Test of AP0127730, AP0134760

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

Test Report Serial No.: RDWN12-U1 Rev A

TEST REPORT

FROM

Test of AP0127730, AP0134760

to

To FCC 47 CFR Part 15.247 & IC RSS-210

Test Report Serial No.: RDWN12-U1 Rev A

This report supersedes: NONE

Applicant: RADWIN Ltd
27 Habarzel Street
Tel Aviv, 69710
Israel

Product Function: 5 GHz 2x2 MIMO RF module

Copy No: pdf Issue Date: 27th November 2012

This Test Report is Issued Under the Authority of;

MiCOM Labs, Inc.
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Pleasanton, CA 94566 USA
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Fax: +1 (925) 462-0306
www.micomlabs.com

ACCREDITED
TEST CERTIFICATE #2381.01

MiCOM Labs is an ISO 17025 Accredited Testing Laboratory

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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	-	US0159 Listing #: 102167
Canada	Industry Canada (IC)	FCB	APEC MRA 2	US0159 Listing #: 4143A-2
Japan	MIC (Ministry of Internal Affairs and Communication)	CAB	APEC MRA 2	RCB 210
	VCCI	--	--	A-0012
Europe	European Commission	NB	EU MRA	NB 2280
Australia	Australian Communications and Media Authority (ACMA)	CAB	APEC MRA 1	US0159
Hong Kong	Office of the Telecommunication Authority (OFTA)	CAB	APEC MRA 1	
Korea	Ministry of Information and Communication Radio Research Laboratory (RRL)	CAB	APEC MRA 1	
Singapore	Infocomm Development Authority (IDA)	CAB	APEC MRA 1	
Taiwan	National Communications Commission (NCC) Bureau of Standards, Metrology and Inspection (BSMI)	CAB	APEC MRA 1	
Vietnam	Ministry of Communication (MIC)	CAB	APEC MRA 1	

**APEC MRA – Asia Pacific Economic Community Mutual Recognition Agreement.
Is a recognition agreement under which test lab is accredited to regulatory standards of the APEC member countries.
Phase I - recognition for product testing
Phase II – recognition for both product testing and certification
N/A – Not Applicable

**EU MRA – European Union Mutual Recognition Agreement.
Is a recognition agreement under which test lab is accredited to regulatory standards of the EU member countries.

**NB – Notified Body

PRODUCT CERTIFICATION

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

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

Industry Canada – Certification Body
CAB Identifier – US0159

Europe – Notified Body
Notified Body Identifier - 2280

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

DOCUMENT HISTORY

Document History		
Revision	Date	Comments
Draft		
Rev A	27th November 2012	Initial release.

TEST RESULT CERTIFICATE

Manufacturer:	RADWIN Ltd 27 Habarzel Street Tel Aviv, 69710 Israel	Tested By:	MiCOM Labs, Inc. 440 Boulder Court Suite 200 Pleasanton California, 94566, USA
EUT:	RF Module operating in the 4.9 – 5.8 GHz bands.	Telephone:	+1 925 462 0304
Model:	AP0127730, AP0134760	Fax:	+1 925 462 0306
S/N's:	Prototype		
Test Date(s):	10th to 18th September '12	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.

1. REFERENCES AND MEASUREMENT UNCERTAINTY

1.1. Normative References

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

1.2. 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.

2. PRODUCT DETAILS AND TEST CONFIGURATIONS

2.1. Technical Details

Details	Description
Purpose:	Test of the AP0127730, AP0134760 to FCC Part 15.247 and Industry Canada RSS-210 regulations.
Applicant:	RADWIN Ltd 27 Habarzel Street Tel Aviv, 69710 Israel
Manufacturer:	As applicant.
Laboratory performing the tests:	MiCOM Labs, Inc. 440 Boulder Court, Suite 200 Pleasanton, California 94566 USA
Test report reference number:	RDWN12-U1 Rev A
Date EUT received:	10th September 2012
Standard(s) applied:	FCC 47 CFR Part 15.247 & IC RSS-210
Dates of test (from - to):	10th to 18th September '12
No of Units Tested:	One
Type of Equipment:	5 GHz 2x2 MIMO RF module.
Manufacturers Trade Name:	RADWIN
Model(s):	AP0127730, AP0134760
Location for use:	Inside outdoor enclosure.
Declared Frequency Range(s):	5725 - 5850 MHz
Hardware Rev	Prototype
Software Rev	Prototype
Type of Modulation:	Per 802.11n – BPSK, QPSK, 16QAM, 64QAM, OFDM
Declared Nominal Average Output Power:	5 MHz: 29.97 dBm; 10 MHz: 29.95 dBm; 20 MHz: 29.84 dBm; 40 MHz: 29.76 dBm
EUT Modes of Operation:	5, 10, 20, 40 MHz
Transmit/Receive Operation:	Time Division Duplex
System Beam Forming:	AP0127730, AP0134760 has no capability for antenna beam forming
Rated Input Voltage and Current:	POE 55 Vdc 1 A
Operating Temperature Range:	Declared range -35°C to +60ºC
ITU Emission Designator:	5 MHz 5M00W7W 10 MHz 10M0W7W 20 MHz 20M0W7W 40 MHz 40M0W7W
Equipment Dimensions:	1.9” x 2.0” x 0.3” inches
Weight:	0.042 lb (19 g)
Primary function of equipment:	5 GHz 2x2 MIMO RF module

2.2. Scope of Test Program

AP0127730, AP0134760 RF Testing
The scope of the test program was to test the AP0127730, AP0134760 5 GHz 2x2 MIMO RF module configurations in the frequency range 5725 – 5850 MHz for compliance against FCC 47 CFR Part 15.247 and Industry Canada RSS-210 specifications

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.

AP0127730, AP0134760

AP0127730, AP0134760 (Rear)

AP0127730, AP0134760 Label

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

Equipment Type	Equipment Description (Including Brand Name)	Mfr	Model No.	Serial No.
EUT	RF module operating in the 4.9-5.8 GHz bands	RADWIN Ltd	AP0127730, AP0134760	None
Support	Laptop PC	DELL	LATITUDE D530	None

2.4. Antenna Details

Radiated emissions were performed on the highest gain of each type of antenna. Radiated results are identified per the table below;-

Radiated Emission Results (Antenna #)	Antenna Type	Manufacturer	Model Number	Antenna Gain (dBi)
				5725 – 5850 MHz
1	Sector Dual Pole Integrated 120 Deg	RADWIN Ltd.	MT0128930	11
	Sector Dual Pole 120 Deg	RADWIN Ltd.	RW-9061-5004	11
2	Sector Dual Pole Integrated 95 Deg	RADWIN Ltd.	AM0135060	12
	Sector Dual Pole 90 Deg	RADWIN Ltd.	RW-9061-5001	14
3	Sector Dual Pole 60 Deg	RADWIN Ltd.	RW-9061-5002	16.5
	Sector Dual Pole Integrated 90 Deg	RADWIN Ltd.	MT0125250	13
	Flat Panel Dual Pole Integrated	RADWIN Ltd.	AM0119960	16
4	Flat Panel Dual Pole Integrated	RADWIN Ltd.	AM0111760	16.5
5	Flat Panel Dual Pole Integrated	RADWIN Ltd.	MT0070760	24
	Flat Panel Dual Pole External	RADWIN Ltd.	RW-9612-5001	23
6	Flat Panel Dual Pole External	RADWIN Ltd.	RW-9622-5001	29
	Dual Pole Dish	RADWIN Ltd.	RW-9721-5158	29
7	Dual Pole Dish	RADWIN Ltd.	RW-9732-4958	32

2.5. Cabling and I/O Ports

Number and type of I/O ports

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

2.6. 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.

Channel Bandwidth (MHz)	Data rate with Highest Power	Frequencies (MHz)
5	32.5 MBit/s	5727.5, 5780, 5847.5
10	65 MBit/s	5730, 5780, 5845
20	130 MBit/s	5735, 5780, 5840
40	270 MBit/s	5745, 5780, 5830

Results for the above configurations are provided in this report.

Radiated Emissions Test Strategy

Radiated emissions' testing was performed on all antennas in the configuration with the highest spectral density.

Results for the following configurations are provided in this report.

5,725 – 5850 MHz

15.247	
5 MHz	SE 5727.5
	SE 5780
	SE 5847.5
	BE 5460
10 MHz	SE 5730
	SE 5780
	SE 5845
	BE 5460
20 MHz	SE 5735
	SE 5780
	SE 5840
	BE 5460
40 MHz	SE 5745
	SE 5780
	SE 5830
	BE 5460

KEY;-

SE – Spurious Emission
BE – Band-Edge

2.7. Equipment Modifications

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

1. None.

2.8. Deviations from the Test Standard

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

1. NONE

3. TEST EQUIPMENT CONFIGURATION(S)

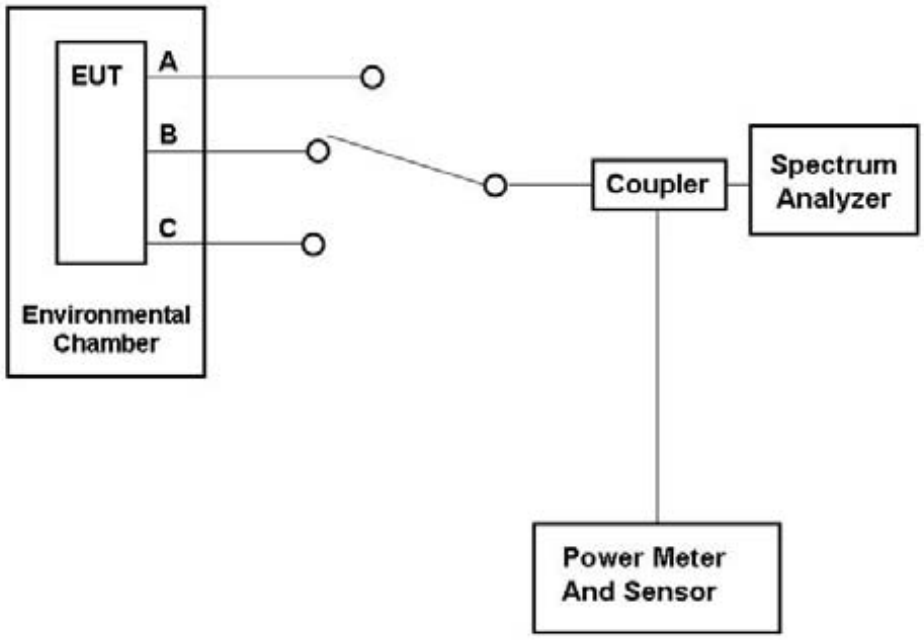
3.1. Conducted RF Emission Test Set-up

The following tests were performed using the conducted test set-up shown in the diagram below.

1. Section 6.1.1.1. 6 dB and 99% Bandwidth
2. Section 6.1.1.2. Peak Output Power
3. Section 6.1.1.3. Power Spectral Density
4. Section 6.1.1.4. Conducted Spurious Emissions

Conducted Test Set-Up Pictorial Representation

3 - Port Test Configuration

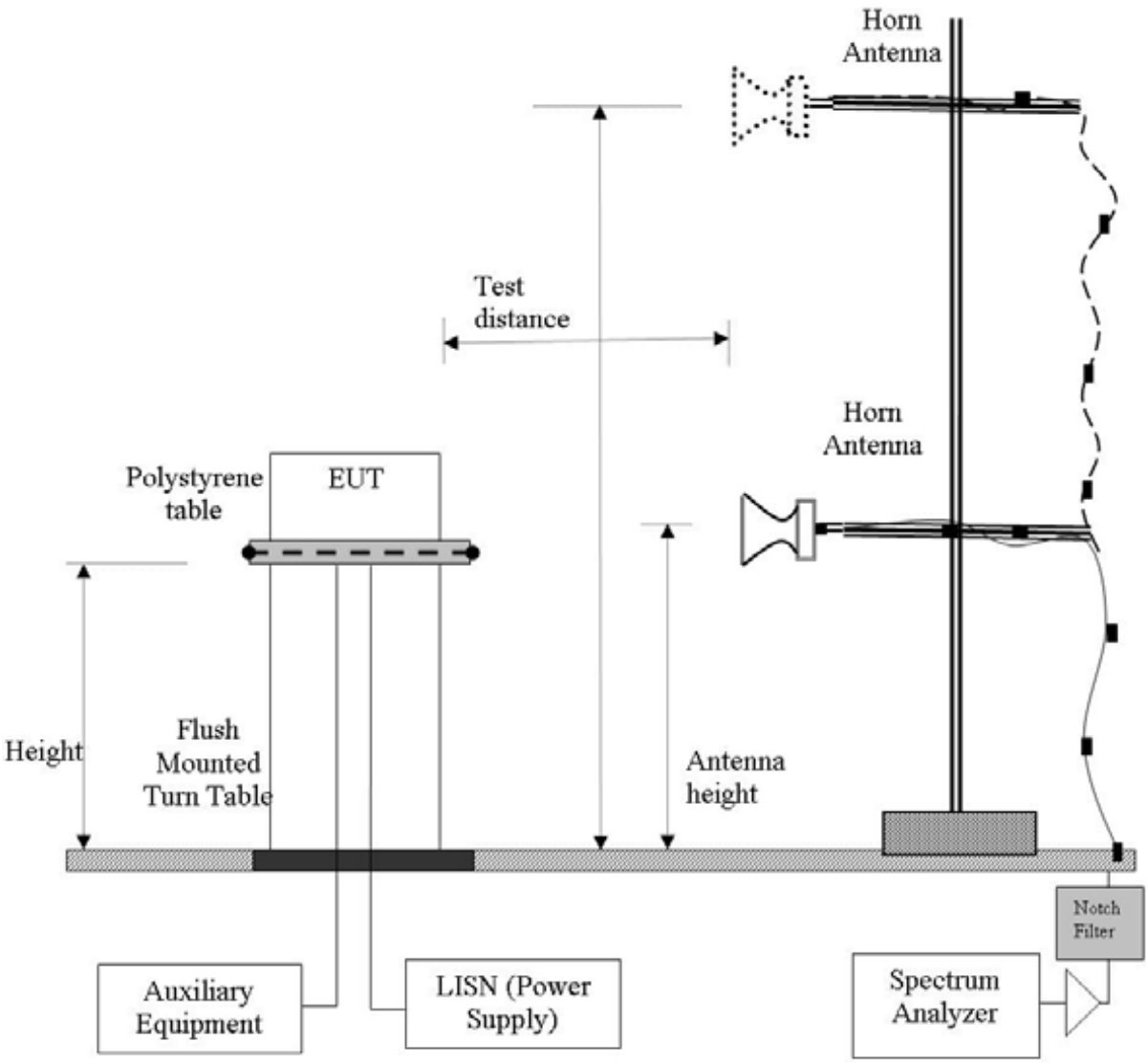


3.2. Radiated Spurious Emission Test Set-up > 1 GHz

The following tests were performed using the radiated test set-up shown in the diagram below.

1. Section 6.1.2.1. Sector Dual Pole Integrated 120 Deg
2. Section 6.1.2.2. Sector Dual Pole Integrated 95 Deg
3. Section 6.1.2.3. Sector Dual Pole 60 Deg
4. Section 6.1.2.4. Flat Panel Dual Pole Integrated
5 Section 6.1.2.5. Flat Panel Dual Pole Integrated
6. Section 6.1.2.6. Flat Panel Dual Pole External
7. Section 6.1.2.7. Dual Pole Dish

Radiated Emission Measurement Setup – Above 1 GHz

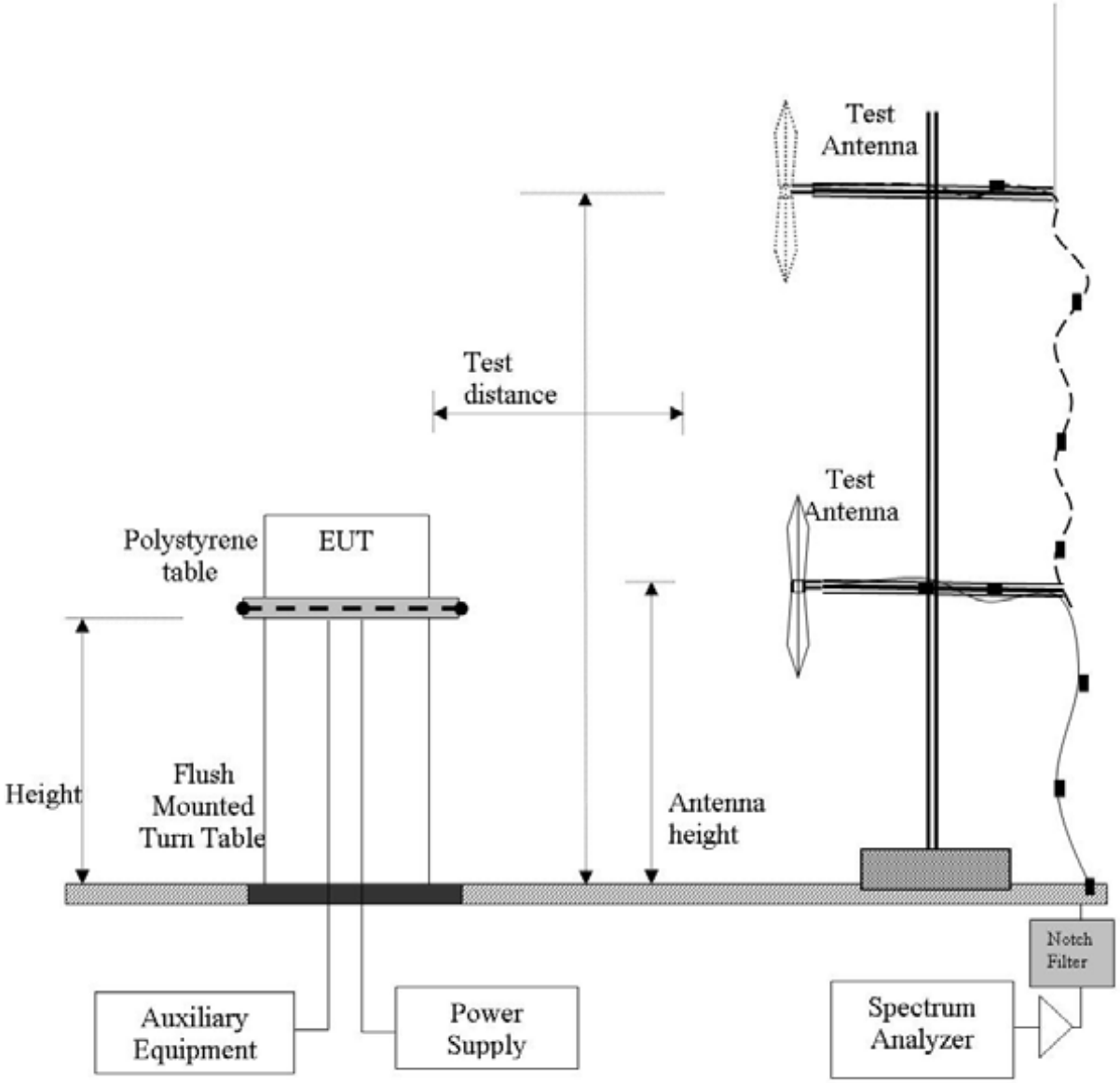


3.3. Digital Emissions Test Set-up (0.03 – 1 GHz)

The following tests were performed using the radiated test set-up shown in the diagram below.

1. Section 6.1.2.8. Sector Dual Pole 60 Deg

Digital Emission Measurement Setup – Below 1 GHz

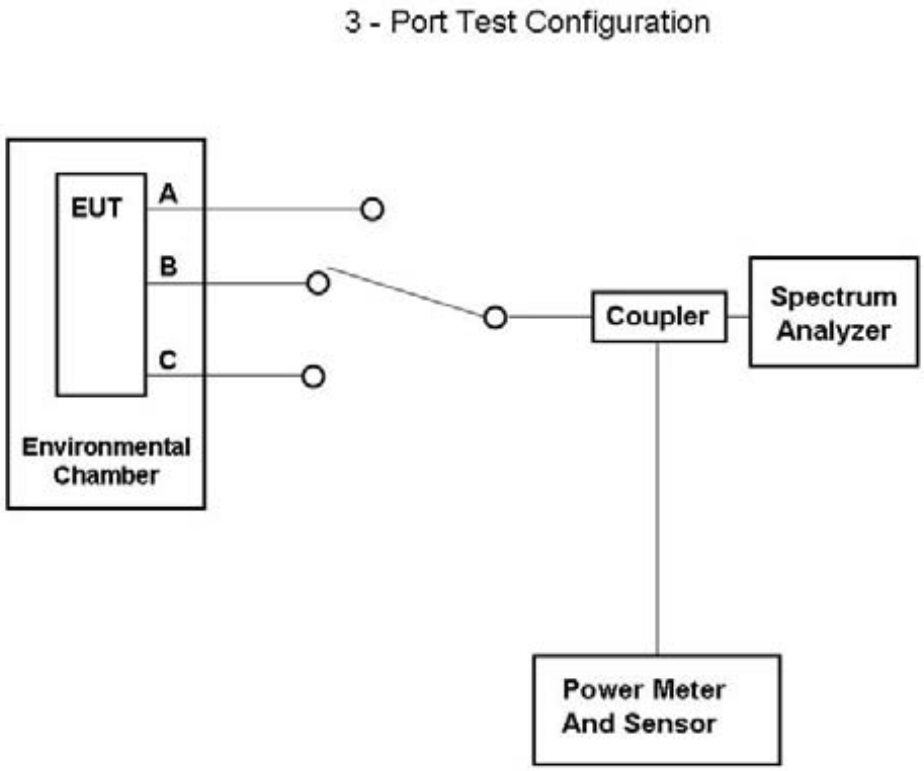


3.4. ac Wireline Emission Test Set-up

The following tests were performed using the conducted test set-up shown in the diagram below.

1. Section 6.1.3 ac Wireline Conducted Emissions

Conducted Test Set-Up Pictorial Representation



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
	Radiated Band Edge	Band-edge results Peak Emissions		Complies	5.1.6
4.10 **6**	Radiated Receiver Emissions			Complies	5.1.7
15.205 / **15.209** **2.2**	Digital Radiated Emissions	Emissions <1 GHz (30M-1 GHz)	Radiated	Complies	5.1.8
15.207 **7.2.2**	AC Wireline Conducted Emissions 150 kHz–30 MHz	Conducted Emissions	Conducted	N/A EUT is POE powered - not shipped with equipment	5.1.9

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 Conducted Testing

5.1.1. 6 dB and 99 % Bandwidth

Conducted Test Conditions for 6 dB and 99% Bandwidth			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	6 dB and 99 % Bandwidth	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.247 (a)(2)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 558074 - D01 DTS Measurement Guidance v01: Section 5.1 Emission Bandwidth		

Test Procedure for 6 dB and 99% Bandwidth Measurement
The bandwidth at 6 dB and 99 % was measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate centre frequency.

Equipment Configuration for 6 dB 99%			
Variant:	5 MHz	**Duty Cycle (%):**	100
Data Rate:	32.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	MHz	MHz
5727.5	4.088	4.088			4.088	4.088	≥ 0.5	-3.59
5780.0	4.108	4.108			4.108	4.108	≥ 0.5	-3.61
5847.5	4.108	4.088			4.108	4.088	≥ 0.5	-3.59

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
5727.5	4.148	4.148			4.148		
5780.0	4.148	4.148			4.148		
5847.5	4.148	4.148			4.148		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Note: click the link in the above results matrix to view the plot

Equipment Configuration for 6 dB 99%			
Variant:	10 MHz	**Duty Cycle (%):**	100
Data Rate:	65 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	MHz	MHz
5730.0	8.136	8.136			8.136	8.136	≥ 0.5	-7.64
5780.0	8.136	8.136			8.136	8.136	≥ 0.5	-7.64
5845.0	8.136	8.136			8.136	8.136	≥ 0.5	-7.64

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
5730.0	8.096	8.096			8.096		
5780.0	8.096	8.096			8.096		
5845.0	8.096	8.096			8.096		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Note: click the link in the above results matrix to view the plot

Equipment Configuration for 6 dB 99%			
Variant:	20 MHz	**Duty Cycle (%):**	100
Data Rate:	130 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	MHz	MHz
5735.0	17.796	17.876			17.876	17.796	≥ 0.5	-17.30
5780.0	17.796	17.876			17.876	17.796	≥ 0.5	-17.30
5840.0	17.796	17.876			17.876	17.796	≥ 0.5	-17.30

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
5735.0	17.715	17.715			17.715		
5780.0	17.715	17.796			17.796		
5840.0	17.715	17.796			17.796		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Note: click the link in the above results matrix to view the plot

Equipment Configuration for 6 dB 99%			
Variant:	40 MHz	**Duty Cycle (%):**	100
Data Rate:	270 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured 6 dB Bandwidth (MHz) Port(s)				6 dB Bandwidth (MHz)		Limit	Lowest Margin
MHz	a	b	c	d	Highest	Lowest	MHz	MHz
5745.0	36.713	36.553			36.713	36.553	≥ 0.5	-36.05
5780.0	36.713	36.553			36.713	36.553	≥ 0.5	-36.05
5830.0	36.713	36.713			36.713	36.713	≥ 0.5	-36.21

Test Frequency	Measured 99% Bandwidth (MHz) Port(s)				Maximum 99% Bandwidth (MHz)		
MHz	a	b	c	d			
5745.0	36.393	36.393			36.393		
5780.0	36.393	36.393			36.393		
5830.0	36.393	36.393			36.393		

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Note: click the link in the above results matrix to view the plot

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.

Traceability

Test Equipment Used
0158, 0287, 0252, 0313, 0314, 0070, 0116, 0117

5.1.2. Peak Output Power

Conducted Test Conditions for Fundamental Emission Output Power			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Emission Output Power	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.247 (a)(2)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 558074 - D01 DTS Measurement Guidance v01: Section 5.2 Fundamental Emission Output Power KDB 662911 was implemented for In-band power measurements. The measure and sum technique was implemented in all cases.		

Test Procedure for Fundamental Emission Output Power Measurement
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 integrate peak power over the 20 dB bandwidth.

Supporting Information
Calculated Power = A + G + 10 log (1/x) dBm
A = Total Power [10 Log10 ($10^{a/10}$ + $10^{b/10}$ + $10^{c/10}$ + $10^{d/10}$)], G = Antenna Gain,
x = Duty Cycle

Requirements

Point to Multi-Point (P-MP)
15.247 (b) Operation with antenna gains greater than 6 dBi.

3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) 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.

Point to Point (P-P)
15.247 (c) Operation with directional antenna gains greater than 6 dBi.

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

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

5.8 GHz Uncorrelated Operation (MIMO) Point to Multi-Point Operation

Antenna Number	Gain (dBi)	Max. Allowable Conducted Peak Power (dBm)	Maximum EIRP (dBm)
MT0128930	11	25	36
RW-9061-5004	10*	26	36
AM0135060	12	24	36
RW-9061-5001	13*	23	36
RW-9061-5002	15.5*	20.5	36
MT0125250	13	23	36

*** The gain includes 1 dB feeder cable loss for external antennas**

Conducted Power Limits

Antenna Number	Gain (dBi)	Conducted Total Power (dBm)					
		Low		Mid		High	
		P-P	P-MP	P-P	P-MP	P-P	P-MP
MT0128930	11	N/A	24.80	N/A	24.95	N/A	24.97
RW-9061-5004	10*	N/A	25.80	N/A	25.95	N/A	25.97
AM0135060	12	N/A	23.80	N/A	23.95	N/A	23.97
RW-9061-5001	13*	N/A	22.80	N/A	22.95	N/A	22.97
RW-9061-5002	15.5*	N/A	20.30	N/A	20.45	N/A	20.47
MT0125250	13	N/A	22.80	N/A	22.95	N/A	22.97
AM0119960	16	29.80	N/A	29.95	N/A	29.97	N/A
AM0111760	16.5	29.80	N/A	29.95	N/A	29.97	N/A
MT0070760	24	29.80	N/A	29.95	N/A	29.97	N/A
RW-9612-5001	23	29.80	N/A	29.95	N/A	29.97	N/A
RW-9622-5001	29	29.80	N/A	29.95	N/A	29.97	N/A
RW-9721-5158	29	29.80	N/A	29.95	N/A	29.97	N/A
RW-9732-4958	32	29.80	N/A	29.95	N/A	29.97	N/A

*** The gain includes 1 dB feeder cable loss for external antennas**

Equipment Configuration for peak output power			
Variant:	5 MHz	**Duty Cycle (%):**	100
Data Rate:	32.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power (dBm)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s)	dBm	dBm	
5727.5	27.16	26.39			29.80	30.00	-0.20	
5780.0	27.13	26.29			29.74	30.00	-0.26	
5847.5	27.49	26.35			29.97	30.00	-0.03	

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 Measuring RF Output Power
Measurement Uncertainty:	±1.33 dB

Equipment Configuration for peak output power			
Variant:	10 MHz	**Duty Cycle (%):**	100
Data Rate:	65 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power (dBm)	Limit	Margin	EUT Power Setting
MHz	a	b	c	d	Σ Port(s)	dBm	dBm	
5730.0	26.85	26.27			29.58	30.00	-0.42	
5780.0	27.27	26.59			29.95	30.00	-0.05	
5845.0	27.11	26.07			29.63	30.00	-0.37	

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 Measuring RF Output Power
Measurement Uncertainty:	±1.33 dB

Note: click the link in the above results matrix to view the plot

Equipment Configuration for peak output power			
Variant:	20 MHz	**Duty Cycle (%):**	100
Data Rate:	130 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power (dBm)	Limit	Margin	EUT Power Setting
MHz	**a**	**b**	**c**	**d**	**Σ Port(s)**	**dBm**	**dBm**	
5735.0	27.27	26.15			29.76	30.00	-0.24	
5780.0	27.19	26.44			29.84	30.00	-0.16	
5840.0	26.66	26.01			29.36	30.00	-0.64	

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 Measuring RF Output Power
Measurement Uncertainty:	±1.33 dB

Equipment Configuration for peak output power			
Variant:	40 MHz	**Duty Cycle (%):**	100
Data Rate:	270 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Output Power (dBm) Port(s)				Calculated Total Power (dBm)	Limit	Margin	EUT Power Setting
MHz	**a**	**b**	**c**	**d**	**Σ Port(s)**	**dBm**	**dBm**	
5745.0	27.06	25.97			29.56	30.00	-0.44	
5780.0	26.71	26.06			29.41	30.00	-0.59	
5830.0	27.28	26.14			29.76	30.00	-0.24	

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-01 Measuring RF Output Power
Measurement Uncertainty:	±1.33 dB

Note: click the link in the above results matrix to view the plot

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.

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. Power Spectral Density

Conducted Test Conditions for Power Spectral Density			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Power Spectral Density	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.247 (e)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 558074 - D01 DTS Measurement Guidance v01: Section 5.3 Maximum Power Spectral Density Level in the Emission Bandwidth		

Test Procedure for Power Spectral Density

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.

Supporting Information

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

A = Total Power Spectral Density [10 Log10 ($10^{a/10}$ + $10^{b/10}$ + $10^{c/10}$ + $10^{d/10}$)]

x = Duty Cycle

Limit Line: KDB 662911 was implemented for In-band power spectral density (PSD) measurements - Option (2) measure and subtract 10 log (N) dB from the limit for devices with multiple RF ports

Equipment Configuration for power density			
Variant:	5 MHz	**Duty Cycle (%):**	100
Data Rate:	32.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm)				Calculated Total Power Spectral Density		Limit	Margin
	Port(s)				dBm			
MHz	a	b	c	d	Σ Port(s)	Conversion to 3 kHz RBW	dBm	dB
5727.5	3.786	3.115			6.474	N/A	≤8.0	-1.53
5780.0	0.144	-0.383			2.899	N/A	≤8.0	-5.10
5847.5	0.487	-0.306			3.119	N/A	≤8.0	-4.88

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for power density			
Variant:	10 MHz	**Duty Cycle (%):**	100
Data Rate:	65 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm)				Calculated Total Power Spectral Density		Limit	Margin
	Port(s)				dBm			
MHz	a	b	c	d	Σ Port(s)	Conversion to 3 kHz RBW	dBm	dB
5730.0	-3.706	-2.974			-0.314	N/A	≤8.0	-8.31
5780.0	-2.905	-3.627			-0.241	N/A	≤8.0	-8.24
5845.0	-1.378	-3.182			0.823	N/A	≤8.0	-7.18

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Note: click the link in the above results matrix to view the plot

Equipment Configuration for power density			
Variant:	20 MHz	**Duty Cycle (%):**	100
Data Rate:	130 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm)				Calculated Total Power Spectral Density		Limit	Margin
	Port(s)				dBm			
MHz	a	b	c	d	Σ Port(s)	Conversion to 3 kHz RBW	dBm	dB
5735.0	-6.690	-6.991			-3.828	N/A	≤8.0	-11.83
5780.0	-5.748	-6.684			-3.181	N/A	≤8.0	-11.18
5840.0	-6.822	-6.769			-3.785	N/A	≤8.0	-11.79

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Equipment Configuration for power density			
Variant:	40 MHz	**Duty Cycle (%):**	100
Data Rate:	270 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Measured Power Spectral Density (dBm)				Calculated Total Power Spectral Density		Limit	Margin
	Port(s)				dBm			
MHz	a	b	c	d	Σ Port(s)	Conversion to 3 kHz RBW	dBm	dB
5745.0	-8.972	-9.273			-6.110	N/A	≤8.0	-14.11
5780.0	-8.927	-8.878			-5.892	N/A	≤8.0	-13.89
5830.0	-8.738	-9.649			-6.159	N/A	≤8.0	-14.16

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-03 Measuring RF Spectrum Mask
Measurement Uncertainty:	±2.81 dB

Note: click the link in the above results matrix to view the plot

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.

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. Conducted Spurious Emissions

Conducted Test Conditions for Transmitter Conducted Spurious and Band-Edge Emissions			
Standard:	FCC CFR 47:15.247	**Ambient Temp. (ºC):**	24.0 - 27.5
Test Heading:	Max Unwanted Emission Levels	**Rel. Humidity (%):**	32 - 45
Standard Section(s):	15.247 (d)	**Pressure (mBars):**	999 - 1001
Reference Document(s):	KDB 558074 - D01 DTS Measurement Guidance v01: Section 5.4 Maximum Unwanted Emission Levels		

Test Procedure for Transmitter Conducted Spurious and Band-Edge Emissions Measurement
Transmitter Conducted Spurious and Band-Edge 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. Measurements were made while EUT was operating in transmit mode of operation at the appropriate centre frequency closest to the band-edge. Emissions were maximized during the measurement and limits derived from the peak spectral power and drawn on each plot.

Equipment Configuration for Transmitter Conducted Spurious and Band-Edge Emissions			
Variant:	5 MHz	**Duty Cycle (%):**	100
Data Rate:	32.5 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Transmitter Conducted Spurious Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
5727.5	30.0 - 26000.0	-45.129	-5.69	-39.329	-4.34				
5780.0	30.0 - 26000.0	-39.02	-8.35	-39.01	-9.70				
5847.5	30.0 - 26000.0	-39.06	-8.29	-39.01	-9.93				

SE - Maximum spurious emission found

Test Frequency	Band-Edge Frequency	Transmitter Conducted Band-Edge Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	BE	Limit	BE	Limit	BE	Limit	BE	Limit
5727.5	5725.0	-7.696	-3.71	-6.319	-5.05				
5847.5	5850.0	-11.225	-6.87	-10.733	-8.12				

BE - Maximum band-edge emission found

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 Measurement of Spurious Emissions
Measurement Uncertainty:	≤ 40 GHz ±2.37 dB > 40 GHz ±4.6 dB

Note: click the link in the above results matrix to view the plot

Equipment Configuration for Transmitter Conducted Spurious and Band-Edge Emissions			
Variant:	10 MHz	**Duty Cycle (%):**	100
Data Rate:	65 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Transmitter Conducted Spurious Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
5730.0	30.0 - 26000.0	-38.798	-11.20	-38.722	-12.08				
5780.0	30.0 - 26000.0	-38.322	-11.56	-39.219	-11.21				
5845.0	30.0 - 26000.0	-38.826	-9.59	-38.287	-9.42				

SE - Maximum spurious emission found

Test Frequency	Band-Edge Frequency	Transmitter Conducted Band-Edge Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	BE	Limit	BE	Limit	BE	Limit	BE	Limit
5730.0	5725.0	-22.119	-10.38	-21.009	-10.80				
5845.0	5850.0	-18.408	-8.47	-21.278	-9.61				

BE - Maximum band-edge emission found

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 Measurement of Spurious Emissions
Measurement Uncertainty:	≤ 40 GHz ±2.37 dB > 40 GHz ±4.6 dB

Note: click the link in the above results matrix to view the plot

Equipment Configuration for Transmitter Conducted Spurious and Band-Edge Emissions			
Variant:	20 MHz	**Duty Cycle (%):**	100
Data Rate:	130 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Transmitter Conducted Spurious Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
5735.0	30.0 - 26000.0	-37.978	-14.61	-39.367	-13.31				
5780.0	30.0 - 26000.0	-38.275	-13.19	-39.548	-15.18				
5840.0	30.0 - 26000.0	-38.545	-14.38	-38.820	-13.57				

SE - Maximum spurious emission found

Test Frequency	Band-Edge Frequency	Transmitter Conducted Band-Edge Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	BE	Limit	BE	Limit	BE	Limit	BE	Limit
5735.0	5725.0	-15.994	-12.85	-16.927	-14.24				
5840.0	5850.0	-16.041	-12.56	-16.734	-13.84				

BE - Maximum band-edge emission found

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 Measurement of Spurious Emissions
Measurement Uncertainty:	≤ 40 GHz ±2.37 dB > 40 GHz ±4.6 dB

Note: click the link in the above results matrix to view the plot

Equipment Configuration for Transmitter Conducted Spurious and Band-Edge Emissions			
Variant:	40 MHz	**Duty Cycle (%):**	100
Data Rate:	270 MBit/s	**Antenna Gain (dBi):**	Not Applicable
Modulation:	OFDM	**Beam Forming Gain (Y):**	Not Applicable
TPC:	Maximum Power		
Engineering Test Notes:			

Test Measurement Results

Test Frequency	Frequency Range	Transmitter Conducted Spurious Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	SE	Limit	SE	Limit	SE	Limit	SE	Limit
5745.0	30.0 - 26000.0	-38.676	-15.01	-38.637	-16.19				
5780.0	30.0 - 26000.0	-38.029	-16.22	-39.007	-16.73				
5830.0	30.0 - 26000.0	-38.338	-17.16	-38.852	-15.50				

SE - Maximum spurious emission found

Test Frequency	Band-Edge Frequency	Transmitter Conducted Band-Edge Emissions (dBm)							
		Port a		Port b		Port c		Port d	
MHz	MHz	BE	Limit	BE	Limit	BE	Limit	BE	Limit
5745.0	5725.0	-18.524	-15.00	-19.829	-15.84				
5830.0	5850.0	-18.825	-14.37	-18.719	-15.32				

BE - Maximum band-edge emission found

Traceability to Industry Recognized Test Methodologies	
Work Instruction:	WI-05 Measurement of Spurious Emissions
Measurement Uncertainty:	≤ 40 GHz ±2.37 dB > 40 GHz ±4.6 dB

Note: click the link in the above results matrix to view the plot

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.

5.1.5. Maximum Permissible Exposure

FCC, Part 15 Subpart C §15.407(f)
Industry Canada RSS-Gen §5.6

Calculations for Maximum Permissible Exposure Levels

Power Density = Pd (mW/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)

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

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 §5.6** Category I and Category II equipment shall comply with the applicable requirements of RSS-102.

Laboratory Measurement Uncertainty for Power Measurements

Measurement uncertainty	±1.33 dB

5725 – 5850 MHz; Antennas used for Point to Multi-Point Operation.

Antenna Model	Type	Ant Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Safe Distance @ 1mW/cm^2 Limit(cm)	Power Density @ 20cm (mW/cm^2)
MT0128930	Sector Dual Pole Integrated 120 Deg	11	13	24.97	314.05	17.74	0.79
RW-9061-5004	Sector Dual Pole 120 Deg	10*	10	25.97	395.37	17.74	0.79
AM0135060	Sector Dual Pole Integrated 95 Deg	12	16	23.97	249.46	17.74	0.79
RW-9061-5001	Sector Dual Pole 90 Deg	13*	20	22.97	198.15	17.74	0.79
RW-9061-5002	Sector Dual Pole 60 Deg	15.5*	35	20.47	111.43	17.74	0.79
MT0125250	Sector Dual Pole Integrated 90 Deg	13	20	22.97	198.15	17.74	0.79

*** The gain includes 1 dB feeder cable loss for external antennas**

5725 – 5850 MHz; Antennas used for Point to Point Operation.

Antenna Model	Type	Ant Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Safe Distance @ 1mW/cm^2 Limit(cm)	Power Density @ 20cm (mW/cm^2)
AM0119960	Flat Panel Dual Pole Integrated	16	40	29.97	993.12	56.09	7.87
AM0111760	Flat Panel Dual Pole Integrated	16.5	45	29.97	993.12	59.41	8.83
MT0070760	Flat Panel Dual Pole Integrated	24	251	29.97	993.12	140.89	49.63
RW-9612-5001	Flat Panel Dual Pole External	23	200	29.97	993.12	125.57	39.42
RW-9622-5001	Flat Panel Dual Pole External	29	794	29.97	993.12	250.55	156.94
RW-9721-5158	Dual Pole Dish	29	794	29.97	993.12	250.55	156.94
RW-9732-4958	Dual Pole Dish	32	1585	29.97	993.12	353.91	313.13

*** The gain includes 1 dB feeder cable loss for external antennas**

5.1.6. Radiated Emission Testing

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))

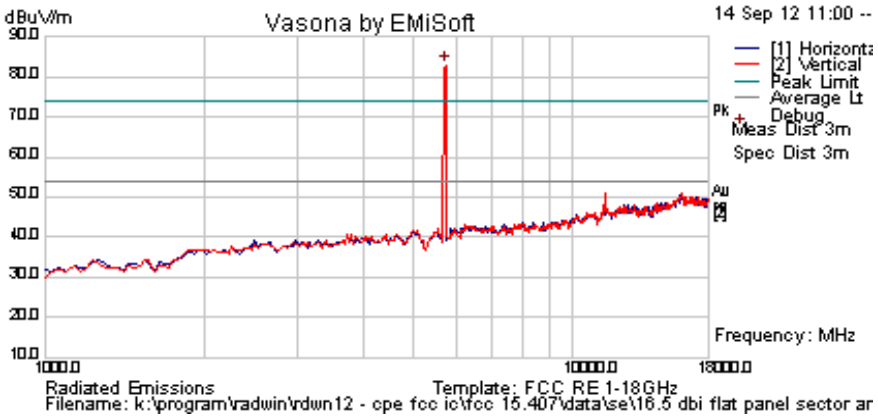
40 dBμV/m = 100 μV/m
48 dBμV/m = 250 μV/m

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

Antenna # 1

Low

Test Freq.	5727.5 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	25	**Press. (mBars)**	2004
Antenna	11 dBi Flat Panel Ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

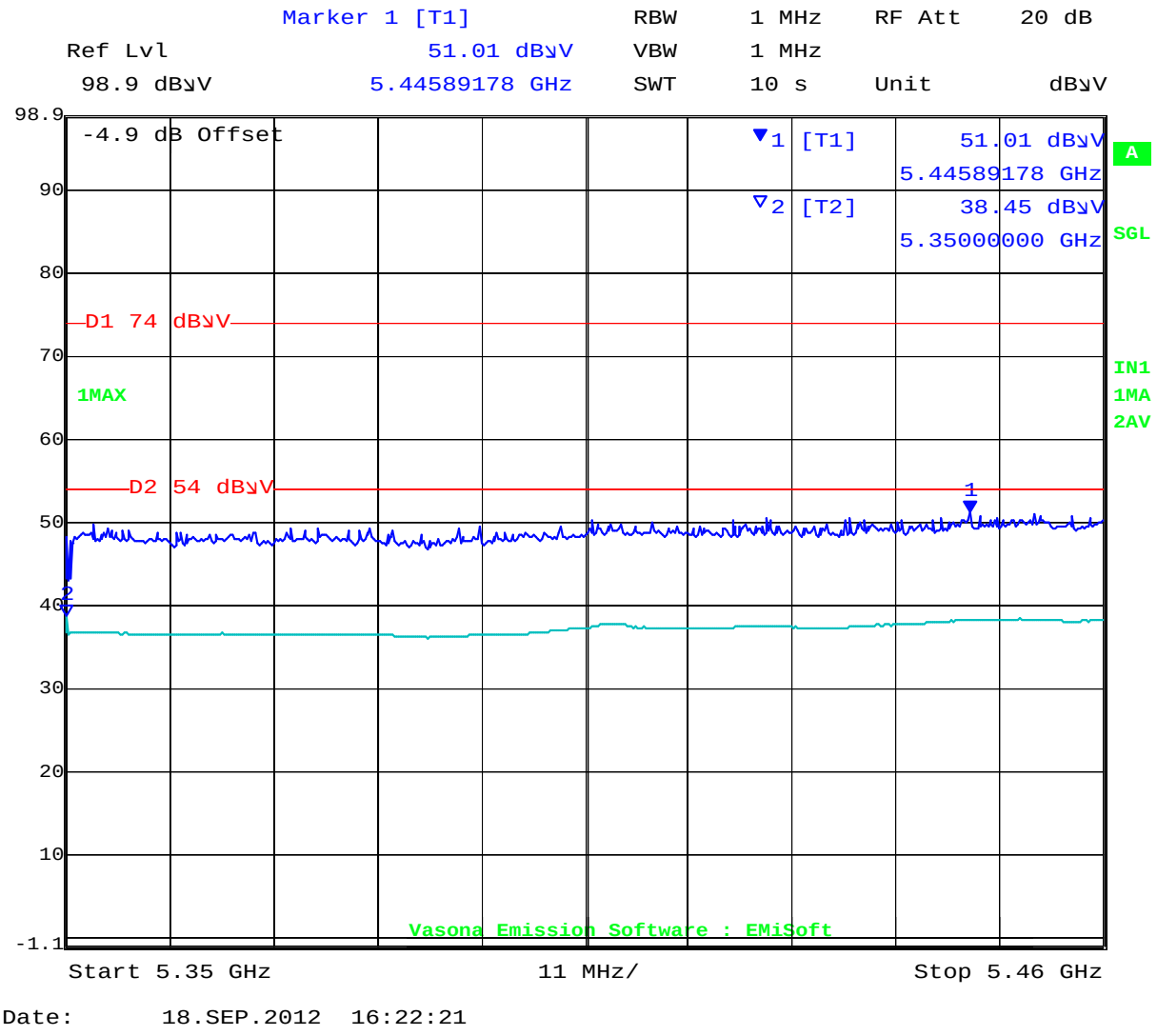


Formally measured emission peaks

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
5735.471	72.6	4.8	-9.5	67.8	Peak [Scan]	V	100	0				FUND
11454.67	57.4	6.8	-2.1	62.2	Peak Max	V	111	209	74.0	-11.8	Pass	RB
11454.670	42.1	6.8	-2.1	46.8	Average Max	V	111	209	54	-7.2	Pass	RB

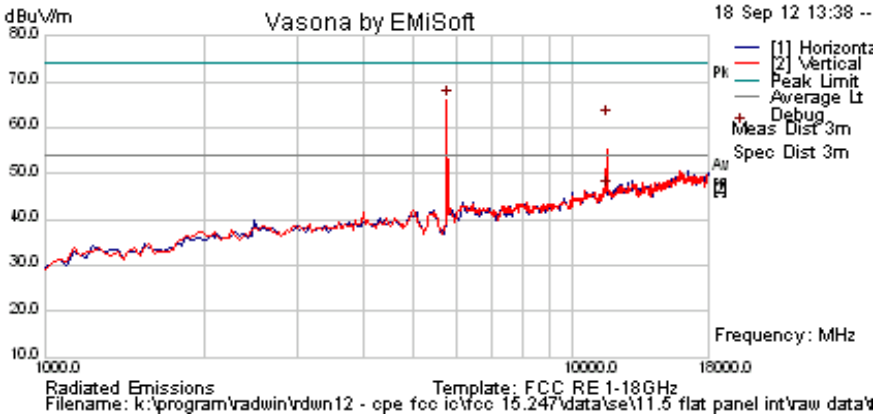
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	NRB = Non-Restricted Band. Limit = 68.23 dBuV/m; RB = Restricted Band. Limits per 15.205

Band Edge 5460 MHz PS =25



Mid

Test Freq.	5780 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	24	**Press. (mBars)**	2004
Antenna	11 dBi Flat Panel Ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



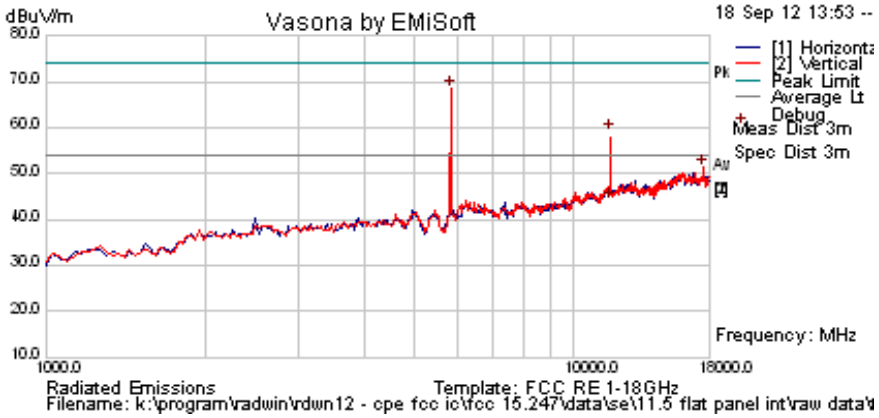
Formally measured emission peaks

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
5769.539	70.8	4.8	-9.5	66.1	Peak [Scan]	V	150	0				FUND
11559.599	57.3	6.8	-2.0	62.2	Peak Max	V	109	225	74.0	-11.9	Pass	RB
11559.599	41.7	6.8	-2.0	46.5	Average Max	V	109	225	54	-7.5	Pass	RB

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

High

Test Freq.	5847.5 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	23	**Press. (mBars)**	2004
Antenna	11 dBi Flat Panel Ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

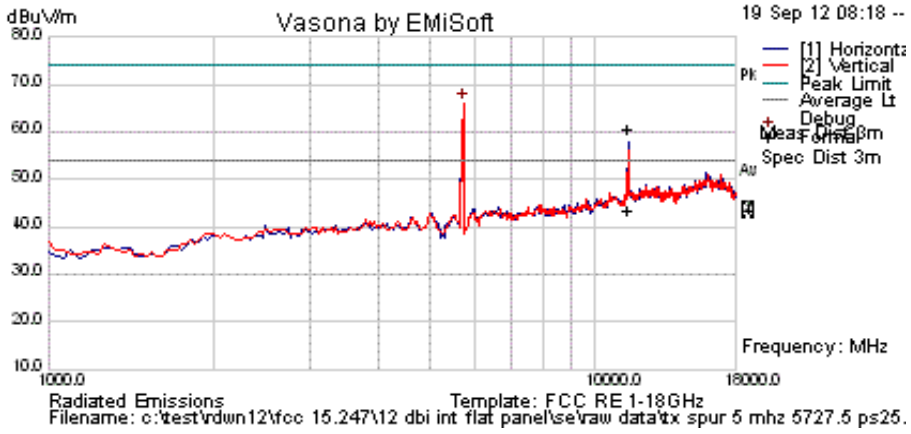
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5837.675	73.0	4.8	-9.3	68.5	Peak [Scan]	V	100	0				FUND
17557.114	41.8	8.8	0.8	51.3	Peak [Scan]	V	150	0				NRB
11695.231	54.3	6.8	-2.4	58.8	Peak Max	V	151	219	74	-15.2	Pass	RB
11695.231	39.4	6.8	-2.4	43.8	Average Max	V	151	219	54	-10.2	Pass	RB

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

Antenna # 2

Low

Test Freq.	5727.5 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	23
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	25	**Press. (mBars)**	1004
Antenna	12 dBI Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

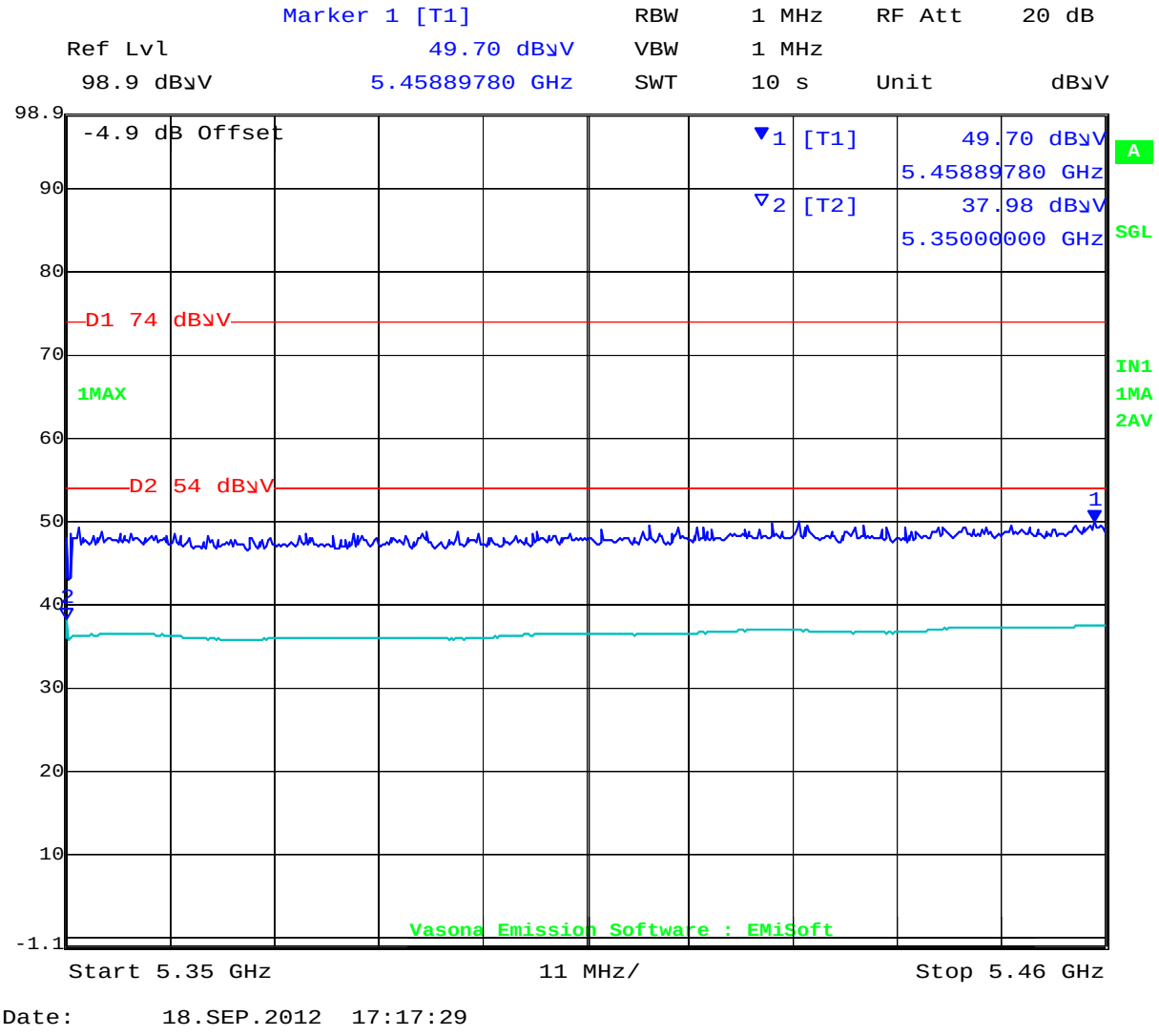


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5735.471	70.9	4.8	-9.5	66.1	Peak [Scan]	V	100	0				FUND
11455.062	56.1	6.8	-2.1	60.8	Peak Max	H	118	218	74.0	-13.2	Pass	RB
11455.062	38.6	6.8	-2.1	43.3	Average Max	H	118	218	54	-10.7	Pass	RB

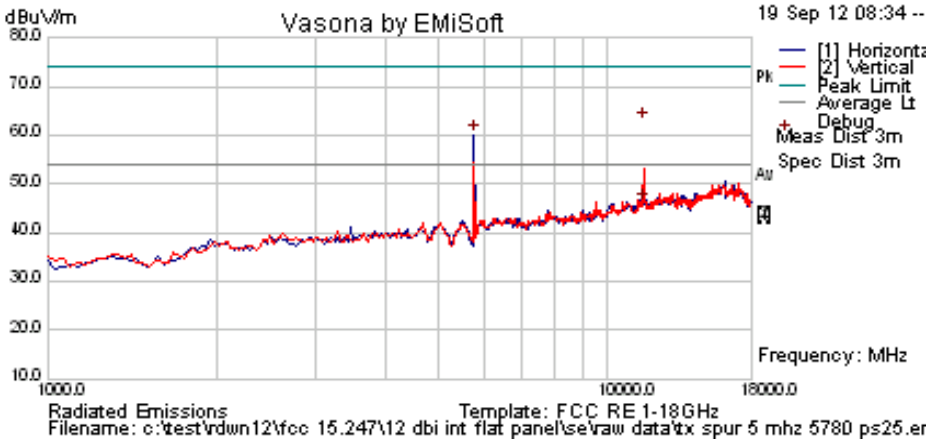
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Band Edge 5460 MHz PS =25



Mid

Test Freq.	5780 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	23
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	25	**Press. (mBars)**	1004
Antenna	12 dBI Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



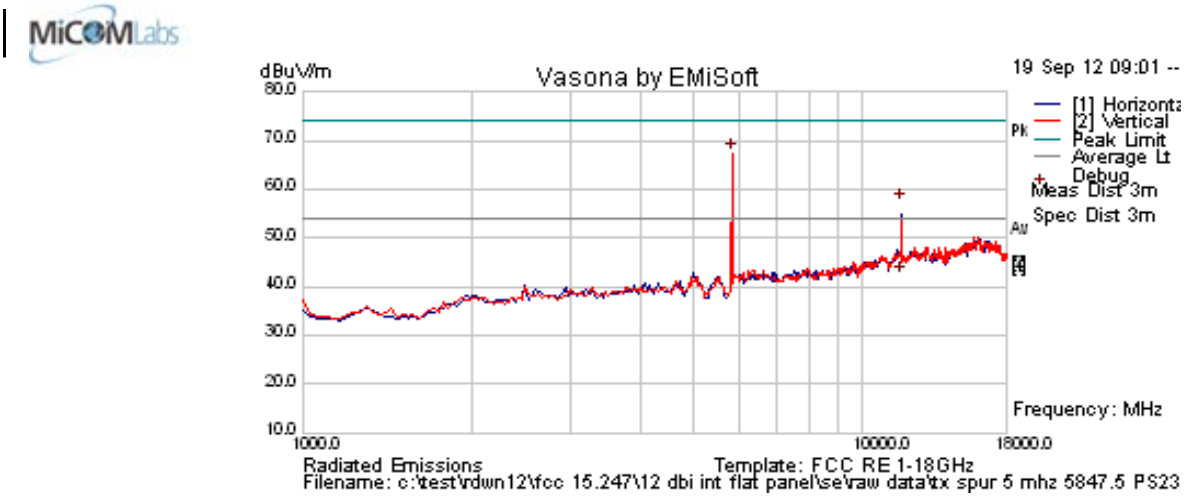
Formally measured emission peaks

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	64.9	4.8	-9.5	60.2	Peak [Scan]	H	150	0				FUND
11560.22	57.9	6.8	-2.0	62.8	Peak Max	V	128	225	74.0	-11.2	Pass	RB
11560.220	41.2	6.8	-2.0	46.0	Average Max	V	128	225	54	-8.0	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

High

Test Freq.	5847.5 MHz	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	23
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	25	**Press. (mBars)**	1004
Antenna	12 dBI Flat Panel Sector	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

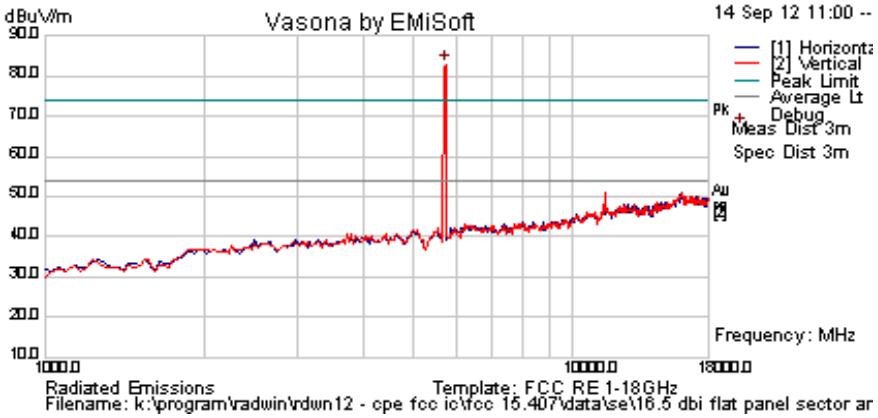
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5837.675	71.8	4.8	-9.3	67.4	Peak [Scan]	V	100	0				FUND
11694.97	52.6	6.8	-2.4	57.1	Peak Max	H	145	186	74.0	-16.9	Pass	RB
11694.970	37.9	6.8	-2.4	42.3	Average Max	H	145	186	54	-11.7	Pass	RB

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

Antenna # 3

Low

Test Freq.	5727.5 MHz	**Engineer**	SB
Variant	5 MHz	**Temp (ºC)**	23
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	25	**Press. (mBars)**	1008
Antenna	16.5 dBi Flat Panel Sector Ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			

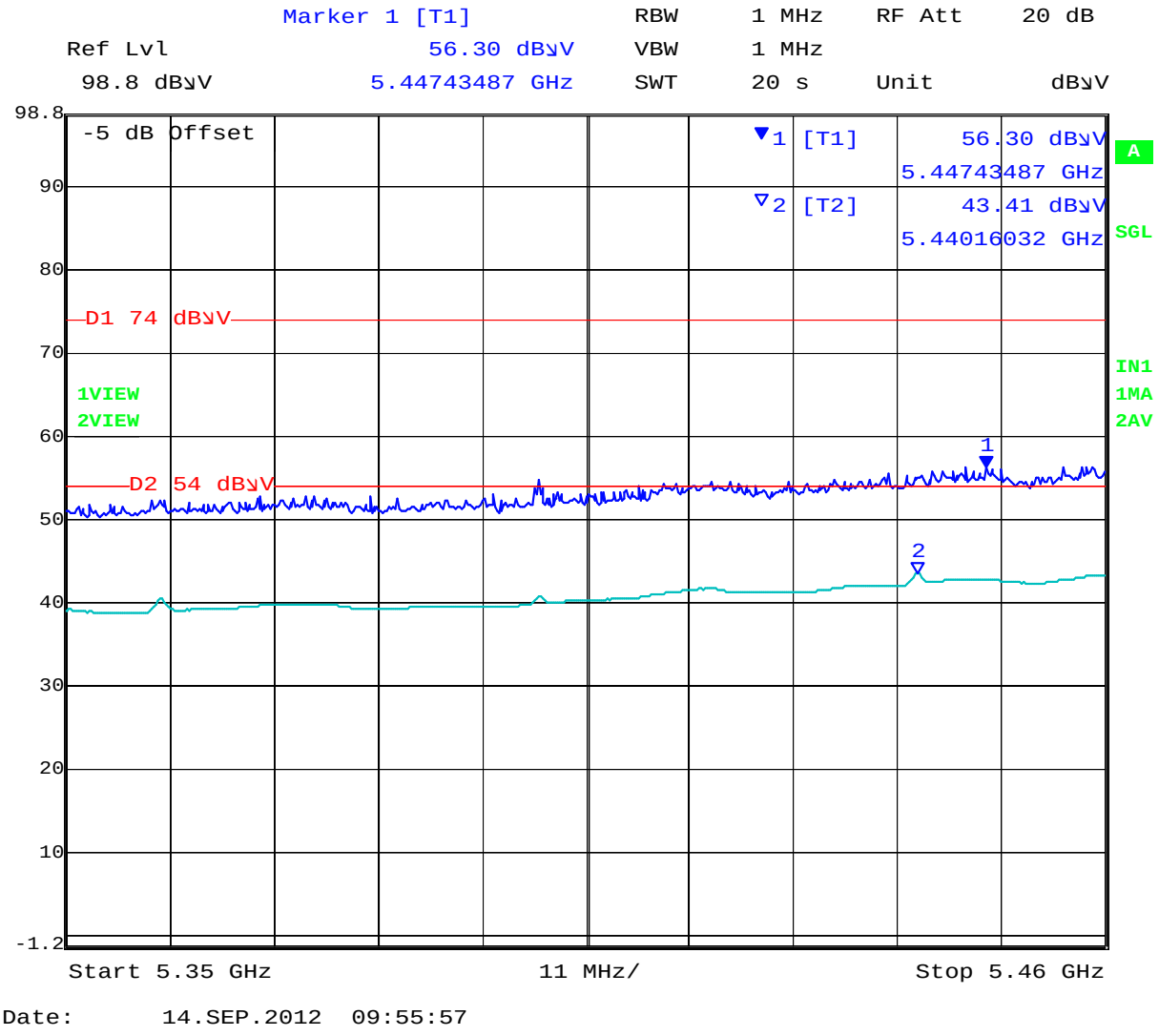


Formally measured emission peaks

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
5735.471	87.7	4.8	-9.5	82.9	Peak [Scan]	H	100	0				FUND

