



Engineering Solutions & Electromagnetic Compatibility Services

**Unlicensed National Information Infrastructure (U-NII) Transmitter Report
FCC Part 15E & Industry Canada RSS-247**

**Harris Corporation
221 Jefferson Ridge Parkway
Lynchburg, VA 24501
Contact: Paresh Chauhan
Phone: (434) 455-9290**

**Model: XL-200P (International)
Multi-Band Portable Land Mobile Radio**

**FCC ID: OWDTR-0145-E
IC: 3636B-0145**

February 9, 2016

Standards Referenced for this Report	
FCC Classification	NII - Unlicensed National Information Infrastructure
FCC Rule Part(s)	FCC Rules Part 15.407 (Subpart E): Unlicensed National Information Infrastructure Devices (10-01-14)
IC Standard	RSS-247 Issue 1 Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and License Exempt Local Area Network (LE-LAN) Devices
FCC Procedure	ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
Digital Interface Information	Digital Interface was found to be compliant

Report Prepared By: Daniel Baltzell

Document Number: 2015216NII

This report may not be reproduced, except in full, without the full written approval of Rhein Tech Laboratories, Inc. and Harris Corporation. Test results relate only to the item tested.

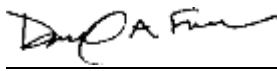
This/these test(s) is/are accredited under Rhein Tech Laboratories, Inc. ISO/IEC 17025 accreditation issued by the ANSI-ASQ National Accreditation Board. Refer to certificate and scope of accreditation AT-1445.

Rhein Tech Laboratories, Inc.
360 Herndon Parkway
Suite 1400
Herndon, VA 20170
<http://www.rheintech.com>

Client: Harris Corporation
Model: XL-200P (International) Multi-Band Portable Radio
Standards: FCC 15.407/IC RSS-247
ID's: OWDTR-0145-E/3636B-0145
Report #: 2015216NII

Frequency Range (MHz)	Output Power (W)	Frequency Tolerance	Emission Designator
5180-5250	0.015	N/A	44M2G7D
5250-5320	0.012	N/A	46M5G7D
5500-5700	0.010	N/A	51M9G7D
5745-5825	0.008	N/A	48M7G7D

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this test report. No modifications were made to the equipment during testing in order to achieve compliance with these standards. Furthermore, there was no deviation from, additions to, or exclusions from, the applicable parts of FCC Part 2, FCC Part 15, and Industry Canada RSS-247.

Signature: 

Date: February 9, 2016

Typed/Printed Name: Desmond A. Fraser

Position: President

Table of Contents

1	General Information	9
1.1	Scope	9
1.2	Description of EUT	9
1.3	Test Facility	9
1.4	Related Submittal(s)/Grant(s)	9
1.5	Modifications	9
2	Test Information	10
2.1	Description of Test Modes	10
2.2	Exercising the EUT	10
2.3	Test Result Summary	11
2.4	Test System Details	11
2.5	Configuration of Tested System	12
3	Transmit Power Measurement – FCC 15.407(a/1/2/3); RSS-247 6.2	13
3.1	Power Output Test Procedure	13
3.2	Power Output Test Data	13
3.3	Limits of Maximum Transmit Power Measurement	13
4	Peak Power Spectral Density Measurement – FCC 15.407(a) 1-5; RSS-247 6.2	14
4.1	Limits of Peak Power Spectral Density	14
4.2	Peak Power Spectral Density Measurement Test Procedure	14
4.3	Peak Power Spectral Density Test Data	14
5	Frequency Stability Measurement – FCC 15.407(g)	56
5.1	Limits of Frequency Stability	56
5.2	Frequency Stability Measurement Test Procedure	56
5.3	Frequency Stability Test Data	56
6	Compliance with the Band Edge – FCC 15.407(b); RSS-247 6.2	58
6.1	Limits of Band Edge Measurement	58
6.2	Band Edge Test Procedure	58
6.3	Band Edge Test Results	59
6.3.1	5150 – 5350 MHz Band Edges – 802.11a and 802.11n	59
6.3.2	5470 – 5725 MHz Band Edges – 802.11a and 802.11n	75
6.3.3	5725 – 5850 MHz Band Edges – 802.11a and 802.11n	91
7	Undesirable Emissions - 15.407(b); RSS-247 6.3	107
7.1	Undesirable Emissions Test Procedures	107
7.2	Undesirable Emissions Test Results	108
7.3	Limits of Undesirable Emissions	123
8	Bandwidth – FCC 15.407(a) and (e); RSS-247 6.2	124
8.1	Bandwidth Test Procedure	124
9	Radiated Emissions – FCC 15.209; RSS-Gen	185
9.1	Limits of Radiated Emissions Measurement	185
9.2	Radiated Emissions Measurement Test Procedure	185
9.3	Radiated Emissions Harmonics/Spurious Test Results	187
10	Conducted Emissions - FCC Rules and Regulations Part 15.207; RSS-Gen 7.2.2	190
11	Conclusion	190

Figure Index

Figure 2-1: Configuration of System Under Test.....	12
---	----

Table Index

Table 2-1: Channels Tested - 802.11a/n.....	10
Table 2-2: Test Result Summary – FCC Part 15, Subpart E (Section 15.407); RSS-247	11
Table 2-3: Equipment Under Test (EUT).....	11
Table 2-4: Support Equipment.....	12
Table 3-1: Power Output Test Equipment	13
Table 3-2: Power Output Test Data.....	13
Table 4-1: Peak Power Spectral Density Measurement Test Equipment	14
Table 4-2: Peak Power Spectral Density Test Data - 802.11a 54 Mbps.....	14
Table 4-3: Power Spectral Density Test Data – 802.11n (65 Mbps).....	15
Table 4-4: Power Spectral Density Test Data – 802.11n (40 MHz BW)	16
Table 5-1: Frequency Stability Measurement Test Equipment	56
Table 5-2: Frequency Stability/Temperature Variation; Channel 56 – 5280 MHz (36 Mbps)	56
Table 5-3: Frequency Stability/Voltage Variation; Channel 56 – 5280 MHz (36 Mbps).....	57
Table 6-1: Band Edge Test Equipment	58
Table 7-1: Undesirable Emissions Test Equipment	107
Table 8-1: 26 dB Bandwidth Test Equipment.....	124
Table 8-2: 26 dB Bandwidth Test Data – 802.11a (36 Mbps)	124
Table 8-3: 26 dB Bandwidth Test Data – 802.11n (39 Mbps)	125
Table 8-4: 26 dB Bandwidth Test Data – 802.11a (40 MHz BW, 36 Mbps).....	125
Table 8-5: 26 dB Bandwidth Test Data – 802.11n (40 MHz BW, 39 Mbps).....	126
Table 8-6: 6 dB Bandwidth Test Data – 802.11a (36 Mbps)	126
Table 8-7: 6 dB Bandwidth Test Data – 802.11n (39 Mbps)	126
Table 9-1: Radiated Emissions Test Equipment	186
Table 9-2: Radiated Emissions Harmonics/Spurious Channel 36 (TX Frequency: 5180 MHz).....	187
Table 9-3: Radiated Emissions Harmonics/Spurious Channel 40 (TX Frequency: 5200 MHz).....	187
Table 9-4: Radiated Emissions Harmonics/Spurious Channel 44 (TX Frequency: 5220 MHz).....	187
Table 9-5: Radiated Emissions Harmonics/Spurious Channel 48 (TX Frequency: 5240 MHz).....	187
Table 9-6: Radiated Emissions Harmonics/Spurious Channel 52 (TX Frequency: 5260 MHz).....	188
Table 9-7: Radiated Emissions Harmonics/Spurious Channel 56 (TX Frequency: 5280 MHz).....	188
Table 9-8: Radiated Emissions Harmonics/Spurious Channel 64 (TX Frequency: 5320 MHz).....	188
Table 9-9: Radiated Emissions Harmonics/Spurious Channel 100 (TX Frequency: 5500 MHz).....	188
Table 9-10: Radiated Emissions Harmonics/Spurious Channel 116 (TX Frequency: 5580 MHz).....	188
Table 9-11: Radiated Emissions Harmonics/Spurious Channel 140(TX Frequency: 5700 MHz).....	189
Table 9-12: Radiated Emissions Harmonics/Spurious Channel 149 (TX Frequency: 5745 MHz).....	189
Table 9-13: Radiated Emissions Harmonics/Spurious Channel 157 (TX Frequency: 5785 MHz).....	189
Table 9-14: Radiated Emissions Harmonics/Spurious Channel 165 (TX Frequency: 5825 MHz).....	189

Plot Index

Plot 4-1:	Peak Power Spectral Density: Channel 36 (5180 MHz) 802.11a 54 Mbps	17
Plot 4-2:	Peak Power Spectral Density: Channel 40 (5200 MHz) 802.11a 54 Mbps	18
Plot 4-3:	Peak Power Spectral Density: Channel 44 (5220 MHz) 802.11a 54 Mbps	19
Plot 4-4:	Peak Power Spectral Density: Channel 48 (5240 MHz) 802.11a 54 Mbps	20
Plot 4-5:	Peak Power Spectral Density: Channel 52 (5260 MHz) 802.11a 54 Mbps	21
Plot 4-6:	Peak Power Spectral Density: Channel 56 (5280 MHz) 802.11a 54 Mbps	22
Plot 4-7:	Peak Power Spectral Density: Channel 64 (5320 MHz) 802.11a 54 Mbps	23
Plot 4-8:	Peak Power Spectral Density: Channel 100 (5500 MHz) 802.11a 54 Mbps	24
Plot 4-9:	Peak Power Spectral Density: Channel 116 (5580 MHz) 802.11a 54 Mbps	25
Plot 4-10:	Peak Power Spectral Density: Channel 140 (5700 MHz) 802.11a 54 Mbps	26
Plot 4-11:	Power Spectral Density: Channel 149 (5745 MHz) 802.11a 54 Mbps	27
Plot 4-12:	Power Spectral Density: Channel 157 (5785 MHz) 802.11a 54 Mbps	28
Plot 4-13:	Power Spectral Density: Channel 165 (5825 MHz) 802.11a 54 Mbps	29
Plot 4-14:	Peak Power Spectral Density: Channel 36 (5180 MHz) 802.11n 65 Mbps	30
Plot 4-15:	Peak Power Spectral Density: Channel 40 (5200 MHz) 802.11n 65 Mbps	31
Plot 4-16:	Peak Power Spectral Density: Channel 44 (5220 MHz) 802.11n 65 Mbps	32
Plot 4-17:	Peak Power Spectral Density: Channel 48 (5240 MHz) 802.11n 65 Mbps	33
Plot 4-18:	Peak Power Spectral Density: Channel 52 (5260 MHz) 802.11n 65 Mbps	34
Plot 4-19:	Peak Power Spectral Density: Channel 56 (5280 MHz) 802.11n 65 Mbps	35
Plot 4-20:	Peak Power Spectral Density: Channel 64 (5320 MHz) 802.11n 65 Mbps	36
Plot 4-21:	Peak Power Spectral Density: Channel 100 (5500 MHz) 802.11n 65 Mbps	37
Plot 4-22:	Peak Power Spectral Density: Channel 116 (5580 MHz) 802.11n 65 Mbps	38
Plot 4-23:	Peak Power Spectral Density: Channel 140 (5700 MHz) 802.11n 65 Mbps	39
Plot 4-24:	Power Spectral Density: Channel 149 (5745 MHz) 802.11n 65 Mbps	40
Plot 4-25:	Power Spectral Density: Channel 157 (5785 MHz) 802.11n 65 Mbps	41
Plot 4-26:	Power Spectral Density: Channel 165 (5825 MHz) 802.11n 65 Mbps	42
Plot 4-27:	Peak Power Spectral Density: Channel 36 (5180 MHz, lower) 802.11n 40 MHz	43
Plot 4-28:	Peak Power Spectral Density: Channel 40 (5200 MHz, lower) 802.11n 40 MHz	44
Plot 4-29:	Peak Power Spectral Density: Channel 44 (5220 MHz, lower) 802.11n 40 MHz	45
Plot 4-30:	Peak Power Spectral Density: Channel 48 (5240 MHz, upper) 802.11n 40 MHz	46
Plot 4-31:	Peak Power Spectral Density: Channel 52 (5260 MHz, lower) 802.11n 40 MHz	47
Plot 4-32:	Peak Power Spectral Density: Channel 56 (5280 MHz, lower) 802.11n 40 MHz	48
Plot 4-33:	Peak Power Spectral Density: Channel 64 (5320 MHz, upper) 802.11n 40 MHz	49
Plot 4-34:	Peak Power Spectral Density: Channel 100 (5500 MHz, upper) 802.11n 40 MHz	50
Plot 4-35:	Peak Power Spectral Density: Channel 116 (5580 MHz, lower) 802.11n 40 MHz	51
Plot 4-36:	Peak Power Spectral Density: Channel 140 (5700 MHz, lower) 802.11n 40 MHz	52
Plot 4-37:	Power Spectral Density: Channel 149 (5745 MHz, lower) 802.11n 40 MHz	53
Plot 4-38:	Power Spectral Density: Channel 157 (5785 MHz, lower) 802.11n 40 MHz	54
Plot 4-39:	Power Spectral Density: Channel 165 (5825 MHz, upper) 802.11n 40 MHz	55
Plot 6-1:	Lower Band Edge: Measurement Channel 36 (5180 MHz, 802.11a, Peak)	59
Plot 6-2:	Lower Band Edge: Measurement Channel 36 (5180 MHz, 802.11a, Average)	60
Plot 6-3:	Lower Band Edge: Measurement Channel 36 (5180 MHz, 802.11n, Peak)	61
Plot 6-4:	Lower Band Edge: Measurement Channel 36 (5180 MHz, 802.11n, Average)	62
Plot 6-5:	Lower Band Edge: Measurement Channel 36 (5180 MHz, 40 MHz BW, 802.11a, Peak)	63
Plot 6-6:	Lower Band Edge: Measurement Channel 36 (5180 MHz, 40 MHz BW, 802.11a, Average)	64
Plot 6-7:	Lower Band Edge: Measurement Channel 36 (5180 MHz, 40 MHz BW, 802.11n, Peak)	65
Plot 6-8:	Lower Band Edge: Measurement Channel 36 (5180 MHz, 40 MHz BW, 802.11n, Average)	66
Plot 6-9:	Upper Band Edge: Measurement Channel 64 (5320 MHz, 802.11a, Peak)	67
Plot 6-10:	Upper Band Edge: Measurement Channel 64 (5320 MHz, 802.11a, Average)	68
Plot 6-11:	Upper Band Edge: Measurement Channel 64 (5320 MHz, 802.11n, Peak)	69
Plot 6-12:	Upper Band Edge: Measurement Channel 64 (5320 MHz, 802.11n, Average)	70

Plot 6-13:	Upper Band Edge: Measurement Channel 64 (5320 MHz, 40 MHz BW, 802.11a, Peak)	71
Plot 6-14:	Upper Band Edge: Measurement Channel 64 (5320 MHz, 40 MHz BW, 802.11a, Average)	72
Plot 6-15:	Upper Band Edge: Measurement Channel 64 (5320 MHz, 40 MHz BW, 802.11n, Peak)	73
Plot 6-16:	Upper Band Edge: Measurement Channel 64 (5320 MHz, 40 MHz BW, 802.11n, Average)	74
Plot 6-17:	Lower Band Edge: Measurement Channel 100 (5500 MHz, 802.11a, Peak).....	75
Plot 6-18:	Lower Band Edge: Measurement Channel 100 (5500 MHz, 802.11a, Average)	76
Plot 6-19:	Lower Band Edge: Measurement Channel 100 (5500 MHz, 802.11n, Peak).....	77
Plot 6-20:	Lower Band Edge: Measurement Channel 100 (5500 MHz, 802.11n, Average)	78
Plot 6-21:	Lower Band Edge: Measurement Channel 100 (5500 MHz, 40 MHz BW, 802.11a, Peak) ..	79
Plot 6-22:	Lower Band Edge: Measurement Channel 100 (5500 MHz, 40 MHz BW, 802.11a, Average) .	80
Plot 6-23:	Lower Band Edge: Measurement Channel 100 (5500 MHz, 40 MHz BW, 802.11n, Peak) ..	81
Plot 6-24:	Lower Band Edge: Measurement Channel 100 (5500 MHz, 40 MHz BW, 802.11n, Average) .	82
Plot 6-25:	Upper Band Edge: Measurement Channel 140 (5700 MHz, 802.11a, Peak).....	83
Plot 6-26:	Upper Band Edge: Measurement Channel 140 (5700 MHz, 802.11a, Average)	84
Plot 6-27:	Upper Band Edge: Measurement Channel 140 (5700 MHz, 802.11n, Peak).....	85
Plot 6-28:	Upper Band Edge: Measurement Channel 140 (5700 MHz, 802.11n, Average)	86
Plot 6-29:	Upper Band Edge: Measurement Channel 140 (5700 MHz, 40 MHz BW, 802.11a, Peak) ..	87
Plot 6-30:	Upper Band Edge: Measurement Channel 140 (5700 MHz, 40 MHz BW, 802.11a, Average) .	88
Plot 6-31:	Upper Band Edge: Measurement Channel 140 (5700 MHz, 40 MHz BW, 802.11n, Peak) ..	89
Plot 6-32:	Upper Band Edge: Measurement Channel 140 (5700 MHz, 40 MHz BW, 802.11n, Average) .	90
Plot 6-33:	Lower Band Edge: Measurement Channel 149 (5745 MHz, 802.11a, Peak).....	91
Plot 6-34:	Lower Band Edge: Measurement Channel 149 (5745 MHz, 802.11a, Average)	92
Plot 6-35:	Lower Band Edge: Measurement Channel 149 (5745 MHz, 802.11n, Peak).....	93
Plot 6-36:	Lower Band Edge: Measurement Channel 149 (5745 MHz, 802.11n, Average)	94
Plot 6-37:	Lower Band Edge: Measurement Channel 149 (5745 MHz, 40 MHz BW, 802.11a, Peak) ..	95
Plot 6-38:	Lower Band Edge: Measurement Channel 149 (5745 MHz, 40 MHz BW, 802.11a, Average) .	96
Plot 6-39:	Lower Band Edge: Measurement Channel 149 (5745 MHz, 40 MHz BW, 802.11n, Peak) ..	97
Plot 6-40:	Lower Band Edge: Measurement Channel 149 (5745 MHz, 40 MHz BW, 802.11n, Average) .	98
Plot 6-41:	Upper Band Edge: Measurement Channel 165 (5825 MHz, 802.11a, Peak).....	99
Plot 6-42:	Upper Band Edge: Measurement Channel 165 (5825 MHz, 802.11a, Average)	100
Plot 6-43:	Upper Band Edge: Measurement Channel 165 (5825 MHz, 802.11n, Peak).....	101
Plot 6-44:	Upper Band Edge: Measurement Channel 165 (5825 MHz, 802.11n, Average)	102
Plot 6-45:	Upper Band Edge: Measurement Channel 165 (5825 MHz, 40 MHz BW, 802.11a, Peak) 103	
Plot 6-46:	Upper Band Edge: Measurement Channel 165 (5825 MHz, 40 MHz BW, 802.11a, Average) .	104
Plot 6-47:	Upper Band Edge: Measurement Channel 165 (5825 MHz, 40 MHz BW, 802.11n, Peak) 105	
Plot 6-48:	Upper Band Edge: Measurement Channel 165 (5825 MHz, 40 MHz BW, 802.11n, Average) .	106
Plot 7-1:	Undesirable Emissions Channel 36 (5180 MHz); 9 kHz – 150 kHz.....	108
Plot 7-2:	Undesirable Emissions Channel 36 (5180 MHz); 150 kHz – 30 MHz	109
Plot 7-3:	Undesirable Emissions Channel 36 (5180 MHz);	110
Plot 7-4:	Undesirable Emissions Channel 40 (5200 MHz)	111
Plot 7-5:	Undesirable Emissions Channel 44 (5220 MHz)	112
Plot 7-6:	Undesirable Emissions Channel 48 (5240 MHz)	113
Plot 7-7:	Undesirable Emissions Channel 52 (5260 MHz)	114
Plot 7-8:	Undesirable Emissions Channel 56 (5280 MHz)	115
Plot 7-9:	Undesirable Emissions Channel 64 (5320 MHz)	116
Plot 7-10:	Undesirable Emissions Channel 100 (5500 MHz)	117

Plot 7-11:	Undesirable Emissions Channel 116 (5580 MHz)	118
Plot 7-12:	Undesirable Emissions Channel 140 (5700 MHz)	119
Plot 7-13:	Undesirable Emissions Channel 149 (5745 MHz)	120
Plot 7-14:	Undesirable Emissions Channel 157(5785 MHz)	121
Plot 7-15:	Undesirable Emissions Channel 165 (5825 MHz)	122
Plot 8-1:	26 dB Bandwidth Channel 36 (TX Frequency 5180 MHz) - 802.11a	127
Plot 8-2:	26 dB Bandwidth Channel 40 (TX Frequency 5200 MHz) - 802.11a	128
Plot 8-3:	26 dB Bandwidth Channel 44(TX Frequency 5220 MHz) - 802.11a	129
Plot 8-4:	26 dB Bandwidth Channel 48 (TX Frequency 5240 MHz) - 802.11a	130
Plot 8-5:	26 dB Bandwidth Channel 52 (TX Frequency 5260 MHz) - 802.11a	131
Plot 8-6:	26 dB Bandwidth Channel 56 (TX Frequency 5280 MHz) - 802.11a	132
Plot 8-7:	26 dB Bandwidth Channel 64 (TX Frequency 5320 MHz) - 802.11a	133
Plot 8-8:	26 dB Bandwidth Channel 100 (TX Frequency 5500 MHz) - 802.11a	134
Plot 8-9:	26 dB Bandwidth Channel 116 (TX Frequency 5580 MHz) - 802.11a	135
Plot 8-10:	26 dB Bandwidth Channel 140 (TX Frequency 5700 MHz) - 802.11a	136
Plot 8-11:	26 dB Bandwidth Channel 149 (TX Frequency 5745 MHz) - 802.11a	137
Plot 8-12:	26 dB Bandwidth Channel 157 (TX Frequency 5785 MHz) - 802.11a	138
Plot 8-13:	26 dB Bandwidth Channel 165 (TX Frequency 5825 MHz) - 802.11a	139
Plot 8-14:	26 dB Bandwidth Channel 36 (TX Frequency 5180 MHz) - 802.11n	140
Plot 8-15:	26 dB Bandwidth Channel 40 (TX Frequency 5200 MHz) - 802.11n	141
Plot 8-16:	26 dB Bandwidth Channel 44 (TX Frequency 5220 MHz) - 802.11n	142
Plot 8-17:	26 dB Bandwidth Channel 48 (TX Frequency 5240 MHz) - 802.11n	143
Plot 8-18:	26 dB Bandwidth Channel 52 (TX Frequency 5260 MHz) - 802.11n	144
Plot 8-19:	26 dB Bandwidth Channel 56 (TX Frequency 5280 MHz) - 802.11n	145
Plot 8-20:	26 dB Bandwidth Channel 64 (TX Frequency 5320 MHz) - 802.11n	146
Plot 8-21:	26 dB Bandwidth Channel 100 (TX Frequency 5500 MHz) - 802.11n	147
Plot 8-22:	26 dB Bandwidth Channel 116 (TX Frequency 5580 MHz) - 802.11n	148
Plot 8-23:	26 dB Bandwidth Channel 140 (TX Frequency 5700 MHz) - 802.11n	149
Plot 8-24:	26 dB Bandwidth Channel 149 (TX Frequency 5745 MHz) - 802.11n	150
Plot 8-25:	26 dB Bandwidth Channel 157 (TX Frequency 5785 MHz) - 802.11n	151
Plot 8-26:	26 dB Bandwidth Channel 165 (TX Frequency 5825 MHz) - 802.11n	152
Plot 8-27:	26 dB Bandwidth (Frequency 5190 MHz) - 802.11a (40 MHz BW, 36 Mbps)	153
Plot 8-28:	26 dB Bandwidth (Frequency 5210 MHz) - 802.11a (40 MHz BW, 36 Mbps)	154
Plot 8-29:	26 dB Bandwidth (Frequency 5230 MHz) - 802.11a (40 MHz BW, 36 Mbps)	155
Plot 8-30:	26 dB Bandwidth (Frequency 5250 MHz) - 802.11a (40 MHz BW, 36 Mbps)	156
Plot 8-31:	26 dB Bandwidth (Frequency 5270 MHz) - 802.11a (40 MHz BW, 36 Mbps)	157
Plot 8-32:	26 dB Bandwidth (Frequency 5290 MHz) - 802.11a (40 MHz BW, 36 Mbps)	158
Plot 8-33:	26 dB Bandwidth (Frequency 5330 MHz) - 802.11a (40 MHz BW, 36 Mbps)	159
Plot 8-34:	26 dB Bandwidth (Frequency 5510 MHz) - 802.11a (40 MHz BW, 36 Mbps)	160
Plot 8-35:	26 dB Bandwidth (Frequency 5590 MHz) - 802.11a (40 MHz BW, 36 Mbps)	161
Plot 8-36:	26 dB Bandwidth (Frequency 5690 MHz) - 802.11a (40 MHz BW, 36 Mbps)	162
Plot 8-37:	26 dB Bandwidth (Frequency 5755 MHz) - 802.11a (40 MHz BW, 36 Mbps)	163
Plot 8-38:	26 dB Bandwidth (Frequency 5795 MHz) - 802.11a (40 MHz BW, 36 Mbps)	164
Plot 8-39:	26 dB Bandwidth (Frequency 5815 MHz) - 802.11a (40 MHz BW, 36 Mbps)	165
Plot 8-40:	26 dB Bandwidth (Frequency 5190 MHz) - 802.11n (40 MHz BW)	166
Plot 8-41:	26 dB Bandwidth (Frequency 5210 MHz) - 802.11n (40 MHz BW)	167
Plot 8-42:	26 dB Bandwidth (Frequency 5230 MHz) - 802.11n (40 MHz BW)	168
Plot 8-43:	26 dB Bandwidth (Frequency 5250 MHz) - 802.11n (40 MHz BW)	169
Plot 8-44:	26 dB Bandwidth (Frequency 5270 MHz) - 802.11n (40 MHz BW)	170
Plot 8-45:	26 dB Bandwidth (Frequency 5290 MHz) - 802.11n (40 MHz BW)	171
Plot 8-46:	26 dB Bandwidth (Frequency 5330 MHz) - 802.11n (40 MHz BW)	172
Plot 8-47:	26 dB Bandwidth (Frequency 5510 MHz) - 802.11n (40 MHz BW)	173
Plot 8-48:	26 dB Bandwidth (Frequency 5590 MHz) - 802.11n (40 MHz BW)	174
Plot 8-49:	26 dB Bandwidth (Frequency 5690 MHz) - 802.11n (40 MHz BW)	175

Plot 8-50:	26 dB Bandwidth (Frequency 5755 MHz) - 802.11n (40 MHz BW)	176
Plot 8-51:	26 dB Bandwidth (Frequency 5795 MHz) - 802.11n (40 MHz BW)	177
Plot 8-52:	26 dB Bandwidth (Frequency 5815 MHz) - 802.11n (40 MHz BW)	178
Plot 8-53:	6 dB Bandwidth Channel 149 (TX Frequency 5745 MHz) - 802.11a.....	179
Plot 8-54:	6 dB Bandwidth Channel 157 (TX Frequency 5785 MHz) - 802.11a.....	180
Plot 8-55:	6 dB Bandwidth Channel 165 (TX Frequency 5825 MHz) - 802.11a.....	181
Plot 8-56:	6 dB Bandwidth Channel 149 (TX Frequency 5745 MHz) - 802.11n.....	182
Plot 8-57:	6 dB Bandwidth Channel 157 (TX Frequency 5785 MHz) - 802.11n.....	183
Plot 8-58:	6 dB Bandwidth Channel 165 (TX Frequency 5825 MHz) - 802.11n.....	184

Appendix Index

Appendix A:	Test Configuration Photographs	191
-------------	--------------------------------------	-----

Photograph Index

Photograph 1:	Radiated Emissions Testing – Front View	191
Photograph 2:	Radiated Emissions Testing – Back View.....	192

1 General Information

1.1 Scope

This is an original FCC and Industry Canada certification application report.

Applicable Standards:

- FCC Rules Part 15E: Unlicensed National Information Infrastructure Devices
- Industry Canada RSS-247: Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and License Exempt Local Area Network (LE-LAN) Devices

1.2 Description of EUT

The EUT is a slave/client device with no ad-hoc capabilities.

Equipment Under Test	XL-200P (International) Multi-Band Portable Radio
Power Supply	7.4 VDC LI-ion Battery
Modulation Type	DSSS
Transfer Rate	1, 2, 5.5, 6, 6.5, 9, 11, 12, 13, 13.5, 18, 19.5, 24, 26, 27, 36, 39, 40.5, 48, 52, 54, 58.5, 65, 81, 108, 121.5, 135
Frequency Range	5180 – 5320 MHz; 5500 – 5700 MHz; 5745 - 5825 MHz
Antenna Connector Type	N/A
Antenna Type	Internal chip (-1 to 1 dBi gain)

1.3 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located at 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report and approved by the Federal Communications Commission to perform AC line conducted and radiated emissions testing.

1.4 Related Submittal(s)/Grant(s)

This report supports a certification application for Harris Corporation Model XL-200P (International), FCC ID: OWDTR-0145-E, IC: 3636B-0145 - a family certification including 8 model numbers:

XL-PFM2M	XL-PFM2Y	XL-PFM2B	XL-PFM2G
XL-PPM2M	XL-PPM2Y	XL-PPM2B	XL-PPM2G

1.5 Modifications

No modifications were required for compliance.

2 Test Information

2.1 Description of Test Modes

In accordance with FCC 15.31(m), and because the EUT utilizes an operating band greater than 10 MHz, the following frequencies were tested:

Table 2-1: Channels Tested - 802.11a/n

Channel	Frequency (MHz)
36	5180
40	5200
44	5220
48	5240
52	5260
56	5280
64	5320
100	5500
116	5580
140	5700
149	5745
157	5785
165	5825

2.2 Exercising the EUT

The EUT was tested in all three orthogonal planes in order to determine worst-case emissions. The EUT was provided with software to continuously transmit during testing. The carrier was also checked to verify that information was being transmitted. There were no deviations from the test standard(s) and/or methods. The test results reported relate only to the item tested.

2.3 Test Result Summary

Table 2-2: Test Result Summary – FCC Part 15, Subpart E (Section 15.407); RSS-247

Test	FCC Reference	IC Reference	Result
AC Power Conducted Emissions	FCC 15.207	RSS-Gen 8.8	N/A
Radiated Emissions	FCC 15.209	RSS-Gen 6.13/7.1	Pass
Maximum Conducted Output Power	FCC 15.407(a/1/2/3)	RSS-247 6.2	Pass
Peak Power Spectral Density Measurement	FCC 15.407(a/1/2/3)	RSS-247 6.2	Pass
Frequency Stability Measurement	FCC 15.407(g)	RSS-247 6.2	Pass
Compliance With the Band Edge	FCC 15.407(7), 15.205	RSS-247 6.2	Pass
Antenna Conducted Spurious Emissions	FCC 15.407(6)	RSS-247 6.2	Pass
26 dB and 6dB Bandwidth	FCC 15.407(a) and (e)	RSS-247 6.2	Pass

2.4 Test System Details

The test sample was received on December 16, 2014 / December 18, 2015. Listed below are the identifiers and descriptions of all equipment, cables, and internal devices used with the EUT for this test, as applicable.

The EUT includes a System model and a Scan model, the difference being that the System model has a DTMF keypad. The System model is considered to be representative of the radio family and to have the worst case emissions, and was therefore used for testing.

The device was programmed for multiple modes of operation and modulation types.

Table 2-3: Equipment Under Test (EUT)

Part	Manufacturer	Model #	PN/SN	FCC ID	RTL Bar Code
Radio	Harris Corporation	XL-PFM2M (System)	14035-1000-51/A40304000045	OWDTR-0145-E	21965

Part	Manufacturer	Model	Serial Number	FCC ID	Cable Description	RTL Bar Code
Portable Transceiver	Harris Corporation	XL-200P (System)	1Y1D-E00067	OWDTR-0145-E	N/A	21269
Portable Transceiver with connector	Harris Corporation	XL-200P (System)	0WXD-E00239	OWDTR-0145-E	N/A	21269

Table 2-4: Support Equipment

Part	Manufacturer	Model	Serial Number	FCC ID	Cable Description	RTL Bar Code
Battery Eliminator	Harris Corporation	14035-4300-01	N/A	N/A	1m unshielded	21553
Breakout Box	Harris Corporation	12082-7980-01	N/A	N/A	2m USB, 1m serial radio interface	20599

2.5 Configuration of Tested System

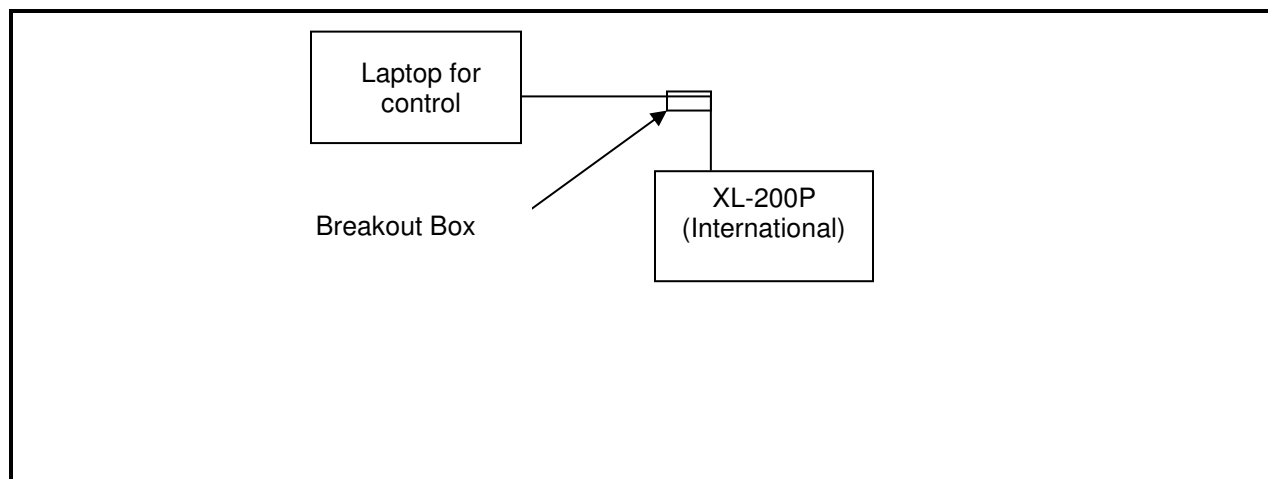


Figure 2-1: Configuration of System Under Test

3 Transmit Power Measurement – FCC 15.407(a/1/2/3); RSS-247 6.2

3.1 Power Output Test Procedure

Method SA-1 789033 D02 General UNII Test Procedures v01

Table 3-1: Power Output Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	FSU	Spectrum Analyzer	1166.1660.50	11/13/15

3.2 Power Output Test Data

Table 3-2: Power Output Test Data

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)
36	5180	11.8
40	5200	11.2
44	5220	11.2
48	5240	11.1
52	5260	10.9
56	5280	10.7
64	5320	10.2
100	5500	10.1
116	5580	9.4
140	5700	9.3
149	5745	9.1
157	5785	9.2
165	5825	9.2

3.3 Limits of Maximum Transmit Power Measurement

Frequency Band	Limit
5.15-5.25 GHz	250 mW (24 dBm)
5.25-5.35 GHz	The lesser of 250 mW (24 dBm) or 11 dBm+10logB
5.725-5.825 GHz	1 W (30 dBm)

Test Personnel:

Daniel W. Baltzell		June 2, 2015
Test Engineer	Signature	Date of Test

4 Peak Power Spectral Density Measurement – FCC 15.407(a) 1-5; RSS-247 6.2

4.1 Limits of Peak Power Spectral Density

Frequency Band	Limit
5.15-5.725 GHz (1 MHz BW)	11 dBm
5.725-5.85 GHz (500 kHz BW)	30 dBm

4.2 Peak Power Spectral Density Measurement Test Procedure

FCC 789033 D02 II.F. Maximum Power Spectral Density (PSD)

The transmitter output was connected to a spectrum analyzer; for 5150-5725 MHz the RBW was set to 1 MHz and the VBW was set to 5 MHz, and for 5725-5850 MHz the RBW was set to 500 kHz. Method SA-1: RMS detector, 100 traces in power averaging, video trigger set to trigger on full power pulses, and auto sweep time were used. The highest level PPSD was measured across the emission.

Table 4-1: Peak Power Spectral Density Measurement Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	FSU	Spectrum Analyzer	1166.1660.50	11/13/15

4.3 Peak Power Spectral Density Test Data

Table 4-2: Peak Power Spectral Density Test Data - 802.11a 54 Mbps

Channel	Frequency (MHz)	RF Power Level in 1 MHz BW (dBm)	Maximum Limit (dBm)	Pass/Fail
36	5180	3.7	11	Pass
40	5200	3.8	11	Pass
44	5220	4.1	11	Pass
48	5240	3.7	11	Pass
52	5260	3.1	11	Pass
56	5280	3.2	11	Pass
64	5320	2.9	11	Pass
100	5500	2.0	11	Pass
116	5580	1.9	11	Pass
140	5700	1.8	11	Pass
Channel	Frequency (MHz)	RF Power Level in 500 kHz (dBm)	Maximum Limit (dBm)	Pass/Fail
149	5745	-1.2	30	Pass
157	5785	-1.4	30	Pass
165	5825	-1.6	30	Pass

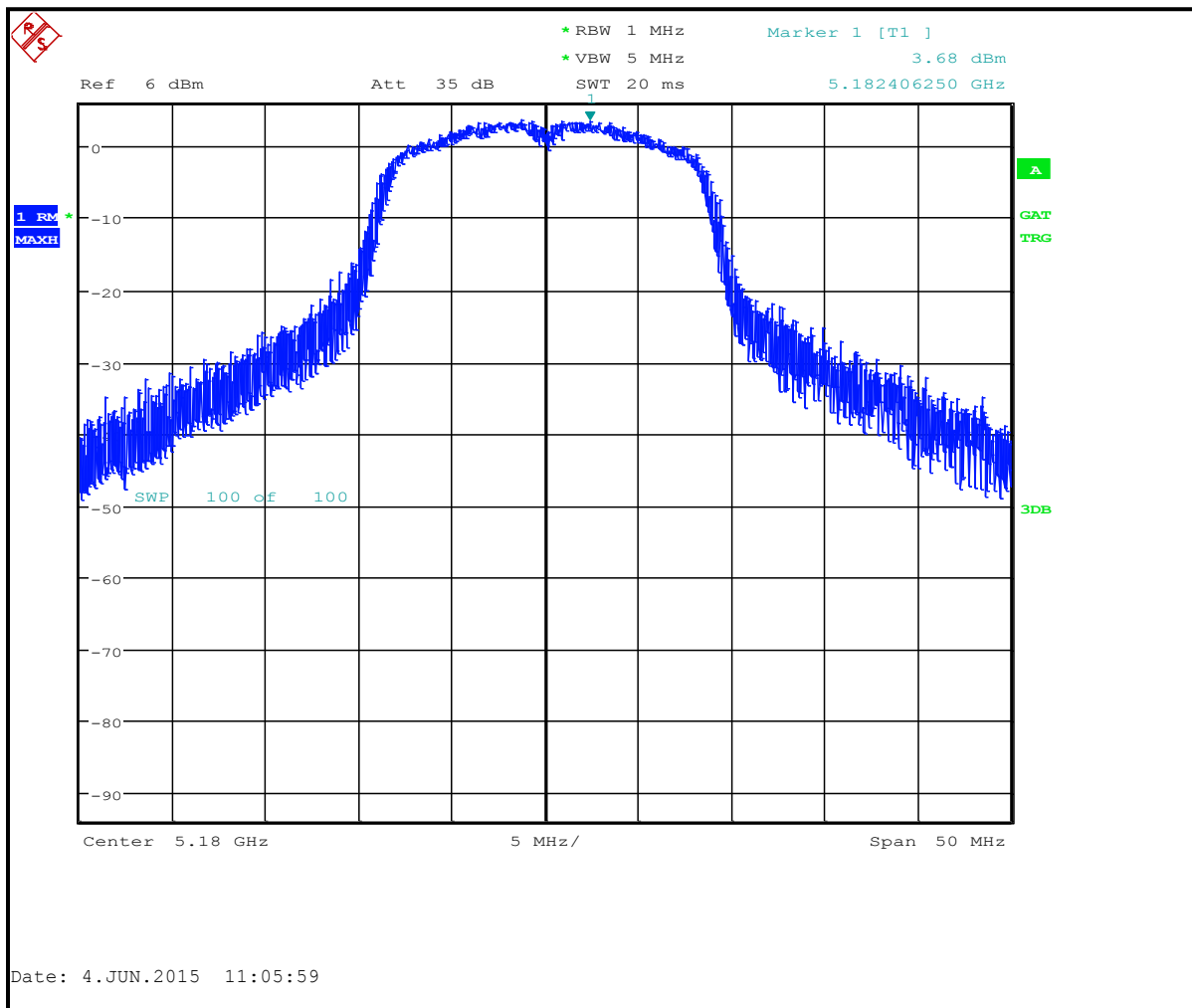
Table 4-3: Power Spectral Density Test Data – 802.11n (65 Mbps)

Channel	Frequency (MHz)	RF Power Level in 1MHz BW (dBm)	Maximum Limit (dBm)	Pass/Fail
36	5180	0.1	11	Pass
40	5200	1.5	11	Pass
44	5220	1.7	11	Pass
48	5240	1.3	11	Pass
52	5260	0.9	11	Pass
56	5280	1.2	11	Pass
64	5320	0.9	11	Pass
100	5500	-0.5	11	Pass
116	5580	-1.0	11	Pass
140	5700	-0.9	11	Pass
Channel	Frequency (MHz)	RF Power Level in 500 kHz (dBm)	Maximum Limit (dBm)	Pass/Fail
149	5745	-1.5	30	Pass
157	5785	-2.4	30	Pass
165	5825	-2.3	30	Pass

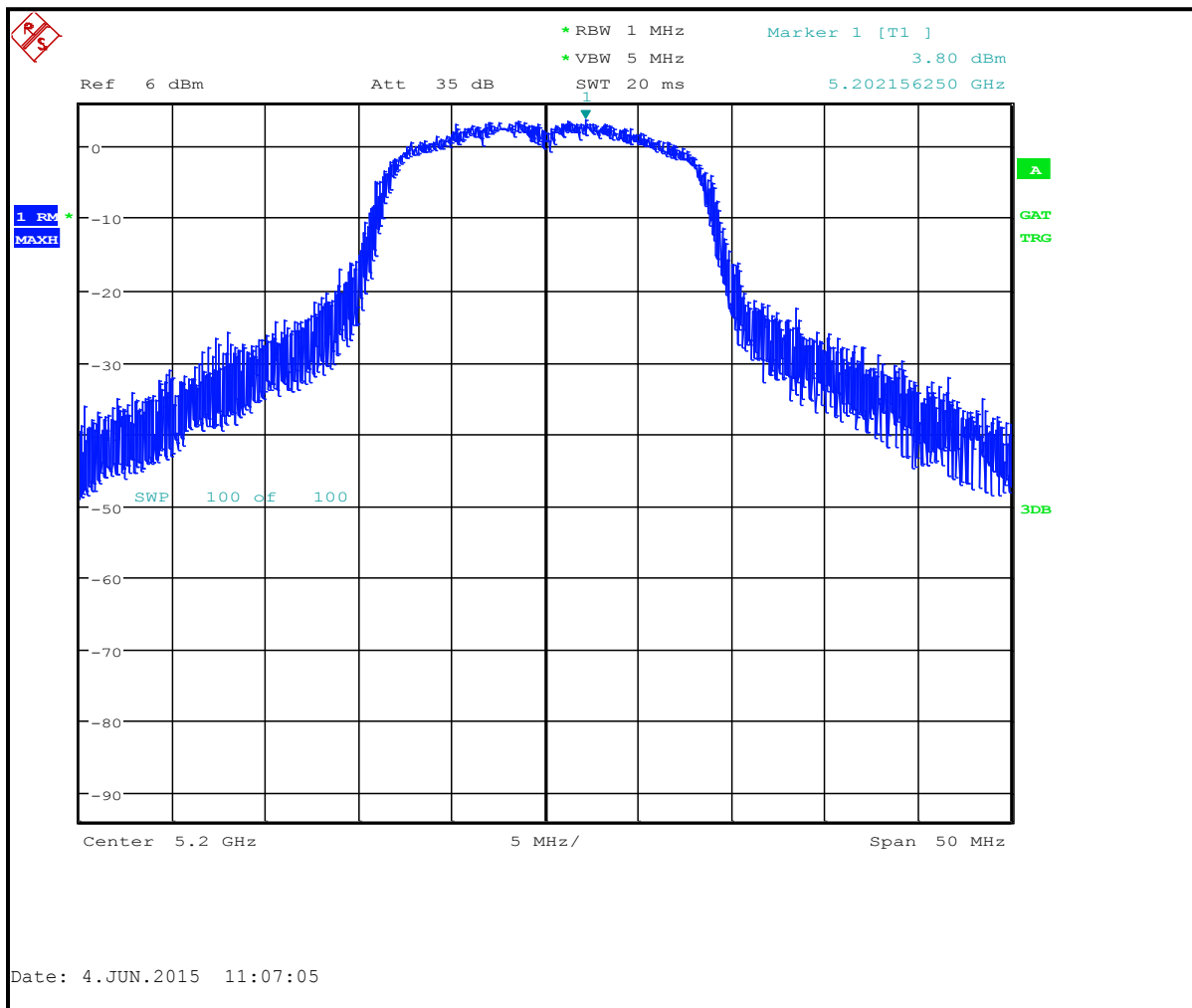
Table 4-4: Power Spectral Density Test Data – 802.11n (40 MHz BW)

Channel	Frequency (MHz)	RF Power Level in 1 MHz BW (dBm)	Maximum Limit (dBm)	Pass/Fail
36	5180	1.5	11	Pass
40	5200	1.2	11	Pass
44	5220	1.4	11	Pass
48	5240	1.0	11	Pass
52	5260	1.2	11	Pass
56	5280	0.6	11	Pass
64	5320	0.7	11	Pass
100	5500	-1.1	11	Pass
116	5580	-1.8	11	Pass
140	5700	-1.7	11	Pass
Channel	Frequency (MHz)	RF Power Level in 500 kHz (dBm)	Maximum Limit (dBm)	Pass/Fail
149	5745	-2.6	30	Pass
157	5785	-2.1	30	Pass
165	5825	-2.5	30	Pass

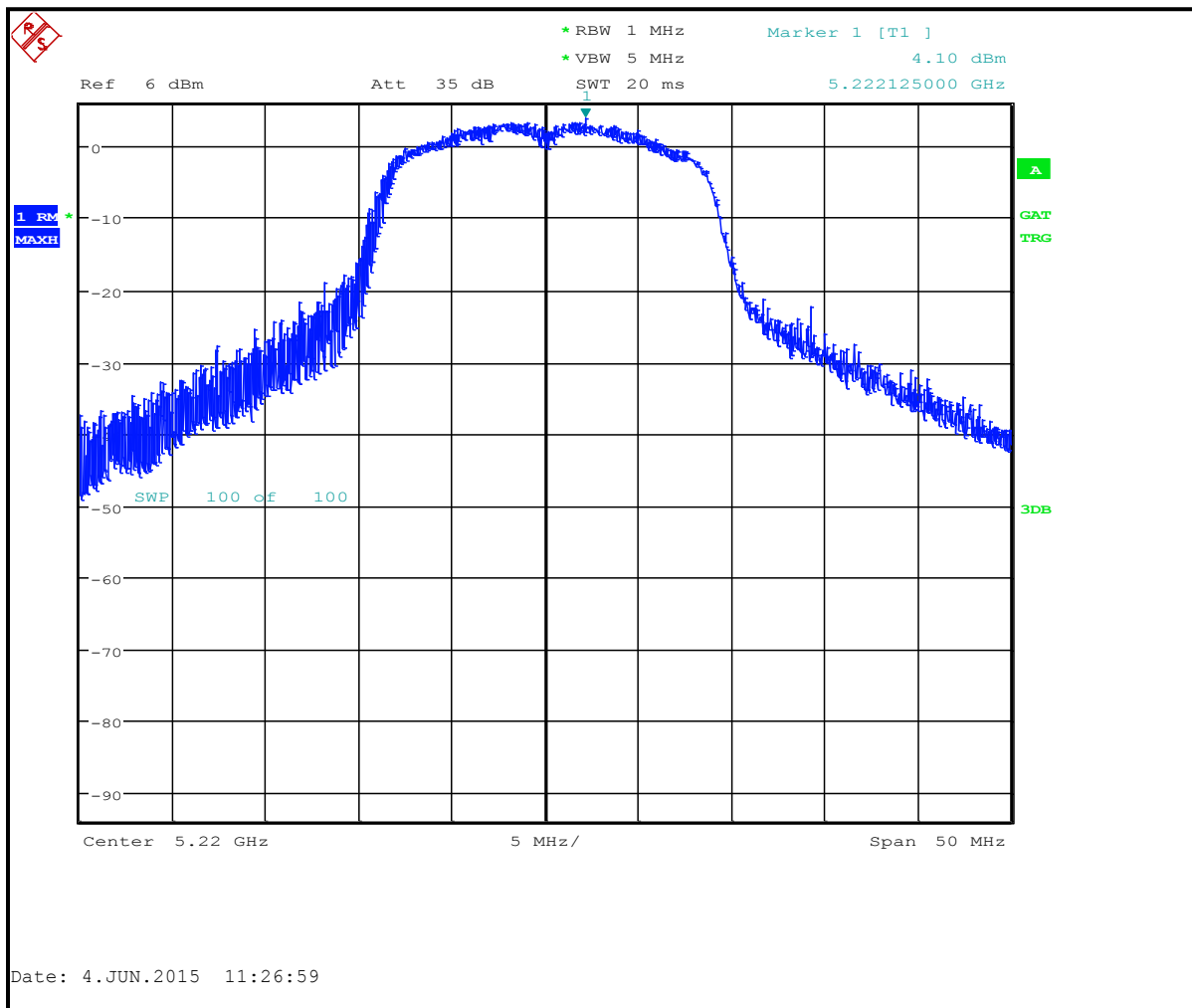
Plot 4-1: Peak Power Spectral Density: Channel 36 (5180 MHz) 802.11a 54 Mbps



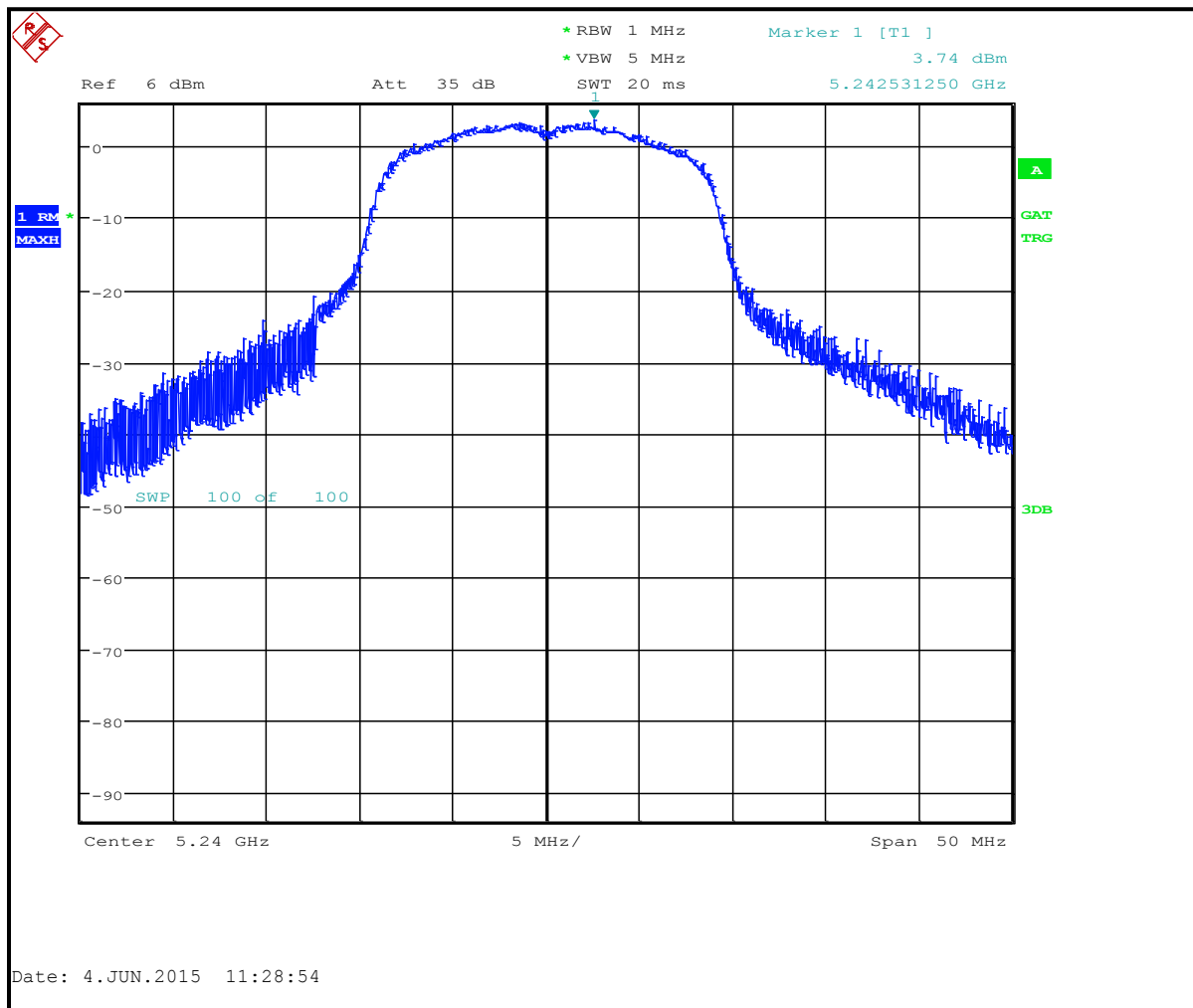
Plot 4-2: Peak Power Spectral Density: Channel 40 (5200 MHz) 802.11a 54 Mbps



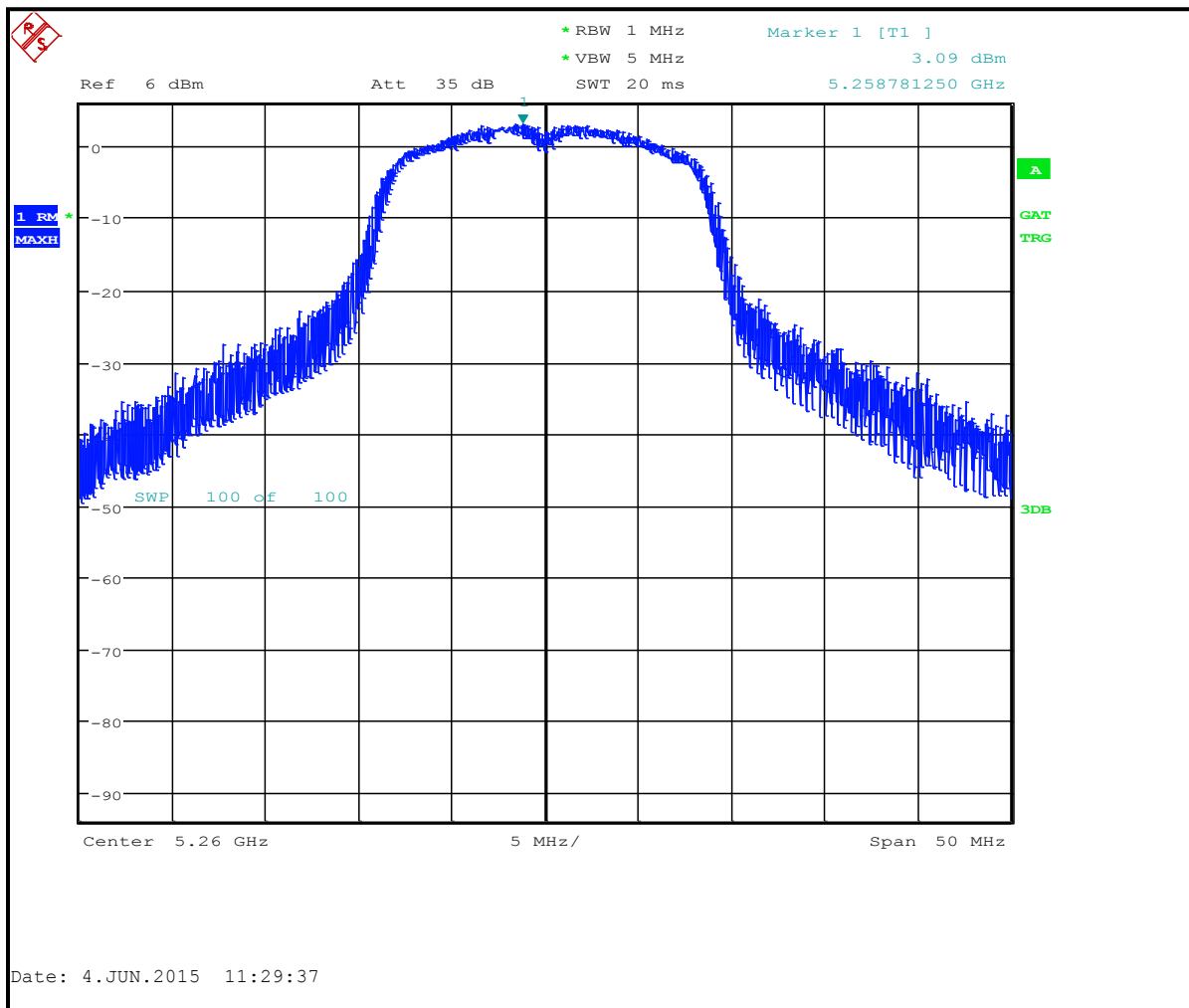
Plot 4-3: Peak Power Spectral Density: Channel 44 (5220 MHz) 802.11a 54 Mbps



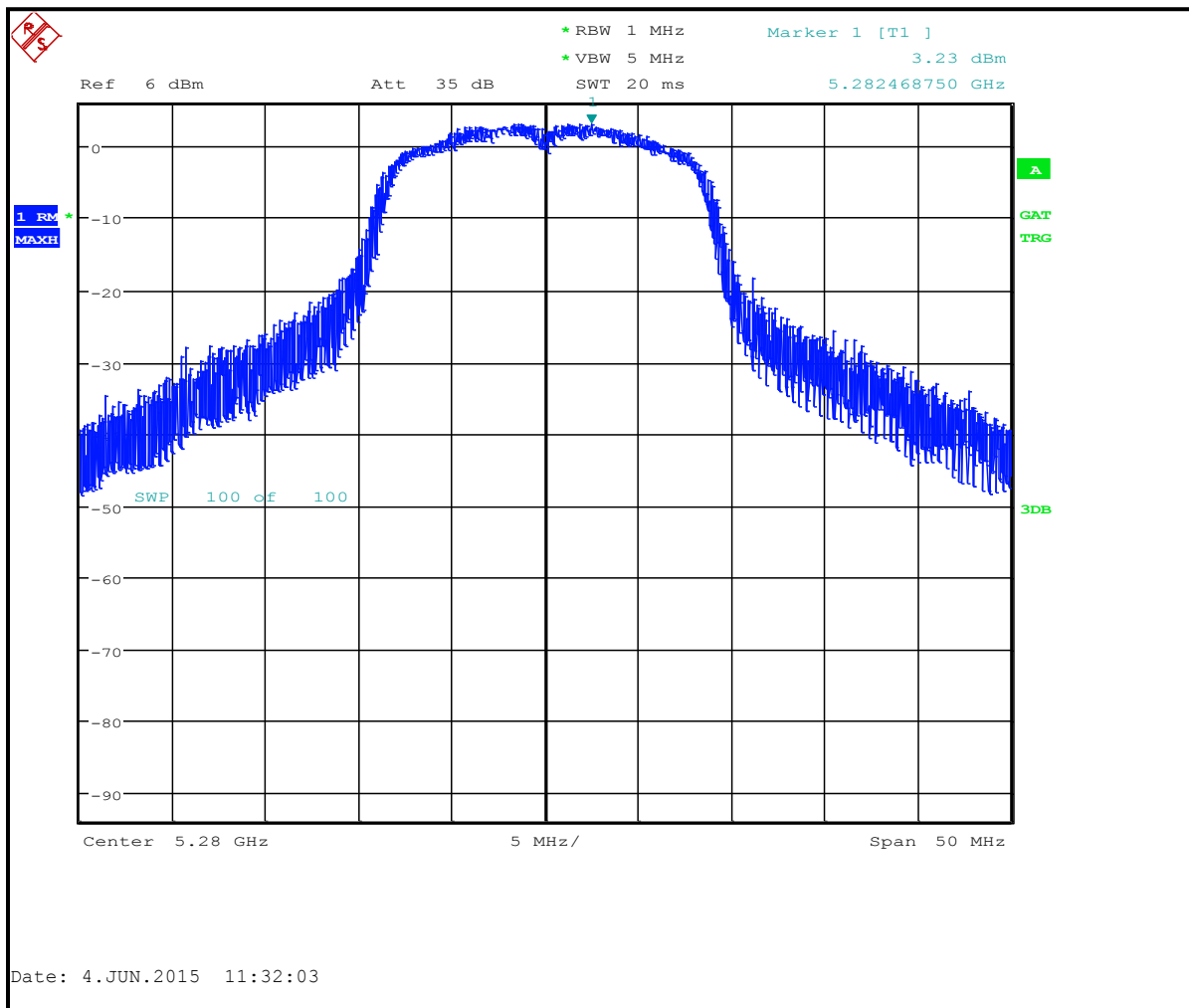
Plot 4-4: Peak Power Spectral Density: Channel 48 (5240 MHz) 802.11a 54 Mbps



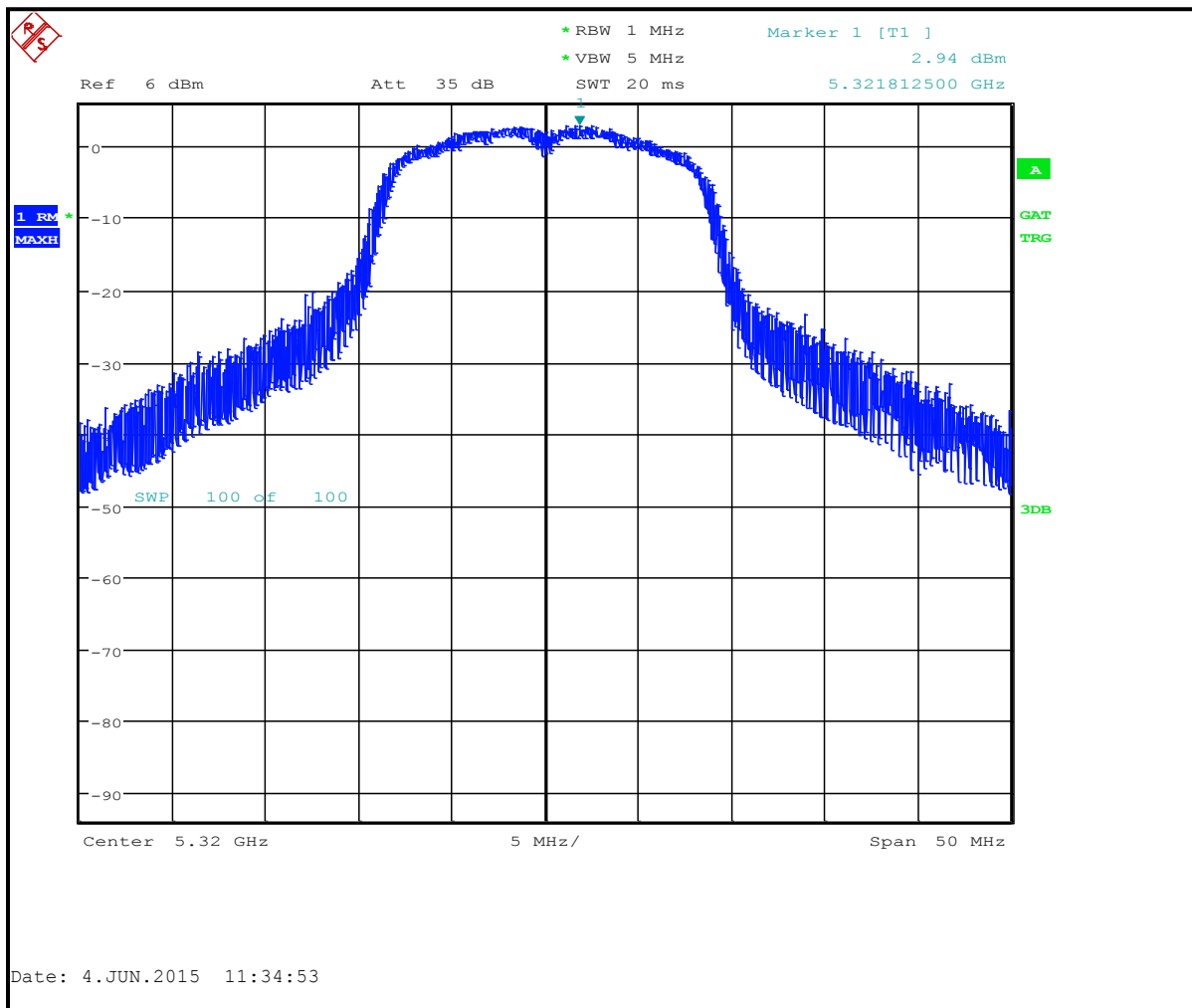
Plot 4-5: Peak Power Spectral Density: Channel 52 (5260 MHz) 802.11a 54 Mbps



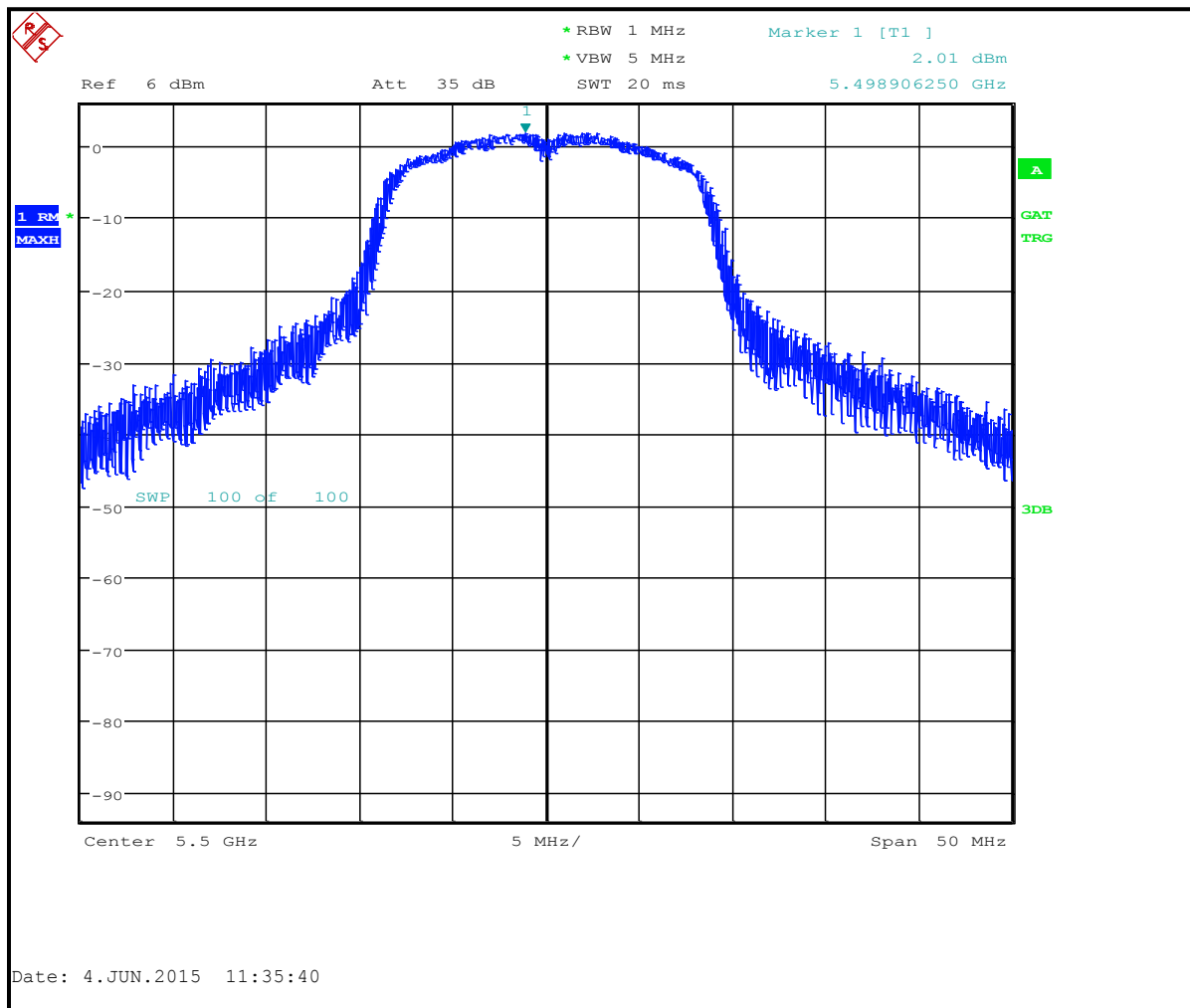
Plot 4-6: Peak Power Spectral Density: Channel 56 (5280 MHz) 802.11a 54 Mbps



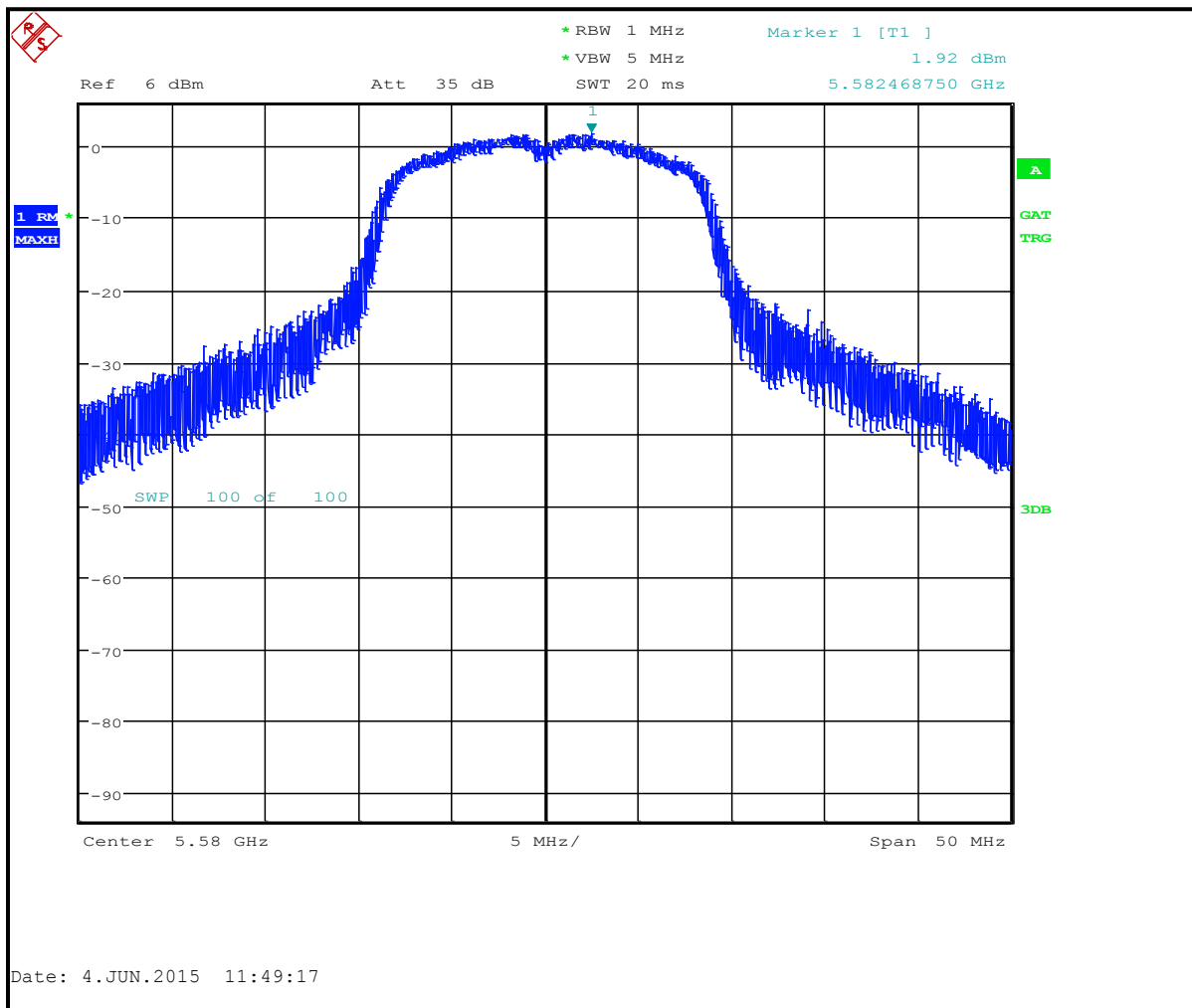
Plot 4-7: Peak Power Spectral Density: Channel 64 (5320 MHz) 802.11a 54 Mbps



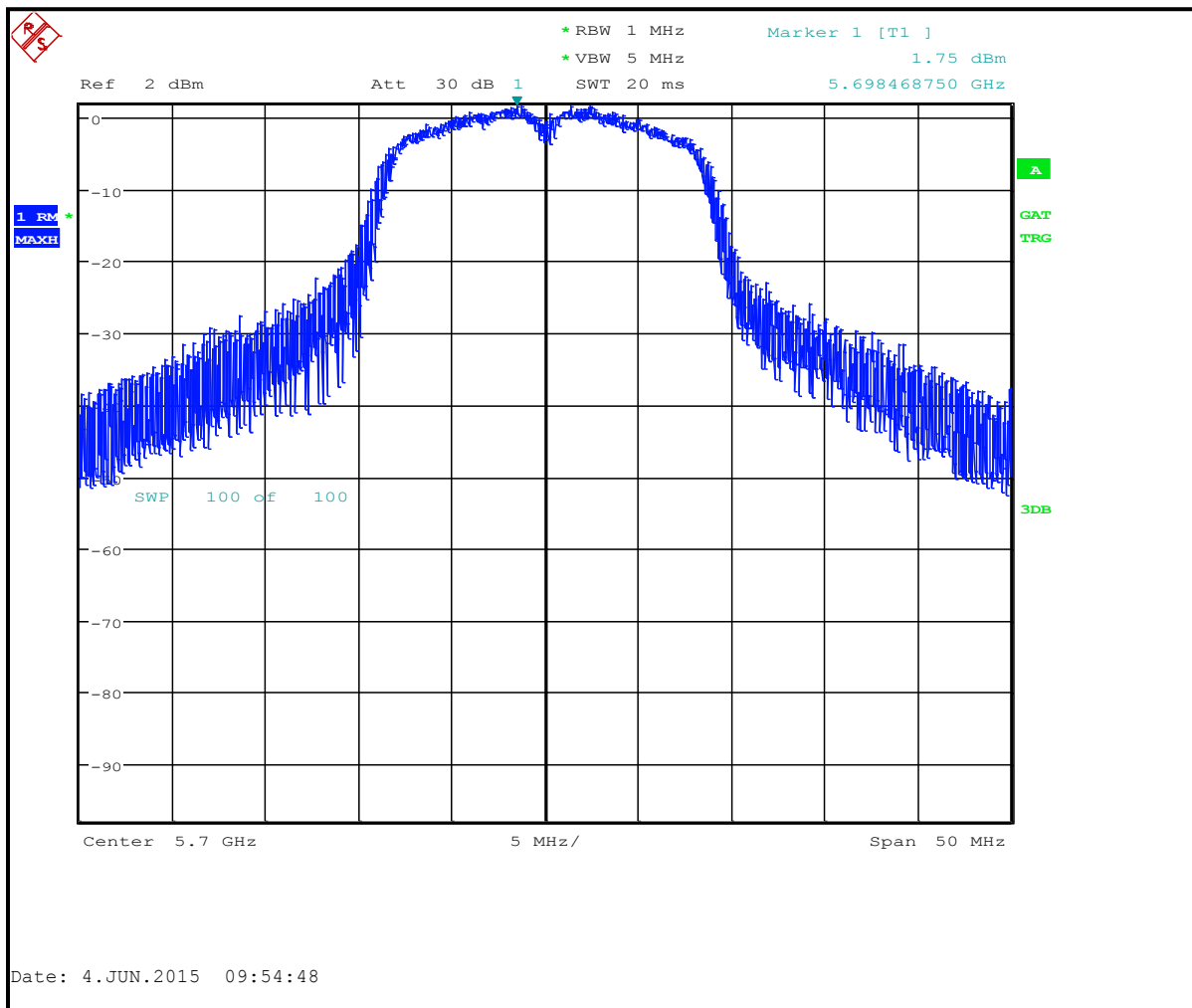
Plot 4-8: Peak Power Spectral Density: Channel 100 (5500 MHz) 802.11a 54 Mbps



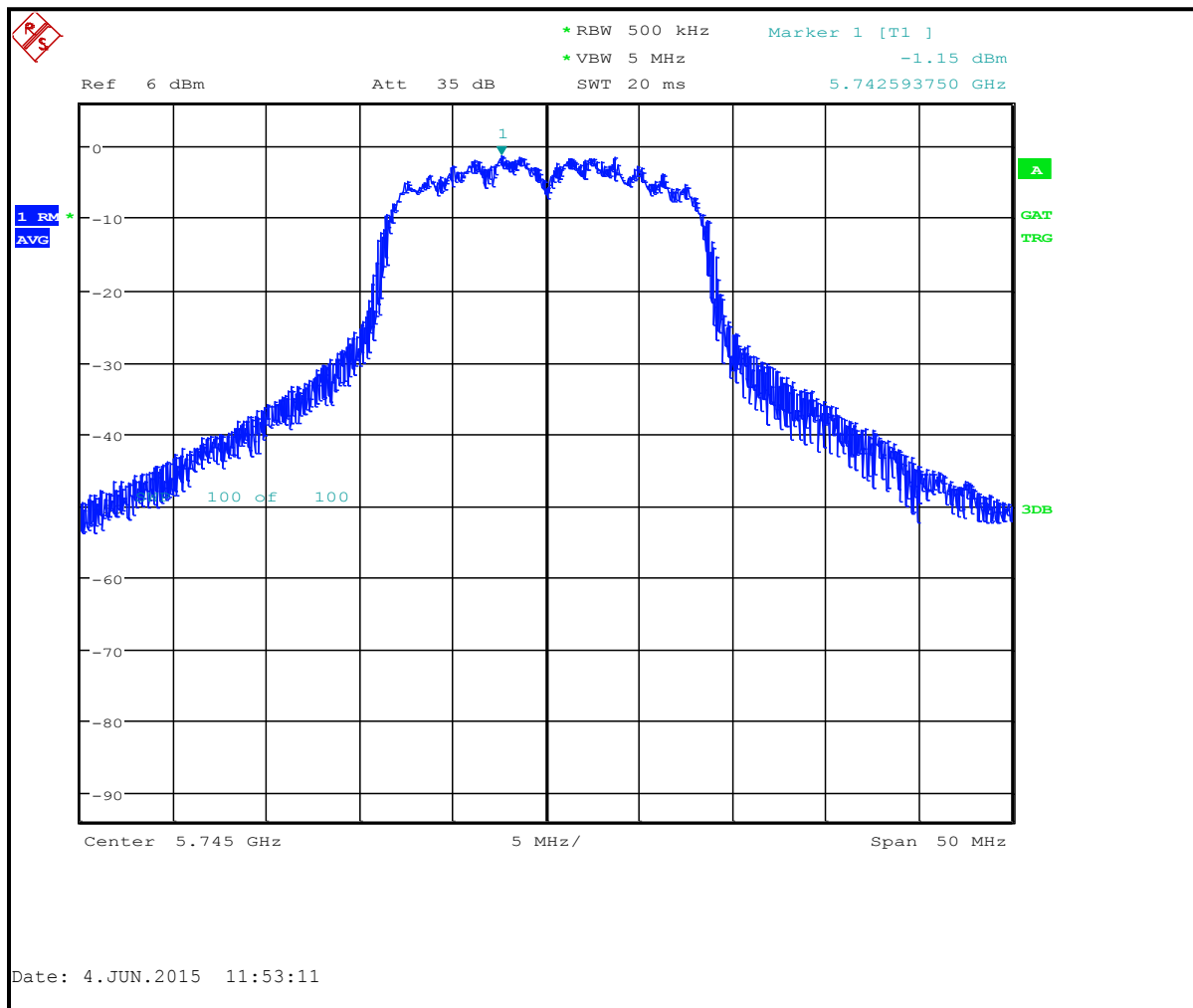
Plot 4-9: Peak Power Spectral Density: Channel 116 (5580 MHz) 802.11a 54 Mbps



