WLAN IEEE 802.11 a, ac, b, g, n

FCC / IC Test Report

FOR:

Intel Corporation

Model Name: EP110

Product Description: Intel 4.7-inch Smartphone with GSM, GPRS, EDGE, UMTS, HSPA+, LTE, WLAN, BT and GPS radios

FCC ID: O2Z-EP110
IC ID: 1000W-EP110

47 CFR PART 15.E (U-NII), Old Rules
IC RSS-210 Issue 8, Annex 9 (LE-LAN)

TEST REPORT #: EMC_INTEL-054-14001_UNII_Rev2
DATE: 2014-12-12

FCC : Accredited

IC recognized # 3462B-1

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1 Assessment

The following equipment (and as identified in Ch.3 of this test report) was evaluated against the applicable criteria specified in FCC CFR47 Part 15 subpart E and Industry Canada Standards RSS-210 Issue 8, Annex 9.

No deviations were ascertained during the course of the tests performed.

Note**:** The evaluation has been applied according to the "OLD UNII Rules" as requested per KDB 926956 D01 U-NII Transition Plan v01r02 and as defined in the generic part of KDB 905462 UNII Compliance Procedures of October 17, 2014.

Note: Additional requirements as stipulated in the KDB 594280 D01 SW or NW Config of non-SDR(o&n) v02r01 August 14, 2014 and KDB 848637, Approval of DFS UNII Devices WHITHOUT radar detection, 06-03-214 are covered in the associate report EMC_INTEL-054-14001_CHANNEL_PLAN_COMPLIANCE.

Company	Description	Model #
Intel Corporation	Intel 4.7-inch Smartphone with GSM,GPRS,EDGE,UMTS,HSPA+,LTE, Wi-Fi, BT and GPS radios	EP110

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Date: 2014.12.15 17:57:49 -08'00'

Date	Section	Name	Signature
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Jennifer Huang

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Date: 2014.12.15 15:52:43 -08'00'

Date	Section	Name	Signature
2014-12-03	Compliance	Jennifer Huang (Compliance Technician)	

The test results of this test report relate exclusively to the test item specified in Section3.
CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the Test Report

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2.2 Identification of the Client

Applicant's Name:	Intel Corporation
Street Address:	2200 Mission College MS:SC1-20
City/Zip Code	Santa Clara, CA 94085
Country	USA
Contact Person:	Christine Ryan
Phone No.	+1 (408) 300-2167
e-mail:	Christine.m.ryan@intel.com

2.3 Identification of the Manufacturer

Manufacturer's Name:	Same as client.
Manufacturers Address:	
City/Zip Code	
Country	

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Marketing Name / Model No:	Intel 4.7-inch Smartphone / EP110
HW Revision :	PR2
FCC-ID / IC-ID:	O2Z-EP110 / 1000W-EP110
Product Description:	Intel 4.7-inch Smartphone with GSM,GPRS,EDGE,UMTS,HSPA+,LTE, Wi-Fi, BT and GPS radios
Authorized Frequency Range:	Nominal bands: 5150 – 5250 (band 1) 5250 – 5350 (band 2) 5470 – 5725 (band 3) 5.725– 5825 (band 4)
Modes of Operation	UNII-1 Client with passive scan for indoor use only UNII-2/2e Client with passive scan UNII-3 Client with Active Scan, Hotspot and ad-hoc mode DFS client only TCP is not supported Channels 12-14, 118 - 128, 138 – 144 are not supported 1 transmit and 1 receive chain (no MIMO technology support) The detail channel plan is given in the manufacturer's Operational Description which is part of the exhibits for the FCC/IC filings.
Type(s) of Modulation:	Wi-Fi: 802.11a,n,ac: OFDM with either BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
Channel Bandwidth:	This report covers all channels with 20MHz, 40MHz and 80MHz bandwidths for UNII-1, UNII-2 and UNII-2e as well as the 40MHz and 80MHz bandwidths of UNII-3 under rule part 15.407(15E) 20MHz channels 149 - 165 are treated under rule part 15.247 (15C) in the corresponding report.
Data rates used:	802.11b: 1 Mbps ; 802.11a/g: 6 Mbps ; 802.11n: 6.5 Mbps; 802.11 ac
Antenna/Antenna gain:	Internal PCB-trace antenna / highest declared Antenna Gain: -1.8 dBi @ 5.3GHz
Declared Output Powers:	According to "EP110 Maximum RF Output Power Declaration "included in filing.
power supply	Rechargeable lithium-ion battery Vmin: 3.6V/ Vnom: 3.8V/ Vmax: 4.2V
Operating temperature range	-10ºC to +55ºC
Prototype / Production unit	Prototype

3.2 Identification of the Equipment Under Test (EUT)

EUT #	Serial Number	HW Version	SW Version	Notes/Comments
1	INV141400717	PR2	4.4.4 KTU84P main engineering 53181-dev-keys	Radiated and Conducted RF Sample
2	INV141401015	PR2	4.4.4 KTU84P main engineering 53181-dev-keys	RF Conducted Sample

3.3 Identification of Accessory equipment

STE #	Type	Manufacturer	Model	Serial Number
1	AC/DC Adapter	Solcomp	SC1402	1309500144736

3.4 Environmental conditions during Test:

The following environmental conditions were maintained during the course of testing:
Ambient Temperature: 20-25°C
Relative humidity: 40-60%

3.5 Dates of Testing:

07/30/2014 – 08/20/2014

3.6 Test modes of operation:

The below listed worst case test modulations have been established from the output power measurement and evaluation of long term test data available to the lab for the different data rates and modulations which are supported by the equipment. The worst case is hereby considered the modulation delivering the highest average output power. The validity of this assumption has been verified with a spot check for the above product.

Modes of Operation		Data rate (Mbps)	Modulation Scheme
20MHz	**802.11a (20 MHz)**	MCS0: 6.5	BPSK
40MHz	**802.11n (40 MHz)**	MCS0: 6.5	BPSK
80MHz	**802.11ac (80 MHz)**	MCS0: 6.5	BPSK

Modes of operation that do not differ in a way relevant to the RF performance are not considered. For example 802.11n MCS0 is identical to 802.11a MCS0 as far as the radio interface is concerned.

The device was configured with a manufacturer provided test SW, capable of setting the unit in different supported modulation schemes, data rates and channels of operation.

The Device was set to continuous framed TX (burst) mode per test SW and could thus be operated with > 98% duty cycle during testing.

The validity of these power levels have been verified against the SW running in standard out of the box mode in the report EMC_INTEL-054-14001_CHANNEL_PLAN_COMPLIANCE.

4 Subject of Investigation

The objective of the measurements applied by CETECOM Inc. was to establish compliance of the EUT as described under Ch. 3 of this Test Report, with the applicable criteria specified in

- FCC CFR47 Parts 15, subpart E
- IC RSS-210 Issue 8, Annex 9

The evaluation has been applied according to the "OLD UNII Rules" as requested per KDB 926956 D01 U-NII Transition Plan v01r02 and as defined in the generic part of KDB 905462 UNII Compliance Procedures of October 17, 2014.

This test report is to support a request for new equipment authorization under the
FCC ID: O2Z-EP110 and IC ID: 1000W – EP110.

5 Summary of Measurement Results

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§15.407 (a)(1) RSS210 A9.2	Power Spectral Density	Nominal	802.11a/n/ac	■	☐	☐	☐	Complies
RSS-GEN, issue 4, section 6.6	Spectrum Bandwidth	Nominal	802.11a/n/ac	■	☐	☐	☐	Complies
§15.407 (a)(1) RSS210 A9.2	Maximum Output Power	Nominal	802.11a/n/ac	■	☐	☐	☐	Complies
§15.407 (a)(6)	Peak Excursion	Nominal	802.11a/n/ac	■	☐	☐	☐	Complies
§15.407 (b)(1)(2)(3)	unwanted emissions into non-restricted bands	Nominal	802.11a/n/ac	■	☐	☐	☐	Complies
§15.205 (a)(c) RSS-GEN , issue 4, section 8.9/8.10	unwanted emissions into restricted bands	Nominal	802.11a/n/ac	■	☐	☐	☐	Complies
§15.207(a) RSS-GEN , issue 4, section 8.8	Conducted Emissions AC power line	Nominal	802.11a/n/ac	■	☐	☐	☐	Complies

Note: NA= Not Applicable; NP= Not Performed.

6 Measurements

6.1 Measurement Uncertainty

	Uncertainty in dB radiated <30MHz	Uncertainty in in dB radiated 30MHz - 1GHz	Uncertainty in dB radiated > 1GHz	Uncertainty in dB Conducted measurement
standard deviation k=1	2.48	1.93	2.16	0.63
95% confidence interval in dB	4.86	3.79	4.23	1.24
95% confidence interval in dB in delta to Result	+-2.5 dB	+-2.0 dB	+- 2.3dB	+-0.7dB

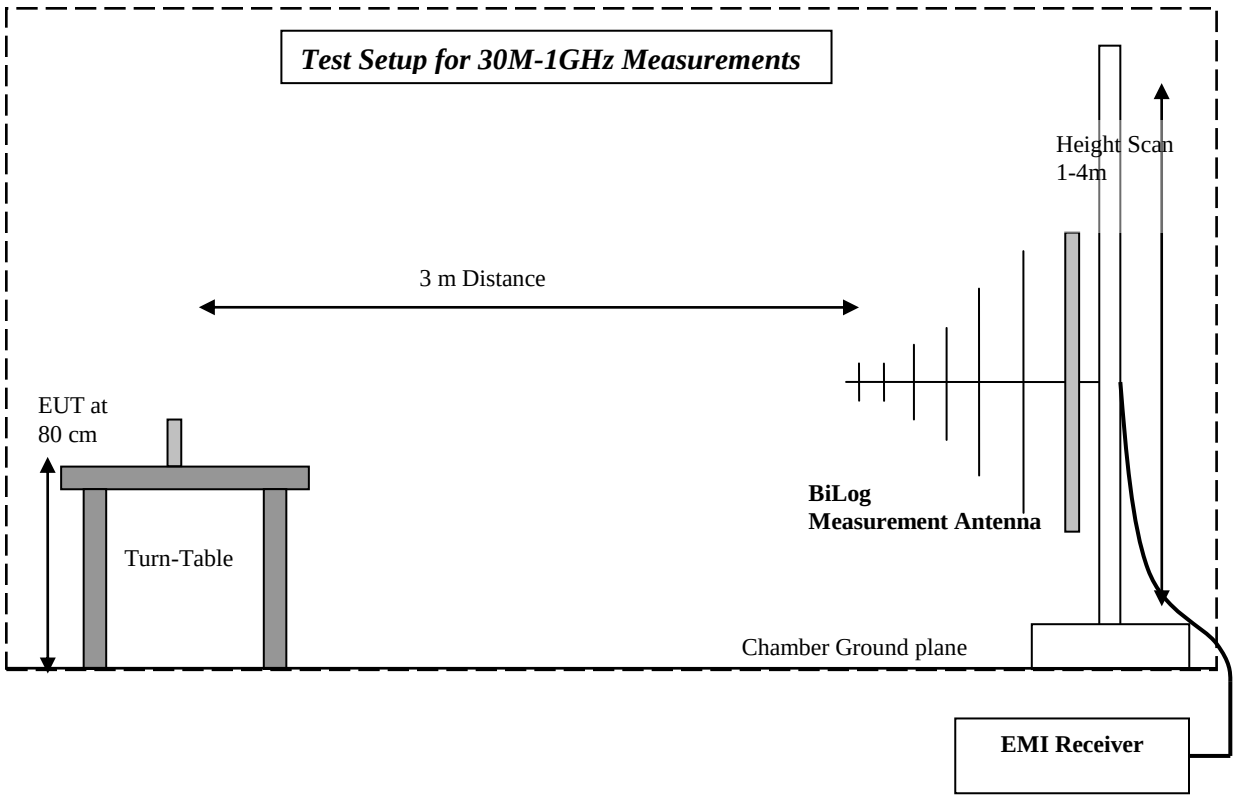
6.2 Test Conditions

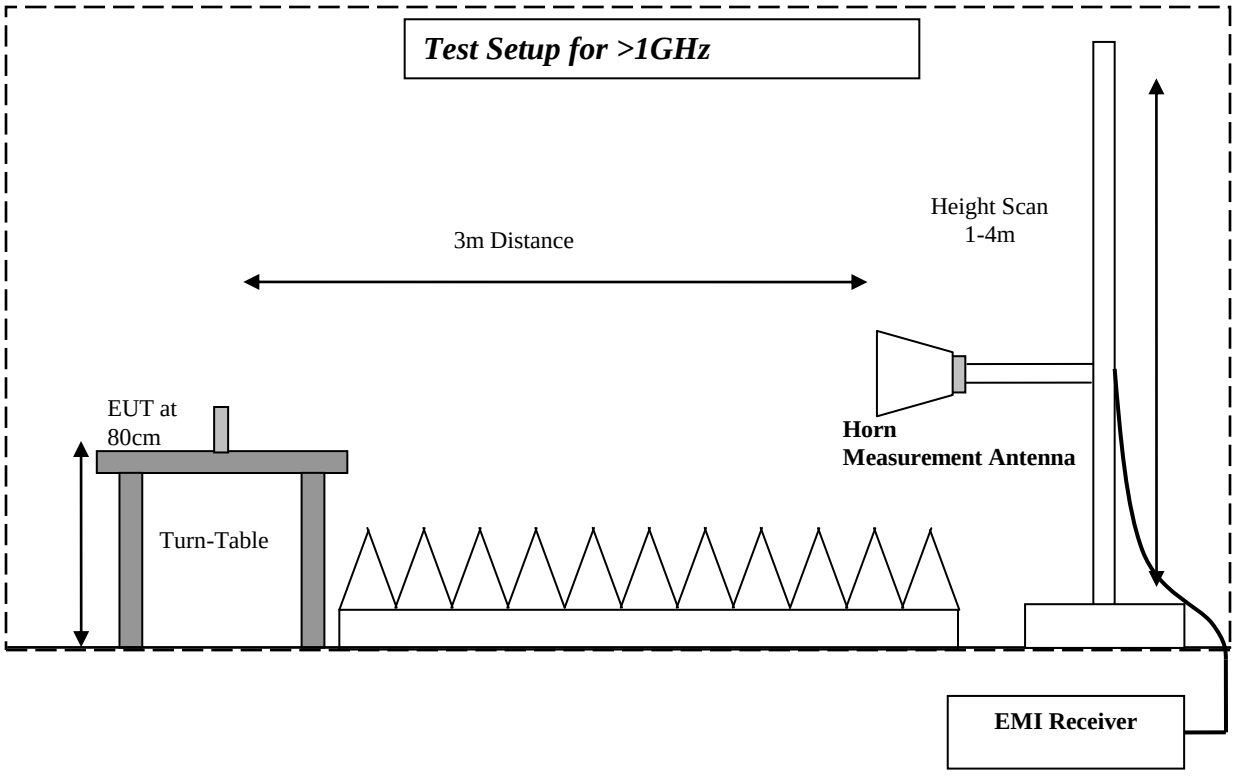
Temperature: 19°C to 25°C;
Operating Voltage: 3.8V for radio measurements;
Operating Voltage: 4.2V for emission measurements due to connected charger;
Relative Humidity 20% to 50%

6.3 Radiated Emissions Measurement Procedure

The radiated measurement is performed according to:
ANSI C63.4 (2009)
ANSI C63.10 (2009)

- The exploratory measurement is accomplished by running a matrix of 16 sweeps over the required frequency range with R&S Test-SW EMC32 for 4 positions of the turntable, two orthogonal positions of the EUT and both antenna polarizations. This procedure exceeds the requirement of the above standards to cover the 3 orthogonal axis of the EUT. A max peak detector is utilized during the exploratory measurement. The Test-SW creates an overall maximum trace for all 16 sweeps and saves the settings for each point of this trace. The maximum trace is part of the test report.
- The 10 highest emissions are selected with an automatic algorithm of EMC32 searching for peaks in the noise floor and ensuring that broadband signals are not selected multiple times.
- The maxima are then put through the final measurement and again maximized in a 90deg range of the turntable, fine search in frequency domain and height scan between 1m and 4m.
- The above procedure is repeated for all possible ways of power supply to EUT and for all supported modulations.
- In case there are no emissions above noise floor level only the maximum trace is reported as described above.
- The results are split up into up to 4 frequency ranges due to antenna bandwidth restrictions. A magnetic loop is used from 9kHz to 30MHz, a Biconlog antenna is used from 30MHz to 1GHz, two different horn antennas are used to cover frequencies up to 40GHz.


Test Setup for 30M-1GHz Measurements
Height Scan
1-4m
3 m Distance
EUT at
80 cm
BiLog
Measurement Antenna
Turn-Table
Chamber Ground plane
EMI Receiver


Test Setup for >1GHz
Height Scan
1-4m
3m Distance
EUT at
80cm
Horn
Measurement Antenna
Turn-Table
EMI Receiver

6.3.1 Sample Calculations for Radiated Measurements

6.3.1.1 Field Strength Measurements:

Measurements from the Spectrum Analyzer/ Receiver are used to calculate the Field Strength, taking into account the following parameters:

1. Measured reading in dBµV
2. Cable Loss between the receiving antenna and SA in dB and
3. Antenna Factor in dB/m

FS (dBµV/m) = Measured Value on SA (dBµV) + Cable Loss (dB) + Antenna Factor (dB/m)
Eg:

Frequency (MHz)	Measured SA (dBµV)	Cable Loss (dB)	Antenna Factor Correction (dB)	Field Strength Result (dBµV/m)
1000	80.5	3.5	14	98.0

All radiated measurement plots in this report are taken from a test SW that calculates the Field Strength based on the above equation.

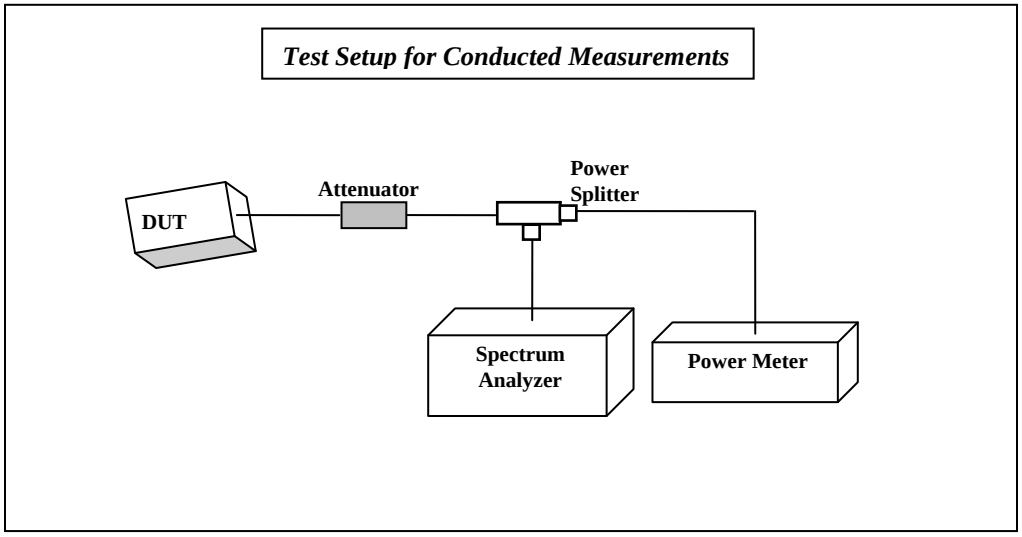
6.3.1.2 Power Measurements using Substitution Procedure:

The measurement on the Spectrum Analyzer is used as a basis for the Substitution procedure.
The EUT is replaced with a Signal Generator and an antenna. The setting on the Signal Generator is varied until the Spectrum Analyzer displays the original reading. EIRP is calculated as-

EIRP (dBm)= Signal Generator setting (dBm)- Cable Loss (dB)+ Antenna Gain (dBi)
Eg:

Frequency (MHz)	Measured SA (dBµV)	Signal Generator setting (dBm)	Antenna Gain (dBi)	Dipole Gain (dBd)	Cable Loss (dB)	EIRP (dBm)
1000	95.5	24.5	6.5	0	3.5	27.5

6.4 Conducted Measurement Setup and Procedure



1. Connect the equipment as shown in the above diagram.
2. A test SW provided by the manufacturer is used to control the different modulations, data rates and max output power configurations.
3. Measurements are to be performed with the EUT set to the low, middle and high channels for 802.11 a/n/ac modes.

6.5 Measurement Procedures according to FCC guidelines

In addition to the related rules in FCC 15(E) and RSS-210 Annex 9 the guidelines in the following FCC publications have been applied for evaluation:

- KDB 905462 UNII Compliance Procedures Old & New Rules, 10-17-2014(generic part)
- KDB 905462 D05 802.11 Channel Plans Old Rules v01, 06-02-2014
- KDB 905462 D01 UNII DFS Compliance Procedures Old Rules v01 (re-assigned FCC 06-96 DFS order)
- KDB 848637, D01 DFS Client Devices v01 08-14-2014
- KDB 789033 D01 General UNII Test Procedures Old Rules v01r04, 06-06-2014
- KDB 443999 D01 Approval of DFS UNII Devices v01r03, 09-23-2014
- KDB 644545 D01 Guidance for IEEE 802.11ac v01r02: Guidance for IEEE 802.11ac and Pre-ac Device Emissions Testing, Oct 31, 2013

7 Maximum Conducted Output Power

7.1 Reference:

FCC	☒ Part 15 Subpart C, §15.407(a)(1)(2)(3)
IC	☒ RSS-210Issue 8: A9.2 (1)(2)(3)(4)
ANSI	☒ C63.10-2009 for TX-mode
KDB Guidance no.	☒ 789033 D01 General UNII test procedures v01r04: E) Method SA-1
Limits	5150-5250: FCC limit is 50mW RMS conducted output power (17dBm) IC limit is 200mW EIRP (23dBm) 5250-5350 and 5470-57125: FCC limit is 250mW RMS conducted output power (24dBm) IC limit is a 250mW RMS conducted output power (24dBm) and EIRP 1W 5725-5825: FCC limit is 1W RMS conducted output power (30dBm) IC limit is 1W RMS conducted output power (30dBm) and EIRP 4W

7.2 Antenna characteristics:

According §15.407(a)(1)(2):
☒ directional gain < 6 dBi (measured: difference between measured conducted and radiated eirp. power)
☐ directional gain > 6 dBi (measured / applicant's declaration) -> conducted power reduction necessary

7.3 EUT settings:

The EUT was instructed to send with maximum power according applicants instructions.
Different modulation characteristics have been checked according to 3.6.
Three operating frequencies within each operating band have been selected. The EUT was transmitting continuously.

7.4 Measurement Method:

789033 D01 General UNII test procedures v01r04: E) Method SA-1

7.5 Settings on Spectrum-Analyzer:

Center Frequency	Nominal channel frequency
Span	40/80/120 MHz
Resolution Bandwidth (RBW)	1 MHz
Video Bandwidth (VBW)	3 MHz
Sweep time	coupled
Detector	RMS
Sweep Mode	AVG mode, 100 Traces

7.6 Conducted power measurement and EIRP calculation

- Maximum declared antenna gain is listed in table below. For other channels linear interpolation was used. These gains are added to the conducted power measurement results to calculate the EIRP results for Industry Canada.

FREQUENCY	GAIN
5.2 dBi @ 5.2GHz	-2.9
5.3 dBi @ 5.3GHz	-1.8
5.6 dBi @ 5.6GHz	-6.1
5.8 dBi @ 5.8GHz	-7.8

7.7 Result

	Channel No./Frequency [GHz]	Band-width	Power [dBm] (limit 17dBm) FCC		Gain [dBi]	EIRP[dBm] (limit 23dBm) IC		Diagram no.
			a-Mode BPSK	n20-Mode 64-QAM		a-Mode BPSK	n20-Mode 64-QAM	
UNII-1	36 / 5.18	20	9.96	7.49[1]	-2.9	7.06	4.59[1]	MCOP_Ch36_a_Mode MCOP_Ch36_n_Mode
	40 / 5.2		11.63	7.48[1]	-2.9	8.73	4.58[1]	MCOP_Ch40_a_Mode MCOP_Ch40_n_Mode
	44 / 5.22		11.68	NP	-2.7	8.98	NP	MCOP_Ch44_a_Mode
	48 / 5.24		11.68	7.15[1]	-2.5	9.18	4.65[1]	MCOP_Ch48_a_Mode MCOP_Ch48_n_Mode

Remark: NP - not performed as low, mid, high and channel already covered in a-mode.

[1] The values for 802.11n are about 4dB lower than the values for 802.11a due to 64-QAM modulation used for 802.11n. The 802.11a measurement with BPSK (MCS0) is the worst case for power and the 802.11n measurement results have been added as a means to support that fact. The tune up spec provided by the customer relates to MCS0 only and provides 11dBm +-2dB.

	Channel No./Frequency [GHz]	Band-width	Power [dBm] (limit 24dBm) FCC & IC		Gain [dBi]	EIRP[dBm] (limit 30dBm) IC		Diagram no.
			a-Mode BPSK	n20-Mode 64-QAM		a-Mode BPSK	n20-Mode 64-QAM	
UNII-2A	52/5.26	20	11.98	7.54[1]	-2.2	9.78	5.34[1]	MCOP_Ch52_a_Mode MCOP_Ch52_n_Mode
	56/5.28		11.93	7.85[1]	-2	9.93	5.85[1]	MCOP_Ch56_a_Mode MCOP_Ch56_n_Mode
	60/5.3		11.92	7.53[1]	-1.8	10.12	5.73[1]	MCOP_Ch60_a_Mode MCOP_Ch60_n_Mode
	64/5.32		12.02	7.51[1]	-1.8	10.22	5.71[1]	MCOP_Ch64_a_Mode MCOP_Ch64_n_Mode

	Channel No./Frequency [GHz]	Band-width	Power [dBm] (limit 24dBm) FCC & IC		Gain [dBi]	EIRP[dBm] (limit 30dBm) IC		Diagram no.
			a-Mode BPSK	n20-Mode 64-QAM		a-Mode BPSK	n20-Mode 64-QAM	
UNII-2C	100/5.5	20	12.03	7.55[1]	-4.7	7.33	2.85[1]	MCOP_Ch100_a_Mode MCOP_Ch100_n_Mode
	104/5.52		11.92	7.55[1]	-5	6.92	2.55[1]	MCOP_Ch104_a_Mode MCOP_Ch104_n_Mode
	136/5.68		11.39	7.02[1]	-6.1	5.29	0.92[1]	MCOP_Ch136_a_Mode MCOP_Ch136_n_Mode
	140/5.70		11.36	7.09[1]	-7	4.36	0.09[1]	MCOP_Ch140_a_Mode MCOP_Ch140_n_Mode

Set-up no.:	1.	2. 50Ohm connection, battery at VNOM 3.8V, no charger connected.				
Op. Mode:		1 (40MHz nominal bandwidth)				
	Channel No./Frequency [GHz]	Nominal bandwidth	Power [dBm] (limit 17dBm) FCC	Gain [dBi]	EIRP[dBm] (limit 23dBm) IC	Diagram no.
			n40-Mode QPSK		n40-Mode QPSK	
UNII-1	38/5.19	40	7.15	-2.9	4.25	MCOP_Ch38_n40_Mode
	46/5.23		7.06	-2.6	4.46	MCOP_Ch46_n40_Mode
	Channel No./Frequency [GHz]	Nominal bandwidth	Power [dBm] (limit 24dBm) FCC & IC		EIRP[dBm] (limit 30dBm) IC	Diagram no.
			n40-Mode QPSK		n40-Mode QPSK	
UNII-2 A	54/5.27	40	7.14	-2.1	5.04	MCOP_Ch54_n40_Mode
	62/5.31		7.19	-1.8	5.39	MCOP_Ch62_n40_Mode
UNII-2 C	102/5.51	40	8.43	-4.8	3.63	MCOP_Ch102_n40_Mode
	134/5.67		8.07	-6.1	1.97	MCOP_Ch134_n40_Mode
	Channel No./Frequency [GHz]	Nominal bandwidth	Power [dBm] (limit 30dBm) FCC & IC		EIRP[dBm] (limit 36dBm) IC	Diagram no.
			n40-Mode QPSK		n40-Mode QPSK	
UNII-3	159/5.79	40	7.81	-7.7	0.11	MCOP_Ch159_n40_Mode

Set-up no.:	1.	2. 50Ohm connection, battery at VNOM 3.8V, no charger connected.				
Op. Mode:		1 (80MHz nominal bandwidth)				
	Channel No./Frequency [GHz]	Nominal bandwidth	Power [dBm] (limit 17dBm) FCC	Gain [dBi]	EIRP[dBm] (limit 23dBm) IC	Diagram no.
			AC80-Mode 256-QAM		AC80-Mode 256-QAM	
UNII-1	42/5.21	80	8.22	-2.8	5.42	MCOP_Ch42_AC80_Mode
	Channel No. /Frequency [GHz]	Nominal bandwidth	Power [dBm] (limit 24dBm) FCC & IC		EIRP[dBm] (limit 30dBm) IC	Diagram no.
			AC80-Mode 256-QAM		AC80-Mode 256-QAM	
UNII-2A	58/5.29	80	7.93	-1.8	6.13	MCOP_Ch58_AC80_Mode
UNII-2C	106/5.53	80	8.24	-5.1	3.14	MCOP_Ch106_AC80_Mode
	122/5.61		7.71	-6.1	1.61	MCOP_Ch122_AC80_Mode
	Channel No. /Frequency [GHz]	Nominal bandwidth	Power [dBm] (limit 30dBm) FCC & IC		EIRP[dBm] (limit 36dBm) IC	Diagram no.
			AC80-Mode 256-QAM		AC80-Mode 256-QAM	
UNII-3	155/5.77	80	7.37	-7.5	-0.13	MCOP_Ch155_AC80_Mode

7.8 Verdict:

Passed

8 Occupied and Emission Bandwidth

8.1 References of occupied and emission bandwidth

FCC	☒ Part 15 Subpart C, §15.407(b)(1)(2)(3)
IC	RSS-Gen, Issue 4, section 6.6
ANSI	☒ C63.10-2009 for TX-mode
KDB Guidance no.	☒ 789033 D01 General UNII test procedures v01r04
Limits	--

8.2 EUT Settings:

The EUT was instructed to send with maximum power and a duty cycle >98%. The modulations were chosen as defined in 3.6.
Different modulation characteristics have been checked, e.g. data rates which EUT can operate.

8.3 Measurement method:

As described in KDB 789033 D01 General UNII test procedures v01r04

8.4 Measurement Uncertainty

The Uncertainty of the FSU spectrum analyzer used is 0.6Hz @ 10MHz resulting in 360Hz @ 6GHz.
The results have been rounded up to 10 kHz to represent worst case conditions.

8.5 Spectrum-Analyzer Settings:

Span	Set as to fully display the emissions and at least 26 dB below the PEAK level
Resolution Bandwidth (RBW)	Set to approx. 1%
Video Bandwidth (VBW)	3 times the resolution bandwidth
Sweep time	Coupled and low enough to have no gaps within power envelope
Detector	PK (26 dB BW)/Sample (99% OBW)
Sweep mode	Repetitive Mode, MAX-HOLD

8.6 Results:

Set-up no.:	1. 50Ohm connection, battery at VNOM 3.8V, no charger connected.				
Op. Mode:	1, a-Mode BPSK				
	Channel No.	Nominal bandwidth	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]	Diagram no.
UNII-1	36	20	21.31	16.75	OEB_Ch36_a_Mode
	40		21.25	16.75	OEB_Ch40_a_Mode
	48		21.44	16.75	OEB_Ch48_a_Mode
UNII-2	52	20	21.31	16.75	OEB_Ch52_a_Mode
	60		21.31	16.75	OEB_Ch60_a_Mode
	64		21.28	16.75	OEB_Ch64_a_Mode
UNII-2e	100	20	21.31	16.75	OEB_Ch100_a_Mode
	116		21.55	16.75	OEB_Ch116_a_Mode
	140		21.5	16.75	OEB_Ch140_a_Mode

Set-up no.:	1. 50Ohm connection, battery at VNOM 3.8V, no charger connected.				
Op. Mode:	1, n-Mode, 64-QAM				
	Channel No.	Nominal bandwidth	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]	Diagram no.
UNII-1	36	20	21.47	17.85	OEB_Ch36_n_Mode
	40		21.22	17.85	OEB_Ch40_n_Mode
	48		21.47	17.85	OEB_Ch48_n_Mode
UNII-2	52	20	21.55	17.85	OEB_Ch52_n_Mode
	60		21.39	17.85	OEB_Ch60_n_Mode
	64		21.55	17.85	OEB_Ch64_n_Mode
UNII-2e	100	20	21.47	17.85	OEB_Ch100_n_Mode
	140		21.55	17.9	OEB_Ch140_n_Mode

Set-up no.:	1. 50Ohm connection, battery at VNOM 3.8V, no charger connected.				
Op. Mode:	1, HT40-Mode, QPSK				
	Channel No.	Nominal bandwidth	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]	Diagram no.
UNII-1	38	40	40.67	36.6	OEB_Ch38_n40_Mode
	46		40.71	36.6	OEB_Ch46_n40_Mode
UNII-2	54	40	40.77	36.6	OEB_Ch54_n40_Mode
	62		40.77	36.6	OEB_Ch62_n40_Mode
UNII-2e	102	40	40.71	36.6	OEB_Ch102_n40_Mode
	110		40.73	36.6	OEB_Ch110_n40_Mode
	134		40.71	36.6	OEB_Ch134_n40_Mode

Set-up no.:	1. 50Ohm connection, battery at VNOM 3.8V, no charger connected.				
Op. Mode:	1, AC80-Mode, 256-QAM-VHT0				
	Channel No.	Nominal bandwidth	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]	Diagram no.
UNII-1	42	80	82.5	75.84	OEB_Ch42_AC80_Mode
UNII-2	58	80	82.6	75.72	OEB_Ch58_AC80_Mode
UNII-2e	106	80	82.5	75.84	OEB_Ch106_AC80_Mode
	122		82.5	75.84	OEB_Ch122_AC80_Mode
UNII-3	155	80	82.5	75.84	OEB_Ch155_AC80_Mode

Set-up no.:	1. 50Ohm connection, battery at VNOM 3.8V, no charger connected.				
Op. Mode:	1, AC80-Mode, 16-QAM-VHT9				
	Channel No.	Nominal bandwidth	26 dB Bandwidth [MHz]	99% Occupied Bandwidth [MHz]	Diagram no.
UNII-1	42	80	82.3	75.84	OEB_Ch42_AC80_Mod_9
UNII-2	58	80	82.9	75.84	OEB_Ch58_AC80_Mode_9
UNII-2e	106	80	82.5	75.84	OEB_Ch106_AC80_Mode_9
	122		82.2	75.84	OEB_Ch122_AC80_Mode_9
UNII-3	155	80	82.3	75.96	OEB_Ch155_AC80_Mode_9

8.7 Verdict

PASS

9 Peak Power Spectral Density

9.1 References

FCC	☒ Part 15 Subpart C, §15.407(a)(1)(2)(5)
IC	☒ RSS-210Issue 8: A9.2 (1)(2)
ANSI	☒ C63.10-2009 for TX-mode
KDB Guidance no.	☒ 789033 D01 General UNII test procedures v01r04: F) Method SA-1
Limits [dBm/MHz]	5150-5250: FCC limit is 4dBm/1MHz conducted RMS IC limit is 10dBm EIRP 5250-5350 and 5470-57125: FCC limit is 11dBm/MHz conducted RMS IC limit is 11dBm/MHz conducted RMS 5725-5825: FCC limit is 17dBm/MHz conducted RMS IC limit is 17dBm/MHz conducted RMS

9.2 EUT settings:

The EUT was instructed to send with maximum power according applicants instructions
Different modulation characteristics have been checked as defined in 3.6.

9.3 Measurement Method:

789033 D01 General UNII test procedures v01r04: F Method SA-1

9.4 Results:

Set-up no.:	1. 50Ohm connection, battery at VNOM 3.8V, no charger connected.				
Op. Mode:	1 (20MHz nominal bandwidth)				
Band	Channel No.	Nominal bandwidth	Power spectral density [dBm/MHz]		Diagram no.
			a-Mode BPSK	n20-Mode 64-QAM	
UNII-1	36	20	0.62	1.16	PPSD_Ch36_a_Mode PPSD_Ch36_n_Mode
	40		0.63	1.26	PPSD_Ch40_a_Mode PPSD_Ch40_n_Mode
	48		0.45	0.97	PPSD_Ch48_a_Mode PPSD_Ch48_n_Mode
UNII-2	52	20	0.72	1.23	PPSD_Ch52_a_Mode PPSD_Ch52_n_Mode
	60		0.63	1.25	PPSD_Ch60_a_Mode PPSD_Ch60_n_Mode
	64		0.64	1.14	PPSD_Ch64_a_Mode PPSD_Ch64_n_Mode
UNII-2e	100	20	0.92	1.27	PPSD_Ch100_a_Mode PPSD_Ch100_n_Mode
	112		0.70	1.19	PPSD_Ch112_a_Mode PPSD_Ch112_n_Mode
	140		0.44	0.93	PPSD_Ch140_a_Mode PPSD_Ch140_n_Mode

Remark: Due to the negative gains EIRPs have not been calculated and conducted measurements are taken as worst case for IC.

Set-up no.:	1. 50Ohm connection, battery at VNOM 3.8V, no charger connected.			
Op. Mode:	1 (40MHz nominal bandwidth)			
Band	Channel No.	Nominal bandwidth	Power spectral density [dBm/MHz] n40-Mode QPSK	Diagram no.
UNII-1	38	40	-5.34	PPSD_Ch38_n40_Mode
	46		-4.26	PPSD_Ch46_n40_Mode
UNII-2	54	40	-4.74	PPSD_Ch54_n40_Mode
	62		-4.82	PPSD_Ch62_n40_Mode
UNII-2e	102	40	-5.17	PPSD_Ch102_n40_Mode
	110		-5.12	PPSD_Ch110_n40_Mode
	134		-4.40	PPSD_Ch134_n40_Mode

Remark: Due to the negative gains EIRPs have not been calculated and conducted measurements are taken as worst case for IC.

Set-up no.:	1, 50Ohm connection, battery at VNOM 3.8V, no charger connected.			
Op. Mode:	1 (80MHz nominal bandwidth)			
Band	Channel No.	Nominal bandwidth	Power spectral density [dBm/MHz] 256-QAM	Diagram no.
UNII-1	42	80	-7.47	PPSD_Ch42_n80_Mode
UNII-2	58		-8.10	PPSD_Ch58_n80_Mode
UNII-2e	106		-7.51	PPSD_Ch106_n80_Mode
	122		-8.07	PPSD_Ch122_n80_Mode
UNII-3	155		-8.70c	PPSD_Ch155_n80_Mode

Remark: Due to the negative gains EIRPs have not been calculated and conducted measurements are taken as worst case for IC.

9.5 Verdict:

Passed

10 Peak Excursion

10.1 References

FCC	☒ Part 15 Subpart C, §15.407(a)(6)
IC	☐ --
ANSI	☒ C63.10-2009 for TX-mode
KDB Guidance no.	☒ 789033 D01 General UNII test procedures v01r04: G
Limit	≤ 13 dB

10.2 EUT settings:

The EUT was instructed to send with maximum power according applicants instructions.
The EUT was set to the different bandwidths and modulations as required by 789033 D01 General UNII test procedures v01r04: G

10.3 Measurement Method:

789033 D01 General UNII test procedures v01r04: G

10.4 Results:

Set-up no.:	1. 50Ohm connection, battery at VNOM 3.8V, no charger connected.				
Op. Mode:	A 20MHz nominal bandwidth, BPSK N 20MHz nominal bandwidth, 64-QAM				
Band	Channel No.	Nominal bandwidth	Peak to Average Ratio [dB]		Diagram no.
			a-Mode BPSK	n20-Mode 64-QAM	
UNII-1	36	20	7.25	7.85	PAR_Ch36_a_Mode_6M PAR_Ch36_n_Mode_6M
	40		7.34	7.88	PAR_Ch40_a_Mode_6M PAR_Ch40_n_Mode
	48		7.65	7.83	PAR_Ch48_a_Mode PAR_Ch48_n_Mode
UNII-2	52	20	7.35	7.81	PAR_Ch52_a_Mode PAR_Ch52_n_Mode
	60		7.25	7.82	PAR_Ch60_a_Mode PAR_Ch60_n_Mode
	64		7.73	7.83	PAR_Ch64_a_Mode PAR_Ch64_n_Mode
UNII-2e	100	20	7.45	7.86	PAR_Ch100_a_Mode PAR_Ch100_n_Mode
	140		7.36	7.84	PAR_Ch140_a_Mode PAR_Ch140_n_Mode

Set-up no.:	1. 50Ohm connection, battery at VNOM 3.8V, no charger connected.			
Op. Mode:	N 40MHz nominal bandwidth, QPSK			
Band	Channel No.	Nominal bandwidth	Peak to Average Ratio [dB] n40-Mode QPSK	Diagram no.
UNII-1	38	40	7.90	PAR_Ch38_n40_Mode
	46		7.83	PAR_Ch46_n40_Mode
UNII-2	54	40	7.99	PAR_Ch54_n40_Mode
	62		7.90	PAR_Ch62_n40_Mode
UNII-2e	102	40	7.96	PAR_Ch102_n40_Mode
	134		7.97	PAR_Ch134_n40_Mode

Set-up no.:	1. 50Ohm connection, battery at VNOM 3.8V, no charger connected.			
Op. Mode:	AC 80MHz nominal bandwidth, 256-QAM (VHT9)			
Band	Channel No.	Nominal bandwidth	Peak to Average Ratio [dB] AC80-Mode 256-QAM	Diagram no.
UNII-1	42	80	8.60	PAR_Ch42_AC80_Mode_9
UNII-2	58		8.57	PAR_Ch58_AC80_Mode_9
UNII-2e	106		8.58	PAR_Ch106_AC80_Mode_9
	122		8.79	PAR_Ch122_AC80_Mode_9
UNII-3	155		8.78	PAR_Ch155_AC80_Mode_9

Set-up no.:	1. 50Ohm connection, battery at VNOM 3.8V, no charger connected.			
Op. Mode:	80MHz nominal bandwidth, 16-QAM (VHT0)			
Band	Channel No.	Nominal bandwidth	Peak to Average Ratio [dB] AC80-Mode 16-QAM	Diagram no.
UNII-1	42	80	8.31	PAR_Ch42_AC80_Mode
UNII-2	58		8.34	PAR_Ch58_AC80_Mode
UNII-2e	106		8.36	PAR_Ch106_AC80_Mode
	122		8.32	PAR_Ch122_AC80_Mode
UNII-3	155		8.49	PAR_Ch155_AC80_Mode

10.5 Verdict:

Passed

11 Band Edge Compliance – Restricted and Non-restricted bands

11.1 Reference:

§15.407/15.205/15.209
RSS GEN, ch. 7.7

15.205 (a) Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41			

15.209 (a) Emission Limits:

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (m)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30 (29.5 dBµV/m)	30
30–88	100 (40dBµV/m)	3
88–216	150 (43.5 dBµV/m)	3
216–960	200 (46 dBµV/m)	3
Above 960	500 (54 dBµV/m)	3

11.2 Measurement method for the restricted band edges 5.15GHz and 5.35GHz to 5.46GHz

According to section H.5 and H.6 of 789033 D01 General UNII Test Procedures Old Rules v01r04

As the measurements have been carried out conducted the limits have been converted from field strength @ 3m measurement distance to EIRP. Limit (EIRP) = Limit (dBuV/m @3m) -95.2 – Gain (2dBi)

PEAK LIMIT = 74dBµV/(mxMHz) @3m = -21.2dBm/MHz – Gain (2dBi) = -23.2dBm/MHz
AVG. LIMIT = 54dBµV/(mxMHz) @3m = -41.2dBm/MHz – Gain (2dBi) = -43.2dBm/MHz

As KDB 789033 D01 General UNII Test Procedures Old Rules v01r04 requires to include at least 2dBi of gain it was ensured that there is more than 2dB margin to the limit.

In cases where the peak measurement meets the average limit the average measurement is omitted.

11.3 Measurement method for the non-restricted band 5.725GHz and 5.825GHz

Same method as described above for the restricted band edges. Only in cases where this is failed the following Limits are used.

AVG. LIMIT= -27dBm/MHz – Gain (2dBi) = -29dBm/MHz

11.4 Verdict:

Pass.

11.5 Results

Det	BW	UNII-1 low (restricted)	UNII-2A high (restricted)	UNII-2C low (restricted)	UNII-2C high (non-restricted)	UNII-3 low	UNII-3 high
Peak	20MHz	BEC_Ch36_Low_Band_Edge_Peak	BEC_Ch64_High_Band_Edge_Peak	BEC_Ch100_Low_Band_Edge_Peak	Channel 144 not supported by EUT	Channel 149 Refer to DTS report	Channel 165 Refer to DTS report
AVG		BEC_Ch36_Low_Band_Edge_AVG	BEC_Ch64_High_Band_Edge_AVG	BEC_Ch100_Low_Band_Edge_AVG			
Peak	40MHz	BEC_Ch38_Low_Band_Edge_Peak	BEC_Ch62_High_Band_Edge_Peak	BEC_Ch102_Low_Band_Edge_Peak	Channel 142 not supported by EUT	BEC_Ch151_Low_Band_Edge_Peak	BEC_Ch159_High_Band_Edge_Peak
AVG		BEC_Ch38_Low_Band_Edge_AVG	BEC_Ch62_High_Band_Edge_AVG	BEC_Ch102_Low_Band_Edge_AVG			
Peak	80MHz	BEC_Ch42_Low_Band_Edge_Peak	BEC_Ch58_High_Band_Edge_Peak	BEC_Ch106_Low_Band_Edge_Peak	Channel 138 not supported by EUT	BEC_Ch155_Low_Band_Edge_Peak	BEC_Ch155_High_Band_Edge_Peak
AVG		BEC_Ch42_Low_Band_Edge_AVG	BEC_Ch58_High_Band_Edge_AVG	BEC_Ch106_Low_Band_Edge_AVG			

Remark: The fact that some traces show no or little signal is due to large distance to Band edge. It has been confirmed that the transmitter was turned on and operating on the channel as documented.

12 Unwanted Emissions into Restricted and Non-restricted bands

12.1 References

§15.407/15.205/15.209
For restricted bands:
RSS GEN Issue 4 section 8.10 Restricted Frequency Bands,

For non-restricted bands:
RSS 210 Issue 8 section A8.5

(b) Undesirable emission limits: Except as shown in paragraph (b)(6) of this section, the peak 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. Devices operating in the 5.25–5.35 GHz band that generate emissions in the 5.15–5.25 GHz band must meet all applicable technical requirements for operation in the 5.15–5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of –27 dBm/MHz in the 5.15–5.25 GHz band.

(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 5.725–5.825 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.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

(7) The provisions of § 15.205 apply to intentional radiators operating under this section.

(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

12.2 Limits:

§15.209

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (m)
0.009–0.490	2400/F(kHz)	300[1]
0.490–1.705	24000/F(kHz)	30[1]
1.705–30.0	30 (29.5 dBµV/m)	30[1]
30–88	100 (40dBµV/m)	3
88–216	150 (43.5 dBµV/m)	3
216–960	200 (46 dBµV/m)	3
Above 960	500 (54 dBµV/m)	3

Radiated spurious emissions shall be measured for the transmit frequencies, transmit power, and data rate for the lowest, middle and highest channel in each frequency band of operation and for the highest gain antenna for each antenna type, and using the appropriate parameters and test requirements described in 5.4.
The highest (or worst-case) data rate shall be recorded for each measurement.

When testing at other than specified distance the limits in dBuV/m are converted according to the following rule:

Below 30MHz:
acc. to FCC §15.31 (f) (2) 40dB/decade. This means that limits are relaxed by 40dB in case the measurement distance is reduced by factor 10.

Above 30MHz:
acc. to FCC §15.31 (f) (1) 20dB/decade. This means that limits are relaxed by 20dB in case the measurement distance is reduced by factor 10.

12.3 Test Result:

Plots reported here represent the worst case emissions for horizontal and vertical antenna polarizations and for three orientations of the EUT.

Unless mentioned otherwise, the emissions outside the limit lines in the plots are from the transmit signal.

Low/Mid/High channels in each sub-band of operation were tested and results reported for both 802.11a and n modes of operation.
Only worst case mid channel test results reported for 9k-1GHz and >18 GHz ranges of test.

Measurement Uncertainty: ±3.0dB

12.4 Testing Notes:

For the measurement range up to 30 MHz in the following plots the limits have been converted (from 300m and 30m) to the 3m measurement distance used by 40dB/decade, according to part 15.31(f)(2).

All band edges of the U-NII bands are covered in the previous chapter.
For simplicity reasons all emission tests have been performed against the restricted limits according 15.209 and 15.35. In cases emissions should fail these limits it is checked whether they are in a restricted band or not. If not the dBuV/m value is converted into a dBm value and compared to the more relaxed limit of -27dBm to make a final pass/fail decision.

12.5 Measurement Verdict

Pass.

12.6 Results:

Band	Modulation and channel	9kHz – 30MHz Peak Emissions	30MHz – 1GHz Peak Emissions	1GHz – 8GHz Peak & Average Emissions according to 15.209, 15.35	8GHz – 18GHz Peak & Average Emissions according to 15.209, 15.35	18GHz – 40GHz Peak & Average Emissions according to 15.209, 15.35
UNII-1	**802.11a -Ch36**	PAE_11a_Ch36_9kHz_30MHz	UER_11a_Ch36_30MHz_1GHz	PAE_11a_Ch36_1GHz_8GHz	PAE_11a_Ch36_8GHz_18GHz	PAE_11a_Ch36_18GHz_40GHz
UNII-1	**802.11n [40]-Ch38**	PAE_11n_Ch38_9kHz_30MHz	UER_11n_Ch38_30MHz_1GHz	PAE_11n_Ch38_1GHz_8GHz	PAE_11n_Ch38_8GHz_18GHz	PAE_11n_Ch38_18GHz_40GHz
UNII-1	**802.11ac [80]-Ch42**	PAE_11ac_Ch42_9kHz_30MHz	UER_11ac_Ch42_30MHz_1GHz	PAE_11ac_Ch42_1GHz_8GHz	PAE_11ac_Ch42_8GHz_18GHz	PAE_11ac_Ch42_18GHz_40GHz
UNII-2	**802.11ac [80]-Ch58**	PAE_11ac_Ch58_9kHz_30MHz	UER_11ac_Ch58_30MHz_1GHz	PAE_11ac_Ch58_1GHz_8GH	PAE_11ac_Ch58_8GHz_18GHz	PAE_11ac_Ch58_18GHz_40GHz
UNII-2	**802.11a -Ch60**	PAE_11a_Ch60_9kHz_30MHz	UER_11a_Ch60_30MHz_1GHz	PAE_11a_Ch60_1GHz_8GHz	PAE_11a_Ch60_8GHz_18GHz	PAE_11a_Ch60_18GHz_40GHz
UNII-2C	**802.11n [40]-Ch102**	PAE_11n_Ch102_9kHz_30MHz	UER_11n_Ch102_30MHz_1GHz	PAE_11n_Ch102_1GHz_8GHz	PAE_11n_Ch102_8GHz_18GHz	PAE_11n_Ch102_18GHz_40GHz
UNII-2C	**802.11ac [80]-Ch106**	PAE_11ac_Ch106_9kHz_30MHz	UER_11ac_Ch106_30MHz_1GHz	PAE_11ac_Ch106_1GHz_8GHz	PAE_11ac_Ch106_8GHz_18GHz	PAE_11ac_Ch106_18GHz_40GHz
UNII-2C	**802.11n [40]-Ch134**	PAE_11n_Ch134_9kHz_30MHz	UER_11n_Ch134_30MHz_1GHz	PAE_11n_Ch134_1GHz_8GHz	PAE_11n_Ch134_8GHz_18GHz	PAE_11n_Ch134_18GHz_40GHz
UNII-2C	**802.11a -Ch140**	PAE_11a_Ch140_9kHz_30MHz	UER_11a_Ch140_30MHz_1GHz	PAE_11a_Ch140_1GHz_8GHz	PAE_11a_Ch140_8GHz_18GHz	PAE_11a_Ch140_18GHz_40GHz
UNII-3	**802.11ac -Ch155**	PAE_11ac_Ch155_9kHz_30MHz	UER_11ac_Ch155_30MHz_1GHz	PAE_11ac_Ch155_1GHz_8GHz	PAE_11ac_Ch155_8GHz_18GHz	PAE_11ac_Ch155_18GHz_40GHz

13 AC Power Line Conducted Emissions

13.1 References:

FCC: CFR Part 15.207
IC: RSS-Gen Section 8.9/8.10
The purpose of this test is to measure unwanted radio frequency currents induced in any AC conductor external to the equipment which could conduct interference to other equipment via the AC electrical network.

13.2 Limits:

§15.207 Conducted limits- Intentional Radiators:

(a) Except as shown in paragraphs (b) and (c) of this section of the CFR, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table (1), as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

RSS-Gen Section 8.9/8.10

Except when the requirements applicable to a given device state otherwise, for any licence-exempt radiocommunication device equipped to operate from the public utility AC power supply, either directly or indirectly, the radio frequency voltage that is conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown below. The tighter limit applies at the frequency range boundaries.

Table 1:

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

*Decreases with the logarithm of the frequency.

Analyzer Settings: CISPR Bandwidth- 9 KHz.

13.3 Test Conditions:

Modulation: 802.11a mode; mid channel of operation.

Note: Plots shown here represent the combined worse case emissions for power lines, phases and neutral line.

13.4 Test Result:

Band	Reference to plot	Highest Peak
UNII-1	Cond_Emi_N20_MODE_CH 36	490kHz/46.3dBuV peak
UNII-2/2e	Cond_Emi_N40_MODE_CH102	NF
UNII-3	Cond_Emi_AC80_MODE_CH155	NF

NF = Noise Floor

13.5 Verdict:

Pass

14 Test Equipment and Ancillaries used for tests

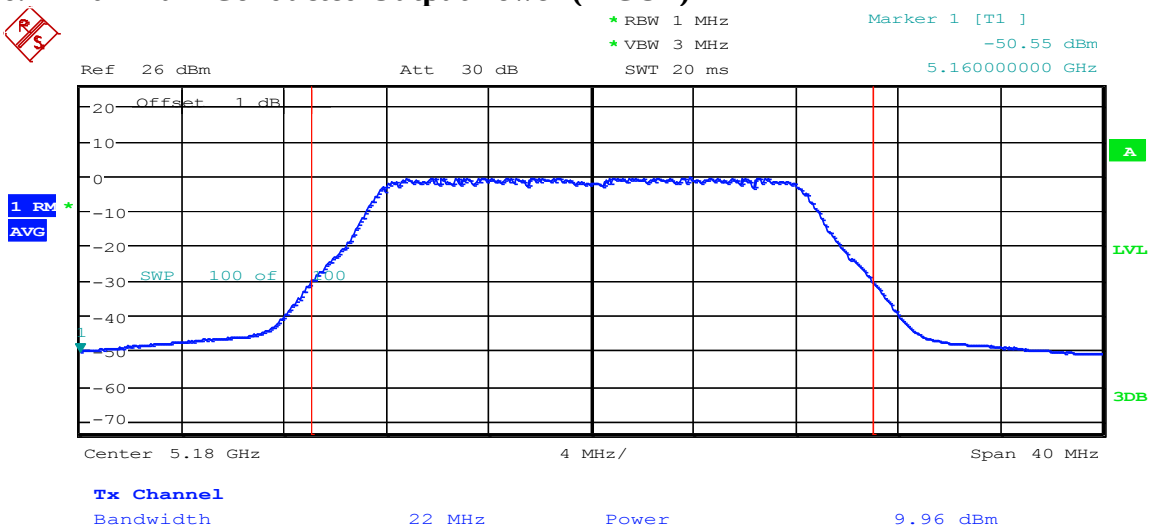
Item Name	Manufacturer	Equipment Type	Model	Serial #	Calibration Cycle	Last Calibration Date
Binconlog Antenna 3141	EMCO	Binconilog Antenna	3141	0005-1186	3 years	4/5/2012
Digital Radio Comm. Tester CMU 200# 4	R&S	Digital Radio Comm. Tester	CMU 200# 4	110229	2 Years	6/15/2013
Digital Radio Comm. Tester CMU 200 #1	R&S	Digital Radio Comm. Tester	CMU 200 #1	101821	2 Years	6/17/2013
Digital Radio Comm. Tester CMU 200 #2	R&S	Digital Radio Comm. Tester	CMU 200 #2	109879	2 Years	6/15/2013
Digital Radio Comm. Tester CMU 200 #3	R&S	Digital Radio Comm. Tester	CMU 200 #3	110759	2 Years	6/15/2013
ESU Receiver	R&S	EMI Receiver	ESU40	100251	2 Years	9/13/2013
Horn Antenna 3115	EMCO	Horn Antenna	3115	35114	3 years	3/6/2012
Horn Antenna 3116	EMCO	Horn Antenna	3116	70497	3 years	3/2/2012
LISN ESH3-Z5	R&S	LISN	ESH3-Z5	836679/003	2 Years	6/18/2013
LISN ESH3-Z6	R&S	LISN	ESH3-Z6	836154/011	2 Years	6/16/2013
Loop Antenna 6512	ETS Lindgren	Loop Antenna	6512	49838	3 years	5/13/2014
Thermometer Humidity TM325	Dickson	Thermometer Humidity	TM325	5285354	2 Years	4/15/2013
FSU 26	R&S	Spectrum Analyzer	FSU 26	100189	2 Years	6/1/2013
SMP04	R&S	Signal Generator	SMP04	100151	2 Years	6/17/2013
DFS Generator / PXI-5421 card	National Instruments	NI PXI-1042		E965F1	3 years	7/3/2012
DFS Upconverter PXI-5610 card	National Instruments	NI PXI-1042		E93740	3 years	6/29/2012

15 Revision History

Date	Report Name	Changes to report	Report prepared by
2014-09-30	EMC_INTEL-054-14001_UNII	First official version	Jennifer Huang
2014-12-3	EMC_INTEL-054-14001_UNII_Rev1	Add band edges for U-NII-3, Add avg results for restricted band edges	Franz Engert
2014-12-15	EMC_INTEL-054-14001_UNII_Rev2	Some editorial corrections required	Jennifer Huang

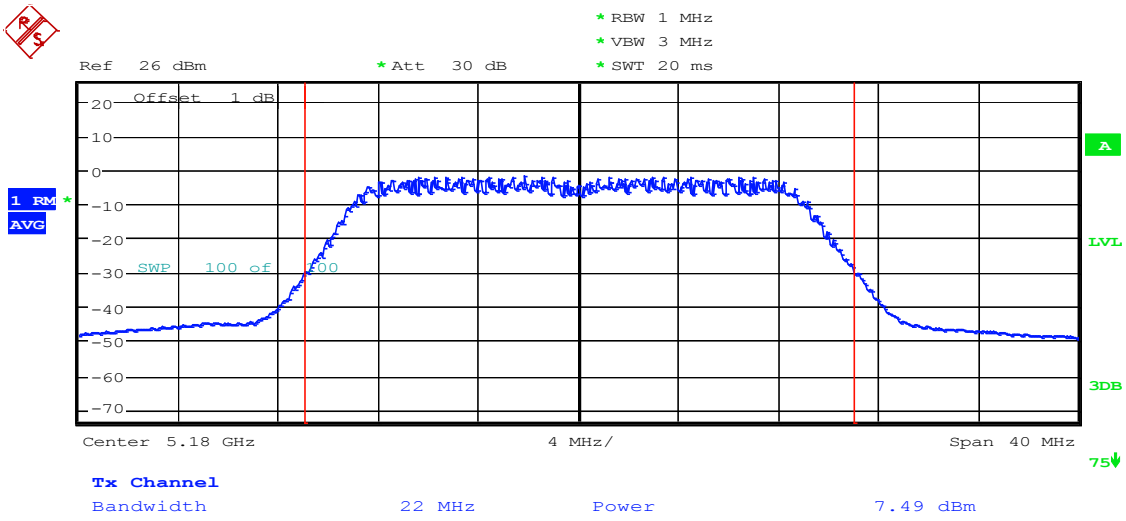
16 Annex A to EMC_Intel-054-14001_UNII

16.1 Maximum Conducted Output Power (MCOP)



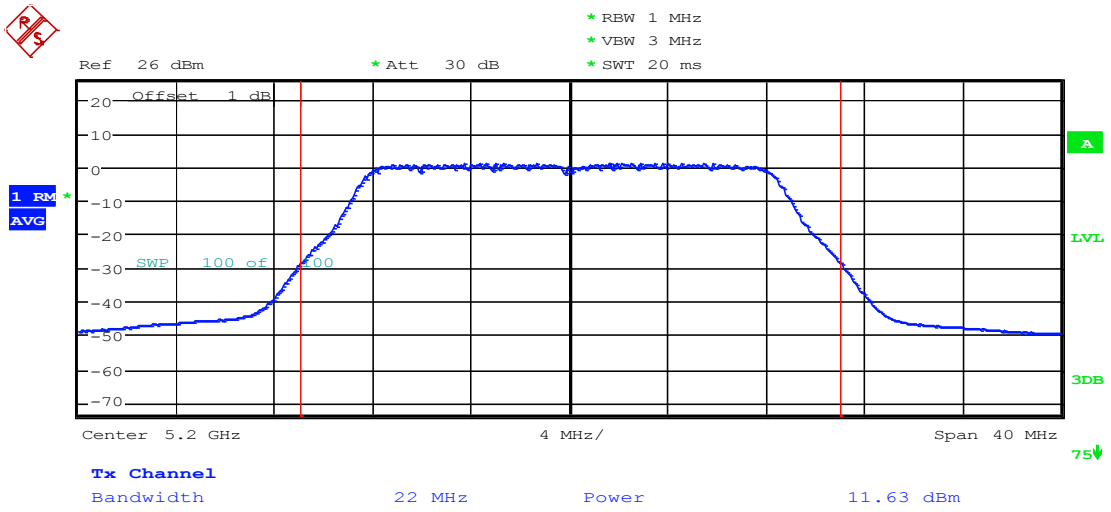
Date: 8.AUG.2014 11:27:08

16.1.1 MCOP_Ch36_a_Mode



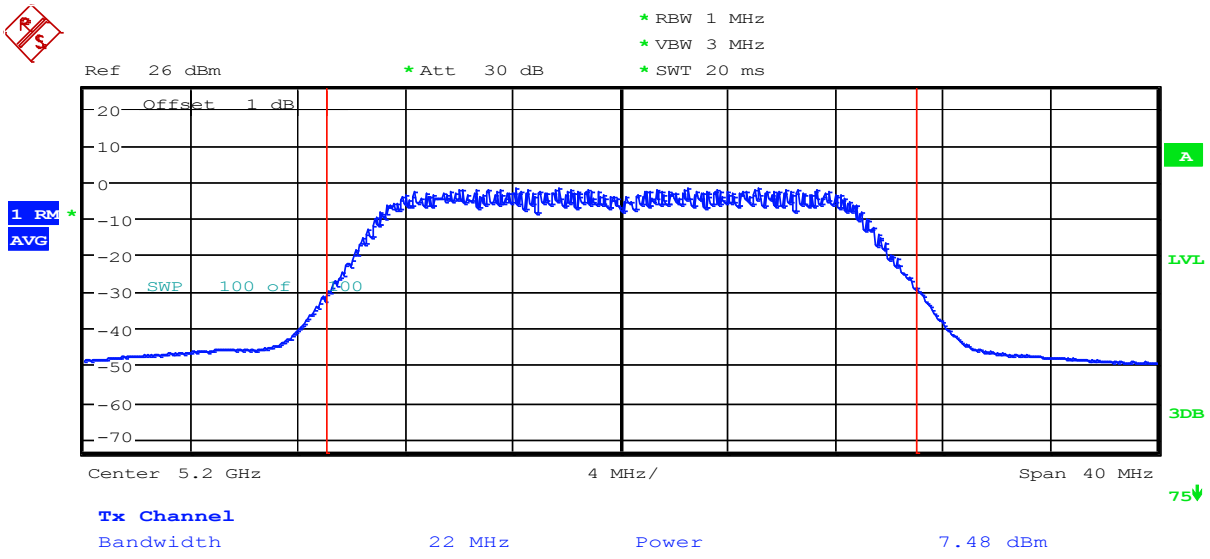
Date: 8.AUG.2014 15:14:37

16.1.2 MCOP_Ch36_n_Mode



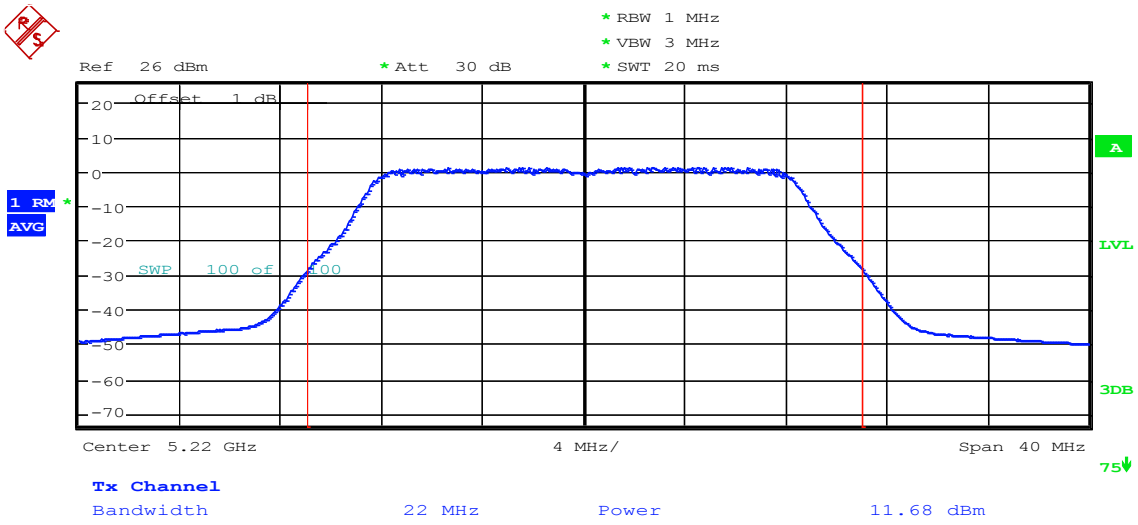
Date: 8.AUG.2014 14:35:47

16.1.3 MCOP_Ch40_a_Mode



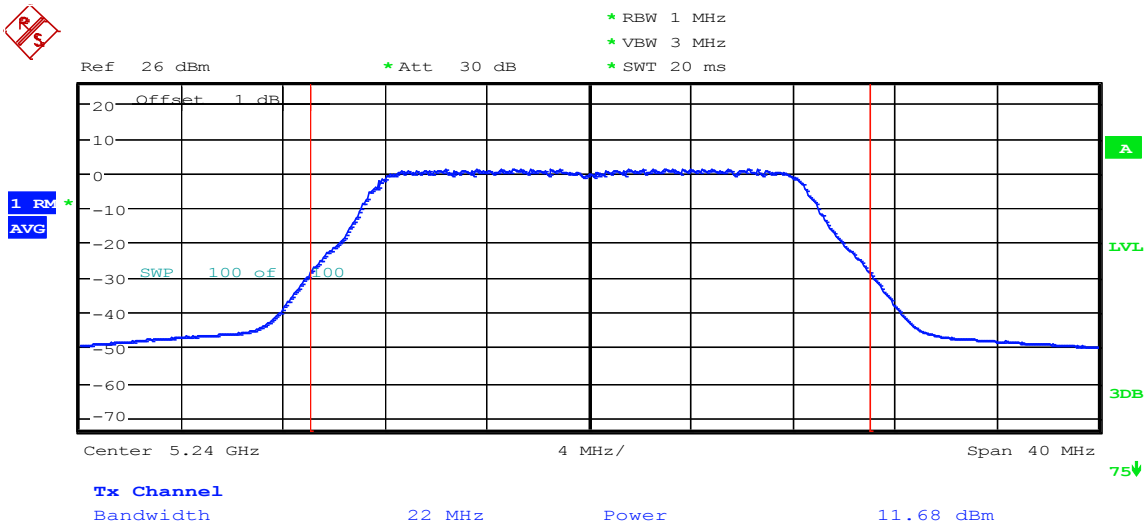
Date: 8.AUG.2014 15:19:42

16.1.4 MCOP_Ch40_n_Mode



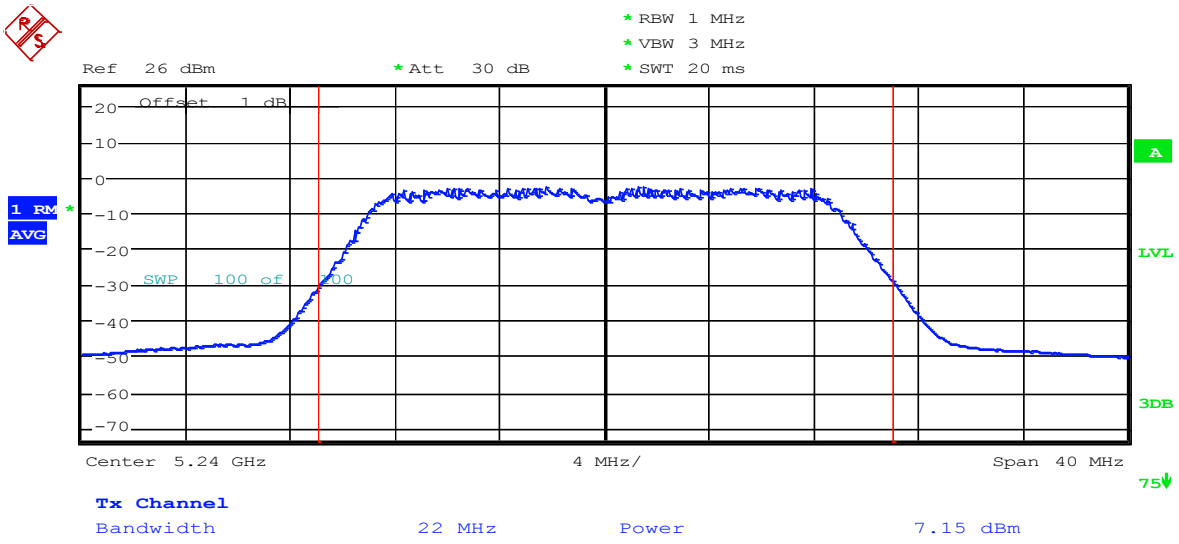
Date: 8.AUG.2014 14:42:07

16.1.5 MCOP_Ch44_a_Mode



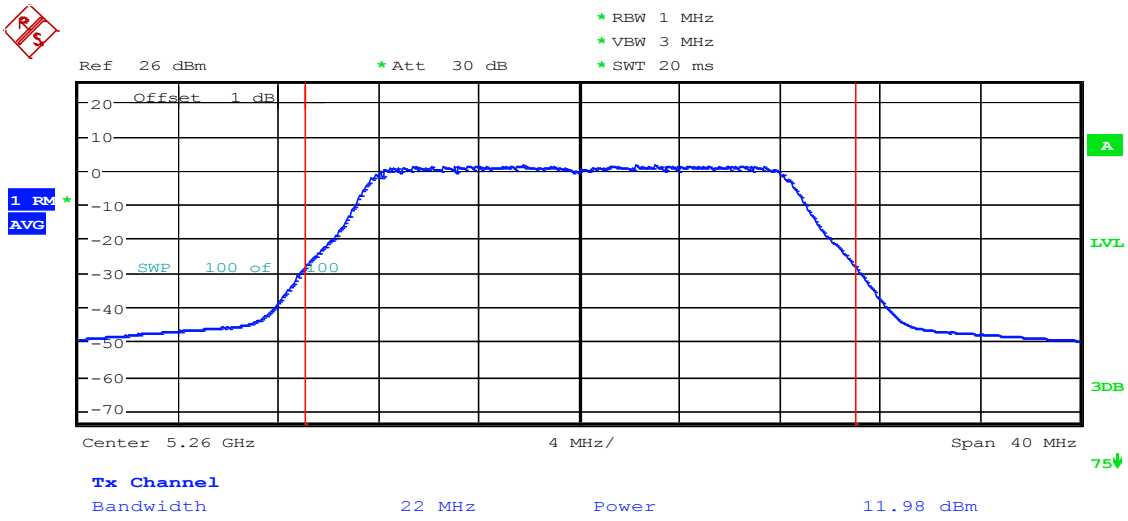
Date: 8.AUG.2014 14:45:14

16.1.6 MCOP_Ch48_a_Mode



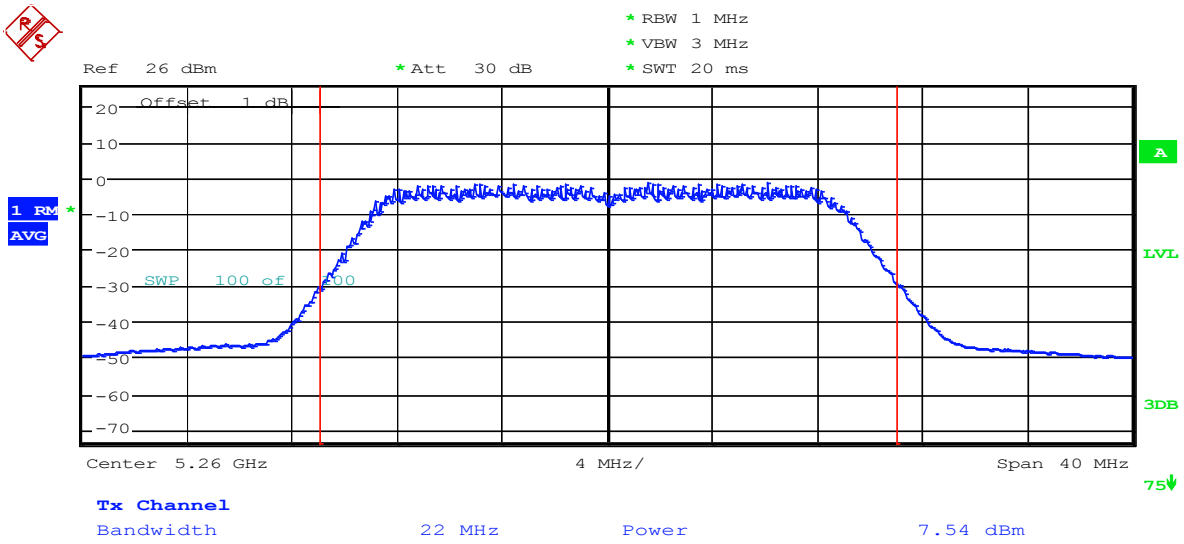
Date: 8.AUG.2014 15:22:33

16.1.7 MCOP_Ch48_n_Mode



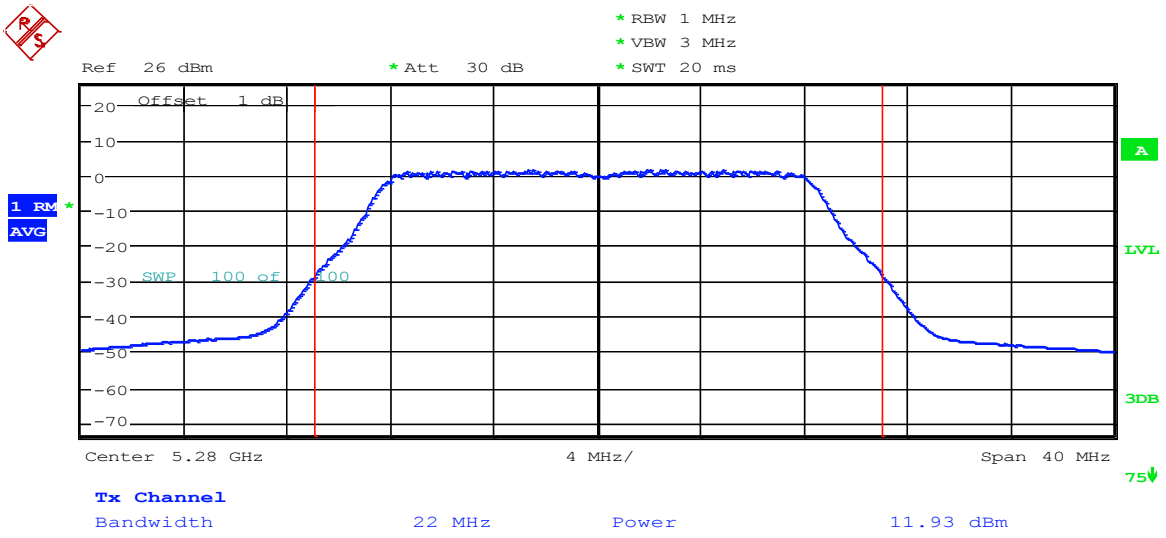
Date: 8.AUG.2014 14:49:24

16.1.8 MCOP_Ch52_a_Mode



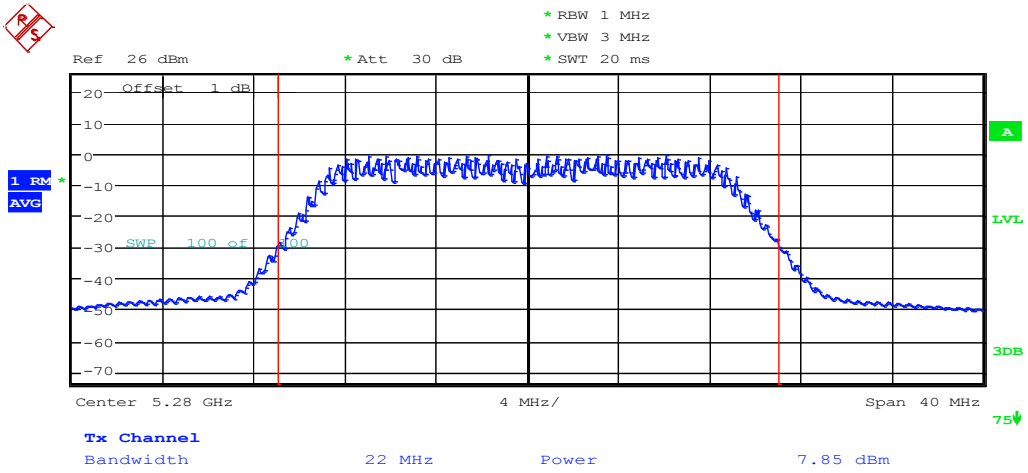
Date: 8.AUG.2014 15:25:50

16.1.9 MCOP_Ch52_n_Mode



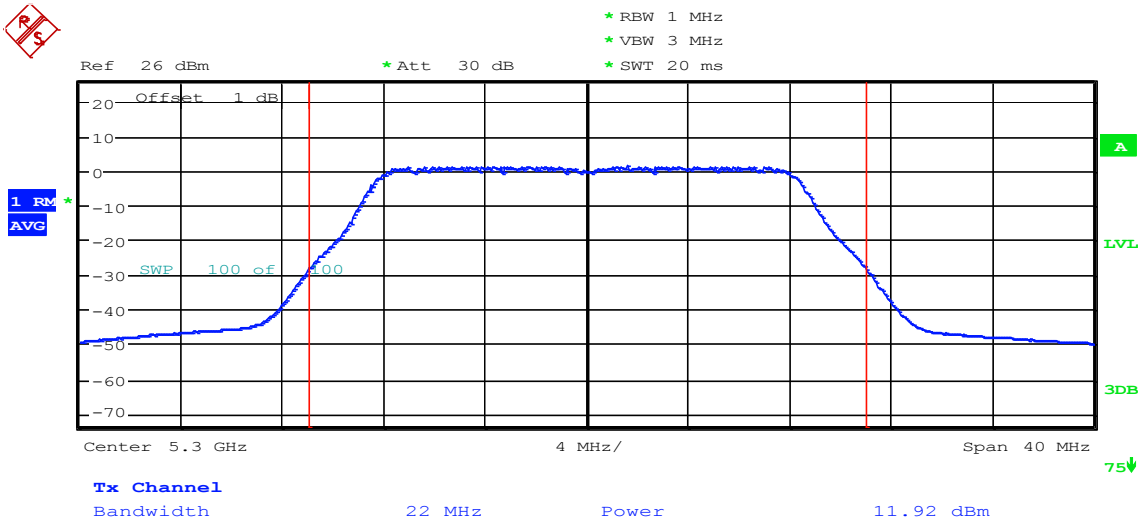
Date: 8.AUG.2014 14:52:04

16.1.10MCOP_Ch56_a_Mode



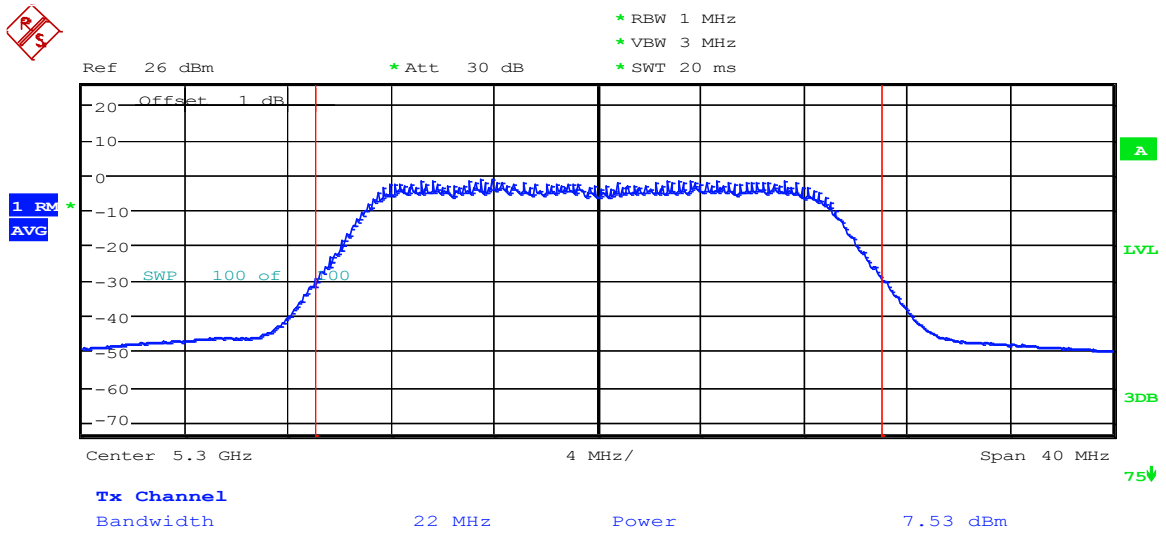
Date: 8.AUG.2014 15:28:18

16.1.11MCOP_Ch56_n_Mode



Date: 8.AUG.2014 14:54:13

16.1.12MCOP_Ch60_a_Mode



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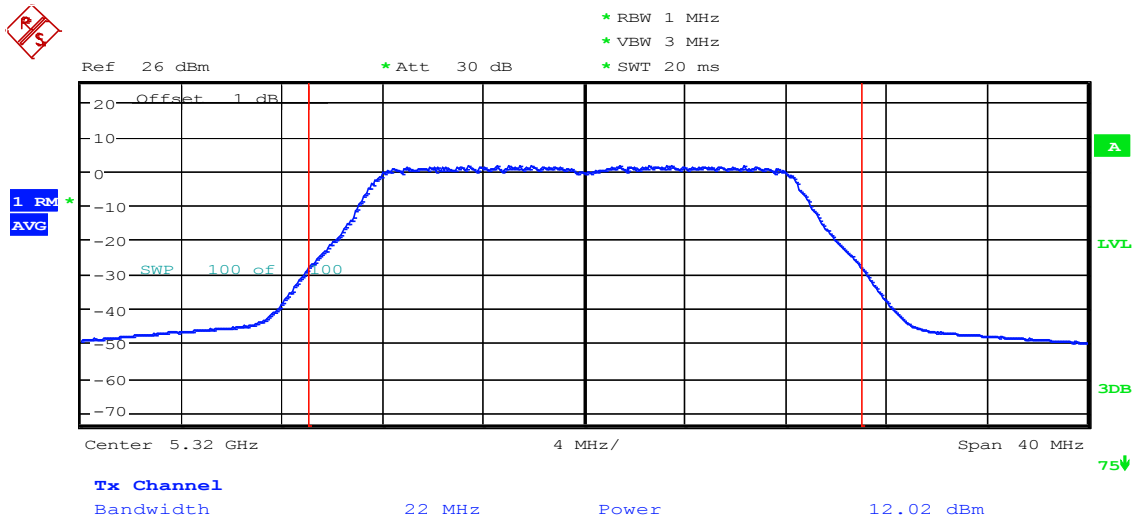
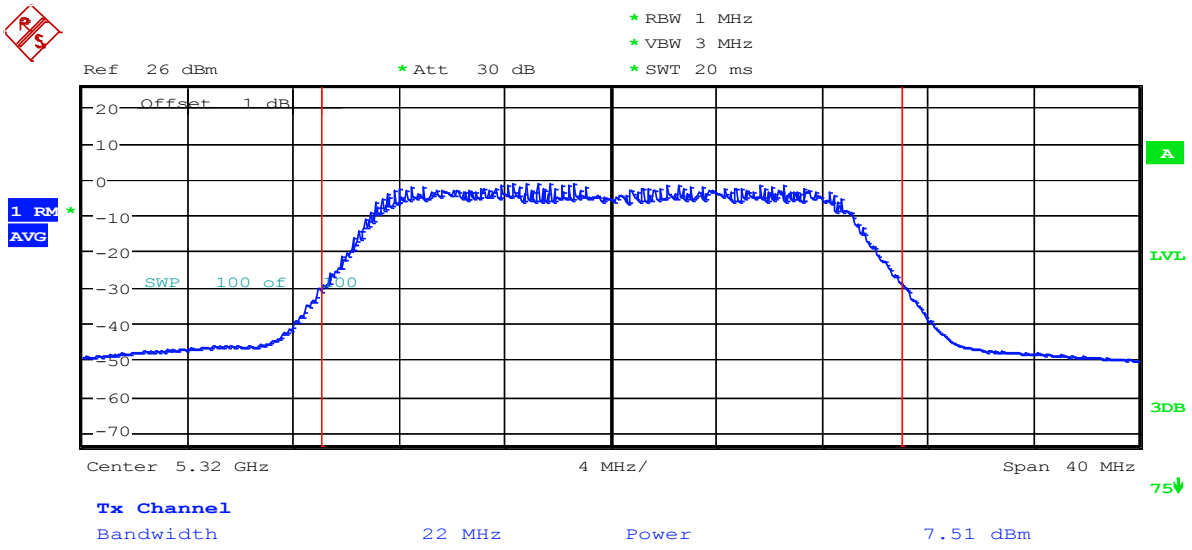
16.1.13MCOP_Ch60_n_Mode



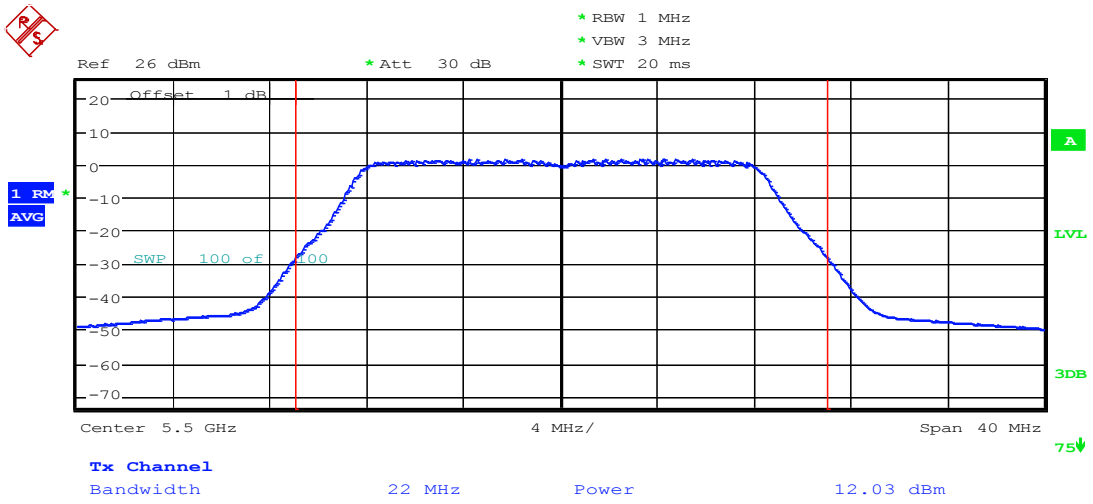
Date: 8.AUG.2014 14:56:39

16.1.14MCOP_Ch64_a_Mode



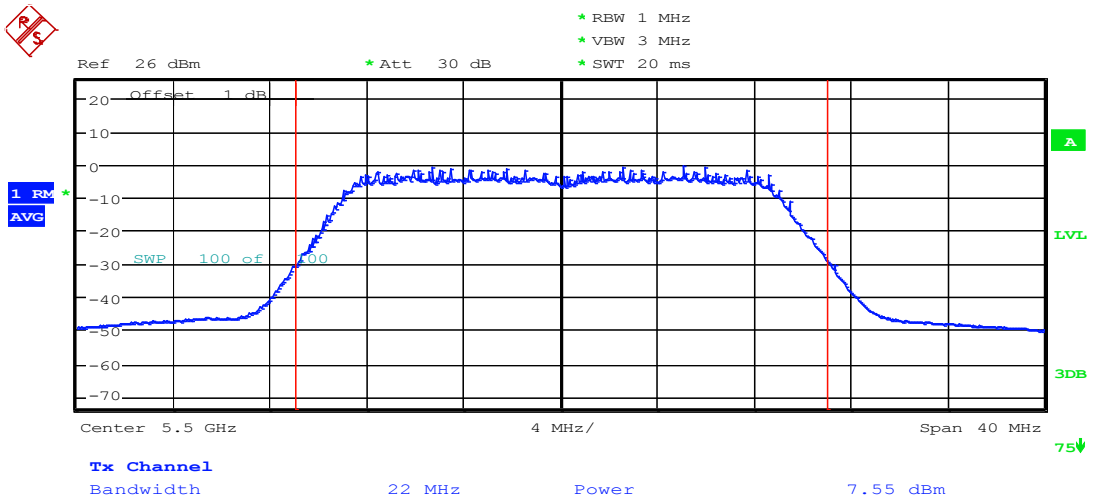
Date: 8.AUG.2014 15:32:43

16.1.15MCOP_Ch64_n_Mode



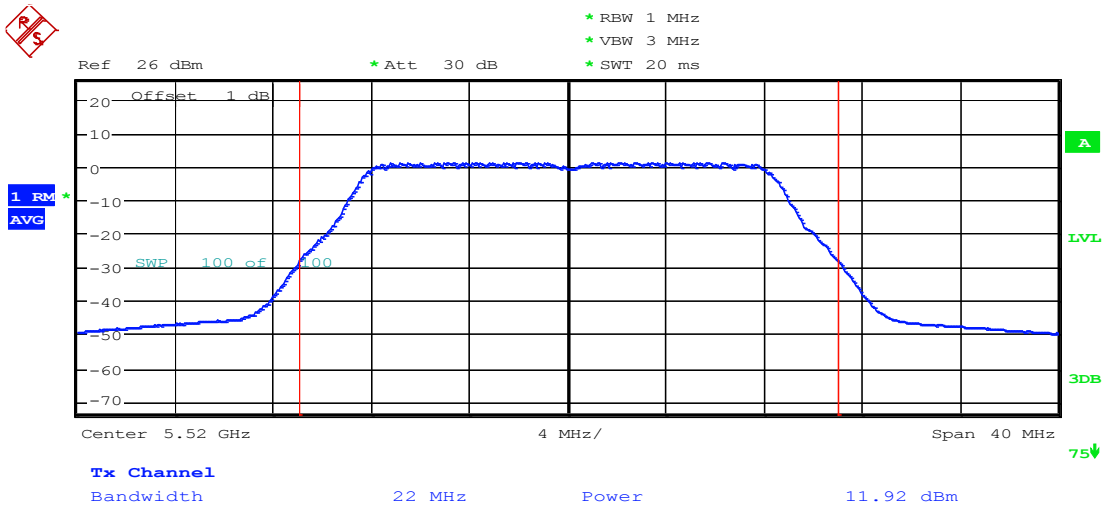
Date: 8.AUG.2014 15:00:10

16.1.16 MCOP_Ch100_a_Mode



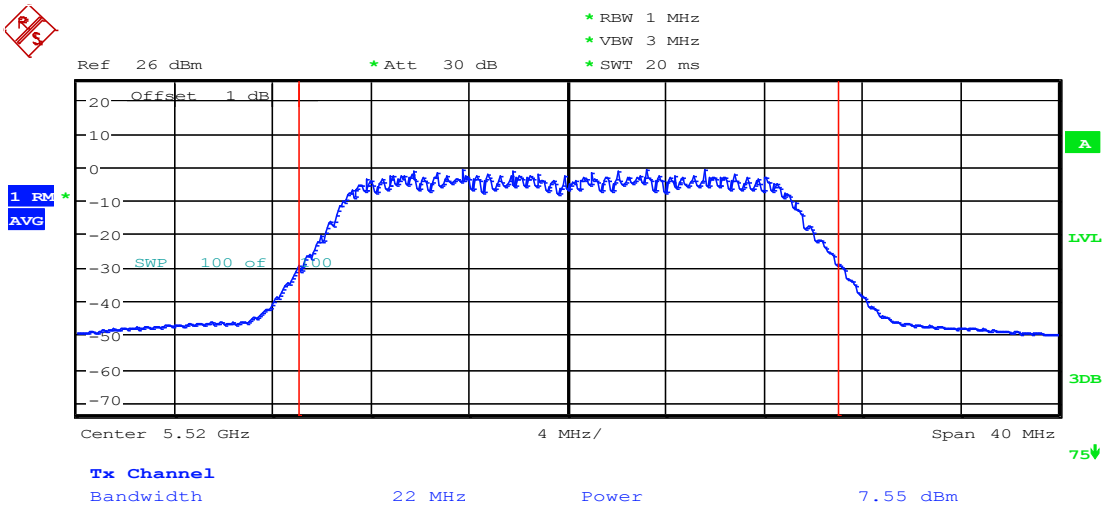
Date: 8.AUG.2014 15:36:01

16.1.17 MCOP_Ch100_n_Mode



Date: 8.AUG.2014 15:02:37

16.1.18 MCOP_Ch104_a_Mode



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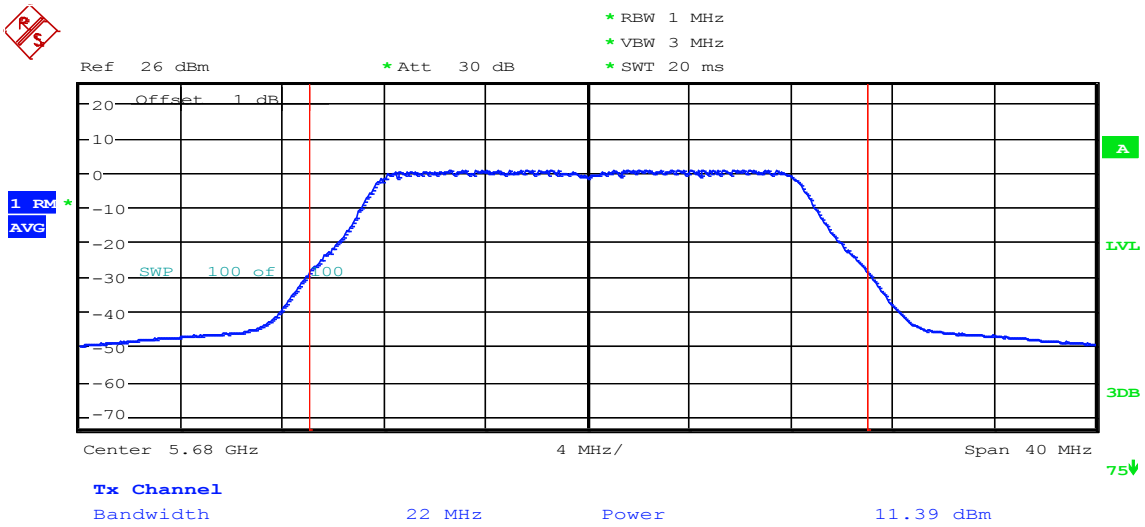
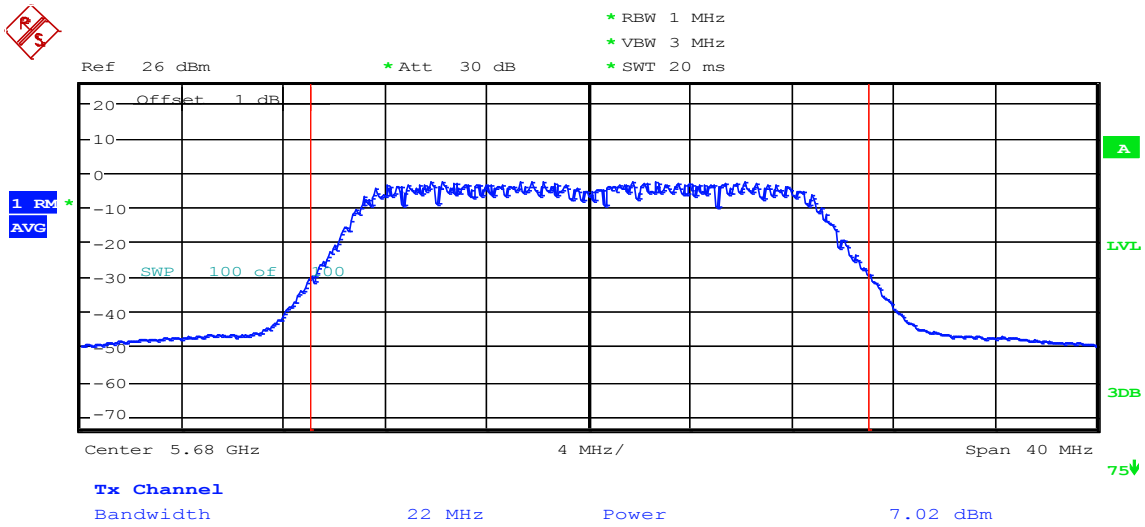
MCOP_Ch104_n_Mode



