Excellence in Compliance Testing

Certification Test Report

FCC ID: VSFMS2
IC: 7980A-MS2

FCC Rule Part: 15.407
IC Radio Standards Specification: RSS-247

ACS Report Number: 15-2133.W06.4B

Applicant: Juniper Systems, Inc.
Model(s): MS2G and MS2GC

Test Begin Date: **December 10, 2015**
Test End Date: **March 4, 2016**

Report Issue Date: March 17, 2016

FOR THE SCOPE OF ACCREDITATION UNDER CERTIFICATE NUMBER AT-1533

This report must not be used by the client to claim product certification, approval, or endorsement by ANAB, ANSI, or any agency of the Federal Government.

Reviewed by:

Thierry Jean-Charles
EMC Engineer
Advanced Compliance Solutions, Inc.

This report contains 198 pages

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1 GENERAL

1.1 Purpose

The purpose of this report is to demonstrate compliance with Part 15 Subpart E of the FCC's Code of Federal Regulations and Industry Canada's Radio Standards Specification RSS-247.

1.2 Applicant Information

Juniper Systems, Inc.
1132 West 1700 North
Logan, UT 84321

1.3 Product Description

The MS2G and MS2GC consist of ultra-rugged tablet computers, featuring a 7-inch touchscreen display and running Microsoft Windows 8.1/10 Professional, Bluetooth 4.0 and WLAN 802.11a/b/g/n. The two models are identical except that the MS2GC model includes a pre-approved cellular module (FCC ID: VSF25271/ IC:7980A-25271). This test report documents the compliance of Wi-Fi transceiver for operation in the 5 GHz UNII band.

Technical Details

Mode of Operation:	5 GHz WLAN IEEE 802.11a/n
Modulation(s):	OFDM
Antenna Type(s)/Gain:	2x2 MIMO PIFA, 4.2 dBi (Primary antenna), PIFA, 4.5 dBi (Secondary Antenna)
Antenna Diversity	802.11a: SISO, MIMO Cyclic Delay Diversity (CDD) 802.11n: SISO, MIMO Cyclic Delay Diversity (CDD), Spatial Multiplexing MIMO (SM-MIMO)
Input Power:	12VDC Power Supply

Band of Operation* (MHz)	Mode of Operation	Ch. Range (MHz)	Number of Available Channels	Channel Spacing	MCS Index/Data Rate (Mbps)
5150 - 5250	a	5180 - 5240	4	20	6, 9, 12, 18, 24, 36, 48, 54 Mbps
5250 - 5350		5260 - 5320	4		
5470 - 5725		5500 - 5700	11		
5725 - 5850		5745 - 5825	5		
5150 - 5250	n (HT20)	5180 - 5240	4	20	MCS0 – MCS15
5250 - 5350		5260 - 5320	4		
5470 - 5725		5500 - 5700	11		
5725 - 5850		5745 - 5825	5		
5150 - 5250	n (HT40)	5190 - 5230	2	40	MCS0 – MCS15
5250 - 5350		5270 - 5310	2		
5470 - 5725		5510 - 5670	5		
5725 - 5850		5755 - 5795	2		

* Operation in the 5600 – 5650 MHz band is not applicable to Innovation Science Economic Development Canada.

Model Number: MS2G

Test Sample Serial Number(s): MS2P58 (RF Conducted Emissions), MS2P34 (Radiated and Power Line Conducted Emissions).

Test Sample Condition: The samples were in good conditions with no observable physical damages.

1.4 Test Methodology and Considerations

The EUT was evaluated for radiated, power line and RF conducted emissions.

For radiated emissions, preliminary evaluation was performed for the EUT standalone as well as for the EUT powered through a wall adapter. The investigation was performed in three orthogonal orientations. Additional measurements were performed on two MS2 models configurations consisting of the MS2G and the MS2GC. No significant emission variation was observed between the models and the final measurements were performed on MS2G model. The Wi-Fi transceiver was evaluated in the SISO, MIMO CDD and SM-MIMO modes, where applicable. The results are provided for the configuration leading to the highest emissions as compared to the limits.

The RF conducted emissions measurements were performed for the EUT modified with a temporary RF connector for direct coupling to a spectrum analyzer. There is no RF output power compensation associated with the MIMO mode of operation. The measurements were performed on both primary and secondary antenna ports.

The EUT was also evaluated for intermodulation product for the MS2GC model which includes the EM7355 cellular module (FCC ID: VSF25271/ IC: 7980A-25271). The Wi-Fi transceiver and Cell radios were set to transmit simultaneously and the intermodulation products were investigated and compared to the FCC Section 15.209 and the RSS-GEN general limits. All intermodulation products were found to be compliant.

The EUT was also evaluated for unintentional emissions. The results are reported separately in a Declaration of Conformity/Verification test report.

Table 1.4-1: IEEE 802.11a/n Test Configuration

Band of Operation	Mode of Operation	Frequency (MHz)	Channel	Modulation Index (Data Rate)	MIMO Mode
U-NII-1 (5.15 - 5.25 GHz)	802.11n 20 MHz	5180	36	MCS0 (CDD), MCS8 (SM-MIMO)	CDD, SM-MIMO
		5200	40		
		5240	48		
	802.11n 40 MHz	5190	38	MCS0 (CDD), MCS8 (SM-MIMO)	CDD, SM-MIMO
		5230	46		
	802.11a	5180	36	6Mbps	CDD
		5200	40		
		5240	48		
U-NII-2A (5.25 - 5.35 GHz)	802.11n 20 MHz	5260	52	MCS0 (CDD), MCS8 (SM-MIMO)	CDD, SM-MIMO
		5280	56		
		5320	64		
	802.11n 40 MHz	5270	54	MCS0 (CDD), MCS8 (SM-MIMO))	CDD, SM-MIMO
		5310	62		
	802.11a	5260	52	6Mbps	CDD
		5280	56		
		5320	64		
U-NII-2C* (5.47 - 5.725 GHz)	802.11n 20 MHz	5500	100	MCS0 (CDD), MCS8 (SM-MIMO)	CDD, SM-MIMO
		5600	120		
		5700	140		
	802.11n 40 MHz	5510	102	MCS0 (CDD), MCS8 (SM-MIMO)	CDD, SM-MIMO
		5590	118		
		5670	134		
	802.11a	5500	100	6Mbps	CDD
		5600	120		
		5700	140		
U-NII-3 (5.725 - 5.85 GHz)	802.11n 20 MHz	5745	149	MCS0 (CDD), MCS8 (SM-MIMO)	CDD, SM-MIMO
		5785	157		
		5825	165		
	802.11n 40 MHz	5755	151	MCS0 (CDD), MCS8 (SM-MIMO)	CDD, SM-MIMO
		5795	159		
	802.11a	5745	149	6Mbps	CDD
		5785	157		
		5825	165		

* Operation in the 5600 – 5650 MHz band is not applicable to Innovation Science Economic Development Canada.

2 TEST FACILITIES

2.1 Location

The radiated and conducted emissions test sites are located at the following address:

Advanced Compliance Solutions, Inc.
3998 FAU Blvd, Suite 310
Boca Raton, Florida 33431
Phone: (561) 961-5585
Fax: (561) 961-5587
www.acstestlab.com

FCC Test Firm Registration #: 475089
Industry Canada Lab Code: 4175C

2.2 Laboratory Accreditations/Recognitions/Certifications

ACS is accredited to ISO/IEC 17025 by ANSI-ASQ National Accreditation Board under their ANAB program and has been issued certificate number AT-1533 in recognition of this accreditation. Unless otherwise specified, all test methods described within this report are covered under the ISO/IEC 17025 scope of accreditation.

2.3 Radiated & Conducted Emissions Test Site Description

2.3.1 Semi-Anechoic Chamber Test Site

The EMC radiated test facility consists of an RF-shielded enclosure. The interior dimensions of the indoor semi-anechoic chamber are approximately 48 feet (14.6 m) long by 36 feet (10.8 m) wide by 24 feet (7.3 m) high and consist of rigid, 1/8 inch (0.32 cm) steel-clad, wood core modular panels with steel framing. In the shielded enclosure, the faces of the panels are galvanized and the chamber is self-supporting. 8-foot RF absorbing cones are installed on 4 walls and the ceiling. The steel-clad ground plane is covered with vinyl flooring.

The turntable is driven by pneumatic motor, which is capable of supporting a 2000 lb. load. The turntable is flush with the chamber floor which it is connected to, around its circumference, with a continuous metallic loaded spring. An EMCO Model 1050 Multi-device Controller controls the turntable position.

A pneumatic motor is used to control antenna polarizations and height relative to the ground. The height information is displayed on the control unit EMCO Model 1050.

The control room is an RF shielded enclosure attached to the semi-anechoic chamber with two bulkhead panels for connecting RF, and control cables. The dimension of the room is 7.3 m x 4.9 m x 3 m high and the entrance doors of both control and conducted rooms are 3 feet (0.91 m) by 7 feet (2.13 m).

A diagram of the Semi-Anechoic Chamber Test Site is shown in Figure 2.3.1-1 below:

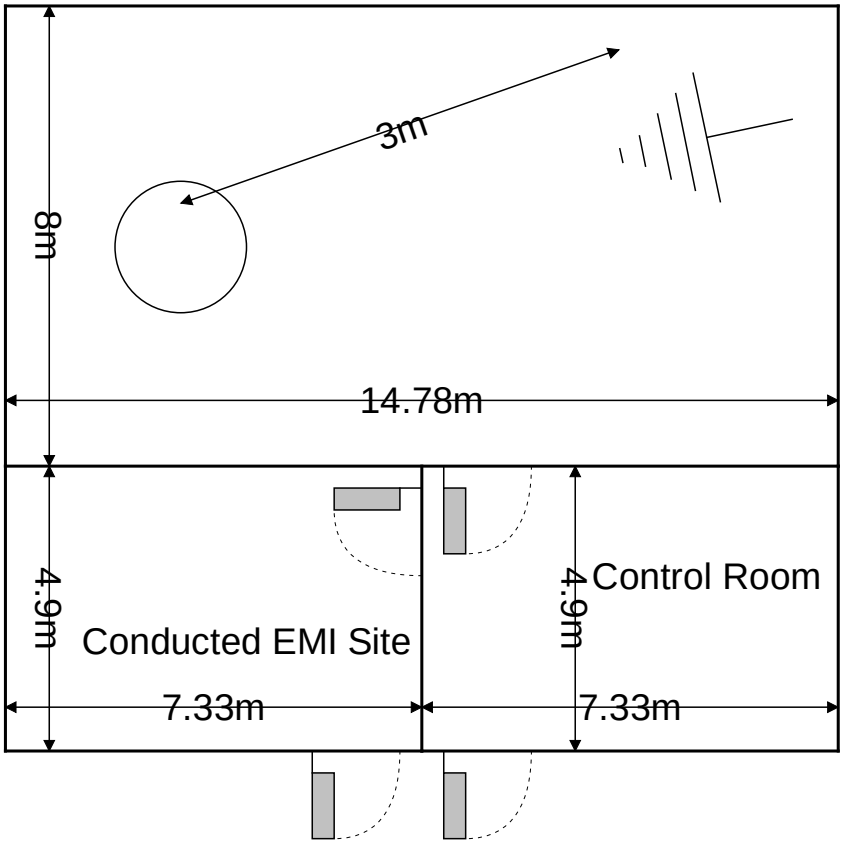

Figure 2.3.1-1: Semi-Anechoic Chamber Test Site

2.3.2 Conducted Emissions Test Site Description

The dimensions of the shielded conducted room are 7.3 x 4.9 x 3 m^3. The power line conducted emission site includes two LISNs: a Solar Model 8028-50 50 Ω/50 µH and an EMCO Model 3825/2R, which are installed as shown in the figure below. For evaluations requiring 230 V, 50 Hz AC input, a Polarad LISN (S/N 879341/048) is used in conjunction with a California Instruments signal generator Model 2001RP-OP1.

A diagram of the room is shown below in figure 2.3.2-1:

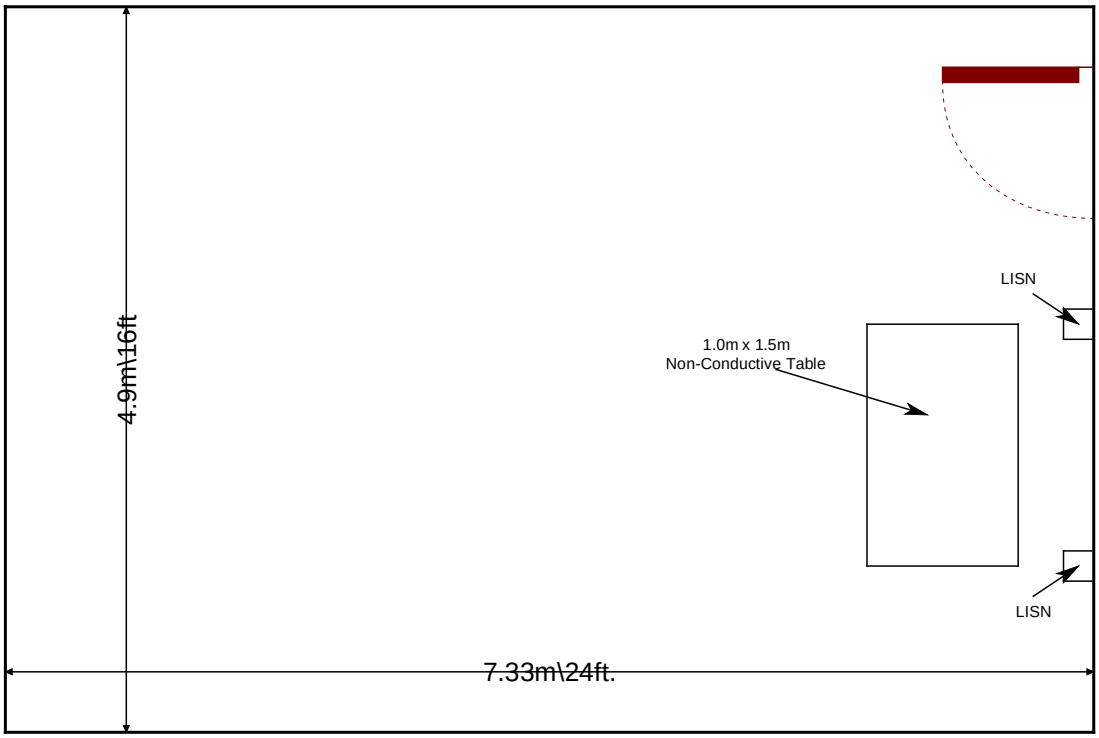

Figure 2.3.2-1: AC Mains Conducted EMI Site

3 APPLICABLE STANDARD REFERENCES

The following standards were used:

- ANSI C63.4-2014: Method of Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the 9 kHz to 40 GHz.
- ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
- US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2016.
- US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart E: Unlicensed National Information Infrastructure Devices, 2016
- Industry Canada Radio Standards Specification: RSS-247 — Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices, Issue 1, May 2015.
- Industry Canada Radio Standards Specification: RSS-GEN – General Requirements for Compliance of Radio Apparatus, Issue 4, November 2014.
- FCC OET KDB Publication No. 789033 D02 General U-NII Test Procedures New Rules v01r01: Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E, January, 2016.
- FCC OET KDB Publication No. 905462 D06 802.11 Channel Plans New Rules v01: Operation in U-NII Bands – 802.11 Channel Plan, 15.407 (Part 15E), 1st R&O (FCC 06-96) June 2014
- FCC OET KDB Publication No. 644545 D03 Guidance for IEEE 802.11ac New Rules v01: Guidance for IEEE Standard 802.11ac™ Devices Emission Testing, August 2014
- FCC OET KDB Publication No. 662911 D01 Multiple Transmitter Output v02r01: Emissions Testing of Transmitters with Multiple Outputs in the Same Band (e.g.,MIMO, Smart Antenna, etc), October 2013.
- FCC OET 13TR1003 Directional Gain of 802 11 MIMO with CDD 04 05 2013: Directional Gain of IEEE 802.11 MIMO Devices Employing Cyclic Delay Diversity, April 2013.

4 LIST OF TEST EQUIPMENT

The calibration interval of test equipment is annually or the manufacturer's recommendations. Where the calibration interval deviates from the annual cycle based on the instrument manufacturer's recommendations, it shall be stated below.

Table 4-1: Test Equipment

AssetID	Manufacturer	Model #	Equipment Type	Serial #	Last Calibration Date	Calibration Due Date
22	Agilent	8449B	Amplifiers	3008A00526	5/18/2015	5/18/2016
283	Rohde & Schwarz	FSP40	Spectrum Analyzers	1000033	7/1/2015	7/1/2016
332	Rohde & Schwarz	TS-PR40	Amplifiers	100021	2/19/2014	2/19/2016
333	Rohde&Schwarz	3160-10	Antennas	45576	11/4/2010	NCR
479	Electro-Metrics	ALP-70	Antennas	158	12/2/2013	12/2/2015
479	Electro-Metrics	ALP-70	Antennas	158	12/3/2015	12/3/2017
523	Agilent	E7405	Spectrum Analyzers	MY45103293	12/26/2014	12/26/2016
653	Suhner	SF-102A	Cables	0944/2A	4/13/2015	4/13/2016
2002	EMCO	3108	Antennas	2147	11/19/2015	11/19/2017
2004	EMCO	3146	Antennas	1385	11/19/2015	11/19/2017
2006	EMCO	3115	Antennas	2573	4/14/2015	4/14/2017
2008	COM-Power	AH-826	Antennas	81009	NCR	NCR
2011	Hewlett-Packard	HP 8447D	Amplifiers	2443A03952	11/18/2015	11/18/2016
2022	EMCO	LISN3825/2R	LISN	1095	9/14/2015	9/14/2017
2045	ACS Boca	Conducted Cable Set	Cable Set	2045	11/11/2015	11/11/2016
2070	Mini Circuits	VHF-8400+	Filter	2070	11/17/2015	11/17/2016
2072	Mini Circuits	VHF-3100+	Filter	30737	11/17/2015	11/17/2016
2075	Hewlett Packard	8495B	Attenuators	2626A11012	11/18/2015	11/18/2016
2082	Teledyne Storm Products	90-010-048	Cables	2082	4/22/2015	4/22/2016
2086	Merrimac	FAN-6-10K	Attenuators	23148-83-1	11/16/2015	11/16/2016
2089	Agilent Technologies, Inc.	83017A	Amplifiers	3123A00214	12/9/2015	12/9/2016
2095	ETS Lindgren	TILE4! - Version 4.2.A	Software	85242	NCR	NCR
2102	Test Equity	115	Environmental Chamber	150892	3/13/2015	3/13/2016
2108	Fluke	115	Digital MultiMeter	99211160	4/2/2015	4/2/2016
2111	Aeroflex Inmet	40AH2W-20	Attenuator	2111	7/22/2015	7/22/2016
2112	Teledyne Storm Products	921-0101-036	Cables	12-06-698	11/13/2015	11/13/2016
2121	ACS Boca	Radiated Cable Set	Cable Set	2121	8/22/2015	8/22/2016
3004	Teseq	CFL 9206A	Attenuators	34720	10/7/2015	10/7/2016
RE578	MPJA	HY5003	Power Supplies	3700278	NCR	NCR
RE619	Rhode & Schwarz	ESU26	Spectrum Analyzers	1302.6005K26 Ser. 100190	11/5/2014	11/5/2016

Notes:

- **NCR = No Calibration Required**
- **All equipment was used within the calibration interval reported in the table.**
- **The calibration cycle information for asset 479 is provided to cover the entire test period.**

5 SUPPORT EQUIPMENT

Table 5-1: EUT and Support Equipment

Item #	Type Device	Manufacturer	Model/Part #	Serial #
1	EUT	Juniper Systems, Inc.	MS2	MS2P34
2	12 VDC Power Supply	PhiHong	PSAA20R-120	P51904229A1
3	Earbuds	Maxell	N/A	N/A
4	Mouse	Insignia	NS-PNC5001	15G03A003432

Table 5-2: Cable Description (Radiated Emissions)

Cable #	Cable Type	Length	Shield	Termination
A	Power	1.5 m	No	Power Supply To EUT
B	Audio	0.92 m	No	Earbuds to EUT
C	USB	1.55 m	No	Mouse to EUT
D	Extension Power Cord	2.7 m	No	Power Supply to AC Mains

6 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM

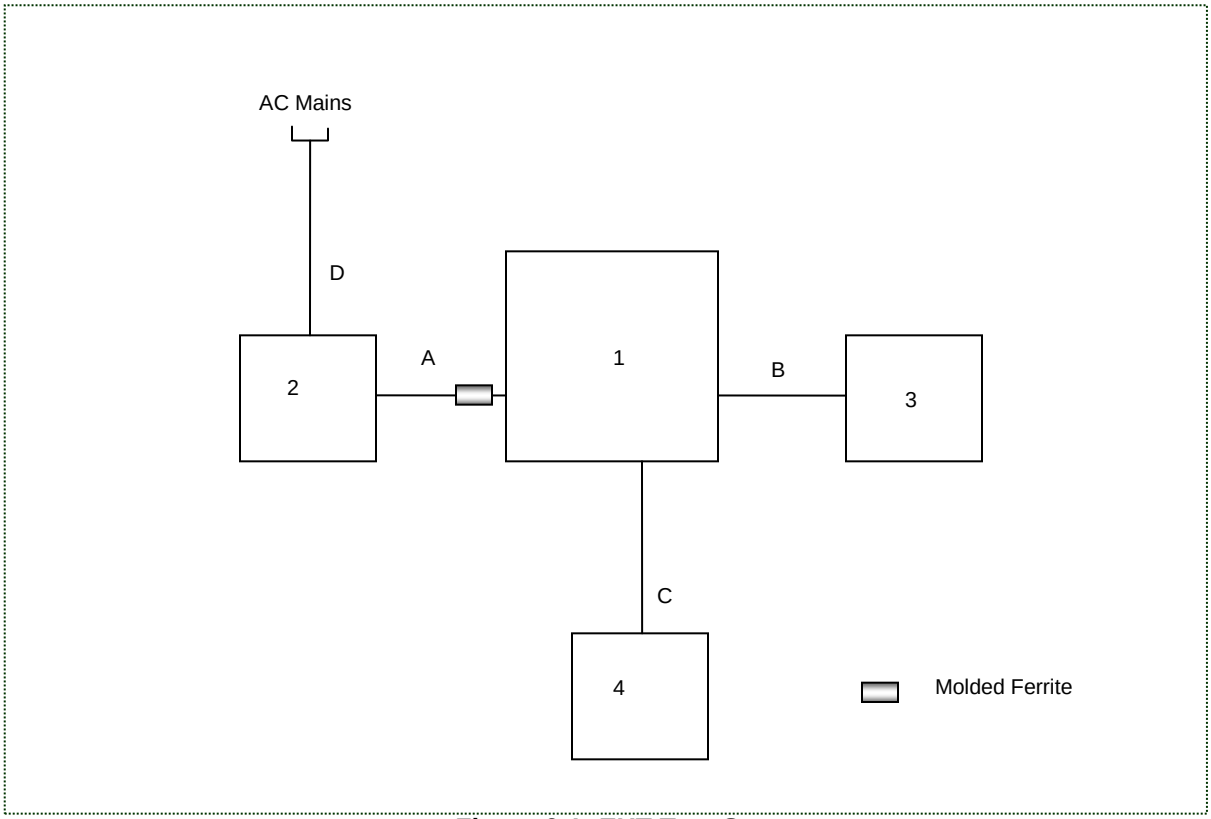

Figure 6-1: EUT Test Setup

7 SUMMARY OF TESTS

Along with the tabular data shown below, plots were taken of all signals deemed important enough to document.

7.1 Antenna Requirement – FCC: Section 15.203

The MS2 uses a 4.2 dBi Internal PIFA that is soldered directly to the PCB as well as a 4.5 dBi PIFA printed in the PCB for the primary and secondary antennas, respectively. The antennas are neither removable nor accessible to the end-user. Thus, the equipment meets the requirements of FCC Section 15.203.

The directional gain is calculated per the FCC KDB Publication No. 662911 D01 Multiple Transmitter Output v02r01.

For MIMO CDD and SM-MIMO, the directional gain is calculated as:

$$Directional\ Gain = 10 \cdot log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$$

where
N_{SS} = the number of independent spatial streams of data.
N_{ANT} = the total number of antennas
$g_{j,k}$ = $10^{G_k/20}$ if the k_{th} antenna is being fed by spatial stream j, or zero if it is not
G_k is the gain in dBi of the k_{th} antenna

The Directional Gain can be calculated as:

$Directional\ Gain$ = $10*\log[\{(10^{4.2/20} + 10^{4.5/20})^2\}/2]$
= $10*\log(5.45)$
= 7.4 dB

7.2 Emission/Occupied Bandwidth - FCC: Section 15.407(e); IC: RSS-247 6.2, RSS-GEN 6.6

7.2.1 Measurement Procedure

The 6dB bandwidth was measured in accordance with the FCC KDB Publication No. 789033 D02 General UNII Test Procedures New Rules v01r01 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E" Minimum Emission Bandwidth for the band 5.725-5.85 GHz. The RBW of the spectrum analyzer was set to 100 kHz and VBW 300 kHz. Span was set large enough to capture the entire emissions and >> RBW.

The 26 dB Emission Bandwidth (EBW) was measured in accordance with the FCC KDB Publication No. 789033 D02 General UNII Test Procedures New Rules v01r01 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E" Emission Bandwidth (EBW). The RBW was set to approximately 1% of the emission bandwidth. The bandwidth was measured as the maximum width of the emission that is 26 dB down form the maximum of the emission.

The 99% occupied bandwidth was measured with the spectrum analyzer span set to fully display the emission, including the emissions skirts. The RBW was to 1% to 5% of the occupied bandwidth. The occupied 99% bandwidth was measured using the occupied bandwidth function of the analyzer.

7.2.2 Measurement Results

Results are shown below.

Band 5150 – 5250 MHz

802.11n 20 MHz

Primary Antenna

Table 7.2.2-1: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5180	19.70	17.60
5200	19.80	17.60
5240	19.80	17.60

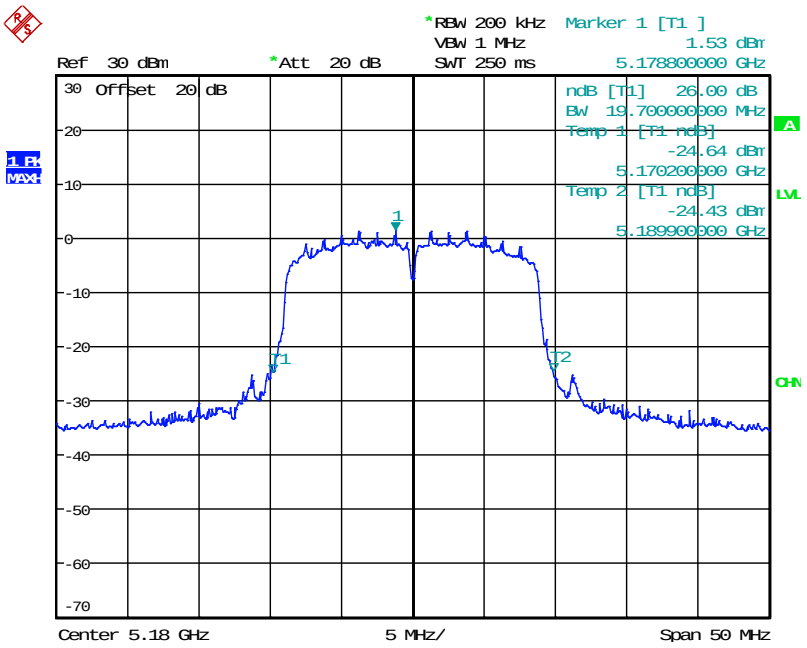

Figure 7.2.2-1: 26 dB EBW - Low Channel

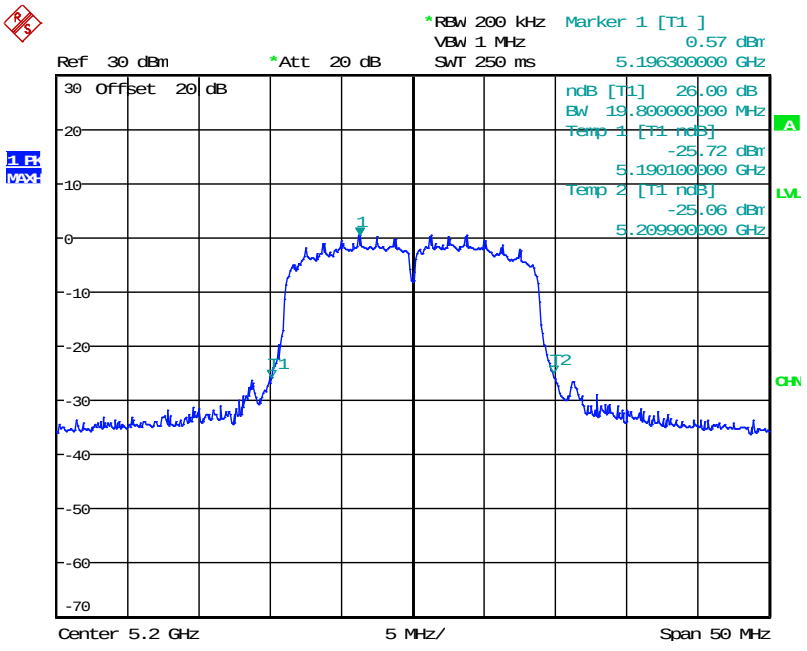

Figure 7.2.2-2: 26 dB EBW - Middle Channel

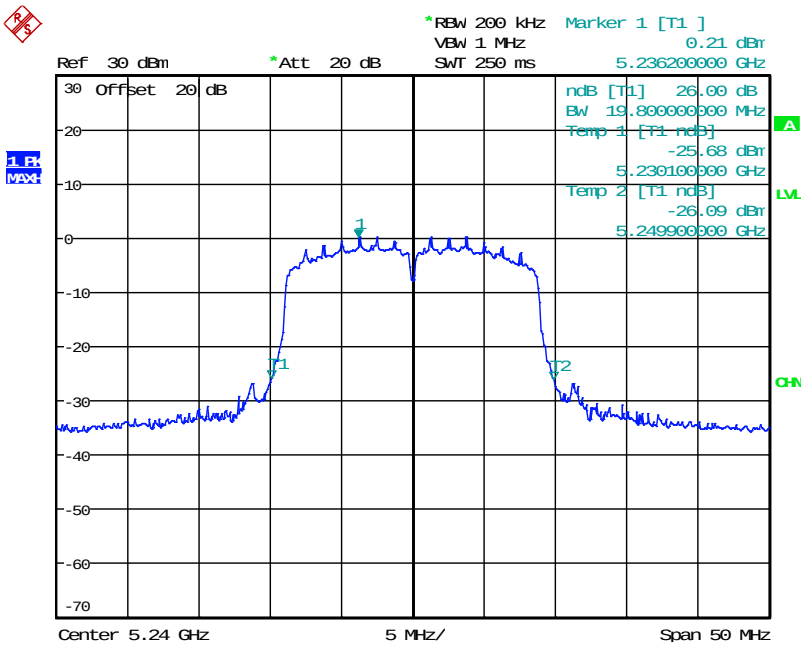

Figure 7.2.2-3: 26 dB EBW - High Channel

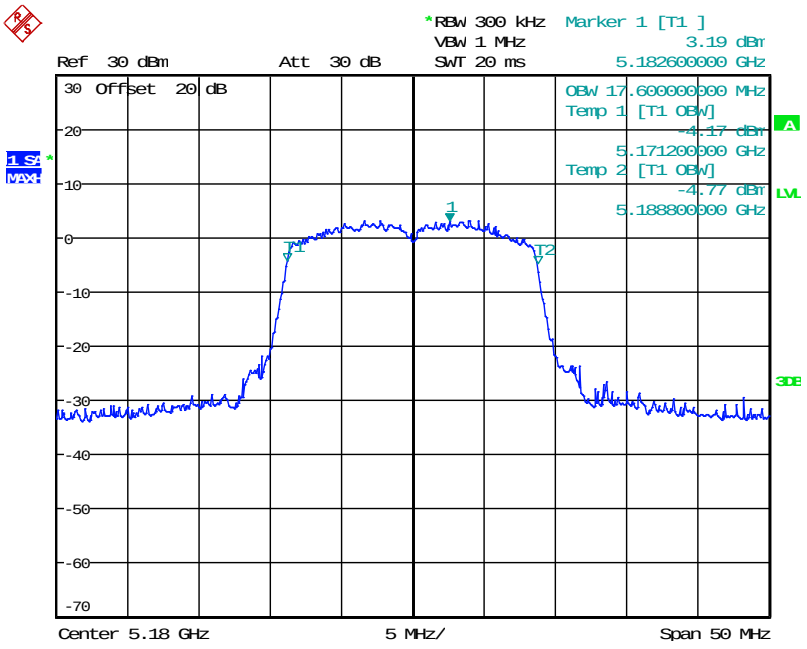

Figure 7.2.2-4: 99% OBW - Low Channel

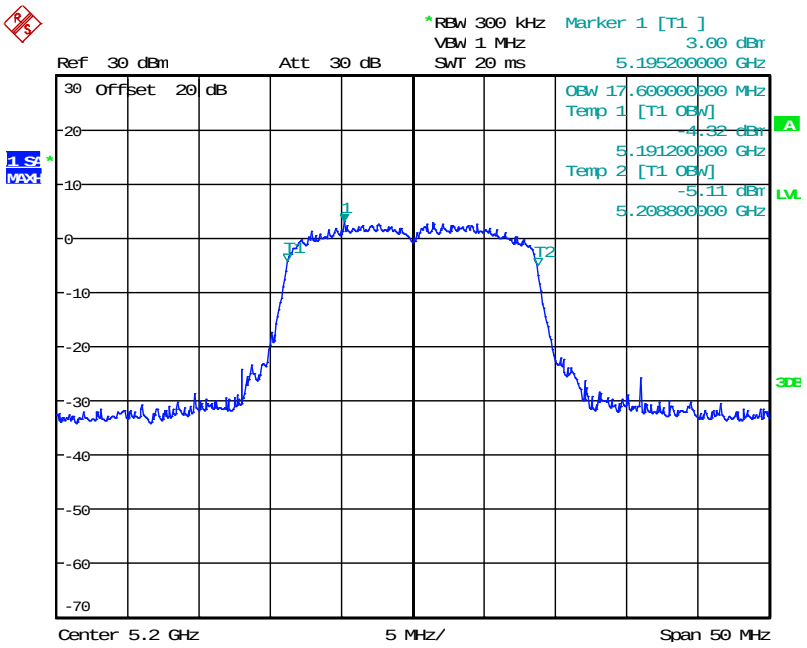

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Figure 7.2.2-5: 99% OBW - Middle Channel

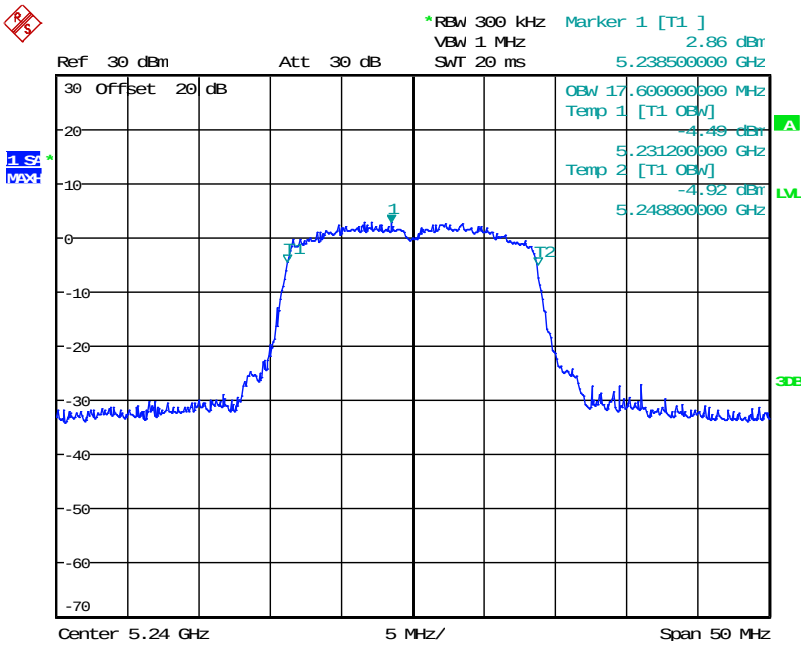

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Figure 7.2.2-6: 99% OBW - High Channel

Secondary Antenna

Table 7.2.2-2: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5180	19.70	17.60
5200	20.00	17.60
5240	19.80	17.60

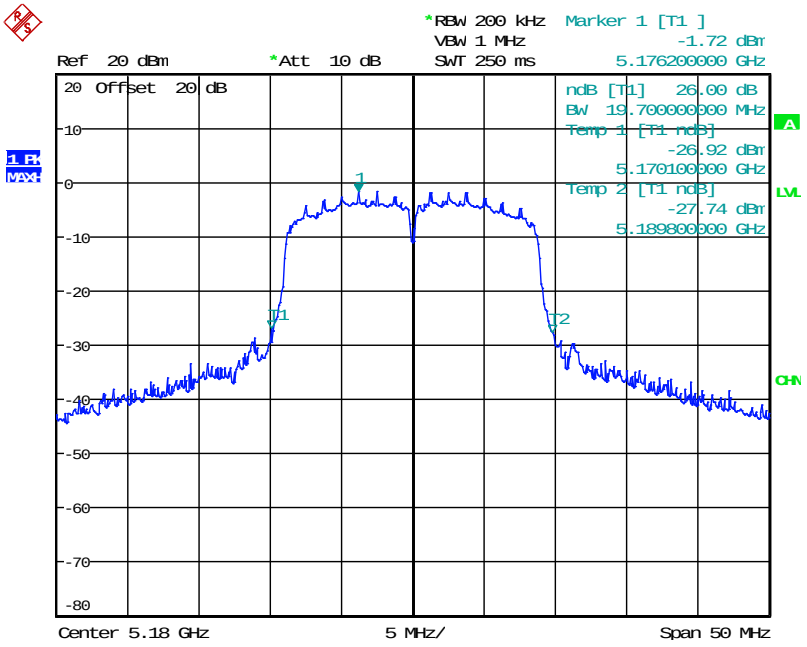

Figure 7.2.2-7: 26 dB EBW - Low Channel

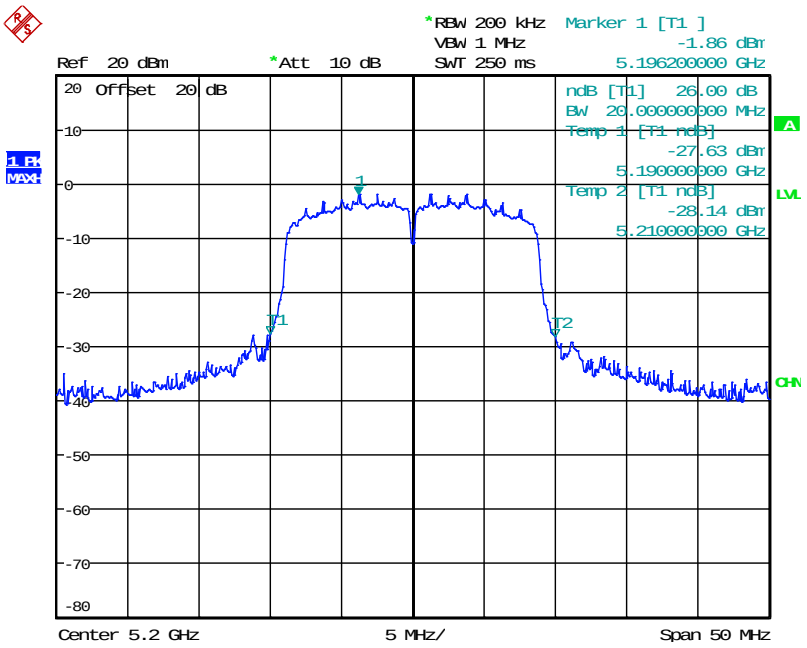

Figure 7.2.2-8: 26 dB EBW - Middle Channel

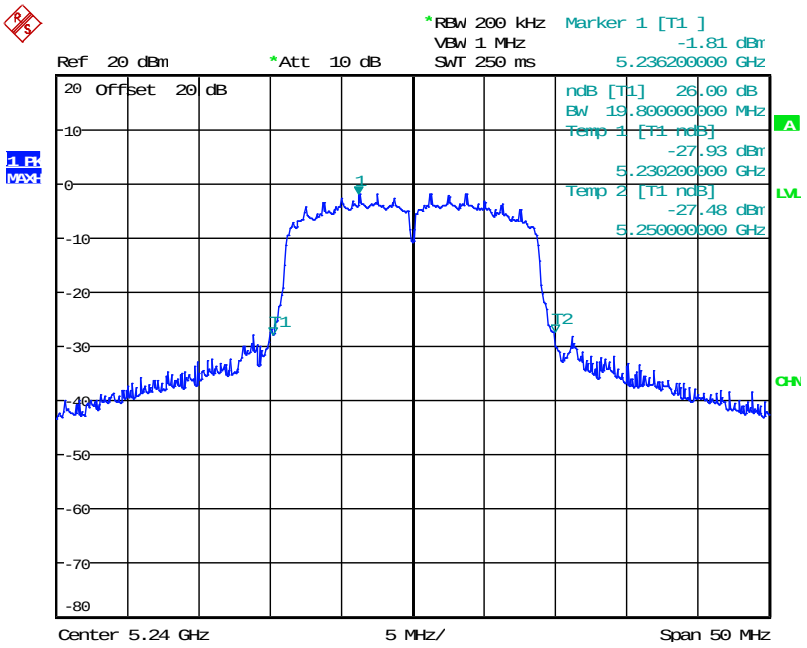

Figure 7.2.2-9: 26 dB EBW - High Channel

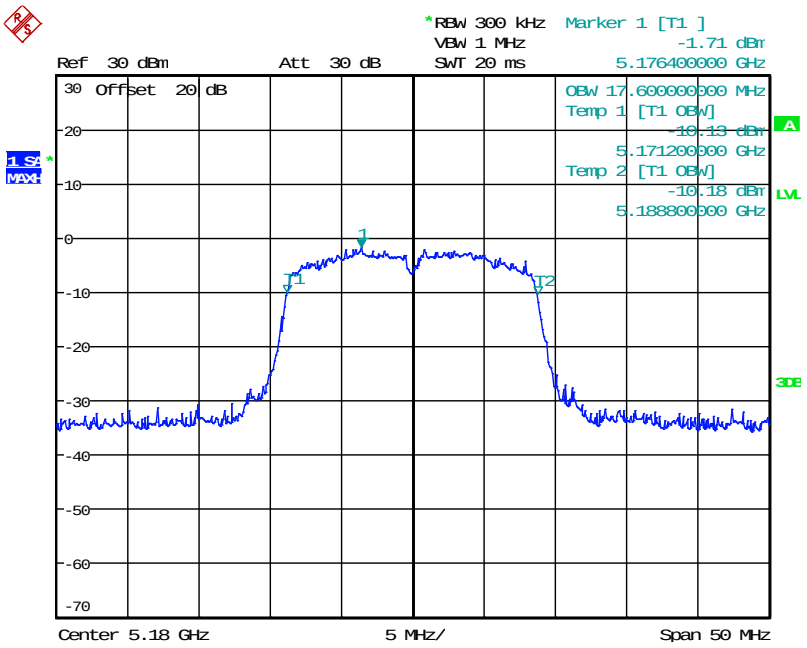

Figure 7.2.2-10: 99% OBW - Low Channel

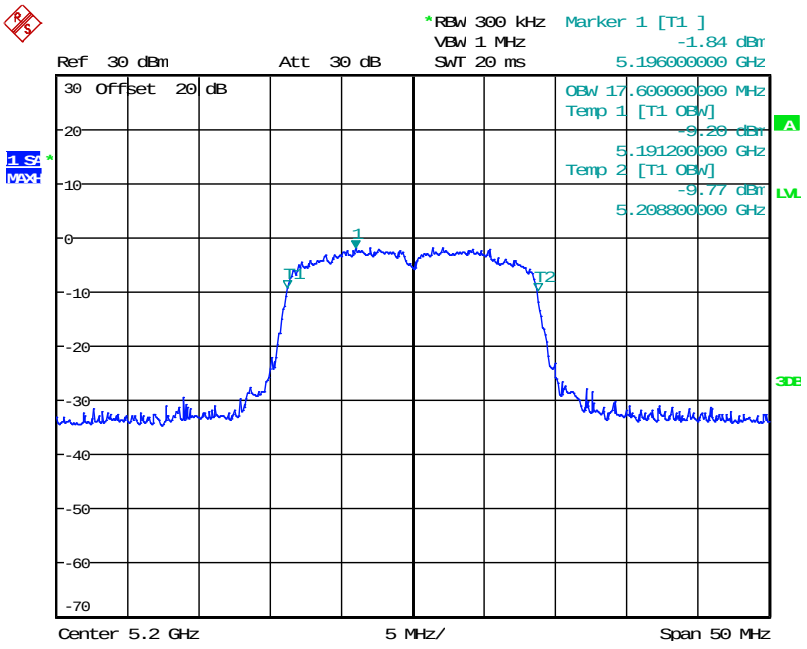

Figure 7.2.2-11: 99% OBW - Middle Channel

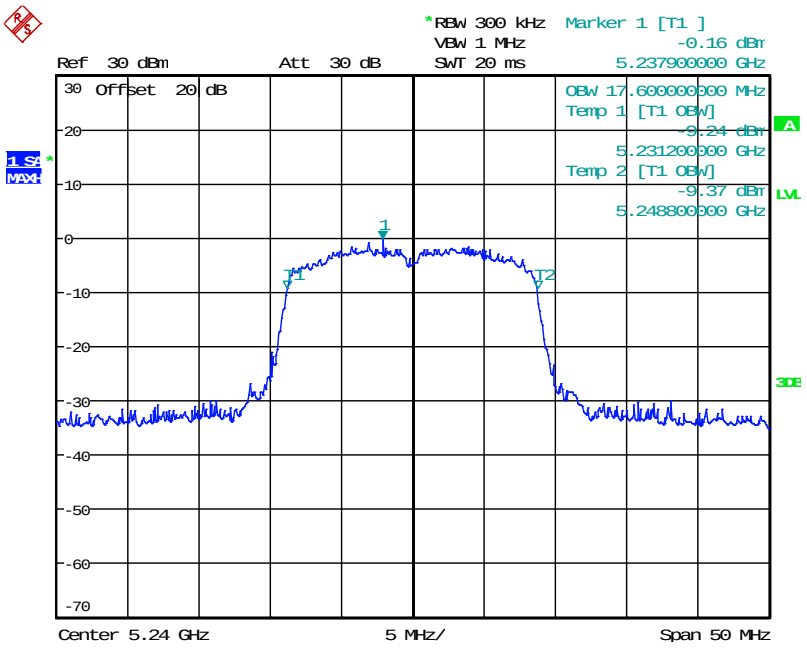

Figure 7.2.2-12: 99% OBW - High Channel

802.11n 40 MHz

Primary Antenna

Table 7.2.2-3: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5190	47.80	37.00
5230	47.00	37.00

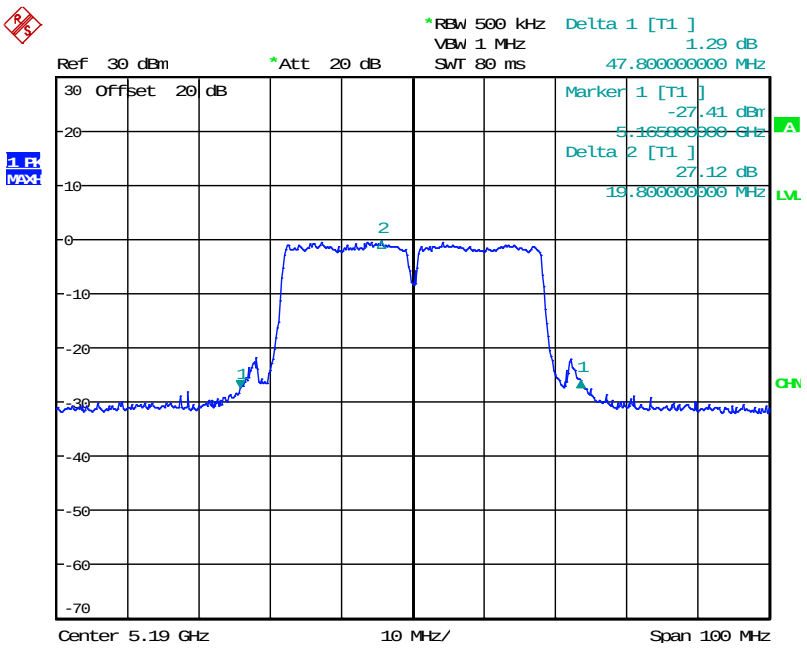

Figure 7.2.2-13: 26 dB EBW - Low Channel

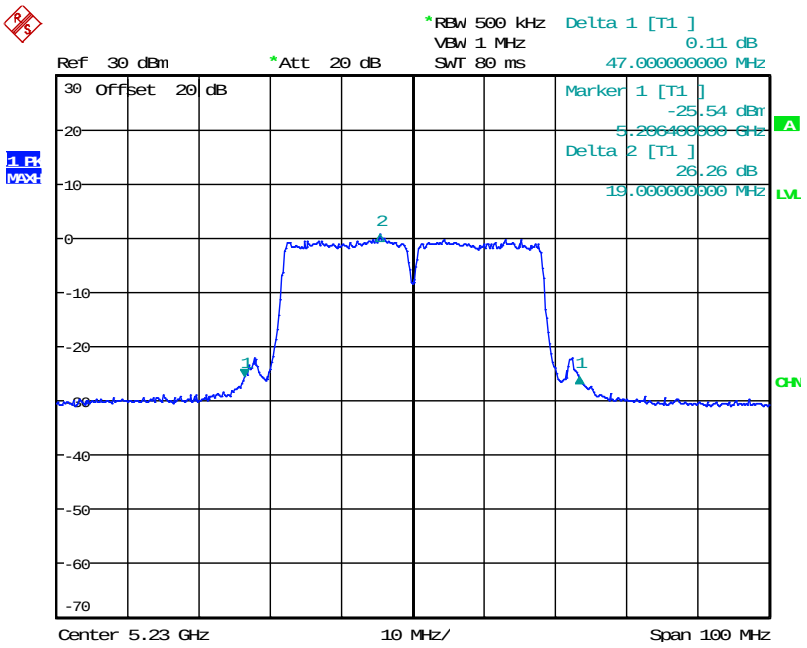

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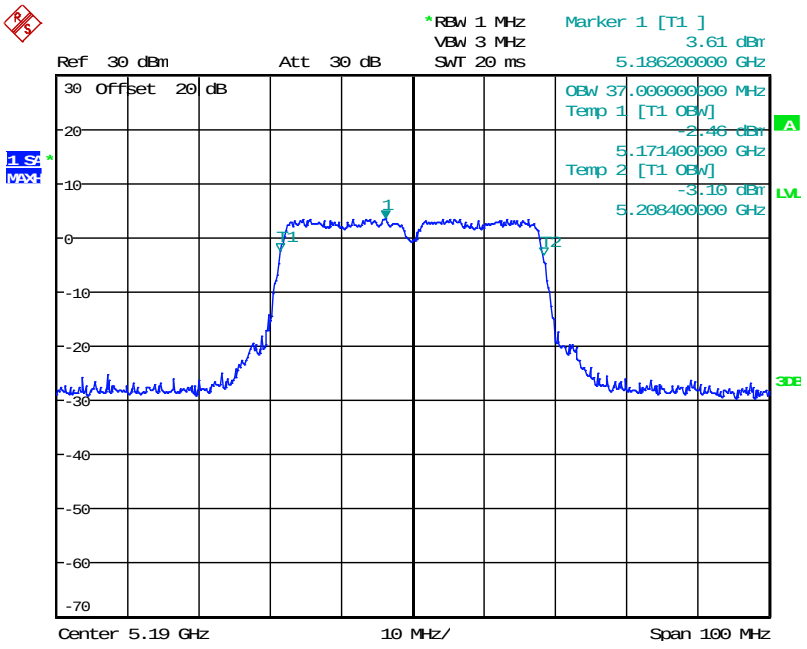
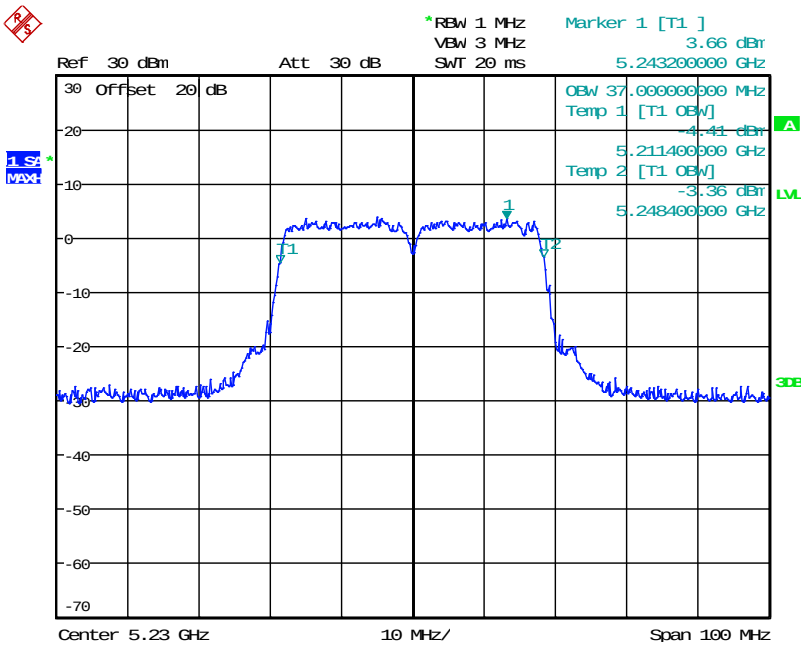
Figure 7.2.2-14: 26 dB EBW - High Channel



Date: 15.FEB.2016 23:36:34

Figure 7.2.2-15: 99% OBW - Low Channel



Date: 15.FEB.2016 23:39:30

Figure 7.2.2-16: 99% OBW - High Channel

Secondary Antenna

Table 7.2.2-4: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5190	48.40	37.40
5230	46.80	37.20

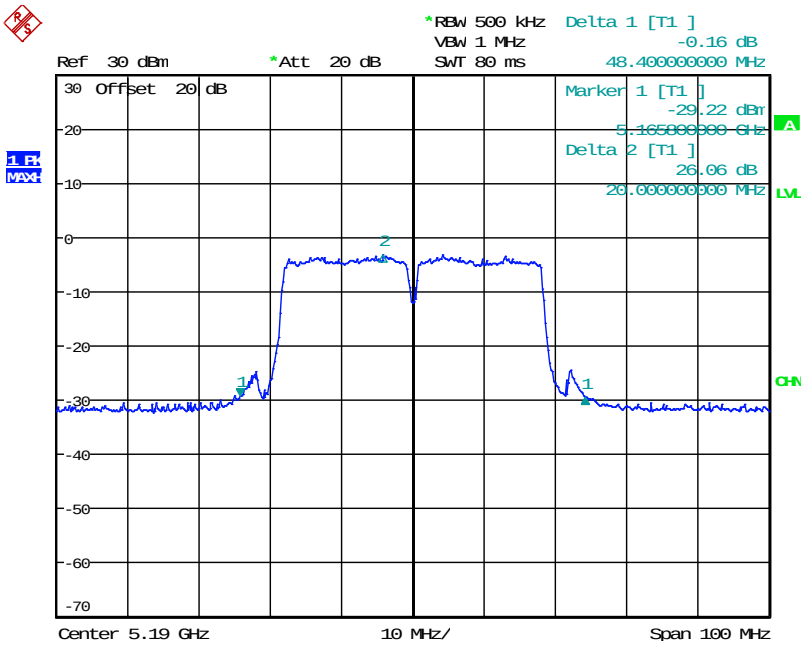
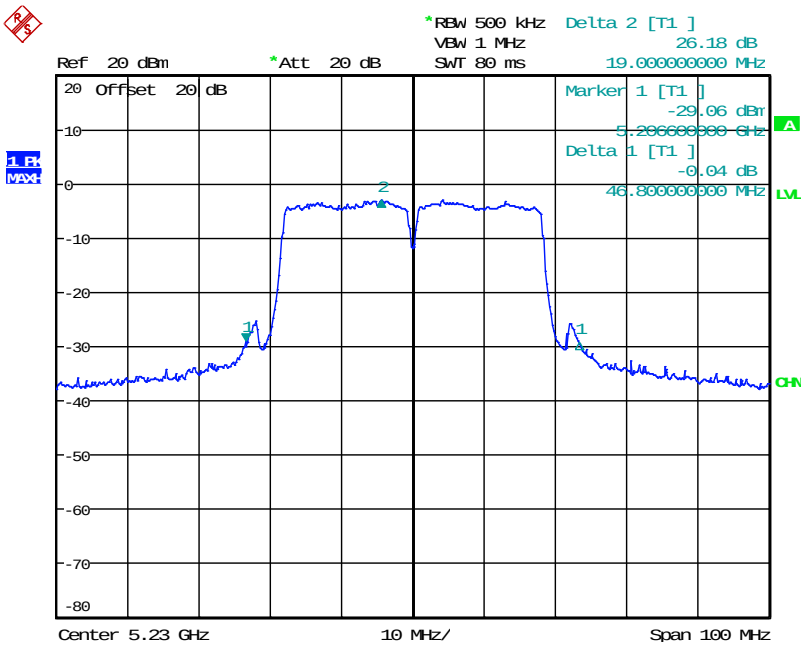
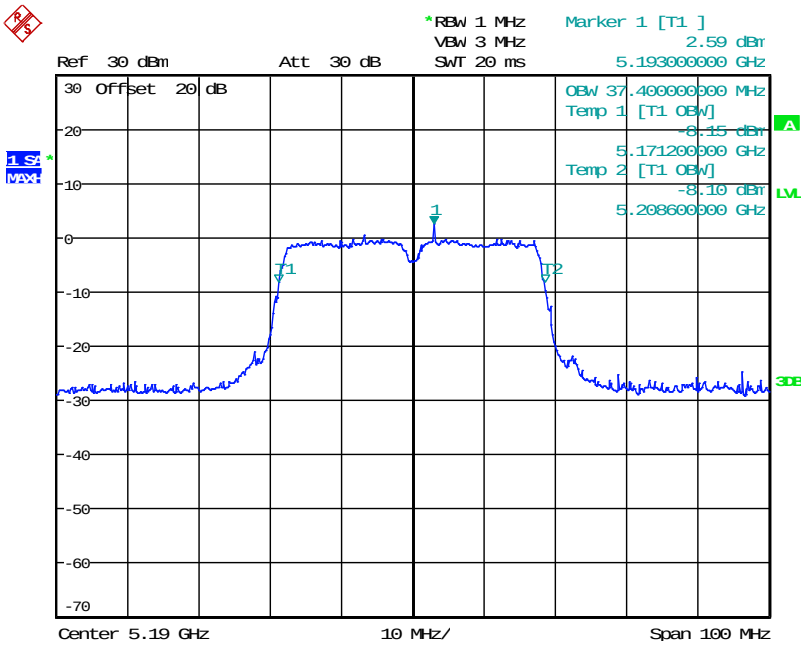


