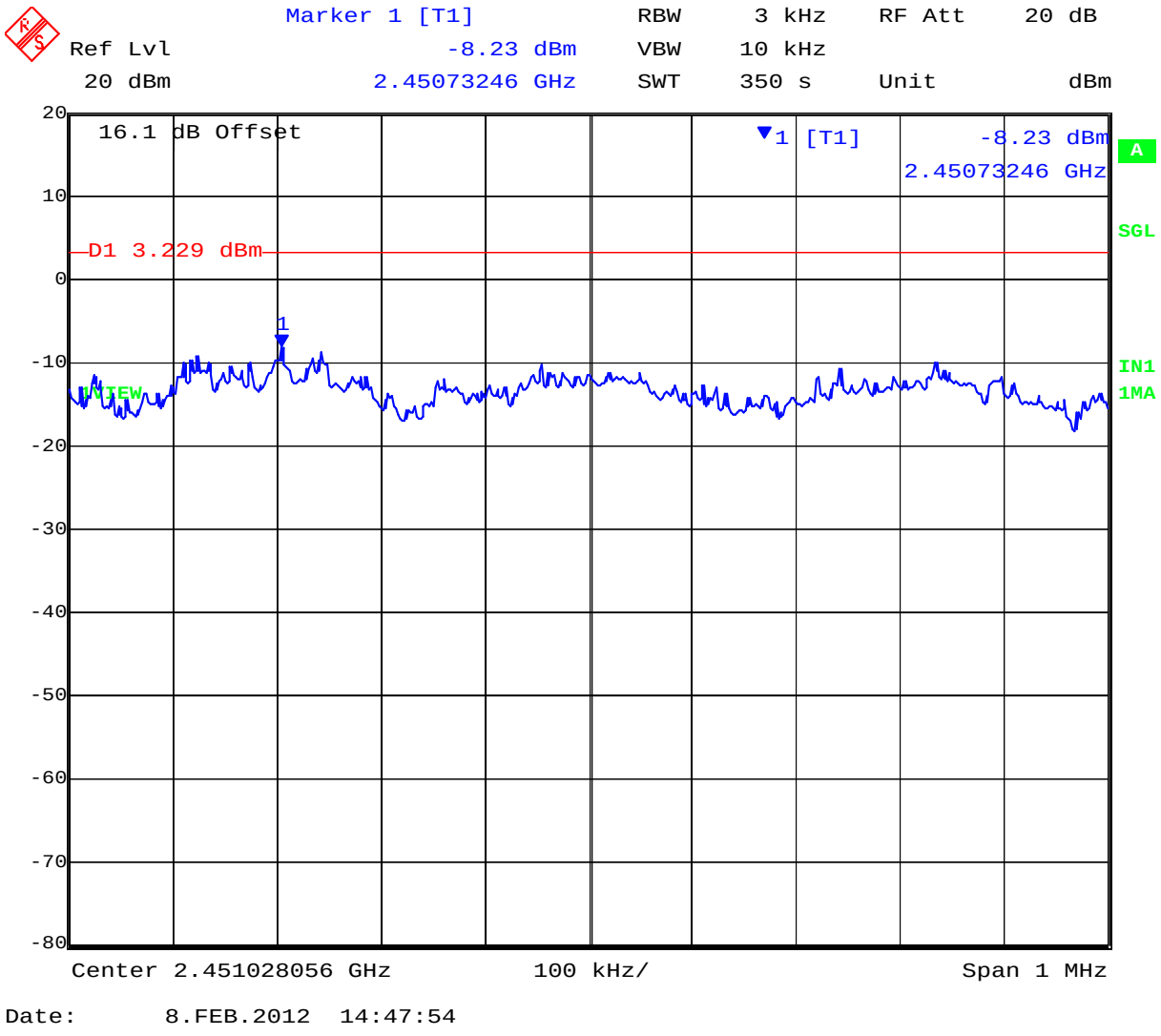


PORT C 2,422 MHz 802.11n HT-40 - Peak Power Spectral Density

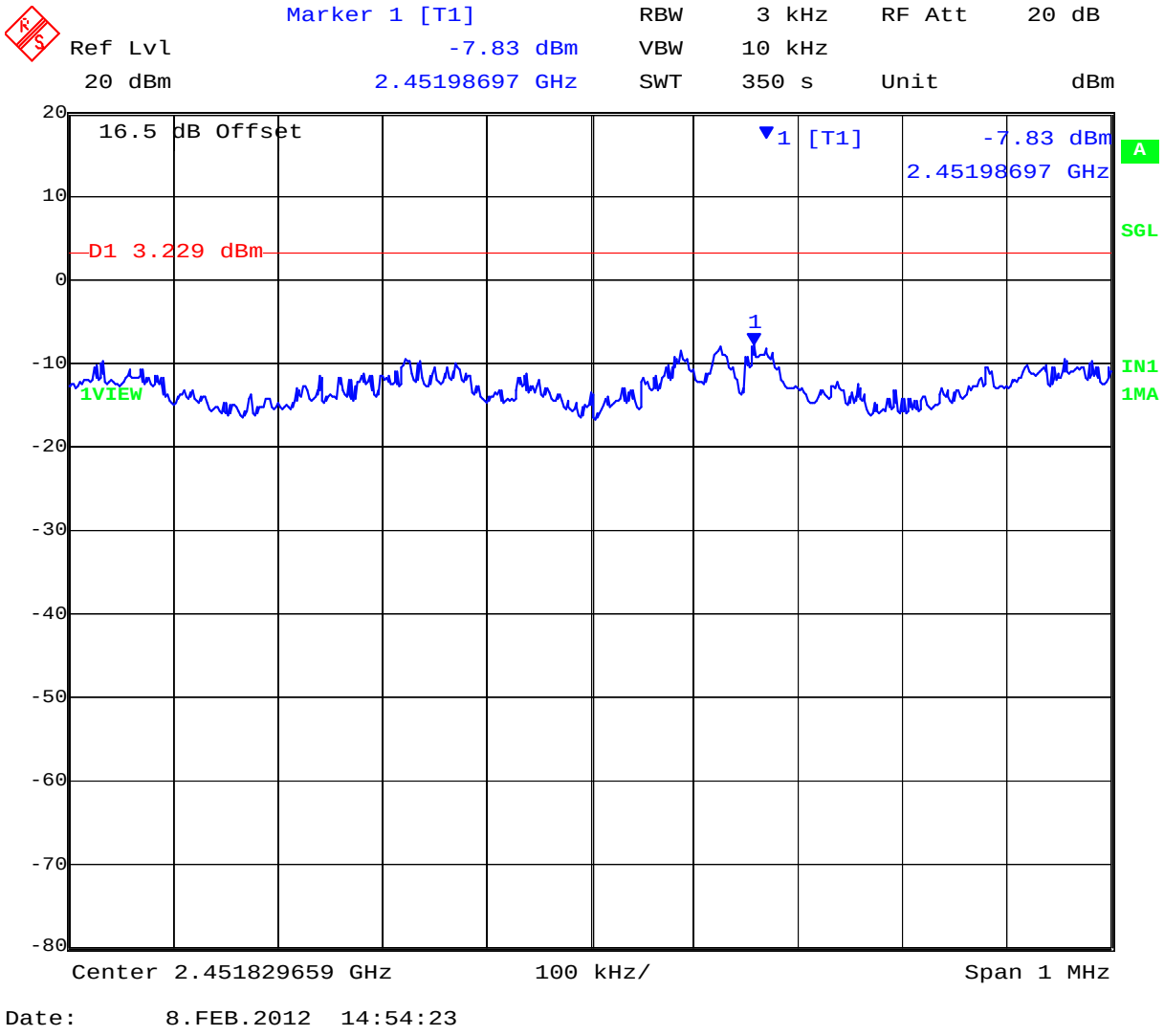


PORT A 2,437 MHz 802.11n HT-40 - Peak Power Spectral Density

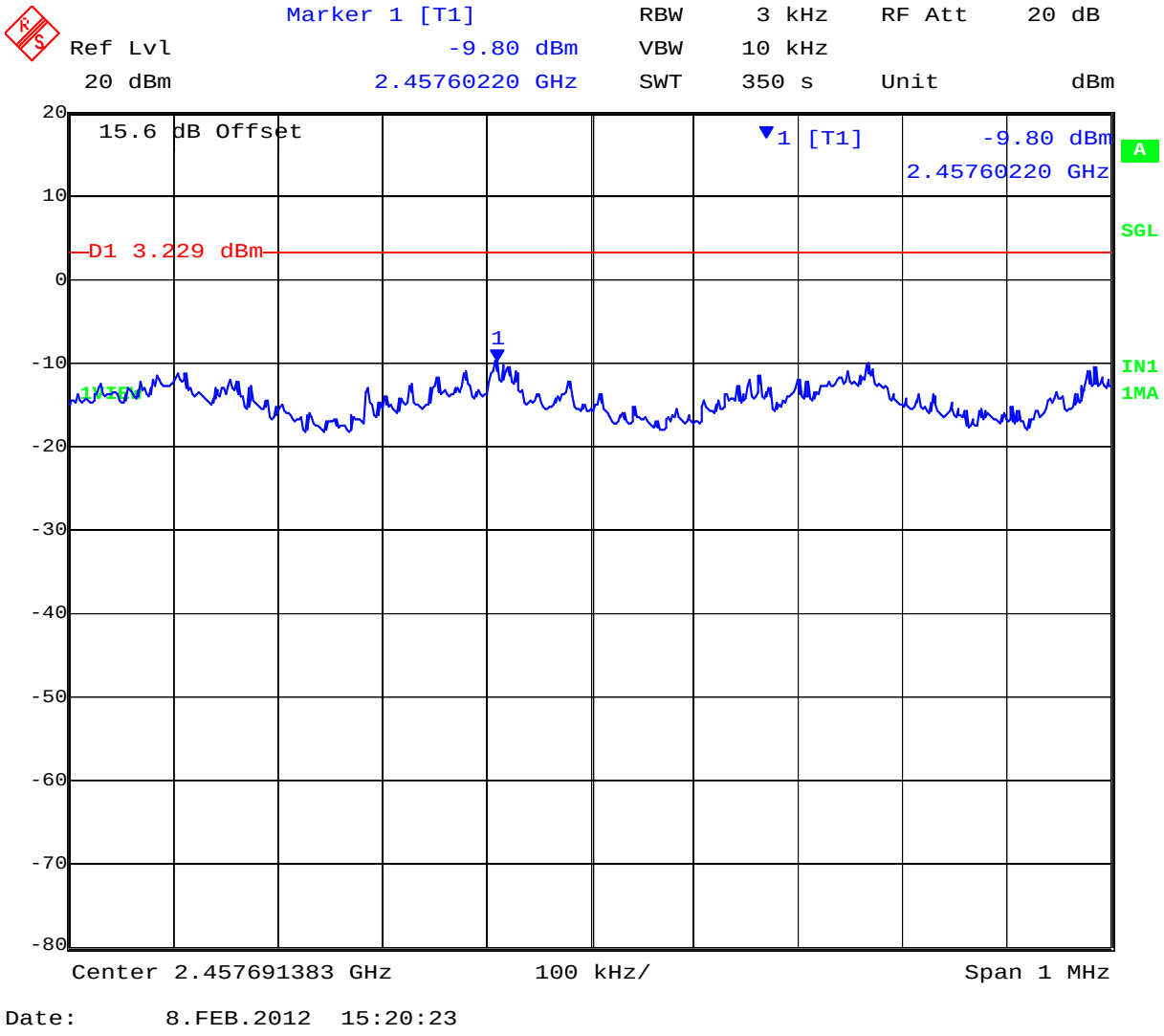
PORT B 2,437 MHz 802.11n HT-40 - Peak Power Spectral Density



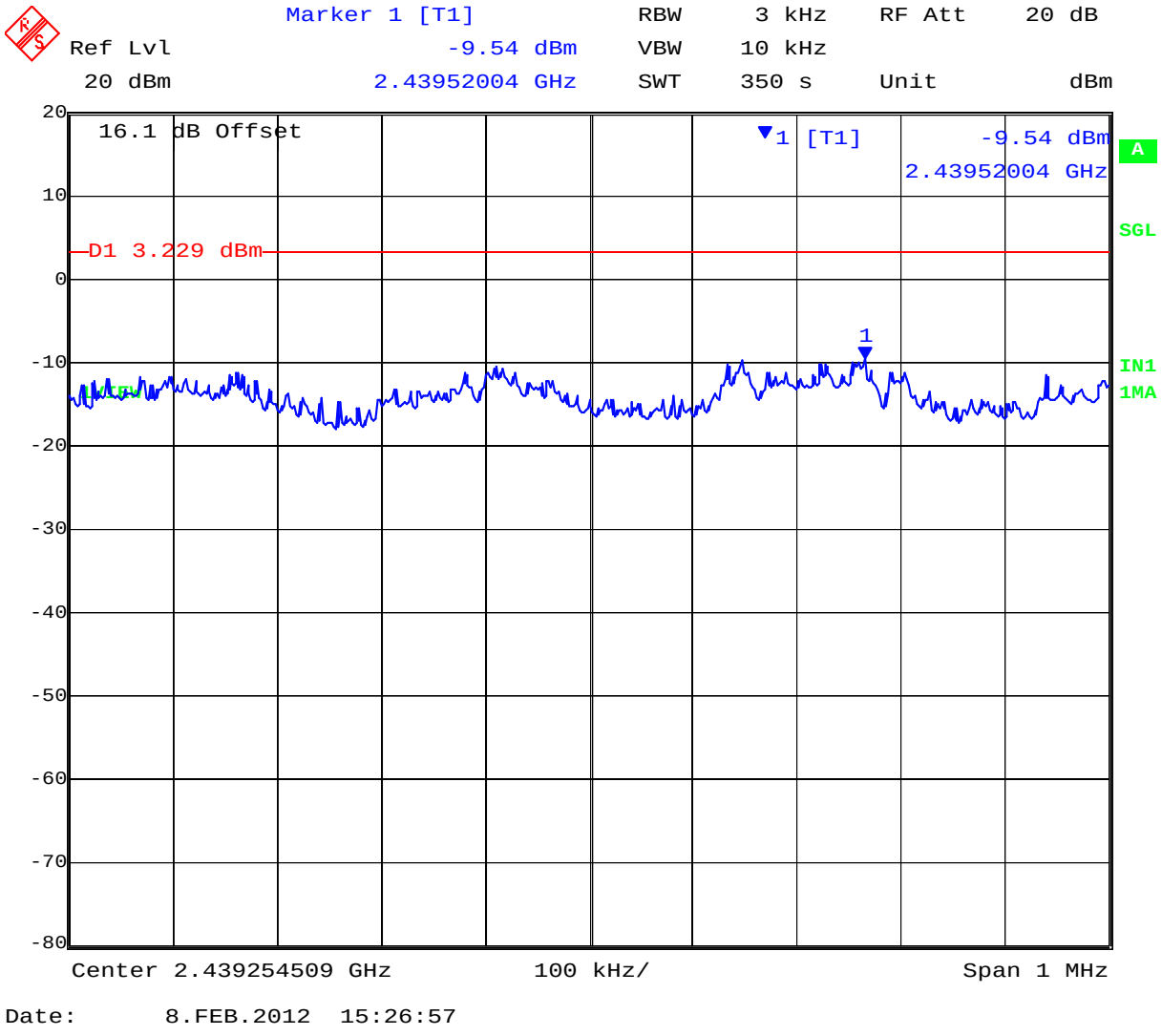
PORT C 2,437 MHz 802.11n HT-40 - Peak Power Spectral Density



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



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



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

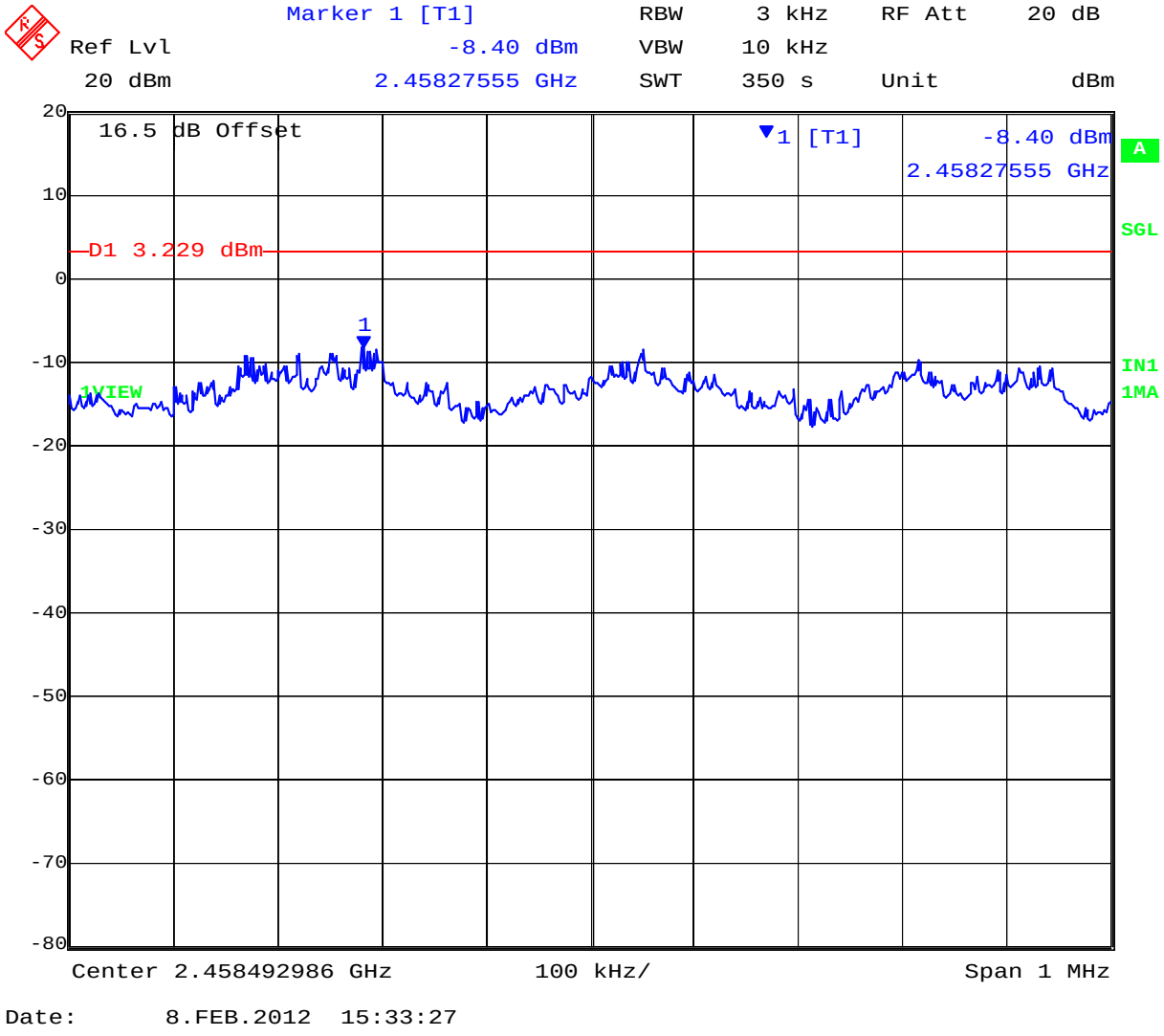


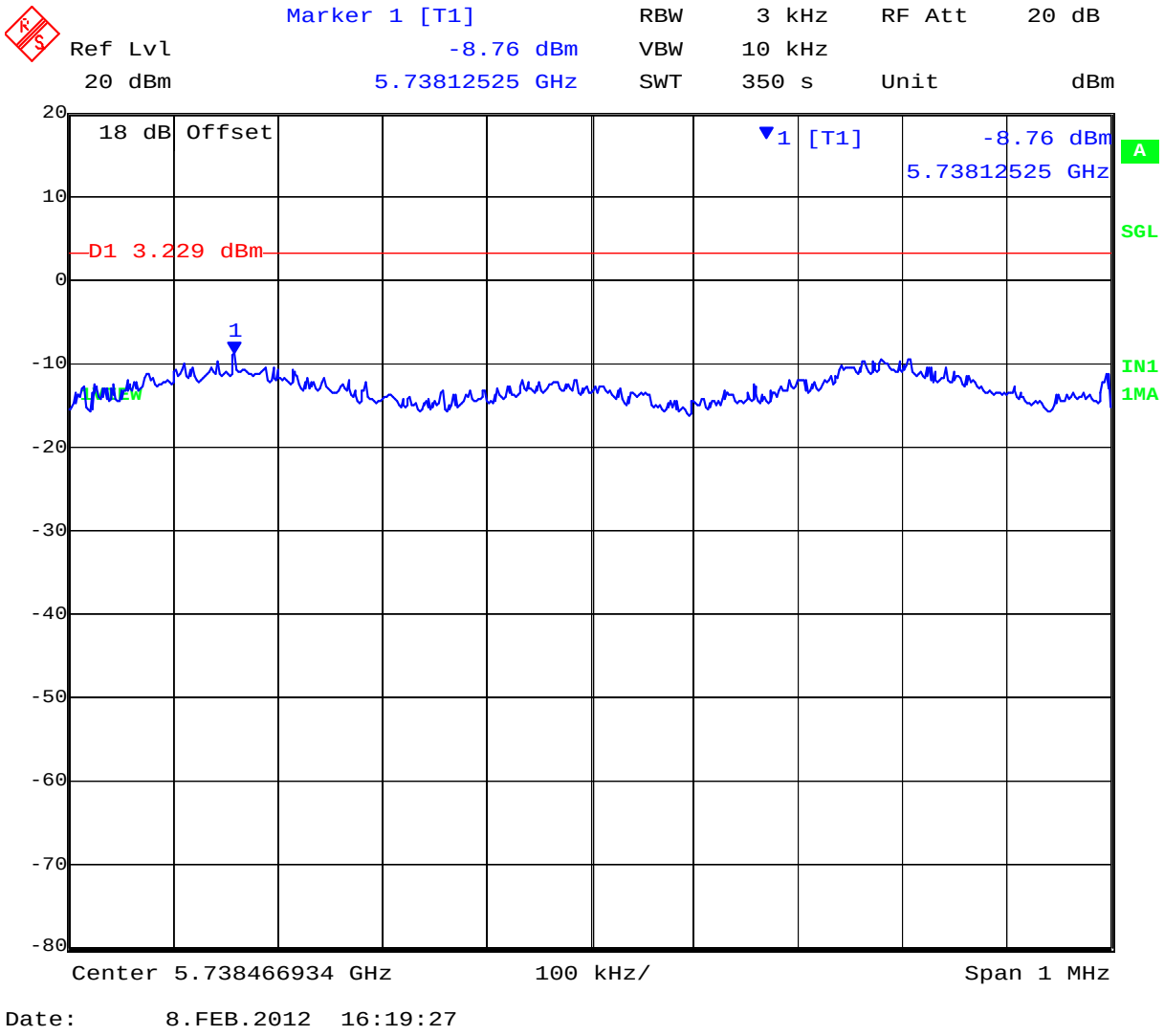
TABLE OF RESULTS – **802.11a Legacy**

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

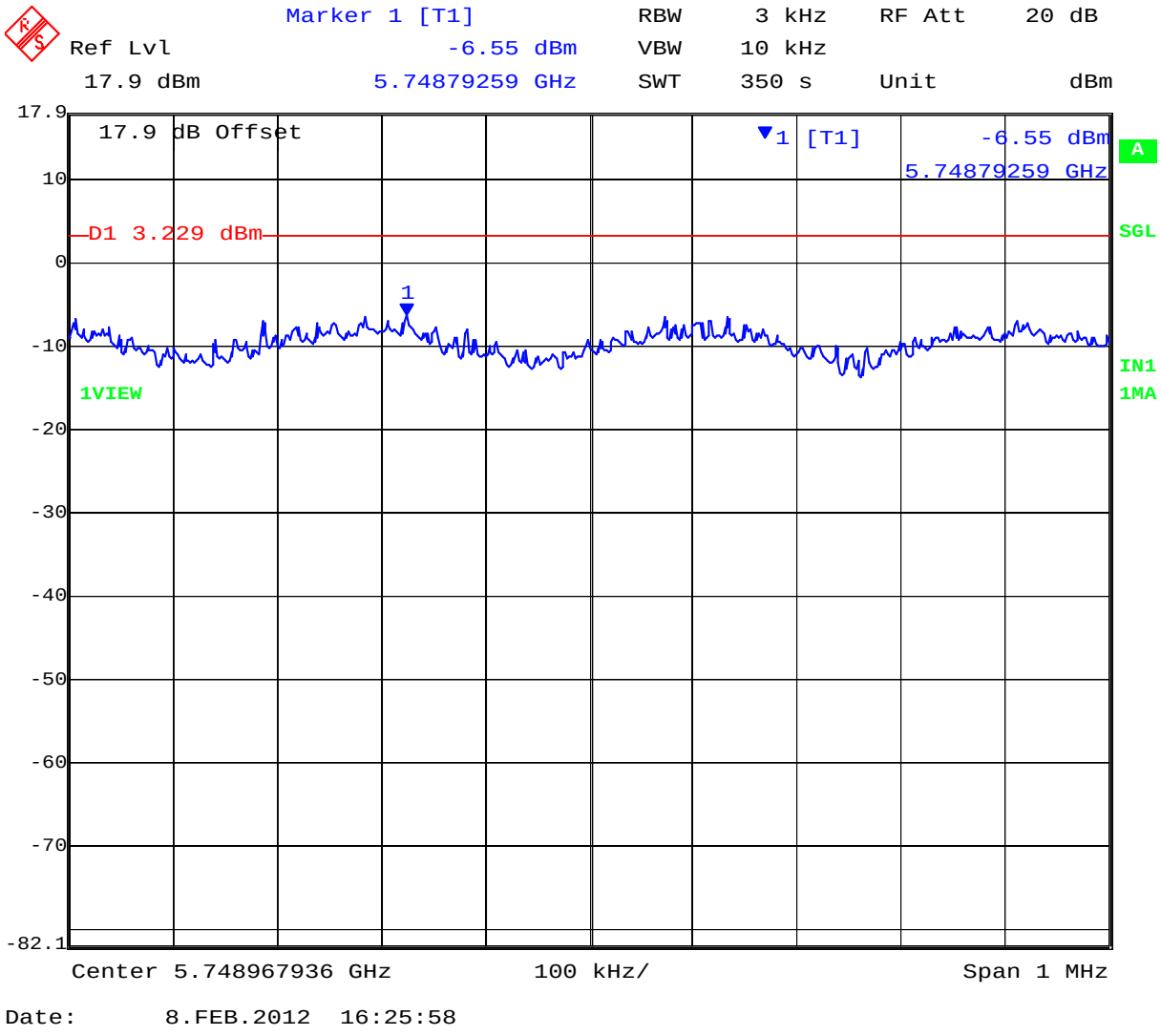
Test Frequency	Measured Power Density RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**10Log(N)**	**dBm**	**dBm**	**dB**
5745.000	-8.76	-6.55	-8.06	--	4.77	-1.78	8.00	-9.78
5785.000	-8.51	-6.01	-7.82	--	4.77	-1.23	8.00	-9.23
5825.000	-9.19	-7.01	-8.30	--	4.77	-2.24	8.00	-10.24

Measurement uncertainty:	± 1.33 dB

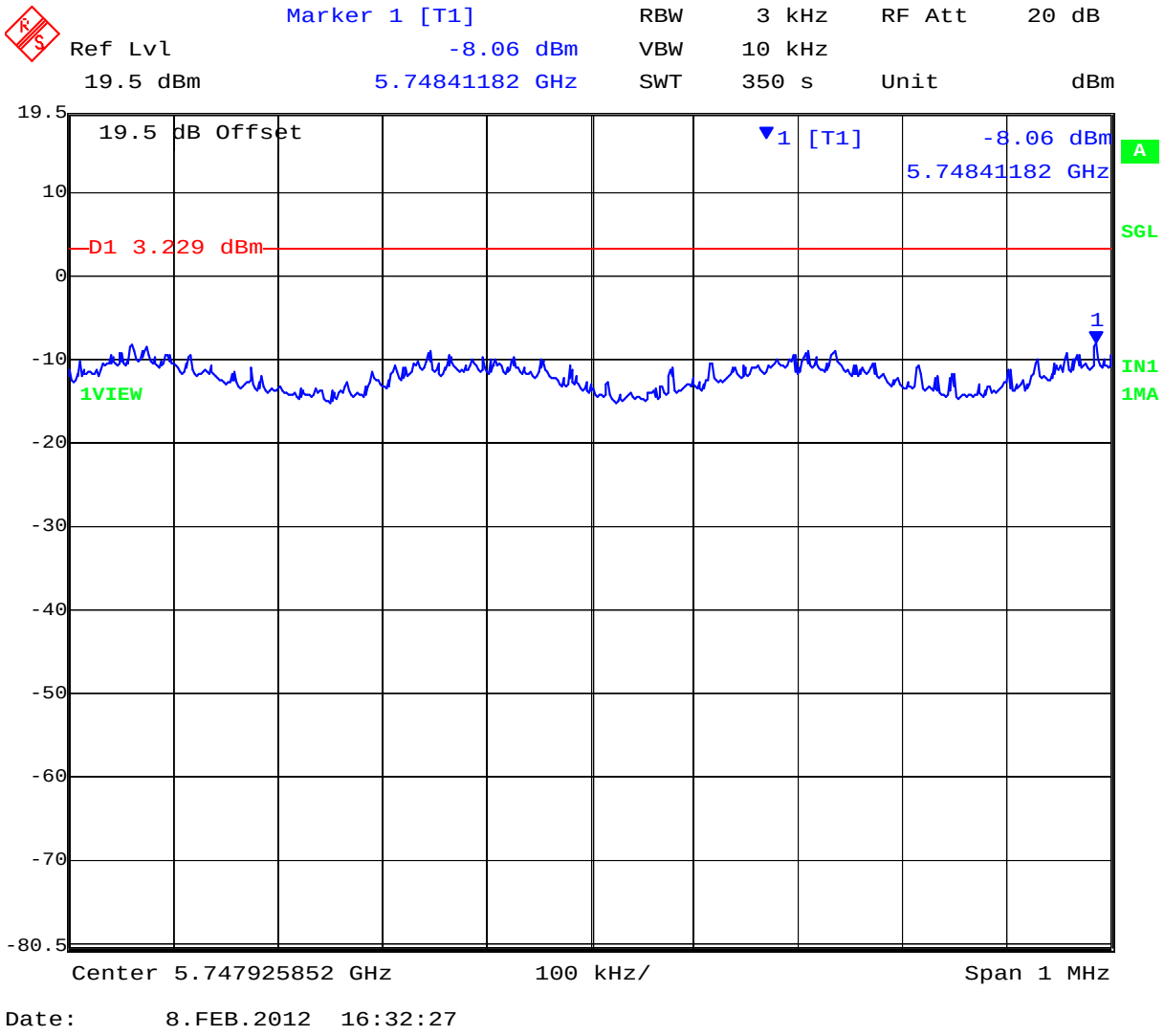
PORT A 5,745 MHz 802.11a Legacy - Peak Power Spectral Density



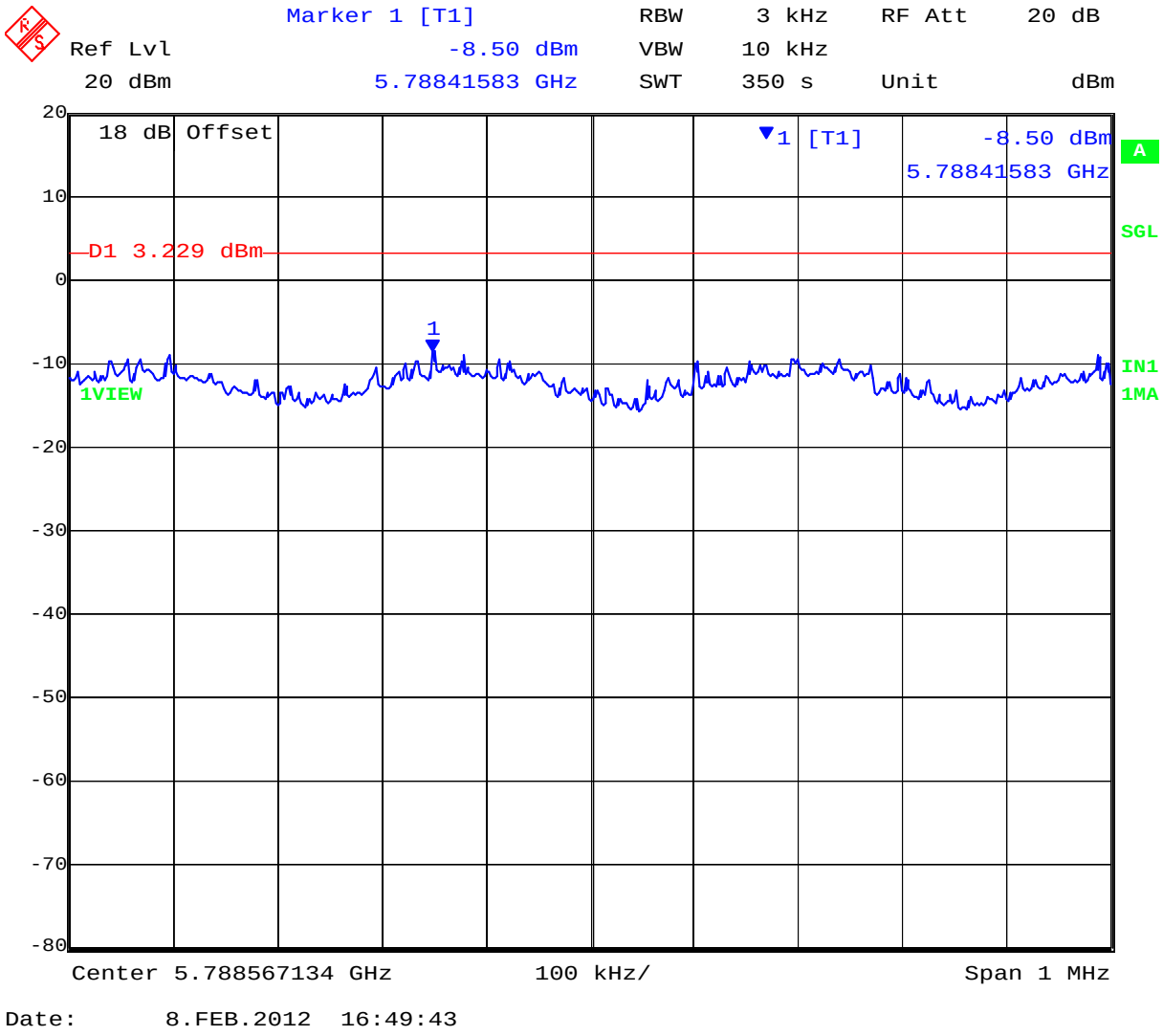
PORT B 5,745 MHz 802.11a Legacy - Peak Power Spectral Density



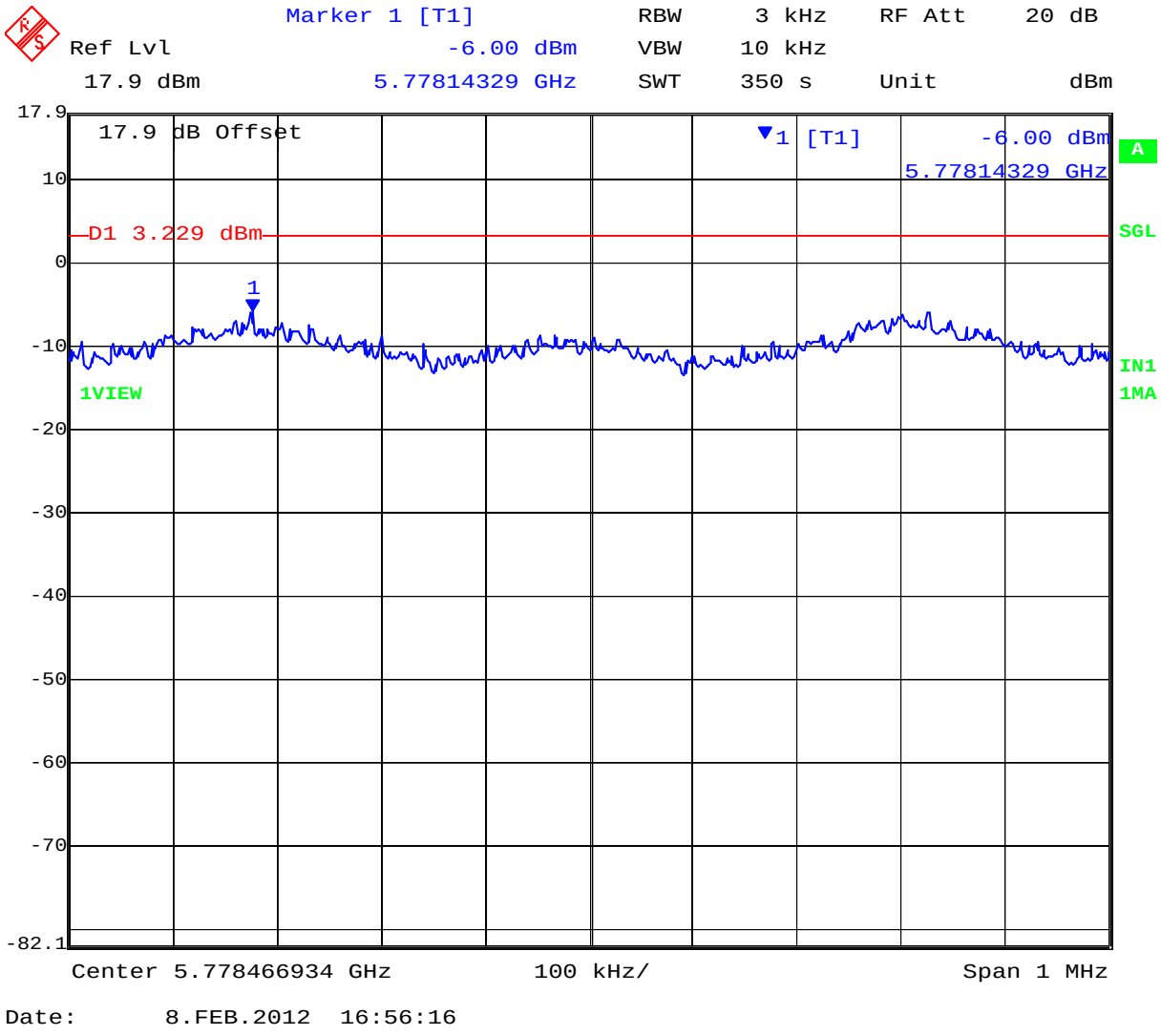
PORT C 5,745 MHz 802.11a Legacy - Peak Power Spectral Density



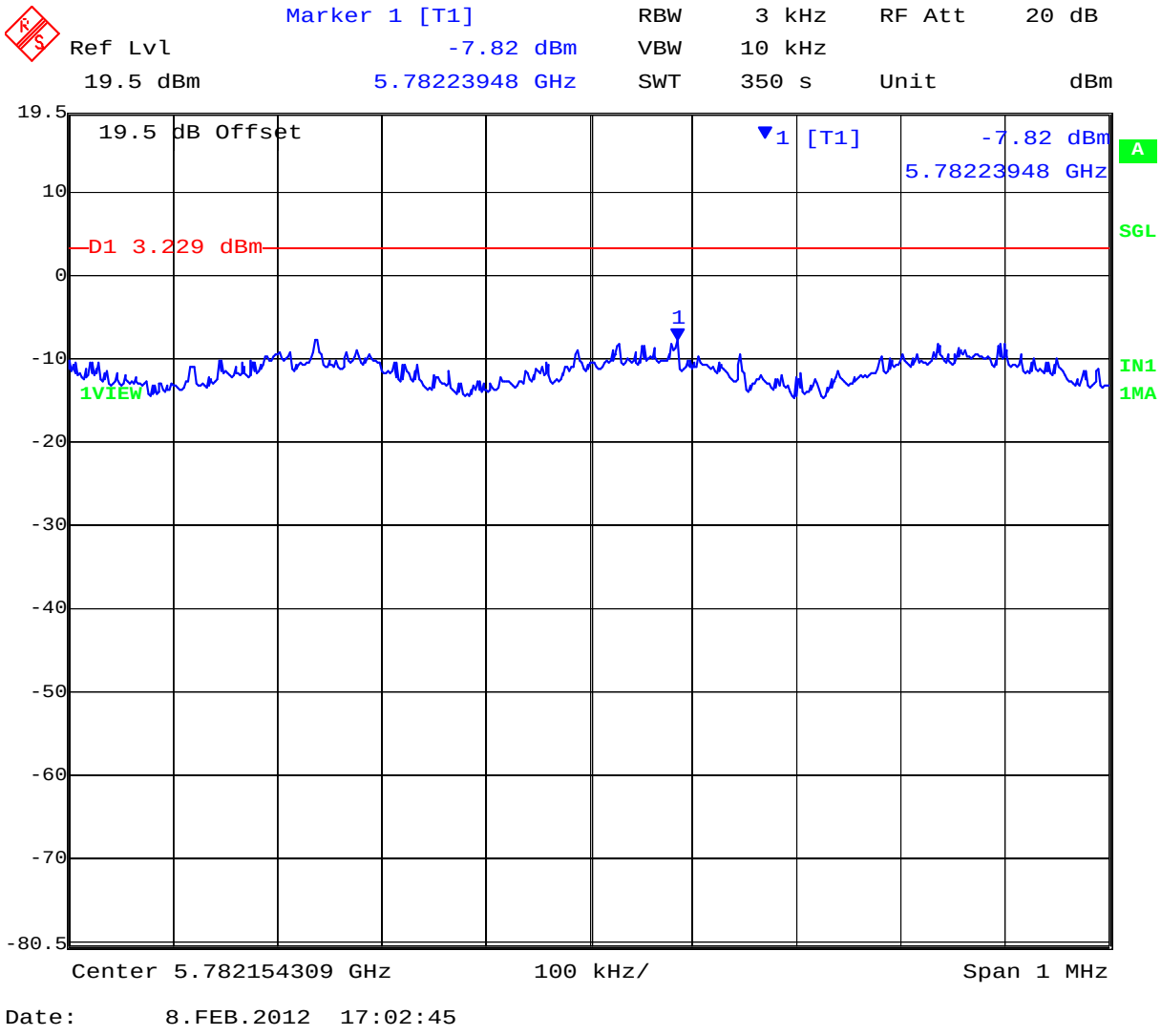
PORT A 5,785 MHz 802.11a Legacy - Peak Power Spectral Density



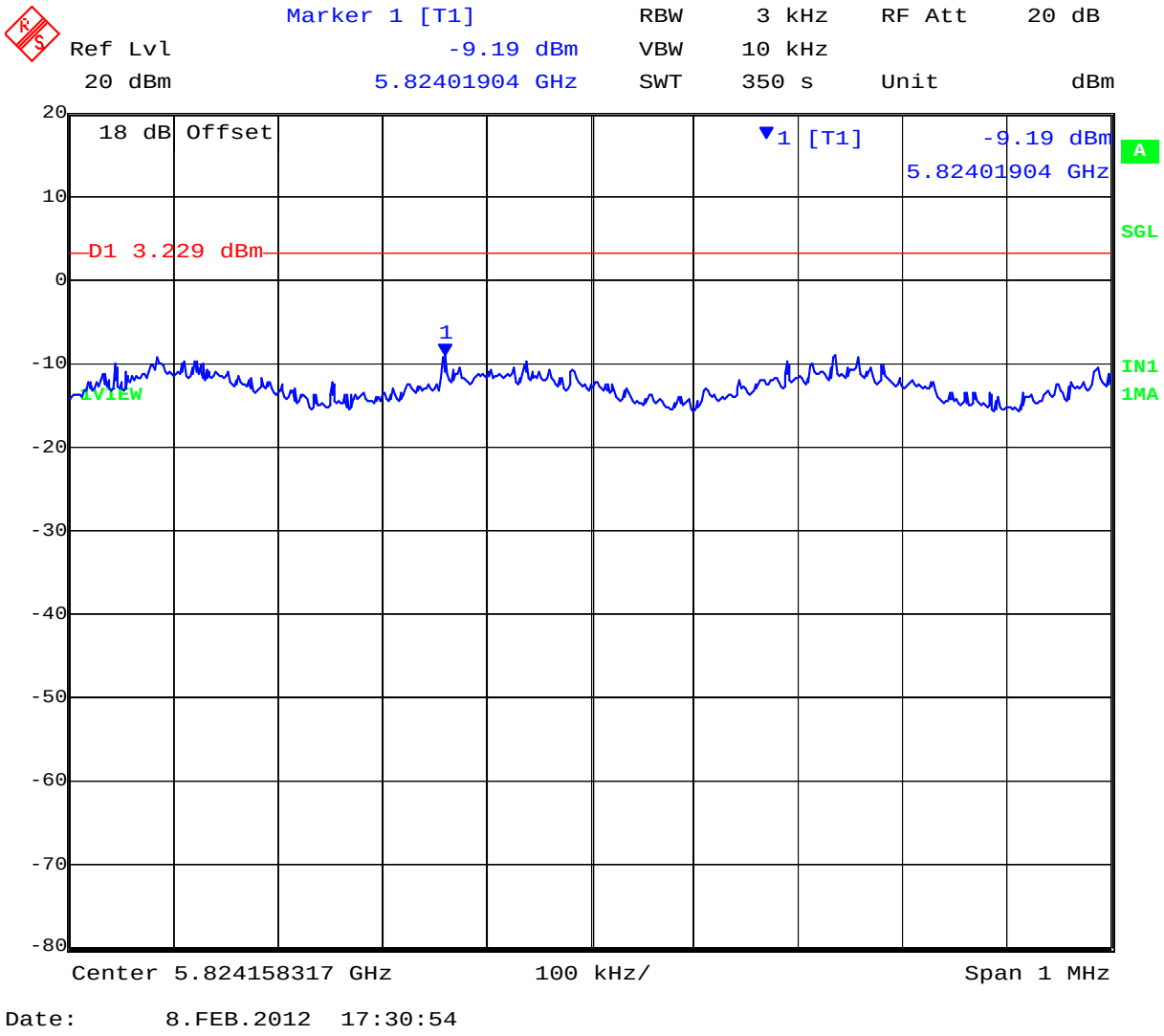
PORT B 5,785 MHz 802.11a Legacy - Peak Power Spectral Density



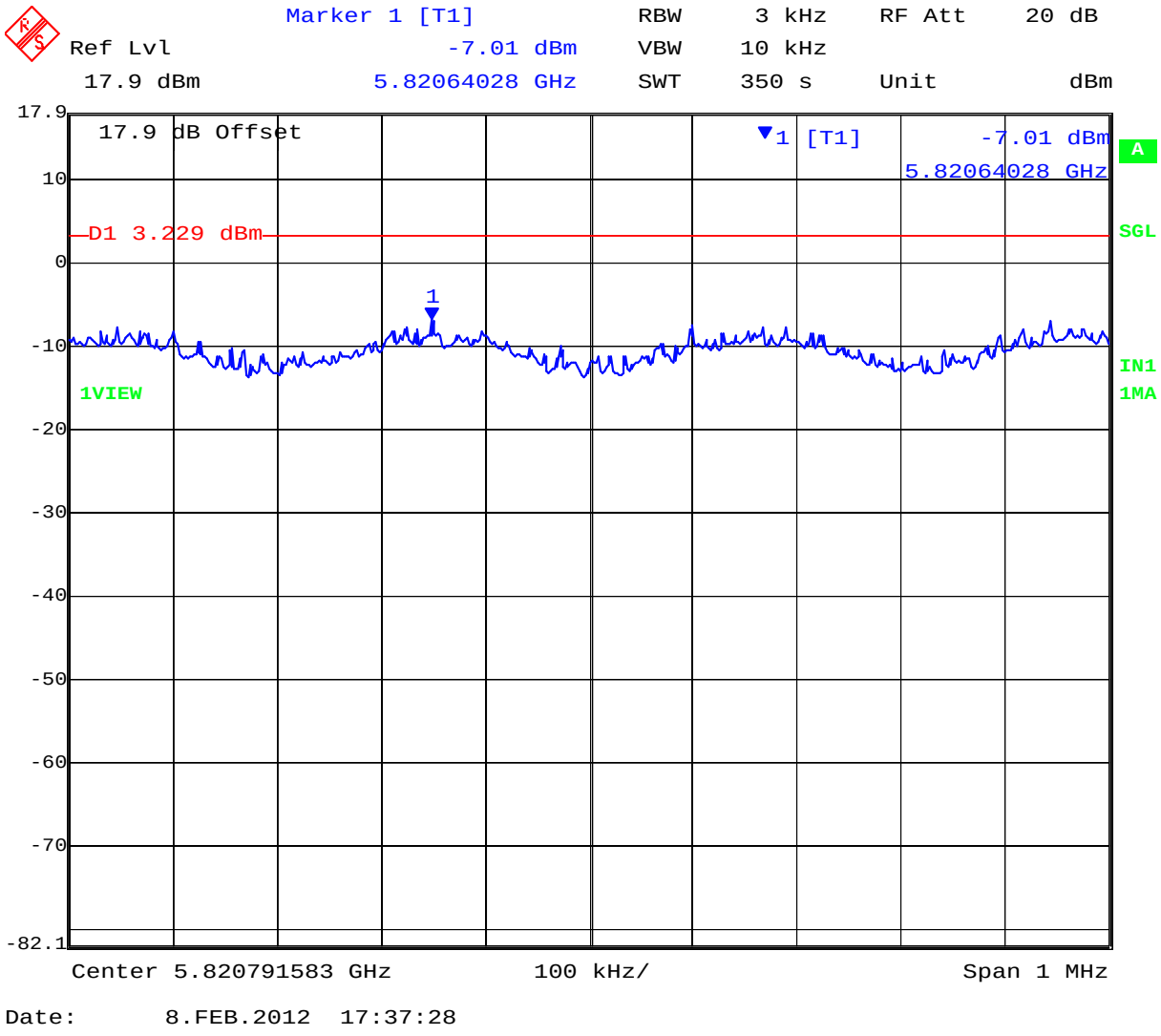
PORT C 5,785 MHz 802.11a Legacy - Peak Power Spectral Density



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



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



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

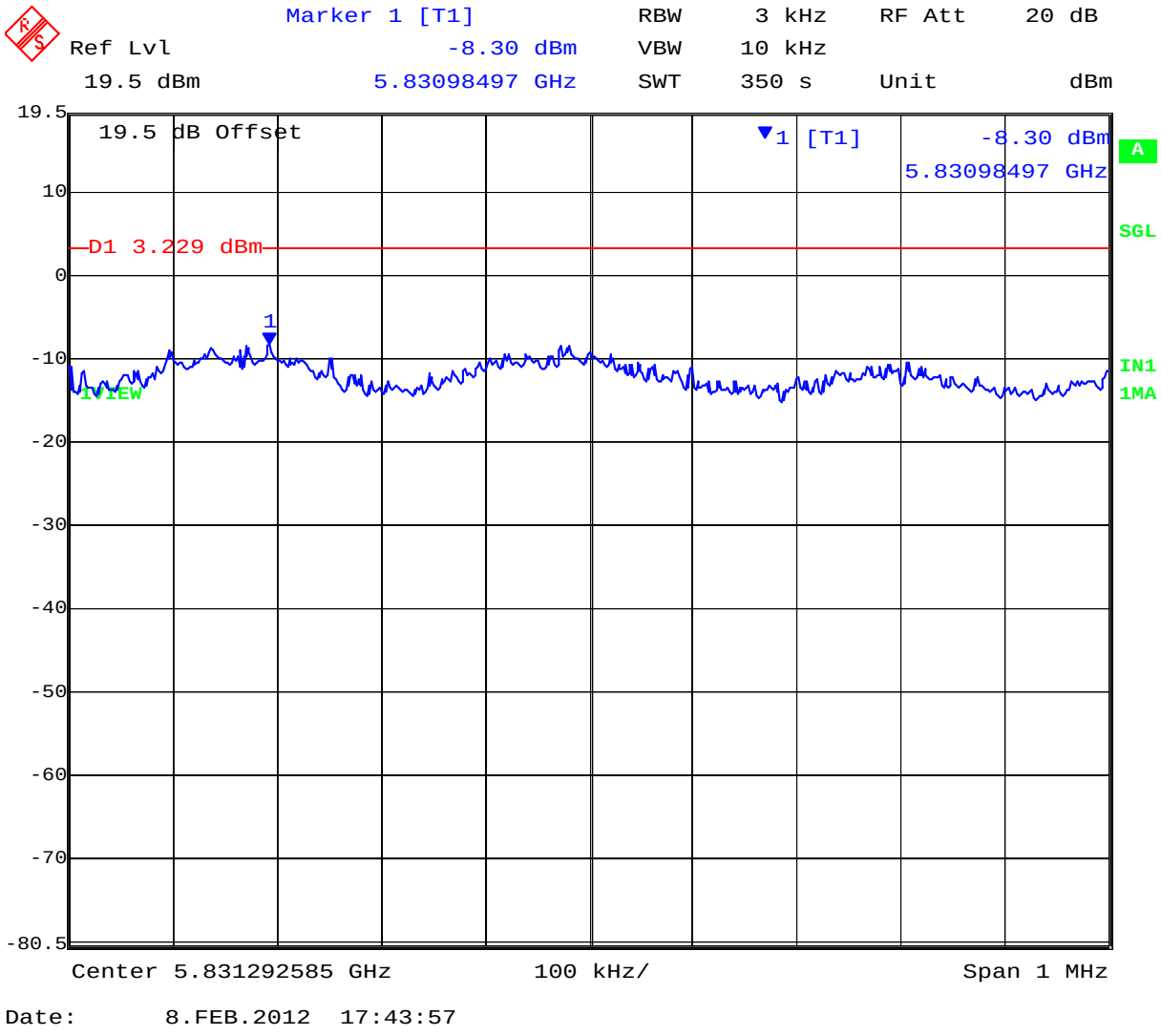


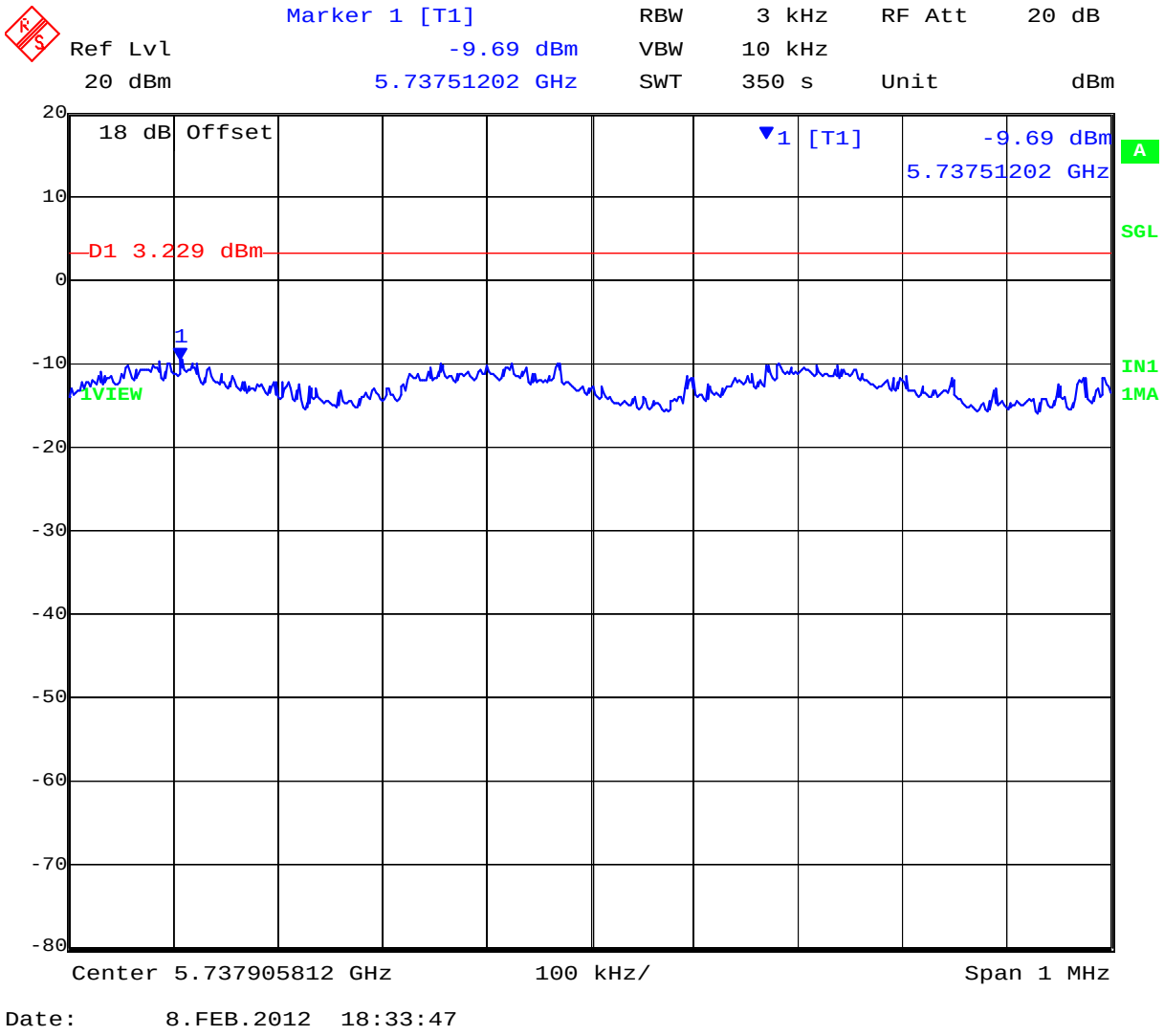
TABLE OF RESULTS – **802.11n HT-20**

Test Conditions:	15.247 (e)		**Rel. Humidity (%):**	35 to 42	
Variant:	802.11n HT-20		**Ambient Temp. (ºC):**	19 to 22	
TPC:	HIGH		**Pressure (mBars):**	998 to 1003	
Modulation:	ON		**Duty Cycle (%):**	100	
Beam Forming Gain (Y):	N/A	dB	**Antenna Gain:**	2 dBi	
Applied Voltage:	48.00	Vdc	**Antenna Ports (N):**	3	
Notes 1:					
Notes 2:					

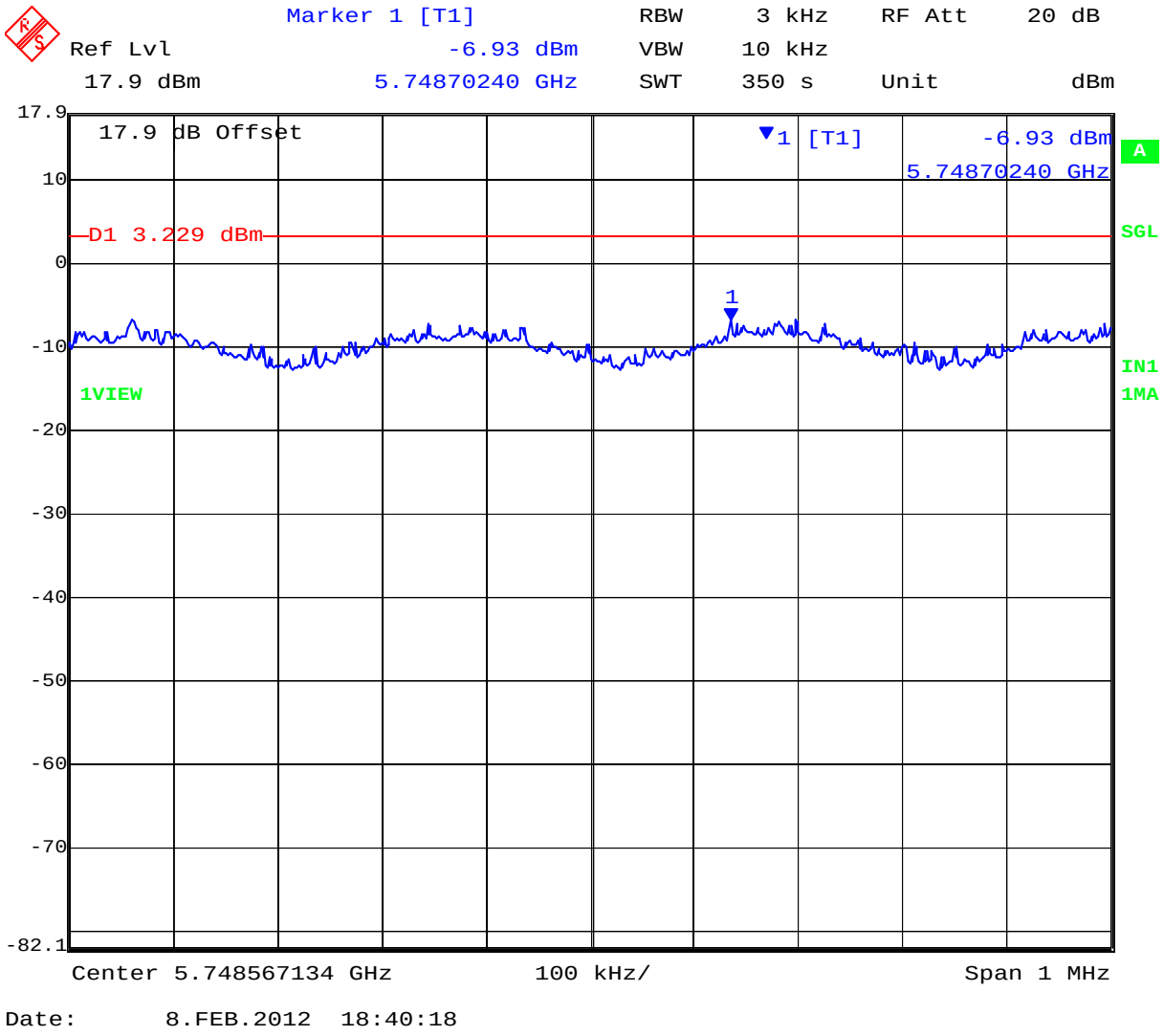
Test Frequency	Measured Power Density RF Port (dBm)				Correction factor	Peak Power Spectral Density	Limit	Margin
MHz	**a**	**b**	**c**	**d**	**10Log(N)**	**dBm**	**dBm**	**dB**
5745.000	-9.69	-6.93	-8.96	--	4.77	-2.16	8.00	-10.16
5785.000	-7.98	-7.20	-7.32	--	4.77	-2.43	8.00	-10.43
5825.000	-9.19	-7.70	-7.36	--	4.77	-2.58	8.00	-10.58

Measurement uncertainty:	± 1.33 dB

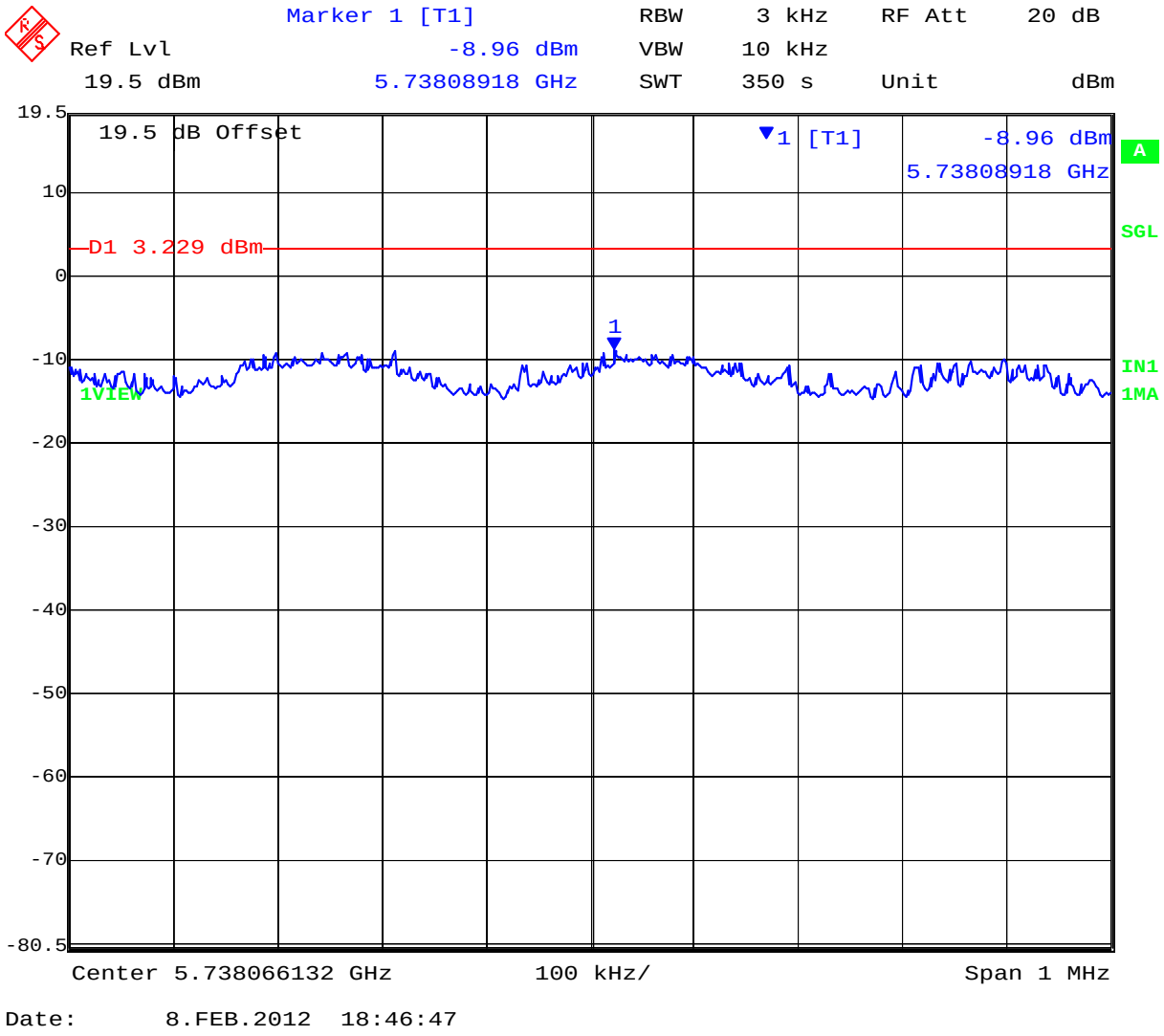
PORT A 5,745 MHz 802.11n HT-20 - Peak Power Spectral Density



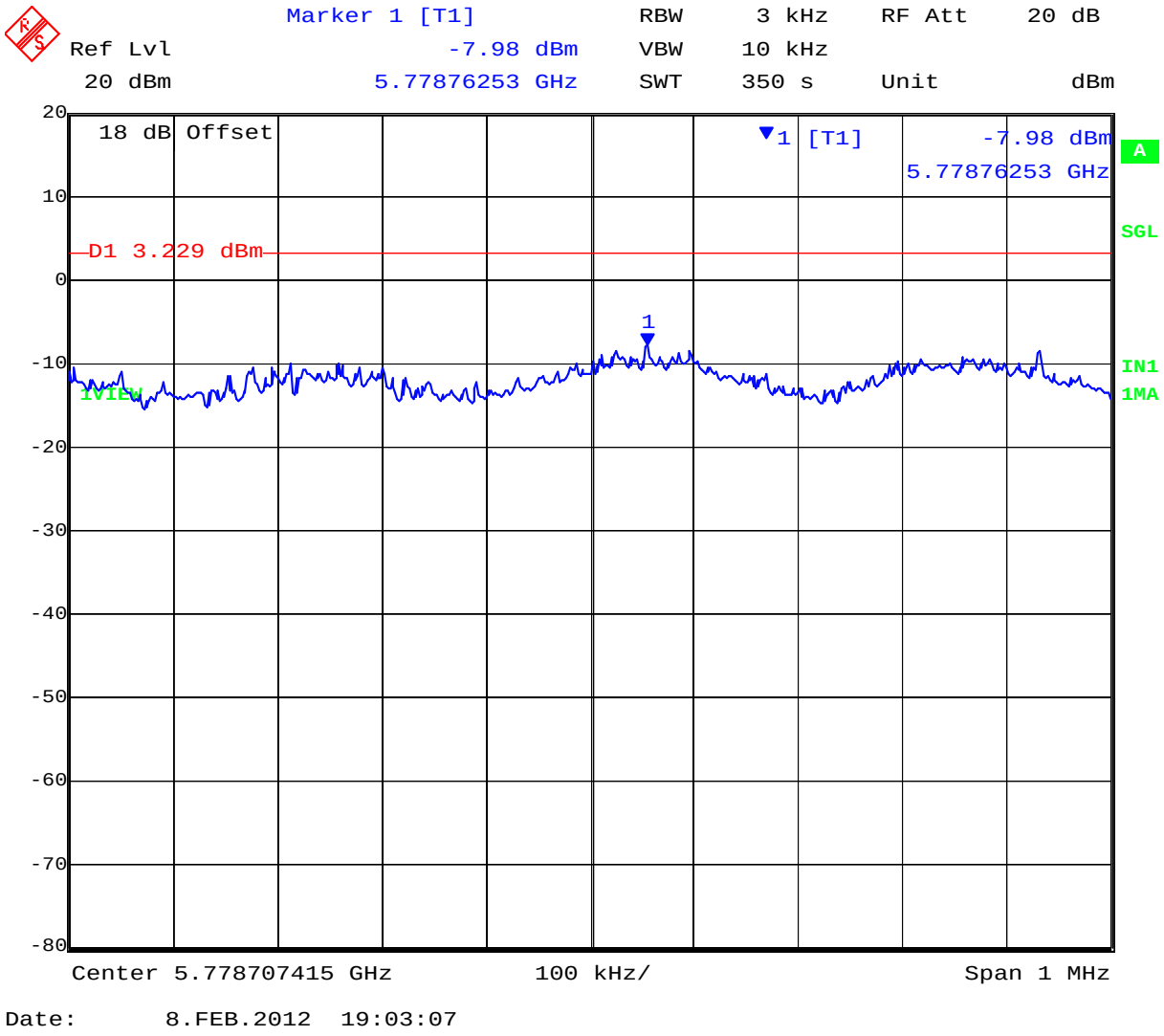
PORT B 5,745 MHz 802.11n HT-20 - Peak Power Spectral Density



