



**SGS-CSTC Standards
Technical Services
(Shanghai)Co., Ltd.**

FCC ID: RFHWIFI-RT3593-DB

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Report No.: SHEM120300025402
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Test Report

Application No. : SHEM1203000254RF
Applicant: ICP Electronics Inc.
FCC ID: RFHWIFI-RT3593-DB
Fundamental Frequency : 2400~2483.5MHz, 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz
Equipment Under Test (EUT):

Trade Mark: 

Name: WIRELESS LAN MODULE
Model No.: WIFI-RT3593-DB
Standards: FCC PART 15 SUBPART E, Section 15.407
ANSI C C63.10-2009
KDB 789033 D01 General UNII Test Procedures v01r01
KDB 662911D01 Multiple Transmitter Output v01r01

Date of Receipt: Mar. 12, 2012
Date of Test: Mar. 14, 2012 to Apr. 22, 2012
Date of Issue: June. 8, 2012
Test Result : **PASS ***

* In the configuration tested, the EUT complied with the standards specified above.

Jim Xu
E&E Section Head
SGS-CSTC(Shanghai) Co., Ltd.

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1 Test Summary

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart E (Section 15.407)		
Test Item	Standard Section	Result
AC Power Conducted Emission	15.407(b)(5)	PASS
Electric Field Strength Spurious Emissions, 30MHz~40000MHz	15.407(b/1/2/3)(b)(5)	PASS
Peak Transmit Power	15.407(a/1/2/3)	PASS
Peak Power Excursion	15.407(a)(6)	PASS
Peak Power Spectral Density	15.407(a/1/2/3)	PASS
Frequency Stability	15.407(g)	PASS
Antenna Requirement	15.203	PASS

NOTE:

1. The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.850GHz frequencies band. This report was recorded the RF parameters including 5.15~5.35GHz and 5.47~5.725GHz. For the 2400 ~ 2483.5MHz and 5.725~5.850GHz RF parameters was recorded in SHEM120300025401 test report.
2. N/A: Not applicable



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3 General Information	
3.1 Client Information	
Applicant :	ICP Electronics Inc.
Applicant Address:	3F., No.22, Zhongxing Rd., Xizhi Dist., New Taipei City 221, Taiwan, R.O.C
Manufacturer:	Armorlink SH Corp.
Address of Manufacturer:	515.Shenfu Rd,Xinzhuang Industrial Development Zone,Minhang District,Shanghai,P.R.China
3.2 Details of E.U.T.	
Trade Mark:	ieI
Name:	WIRELESS LAN MODULE
Model No.:	WIFI-RT3593-DB
Power Supply:	3.3V
Hardware Version:	N/A
Software Version:	N/A
Operating Frequency :	For 15.407 802.11a & 802.11n: 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz,5.50 ~ 5.70GHz
	For 15.247 802.11b & 802.11g & 802.11n: 2.412 ~ 2.462GHz
	802.11a & 802.11n: 5.745 ~ 5.825GHz
Number of Channel :	For 15.407 19 for 802.11a, 802.11n (20MHz) 9 for 802.11n (40MHz)
	For 15.247(2.4GHz) 11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
	For 15.247(5GHz) 5 for 802.11a, 802.11n (20MHz) 2 for 802.11n (40MHz)
Modulation Type:	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology:	DSSS, OFDM

Antenna Information:

Antenna Delivery: 3T3R

Antenna Configuration:



Antenna List:

There are two sets of antennas provided to this EUT, please refer to the following table:

Set 1:

Chains	Antenna Type	Manufacturer	Model No.	Antenna Gain (2.0 dBi)
Chain 100	Dipole	Exceltek Electronics (kunshan) Co., Ltd	C0255-ANG0018	<input checked="" type="checkbox"/> For 2.4GHz: <input checked="" type="checkbox"/> For 5GHz:
Chain 010	Dipole		C0255-ANG0018	<input checked="" type="checkbox"/> For 2.4GHz: <input checked="" type="checkbox"/> For 5GHz:
Chain 001	Dipole		C0255-ANG0018	<input checked="" type="checkbox"/> For 2.4GHz: <input checked="" type="checkbox"/> For 5GHz:

Set 2:

Chains	Antenna Type	Manufacturer	Model No.	Antenna Gain (2.0 dBi)
Chain 100	PCB	Exceltek Electronics (kunshan) Co., Ltd	C0255-ANG0016	<input checked="" type="checkbox"/> For 2.4GHz: <input checked="" type="checkbox"/> For 5GHz:
Chain 010	PCB		C0255-ANG0020	<input checked="" type="checkbox"/> For 2.4GHz: <input checked="" type="checkbox"/> For 5GHz:
Chain 001	PCB		C0255-ANG0021	<input checked="" type="checkbox"/> For 2.4GHz: <input checked="" type="checkbox"/> For 5GHz:

The PCB antenna was pre-tested under the following test modes for three different axes placements:

Test Mode	Description
Mode A	X-Z plane
Mode B	X-Y plane
Mode C	Y-Z plane



From the above modes, the radiated emission worst case was found in Mode C.

Therefore only the test data of the mode was recorded in this report.

Antenna Combination Mode:

Operation Mode	Chain(100)	Chain(010)	Chain(001)	Chain(111)*
802.11b	☒	☒	☒	☐
802.11g	☒	☒	☒	☐
802.11n(20MHz)	☒	☒	☒	☒
802.11n(40MHz)	☒	☒	☒	☒
802.11a	☒	☒	☒	☒

NOTE 1: * means transmitting simultaneously via these chains (Chain(100), Chain(010), Chain(001)).
NOTE 2: The above information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

Operated in 5150MHz ~ 5350MHz bands:

Eight channels are provided for 802.11a and 802.11n (20MHz):

CHANNEL	FREQUENCY(MHz)	CHANNEL	FREQUENCY(MHz)
36	5180	52	5260
40	5200	56	5280
44	5220	60	5300
48	5240	64	5320

Four channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY(MHz)	CHANNEL	FREQUENCY(MHz)
38	5190	54	5270
46	5230	62	5310

Operated in 5470MHz ~ 5725MHz bands:

Eleven channels are provided for 802.11a and 802.11n (20MHz):

CHANNEL	FREQUENCY(MHz)	CHANNEL	FREQUENCY(MHz)
100	5500	124	5620
104	5520	128	5640
108	5540	132	5660
112	5560	136	5680
116	5580	140	5700
120	5600	N/A	N/A

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Five channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY(MHz)	CHANNEL	FREQUENCY(MHz)
102	5510	126	5630
110	5550	134	5670
118	5590	N/A	N/A

3.3 Description of Support Units

Name	Model No.	Remark
17" LCD	Lenovo 9227-AE1	N/A
Mouse	Lenovo M-UAE119	N/A
Mini ATX Board	N/A	N/A

3.4 Test Location

Tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
No.588 West Jindu Road, Songjiang District, Shanghai, China. 201612.

Tel: +86 21 6191 5666 Fax: +86 21 6191 5655

No tests were sub-contracted.

3.5 Other Information Requested by the Customer

None.

3.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2014-07-26.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2015-02-22.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A. Expiry Date: 2014-09-20.



4 Test Results

Test Instruments

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	EMI test receiver	Rohde & Schwarz	ESU40	100109	2012-06-02	2013-06-01
2	Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-679	2012-03-15	2013-03-14
3	Horn Antenna	Rohde & Schwarz	HF906	100284	2012-03-15	2013-03-14
4	Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170 373	2012-03-15	2013-03-14
5	ANTENNA	SCHWARZBECK	VULB9168	9168-313	2012-03-15	2013-03-14
6	Ultra broadband antenna	Rohde & Schwarz	HL562	100227	2011-10-09	2012-10-08
7	Atmosphere pressure meter	Shanghai ZhongXuan Electronic Co;Ltd	BY—2009P	--	2011-10-15	2012-10-14
8	CLAMP METER	FLUKE	316	86080010	2012-03-15	2013-03-14
9	Thermo-Hygrometer	ZHICHEN	ZC1-2	01050033	2011-10-15	2012-10-14
10	High-low temperature cabinet	Shanghai YuanZhen	GW2050	--	2011-09-05	2012-09-03
11	Tunable Notch Filter	Wainwright instruments Gmbh	WRCT1800.0/ 2000.0-0.2/40- 5SSK	11	2012-01-15	2013-01-14
12	Tunable Notch Filter	Wainwright instruments Gmbh	WRCT800.0/88 0.0-0.2/40-5SSK	9	2012-03-15	2013-03-14
13	High pass Filter	FSCW	HP 12/2800- 5AA2	19A45-02	2012-05-04	2013-05-03
14	Low noise amplifier	TESEQ	LNA6900	70133	2011-07-05	2012-07-04
15	EMI test receiver	Rohde & Schwarz	ESCS30	100086	2012-04-13	2013-04-12
16	Line impedance stabilization network	SCHWARZBECK	NSLK8127	8127-490	2012-03-15	2013-03-14

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4.1 E.U.T. Operation

Input voltage: 120V/60Hz for the adapter of mainboard

Operating Environment:

Temperature: 24.0 °C

Humidity: 50 % RH

Atmospheric Pressure: 1010 mbar

EUT Operation: The EUT has been tested under operating condition.

Test program was used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Operated in 5150MHz~5250MHz bands:

802.11 a/n(20MHz) mode:Channel low 36 (5180MHz) mid 40(5200MHz) high 48(5240MHz) with the worst case 6.5Mbps data rate was report for conductive test and radiated spurious emission test.

802.11 n(40MHz) mode:Channel low 38(5190MHz) high 46(5230MHz) with the worst case 6.5Mbps data rate was report for conductive test and radiated spurious emission test.

Operated in 5250MHz~5350MHz bands:

802.11 a/n(20MHz) mode:Channel low 52 (5260MHz) mid 60(5300MHz) high 64(5320MHz) with the worst case 6.5Mbps data rate was report for conductive test and radiated spurious emission test.

802.11 n(40MHz) mode:Channel low 54(5270MHz) high 62(5310MHz) with the worst case 6.5Mbps data rate was report for conductive test and radiated spurious emission test.

Operated in 5470MHz~5725MHz bands:

802.11 a/n(20MHz) mode:Channel low 100 (5500MHz) mid 120(5600MHz) high 140(5700MHz) with the worst case 6.5Mbps data rate was report for conductive test and radiated spurious emission test.

802.11 n(40MHz) mode:Channel low 102(5510MHz) mid 118(5590MHz) high 5670(5670MHz) with the worst case 6.5Mbps data rate was report for conductive test and radiated spurious emission test.

4.2 Test Procedure & Measurement Data



4.2.1 Conducted Emission Test

Test Requirement: FCC Part15 15.407(b)(5)
Test date: April 16,2012
Standard Applicable According to section 15.207,frequency 150KHz to 30MHz shall not not exceed the limit table as blew.

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

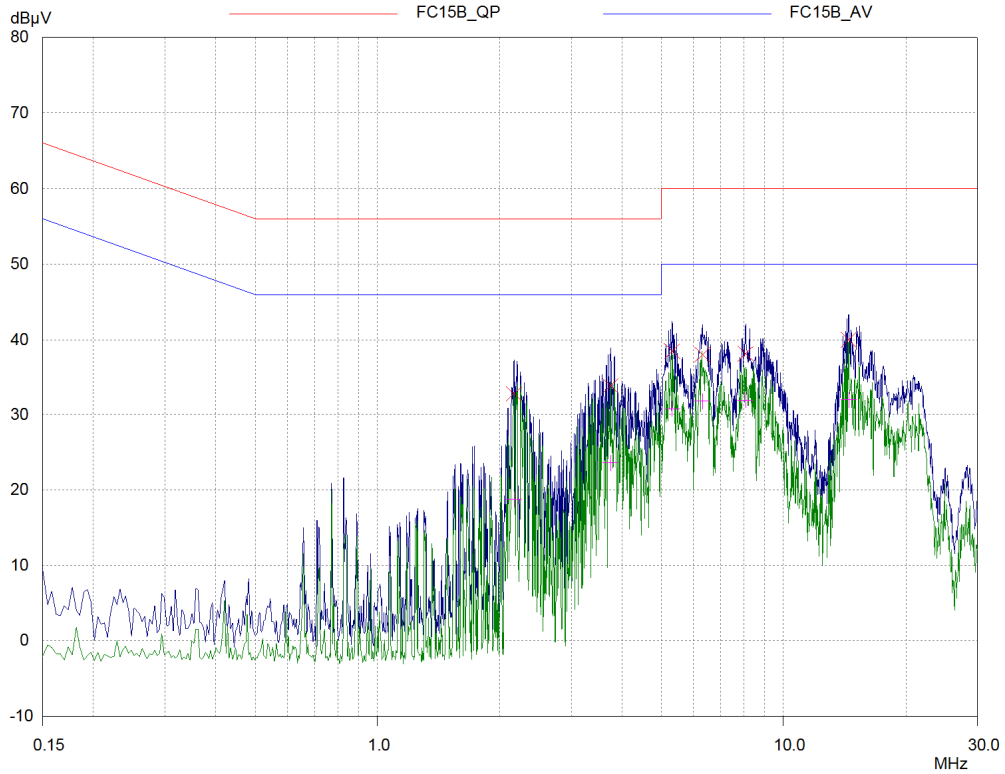
EUT Setup

- 1.The conducted emission tests were performed in the test site,using the setup in accordance with the ANSI C C63.10-2009.
- 2.EUT is charged with AC/DC power adapter.The AC/DC Power adapter was plug-in LISN.The rear of the EUT and periphearals were placed flushed with the rear of the tabletop.
- 3.The LISN was connected with 120V AC/60Hz power source.

Measurement Result Operation mode:WiFi Mode 802.11n (20MHz BW) OFDM modulation 6.5Mbps Rate
 Note:All test modes have been tested and record the worst case.



L line:



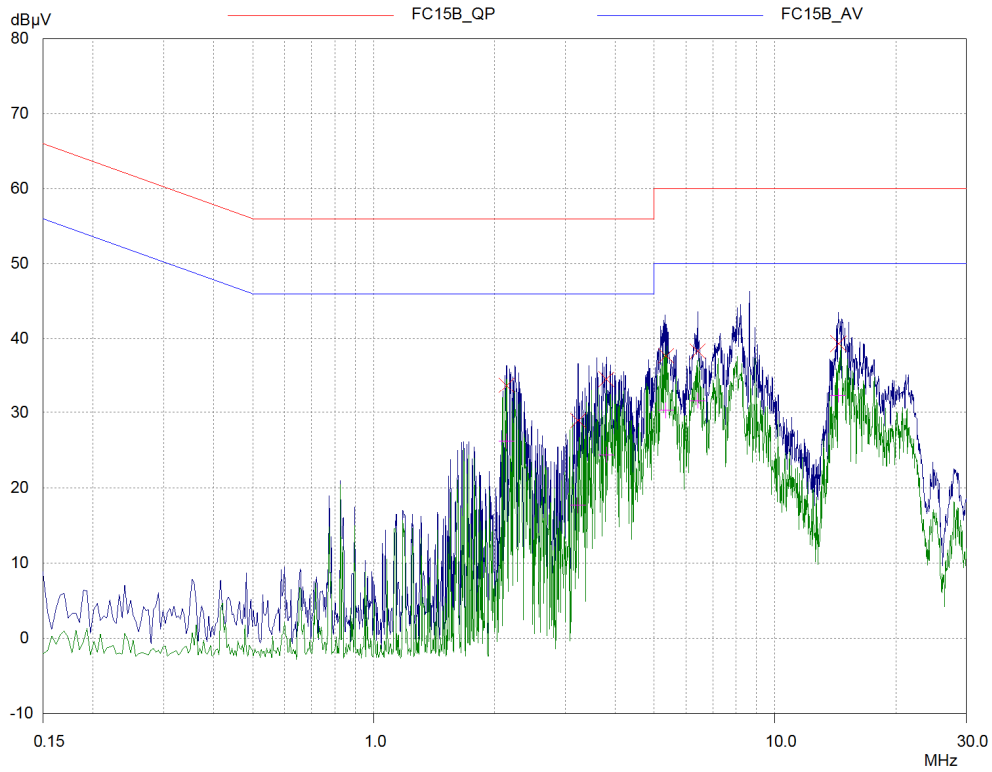
Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB
2.16562	32.80	56.00	23.20
3.74765	33.93	56.00	22.07
5.31796	38.51	60.00	21.49
6.30625	38.01	60.00	21.99
8.06795	38.20	60.00	21.80
14.45078	39.99	60.00	20.01

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB
2.16562	18.71	46.00	27.29
3.74765	23.60	46.00	22.40
5.31796	30.76	50.00	19.24
6.30625	31.74	50.00	18.26
8.06795	31.91	50.00	18.09
14.45078	31.97	50.00	18.03



N Line:



Final Measurement Results

Frequency MHz	QP Level dBµV	QP Limit dBµV	QP Delta dB
2.14218	33.68	56.00	22.32
3.22812	28.93	56.00	27.07
3.79843	34.59	56.00	21.41
5.34531	37.71	60.00	22.29
6.41171	38.31	60.00	21.69
14.38437	39.33	60.00	20.67

Frequency MHz	AV Level dBµV	AV Limit dBµV	AV Delta dB
2.14218	26.20	46.00	19.80
3.22812	17.68	46.00	28.32
3.79843	24.39	46.00	21.61
5.34531	30.30	50.00	19.70
6.41171	31.58	50.00	18.42
14.38437	32.31	50.00	17.69



4.2.2 Peak Output Power Measurement

Test Requirement: FCC Part 15 15.407(a/1/2/3)

Test date April 2,2012

LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

Frequency Band	Limit
5.15-5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25-5.35GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.47-5.725GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725-5.825GHz	The lesser of 1W (30dBm) or 17dBm + 10logB

NOTE:Where B is the 26dB emission bandwidth in MHz.

Measurement Procedure

FOR 26dB BANDWIDTH

- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = Peak.
- 4) Trace mode = max hold.
- 5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

FOR PEAK OUTPUT POWER following the KDB: 789033;

- b) Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep):
 - (i) Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - (ii) Set RBW = 1 MHz.
 - (iii) Set VBW ≥ 3 MHz.
 - (iv) Number of points in sweep ≥ 2 Span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
 - (v) Sweep time = auto.
 - (vi) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
 - (vii) If transmit duty cycle < 98 percent, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle ≥ 98 percent, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run".
 - (viii) Trace average at least 100 traces in power averaging (i.e., RMS) mode.
 - (ix) Compute power by integrating the spectrum across the 26 dB EBW of the signal using the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges. If the spectrum analyzer does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the 26 dB EBW of the spectrum.

FOR Multiple Output in the Same Band following the KDB:662911;

Total peak output power is summing entire spectra across corresponding frequency bins on the various outputs by computer



Measurement Result:

Operated in 5150MHz ~ 5250MHz

The test was performed with 802.11a, the data was shown the worst case 802.11a 6.5Mbps. Since 802.11a mode at this band Minimum 26dB bandwidth is 19.70MHz($10 \log 19.70 = 12.94$). So power limit at 5150~5250MHz is $4\text{dBm} + 10\log 19.70 = 16.94\text{dBm}$;

CH	Frequency (MHz)	Reading Peak Power(dBm)			Cable Loss (dB)	Output Peak Power (dBm)	Limit (dBm)	Result
		Chain(100)	Chain(010)	Chain(001)				
36	5180	9.73	9.56	10.09	1.50	16.07	16.94	PASS
40	5200	6.40	6.63	7.97		13.33	16.94	PASS
48	5240	10.09	10.12	9.46		16.17	16.94	PASS

The test was performed with 802.11n(20MHz BW), the data was shown the worst case 802.11n 6.5Mbps. Minimum 26db bandwidth in this band is 20.10MHz($10 \log 20.10 = 13.03$). So power limit at 5150~5250MHz is 17dBm;

CH	Frequency (MHz)	Reading Peak Power(dBm)			Cable Loss (dB)	Output Peak Power (dBm)	Limit (dBm)	Result
		Chain(100)	Chain(010)	Chain(001)				
36	5180	7.67	7.76	9.56	1.50	14.69	17.00	PASS
40	5200	6.34	6.68	8.06		13.36	17.00	PASS
48	5240	8.28	9.97	9.18		15.47	17.00	PASS

The test was performed with 802.11n(40MHz BW), the data was shown the worst case 802.11n 6.5Mbps. Minimum 26db bandwidth is 39.34MHz($10 \log 39.34 = 15.95$). So power limit at 5150~5250MHz is 17dBm;

CH	Frequency (MHz)	Reading Peak Power(dBm)			Cable Loss (dB)	Output Peak Power (dBm)	Limit (dBm)	Result
		Chain(100)	Chain(010)	Chain(001)				
38	5190	10.38	10.12	10.67	1.50	16.67	17.00	PASS
46	5230	9.17	10.41	9.05		15.86	17.00	PASS



Operated in 5250MHz ~ 5350MHz

The test was performed with 802.11a, the data was shown the worst case 802.11a 6.5Mbps. Since 802.11a mode Minimum 26dB bandwidth in this band is 19.60MHz($10 \log 19.60=12.92$) So power limit at 5250~5350MHz is $11\text{dBm}+10\log 19.60=23.92\text{dBm}$;

CH	Frequency (MHz)	Reading Peak Power(dBm)			Cable Loss (dB)	Output Peak Power (dBm)	Limit (dBm)	Result
		Chain(100)	Chain(010)	Chain(001)				
52	5260	6.61	6.95	6.43	1.50	12.94	23.92	PASS
60	5300	6.57	6.78	7.15		13.11	23.92	PASS
64	5320	8.54	10.57	10.06		16.08	23.92	PASS

The test was performed with 802.11n(20MHz BW), the data was shown the worst case 802.11n 6.5Mbps. Minimum 26db bandwidth is 20.05MHz($10 \log 20.05=13.02$). So power limit at 5250~5350MHz is 24dBm.

CH	Frequency (MHz)	Reading Peak Power(dBm)			Cable Loss (dB)	Output Peak Power (dBm)	Limit (dBm)	Result
		Chain(100)	Chain(010)	Chain(001)				
52	5260	6.44	6.92	6.48	1.50	12.89	24.00	PASS
60	5300	6.26	6.92	6.48		12.83	24.00	PASS
64	5320	6.49	8.41	8.92		14.33	24.00	PASS

The test was performed with 802.11n(40MHz BW), the data was shown the worst case 802.11n 6.5Mbps. Minimum 26db bandwidth in this band is 39.48MHz($10 \log 39.48=15.96$). So power limit at 5250~5350MHz is 24dBm.

CH	Frequency (MHz)	Reading Peak Power(dBm)			Cable Loss (dB)	Output Peak Power (dBm)	Limit (dBm)	Result
		Chain(100)	Chain(010)	Chain(001)				
54	5270	5.71	4.53	3.72	1.50	11.00	17.00	PASS
62	5310	10.68	10.83	10.11		16.82	24.00	PASS



Operated in 5470MHz ~ 5725MHz

The test was performed with 802.11a, the data was shown the worst case 802.11a 6.5Mbps.
Since 802.11a mode Minimum 26dB bandwidth is 19.80MHz($10\log 19.85=12.97$)
So power limit at 5470~5725MHz is $11\text{dBm}+10\log 19.80=23.97\text{dBm}$.

CH	Frequency (MHz)	Reading Peak Power(dBm)			Cable Loss (dB)	Output Peak Power (dBm)	Limit (dBm)	Result
		Chain(100)	Chain(010)	Chain(001)				
100	5500	8.33	7.91	7.54	1.50	14.21	23.97	PASS
120	5600	7.07	6.69	9.06		14.01	23.97	PASS
140	5700	3.75	4.67	5.32		10.90	23.97	PASS

The test was performed with 802.11n(20MHz BW), the data was shown the worst case 802.11n 6.5Mbps.
Since 802.11 n 20MHz BW minimum 26Db bandwidth is 20.25($10\log 20.25=13.06$),so power limit at 5470~5725MHz is 24dBm.

CH	Frequency (MHz)	Reading Peak Power(dBm)			Cable Loss (dB)	Output Peak Power (dBm)	Limit (dBm)	Result
		Chain(100)	Chain(010)	Chain(001)				
100	5500	8.34	8.41	8.89	1.50	14.82	24	PASS
120	5600	7.10	7.33	10.02		14.63	24	PASS
140	5700	2.94	4.44	2.90		9.76	24	PASS

The test was performed with 802.11n(40MHz BW), the data was shown the worst case 802.11n 6.5Mbps.
Minimum 26db bandwidth is 39.41MHz($10\log 39.20=15.93$).
So power limit at 5470~5725MHz is 24dBm.

CH	Frequency (MHz)	Reading Peak Power(dBm)			Cable Loss (dB)	Output Peak Power (dBm)	Limit (dBm)	Result
		Chain(100)	Chain(010)	Chain(001)				
102	5510	8.45	8.45	8.66	1.50	14.79	24	PASS
118	5590	7.35	7.91	7.78		13.96	24	PASS
134	5670	3.31	7.39	7.42		12.69	24	PASS

Measurement Data:

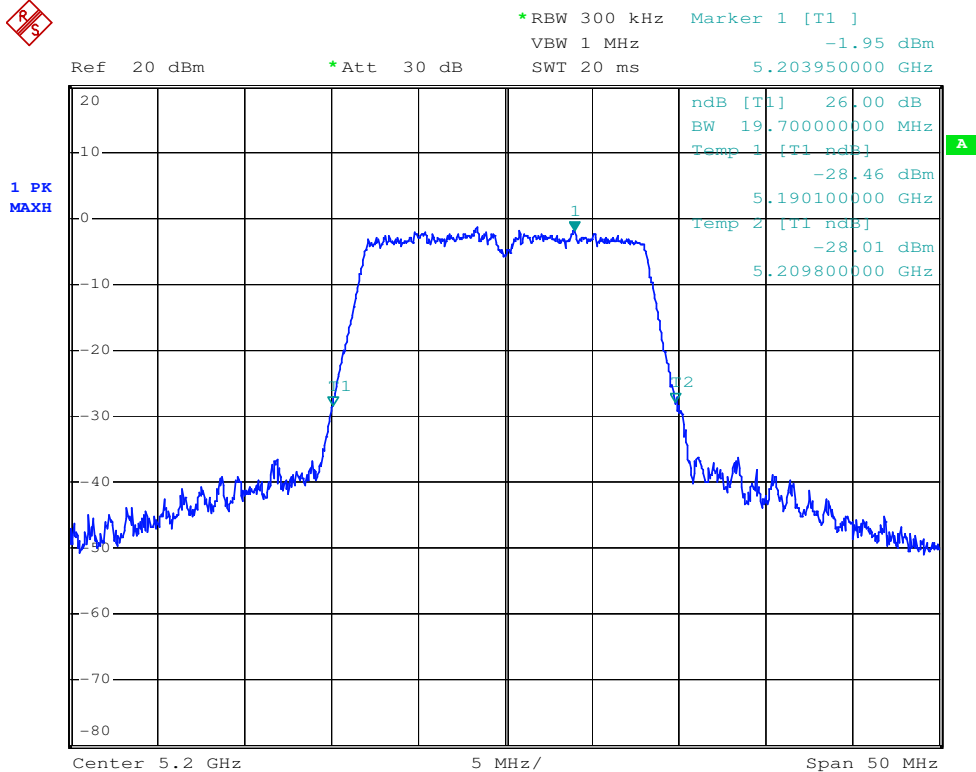
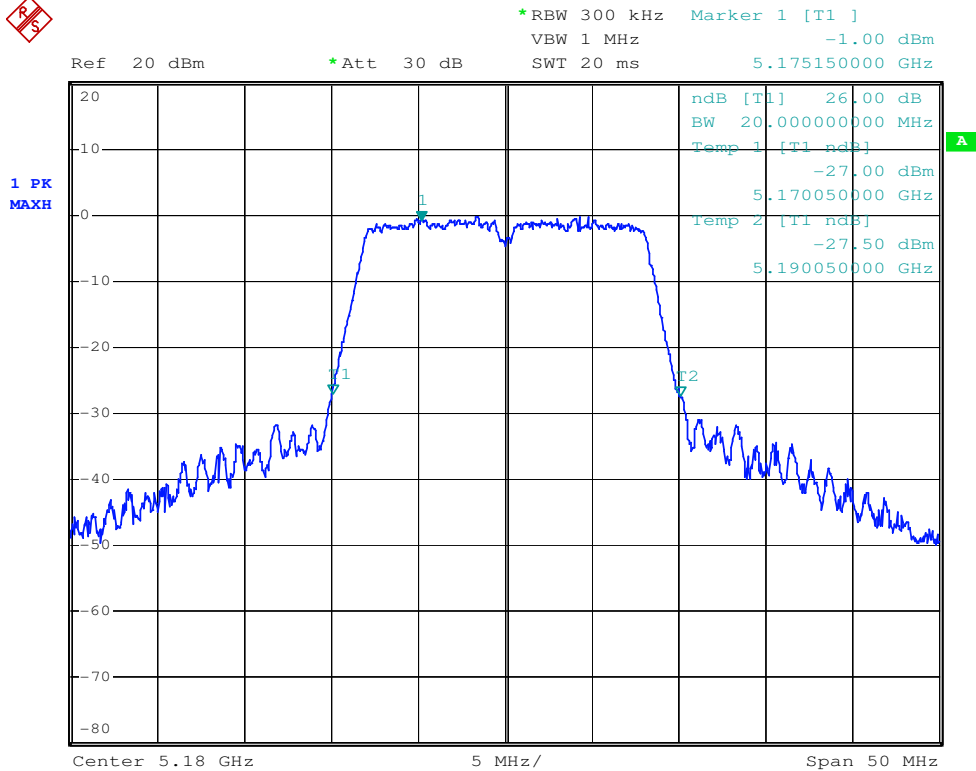
Operated in 5150MHz ~ 5250MHz and 5250MHz ~ 5350MHz