Figure 7.2.2-17: 26 dB EBW - Low Channel



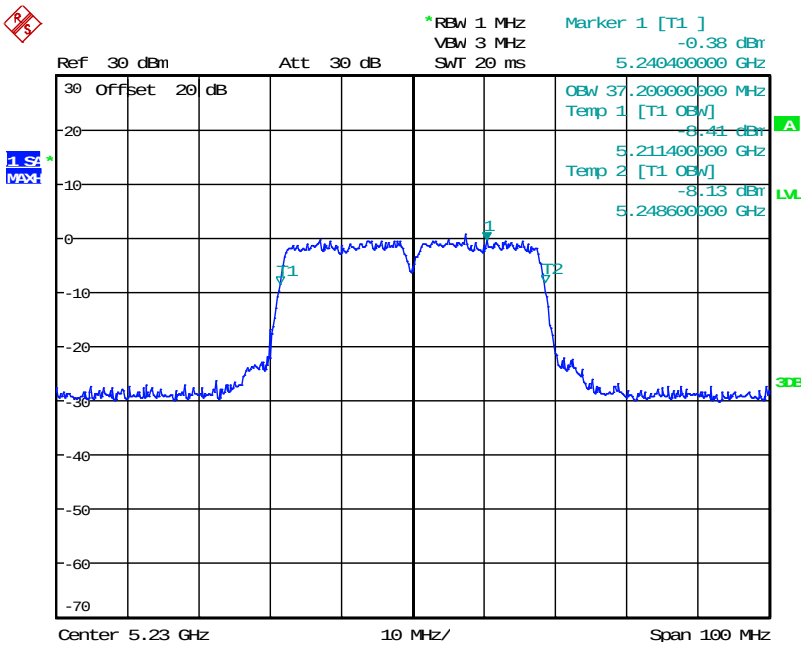
Date: 19.FEB.2016 09:44:49

Figure 7.2.2-18: 26dB EBW - High Channel



Date: 15.FEB.2016 23:12:58

Figure 7.2.2-19: 99% OBW - Low Channel



Date: 15.FEB.2016 23:16:29

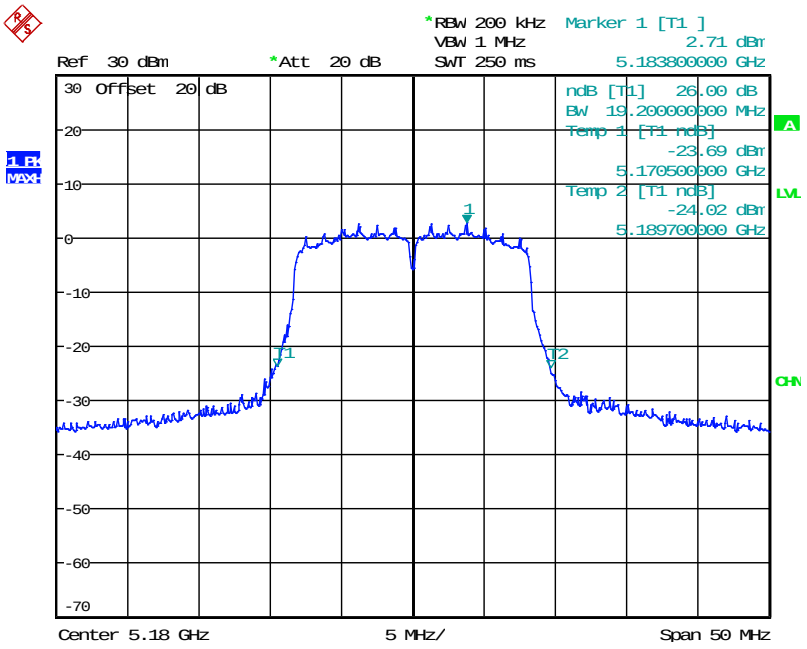
Figure 7.2.2-20: 99% OBW - High Channel

802.11a

Primary Antenna

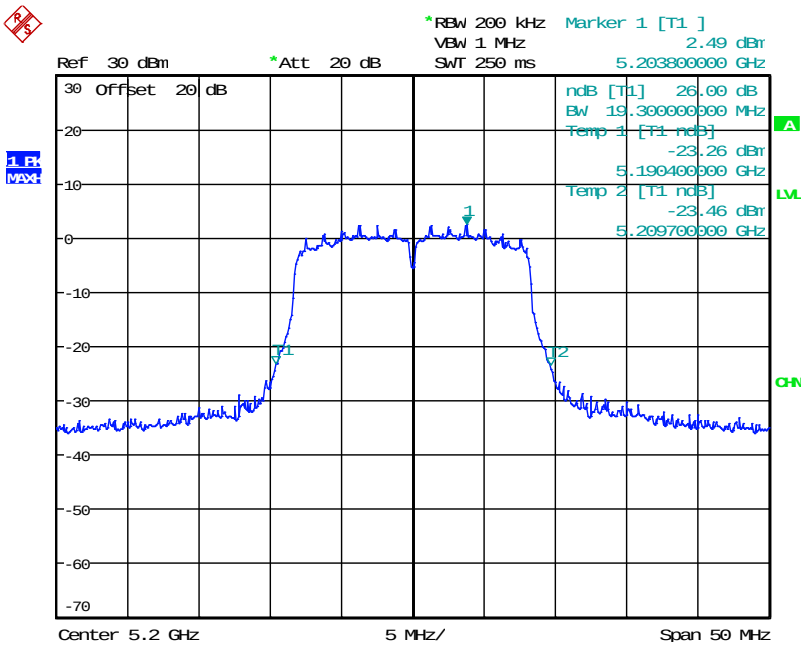
Table 7.2.2-5: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5180	19.20	16.70
5200	19.30	16.50
5240	19.20	16.70



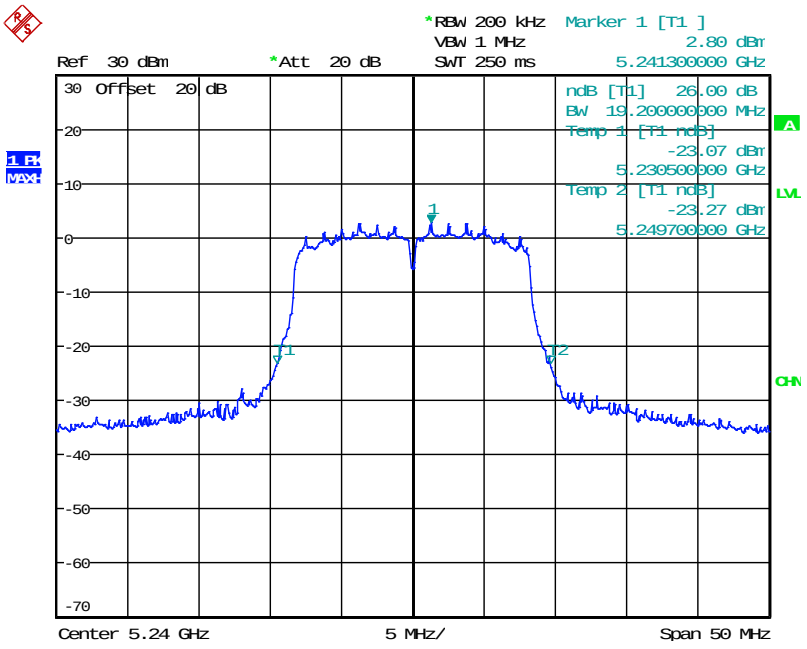
Date: 18.FEB.2016 16:01:21

Figure 7.2.2-21: 26 dB EBW - Low Channel



Date: 18.FEB.2016 16:03:24

Figure 7.2.2-22: 26 dB EBW - Middle Channel



Date: 18.FEB.2016 16:05:07

Figure 7.2.2-23: 26 dB EBW - High Channel

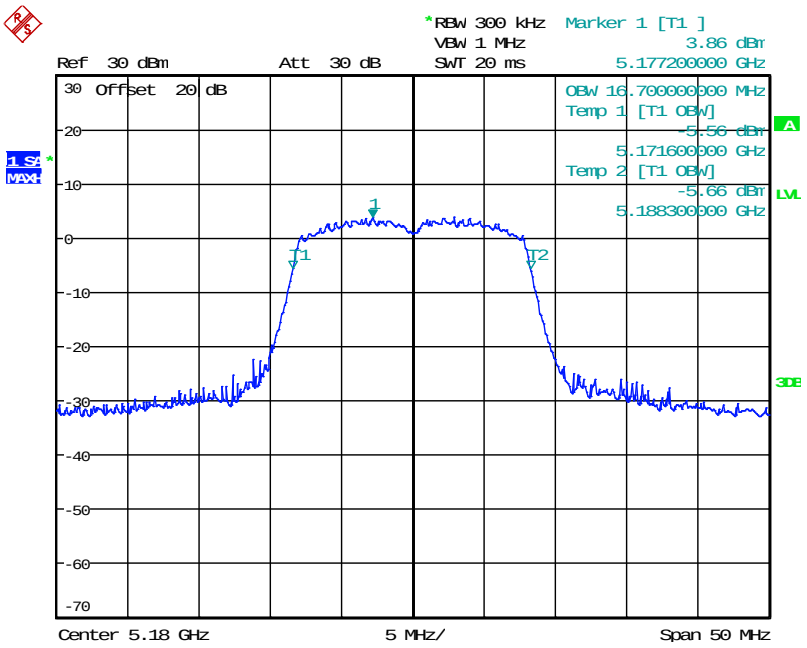


Figure 7.2.2-24: 99% OBW - Low Channel

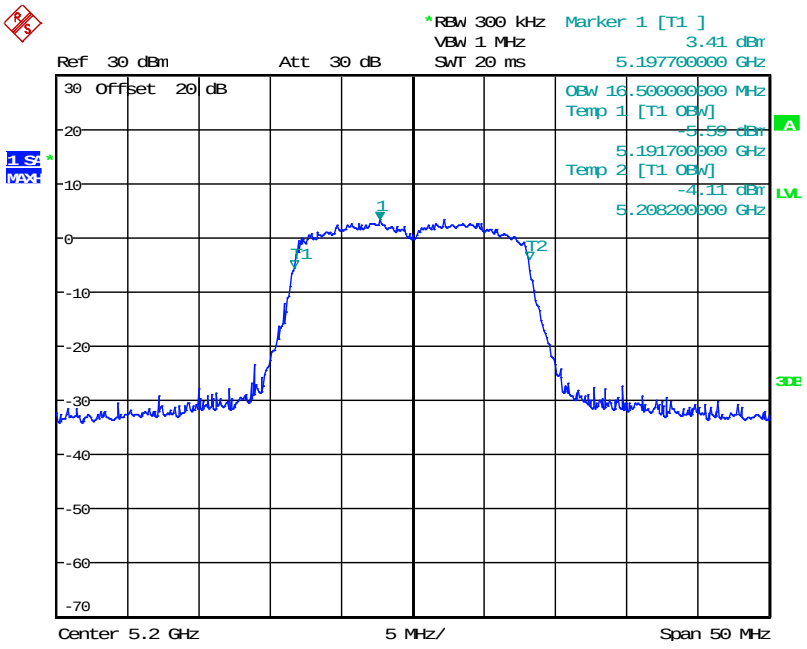


Figure 7.2.2-25: 99% OBW - Middle Channel

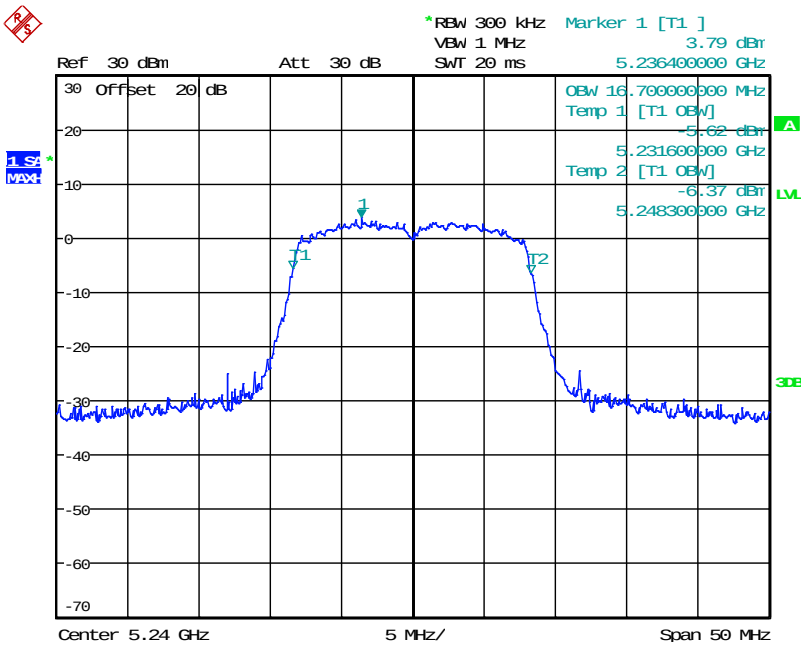


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Figure 7.2.2-26: 99% OBW - High Channel

Secondary Antenna

Table 7.2.2-6: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5180	19.40	16.60
5200	19.40	16.70
5240	19.40	16.60

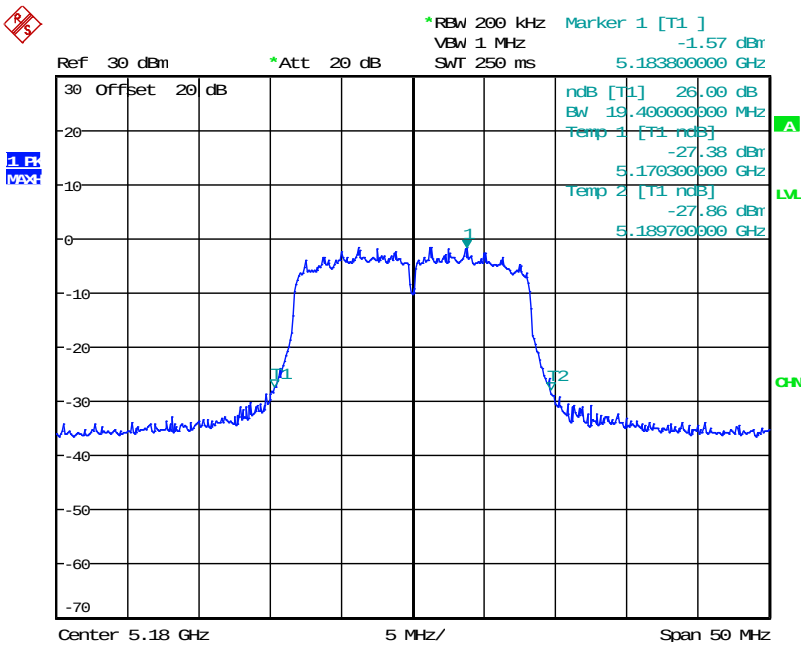

Figure 7.2.2-27: 26 dB EBW - Low Channel

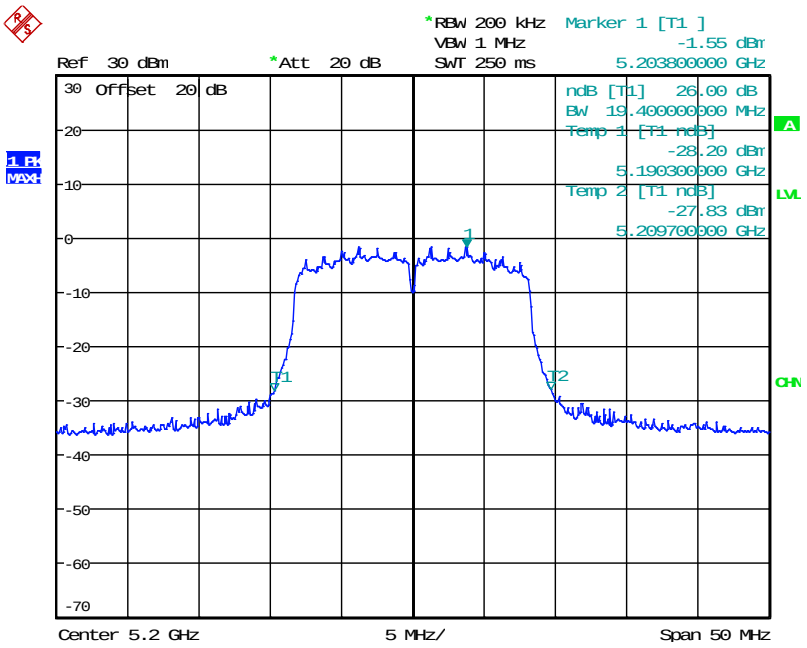

Figure 7.2.2-28: 26 dB EBW - Middle Channel

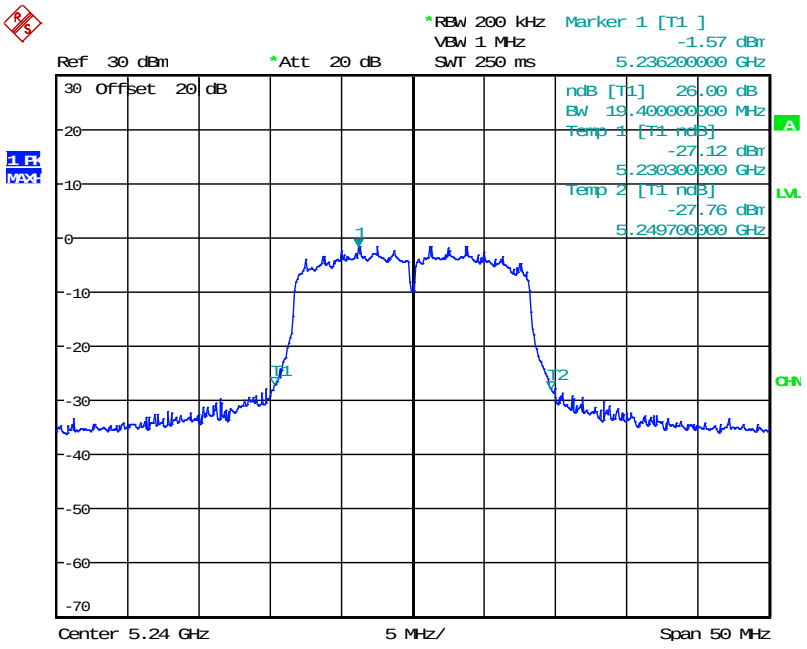

Figure 7.2.2-29: 26 dB EBW - High Channel

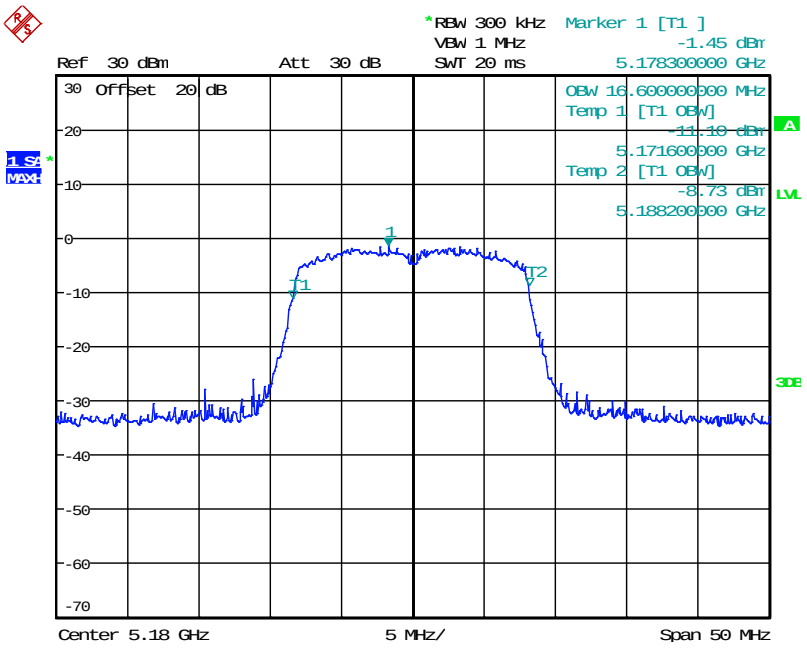

Figure 7.2.2-30: 99% OBW - Low Channel

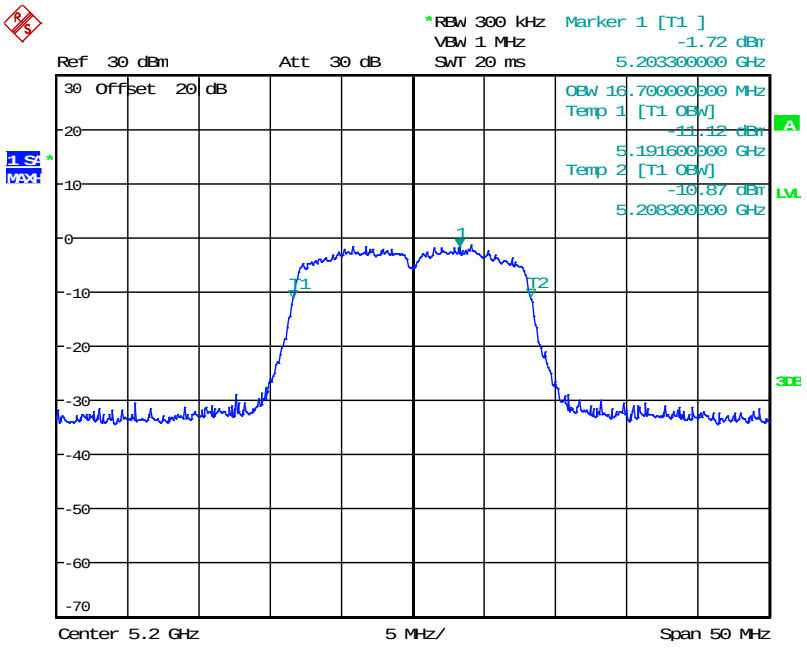

Figure 7.2.2-31: 99% OBW - Middle Channel

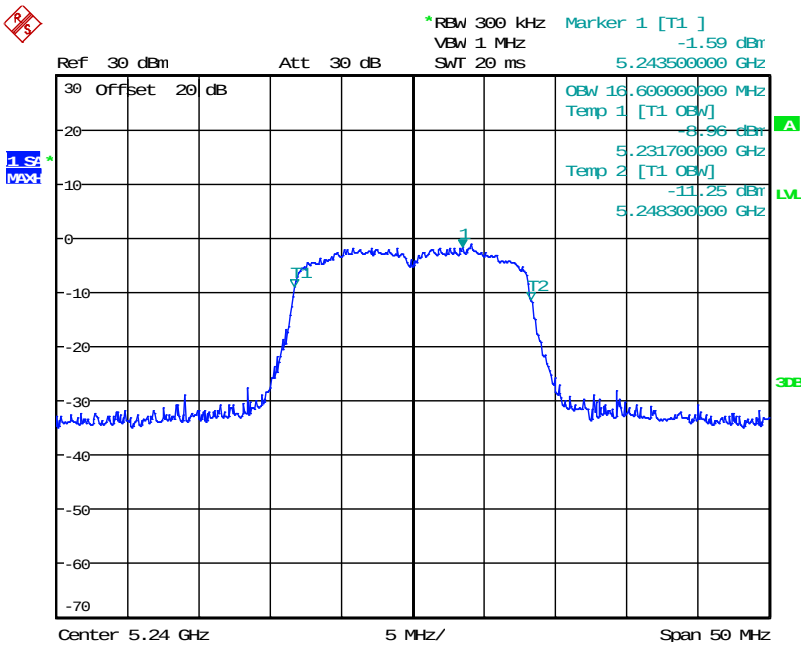

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Figure 7.2.2-32: 99% OBW - High Channel

Band 5250 – 5350 MHz

802.11n 20 MHz

Primary Antenna

Table 7.2.2-8: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5260	19.80	17.70
5280	19.90	17.60
5320	19.60	17.50

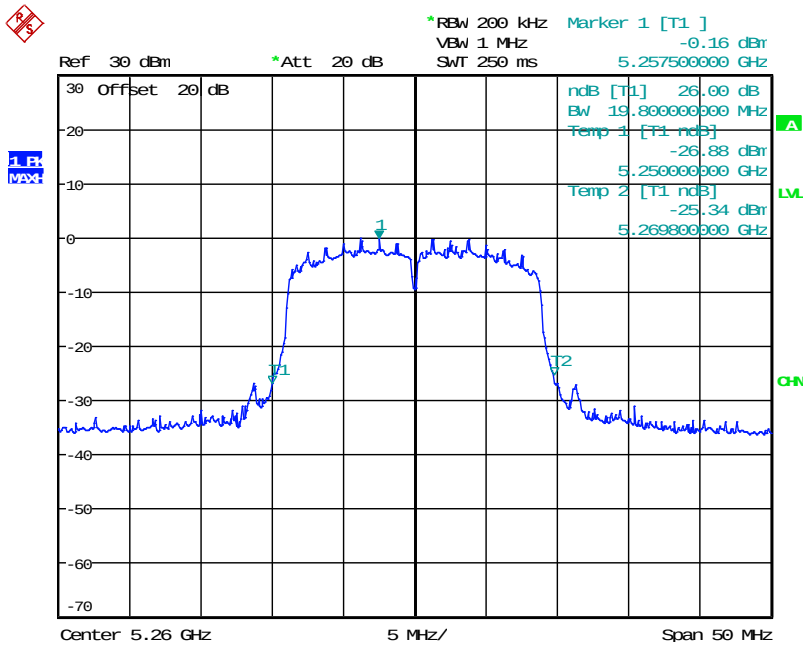

Figure 7.2.2-33: 26 dB EBW - Low Channel

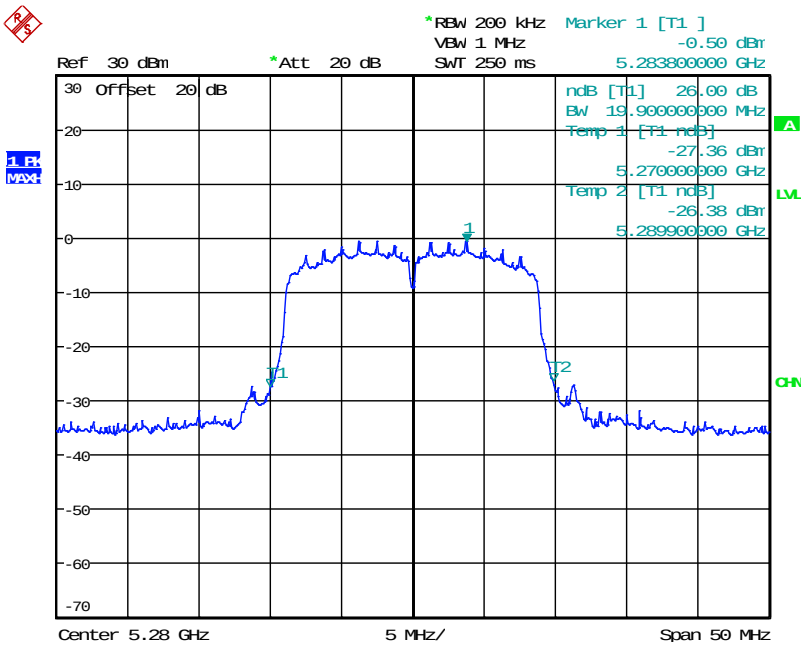

Figure 7.2.2-34: 26 dB EBW - Middle Channel

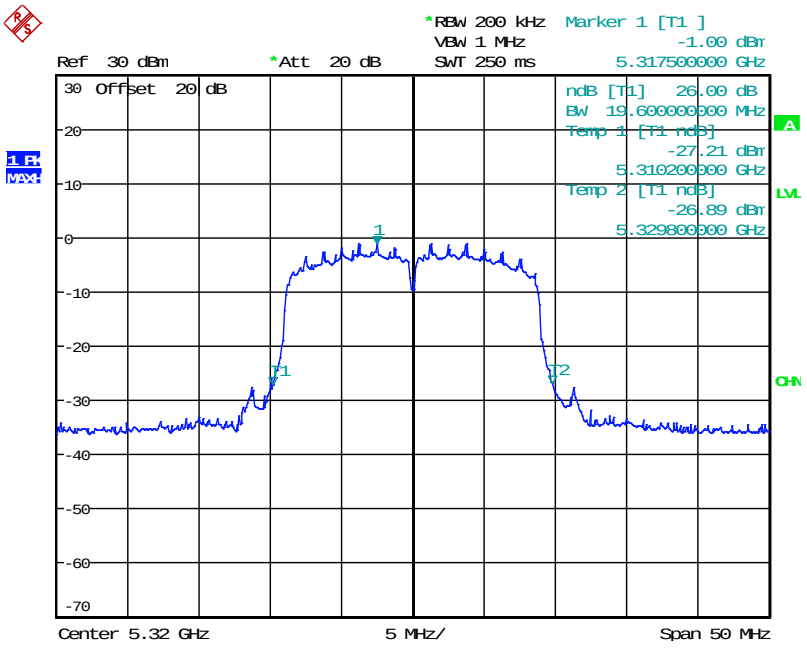

Figure 7.2.2-35: 26 dB EBW - High Channel

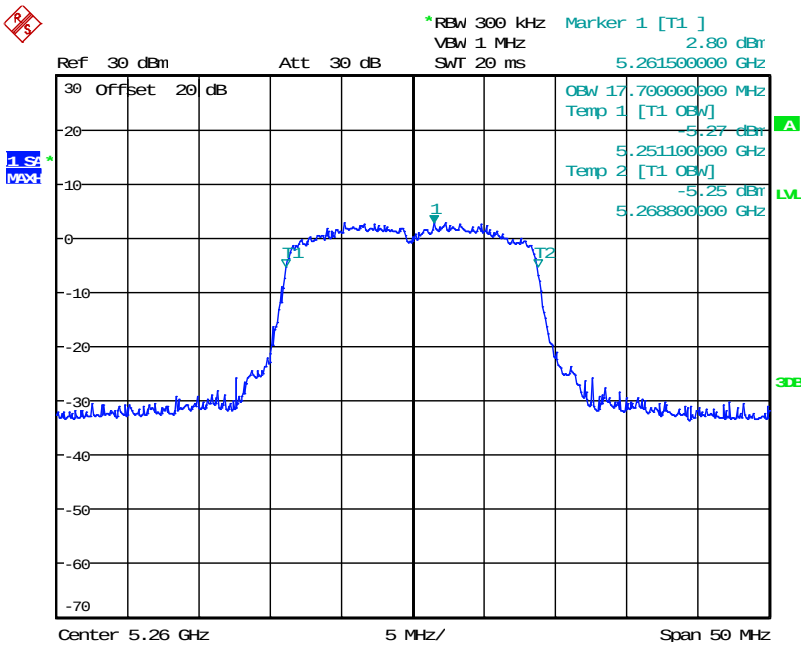

Figure 7.2.2-36: 99% OBW - Low Channel

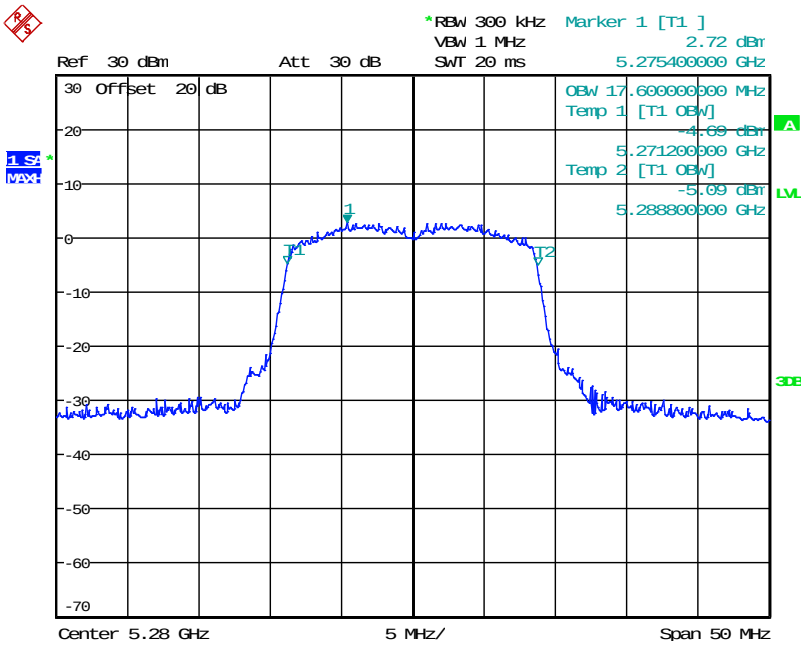

Figure 7.2.2-37: 99% OBW - Middle Channel

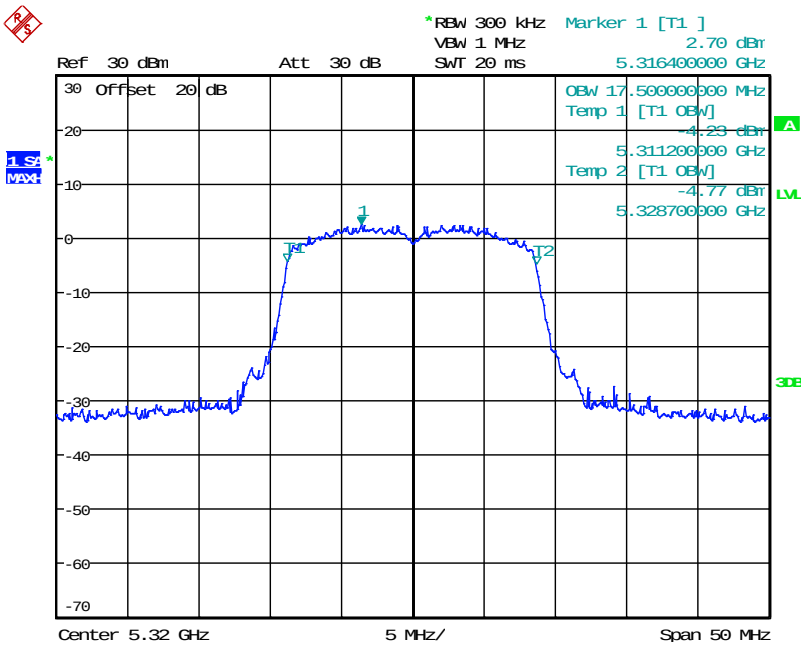

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Figure 7.2.2-38: 99% OBW - High Channel

Secondary Antenna

Table 7.2.2-9: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5260	19.80	17.60
5280	19.90	17.70
5320	19.90	17.60

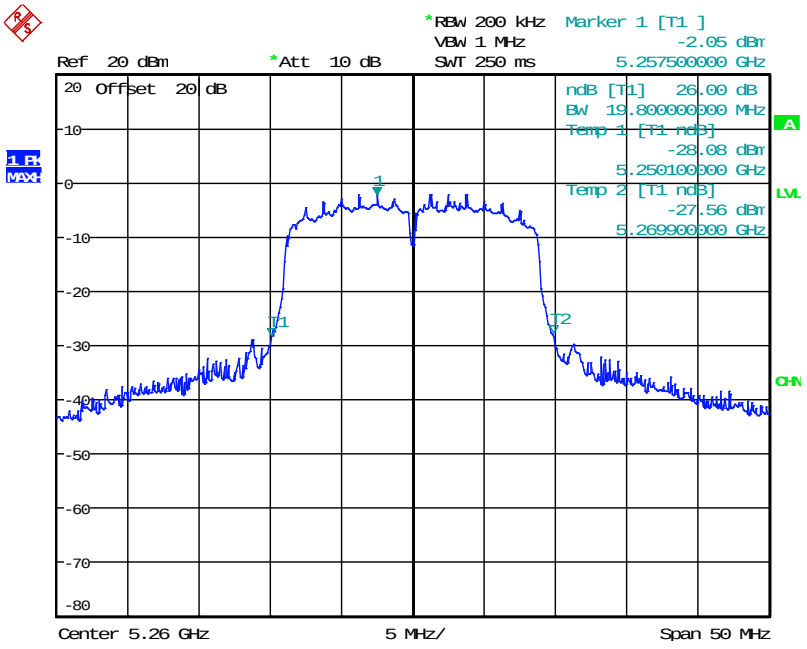


Figure 7.2.2-39: 26 dB EBW - Low Channel

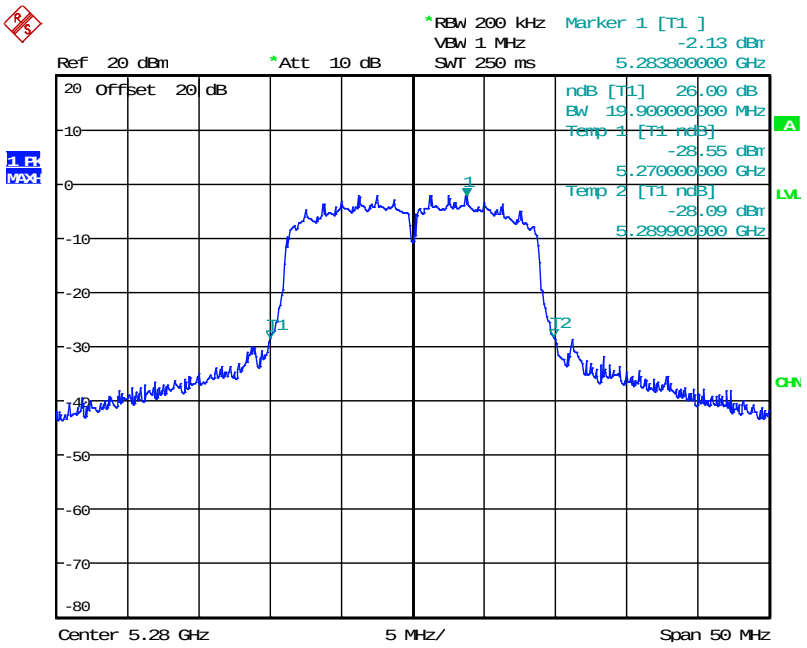


Figure 7.2.2-40: 26 dB EBW - Middle Channel

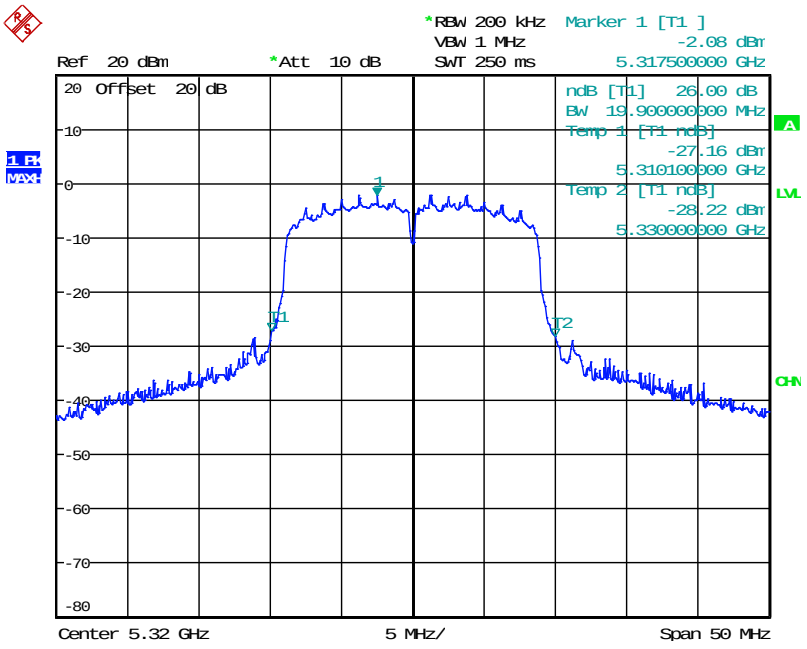
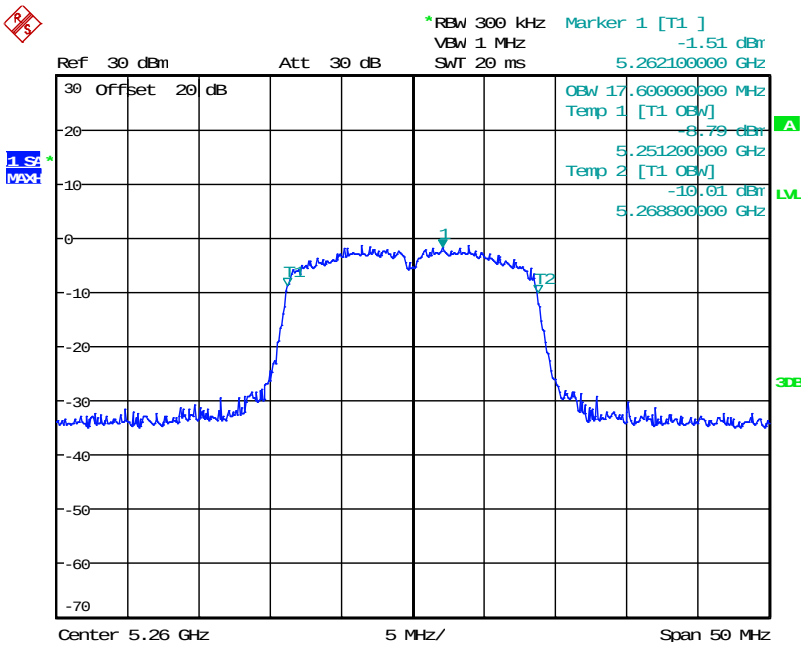
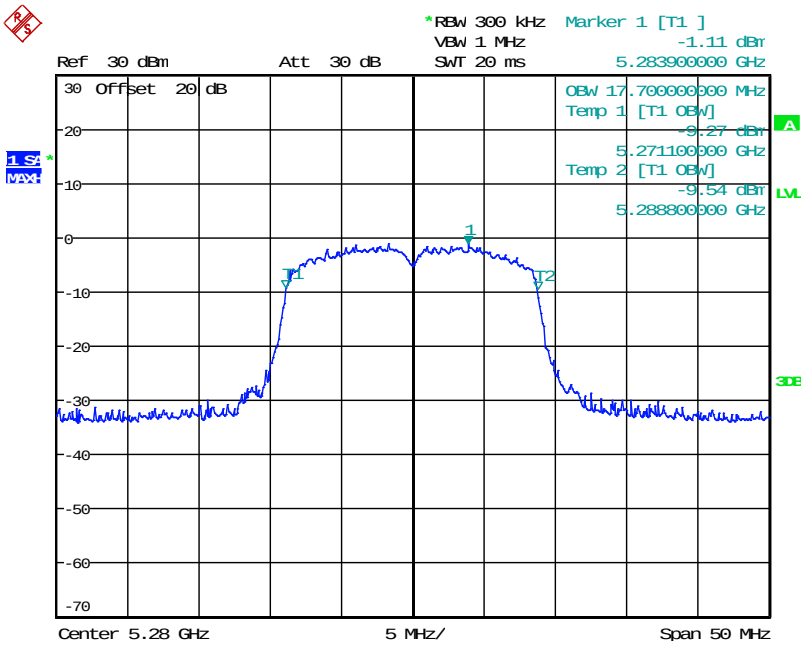


Figure 7.2.2-41: 26 dB EBW - High Channel



Date: 17.FEB.2016 23:14:06

Figure 7.2.2-42: 99% OBW - Low Channel



Date: 17.FEB.2016 23:20:26

Figure 7.2.2-43: 99% OBW - Middle Channel

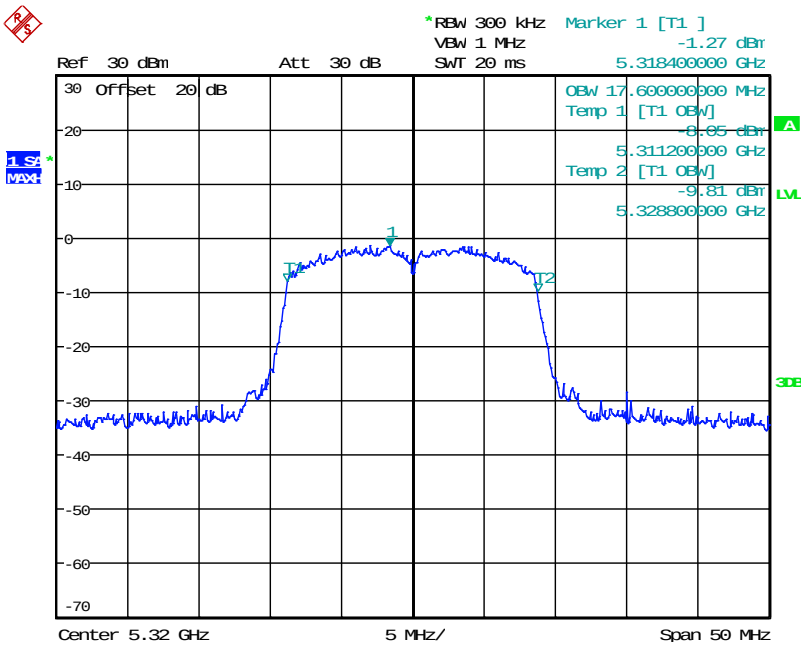


Figure 7.2.2-44: 99% OBW - High Channel

802.11n 40 MHz

Primary Antenna

Table 7.2.2-10: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5270	48.00	37.00
5310	48.40	37.00

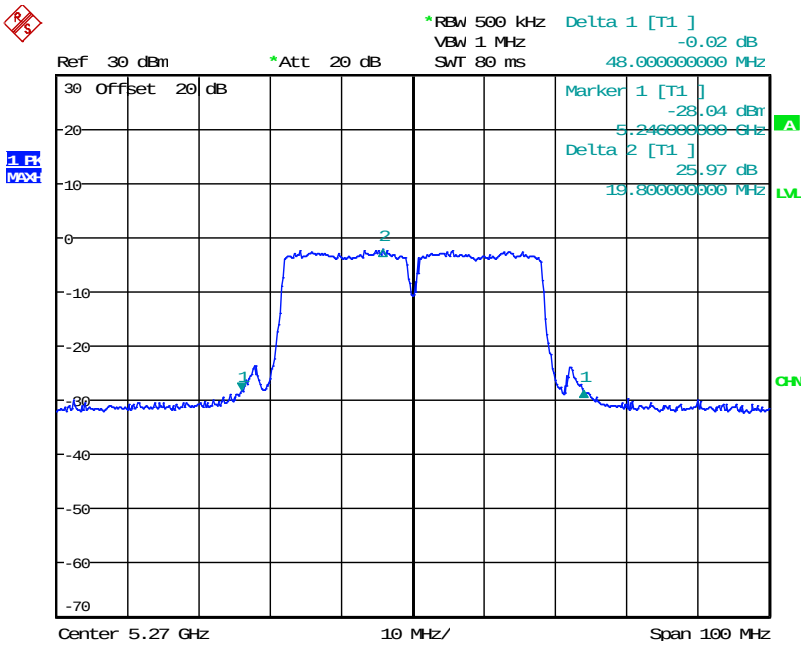
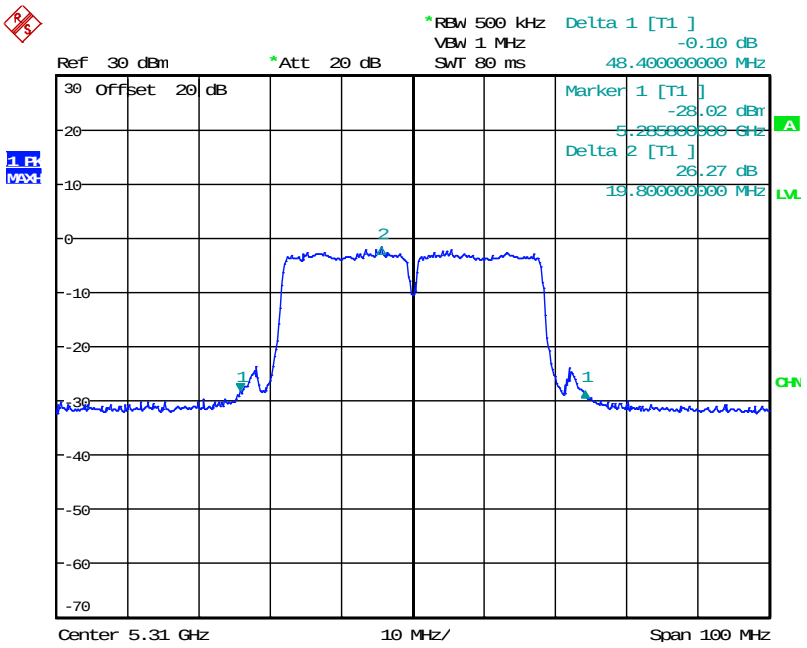
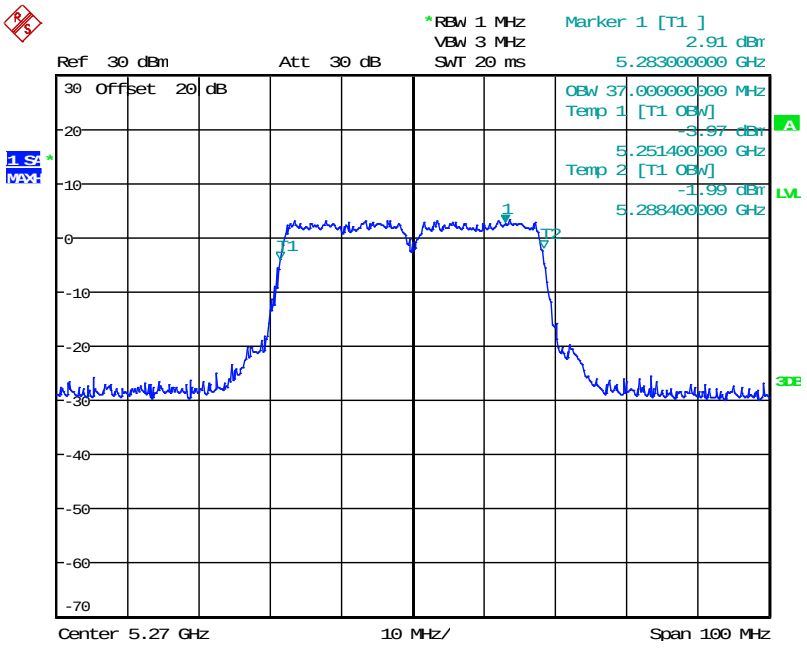


Figure 7.2.2-45: 26 dB EBW - Low Channel



Date: 19.FEB.2016 00:01:02

Figure 7.2.2-46: 26 dB EBW - High Channel



Date: 15.FEB.2016 23:42:22

Figure 7.2.2-47: 99% OBW - Low Channel

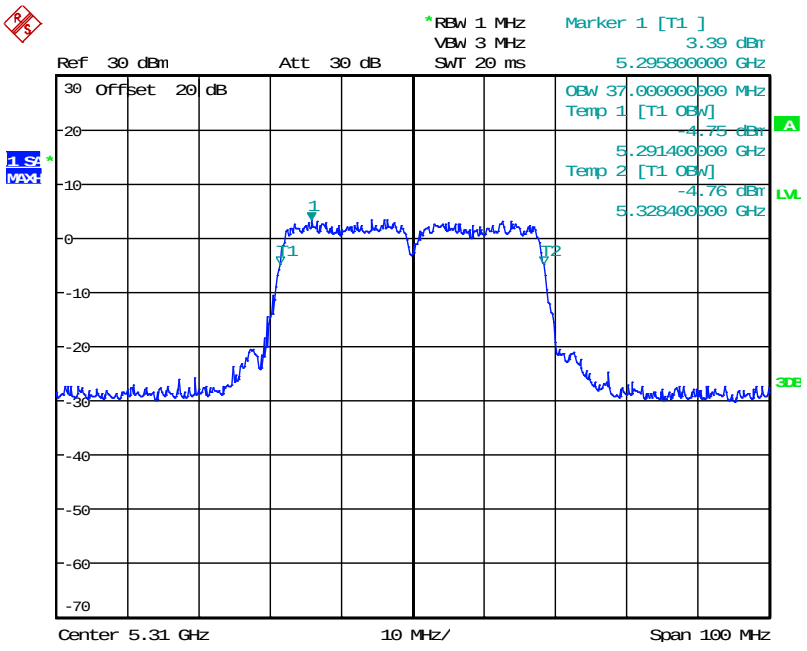


Figure 7.2.2-48: 99% OBW - High Channel

Secondary Antenna

Table 7.2.2-11: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5270	47.20	37.20
5310	46.60	37.20

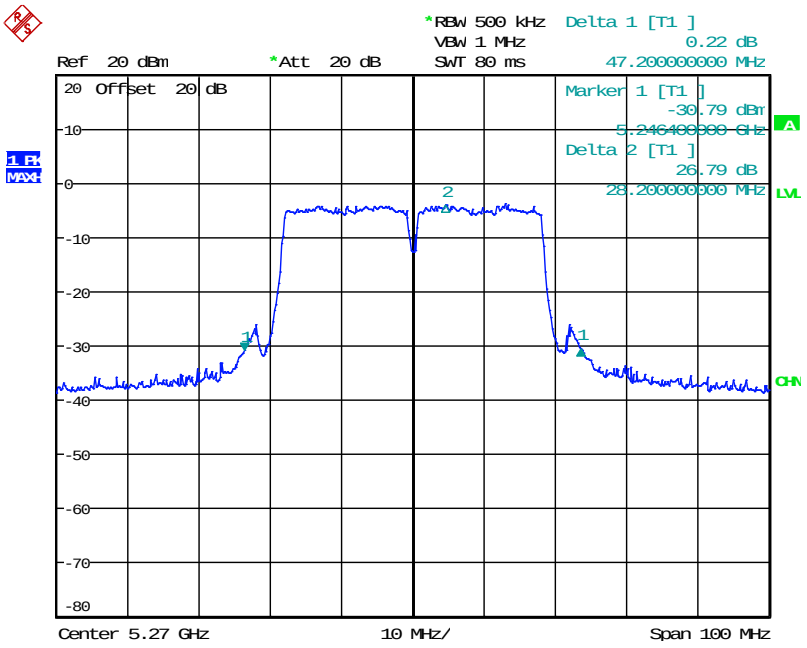


Figure 7.2.2-49: 26 dB EBW - Low Channel

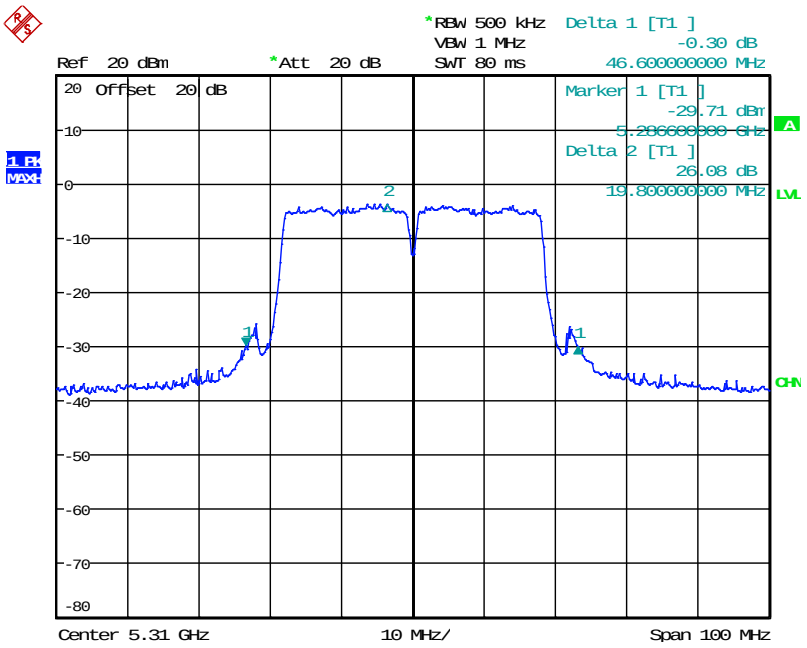


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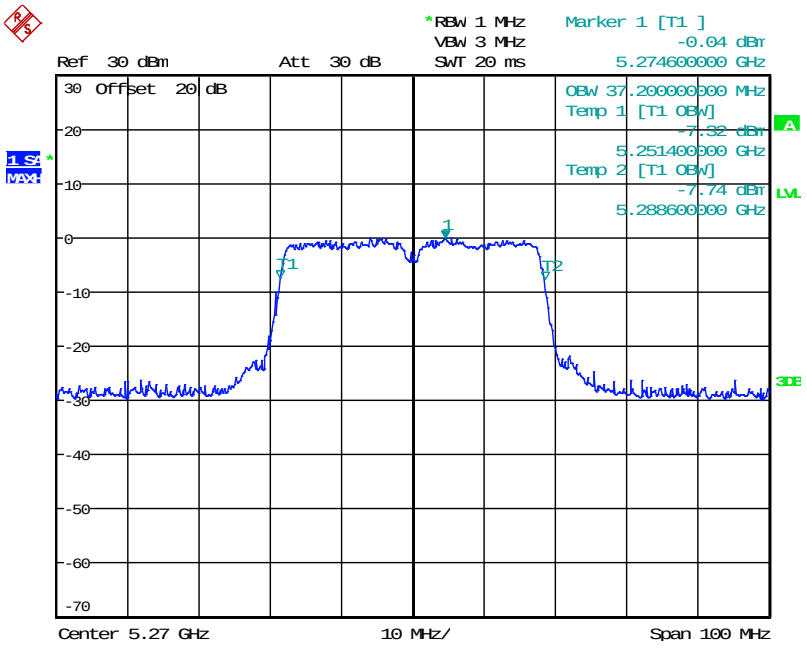
Figure 7.2.2-50: 26 dB EBW - High Channel