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

Band Edge 5460 MHz PS = 25



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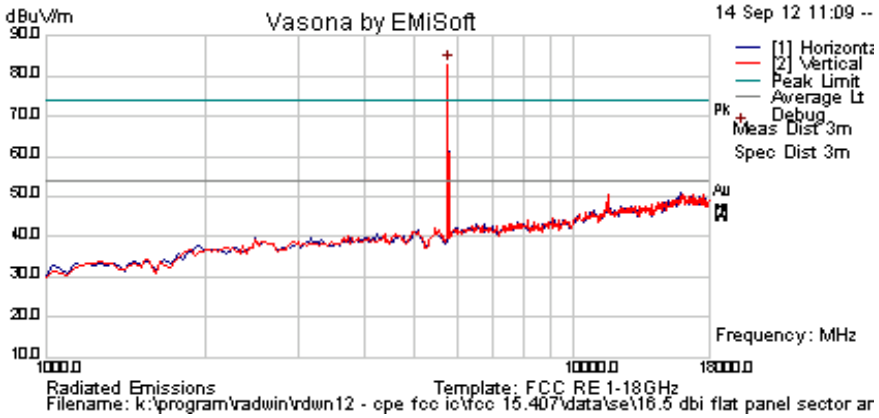
Mid

Test Freq.	5780 MHz	**Engineer**	SB
Variant	5 MHz	**Temp (ºC)**	23
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	25	**Press. (mBars)**	1008
Antenna	16.5 dBi Flat Panel Sector Ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



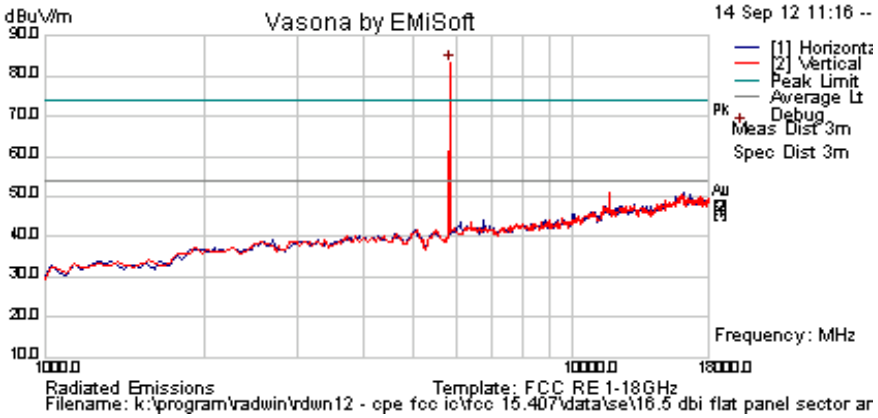
Formally measured emission peaks

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
5769.539	87.7	4.8	-9.5	83.0	Peak [Scan]	H	150	0				FUND

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

High

Test Freq.	5847.5 MHz	**Engineer**	SB
Variant	5 MHz	**Temp (ºC)**	23
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	33
Power Setting	25	**Press. (mBars)**	1008
Antenna	16.5 dBi Flat Panel Sector Ant	**Duty Cycle (%)**	100
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

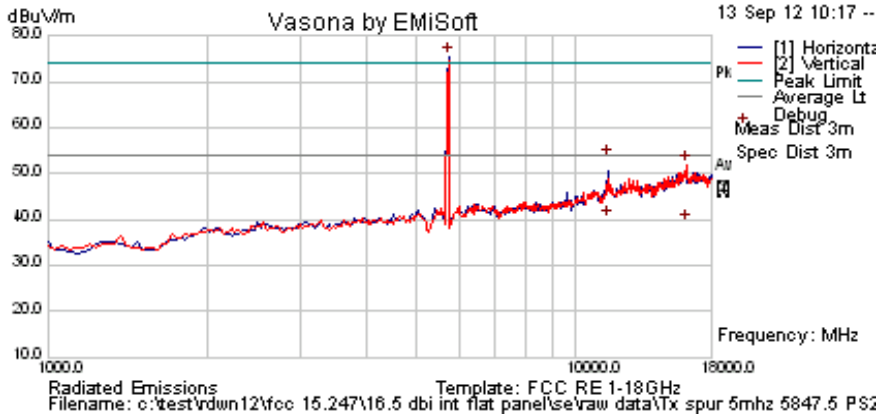
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5837.675	87.8	4.8	-9.3	83.3	Peak [Scan]	H	100	0				FUND

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

Antenna # 4

Low

Test Freq.	5727.5	**Engineer**	JMH
Variant	5 MHz	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	25	**Press. (mBars)**	1003
Antenna	16.5 dBi Integral Flat Panel	**Duty Cycle (%)**	100%
Test Notes 1			
Test Notes 2	with Integral Leads, no cable extensions		

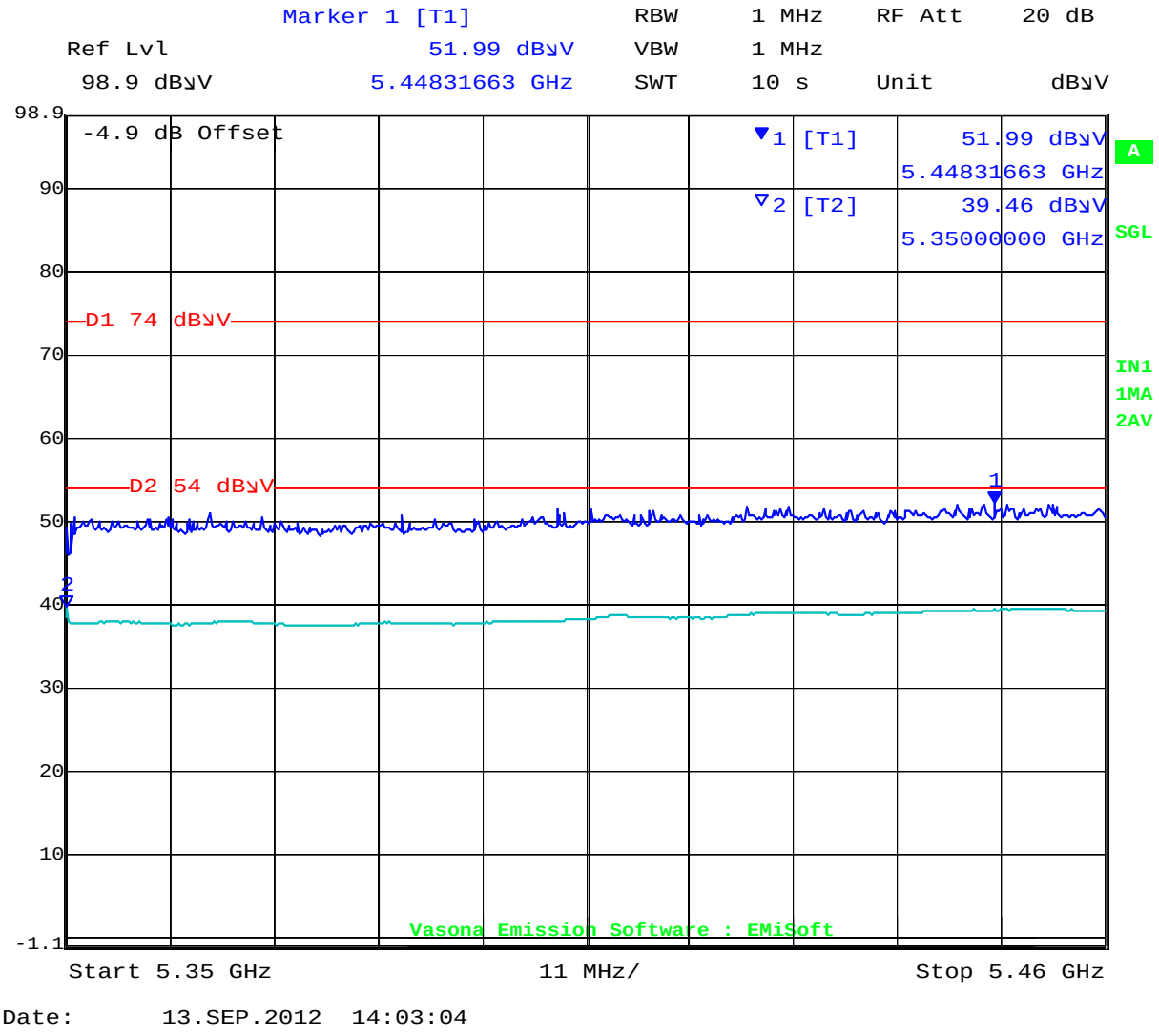


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5735.471	80.3	4.8	-9.5	75.5	Peak [Scan]							FUND
16162.248	43.0	9.0	0.2	52.1	Peak Max	V	123	27	74.0	-21.9	Pass	RB
11454.742	48.8	6.8	-2.1	53.5	Peak Max	H	134	247	74	-20.5	Pass	RB
16162.248	30.2	9.0	0.2	39.4	Average Max	V	123	27	54	-14.6	Pass	RB
11454.742	35.3	6.8	-2.1	40.0	Average Max	H	134	247	54	-14.0	Pass	RB

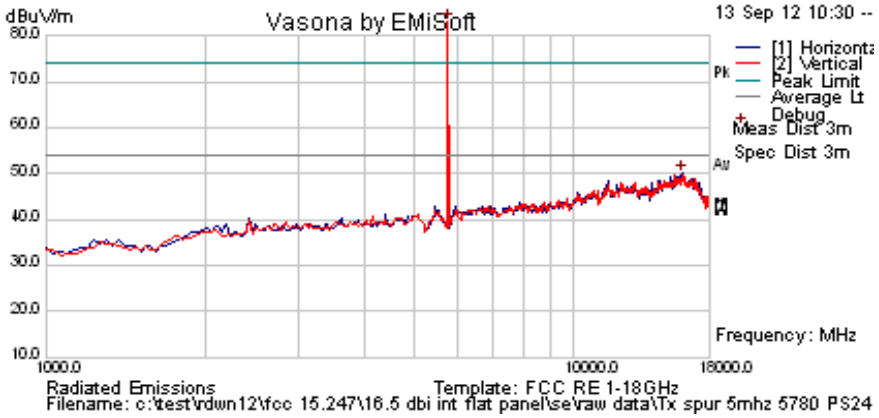
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Band Edge 5460 MHz PS = 25



Mid

Test Freq.	5780 MHz	**Engineer**	JMH
Variant	5 MHz, MCS 15	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	24	**Press. (mBars)**	1003
Antenna	16.5 dBi Integral Flat Panel	**Duty Cycle (%)**	100%
Test Notes 1	0		
Test Notes 2	with Integral Leads, no cable extensions		



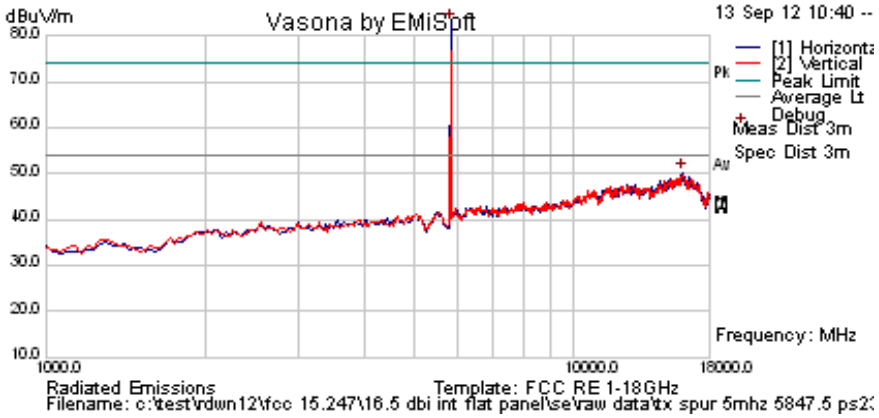
Formally measured emission peaks

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	87.6	4.8	-9.5	82.9	Peak [Scan]	V	100	0	54.0	28.9		FUND
16058.116	40.9	9.0	0.3	50.1	Peak [Scan]	H	150	0	54.0	-3.9	Pass	Noise

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

High

Test Freq.	5847.5 MHz	**Engineer**	JMH
Variant	5 MHz, MCS 15	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	23	**Press. (mBars)**	1003
Antenna	16.5 dBi Integral Flat Panel	**Duty Cycle (%)**	100%
Test Notes 1	0		
Test Notes 2	with Integral Leads, no cable extensions		



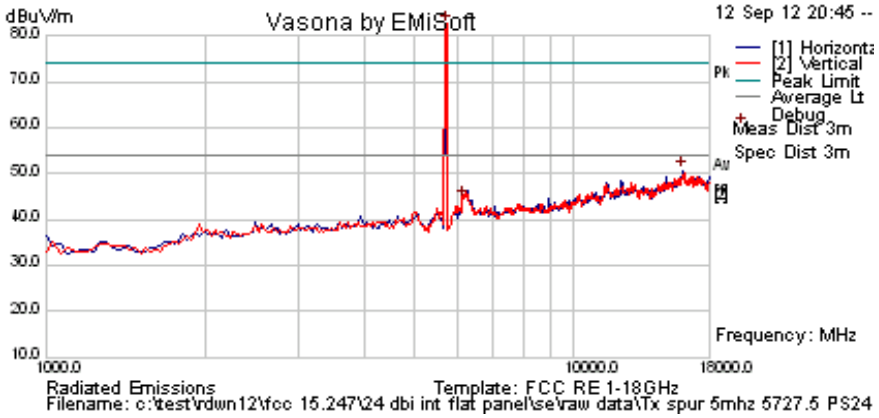
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5837.675	87.4	4.8	-9.3	83.0	Peak [Scan]							FUND
16058.116	41.0	9.0	0.3	50.3	Peak [Scan]	H	100	0	54.0	-3.7	Pass	Noise
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak											

Antenna # 5

Low

Test Freq.	5727.5	**Engineer**	JMH
Variant	5 MHz, MCS 15	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	25	**Press. (mBars)**	1003
Antenna	24 dBi Integral Flat Panel	**Duty Cycle (%)**	100%
Test Notes 1			
Test Notes 2	with Integral Leads, no cable extensions		

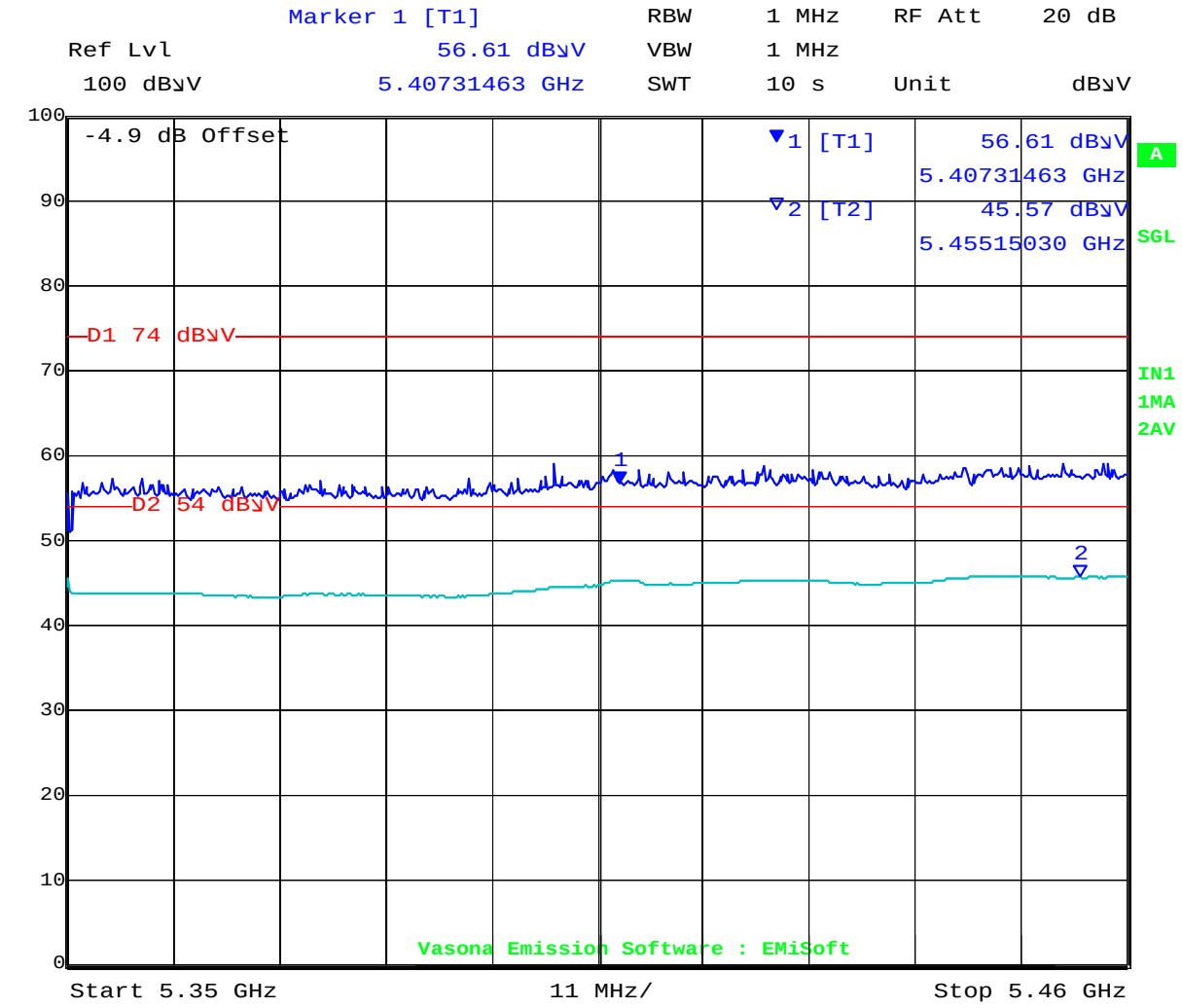


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5735.471	87.4	4.8	-9.5	82.6	Peak [Scan]							FUND
16024.048	41.4	9.0	0.2	50.6	Peak [Scan]	H	150	0	54.0	-3.4	Pass	Noise
6177.627	47.4	5.0	-7.9	44.5	Peak [Scan]							NRB

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

Band Edge 5460 MHz PS = 25



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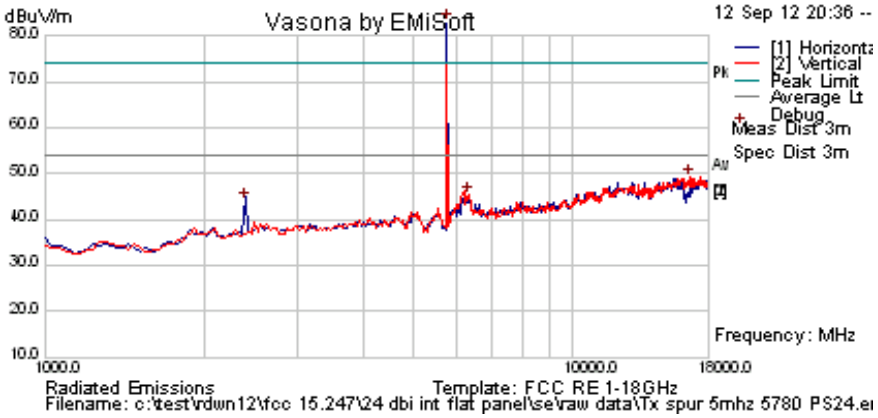
Mid

Test Freq.	5780 MHz	**Engineer**	JMH
Variant	5 MHz, MCS 15	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	24	**Press. (mBars)**	1003
Antenna	24 dBi Integral Flat Panel	**Duty Cycle (%)**	100%
Test Notes 1	0		
Test Notes 2	with Integral Leads, no cable extensions		



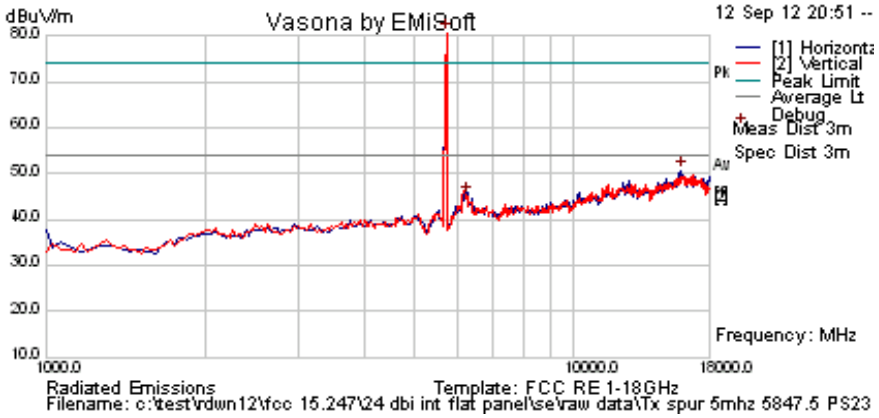
Formally measured emission peaks

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	87.5	4.8	-9.5	82.8	Peak [Scan]							FUND
16637.275	39.9	8.7	0.6	49.3	Peak [Scan]	V	100	0	54.0	-4.7	Pass	Noise
2400.753	52.6	3.0	-11.6	43.9	Peak [Scan]							NRB
6349.606	47.6	5.1	-7.4	45.4	Peak [Scan]							NRB

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

High

Test Freq.	5847.5 MHz	**Engineer**	JMH
Variant	5 MHz, MCS 15	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	23	**Press. (mBars)**	1003
Antenna	24 dBi Integral Flat Panel	**Duty Cycle (%)**	100%
Test Notes 1	0		
Test Notes 2	with Integral Leads, no cable extensions		



Formally measured emission peaks

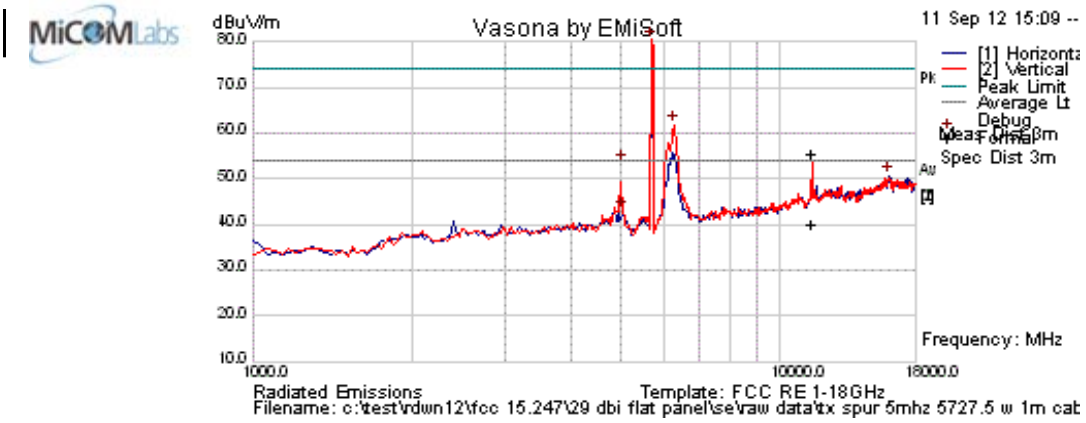
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5735.471	85.5	4.8	-9.5	80.7	Peak [Scan]							FUND
15955.912	41.7	9.0	0.0	50.6	Peak [Scan]	H	100	0	54.0	-3.4	Pass	
6294.786	47.9	5.0	-7.5	45.4	Peak [Scan]							NRB

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

Antenna # 6

Low

Test Freq.	5727.5 MHz	**Engineer**	JMH
Variant	5 MHz, MCS 15	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	32	**Press. (mBars)**	1002
Antenna	Flat Panel 29 dBi	**Duty Cycle (%)**	100%
Test Notes 1	1m Cables		
Test Notes 2			

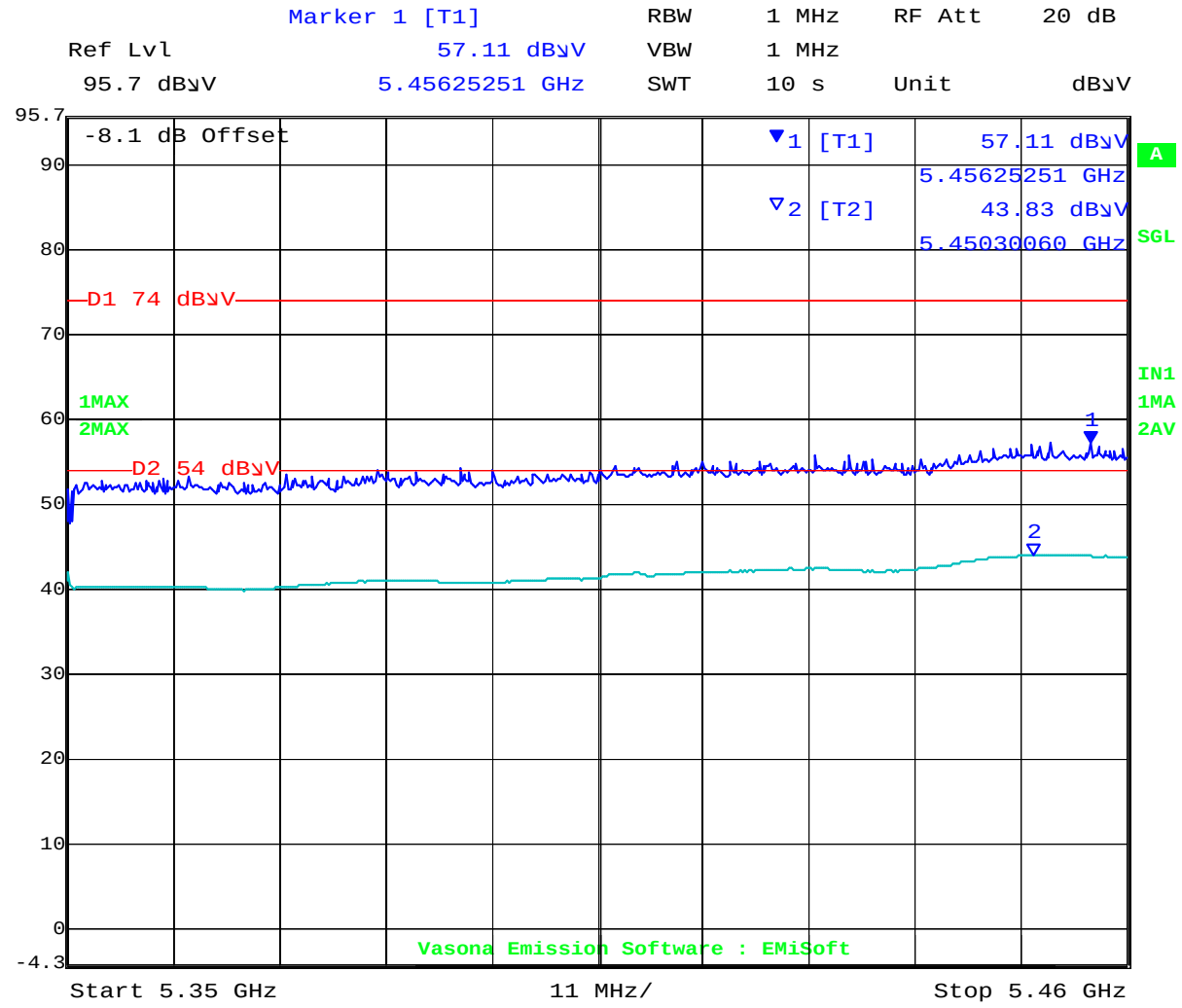


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5701.403	85.4	4.7	-9.6	80.5	Peak [Scan]	V						FUND
6280.561122	64.3	5.0	-7.5	61.8	Peak [Scan]	V						NRB
16058.116	41.5	9.0	0.3	50.8	Peak [Scan]	H	100	0	54	-3.2	Pass	Noise
5000.260	48.2	4.6	-9.9	42.9	Average Max	V	98	7	54	-11.1	Pass	RB
11450.160	35.3	6.8	-2.1	40.0	Average Max	H	121	265	54	-14.1	Pass	RB
11450.160	50.7	6.8	-2.1	55.4	Peak Max	H	121	265	74	-18.6	Pass	RB
5000.260	58.5	4.6	-9.9	53.2	Peak Max	V	98	7	74	-20.8	Pass	RB

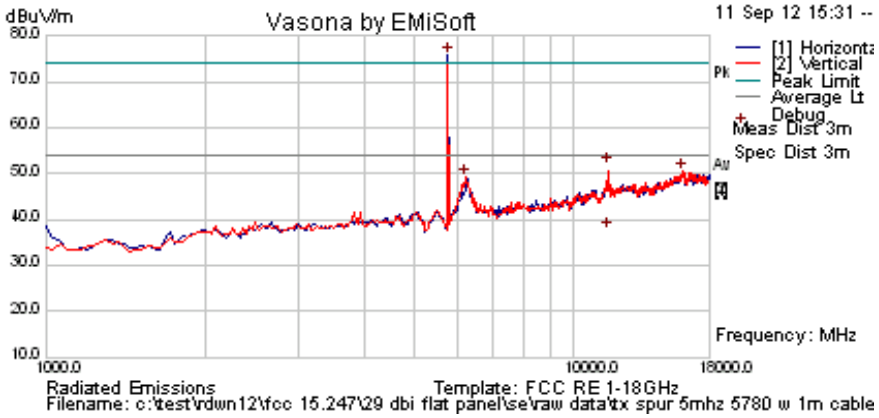
Legend:	TX = Transmitter Emissions; DIG = Digital Emissions; FUND = Fundamental; WB = Wideband Emission
	RB = Restricted Band (15.209 Limits); NRB = Non Restricted Band, Limit is 20dB below fundamental peak

Band Edge 5460 MHz PS = 32



Mid

Test Freq.	5780 MHz	**Engineer**	JMH
Variant	5 MHz, MCS 15	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	32	**Press. (mBars)**	1002
Antenna	Flat Panel 29 dBi	**Duty Cycle (%)**	100%
Test Notes 1	1m Cables		
Test Notes 2			



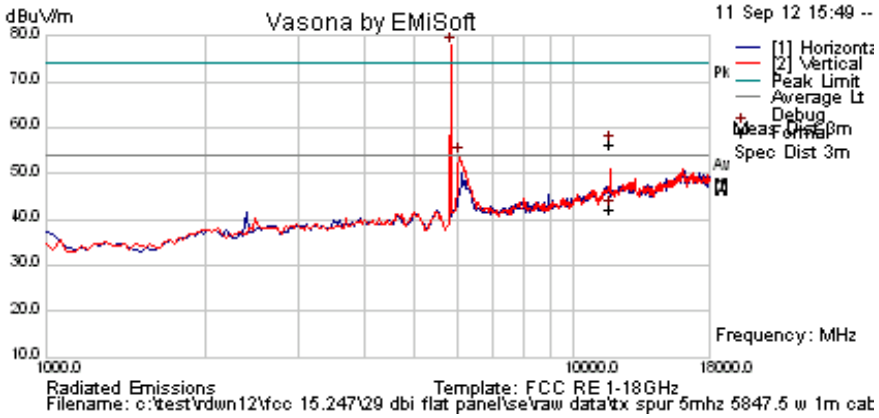
Formally measured emission peaks

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	80.5	4.8	-9.5	75.8	Peak [Scan]	H						FUND
15989.98	41.4	9.0	0.1	50.5	Peak [Scan]	V	100	0	54.0	-3.5	Pass	Noise
6212.425	51.9	5.0	-7.8	49.1	Peak [Scan]	V						NRB
11560.590	46.7	6.8	-2.0	51.6	Peak Max	V	98	0	74	-22.5	Pass	RB
11560.590	32.7	6.8	-2.0	37.6	Average Max	V	98	0	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

High

Test Freq.	5847.5 MHz	**Engineer**	JMH
Variant	5 MHz, MCS 15	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	32	**Press. (mBars)**	1002
Antenna	Flat Panel 29 dBi	**Duty Cycle (%)**	100%
Test Notes 1	1m Cables		
Test Notes 2			



Formally measured emission peaks

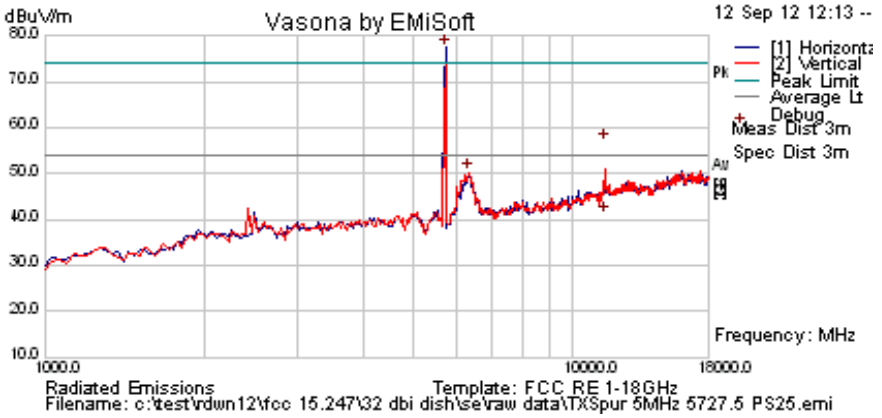
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5837.675	82.4	4.8	-9.3	78.0	Peak [Scan]	V						FUND
6076.152	57.1	4.9	-8.4	53.6	Peak [Scan]	V						NRB
11694.429	51.9	6.8	-2.4	56.3	Peak Max	V	98	352	74	-17.7	Pass	RB
11694.429	37.7	6.8	-2.4	42.1	Average Max	V	98	352	54	-11.9	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

Antenna # 7

Low

Test Freq.	5727.5 MHz	**Engineer**	JMH
Variant	5 MHz, MCS 15	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	25	**Press. (mBars)**	1002
Antenna	Dish 32 dBi	**Duty Cycle (%)**	100%
Test Notes 1	1m Cables		
Test Notes 2			

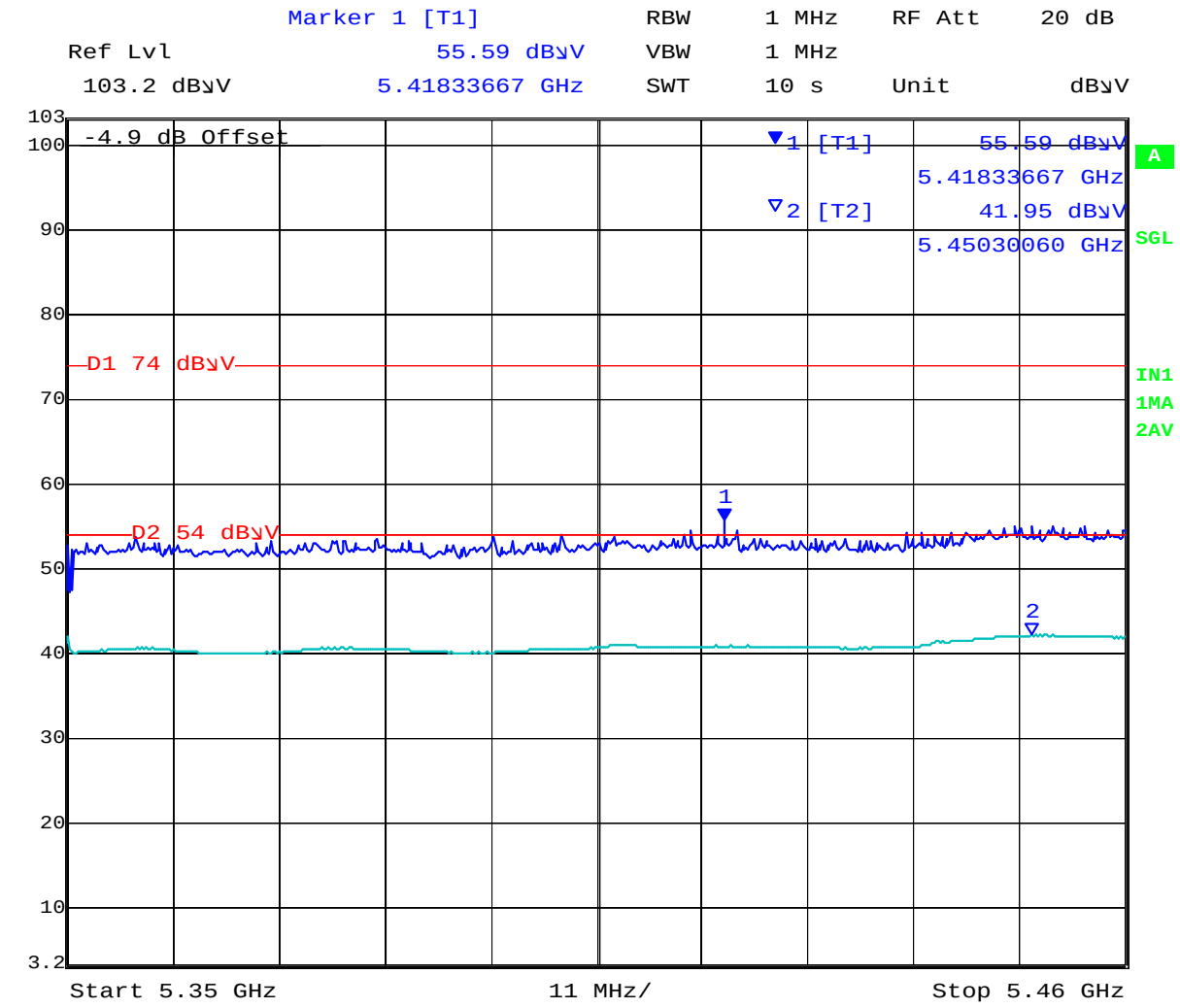


Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5735.471	82.4	4.8	-9.5	77.6	Peak [Scan]	H						FUND
6348.697395	52.6	5.1	-7.4	50.3	Peak [Scan]	V						NRB
11455.610	52.1	6.8	-2.1	56.8	Peak Max	V	154	164	74	-17.2	Pass	RB
11455.610	36.1	6.8	-2.1	40.8	Average Max	V	154	164	54	-13.2	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

Band Edge 5460 MHz PS = 25



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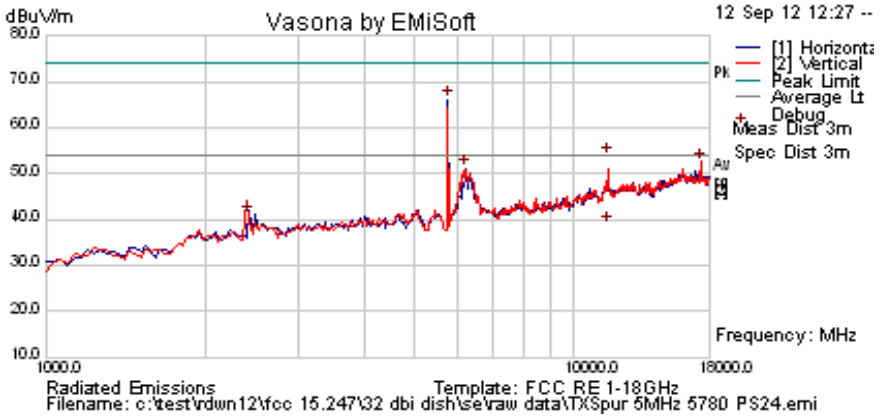
Mid

Test Freq.	5780 MHz	**Engineer**	JMH
Variant	5 MHz, MCS 15	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	24	**Press. (mBars)**	1002
Antenna	Dish 32 dBi	**Duty Cycle (%)**	100%
Test Notes 1	1m Cables		
Test Notes 2			



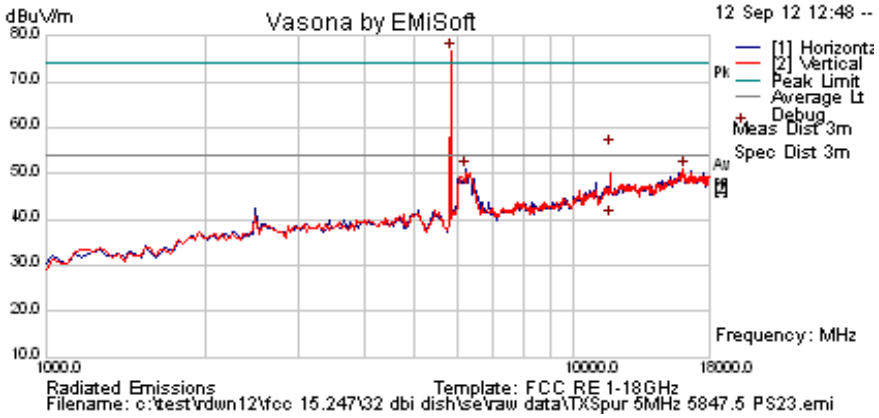
Formally measured emission peaks

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	70.8	4.8	-9.5	66.1	Peak [Scan]	H						FUND
17352.705	42.7	8.7	1.3	52.7	Peak [Scan]	V						NRB
6246.493	53.7	5.0	-7.6	51.1	Peak [Scan]	H						NRB
2425.163	49.7	3.0	-11.6	41.1	Peak [Scan]	V	98	0	54	-12.9	Pass	NRB
11558.827	49.1	6.8	-2.0	53.9	Peak Max	V	101	112	74	-20.1	Pass	RB
11558.827	34.1	6.8	-2.0	38.9	Average Max	V	101	112	54	-15.1	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

High

Test Freq.	5847.5 MHz	**Engineer**	JMH
Variant	5 MHz, MCS 15	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	23	**Press. (mBars)**	1002
Antenna	Dish 32 dBi	**Duty Cycle (%)**	100%
Test Notes 1	1m Cables		
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
5837.675	81.0	4.8	-9.3	76.6	Peak [Scan]	V						FUND
16092.184	41.7	9.0	0.3	51.0	Peak [Scan]	H						Noise
6246.493	53.5	5.0	-7.6	50.9	Peak [Scan]	H	100	0	54	-3.1	Pass	NRB
11695.773	51.1	6.8	-2.4	55.6	Peak Max	V	100	144	74	-18.4	Pass	RB
11695.773	35.8	6.8	-2.4	40.2	Average Max	V	100	144	54	-13.8	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

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 5^{th} 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

5.1.7. Receiver Radiated Spurious Emissions (above 1 GHz)

Industry Canada RSS-Gen §4.10, §6

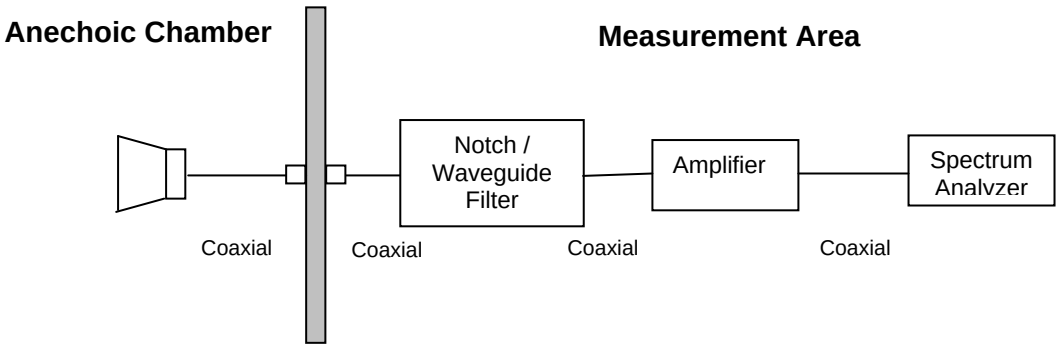
Test Procedure

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.

All Sectors of the EUT were tested simultaneously

Test Measurement Set up



Measurement set up for Radiated Emission Test

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

Specification

Radiated Receiver Spurious Emissions

RSS-Gen §4.10 the search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g.. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is higher, to at least 3 times the highest tunable or local oscillator frequency, whichever is higher, without exceeding 40 GHz.

For emissions below 1000 MHz, measurements shall be performed using a CISPR quasi-peak detector and the related measurement bandwidth. As an alternative to CISPR quasi-peak measurement, compliance with the emission limit can be demonstrated using measuring equipment employing a peak detector function properly adjusted for factors such as pulse desensitization as required, with an equal or greater measurement bandwidth relative to the applicable CISPR quasi-peak bandwidth.

Above 1000 MHz, measurements shall be performed using an average detector with a minimum resolution bandwidth of 1 MHz.

RSS-Gen §6 Receiver Spurious Radiated Limits
Spurious emissions from receivers shall not exceed the radiated limits shown in the table below:

RSS-Gen Spurious Emissions Limits

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

Traceability:

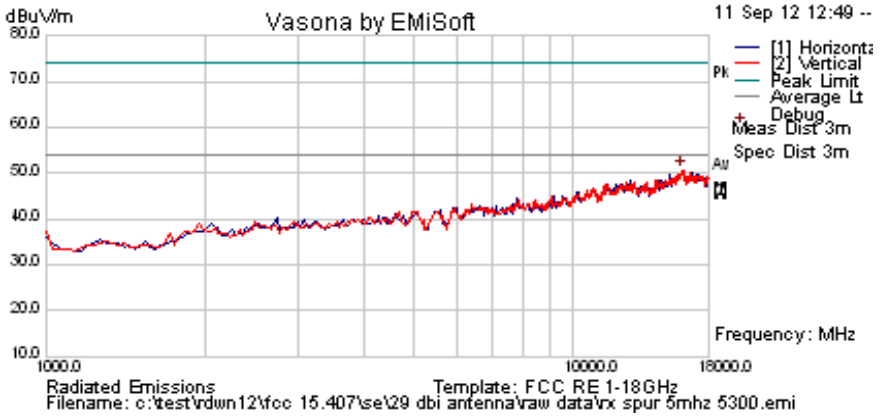
Test Equipment Used
0088, 0158, 0134, 0304, 0311, 0315, 0310, 0312

Receiver Radiated Spurious Emissions above 1 GHz

Radiated receiver testing was performed on antennas with the highest gains; 29 dBi Flat Panel and 32 dBi Dish antennas

29 dBi Flat Panel Antenna

Test Freq.	N/A	**Engineer**	JMH
Variant	Receive in Test Utility	**Temp (°C)**	24
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	1002
Antenna	29 dBi Flat Panel		
Test Notes 1			
Test Notes 2			



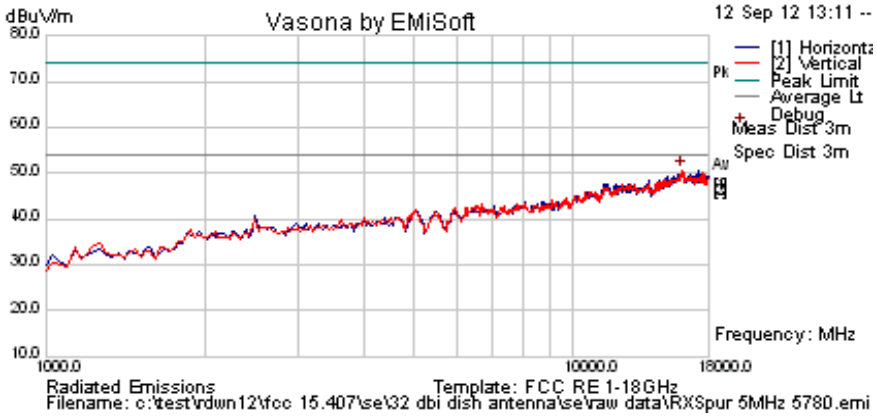
Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
16058.116	41.5	9.0	0.3	50.7	Peak [Scan]	V	200	0	54	-3.3	Pass	Noise

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

32 dBi Dish antenna

Test Freq.	N/A	**Engineer**	JMH
Variant	Receive in Test Utility	**Temp (ºC)**	25
Freq. Range	1000 MHz - 18000 MHz	**Rel. Hum.(%)**	34
Power Setting	Not Applicable in Receive Mode	**Press. (mBars)**	1006
Antenna	32 dBi Dish		
Test Notes 1			
Test Notes 2			



Formally measured emission peaks

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail	Comments
16058.116	41.4	9.0	0.3	50.7	Peak [Scan]	V	150	0	54	-3.3	Pass	Noise

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

5.1.8. Digital Emissions (0.03-1 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:

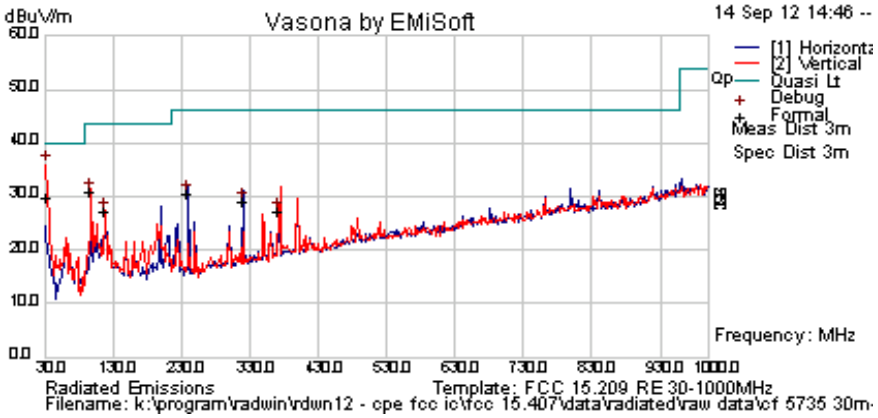
FS = 51.5 + 8.5 + 1.3 - 26.0 +1 = 36.3dBμV/m

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 = 100μV/m
48 dBμV/m = 250μV/m

Test Freq.	5780 MHz	**Engineer**	SB
Variant	Digital Emissions	**Temp (ºC)**	23
Freq. Range	30 MHz - 1000 MHz	**Rel. Hum.(%)**	33
Power Setting	25	**Press. (mBars)**	1008
Antenna	16.5 dBi Flat Panel Sector		
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
33.058	38.4	3.5	-12.1	29.7	Quasi Max	V	104	261	40	-10.3	Pass	
240.136	44.7	4.8	-19.0	30.5	Peak [Scan]	H	104	261	46	-15.5	Pass	
319.958	40.5	5.2	-16.7	29.1	Peak [Scan]	H	104	261	46	-16.9	Pass	
97.912	48.8	4.1	-21.9	31.0	Peak [Scan]	V	104	261	43.5	-12.5	Pass	
119.199	40.7	4.2	-17.5	27.4	Peak [Scan]	V	104	261	43.5	-16.1	Pass	
372.410	37.1	5.4	-15.3	27.2	Peak [Scan]	V	104	261	46	-18.8	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

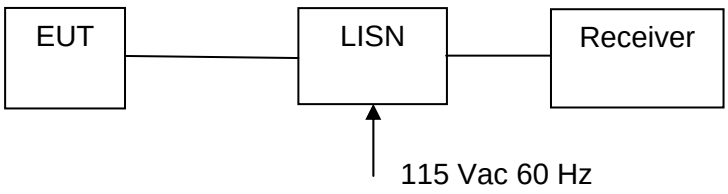
5.1.9. AC Wireline Conducted Emissions (150 kHz – 30 MHz)

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

Not required - EUT is power by POE only.

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

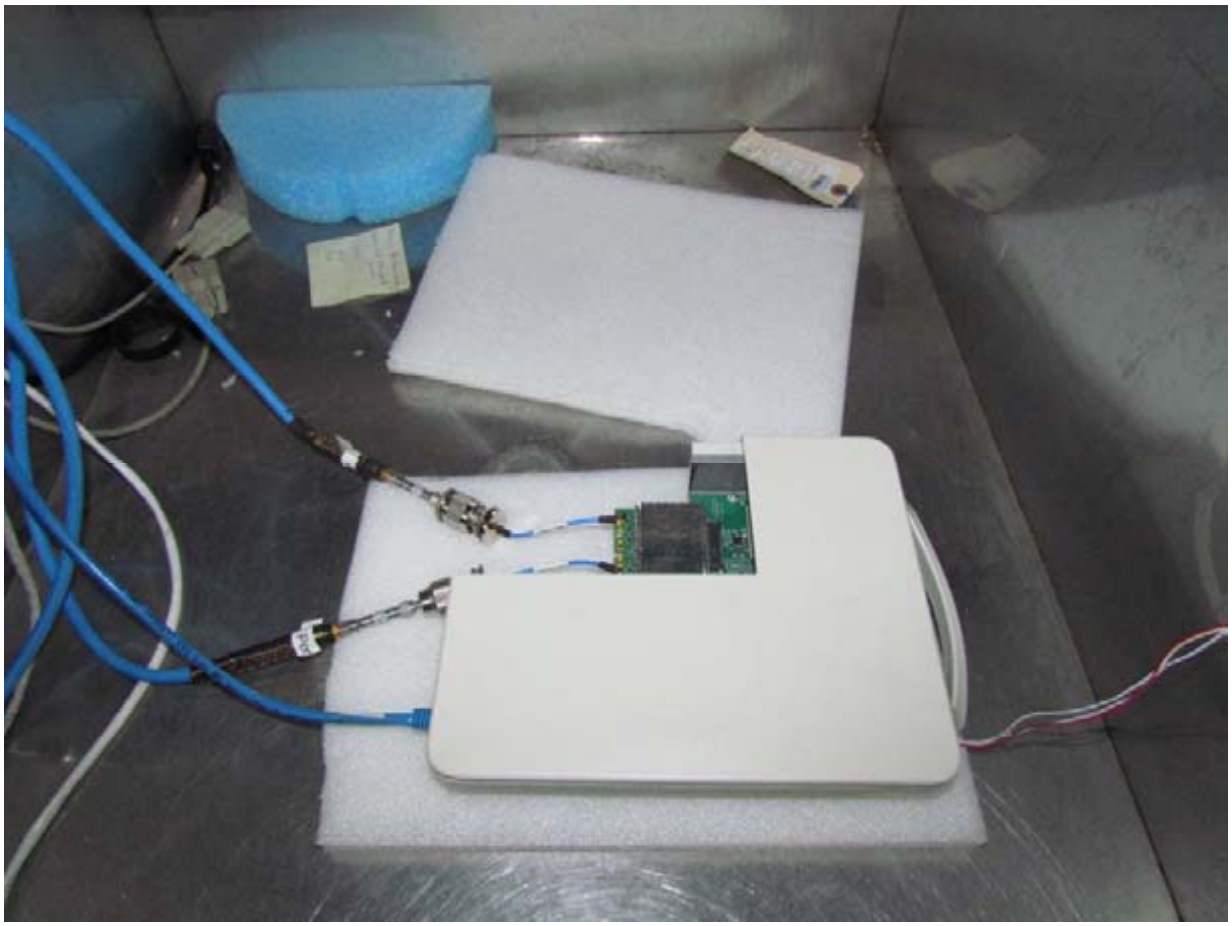
Measurement uncertainty	±2.64 dB

Traceability

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

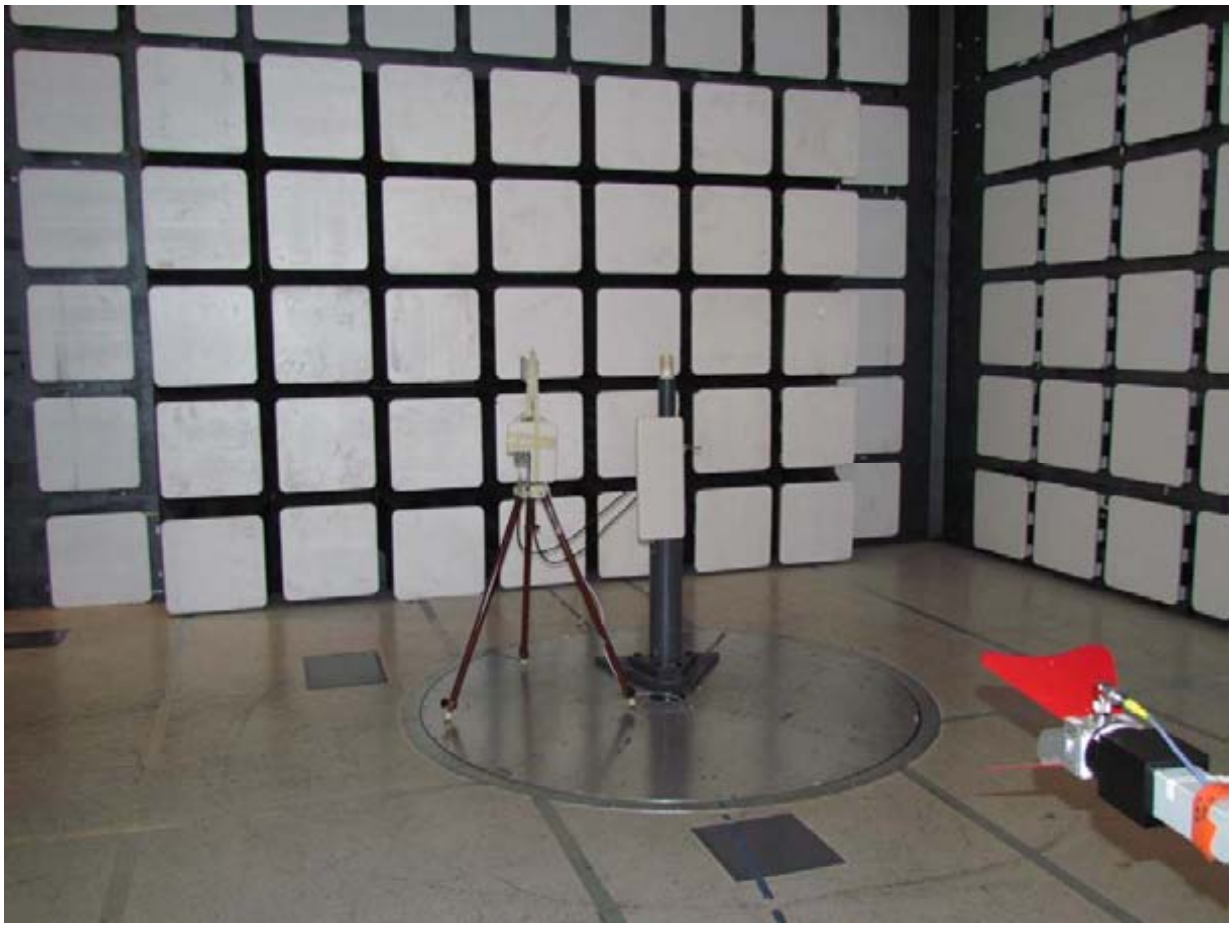
6. PHOTOGRAPHS

6.1. Conducted Test Setup



3.7. Test Setup - Digital Emissions below 1 GHz

3.8. Radiated Emissions Test Setup >1 GHz



7. TEST EQUIPMENT

Asset #	Instrument	Manufacturer	Part #	Serial #	Calibration Due Date
0070	Power Meter	Hewlett Packard	437B	3125U11552	28th Nov 12
0117	Power Sensor	Hewlett Packard	8487D	3318A00371	15th Nov 12
0223	Power Meter	Hewlett Packard	EPM-442A	US37480256	15th Nov 12
0374	Power Sensor	Hewlett Packard	8485A	3318A19694	29th Nov 12
0158	Barometer /Thermometer	Control Co.	4196	E2846	8th Dec 12
0193	EMI Receiver	Rhode & Schwartz	ESI 7	838496/007	2nd Dec 12
0287	EMI Receiver	Rhode & Schwartz	ESIB40	100201	16th Nov 12
0338	30 - 3000 MHz Antenna	Sunol	JB3	A052907	8th Nov 13
0335	1-18 GHz Horn Antenna	EMCO	3117	00066580	7th Nov 13
0252	SMA Cable	Megaphase	Sucoflex 104	None	N/A
0293	BNC Cable	Megaphase	1689 1GVT4	15F50B001	N/A
0307	BNC Cable	Megaphase	1689 1GVT4	15F50B002	N/A
0310	2m SMA Cable	Micro-Coax	UFA210A-0-0787-3G03G0	209089-001	N/A
0312	3m SMA Cable	Micro-Coax	UFA210A-1-1181-3G0300	209092-001	N/A
0314	30dB N-Type Attenuator	ARRA	N9444-30	1623	N/A
	EMC Test Software	EMISoft	Vasona	5.0051	N/A
	RF Conducted Test Software	National Instruments	Labview	Version 8.2	N/A
	RF Conducted Test Software	MiCOM Labs ATS		Version 1.4	N/A

APPENDIX

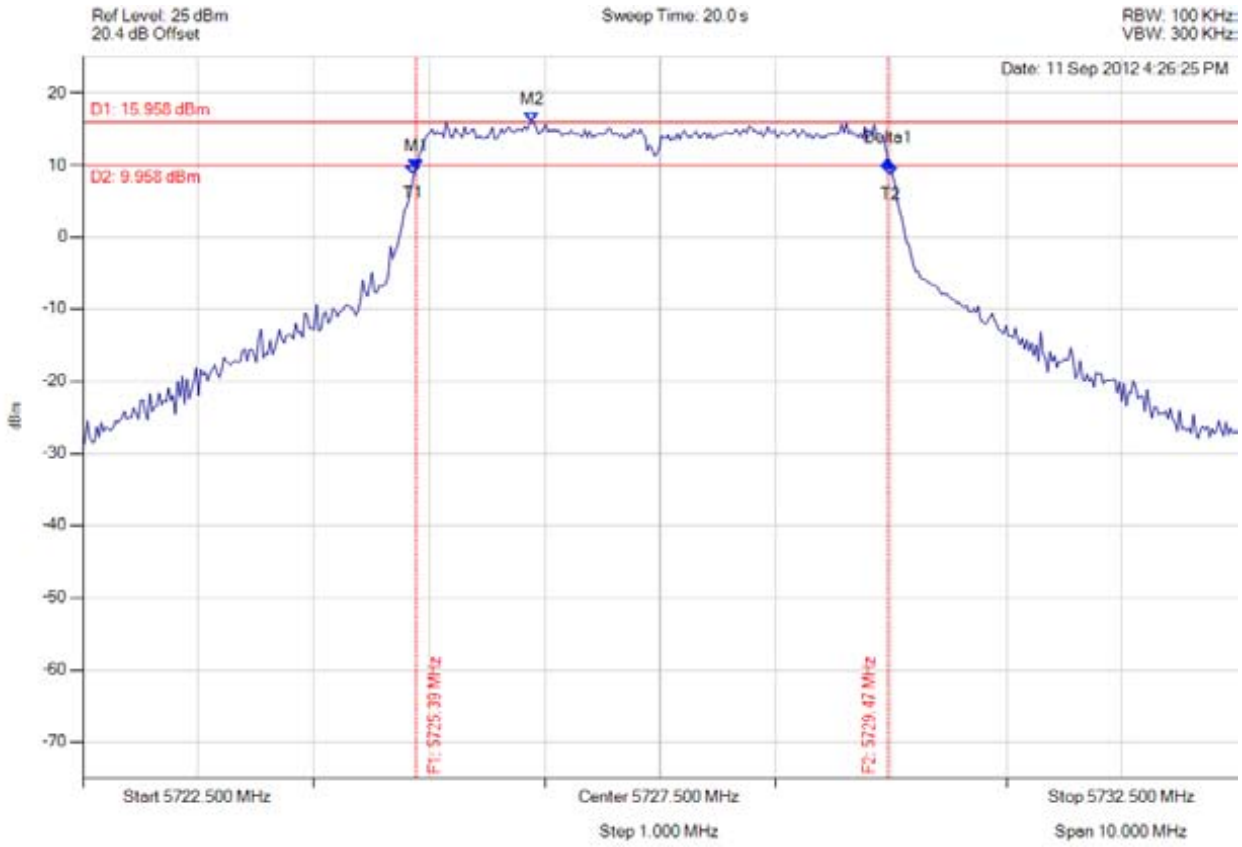
A. SUPPORTING INFORMATION

A.1. CONDUCTED TEST PLOTS

A.1.1. 6 dB & 99% Bandwidth

6 dB 99%

Variant: 5 MHz, Channel: 5727.50 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

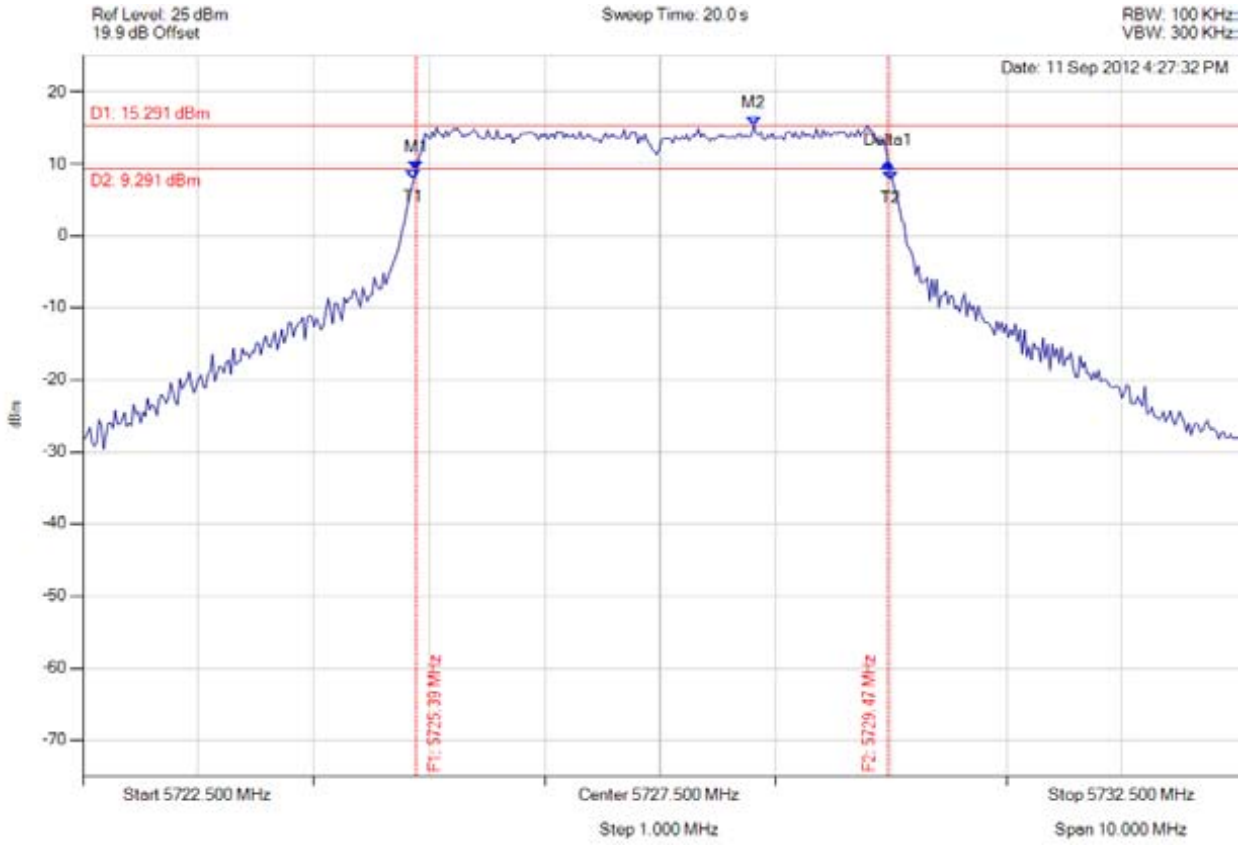


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5725.386 MHz : 9.539 dBm M2 : 5726.388 MHz : 15.958 dBm Delta1 : 4.088 MHz : 1.163 dB T1 : 5725.366 MHz : 8.610 dBm T2 : 5729.494 MHz : 8.462 dBm OBW : 4.148 MHz	Measured 6 dB Bandwidth: 4.088 MHz Limit: ≥ 0.5 MHz Margin: -3.59 MHz