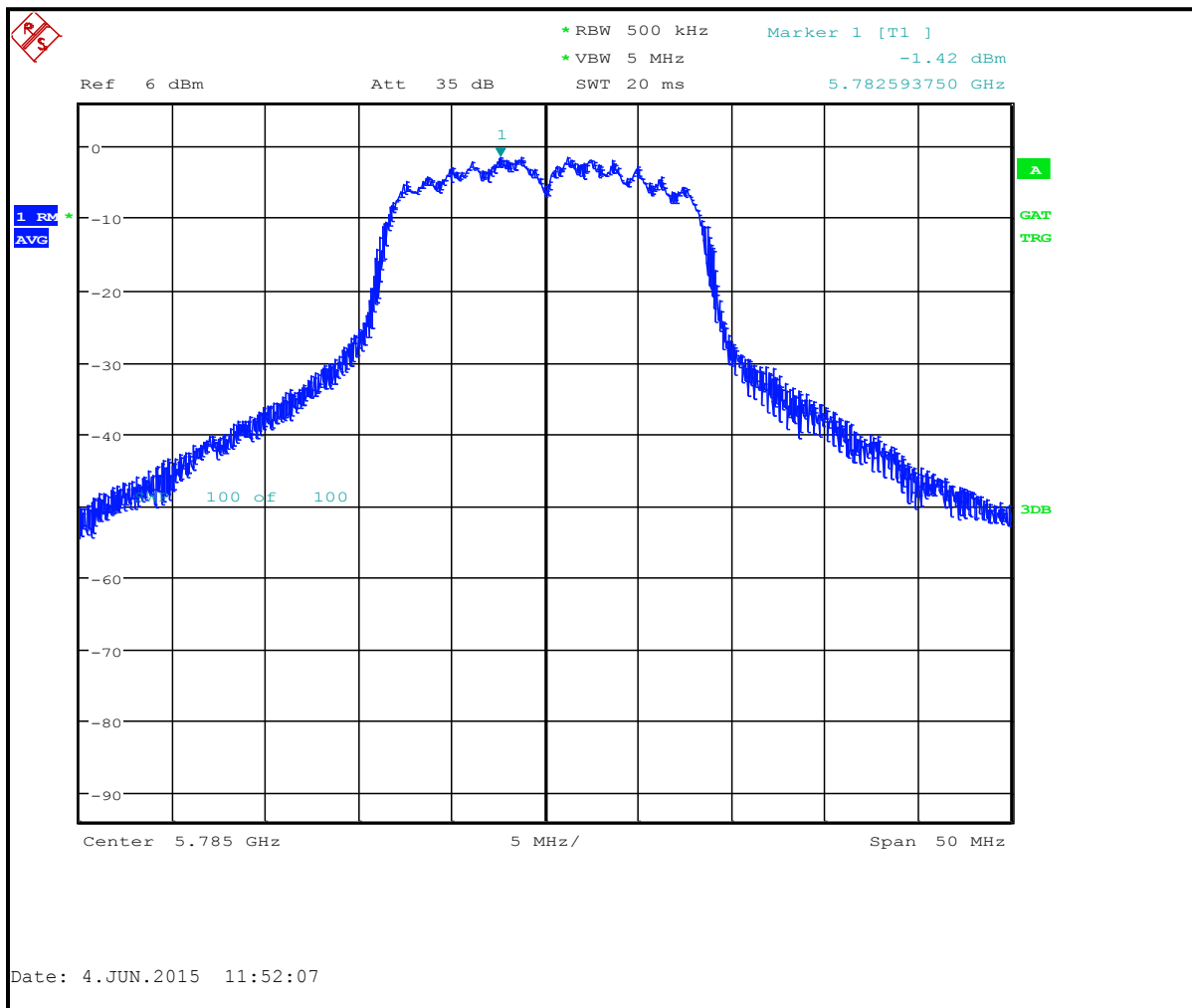
Plot 4-100: Peak Power Spectral Density: Channel 140 (5700 MHz) 802.11a 54 Mbps



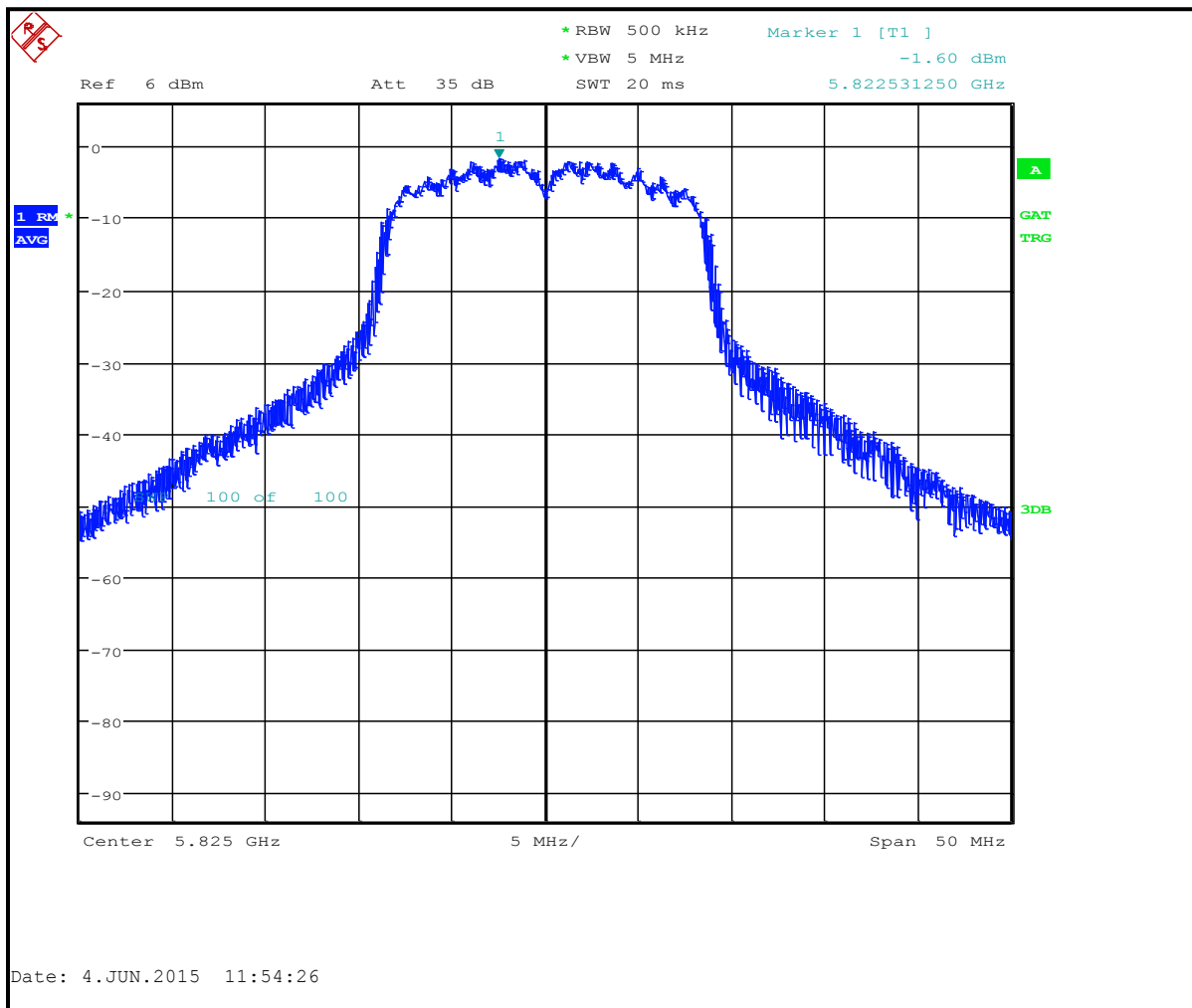
Plot 4-11: Power Spectral Density: Channel 149 (5745 MHz) 802.11a 54 Mbps



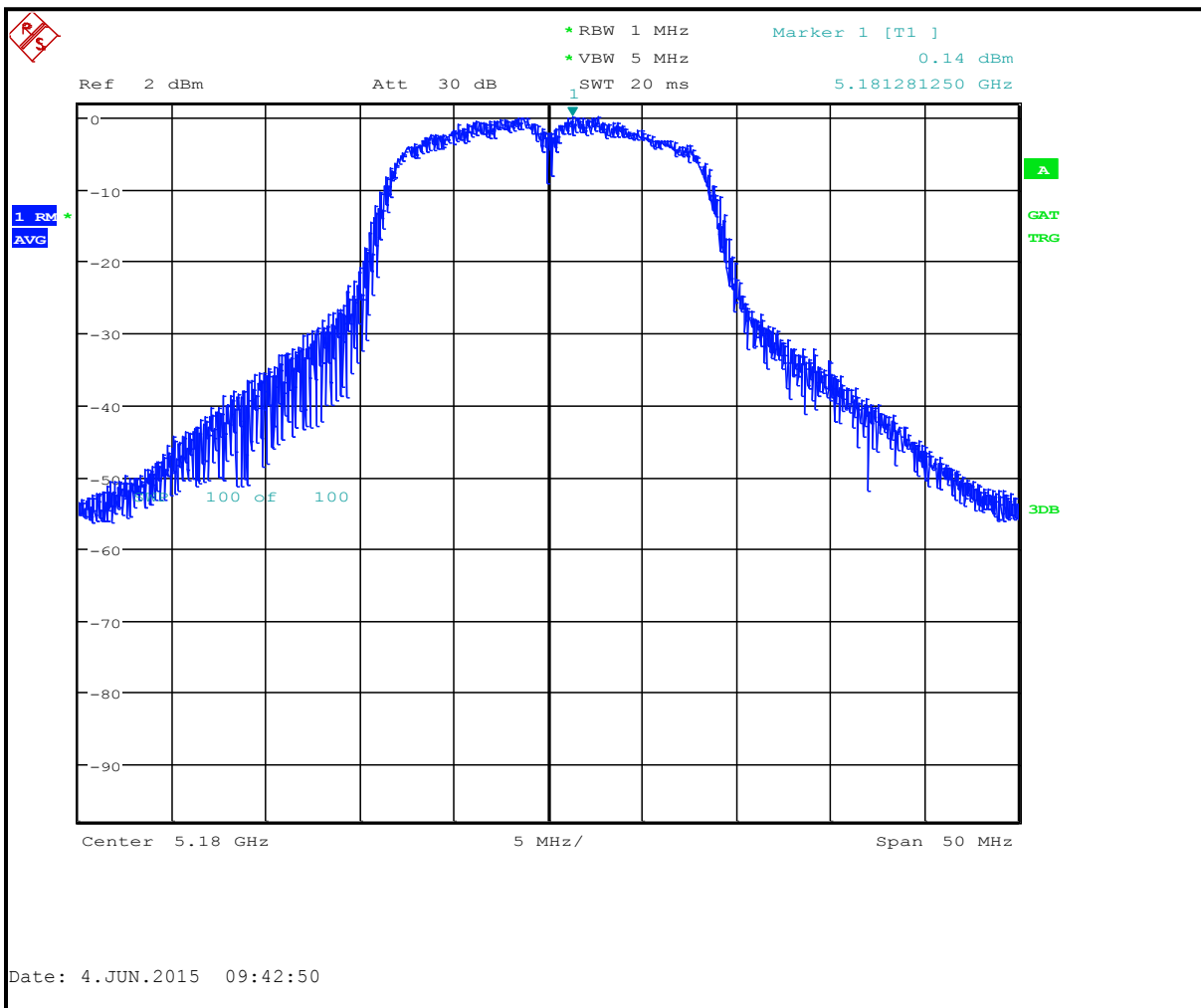
Plot 4-12: Power Spectral Density: Channel 157 (5785 MHz) 802.11a 54 Mbps



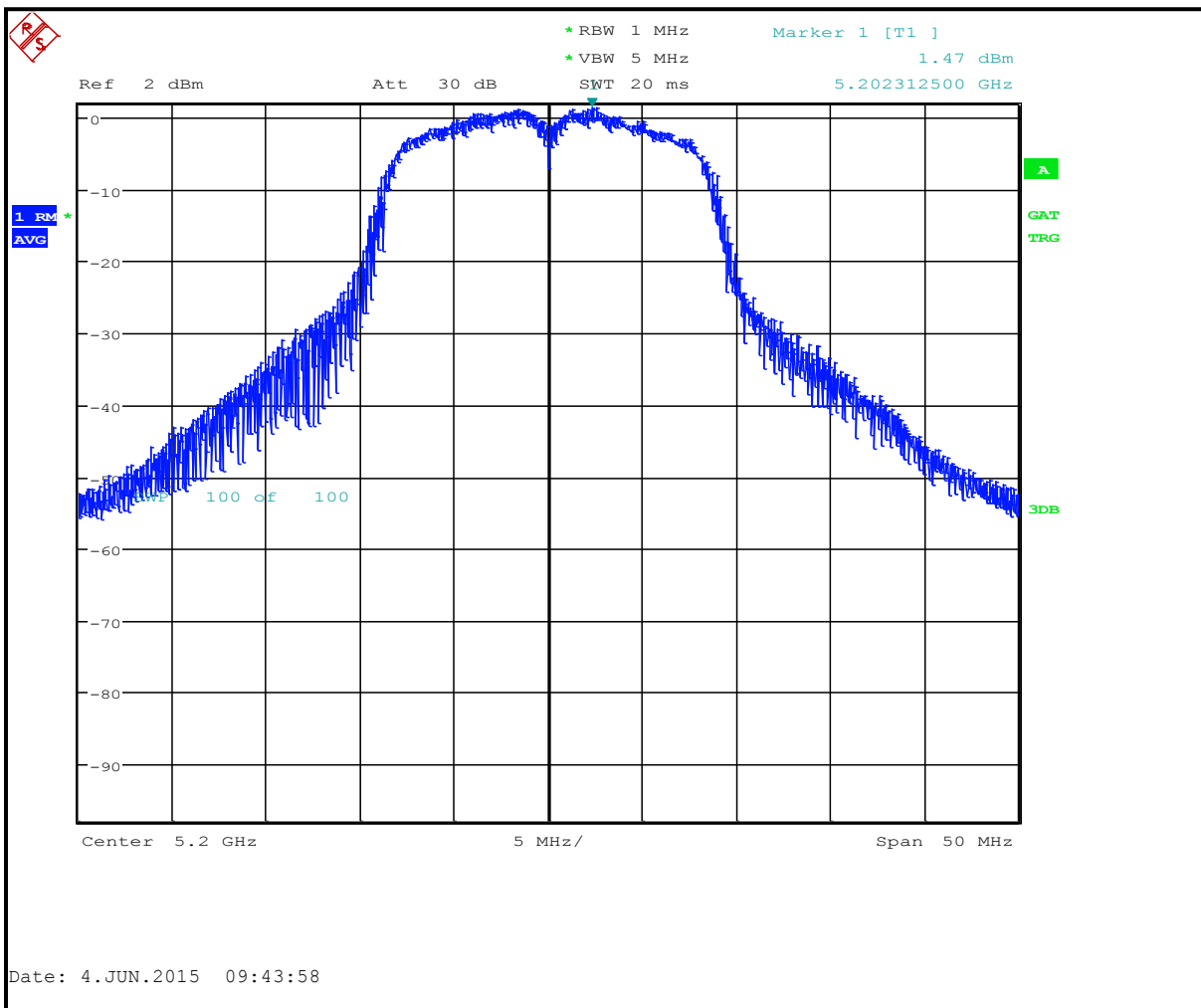
Plot 4-13: Power Spectral Density: Channel 165 (5825 MHz) 802.11a 54 Mbps



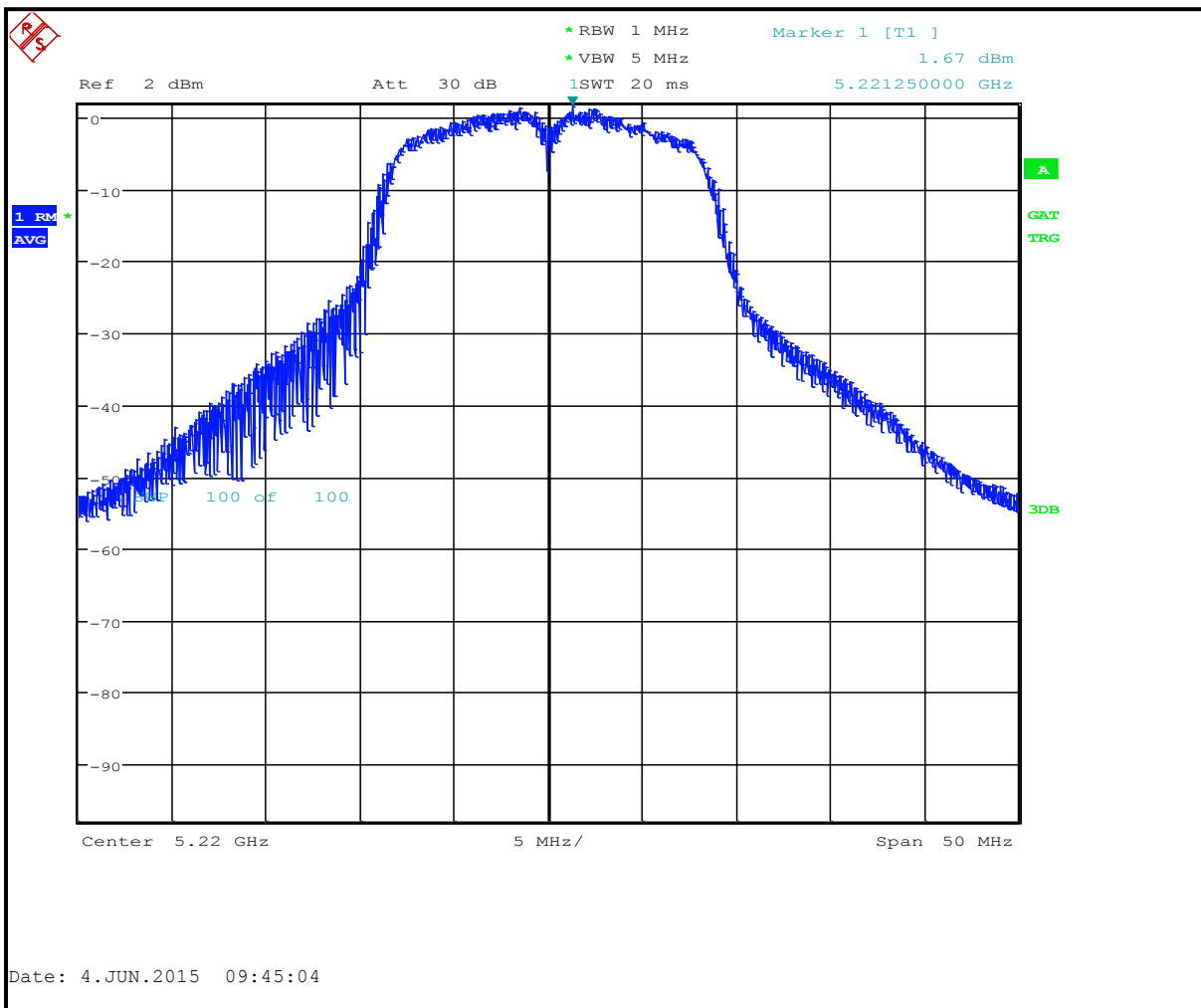
Plot 4-14: Peak Power Spectral Density: Channel 36 (5180 MHz) 802.11n 65 Mbps



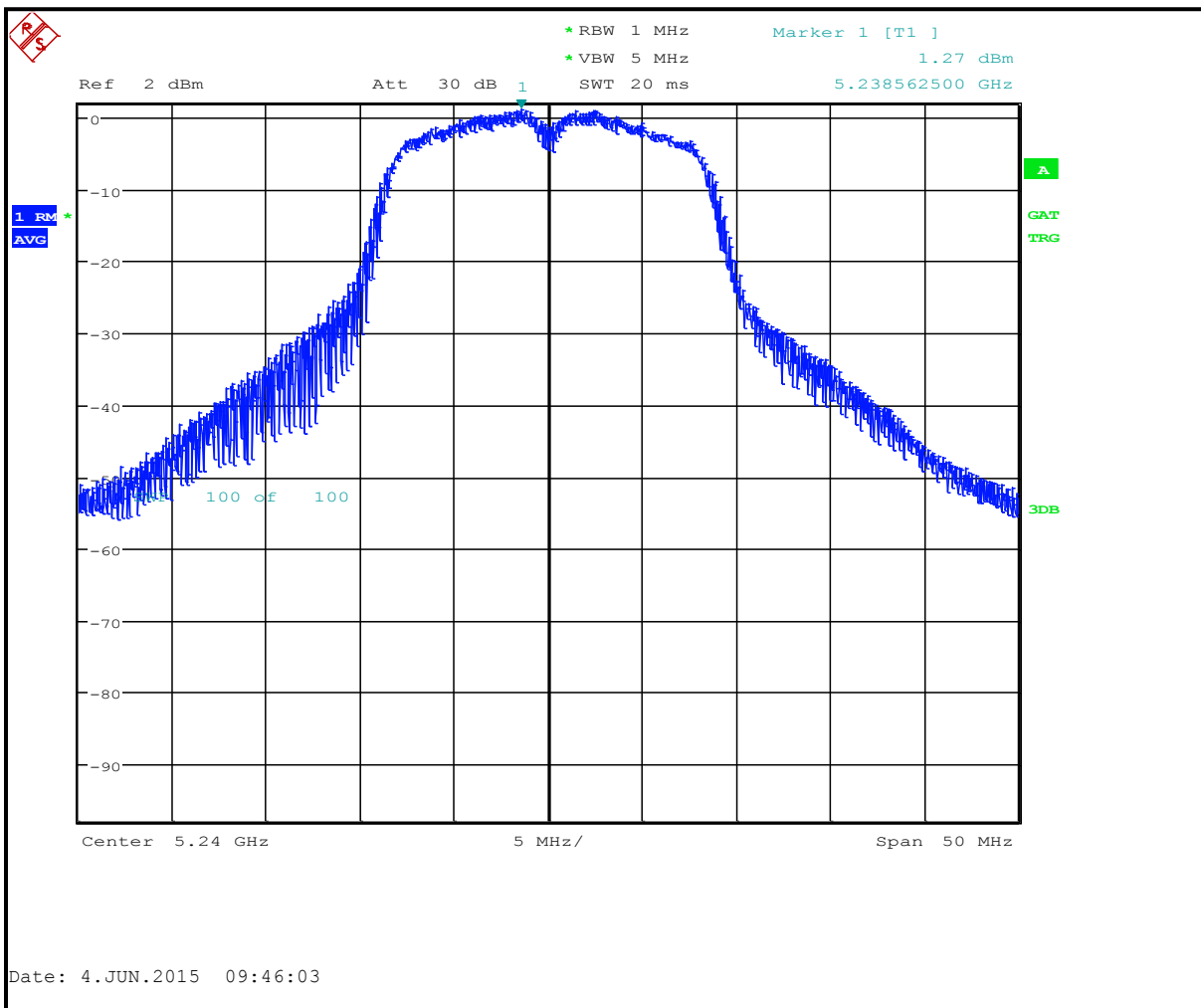
Plot 4-15: Peak Power Spectral Density: Channel 40 (5200 MHz) 802.11n 65 Mbps



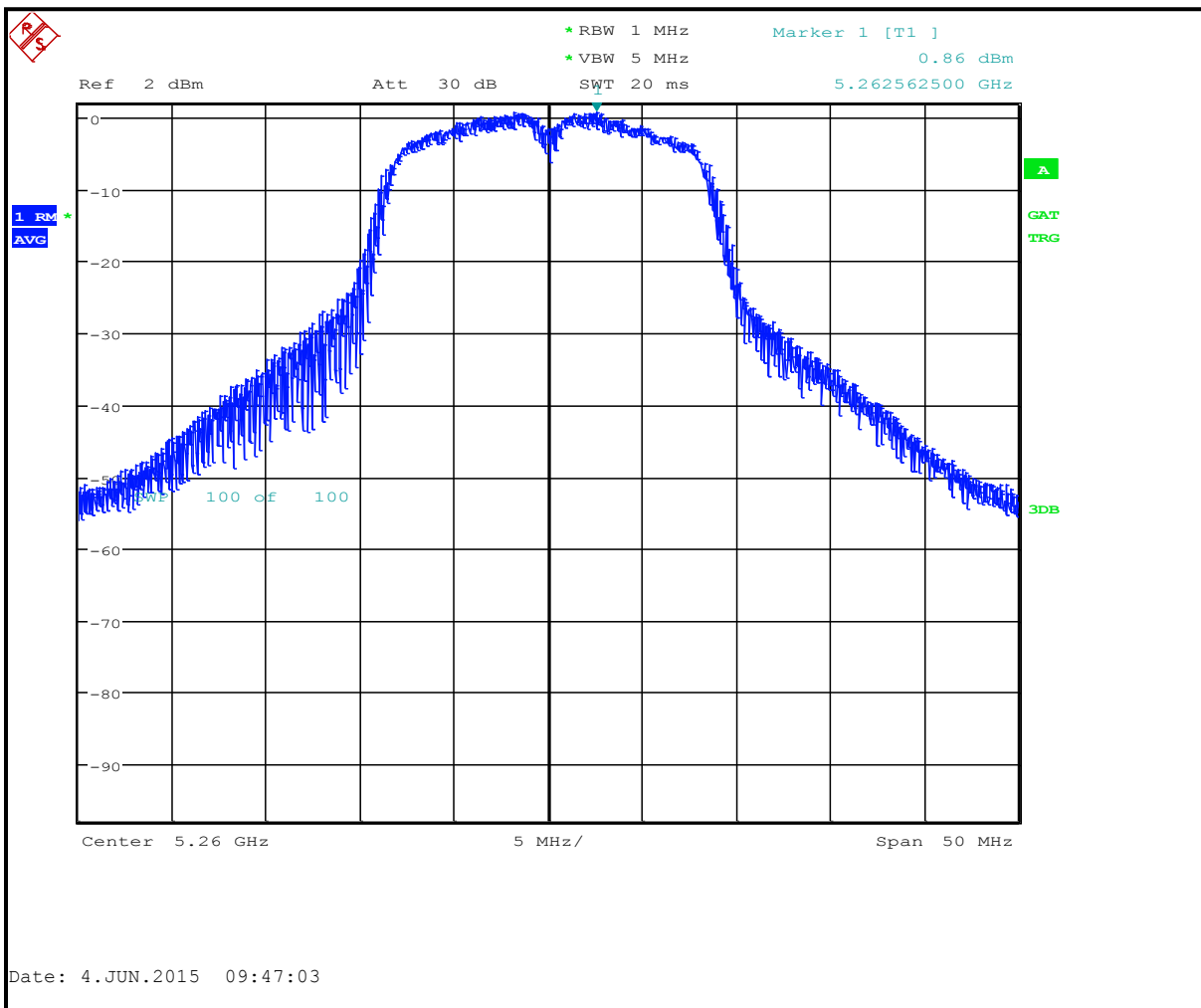
Plot 4-16: Peak Power Spectral Density: Channel 44 (5220 MHz) 802.11n 65 Mbps



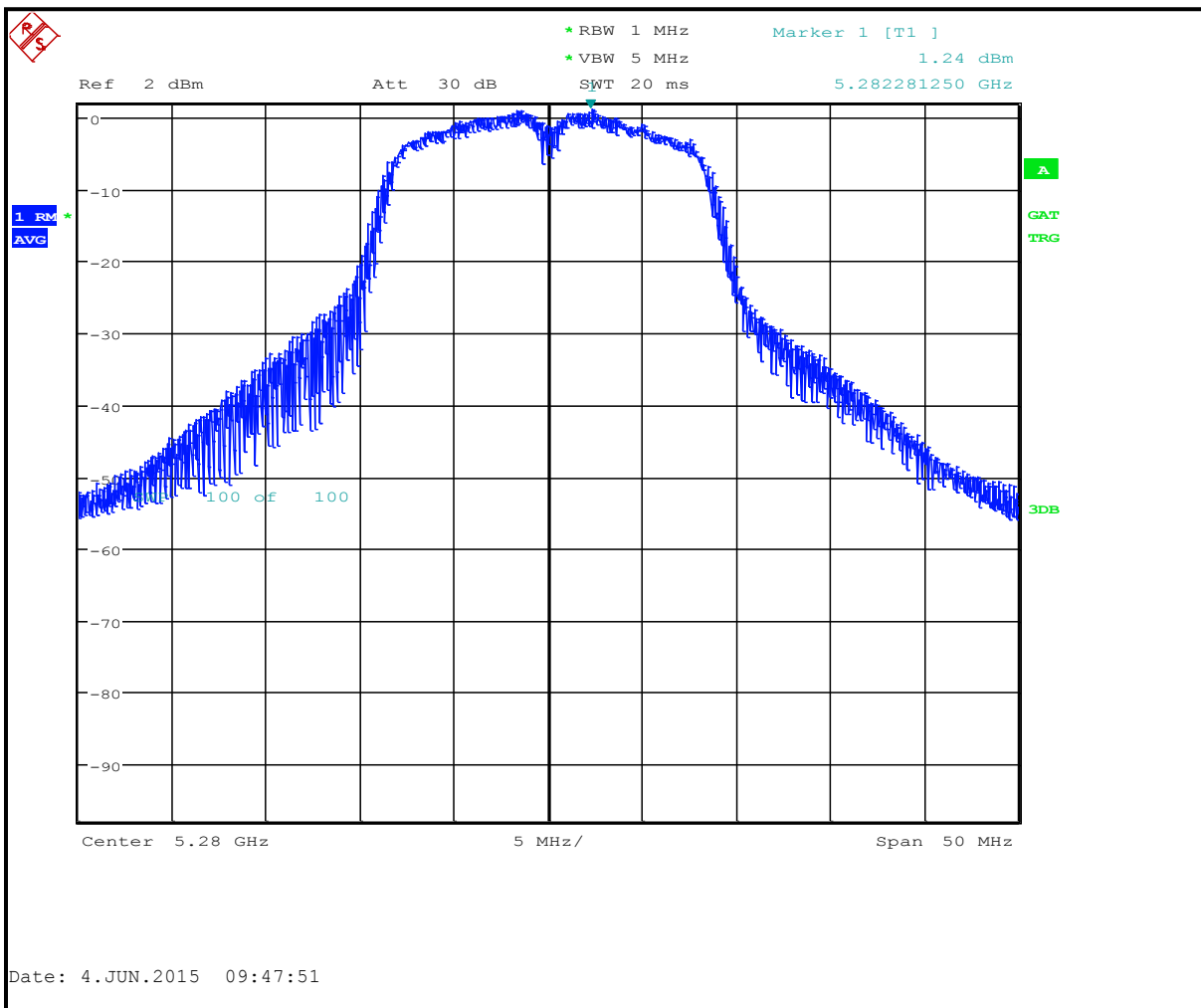
Plot 4-17: Peak Power Spectral Density: Channel 48 (5240 MHz) 802.11n 65 Mbps



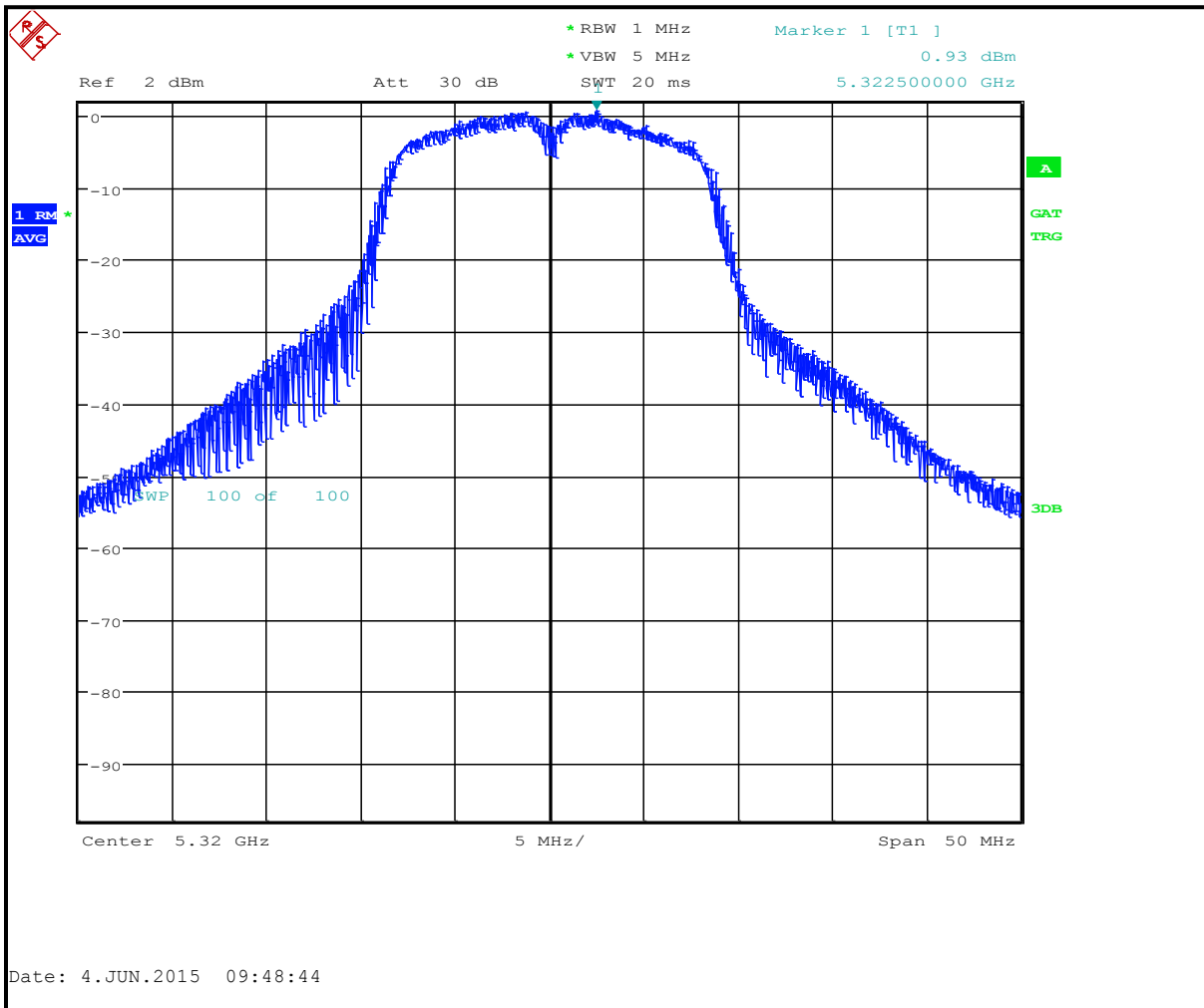
Plot 4-18: Peak Power Spectral Density: Channel 52 (5260 MHz) 802.11n 65 Mbps



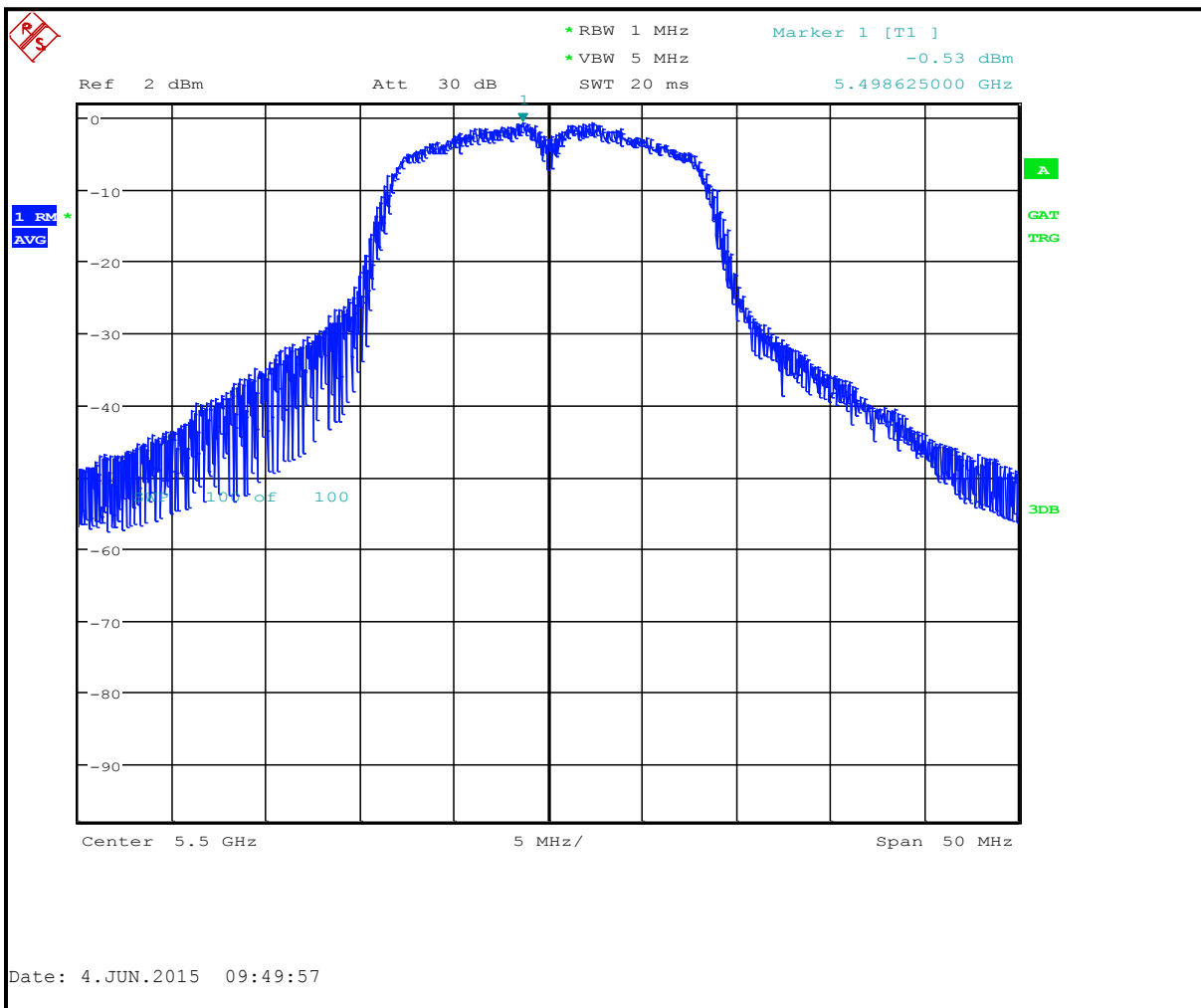
Plot 4-19: Peak Power Spectral Density: Channel 56 (5280 MHz) 802.11n 65 Mbps



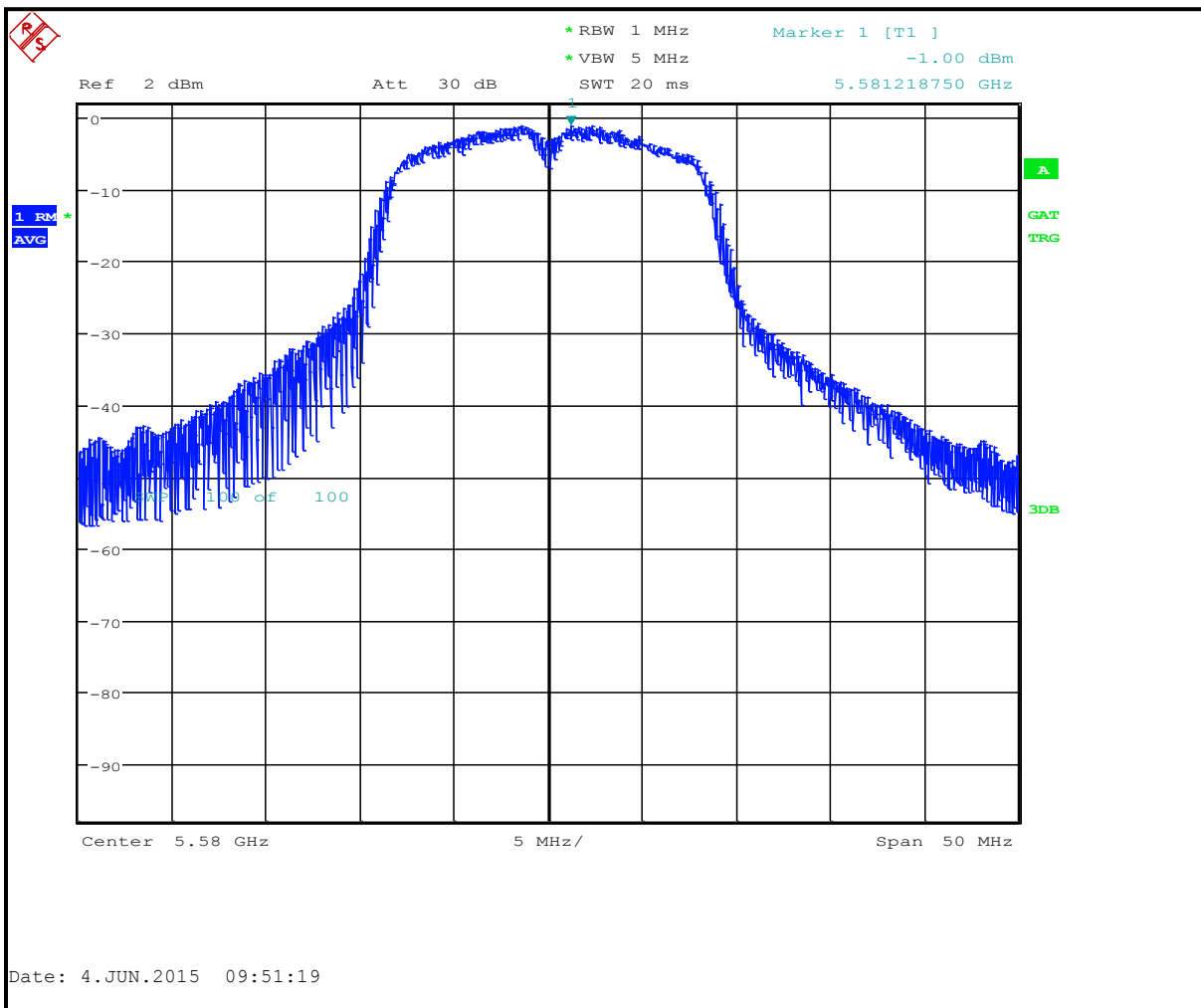
Plot 4-200: Peak Power Spectral Density: Channel 64 (5320 MHz) 802.11n 65 Mbps



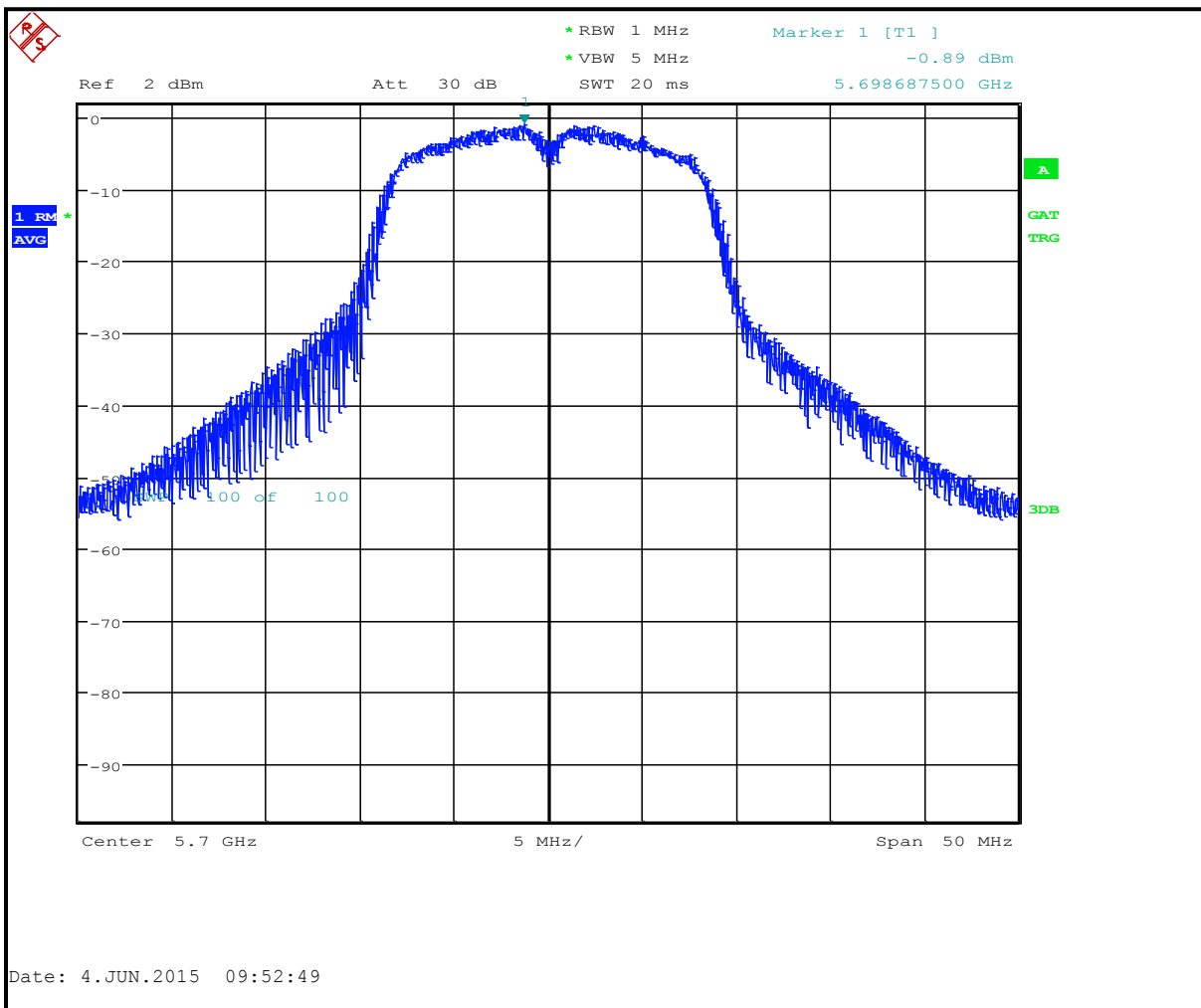
Plot 4-21: Peak Power Spectral Density: Channel 100 (5500 MHz) 802.11n 65 Mbps



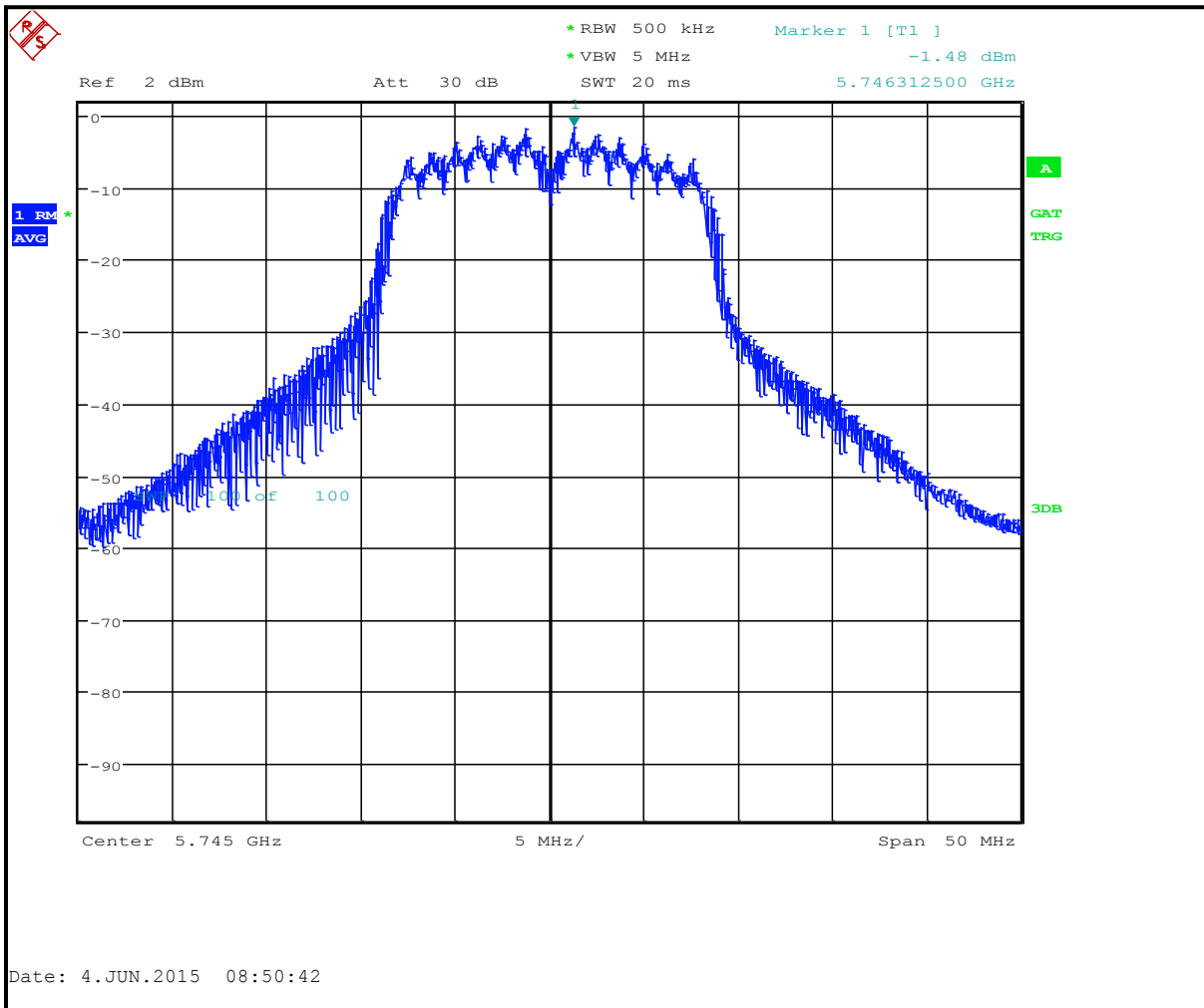
Plot 4-22: Peak Power Spectral Density: Channel 116 (5580 MHz) 802.11n 65 Mbps



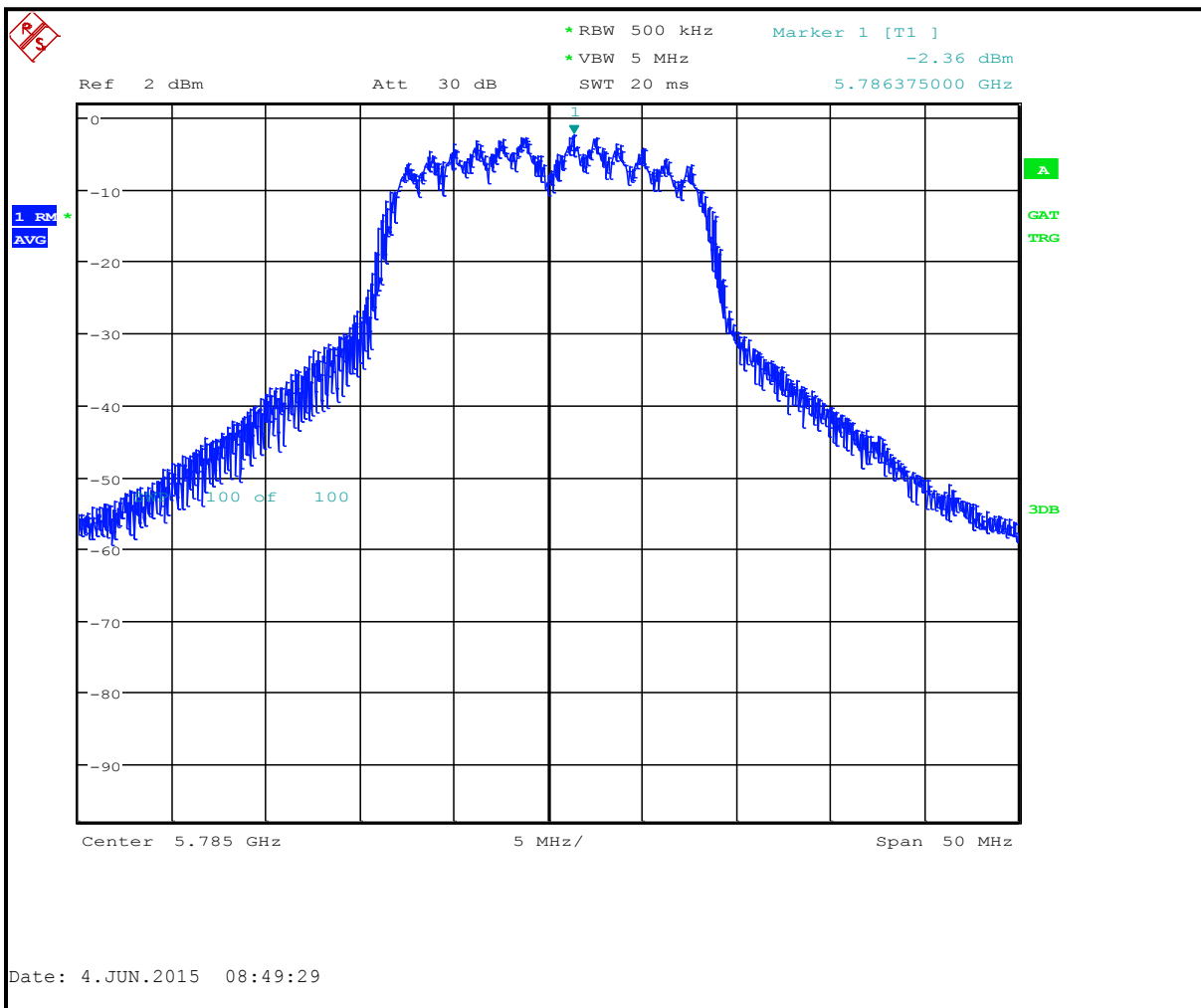
Plot 4-23: Peak Power Spectral Density: Channel 140 (5700 MHz) 802.11n 65 Mbps



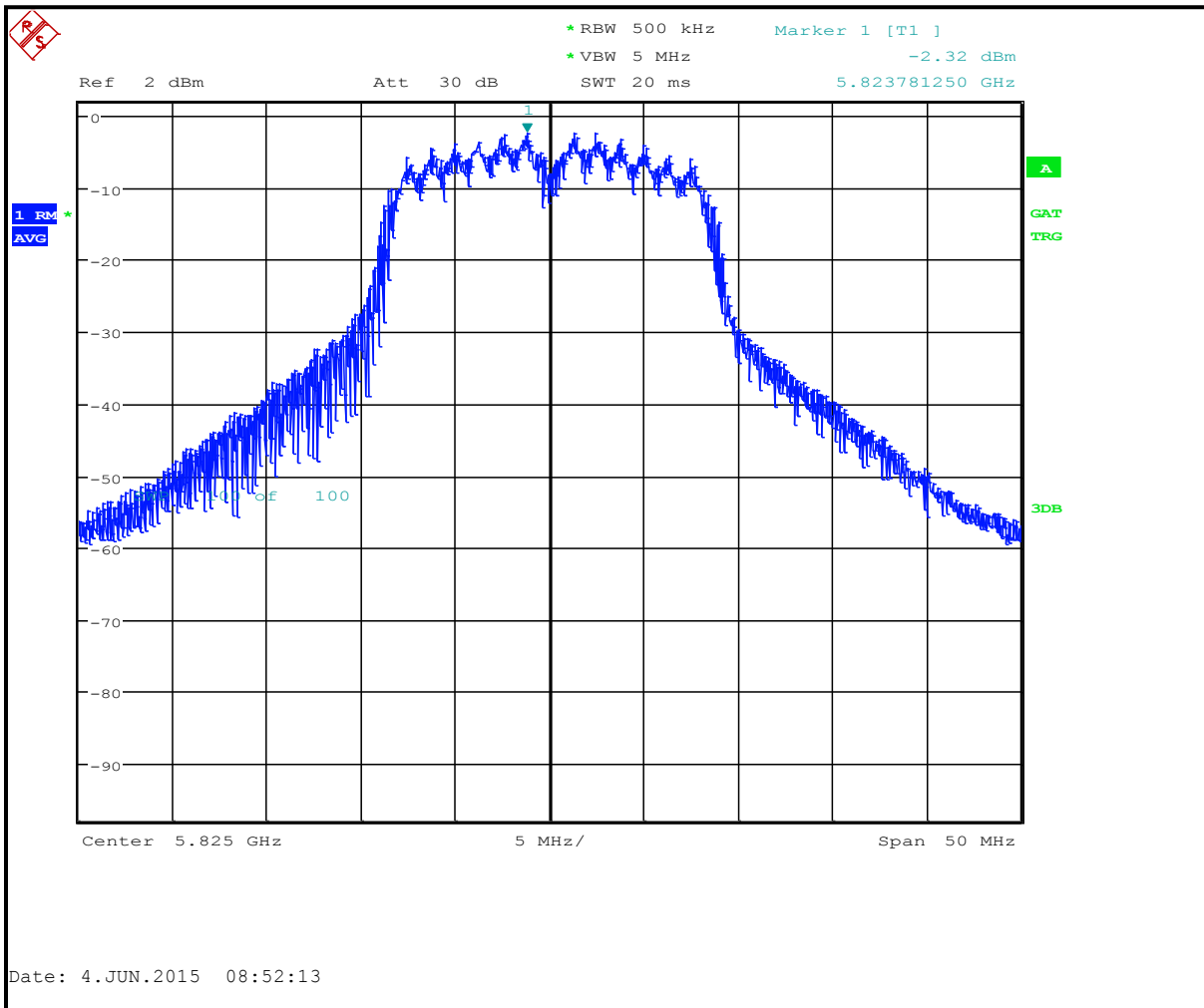
Plot 4-24: Power Spectral Density: Channel 149 (5745 MHz) 802.11n 65 Mbps



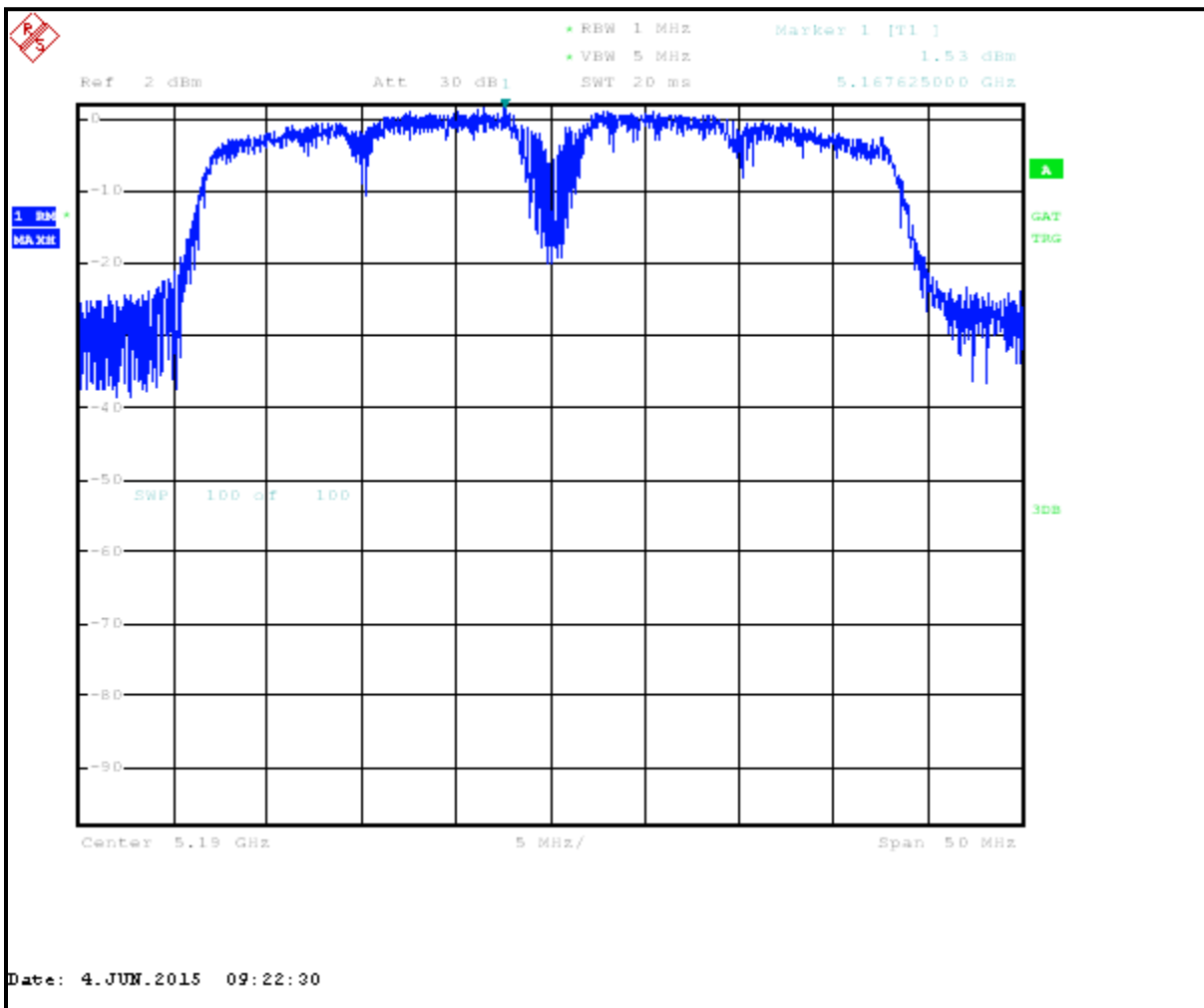
Plot 4-25: Power Spectral Density: Channel 157 (5785 MHz) 802.11n 65 Mbps



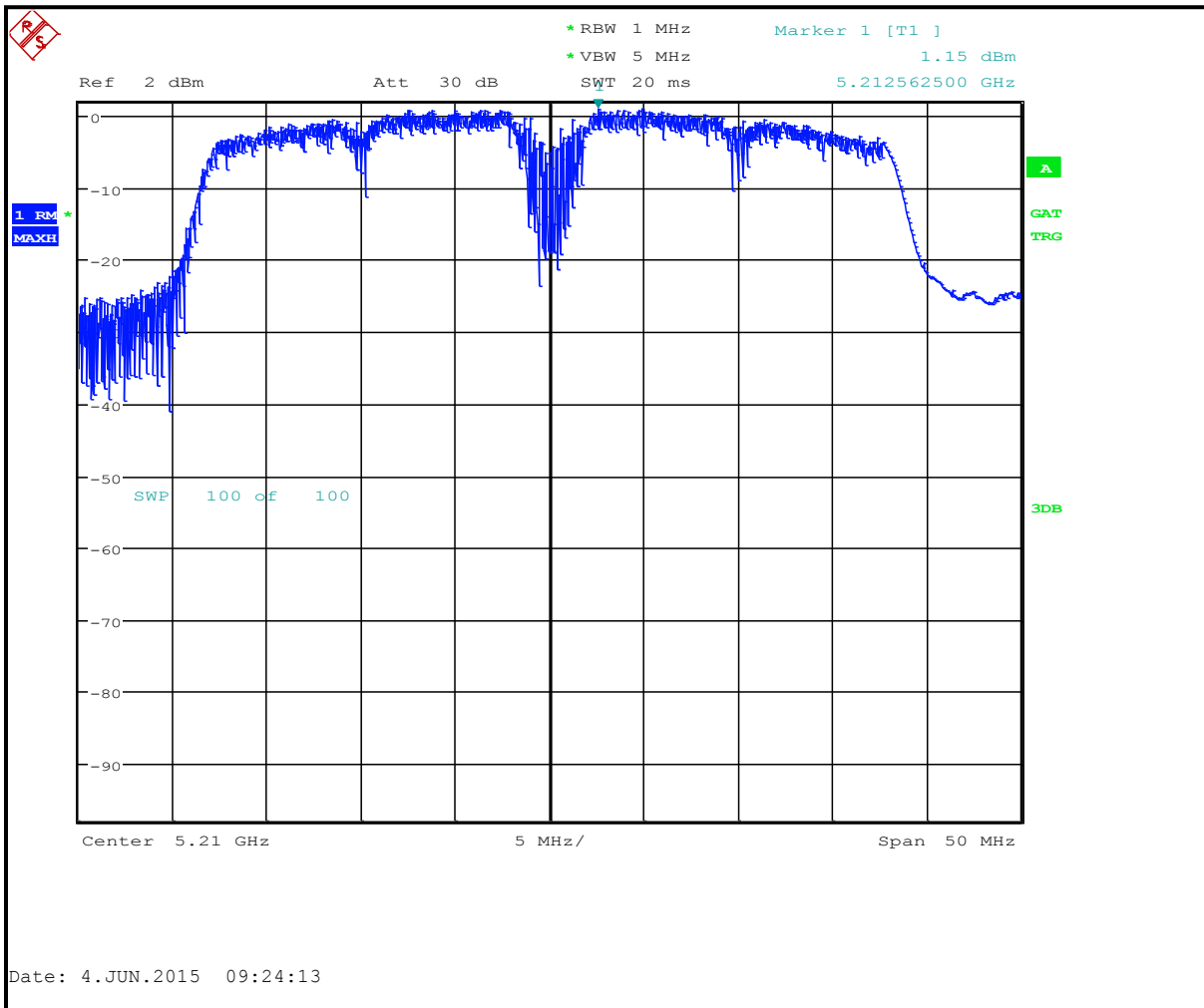
Plot 4-26: Power Spectral Density: Channel 165 (5825 MHz) 802.11n 65 Mbps



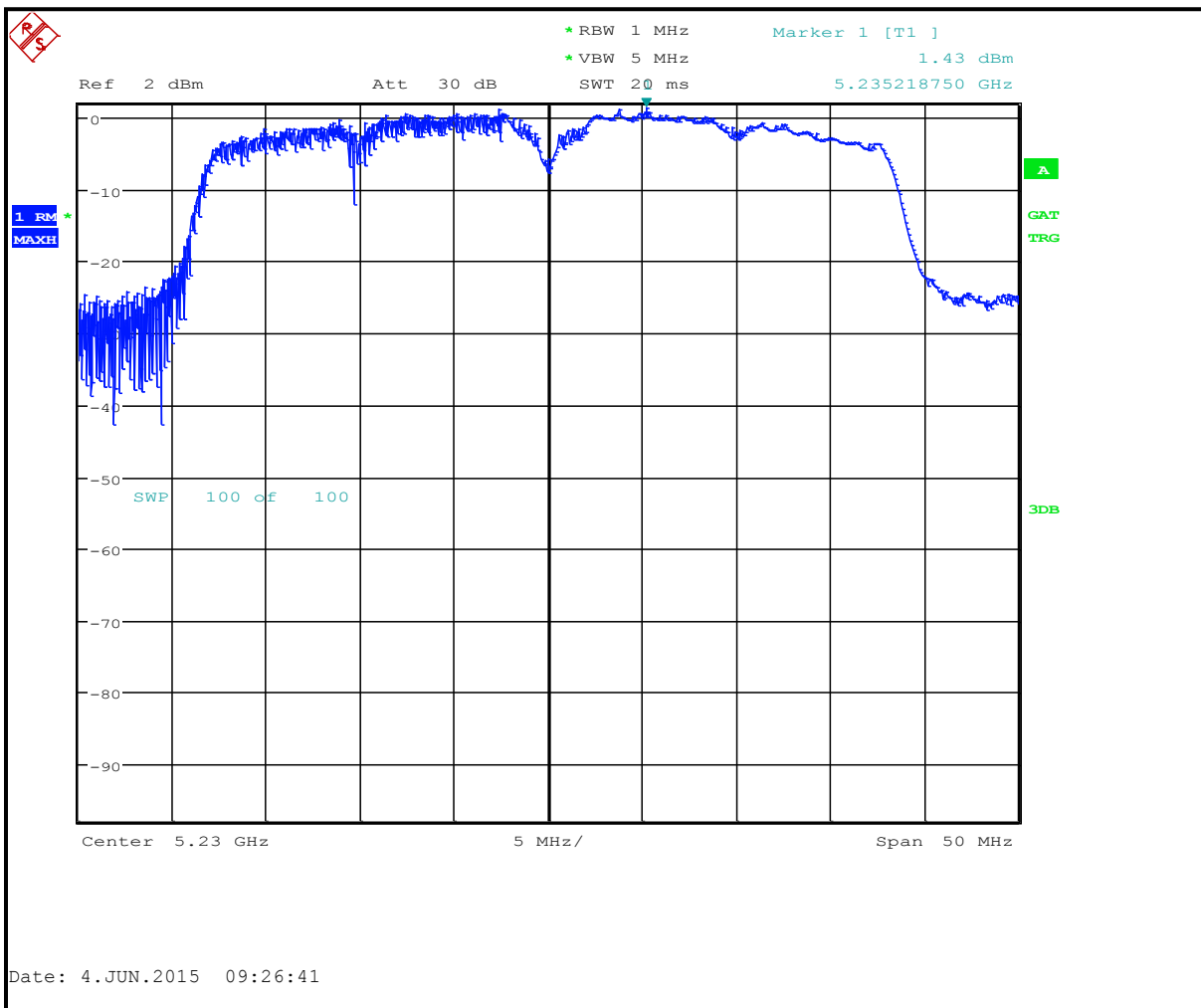
Plot 4-27: Peak Power Spectral Density: Channel 36 (5180 MHz, lower) 802.11n 40 MHz



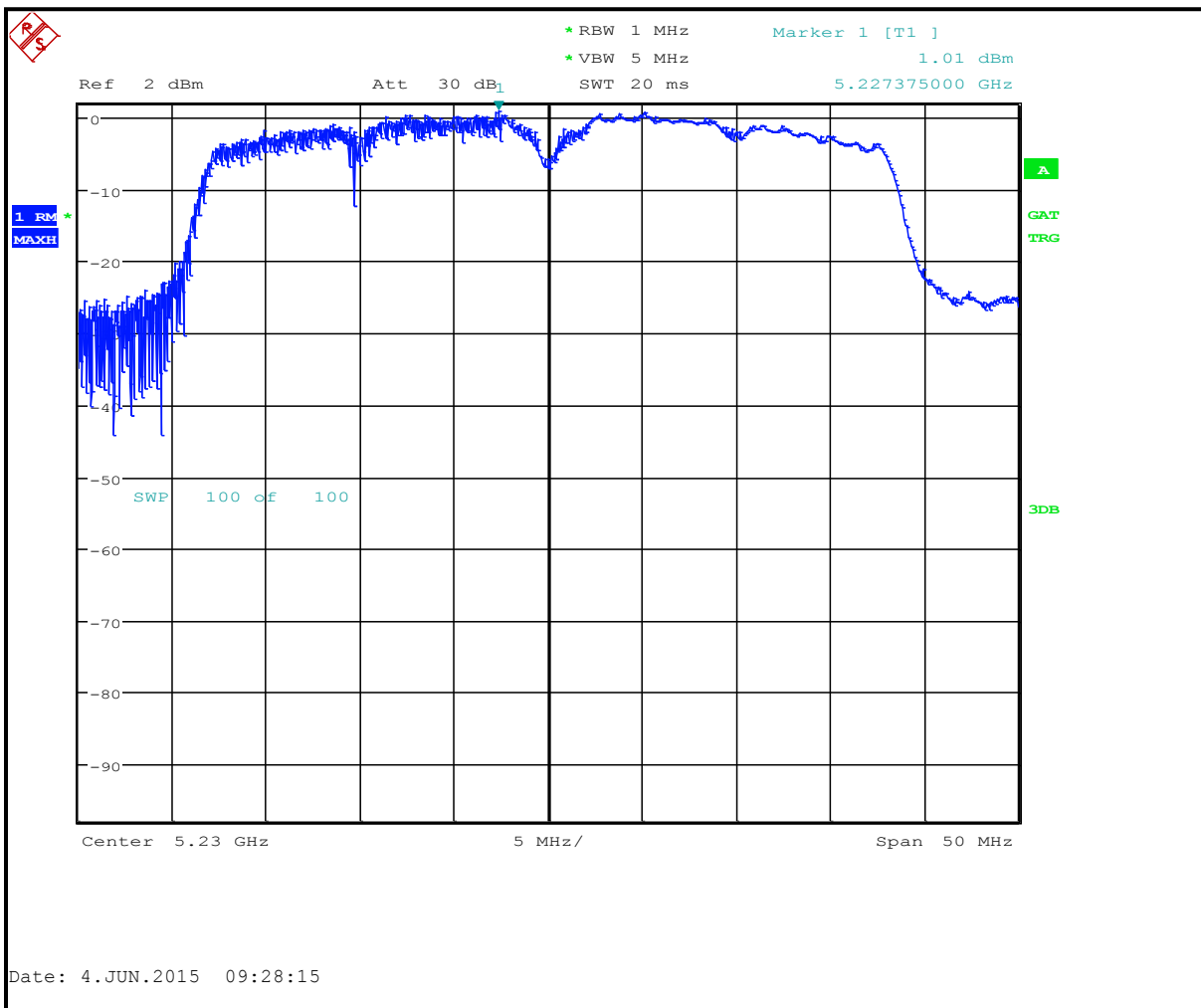
Plot 4-28: Peak Power Spectral Density: Channel 40 (5200 MHz, lower) 802.11n 40 MHz



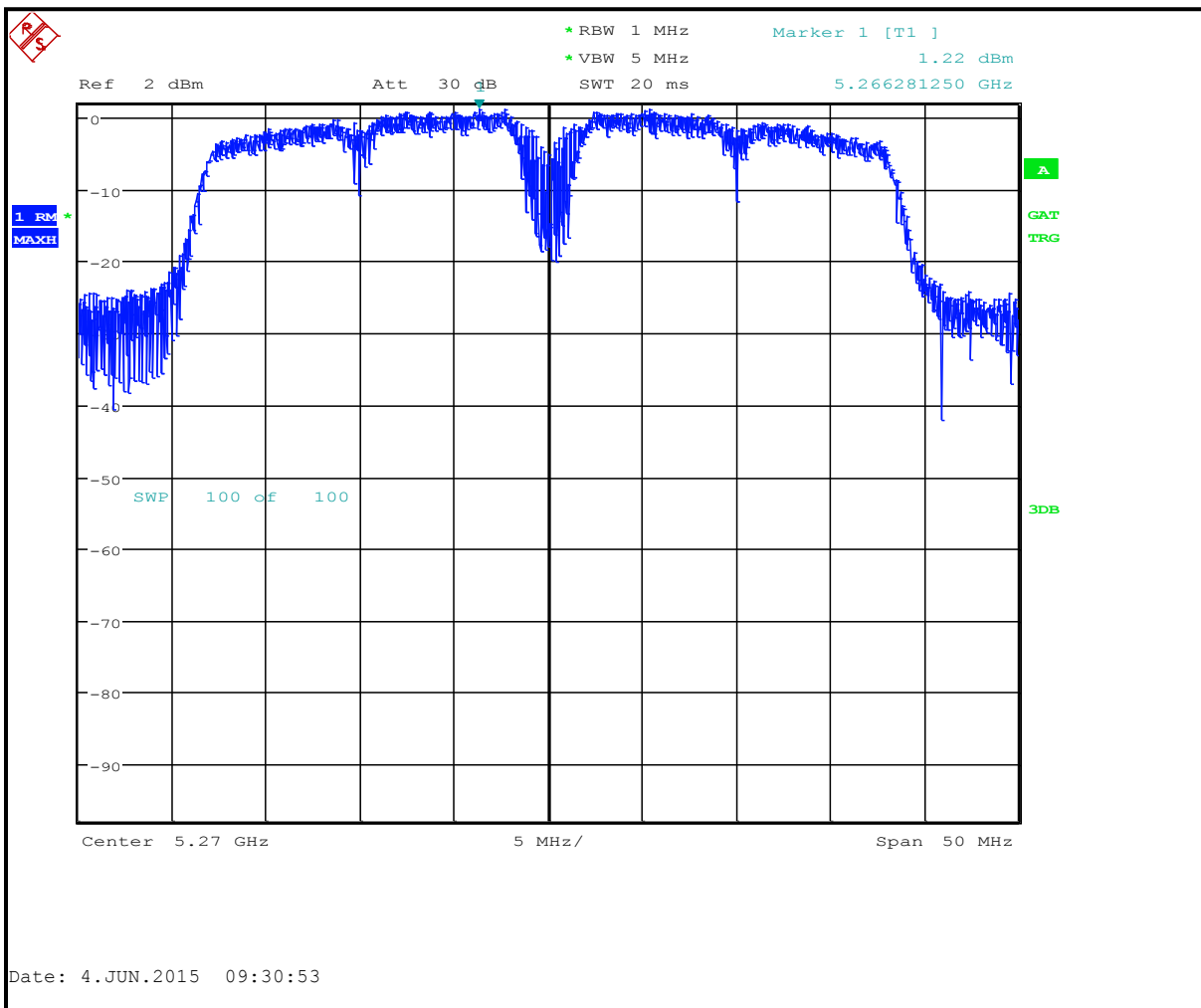
Plot 4-29: Peak Power Spectral Density: Channel 44 (5220 MHz, lower) 802.11n 40 MHz



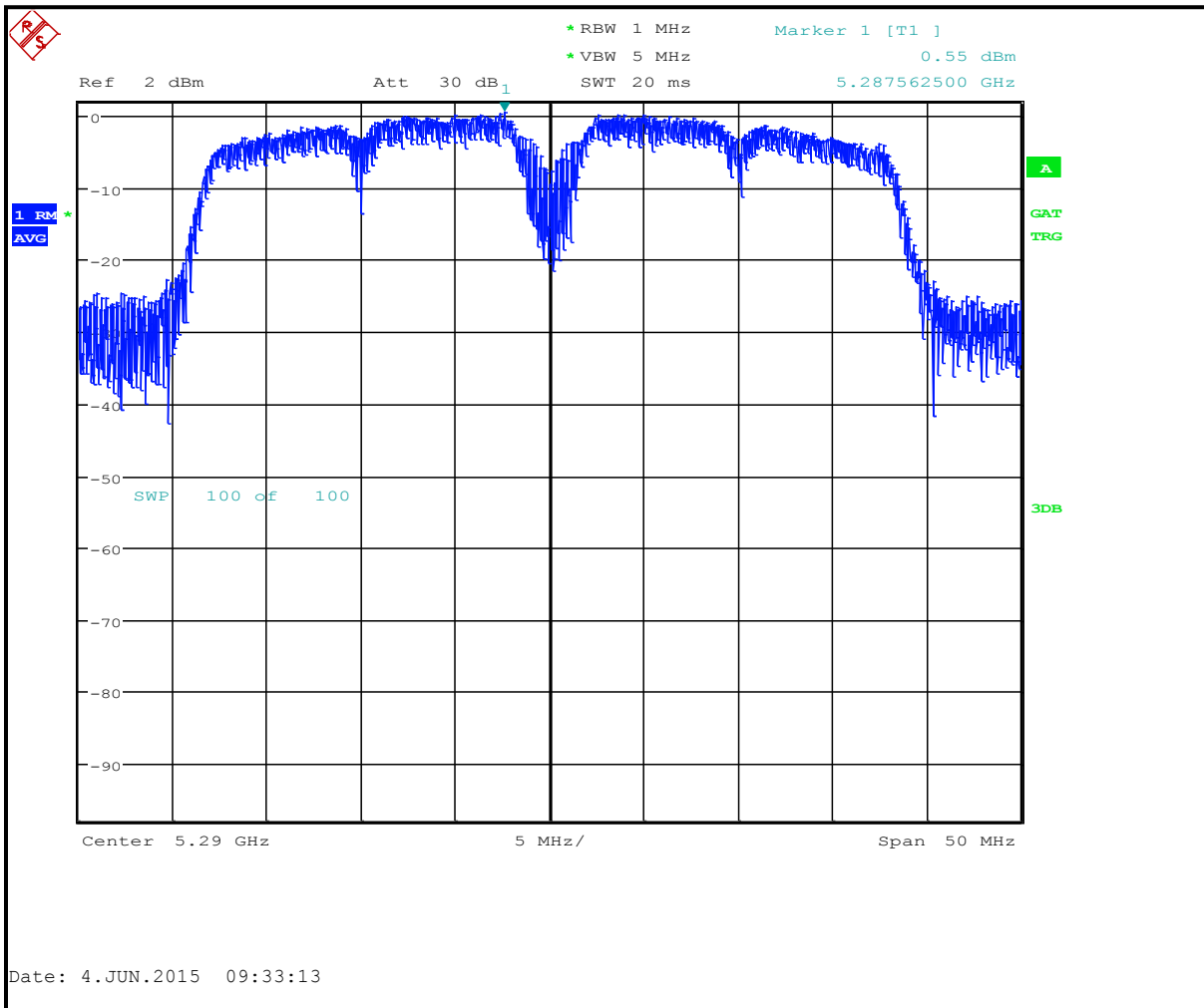
Plot 4-30: Peak Power Spectral Density: Channel 48 (5240 MHz, upper) 802.11n 40 MHz



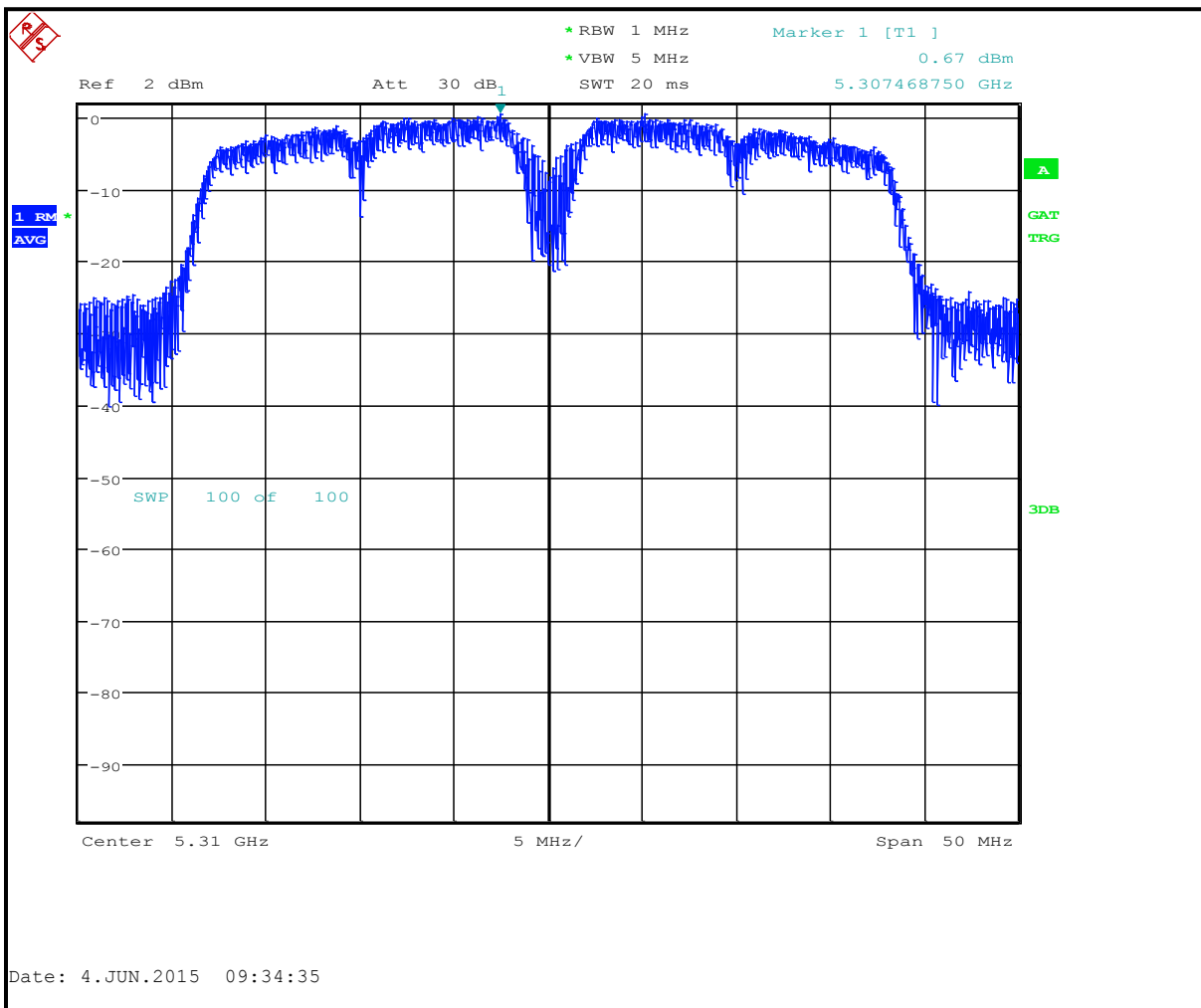
Plot 4-31: Peak Power Spectral Density: Channel 52 (5260 MHz, lower) 802.11n 40 MHz