Date: 15.FEB.2016 23:21:45

Figure 7.2.2-51: 99% OBW - Low Channel

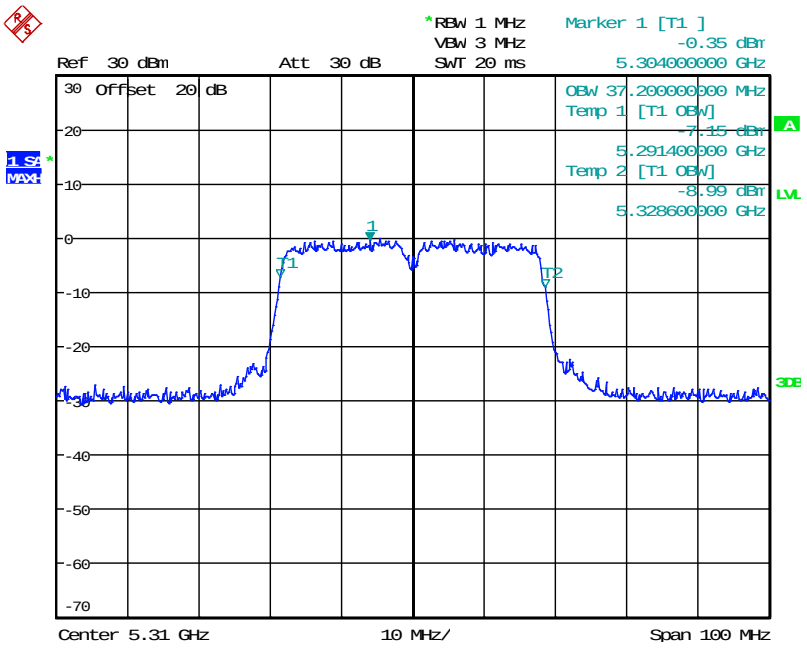


Figure 7.2.2-52: 99% OBW - High Channel

802.11a

Primary Antenna

Table 7.2.2-12: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5260	19.40	16.60
5280	19.30	16.70
5320	19.30	16.70

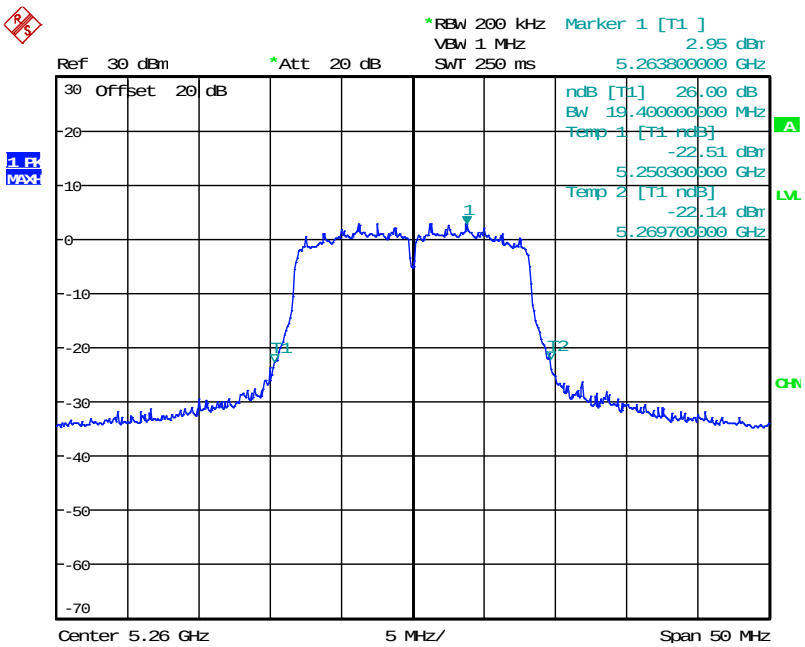


Figure 7.2.2-53: 26 dB EBW - Low Channel

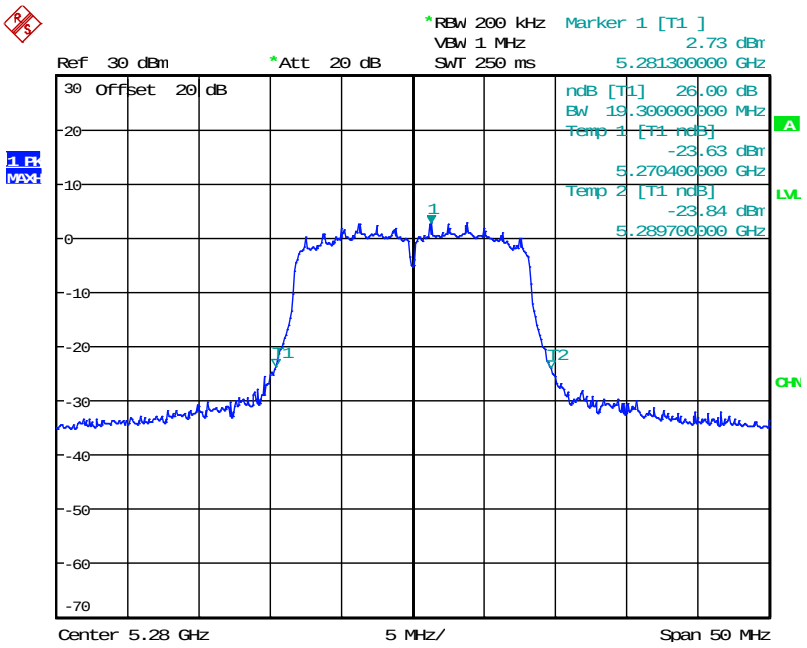


Figure 7.2.2-54: 26 dB EBW - Middle Channel

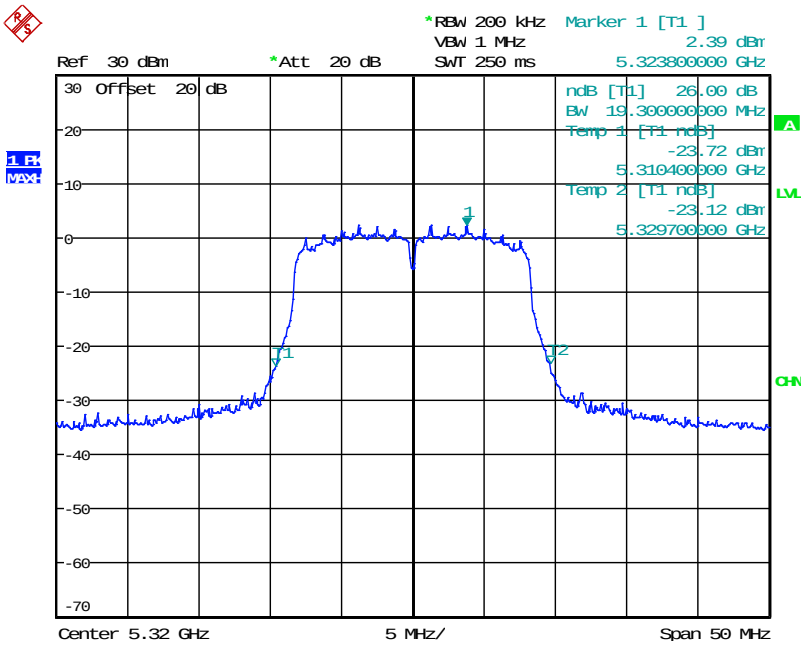


Figure 7.2.2-55: 26 dB EBW - High Channel

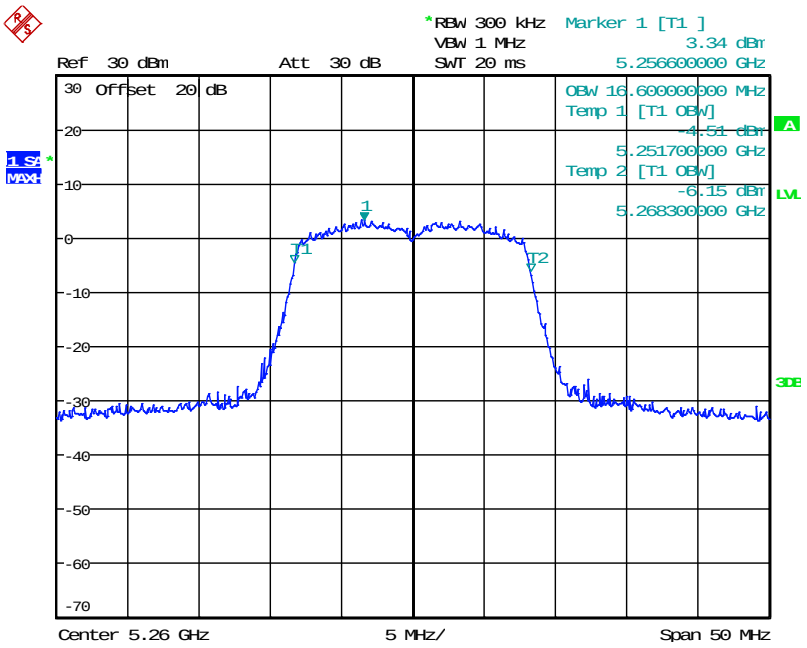


Figure 7.2.2-56: 99% OBW - Low Channel

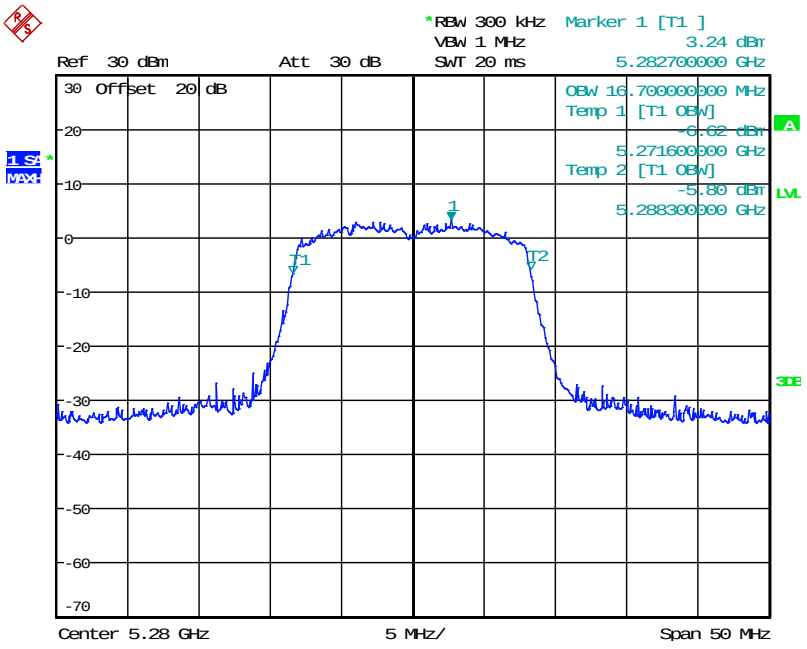


Figure 7.2.2-57: 99% OBW - Middle Channel

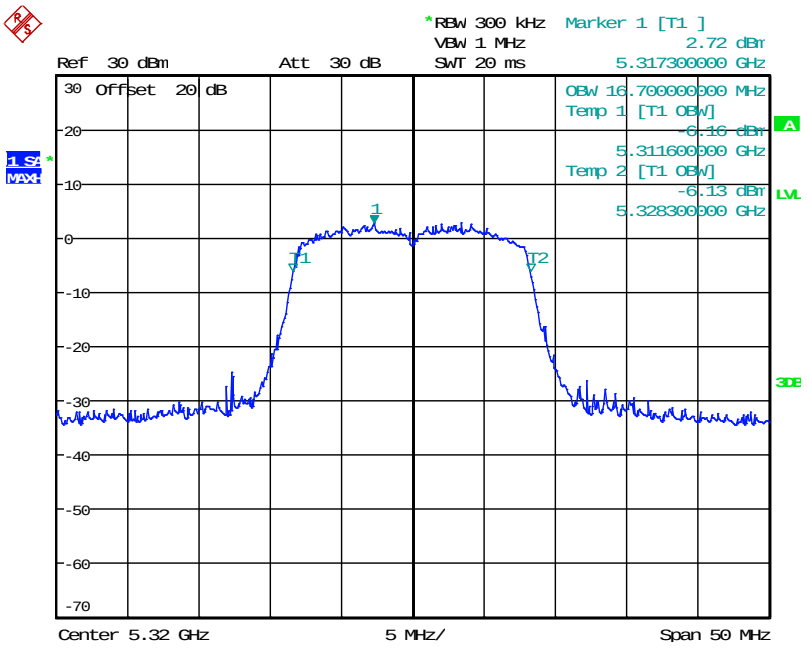


Figure 7.2.2-58: 99% OBW - High Channel

Secondary Antenna

Table 7.2.2-13: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5260	19.40	16.60
5280	19.40	16.70
5320	19.40	16.70

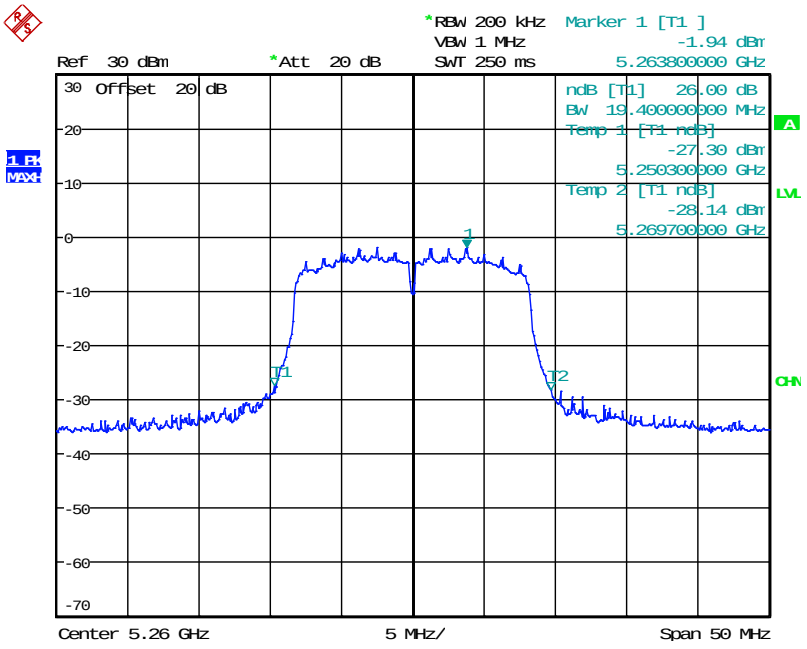


Figure 7.2.2-59: 26 dB EBW - Low Channel

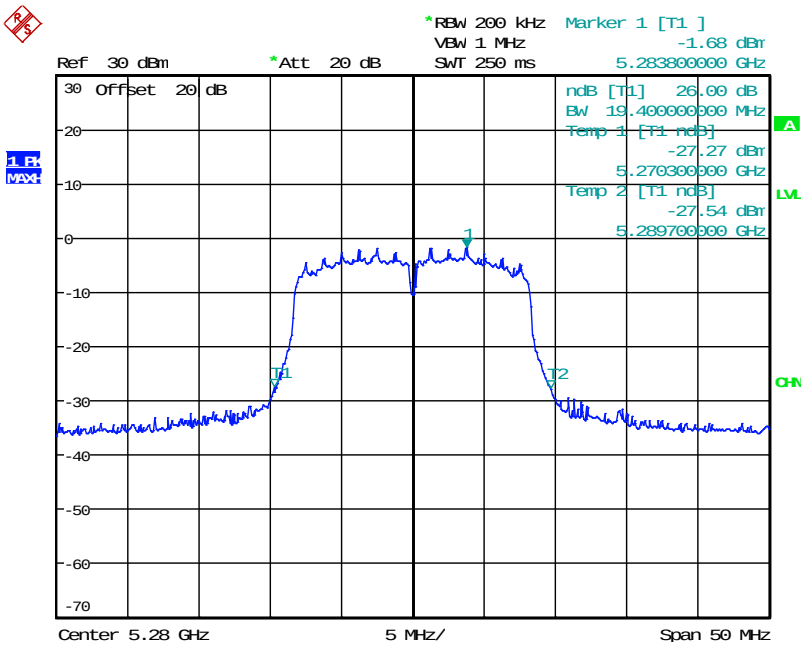


Figure 7.2.2-60: 26 dB EBW - Middle Channel

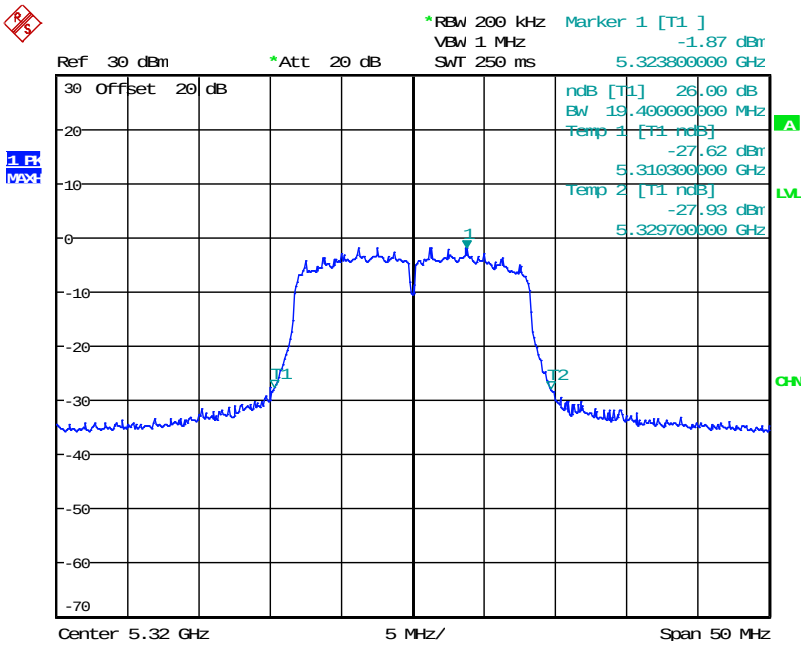


Figure 7.2.2-61: 26 dB EBW - High Channel

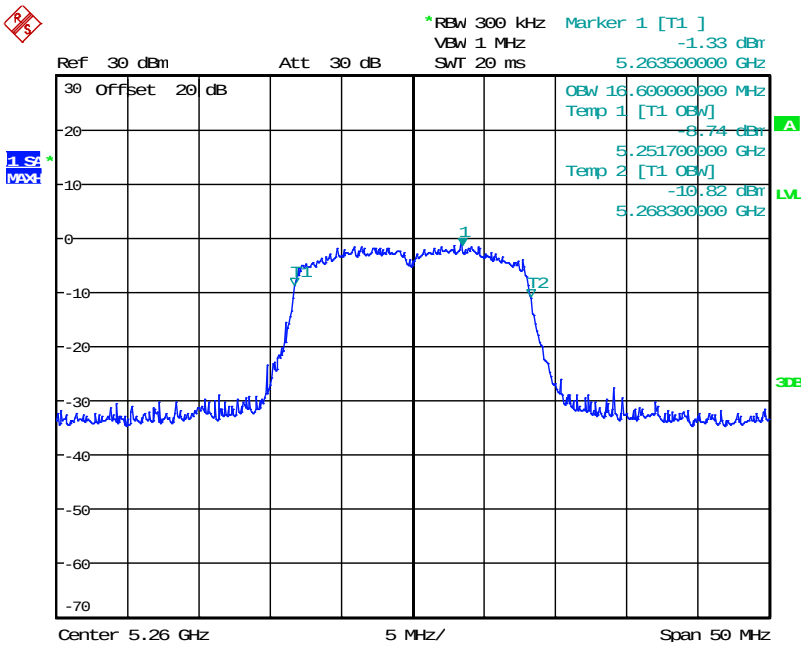


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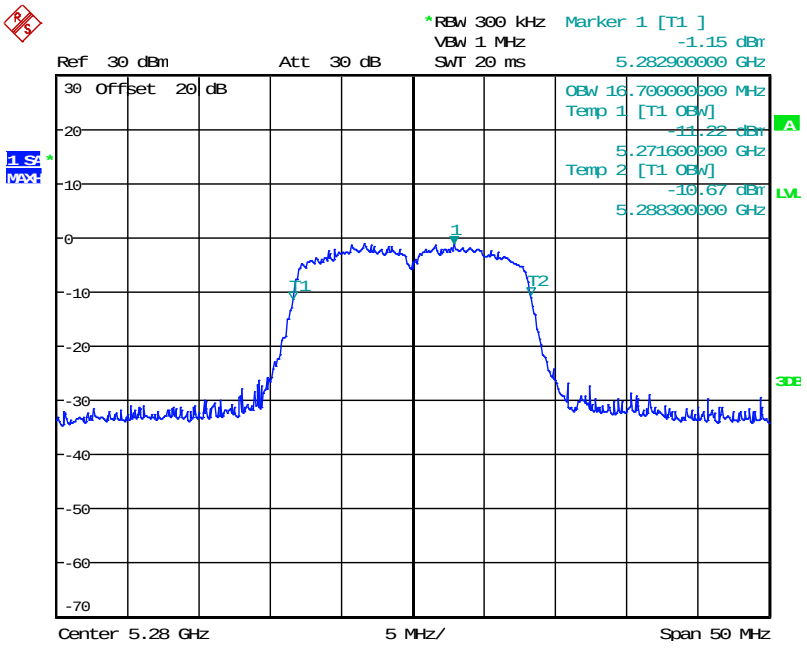
Figure 7.2.2-62: 99% OBW - Low Channel



Date: 17.FEB.2016 22:36:34

Figure 7.2.2-63: 99% OBW - Middle Channel

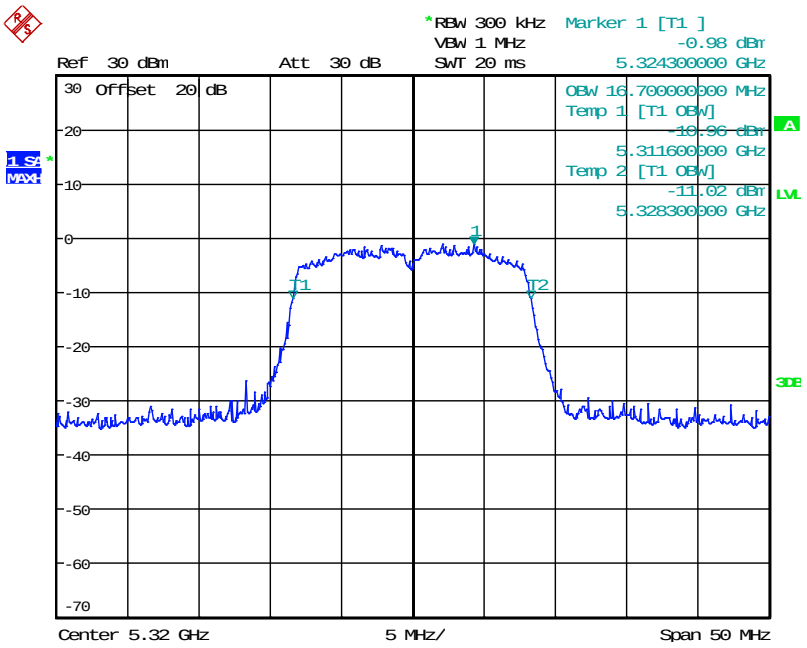


Figure 7.2.2-64: 99% OBW - High Channel

Band 5470 – 5725 MHz

802.11n 20 MHz

Primary Antenna

Table 7.2.2-14: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5500	19.90	17.60
5600	19.70	17.50
5700	19.70	17.50

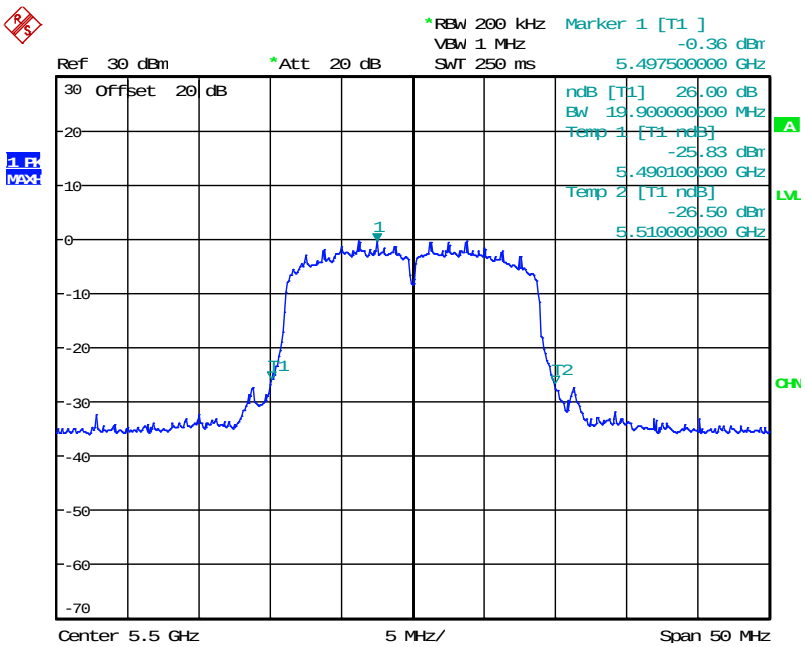


Figure 7.2.2-65: 26 dB EBW - Low Channel

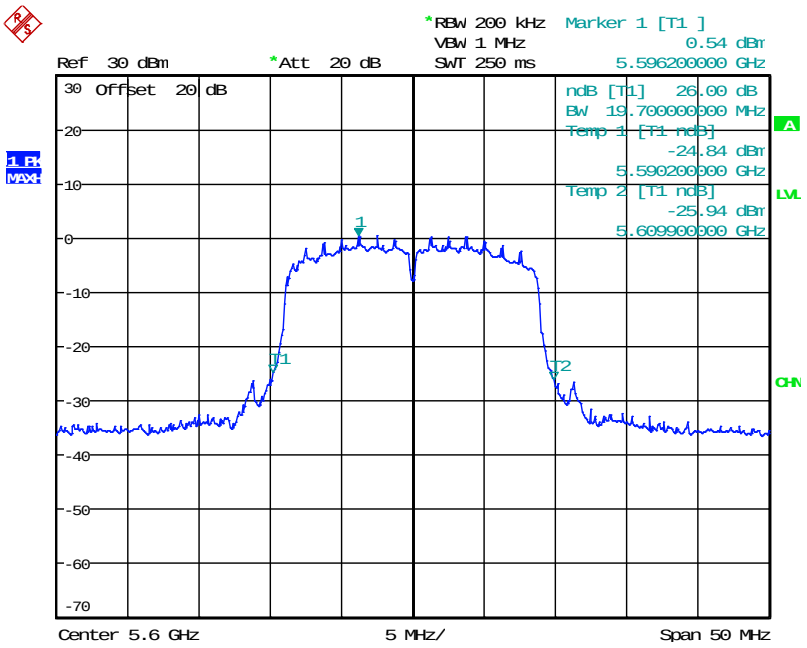


Figure 7.2.2-66: 26 dB EBW - Middle Channel

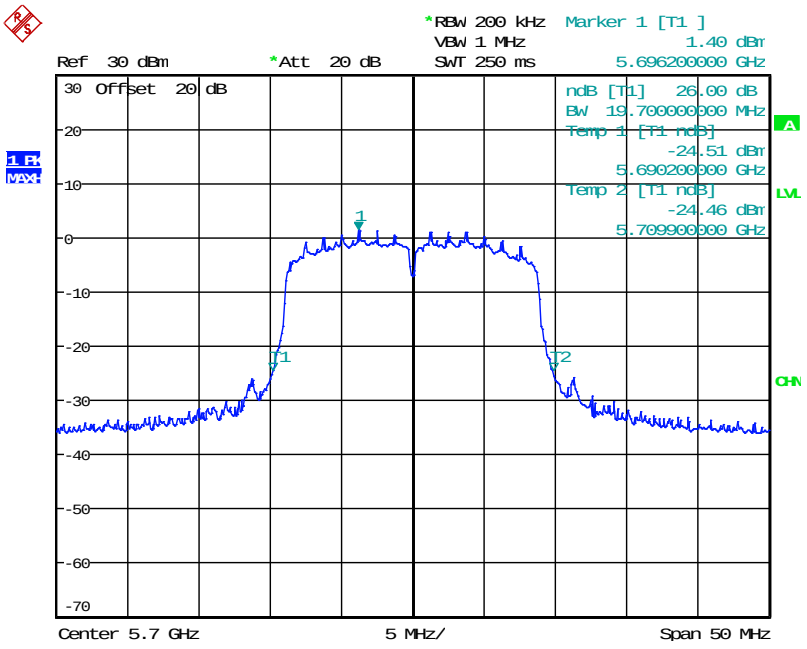


Figure 7.2.2-67: 26 dB EBW - High Channel

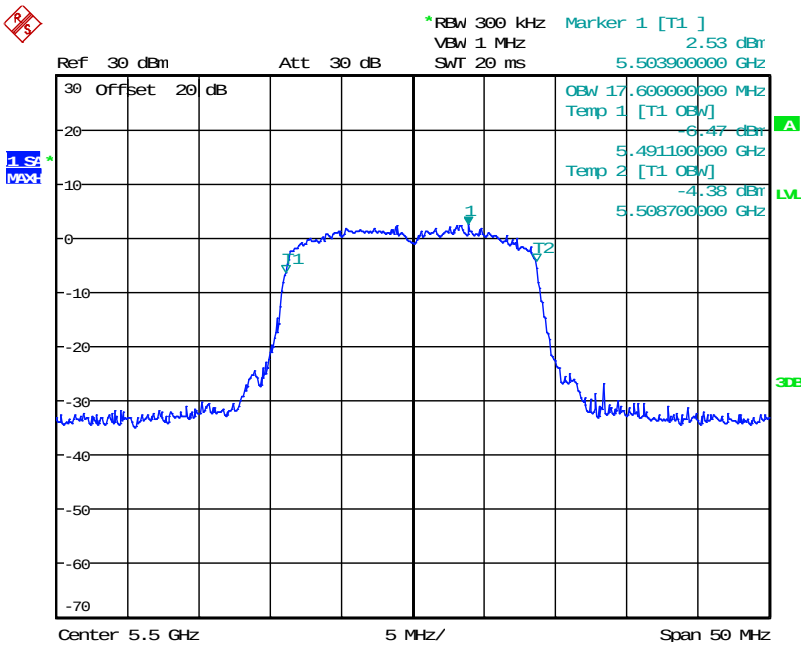


Figure 7.2.2-68: 99% OBW - Low Channel

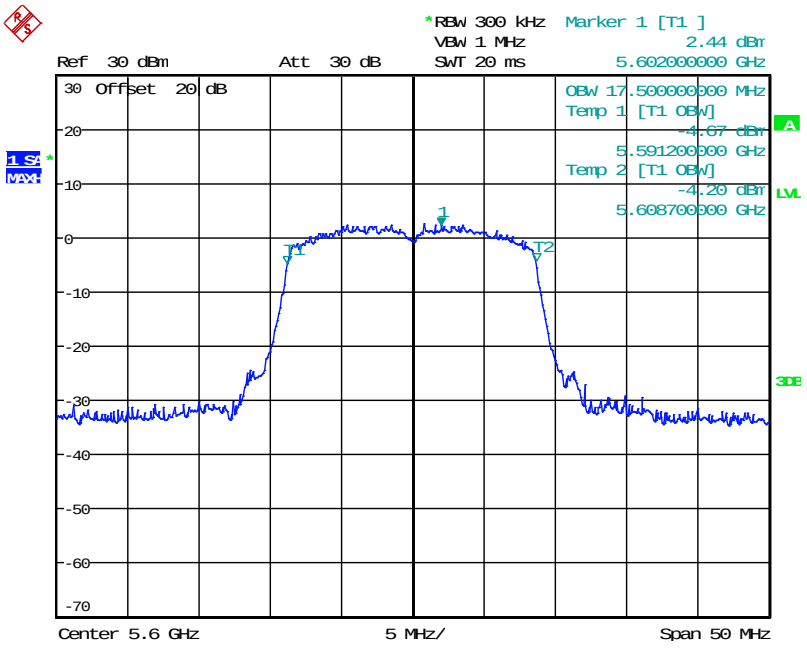


Figure 7.2.2-69: 99% OBW - Middle Channel

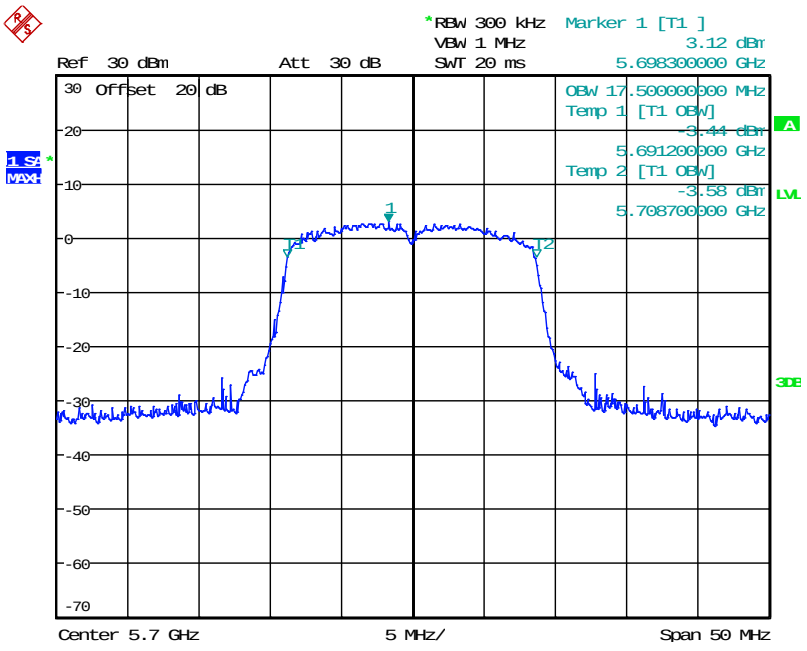


Figure 7.2.2-70: 99% OBW - High Channel

Secondary Antenna

Table 7.2.2-15: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5500	19.90	17.50
5600	19.80	17.70
5700	19.90	17.70

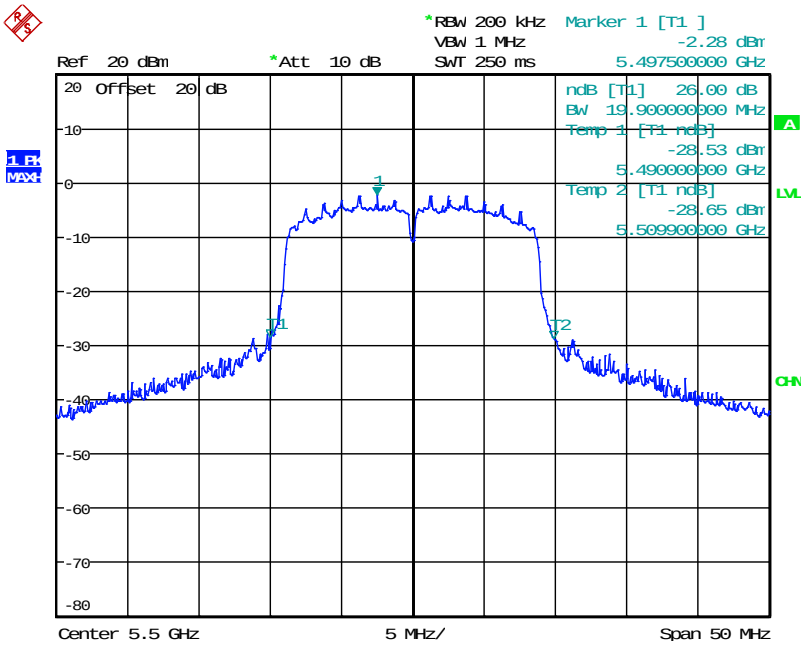


Figure 7.2.2-71: 26 dB EBW - Low Channel

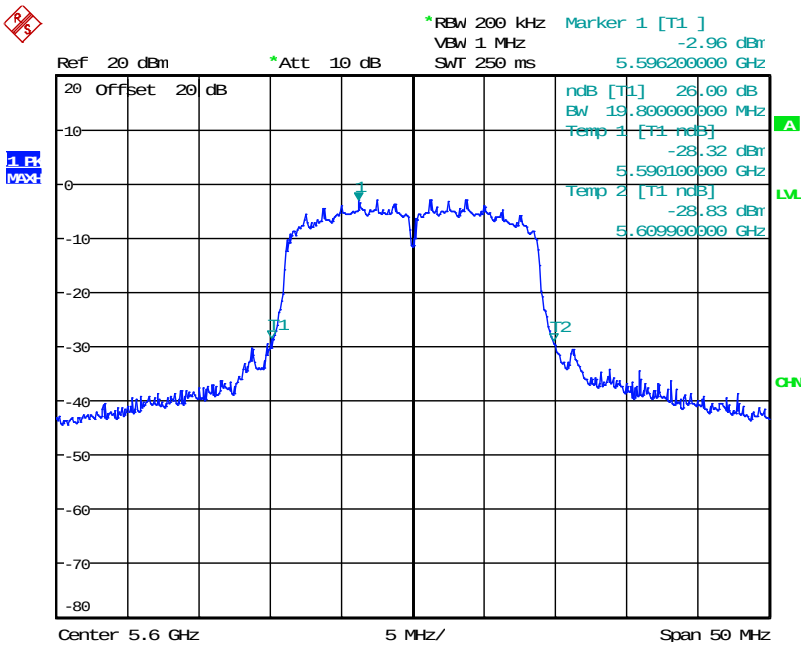


Figure 7.2.2-72: 26 dB EBW - Middle Channel

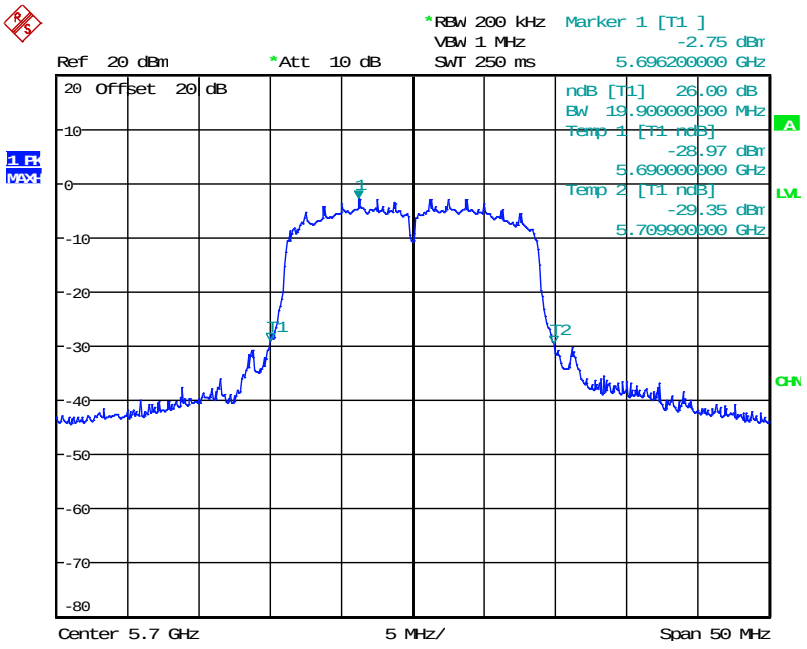


Figure 7.2.2-73: 26 dB EBW - High Channel

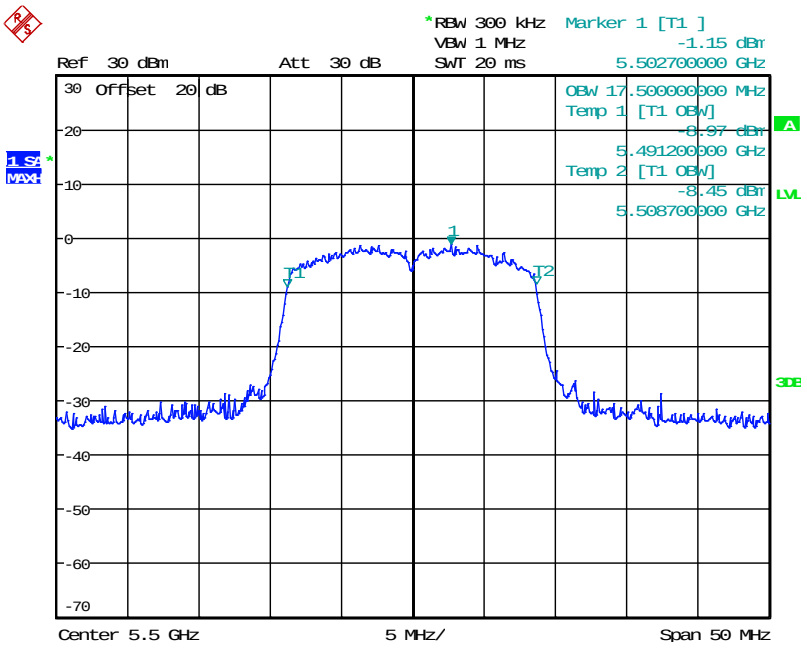


Figure 7.2.2-74: 99% OBW - Low Channel

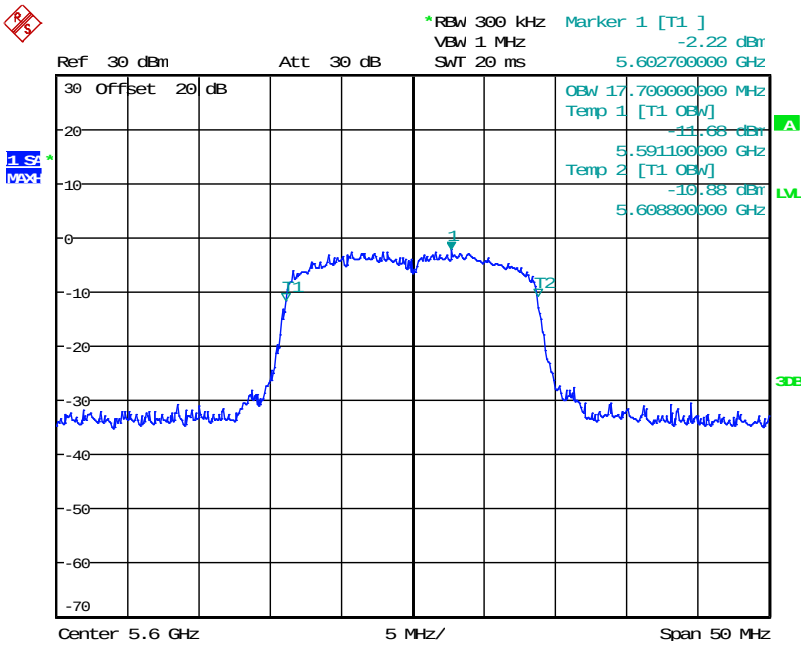


Figure 7.2.2-75: 99% OBW - Middle Channel

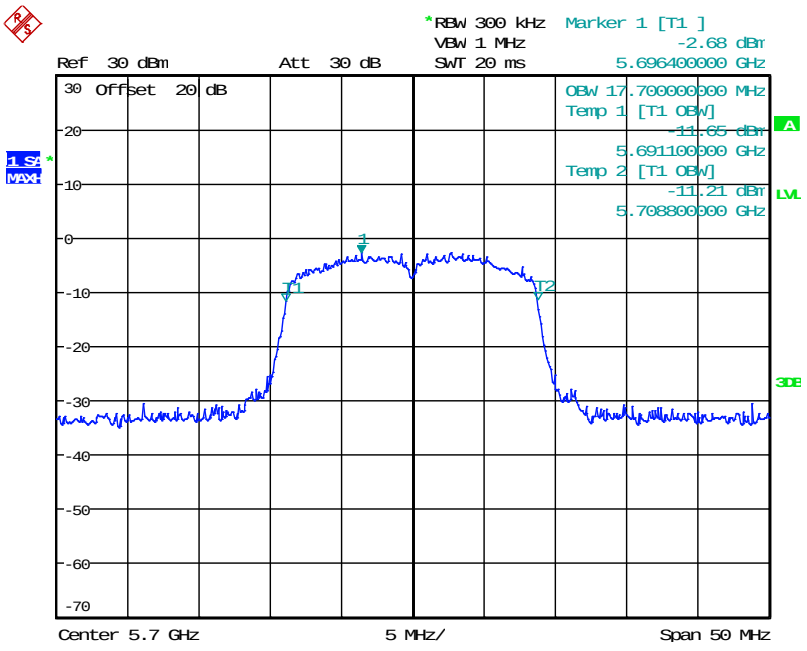


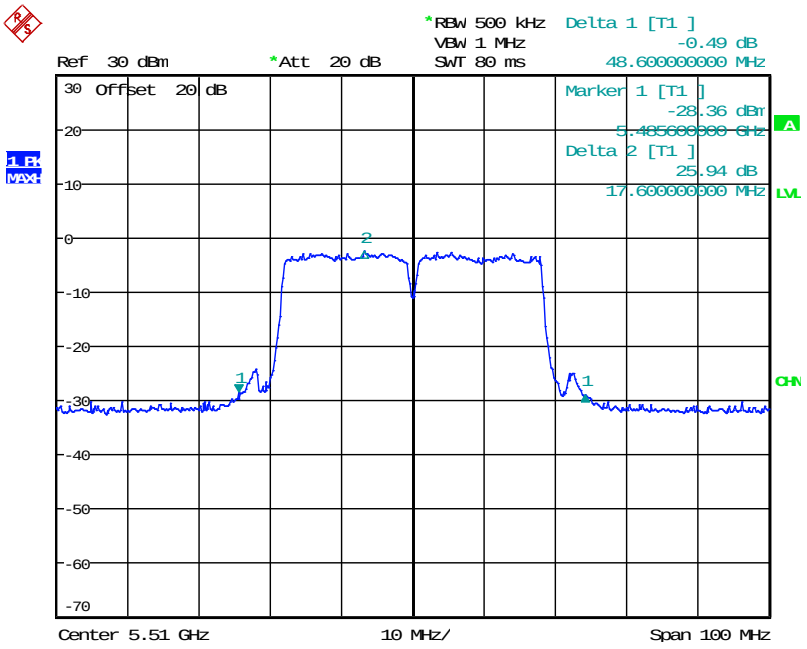
Figure 7.2.2-76: 99% OBW - High Channel

802.11n 40 MHz

Primary Antenna

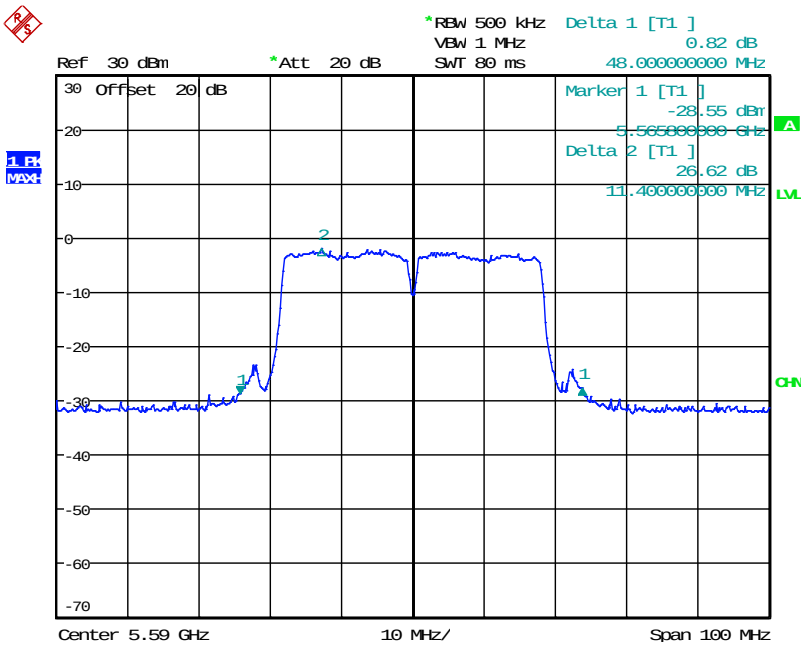
Table 7.2.2-16: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5510	48.60	37.00
5590	48.00	37.00
5670	48.80	37.20



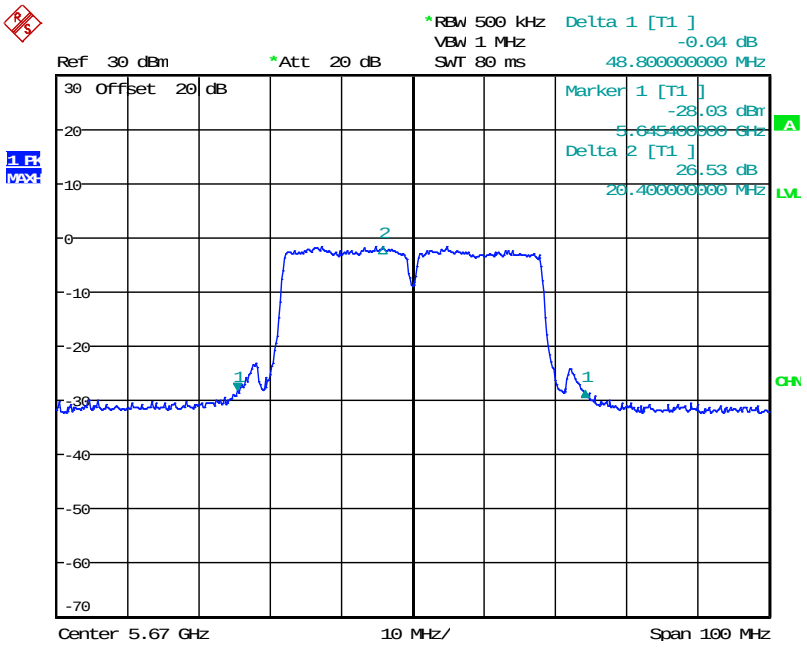
Date: 19.FEB.2016 00:04:13

Figure 7.2.2-77: 26 dB EBW - Low Channel



Date: 19.FEB.2016 00:08:25

Figure 7.2.2-78: 26 dB EBW - Middle Channel



Date: 19.FEB.2016 00:12:30

Figure 7.2.2-79: 26 dB EBW - High Channel

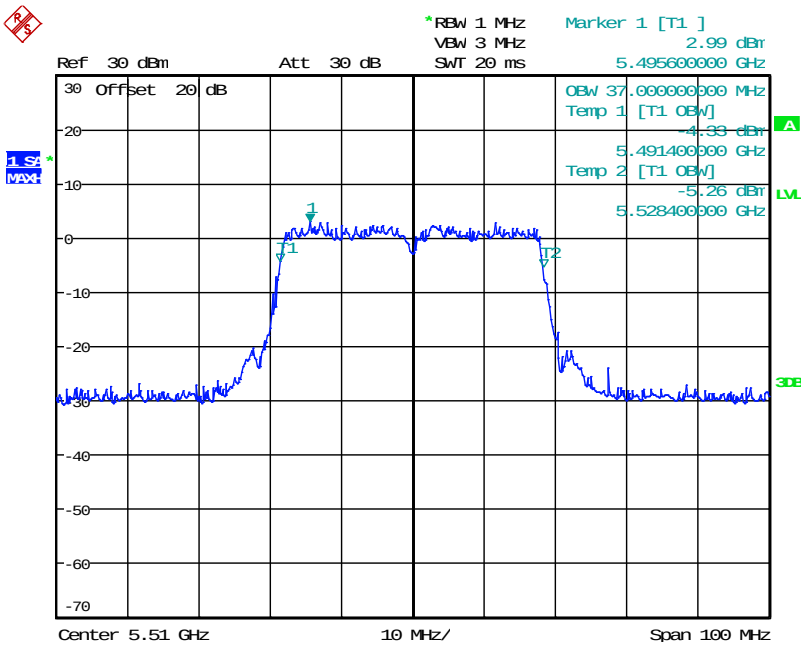


Figure 7.2.2-80: 99% OBW - Low Channel

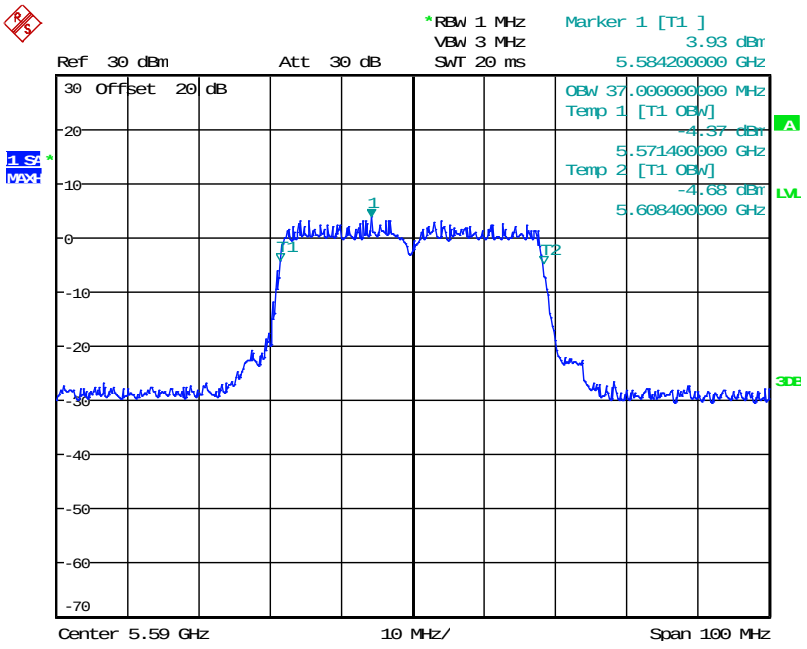


Figure 7.2.2-81: 99% OBW - Middle Channel

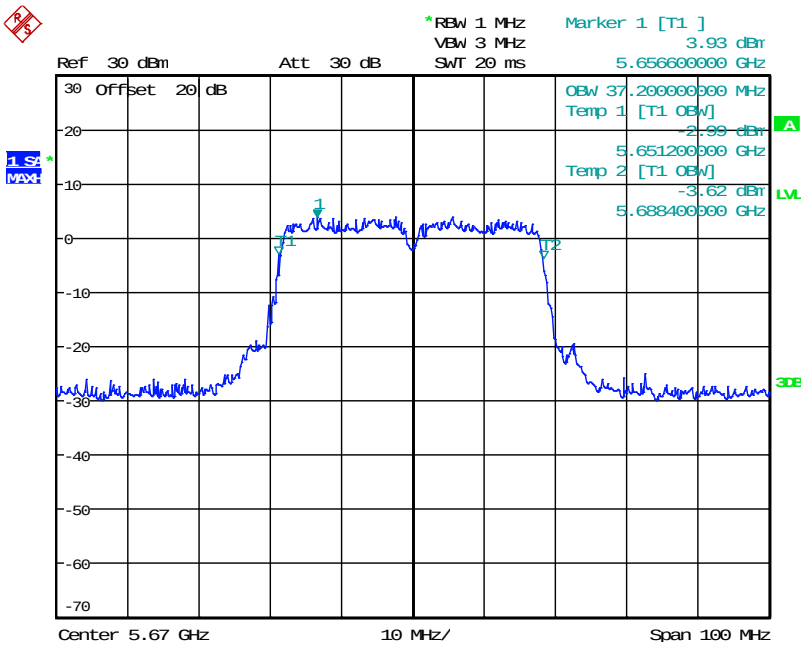


Figure 7.2.2-82: 99% OBW - High Channel

Secondary Antenna

Table 7.2.2-17: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5510	47.20	37.40
5590	47.20	37.40
5670	46.60	37.60