Back to the Matrix

6 dB 99%

Variant: 5 MHz, Channel: 5727.50 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

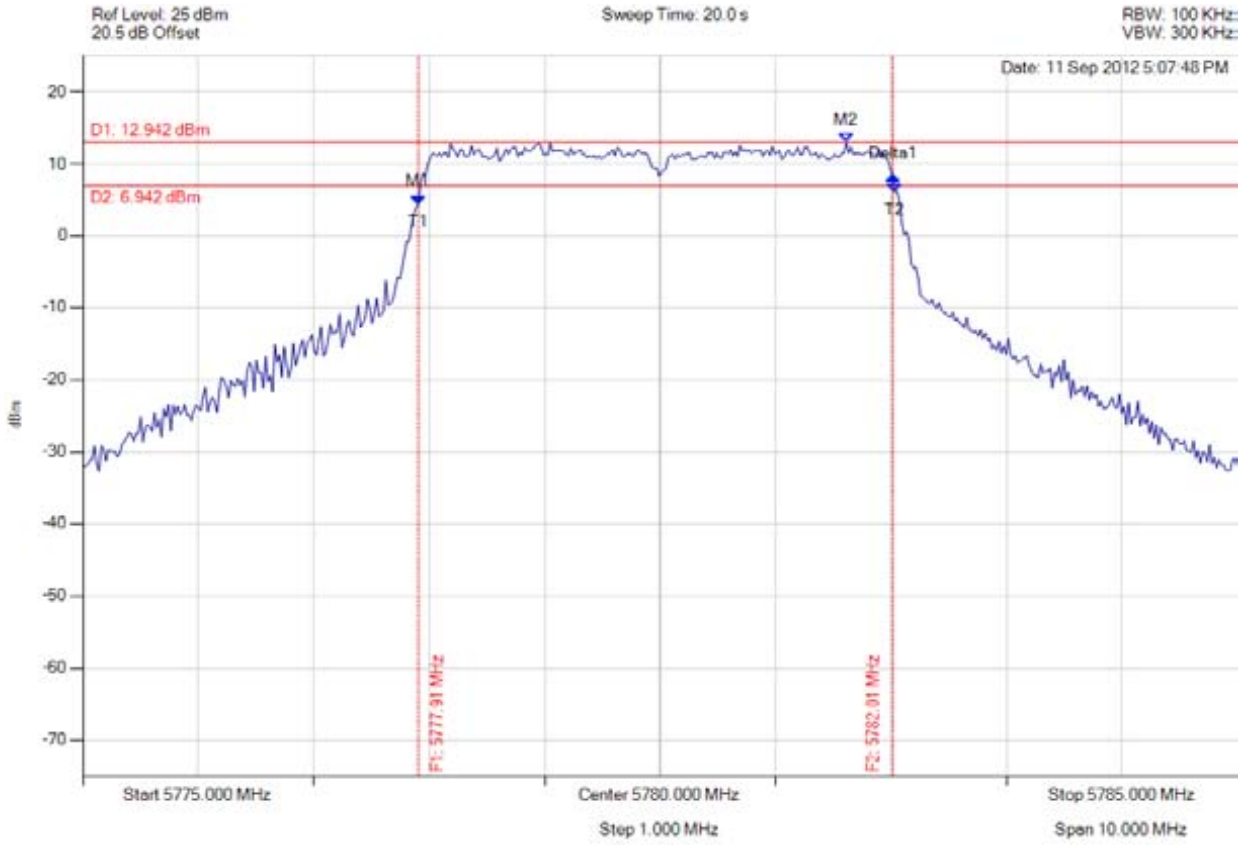


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5725.386 MHz : 9.192 dBm M2 : 5728.312 MHz : 15.291 dBm Delta1 : 4.088 MHz : 1.007 dB T1 : 5725.366 MHz : 7.884 dBm T2 : 5729.494 MHz : 7.705 dBm OBW : 4.148 MHz	Measured 6 dB Bandwidth: 4.088 MHz Limit: ≥ 0.5 MHz Margin: -3.59 MHz

Back to the Matrix

6 dB 99%

Variant: 5 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

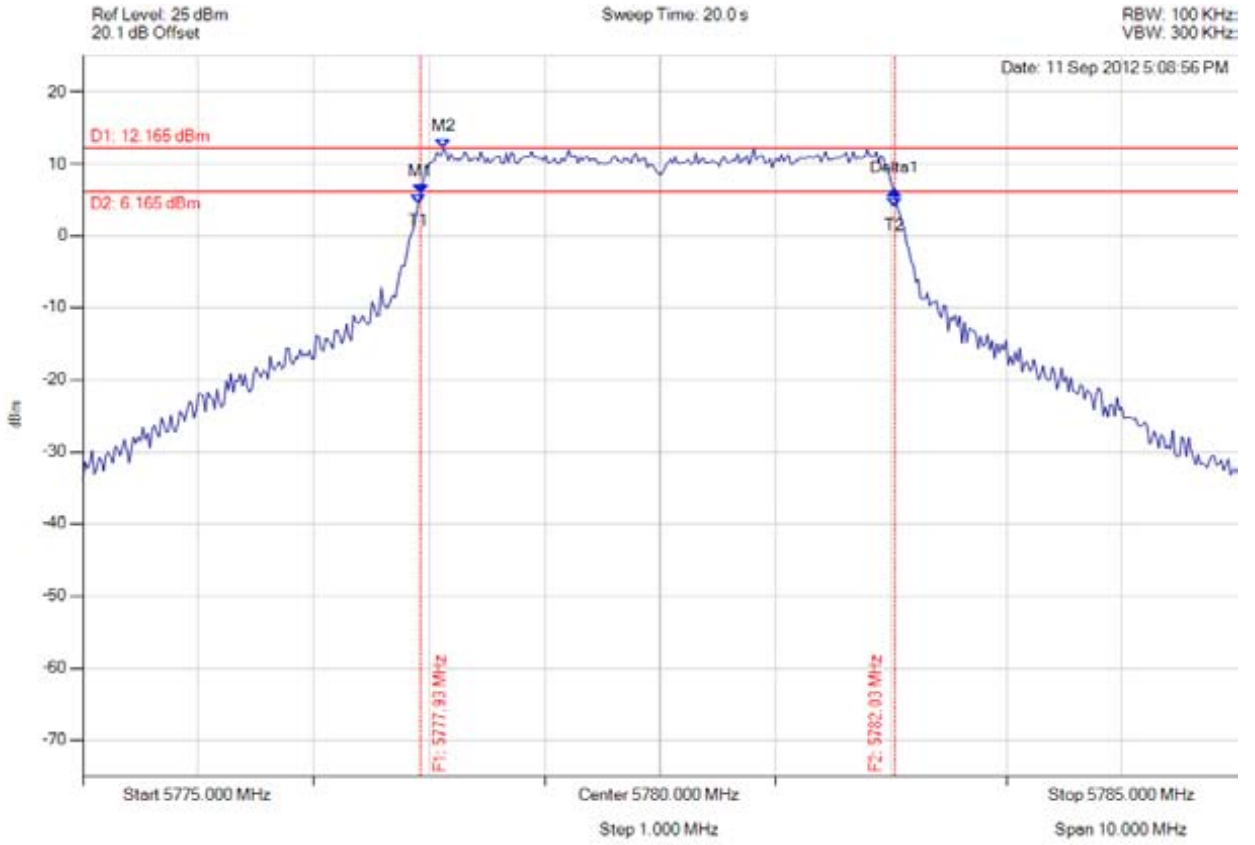


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5777.906 MHz : 4.388 dBm M2 : 5781.613 MHz : 12.942 dBm Delta1 : 4.108 MHz : 3.868 dB T1 : 5777.906 MHz : 4.388 dBm T2 : 5782.034 MHz : 6.045 dBm OBW : 4.148 MHz	Measured 6 dB Bandwidth: 4.108 MHz Limit: ≥ 0.5 MHz Margin: -3.61 MHz

Back to the Matrix

6 dB 99%

Variant: 5 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

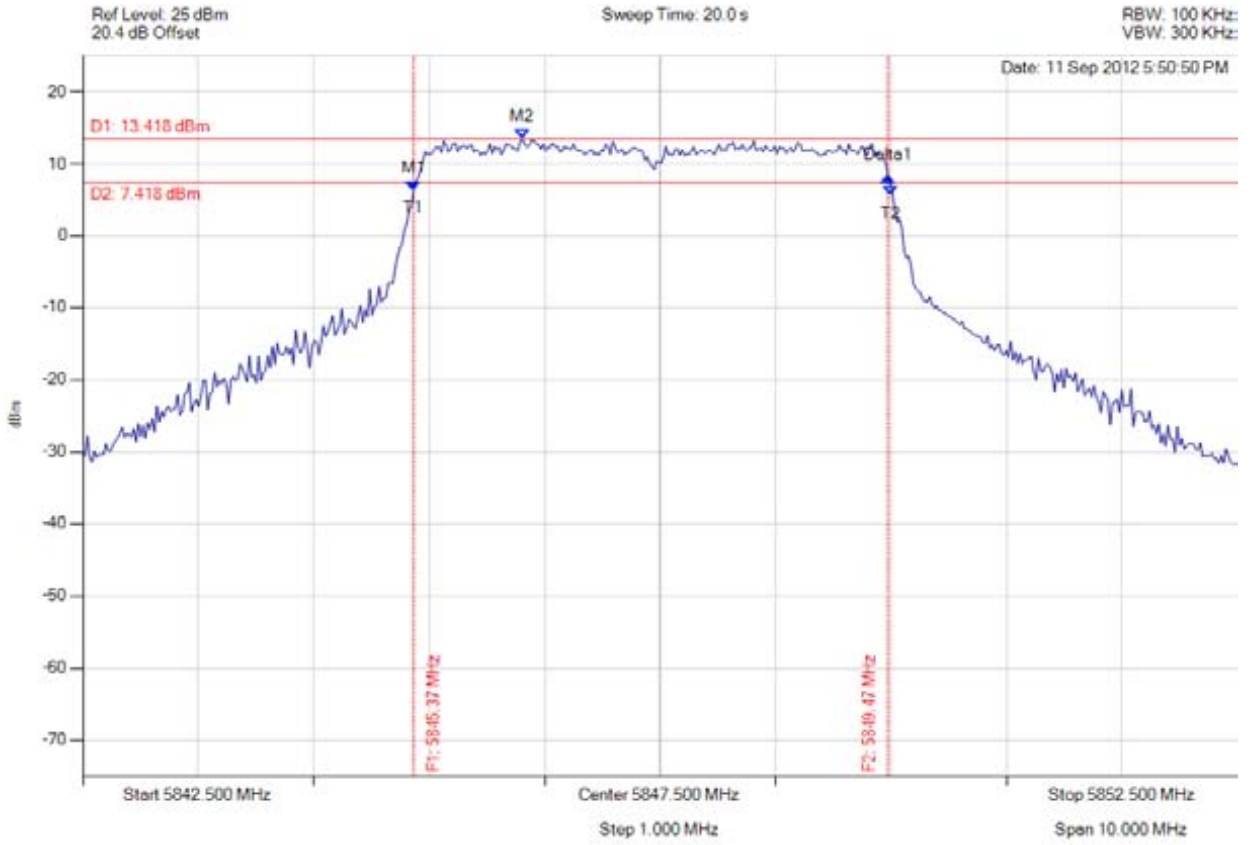


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5777.926 MHz : 5.806 dBm M2 : 5778.126 MHz : 12.165 dBm Delta1 : 4.108 MHz : 0.513 dB T1 : 5777.906 MHz : 4.530 dBm T2 : 5782.034 MHz : 3.967 dBm OBW : 4.148 MHz	Measured 6 dB Bandwidth: 4.108 MHz Limit: ≥ 0.5 MHz Margin: -3.61 MHz

Back to the Matrix

6 dB 99%

Variant: 5 MHz, Channel: 5847.50 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

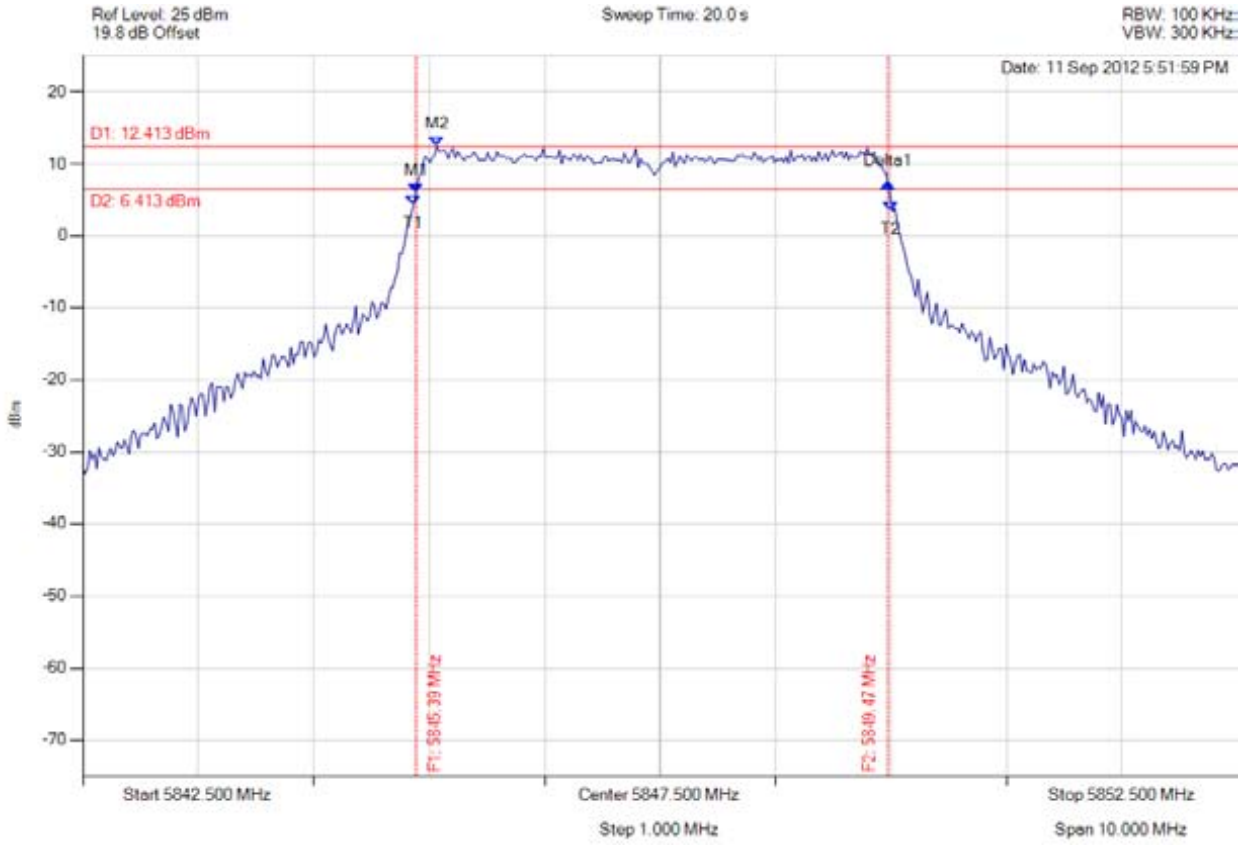


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5845.366 MHz : 6.377 dBm M2 : 5846.308 MHz : 13.418 dBm Delta1 : 4.108 MHz : 1.739 dB T1 : 5845.366 MHz : 6.377 dBm T2 : 5849.494 MHz : 5.578 dBm OBW : 4.148 MHz	Measured 6 dB Bandwidth: 4.108 MHz Limit: ≥ 0.5 MHz Margin: -3.61 MHz

Back to the Matrix

6 dB 99%

Variant: 5 MHz, Channel: 5847.50 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

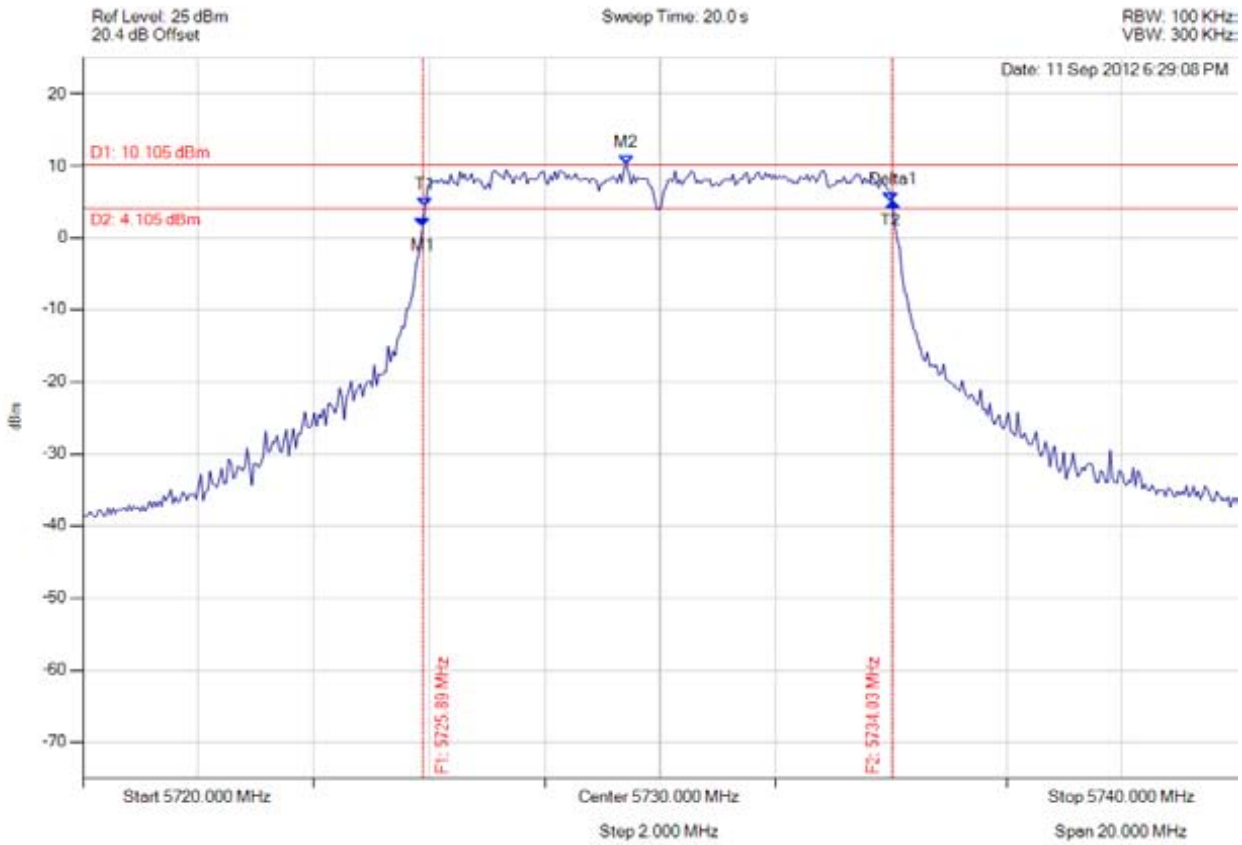


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5845.386 MHz : 5.954 dBm M2 : 5845.566 MHz : 12.413 dBm Delta1 : 4.088 MHz : 1.285 dB T1 : 5845.366 MHz : 4.307 dBm T2 : 5849.494 MHz : 3.450 dBm OBW : 4.148 MHz	Measured 6 dB Bandwidth: 4.088 MHz Limit: ≥ 0.5 MHz Margin: -3.59 MHz

Back to the Matrix

6 dB 99%

Variant: 10 MHz, Channel: 5730.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

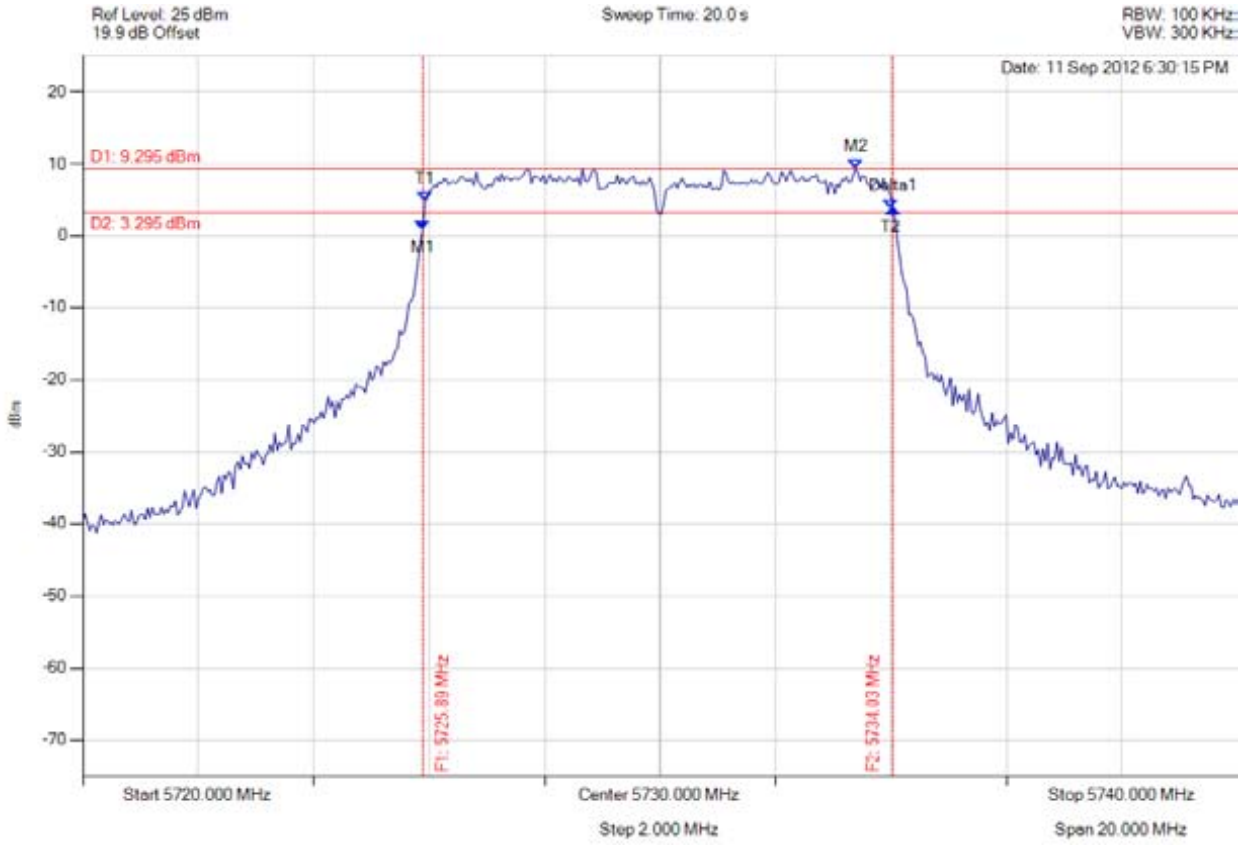


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5725.892 MHz : 1.453 dBm M2 : 5729.419 MHz : 10.105 dBm Delta1 : 8.136 MHz : 3.504 dB T1 : 5725.932 MHz : 4.290 dBm T2 : 5733.988 MHz : 4.957 dBm OBW : 8.096 MHz	Measured 6 dB Bandwidth: 8.136 MHz Limit: ≥ 0.5 MHz Margin: -7.64 MHz

Back to the Matrix

6 dB 99%

Variant: 10 MHz, Channel: 5730.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

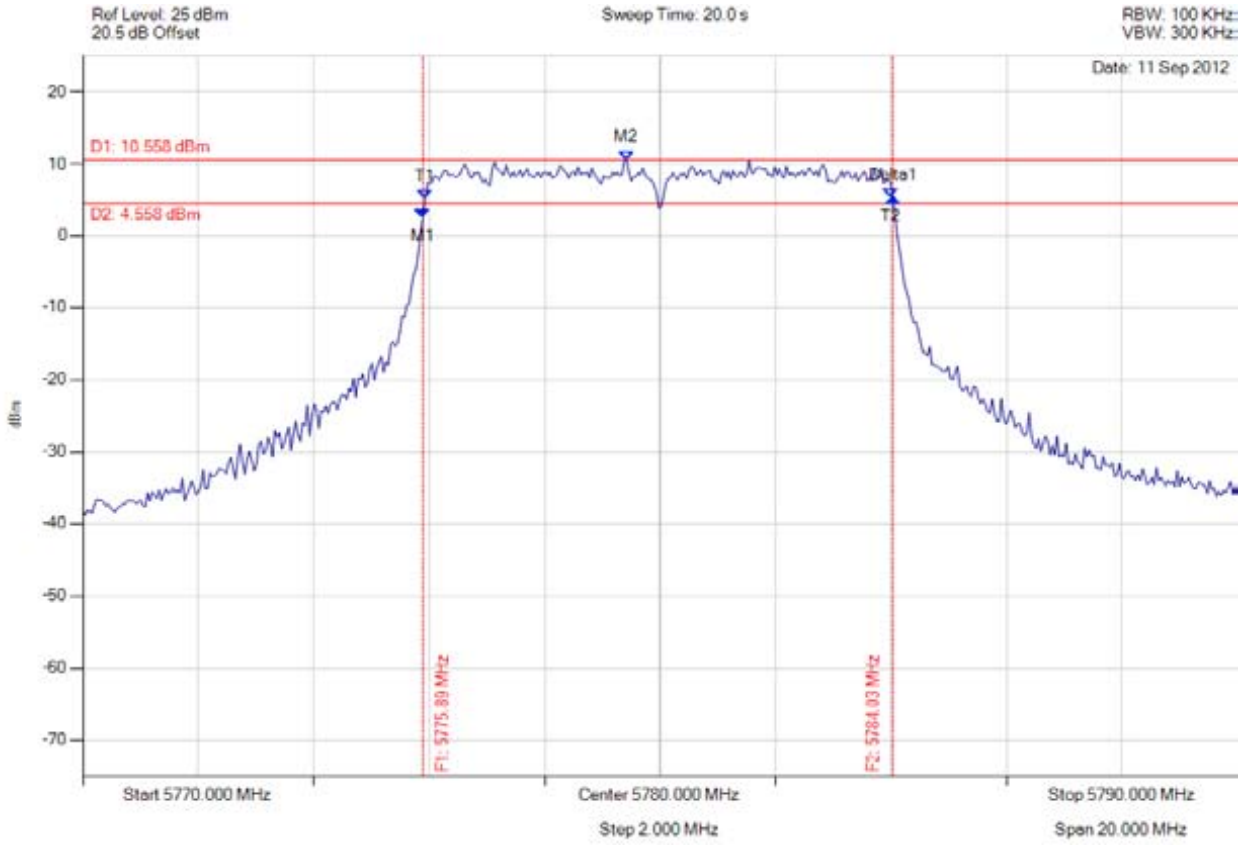


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5725.892 MHz : 0.876 dBm M2 : 5733.387 MHz : 9.295 dBm Delta1 : 8.136 MHz : 2.931 dB T1 : 5725.932 MHz : 4.732 dBm T2 : 5733.988 MHz : 3.806 dBm OBW : 8.096 MHz	Measured 6 dB Bandwidth: 8.136 MHz Limit: ≥ 0.5 MHz Margin: -7.64 MHz

Back to the Matrix

6 dB 99%

Variant: 10 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

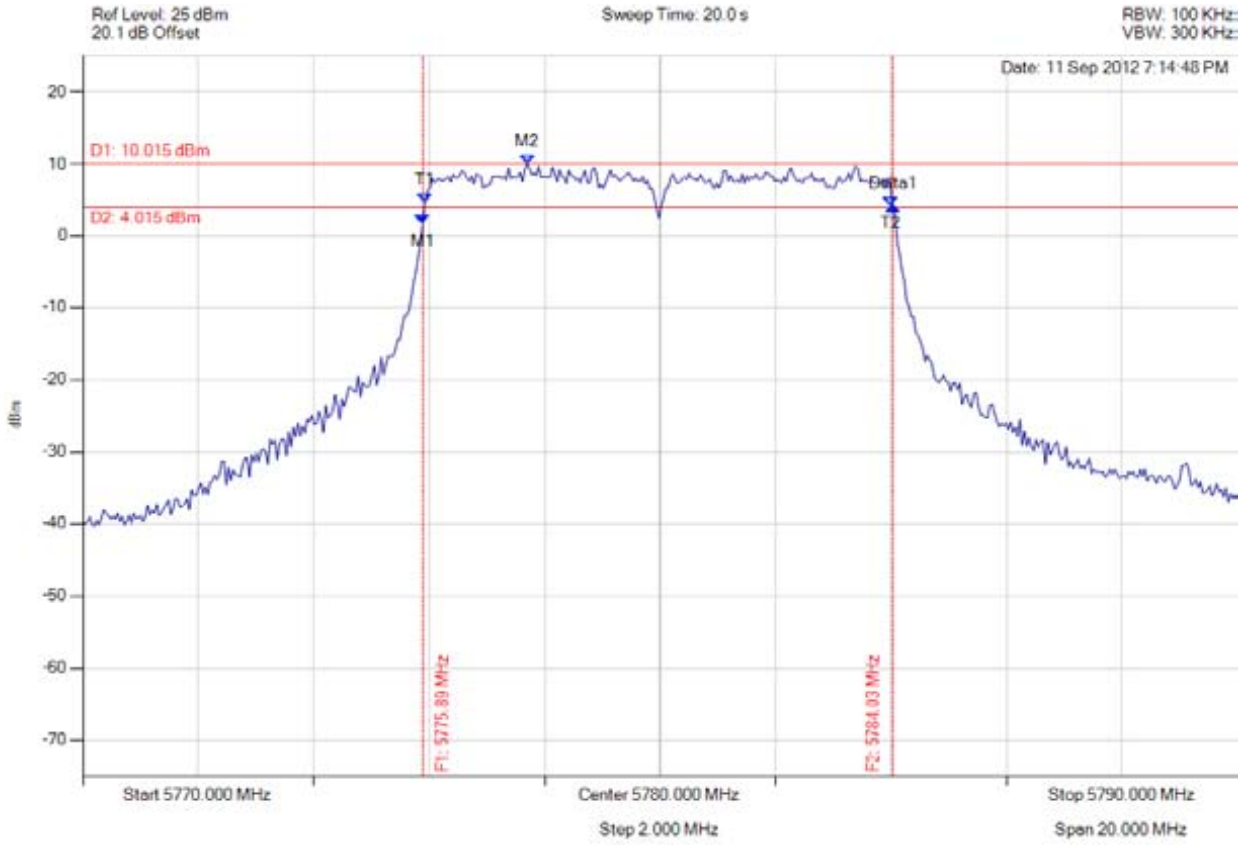


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5775.892 MHz : 2.438 dBm M2 : 5779.419 MHz : 10.558 dBm Delta1 : 8.136 MHz : 2.807 dB T1 : 5775.932 MHz : 5.145 dBm T2 : 5783.988 MHz : 5.244 dBm OBW : 8.096 MHz	Measured 6 dB Bandwidth: 8.136 MHz Limit: ≥ 0.5 MHz Margin: -7.64 MHz

Back to the Matrix

6 dB 99%

Variant: 10 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

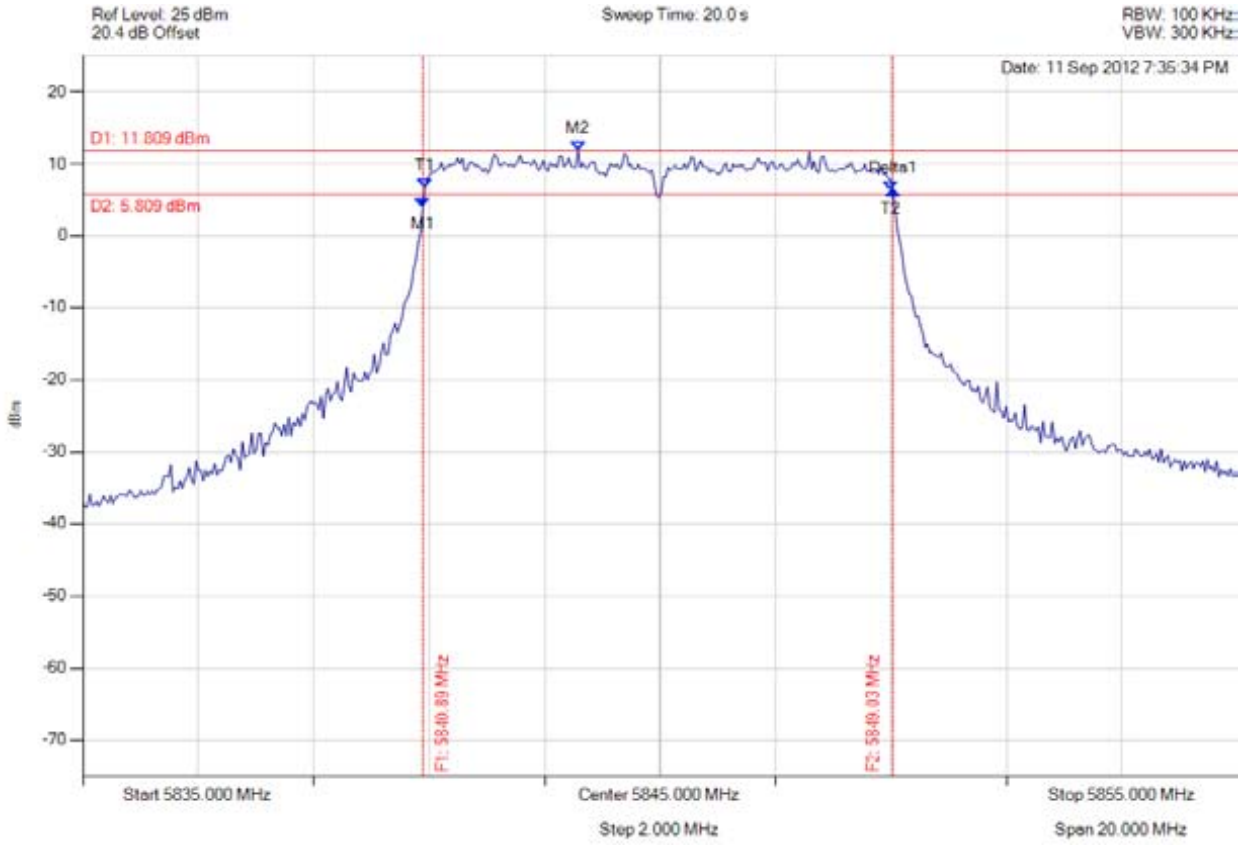


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5775.892 MHz : 1.710 dBm M2 : 5777.695 MHz : 10.015 dBm Delta1 : 8.136 MHz : 2.465 dB T1 : 5775.932 MHz : 4.593 dBm T2 : 5783.988 MHz : 4.174 dBm OBW : 8.096 MHz	Measured 6 dB Bandwidth: 8.136 MHz Limit: ≥ 0.5 MHz Margin: -7.64 MHz

Back to the Matrix

6 dB 99%

Variant: 10 MHz, Channel: 5845.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

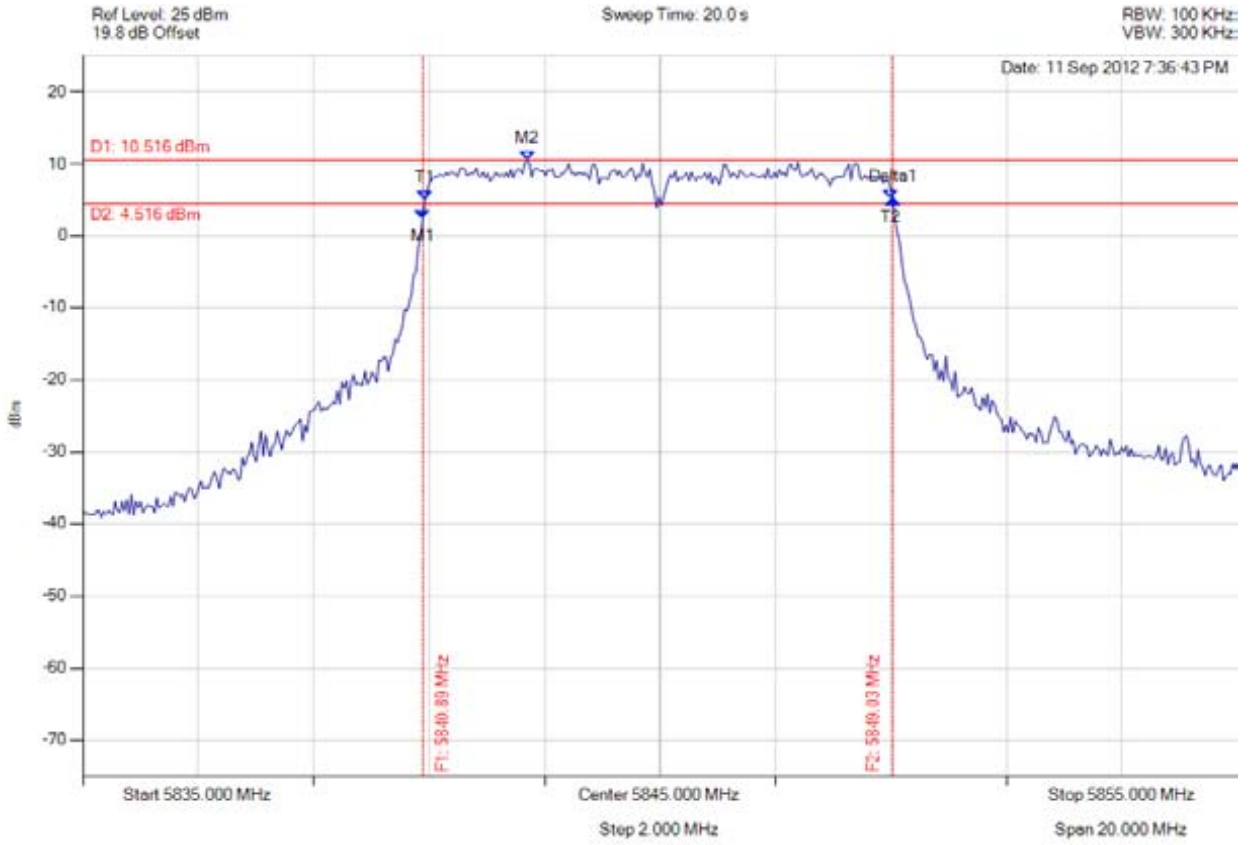


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5840.892 MHz : 4.002 dBm M2 : 5843.577 MHz : 11.809 dBm Delta1 : 8.136 MHz : 2.233 dB T1 : 5840.932 MHz : 6.668 dBm T2 : 5848.988 MHz : 6.235 dBm OBW : 8.096 MHz	Measured 6 dB Bandwidth: 8.136 MHz Limit: ≥ 0.5 MHz Margin: -7.64 MHz

Back to the Matrix

6 dB 99%

Variant: 10 MHz, Channel: 5845.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

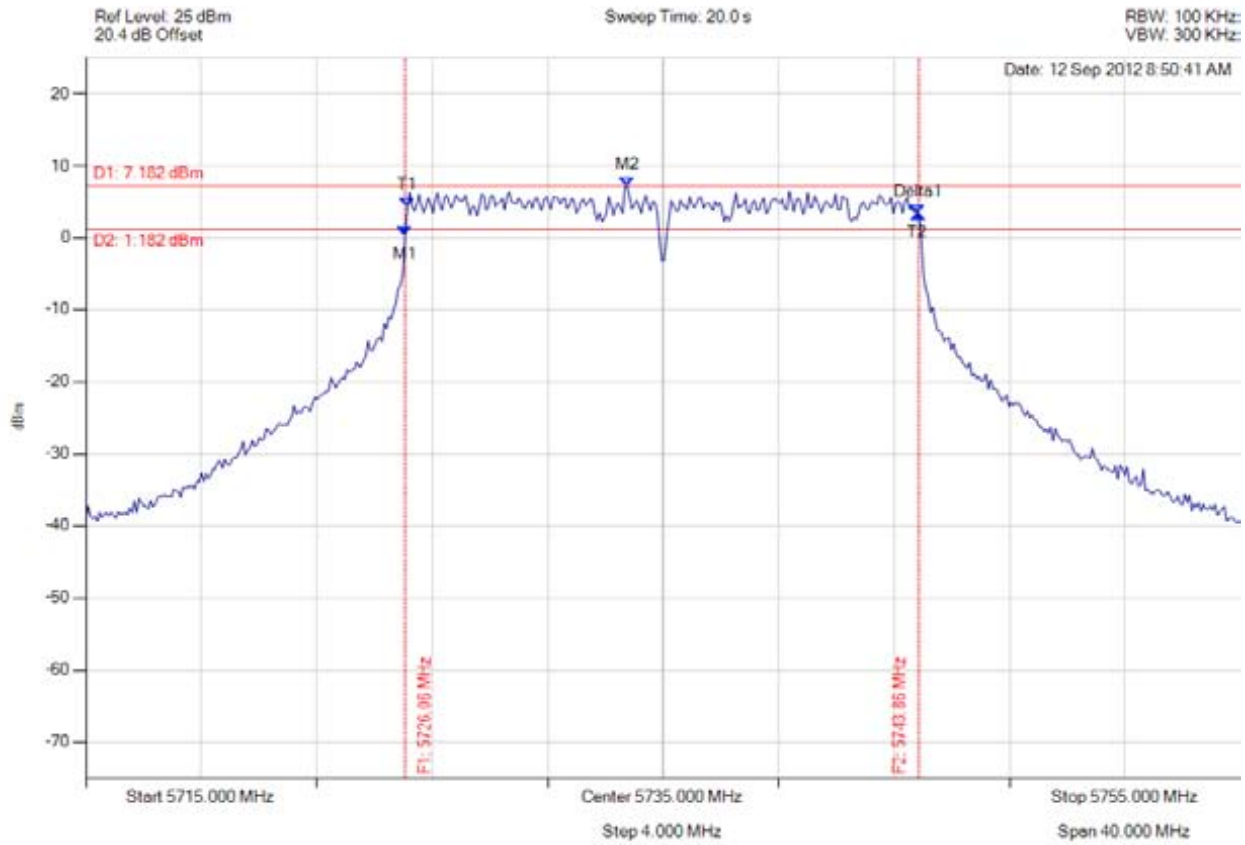


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5840.892 MHz : 2.379 dBm M2 : 5842.695 MHz : 10.516 dBm Delta1 : 8.136 MHz : 2.768 dB T1 : 5840.932 MHz : 4.998 dBm T2 : 5848.988 MHz : 5.147 dBm OBW : 8.096 MHz	Measured 6 dB Bandwidth: 8.136 MHz Limit: ≥ 0.5 MHz Margin: -7.64 MHz

Back to the Matrix

6 dB 99%

Variant: 20 MHz, Channel: 5735.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

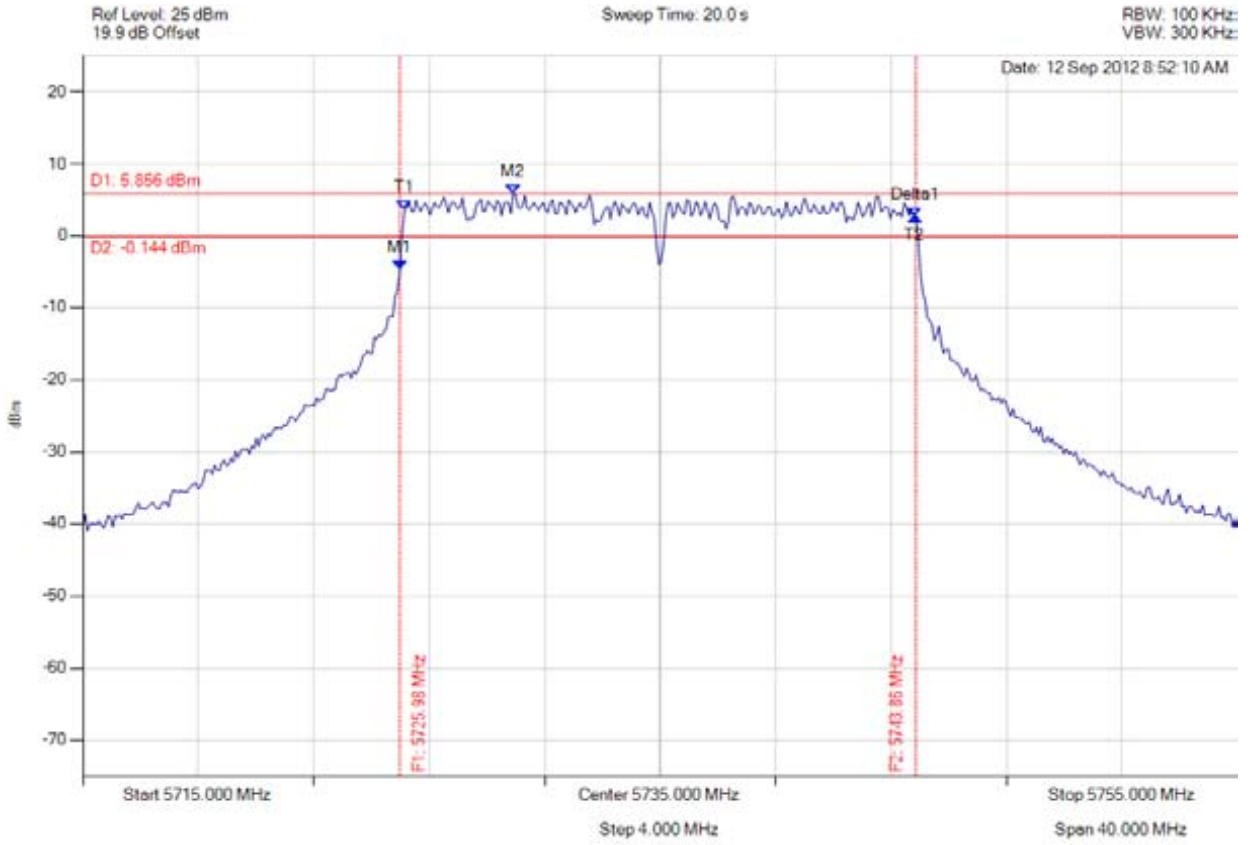


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5726.062 MHz : 0.227 dBm M2 : 5733.758 MHz : 7.182 dBm Delta1 : 17.796 MHz : 3.042 dB T1 : 5726.142 MHz : 4.296 dBm T2 : 5743.778 MHz : 3.269 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.796 MHz Limit: ≥ 0.5 MHz Margin: -17.30 MHz

Back to the Matrix

6 dB 99%

Variant: 20 MHz, Channel: 5735.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

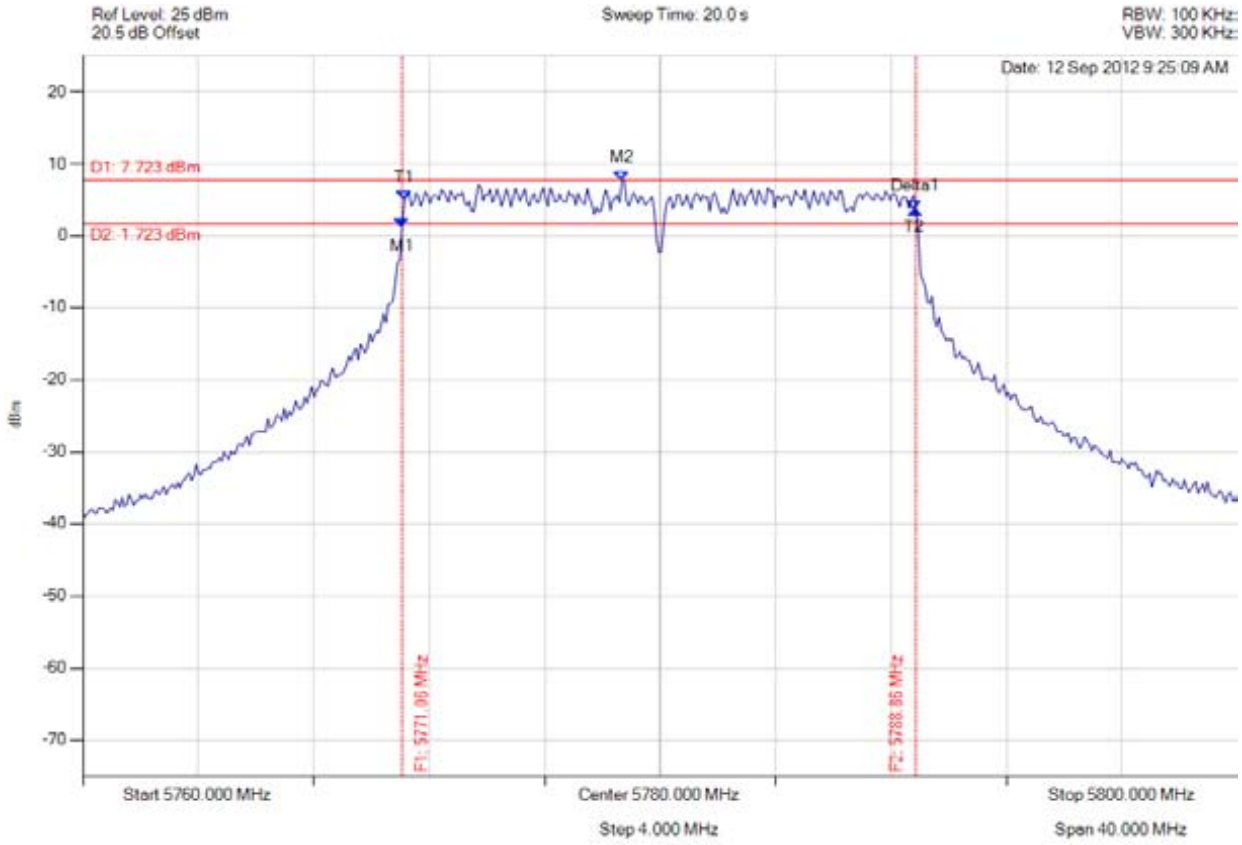


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5725.982 MHz : -4.705 dBm M2 : 5729.910 MHz : 5.856 dBm Delta1 : 17.876 MHz : 7.267 dB T1 : 5726.142 MHz : 3.631 dBm T2 : 5743.778 MHz : 2.562 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.876 MHz Limit: ≥ 0.5 MHz Margin: -17.38 MHz

Back to the Matrix

6 dB 99%

Variant: 20 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

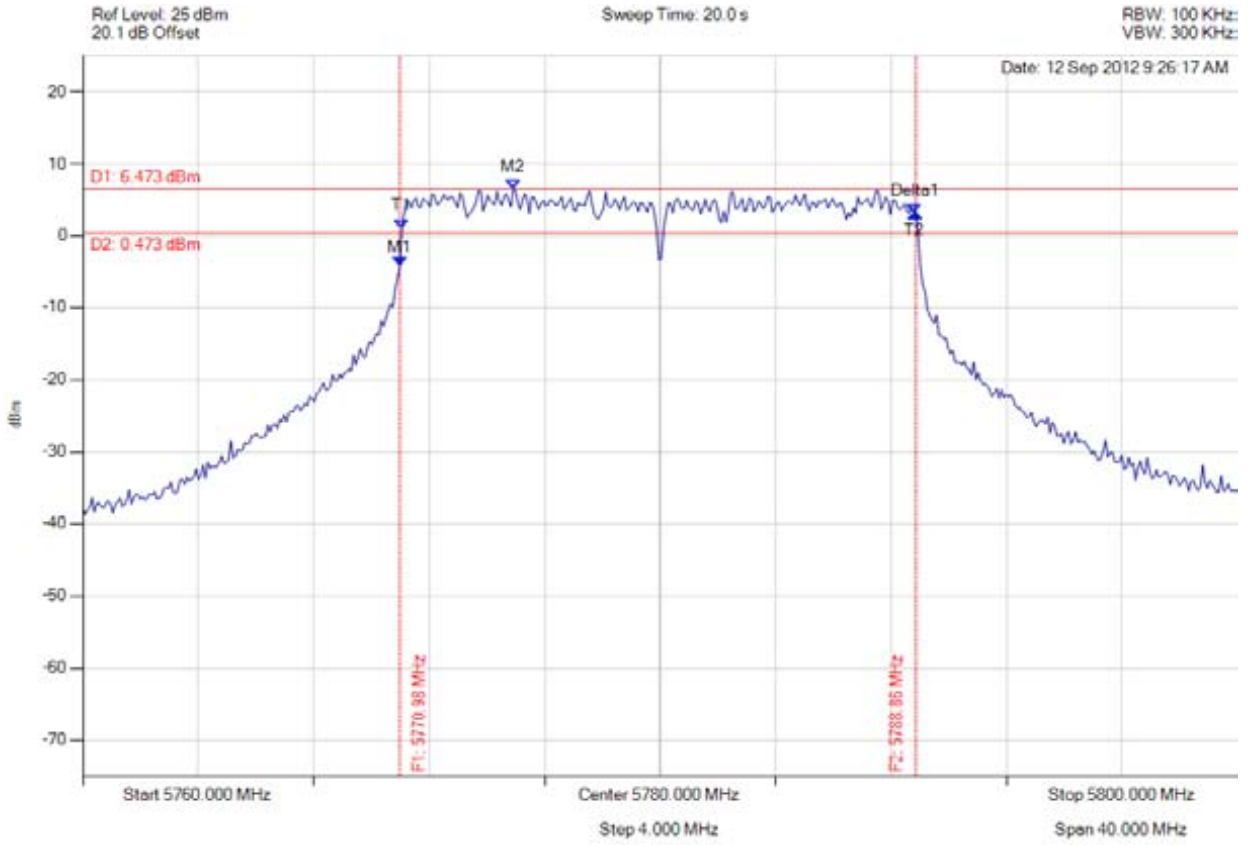


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5771.062 MHz : 1.142 dBm M2 : 5778.677 MHz : 7.723 dBm Delta1 : 17.796 MHz : 2.581 dB T1 : 5771.142 MHz : 4.978 dBm T2 : 5788.778 MHz : 3.723 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.796 MHz Limit: ≥ 0.5 MHz Margin: -17.30 MHz

Back to the Matrix

6 dB 99%

Variant: 20 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

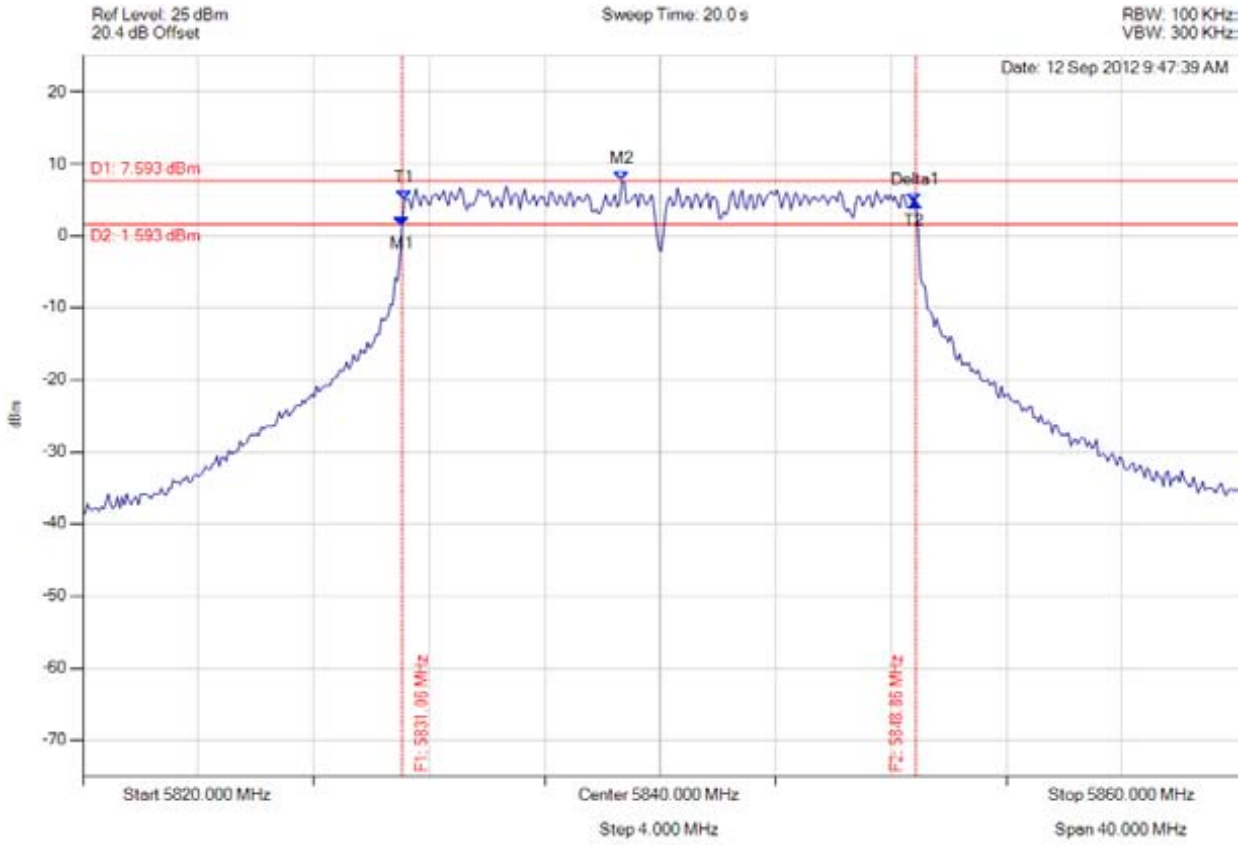


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5770.982 MHz : -4.121 dBm M2 : 5774.910 MHz : 6.473 dBm Delta1 : 17.876 MHz : 7.301 dB T1 : 5771.062 MHz : 1.042 dBm T2 : 5788.778 MHz : 3.180 dBm OBW : 17.796 MHz	Measured 6 dB Bandwidth: 17.876 MHz Limit: ≥ 0.5 MHz Margin: -17.38 MHz

Back to the Matrix

6 dB 99%

Variant: 20 MHz, Channel: 5840.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

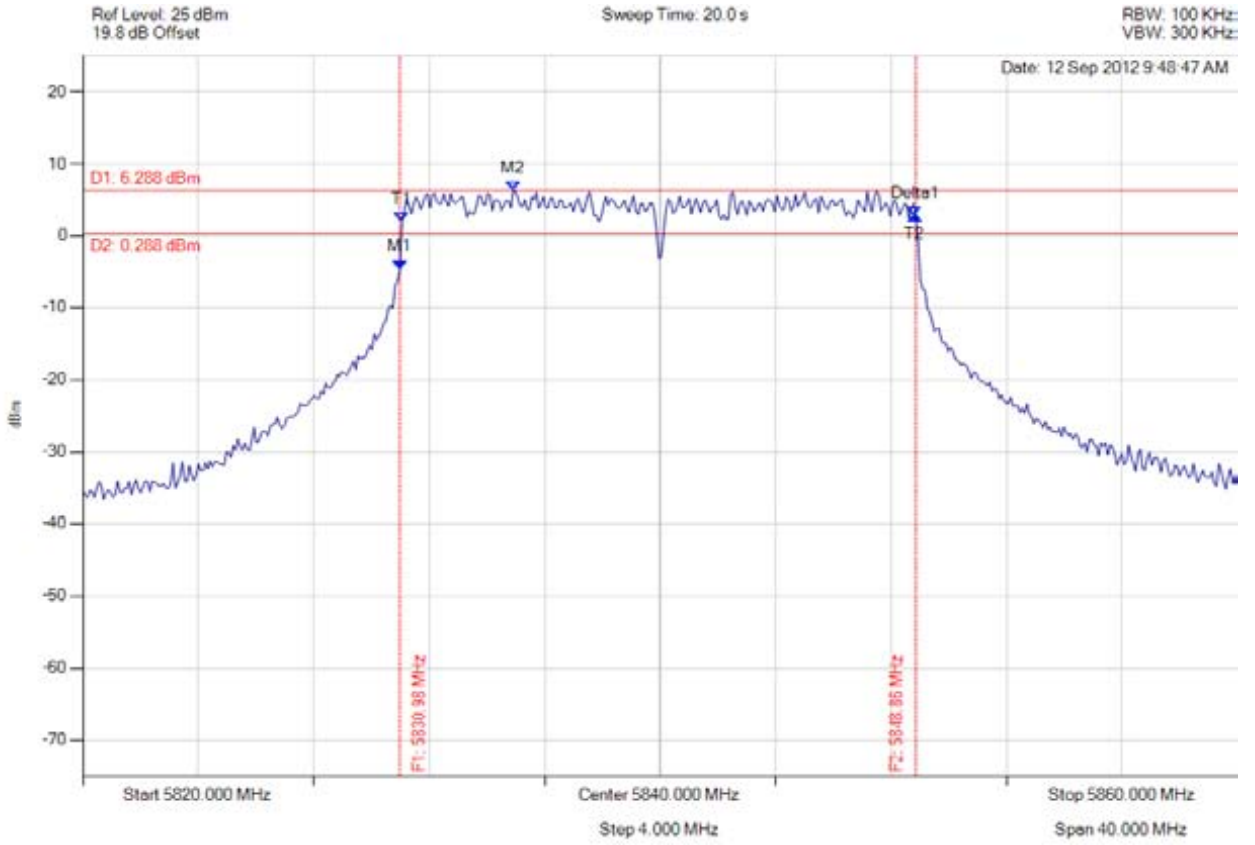


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5831.062 MHz : 1.335 dBm M2 : 5838.677 MHz : 7.593 dBm Delta1 : 17.796 MHz : 3.327 dB T1 : 5831.142 MHz : 5.029 dBm T2 : 5848.778 MHz : 4.663 dBm OBW : 17.715 MHz	Measured 6 dB Bandwidth: 17.796 MHz Limit: ≥ 0.5 MHz Margin: -17.30 MHz

Back to the Matrix

6 dB 99%

Variant: 20 MHz, Channel: 5840.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

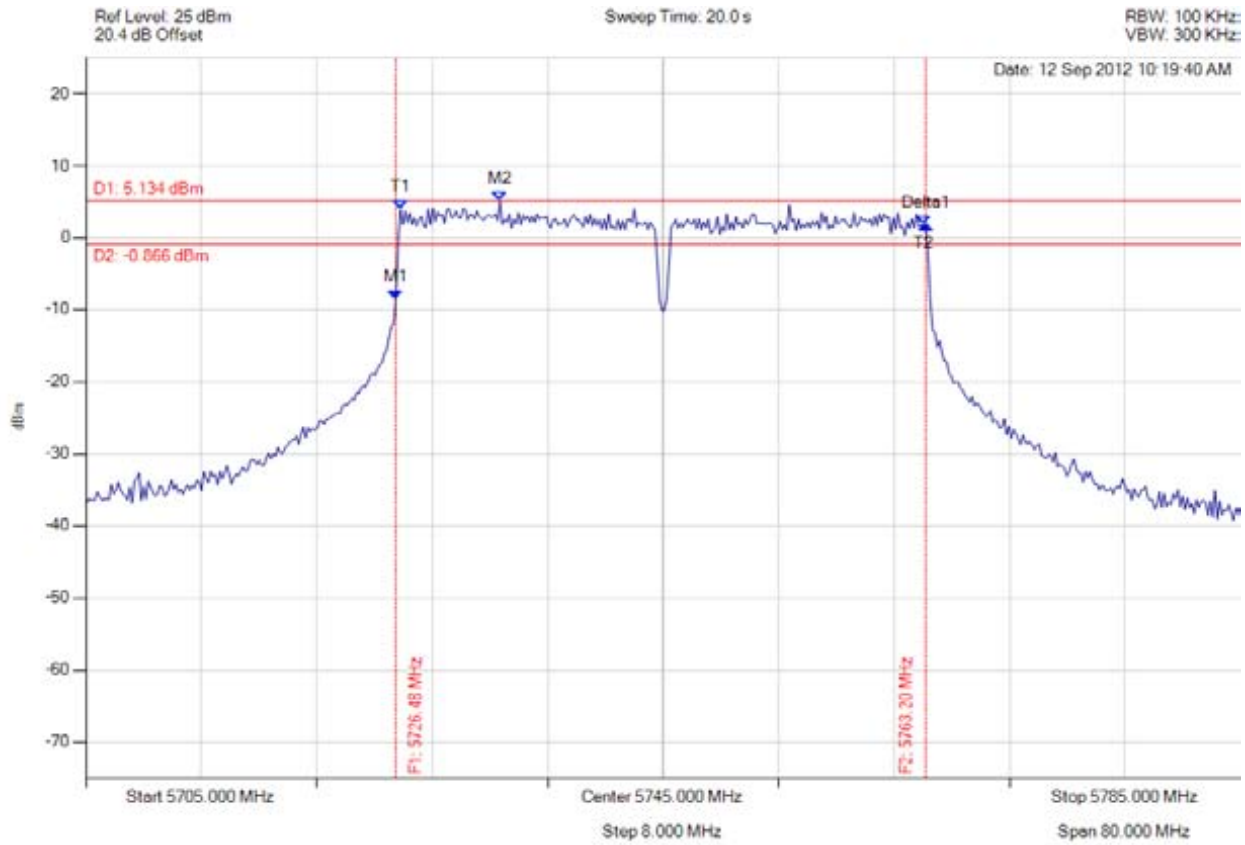


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5830.982 MHz : -4.628 dBm M2 : 5834.910 MHz : 6.288 dBm Delta1 : 17.876 MHz : 7.448 dB T1 : 5831.062 MHz : 1.986 dBm T2 : 5848.778 MHz : 2.820 dBm OBW : 17.796 MHz	Measured 6 dB Bandwidth: 17.876 MHz Limit: ≥ 0.5 MHz Margin: -17.38 MHz