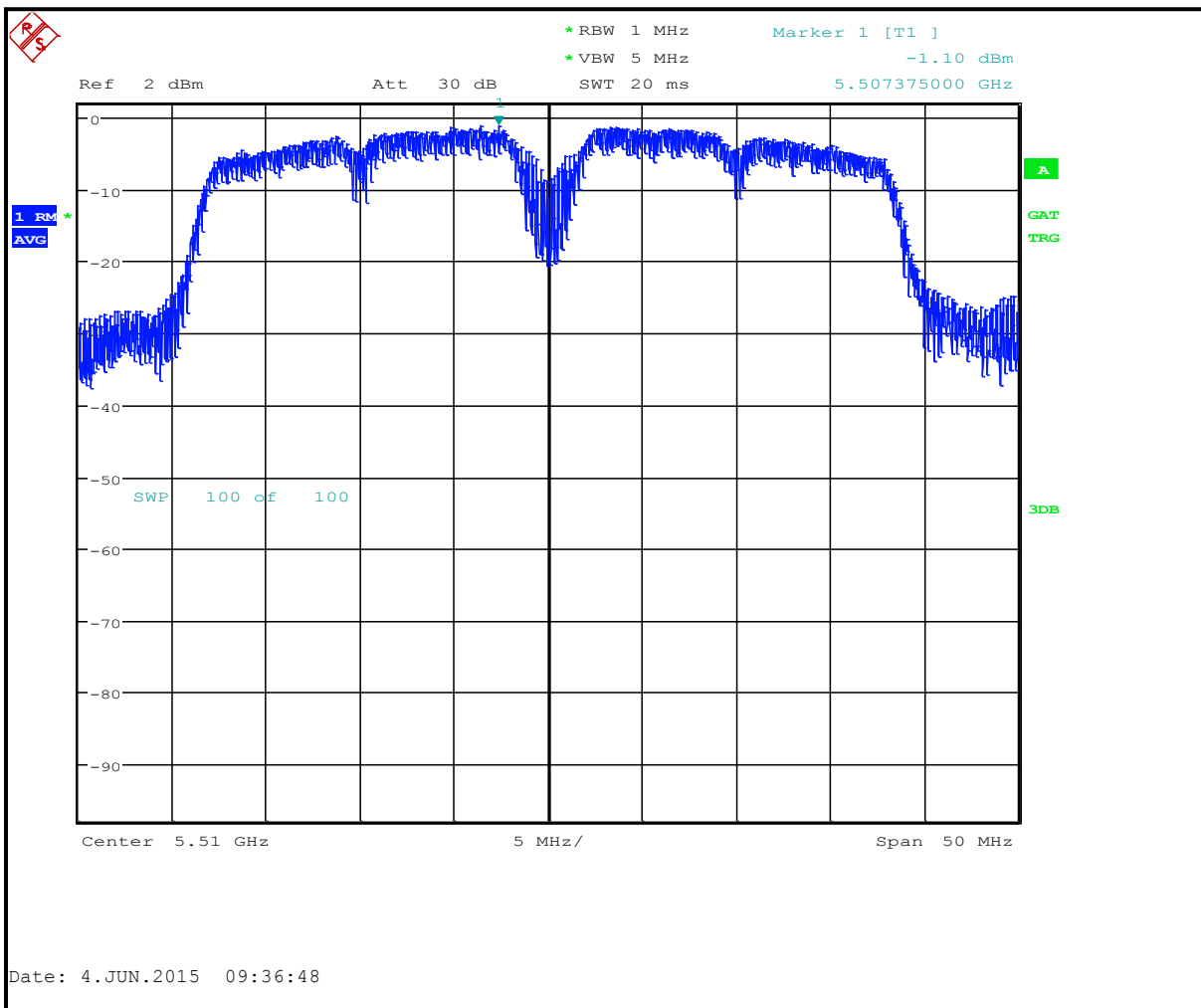
Plot 4-32: Peak Power Spectral Density: Channel 56 (5280 MHz, lower) 802.11n 40 MHz



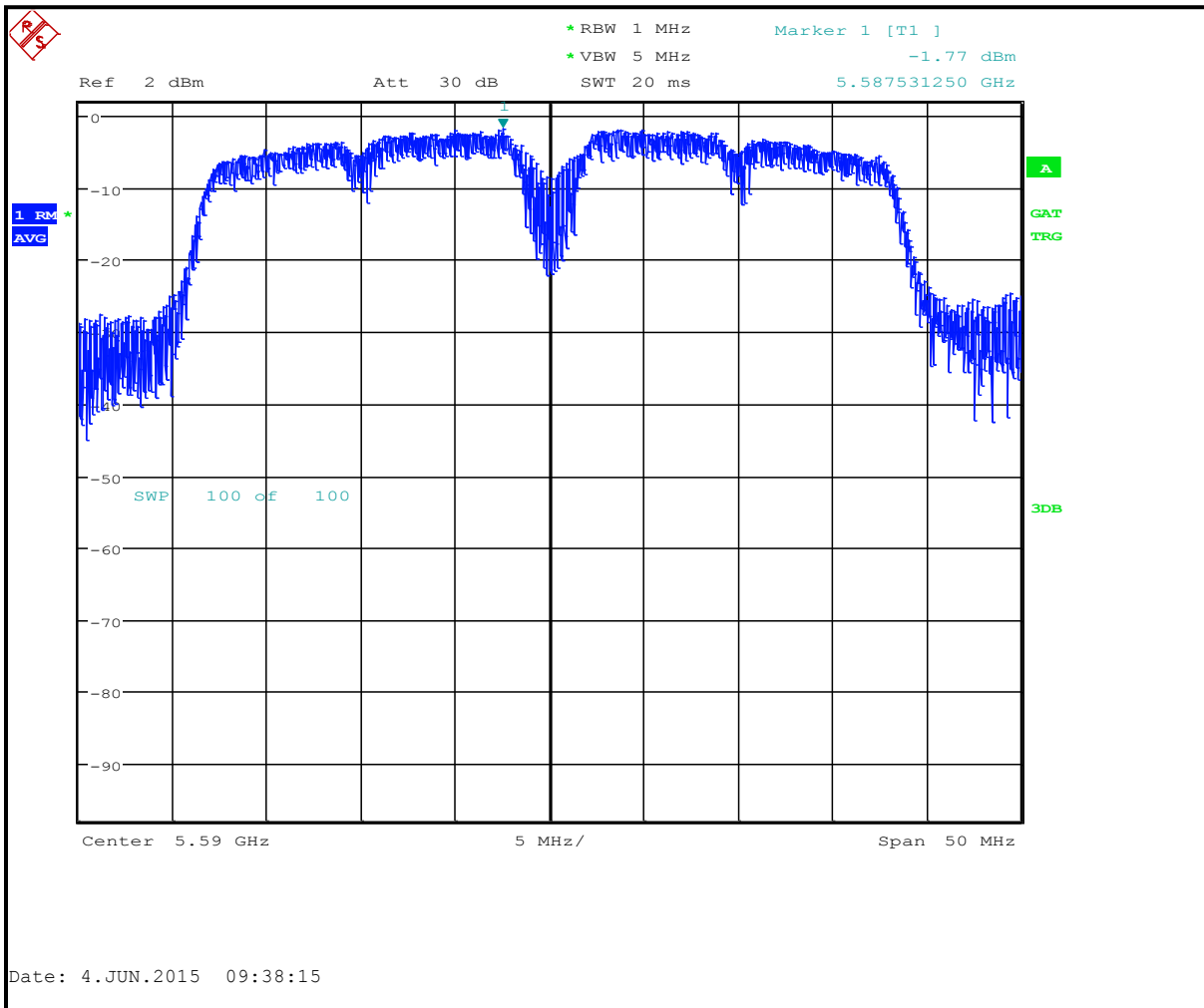
Plot 4-33: Peak Power Spectral Density: Channel 64 (5320 MHz, upper) 802.11n 40 MHz



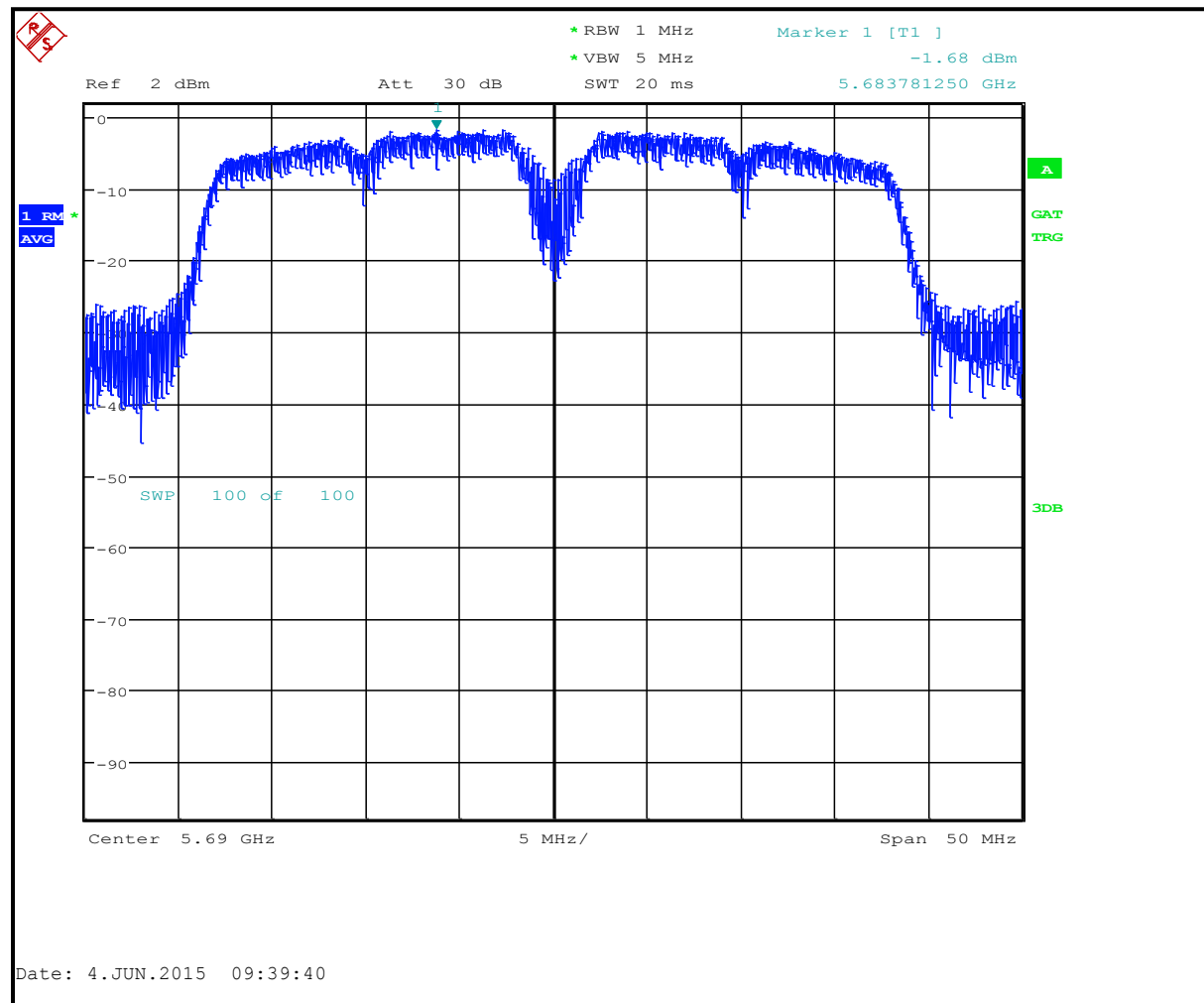
Plot 4-34: Peak Power Spectral Density: Channel 100 (5500 MHz, upper) 802.11n 40 MHz



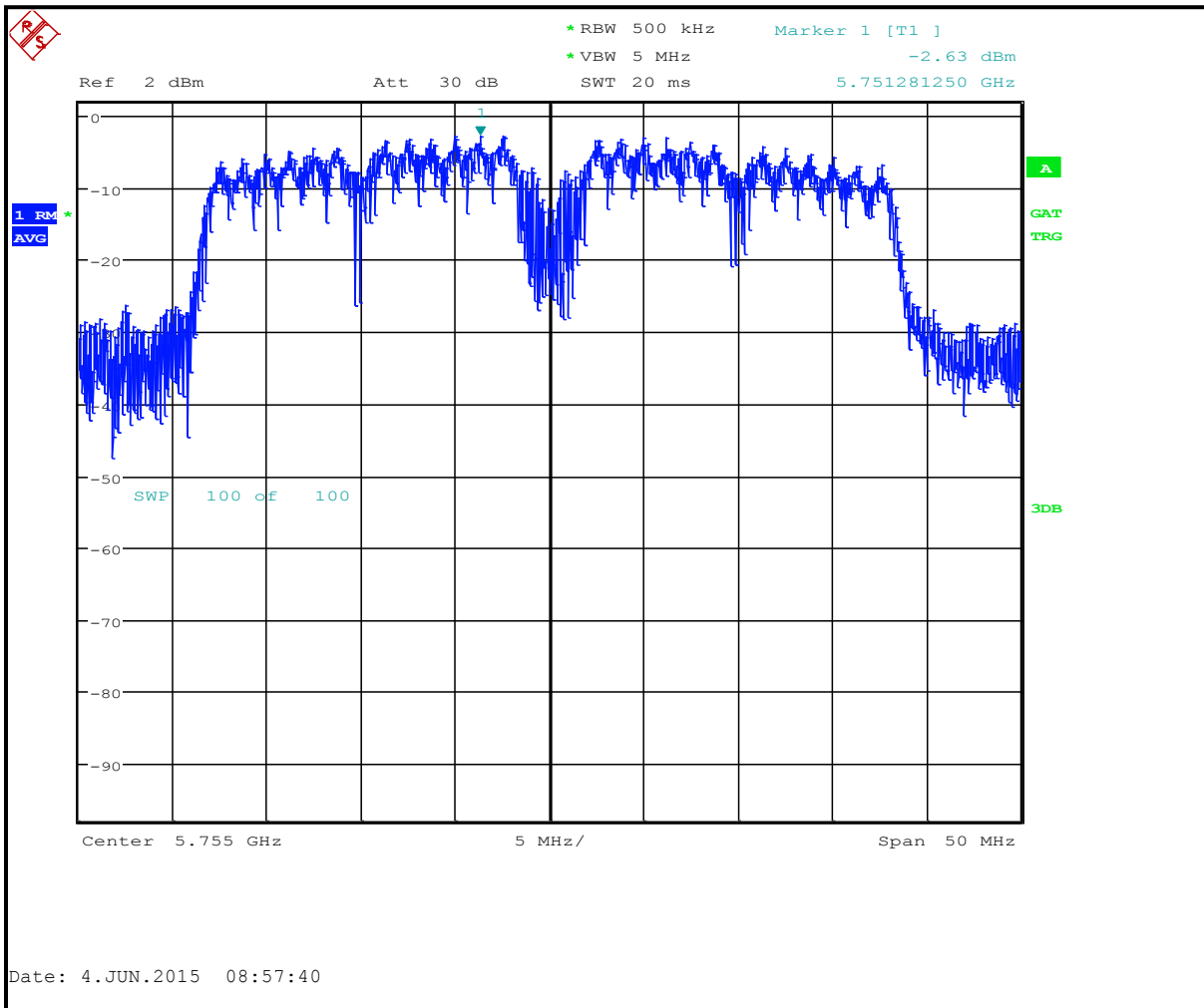
Plot 4-35: Peak Power Spectral Density: Channel 116 (5580 MHz, lower) 802.11n 40 MHz



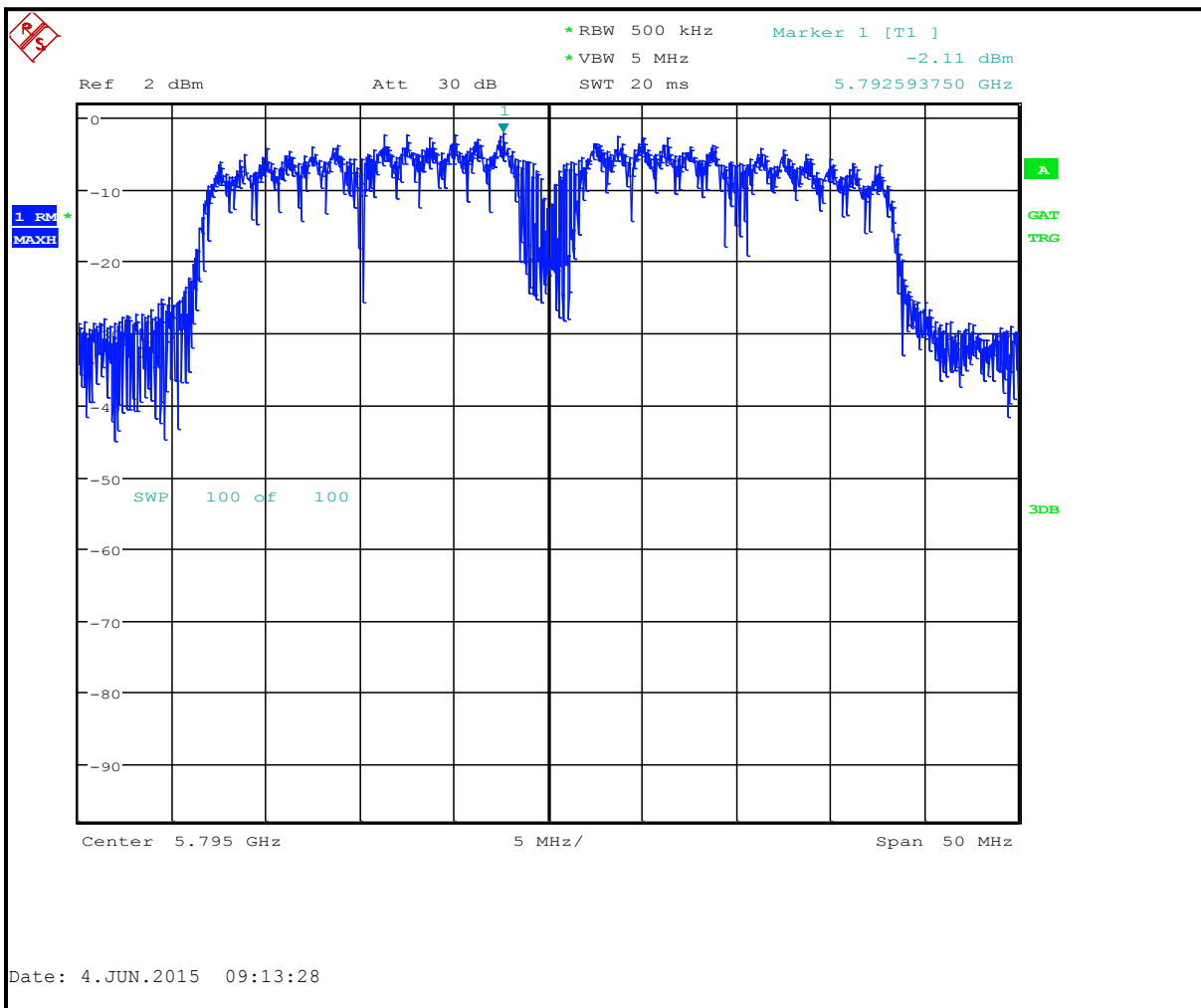
Plot 4-36: Peak Power Spectral Density: Channel 140 (5700 MHz, lower) 802.11n 40 MHz



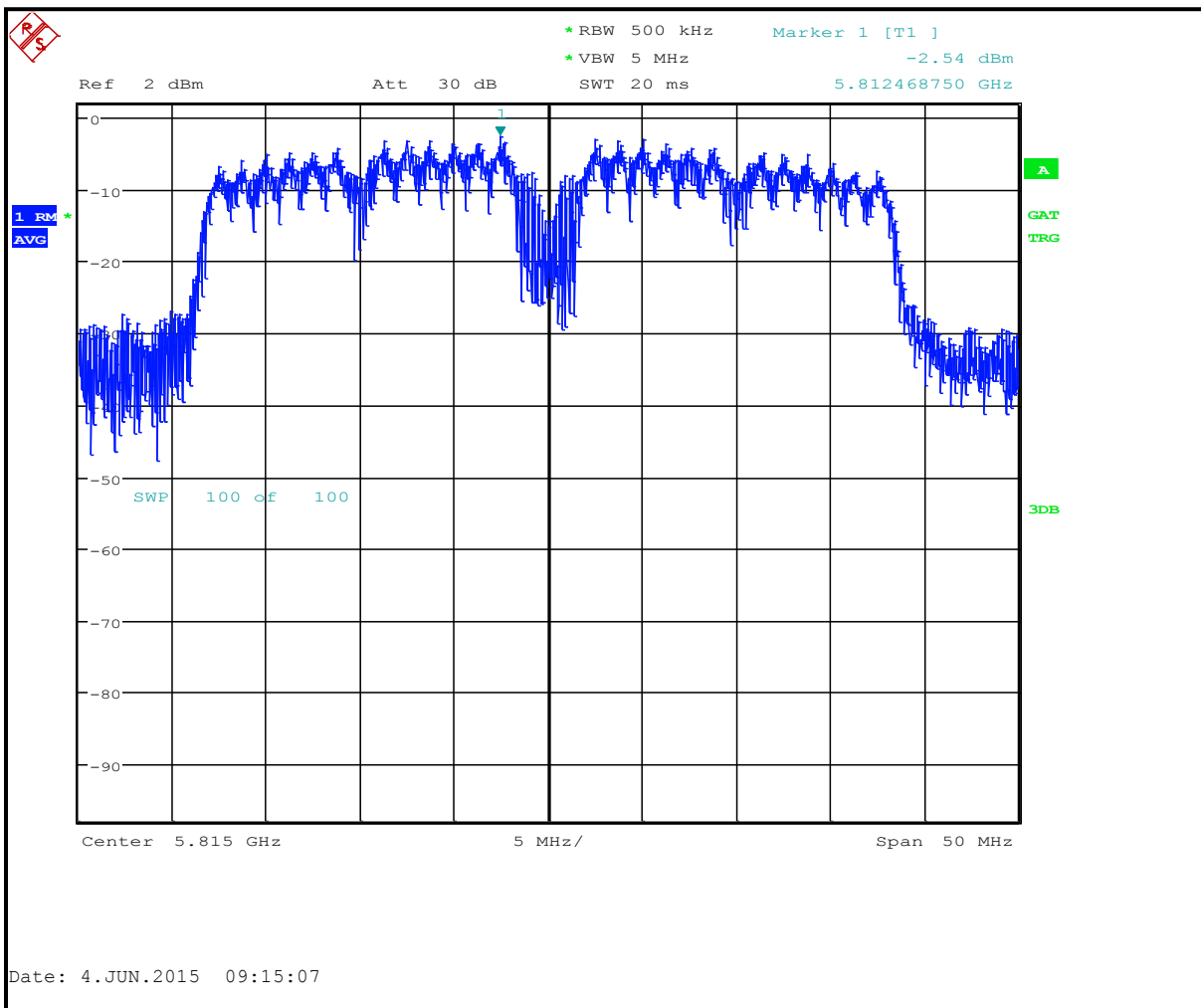
Plot 4-37: Power Spectral Density: Channel 149 (5745 MHz, lower) 802.11n 40 MHz



Plot 4-38: Power Spectral Density: Channel 157 (5785 MHz, lower) 802.11n 40 MHz



Plot 4-390: Power Spectral Density: Channel 165 (5825 MHz, upper) 802.11n 40 MHz



Test Personnel:

Daniel W. Baltzell
 Test Engineer

Daniel W. Baltzell

Signature

June 4, 2013
 Date of Test

5 Frequency Stability Measurement – FCC 15.407(g)

5.1 Limits of Frequency Stability

The frequency tolerance shall be maintained within +/-0.02% of the operating frequency over a temperature variation of -30°C to 50°C at normal supply voltage, and for a variation in the primary supply voltage from 85%-115% of the rated supply voltage at a temperature of 20°C.

$$5280 \text{ MHz} \times 0.02\% = 1.056 \text{ MHz} = 200 \text{ ppm}$$

5.2 Frequency Stability Measurement Test Procedure

The EUT was placed inside the temperature chamber and supplied by nominal 7.4 VDC. The EUT was connected to an analyzer which was located outside of the chamber. The temperature was set to the lowest level and the EUT was allowed to stabilize with power off for a period of 1 hour. The EUT was then powered up and the frequency was measured. This was continued in 10 degree steps until the highest temperature level of 50°C was measured. The chamber was allowed to stabilize between measurements for approximately 30 minutes. At 20°C, the EUT supply voltage was adjusted to 85% and 115% of nominal voltage and the frequency was recorded.

Table 5-1: Frequency Stability Measurement Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	FSU	Spectrum Analyzer	1166.1660.50	11/13/15
901350	Meterman	33XR	Multimeter	040402802	4/14/17
901594	Insulated Wire Inc.	KPS-1503-360-KPR	SMK RF Cables 36"	NA	9/3/15
900946	Tenney Engineering, Inc.	TH65	Temperature Chamber with Humidity	11380	3/28/16
1724	Hewlett Packard	6024A	DC Power Supply	1912A00331	N/A

5.3 Frequency Stability Test Data

Table 5-2: Frequency Stability/Temperature Variation; Channel 56 – 5280 MHz (36 Mbps)

Temperature (°C)	Measured Frequency (MHz)	ppm
-30	5280.001747	0.33
-20	5280.001939	0.37
-10	5280.002083	0.39
0	5280.001507	0.29
10	5280.000914	0.17
20	5280.000000	0.00
30	5280.001939	0.37
40	5280.000521	0.10
50	5280.000521	0.10

Table 5-3: Frequency Stability/Voltage Variation; Channel 56 – 5280 MHz (36 Mbps)

Voltage (VDC)	Measured Frequency (MHz)	ppm
6.29	5279.999760	-0.05
7.4	5280.000000	0.00
8.51	5279.999616	-0.07

Highest deviation noted: 0.39 ppm

Pass limit of 200 ppm.

Test Personnel:

Daniel W. Baltzell		June 10, 2015
Test Engineer	Signature	Date of Test

6 Compliance with the Band Edge – FCC 15.407(b); RSS-247 6.2

6.1 Limits of Band Edge Measurement

Below -27 dBm of the highest emission level of operating band (in 100 kHz resolution bandwidth).

6.2 Band Edge Test Procedure

789033 D02 General UNII Test Procedures New Rules v01 II.G.3.d)(ii)

Integration Method

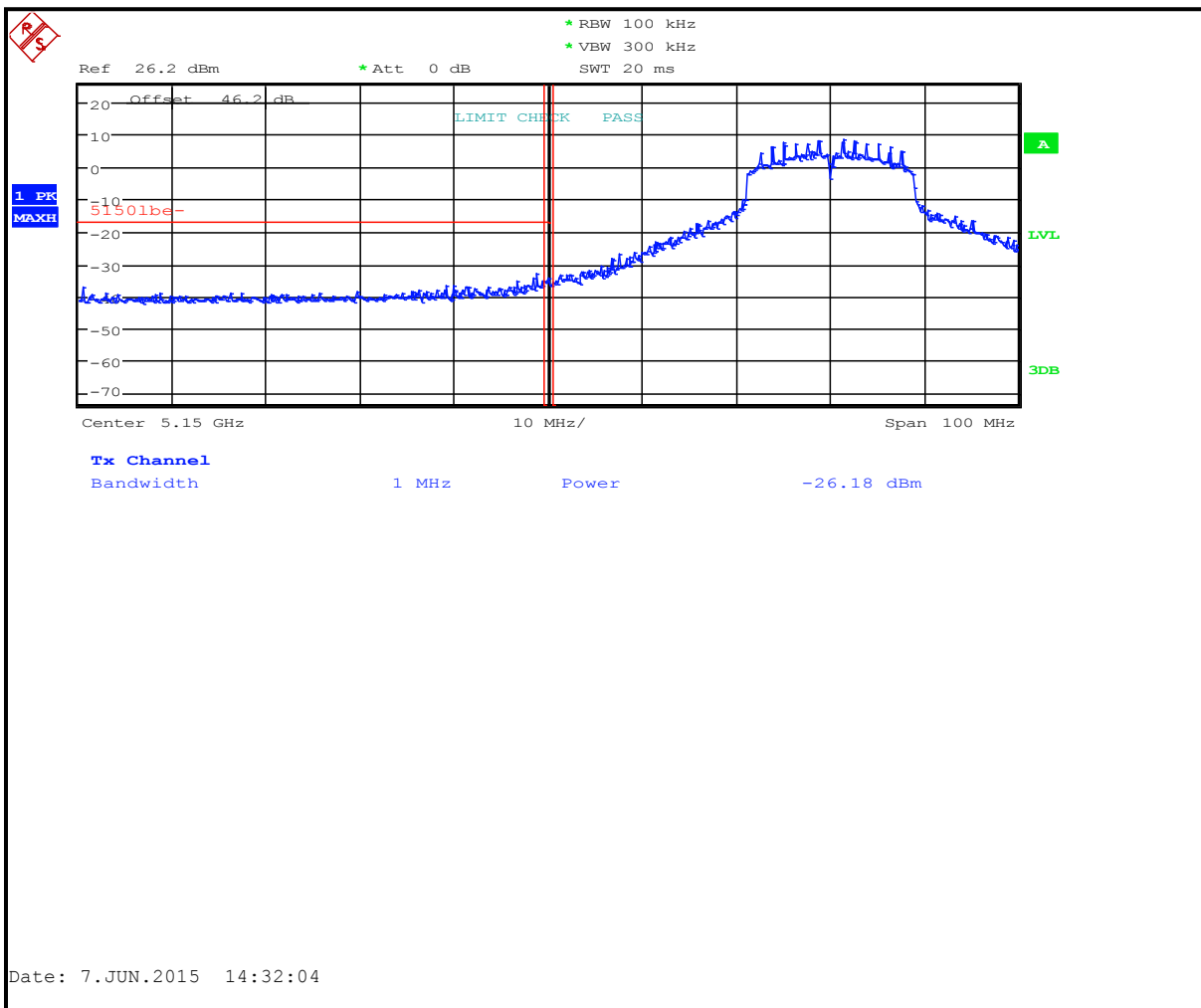
Table 6-1: Band Edge Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	FSU	Spectrum Analyzer	1166.1660.50	11/13/15
900321	EMCO	3161-03	Horn Antenna (4.0 - 8.2 GHz)	9508-1020	4/9/18
901592	Insulated Wire Inc.	KPS-1503- 3600-KPR	SMK RF Cables 20'	NA	9/3/15

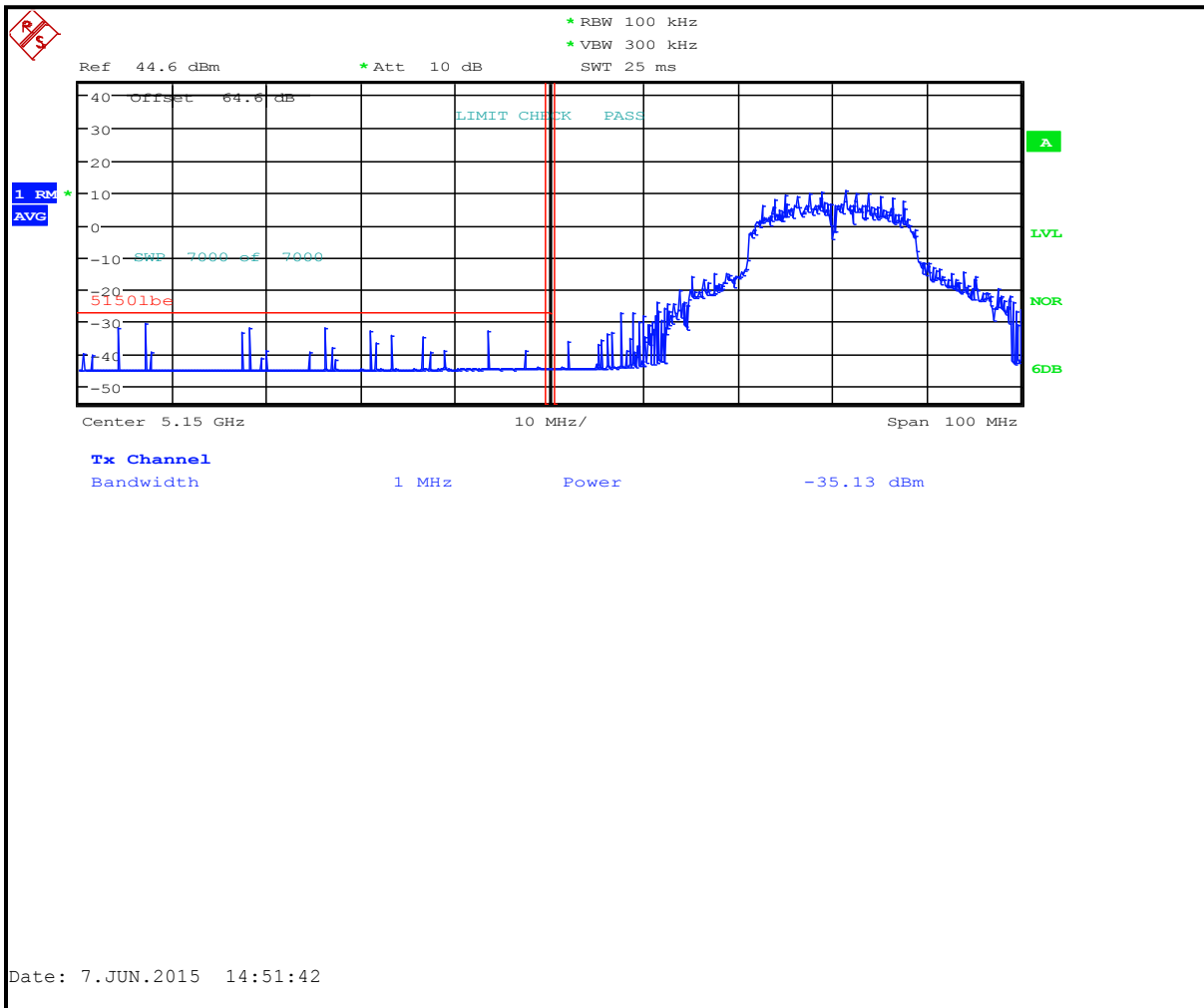
6.3 Band Edge Test Results

6.3.1 5150 – 5350 MHz Band Edges – 802.11a and 802.11n

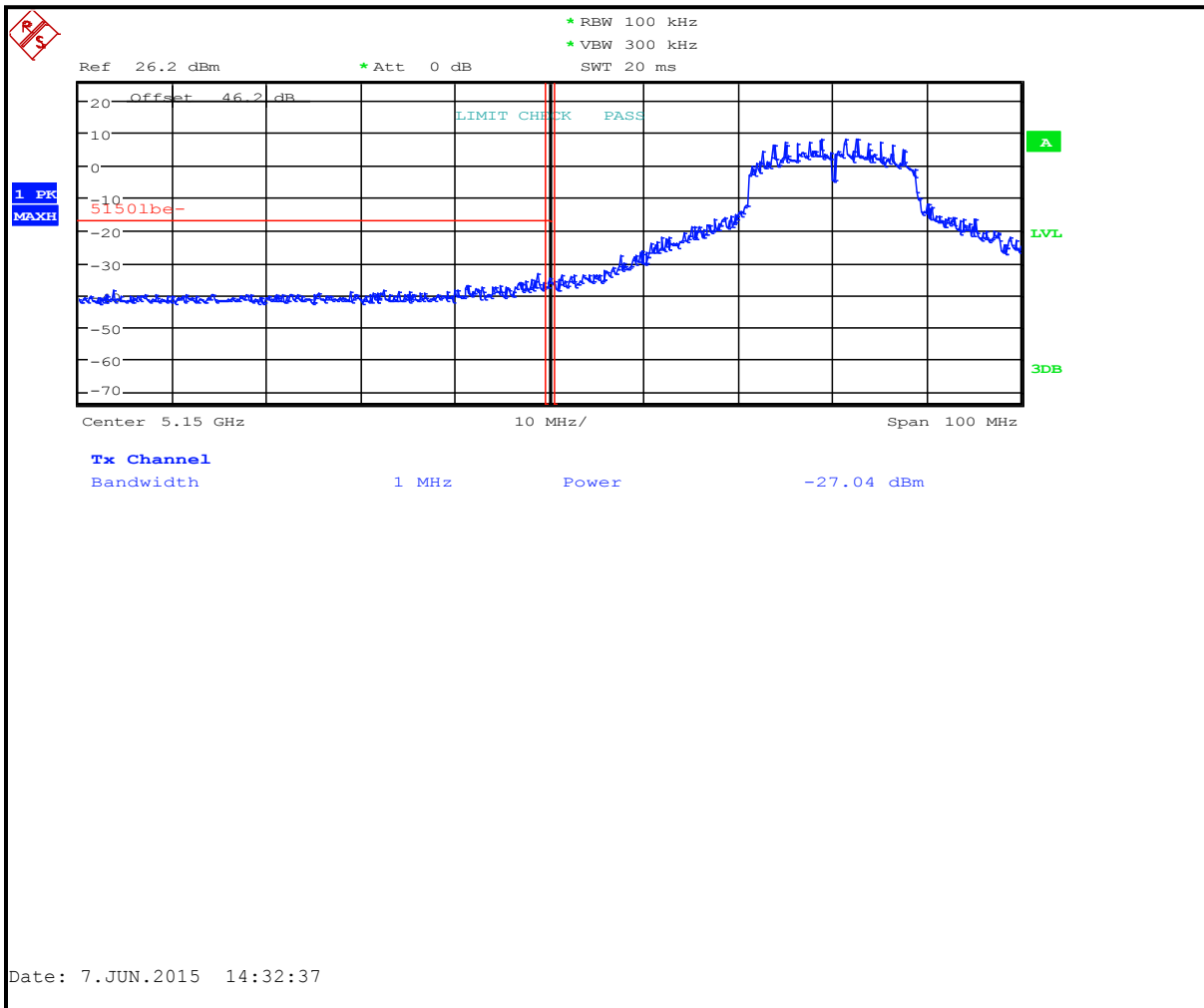
Plot 6-1: Lower Band Edge: Measurement Channel 36 (5180 MHz, 802.11a, Peak)



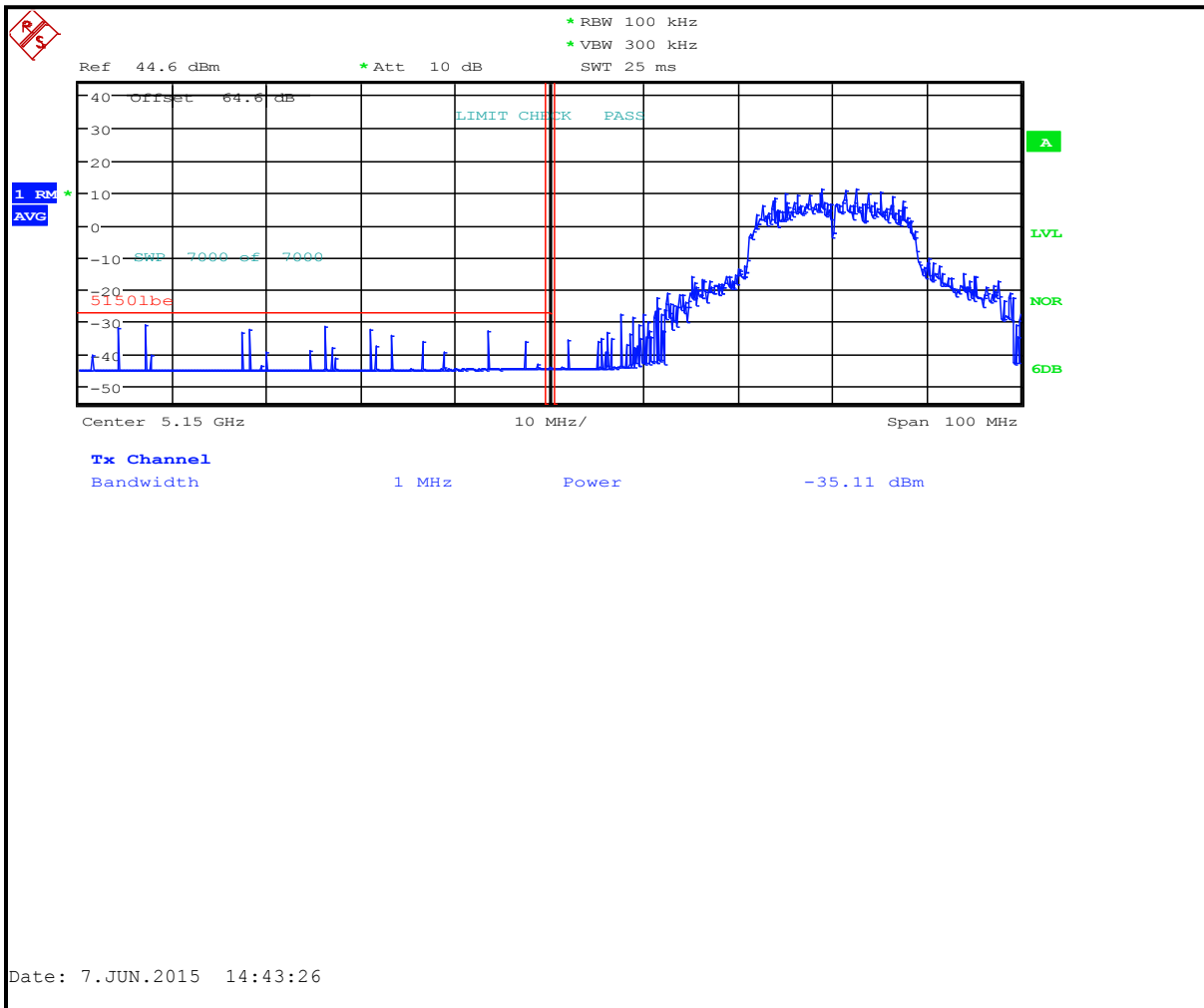
Plot 6-2: Lower Band Edge: Measurement Channel 36 (5180 MHz, 802.11a, Average)



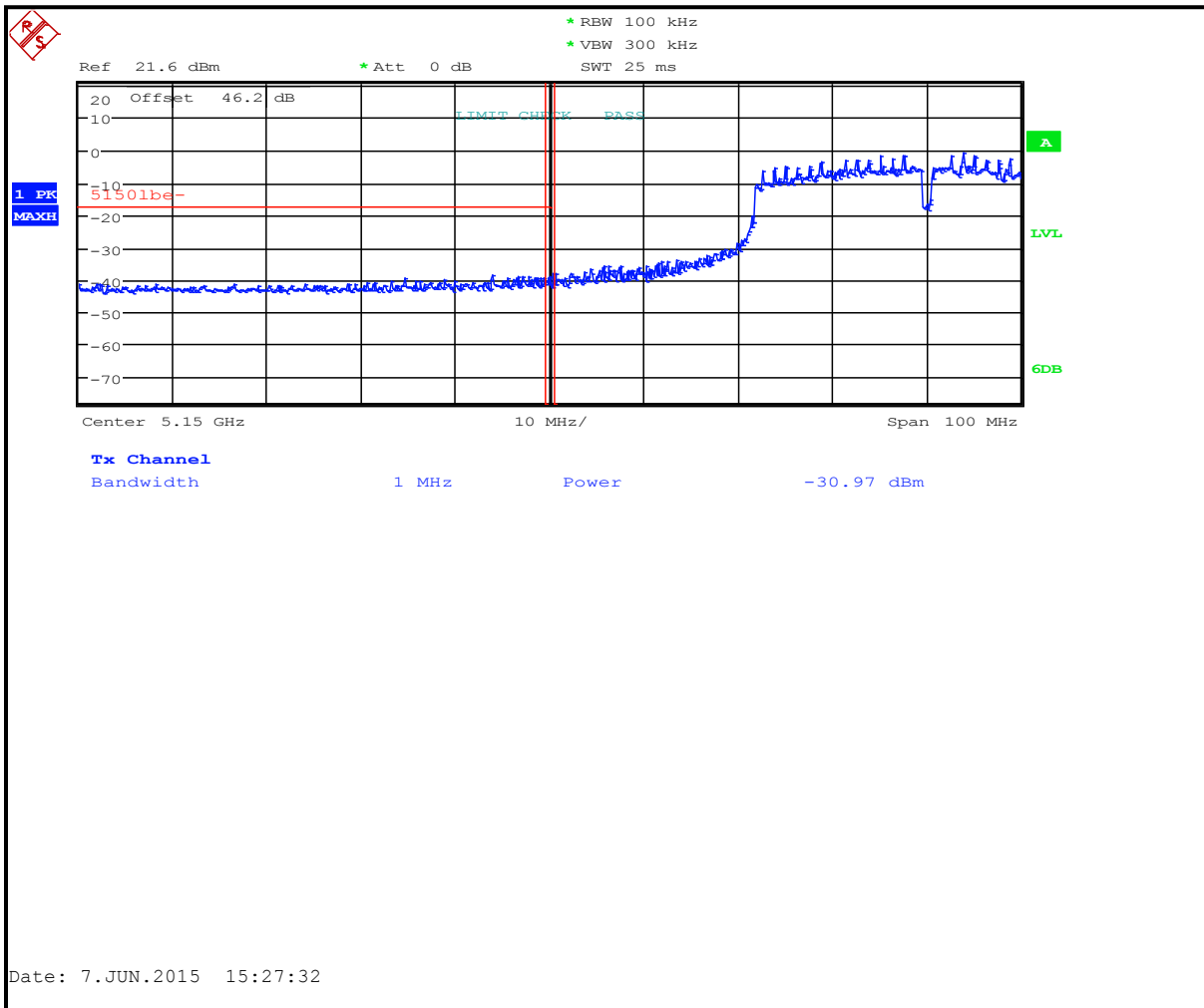
Plot 6-3: Lower Band Edge: Measurement Channel 36 (5180 MHz, 802.11n, Peak)

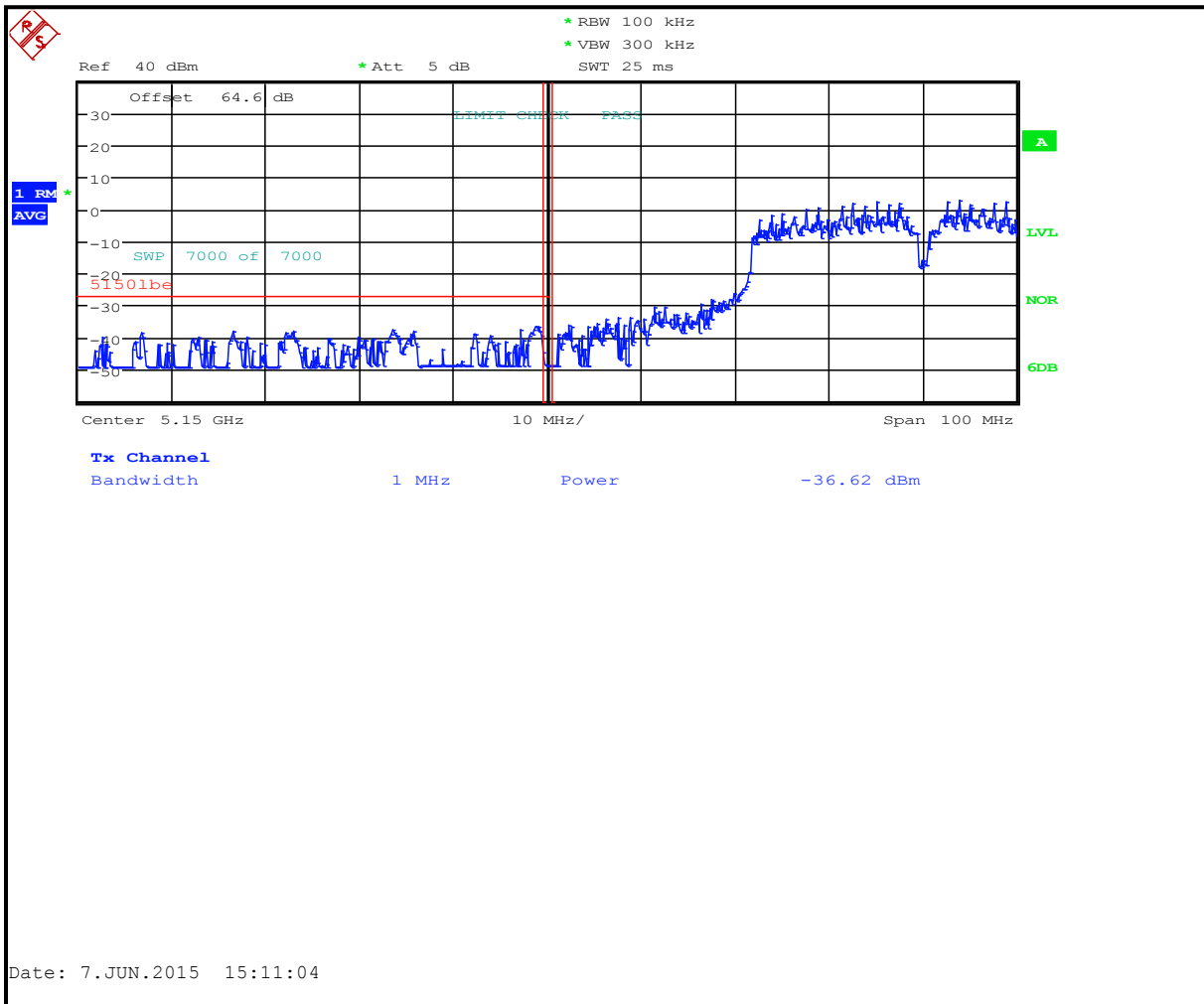


Plot 6-4: Lower Band Edge: Measurement Channel 36 (5180 MHz, 802.11n, Average)

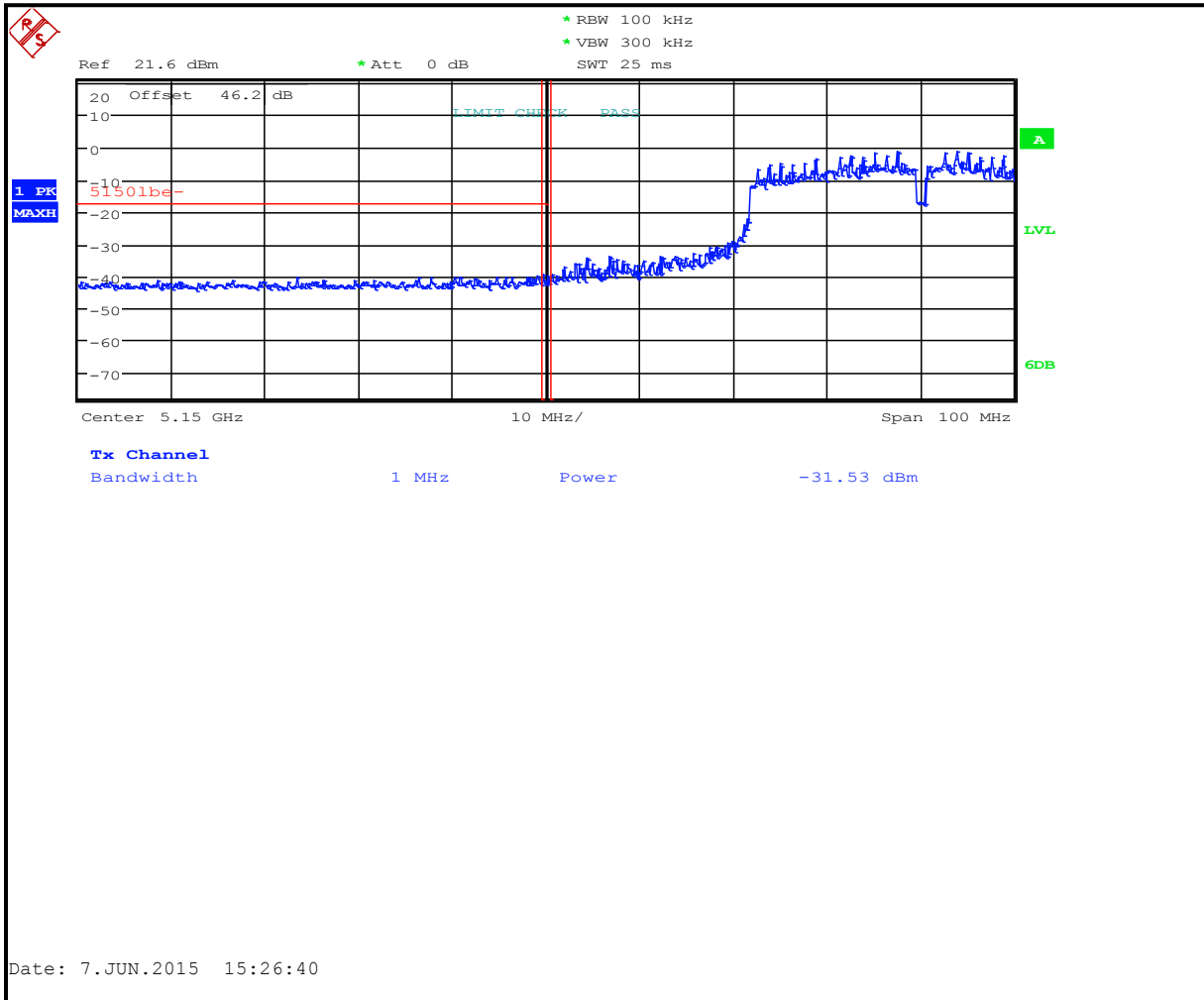


Plot 6-5: Lower Band Edge: Measurement Channel 36 (5180 MHz, 40 MHz BW, 802.11a, Peak)

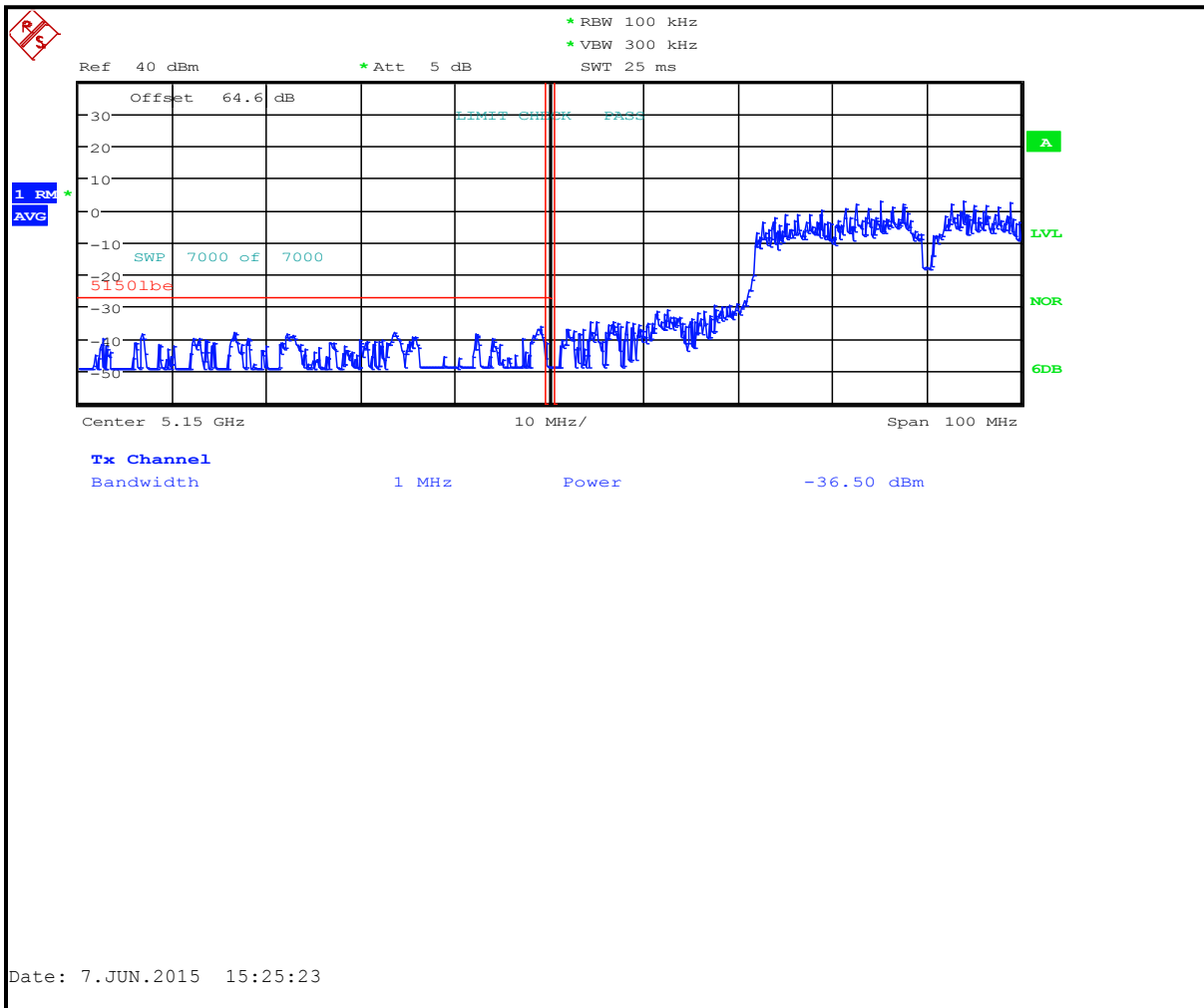




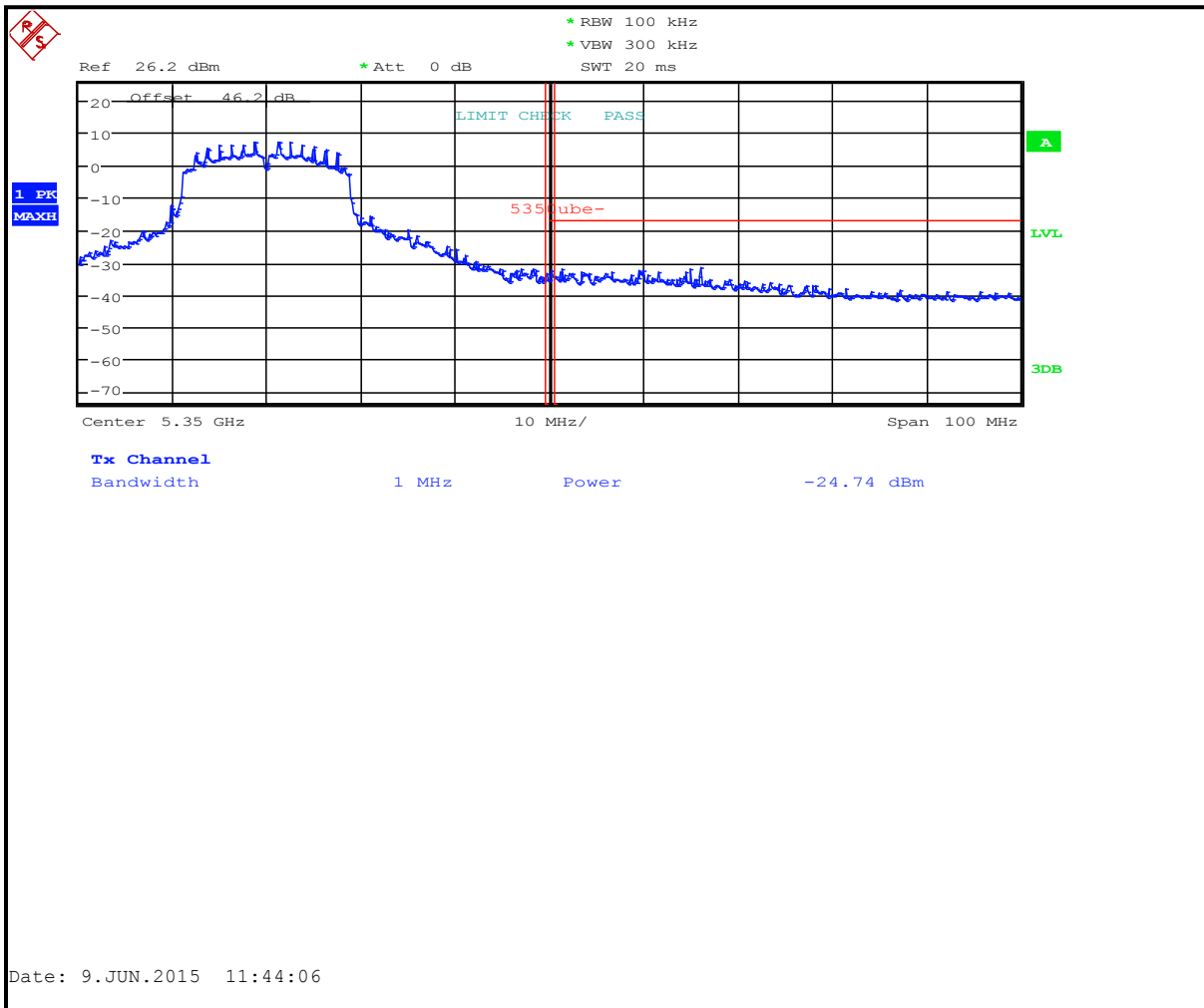
Plot 6-7: Lower Band Edge: Measurement Channel 36 (5180 MHz, 40 MHz BW, 802.11n, Peak)



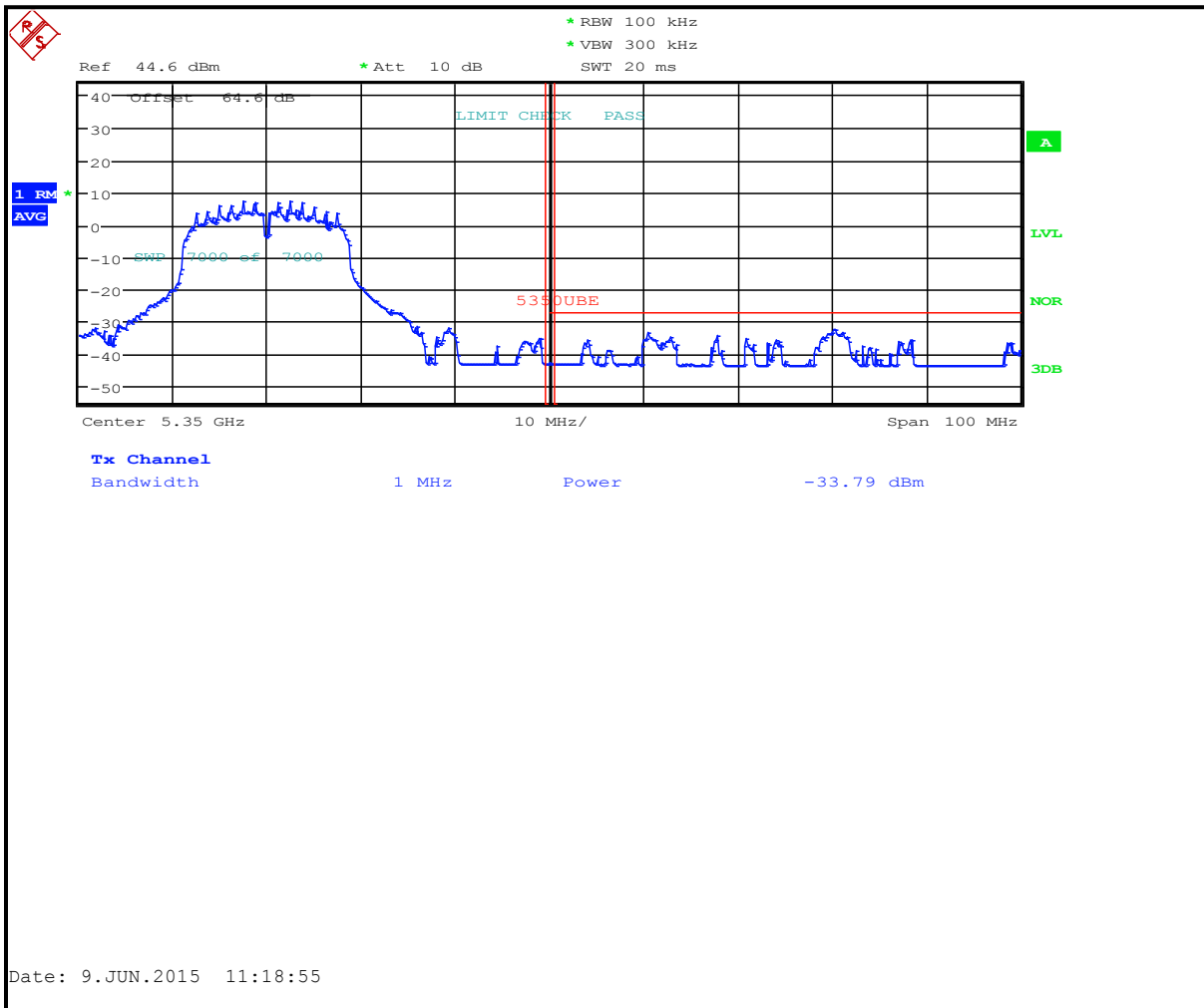
Plot 6-8: Lower Band Edge: Measurement Channel 36 (5180 MHz, 40 MHz BW, 802.11n, Average)



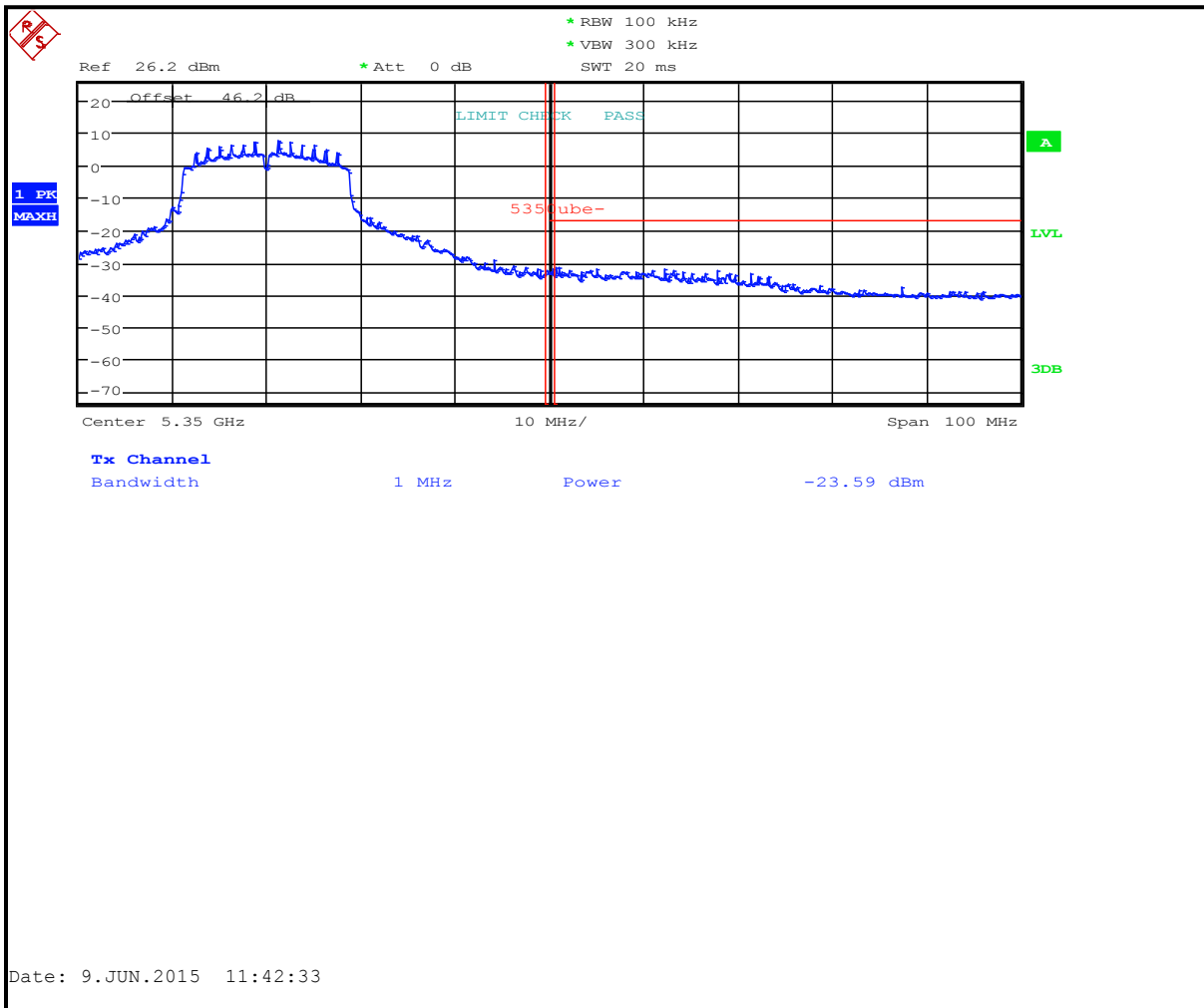
Plot 6-9: Upper Band Edge: Measurement Channel 64 (5320 MHz, 802.11a, Peak)



Plot 6-10: Upper Band Edge: Measurement Channel 64 (5320 MHz, 802.11a, Average)



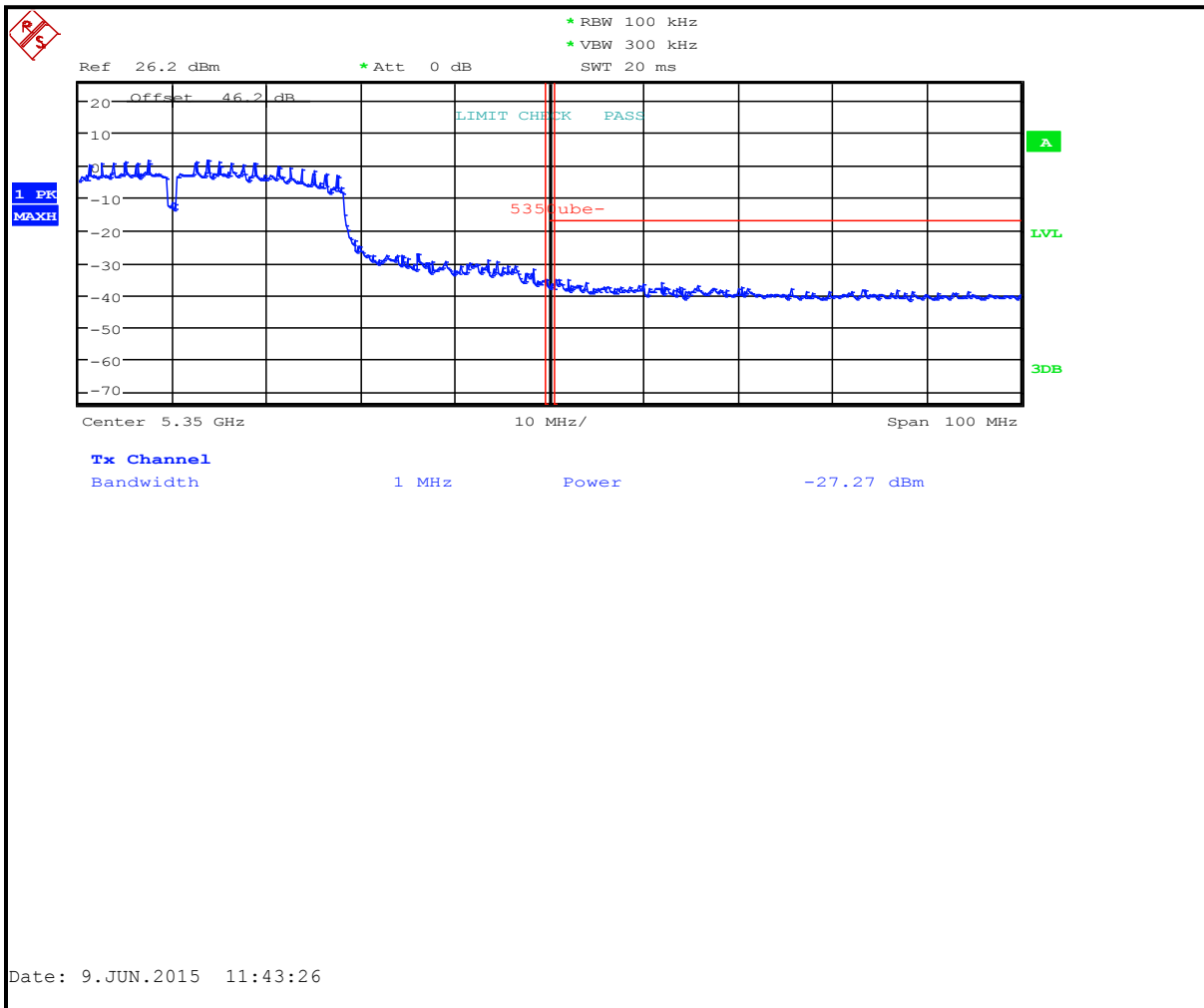
Plot 6-11: Upper Band Edge: Measurement Channel 64 (5320 MHz, 802.11n, Peak)



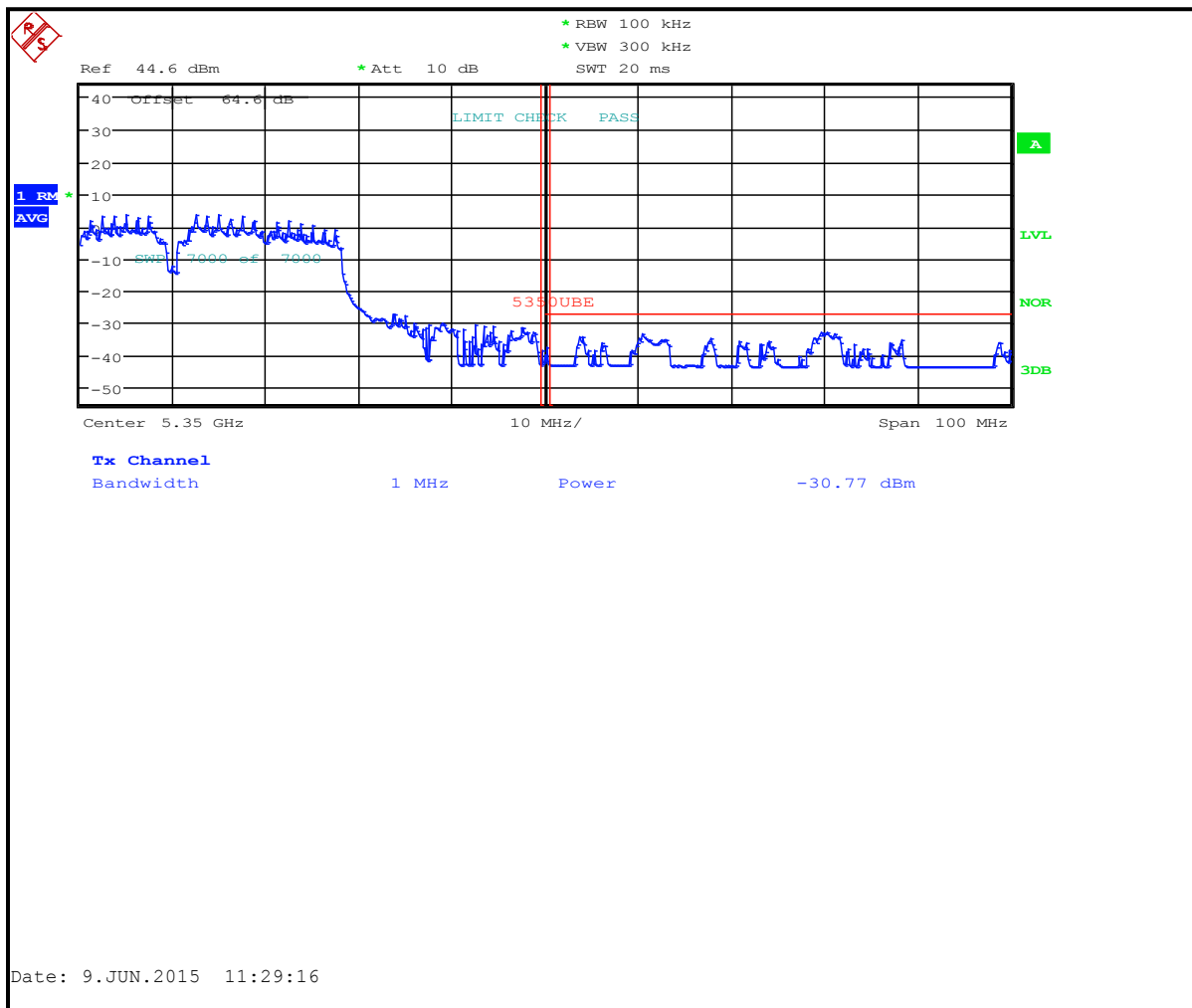
Plot 6-12: Upper Band Edge: Measurement Channel 64 (5320 MHz, 802.11n, Average)



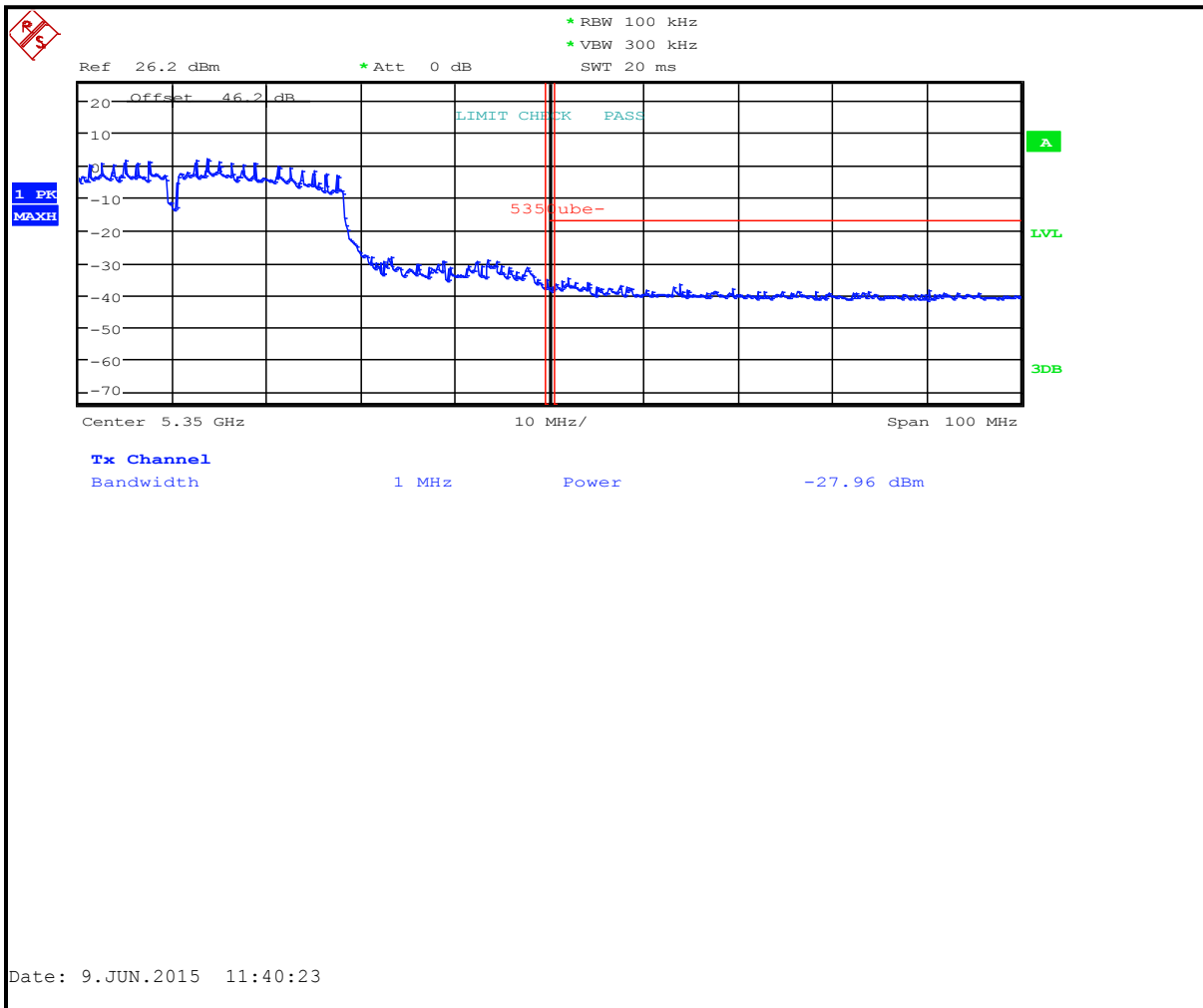
Plot 6-13: Upper Band Edge: Measurement Channel 64 (5320 MHz, 40 MHz BW, 802.11a, Peak)



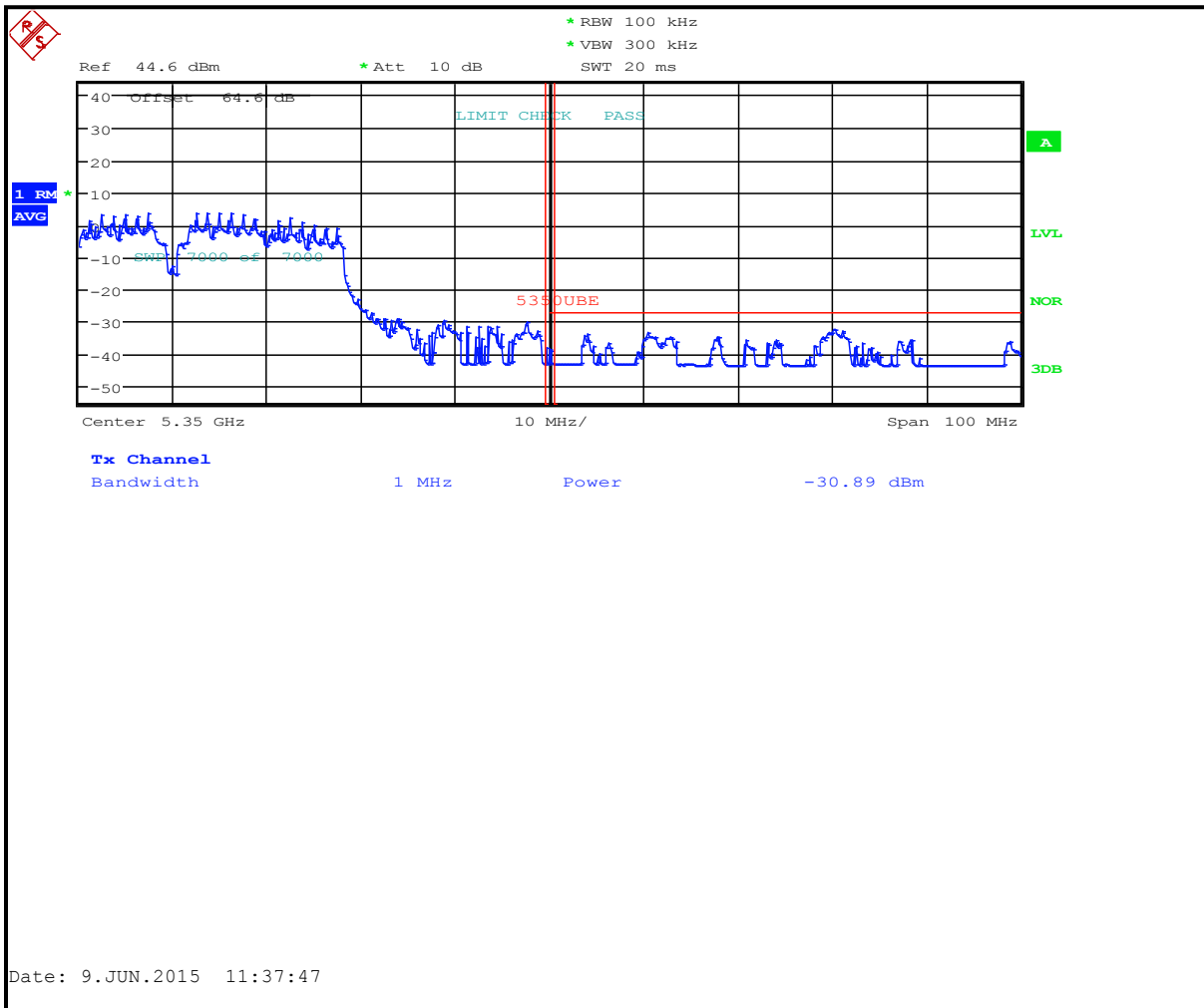
Plot 6-14: Upper Band Edge: Measurement Channel 64 (5320 MHz, 40 MHz BW, 802.11a, Average)