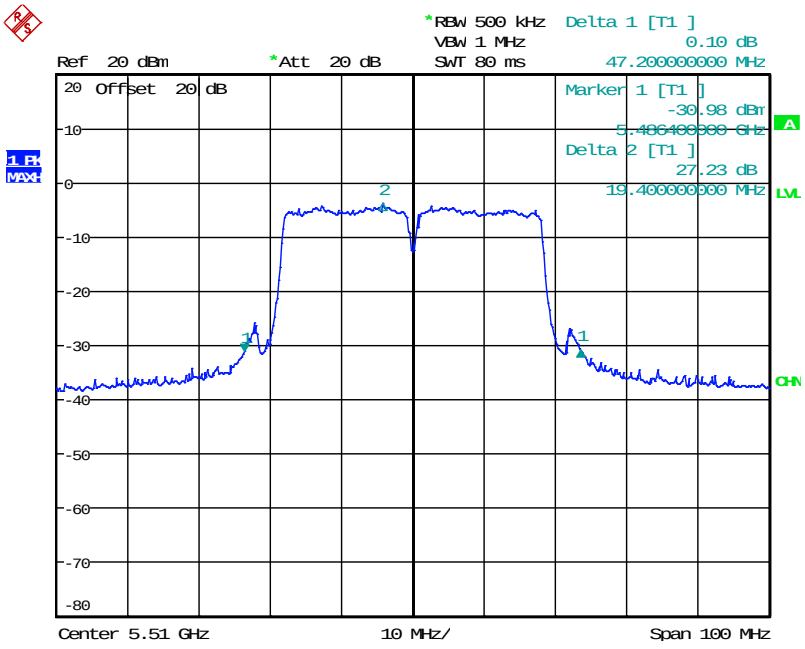
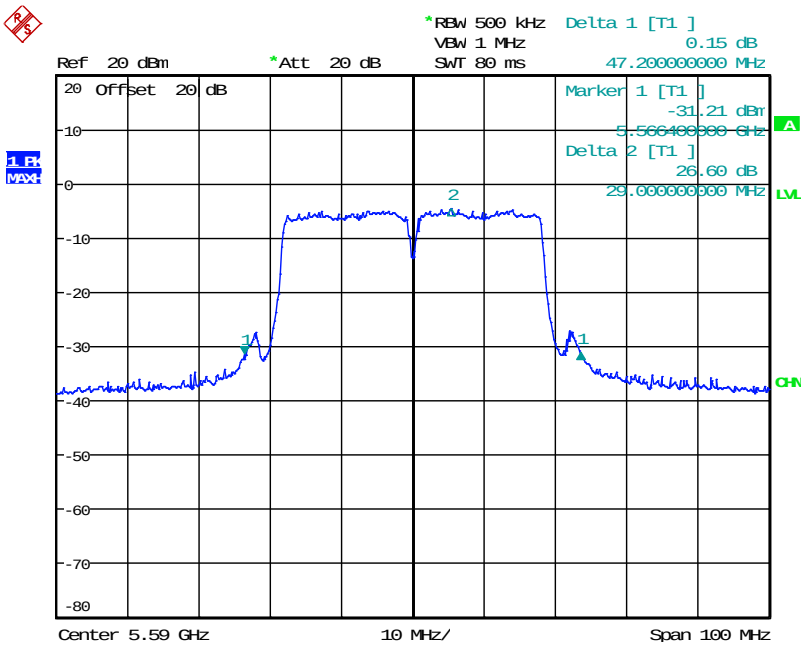
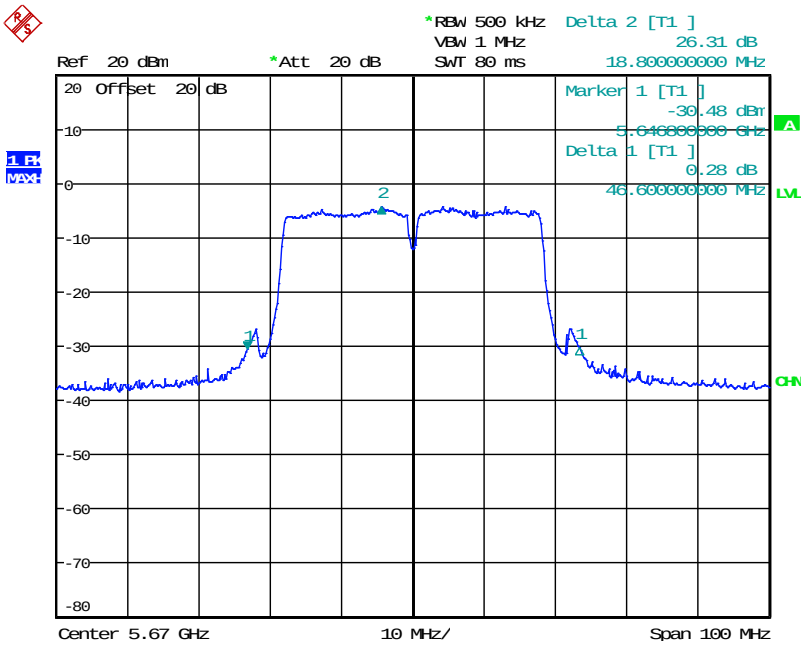


Figure 7.2.2-83: 26 dB EBW - Low Channel



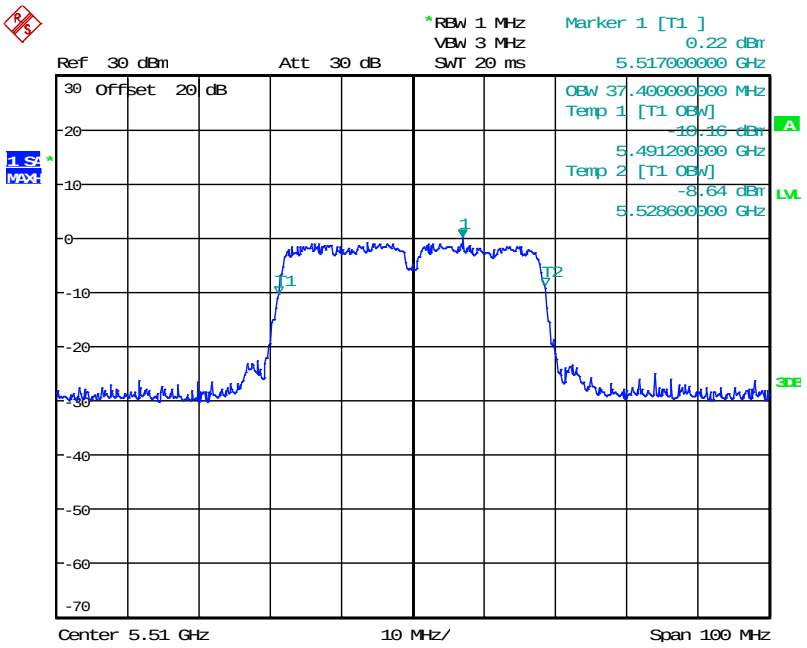
Date: 19.FEB.2016 10:07:37

Figure 7.2.2-84: 26 dB EBW - Middle Channel



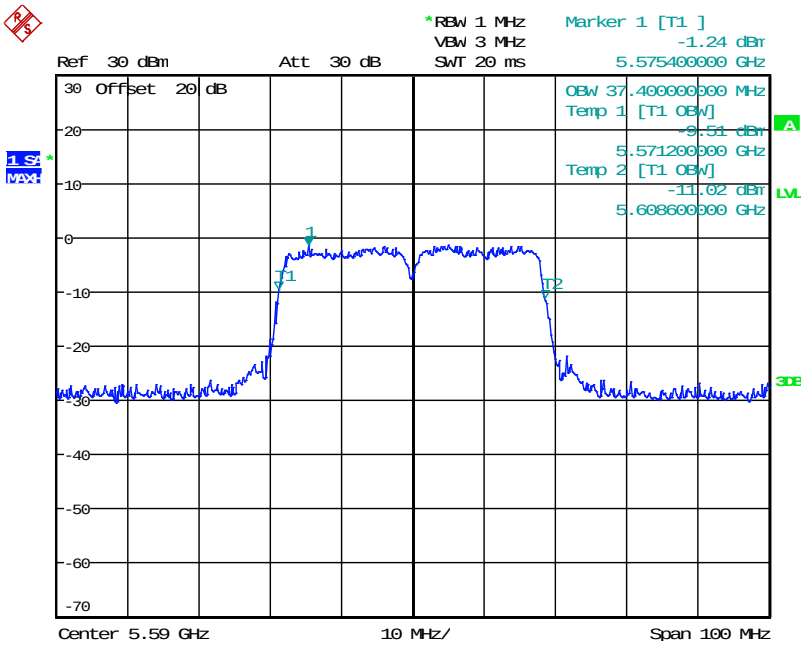
Date: 19.FEB.2016 10:15:48

Figure 7.2.2-85: 26 dB EBW - High Channel



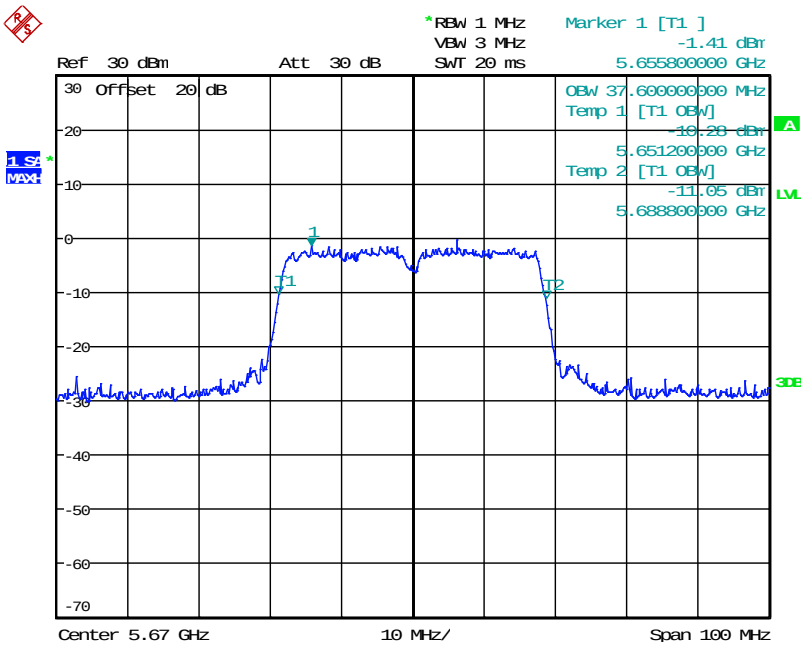
Date: 15.FEB.2016 23:27:48

Figure 7.2.2-86: 99% OBW - Low Channel



Date: 15.FEB.2016 23:30:41

Figure 7.2.2-87: 99% OBW - Middle Channel



Date: 15.FEB.2016 22:39:07

Figure 7.2.2-88: 99% OBW - High Channel

802.11a

Primary Antenna

Table 7.2.2-18: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5500	19.50	16.50
5600	19.20	16.50
5700	19.40	16.60

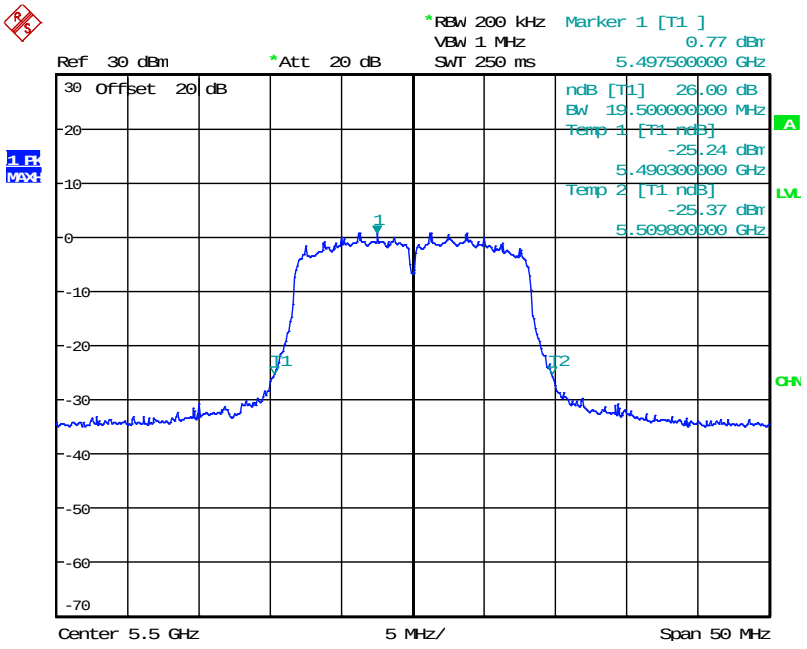


Figure 7.2.2-89: 26 dB EBW - Low Channel

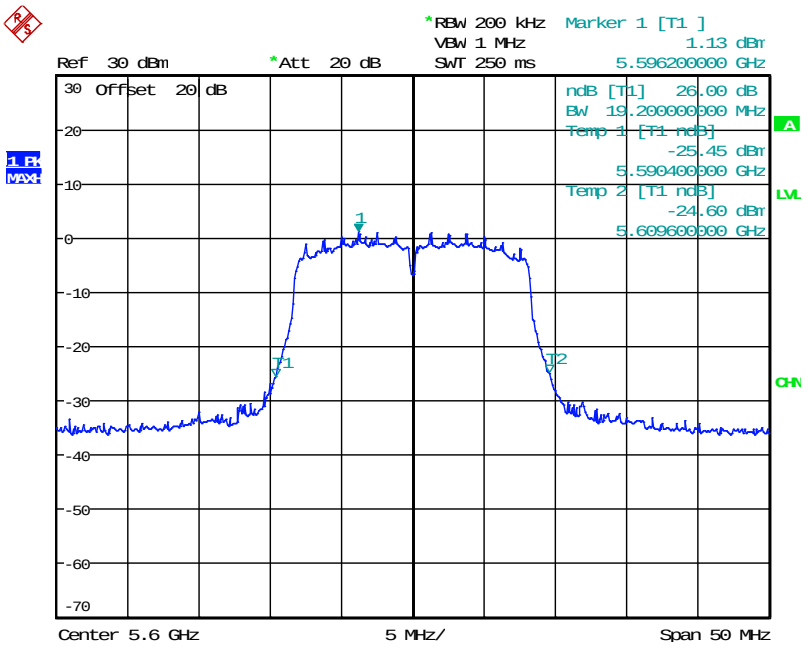


Figure 7.2.2-90: 26 dB EBW - Middle Channel

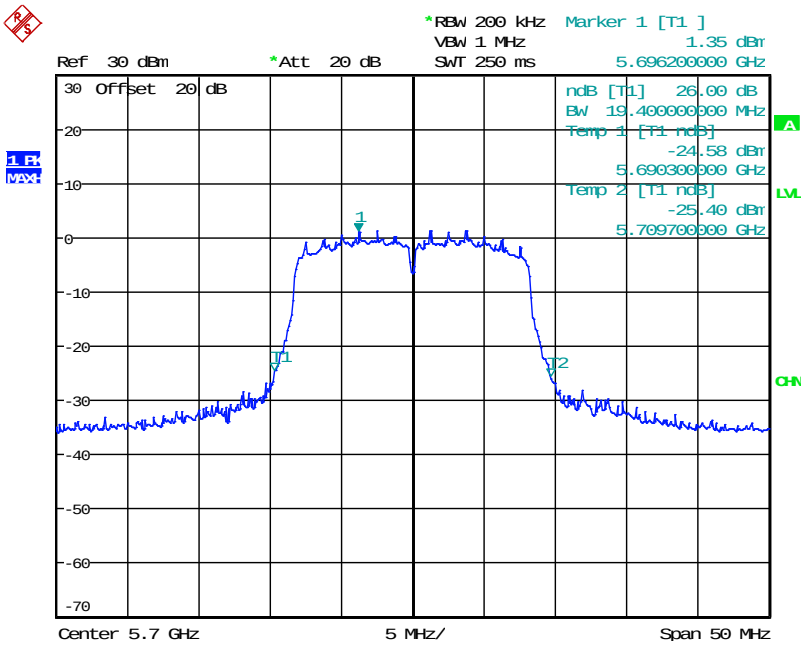
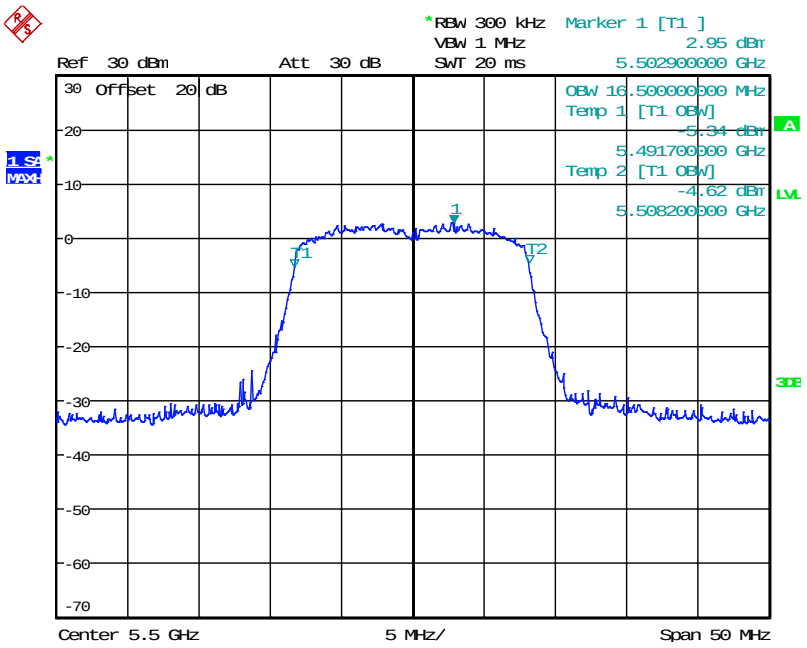
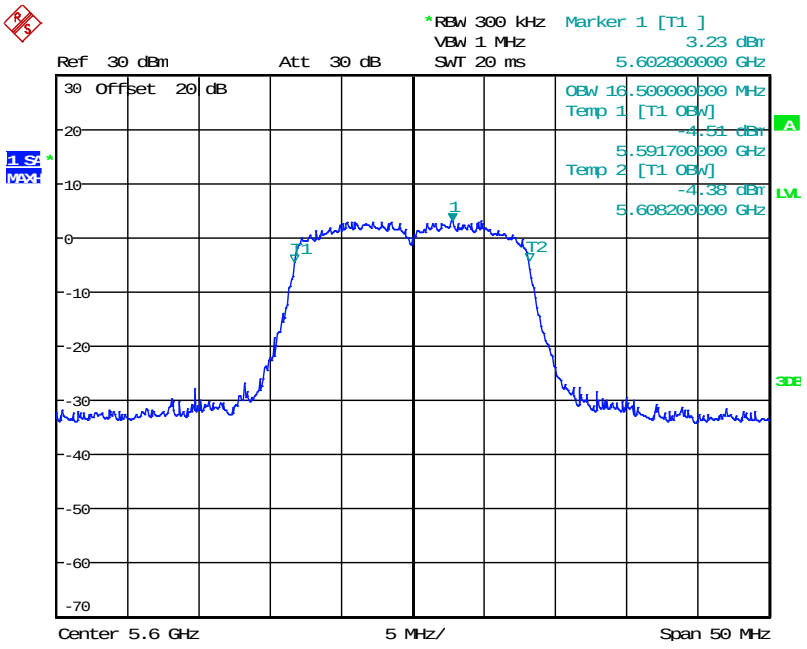


Figure 7.2.2-91: 26 dB EBW - High Channel



Date: 15.FEB.2016 18:56:38

Figure 7.2.2-92: 99% OBW - Low Channel



Date: 15.FEB.2016 19:06:32

Figure 7.2.2-93: 99% OBW - Middle Channel

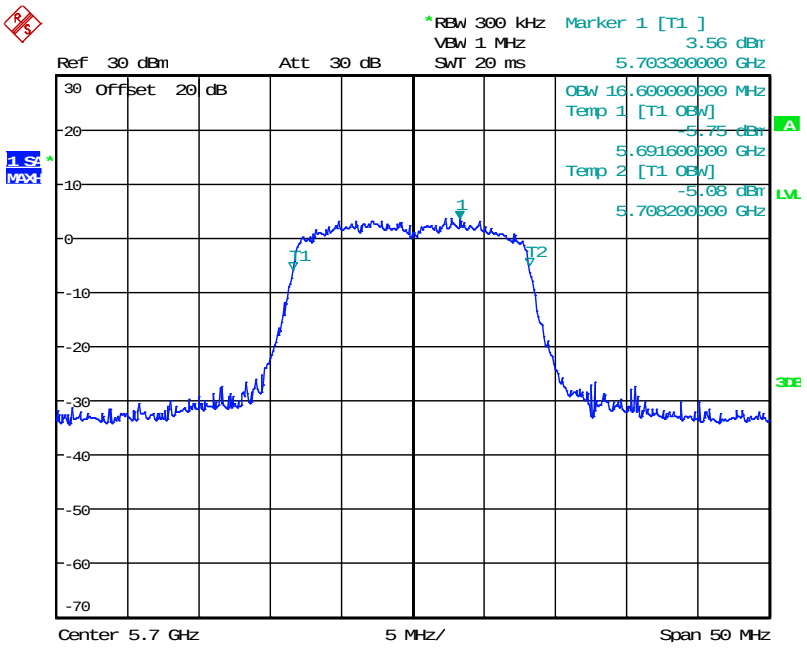


Figure 7.2.2-94: 99% OBW - High Channel

Secondary Antenna

Table 7.2.2-19: EBW / 99% Bandwidth

Frequency [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5500	19.80	16.70
5600	19.40	16.70
5700	19.40	16.70

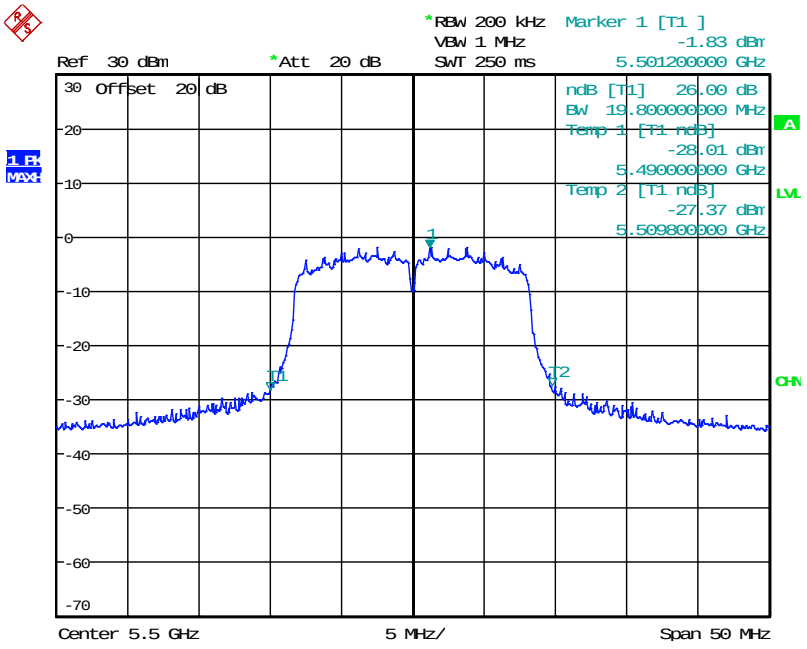


Figure 7.2.2-95: 26 dB EBW - Low Channel

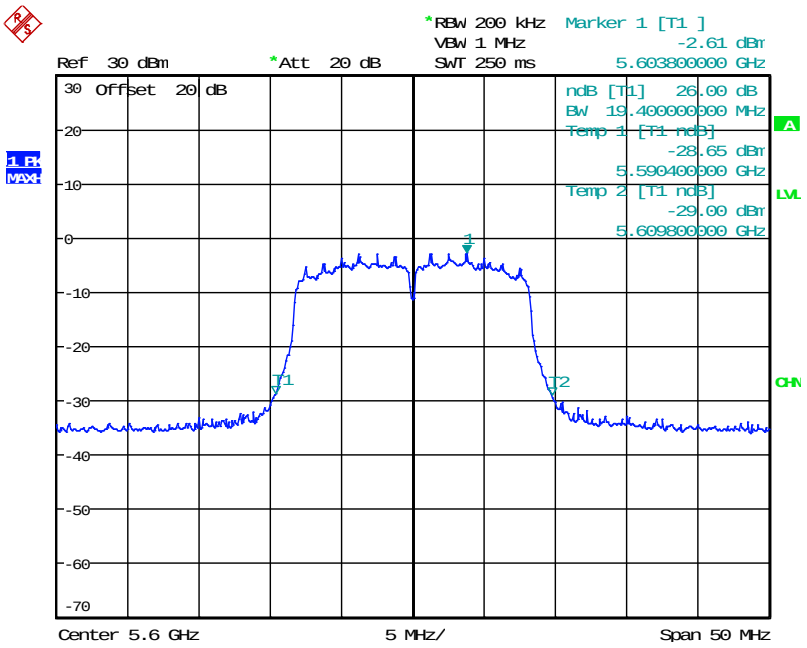


Figure 7.2.2-96: 26 dB EBW - Middle Channel

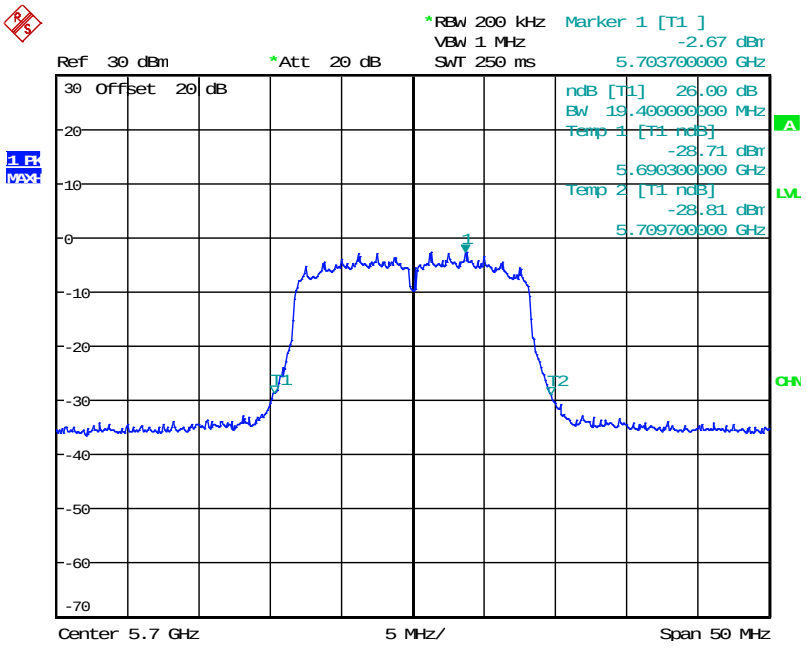


Figure 7.2.2-97: 26 dB EBW - High Channel

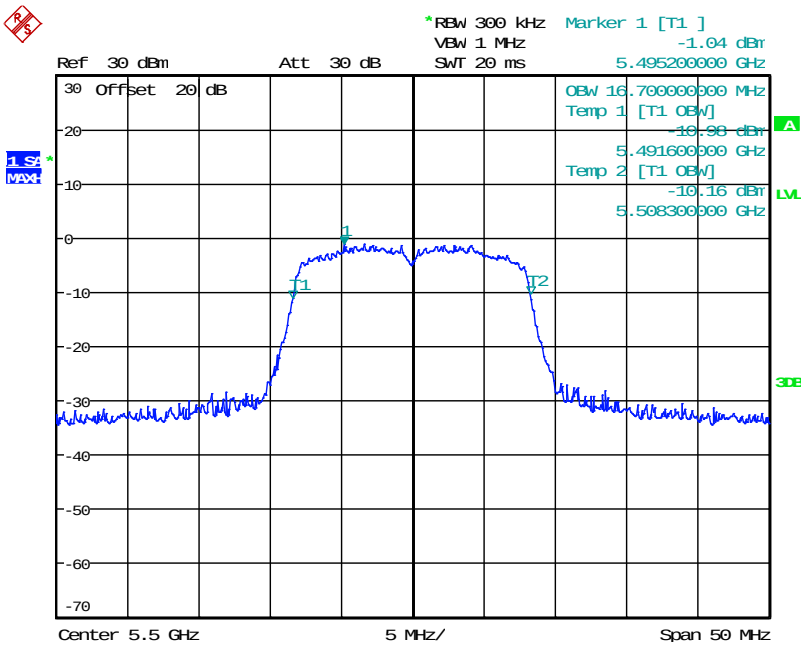


Figure 7.2.2-98: 99% OBW - Low Channel

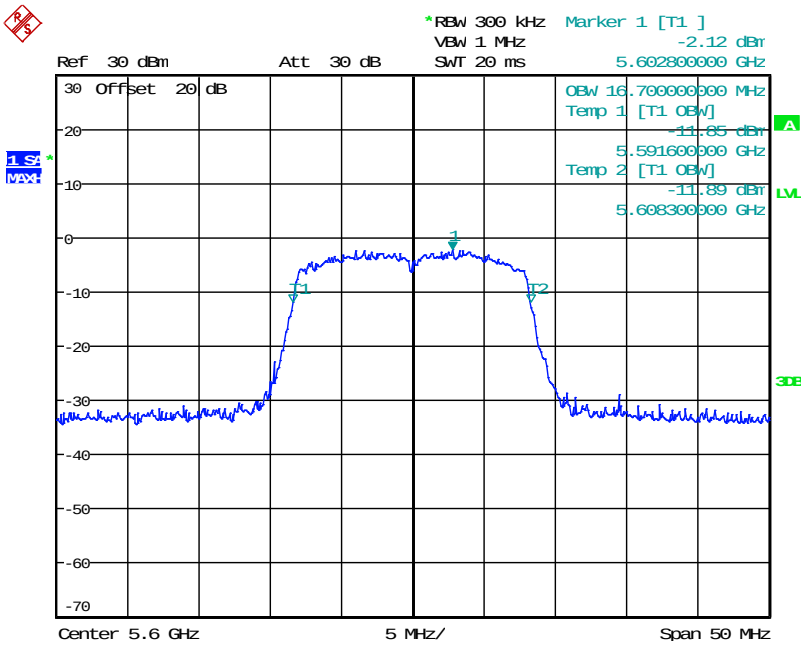


Figure 7.2.2-99: 99% OBW - Middle Channel

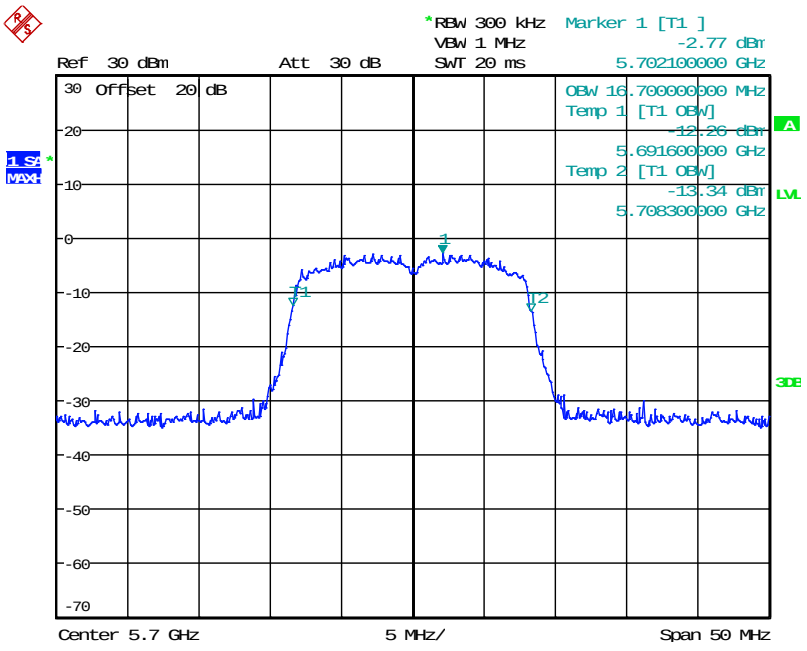


Figure 7.2.2-100: 99% OBW - High Channel

Band 5725 – 5850 MHz

802.11n 20 MHz

Primary Antenna

Table 7.2.2-20: 6dB / EBW/ 99% Bandwidth

Frequency [MHz]	6dB Bandwidth [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5745	15.66	19.80	17.50
5785	16.32	19.80	17.50
5825	16.32	19.80	17.60

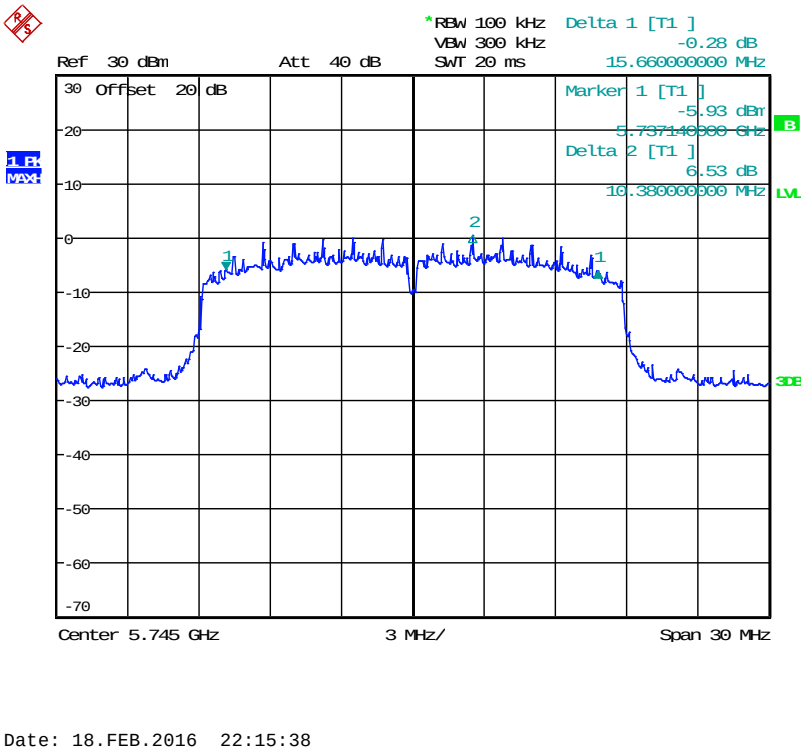
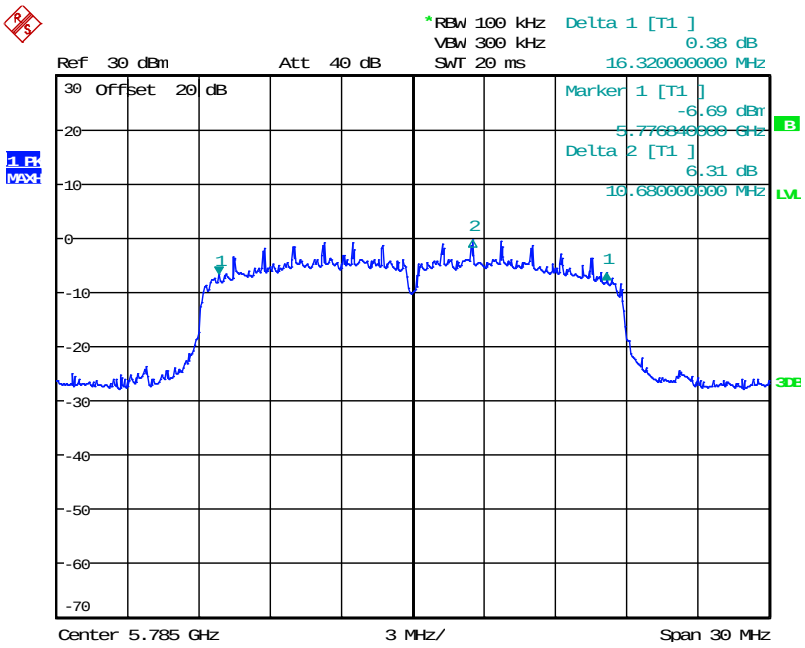
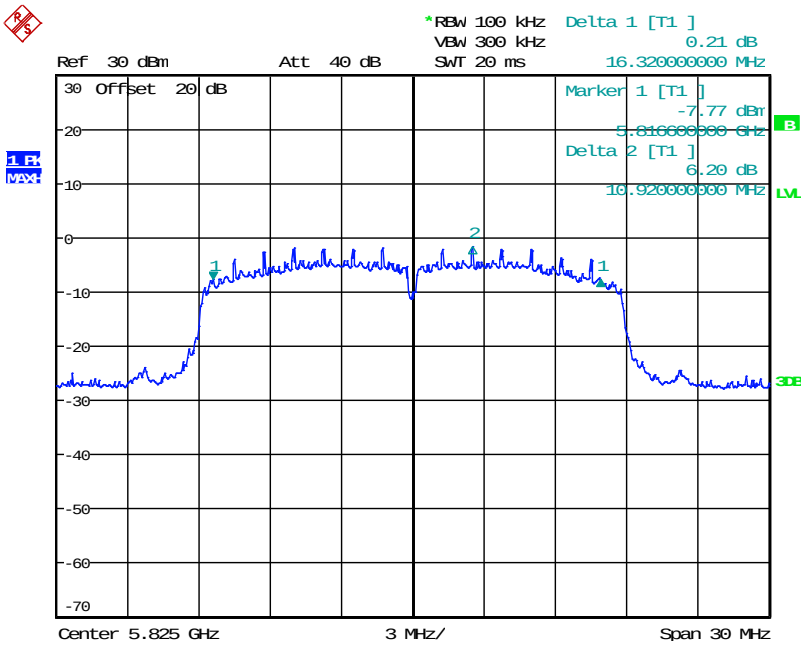


Figure 7.2.2-101: 6dB BW - Low Channel



Date: 18.FEB.2016 22:19:46

Figure 7.2.2-102: 6dB BW - Middle Channel



Date: 18.FEB.2016 22:36:53

Figure 7.2.2-103: 6dB BW - High Channel

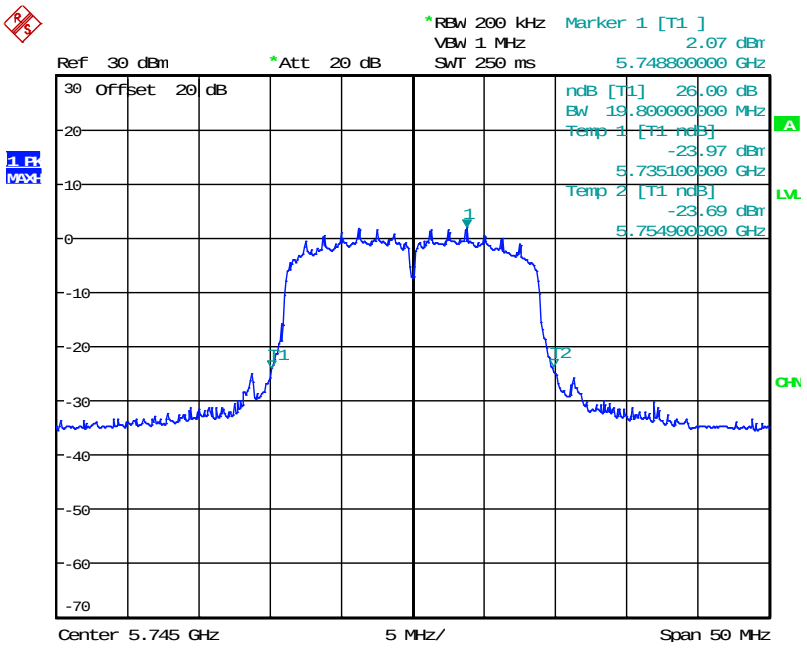


Figure 7.2.2-104: 26dB EBW - Low Channel

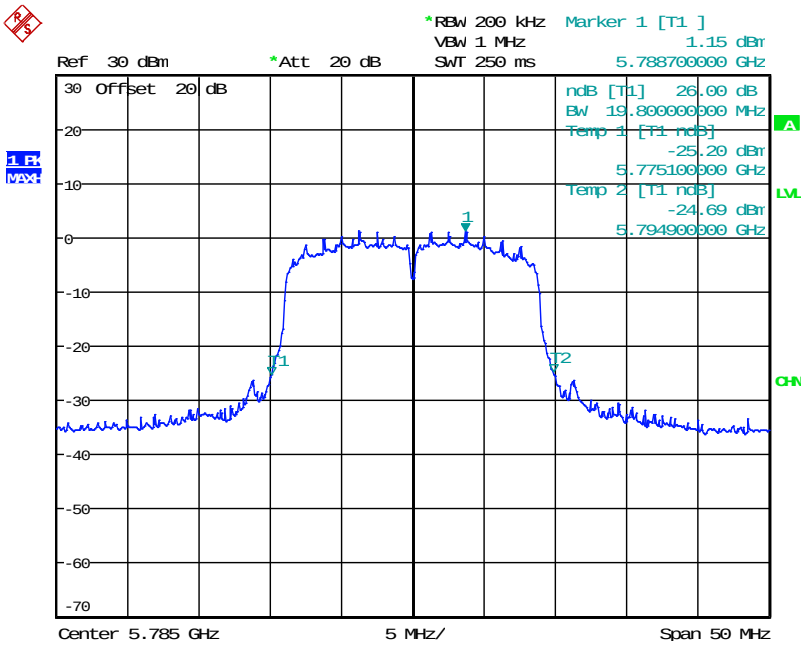


Figure 7.2.2-105: 26dB EBW - Middle Channel

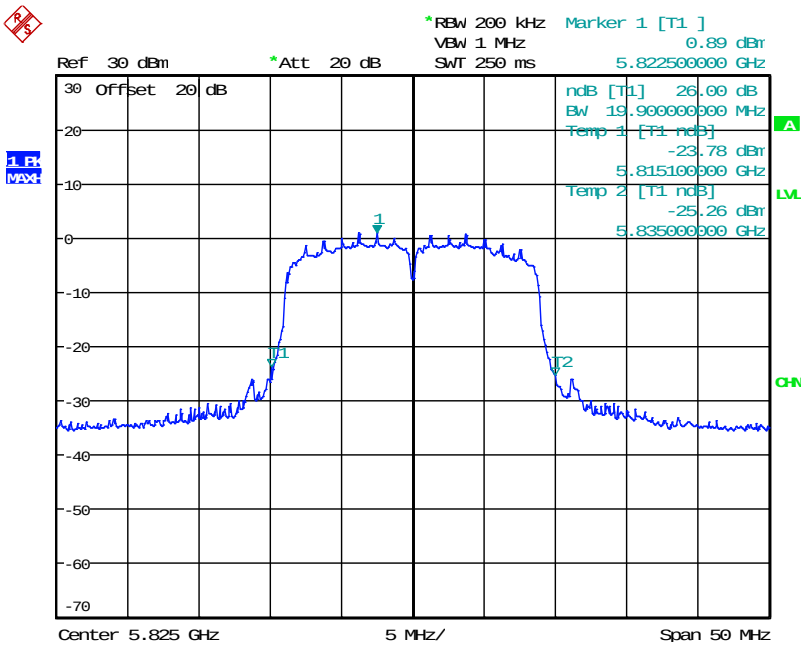


Figure 7.2.2-106: 26dB EBW - High Channel

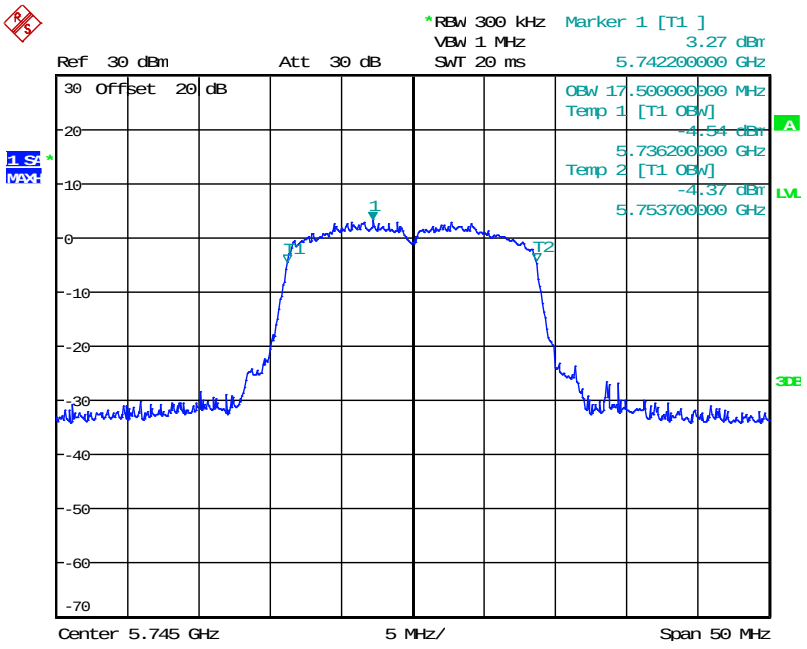
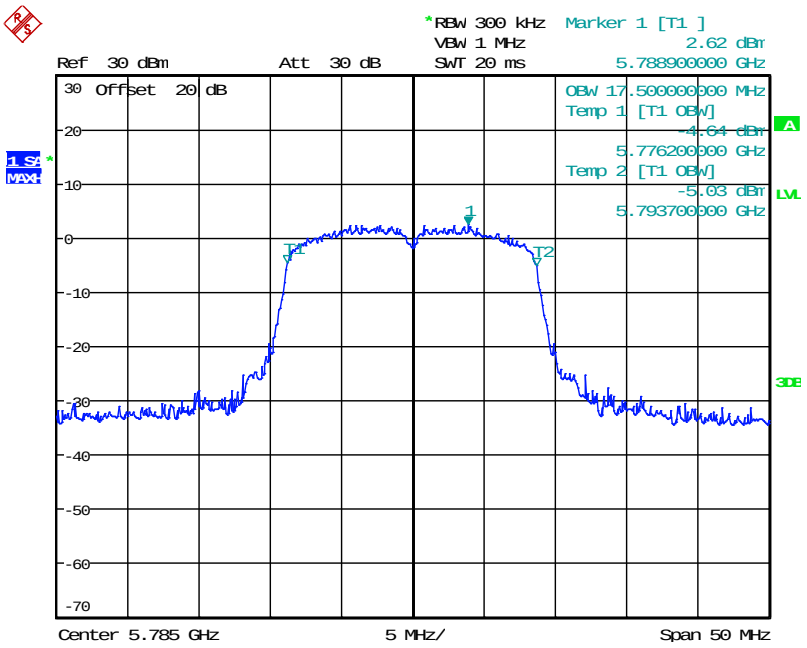
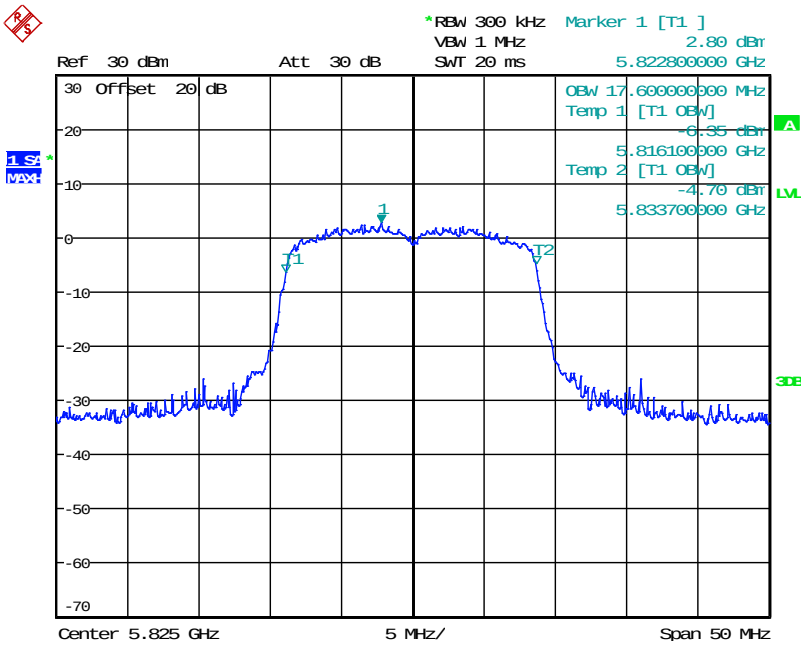


Figure 7.2.2-107: 99% OBW - Low Channel



Date: 15.FEB.2016 20:57:03

Figure 7.2.2-108: 99% OBW - Middle Channel



Date: 15.FEB.2016 21:03:53

Figure 7.2.2-109: 99% OBW - High Channel

Secondary Antenna

Table 7.2.2-21: 6dB / EBW/ 99% Bandwidth

Frequency [MHz]	6dB Bandwidth [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5745	16.32	19.60	17.70
5785	16.32	19.70	17.70
5825	16.68	19.60	17.70

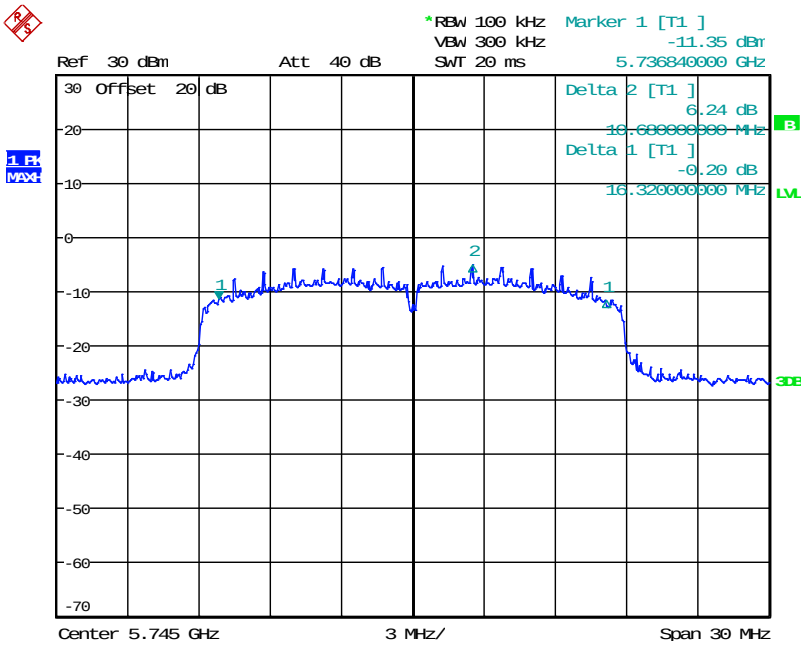
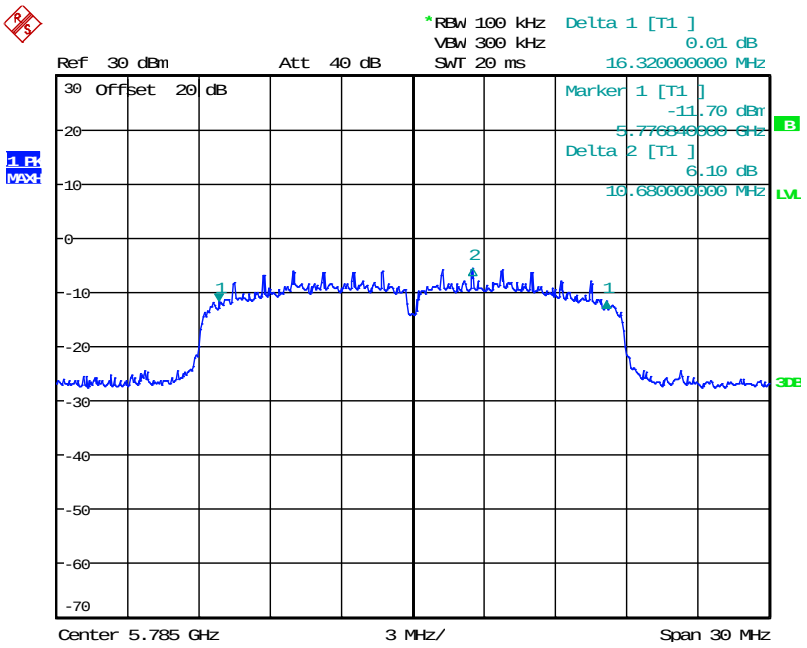
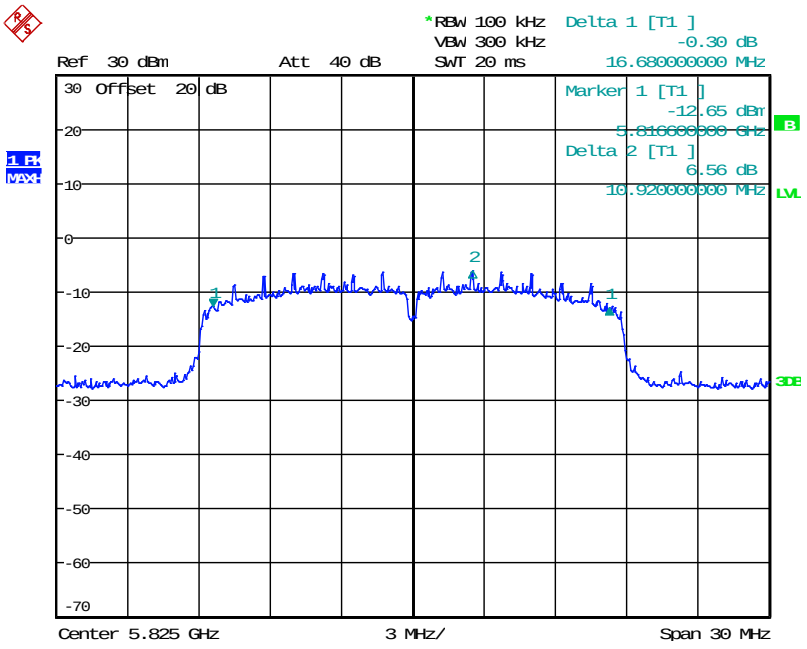