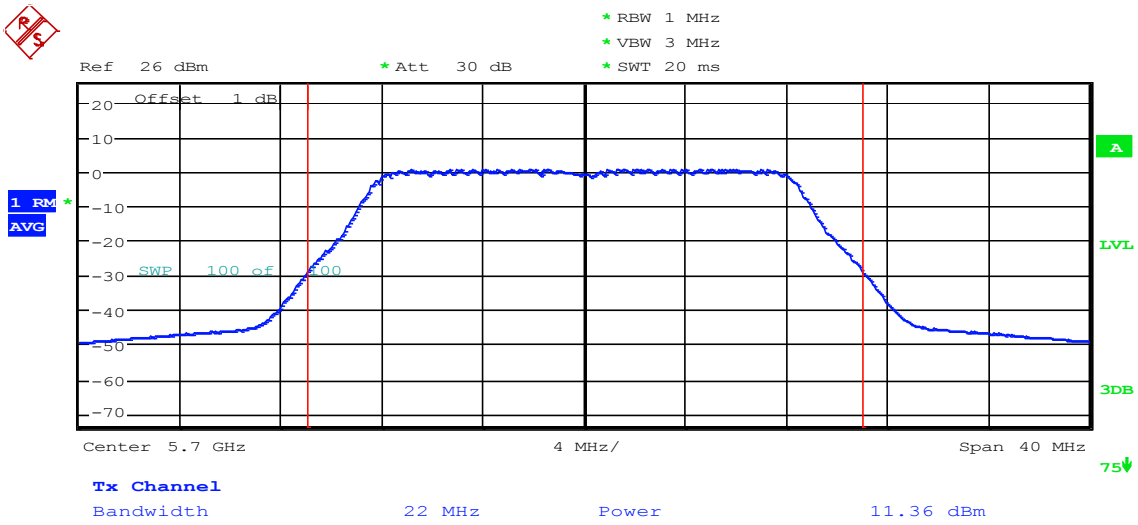
Date: 8.AUG.2014 15:05:11

16.1.19MCOP_Ch136_a_Mode



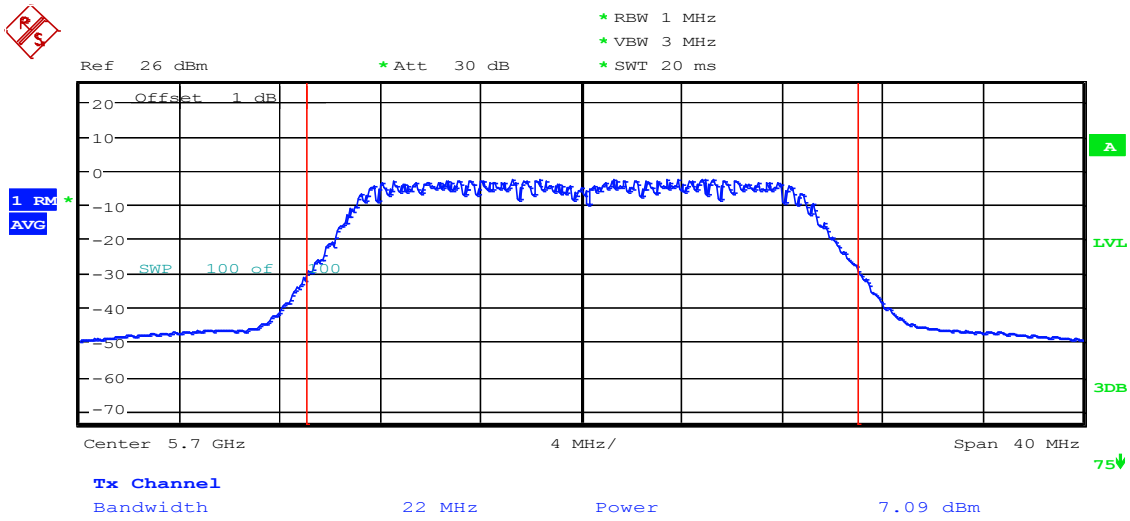
Date: 8.AUG.2014 16:08:49

MCOP_Ch136_n_Mode



Date: 8.AUG.2014 15:07:40

16.1.20MCOP_Ch140_a_Mode



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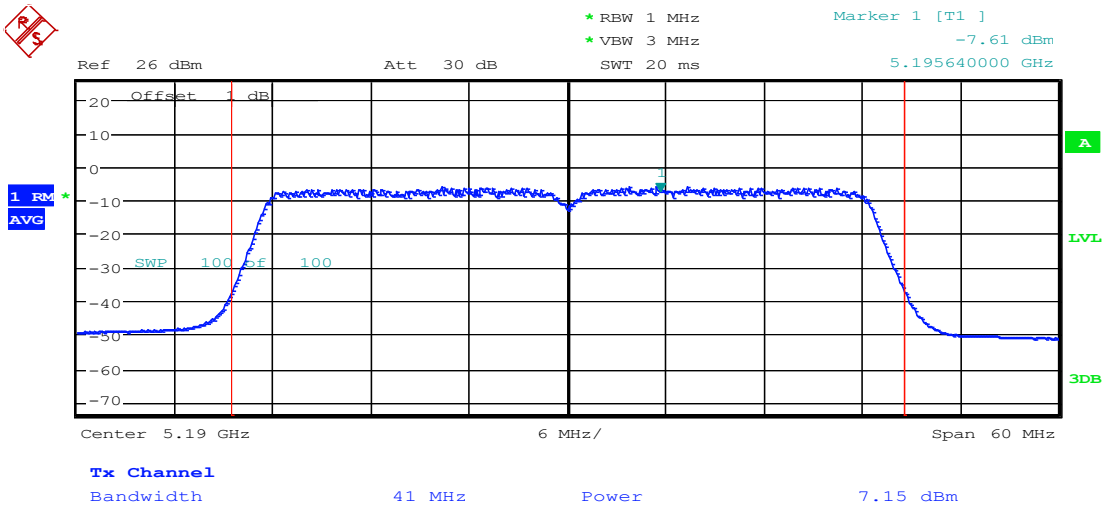
16.1.21 MCOP_Ch140_n_Mode



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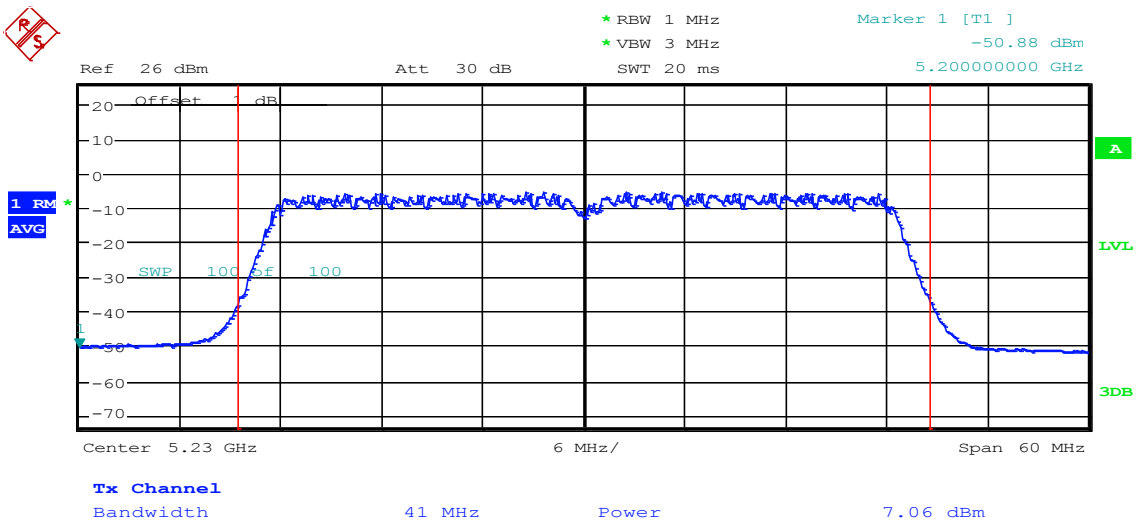
Date: 12.AUG.2014 18:38:06

16.1.22MCOP_Ch38_n40_Mode



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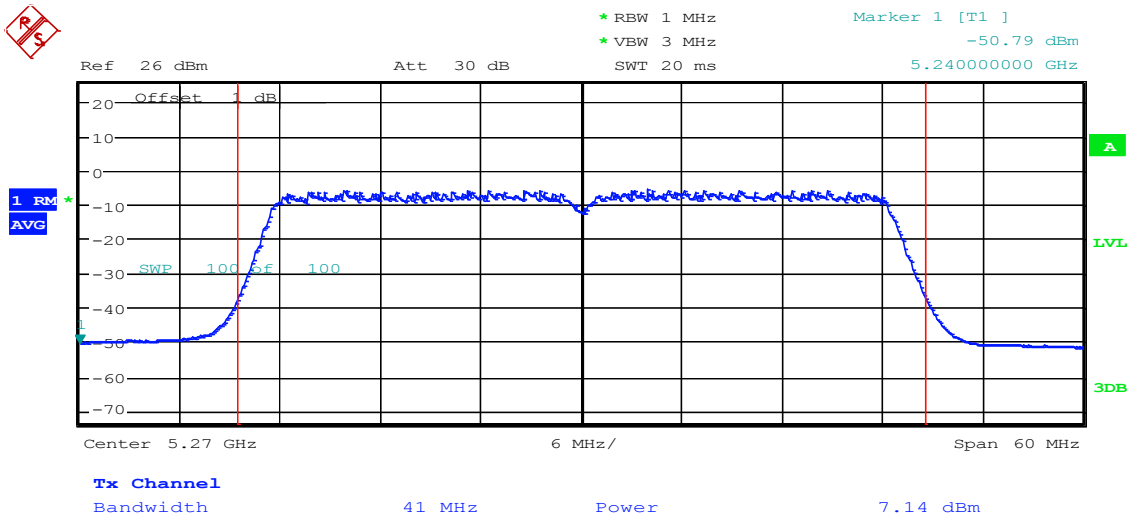
Date: 12.AUG.2014 18:39:12

16.1.23 MCOP_Ch46_n40_Mode



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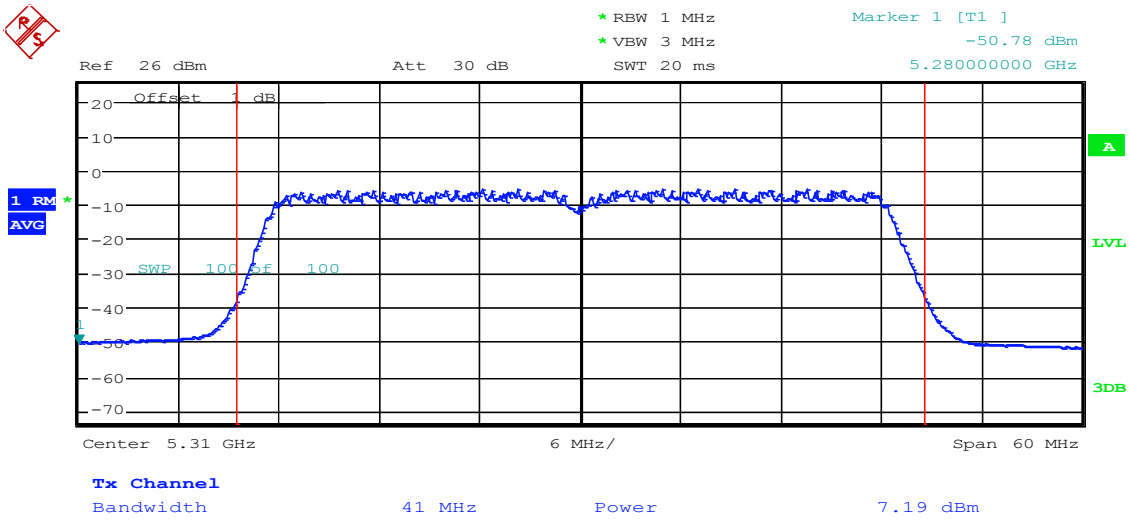
Date: 12.AUG.2014 18:40:32

16.1.24MCOP_Ch54_n40_Mode



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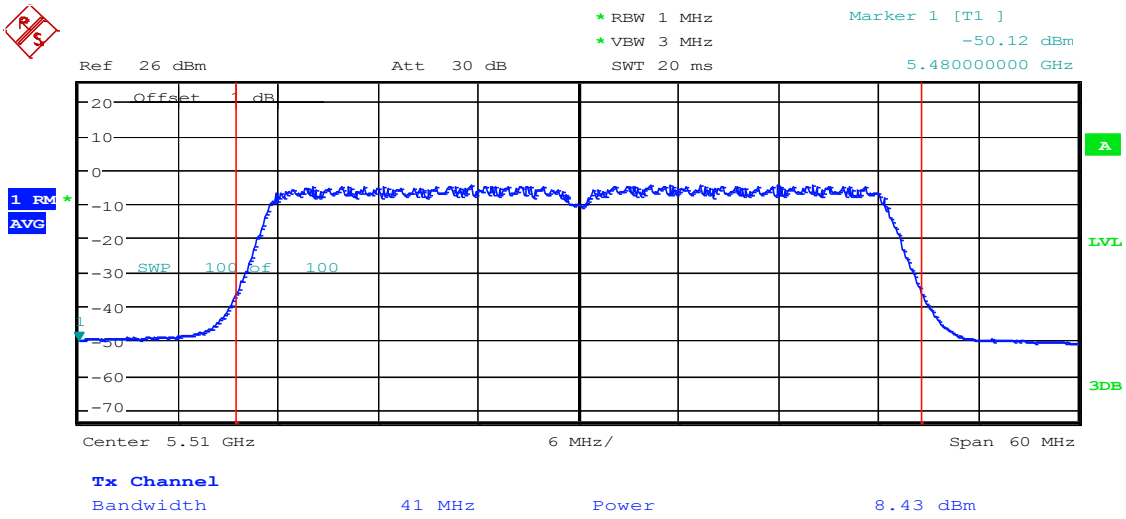
Date: 12.AUG.2014 18:41:29

16.1.25 MCOP_Ch62_n40_Mode



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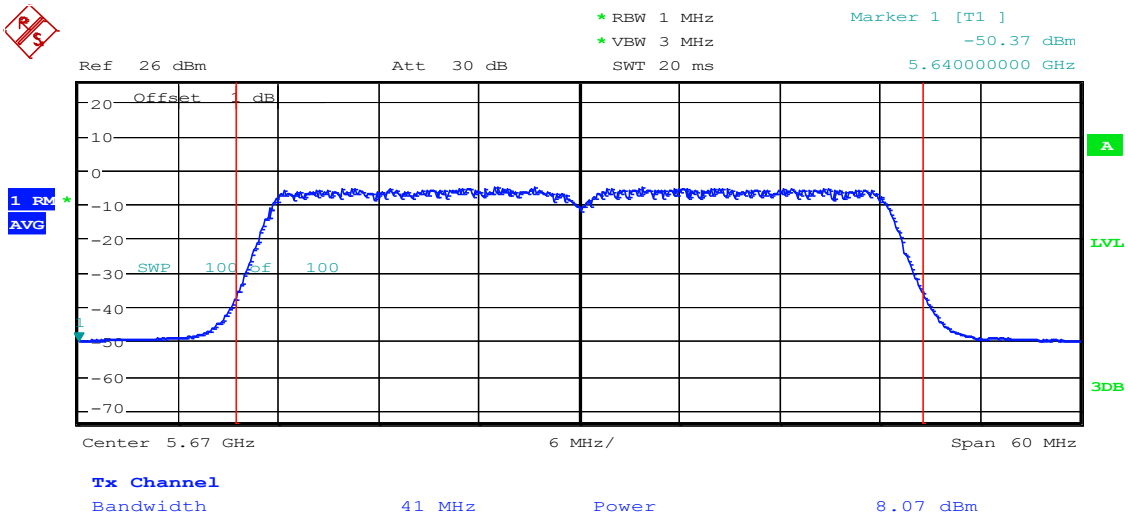
Date: 12.AUG.2014 18:42:31

16.1.26 MCOP_Ch102_n40_Mode



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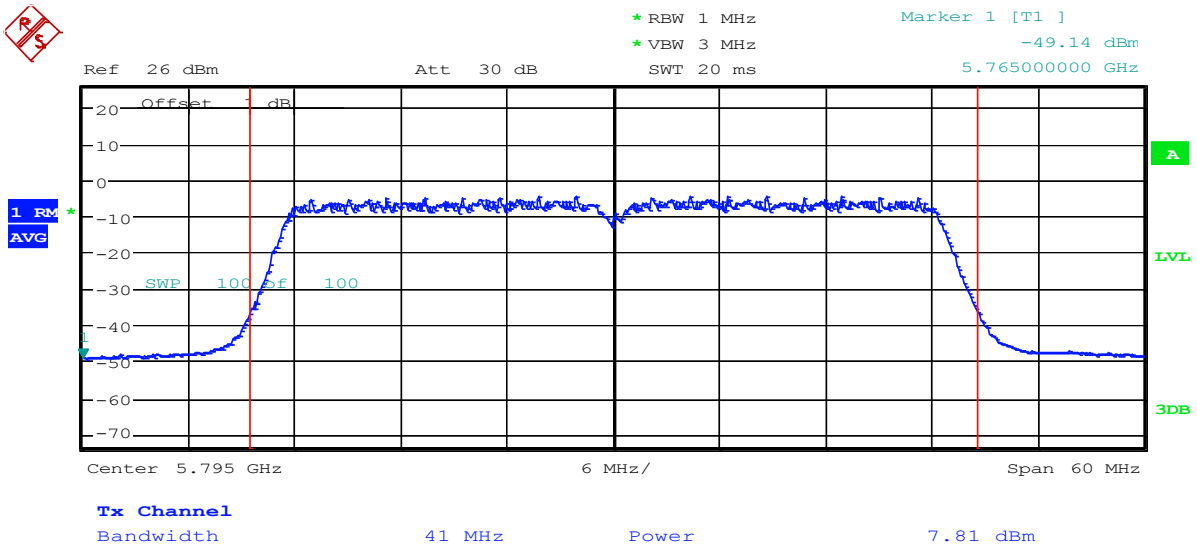
Date: 12.AUG.2014 18:44:16

16.1.27 MCOP_Ch134_n40_Mode



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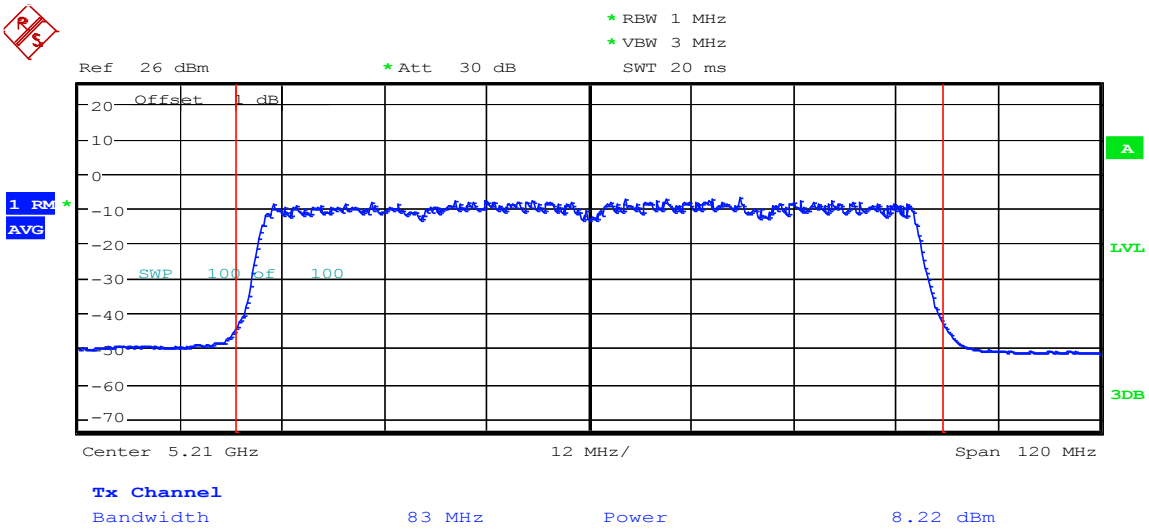
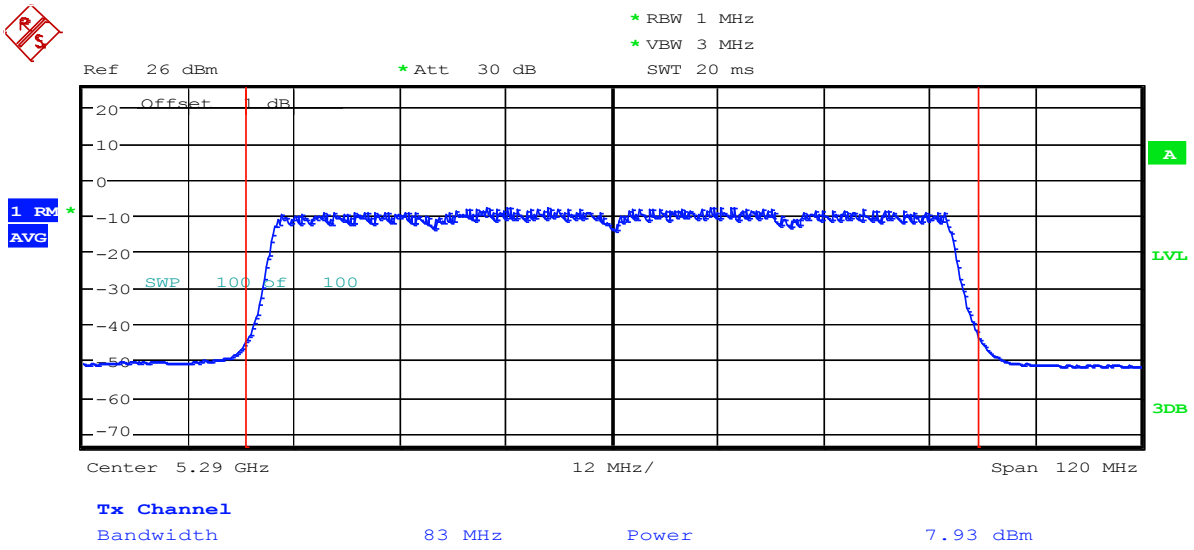
Date: 12.AUG.2014 18:45:06

16.1.28 MCOP_Ch159_n40_Mode



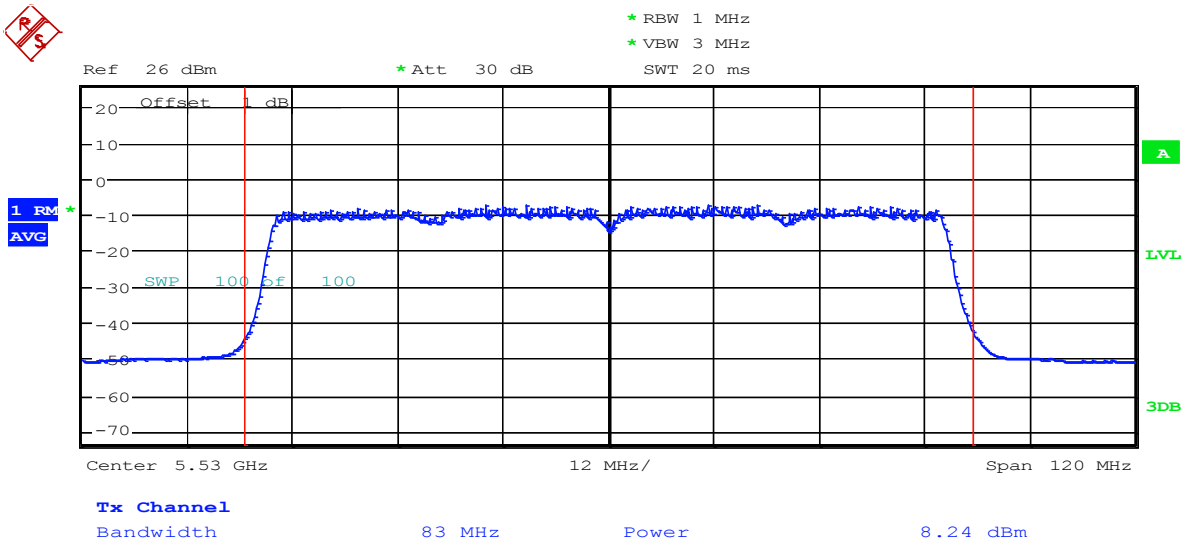
Date: 11.AUG.2014 10:44:18

16.1.29MCOP_Ch42_AC80_Mode



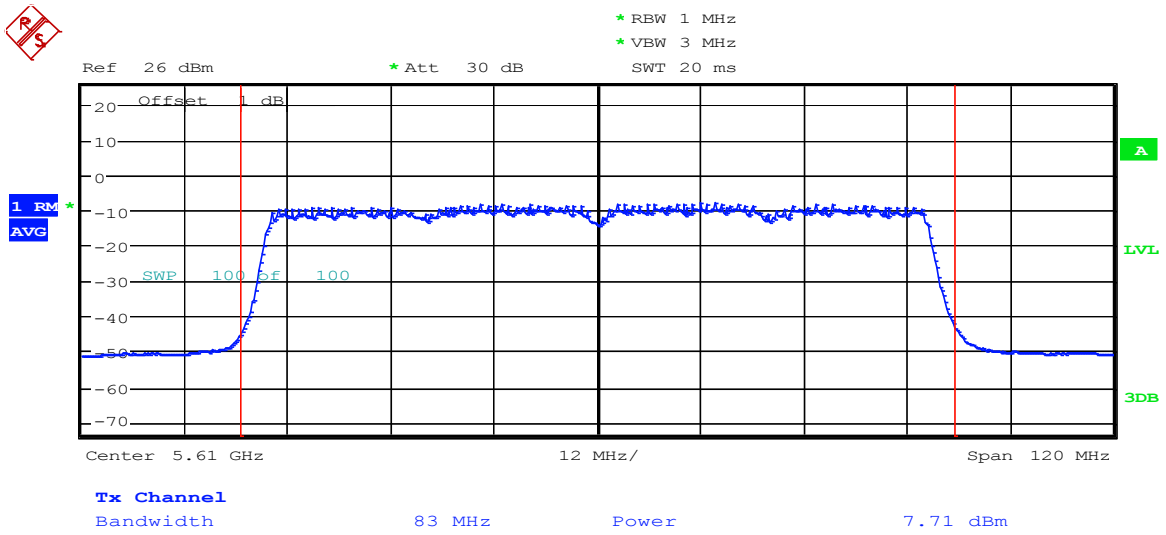
Date: 11.AUG.2014 10:54:04

16.1.30 MCOP_Ch58_AC80_Mode



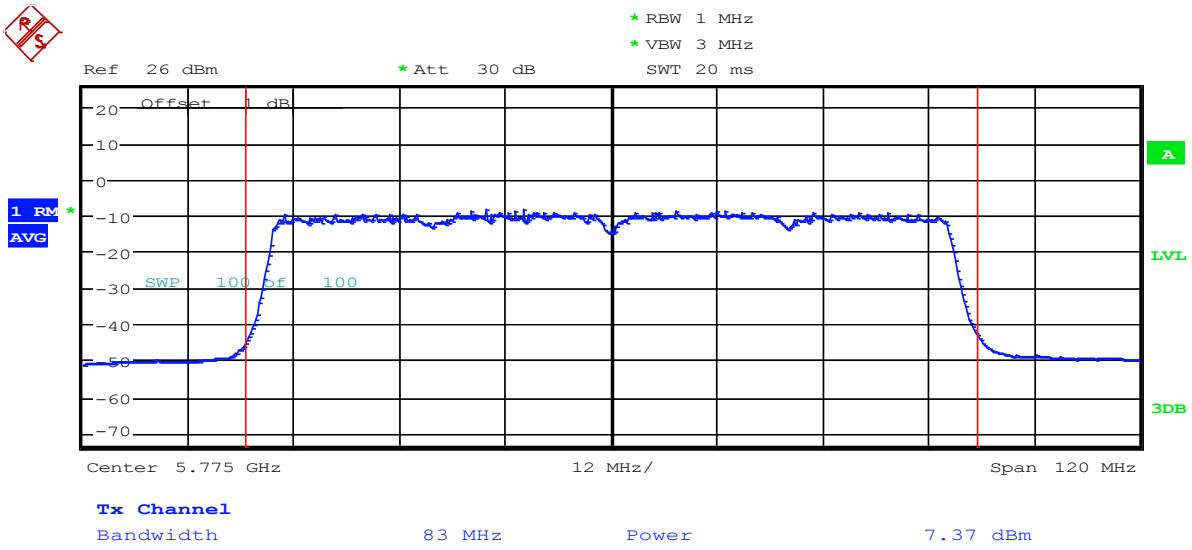
Date: 11.AUG.2014 11:00:08

16.1.31 MCOP_Ch106_AC80_Mode



Date: 11.AUG.2014 11:02:51

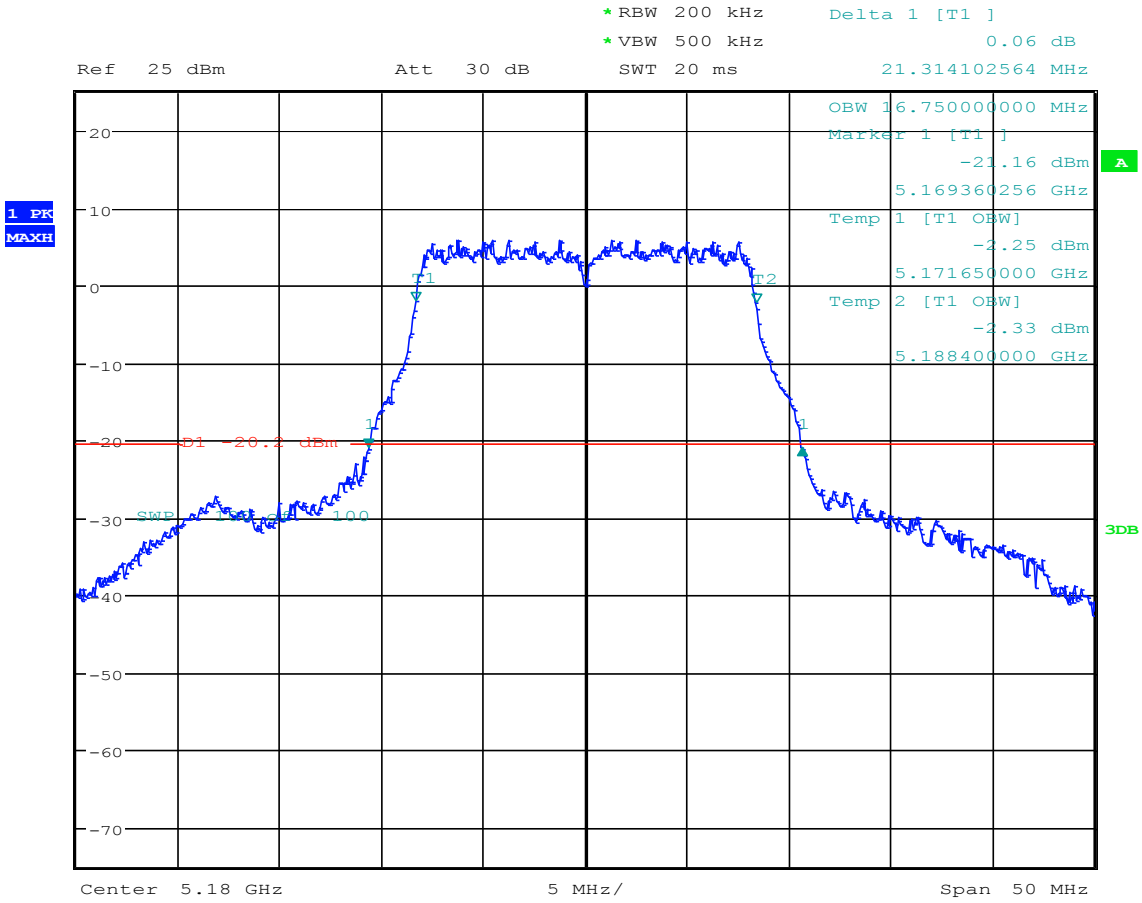
16.1.32 MCOP_Ch122_AC80_Mode



Date: 11.AUG.2014 11:05:04

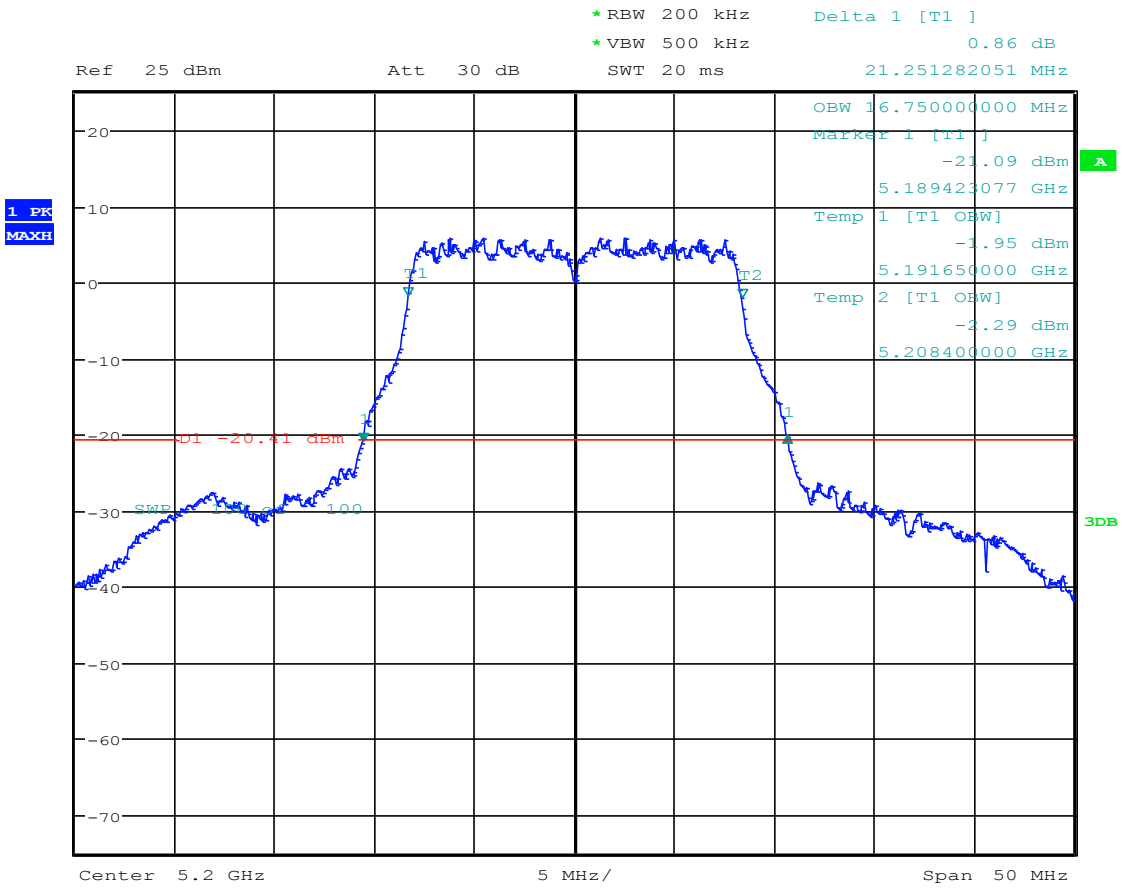
16.1.33 MCOP_Ch155_AC80_Mode

16.2 Occupied and Emission Bandwidth (OEB)



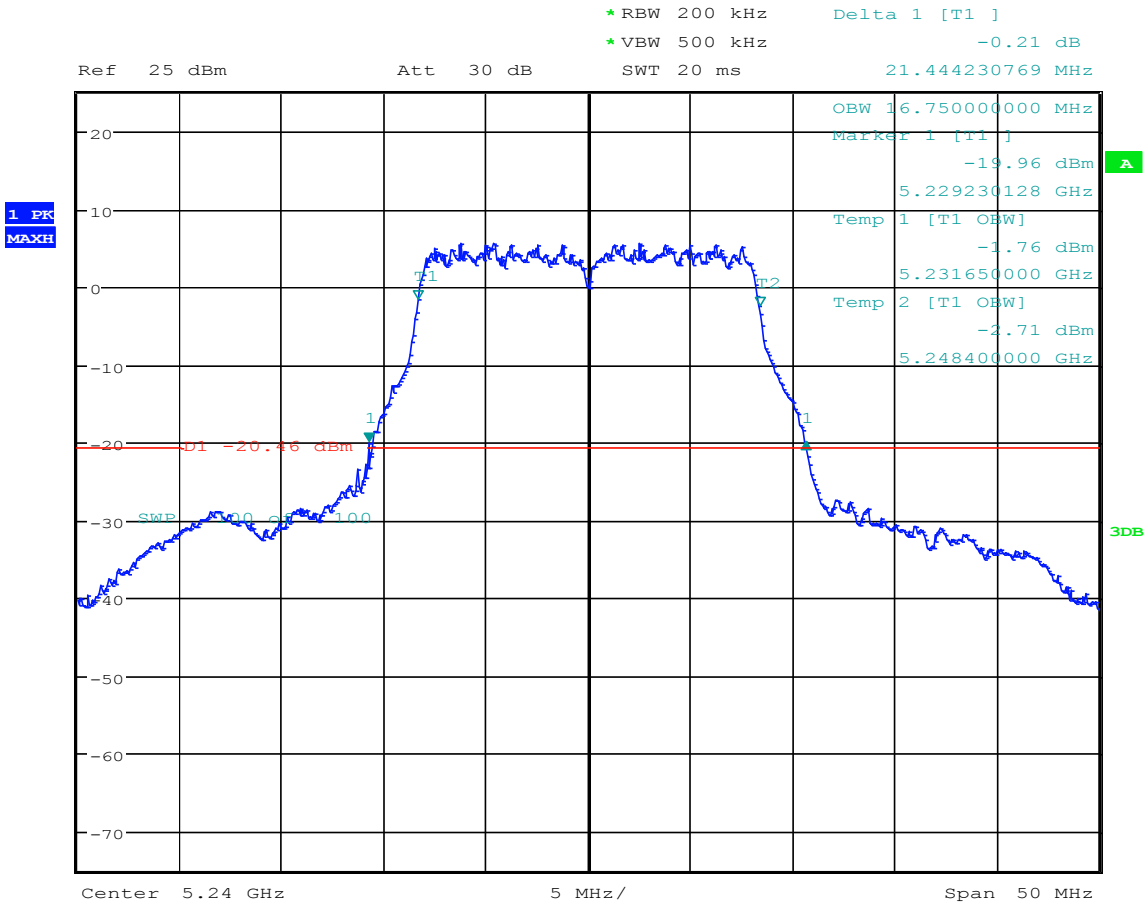
Date: 30.JUL.2014 13:05:24

16.2.1 OEB_Ch36_a_Mode



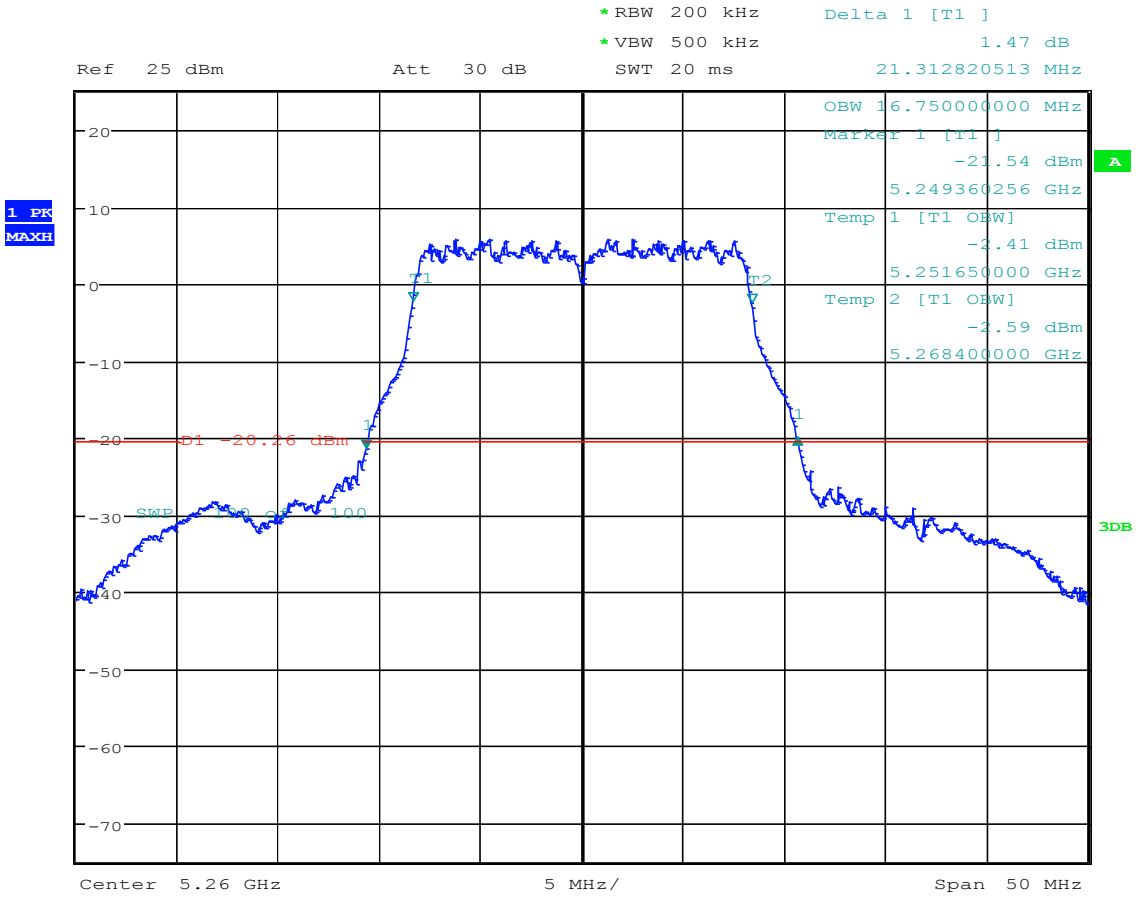
Date: 30.JUL.2014 13:14:59

16.2.2 OEB_Ch40_a_Mode

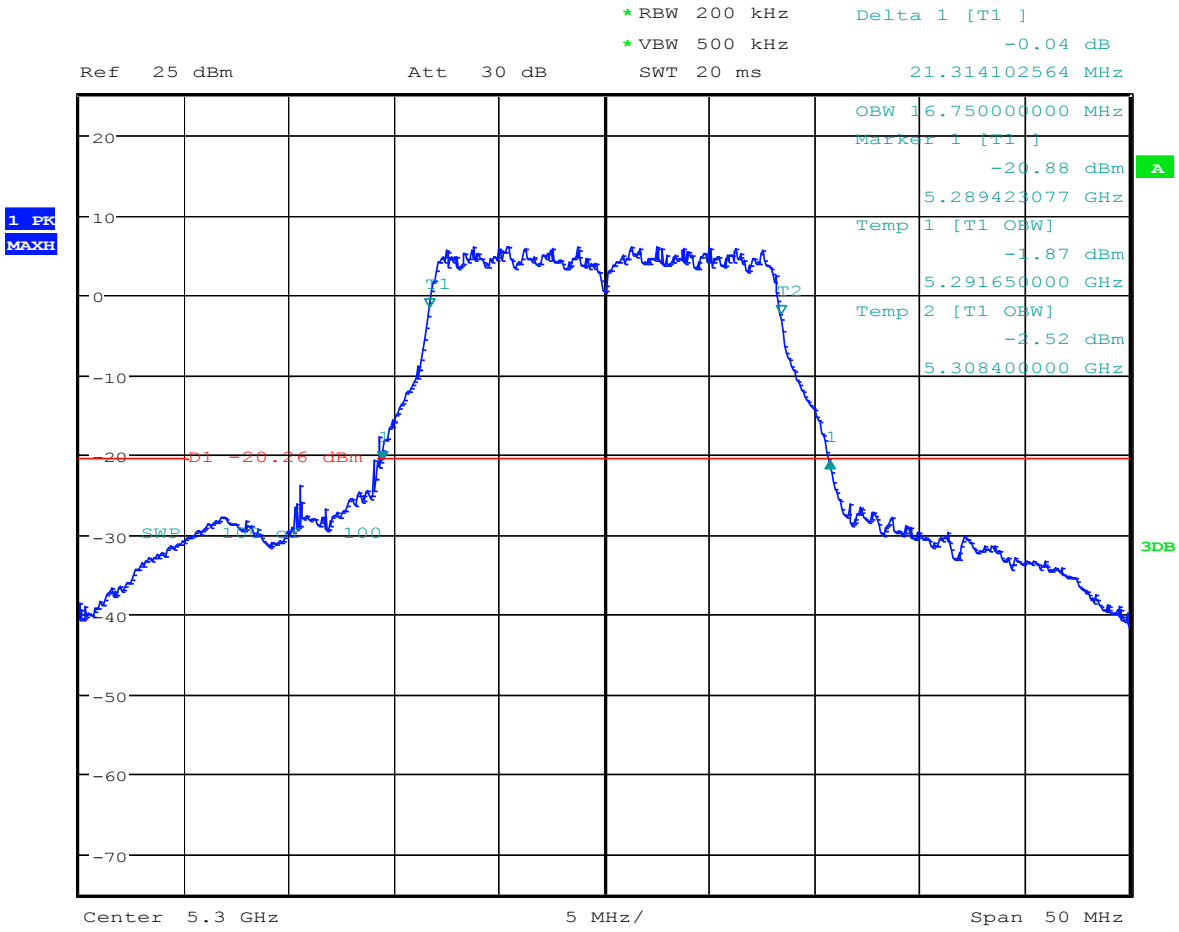


Date: 30.JUL.2014 13:20:00

16.2.3 OEB_Ch48_a_Mode

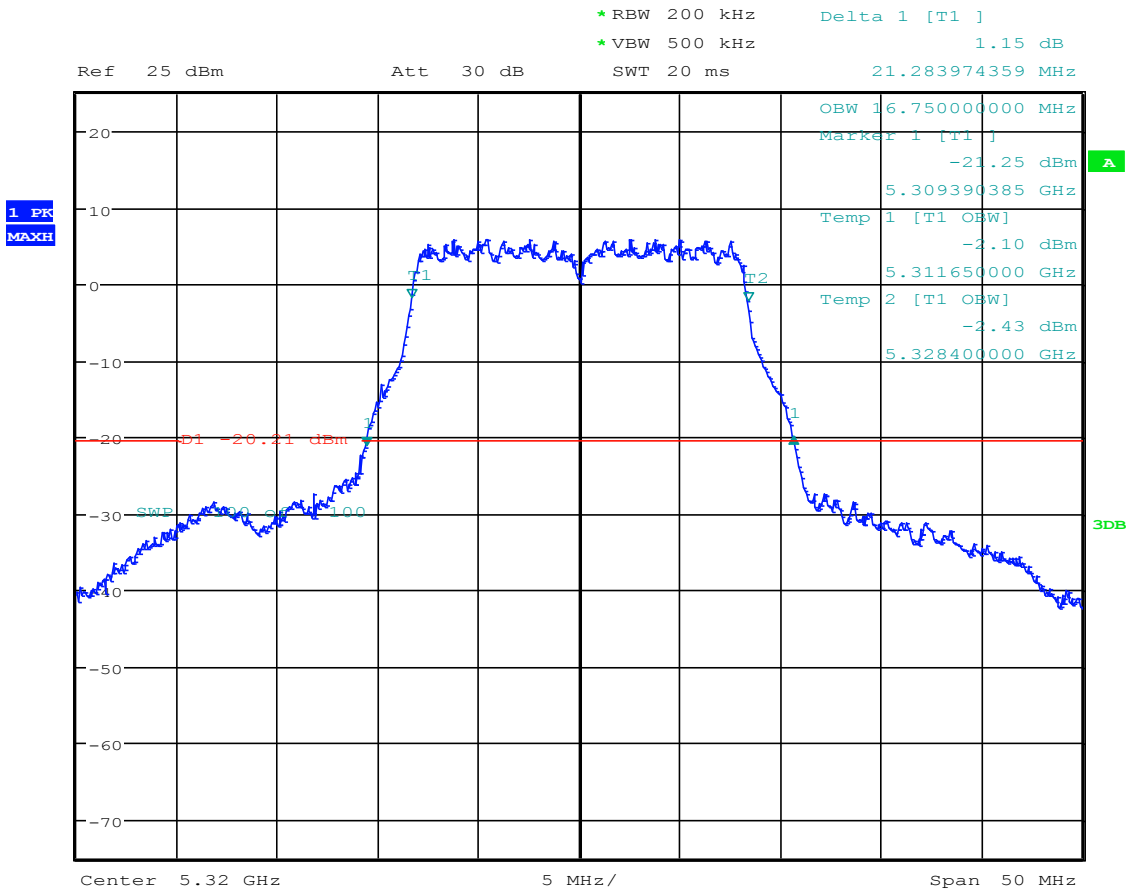


16.2.4 OEB_Ch52_a_Mode



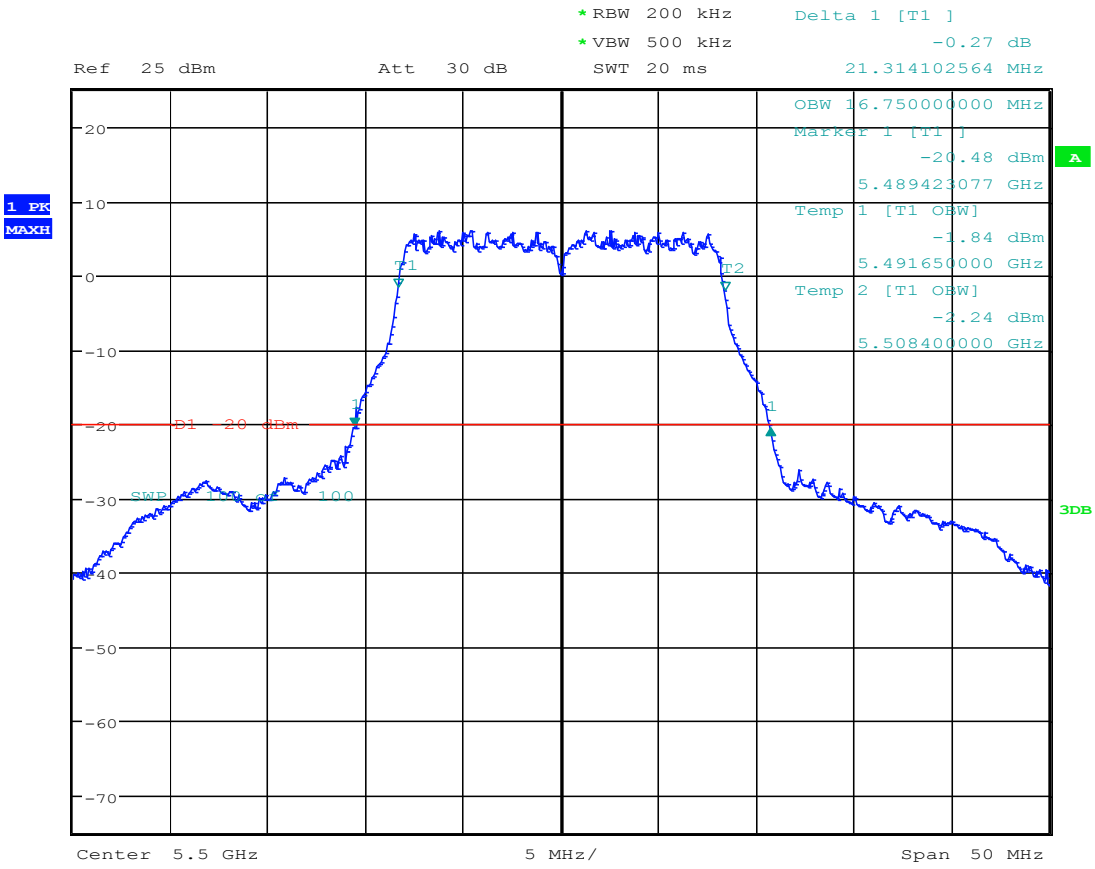
Date: 30.JUL.2014 13:36:46

16.2.5 OEB_Ch60_a_Mode



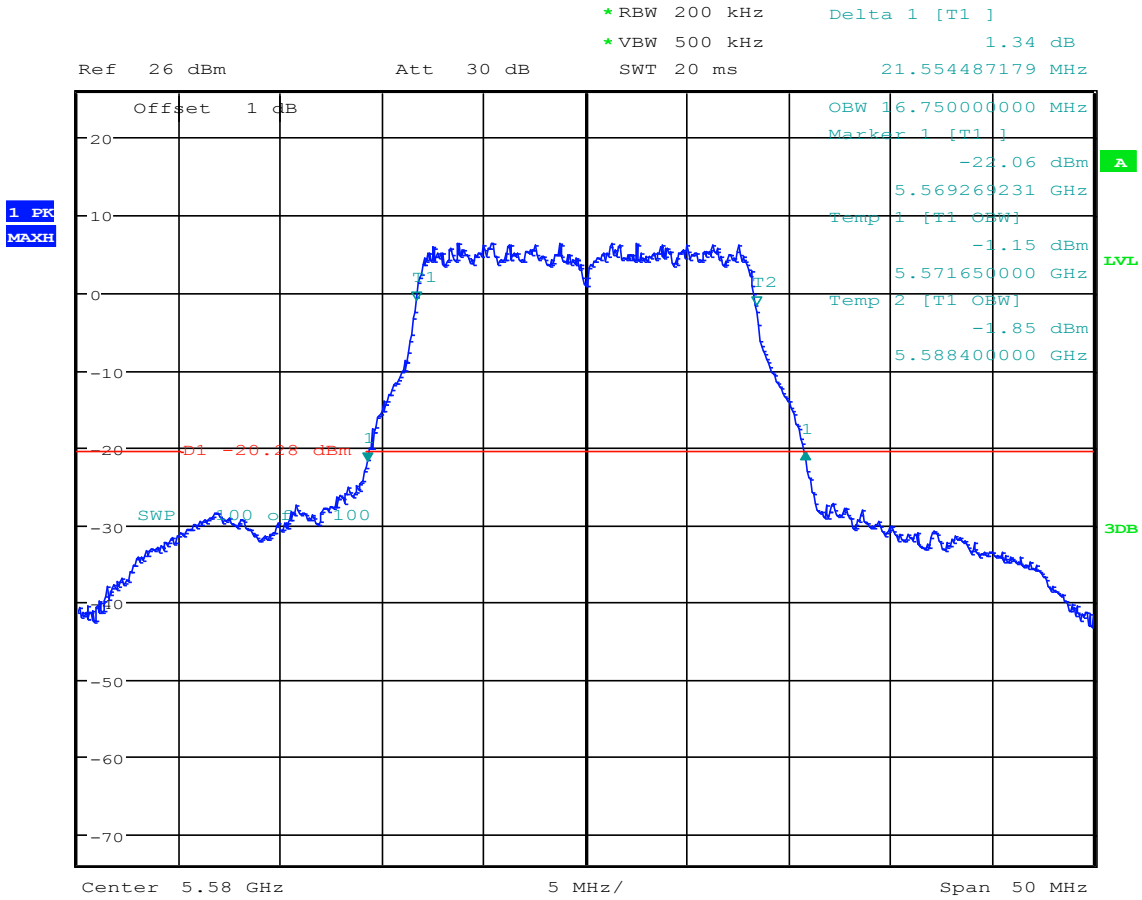
Date: 30.JUL.2014 13:44:17

16.2.6 OEB_Ch64_a_Mode

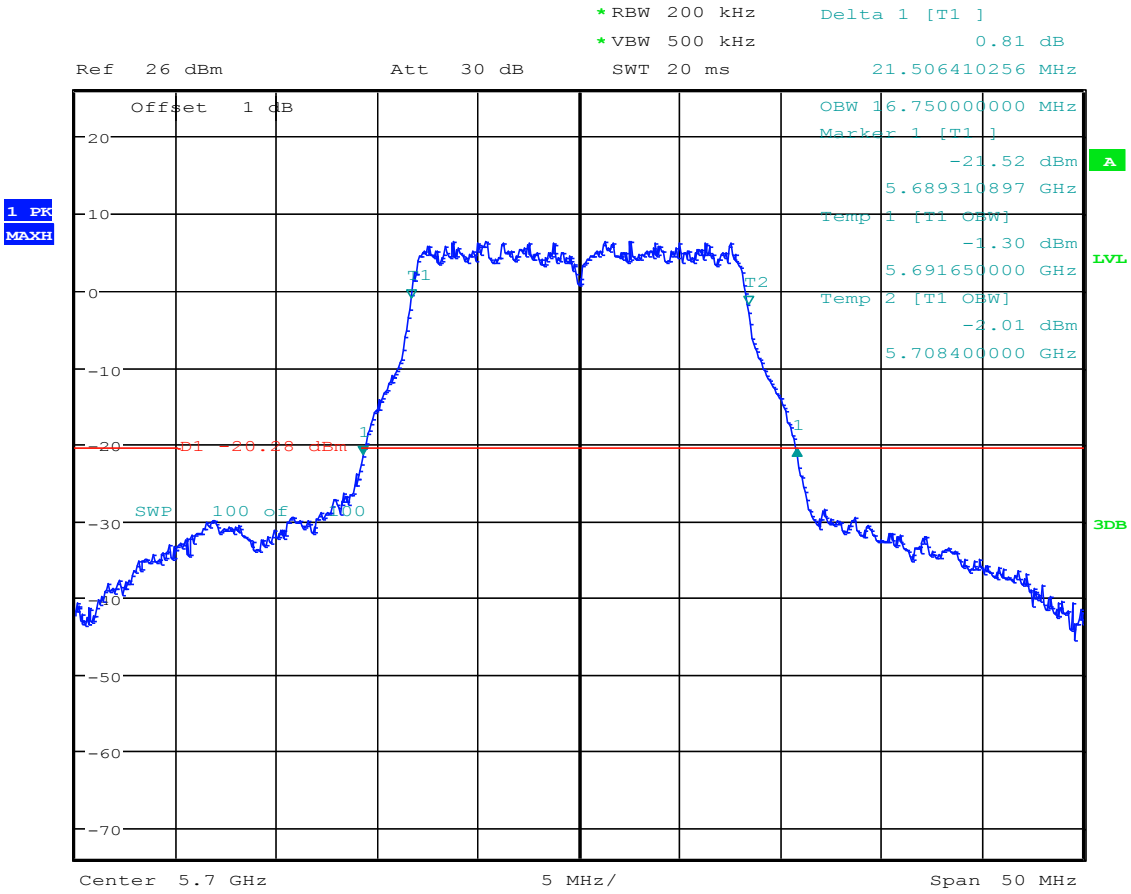


Date: 30.JUL.2014 13:52:40

16.2.7 OEB_Ch100_a_Mode

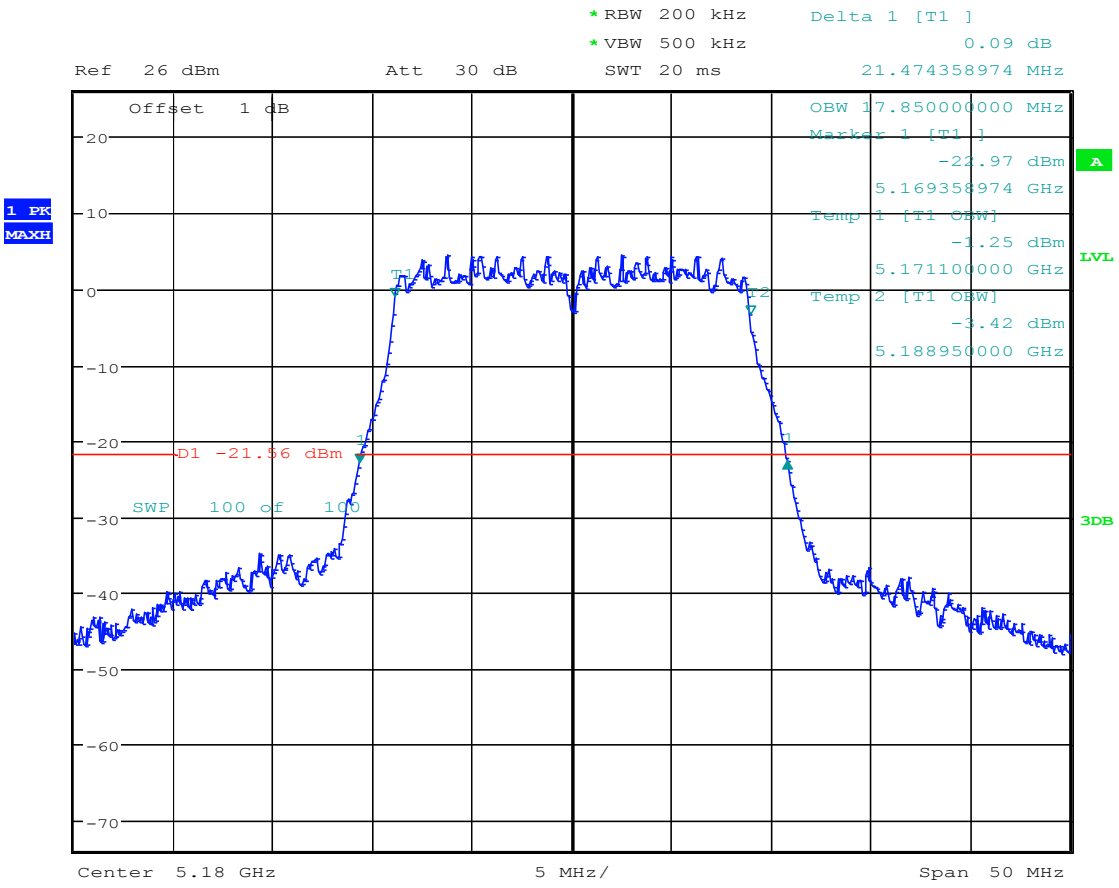


16.2.8 OEB_Ch116_a_Mode

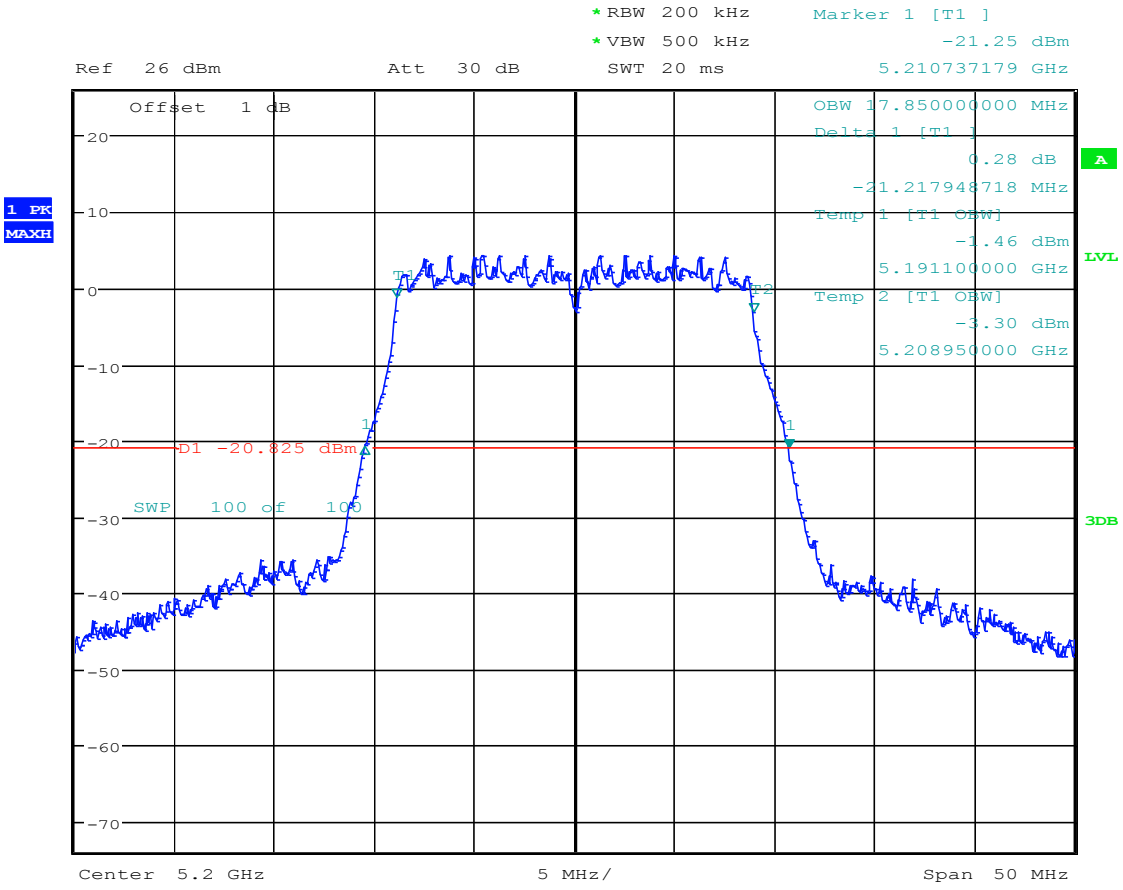


Date: 30.JUL.2014 15:13:34

16.2.9 OEB_Ch140_a_Mode

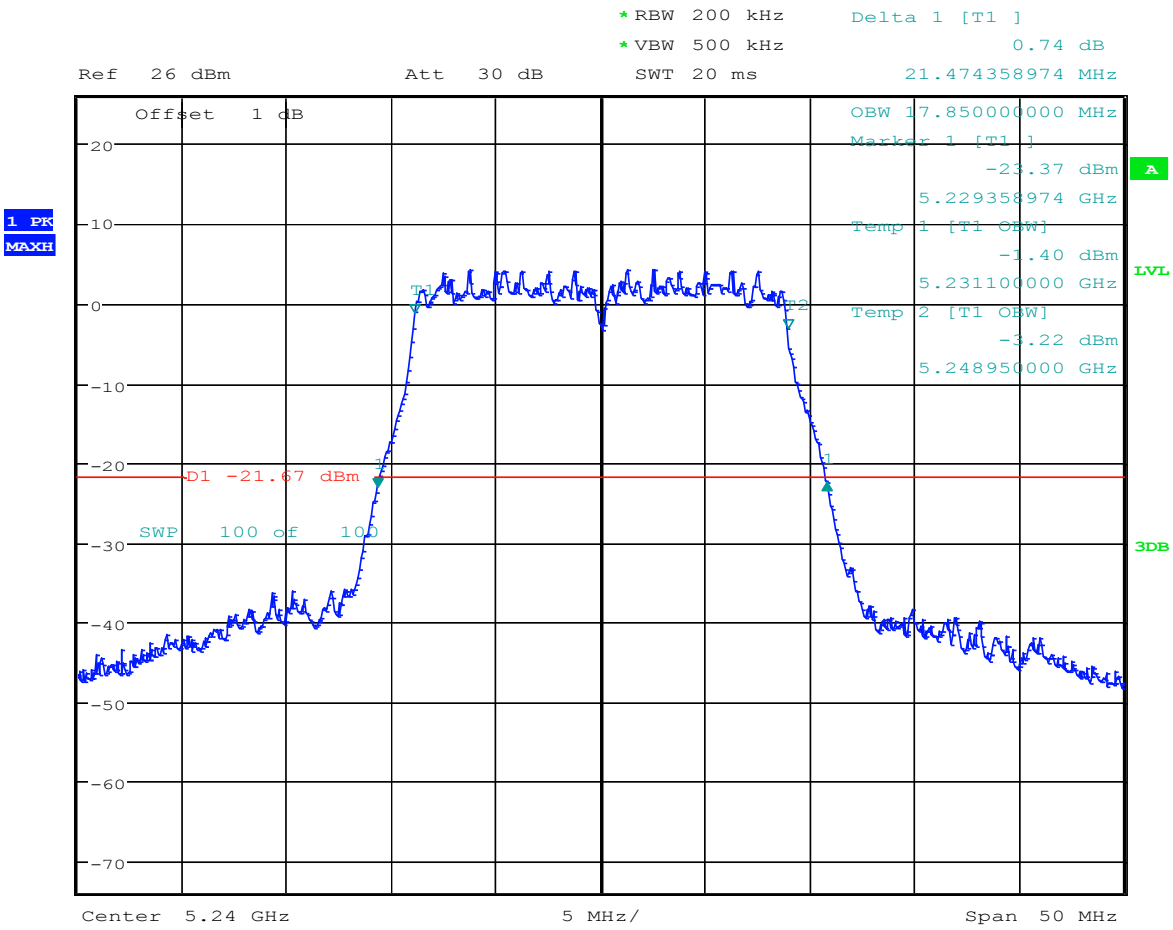


16.2.10OEB_Ch36_n_Mode



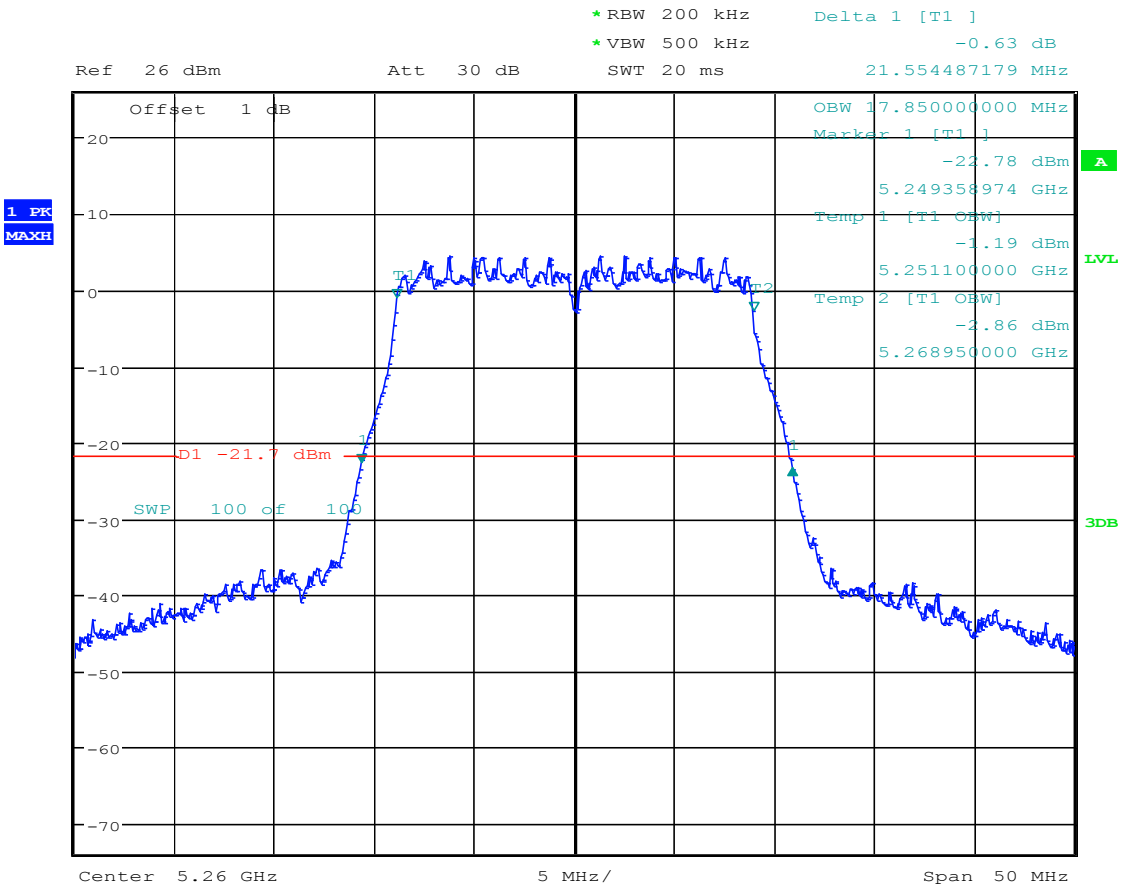
Date: 30.JUL.2014 16:09:02

16.2.11OEB_Ch40_n_Mode

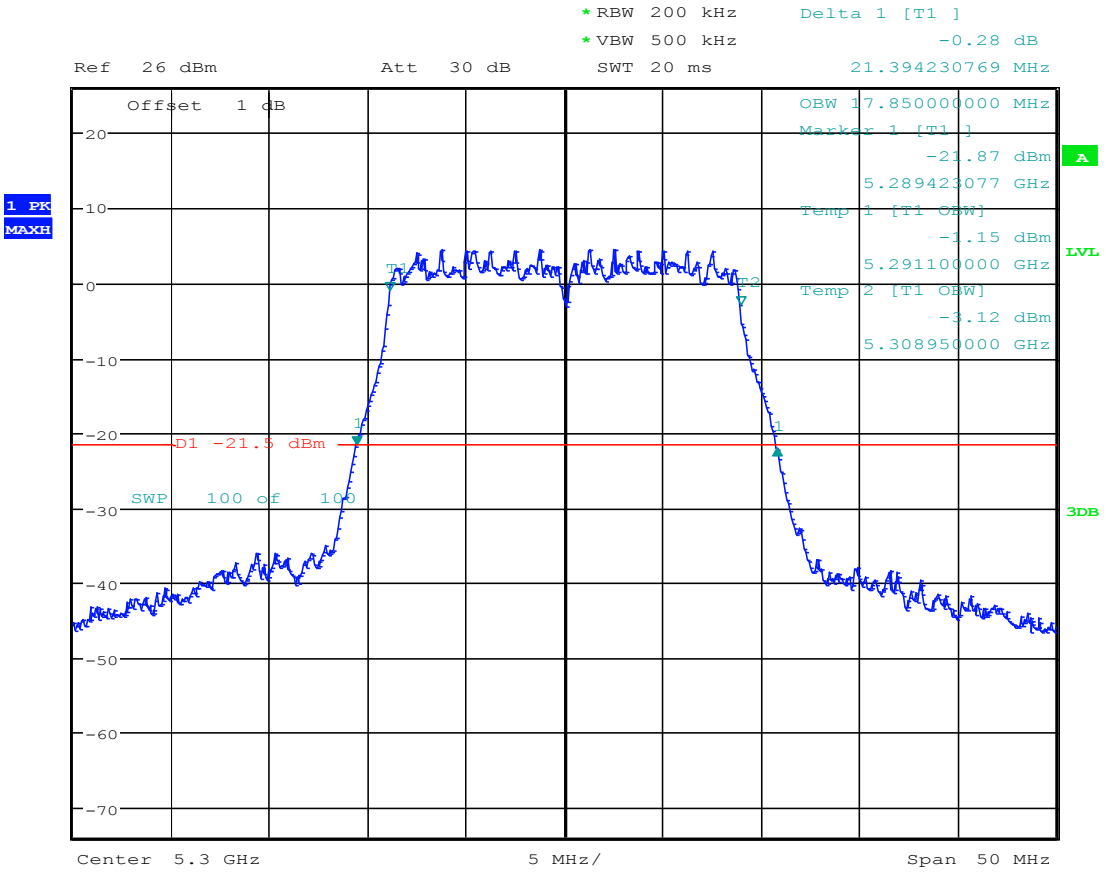


Date: 30.JUL.2014 16:31:30

16.2.12 OEB_Ch48_n_Mode



16.2.13OEB_Ch52_n_Mode



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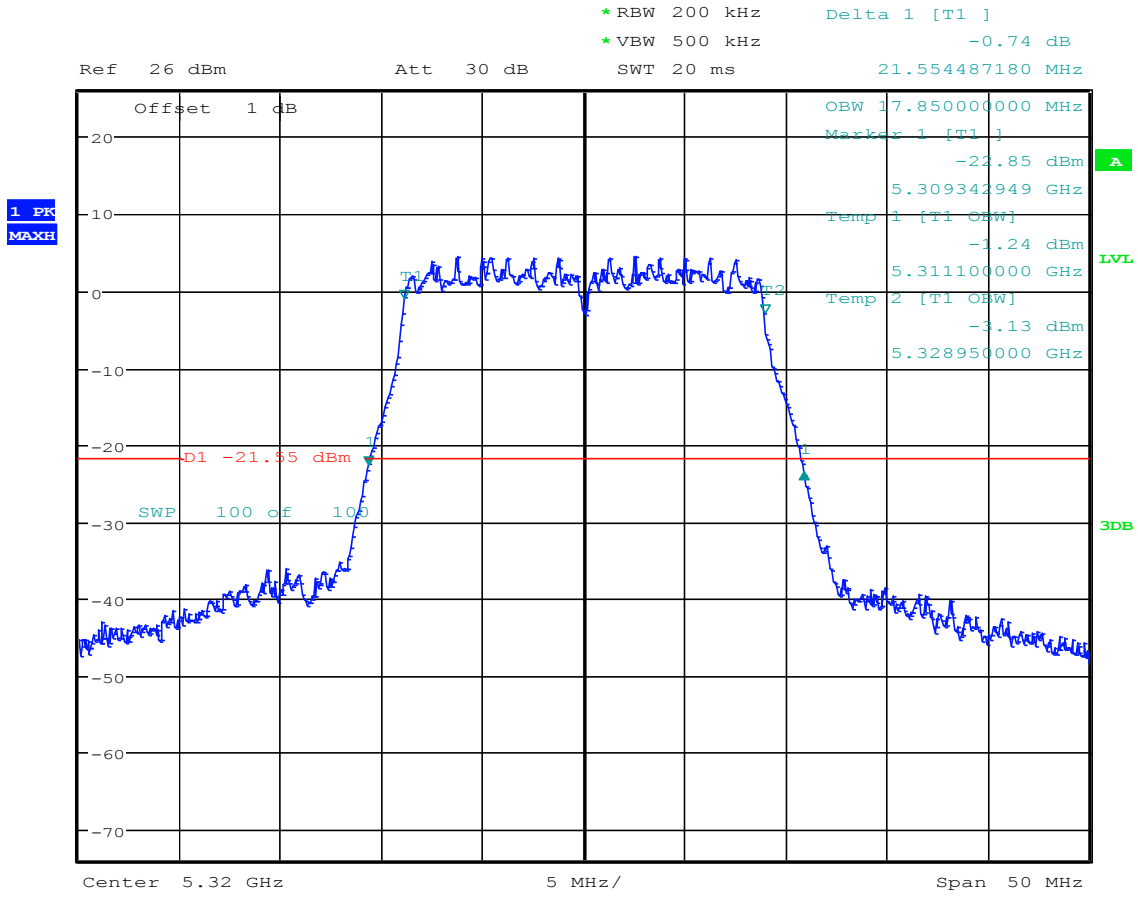
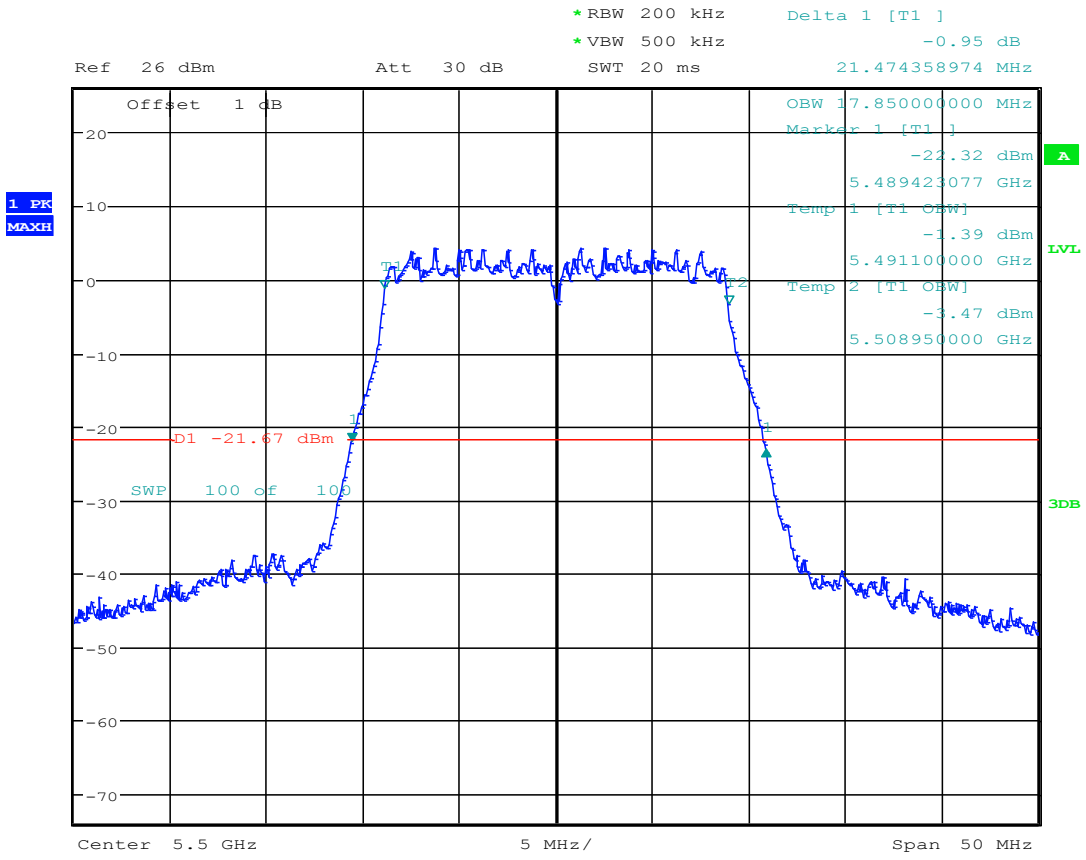
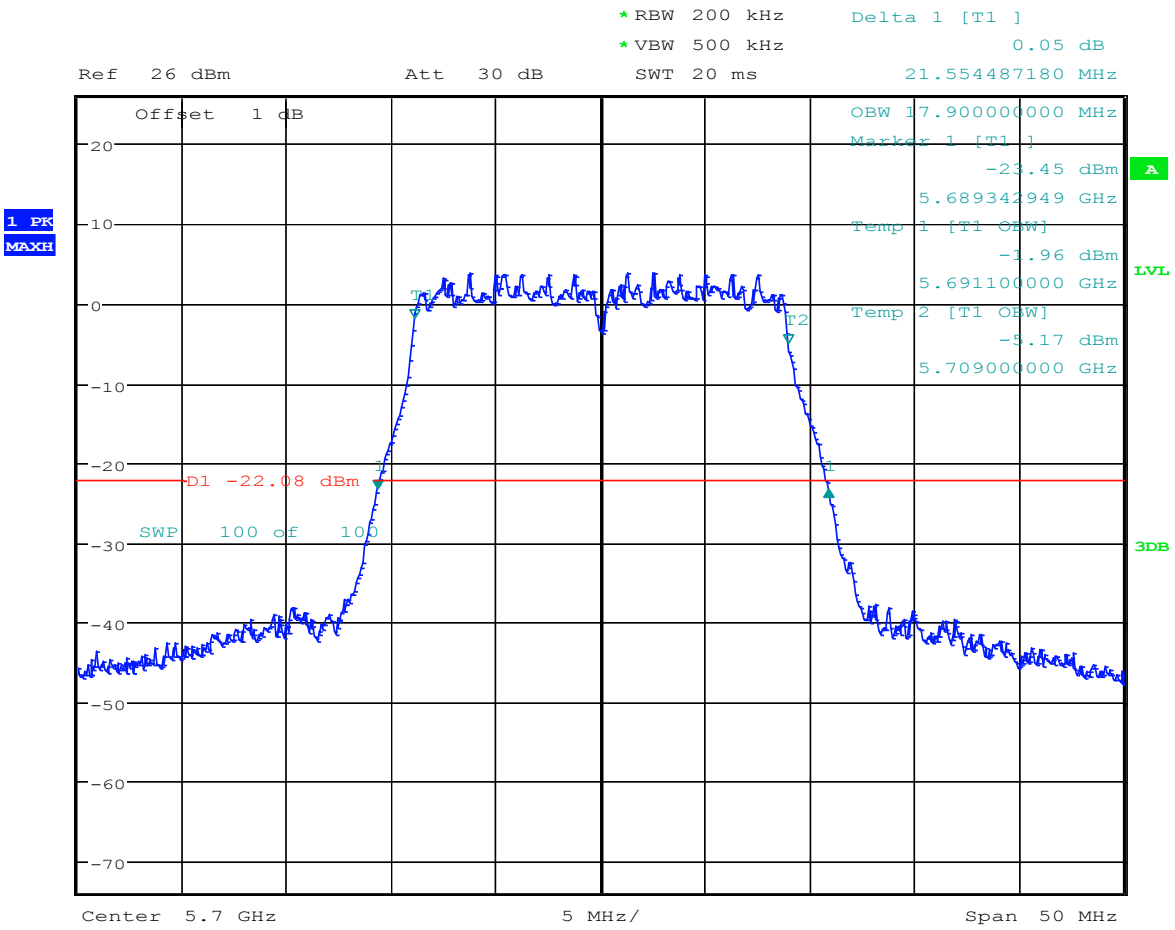
16.2.14 OEB_Ch60_n_Mode