Plot 6-15: Upper Band Edge: Measurement Channel 64 (5320 MHz, 40 MHz BW, 802.11n, Peak)

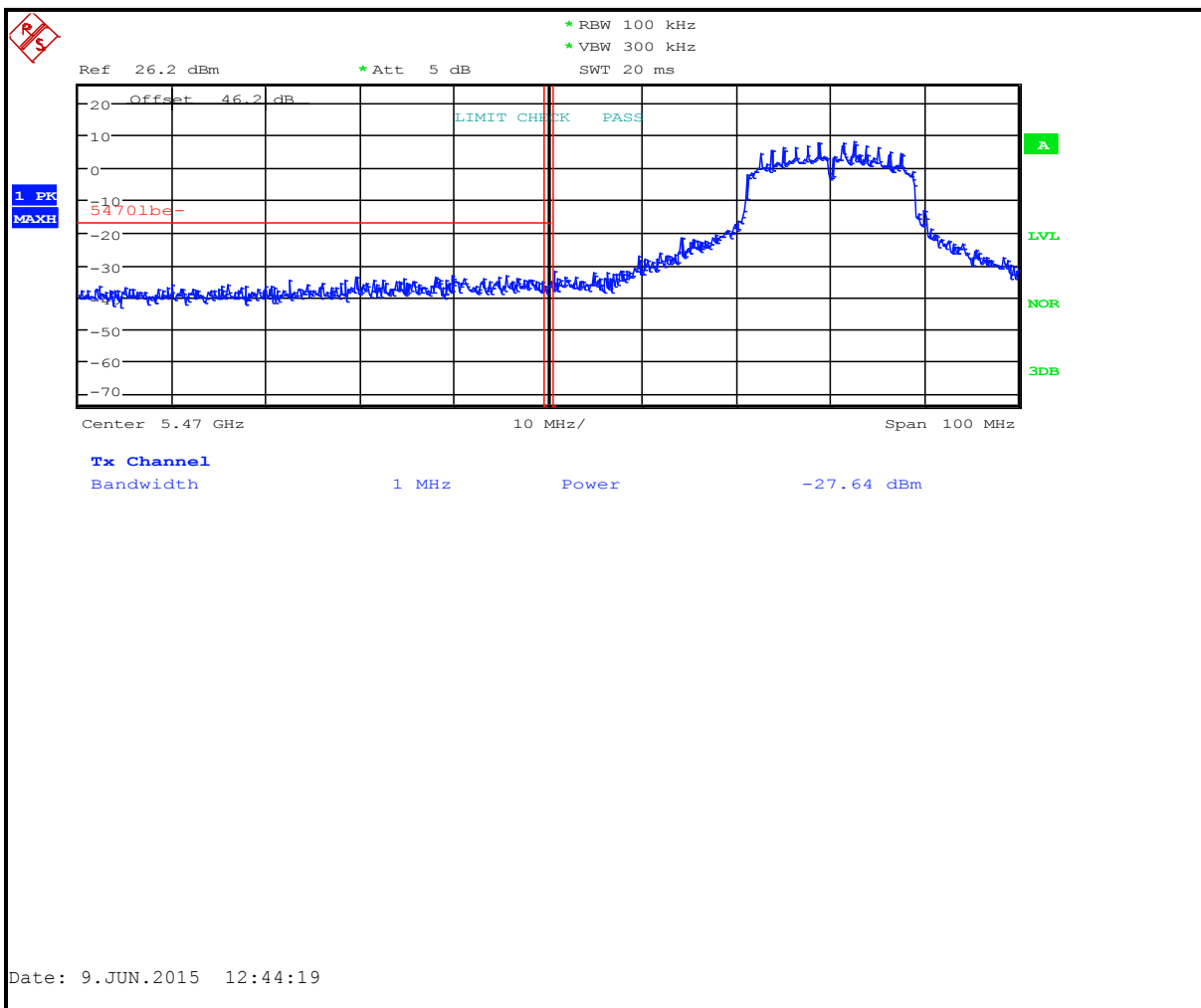


Plot 6-16: Upper Band Edge: Measurement Channel 64 (5320 MHz, 40 MHz BW, 802.11n, Average)

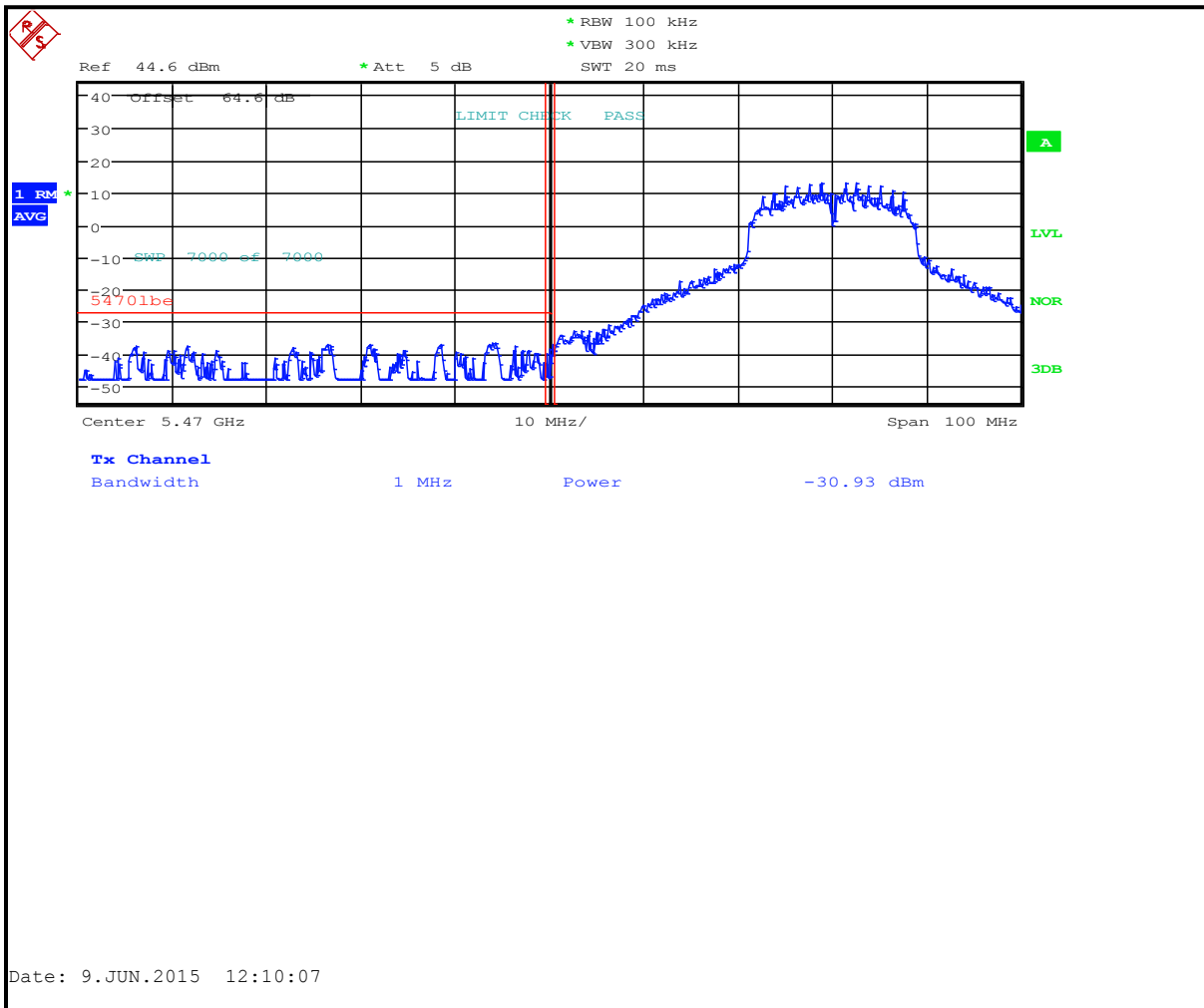


6.3.2 5470 – 5725 MHz Band Edges – 802.11a and 802.11n

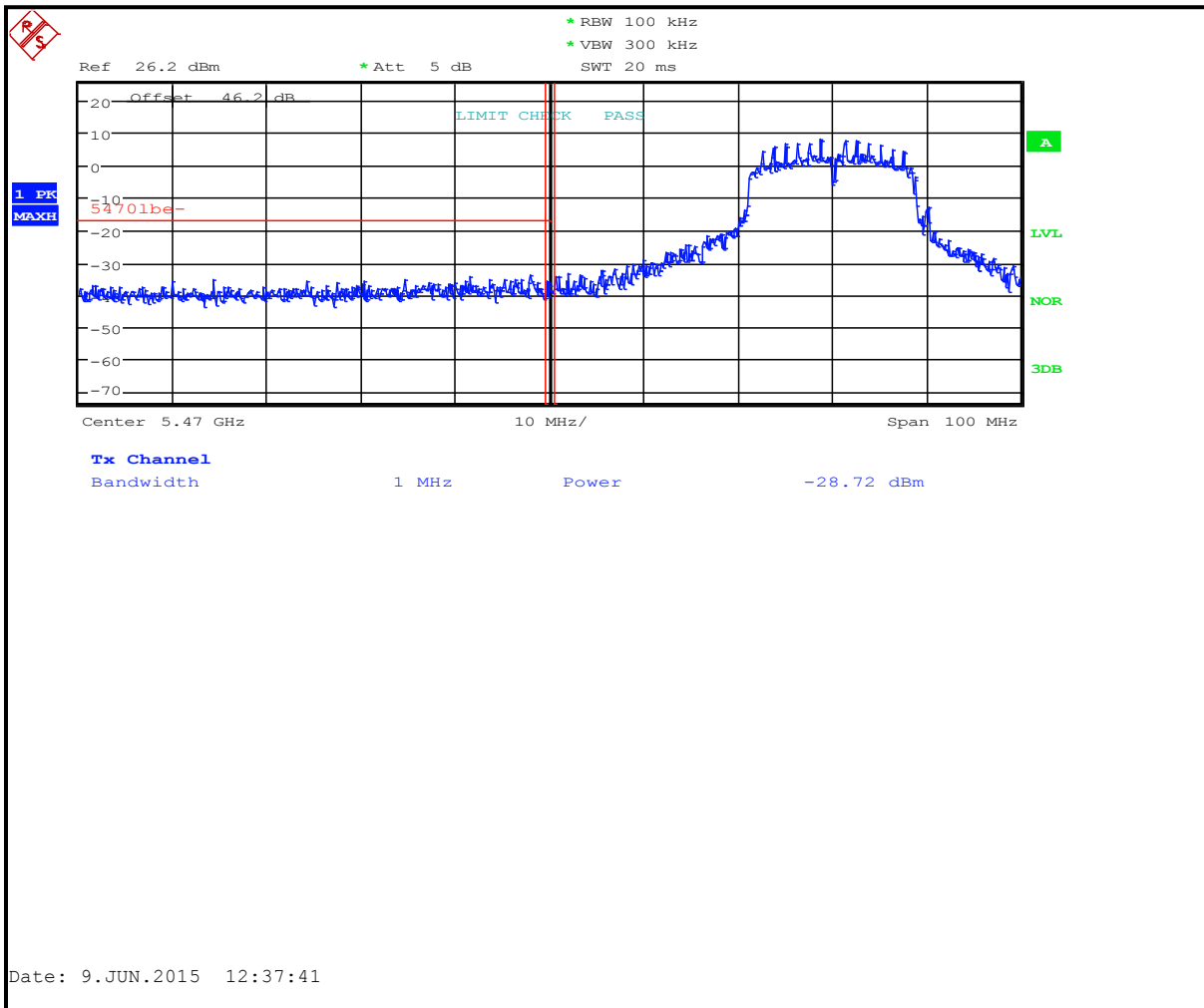
Plot 6-17: Lower Band Edge: Measurement Channel 100 (5500 MHz, 802.11a, Peak)



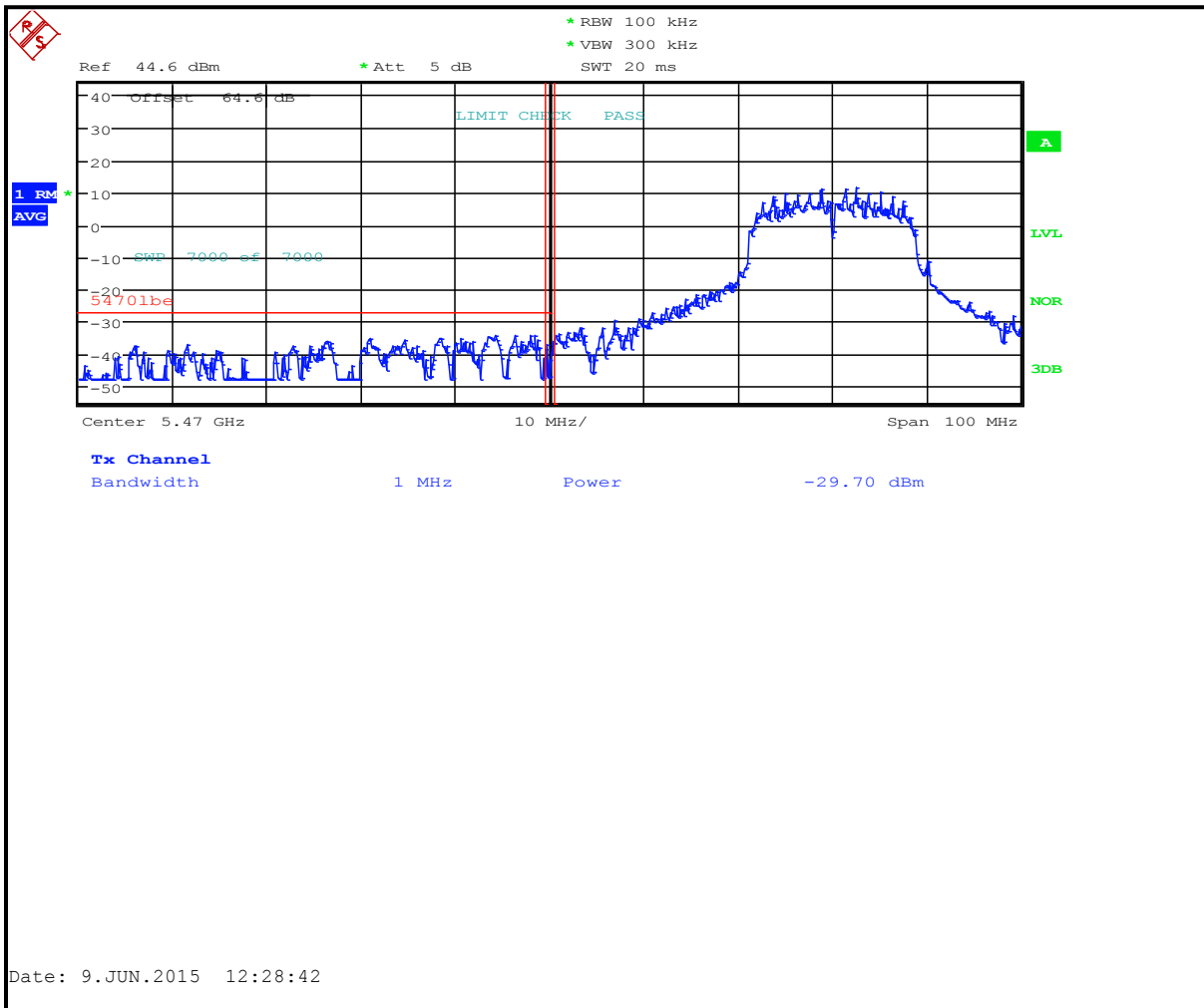
Plot 6-18: Lower Band Edge: Measurement Channel 100 (5500 MHz, 802.11a, Average)



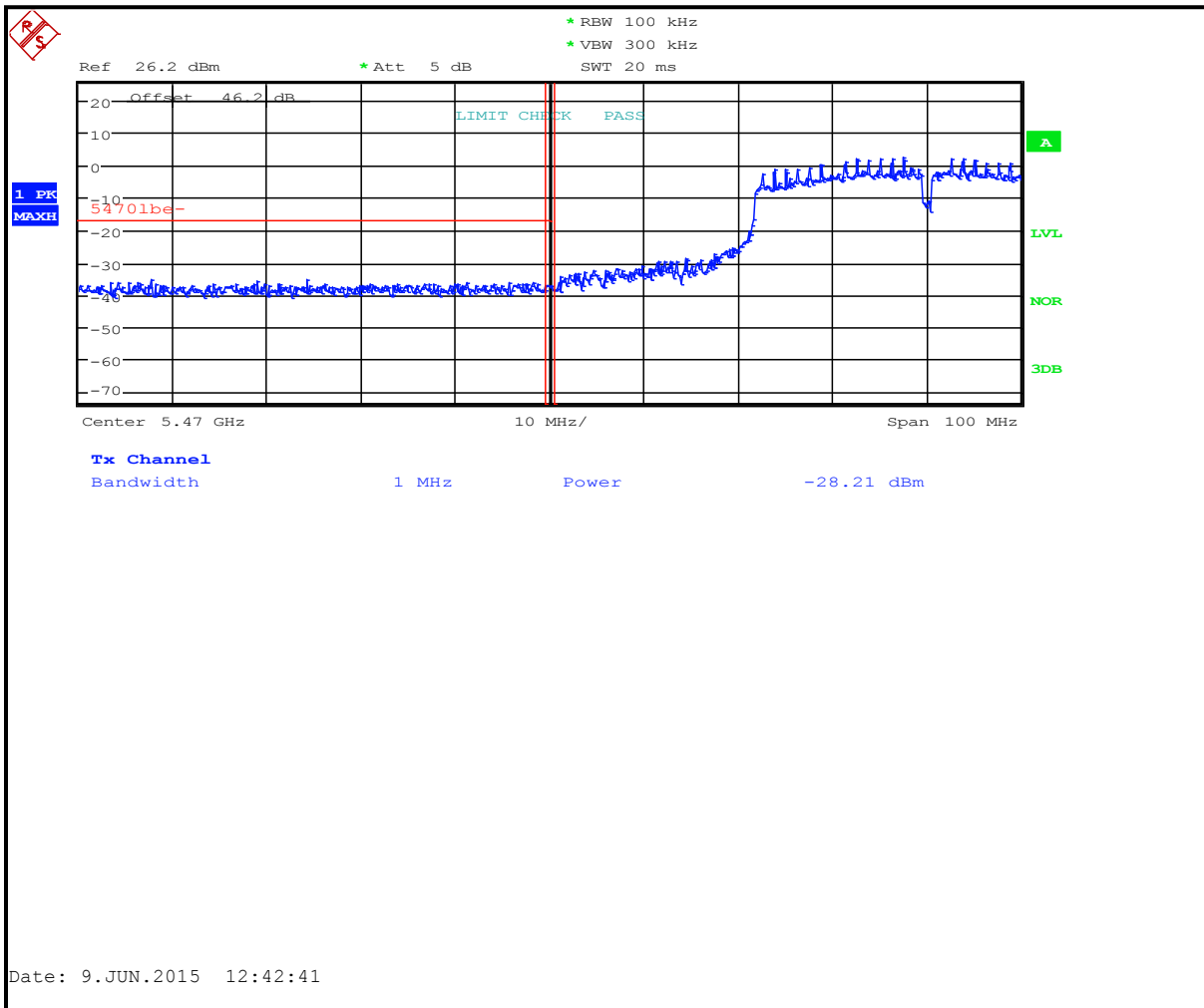
Plot 6-19: Lower Band Edge: Measurement Channel 100 (5500 MHz, 802.11n, Peak)



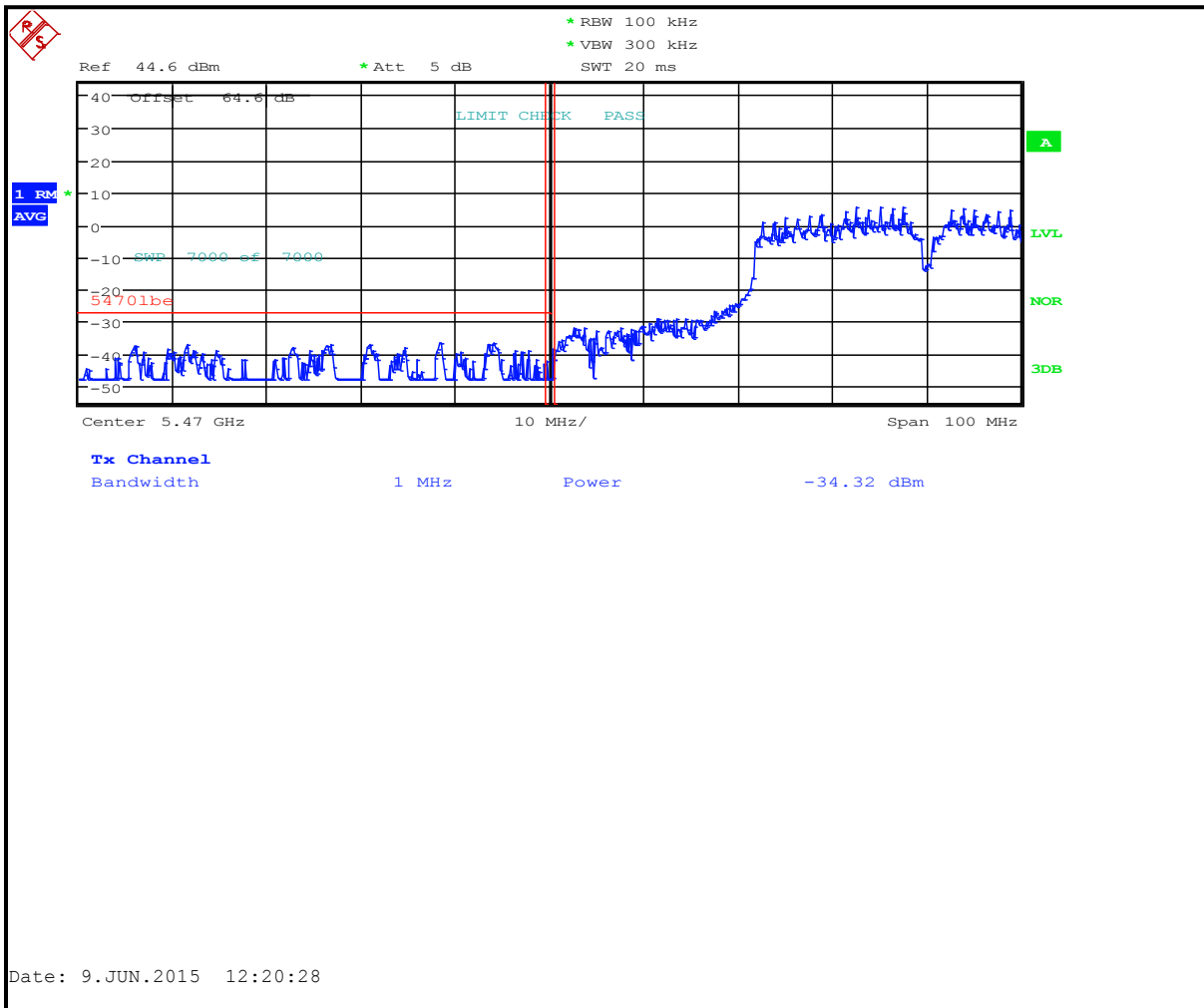
Plot 6-20: Lower Band Edge: Measurement Channel 100 (5500 MHz, 802.11n, Average)



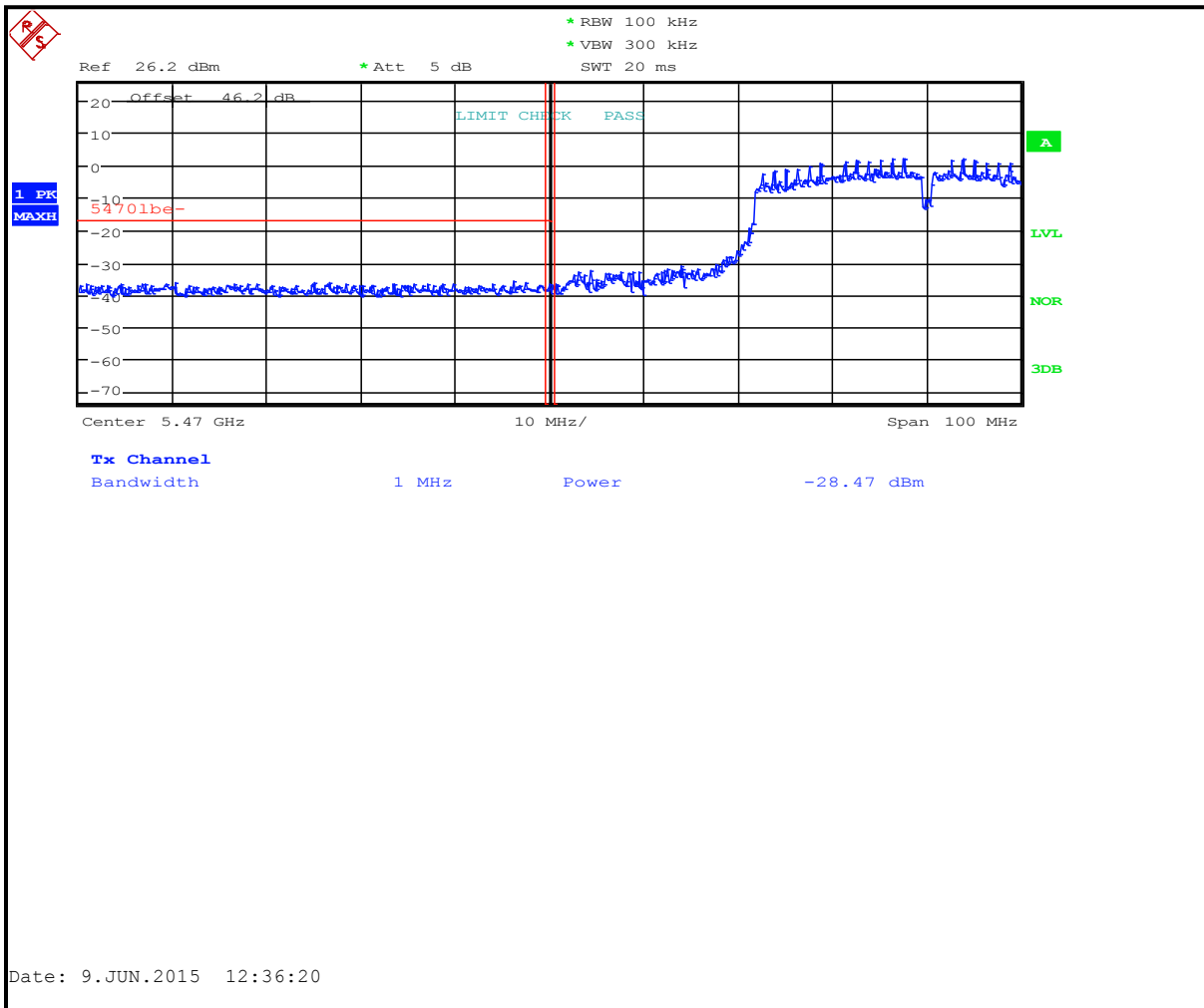
Plot 6-21: Lower Band Edge: Measurement Channel 100 (5500 MHz, 40 MHz BW, 802.11a, Peak)



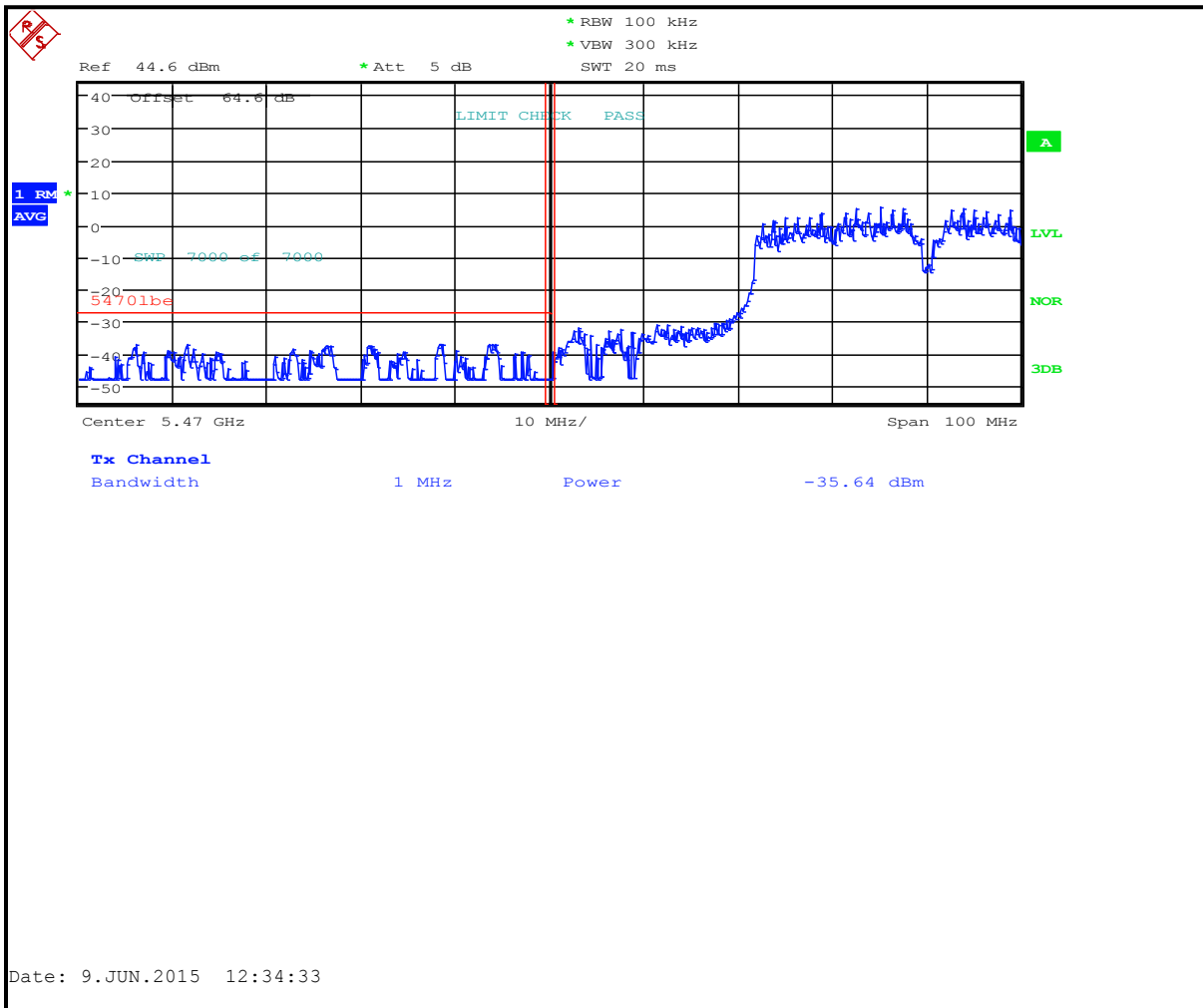
Plot 6-22: Lower Band Edge: Measurement Channel 100 (5500 MHz, 40 MHz BW, 802.11a, Average)



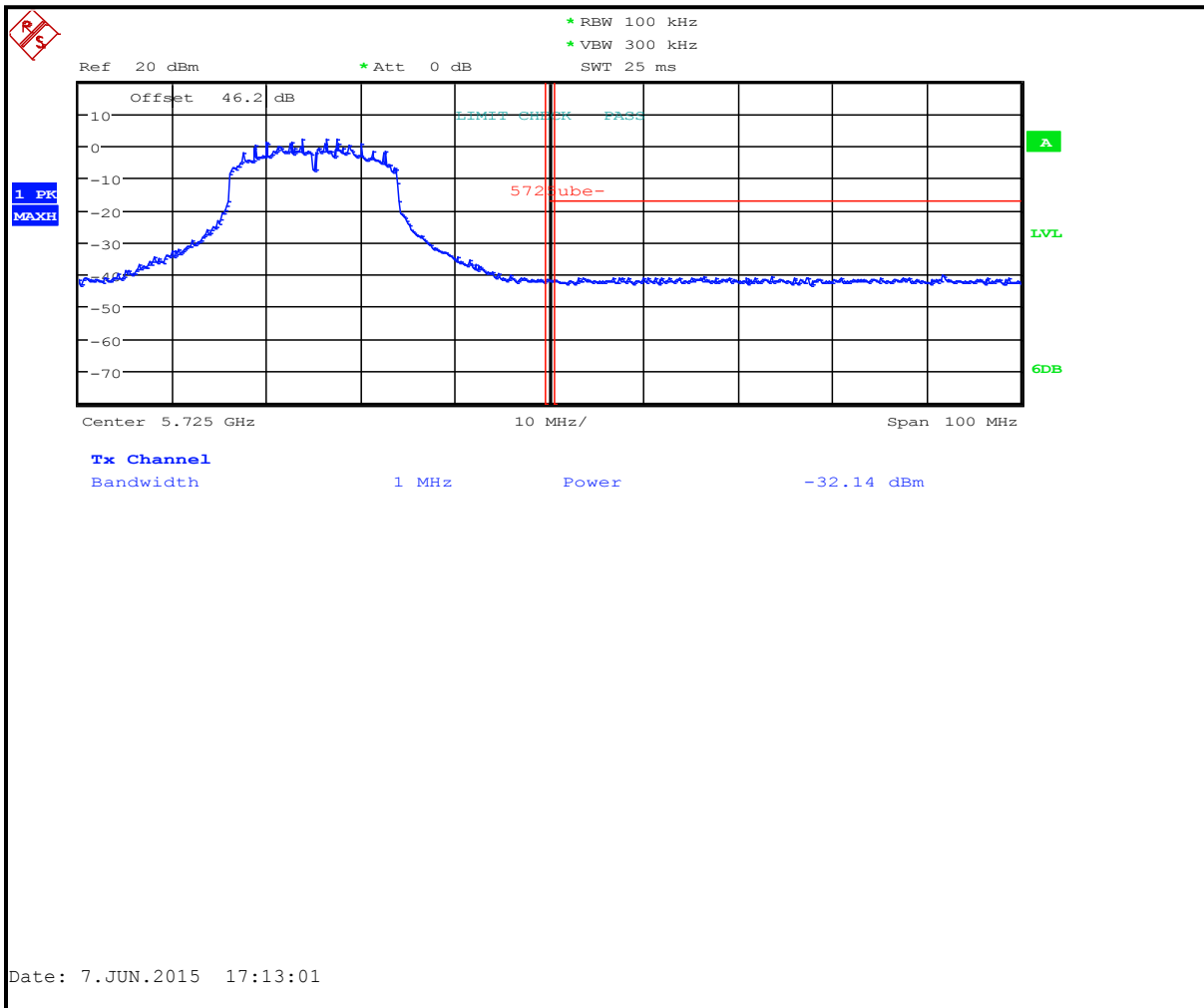
Plot 6-23: Lower Band Edge: Measurement Channel 100 (5500 MHz, 40 MHz BW, 802.11n, Peak)



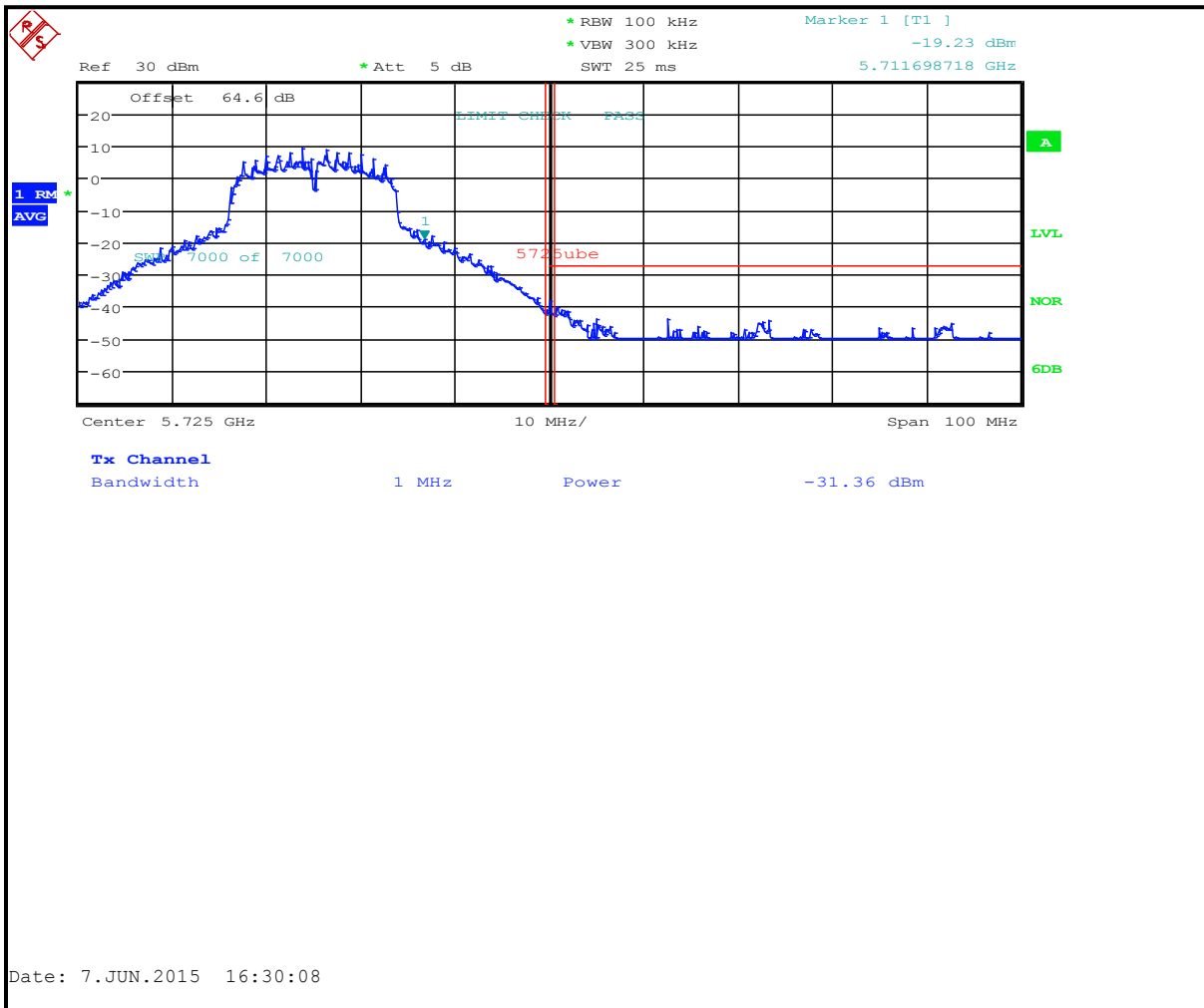
Plot 6-24: Lower Band Edge: Measurement Channel 100 (5500 MHz, 40 MHz BW, 802.11n, Average)

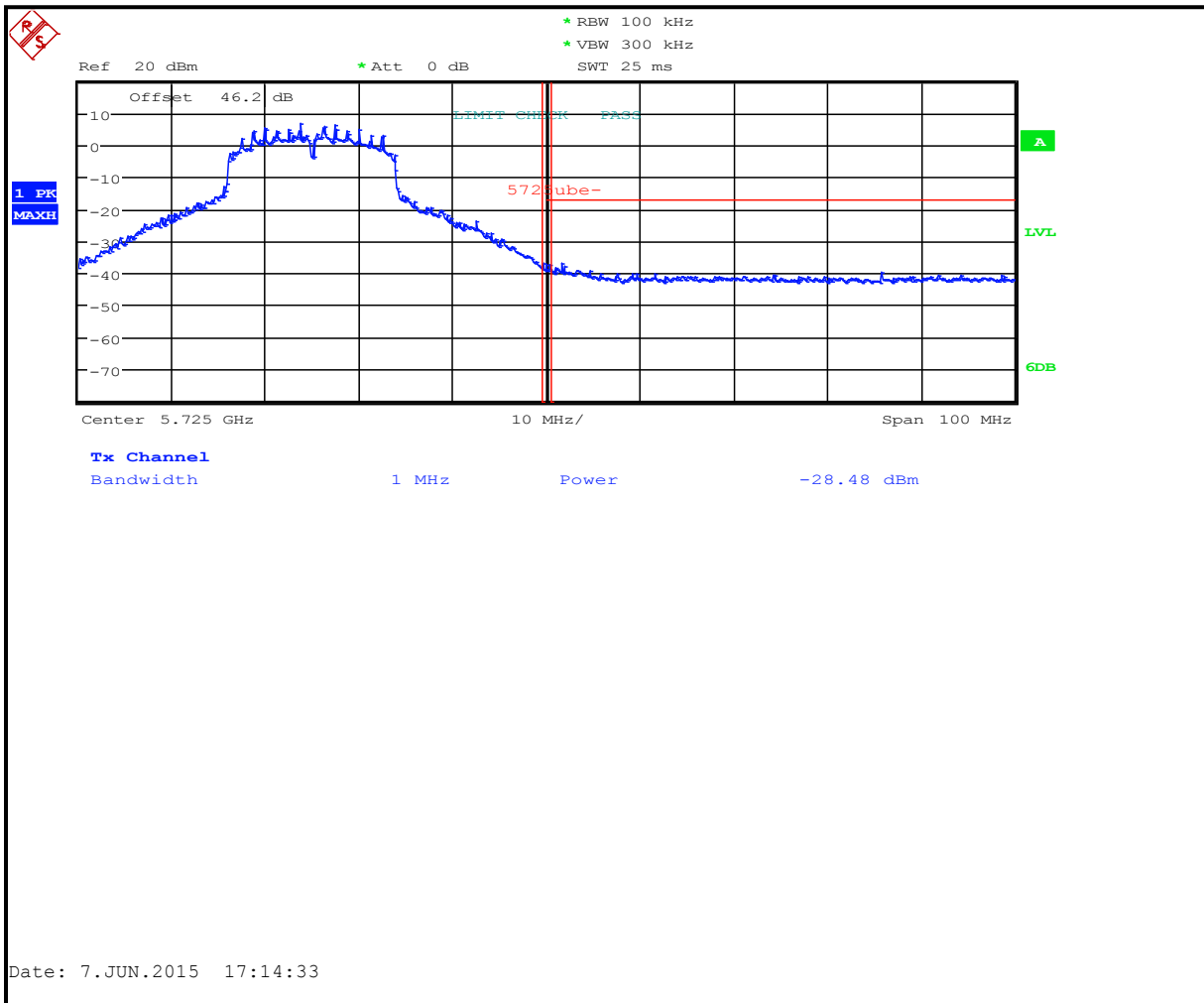


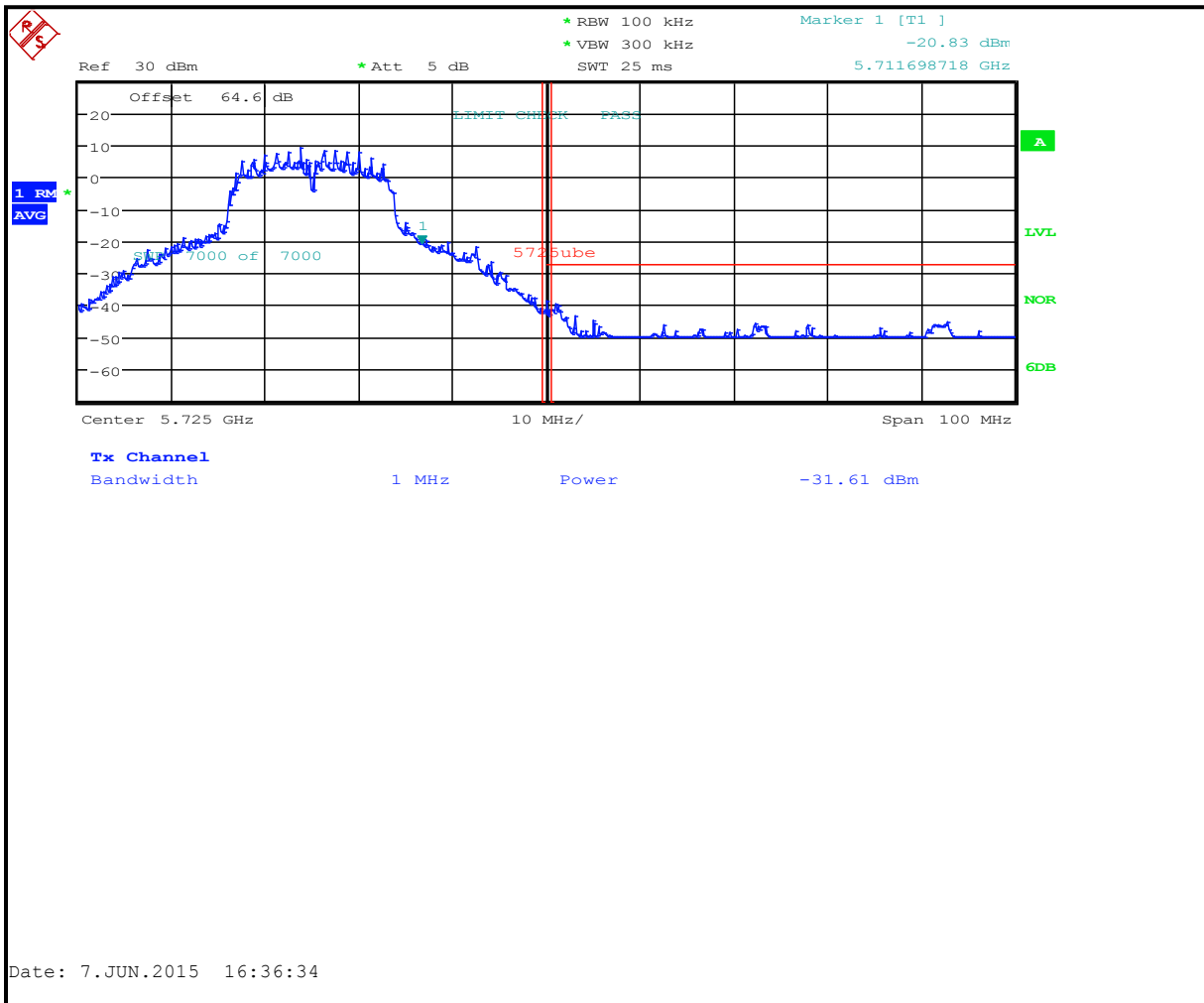
Plot 6-25: Upper Band Edge: Measurement Channel 140 (5700 MHz, 802.11a, Peak)

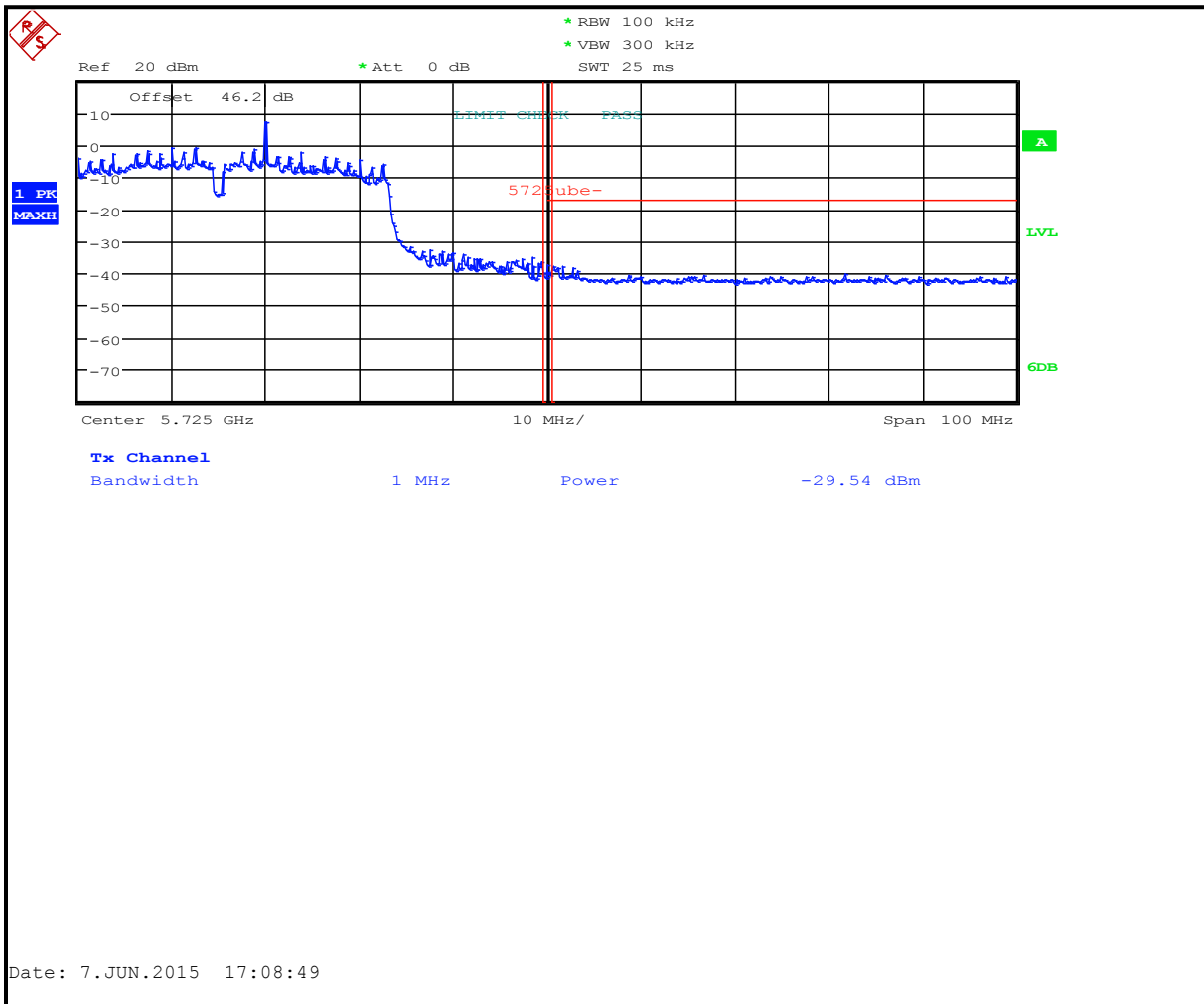


Plot 6-26: Upper Band Edge: Measurement Channel 140 (5700 MHz, 802.11a, Average)

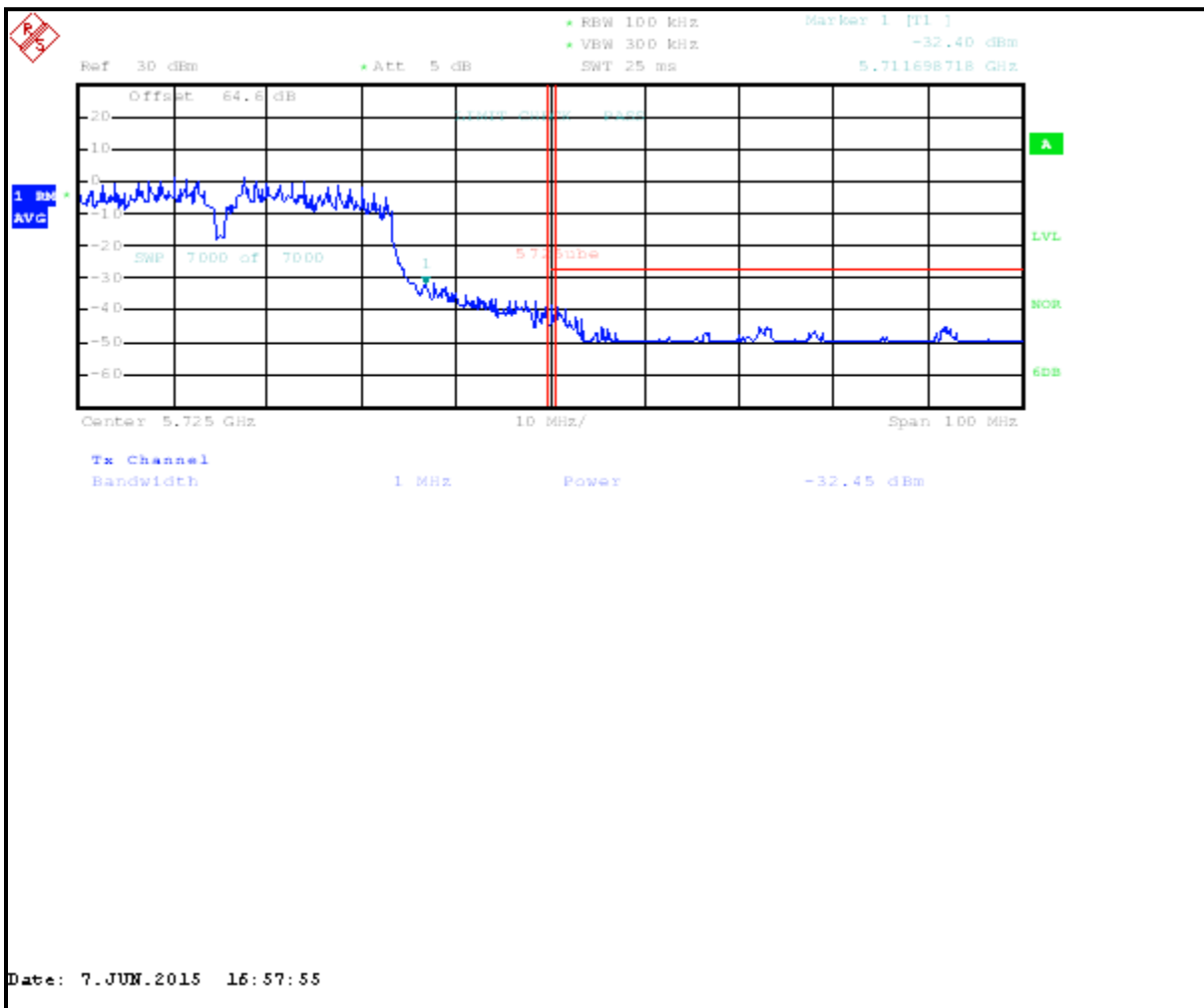




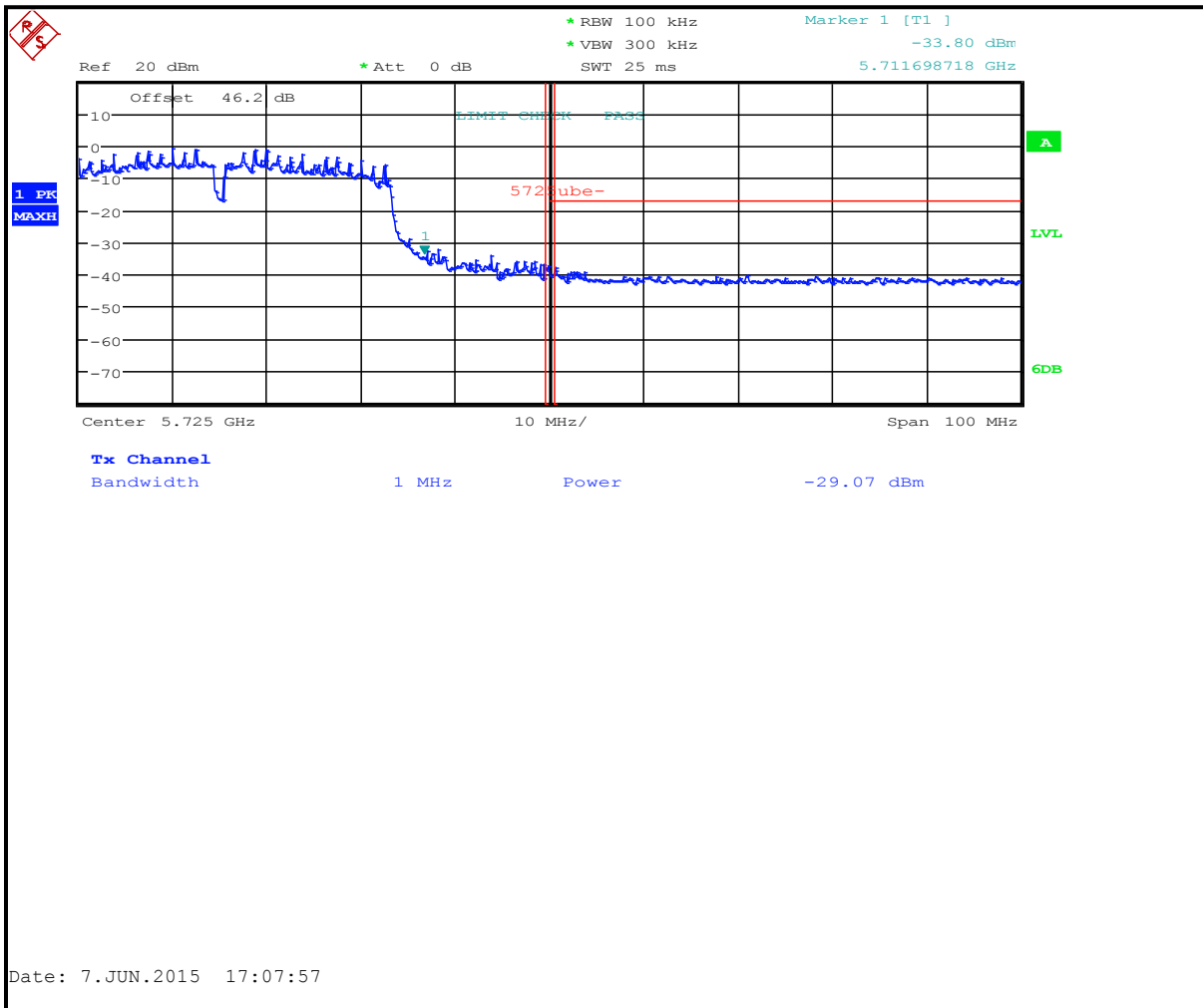




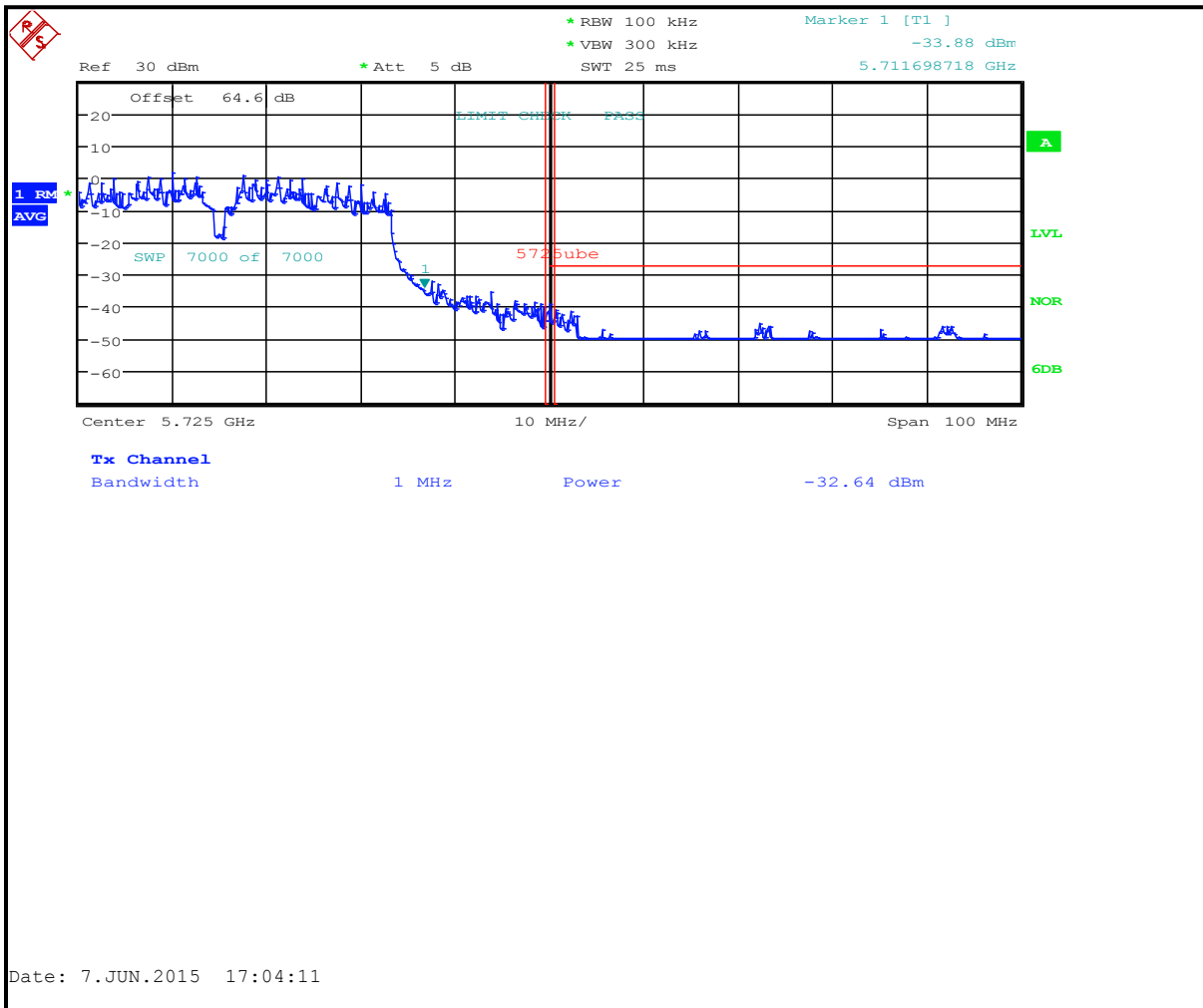
Plot 6-30: Upper Band Edge: Measurement Channel 140 (5700 MHz, 40 MHz BW, 802.11a, Average)



Plot 6-31: Upper Band Edge: Measurement Channel 140 (5700 MHz, 40 MHz BW, 802.11n, Peak)

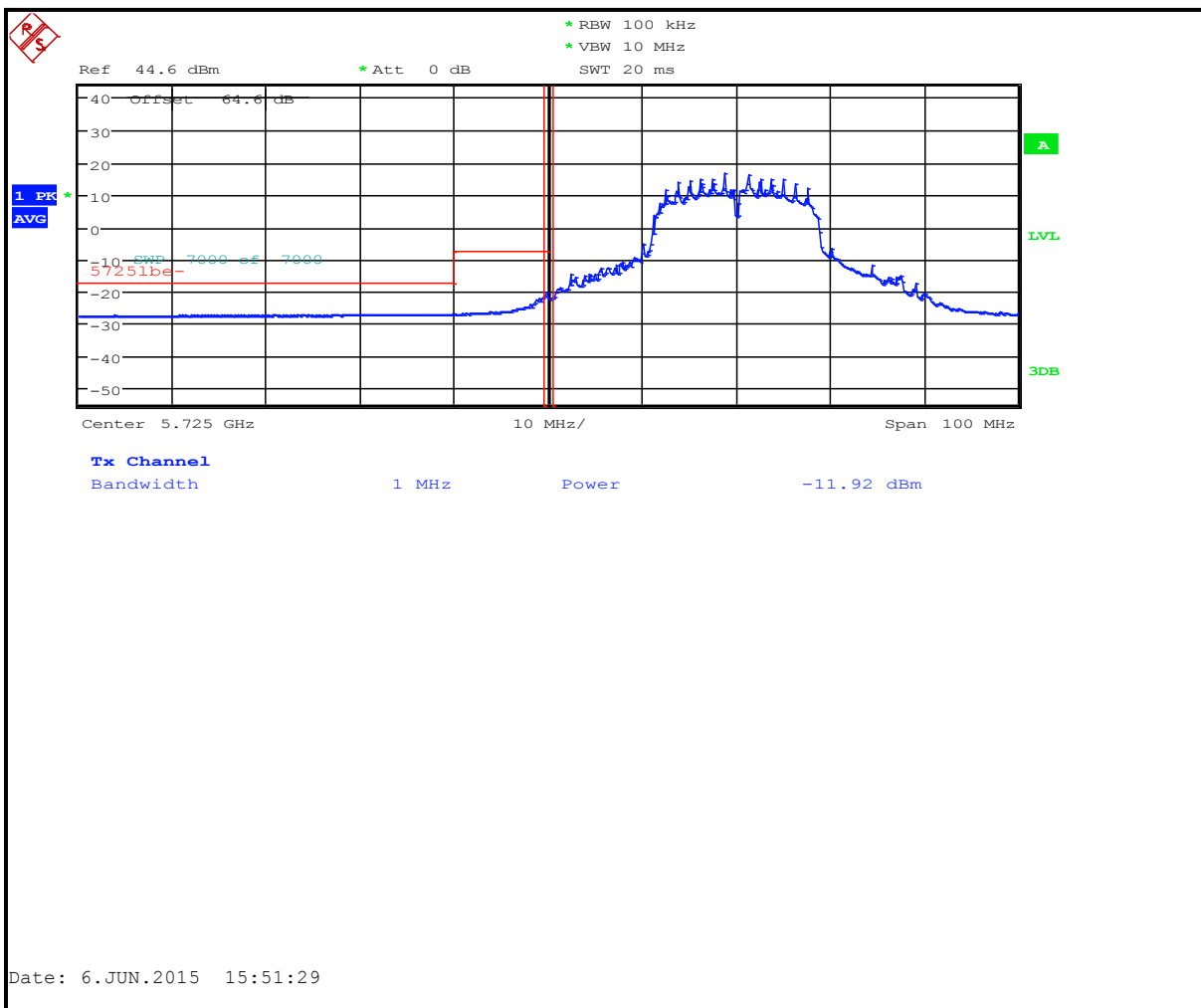


Plot 6-32: Upper Band Edge: Measurement Channel 140 (5700 MHz, 40 MHz BW, 802.11n, Average)

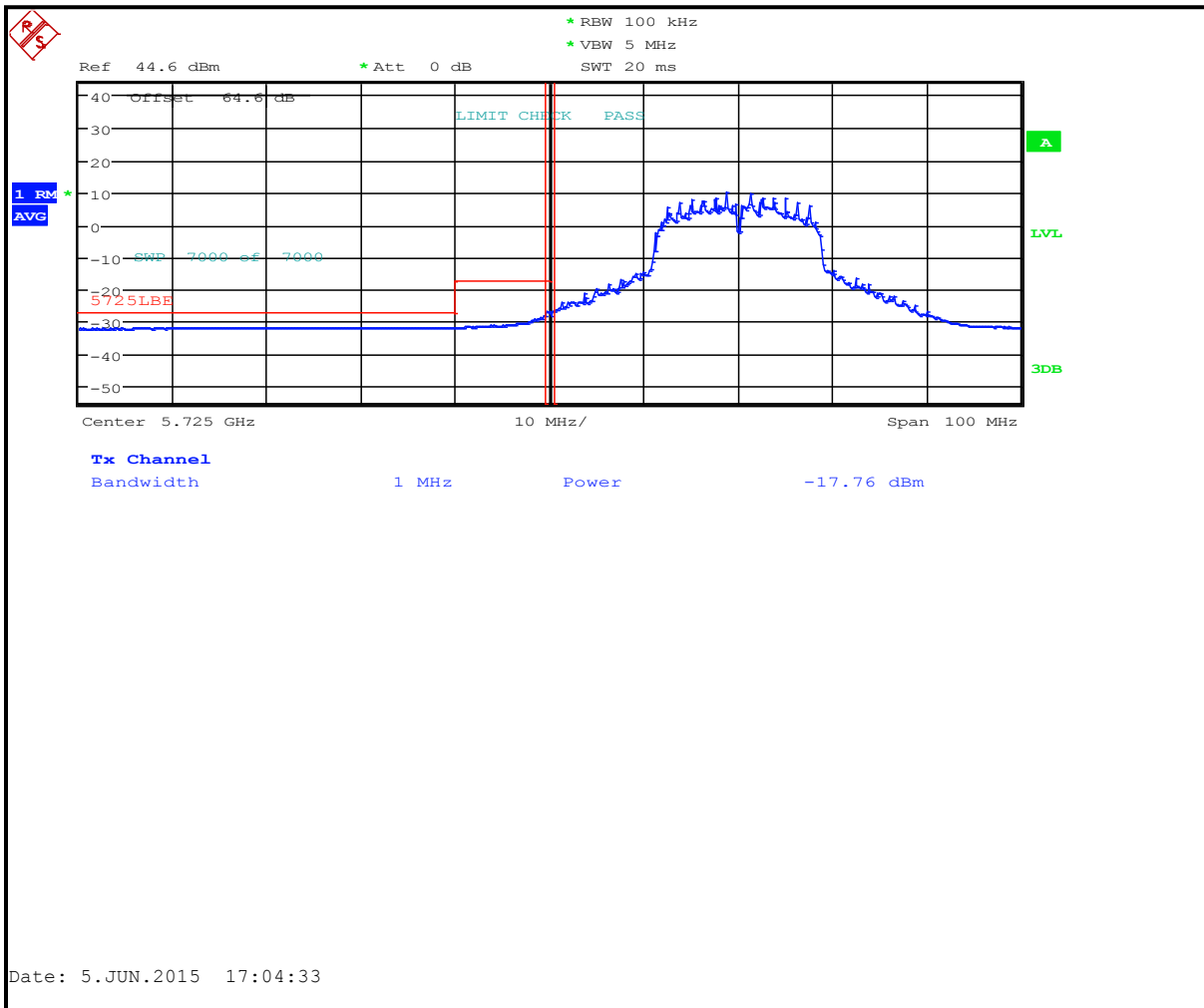


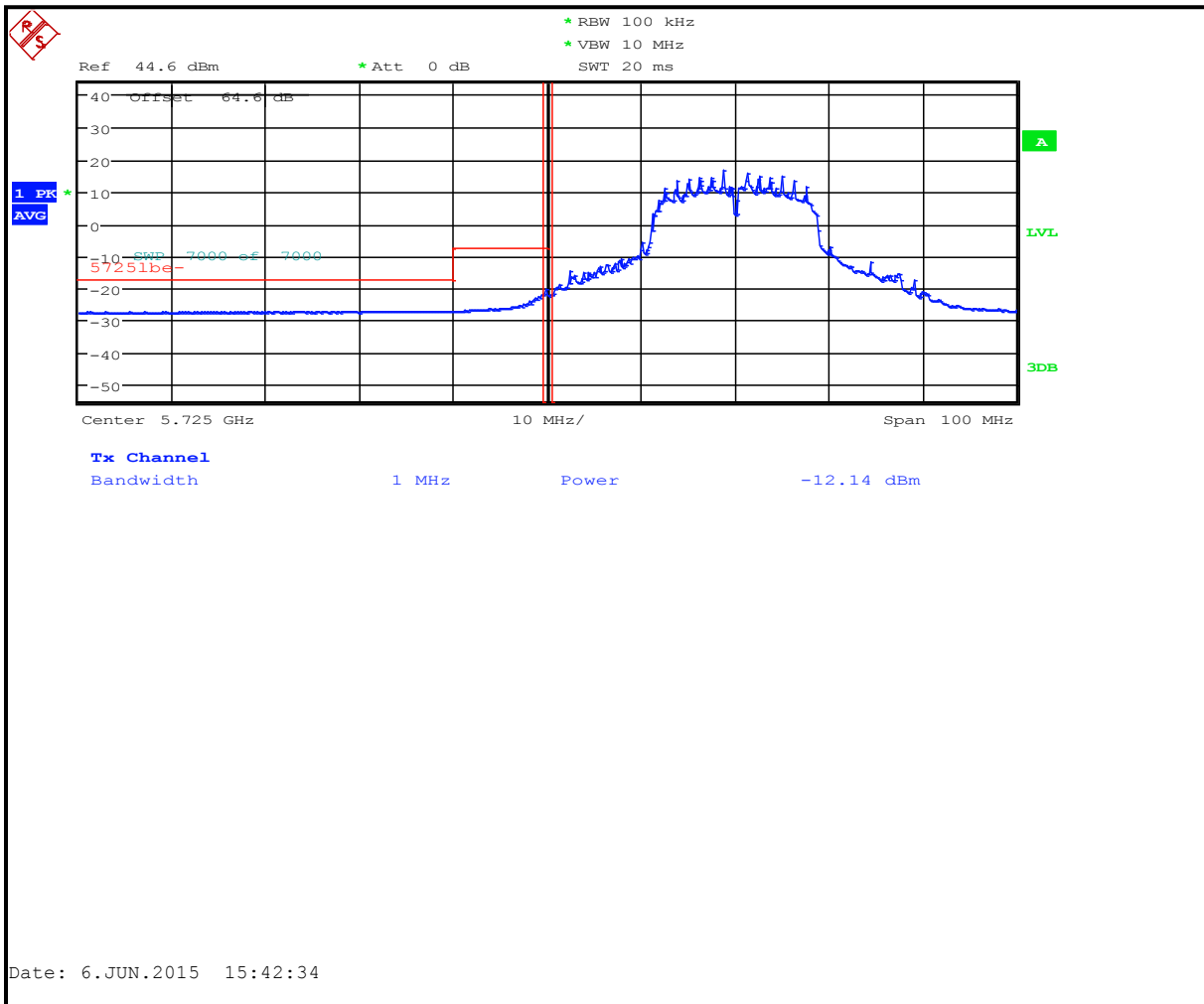
6.3.3 5725 – 5850 MHz Band Edges – 802.11a and 802.11n

Plot 6-33: Lower Band Edge: Measurement Channel 149 (5745 MHz, 802.11a, Peak)

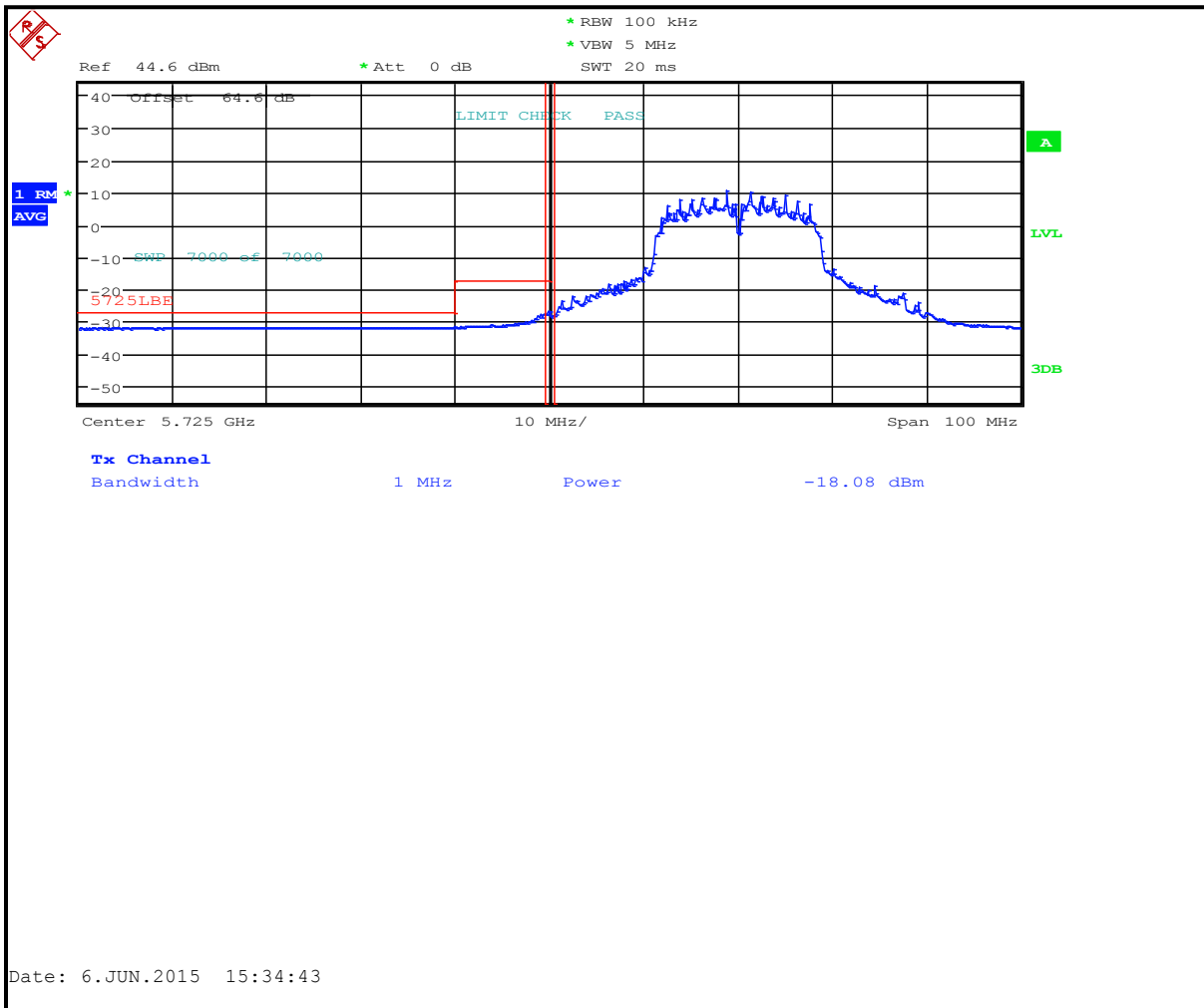


Plot 6-34: Lower Band Edge: Measurement Channel 149 (5745 MHz, 802.11a, Average)

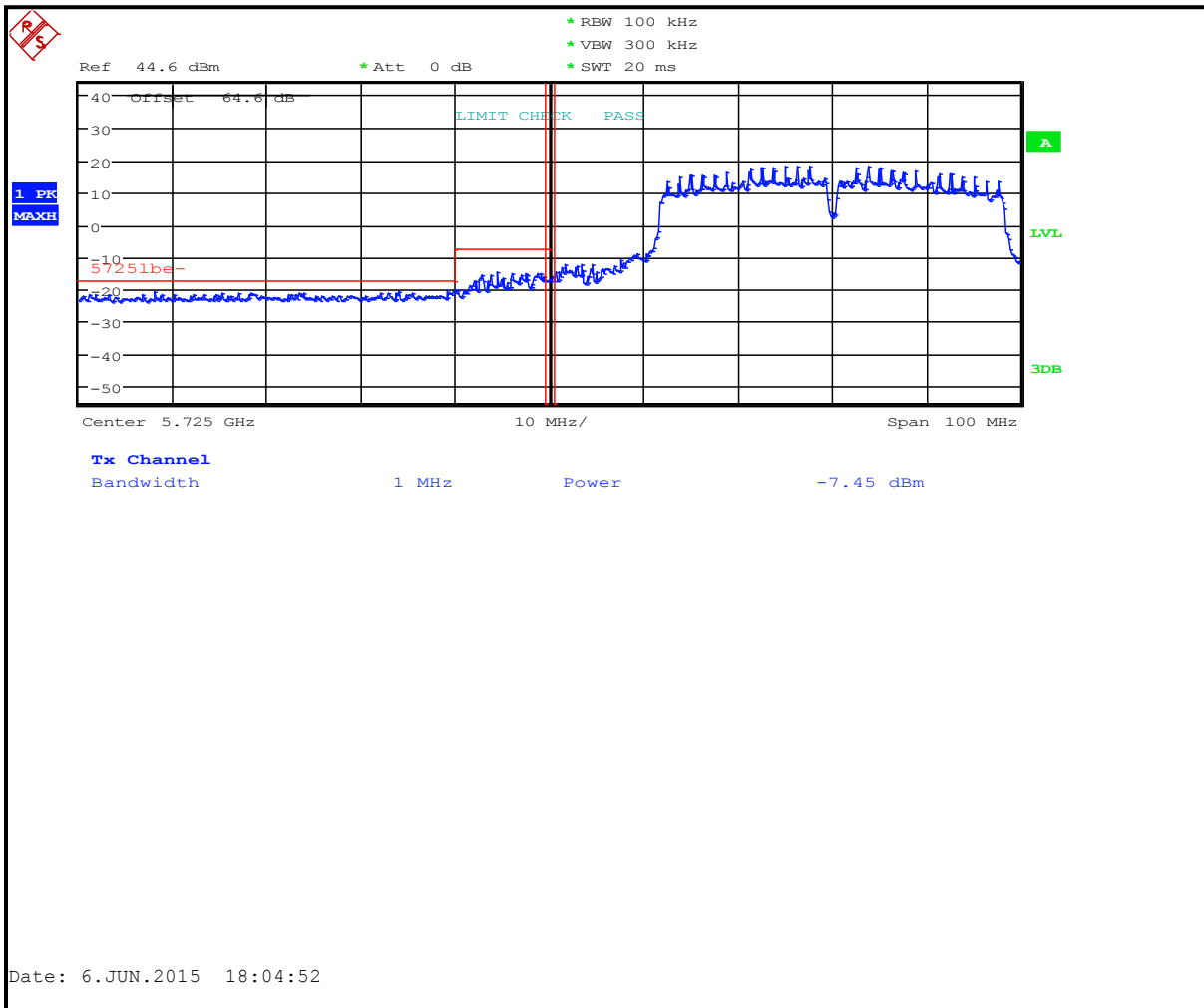




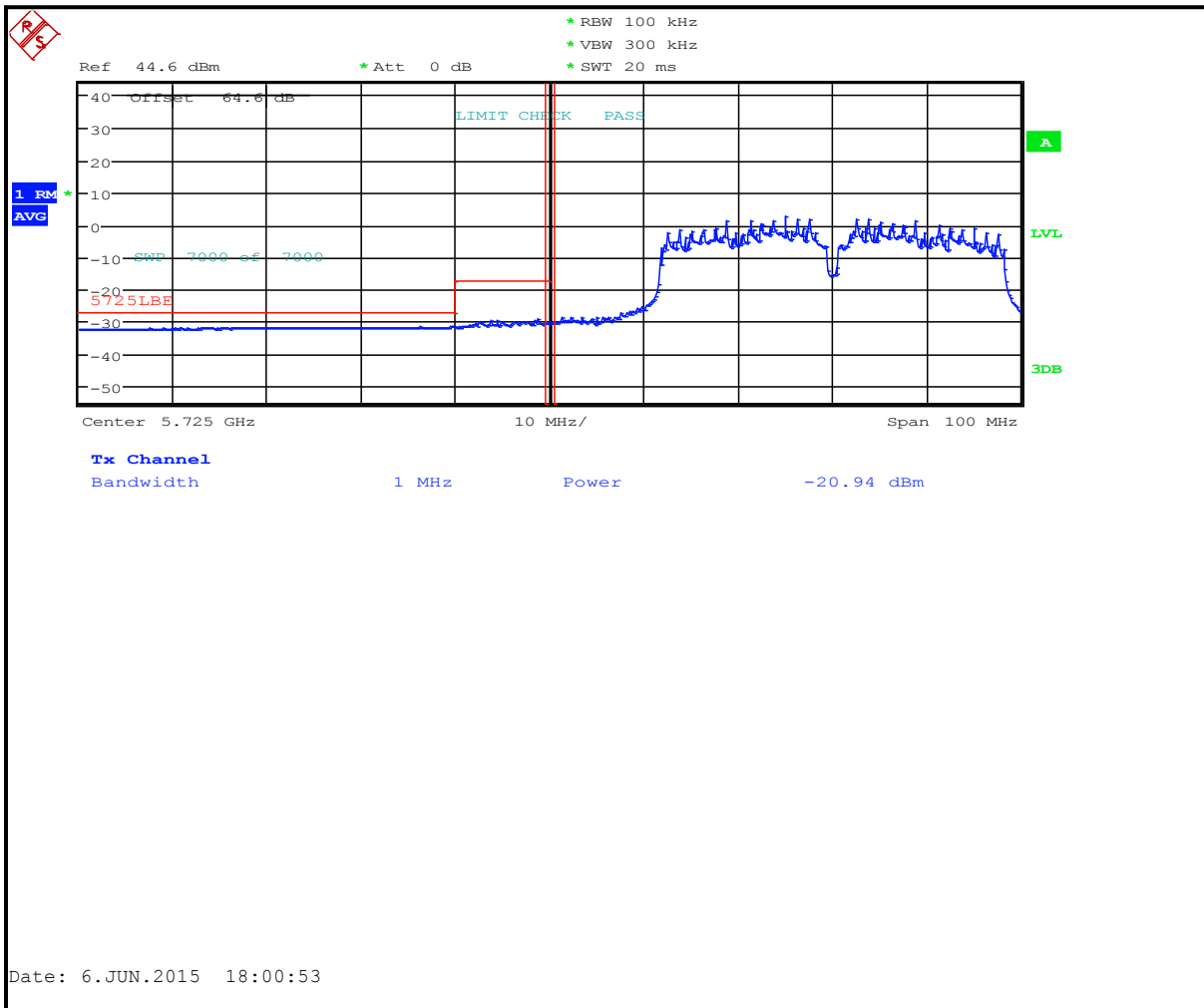
Plot 6-36: Lower Band Edge: Measurement Channel 149 (5745 MHz, 802.11n, Average)