Back to the Matrix

6 dB 99%

Variant: 40 MHz, Channel: 5745.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

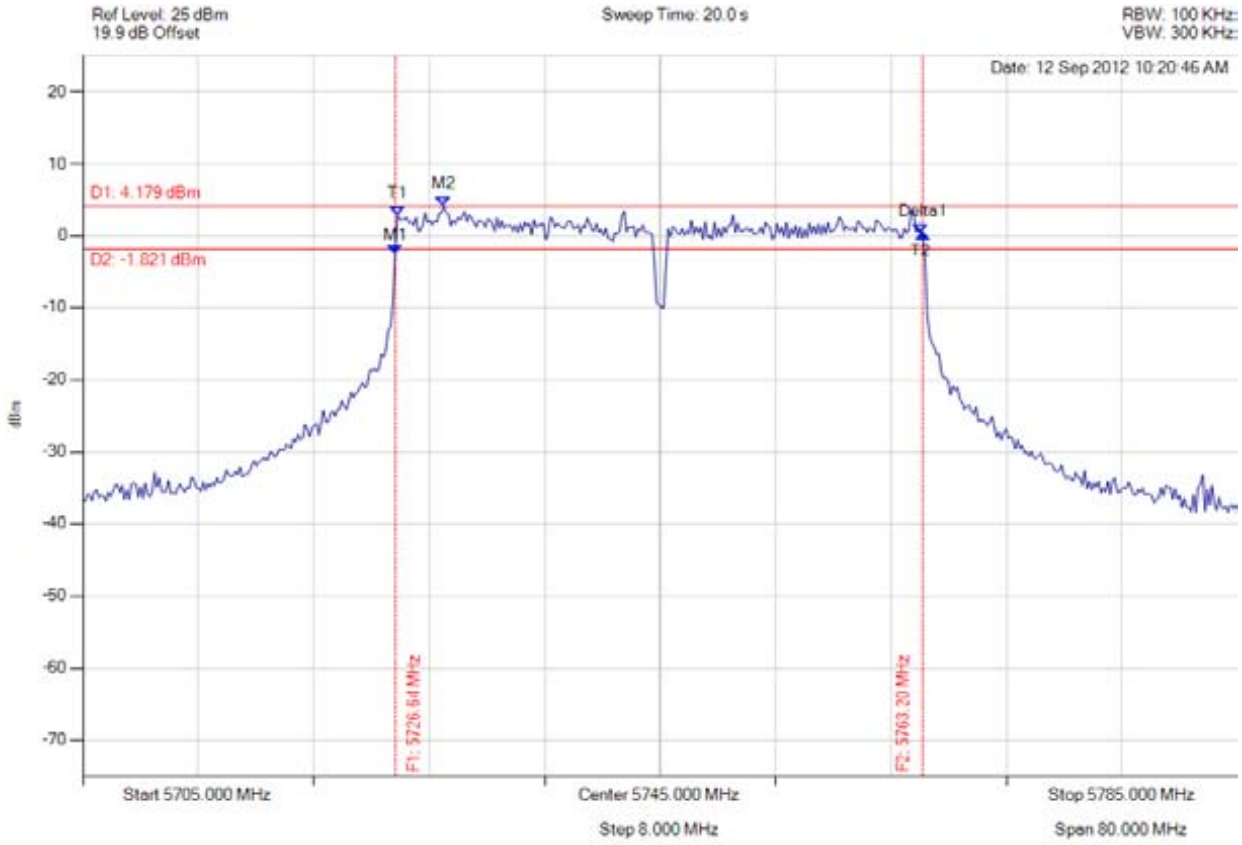


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5726.483 MHz : -8.551 dBm M2 : 5733.697 MHz : 5.134 dBm Delta1 : 36.713 MHz : 10.311 dB T1 : 5726.804 MHz : 3.924 dBm T2 : 5763.036 MHz : 1.760 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 36.713 MHz Limit: ≥ 0.5 MHz Margin: -36.21 MHz

Back to the Matrix

6 dB 99%

Variant: 40 MHz, Channel: 5745.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

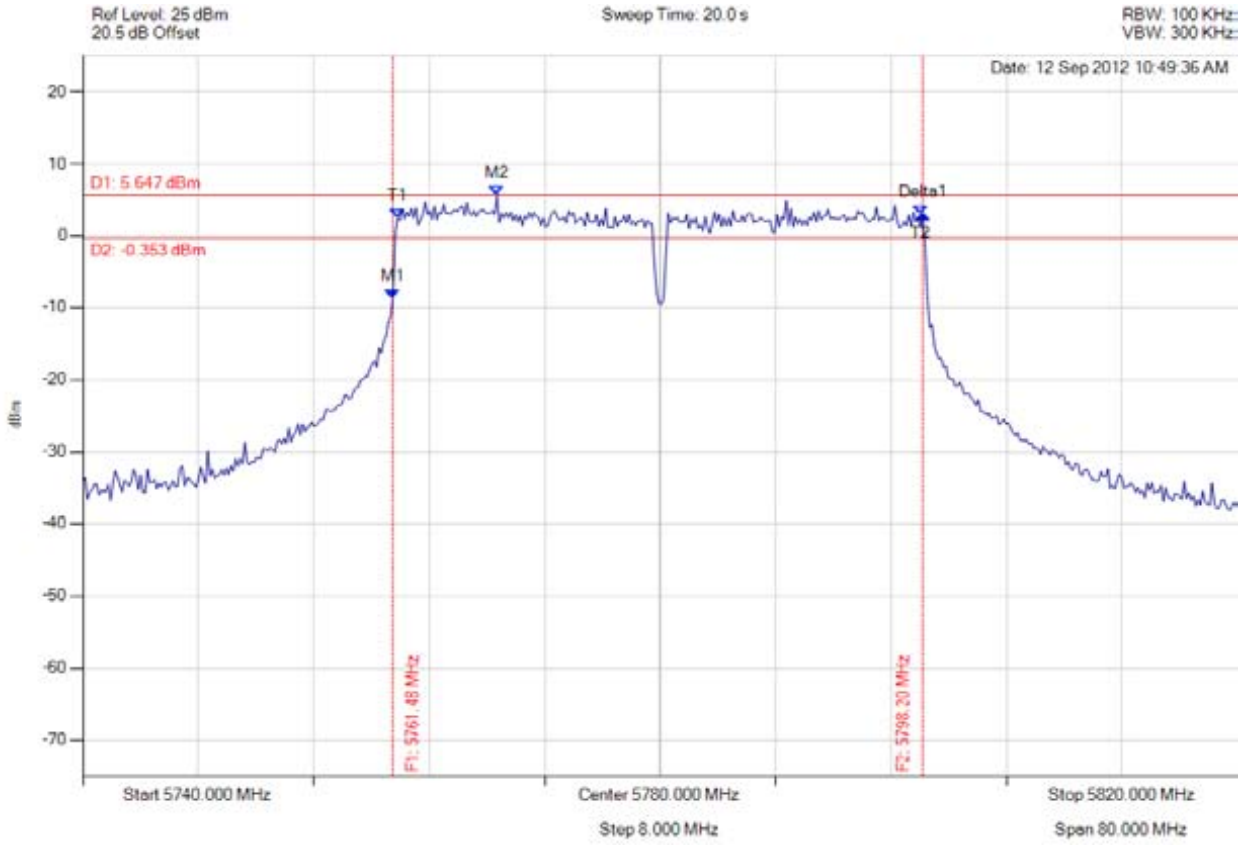


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5726.643 MHz : -2.468 dBm M2 : 5730.010 MHz : 4.179 dBm Delta1 : 36.553 MHz : 2.823 dB T1 : 5726.804 MHz : 2.850 dBm T2 : 5763.036 MHz : 0.355 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 36.553 MHz Limit: ≥ 0.5 MHz Margin: -36.05 MHz

Back to the Matrix

6 dB 99%

Variant: 40 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

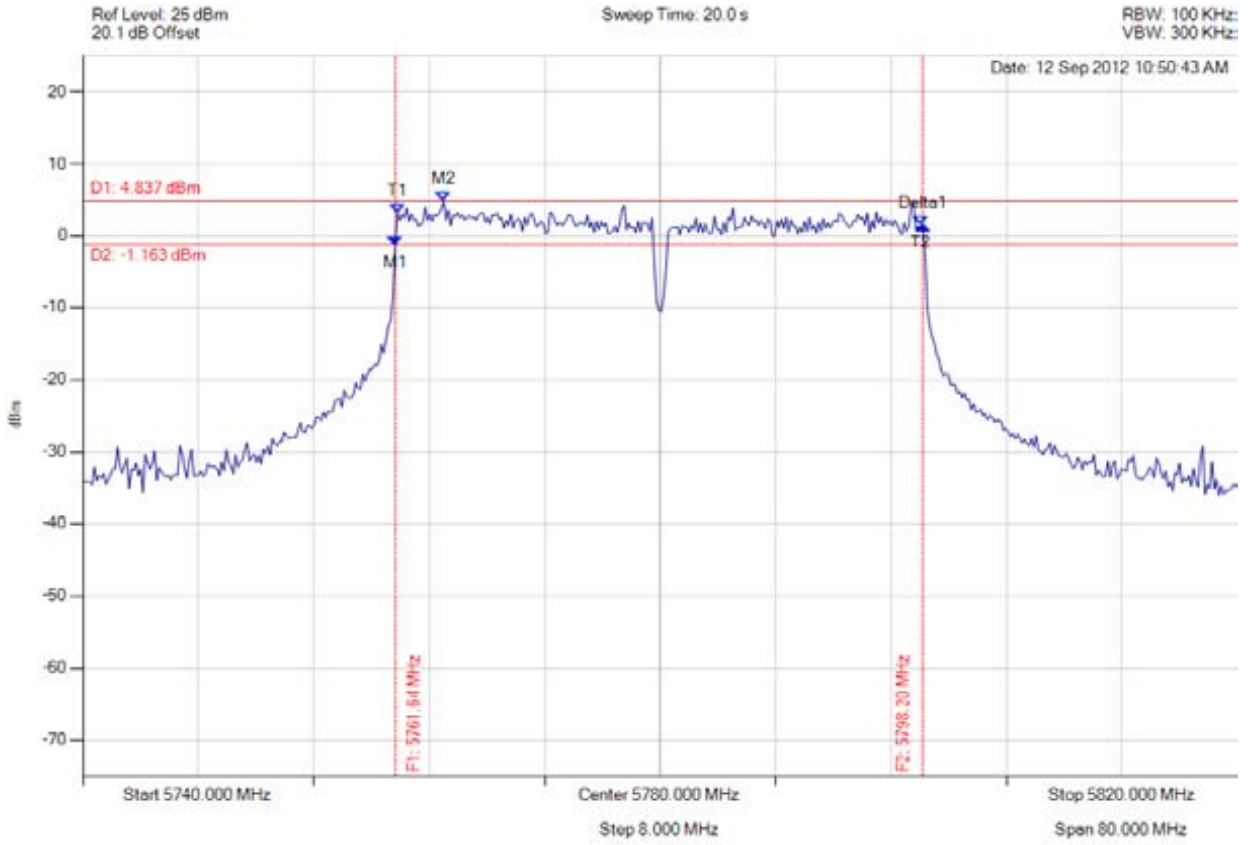


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5761.483 MHz : -8.638 dBm M2 : 5768.697 MHz : 5.647 dBm Delta1 : 36.713 MHz : 11.568 dB T1 : 5761.804 MHz : 2.444 dBm T2 : 5798.036 MHz : 2.930 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 36.713 MHz Limit: ≥ 0.5 MHz Margin: -36.21 MHz

Back to the Matrix

6 dB 99%

Variant: 40 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

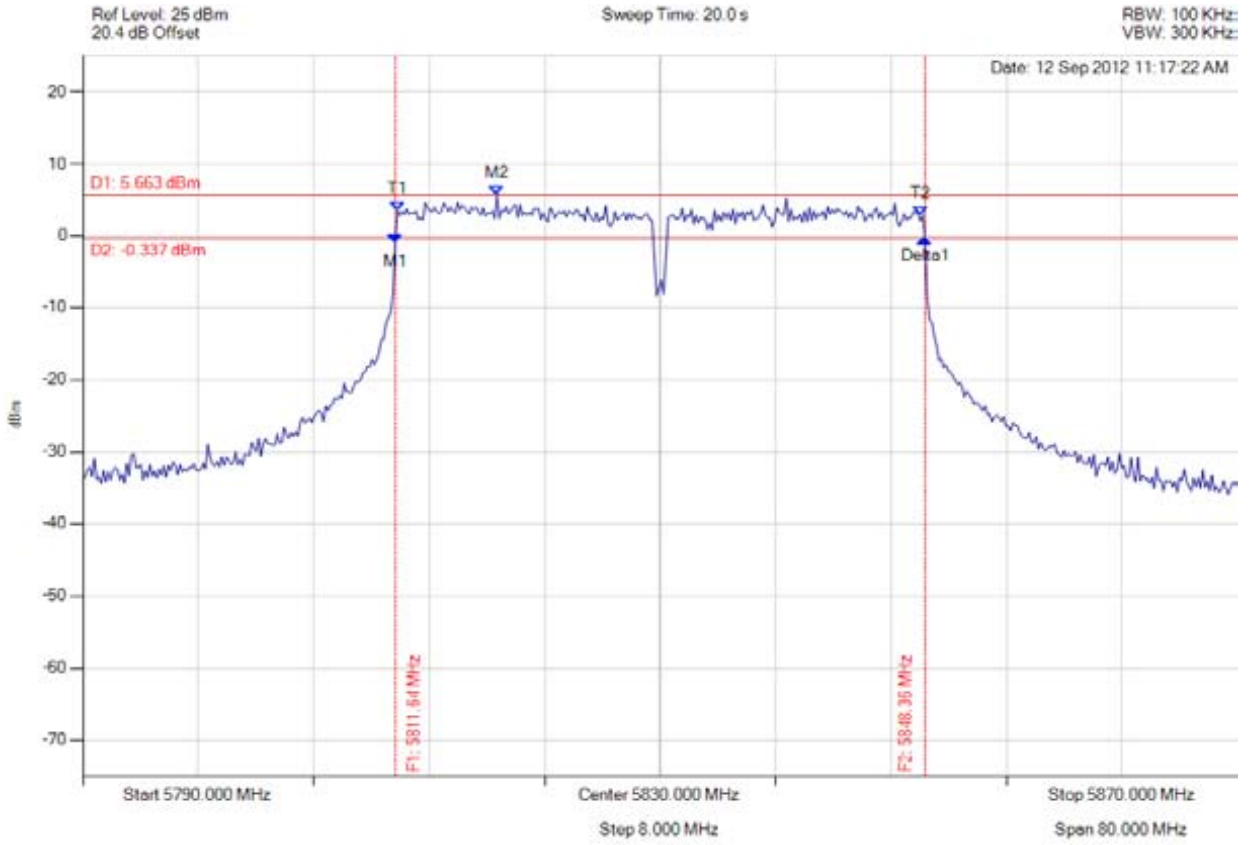


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5761.643 MHz : -1.337 dBm M2 : 5765.010 MHz : 4.837 dBm Delta1 : 36.553 MHz : 2.847 dB T1 : 5761.804 MHz : 3.164 dBm T2 : 5798.036 MHz : 1.510 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 36.553 MHz Limit: ≥ 0.5 MHz Margin: -36.05 MHz

Back to the Matrix

6 dB 99%

Variant: 40 MHz, Channel: 5830.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

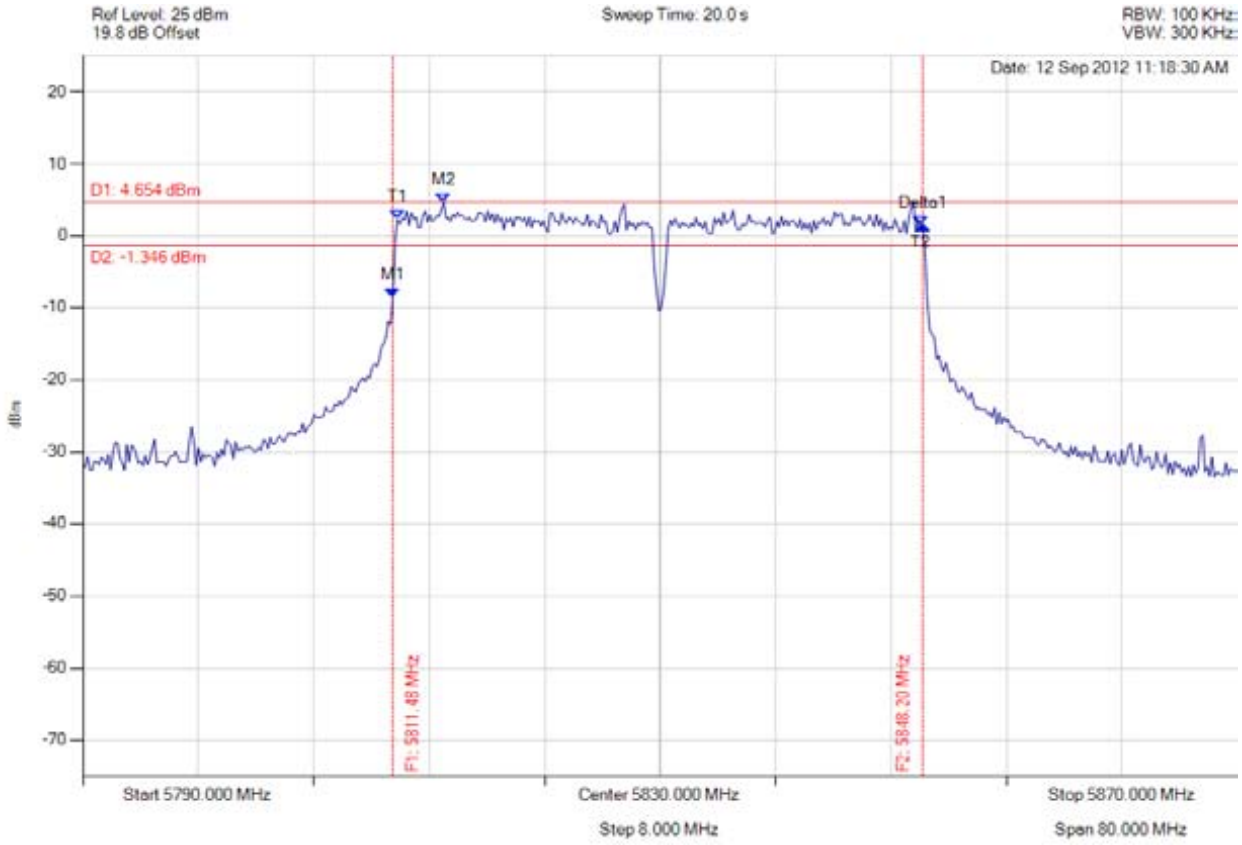


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5811.643 MHz : -1.022 dBm M2 : 5818.697 MHz : 5.663 dBm Delta1 : 36.713 MHz : 0.698 dB T1 : 5811.804 MHz : 3.532 dBm T2 : 5848.036 MHz : 2.867 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 36.713 MHz Limit: ≥ 0.5 MHz Margin: -36.21 MHz

Back to the Matrix

6 dB 99%

Variant: 40 MHz, Channel: 5830.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V



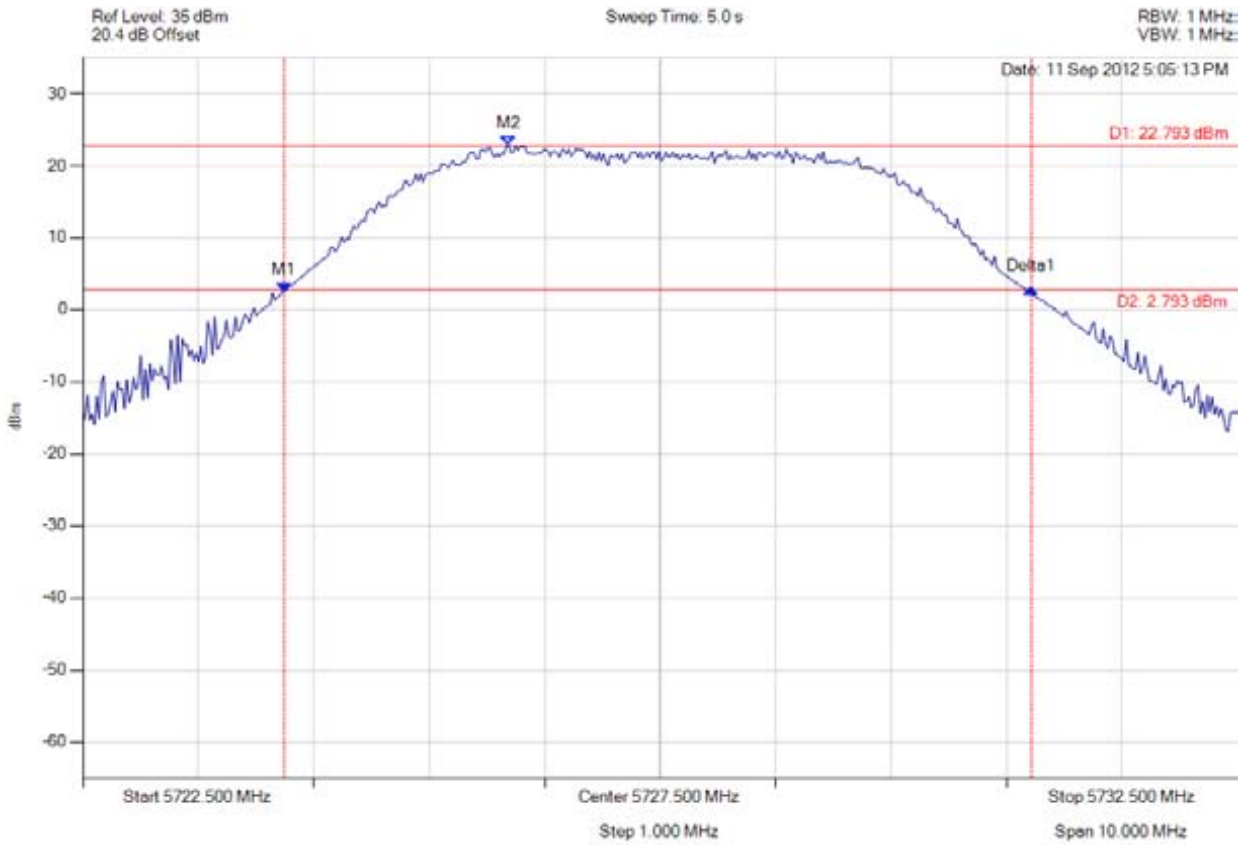
Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5811.483 MHz : -8.602 dBm M2 : 5815.010 MHz : 4.654 dBm Delta1 : 36.713 MHz : 10.110 dB T1 : 5811.804 MHz : 2.253 dBm T2 : 5848.036 MHz : 1.508 dBm OBW : 36.393 MHz	Measured 6 dB Bandwidth: 36.713 MHz Limit: ≥ 0.5 MHz Margin: -36.21 MHz

Back to the Matrix

A.1.2. Peak Output Power

peak output power

Variant: 5 MHz, Channel: 5727.50 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

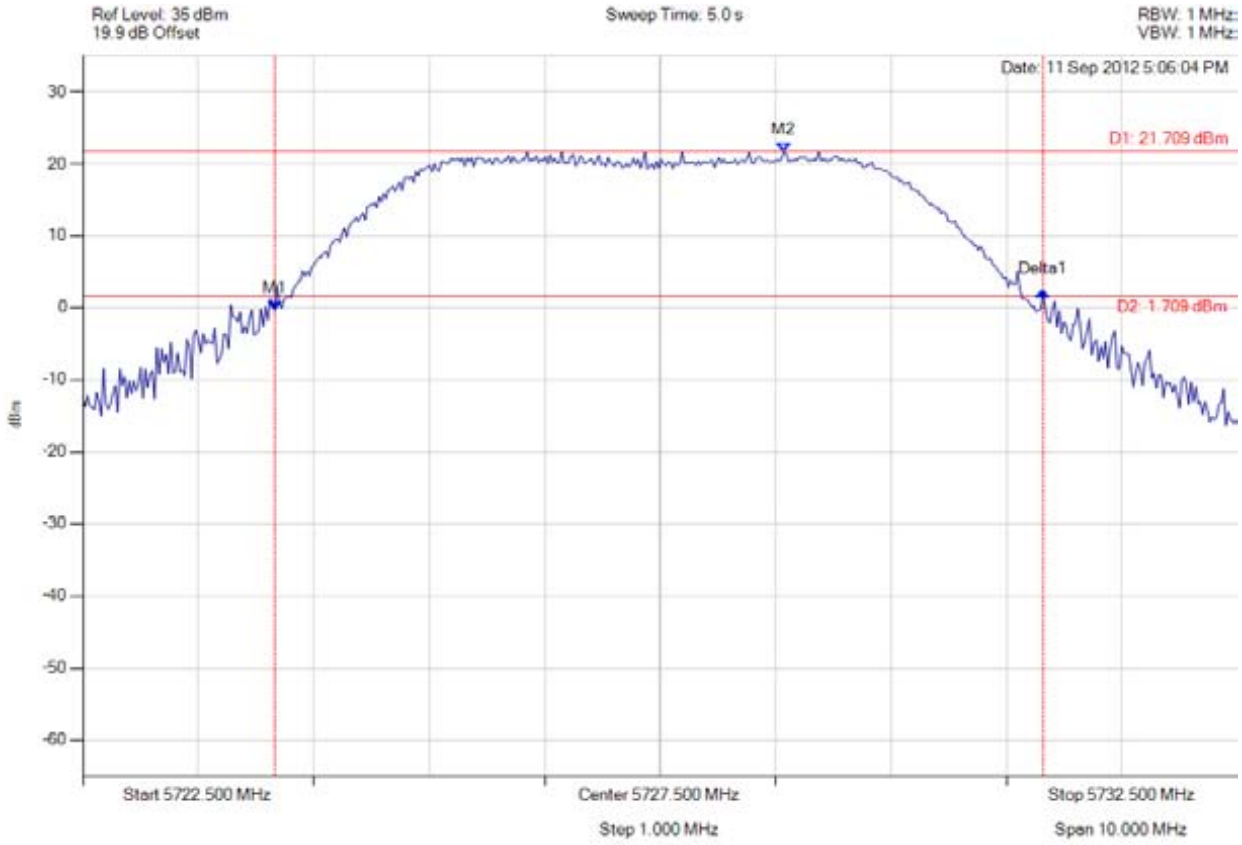


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5724.243 MHz : 2.531 dBm M2 : 5726.187 MHz : 22.793 dBm Delta1 : 6.473 MHz : 0.462 dB	Channel Power: 27.16 dBm Limit: 26.99 dBm Margin: 0.17 dB

Back to the Matrix

peak output power

Variant: 5 MHz, Channel: 5727.50 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

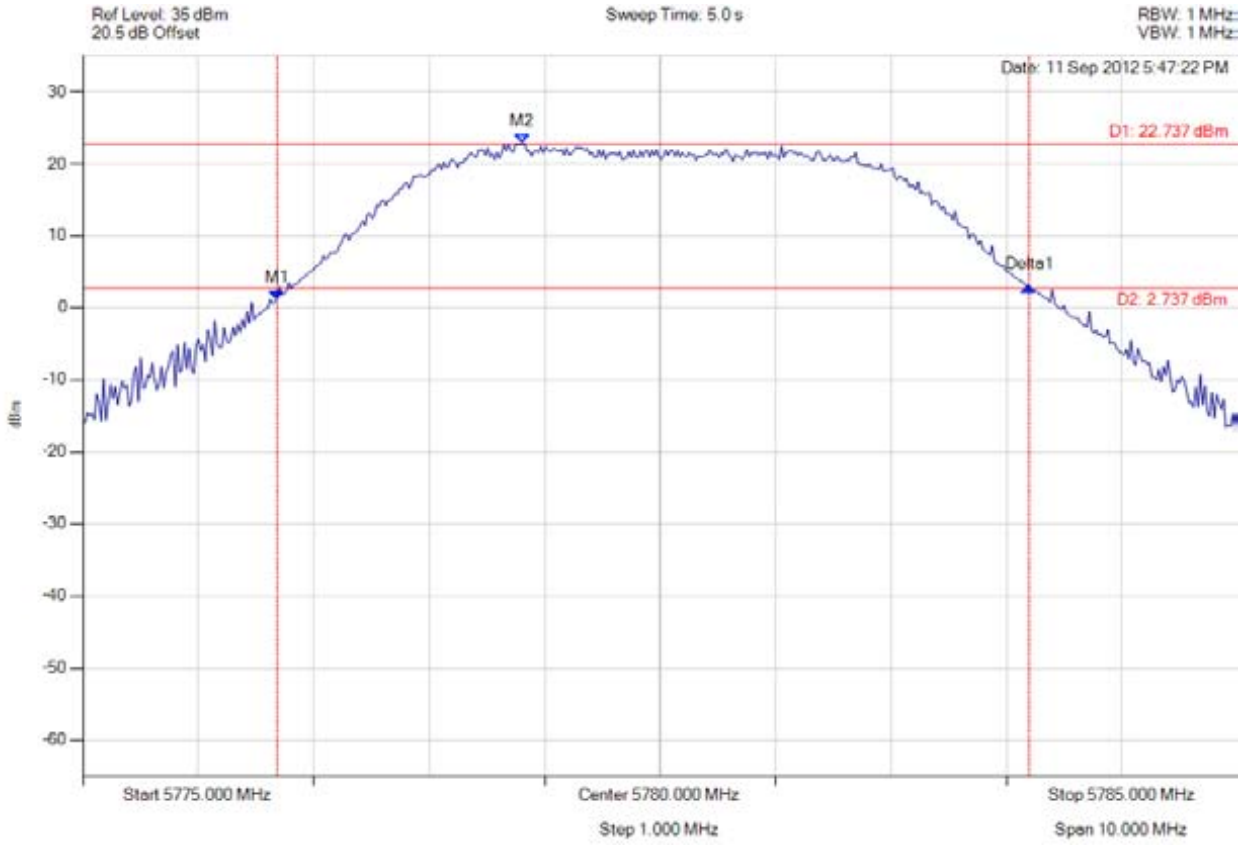


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5724.163 MHz : -0.316 dBm M2 : 5728.572 MHz : 21.709 dBm Delta1 : 6.653 MHz : 2.542 dB	Channel Power: 26.39 dBm Limit: 26.99 dBm Margin: -0.60 dB

Back to the Matrix

peak output power

Variant: 5 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

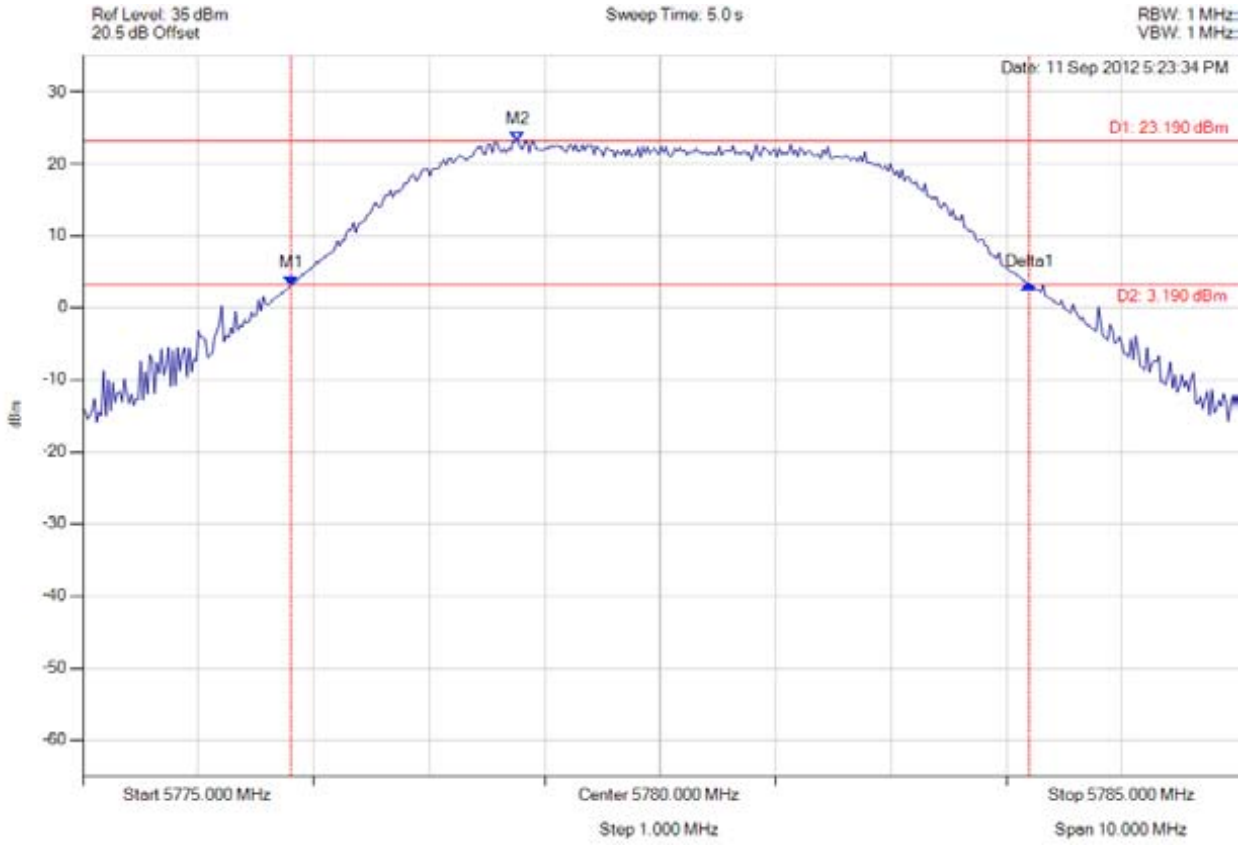


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5776.683 MHz : 1.142 dBm M2 : 5778.808 MHz : 22.737 dBm Delta1 : 6.513 MHz : 1.891 dB	Channel Power: 27.13 dBm Limit: 26.99 dBm Margin: 0.14 dB

Back to the Matrix

peak output power

Variant: 5 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

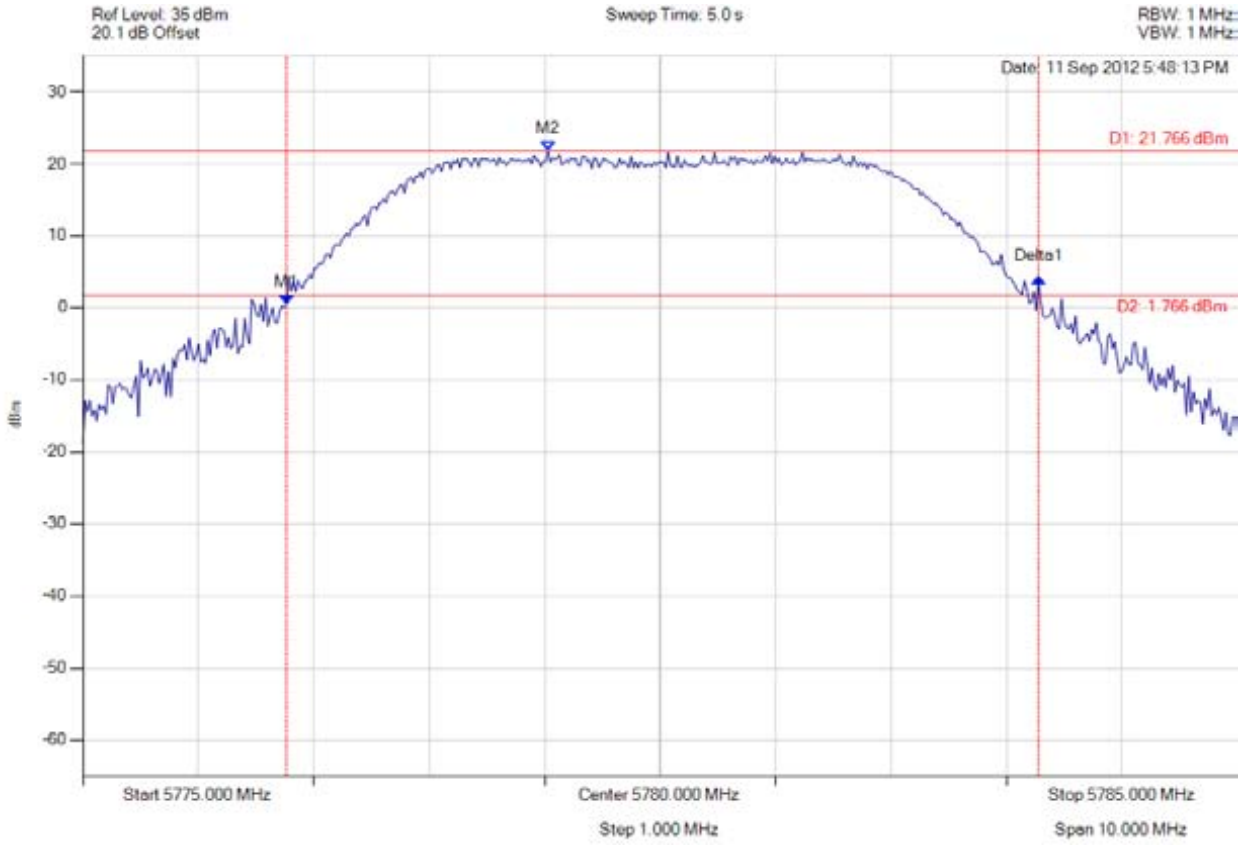


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5776.804 MHz : 3.117 dBm M2 : 5778.768 MHz : 23.190 dBm Delta1 : 6.393 MHz : 0.165 dB	Channel Frequency: 5780.00 MHz

Back to the Matrix

peak output power

Variant: 5 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

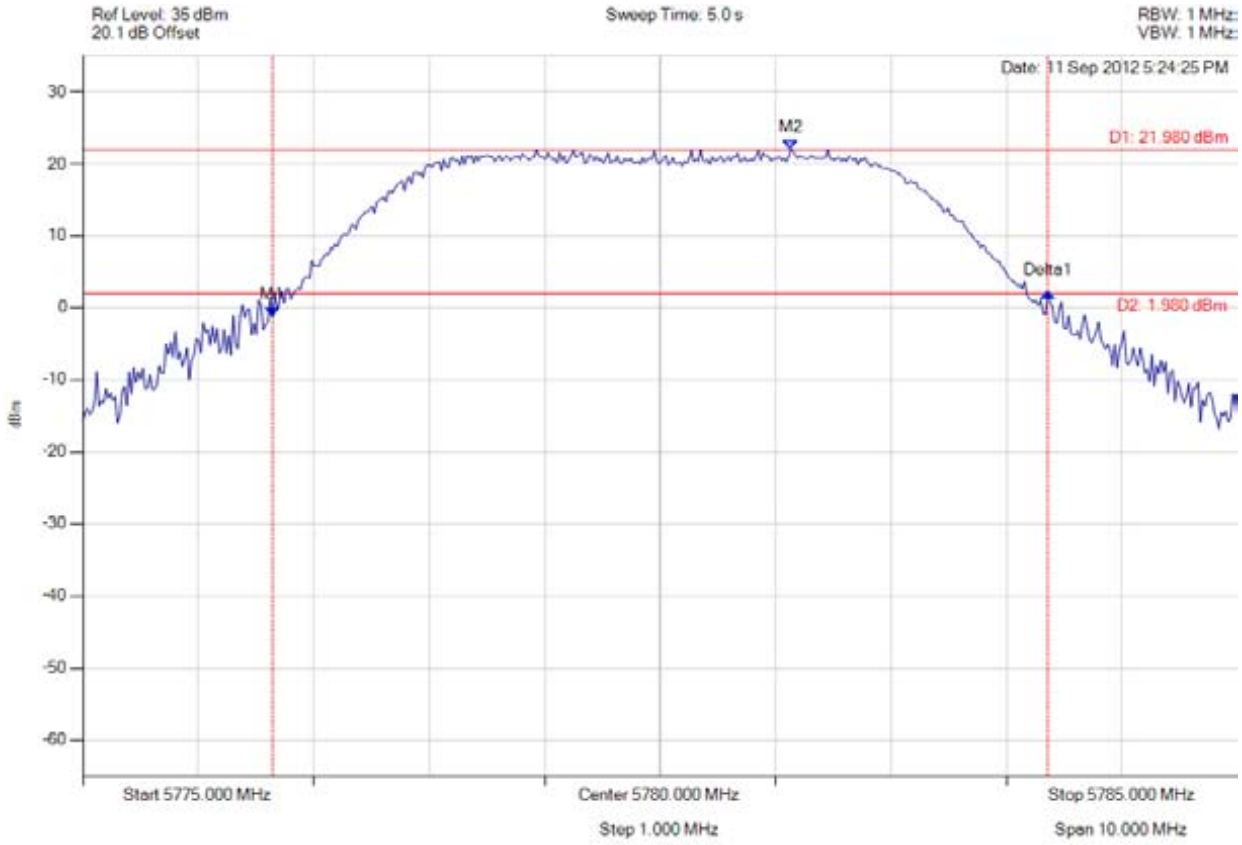


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5776.764 MHz : 0.461 dBm M2 : 5779.028 MHz : 21.766 dBm Delta1 : 6.513 MHz : 3.620 dB	Channel Power: 26.29 dBm Limit: 26.99 dBm Margin: -0.70 dB

Back to the Matrix

peak output power

Variant: 5 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

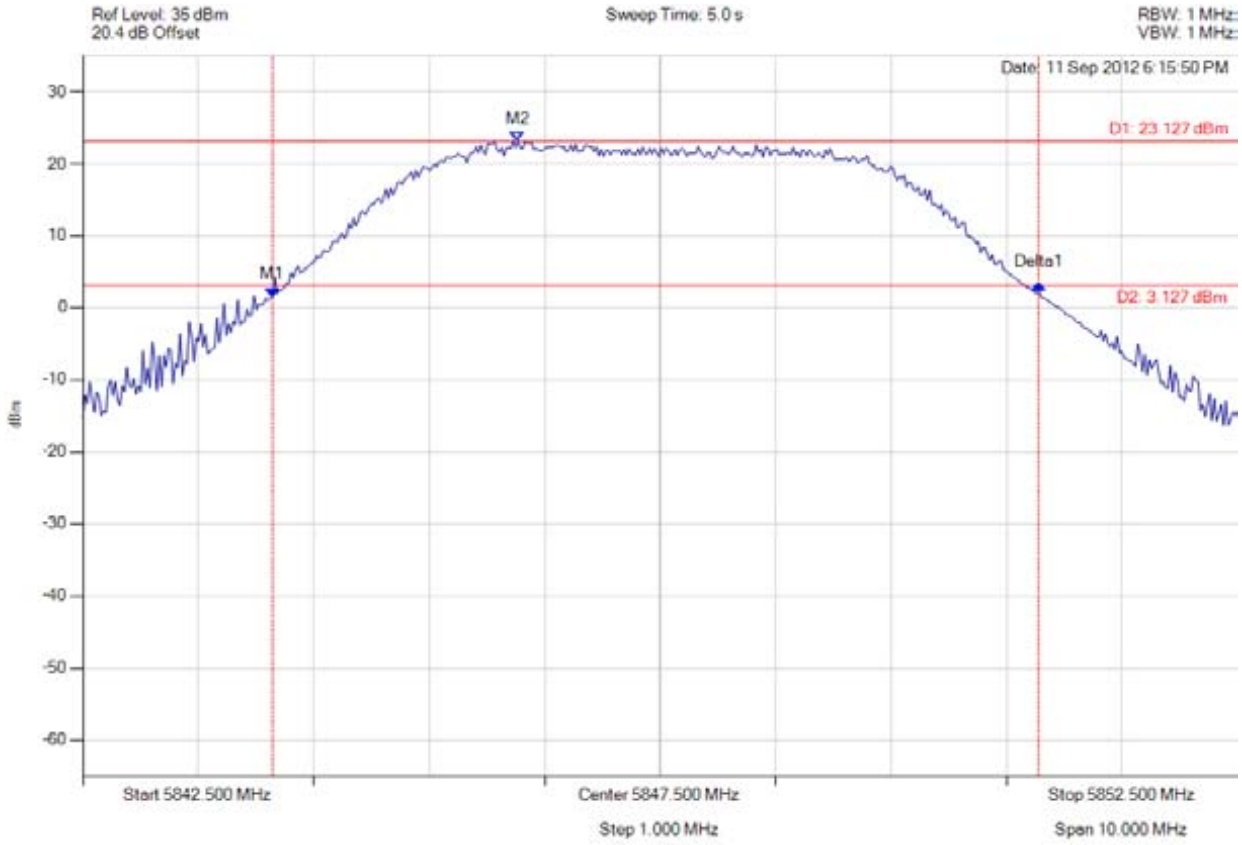


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5776.643 MHz : -1.258 dBm M2 : 5781.132 MHz : 21.980 dBm Delta1 : 6.713 MHz : 3.417 dB	Channel Frequency: 5780.00 MHz

Back to the Matrix

peak output power

Variant: 5 MHz, Channel: 5847.50 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

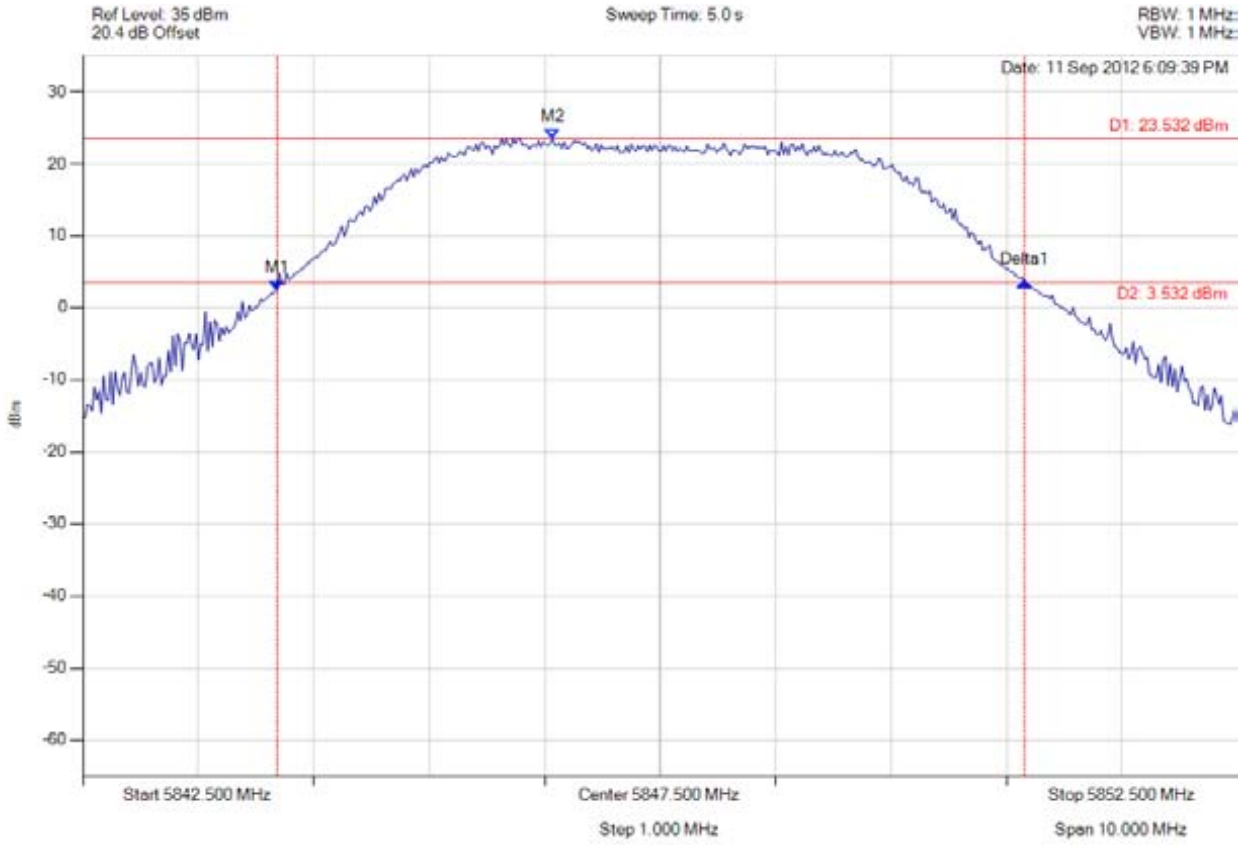


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5844.143 MHz : 1.549 dBm M2 : 5846.268 MHz : 23.127 dBm Delta1 : 6.633 MHz : 1.743 dB	Channel Power: 27.49 dBm Limit: 26.99 dBm Margin: 0.50 dB

Back to the Matrix

peak output power

Variant: 5 MHz, Channel: 5847.50 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

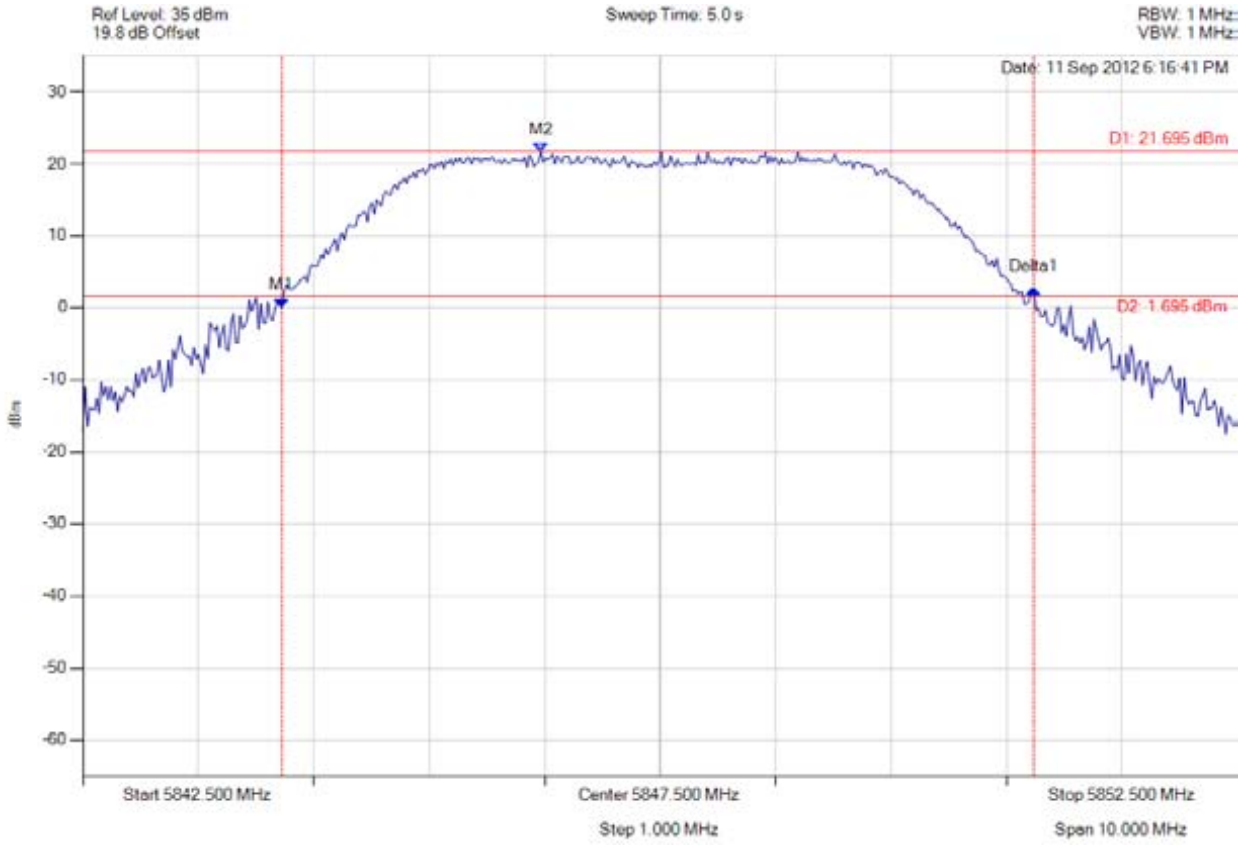


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5844.183 MHz : 2.419 dBm M2 : 5846.568 MHz : 23.532 dBm Delta1 : 6.473 MHz : 1.208 dB	Channel Frequency: 5847.50 MHz

Back to the Matrix

peak output power

Variant: 5 MHz, Channel: 5847.50 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

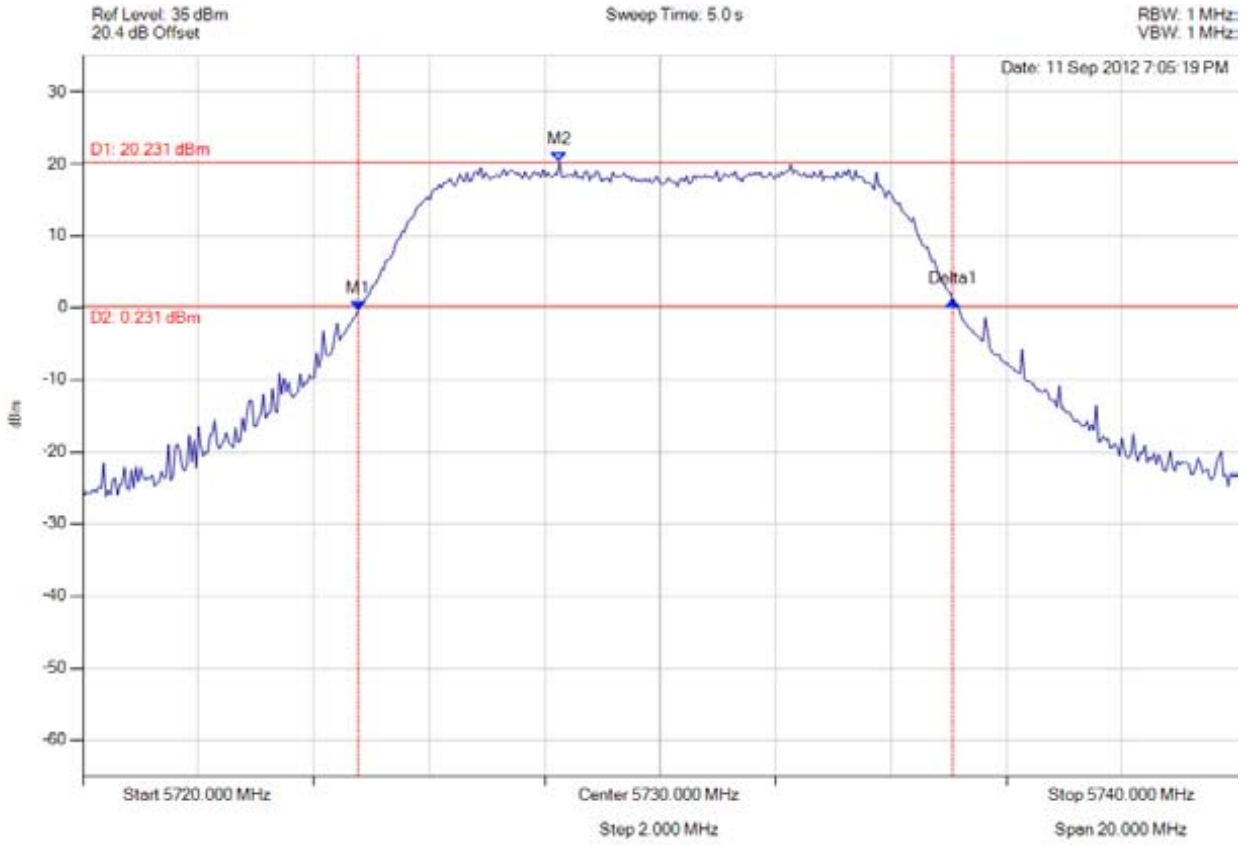


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5844.223 MHz : 0.040 dBm M2 : 5846.468 MHz : 21.695 dBm Delta1 : 6.513 MHz : 2.563 dB	Channel Power: 26.35 dBm Limit: 26.99 dBm Margin: -0.64 dB

Back to the Matrix

peak output power

Variant: 10 MHz, Channel: 5730.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

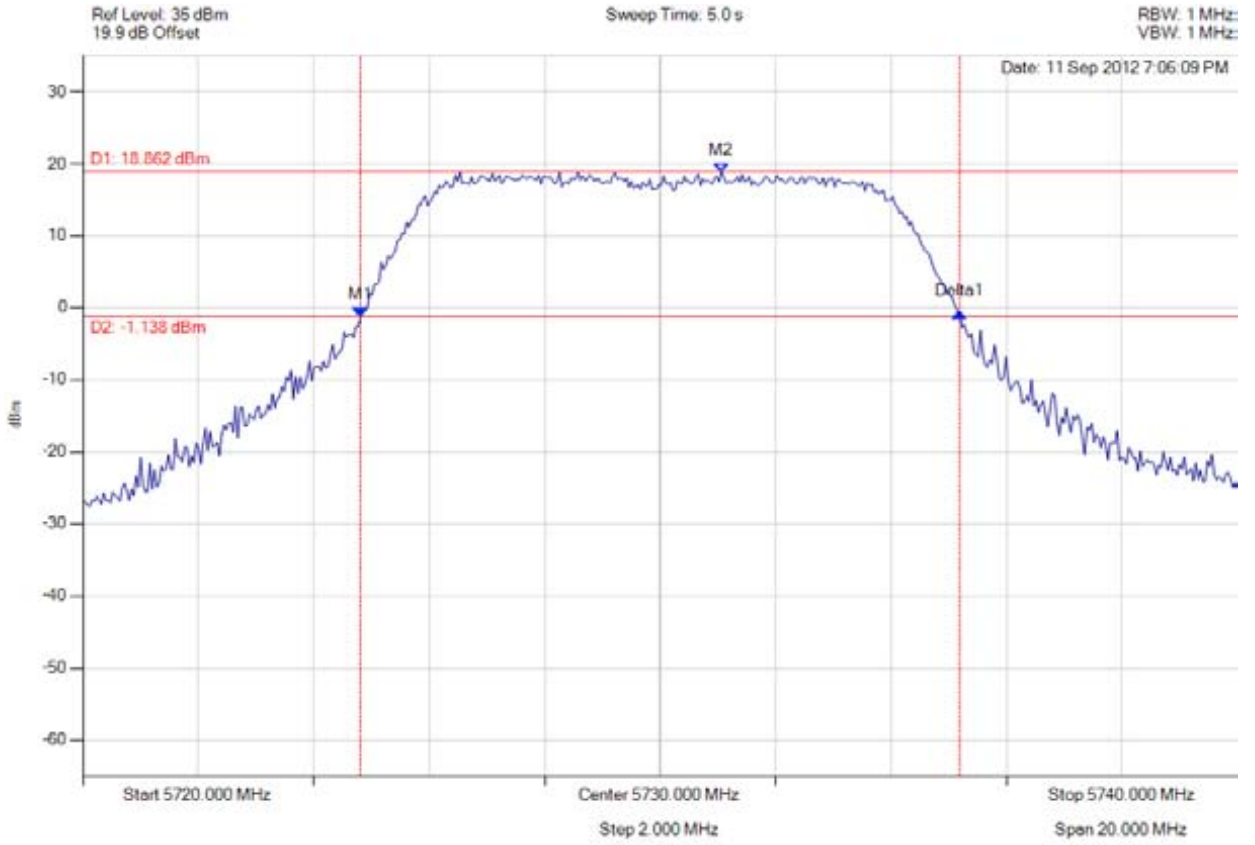


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5724.770 MHz : -0.389 dBm M2 : 5728.257 MHz : 20.231 dBm Delta1 : 10.301 MHz : 1.289 dB	Channel Power: 26.85 dBm Limit: 26.99 dBm Margin: -0.14 dB

Back to the Matrix

peak output power

Variant: 10 MHz, Channel: 5730.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

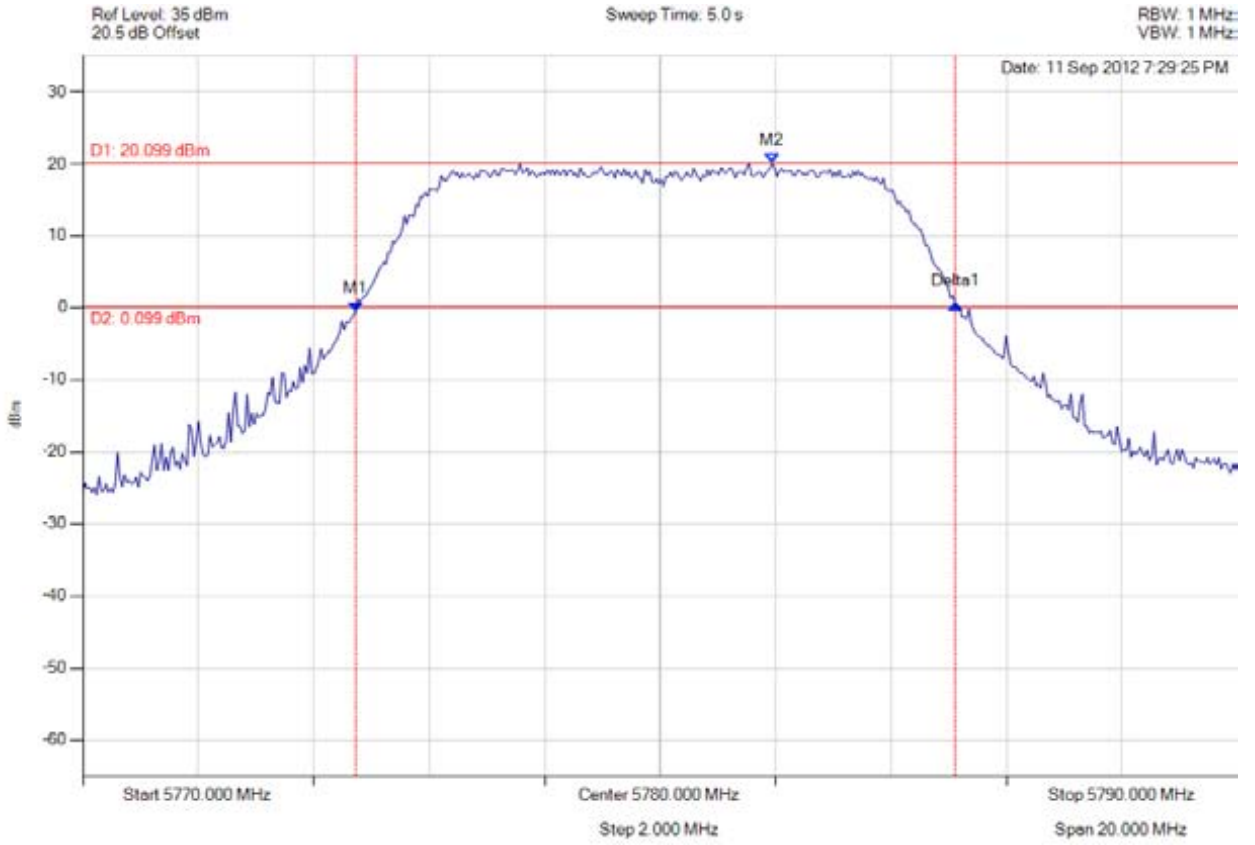


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5724.810 MHz : -1.282 dBm M2 : 5731.062 MHz : 18.862 dBm Delta1 : 10.381 MHz : 0.521 dB	Channel Power: 26.27 dBm Limit: 26.99 dBm Margin: -0.72 dB