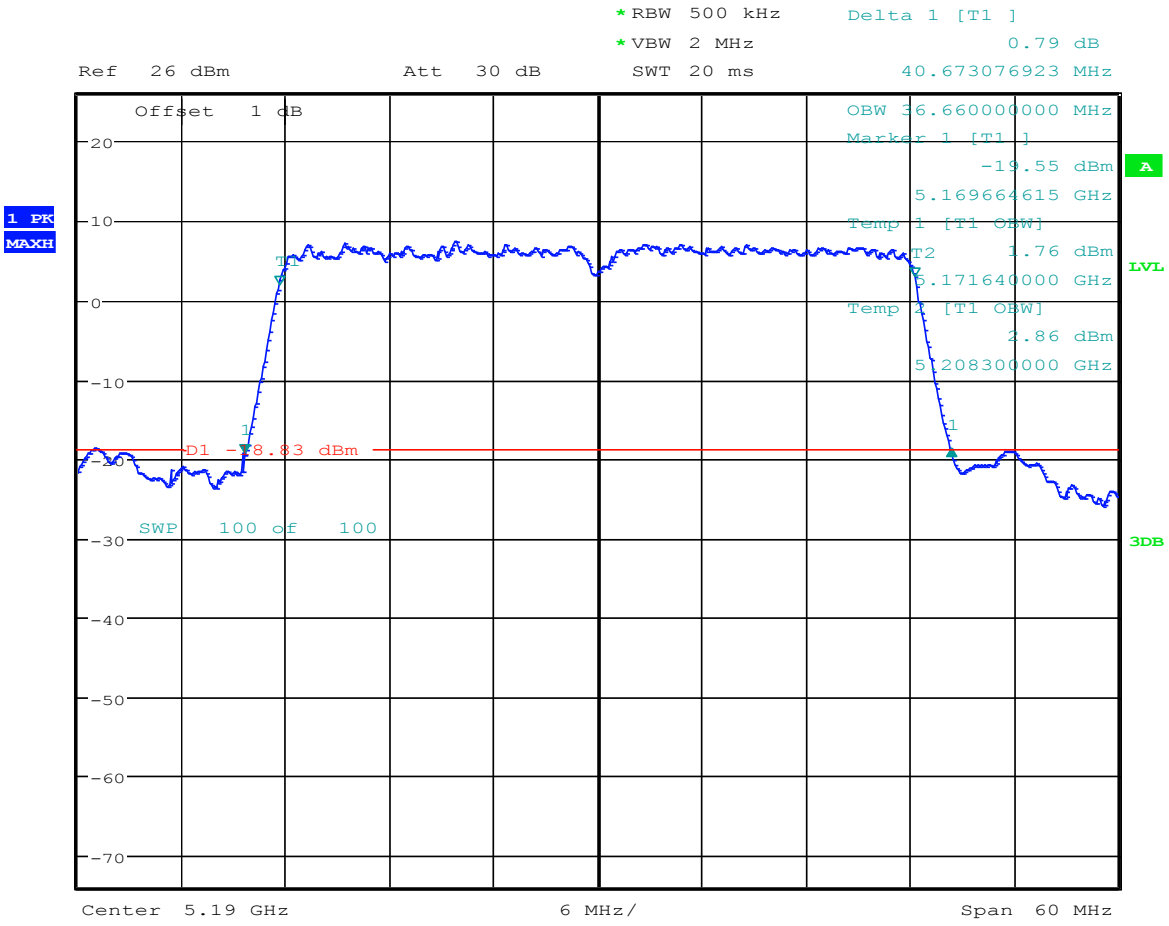
16.2.15 OEB_Ch64_n_Mode



16.2.16 OEB_Ch100_n_Mode

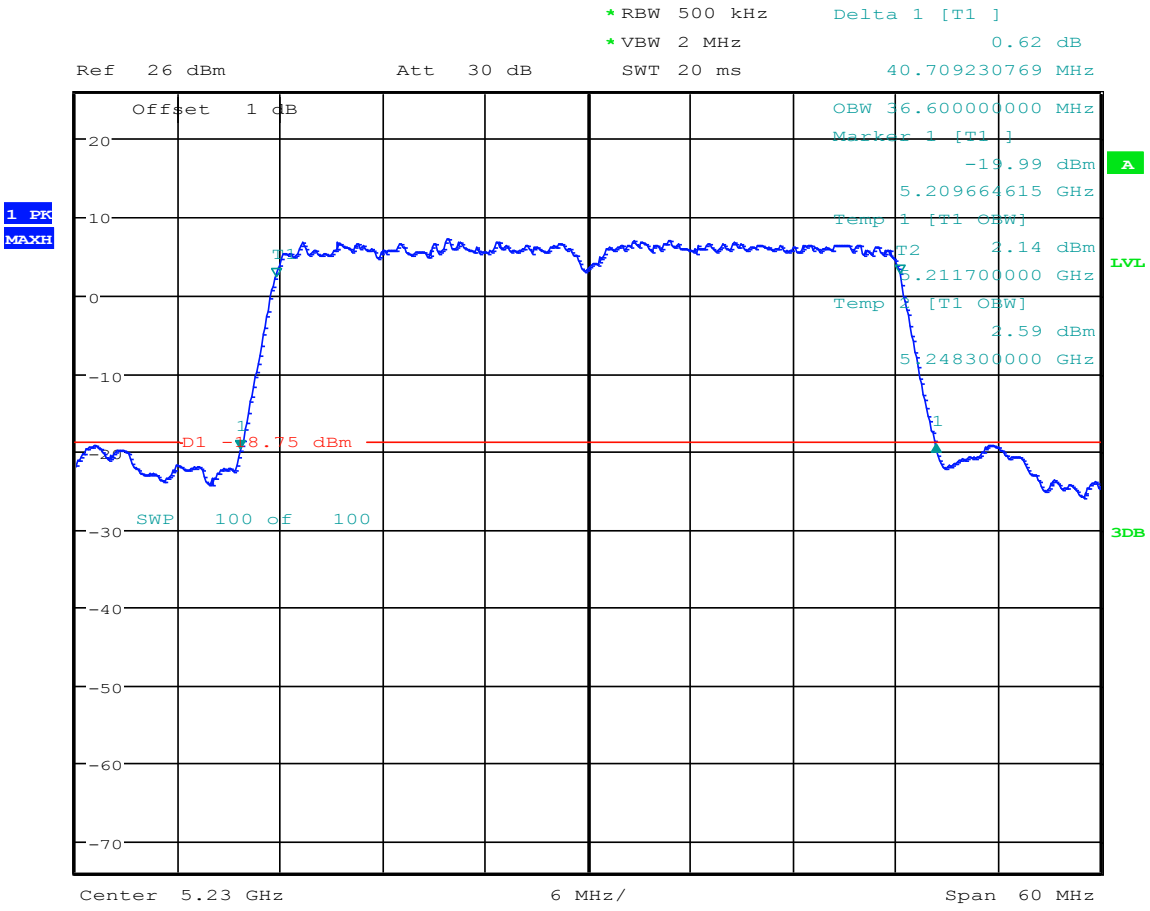


16.2.17 OEB_Ch140_n_Mode



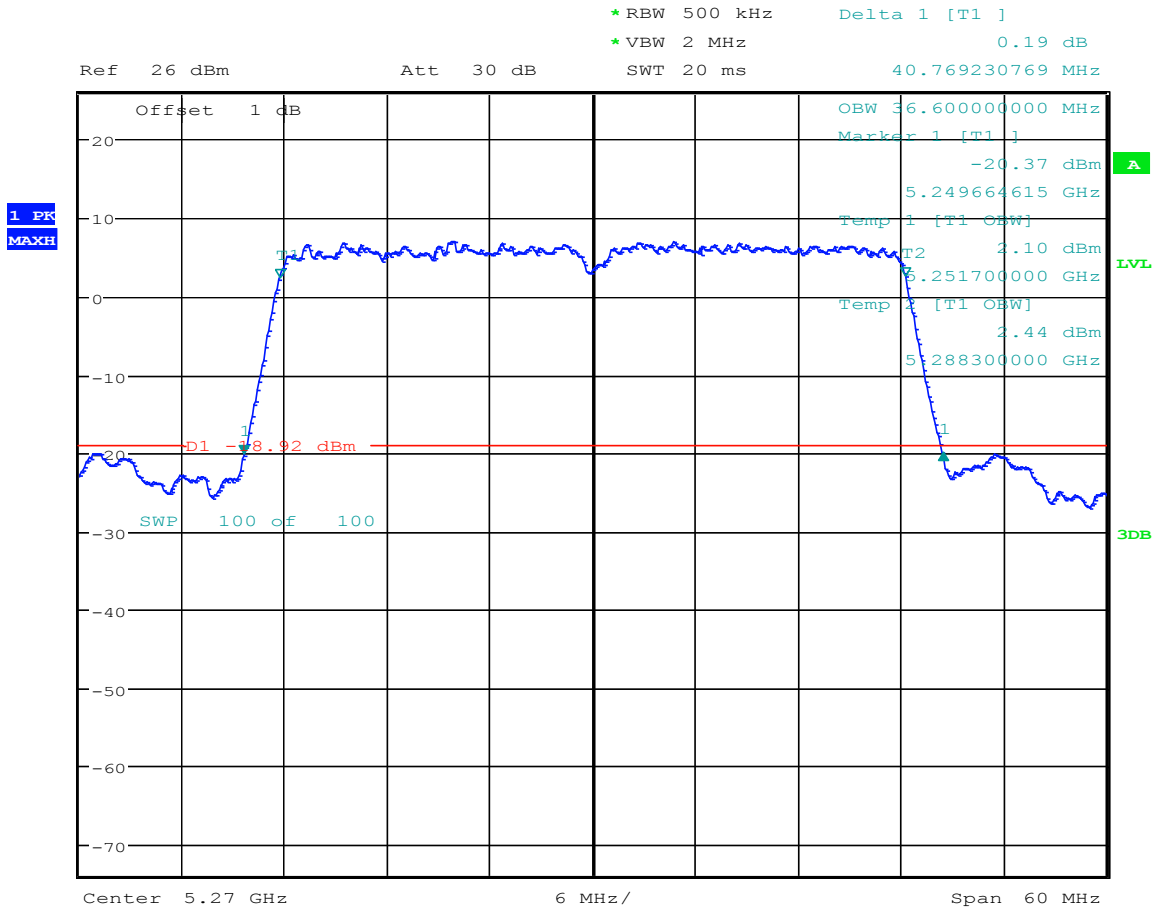
Date: 30.JUL.2014 17:17:33

16.2.18 OEB_Ch38_n40_Mode



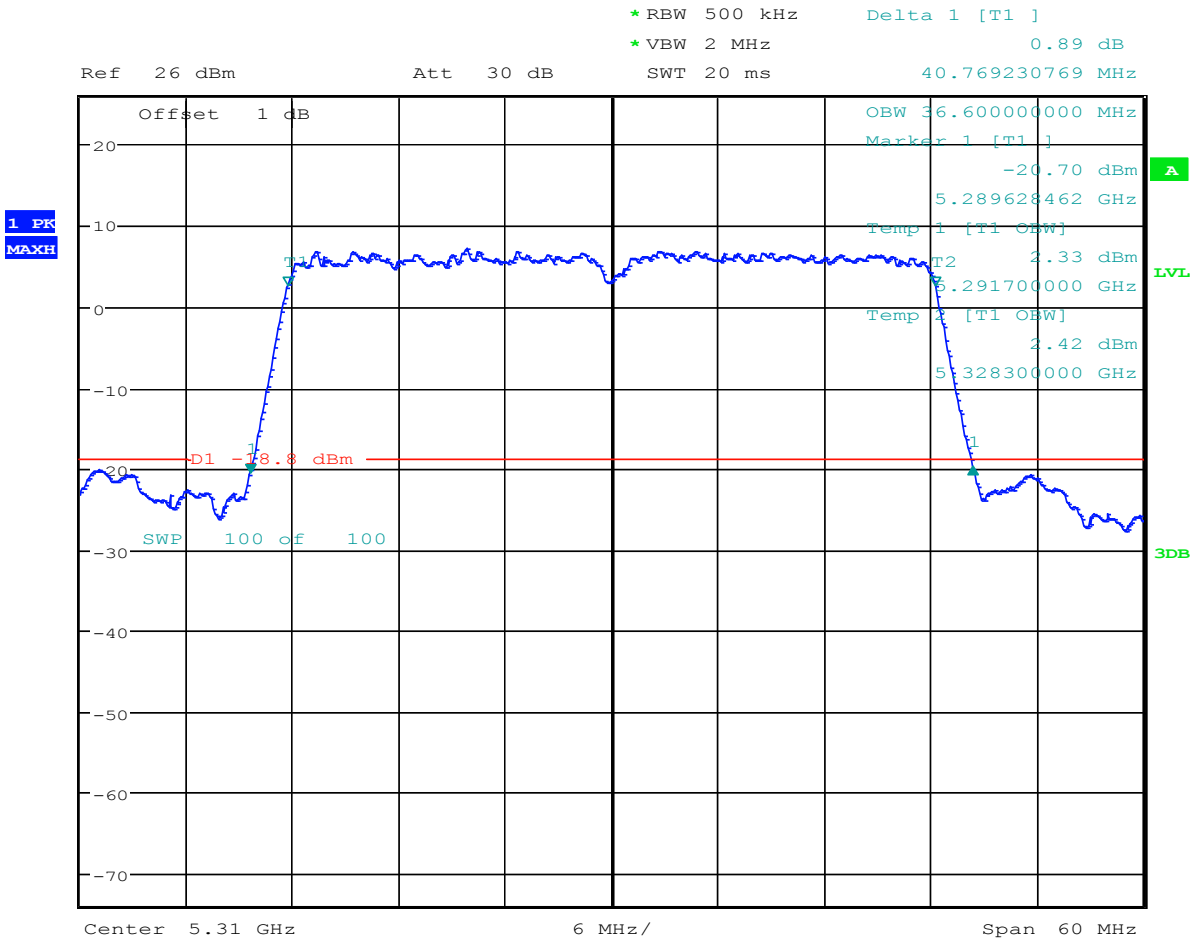
Date: 30.JUL.2014 17:24:06

16.2.19 OEB_Ch46_n40_Mode



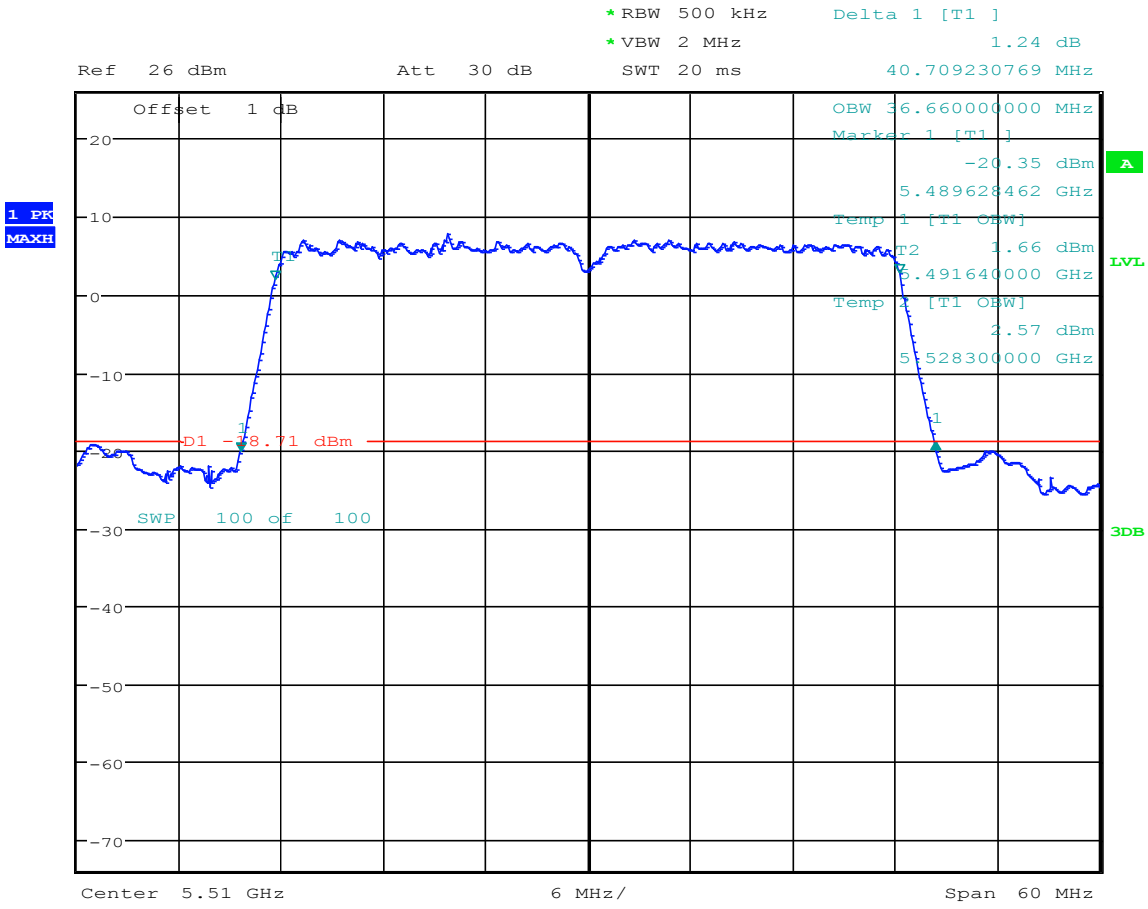
Date: 30.JUL.2014 17:29:44

16.2.20 OEB_Ch54_n40_Mode



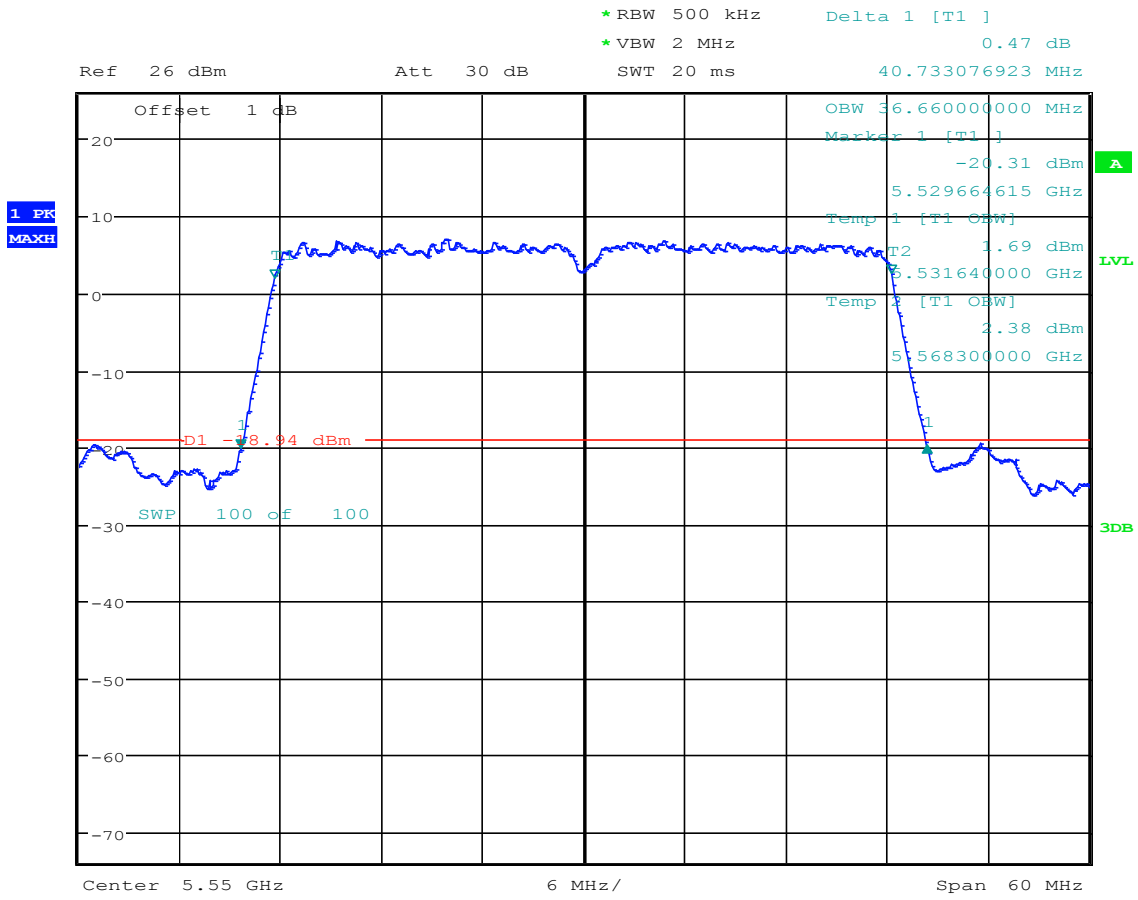
Date: 30.JUL.2014 17:35:34

16.2.21 OEB_Ch62_n40_Mode



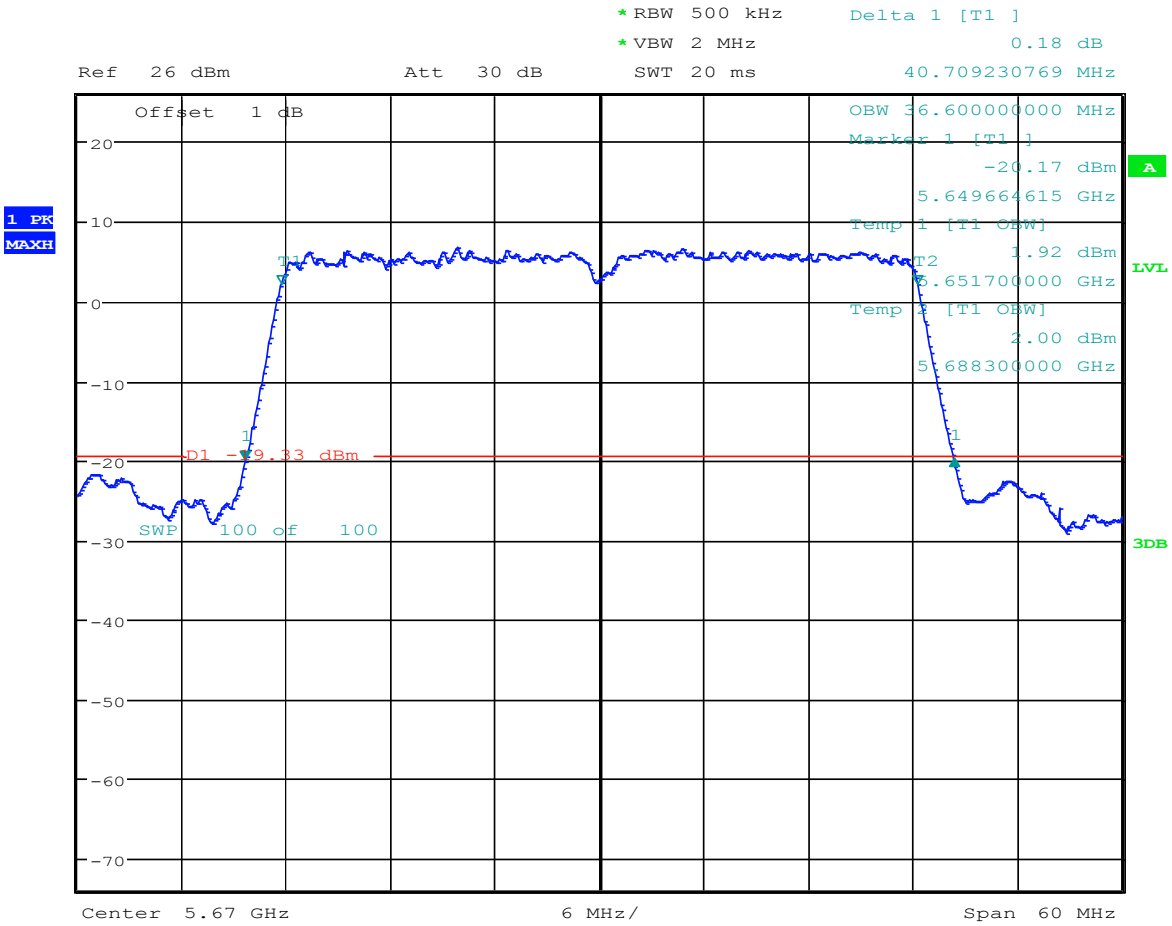
Date: 30.JUL.2014 17:42:54

16.2.22 OEB_Ch102_n40_Mode



Date: 30.JUL.2014 17:47:43

16.2.23 OEB_Ch110_n40_Mode



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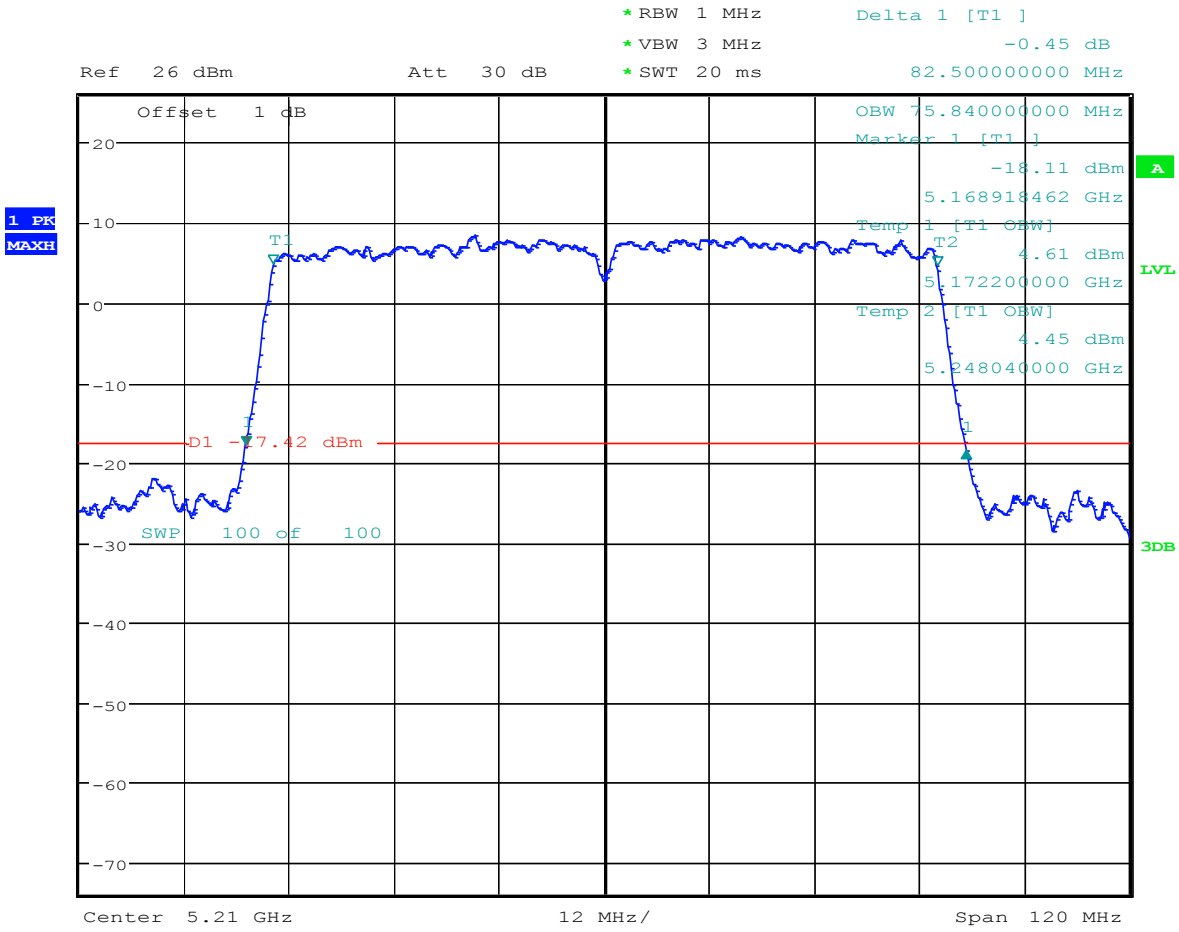
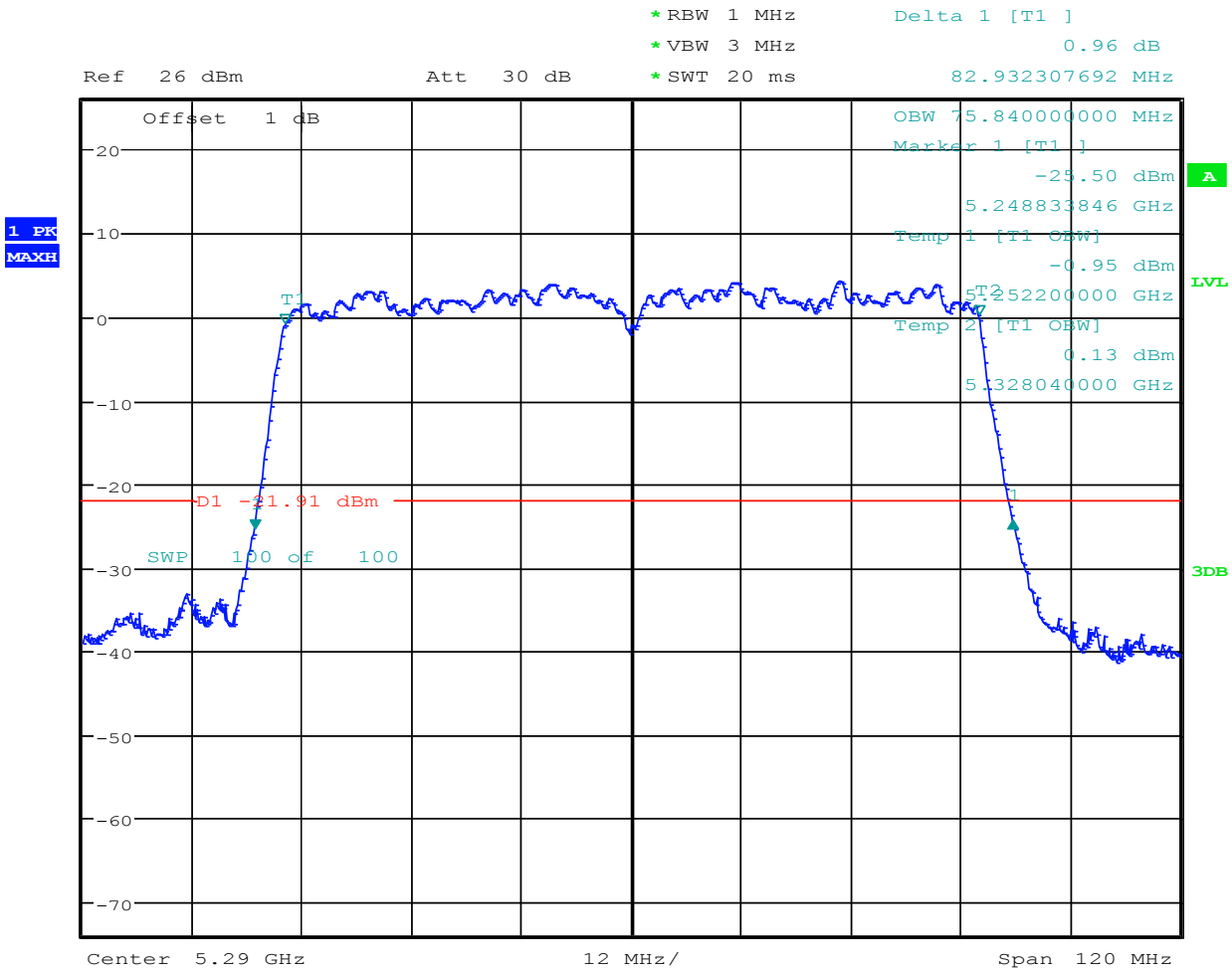
16.2.24 OEB_Ch134_n40_Mode



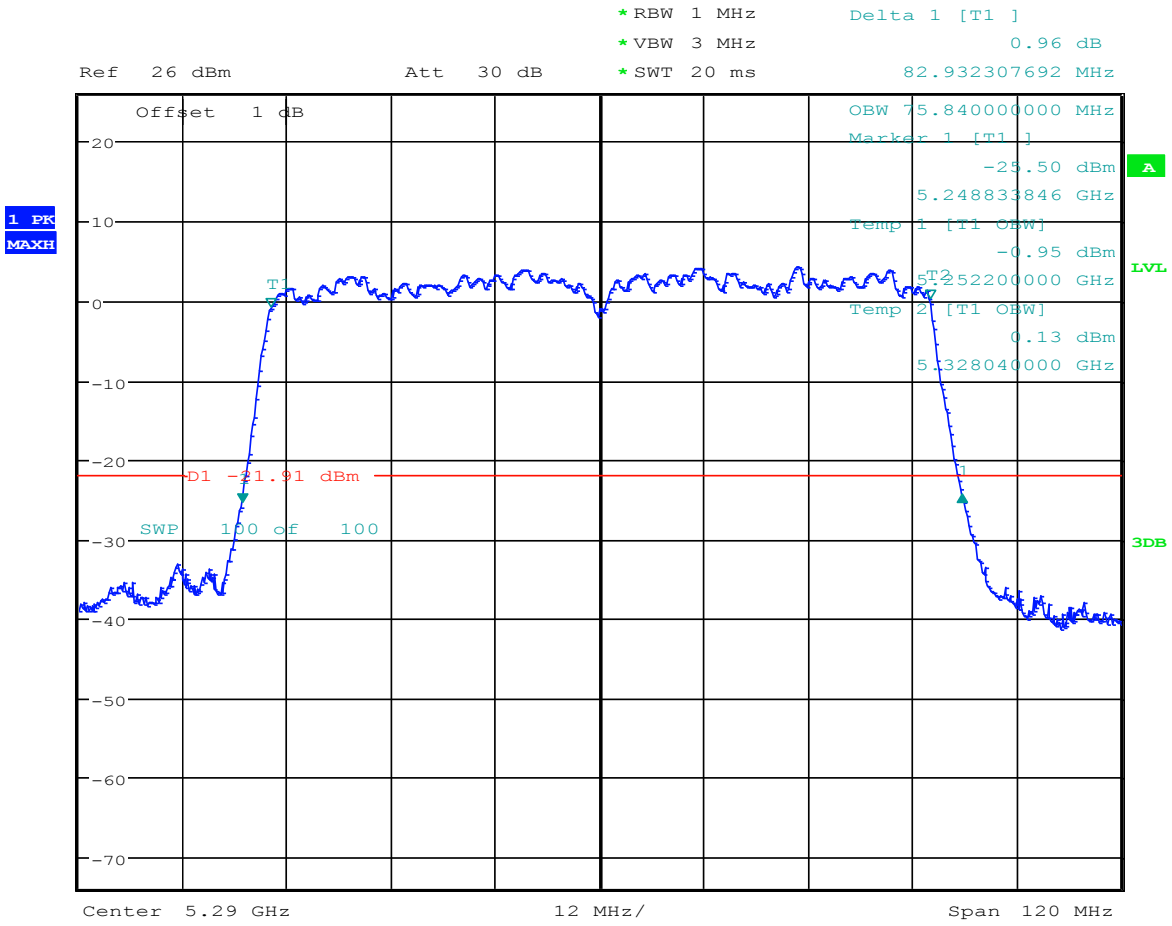
Date: 31.JUL.2014 15:08:57

16.2.25 OEB_Ch42_AC80_Mode



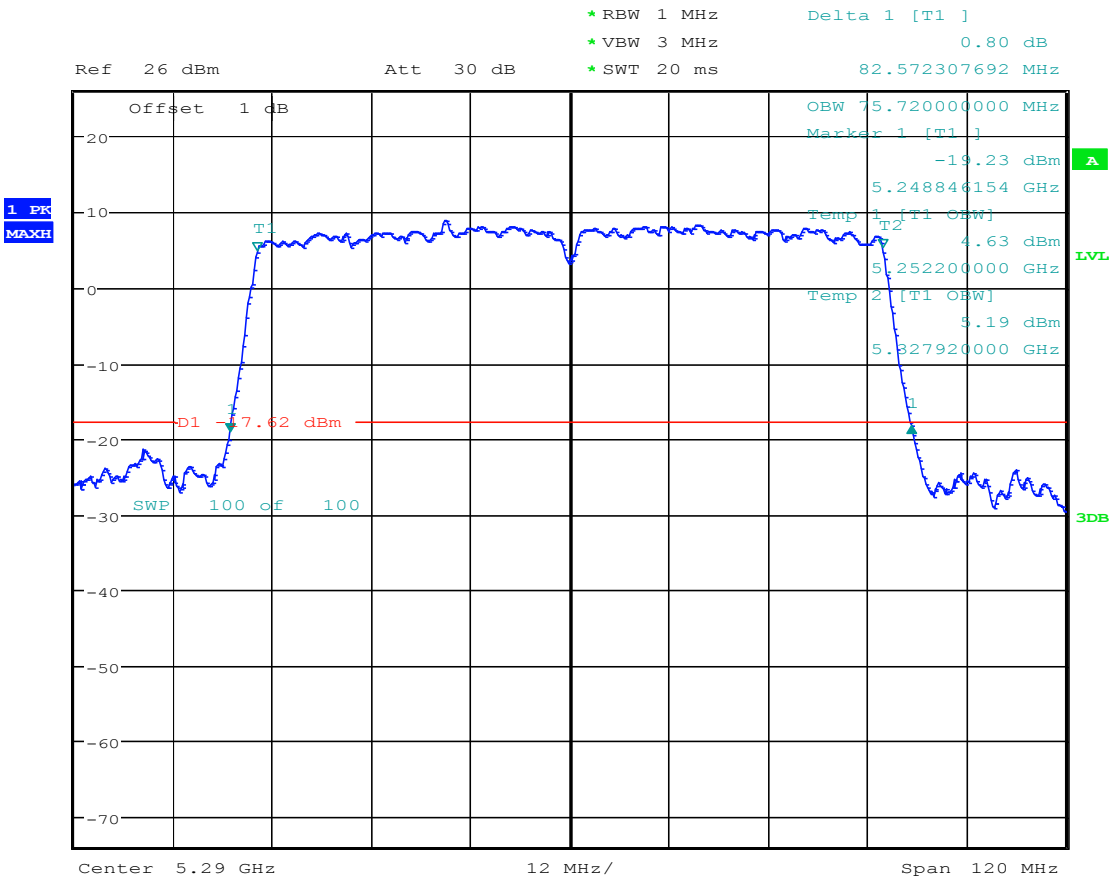
Date: 31.JUL.2014 16:00:47

16.2.26 OEB_Ch42_AC80_Mode_9

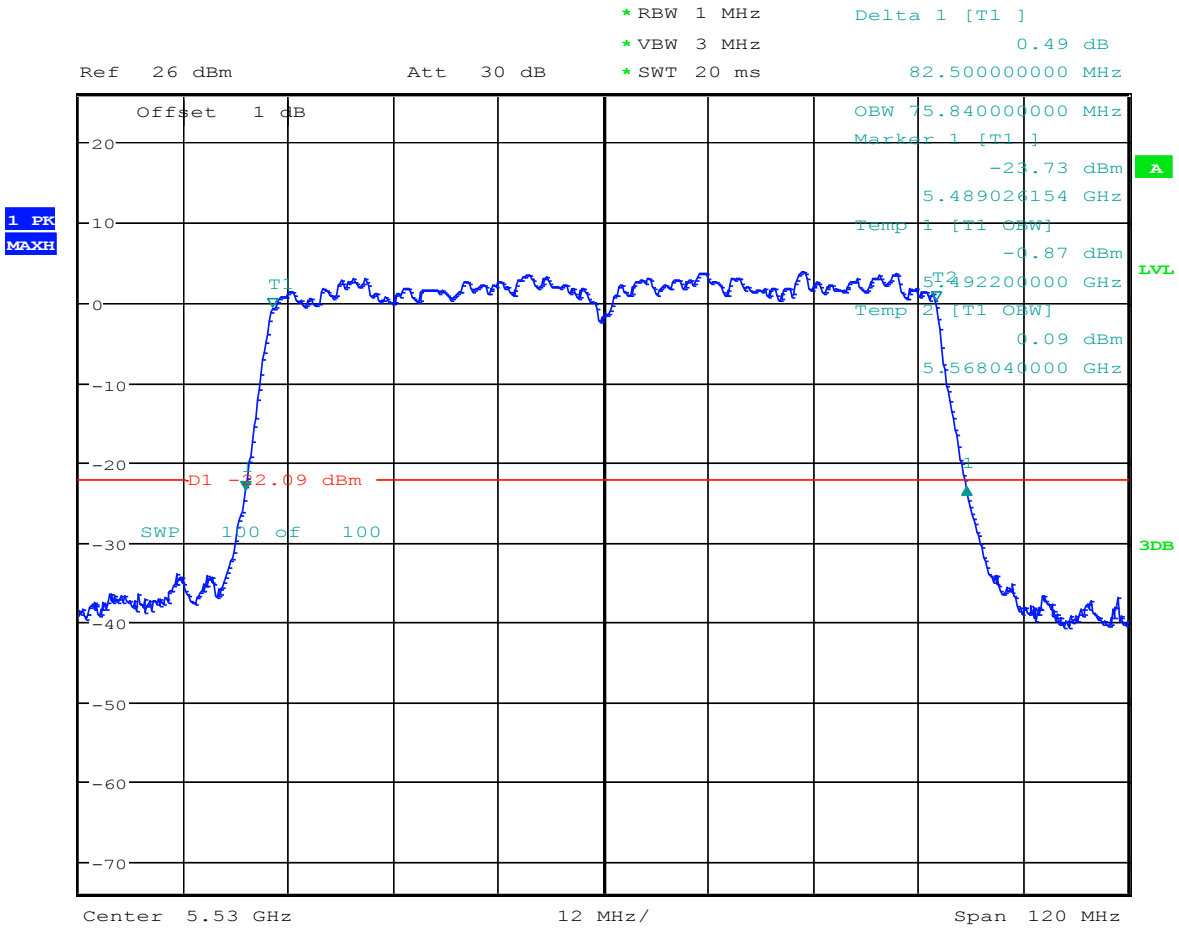


Date: 31.JUL.2014 16:00:47

16.2.27 OEB_Ch58_AC80_Mode_9



OEB_Ch58_AC80_Mode



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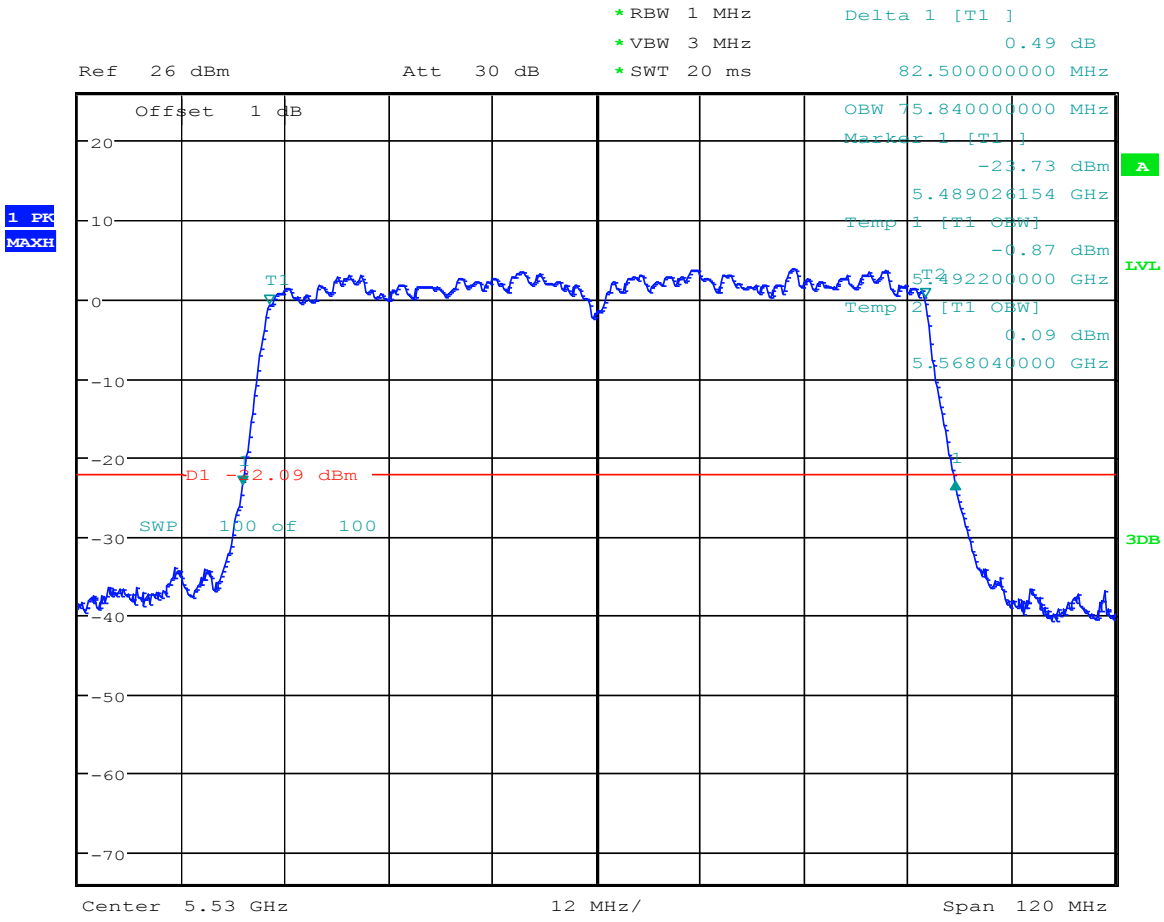
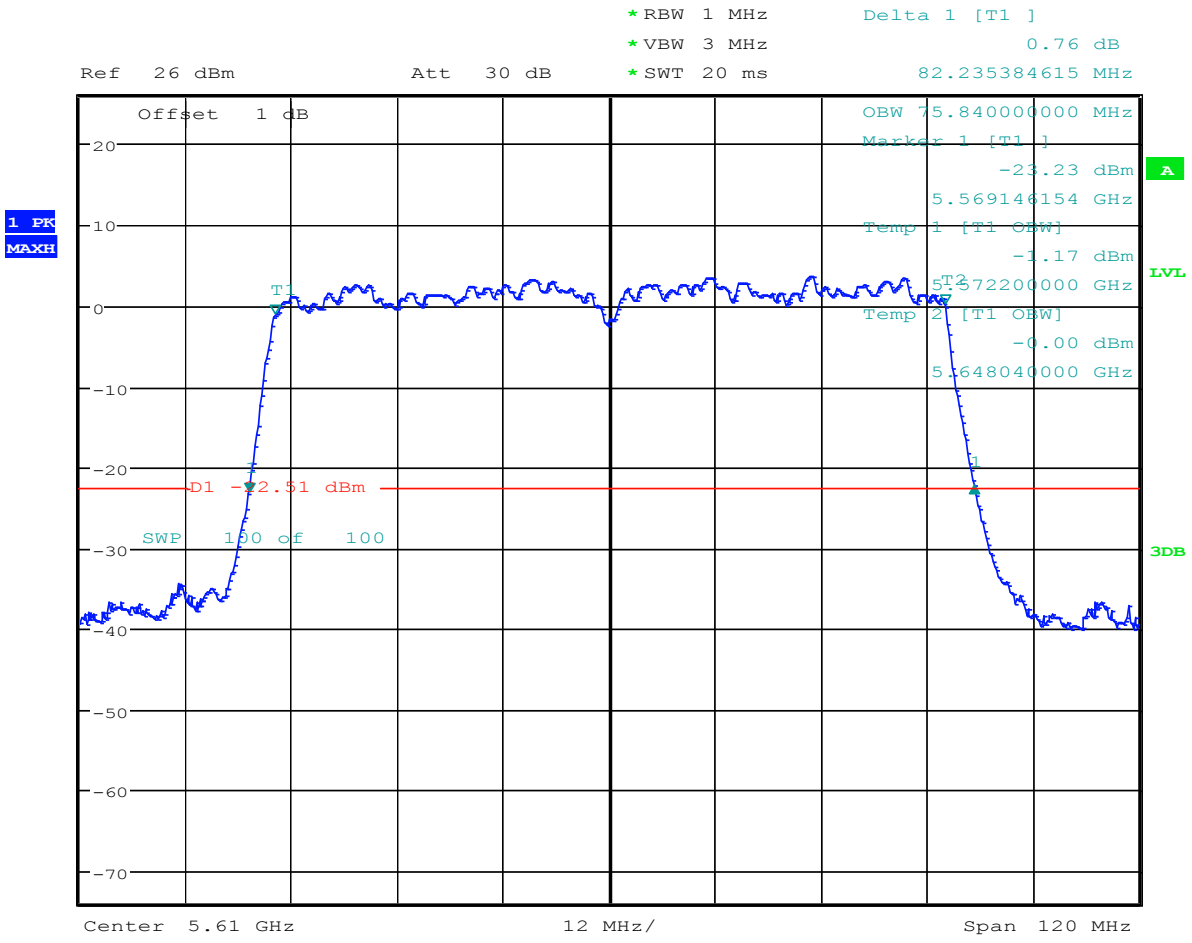
16.2.28 OEB_Ch106_AC80_Mode



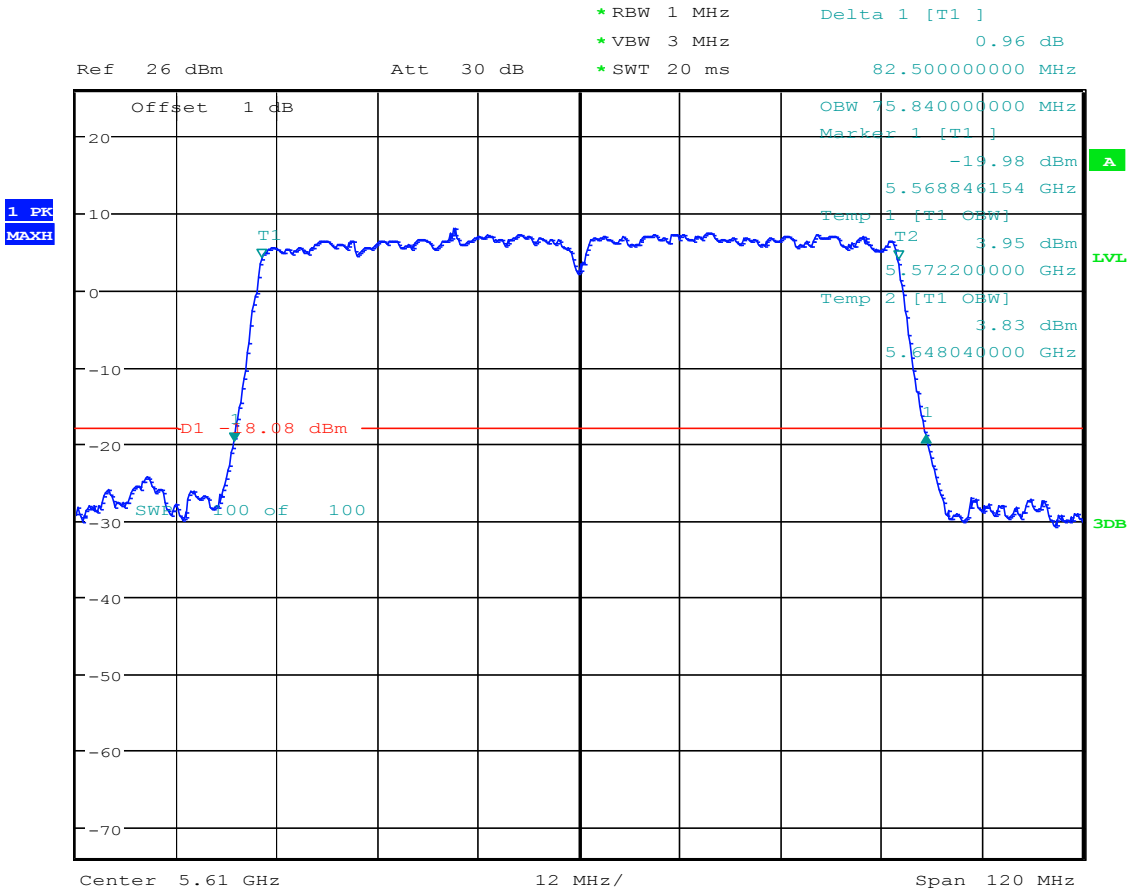
Date: 31.JUL.2014 16:05:02

16.2.29 OEB_Ch106_AC80_Mode_9



Date: 31.JUL.2014 16:09:18

16.2.30 OEB_Ch122_AC80_Mode_9



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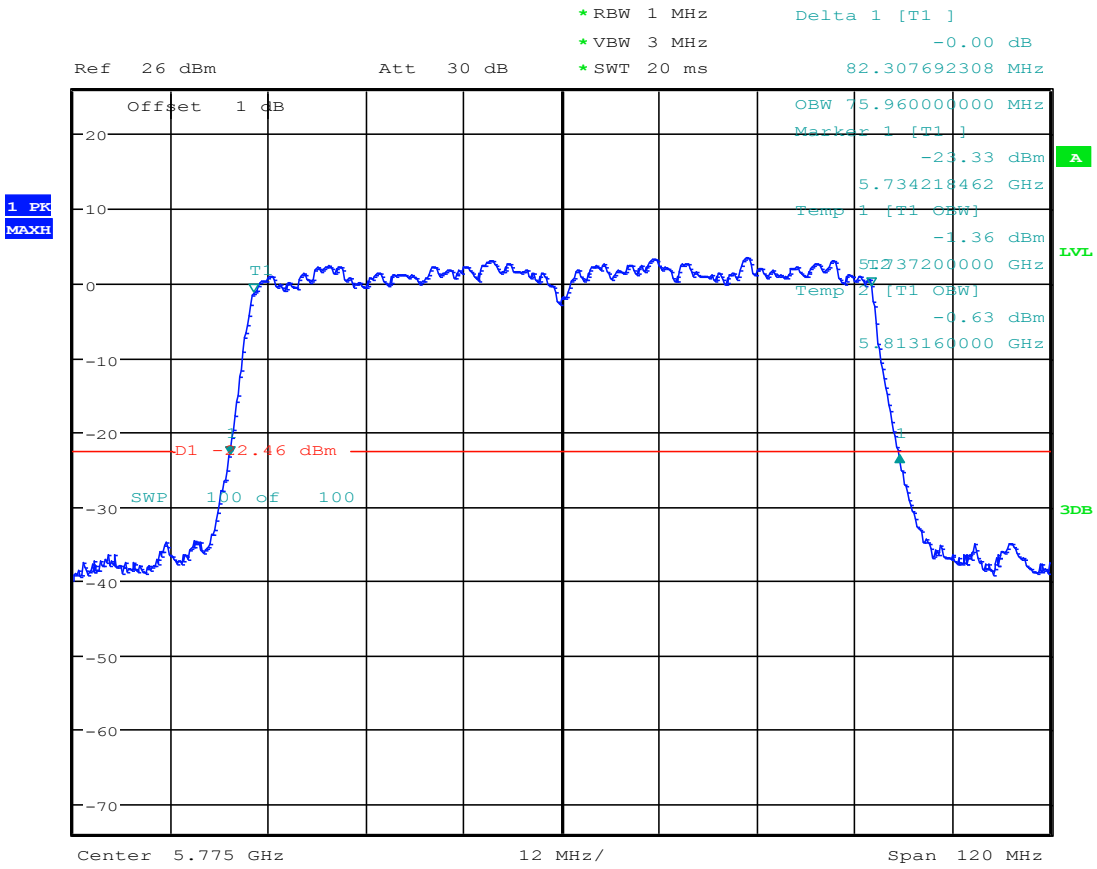
OEB_Ch122_AC80_Mode



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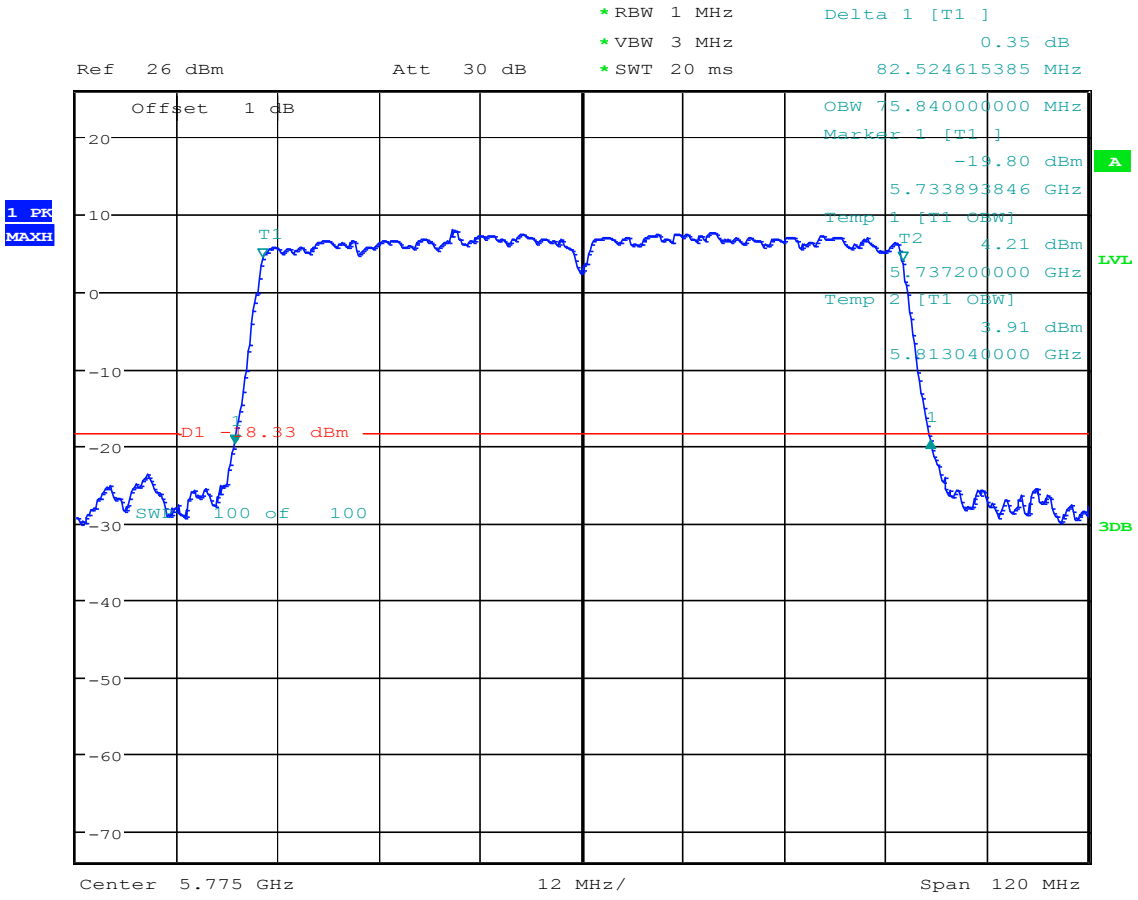
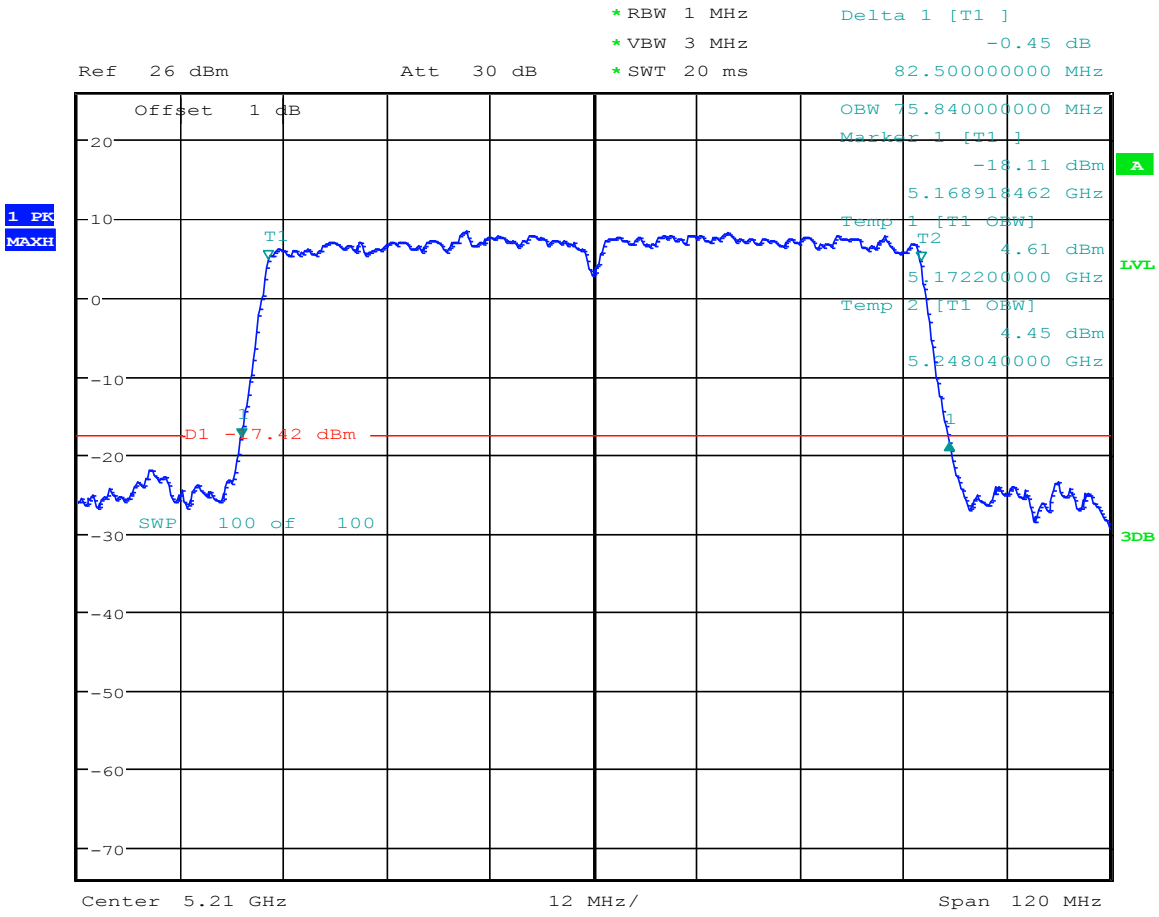
16.2.31 OEB_Ch155_AC80_Mode_9

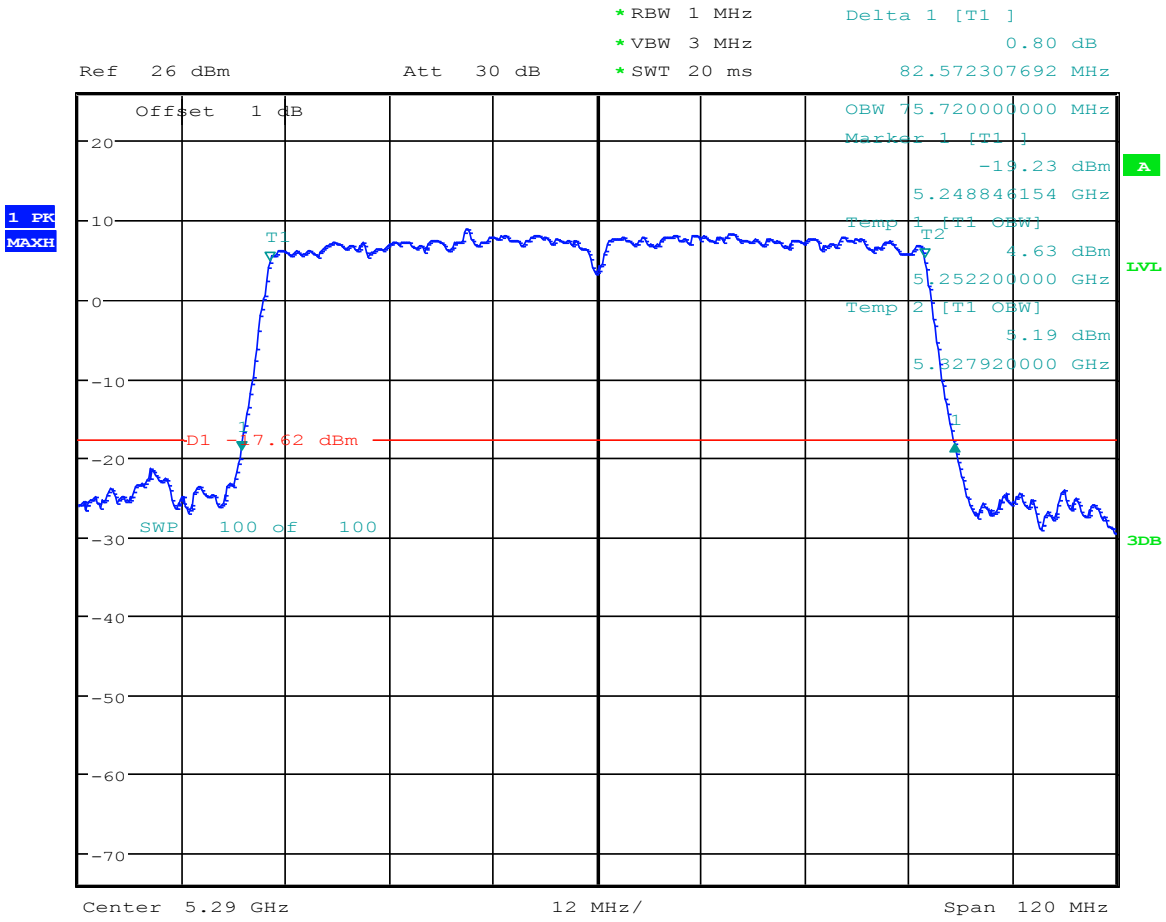


OEB_Ch155_AC80_Mode

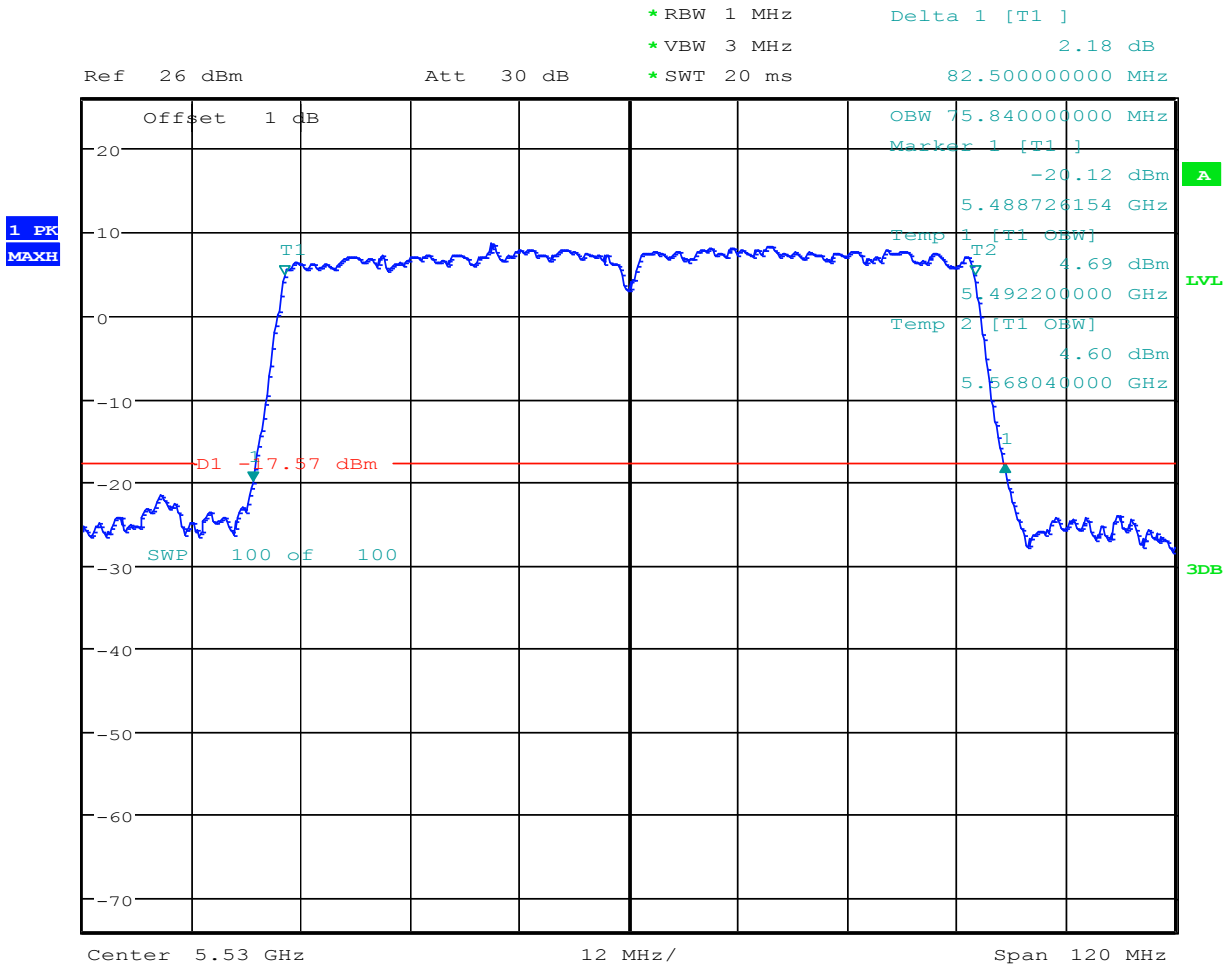


Date: 31.JUL.2014 15:08:57

16.2.32OEB_Ch42_AC80_Mode



16.2.33OEB_Ch58_AC80_Mode



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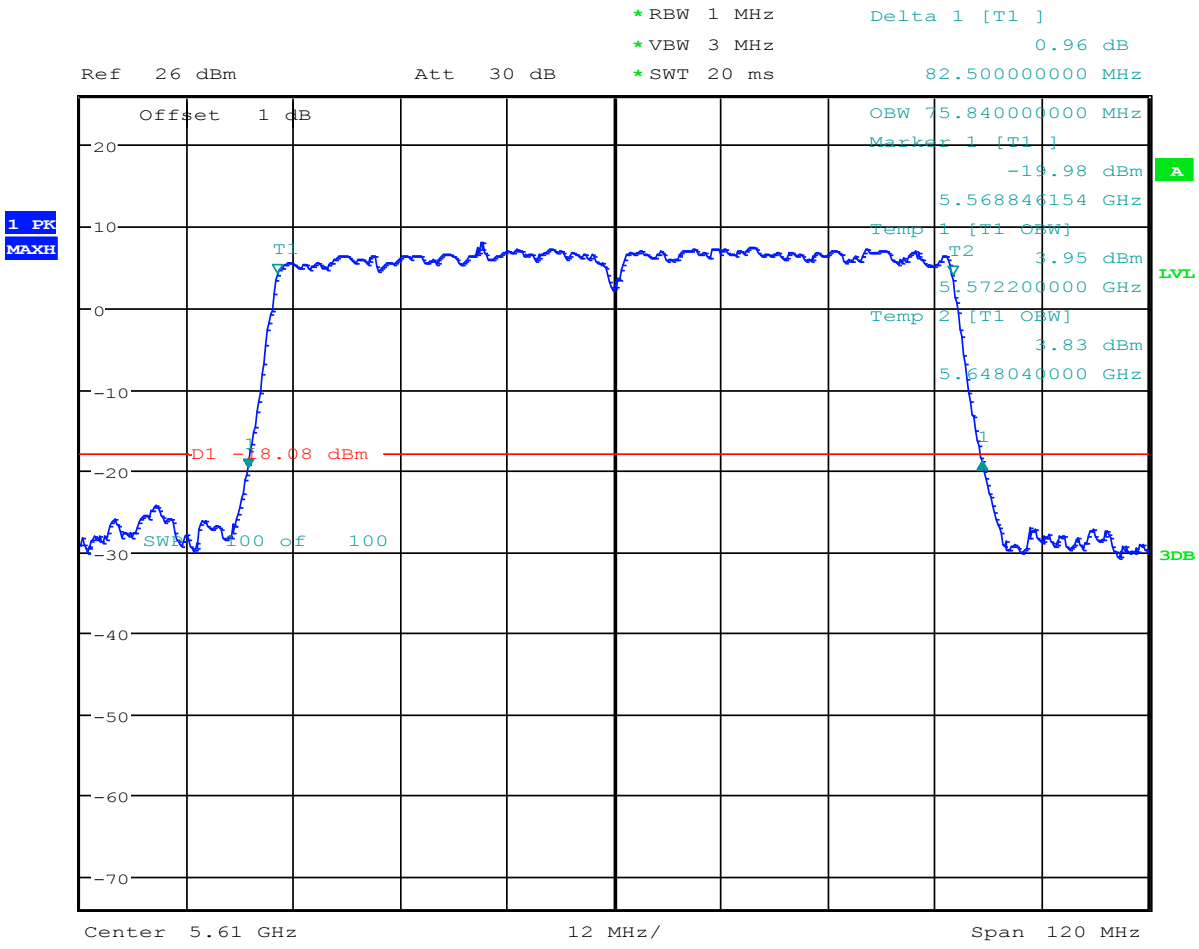
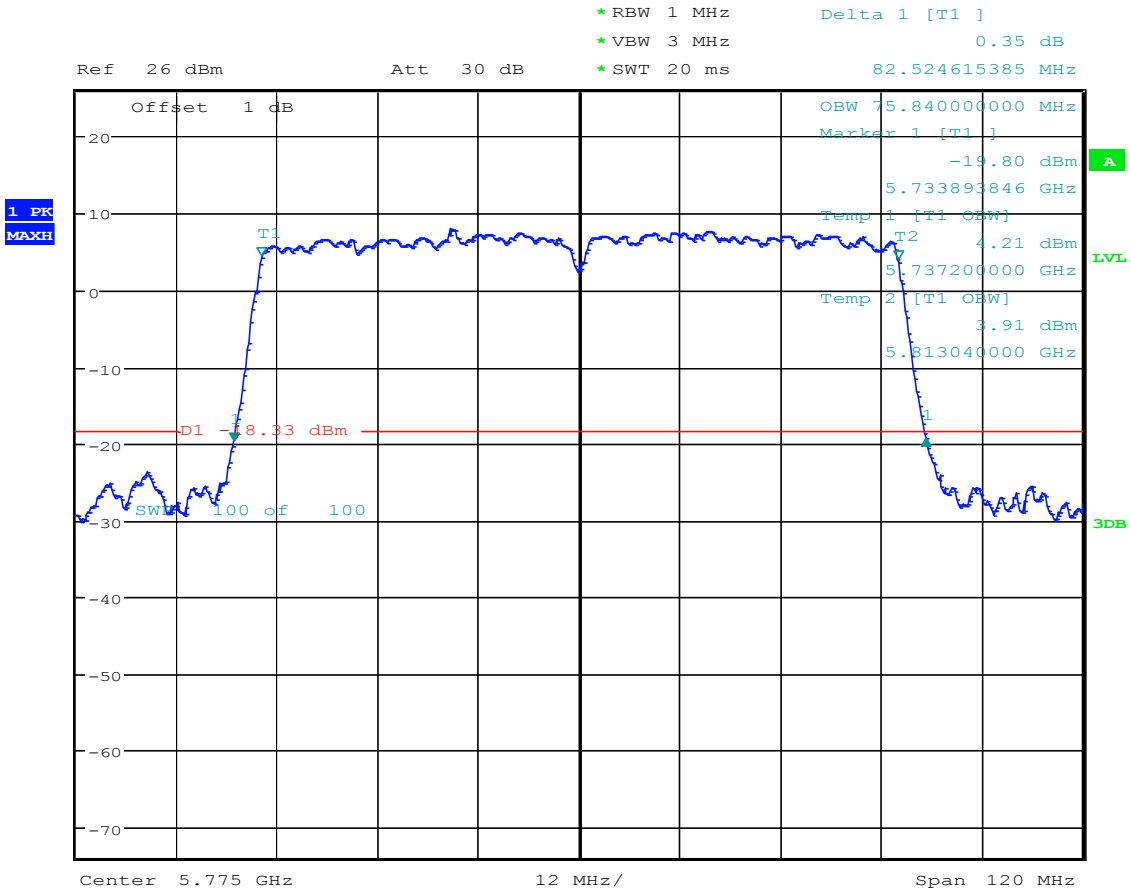
16.2.34OEB_Ch106_AC80_Mode



Date: 31.JUL.2014 15:43:26

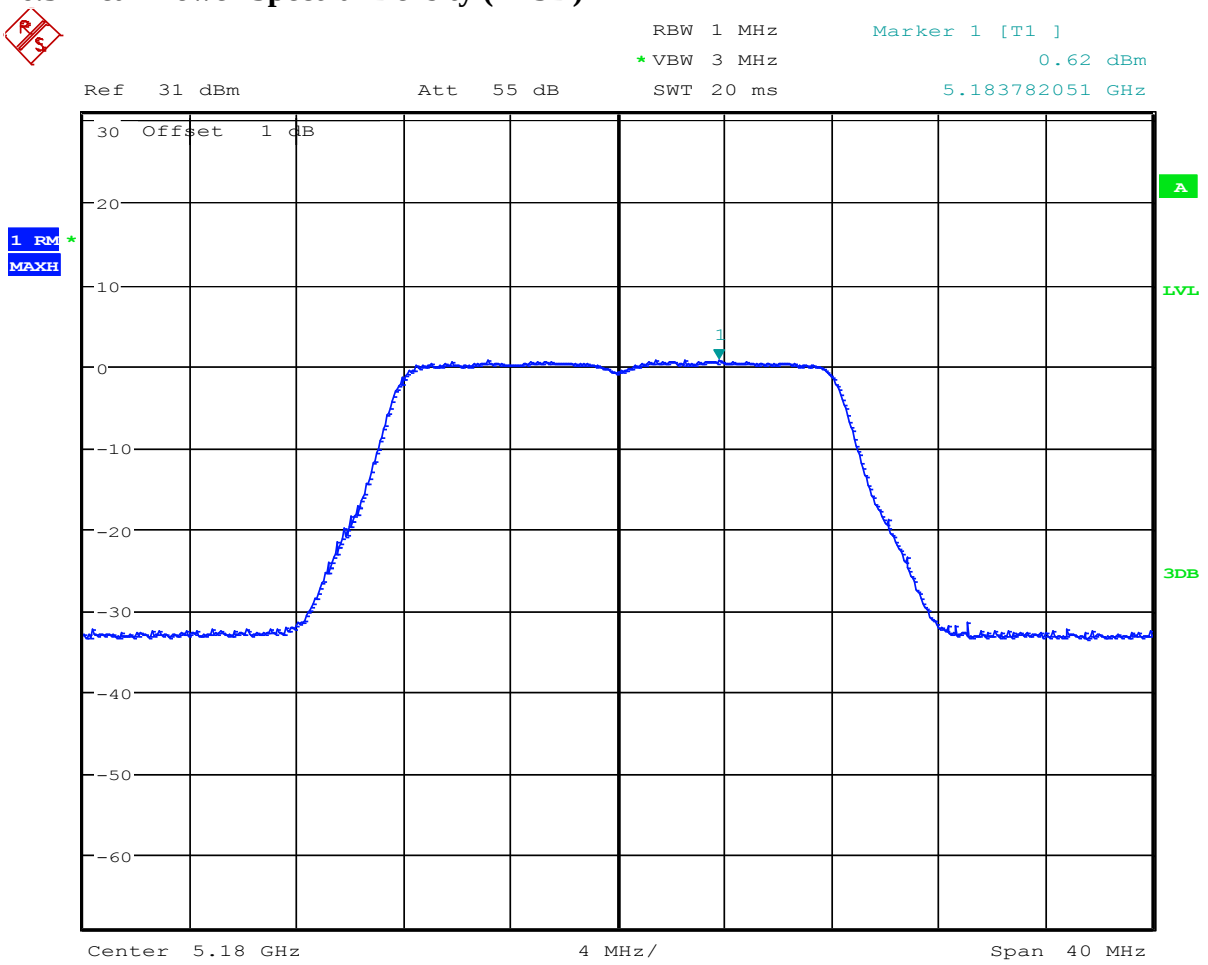
16.2.35OEB_Ch122_AC80_Mode



Date: 31.JUL.2014 15:47:09

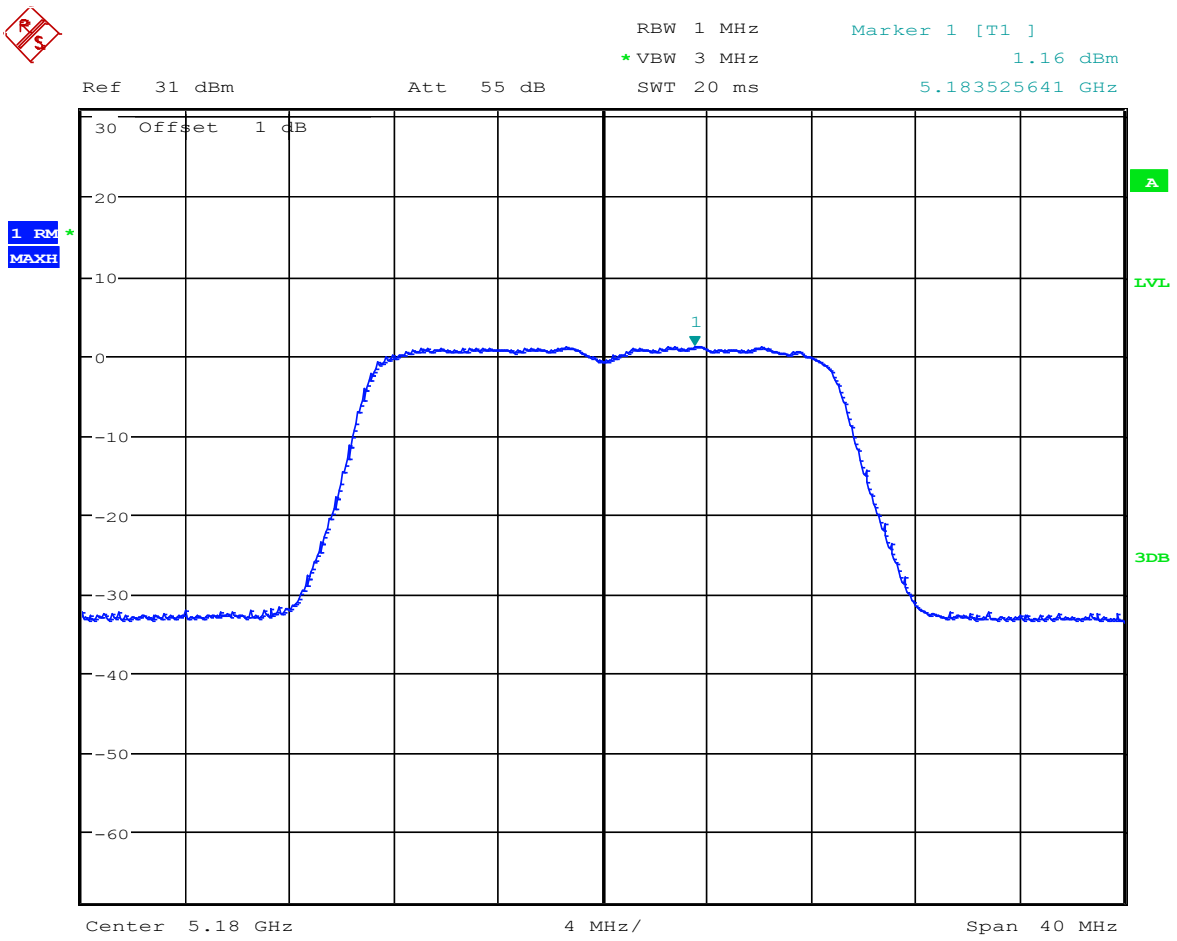
16.2.36OEB_Ch155_AC80_Mode

16.3 Peak Power Spectral Density (PPSD)

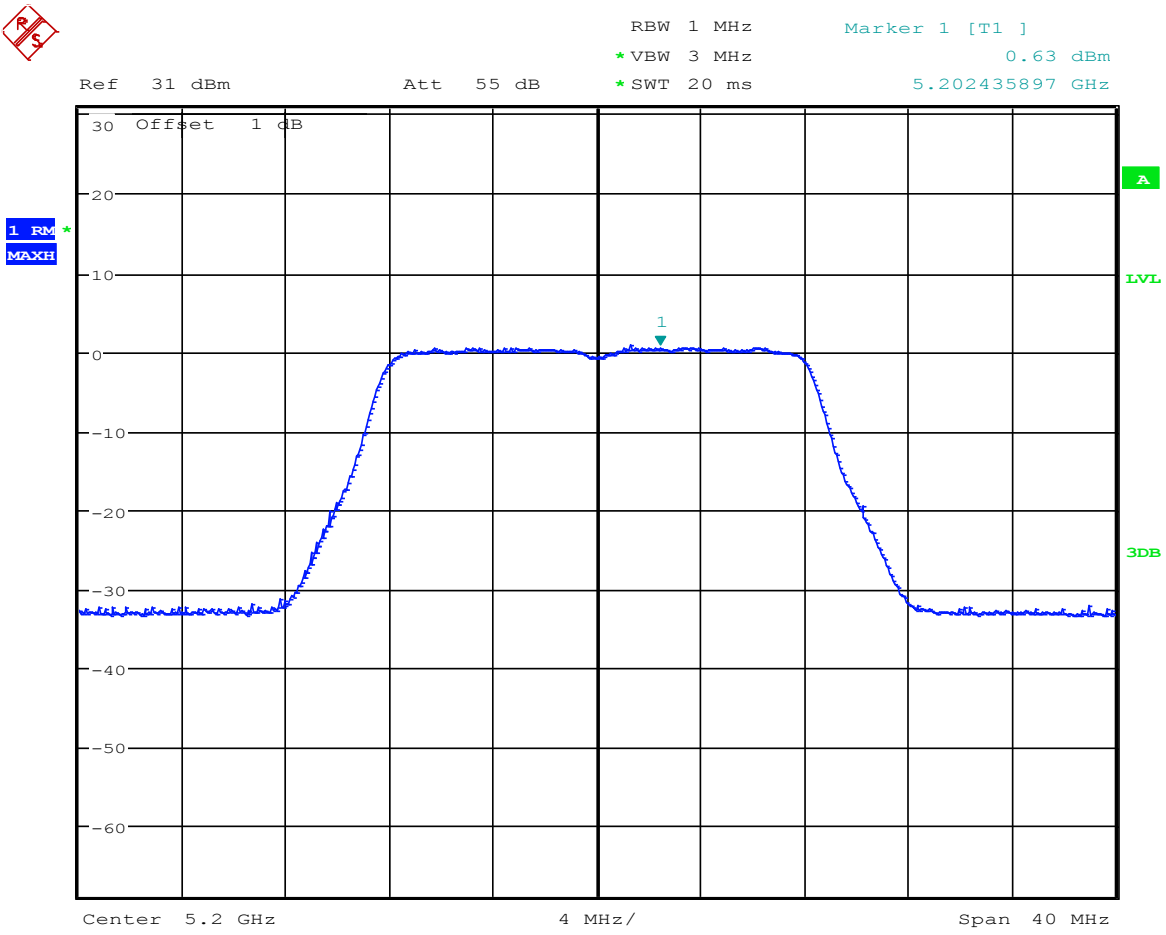


Date: 11.AUG.2014 12:20:14

16.3.1 PPSD_Ch36_a_Mode

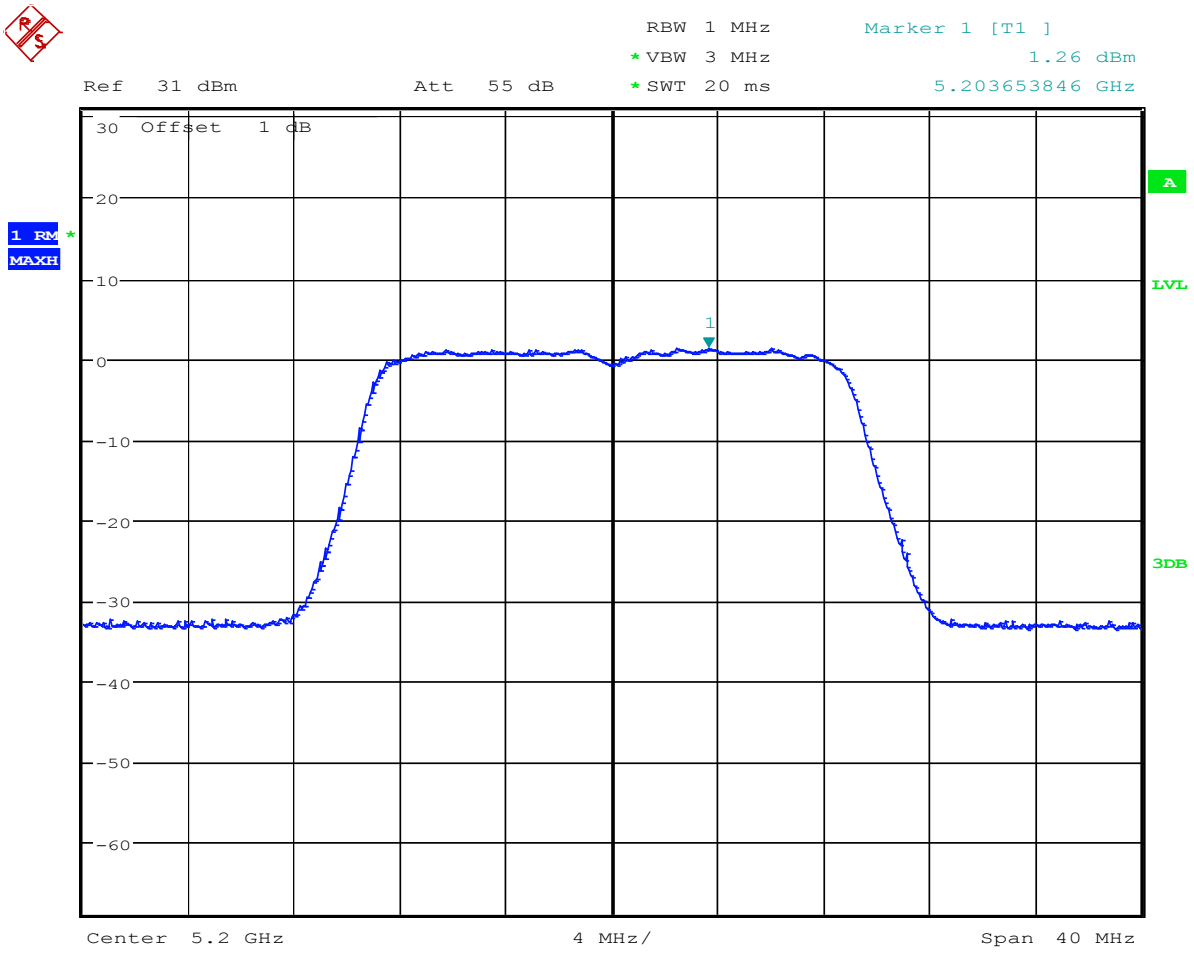


16.3.2 PPSD_Ch36_n_Mode



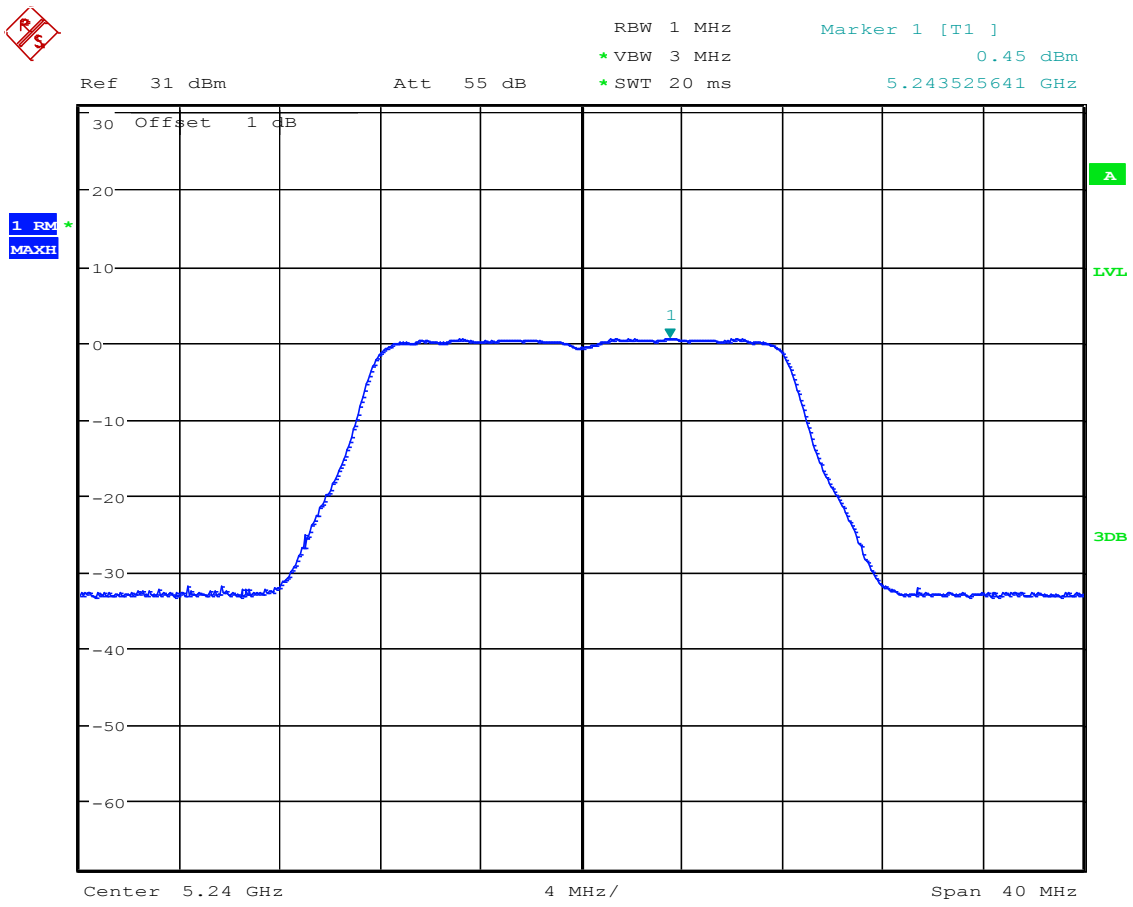
Date: 11.AUG.2014 12:32:03

16.3.3 PPSD_Ch40_a_Mode



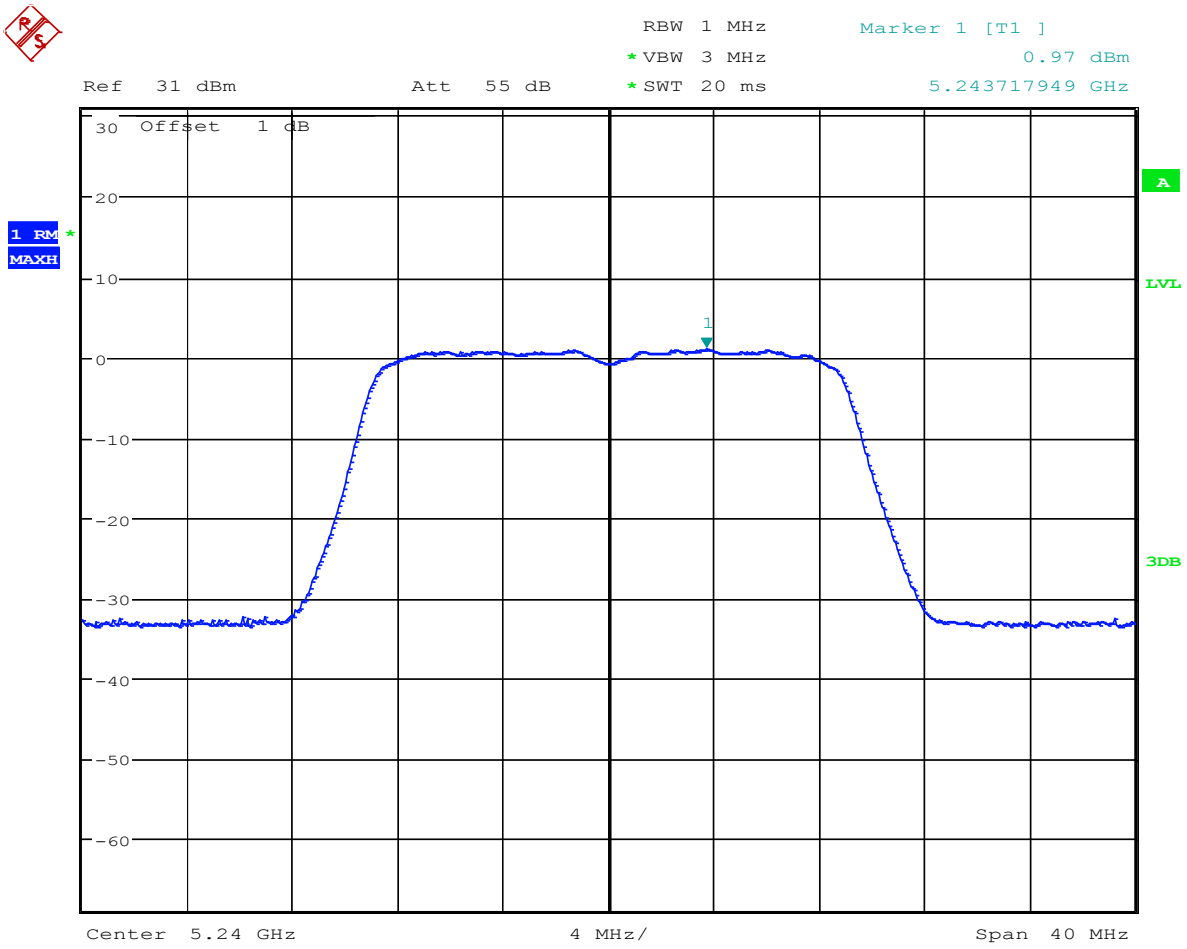
Date: 11.AUG.2014 12:34:43

16.3.4 PPSD_Ch40_n_Mode



Date: 11.AUG.2014 12:38:32

16.3.5 PPSD_Ch48_a_Mode



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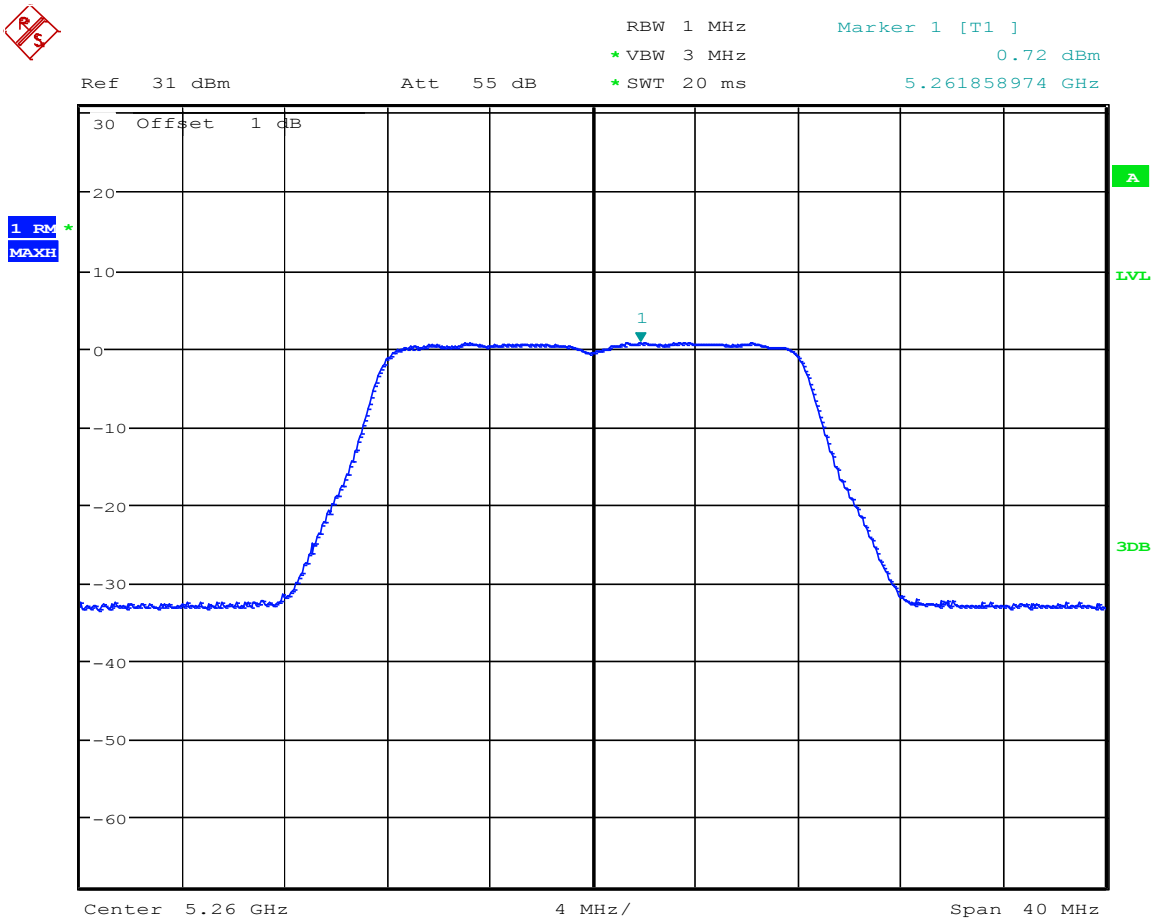
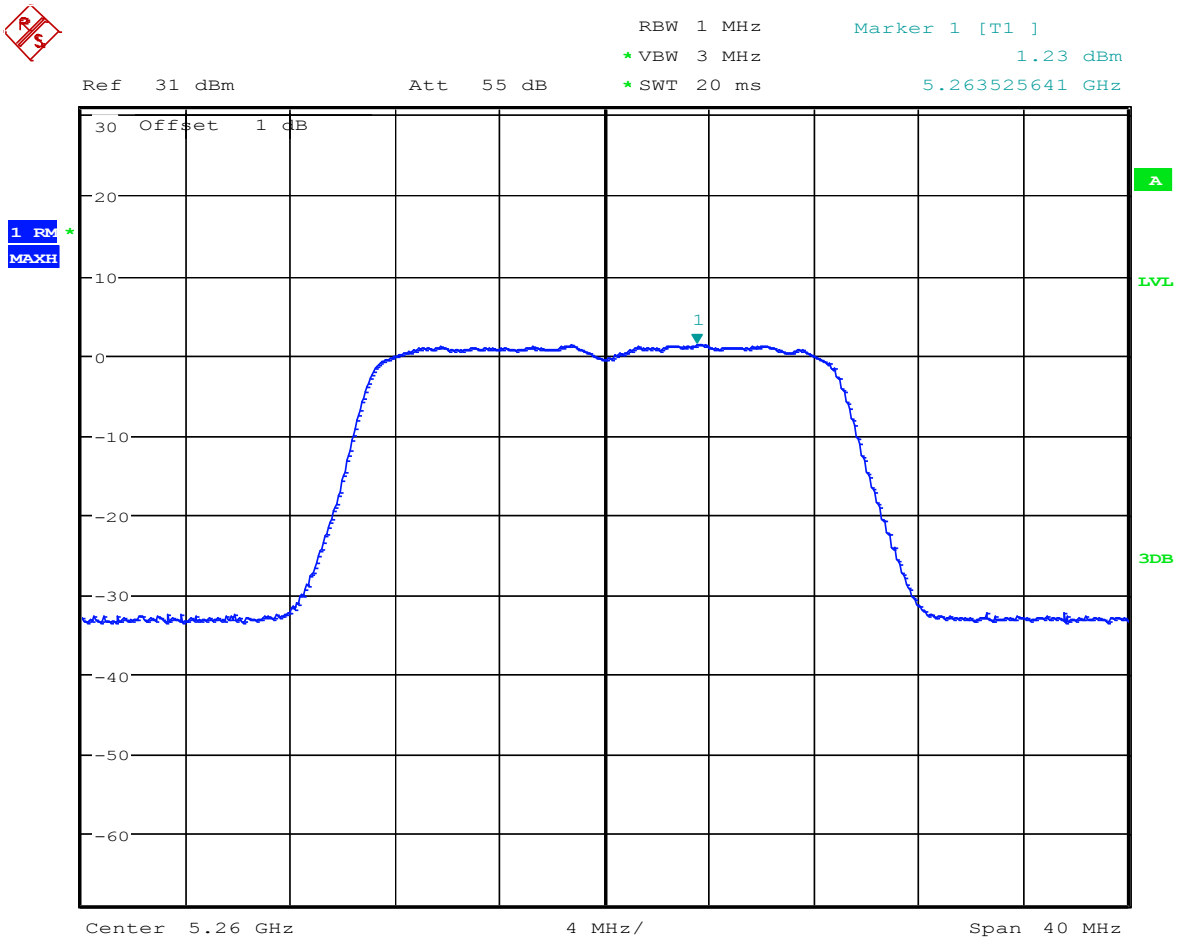
16.3.6 PPSD_Ch48_n_Mode