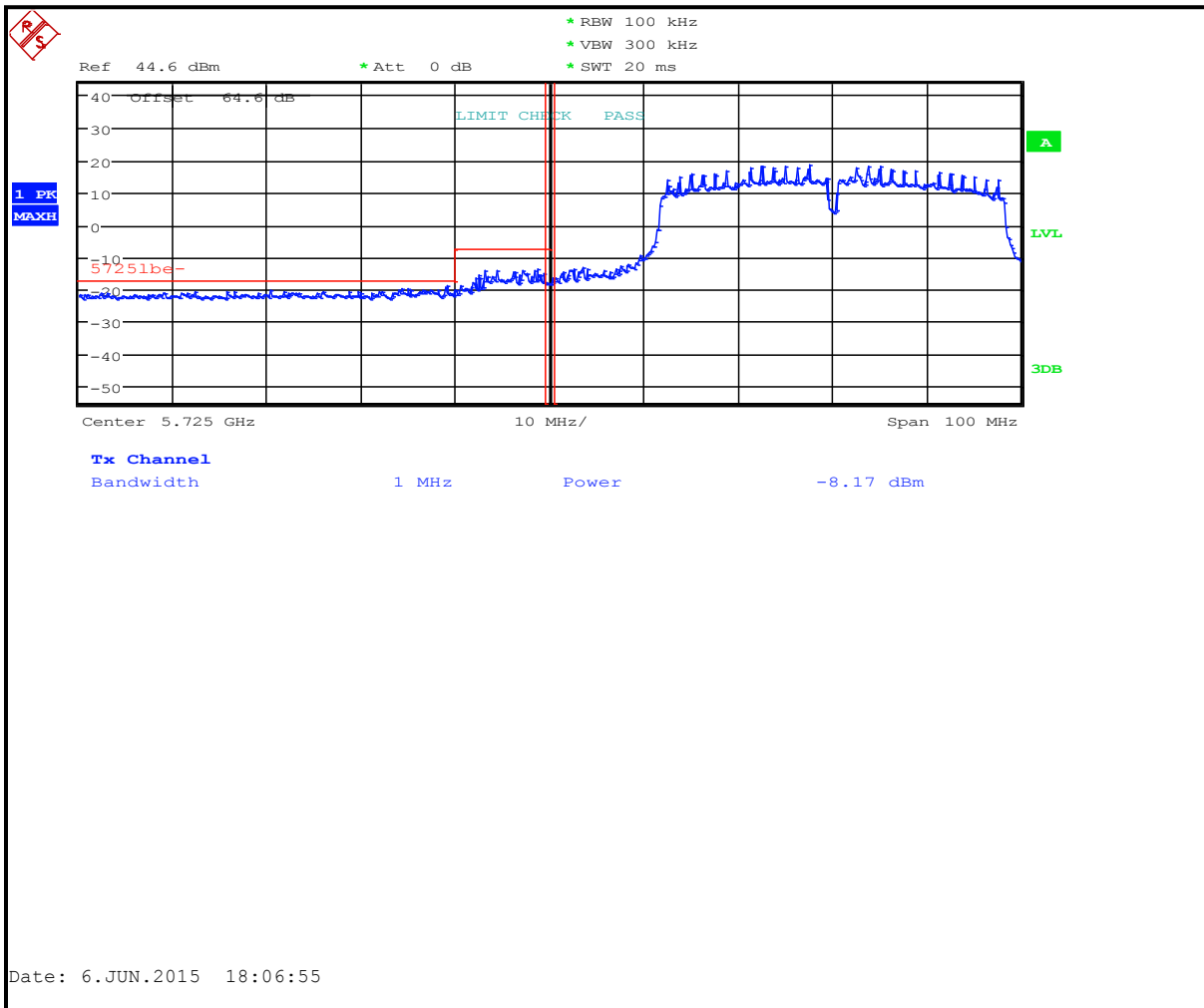
Plot 6-37: Lower Band Edge: Measurement Channel 149 (5745 MHz, 40 MHz BW, 802.11a, Peak)



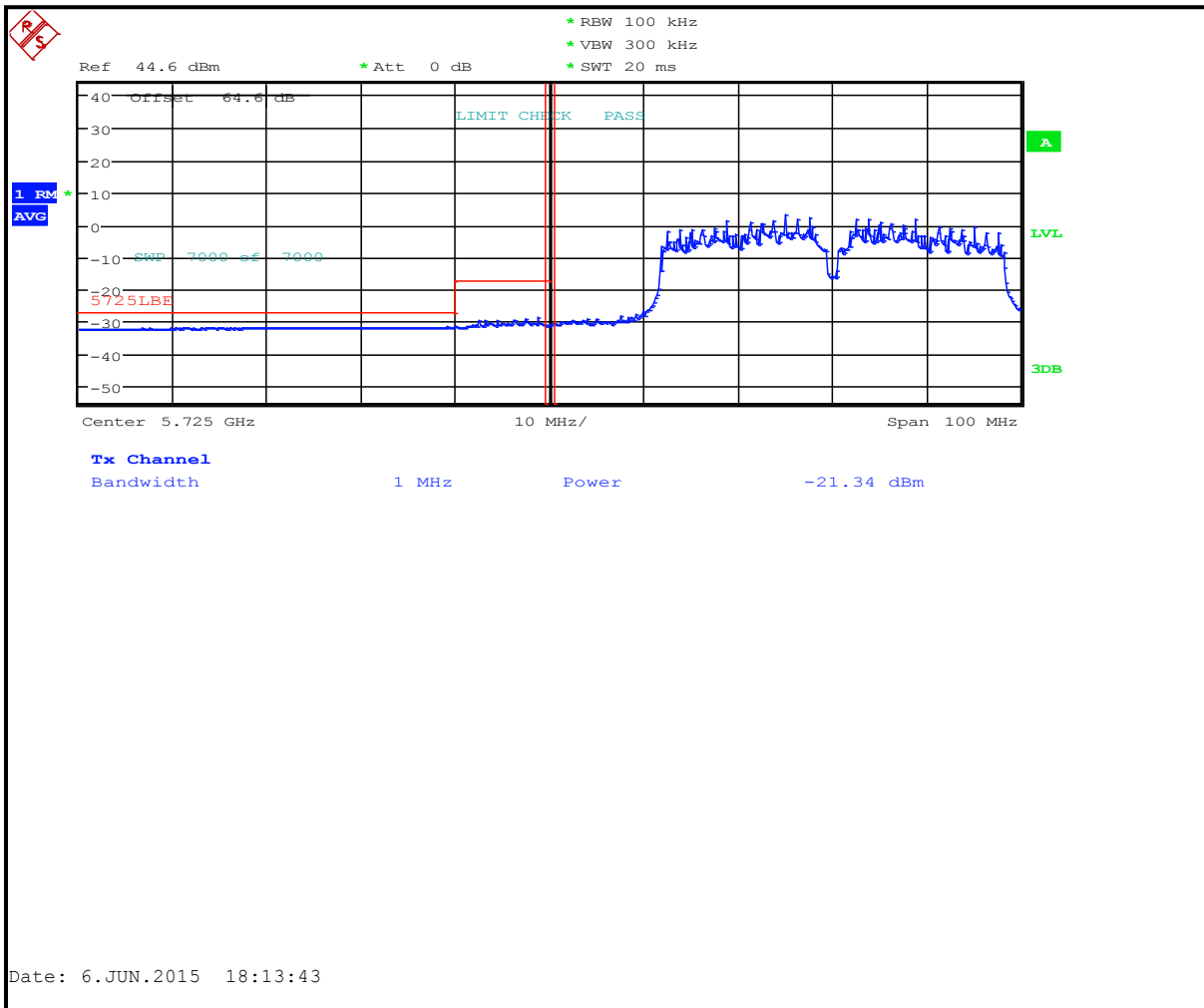
Plot 6-38: Lower Band Edge: Measurement Channel 149 (5745 MHz, 40 MHz BW, 802.11a, Average)



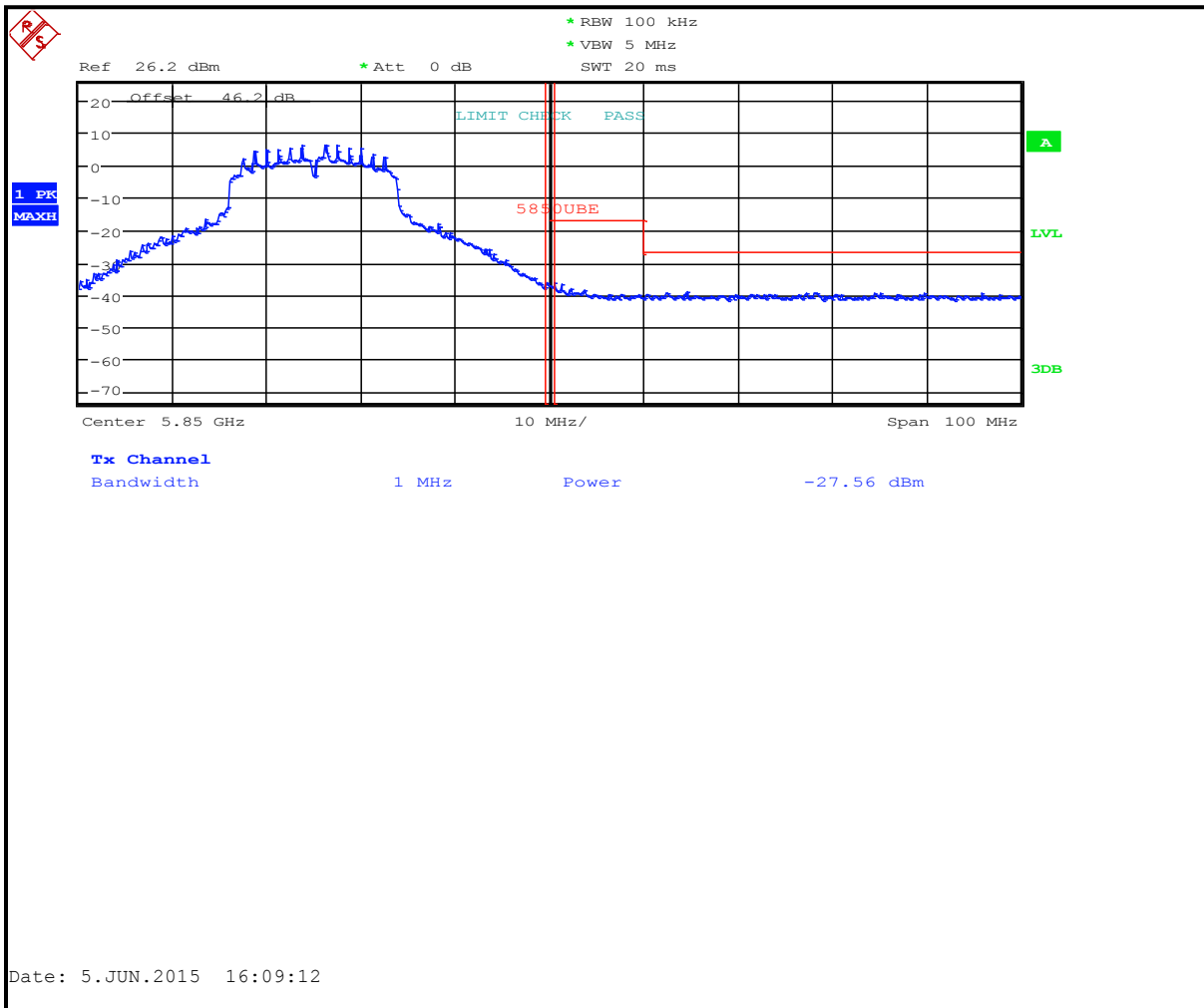
Plot 6-39: Lower Band Edge: Measurement Channel 149 (5745 MHz, 40 MHz BW, 802.11n, Peak)



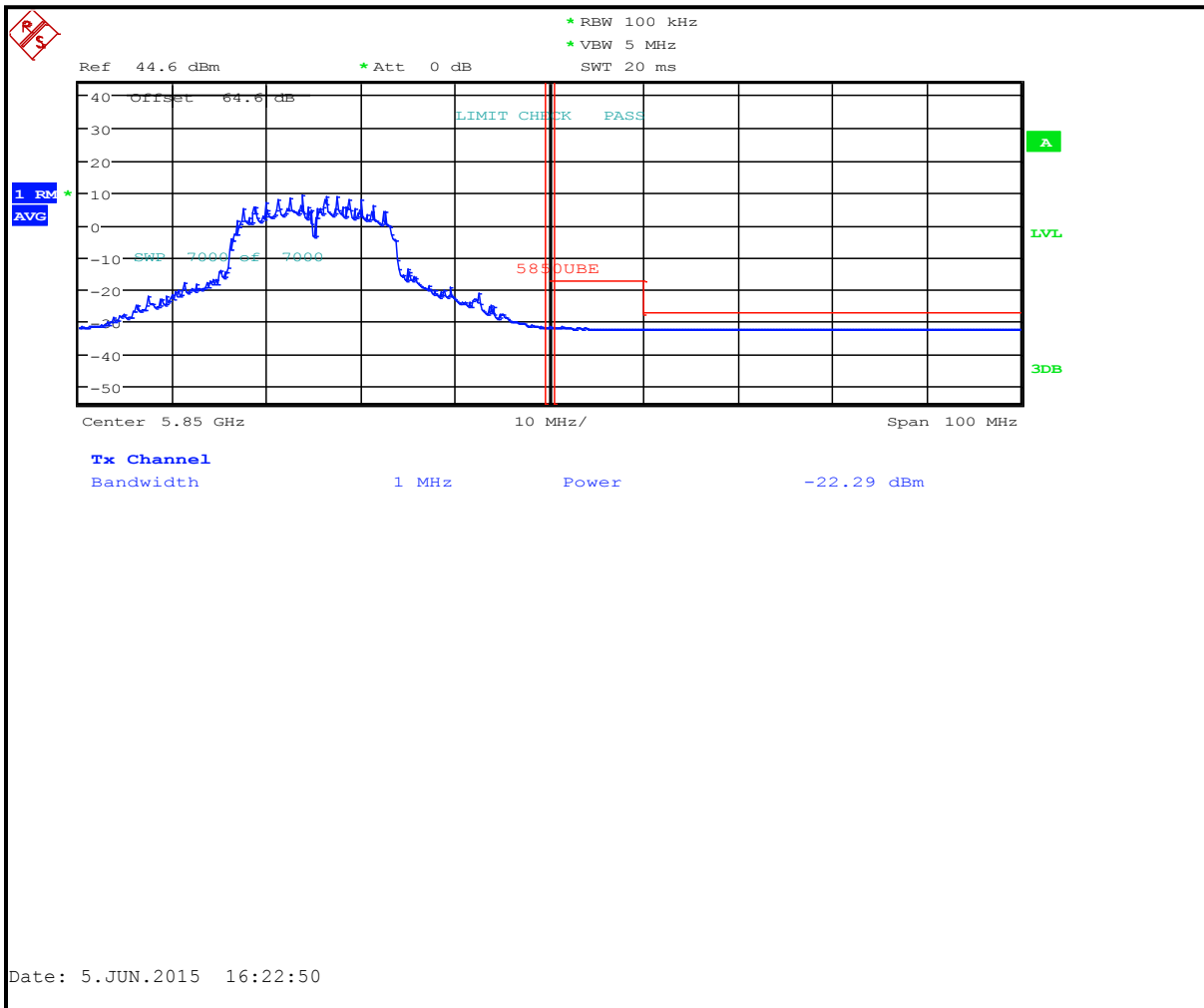
Plot 6-40: Lower Band Edge: Measurement Channel 149 (5745 MHz, 40 MHz BW, 802.11n, Average)



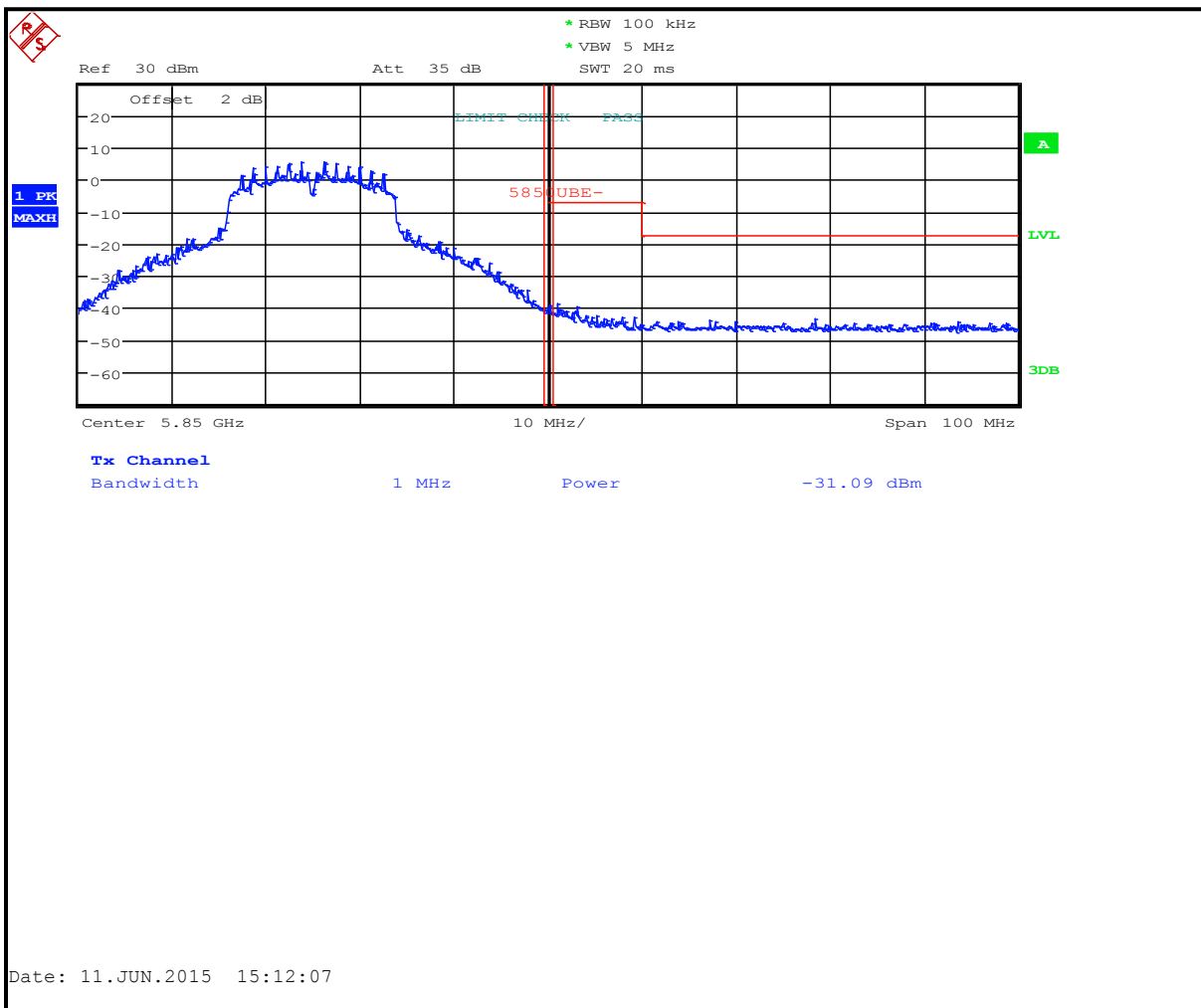
Plot 6-41: Upper Band Edge: Measurement Channel 165 (5825 MHz, 802.11a, Peak)



Plot 6-42: Upper Band Edge: Measurement Channel 165 (5825 MHz, 802.11a, Average)

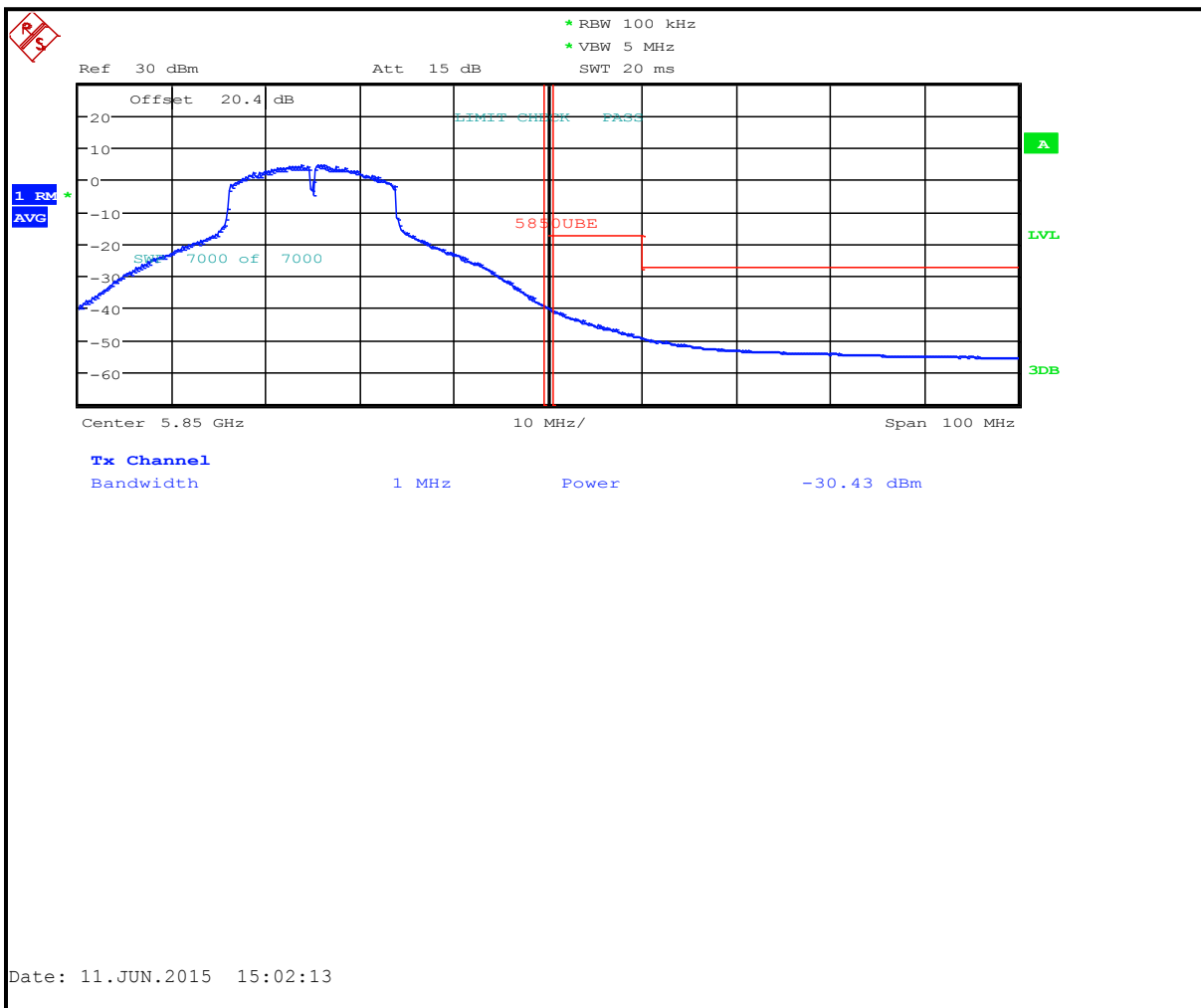


Plot 6-43: Upper Band Edge: Measurement Channel 165 (5825 MHz, 802.11n, Peak)



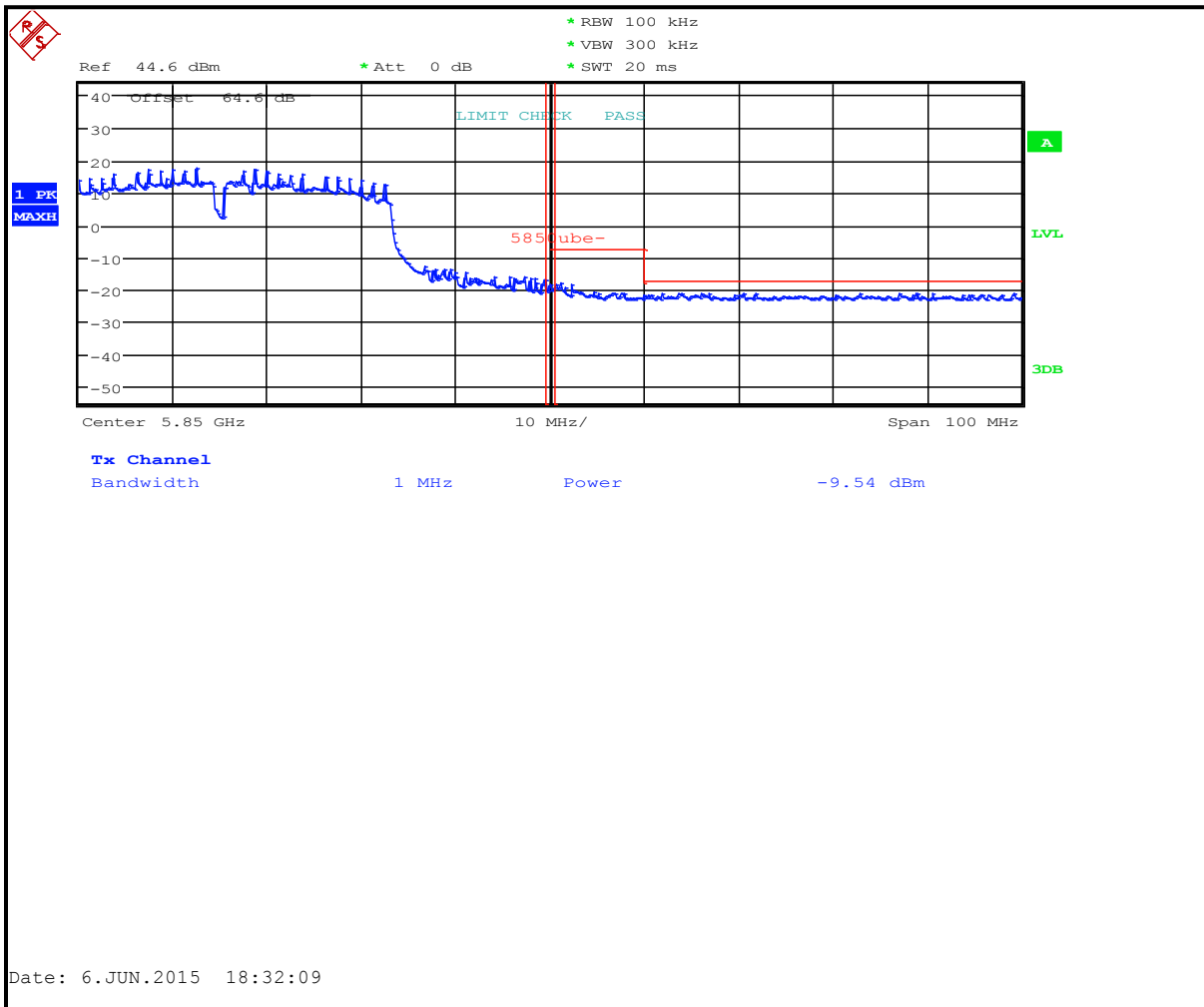
Note: Conducted antenna port measurement

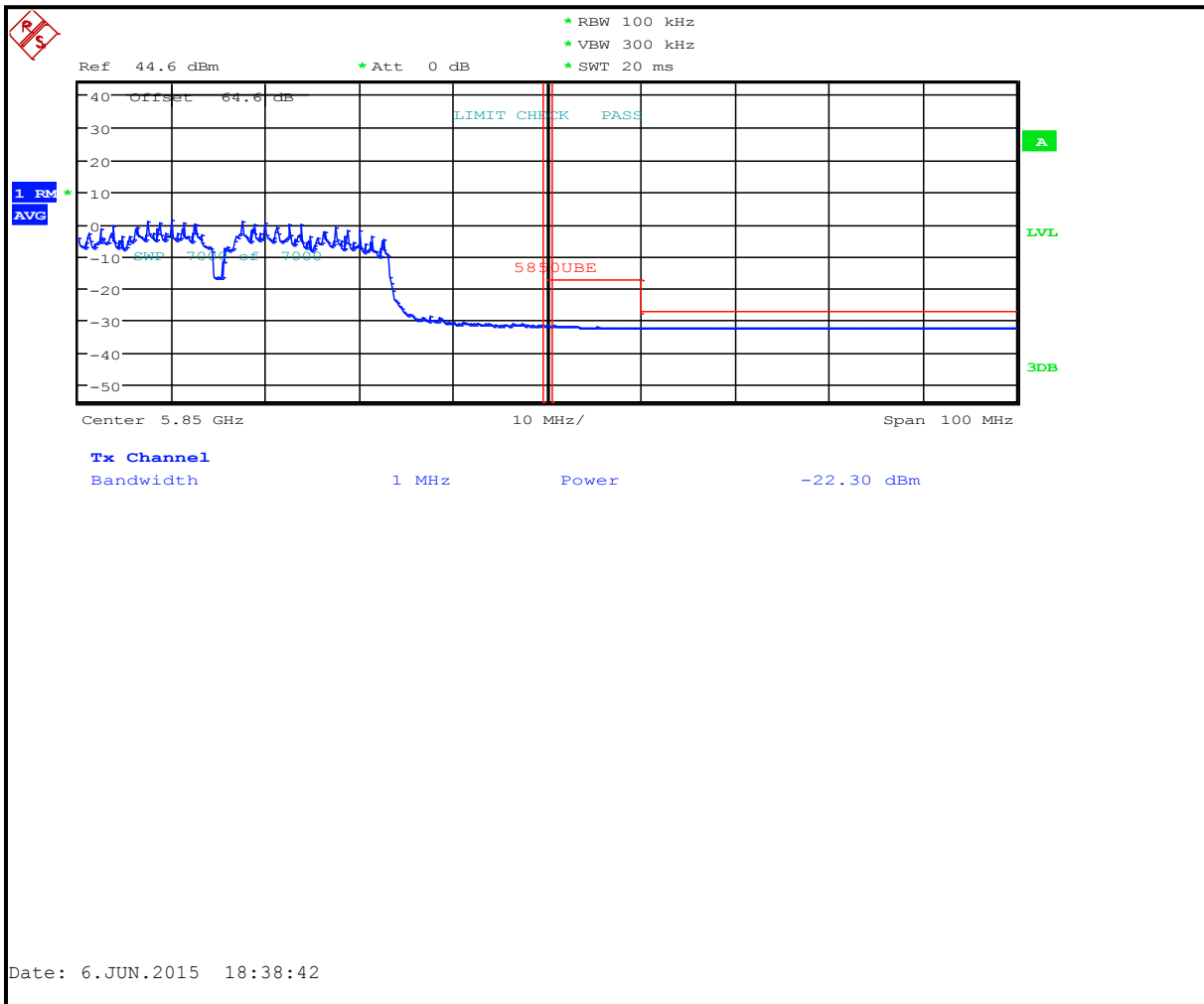
Plot 6-44: Upper Band Edge: Measurement Channel 165 (5825 MHz, 802.11n, Average)

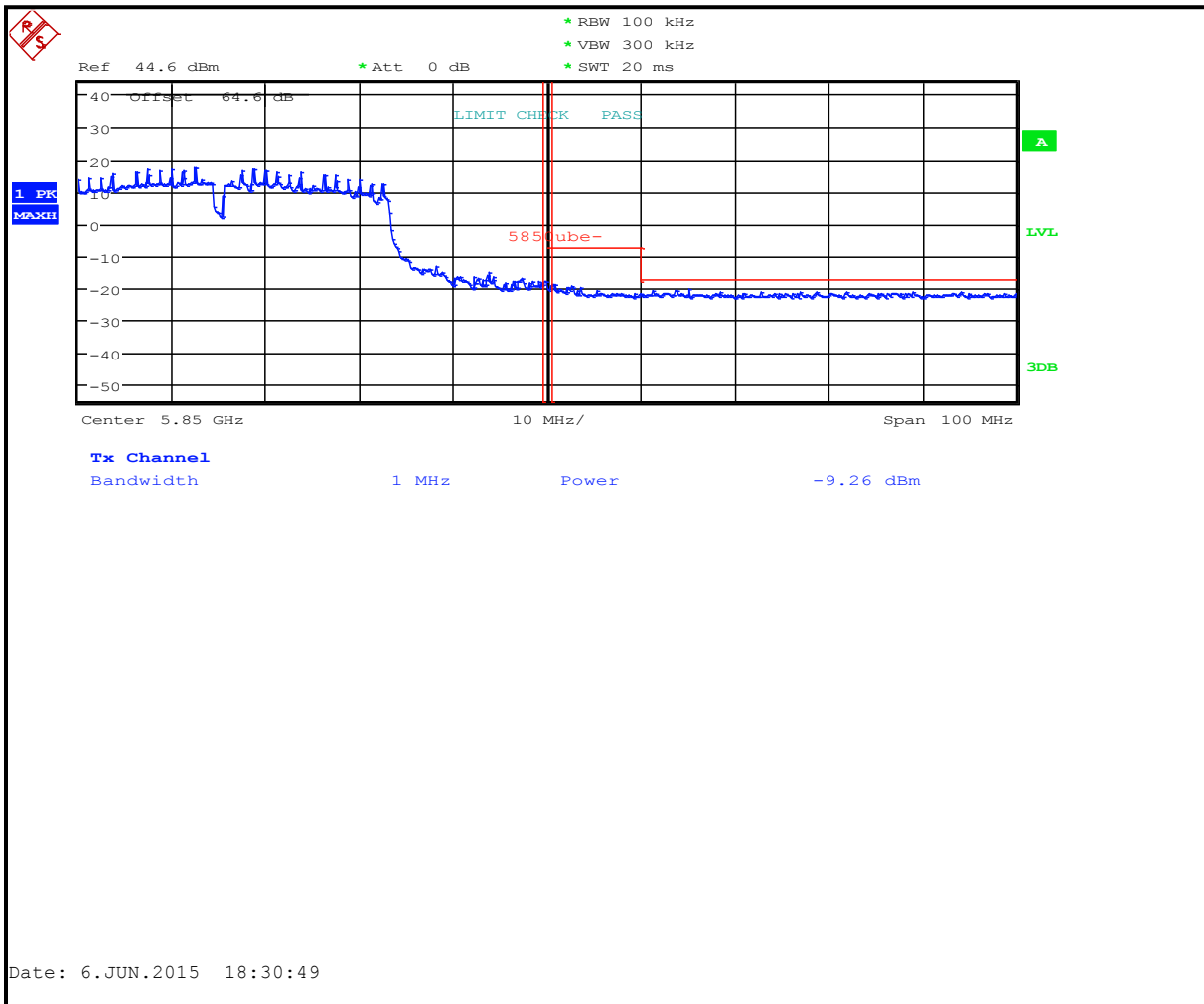


Note: Conducted antenna port measurement

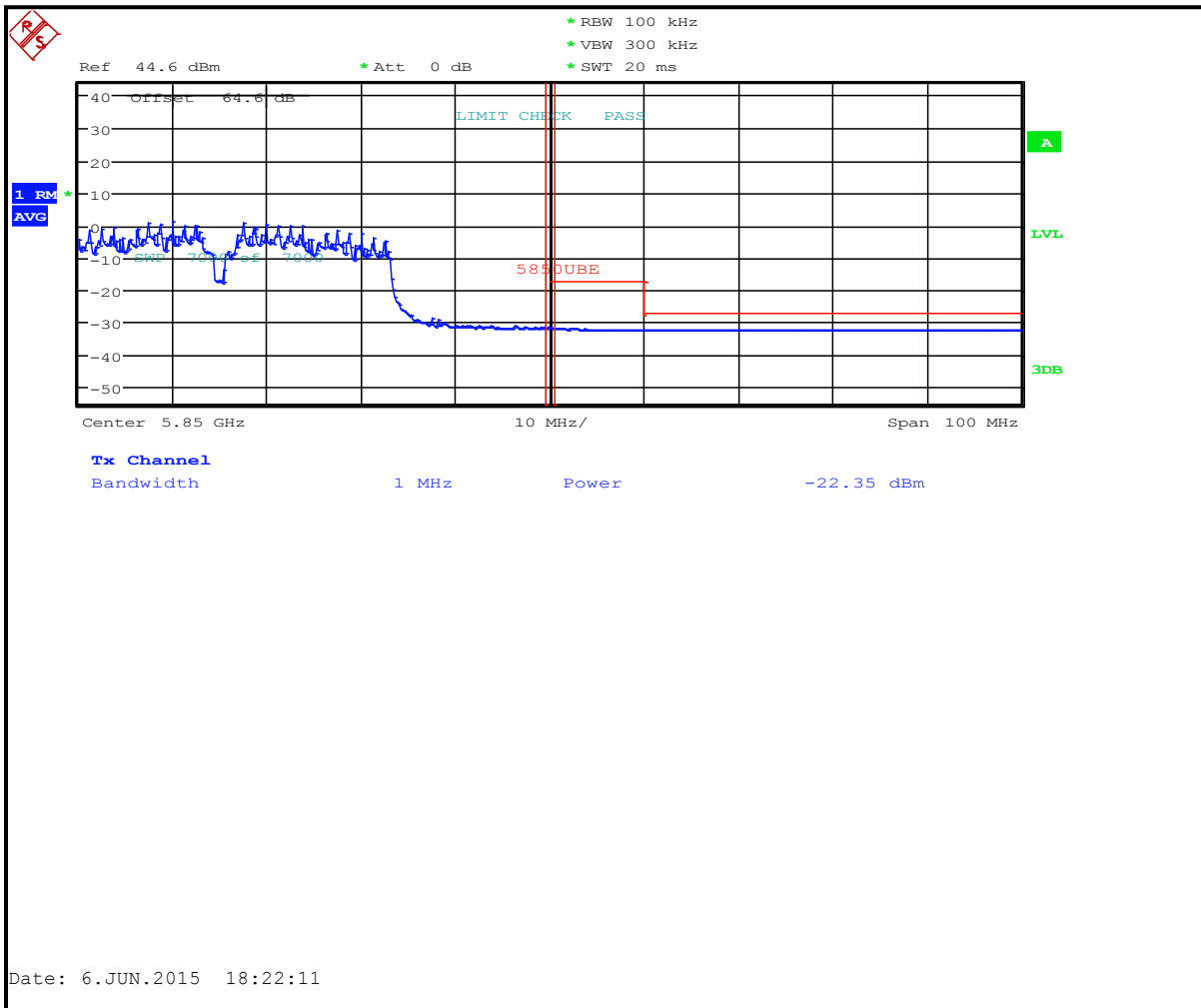
Plot 6-45: Upper Band Edge: Measurement Channel 165 (5825 MHz, 40 MHz BW, 802.11a, Peak)







Plot 6-48: Upper Band Edge: Measurement Channel 165 (5825 MHz, 40 MHz BW, 802.11n, Average)



Test Personnel:

Daniel W. Baltzell
Test Engineer

Signature

June 6-11, 2015
Dates of Test

7 Undesirable Emissions - 15.407(b); RSS-247 6.3

7.1 Undesirable Emissions Test Procedures

Antenna spurious emissions were measured from the EUT antenna port using a 50-ohm spectrum analyzer.

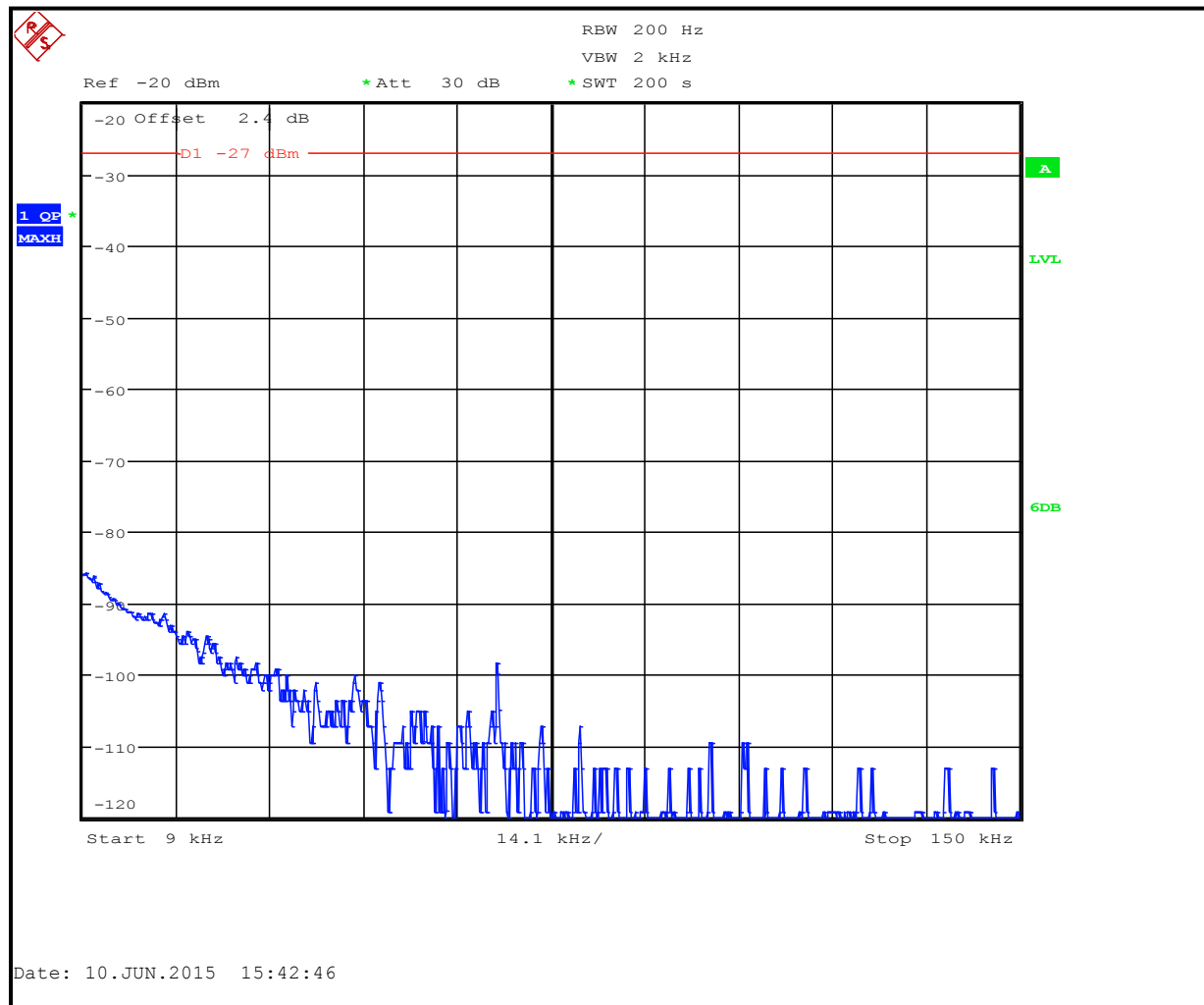
NOTE: Offset is 2 dB antenna gain added for EIRP comparison to limit since manufacturer's maximum gain is 1 dB, with duty cycle addition.

Table 7-1: Undesirable Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	FSU	Spectrum Analyzer	1166.1660.50	11/13/15

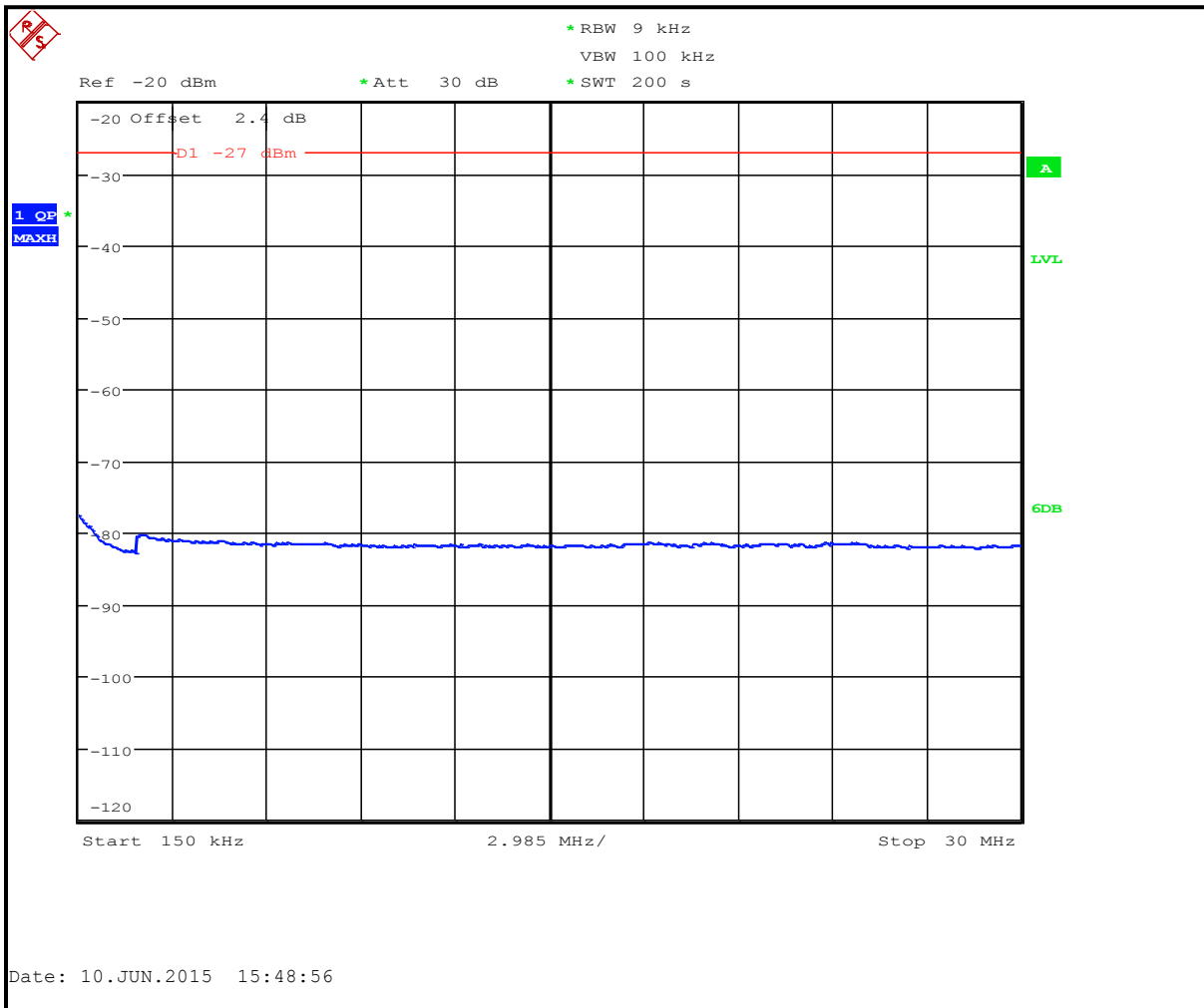
7.2 Undesirable Emissions Test Results

Plot 7-1: Undesirable Emissions Channel 36 (5180 MHz); 9 kHz – 150 kHz



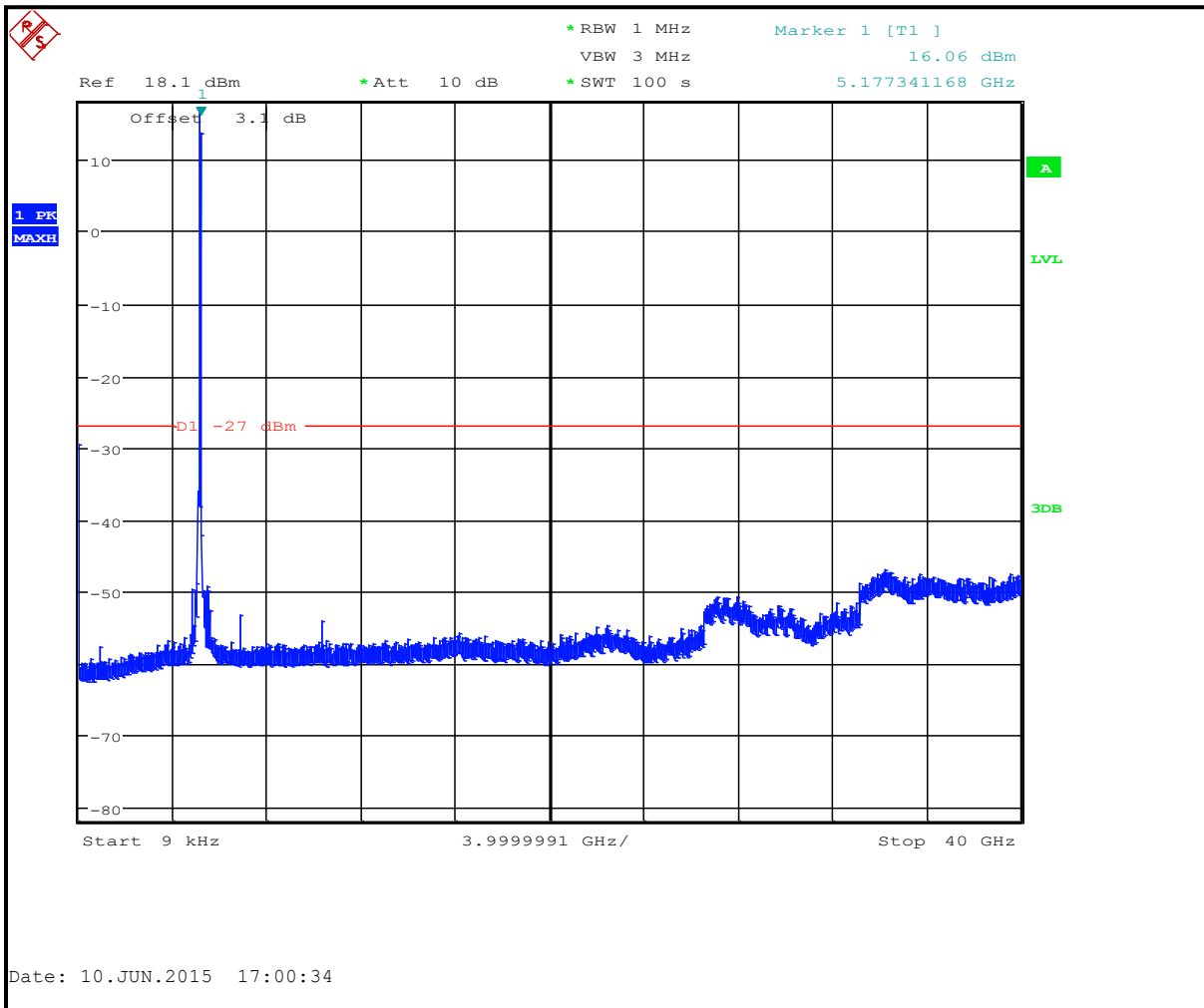
NOTE: Displayed as representative of all channels

Plot 7-2: Undesirable Emissions Channel 36 (5180 MHz); 150 kHz – 30 MHz

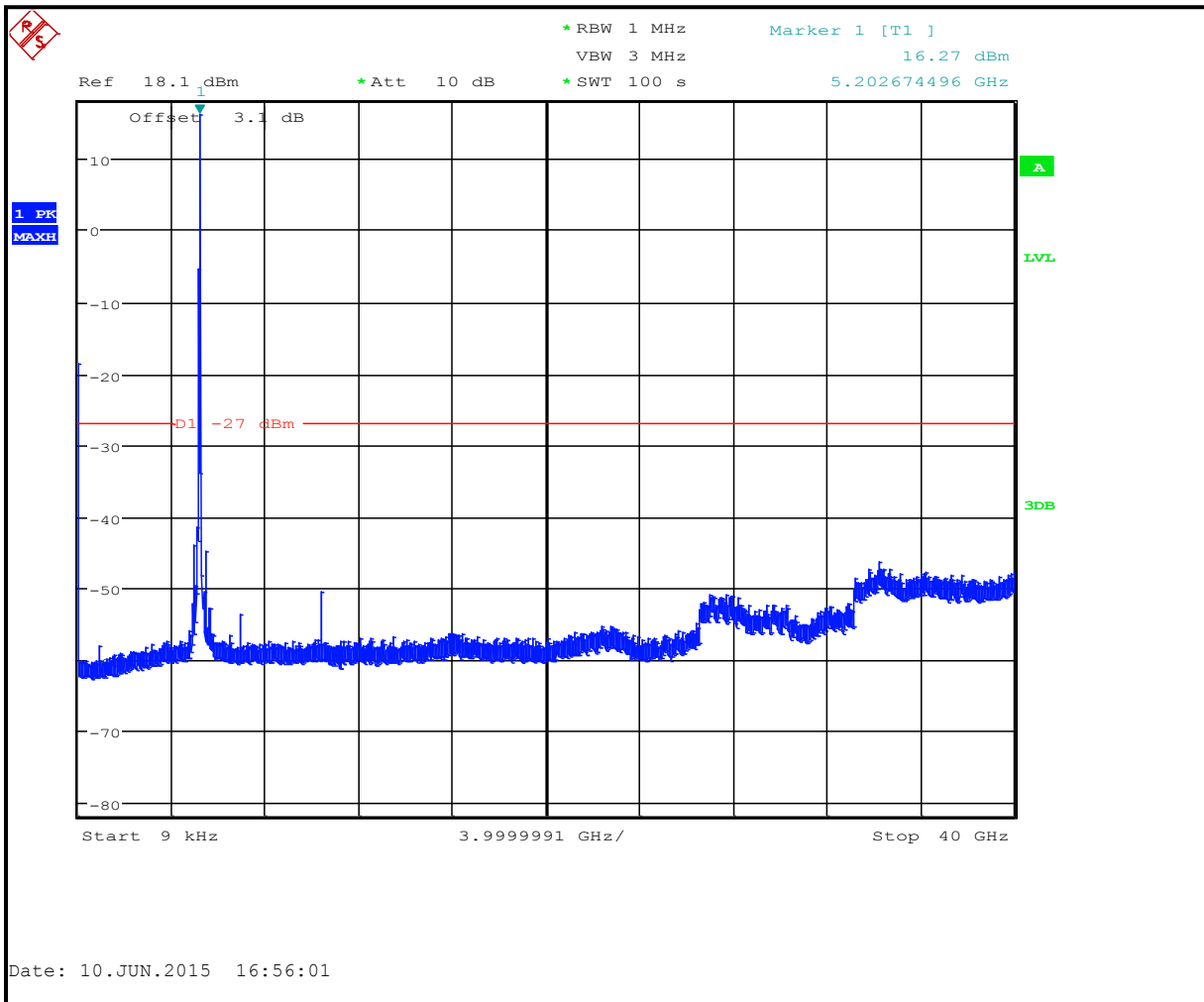


NOTE: Displayed as representative of all channels

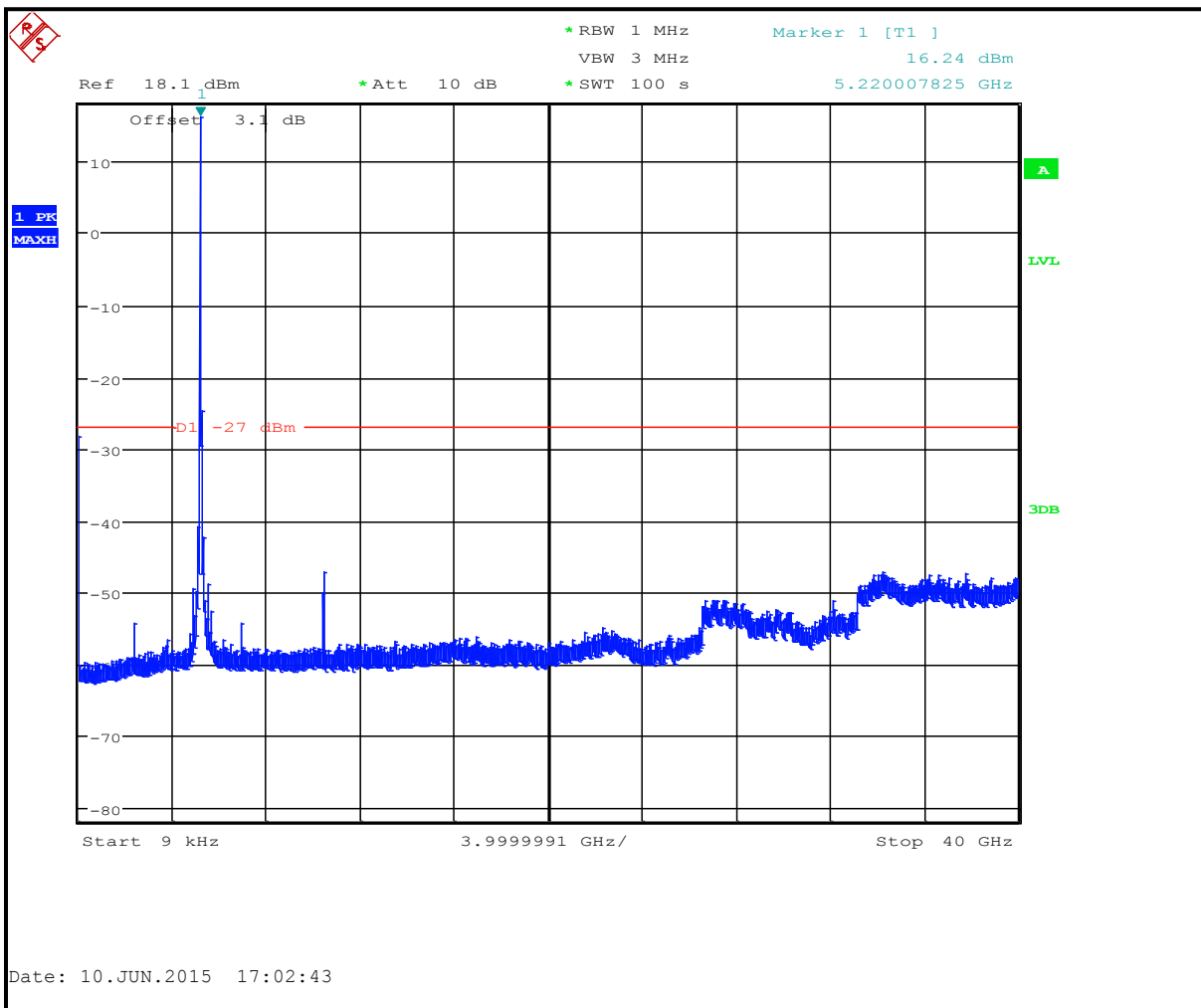
Plot 7-3: Undesirable Emissions Channel 36 (5180 MHz);



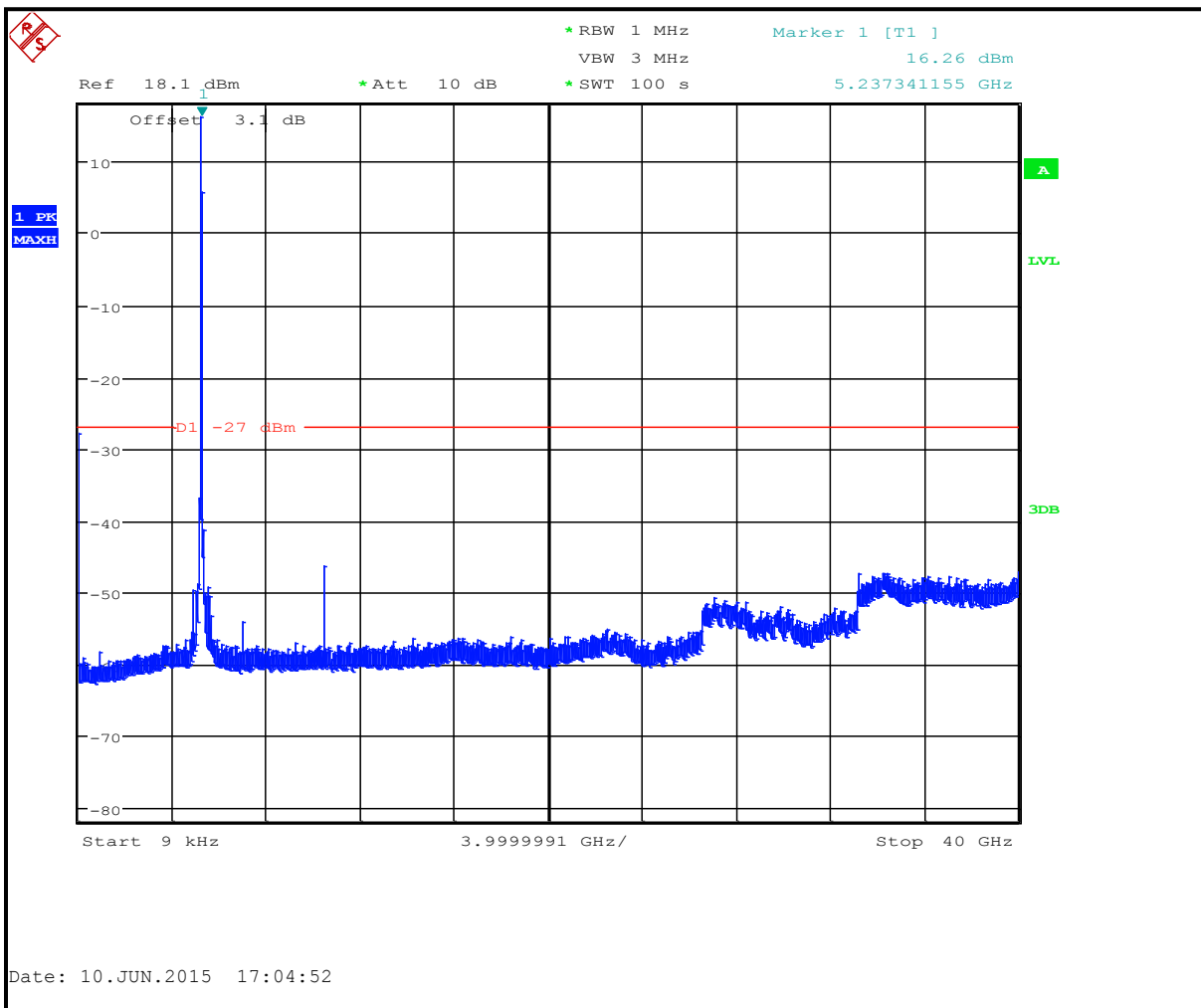
Plot 7-4: Undesirable Emissions Channel 40 (5200 MHz)



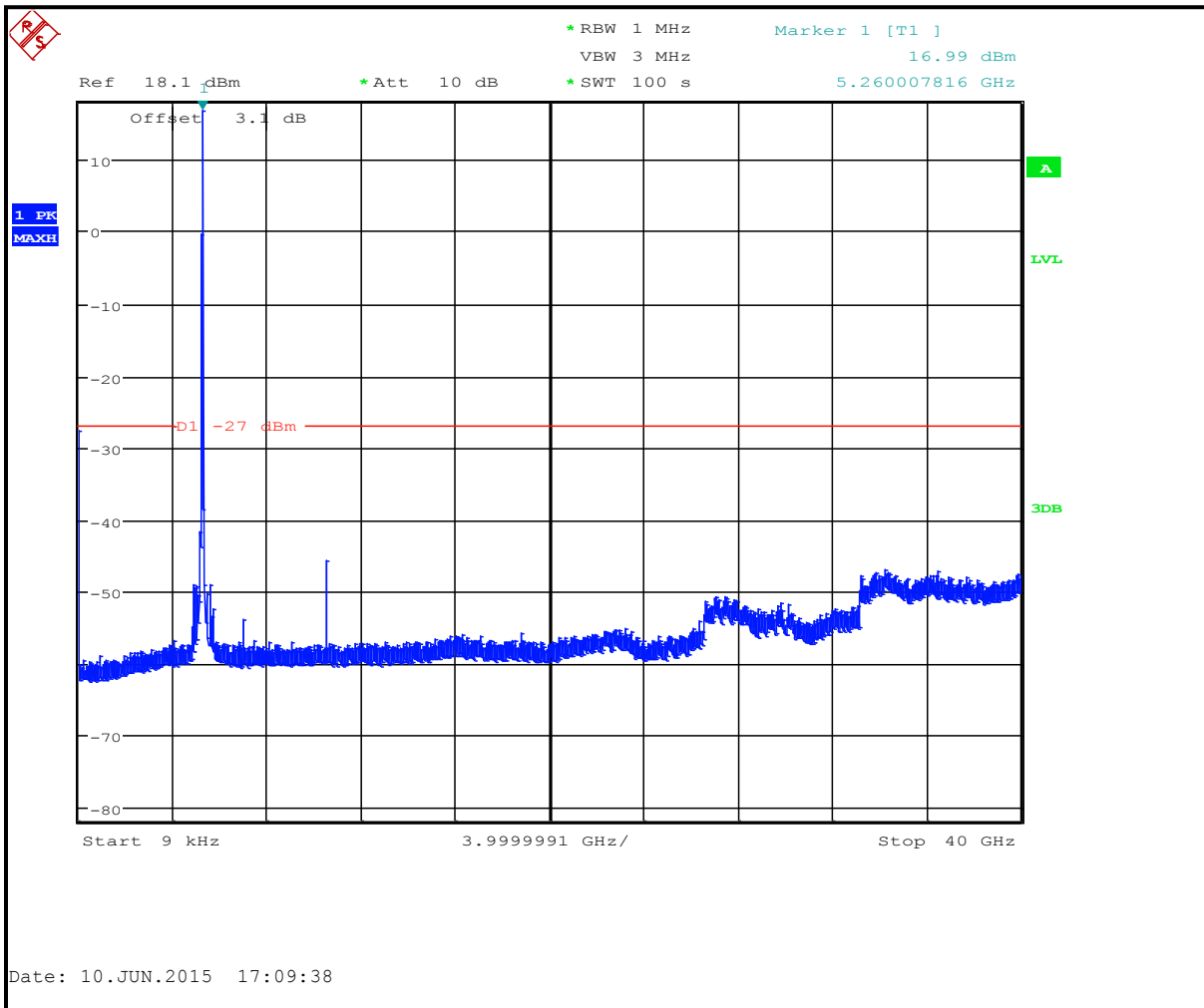
Plot 7-5: Undesirable Emissions Channel 44 (5220 MHz)



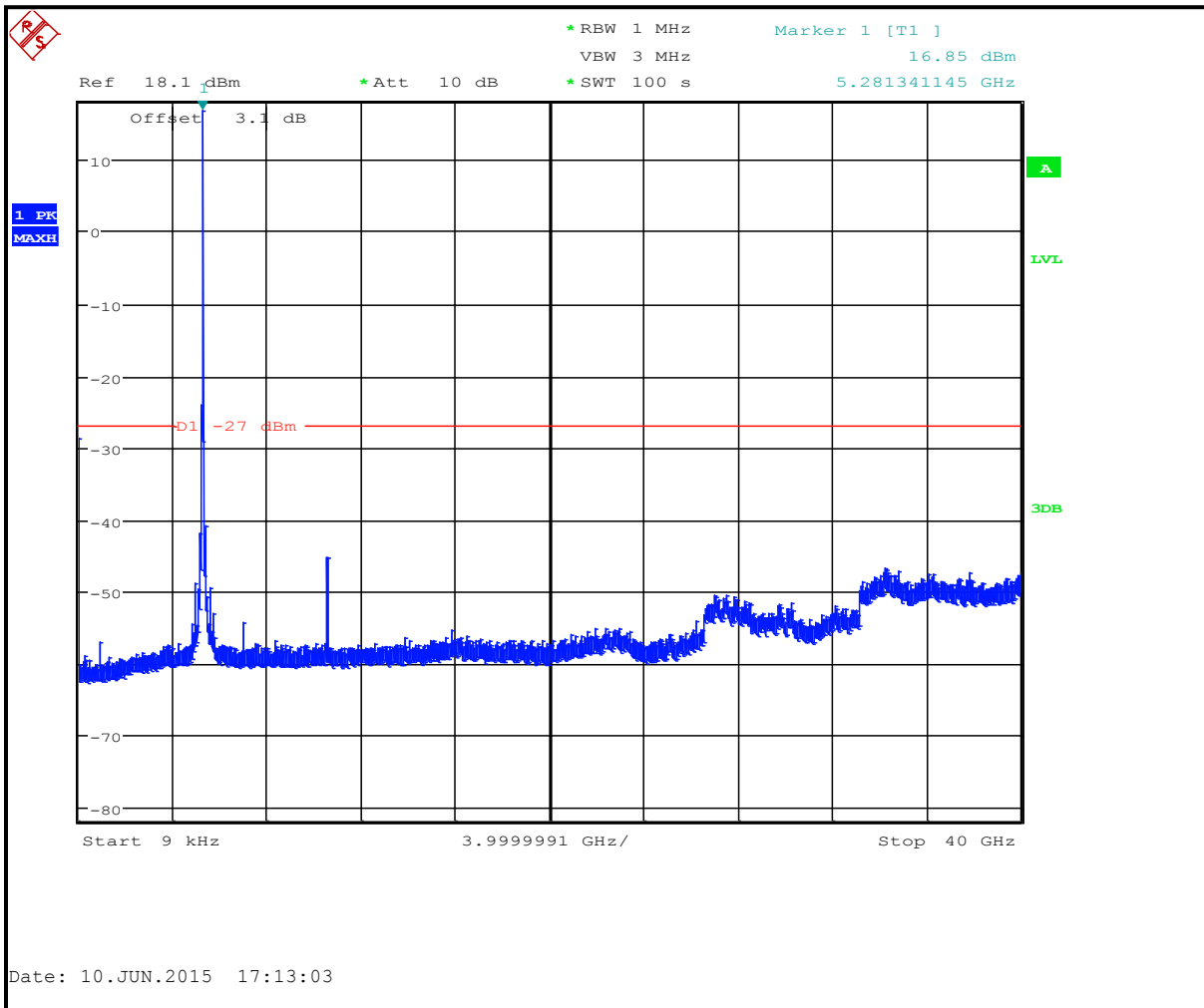
Plot 7-6: Undesirable Emissions Channel 48 (5240 MHz)



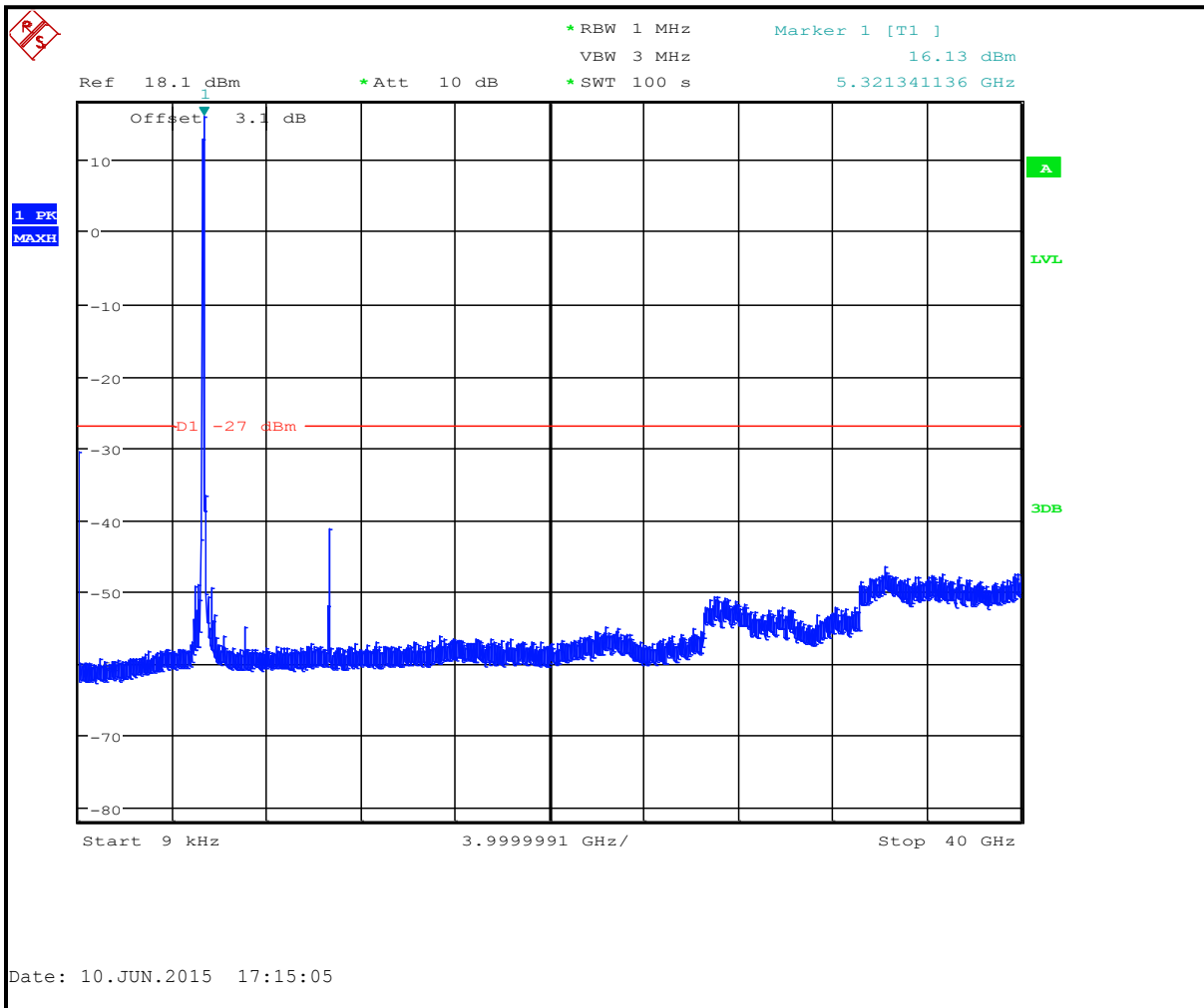
Plot 7-7: Undesirable Emissions Channel 52 (5260 MHz)



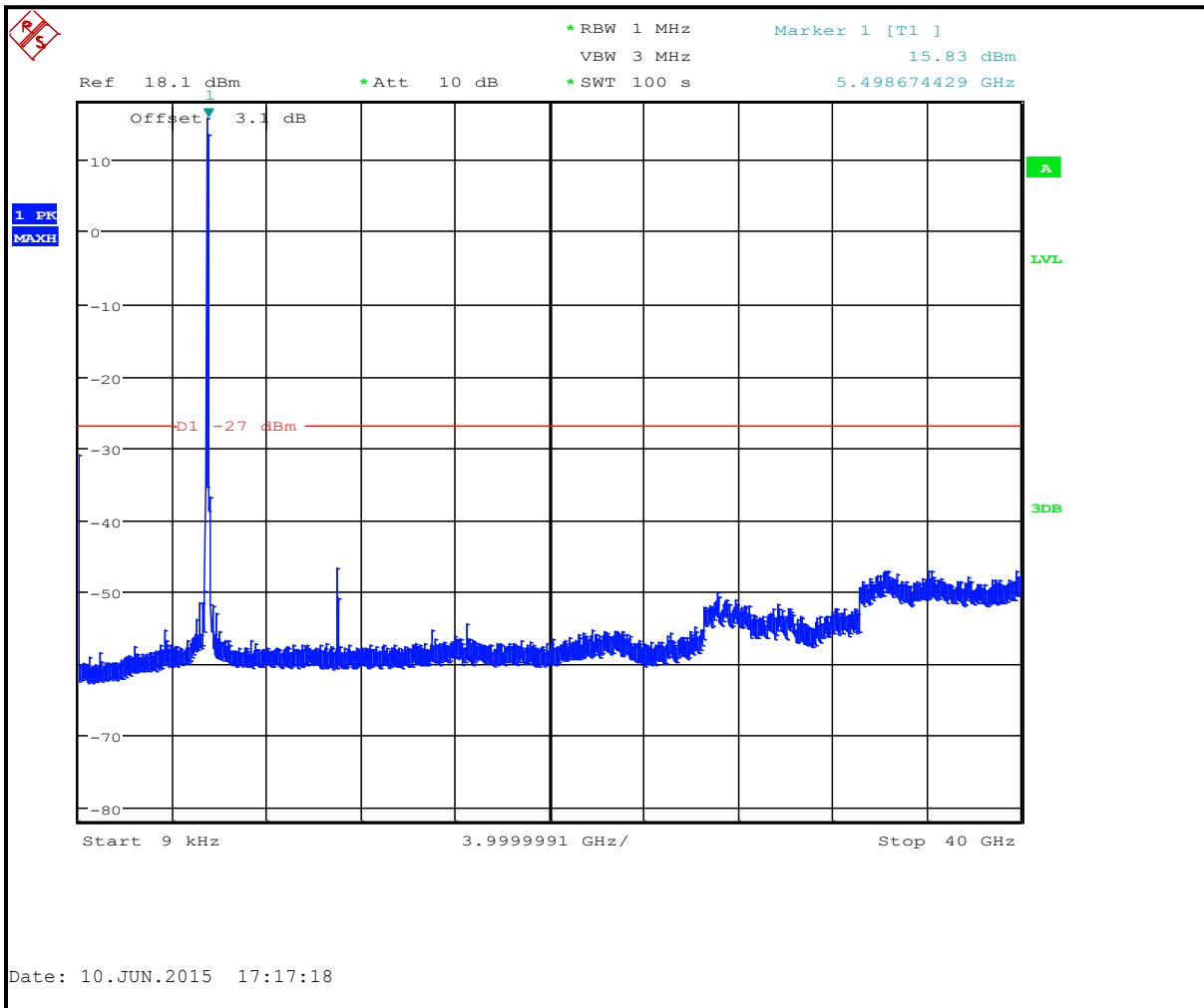
Plot 7-8: Undesirable Emissions Channel 56 (5280 MHz)



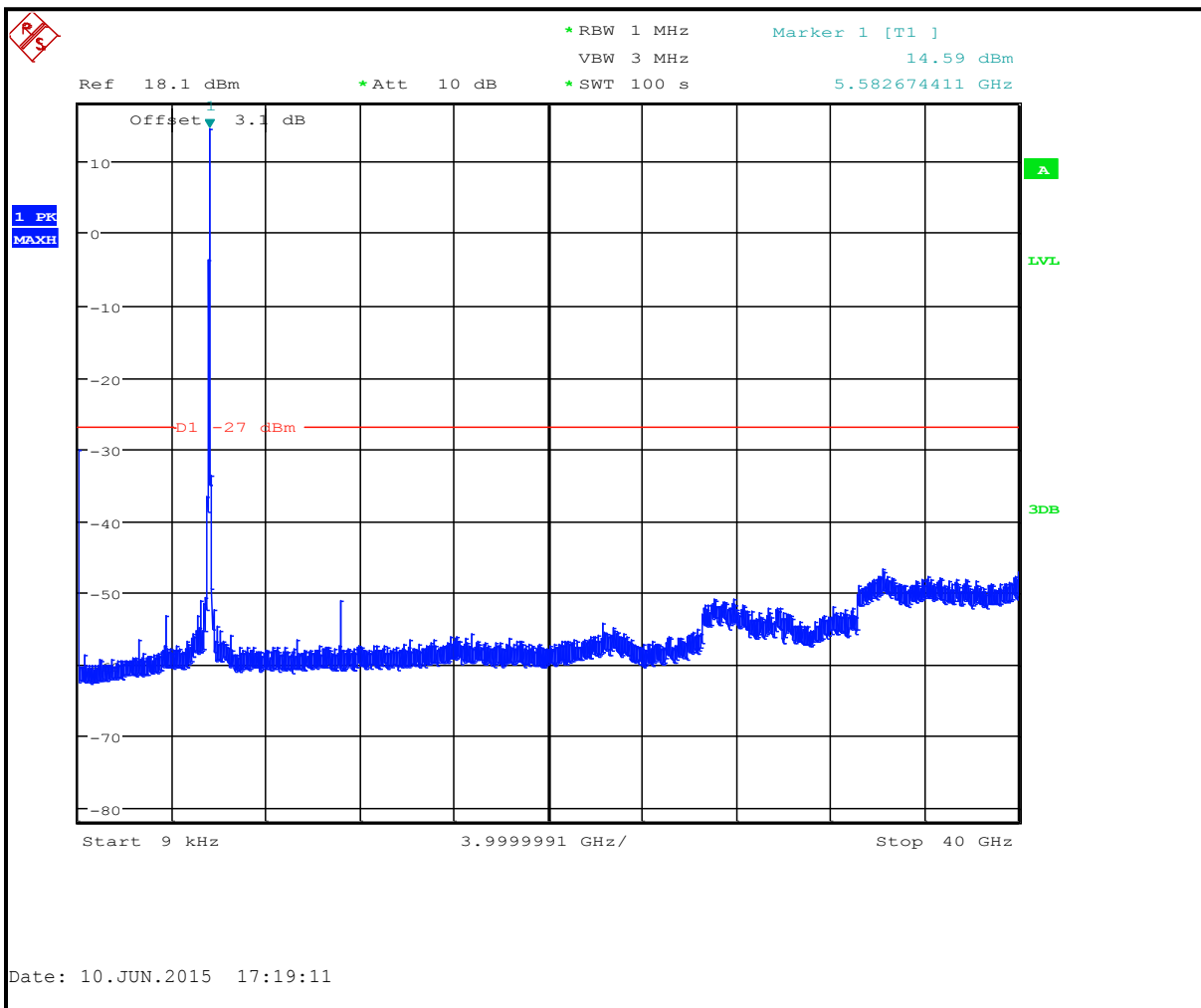
Plot 7-9: Undesirable Emissions Channel 64 (5320 MHz)