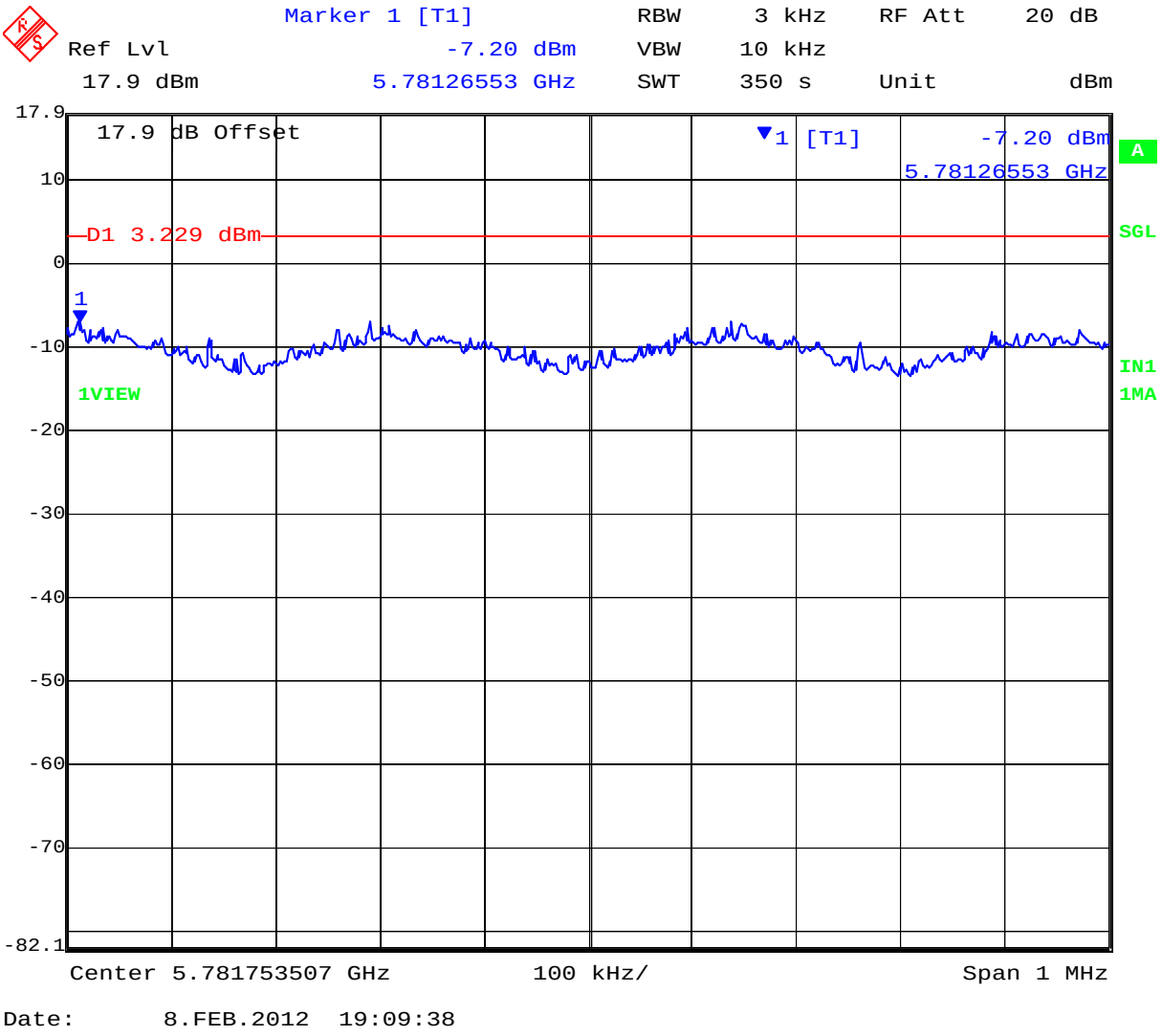
PORT C 5,745 MHz 802.11n HT-20 - Peak Power Spectral Density



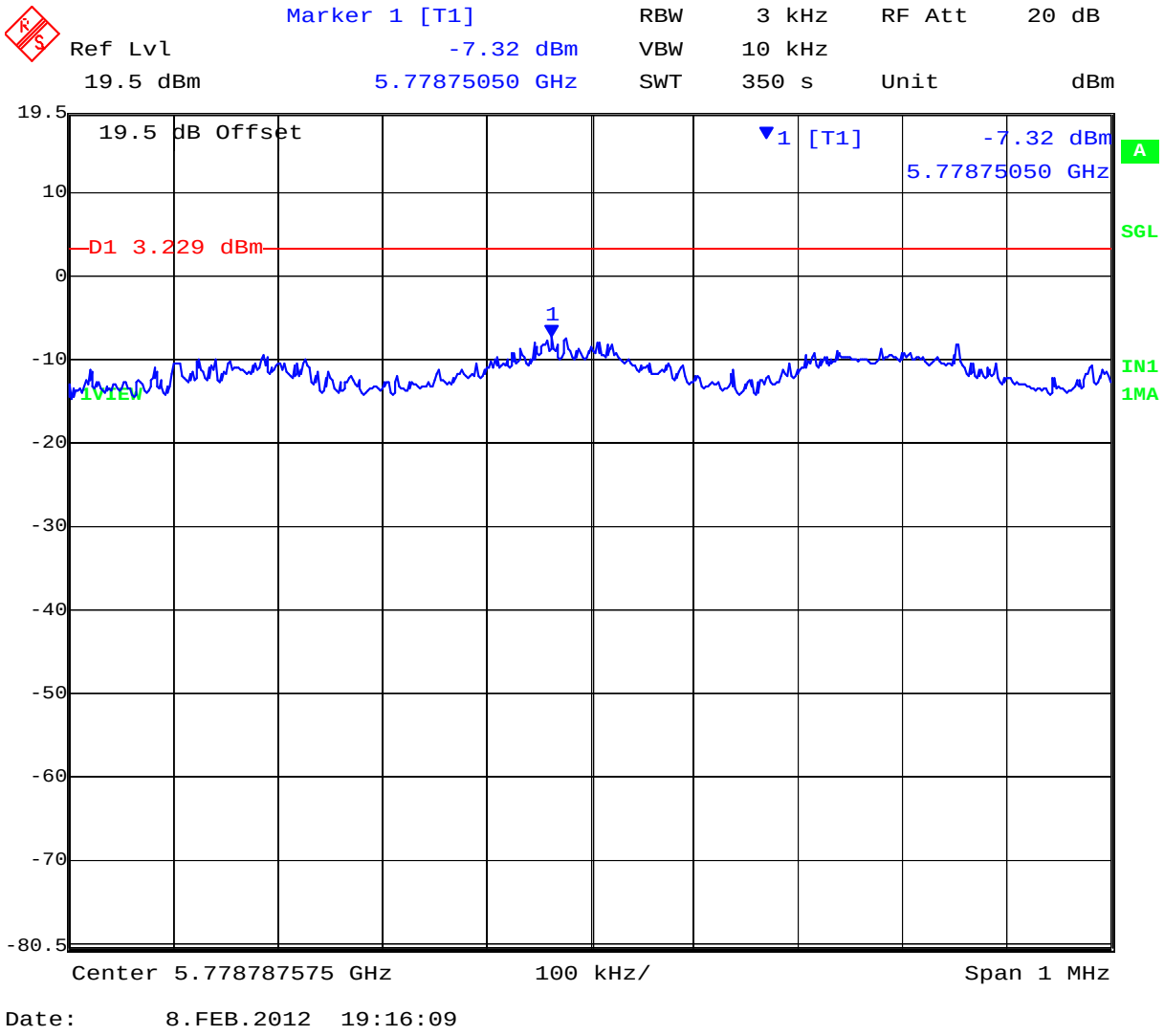
PORT A 5,785 MHz 802.11n HT-20 - Peak Power Spectral Density



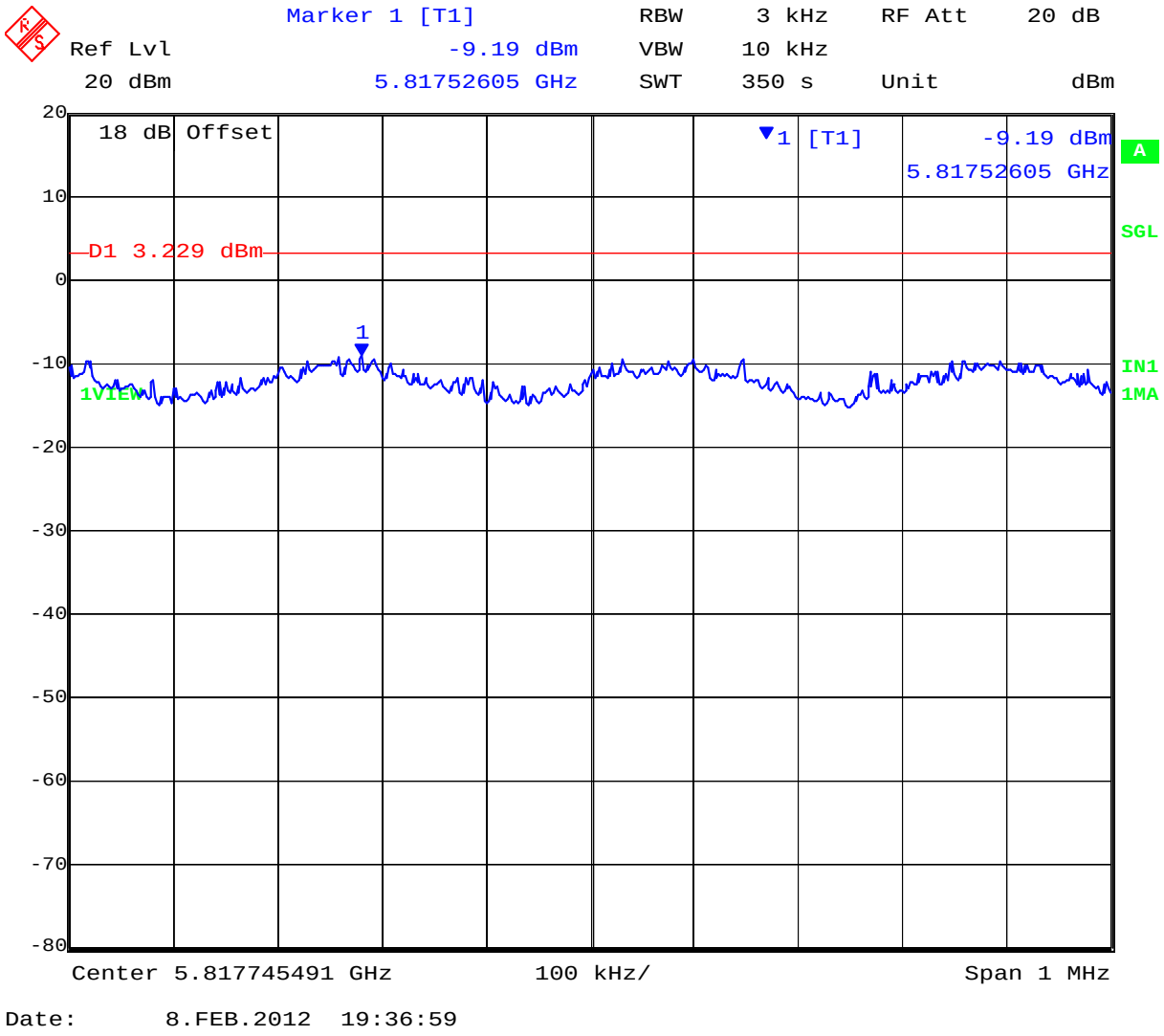
PORT B 5,785 MHz 802.11n HT-20 - Peak Power Spectral Density



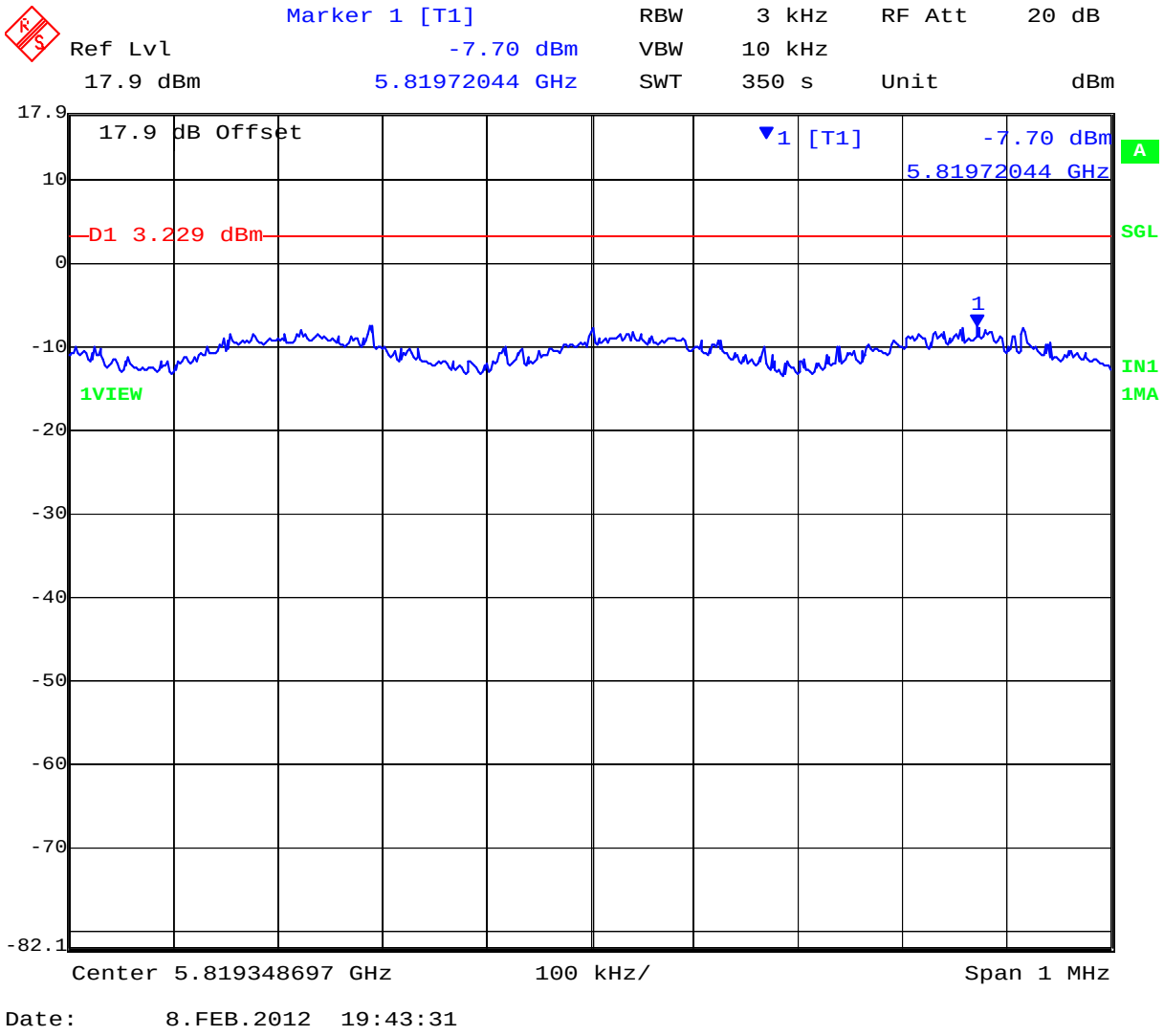
PORT C 5,785 MHz 802.11n HT-20 - Peak Power Spectral Density



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



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



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

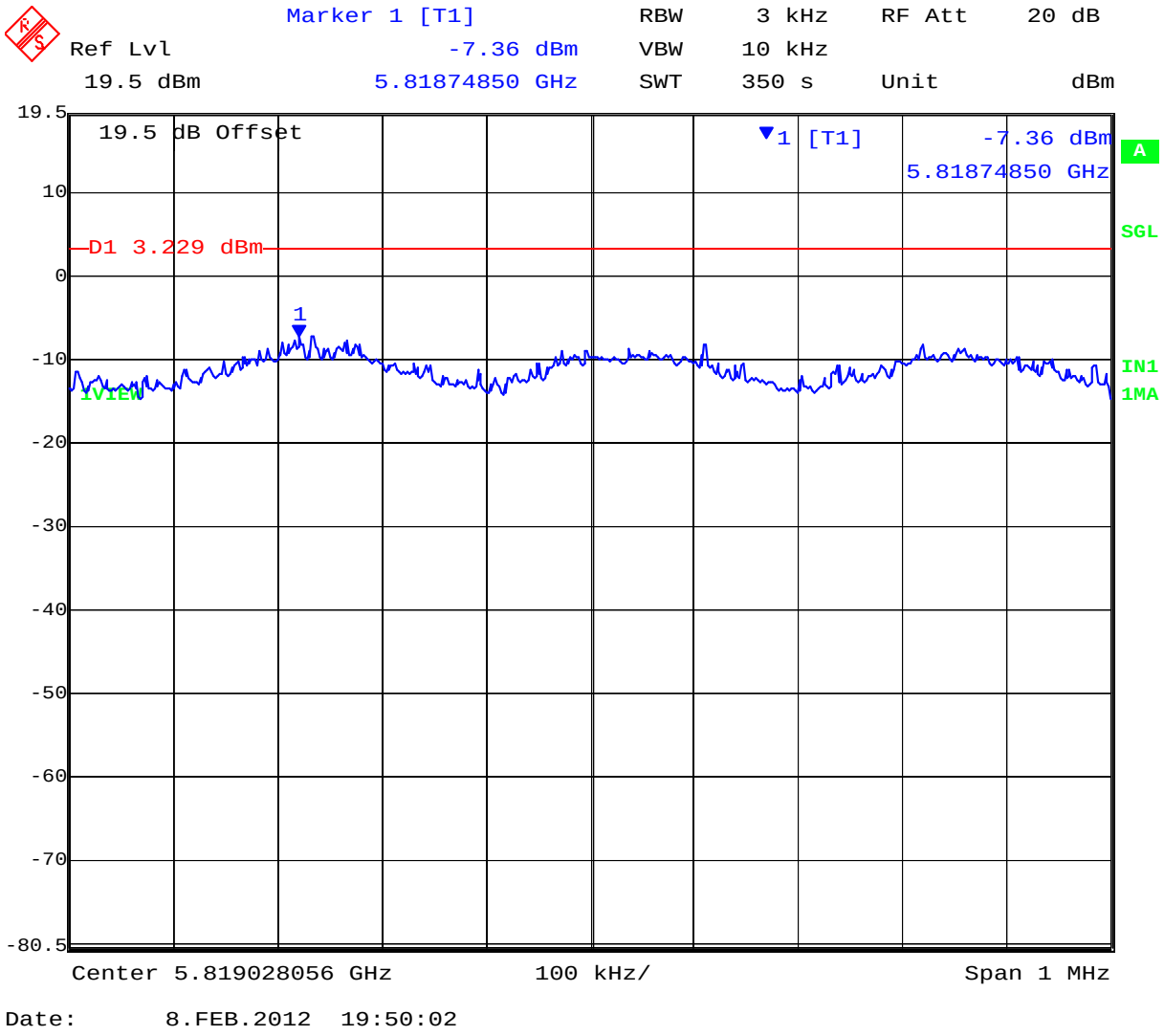


TABLE OF RESULTS – **802.11n HT-40**

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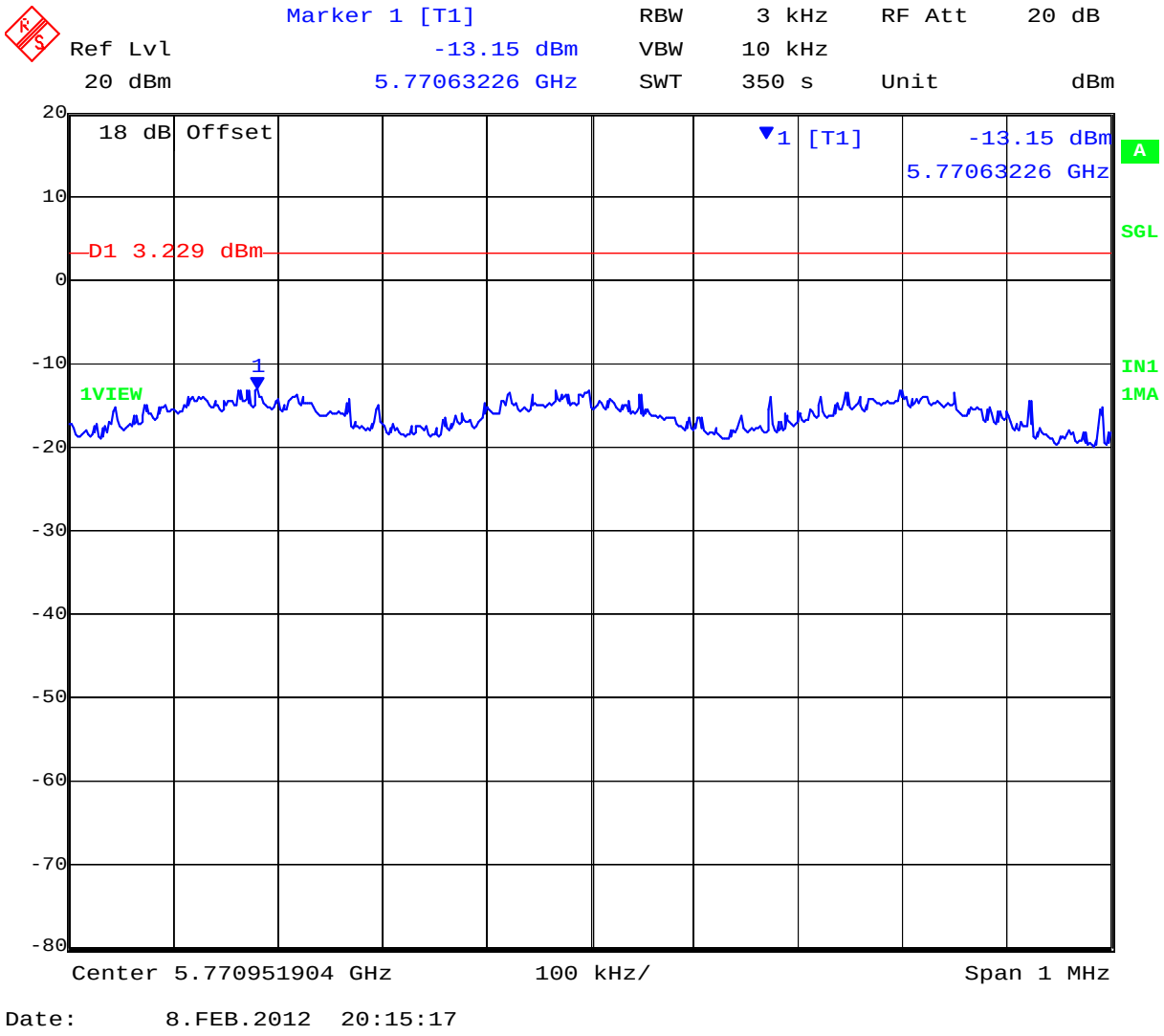
Test Conditions:	15.247 (e)		**Rel. Humidity (%):**	35 to 42	
Variant:	802.11n HT-40		**Ambient Temp. (ºC):**	19 to 22	
TPC:	HIGH		**Pressure (mBars):**	998 to 1003	
Modulation:	ON		**Duty Cycle (%):**	100	
Beam Forming Gain (Y):	N/A	dB	**Antenna Gain:**	2 dBi	
Applied Voltage:	48.00	Vdc	**Antenna Ports (N):**	3	
Notes 1:					
Notes 2:					

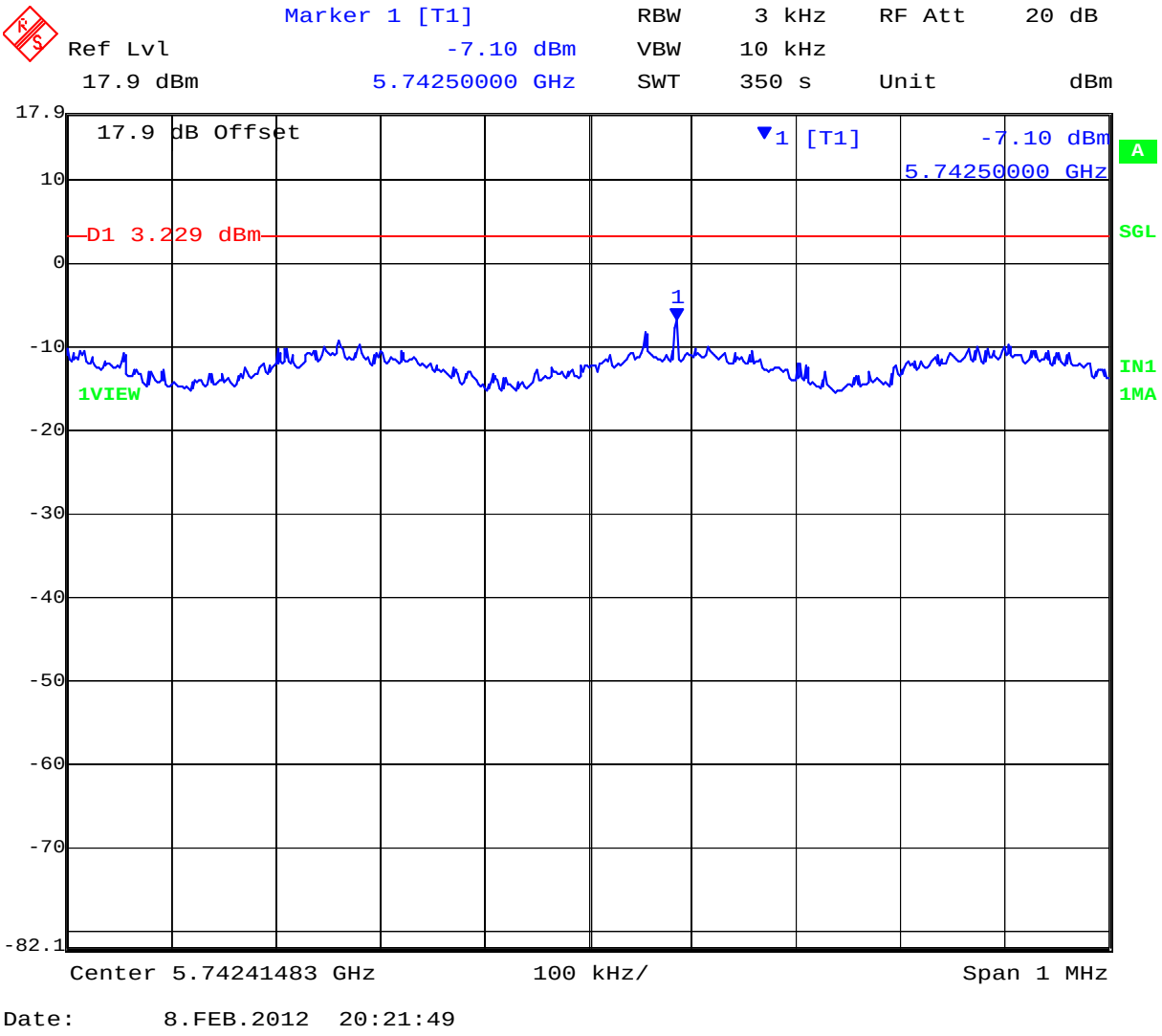
Test Frequency	**Measured Power Density**				**Correction factor**	**Peak Power Spectral Density**	**Limit**	**Margin**
	RF Port (dBm)							
MHz	**a**	**b**	**c**	**d**	**10Log(N)**	**dBm**	**dBm**	**dB**
5755.000	-13.15	-7.10	-12.09	--	4.77	-2.33	8.00	-10.33
5795.000	-9.46	-7.10	-9.64	--	4.77	-2.33	8.00	-10.33

Measurement uncertainty:	± 1.33 dB

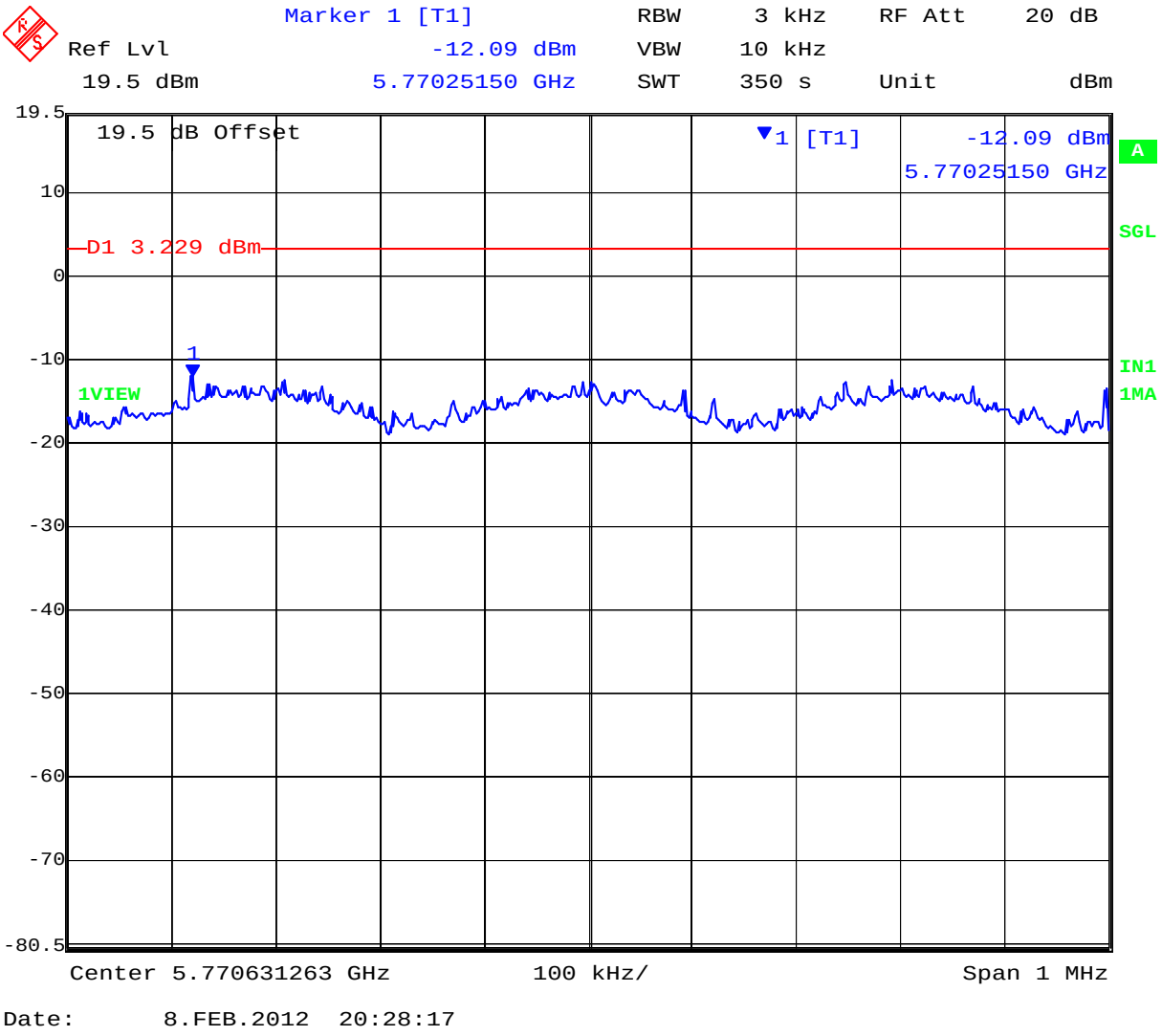
PORT A 5,755 MHz 802.11n HT-40 - Peak Power Spectral Density



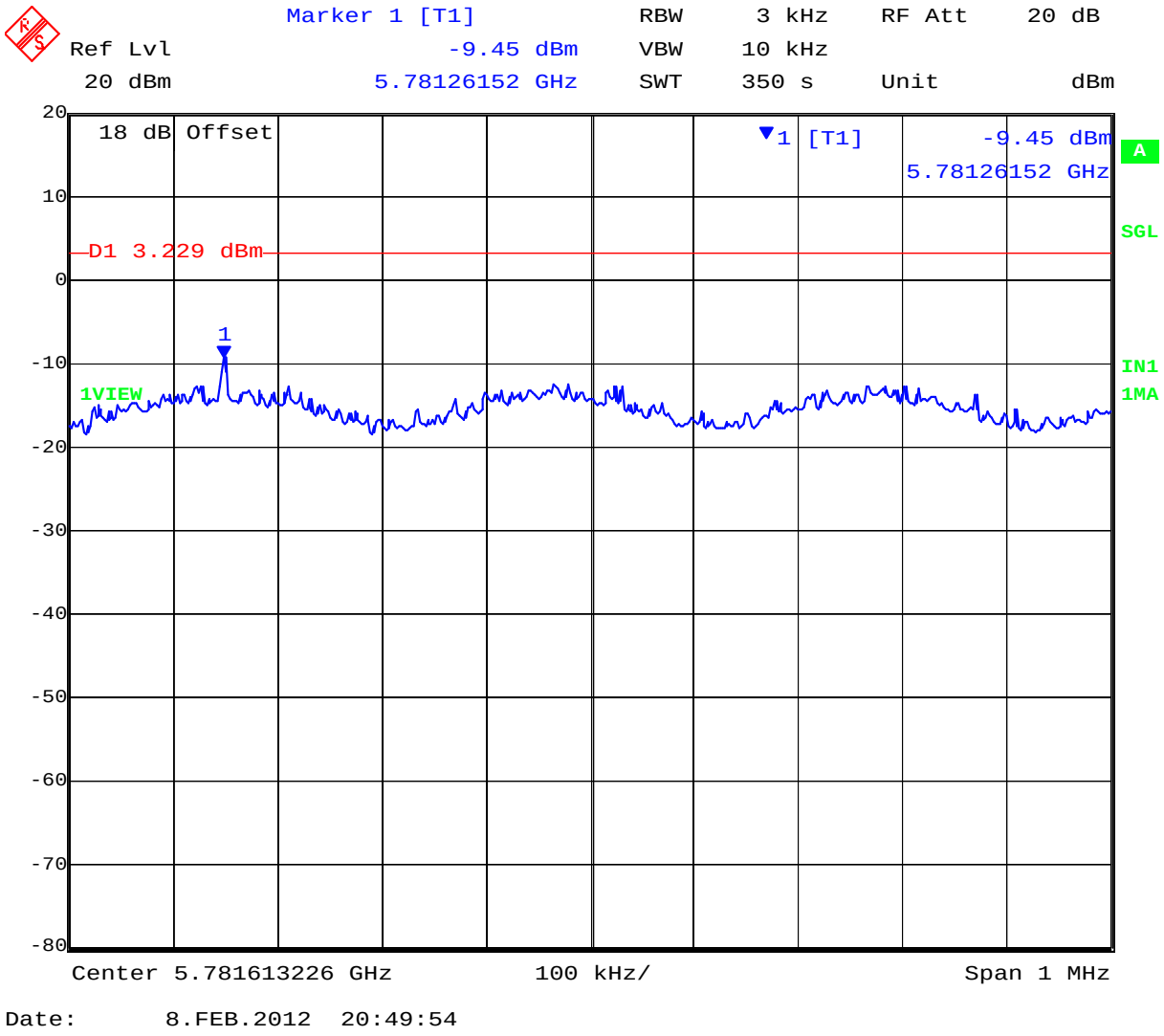
PORT B 5,755 MHz 802.11n HT-40 - Peak Power Spectral Density



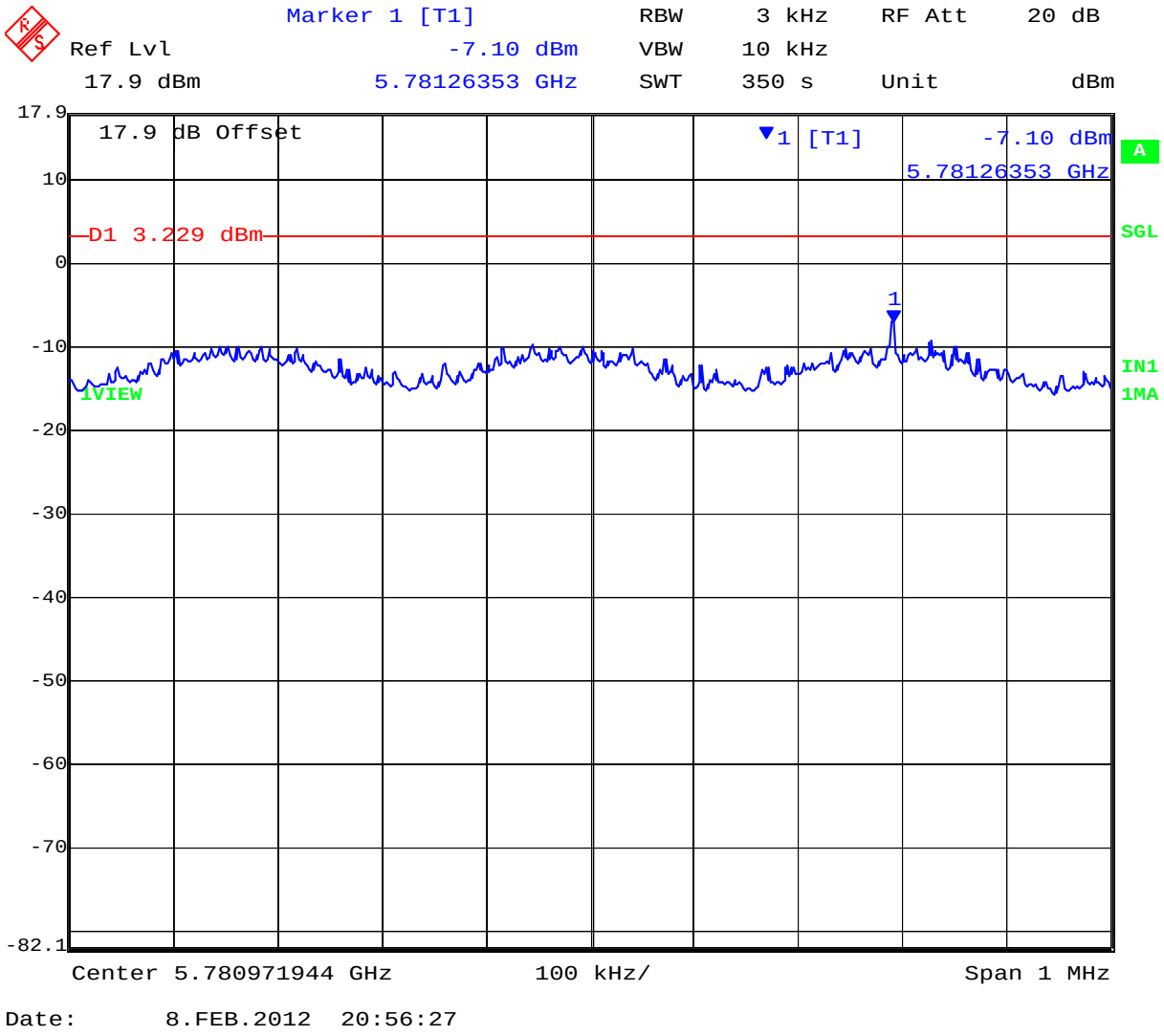
PORT C 5,755 MHz 802.11n HT-40 - Peak Power Spectral Density



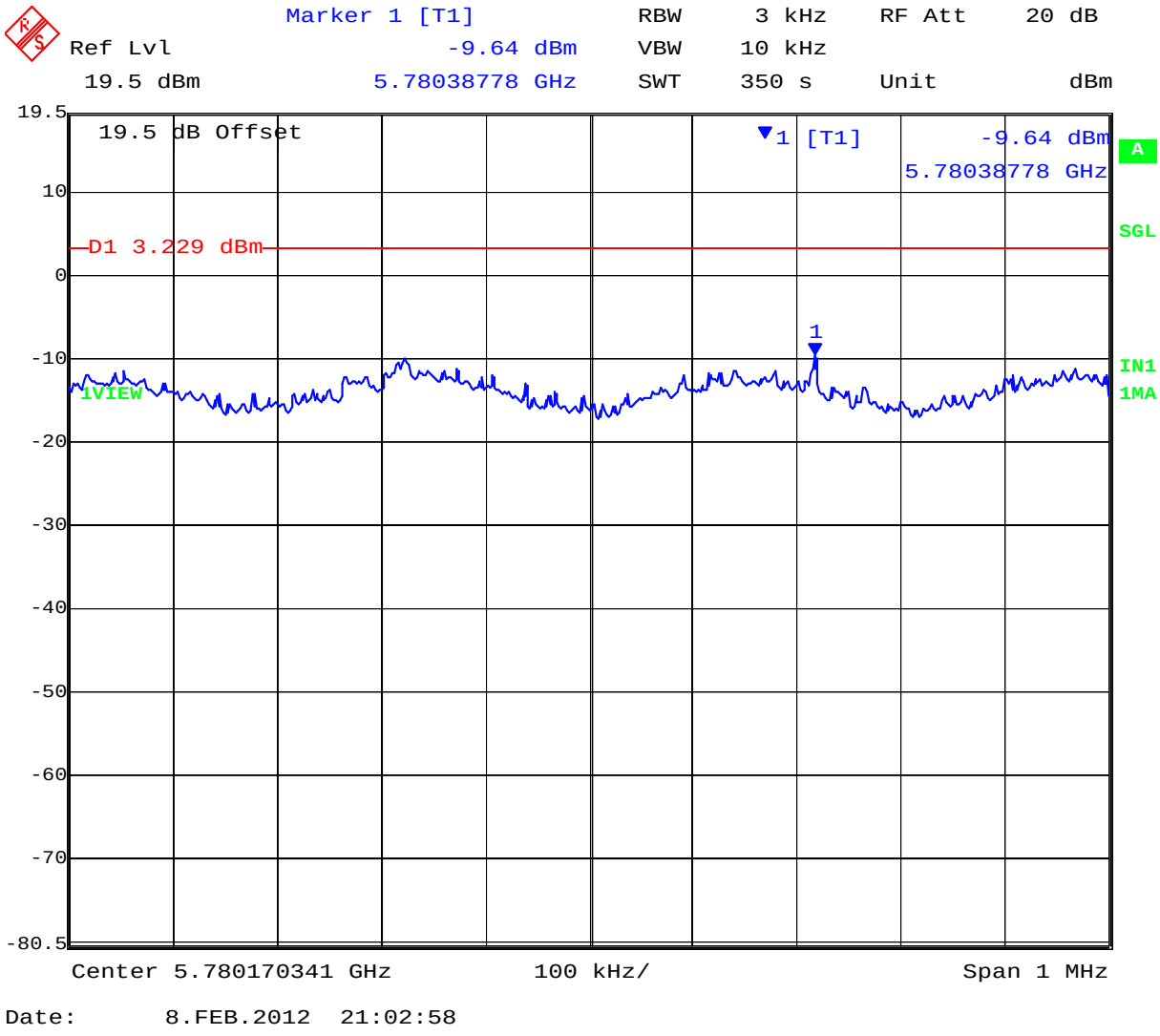
PORT A 5,795 MHz 802.11n HT-40 - Peak Power Spectral Density



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



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



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

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/cm^2) = EIRP/(4πd^2)

EIRP = P * G

P = Peak output power (mW)

G = Antenna numeric gain (numeric)

d = Separation distance (cm)

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

The Fluke Networks Sensor4 has three transmitters operating in each band. It also has two similar radio's. The peak power in the table below is calculated by assuming a worst case scenario where all transmitters are operating simultaneously in the same channel and x2 the maximum power found in Section 5.1.2 Peak Output Power to take into account the two radio modules operating simultaneously in the same band.

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

The following table uses the highest antenna gain for each band.

Freq. Band (MHz)	Antenna Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power x 2 (mW)	Power Density (S) @ 20cm mW/cm^2
2.4	External 2.0	1.58	+25.23	666.9	0.21
5.8	Integral 4.8	3.02	+21.12	263.7	0.16

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 / cm^2 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

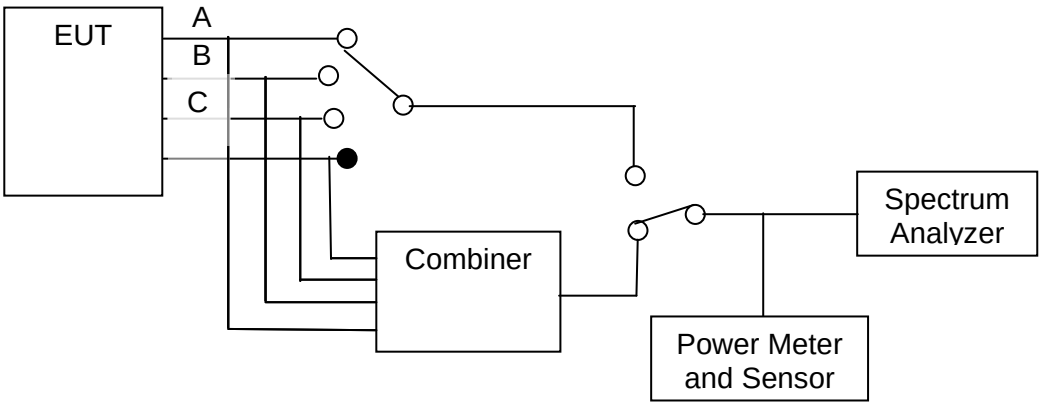
Measurement uncertainty	±1.33 dB

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

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. (ºC):**	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	-7.81	-42.86	-8.91	-43.21	-8.45		
2437.000	30.00	26000.00	-43.84	-8.31	-43.42	-8.50	-43.23	-7.80		
2462.000	30.00	26000.00	-43.78	-9.85	-43.21	-9.30	-42.15	-8.19		

SE: Maximum spurious emisssion found

Band-edge Measurement

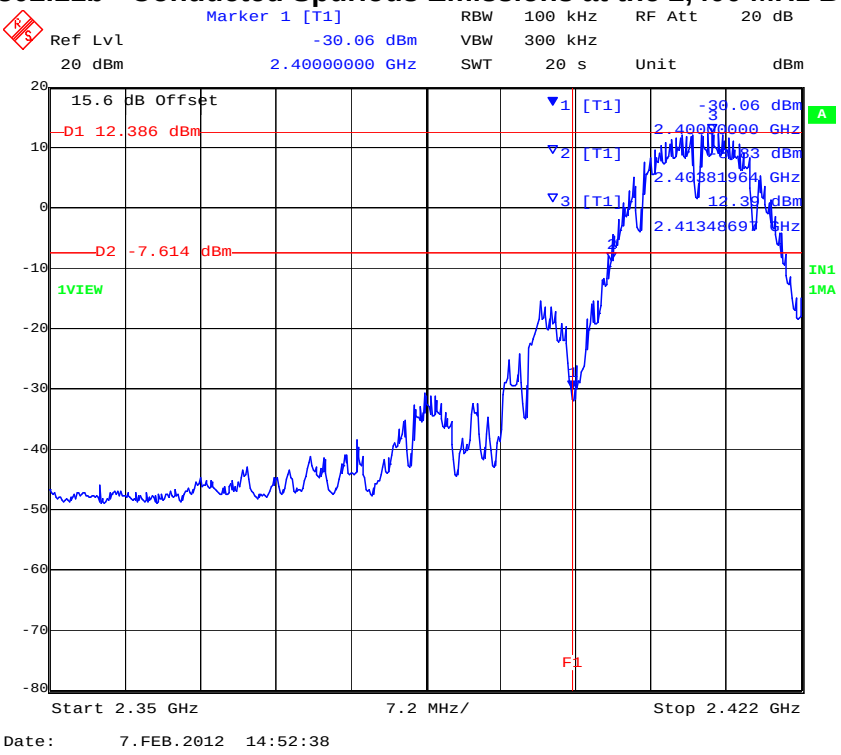
Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
2412.000	2400.00	-30.06	-7.61	-31.64	-8.38	-32.21	-7.78		
2462.000	2483.50	-34.53	-8.51	-34.76	-8.24	-34.16	-7.37		

BE: Maximum Band edge emission found

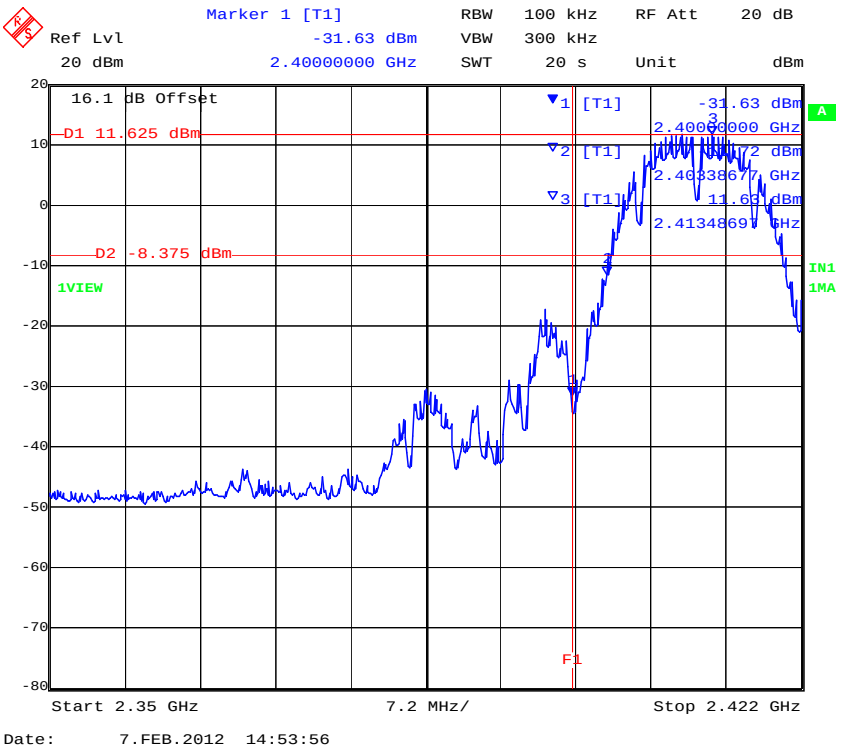
Measurement uncertainty:	±2.81 dB

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

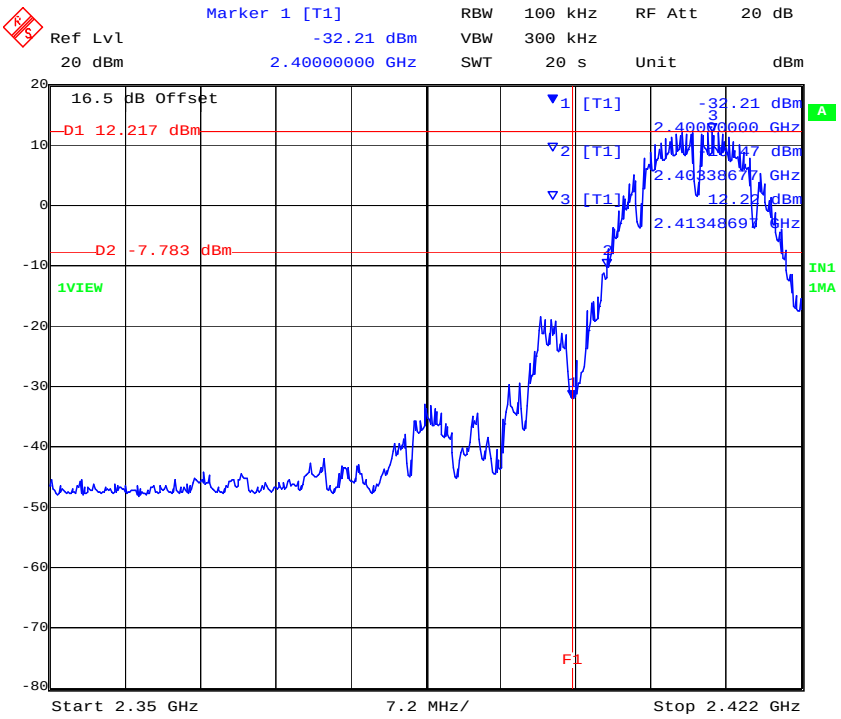
PORT A 802.11b - Conducted Spurious Emissions at the 2,400 MHz Band Edge



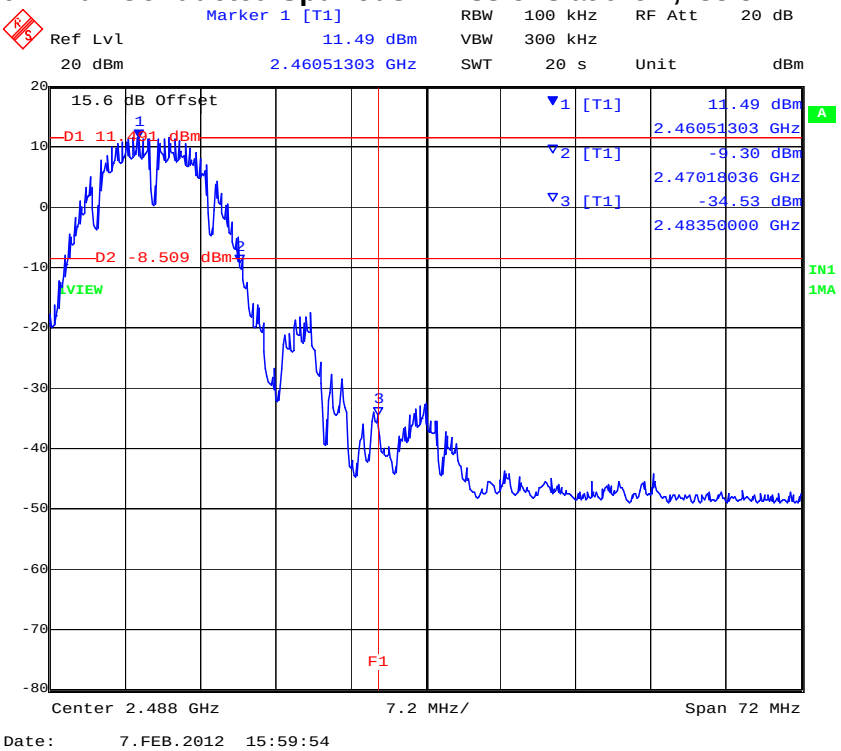
PORT B 802.11b - Conducted Spurious Emissions at the 2,400 MHz Band Edge



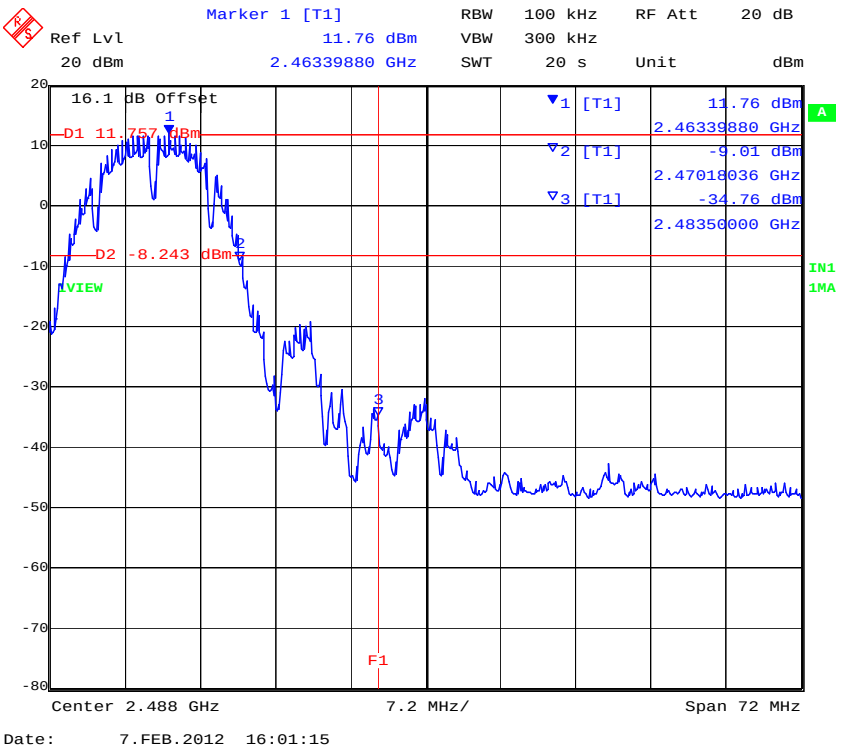
PORT C 802.11b - Conducted Spurious Emissions at the 2,400 MHz Band Edge



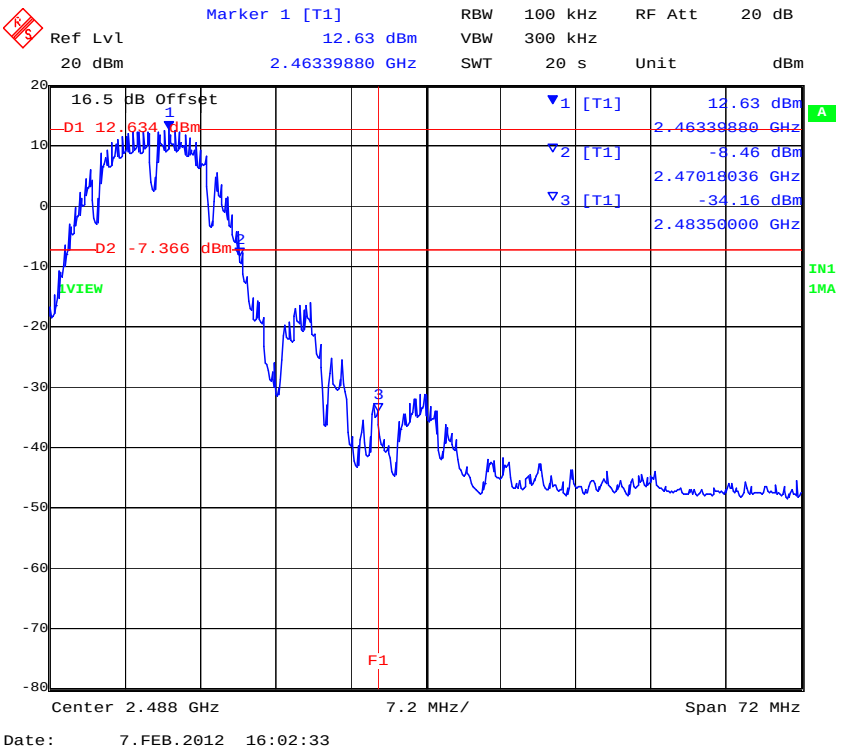
PORT A 802.11b - Conducted Spurious Emissions at the 2,483.5 MHz Band Edge



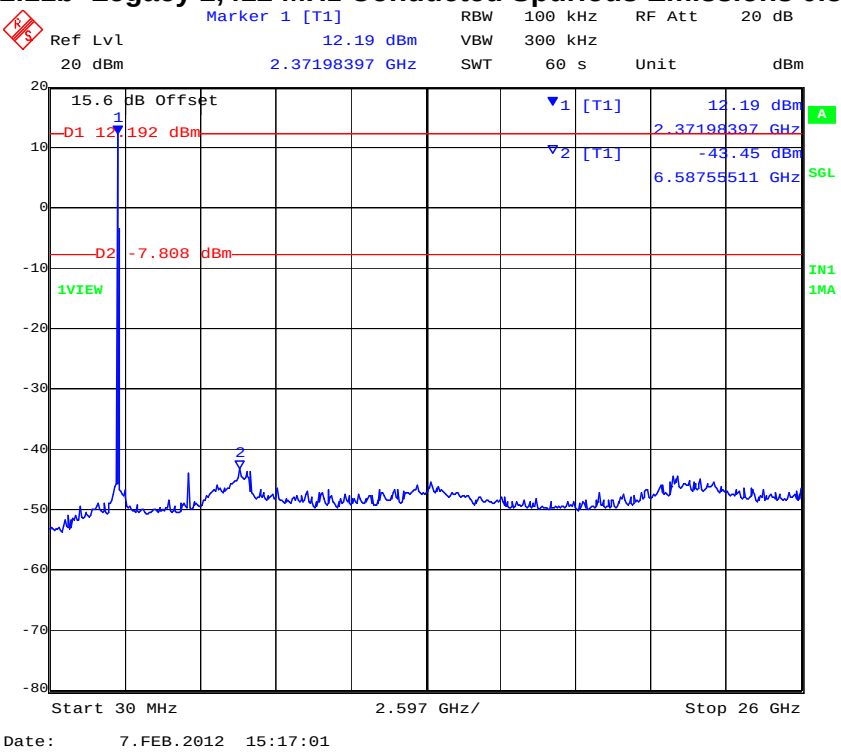
PORT B 802.11b - Conducted Spurious Emissions at the 2,483.5 MHz Band Edge



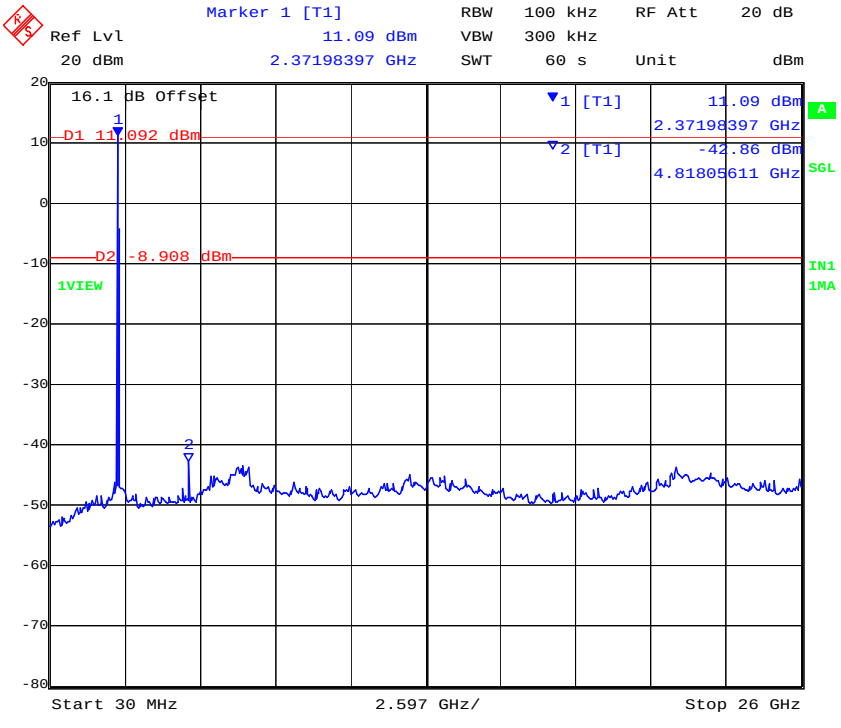
PORT C 802.11b - Conducted Spurious Emissions at the 2,483.5 MHz Band Edge



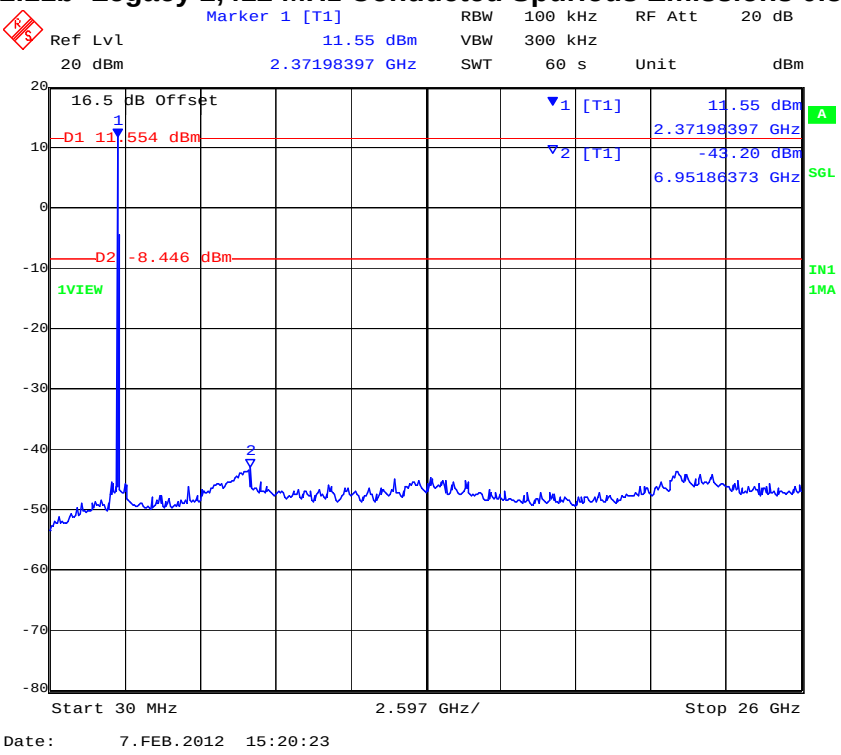
PORT A 802.11b–Legacy 2,412 MHz Conducted Spurious Emissions 0.30 to 26 GHz



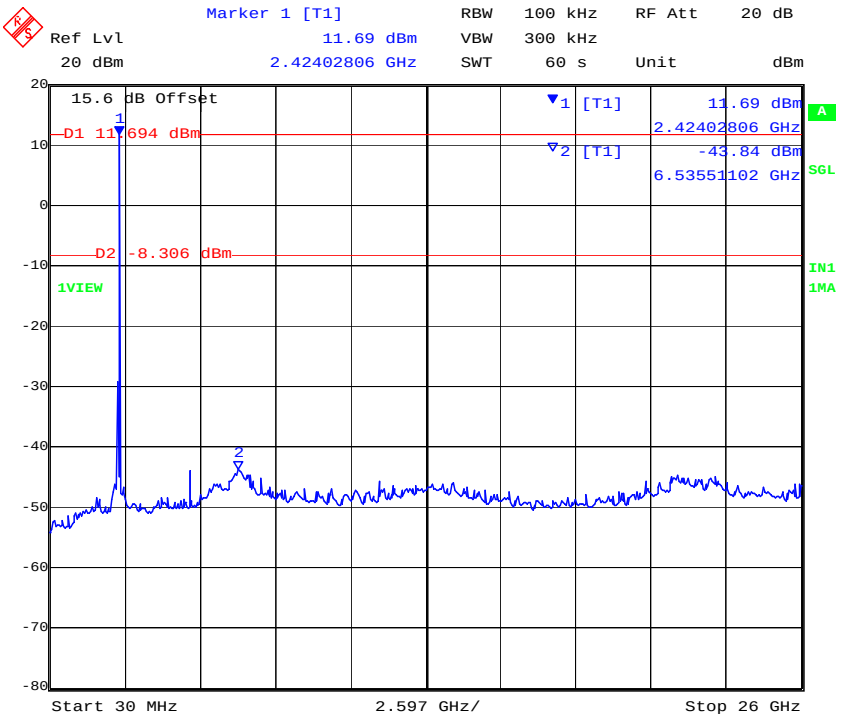
PORT B 802.11b–Legacy 2,412 MHz Conducted Spurious Emissions 0.30 to 26 GHz



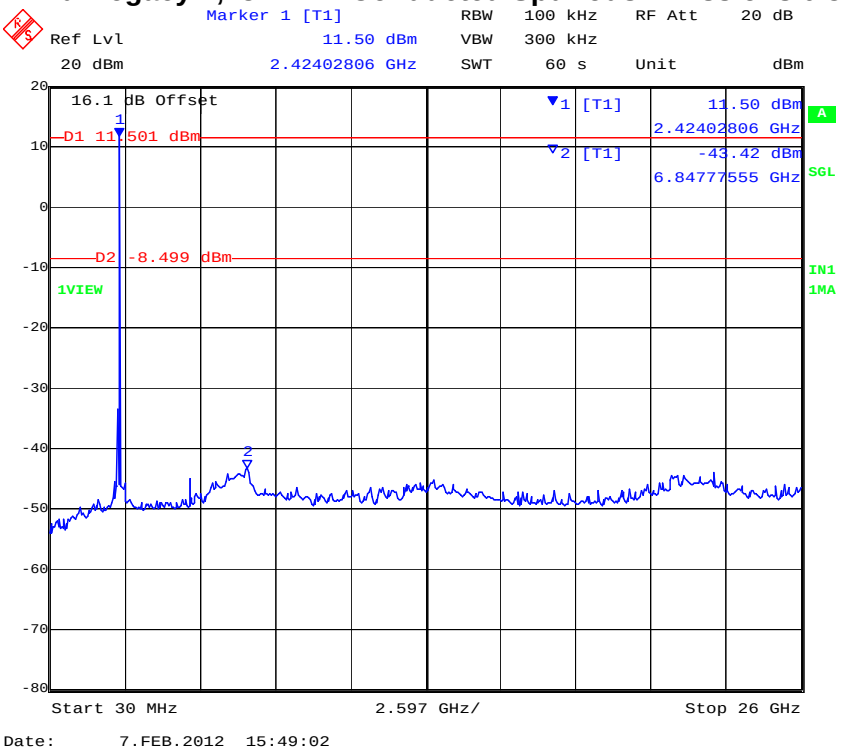
PORT C 802.11b–Legacy 2,412 MHz Conducted Spurious Emissions 0.30 to 26 GHz