Figure 7.2.2-110: 6dB BW - Low Channel



Date: 19.FEB.2016 13:11:14

Figure 7.2.2-111: 6dB BW - Middle Channel



Date: 19.FEB.2016 13:23:53

Figure 7.2.2-112: 6dB BW - High Channel

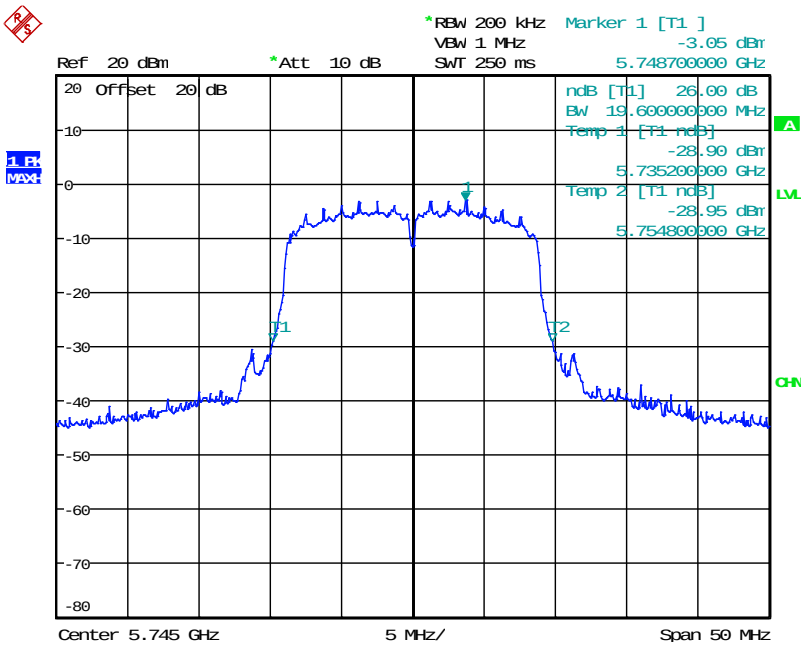


Figure 7.2.2-113: 26dB EBW - Low Channel

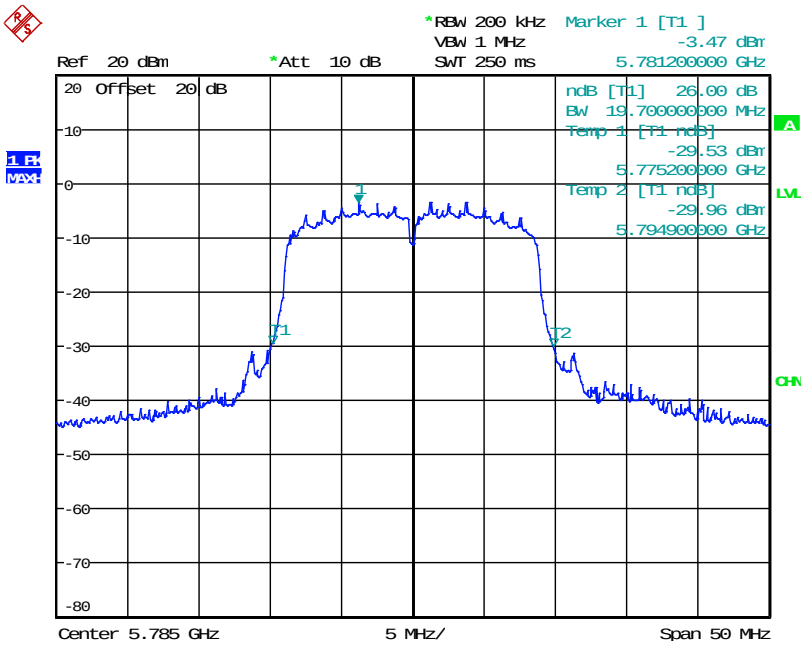
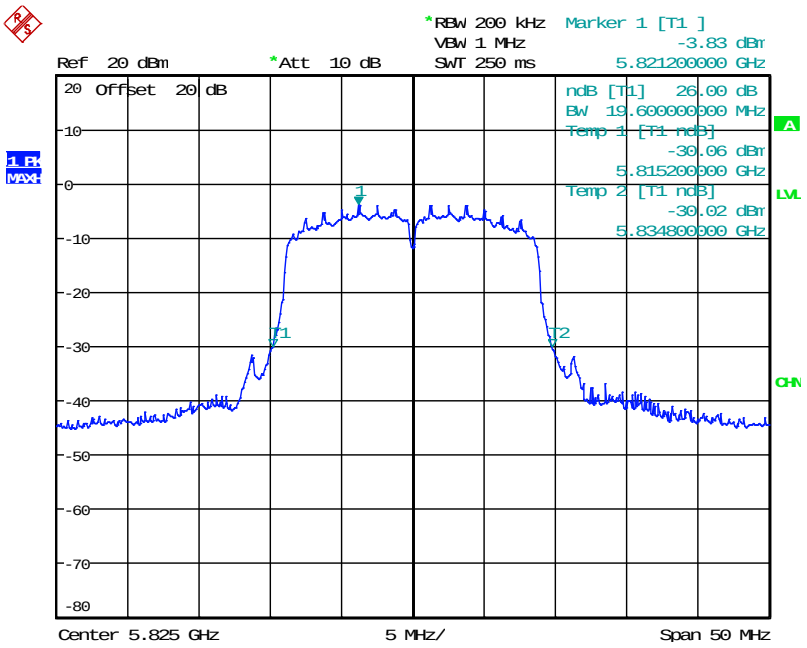
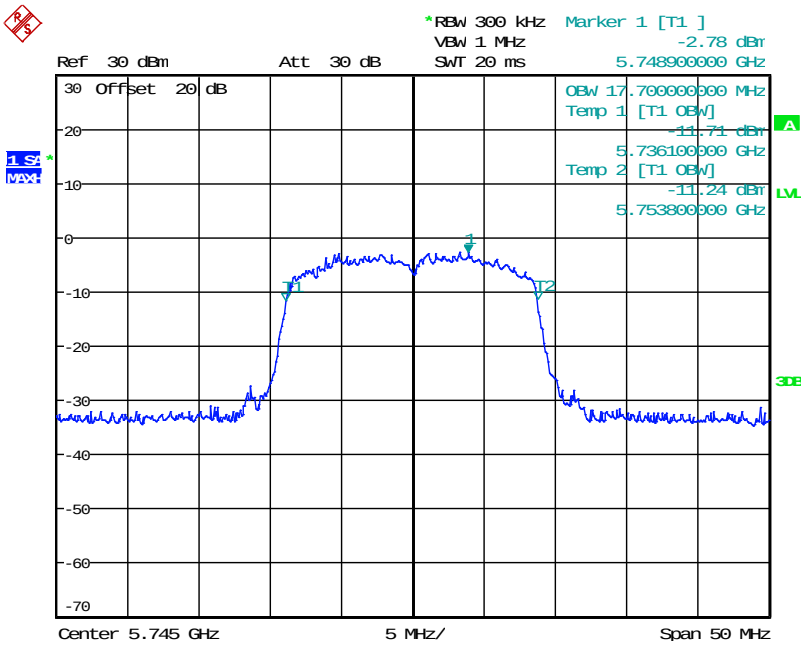


Figure 7.2.2-114: 26dB EBW - Middle Channel



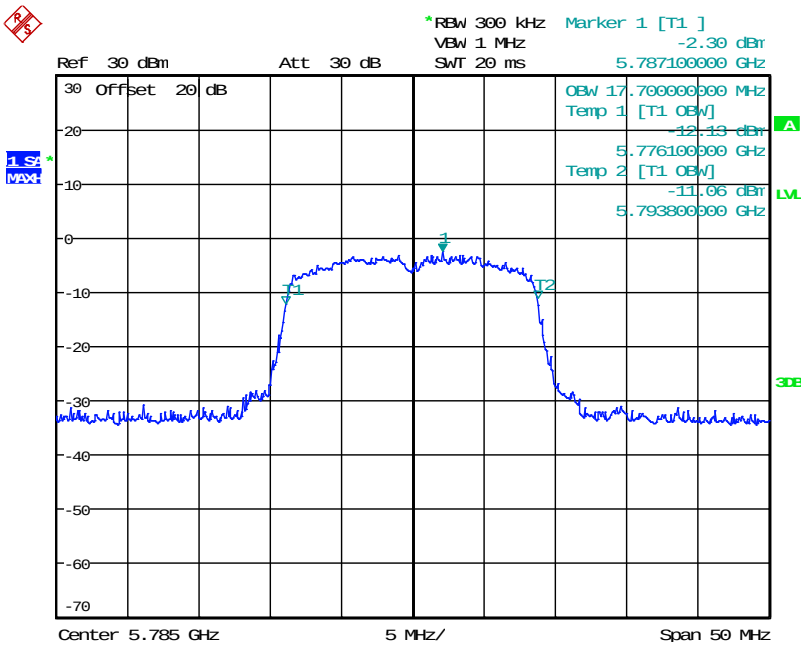
Date: 19.FEB.2016 13:18:35

Figure 7.2.2-115: 26dB EBW - High Channel



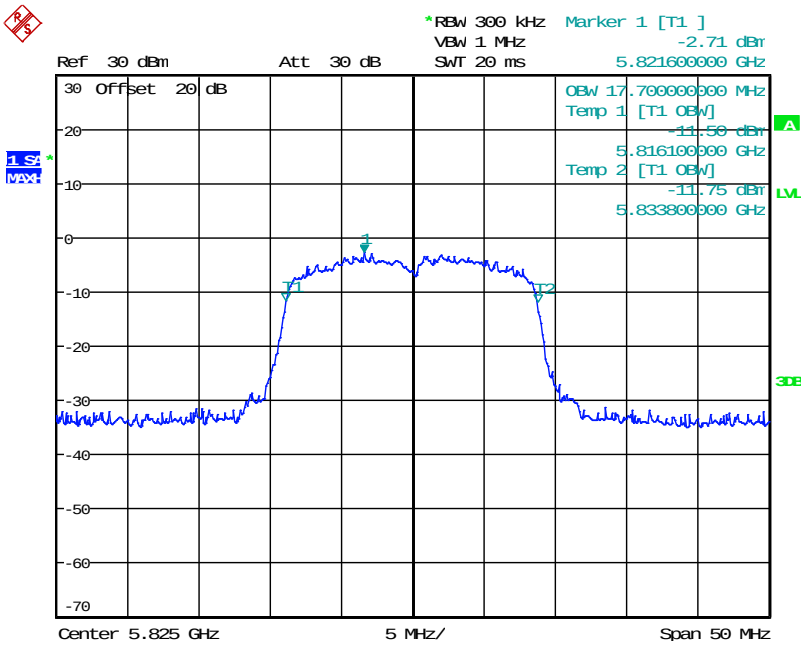
Date: 17.FEB.2016 23:36:03

Figure 7.2.2-116: 99% OBW - Low Channel



Date: 17.FEB.2016 23:39:42

Figure 7.2.2-117: 99% OBW - Middle Channel



Date: 17.FEB.2016 23:43:44

Figure 7.2.2-118: 99% OBW - High Channel

802.11n 40 MHz

Primary Antenna

Table 7.2.2-22: 6dB / EBW / 99% Bandwidth

Frequency [MHz]	6dB Bandwidth [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5755	36.50	47.80	37.00
5795	36.60	47.20	37.00

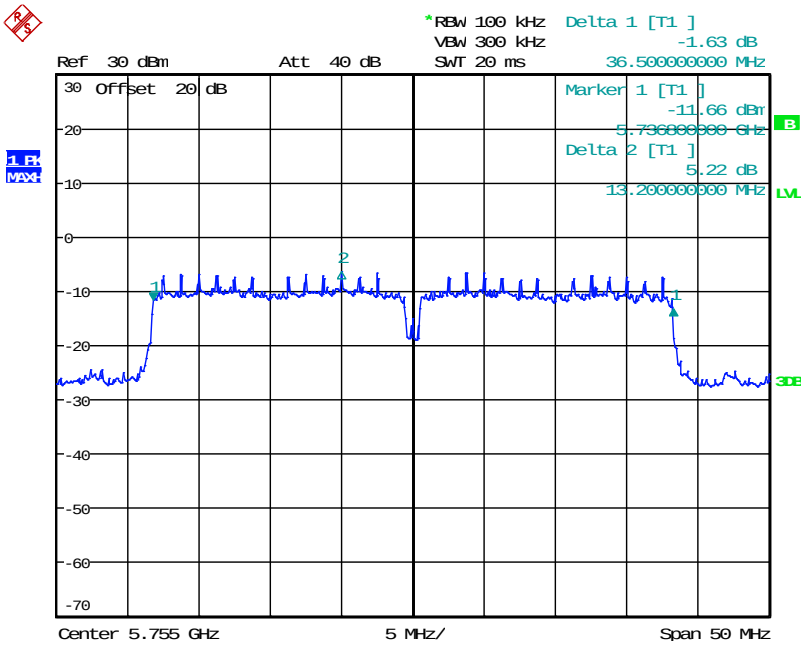
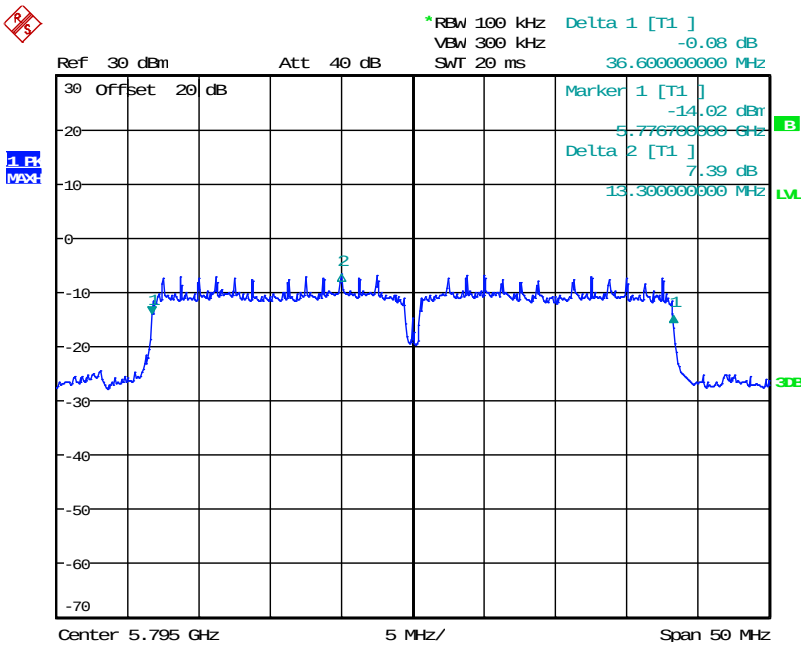
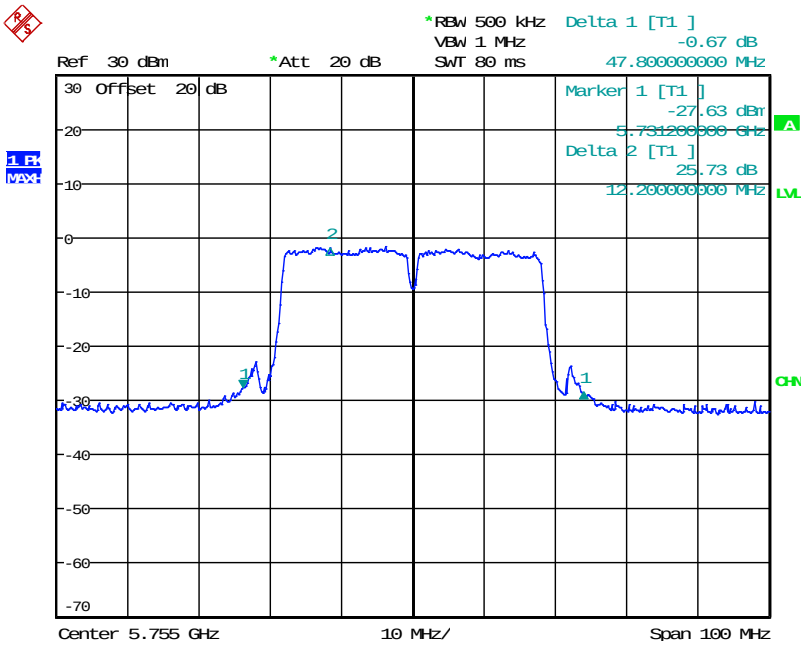


Figure 7.2.2-119: 6dB BW - Low Channel



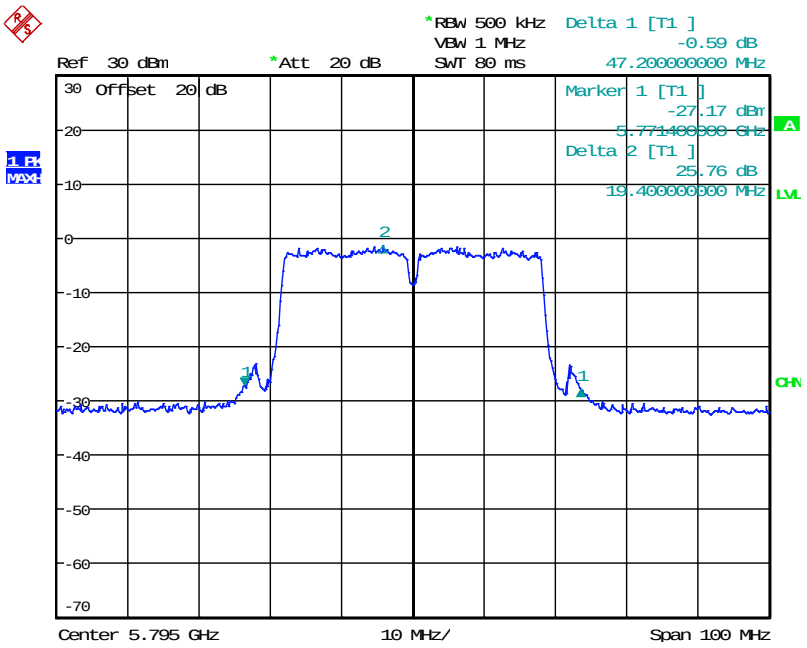
Date: 19.FEB.2016 00:23:15

Figure 7.2.2-120: 6dB BW - High Channel



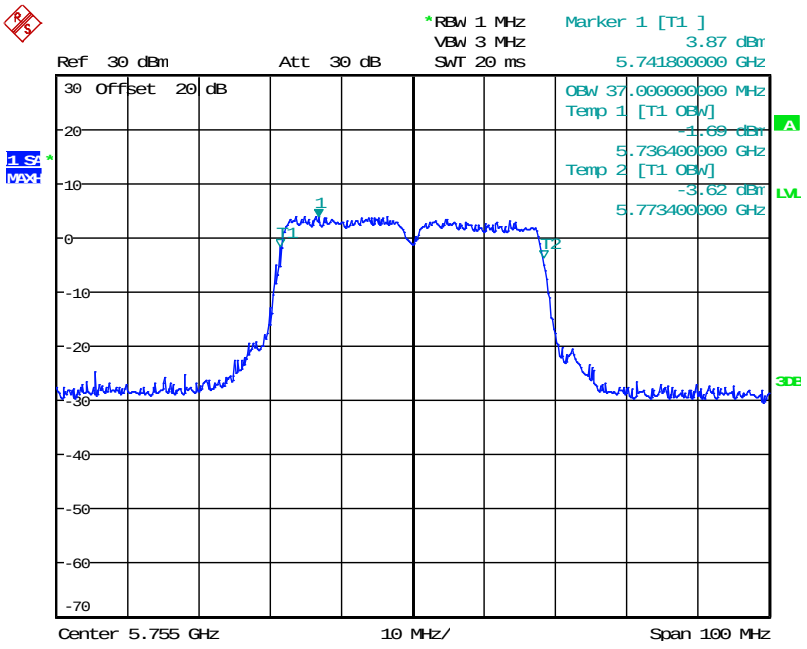
Date: 19.FEB.2016 00:15:21

Figure 7.2.2-121: 26dB EBW - Low Channel



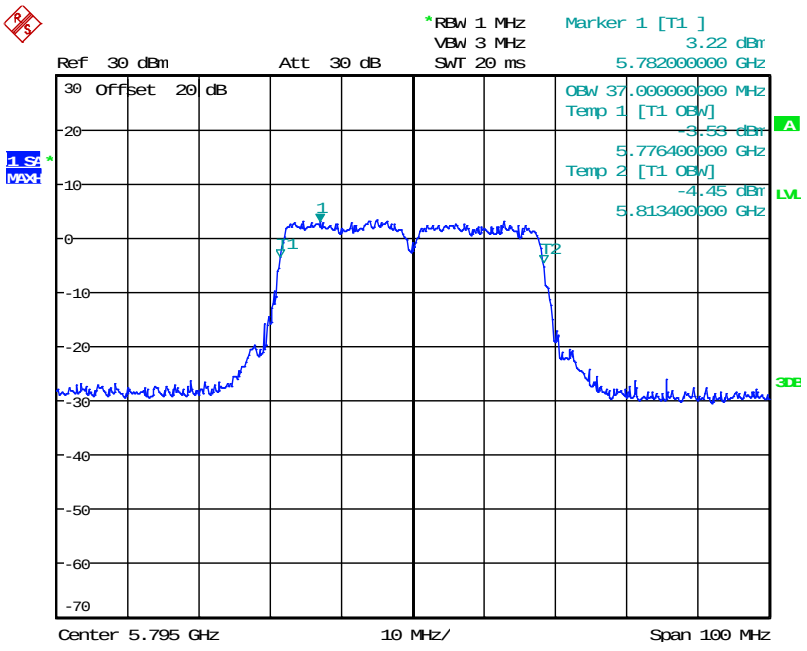
Date: 19.FEB.2016 00:25:10

Figure 7.2.2-122: 26dB EBW - High Channel



Date: 16.FEB.2016 00:00:15

Figure 7.2.2-123: 99% OBW - Low Channel



Date: 16.FEB.2016 00:03:37

Figure 7.2.2-124: 99% OBW - High Channel

Secondary Antenna

Table 7.2.2-23: 6dB / EBW / 99% Bandwidth

Frequency [MHz]	6dB Bandwidth [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5755	36.50	46.80	37.80
5795	36.60	46.80	37.40

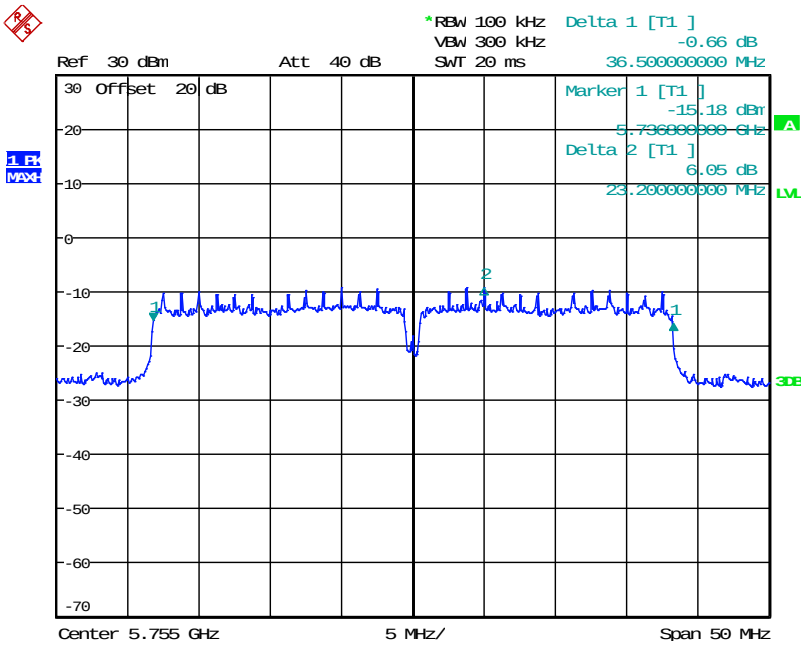
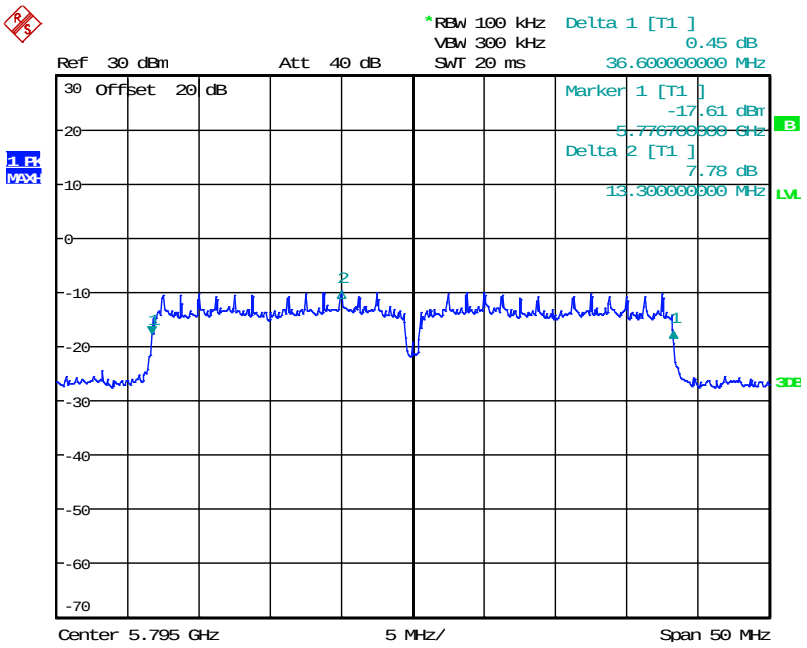
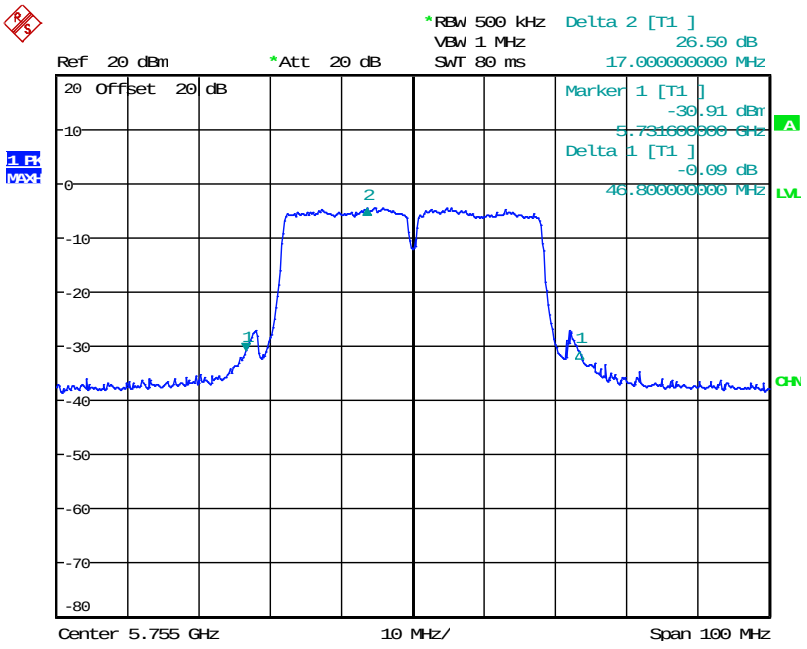


Figure 7.2.2-125: 6dB BW - Low Channel



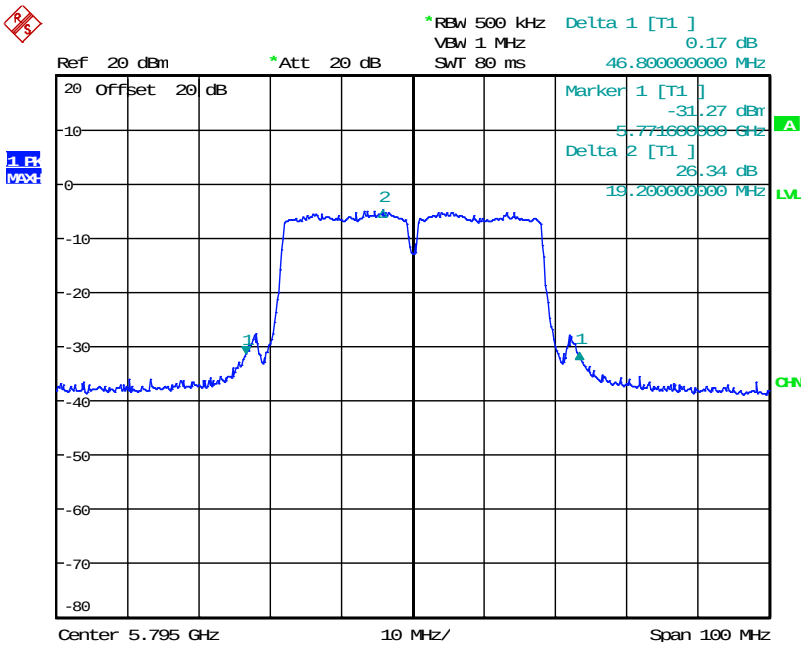
Date: 19.FEB.2016 10:50:48

Figure 7.2.2-126: 6dB BW - High Channel



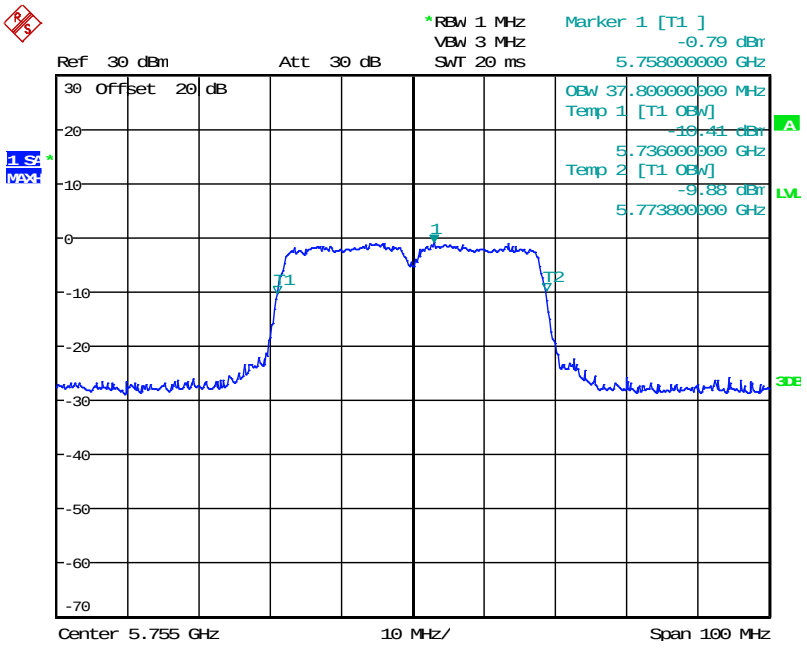
Date: 19.FEB.2016 10:23:26

Figure 7.2.2-127: 26dB EBW - Low Channel



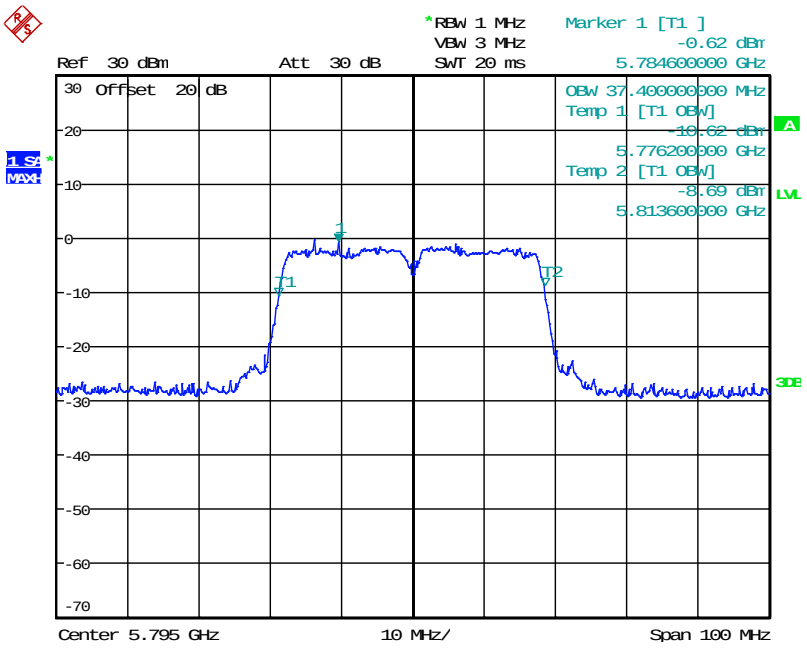
Date: 19.FEB.2016 10:54:09

Figure 7.2.2-128: 26dB EBW - High Channel



Date: 15.FEB.2016 22:53:57

Figure 7.2.2-129: 99% OBW - Low Channel



Date: 15.FEB.2016 22:59:23

Figure 7.2.2-130: 99% OBW - High Channel

802.11a

Primary Antenna

Table 7.2.2-25: 6dB / EBW/ 99% Bandwidth

Frequency [MHz]	6dB Bandwidth [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5745	16.32	19.30	16.60
5785	16.08	19.20	16.70
5825	16.32	19.50	16.50

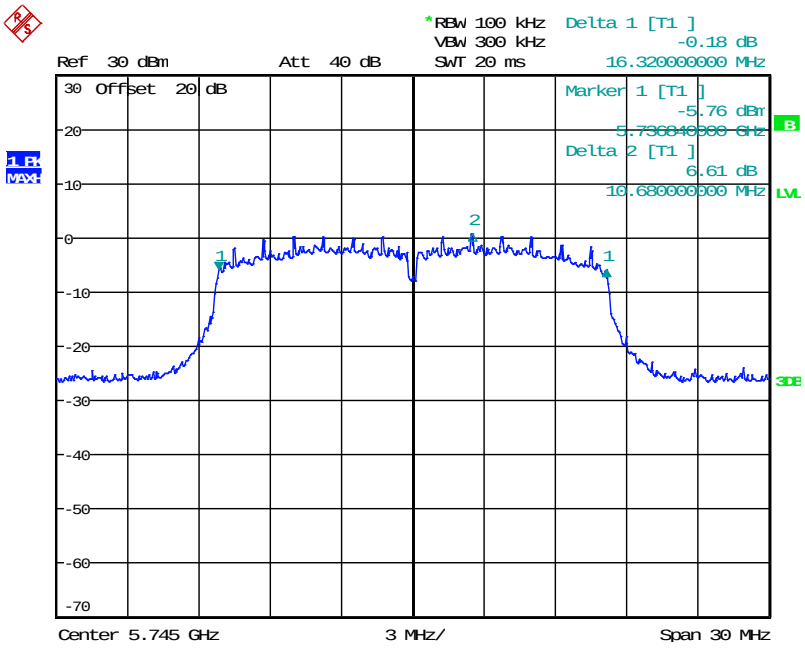
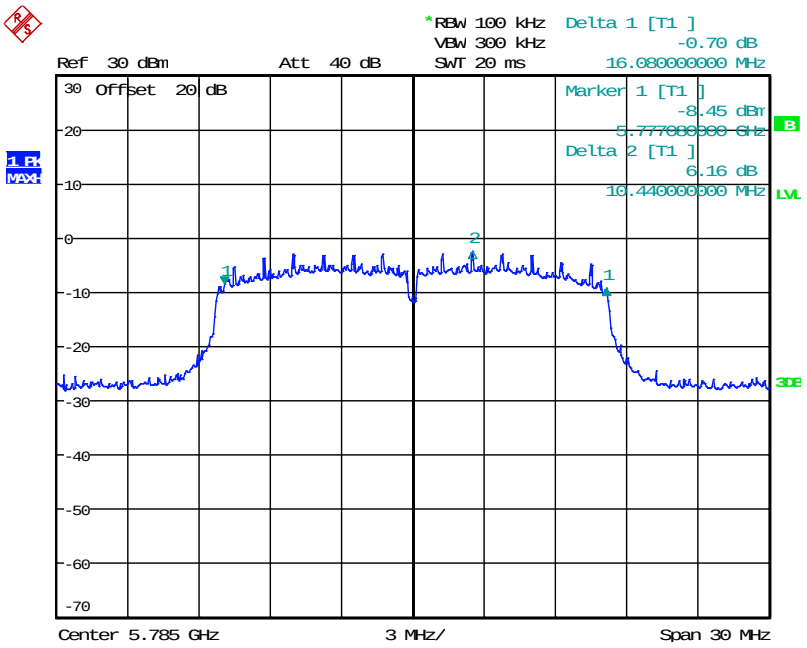
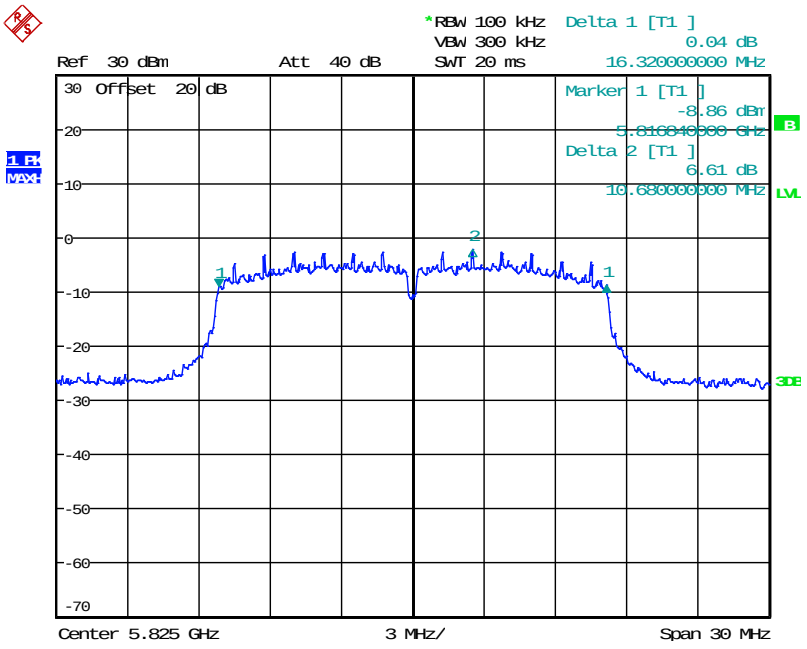


Figure 7.2.2-131: 6dB BW - Low Channel



Date: 18.FEB.2016 19:44:19

Figure 7.2.2-132: 6dB BW - Middle Channel



Date: 18.FEB.2016 21:31:34

Figure 7.2.2-133: 6dB BW - High Channel

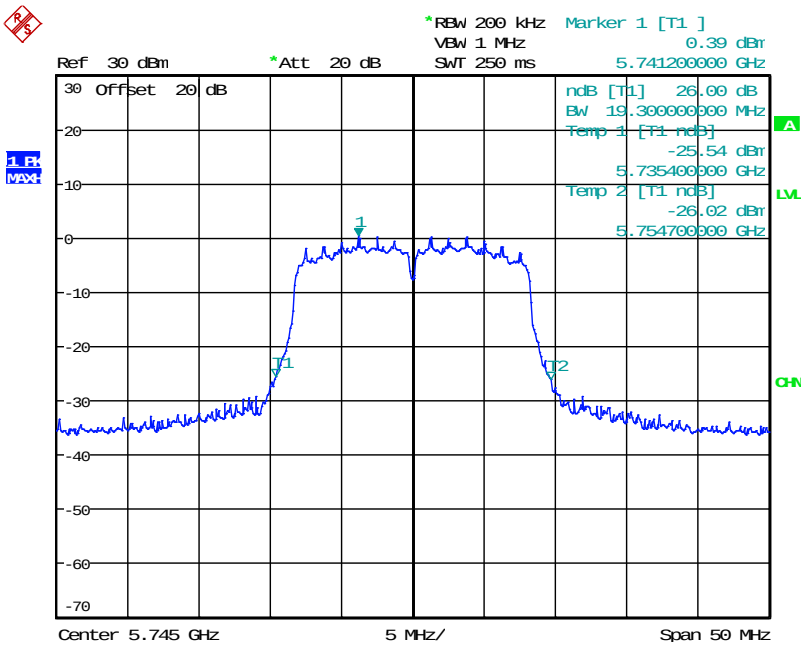


Figure 7.2.2-134: 26dB EBW - Low Channel

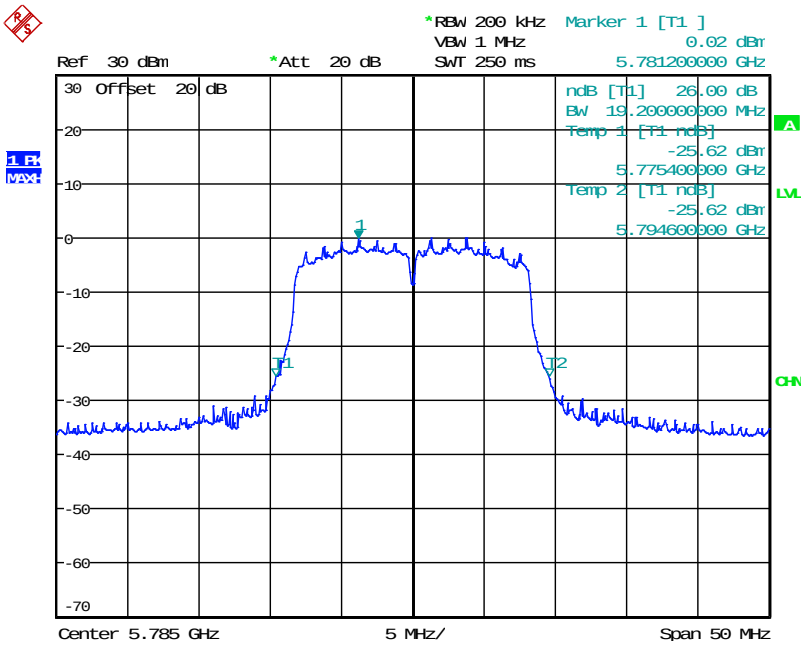


Figure 7.2.2-135: 26dB EBW - Middle Channel

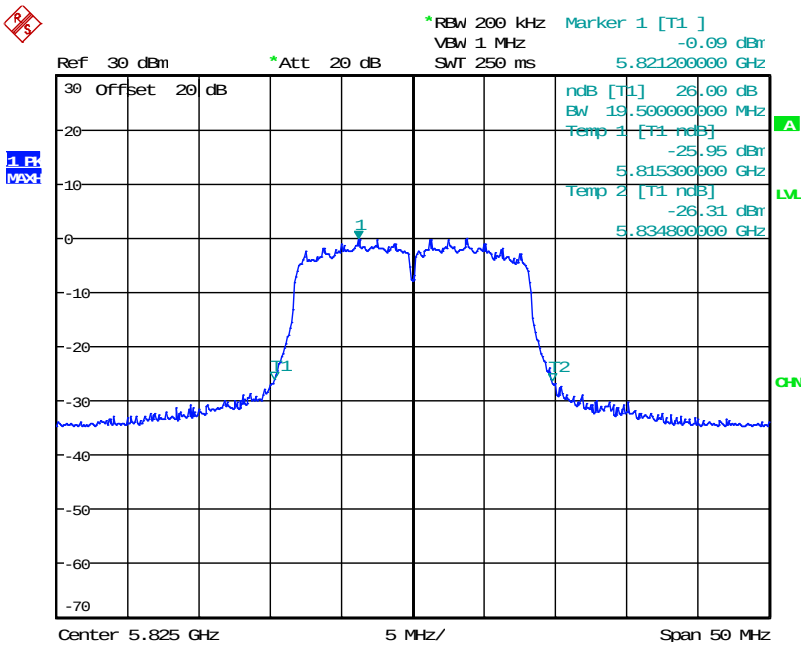


Figure 7.2.2-136: 26dB EBW - High Channel

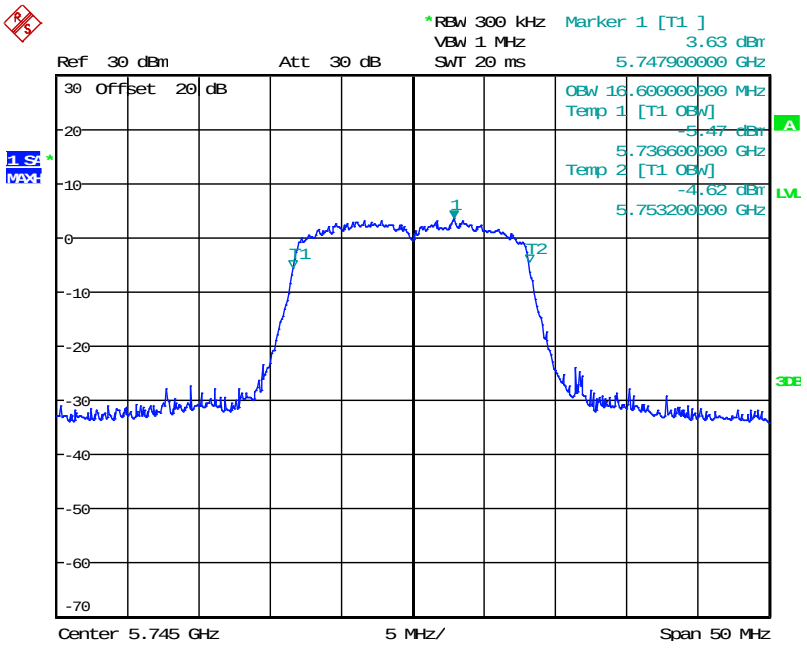
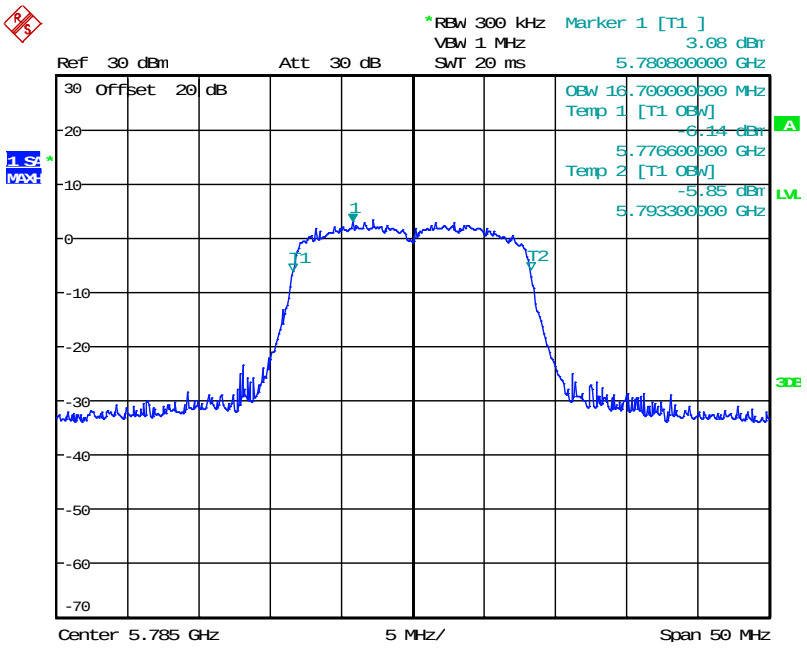
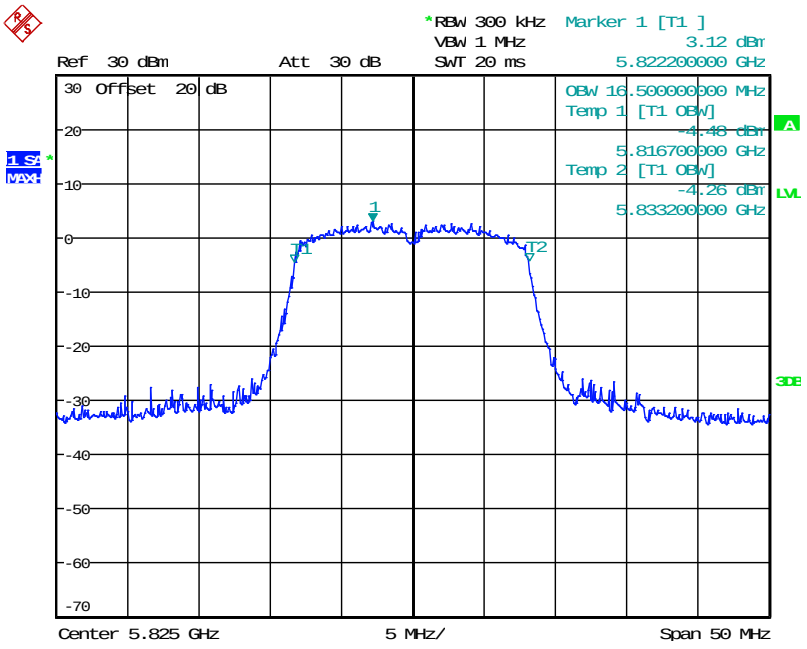


Figure 7.2.2-137: 99% OBW - Low Channel



Date: 15.FEB.2016 19:41:16

Figure 7.2.2-138: 99% OBW - Middle Channel



Date: 15.FEB.2016 19:47:18

Figure 7.2.2-139: 99% OBW - High Channel

Secondary Antenna

Table 7.2.2-26: 6dB / EBW/ 99% Bandwidth

Frequency [MHz]	6dB Bandwidth [MHz]	26dB Bandwidth [MHz]	99% Bandwidth (MHz)
5745	16.32	19.40	16.70
5785	16.26	19.30	16.70
5825	16.02	19.50	16.70

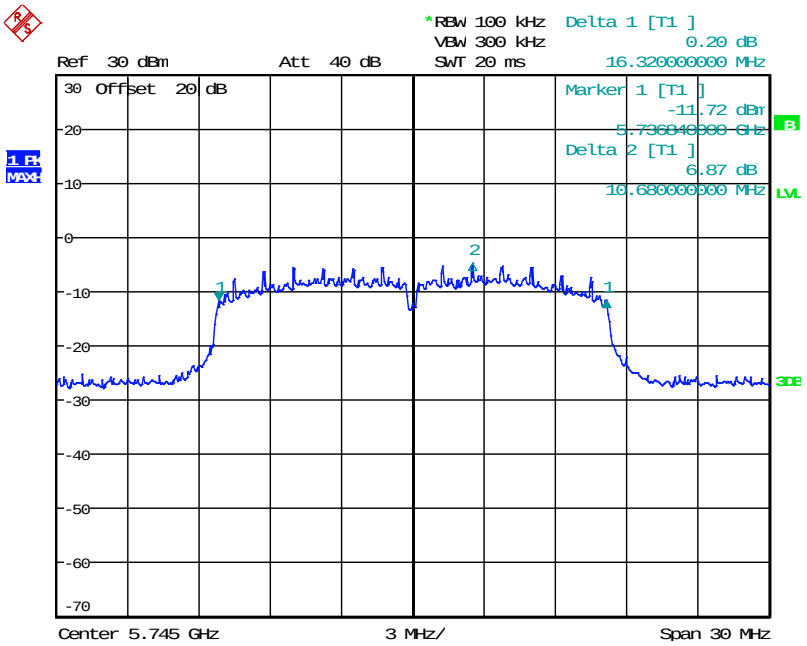
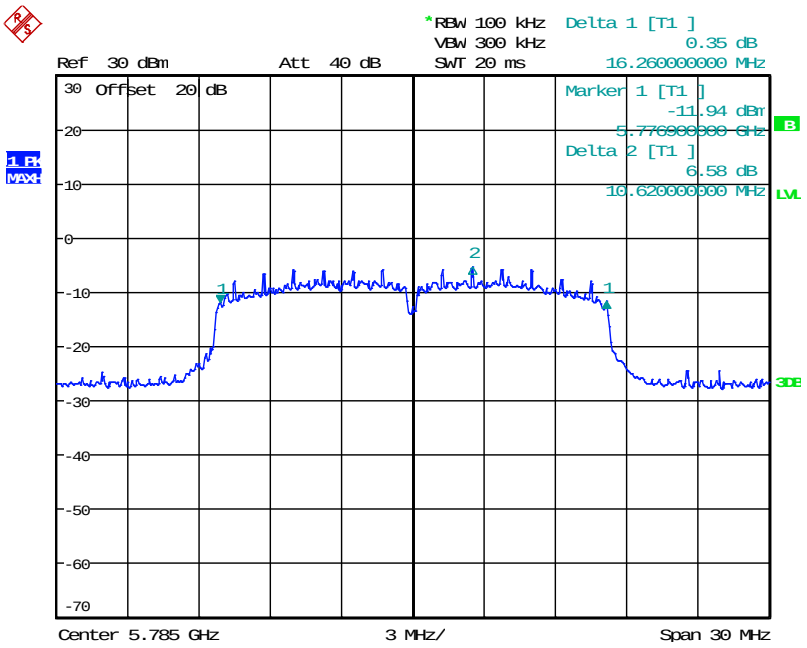
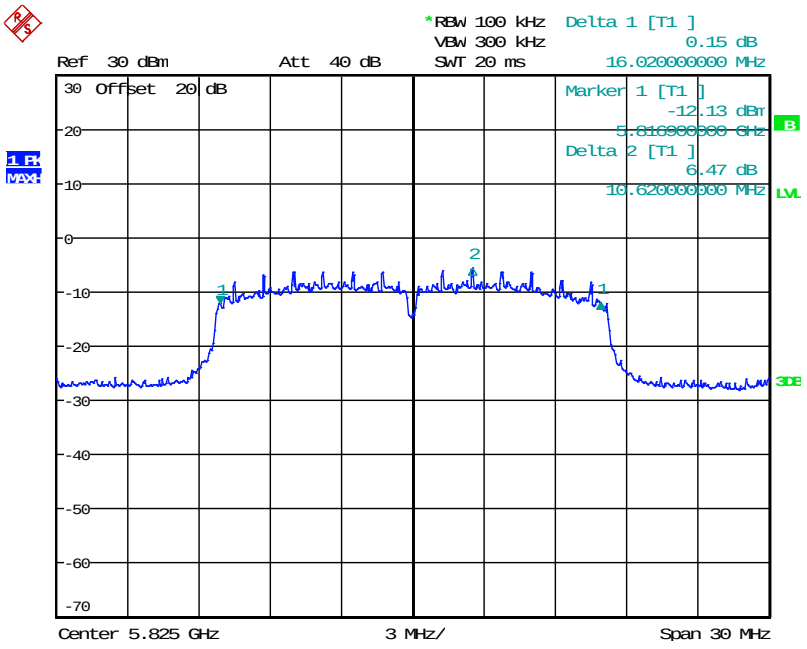


Figure 7.2.2-140: 6dB BW - Low Channel



Date: 19.FEB.2016 14:39:44

Figure 7.2.2-141: 6dB BW - Middle Channel



Date: 19.FEB.2016 14:50:43

Figure 7.2.2-142: 6dB BW - High Channel

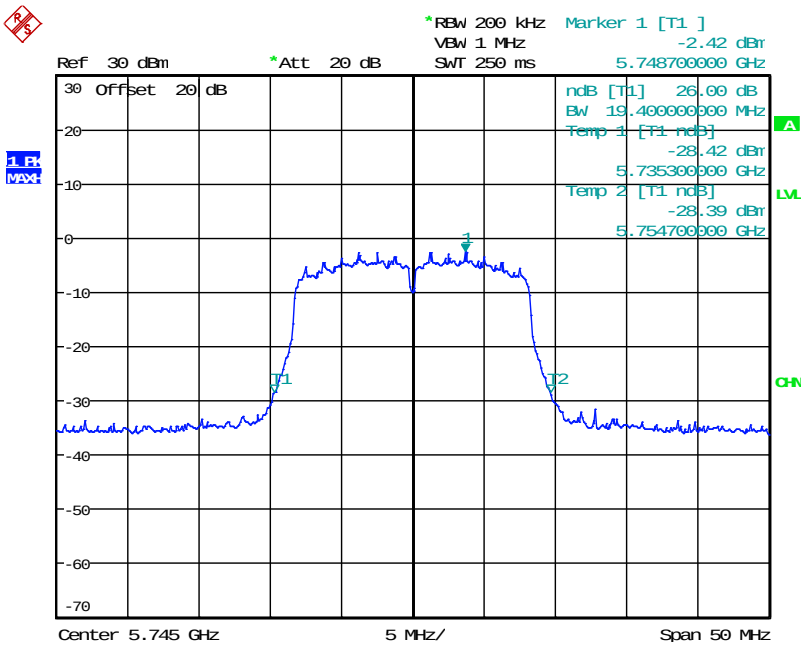


Figure 7.2.2-143: 26dB EBW - Low Channel

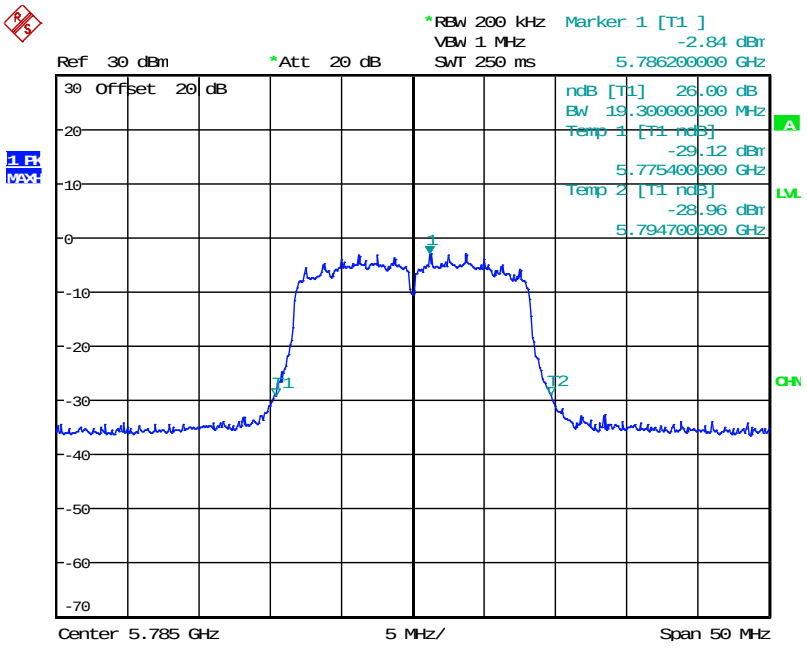
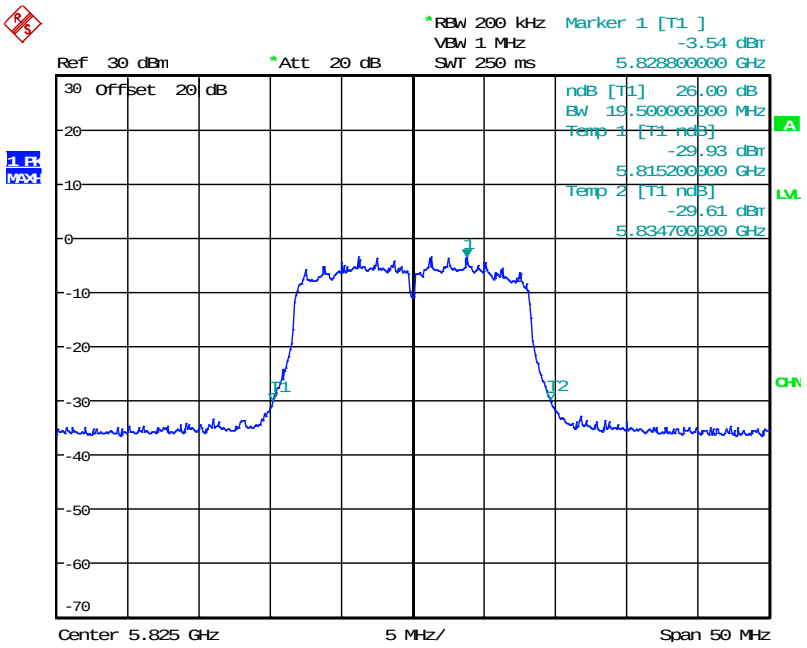
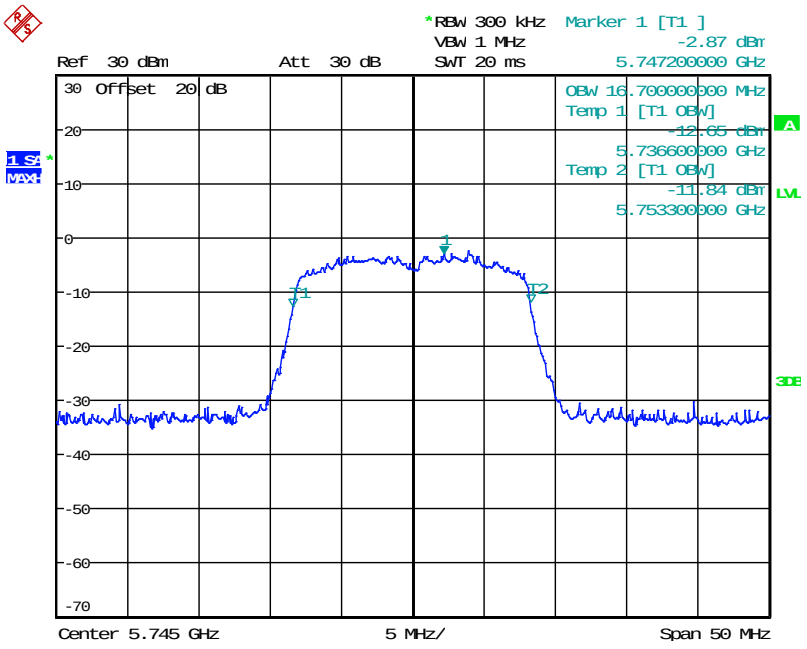


Figure 7.2.2-144: 26dB EBW - Middle Channel



Date: 19.FEB.2016 14:45:18

Figure 7.2.2-145: 26dB EBW - High Channel



Date: 17.FEB.2016 22:54:38

Figure 7.2.2-146: 99% OBW - Low Channel

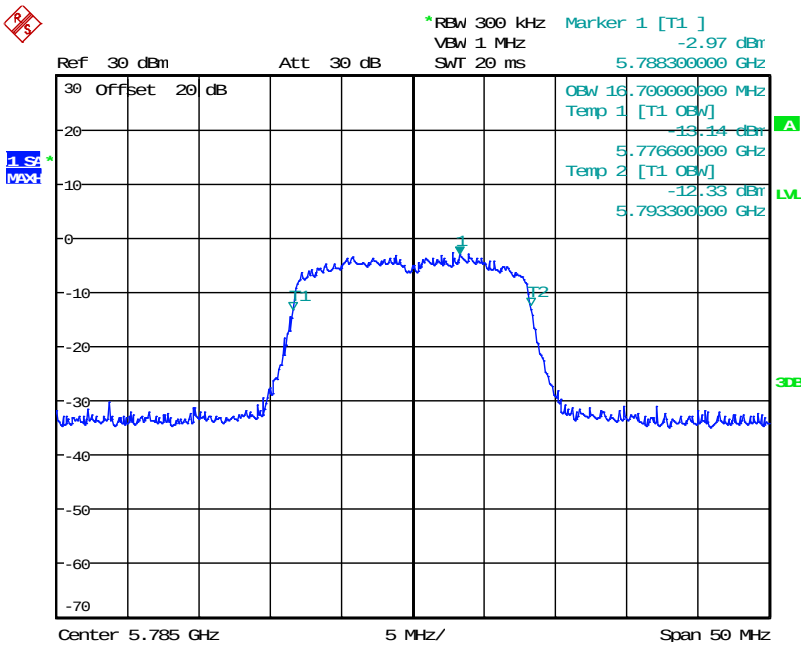


Figure 7.2.2-147: 99% OBW - Middle Channel

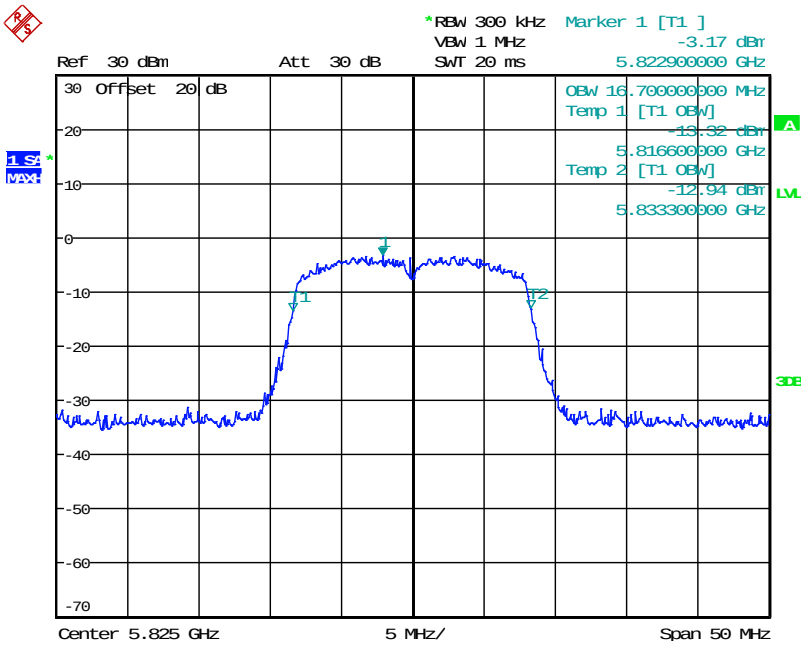


Figure 7.2.2-148: 99% OBW - High Channel

7.3 Maximum Conducted Output Power

7.3.1 Measurement Procedure (Conducted Method)

The Peak Output Power was measured in accordance with the KDB Publication No. 789033 D02 General UNII Test Procedures New Rules v01r01 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E" Method SA-2. The RF output of the equipment under test was directly connected to the input of the spectrum analyzer through suitable attenuation. The power was integrated over the 99% alternative bandwidth instead of the 26 dB bandwidth.