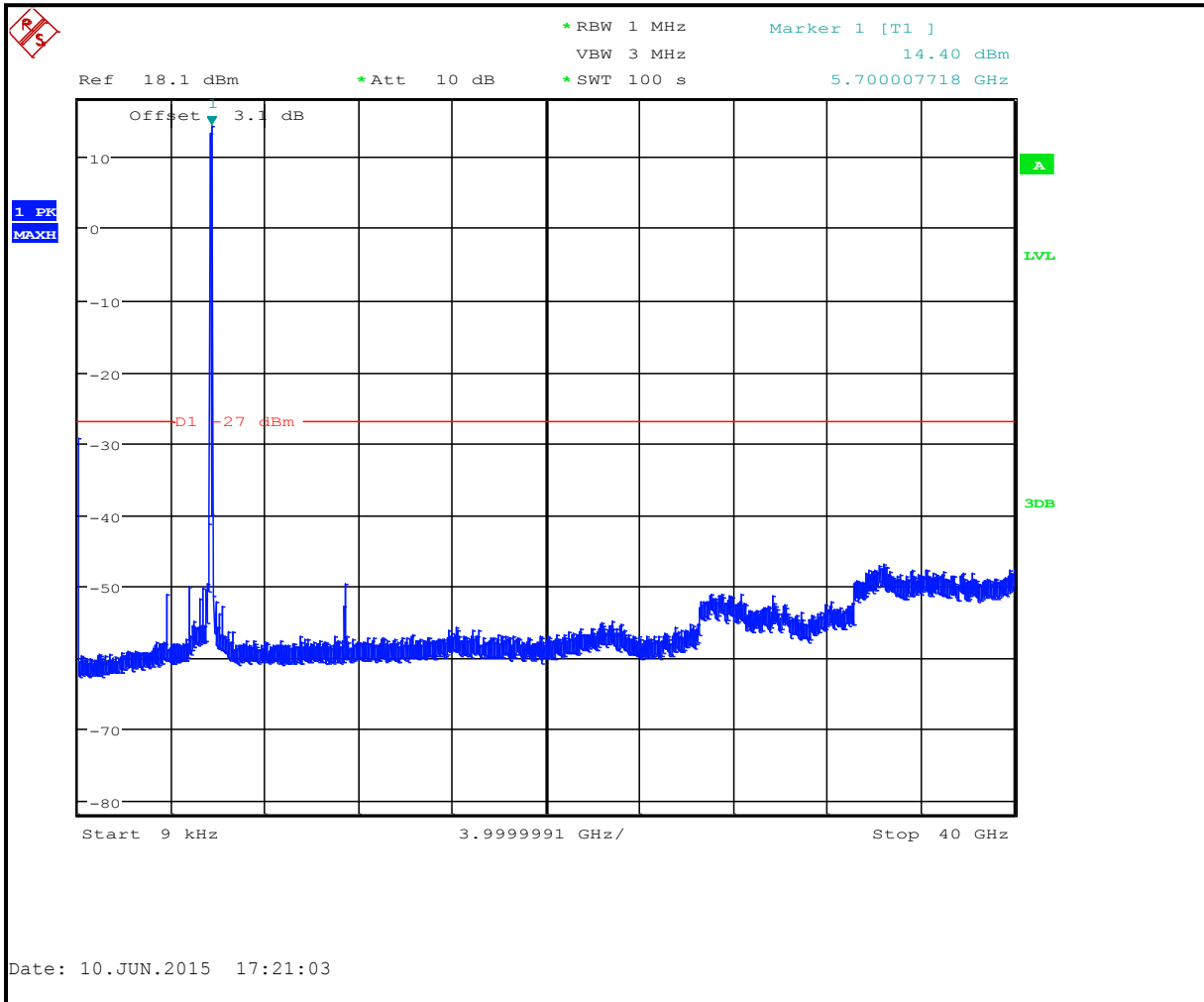
Plot 7-10: Undesirable Emissions Channel 100 (5500 MHz)



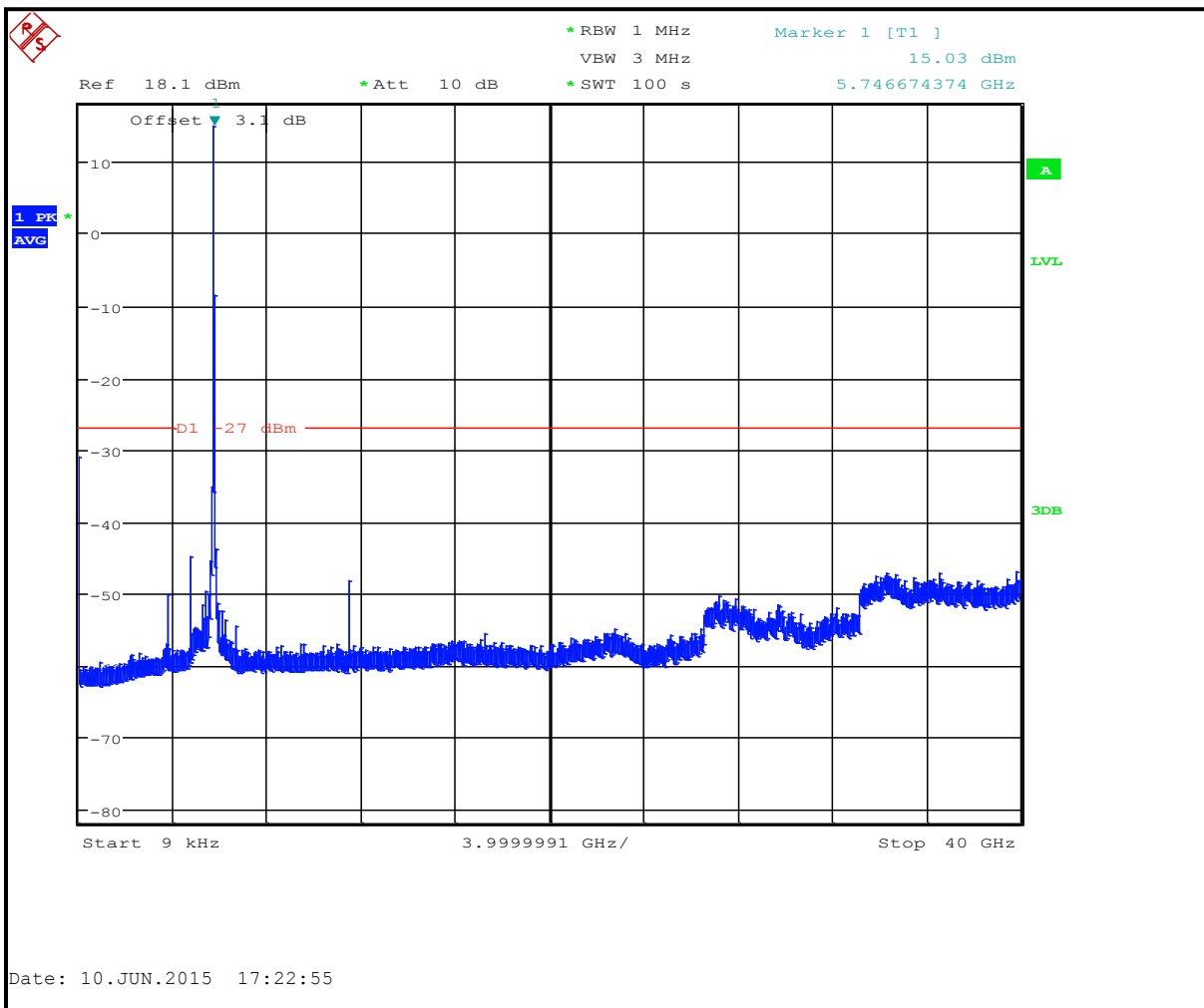
Plot 7-11: Undesirable Emissions Channel 116 (5580 MHz)



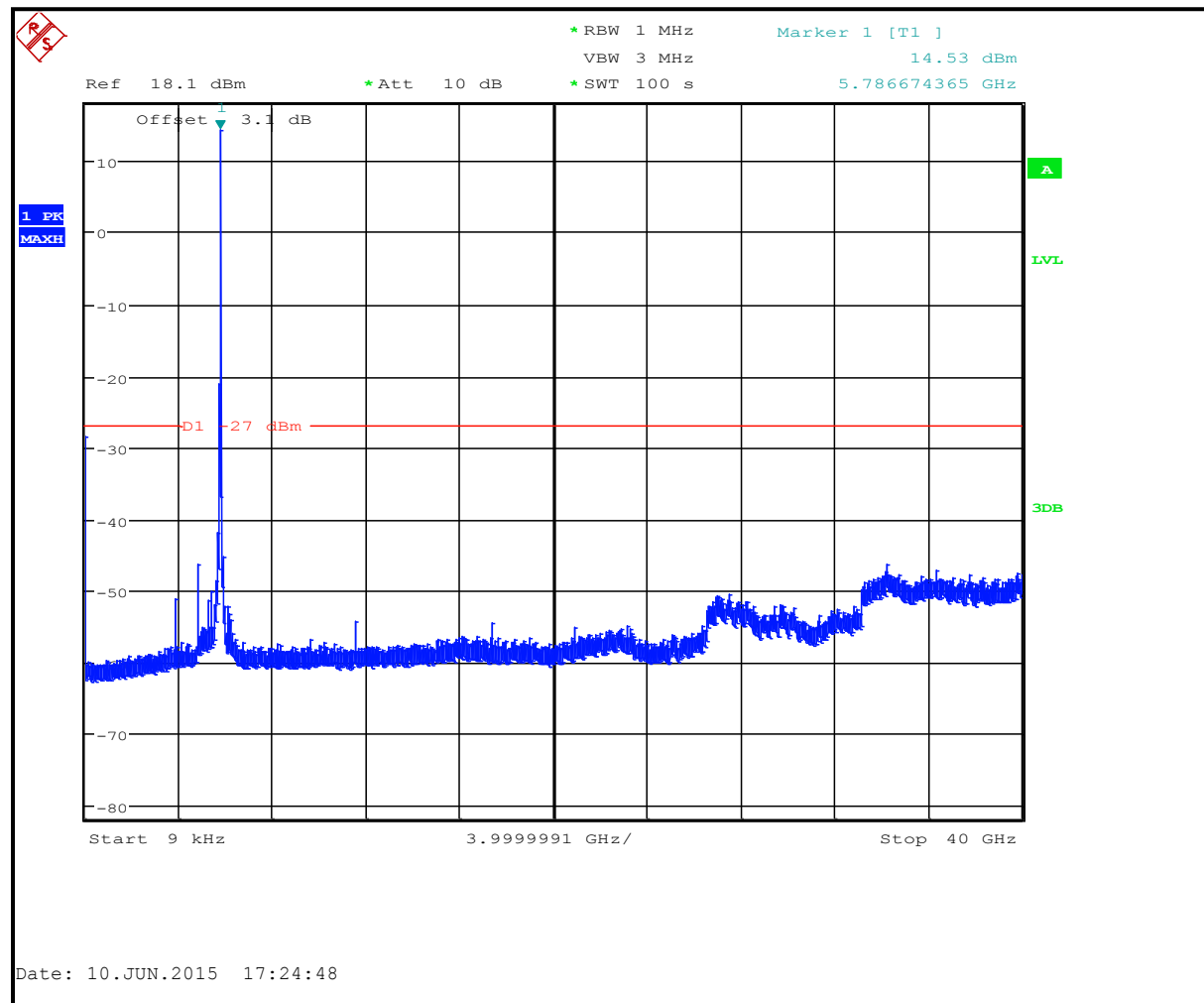
Plot 7-12: Undesirable Emissions Channel 140 (5700 MHz)



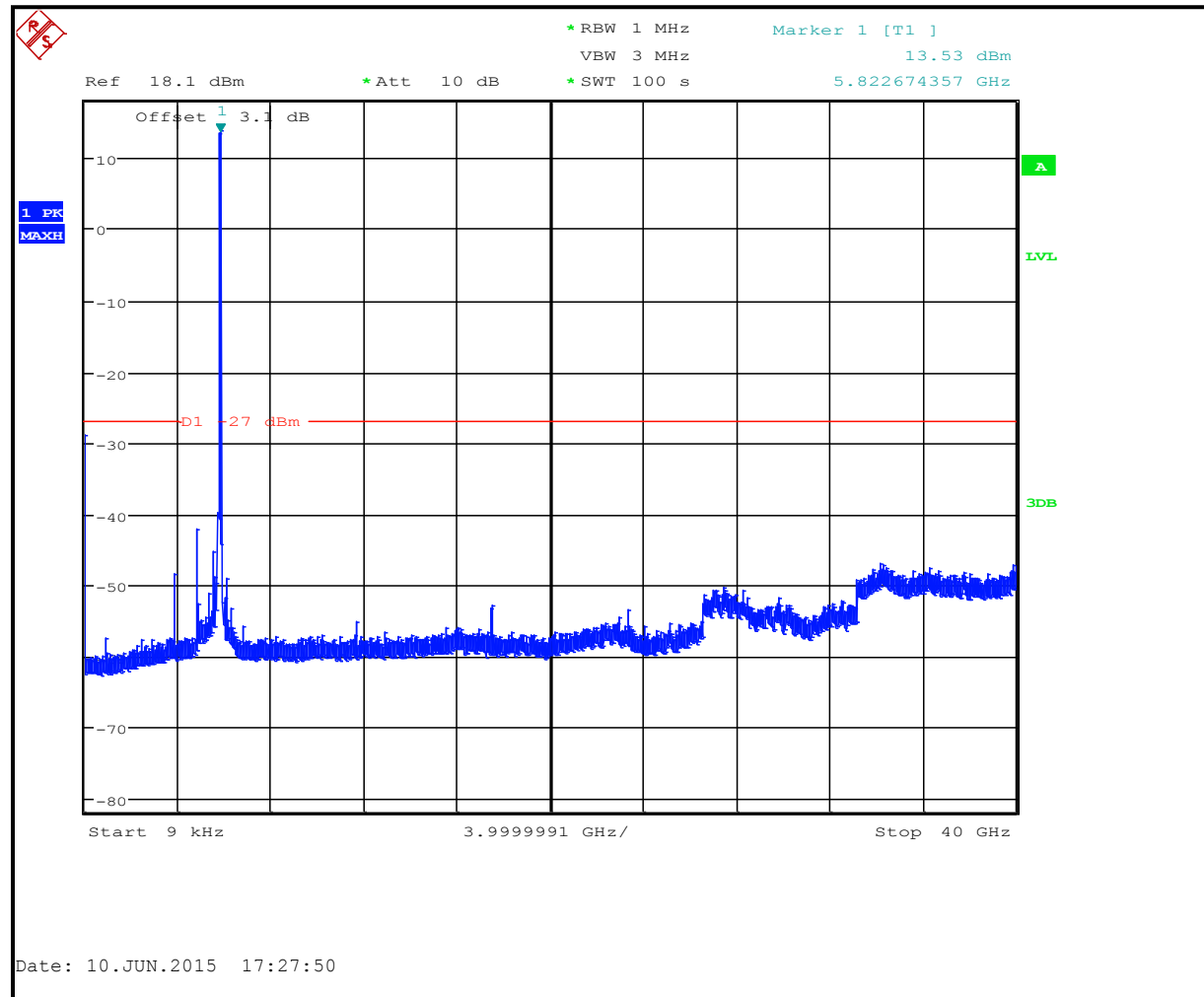
Plot 7-13: Undesirable Emissions Channel 149 (5745 MHz)



Plot 7-14: Undesirable Emissions Channel 157(5785 MHz)



Plot 7-15: Undesirable Emissions Channel 165 (5825 MHz)



7.3 Limits of Undesirable Emissions

(b) *Undesirable emission limits:* Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz.

(2) For transmitters operating in the 5.25–5.35 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz.

(3) For transmitters operating in the 5.47–5.725 GHz band: all emissions outside of the 5.47–5.725 GHz band shall not exceed an EIRP of –27 dBm/MHz.

(4) For transmitters operating in the 5.725–5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of –17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of –27 dBm/MHz.

Test Personnel:

Daniel W. Baltzell
Test Engineer



Signature

June 10, 2015
Date of Test

8 Bandwidth – FCC 15.407(a) and (e); RSS-247 6.2

8.1 Bandwidth Test Procedure

The bandwidths were measured using a 50-ohm spectrum analyzer with the resolution bandwidth set at 1% of the emission bandwidth. The device was modulated and the spectrum analyzer placed in max hold, peak detector, to capture the trace. The minimum 26 dB and 6 dB bandwidths are presented below.

Table 8-1: 26 dB Bandwidth Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
901581	Rohde & Schwarz	FSU	Spectrum Analyzer	1166.1660.50	11/13/15

Table 8-2: 26 dB Bandwidth Test Data – 802.11a (36 Mbps)

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	19.5
40	5200	19.4
44	5220	19.5
48	5240	19.3
52	5260	19.6
56	5280	19.1
64	5320	19.7
100	5500	19.7
116	5580	19.6
140	5700	19.5
149	5745	19.6
157	5785	19.6
165	5825	19.4

Table 8-3: 26 dB Bandwidth Test Data – 802.11n (39 Mbps)

Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
36	5180	22.7
40	5200	22.7
44	5220	22.6
48	5240	22.6
52	5260	25.6
56	5280	25.6
64	5320	25.1
100	5500	25.1
116	5580	24.8
140	5700	24.1
149	5745	23.5
157	5785	25.8
165	5825	26.7

Table 8-4: 26 dB Bandwidth Test Data – 802.11a (40 MHz BW, 36 Mbps)

Channel	Center Frequency (MHz)	26 dB Bandwidth (MHz)
36 (lower half)	5190	43.6
40 (lower half)	5210	43.9
44 (lower half)	5230	43.4
48 (lower half)	5250	43.8
52 (lower half)	5270	44.4
56 (lower half)	5290	43.3
64 (lower half)	5330	46.5
100 (lower half)	5510	47.1
116 (lower half)	5590	48.9
140 (upper half)	5690	48.6
149 (lower half)	5755	48.7
157 (lower) half	5795	48.4
165 (upper half)	5815	48.2

Table 8-5: 26 dB Bandwidth Test Data – 802.11n (40 MHz BW, 39 Mbps)

Channel	Center Frequency (MHz)	26 dB Bandwidth (MHz)
36 (lower half)	5190	43.9
40 (lower half)	5210	44.2
44 (lower half)	5230	44.2
48 (lower half)	5250	44.2
52 (lower half)	5270	44.4
56 (lower half)	5290	44.6
64 (lower half)	5330	46.0
100 (lower half)	5510	49.8
116 (lower half)	5590	51.0
140 (upper half)	5690	51.9
149 (lower half)	5755	43.3
157 (lower) half	5795	42.9
165 (upper half)	5815	44.2

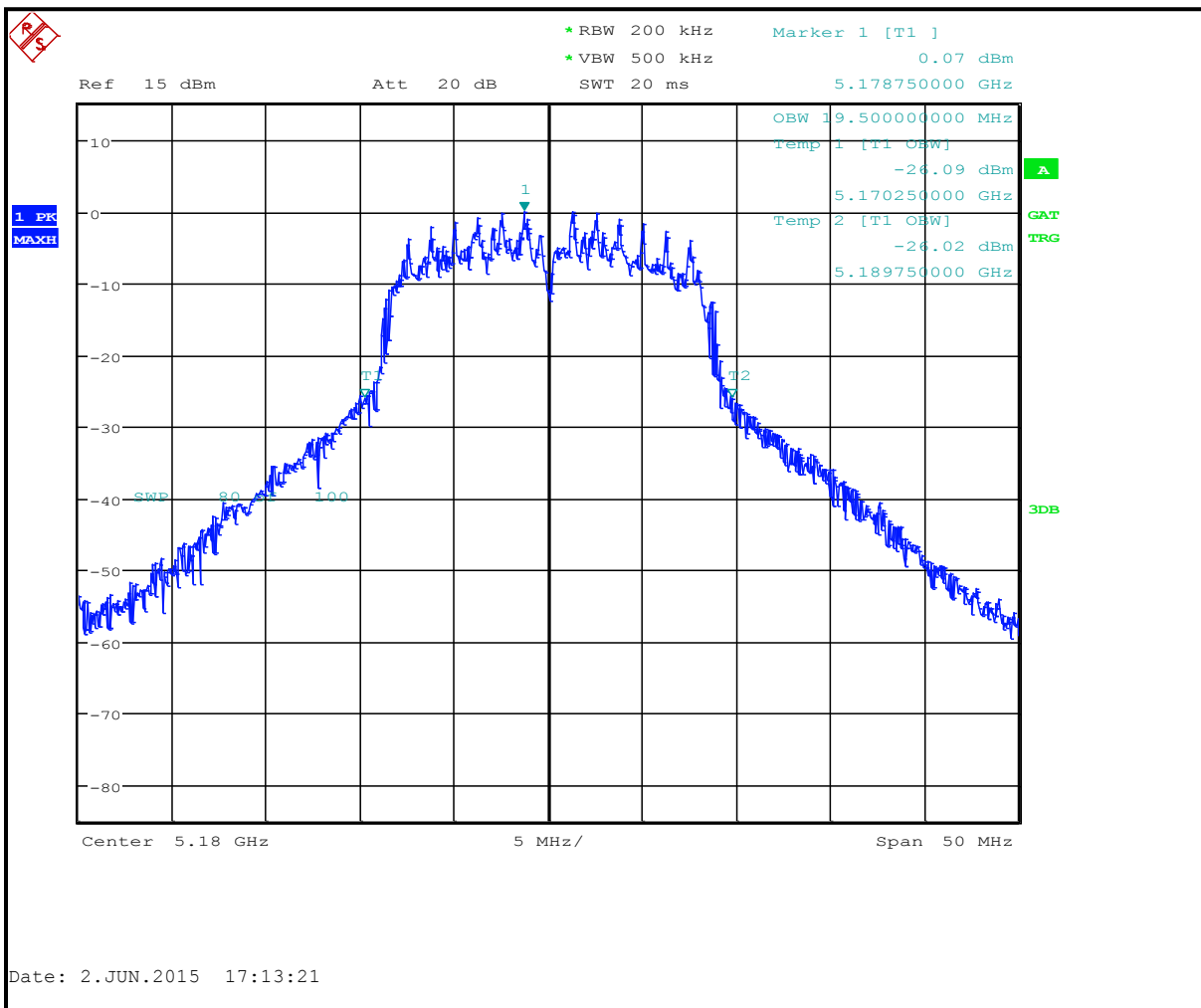
Table 8-6: 6 dB Bandwidth Test Data – 802.11a (36 Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
149	5745	16.0	0.5	Pass
157	5785	16.1	0.5	Pass
165	5825	15.9	0.5	Pass

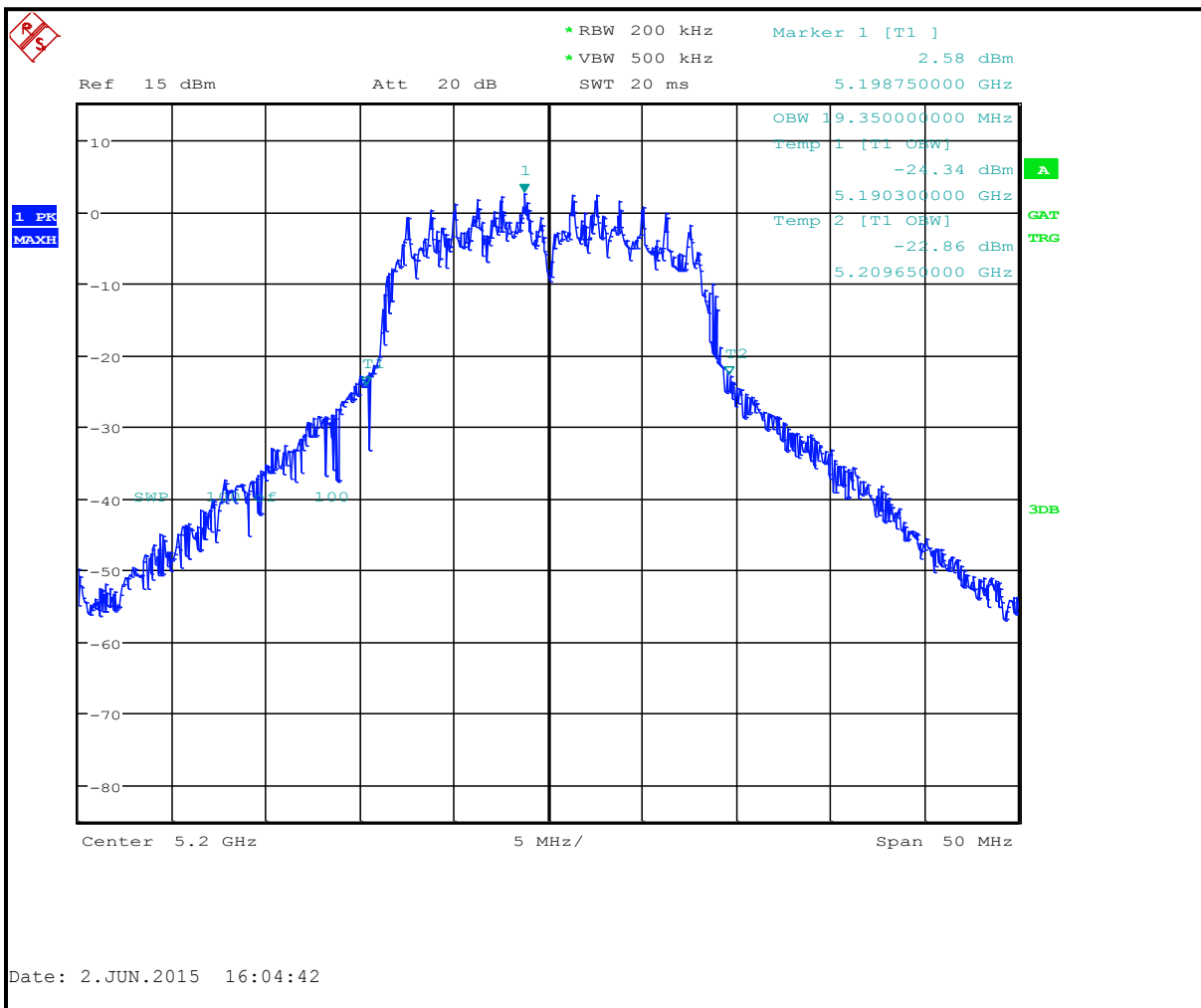
Table 8-7: 6 dB Bandwidth Test Data – 802.11n (39 Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/Fail
149	5745	15.8	0.5	Pass
157	5785	16.0	0.5	Pass
165	5825	16.0	0.5	Pass

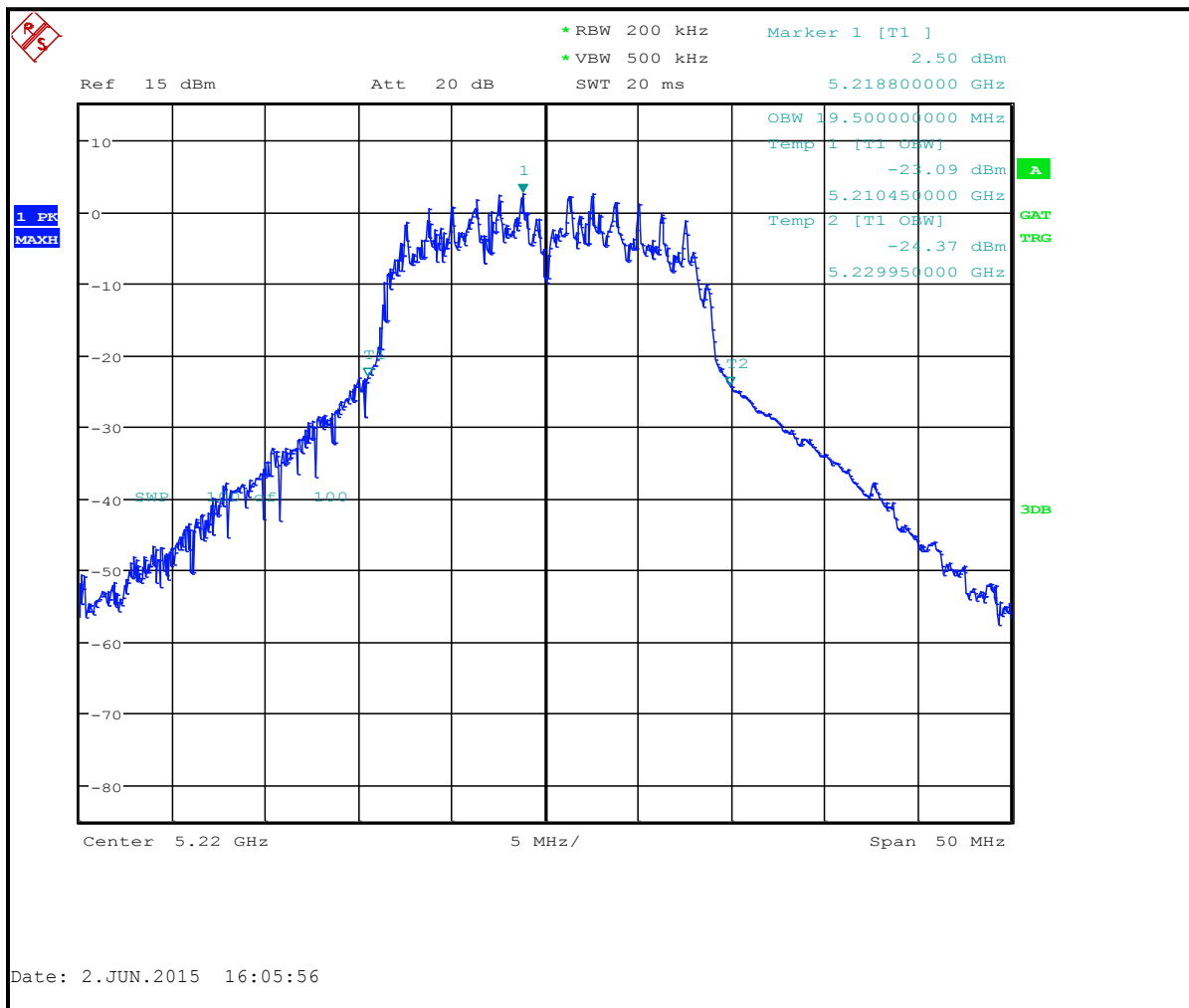
Plot 8-1: 26 dB Bandwidth Channel 36 (TX Frequency 5180 MHz) - 802.11a



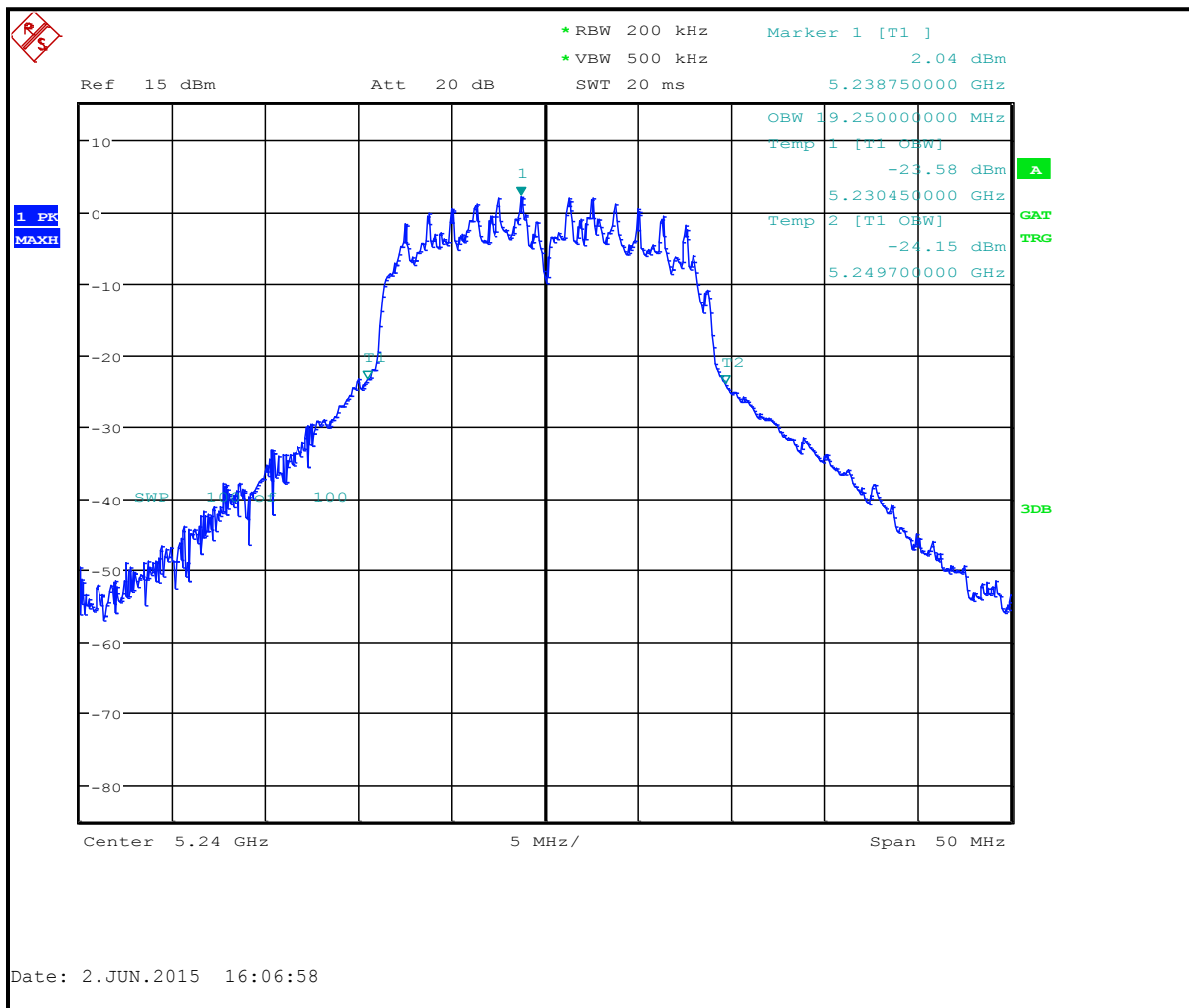
Plot 8-2: 26 dB Bandwidth Channel 40 (TX Frequency 5200 MHz) - 802.11a



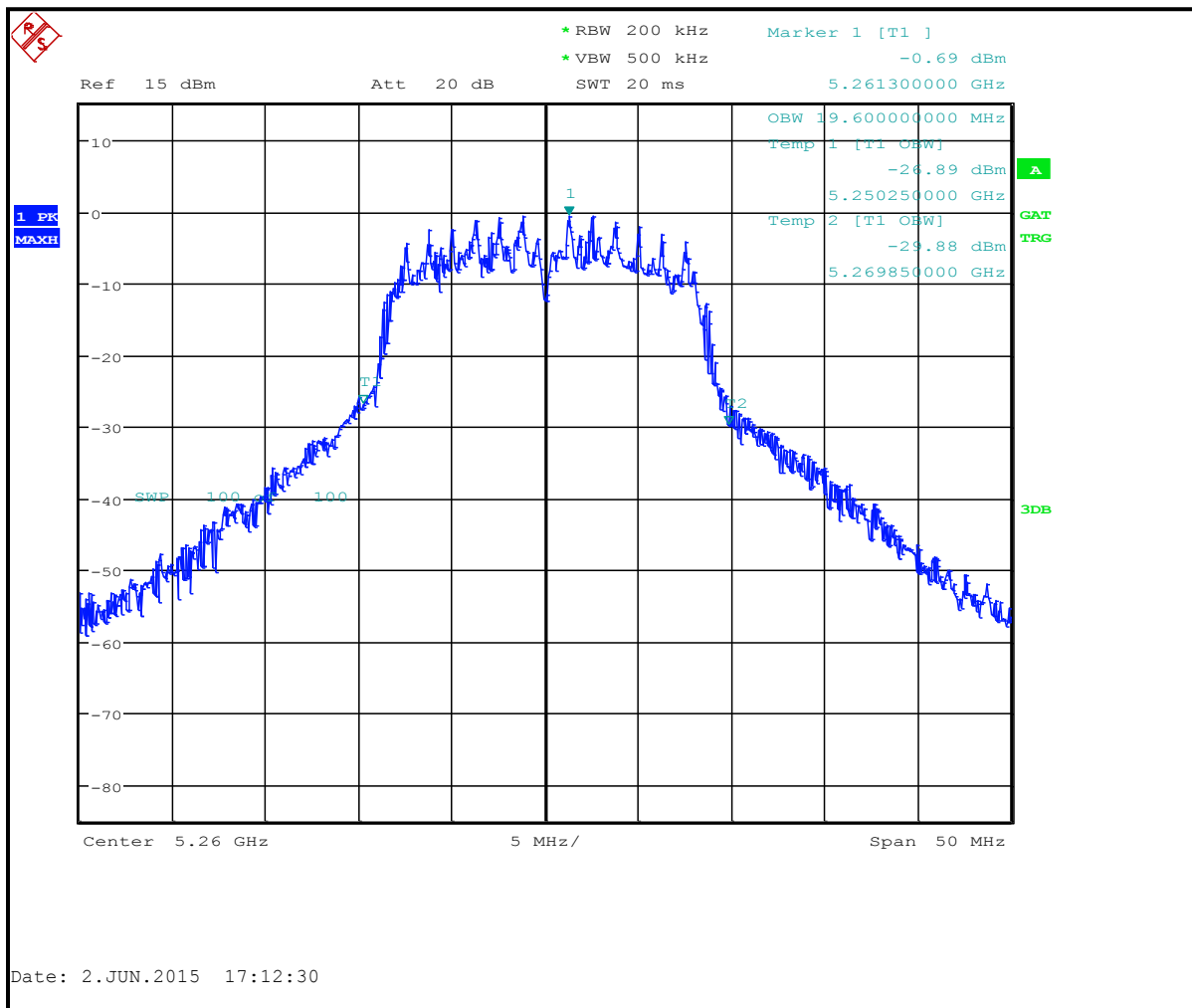
Plot 8-3: 26 dB Bandwidth Channel 44(TX Frequency 5220 MHz) - 802.11a



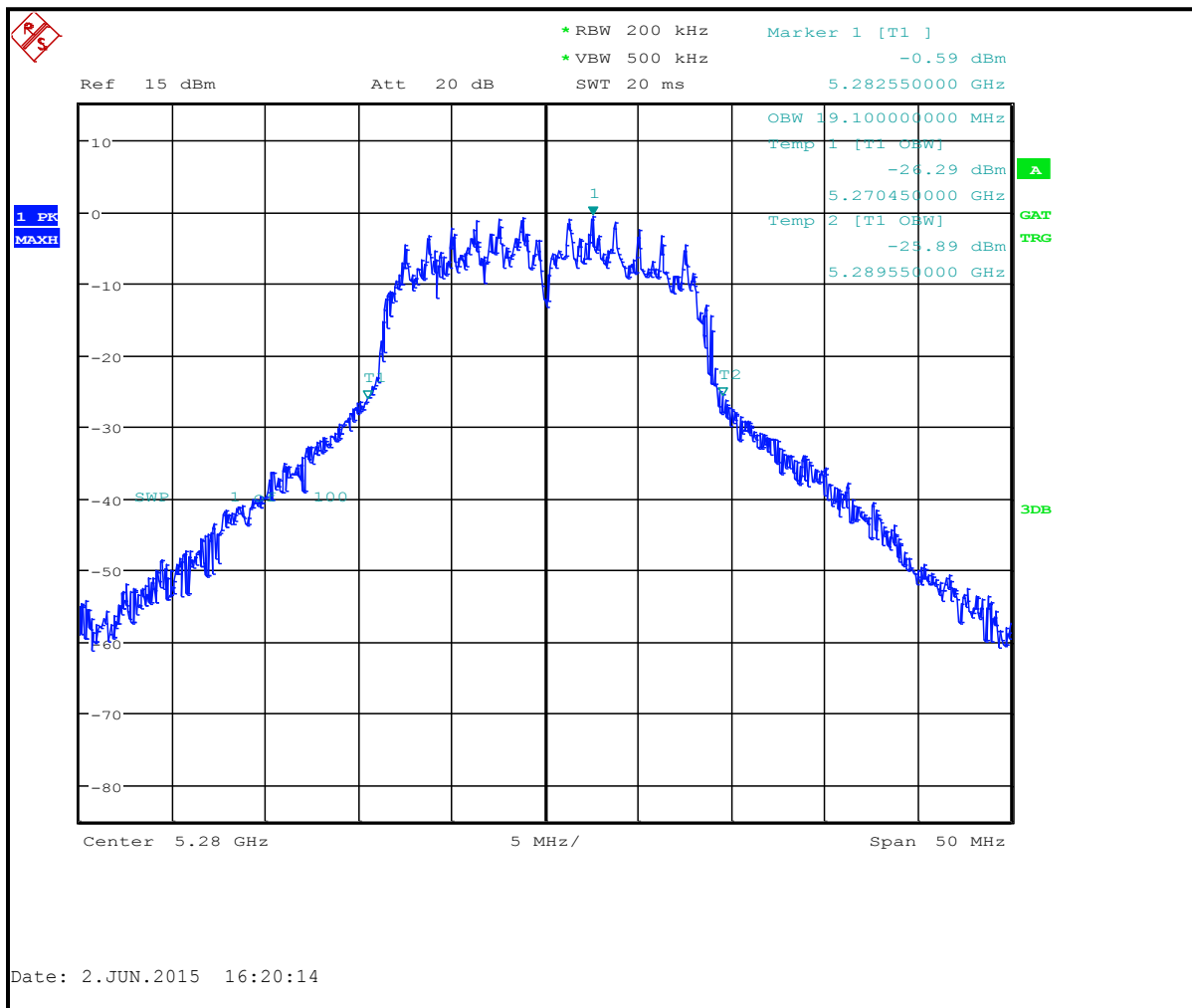
Plot 8-4: 26 dB Bandwidth Channel 48 (TX Frequency 5240 MHz) - 802.11a



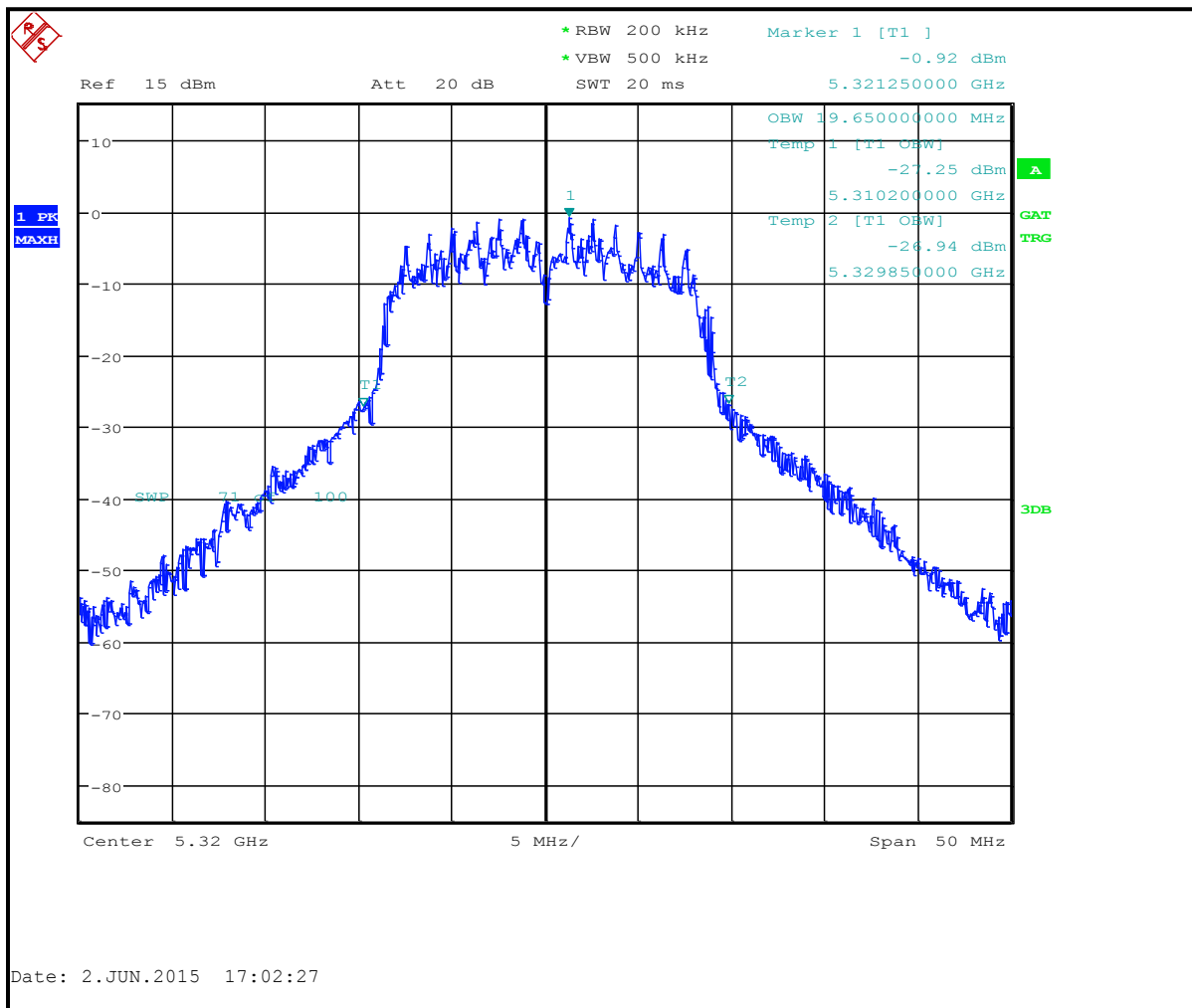
Plot 8-5: 26 dB Bandwidth Channel 52 (TX Frequency 5260 MHz) - 802.11a



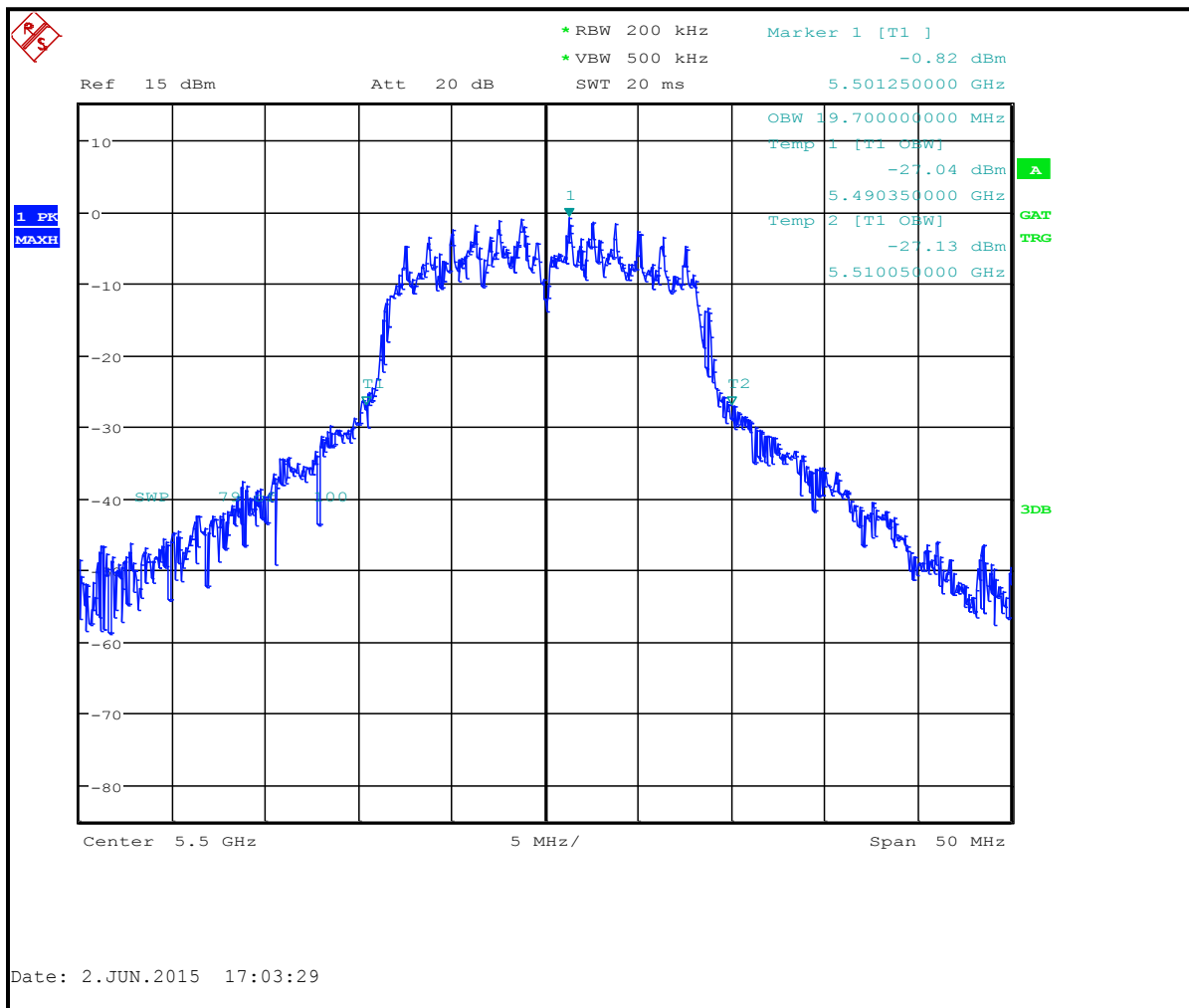
Plot 8-6: 26 dB Bandwidth Channel 56 (TX Frequency 5280 MHz) - 802.11a



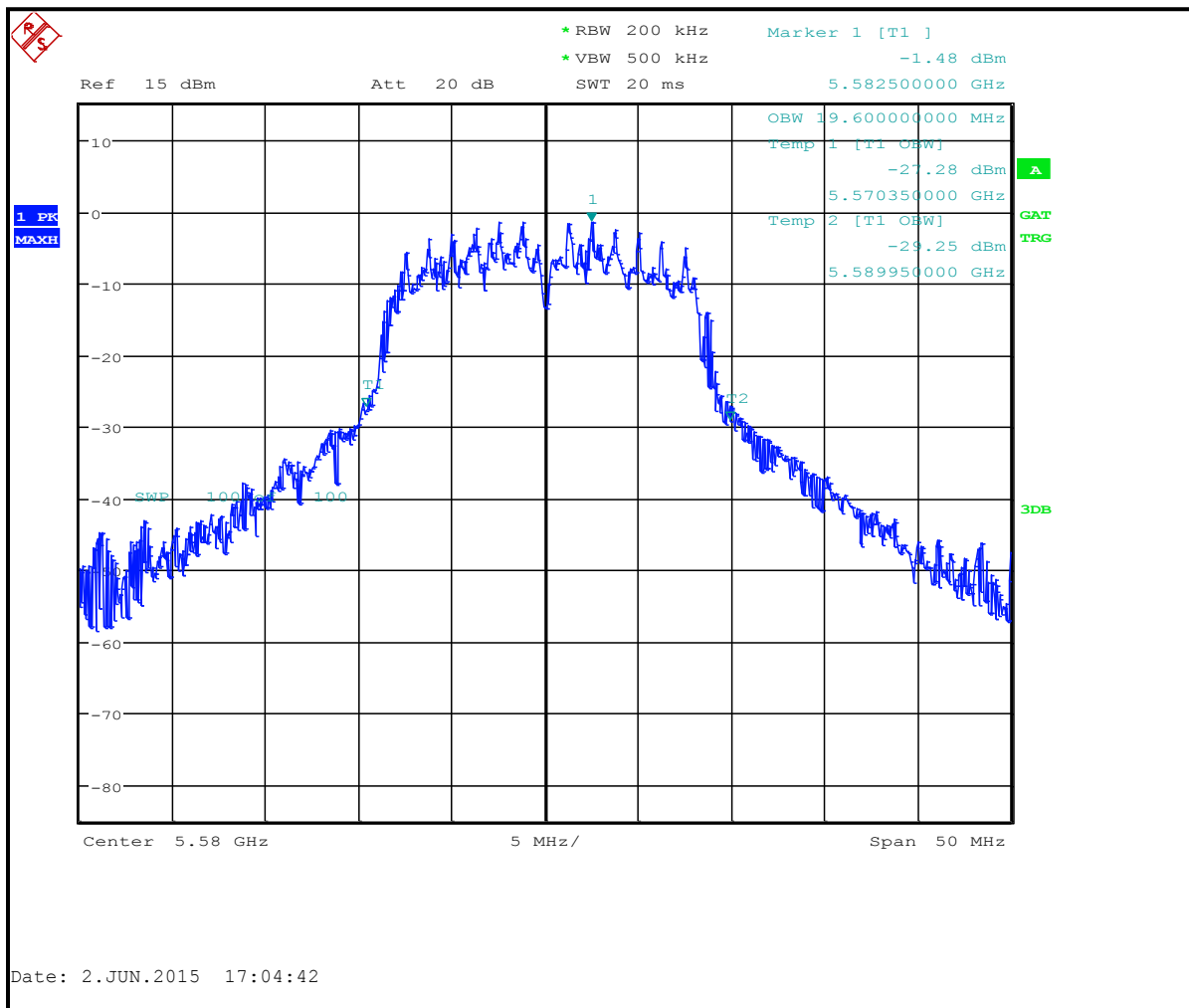
Plot 8-7: 26 dB Bandwidth Channel 64 (TX Frequency 5320 MHz) - 802.11a



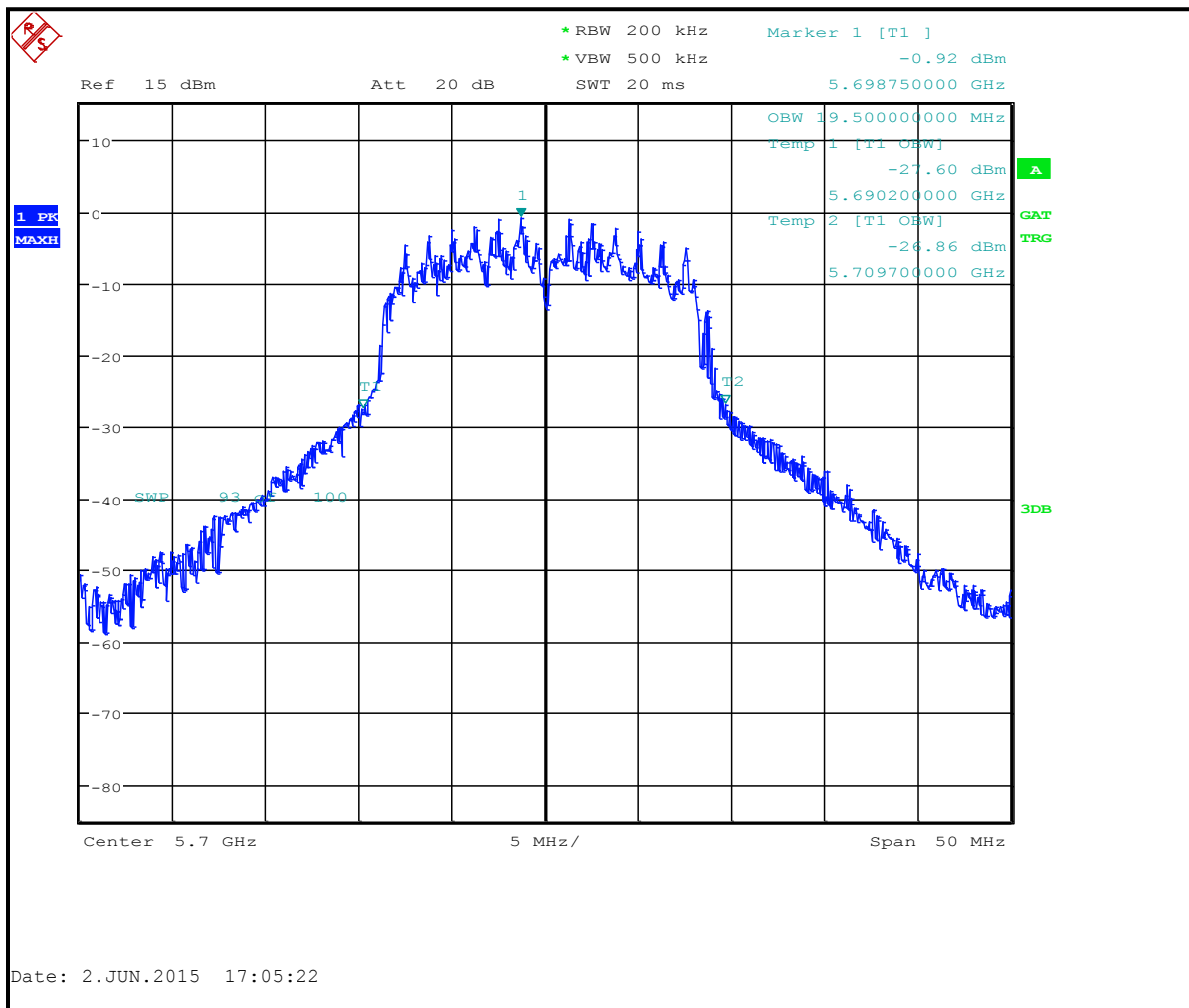
Plot 8-8: 26 dB Bandwidth Channel 100 (TX Frequency 5500 MHz) - 802.11a



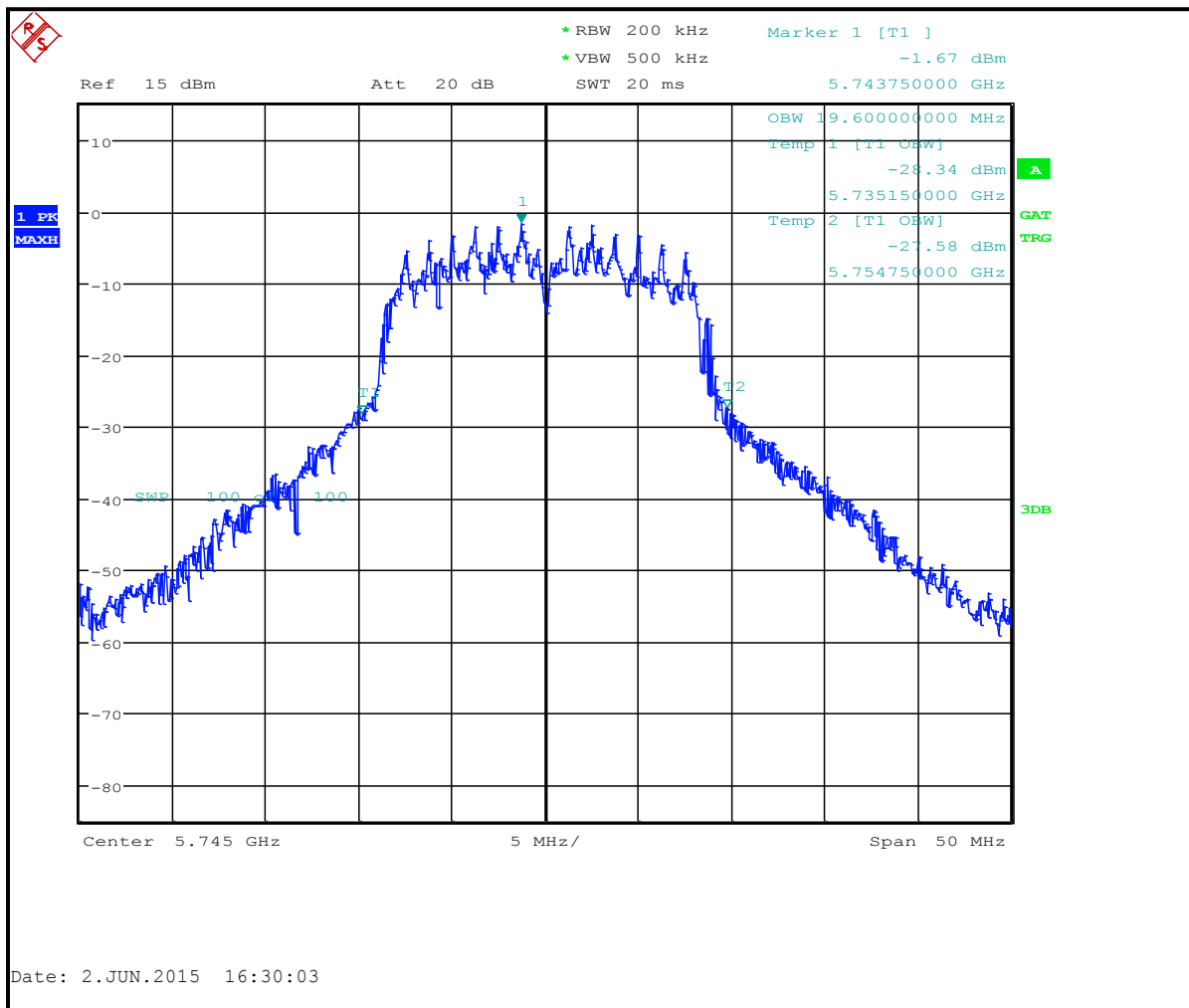
Plot 8-9: 26 dB Bandwidth Channel 116 (TX Frequency 5580 MHz) - 802.11a



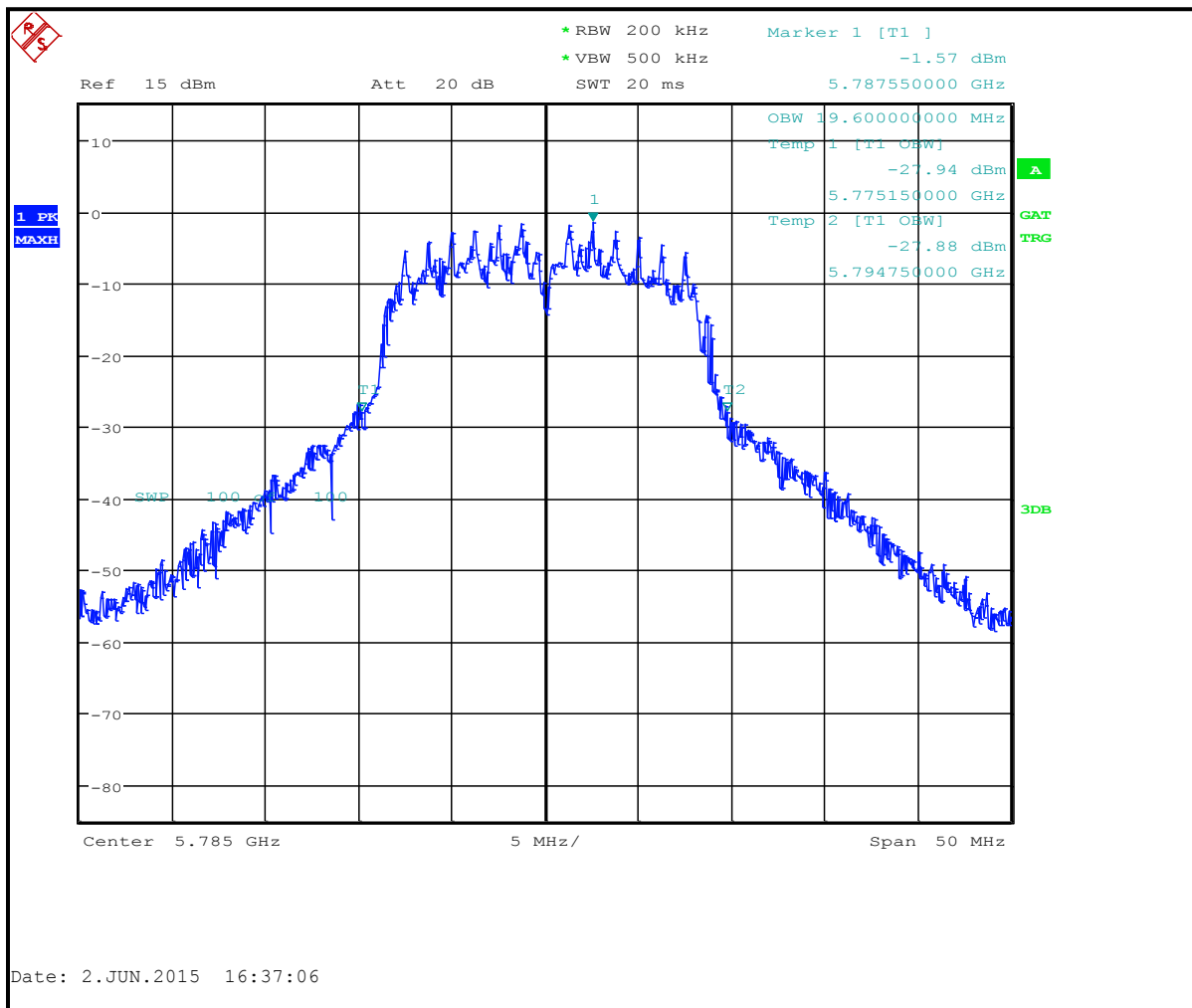
Plot 8-10: 26 dB Bandwidth Channel 140 (TX Frequency 5700 MHz) - 802.11a



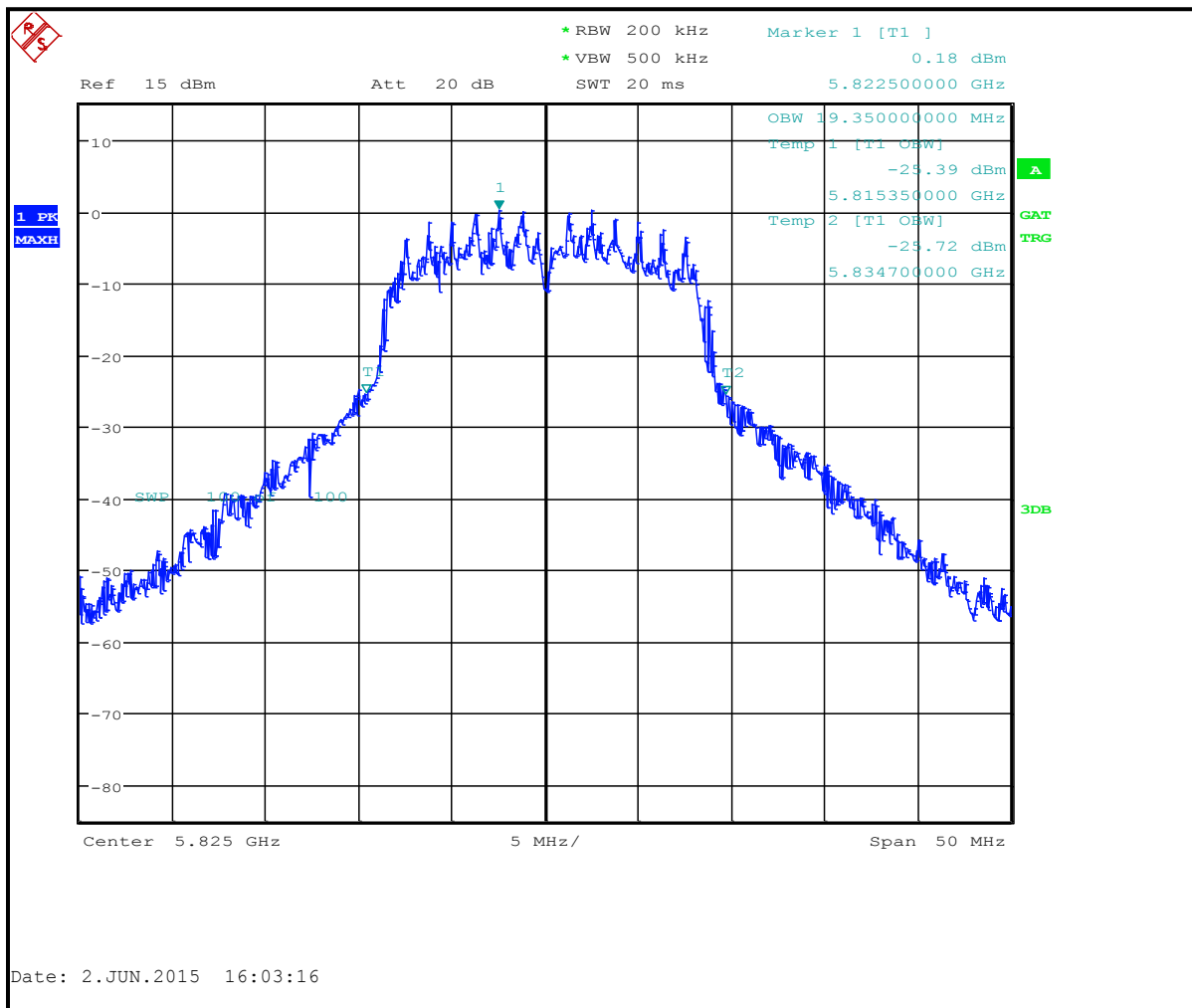
Plot 8-11: 26 dB Bandwidth Channel 149 (TX Frequency 5745 MHz) - 802.11a



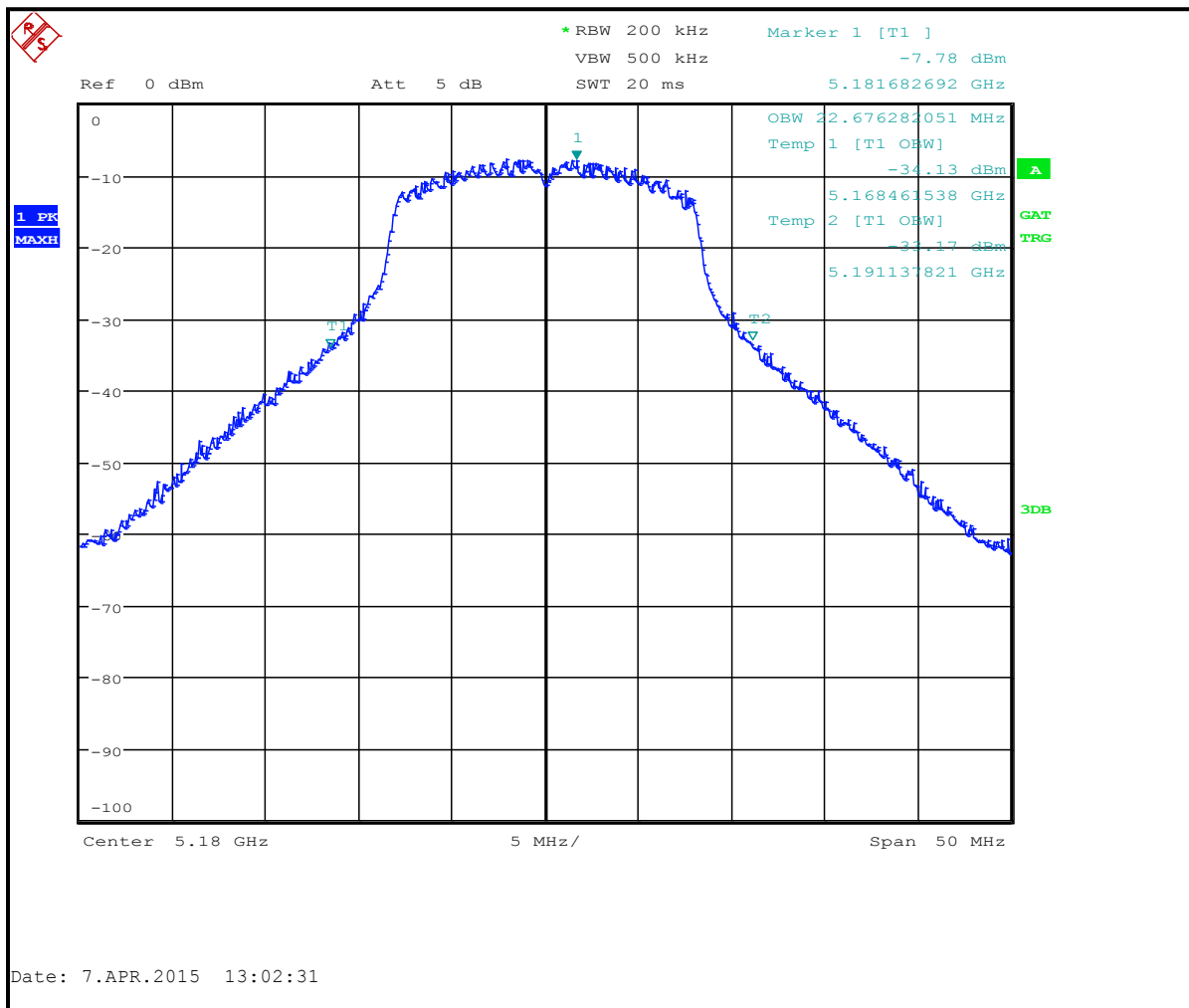
Plot 8-12: 26 dB Bandwidth Channel 157 (TX Frequency 5785 MHz) - 802.11a



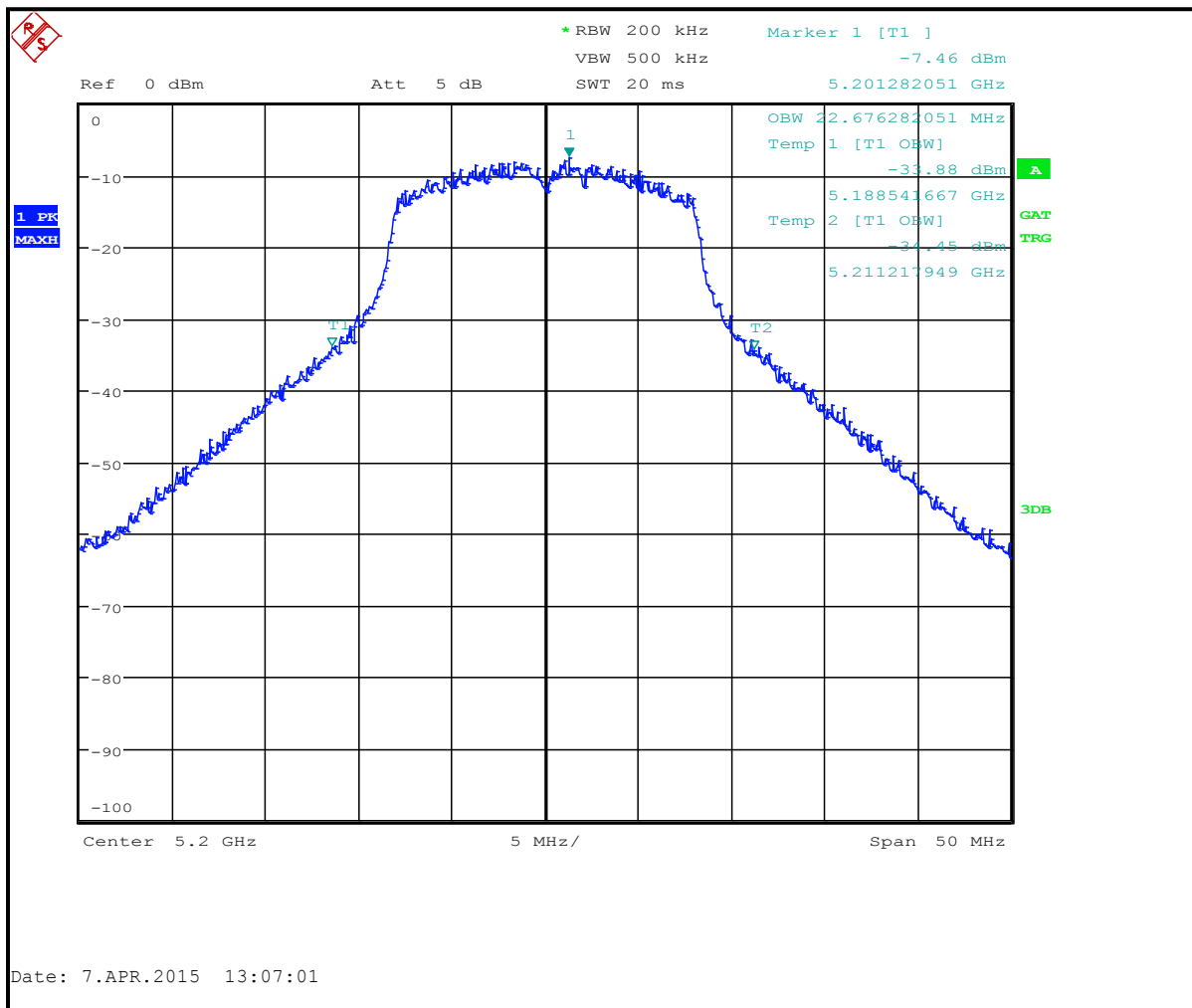
Plot 8-13: 26 dB Bandwidth Channel 165 (TX Frequency 5825 MHz) - 802.11a



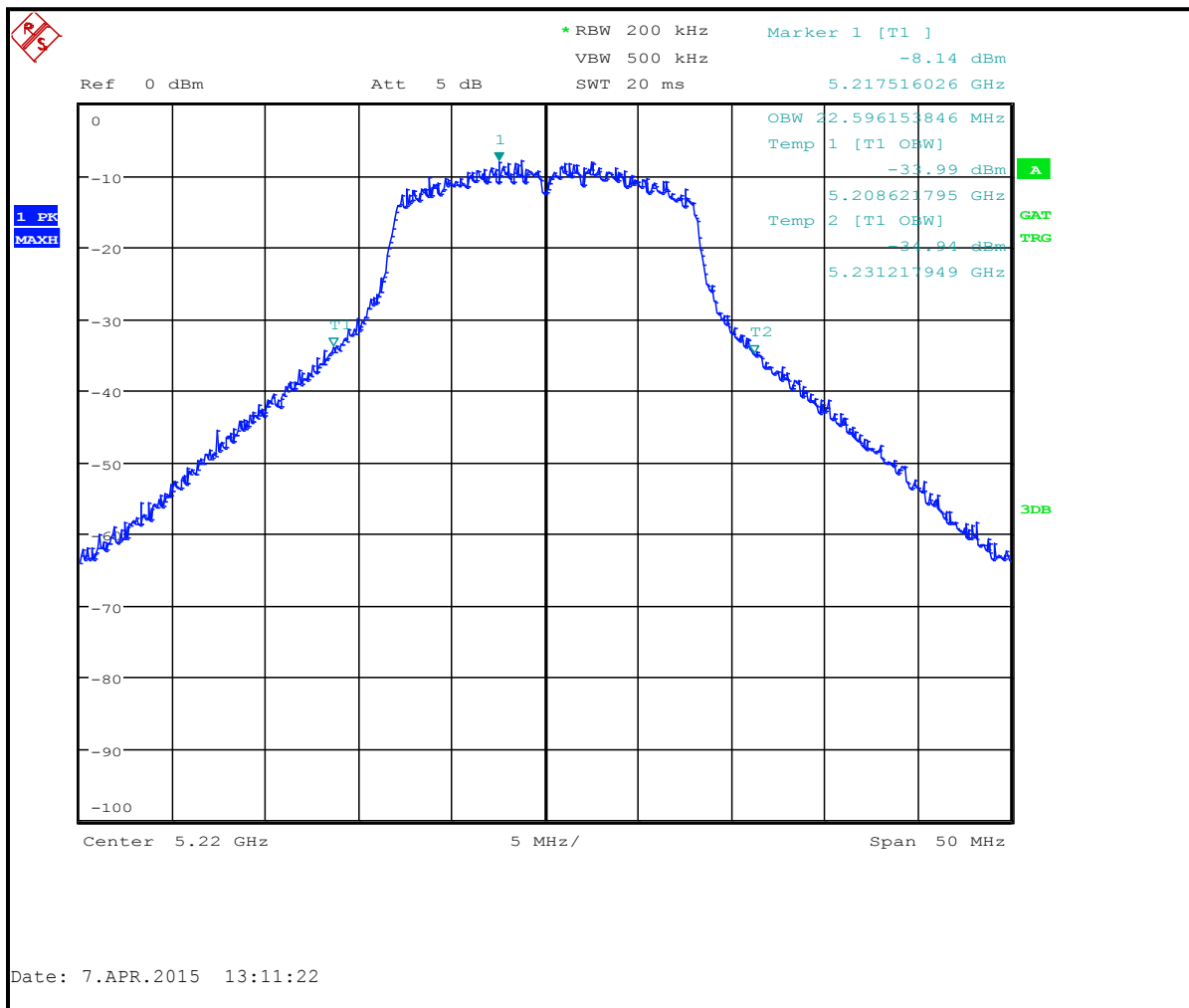
Plot 8-14: 26 dB Bandwidth Channel 36 (TX Frequency 5180 MHz) - 802.11n