16.3.7 PPSD_Ch52_a_Mode



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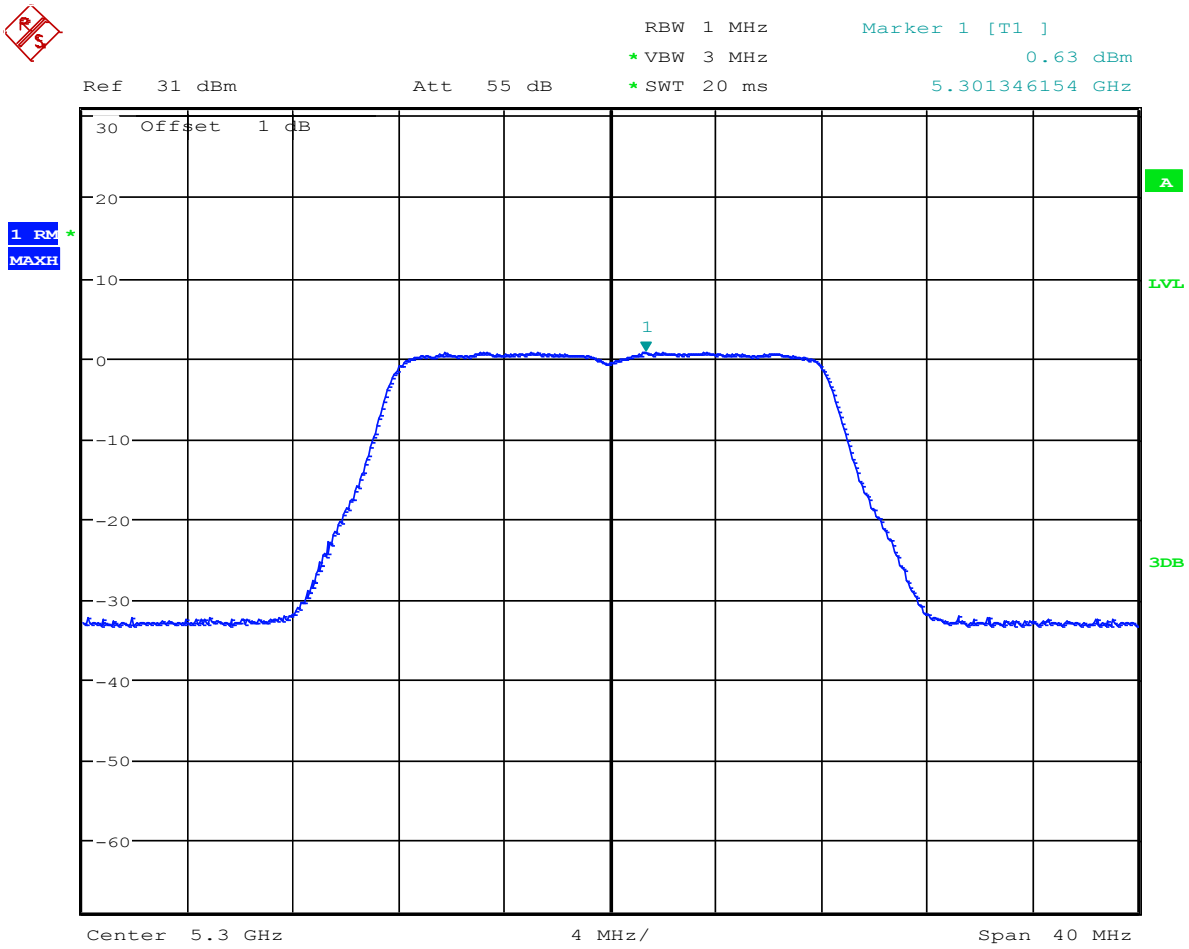
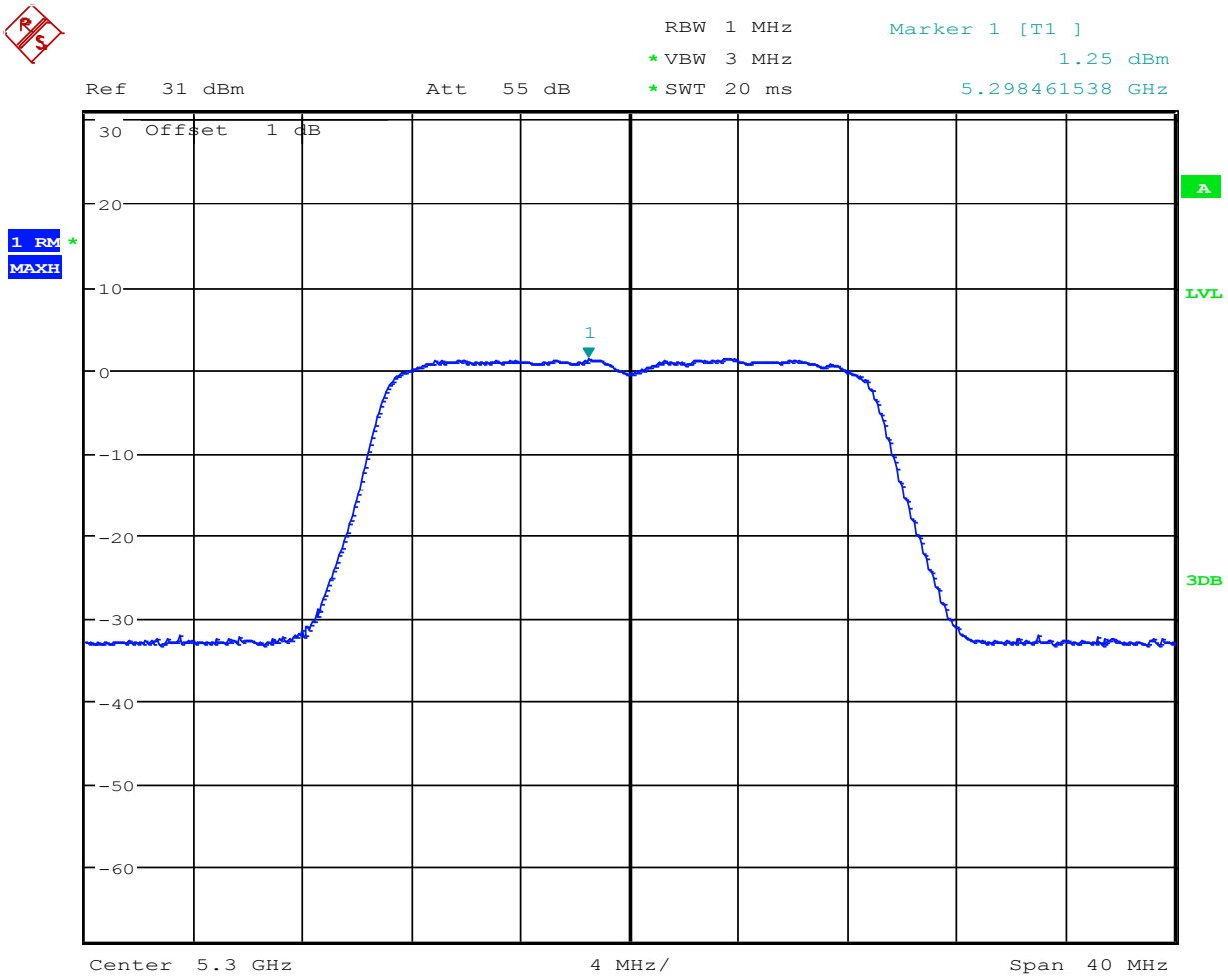
16.3.8 PPSD_Ch52_n_Mode



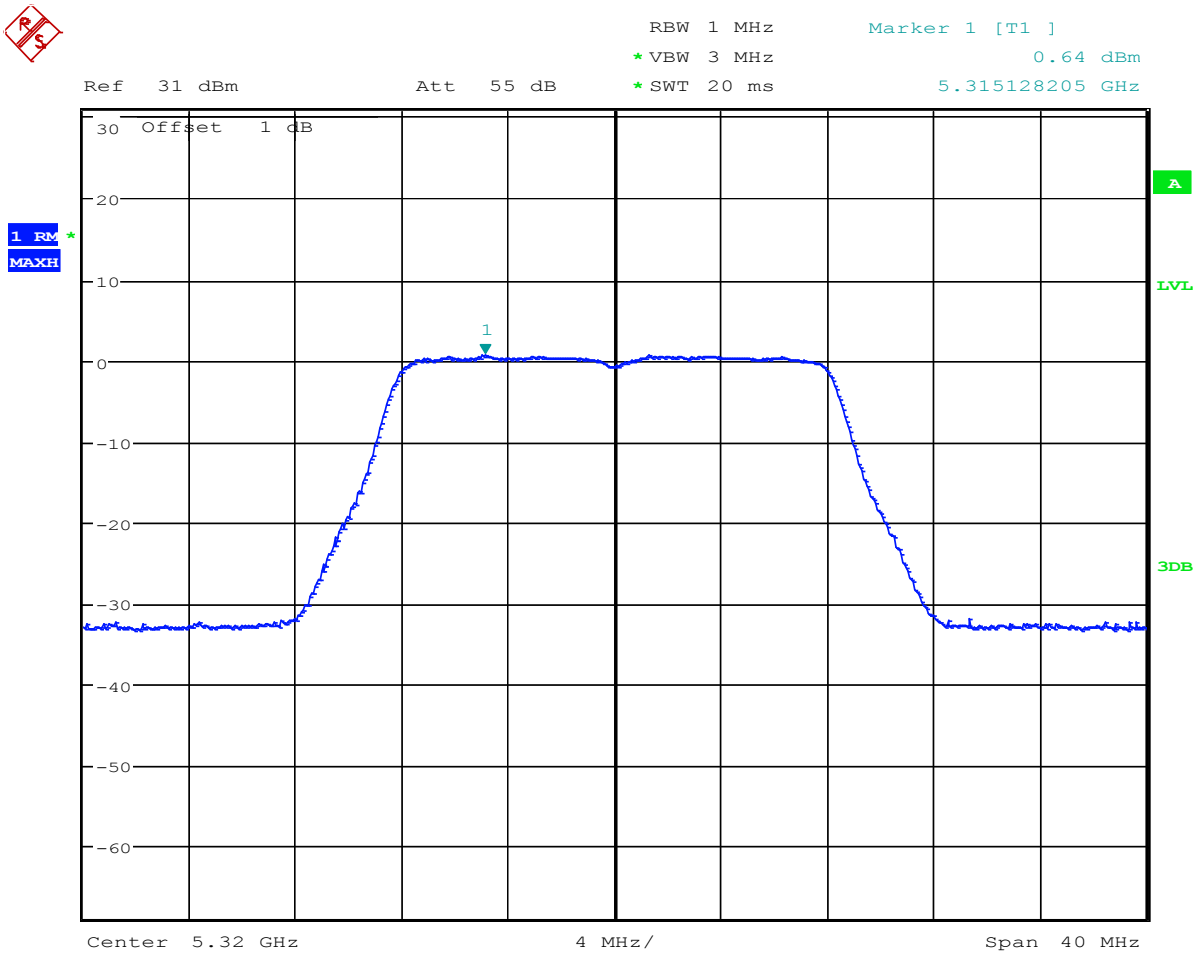
Date: 11.AUG.2014 12:49:23

16.3.9 PPSD_Ch60_a_Mode



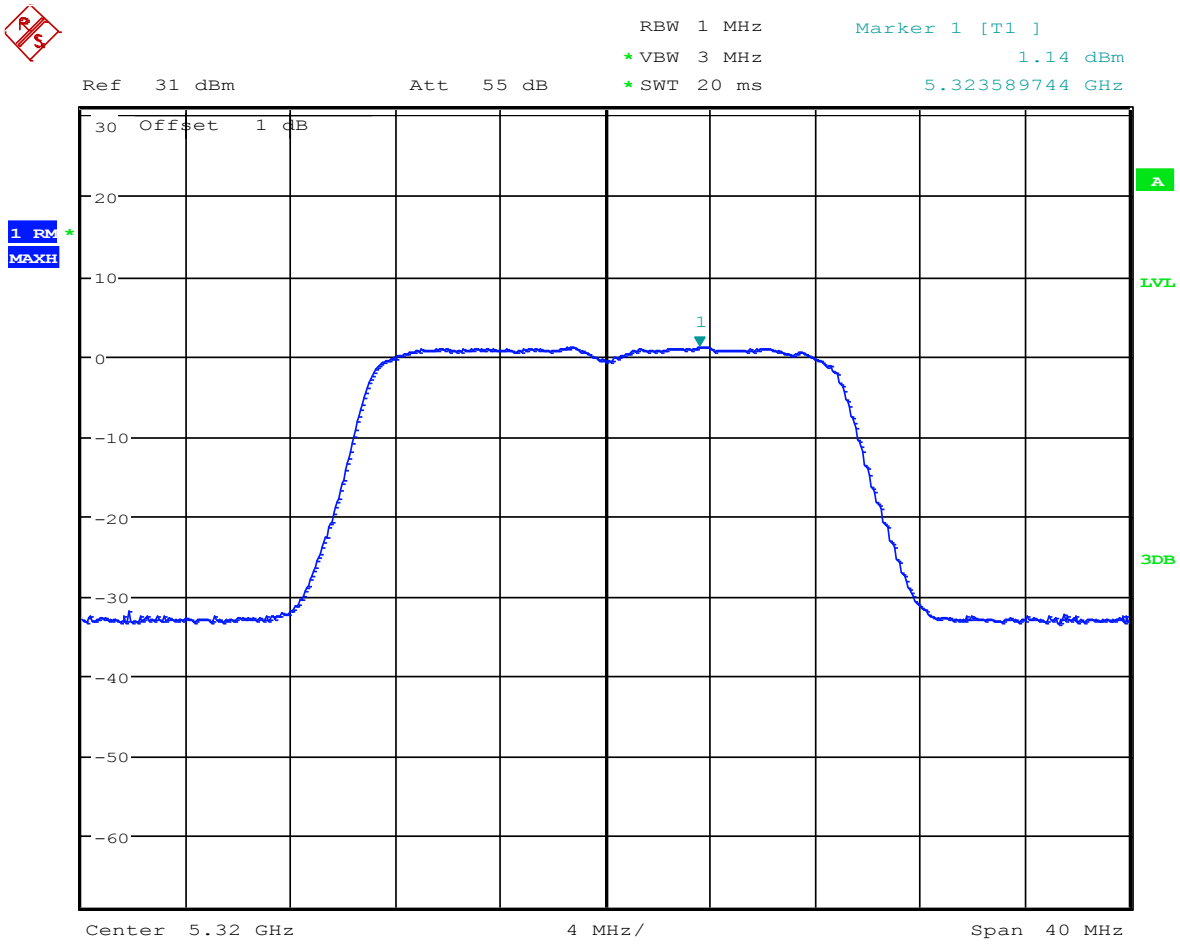
Date: 11.AUG.2014 12:51:25

16.3.10 PPSD_Ch60_n_Mode



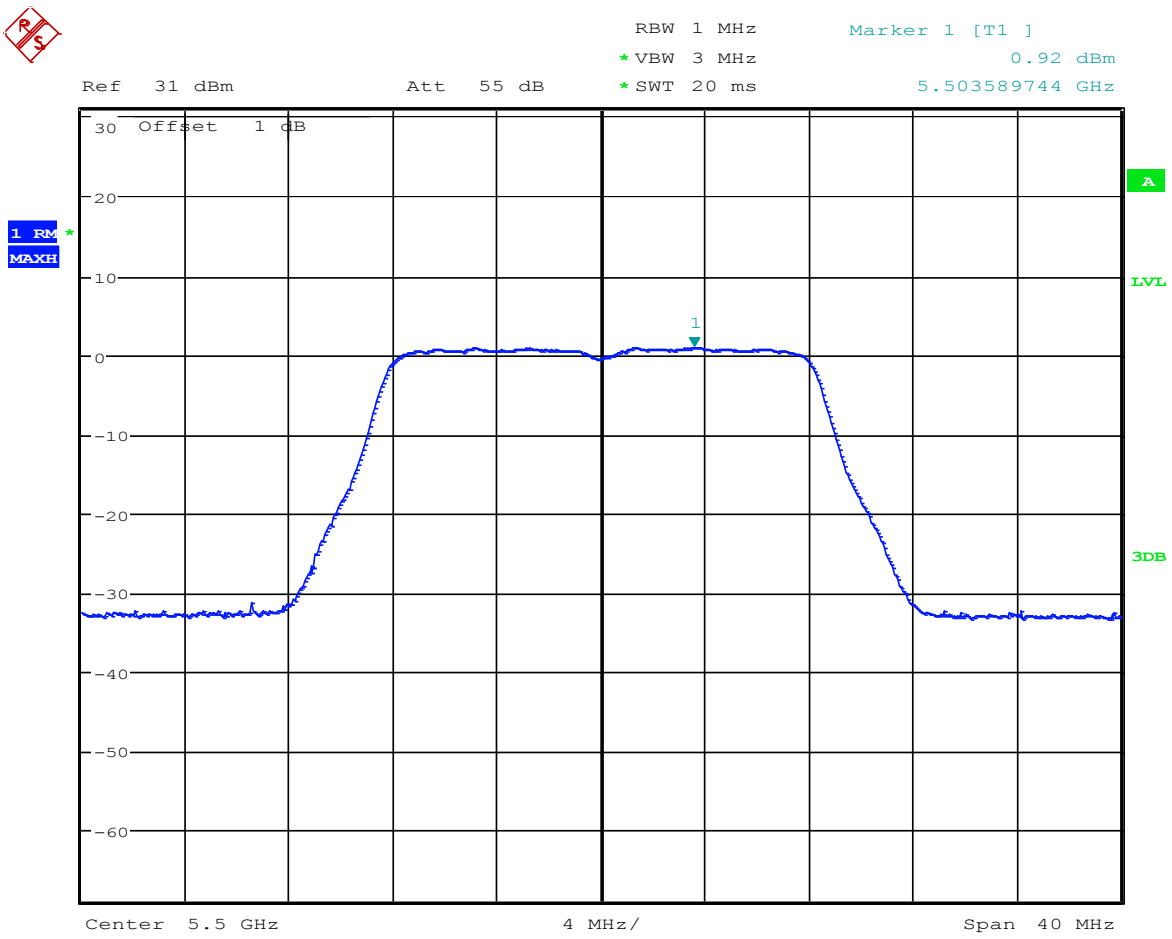
Date: 11.AUG.2014 12:54:11

16.3.11 PPSD_Ch64_a_Mode



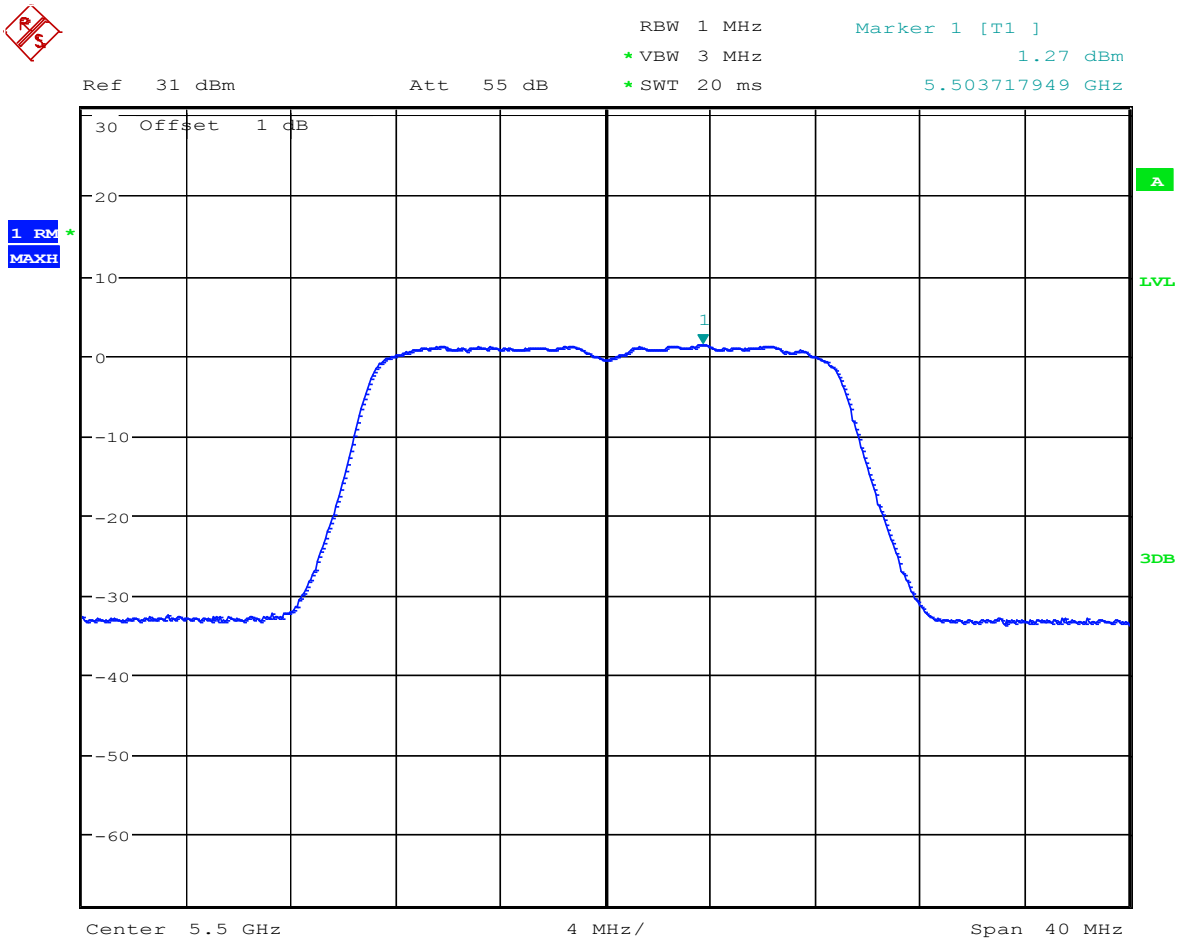
Date: 11.AUG.2014 12:56:08

16.3.12 PPSD_Ch64_n_Mode



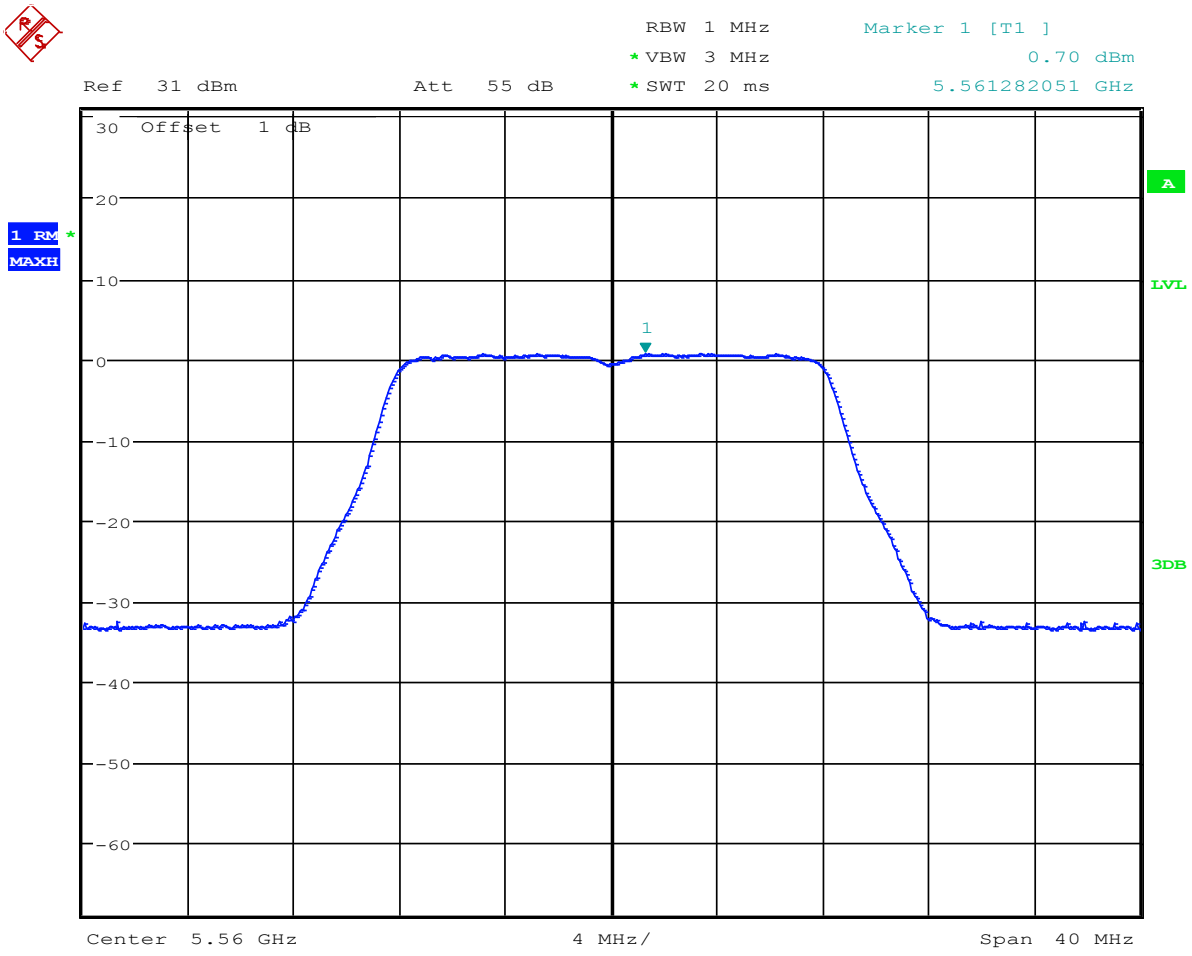
Date: 11.AUG.2014 14:47:51

16.3.13 PPSD_Ch100_a_Mode



Date: 11.AUG.2014 14:49:41

16.3.14 PPSD_Ch100_n_Mode



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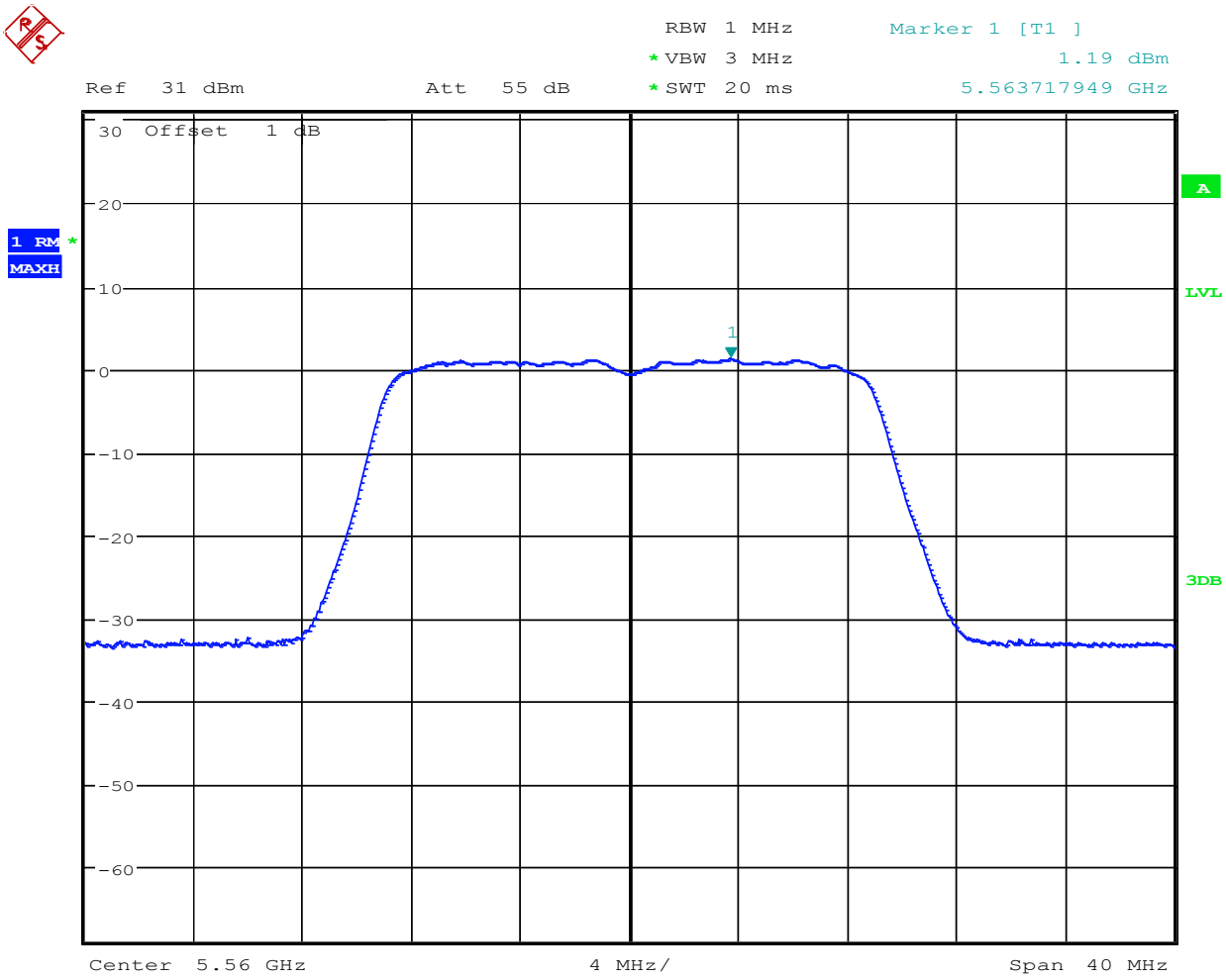
16.3.15 PPSD_Ch112_a_Mode



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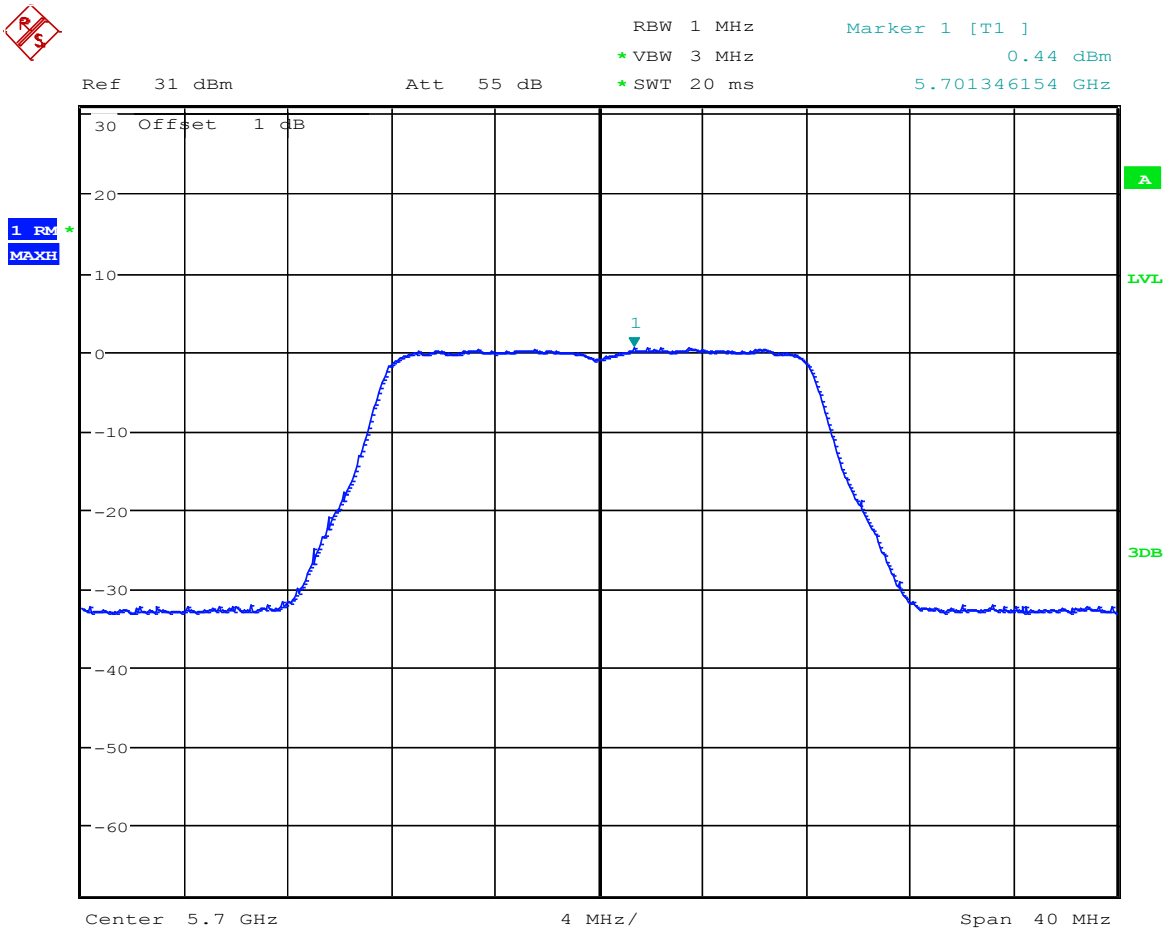
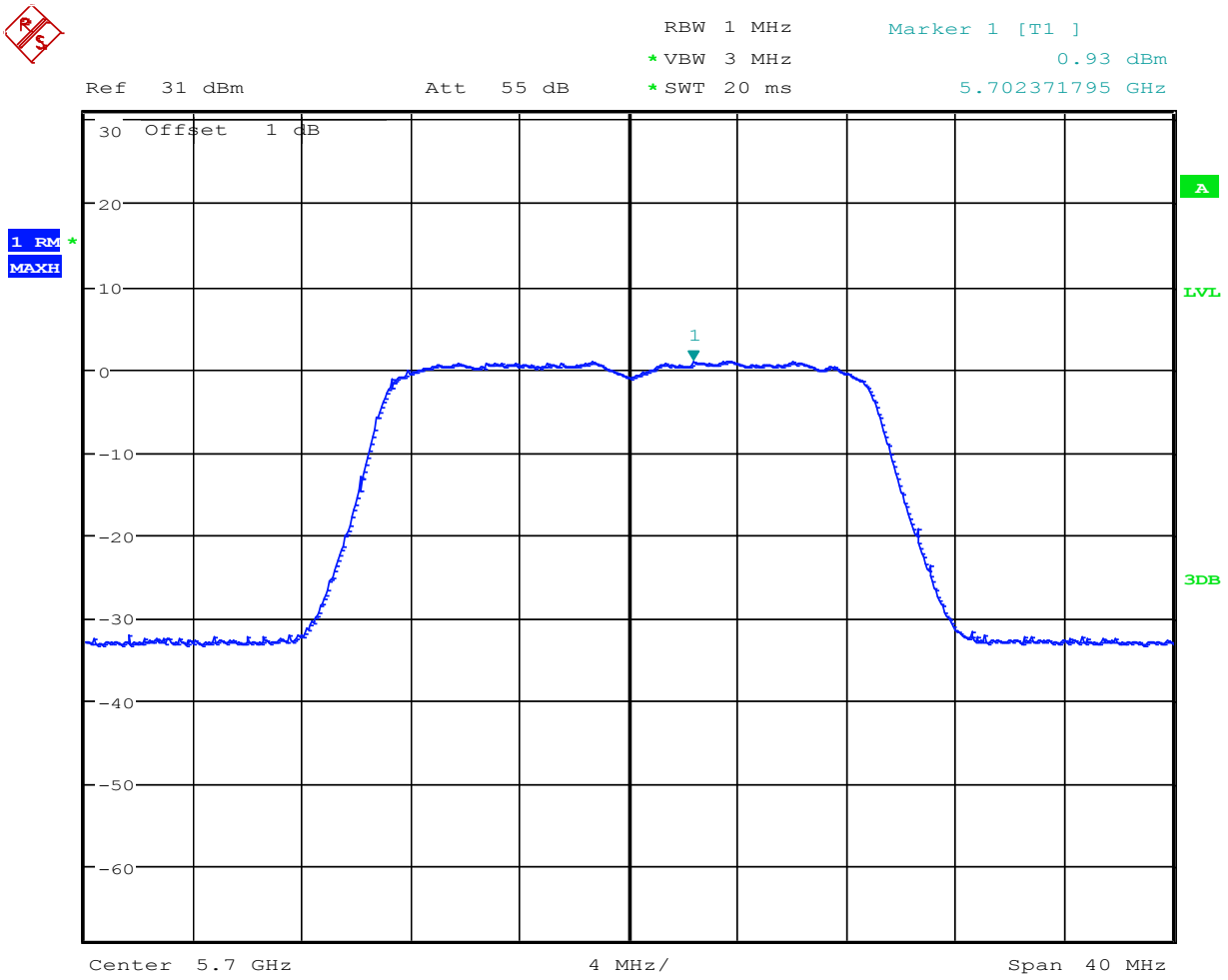
16.3.16 PPSD_Ch112_n_Mode

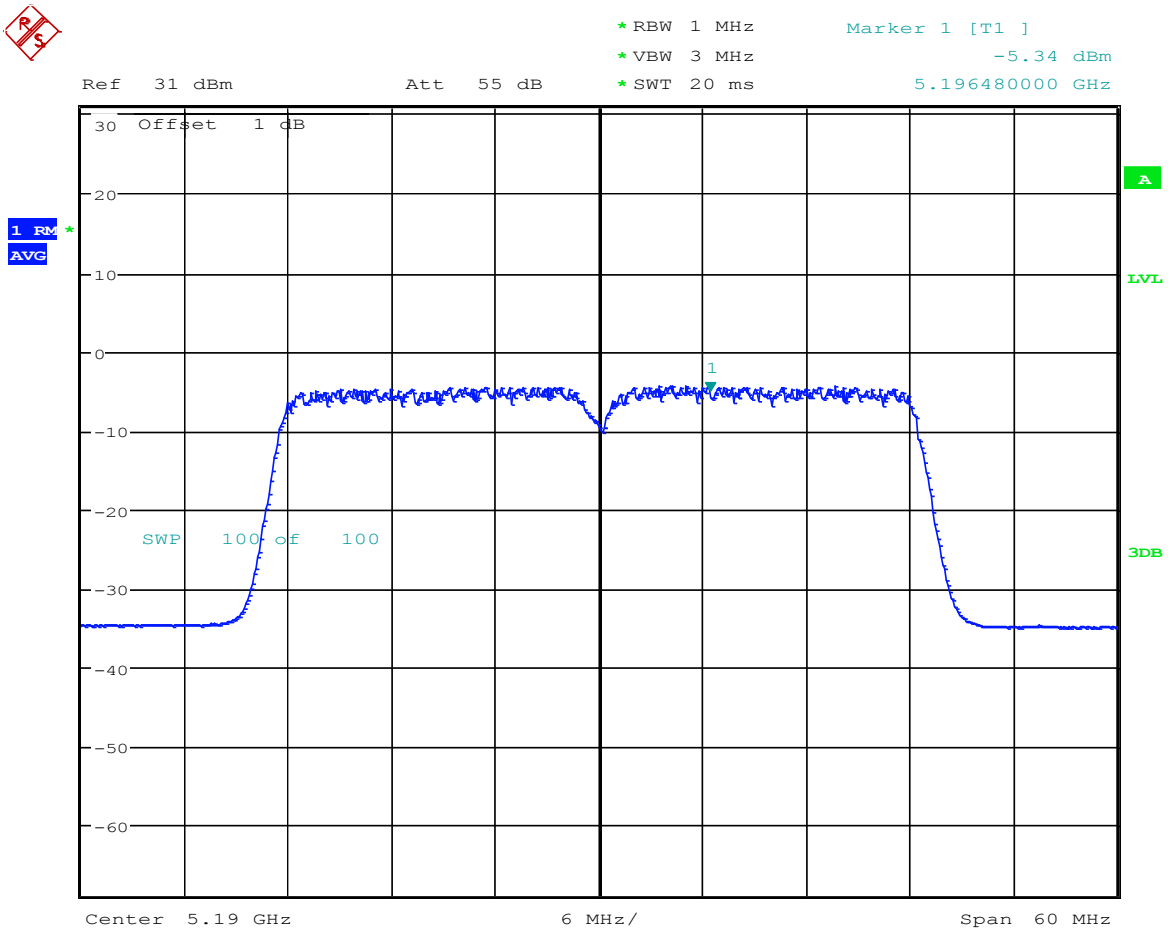


16.3.17 PPSD_Ch140_a_Mode



Date: 11.AUG.2014 15:05:14

16.3.18 PPSD_Ch140_n_Mode



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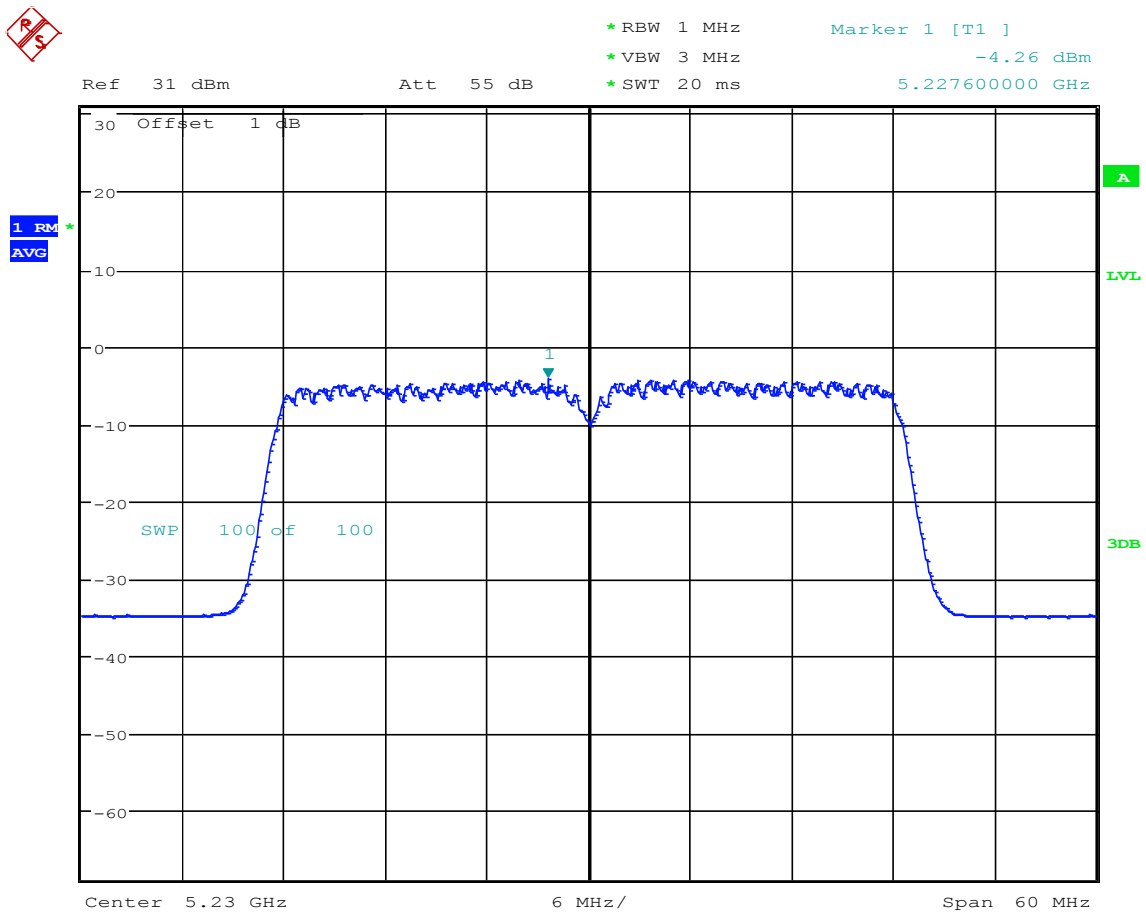
16.3.19 PPSD_Ch38_n40_Mode



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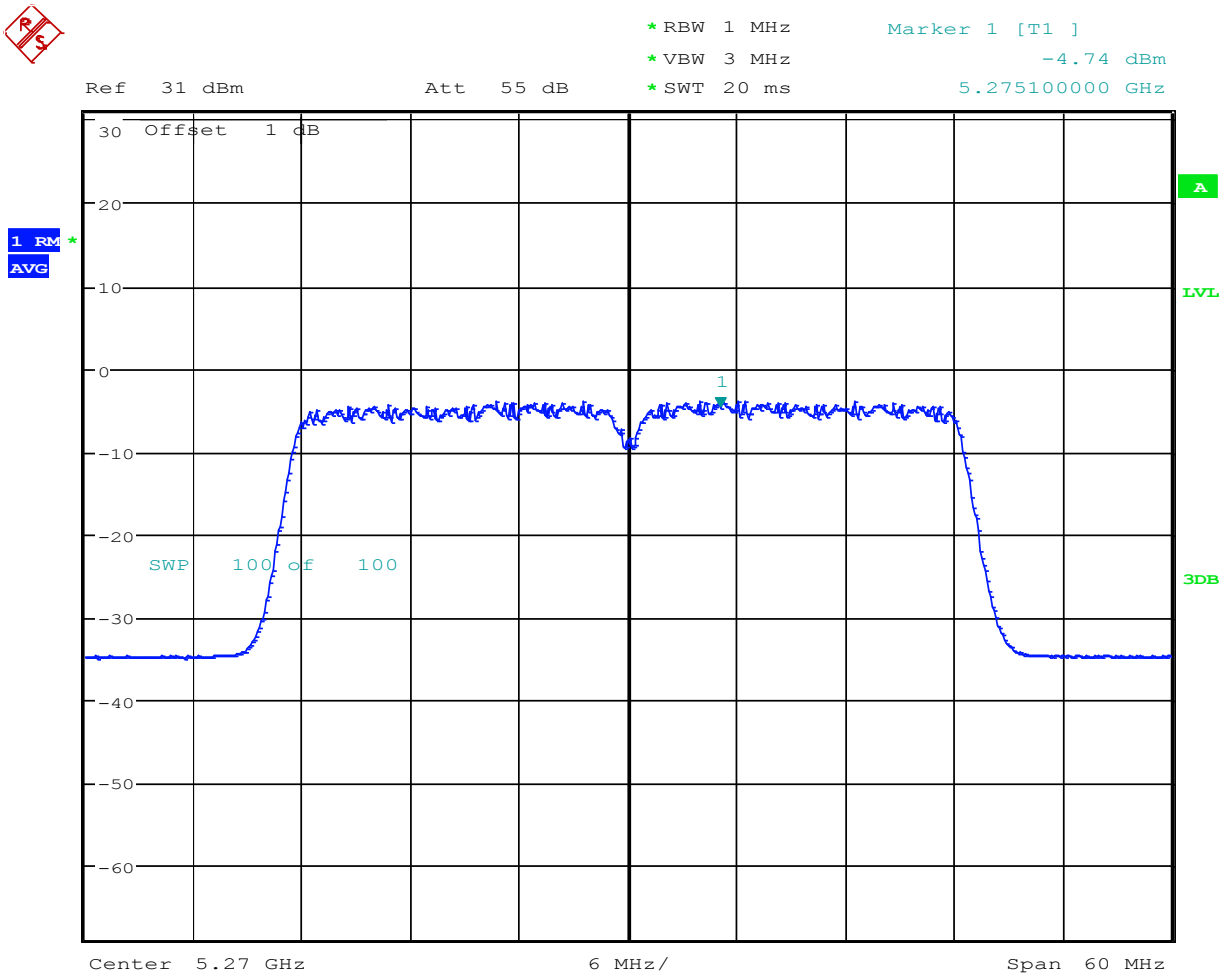
16.3.20 PPSD_Ch46_n40_Mode



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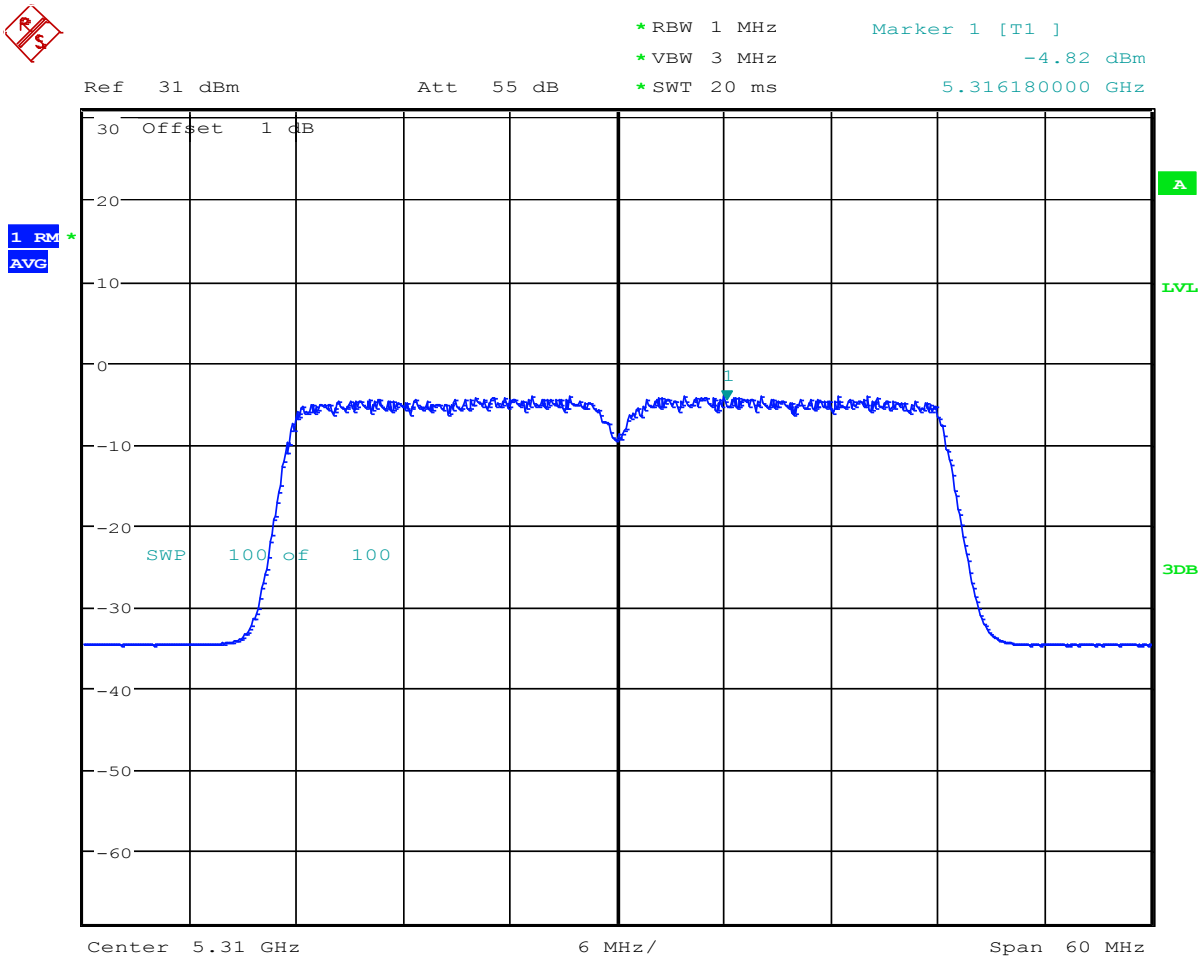
16.3.21 PPSD_Ch54_n40_Mode



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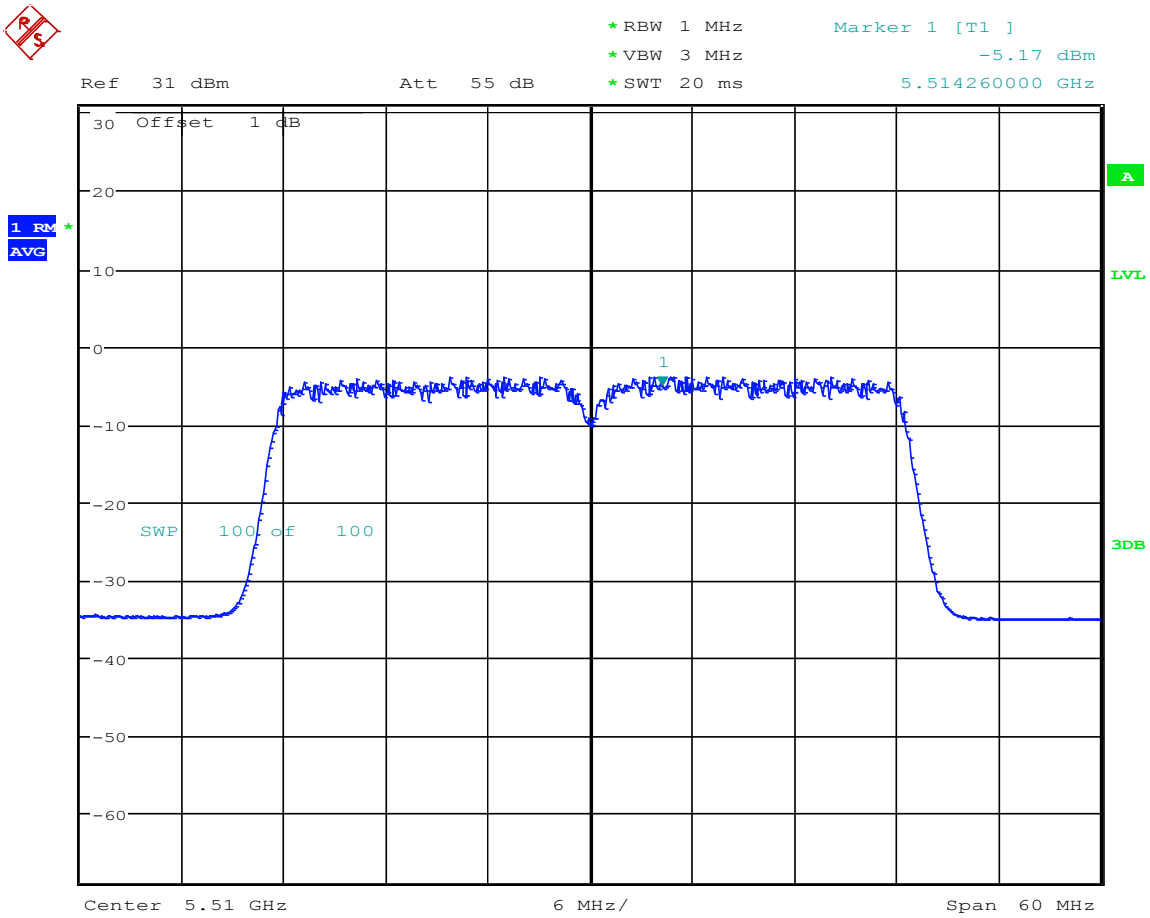
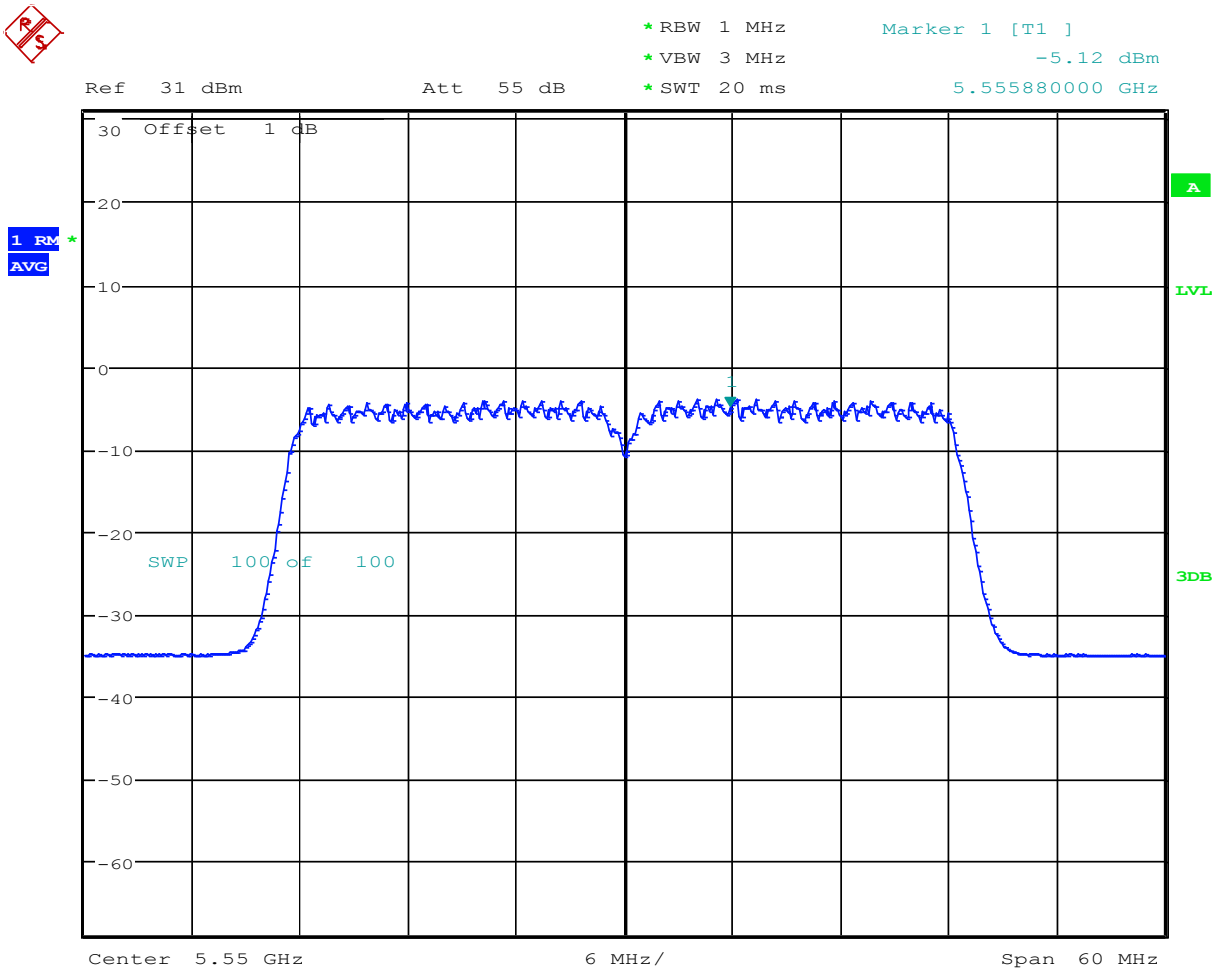
16.3.22 PPSD_Ch62_n40_Mode