The total output power levels for the MIMO modes were calculated in accordance with FCC KDB Publication No. 662911 "Emissions Testing of Transmitters with Multiple Outputs in the Same Band" in order to account for the two TX antenna paths by summing the output power across all transmitter outputs.

7.3.2 Measurement Results

Results are shown below.

FCC Section 15.407(a)(1) IC: RSS-247 6.2.1 Band 5.15 GHz-5.25GHz

802.11n 20 MHz

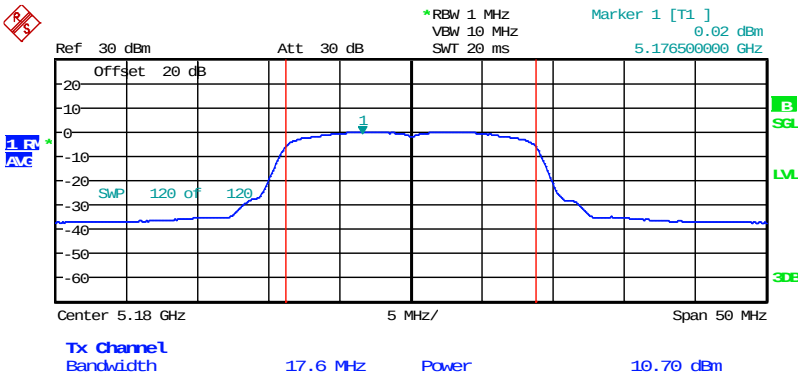
Table 7.3.2-1: RF Output Power (MIMO)

Frequency [MHz]	Primary Antenna Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]
5180	10.95	6.34	12.24
5200	10.70	6.34	12.06
5240	10.72	6.67	12.16

Primary Antenna

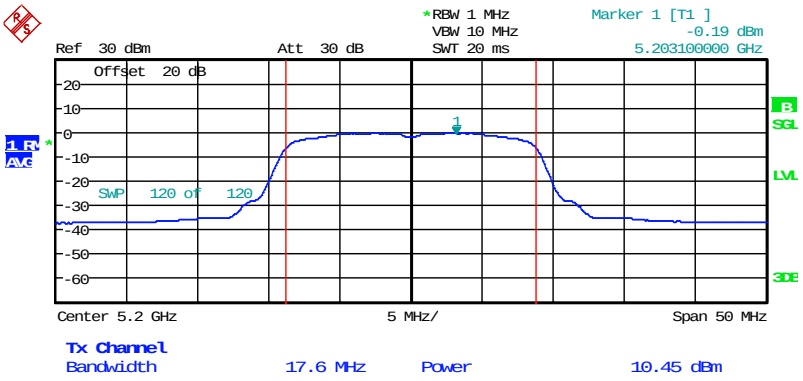
Table 7.3.2-2: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5180	10.70	0.25	10.95
5200	10.45	0.25	10.70
5240	10.47	0.25	10.72



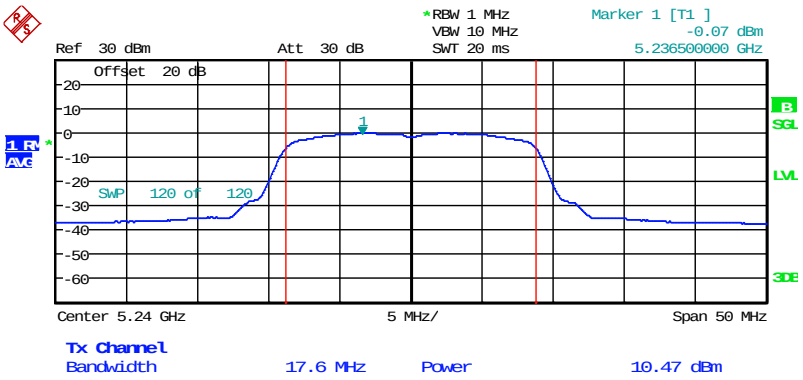
Date: 15.FEB.2016 19:58:01

Figure 7.3.2-1: RF Output Power - Low Channel



Date: 15.FEB.2016 20:03:28

Figure 7.3.2-2: RF Output Power - Middle Channel



Date: 15.FEB.2016 20:08:07

Figure 7.3.2-3: RF Output Power - High Channel

Secondary Antenna

Table 7.3.2-3: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5180	6.09	0.25	6.34
5200	6.09	0.25	6.34
5240	6.42	0.25	6.67

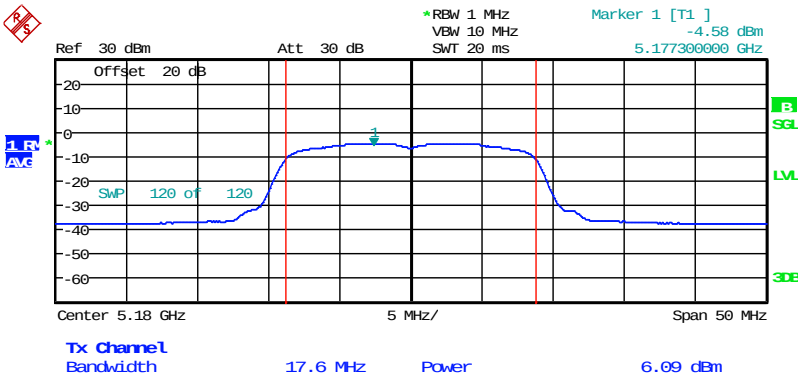
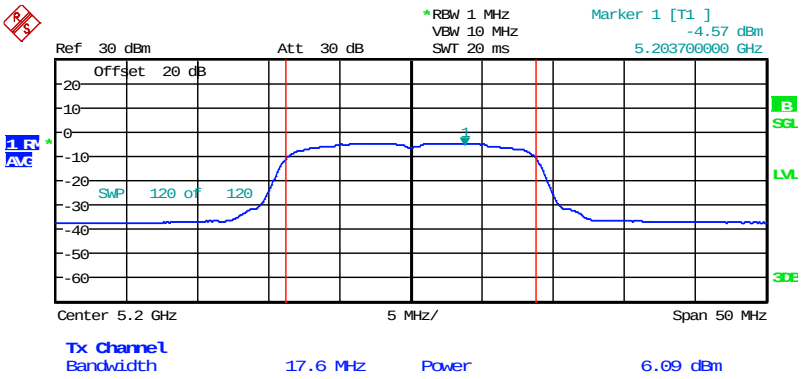
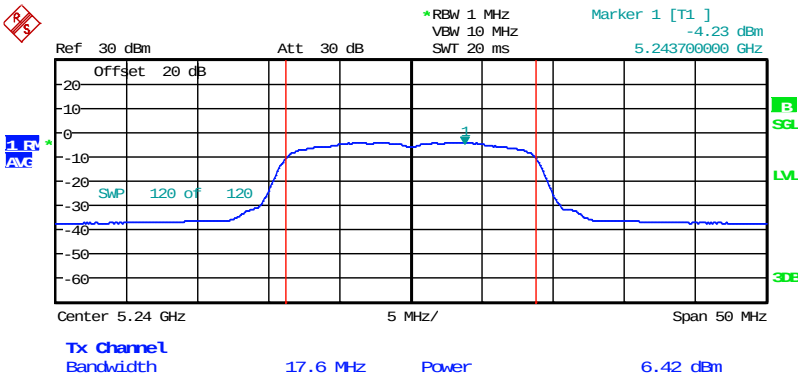


Figure 7.3.2-4: RF Output Power - Low Channel



Date: 17.FEB.2016 23:07:55

Figure 7.3.2-5: RF Output Power - Middle Channel



Date: 17.FEB.2016 23:11:43

Figure 7.3.2-6: RF Output Power - High Channel

802.11n 40 MHz

Table 7.3.2-4: RF Output Power

Frequency [MHz]	Primary Antenna Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]
5190	9.81	5.57	11.2
5230	9.84	5.86	11.3

Primary Antenna

Table 7.3.2-5: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5190	9.36	0.45	9.81
5230	9.39	0.45	9.84

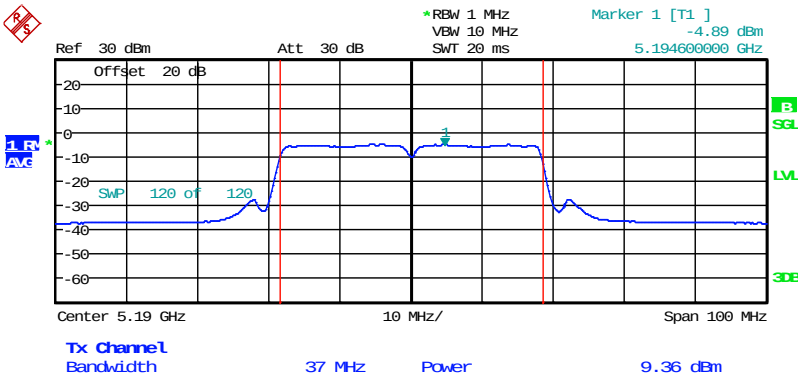


Figure 7.3.2-7: RF Output Power - Low Channel

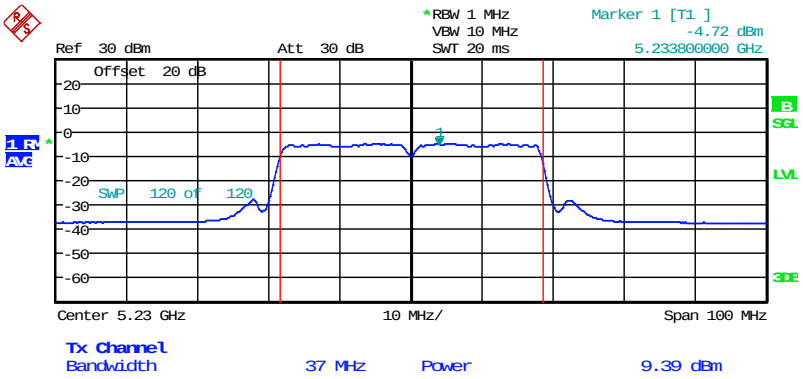
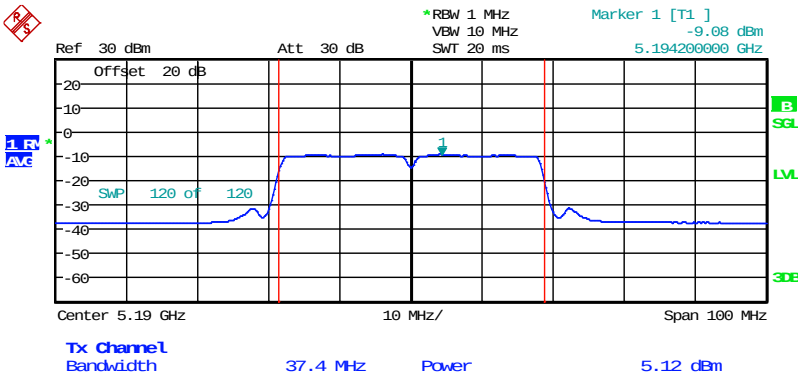


Figure 7.3.2-8: RF Output Power - High Channel

Secondary Antenna

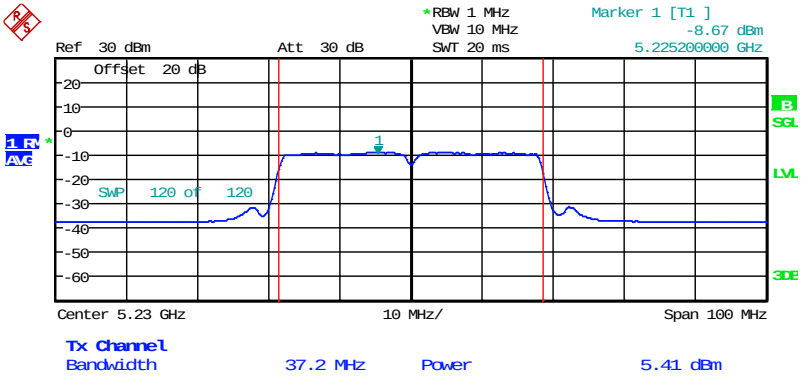
Table 7.3.2-6: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5190	5.12	0.45	5.57
5230	5.41	0.45	5.86



Date: 15.FEB.2016 23:13:55

Figure 7.3.2-9: RF Output Power - Low Channel



Date: 15.FEB.2016 23:17:26

Figure 7.3.2-10: RF Output Power - High Channel

802.11a

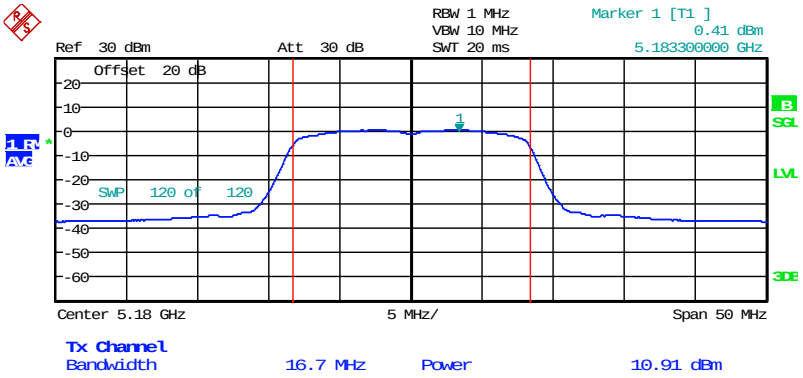
Table 7.3.2-7: RF Output Power

Frequency [MHz]	Primary Antenna Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]
5180	11.14	6.50	12.42
5200	10.97	6.21	12.22
5240	11.06	6.51	12.37

Primary Antenna

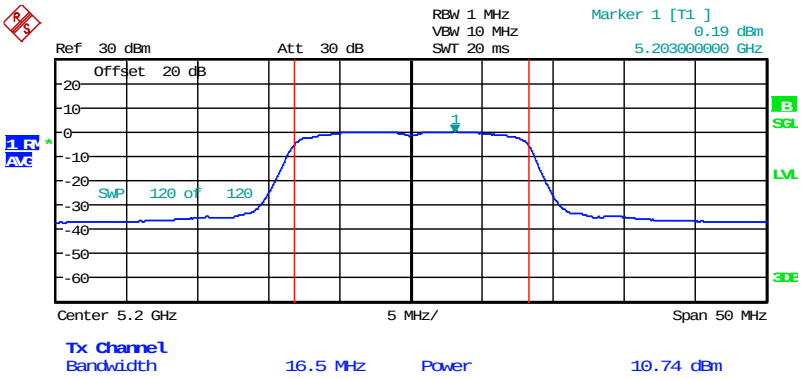
Table 7.3.2-8: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5180	10.91	0.23	11.14
5200	10.74	0.23	10.97
5240	10.83	0.23	11.06



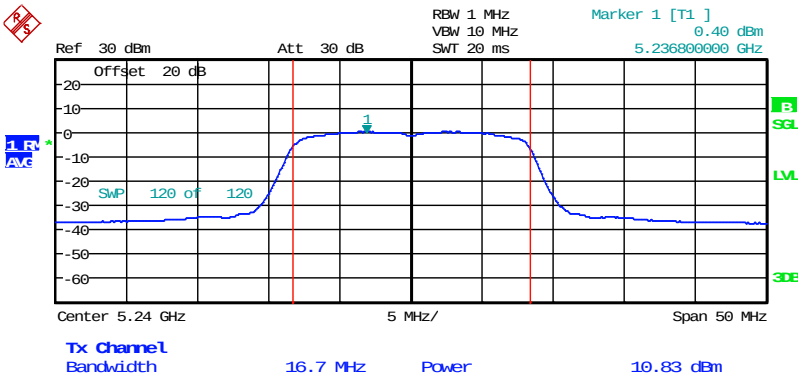
Date: 15.FEB.2016 16:52:47

Figure 7.3.2-11: RF Output Power - Low Channel



Date: 15.FEB.2016 16:57:58

Figure 7.3.2-12: RF Output Power - Middle Channel



Date: 15.FEB.2016 17:04:56

Figure 7.3.2-13: RF Output Power - High Channel

Secondary Antenna

Table 7.3.2-9: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5180	6.27	0.23	6.50
5200	5.98	0.23	6.21
5240	6.28	0.23	6.51

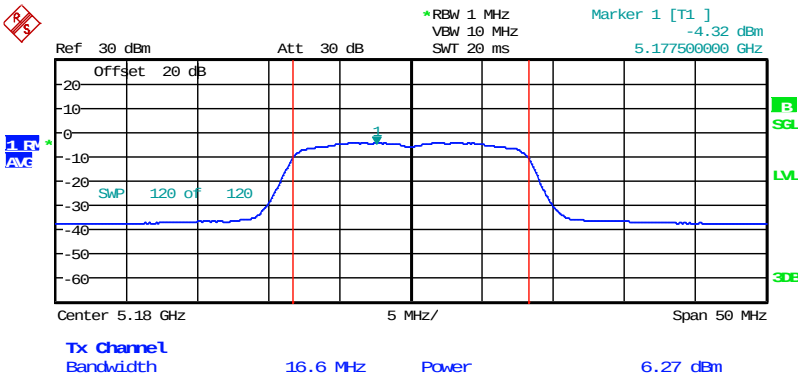


Figure 7.3.2-14: RF Output Power - Low Channel

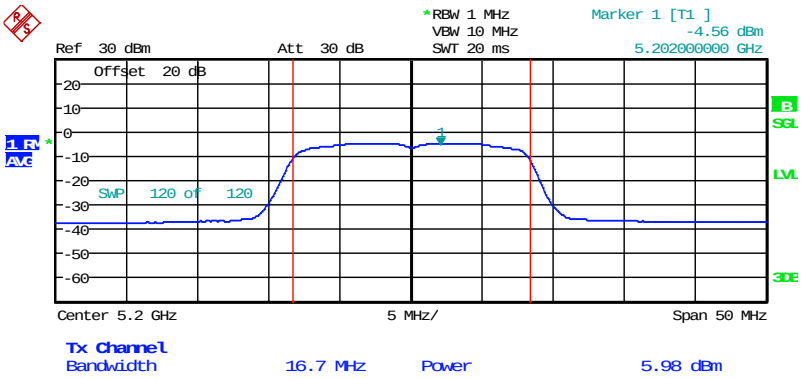


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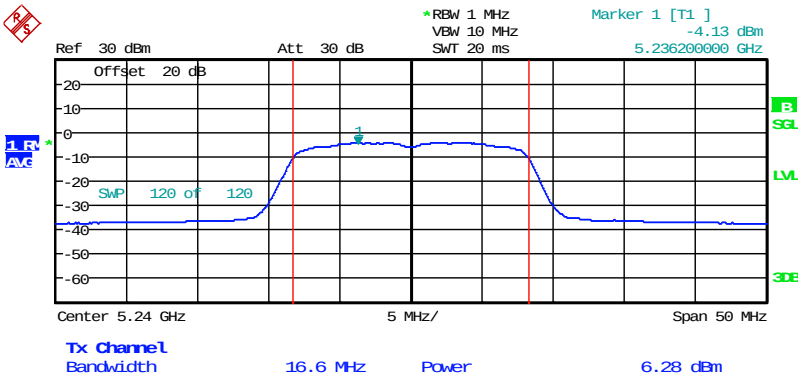
Figure 7.3.2-15: RF Output Power - Middle Channel



Date: 17.FEB.2016 22:32:54

Figure 7.3.2-16: RF Output Power - High Channel

FCC Section 15.407(a)(2) IC: RSS-247 6.2.2 Band 5.25 GHz-5.35GHz

802.11n 20 MHz

Table 7.3.2-10: RF Output Power

Frequency [MHz]	Primary Antenna Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]
5260	10.49	6.53	11.96
5280	10.46	6.54	11.94
5320	10.07	6.72	11.72

Primary Antenna

Table 7.3.2-11: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5260	10.24	0.25	10.49
5280	10.21	0.25	10.46
5320	9.82	0.25	10.07

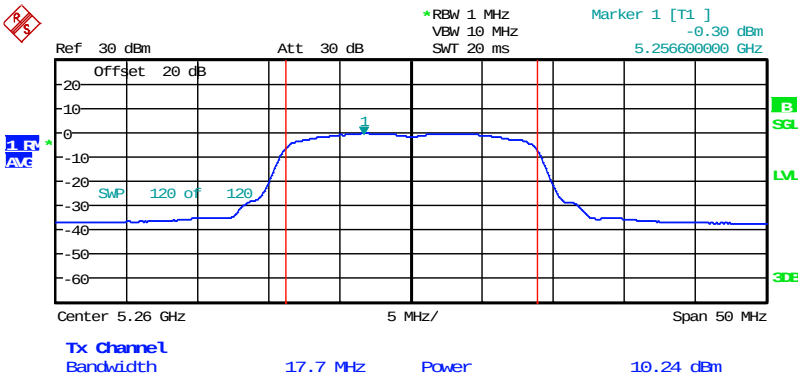


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Figure 7.3.2-17: RF Output Power - Low Channel

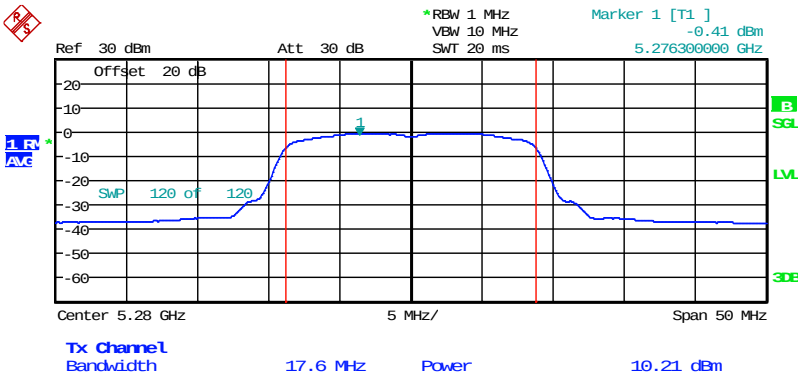

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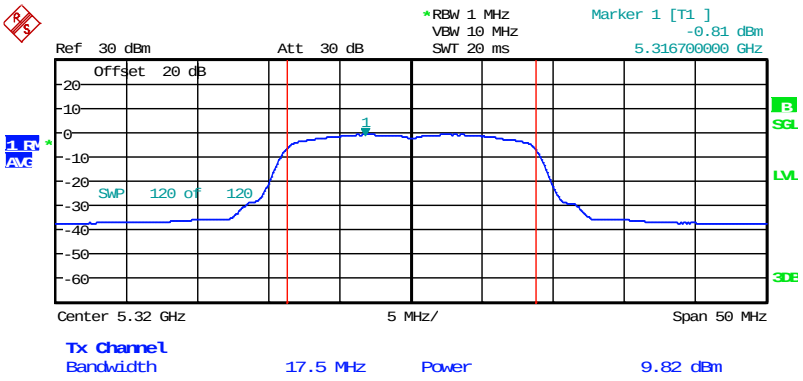
Figure 7.3.2-18: RF Output Power - Middle Channel



Date: 15.FEB.2016 20:31:13

Figure 7.3.2-19: RF Output Power - High Channel

Secondary Antenna

Table 7.3.2-12: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5260	6.28	0.25	6.53
5280	6.29	0.25	6.54
5240	6.47	0.25	6.72

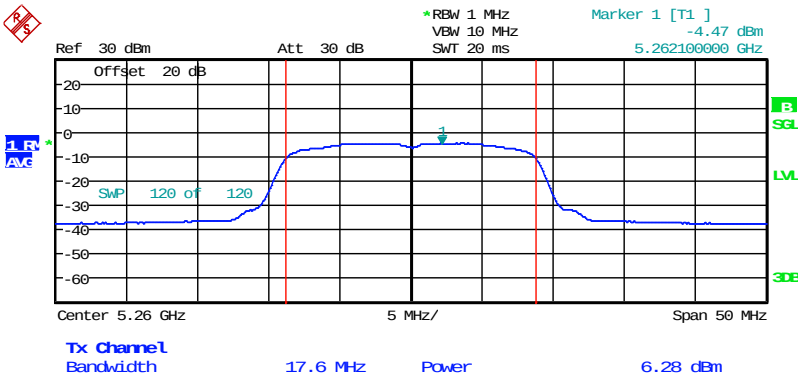


Figure 7.3.2-20: RF Output Power - Low Channel

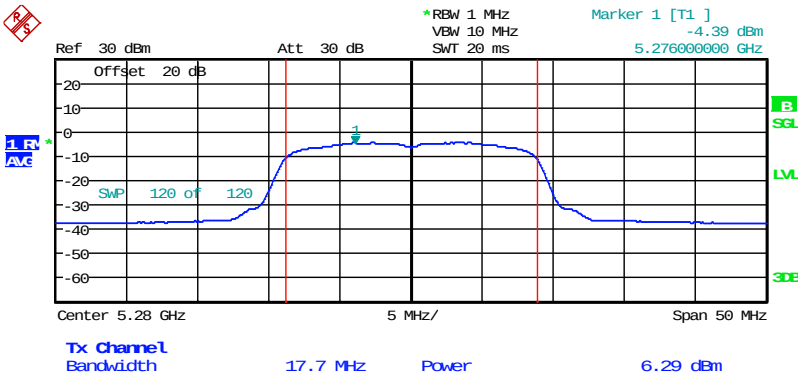


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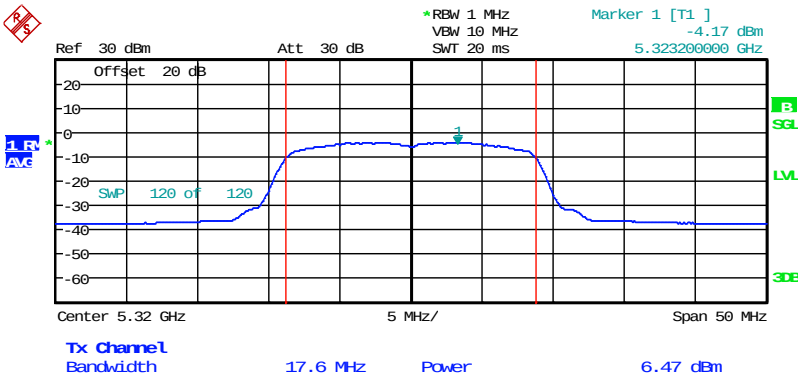
Figure 7.3.2-21: RF Output Power - Middle Channel



Date: 17.FEB.2016 23:24:20

Figure 7.3.2-22: RF Output Power - High Channel

802.11n 40 MHz

Table 7.3.2-13: RF Output Power

Frequency [MHz]	Primary Antenna Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]
5270	9.68	5.83	11.18
5310	9.26	5.80	10.88

Primary Antenna

Table 7.3.2-14: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5270	9.23	0.45	9.68
5310	8.81	0.45	9.26

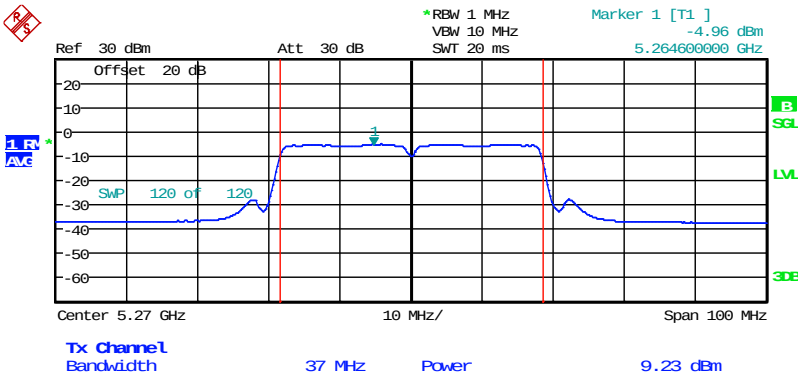


Figure 7.3.2-23: RF Output Power - Low Channel

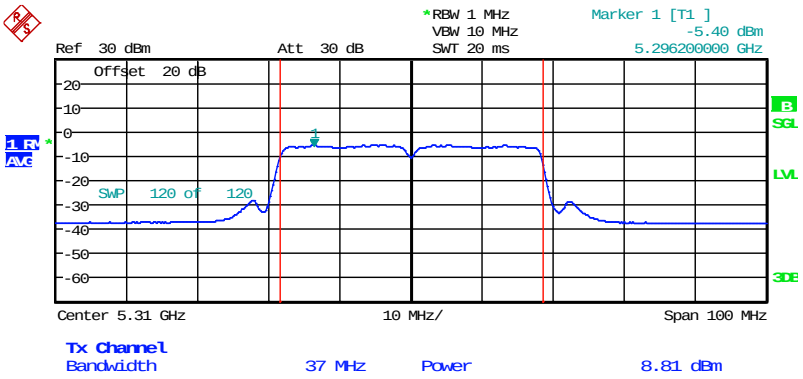


Figure 7.3.2-24: RF Output Power - High Channel

Secondary Antenna

Table 7.3.2-15: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5270	5.38	0.45	5.83
5310	5.35	0.45	5.80

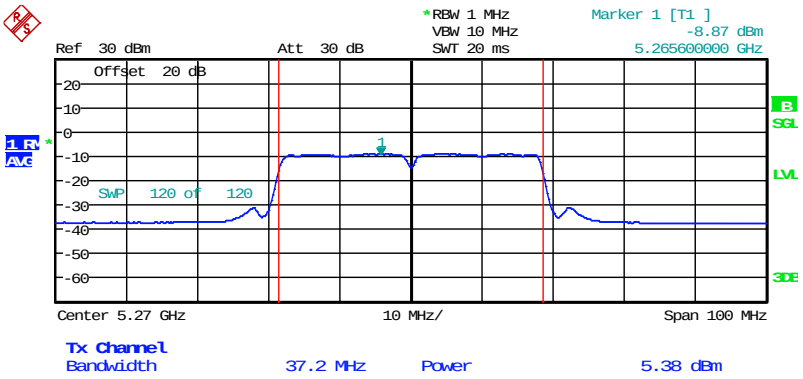


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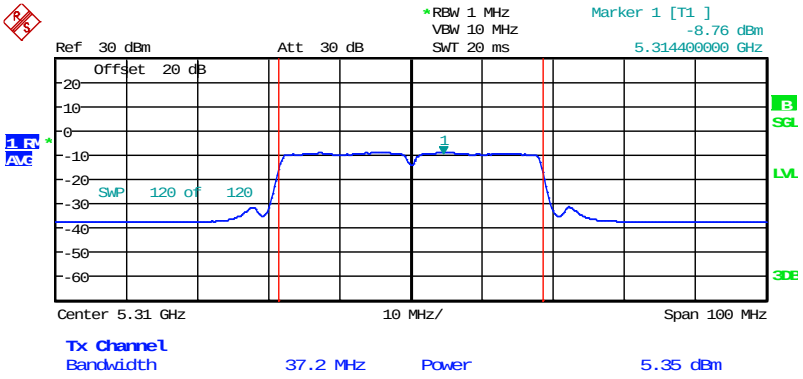
Figure 7.3.2-25: RF Output Power - Low Channel



Date: 15.FEB.2016 23:25:52

Figure 7.3.2-26: RF Output Power - High Channel

802.11a

Table 7.3.2-16: RF Output Power

Frequency [MHz]	Primary Antenna Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]
5260	10.65	6.49	12.06
5280	10.65	6.53	12.07
5320	10.79	6.62	12.20

Primary Antenna

Table 7.3.2-17: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5260	10.42	0.23	10.65
5280	10.42	0.23	10.65
5320	10.56	0.23	10.79

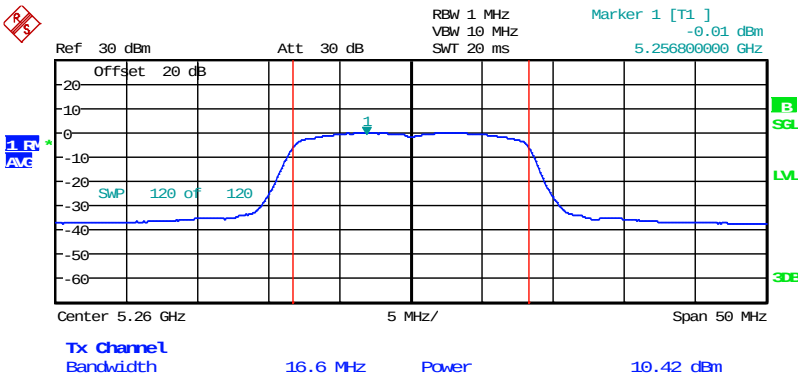


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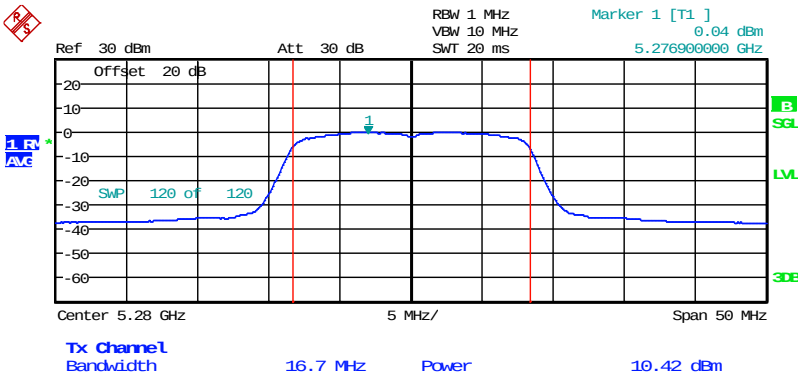
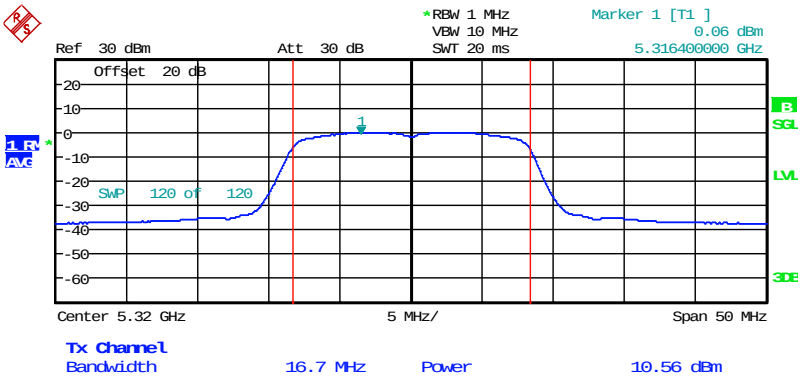
Figure 7.3.2-27: RF Output Power - Low Channel



Date: 15.FEB.2016 17:21:56

Figure 7.3.2-28: RF Output Power - Middle Channel



Date: 15.FEB.2016 18:31:52

Figure 7.3.2-29: RF Output Power - High Channel

Secondary Antenna

Table 7.3.2-17: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5260	6.26	0.23	6.49
5280	6.30	0.23	6.53
5240	6.39	0.23	6.62

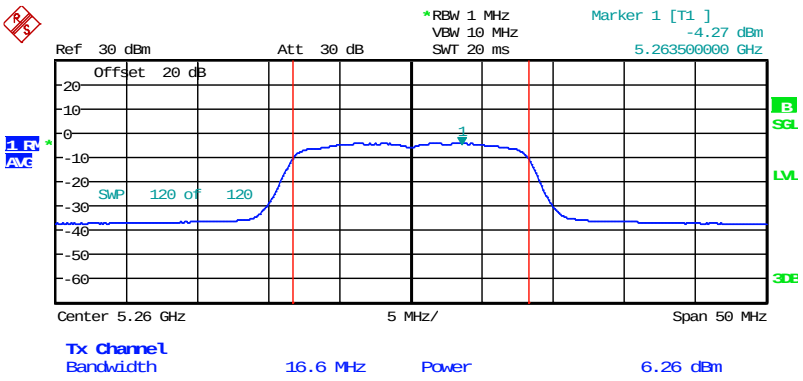
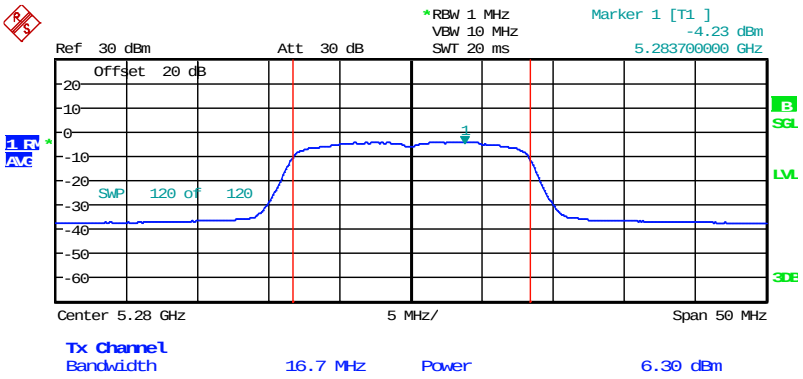
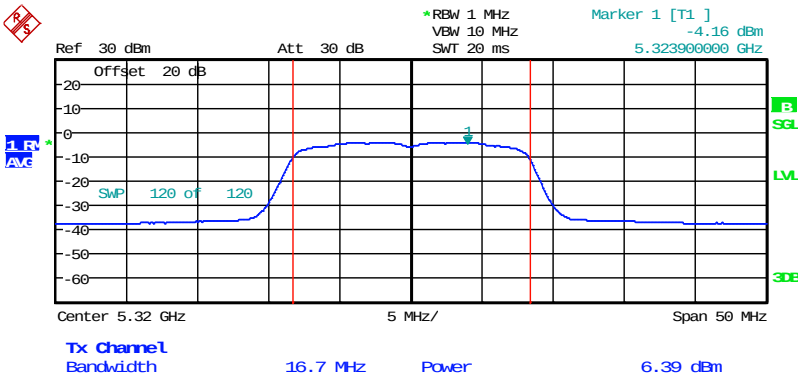


Figure 7.3.2-30: RF Output Power - Low Channel



Date: 17.FEB.2016 22:39:01

Figure 7.3.2-31: RF Output Power - Middle Channel



Date: 17.FEB.2016 22:41:26

Figure 7.3.2-32: RF Output Power - High Channel

FCC Section 15.407(a)(2) IC: RSS-247 6.2.3 Band 5.47 GHz-5.725 GHz

802.11n 20 MHz

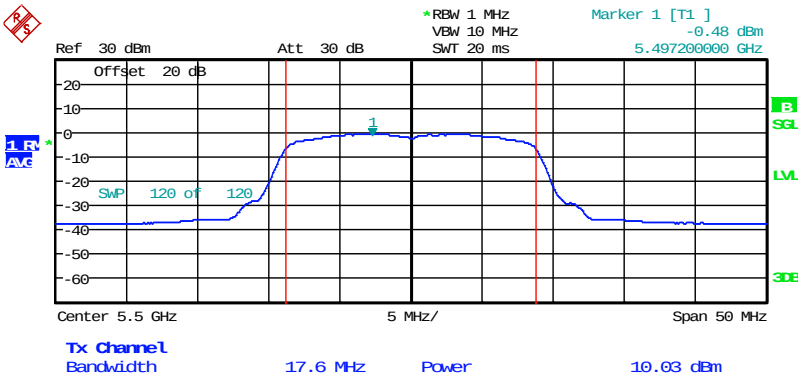
Table 7.3.2-19: RF Output Power

Frequency [MHz]	Primary Antenna Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]
5500	10.28	6.72	11.87
5600	10.52	5.70	11.76
5700	10.94	5.21	11.97

Primary Antenna

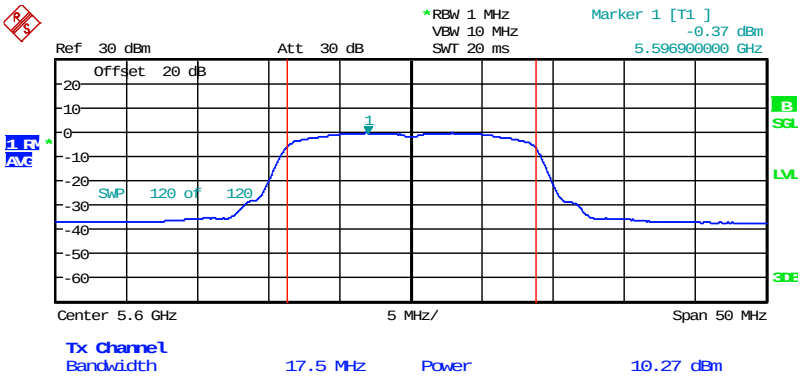
Table 7.3.2-20: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5500	10.03	0.25	10.28
5600	10.27	0.25	10.52
5700	10.69	0.25	10.94



Date: 15.FEB.2016 20:37:13

Figure 7.3.2-33: RF Output Power - Low Channel



Date: 15.FEB.2016 20:41:37

Figure 7.3.2-34: RF Output Power - Middle Channel

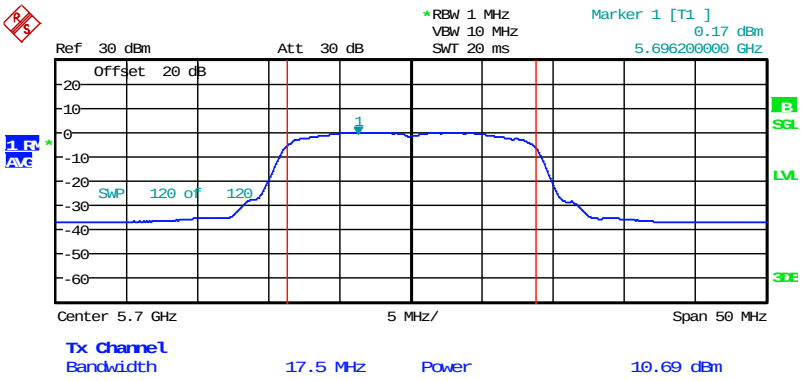


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Figure 7.3.2-35: RF Output Power - High Channel

Secondary Antenna

Table 7.3.2-21: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5500	6.47	0.25	6.72
5600	5.45	0.25	5.70
5240	4.96	0.25	5.21

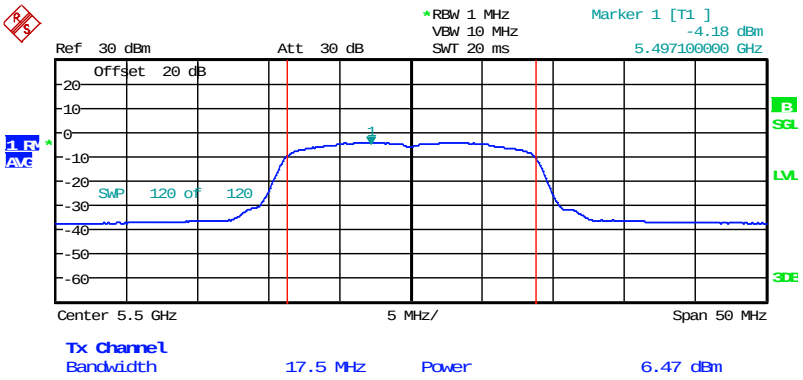

Figure 7.3.2-36: RF Output Power - Low Channel

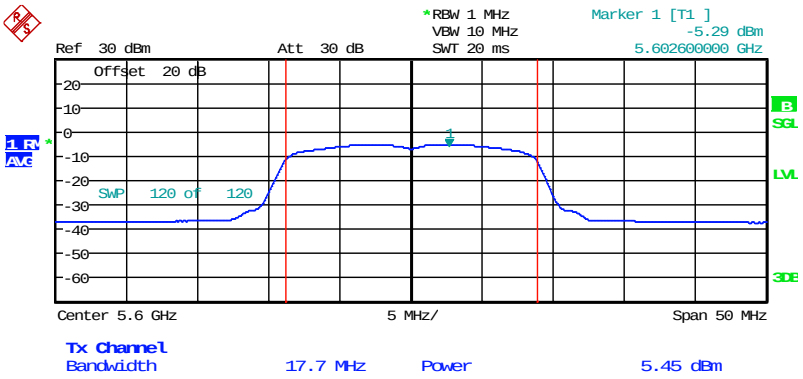

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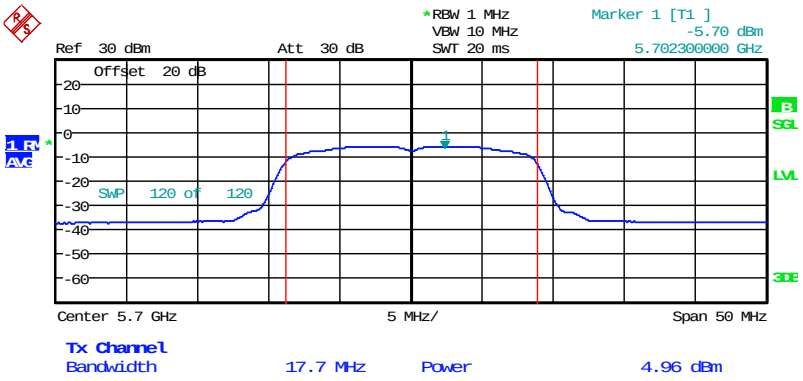
Figure 7.3.2-37: RF Output Power - Middle Channel



Date: 17.FEB.2016 23:33:11

Figure 7.3.2-38: RF Output Power - High Channel

802.11n 40 MHz

Table 7.3.2-22: RF Output Power

Frequency [MHz]	Primary Antenna Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]
5510	8.96	5.39	10.54
5590	9.37	4.67	10.64
5670	10.10	4.39	11.13

Primary Antenna

Table 7.3.2-23: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5510	8.51	0.45	8.96
5590	8.92	0.45	9.37
5670	9.65	0.45	10.10

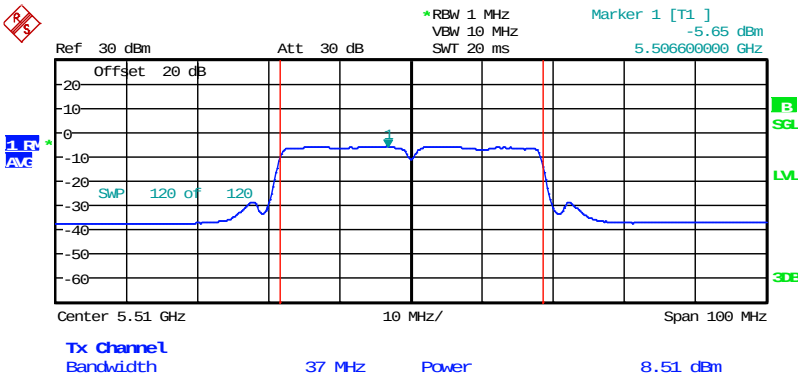
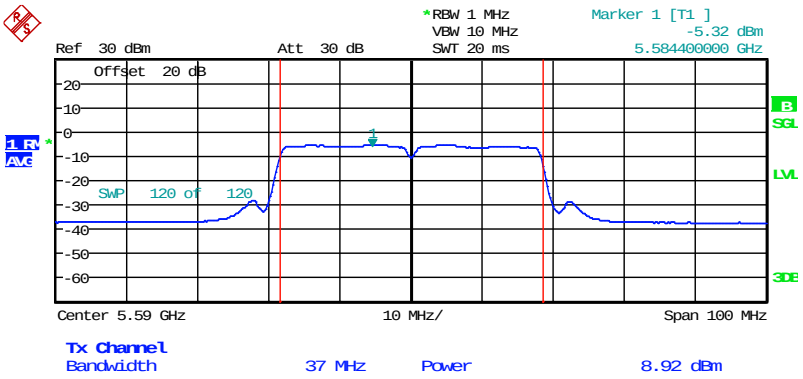
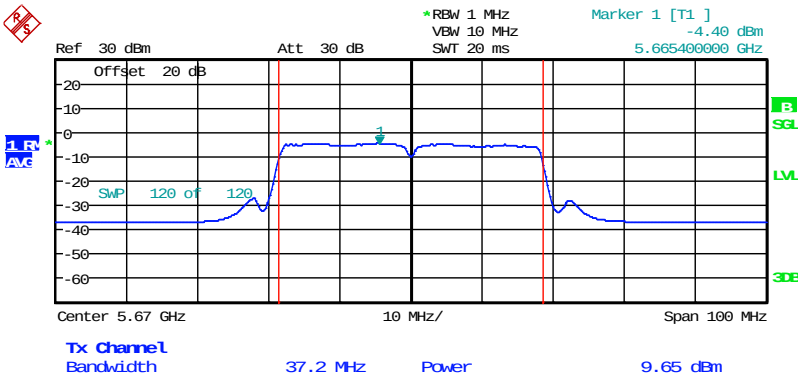


Figure 7.3.2-39: RF Output Power - Low Channel



Date: 15.FEB.2016 23:53:12

Figure 7.3.2-40: RF Output Power - Middle Channel



Date: 15.FEB.2016 23:57:53

Figure 7.3.2-41: RF Output Power - High Channel

Secondary Antenna

Table 7.3.2-24: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5510	4.94	0.45	5.39
5590	4.22	0.45	4.67
5670	3.94	0.45	4.39

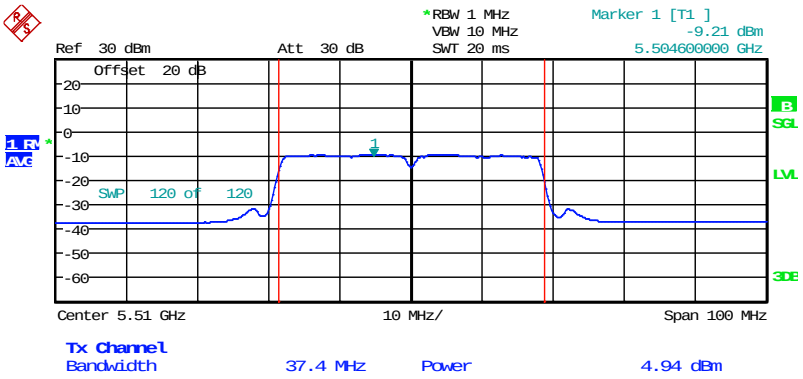
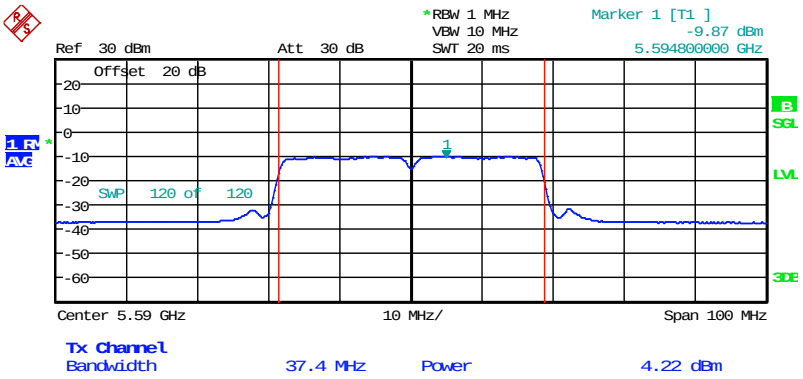
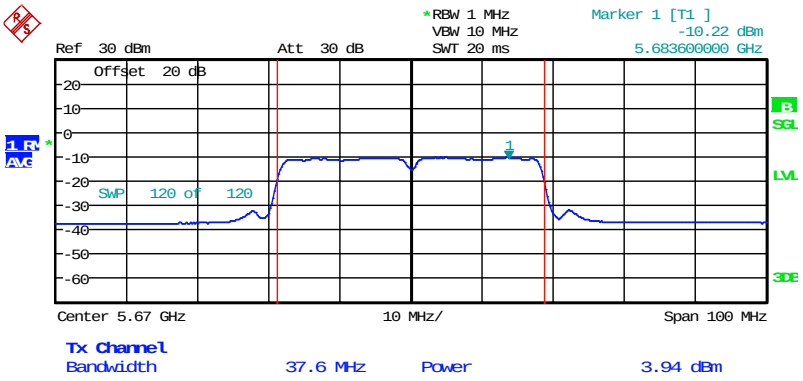


Figure 7.3.2-42: RF Output Power - Low Channel



Date: 15.FEB.2016 23:31:41

Figure 7.3.2-43: RF Output Power - Middle Channel



Date: 15.FEB.2016 22:40:17

Figure 7.3.2-44: RF Output Power - High Channel

802.11a

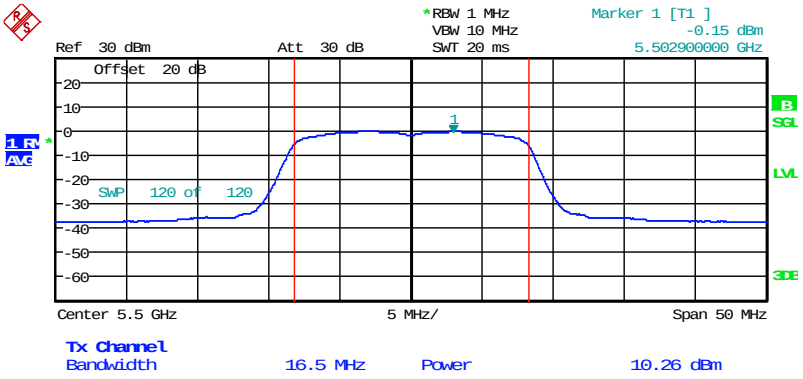
Table 7.3.2-25: RF Output Power

Frequency [MHz]	Primary Antenna Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]
5500	10.49	6.75	12.02
5600	10.73	5.74	11.93
5700	11.18	5.08	12.13