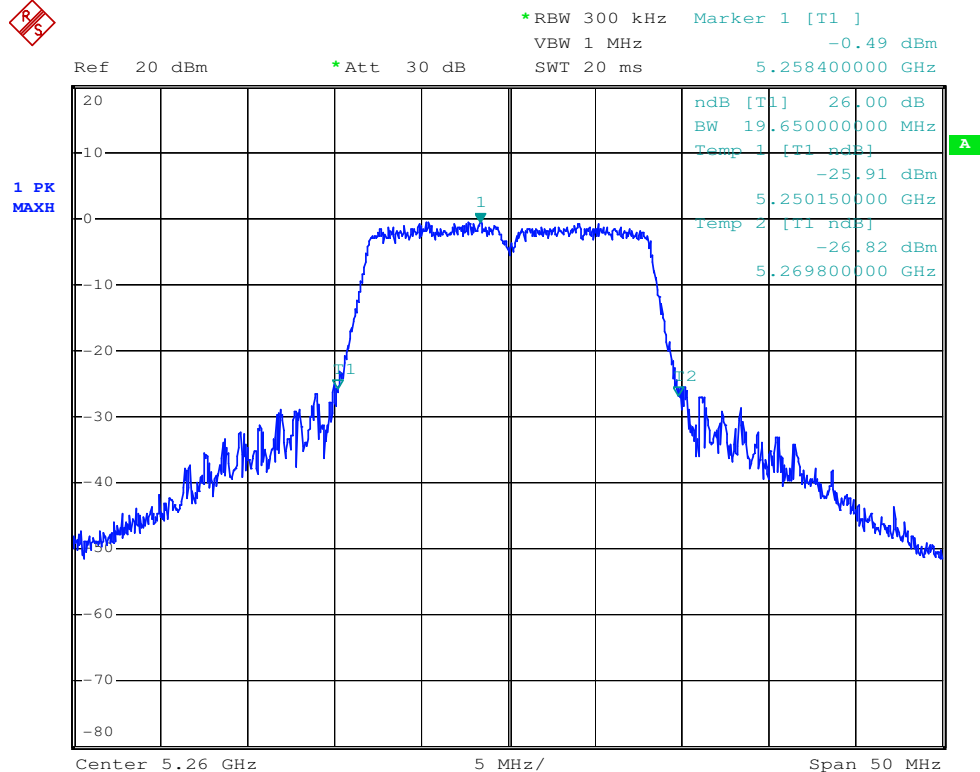
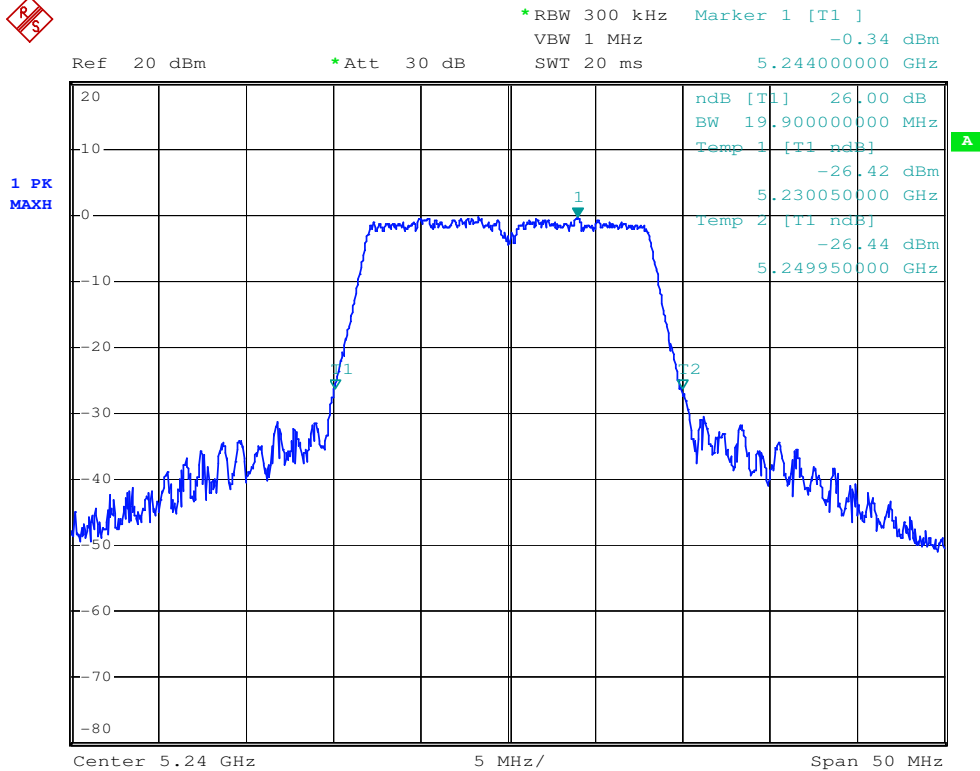
The test was performed with 802.11a, the data was shown the worst case 802.11a 6.5Mbps.

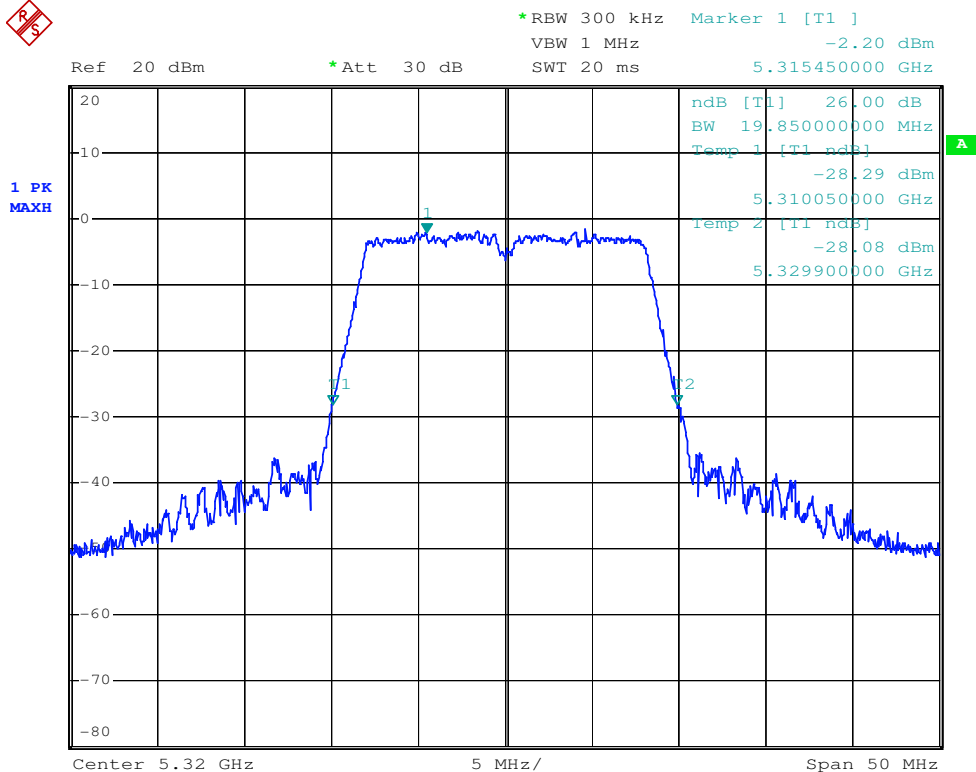
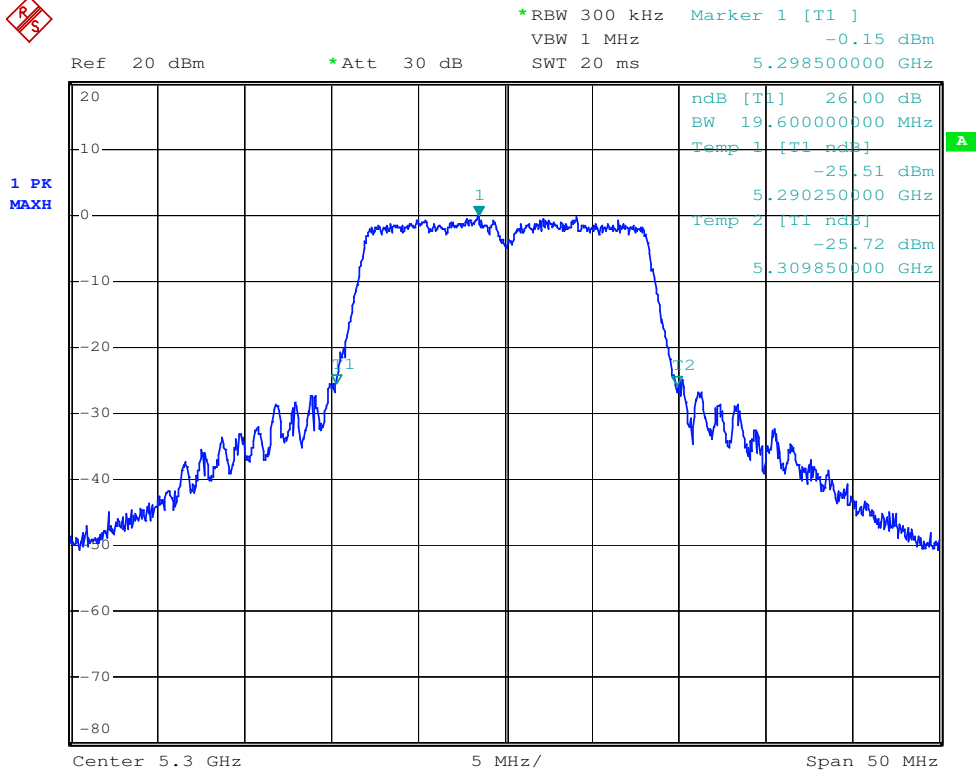
Peak Power Output Data Plot 802.11a 6.5Mbps (Chain 100)

26dB Bandwidth

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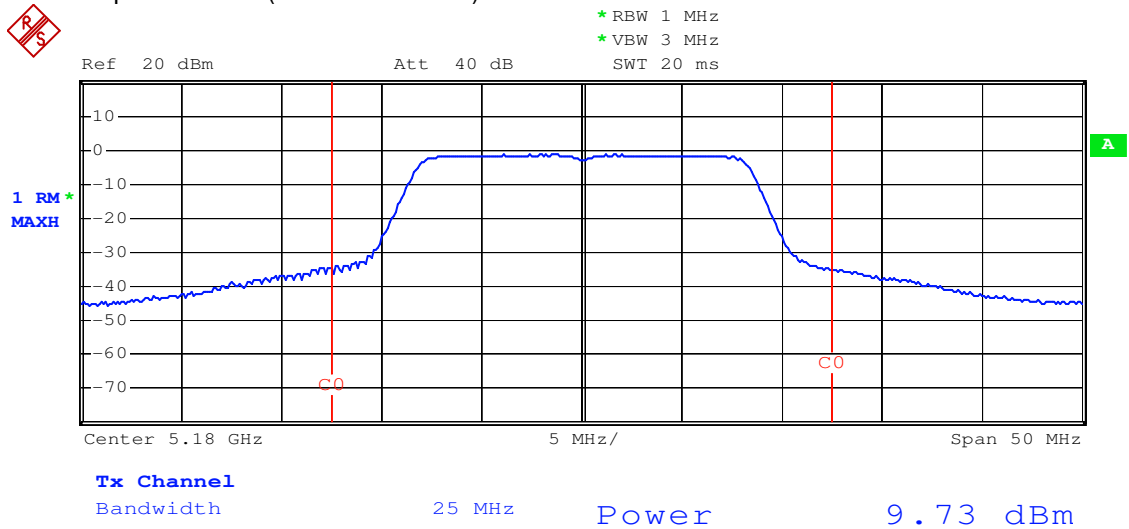




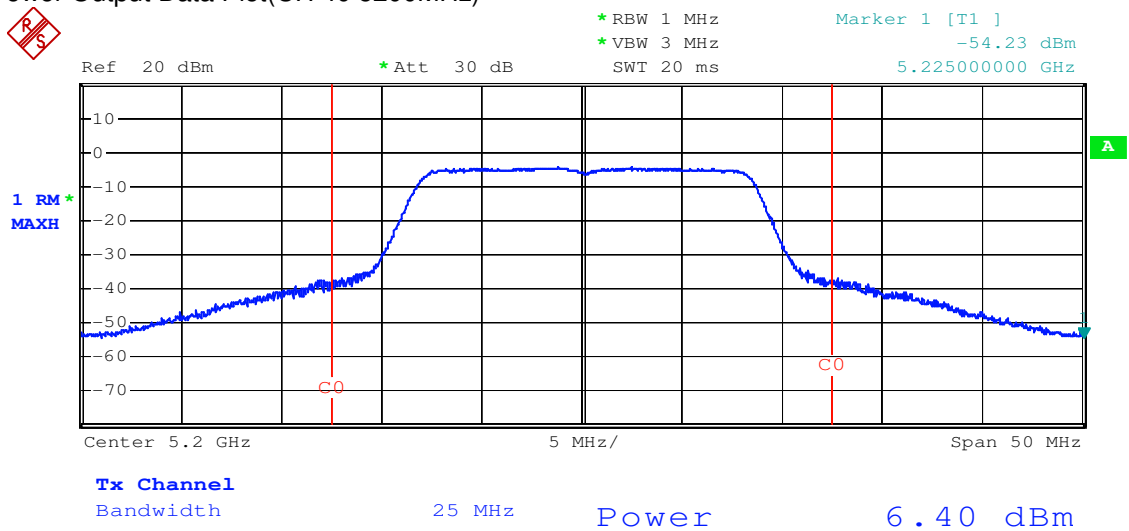




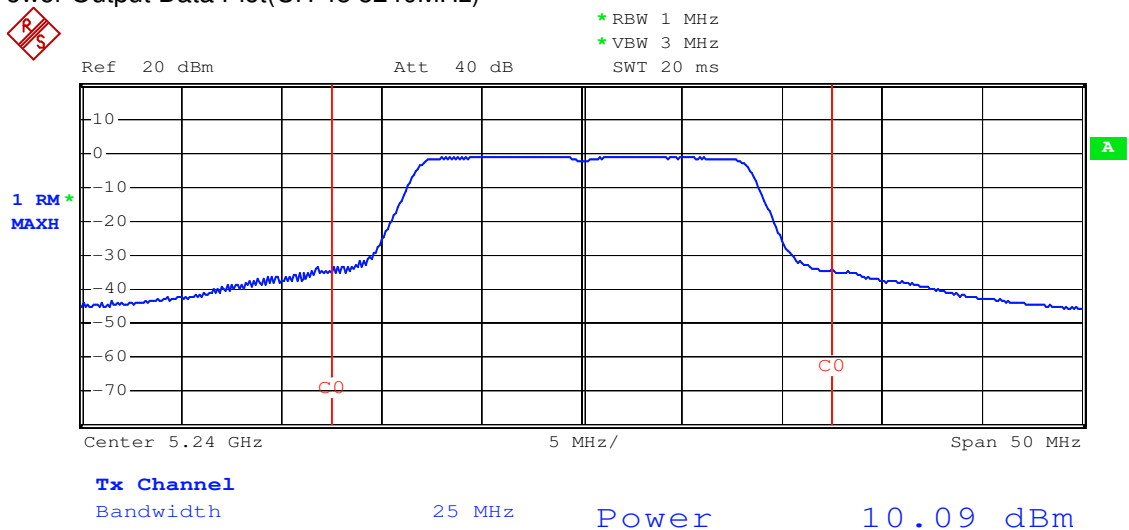
Peak Power Output Data Plot(CH 36 5180MHz)



Peak Power Output Data Plot(CH 40 5200MHz)

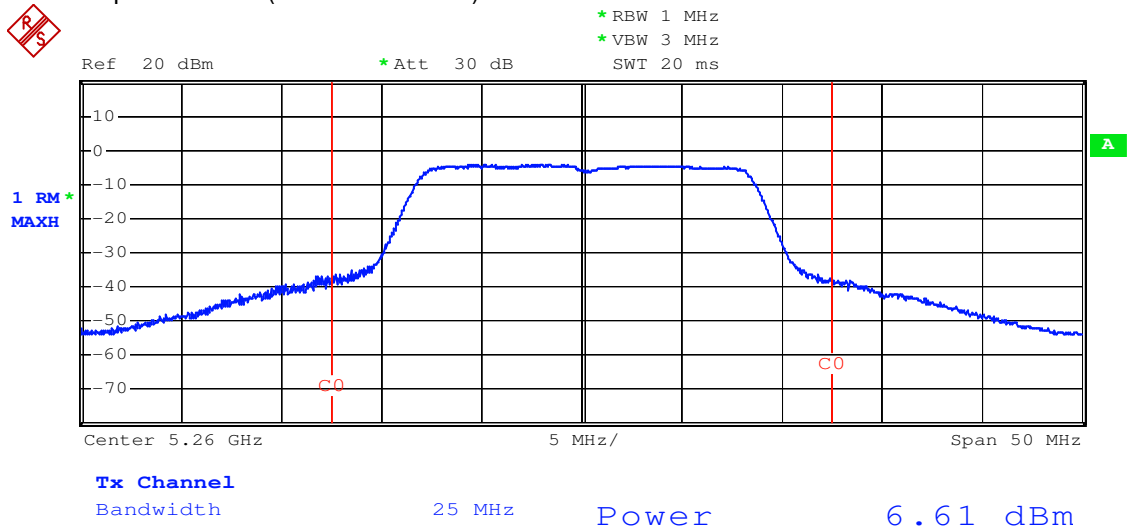


Peak Power Output Data Plot(CH 48 5240MHz)

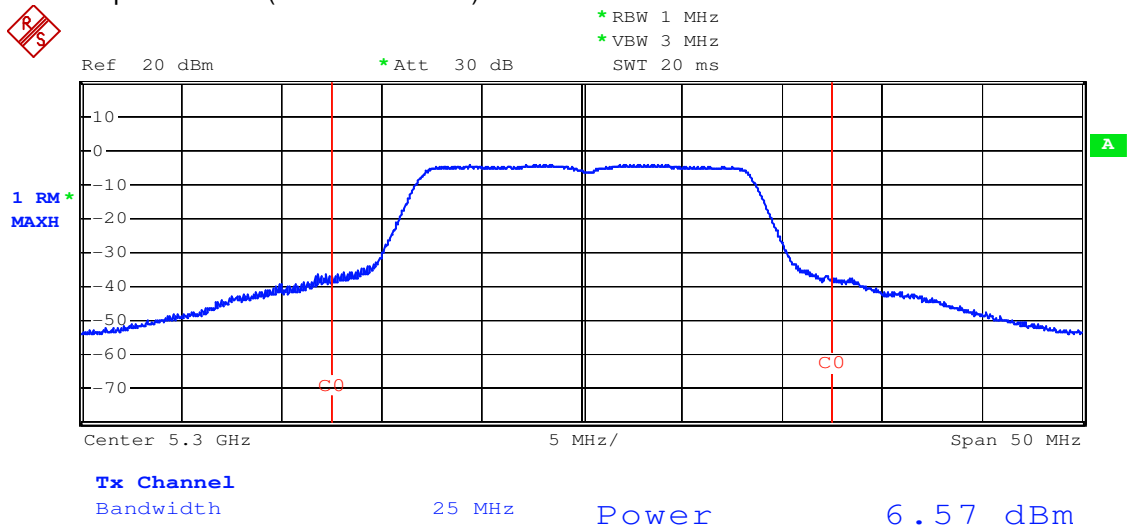




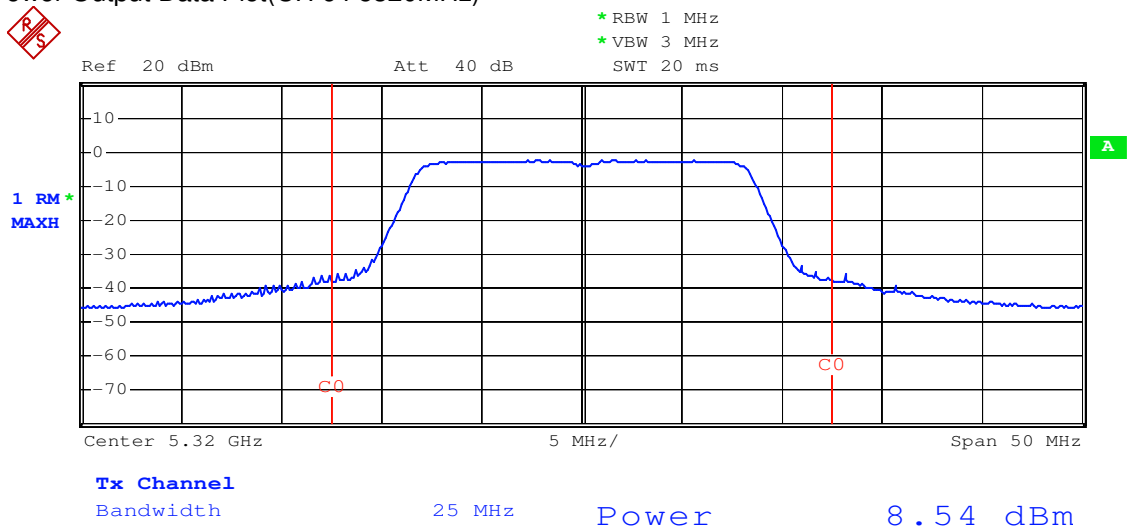
Peak Power Output Data Plot(CH 52 5260MHz)



Peak Power Output Data Plot(CH 60 5300MHz)



Peak Power Output Data Plot(CH 64 5320MHz)

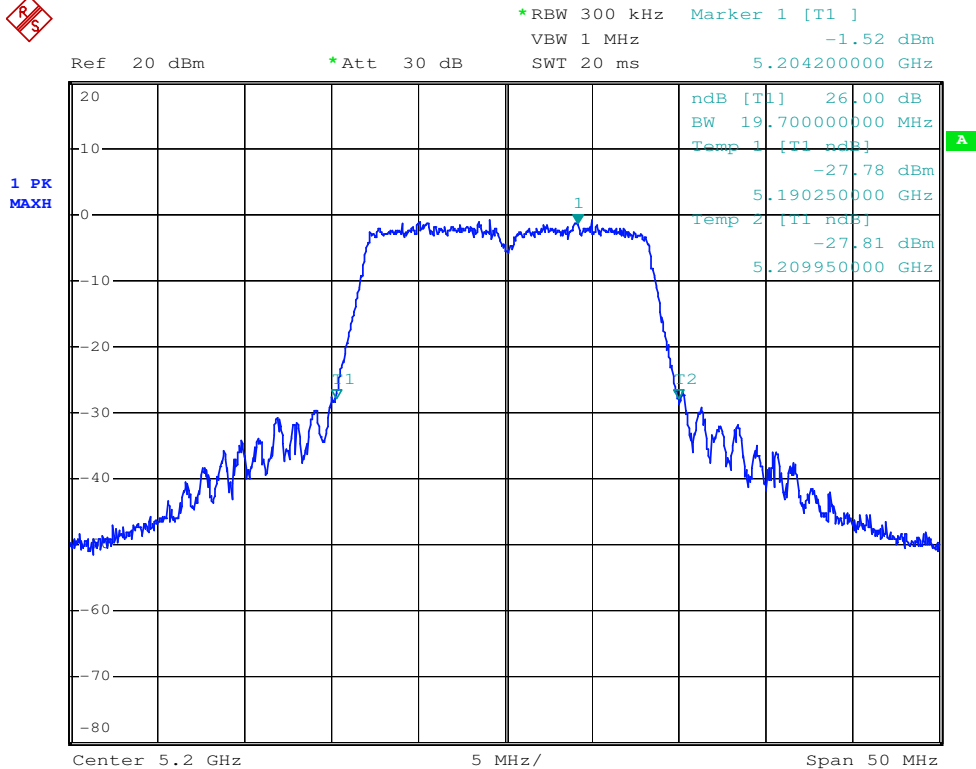
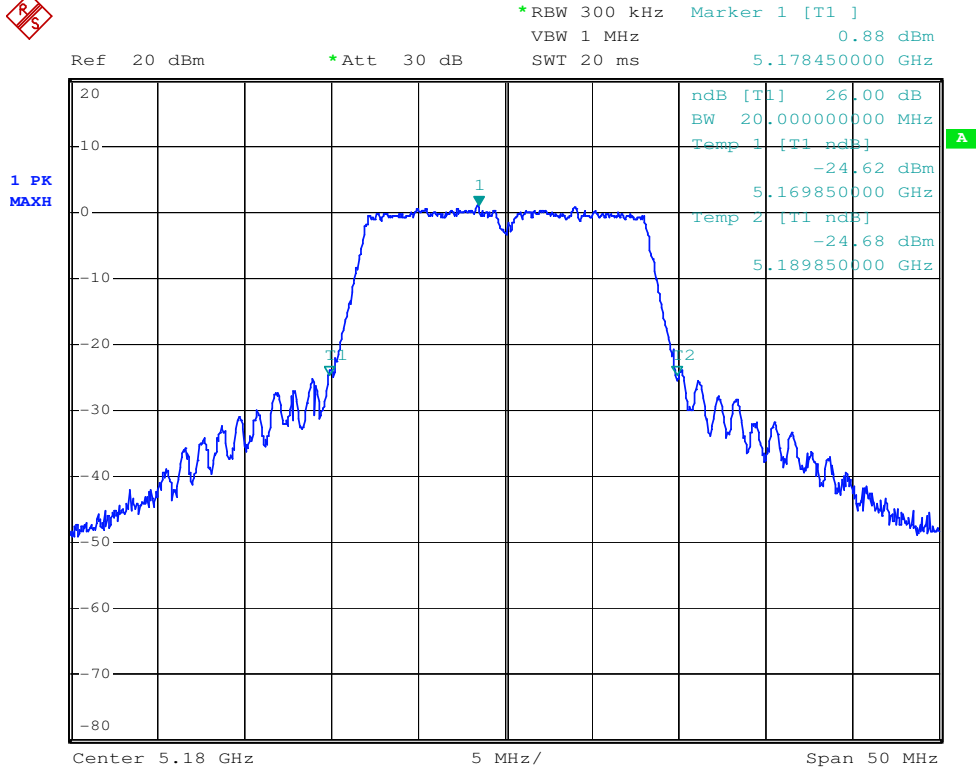