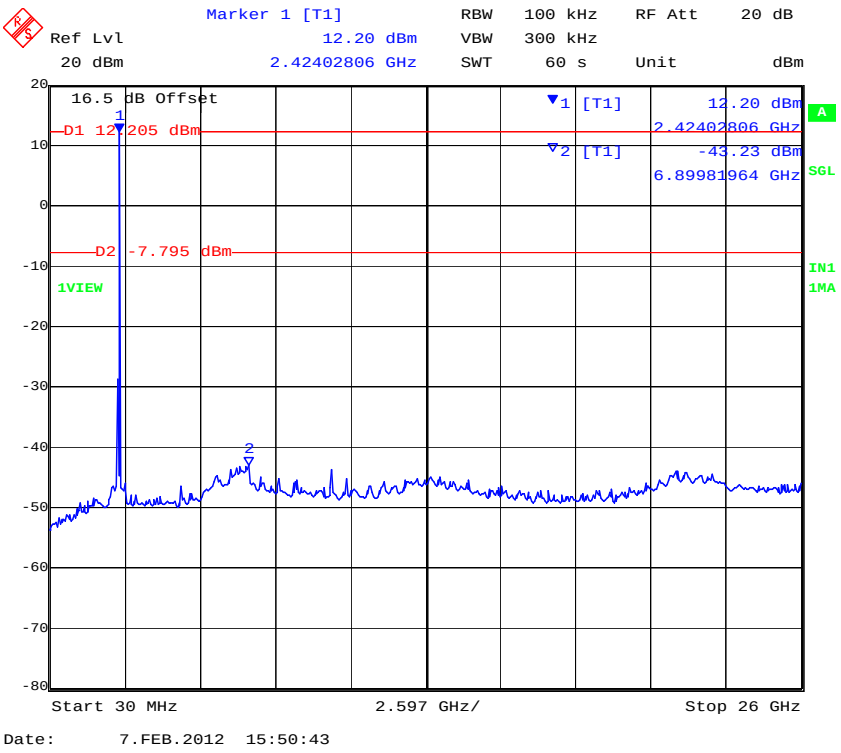
PORT A 802.11b–Legacy 2,437 MHz Conducted Spurious Emissions 0.30 to 26 GHz



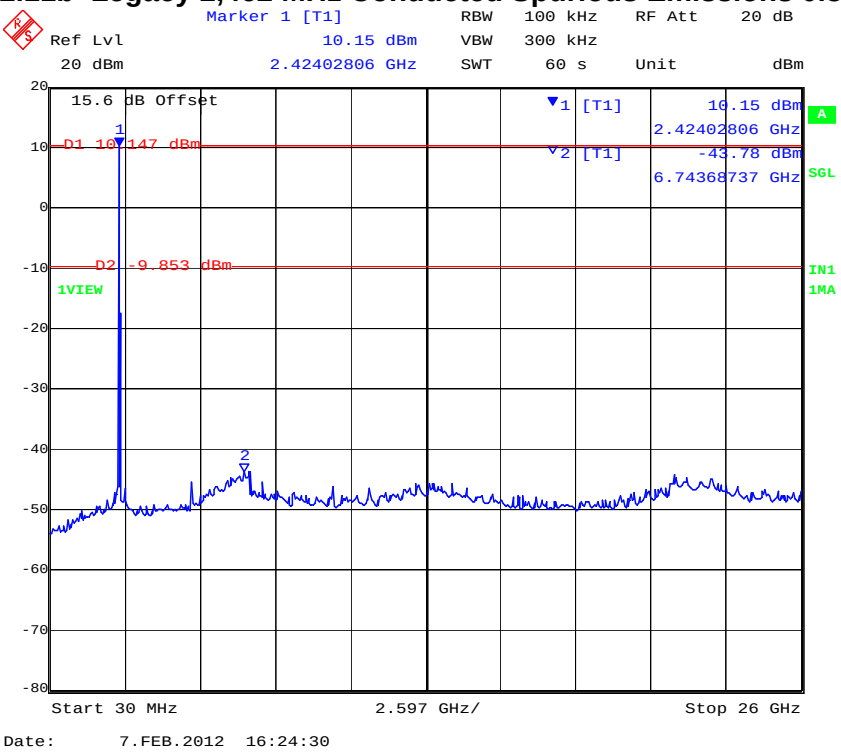
PORT B 802.11b–Legacy 2,437 MHz Conducted Spurious Emissions 0.30 to 26 GHz



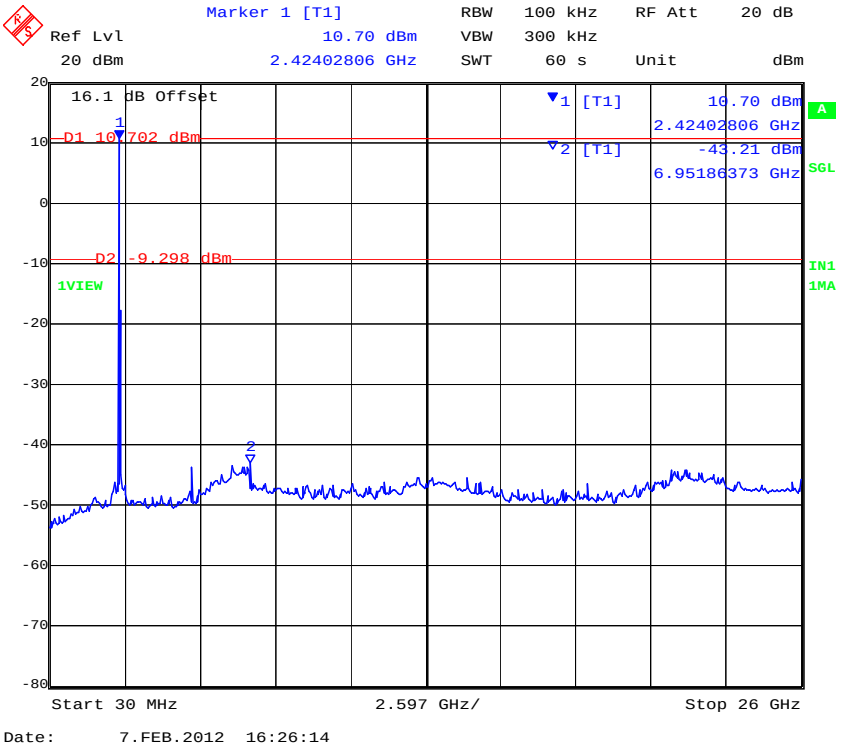
PORT C 802.11b–Legacy 2,437 MHz Conducted Spurious Emissions 0.30 to 26 GHz



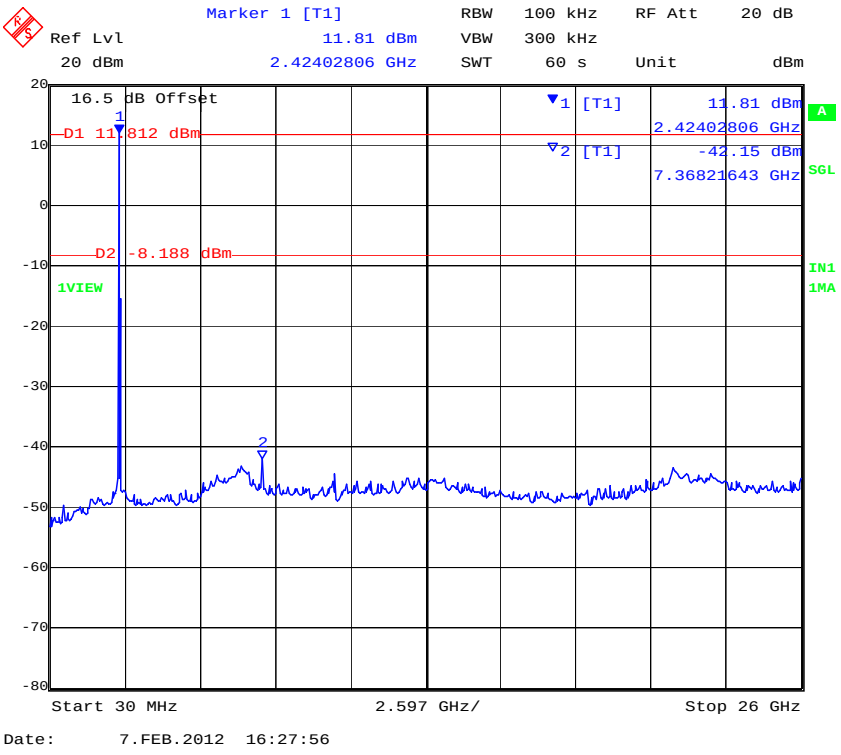
PORT A 802.11b–Legacy 2,462 MHz Conducted Spurious Emissions 0.30 to 26 GHz



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



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



Conducted Spurious Emission Results

TABLE OF RESULTS – **802.11g Legacy**

Test Conditions:	15.247 (a)(2)		**Rel. Humidity (%):**	35	to	42
Variant:	802.11g		**Ambient Temp. (ºC):**	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	-44.04	-12.86	-43.40	-12.65	-43.42	-11.45		
2437.000	30.00	26000.00	-43.46	-12.92	-43.26	-14.04	-42.61	-14.21		
2462.000	30.00	26000.00	-44.34	-13.60	-43.60	-13.06	-42.81	-12.74		

SE: Maximum spurious emission found

Band-edge Measurement

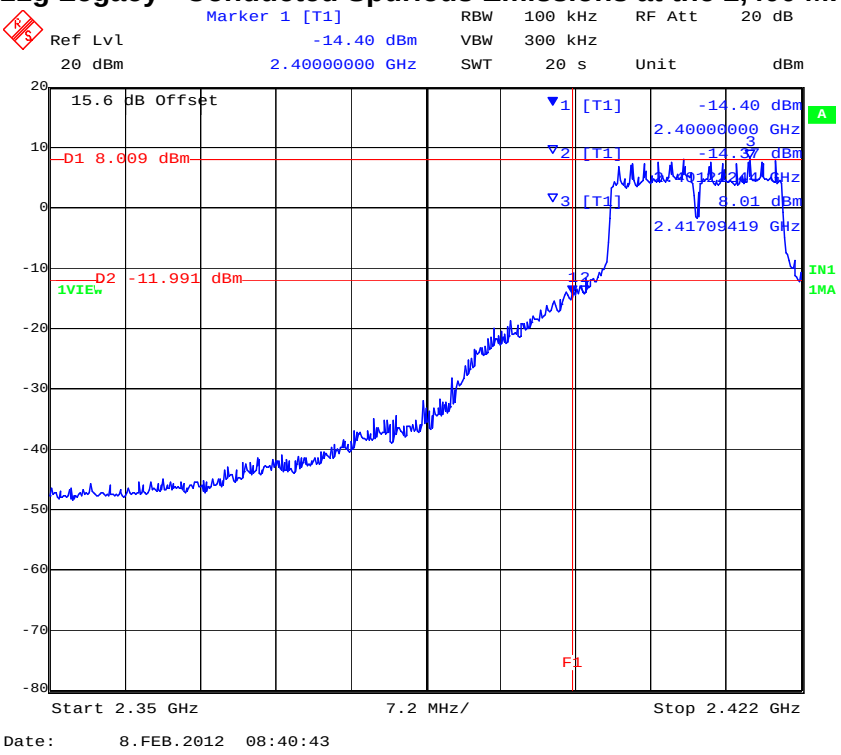
Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
2412.000	2400.00	-14.40	-11.99	-16.81	-12.09	-15.39	-10.82		
2462.000	2483.50	-28.96	-13.04	-27.40	-12.73	-25.65	-11.28		

BE: Maximum Band edge emission found

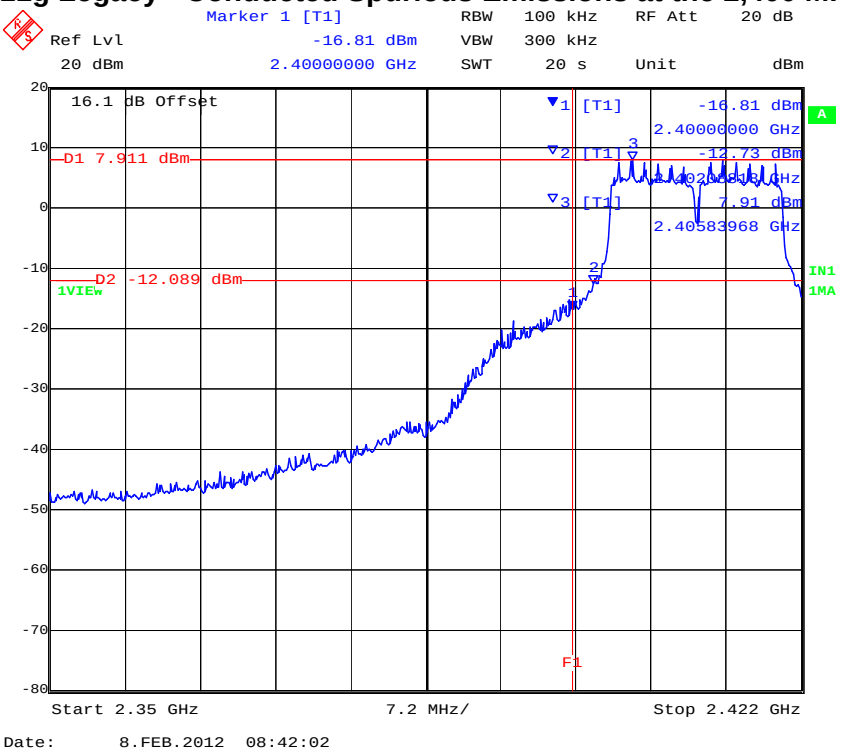
Measurement uncertainty:	±2.81 dB

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

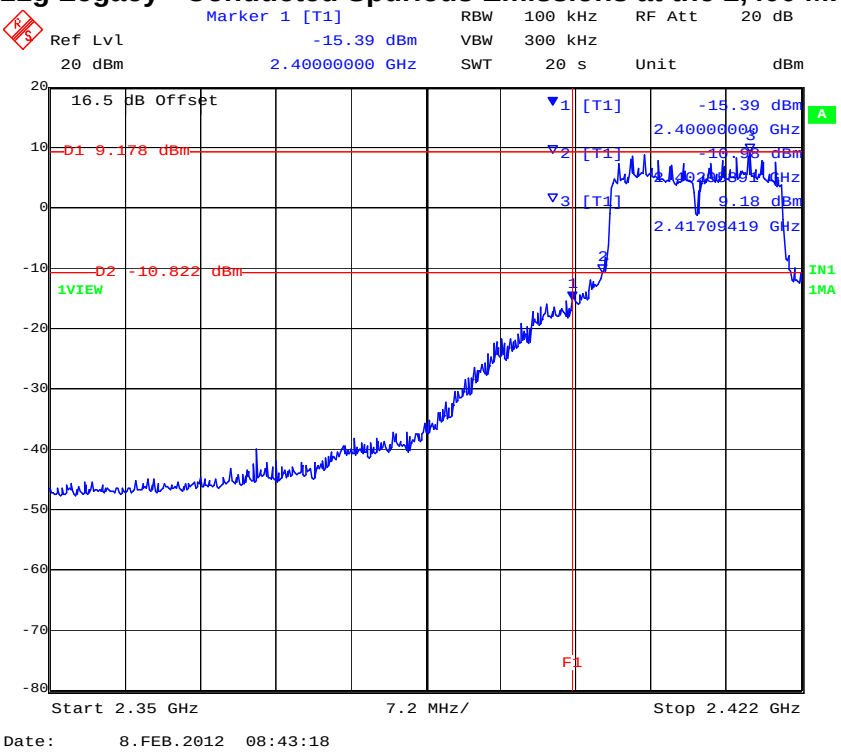
PORT A 802.11g Legacy - Conducted Spurious Emissions at the 2,400 MHz Band Edge



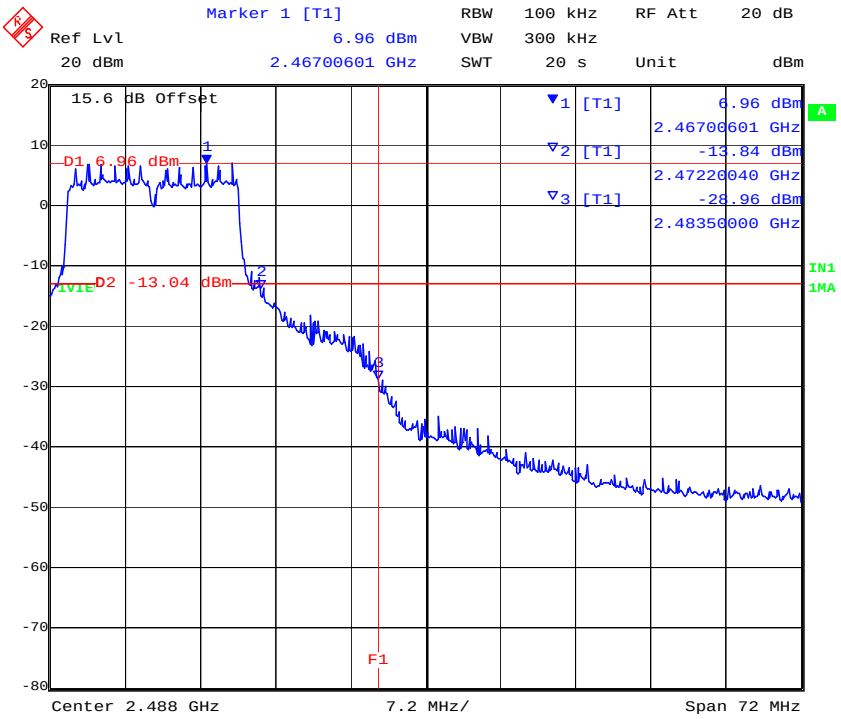
PORT B 802.11g Legacy - Conducted Spurious Emissions at the 2,400 MHz Band Edge



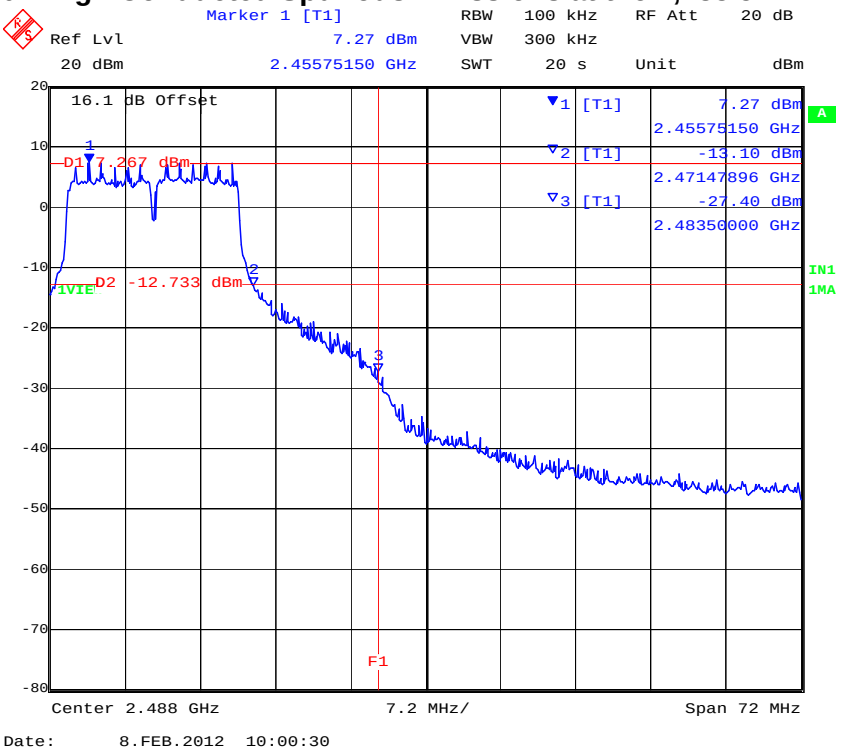
PORT C 802.11g Legacy - Conducted Spurious Emissions at the 2,400 MHz Band Edge



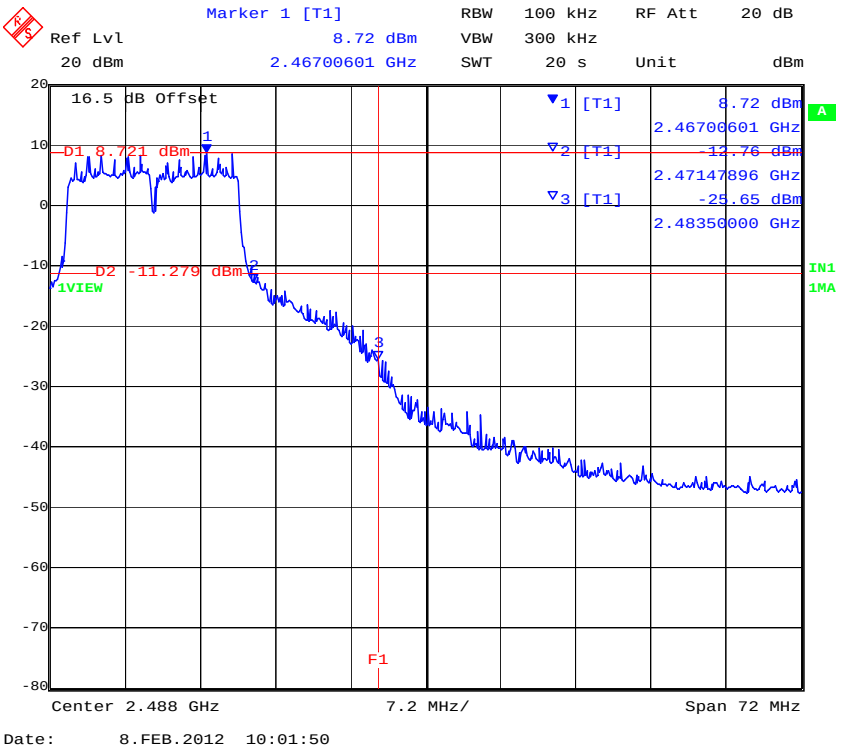
PORT A 802.11g - Conducted Spurious Emissions at the 2,483.5 MHz Band Edge



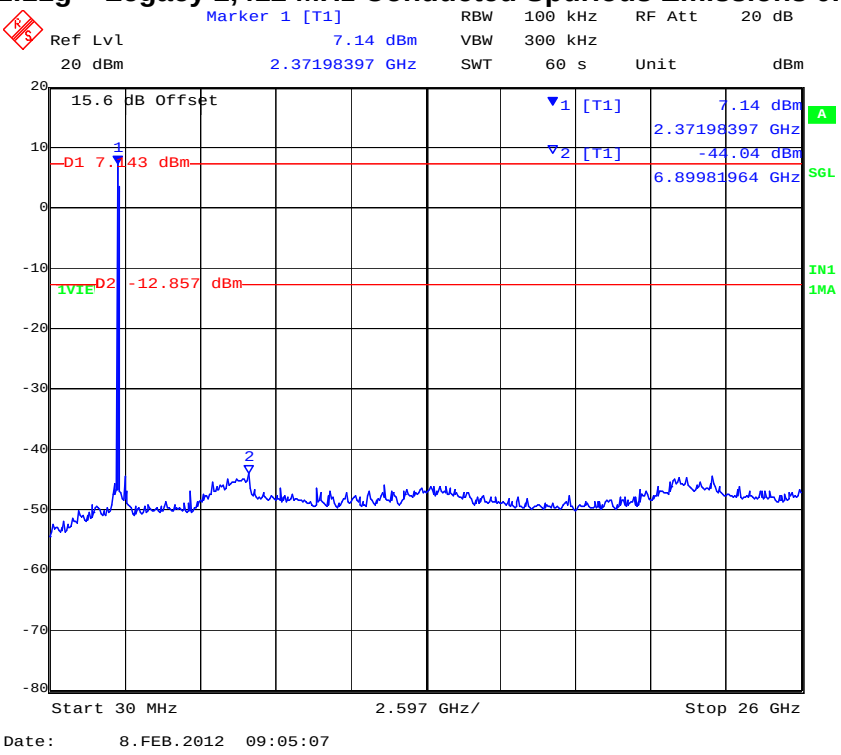
PORT B 802.11g - Conducted Spurious Emissions at the 2,483.5 MHz Band Edge



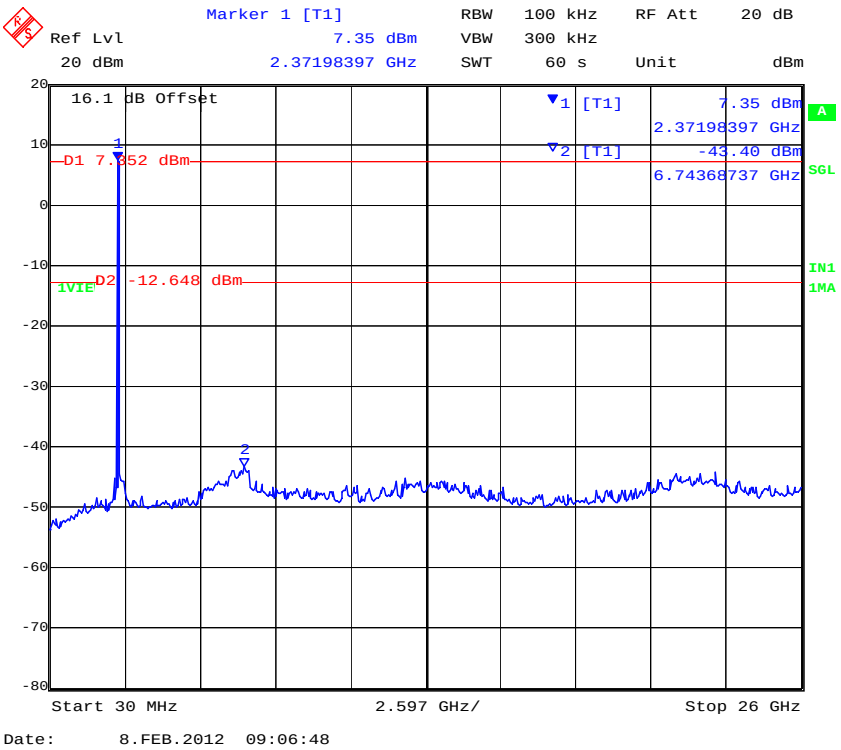
PORT C 802.11g - Conducted Spurious Emissions at the 2,483.5 MHz Band Edge



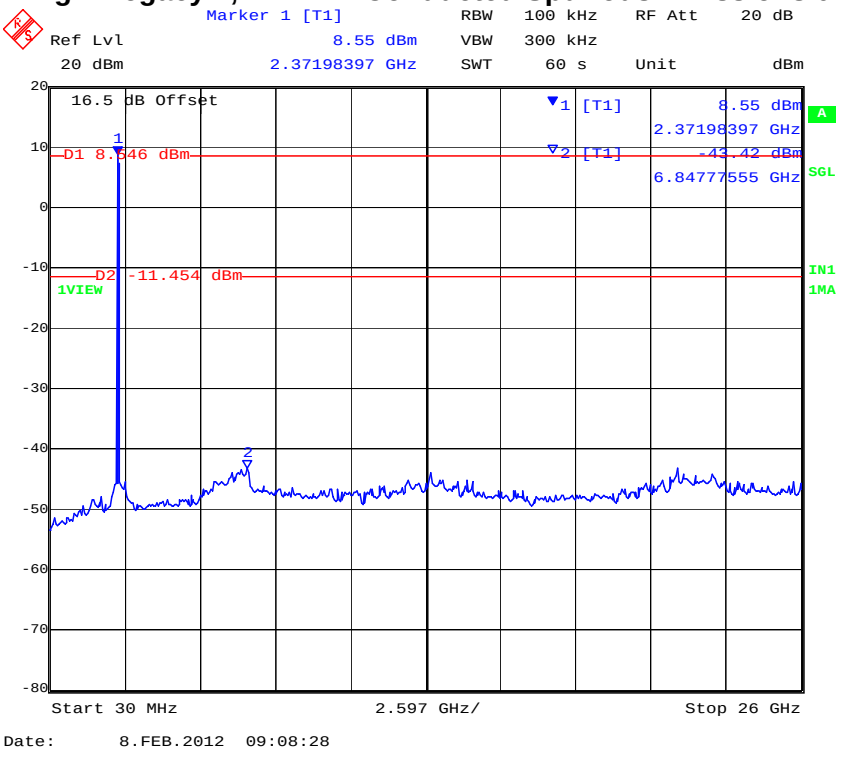
PORT A 802.11g – Legacy 2,412 MHz Conducted Spurious Emissions 0.03 – 26 GHz



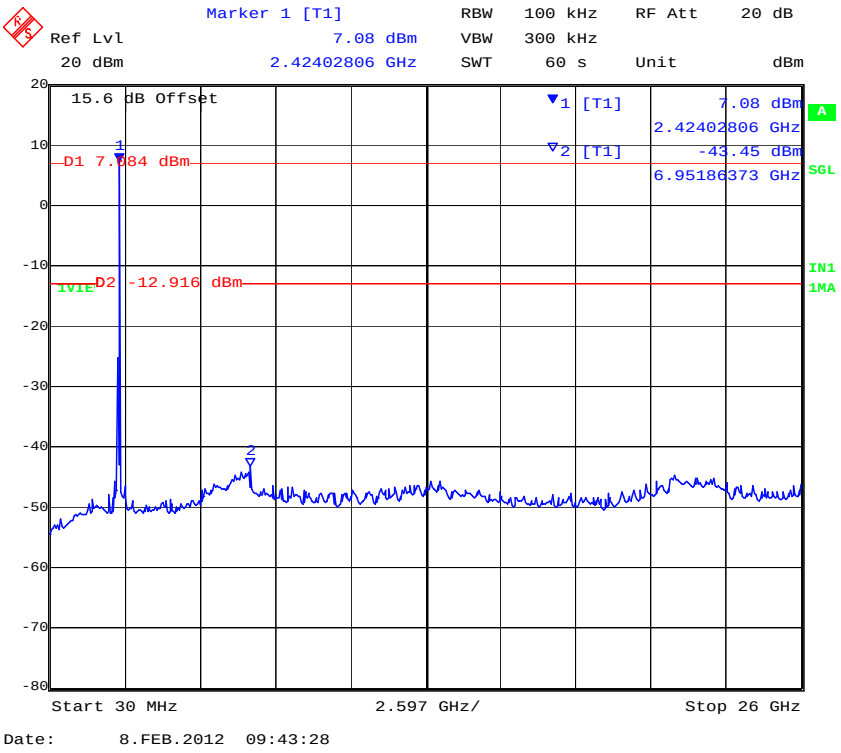
PORT B 802.11g – Legacy 2,412 MHz Conducted Spurious Emissions 0.03 – 26 GHz



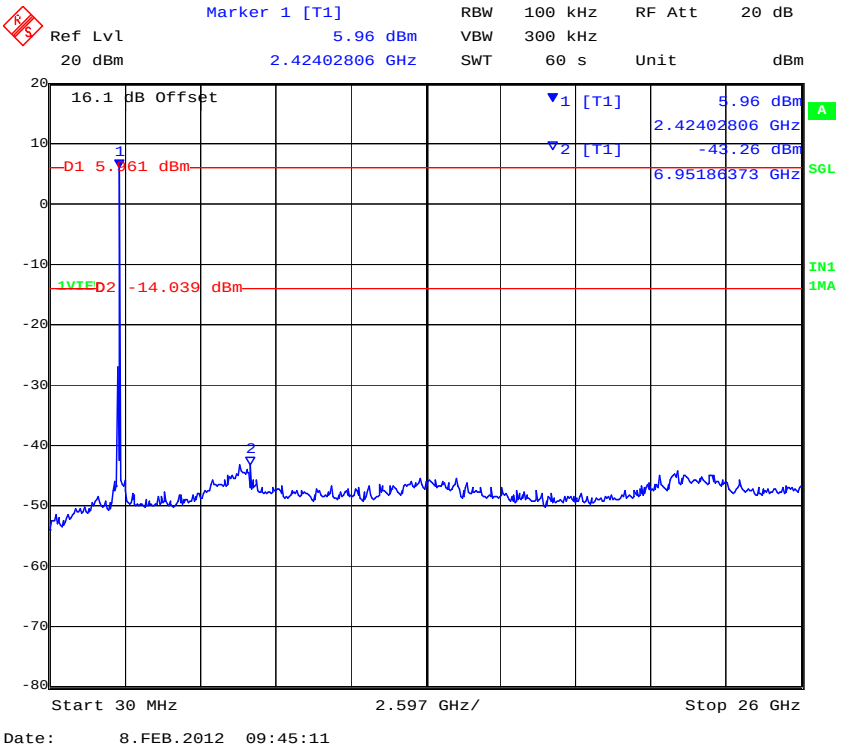
PORT C 802.11g – Legacy 2,412 MHz Conducted Spurious Emissions 0.03 – 26 GHz



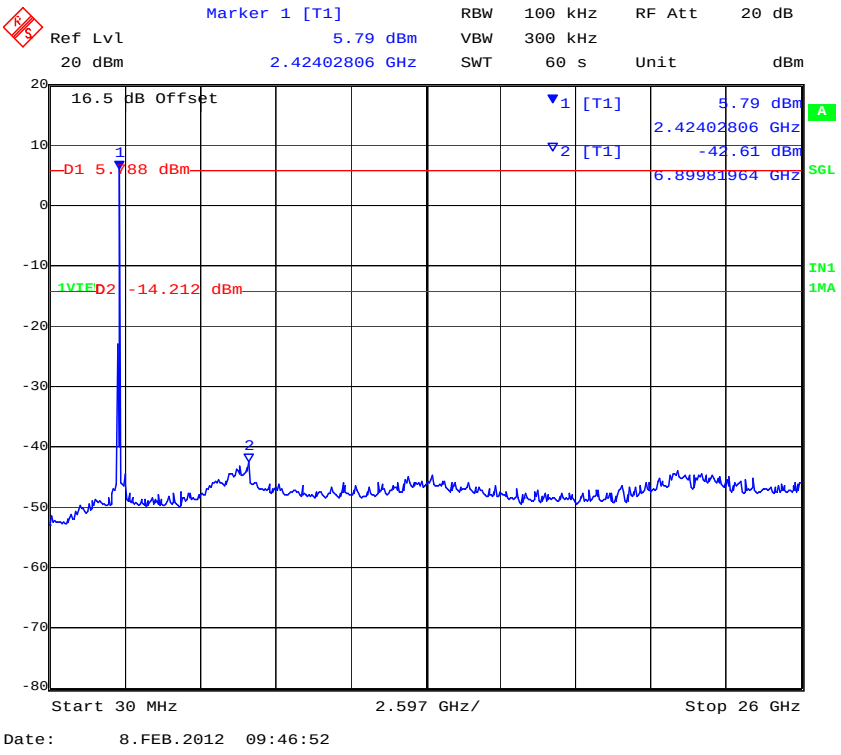
PORT A 802.11g–Legacy 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz



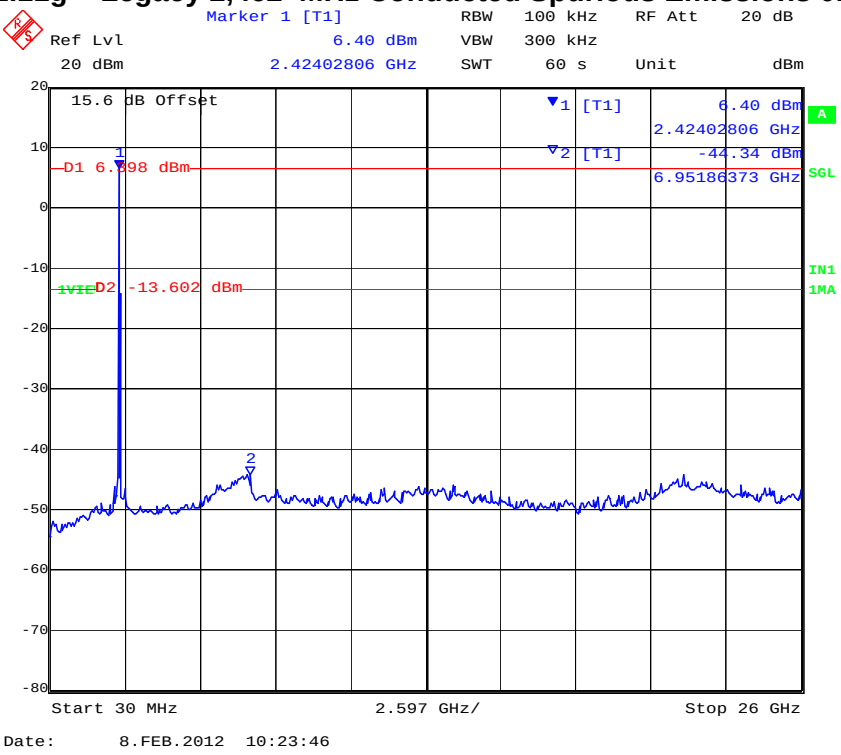
PORT B 802.11g–Legacy 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz



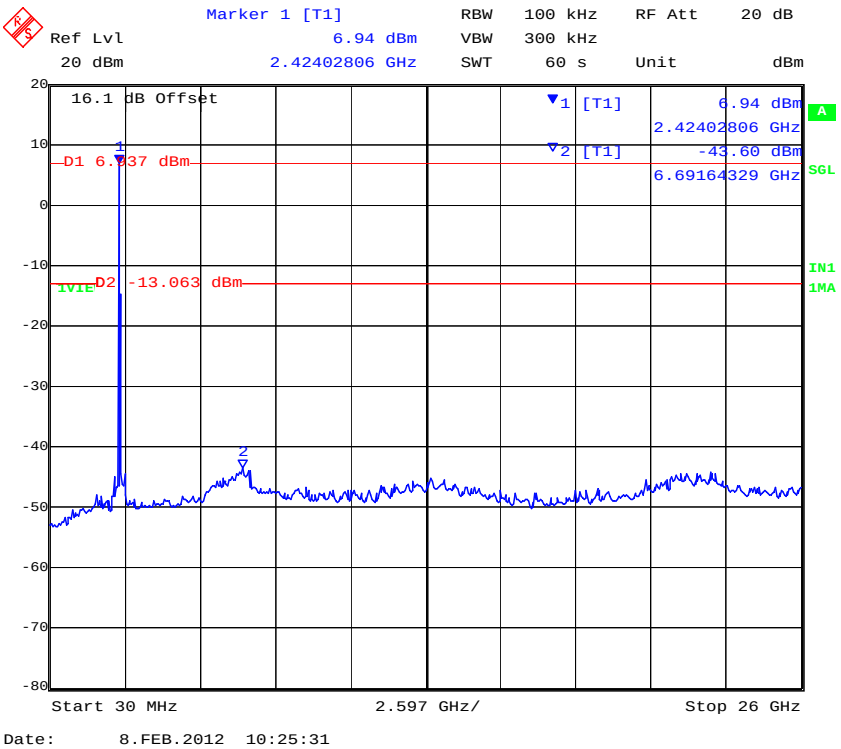
PORT C 802.11g–Legacy 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz



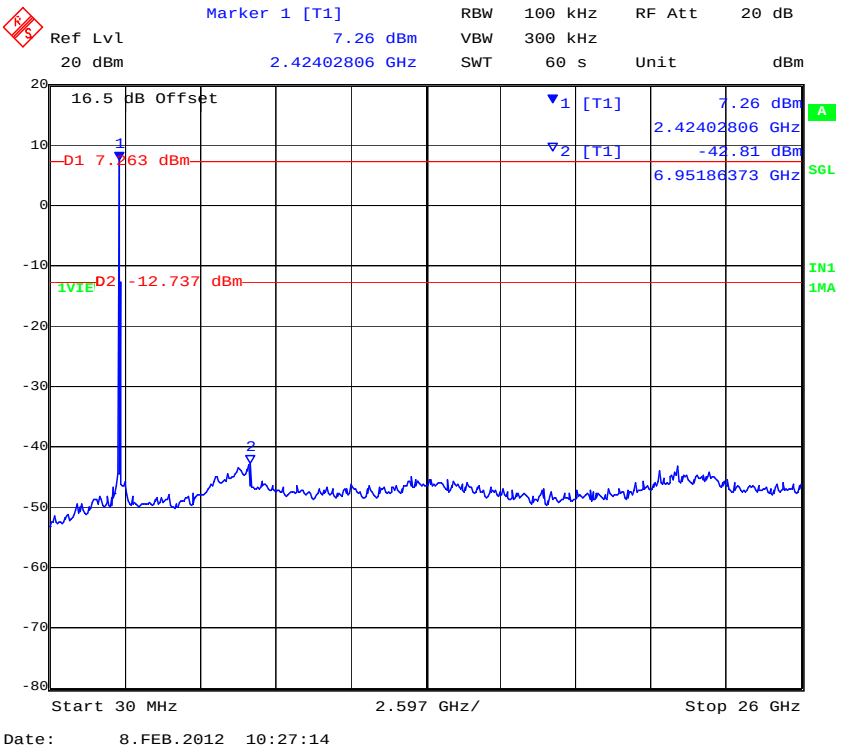
PORT A 802.11g – Legacy 2,462 MHz Conducted Spurious Emissions 0.03 – 26 GHz



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



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



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. (ºC):**	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	-43.79	-15.23	-43.84	-13.21	-43.12	-11.23		
2437.000	30.00	26000.00	-42.73	-12.52	-42.22	-12.00	-42.98	-14.86		
2462.000	30.00	26000.00	-44.43	-14.25	-42.86	-12.56	-42.76	-14.97		

SE: Maximum spurious emission found

Band-edge Measurement

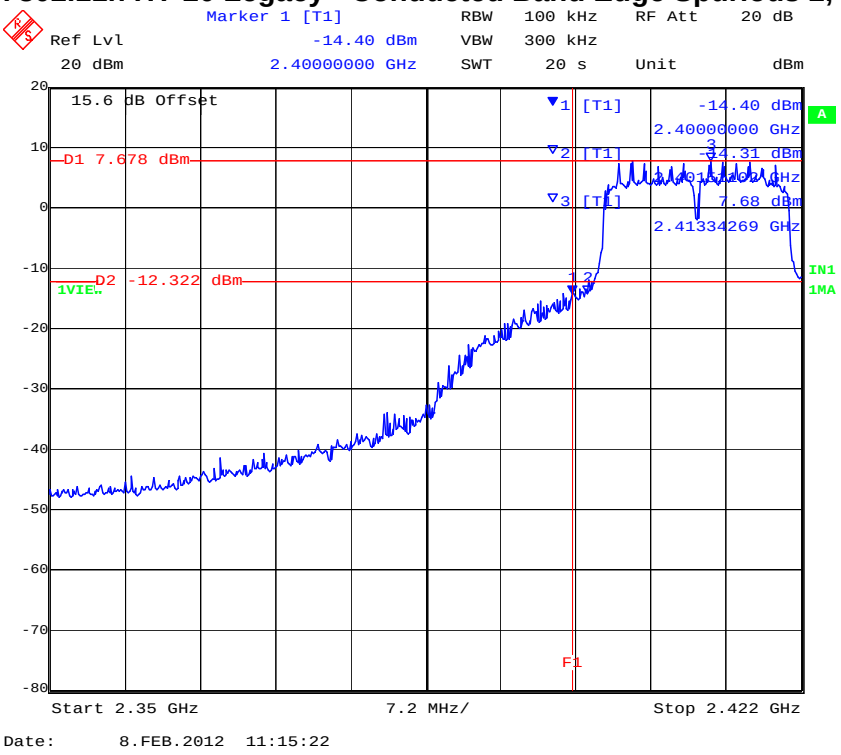
Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
2412.000	2400.00	-14.40	-12.32	-14.67	-12.07	-15.62	-11.23		
2462.000	2483.50	-23.97	-12.72	-25.56	-12.31	-23.63	-11.04		

BE: Maximum Band edge emission found

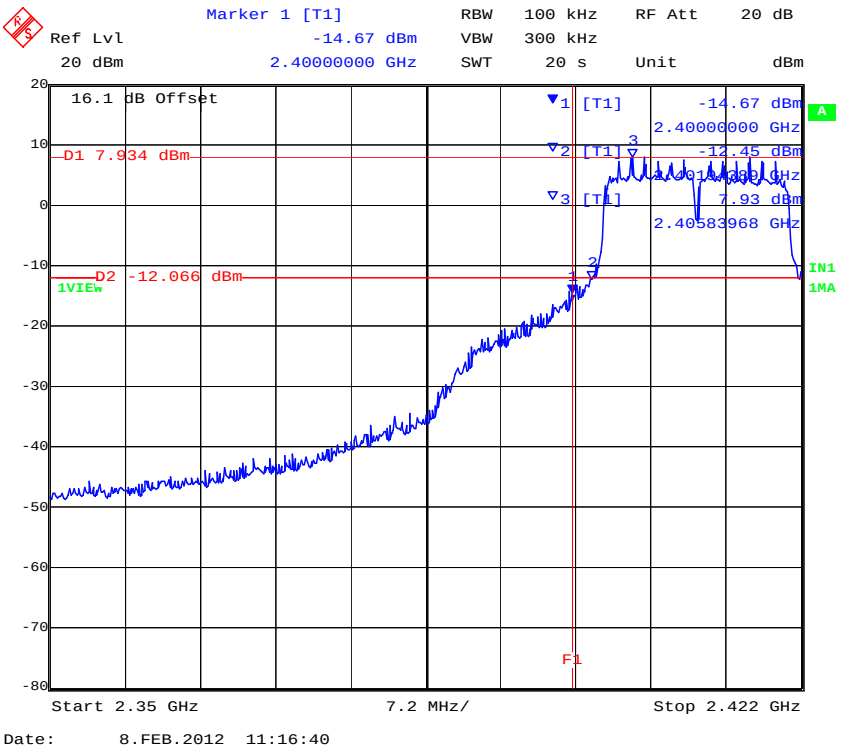
Measurement uncertainty:	±2.81 dB

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

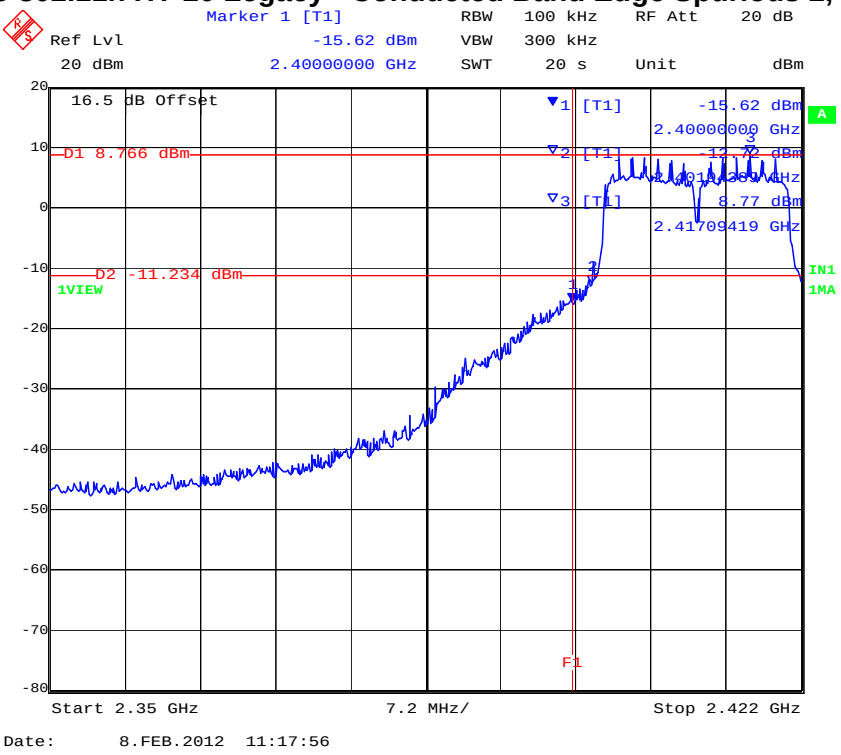
PORT A 802.11n HT-20 Legacy - Conducted Band Edge Spurious 2,400 MHz



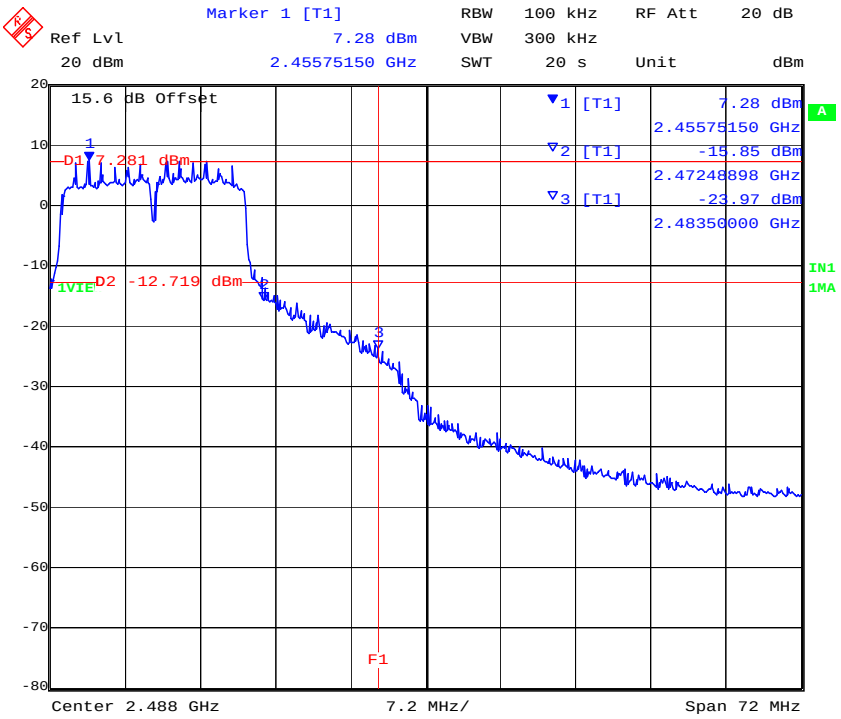
PORT B 802.11n HT-20 Legacy - Conducted Band Edge Spurious 2,400 MHz



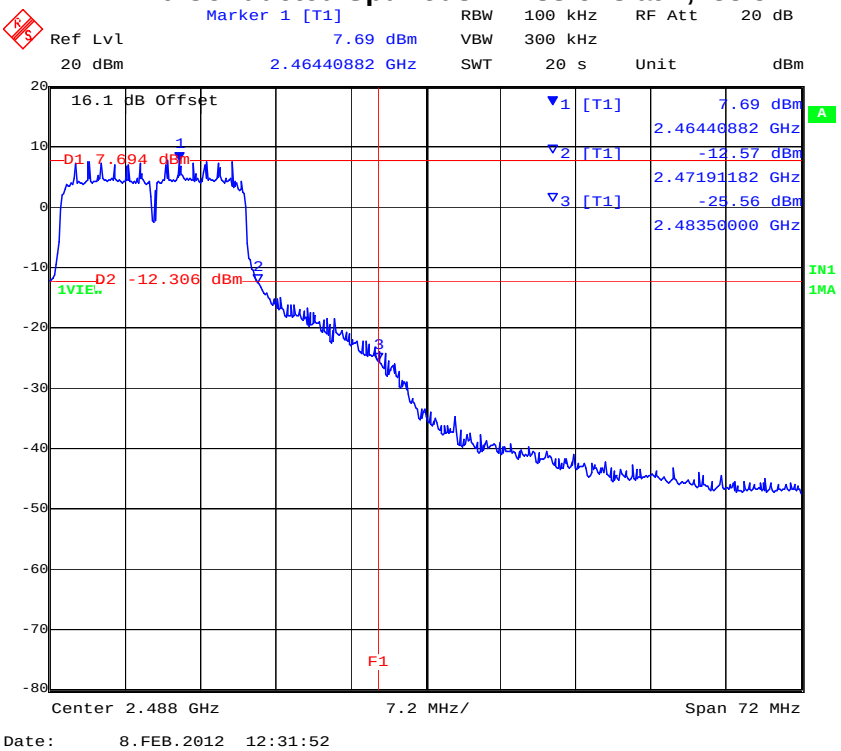
PORT C 802.11n HT-20 Legacy - Conducted Band Edge Spurious 2,400 MHz



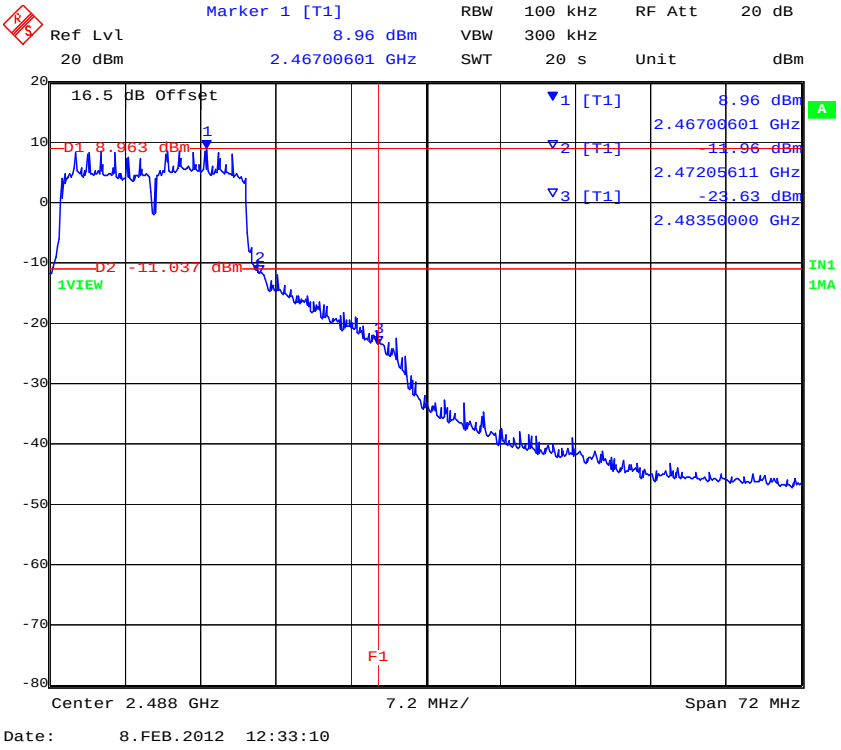
PORT A 802. 11n HT-20 Conducted Spurious Emissions at 2,483.5 MHz Band Edge



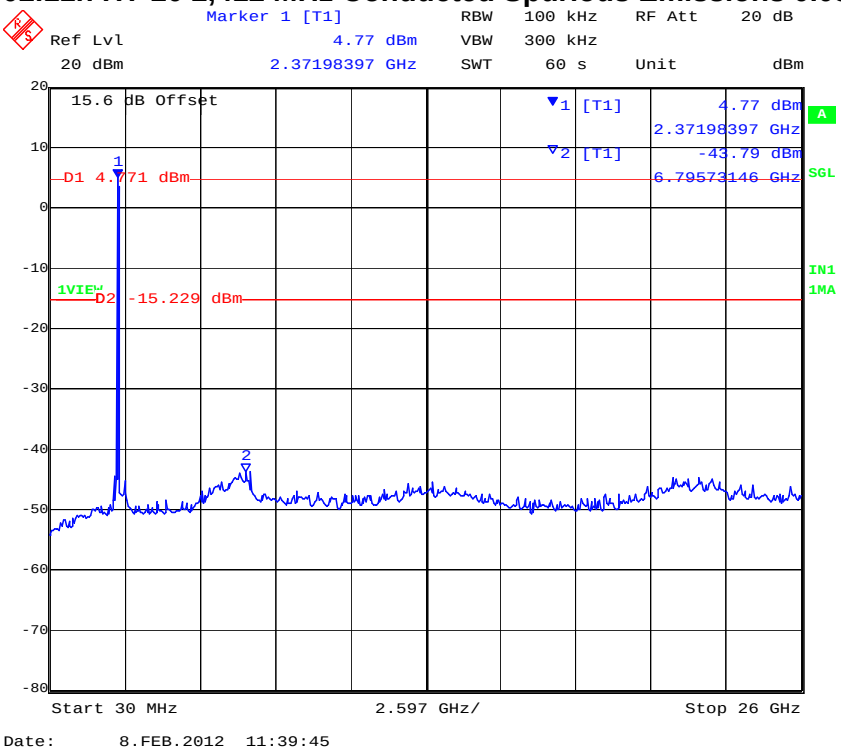
PORT B 802. 11n HT-20 Conducted Spurious Emissions at 2,483.5 MHz Band Edge



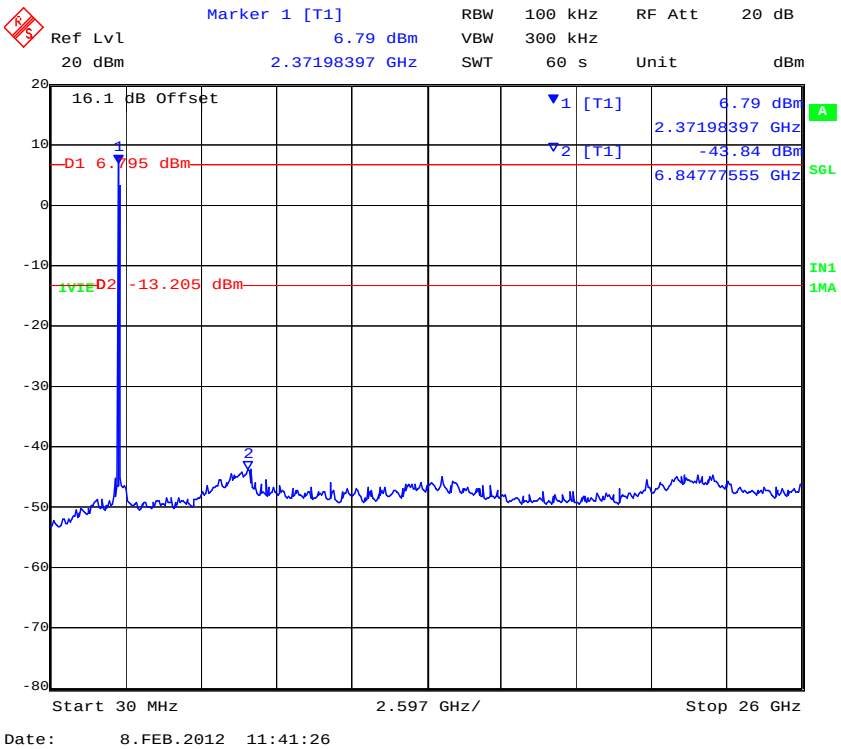
PORT C 802. 11n HT-20 Conducted Spurious Emissions at 2,483.5 MHz Band Edge



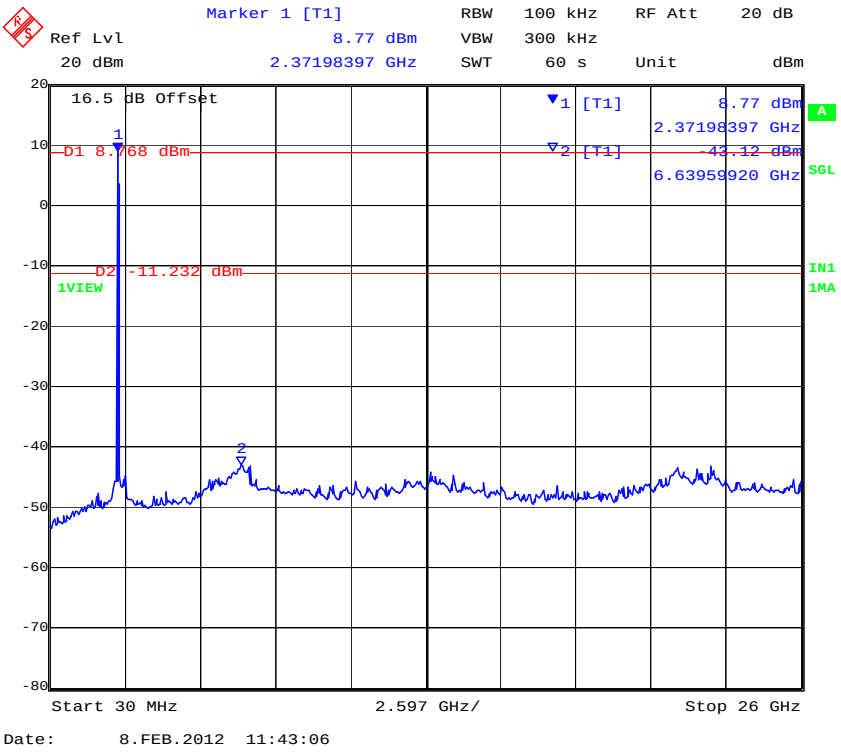
PORT A 802.11n HT-20 2,412 MHz Conducted Spurious Emissions 0.03 – 26 GHz



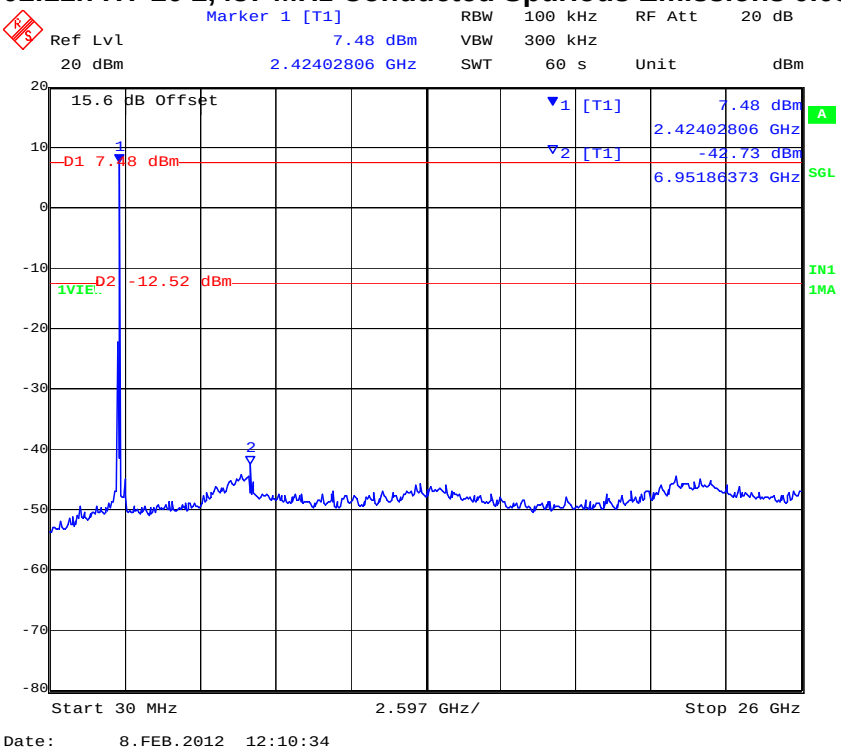
PORT B 802.11n HT-20 2,412 MHz Conducted Spurious Emissions 0.03 – 26 GHz



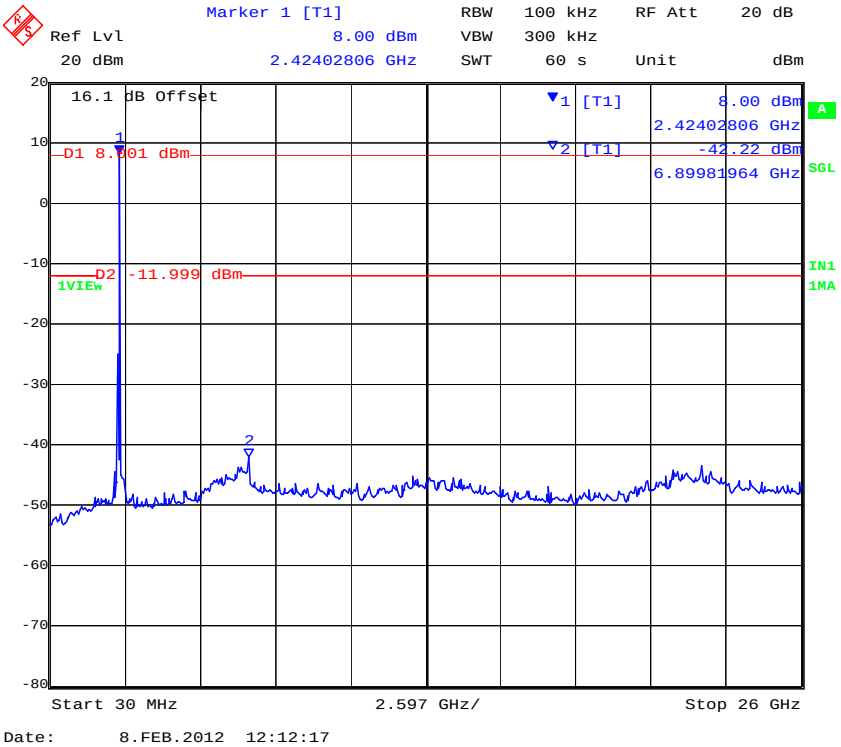
PORT C 802.11n HT-20 2,412 MHz Conducted Spurious Emissions 0.03 – 26 GHz



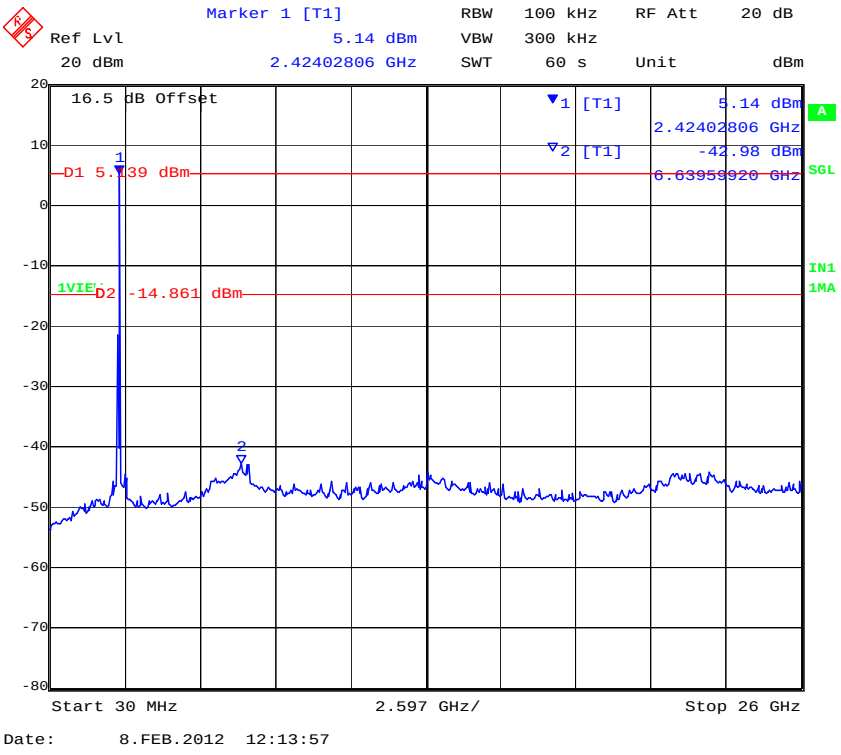
PORT A 802.11n HT-20 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz



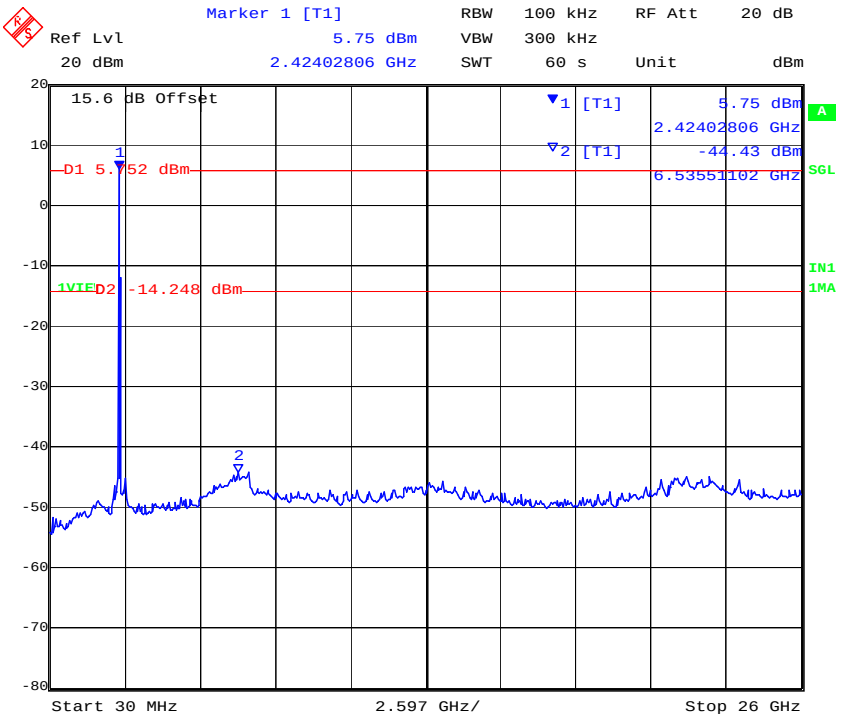
PORT B 802.11n HT-20 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz



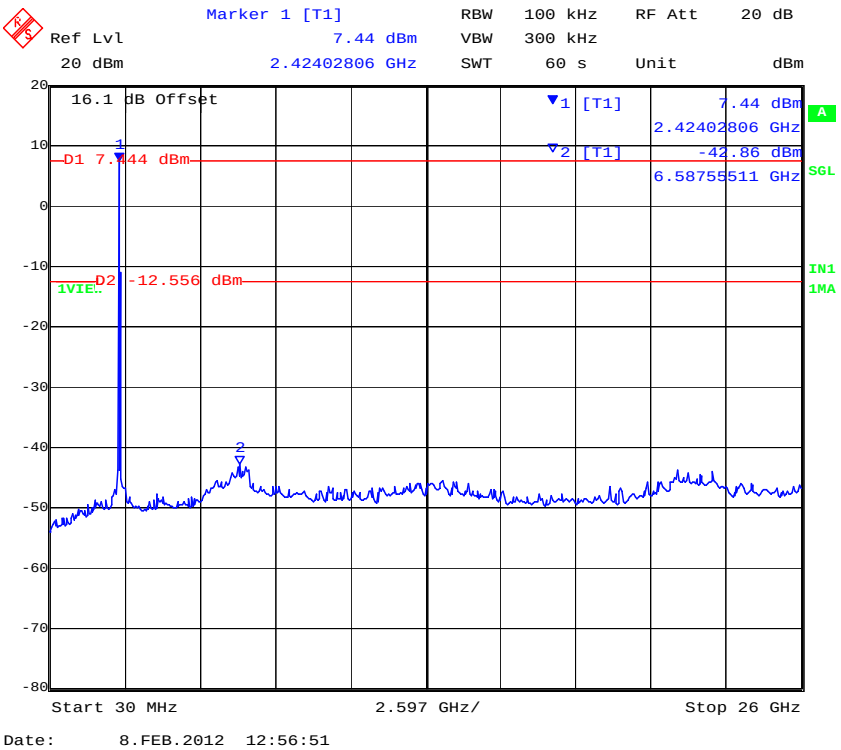
PORT C 802.11n HT-20 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz