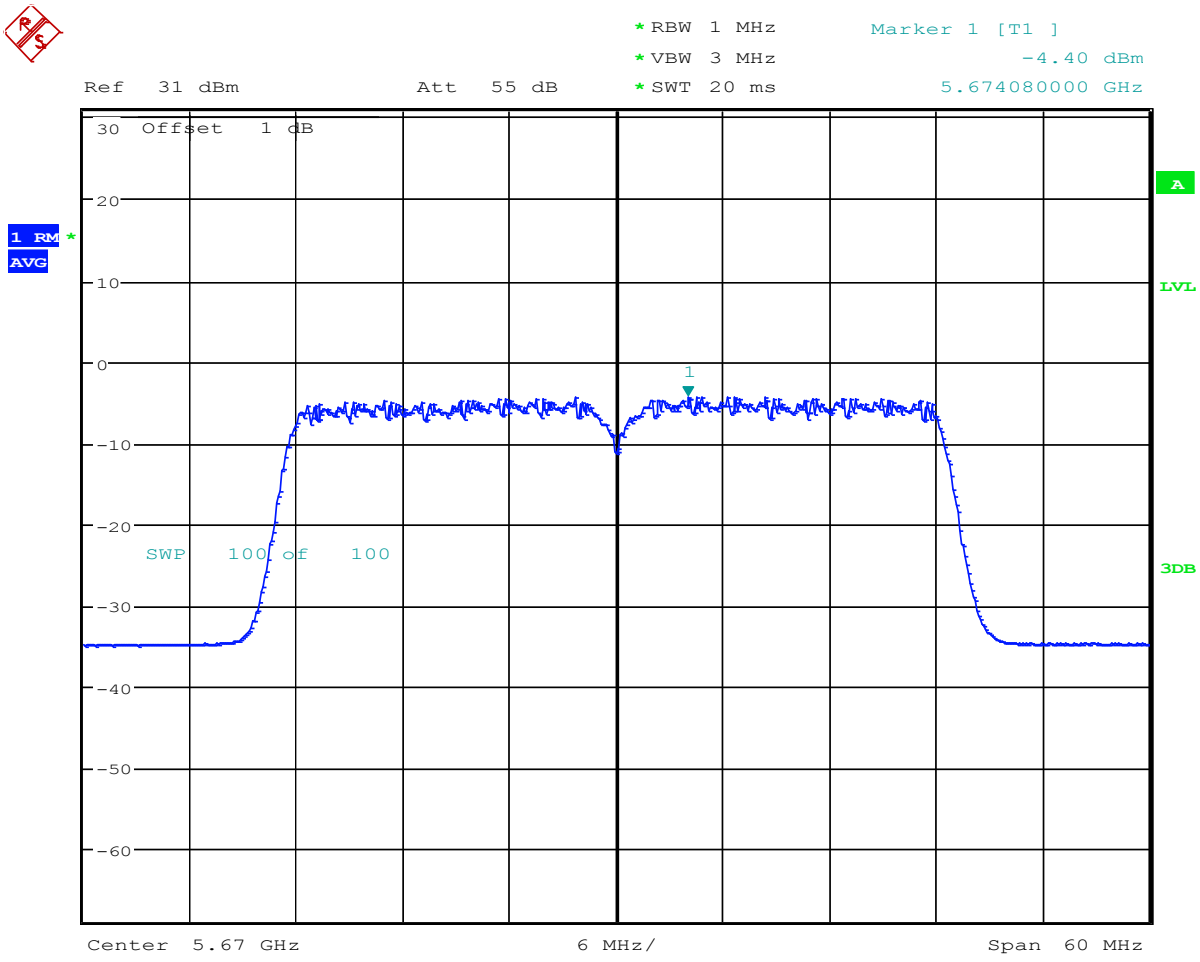


16.3.23 PPSD_Ch102_n40_Mode



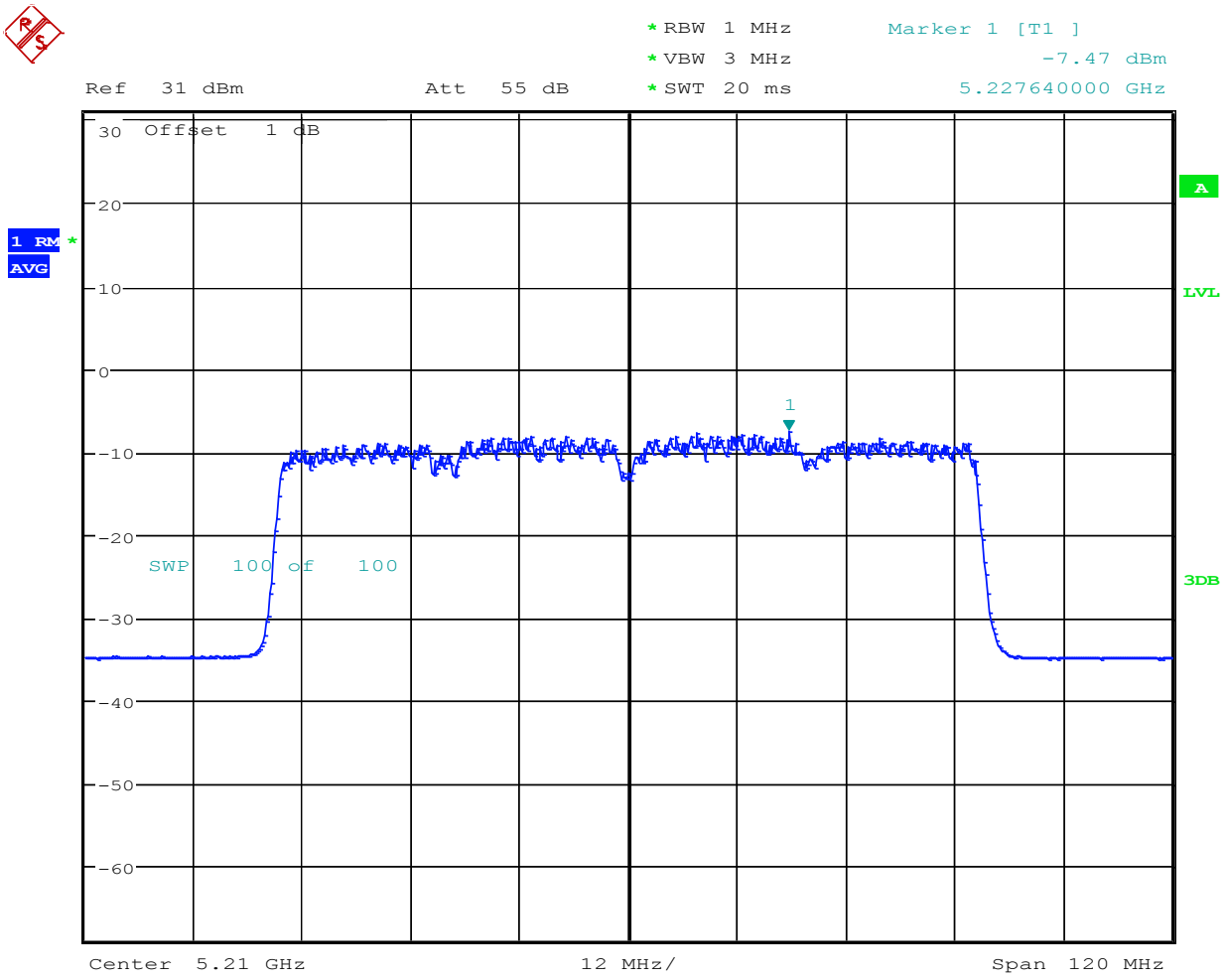
Date: 11.AUG.2014 16:36:57

16.3.24 PPSD_Ch110_n40_Mode

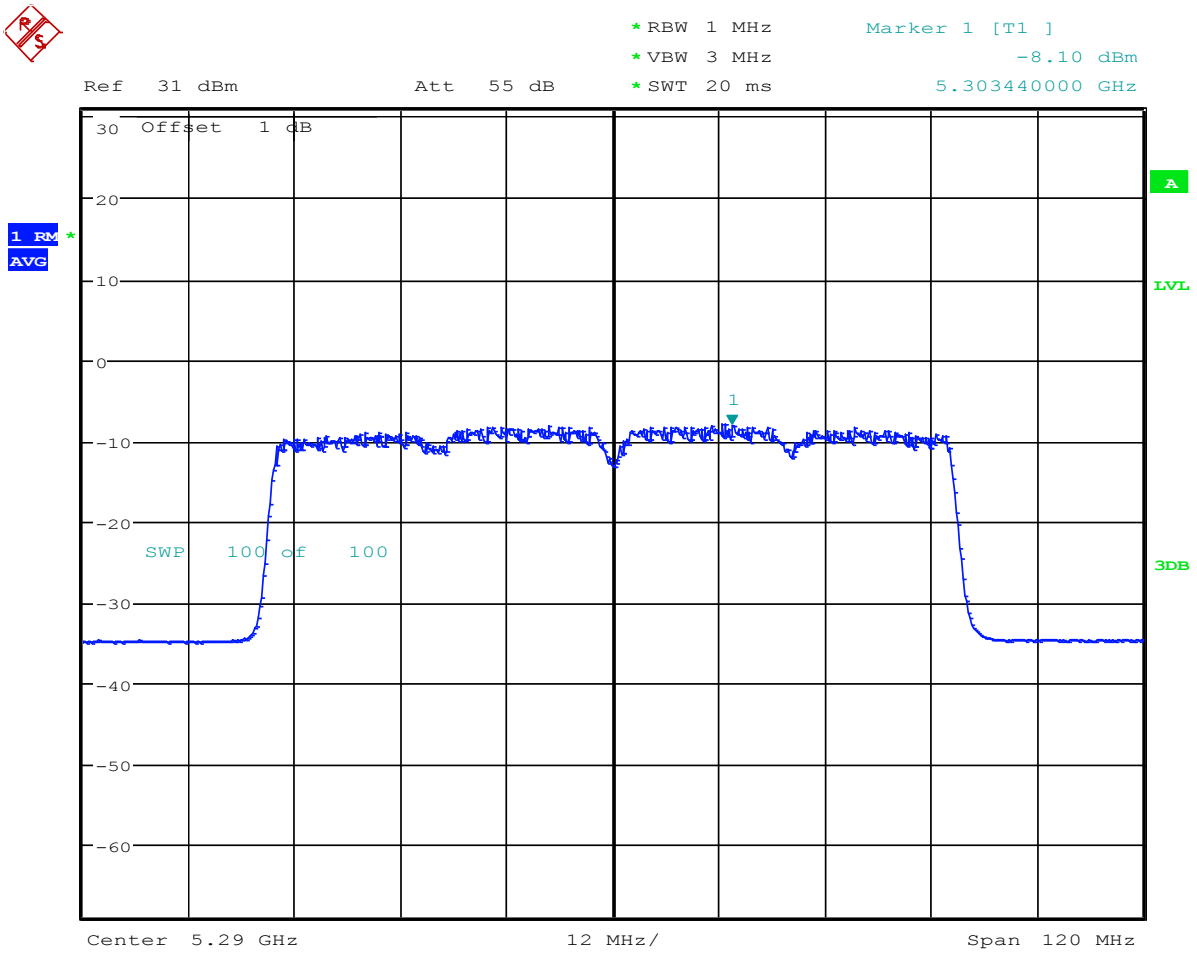


Date: 11.AUG.2014 16:39:18

16.3.25 PPSD_Ch134_n40_Mode

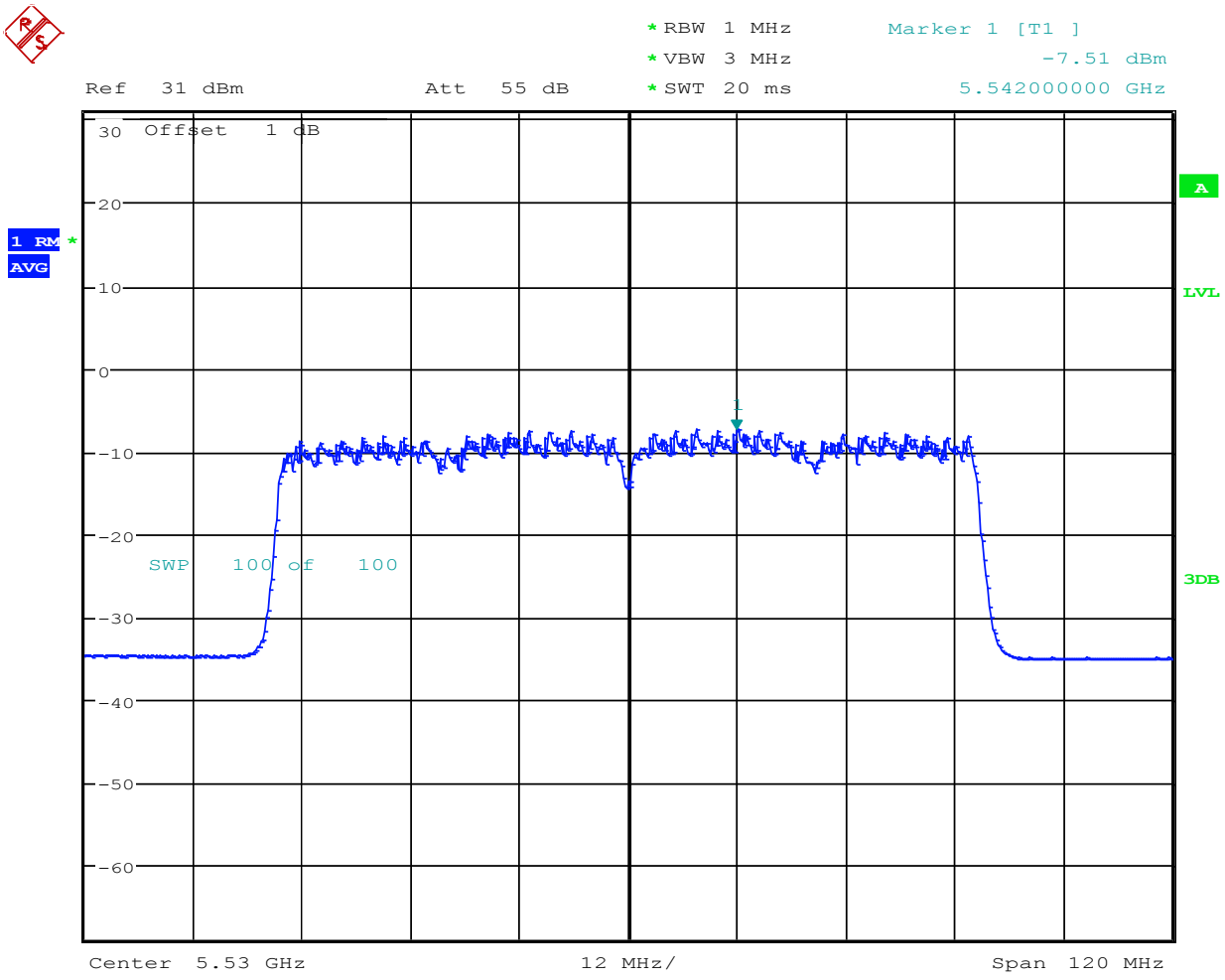


16.3.26 PPSD_Ch42_n80_Mode

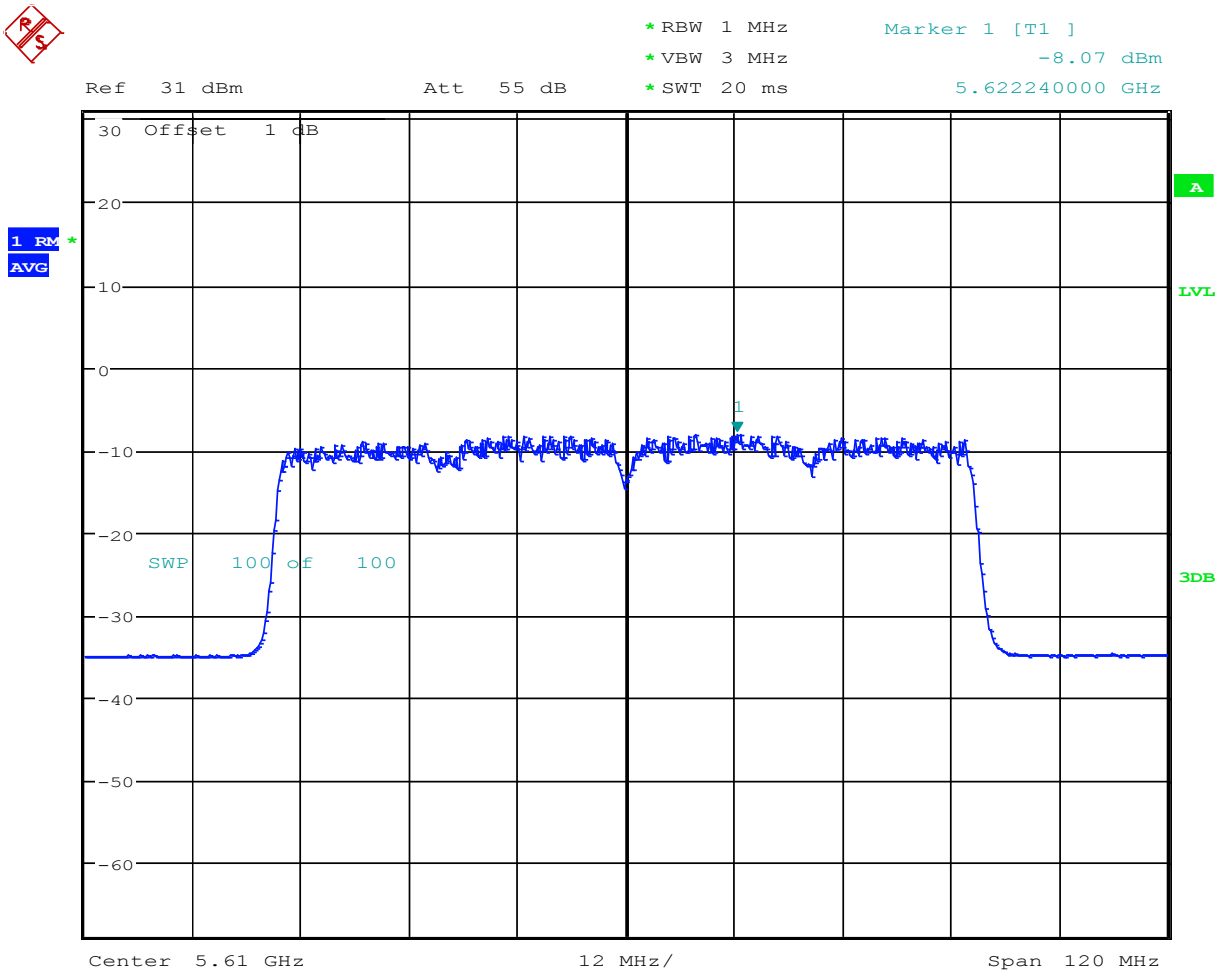


Date: 11.AUG.2014 16:51:39

16.3.27 PPSD_Ch58_n80_Mode

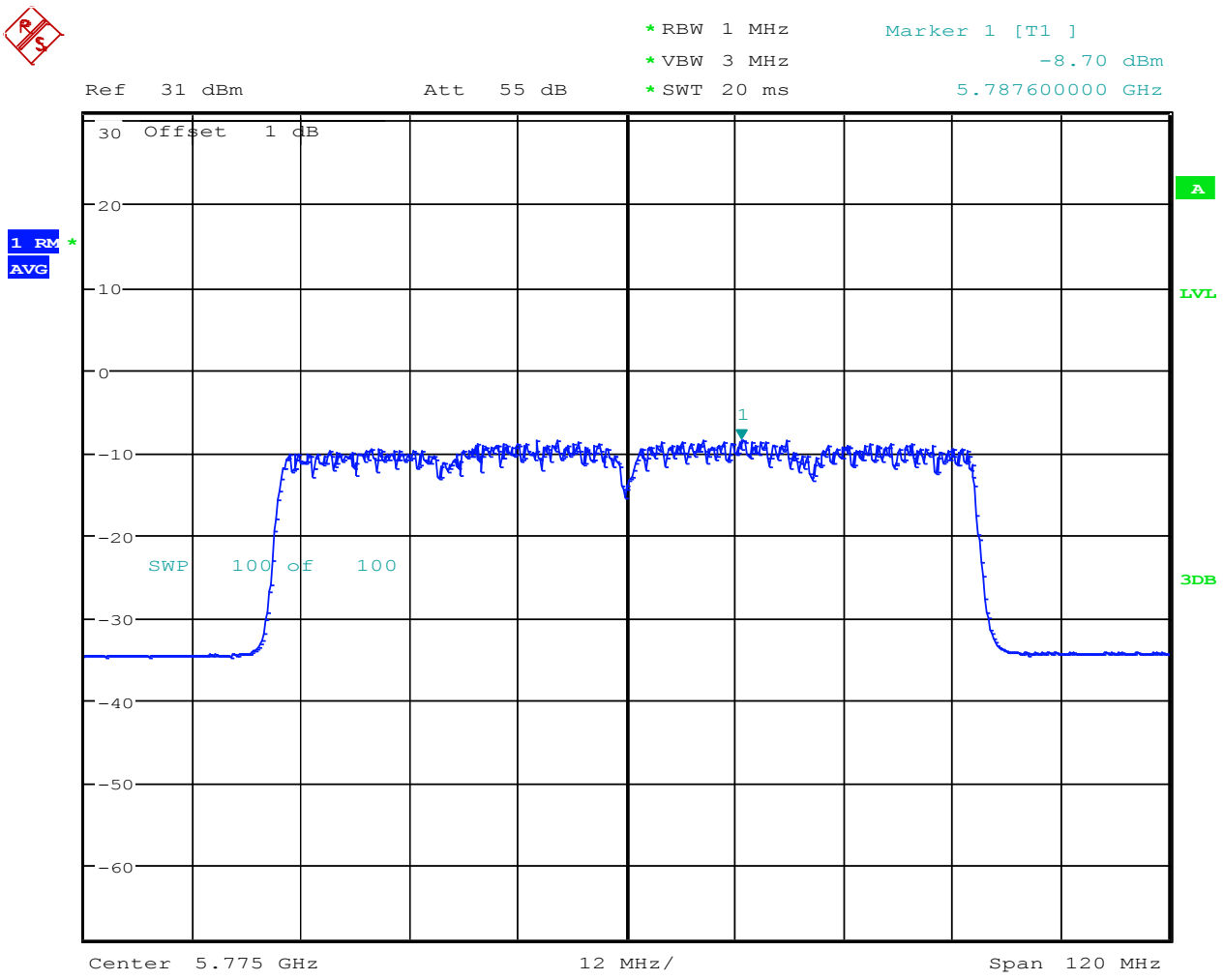


16.3.28 PPSD_Ch106_n80_Mode



Date: 11.AUG.2014 16:56:25

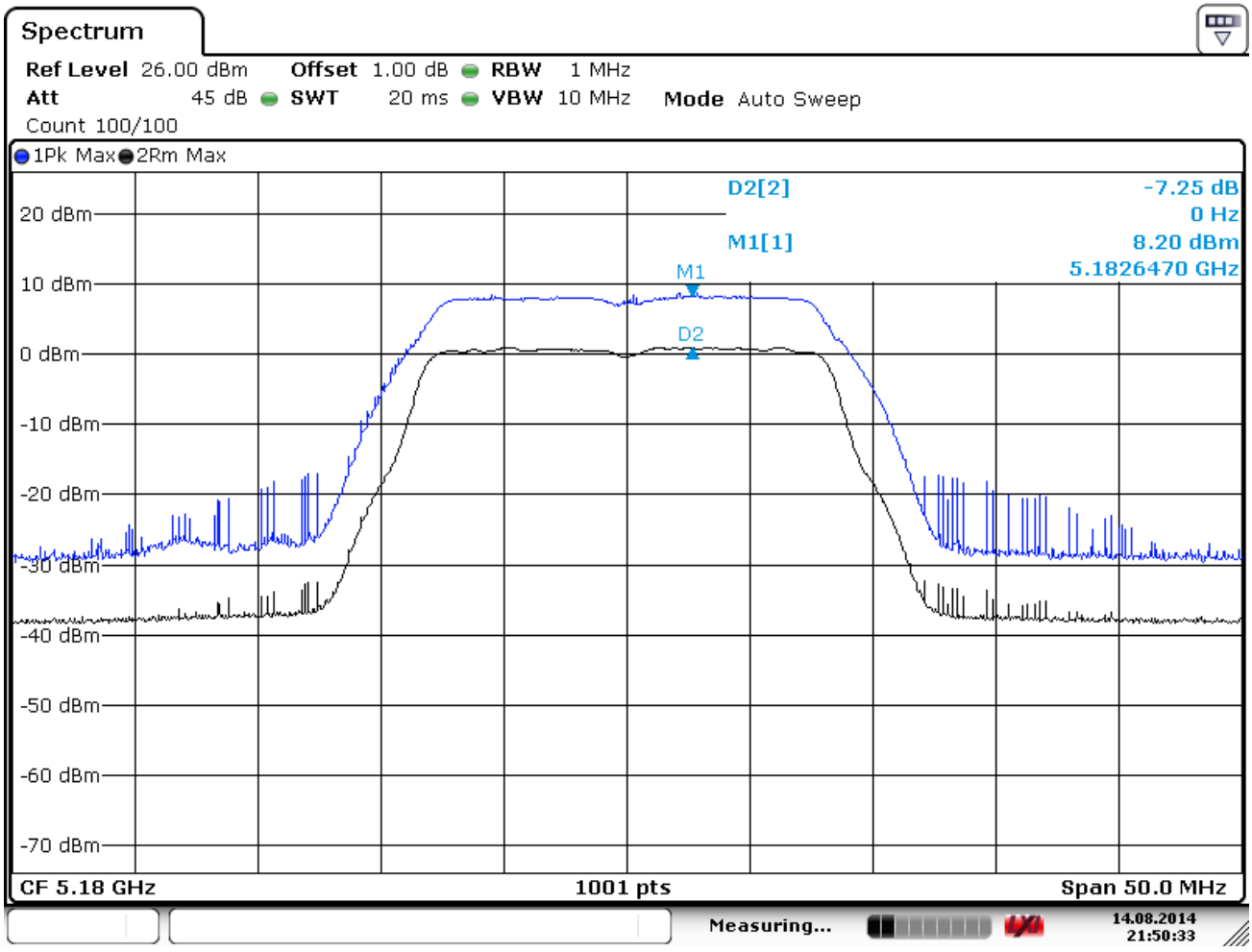
16.3.29 PPSD_Ch122_n80_Mode



Date: 11.AUG.2014 16:58:12

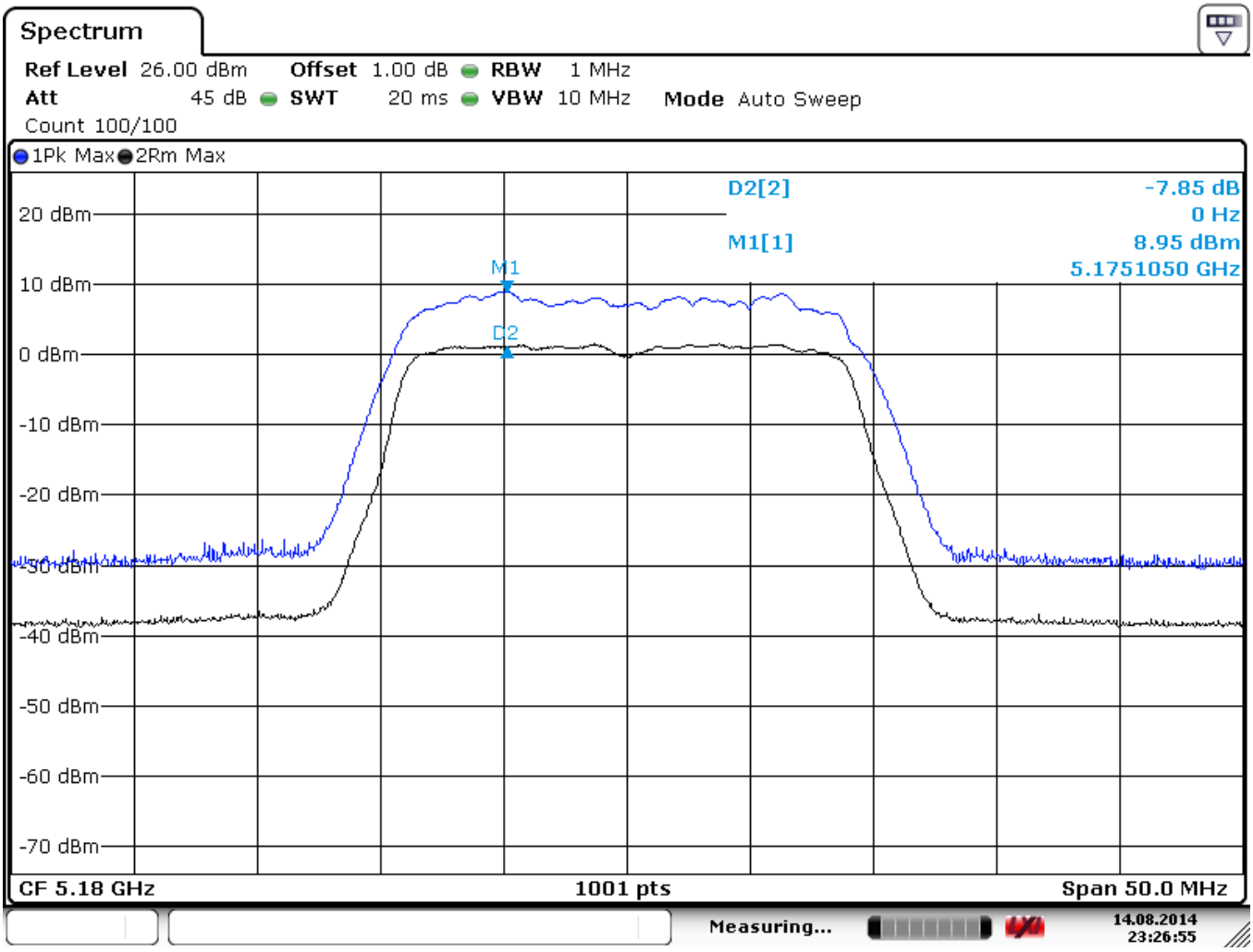
16.3.30 PPSD_Ch155_n80_Mode

16.4 Peak Excursion (Peak to Average Ratio = PAR)



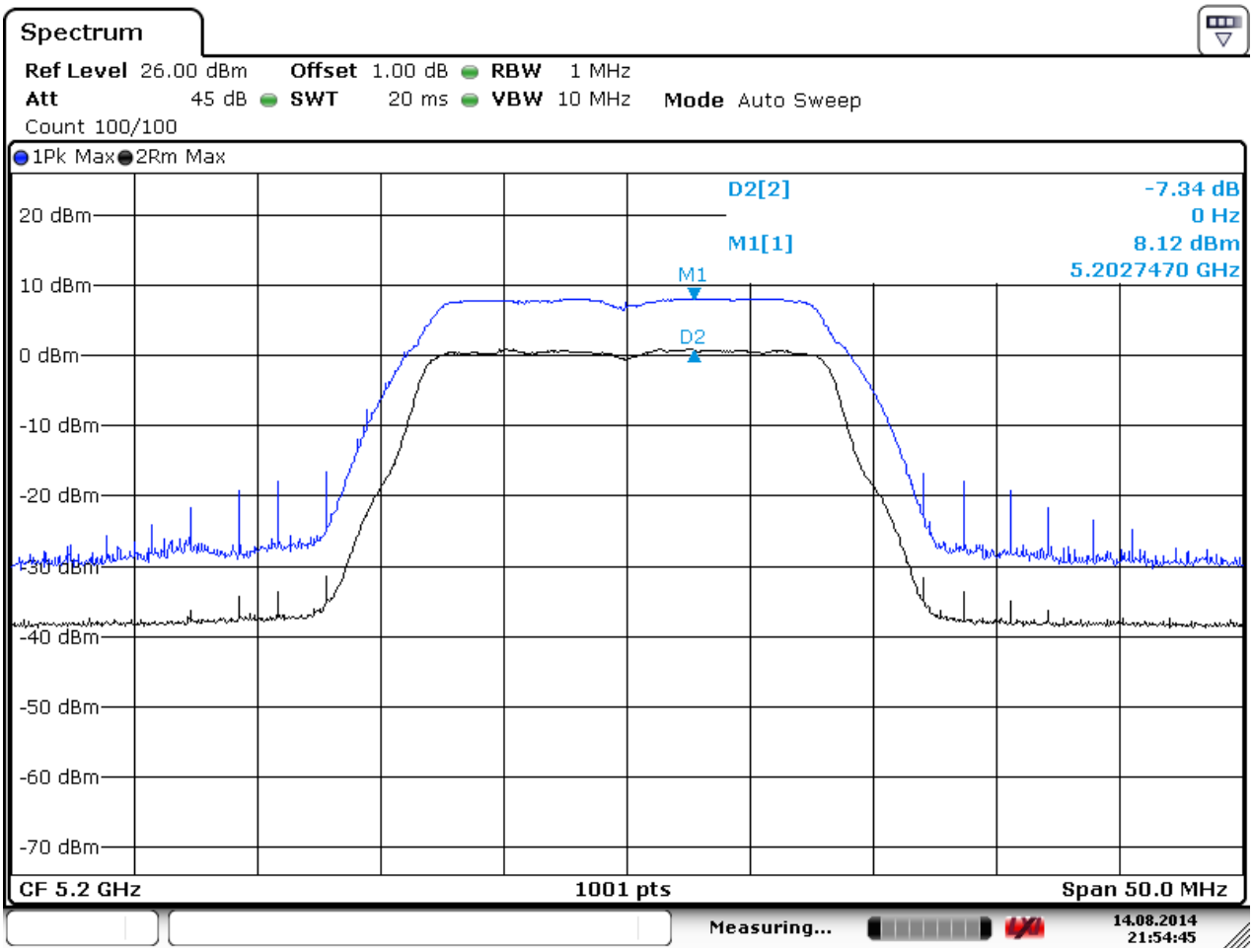
Date: 14.AUG.2014 21:50:33

16.4.1 PAR_Ch36_a_Mode_6M



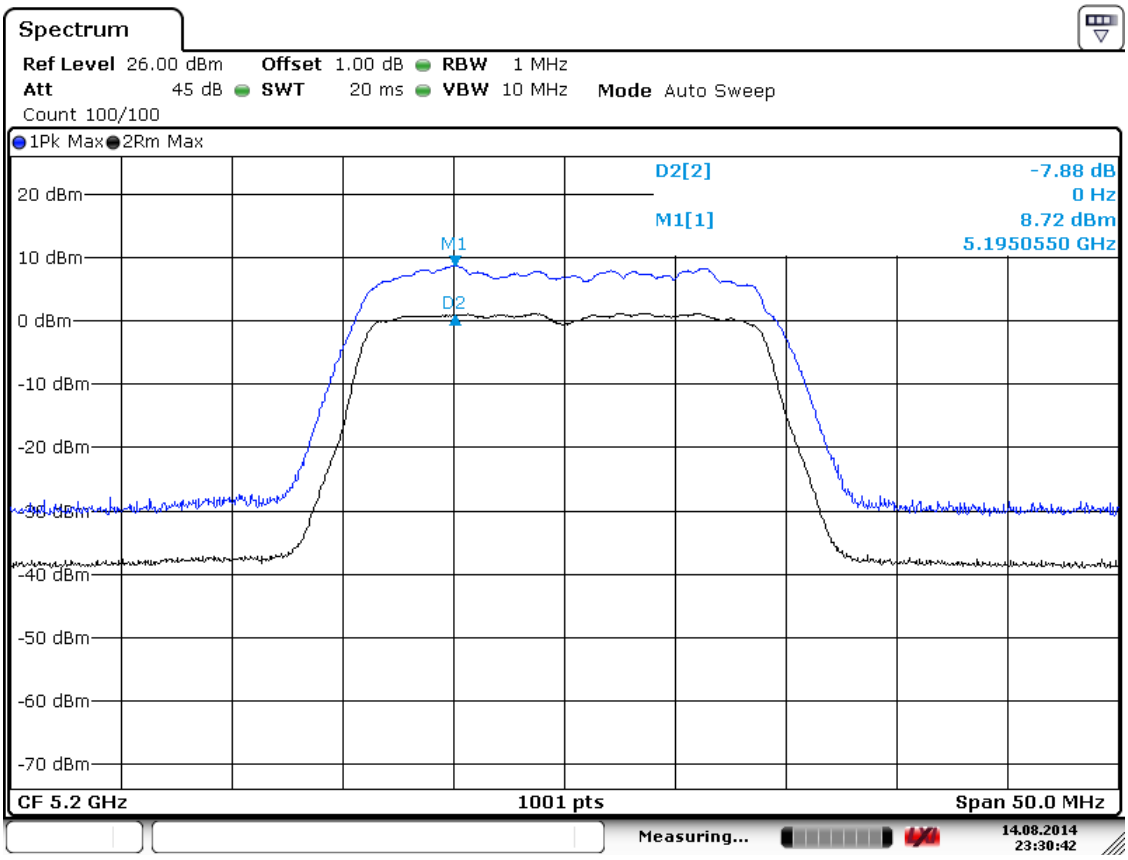
Date: 14.AUG.2014 23:26:55

PAR_Ch36_n_Mode_6M



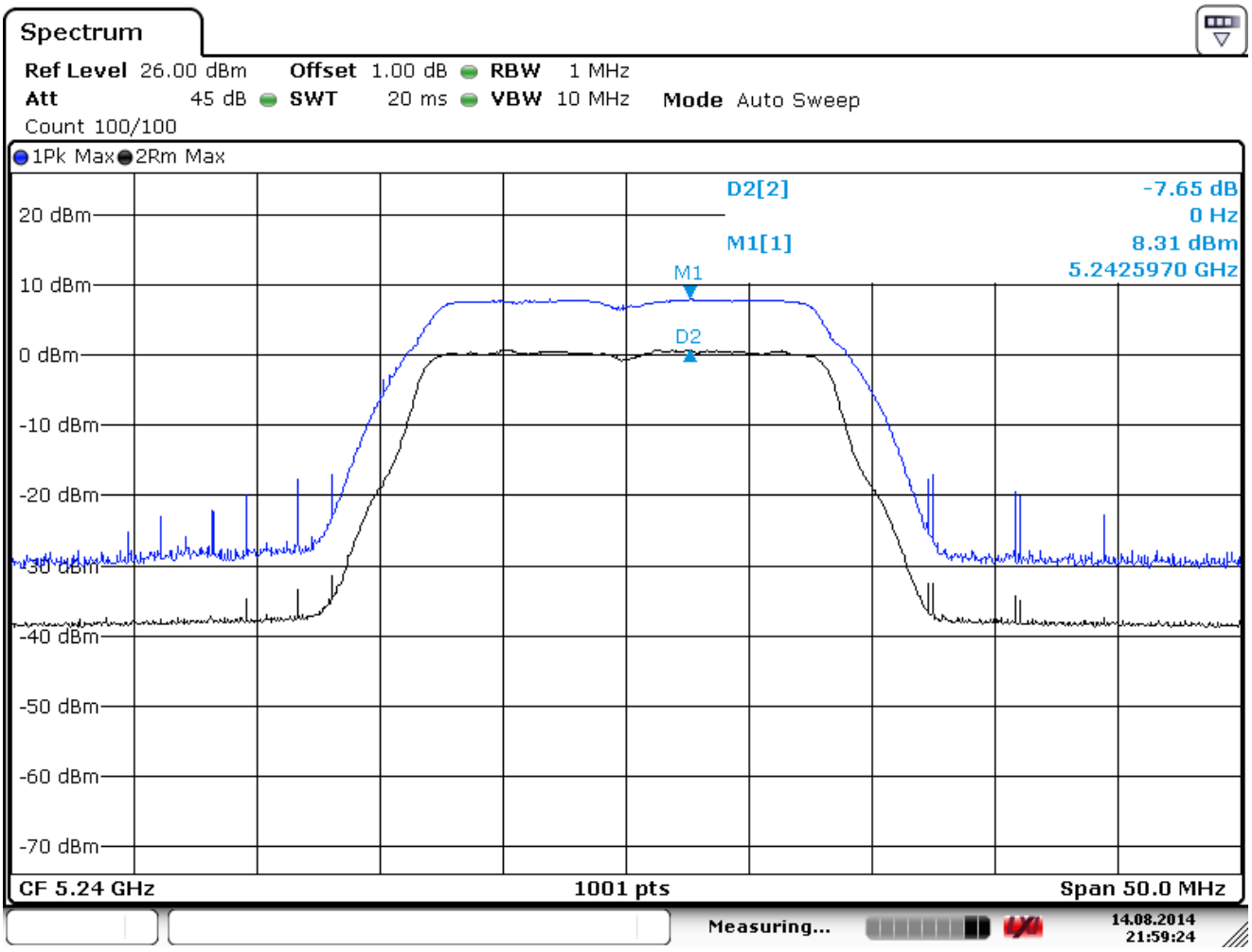
Date:14.AUG.2014 21:54:45

PAR_Ch40_a_Mode_6M



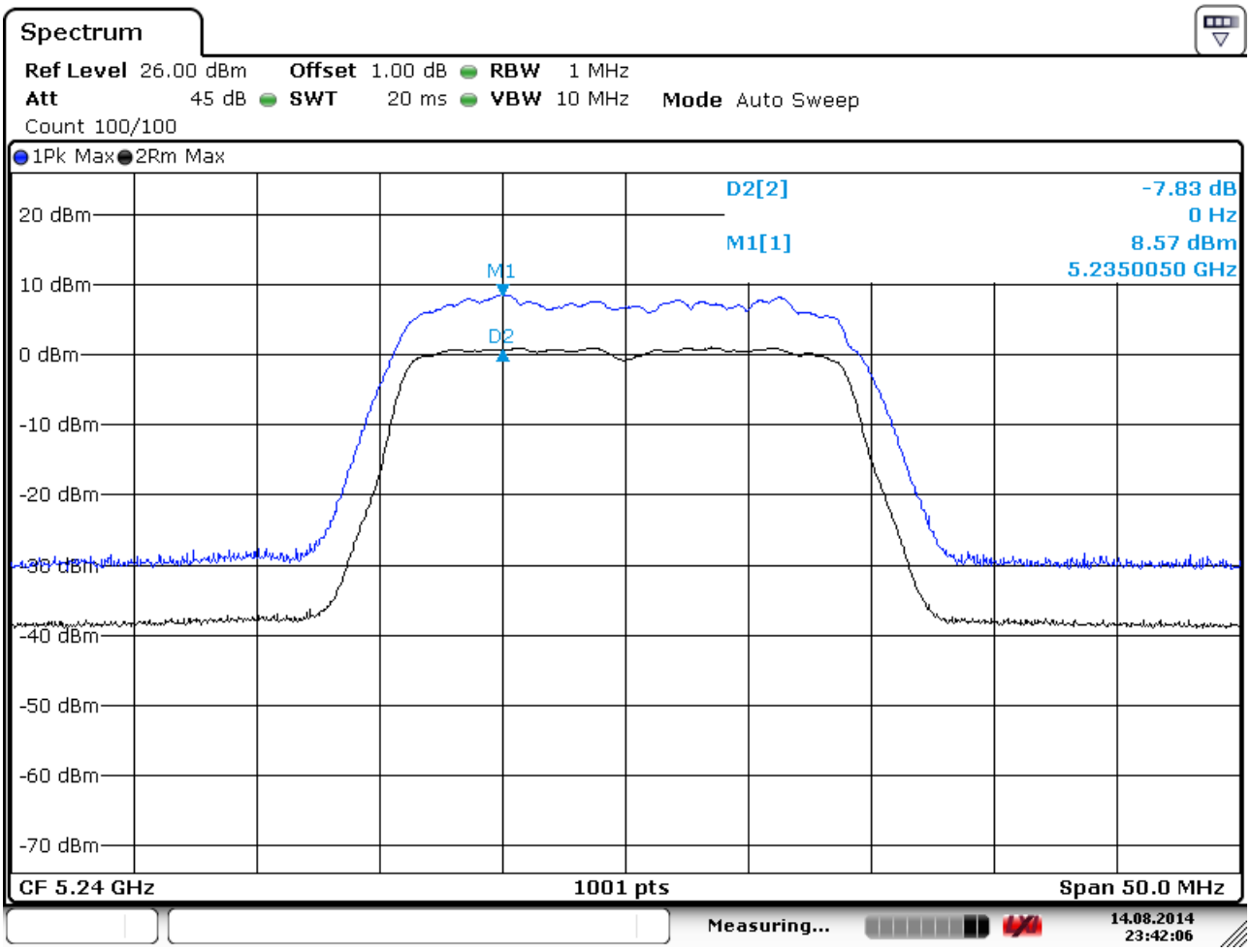
Date: 14.AUG.2014 23:30:43

16.4.2 PAR_Ch40_n_Mode



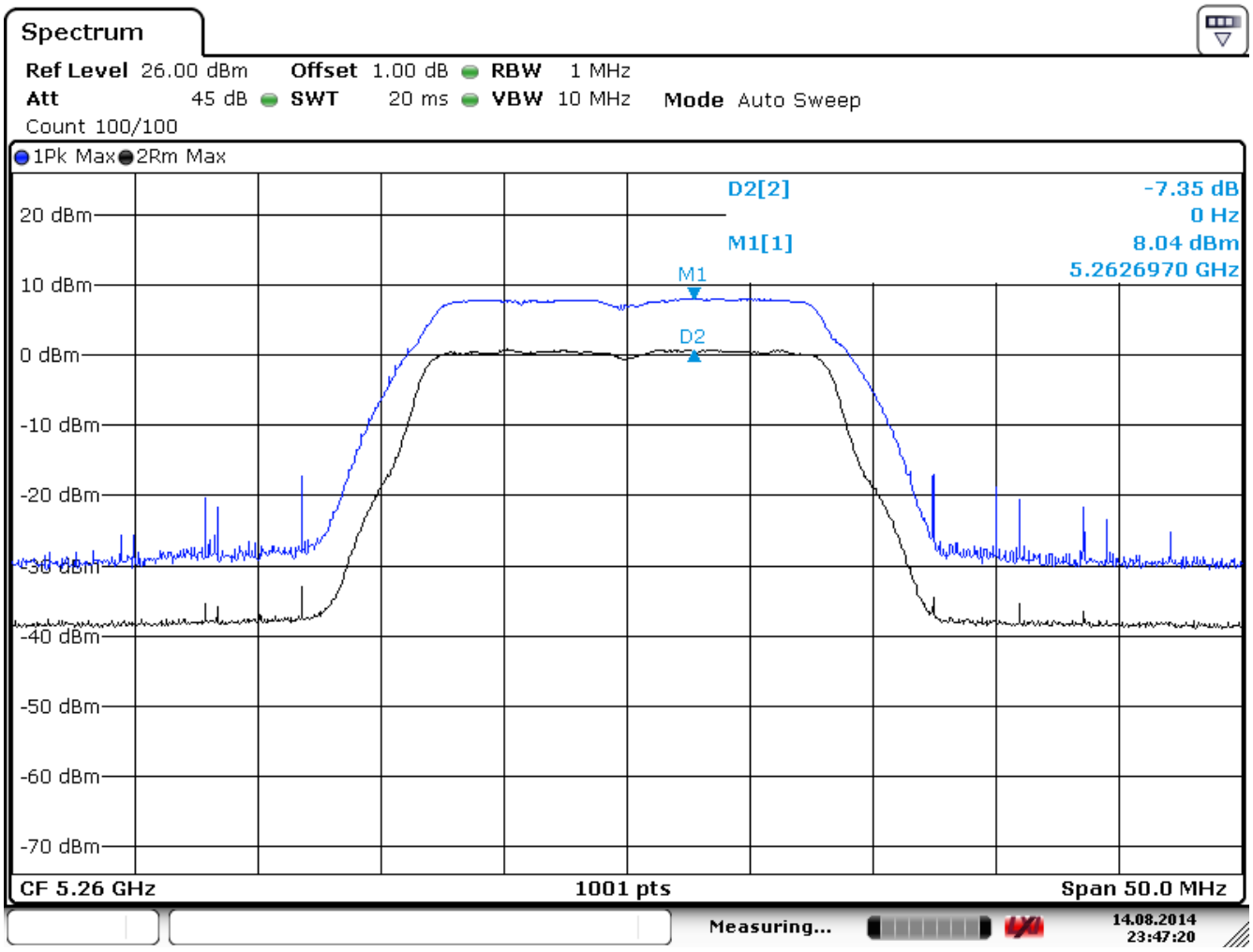
Date: 14.AUG.2014 21:59:24

16.4.3 PAR_Ch48_a_Mode



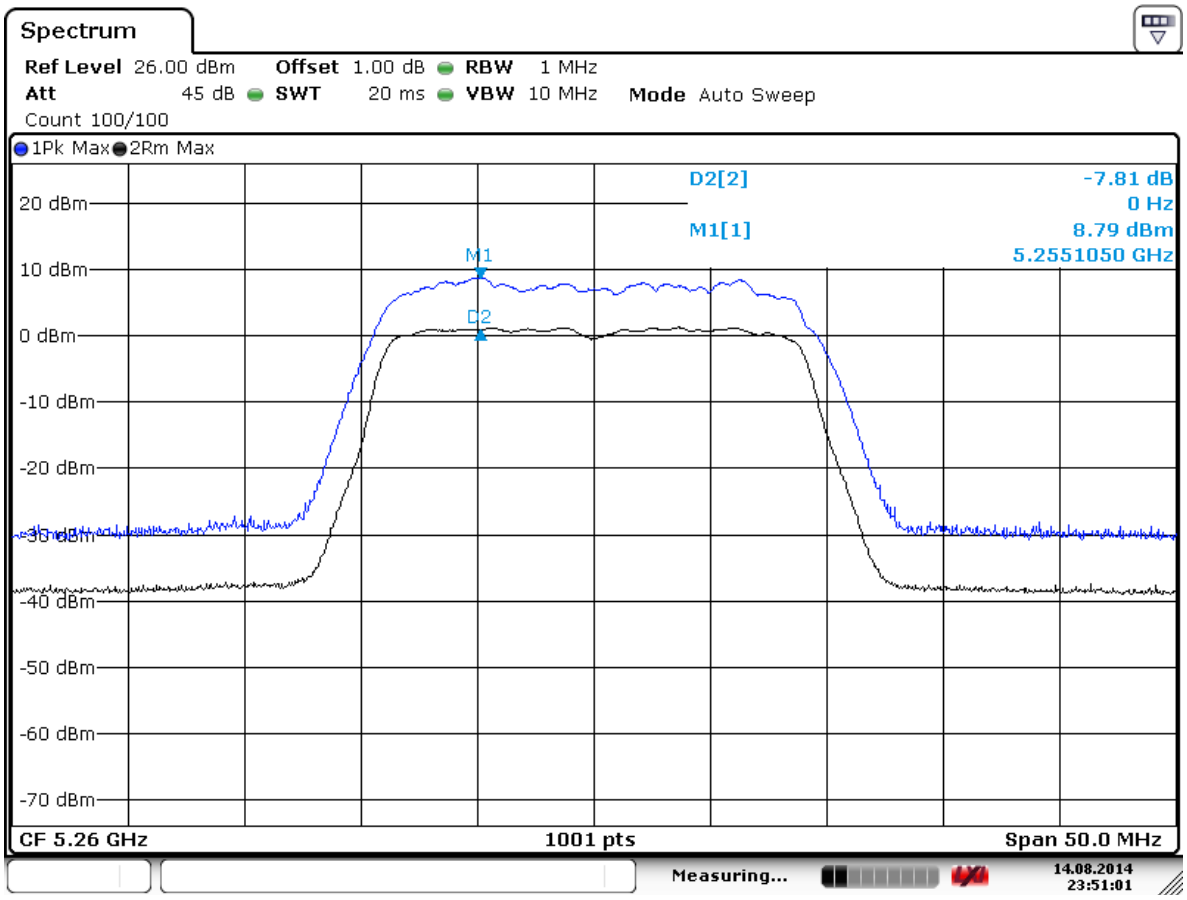
Date:14.AUG.2014 23:42:06

16.4.4 PAR_Ch48_n_Mode



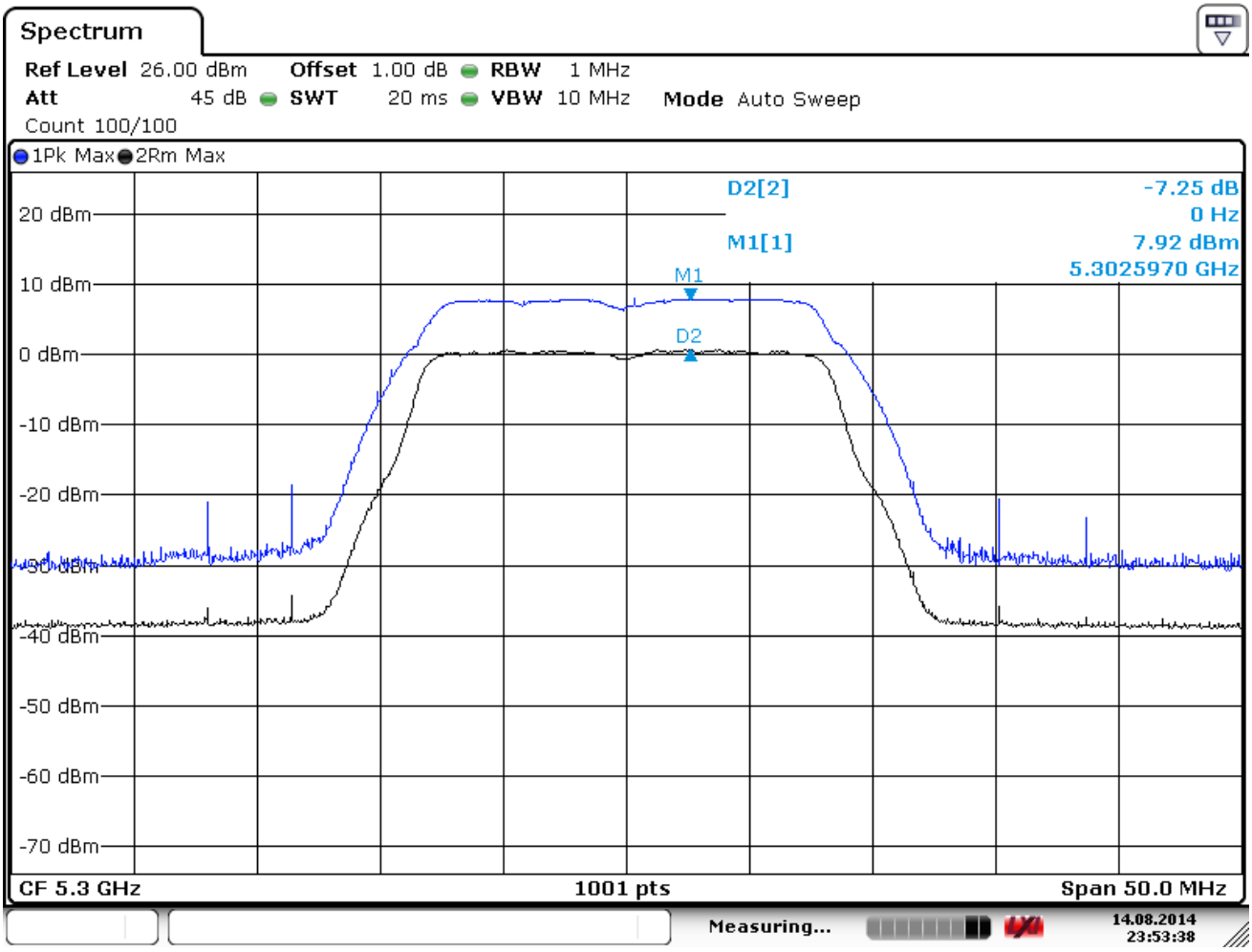
Date: 14.AUG.2014 23:47:20

16.4.5 PAR_Ch52_a_Mode



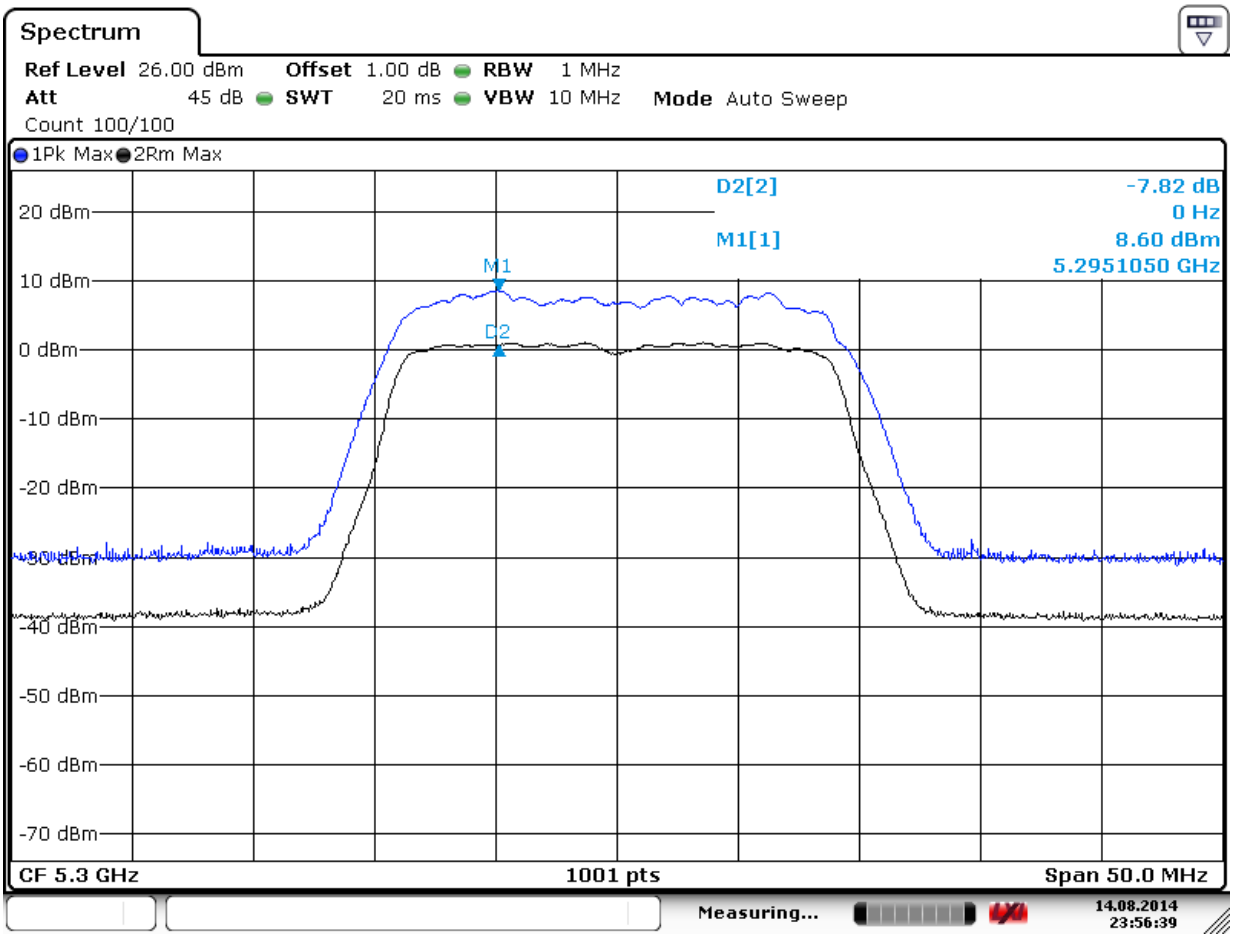
Date: 14.AUG.2014 23:51:02

16.4.6 PAR_Ch52_n_Mode



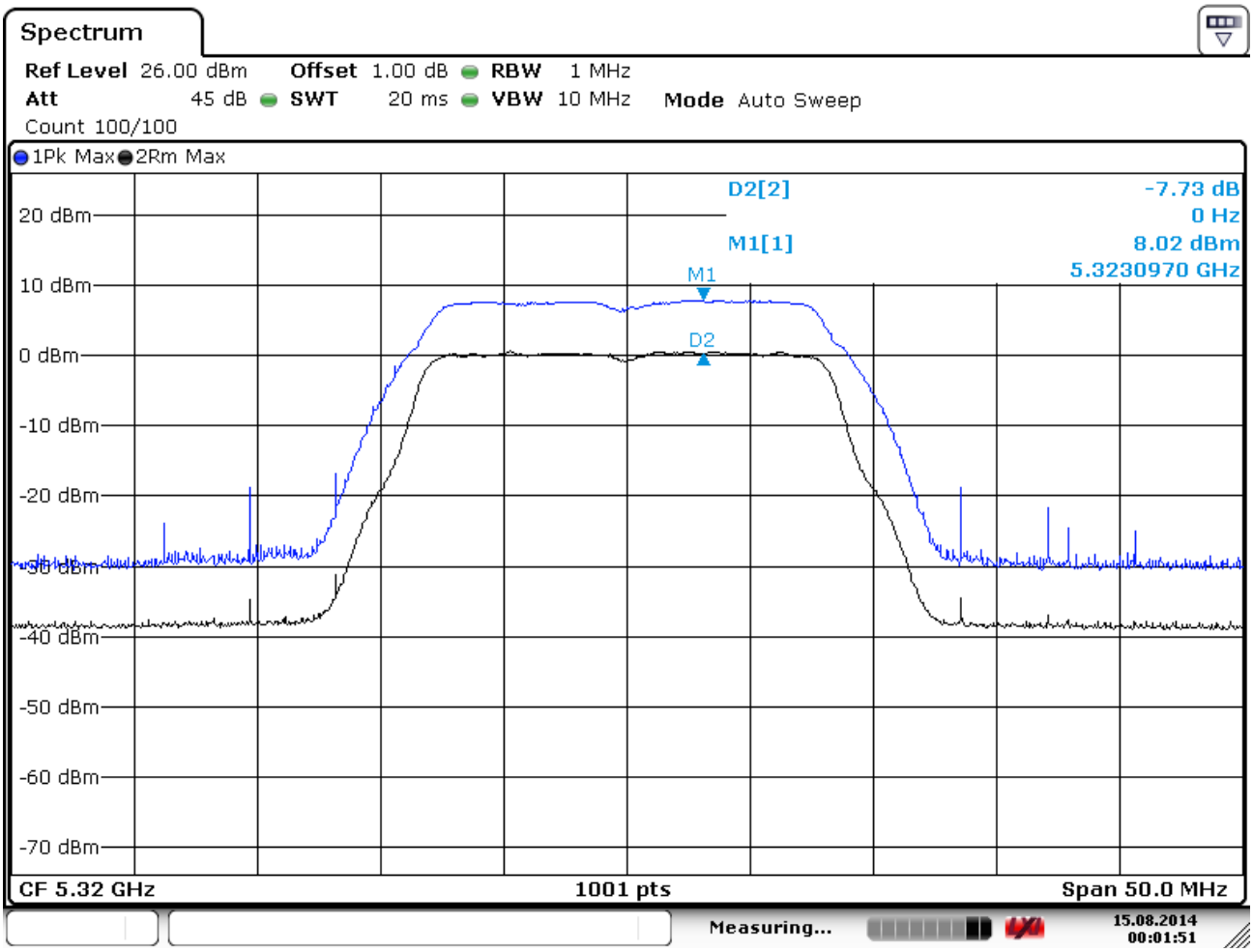
Date: 14.AUG.2014 23:53:38

16.4.7 PAR_Ch60_a_Mode



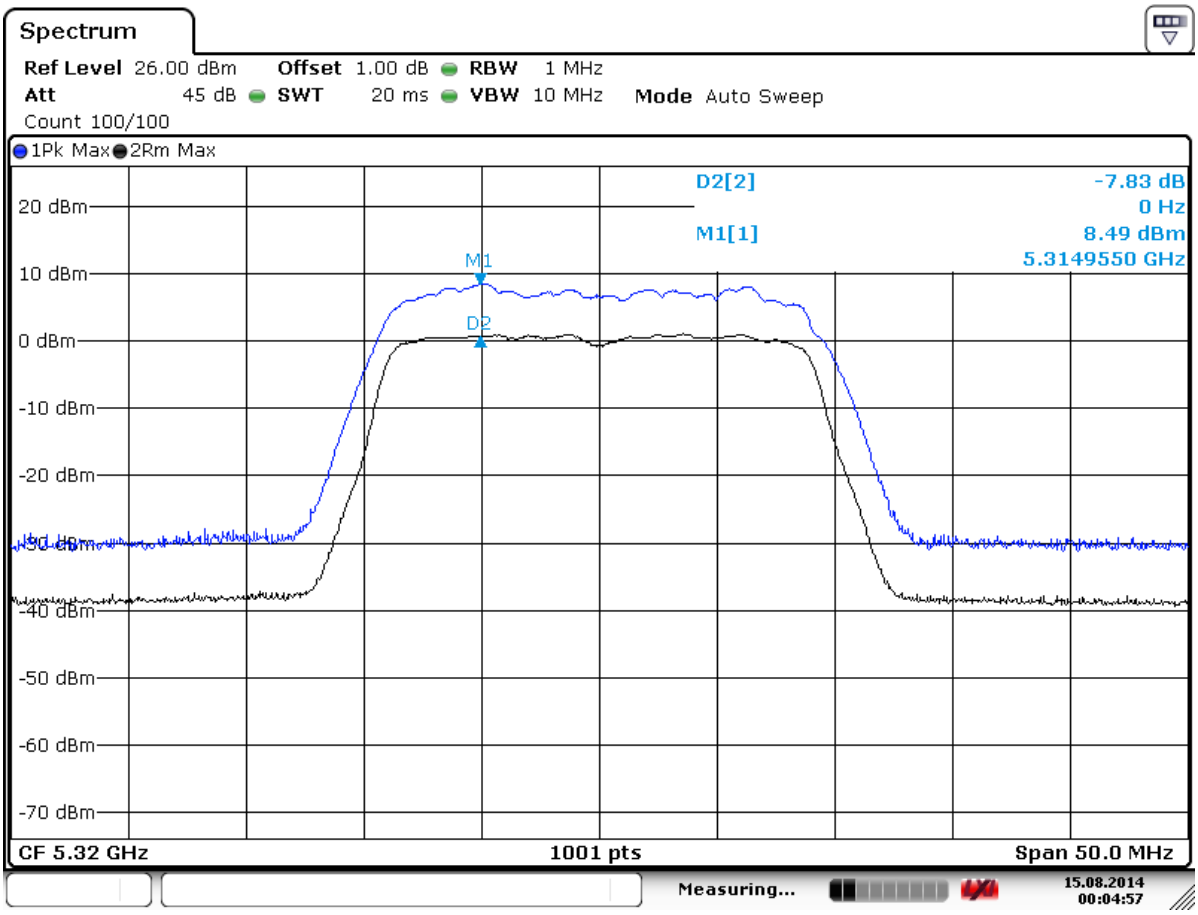
Date:14.AUG.2014 23:56:39

16.4.8 PAR_Ch60_n_Mode



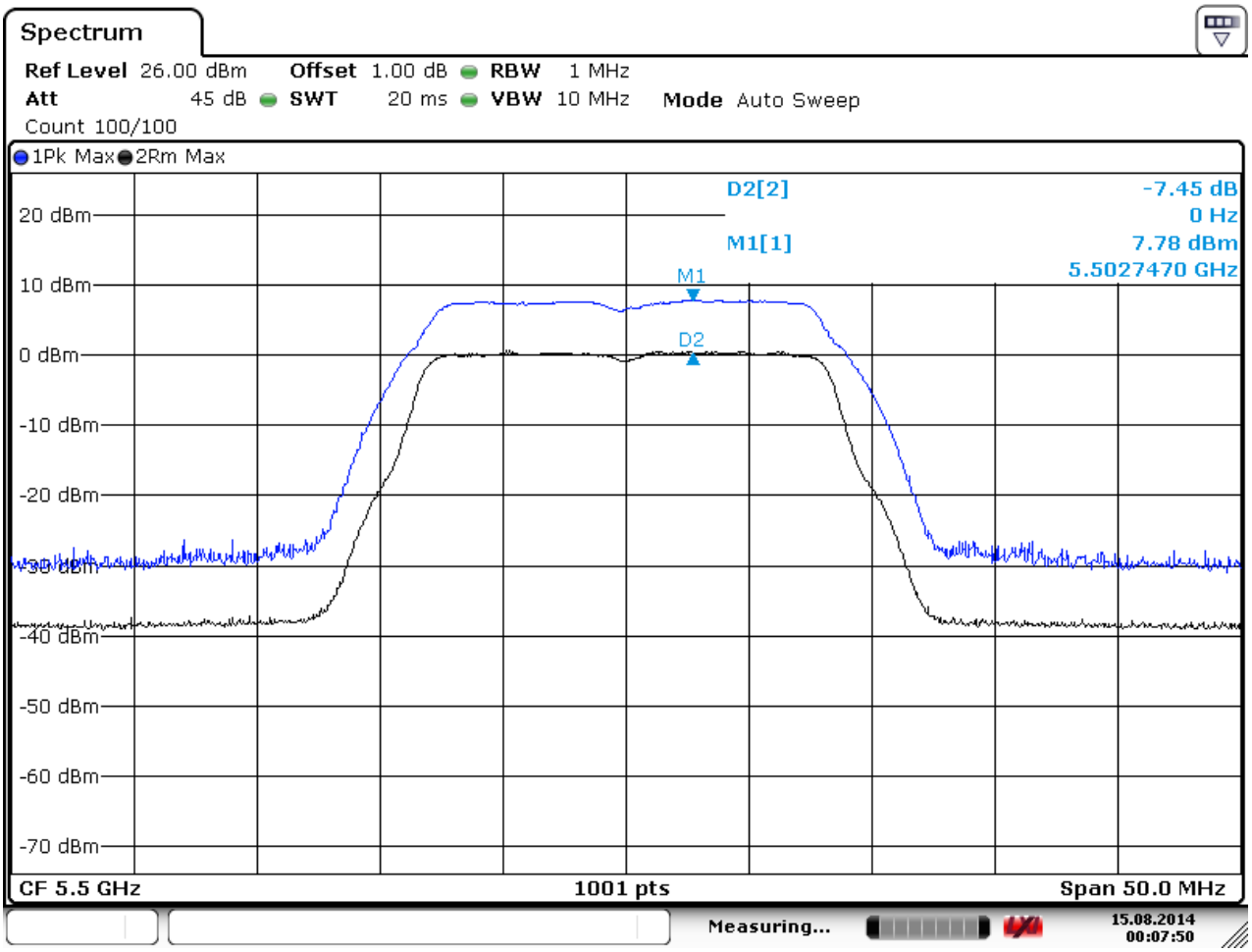
Date:15.AUG.2014 00:01:51

16.4.9 PAR_Ch64_a_Mode



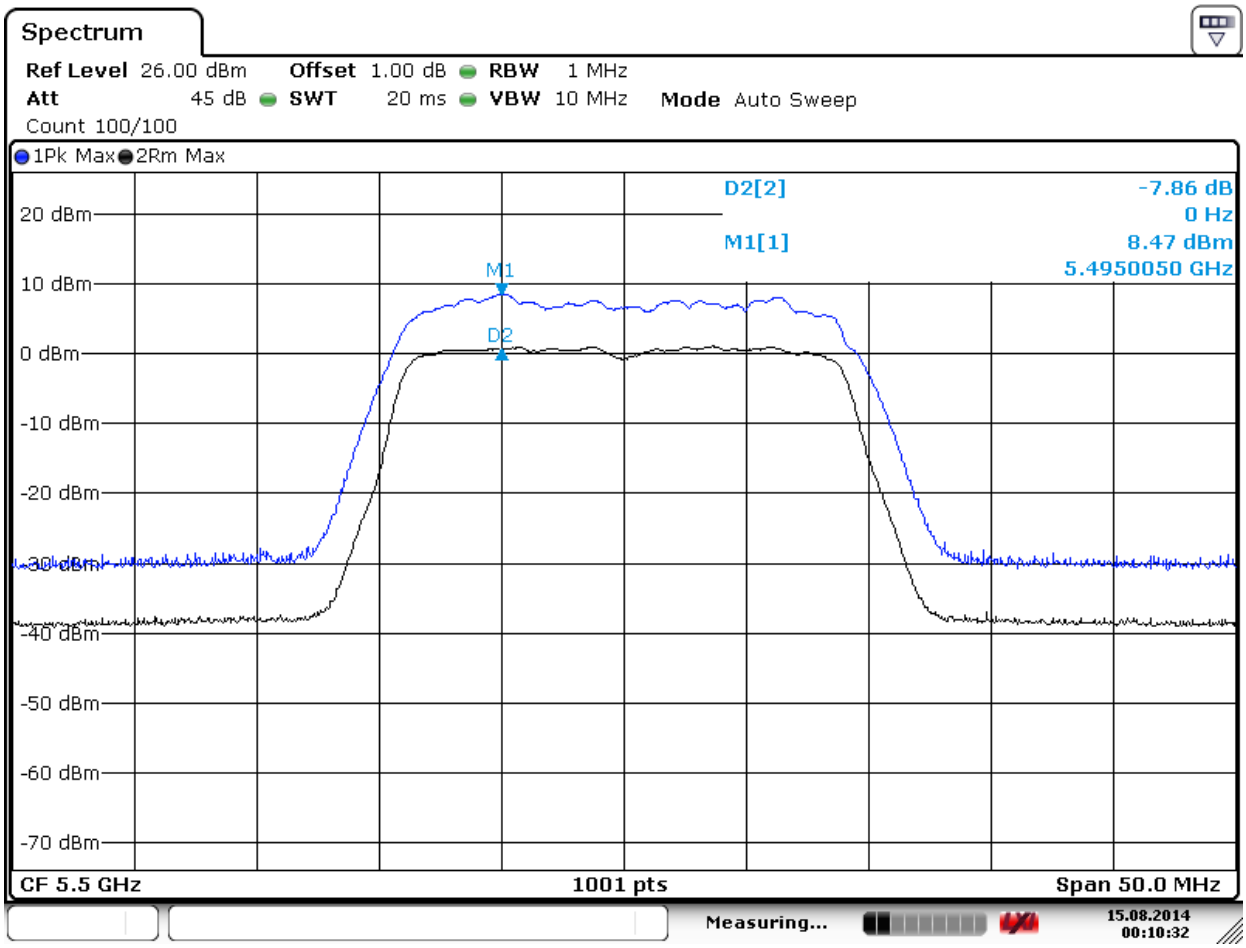
Date: 15.AUG.2014 00:04:57

16.4.10 PAR_Ch64_n_Mode



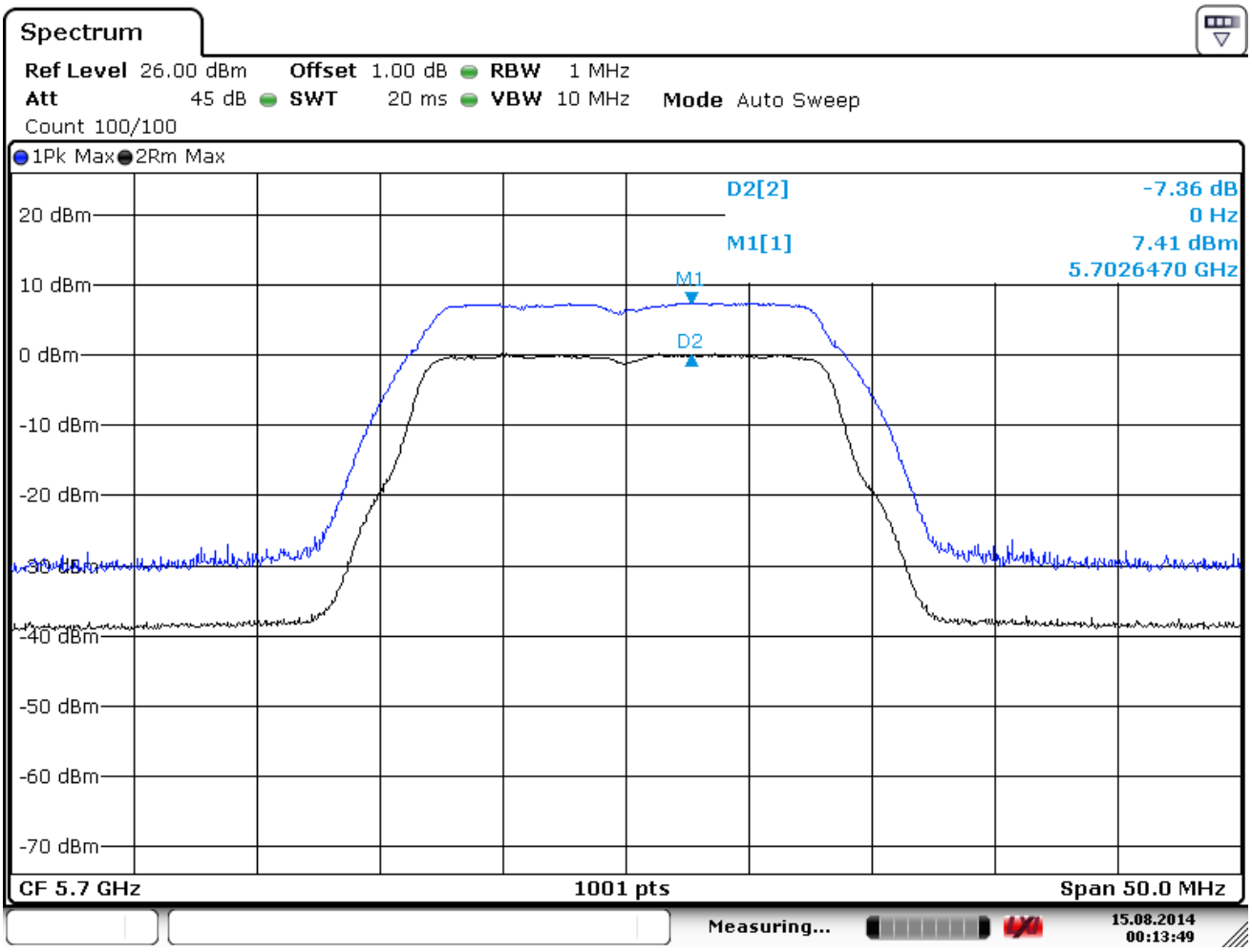
Date: 15.AUG.2014 00:07:50

16.4.11 PAR_Ch100_a_Mode



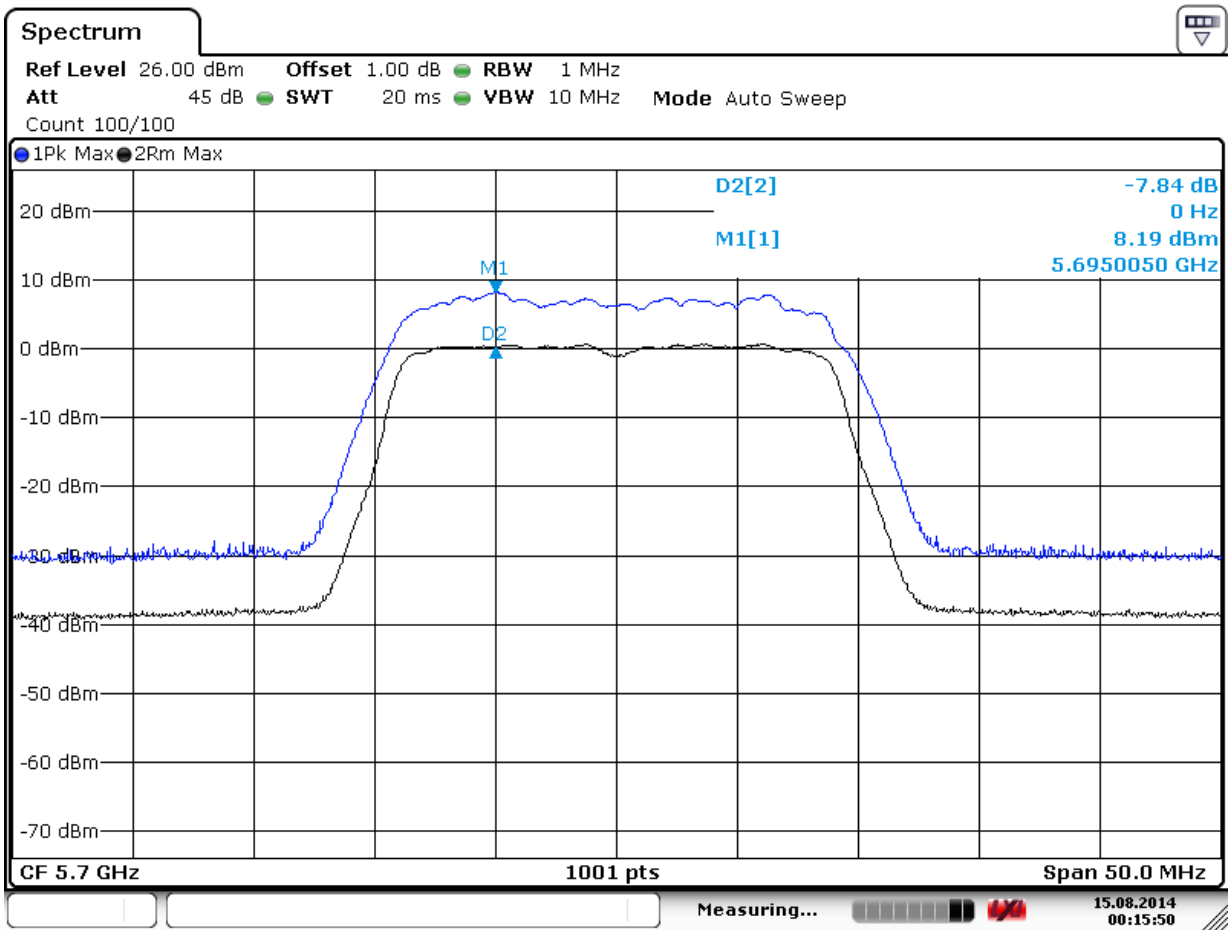
Date: 15.AUG.2014 00:10:32

16.4.12 PAR_Ch100_n_Mode



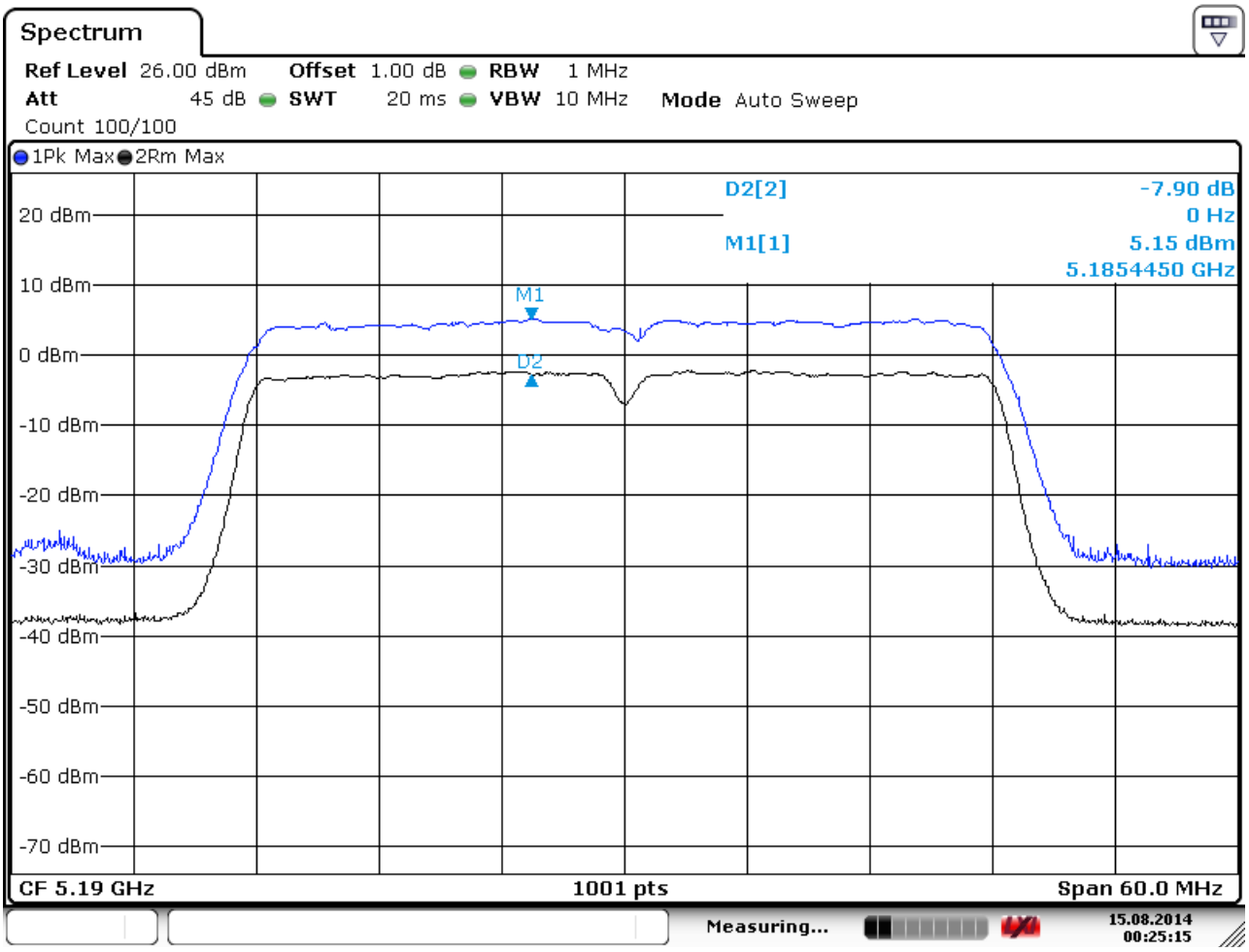
Date: 15.AUG.2014 00:13:49

16.4.13 PAR_Ch140_a_Mode



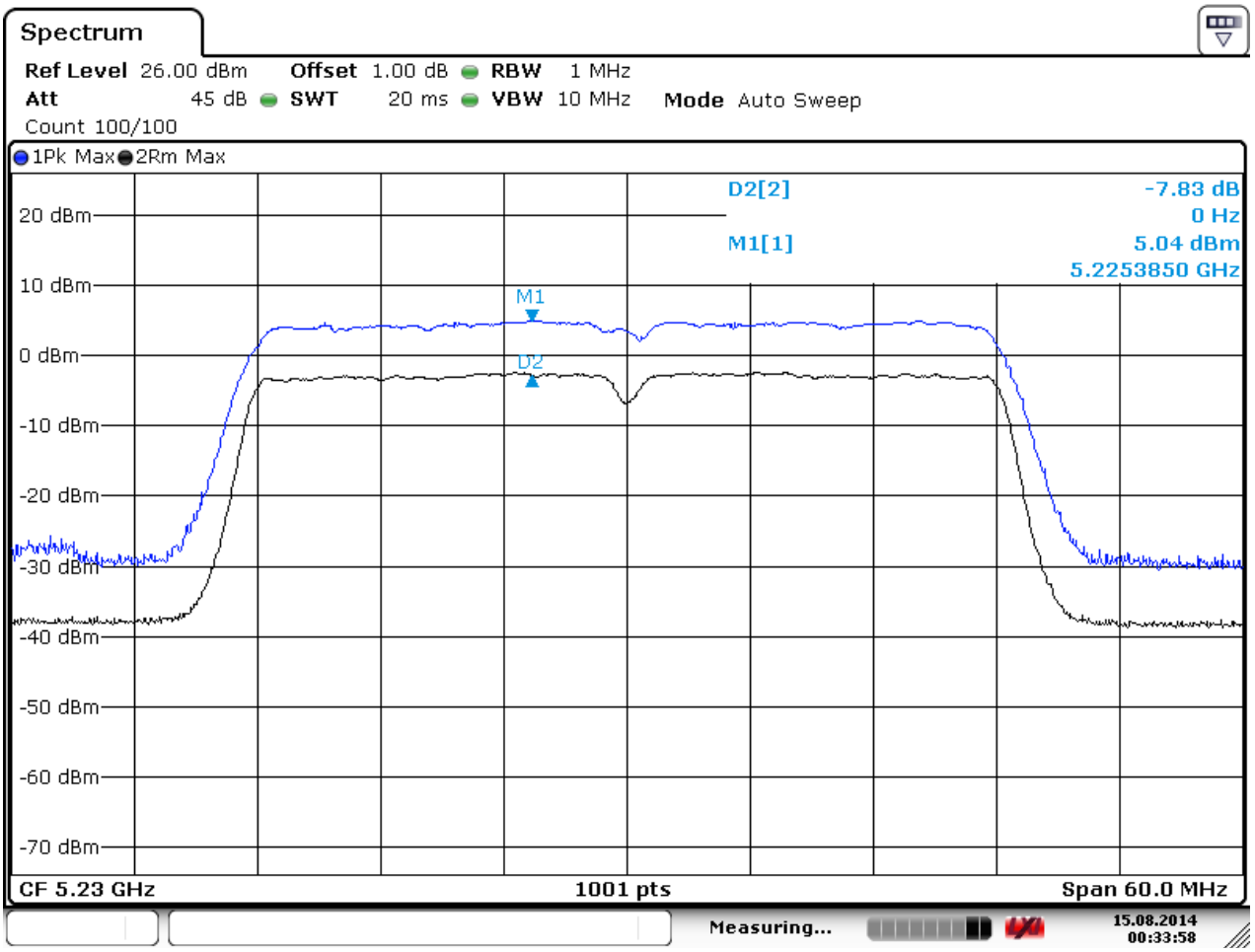
Date: 15.AUG.2014 00:15:49

16.4.14 PAR_Ch140_n_Mode



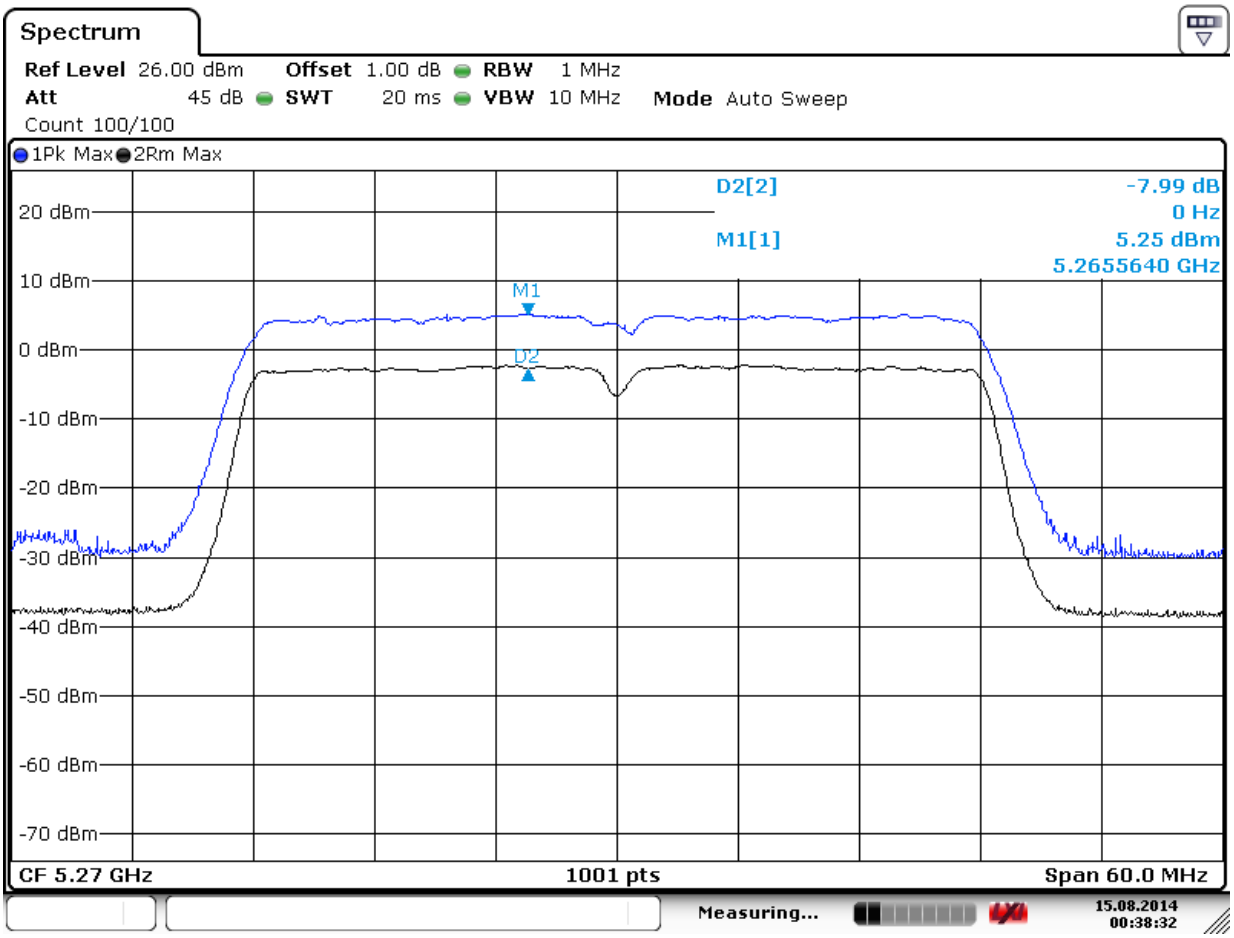
Date:15.AUG.2014 00:25:15

16.4.15 PAR_Ch38_n40_Mode



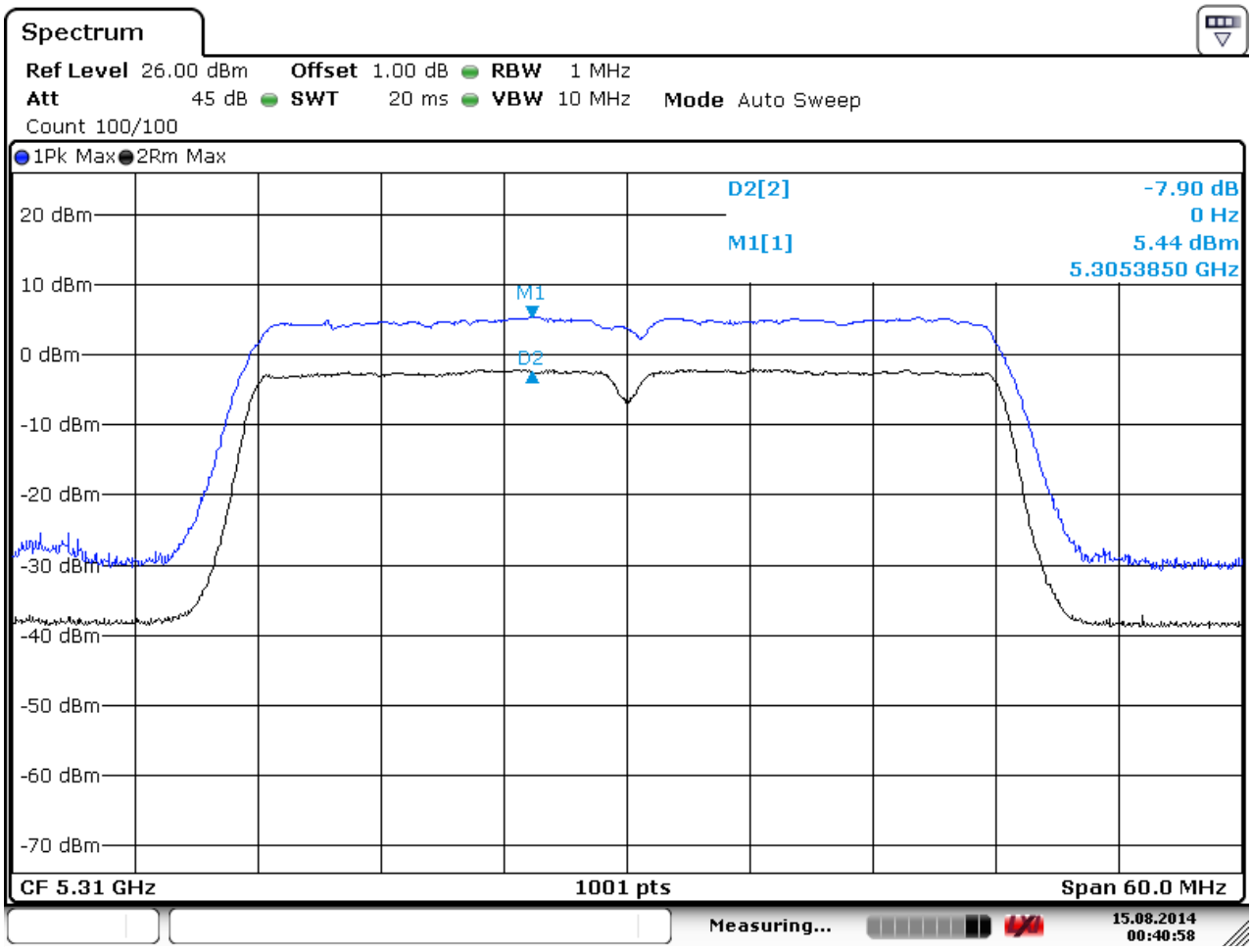
Date: 15.AUG.2014 00:33:58

16.4.16 PAR_Ch46_n40_Mode



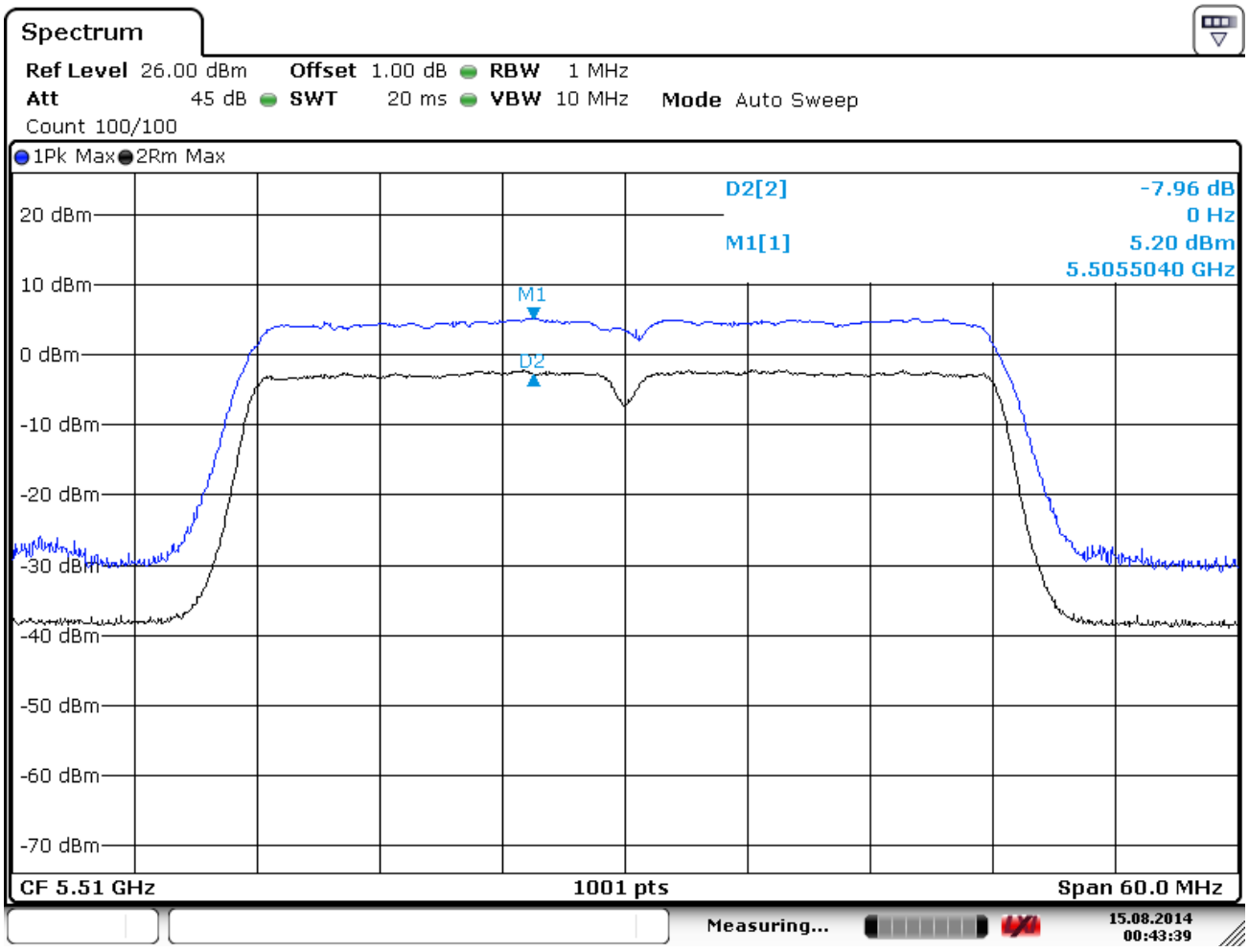
Date:15.AUG.2014 00:38:31

16.4.17 PAR_Ch54_n40_Mode



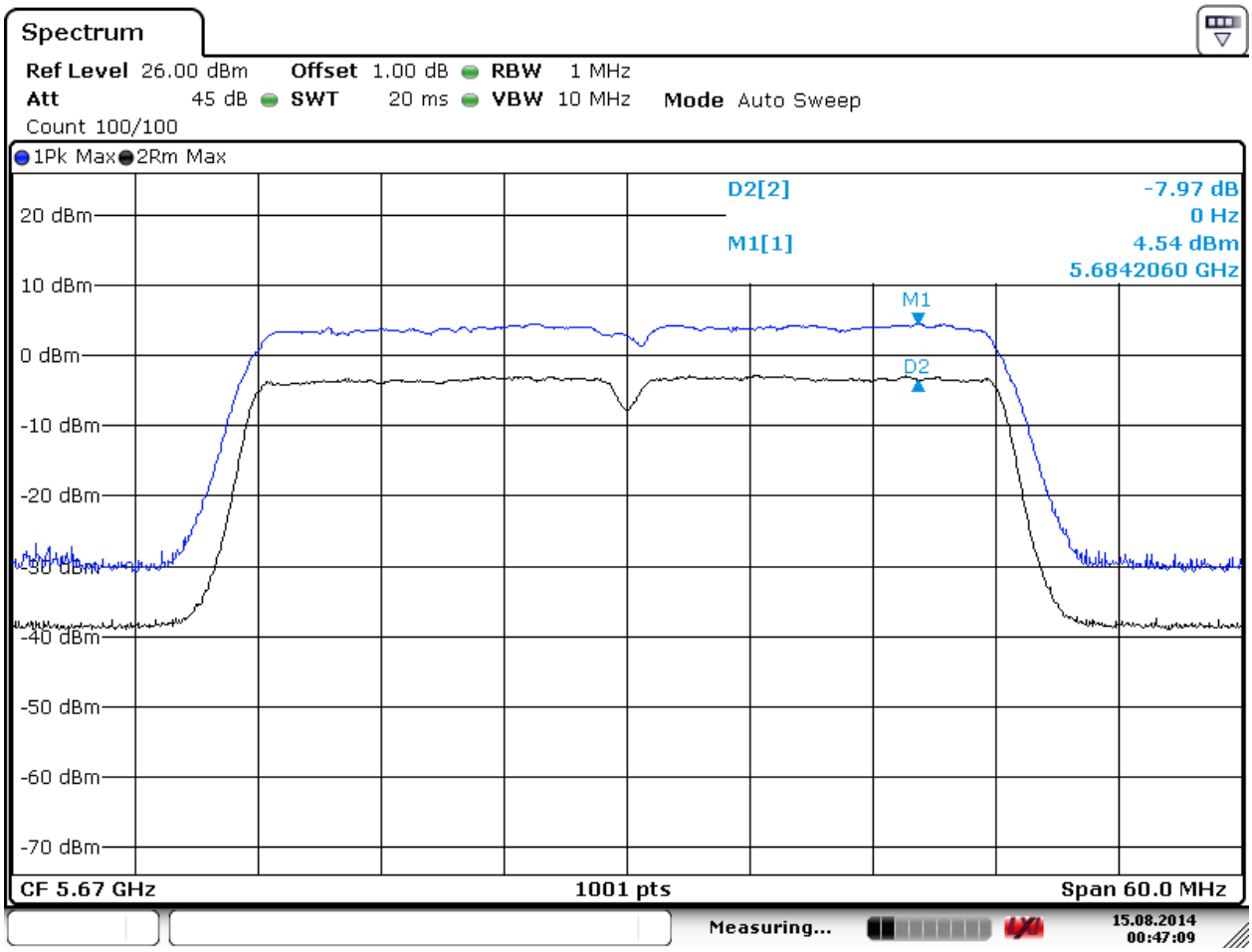
Date: 15.AUG.2014 00:40:58

16.4.18 PAR_Ch62_n40_Mode



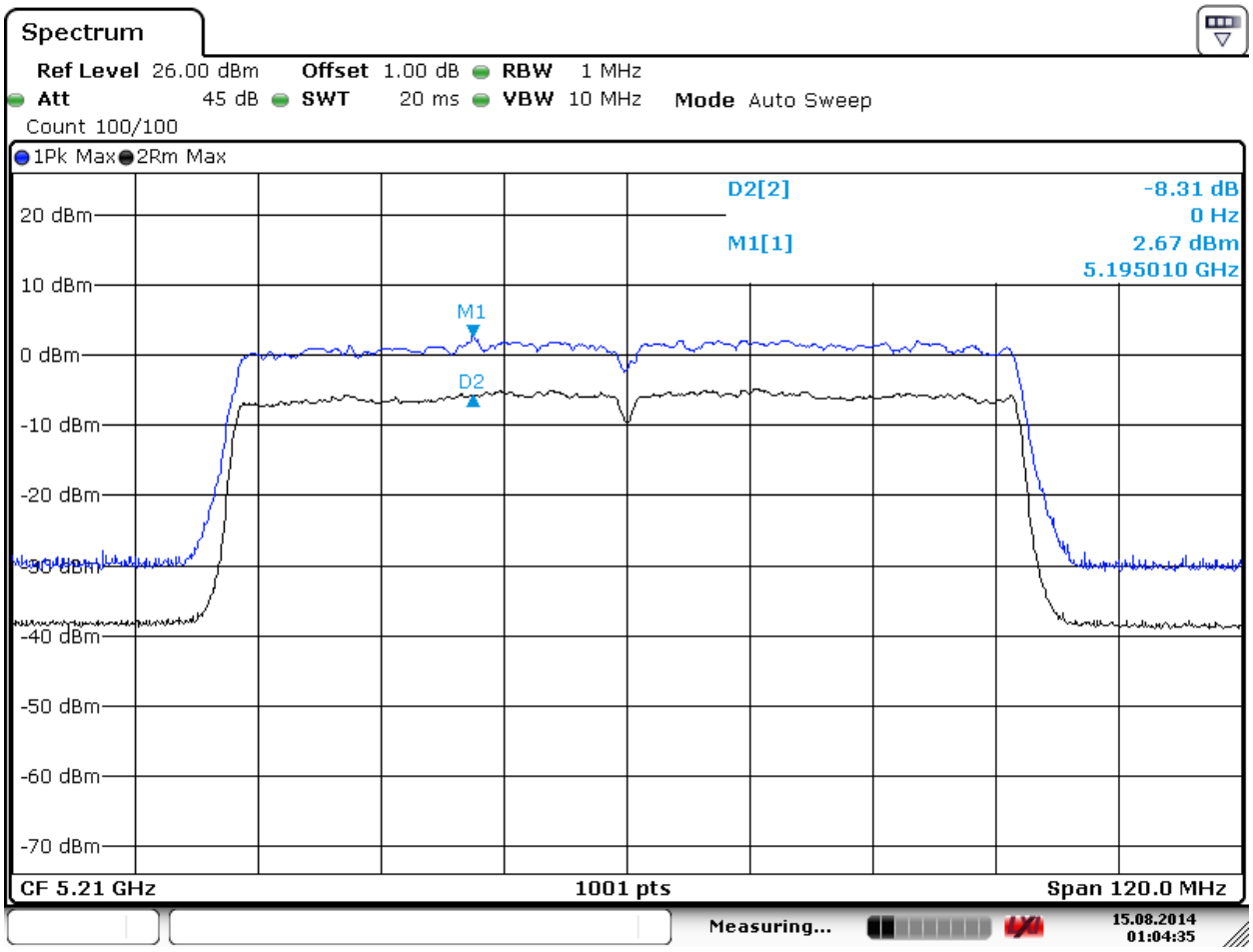
Date:15.AUG.2014 00:43:39

16.4.19 PAR_Ch102_n40_Mode



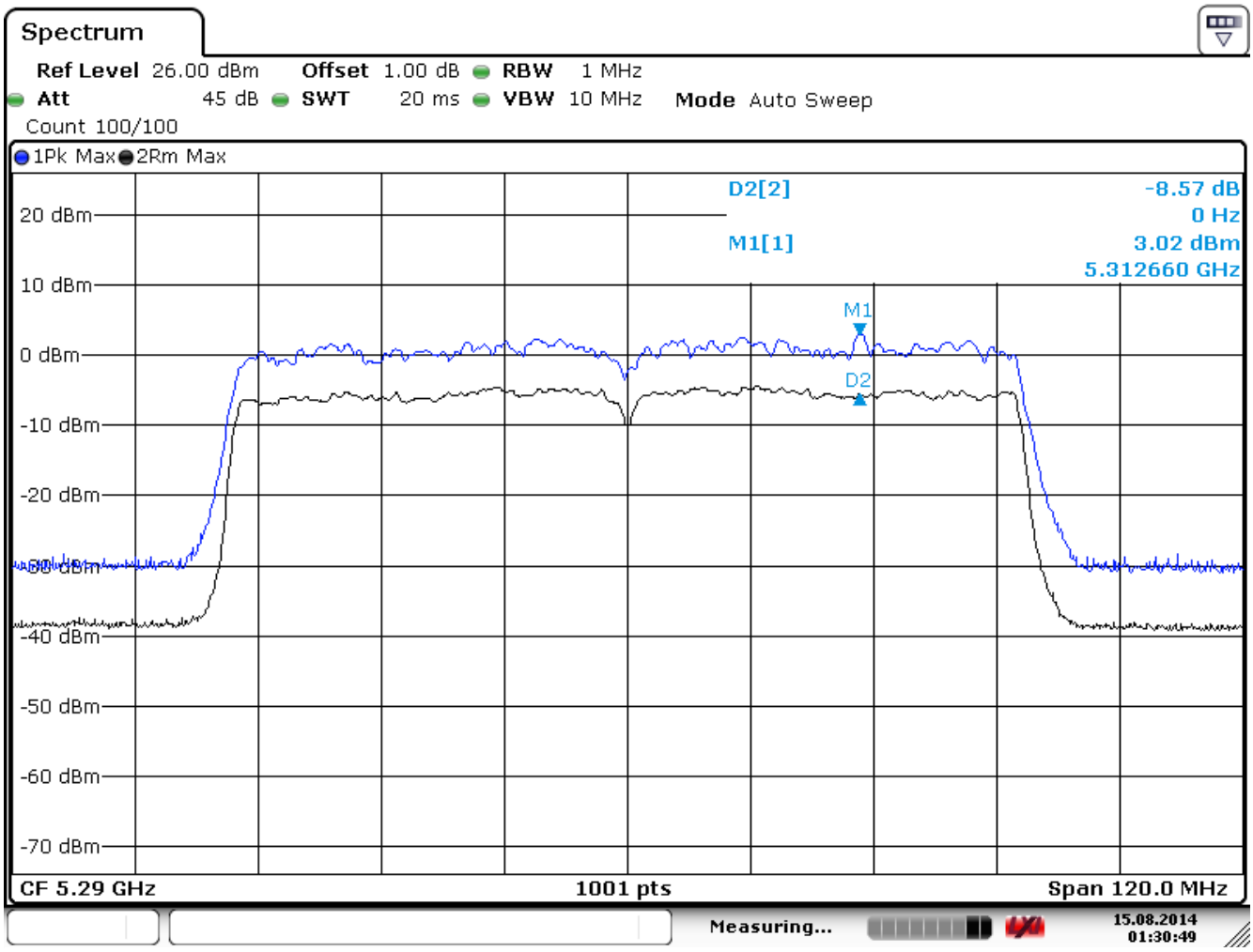
Date: 15.AUG.2014 00:47:08

16.4.20 PAR_Ch134_n40_Mode



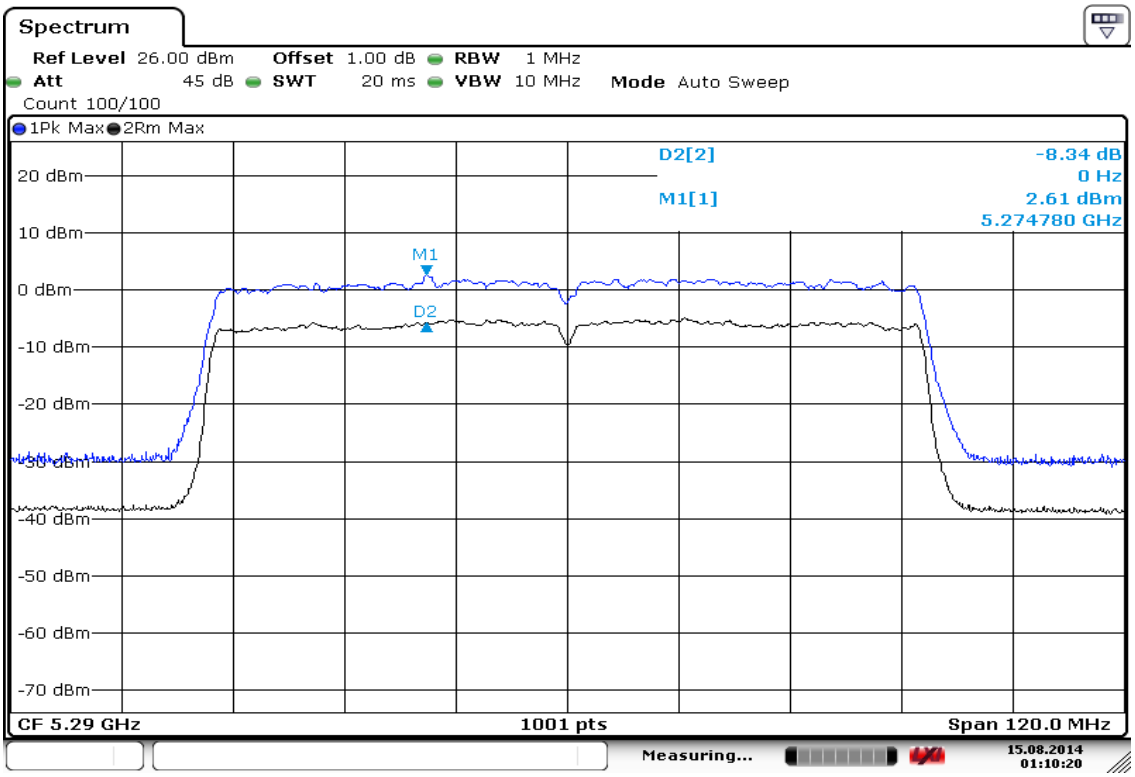
Date:15.AUG.2014 01:04:35

16.4.21 PAR_Ch42_AC80_Mode



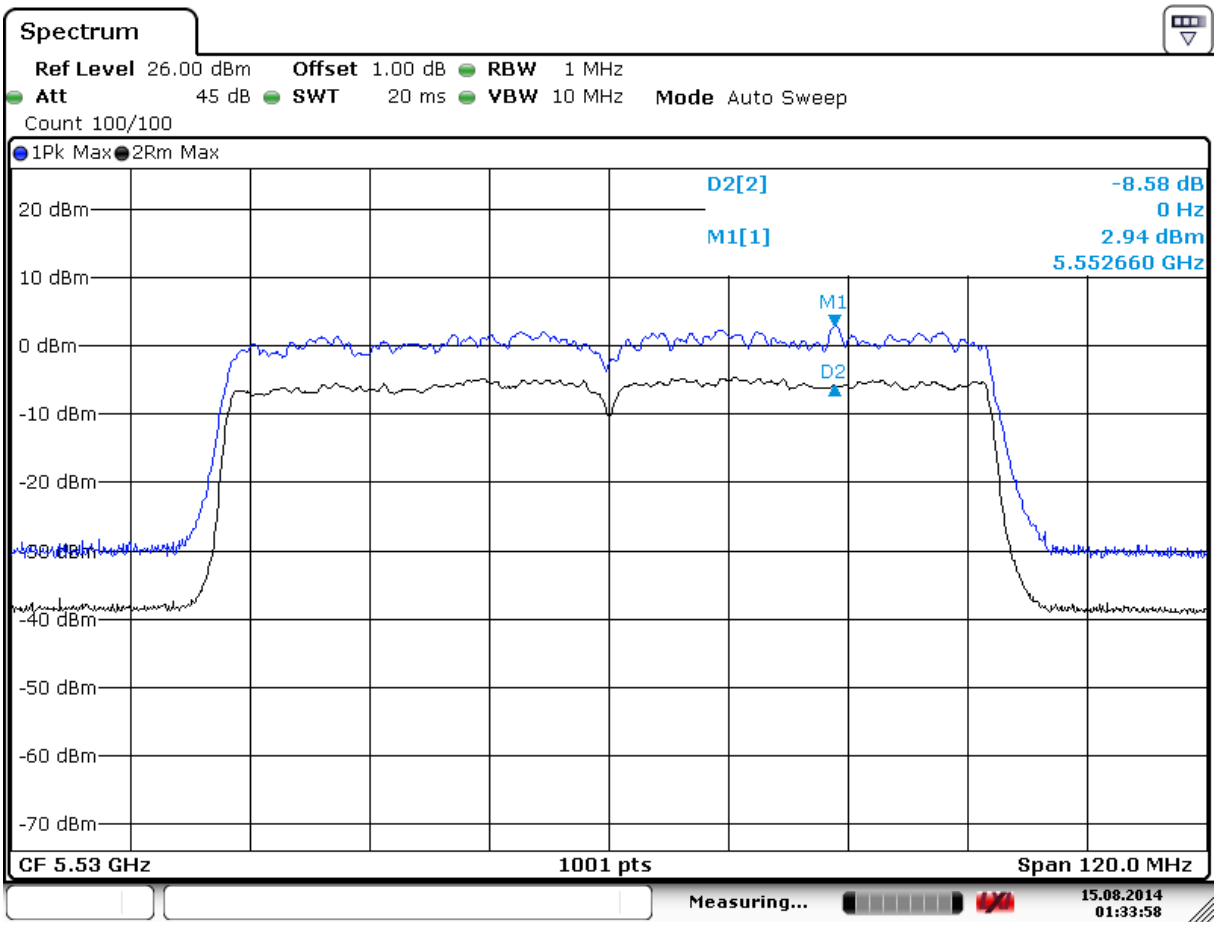
Date: 15.AUG.2014 01:30:49

16.4.22 PAR_Ch58_AC80_Mode_9



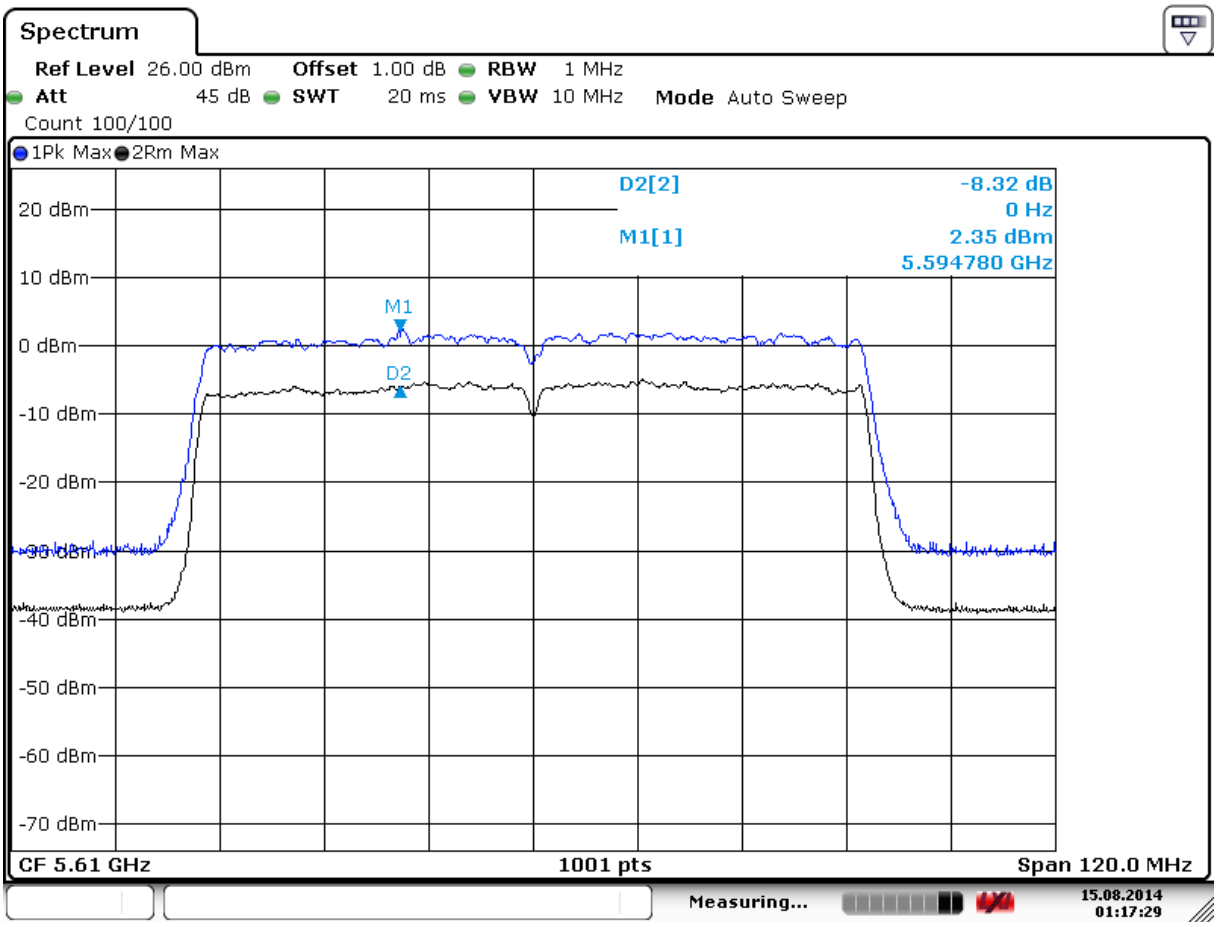
Date: 15.AUG.2014 01:10:20

PAR_Ch58_AC80_Mode



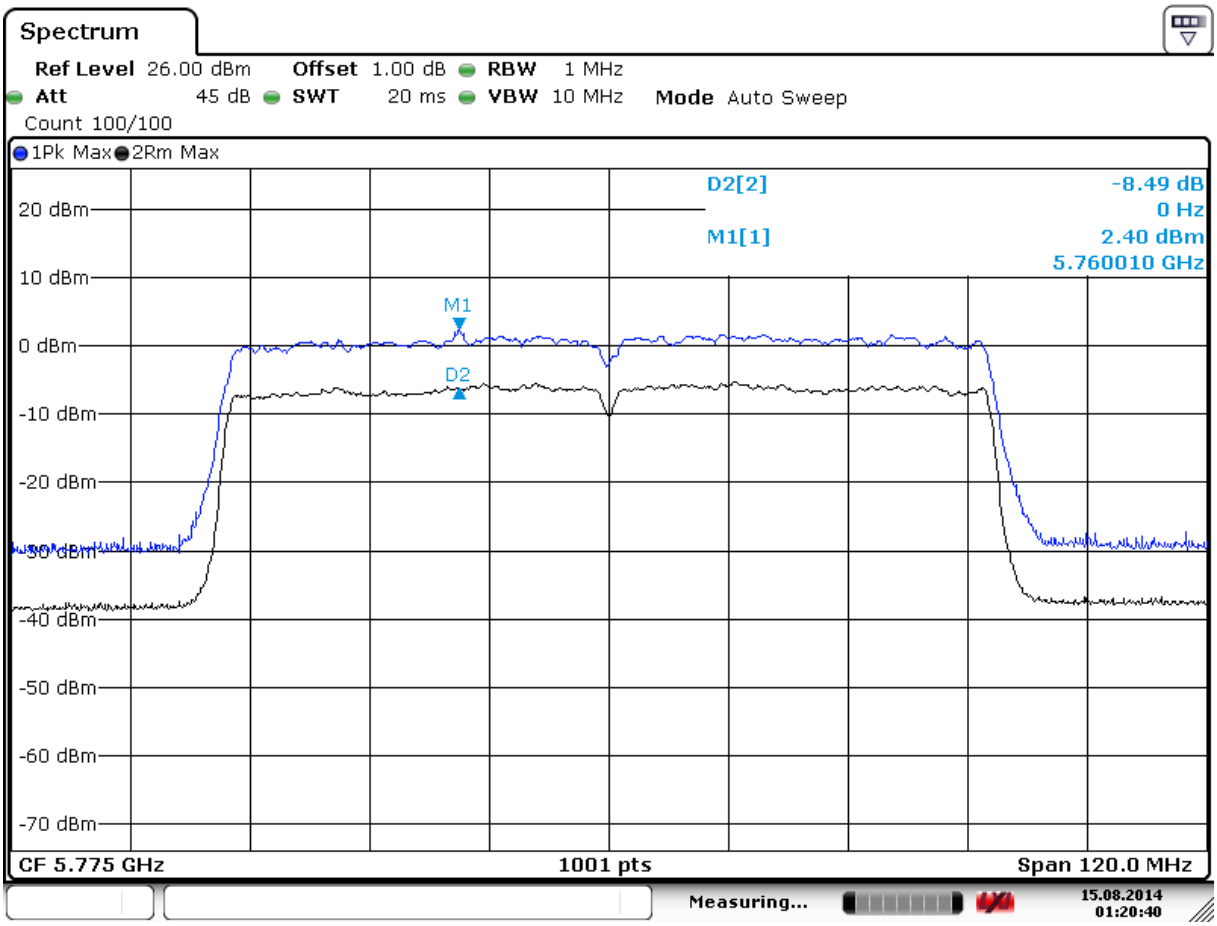
Date: 15.AUG.2014 01:33:59

16.4.23PAR_Ch106_AC80_Mode