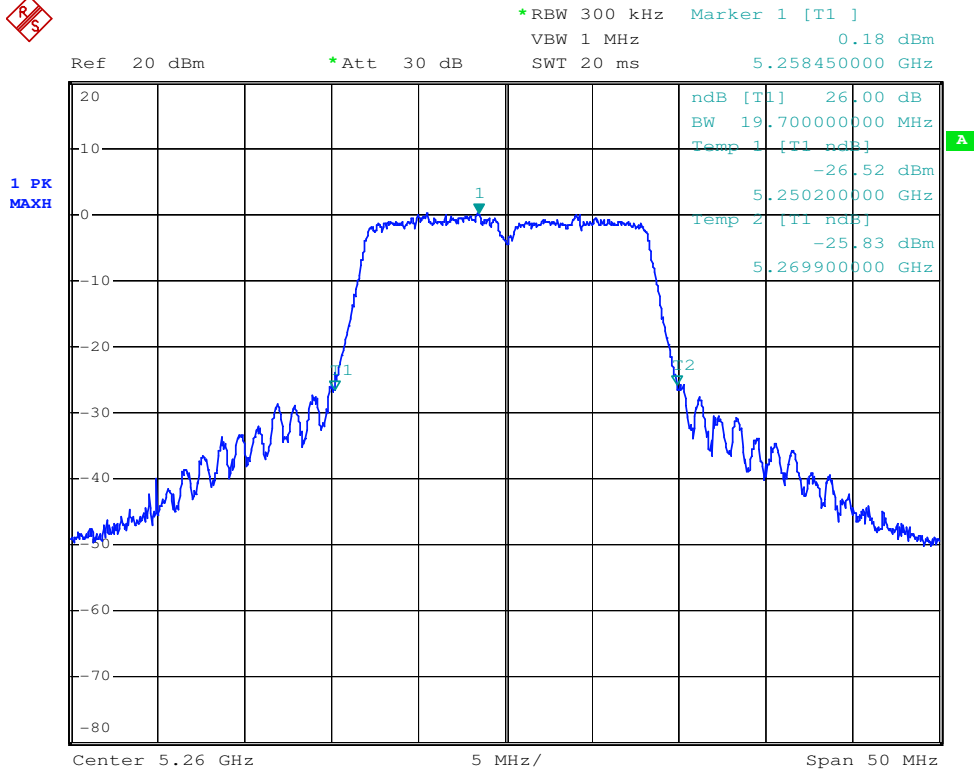
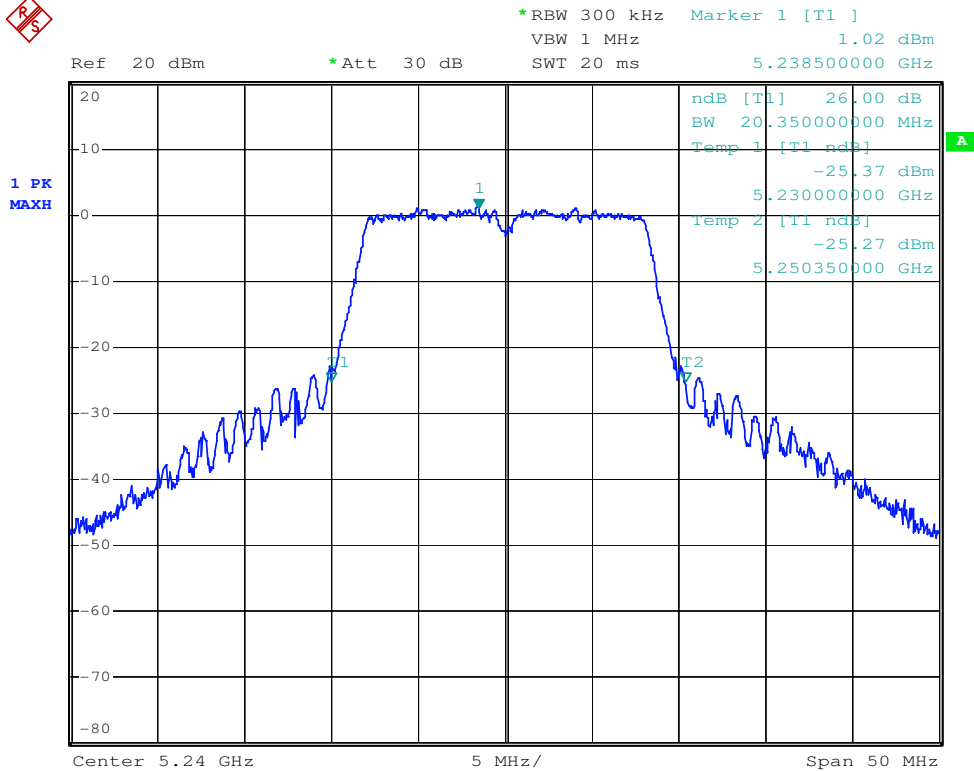
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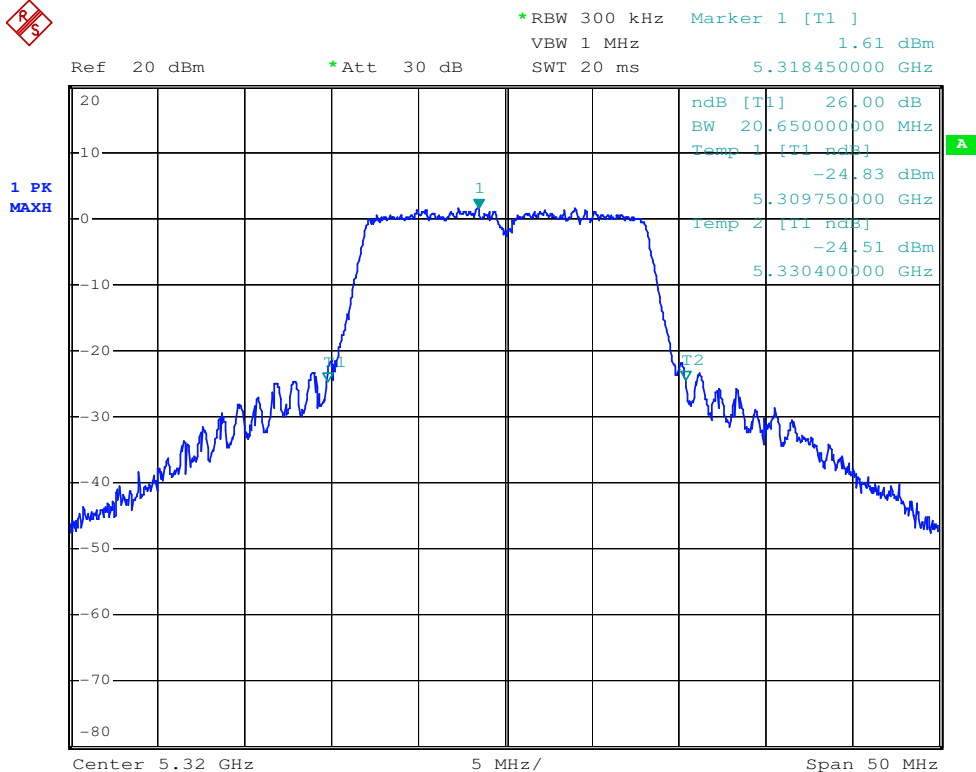
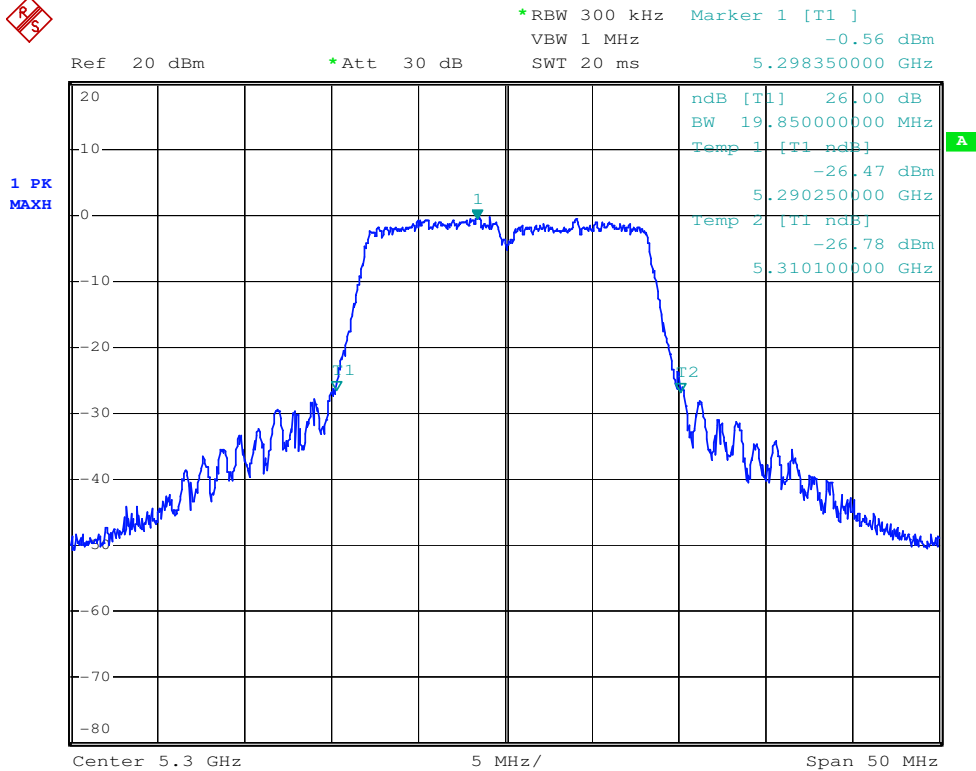


Peak Power Output Data Plot 802.11a 6.5Mbps (Chain 010)

26dB Bandwidth

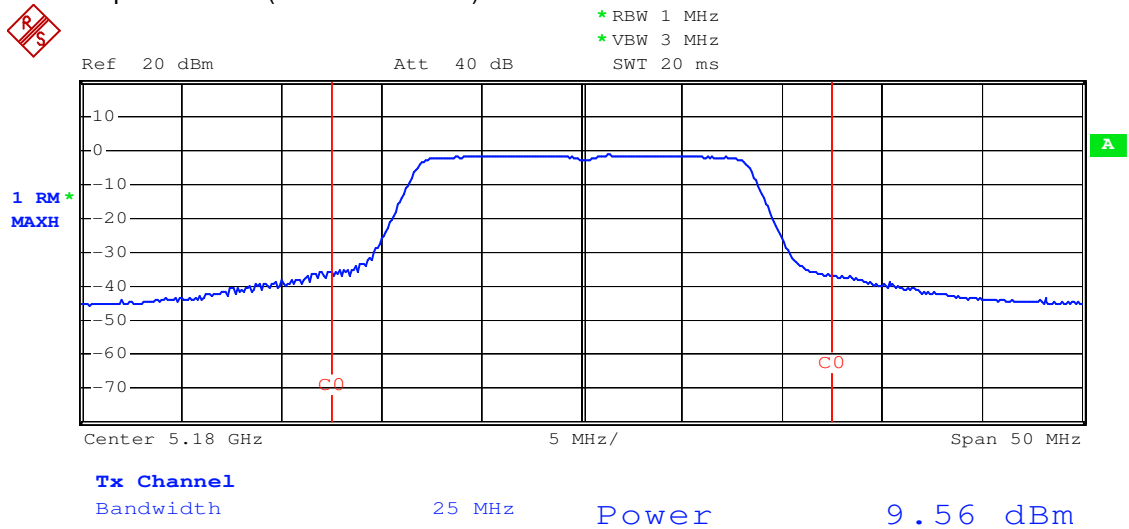




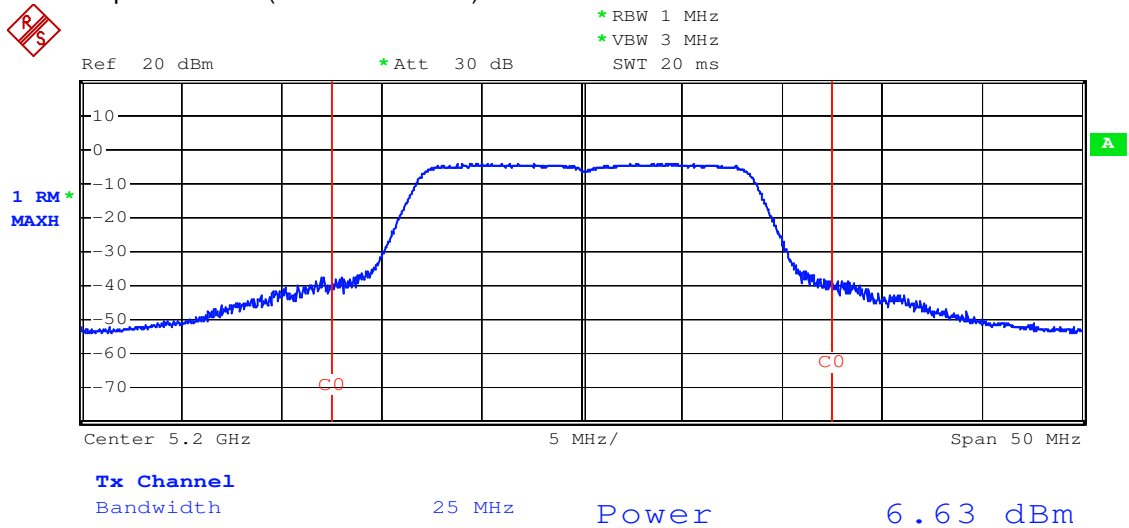




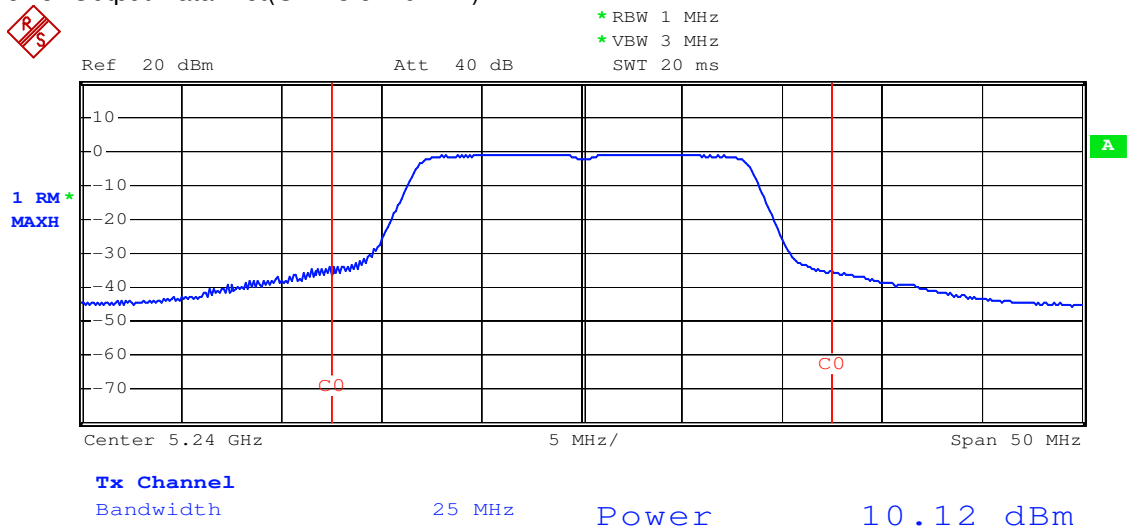
Peak Power Output Data Plot(CH 36 5180MHz)



Peak Power Output Data Plot(CH 40 5200MHz)

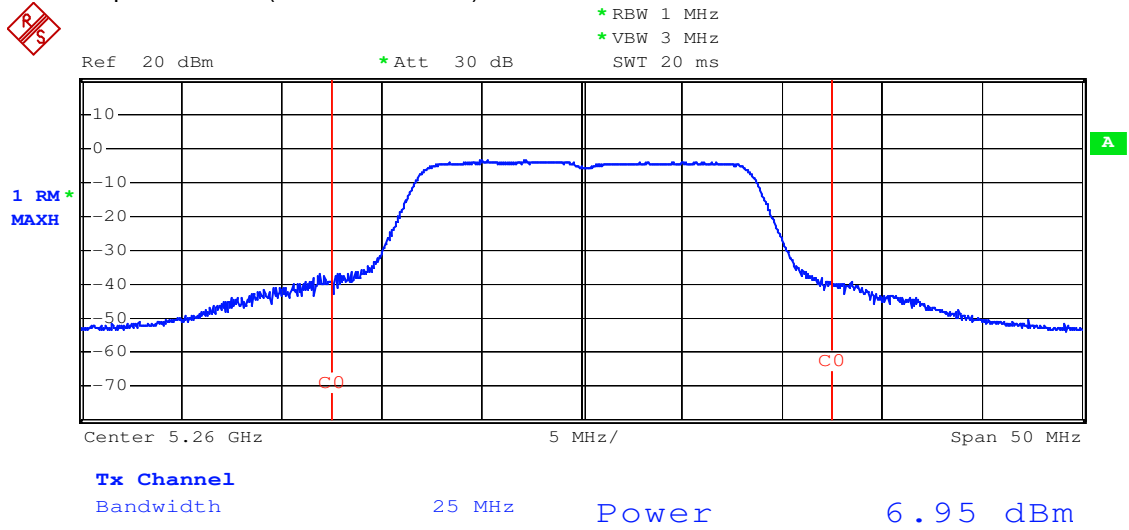


Peak Power Output Data Plot(CH 48 5240MHz)

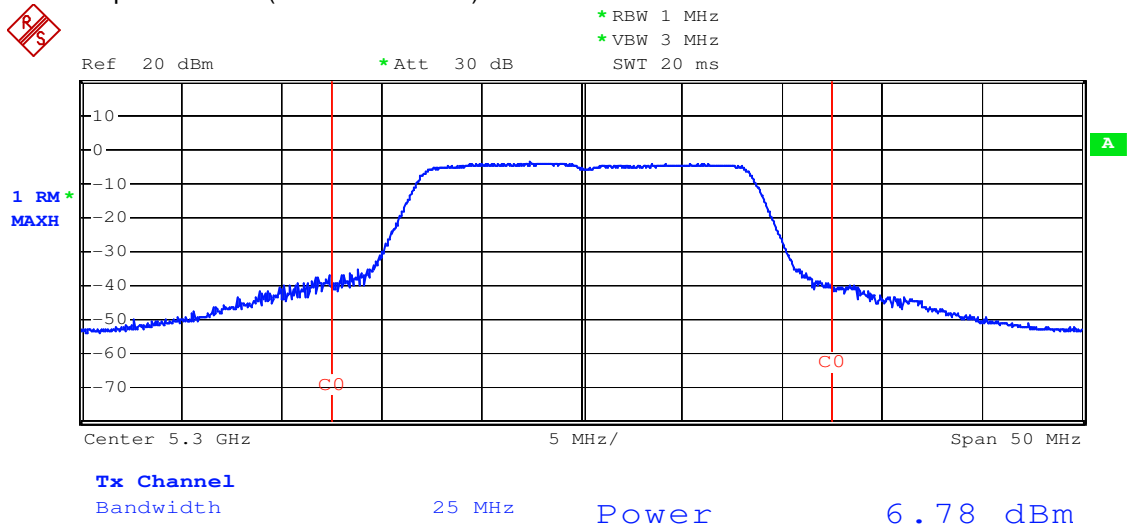




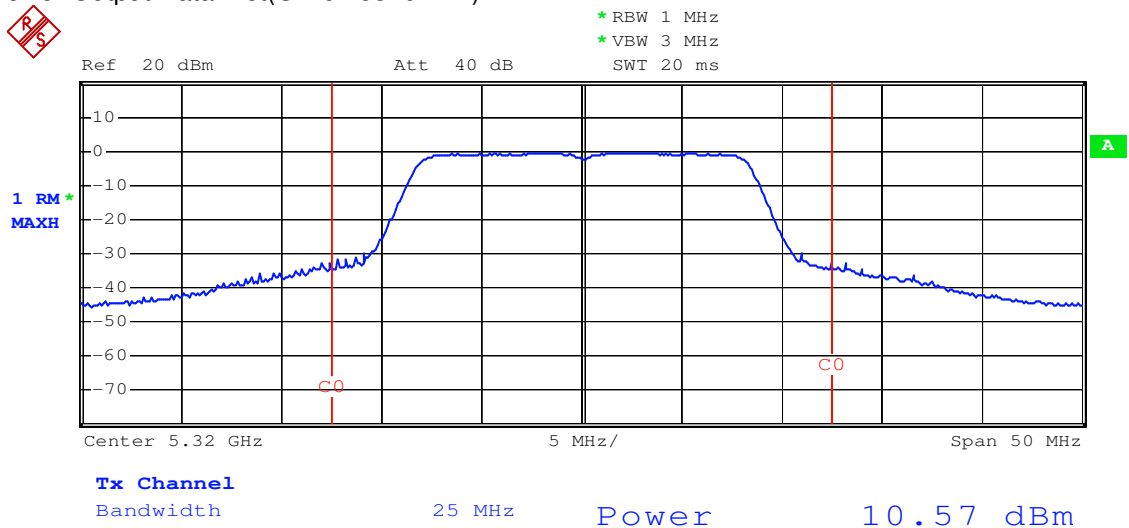
Peak Power Output Data Plot(CH 52 5260MHz)



Peak Power Output Data Plot(CH 60 5300MHz)



Peak Power Output Data Plot(CH 64 5320MHz)

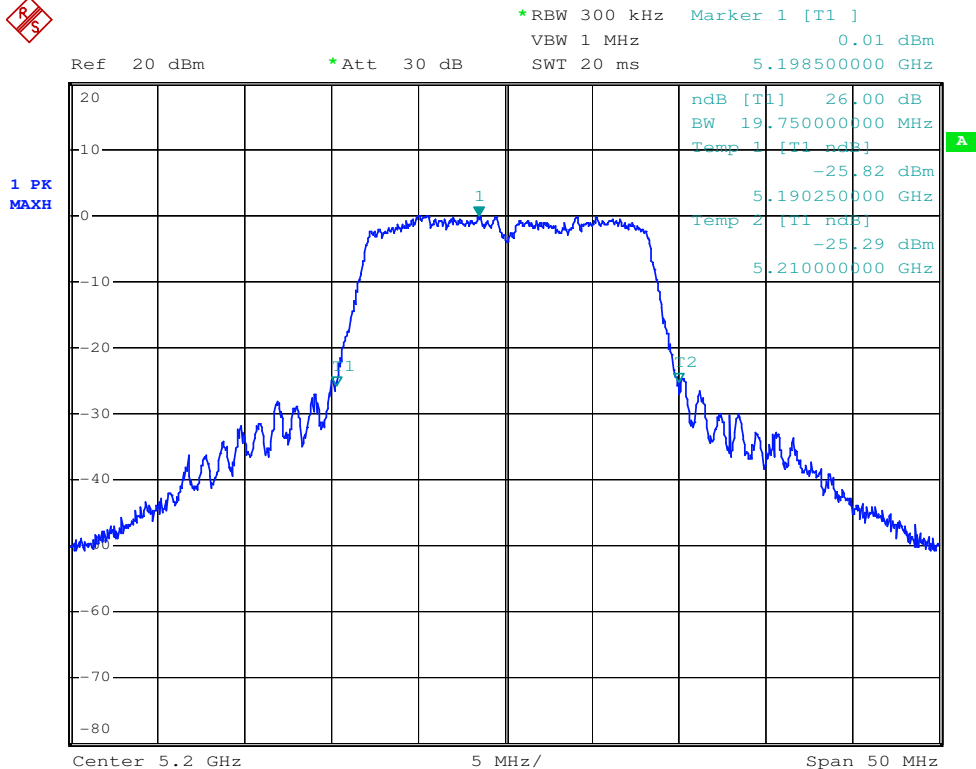
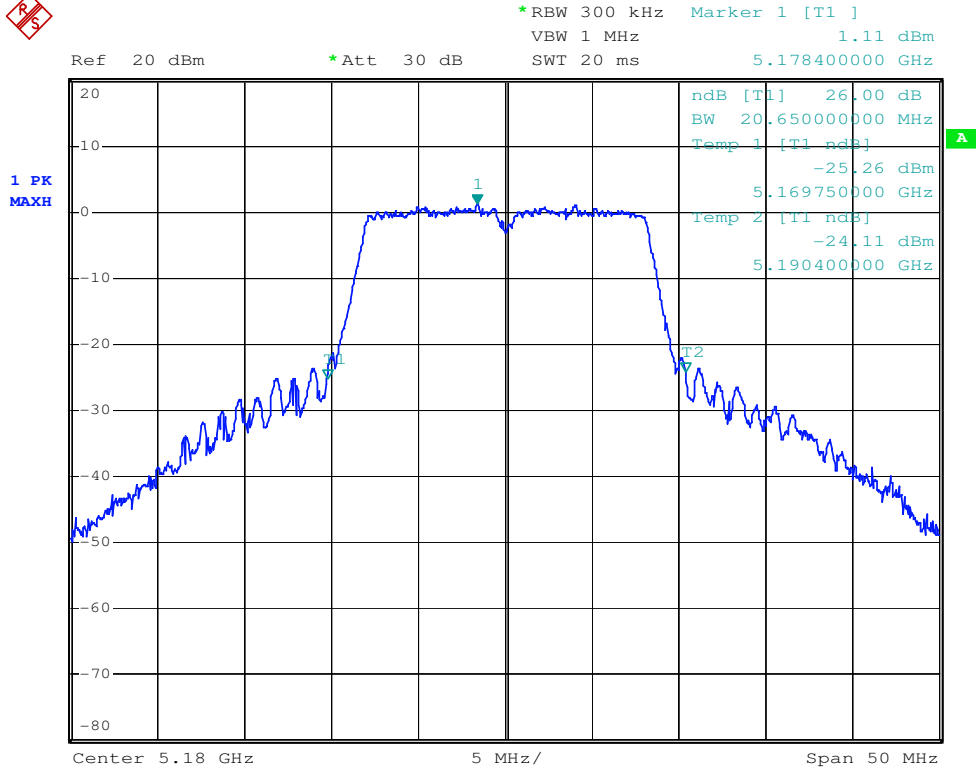


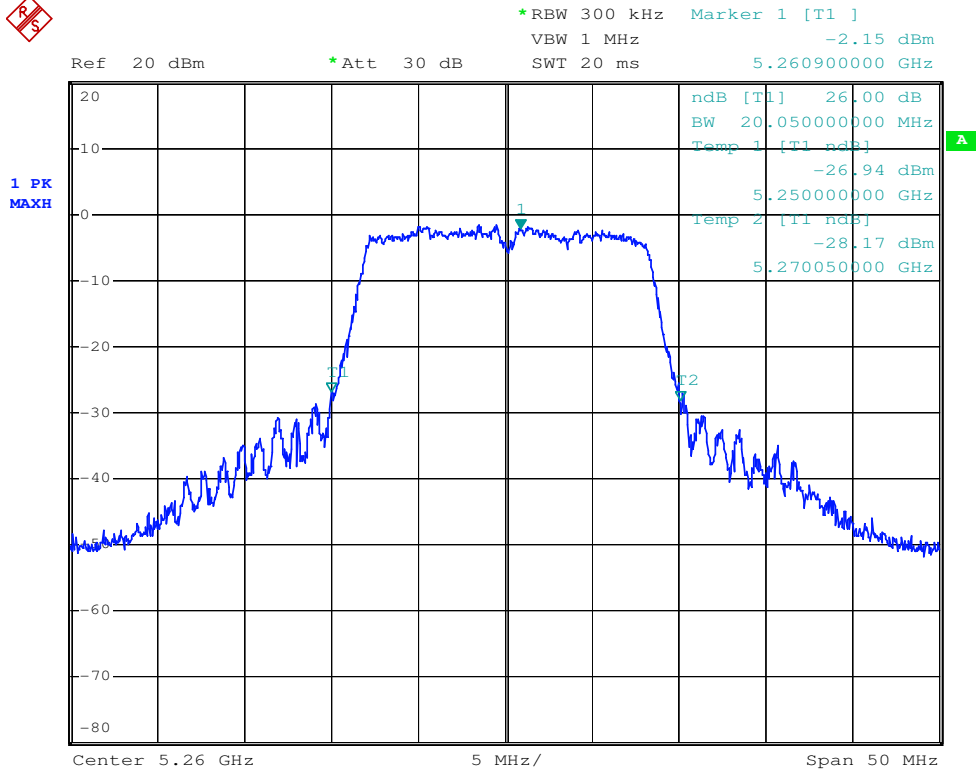
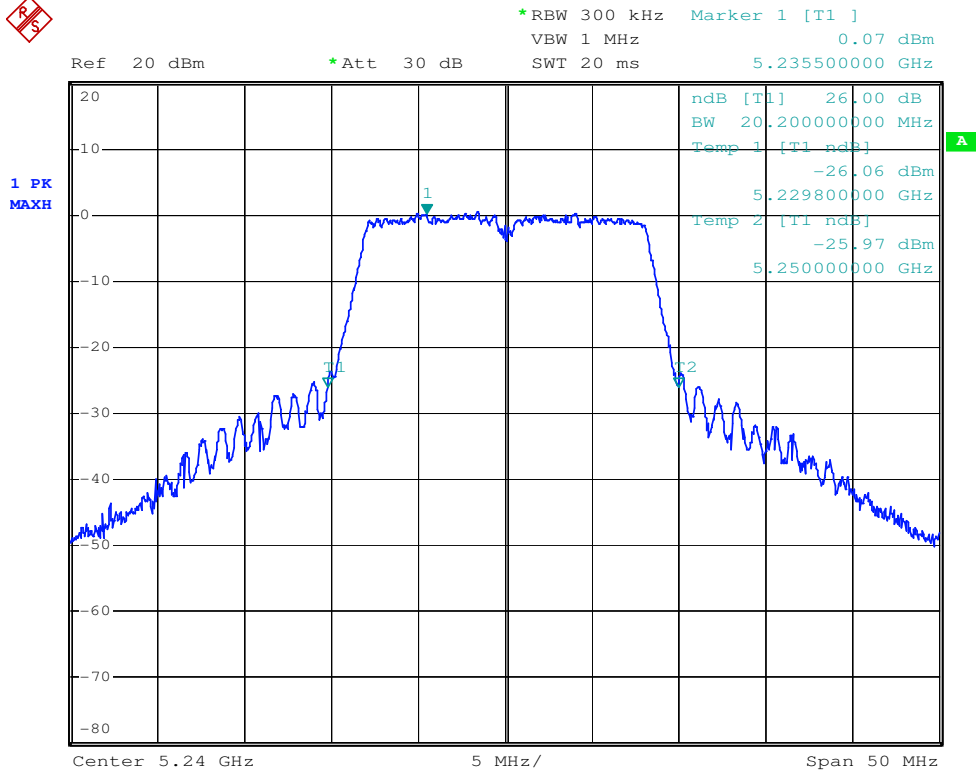
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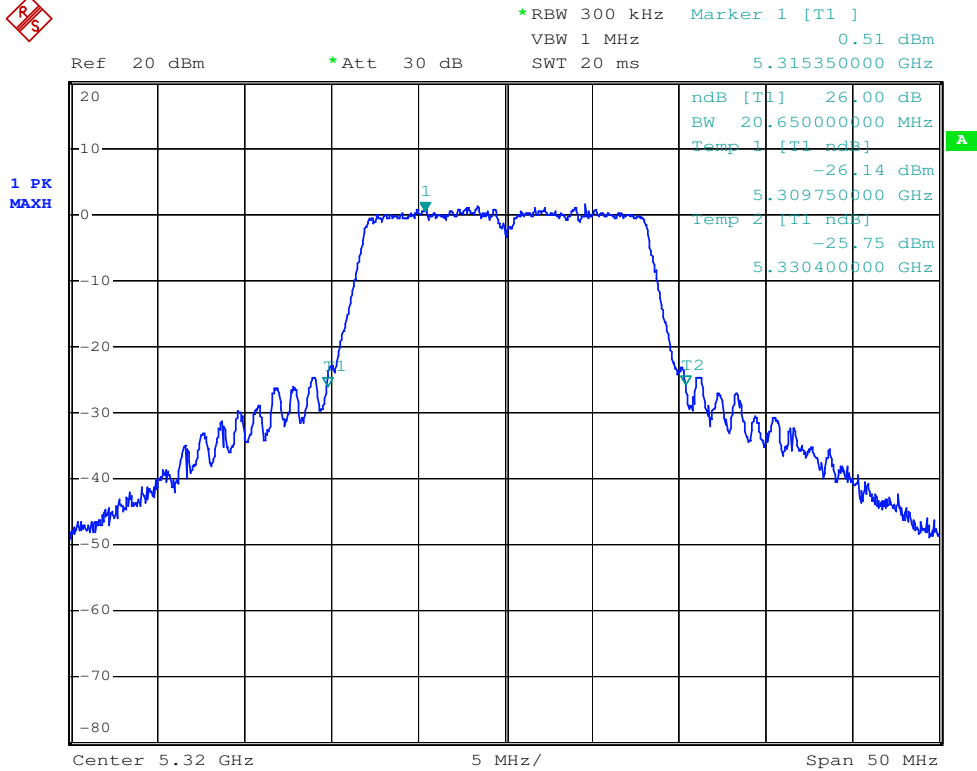
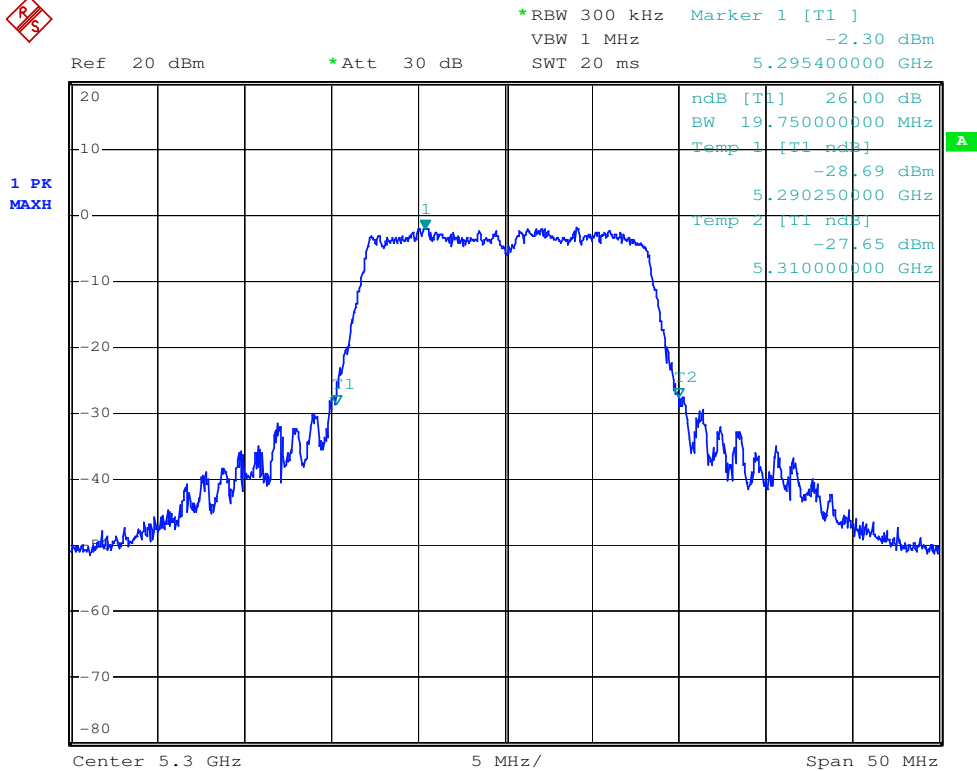