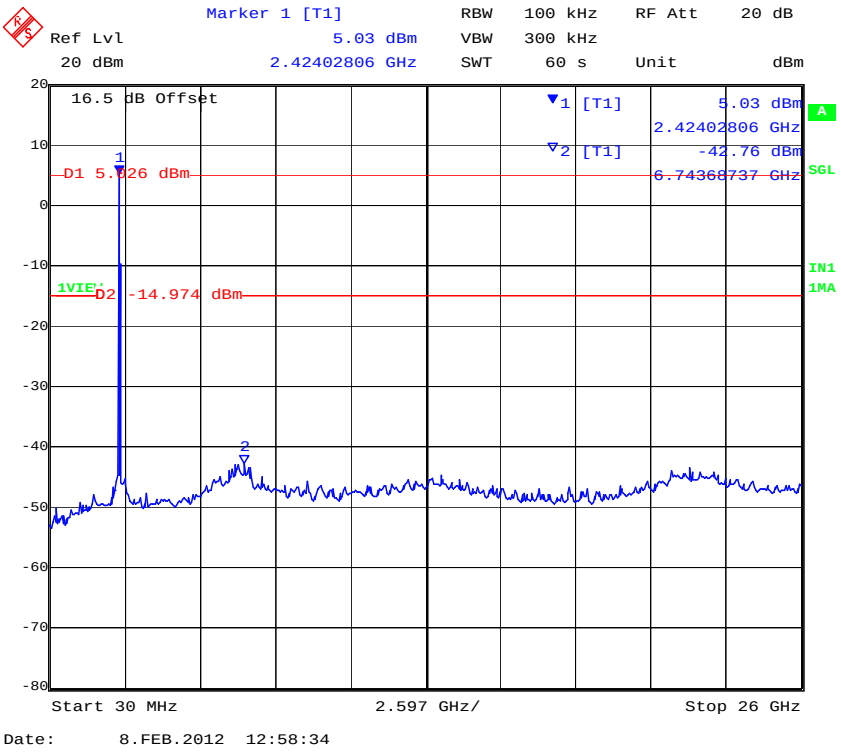
PORT A 802.11n HT-20 2,462 MHz Conducted Spurious Emissions 0.03 – 26 GHz



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



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



Conducted Spurious Emission Results

TABLE OF RESULTS – **802.11n HT-40**

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Test Conditions:	15.247 (a)(2)	**Rel. Humidity (%):**	35	to	42
Variant:	802.11n HT-40	**Ambient Temp. (ºC):**	19	to	22
TPC:	HIGH	**Pressure (mBars):**	998	to	1003
Modulation:	ON	**Duty Cycle (%):**	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	-44.10	-14.66	-43.64	-14.79	-42.76	-14.49		
2437.000	30.00	26000.00	-44.13	-14.65	-43.27	-14.71	-42.33	-14.58		
2452.000	30.00	26000.00	-44.35	-14.90	-43.28	-14.97	-42.67	-14.15		

SE: Maximum spurious emission found

Band-edge Measurement

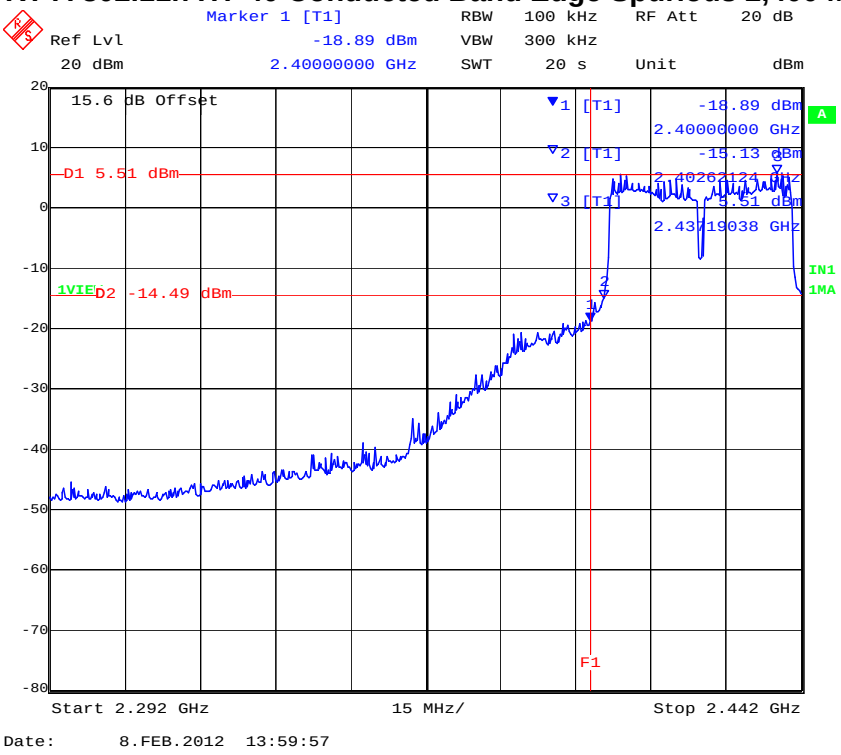
Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
2422.000	2400.00	-18.89	-14.49	-17.44	-14.78	-16.64	-14.19		
2452.000	2483.50	-19.95	-14.87	-22.45	-14.68	-20.17	-13.79		

BE: Maximum Band edge emission found

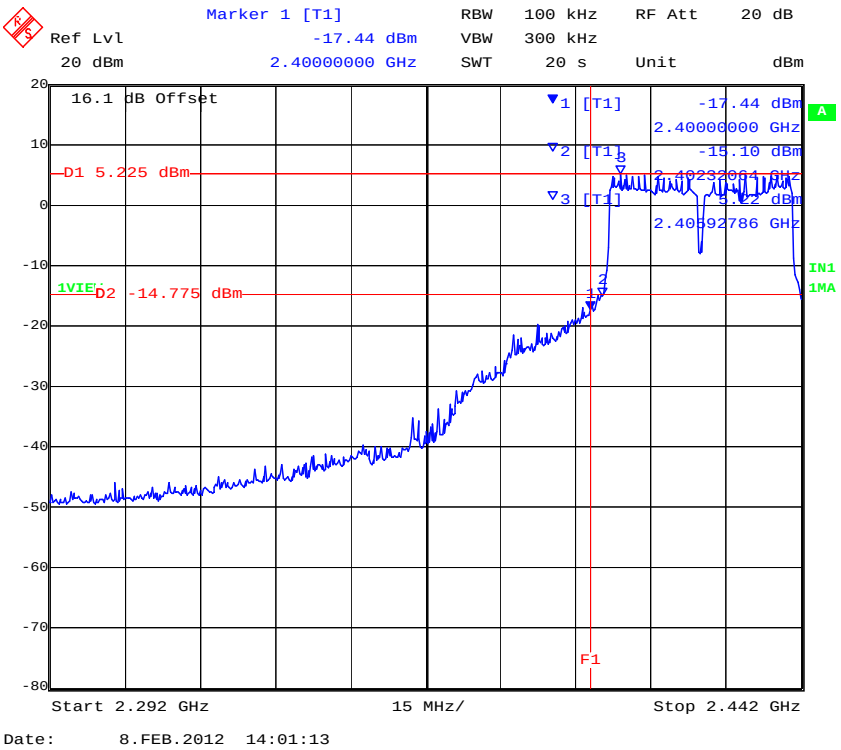
Measurement uncertainty:	±2.81 dB

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

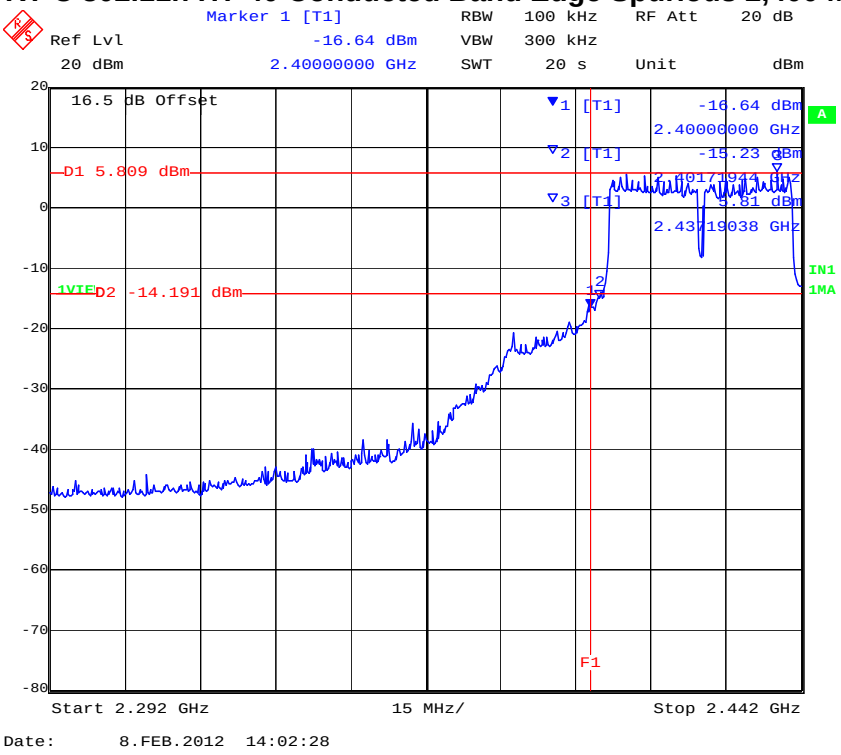
PORT A 802.11n HT-40 Conducted Band Edge Spurious 2,400 MHz



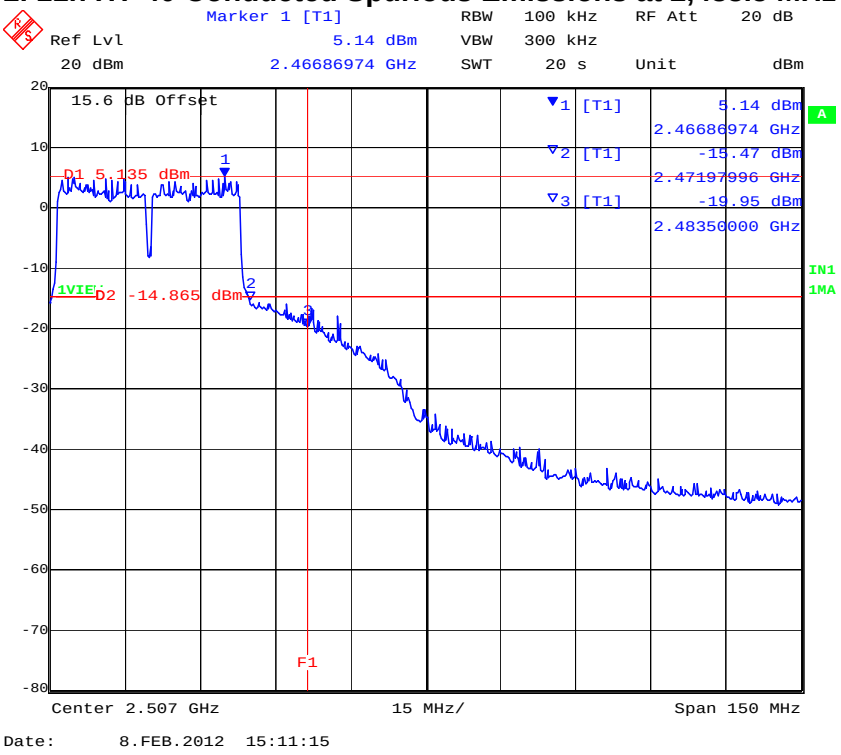
PORT B 802.11n HT-40 Conducted Band Edge Spurious 2,400 MHz



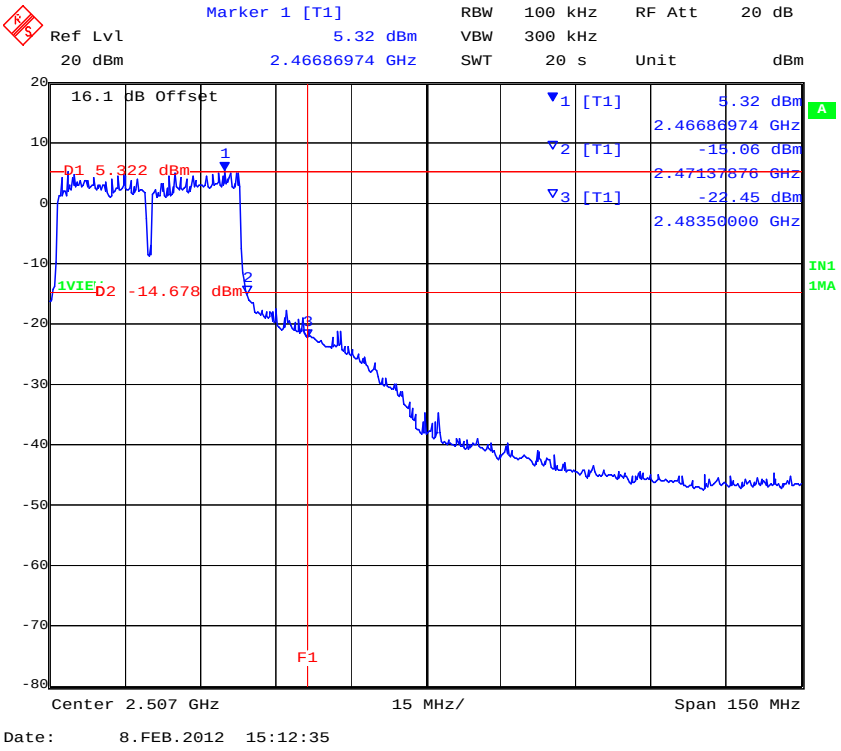
PORT C 802.11n HT-40 Conducted Band Edge Spurious 2,400 MHz



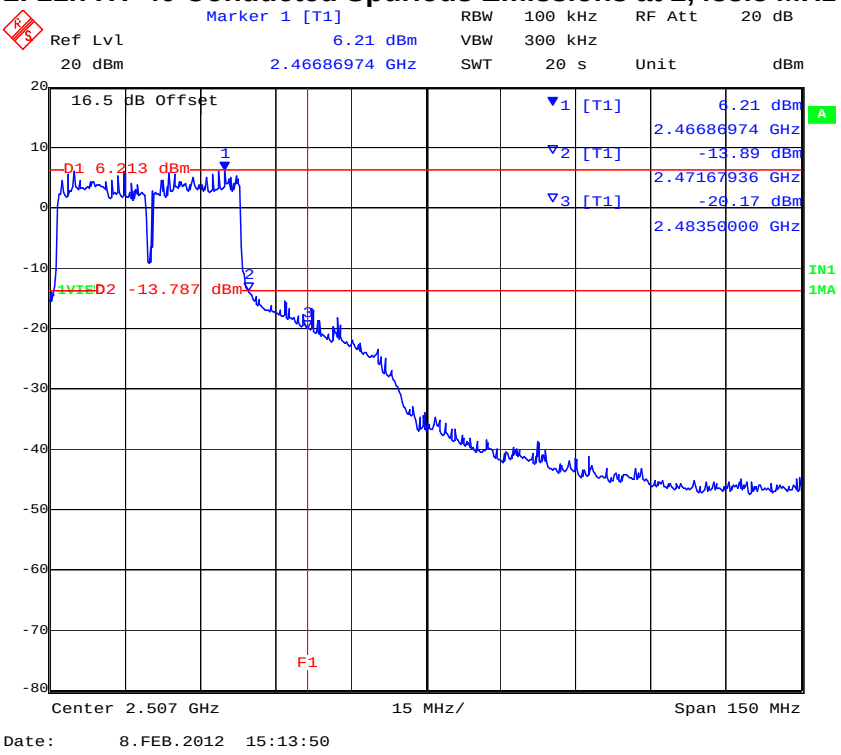
PORT A 802. 11n HT-40 Conducted Spurious Emissions at 2,483.5 MHz Band Edge



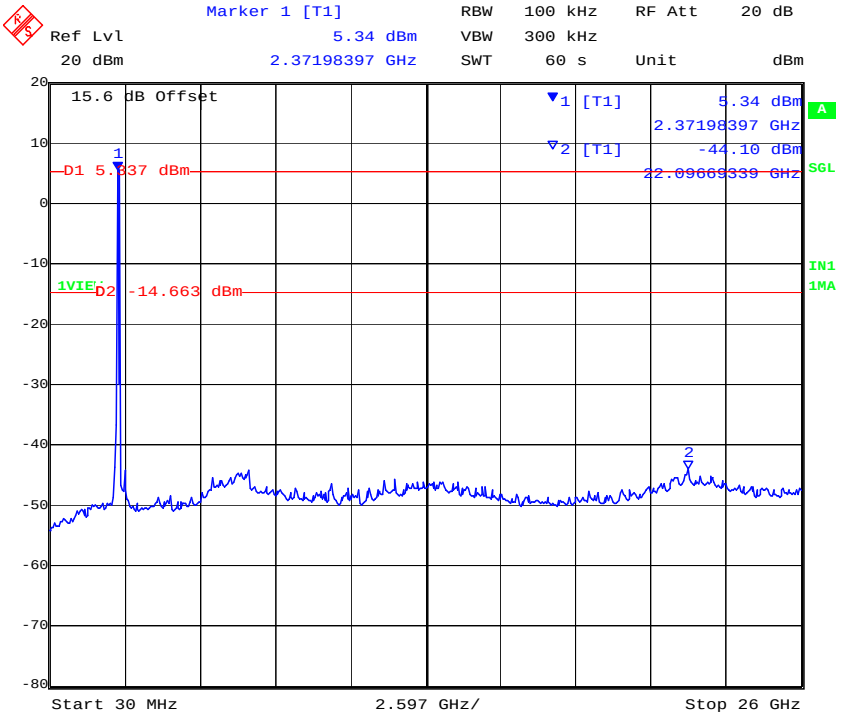
PORT B 802. 11n HT-40 Conducted Spurious Emissions at 2,483.5 MHz Band Edge



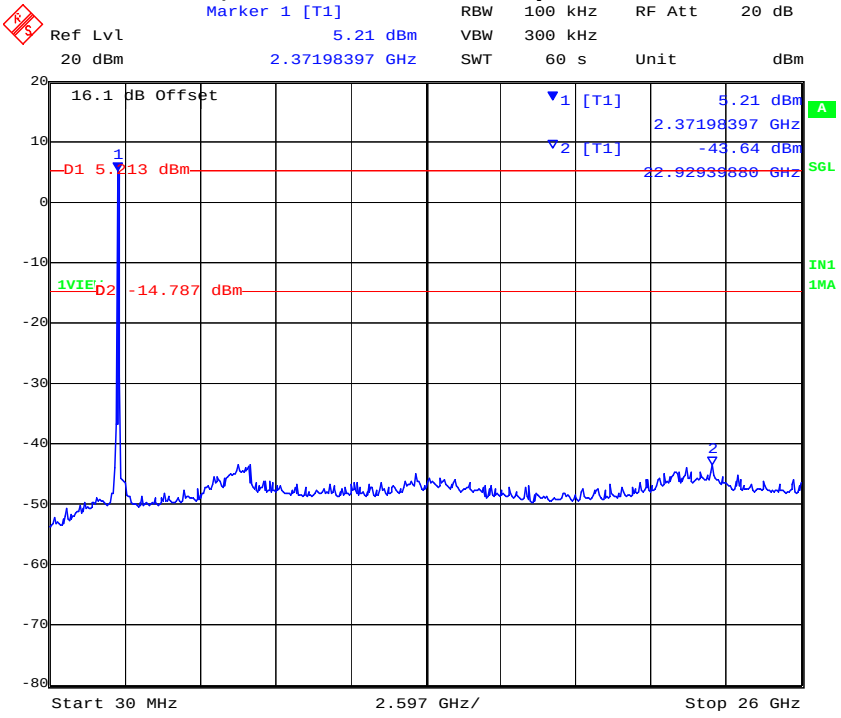
PORT C 802. 11n HT-40 Conducted Spurious Emissions at 2,483.5 MHz Band Edge



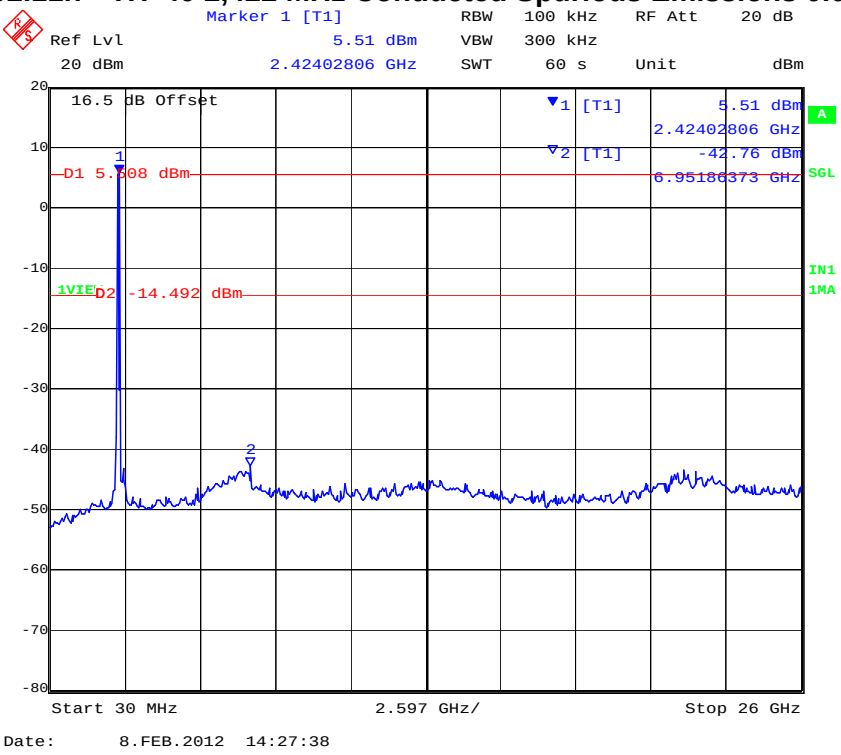
PORT A 802.11n – HT-40 2,422 MHz Conducted Spurious Emissions 0.03 – 26 GHz



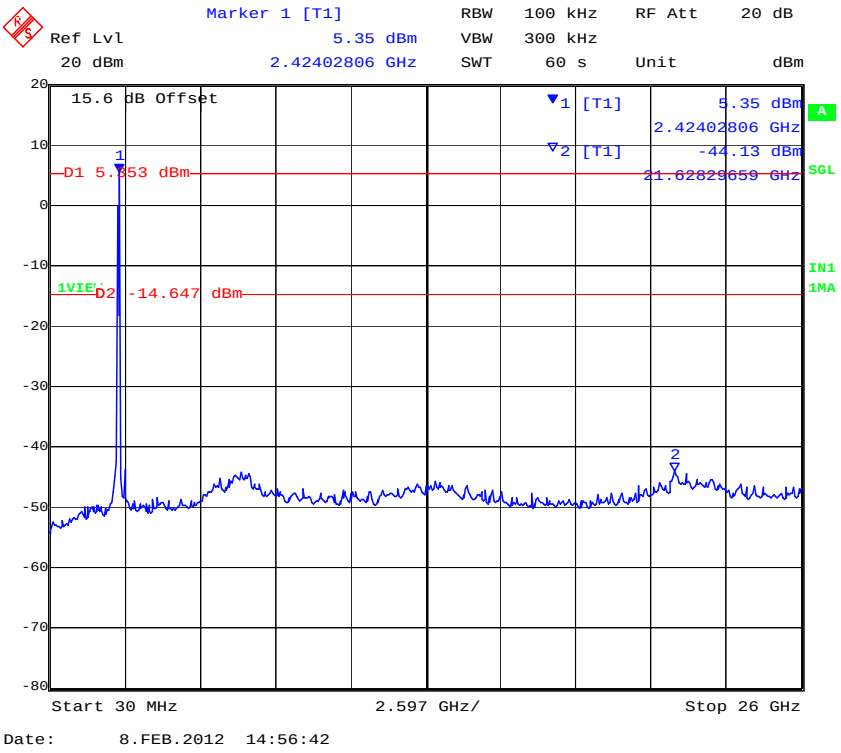
PORT B 802.11n – HT-40 2,422 MHz Conducted Spurious Emissions 0.03 – 26 GHz



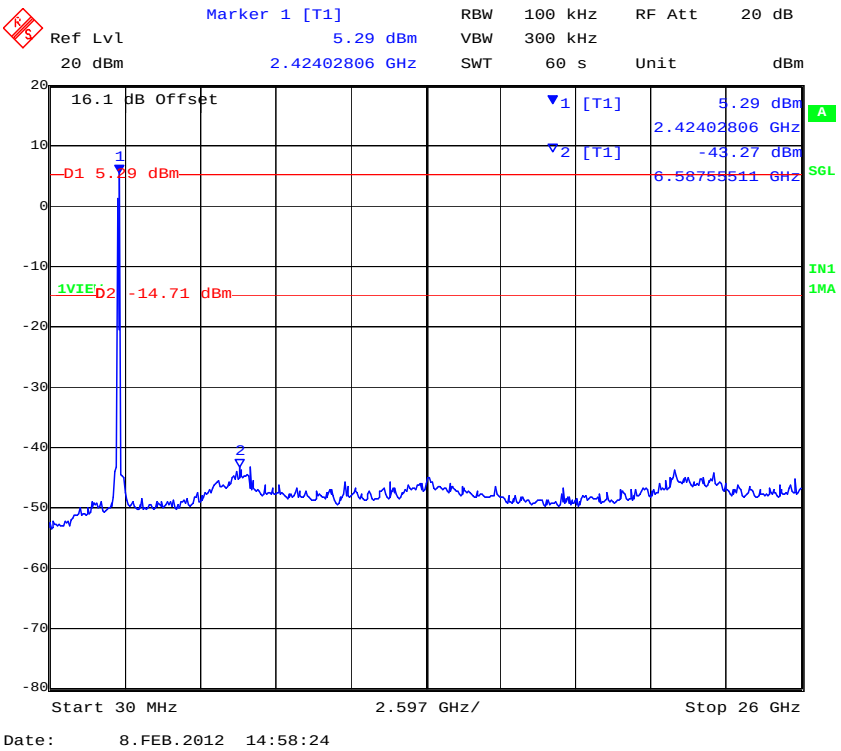
PORT C 802.11n – HT-40 2,422 MHz Conducted Spurious Emissions 0.03 – 26 GHz



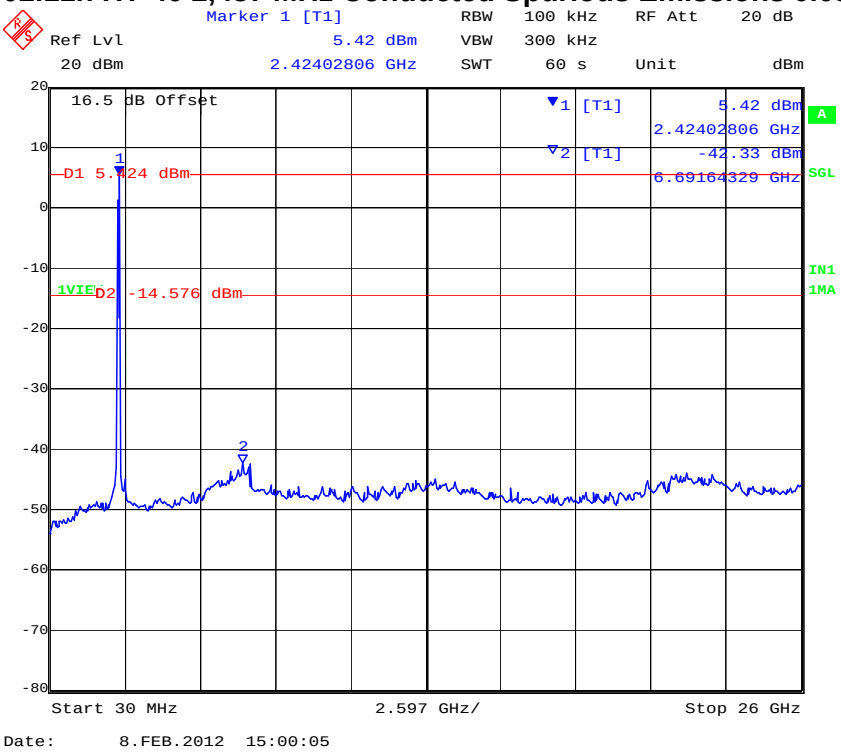
PORT A 802.11n HT-40 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz



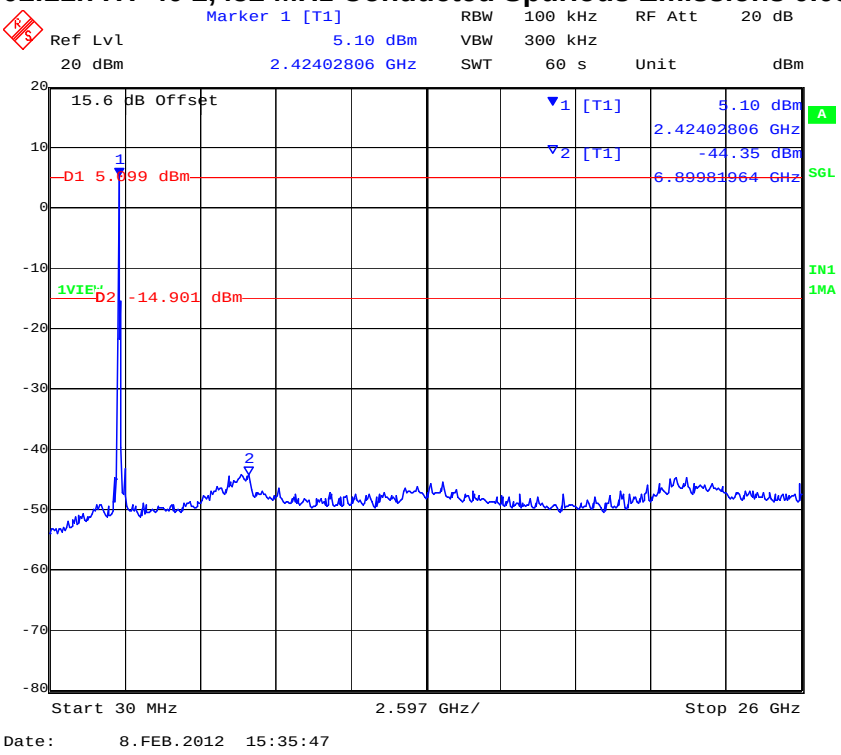
PORT B 802.11n HT-40 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz



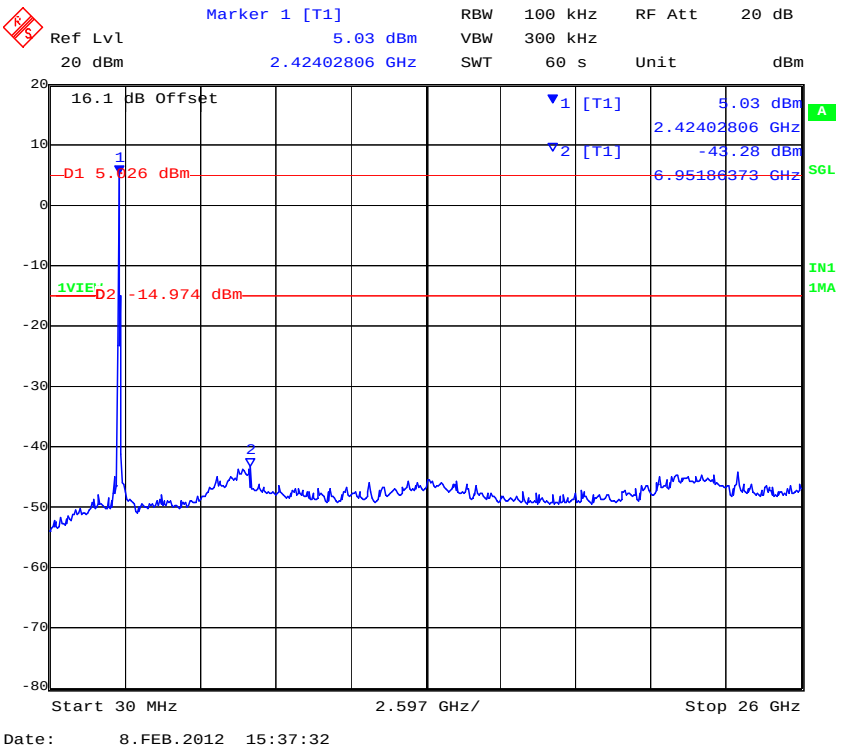
PORT C 802.11n HT-40 2,437 MHz Conducted Spurious Emissions 0.03 – 26 GHz



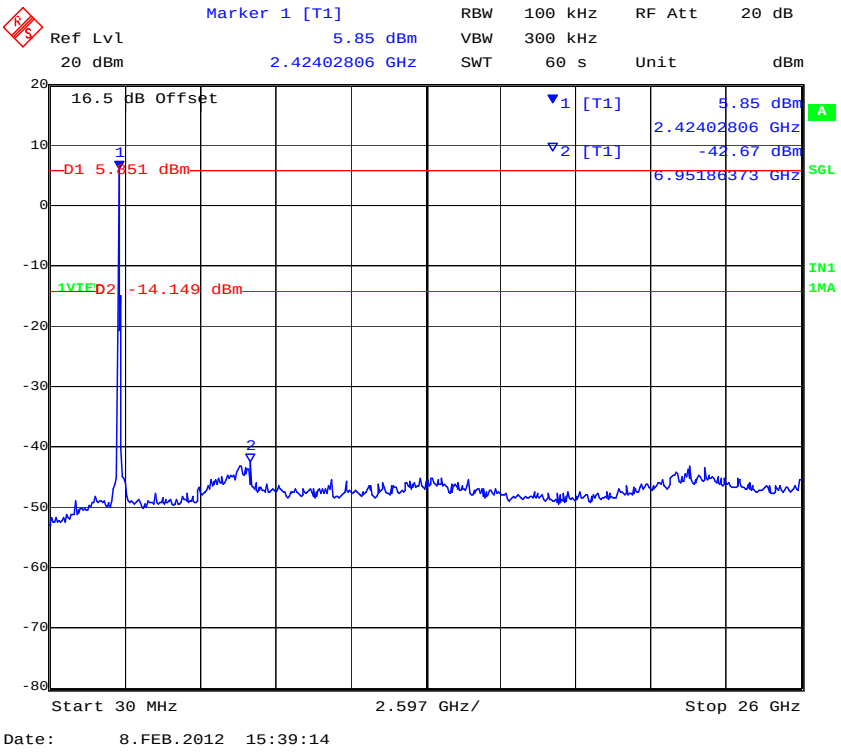
PORT A 802.11n HT-40 2,452 MHz Conducted Spurious Emissions 0.03 – 26 GHz



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



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



Conducted Spurious Emission Results

TABLE OF RESULTS – **802.11a Legacy**

Test Conditions:	15.247 (a)(2)		**Rel. Humidity (%):**	35	to	42	
Variant:	802.11a		**Ambient Temp. (ºC):**	19	to	22	
TPC:	HIGH		**Pressure (mBars):**	998	to	1003	
Modulation:	ON		**Duty Cycle (%):**	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	-42.01	-15.67	-42.18	-13.92	-47.36	-14.71		
5785.000	30.00	26000.00	-42.17	-17.39	-42.56	-12.77	-45.49	-15.26		
5825.000	30.00	26000.00	-41.74	-16.29	-42.88	-13.63	-46.41	-14.56		

SE: Maximum spurious emission found

Band-edge Measurement

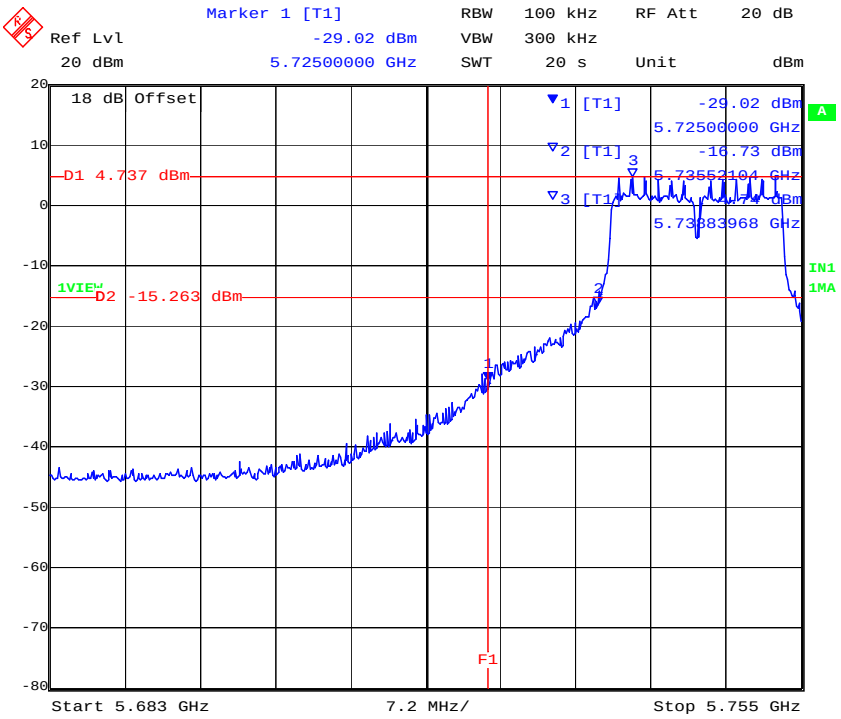
Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
5745.000	5725.00	-29.02	-15.26	-19.17	-12.11	-27.50	-14.82		
5825.000	5850.00	-37.61	-15.32	-24.42	-12.83	-29.56	-14.17		

BE: Maximum Band edge emission found

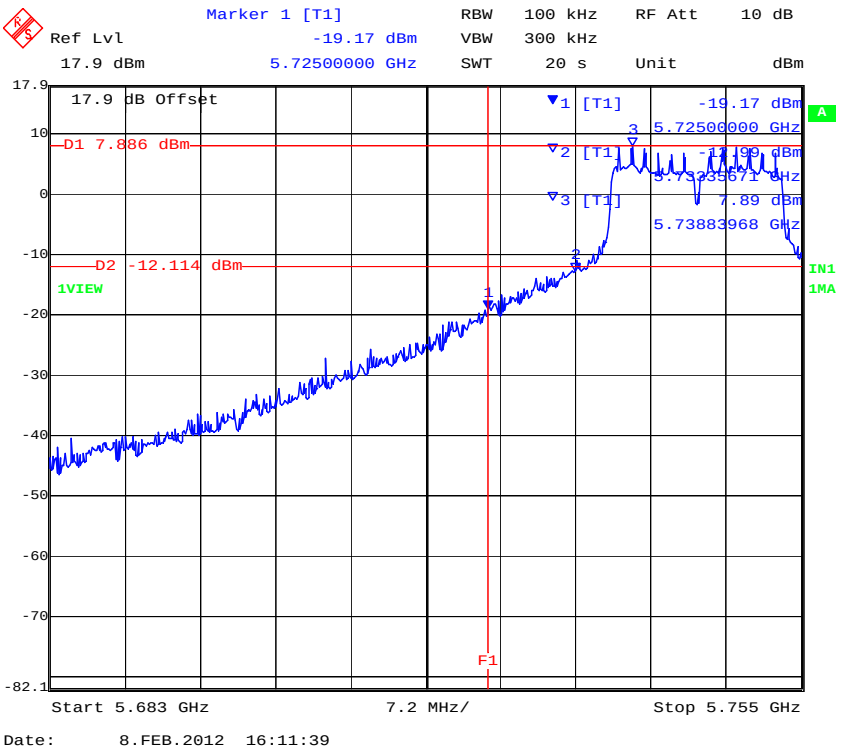
Measurement uncertainty:	±2.81 dB

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

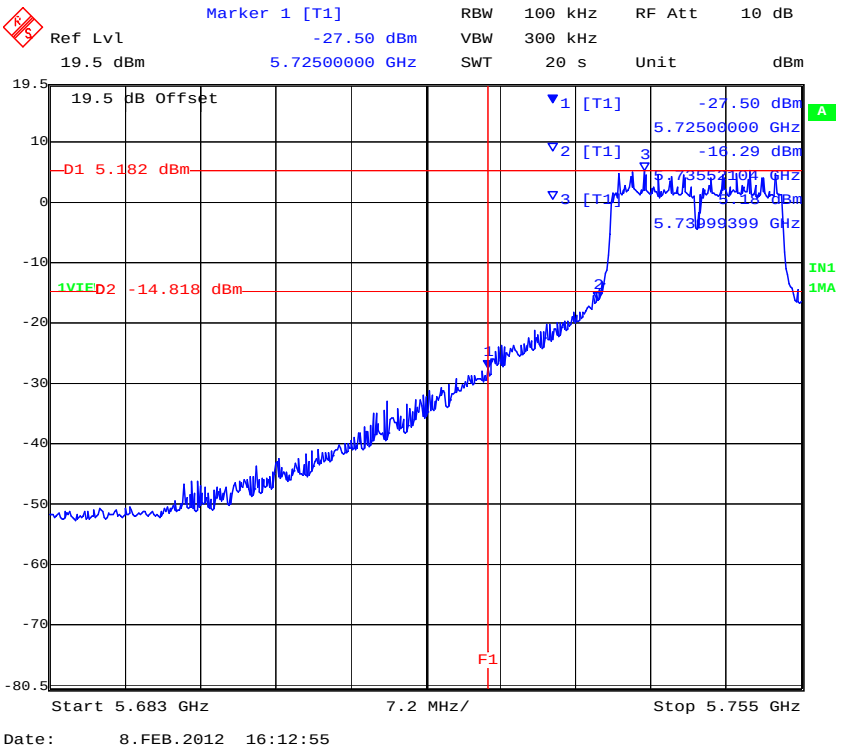
PORT A 802.11a Legacy - Conducted Band Edge Spurious 5,725 MHz



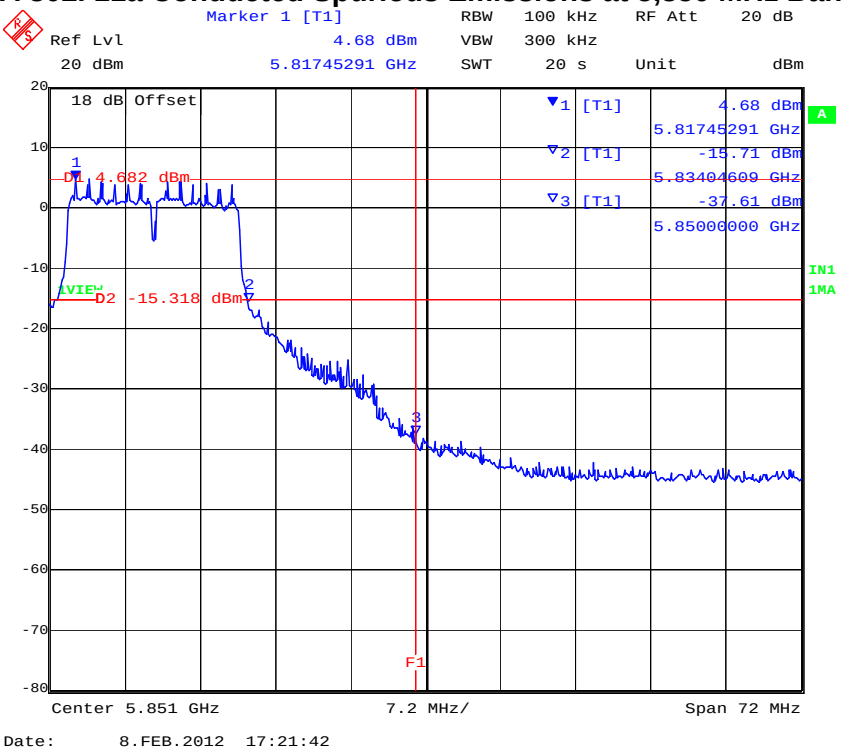
PORT B 802.11a Legacy - Conducted Band Edge Spurious 5,725 MHz



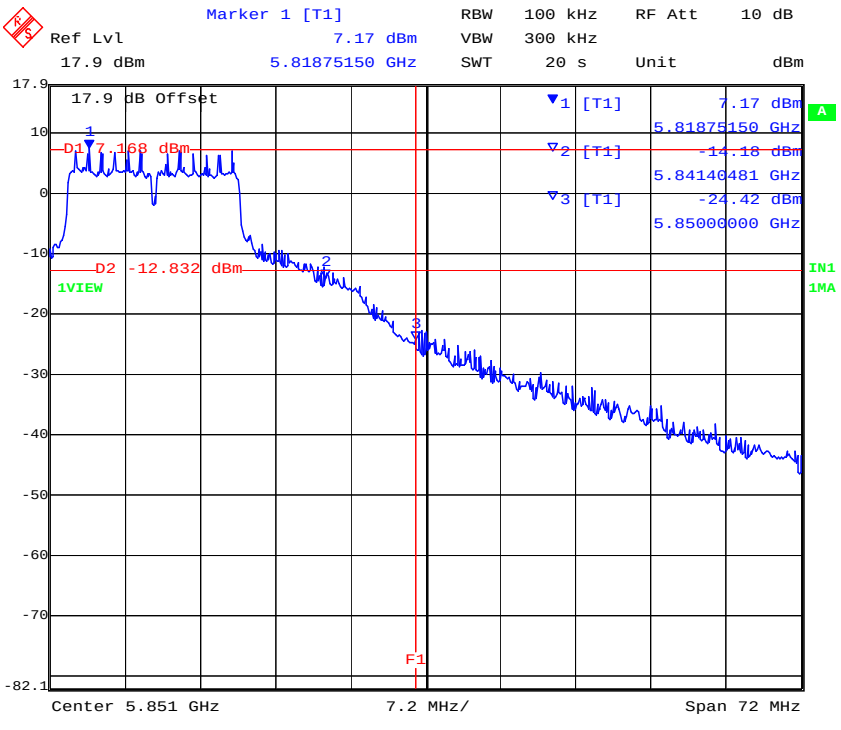
PORT C 802.11a Legacy - Conducted Band Edge Spurious 5,725 MHz



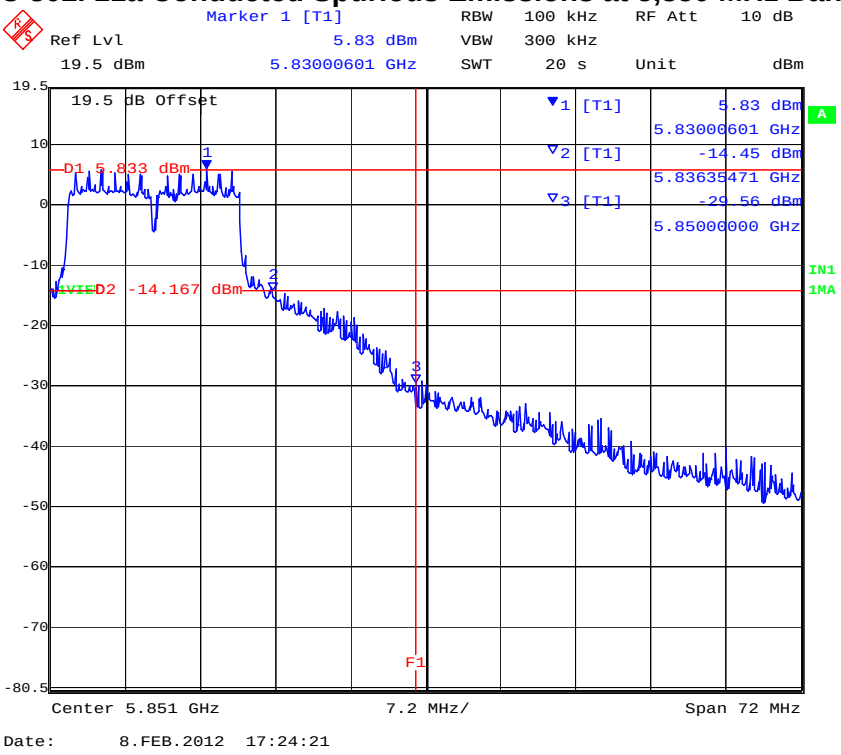
PORT A 802. 11a Conducted Spurious Emissions at 5,850 MHz Band Edge



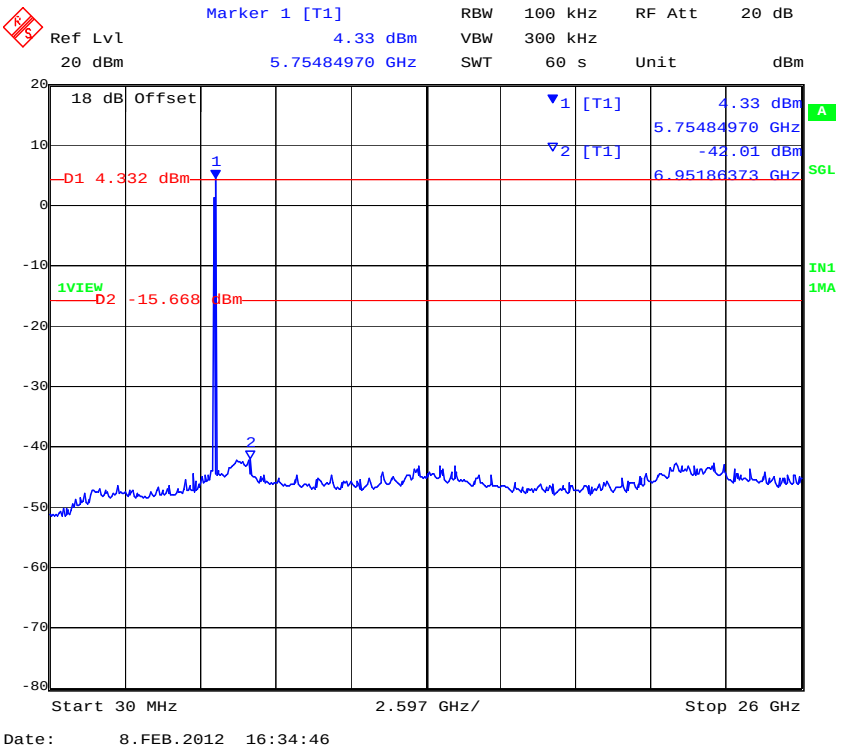
PORT B 802. 11a Conducted Spurious Emissions at 5,850 MHz Band Edge



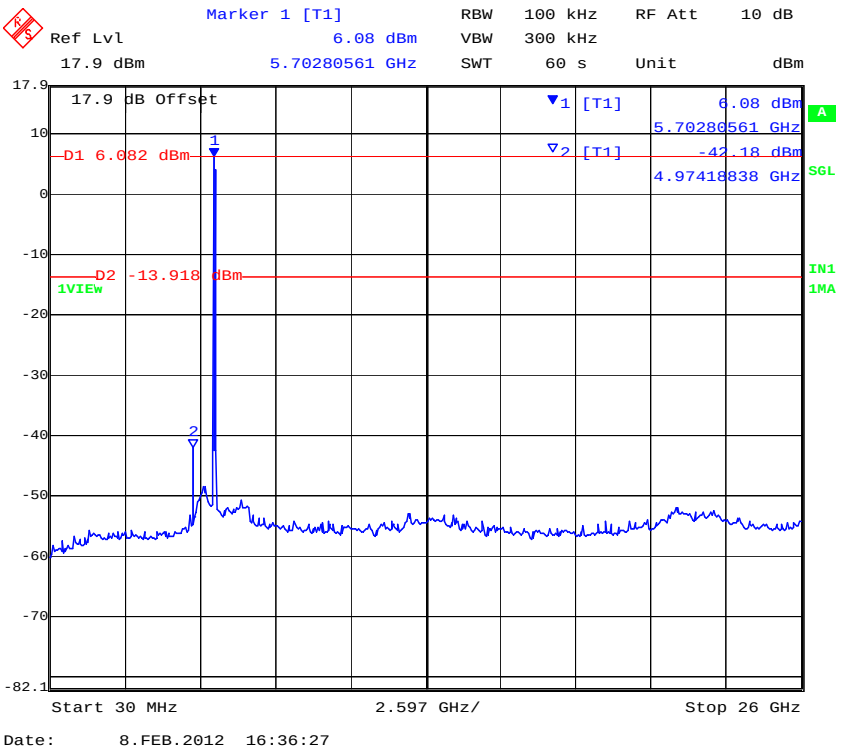
PORT C 802. 11a Conducted Spurious Emissions at 5,850 MHz Band Edge



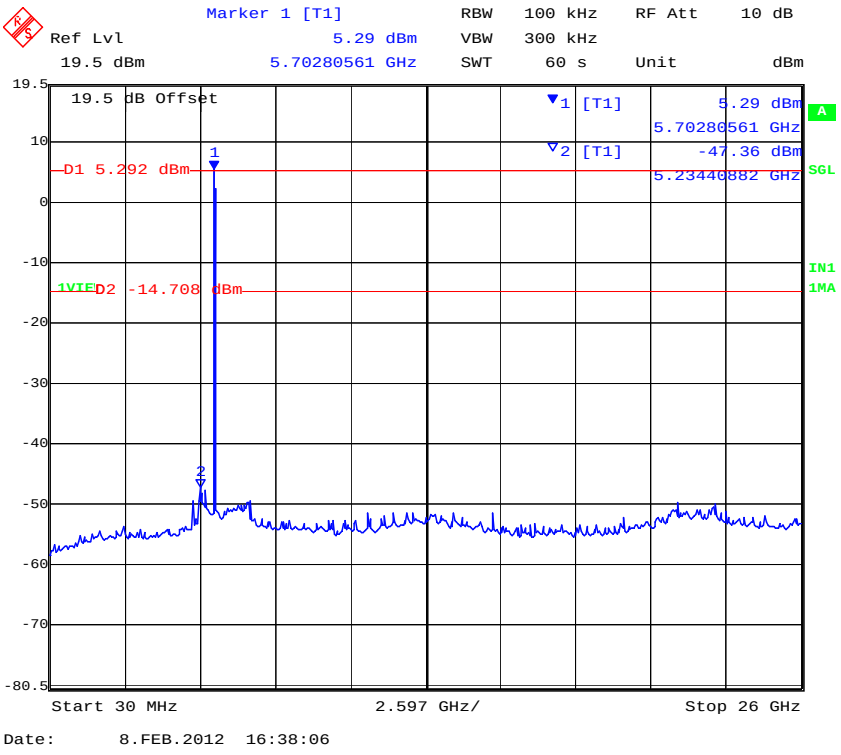
PORT A 802.11a – Legacy 5,745 MHz Conducted Spurious Emissions 0.03 – 40 GHz



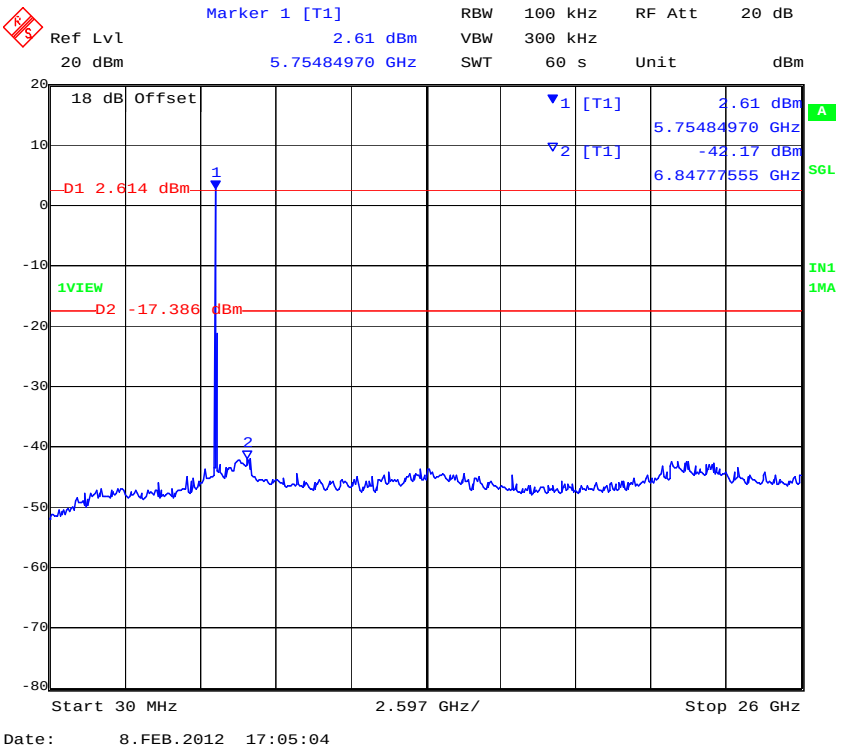
PORT B 802.11a – Legacy 5,745 MHz Conducted Spurious Emissions 0.03 – 40 GHz



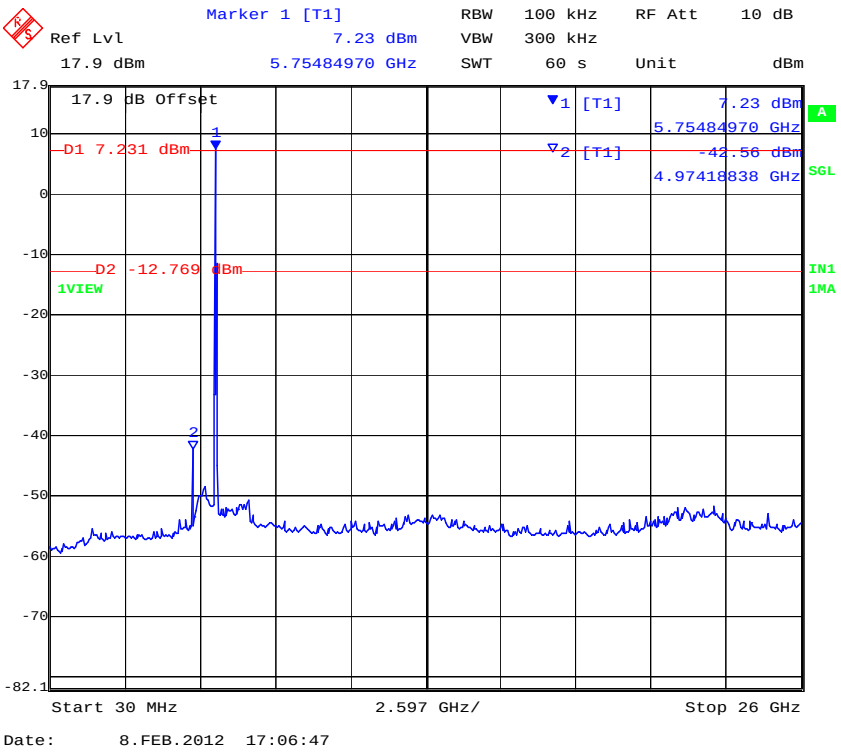
PORT C 802.11a – Legacy 5,745 MHz Conducted Spurious Emissions 0.03 – 40 GHz



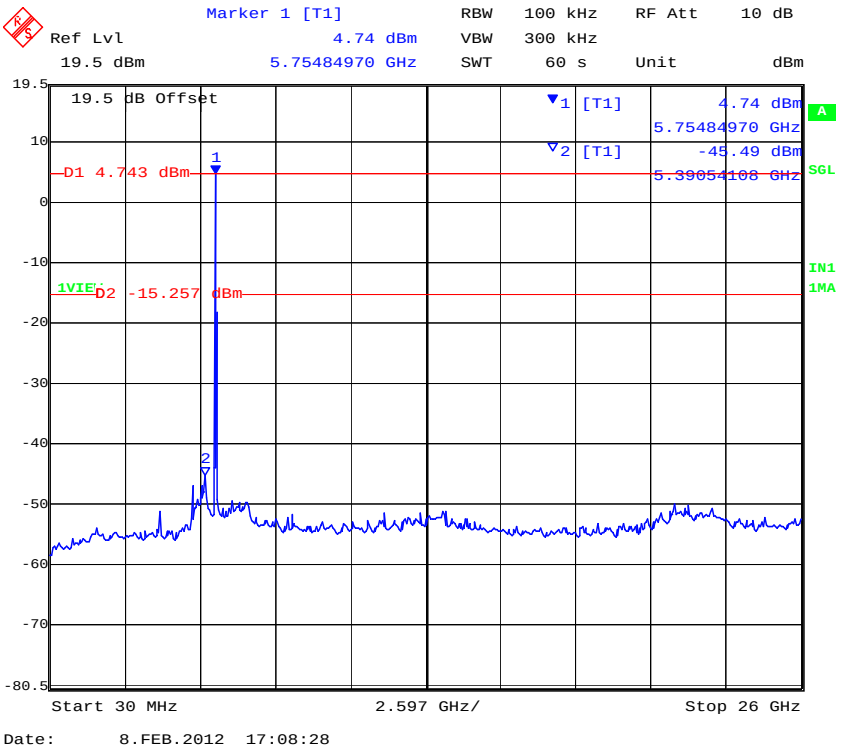
PORT A 802.11a – Legacy 5,785 MHz Conducted Spurious Emissions 0.03 – 40 GHz



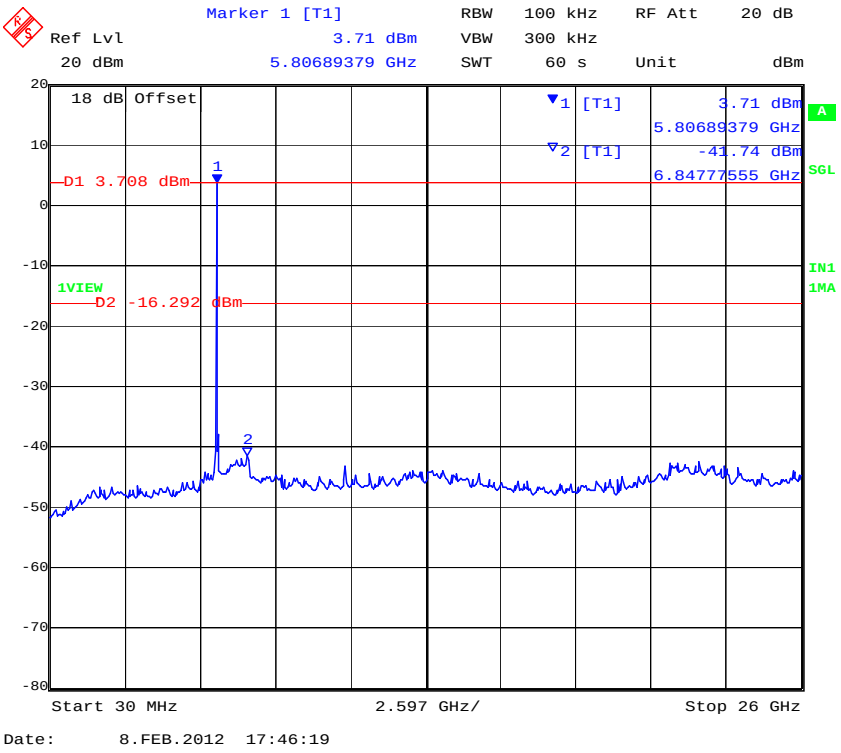
PORT B 802.11a – Legacy 5,785 MHz Conducted Spurious Emissions 0.03 – 40 GHz



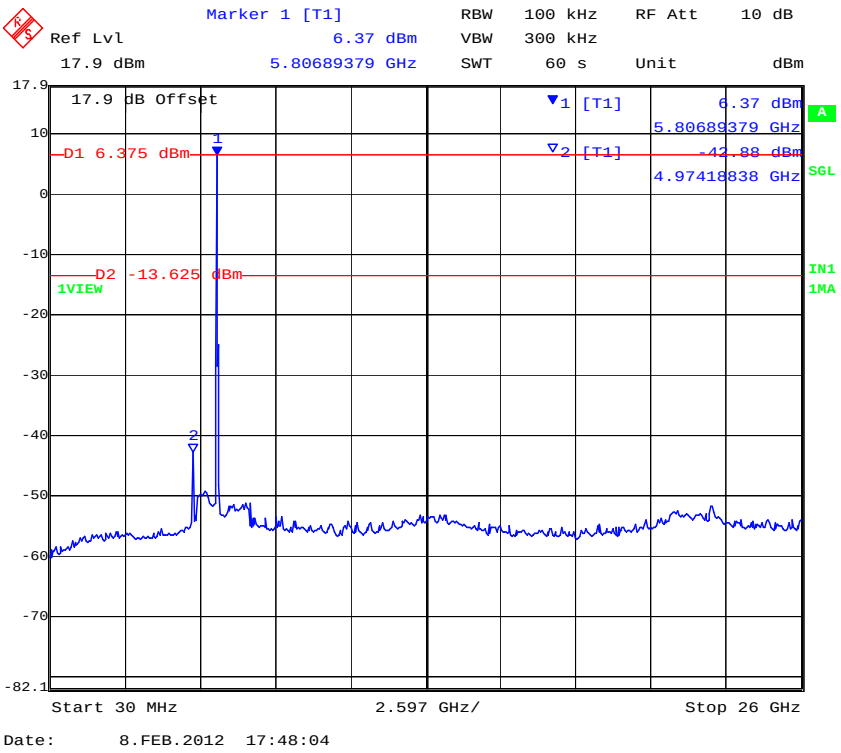
PORT C 802.11a – Legacy 5,785 MHz Conducted Spurious Emissions 0.03 – 40 GHz



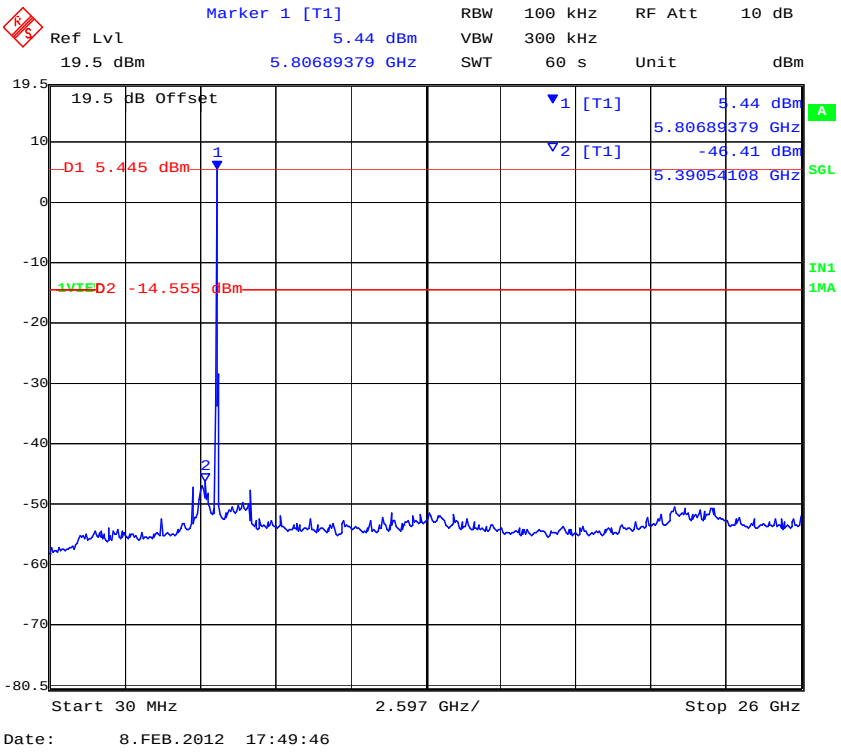
PORT A 802.11a – Legacy 5,825 MHz Conducted Spurious Emissions 0.03 – 40 GHz



PORT B 802.11a – Legacy 5,825 MHz Conducted Spurious Emissions 0.03 – 40 GHz



PORT C 802.11a – Legacy 5,825 MHz Conducted Spurious Emissions 0.03 – 40 GHz



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. (ºC):**	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	-42.13	-16.64	-45.29	-13.40	-46.12	-15.53		
5785.000	30.00	26000.00	-41.92	-15.46	-42.53	-13.07	-46.31	-14.74		
5825.000	30.00	26000.00	-41.27	-16.25	-42.01	-13.76	-46.68	-15.45		

SE: Maximum spurious emission found

Band-edge Measurement

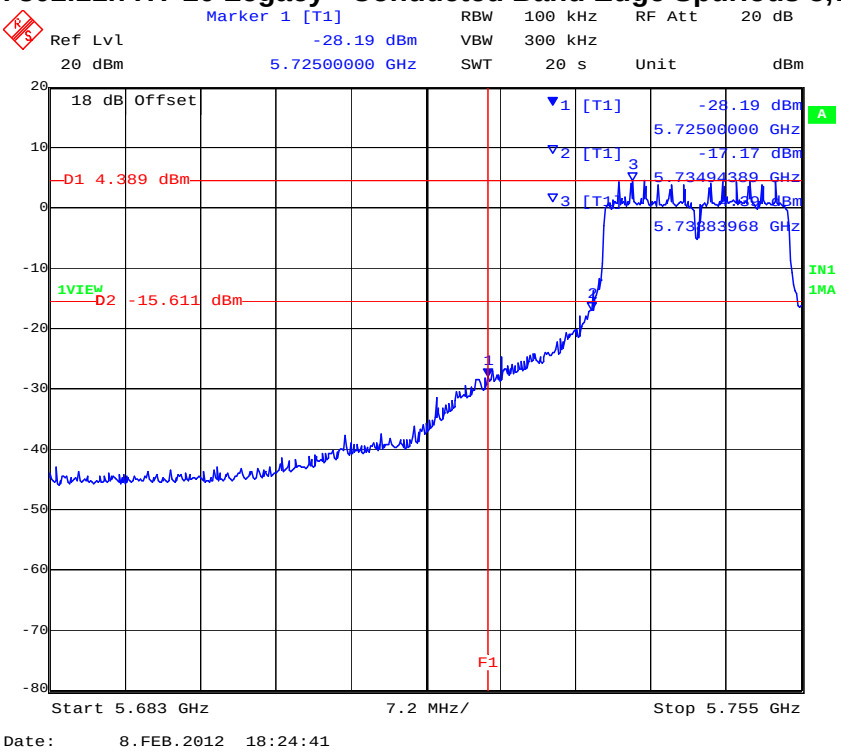
Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
5745.000	5725.00	-28.19	-15.61	-19.84	-12.42	-27.35	-15.02		
5825.000	5850.00	-35.33	-15.22	-21.88	-12.48	-28.90	-14.25		