Back to the Matrix

peak output power

Variant: 10 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

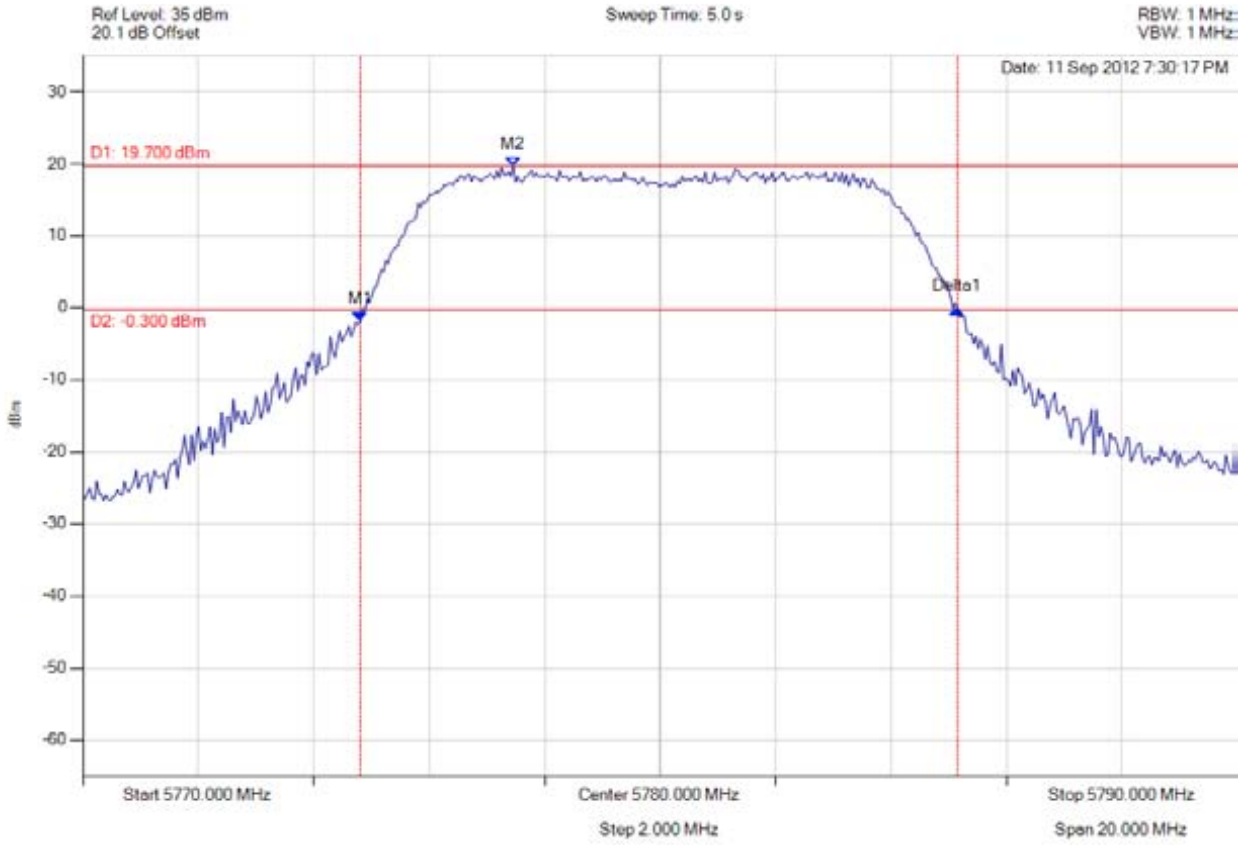


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5774.729 MHz : -0.456 dBm M2 : 5781.944 MHz : 20.099 dBm Delta1 : 10.381 MHz : 0.999 dB	Channel Power: 27.27 dBm Limit: 26.99 dBm Margin: 0.28 dB

Back to the Matrix

peak output power

Variant: 10 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

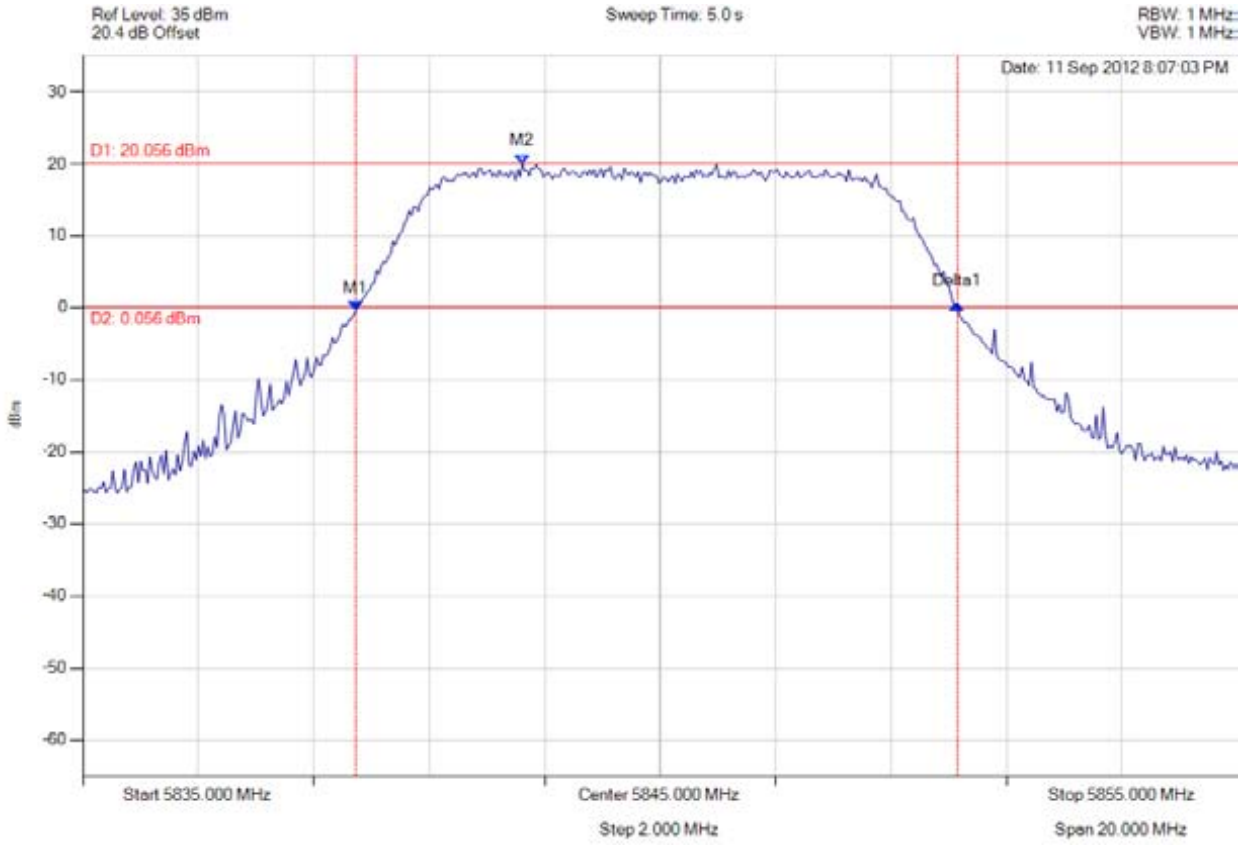


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5774.810 MHz : -1.823 dBm M2 : 5777.455 MHz : 19.700 dBm Delta1 : 10.341 MHz : 1.702 dB	Channel Power: 26.59 dBm Limit: 26.99 dBm Margin: -0.40 dB

Back to the Matrix

peak output power

Variant: 10 MHz, Channel: 5845.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

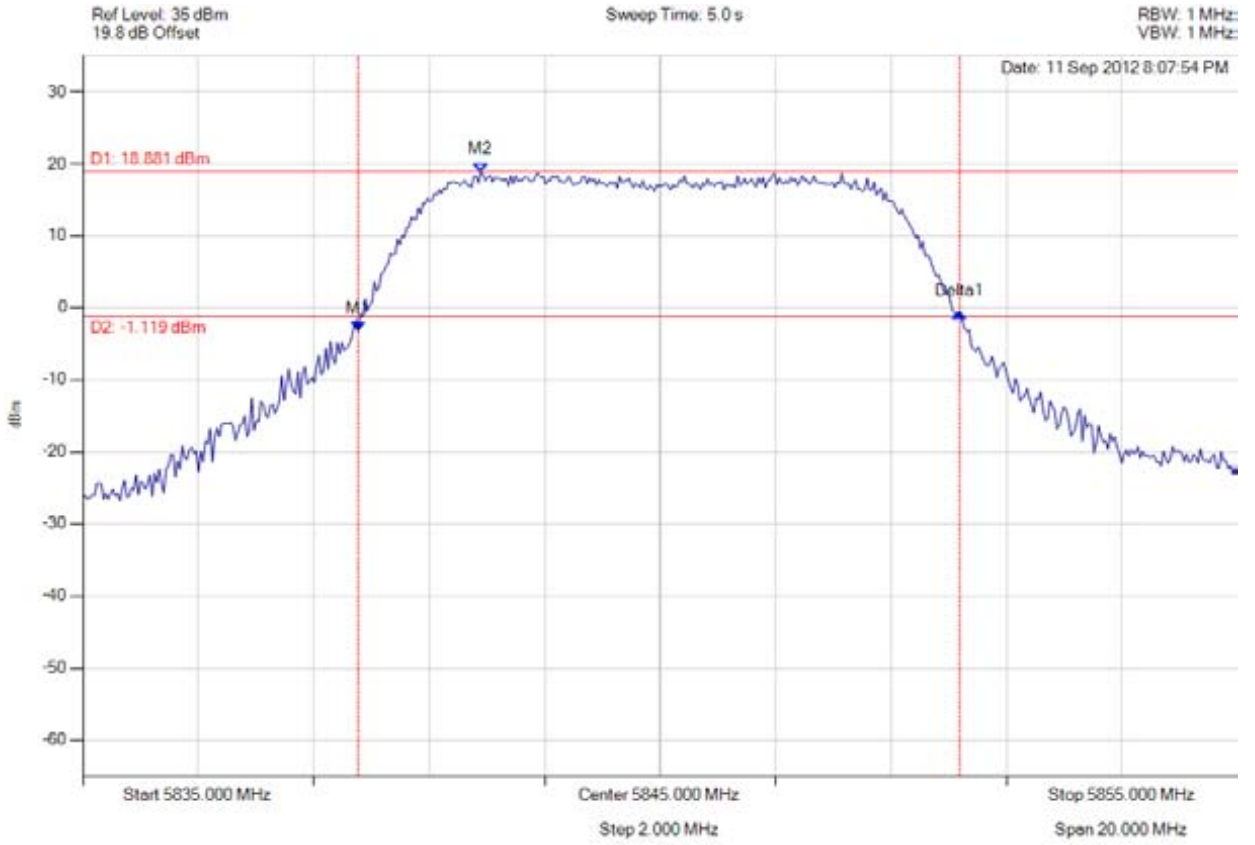


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5839.729 MHz : -0.379 dBm M2 : 5842.615 MHz : 20.056 dBm Delta1 : 10.421 MHz : 0.923 dB	Channel Power: 27.11 dBm Limit: 26.99 dBm Margin: 0.12 dB

Back to the Matrix

peak output power

Variant: 10 MHz, Channel: 5845.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

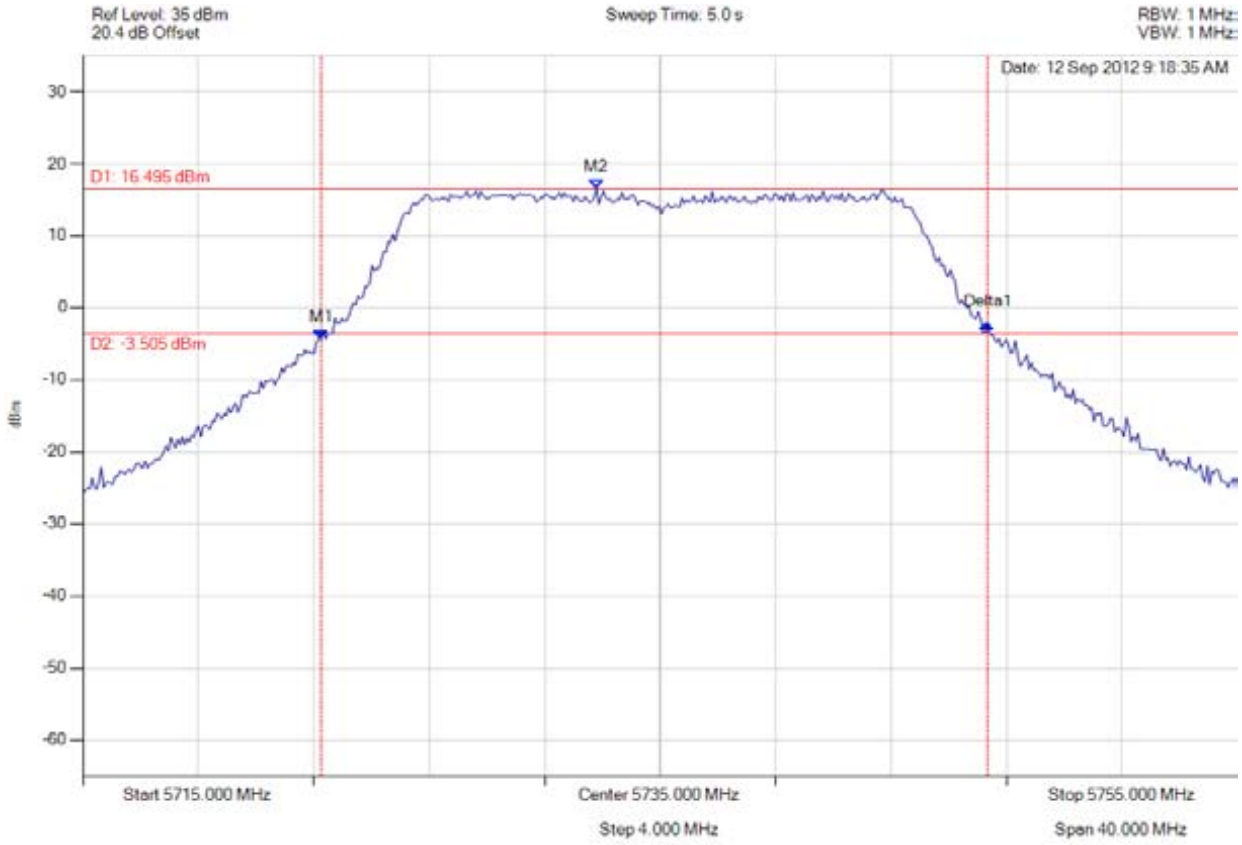


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5839.770 MHz : -3.251 dBm M2 : 5841.894 MHz : 18.881 dBm Delta1 : 10.421 MHz : 2.613 dB	Channel Power: 26.07 dBm Limit: 26.99 dBm Margin: -0.92 dB

Back to the Matrix

peak output power

Variant: 20 MHz, Channel: 5735.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

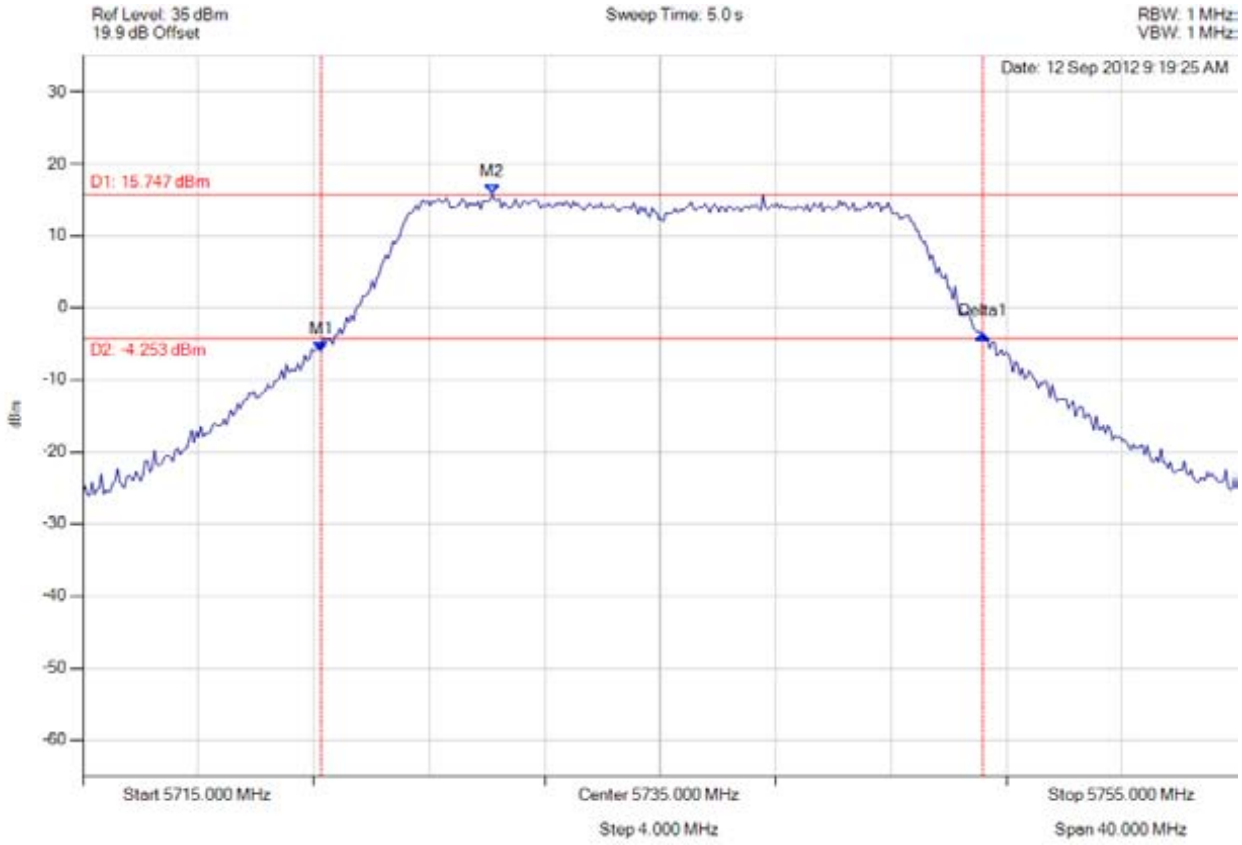


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5723.257 MHz : -4.445 dBm M2 : 5732.796 MHz : 16.495 dBm Delta1 : 23.086 MHz : 2.270 dB	Channel Power: 27.27 dBm Limit: 26.99 dBm Margin: 0.28 dB

Back to the Matrix

peak output power

Variant: 20 MHz, Channel: 5735.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

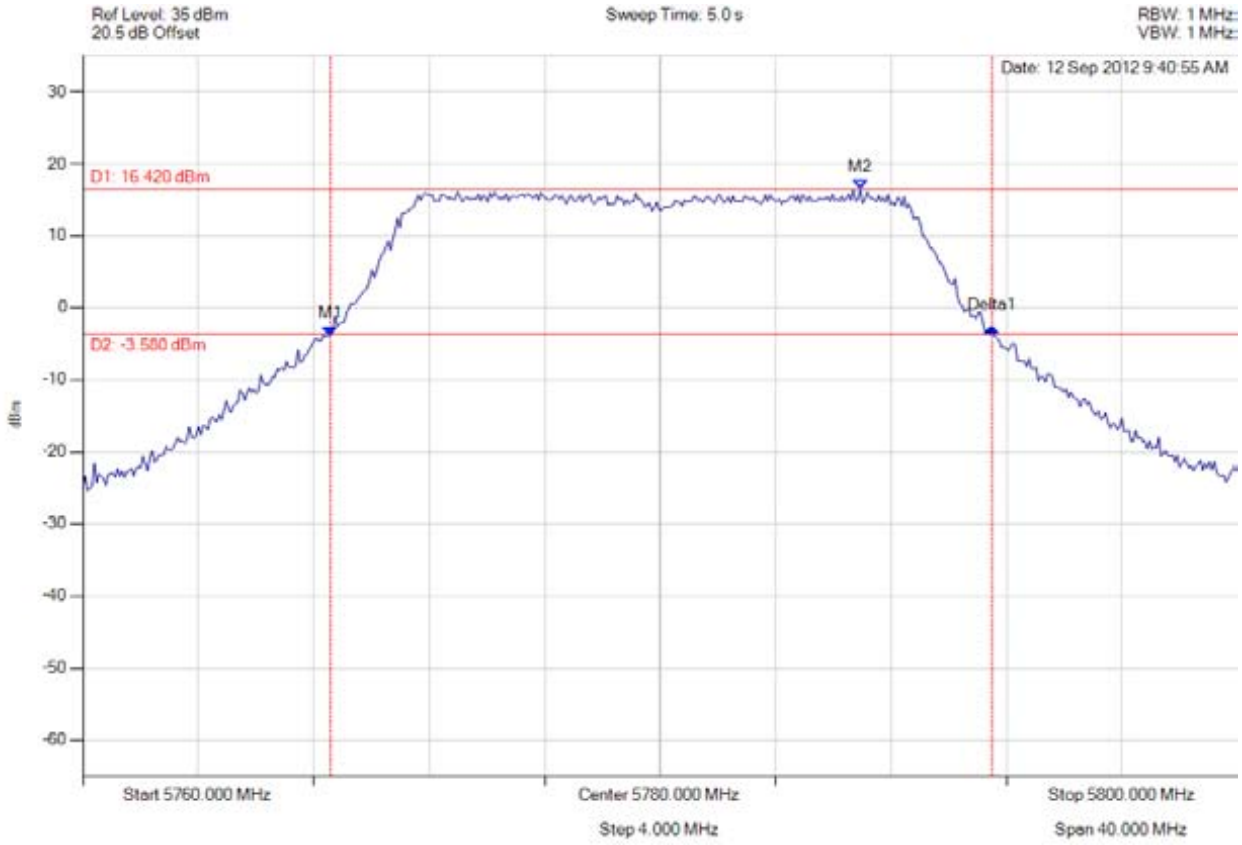


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5723.257 MHz : -6.035 dBm M2 : 5729.188 MHz : 15.747 dBm Delta1 : 22.926 MHz : 2.406 dB	Channel Power: 26.15 dBm Limit: 26.99 dBm Margin: -0.84 dB

Back to the Matrix

peak output power

Variant: 20 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

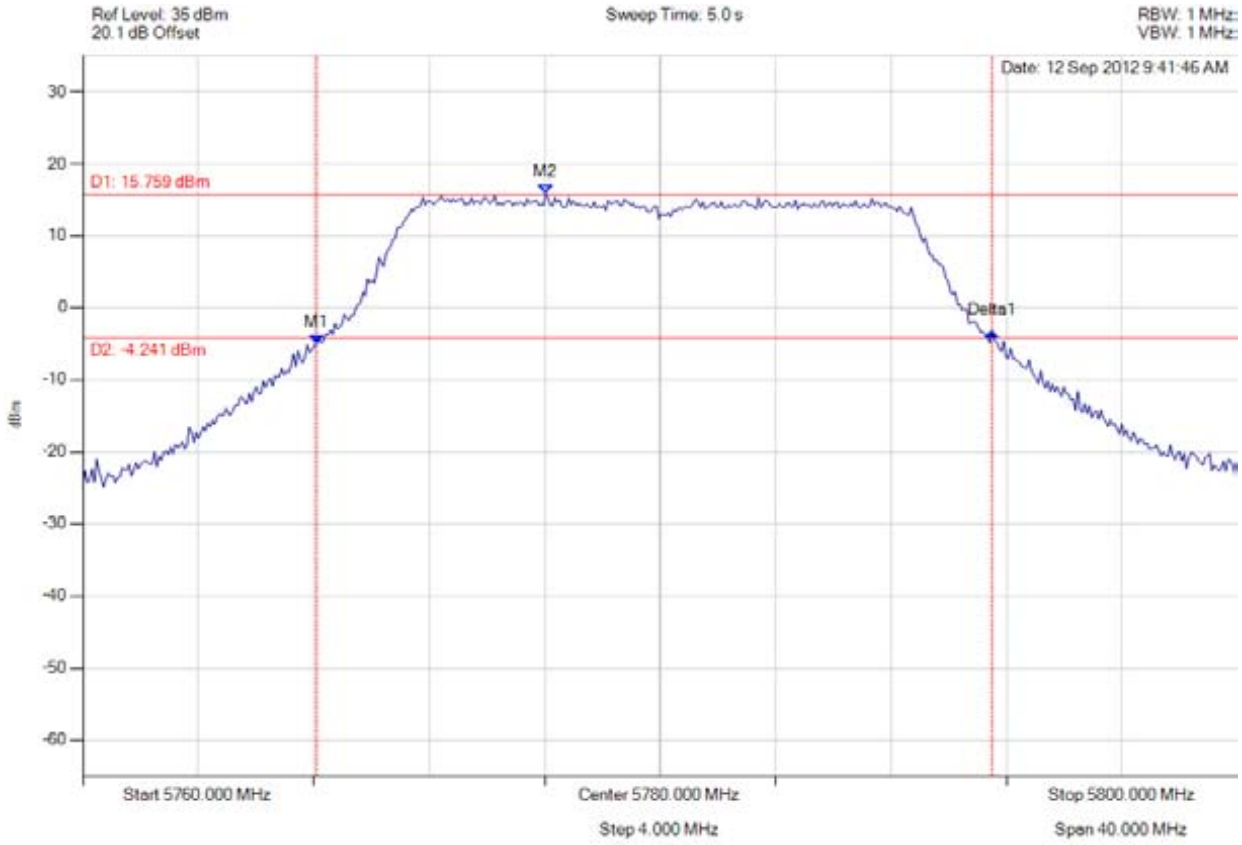


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5768.577 MHz : -3.826 dBm M2 : 5786.934 MHz : 16.420 dBm Delta1 : 22.926 MHz : 1.149 dB	Channel Power: 27.19 dBm Limit: 26.99 dBm Margin: 0.20 dB

Back to the Matrix

peak output power

Variant: 20 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

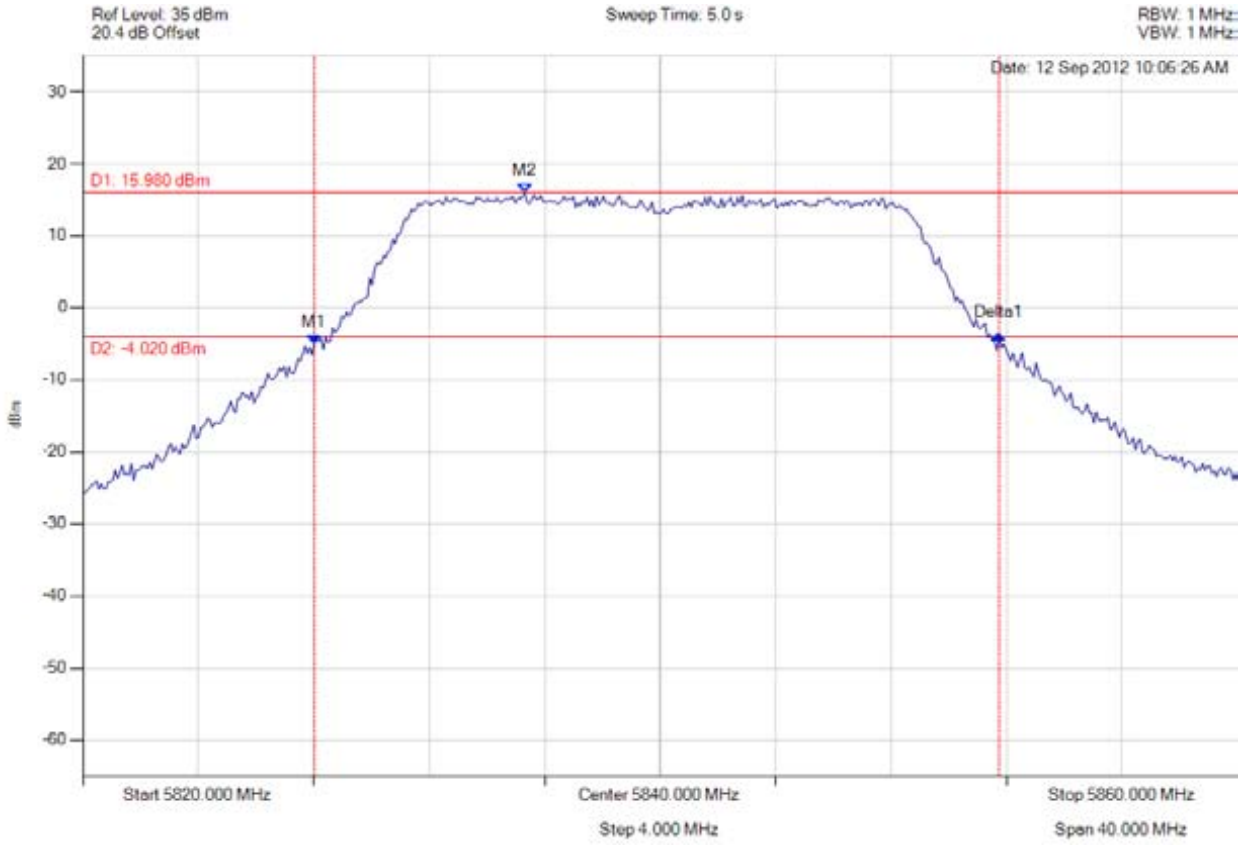


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5768.096 MHz : -5.034 dBm M2 : 5776.032 MHz : 15.759 dBm Delta1 : 23.407 MHz : 1.637 dB	Channel Power: 26.44 dBm Limit: 26.99 dBm Margin: -0.55 dB

Back to the Matrix

peak output power

Variant: 20 MHz, Channel: 5840.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

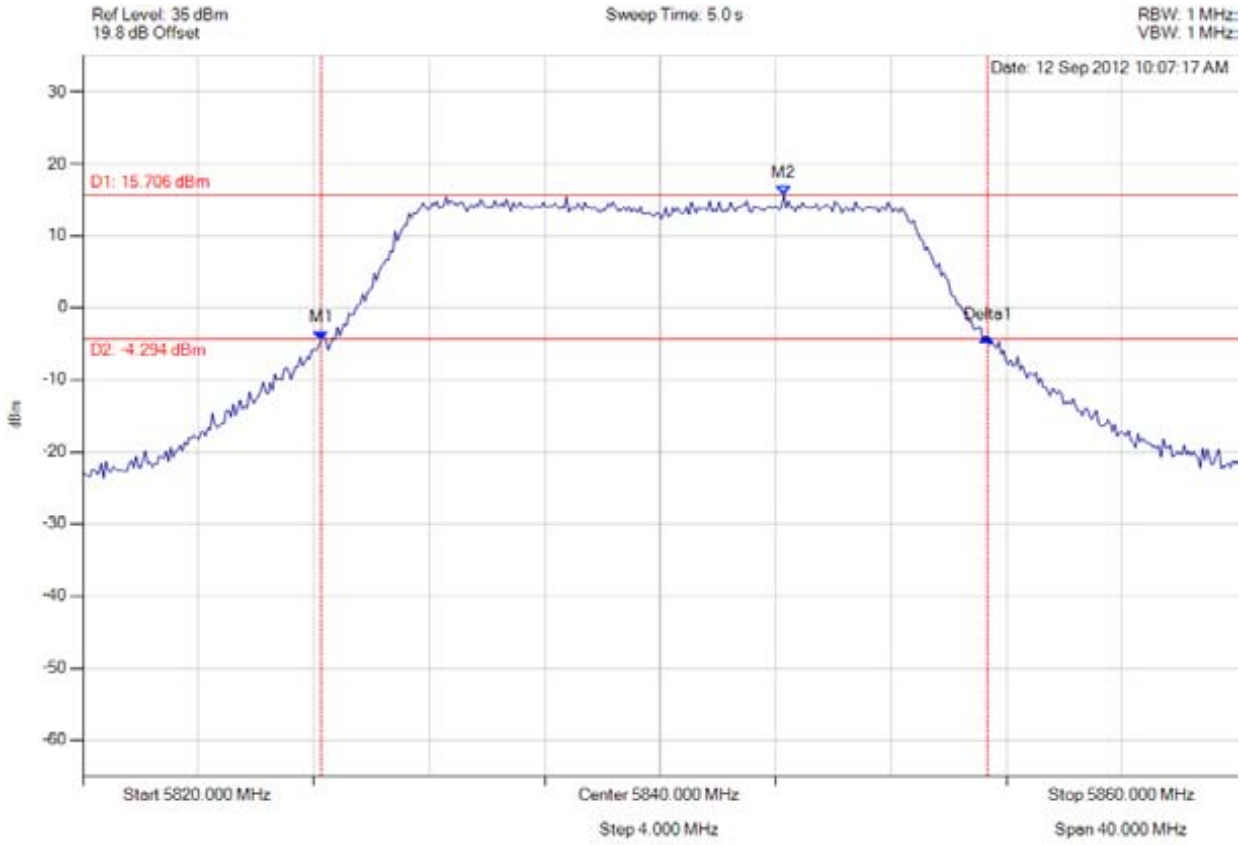


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5828.016 MHz : -5.020 dBm M2 : 5835.311 MHz : 15.980 dBm Delta1 : 23.727 MHz : 1.267 dB	Channel Power: 26.66 dBm Limit: 26.99 dBm Margin: -0.33 dB

Back to the Matrix

peak output power

Variant: 20 MHz, Channel: 5840.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V



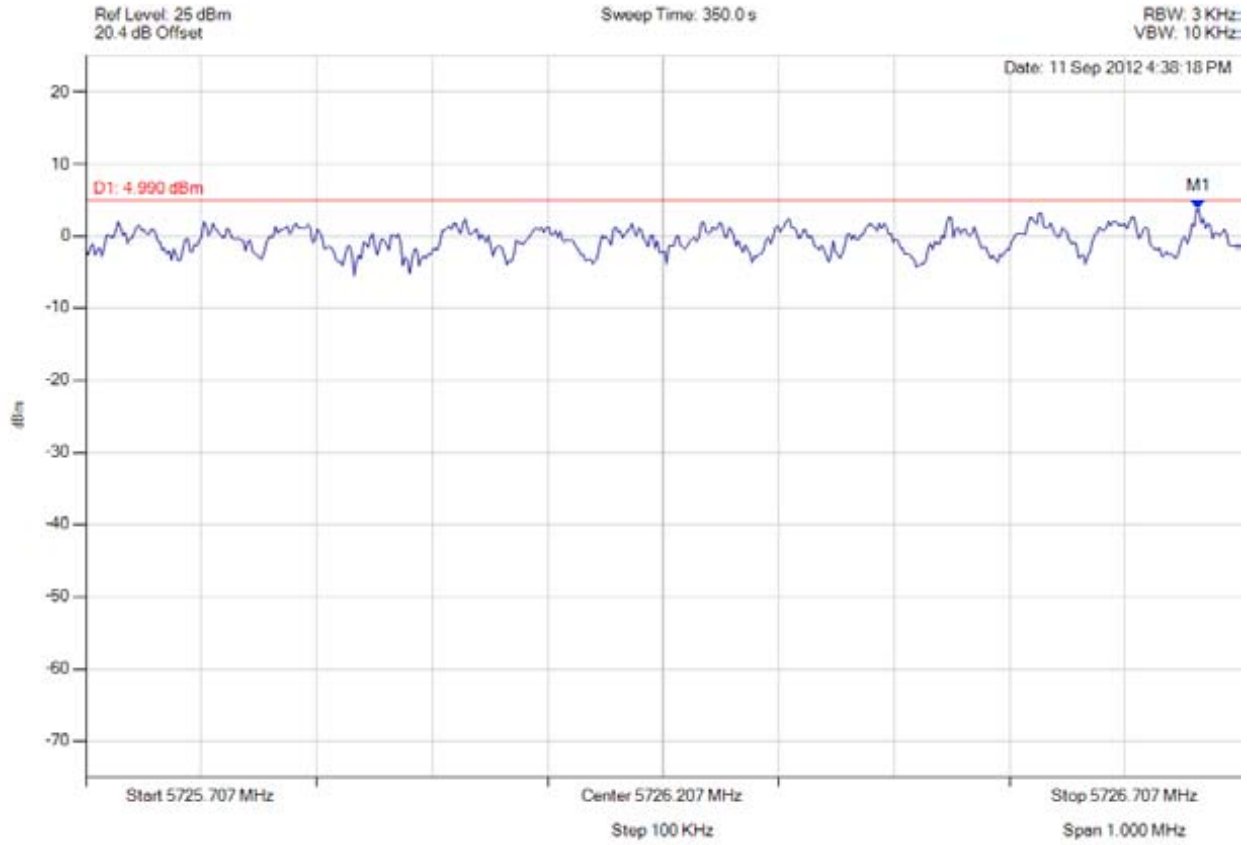
Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 30 Trace Mode = VIEW	M1 : 5828.257 MHz : -4.463 dBm M2 : 5844.289 MHz : 15.706 dBm Delta1 : 23.086 MHz : 0.374 dB	Channel Power: 26.01 dBm Limit: 26.99 dBm Margin: -0.98 dB

Back to the Matrix

A.1.3. Power Spectral Density

power density

Variant: 5 MHz, Channel: 5727.50 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

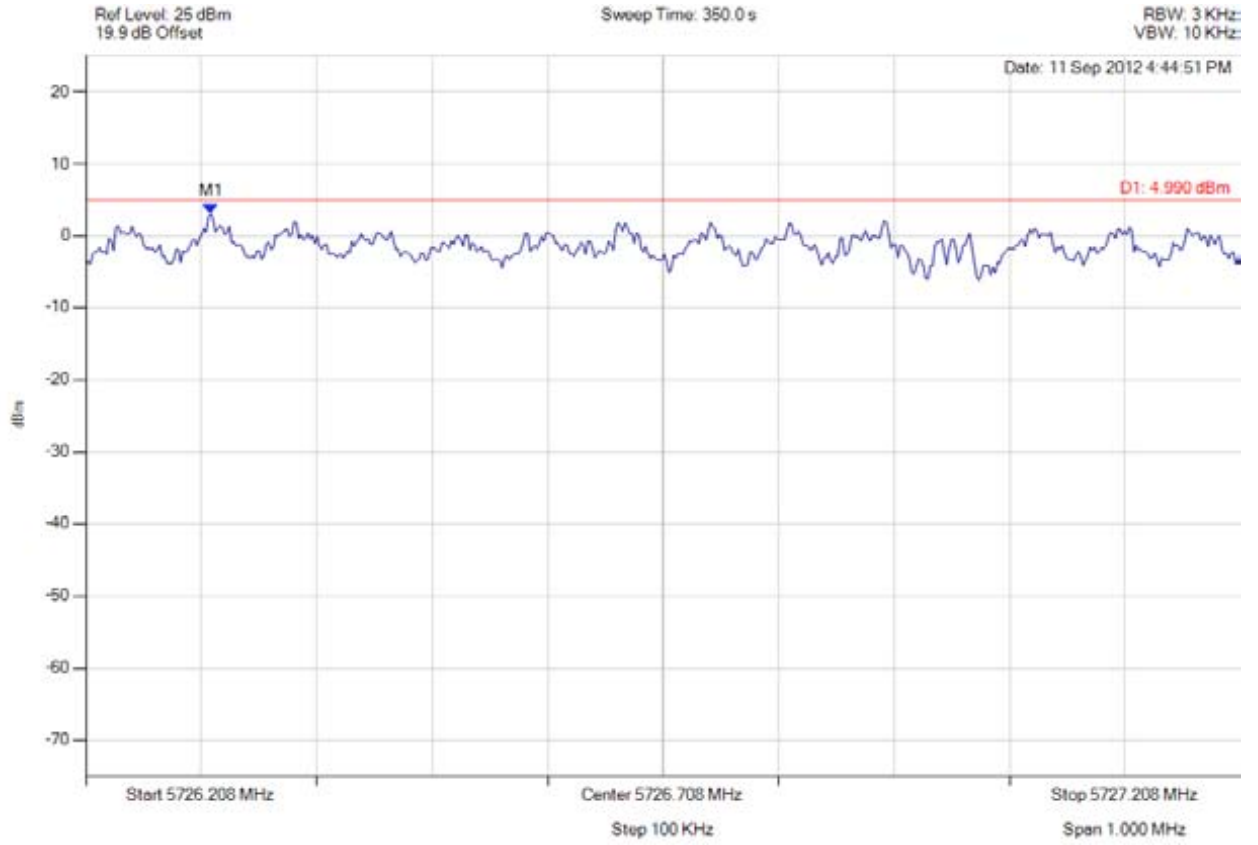


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5726.671 MHz : 3.786 dBm	Limit: ≤4.99 dBm Margin: -1.20 dB

Back to the Matrix

power density

Variant: 5 MHz, Channel: 5727.50 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

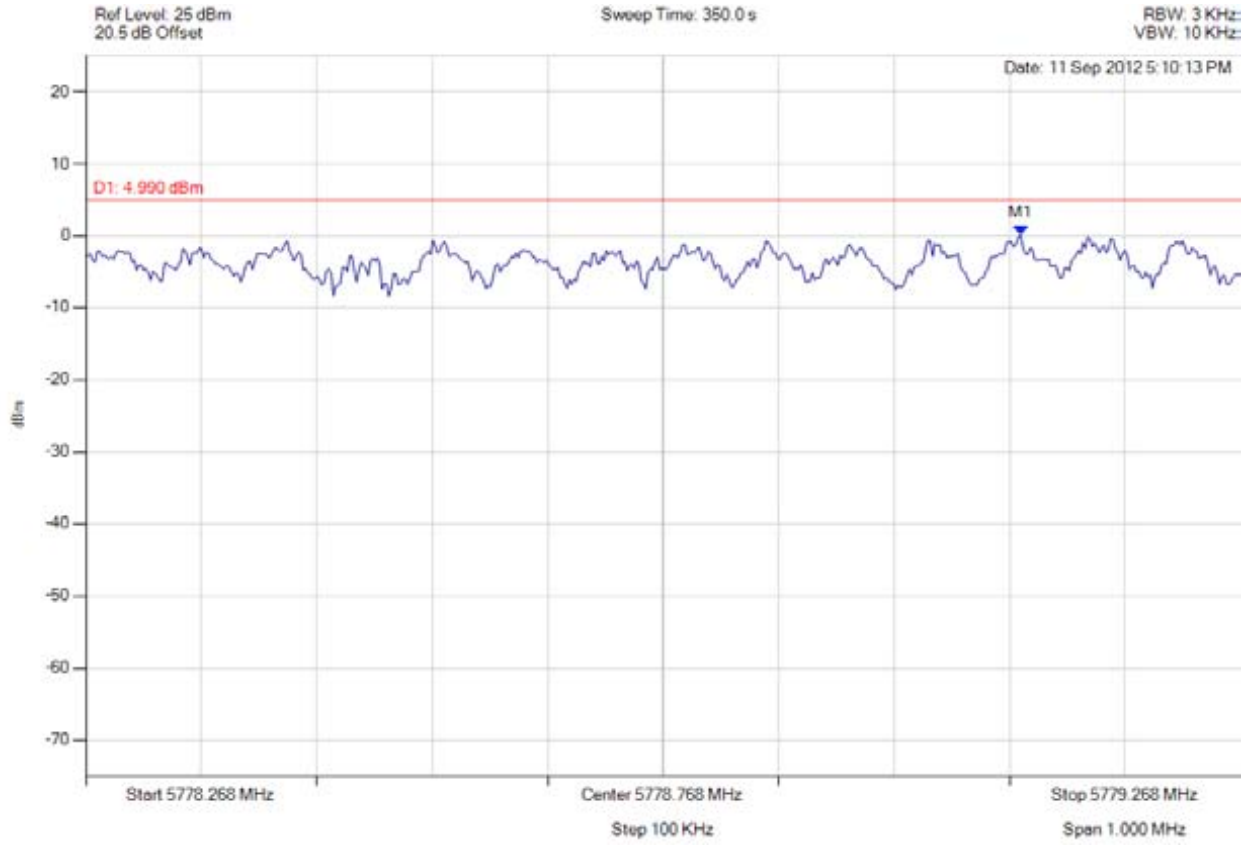


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5726.317 MHz : 3.115 dBm	Limit: ≤4.99 dBm Margin: -1.87 dB

Back to the Matrix

power density

Variant: 5 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

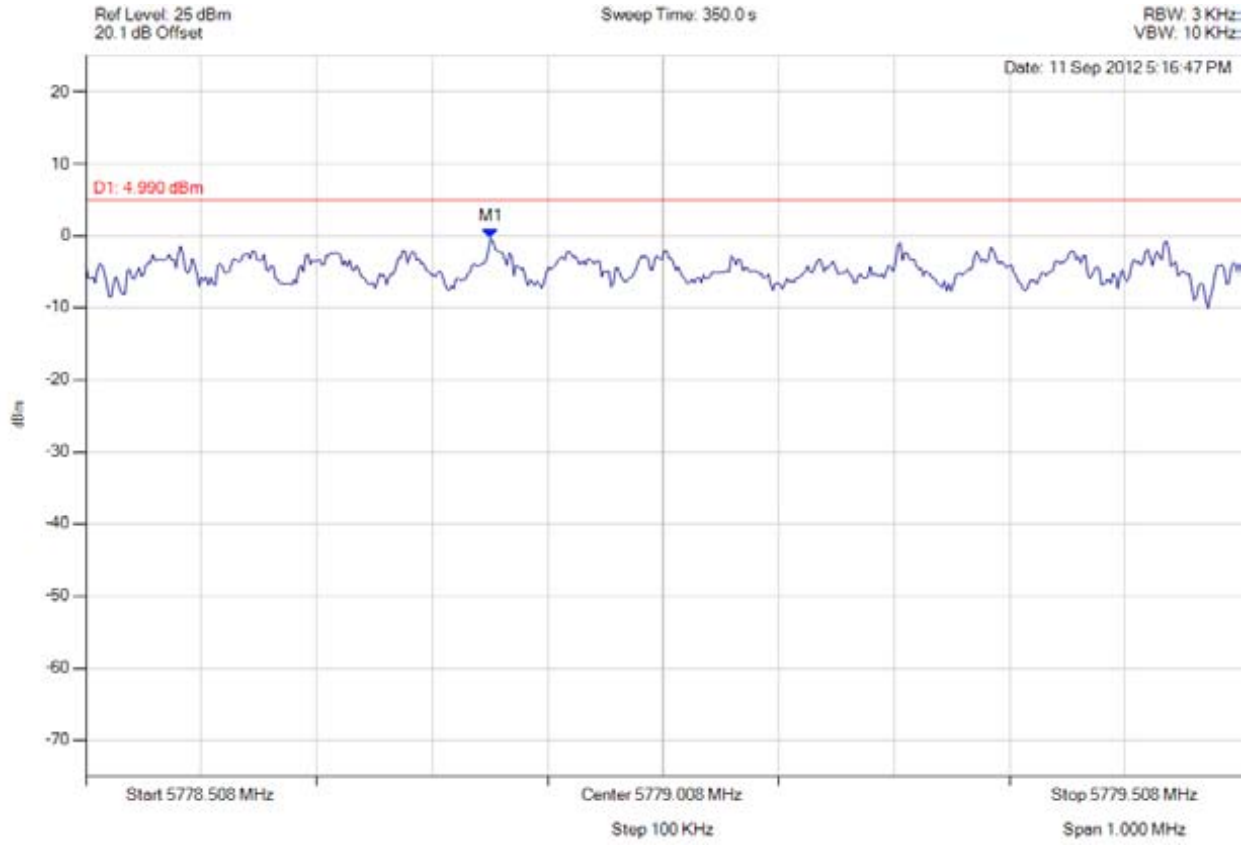


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5779.077 MHz : 0.144 dBm	Limit: ≤4.99 dBm Margin: -4.85 dB

Back to the Matrix

power density

Variant: 5 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

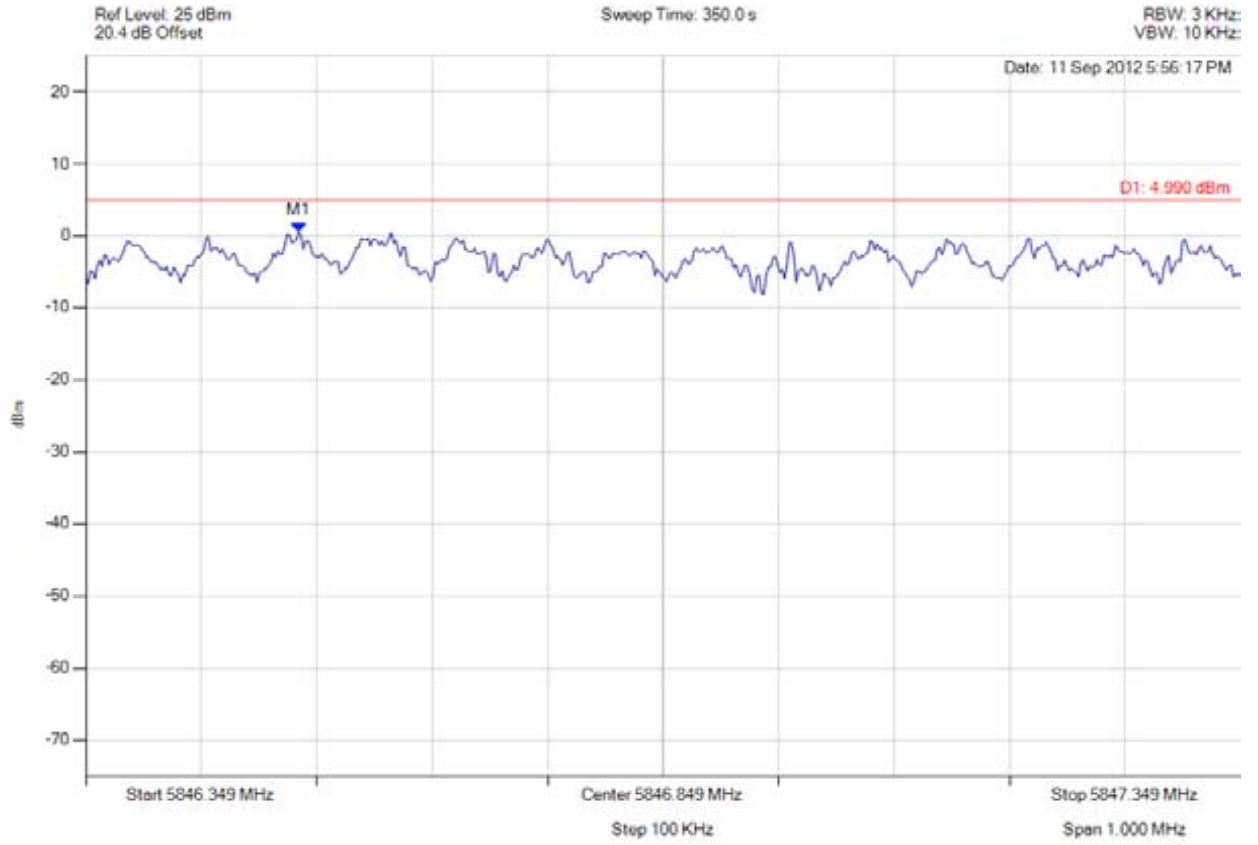


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5778.859 MHz : -0.383 dBm	Limit: ≤4.99 dBm Margin: -5.37 dB

Back to the Matrix

power density

Variant: 5 MHz, Channel: 5847.50 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

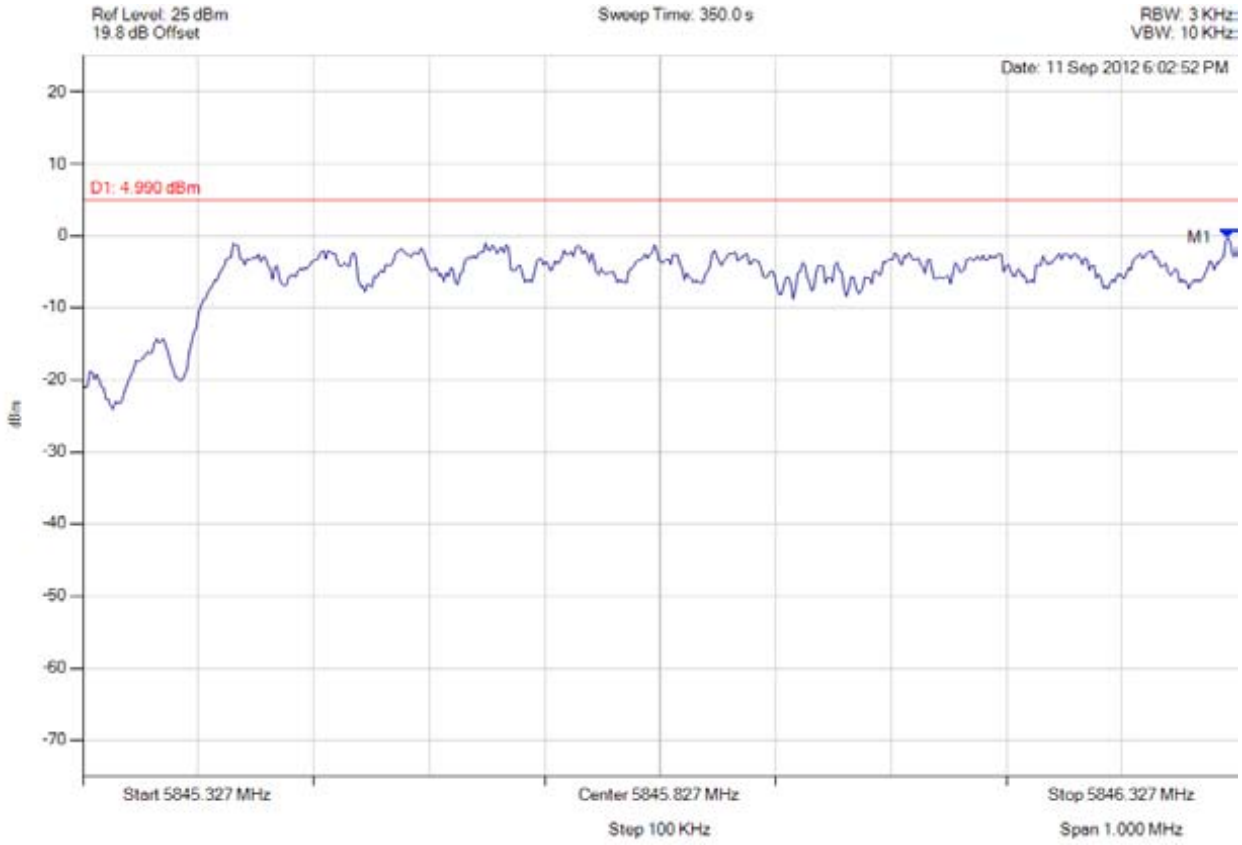


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5846.533 MHz : 0.487 dBm	Limit: ≤4.99 dBm Margin: -4.50 dB

Back to the Matrix

power density

Variant: 5 MHz, Channel: 5847.50 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

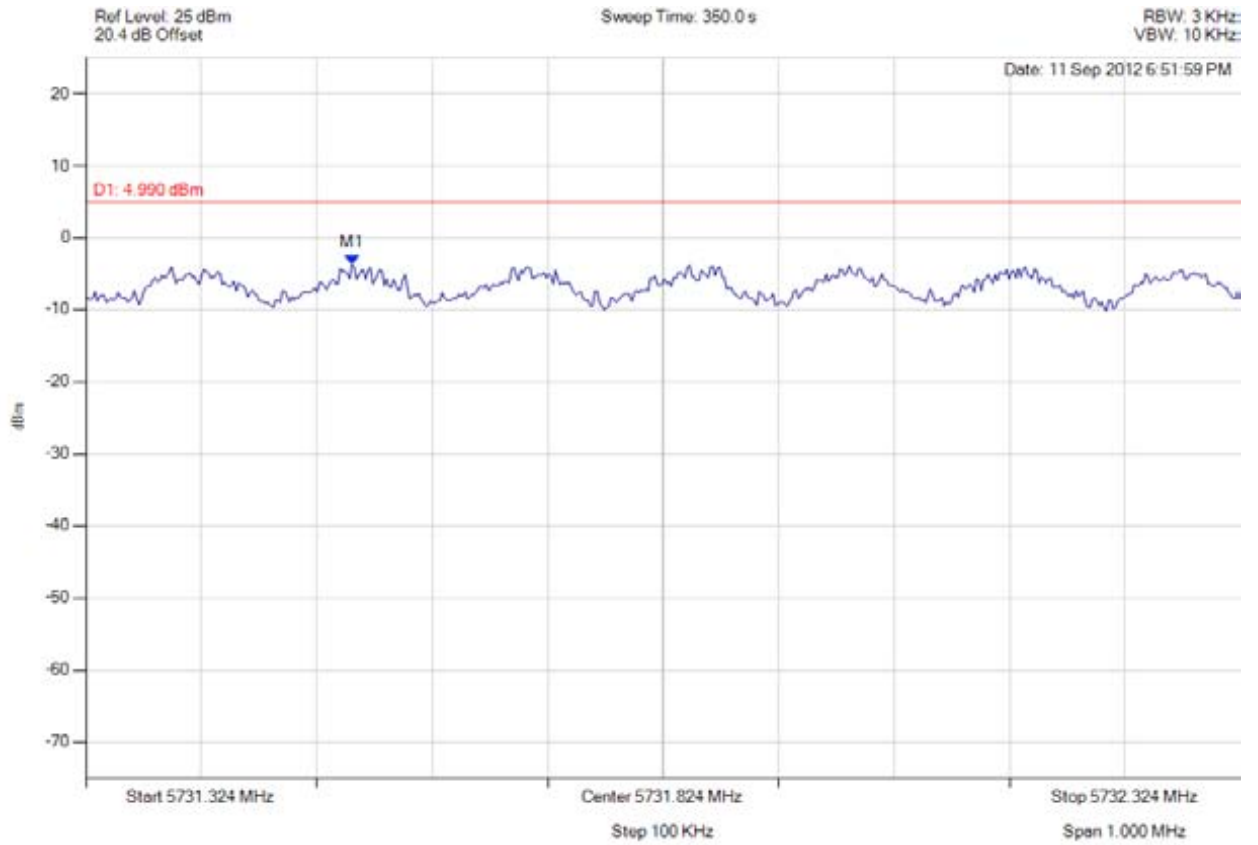


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5846.319 MHz : -0.306 dBm	Limit: ≤4.99 dBm Margin: -5.30 dB

Back to the Matrix

power density

Variant: 10 MHz, Channel: 5730.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

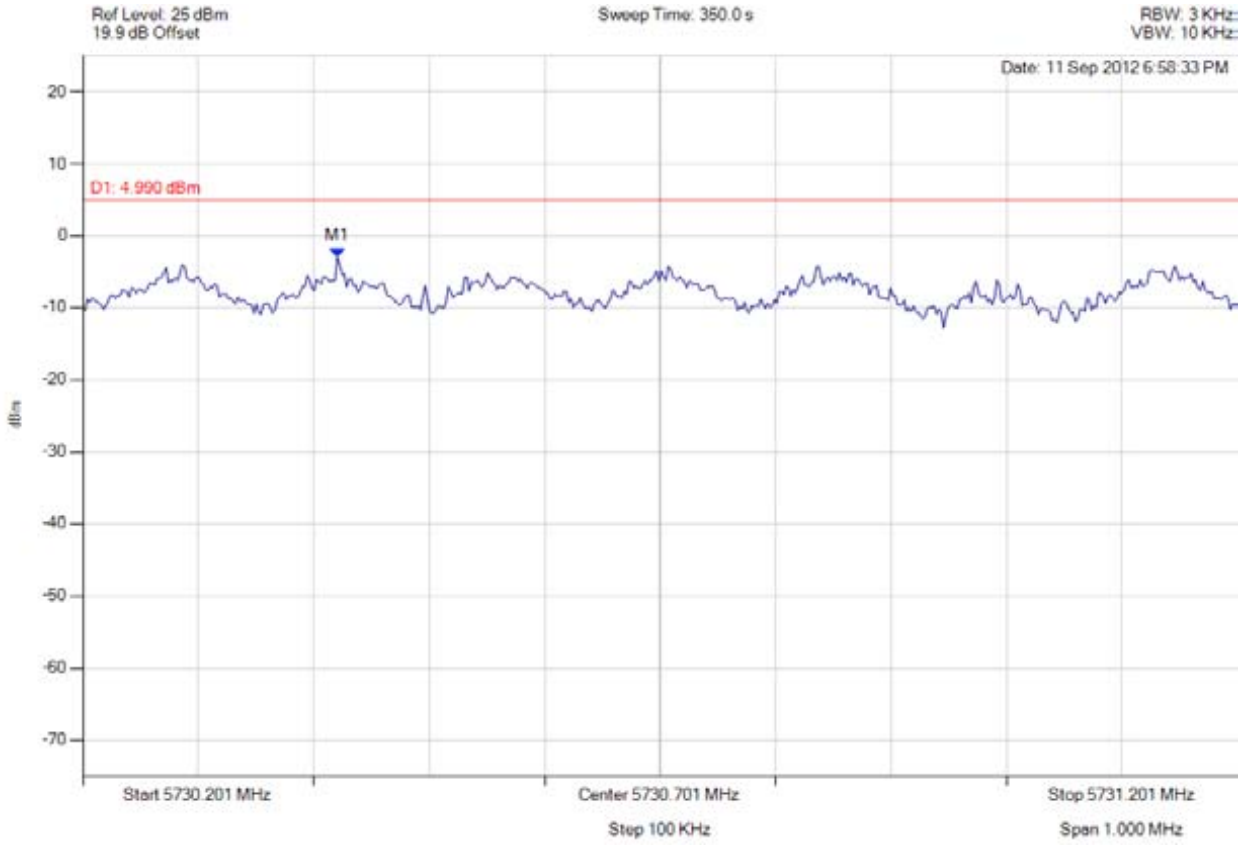


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5731.554 MHz : -3.706 dBm	Limit: ≤4.99 dBm Margin: -8.70 dB

Back to the Matrix

power density

Variant: 10 MHz, Channel: 5730.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

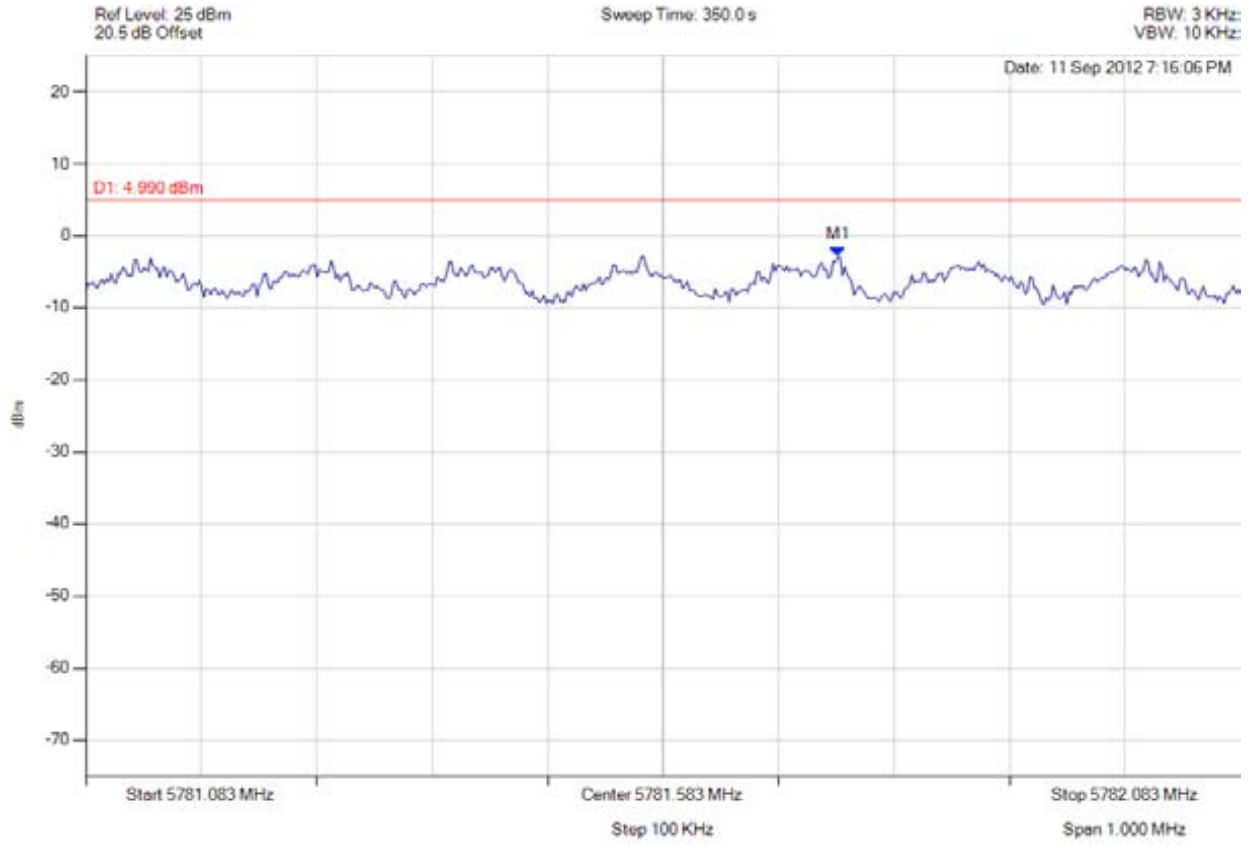


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5730.422 MHz : -2.974 dBm	Limit: ≤4.99 dBm Margin: -7.96 dB

Back to the Matrix

power density

Variant: 10 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

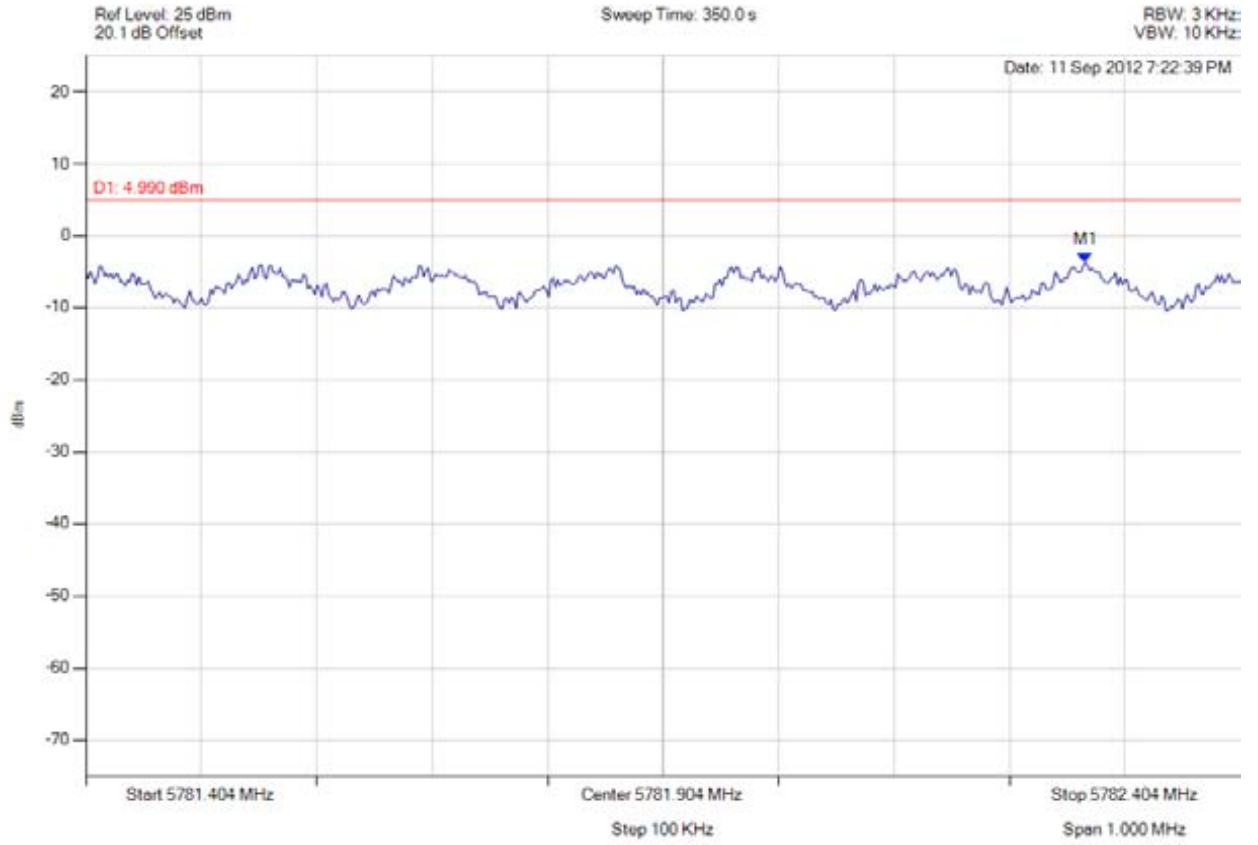


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5781.734 MHz : -2.905 dBm	Limit: ≤4.99 dBm Margin: -7.89 dB