Primary Antenna

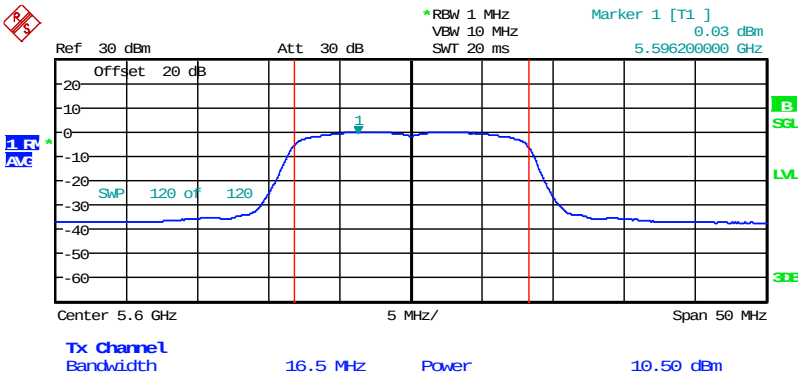
Table 7.3.2-26: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5500	10.26	0.23	10.49
5600	10.5	0.23	10.73
5700	10.95	0.23	11.18



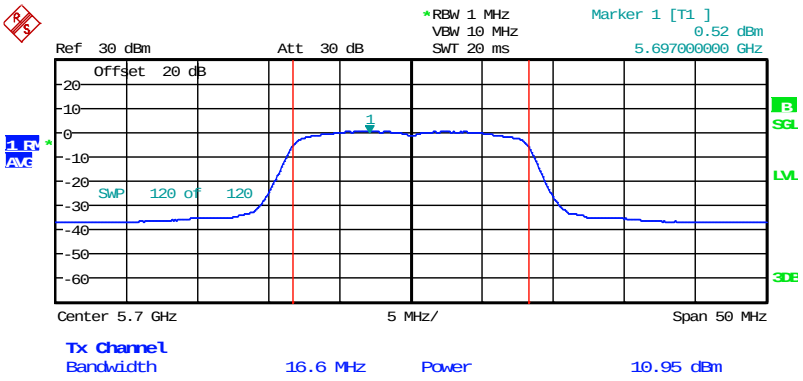
Date: 15.FEB.2016 19:00:37

Figure 7.3.2-45: RF Output Power - Low Channel



Date: 15.FEB.2016 19:08:00

Figure 7.3.2-46: RF Output Power - Middle Channel



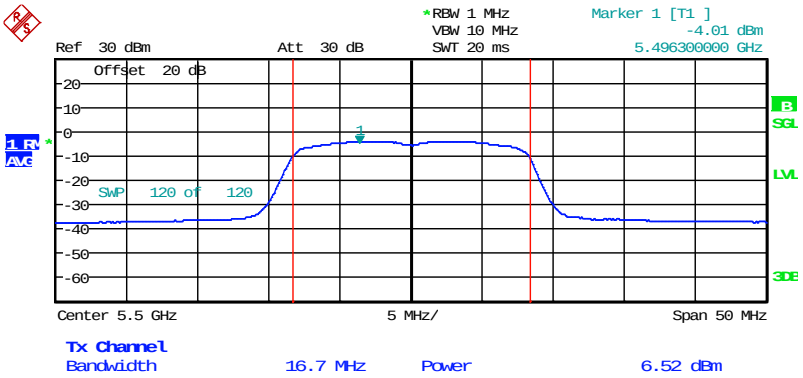
Date: 15.FEB.2016 19:37:34

Figure 7.3.2-47: RF Output Power - High Channel

Secondary Antenna

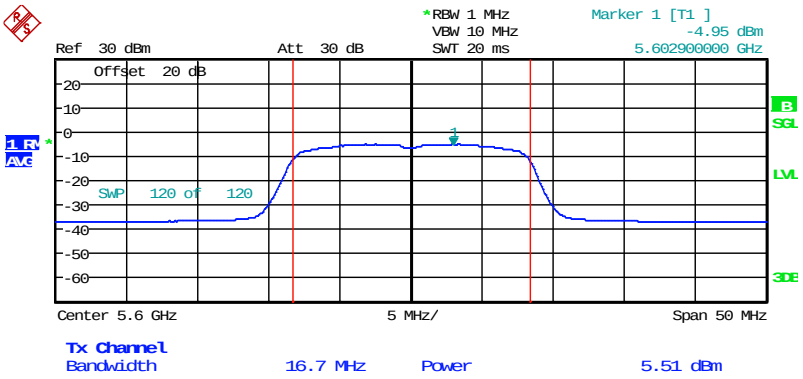
Table 7.3.2-27: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5500	6.52	0.23	6.75
5600	5.51	0.23	5.74
5240	4.85	0.23	5.08



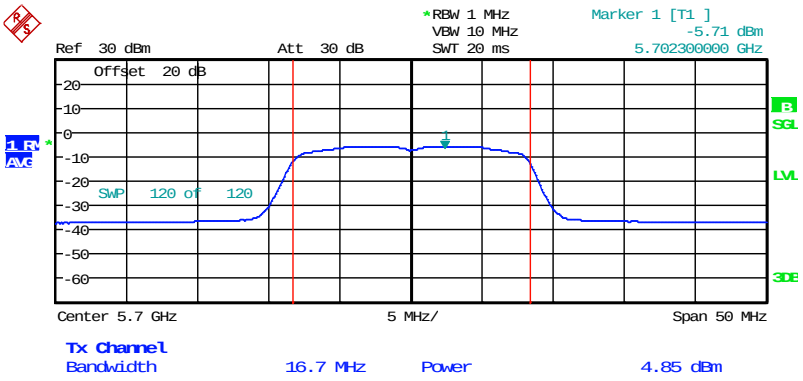
Date: 17.FEB.2016 22:46:38

Figure 7.3.2-48: RF Output Power - Low Channel



Date: 17.FEB.2016 22:50:20

Figure 7.3.2-49: RF Output Power - Middle Channel



Date: 17.FEB.2016 22:52:59

Figure 7.3.2-50: RF Output Power - High Channel

FCC Section 15.407(a)(3) IC: RSS-247 6.2.4 Band 5.725-5.85GHz

802.11n 20 MHz

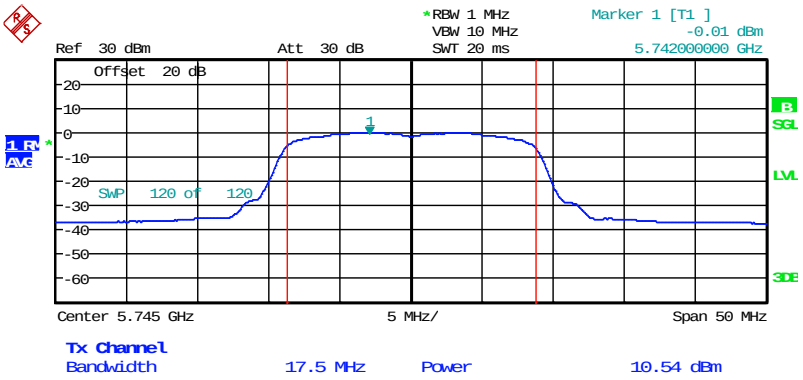
Table 7.3.2-28: RF Output Power

Frequency [MHz]	Primary Antenna Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]
5745	10.79	5.17	11.84
5785	10.38	5.05	11.50
5825	10.01	4.96	11.19

Primary Antenna

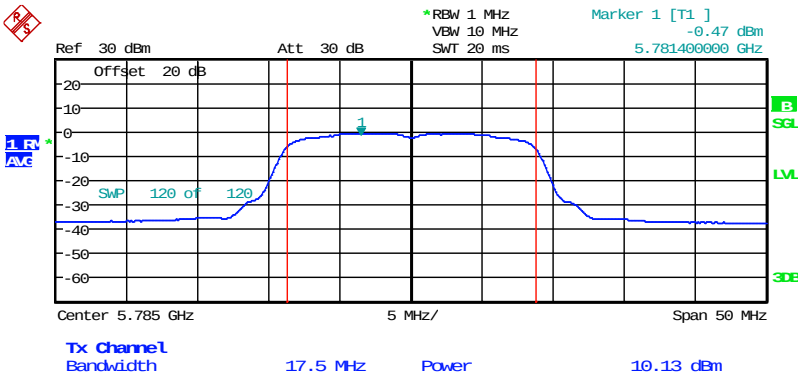
Table 7.3.2-29: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5745	10.54	0.25	10.79
5785	10.13	0.25	10.38
5825	9.76	0.25	10.01



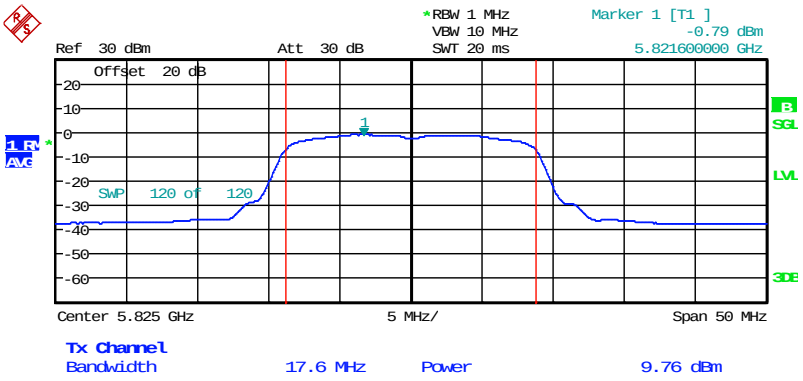
Date: 15.FEB.2016 20:52:49

Figure 7.3.2-51: RF Output Power - Low Channel



Date: 15.FEB.2016 20:58:18

Figure 7.3.2-52: RF Output Power - Middle Channel



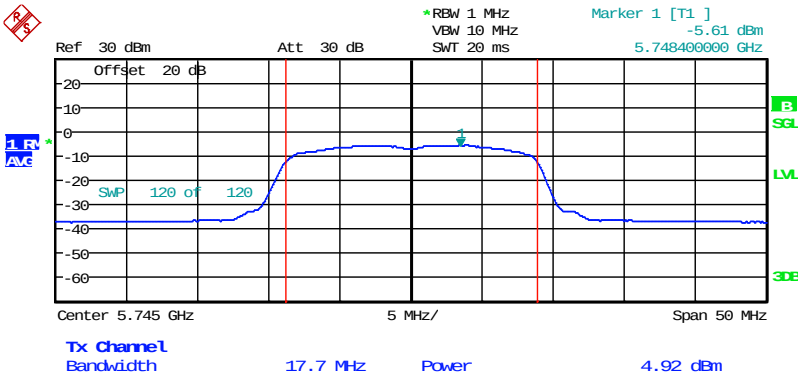
Date: 15.FEB.2016 21:09:44

Figure 7.3.2-53: RF Output Power - High Channel

Secondary Antenna

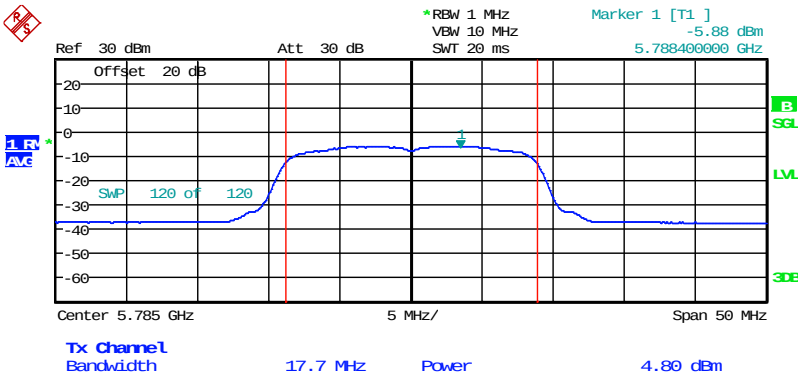
Table 7.3.2-30: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5745	4.92	0.25	5.17
5785	4.80	0.25	5.05
5240	4.71	0.25	4.96



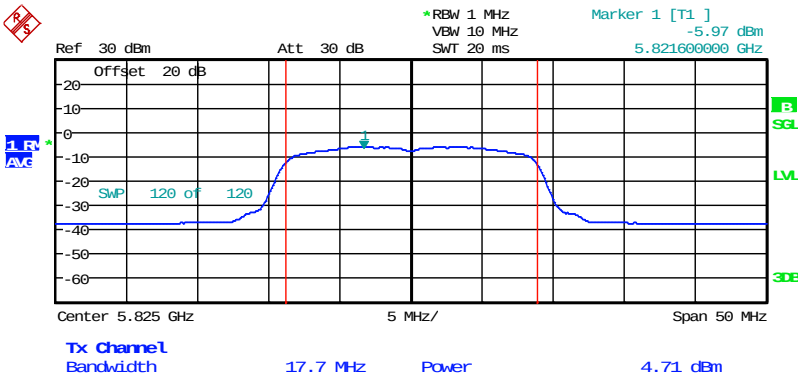
Date: 17.FEB.2016 23:37:01

Figure 7.3.2-54: RF Output Power - Low Channel



Date: 17.FEB.2016 23:41:15

Figure 7.3.2-55: RF Output Power - Middle Channel



Date: 17.FEB.2016 23:45:22

Figure 7.3.2-56: RF Output Power - High Channel

802.11n 40 MHz

Table 7.3.2-31: RF Output Power

Frequency [MHz]	Primary Antenna Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]
5755	9.89	4.59	11.01
5795	9.20	4.48	10.46

Primary Antenna

Table 7.3.2-32: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5755	9.44	0.45	9.89
5795	8.75	0.45	9.20

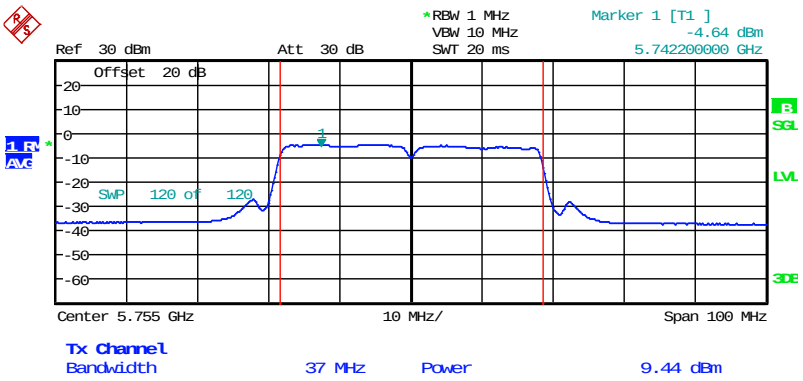


Figure 7.3.2-57: RF Output Power - Low Channel

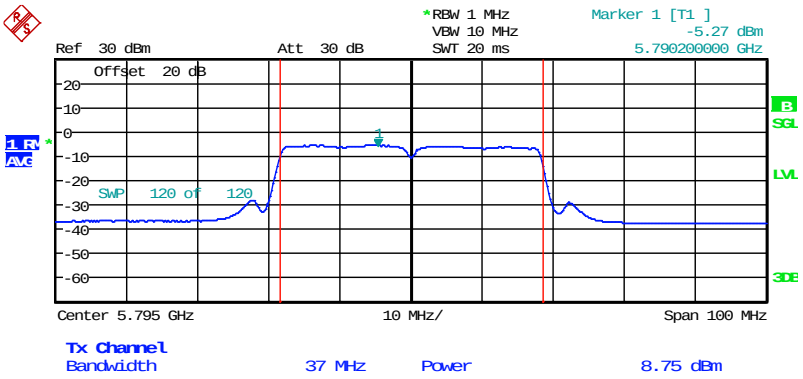
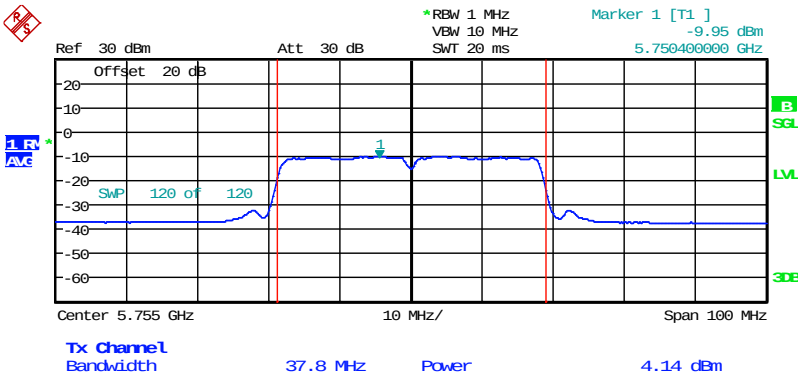


Figure 7.3.2-58: RF Output Power - High Channel

Secondary Antenna

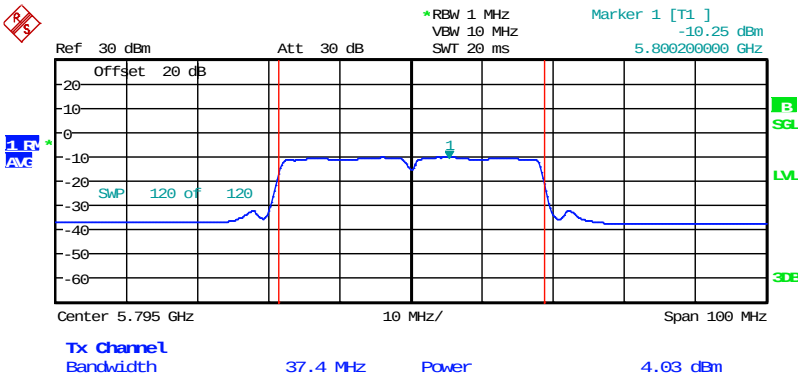
Table 7.3.2-33: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5755	4.14	0.45	4.59
5795	4.03	0.45	4.48



Date: 15.FEB.2016 22:55:07

Figure 7.3.2-59: RF Output Power - Low Channel



Date: 15.FEB.2016 23:00:51

Figure 7.3.2-60: RF Output Power - High Channel

802.11a

Table 7.3.2-34: RF Output Power

Frequency [MHz]	Primary Antenna Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]
5745	11.11	5.19	12.10
5785	10.70	4.84	11.70
5825	10.25	4.79	11.34

Primary Antenna

Table 7.3.2-35: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5745	10.88	0.23	11.11
5785	10.47	0.23	10.70
5825	10.02	0.23	10.25

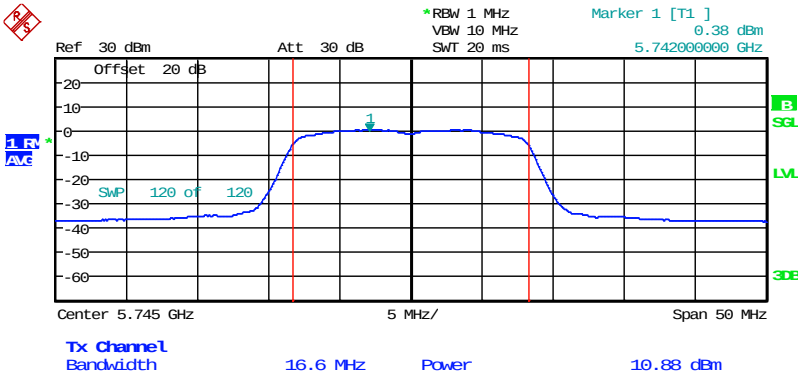
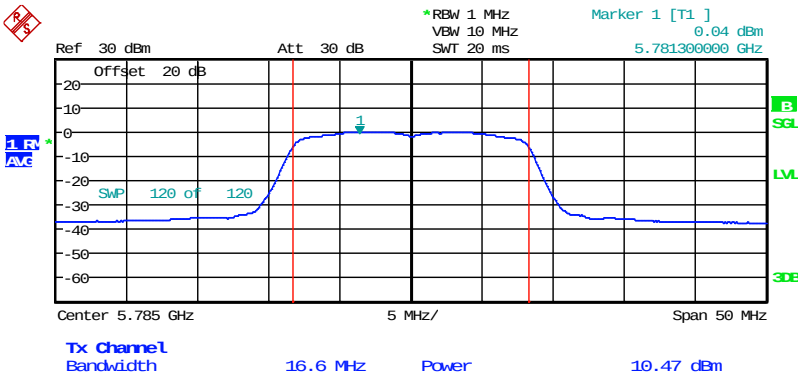
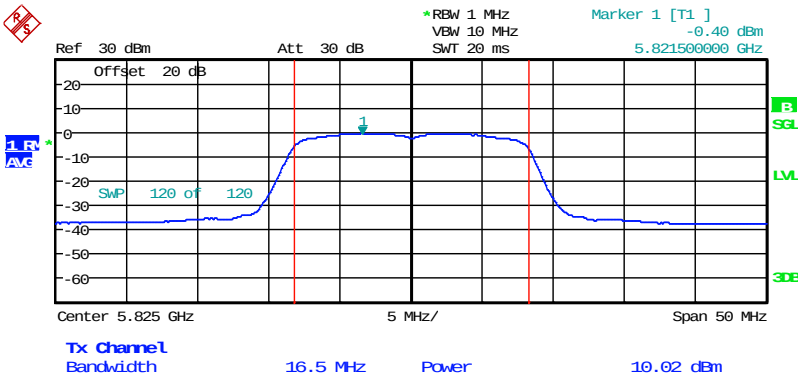


Figure 7.3.2-61: RF Output Power - Low Channel



Date: 15.FEB.2016 19:42:50

Figure 7.3.2-62: RF Output Power - Middle Channel



Date: 15.FEB.2016 19:49:01

Figure 7.3.2-63: RF Output Power - High Channel

Secondary Antenna

Table 7.3.2-36: RF Output Power

Frequency [MHz]	Level [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]
5745	4.96	0.23	5.19
5785	4.61	0.23	4.84
5240	4.56	0.23	4.79

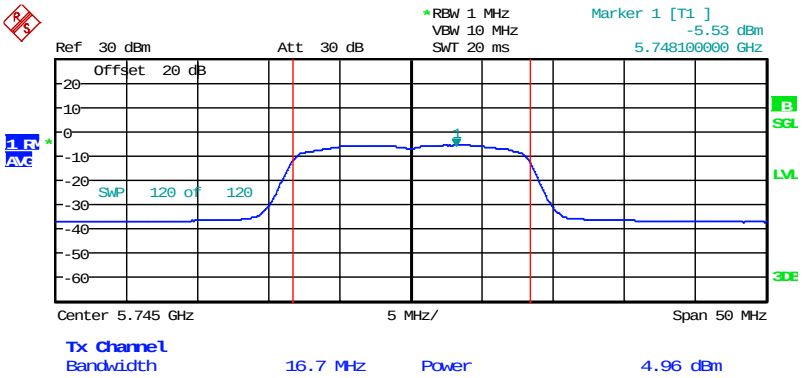
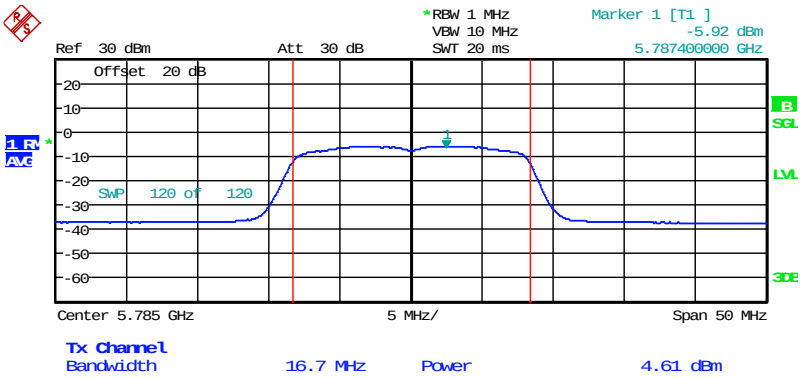
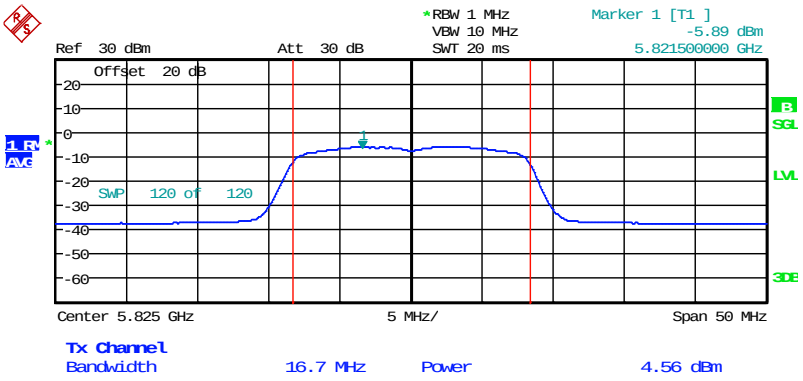


Figure 7.3.2-64: RF Output Power - Low Channel



Date: 17.FEB.2016 22:59:01

Figure 7.3.2-65: RF Output Power - Middle Channel



Date: 17.FEB.2016 23:01:30

Figure 7.3.2-66: RF Output Power - High Channel

7.4 Maximum Power Spectral Density

7.4.1 PSD Measurement Procedure (Conducted Method)

The power spectral density was measured in accordance with the FCC KDB Publication No. 789033 D02 General UNII Test Procedures New Rules v01 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E" Maximum Power Spectral Density (PSD). The RF output port of the EUT was directly connected to the input of the spectrum analyzer. Offset values were input for cable, external attenuation and transmission duty cycle.

For devices operating in the 5.15-5.25 GHz, 5.25-5.35 GHz and 5.47-5.725 GHz bands, the spectrum analyzer RBW was set to 1 MHz and VBW >>3*RBW. The power spectral density was measured from the Maximum Conducted Output Power Measurement.

For devices operating in the band 5.725 – 5.85 GHz, the spectrum analyzer RBW was set to 500 kHz and VBW >>3*RBW. The power spectral density was measured as the maximum level from the average power over 500 kHz reference bandwidth.

The total PSD levels for the MIMO modes were calculated in accordance with FCC KDB Publication No. 662911 "Emissions Testing of Transmitters with Multiple Outputs in the Same Band" in order to account for the two TX antenna paths by summing the PSD level across all transmitter outputs.

7.4.2 Measurement Results

Results are shown below.

FCC Section 15.407(a)(1) IC: RSS-247 6.2.1 Band 5.15 – 5.25 GHz

802.11n 20 MHz

Table 7.4.2-1: Power Spectral Density MIMO

Frequency [MHz]	Primary Antenna PSD Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]	Limit (dBm)	Margin (dB)
5180	0.27	-4.33	1.56	9.6	8.04
5200	0.06	-4.32	1.41	9.6	8.19
5240	0.18	-3.98	1.59	9.6	8.01

Note: The PSD limits for the MIMO mode of operation were reduced by 1.4 dB corresponding to the amount by which the directional antenna gain exceeds 6 dBi.

Table 7.4.2-2: Power Spectral Density – Primary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5180	0.02	0.25	0.27	11	10.73
5200	-0.19	0.25	0.06	11	10.94
5240	-0.07	0.25	0.18	11	10.82

Note: Graphical data for the measurement is provided in Section 7.3

Table 7.4.2-3: Power Spectral Density – Secondary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5180	-4.58	0.25	-4.33	11	15.33
5200	-4.57	0.25	-4.32	11	15.32
5240	-4.23	0.25	-3.98	11	14.98

Note: Graphical data for the measurement is provided in Section 7.3

802.11n 40 MHz

Table 7.4.2-4: Power Spectral Density MIMO

Frequency [MHz]	Primary Antenna PSD Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]	Limit (dBm)	Margin (dB)
5190	-4.44	-8.63	-3.04	9.6	12.64
5230	-4.27	-8.22	-2.8	9.6	12.4

Note: The PSD limits for the MIMO mode of operation were reduced by 1.4 dB corresponding to the amount by which the directional antenna gain exceeds 6 dBi.

Table 7.4.2-5: Power Spectral Density – Primary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5190	-4.89	0.45	-4.44	11	15.44
5230	-4.72	0.45	-4.27	11	15.27

Note: Graphical data for the measurement is provided in Section 7.3

Table 7.4.2-6: Power Spectral Density – Secondary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5190	-9.08	0.45	-8.63	11	19.63
5230	-8.67	0.45	-8.22	11	19.22

Note: Graphical data for the measurement is provided in Section 7.3

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Table 7.4.2-7: Power Spectral Density MIMO

Frequency [MHz]	Primary Antenna PSD Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]	Limit (dBm)	Margin (dB)
5180	0.64	-4.09	1.9	9.6	7.70
5200	0.42	-4.33	1.67	9.6	7.93
5240	0.63	-3.90	1.94	9.6	7.66

Note: The PSD limits for the MIMO mode of operation were reduced by 1.4 dB corresponding to the amount by which the directional antenna gain exceeds 6 dBi.

Table 7.4.2-8: Power Spectral Density – Primary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5180	0.41	0.23	0.64	11	10.36
5200	0.19	0.23	0.42	11	10.58
5240	0.4	0.23	0.63	11	10.37

Note: Graphical data for the measurement is provided in Section 7.3

Table 7.4.2-9: Power Spectral Density – Secondary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5180	-4.32	0.23	-4.09	11	15.09
5200	-4.56	0.23	-4.33	11	15.33
5240	-4.13	0.23	-3.90	11	14.90

Note: Graphical data for the measurement is provided in Section 7.3

FCC Section 15.407(a)(2) IC: RSS-247 6.2.2 Band 5.25 – 5.35 GHz

802.11n 20 MHz

Table 7.4.2-10: Power Spectral Density MIMO

Frequency [MHz]	Primary Antenna PSD Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]	Limit (dBm)	Margin (dB)
5260	-0.05	-4.22	1.36	9.6	8.24
5280	-0.16	-4.14	1.30	9.6	8.30
5320	-0.56	-3.92	1.09	9.6	8.51

Note: The PSD limits for the MIMO mode of operation were reduced by 1.4 dB corresponding to the amount by which the directional antenna gain exceeds 6 dBi.

Table 7.4.2-11: Power Spectral Density – Primary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5260	-0.3	0.25	-0.05	11	11.05
5280	-0.41	0.25	-0.16	11	11.16
5320	-0.81	0.25	-0.56	11	11.56

Note: Graphical data for the measurement is provided in Section 7.3

Table 7.4.2-12: Power Spectral Density – Secondary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5260	-4.47	0.25	-4.22	11	15.22
5280	-4.39	0.25	-4.14	11	15.14
5320	-4.17	0.25	-3.92	11	14.92

Note: Graphical data for the measurement is provided in Section 7.3

802.11n 40 MHz

Table 7.4.2-13: Power Spectral Density MIMO

Frequency [MHz]	Primary Antenna PSD Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]	Limit (dBm)	Margin (dB)
5270	-4.51	-8.42	-3.03	9.6	12.63
5310	-4.95	-8.31	-3.30	9.6	12.90

Note: The PSD limits for the MIMO mode of operation were reduced by 1.4 dB corresponding to the amount by which the directional antenna gain exceeds 6 dBi.

Table 7.4.2-14: Power Spectral Density – Primary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5270	-4.96	0.45	-4.51	11	15.51
5310	-5.40	0.45	-4.95	11	15.95

Note: Graphical data for the measurement is provided in Section 7.3

Table 7.4.2-15: Power Spectral Density – Secondary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5270	-8.87	0.45	-8.42	11	19.42
5310	-8.76	0.45	-8.31	11	19.31

Note: Graphical data for the measurement is provided in Section 7.3

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Table 7.4.2-16: Power Spectral Density MIMO

Frequency [MHz]	Primary Antenna PSD Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]	Limit (dBm)	Margin (dB)
5260	0.22	-4.04	1.60	9.6	8.00
5280	0.27	-4.00	1.65	9.6	7.95
5320	0.29	-3.93	1.68	9.6	7.92

Note: The PSD limits for the MIMO mode of operation were reduced by 1.4 dB corresponding to the amount by which the directional antenna gain exceeds 6 dBi.

Table 7.4.2-17: Power Spectral Density – Primary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5260	-0.01	0.23	0.22	11	10.78
5280	0.04	0.23	0.27	11	10.73
5320	0.06	0.23	0.29	11	10.71

Note: Graphical data for the measurement is provided in Section 7.3

Table 7.4.2-18: Power Spectral Density – Secondary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5260	-4.27	0.23	-4.04	11	15.04
5280	-4.23	0.23	-4.00	11	15.00
5240	-4.16	0.23	-3.93	11	14.93

Note: Graphical data for the measurement is provided in Section 7.3

FCC Section 15.407(a)(2) IC: RSS-247 6.2.3 Band 5.47 – 5.725 GHz

802.11n 20 MHz

Table 7.4.2-19: Power Spectral Density MIMO

Frequency [MHz]	Primary Antenna PSD Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]	Limit (dBm)	Margin (dB)
5500	-0.23	-3.93	1.31	9.6	8.29
5600	-0.12	-5.04	1.09	9.6	8.51
5700	0.42	-5.45	1.42	9.6	8.18

Note: The PSD limits for the MIMO mode of operation were reduced by 1.4 dB corresponding to the amount by which the directional antenna gain exceeds 6 dBi.

Table 7.4.2-20: Power Spectral Density – Primary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5500	-0.48	0.25	-0.23	11	11.23
5600	-0.37	0.25	-0.12	11	11.12
5700	0.17	0.25	0.42	11	10.58

Note: Graphical data for the measurement is provided in Section 7.3

Table 7.4.2-21: Power Spectral Density – Secondary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5500	-4.18	0.25	-3.93	11	14.93
5600	-5.29	0.25	-5.04	11	16.04
5700	-5.70	0.25	-5.45	11	16.45

Note: Graphical data for the measurement is provided in Section 7.3

802.11n 40 MHz

Table 7.4.2-22: Power Spectral Density MIMO

Frequency [MHz]	Primary Antenna PSD Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]	Limit (dBm)	Margin (dB)
5510	-5.2	-8.76	-3.61	9.6	13.21
5590	-4.87	-9.42	-3.56	9.6	13.16
5670	-3.95	-9.77	-2.94	9.6	12.54

Note: The PSD limits for the MIMO mode of operation were reduced by 1.4 dB corresponding to the amount by which the directional antenna gain exceeds 6 dBi.

Table 7.4.2-23: Power Spectral Density – Primary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5510	-5.65	0.45	-5.20	11	16.2
5590	-5.32	0.45	-4.87	11	15.87
5670	-4.40	0.45	-3.95	11	14.95

Note: Graphical data for the measurement is provided in Section 7.3

Table 7.4.2-24: Power Spectral Density – Secondary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5510	-9.21	0.45	-8.76	11	19.76
5590	-9.87	0.45	-9.42	11	20.42
5670	-10.22	0.45	-9.77	11	20.77

Note: Graphical data for the measurement is provided in Section 7.3

802.11a

Table 7.4.2-25: Power Spectral Density MIMO

Frequency [MHz]	Primary Antenna PSD Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]	Limit (dBm)	Margin (dB)
5500	0.08	-3.78	1.58	9.6	8.02
5600	0.26	-4.72	1.46	9.6	8.14
5700	0.75	-5.48	1.68	9.6	7.92

Note: The PSD limits for the MIMO mode of operation were reduced by 1.4 dB corresponding to the amount by which the directional antenna gain exceeds 6 dBi.

Table 7.4.2-26: Power Spectral Density – Primary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5500	-0.15	0.23	0.08	11	10.92
5600	0.03	0.23	0.26	11	10.74
5700	0.52	0.23	0.75	11	10.25

Note: Graphical data for the measurement is provided in Section 7.3

Table 7.4.2-27: Power Spectral Density – Secondary Antenna

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5500	-4.01	0.23	-3.78	11	14.78
5600	-4.95	0.23	-4.72	11	15.72
5240	-5.71	0.23	-5.48	11	16.48

Note: Graphical data for the measurement is provided in Section 7.3

FCC Section 15.407(a)(3) IC: RSS-247 6.2.4 Band 5.725 – 5.85 GHz

802.11n 20 MHz

Table 7.4.2-28: Power Spectral Density MIMO

Frequency [MHz]	Primary Antenna PSD Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]	Limit (dBm)	Margin (dB)
5745	-3.35	-8.6	-2.22	28.6	30.82
5785	-3.61	-9.02	-2.51	28.6	31.11
5825	-3.65	-9.11	-2.56	28.6	31.16

Note: The PSD limits for the MIMO mode of operation were reduced by 1.4 dB corresponding to the amount by which the directional antenna gain exceeds 6 dBi.

Primary Antenna

Table 7.4.2-29: Power Spectral Density

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5745	-3.6	0.25	-3.35	30	33.35
5785	-3.86	0.25	-3.61	30	33.61
5825	-3.9	0.25	-3.65	30	33.65

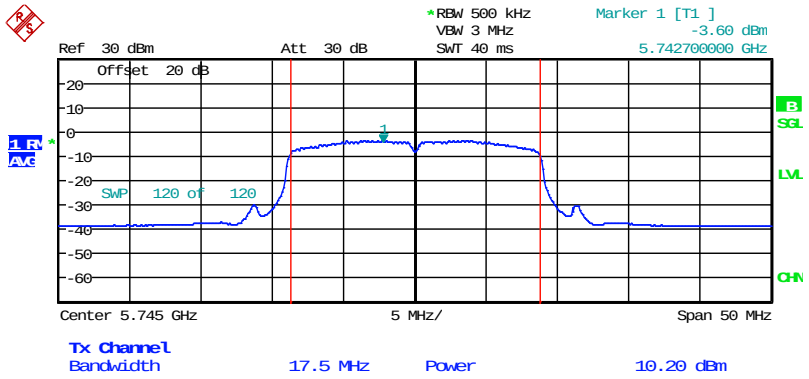
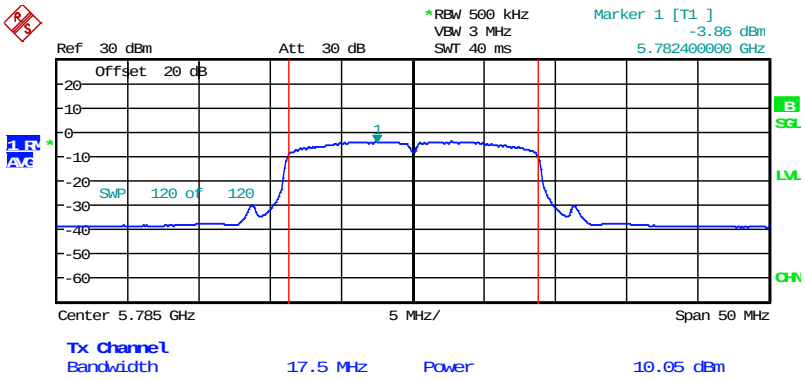


Figure 7.4.2-1: Power Spectral Density - Low Channel



Date: 18.FEB.2016 00:20:02

Figure 7.4.2-2: Power Spectral Density - Middle Channel

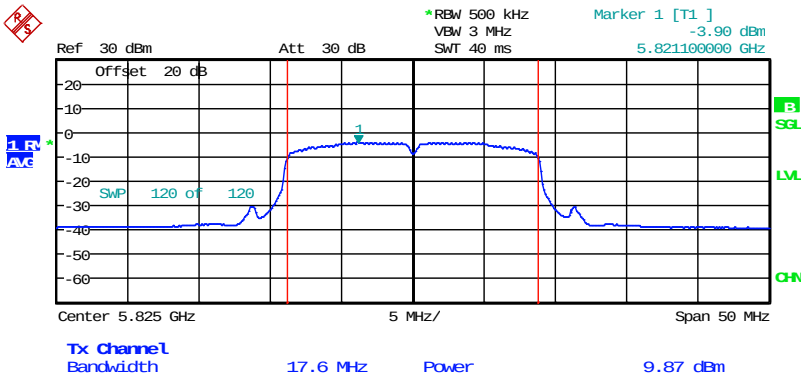


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Figure 7.4.2.3: Power Spectral Density – High Channel

Secondary Antenna

Table 7.4.2-30: Power Spectral Density

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5745	-8.85	0.25	-8.60	30	38.60
5785	-9.27	0.25	-9.02	30	39.02
5825	-9.36	0.25	-9.11	30	39.11

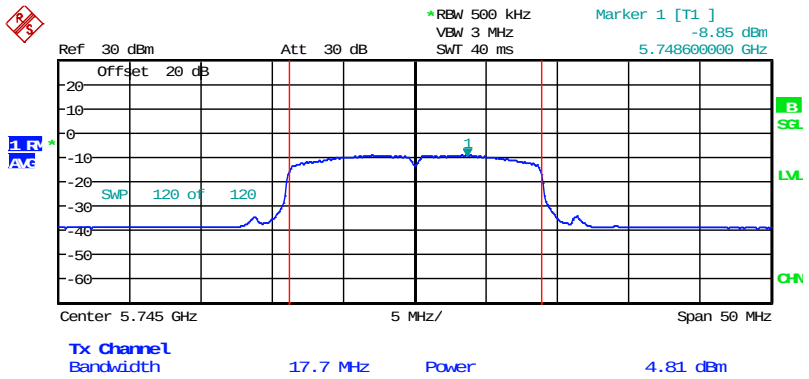
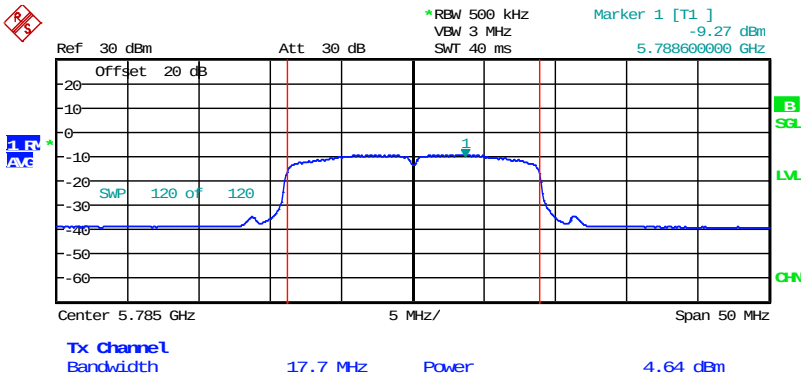
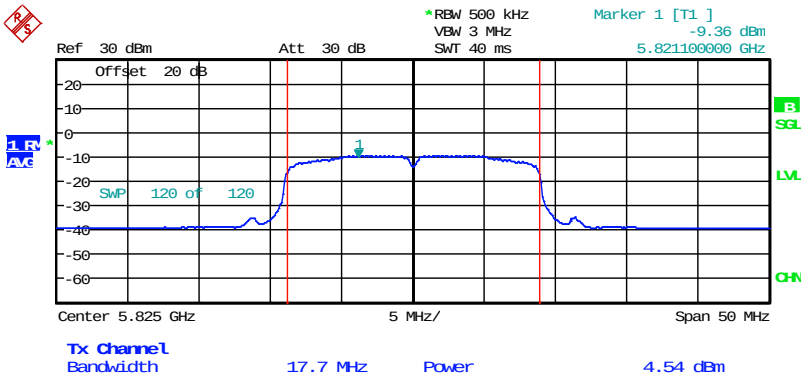


Figure 7.4.2-4: Power Spectral Density - Low Channel



Date: 17.FEB.2016 23:50:59

Figure 7.4.2-5: Power Spectral Density - Middle Channel



Date: 17.FEB.2016 23:47:05

Figure 7.4.2.6: Power Spectral Density – High Channel

802.11n 40 MHz

Table 7.4.2-31: Power Spectral Density MIMO

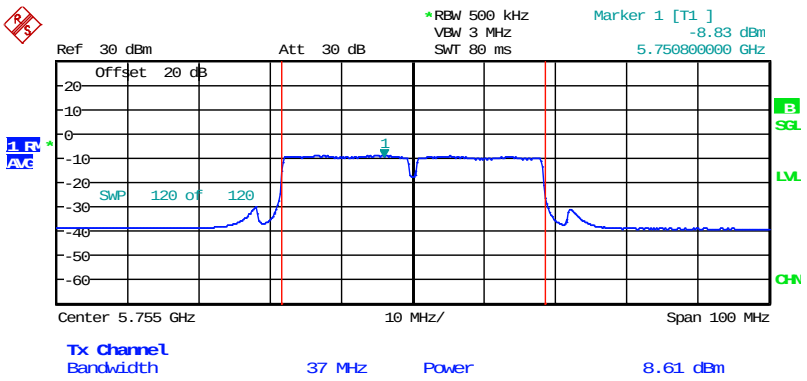
Frequency [MHz]	Primary Antenna PSD Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]	Limit (dBm)	Margin (dB)
5755	-8.38	-13.43	-7.20	28.6	35.80
5795	-8.78	-13.36	-7.48	28.6	36.08

Note: The PSD limits for the MIMO mode of operation were reduced by 1.4 dB corresponding to the amount by which the directional antenna gain exceeds 6 dBi.

Primary Antenna

Table 7.4.2-32: Power Spectral Density

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5755	-8.83	0.45	-8.38	30	38.38
5795	-9.23	0.45	-8.78	30	38.78



Date: 18.FEB.2016 00:26:03

Figure 7.4.2-7: Power Spectral Density - Low Channel

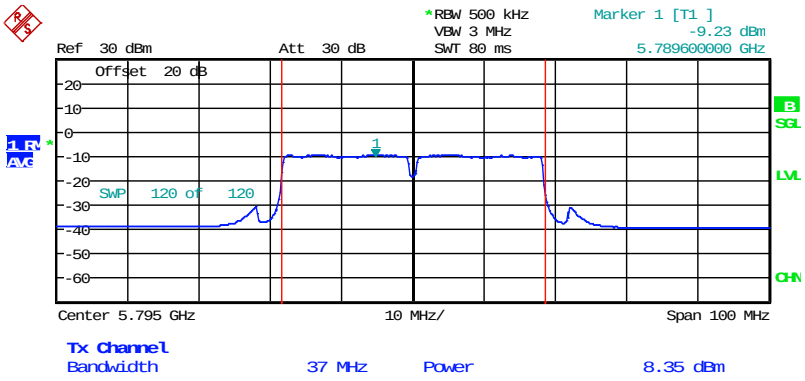
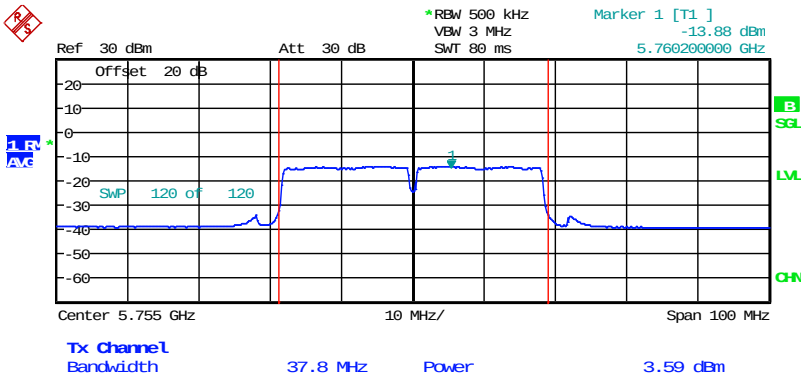


Figure 7.5.2-8: Power Spectral Density – High Channel

Secondary Antenna

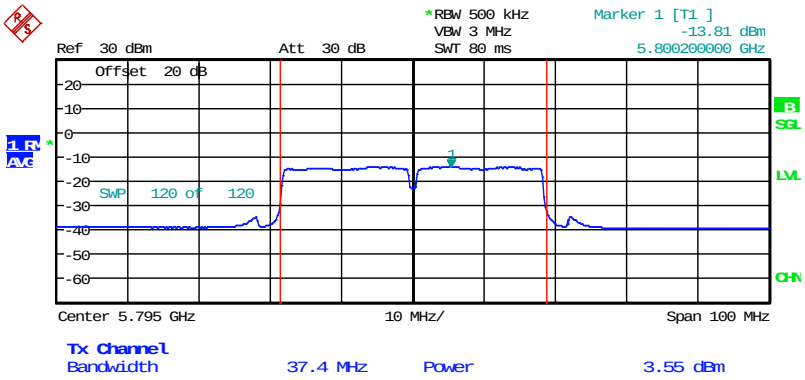
Table 7.4.2-32: Power Spectral Density

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5755	-13.88	0.45	-13.43	30	43.43
5795	-13.81	0.45	-13.36	30	43.36



Date: 17.FEB.2016 23:58:15

Figure 7.4.2-9: Power Spectral Density - Low Channel



Date: 18.FEB.2016 00:02:53

Figure 7.5.2-10: Power Spectral Density – High Channel

802.11a

Table 7.4.2-34: Power Spectral Density MIMO

Frequency [MHz]	Primary Antenna PSD Level [dBm]	Secondary Antenna Level [dBm]	MIMO Level [dBm]	Limit (dBm)	Margin (dB)
5745	-3.05	-8.43	-1.94	28.6	30.54
5785	-3.42	-8.96	-2.35	28.6	30.95
5825	-3.36	-8.8	-2.27	28.6	30.87

Note: The PSD limits for the MIMO mode of operation were reduced by 1.4 dB corresponding to the amount by which the directional antenna gain exceeds 6 dBi.

Primary Antenna

Table 7.4.2-35: Power Spectral Density

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5745	-3.28	0.23	-3.05	30	33.05
5785	-3.65	0.23	-3.42	30	33.42
5825	-3.59	0.23	-3.36	30	33.36

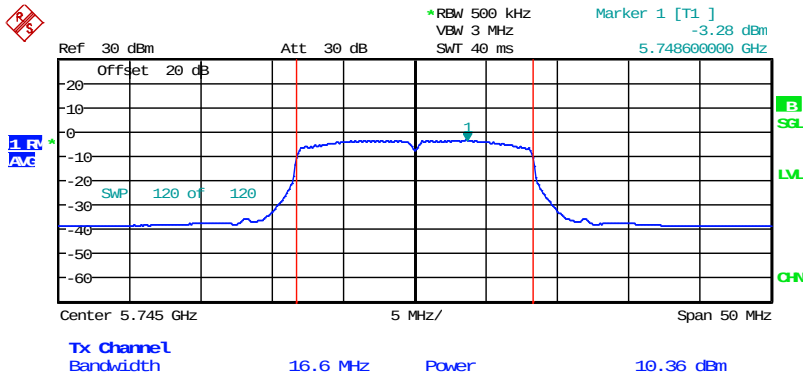
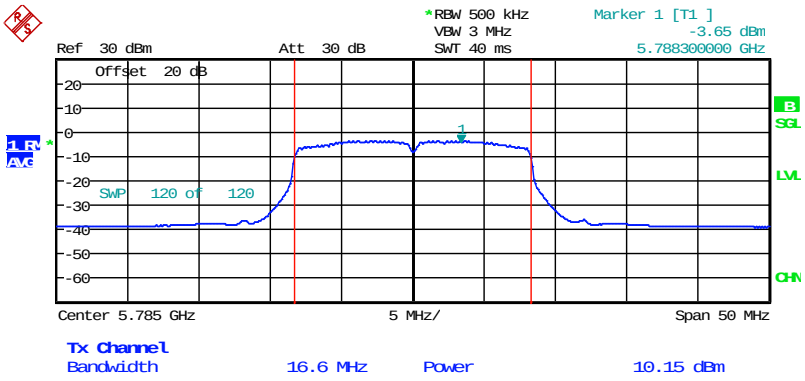


Figure 7.4.2-11: Power Spectral Density - Low Channel



Date: 18.FEB.2016 00:14:51

Figure 7.4.2-12: Power Spectral Density - Middle Channel

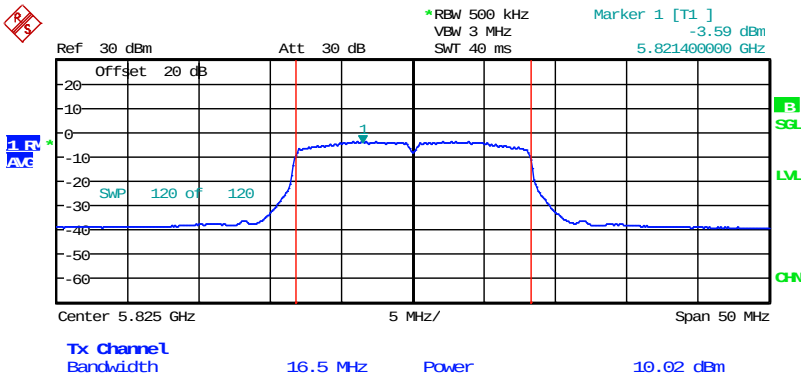


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Figure 7.4.2-13: Power Spectral Density - High Channel

Secondary Antenna

Table 7.4.2-36: Power Spectral Density

Frequency [MHz]	PSD [dBm]	Duty Cycle Correction Factor [dB]	Corrected Level [dBm]	Limit (dBm)	Margin (dB)
5745	-8.66	0.23	-8.43	30	38.43
5785	-9.19	0.23	-8.96	30	38.96
5240	-9.03	0.23	-8.80	30	38.80

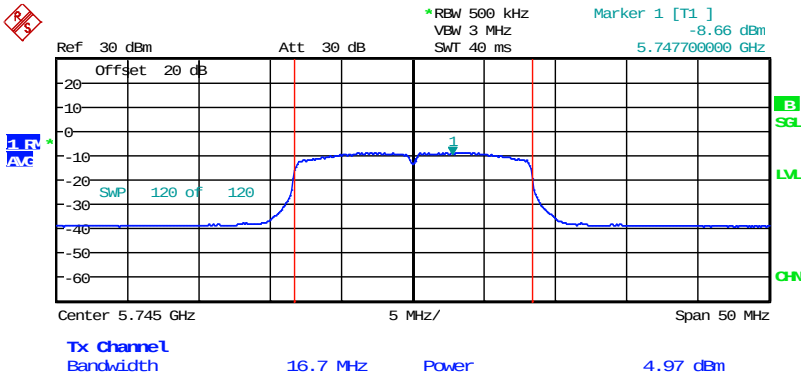
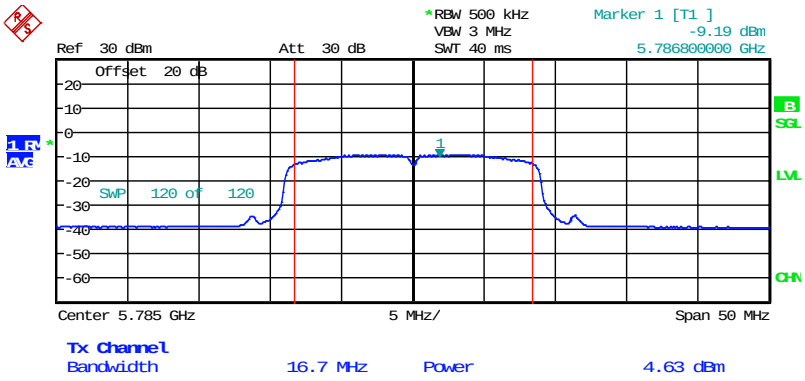
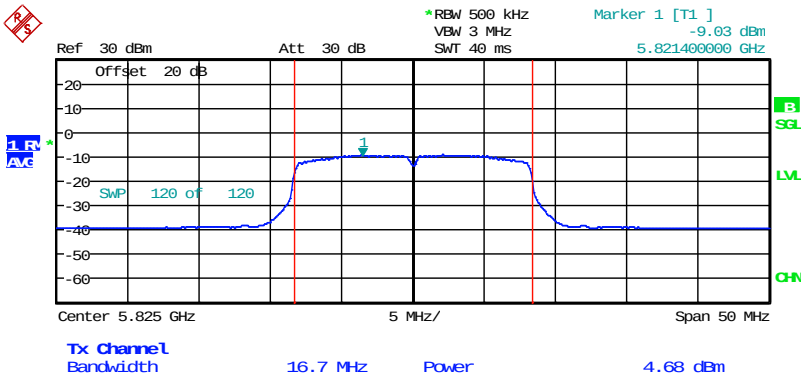


Figure 7.4.2-14: Power Spectral Density – Low Channel



Date: 18.FEB.2016 00:07:35

Figure 7.4.2-15: Power Spectral Density - Middle Channel



Date: 18.FEB.2016 00:09:42

Figure 7.4.2-16: Power Spectral Density - High Channel

7.5 Band-Edge Compliance and Spurious Emissions-FCC 15.407(b) IC: RSS-247 6.2

7.5.1 Radiated Emissions below 1 GHz

7.5.1.1 Measurement Procedure

Radiated emissions tests were made over the frequency range of 9 kHz to 1 GHz.

For measurements below 30 MHz, the receive antenna height was set to 1m and the EUT was rotated through 360 degrees. The resolution bandwidth was set to 200 Hz below 150 kHz and to 9 kHz above 150 kHz.

For frequencies from 30 MHz to 1000 MHz, quasi-peak measurements were made using a resolution bandwidth RBW of 120 kHz and a video bandwidth VBW of 300 kHz. The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected.