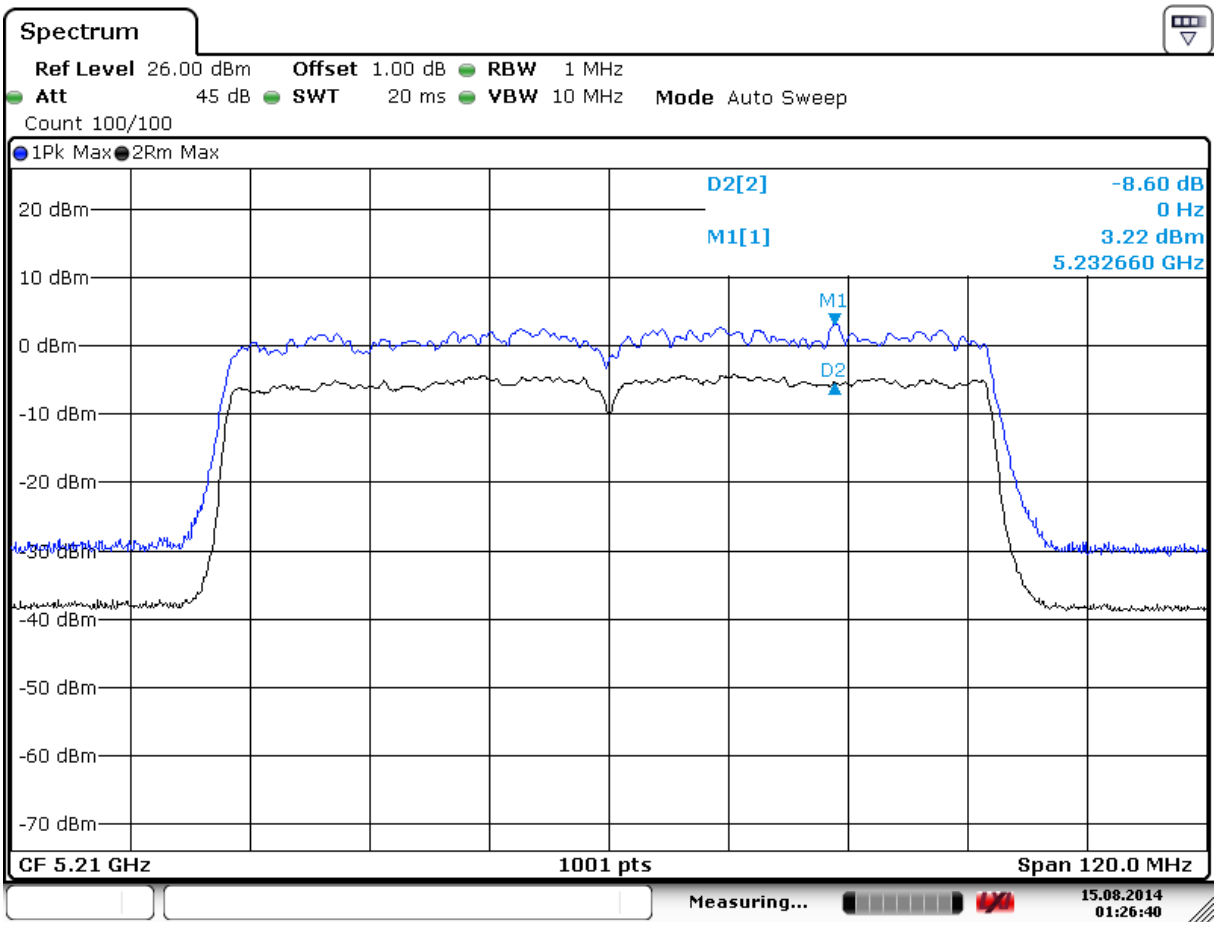
Date:15.AUG.2014 01:17:29

PAR_Ch122_AC80_Mode



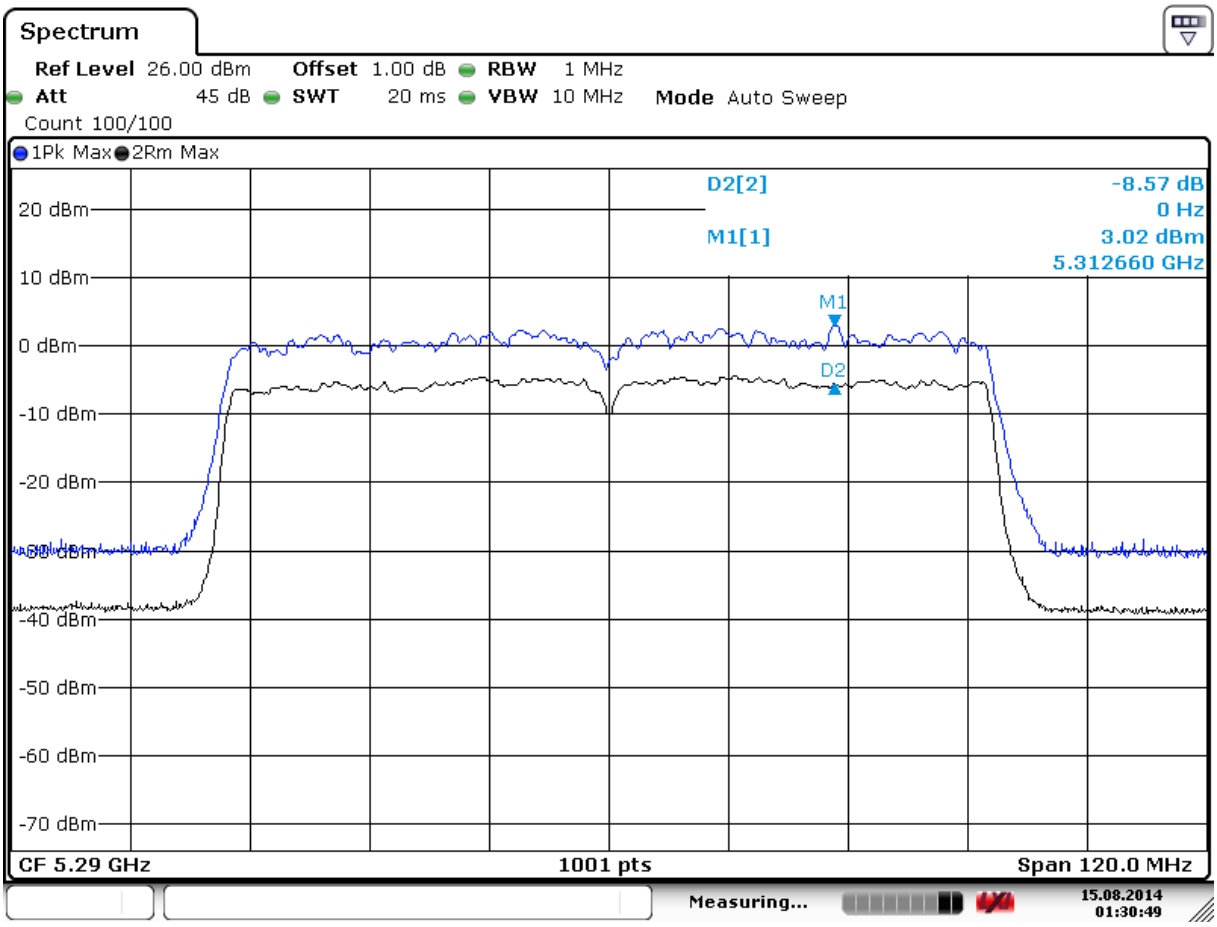
Date: 15.AUG.2014 01:20:40

16.4.24 PAR_Ch155_AC80_Mode



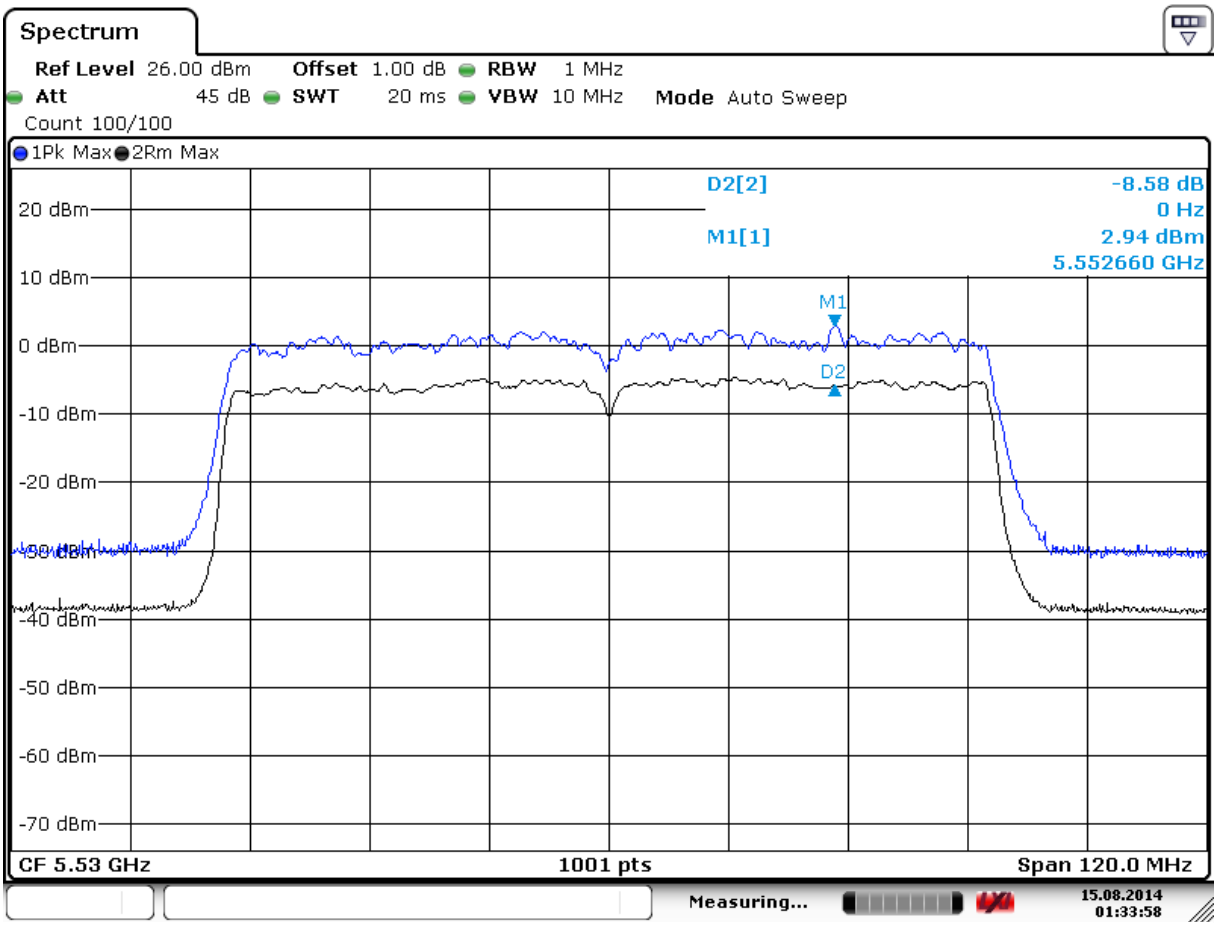
Date: 15.AUG.2014 01:26:40

16.4.25 PAR_Ch42_AC80_Mode_9



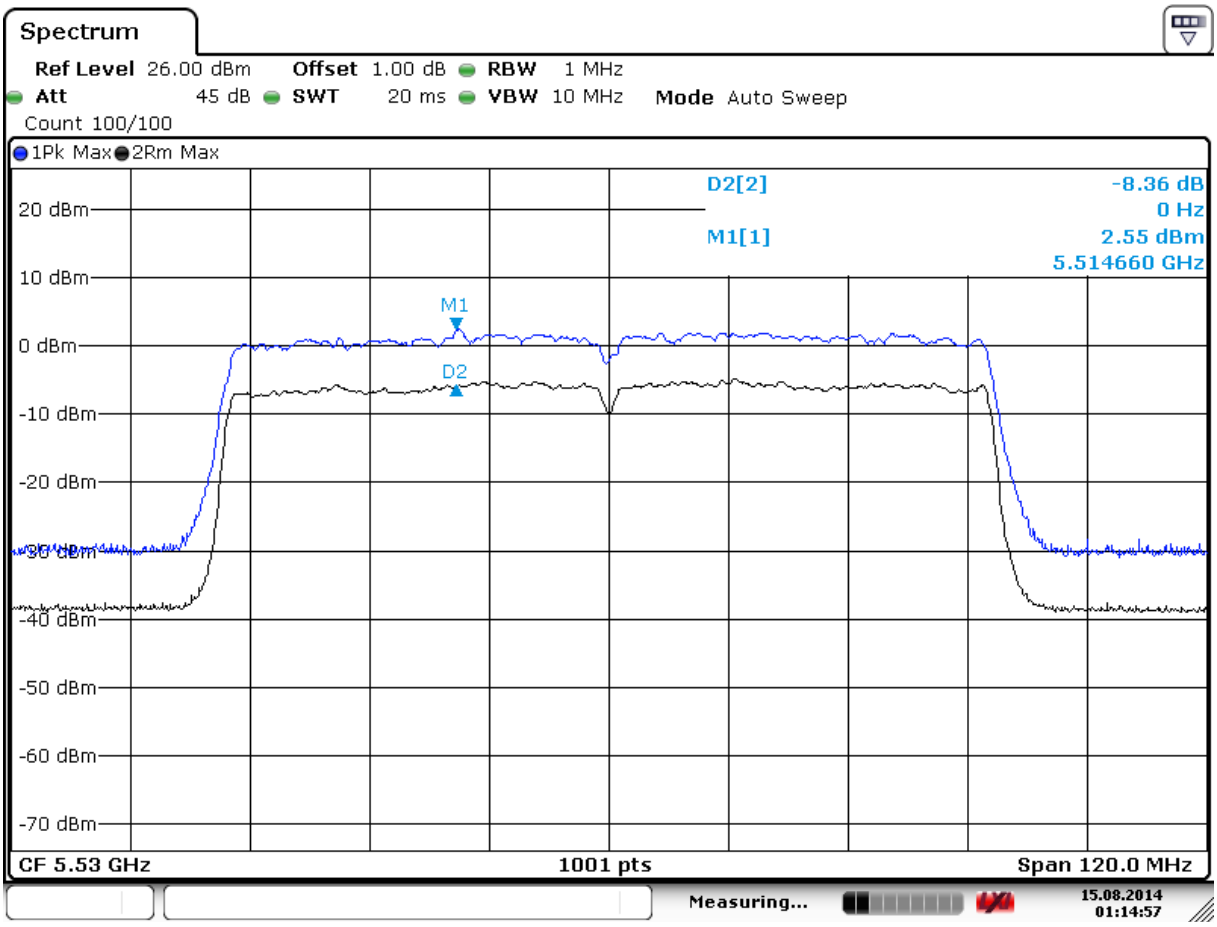
Date: 15.AUG.2014 01:30:49

16.4.26PAR_Ch58_AC80_Mode



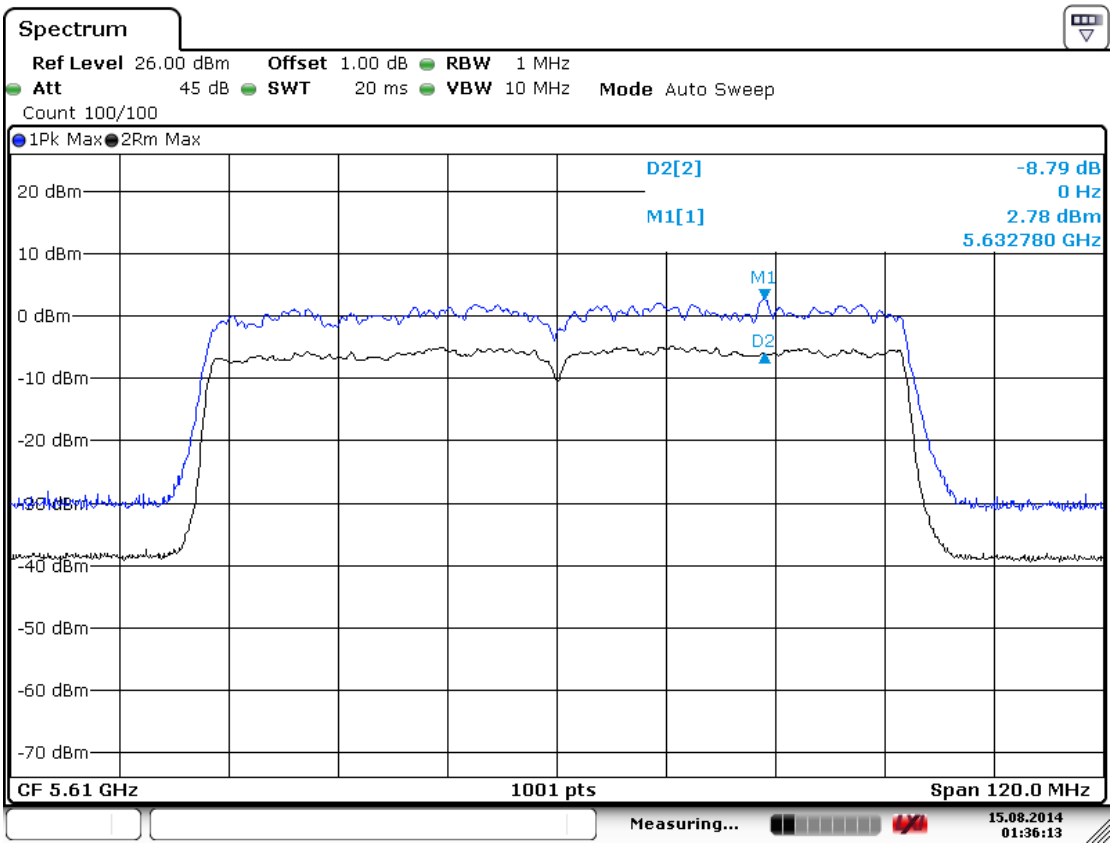
Date: 15.AUG.2014 01:33:59

16.4.27 PAR_Ch106_AC80_Mode_9



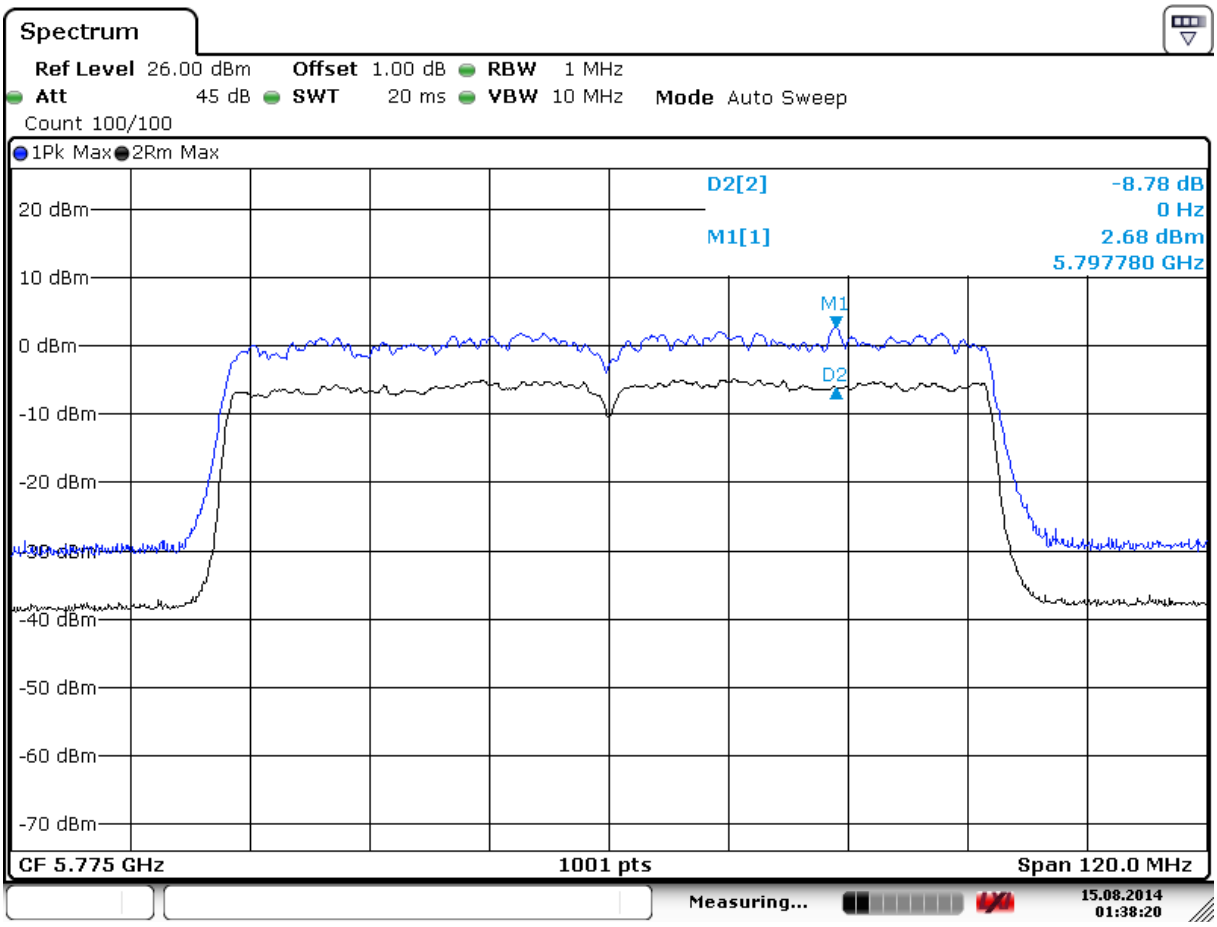
Date: 15.AUG.2014 01:14:57

PAR_Ch106_AC80_Mode



Date: 15.AUG.2014 01:36:14

16.4.28 PAR_Ch122_AC80_Mode_9

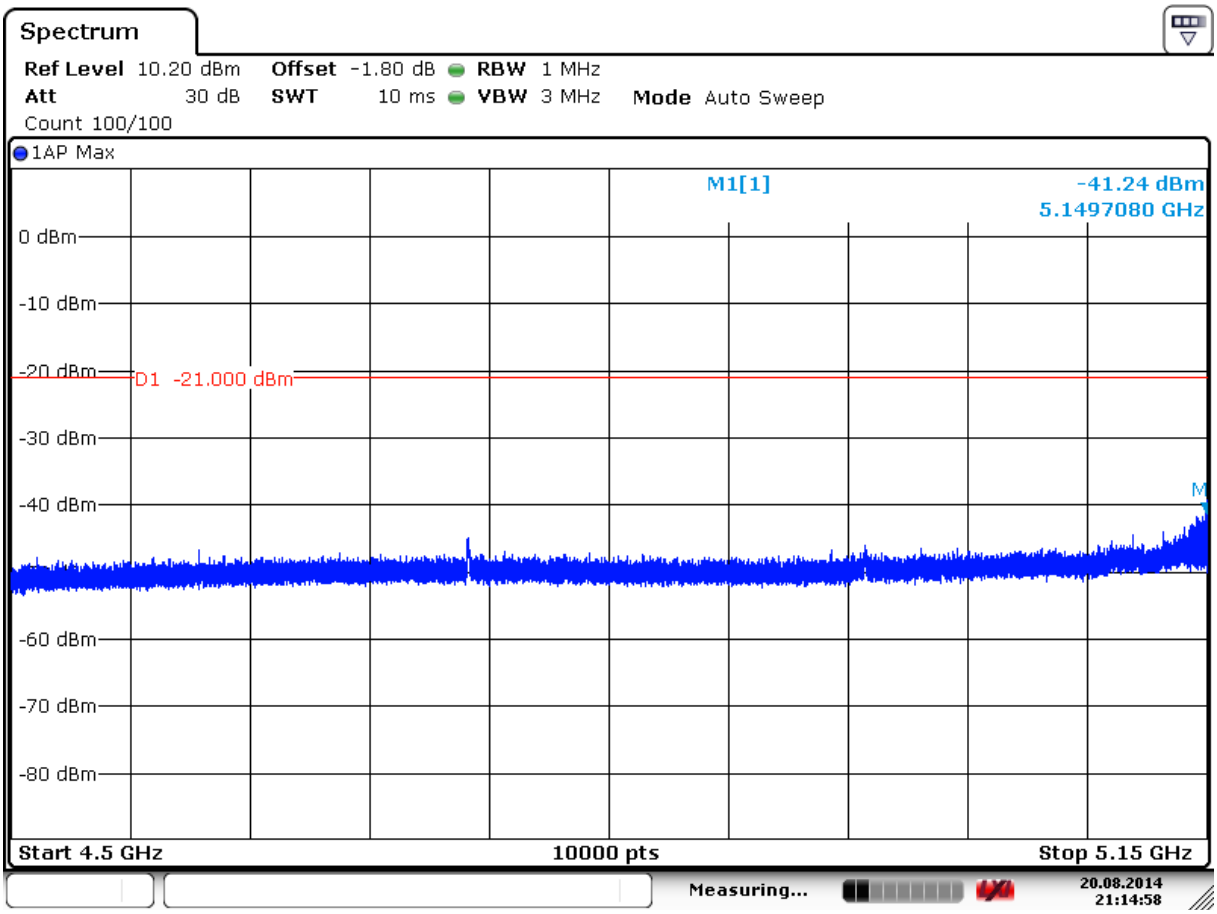


Date: 15.AUG.2014 01:38:20

16.4.29 PAR_Ch155_AC80_Mode_9

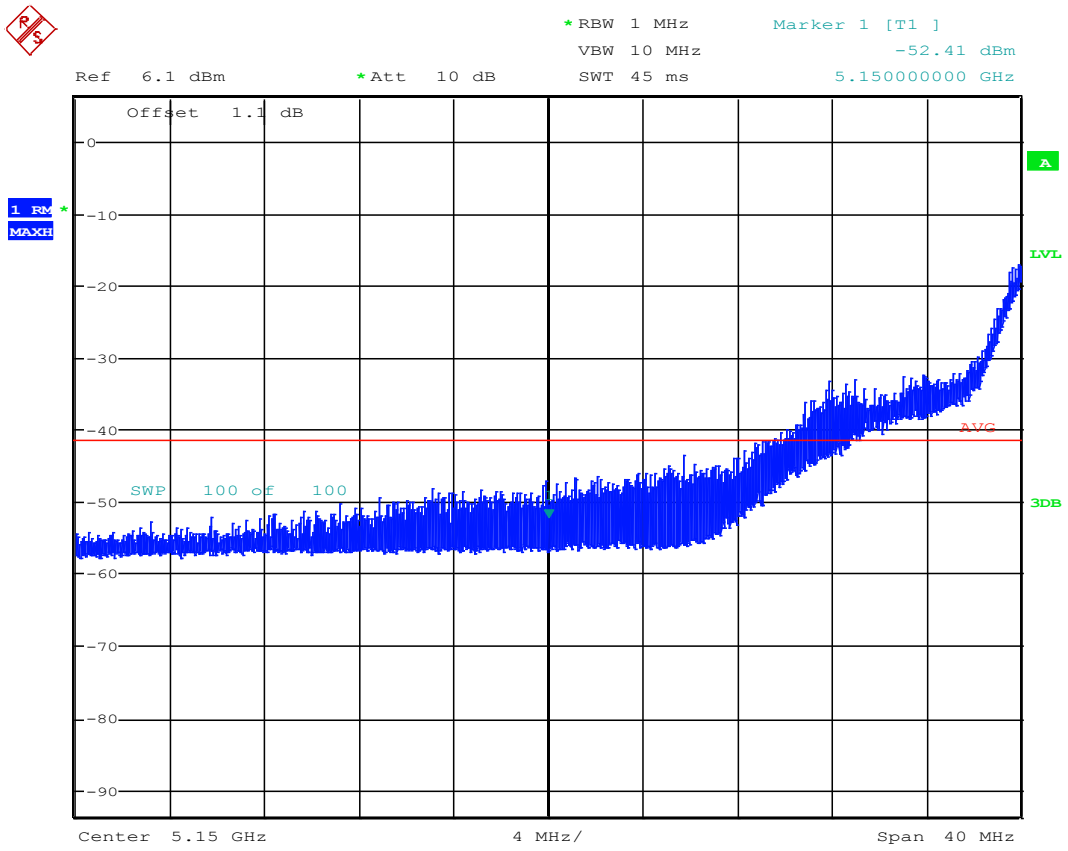
16.4.30

16.5 Band Edge Compliance – Radiated (Restricted band limits applied)



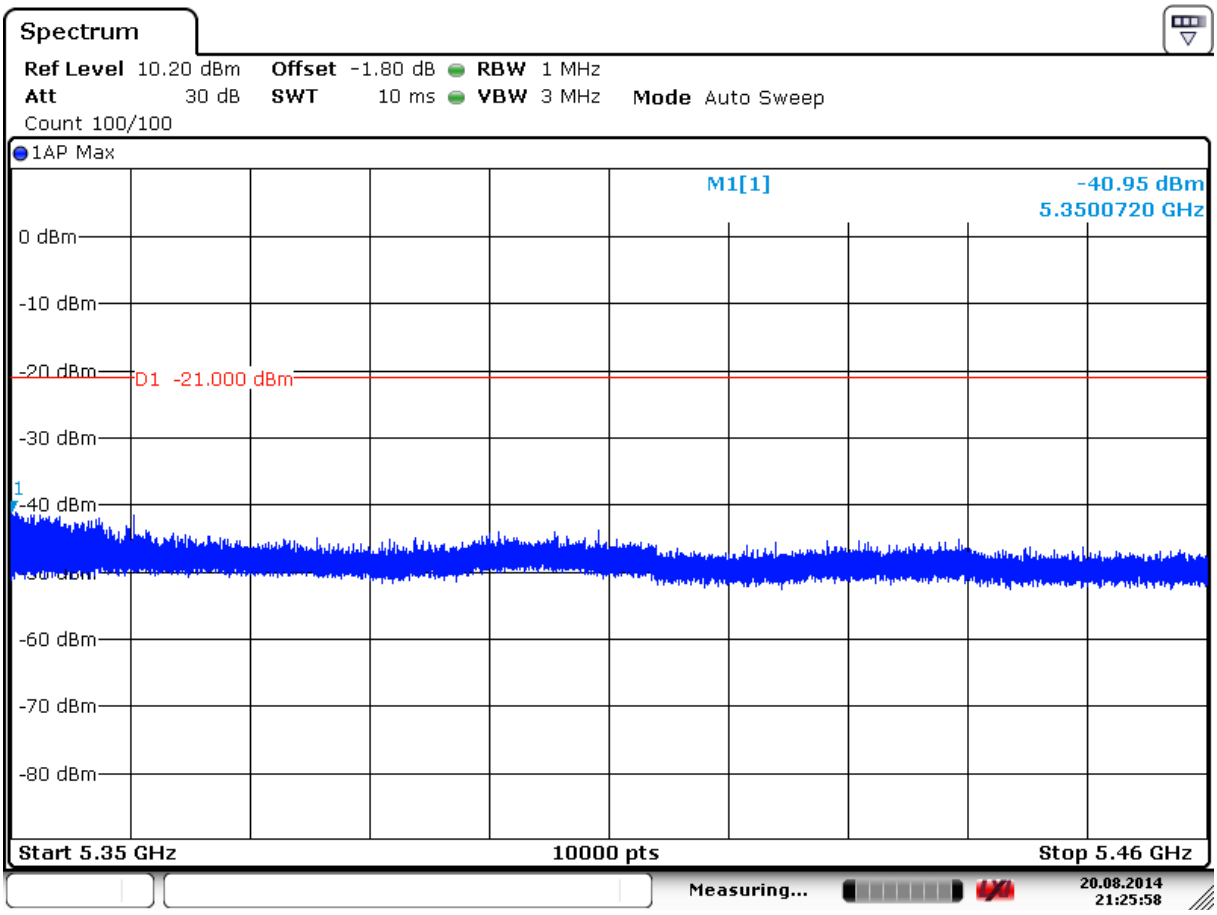
Date: 20.AUG.2014 21:14:59

16.5.1 BEC_Ch36_Low_Band_Edge_Peak



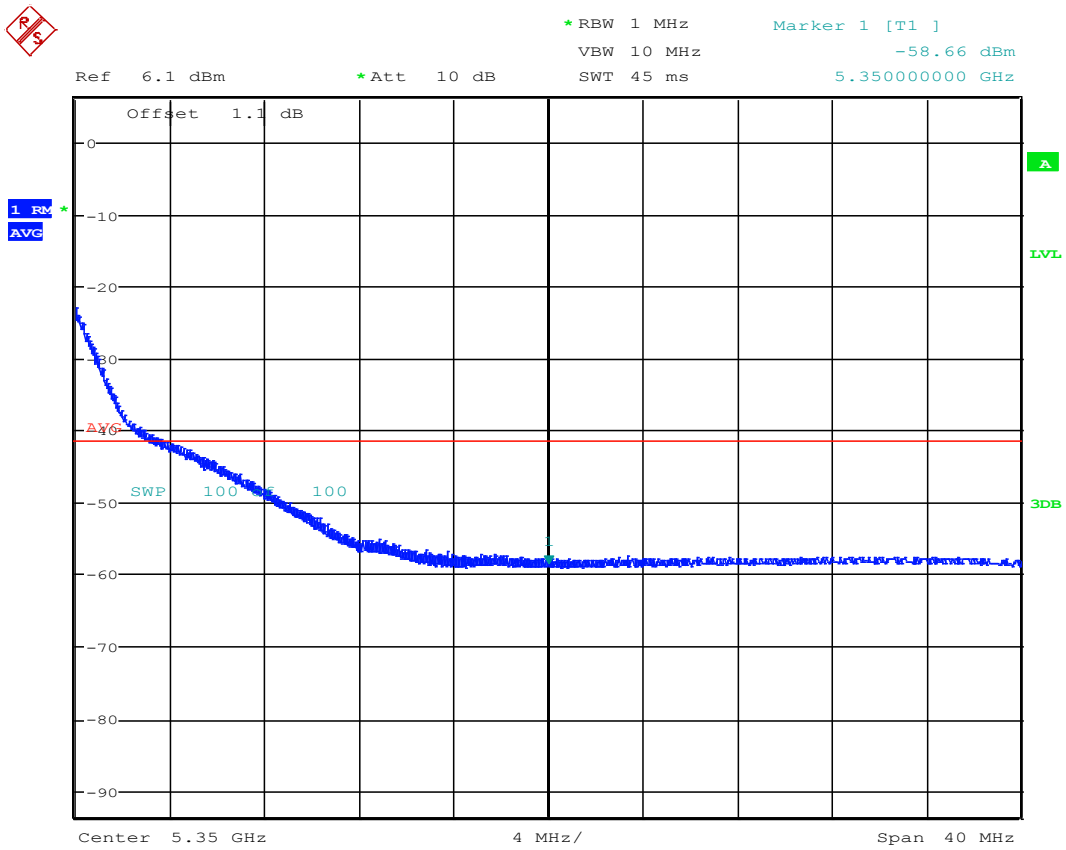
Date: 2.DEC.2014 17:38:48

16.5.2 BEC_Ch36_Low_Band_Edge_AVG



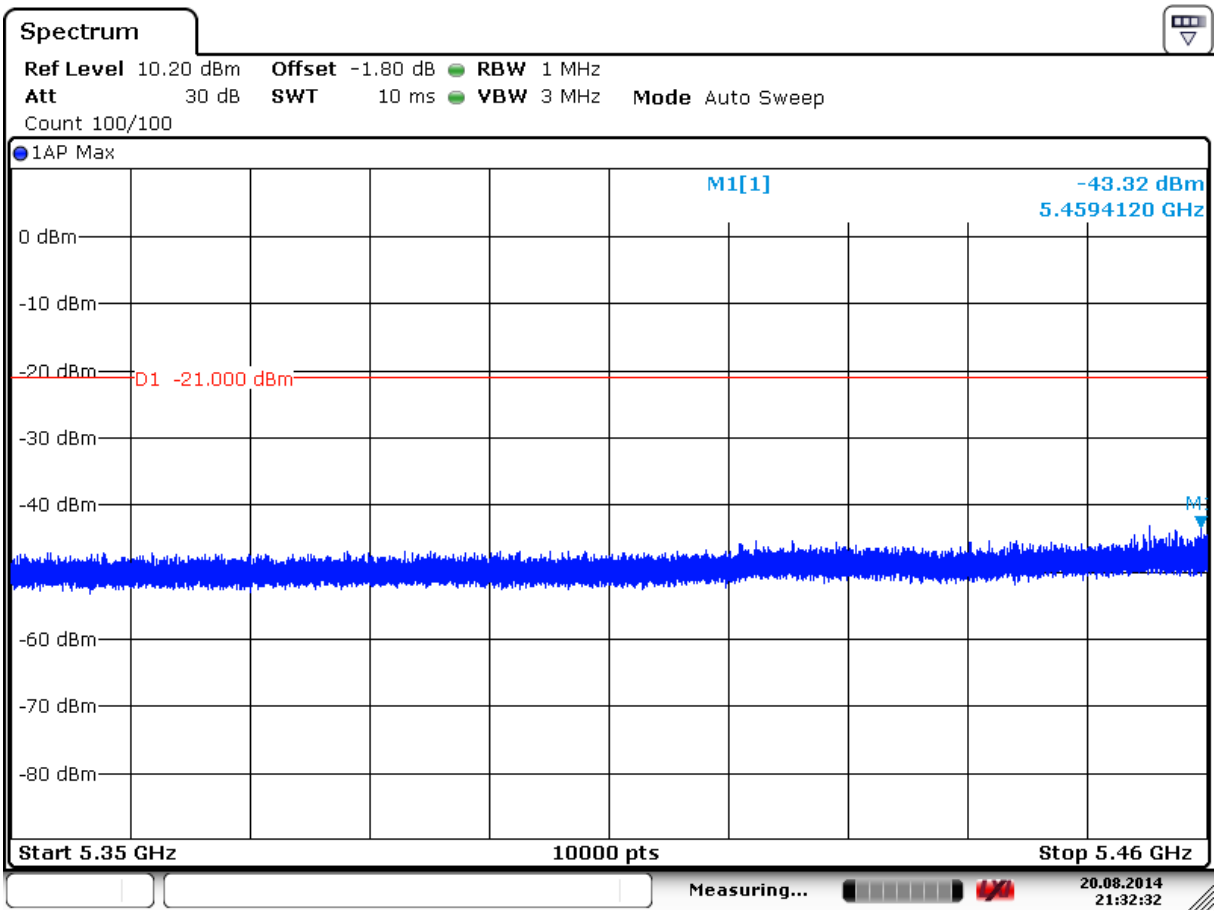
Date: 20.AUG.2014 21:25:59

16.5.3 BEC_Ch64_High_Band_Edge_Peak



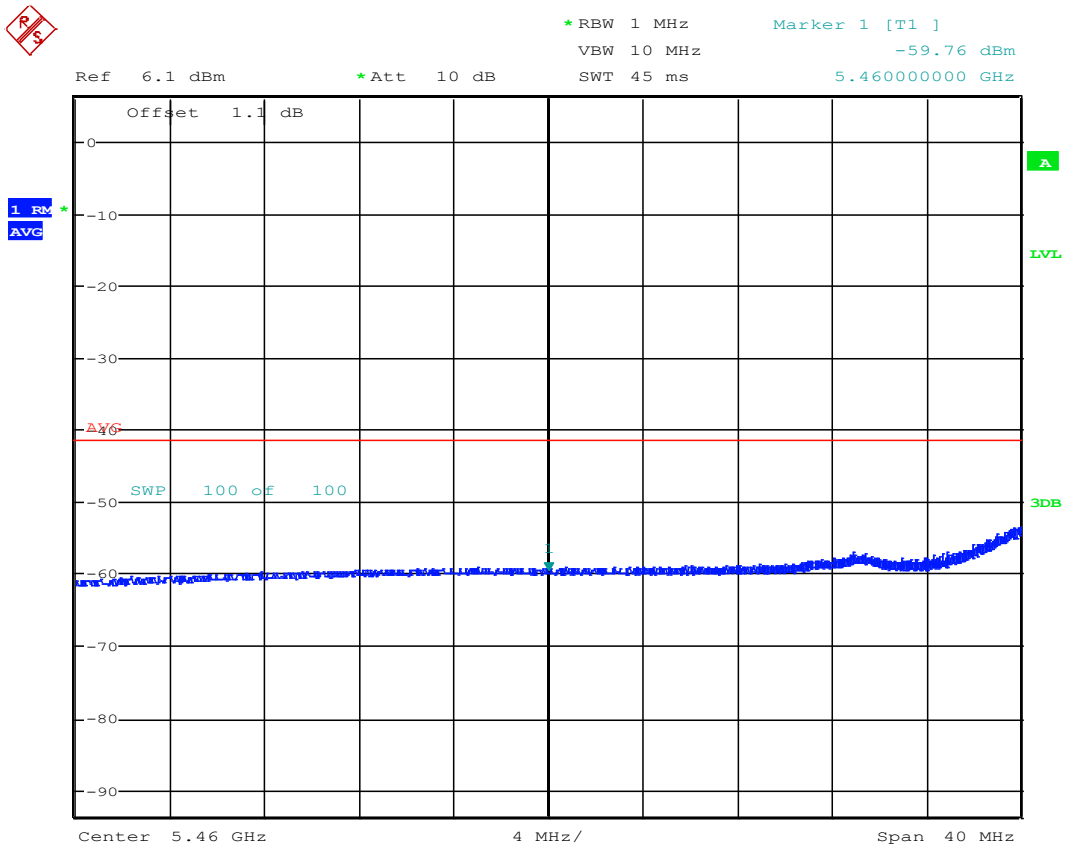
Date: 2.DEC.2014 18:01:47

16.5.4 BEC_Ch64_High_Band_Edge_AVG



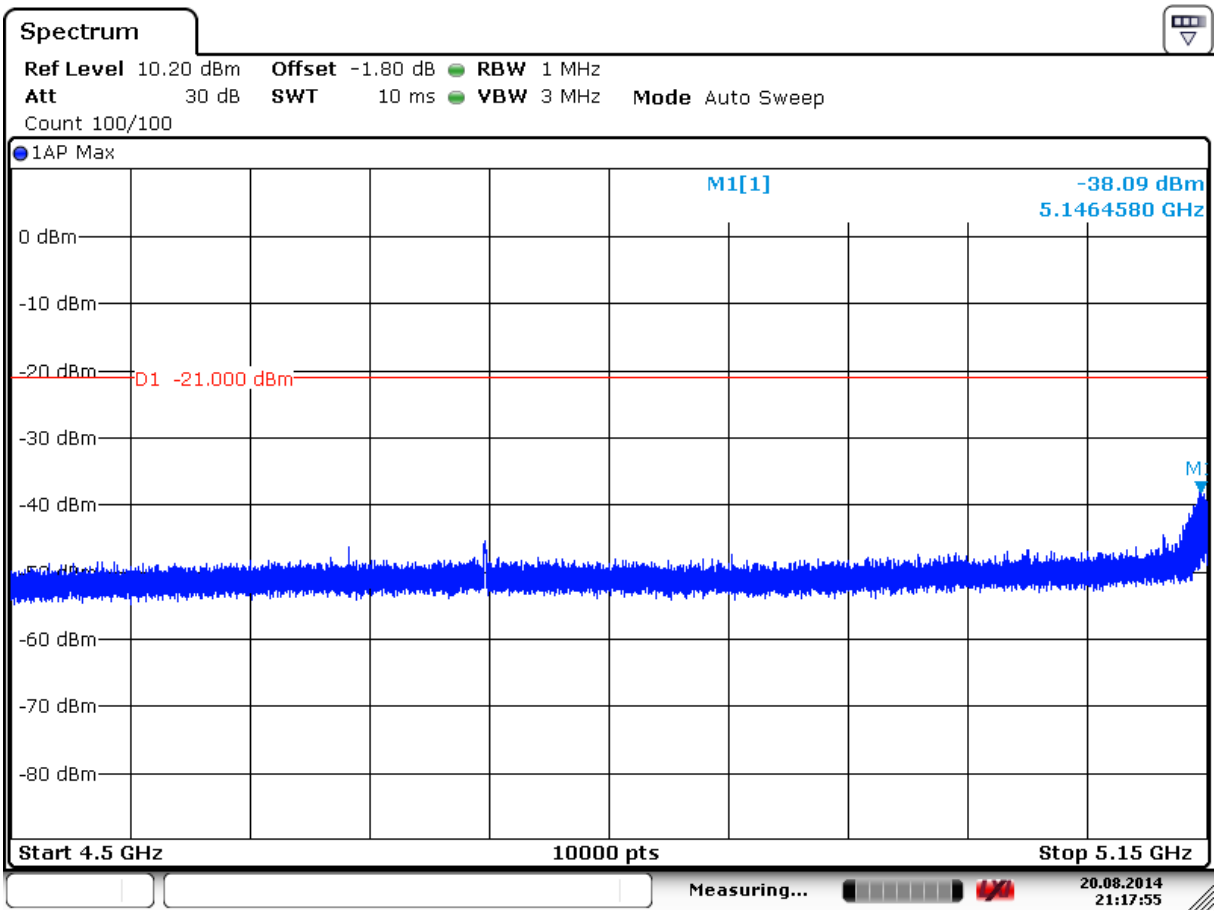
Date: 20.AUG.2014 21:32:32

16.5.5 BEC_Ch100_Low_Band_Edge_Peak



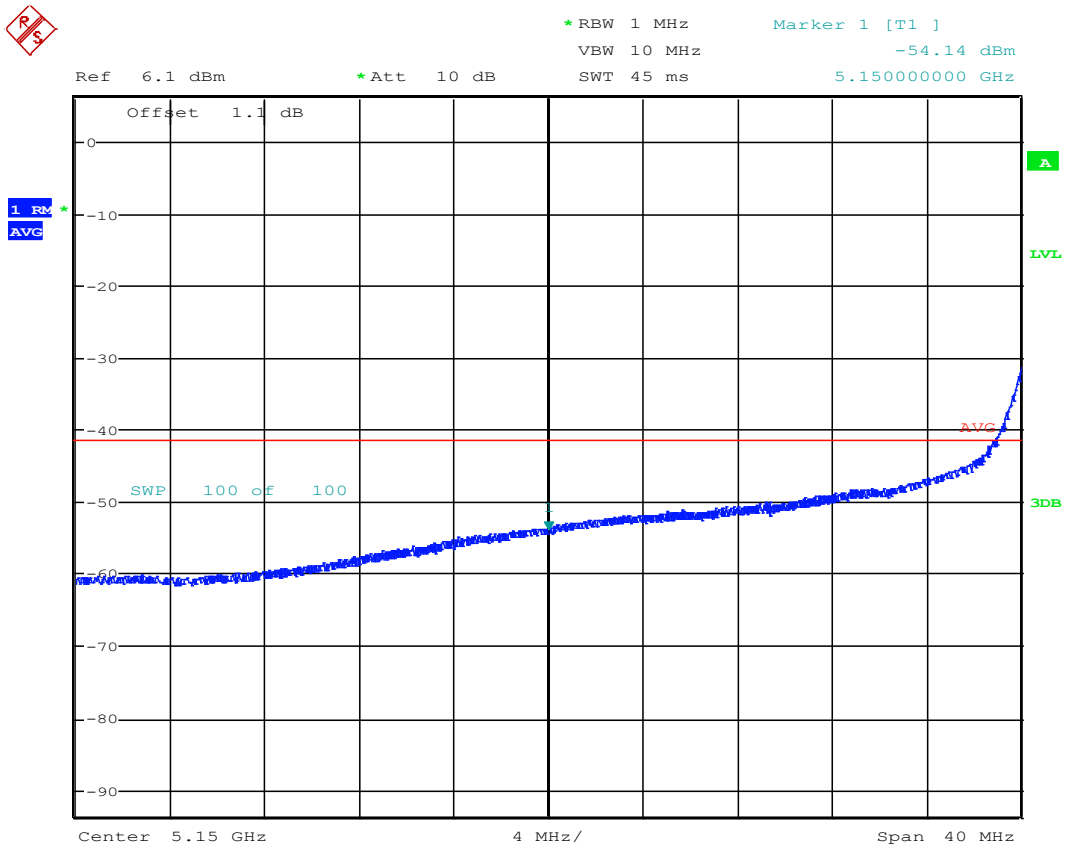
Date: 2.DEC.2014 18:03:23

16.5.6 BEC_Ch100_Low_Band_Edge_AVG



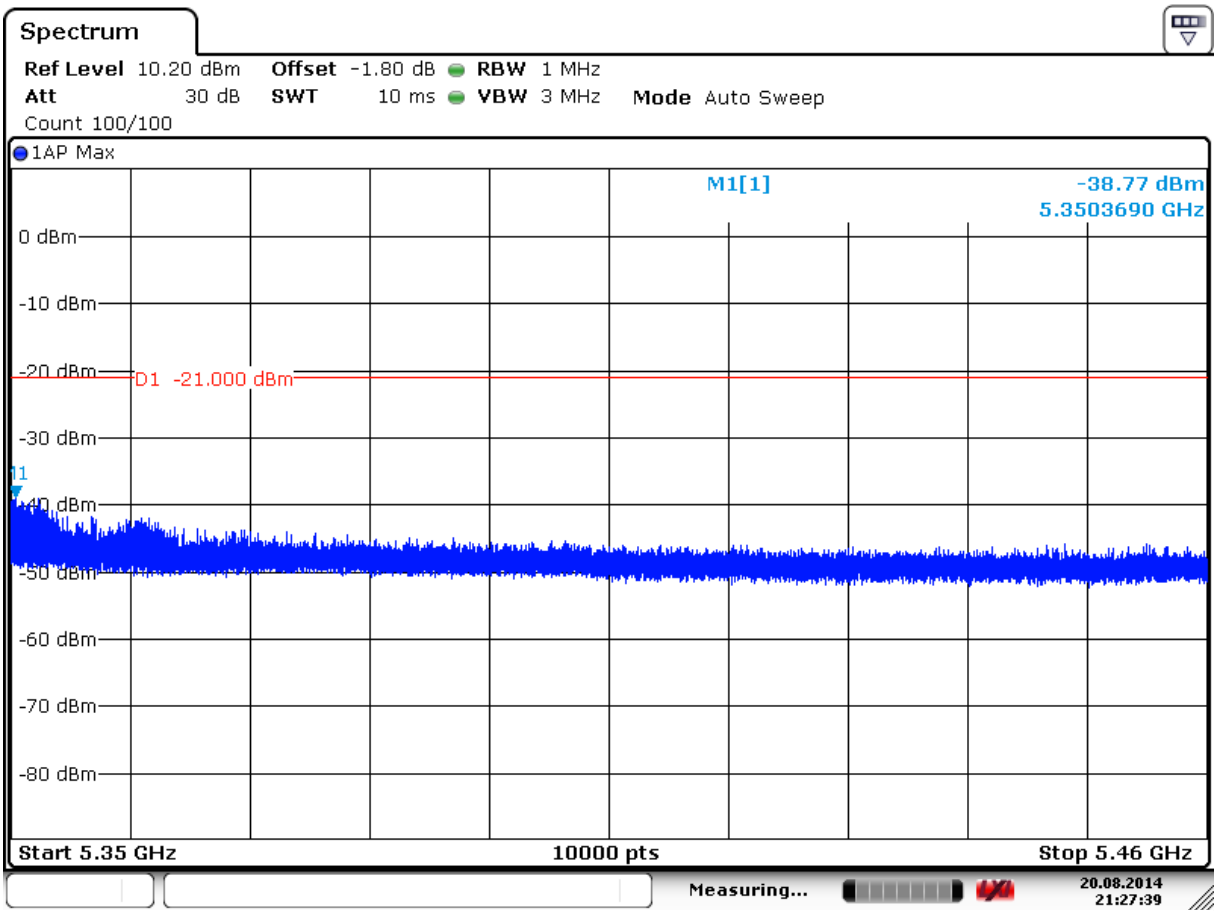
Date: 20.AUG.2014 21:17:55

16.5.7 BEC_Ch38_Low_Band_Edge_Peak



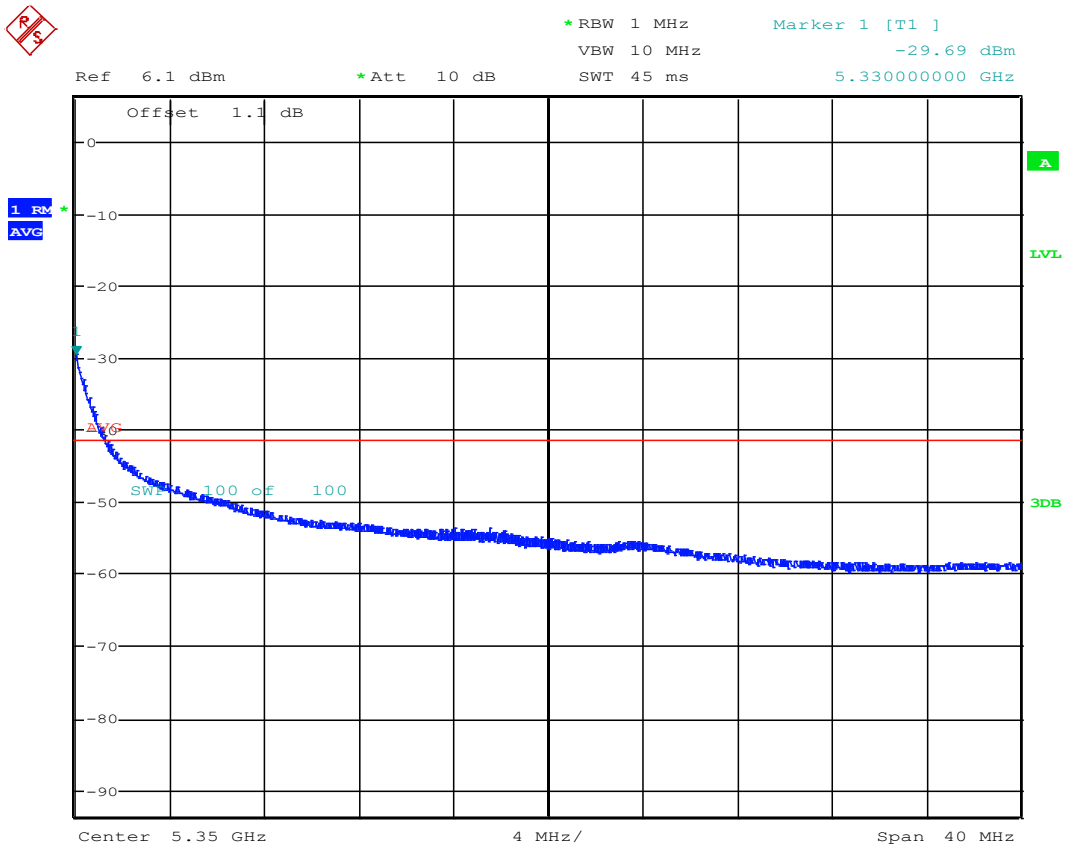
Date: 2.DEC.2014 17:53:24

16.5.8 BEC_Ch38_Low_Band_Edge_AVG

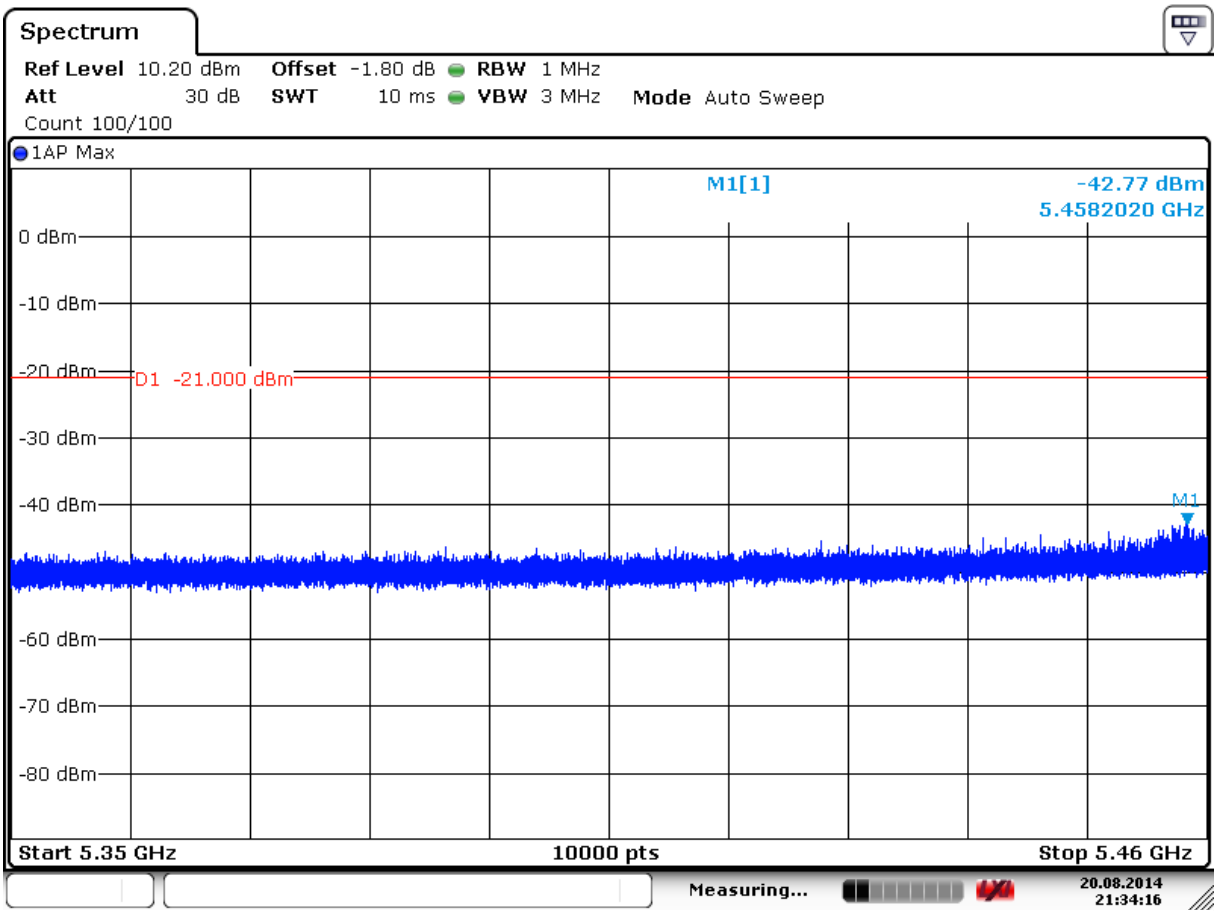


Date: 20.AUG.2014 21:27:38

16.5.9 BEC_Ch62_High_Band_Edge_Peak

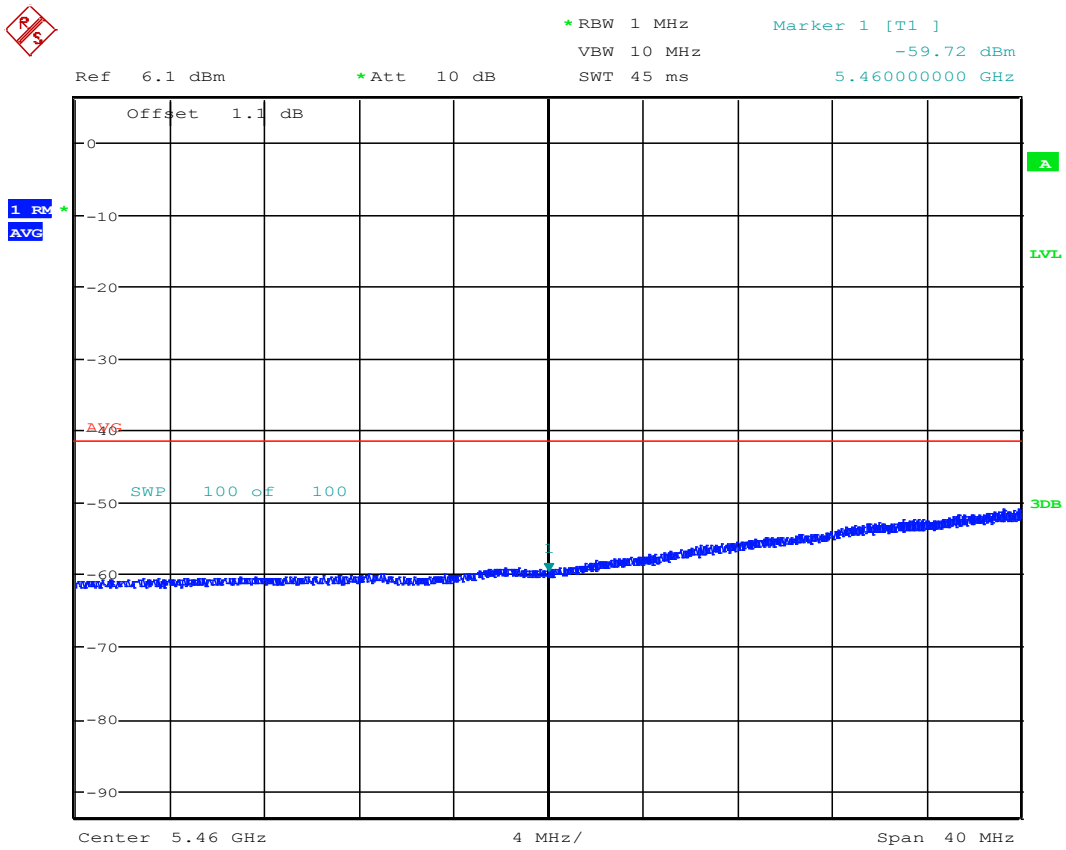


16.5.10BEC_Ch62_High_Band_Edge_AVG



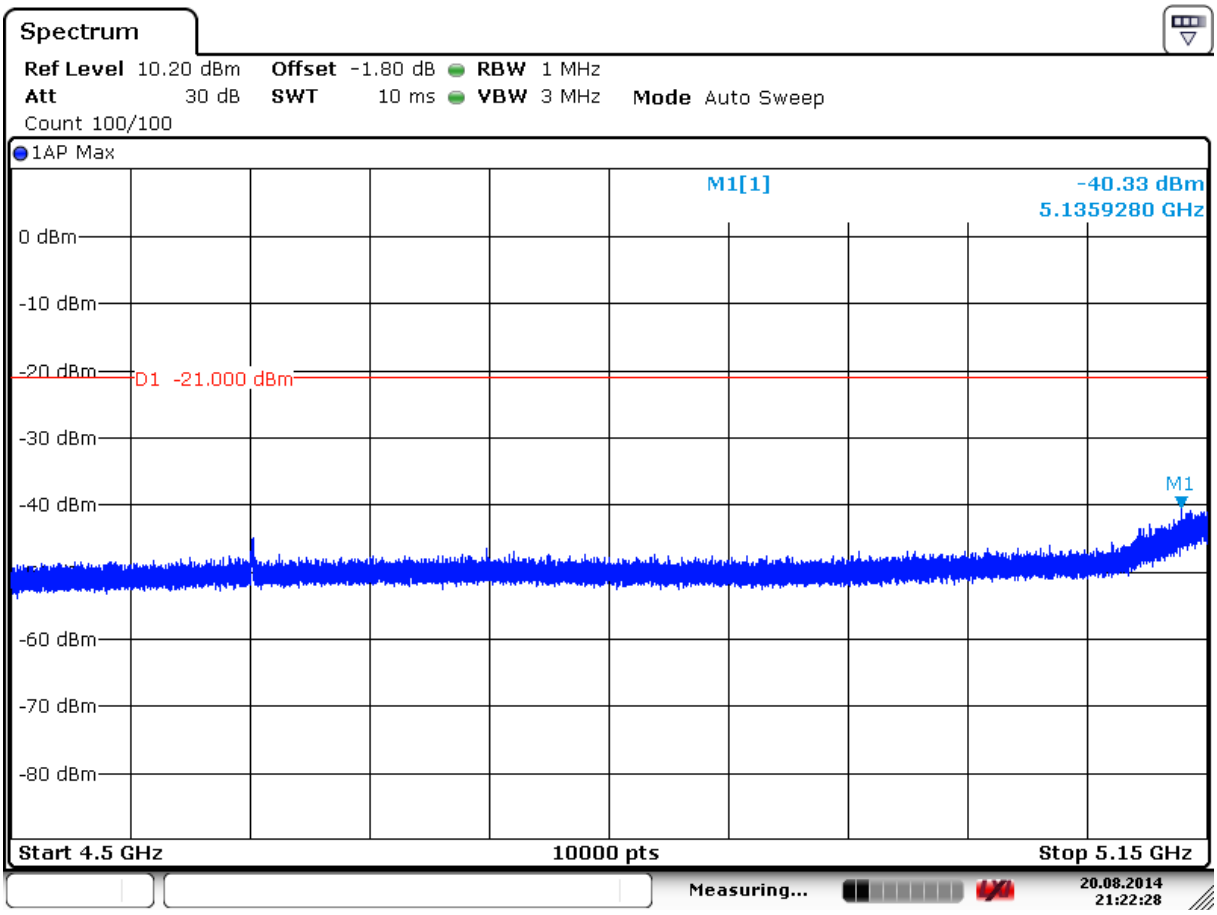
Date: 20.AUG.2014 21:34:17

16.5.11BEC_Ch102_Low_Band_Edge_Peak



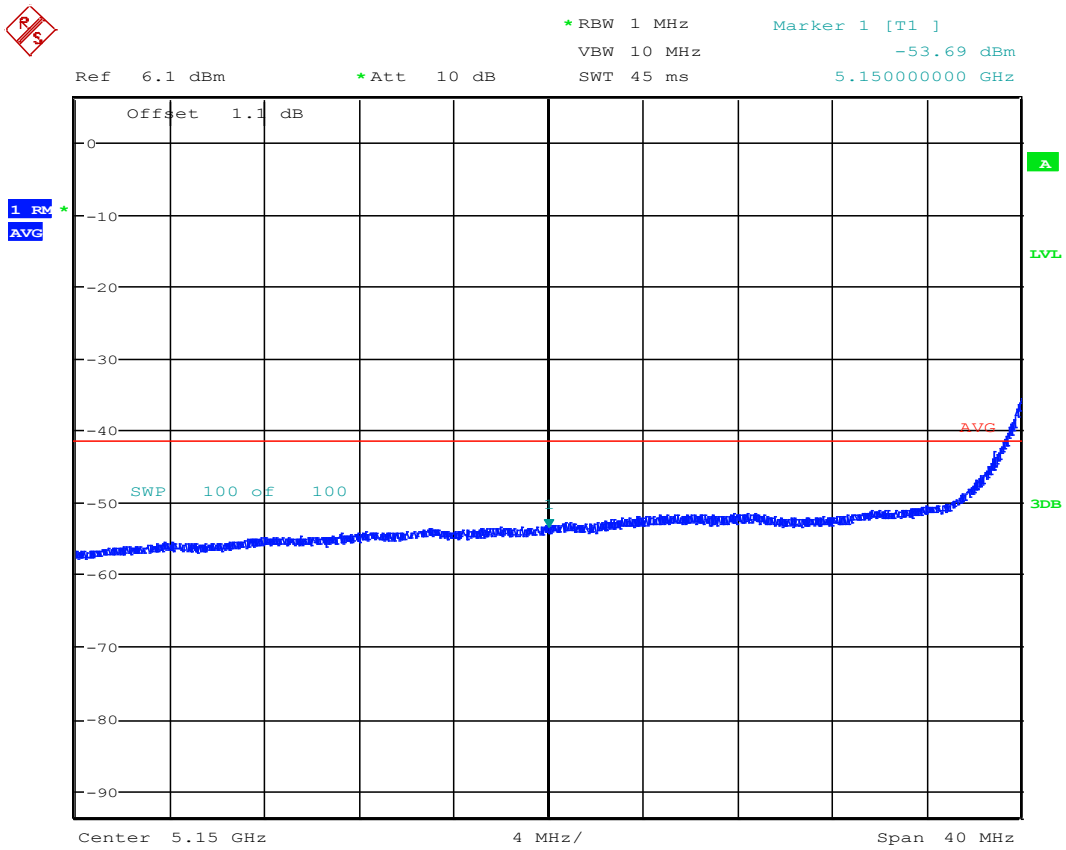
Date: 2.DEC.2014 18:04:29

16.5.12BEC_Ch102_Low_Band_Edge_AVG



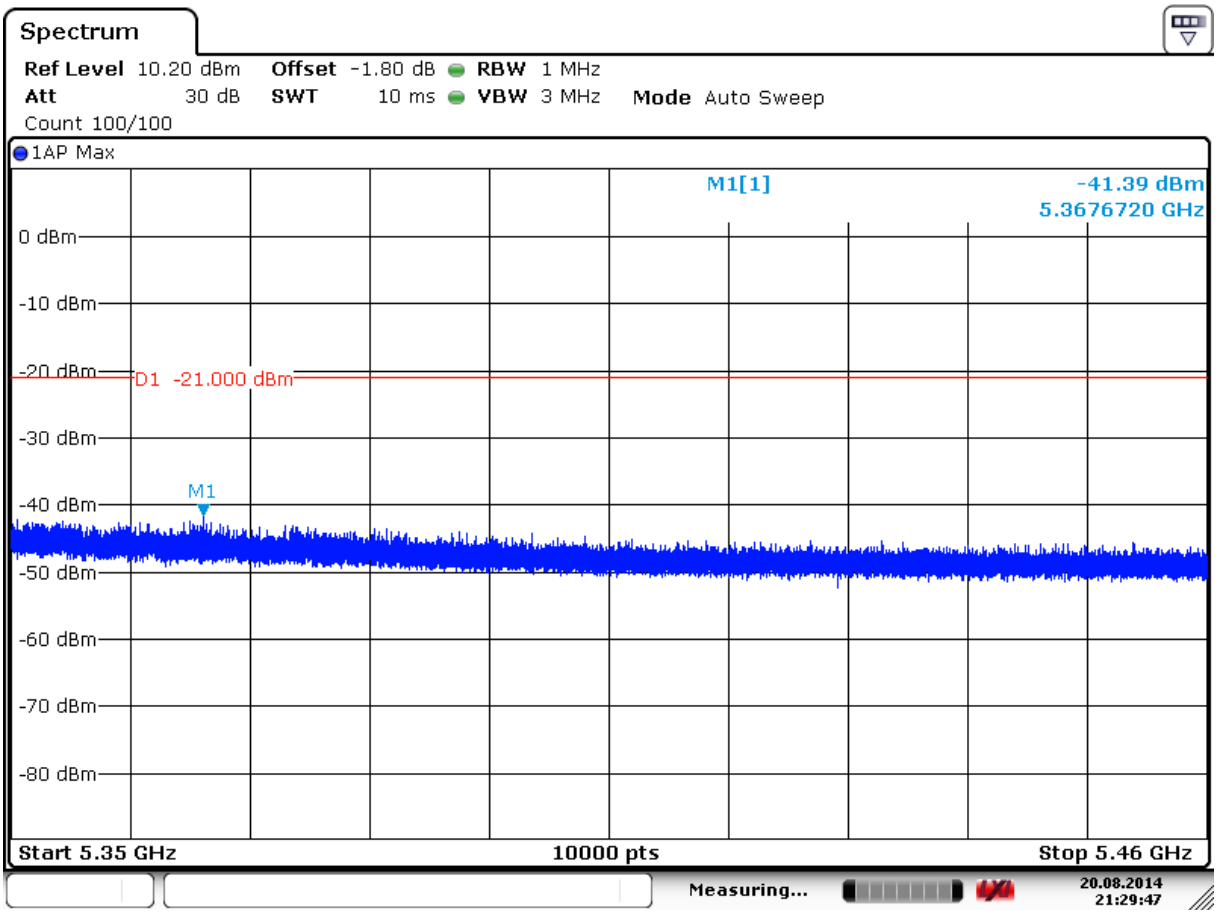
Date: 20.AUG.2014 21:22:29

16.5.13BEC_Ch42_Low_Band_Edge_Peak



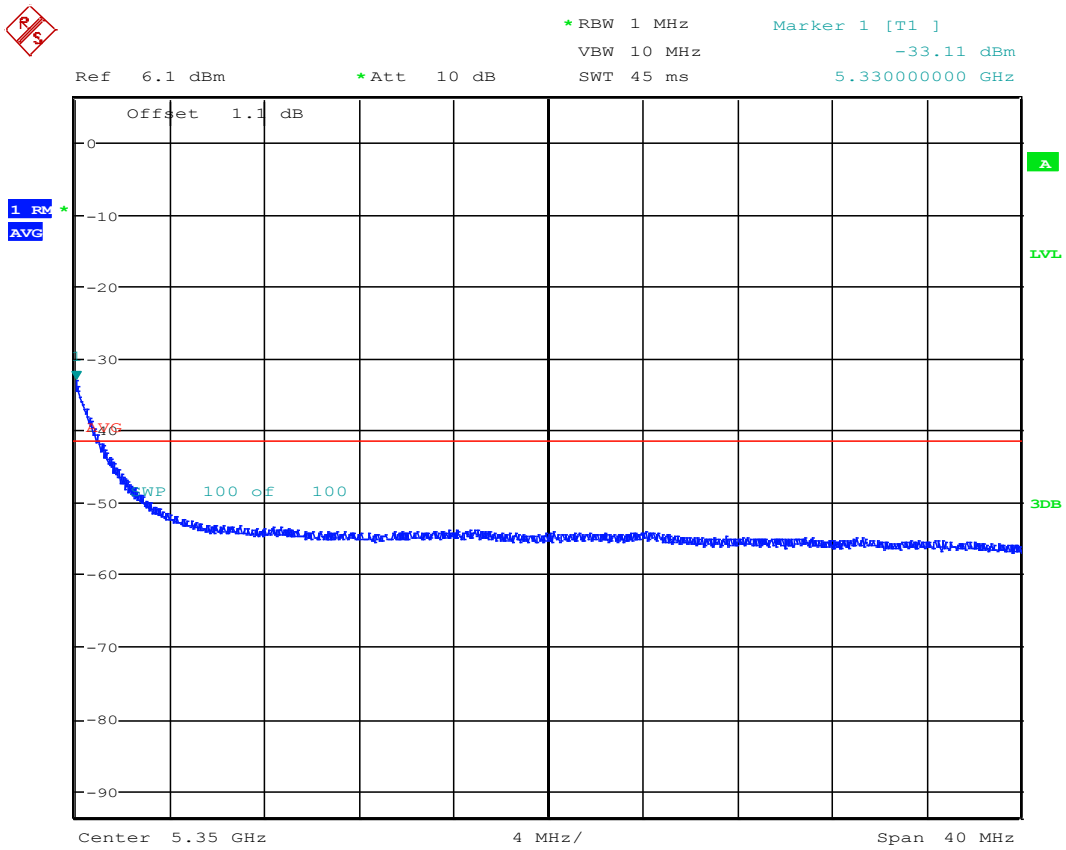
Date: 2.DEC.2014 17:56:07

16.5.14BEC_Ch42_Low_Band_Edge_AVG



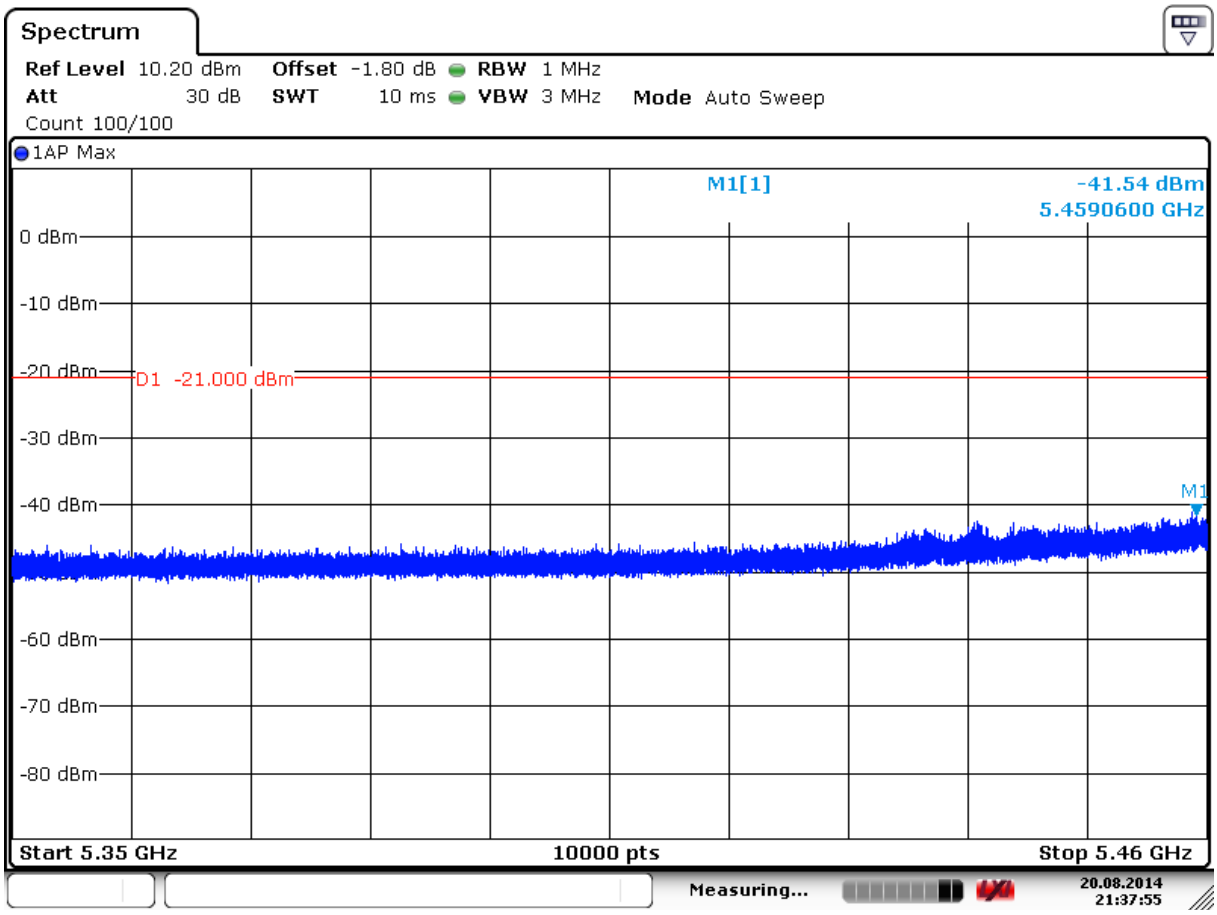
Date: 20.AUG.2014 21:29:48

16.5.15BEC_Ch58_High_Band_Edge_Peak



Date: 2.DEC.2014 17:57:51

16.5.16BEC_Ch58_High_Band_Edge_AVG



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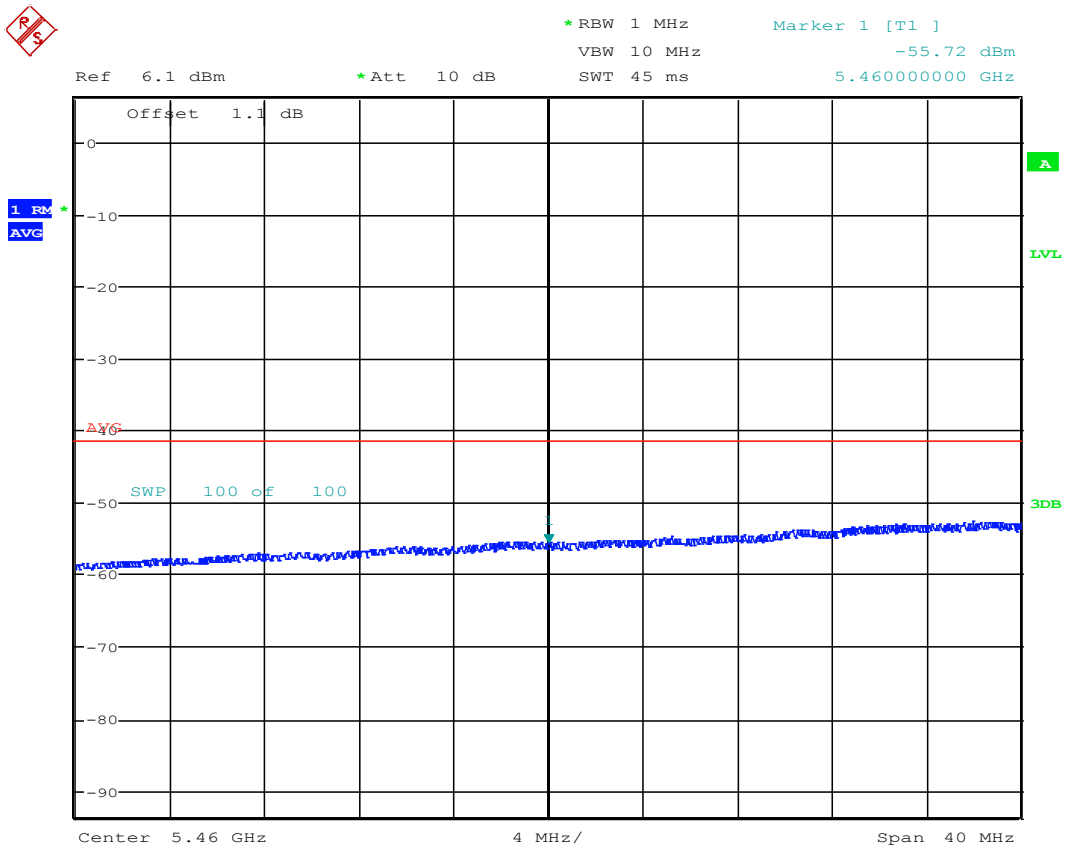
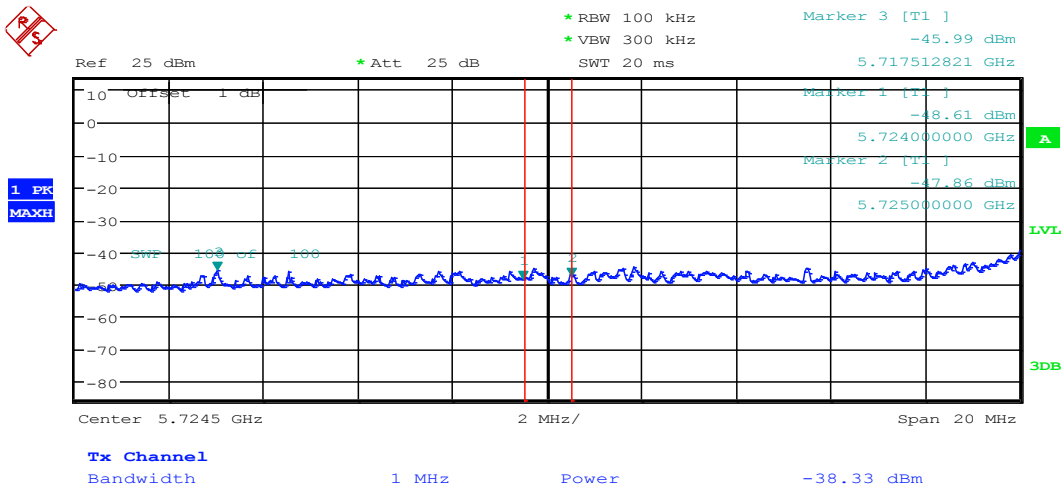
16.5.17BEC_Ch106_Low_Band_Edge_Peak



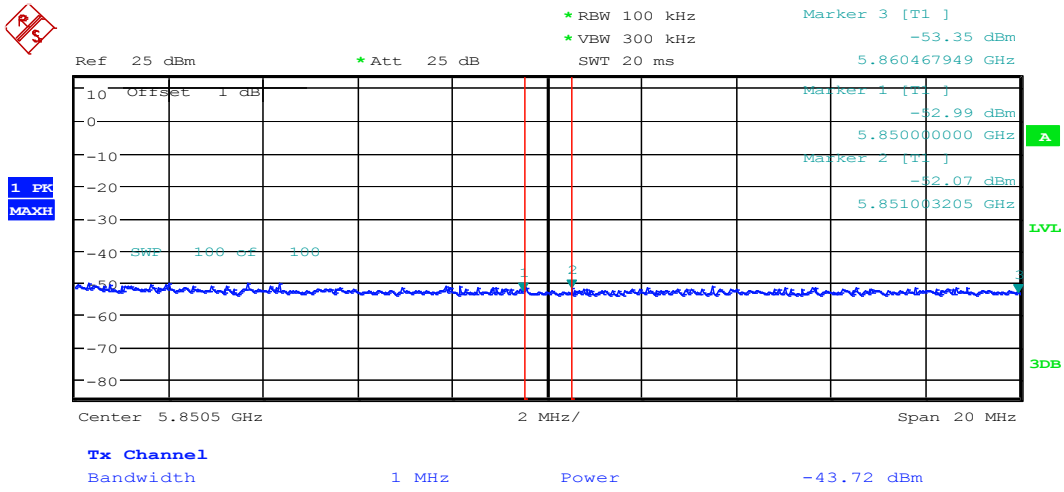
Date: 2.DEC.2014 18:06:01

16.5.18BEC_Ch106_Low_Band_Edge_AVG



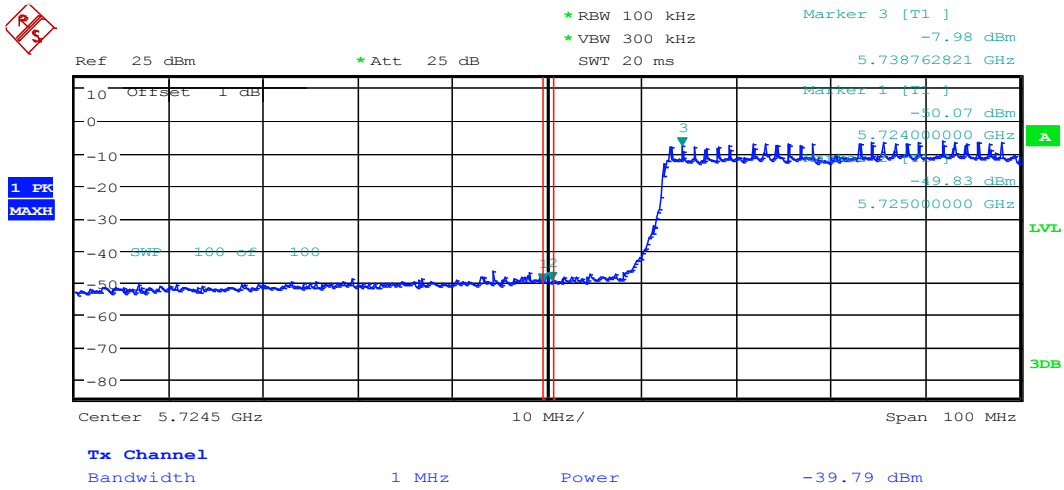
Date: 22.NOV.2014 12:13:23

16.5.19BEC_Ch151_Low_Band_Edge_Peak



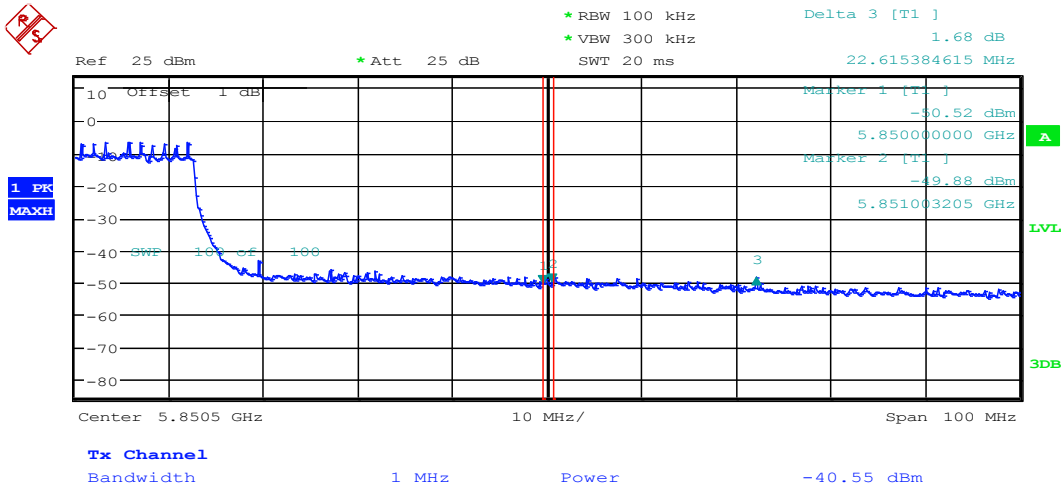
Date: 22.NOV.2014 12:22:38

16.5.20 BEC_Ch159_High_Band_Edge_Peak



Date: 22.NOV.2014 12:31:03

16.5.21 BEC_Ch155_Low_Band_Edge_Peak



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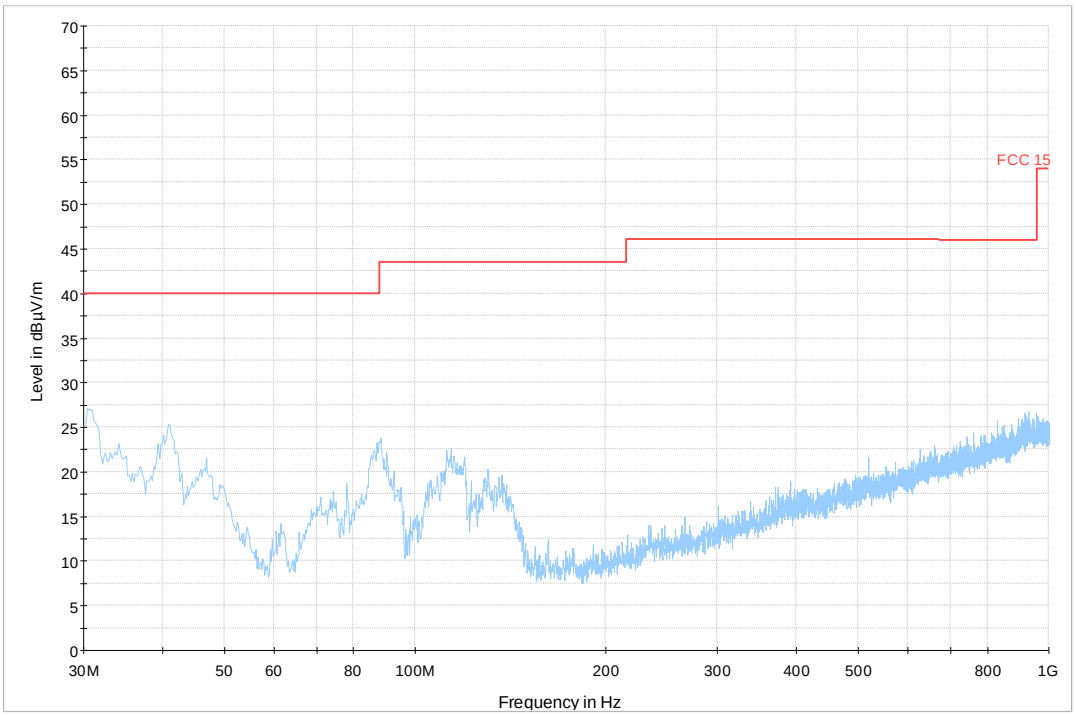
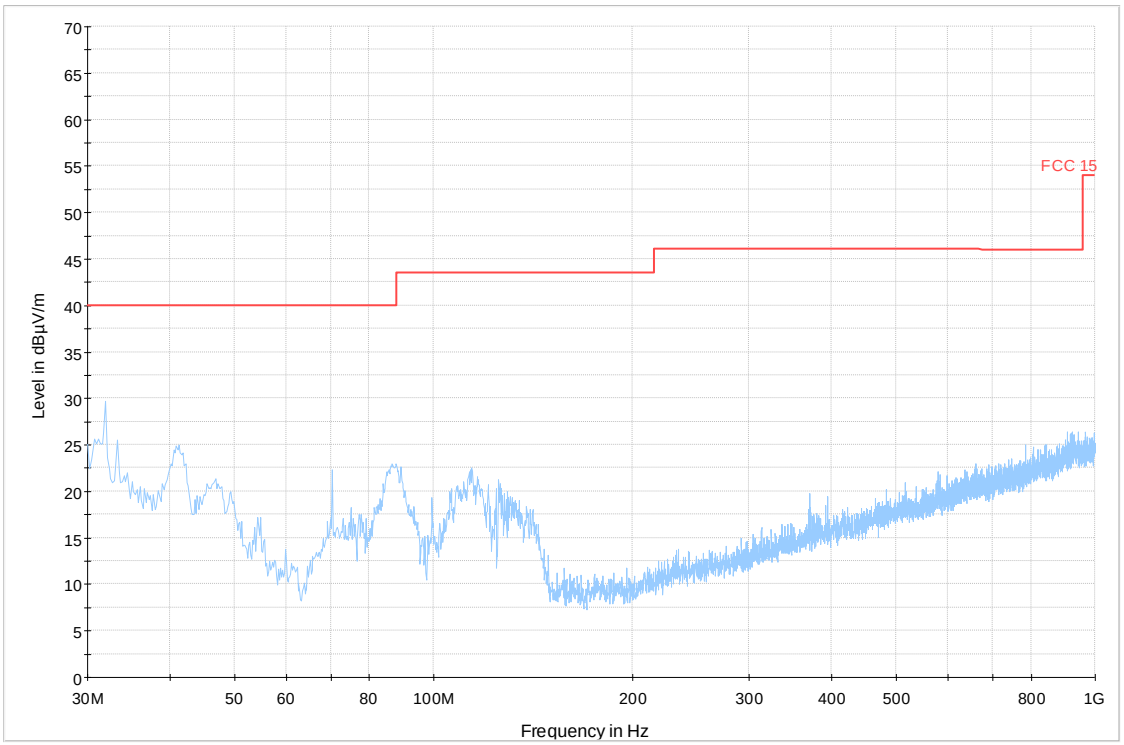
16.5.22BEC_Ch155_HIgh_Band_Edge_Peak