Back to the Matrix

power density

Variant: 10 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

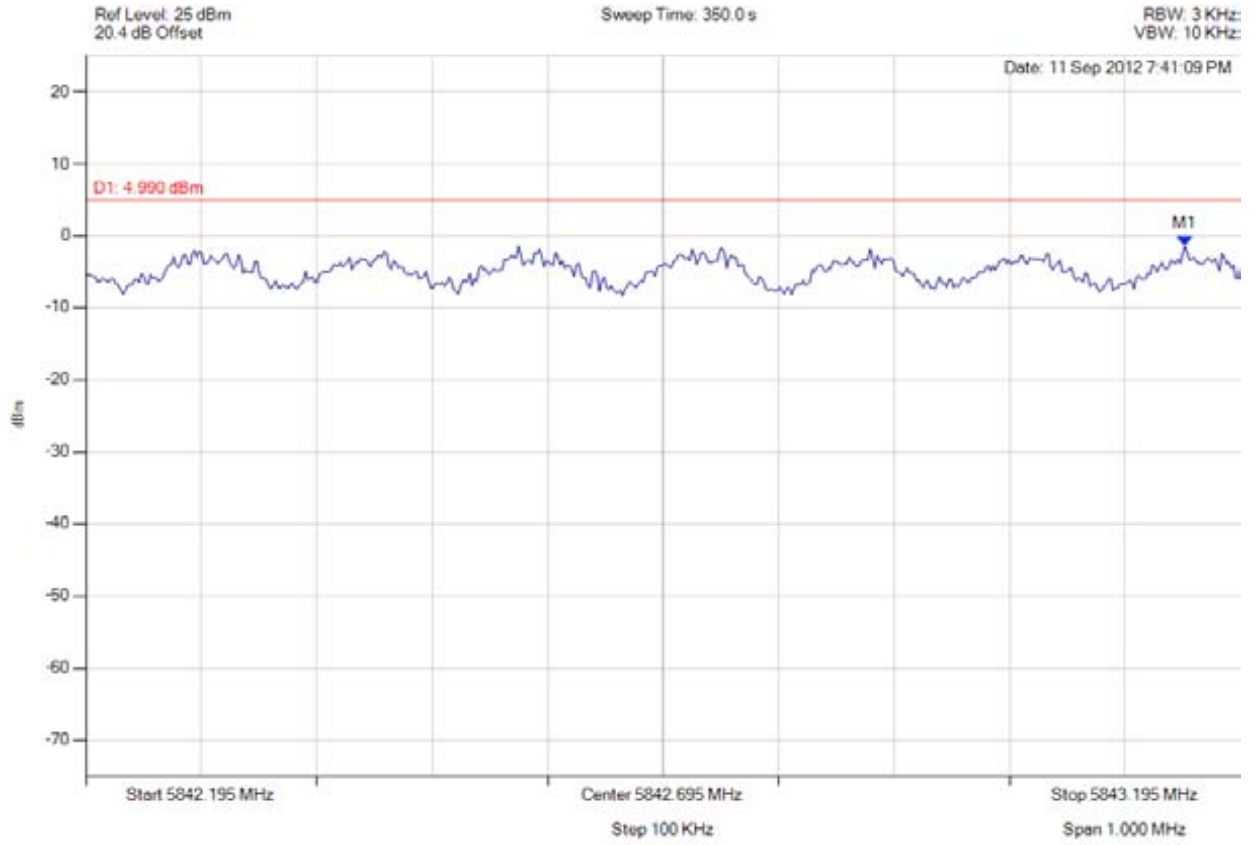


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5782.270 MHz : -3.627 dBm	Limit: ≤4.99 dBm Margin: -8.62 dB

Back to the Matrix

power density

Variant: 10 MHz, Channel: 5845.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

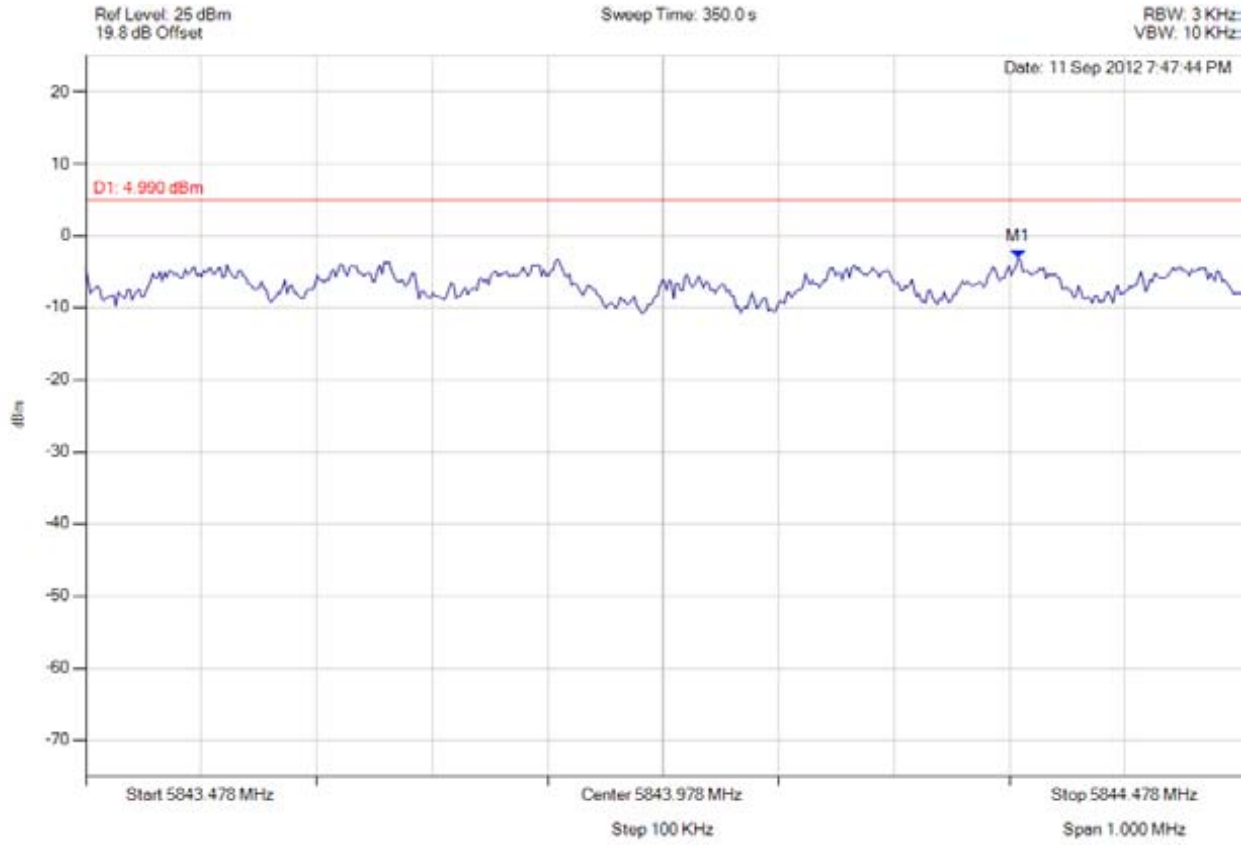


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5843.147 MHz : -1.378 dBm	Limit: ≤4.99 dBm Margin: -6.37 dB

Back to the Matrix

power density

Variant: 10 MHz, Channel: 5845.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

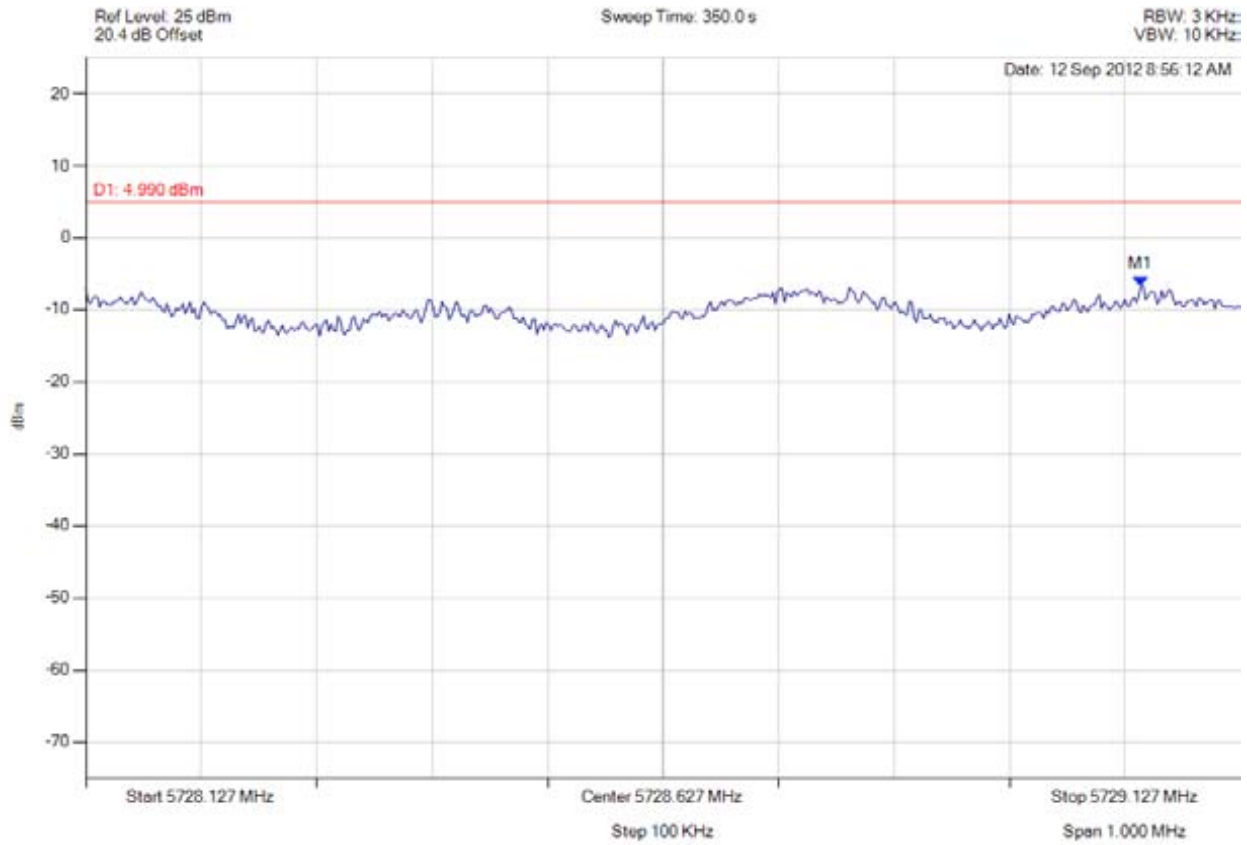


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5844.286 MHz : -3.182 dBm	Limit: ≤4.99 dBm Margin: -8.17 dB

Back to the Matrix

power density

Variant: 20 MHz, Channel: 5735.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

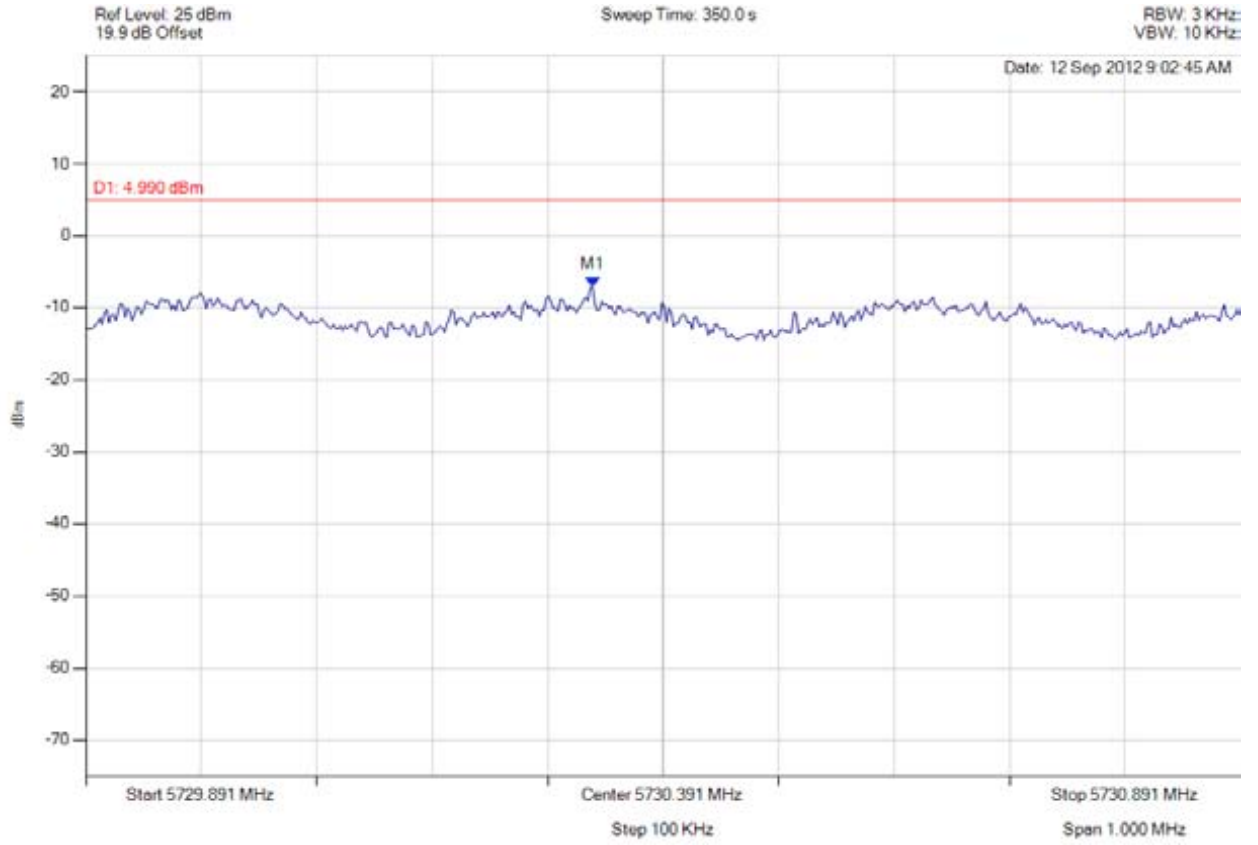


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5729.041 MHz : -6.690 dBm	Limit: ≤4.99 dBm Margin: -11.68 dB

Back to the Matrix

power density

Variant: 20 MHz, Channel: 5735.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

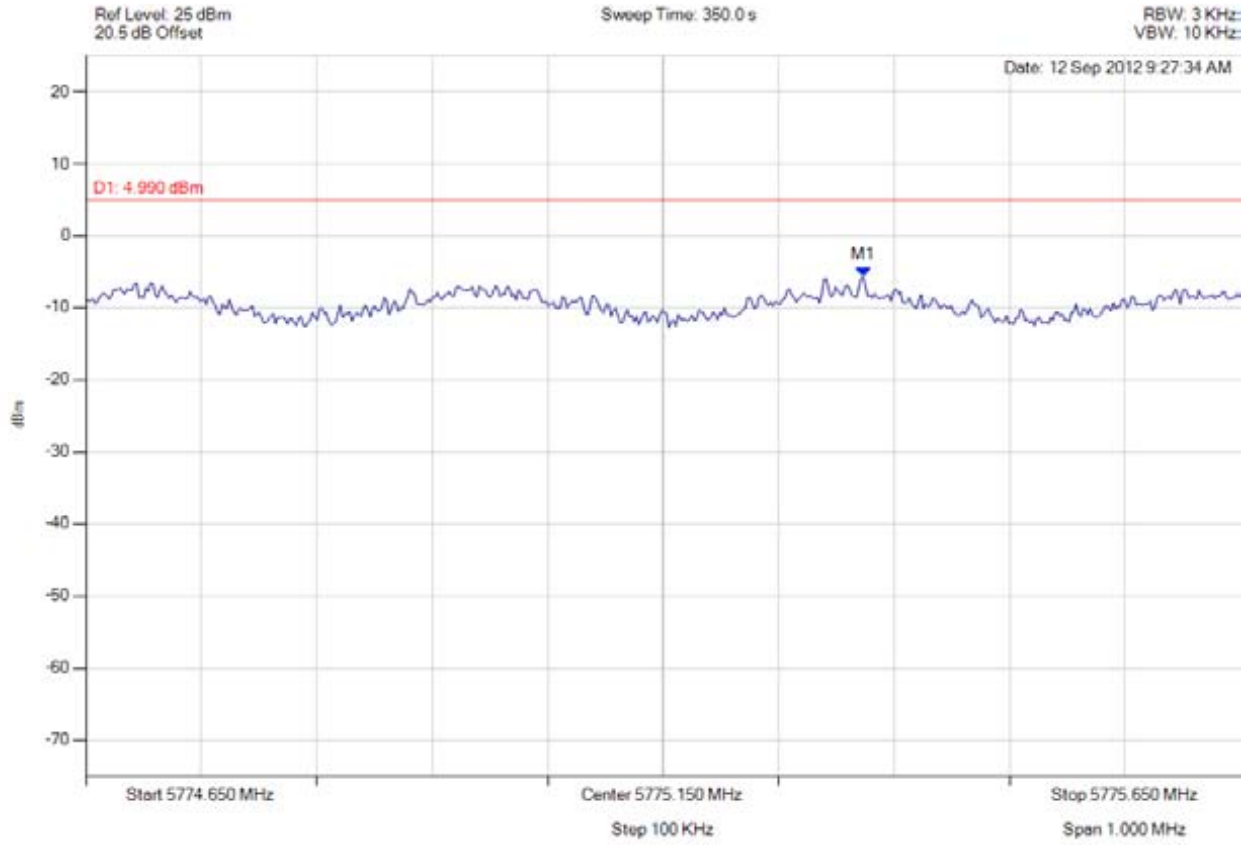


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5730.330 MHz : -6.991 dBm	Limit: ≤4.99 dBm Margin: -11.98 dB

Back to the Matrix

power density

Variant: 20 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

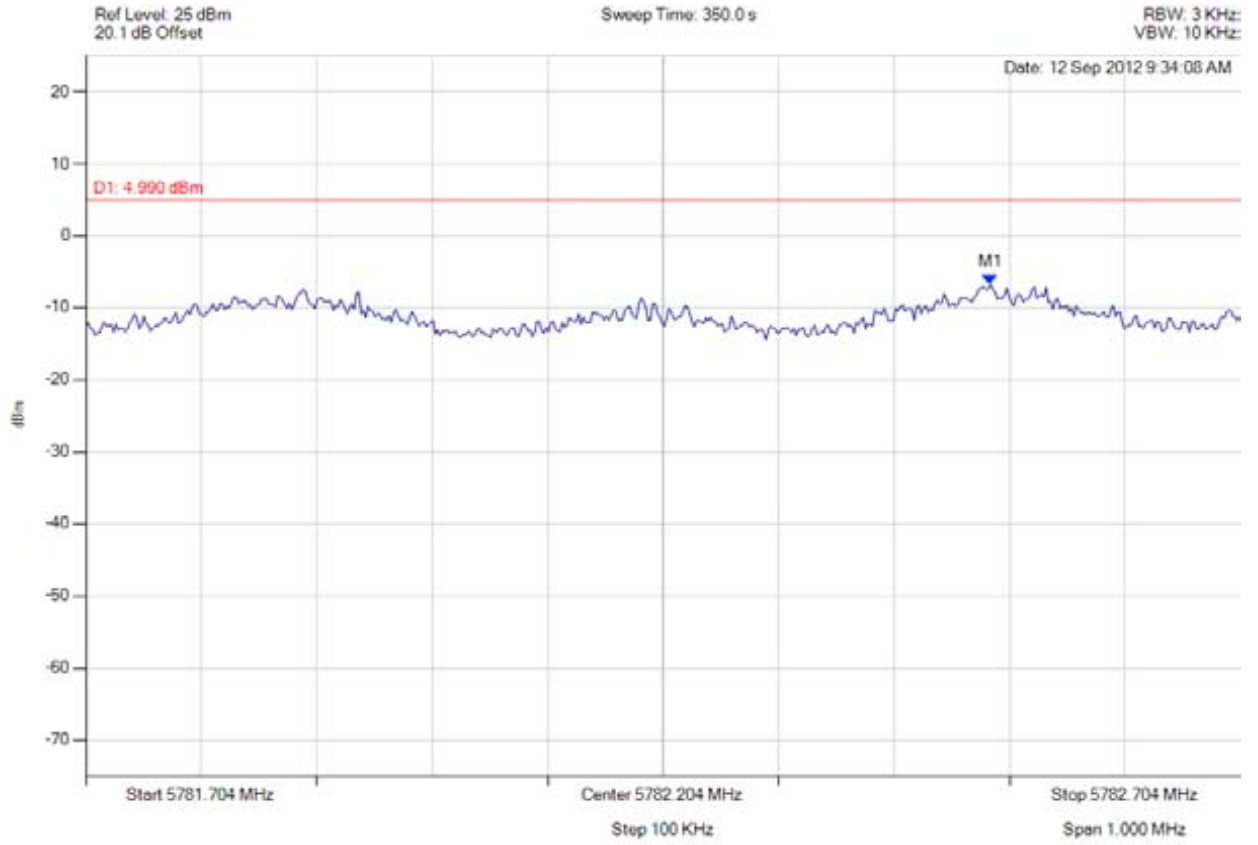


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5775.324 MHz : -5.748 dBm	Limit: ≤4.99 dBm Margin: -10.74 dB

Back to the Matrix

power density

Variant: 20 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

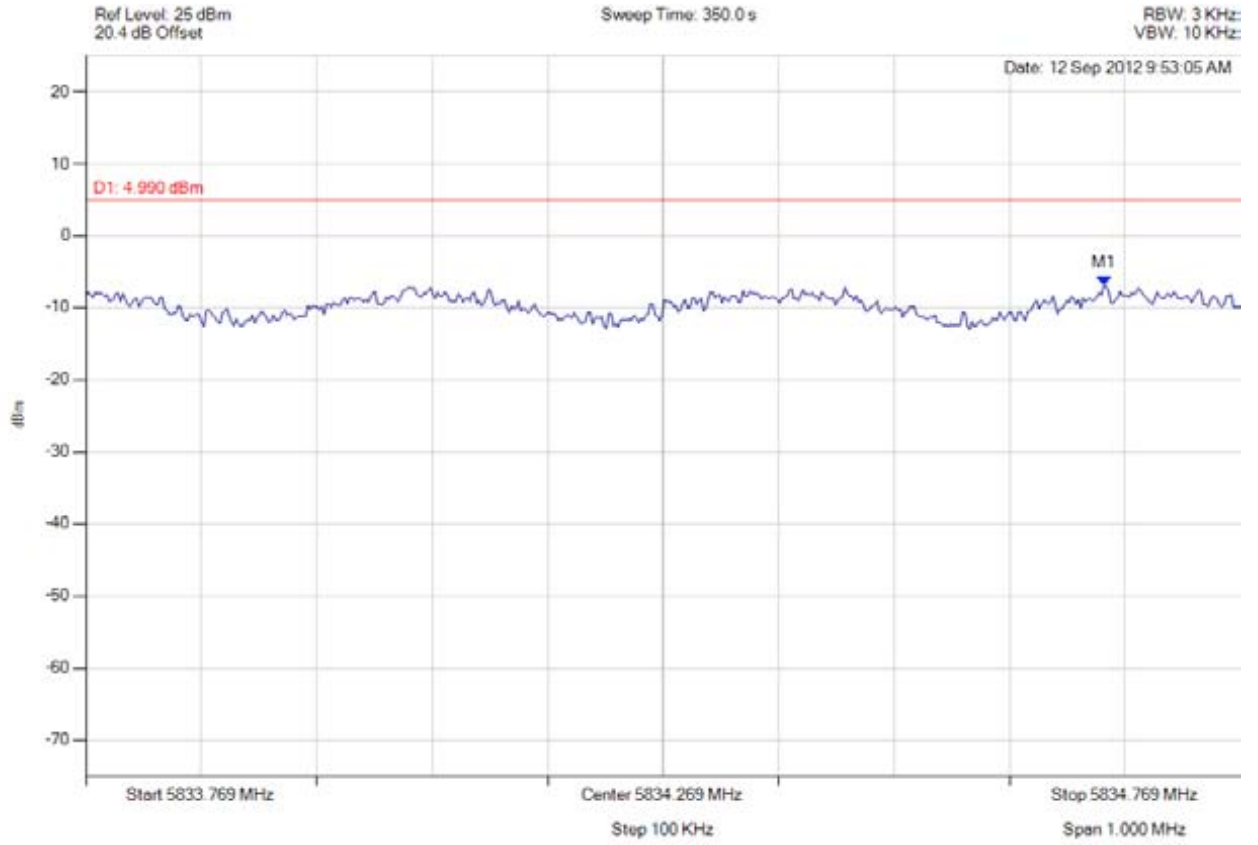


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5782.488 MHz : -6.684 dBm	Limit: ≤4.99 dBm Margin: -11.67 dB

Back to the Matrix

power density

Variant: 20 MHz, Channel: 5840.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

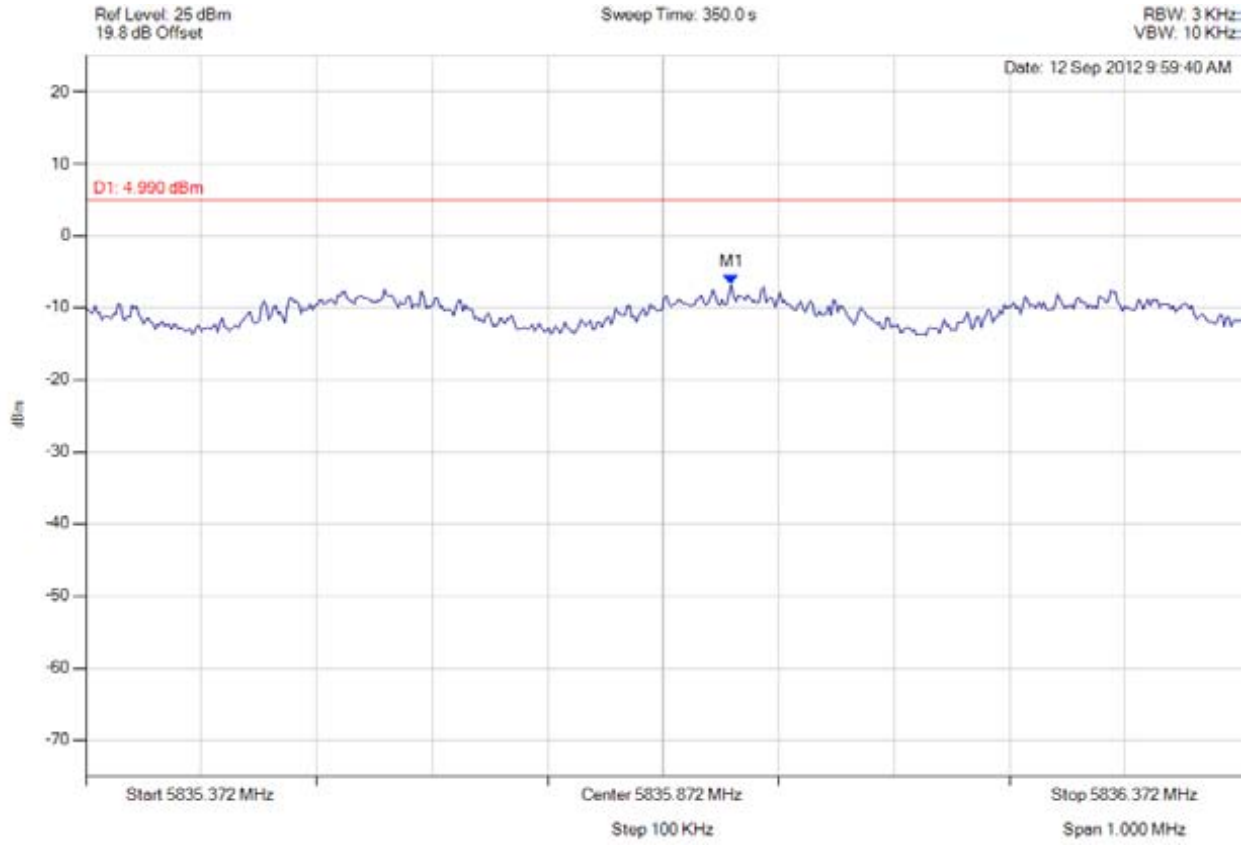


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5834.650 MHz : -6.822 dBm	Limit: ≤4.99 dBm Margin: -11.81 dB

Back to the Matrix

power density

Variant: 20 MHz, Channel: 5840.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

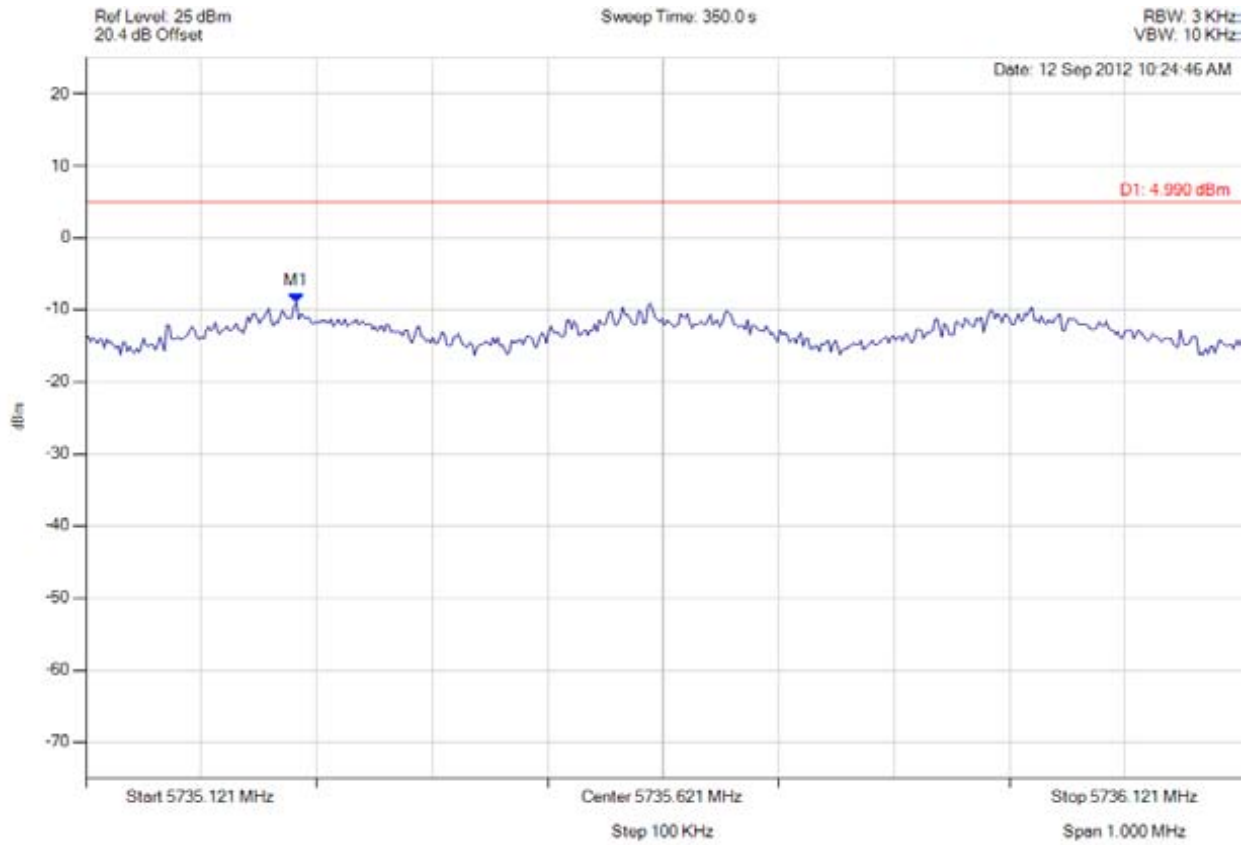


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5835.931 MHz : -6.769 dBm	Limit: ≤4.99 dBm Margin: -11.76 dB

Back to the Matrix

power density

Variant: 40 MHz, Channel: 5745.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

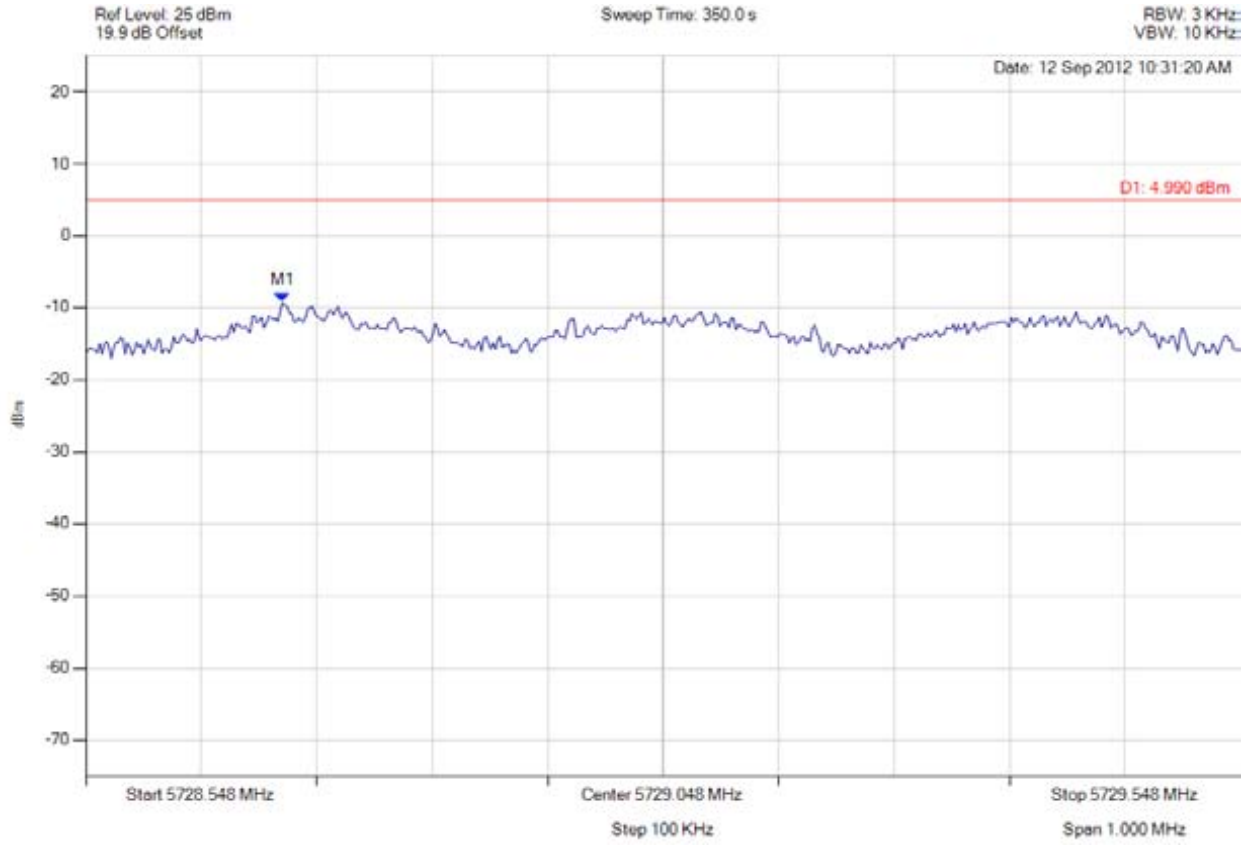


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5735.304 MHz : -8.972 dBm	Limit: ≤4.99 dBm Margin: -13.96 dB

Back to the Matrix

power density

Variant: 40 MHz, Channel: 5745.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

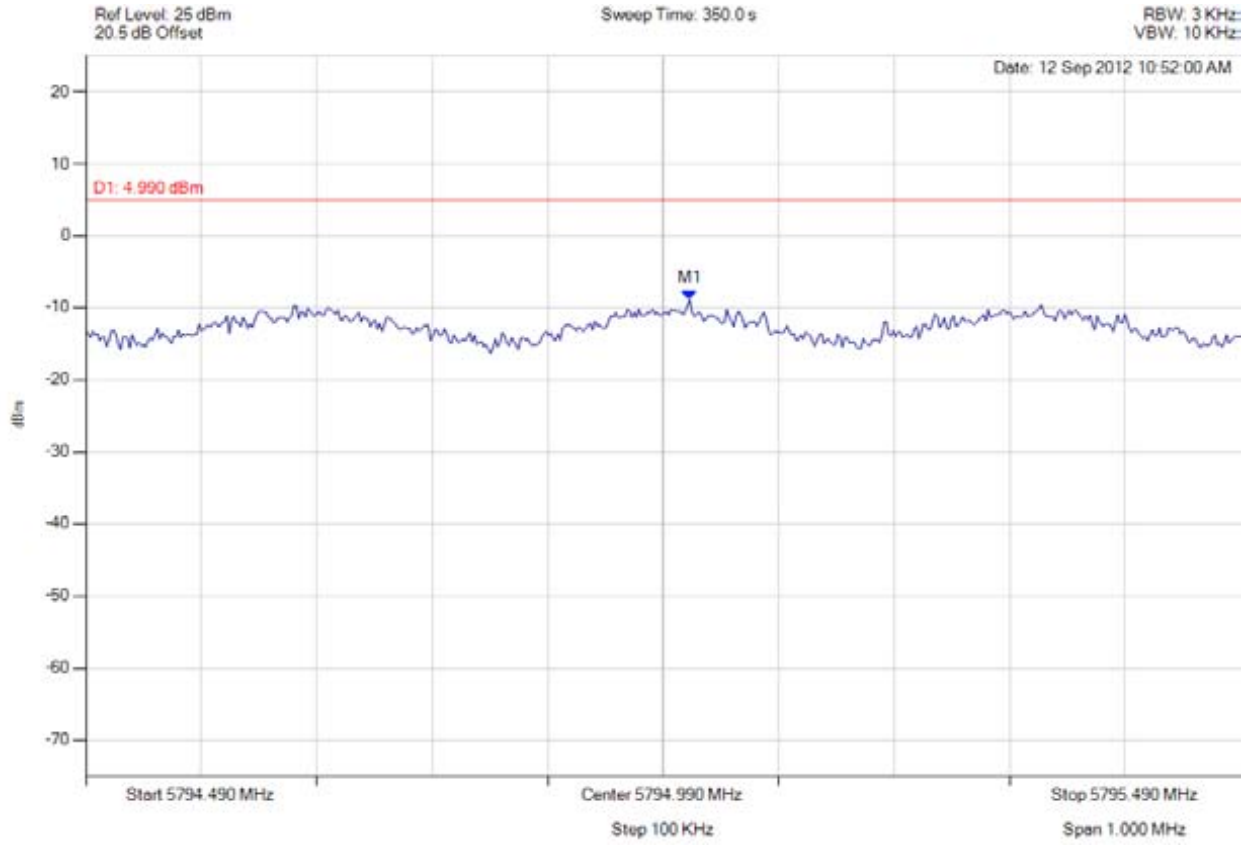


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5728.718 MHz : -9.273 dBm	Limit: ≤4.99 dBm Margin: -14.26 dB

Back to the Matrix

power density

Variant: 40 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

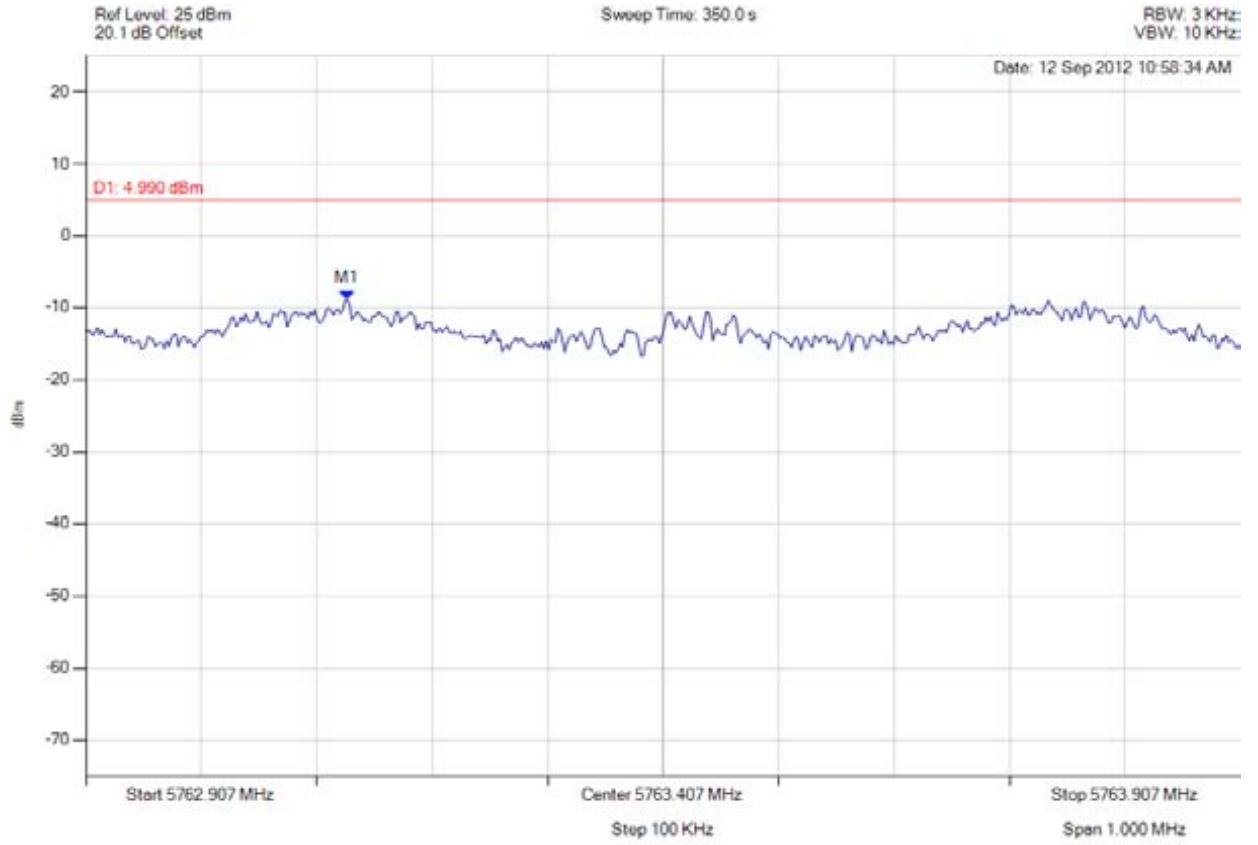


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5795.013 MHz : -8.927 dBm	Limit: ≤4.99 dBm Margin: -13.92 dB

Back to the Matrix

power density

Variant: 40 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

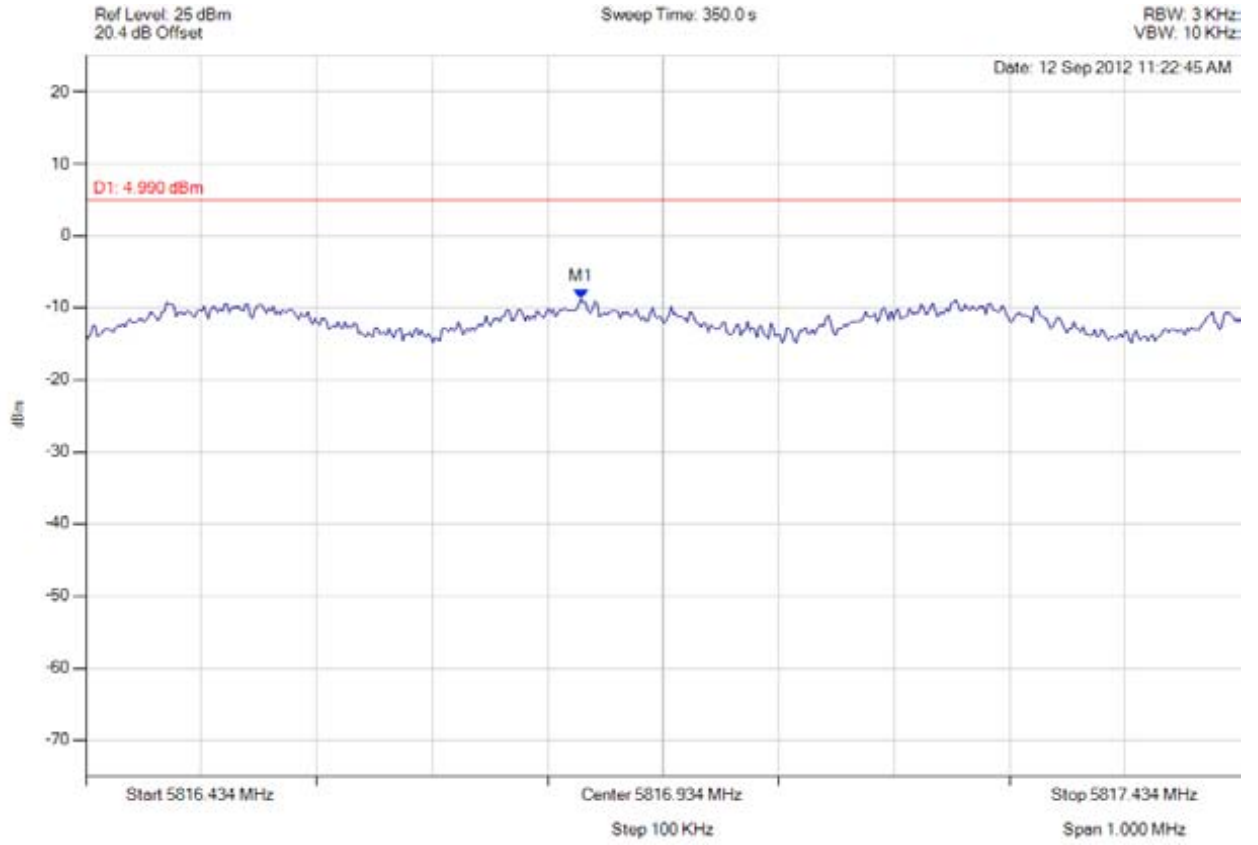


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5763.133 MHz : -8.878 dBm	Limit: ≤4.99 dBm Margin: -13.87 dB

Back to the Matrix

power density

Variant: 40 MHz, Channel: 5830.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

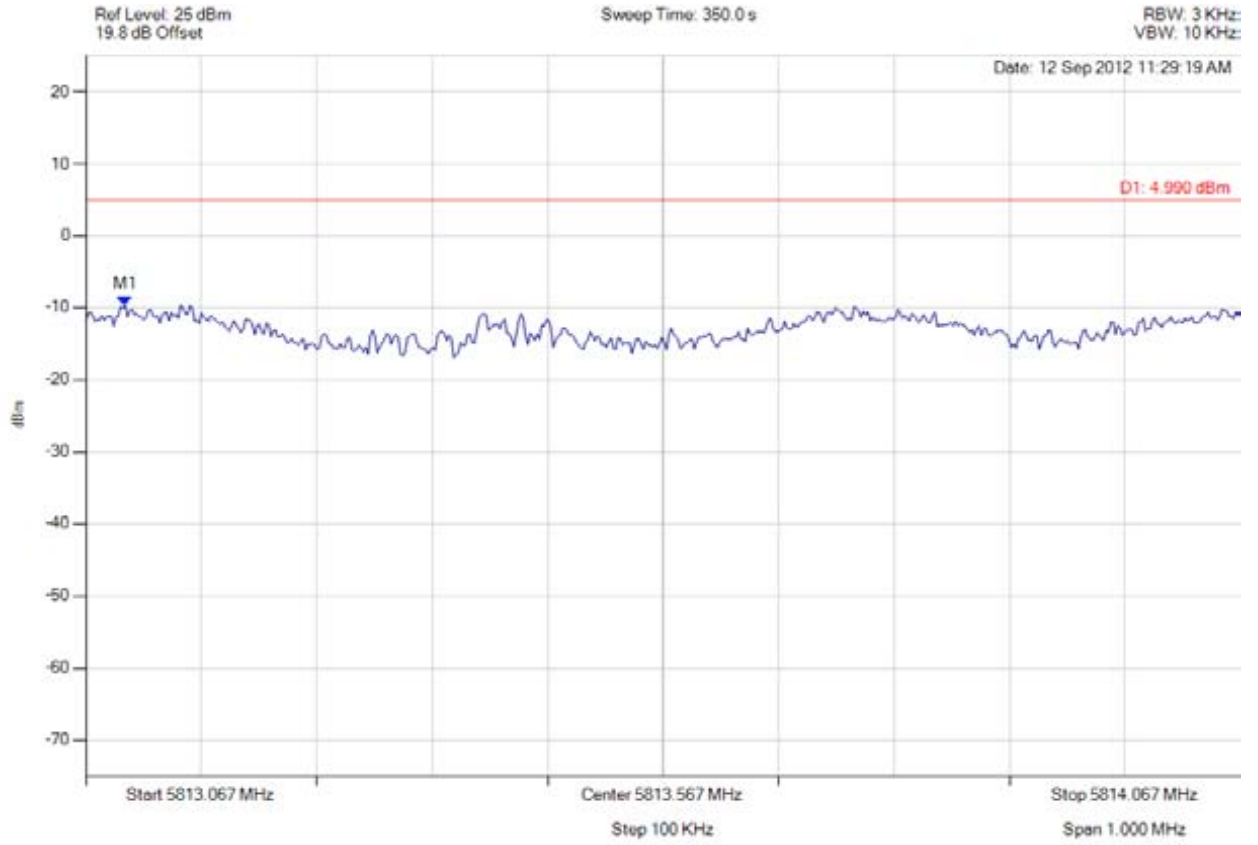


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5816.863 MHz : -8.738 dBm	Limit: ≤4.99 dBm Margin: -13.73 dB

Back to the Matrix

power density

Variant: 40 MHz, Channel: 5830.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V



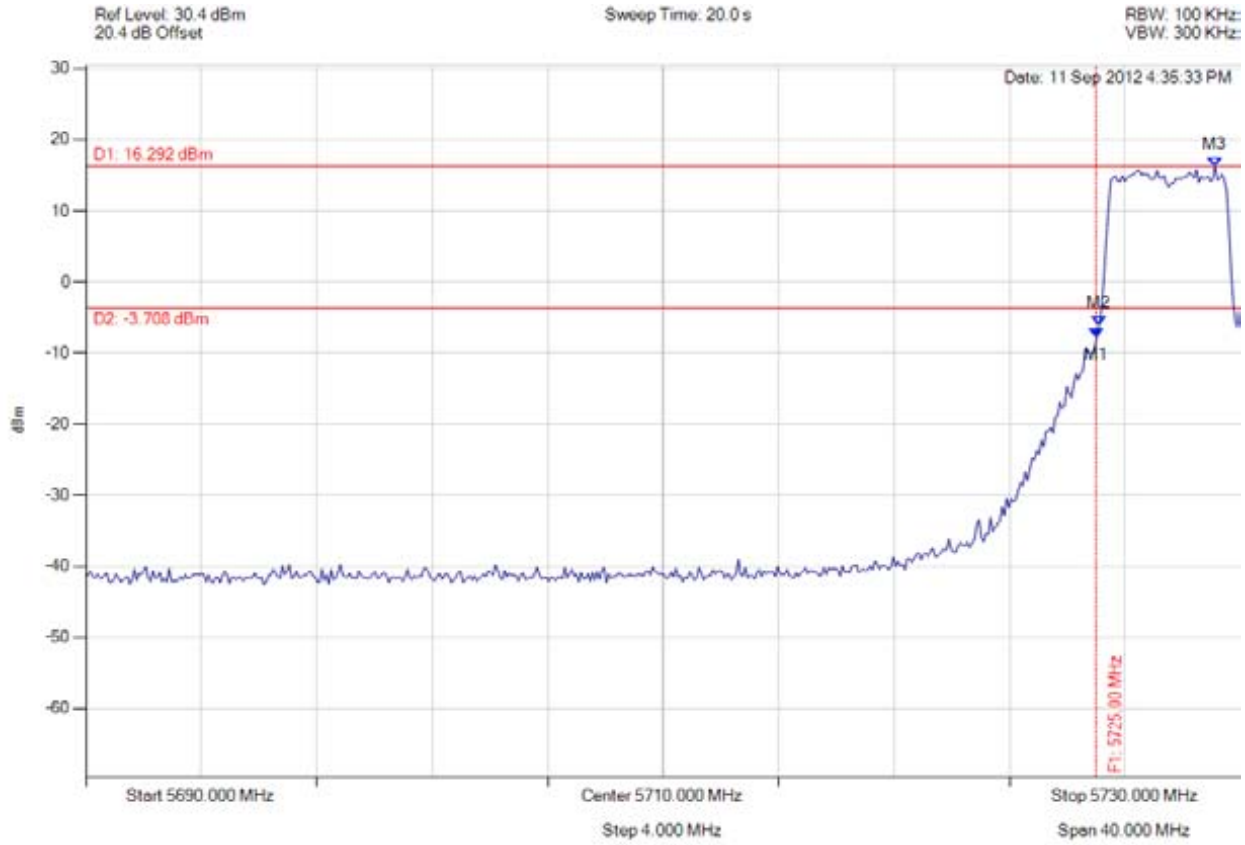
Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5813.101 MHz : -9.649 dBm	Limit: ≤4.99 dBm Margin: -14.64 dB

Back to the Matrix

A.1.4. Conducted Spurious Emissions

band-edge

Variant: 5 MHz, Channel: 5727.50 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

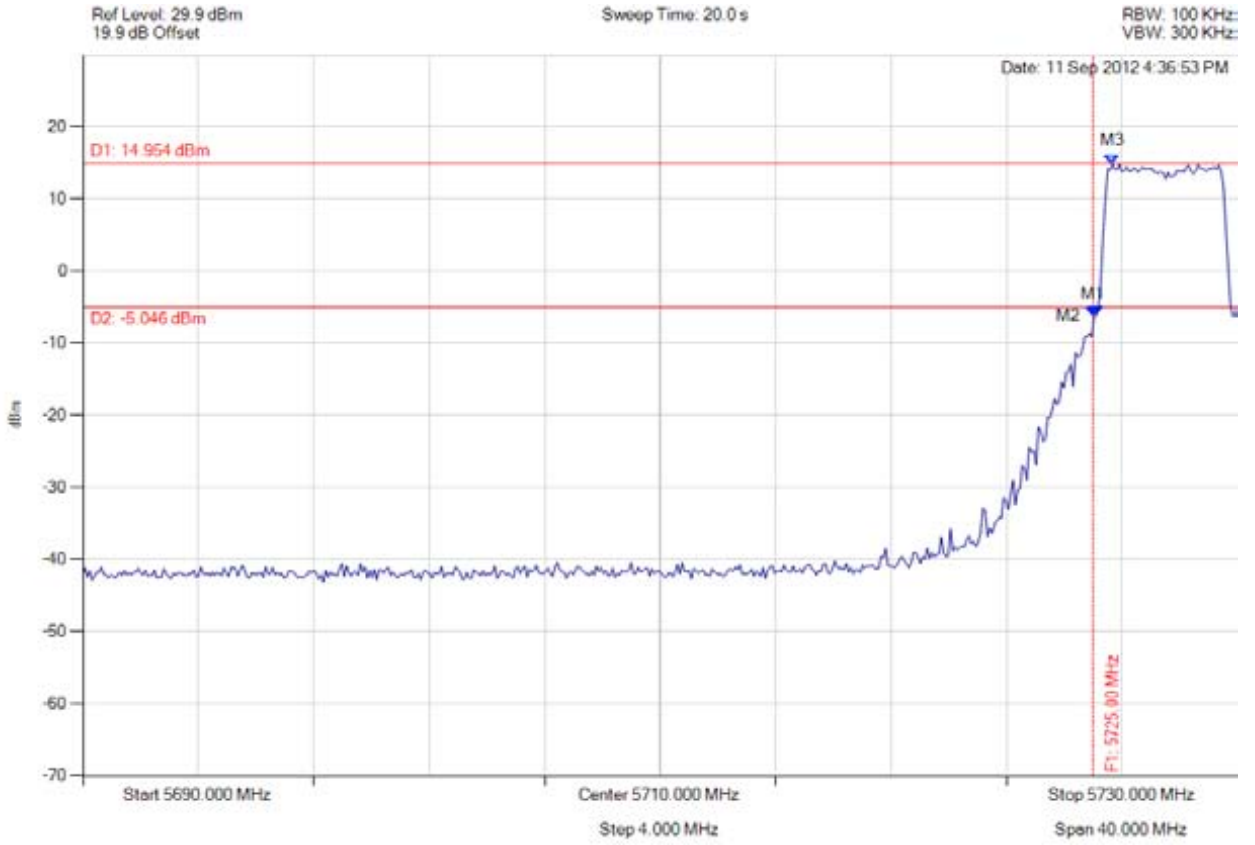


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5725.000 MHz : -7.696 dBm M2 : 5725.110 MHz : -6.079 dBm M3 : 5729.118 MHz : 16.292 dBm	Limit: -3.71 dBm Margin: -3.99 dB

Back to the Matrix

band-edge

Variant: 5 MHz, Channel: 5727.50 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

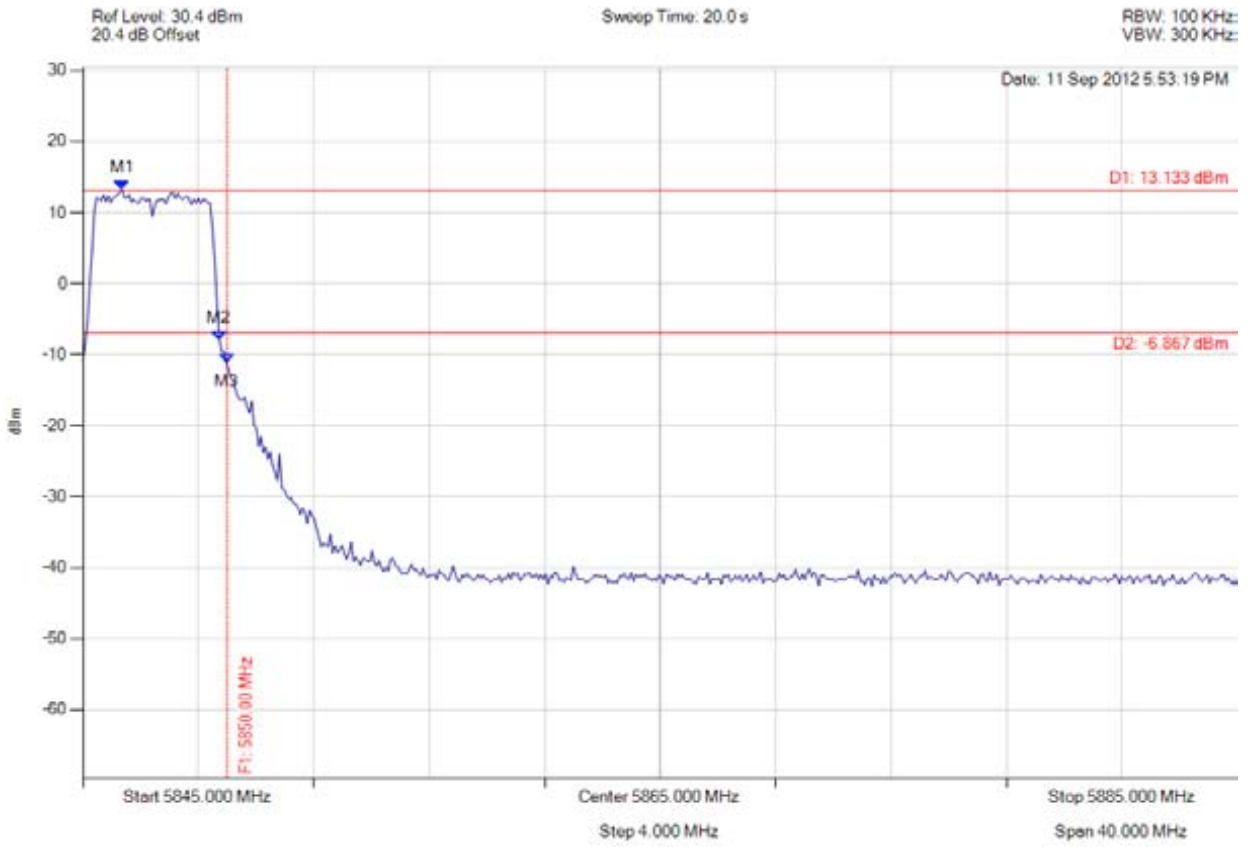


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5725.000 MHz : -6.319 dBm M2 : 5725.110 MHz : -6.136 dBm M3 : 5725.671 MHz : 14.954 dBm	Limit: -5.05 dBm Margin: -1.27 dB

Back to the Matrix

band-edge

Variant: 5 MHz, Channel: 5847.50 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

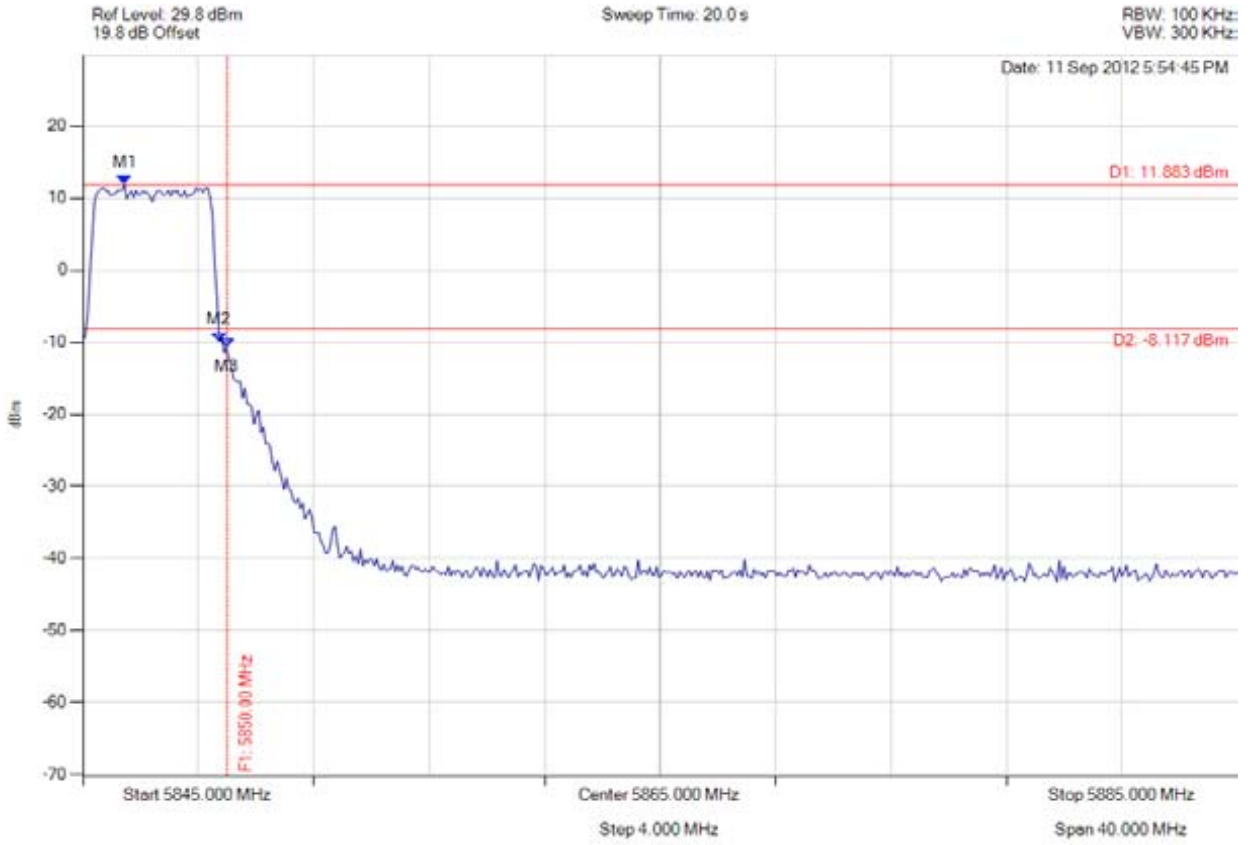


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5846.363 MHz : 13.133 dBm M2 : 5849.729 MHz : -7.977 dBm M3 : 5850.000 MHz : -11.225 dBm	Limit: -6.87 dBm Margin: -4.35 dB