Peak Power Output Data Plot 802.11a 6.5Mbps (Chain 001)

26dB Bandwidth

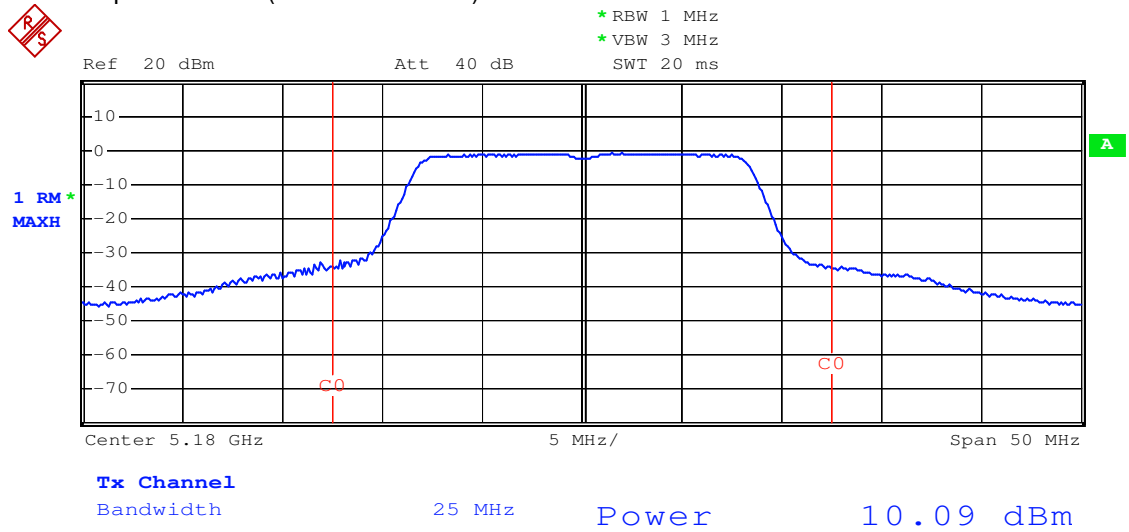




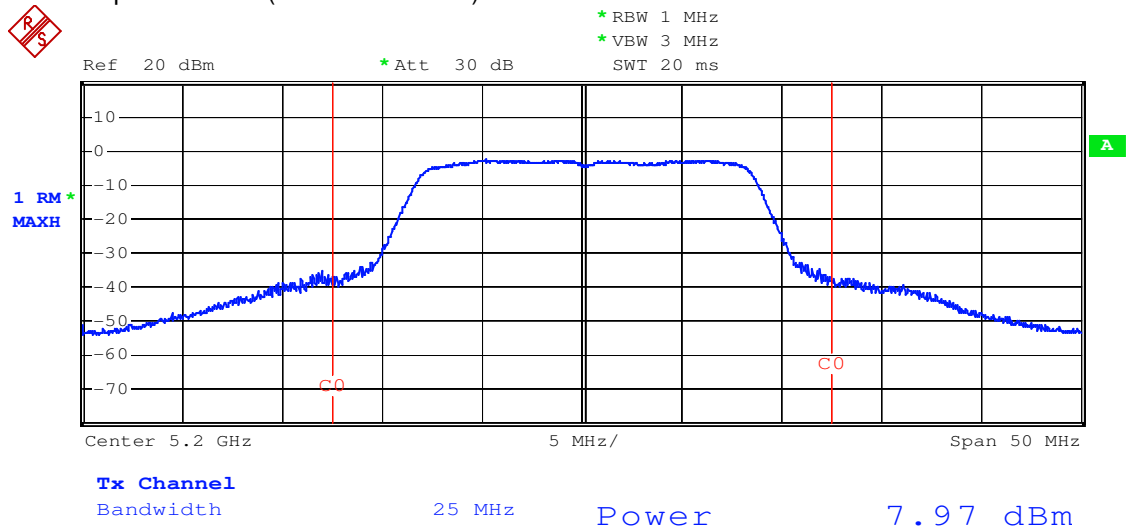




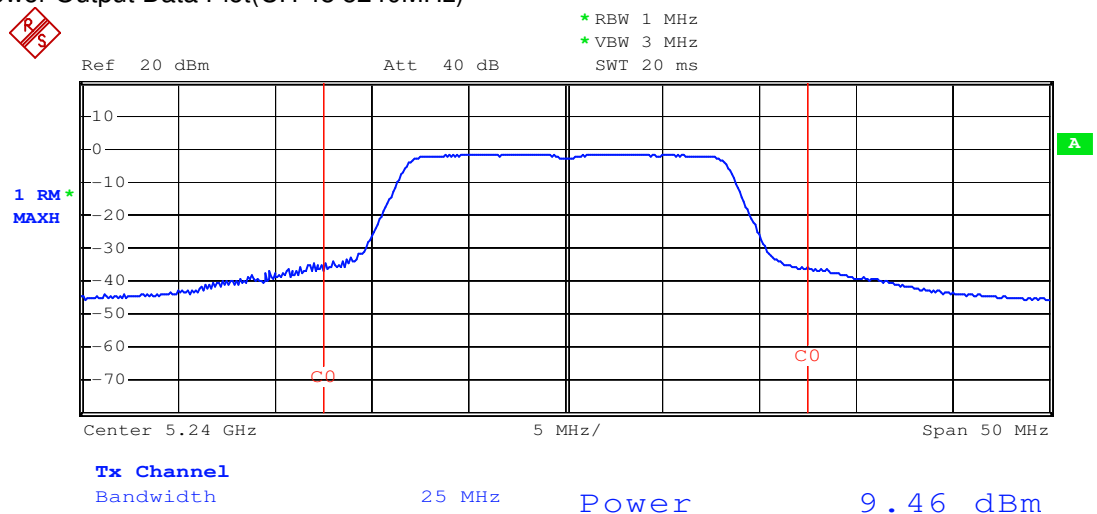
Peak Power Output Data Plot(CH 36 5180MHz)



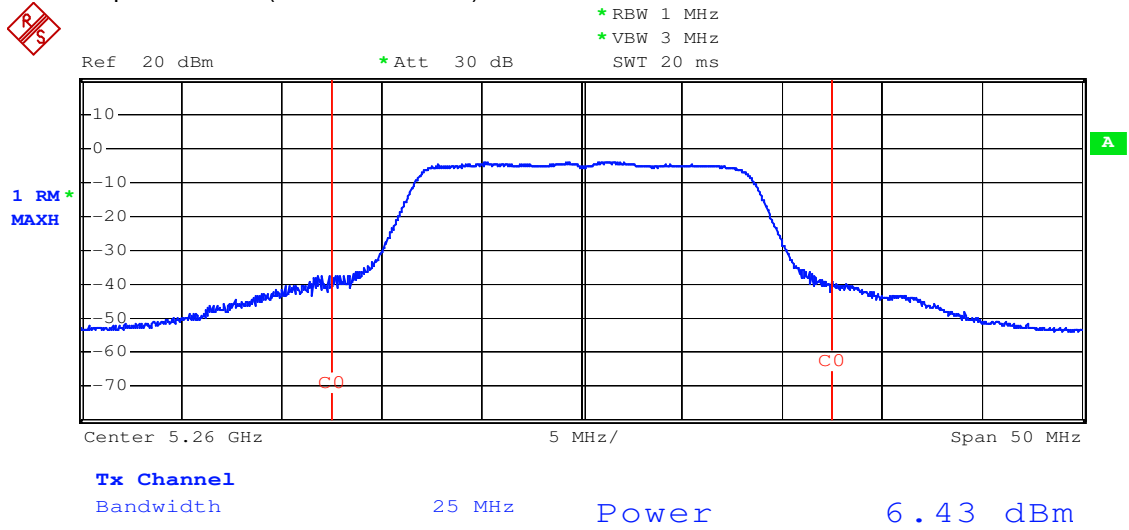
Peak Power Output Data Plot(CH 40 5200MHz)



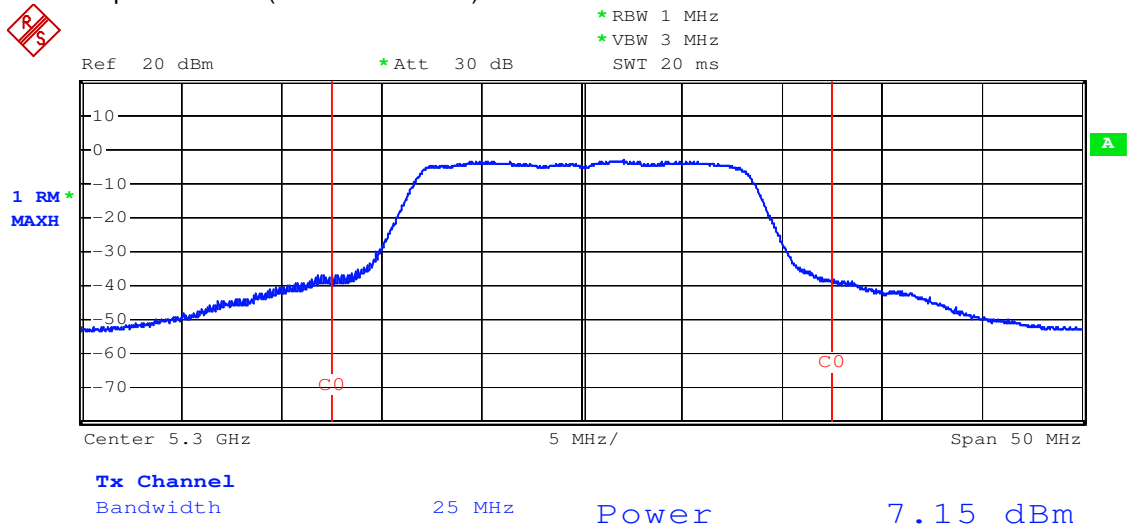
Peak Power Output Data Plot(CH 48 5240MHz)



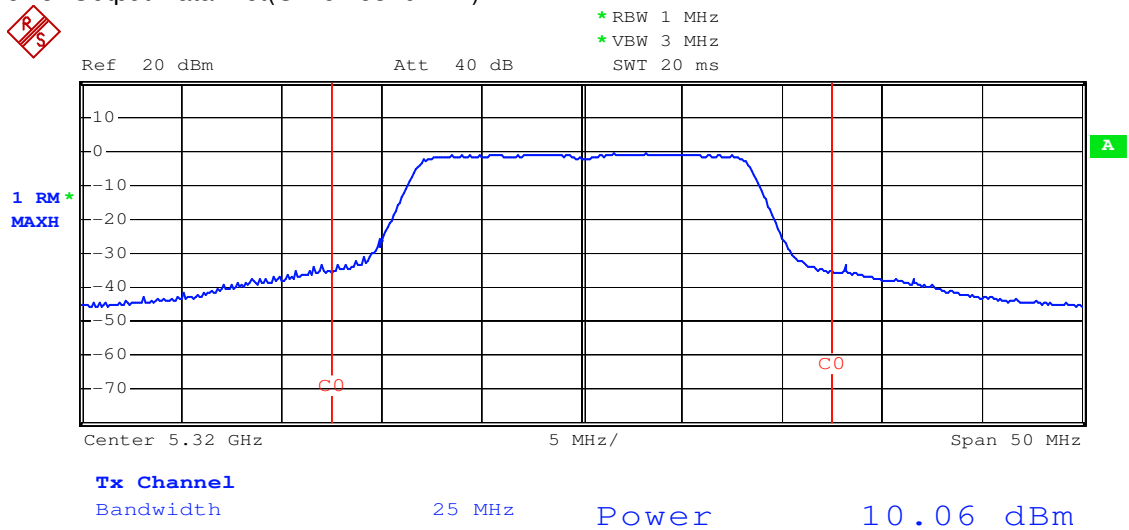
Peak Power Output Data Plot(CH 52 5260MHz)



Peak Power Output Data Plot(CH 60 5300MHz)



Peak Power Output Data Plot(CH 64 5320MHz)

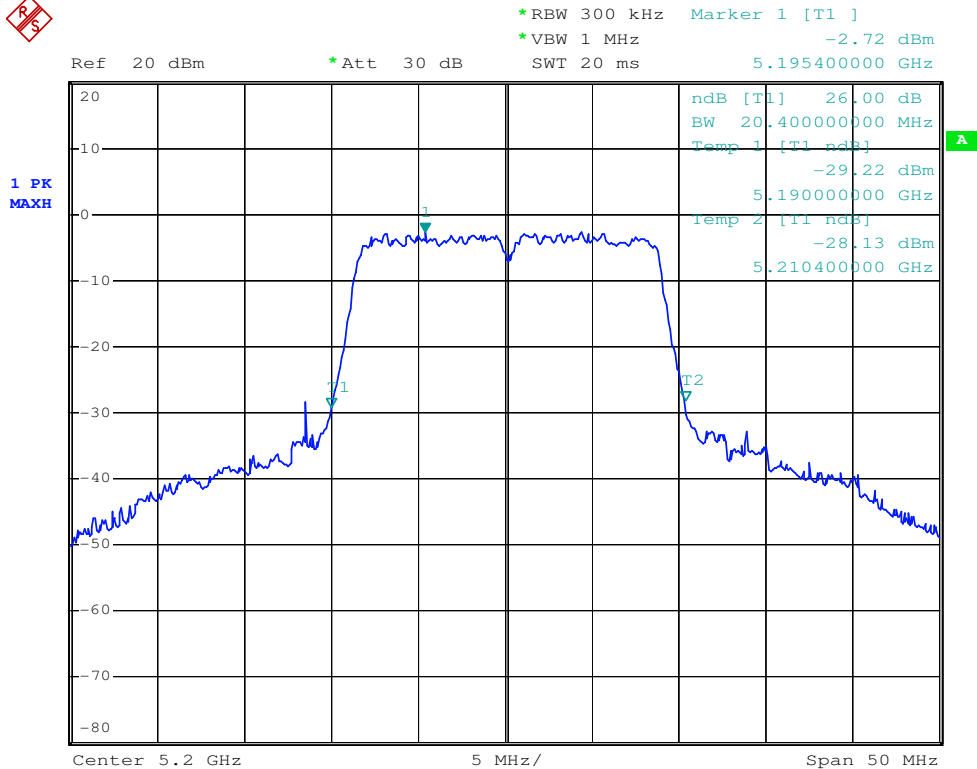
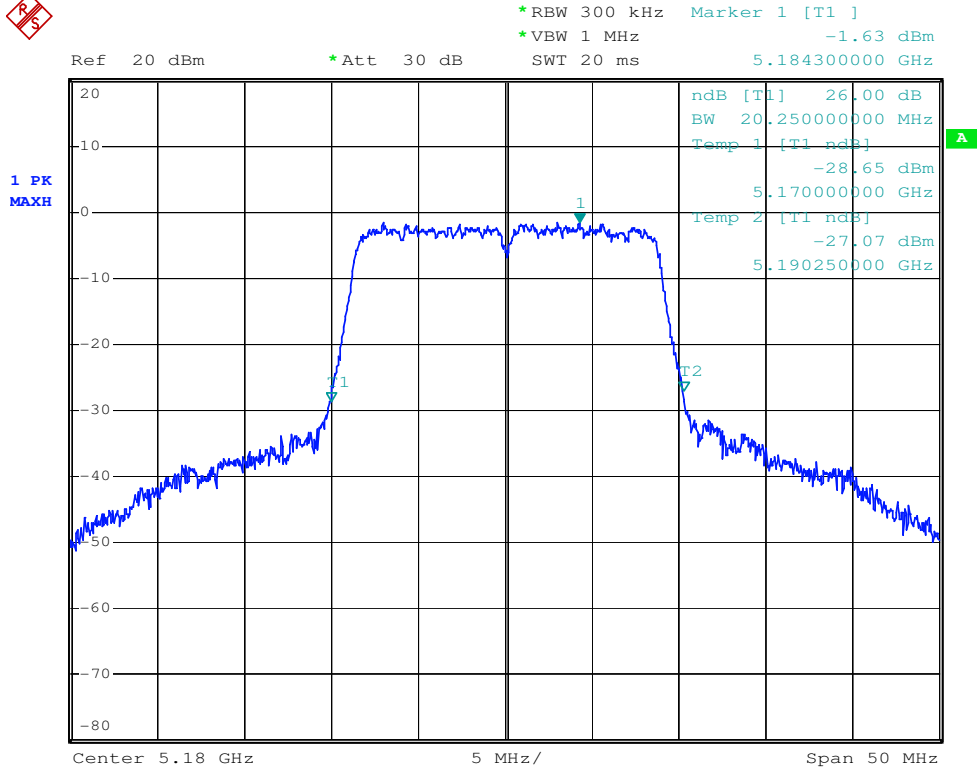


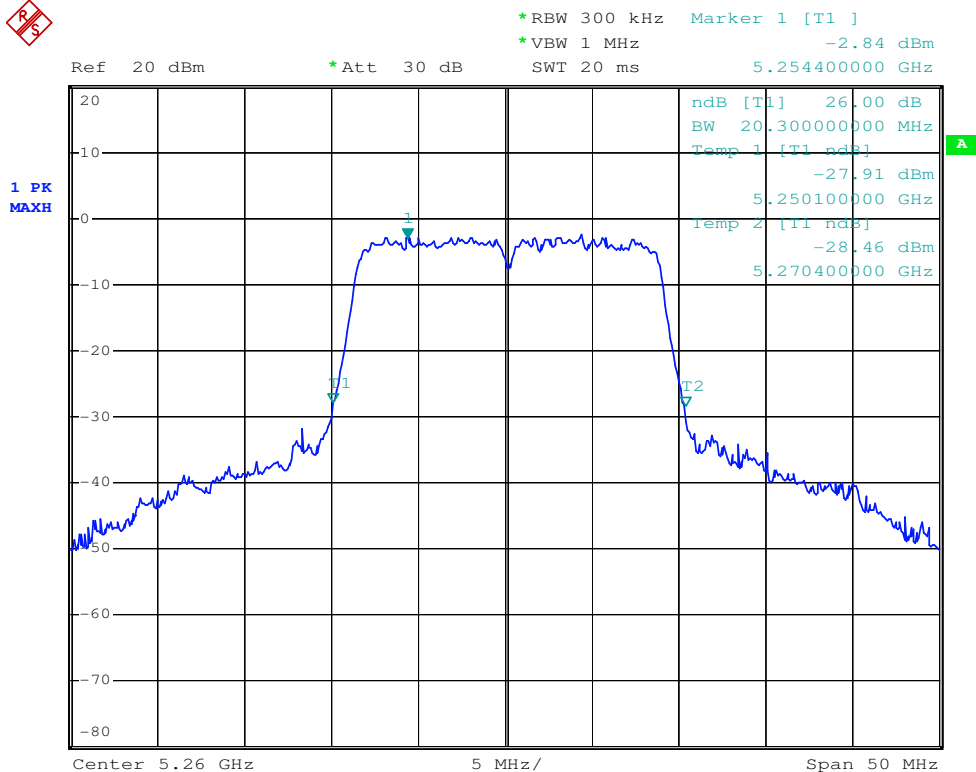
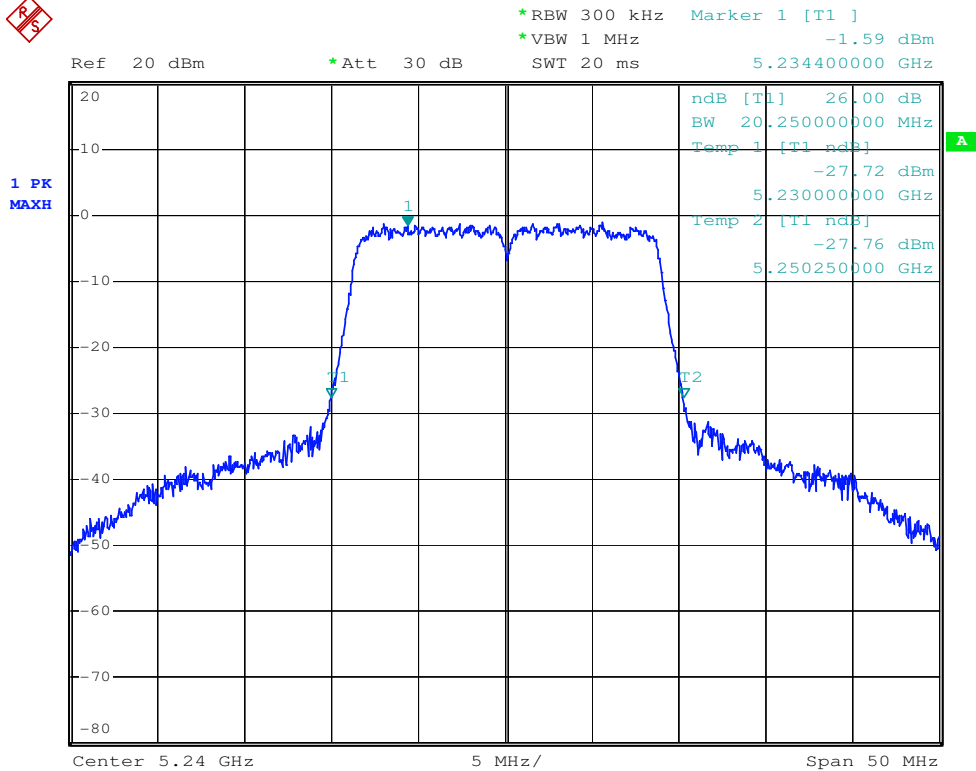
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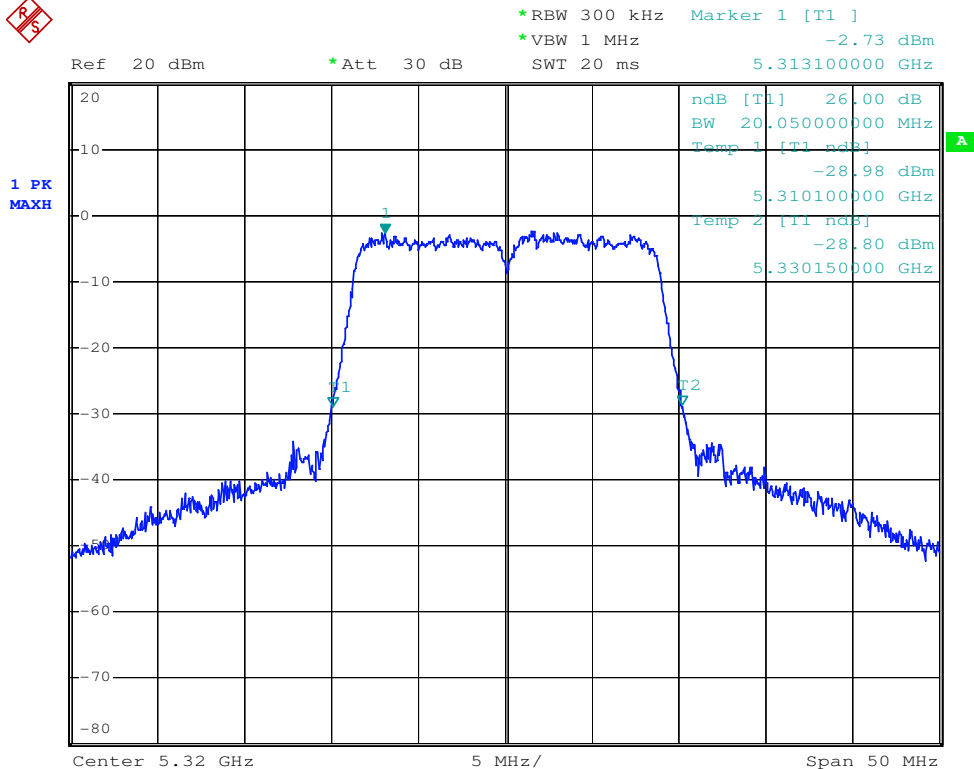
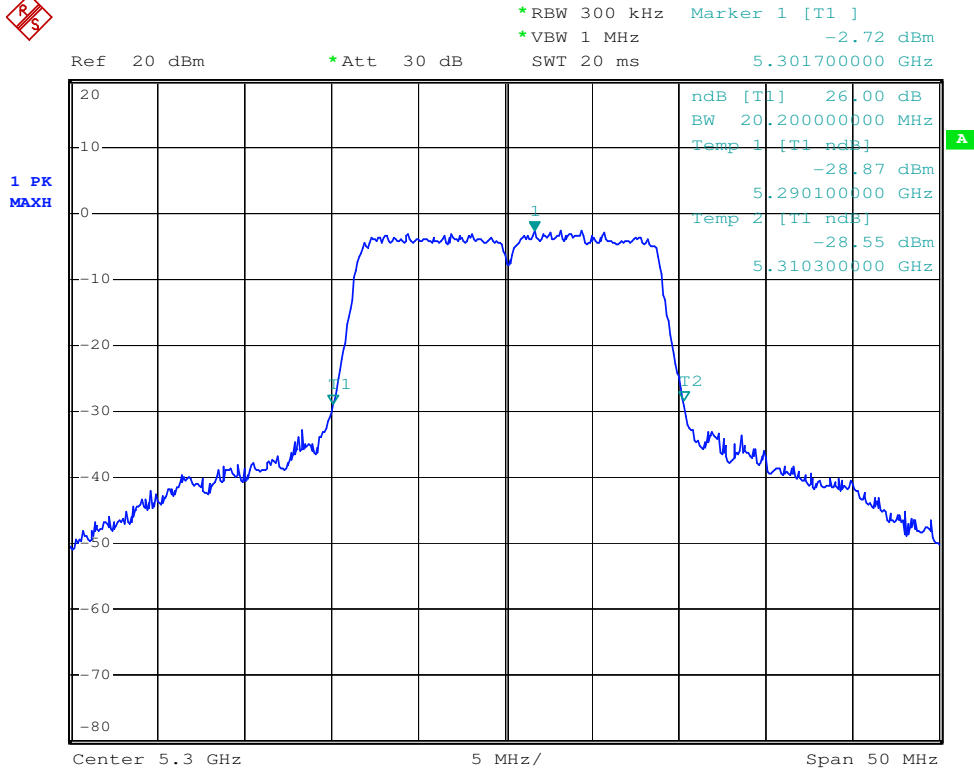