BE: Maximum Band edge emission found

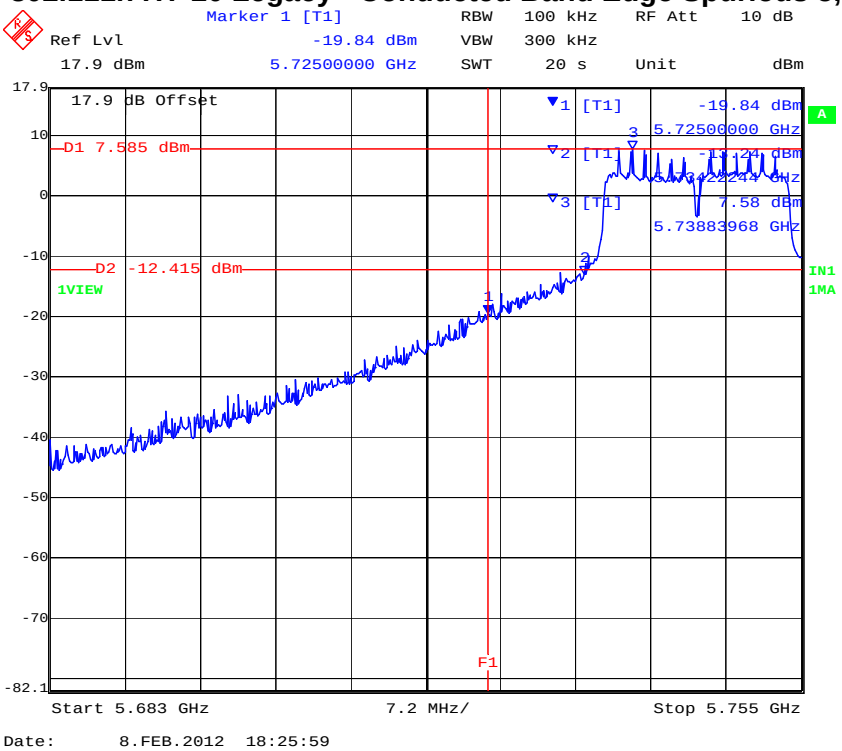
Measurement uncertainty:	±2.81 dB

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

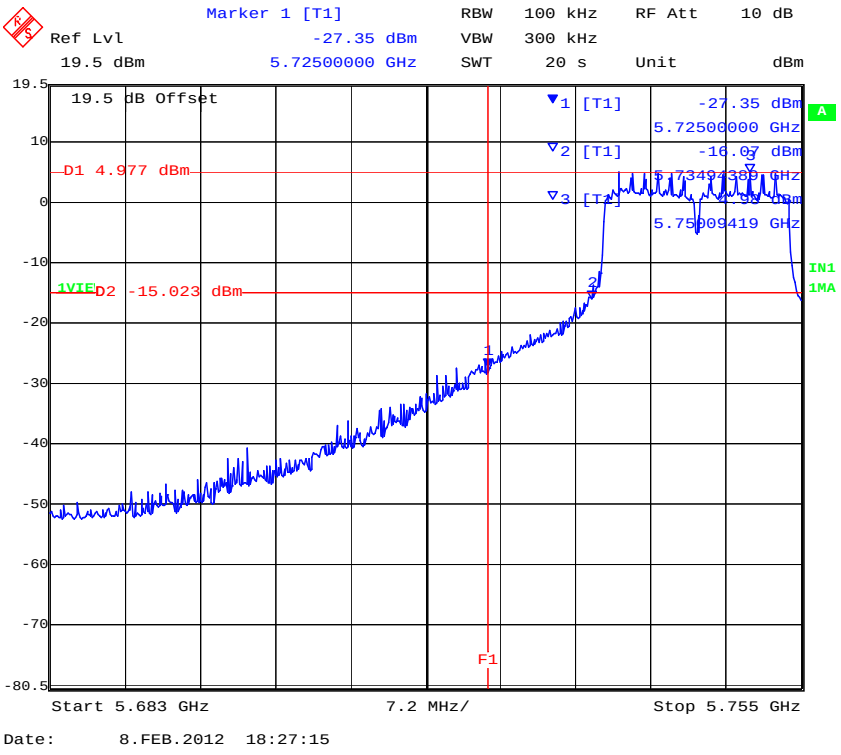
PORT A 802.11n HT-20 Legacy - Conducted Band Edge Spurious 5,725 MHz



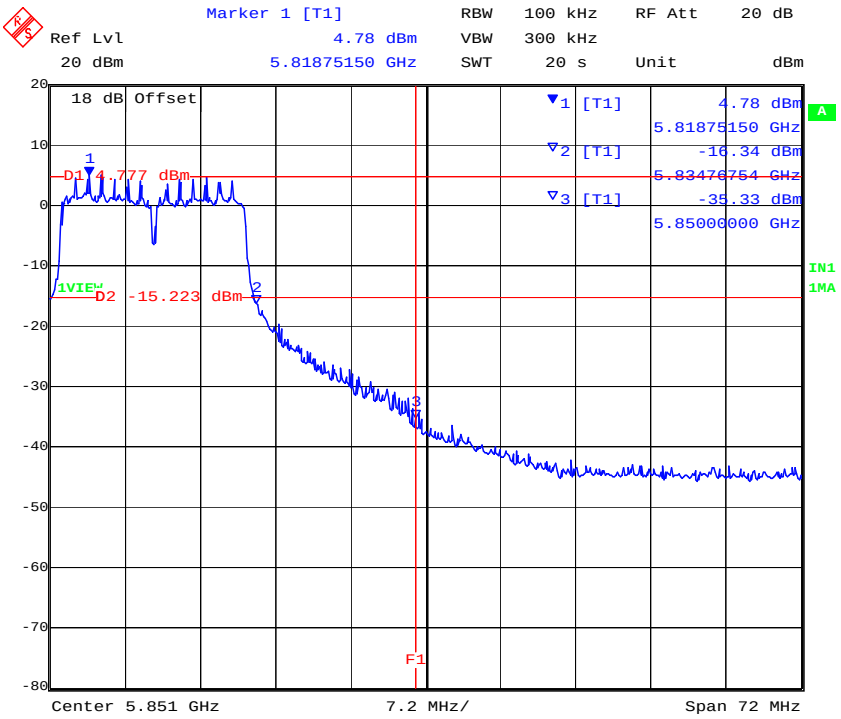
PORT B 802.11n HT-20 Legacy - Conducted Band Edge Spurious 5,725 MHz



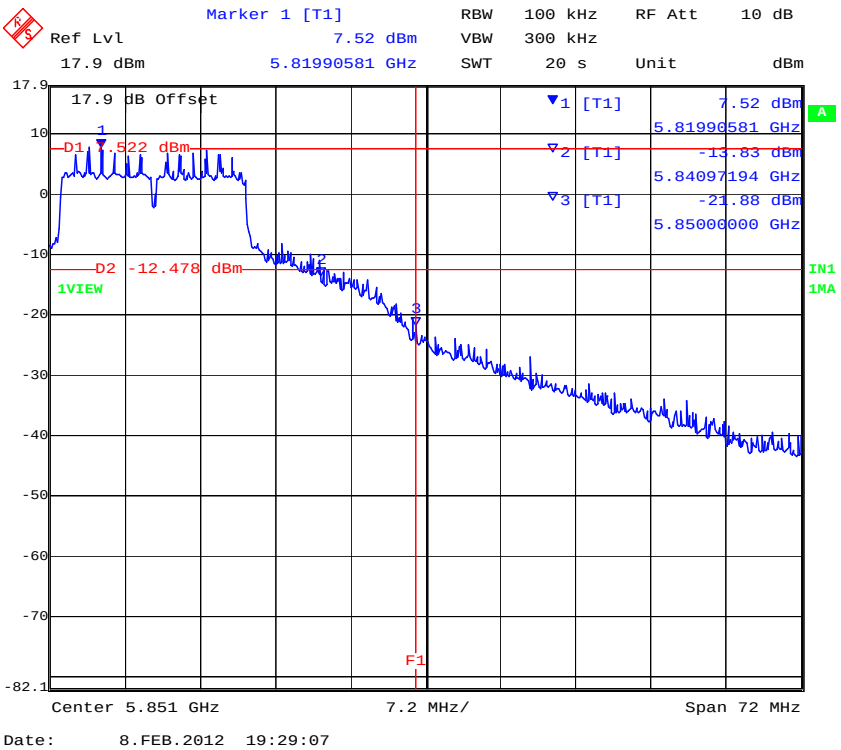
PORT C 802.11n HT-20 Legacy - Conducted Band Edge Spurious 5,725 MHz



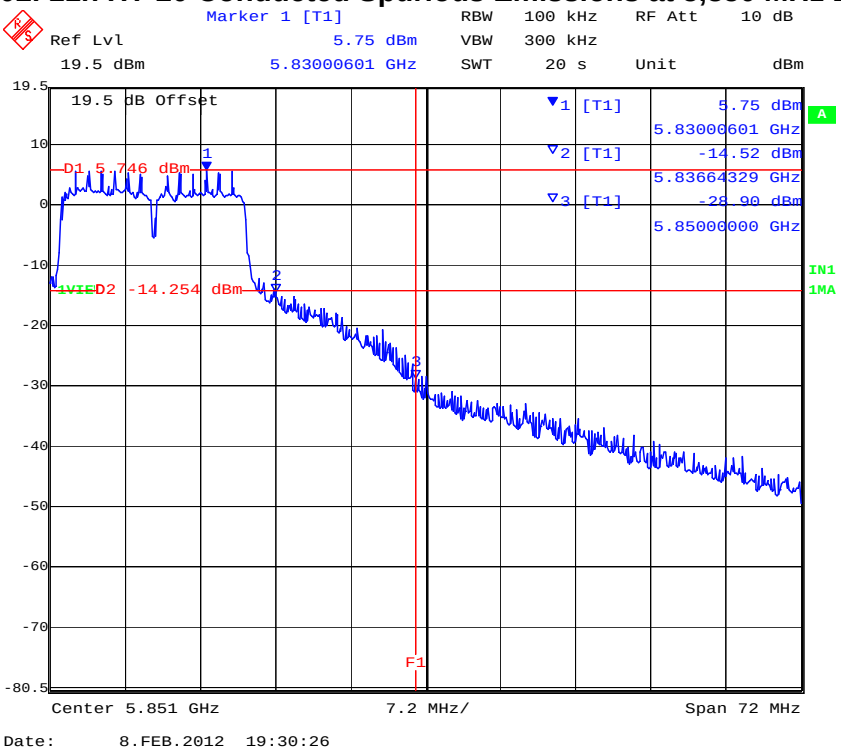
PORT A 802. 11n HT-20 Conducted Spurious Emissions at 5,850 MHz Band Edge



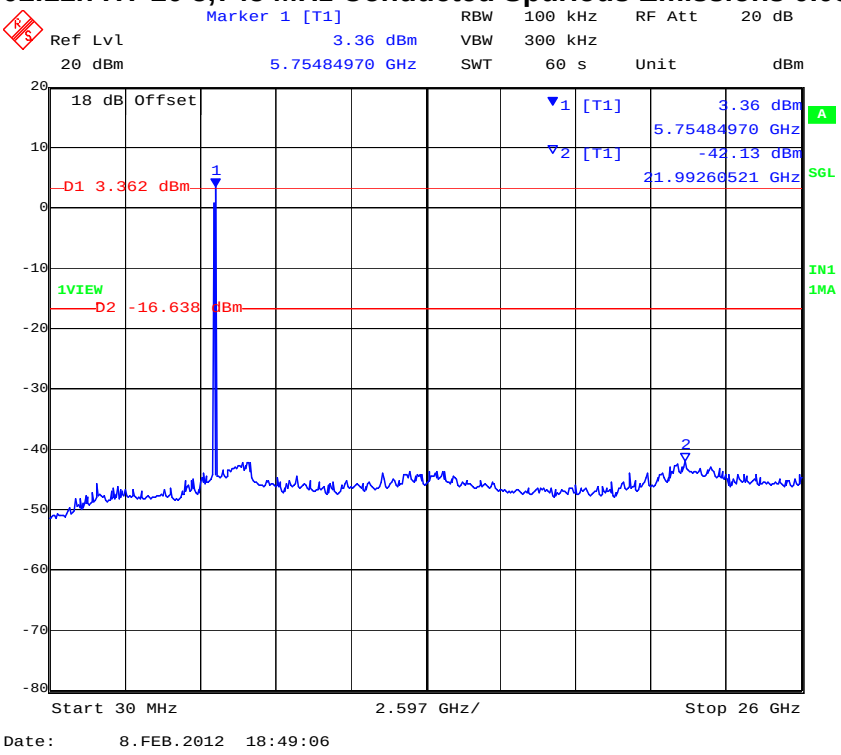
PORT B 802. 11n HT-20 Conducted Spurious Emissions at 5,850 MHz Band Edge



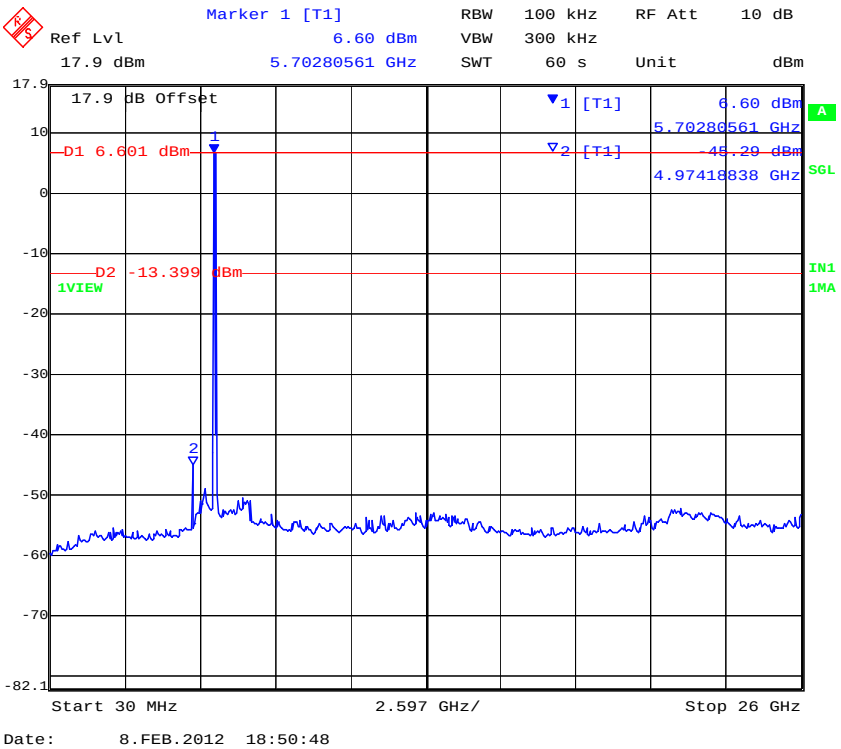
PORT C 802. 11n HT-20 Conducted Spurious Emissions at 5,850 MHz Band Edge



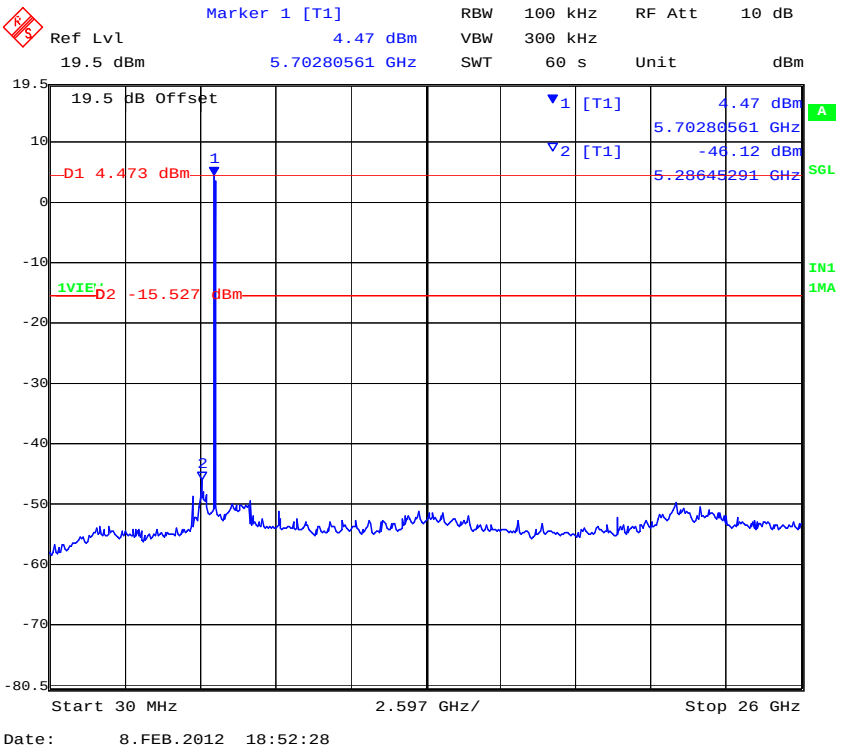
PORT A 802.11n HT-20 5,745 MHz Conducted Spurious Emissions 0.03 – 26 GHz



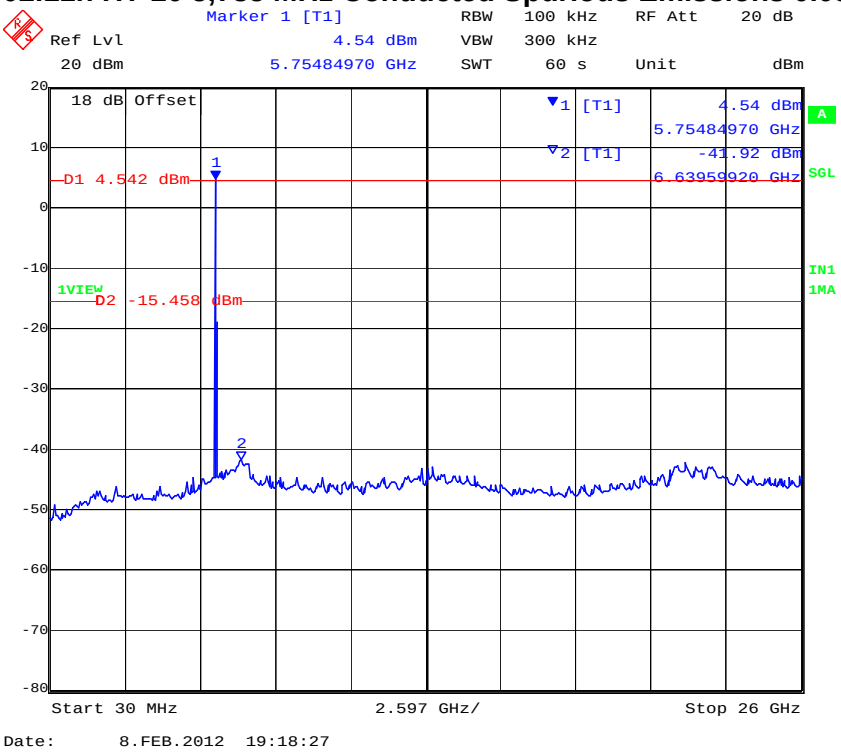
PORT B 802.11n HT-20 5,745 MHz Conducted Spurious Emissions 0.03 – 26 GHz



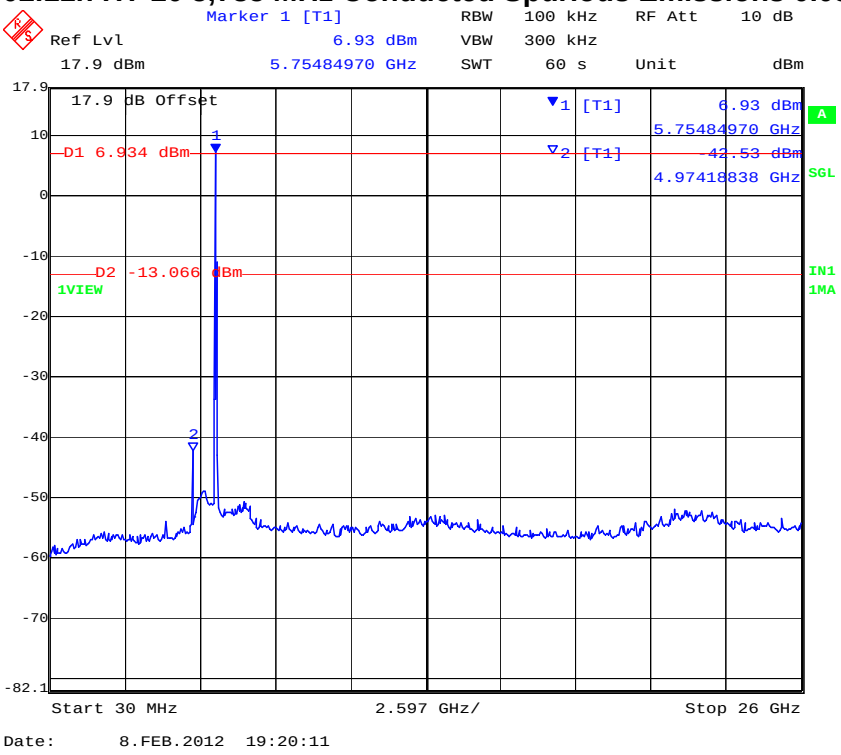
PORT C 802.11n HT-20 5,745 MHz Conducted Spurious Emissions 0.03 – 26 GHz



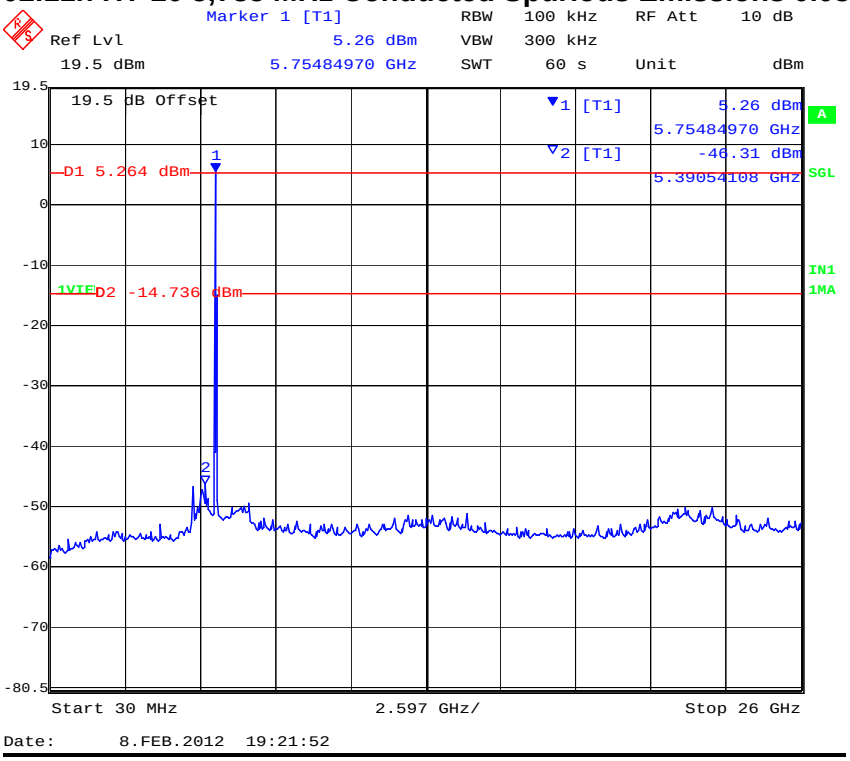
PORT A 802.11n HT-20 5,785 MHz Conducted Spurious Emissions 0.03 – 26 GHz



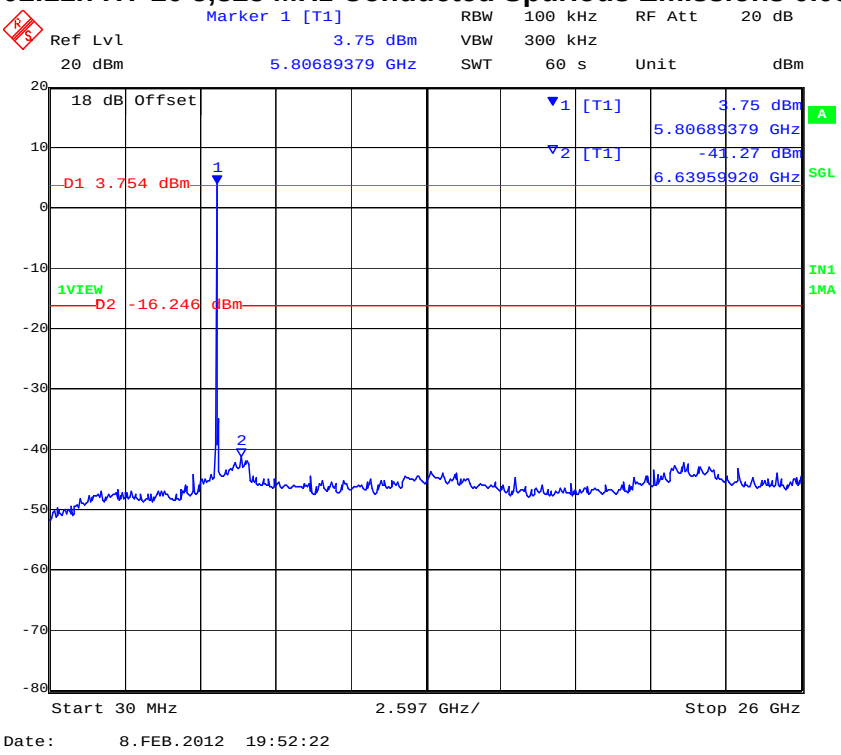
PORT B 802.11n HT-20 5,785 MHz Conducted Spurious Emissions 0.03 – 26 GHz



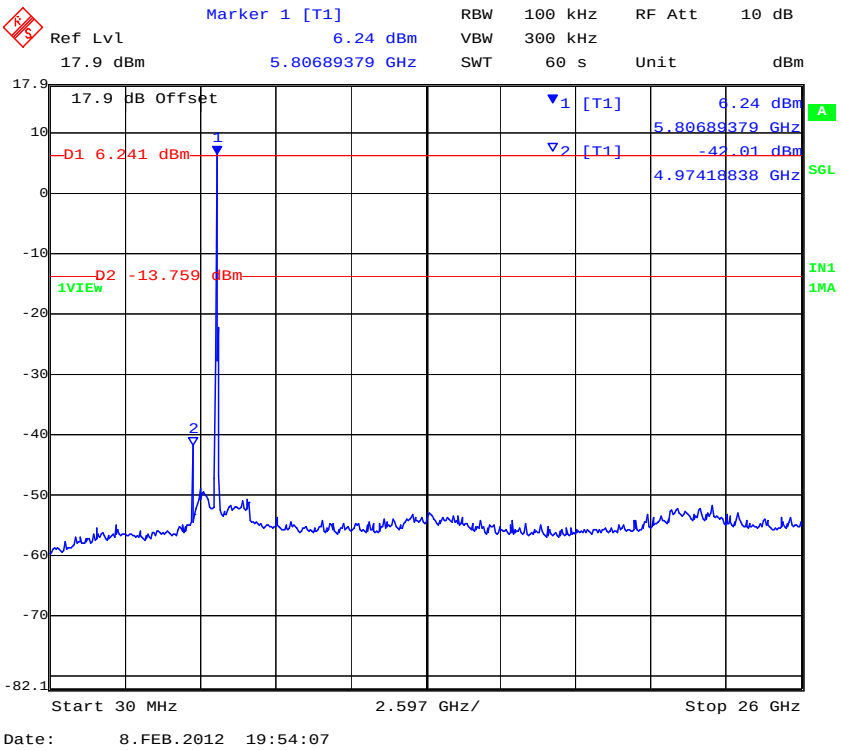
PORT C 802.11n HT-20 5,785 MHz Conducted Spurious Emissions 0.03 – 26 GHz



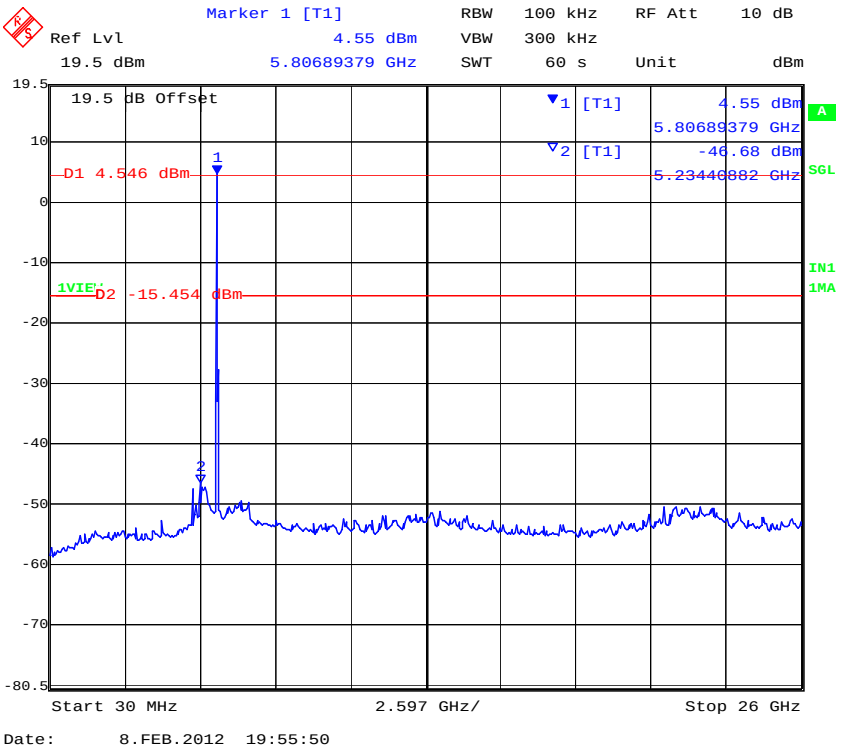
PORT A 802.11n HT-20 5,825 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11n HT-20 5,825 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT C 802.11n HT-20 5,825 MHz Conducted Spurious Emissions 0.03 – 26 GHz



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. (ºC):**	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	-41.24	-19.13	-45.44	-17.08	-45.89	-18.89		
5795.000	30.00	26000.00	-41.31	-19.53	-42.26	-15.60	-45.44	-17.82		

SE: Maximum spurious emission found

Band-edge Measurement

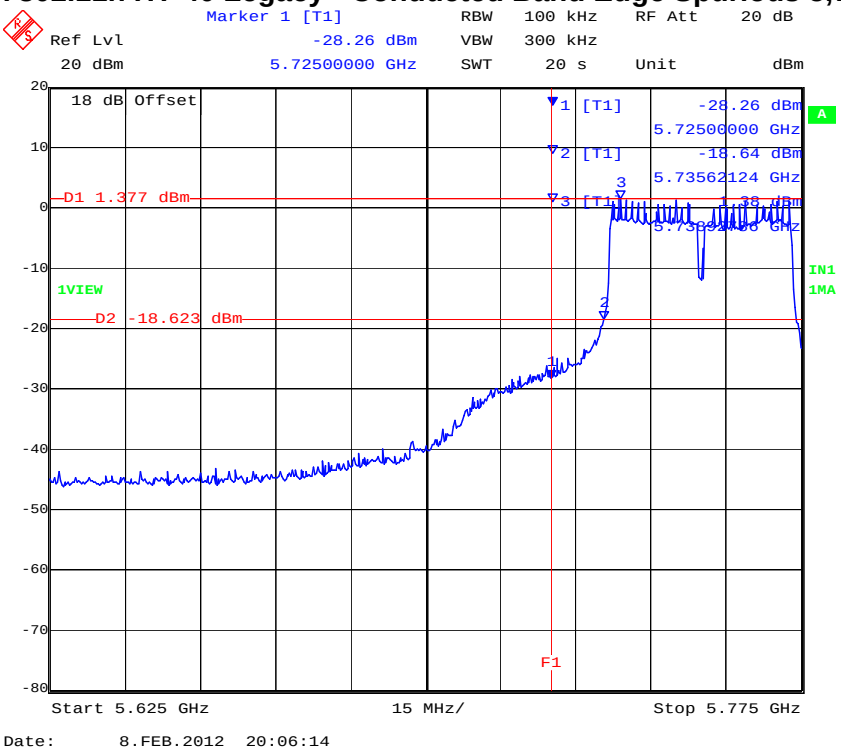
Test Freq.	Band-edge freq.	Port A		Port B		Port C		Port D	
MHz	MHz	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm	BE dBm	Limit dBm
5755.000	5725.00	-28.26	-18.62	-20.33	-15.15	-24.77	-17.71		
5795.000	5850.00	-41.08	-17.88	-29.40	-15.40	-39.84	-17.05		

BE: Maximum Band edge emission found

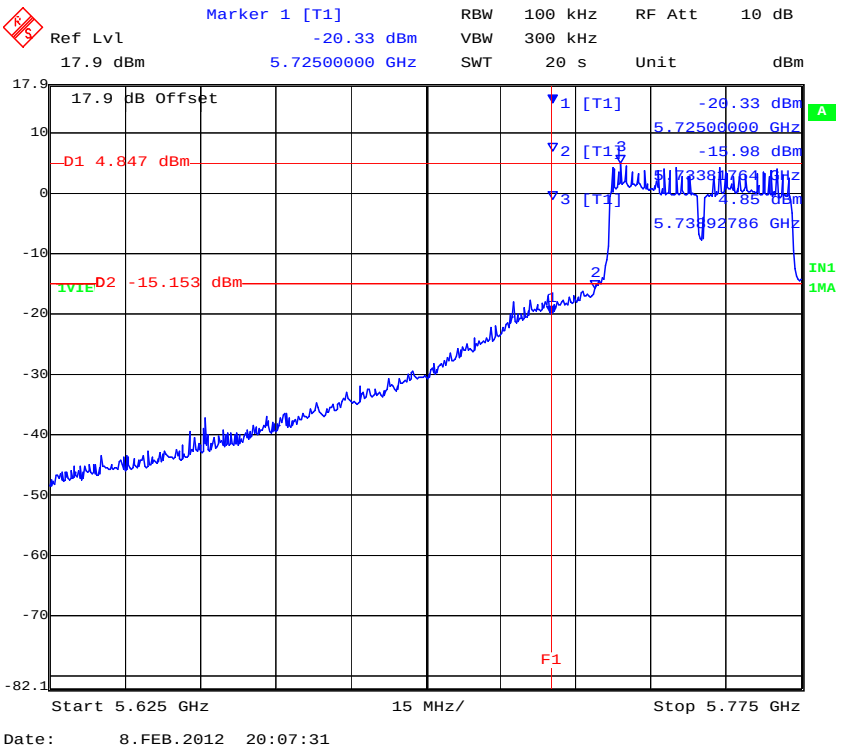
Measurement uncertainty:	±2.81 dB

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

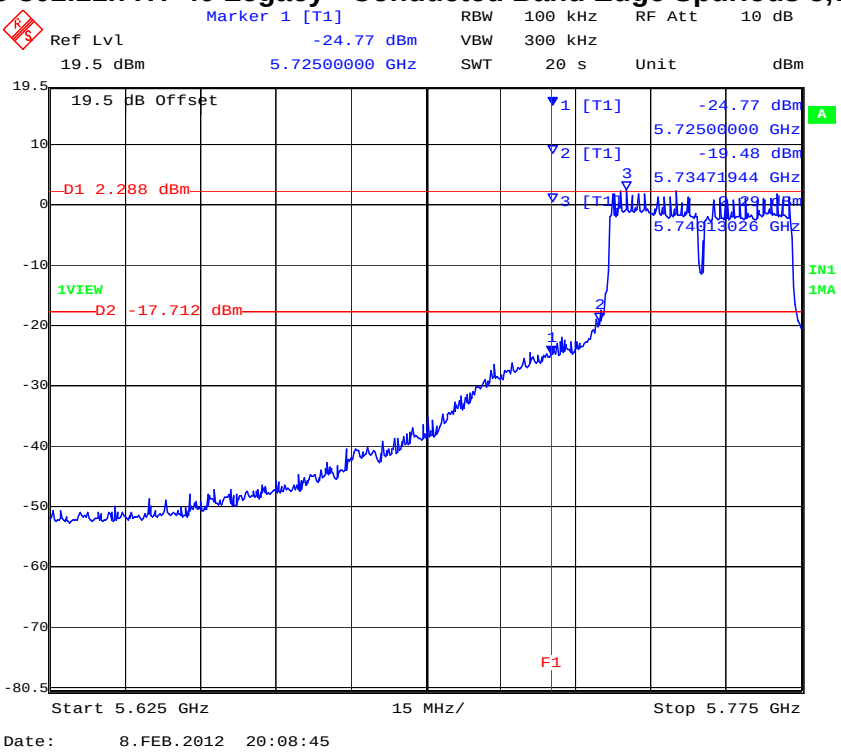
PORT A 802.11n HT-40 Legacy - Conducted Band Edge Spurious 5,725 MHz



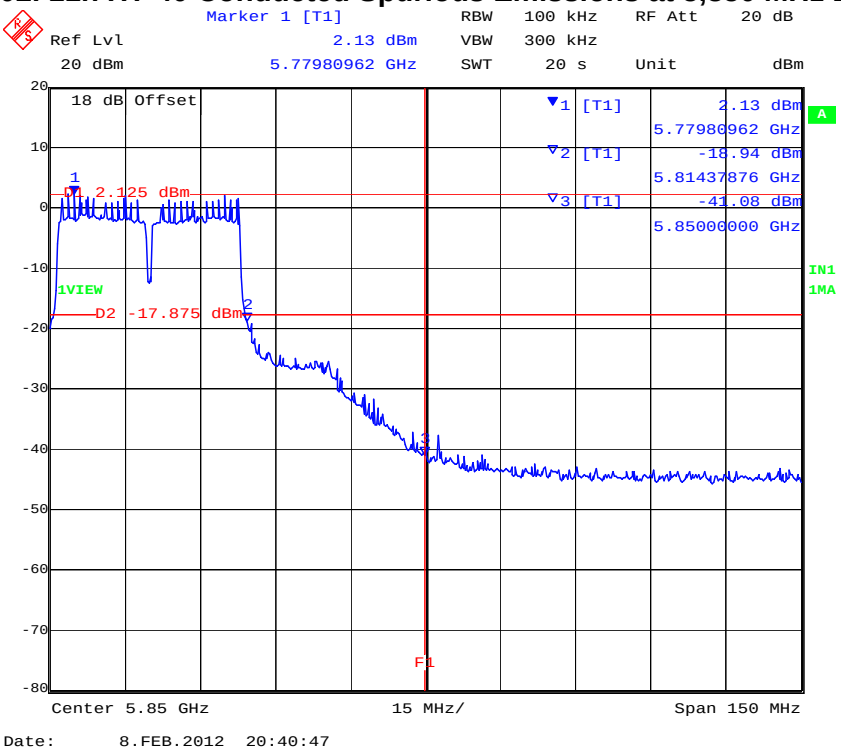
PORT B 802.11n HT-40 Legacy - Conducted Band Edge Spurious 5,725 MHz



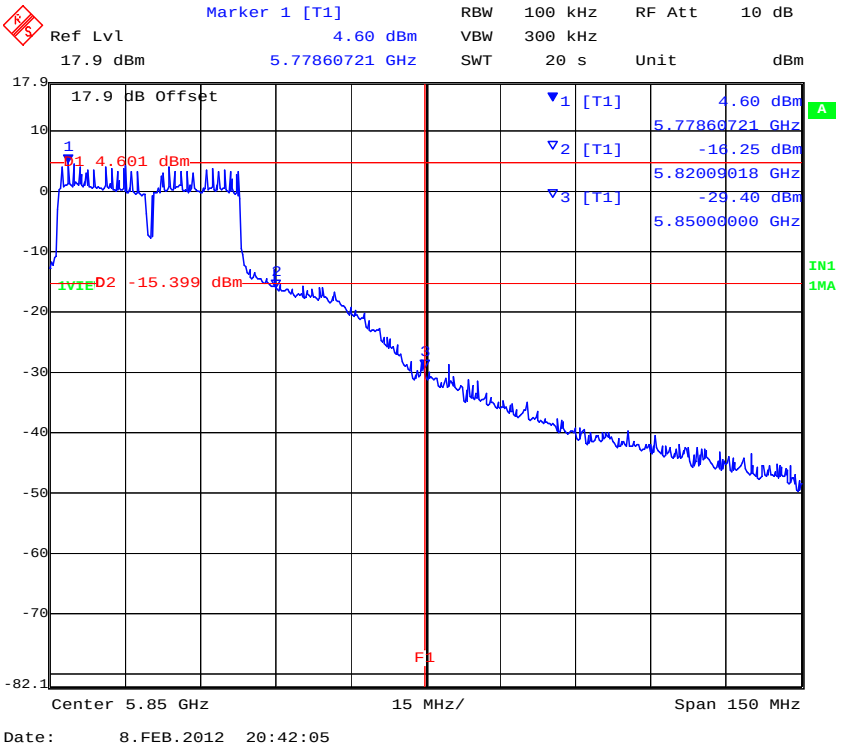
PORT C 802.11n HT-40 Legacy - Conducted Band Edge Spurious 5,725 MHz



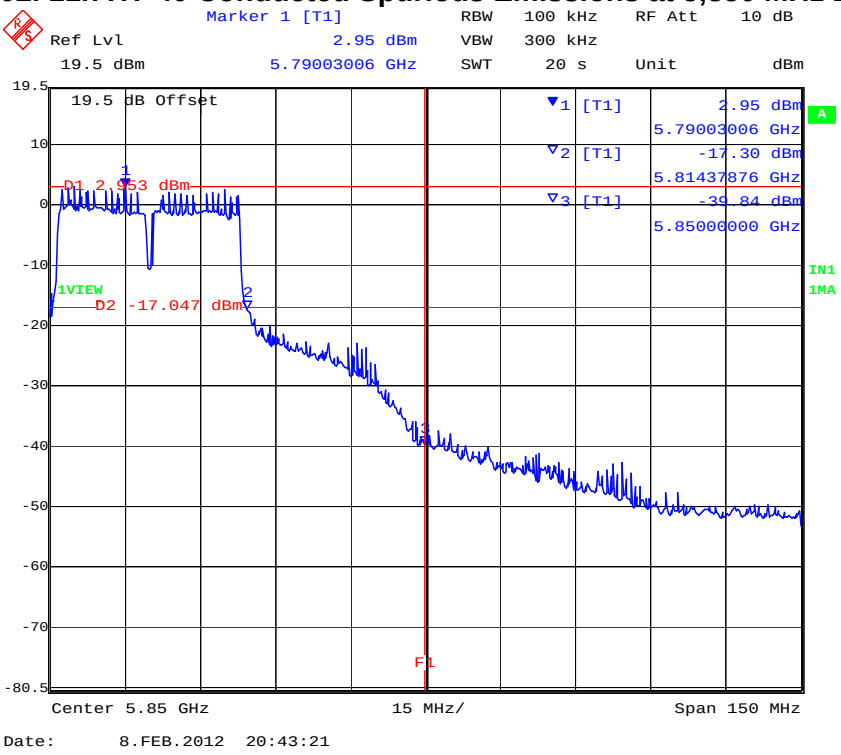
PORT A 802. 11n HT-40 Conducted Spurious Emissions at 5,850 MHz Band Edge



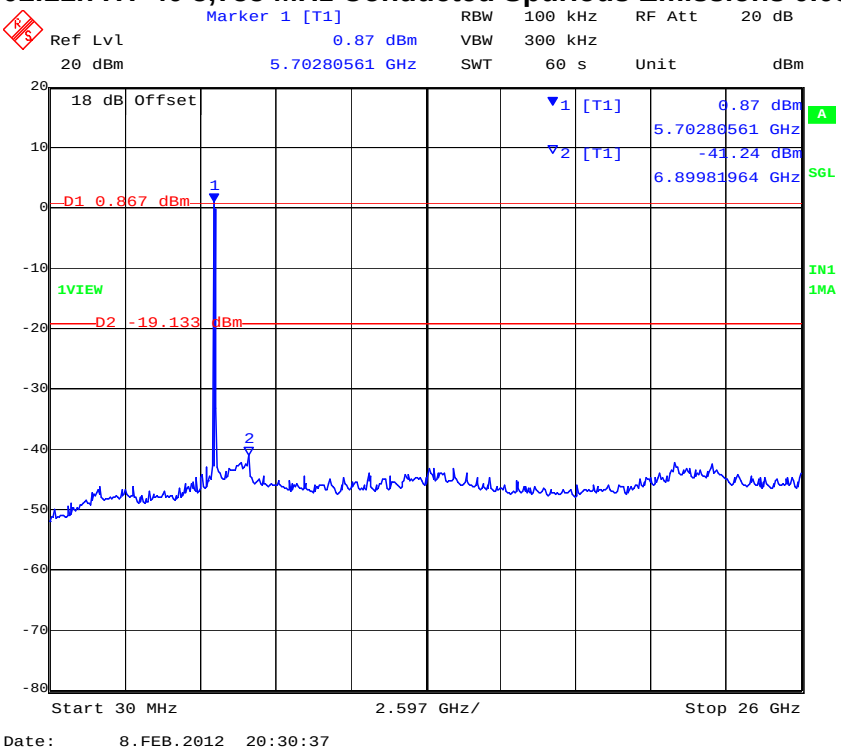
PORT B 802. 11n HT-40 Conducted Spurious Emissions at 5,850 MHz Band Edge



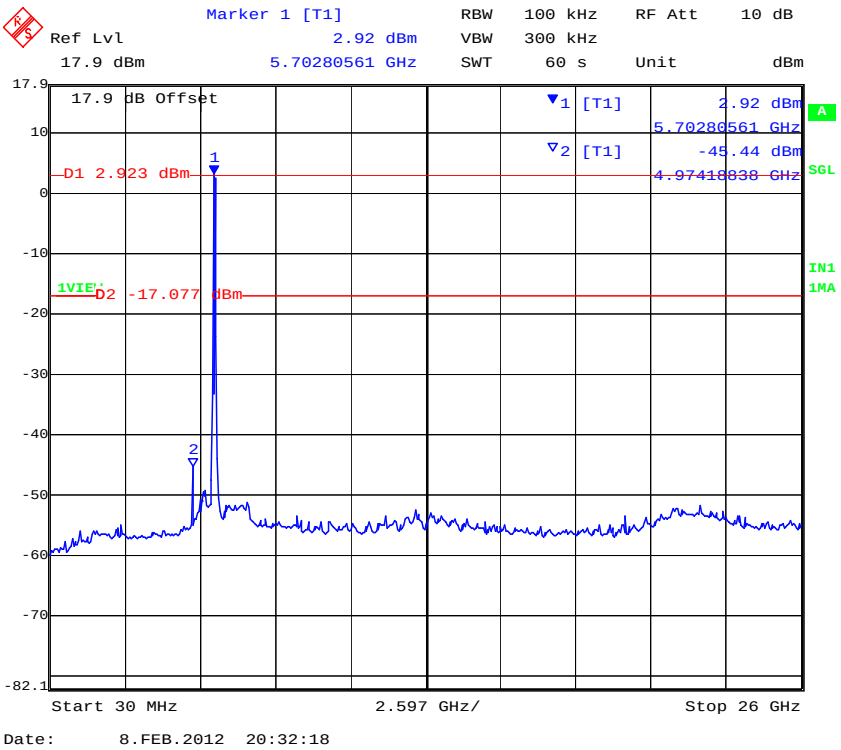
PORT C 802. 11n HT-40 Conducted Spurious Emissions at 5,850 MHz Band Edge



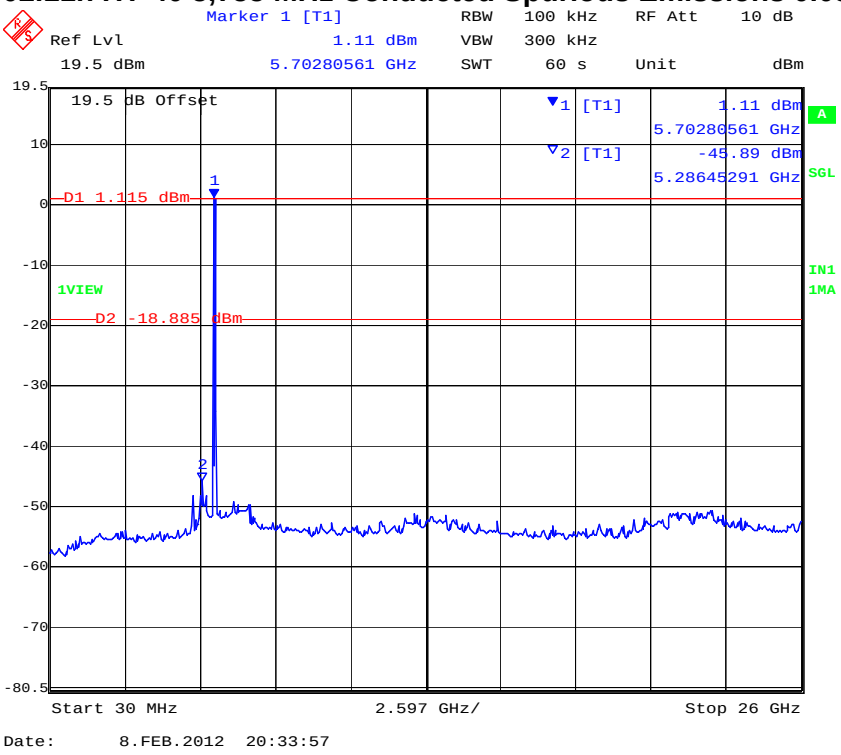
PORT A 802.11n HT-40 5,755 MHz Conducted Spurious Emissions 0.03 – 26 GHz



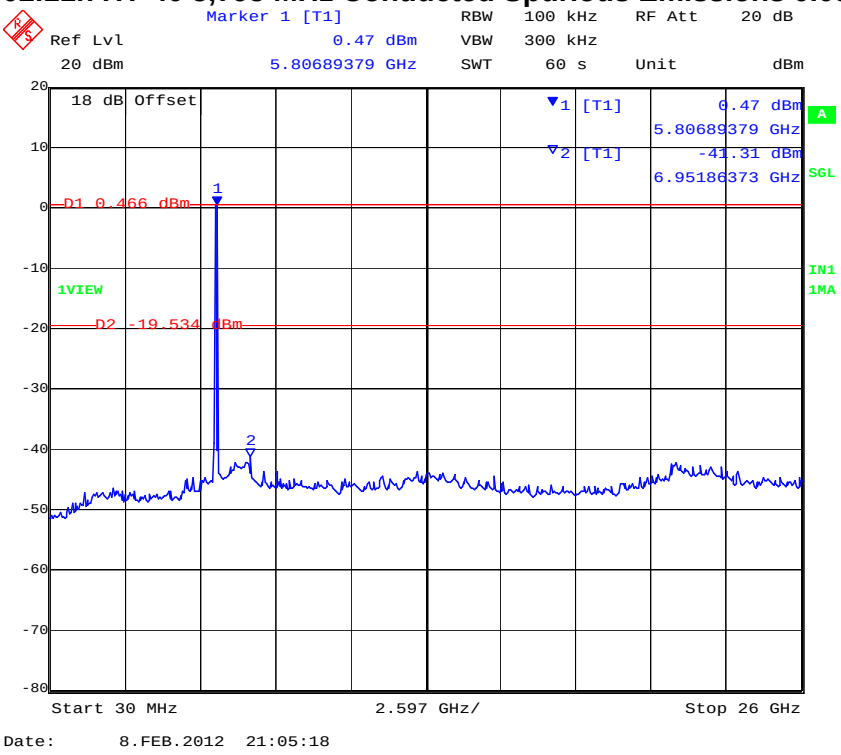
PORT B 802.11n HT-40 5,755 MHz Conducted Spurious Emissions 0.03 – 26 GHz



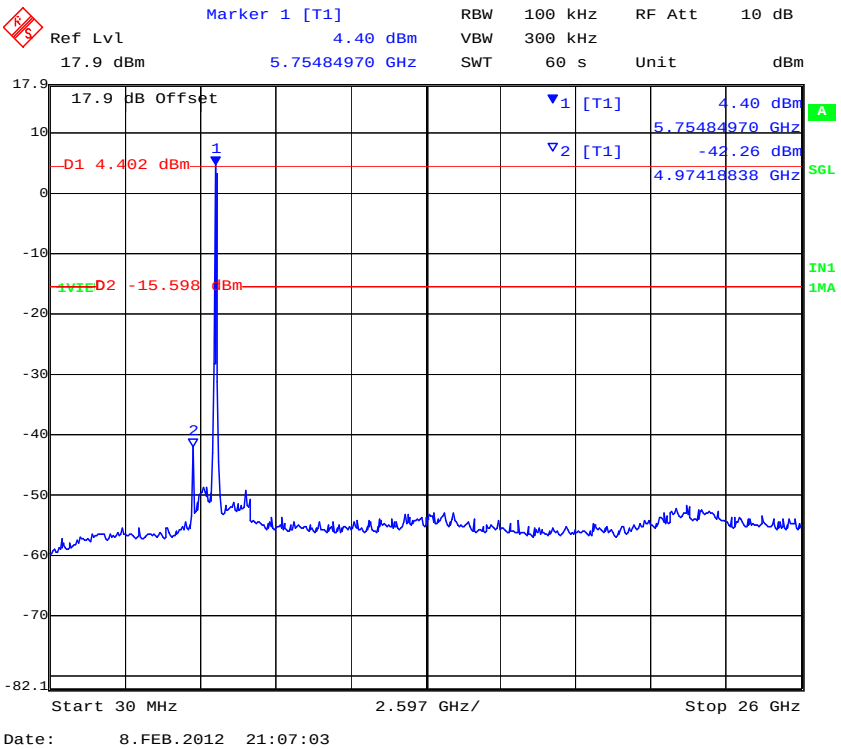
PORT C 802.11n HT-40 5,755 MHz Conducted Spurious Emissions 0.03 – 26 GHz



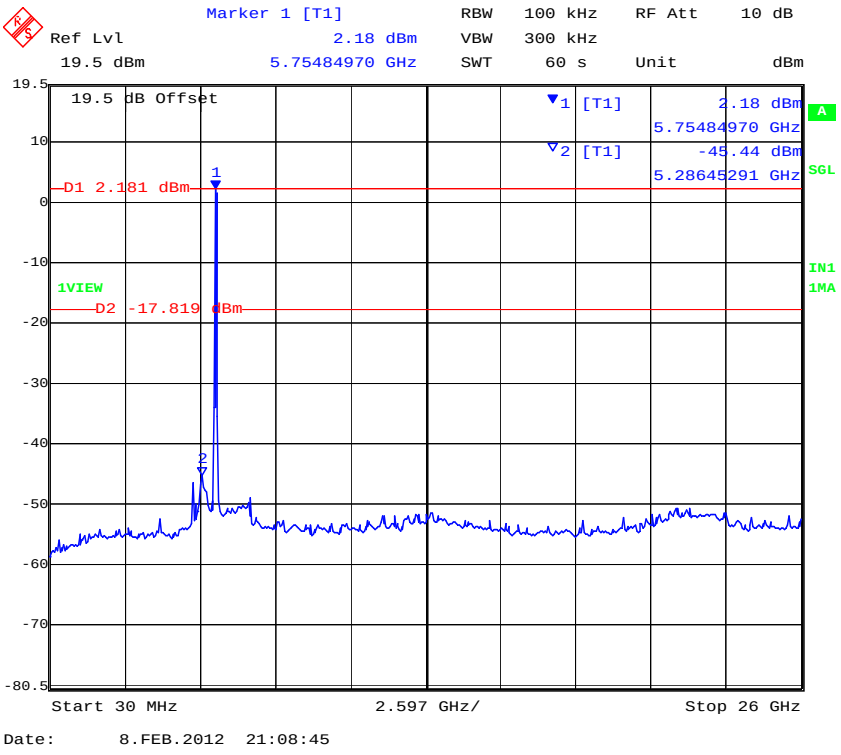
PORT A 802.11n HT-40 5,795 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT B 802.11n HT-40 5,795 MHz Conducted Spurious Emissions 0.03 – 26 GHz



PORT C 802.11n HT-40 5,795 MHz Conducted Spurious Emissions 0.03 – 26 GHz



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.

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

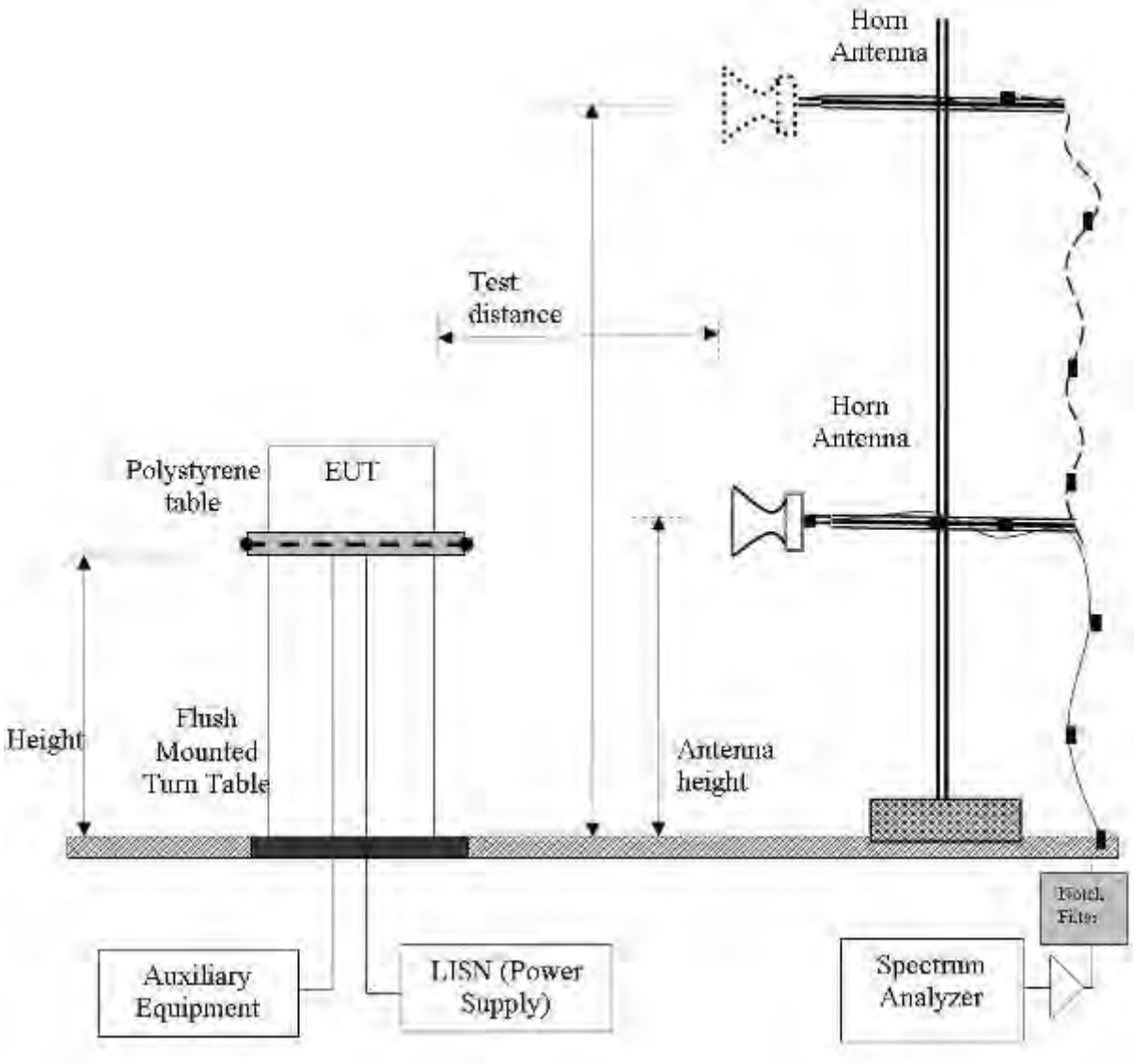
FS = 51.5 + 8.5 + 1.3 - 26.0 +1 = 36.3 dBμV/m

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

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

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

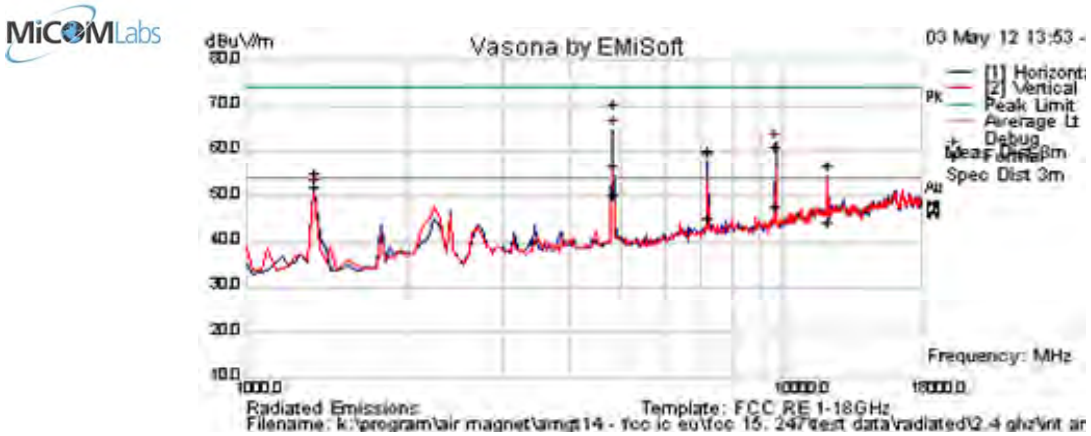
Radiated Emission Measurement Setup – Above 1 GHz



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

5.1.6.1. 2.4 GHz Integral Antenna

Test Freq.	2412 MHz	**Engineer**	SB
Variant	802.11b; 1 Mbs	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	17 reduced to 14	**Press. (mBars)**	1010
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1	antenna positions inside chassis were moved		
Test Notes 2			

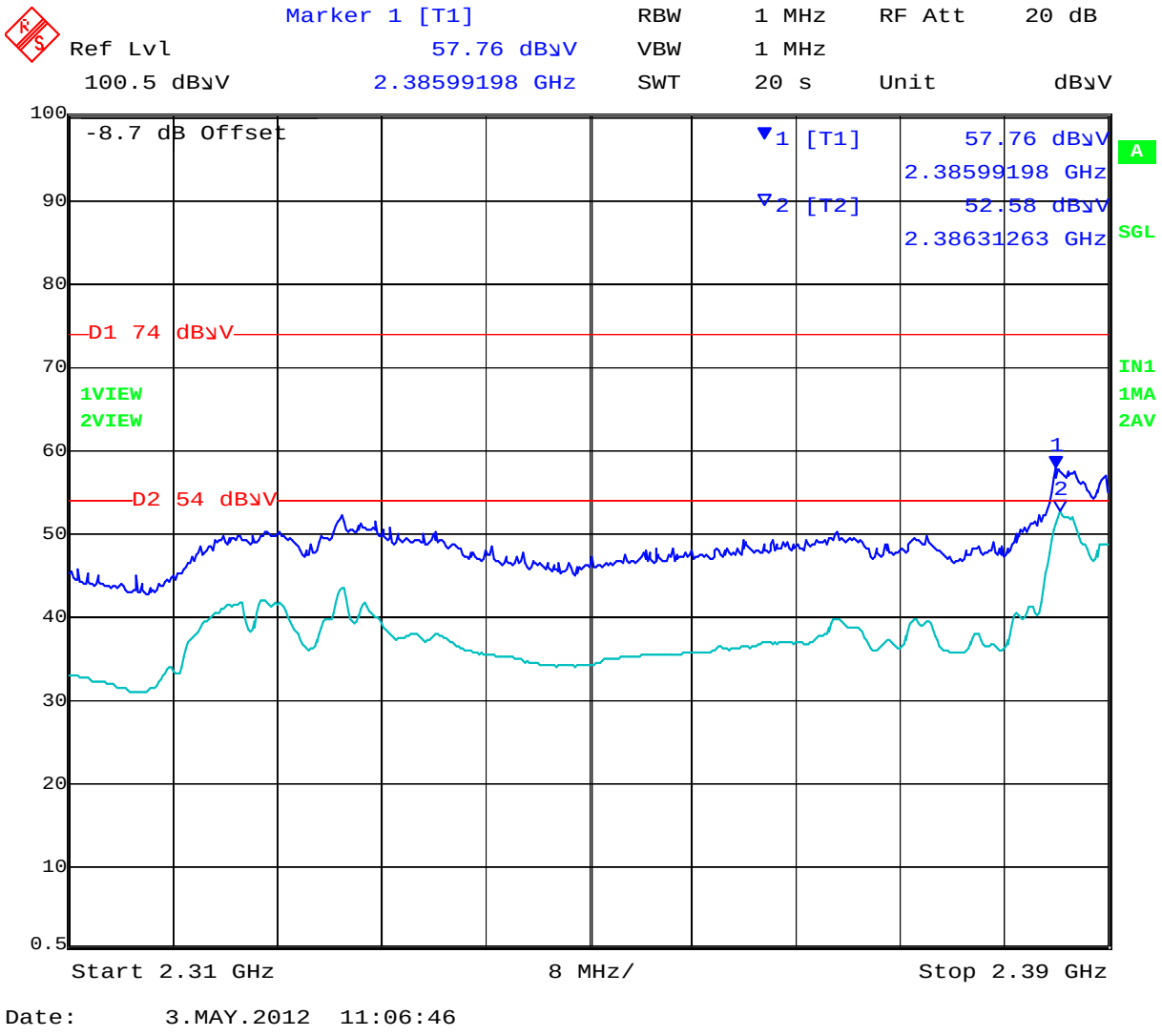


Formally measured emission peaks

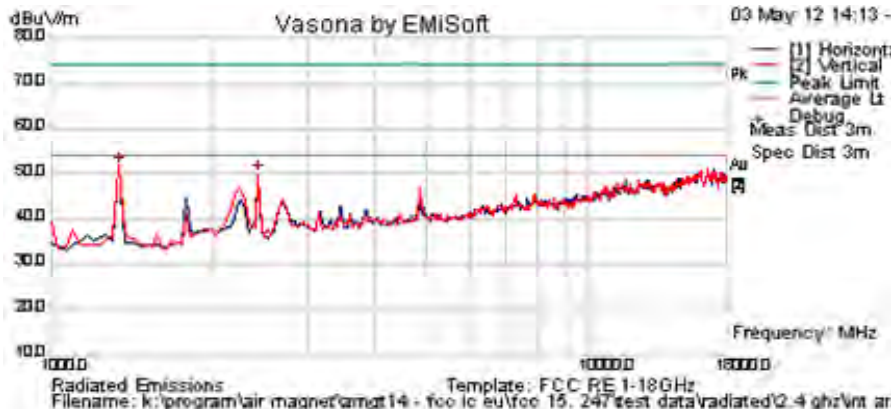
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
9648.056	58.1	6.3	-3.5	60.9	Peak Max	H	102	225	74.0	-13.2	Pass	NRB
4824.008	75.9	4.5	-9.7	70.7	Peak Max	H	116	176	74.0	-3.4	Pass	RB
7234.629	60.4	5.4	-5.8	60.0	Peak Max	H	106	163	74.0	-14.0	Pass	NRB
12061.883	52.5	6.9	-2.5	56.9	Peak Max	H	98	188	74.0	-17.1	Pass	RB
1349.960	66.9	2.3	-14.0	55.2	Peak Max	H	98	27	74	-18.8	Pass	RB
4824.078	55.4	4.5	-9.7	50.2	Average Max	H	116	176	54	-3.8	Pass	RB
1349.960	63.6	2.3	-14.0	51.9	Average Max	H	98	27	54.0	-2.1	Pass	RB
7234.629	45.5	5.4	-5.8	45.1	Average Max	H	106	163	54.0	-9.0	Pass	NRB
12061.883	39.7	6.9	-2.5	44.2	Average Max	H	98	188	54.0	-9.8	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

Band Edge



Test Freq.	2437 MHz	**Engineer**	SB
Variant	802.11b; 1 Mbs	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	20	**Press. (mBars)**	1010
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1	antenna positions inside chassis were moved		
Test Notes 2			

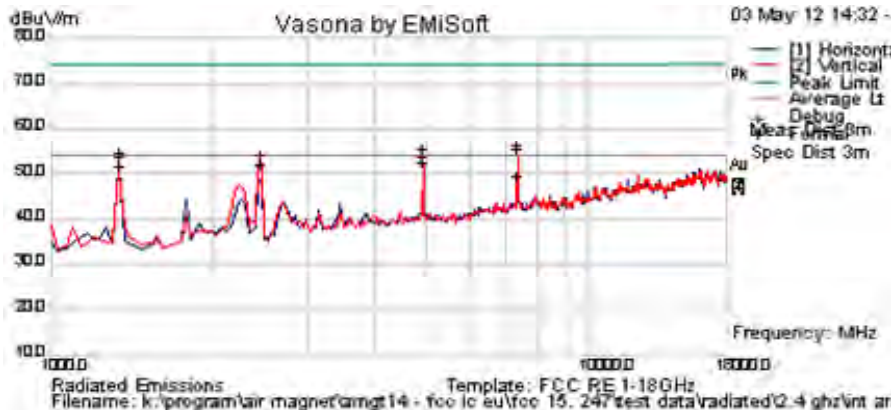


Formally measured emission peaks

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
1349.960	66.9	2.3	-14.0	55.2	Peak Max	H	98	27	74	-18.8	Pass	RB
1349.960	63.6	2.3	-14.0	51.9	Average Max	H	98	27	54.0	-2.1	Pass	RB
2430.862	58.5	3.0	-11.6	49.9	Peak [Scan]	V	150	0				FUND