Back to the Matrix

band-edge

Variant: 5 MHz, Channel: 5847.50 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

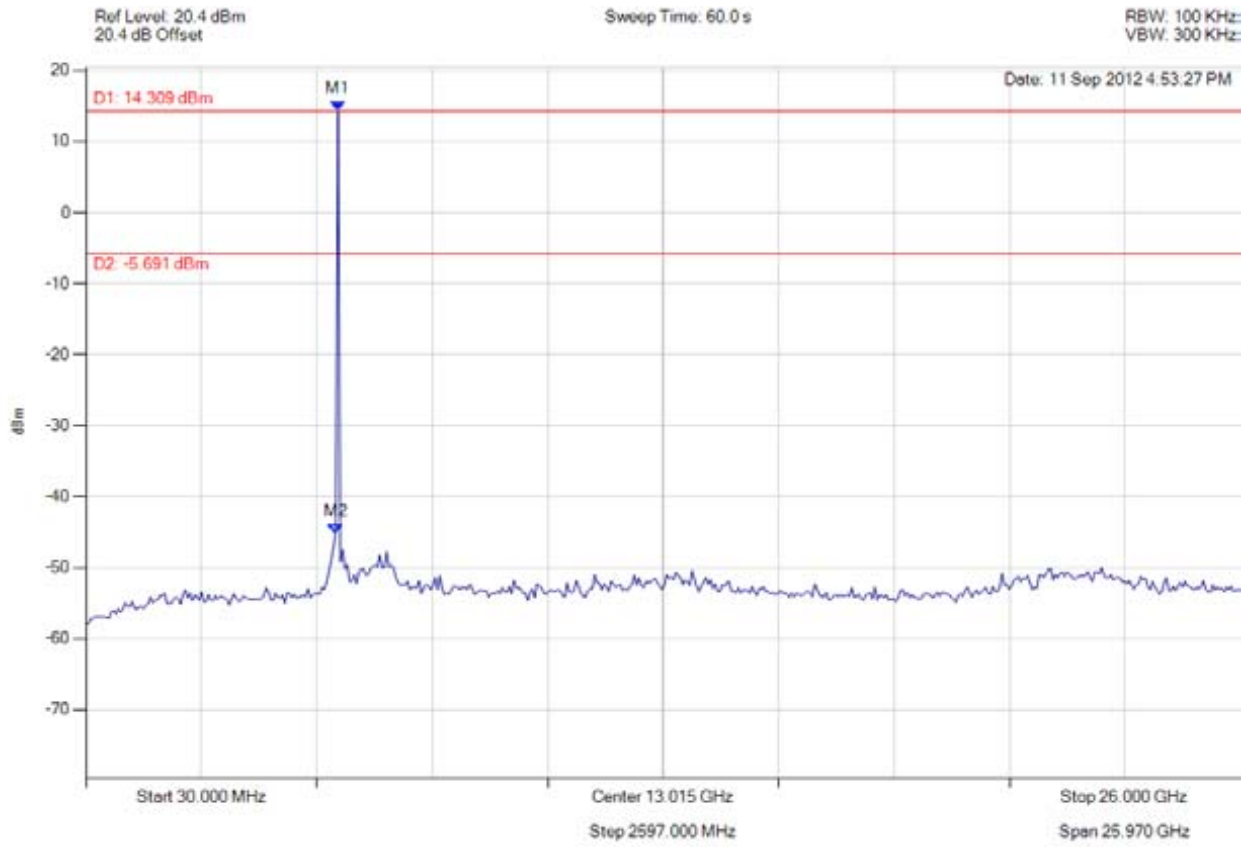


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5846.443 MHz : 11.883 dBm M2 : 5849.729 MHz : -9.882 dBm M3 : 5850.000 MHz : -10.733 dBm	Limit: -8.12 dBm Margin: -2.61 dB

Back to the Matrix

con tx spurious emissions

Variant: 5 MHz, Channel: 5727.50 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

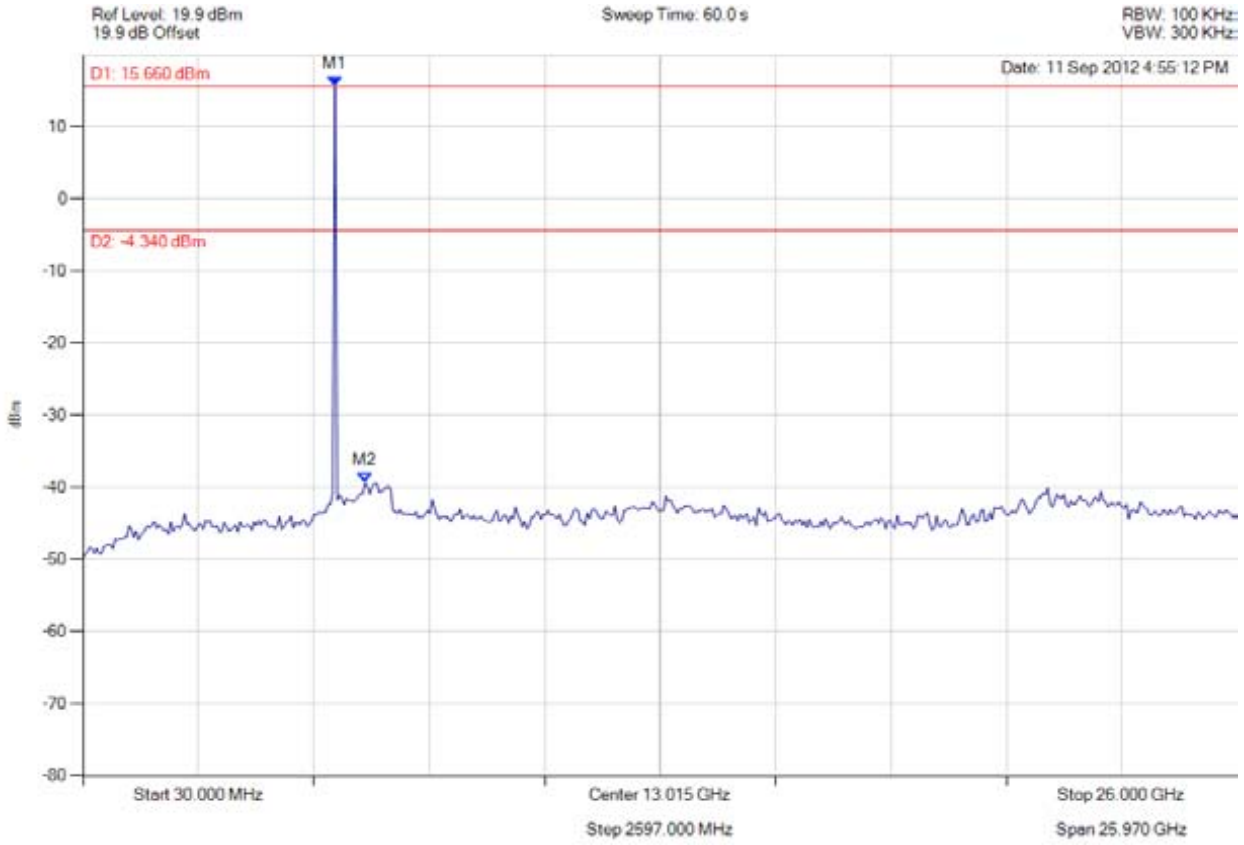


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 10 Trace Mode = VIEW	M1 : 5702.806 MHz : 14.309 dBm M2 : 5650.762 MHz : -45.129 dBm	Limit: -5.69 dBm Margin: -39.44 dB

Back to the Matrix

con tx spurious emissions

Variant: 5 MHz, Channel: 5727.50 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

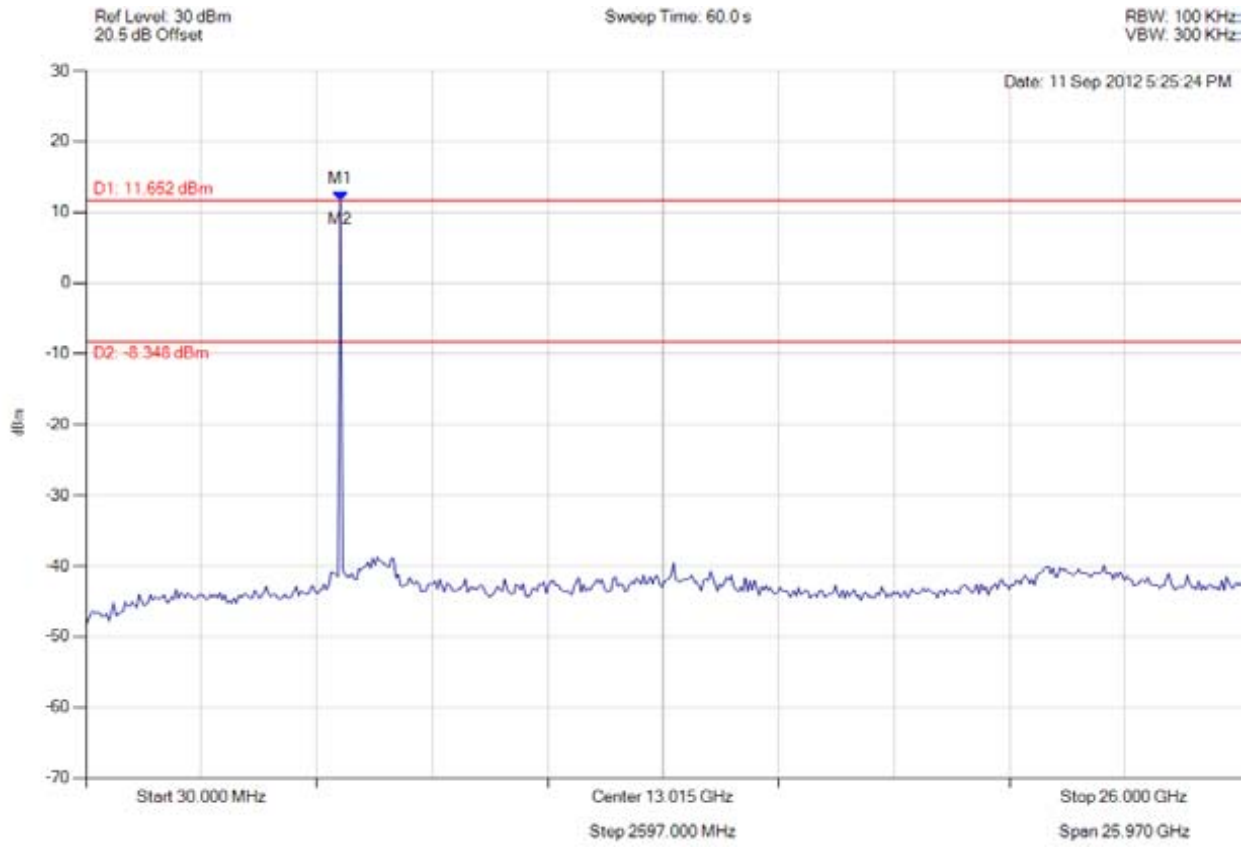


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5702.806 MHz : 15.660 dBm M2 : 6379.379 MHz : -39.329 dBm	Limit: -4.34 dBm Margin: -34.99 dB

Back to the Matrix

con tx spurious emissions

Variant: 5 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

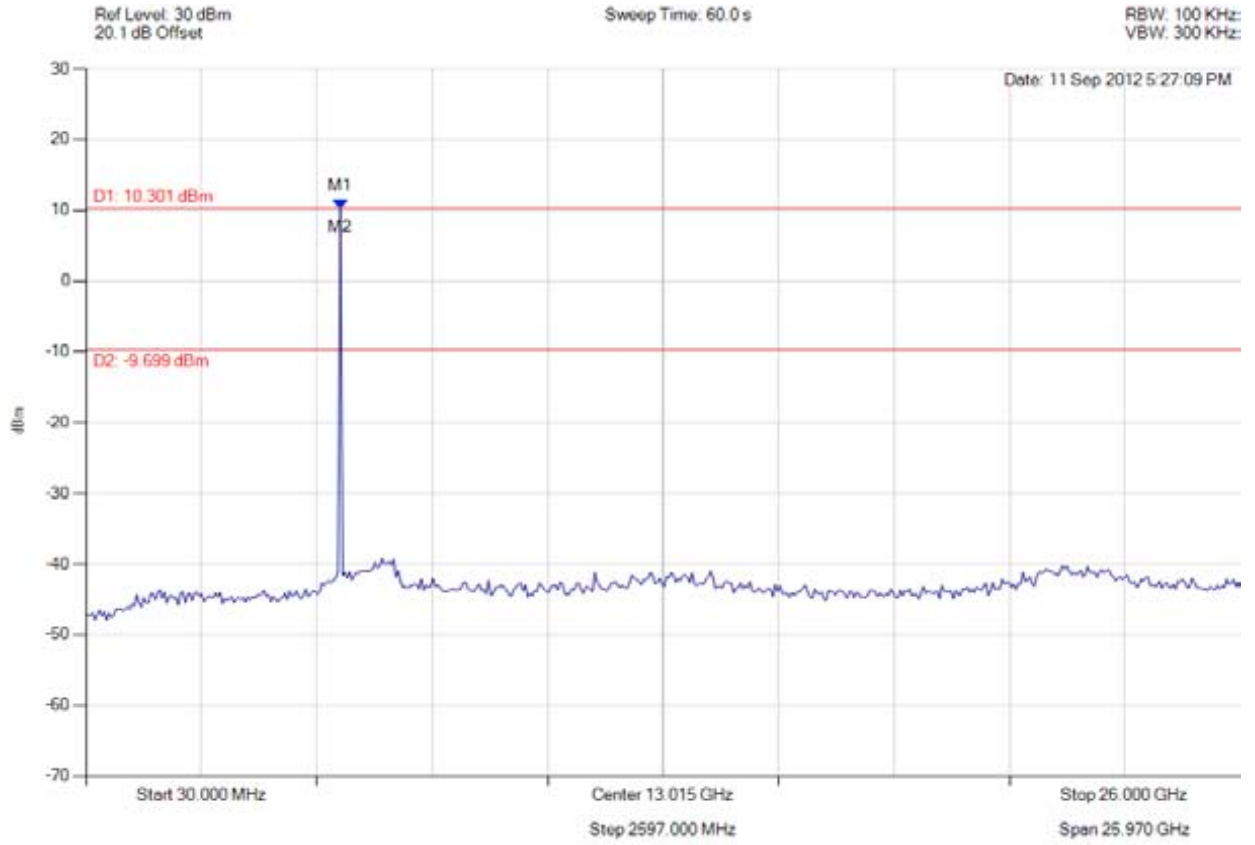


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5754.850 MHz : 11.652 dBm M2 : 5754.850 MHz : 11.652 dBm	Limit: -8.35 dBm Margin: 20.00 dB

Back to the Matrix

con tx spurious emissions

Variant: 5 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

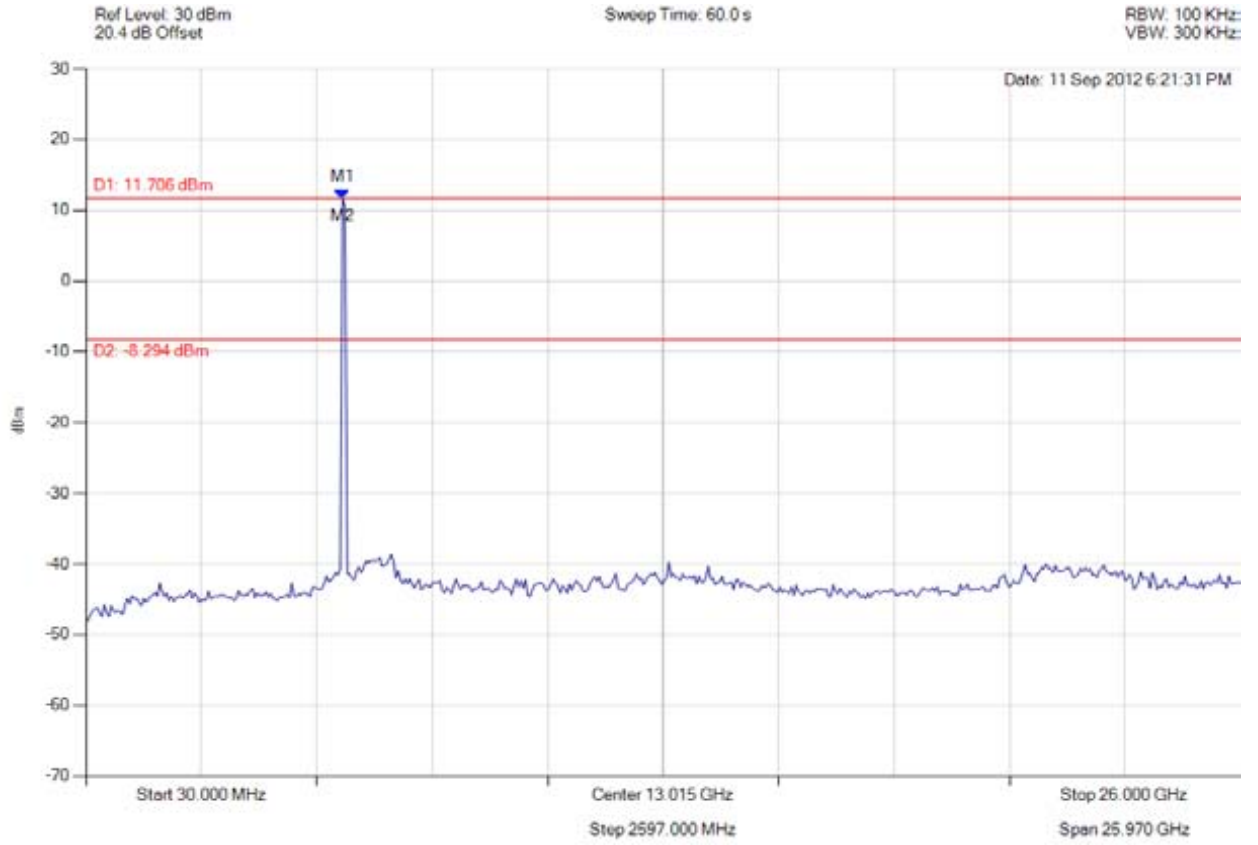


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5754.850 MHz : 10.301 dBm M2 : 5754.850 MHz : 10.301 dBm	Limit: -9.70 dBm Margin: 20.00 dB

Back to the Matrix

con tx spurious emissions

Variant: 5 MHz, Channel: 5847.50 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

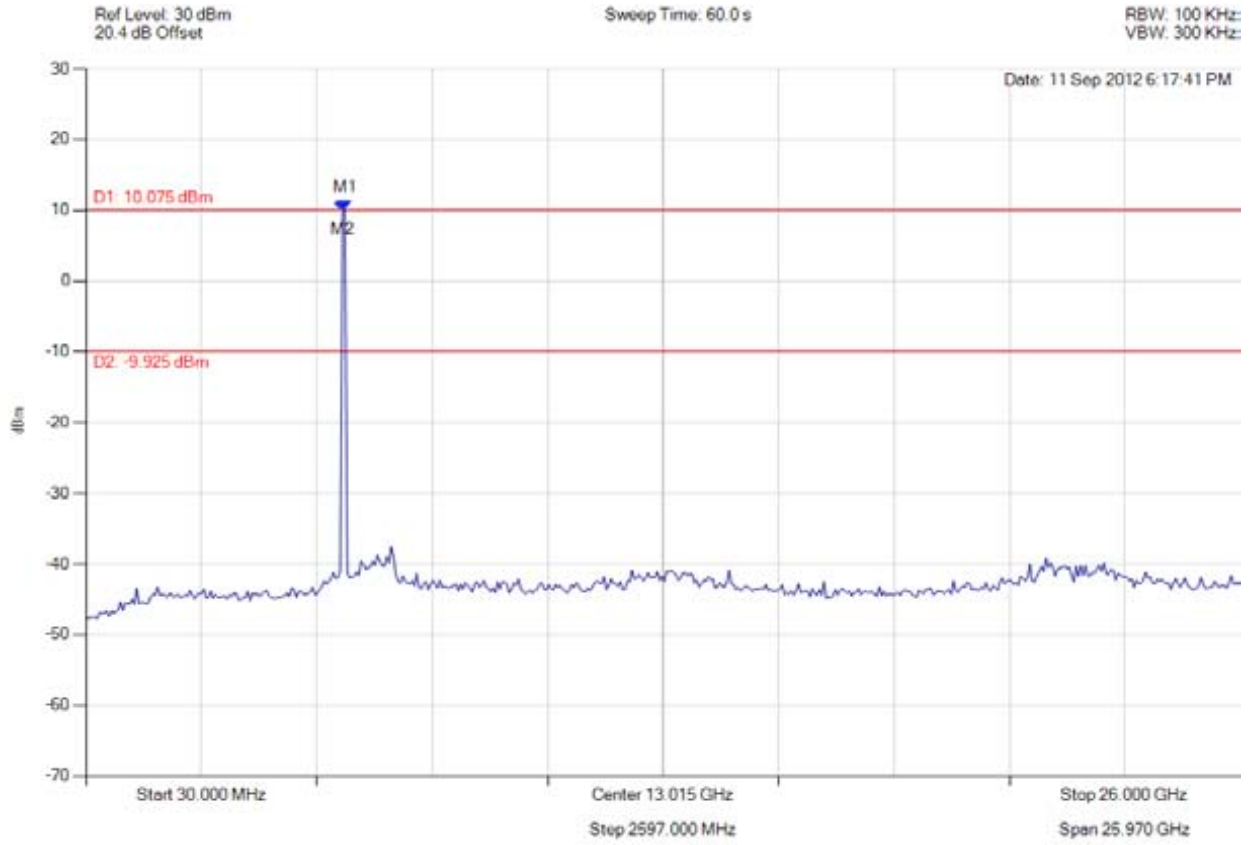


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5806.894 MHz : 11.706 dBm M2 : 5806.894 MHz : 11.706 dBm	Limit: -8.29 dBm Margin: 20.00 dB

Back to the Matrix

con tx spurious emissions

Variant: 5 MHz, Channel: 5847.50 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

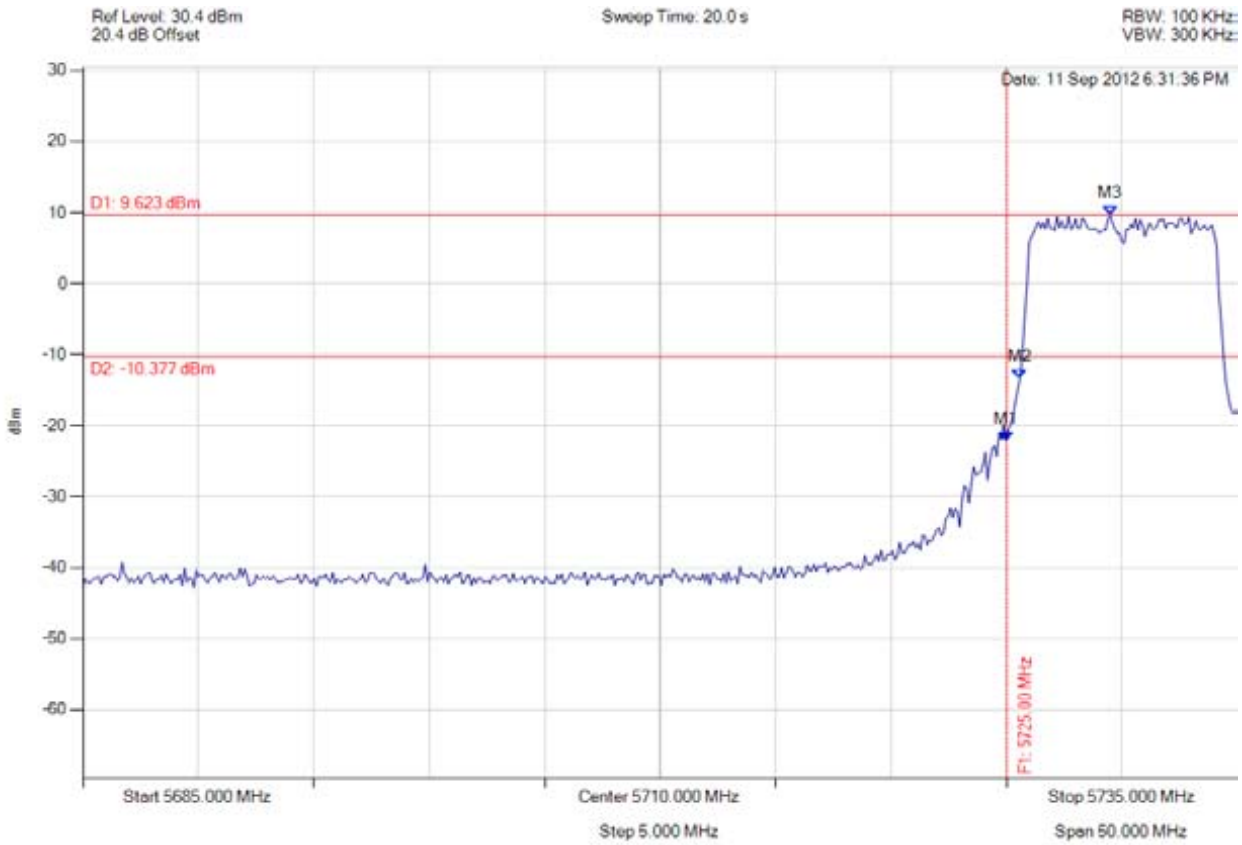


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5858.938 MHz : 10.075 dBm M2 : 5806.894 MHz : 9.931 dBm	Limit: -9.93 dBm Margin: 19.86 dB

Back to the Matrix

band-edge

Variant: 10 MHz, Channel: 5730.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

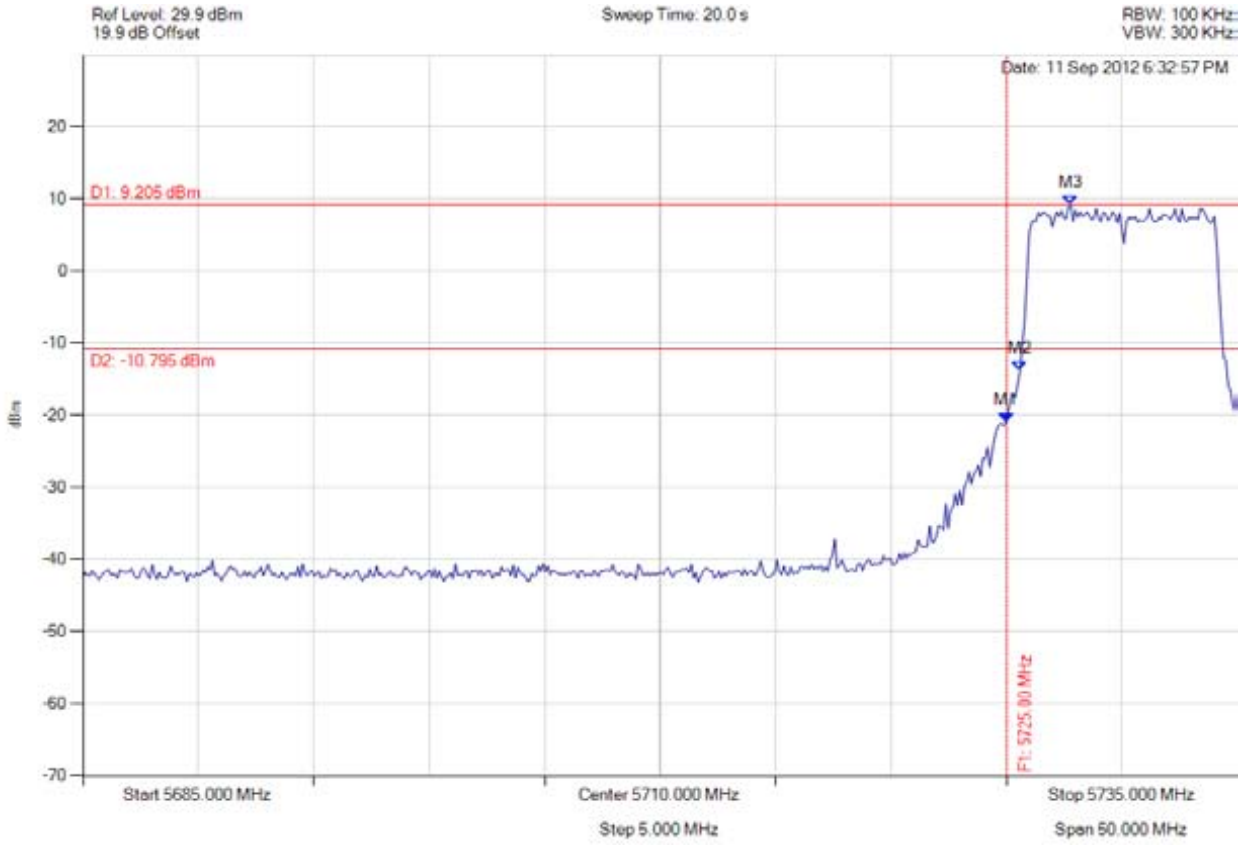


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5725.000 MHz : -22.119 dBm M2 : 5725.581 MHz : -13.356 dBm M3 : 5729.489 MHz : 9.623 dBm	Limit: -10.38 dBm Margin: -11.74 dB

Back to the Matrix

band-edge

Variant: 10 MHz, Channel: 5730.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

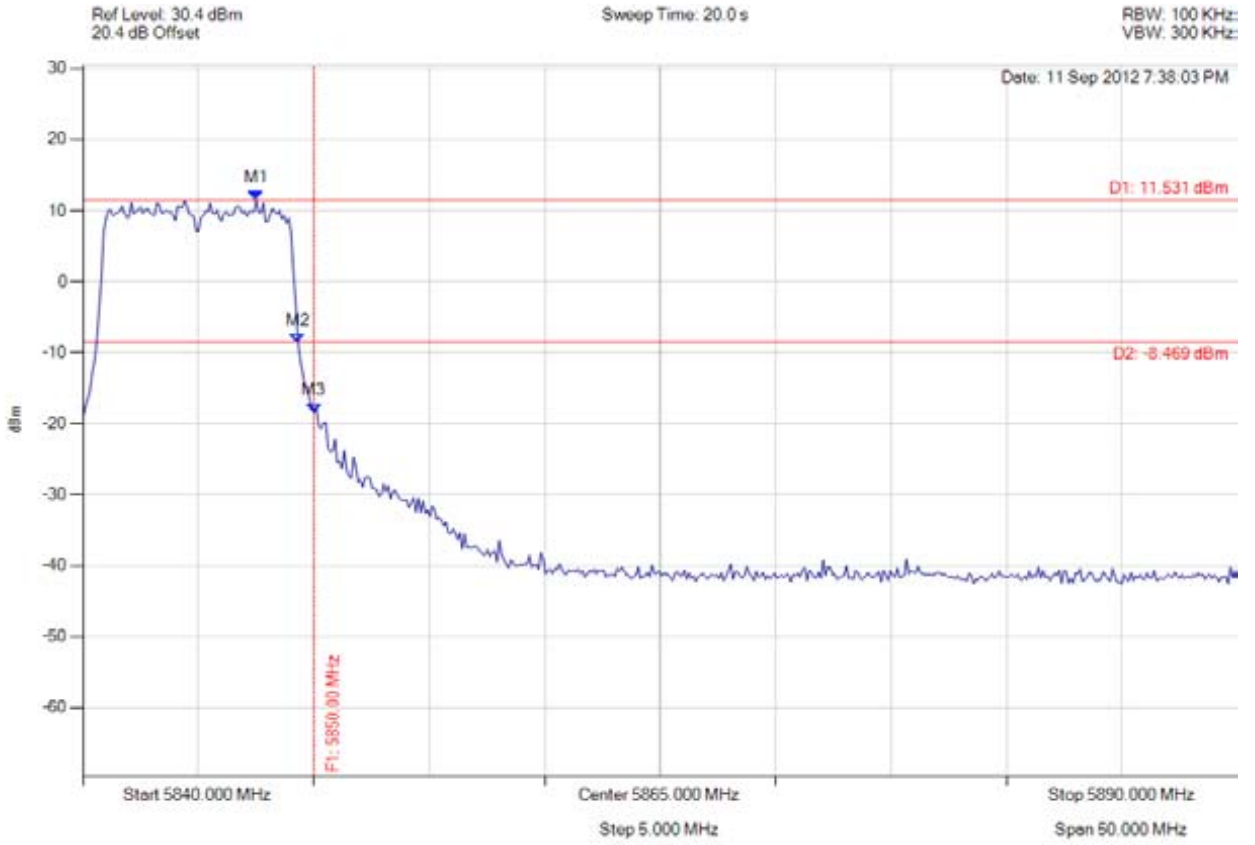


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5725.000 MHz : -21.009 dBm M2 : 5725.581 MHz : -13.874 dBm M3 : 5727.786 MHz : 9.205 dBm	Limit: -10.80 dBm Margin: -10.21 dB

Back to the Matrix

band-edge

Variant: 10 MHz, Channel: 5845.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

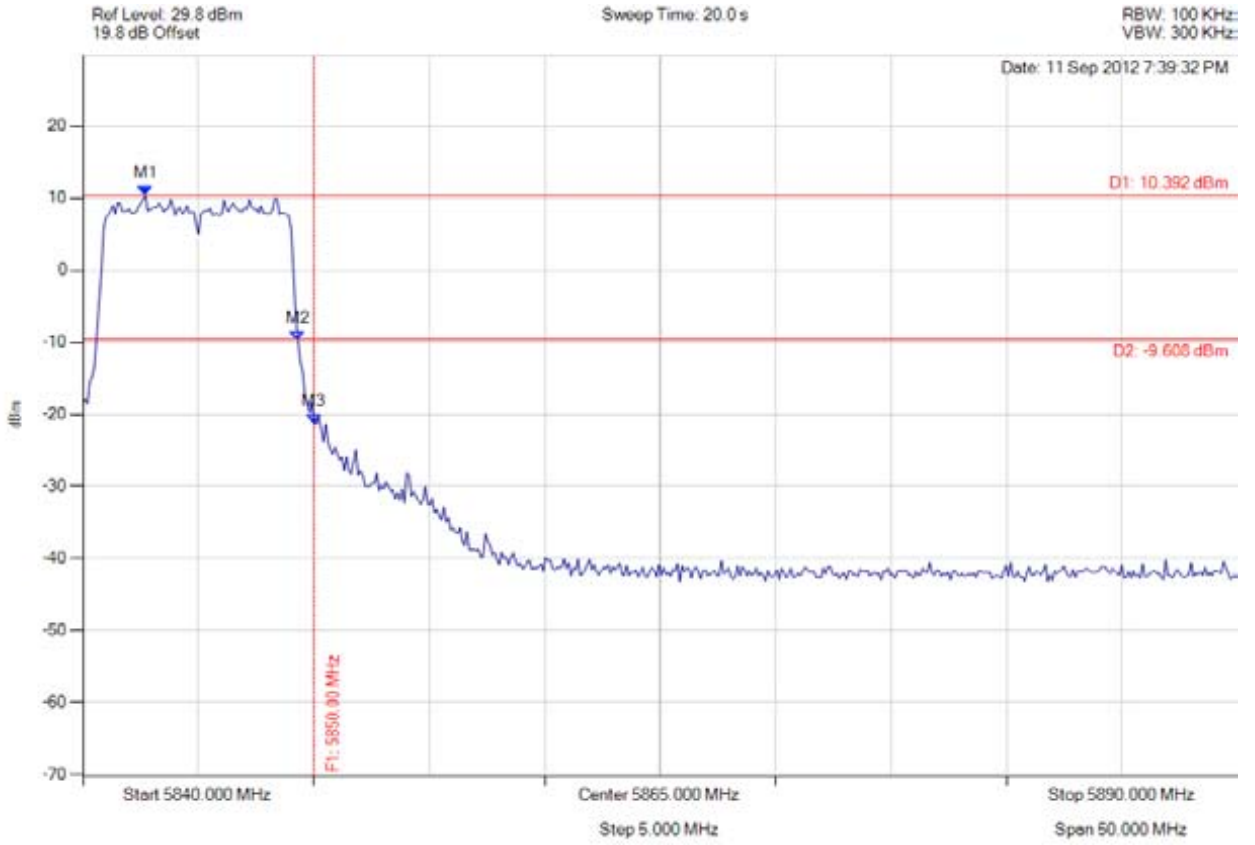


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5847.515 MHz : 11.531 dBm M2 : 5849.319 MHz : -8.552 dBm M3 : 5850.000 MHz : -18.408 dBm	Limit: -8.47 dBm Margin: -9.94 dB

Back to the Matrix

band-edge

Variant: 10 MHz, Channel: 5845.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

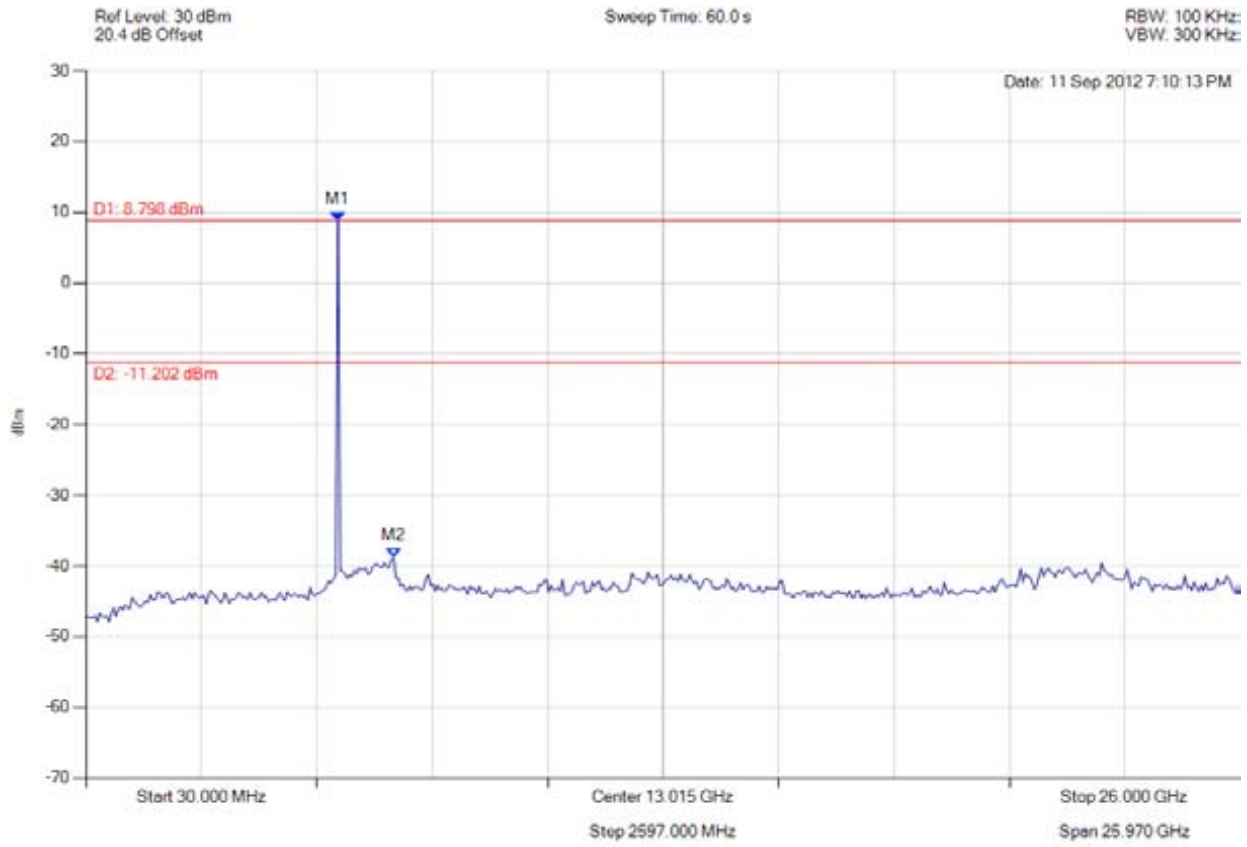


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5842.705 MHz : 10.392 dBm M2 : 5849.319 MHz : -9.781 dBm M3 : 5850.000 MHz : -21.278 dBm	Limit: -9.61 dBm Margin: -11.67 dB

Back to the Matrix

con tx spurious emissions

Variant: 10 MHz, Channel: 5730.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

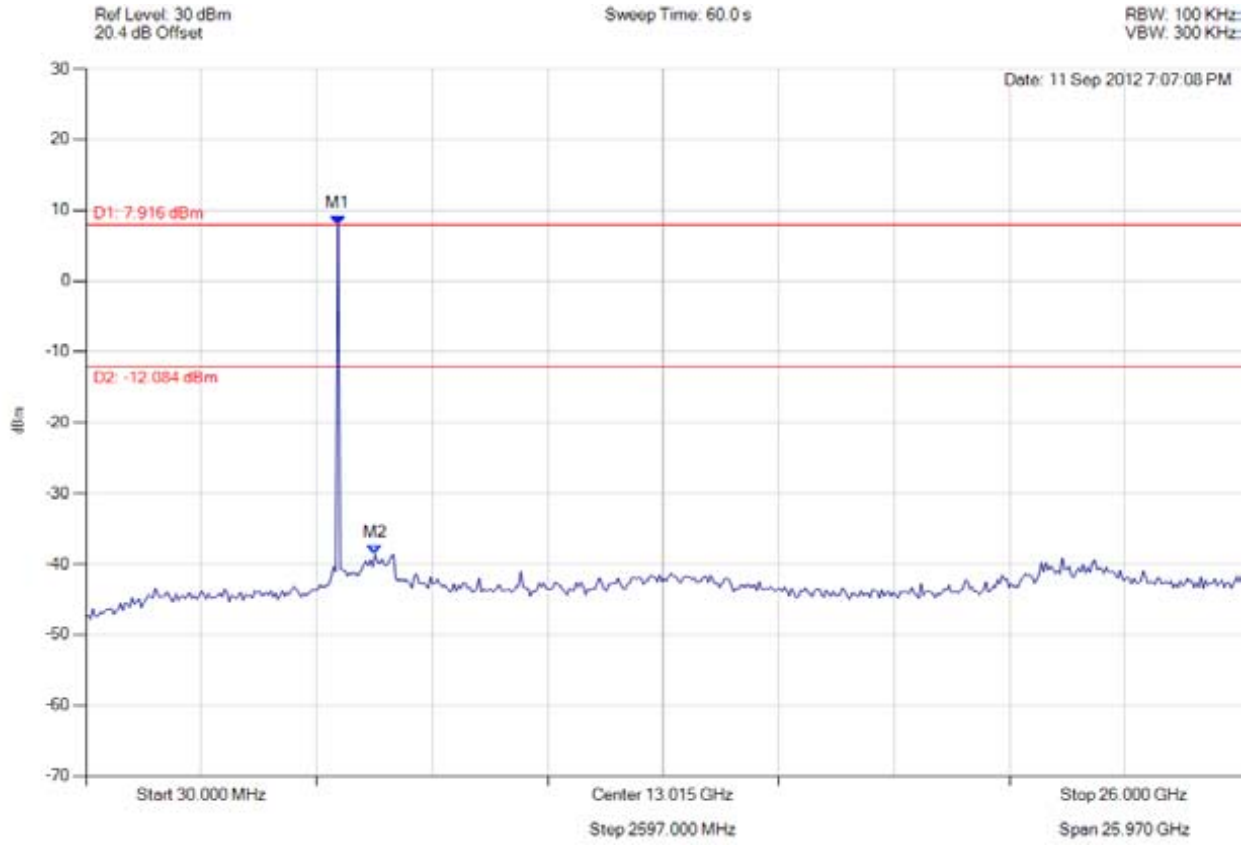


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5702.806 MHz : 8.798 dBm M2 : 6951.864 MHz : -38.798 dBm	Limit: -11.20 dBm Margin: -27.60 dB

Back to the Matrix

con tx spurious emissions

Variant: 10 MHz, Channel: 5730.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

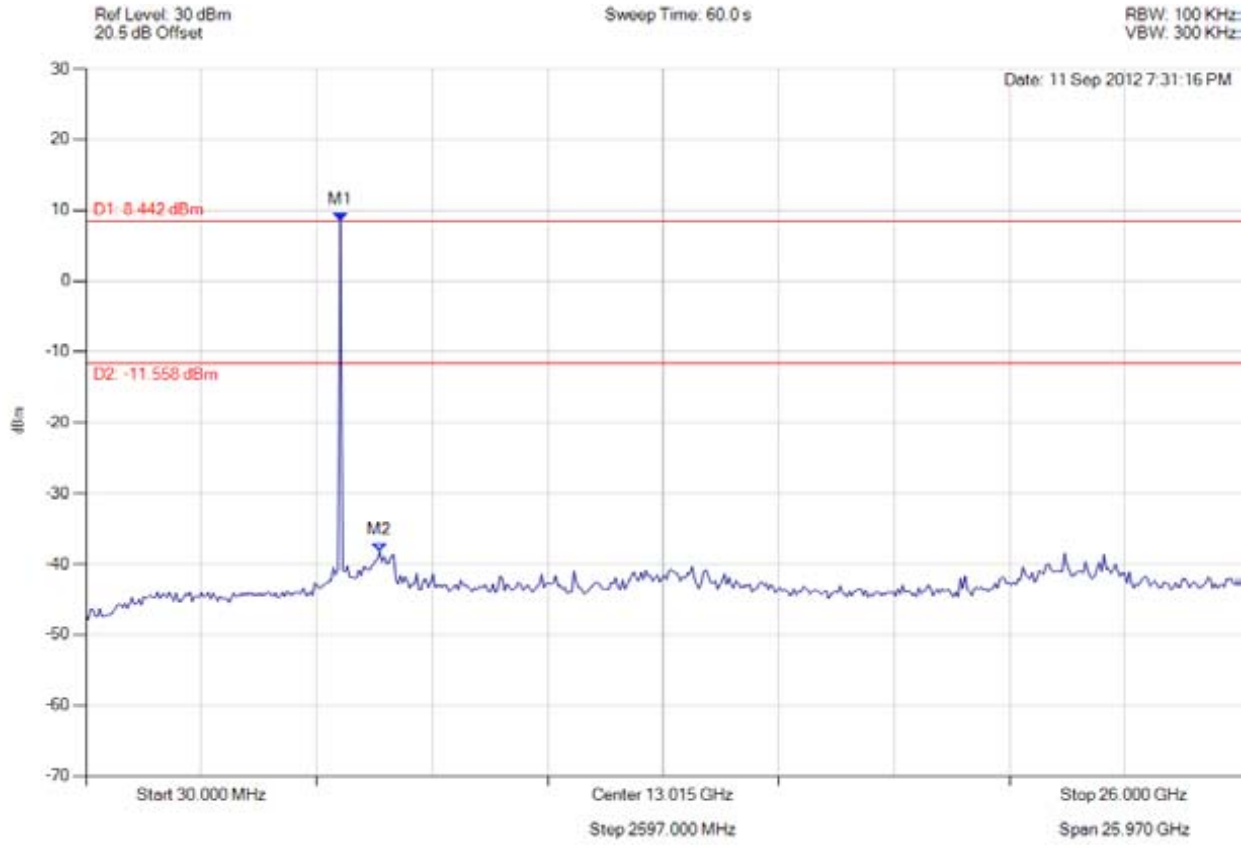


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5702.806 MHz : 7.916 dBm M2 : 6535.511 MHz : -38.722 dBm	Limit: -12.08 dBm Margin: -26.64 dB

Back to the Matrix

con tx spurious emissions

Variant: 10 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

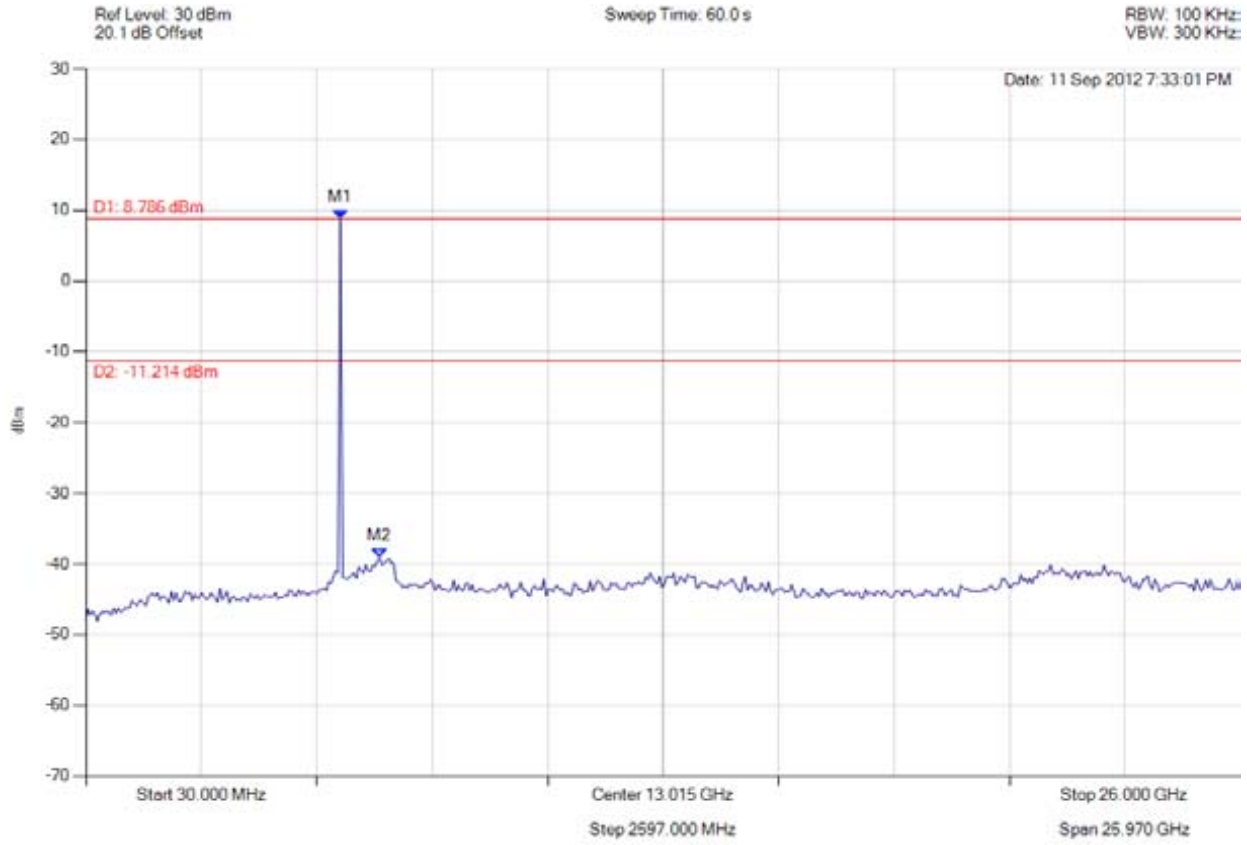


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5754.850 MHz : 8.442 dBm M2 : 6639.599 MHz : -38.322 dBm	Limit: -11.56 dBm Margin: -26.76 dB

Back to the Matrix

con tx spurious emissions

Variant: 10 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

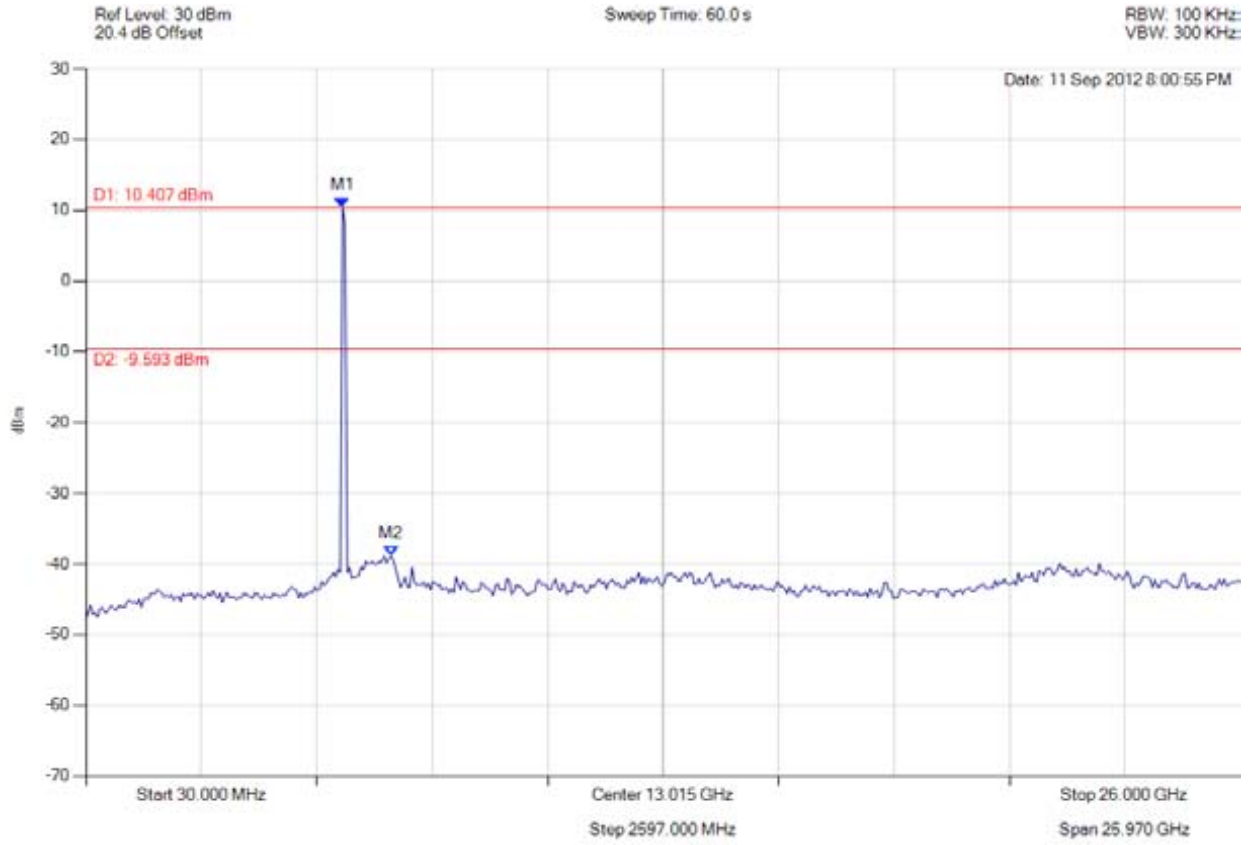


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5754.850 MHz : 8.786 dBm M2 : 6639.599 MHz : -39.219 dBm	Limit: -11.21 dBm Margin: -28.01 dB

Back to the Matrix

con tx spurious emissions

Variant: 10 MHz, Channel: 5845.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

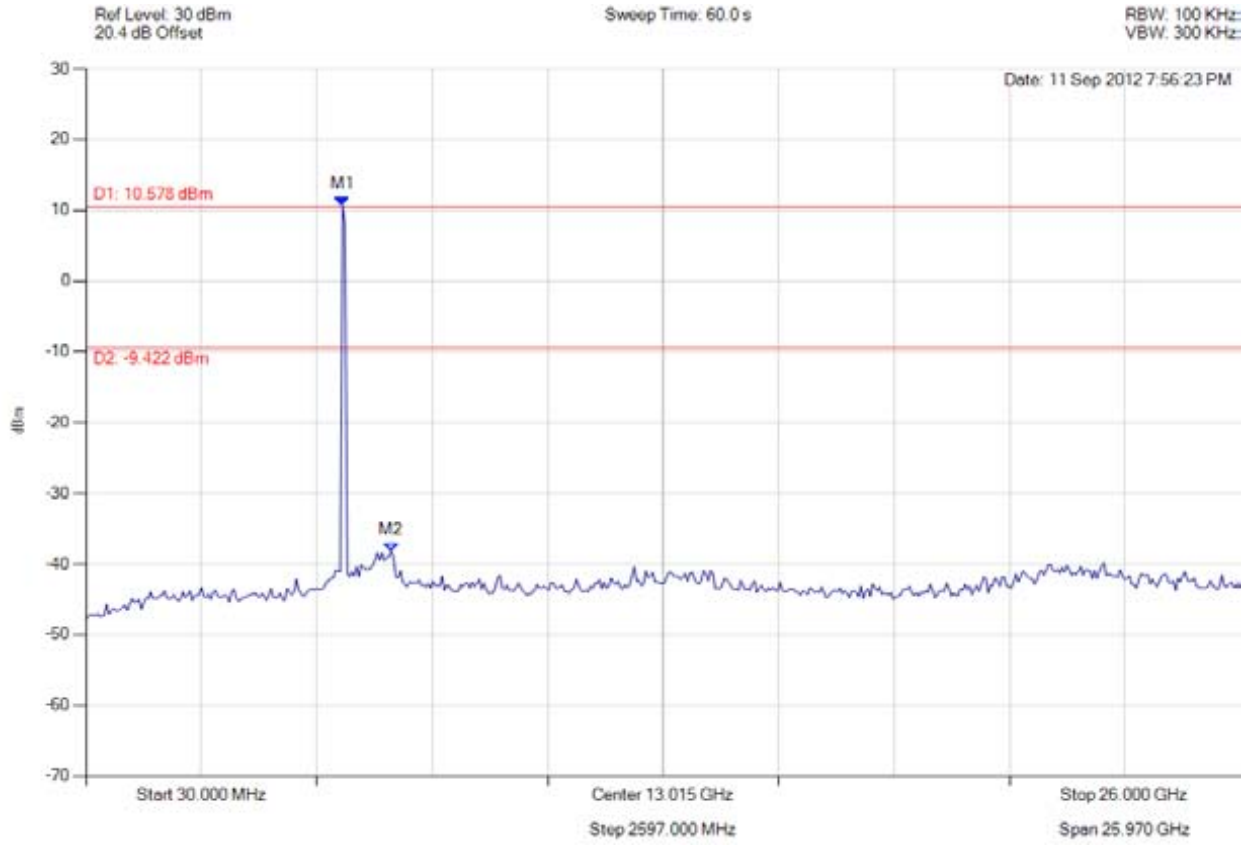


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5806.894 MHz : 10.407 dBm M2 : 6899.820 MHz : -38.826 dBm	Limit: -9.59 dBm Margin: -29.24 dB

Back to the Matrix

con tx spurious emissions

Variant: 10 MHz, Channel: 5845.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

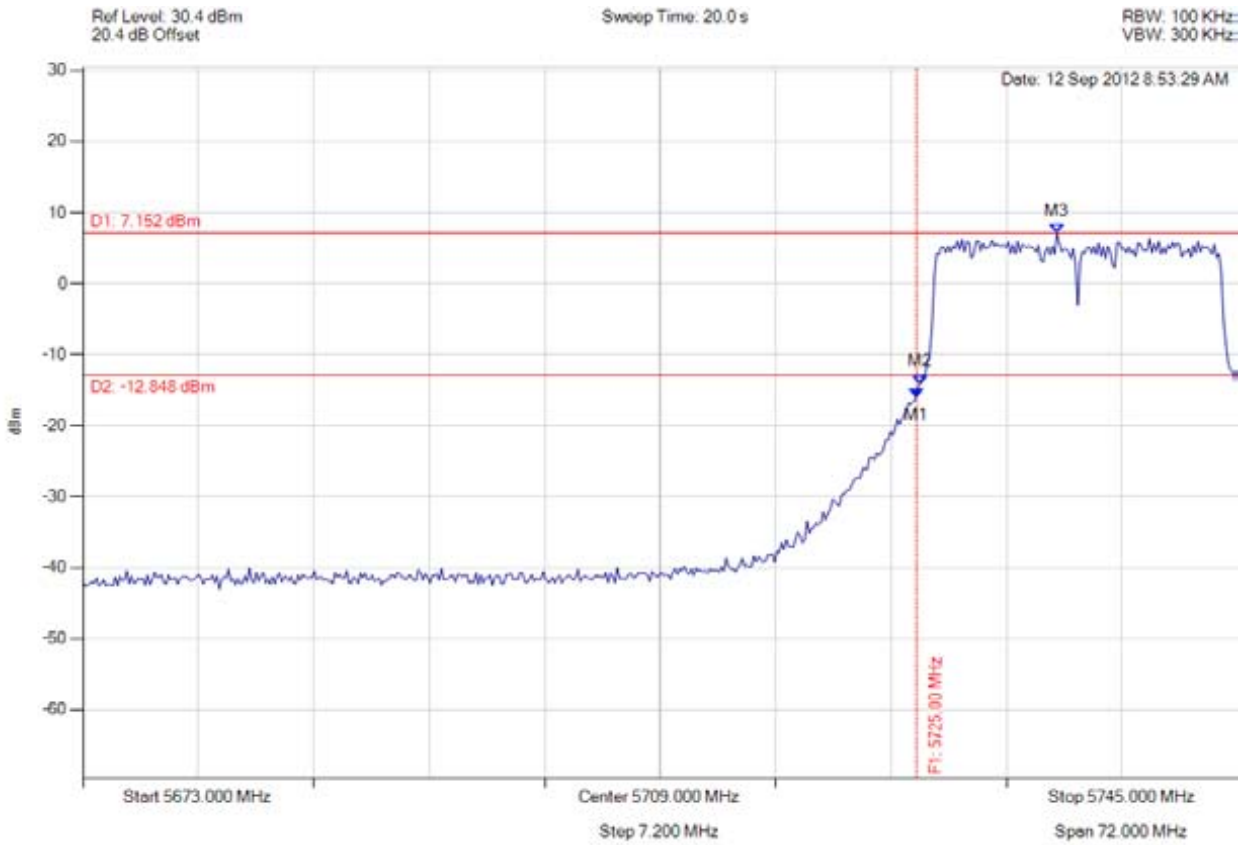


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5806.894 MHz : 10.578 dBm M2 : 6899.820 MHz : -38.287 dBm	Limit: -9.42 dBm Margin: -28.87 dB

Back to the Matrix

band-edge

Variant: 20 MHz, Channel: 5735.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

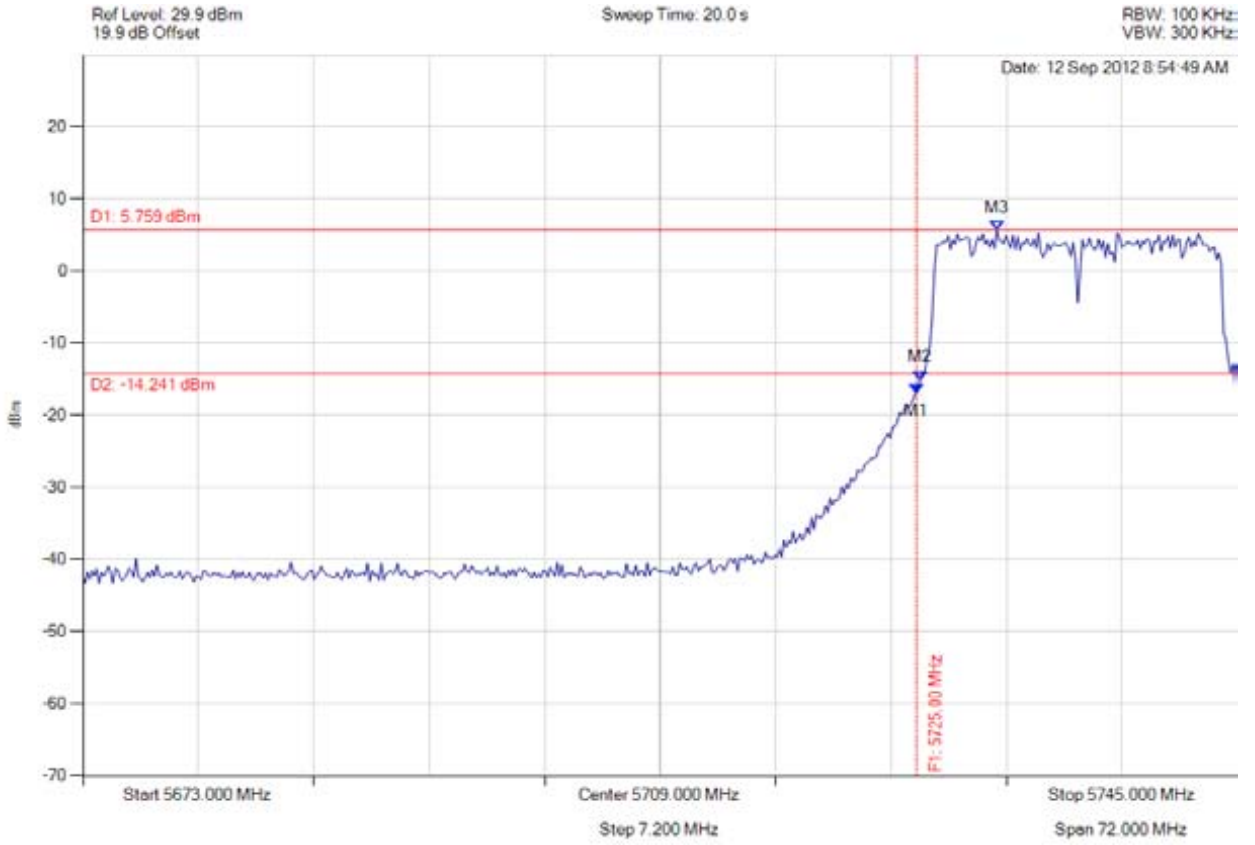


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5725.000 MHz : -15.994 dBm M2 : 5725.232 MHz : -14.125 dBm M3 : 5733.745 MHz : 7.152 dBm	Limit: -12.85 dBm Margin: -3.14 dB

Back to the Matrix

band-edge

Variant: 20 MHz, Channel: 5735.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