Plot 8-15: 26 dB Bandwidth Channel 40 (TX Frequency 5200 MHz) - 802.11n



Plot 8-16: 26 dB Bandwidth Channel 44 (TX Frequency 5220 MHz) - 802.11n



Ref 0 dBm Att 5 dB SWT 20 ms 5.242483974 GHz

RBW 200 kHz VBW 500 kHz Marker 1 [T1] -7.57 dBm

1 99% MAX

1 5.242483974 GHz Temp 1 [T1 OFF] -34.28 dBm

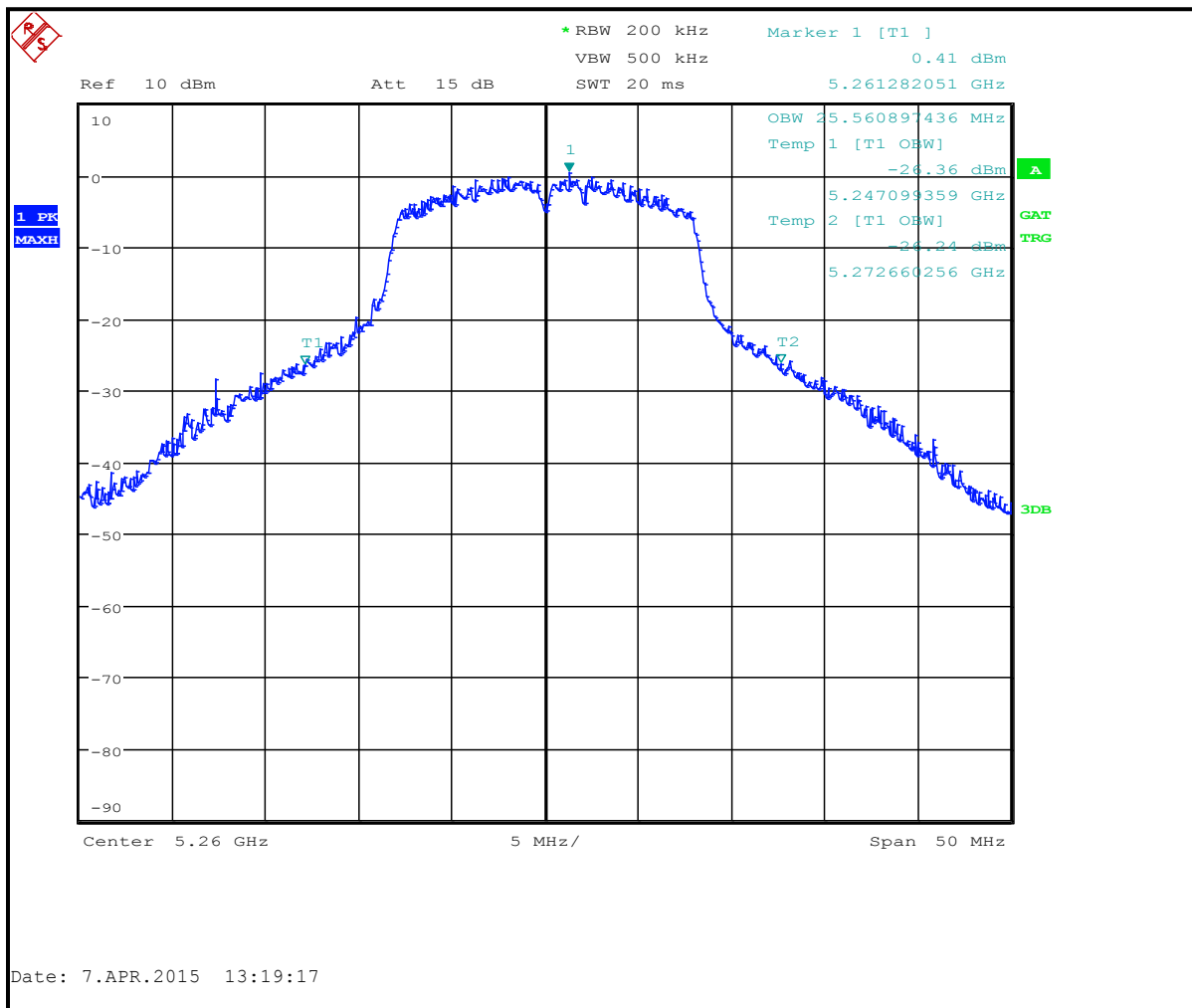
2 5.251217949 GHz Temp 2 [T1 OFF] -34.28 dBm

3dB

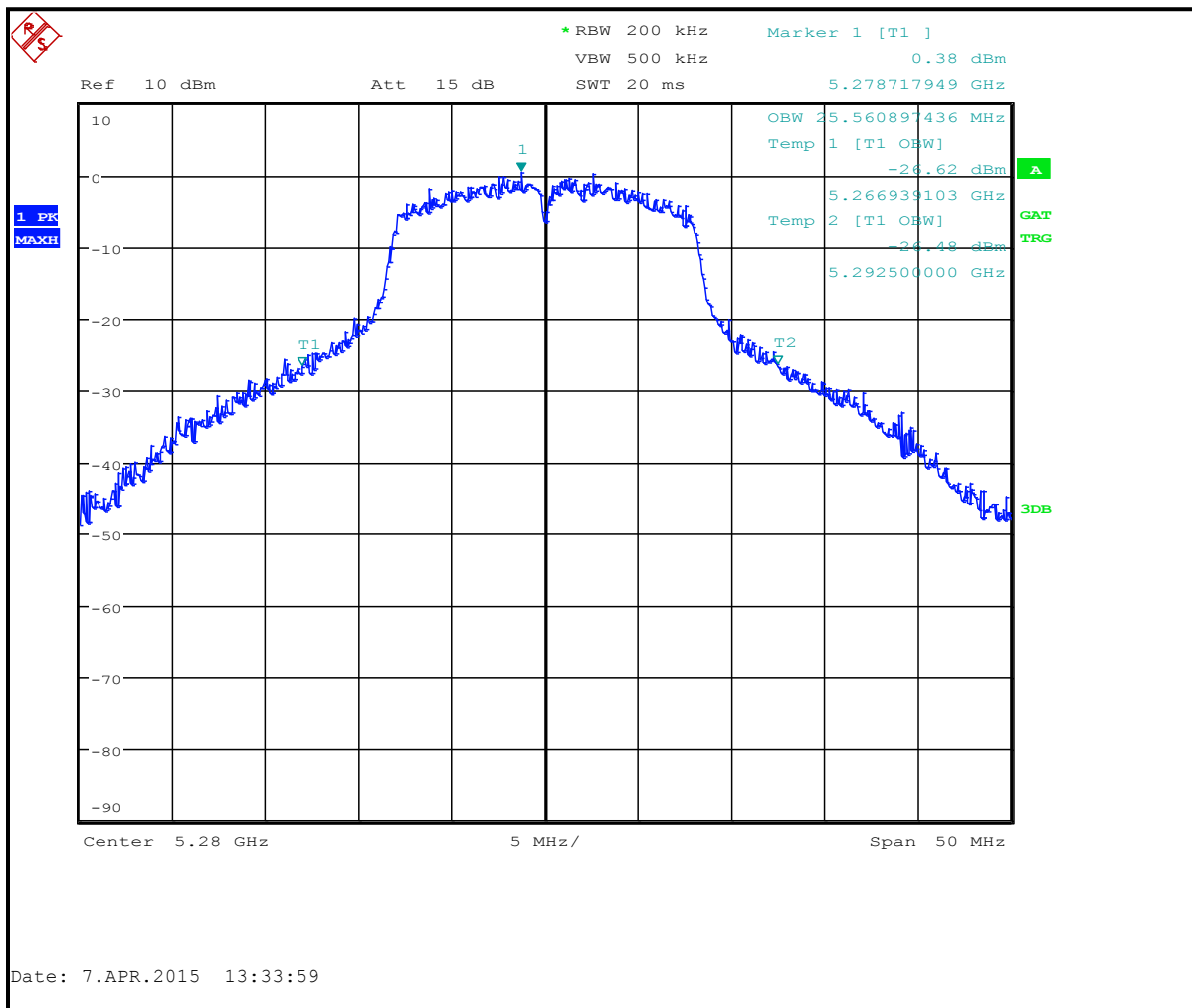
Center 5.24 GHz 5 MHz/ Span 50 MHz

Date: 7.APR.2015 13:12:48

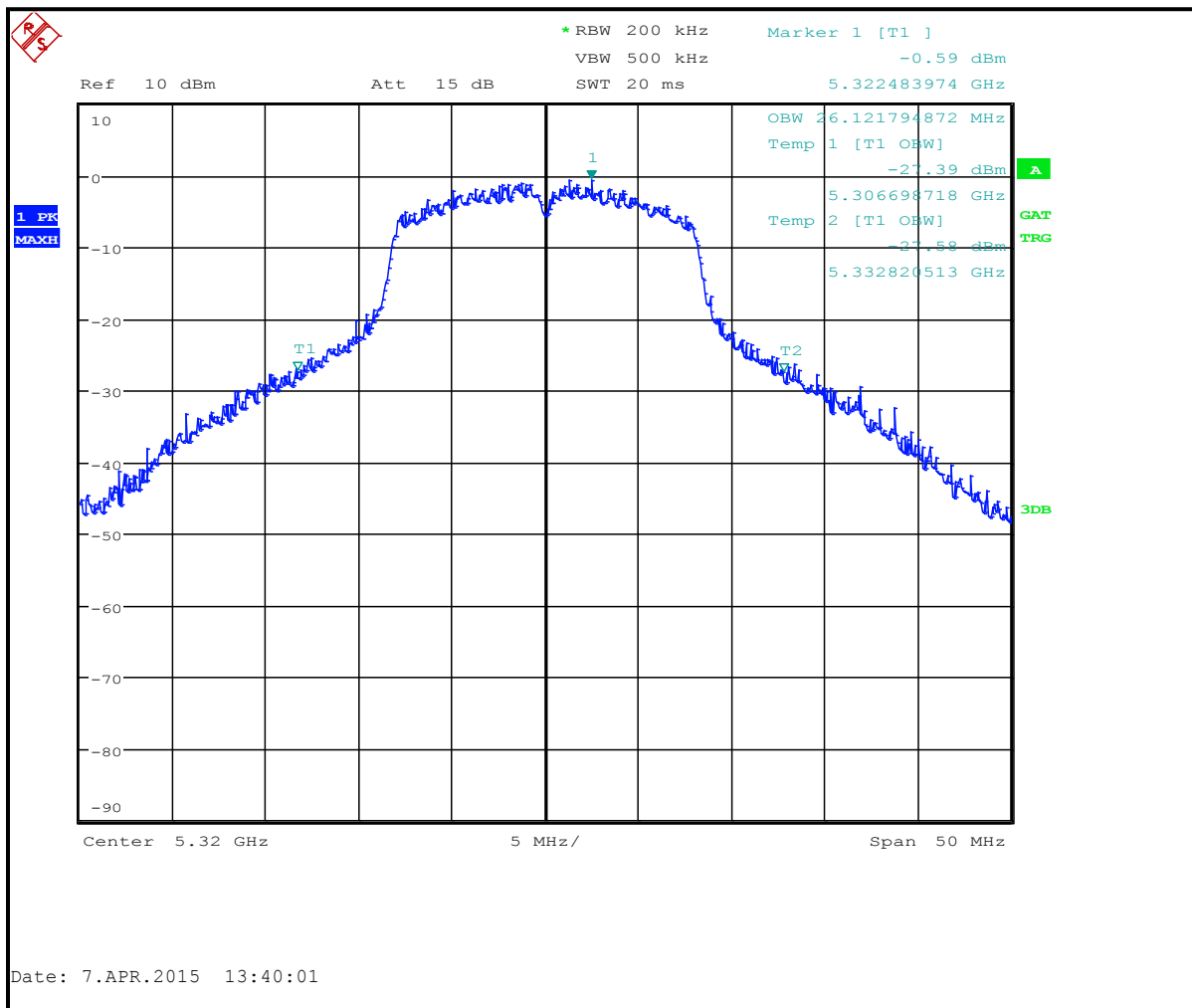
Plot 8-18: 26 dB Bandwidth Channel 52 (TX Frequency 5260 MHz) - 802.11n



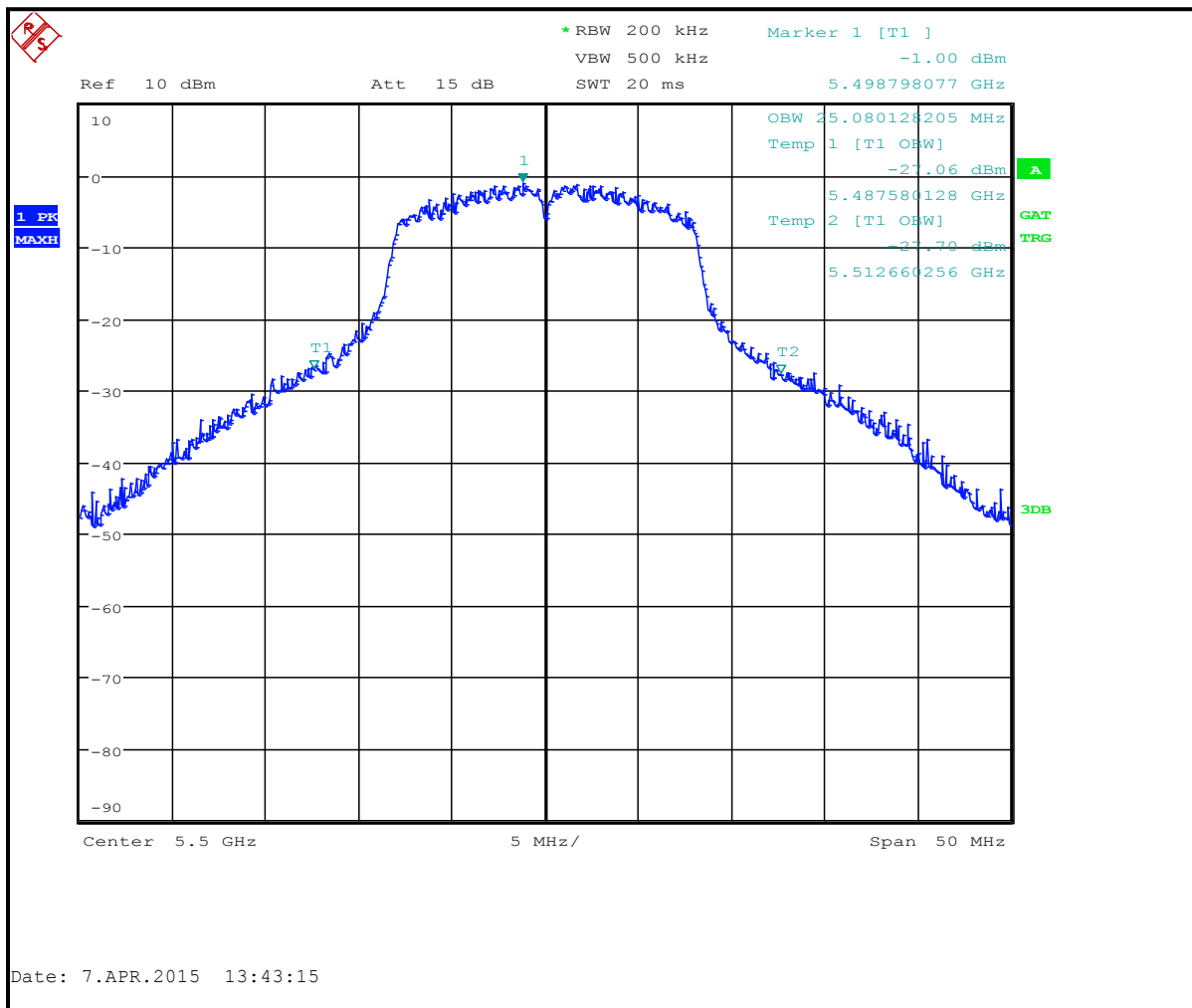
Plot 8-19: 26 dB Bandwidth Channel 56 (TX Frequency 5280 MHz) - 802.11n



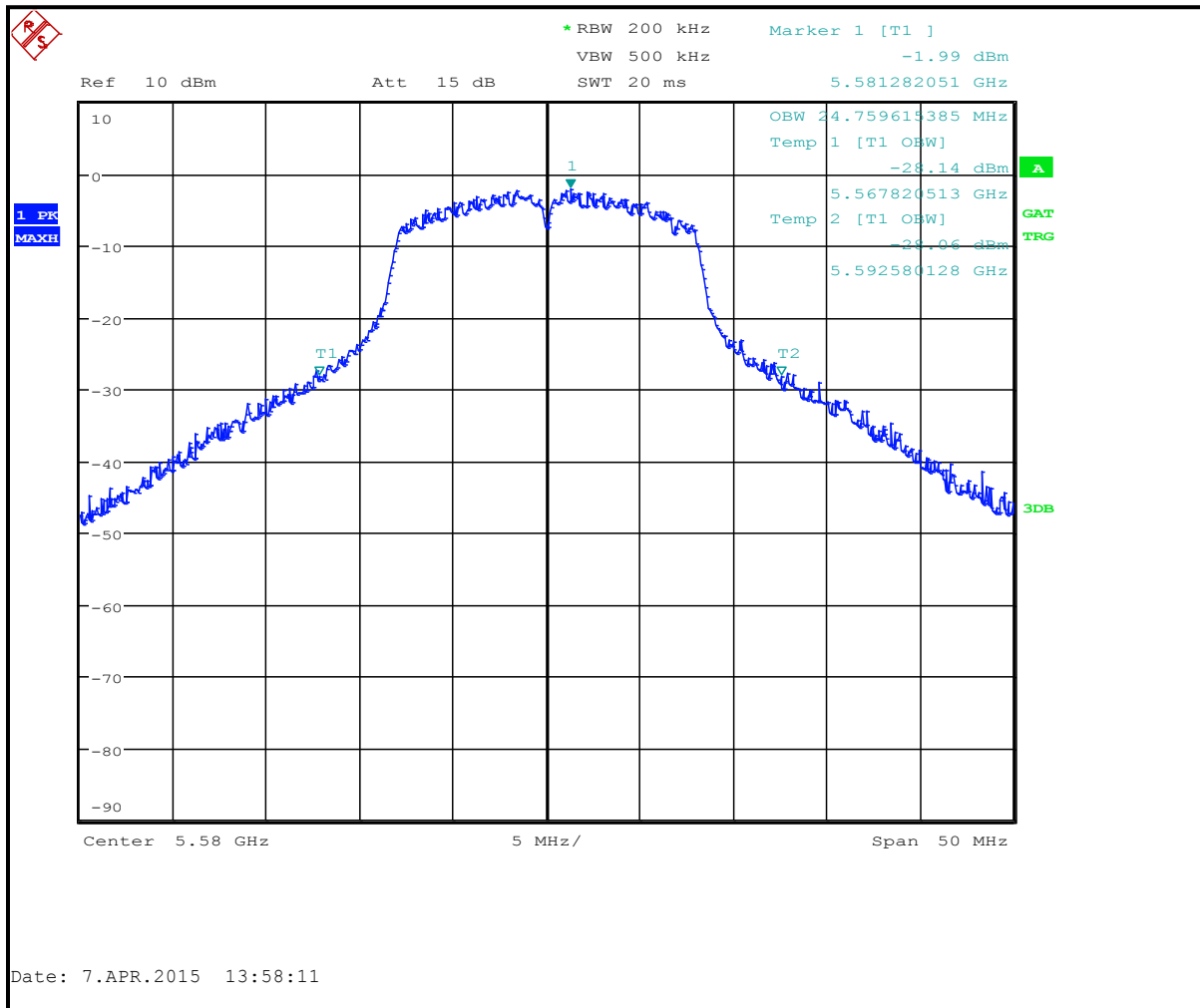
Plot 8-20: 26 dB Bandwidth Channel 64 (TX Frequency 5320 MHz) - 802.11n



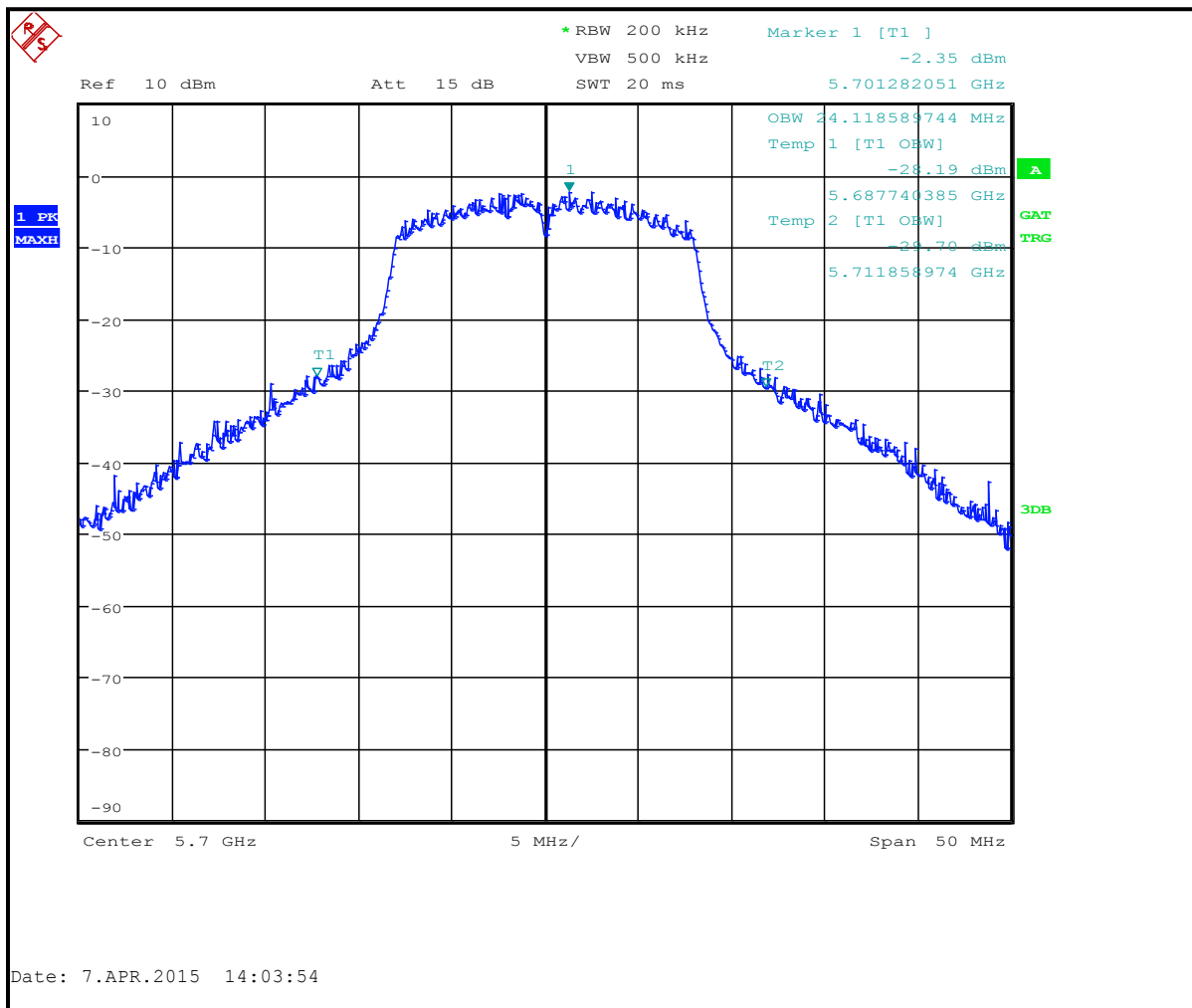
Plot 8-21: 26 dB Bandwidth Channel 100 (TX Frequency 5500 MHz) - 802.11n



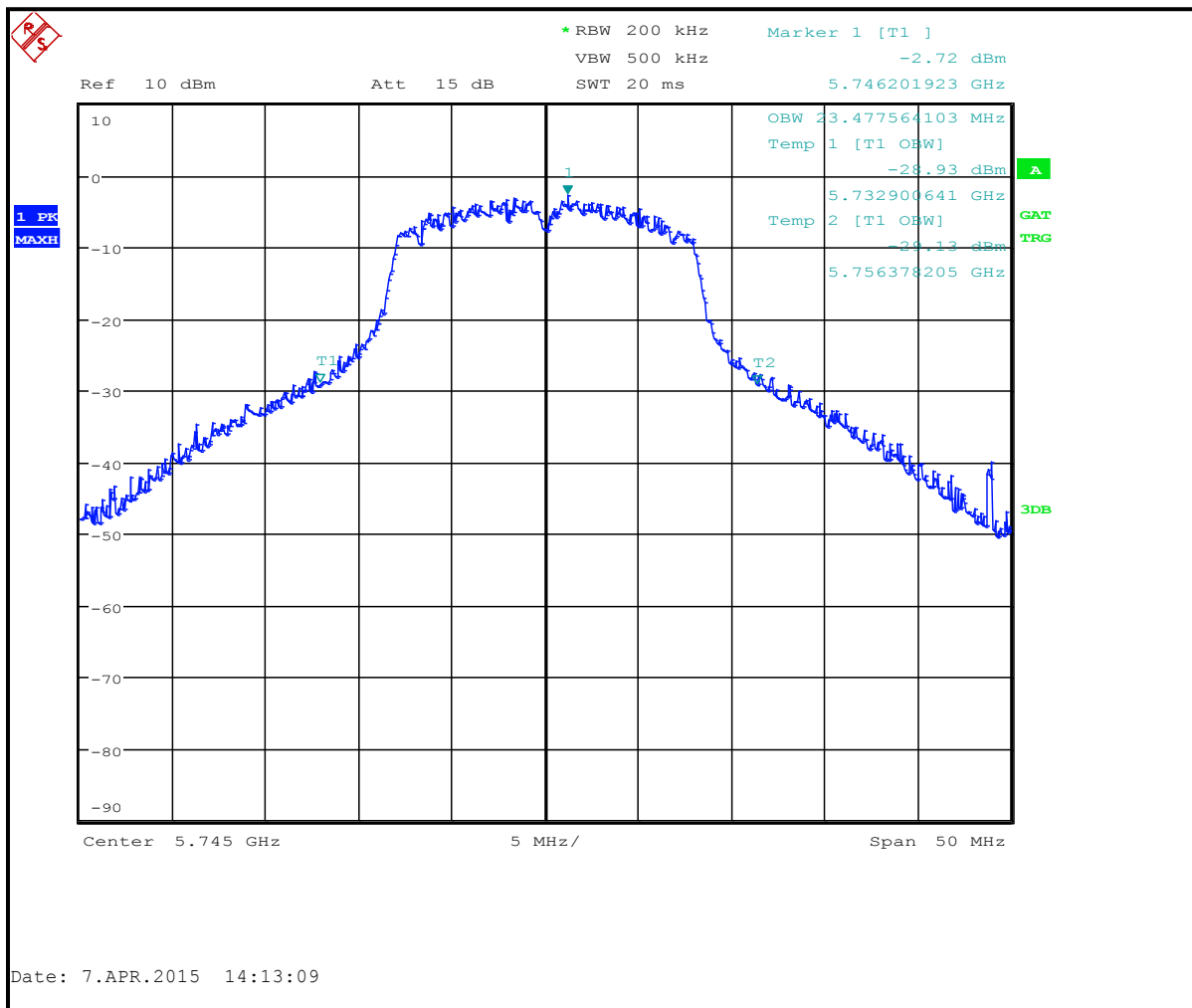
Plot 8-22: 26 dB Bandwidth Channel 116 (TX Frequency 5580 MHz) - 802.11n



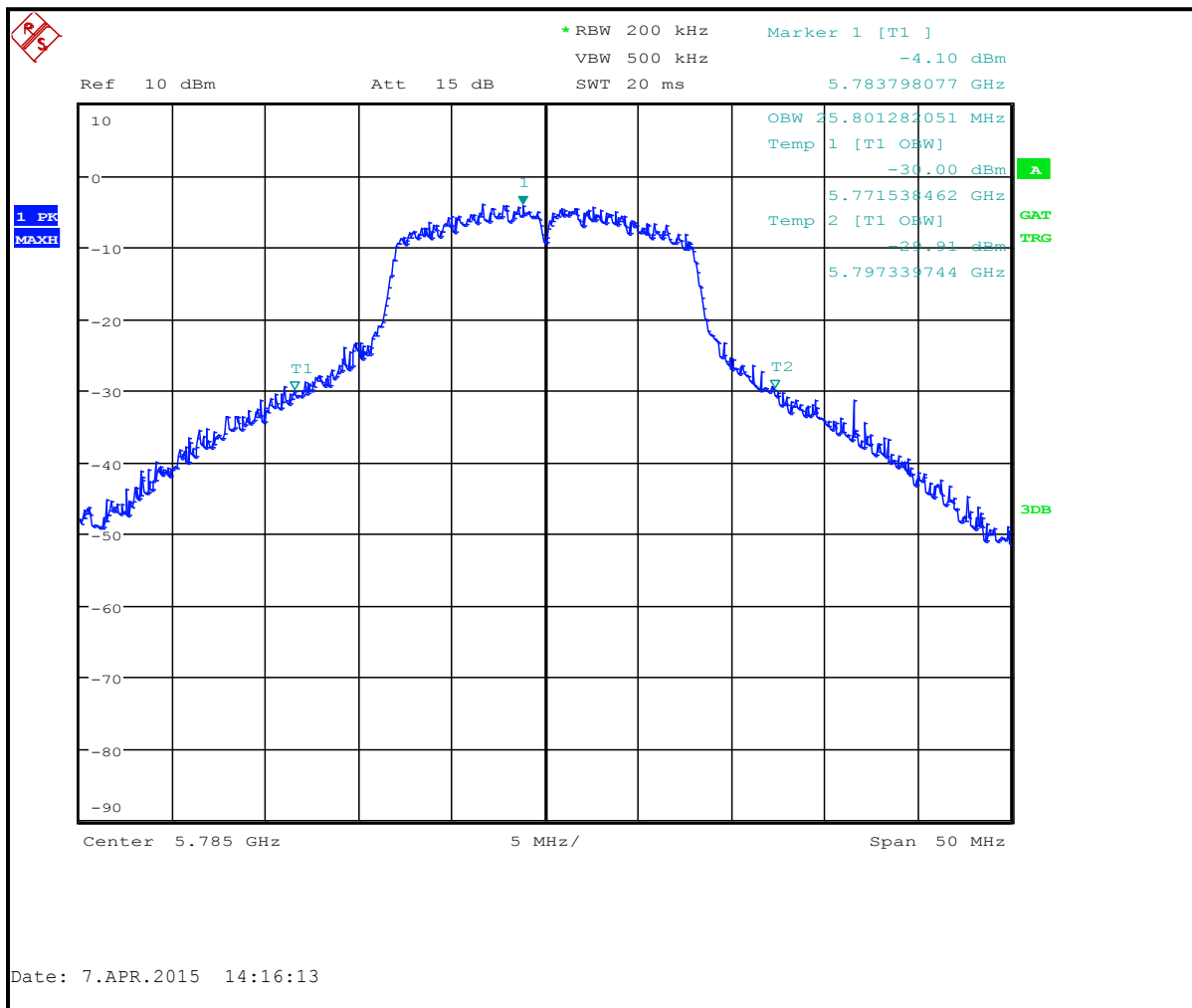
Plot 8-23: 26 dB Bandwidth Channel 140 (TX Frequency 5700 MHz) - 802.11n



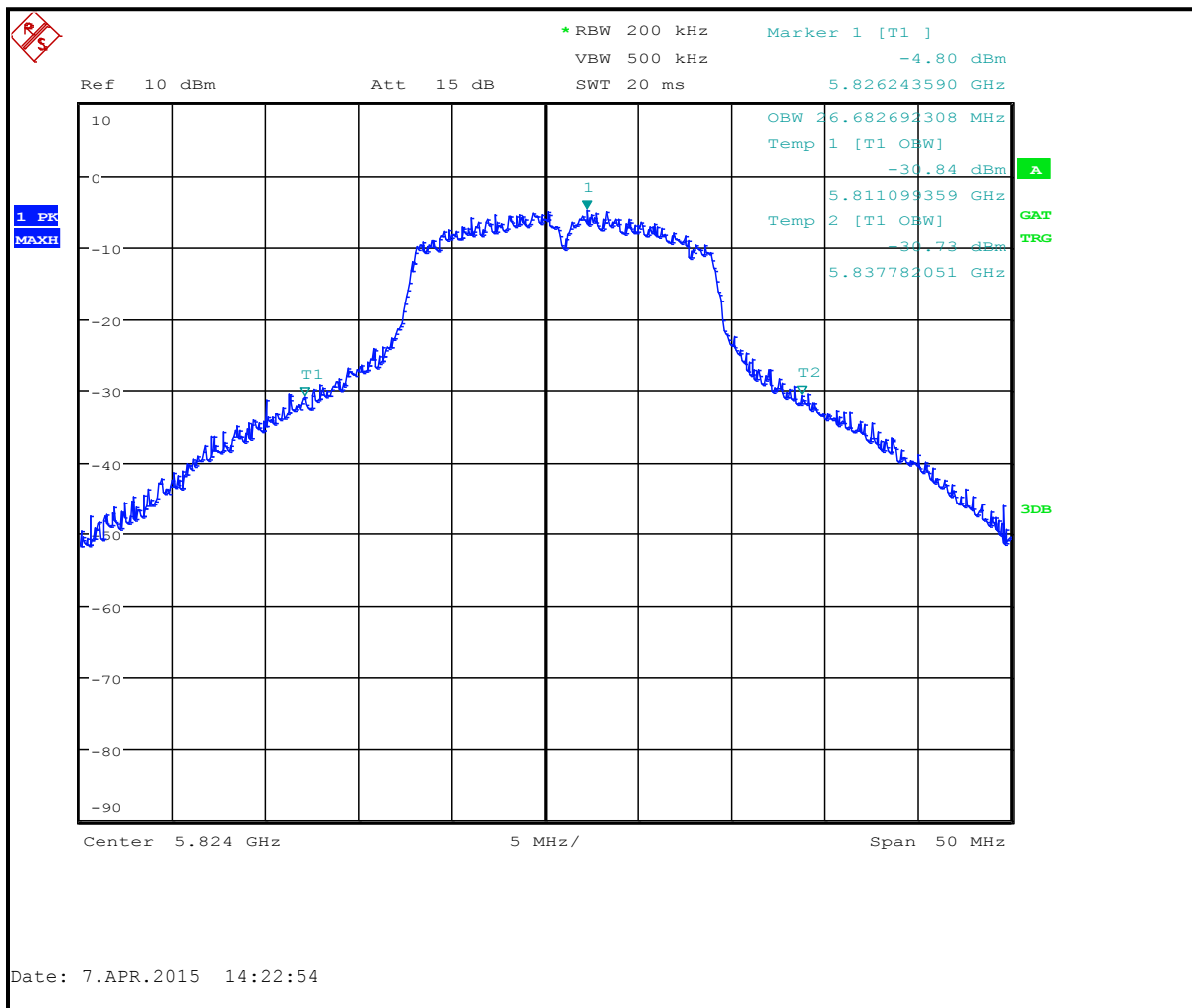
Plot 8-24: 26 dB Bandwidth Channel 149 (TX Frequency 5745 MHz) - 802.11n



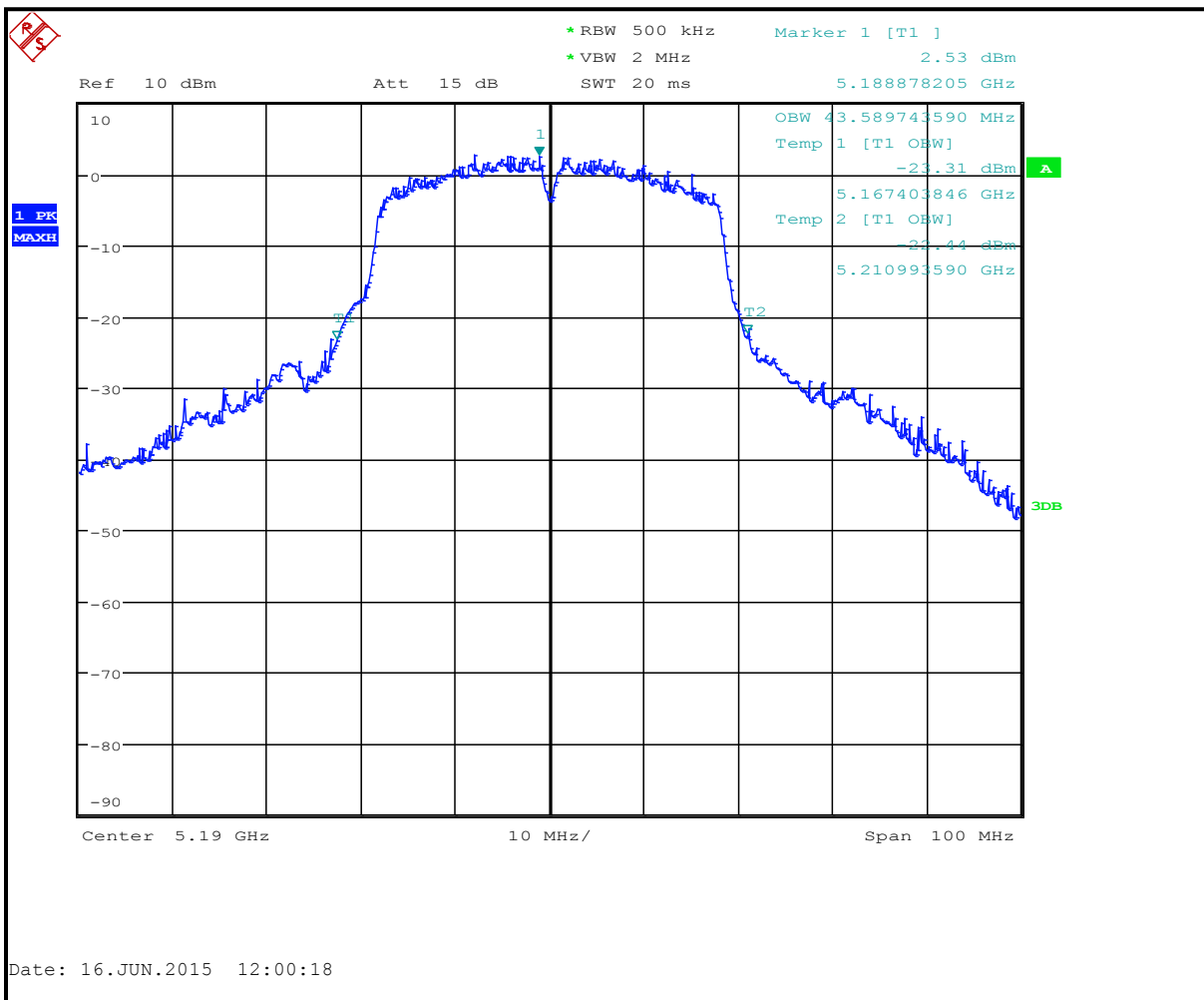
Plot 8-25: 26 dB Bandwidth Channel 157 (TX Frequency 5785 MHz) - 802.11n



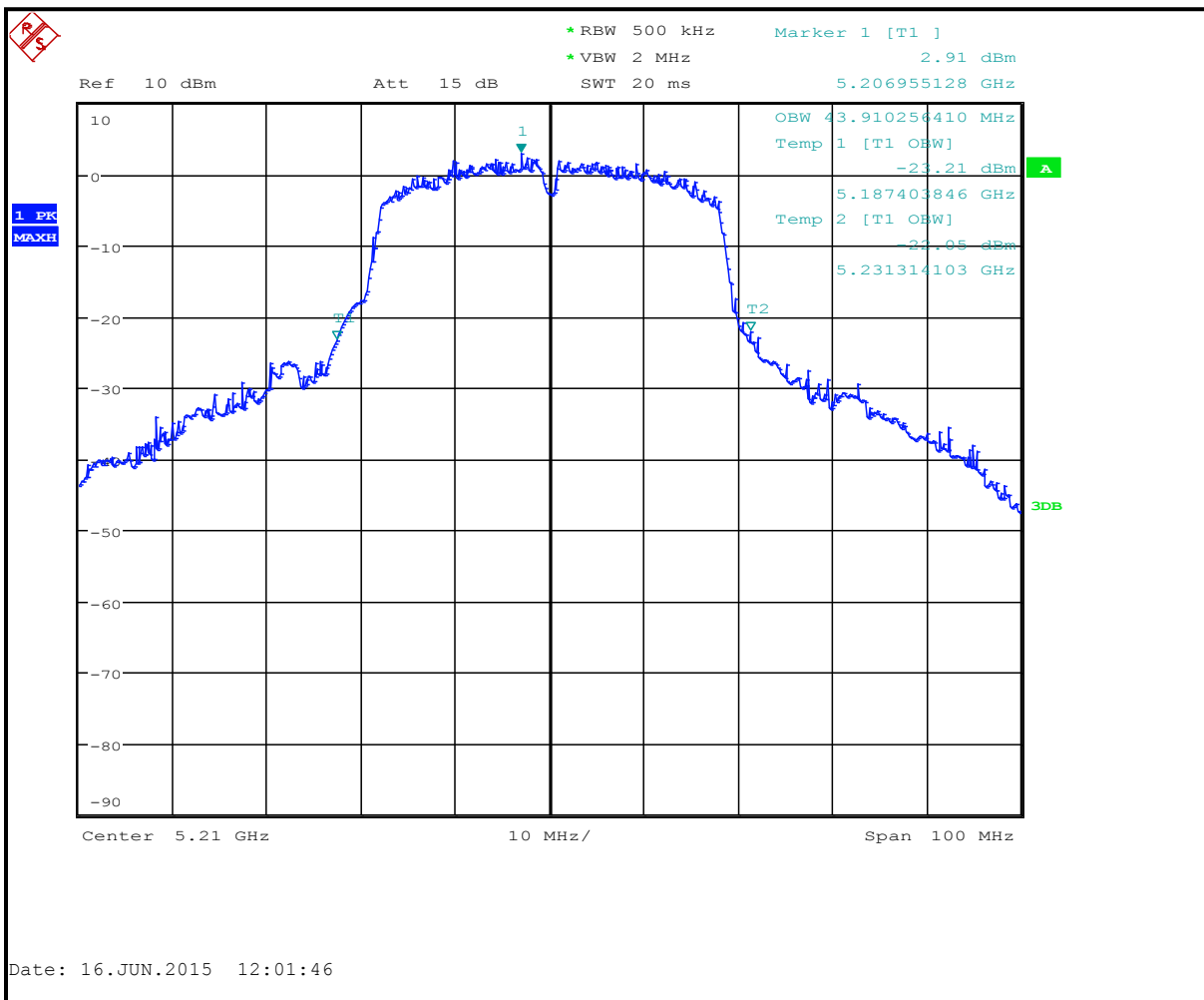
Plot 8-26: 26 dB Bandwidth Channel 165 (TX Frequency 5825 MHz) - 802.11n



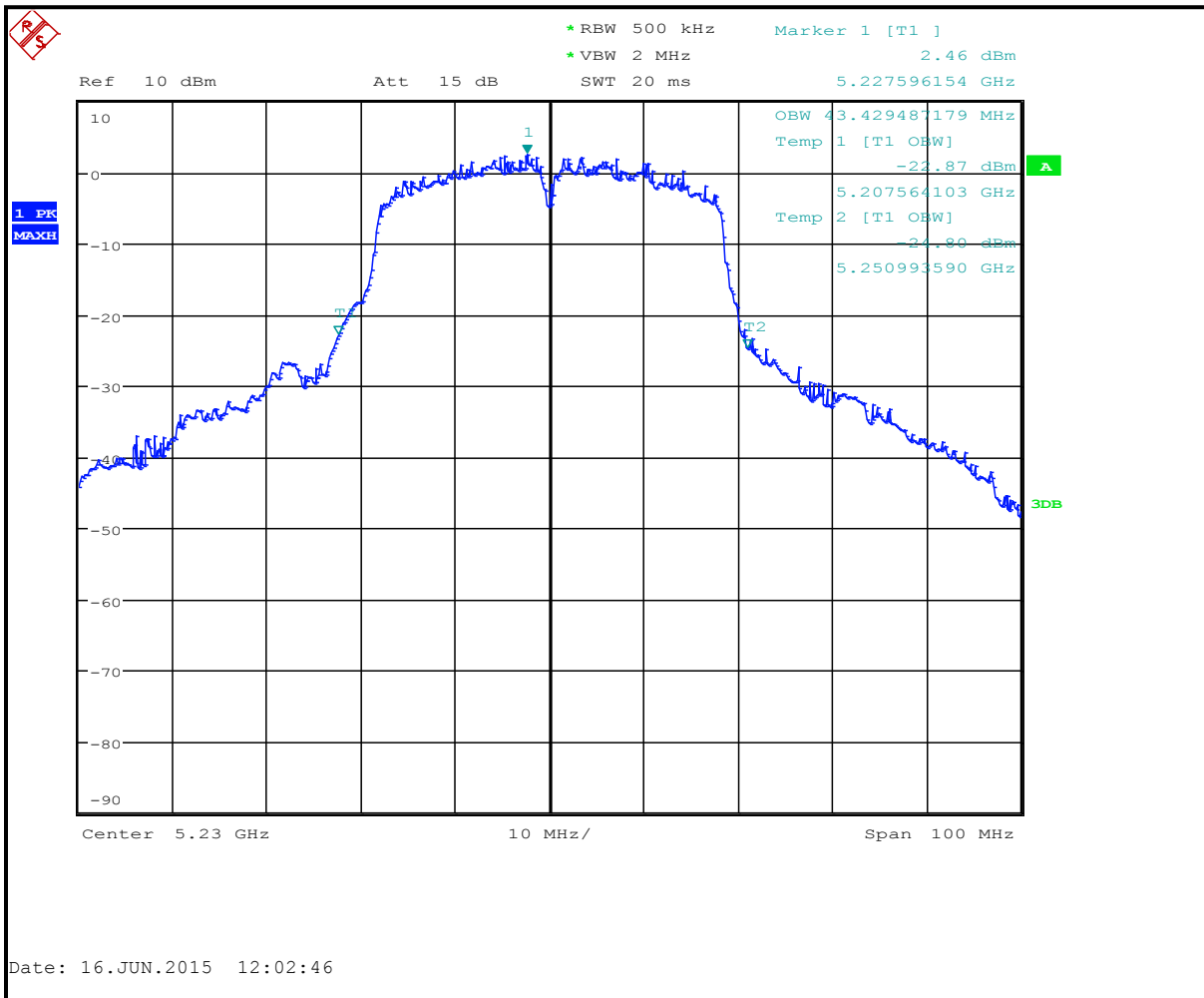
Plot 8-27: 26 dB Bandwidth (Frequency 5190 MHz) - 802.11a (40 MHz BW, 36 Mbps)



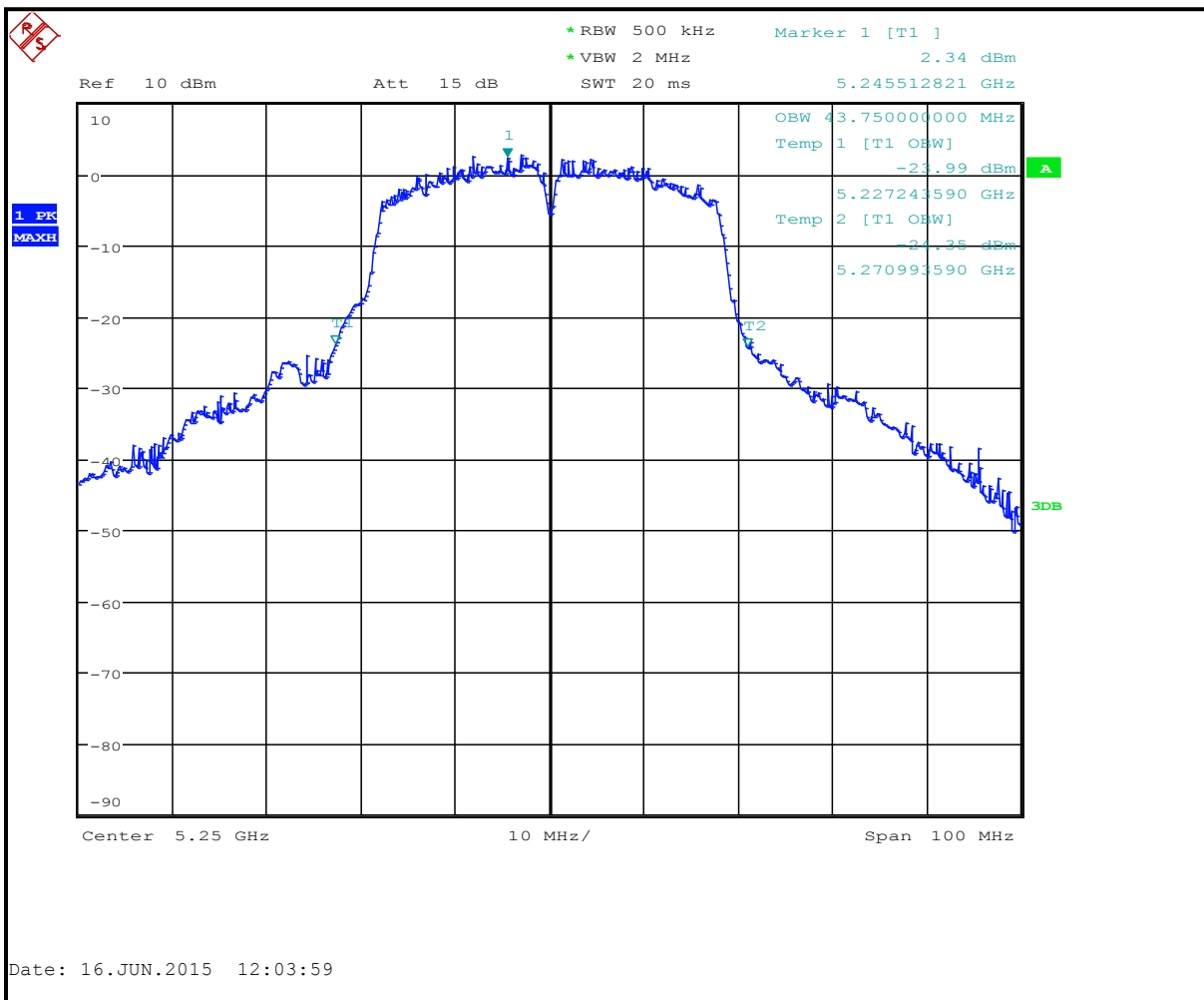
Plot 8-28: 26 dB Bandwidth (Frequency 5210 MHz) - 802.11a (40 MHz BW, 36 Mbps)



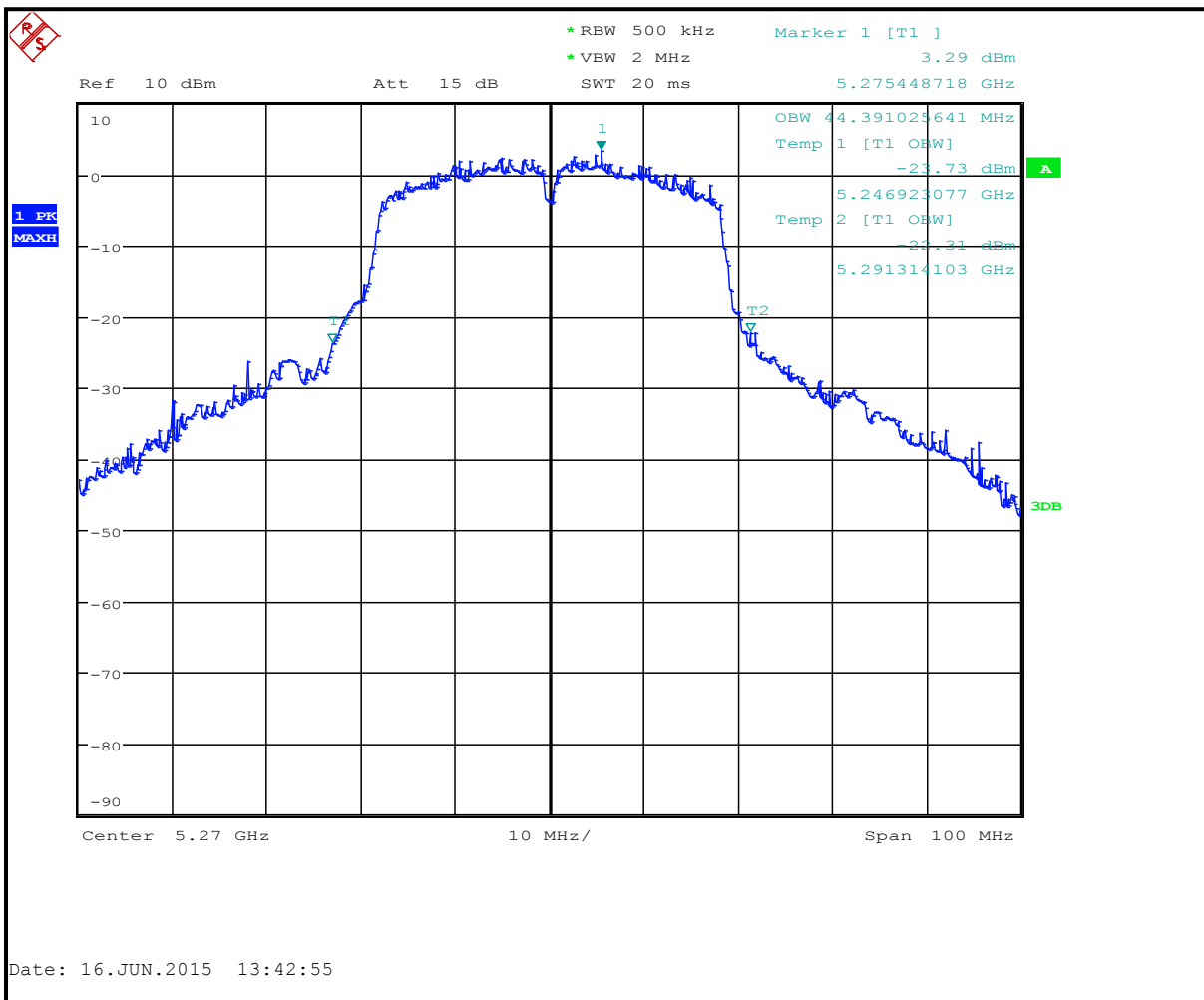
Plot 8-29: 26 dB Bandwidth (Frequency 5230 MHz) - 802.11a (40 MHz BW, 36 Mbps)



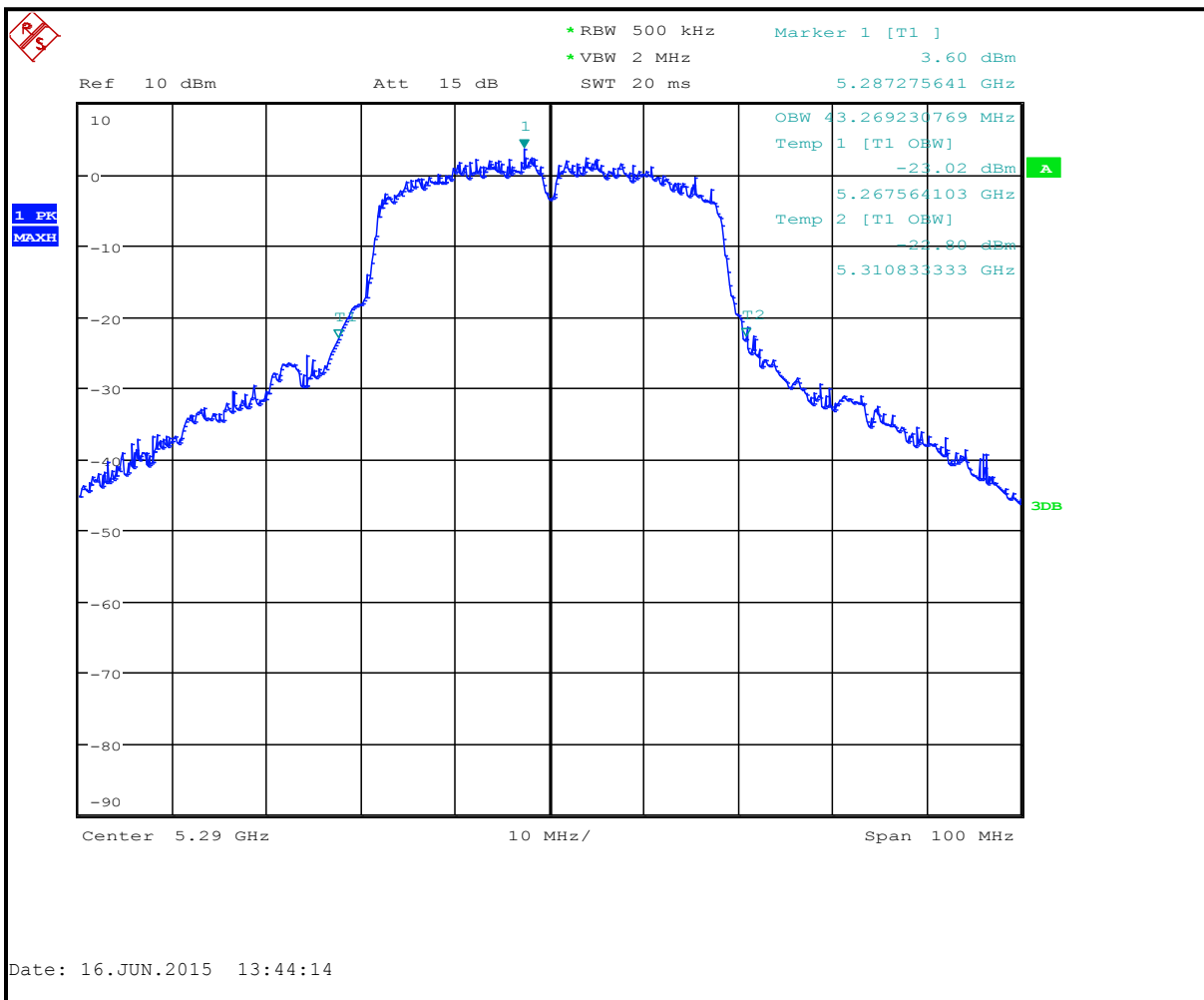
Plot 8-300: 26 dB Bandwidth (Frequency 5250 MHz) - 802.11a (40 MHz BW, 36 Mbps)



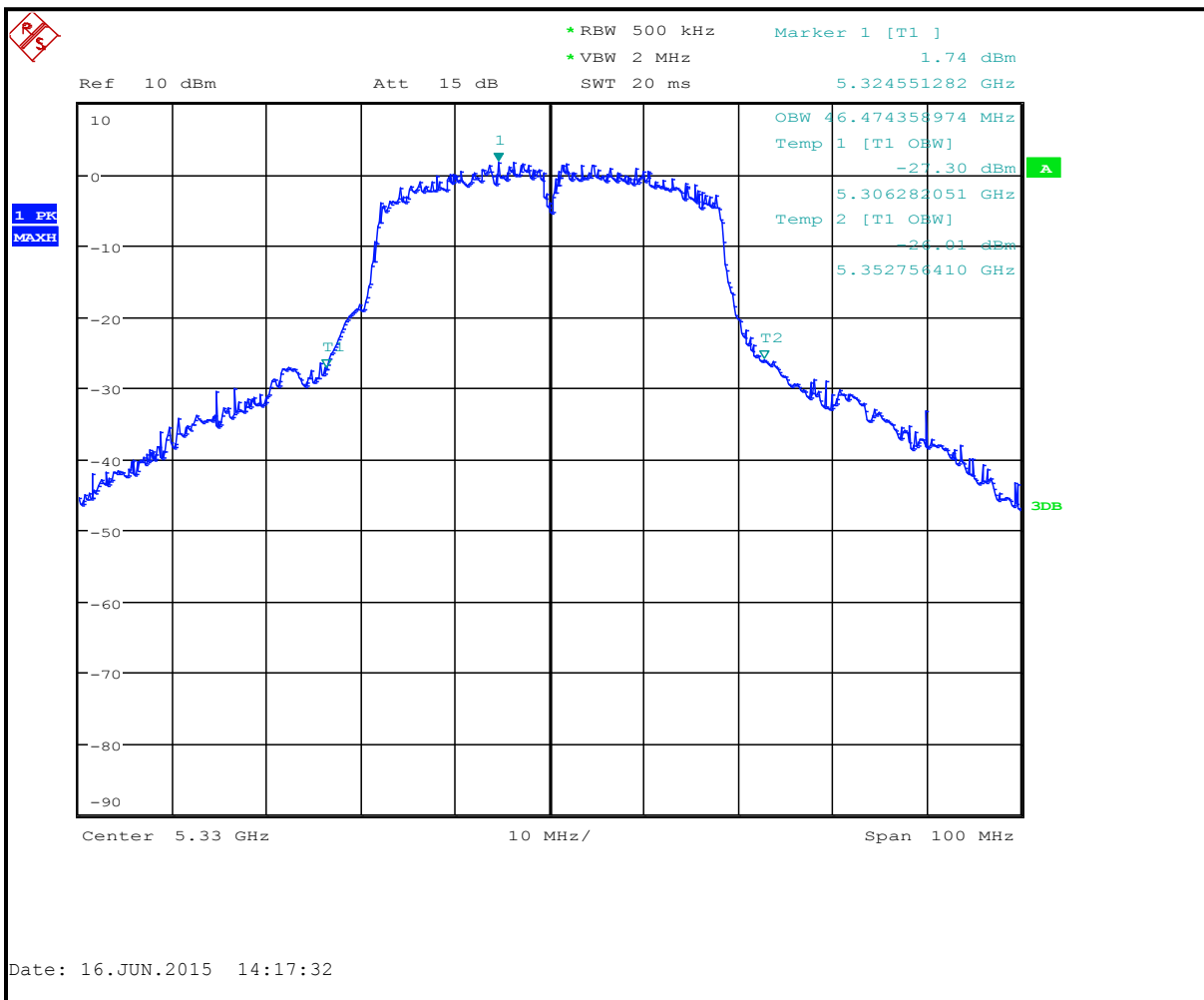
Plot 8-31: 26 dB Bandwidth (Frequency 5270 MHz) - 802.11a (40 MHz BW, 36 Mbps)



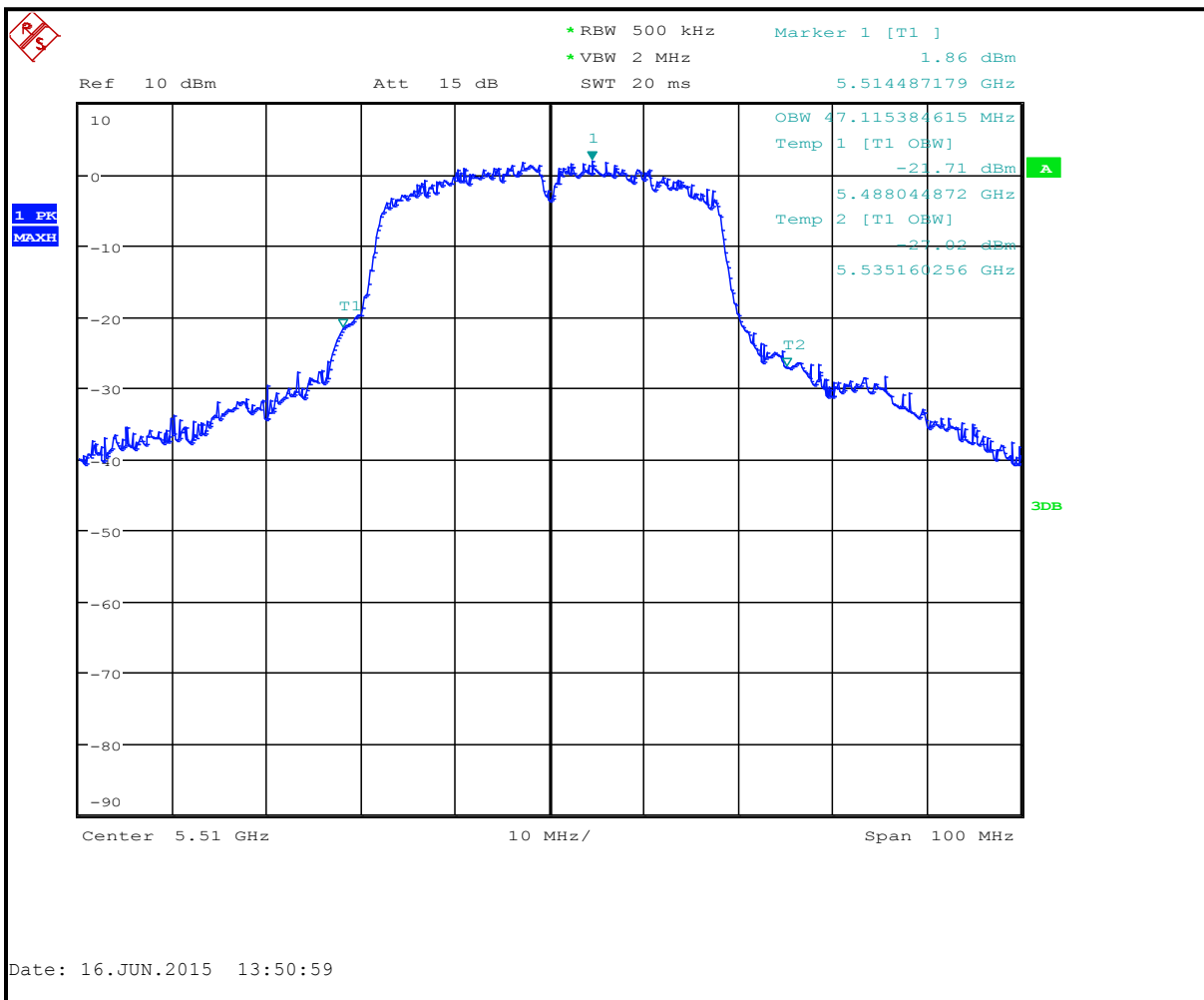
Plot 8-32: 26 dB Bandwidth (Frequency 5290 MHz) - 802.11a (40 MHz BW, 36 Mbps)



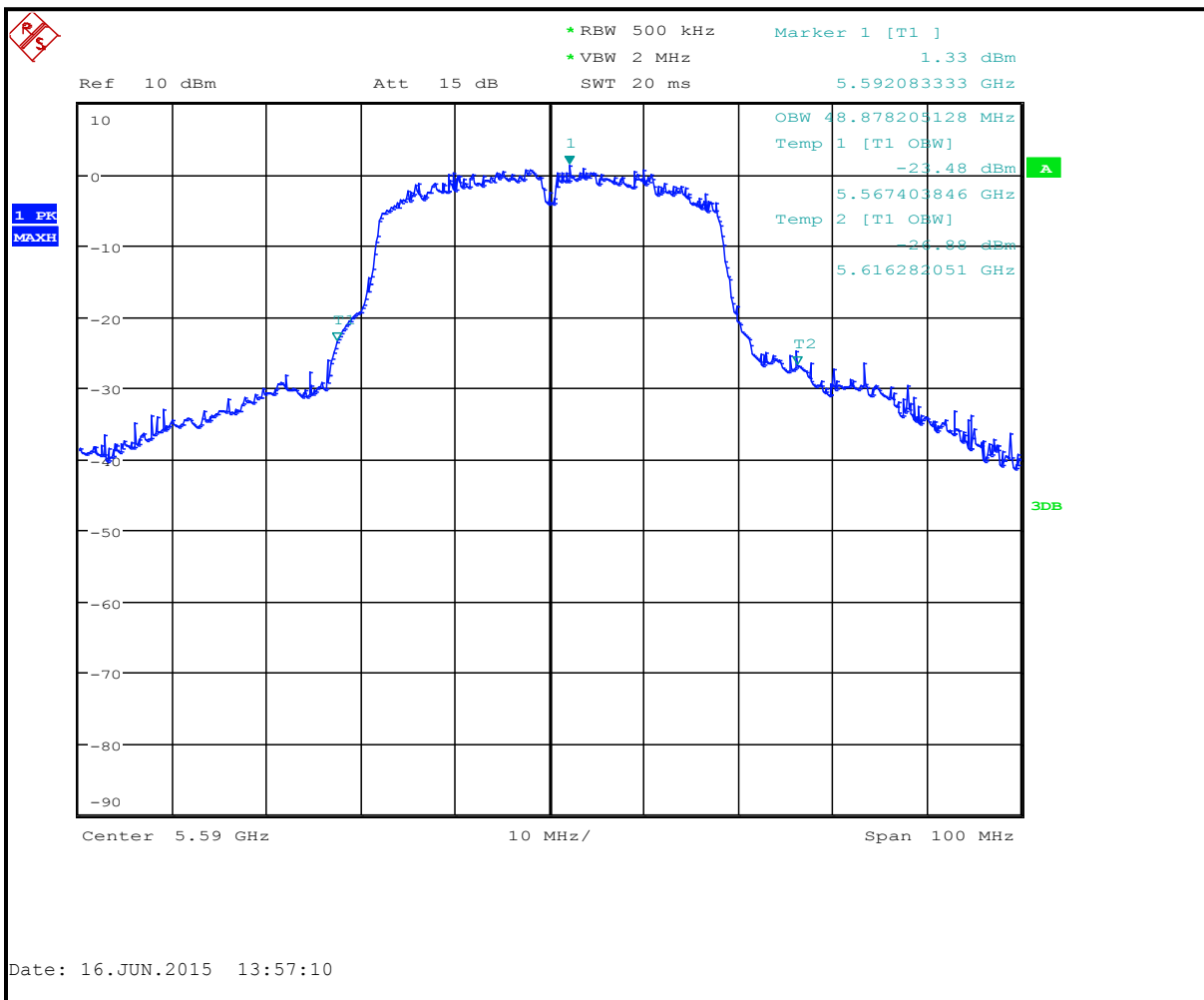
Plot 8-33: 26 dB Bandwidth (Frequency 5330 MHz) - 802.11a (40 MHz BW, 36 Mbps)



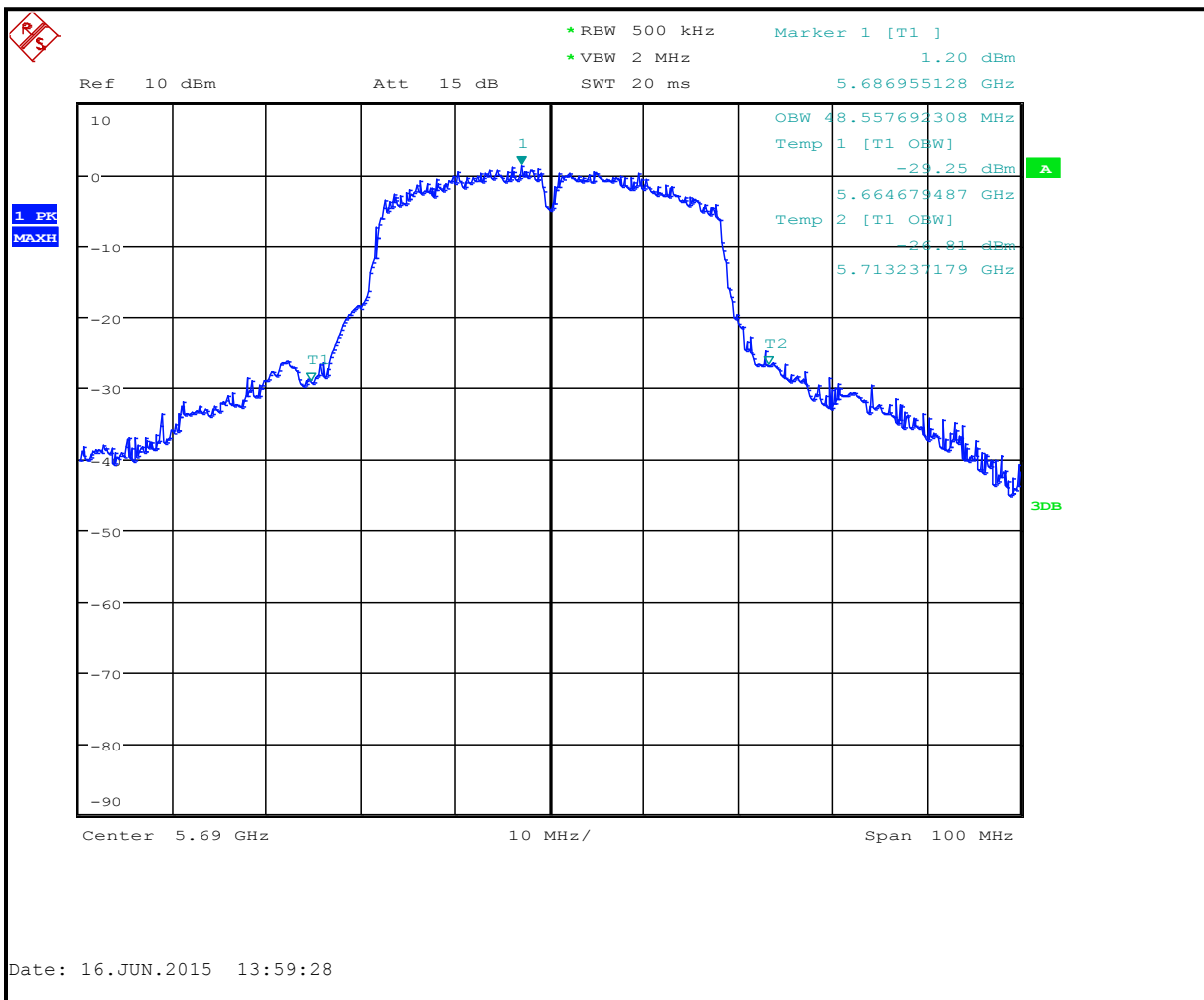
Plot 8-34: 26 dB Bandwidth (Frequency 5510 MHz) - 802.11a (40 MHz BW, 36 Mbps)



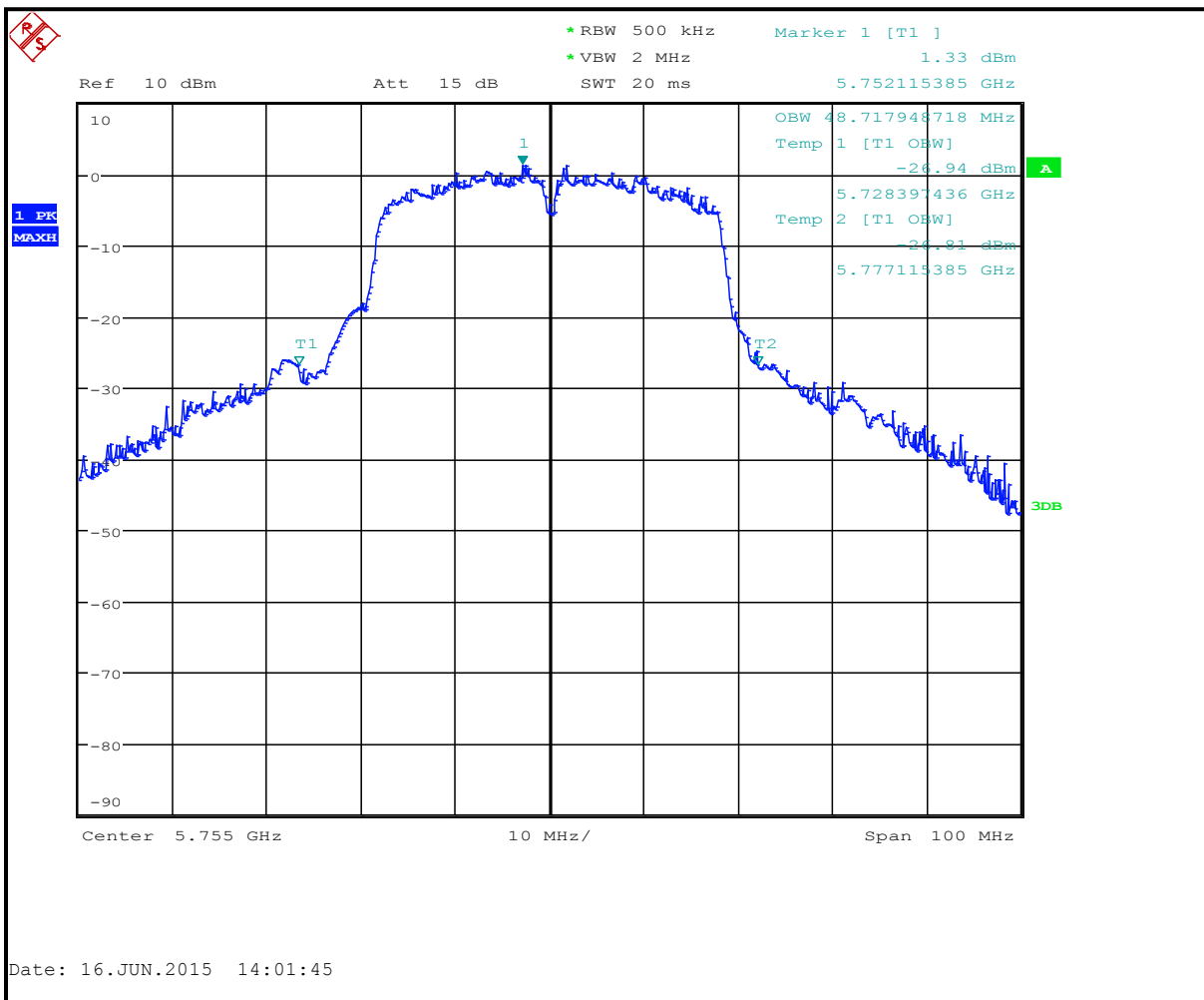
Plot 8-35: 26 dB Bandwidth (Frequency 5590 MHz) - 802.11a (40 MHz BW, 36 Mbps)



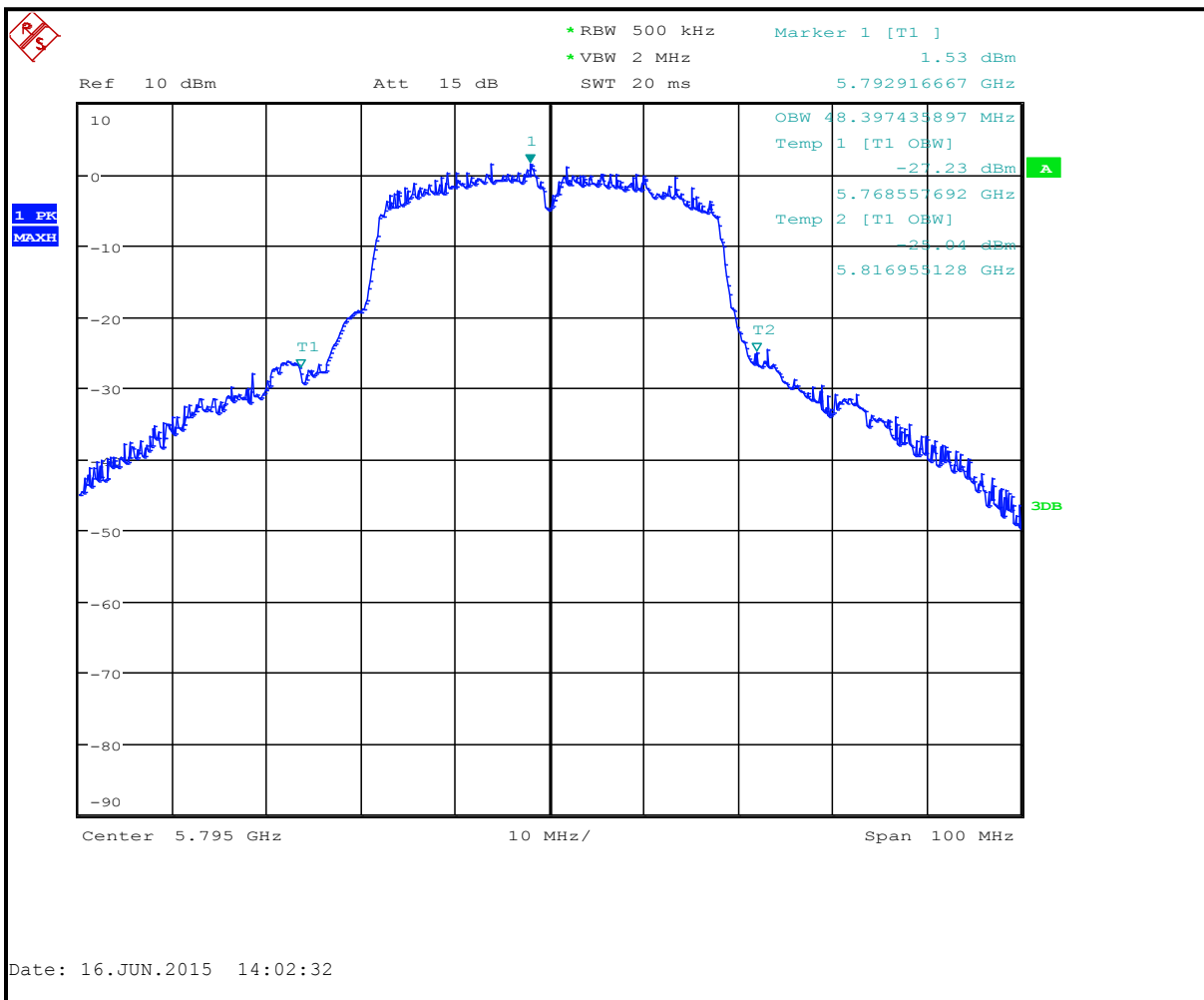
Plot 8-36: 26 dB Bandwidth (Frequency 5690 MHz) - 802.11a (40 MHz BW, 36 Mbps)



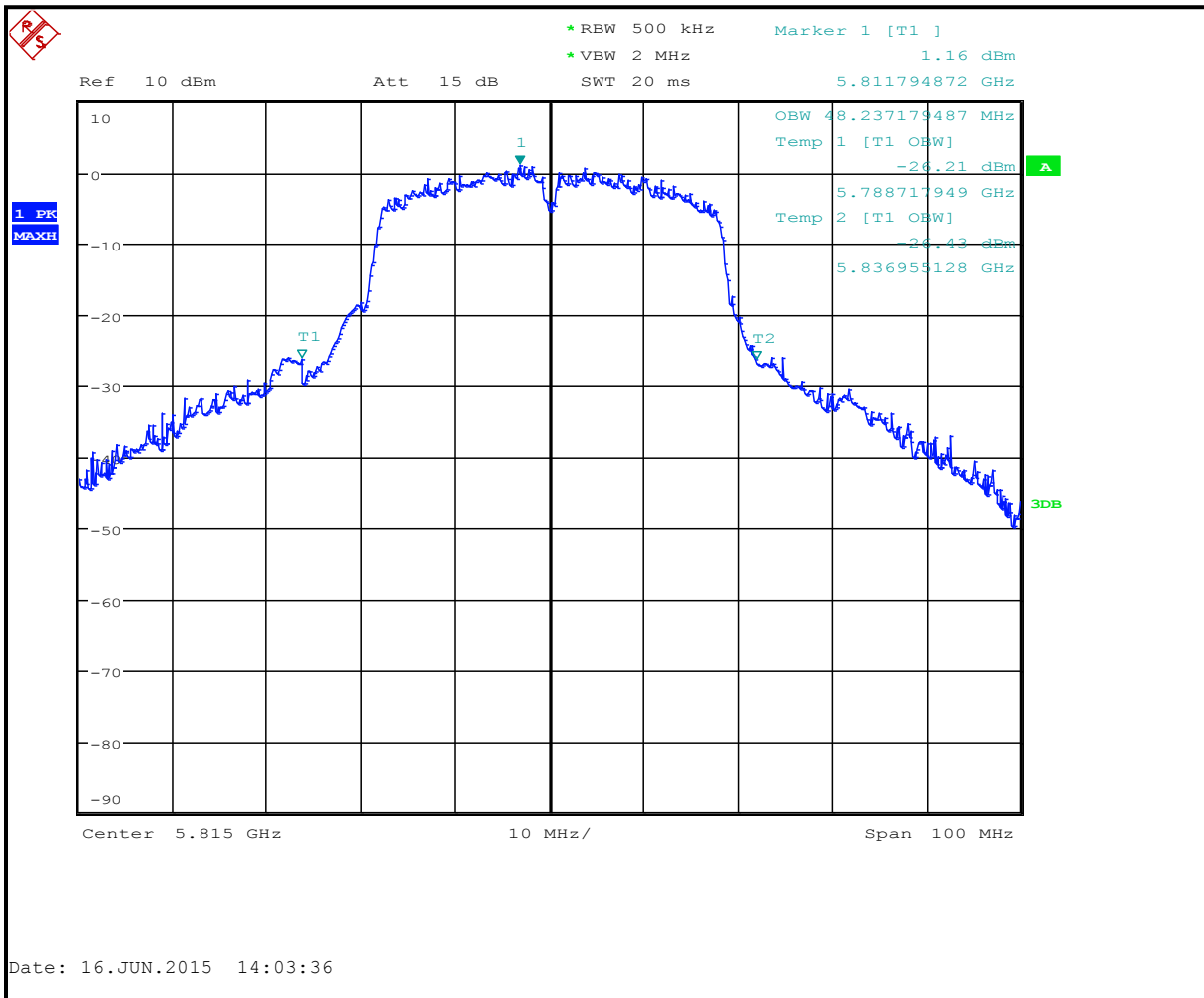
Plot 8-37: 26 dB Bandwidth (Frequency 5755 MHz) - 802.11a (40 MHz BW, 36 Mbps)