Peak Power Output Data Plot 802.11n(20MHz BW) 6.5Mbps (Chain 100)

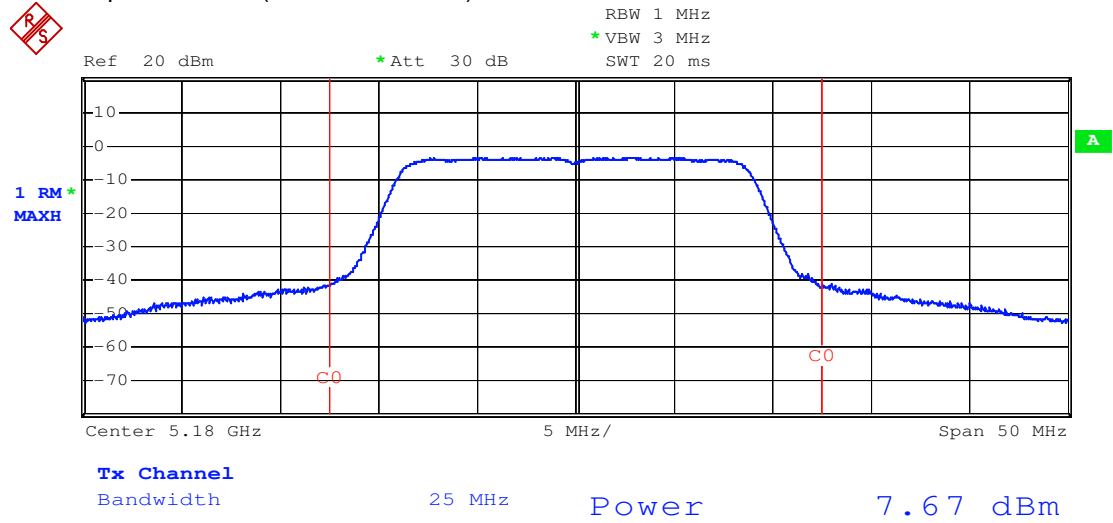
26dB Bandwidth



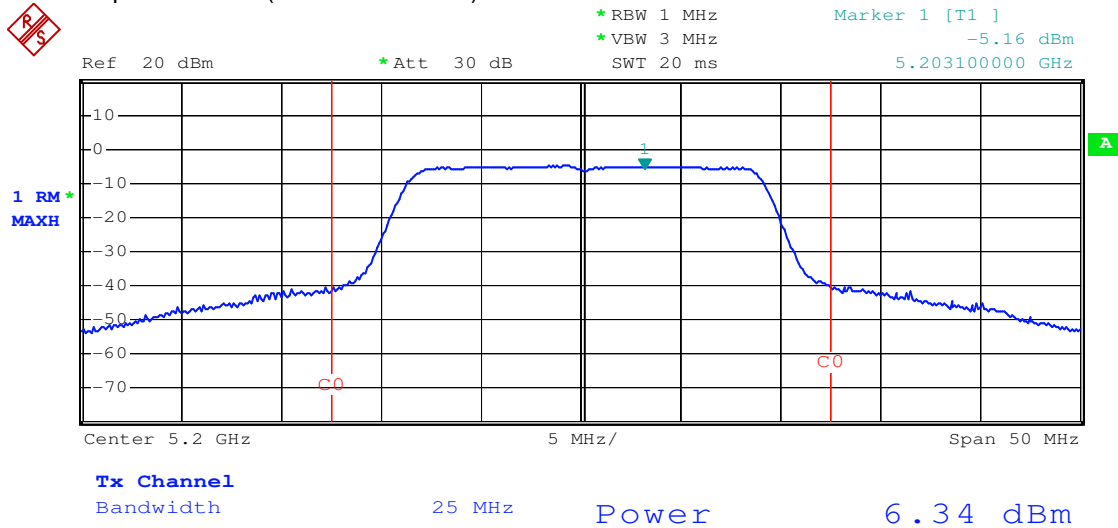




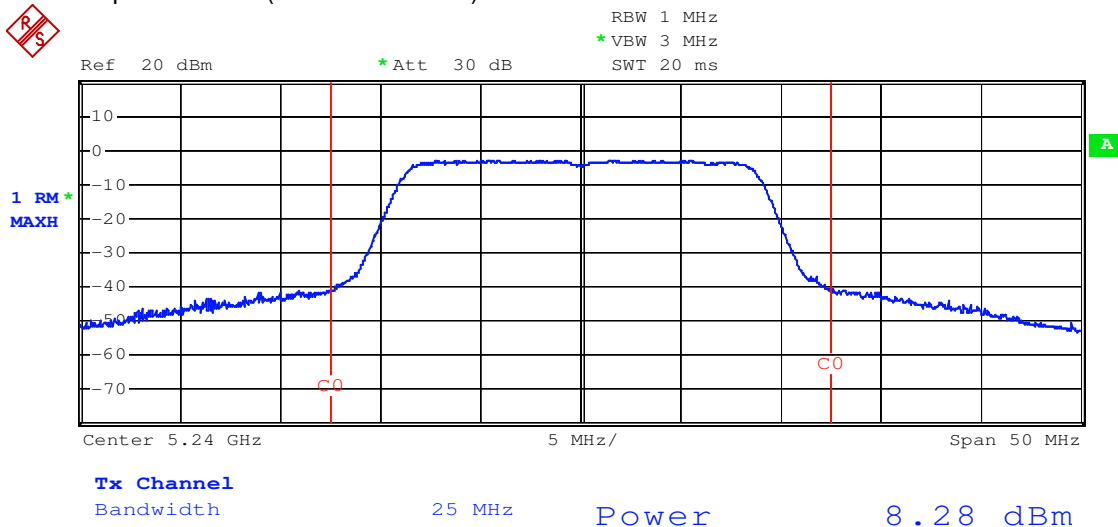
Peak Power Output Data Plot(CH 36 5180MHz)



Peak Power Output Data Plot(CH 40 5200MHz)

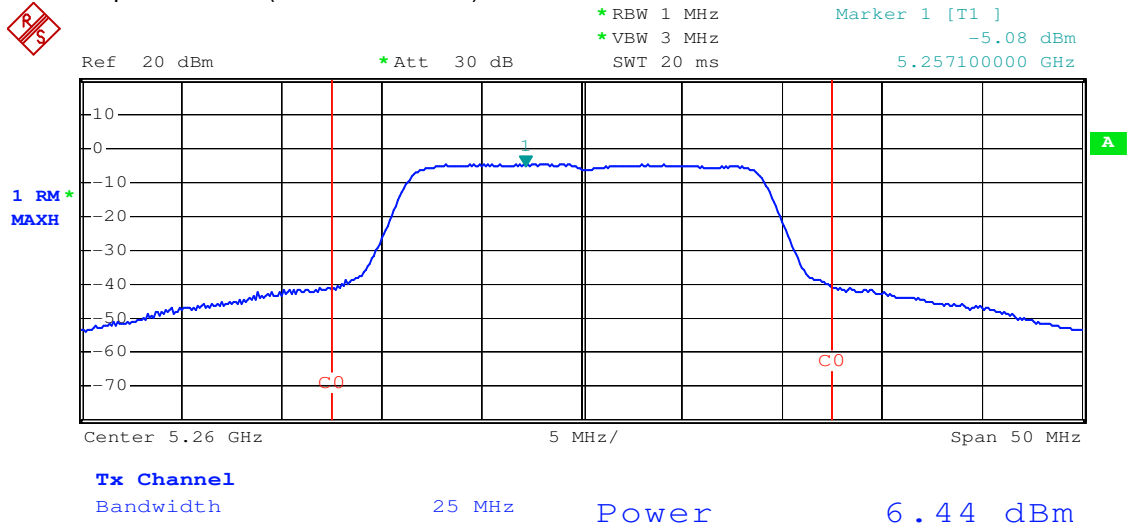


Peak Power Output Data Plot(CH 48 5240MHz)

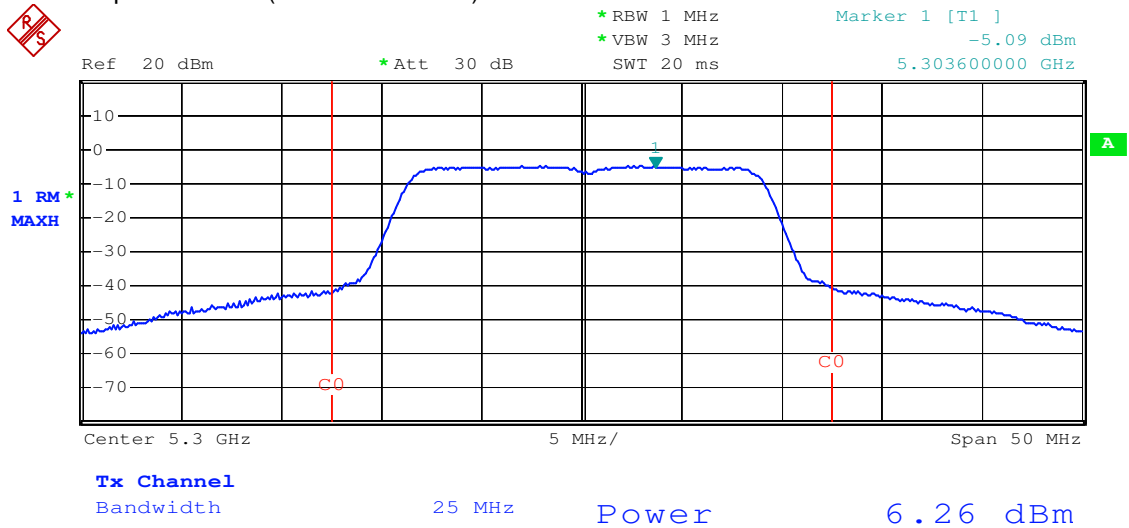




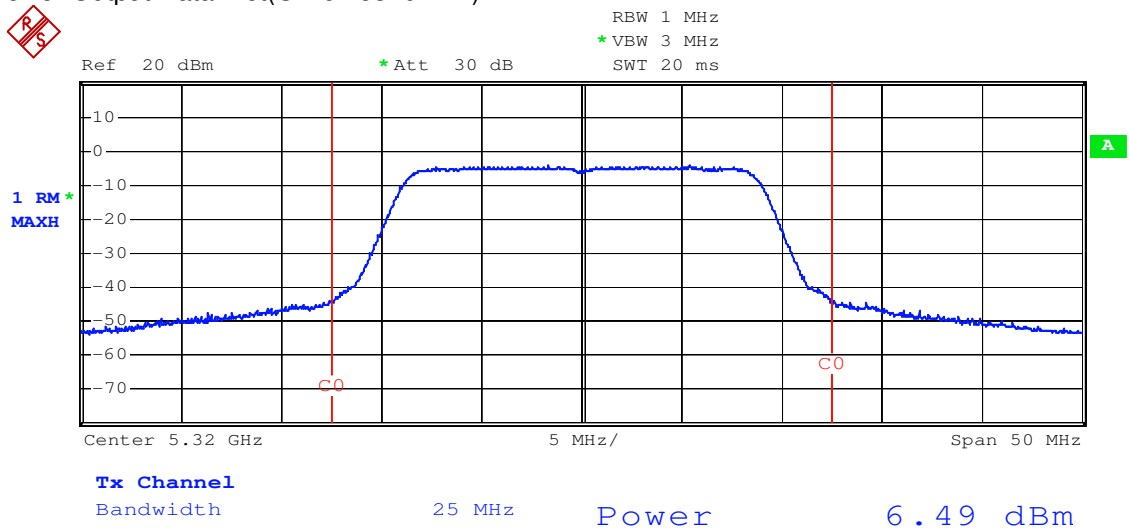
Peak Power Output Data Plot(CH 52 5260MHz)



Peak Power Output Data Plot(CH 60 5300MHz)



Peak Power Output Data Plot(CH 64 5320MHz)

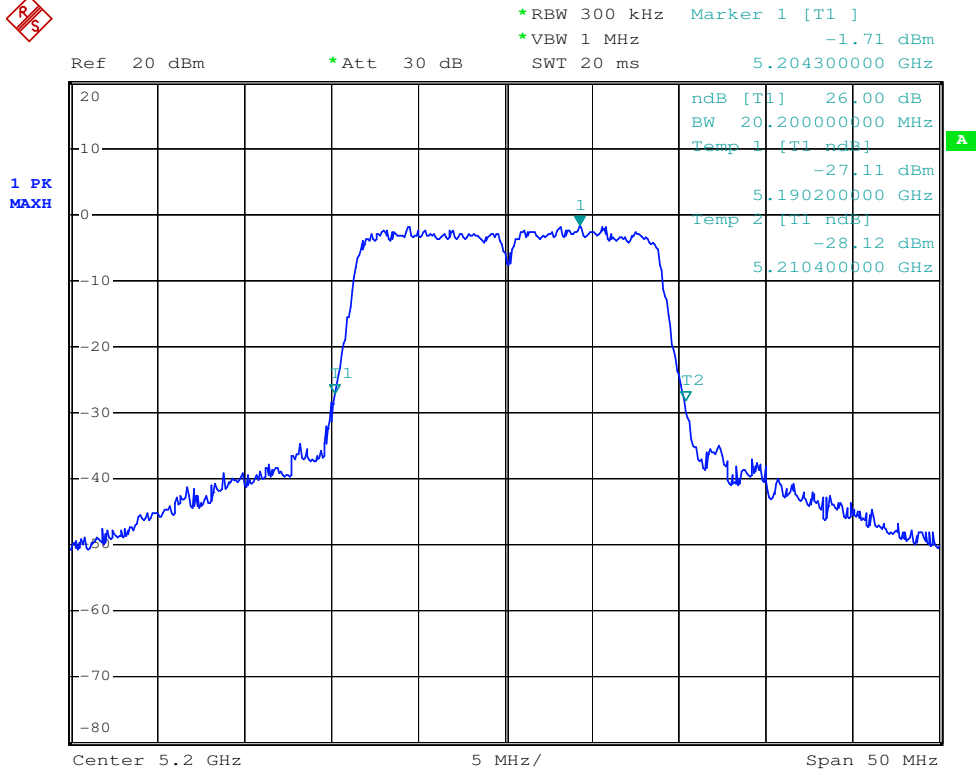
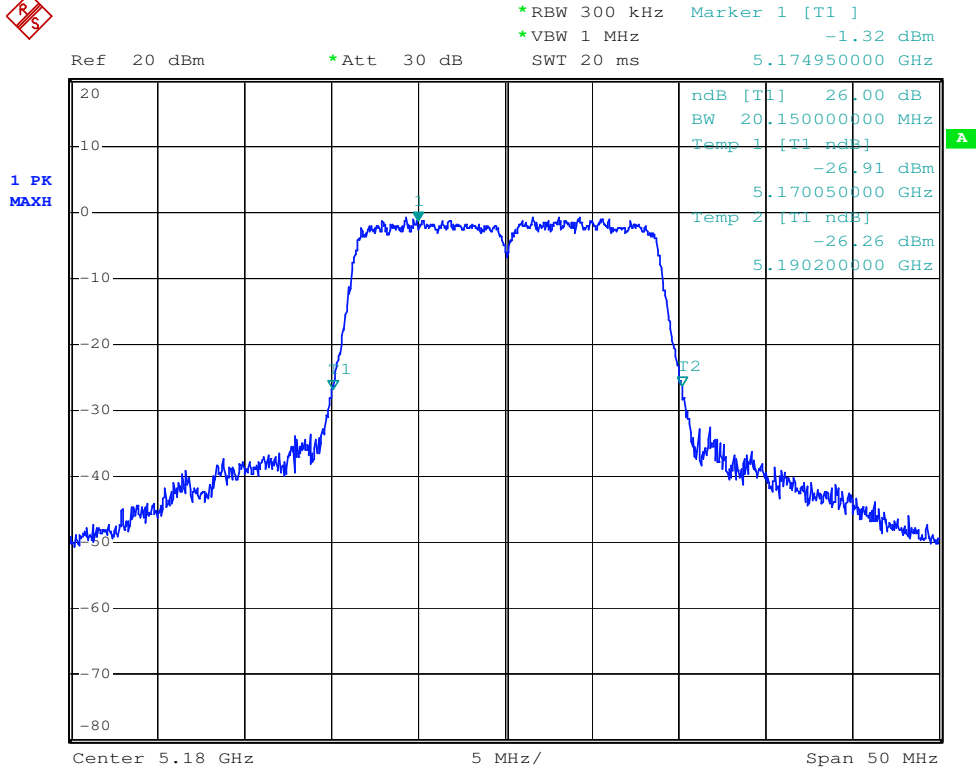


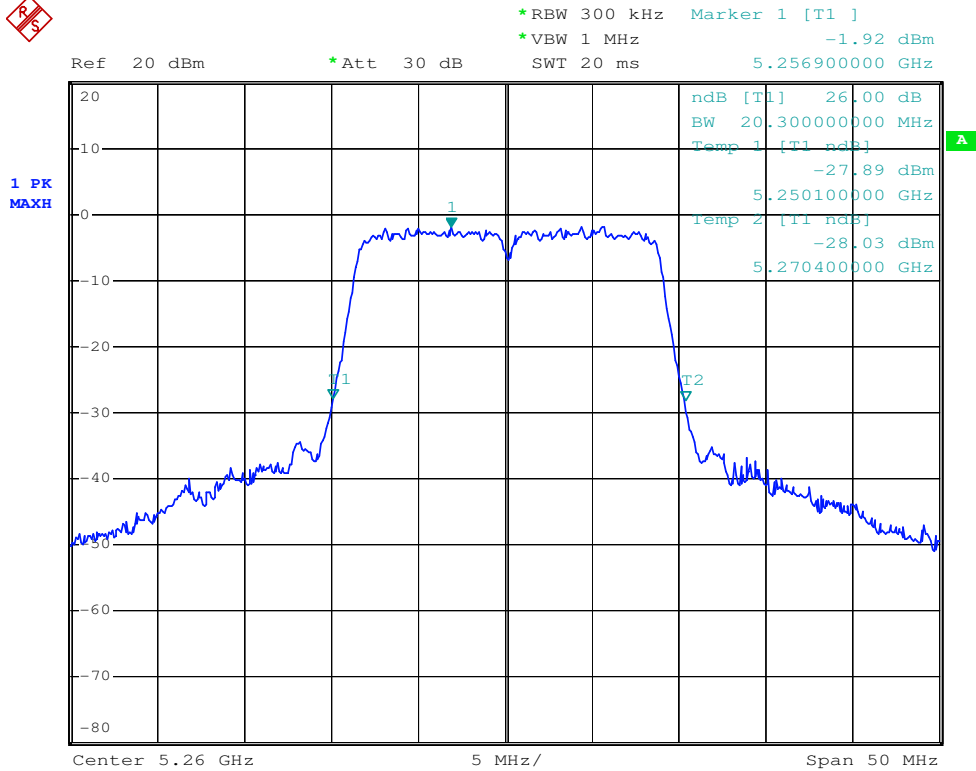
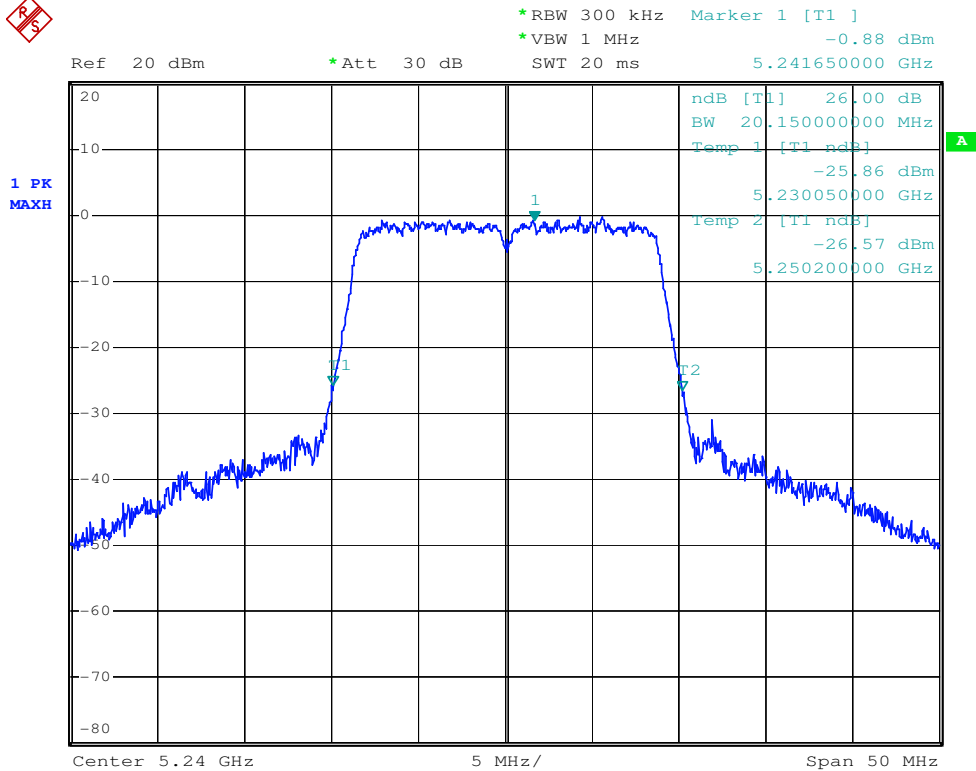
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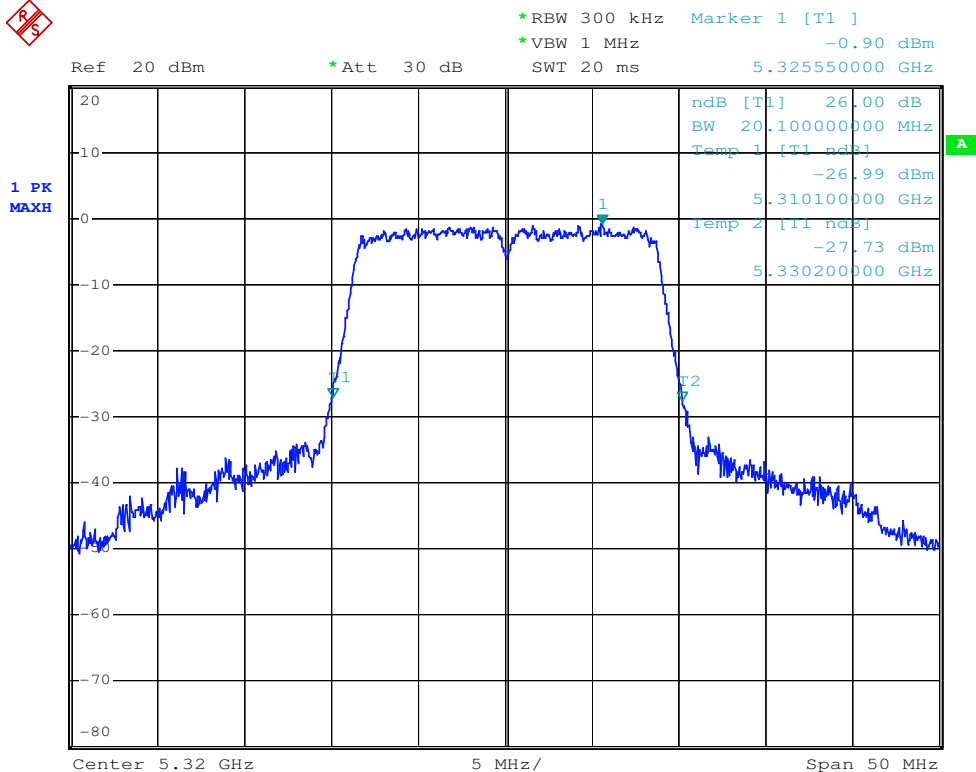
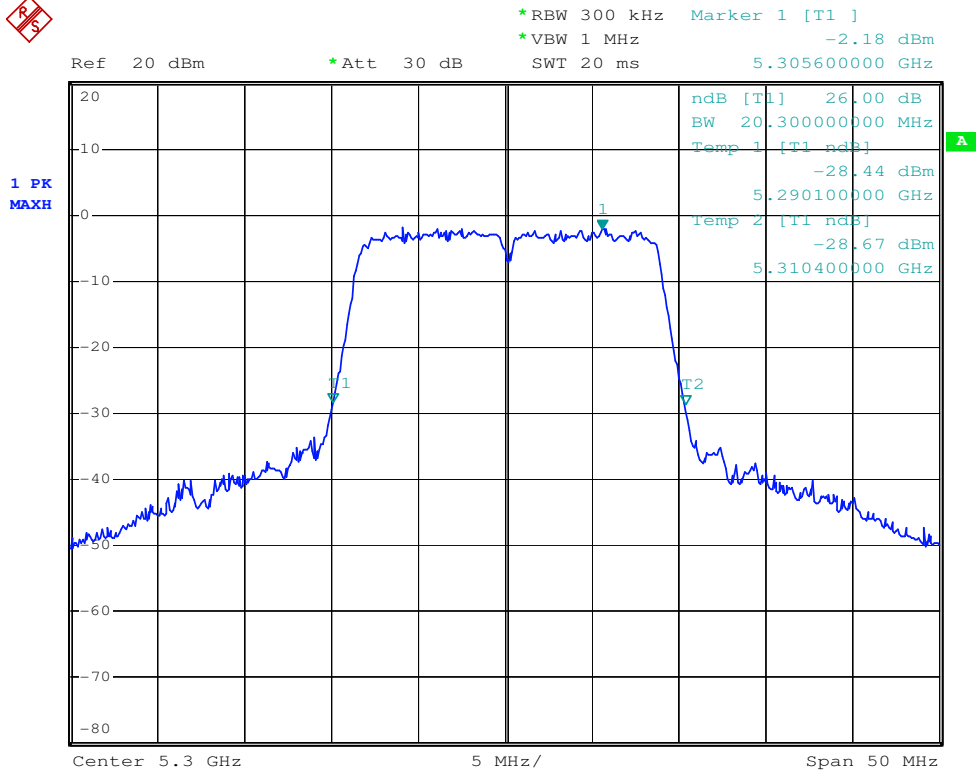


Peak Power Output Data Plot 802.11n(20MHz BW) 6.5Mbps (Chain 010)