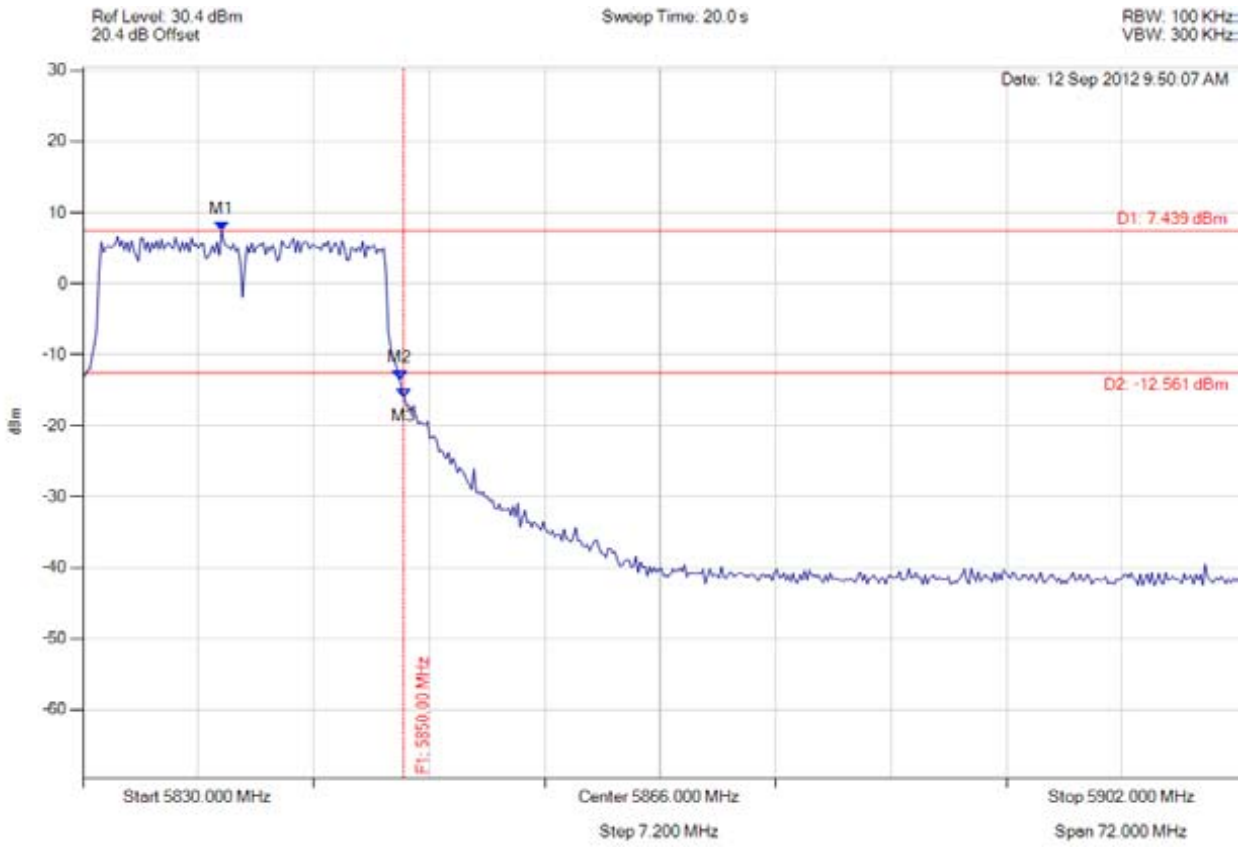


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5725.000 MHz : -16.927 dBm M2 : 5725.232 MHz : -15.072 dBm M3 : 5729.994 MHz : 5.759 dBm	Limit: -14.24 dBm Margin: -2.69 dB

Back to the Matrix

band-edge

Variant: 20 MHz, Channel: 5840.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

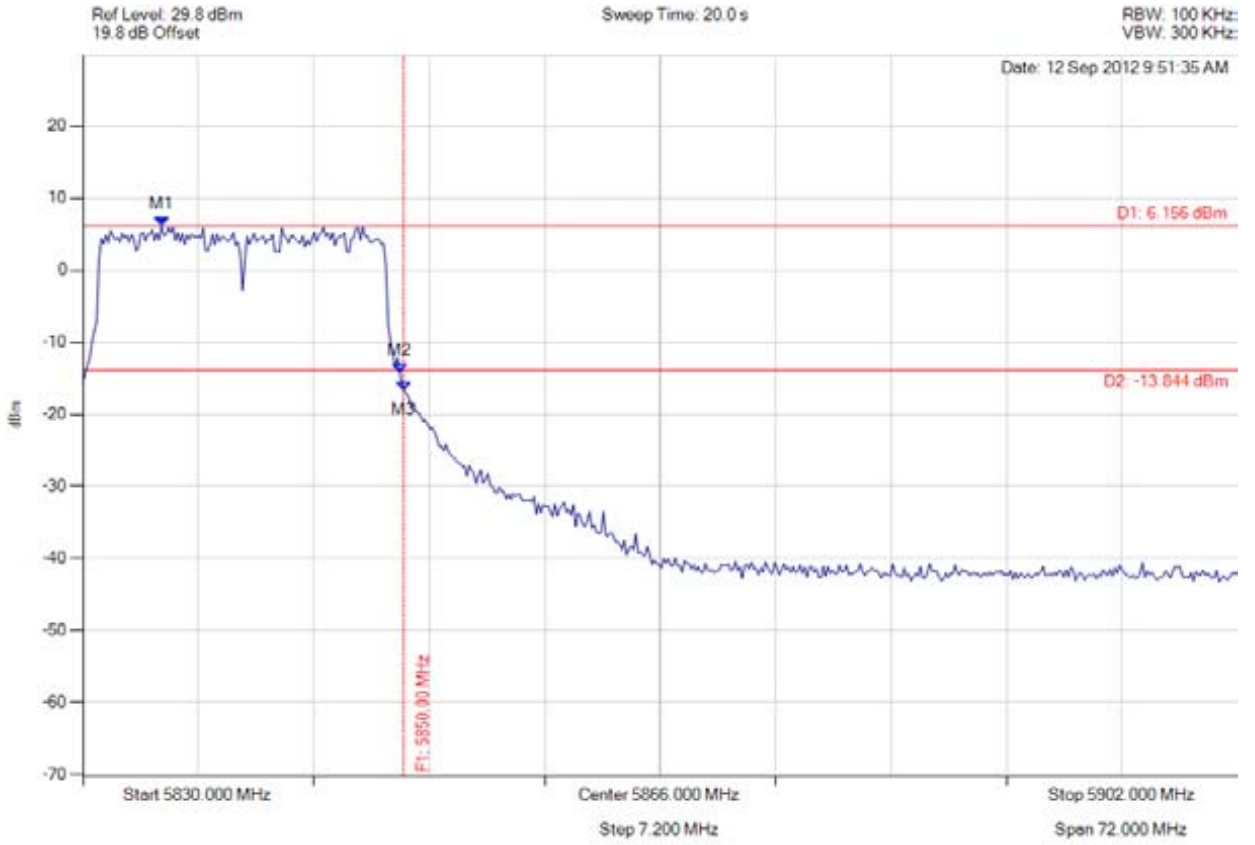


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5838.657 MHz : 7.439 dBm M2 : 5849.768 MHz : -13.494 dBm M3 : 5850.000 MHz : -16.041 dBm	Limit: -12.56 dBm Margin: -3.48 dB

Back to the Matrix

band-edge

Variant: 20 MHz, Channel: 5840.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

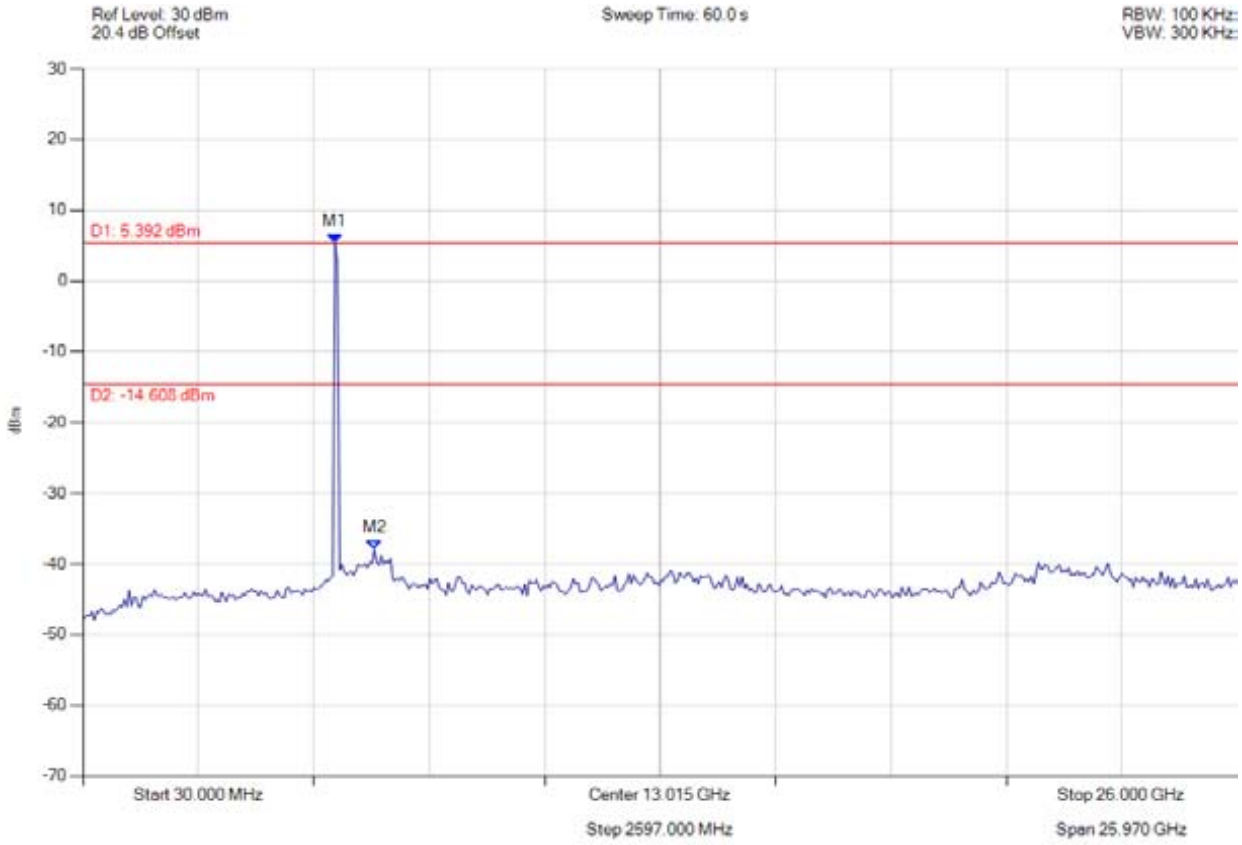


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5834.906 MHz : 6.156 dBm M2 : 5849.768 MHz : -14.316 dBm M3 : 5850.000 MHz : -16.734 dBm	Limit: -13.84 dBm Margin: -2.89 dB

Back to the Matrix

con tx spurious emissions

Variant: 20 MHz, Channel: 5735.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

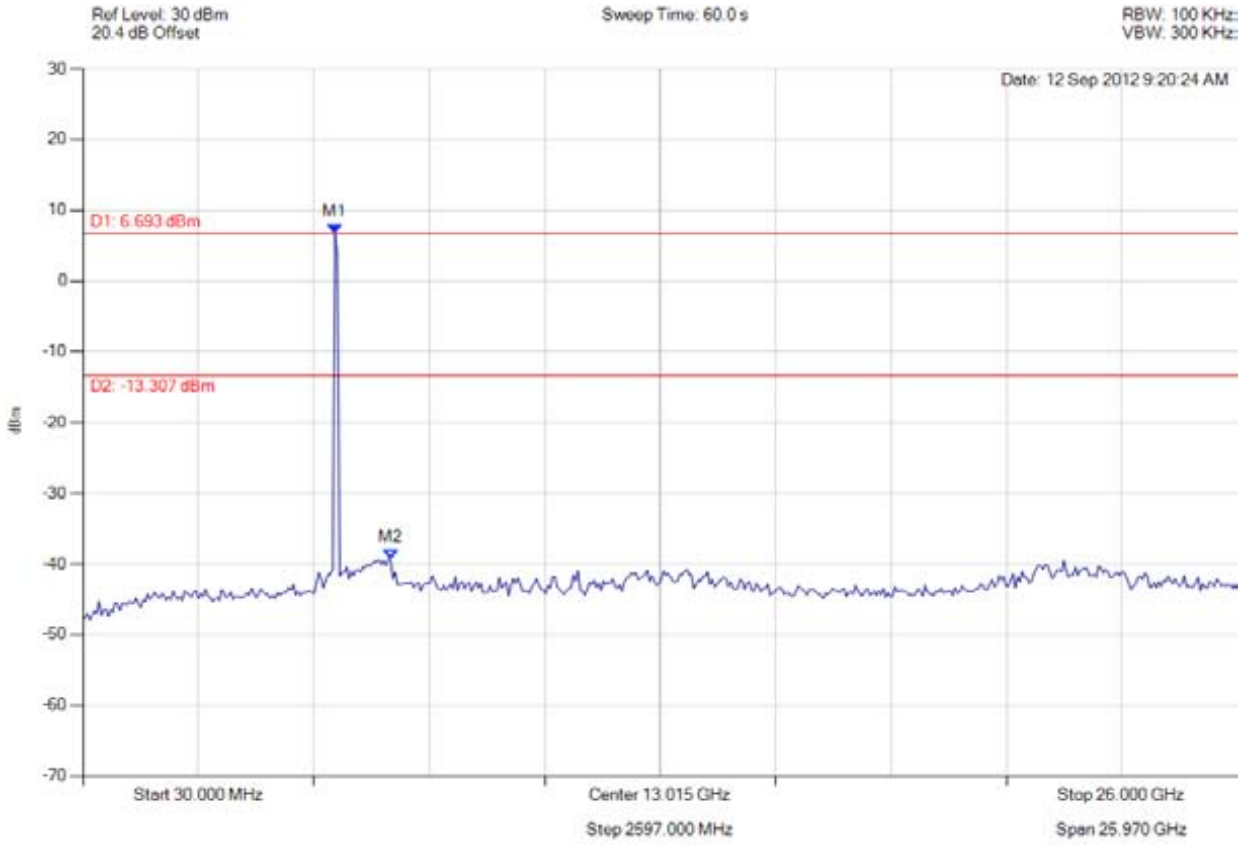


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5702.806 MHz : 5.392 dBm M2 : 6587.555 MHz : -37.978 dBm	Limit: -14.61 dBm Margin: -23.37 dB

Back to the Matrix

con tx spurious emissions

Variant: 20 MHz, Channel: 5735.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

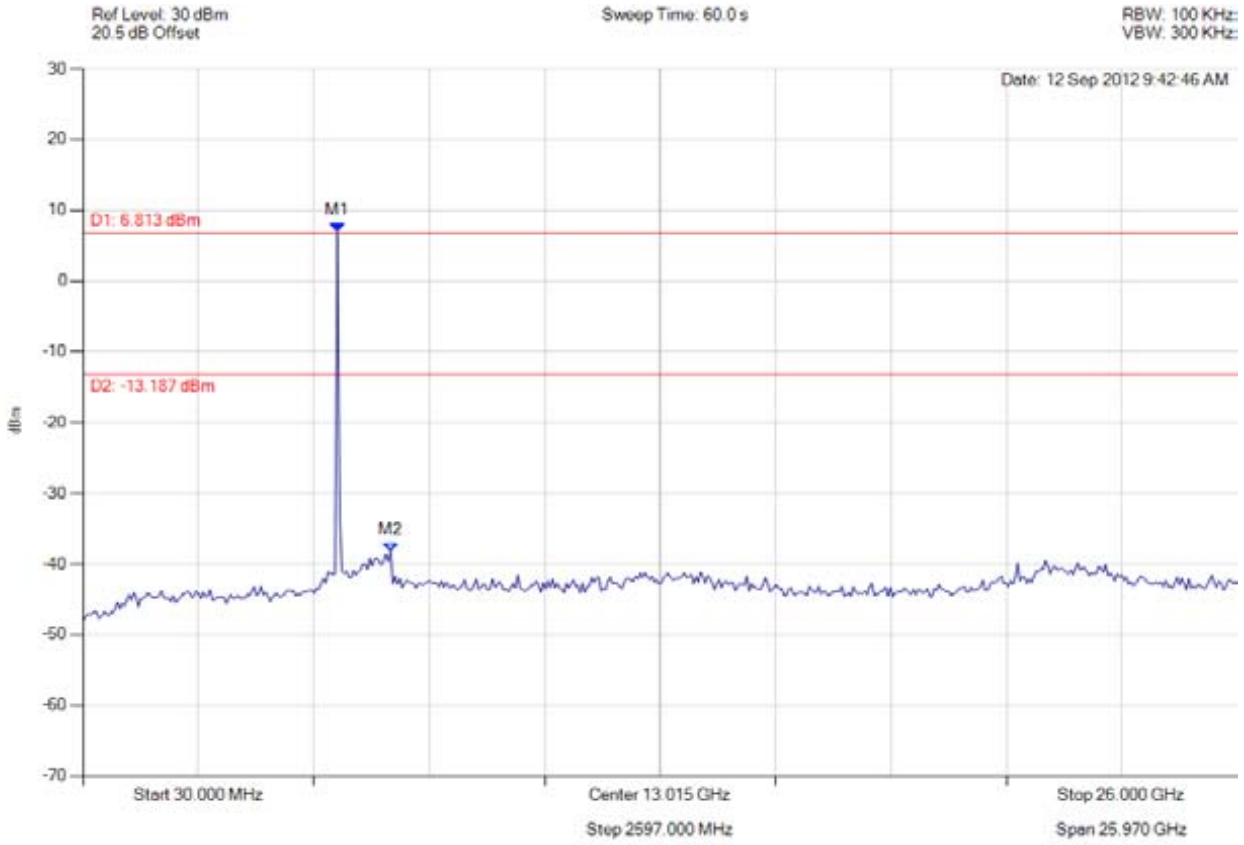


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5702.806 MHz : 6.693 dBm M2 : 6951.864 MHz : -39.367 dBm	Limit: -13.31 dBm Margin: -26.06 dB

Back to the Matrix

con tx spurious emissions

Variant: 20 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

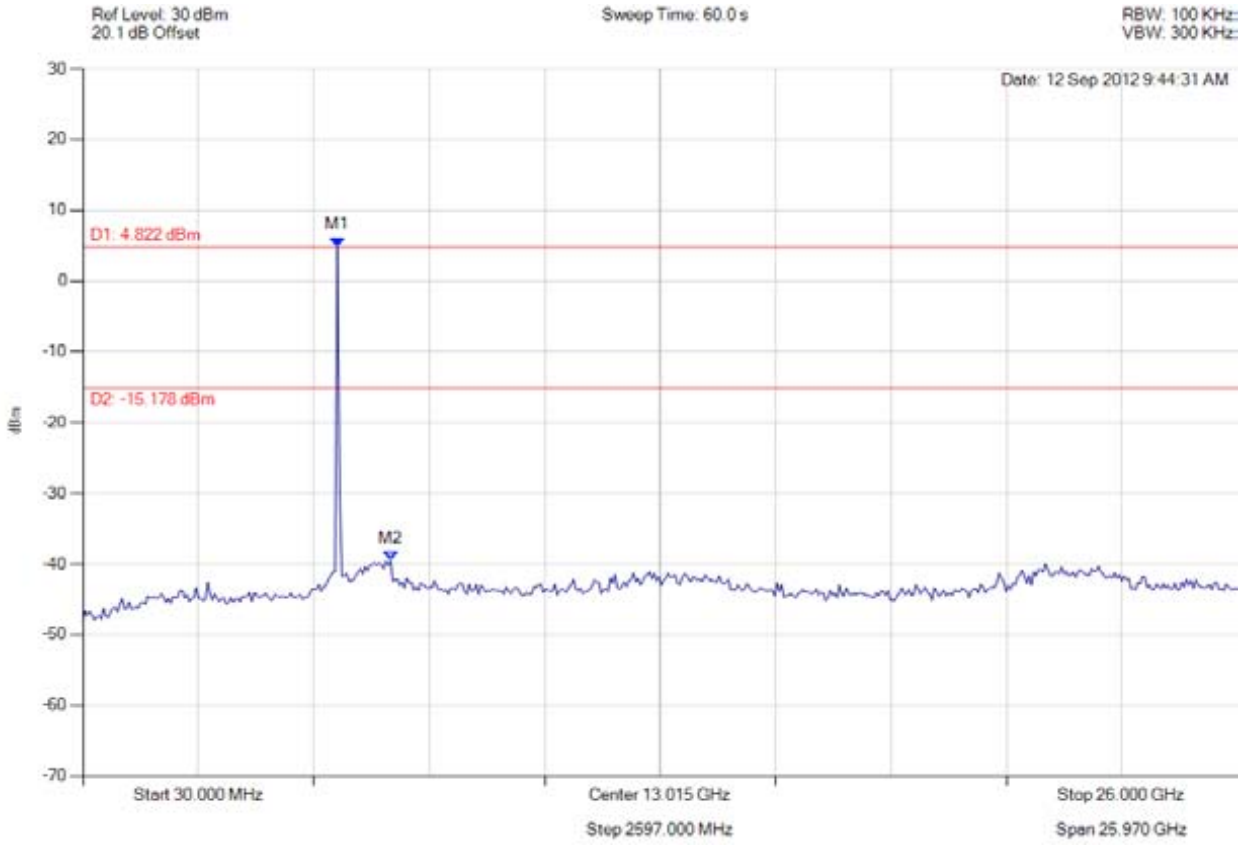


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5754.850 MHz : 6.813 dBm M2 : 6951.864 MHz : -38.275 dBm	Limit: -13.19 dBm Margin: -25.09 dB

Back to the Matrix

con tx spurious emissions

Variant: 20 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

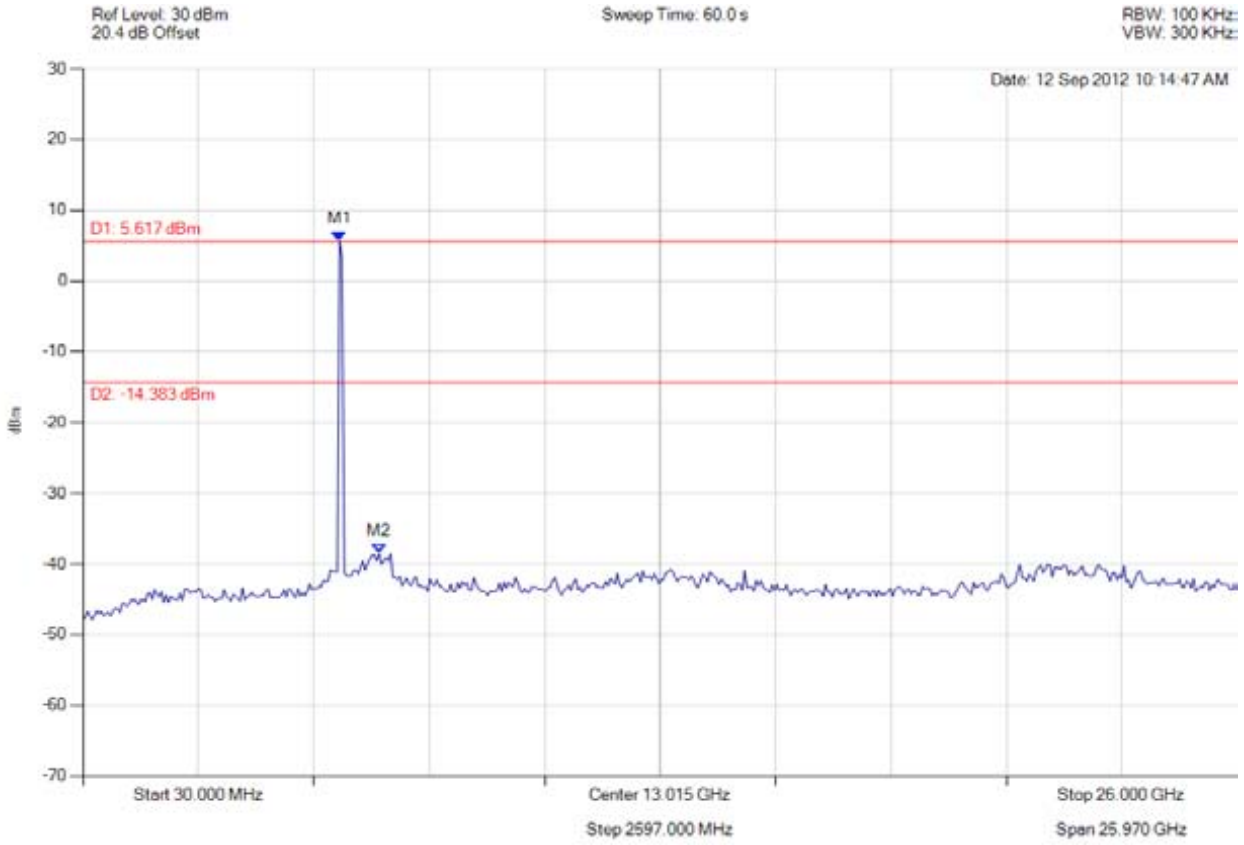


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5754.850 MHz : 4.822 dBm M2 : 6951.864 MHz : -39.548 dBm	Limit: -15.18 dBm Margin: -24.37 dB

Back to the Matrix

con tx spurious emissions

Variant: 20 MHz, Channel: 5840.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

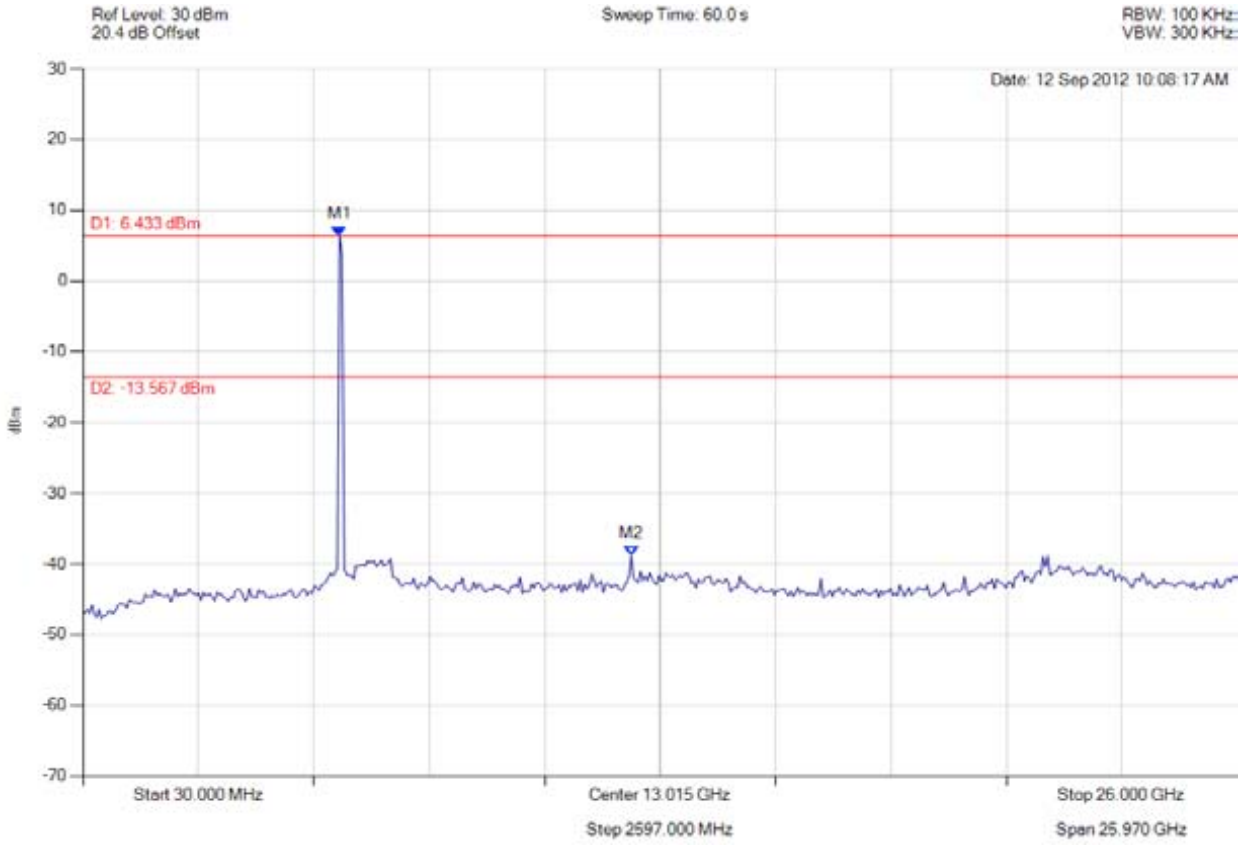


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5806.894 MHz : 5.617 dBm M2 : 6691.643 MHz : -38.545 dBm	Limit: -14.38 dBm Margin: -24.16 dB

Back to the Matrix

con tx spurious emissions

Variant: 20 MHz, Channel: 5840.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

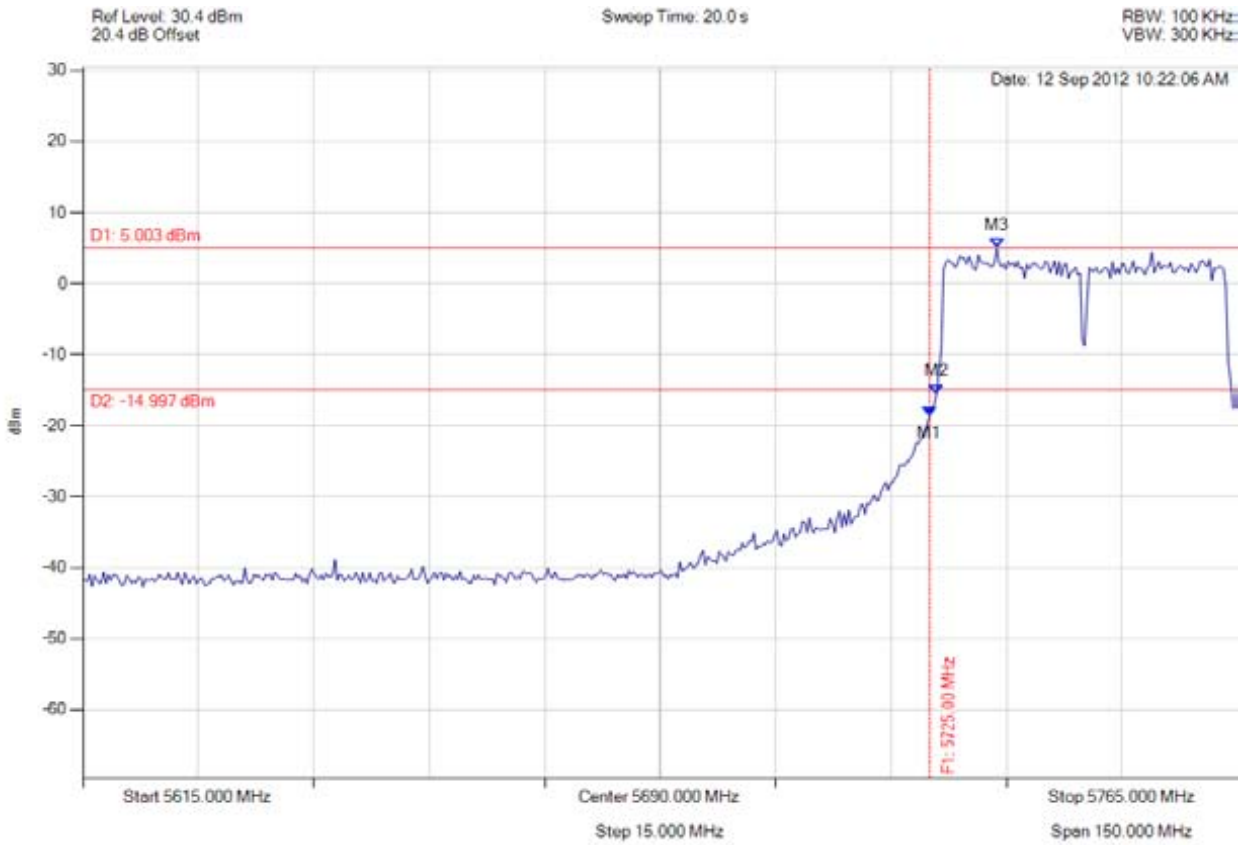


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5806.894 MHz : 6.433 dBm M2 : 12.364 GHz : -38.820 dBm	Limit: -13.57 dBm Margin: -25.25 dB

Back to the Matrix

band-edge

Variant: 40 MHz, Channel: 5745.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

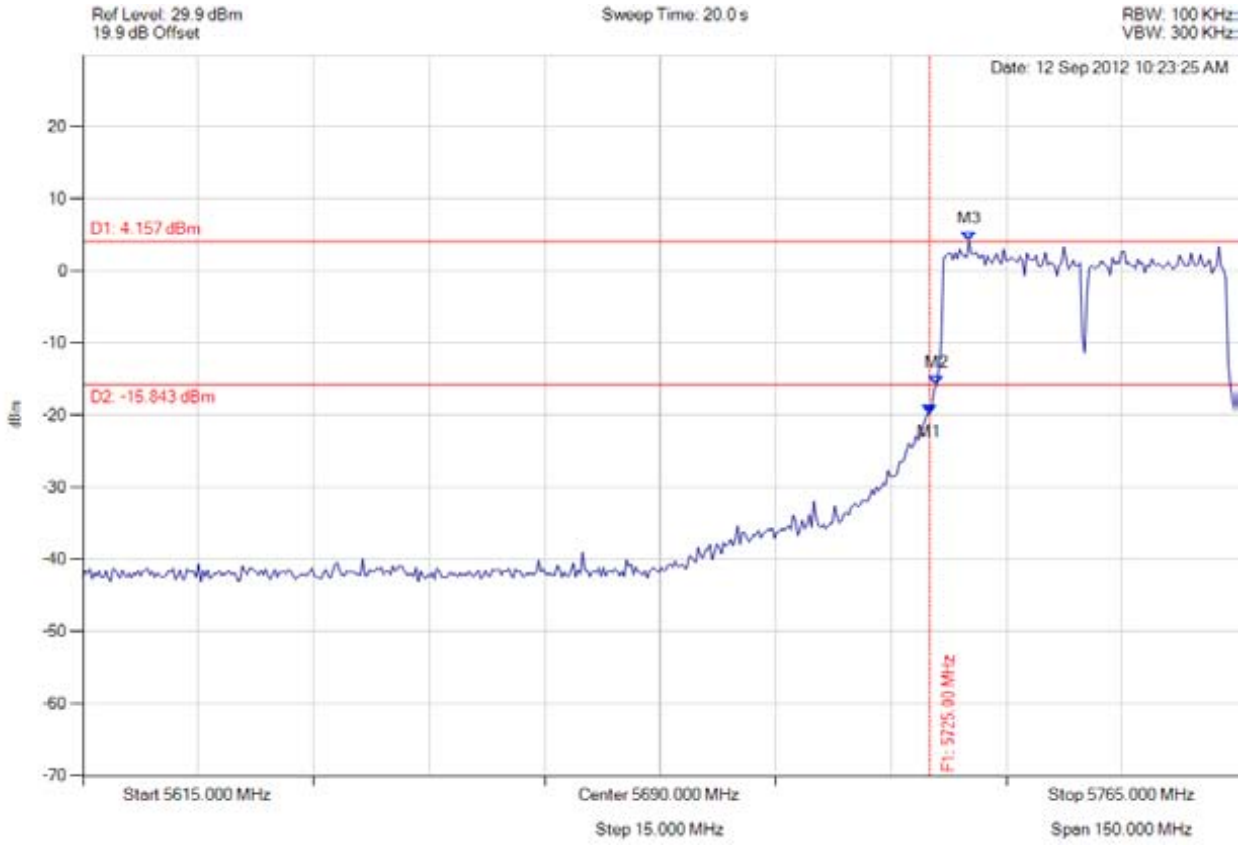


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5725.000 MHz : -18.524 dBm M2 : 5725.922 MHz : -15.471 dBm M3 : 5733.737 MHz : 5.003 dBm	Limit: -15.00 dBm Margin: -3.52 dB

Back to the Matrix

band-edge

Variant: 40 MHz, Channel: 5745.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

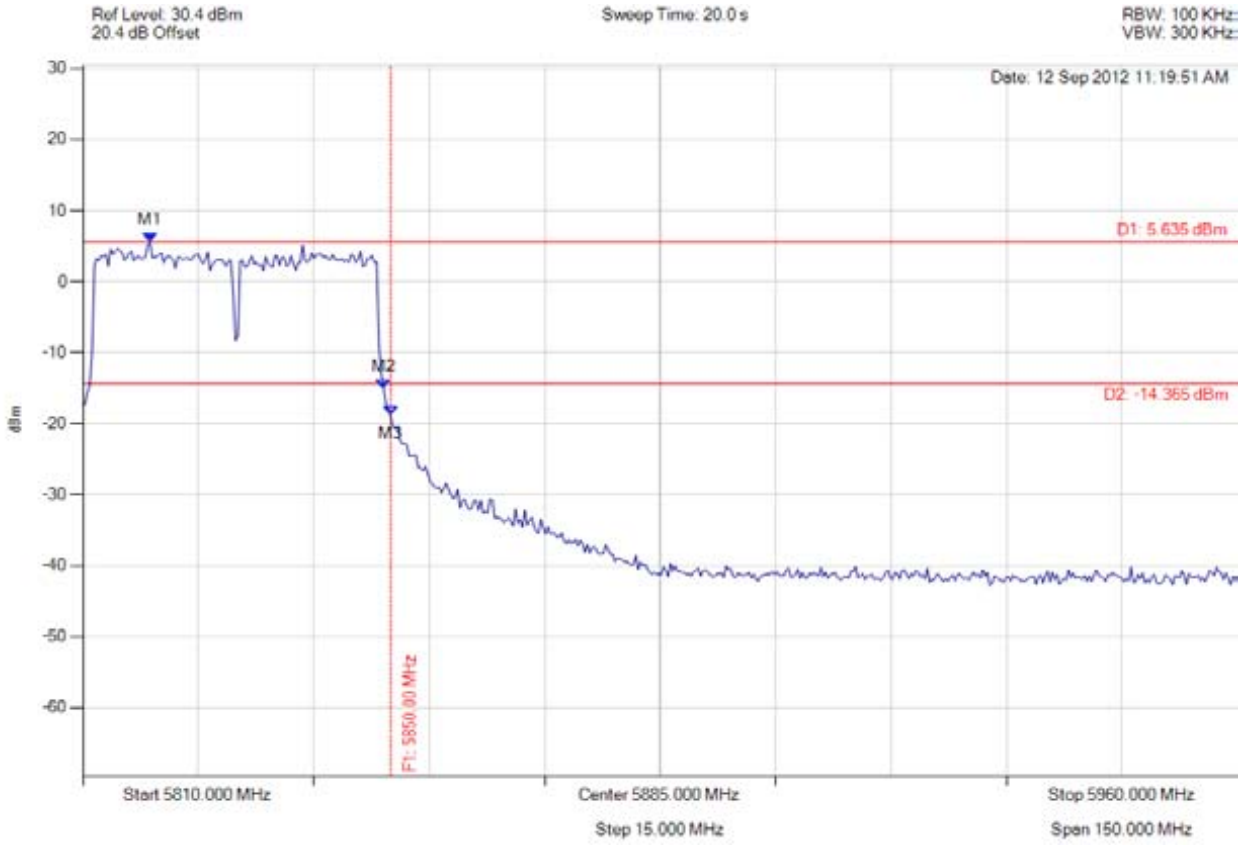


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5725.000 MHz : -19.829 dBm M2 : 5725.922 MHz : -15.853 dBm M3 : 5730.130 MHz : 4.157 dBm	Limit: -15.84 dBm Margin: -3.99 dB

Back to the Matrix

band-edge

Variant: 40 MHz, Channel: 5830.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

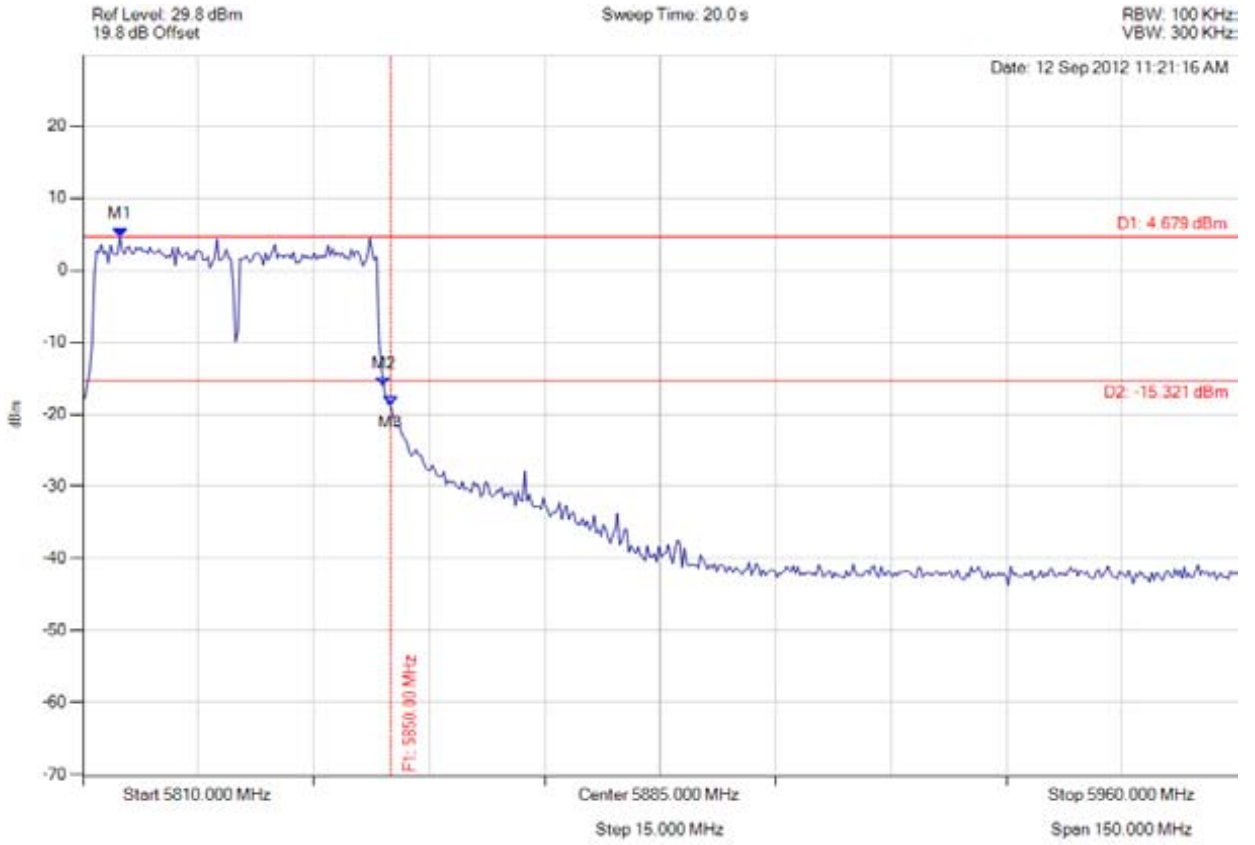


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5818.717 MHz : 5.635 dBm M2 : 5849.078 MHz : -15.016 dBm M3 : 5850.000 MHz : -18.825 dBm	Limit: -14.37 dBm Margin: -4.46 dB

Back to the Matrix

band-edge

Variant: 40 MHz, Channel: 5830.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

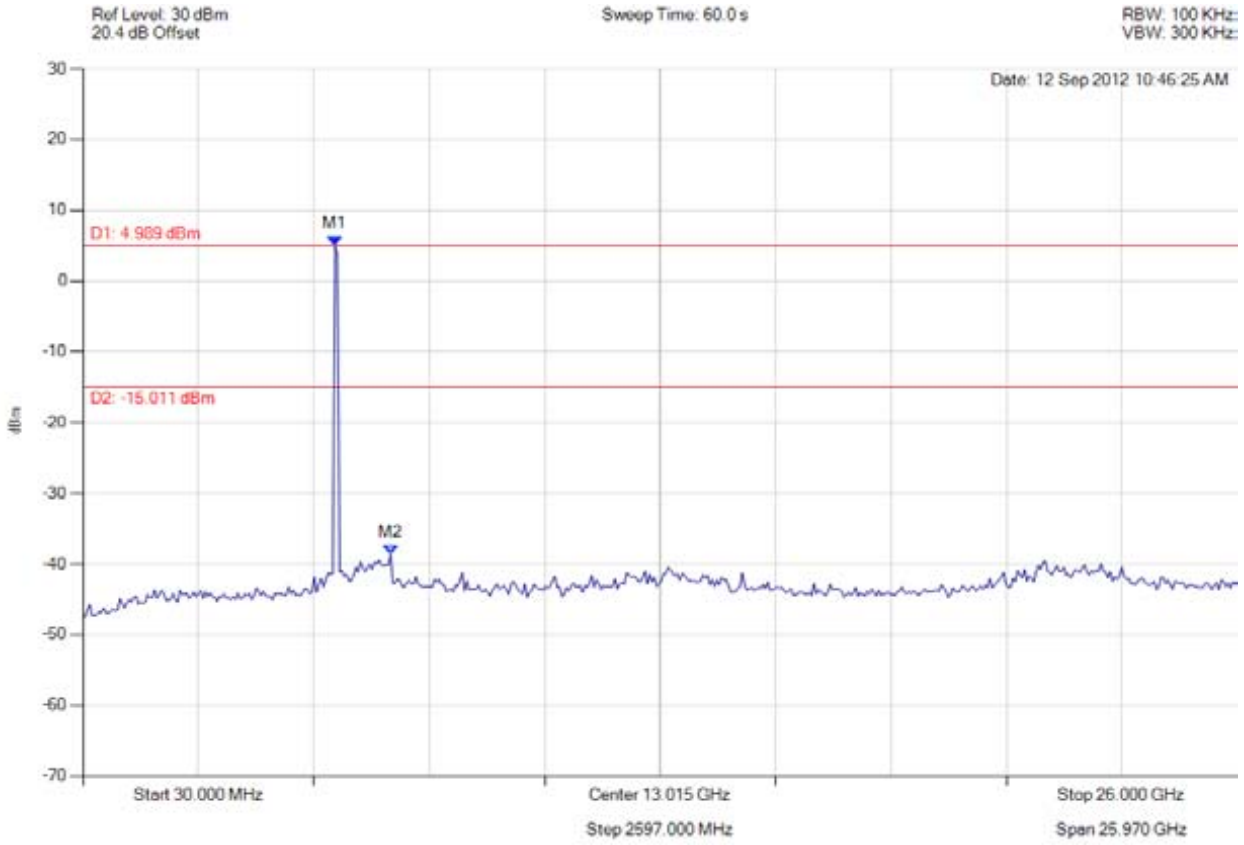


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5814.810 MHz : 4.679 dBm M2 : 5849.078 MHz : -16.104 dBm M3 : 5850.000 MHz : -18.719 dBm	Limit: -15.32 dBm Margin: -3.40 dB

Back to the Matrix

con tx spurious emissions

Variant: 40 MHz, Channel: 5745.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

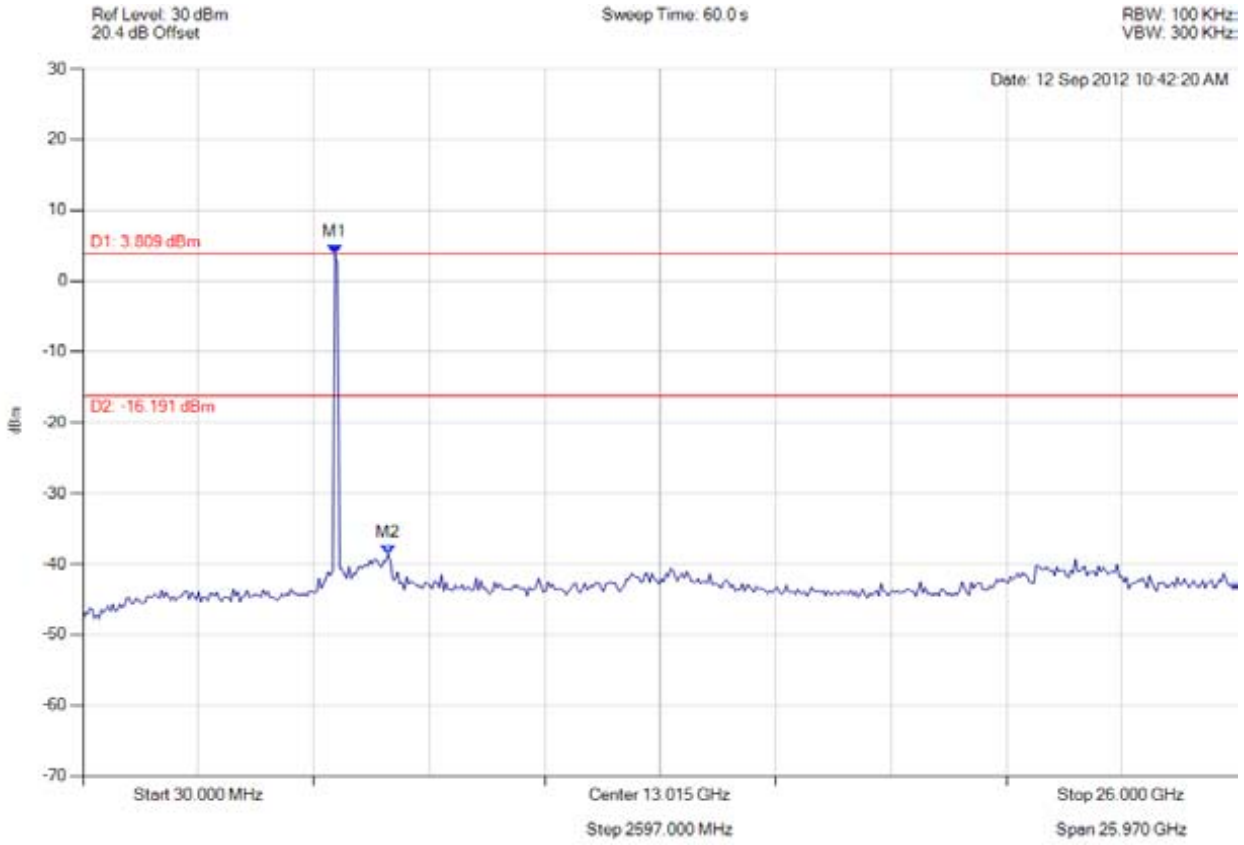


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5702.806 MHz : 4.989 dBm M2 : 6951.864 MHz : -38.676 dBm	Limit: -15.01 dBm Margin: -23.67 dB

Back to the Matrix

con tx spurious emissions

Variant: 40 MHz, Channel: 5745.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

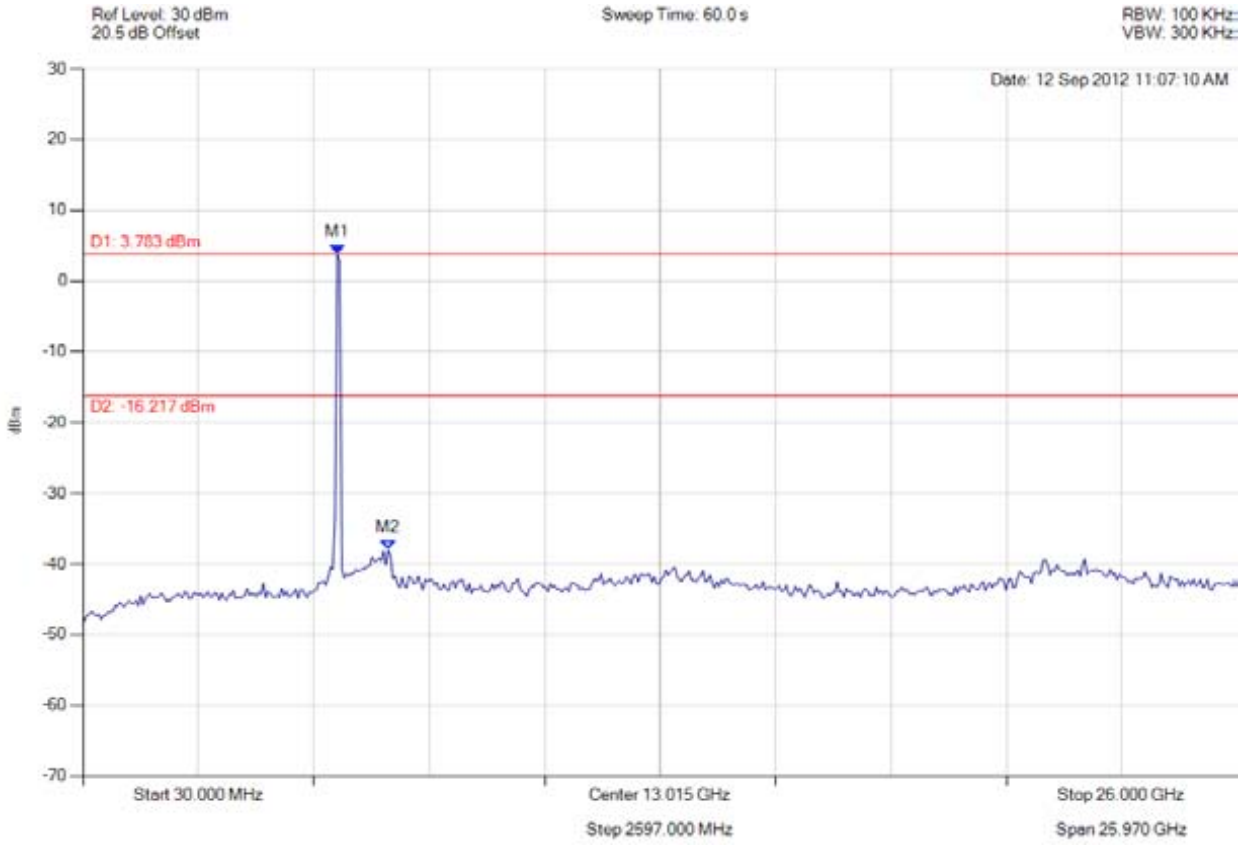


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5702.806 MHz : 3.809 dBm M2 : 6899.820 MHz : -38.637 dBm	Limit: -16.19 dBm Margin: -22.45 dB

Back to the Matrix

con tx spurious emissions

Variant: 40 MHz, Channel: 5780.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V

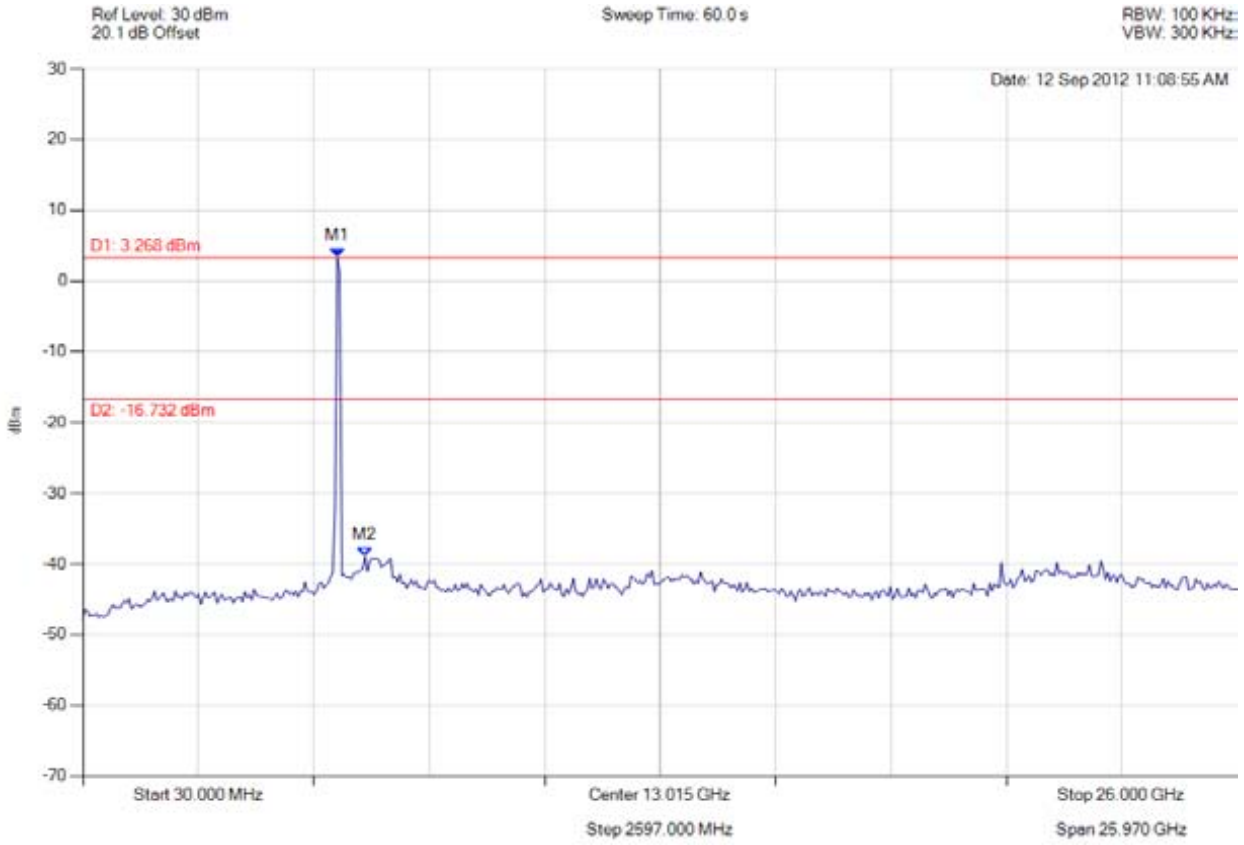


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5754.850 MHz : 3.783 dBm M2 : 6899.820 MHz : -38.029 dBm	Limit: -16.22 dBm Margin: -21.81 dB

Back to the Matrix

con tx spurious emissions

Variant: 40 MHz, Channel: 5780.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V

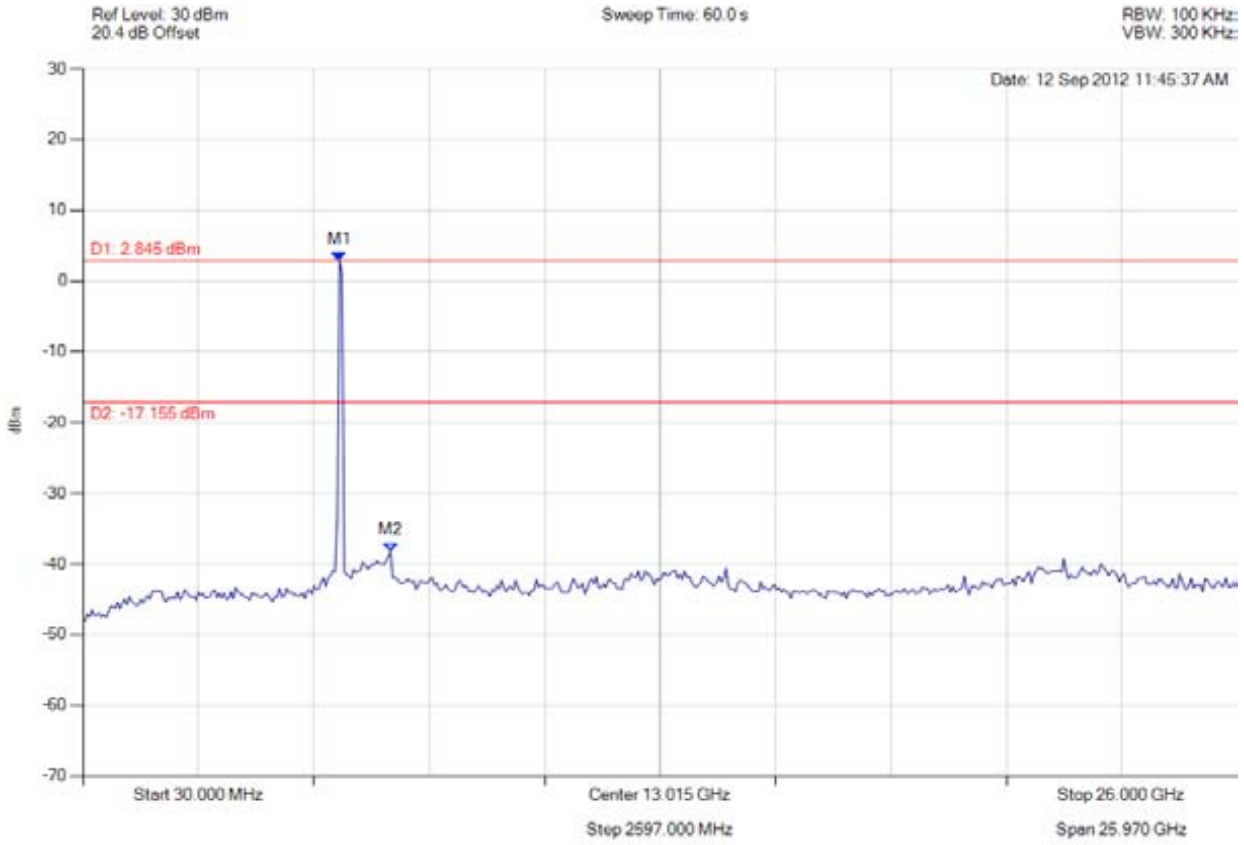


Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5754.850 MHz : 3.268 dBm M2 : 6379.379 MHz : -39.007 dBm	Limit: -16.73 dBm Margin: -22.28 dB

Back to the Matrix

con tx spurious emissions

Variant: 40 MHz, Channel: 5830.00 MHz, Chain a, Temp: Ambient, Voltage: 55.00V



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5806.894 MHz : 2.845 dBm M2 : 6951.864 MHz : -38.338 dBm	Limit: -17.16 dBm Margin: -21.18 dB

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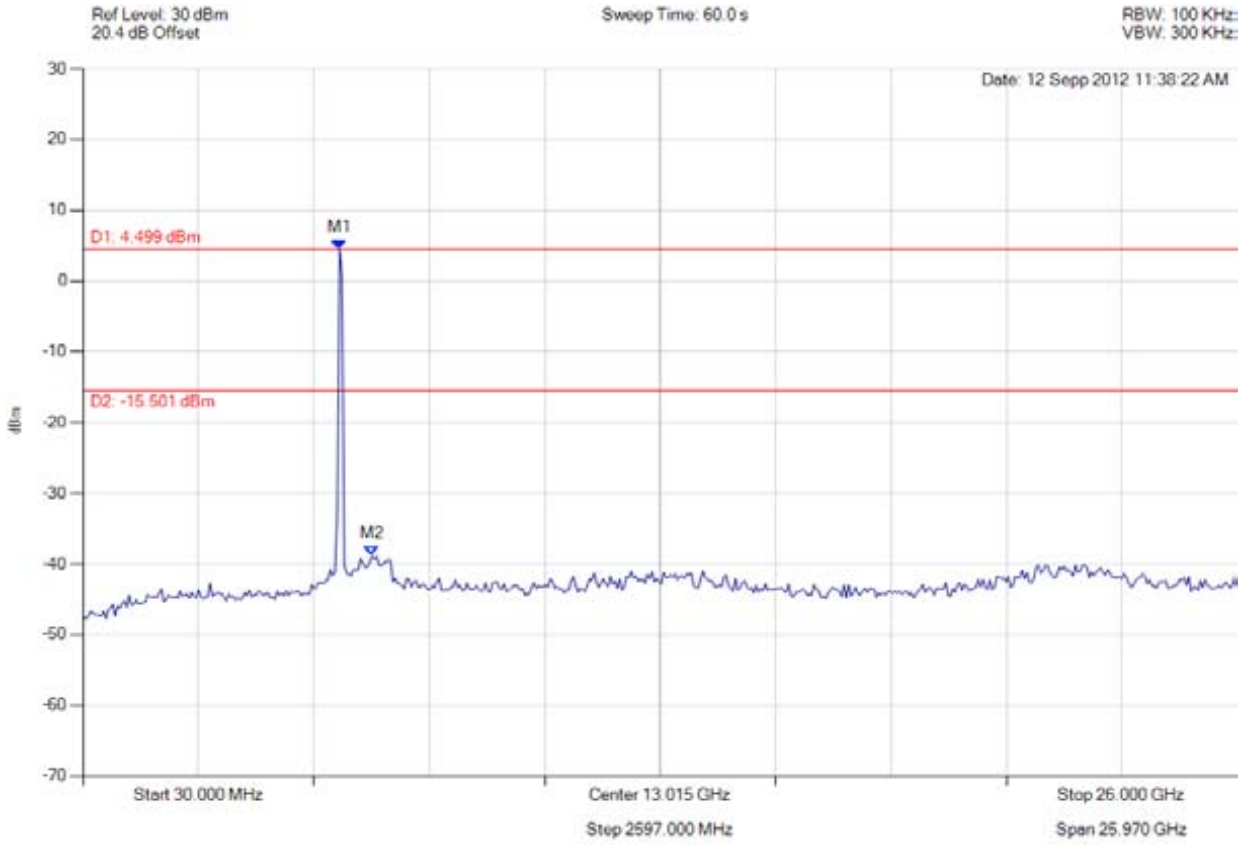
con tx spurious emissions

Variant: 40 MHz, Channel: 5830.00 MHz, Chain b, Temp: Ambient, Voltage: 55.00V



Analyser Setup	Marker : Frequency : Amplitude	Test Results
Detector = MAX PEAK Sweep Count = 0 RF Atten (dB) = 20 Trace Mode = VIEW	M1 : 5806.894 MHz : 4.499 dBm M2 : 6535.511 MHz : -38.852 dBm	Limit: -15.50 dBm Margin: -23.35 dB

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