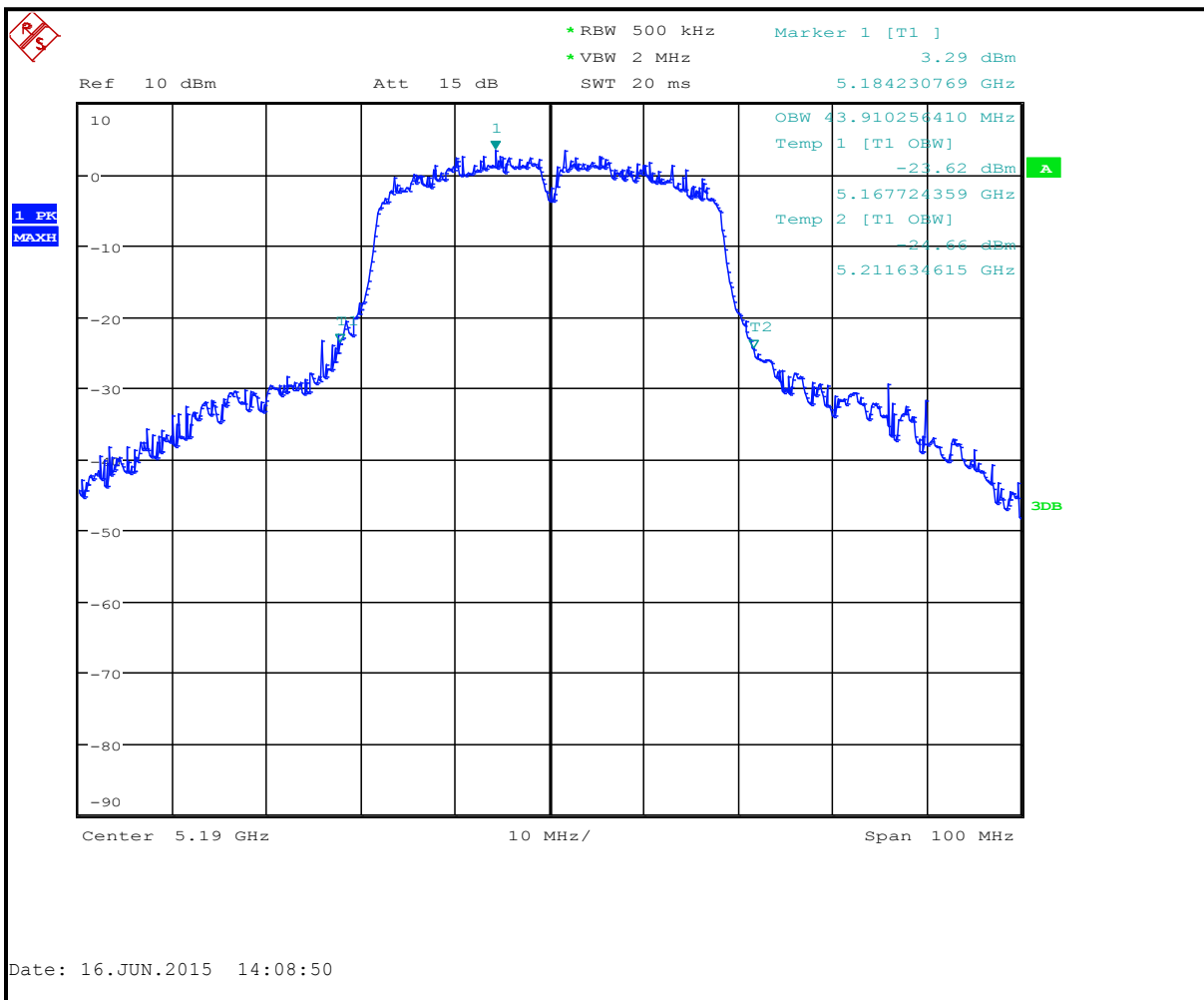
Plot 8-38: 26 dB Bandwidth (Frequency 5795 MHz) - 802.11a (40 MHz BW, 36 Mbps)



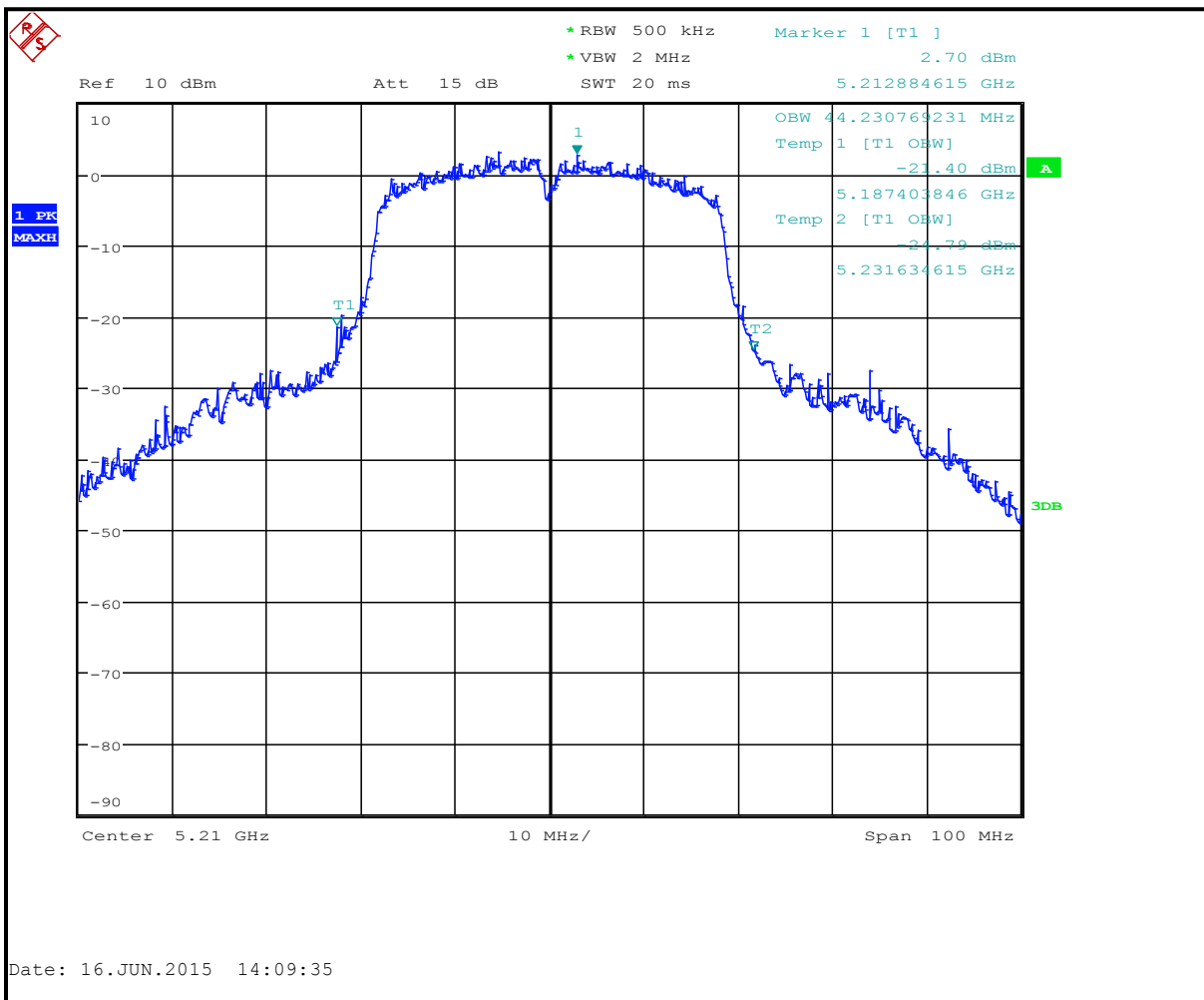
Plot 8-39: 26 dB Bandwidth (Frequency 5815 MHz) - 802.11a (40 MHz BW, 36 Mbps)



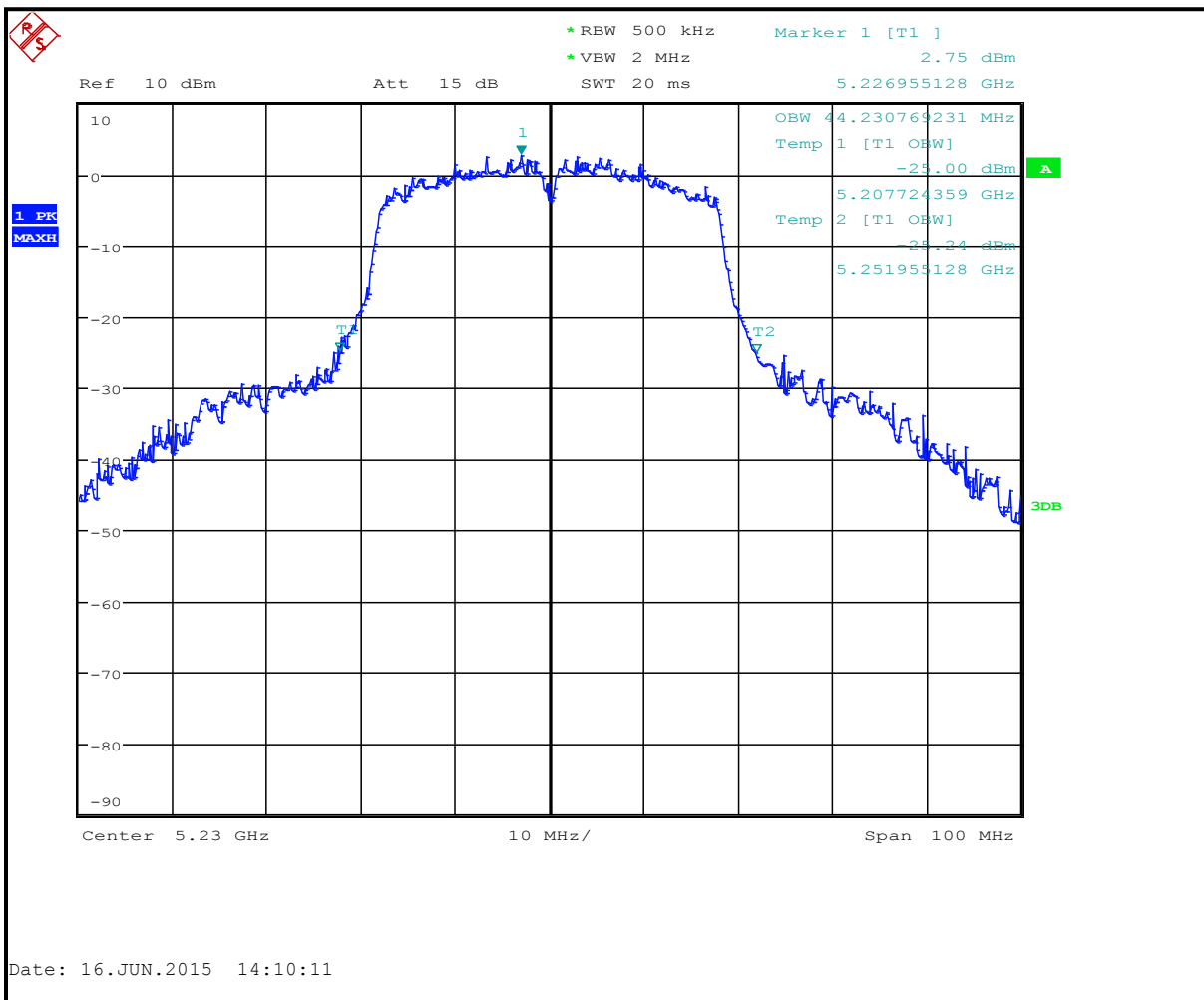
Plot 8-40: 26 dB Bandwidth (Frequency 5190 MHz) - 802.11n (40 MHz BW)



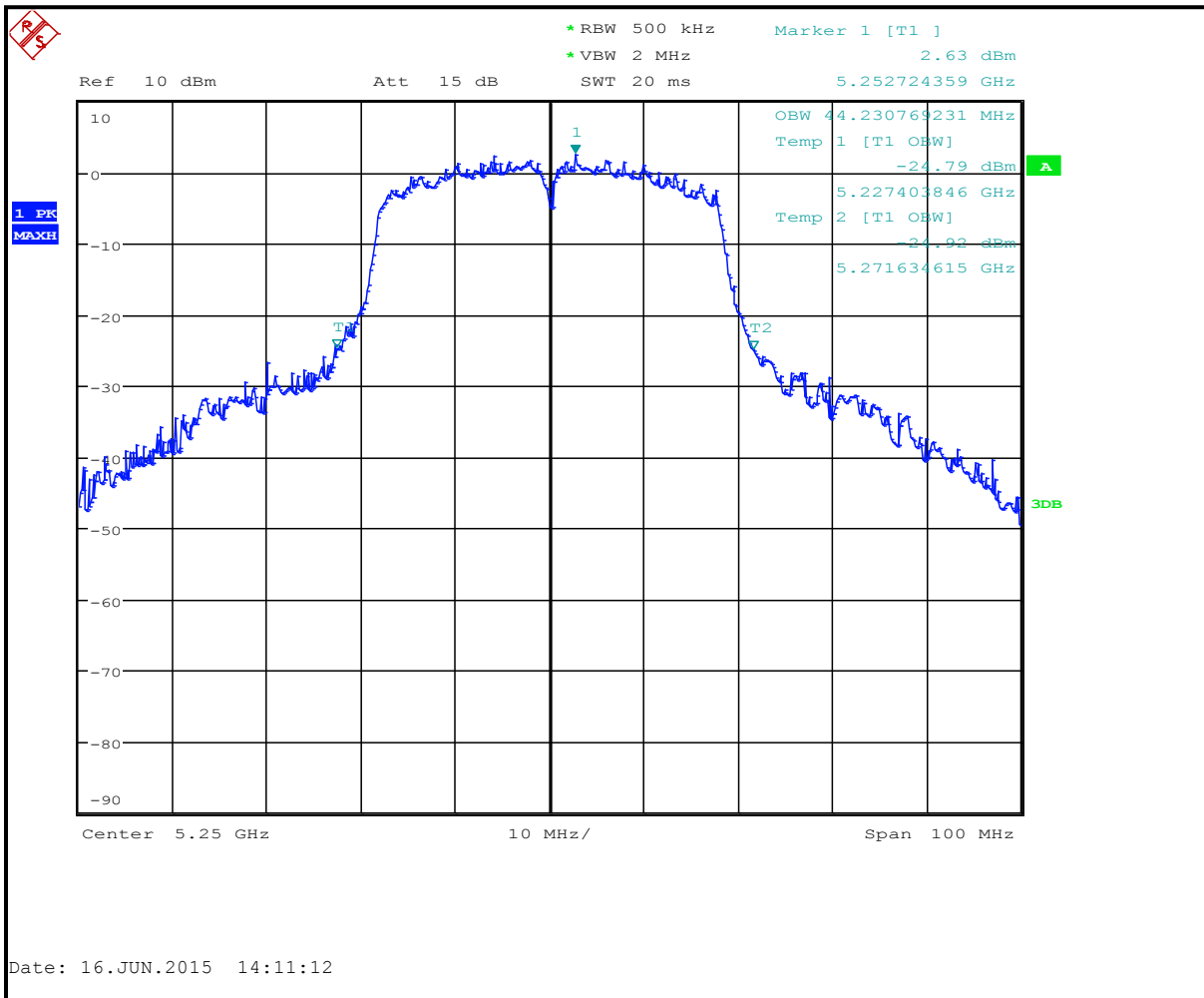
Plot 8-41: 26 dB Bandwidth (Frequency 5210 MHz) - 802.11n (40 MHz BW)



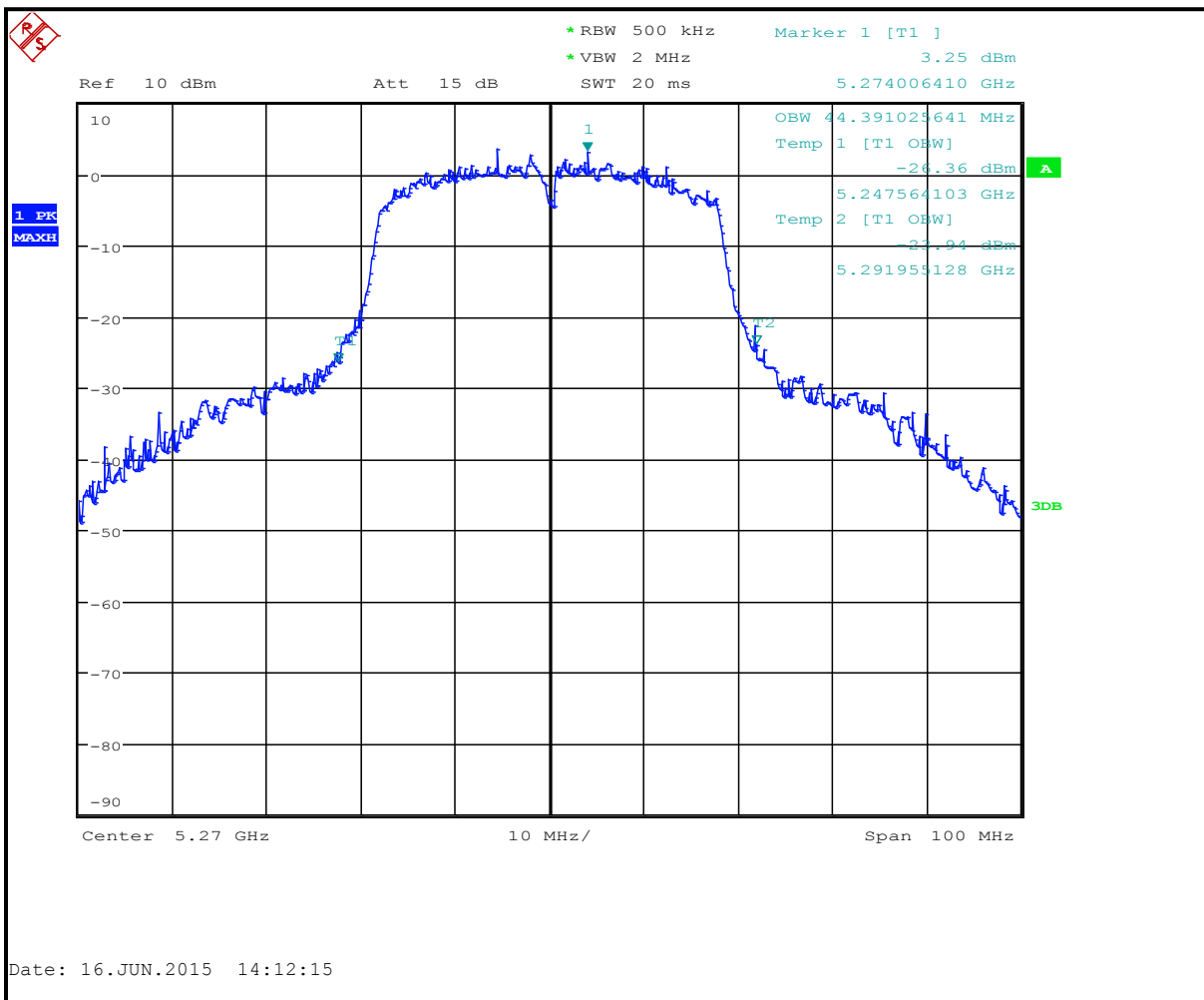
Plot 8-42: 26 dB Bandwidth (Frequency 5230 MHz) - 802.11n (40 MHz BW)



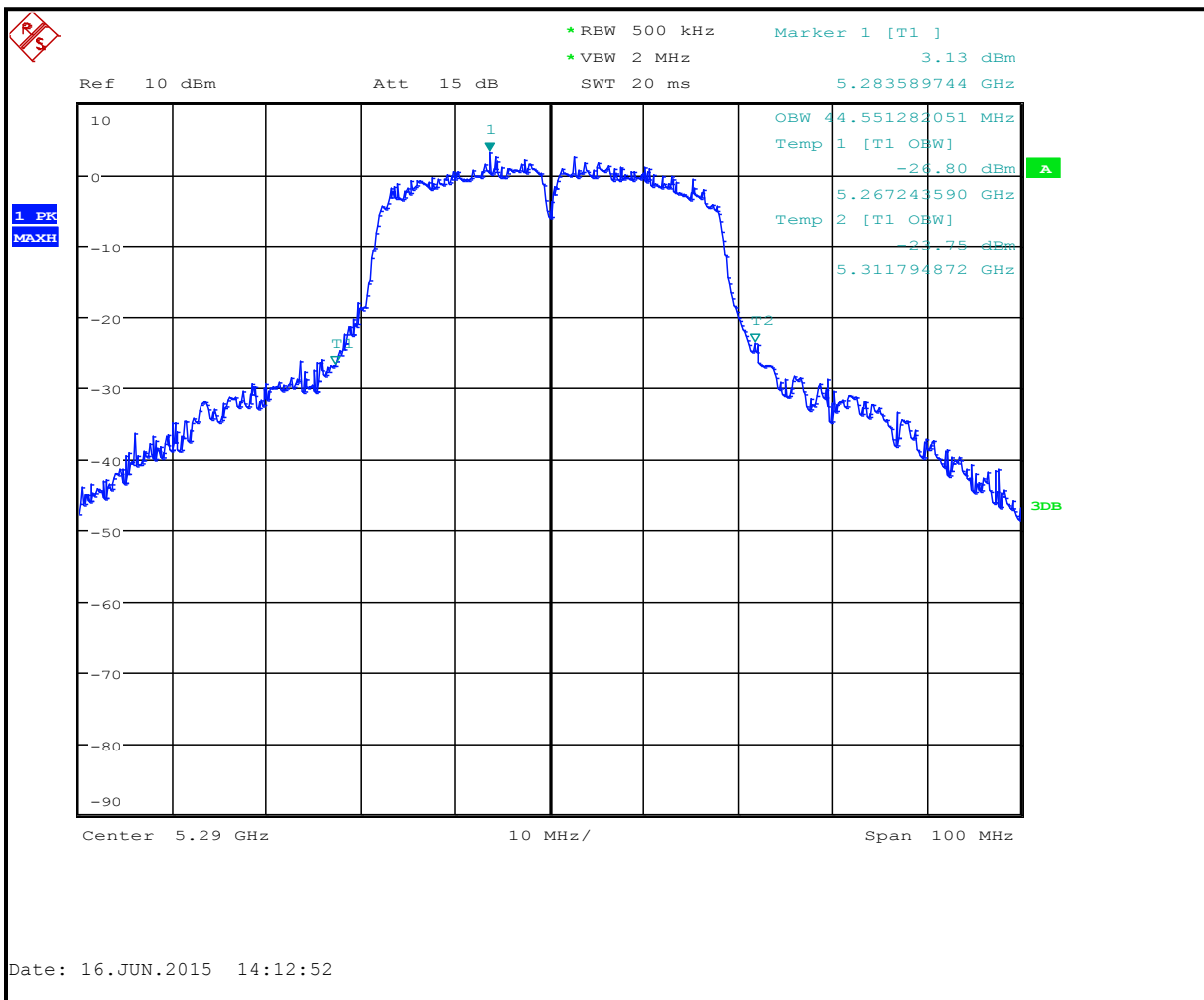
Plot 8-43: 26 dB Bandwidth (Frequency 5250 MHz) - 802.11n (40 MHz BW)



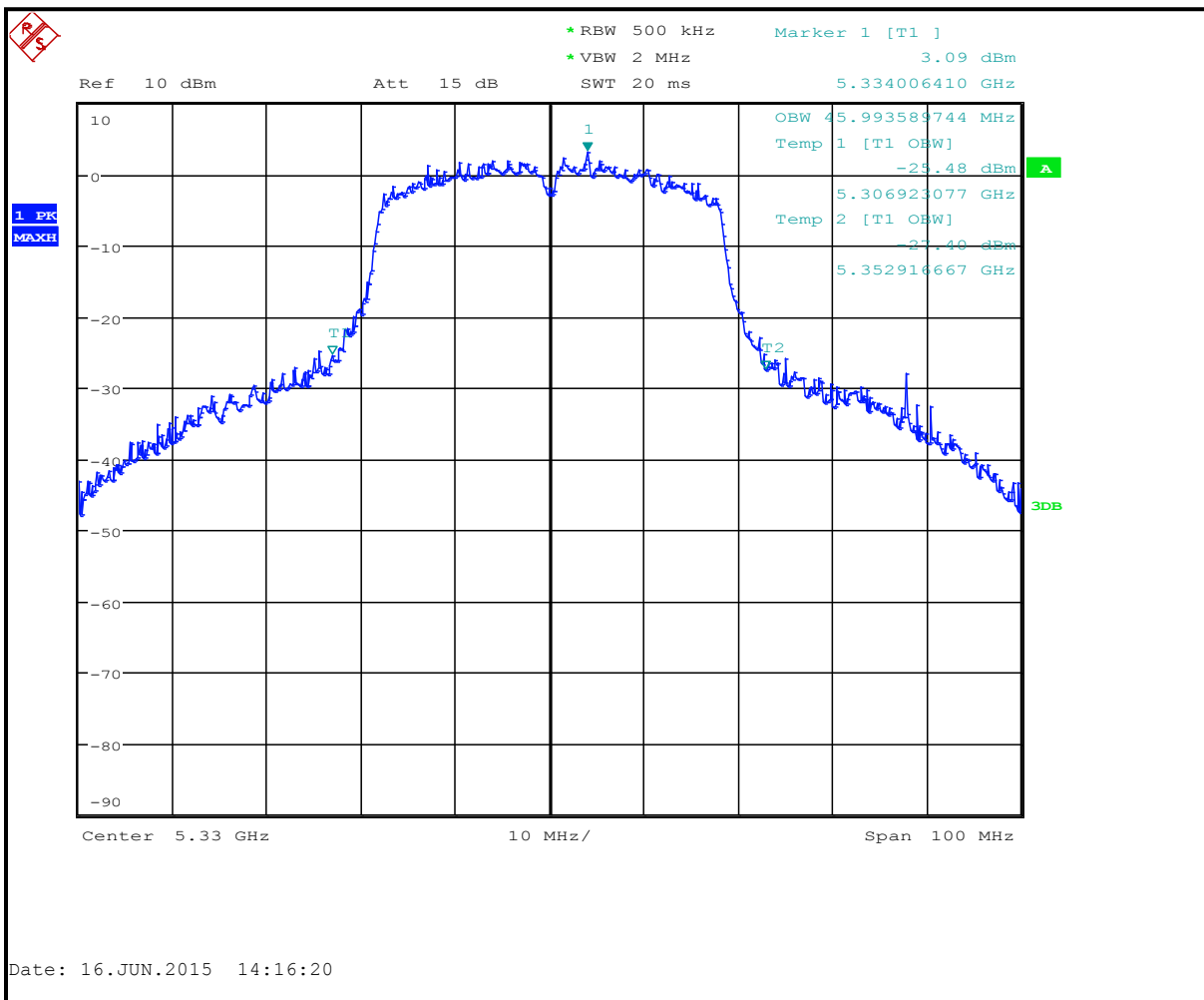
Plot 8-44: 26 dB Bandwidth (Frequency 5270 MHz) - 802.11n (40 MHz BW)



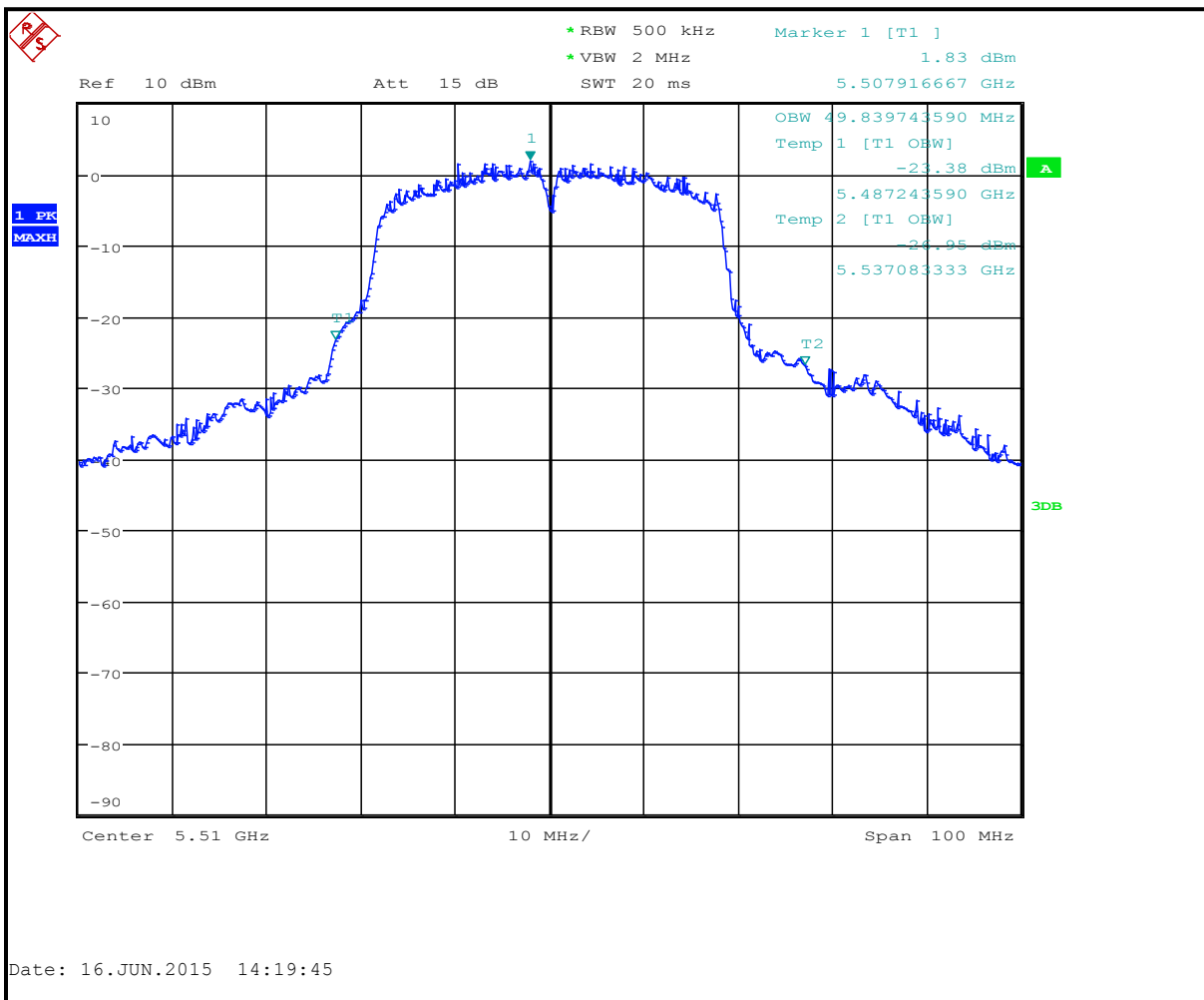
Plot 8-45: 26 dB Bandwidth (Frequency 5290 MHz) - 802.11n (40 MHz BW)



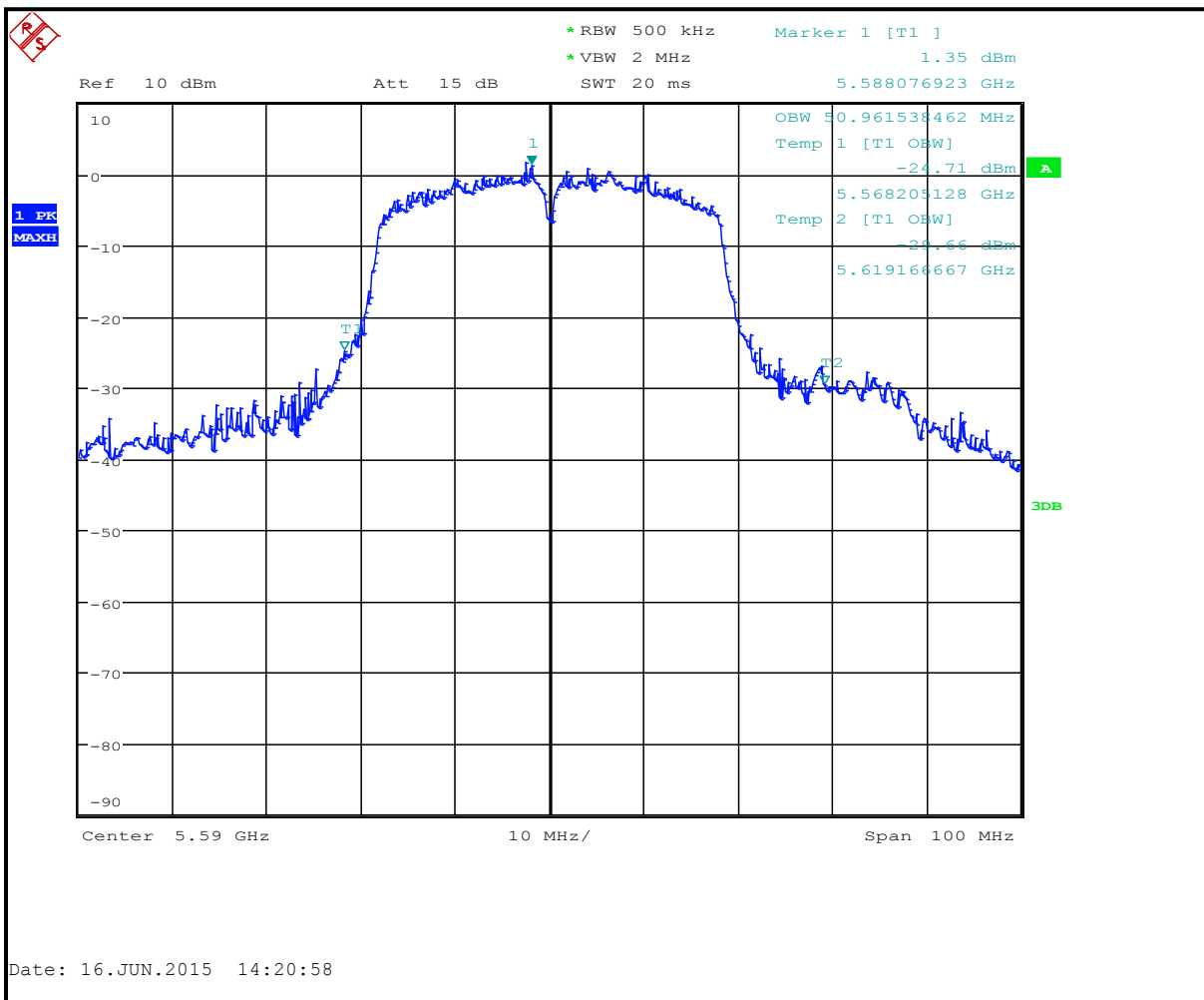
Plot 8-46: 26 dB Bandwidth (Frequency 5330 MHz) - 802.11n (40 MHz BW)



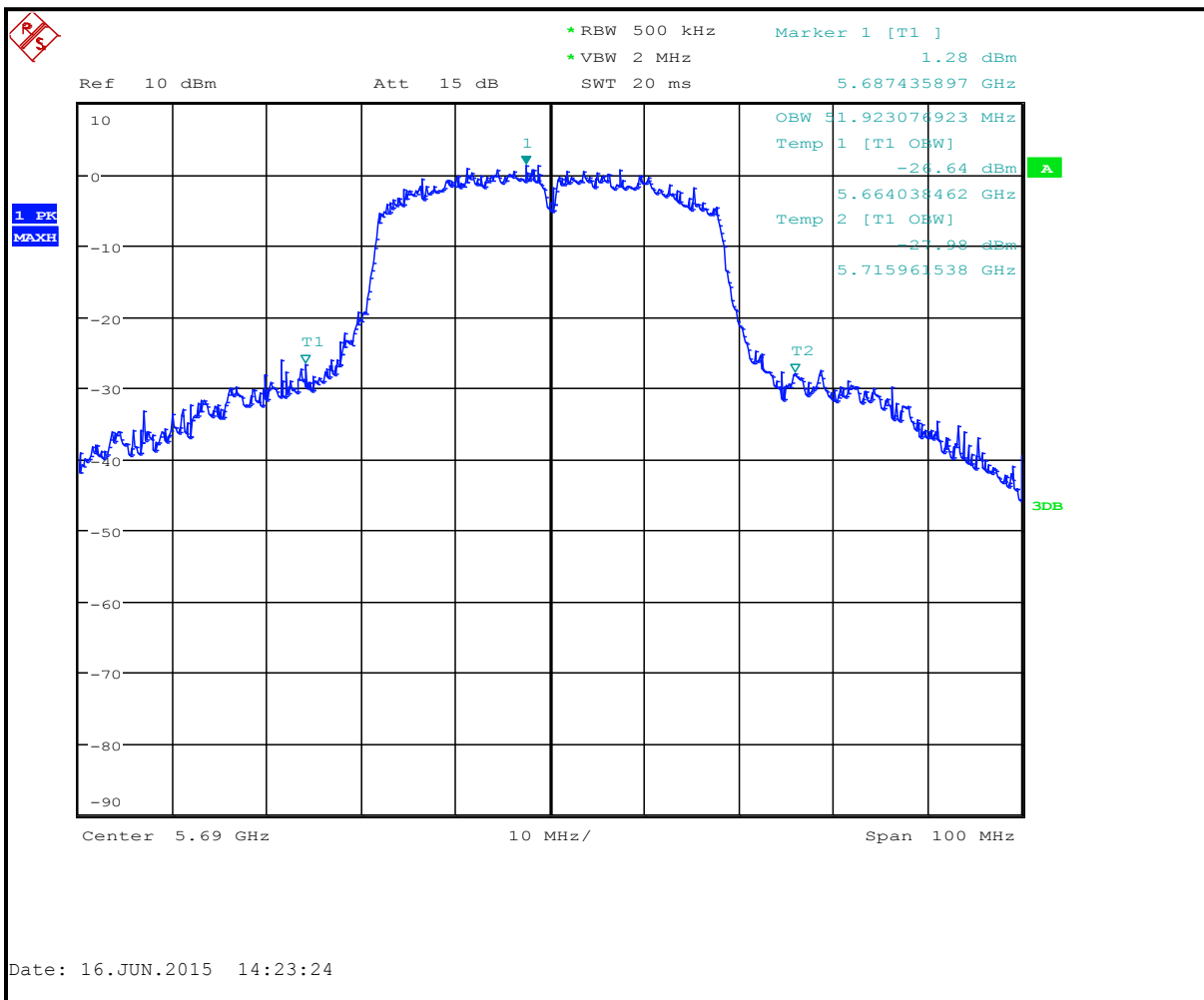
Plot 8-47: 26 dB Bandwidth (Frequency 5510 MHz) - 802.11n (40 MHz BW)



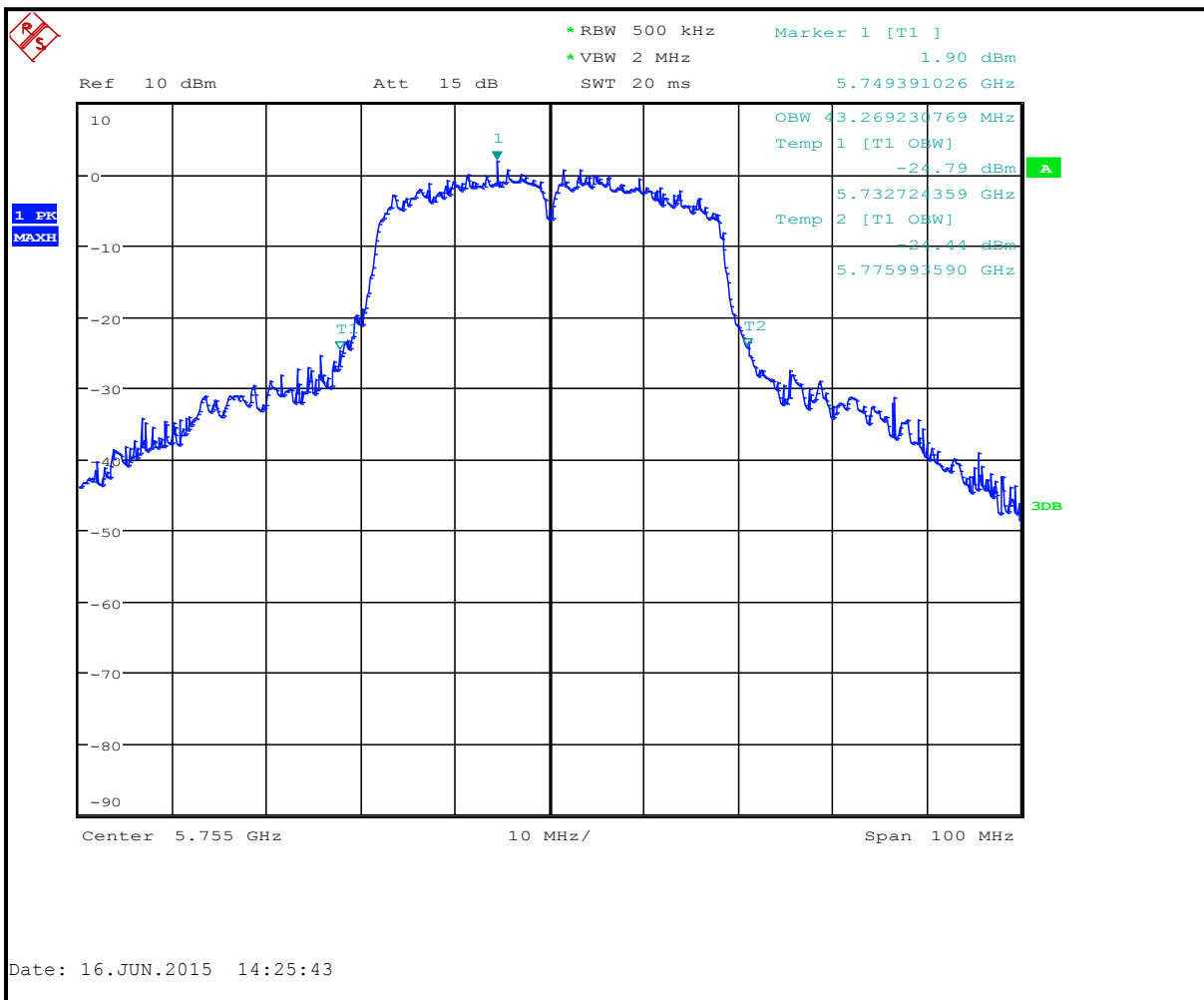
Plot 8-48: 26 dB Bandwidth (Frequency 5590 MHz) - 802.11n (40 MHz BW)



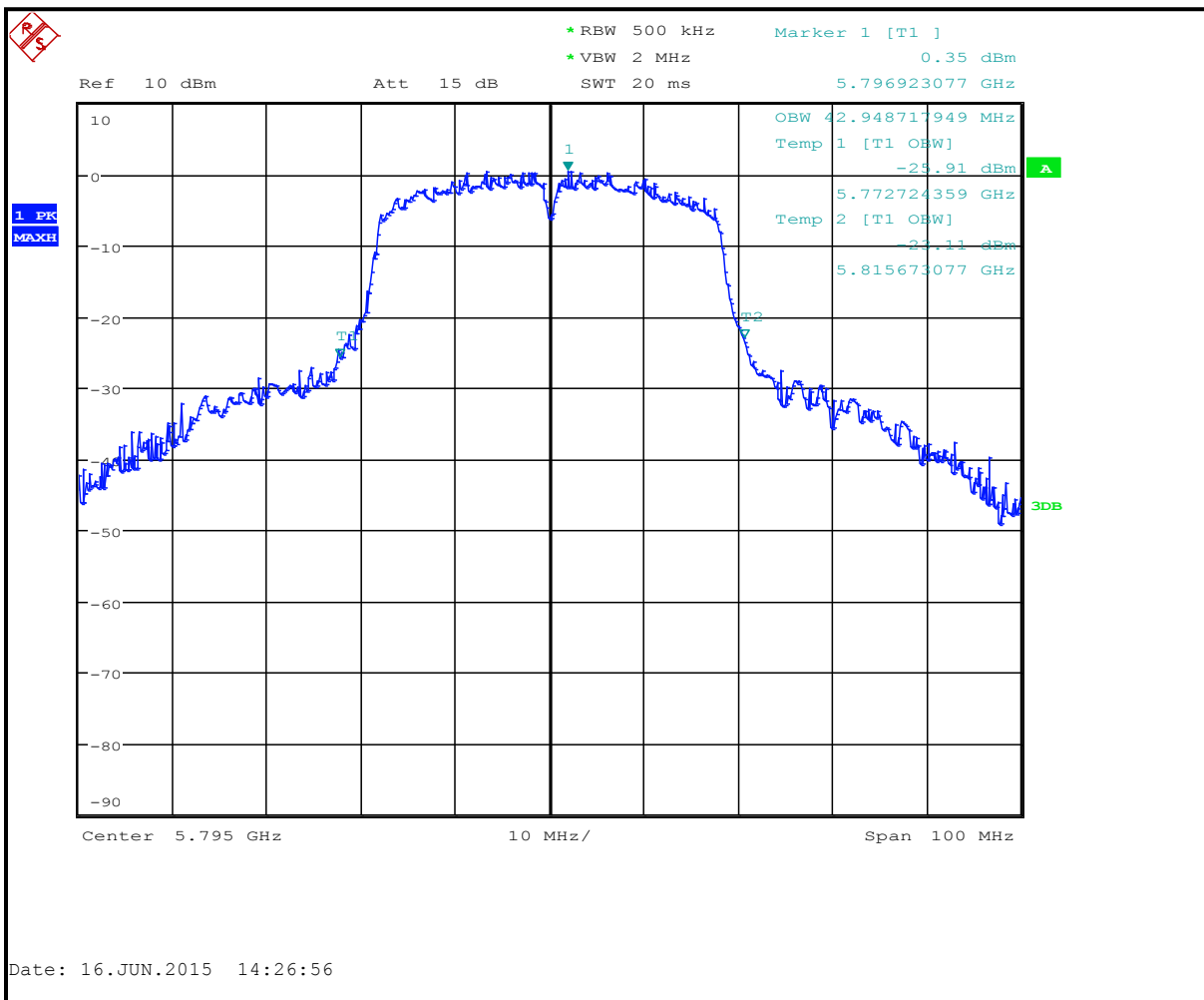
Plot 8-49: 26 dB Bandwidth (Frequency 5690 MHz) - 802.11n (40 MHz BW)



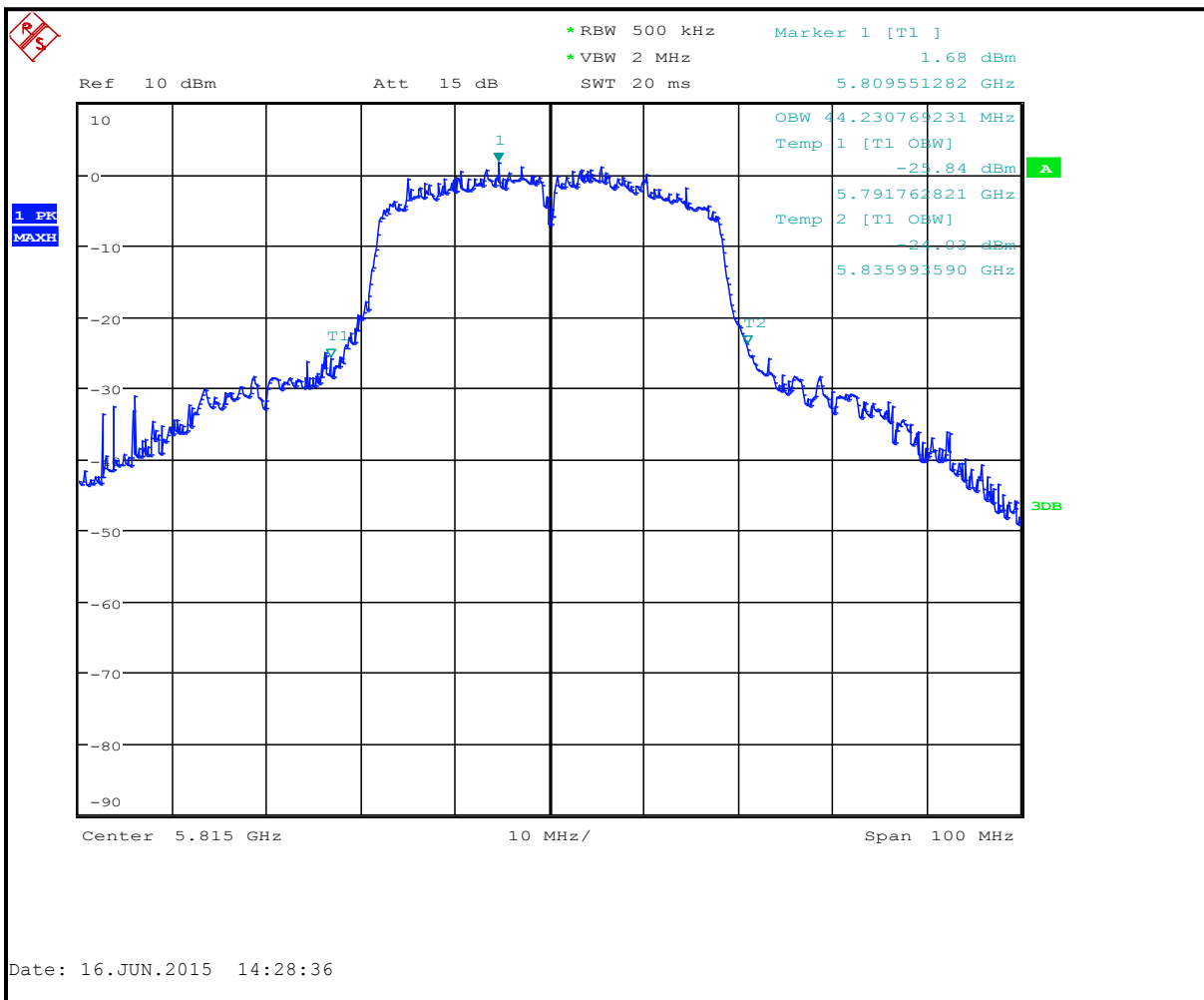
Plot 8-500: 26 dB Bandwidth (Frequency 5755 MHz) - 802.11n (40 MHz BW)



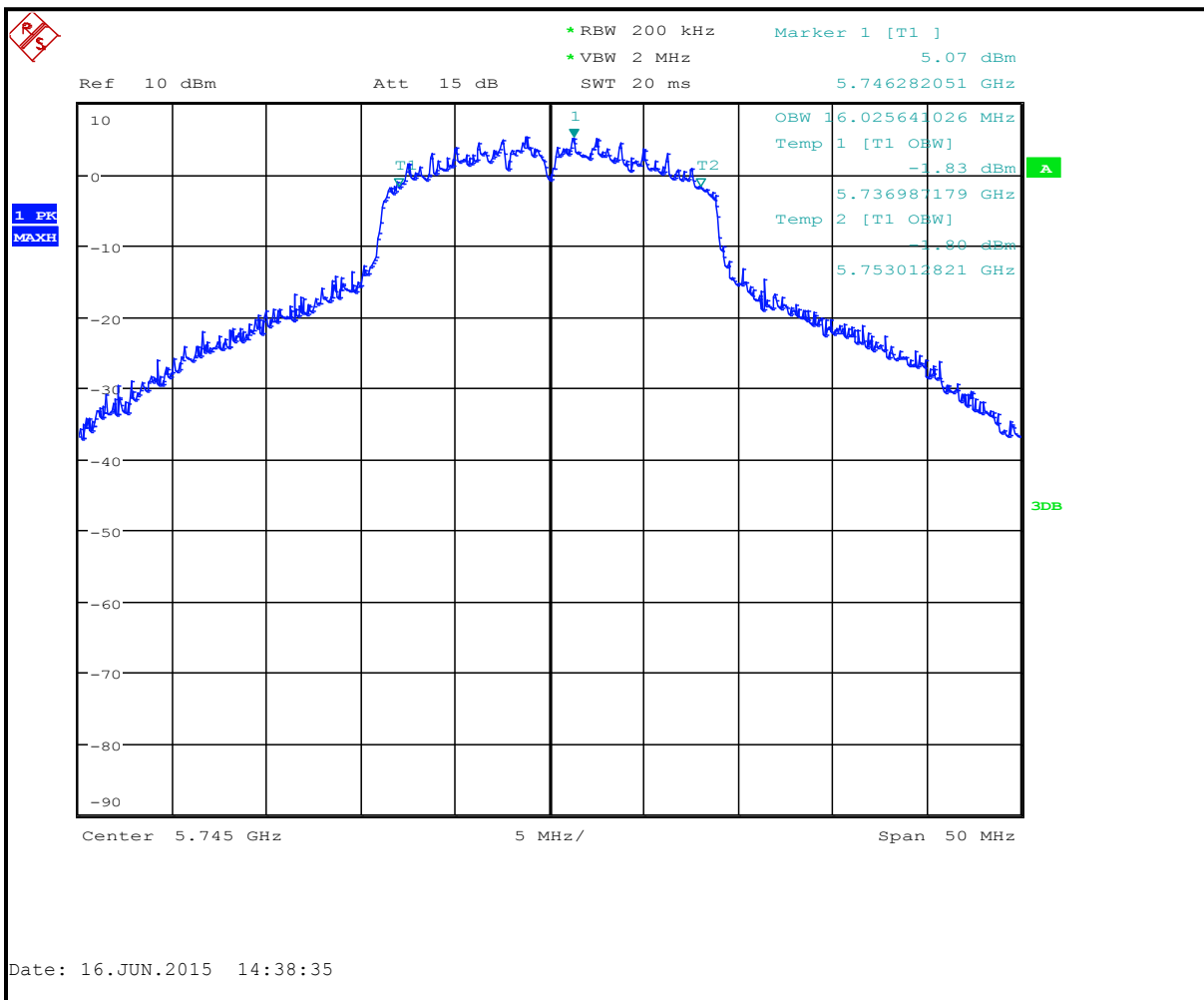
Plot 8-51: 26 dB Bandwidth (Frequency 5795 MHz) - 802.11n (40 MHz BW)



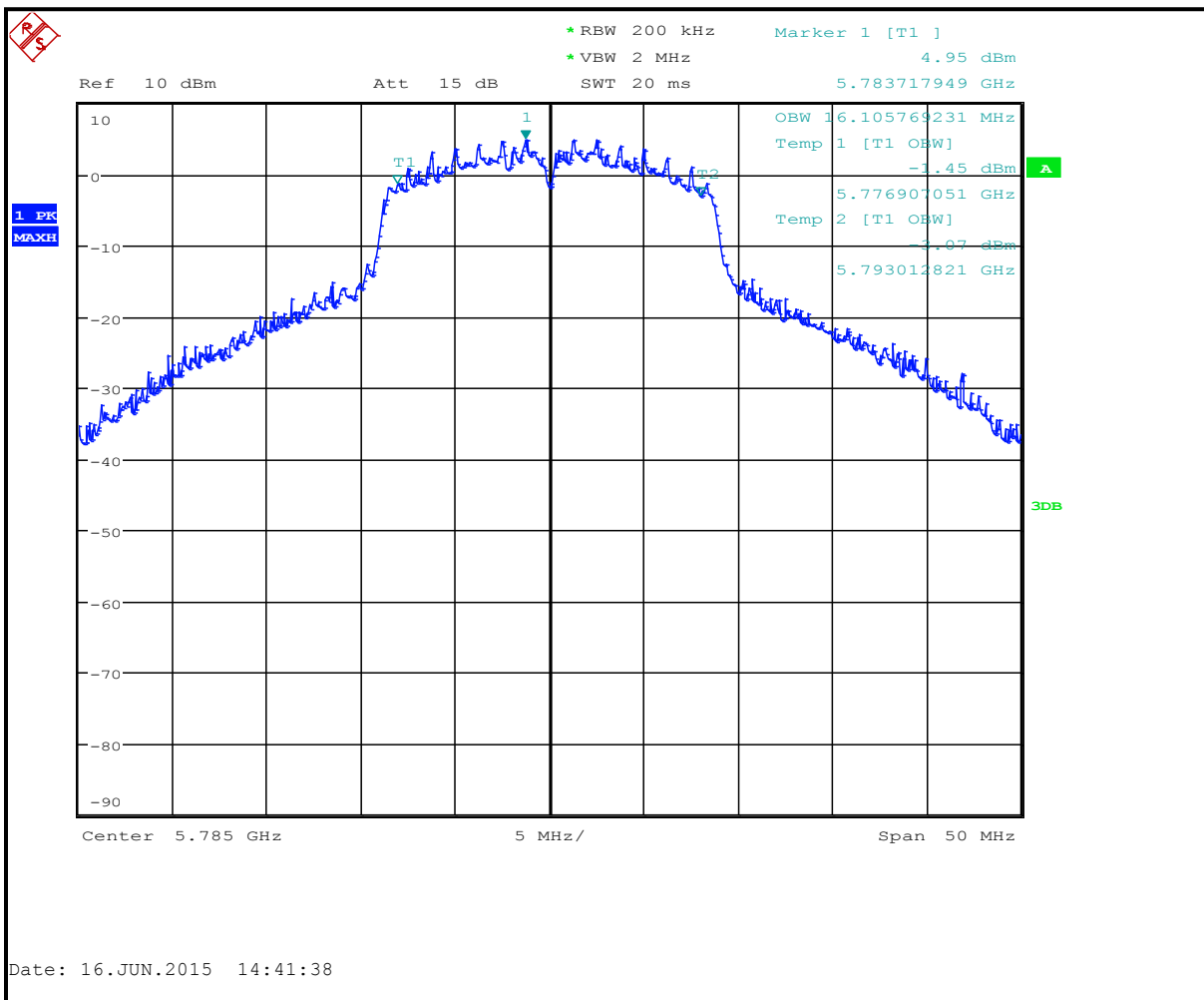
Plot 8-52: 26 dB Bandwidth (Frequency 5815 MHz) - 802.11n (40 MHz BW)



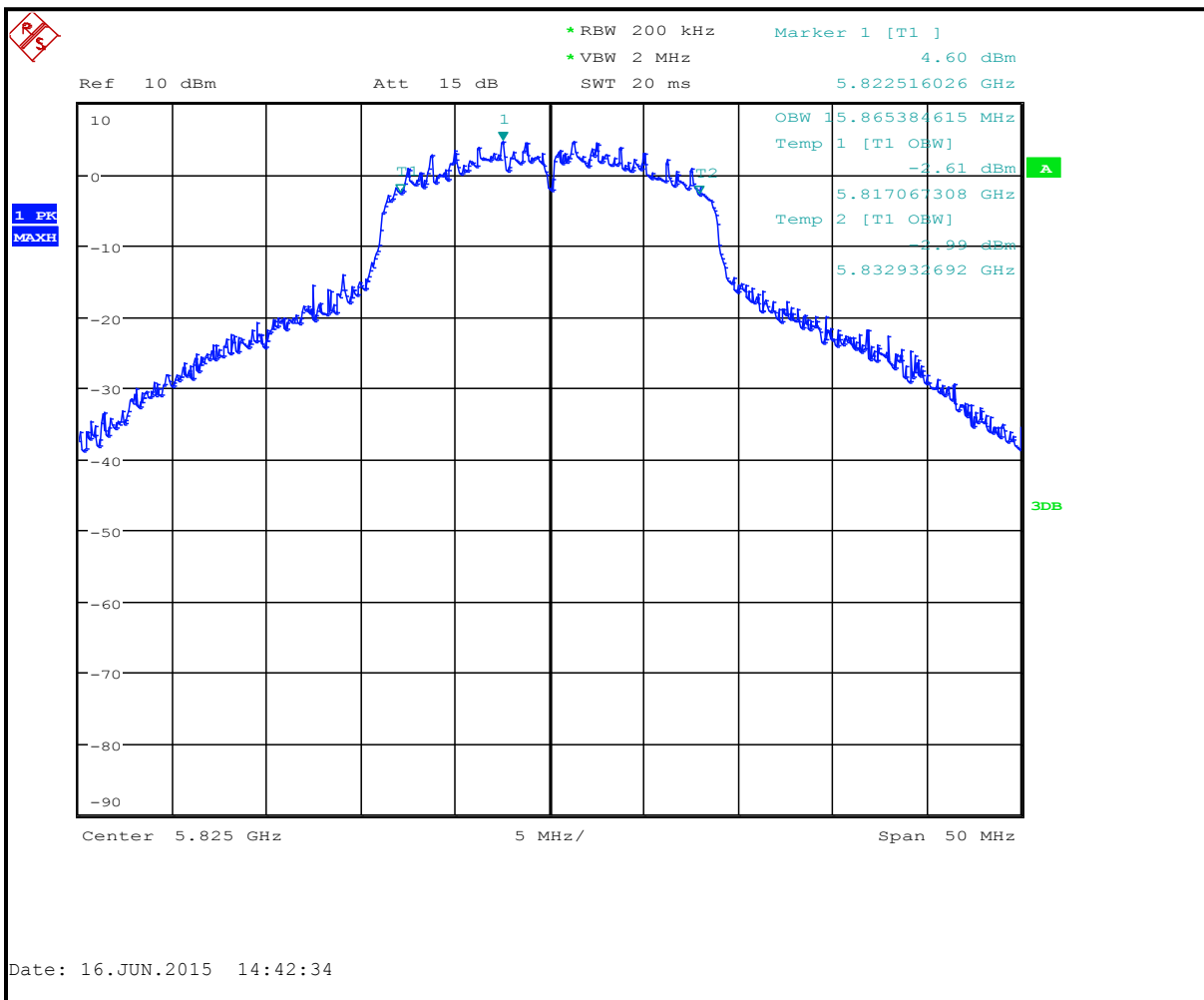
Plot 8-53: 6 dB Bandwidth Channel 149 (TX Frequency 5745 MHz) - 802.11a



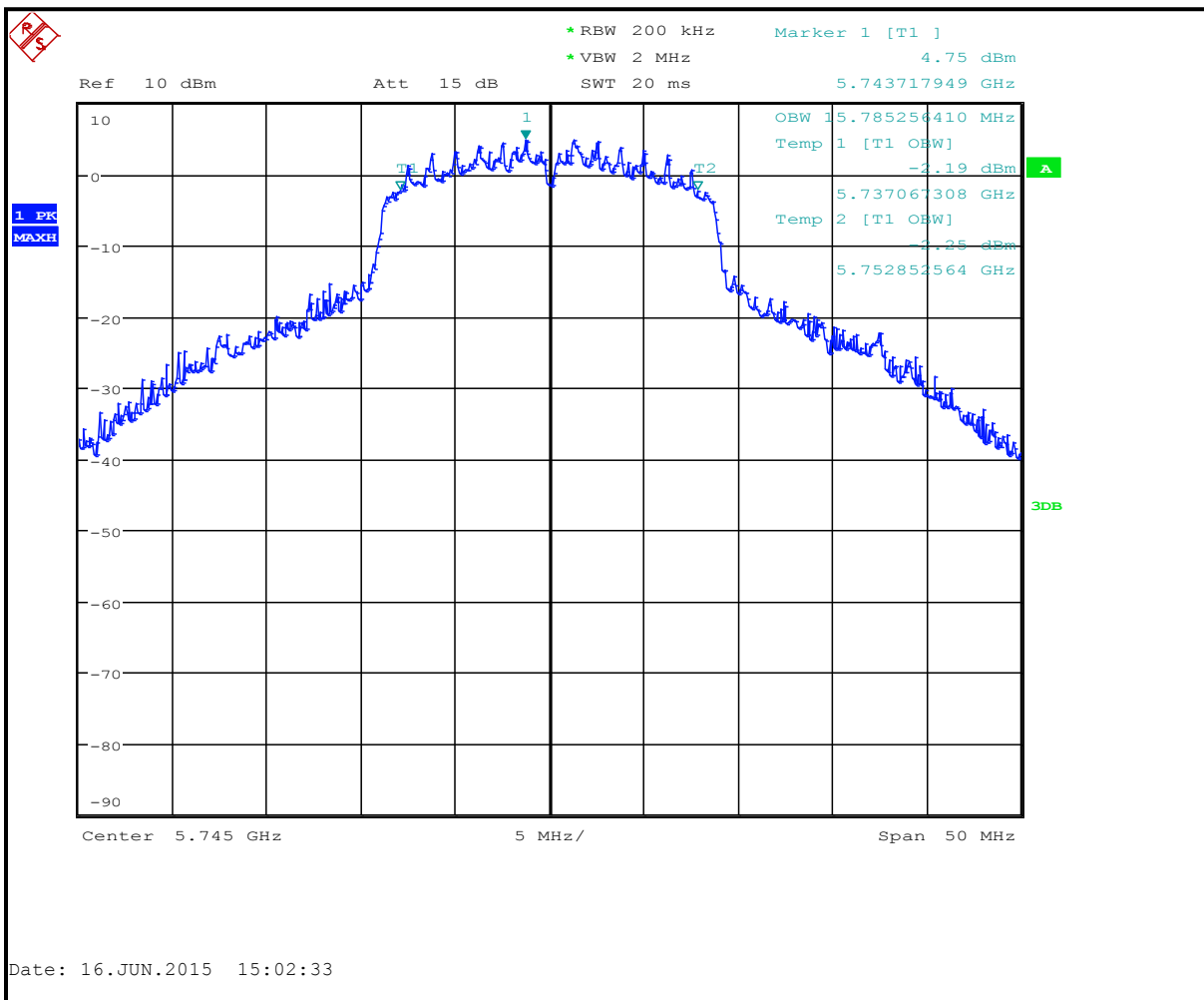
Plot 8-54: 6 dB Bandwidth Channel 157 (TX Frequency 5785 MHz) - 802.11a



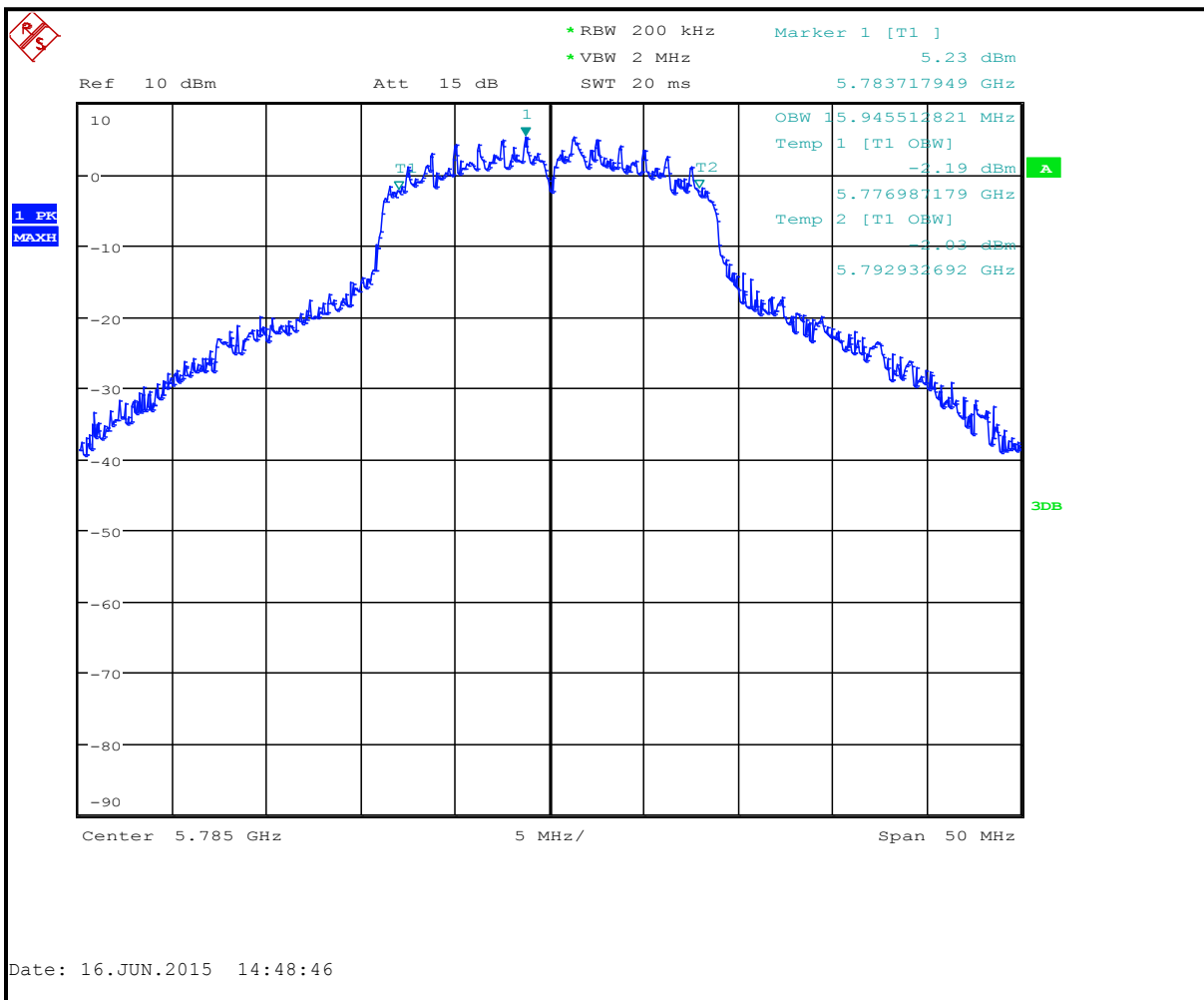
Plot 8-55: 6 dB Bandwidth Channel 165 (TX Frequency 5825 MHz) - 802.11a



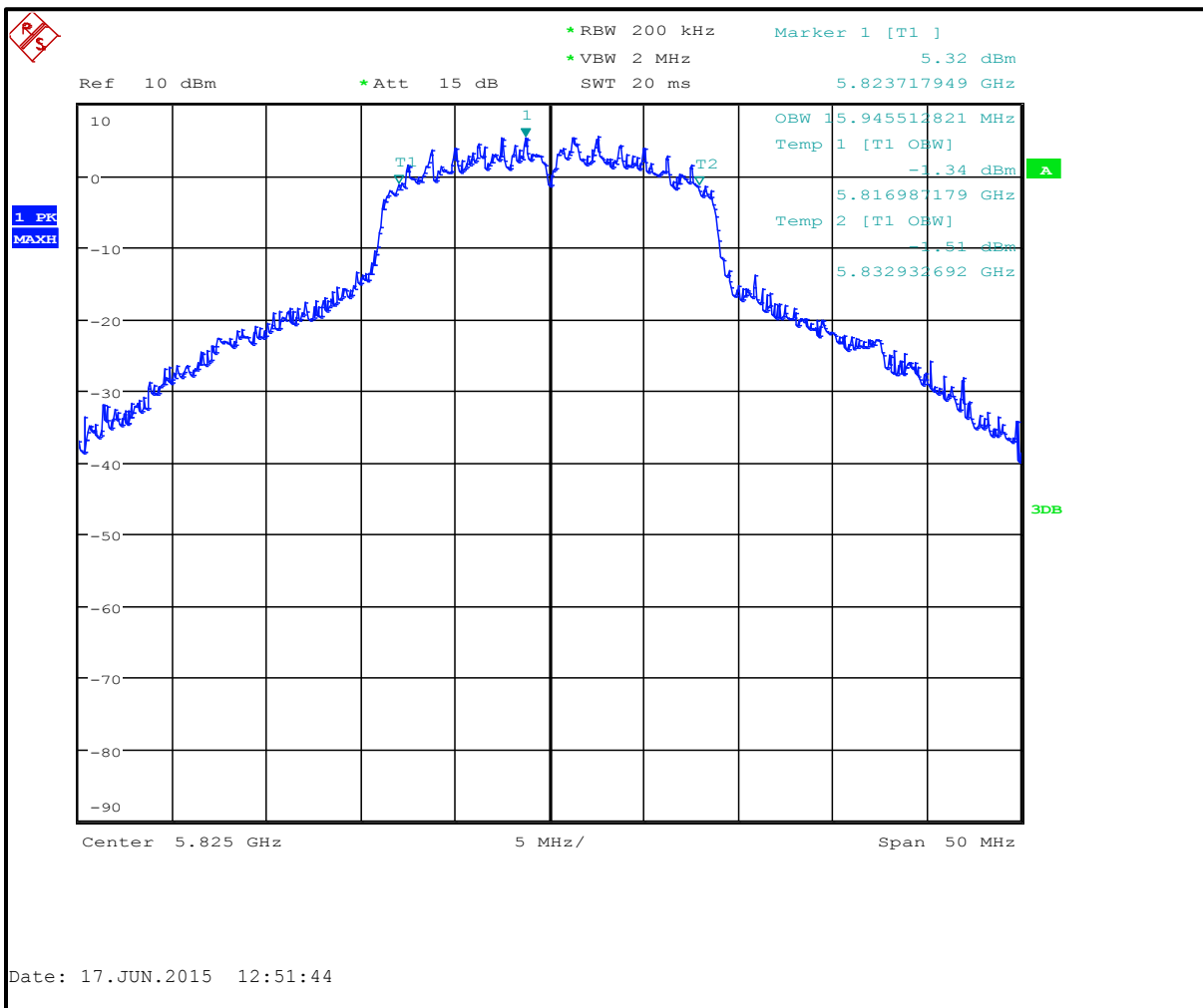
Plot 8-56: 6 dB Bandwidth Channel 149 (TX Frequency 5745 MHz) - 802.11n



Plot 8-57: 6 dB Bandwidth Channel 157 (TX Frequency 5785 MHz) - 802.11n



Plot 8-58: 6 dB Bandwidth Channel 165 (TX Frequency 5825 MHz) - 802.11n



Test Personnel:

Daniel W. Baltzell
 Test Engineer

Daniel W. Baltzell
 Signature

June 4-17, 2015
 Dates of Test

9 Radiated Emissions – FCC 15.209; RSS-Gen

9.1 Limits of Radiated Emissions Measurement

Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009-0.490	2400/f (kHz)	300
0.490-1.705	2400/f (kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any circumstances of modulation.

9.2 Radiated Emissions Measurement Test Procedure

Before final measurements of radiated emissions were made on the three/ten-meter, open-field test site, the EUT was scanned indoors at one and three meter distances. This was done in order to determine its emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to ensure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made on the three/ten-meter, open-field test site. The EUT was placed on a nonconductive turntable 0.8 meters above the ground plane. The spectrum was examined from 9 kHz to the 10th harmonic of the highest fundamental transmitter frequency (24.8 GHz).

At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations. For frequencies between 30 and 1000 MHz, the spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. For emissions above 1000 MHz, emissions are measured using the average detector function with a minimum resolution bandwidth of 1 MHz. No video filter less than 10 times the resolution bandwidth was used. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

Table 9-1: Radiated Emissions Test Equipment

RTL Asset #	Manufacturer	Model	Part Type	Serial Number	Calibration Due Date
900878	Rhein Tech Laboratories	AM3-1197-0005	3 meter antenna mast, polarizing	Outdoor Range 1	Not Required
901592	Insulated Wire Inc.	KPS-1503-3600-KPR	SMK RF Cables 20'	N/A	9/3/15
901593	Insulated Wire Inc.	KPS-1503-360-KPR	SMK RF Cables 36"	N/A	9/3/15
901242	Rhein Tech Laboratories	WRT-000-0003	Wood rotating table	N/A	Not Required
900772	EMCO	3161-02	Horn Antenna (2 - 4 GHz)	9804-1044	4/9/18
900321	EMCO	3161-03	Horn Antennas (4 – 8.2 GHz)	9508-1020	4/9/18
900323	EMCO	3160-7	Horn Antennas (8,2 – 12.4 GHz)	9605-1054	4/9/18
900356	EMCO	3160-08	Horn Antenna (12.4 - 18 GHz)	9607-1044	4/9/18
901218	EMCO	3160-09	Horn Antenna (18 - 26.5 GHz)	960281-003	4/14/18
901303	EMCO	3160-10	Horn Antenna (26.5 - 40.0 GHz) WR-28	960452-007	6/19/15
900791	Chase	CBL6111B	Bilog Antenna (30 MHz – 2000 MHz)	N/A	6/11/17
901581	Rohde & Schwarz	FSU	Spectrum Analyzer	1166.1660.50	11/13/15

9.3 Radiated Emissions Harmonics/Spurious Test Results

Table 9-2: Radiated Emissions Harmonics/Spurious Channel 36 (TX Frequency: 5180 MHz)

Emission Frequency (MHz)	Analyzer Peak Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Analyzer RMS Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
10360	6.6	-6.3	35.4	29.1	68.2	-39.1
15540	-1.2	-13.2	39.9	26.8	68.2	-41.4

Table 9-3: Radiated Emissions Harmonics/Spurious Channel 40 (TX Frequency: 5200 MHz)

Emission Frequency (MHz)	Analyzer Peak Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Analyzer RMS Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
10400	5.8	-6.2	35.4	29.2	68.2	-39.0
15600	-0.4	-13.1	39.9	26.9	68.2	-41.3

Table 9-4: Radiated Emissions Harmonics/Spurious Channel 44 (TX Frequency: 5220 MHz)

Emission Frequency (MHz)	Analyzer Peak Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Analyzer RMS Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
10440	6.2	-6.2	35.4	29.2	68.2	-39.0
15660	-1.2	-13.3	39.9	26.7	68.2	-41.5

Table 9-5: Radiated Emissions Harmonics/Spurious Channel 48 (TX Frequency: 5240 MHz)

Emission Frequency (MHz)	Analyzer Peak Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Analyzer RMS Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
10480	6.7	-5.8	35.5	29.7	68.2	-38.5
15720	-0.9	-13.1	39.9	26.9	68.2	-41.3

Table 9-6: Radiated Emissions Harmonics/Spurious Channel 52 (TX Frequency: 5260 MHz)

Emission Frequency (MHz)	Analyzer Peak Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Analyzer RMS Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
10520	8.4	-4.9	35.5	30.6	68.2	-37.6
15780	-0.8	-12.9	40.0	27.1	68.2	-41.1

Table 9-7: Radiated Emissions Harmonics/Spurious Channel 56 (TX Frequency: 5280 MHz)

Emission Frequency (MHz)	Analyzer Peak Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Analyzer RMS Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
10560	8.0	-4.5	35.6	31.1	68.2	-37.1
15840	-1.0	-12.7	40.0	27.3	68.2	-40.9

Table 9-8: Radiated Emissions Harmonics/Spurious Channel 64 (TX Frequency: 5320 MHz)

Emission Frequency (MHz)	Analyzer Peak Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Analyzer RMS Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
10640	7.9	-4.8	35.6	30.8	68.2	-37.4
15960	-0.8	-12.5	39.9	27.5	68.2	-40.7

Table 9-9: Radiated Emissions Harmonics/Spurious Channel 100 (TX Frequency: 5500 MHz)

Emission Frequency (MHz)	Analyzer Peak Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Analyzer RMS Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
11000	12.7	-0.8	35.6	34.8	68.2	-33.4
16500	-0.8	-13.3	39.8	26.5	68.2	-41.7

Table 9-10: Radiated Emissions Harmonics/Spurious Channel 116 (TX Frequency: 5580 MHz)

Emission Frequency (MHz)	Analyzer Peak Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Analyzer RMS Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
11160	9.3	-4.3	35.6	31.3	68.2	-36.9
16740	-2.2	-14.3	39.7	25.5	68.2	-42.7

Table 9-11: Radiated Emissions Harmonics/Spurious Channel 140(TX Frequency: 5700 MHz)

Emission Frequency (MHz)	Analyzer Peak Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Analyzer RMS Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
11400	4.9	-5.2	35.6	30.4	68.2	-37.8
17100	-1.6	-14.3	40.0	25.7	68.2	-42.5

Table 9-12: Radiated Emissions Harmonics/Spurious Channel 149 (TX Frequency: 5745 MHz)

Emission Frequency (MHz)	Analyzer Peak Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Analyzer RMS Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
11490	4.7	-6.0	35.7	29.7	68.2	-38.5
17235	-2.1	-14.5	40.0	25.6	68.2	-42.6

Table 9-13: Radiated Emissions Harmonics/Spurious Channel 157 (TX Frequency: 5785 MHz)

Emission Frequency (MHz)	Analyzer Peak Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Analyzer RMS Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
11570	5.5	-5.4	35.7	30.3	68.2	-37.9
17355	-1.9	-14.2	40.1	25.9	68.2	-42.3

Table 9-14: Radiated Emissions Harmonics/Spurious Channel 165 (TX Frequency: 5825 MHz)

Emission Frequency (MHz)	Analyzer Peak Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Analyzer RMS Detector (dBuV) (1 MHz RBW/ 3 MHz VBW)	Site Correction Factor (dB/m)	Average Emission Level (dBuV/m)	Average Limit (dBuV/m)	Average Margin (dB)
11650	3.7	-5.8	35.8	30.0	68.2	-38.2
17475	-2.6	-14.1	40.1	26.0	68.2	-42.2

Test Personnel:

Daniel W. Baltzell
Test Engineer



Signature

June 11, 2015
Date of Test

10 Conducted Emissions - FCC Rules and Regulations Part 15.207; RSS-Gen 7.2.2

The EUT is battery operated so AC conducted emissions were not tested.

11 Conclusion

The data in this measurement report shows that the EUT as tested, Harris Corporation Model XL-200P (International), FCC ID: OWDTR-0145-E, IC: 3636B-0145, complies with the applicable requirements of Parts 2 and 15 of the FCC Rules and Regulations and Industry Canada RSS-247.