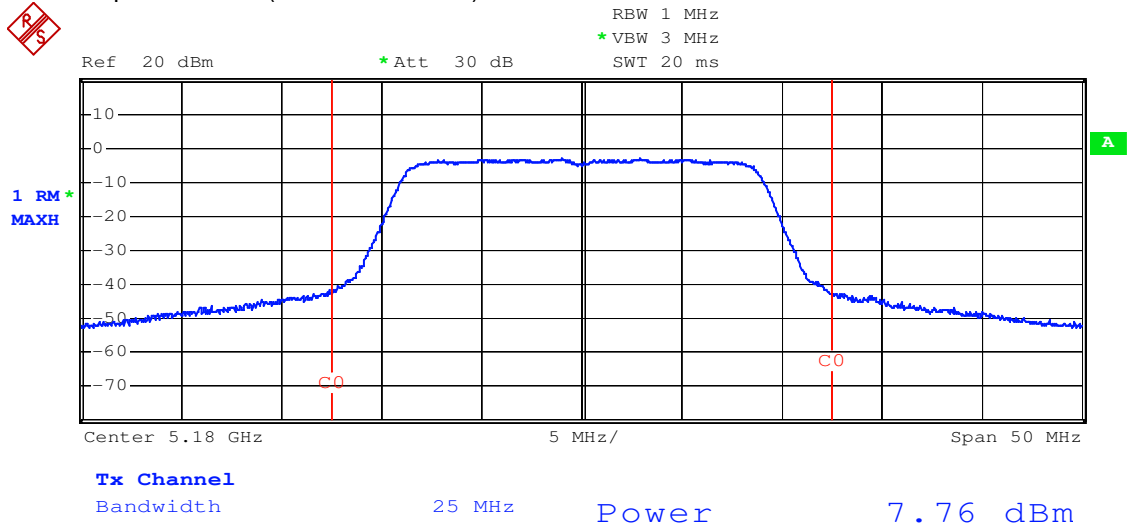
26dB Bandwidth



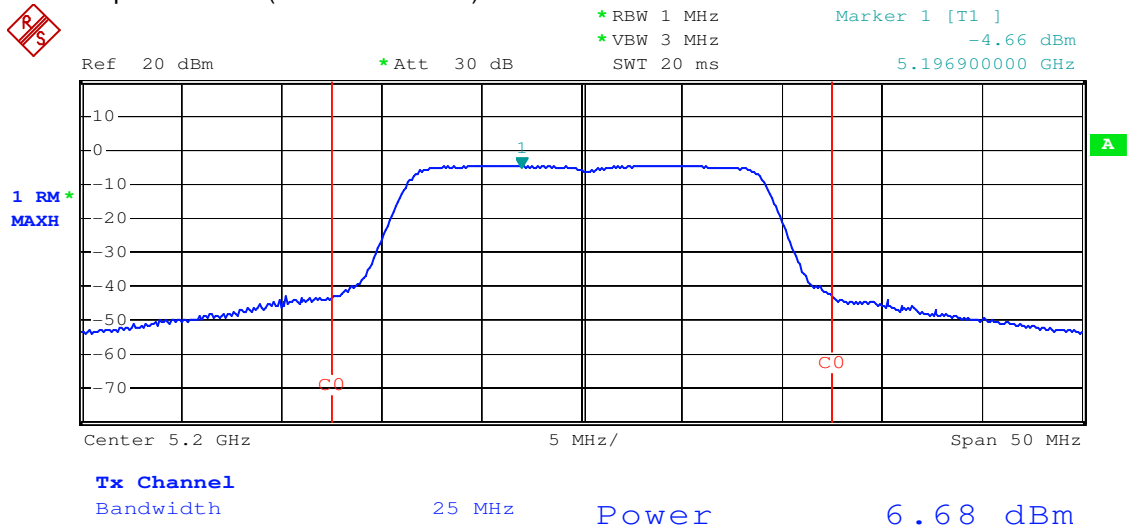




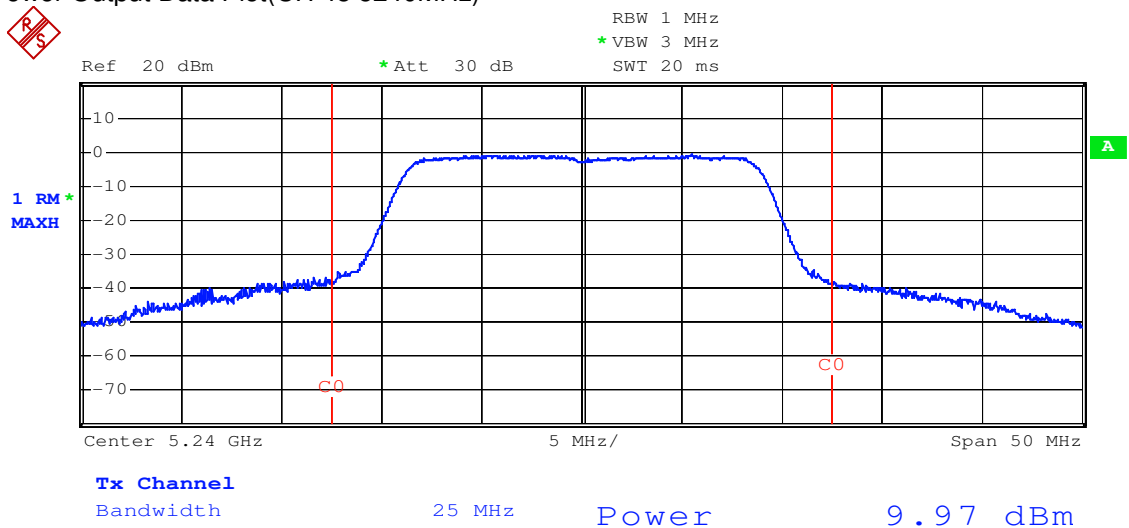
Peak Power Output Data Plot(CH 36 5180MHz)



Peak Power Output Data Plot(CH 40 5200MHz)

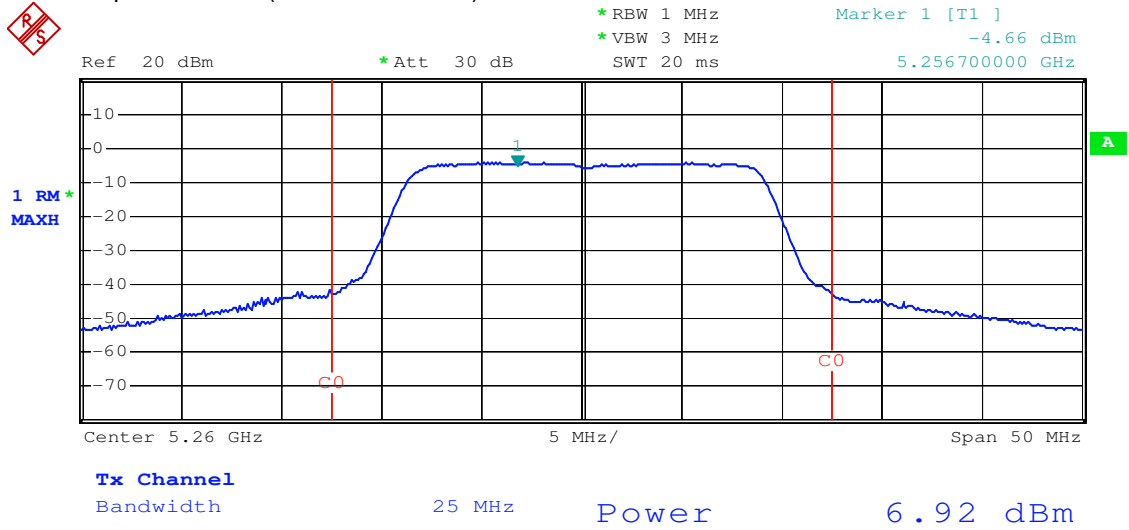


Peak Power Output Data Plot(CH 48 5240MHz)

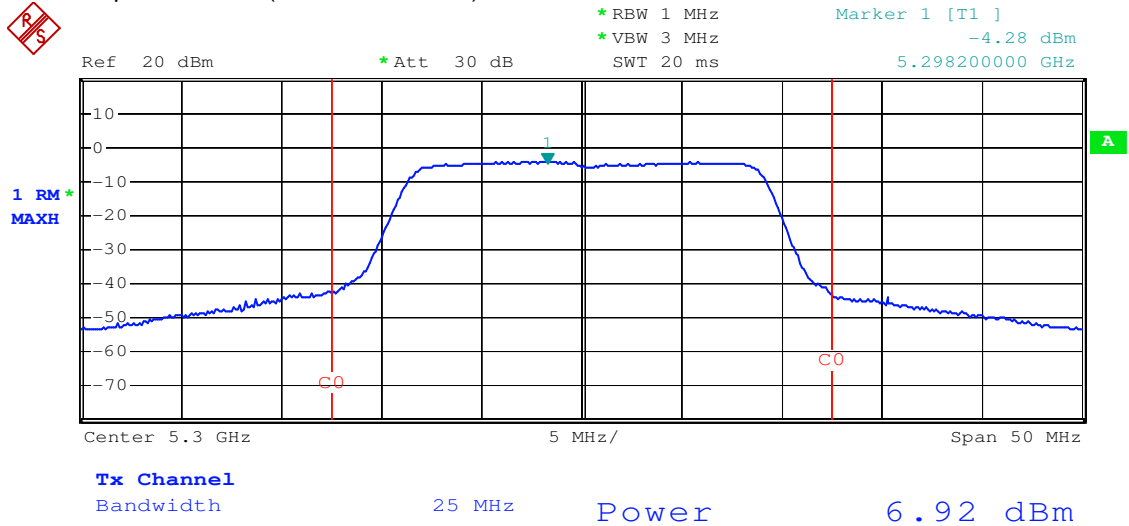




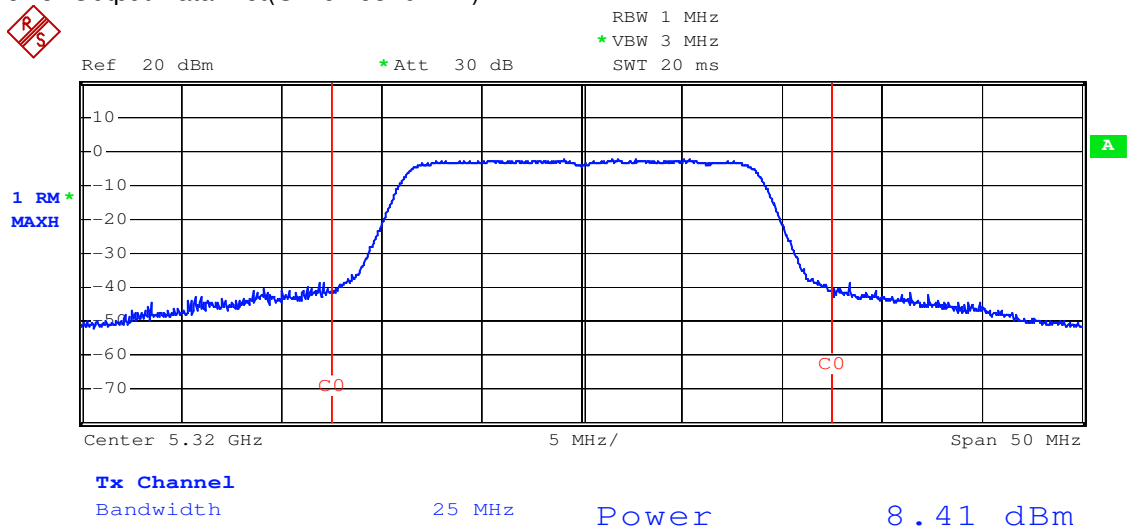
Peak Power Output Data Plot(CH 52 5260MHz)



Peak Power Output Data Plot(CH 60 5300MHz)



Peak Power Output Data Plot(CH 64 5320MHz)

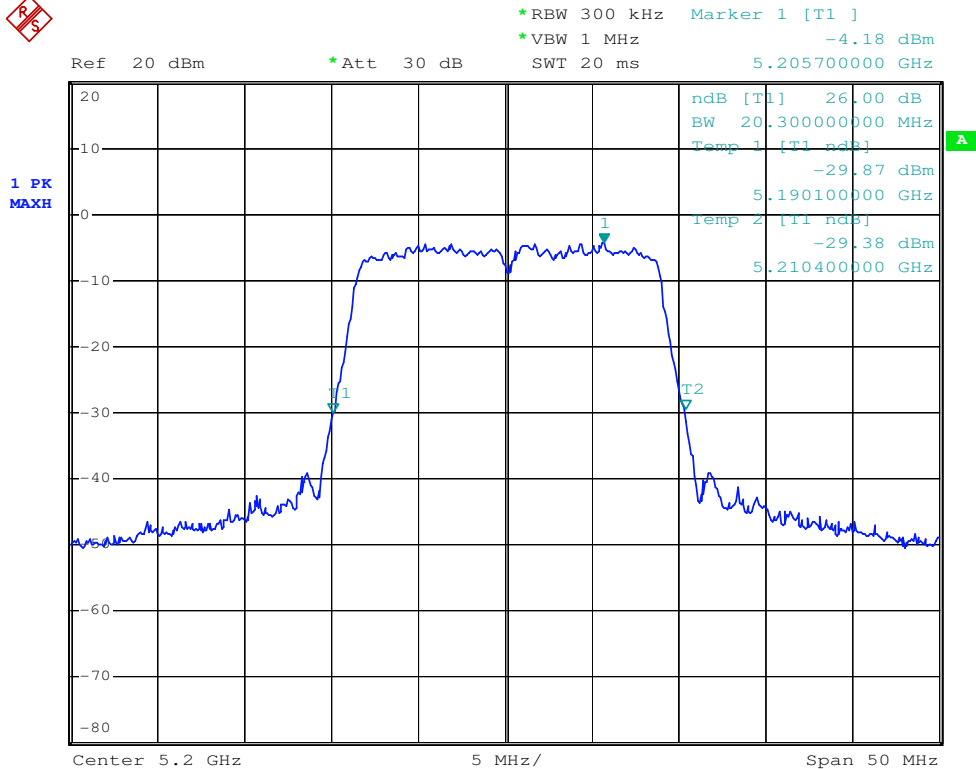
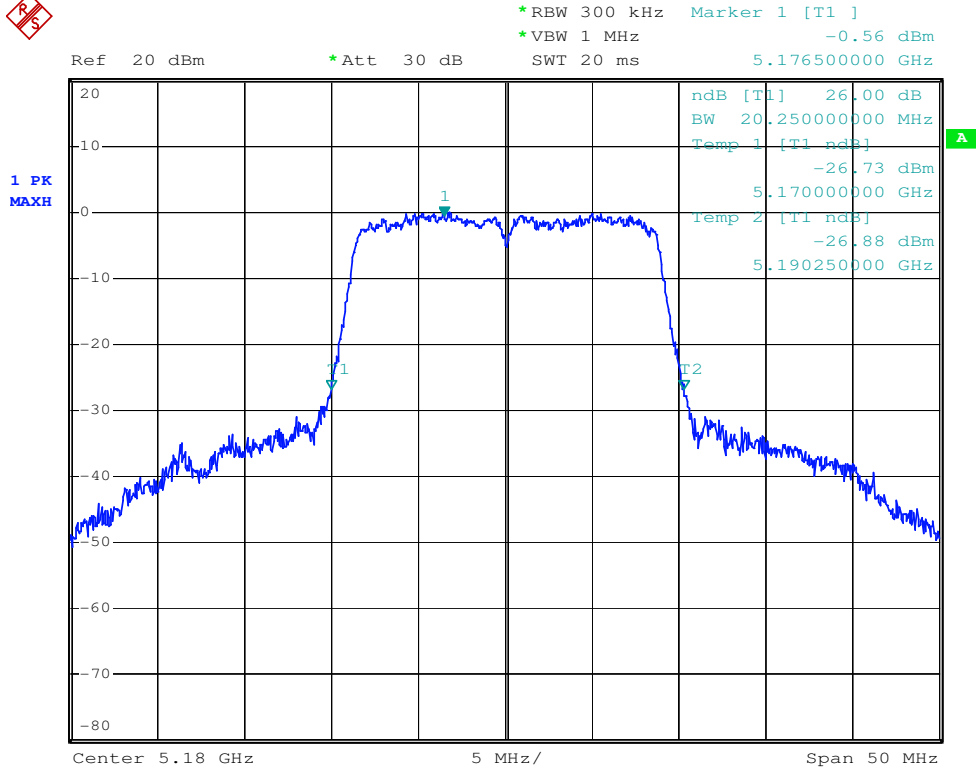


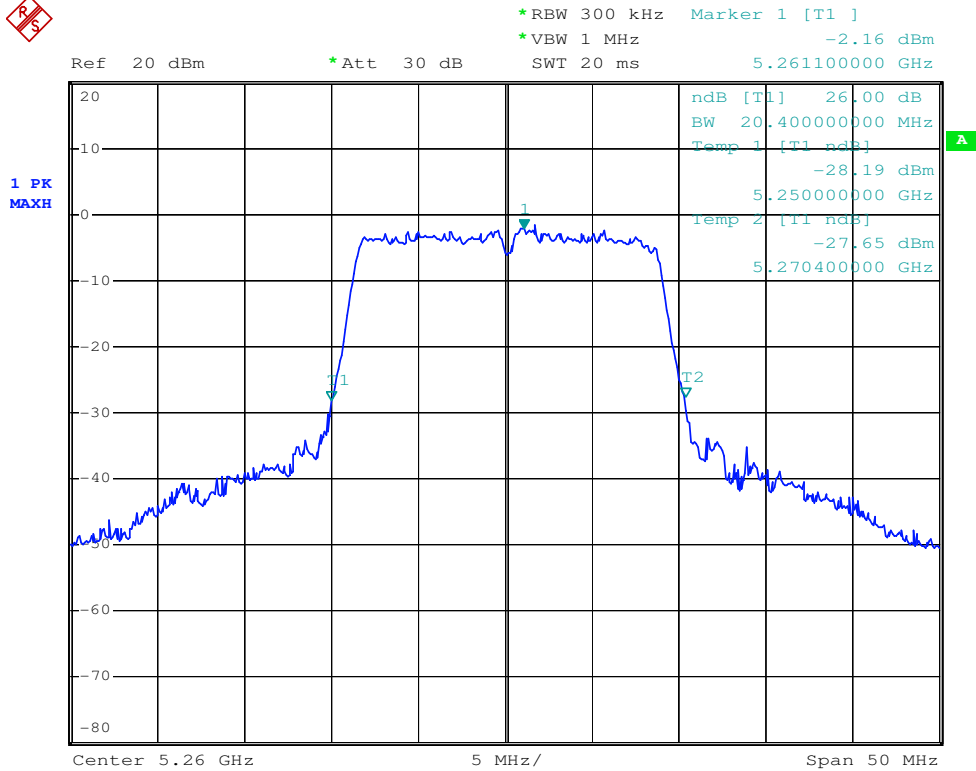
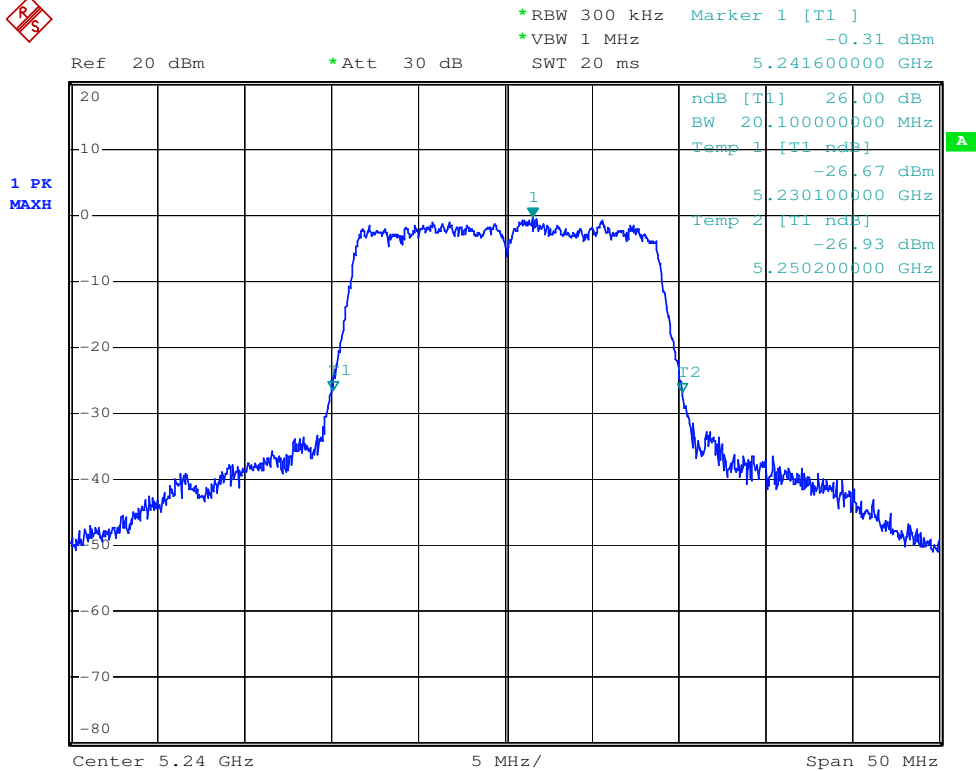
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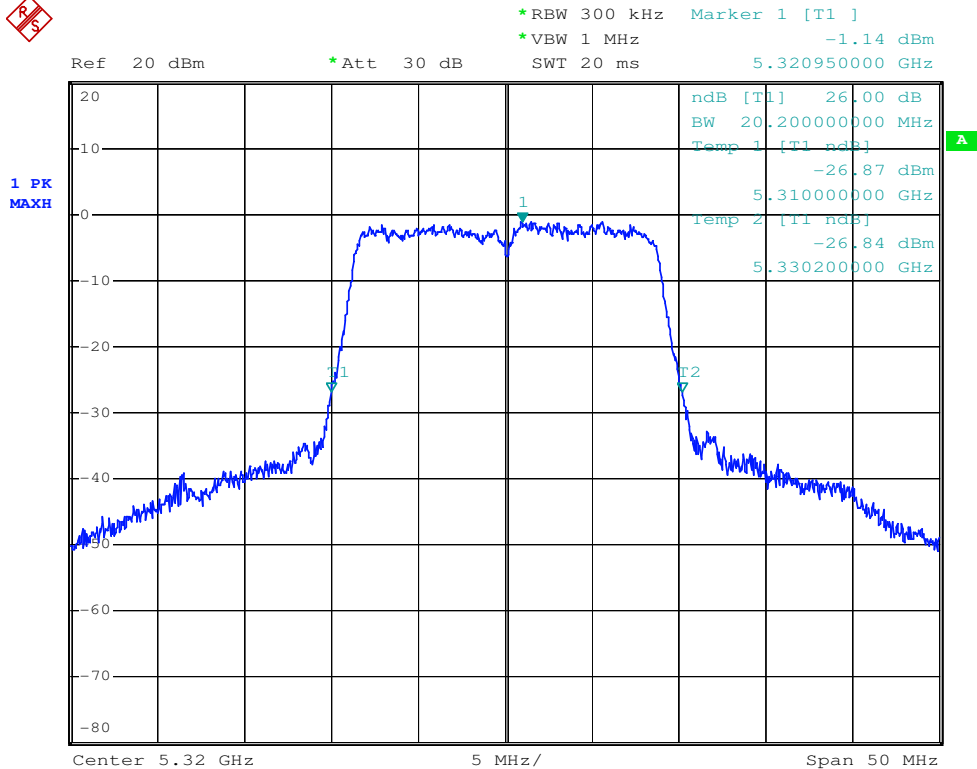
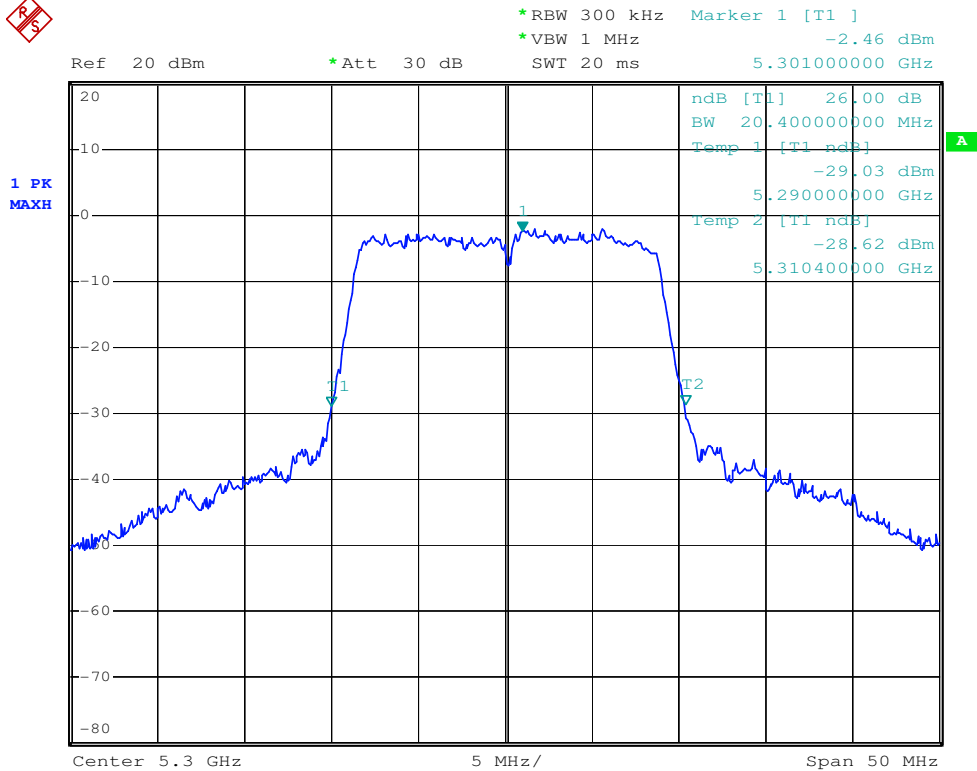


Peak Power Output Data Plot 802.11n(20MHz BW) 6.5Mbps (Chain 001)

26dB Bandwidth

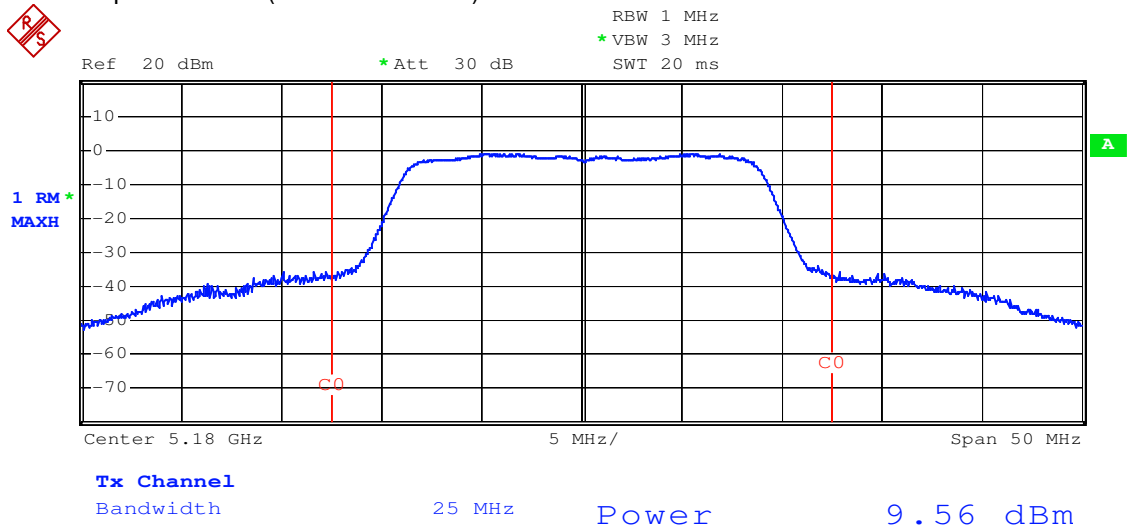




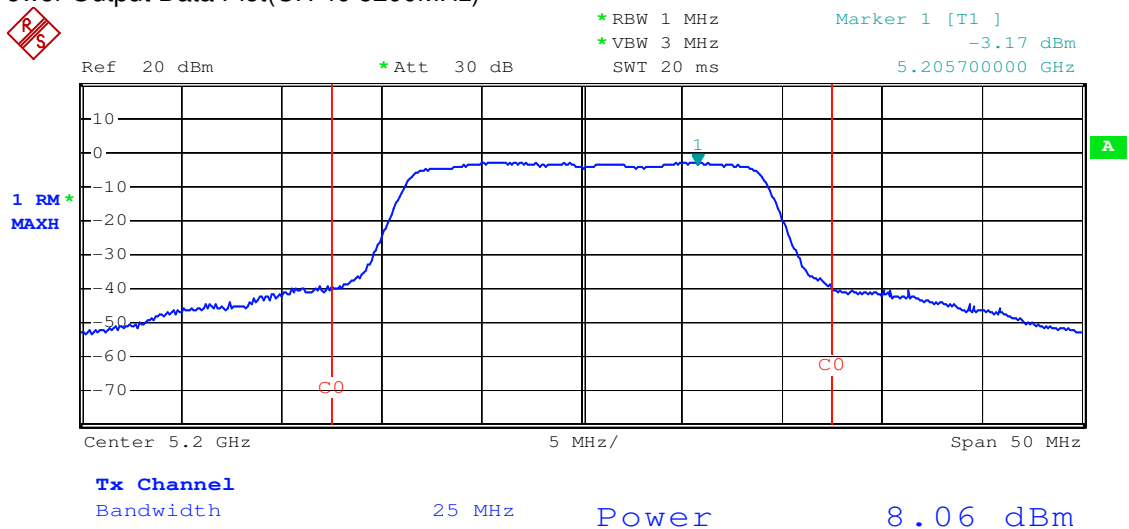




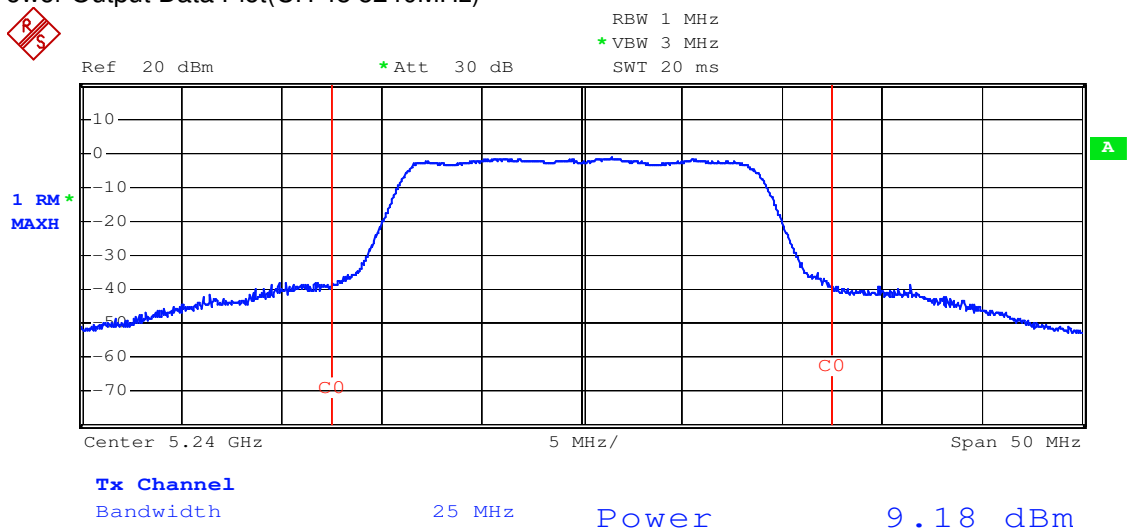
Peak Power Output Data Plot(CH 36 5180MHz)