7.5.1.2 Measurement Results

The highest radiated emissions with respect to the limits found in from 9 kHz to 1 GHz are reported in the tables below.

Table 7.5.1.2-1: Radiated Emissions Below 1 GHz

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
57.4	57.48	47.24	H	-17.92	---------	29.32	--------	40.0	---------	10.7
57.4	55.04	46.92	V	-17.92	---------	29.00	--------	40.0	---------	11.0
90.2	44.10	37.68	H	-19.46	---------	18.22	--------	43.5	---------	25.3
98.2	46.52	40.97	V	-18.50	---------	22.47	--------	43.5	---------	21.0
124.8	43.04	33.78	H	-15.64	---------	18.14	--------	43.5	---------	25.4
124.6	40.51	36.21	V	-15.65	---------	20.56	--------	43.5	---------	22.9
154.8	37.39	31.83	H	-14.36	---------	17.47	--------	43.5	---------	26.0
156.8	39.11	34.93	V	-14.26	---------	20.67	--------	43.5	---------	22.8
678	26.69	20.31	H	-3.19	---------	17.12	--------	46.0	---------	28.9
678	26.32	20.31	V	-3.19	---------	17.12	--------	46.0	---------	28.9

Note: The data reported corresponds to the worst case configuration which was achieved for the EUT operating at channel 36 in the 802.11a CDD MIMO mode.

7.5.2 Radiated Spurious Emissions above 1 GHz

7.5.2.1 Measurement Procedure

Radiated emissions tests were made over the frequency range of 1 GHz to 40 GHz. Each emission found to be in a restricted band as defined by section 15.205, including any emission at the operational band-edge, was compared to the radiated emission limits as defined in section 15.209. The other emissions were evaluated either per the general radiated emission limits of FCC Section 15.209 or the limits of FCC Section 15.407(b) / IC RSS-247 6.2. The EIRP limits of FCC Section 15.407(b) / IC RSS-247 6.2 were converted to field strength limits using a correction factor of 95.2 dB.

The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. Peak measurements are made with RBW of 1 MHz and VBW of 3 MHz. Average measurements are performed in the linear scale using an RMS detector averaged over 100 sweeps.

7.5.2.2 Measurement Results

Radiated band-edge and spurious emissions found within or outside of the restricted frequency bands from 1 GHz to 40 GHz are reported in the tables below.

Band 5.15-5.25 GHz

Table 7.5.2.2-1: Radiated Spurious Emissions Tabulated Data – 802.11n 20 MHz CDD

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5180 MHz)										
5150	62.59	46.12	H	4.08	66.67	50.20	74.0	54.0	7.3	3.8
5150	57.05	42.01	V	4.08	61.13	46.09	74.0	54.0	12.9	7.9
10360	41.61	---------	H	13.96	55.57	---------	77.7	---------	22.1	---------
10360	42.64	---------	V	13.96	56.60	---------	77.7	---------	21.1	---------
Middle Channel (5200 MHz)										
10400	41.67	---------	H	14.04	55.71	---------	77.7	---------	22.0	---------
10400	43.02	---------	V	14.04	57.06	---------	77.7	---------	20.6	---------
High Channel (5240 MHz)										
10480	42.15	---------	H	14.20	56.35	---------	77.7	---------	21.4	---------
10480	44.43	---------	V	14.20	58.63	---------	77.7	---------	19.1	---------

Notes:

- **All emissions above 10.48 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**

Table 7.5.2.2-2: Radiated Spurious Emissions Tabulated Data – 802.11n 20 MHz SM-MIMO

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5180 MHz)										
5150	53.52	39.95	H	9.56	63.08	49.51	74.0	54.0	10.9	4.5
5150	49.88	37.31	V	9.56	59.44	46.87	74.0	54.0	14.6	7.1
10360	38.96	---	H	17.63	56.59	---	77.7	---	21.1	---
10360	40.01	---	V	17.63	57.64	---	77.7	---	20.1	---
Middle Channel (5200 MHz)										
10400	39.88	---	H	17.75	57.63	---	77.7	---	20.1	---
10400	38.58	---	V	17.75	56.33	---	77.7	---	21.4	---
High Channel (5240 MHz)										
10480	38.67	---	H	18.00	56.67	---	77.7	---	21.0	---
10480	40.06	---	V	18.00	58.06	---	77.7	---	19.6	---

Notes:

- **All emissions above 10.48 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**

Table 7.5.2.2-3: Radiated Spurious Emissions Tabulated Data – 802.11n 40 MHz CDD

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5190 MHz)										
5150	61.42	46.68	H	4.08	65.50	50.76	74.0	54.0	8.5	3.2
5150	65.11	48.17	V	4.08	69.19	52.25	74.0	54.0	4.8	1.8
10380	43.12	---	V	14.00	57.12	---	77.7	---	20.6	---
High Channel (5230 MHz)										
10460	43.03	---	V	14.16	57.19	---	77.7	---	20.5	---

Notes:

- **All emissions above 10.46 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**

Table 7.5.2.2-4: Radiated Spurious Emissions Tabulated Data – 802.11n 40 MHz SM-MIMO

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5190 MHz)										
5150	59.88	44.15	H	9.56	69.44	53.71	74.0	54.0	4.6	0.3
5150	54.94	39.58	V	9.56	64.50	49.14	74.0	54.0	9.5	4.9
High Channel (5230 MHz)										
10460	39.32	---------	H	17.94	57.26	---------	77.7	---------	20.4	---------
10460	39.60	---------	V	17.94	57.54	---------	77.7	---------	20.2	---------

Notes:

- **All emissions above 10.46 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**

Table 7.5.2.2-5: Radiated Spurious Emissions Tabulated Data – 802.11a CDD

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5180 MHz)										
5150	67.97	48.00	H	4.08	72.05	52.08	74.0	54.0	2.0	1.9
5150	62.36	45.14	V	4.08	66.44	49.22	74.0	54.0	7.6	4.8
10360	43.48	---------	H	13.96	57.44	---------	77.7	---------	20.3	---------
10360	43.87	---------	V	13.96	57.83	---------	77.7	---------	19.9	---------
Middle Channel (5200 MHz)										
10400	43.10	---------	H	14.04	57.14	---------	77.7	---------	20.6	---------
10400	44.16	---------	V	14.04	58.20	---------	77.7	---------	19.5	---------
High Channel (5240 MHz)										
10480	43.31	---------	H	14.20	57.51	---------	77.7	---------	20.2	---------
10480	44.99	---------	V	14.20	59.19	---------	77.7	---------	18.5	---------

Notes:

- **All emissions above 10.48 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**

Band 5.25-5.35 GHz

Table 7.5.2.2-6: Radiated Spurious Emissions Tabulated Data – 802.11n 20 MHz CDD

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5260 MHz)										
10520	42.83	---------	H	14.28	57.11	---------	77.7	---------	20.6	---------
10520	43.65	---------	V	14.28	57.93	---------	77.7	---------	19.8	---------
Middle Channel (5280 MHz)										
10560	43.22	---------	H	14.36	57.58	---------	77.7	---------	20.1	---------
10560	44.32	---------	V	14.36	58.68	---------	77.7	---------	19.0	---------
High Channel (5320 MHz)										
5350	60.10	43.46	H	4.71	64.81	48.17	74.0	54.0	9.2	5.8
5350	59.67	44.78	V	4.71	64.38	49.49	74.0	54.0	9.6	4.5
10640	44.08	32.28	H	14.52	58.60	46.80	83.5	63.5	24.9	16.7
10640	44.87	33.68	V	14.52	59.39	48.20	83.5	63.5	24.1	15.3

Notes:

- **All emissions above 10.64 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**

Table 7.5.2.2-7: Radiated Spurious Emissions Tabulated Data – 802.11n 20 MHz SM-MIMO

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5260 MHz)										
10520	39.03	---------	H	18.12	57.15	---------	77.7	---------	20.5	---------
10520	39.01	---------	V	18.12	57.13	---------	77.7	---------	20.6	---------
Middle Channel (5280 MHz)										
10560	40.21	---------	H	18.23	58.44	---------	77.7	---------	19.3	---------
10560	38.97	---------	V	18.23	57.20	---------	77.7	---------	20.5	---------
High Channel (5320 MHz)										
5350	52.46	38.86	H	9.98	62.44	48.84	74.0	54.0	11.6	5.2
5350	53.14	37.64	V	9.98	63.12	47.62	74.0	54.0	10.9	6.4
10640	38.58	28.04	H	18.46	57.04	46.50	83.5	63.5	26.5	17.0
10640	39.30	28.32	V	18.46	57.76	46.78	83.5	63.5	25.7	16.7

Notes:

- **All emissions above 10.64 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**

Table 7.5.2.2-8: Radiated Spurious Emissions Tabulated Data – 802.11n 40 MHz CDD

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5270 MHz)										
10540	43.21	---------	V	14.32	57.53	---------	77.7	---------	20.2	---------
High Channel (5310 MHz)										
5350	61.85	44.19	H	4.71	66.56	48.90	74.0	54.0	7.4	5.1
5350	62.33	45.96	V	4.71	67.04	50.67	74.0	54.0	7.0	3.3
10620	44.93	32.03	V	14.48	59.41	46.51	83.5	63.5	24.1	17.0

Notes:

- **All emissions above 10.62 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**

Table 7.5.2.2-9: Radiated Spurious Emissions Tabulated Data – 802.11n 40 MHz SM-MIMO

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5270 MHz)										
Noise Floor										
High Channel (5310 MHz)										
5350	59.74	42.38	H	9.98	69.72	52.36	74.0	54.0	4.3	1.6
5350	59.02	41.32	V	9.98	69.00	51.30	74.0	54.0	5.0	2.7
10620	39.70	27.98	H	18.40	58.10	46.38	83.5	63.5	25.4	17.1
10620	40.27	28.22	V	18.40	58.67	46.62	83.5	63.5	24.8	16.9

Notes:

- **All emissions above 10.62 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**

Table 7.5.2.2-10: Radiated Spurious Emissions Tabulated Data – 802.11a CDD

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5260 MHz)										
10520	44.51	---------	H	14.28	58.79	---------	77.7	---------	18.9	---------
10520	44.99	---------	V	14.28	59.27	---------	77.7	---------	18.4	---------
Middle Channel (5280 MHz)										
10560	43.39	---------	H	14.36	57.75	---------	77.7	---------	20.0	---------
10560	44.23	---------	V	14.36	58.59	---------	77.7	---------	19.1	---------
High Channel (5320 MHz)										
5350	59.63	44.14	H	4.71	64.34	48.85	74.0	54.0	9.7	5.1
5350	60.97	44.29	V	4.71	65.68	49.00	74.0	54.0	8.3	5.0
10640	44.90	33.00	H	14.52	59.42	47.52	83.5	63.5	24.1	16.0
10640	46.40	34.10	V	14.52	60.92	48.62	83.5	63.5	22.6	14.9

Notes:

- **All emissions above 10.64 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**

Band 5.47-5.725 GHz

Table 7.5.2.2-11: Radiated Spurious Emissions Tabulated Data – 802.11n 20 MHz CDD

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5500 MHz)										
5460	58.55	43.13	H	5.07	63.62	48.20	74.0	54.0	10.4	5.8
5460	59.38	43.96	V	5.07	64.45	49.03	74.0	54.0	9.6	5.0
5470	62.28	---------	H	5.10	67.38	---------	68.2	---------	0.8	---------
5470	62.62	---------	V	5.10	67.72	---------	68.2	---------	0.5	---------
11000	44.01	33.07	H	15.26	59.27	48.33	83.5	63.5	24.2	15.2
11000	44.10	32.63	V	15.26	59.36	47.89	83.5	63.5	24.1	15.6
Middle Channel (5600 MHz)										
11200	43.22	31.47	H	16.16	59.38	47.63	83.5	63.5	24.1	15.9
11200	41.87	30.98	V	16.16	58.03	47.14	83.5	63.5	25.5	16.4
High Channel (5700 MHz)										
5725	63.63	45.19	H	5.60	69.23	50.79	74.0	54.0	4.8	3.2
5725	65.11	46.36	V	5.60	70.71	51.96	74.0	54.0	3.3	2.0
11400	41.10	30.82	H	17.06	58.16	47.88	83.5	63.5	25.3	15.6
11400	40.41	30.16	V	17.06	57.47	47.22	83.5	63.5	26.0	16.3

Notes:

- **All emissions above 11.44 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**
- **The emissions at 5725 MHz were compared to the general intentional limits of FCC Section 15.209 and ISED Canada RSS-GEN**

Table 7.5.2.2-12: Radiated Spurious Emissions Tabulated Data – 802.11n 20 MHz SM-MIMO

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5500 MHz)										
5460	55.42	38.56	H	10.22	65.64	48.78	74.0	54.0	8.4	5.2
5460	53.17	37.07	V	10.22	63.39	47.29	74.0	54.0	10.6	6.7
5470	56.57	---------	H	10.24	66.81	---------	68.2	---------	1.4	---------
5470	54.83	---------	V	10.24	65.07	---------	68.2	---------	3.1	---------
11000	38.63	27.33	H	19.47	58.10	46.80	83.5	63.5	25.4	16.7
11000	38.24	27.39	V	19.47	57.71	46.86	83.5	63.5	25.8	16.6
Middle Channel (5600 MHz)										
11200	39.88	28.16	H	20.06	59.94	48.22	83.5	63.5	23.6	15.3
11200	39.08	27.33	V	20.06	59.14	47.39	83.5	63.5	24.4	16.1
High Channel (5700 MHz)										
5725	58.04	39.57	H	10.60	68.64	50.17	74.0	54.0	5.4	3.8
5725	54.07	38.92	V	10.60	64.67	49.52	74.0	54.0	9.3	4.5
11400	37.32	26.48	H	20.64	57.96	47.12	83.5	63.5	25.5	16.4
11400	36.92	26.76	V	20.64	57.56	47.40	83.5	63.5	25.9	16.1

Notes:

- **All emissions above 11.44 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**
- **The emissions at 5725 MHz were compared to the general intentional limits of FCC Section 15.209 and ISED Canada RSS-GEN**

Table 7.5.2.2-13: Radiated Spurious Emissions Tabulated Data – 802.11n 40 MHz CDD

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5510 MHz)										
5460	60.06	44.67	H	5.07	65.13	49.74	74.0	54.0	8.9	4.3
5460	61.9	45.92	V	5.07	66.97	50.99	74.0	54.0	7.0	3.0
5470	65	47.04	H	5.10	70.10	52.14	74.0	54.0	3.9	1.9
5470	66	48.76	V	5.10	71.10	53.86	74.0	54.0	2.9	0.1
11020	43.29	31.09	H	15.35	58.64	46.44	83.5	63.5	24.9	17.1
11020	43.33	30.92	V	15.35	58.68	46.27	83.5	63.5	24.8	17.2
Middle Channel (5590 MHz)										
11180	41.76	30.20	V	16.07	57.83	46.27	83.5	63.5	25.7	17.2
High Channel (5670 MHz)										
5725	53.24	---------	H	5.60	58.84	---------	68.2	---------	9.4	---------
5725	54	---------	V	5.60	59.60	---------	68.2	---------	8.6	---------
11340	41.92	29.89	H	16.79	58.71	46.68	83.5	63.5	24.8	16.8
11340	41.09	30.08	V	16.79	57.88	46.87	83.5	63.5	25.6	16.6

Notes:

- **All emissions above 11.42 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**
- **The emissions at 5470 MHz were compared to the general intentional limits of FCC Section 15.209 and ISED Canada RSS-GEN**

Table 7.5.2.2-14: Radiated Spurious Emissions Tabulated Data – 802.11n 40 MHz SM-MIMO

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5510 MHz)										
5460	60.01	45.95	H	4.35	64.36	50.30	74.0	54.0	9.6	3.7
5460	56.06	43.94	V	4.35	60.41	48.29	74.0	54.0	13.6	5.7
5470	62.37	---------	H	4.38	66.75	---------	68.2	---------	1.4	---------
5470	60.32	---------	V	4.38	64.70	---------	68.2	---------	3.5	---------
11020	39.29	26.97	H	19.52	58.81	46.49	83.5	63.5	24.7	17.0
11020	39.95	26.80	V	19.52	59.47	46.32	83.5	63.5	24.0	17.2
Middle Channel (5590 MHz)										
11180	39.04	26.80	H	20.00	59.04	46.80	83.5	63.5	24.5	16.7
High Channel (5670 MHz)										
5725	49.59	37.13	H	10.60	60.19	---------	68.2	---------	8.0	---------
5725	50.33	37.69	V	10.60	60.93	---------	68.2	---------	7.3	---------

Notes:

- **All emissions above 11.42 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**

Table 7.5.2.2-15: Radiated Spurious Emissions Tabulated Data – 802.11a CDD

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5500 MHz)										
5460	55.35	42.84	H	5.07	60.42	47.91	74.0	54.0	13.6	6.1
5460	56.82	43.77	V	5.07	61.89	48.84	74.0	54.0	12.1	5.2
5470	60.14	---------	H	5.10	65.24	---------	68.2	---------	3.0	---------
5470	60.53	---------	V	5.10	65.63	---------	68.2	---------	2.6	---------
11000	44.03	32.60	H	15.26	59.29	47.86	83.5	63.5	24.2	15.6
11000	44.58	32.69	V	15.26	59.84	47.95	83.5	63.5	23.7	15.6
Middle Channel (5600 MHz)										
11200	43.72	32.74	H	16.16	59.88	48.90	83.5	63.5	23.6	14.6
11200	42.91	31.20	V	16.16	59.07	47.36	83.5	63.5	24.4	16.1
High Channel (5700 MHz)										
5725	63.65	44.65	H	5.60	69.25	50.25	74.0	54.0	4.7	3.7
5725	65.62	45.36	V	5.60	71.22	50.96	74.0	54.0	2.8	3.0
11400	41.67	30.31	H	17.06	58.73	47.37	83.5	63.5	24.8	16.1
11400	41.70	30.35	V	17.06	58.76	47.41	83.5	63.5	24.7	16.1

Notes:

- **All emissions above 11.4 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**
- **The emissions at 5725 MHz were compared to the general intentional limits of FCC Section 15.209 and ISED Canada RSS-GEN**

Band 5.725-5.85 GHz

Table 7.5.2.2-16: Radiated Spurious Emissions Tabulated Data – 802.11n 20 MHz CDD

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5745 MHz)										
5715	58.69	---------	H	5.59	64.28	---------	68.2	---------	3.9	---------
5715	60.73	---------	V	5.59	66.32	---------	68.2	---------	1.9	---------
5725	67.23	---------	H	5.60	72.83	---------	78.2	---------	5.4	---------
5725	67.76	---------	V	5.60	73.36	---------	78.2	---------	4.8	---------
11490	41.28	30.56	H	17.46	58.74	48.02	83.5	63.5	24.8	15.5
Middle Channel (5785 MHz)										
Noise Floor										
High Channel (5825 MHz)										
5850	62.62	---------	H	5.83	68.45	---------	78.2	---------	9.7	---------
5850	63.06	---------	V	5.83	68.89	---------	78.2	---------	9.3	---------
5860	57.13	---------	H	5.85	62.98	---------	68.2	---------	5.2	---------
5860	57.49	---------	V	5.85	63.34	---------	68.2	---------	4.9	---------

Notes:

- **All emissions above 11.65 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**

Table 7.5.2.2-17: Radiated Spurious Emissions Tabulated Data – 802.11n 20 MHz SM-MIMO

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5745 MHz)										
5715	55.98	---------	H	10.59	66.57	---------	68.2	---------	1.6	---------
5715	53.54	---------	V	10.59	64.13	---------	68.2	---------	4.1	---------
5725	60.16	---------	H	10.60	70.76	---------	78.2	---------	7.4	---------
5725	57.23	---------	V	10.60	67.83	---------	78.2	---------	10.4	---------
Middle Channel (5785 MHz)										
11570	38.67	27.15	H	20.85	59.52	48.00	83.5	63.5	24.0	15.5
High Channel (5825 MHz)										
5850	57.21	---------	H	10.77	67.98	---------	78.2	---------	10.2	---------
5850	54.04	---------	V	10.77	64.81	---------	78.2	---------	13.4	---------
5860	51.62	---------	H	10.78	62.40	---------	68.2	---------	5.8	---------
5860	49.45	---------	V	10.78	60.23	---------	68.2	---------	8.0	---------

Notes:

- **All emissions above 11.65 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**

Table 7.5.2.2-18: Radiated Spurious Emissions Tabulated Data – 802.11n 40 MHz CDD

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5755 MHz)										
5715	60.59	---------	H	5.59	66.18	---------	68.2	---------	2.0	---------
5715	62.41	---------	V	5.59	68.00	---------	68.2	---------	0.2	---------
5725	64.43	---------	H	5.60	70.03	---------	78.2	---------	8.2	---------
5725	64.8	---------	V	5.60	70.40	---------	78.2	---------	7.8	---------
High Channel (5795 MHz)										
5850	53.03	---------	H	5.83	58.86	---------	78.2	---------	19.3	---------
5850	53.18	---------	V	5.83	59.01	---------	78.2	---------	19.2	---------

Notes:

- **All emissions above 5.85 GHz were attenuated below the limits and the noise floor of the measurement equipment.**

Table 7.5.2.2-19: Radiated Spurious Emissions Tabulated Data – 802.11n 40 MHz SM-MIMO

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5755 MHz)										
5715	58.57	42.19	H	10.59	69.16	52.78	74.0	54.0	4.8	1.2
5715	53.51	39.53	V	10.59	64.10	50.12	74.0	54.0	9.9	3.9
5725	61.77	---------	H	10.60	72.37	---------	78.2	---------	5.8	---------
5725	57.06	---------	V	10.60	67.66	---------	78.2	---------	10.5	---------
High Channel (5795 MHz)										
5850	48.11	---------	H	10.77	58.88	---------	78.2	---------	19.3	---------
5850	48.60	---------	V	10.77	59.37	---------	78.2	---------	18.8	---------

Notes:

- **All emissions above 5.85 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions at 5715 MHz were compared to the general intentional limits of FCC Section 15.209 and ISED Canada RSS-GEN**

Table 7.5.2.2-20: Radiated Spurious Emissions Tabulated Data – 802.11a CDD

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (5745 MHz)										
5715	57.67	---------	H	5.59	63.26	---------	68.2	---------	4.9	---------
5715	62.16	---------	V	5.59	67.75	---------	68.2	---------	0.5	---------
5725	66.57	---------	H	5.60	72.17	---------	78.2	---------	6.0	---------
5725	67.02	---------	V	5.60	72.62	---------	78.2	---------	5.6	---------
11490	40.92	29.95	H	17.46	58.38	47.41	83.5	63.5	25.1	16.1
11490	41.62	30.19	V	17.46	59.08	47.65	83.5	63.5	24.4	15.8
Middle Channel (5785 MHz)										
11570	41.25	29.85	H	17.38	58.63	47.23	83.5	63.5	24.9	16.3
11570	41.42	30.02	V	17.38	58.80	47.40	83.5	63.5	24.7	16.1
High Channel (5825 MHz)										
5850	61.35	---------	H	5.83	67.18	---------	78.2	---------	11.0	---------
5850	57.7	---------	V	5.83	63.53	---------	78.2	---------	14.7	---------
5860	56.32	---------	H	5.85	62.17	---------	68.2	---------	6.0	---------
5860	52.65	---------	V	5.85	58.50	---------	68.2	---------	9.7	---------
11650	41.01	29.77	V	17.23	58.24	47.00	83.5	63.5	25.3	16.5

Notes:

- **All emissions above 11.65 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The emissions above 10 GHz were measured at a test distance of 1m. The limits are corrected accordingly using a distance factor of 20*log(3/1) = 9.5 dB.**

7.5.3 Sample Calculation:

$R_C = R_U + CF_T$

Where:

CF_T	=	Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)
R_U	=	Uncorrected Reading
R_C	=	Corrected Level
AF	=	Antenna Factor
CA	=	Cable Attenuation
AG	=	Amplifier Gain
DC	=	Duty Cycle Correction Factor

Example Calculation: Peak
Corrected Level: 62.59 + 4.08 = 66.67 dBµV/m
Margin: 74 dBµV/m – 66.67 dBµV/m = 7.3 dB

Example Calculation: Average
Corrected Level: 46.12 + 4.08 = 50.2 dBµV/m
Margin: 54 dBµV/m – 50.2 dBµV/m = 3.8 dB

Example Calculation: EIRP Limits to Field Strength Limits
E(dBuV/m) = P(dBm EIRP) + 95.2
E(dBuV/m = -17dBm + 95.2 = 78.2 dBuV/m
E(dBuV/m = -27dBm + 95.2 = 68.2 dBuV/m

7.6 Power Line Conducted Emissions – FCC: Section 15.207 IC: RSS-Gen 8.8

7.6.1 Measurement Procedure

ANSI C63.4 sections 6 and 7 were the guiding documents for this evaluation. Conducted emissions were performed from 150 kHz to 30 MHz with the spectrum analyzer's resolution bandwidth set to 9 kHz and the video bandwidth set to 30 kHz. The calculation for the conducted emissions is as follows:

Corrected Reading = Analyzer Reading + LISN Loss + Cable Loss
Margin = Applicable Limit - Corrected Reading

Preliminary evaluation was performed for all the modes of operation of the WLAN transceiver. The results reported correspond to the worst case. The EUT was in the 802.11n 40 MHz mode at channel 102.

7.6.2 Measurement Results

Results are shown below.

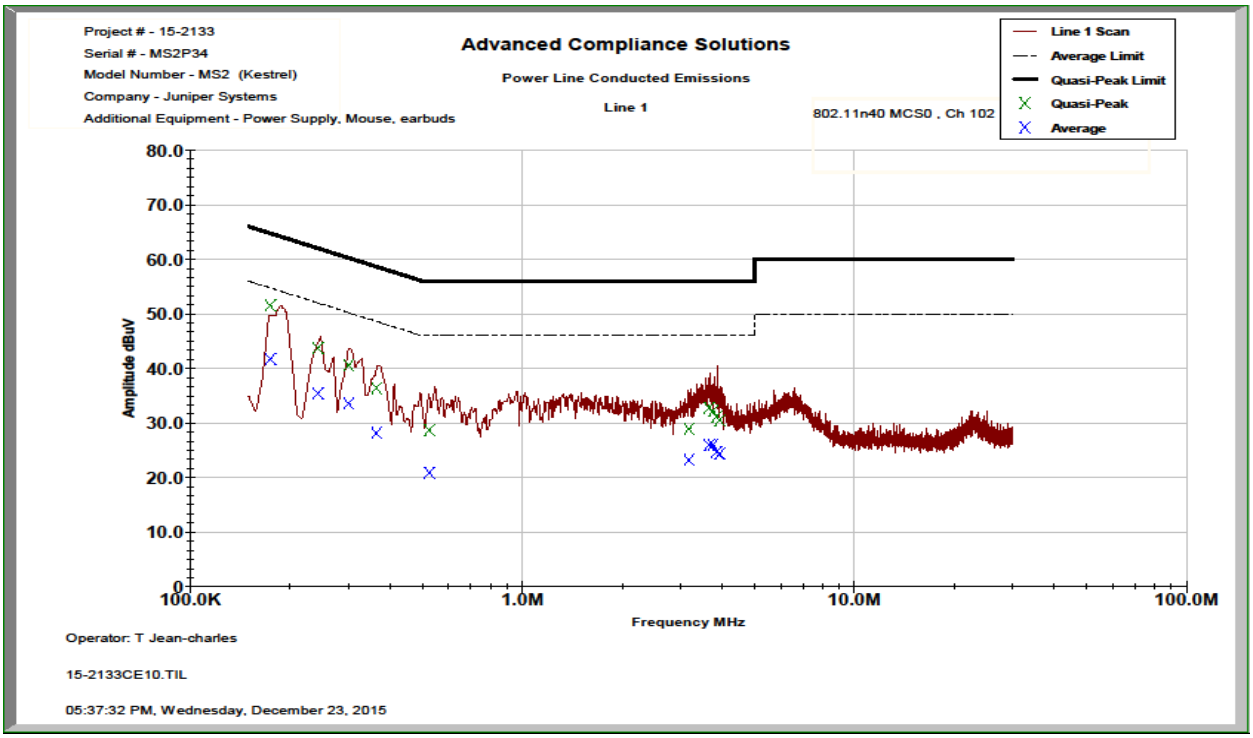


Figure 7.6.2-1: Conducted Emissions Results – Line 1

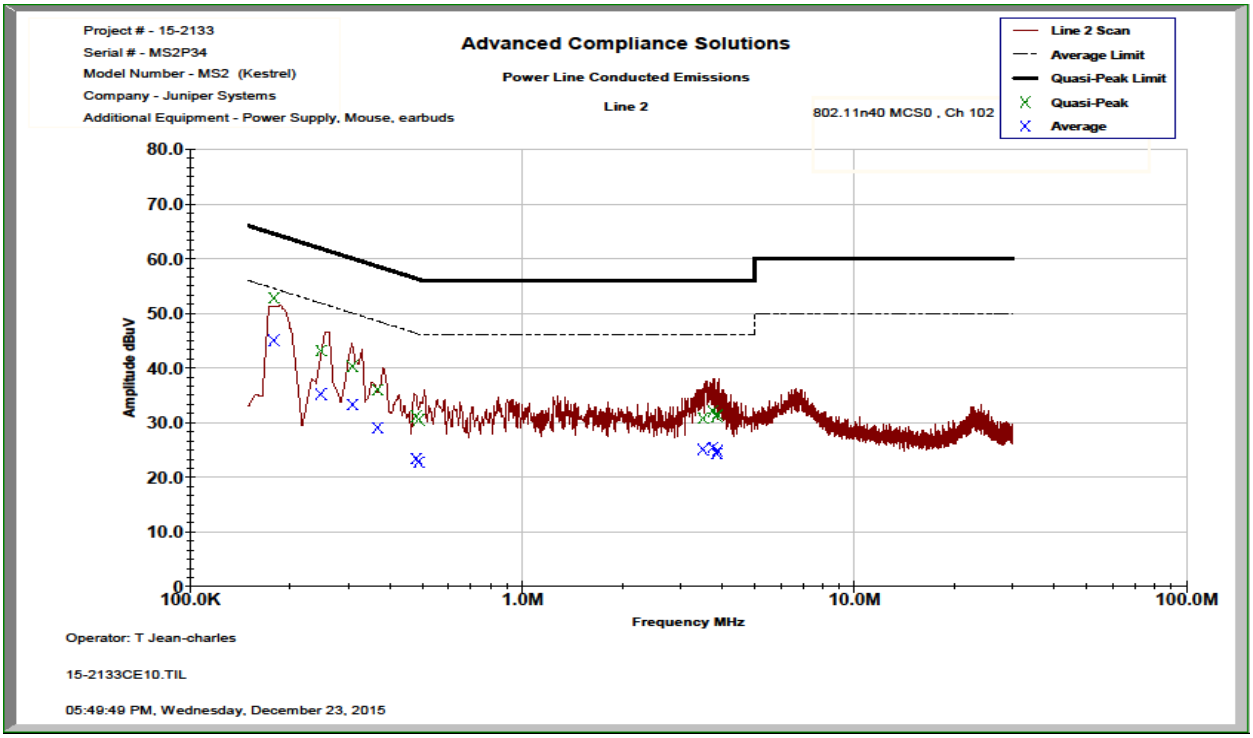


Figure 7.6.2-2: Conducted Emissions Results – Line 2

Table 7.6.2-1: Conducted EMI Results

☒ Line 1 ☒ Line 2 ☐ Line 3
☐ Line 4
☐ To Ground ☒ Floating
☐ Telecom Port _____
☒ dBµV ☐ dBµA

Plot Number: 15-2133CE10
Power Supply Description: 12 VDC

Frequency (MHz)	Uncorrected Reading		Total Correction Factor (dB)	Corrected Level		Limit		Margin (dB)	
	Quasi-Peak	Average		Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
Line 1									
0.174663	41.323	31.527	10.20	51.53	41.73	64.74	54.74	13.2	13.0
0.242963	33.567	25.258	10.21	43.78	35.47	61.99	51.99	18.2	16.5
0.300699	30.405	23.333	10.20	40.61	33.54	60.22	50.22	19.6	16.7
0.364763	26.213	17.96	10.20	36.42	28.16	58.62	48.62	22.2	20.5
0.525513	18.482	10.716	10.20	28.69	20.92	56.00	46.00	27.3	25.1
3.18216	18.572	12.869	10.35	28.92	23.22	56.00	46.00	27.1	22.8
3.65976	22.361	15.594	10.35	32.71	25.95	56.00	46.00	23.3	20.1
3.75678	21.792	15.609	10.35	32.14	25.96	56.00	46.00	23.9	20.0
3.85379	20.809	14.361	10.35	31.16	24.71	56.00	46.00	24.8	21.3
3.93587	20.122	13.952	10.35	30.47	24.30	56.00	46.00	25.5	21.7
Line 2									
0.179013	42.572	34.838	10.22	52.80	45.06	64.53	54.53	11.7	9.5
0.247475	32.949	25.045	10.22	43.17	35.26	61.84	51.84	18.7	16.6
0.308413	30.095	23.098	10.21	40.31	33.31	60.01	50.01	19.7	16.7
0.366737	25.814	18.856	10.20	36.02	29.06	58.57	48.57	22.6	19.5
0.479999	20.935	13.214	10.21	31.15	23.42	56.34	46.34	25.2	22.9
0.488199	20.325	12.567	10.21	30.54	22.78	56.20	46.20	25.7	23.4
3.50305	20.378	14.641	10.39	30.77	25.03	56.00	46.00	25.2	21.0
3.75678	21.684	15.061	10.39	32.07	25.45	56.00	46.00	23.9	20.5
3.85379	20.702	13.945	10.39	31.09	24.34	56.00	46.00	24.9	21.7
3.87617	21.095	14.439	10.39	31.49	24.83	56.00	46.00	24.5	21.2

7.7 Frequency Stability – FCC Section 15.407(g), IC RSS-Gen 8.11

7.7.1 Measurement Procedure

The equipment under test is placed inside an environmental chamber. The RF output is directly coupled to the input of the measurement equipment and a power supply is attached to the primary supply voltage.

Frequency measurements were made at the extremes of the of temperature range -30º C to +50º C and at intervals of 10º C at normal supply voltage. A period of time sufficient to stabilize all components of the equipment was allowed at each frequency measurement. At a temperature 20º C the supply voltage was also reduced to the endpoint. The maximum variation of frequency was recorded.

Results of the test are shown below

7.7.2 Measurement Results

Frequency Stability

Frequency (MHz): 5240

Deviation Limit (PPM): 20ppm

Temperature	Frequency	Frequency Error	Voltage	Voltage
C	MHz	(PPM)	(%)	(VDC)
-30 C	**5240.041000**	**7.824**	100%	3.65
-20 C	**5240.038625**	**7.371**	100%	3.65
-10 C	**5240.025125**	**4.795**	100%	3.65
0 C	**5240.016875**	**3.220**	100%	3.65
10 C	**5240.022125**	**4.222**	100%	3.65
20 C	**5239.993250**	**-1.288**	100%	3.65
30 C	**5239.989750**	**-1.956**	100%	3.65
40 C	**5239.989000**	**-2.099**	100%	3.65
50 C	**5239.989875**	**-1.932**	100%	3.65
20 C	**5239.989625**	**-1.980**	Endpoint	3.20

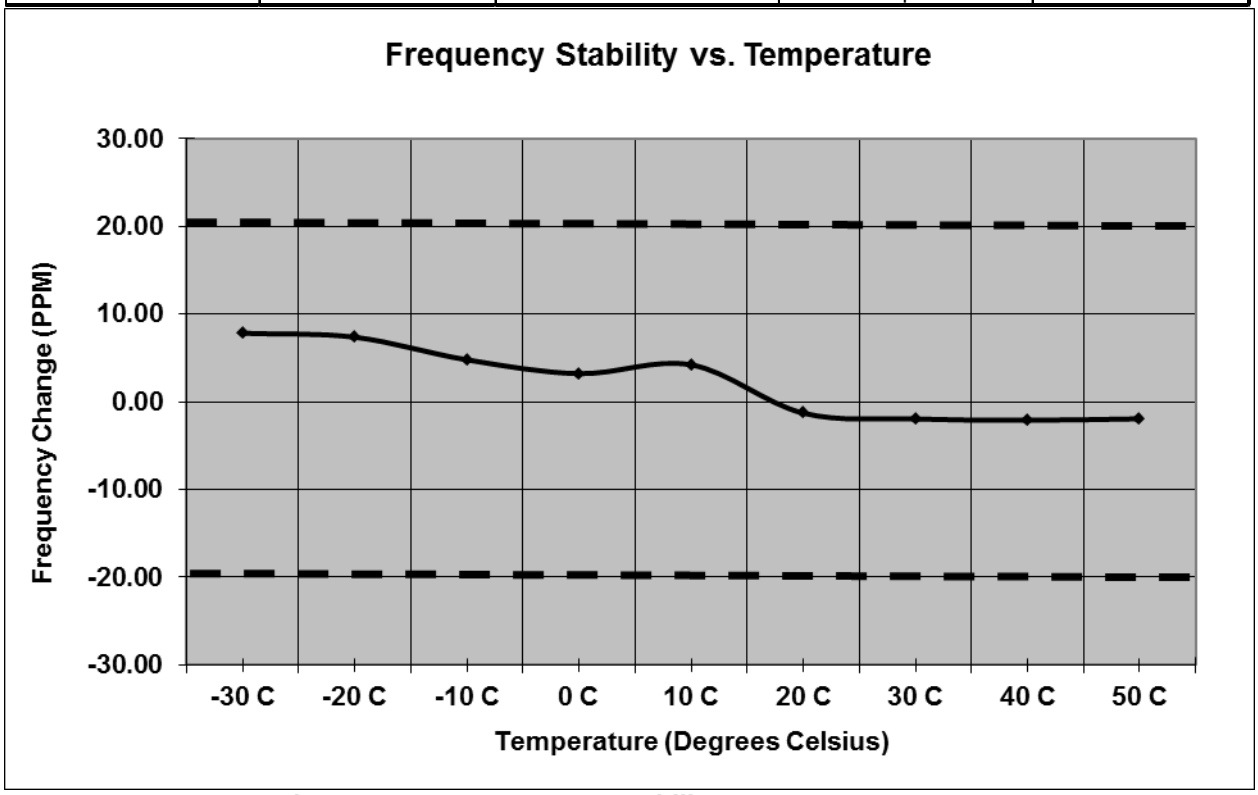


Figure 7.7.2-1: Frequency Stability 5.15 GHz – 5.25 GHz

Frequency Stability

Frequency (MHz): 5320

Deviation Limit (PPM): 20ppm

Temperature	Frequency	Frequency Error	Voltage	Voltage
C	MHz	(PPM)	(%)	(VDC)
-30 C	**5320.041625**	**7.824**	100%	3.65
-20 C	**5320.040500**	**7.613**	100%	3.65
-10 C	**5320.026250**	**4.934**	100%	3.65
0 C	**5320.015750**	**2.961**	100%	3.65
10 C	**5320.016500**	**3.102**	100%	3.65
20 C	**5319.993250**	**-1.269**	100%	3.65
30 C	**5319.989500**	**-1.974**	100%	3.65
40 C	**5319.989000**	**-2.068**	100%	3.65
50 C	**5320.010000**	**1.880**	100%	3.65
20 C	**5319.989875**	**-1.903**	Endpoint	3.20

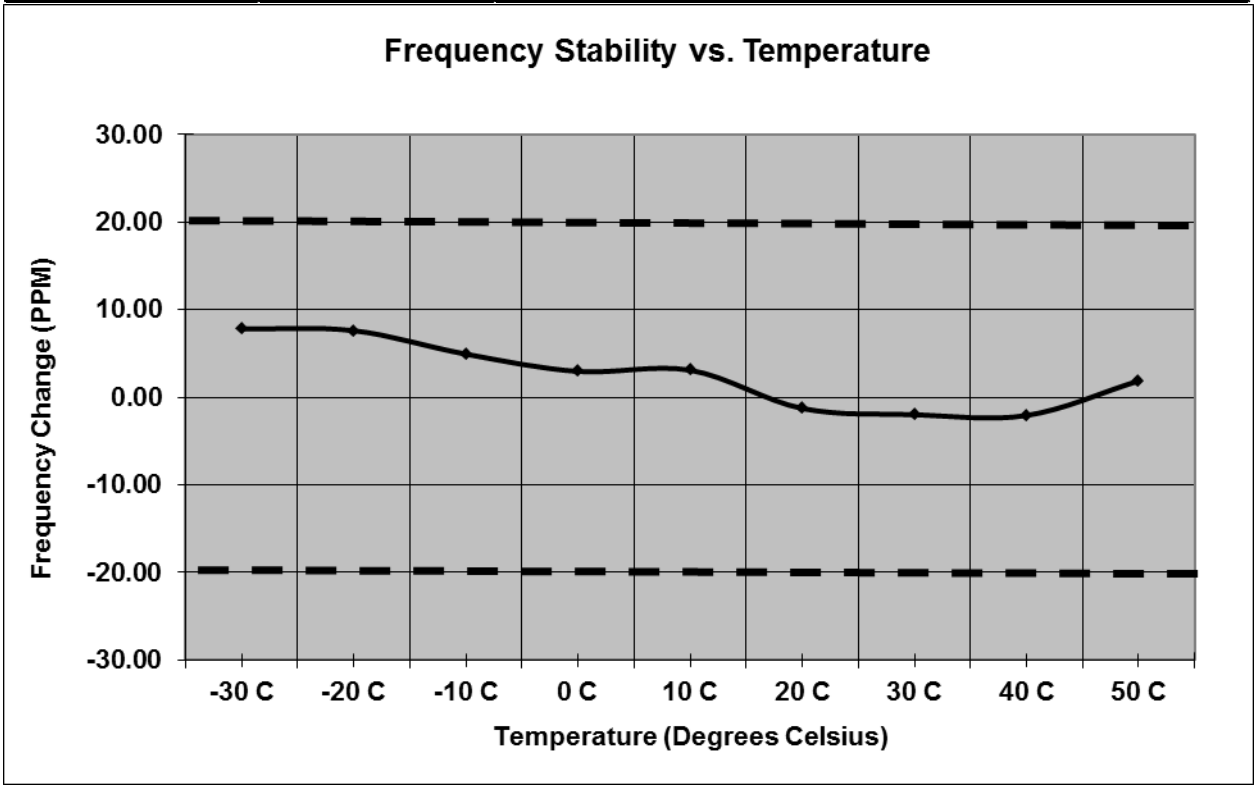


Figure 7.7.2-2: Frequency Stability 5.25 GHz – 5.35 GHz

Frequency Stability

Frequency (MHz): 5500

Deviation Limit (PPM): 20ppm

Temperature	Frequency	Frequency Error	Voltage	Voltage
C	MHz	(PPM)	(%)	(VDC)
-30 C	**5500.043125**	**7.841**	100%	3.65
-20 C	**5500.040875**	**7.432**	100%	3.65
-10 C	**5500.027000**	**4.909**	100%	3.65
0 C	**5500.016125**	**2.932**	100%	3.65
10 C	**5500.009375**	**1.705**	100%	3.65
20 C	**5499.993625**	**-1.159**	100%	3.65
30 C	**5499.989125**	**-1.977**	100%	3.65
40 C	**5499.991375**	**-1.568**	100%	3.65
50 C	**5500.011750**	**2.136**	100%	3.65
20 C	**5499.989375**	**-1.932**	Endpoint	3.20

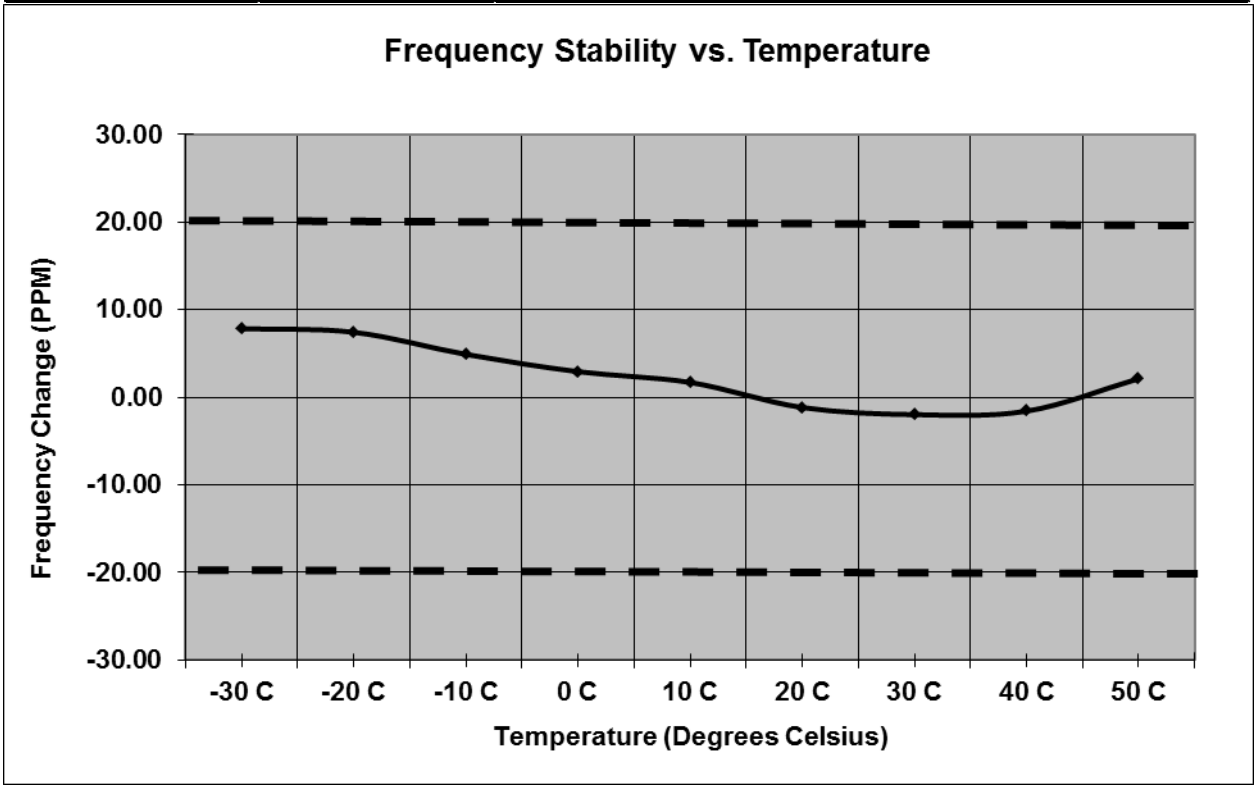


Figure 7.7.2-3: Frequency Stability 5.47 GHz – 5.725 GHz

Frequency Stability

Frequency (MHz): 5825
Deviation Limit (PPM): 20ppm

Temperature	Frequency	Frequency Error	Voltage	Voltage
C	MHz	(PPM)	(%)	(VDC)
-30 C	**5825.045000**	**7.725**	100%	3.65
-20 C	**5825.044250**	**7.597**	100%	3.65
-10 C	**5825.031500**	**5.408**	100%	3.65
0 C	**5825.023250**	**3.991**	100%	3.65
10 C	**5825.012750**	**2.189**	100%	3.65
20 C	**5825.008625**	**1.481**	100%	3.65
30 C	**5824.988375**	**-1.996**	100%	3.65
40 C	**5824.988250**	**-2.017**	100%	3.65
50 C	**5825.010750**	**1.845**	100%	3.65
20 C	**5824.988250**	**-2.017**	Endpoint	3.20

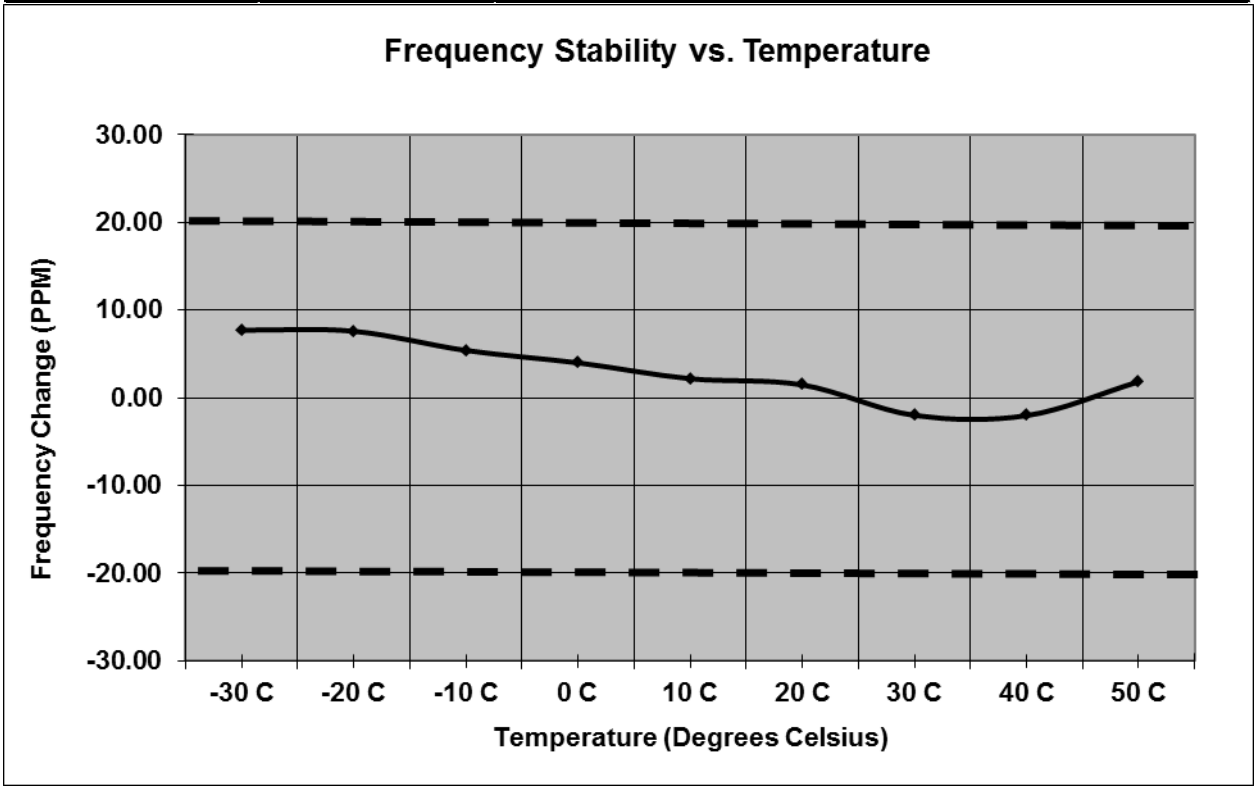


Figure 7.7.2-4: Frequency Stability 5.725 GHz – 5.85 GHz

7.8 Duty Cycle

7.8.1 Measurement Procedure

The duty cycle was measured in accordance with ANSI C63.10 Section 12.2 Duty cycle (D), transmission duration (T), and maximum power control level. The unit was connected directly to the input of the spectrum analyzer via suitable attenuation. The RBW and VBW were set to 10 MHz and the number of sweep points across duration T was set to exceed 100.

7.8.2 Measurement Results

The results for all the modes of operation are provided below.

Table 7.8.2-1 Duty Cycle Correction Factor

Mode	Time On (ms)	Period (ms)	Duty Cycle %	Correction Factor (dB)
802.11n 20 MHz	1.890	2.000	94.5	0.25
802.11n 40MHz	0.924	1.026	90.1	0.45
802.11a	2.050	2.160	94.9	0.23

Note: The correction factor was calculated as 10*log (Time on/Period)

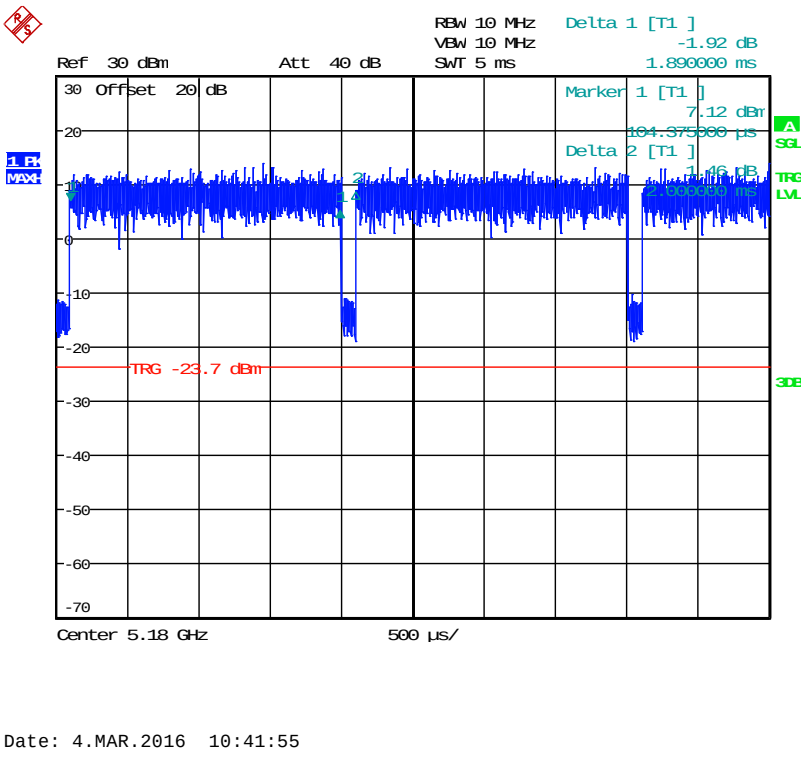


Figure 7.8.2-1: Duty Cycle 802.11n 20 MHz

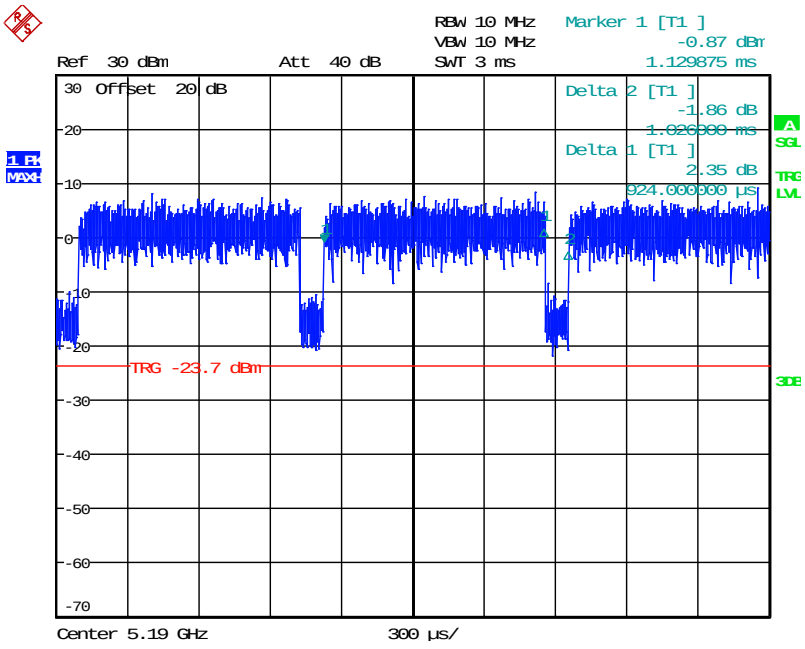


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Figure 7.8.2-2: Duty Cycle 802.11n 40 MHz

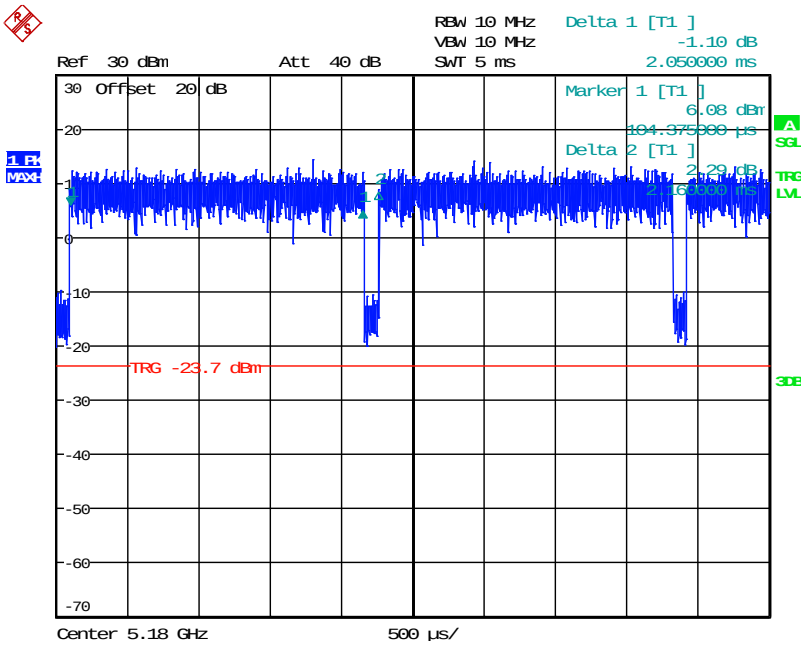

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Figure 7.8.2-3: Duty Cycle 802.11a

8 CONCLUSION

In the opinion of ACS, Inc., the models MS2G and MS2GC meet the requirements of FCC Part 15 subpart E and Industry Canada's Radio Standards Specification RSS-247 for the test procedures documented in the test report.

END REPORT