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

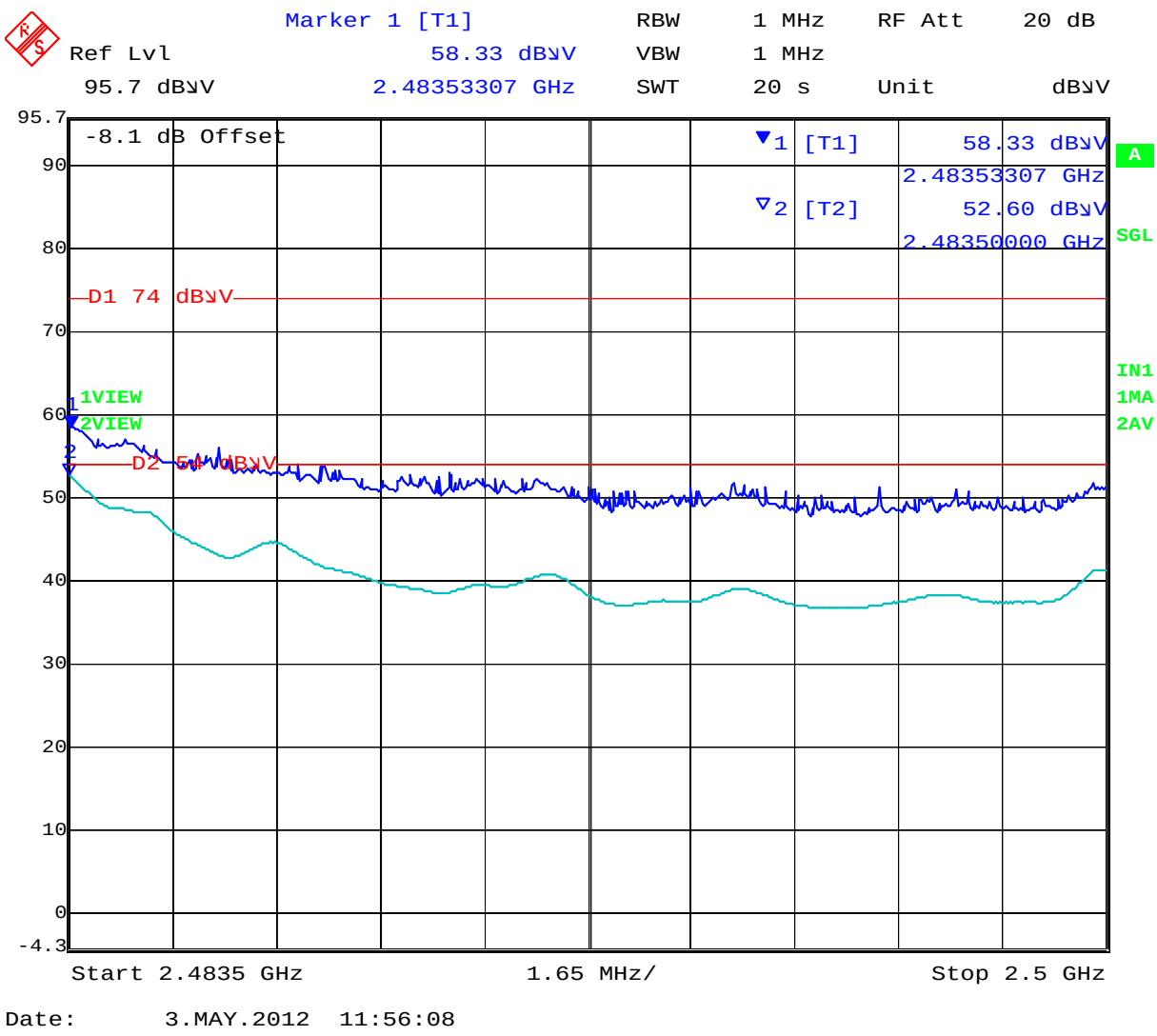
Test Freq.	2462 MHz	**Engineer**	SB
Variant	802.11b; 1 Mbs	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	17	**Press. (mBars)**	1010
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1	antenna positions inside chassis were moved		
Test Notes 2			



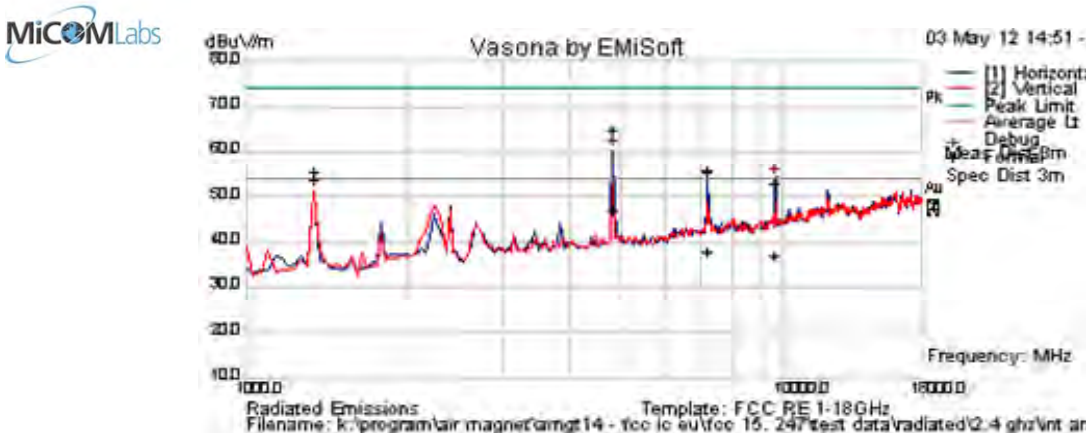
Formally measured emission peaks

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
7387.255	55.4	5.5	-5.5	55.4	Peak Max	V	142	265	74	-18.6	Pass	RB
4924.128	60.5	4.6	-9.8	55.3	Peak Max	V	151	190	74.0	-18.7	Pass	RB
1350.020	66.2	2.3	-14.0	54.5	Peak Max	H	100	23	74.0	-19.5	Pass	RB
7387.255	49.5	5.5	-5.5	49.5	Average Max	V	142	265	54.0	-4.5	Pass	RB
4924.128	57.6	4.6	-9.8	52.4	Average Max	V	151	190	54.0	-1.6	Pass	RB
1350.020	63.2	2.3	-14.0	51.5	Average Max	H	100	23	54	-2.5	Pass	RB
2464.930	60.6	3.0	-11.5	52.1	Peak [Scan]	V	100	0				FUND
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission											
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak											

Band Edge



Test Freq.	2412 MHz	**Engineer**	SB
Variant	802.11g; 6 Mbs	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	13	**Press. (mBars)**	1010
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

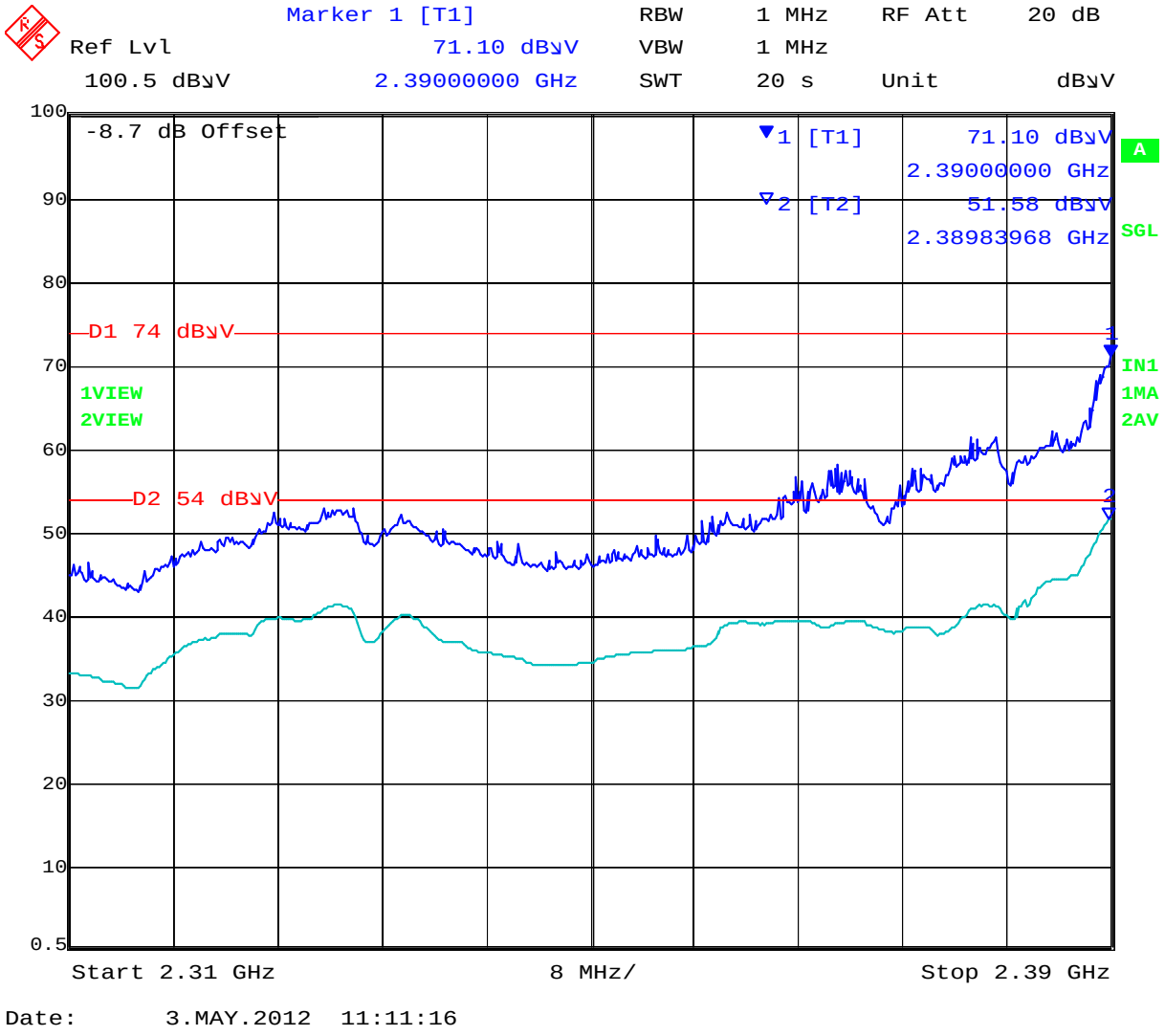


Formally measured emission peaks

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
4826.693	70.0	4.5	-9.7	64.8	Peak Max	H	115	232	74.0	-9.2	Pass	RB
9656.192	50.2	6.3	-3.6	53.0	Peak Max	H	119	238	74.0	-21.0	Pass	RB
7241.122	56.1	5.4	-5.8	55.7	Peak Max	H	142	192	74.0	-18.3	Pass	RB
1349.920	67.4	2.3	-14.0	55.7	Peak Max	V	111	42	74.0	-18.3	Pass	RB
4826.693	52.1	4.5	-9.7	46.9	Average Max	H	115	232	54.0	-7.1	Pass	RB
9656.192	34.3	6.3	-3.6	37.1	Average Max	H	119	238	54.0	-16.9	Pass	RB
7241.122	38.2	5.4	-5.8	37.8	Average Max	H	142	192	54.0	-16.2	Pass	RB
1349.920	65.6	2.3	-14.0	53.9	Average Max	V	111	42	54.0	-0.1	Pass	RB

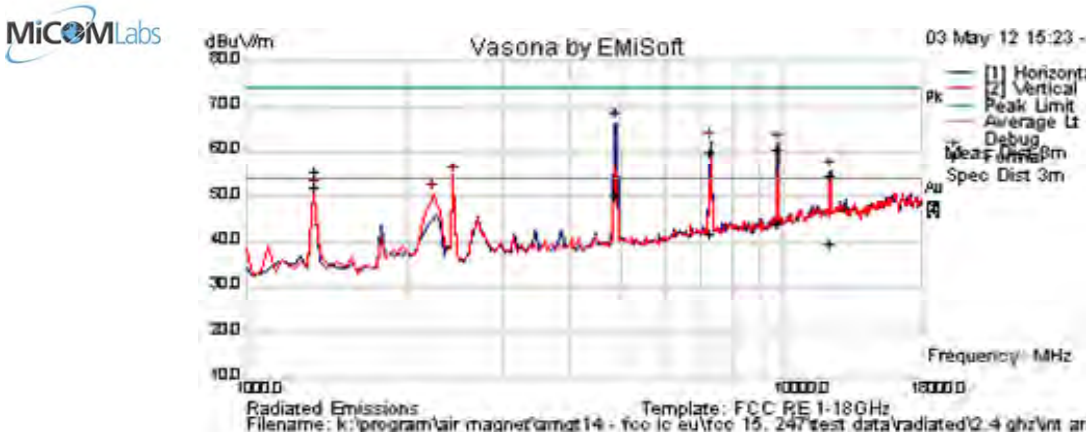
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Band Edge



Output power reduction required (Power = 13)

Test Freq.	2437 MHz	**Engineer**	SB
Variant	802.11g; 6 Mbs	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	20 to 17	**Press. (mBars)**	1010
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

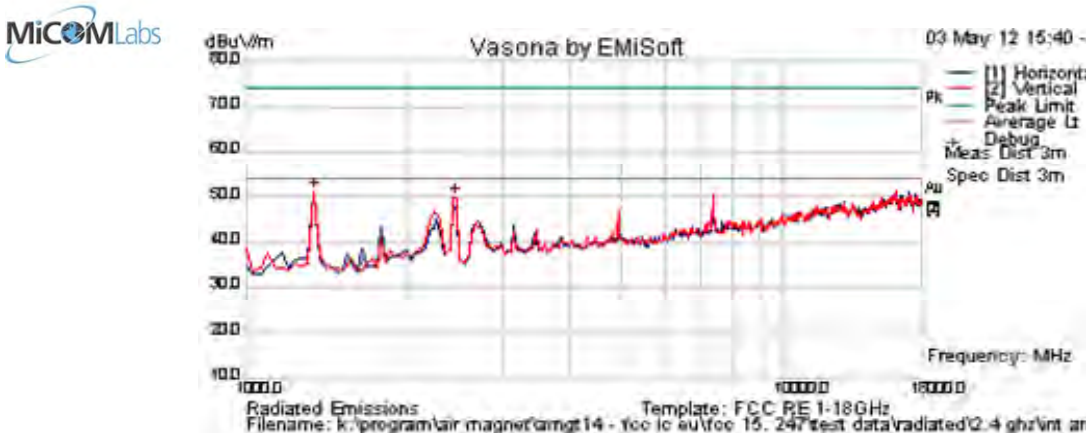


Formally measured emission peaks

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
4871.583	74.1	4.5	-9.7	68.9	Peak Max	H	170	182	74	-5.1	Pass	RB
7309.820	60.2	5.4	-5.7	60.0	Peak Max	H	98	216	74	-14.1	Pass	RB
9753.908	58.2	6.4	-3.7	60.8	Peak Max	H	119	161	74	-13.2	Pass	RB
12182.445	49.9	7.0	-2.2	54.7	Peak Max	H	130	189	74	-19.3	Pass	RB
1350.000	67.4	2.3	-14.0	55.7	Peak Max	H	94	22	74	-18.3	Pass	RB
4871.583	55.4	4.5	-9.7	50.2	Average Max	H	170	182	54	-3.8	Pass	RB
7309.820	42.2	5.4	-5.7	41.9	Average Max	H	98	216	54	-12.1	Pass	RB
9753.908	41.3	6.4	-3.7	43.9	Average Max	H	119	161	54	-10.1	Pass	RB
12182.445	34.7	7.0	-2.2	39.5	Average Max	H	130	189	54	-14.5	Pass	RB
1350.000	63.8	2.3	-14.0	52.1	Average Max	H	94	22	54	-1.9	Pass	RB
2430.862	63.5	3.0	-11.6	54.9	Peak [Scan]	V	150	0				FUND

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

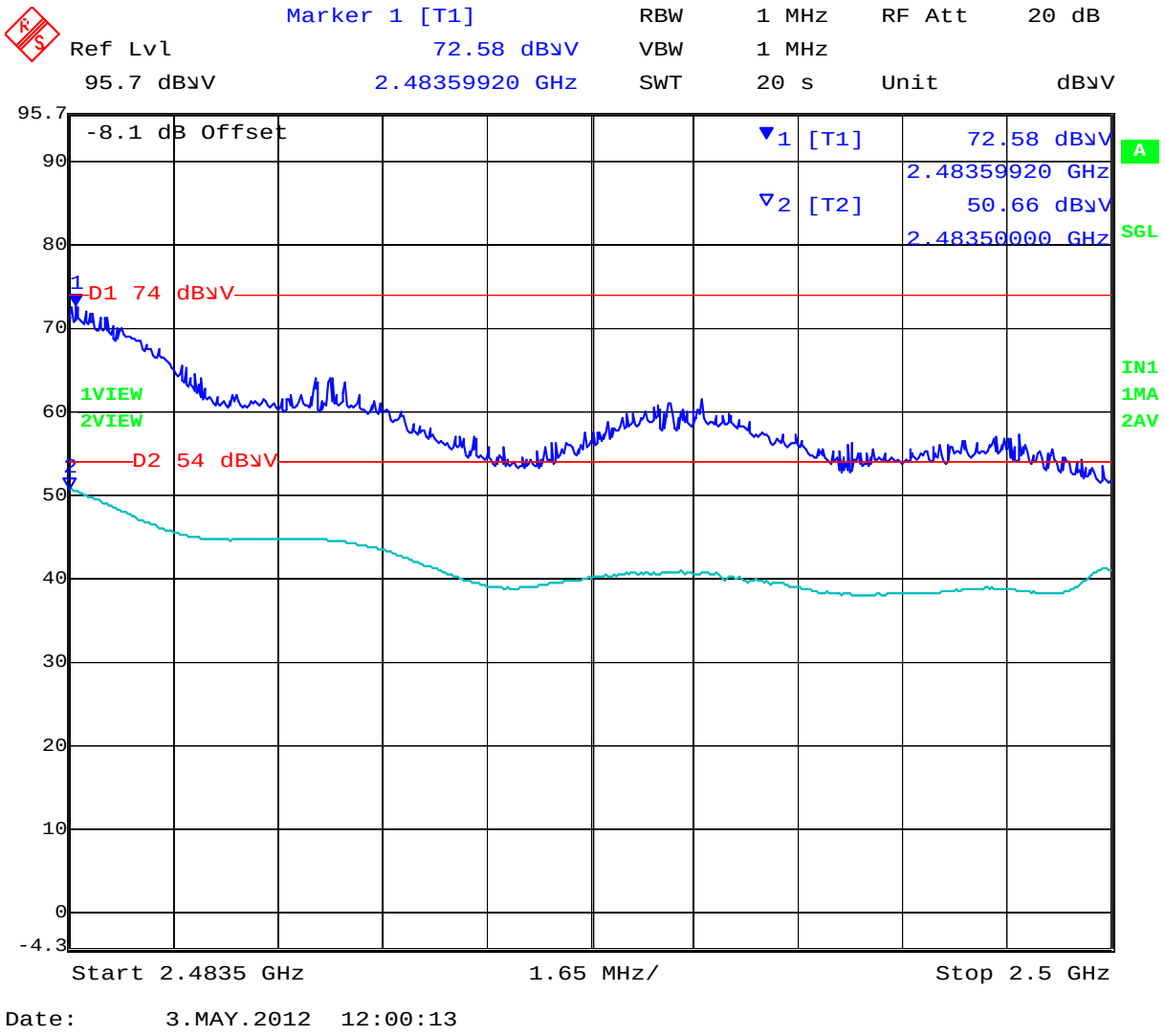
Test Freq.	2462 MHz	**Engineer**	SB
Variant	802.11g; 6 Mbs	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	13	**Press. (mBars)**	1010
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

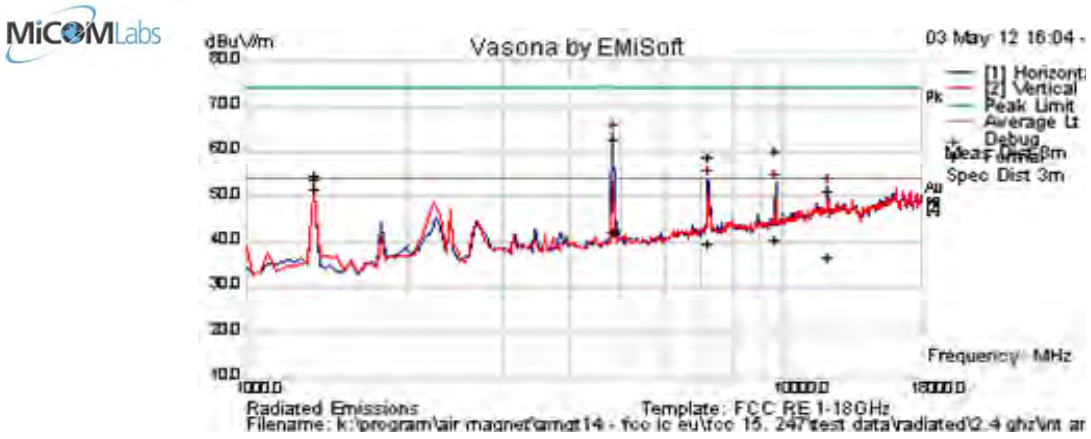
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1349.960	66.9	2.3	-14.0	55.2	Peak Max	H	98	27	74	-18.8	Pass	RB
1349.960	63.6	2.3	-14.0	51.9	Average Max	H	98	27	54.0	-2.1	Pass	RB
2464.930	58.4	3.0	-11.5	49.9	Peak [Scan]	V	150	0				FUND
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission											
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak											

Band Edge



Output power reduction required (Power = 13)

Test Freq.	2412 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	14	**Press. (mBars)**	1010
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

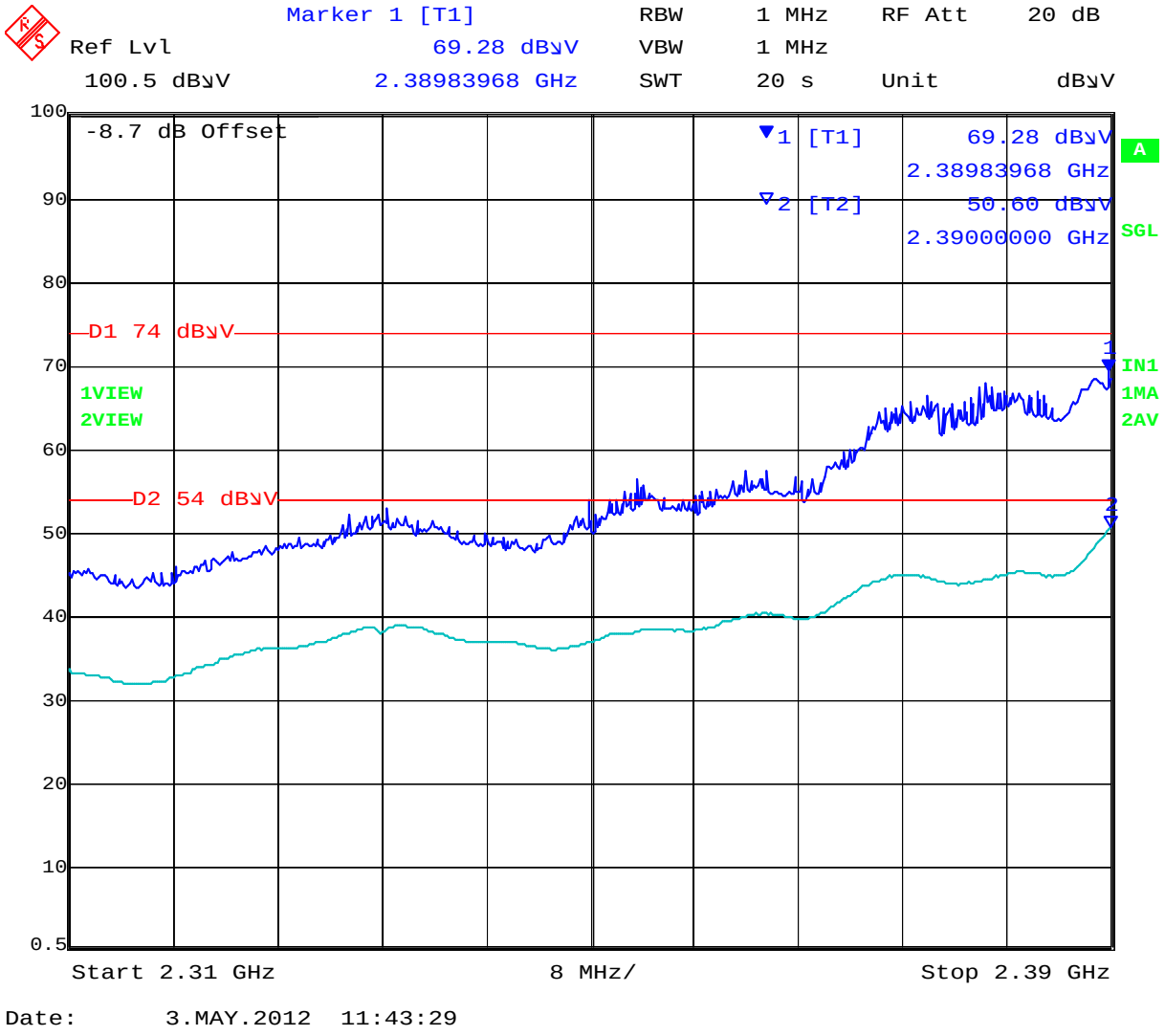


Formally measured emission peaks

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
4827.335	67.9	4.5	-9.7	62.7	Peak Max	H	98	194	74.0	-11.3	Pass	RB
7246.012	59.5	5.4	-5.8	59.1	Peak Max	H	99	175	74.0	-14.9	Pass	RB
9666.132	57.6	6.3	-3.6	60.3	Peak Max	H	100	148	74.0	-13.7	Pass	RB
12087.134	46.6	7.0	-2.5	51.1	Peak Max	H	124	306	74.0	-22.9	Pass	RB
1350.000	66.4	2.3	-14.0	54.7	Peak Max	H	98	27	74.0	-19.3	Pass	RB
4827.335	47.6	4.5	-9.7	42.4	Average Max	H	98	194	54.0	-11.6	Pass	RB
7246.012	39.8	5.4	-5.8	39.4	Average Max	H	99	175	54.0	-14.6	Pass	RB
9666.132	37.7	6.3	-3.6	40.5	Average Max	H	100	148	54.0	-13.6	Pass	RB
12087.134	32.2	7.0	-2.5	36.7	Average Max	H	124	306	54.0	-17.3	Pass	RB
1350.000	63.2	2.3	-14.0	51.5	Average Max	H	98	27	54.0	-2.5	Pass	RB

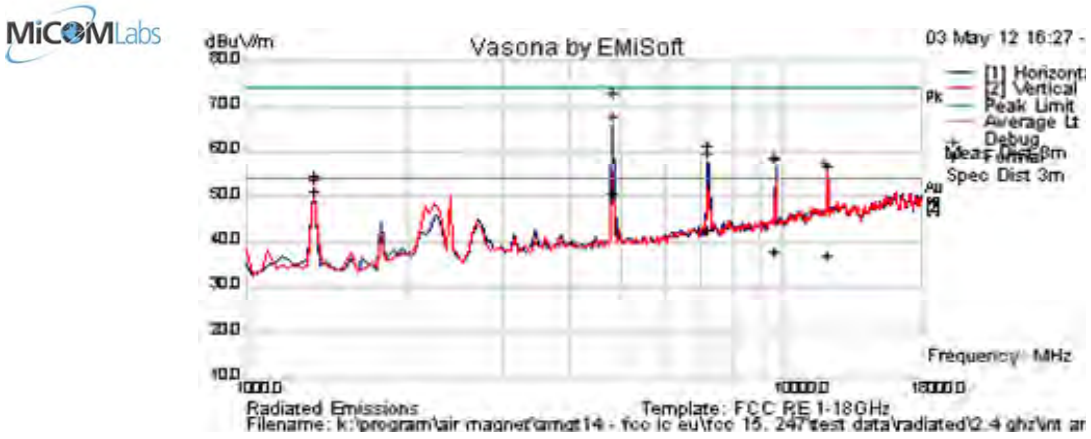
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	* Evaluated as 1600 MHz, RB Emission See Evaluation
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Band Edge



Output power reduction required (Power = 14)

Test Freq.	2437 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	20 to 17	**Press. (mBars)**	1010
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

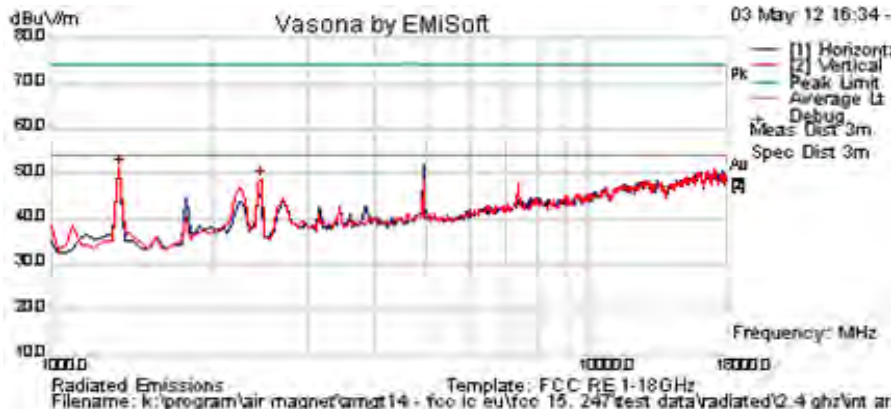


Formally measured emission peaks

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
4827.174	78.1	4.5	-9.7	72.9	Peak Max	H	142	199	74	-1.1	Pass	RB
7238.557	61.8	5.4	-5.8	61.4	Peak Max	H	98	167	74	-12.6	Pass	RB
9672.224	56.3	6.3	-3.6	59.0	Peak Max	H	170	163	74	-15.0	Pass	RB
12094.669	52.1	7.0	-2.4	56.6	Peak Max	V	130	249	74	-17.4	Pass	RB
1349.960	66.2	2.3	-14.0	54.5	Peak Max	H	99	19	74	-19.5	Pass	RB
4827.174	56.1	4.5	-9.7	50.9	Average Max	H	142	199	54	-3.1	Pass	RB
7238.557	42.9	5.4	-5.8	42.5	Average Max	H	98	167	54	-11.5	Pass	RB
9672.224	35.1	6.3	-3.6	37.8	Average Max	H	170	163	54	-16.2	Pass	RB
12094.669	32.4	7.0	-2.4	36.9	Average Max	V	130	249	54	-17.1	Pass	RB
1349.960	62.9	2.3	-14.0	51.2	Average Max	H	99	19	54	-2.8	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	* Evaluated as 1600 MHz, RB Emission See Evaluation
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	2462 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	12	**Press. (mBars)**	1010
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

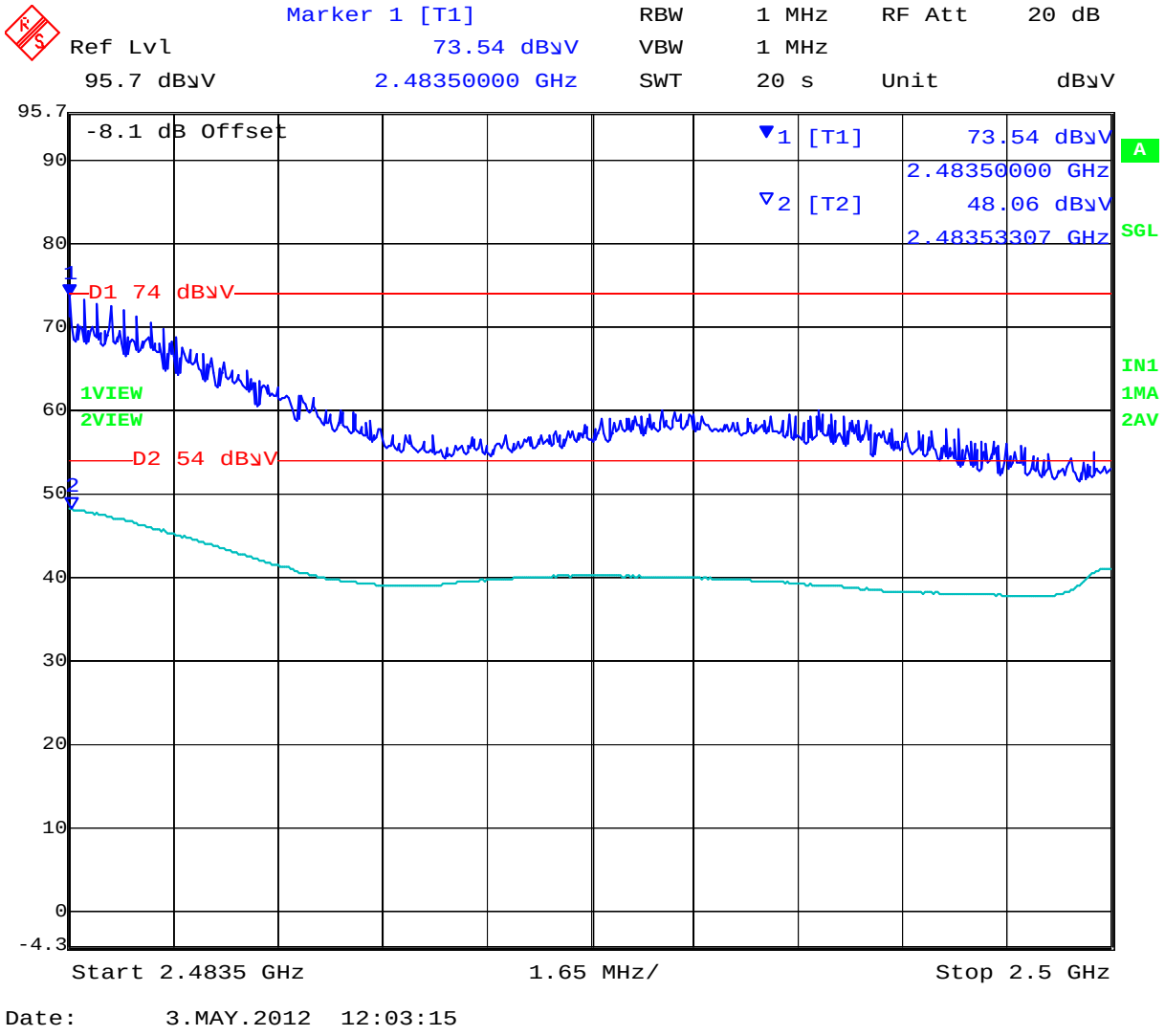


Formally measured emission peaks

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
1349.960	66.9	2.3	-14.0	55.2	Peak Max	H	98	27	74	-18.8	Pass	RB
1349.960	63.6	2.3	-14.0	51.9	Average Max	H	98	27	54.0	-2.1	Pass	RB
2464.930	57.2	3.0	-11.5	48.7	Peak [Scan]	V	200	0				FUND

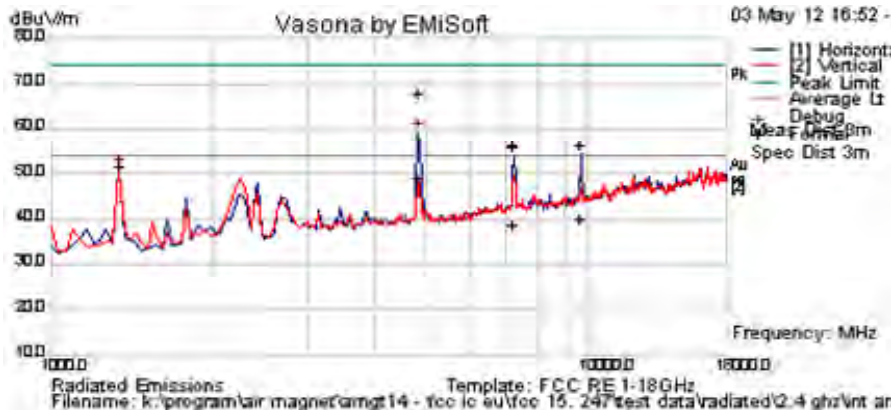
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	* Evaluated as 1600 MHz, RB Emission See Evaluation
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Band Edge



Output power reduction required (Power = 12)

Test Freq.	2422 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	14	**Press. (mBars)**	1010
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

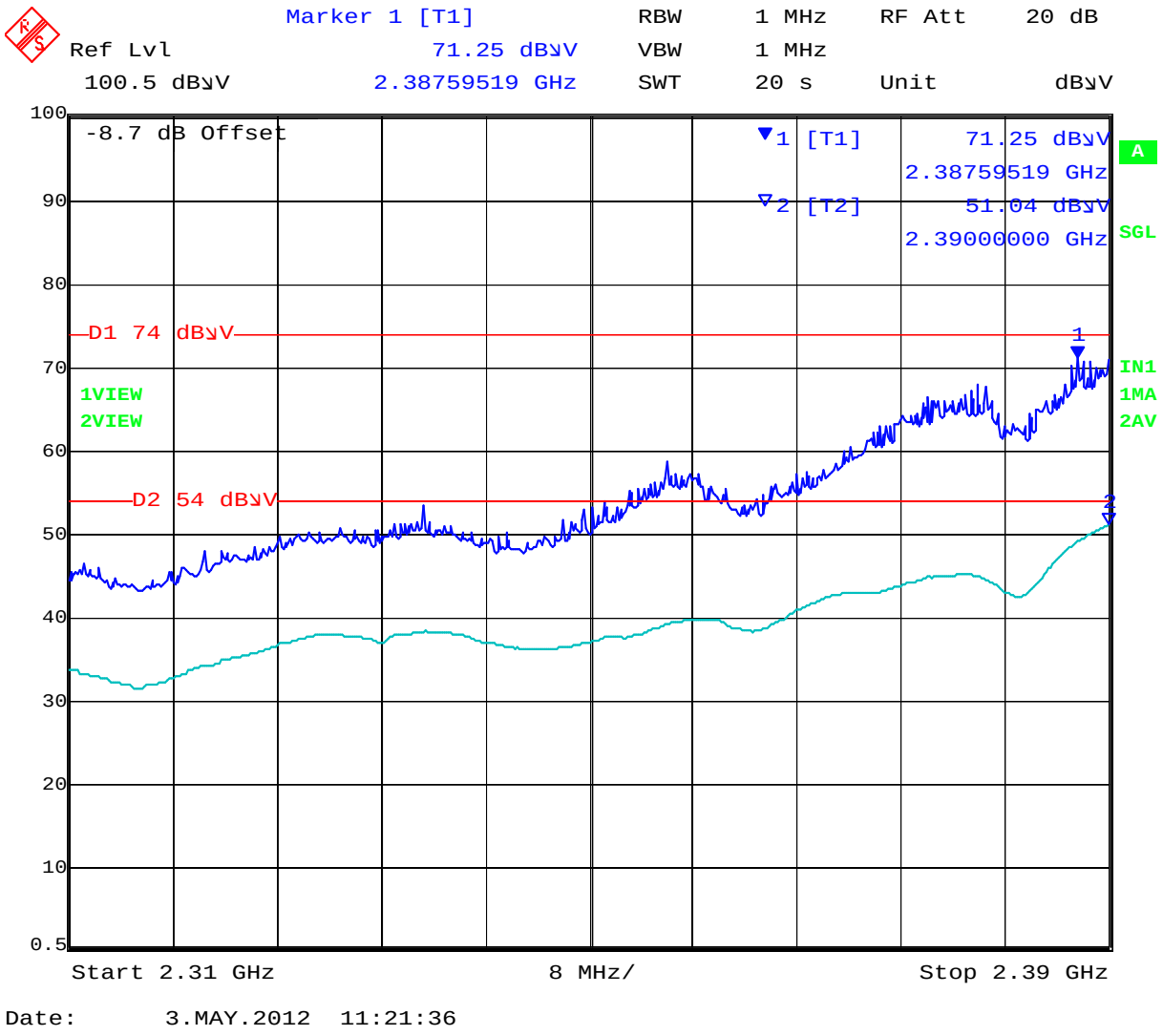


Formally measured emission peaks

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
4837.435	73.3	4.5	-9.7	68.1	Peak Max	H	133	191	74.0	-5.9	Pass	RB
9678.717	53.7	6.3	-3.6	56.4	Peak Max	H	99	146	74.0	-17.6	Pass	RB
7274.790	56.5	5.4	-5.8	56.1	Peak Max	H	98	156	74.0	-17.9	Pass	RB
4837.435	54.1	4.5	-9.7	48.9	Average Max	H	133	191	54.0	-5.1	Pass	RB
9678.717	37.3	6.3	-3.6	40.0	Average Max	H	99	146	54.0	-14.0	Pass	RB
7274.790	39.3	5.4	-5.8	39.0	Average Max	H	98	156	54.0	-15.0	Pass	RB
1340.681	63.0	2.3	-13.9	51.4	Peak [Scan]	H	100	0	54.0	-2.6	Pass	RB

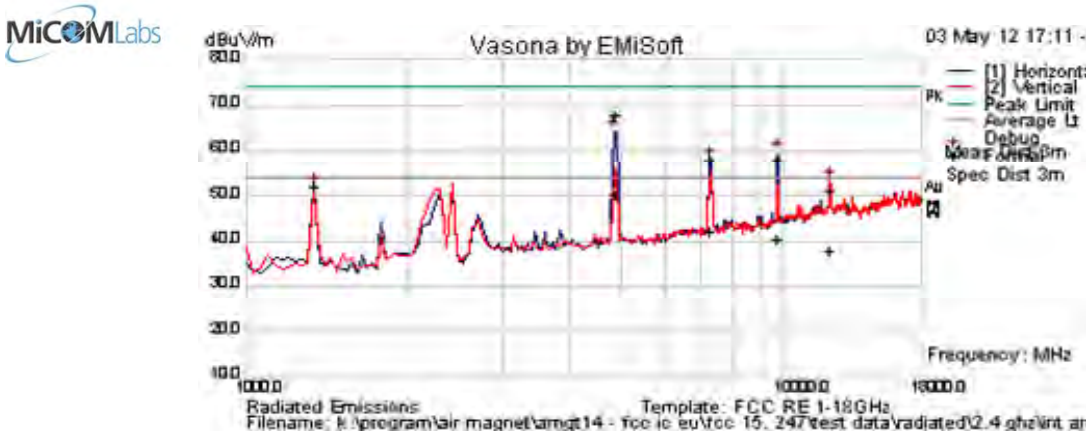
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	* Evaluated as 1600 MHz, RB Emission See Evaluation
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Band Edge



Output power reduction required (Power = 14)

Test Freq.	2437 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	20	**Press. (mBars)**	1010
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

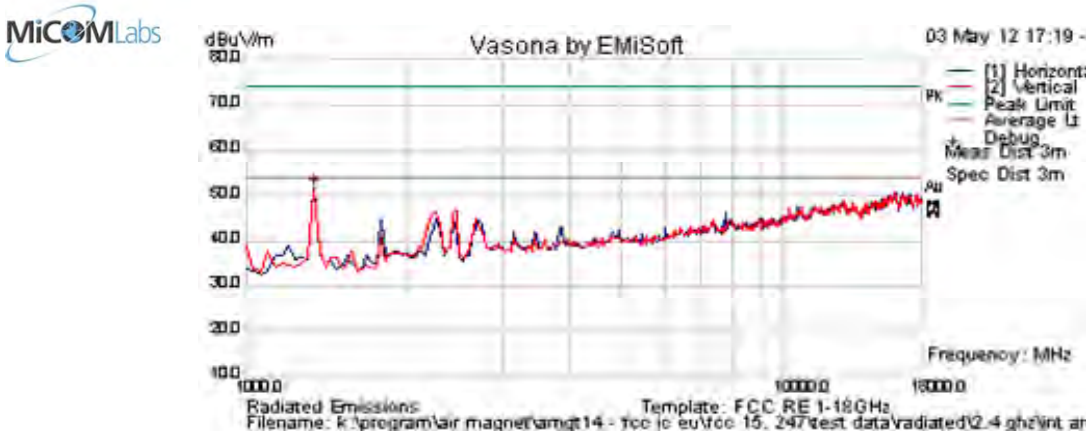


Formally measured emission peaks

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
4868.136	73.2	4.5	-9.7	68.0	Peak Max	H	102	185	74	-6.1	Pass	RB
9753.267	55.2	6.4	-3.7	57.9	Peak Max	H	114	153	74	-16.1	Pass	RB
7319.118	58.3	5.4	-5.7	58.1	Peak Max	H	106	148	74	-15.9	Pass	RB
12177.555	46.6	7.0	-2.2	51.4	Peak Max	V	124	88	74	-22.6	Pass	RB
4868.136	55.6	4.5	-9.7	50.5	Average Max	H	102	185	54	-3.6	Pass	RB
9753.267	37.7	6.4	-3.7	40.3	Average Max	H	114	153	54	-13.7	Pass	RB
7319.118	42.3	5.4	-5.7	42.1	Average Max	H	106	148	54	-11.9	Pass	RB
12177.555	33.0	7.0	-2.2	37.8	Average Max	V	124	88	54	-16.2	Pass	RB
1340.681	63.8	2.3	-13.9	52.2	Peak [Scan]	H	100	0	54	-1.8	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	* Evaluated as 1600 MHz, RB Emission See Evaluation
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	2452 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	12	**Press. (mBars)**	1010
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

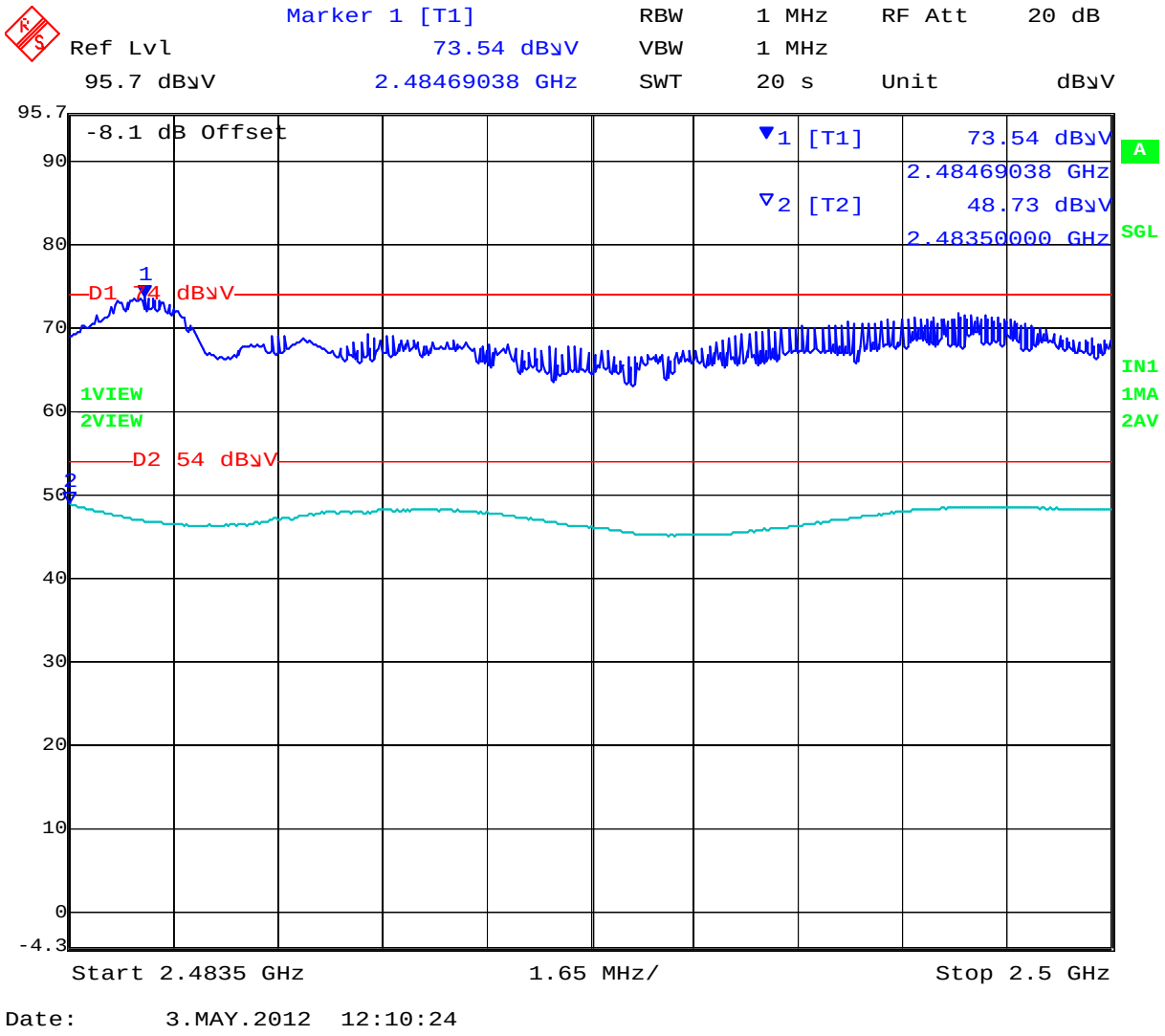


Formally measured emission peaks

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
1349.960	66.9	2.3	-14.0	55.2	Peak Max	H	98	27	74	-18.8	Pass	RB
1349.960	63.6	2.3	-14.0	51.9	Average Max	H	98	27	54.0	-2.1	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

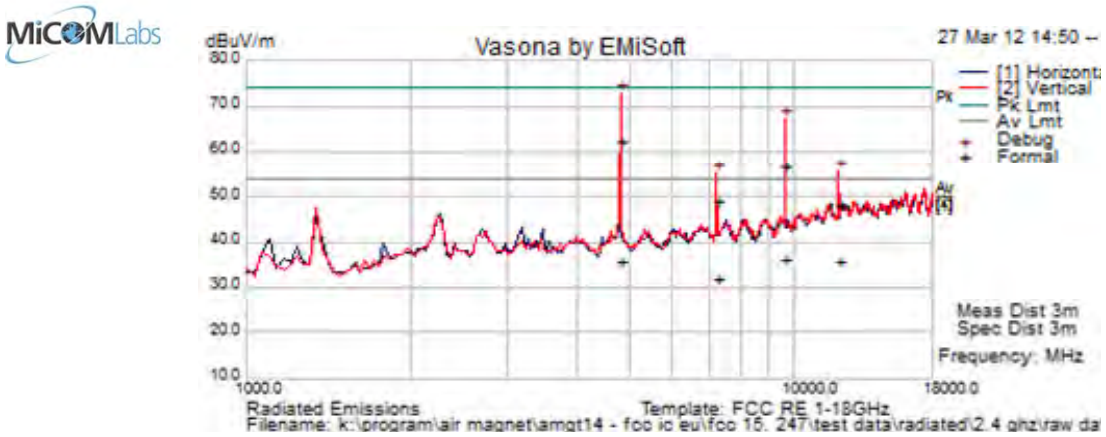
Band Edge



Output power reduction required (Power = 12)

5.1.6.2. 2.4 GHz External Antenna

Test Freq.	2412 MHz	**Engineer**	SB
Variant	802.11b; 1 Mbs	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	14 reduced to 13	**Press. (mBars)**	1010
Antenna	external	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



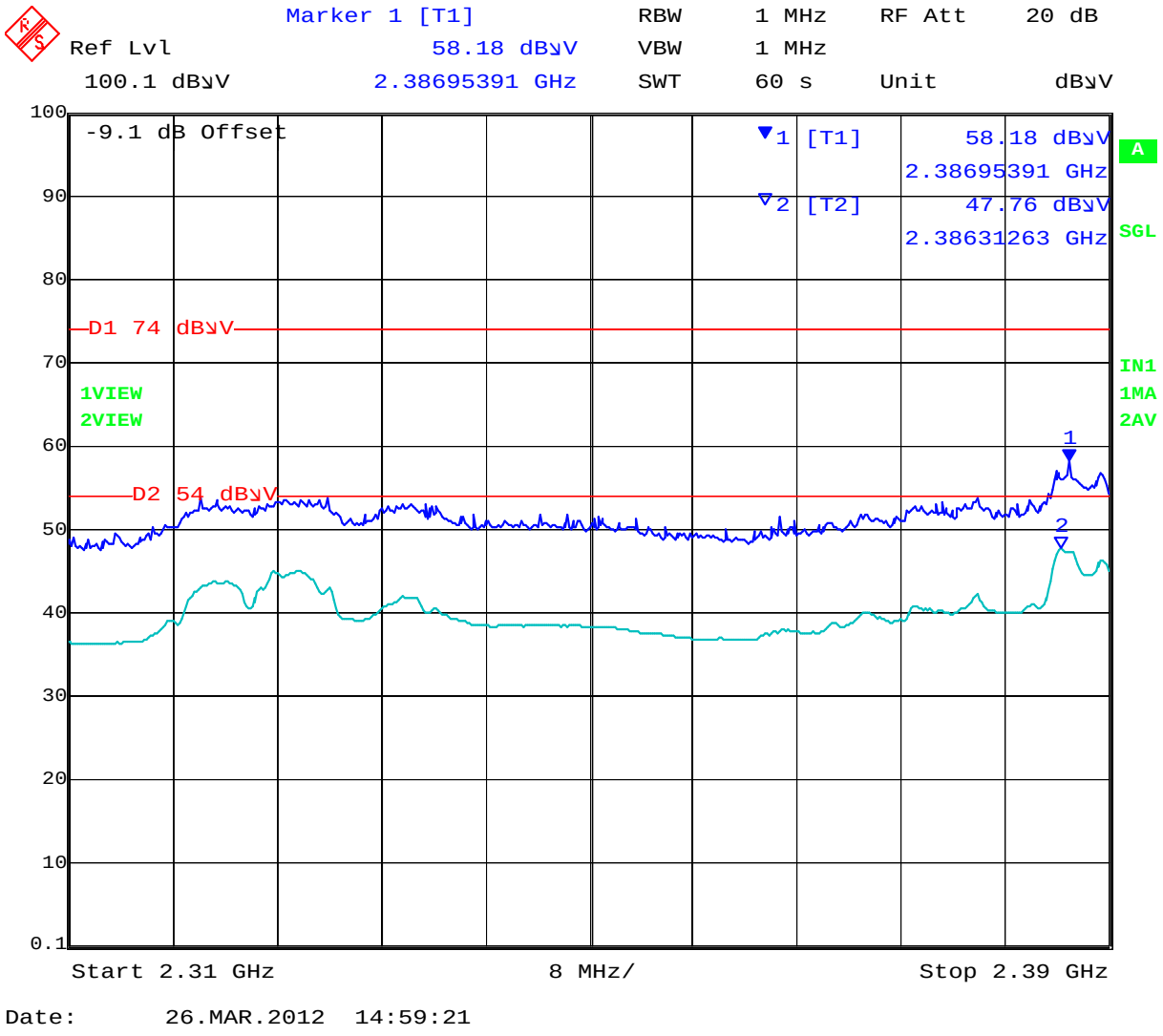
Formally measured emission peaks

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
4823.998	67.6	4.5	-9.7	62.4	Peak Max	V	103	-2	74.0	-11.6	Pass	RB
9647.996	53.8	6.3	-3.5	56.6	Peak Max	V	152	0	74.0	-17.4	Pass	NRB
12057.114	44.0	6.9	-2.5	48.4	Peak Max	V	194	332	74.0	-25.6	Pass	RB
7236.673	49.6	5.4	-5.8	49.2	Peak Max	V	178	179	74.0	-24.8	Pass	RB
4823.998	40.9	4.5	-9.7	35.7	Average Max	V	103	-2	54.0	-18.3	Pass	RB
9647.996	33.5	6.3	-3.5	36.3	Average Max	V	152	0	54.0	-17.7	Pass	NRB
12057.114	31.3	6.9	-2.5	35.7	Average Max	V	194	332	54.0	-18.3	Pass	RB
7236.673	32.2	5.4	-5.8	31.8	Average Max	V	178	179	54.0	-22.2	Pass	RB

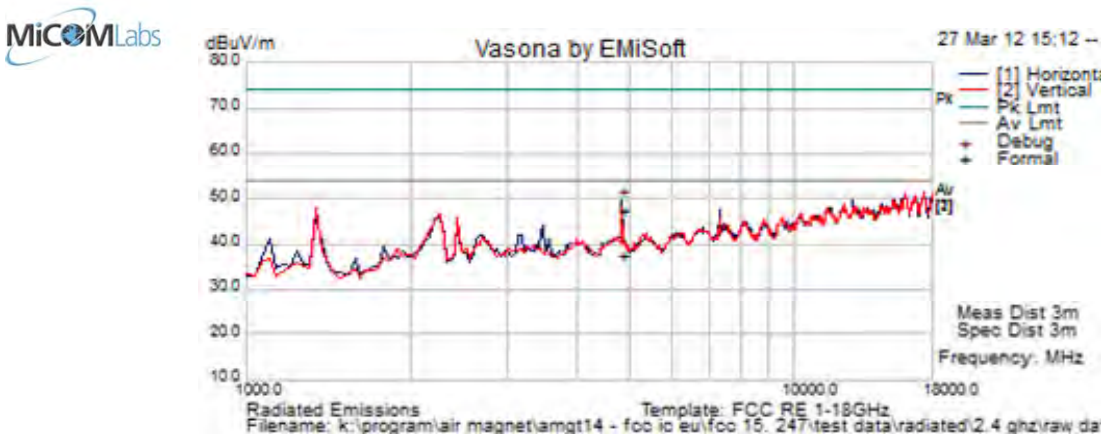
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Note: The scan peak above was set for power = 14 which was to high. Reduction to power = 13 saw a drop in emission amplitude by approximately 10 dB.

Band-Edge



Test Freq.	2437 MHz	**Engineer**	SB
Variant	802.11b; 1 Mbs	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	18	**Press. (mBars)**	1010
Antenna	external	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

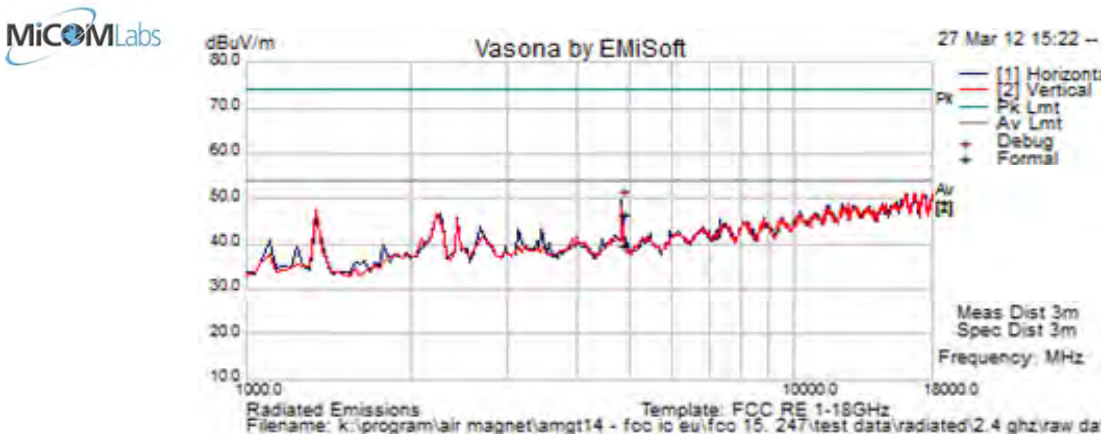


Formally measured emission peaks

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
4873.998	52.4	4.5	-9.7	47.3	Peak Max	H	99	332	74	-26.8	Pass	RB
4873.998	42.8	4.5	-9.7	37.6	Average Max	H	99	332	54	-16.4	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

Test Freq.	2462 MHz	**Engineer**	SB
Variant	802.11b; 1 Mbs	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	17	**Press. (mBars)**	1010
Antenna	external	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

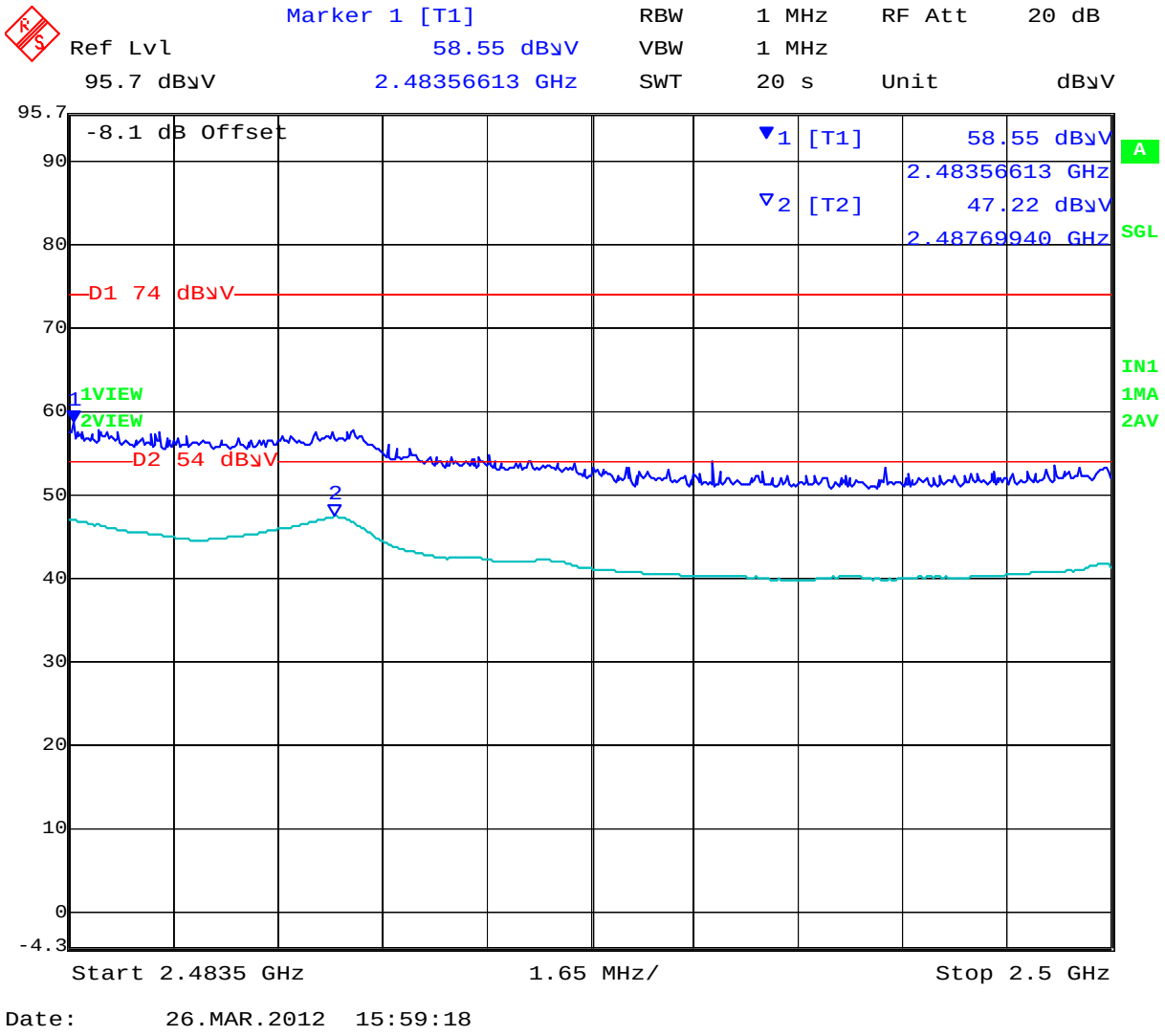


Formally measured emission peaks

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
4873.967	51.8	4.5	-9.7	46.6	Peak Max	H	99	188	74	-27.4	Pass	RB
4873.967	44.9	4.5	-9.7	39.7	Average Max	H	99	188	54.0	-14.4	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

Band-edge



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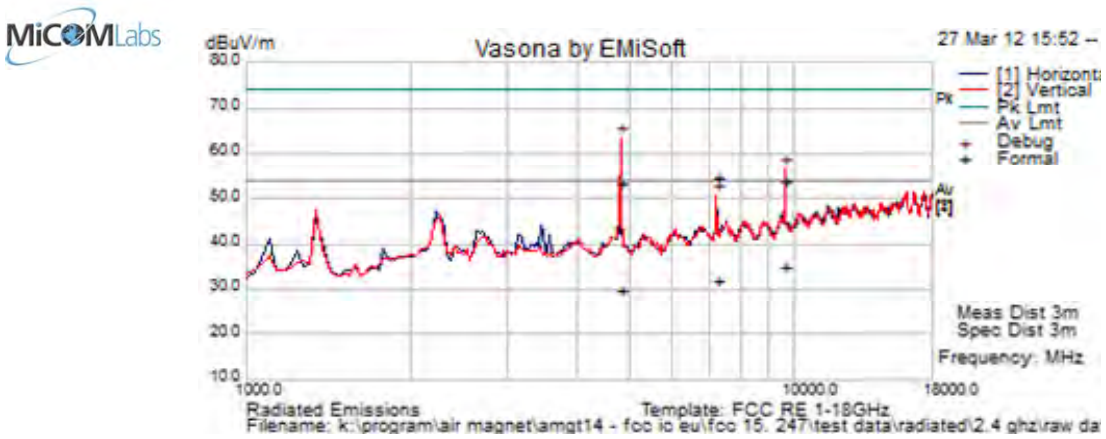
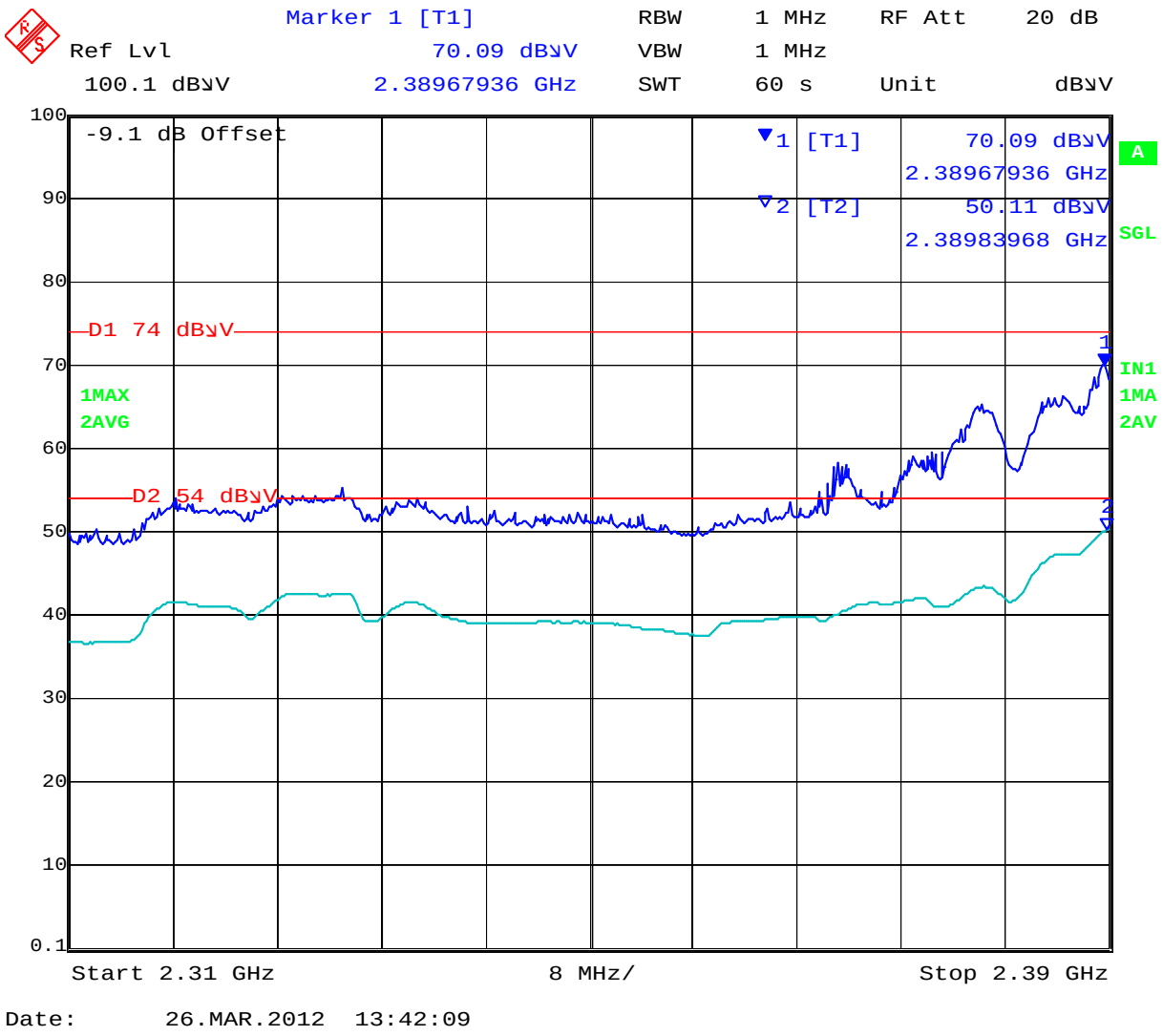
Test Freq.	2412 MHz	**Engineer**	SB
Variant	802.11g; 6 Mbs	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	13	**Press. (mBars)**	1010
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