Peak Power Output Data Plot(CH 40 5200MHz)

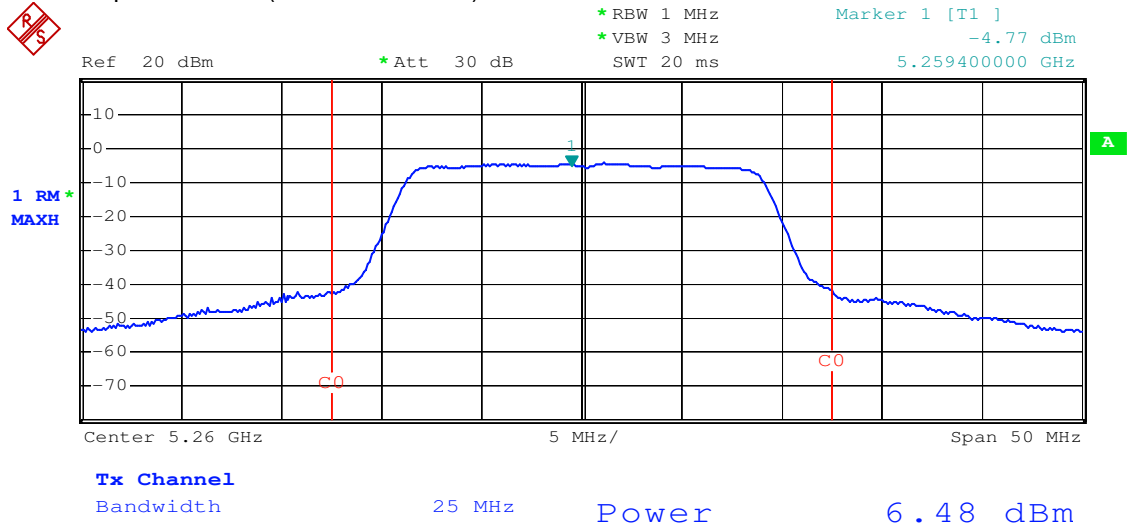


Peak Power Output Data Plot(CH 48 5240MHz)

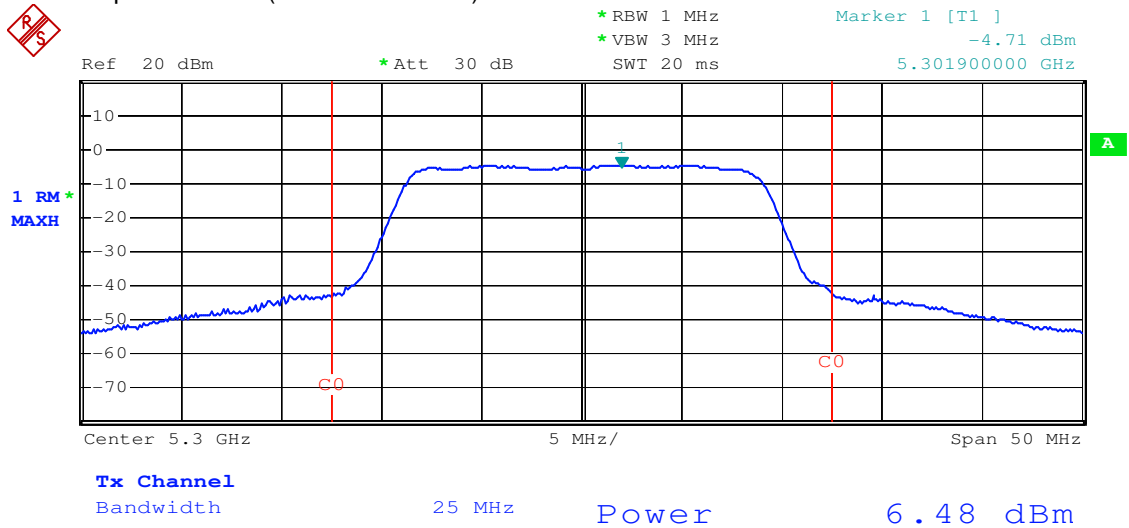




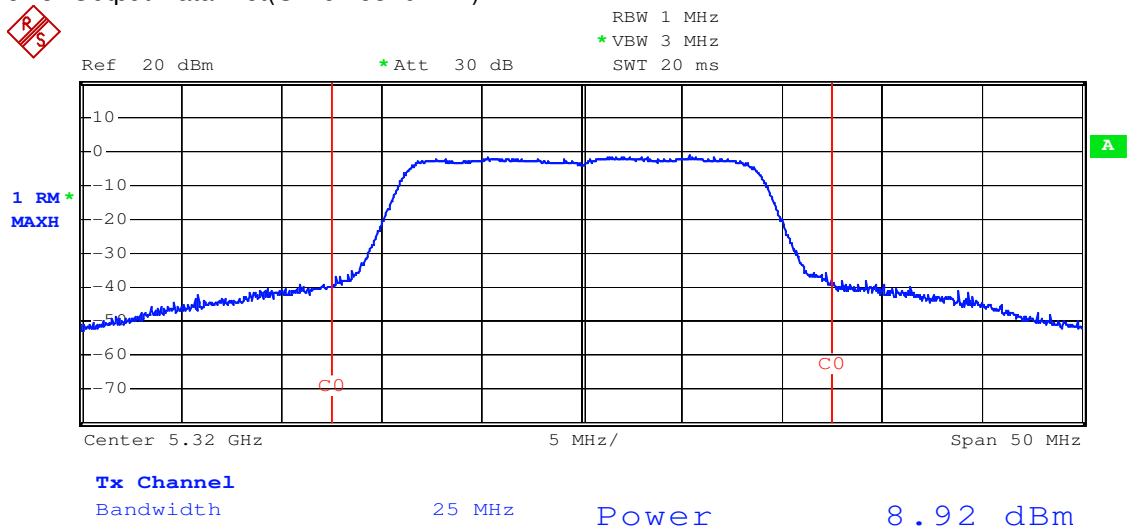
Peak Power Output Data Plot(CH 52 5260MHz)



Peak Power Output Data Plot(CH 60 5300MHz)



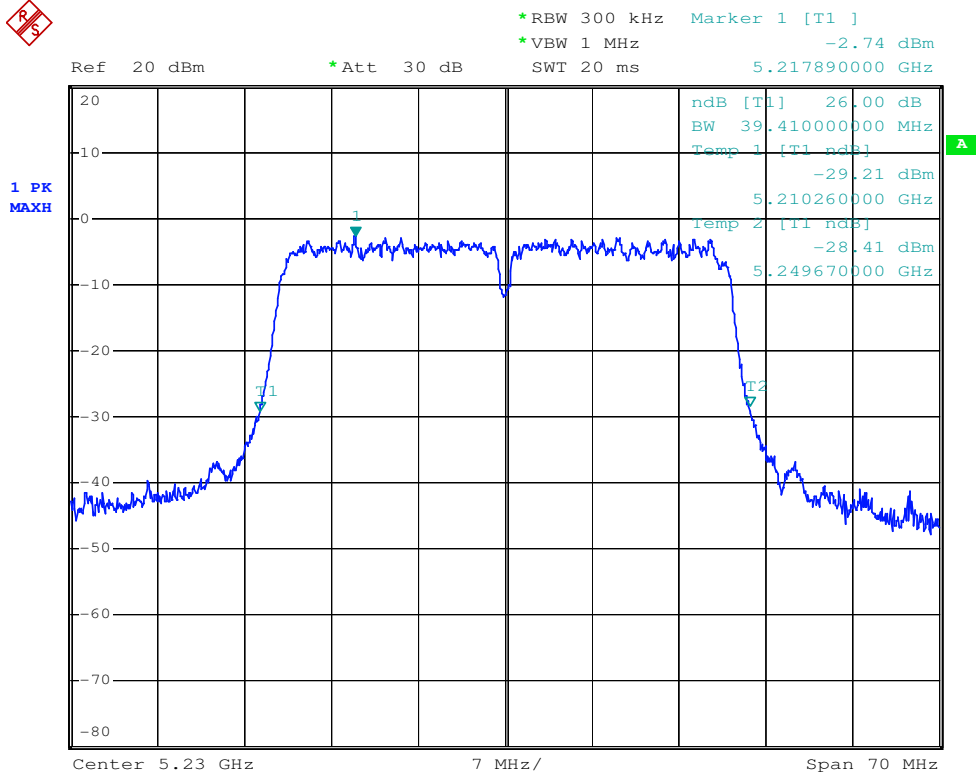
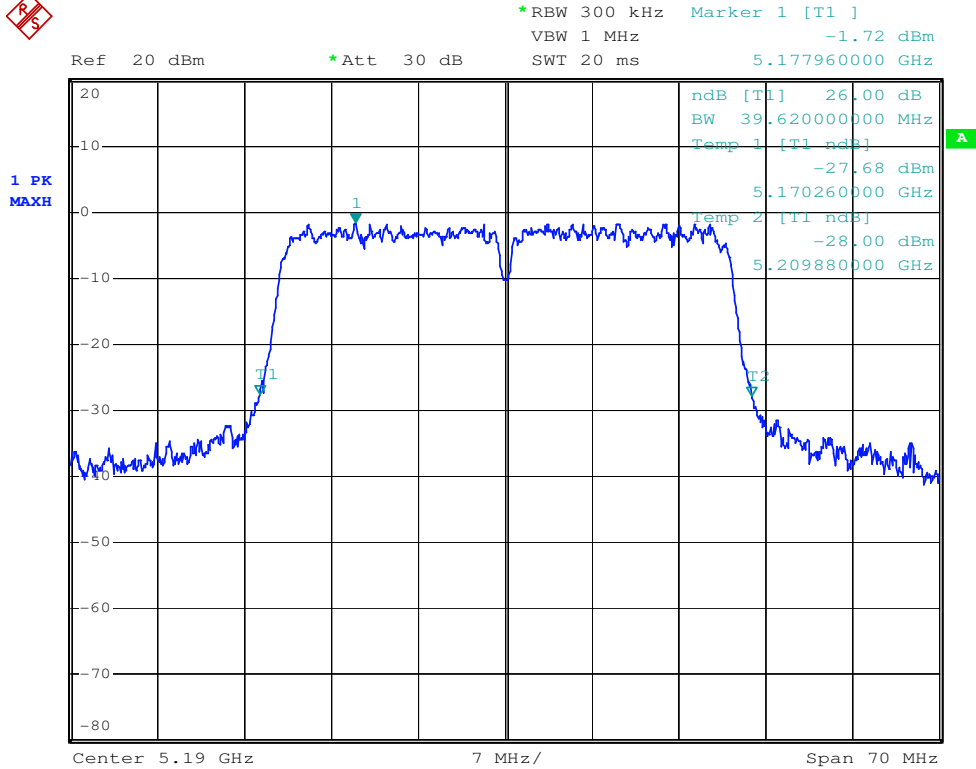
Peak Power Output Data Plot(CH 64 5320MHz)

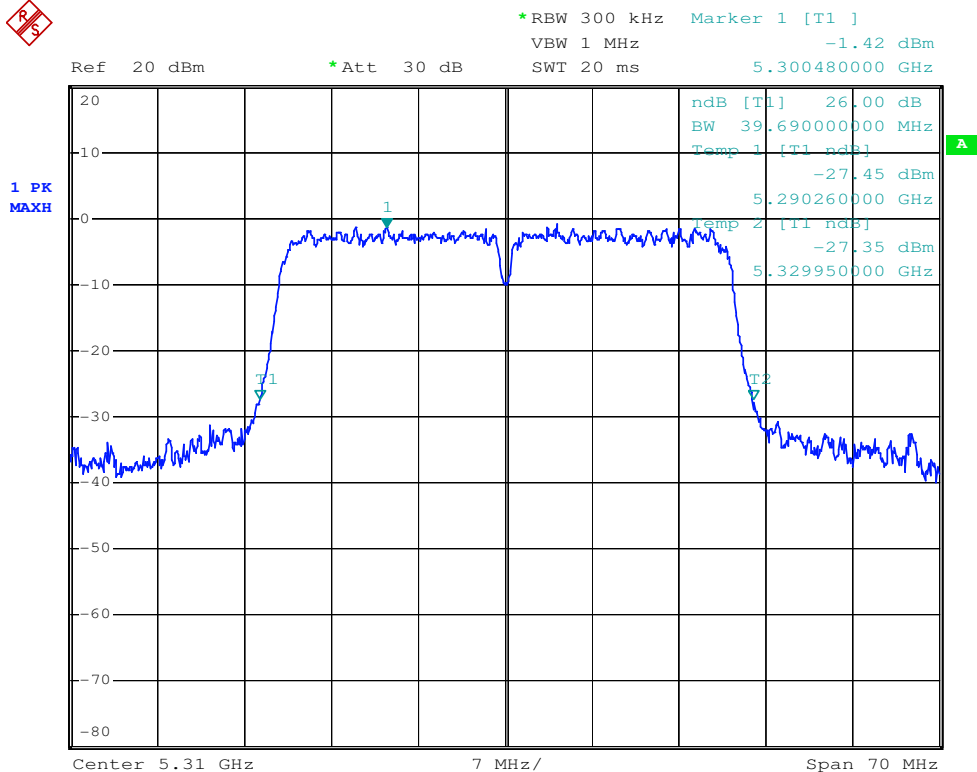
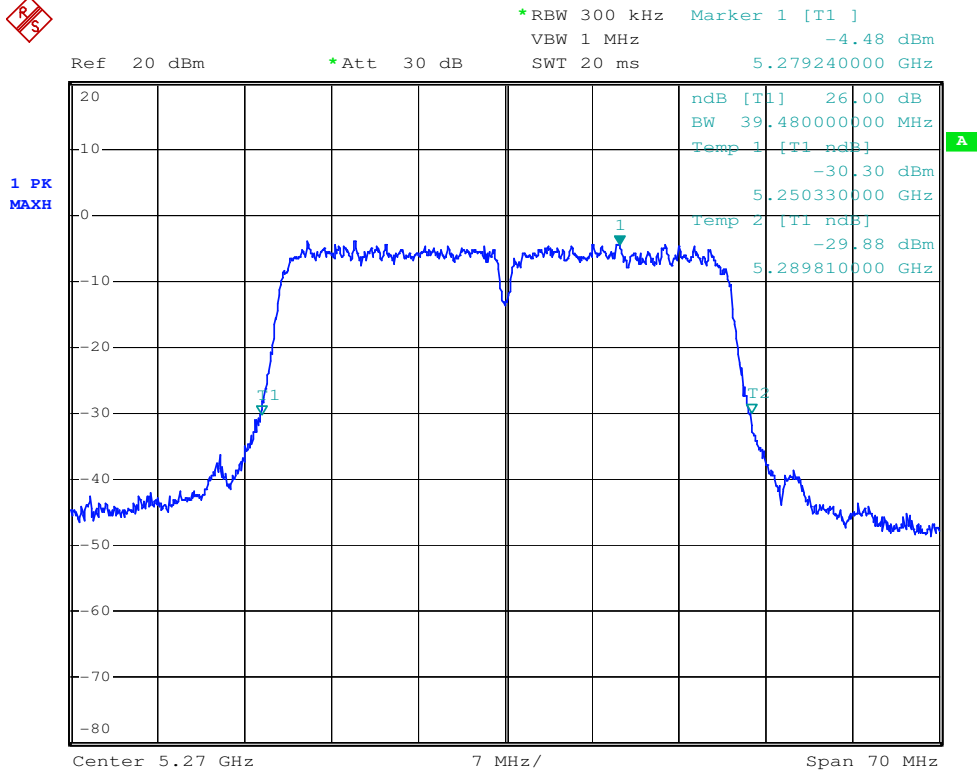


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Peak Power Output Data Plot 802.11n(40MHz BW) 6.5Mbps (Chain 100)

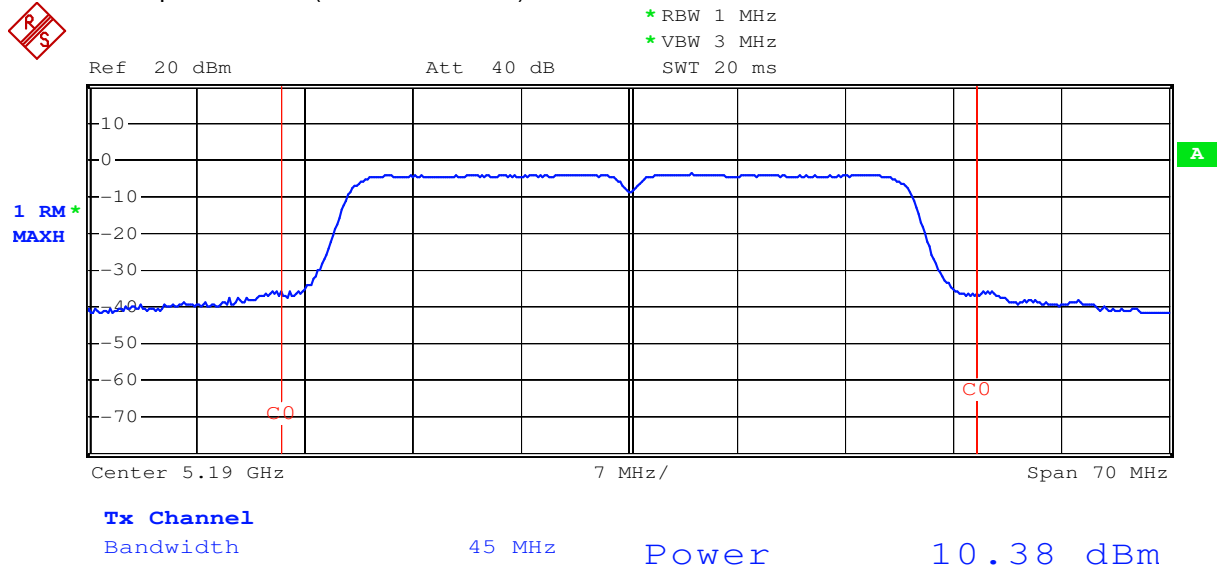
26dB Bandwidth



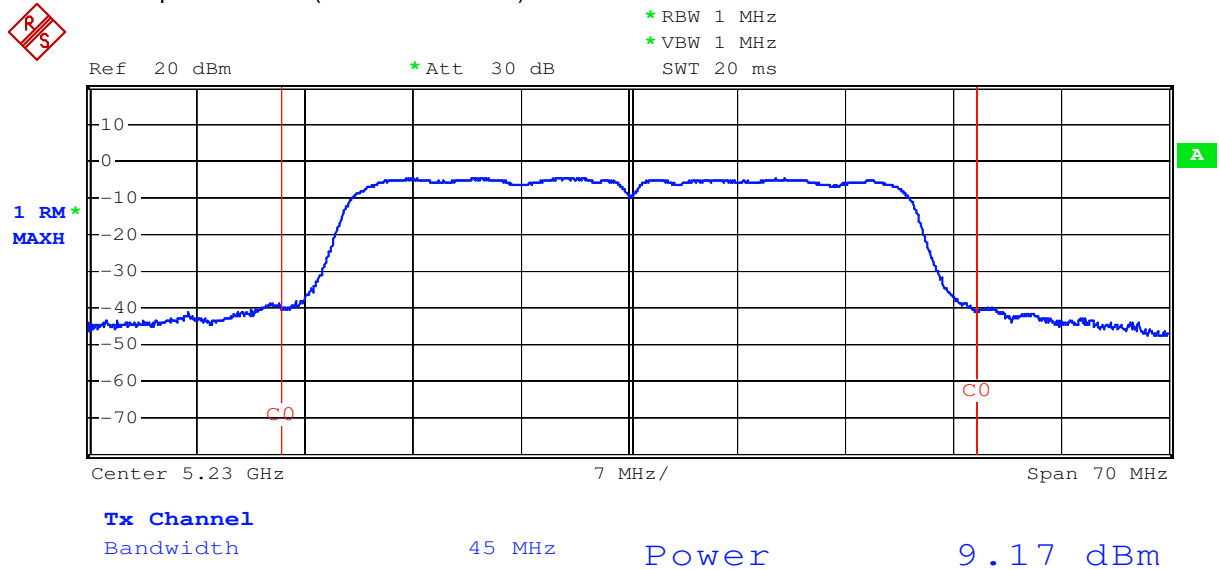




Peak Power Output Data Plot(CH 38 5190MHz)



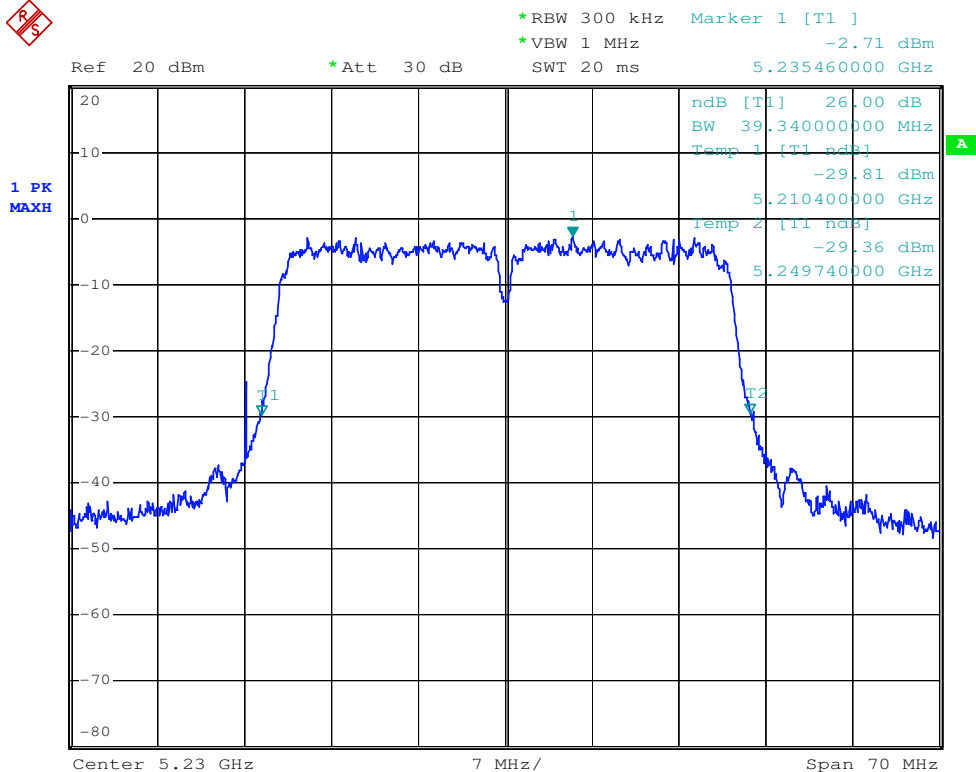
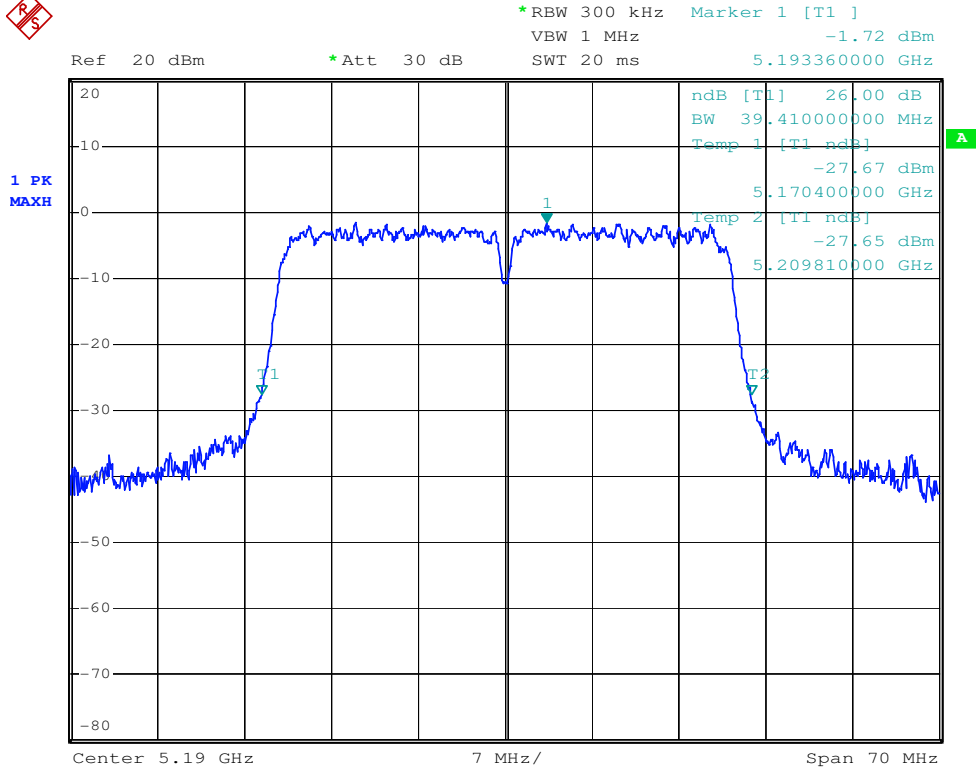
Peak Power Output Data Plot(CH 46 5230MHz)

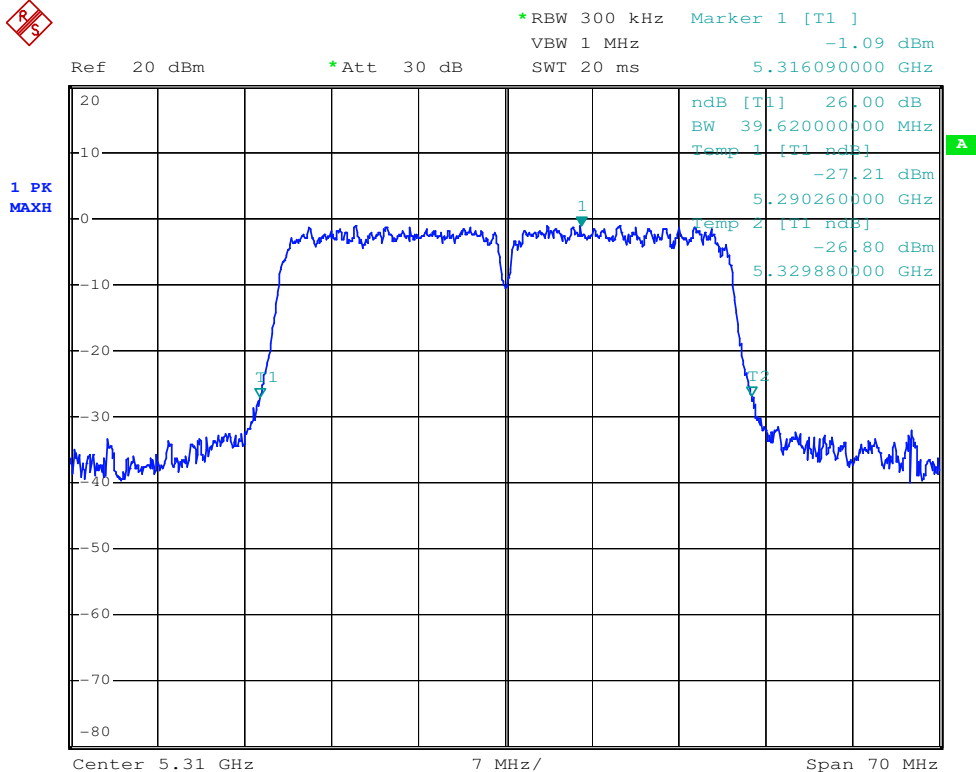
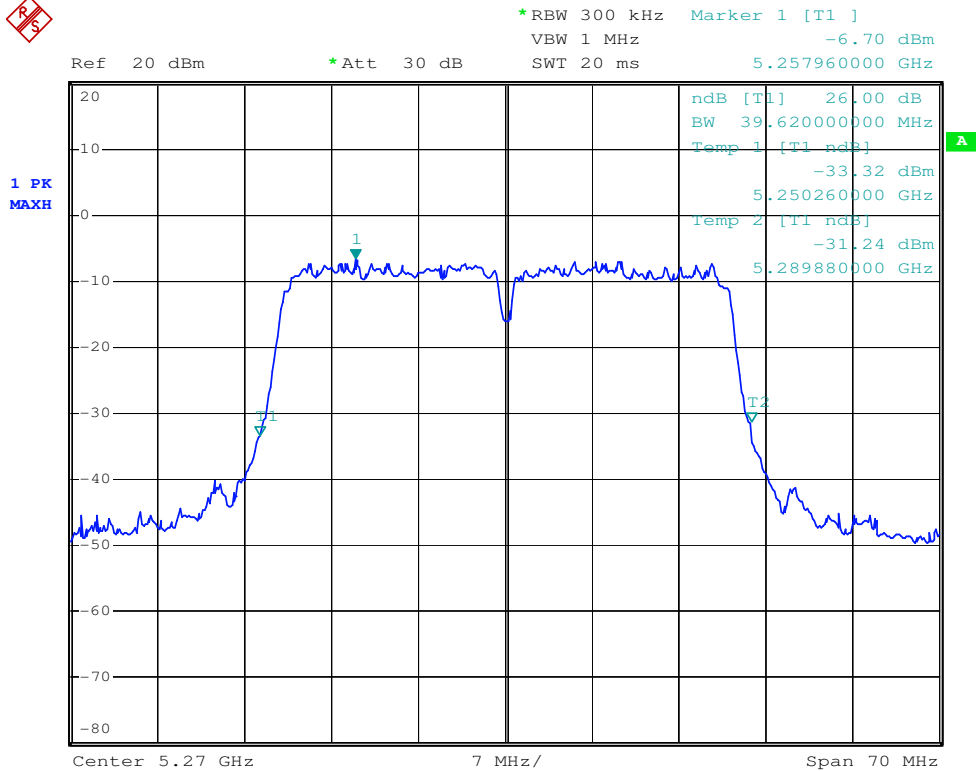