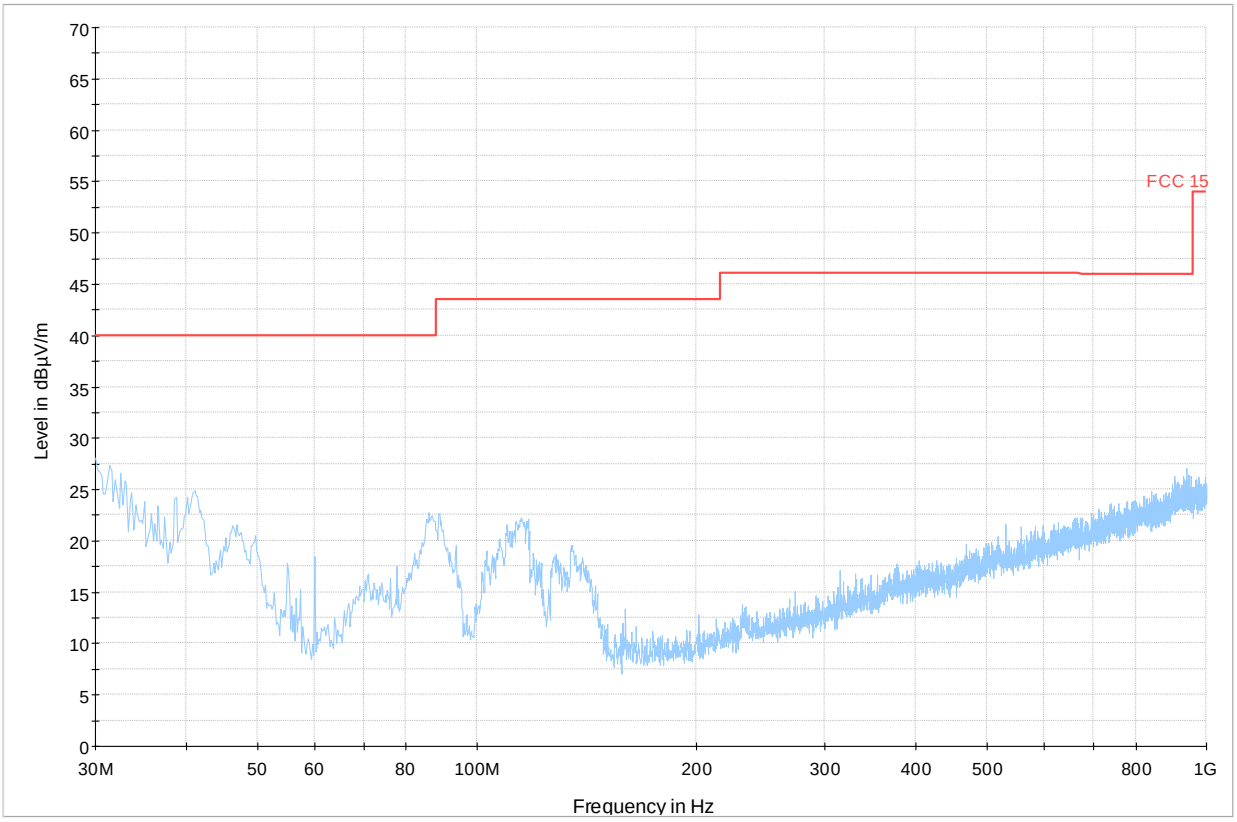
16.6 Unwanted Emissions into Restricted and Non-restricted bands



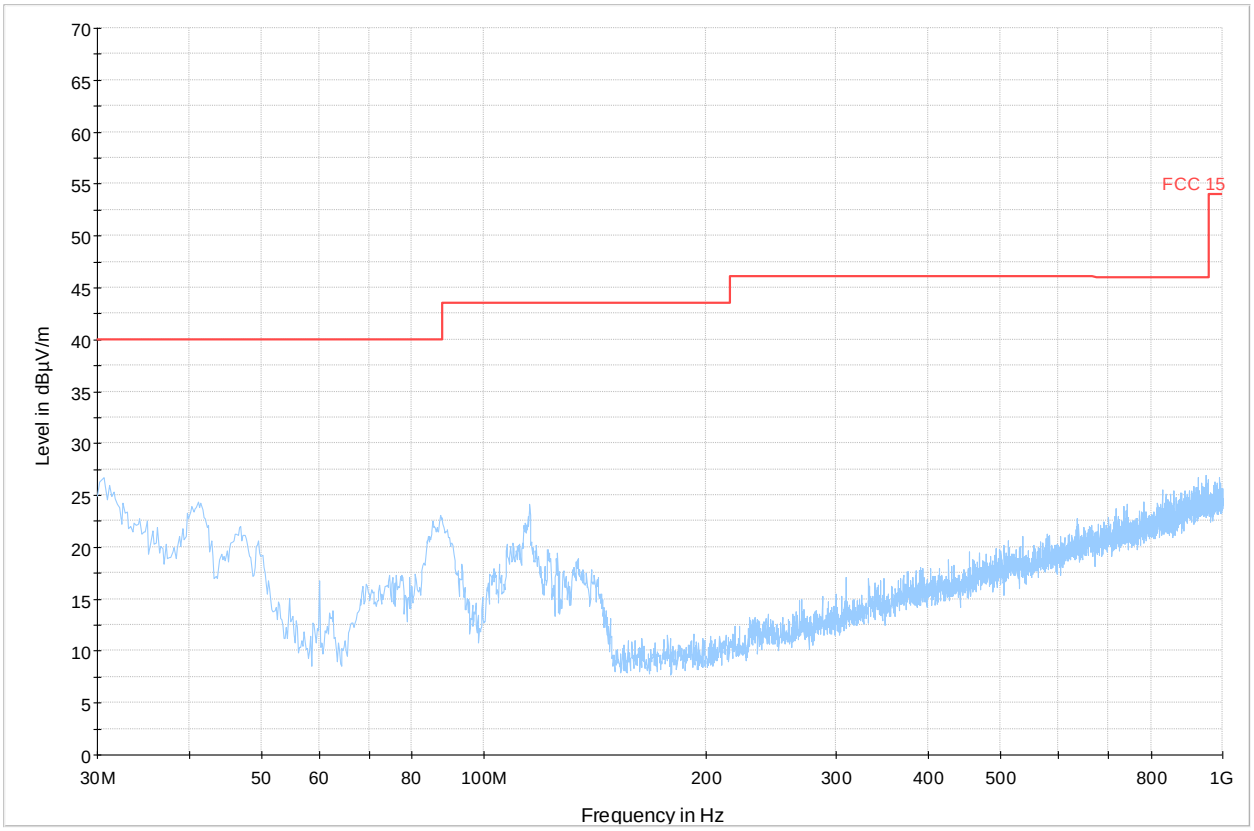
16.6.1 UER_11a_Ch36_30MHz_1GHz



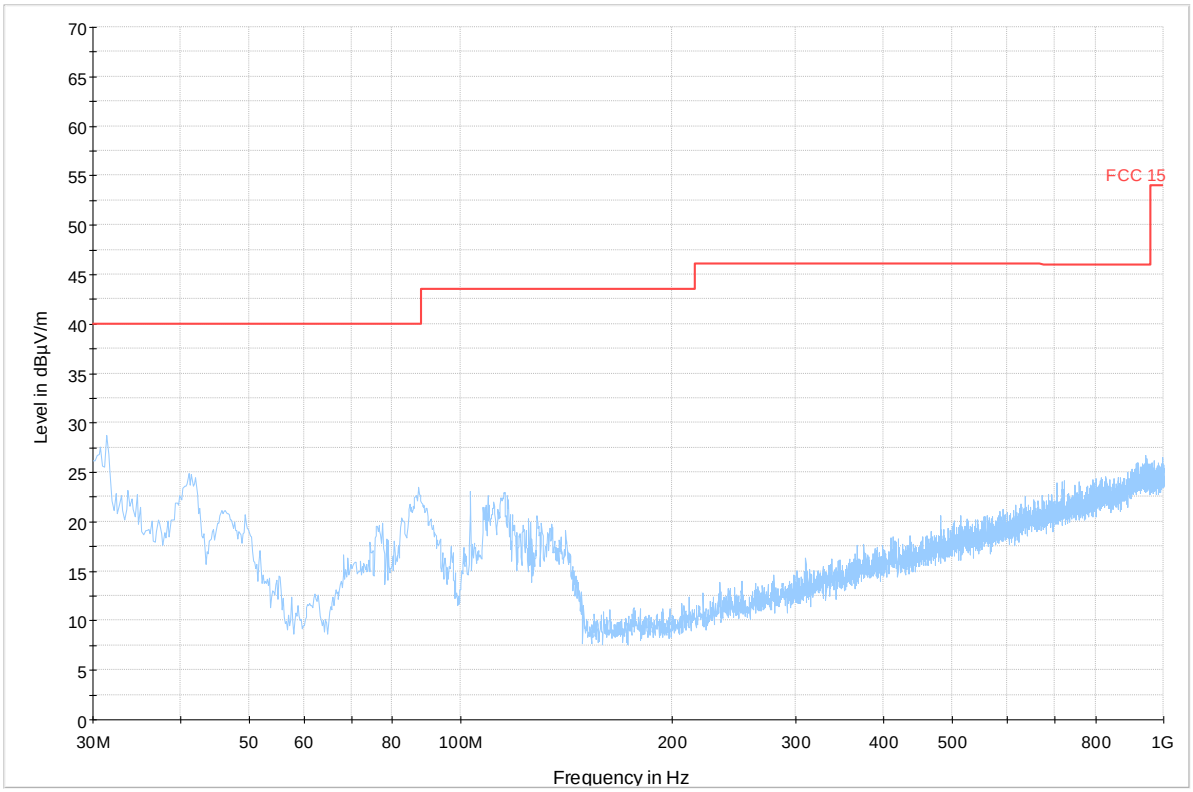
16.6.2 UER_11n_Ch38_30MHz_1GHz



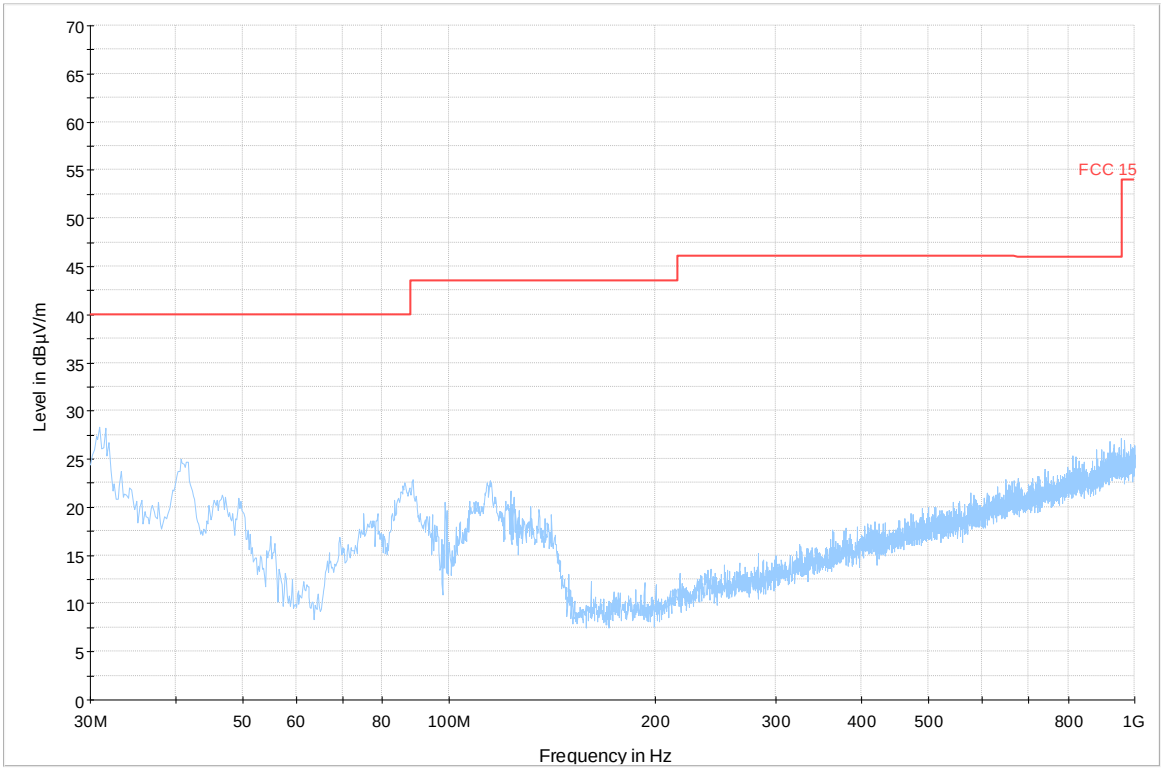
16.6.3 UER_11ac_Ch42_30MHz_1GHz



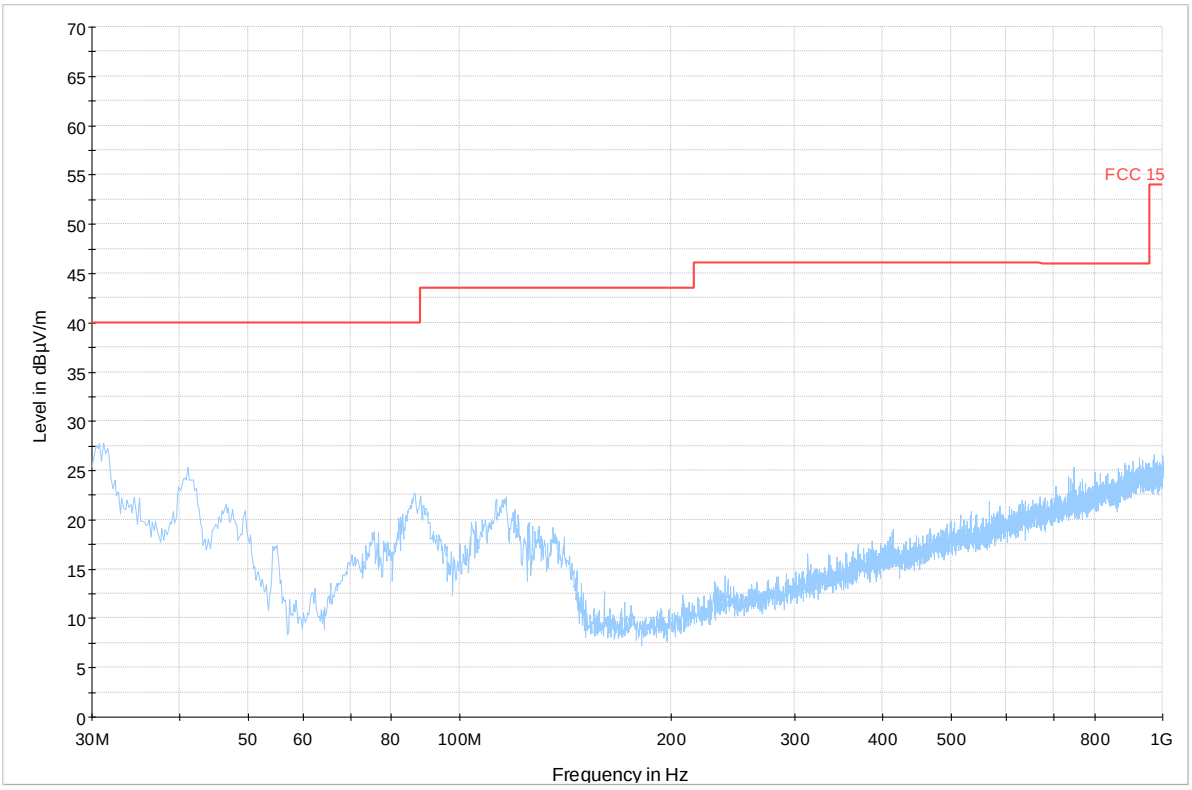
16.6.4 UER_11ac_Ch58_30MHz_1GHz



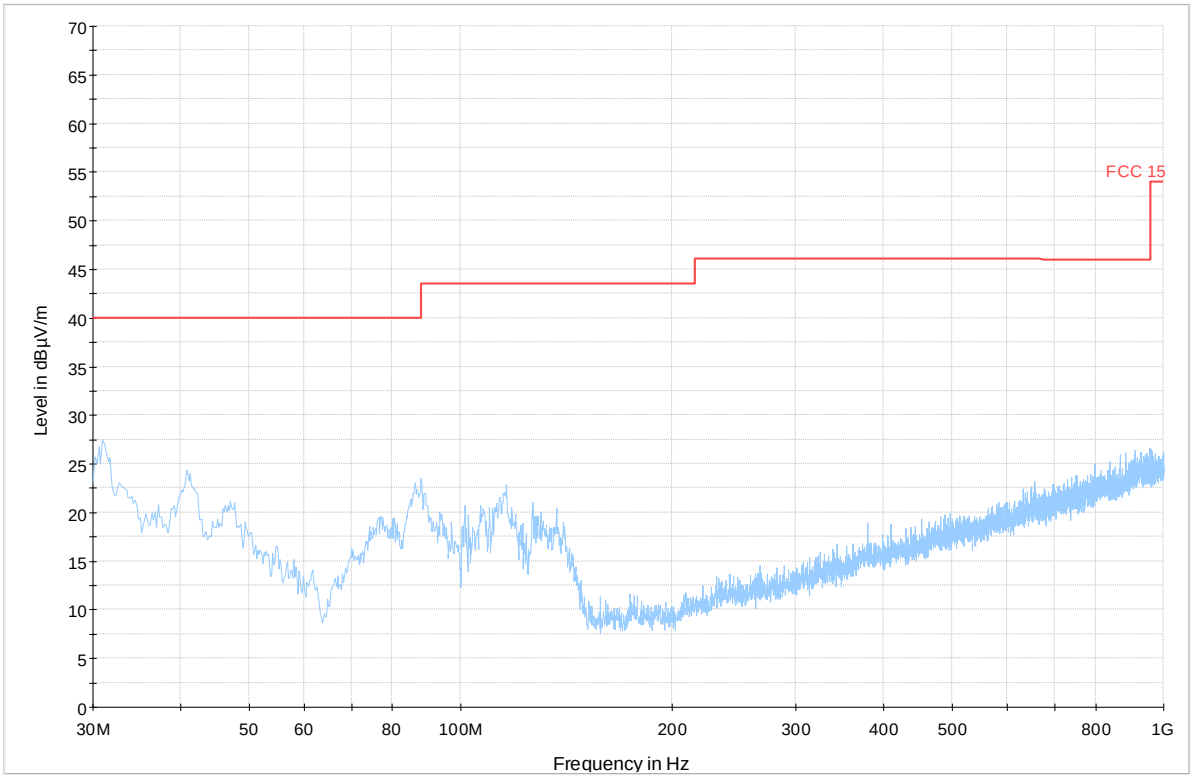
16.6.5 UER_11a_Ch60_30MHz_1GHz



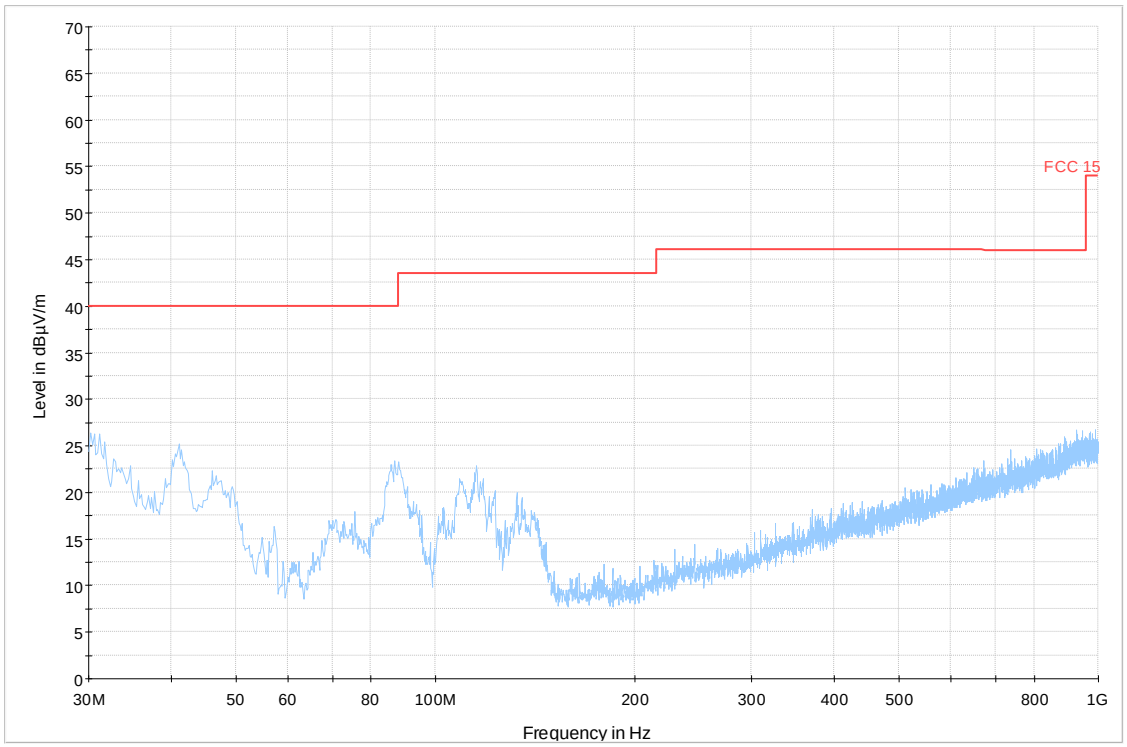
16.6.6 UER_11n_Ch102_30MHz_1GHz



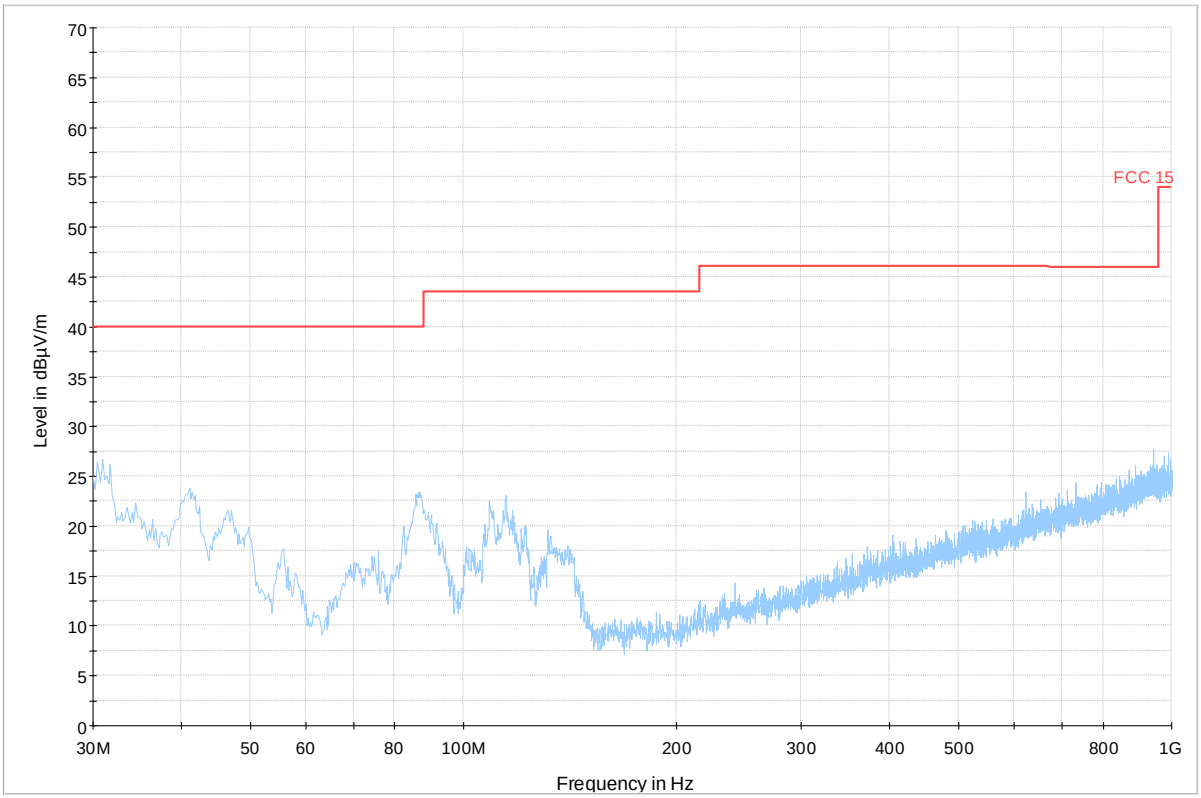
16.6.7 UER_11ac_Ch106_30MHz_1GHz



16.6.8 UER_11n_Ch134_30MHz_1GHz

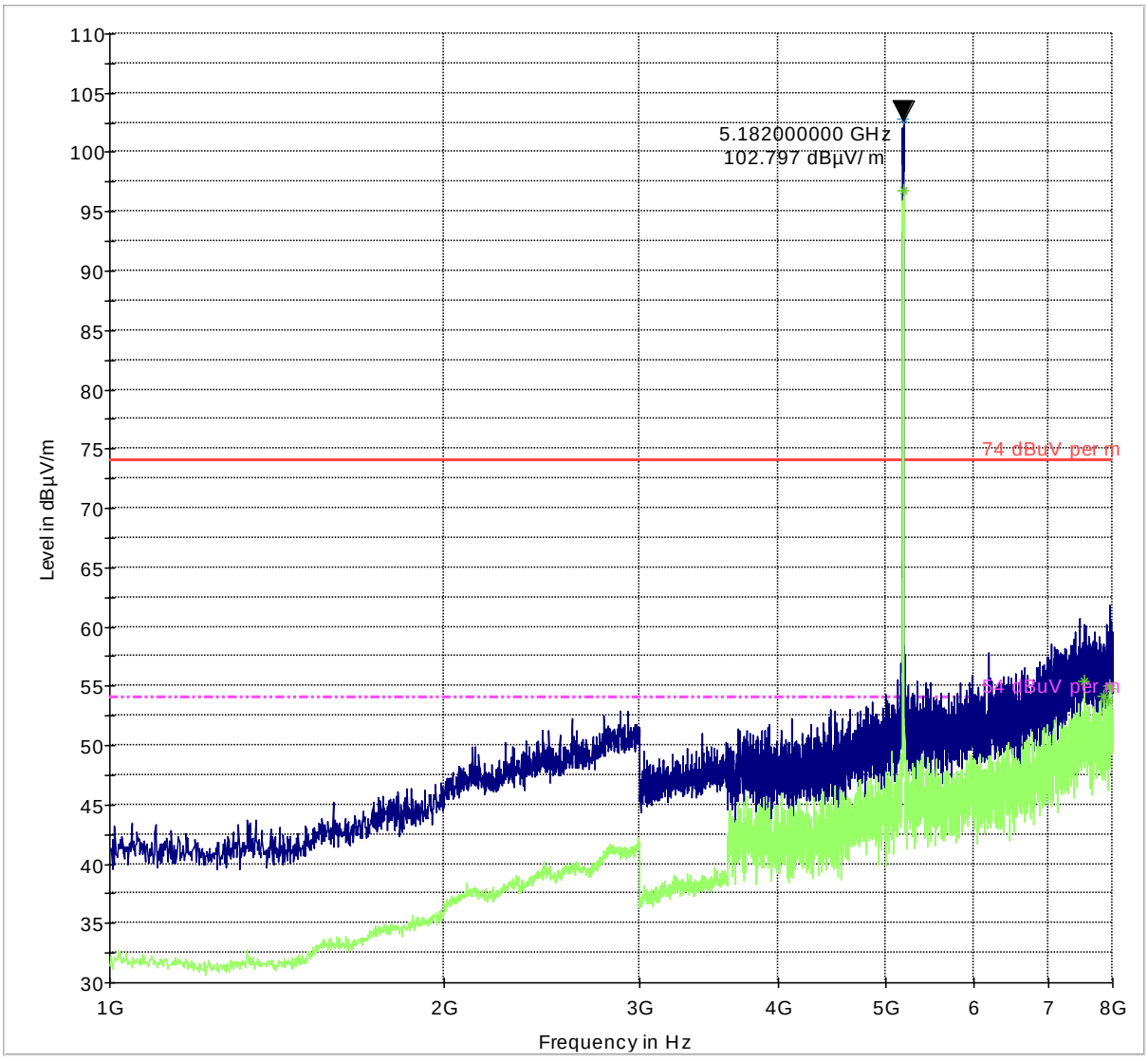


16.6.9 UER_11a_Ch140_30MHz_1GHz

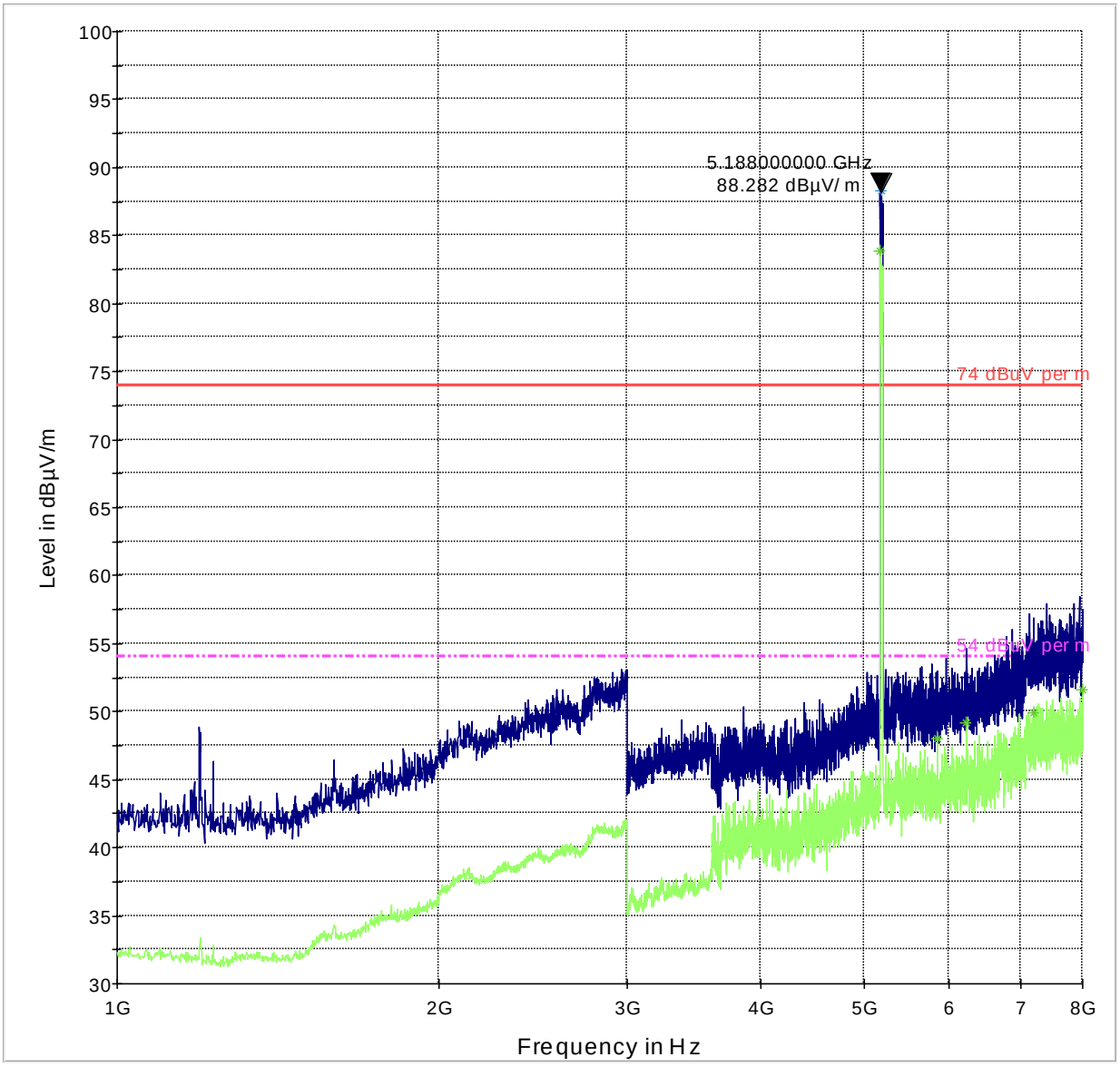


16.6.10 UER_11ac_Ch155_30MHz_1GHz

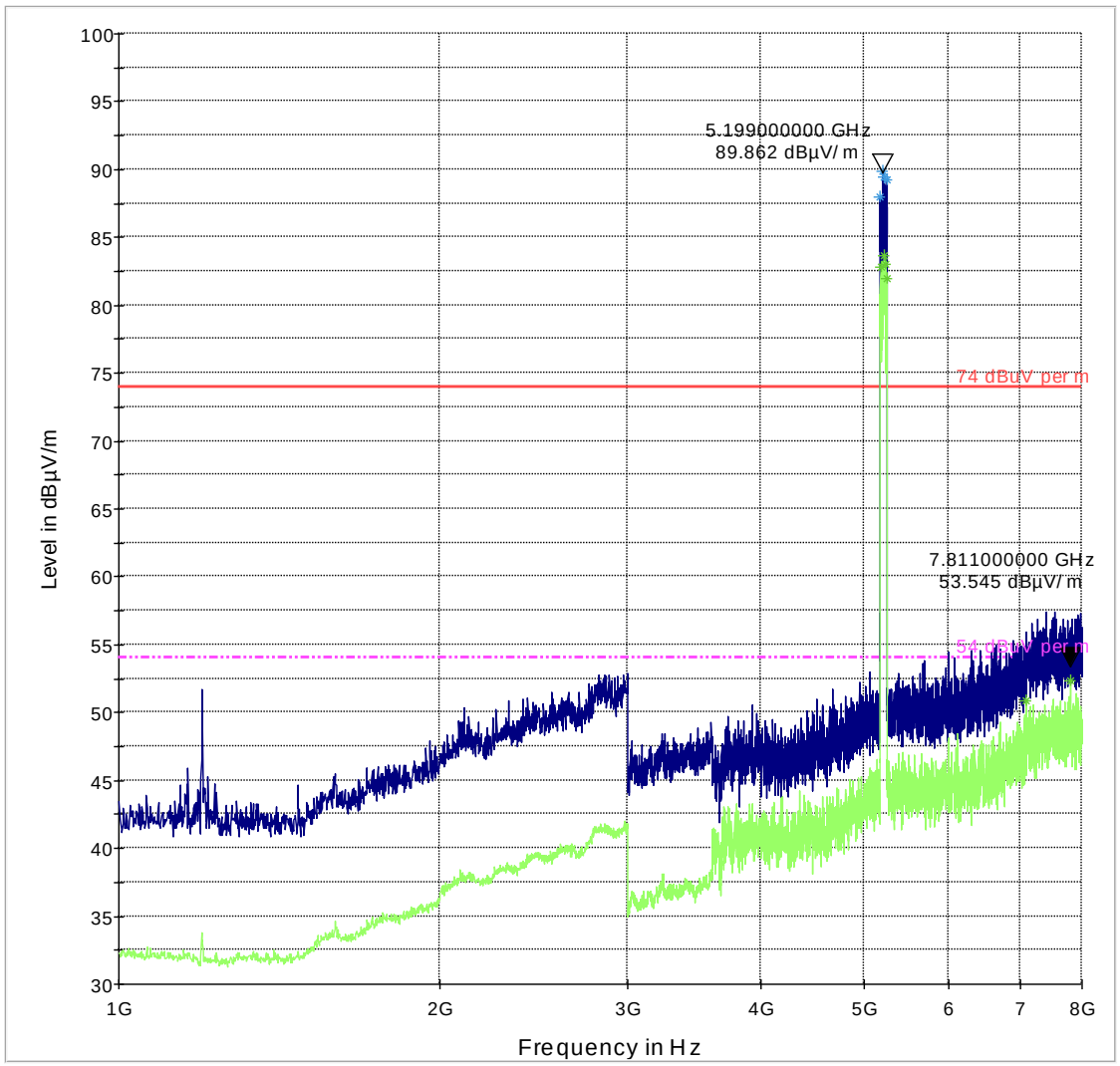
16.7 Peak & Average Emissions



16.7.1 PAE_11a_Ch36_1GHz_8GHz

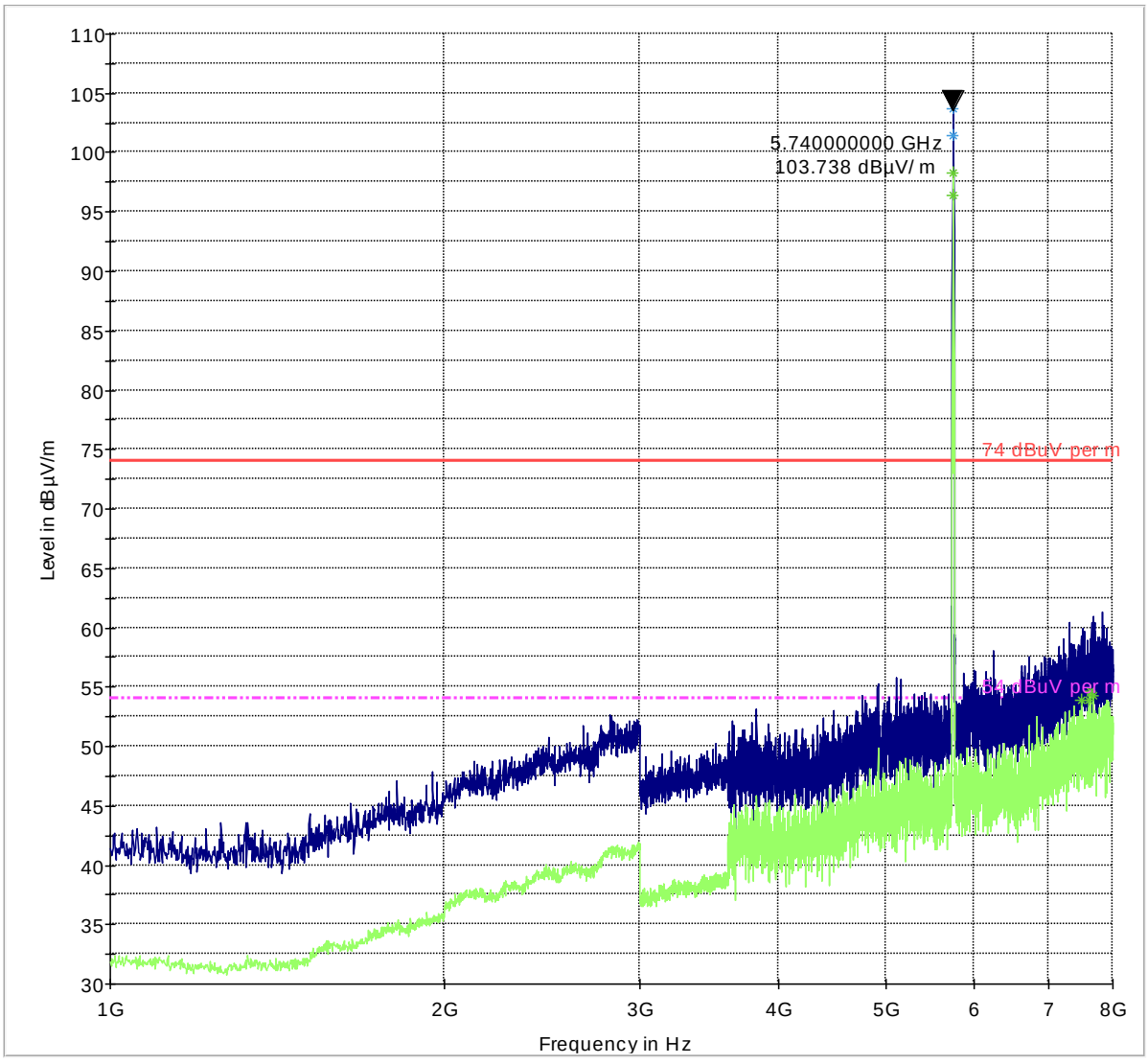


16.7.2 PAE_11n_Ch38_1GHz_8GHz

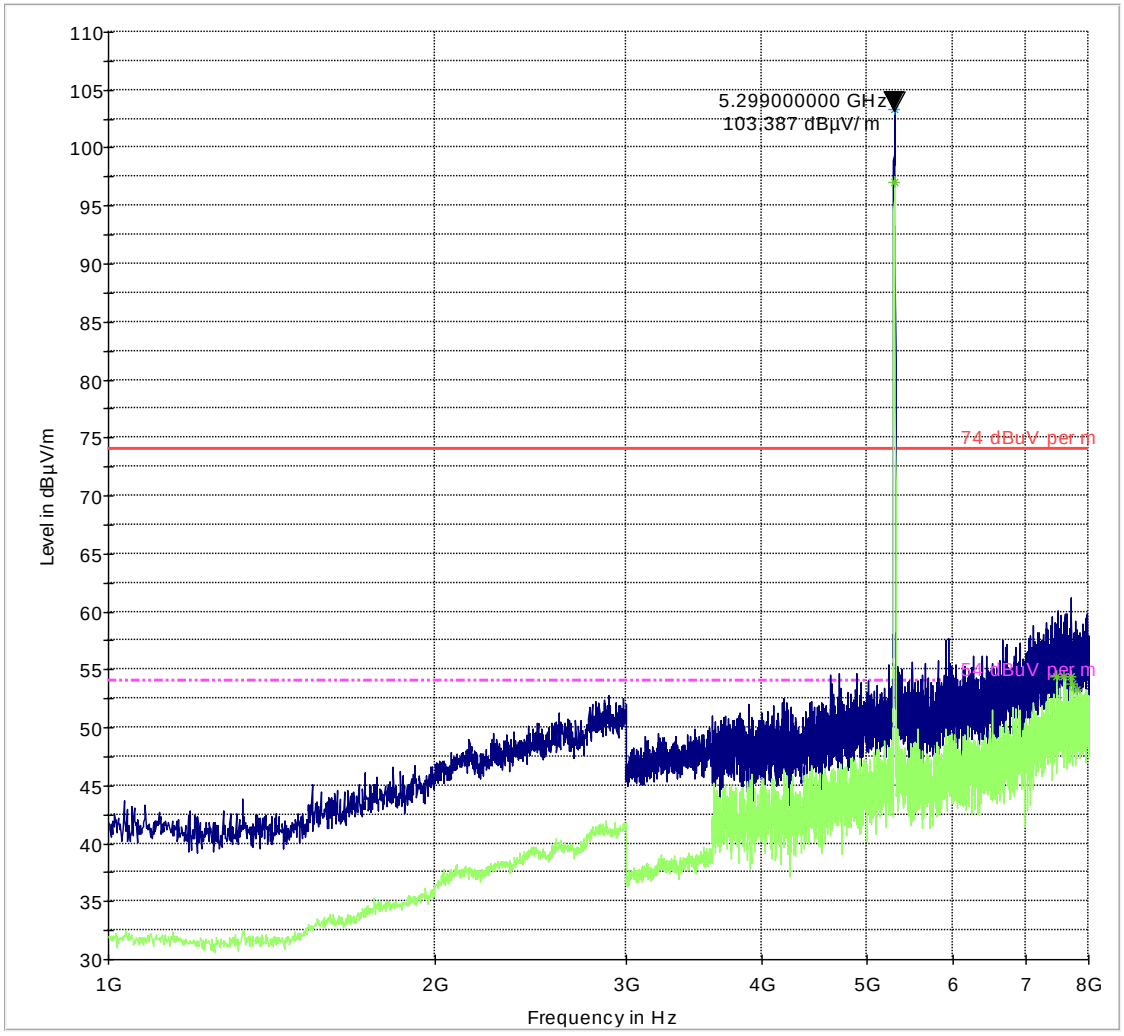


74 dBuV per m
Preview Result 1-PK+
Data Reduction Result 1 [4]-PK+
54 dBuV per m
Preview Result 2-AVG
Data Reduction Result 2 [4]-AVG

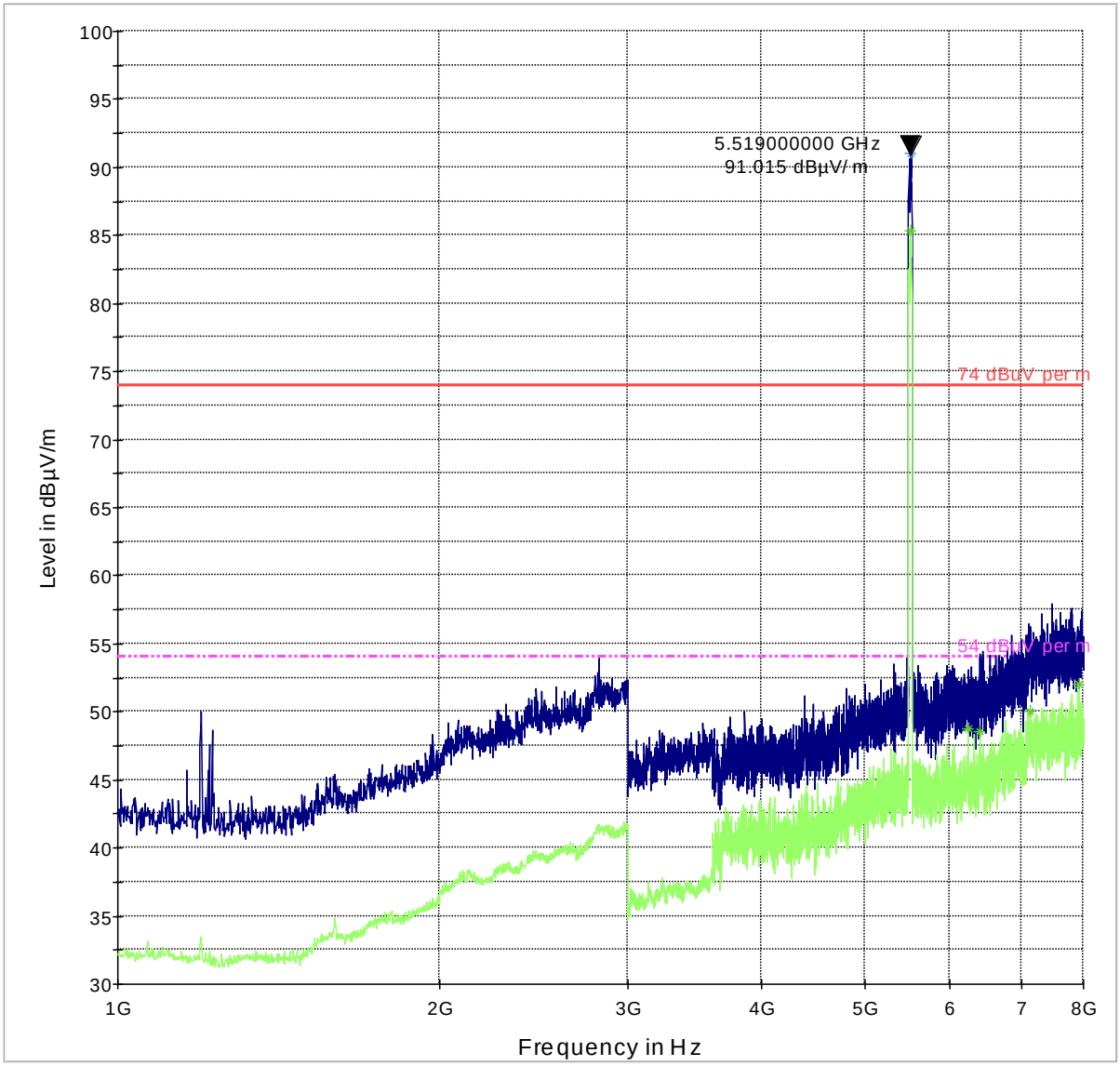
16.7.3 PAE_11ac_Ch42_1GHz_8GHz



16.7.4 PAE_11ac_Ch58_1GHz_8GHz

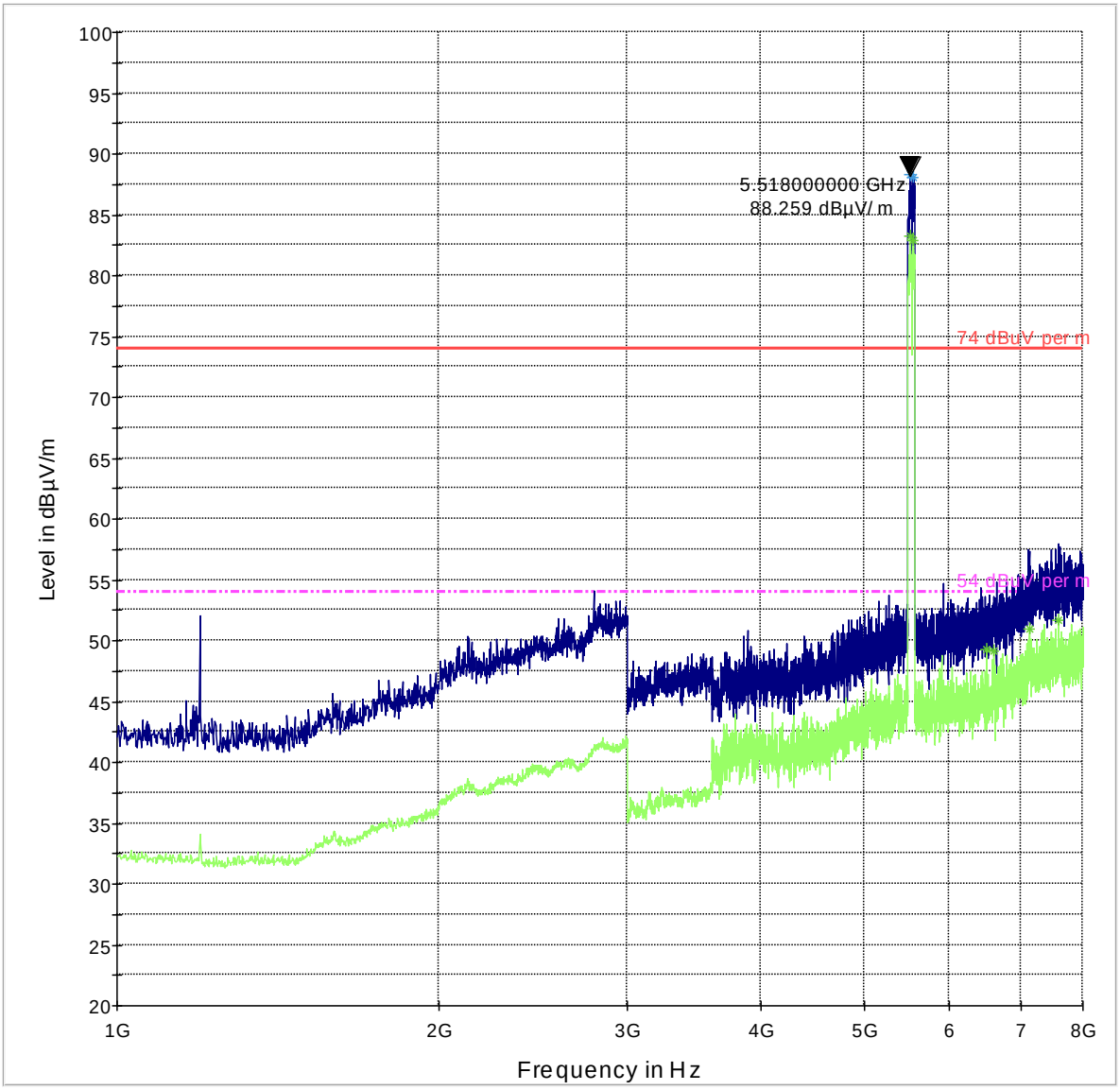


16.7.5 PAE_11a_Ch60_1GHz_8GHz



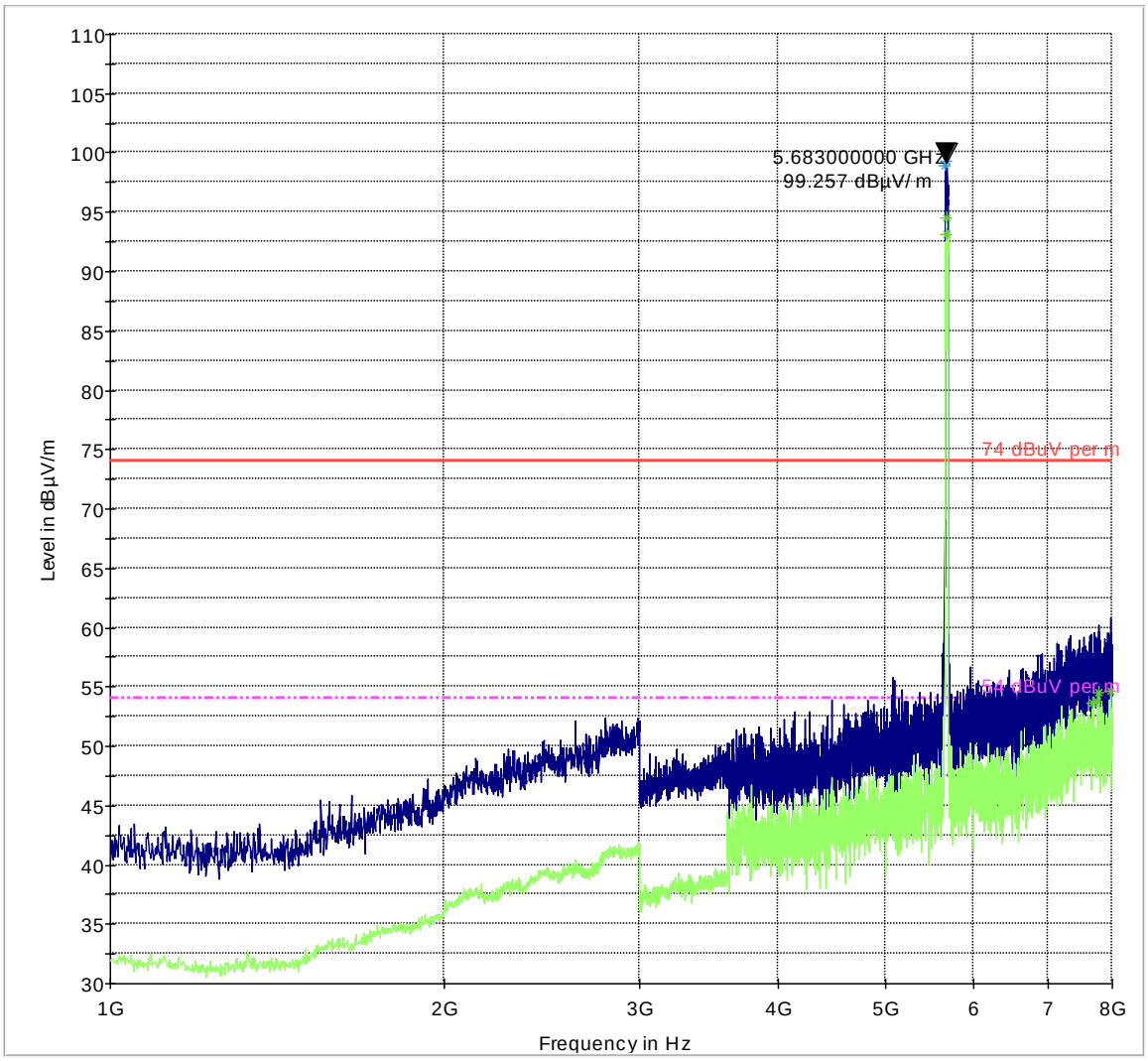
74 dBuV per m
Preview Result 1-PK+
Data Reduction Result 1 [4]-PK+
54 dBuV per m
Preview Result 2-AVG
Data Reduction Result 2 [4]-AVG

16.7.6 PAE_11n_Ch102_1GHz_8GHz



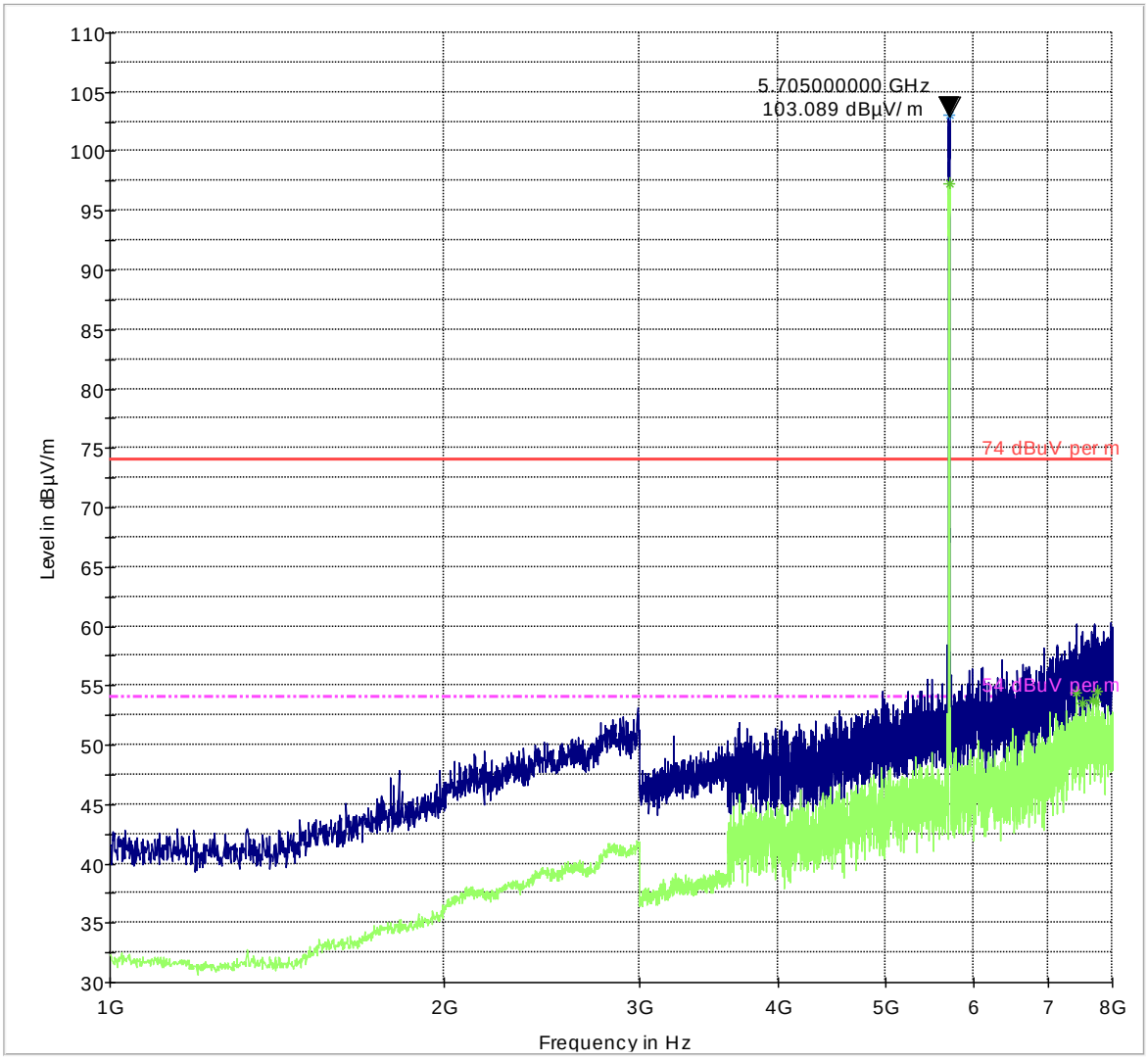
74 dBuV per m
Preview Result 1-PK+
Data Reduction Result 1 [4]-PK+
54 dBuV per m
Preview Result 2-AVG
Data Reduction Result 2 [4]-AVG

16.7.7 PAE_11ac_Ch106_1GHz_8GHz



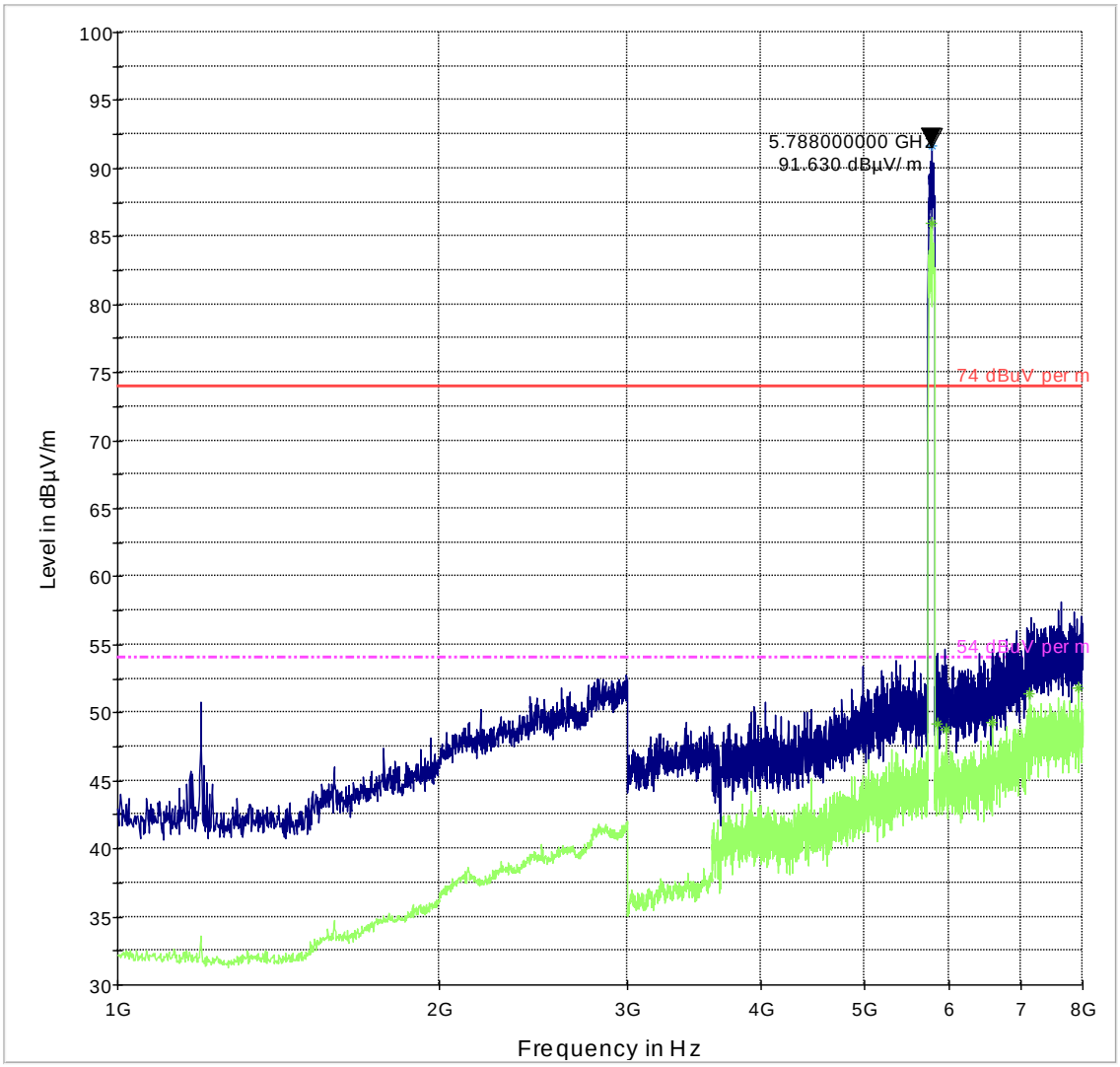
74 dBuV per m
Preview Result 1-PK+
Data Reduction Result 1 [4]-PK+
54 dBuV per m
Preview Result 2-AVG
Data Reduction Result 2 [4]-AVG

16.7.8 PAE_11n_Ch134_1GHz_8GHz

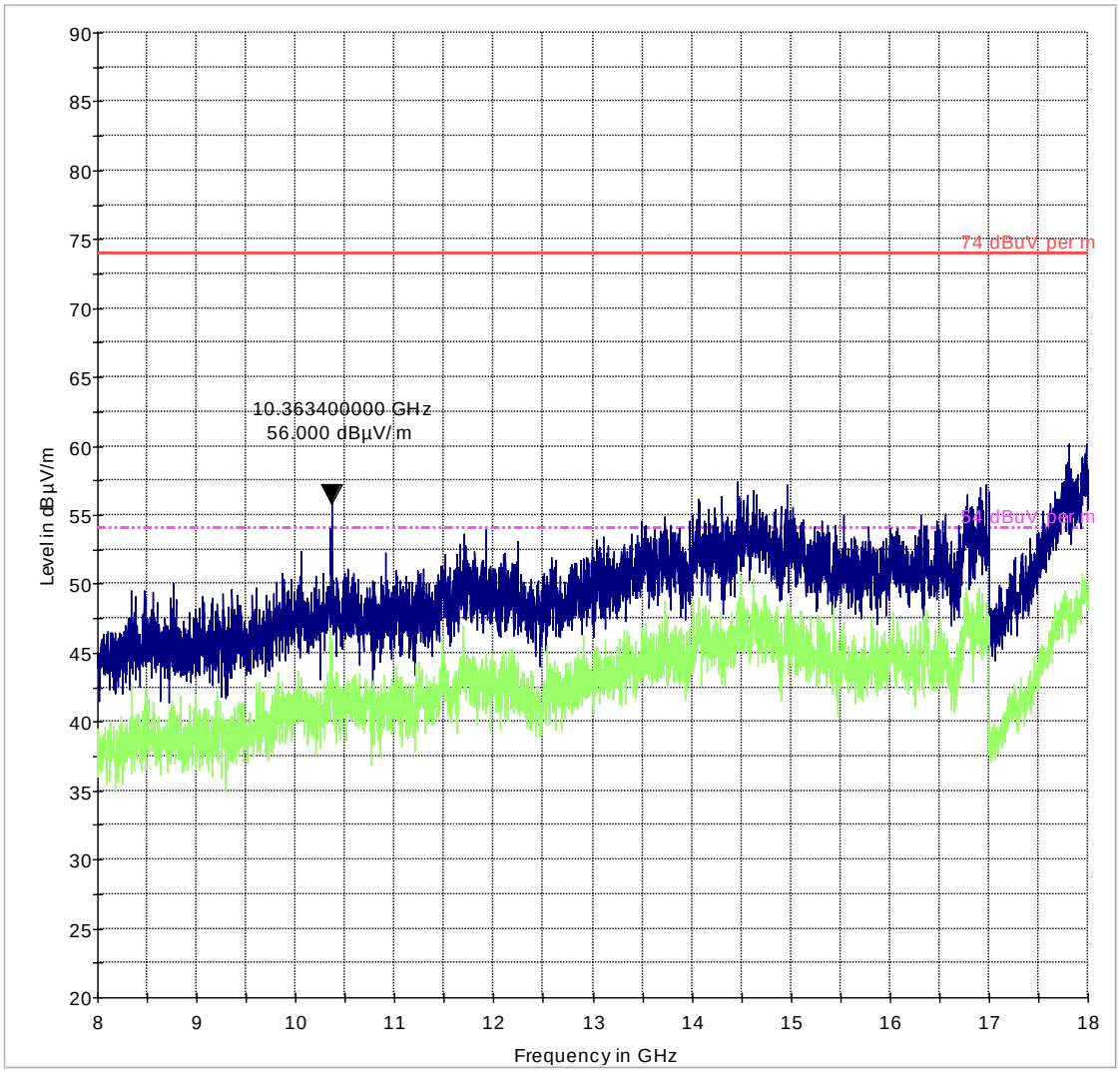


74 dBuV per m
Preview Result 1-PK+
Data Reduction Result 1 [4]-PK+
54 dBuV per m
Preview Result 2-AVG
Data Reduction Result 2 [4]-AVG