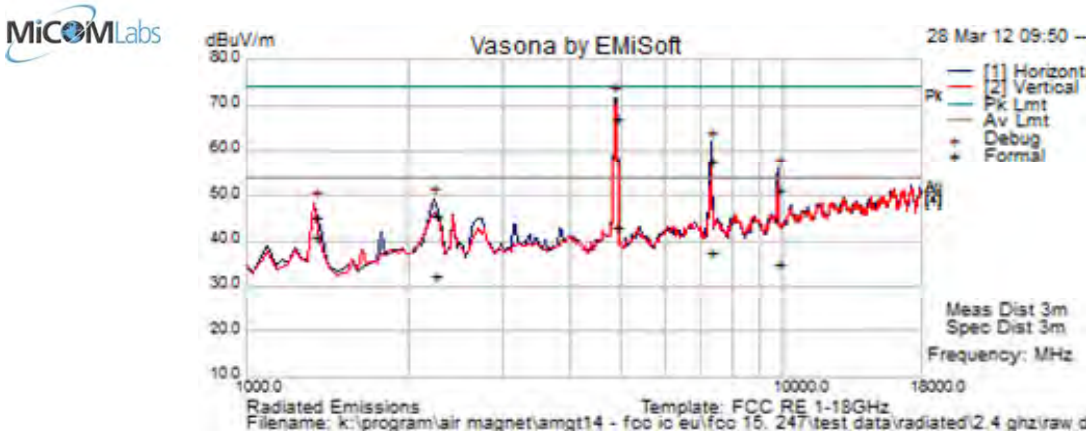
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
4821.643	58.5	4.5	-9.7	53.2	Peak Max	V	201	75	74.0	-20.8	Pass	RB
9650.501	50.8	6.3	-3.5	53.6	Peak Max	V	100	0	74.0	-20.4	Pass	NRB
7233.868	55.0	5.4	-5.8	54.6	Peak Max	H	153	0	74.0	-19.4	Pass	RB
4821.643	35.0	4.5	-9.7	29.8	Average Max	V	201	75	54.0	-24.2	Pass	RB
9650.501	31.9	6.3	-3.5	34.7	Average Max	V	100	0	54.0	-19.3	Pass	NRB
7233.868	32.4	5.4	-5.8	32.0	Average Max	H	153	0	54.0	-22.0	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



Output power reduction required (Power = 13)

Test Freq.	2437 MHz	**Engineer**	SB
Variant	802.11g; 6 Mbs	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	15	**Press. (mBars)**	1010
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

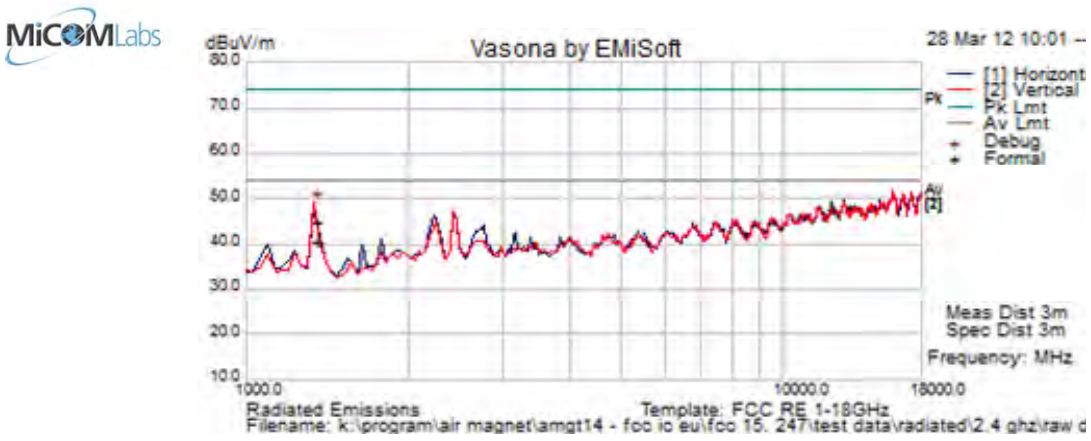


Formally measured emission peaks

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
4872.445	72.3	4.5	-9.7	67.1	Peak Max	H	127	0	74	-7.0	Pass	RB
7309.820	58.0	5.4	-5.7	57.8	Peak Max	H	190	70	74	-16.2	Pass	RB
9758.717	48.5	6.4	-3.7	51.1	Peak Max	H	162	150	74	-22.9	Pass	NRB
2243.287	54.5	2.9	-11.8	45.5	Peak Max	H	192	0	74	-28.5	Pass	RB
1350.088	57.0	2.3	-14.0	45.3	Peak Max	V	116	209	74	-28.7	Pass	RB
4872.445	48.3	4.5	-9.7	43.1	Average Max	H	127	0	54	-11.0	Pass	RB
7309.820	37.7	5.4	-5.7	37.4	Average Max	H	190	70	54	-16.6	Pass	RB
9758.717	32.4	6.4	-3.7	35.0	Average Max	H	162	150	54	-19.0	Pass	NRB
2243.287	41.3	2.9	-11.8	32.3	Average Max	H	192	0	54	-21.7	Pass	RB
1350.088	52.6	2.3	-14.0	40.9	Average Max	V	116	209	54	-13.1	Pass	RB

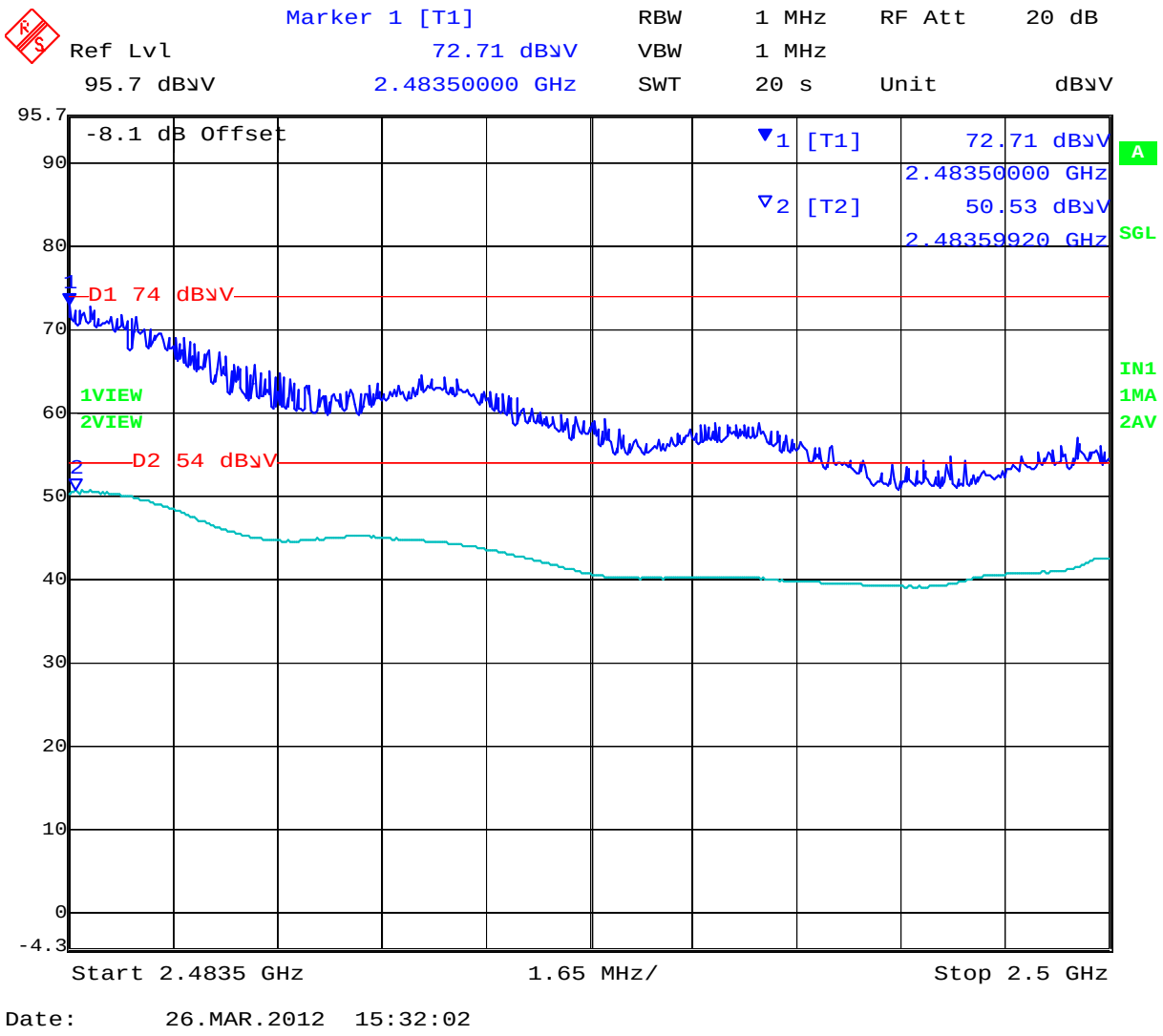
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	2462 MHz	**Engineer**	SB
Variant	802.11g; 6 Mbs	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	13	**Press. (mBars)**	1010
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



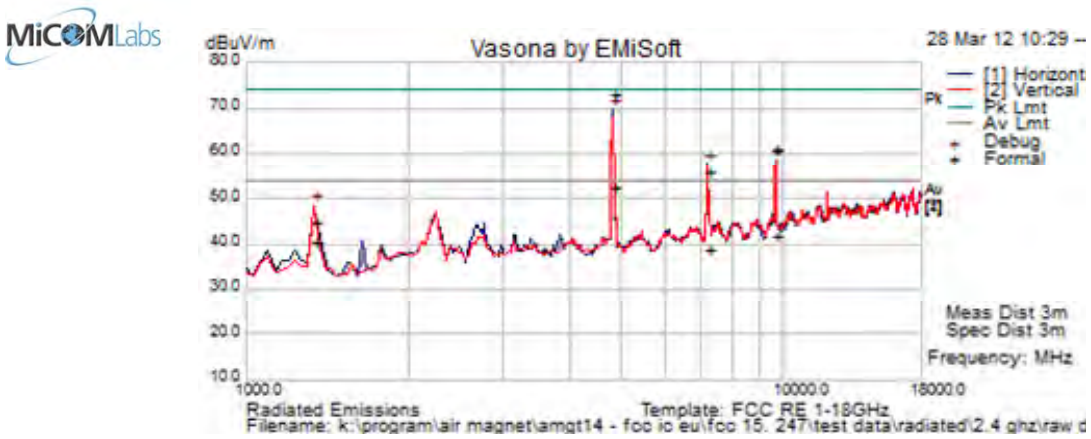
Formally measured emission peaks

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
1350.050	56.6	2.3	-14.0	44.9	Peak Max	V	117	209	74	-29.1	Pass	RB
1350.050	52.1	2.3	-14.0	40.4	Average Max	V	117	209	54.0	-13.6	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											



Output power reduction required (Power = 13)

Test Freq.	2412 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	14	**Press. (mBars)**	1010
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

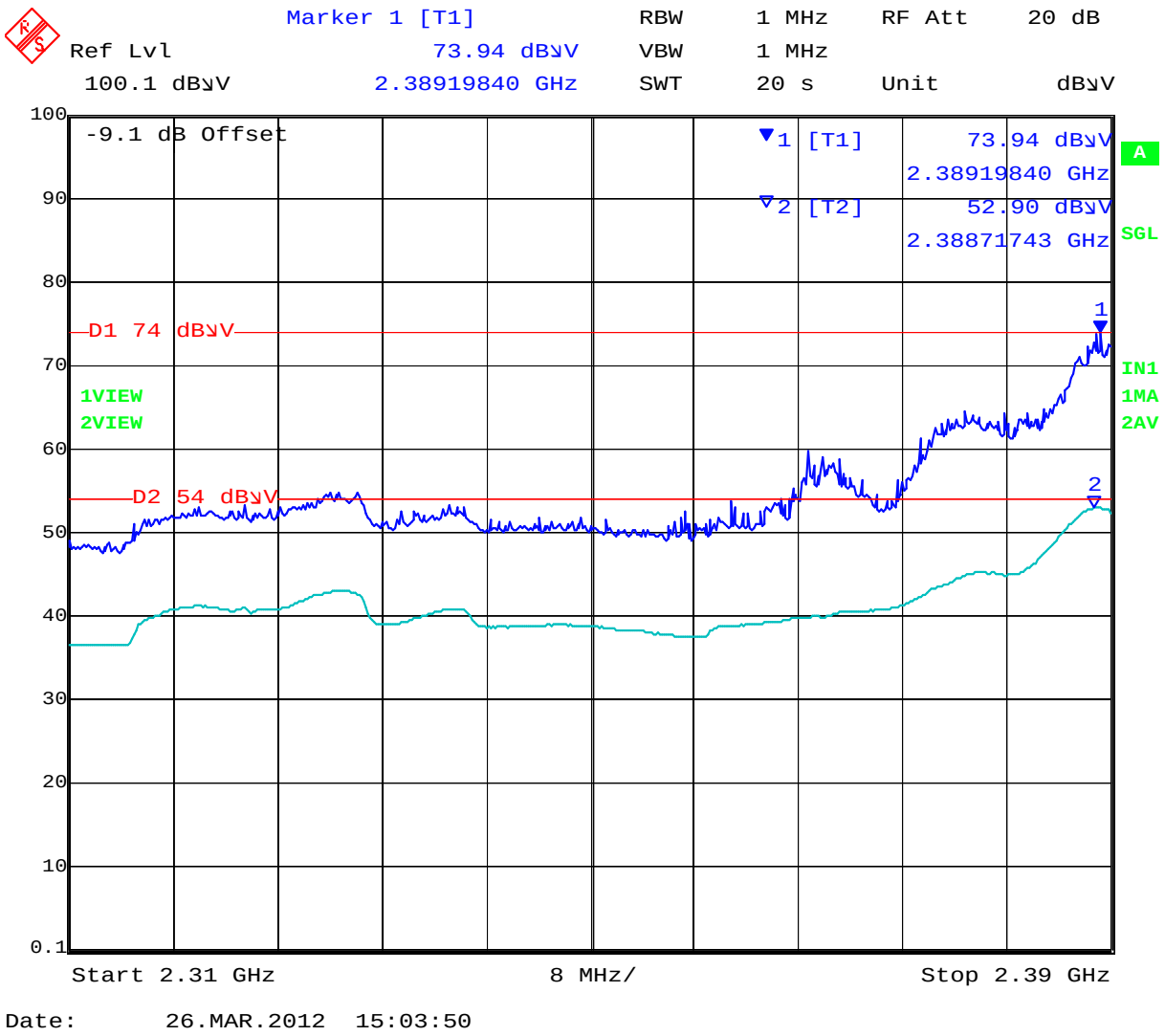


Formally measured emission peaks

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
4832.365	78.4	4.5	-9.7	73.2	Peak Max	H	118	192	74.0	-0.8	Pass	RB
9653.307	58.1	6.3	-3.5	60.9	Peak Max	V	118	268	74.0	-13.2	Pass	NRB
7231.363	56.3	5.4	-5.8	55.9	Peak Max	H	146	360	74.0	-18.1	Pass	RB
1349.931	56.6	2.3	-14.0	44.9	Peak Max	V	116	211	74.0	-29.1	Pass	RB
4832.365	57.6	4.5	-9.7	52.4	Average Max	H	118	192	54.0	-1.6	Pass	RB
9653.307	39.0	6.3	-3.5	41.8	Average Max	V	118	268	54.0	-12.2	Pass	NRB
7231.363	39.3	5.4	-5.8	38.9	Average Max	H	146	360	54.0	-15.1	Pass	RB
1349.931	52.3	2.3	-14.0	40.6	Average Max	V	116	211	54.0	-13.4	Pass	RB

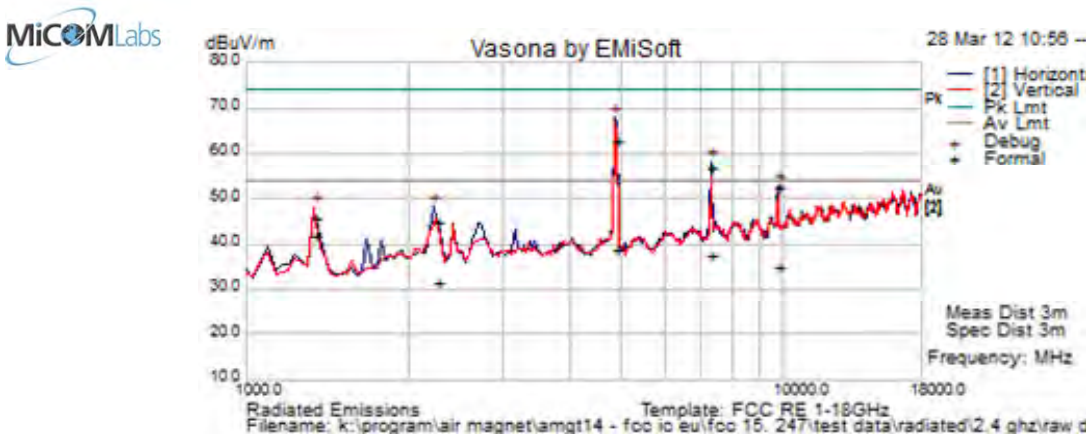
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	* Evaluated as 1600 MHz, RB Emission See Evaluation
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Band-Edge



Output power reduction required (Power = 14)

Test Freq.	2437 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	16	**Press. (mBars)**	1010
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

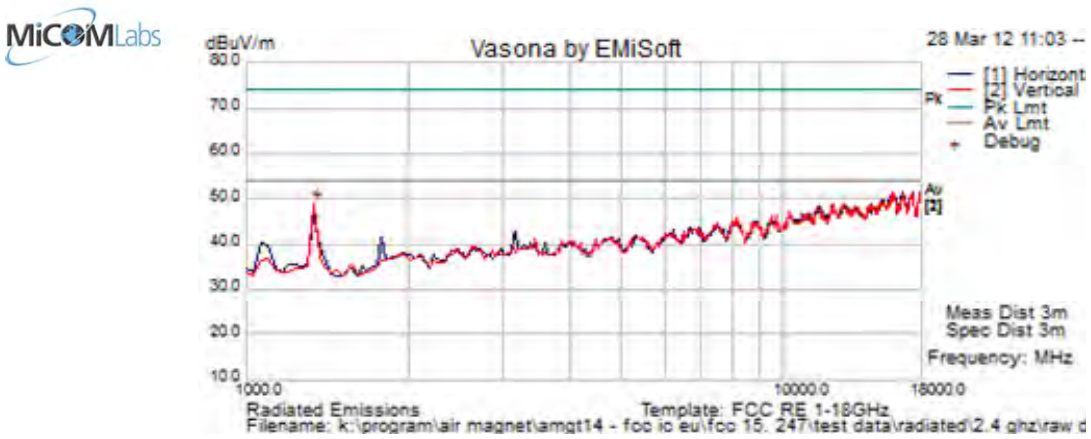


Formally measured emission peaks

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
4882.966	68.0	4.5	-9.7	62.8	Peak Max	H	98	0	74	-11.2	Pass	RB
7321.042	56.9	5.4	-5.7	56.7	Peak Max	H	98	-2	74	-17.3	Pass	RB
9766.132	49.9	6.4	-3.7	52.6	Peak Max	H	144	296	74	-21.5	Pass	NRB
2270.341	53.7	2.9	-11.8	44.8	Peak Max	H	111	335	74	-29.2	Pass	RB
1350.050	57.3	2.3	-14.0	45.6	Peak Max	V	116	208	74	-28.4	Pass	RB
4882.966	43.8	4.5	-9.7	38.6	Average Max	H	98	0	54	-15.4	Pass	RB
7321.042	37.7	5.4	-5.7	37.5	Average Max	H	98	-2	54	-16.5	Pass	RB
9766.132	32.4	6.4	-3.7	35.0	Average Max	H	144	296	54	-19.0	Pass	NRB
2270.341	40.4	2.9	-11.8	31.5	Average Max	H	111	335	54	-22.5	Pass	RB
1350.050	53.4	2.3	-14.0	41.7	Average Max	V	116	208	54	-12.3	Pass	RB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	* Evaluated as 1600 MHz, RB Emission See Evaluation
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	2462 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	14	**Press. (mBars)**	1010
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

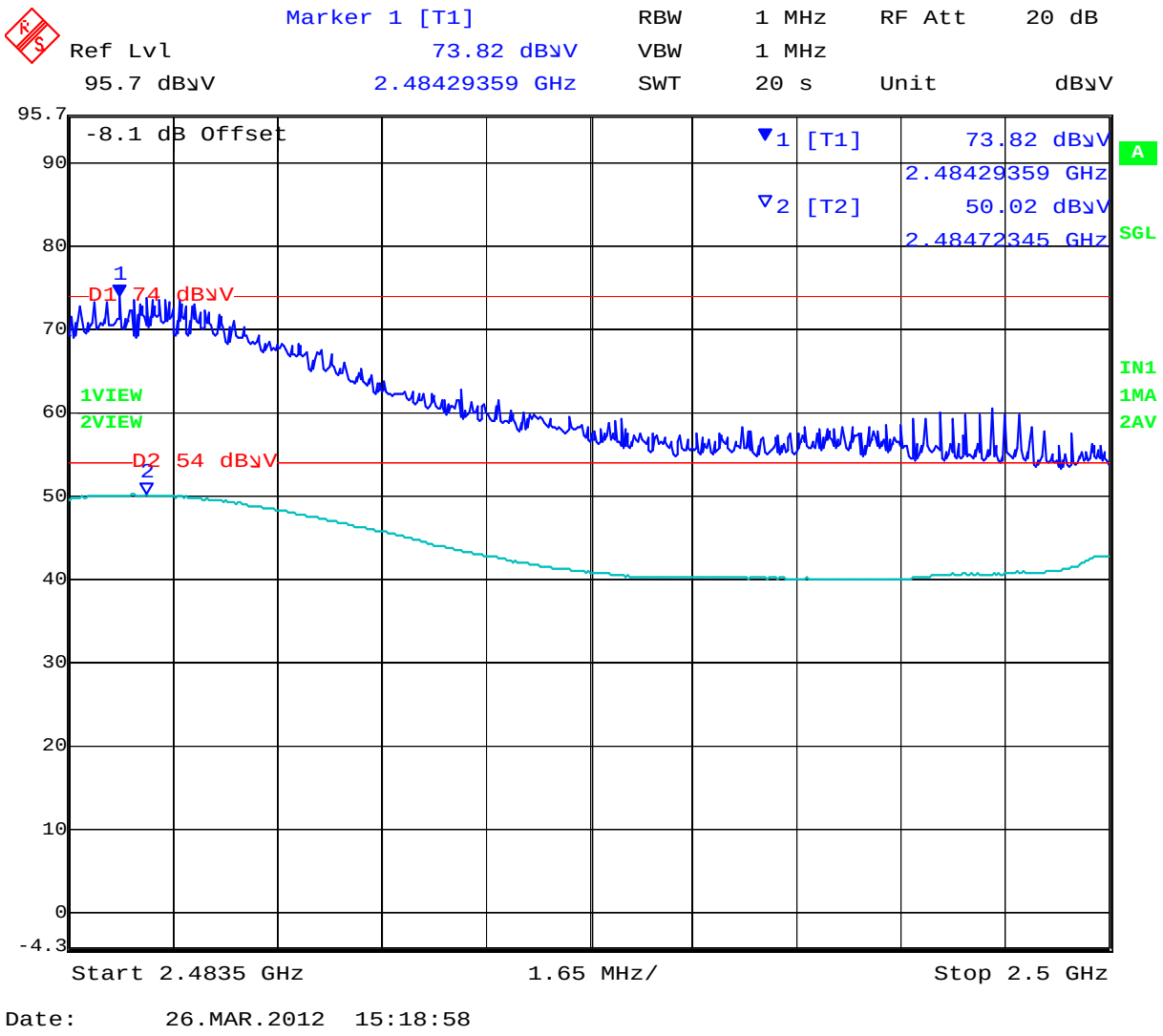


Formally measured emission peaks

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
1350.088	57.0	2.3	-14.0	45.3	Peak Max	V	116	209	74	-28.7	Pass	RB
1350.088	52.6	2.3	-14.0	40.9	Average Max	V	116	209	54	-13.1	Pass	RB

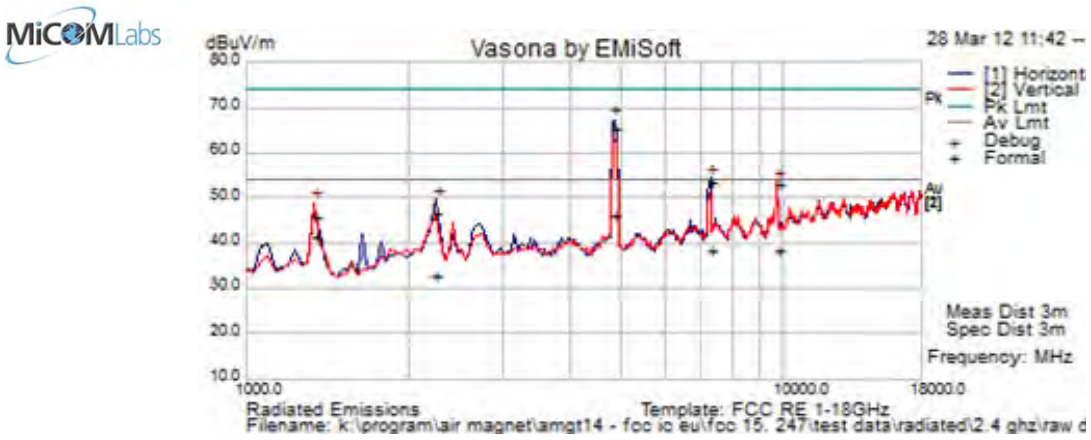
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	* Evaluated as 1600 MHz, RB Emission See Evaluation
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Band-Edge



Output power reduction required (Power = 13)

Test Freq.	2422 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (°C)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	13	**Press. (mBars)**	1010
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

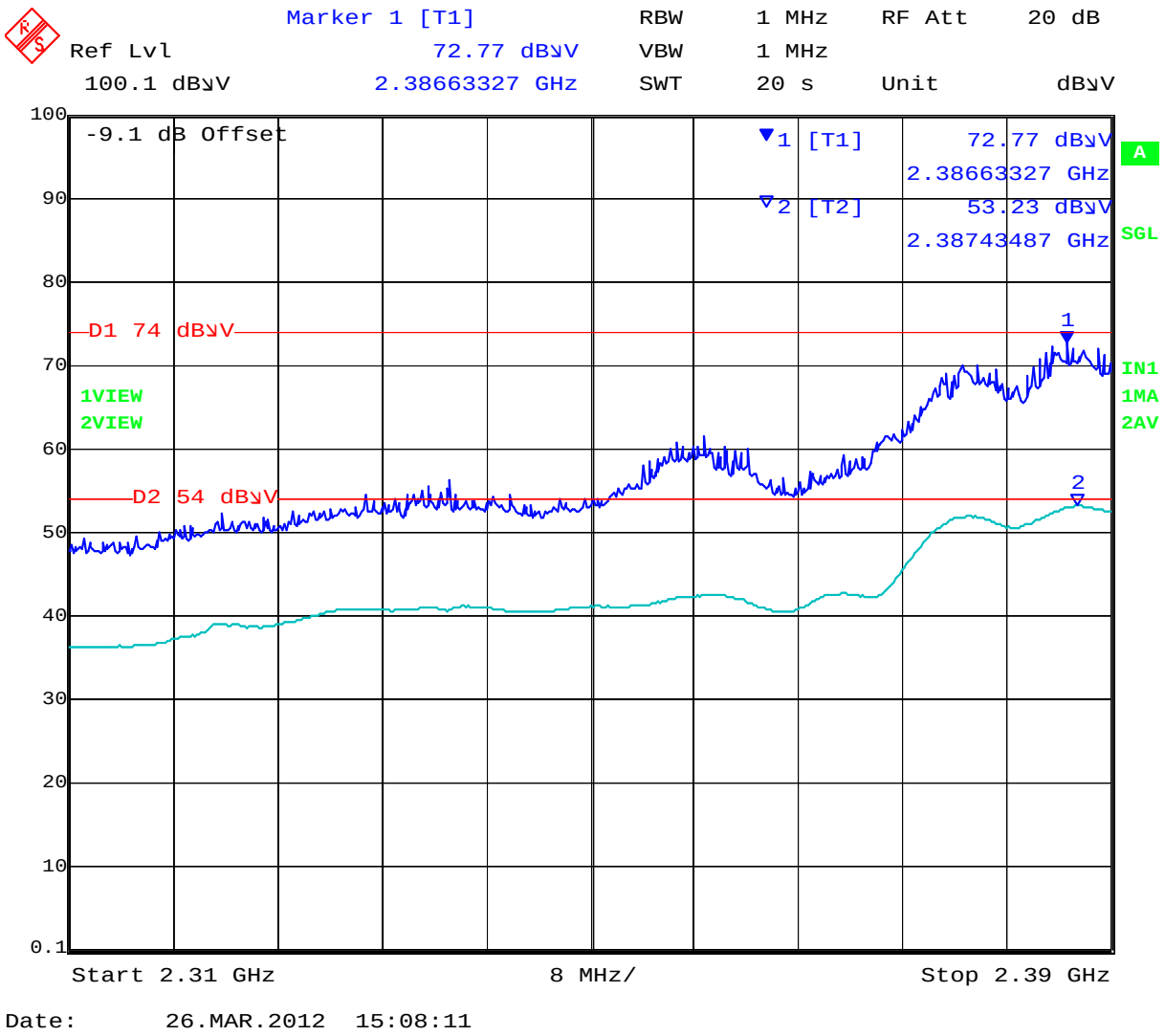


Formally measured emission peaks

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
4849.599	70.4	4.5	-9.7	65.2	Peak Max	H	201	203	74.0	-8.8	Pass	RB
7278.958	53.5	5.4	-5.8	53.2	Peak Max	H	183	-1	74.0	-20.8	Pass	RB
9721.443	50.4	6.3	-3.7	53.0	Peak Max	V	99	0	74.0	-21.0	Pass	NRB
2249.900	55.4	2.9	-11.8	46.5	Peak Max	H	113	0	74.0	-27.5	Pass	RB
1349.962	57.1	2.3	-14.0	45.4	Peak Max	V	116	209	74.0	-28.6	Pass	RB
4849.599	51.3	4.5	-9.7	46.2	Average Max	H	201	203	54.0	-7.9	Pass	RB
7278.958	38.8	5.4	-5.8	38.5	Average Max	H	183	-1	54.0	-15.5	Pass	RB
9721.443	35.8	6.3	-3.7	38.5	Average Max	V	99	0	54.0	-15.5	Pass	NRB
2249.900	41.6	2.9	-11.8	32.7	Average Max	H	113	0	54	-21.3	Pass	RB
1349.962	53.2	2.3	-14.0	41.5	Average Max	V	116	209	54	-12.6	Pass	RB

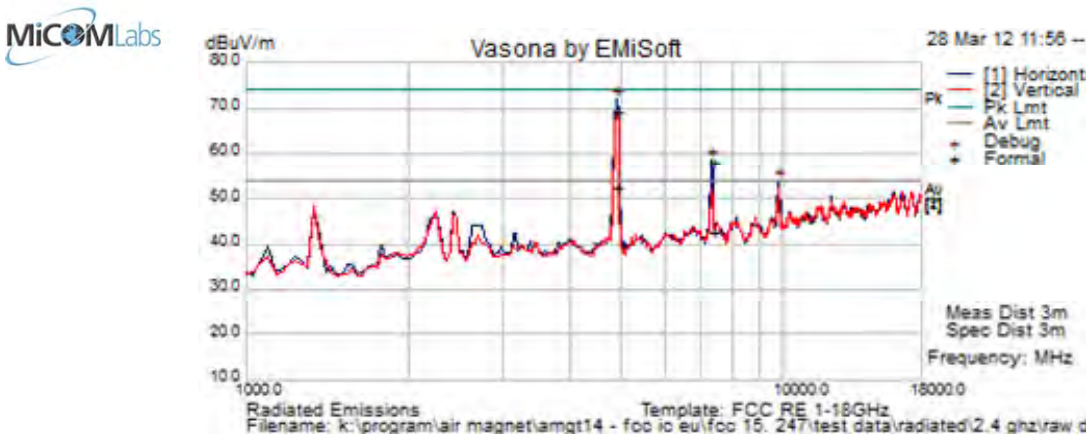
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	* Evaluated as 1600 MHz, RB Emission See Evaluation
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Band-Edge



Output power reduction required (Power = 13)

Test Freq.	2437 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	16	**Press. (mBars)**	1010
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

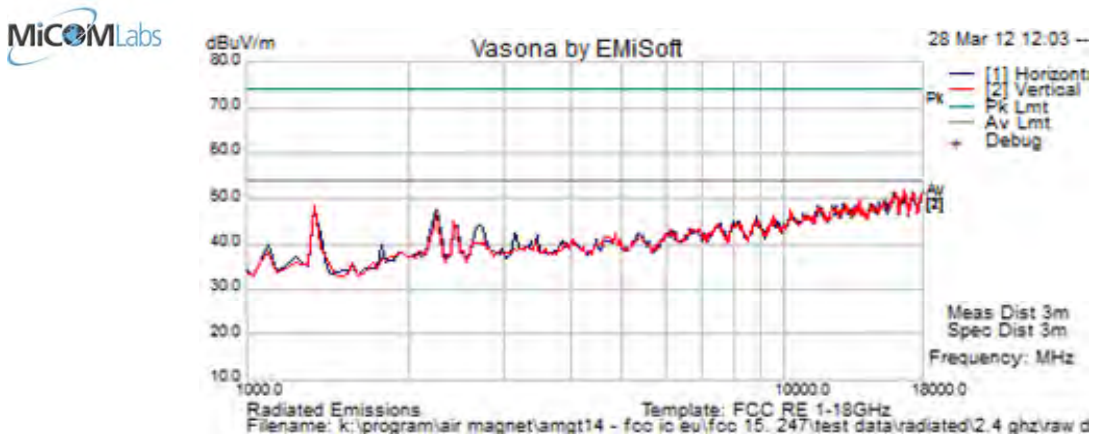


Formally measured emission peaks

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
4885.972	74.2	4.5	-9.7	69.0	Peak Max	H	201	79	74	-5.0	Pass	RB
7352.505	58.2	5.5	-5.6	58.1	Peak Max	H	158	-2	74	-15.9	Pass	RB
4885.972	57.7	4.5	-9.7	52.5	Average Max	H	201	79	54	-1.6	Pass	RB
7352.505	42.7	5.5	-5.6	42.5	Average Max	H	158	-2	54	-11.5	Pass	RB
9755.511	51.0	6.4	-3.7	53.7	Peak [Scan]	H	100	0				NRB

Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	* Evaluated as 1600 MHz, RB Emission See Evaluation
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Test Freq.	2452 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (ºC)**	22
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	13	**Press. (mBars)**	1010
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

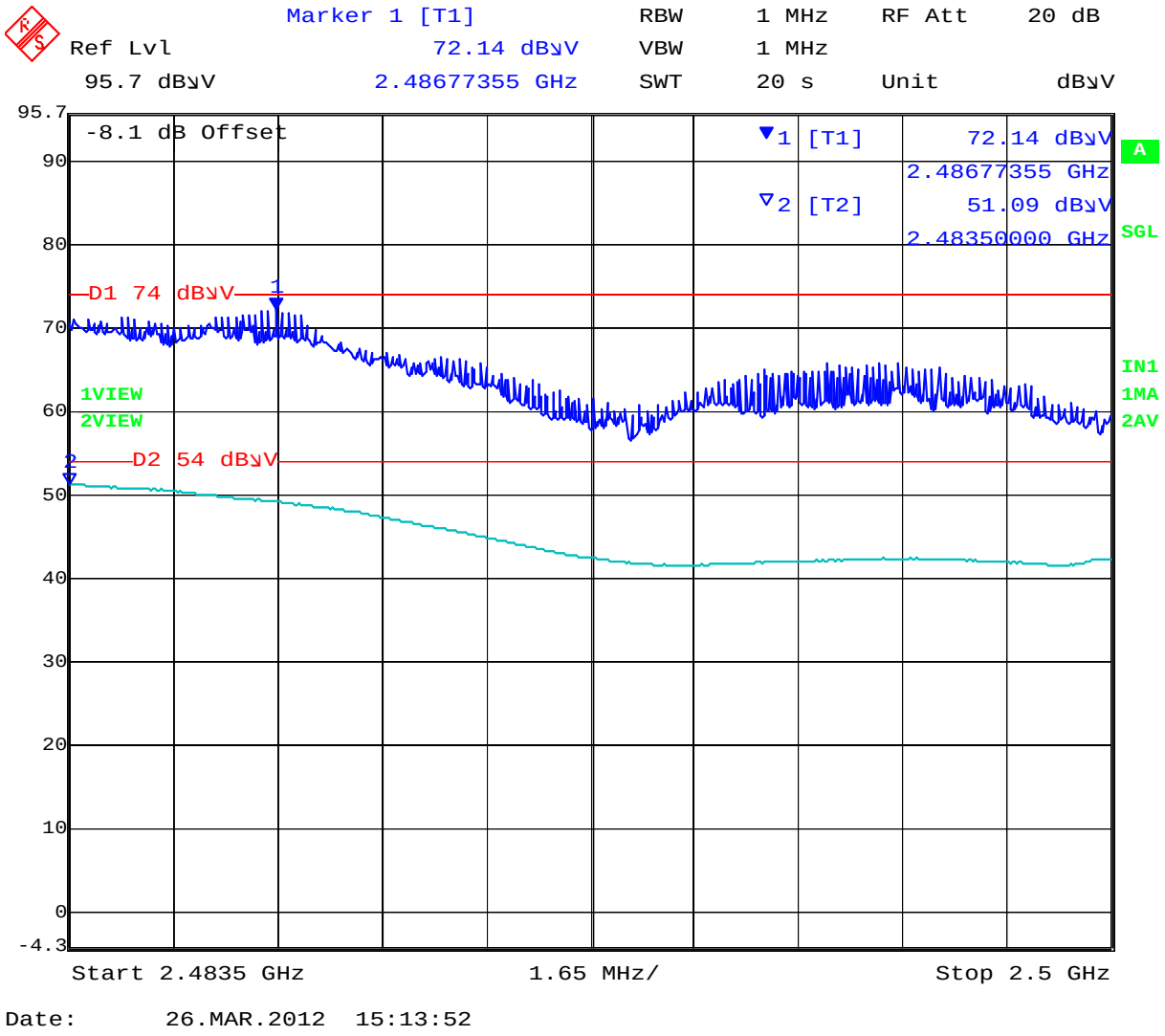


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments

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

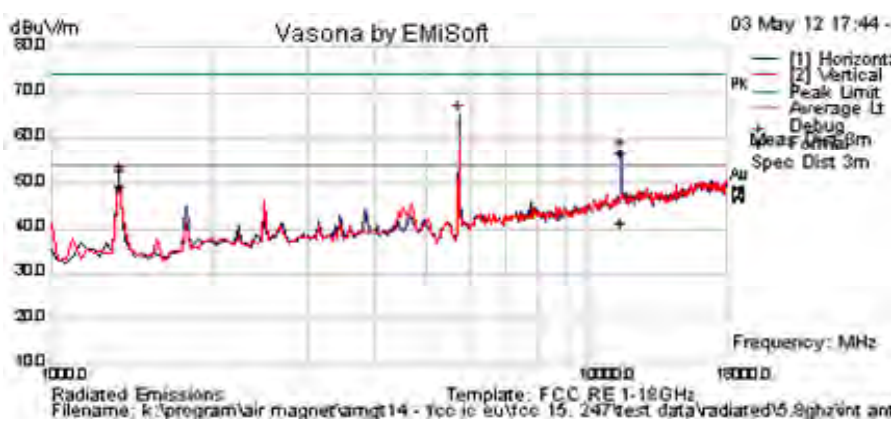
Band-Edge



Output power reduction required (Power = 13)

5.1.6.3. 5.8 GHz Integral Antenna

Test Freq.	5745 MHz	**Engineer**	SB
Variant	802.11a; 6.0 Mbs	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

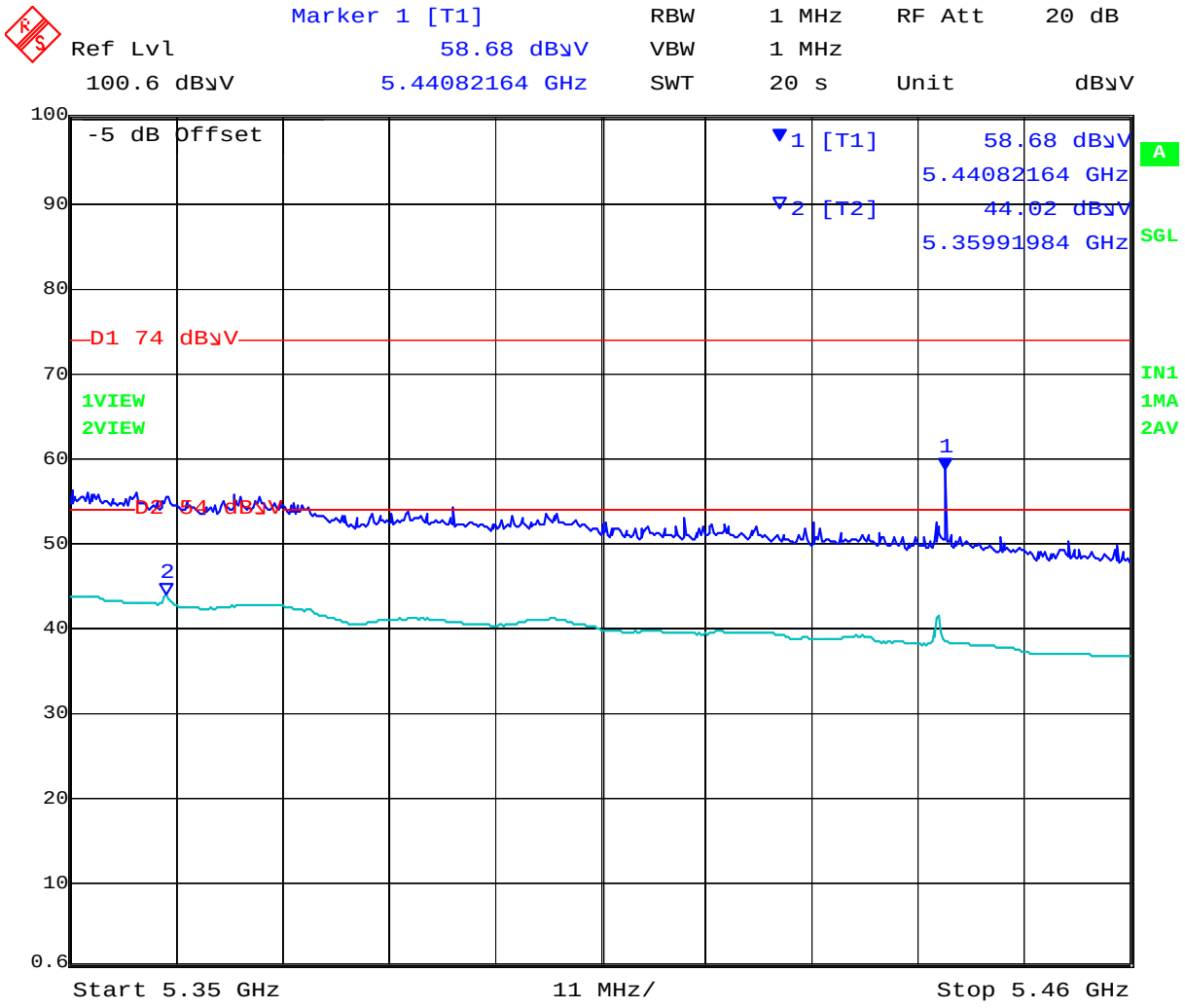


Formally measured emission peaks

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
11492.425	51.9	6.8	-2.0	56.7	Peak Max	H	106	361	74.0	-17.3	Pass	RB
1349.96	64.7	2.3	-14.0	53.0	Peak Max	H	104	17	74.0	-21.0	Pass	RB
11492.425	36.7	6.8	-2.0	41.5	Average Max	H	106	361	54	-12.5	Pass	RB
1349.960	61.1	2.3	-14.0	49.4	Average Max	H	104	17	54	-4.6	Pass	RB
5735.471	70.1	4.8	-9.5	65.3	Peak [Scan]	H	150	0				FUND

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

Band-Edge



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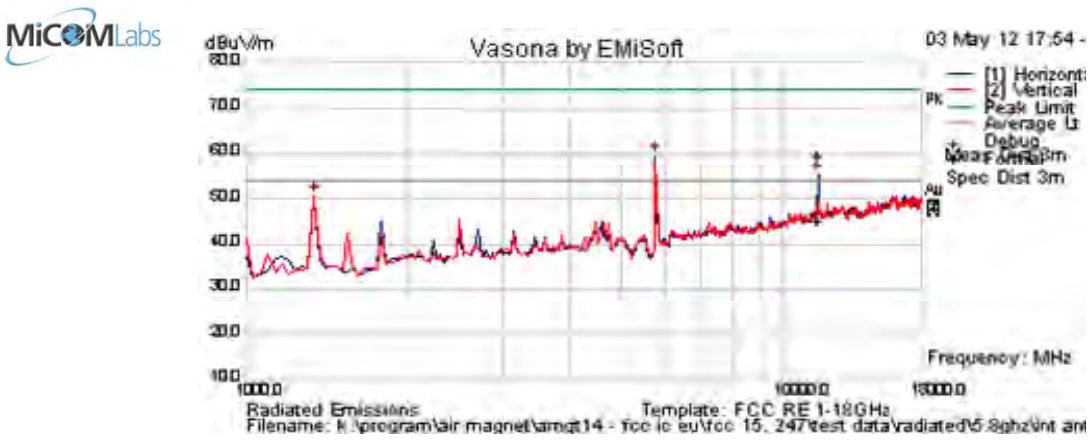
Maximum output power (Power = 20)

Test Freq.	5785 MHz	**Engineer**	SB
Variant	802.11a; 6.0 Mbs	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

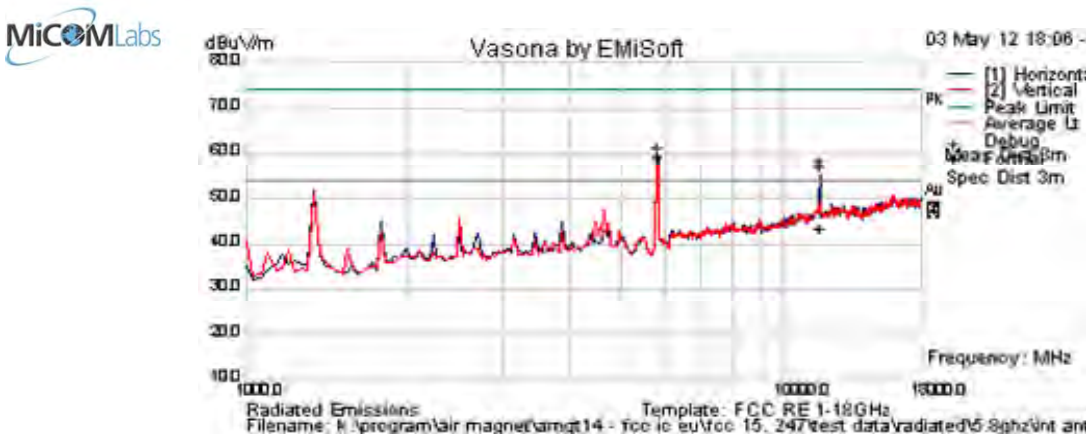


Formally measured emission peaks

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
11570.260	55.1	6.8	-2.0	59.9	Peak Max	H	136	361	74.0	-14.1	Pass	RB
1349.76	64.7	2.3	-14.0	53.0	Peak Max	H	104	17	74.0	-21.0	Pass	RB
11570.26	40.2	6.8	-2.0	45.0	Average Max	H	136	361	54.0	-9.0	Pass	RB
1349.76	61.1	2.3	-14.0	49.4	Average Max	H	104	17	54	-4.6	Pass	RB
5769.539	64.4	4.8	-9.5	59.7	Peak [Scan]	H	100	0				FUND

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

Test Freq.	5825 MHz	**Engineer**	SB
Variant	802.11a; 6.0 Mbs	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

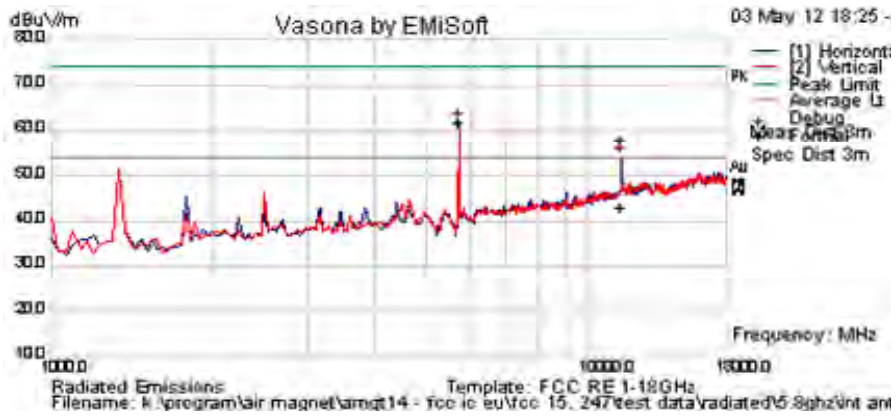


Formally measured emission peaks

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
11650.822	53.8	6.8	-2.3	58.4	Peak Max	H	114	312	74.0	-15.6	Pass	RB
1350.96	64.7	2.3	-14.0	53.0	Peak Max	H	104	17	74.0	-21.0	Pass	RB
11650.822	38.9	6.8	-2.3	43.5	Average Max	H	114	312	54.0	-10.5	Pass	RB
1350.96	61.1	2.3	-14.0	49.4	Average Max	H	104	17	54	-4.6	Pass	RB
5837.675	63.8	4.8	-9.3	59.4	Peak [Scan]	H	200	0				FUND

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

Test Freq.	5745 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

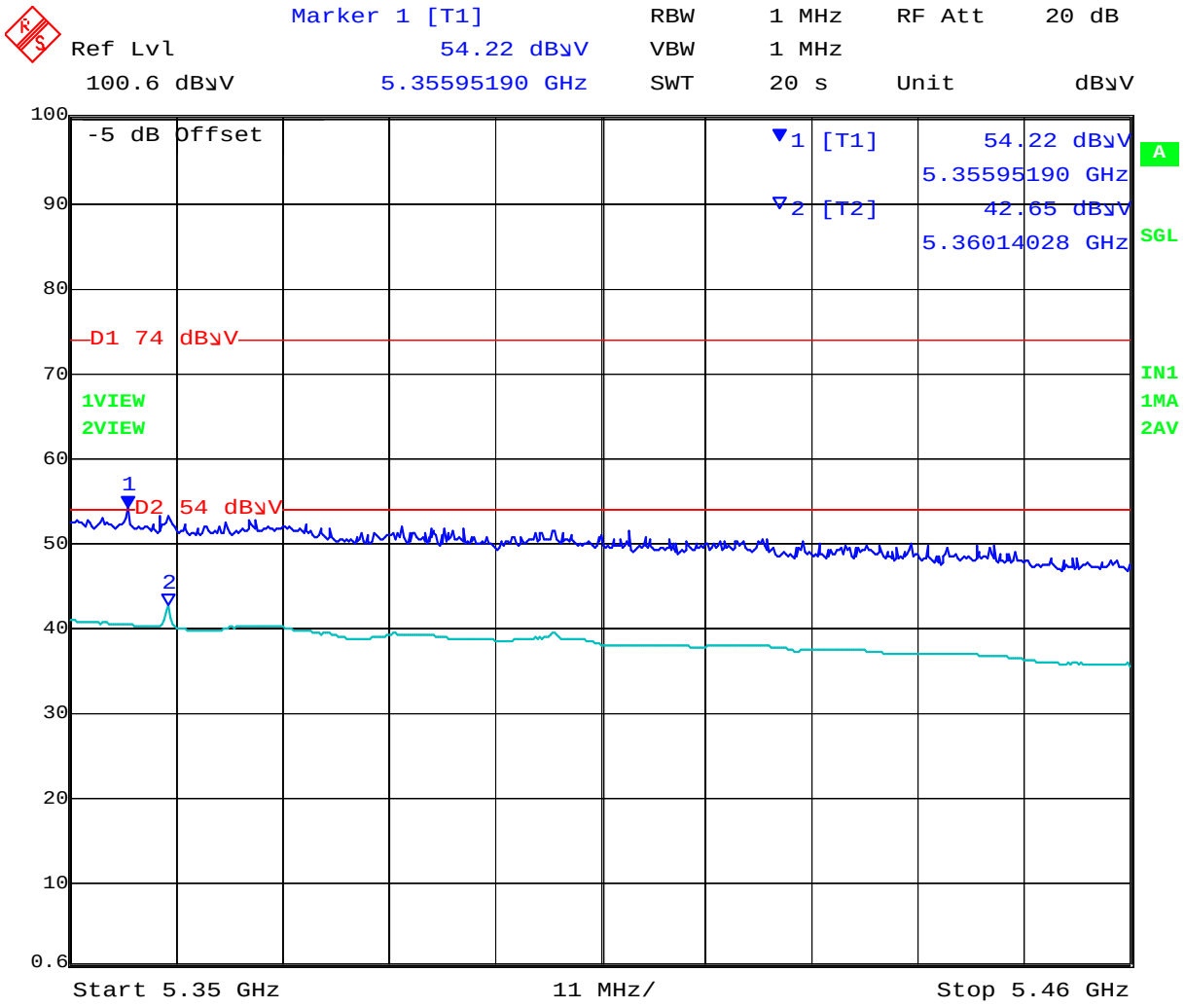


Formally measured emission peaks

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
11493.467	53.3	6.8	-2.0	58.1	Peak Max	H	128	0	74.0	-15.9	Pass	RB
1347.96	64.7	2.3	-14.0	53.0	Peak Max	H	104	17	74.0	-21.0	Pass	RB
11493.467	38.2	6.8	-2.0	43.1	Average Max	H	128	0	54.0	-10.9	Pass	RB
1347.960	61.1	2.3	-14.0	49.4	Average Max	H	104	17	54	-4.6	Pass	RB
5735.471	66.8	4.8	-9.5	62.0	Peak [Scan]	H	150	0				FUND

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

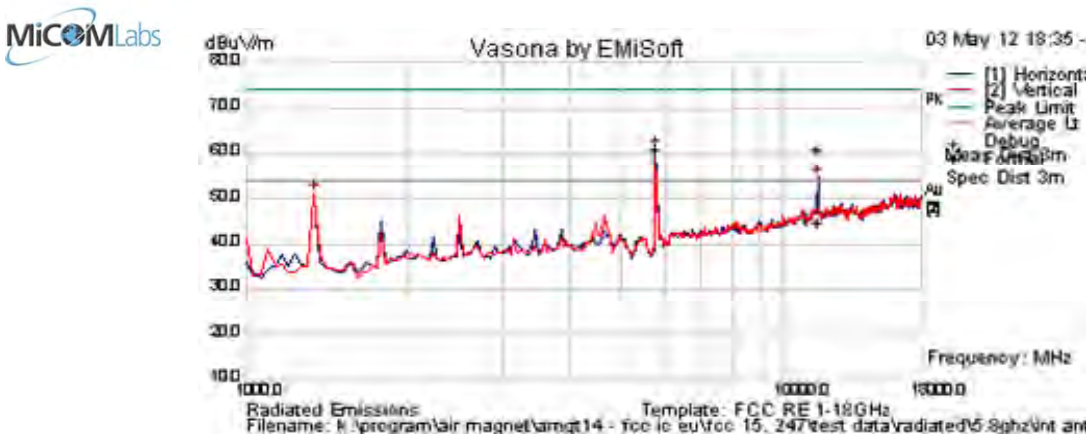
Band-Edge



Date: 3.MAY.2012 12:26:48

Maximum output power (Power = 20)

Test Freq.	5785 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

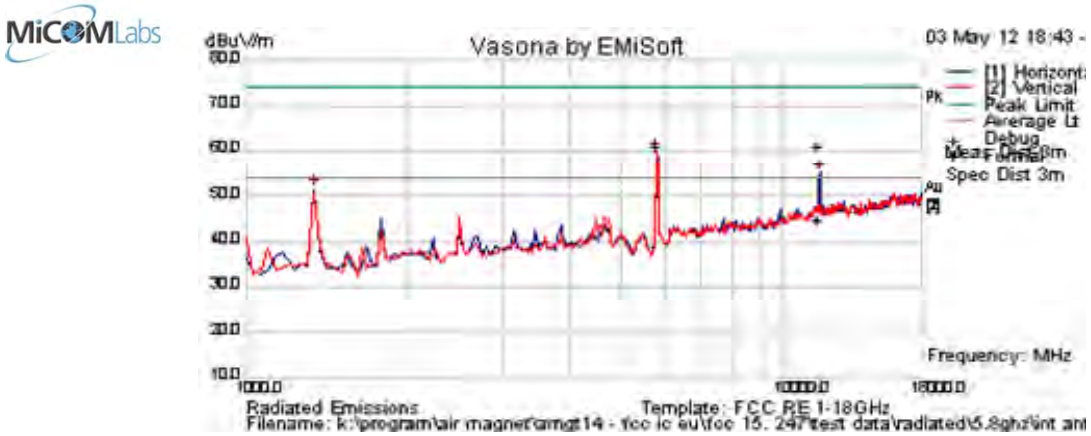


Formally measured emission peaks

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
11569.699	56.1	6.8	-2.0	60.9	Peak Max	H	99	1	74.0	-13.1	Pass	RB
1348.96	64.7	2.3	-14.0	53.0	Peak Max	H	104	17	74.0	-21.0	Pass	RB
11569.699	39.9	6.8	-2.0	44.7	Average Max	H	99	1	54.0	-9.3	Pass	RB
1348.96	61.1	2.3	-14.0	49.4	Average Max	H	104	17	54	-4.6	Pass	RB
5769.539078	65.7	4.8	-9.5	61.0	Peak [Scan]	H	200	0				FUND

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

Test Freq.	5825 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

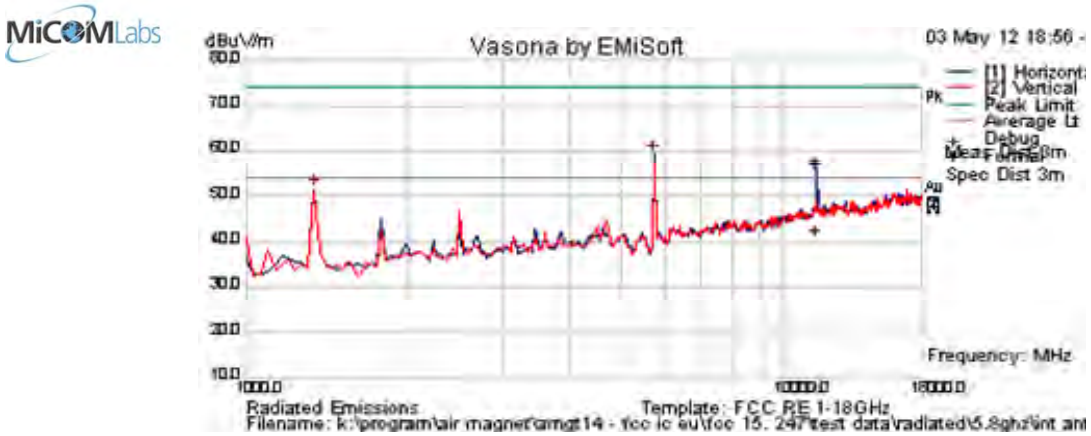


Formally measured emission peaks

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
11651.822	53.8	6.8	-2.3	58.4	Peak Max	H	114	312	74.0	-15.6	Pass	RB
1350.96	64.7	2.3	-14.0	53.0	Peak Max	H	104	17	74.0	-21.0	Pass	RB
11651.822	38.9	6.8	-2.3	43.5	Average Max	H	114	312	54.0	-10.5	Pass	RB
1350.96	61.1	2.3	-14.0	49.4	Average Max	H	104	17	54	-4.6	Pass	RB
5803.607	64.4	4.8	-9.4	59.8	Peak [Scan]	V	150	0				FUND

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

Test Freq.	5755 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (°C)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

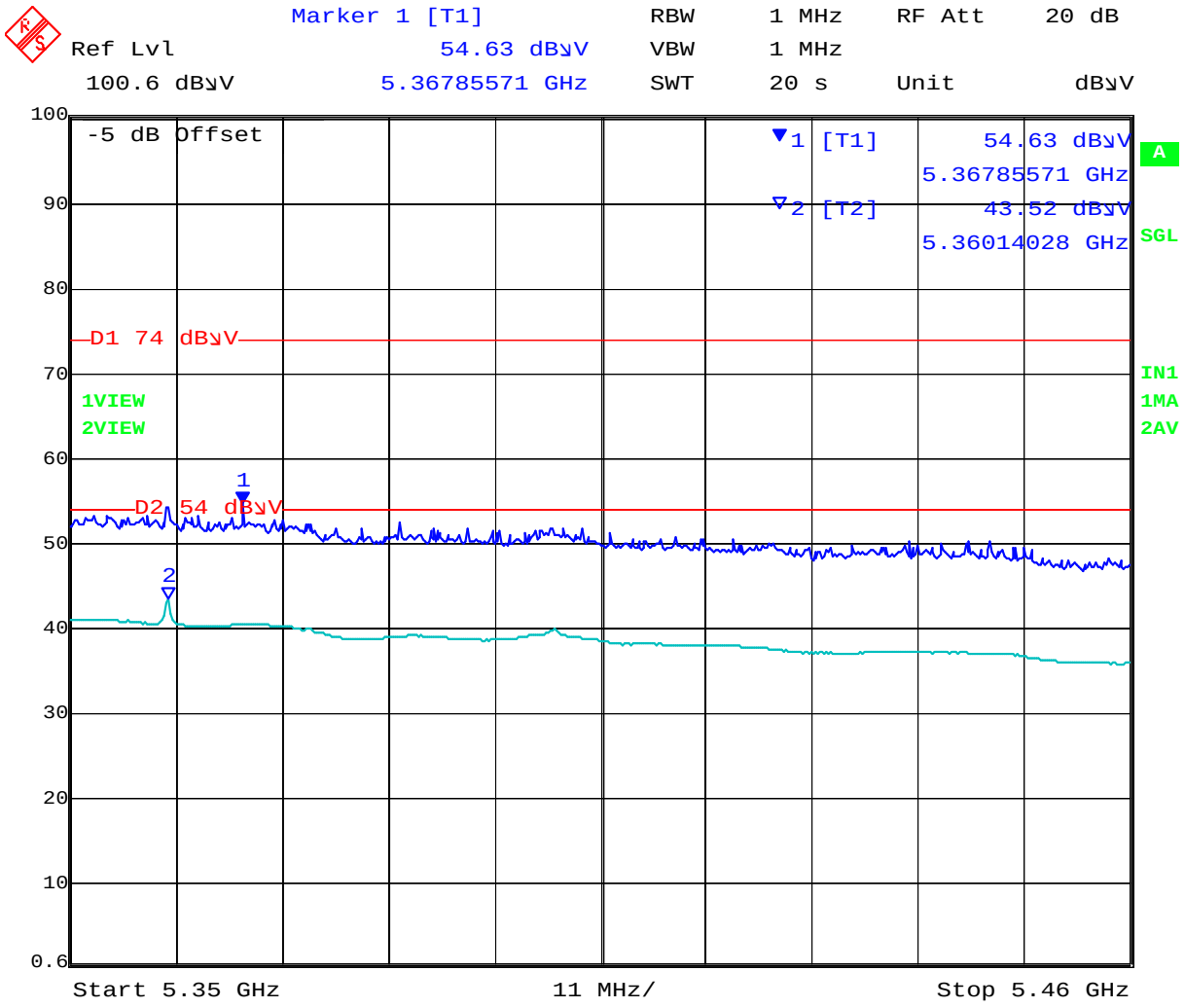


Formally measured emission peaks

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
11509.900	52.1	6.8	-1.9	57.0	Peak Max	H	117	360	74.0	-17.0	Pass	RB
1347.77	64.7	2.3	-14.0	53.0	Peak Max	H	104	17	74.0	-21.0	Pass	RB
11509.9	37.7	6.8	-1.9	42.6	Average Max	H	117	360	54.0	-11.4	Pass	RB
1347.77	61.1	2.3	-14.0	49.4	Average Max	H	104	17	54	-4.6	Pass	RB
5735.471	64.3	4.8	-9.5	59.5	Peak [Scan]	H	200	0				FUND

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

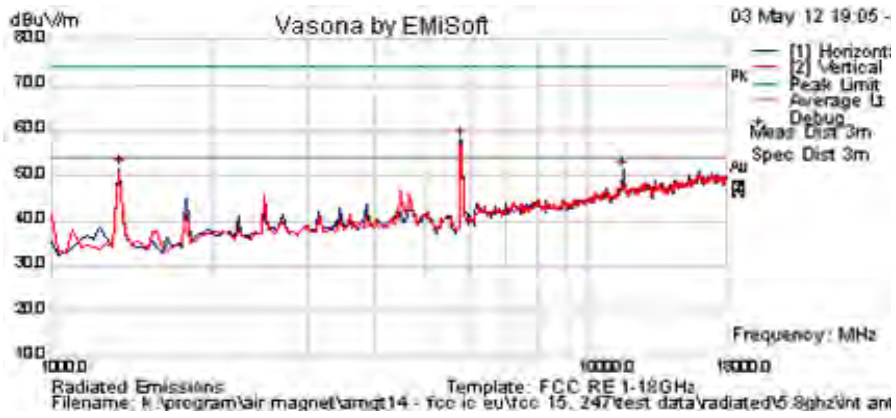
Band-Edge



Date: 3.MAY.2012 12:27:52

Maximum output power (Power = 20)

Test Freq.	5795 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna	integral	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



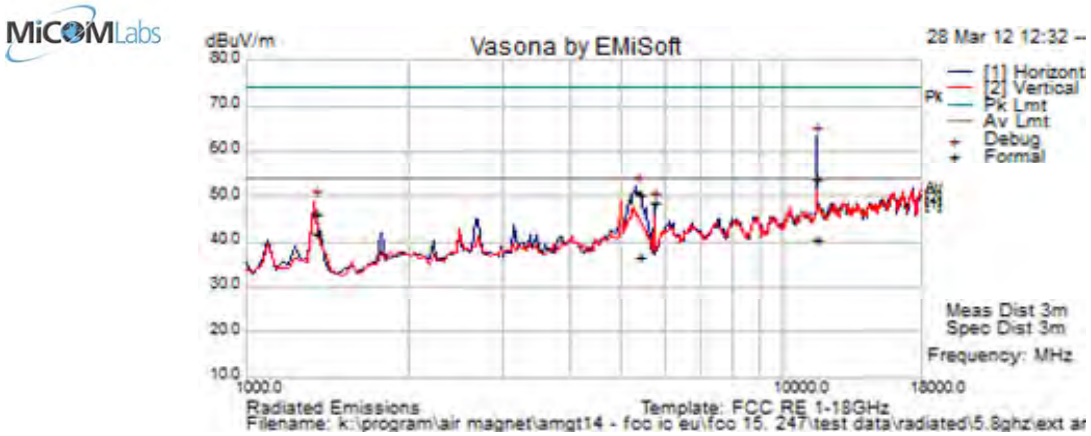
Formally measured emission peaks

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
5769.539	62.8	4.8	-9.5	58.1	Peak [Scan]	H	200	0				FUND
1340.681363	63.2	2.3	-13.9	51.6	Peak [Scan]	H	100	0	54.0	-2.4	Pass	RB
11595.190	46.7	6.8	-2.1	51.4	Peak [Scan]	H	100	0	54	-2.6	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

5.1.6.4. 5.8 GHz External Antenna

Test Freq.	5745 MHz	**Engineer**	SB
Variant	802.11a; 6.0 Mbs	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

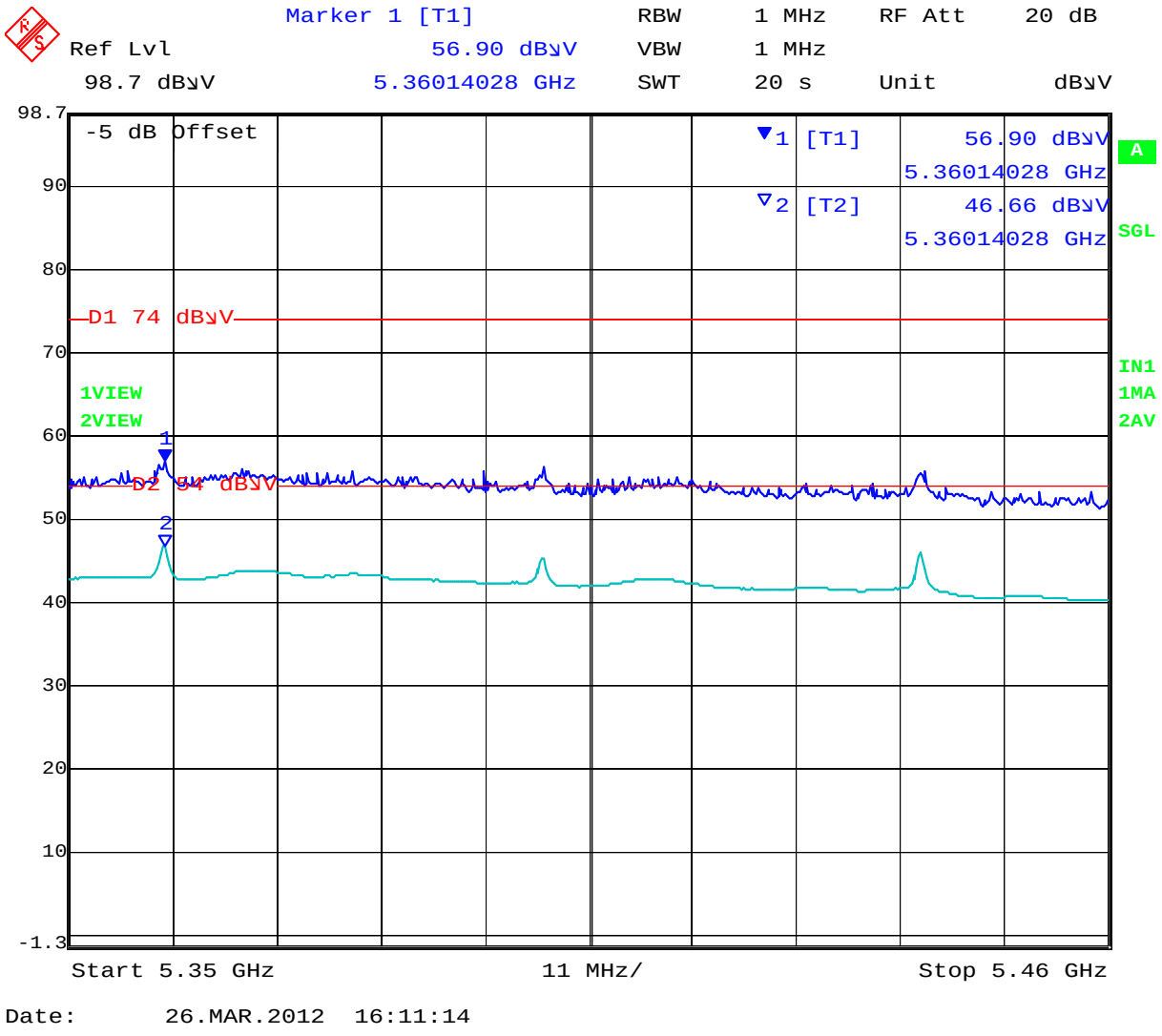


Formally measured emission peaks

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
11496.869	49.0	6.8	-2.0	53.9	Peak Max	H	99	19	74.0	-20.2	Pass	RB
5401.202	55.2	4.6	-9.6	50.2	Peak Max	H	99	223	74.0	-23.8	Pass	RB
1349.944	57.9	2.3	-14.0	46.2	Peak Max	V	99	211	74	-27.8	Pass	RB
11496.869	35.5	6.8	-2.0	40.4	Average Max	H	99	19	54	-13.6	Pass	RB
5401.202	41.8	4.6	-9.6	36.8	Average Max	H	99	223	54	-17.2	Pass	RB
1349.944	53.6	2.3	-14.0	42.0	Average Max	V	99	211	54	-12.1	Pass	RB
5735.471	53.4	4.8	-9.5	48.6	Peak [Scan]	H	100	0				FUND

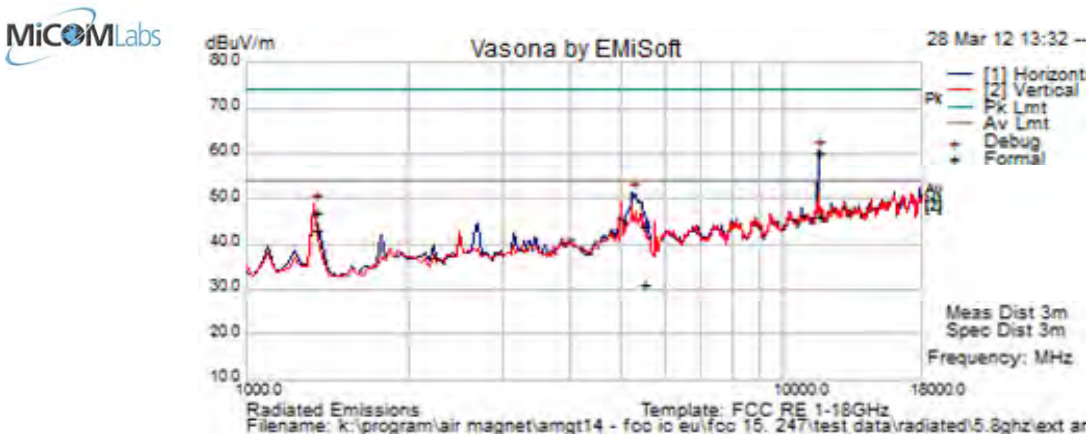
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Band-Edge



Maximum output power (Power = 20)

Test Freq.	5785 MHz	**Engineer**	SB
Variant	802.11a; 6.0 Mbs	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

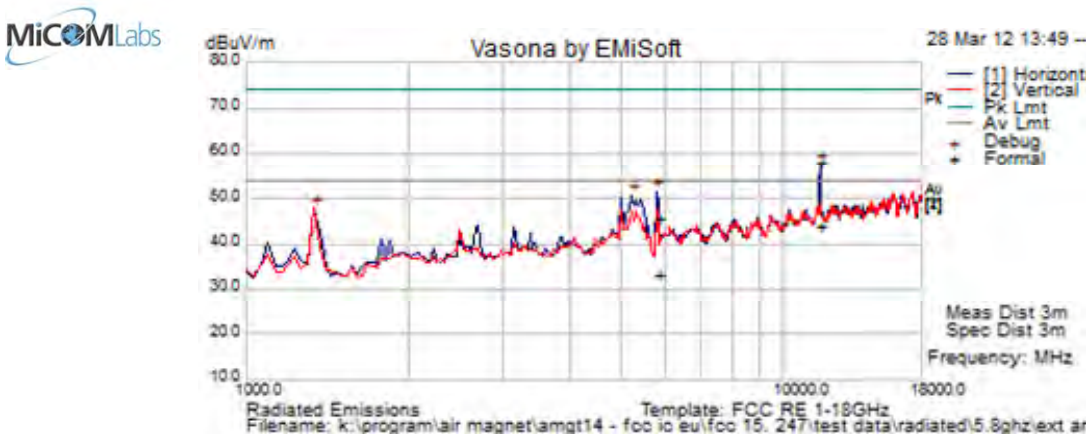


Formally measured emission peaks

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
11569.902	55.4	6.8	-2.0	60.2	Peak Max	H	98	362	74.0	-13.8	Pass	RB
5470.541	48.9	4.6	-9.7	43.8	Peak Max	H	104	0	74.0	-30.2	Pass	RB
1349.950	58.7	2.3	-14.0	47.0	Peak Max	V	121	0	74	-27.0	Pass	RB
11569.902	41.2	6.8	-2.0	46.0	Average Max	H	98	362	54	-8.0	Pass	RB
5470.541	36.0	4.6	-9.7	30.9	Average Max	H	104	0	54	-23.1	Pass	RB
1349.950	54.8	2.3	-14.0	43.1	Average Max	V	121	0	54	-10.9	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

Test Freq.	5825 MHz	**Engineer**	SB
Variant	802.11a; 6.0 Mbs	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

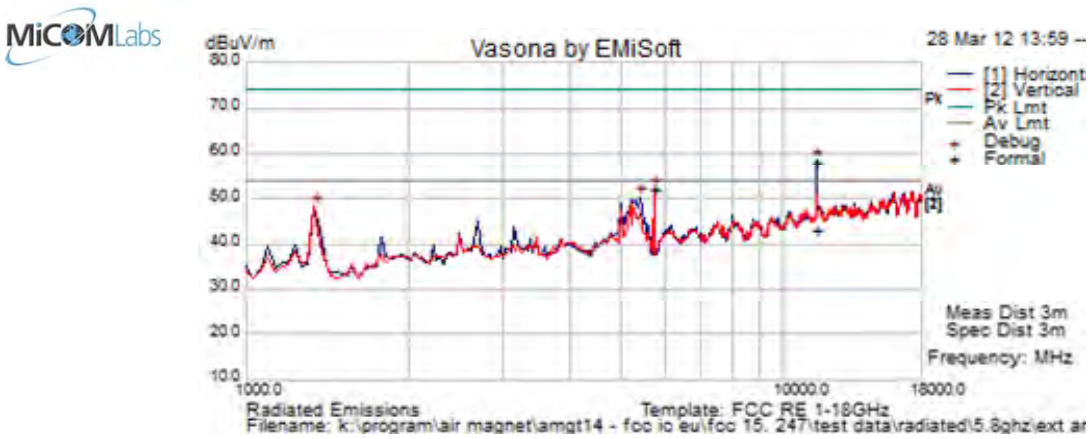


Formally measured emission peaks

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
11649.800	53.7	6.8	-2.3	58.2	Peak Max	H	104	361	74.0	-15.8	Pass	RB
5828.357	50.1	4.8	-9.3	45.6	Peak Max	H	98	208	74.0	-28.4	Pass	RB
1349.950	58.7	2.3	-14.0	47.0	Peak Max	V	121	0	74	-27.0	Pass	RB
11649.800	39.5	6.8	-2.3	44.1	Average Max	H	104	361	54	-9.9	Pass	RB
5828.357	37.9	4.8	-9.3	33.4	Average Max	H	98	208	54	-20.6	Pass	RB
1349.950	54.8	2.3	-14.0	43.1	Average Max	V	121	0	54	-10.9	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

Test Freq.	5745 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

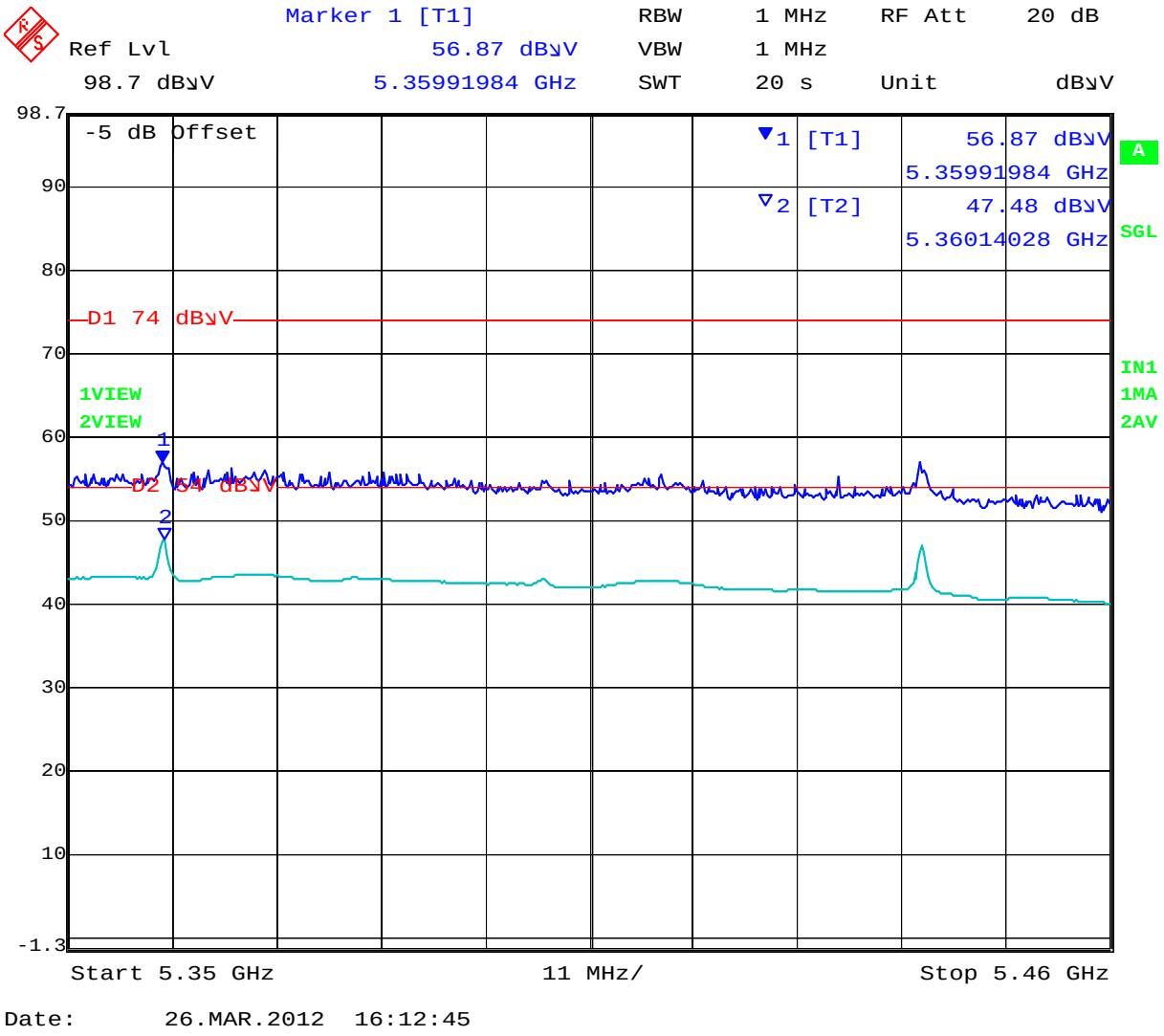


Formally measured emission peaks

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
11491.232	53.4	6.8	-2.0	58.2	Peak Max	H	116	322	74.0	-15.8	Pass	RB
5470.541	48.9	4.6	-9.7	43.8	Peak Max	H	104	0	74.0	-30.2	Pass	RB
1349.950	58.7	2.3	-14.0	47.0	Peak Max	V	121	0	74	-27.0	Pass	RB
11491.232	38.4	6.8	-2.0	43.3	Average Max	H	116	322	54.0	-10.8	Pass	RB
5470.541	36.0	4.6	-9.7	30.9	Average Max	H	104	0	54	-23.1	Pass	RB
1349.950	54.8	2.3	-14.0	43.1	Average Max	V	121	0	54	-10.9	Pass	RB
5735.471	57.0	4.8	-9.5	52.2	Peak [Scan]	H	150	0				FUND

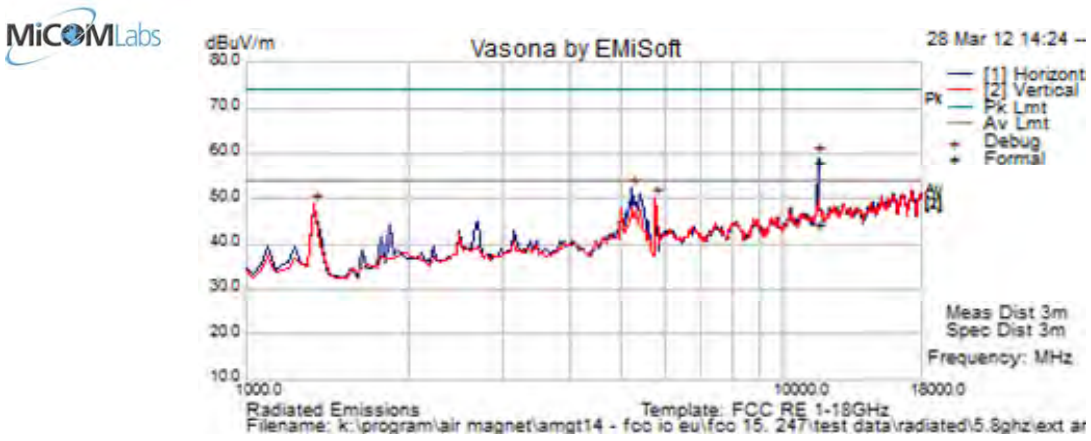
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Band-Edge



Maximum output power (Power = 20)

Test Freq.	5785 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

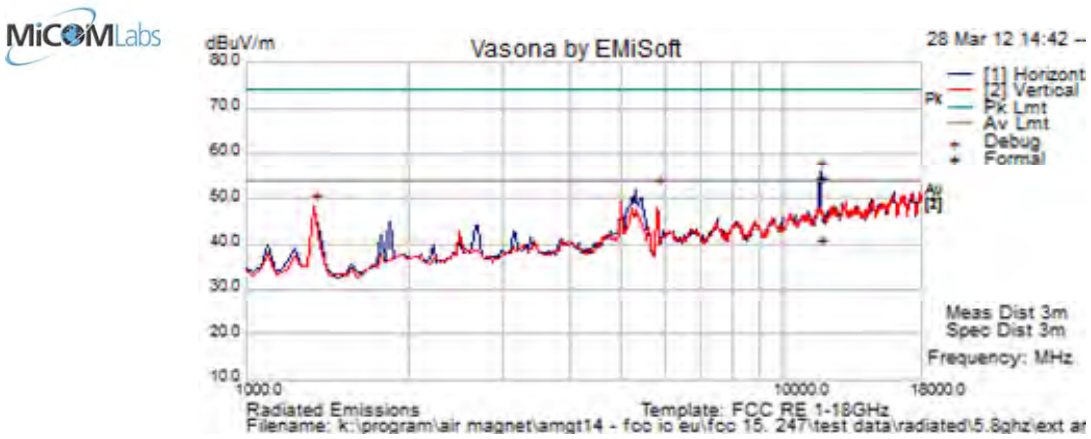


Formally measured emission peaks

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
11572.269	53.3	6.8	-2.0	58.1	Peak Max	H	98	360	74.0	-16.0	Pass	RB
11572.269	39.4	6.8	-2.0	44.2	Average Max	H	98	360	54.0	-9.8	Pass	RB
5470.541	48.9	4.6	-9.7	43.8	Peak Max	H	104	0	74.0	-30.2	Pass	RB
1349.950	58.7	2.3	-14.0	47.0	Peak Max	V	121	0	74	-27.0	Pass	RB
11572.269	39.4	6.8	-2.0	44.2	Average Max	H	98	360	54.0	-9.8	Pass	RB
5470.541	36.0	4.6	-9.7	30.9	Average Max	H	104	0	54	-23.1	Pass	RB
1349.950	54.8	2.3	-14.0	43.1	Average Max	V	121	0	54	-10.9	Pass	RB
5769.539	54.7	4.8	-9.5	50.0	Peak [Scan]	V	150	0				FUND

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

Test Freq.	5825 MHz	**Engineer**	SB
Variant	802.11n; HT-20; 6.5 MCS	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

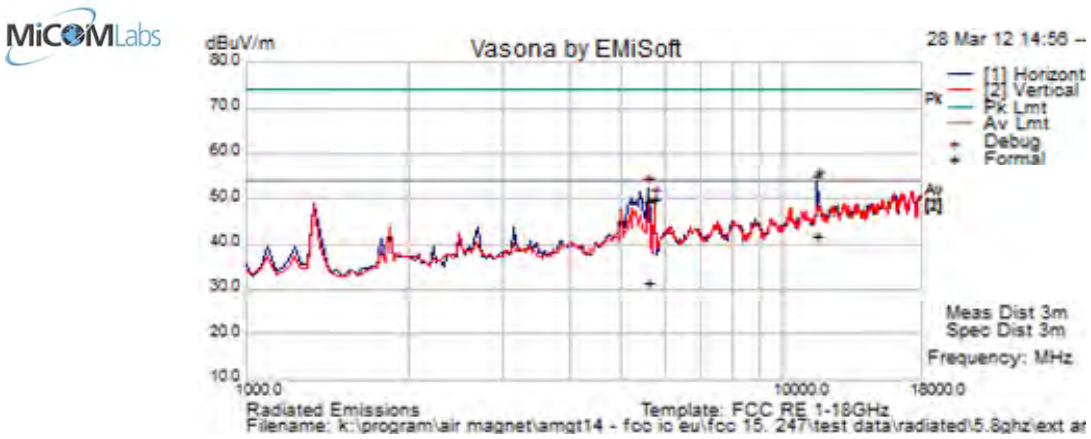


Formally measured emission peaks

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
11652.806	50.1	6.8	-2.3	54.6	Peak Max	H	149	0	74.0	-19.4	Pass	RB
1349.950	58.7	2.3	-14.0	47.0	Peak Max	V	121	0	74	-27.0	Pass	RB
11652.806	36.2	6.8	-2.3	40.8	Average Max	H	149	0	54.0	-13.2	Pass	RB
1349.950	54.8	2.3	-14.0	43.1	Average Max	V	121	0	54	-10.9	Pass	RB
5823.246	56.5	4.8	-9.3	52.0	Peak [Scan]	H	100	0				FUND

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

Test Freq.	5755 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna	ext ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

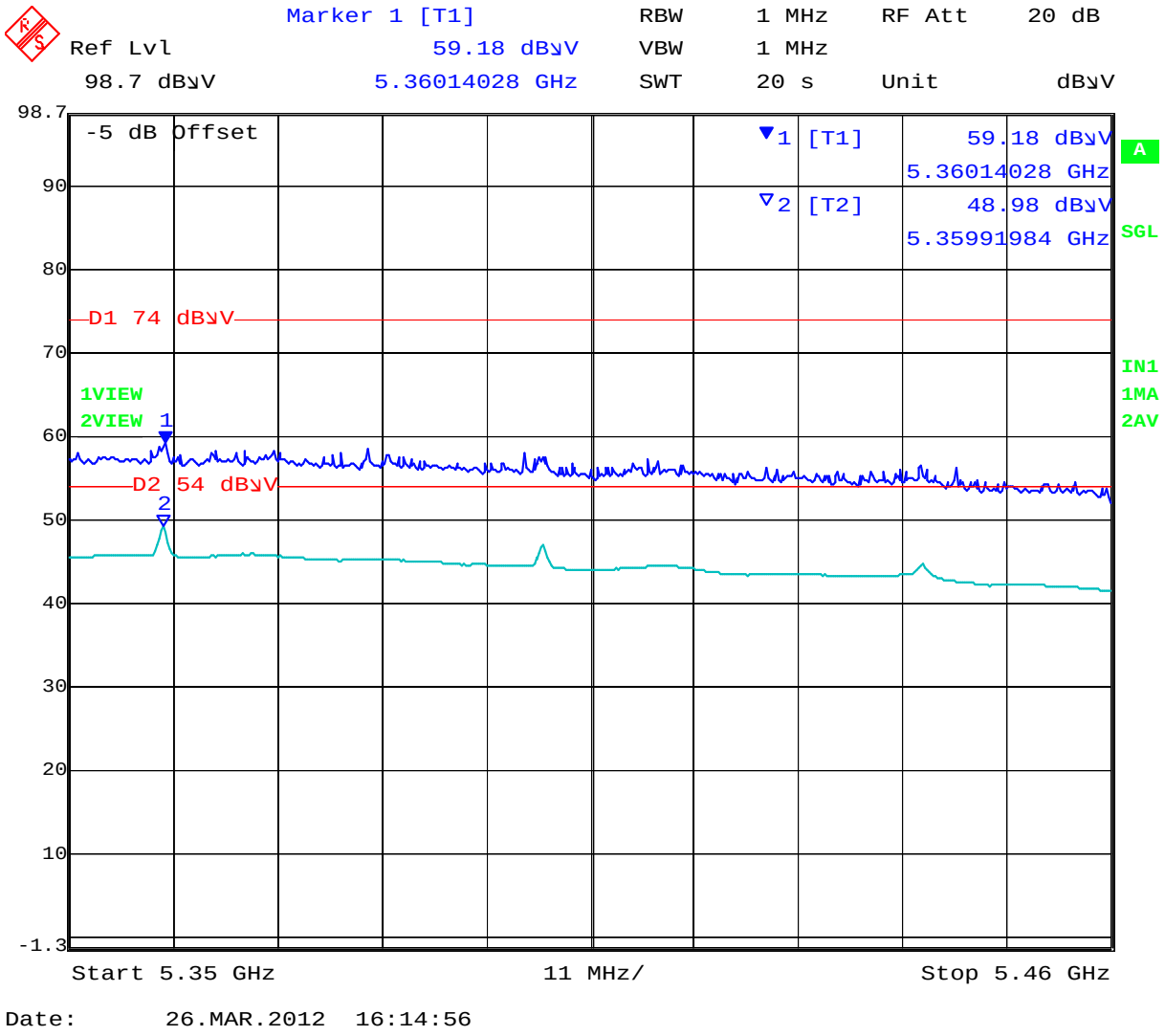


Formally measured emission peaks

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
11511.272	50.2	6.8	-1.9	55.1	Peak Max	H	98	361	74.0	-18.9	Pass	RB
5591.784	54.7	4.7	-9.7	49.7	Peak Max	H	173	86	74.0	-24.4	Pass	RB
11511.272	36.7	6.8	-1.9	41.5	Average Max	H	98	361	54	-12.5	Pass	RB
5591.784	36.5	4.7	-9.7	31.4	Average Max	H	173	86	54	-22.6	Pass	RB
5735.471	54.9	4.8	-9.5	50.1	Peak [Scan]	V	100	0				FUND

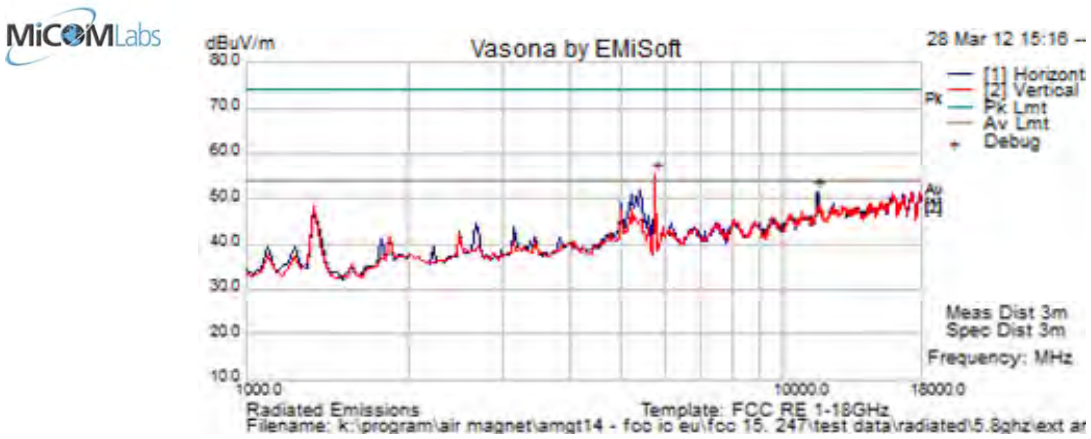
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Band-Edge



Maximum output power (Power = 20)

Test Freq.	5795 MHz	**Engineer**	SB
Variant	802.11n; HT-40; 13.5 MCS	**Temp (ºC)**	22.5
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	36
Power Setting	20	**Press. (mBars)**	1004
Antenna		**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5769.539	60.1	4.8	-9.5	55.4	Peak [Scan]	V	150	0				FUND
11561.122	46.8	6.8	-2.0	51.6	Peak [Scan]	H	100	0	54.0	-2.4	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

Specification Limits

FCC §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.

FCC §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)).

IC 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.

IC 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.

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

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

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

§15.209 (a) Limit Matrix

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

Laboratory Measurement Uncertainty for Radiated Emissions

Measurement uncertainty	+5.6/ -4.5 dB

Traceability

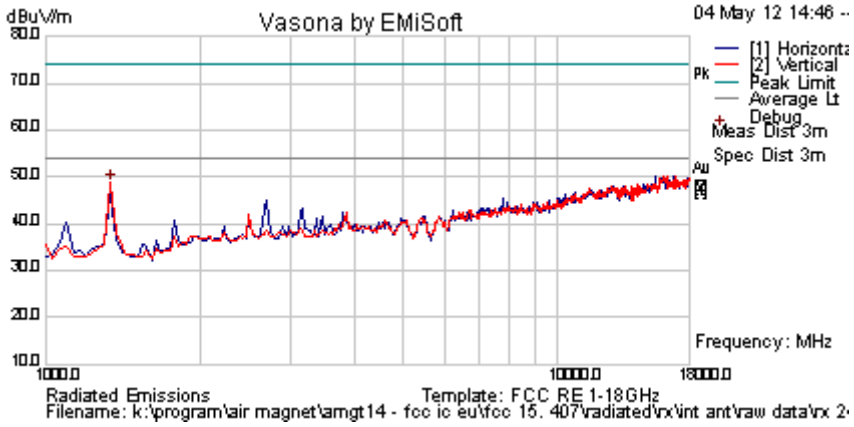
Method	Test Equipment Used
Measurements were made per work instruction WI-03 'Measurement of Radiated Emissions'	0088, 0158, 0134, 0304, 0311, 0315, 0310, 0312

5.1.6.5. Receiver Radiated Emissions

2.4 GHz Operational Mode

Integral antenna

Test Freq.	2437 MHz	**Engineer**	SB
Variant	Receive in Test Utility	**Temp (ºC)**	21
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	39
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	1003
Antenna	Integral antenna		
Test Notes 1			
Test Notes 2			



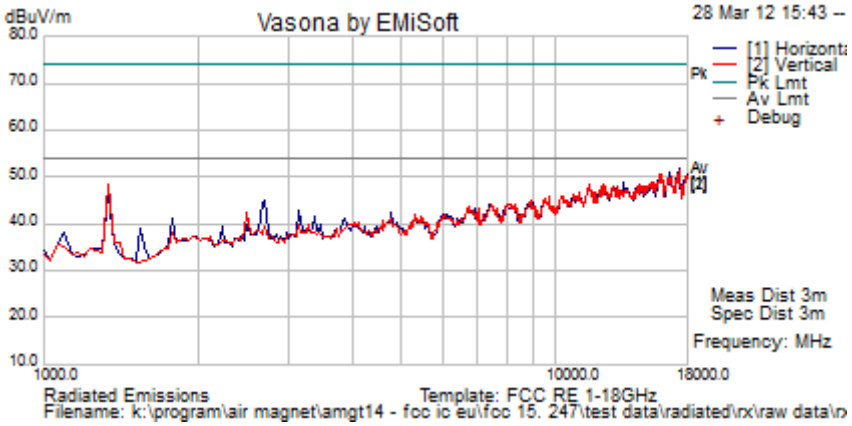
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1340.681	60.4	2.3	-13.9	48.8	Peak [Scan]	V	100	0	54	-5.3	Pass	

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

External antenna

Test Freq.	2412 MHz	**Engineer**	SB
Variant	Receive in Test Utility	**Temp (ºC)**	21
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	39
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	1003
Antenna	External Antenna		
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

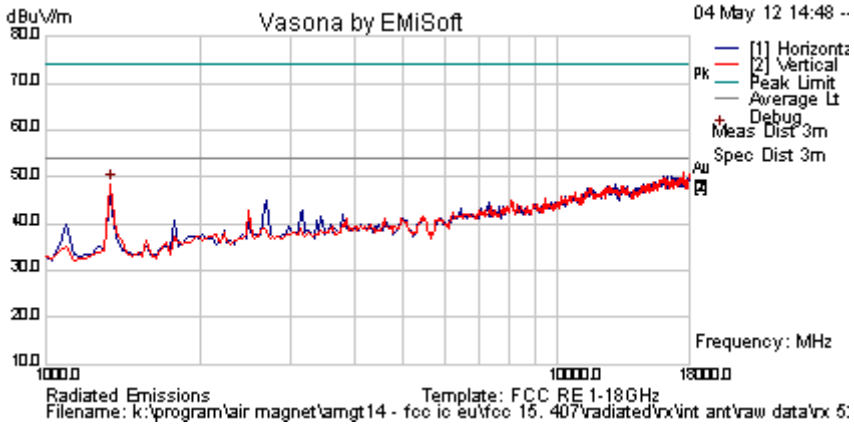
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Receiver Emissions Within 6dB of limit.												

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

5.8 GHz Operational Mode

Integral antenna

Test Freq.	5745 MHz	**Engineer**	SB
Variant	Receive in Test Utility	**Temp (ºC)**	21
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	39
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	1003
Antenna	Integral antenna		
Test Notes 1			
Test Notes 2			



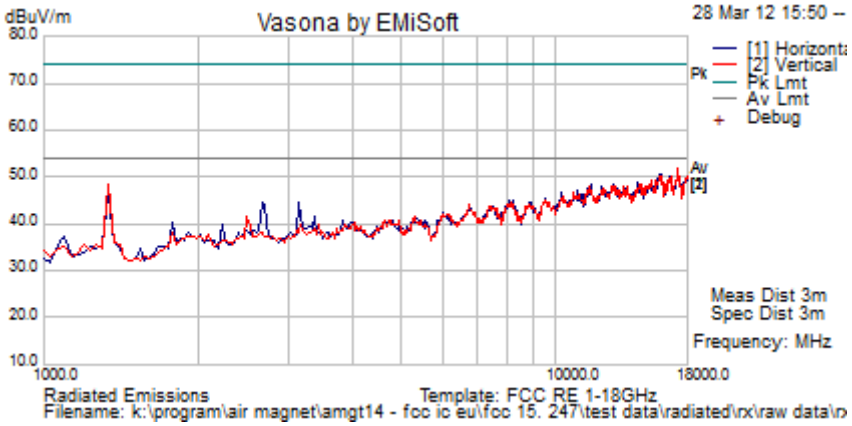
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
1340.681	60.2	2.3	-13.9	48.6	Peak [Scan]	V	100	0	54	-5.4	Pass	

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

External antenna

Test Freq.	5745 MHz	**Engineer**	SB
Variant	Receive in Test Utility	**Temp (ºC)**	21
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	39
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	1003
Antenna	External antenna		
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
No Receiver Emissions Within 6dB of limit.												

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

5.1.6.6. Radiated Spurious Emissions (30M-1 GHz)

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

Test Procedure

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

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

Field Strength Calculation

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

$$FS = R + AF + CORR$$

where:

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

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

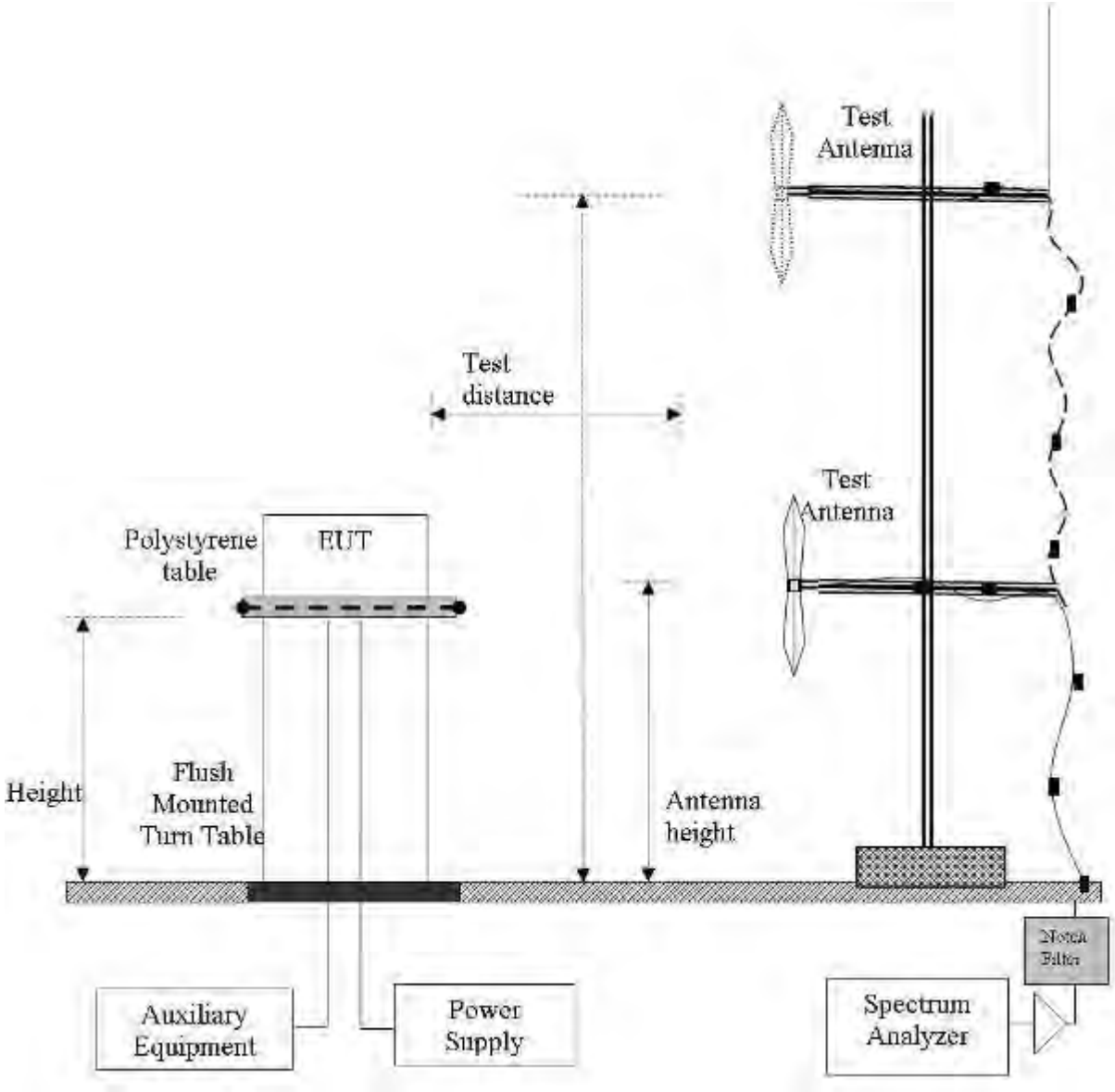
$$FS = 51.5 + 8.5 + 1.3 - 26.0 + 1 = 36.3 dB\mu V/m$$

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

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

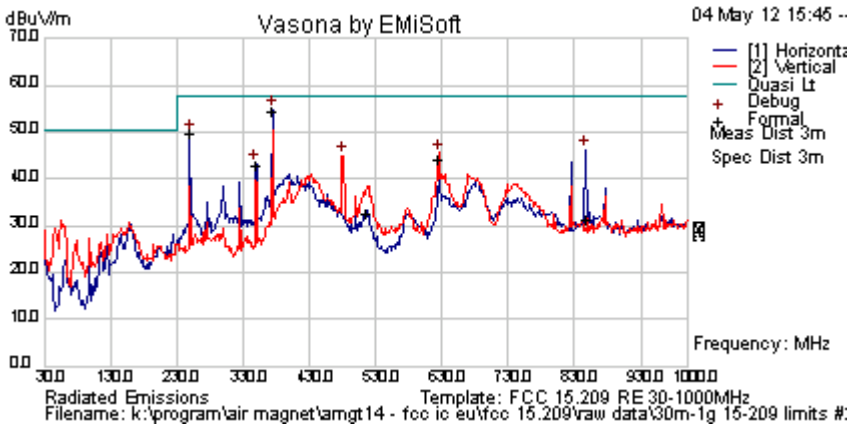
40 dBμV/m = 100μV/m
48 dBμV/m = 250μV/m

Radiated Emission Measurement Setup – Below 1 GHz



Ferrites clamped-on antenna cables

Test Freq.	2437 MHz	**Engineer**	SB
Variant	Digital Emissions	**Temp (°C)**	19.5
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	35
Power Setting	20	**Press. (mBars)**	1004
Antenna	external ant		
Test Notes 1			
Test Notes 2	ac/dc adaptor 110Vac 60 Hz		



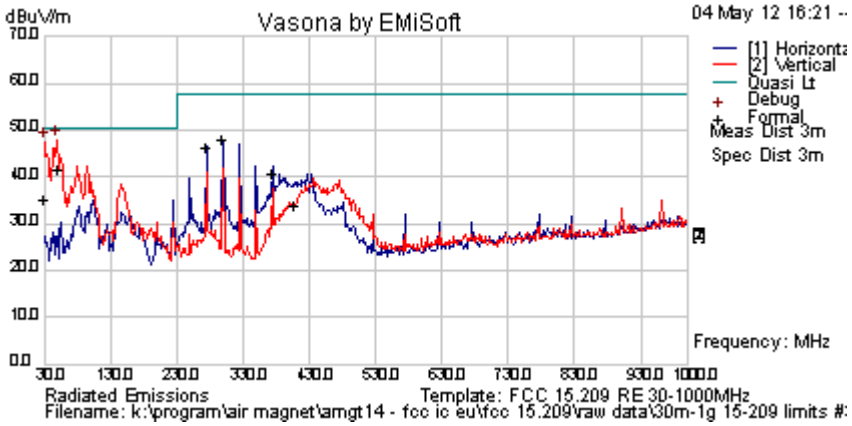
Formally measured emission peaks

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
375.020	64.5	5.4	-15.4	54.5	Quasi Max	H	208	184	57.5	-3.0	Pass	
249.984	64.0	4.9	-19.0	49.8	Quasi Max	H	104	167	57.5	-7.7	Pass	
850.080	32.8	7.0	-8.3	31.5	Quasi Max	H	251	273	57.5	-26.1	Pass	
624.985	49.1	6.3	-11.0	44.4	Quasi Max	V	187	342	57.5	-13.1	Pass	
516.381	39.6	5.9	-12.7	32.8	Quasi Max	V	155	159	57.5	-24.7	Pass	
350.016	53.3	5.3	-15.7	42.8	Quasi Max	H	98	187	57.5	-14.7	Pass	

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

Ferrites clamped-on antenna cables

Test Freq.	2437 MHz	**Engineer**	SB
Variant	Digital Emissions	**Temp (°C)**	19.5
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	35
Power Setting	20	**Press. (mBars)**	1004
Antenna	external ant		
Test Notes 1			
Test Notes 2	POE 110Vac 60 Hz		



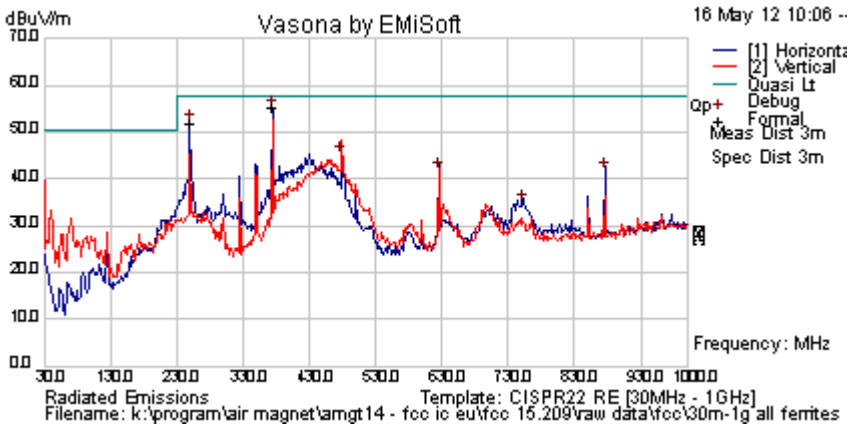
Formally measured emission peaks

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
49.816	61.1	3.7	-23.1	41.7	Quasi Max	V	139	184	50.5	-8.8	Pass	
30.001	41.5	3.5	-9.7	35.3	Quasi Max	V	132	201	50.5	-15.2	Pass	
299.982	59.9	5.1	-17.2	47.8	Quasi Max	H	103	29	57.5	-9.7	Pass	
274.980	58.8	5.0	-17.4	46.4	Quasi Max	H	101	3	57.5	-11.1	Pass	
374.979	50.6	5.4	-15.4	40.6	Quasi Max	H	212	3	57.5	-16.9	Pass	
409.043	42.9	5.5	-14.5	33.9	Quasi Max	H	223	178	57.5	-23.6	Pass	

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

Ferrites removed from antenna cables

Test Freq.	2437 MHz	**Engineer**	SB
Variant	Digital Emissions	**Temp (°C)**	19.5
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	35
Power Setting	20	**Press. (mBars)**	1004
Antenna	external ant		
Test Notes 1	All ferrites removed except for one which is located on the cable to the dedicated RX Ant		
Test Notes 2	ac/dc adaptor 110Vac 60 Hz		



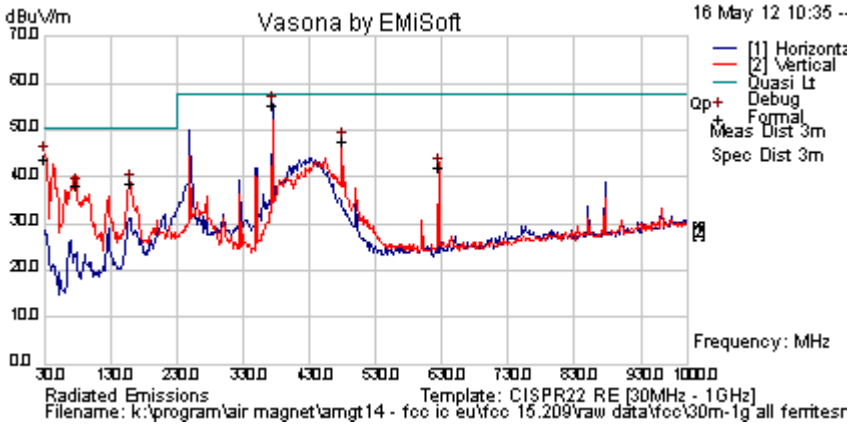
Formally measured emission peaks

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
375.018	65.2	5.4	-15.4	55.2	Quasi Max	H	208	12	57.5	-2.3	Pass	
249.993	66.2	4.9	-19.0	52.0	Quasi Max	H	122	178	57.5	-5.5	Pass	
478.140	52.3	5.8	-12.9	45.2	Peak [Scan]	H	122	178	57.5	-12.3	Pass	
624.888	46.4	6.3	-11.0	41.8	Peak [Scan]	H	122	178	57.5	-15.8	Pass	
753.135	37.5	6.7	-9.4	34.8	Peak [Scan]	H	122	178	57.5	-22.7	Pass	
875.483	42.8	7.1	-8.1	41.8	Peak [Scan]	H	122	178	57.5	-15.7	Pass	

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

Ferrites removed from antenna cables

Test Freq.	2437 MHz	**Engineer**	SB
Variant	Digital Emissions	**Temp (ºC)**	19.5
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	35
Power Setting	20	**Press. (mBars)**	1004
Antenna	external ant		
Test Notes 1	All ferrites removed except for one which is located on the cable to the dedicated RX Ant		
Test Notes 2	POE 110Vac 60 Hz		



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
375.006	65.2	5.4	-15.4	55.3	Quasi Max	H	98	212	57.5	-2.2	Pass	
30.628	50.6	3.5	-10.3	43.8	Quasi Max	V	98	360	50.5	-6.7	Pass	
479.055	54.5	5.8	-12.9	47.5	Peak [Scan]	V	98	0	57.5	-10.1	Pass	
624.709	46.6	6.3	-11.0	41.9	Peak [Scan]	V	98	0	57.5	-15.6	Pass	
79.470	57.6	3.9	-23.5	38.0	Peak [Scan]	V	98	0	50.5	-12.5	Pass	
160.950	53.0	4.4	-18.8	38.6	Peak [Scan]	V	98	0	50.5	-11.9	Pass	

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

Specification

Limits

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

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

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

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

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

Laboratory Measurement Uncertainty for Radiated Emissions

Measurement uncertainty	+5.6/ -4.5 dB

Traceability

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

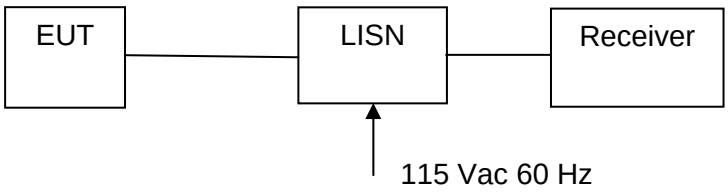
5.1.7. AC Wireline Conducted Emissions (150 kHz – 30 MHz)

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

Test Procedure

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

Test Measurement Set up

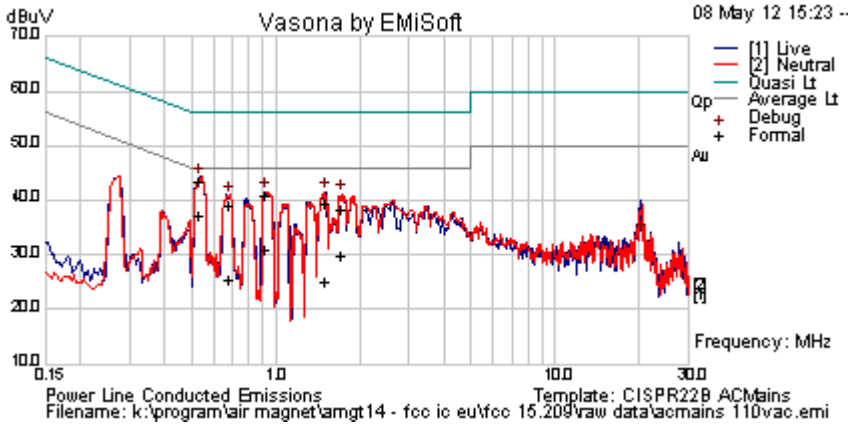


Measurement set up for AC Wireline Conducted Emissions Test

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

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

Test Freq.	N/A	**Engineer**	SB
Variant	AC Line Emissions	**Temp (ºC)**	19.5
Freq. Range	0.150 MHz - 30 MHz	**Rel. Hum.(%)**	35
Power Setting	20	**Press. (mBars)**	1004
Antenna	N/A		
Test Notes 1			
Test Notes 2	Ac adaptor 110Vac 60 Hz		



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	Factors dB	Level dBuV	Measurement Type	Line	Limit dBuV	Margin dB	Pass /Fail	Comments
0.535	33.4	9.9	0.1	43.4	Quasi Peak	Neutral	56	-12.6	Pass	
1.502	29.4	10.0	0.1	39.5	Quasi Peak	Neutral	56	-16.5	Pass	
0.926	30.8	9.9	0.1	40.8	Quasi Peak	Neutral	56	-15.2	Pass	
1.734	28.4	10.0	0.1	38.5	Quasi Peak	Neutral	56	-17.5	Pass	
0.686	29.2	10.0	0.1	39.2	Quasi Peak	Neutral	56	-16.8	Pass	
0.535	27.2	9.9	0.1	37.2	Average	Neutral	46	-8.8	Pass	
1.502	14.9	10.0	0.1	25.0	Average	Neutral	46	-21.0	Pass	
0.926	20.9	9.9	0.1	30.9	Average	Neutral	46	-15.1	Pass	
1.734	19.9	10.0	0.1	30.1	Average	Neutral	46	-16.0	Pass	
0.686	15.6	10.0	0.1	25.6	Average	Neutral	46	-20.4	Pass	
20.594	22.7	10.5	0.8	34.0	Peak [Scan]	Neutral	50	-16.0	Pass	

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

Specification

Limit

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

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

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

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

* Decreases with the logarithm of the frequency

Laboratory Measurement Uncertainty for Conducted Emissions

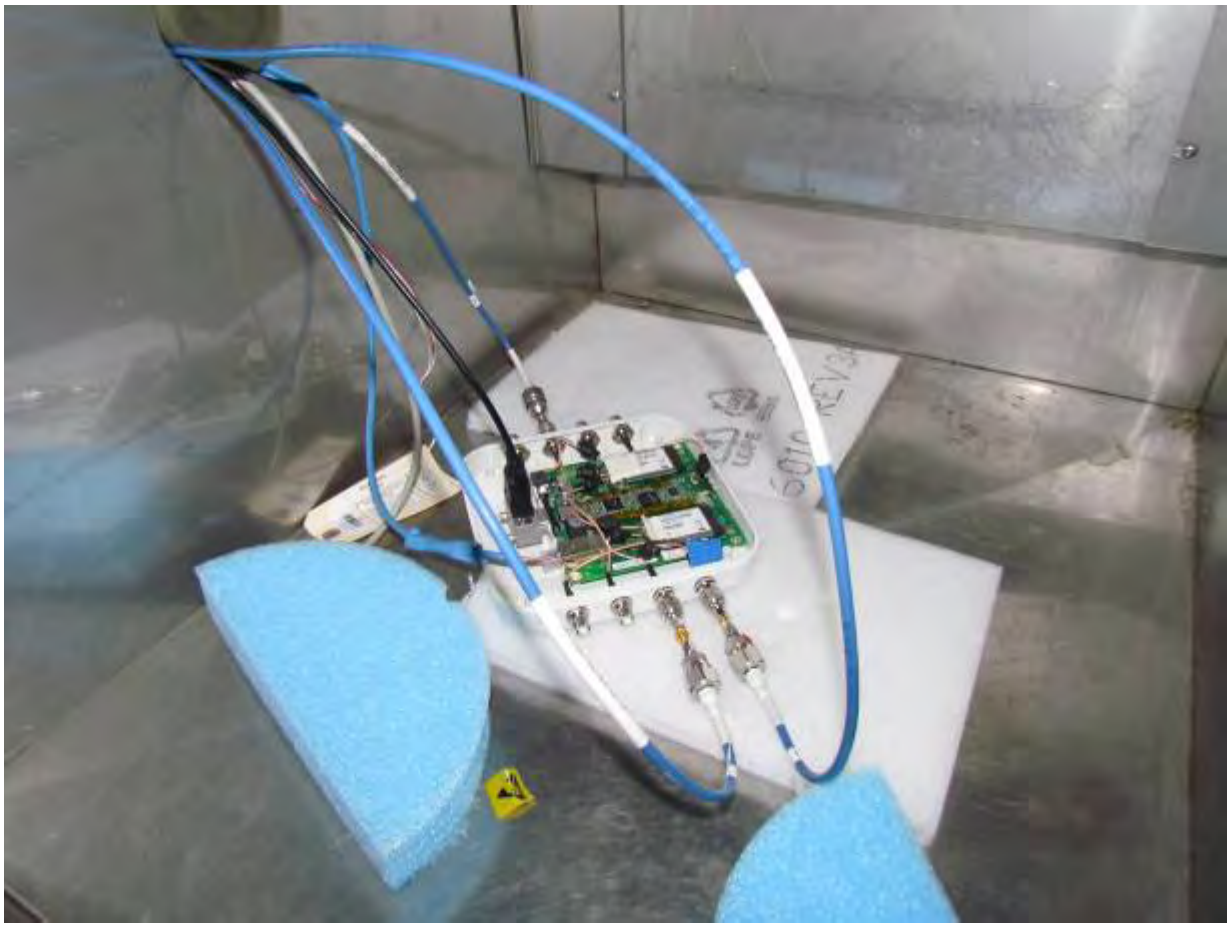
Measurement uncertainty	±2.64 dB

Traceability

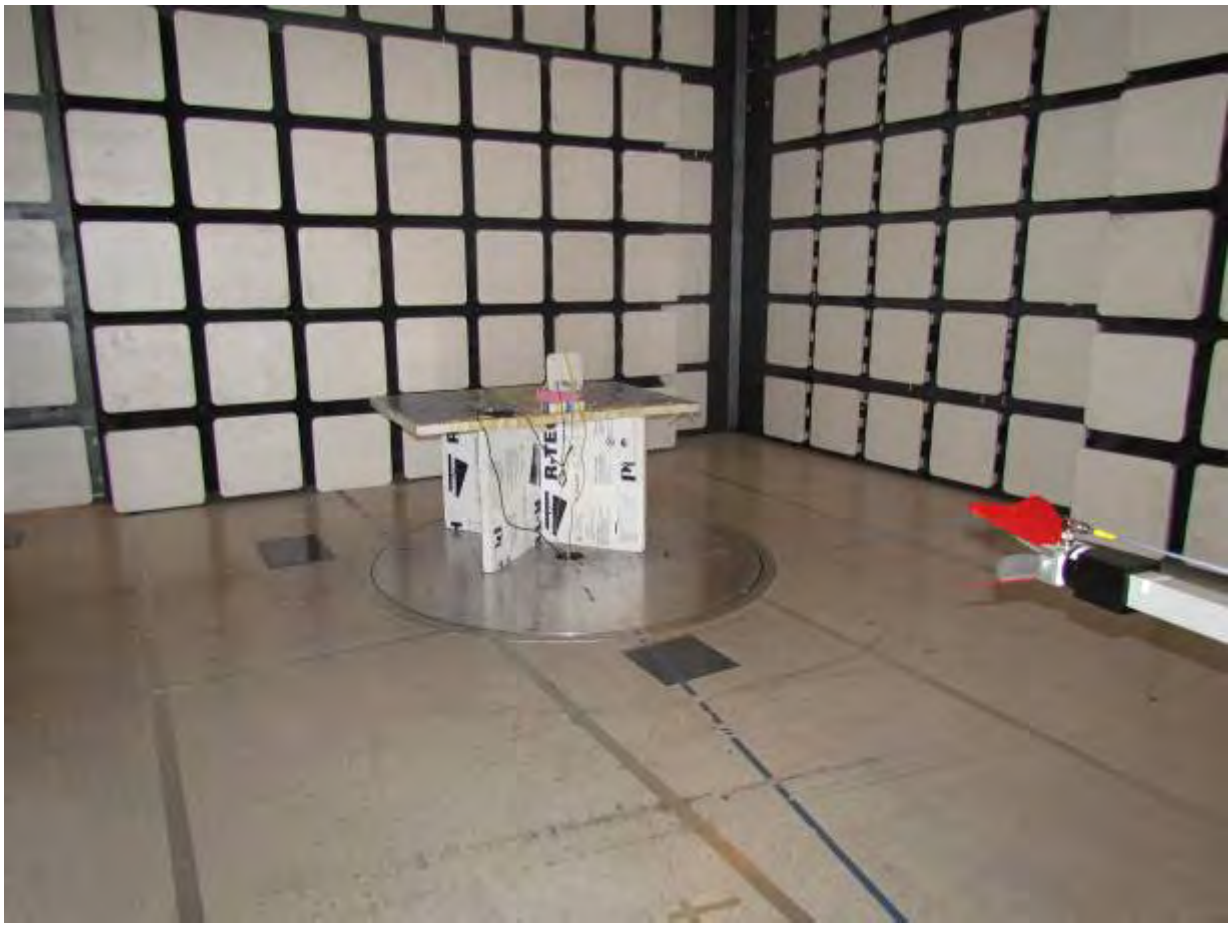
Method	Test Equipment Used
Measurements were made per work instruction WI-EMC-01 'Measurement of Conducted Emissions'	0158, 0184, 0287, 0190, 0293, 0307

6. PHOTOGRAPHS

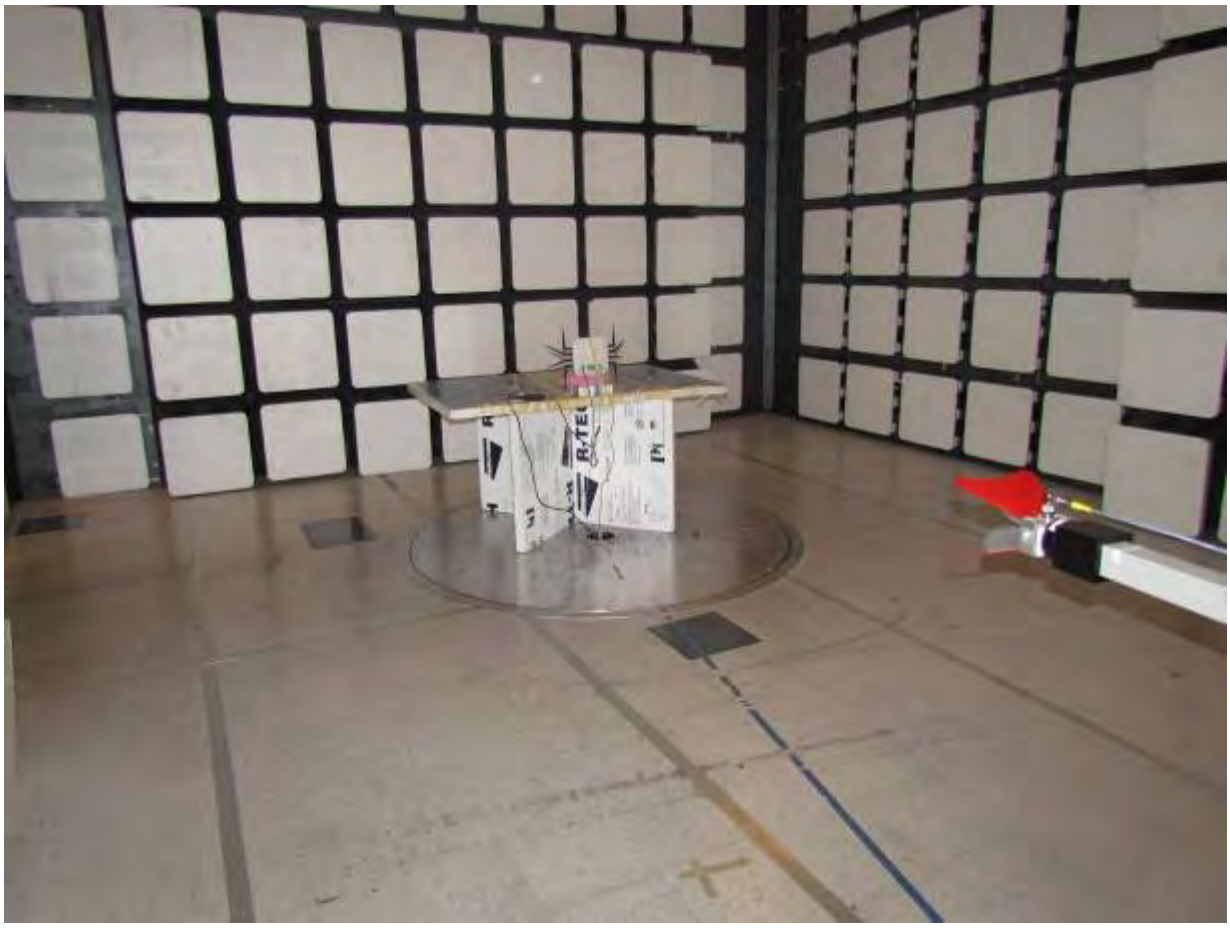
6.1. Conducted Test Setup



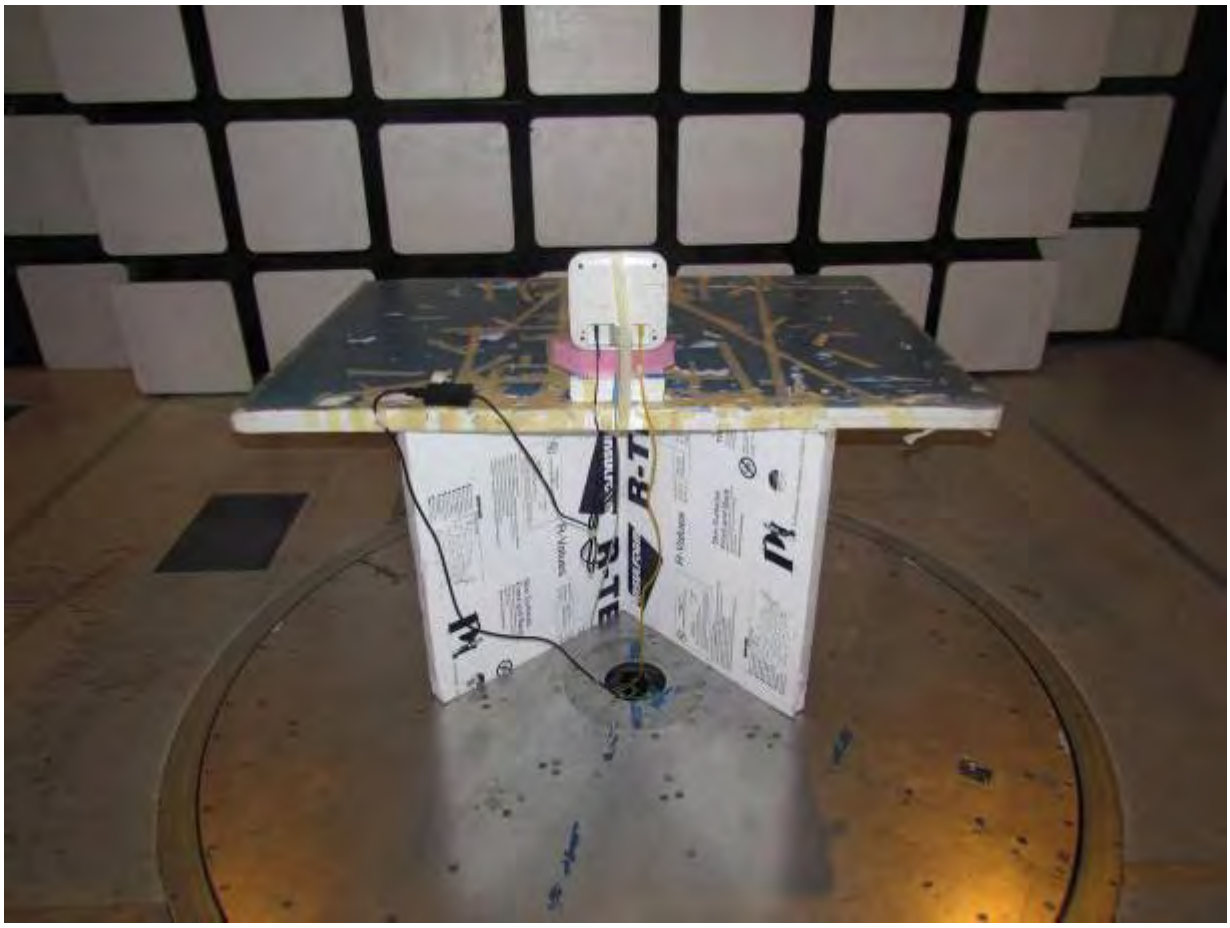
6.2. Radiated Test Setup > 1 GHz (Integral Antenna)



6.3. Radiated Test Setup > 1 GHz (External Antenna)

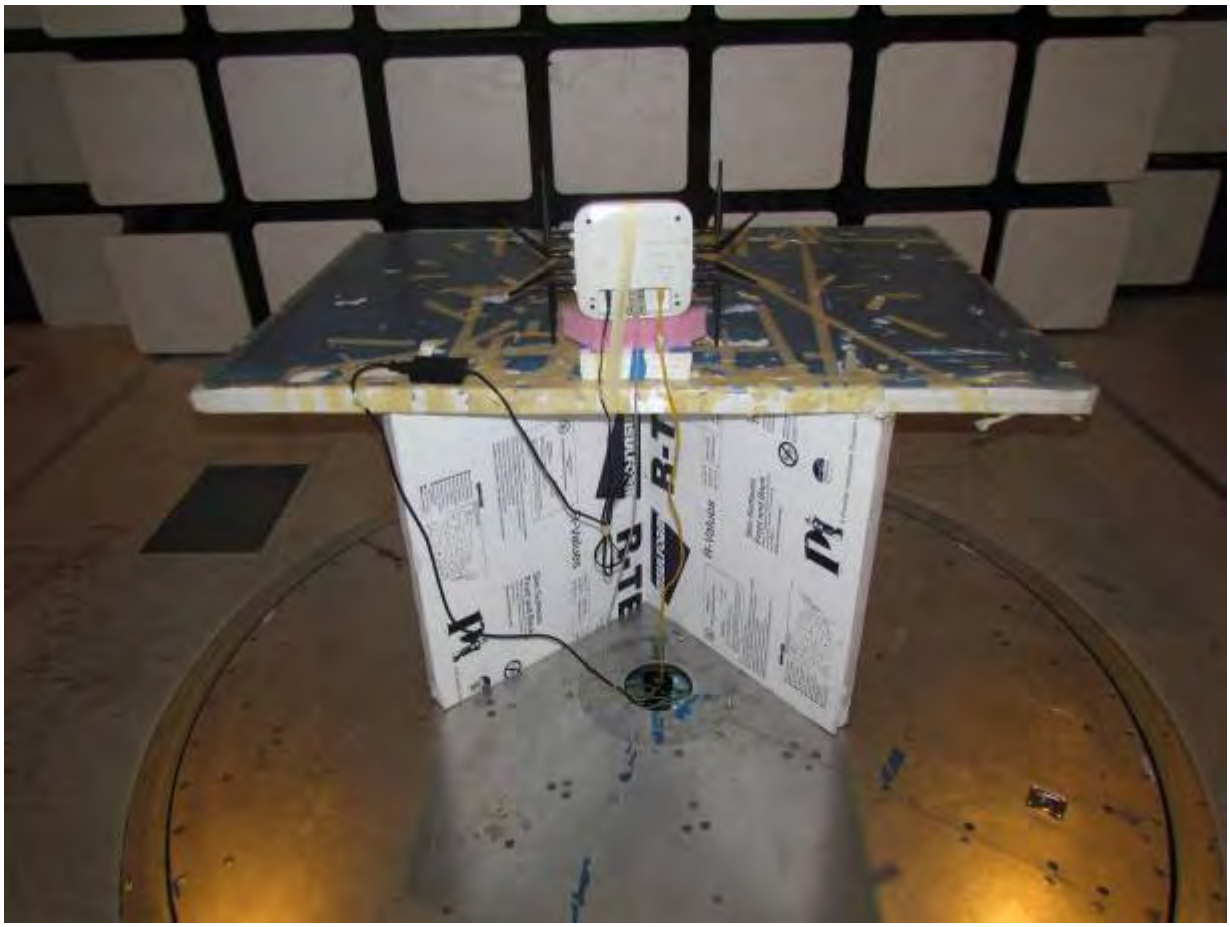


6.4. Radiated Test Table-top Setup (Integral Antenna)



6.5. Radiated Test Setup < 1 GHz (External Antenna)

6.6. Radiated Test Table-top Setup (External Antenna)



6.7. ac Wireline Emissions

7. TEST EQUIPMENT DETAILS

Asset #	Instrument	Manufacturer	Part #	Serial #
0088	Spectrum Analyzer	Hewlett Packard	8564E	3410A00141
0134	Amplifier	Com Power	PA 122	181910
0158	Barometer /Thermometer	Control Co.	4196	E2846
0287	EMI Receiver	Rhode & Schwartz	ESIB 40	100201
0252	SMA Cable	Megaphase	Sucoflex 104	None
0310	2m SMA Cable	Micro-Coax	UFA210A-0-0787-3G03G0	209089-001
0312	3m SMA Cable	Micro-Coax	UFA210A-1-1181-3G0300	209092-001
0313	Coupler	Hewlett Packard	86205A	3140A01285
0314	30dB N-Type Attenuator	ARRA	N9444-30	1623
0070	Power Meter	Hewlett Packard	437B	3125U11552
0116	Power Sensor	Hewlett Packard	8485A	3318A19694
0117	Power Sensor	Hewlett Packard	8487D	3318A00371
0184	Pulse Limiter	Rhode & Schwartz	ESH3Z2	357.8810.52
0190	LISN	Rhode & Schwartz	ESH3Z5	836679/006
0293	BNC Cable	Megaphase	1689 1GVT4	15F50B001
0301	5.6 GHz Notch Filter	Micro-Tronics	RBC50704	001
0302	5.25 GHz Notch Filter	Micro-Tronics	BRC50703	002
0303	5.8 GHz Notch Filter	Micro-Tronics	BRC50705	003
0304	2.4GHzHz Notch Filter	Micro-Tronics	--	001
0307	BNC Cable	Megaphase	1689 1GVT4	15F50B002
0335	1-18GHz Horn Antenna	ETS- Lindgren	3117	00066580
0337	Amplifier	MiCOM Labs	--	--
0338	Antenna	Sunol Sciences	JB-3	A052907

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