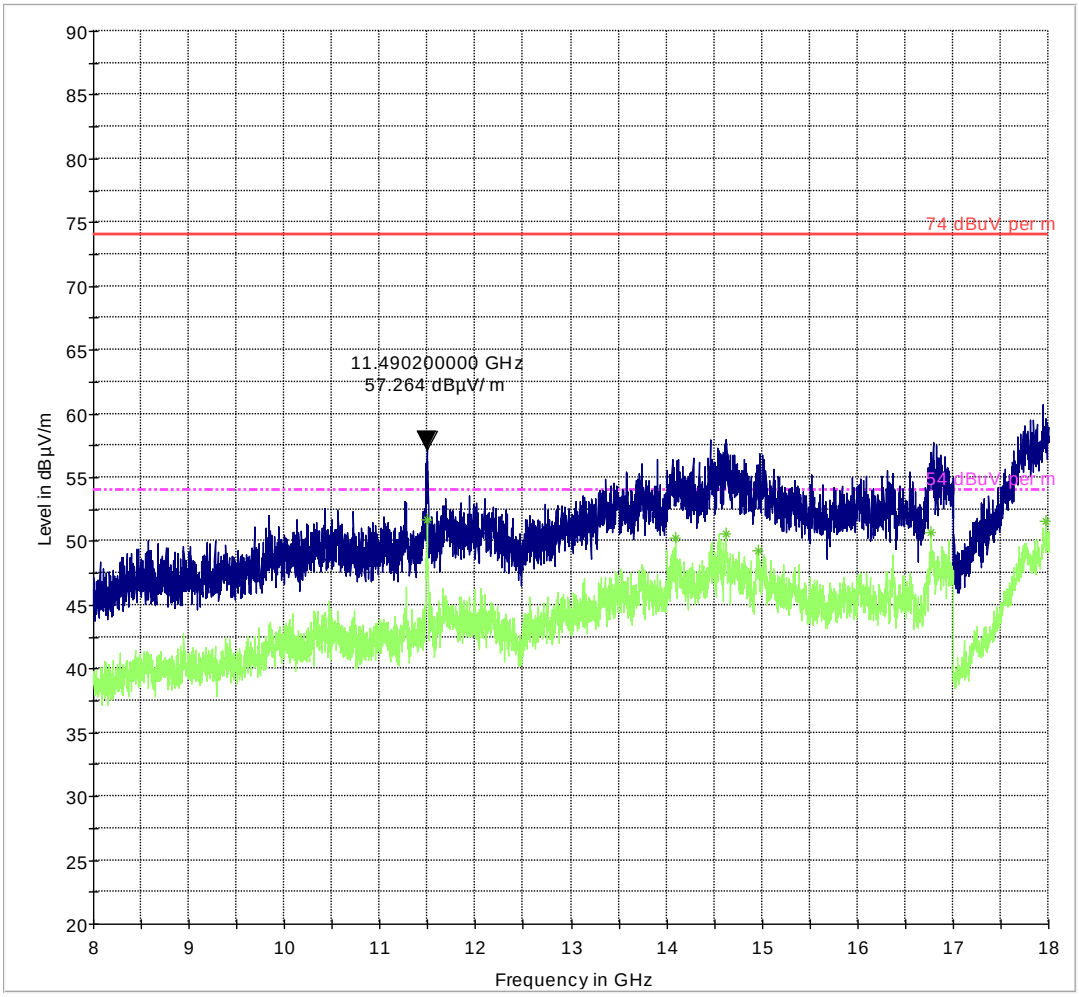
16.7.9 PAE_11a_Ch140_1GHz_8GHz



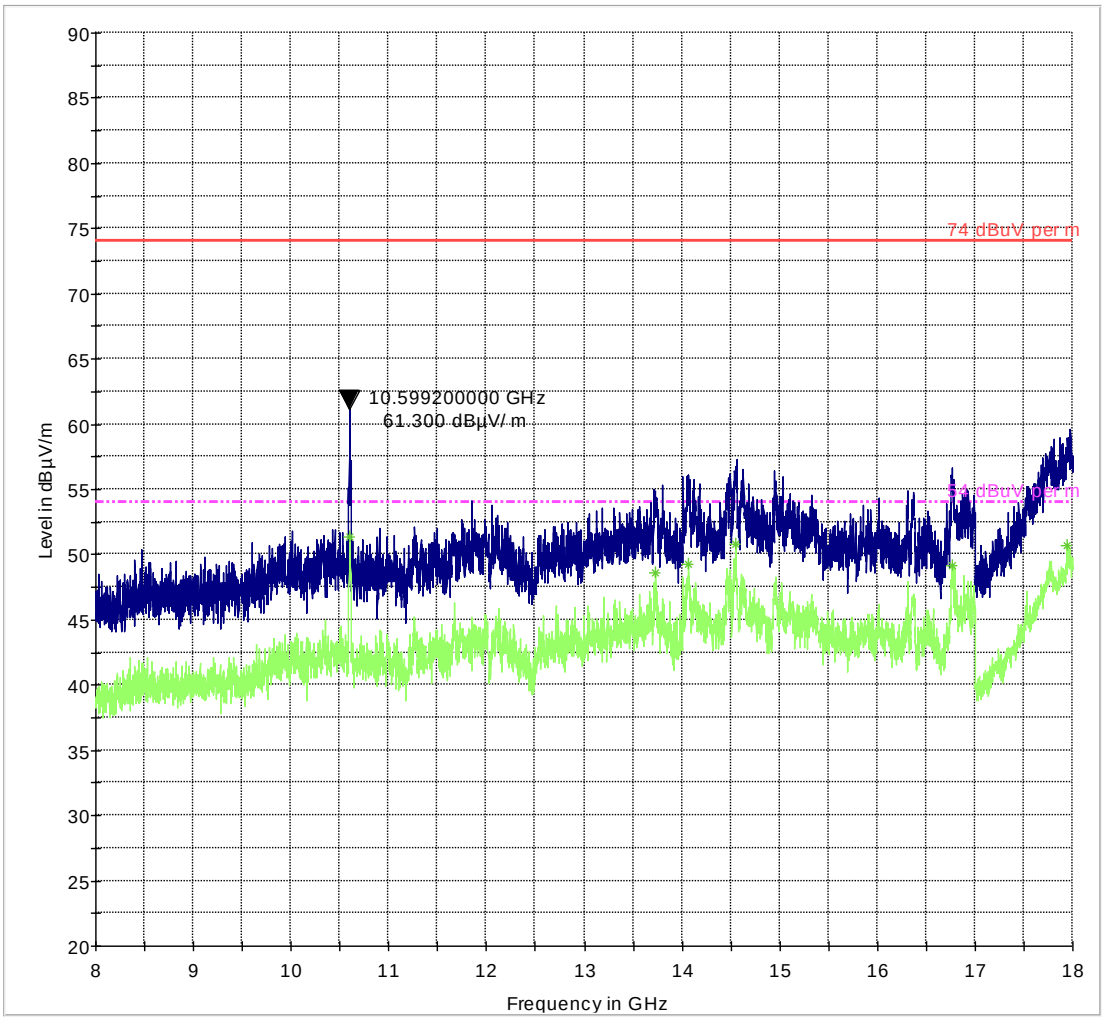
16.7.10 PAE_11ac_Ch155_1GHz_8GHz



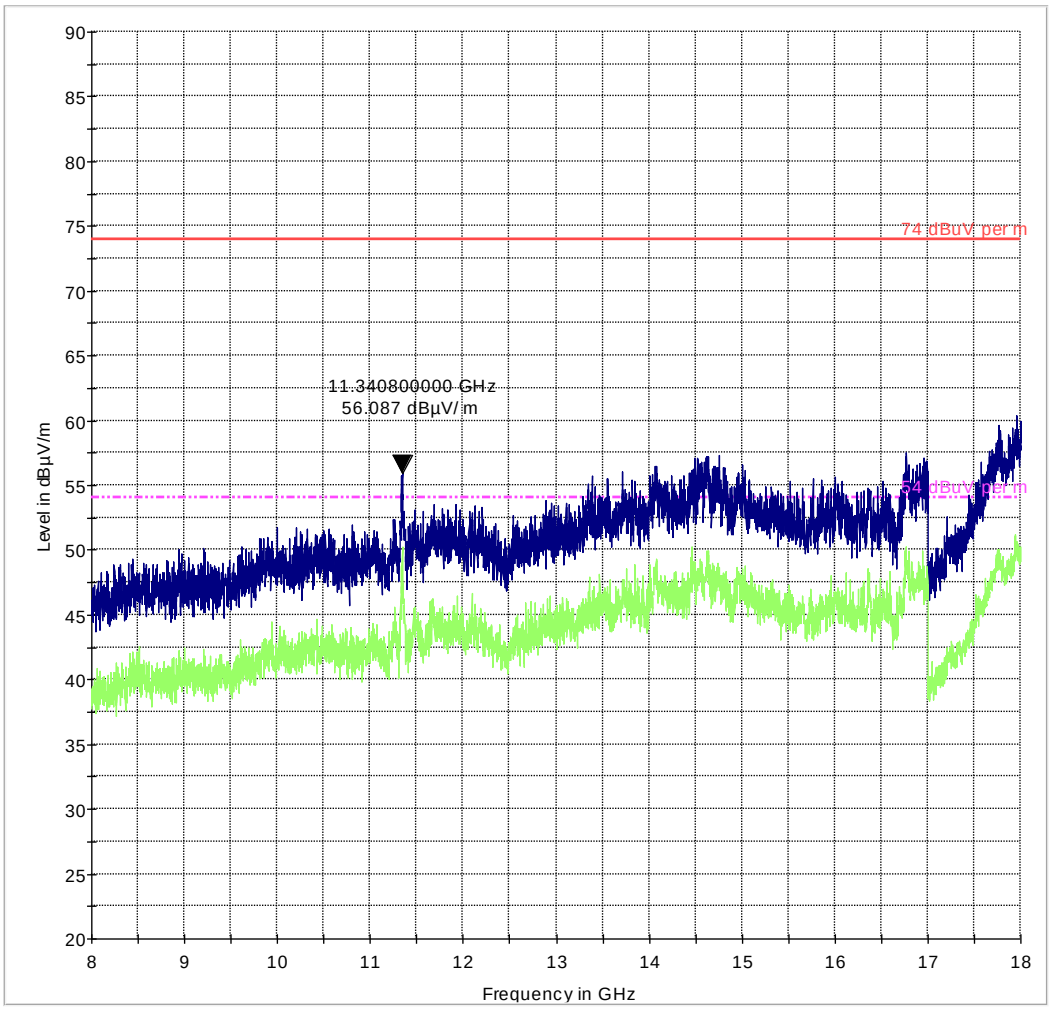
16.7.11 PAE_11a_Ch36_8GHz_18GHz



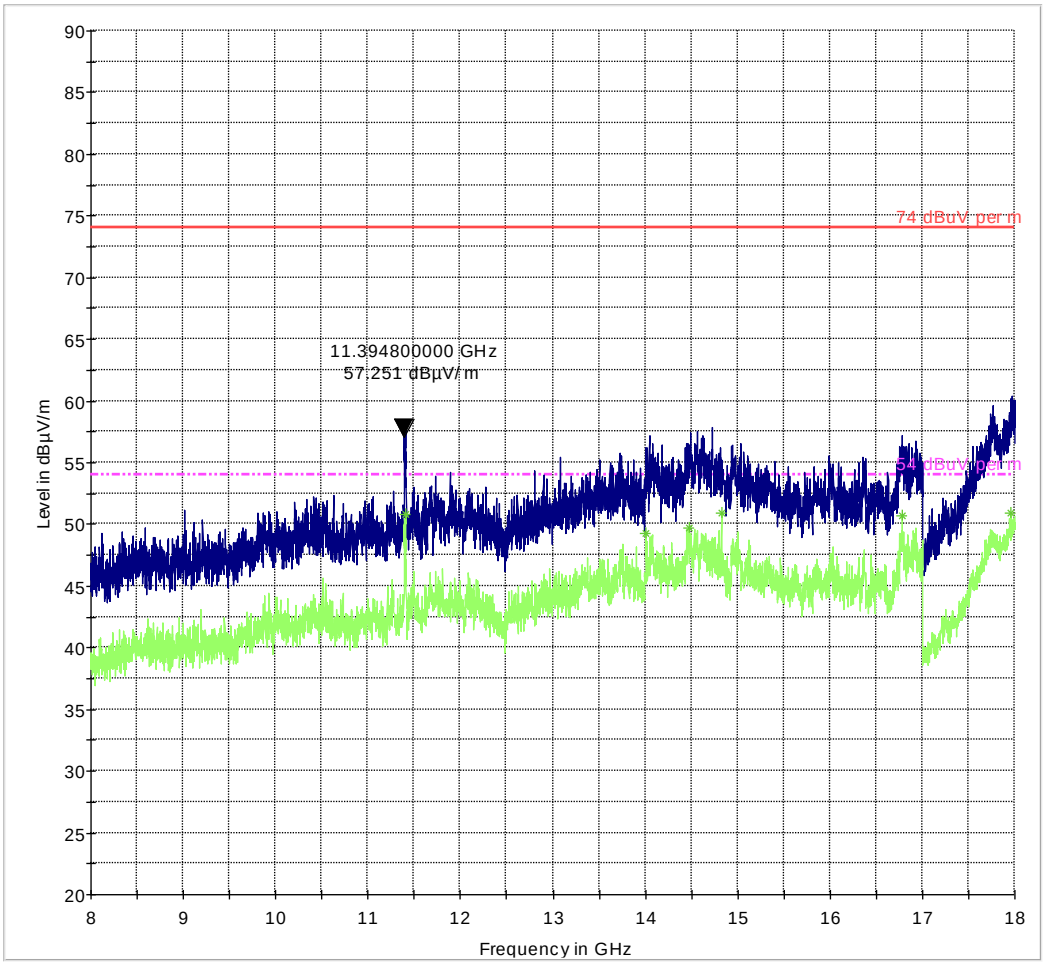
16.7.12 PAE_11ac_Ch58_8GHz_18GHz



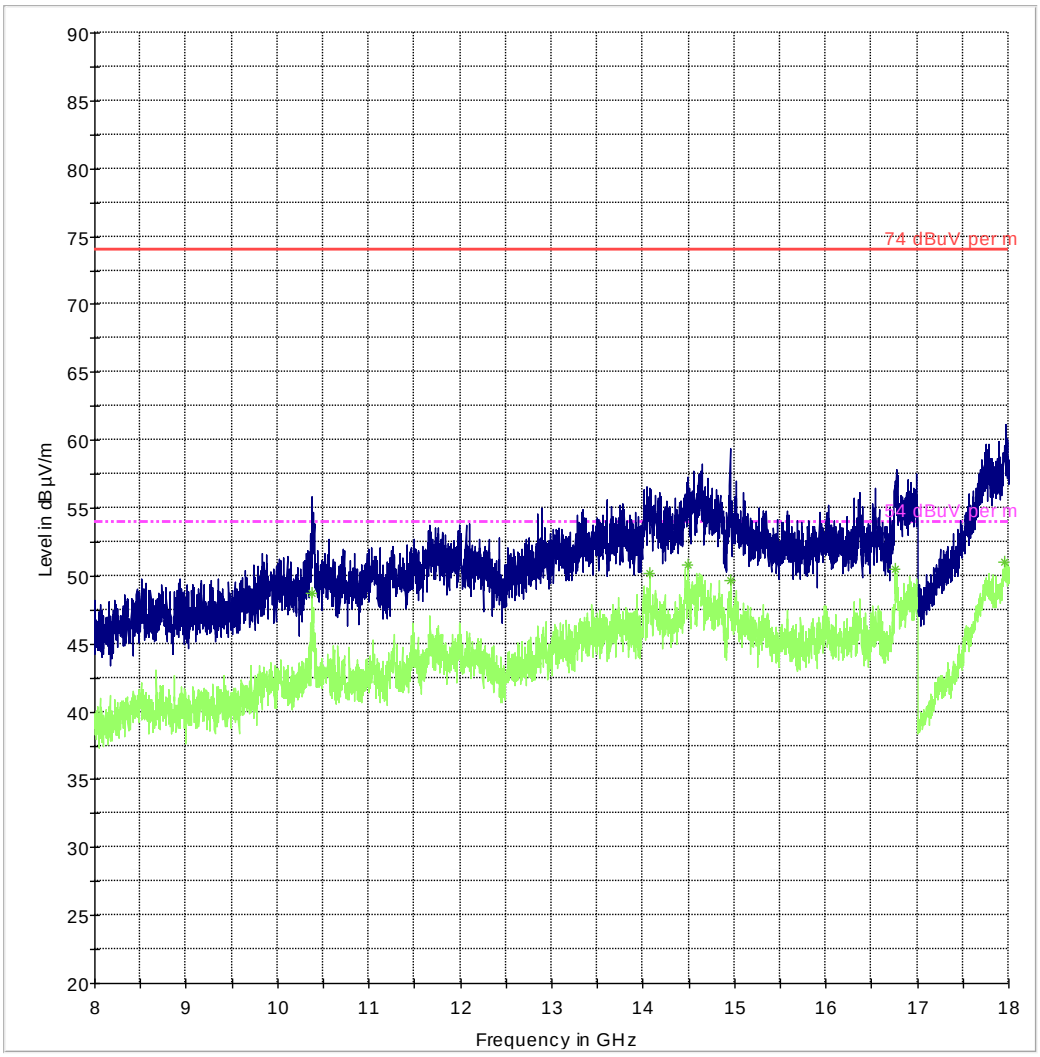
16.7.13 PAE_11a_Ch60_8GHz_18GHz



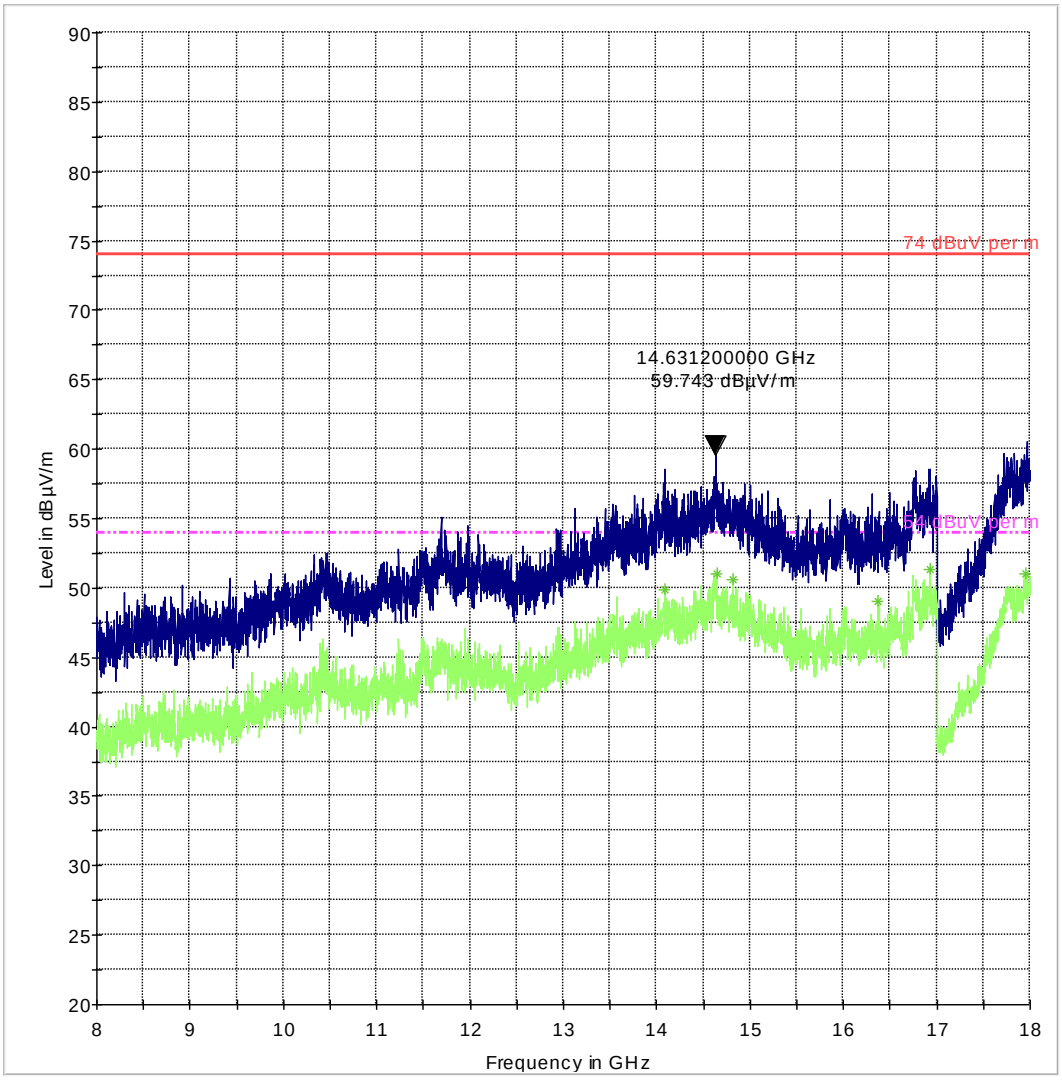
16.7.14 PAE_11n_Ch134_8GHz_18GHz



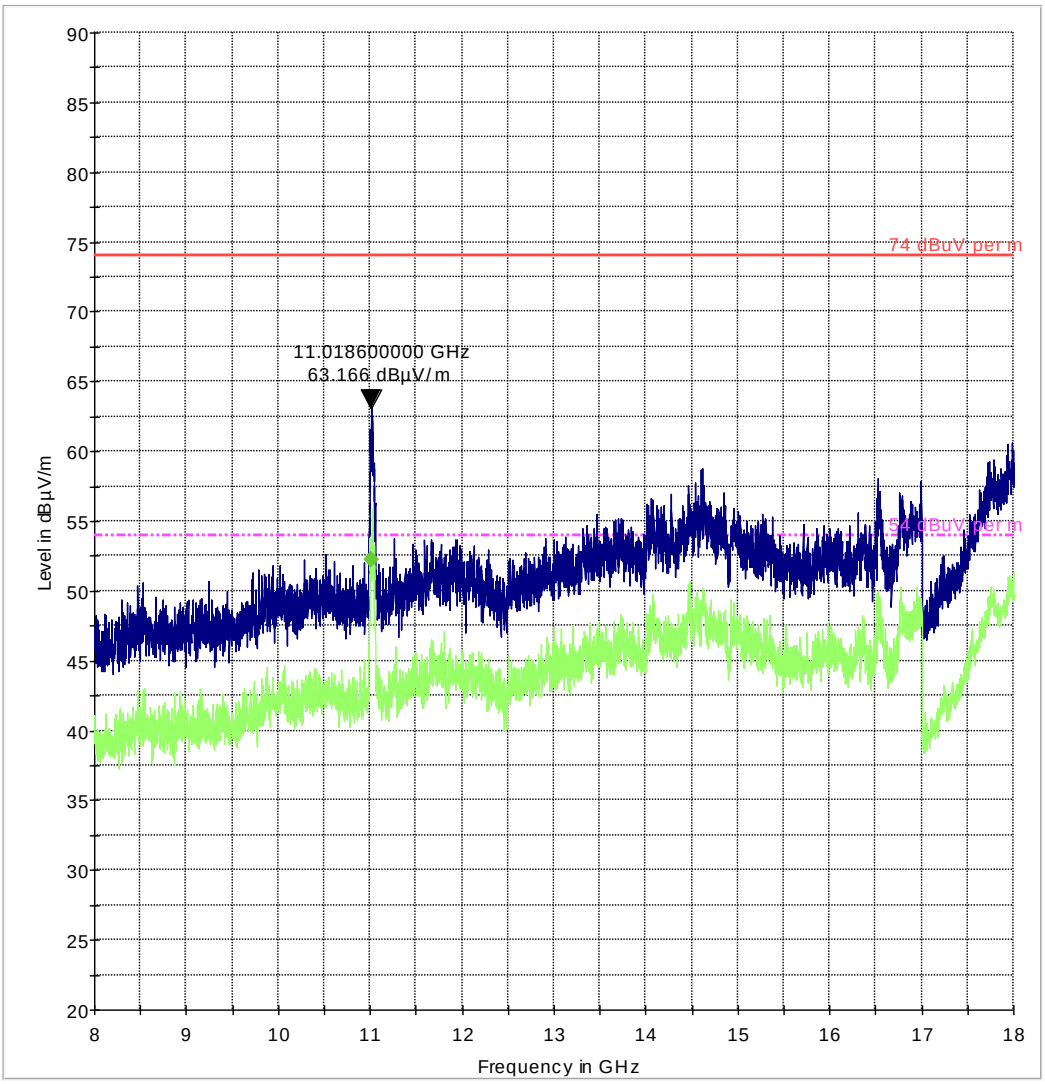
16.7.15 PAE_11a_Ch140_8GHz_18GHz



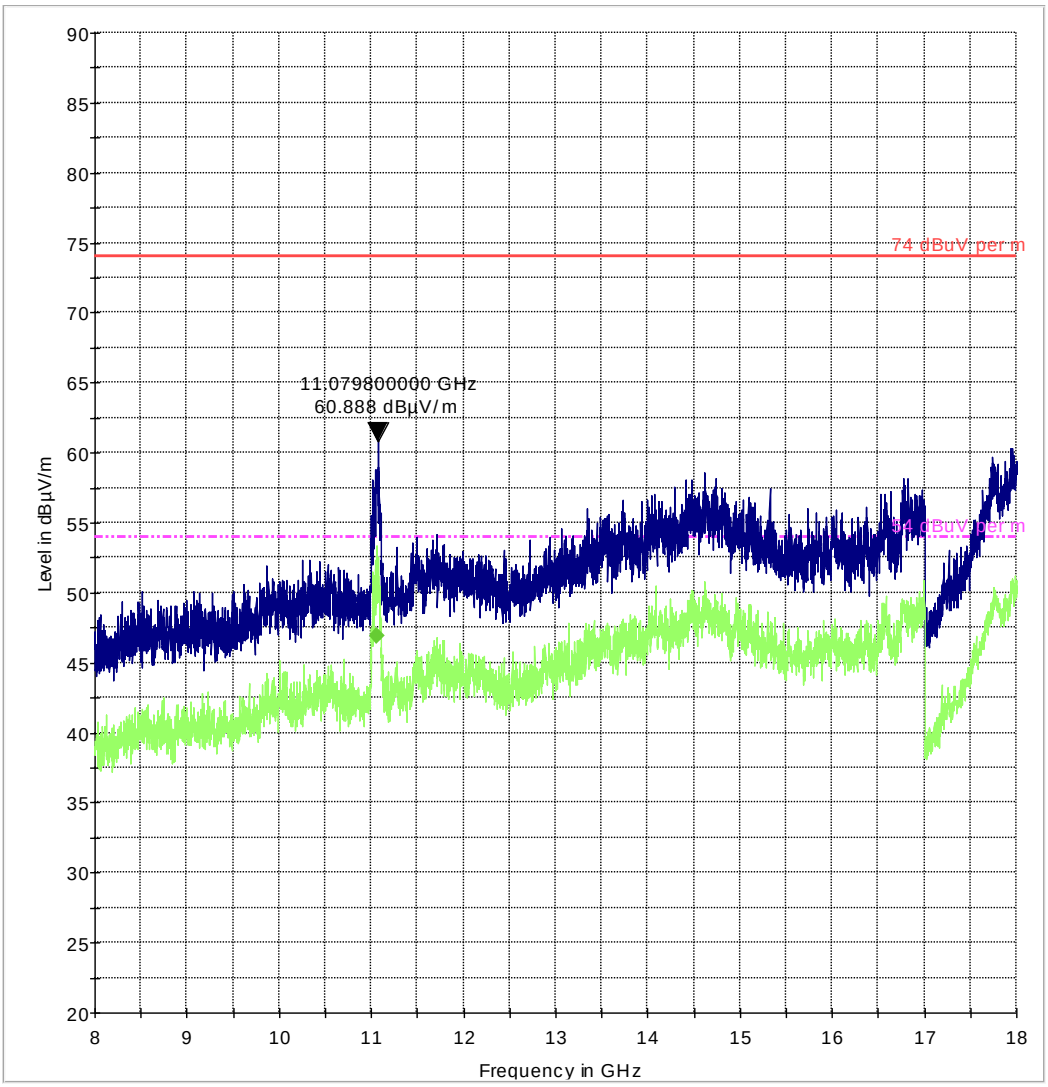
16.7.16 PAE_11n_Ch38_8GHz_18GHz



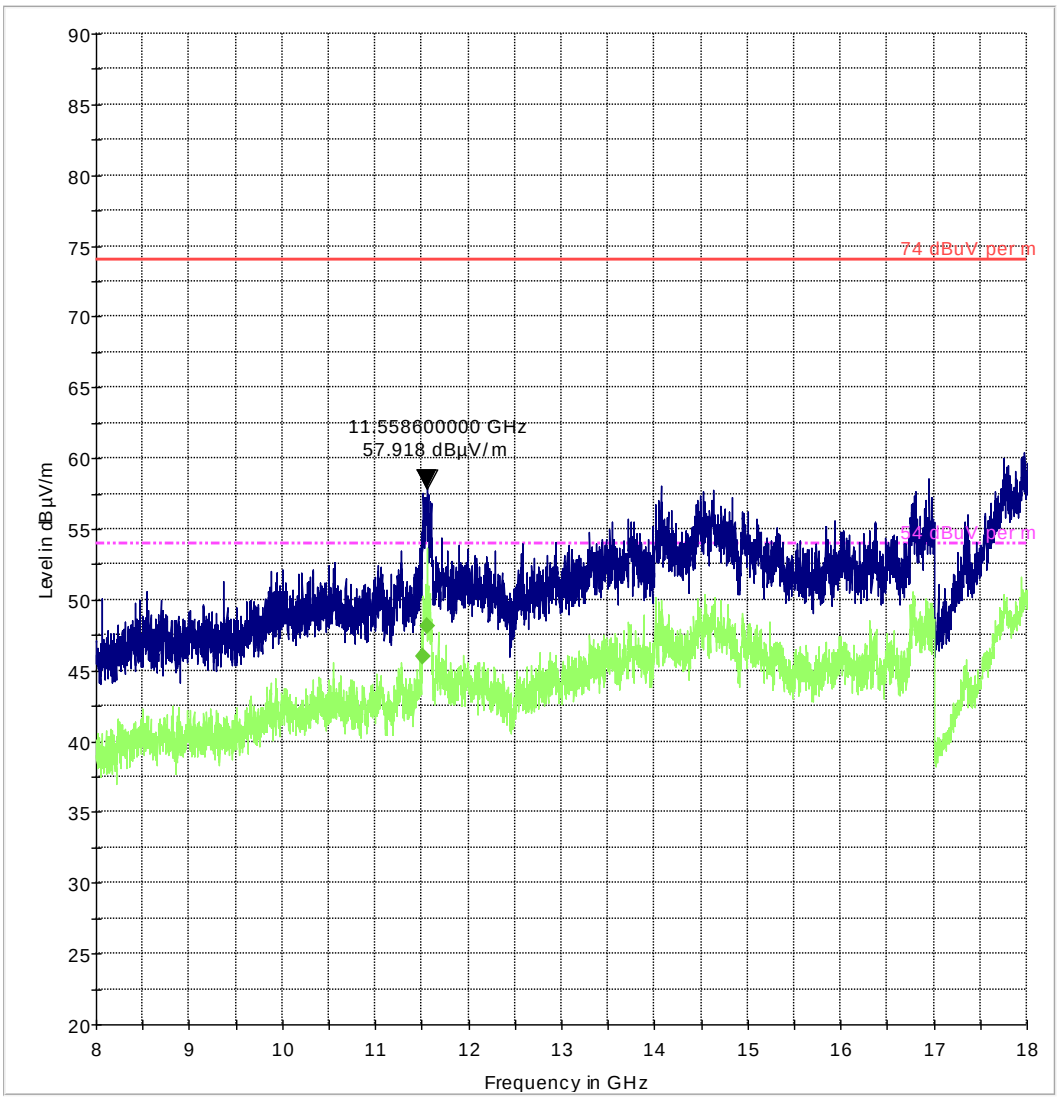
16.7.17 PAE_11ac_Ch42_8GHz_18GHz



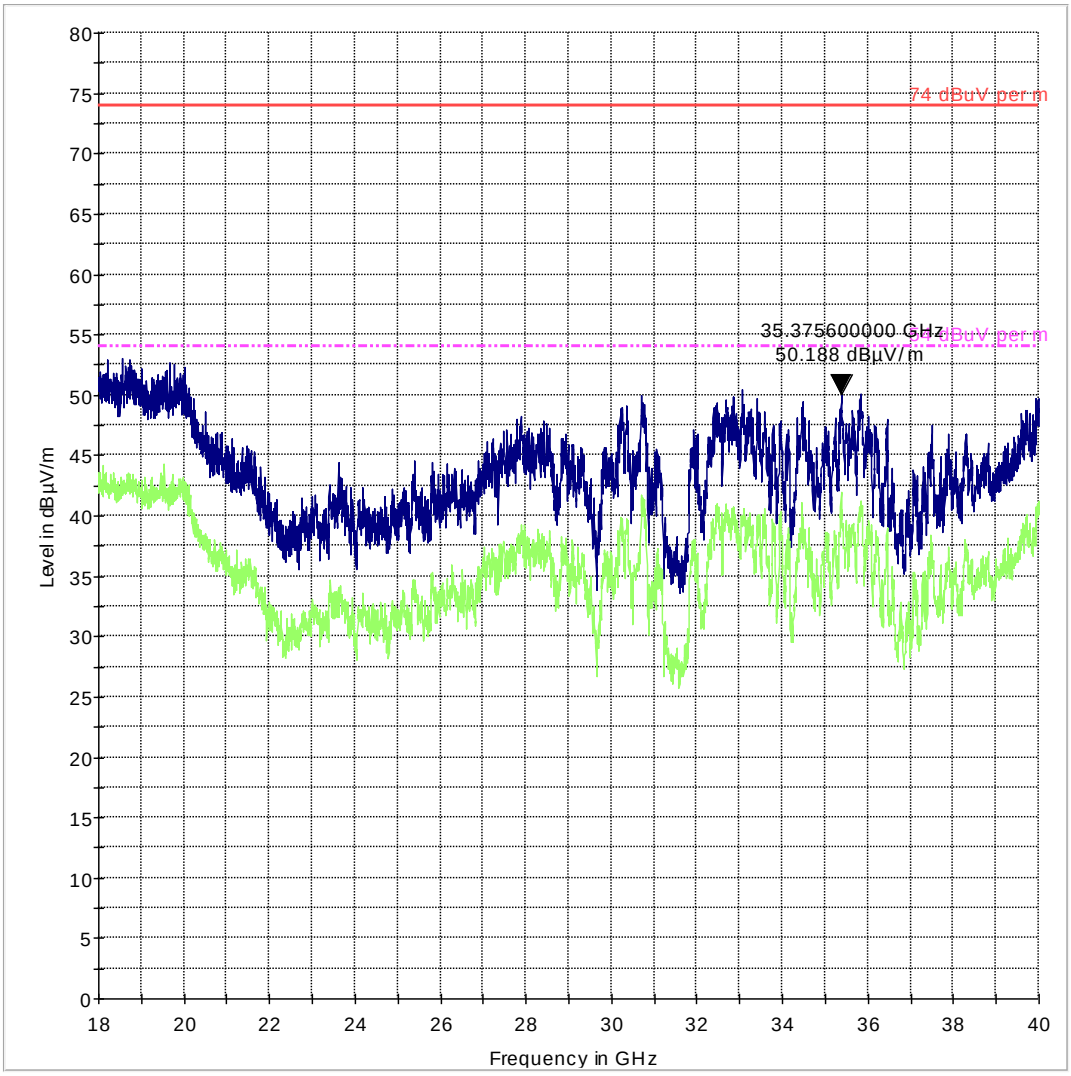
16.7.18 PAE_11n_Ch102_8GHz_18GHz



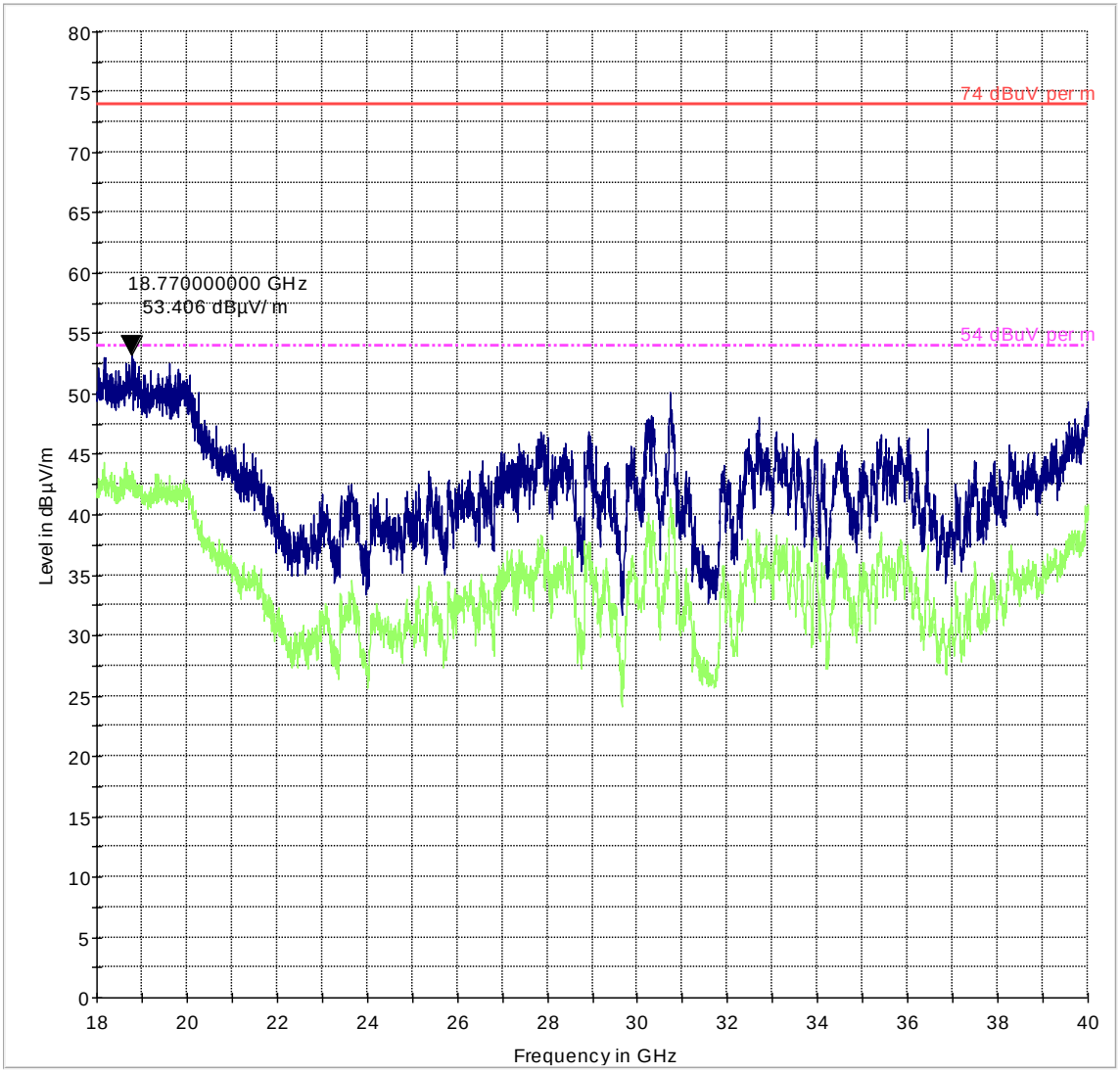
16.7.19 PAE_11ac_Ch106_8GHz_18GHz



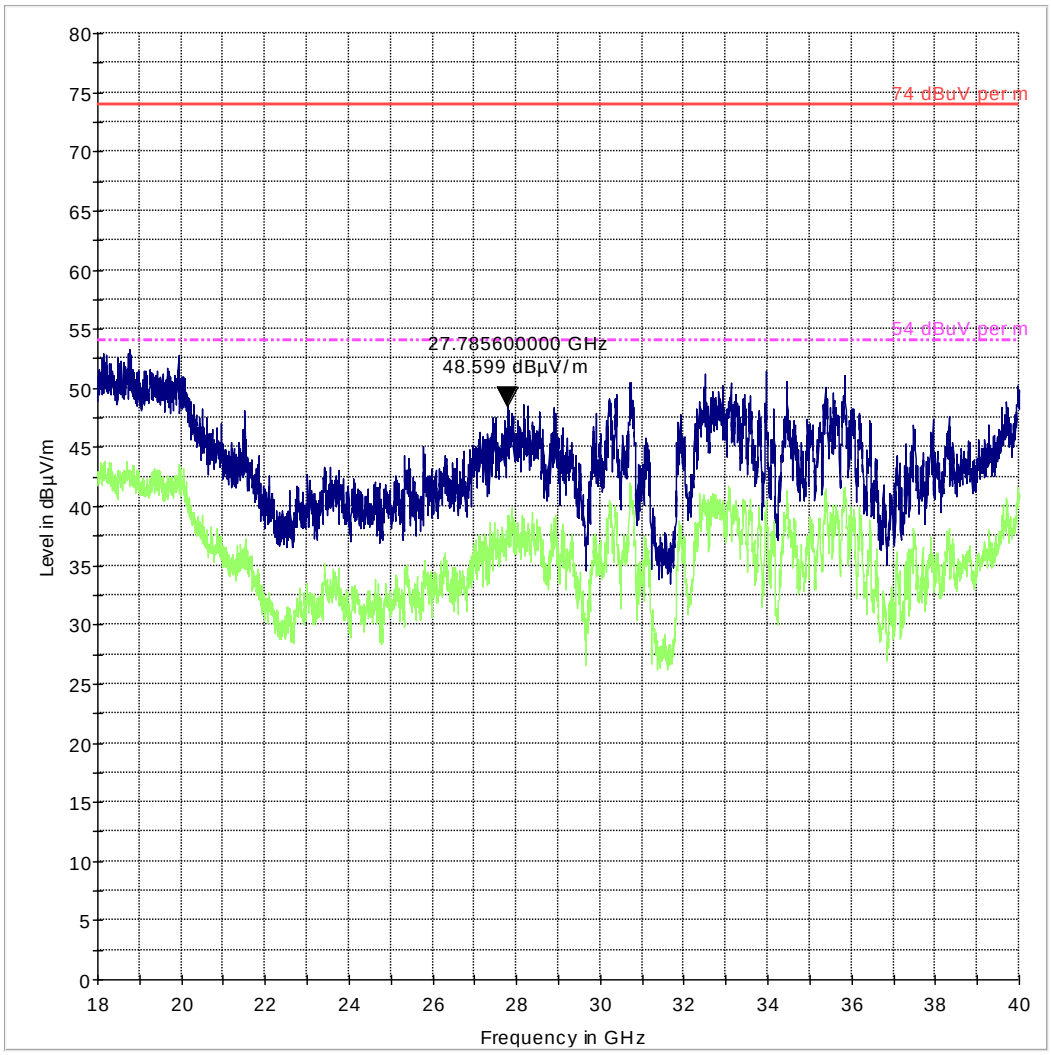
16.7.20 PAE_11ac_Ch155_8GHz_18GHz



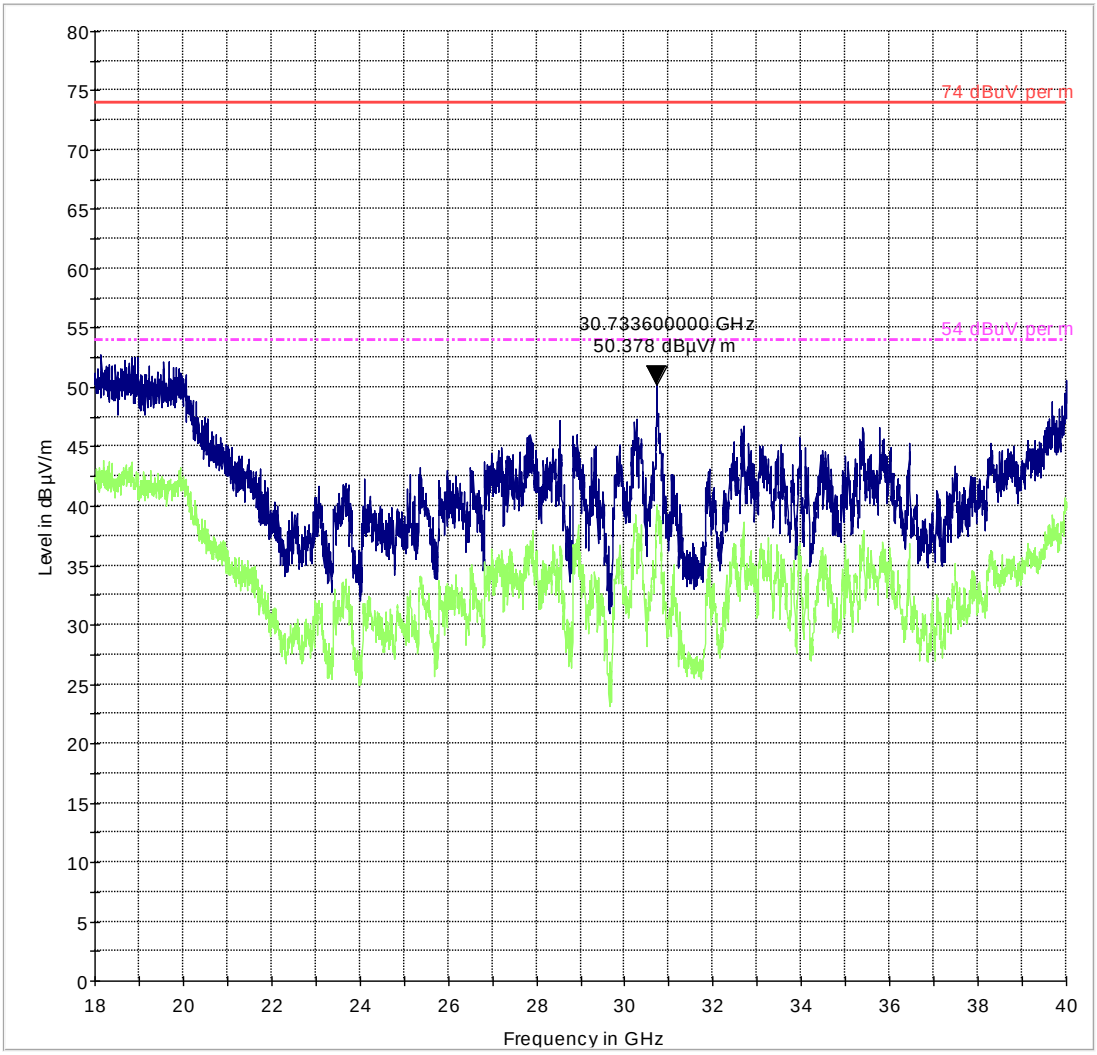
16.7.21PAE_11n_Ch38_18GHz_40GHz



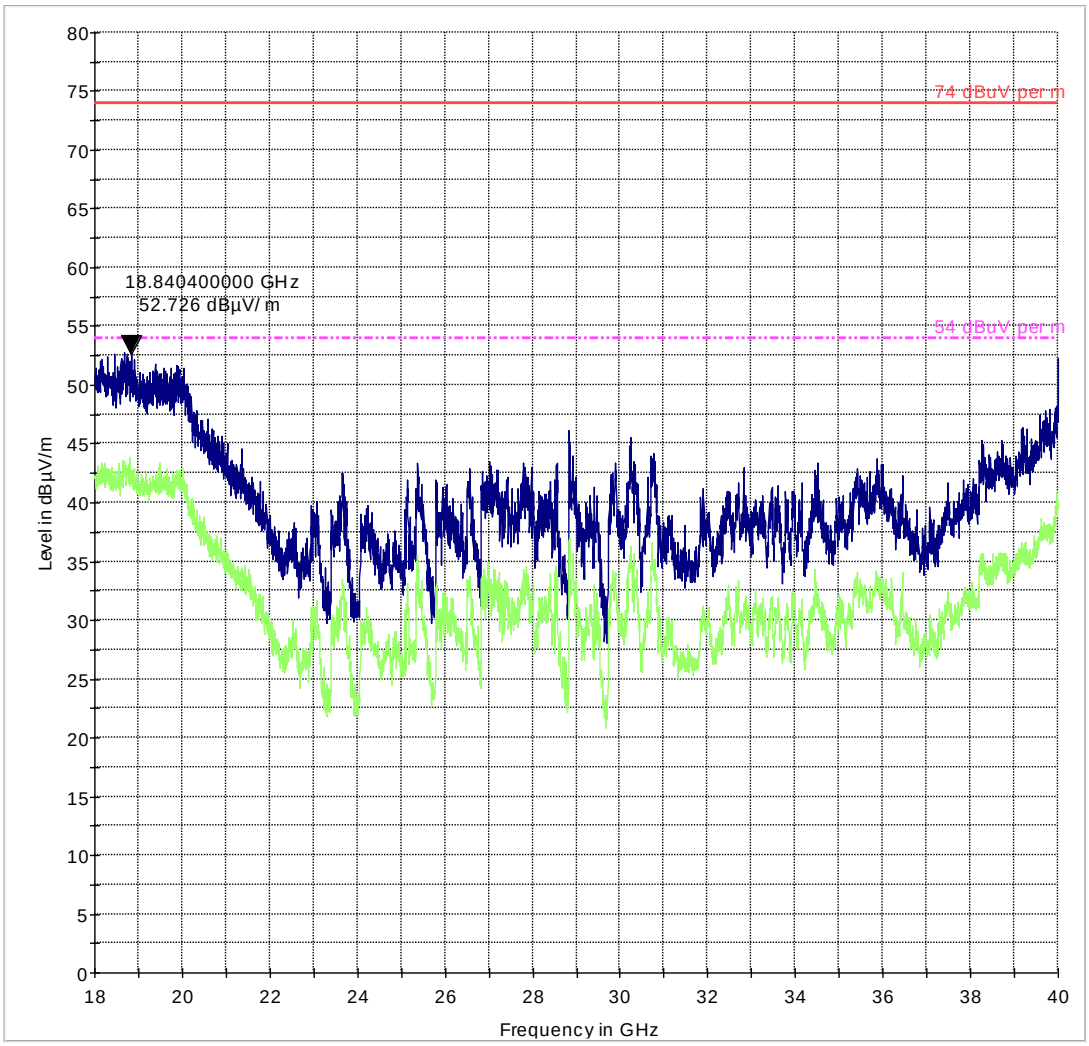
16.7.22PAE_11a_Ch36_18GHz_40GHz



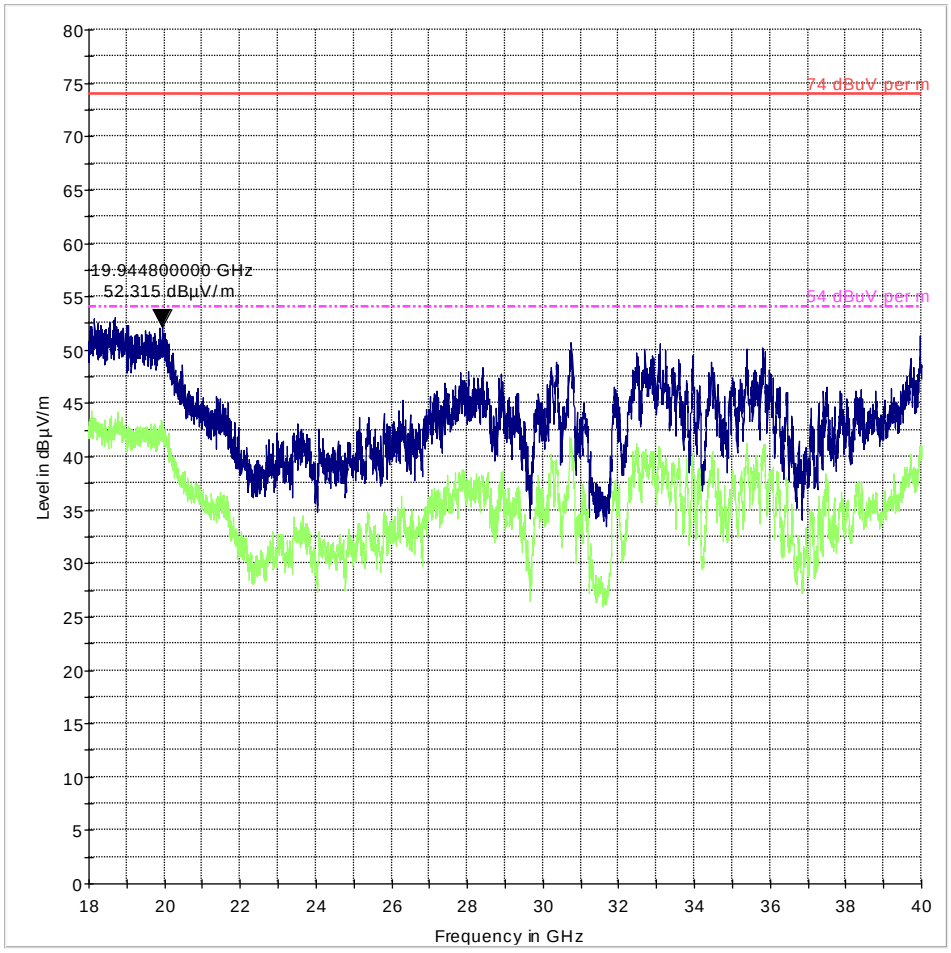
16.7.23PAE_11ac_Ch42_18GHz_40GHz



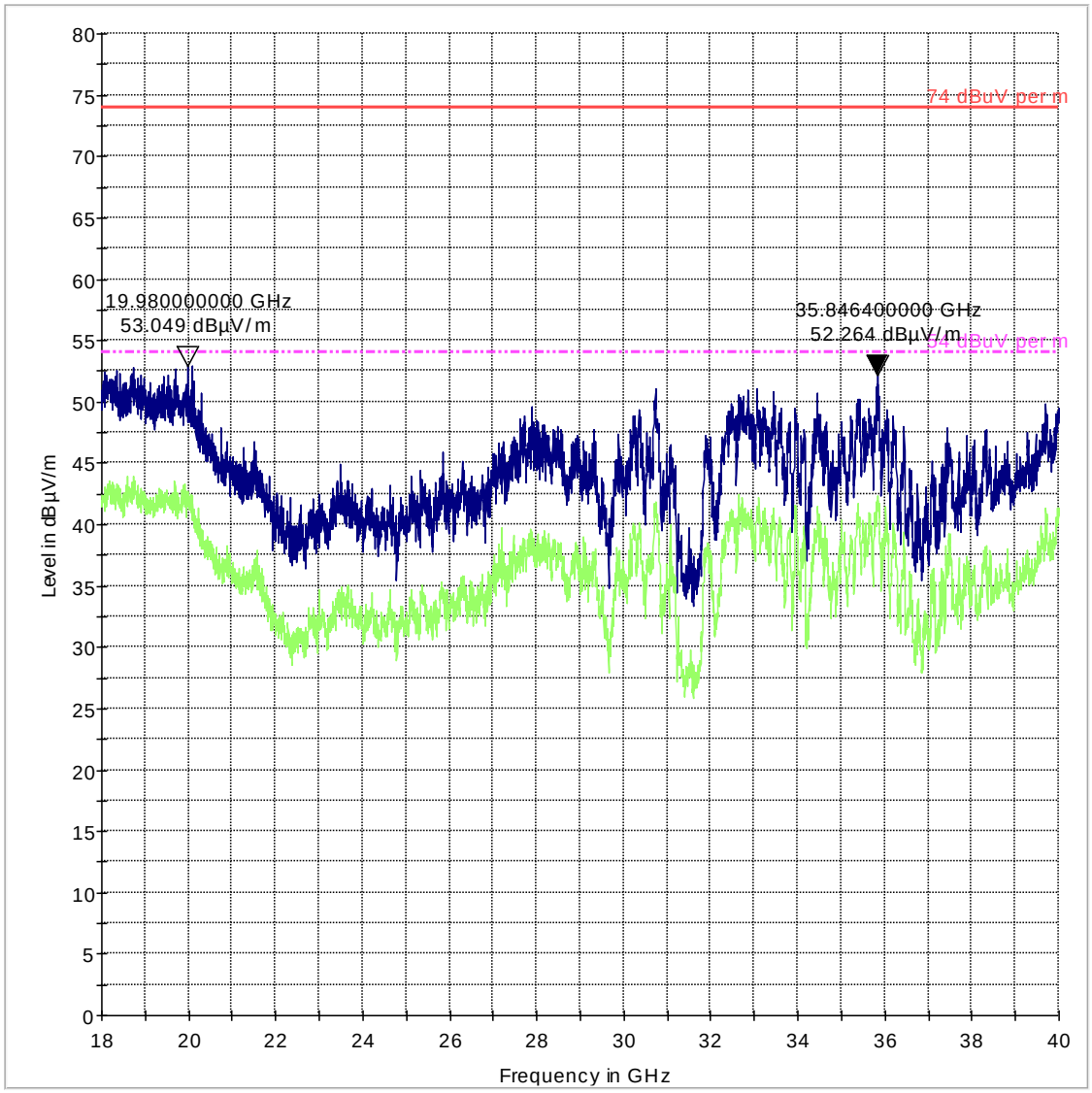
16.7.24PAE_11ac_Ch58_18GHz_40GHz



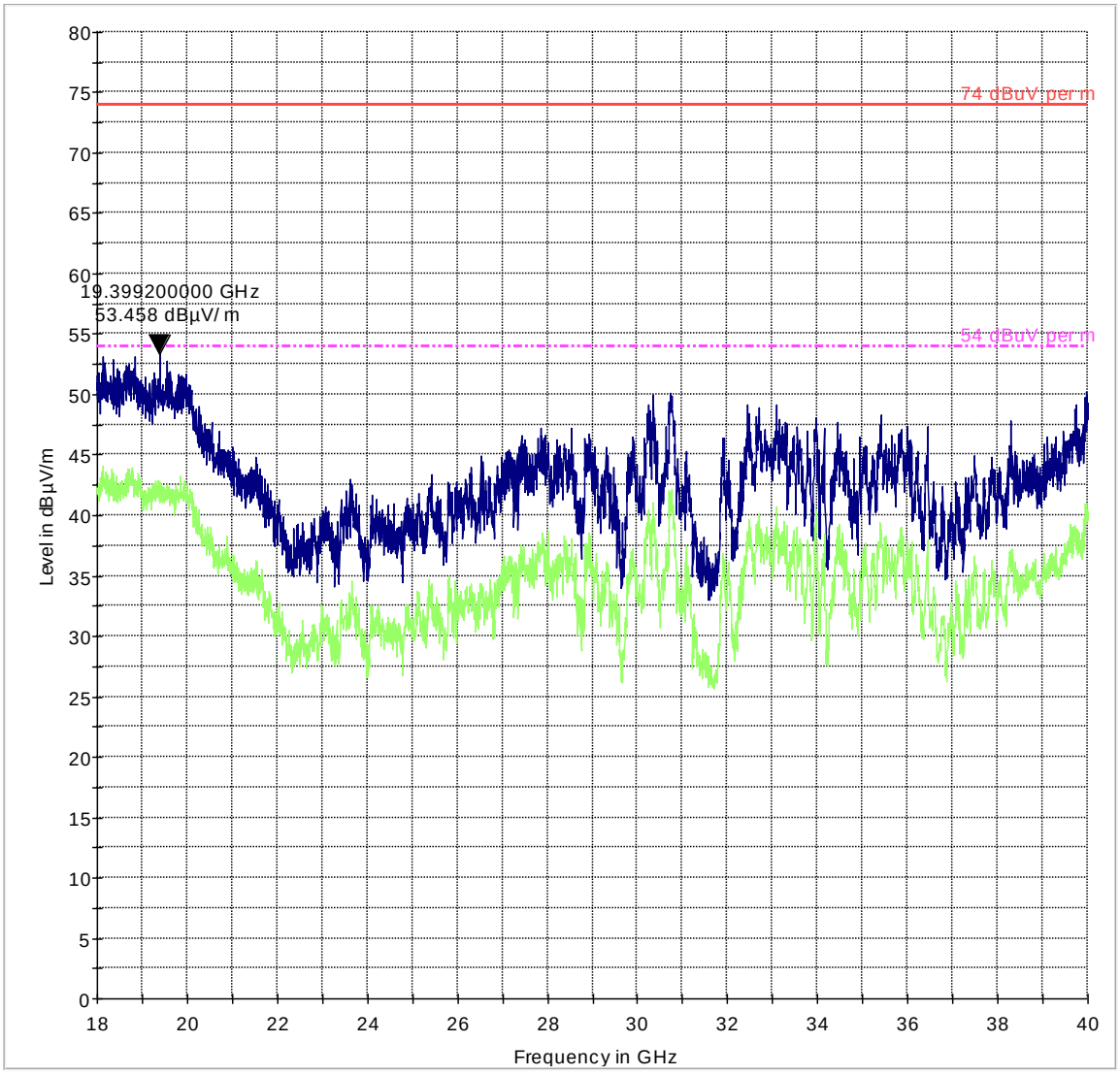
PAE_11a_Ch60_18GHz_40GHz



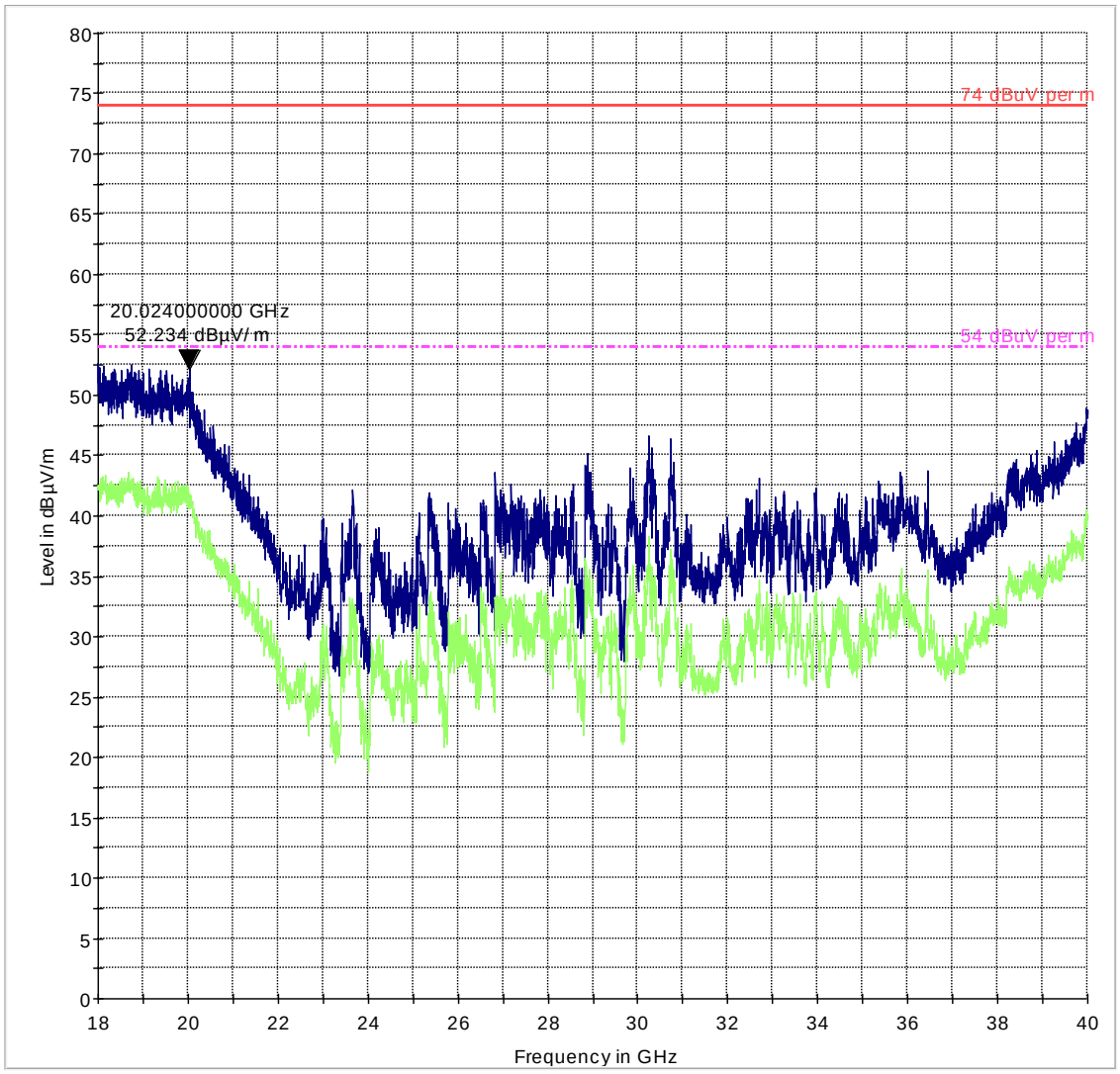
16.7.25PAE_11n_Ch102_18GHz_40GHz



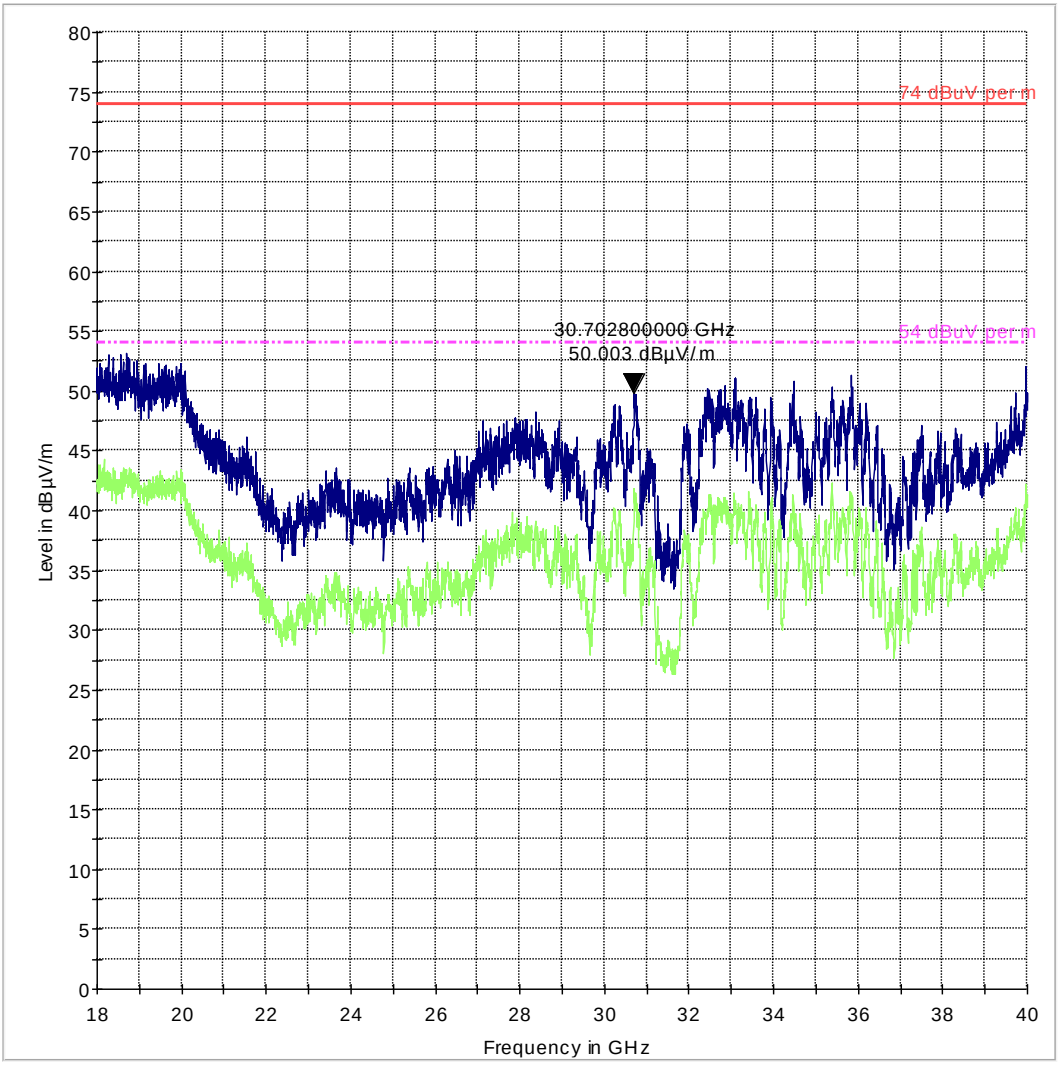
16.7.26PAE_11ac_Ch106_18GHz_40GHz



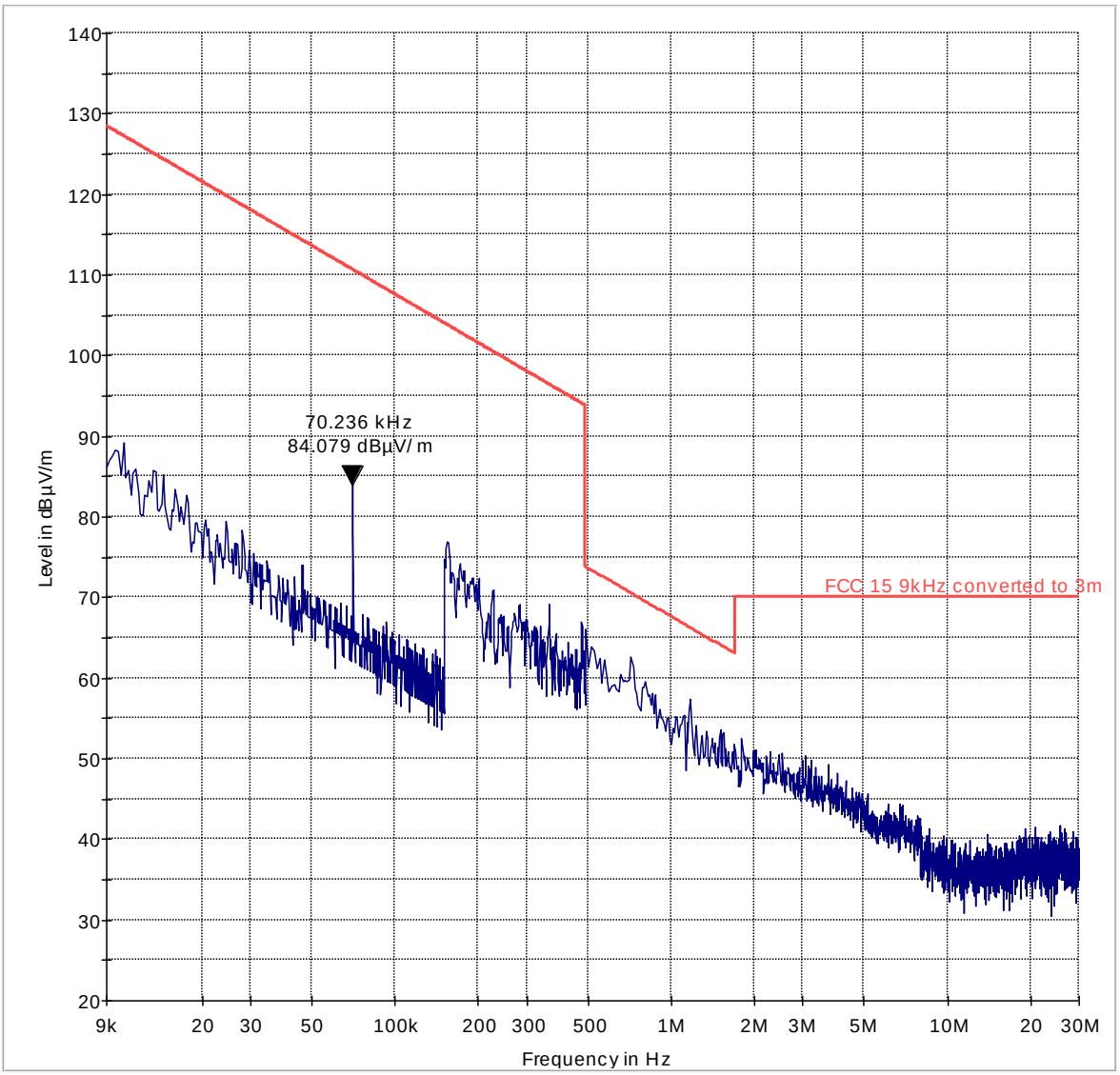
16.7.27PAE_11n_Ch134_18GHz_40GHz



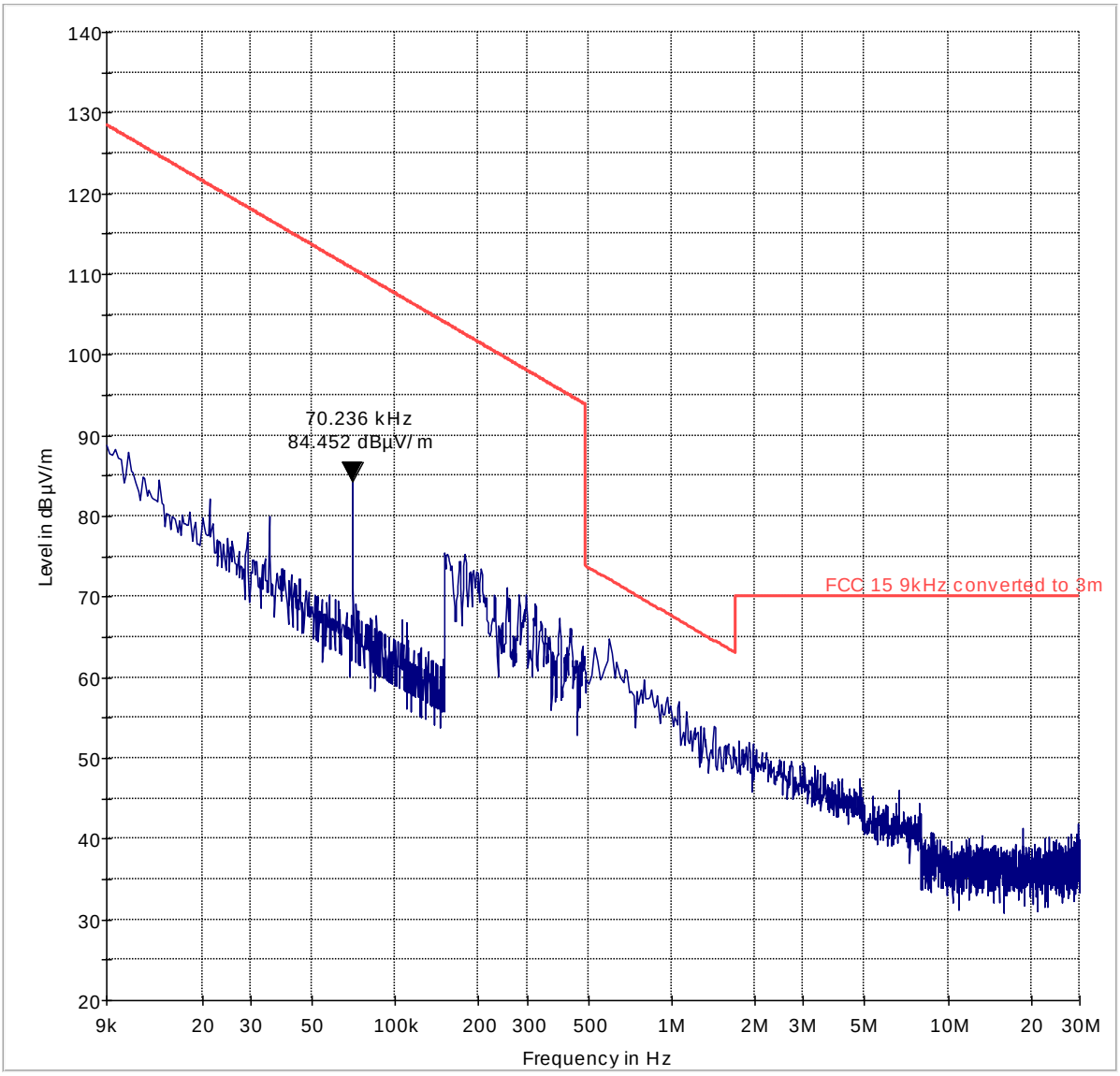
16.7.28PAE_11a_Ch140_18GHz_40GHz



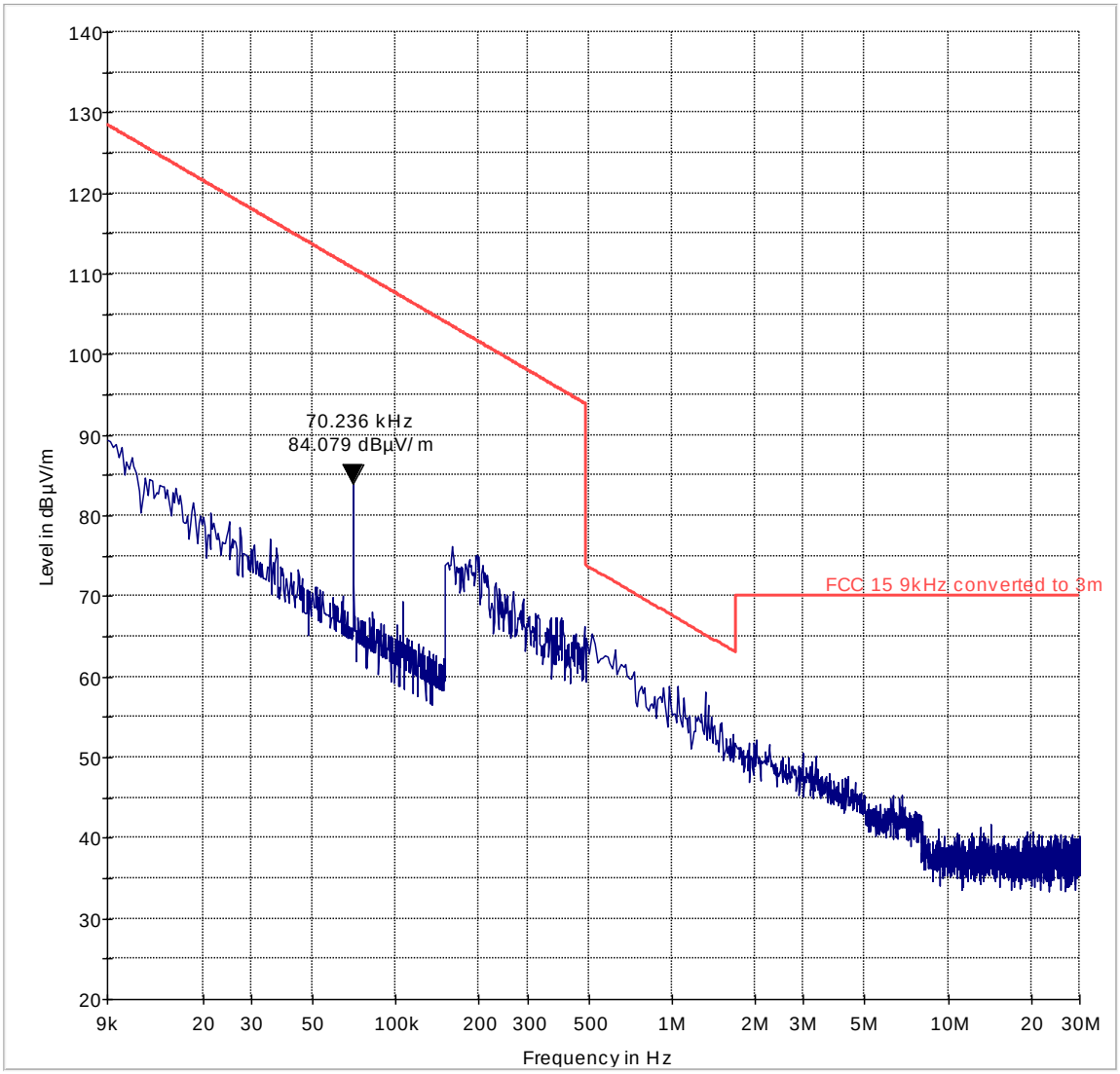
16.7.29PAE_11ac_Ch155_18GHz_40GHz



16.7.30PAE_11n_Ch102_9kHz_30MHz

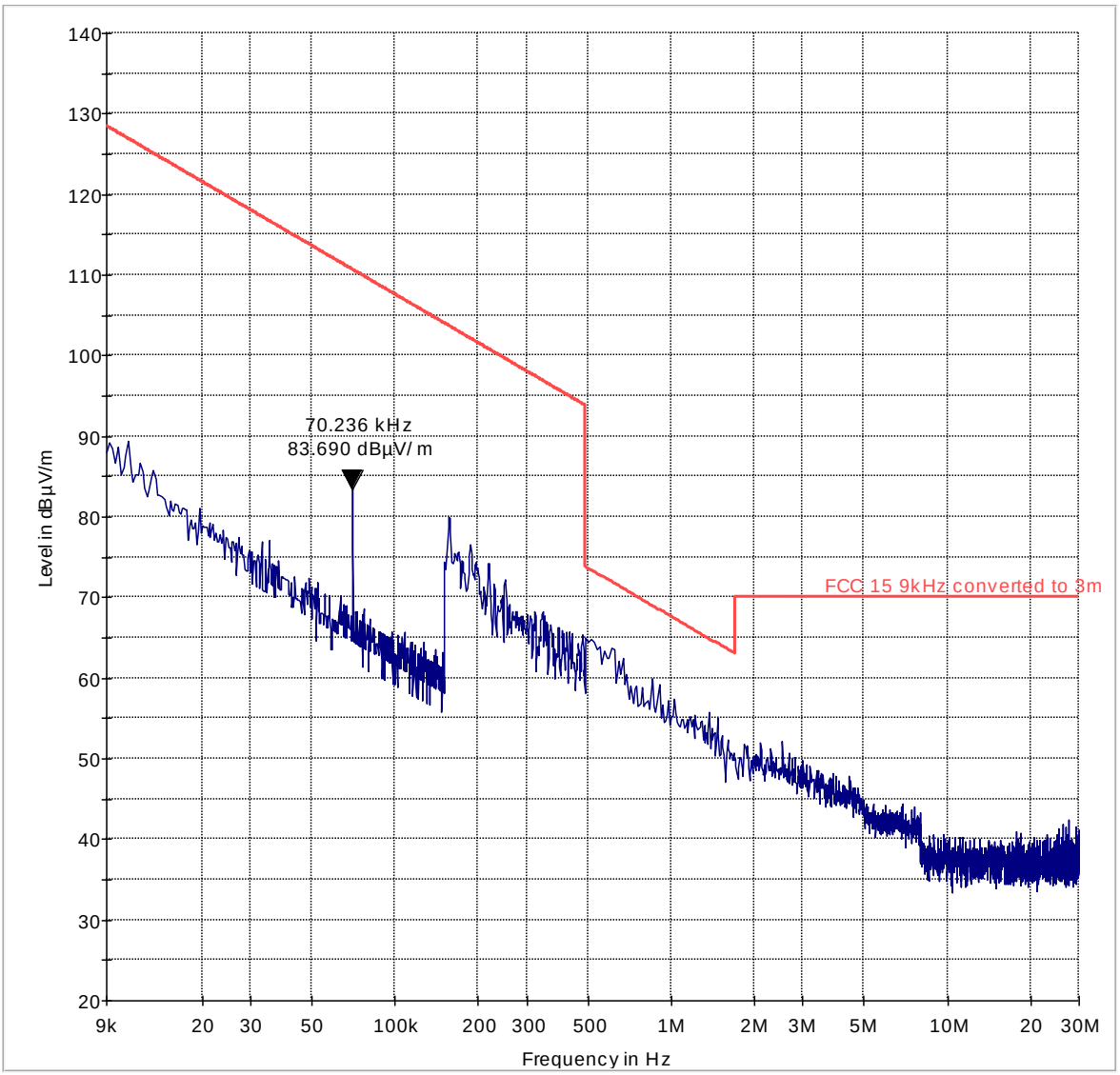


16.7.31PAE_11a_Ch36_9kHz_30MHz



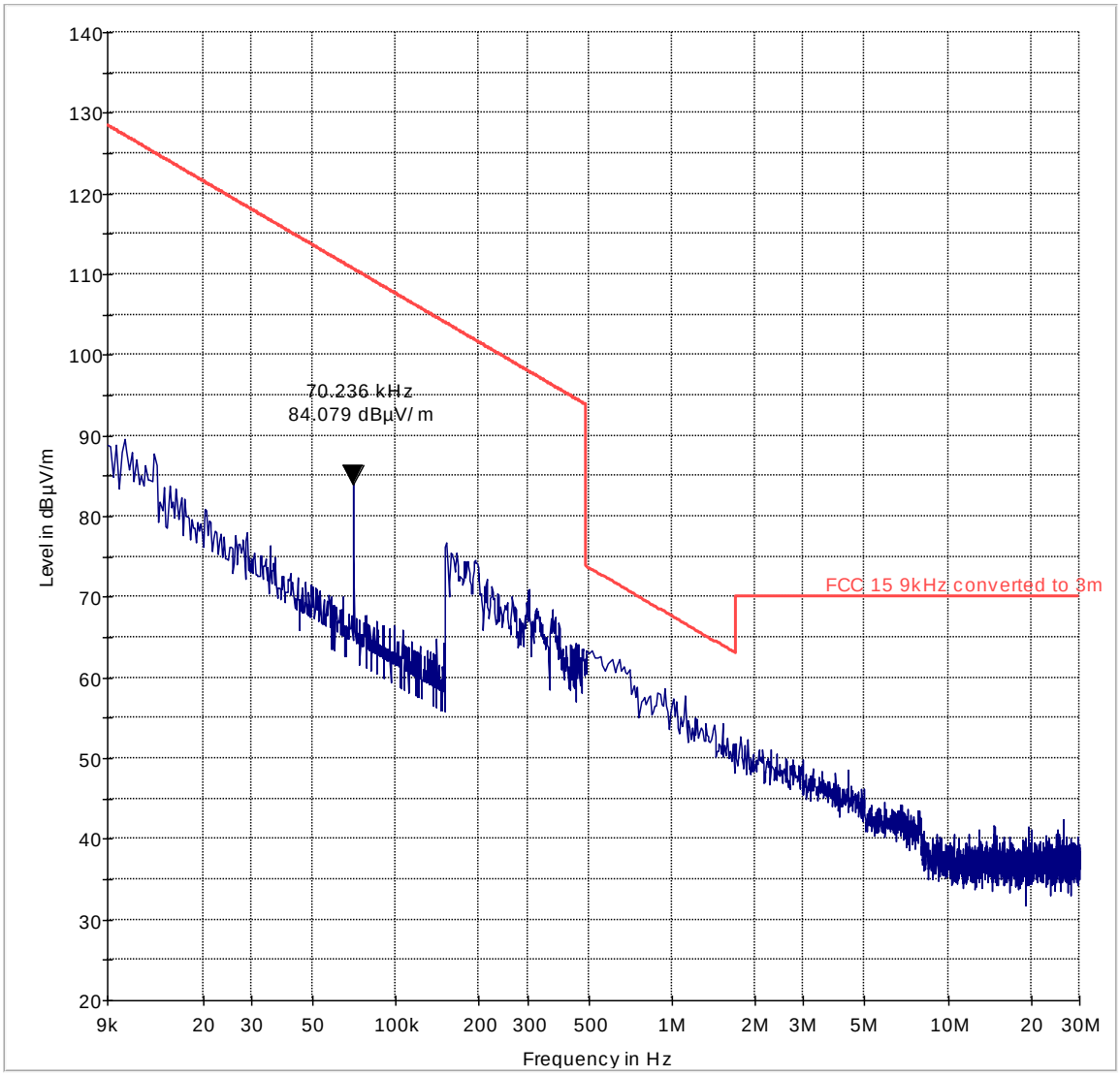
FCC 15 9kHz converted to 3m Preview Result 1-PK+

16.7.32PAE_11n_Ch38_9kHz_30MHz

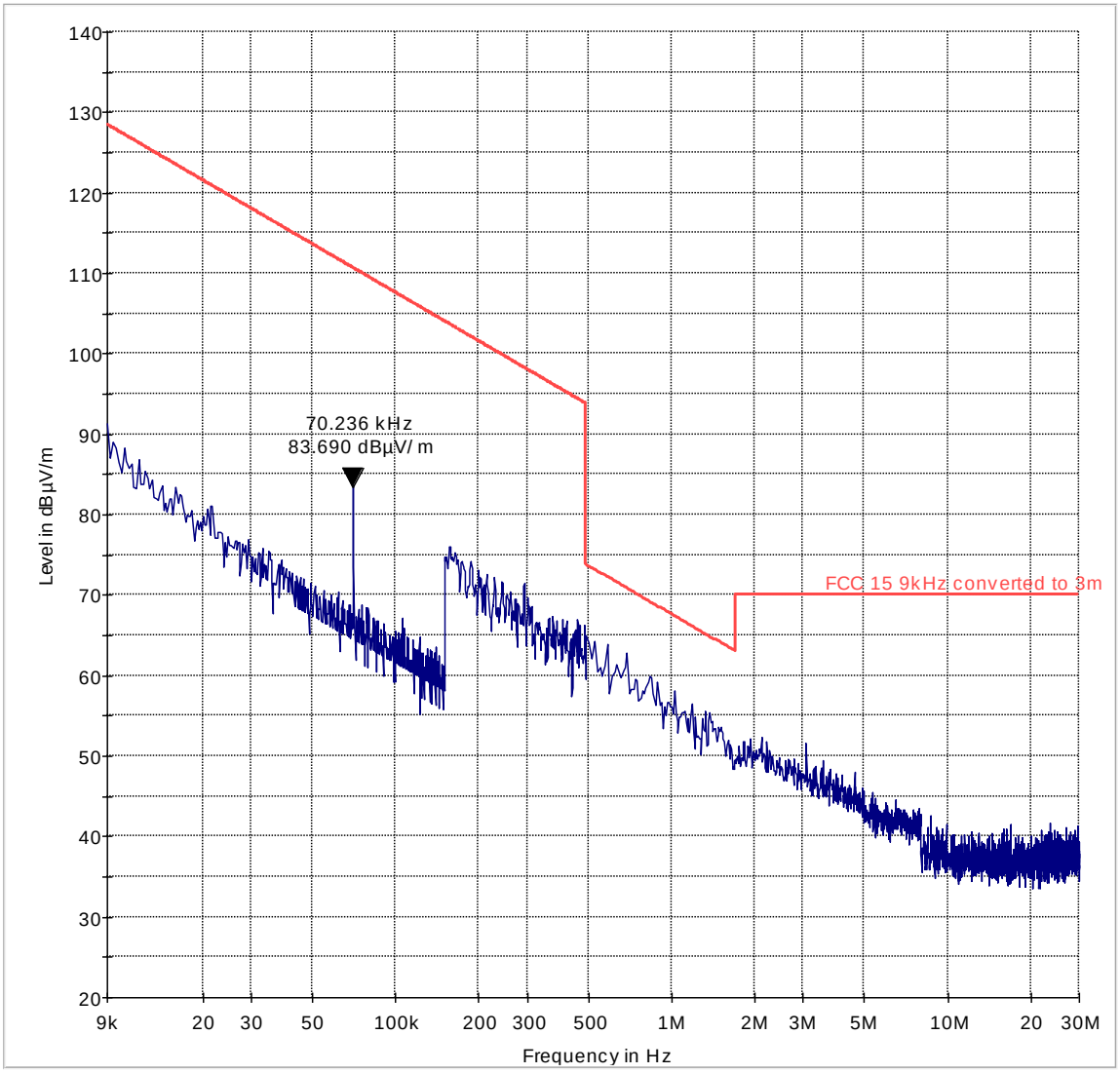


FCC 15 9kHz converted to 3m Preview Result 1-PK+

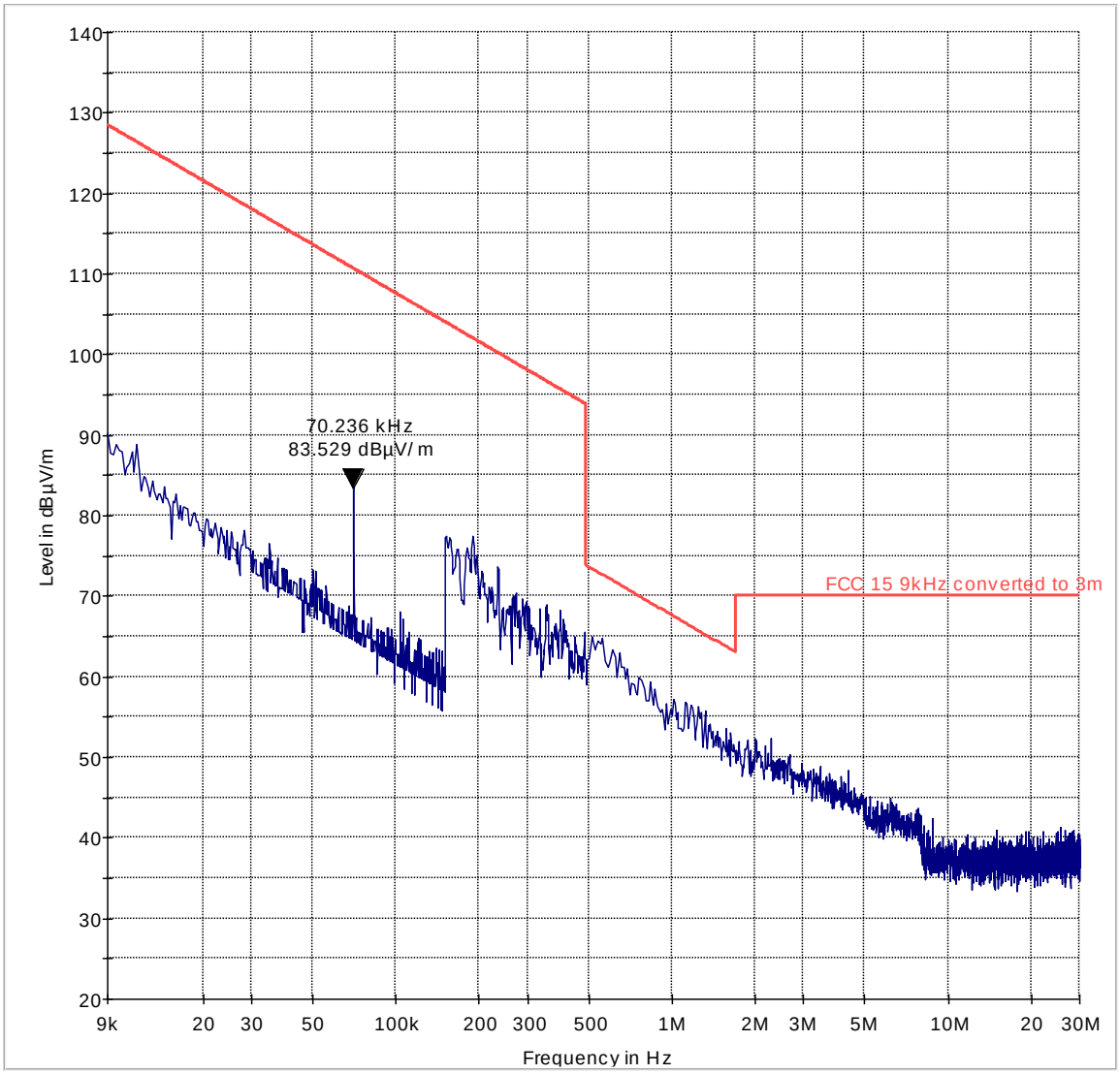
16.7.33PAE_11ac_Ch42_9kHz_30MHz



16.7.34PAE_11ac_Ch58_9kHz_30MHz

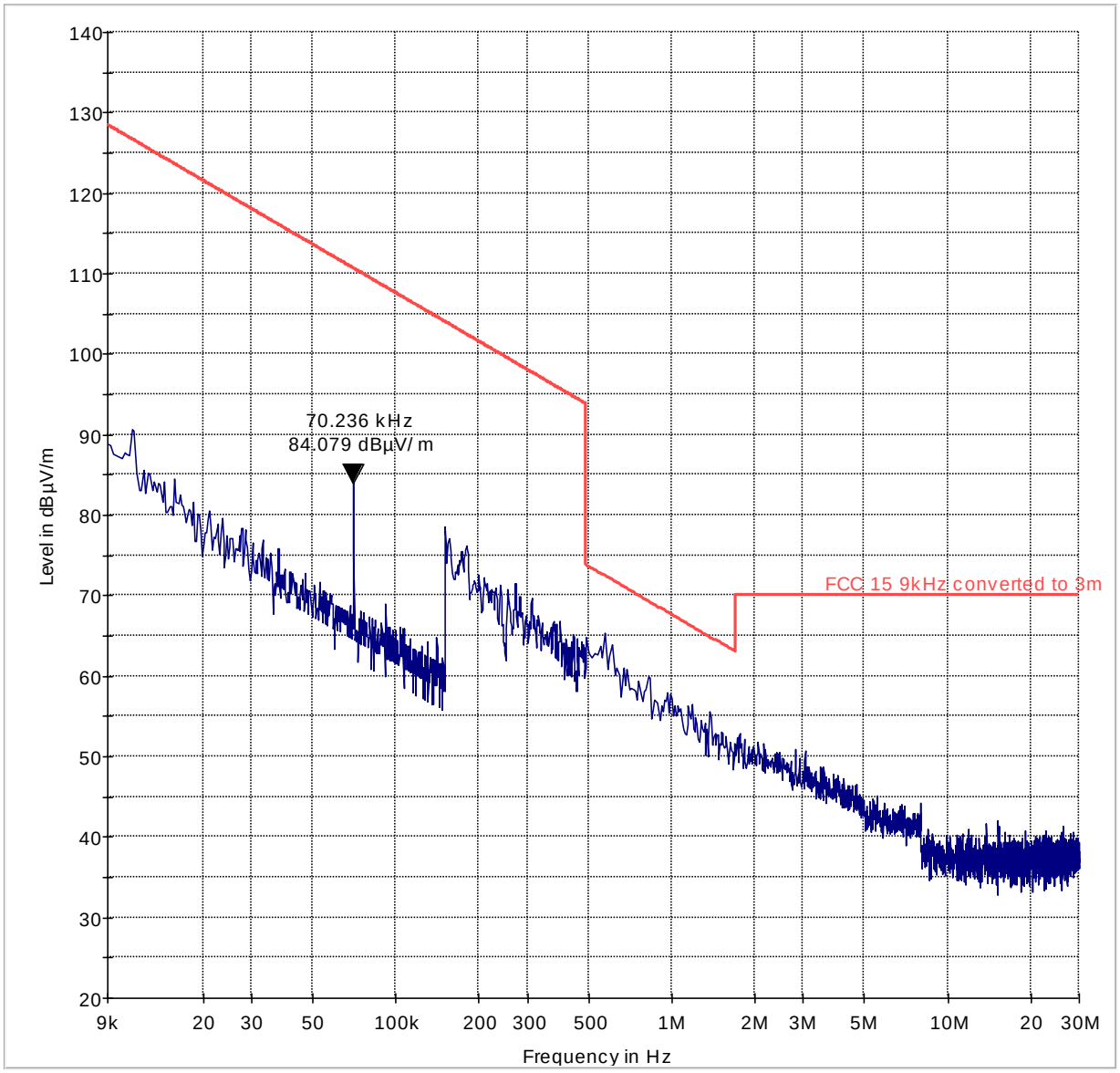


16.7.35PAE_11a_Ch60_9kHz_30MHz

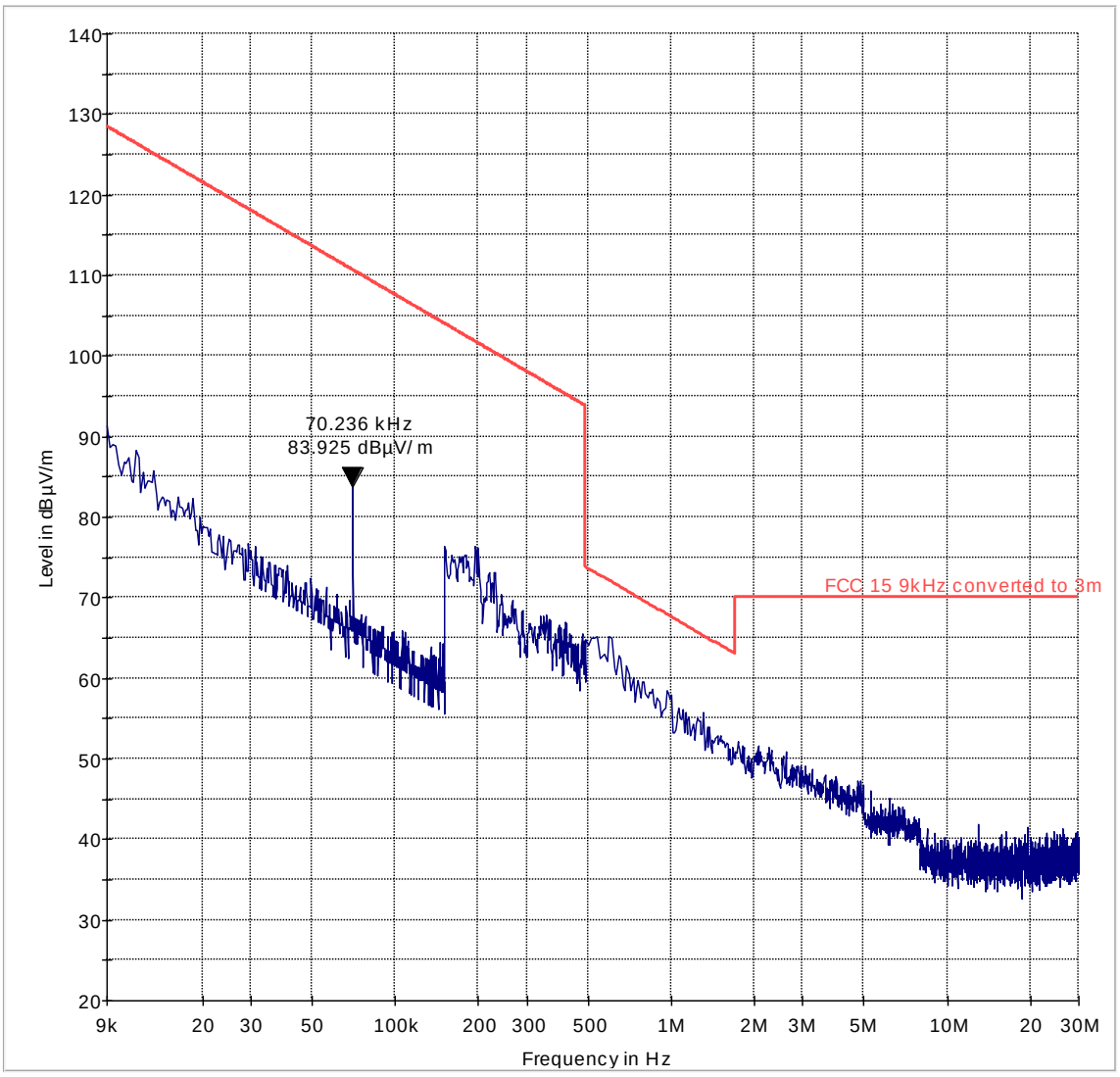


FCC 15 9kHz converted to 3m Preview Result 1-PK+

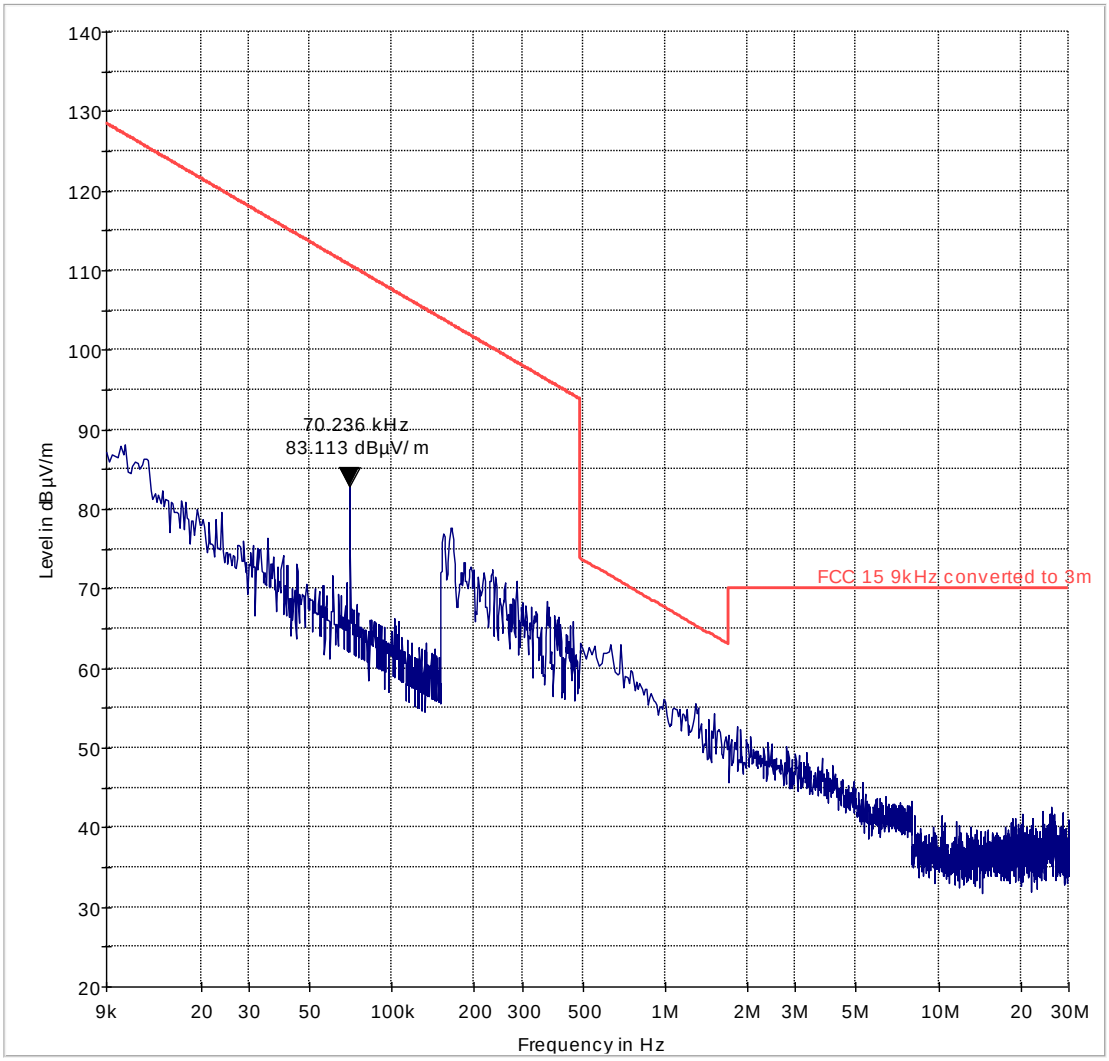
16.7.36PAE_11ac_Ch106_9kHz_30MHz



16.7.37PAE_11n_Ch134_9kHz_30MHz



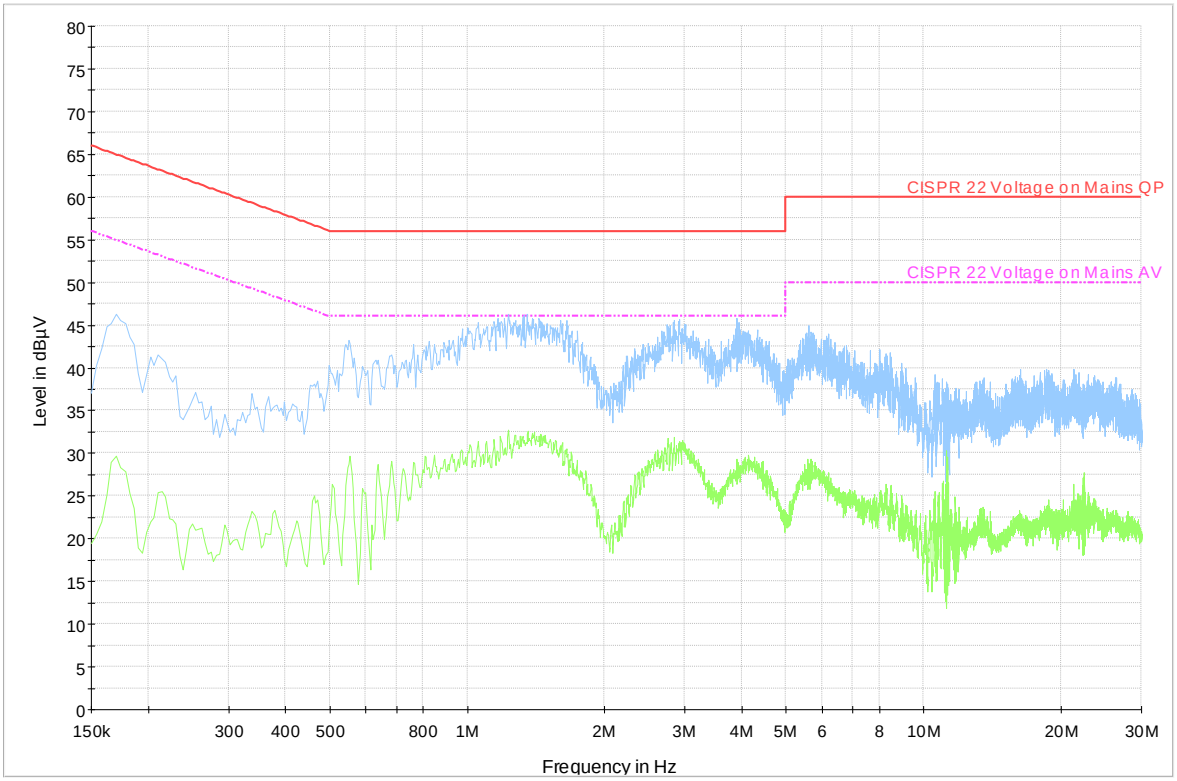
PAE_11a_Ch140_9kHz_30MHz



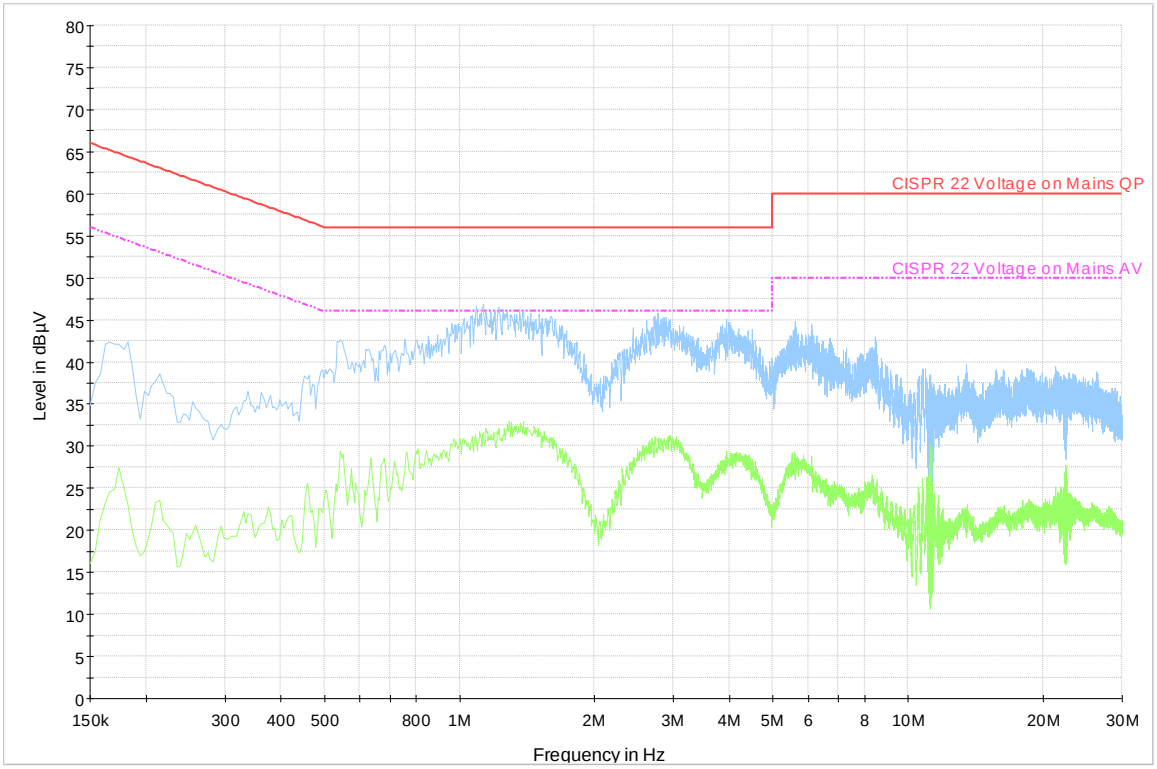
FCC 15 9kHz converted to 3m Preview Result 1-PK+

16.7.38 PAE_11ac_Ch155_9kHz_30MHz

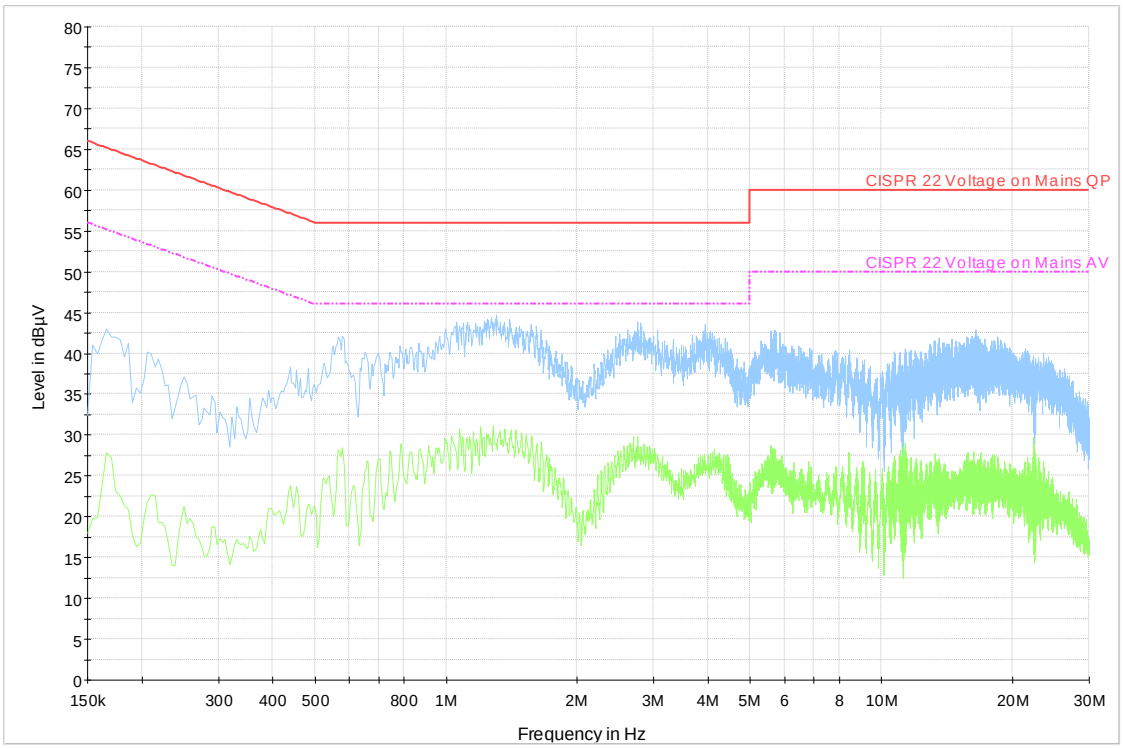
16.8 AC Power Line Conducted Emissions



16.8.1 Cond_Emi_N20_MODE_CH36



16.8.2 Cond_Emi_N40_MODE_CH102



16.8.3 Cond_Emi_AC80_MODE_CH155