Peak Power Output Data Plot 802.11n(40MHz BW) 6.5Mbps (Chain 010)

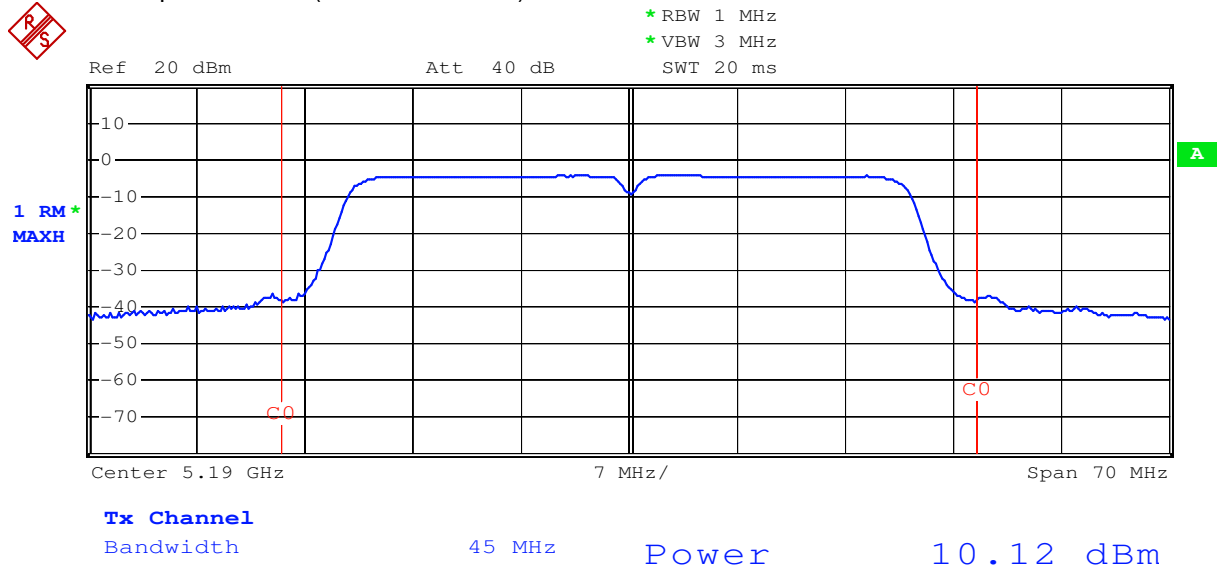
26dB Bandwidth



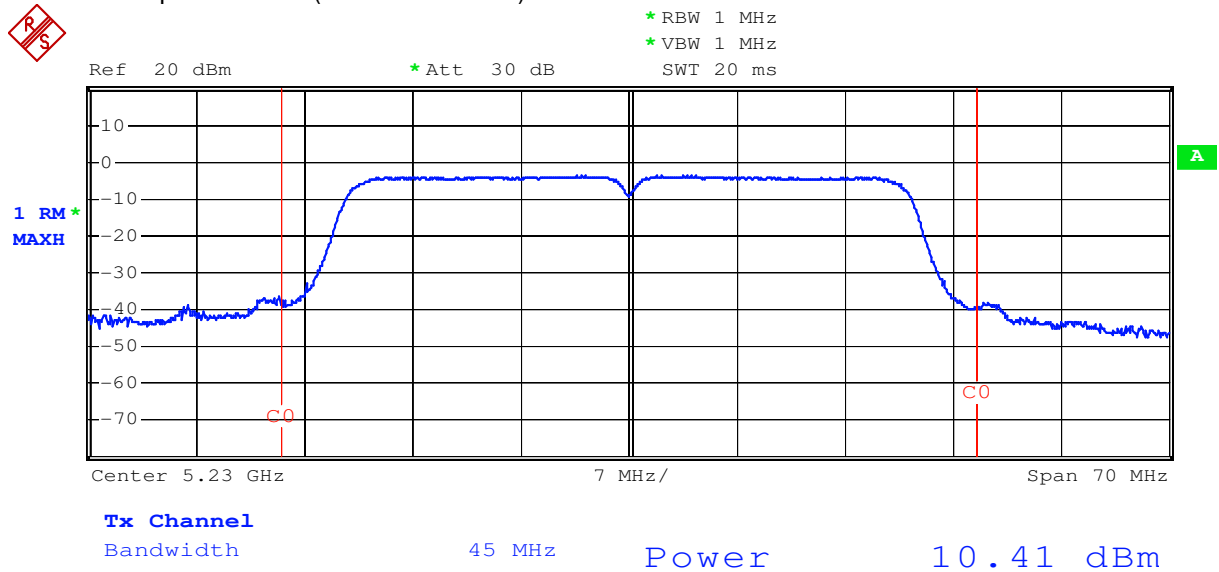




Peak Power Output Data Plot(CH 38 5190MHz)

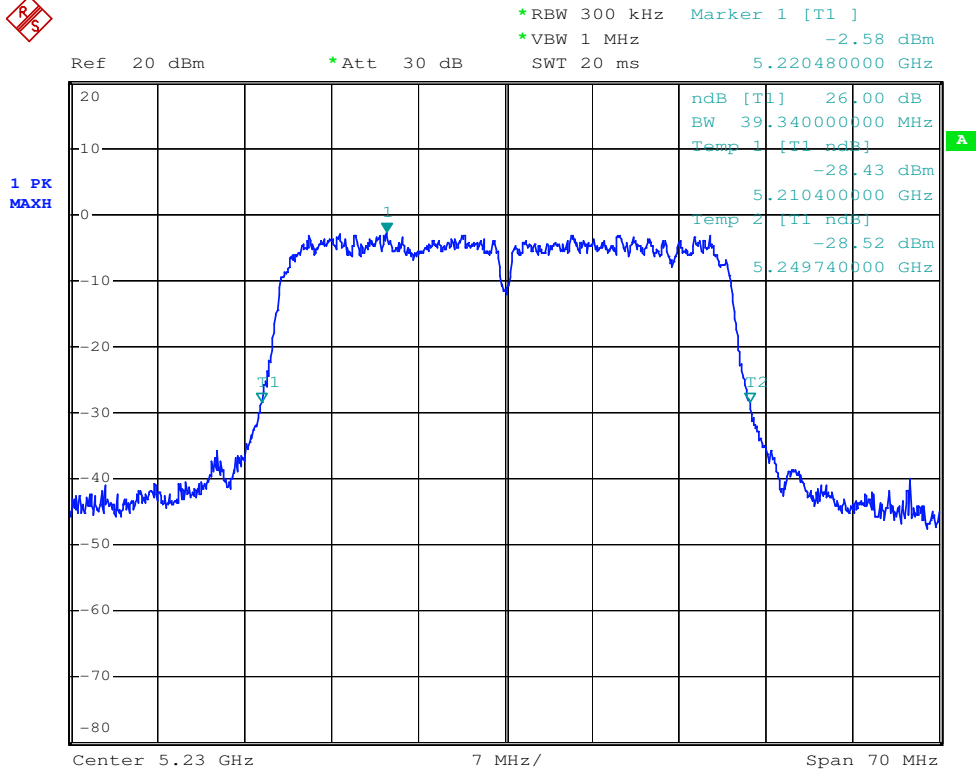
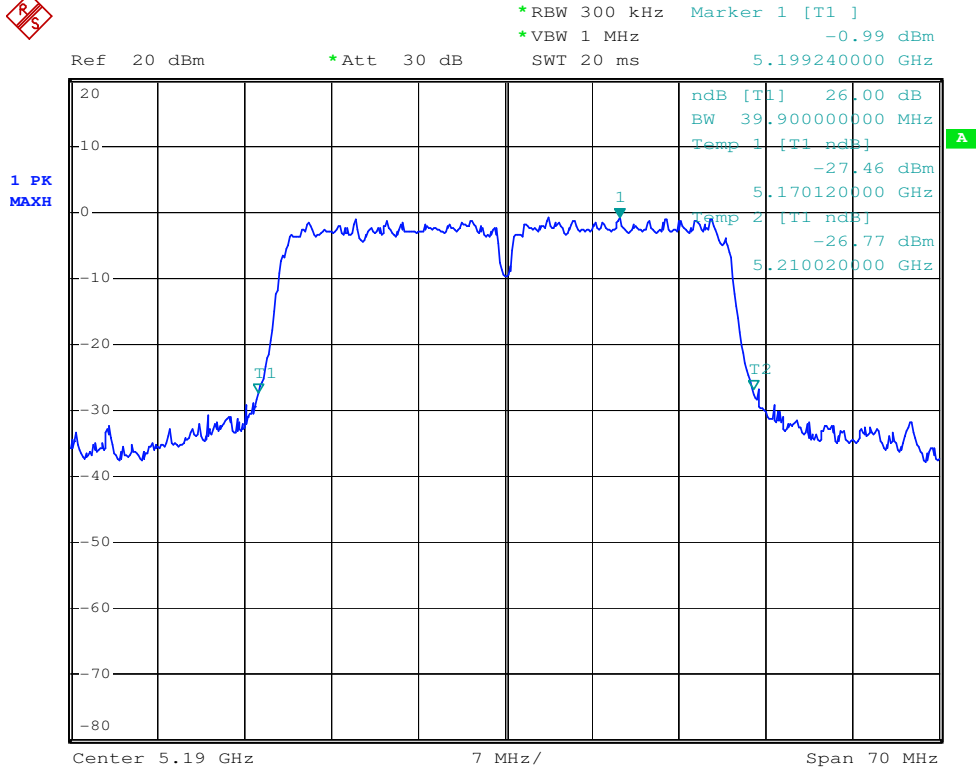


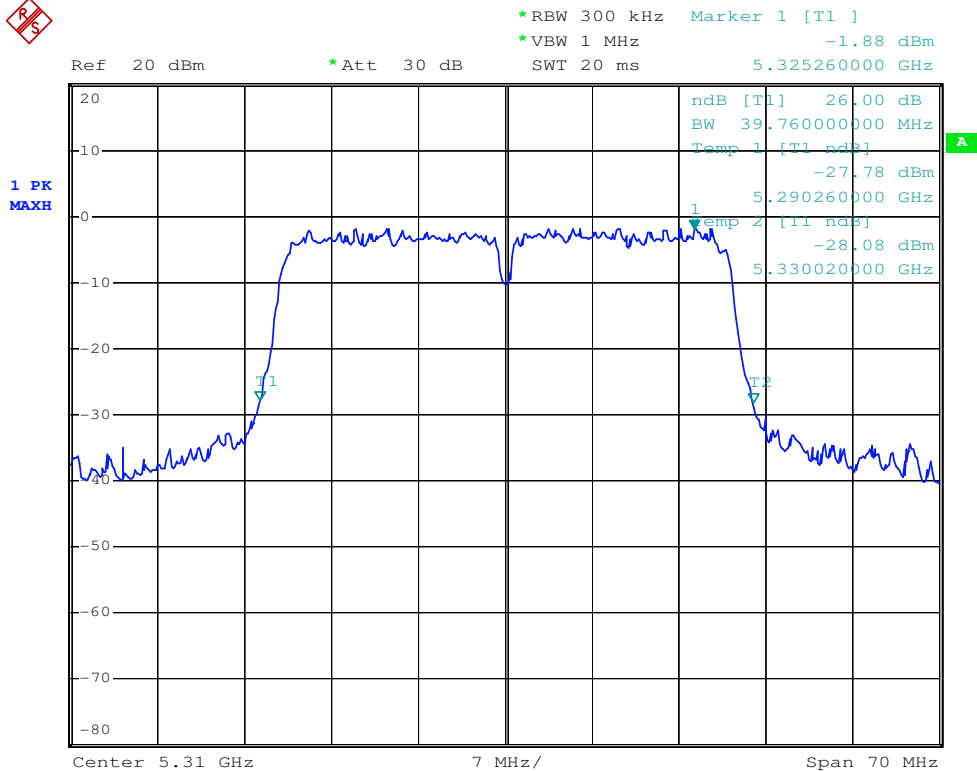
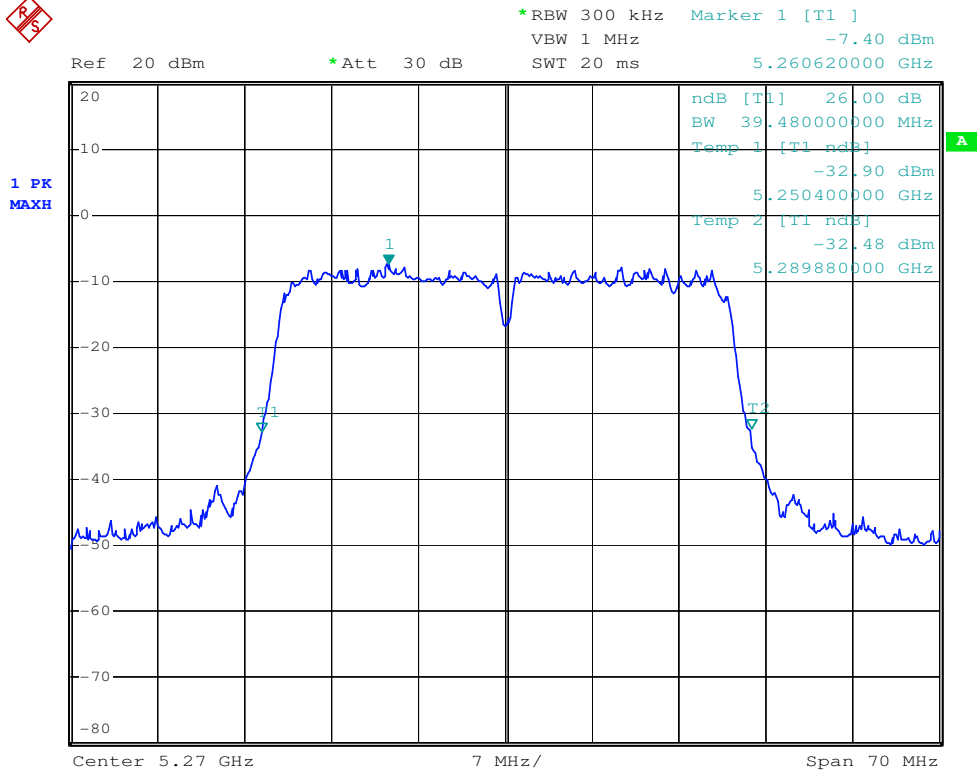
Peak Power Output Data Plot(CH 46 5230MHz)



Peak Power Output Data Plot 802.11n(40MHz BW) 6.5Mbps (Chain 001)

26dB Bandwidth

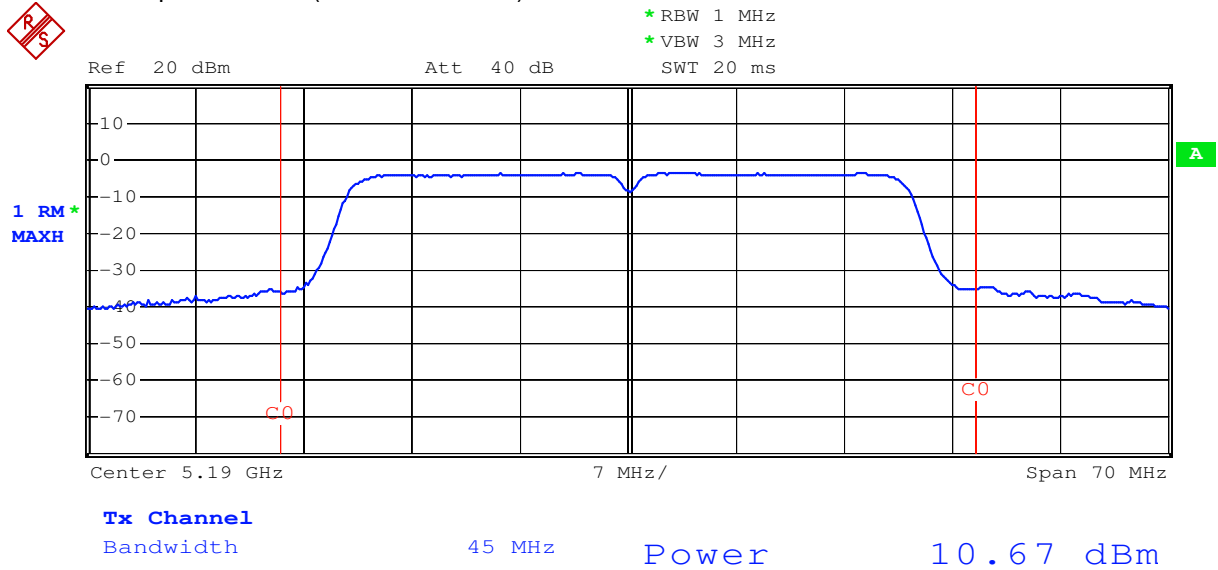




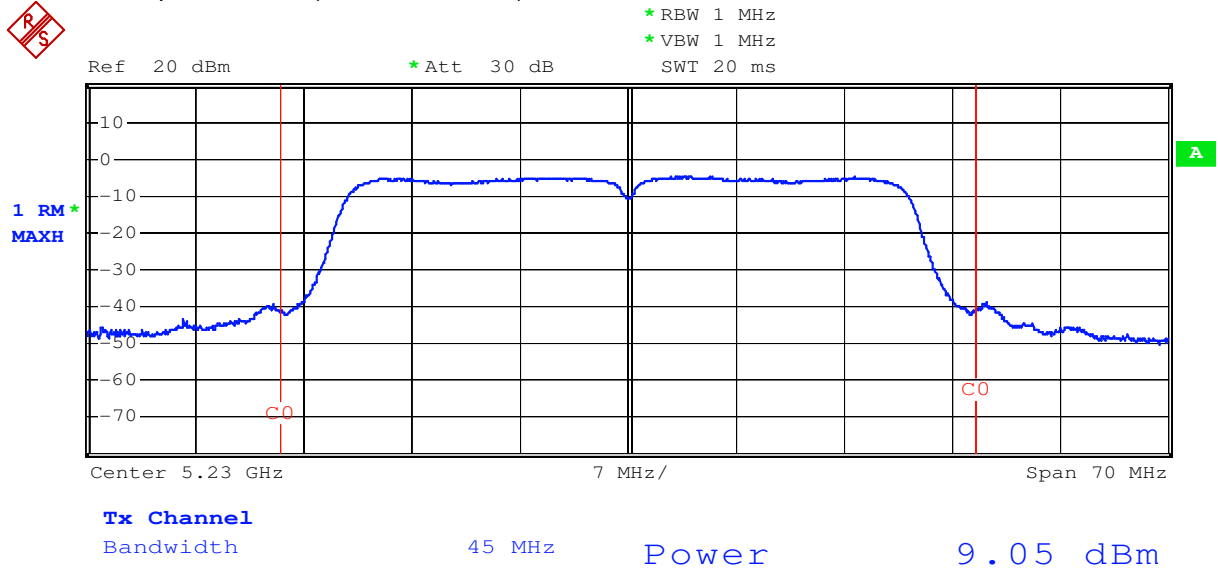
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Peak Power Output Data Plot(CH 38 5190MHz)

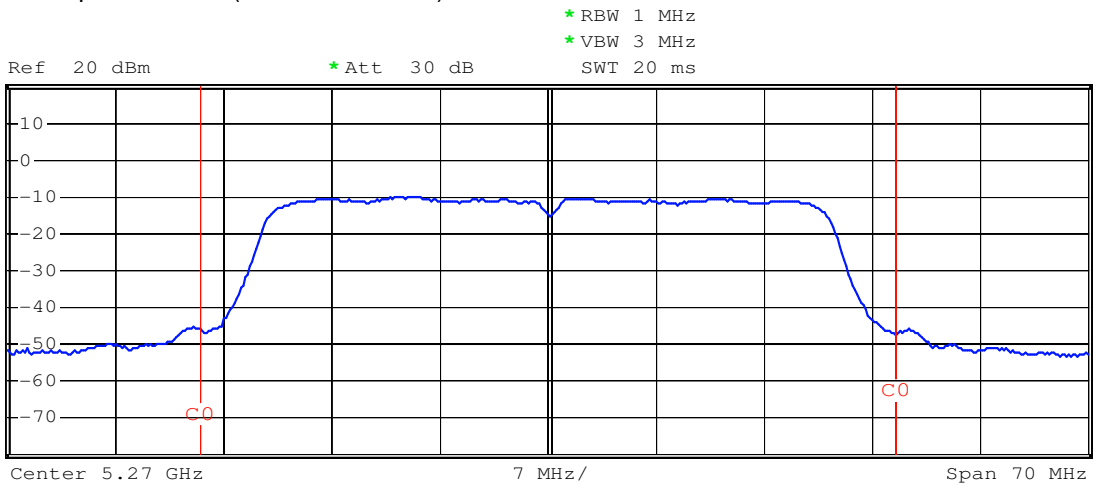


Peak Power Output Data Plot(CH 46 5230MHz)



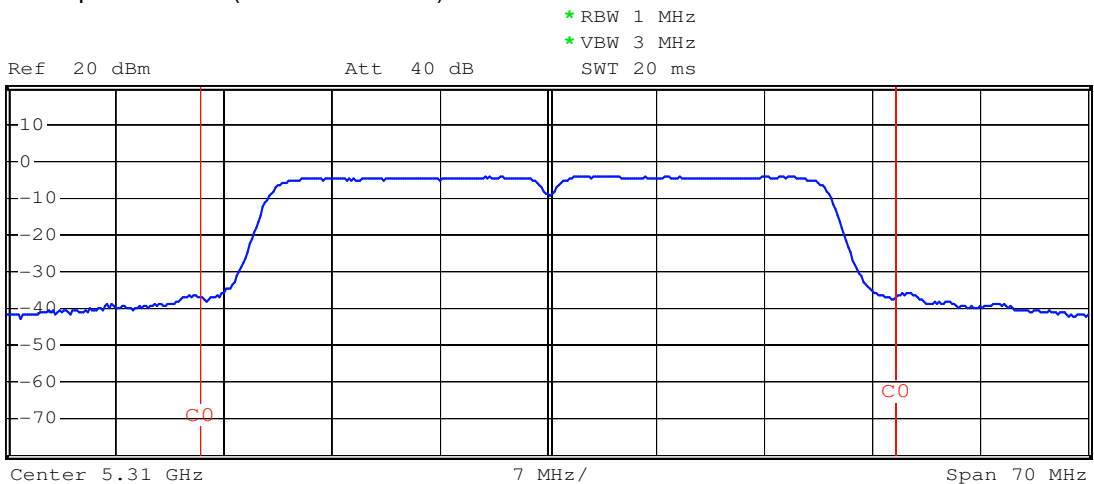


Peak Power Output Data Plot(CH 54 5270MHz)



Tx Channel
Bandwidth 45 MHz Power 3.72 dBm

Peak Power Output Data Plot(CH 62 5310MHz)



Tx Channel
Bandwidth 45 MHz Power 10.11 dBm

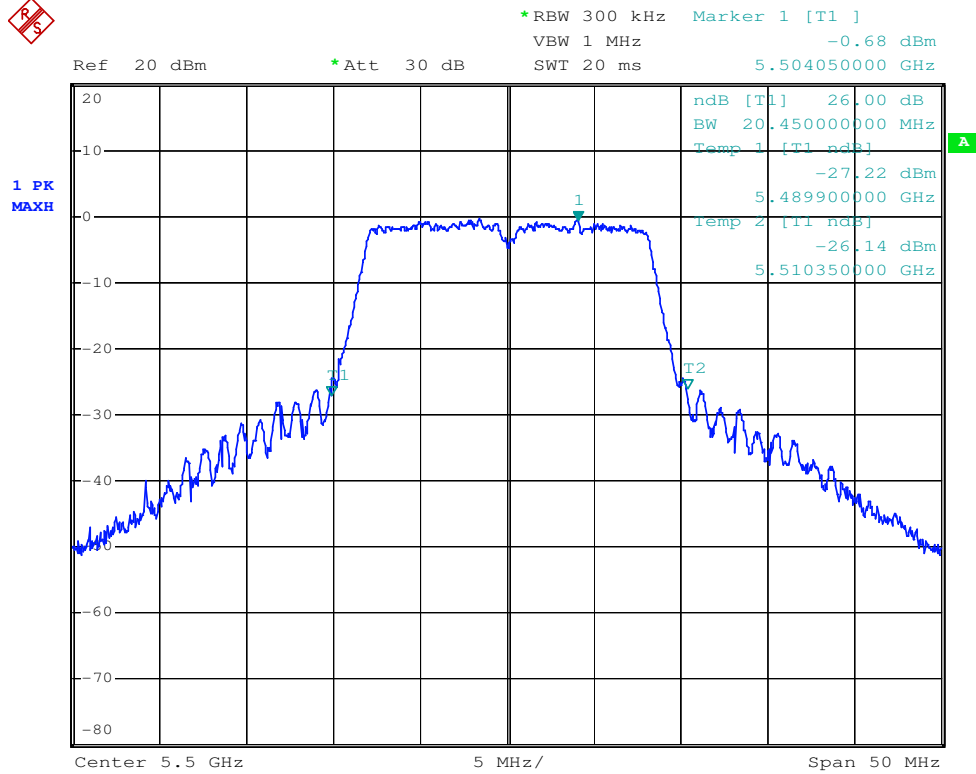


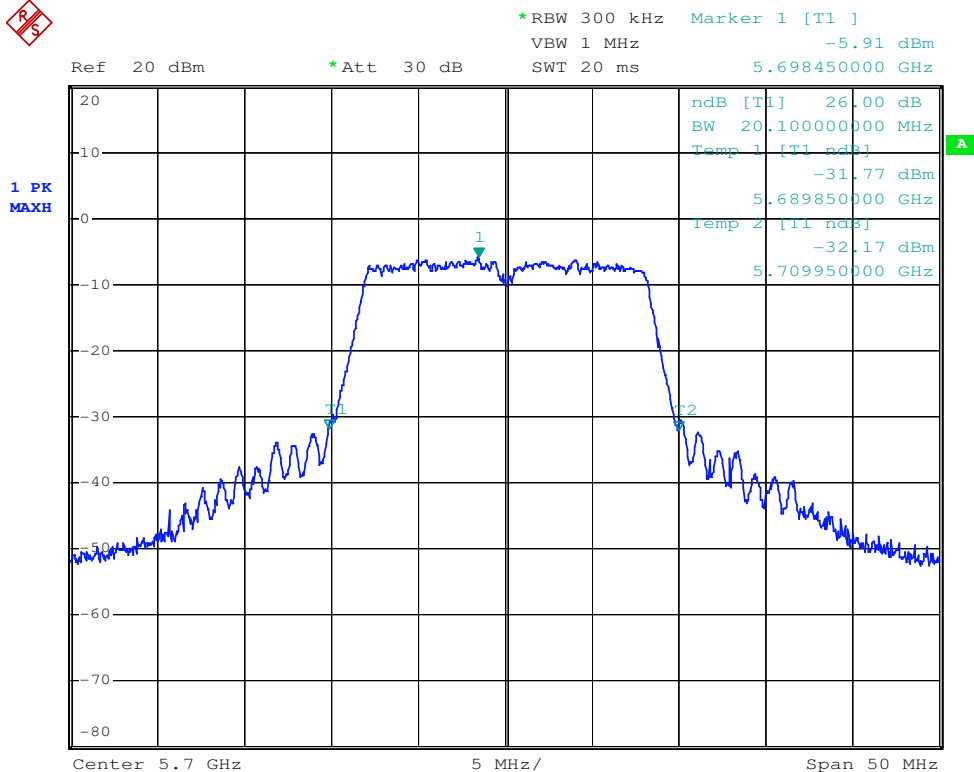
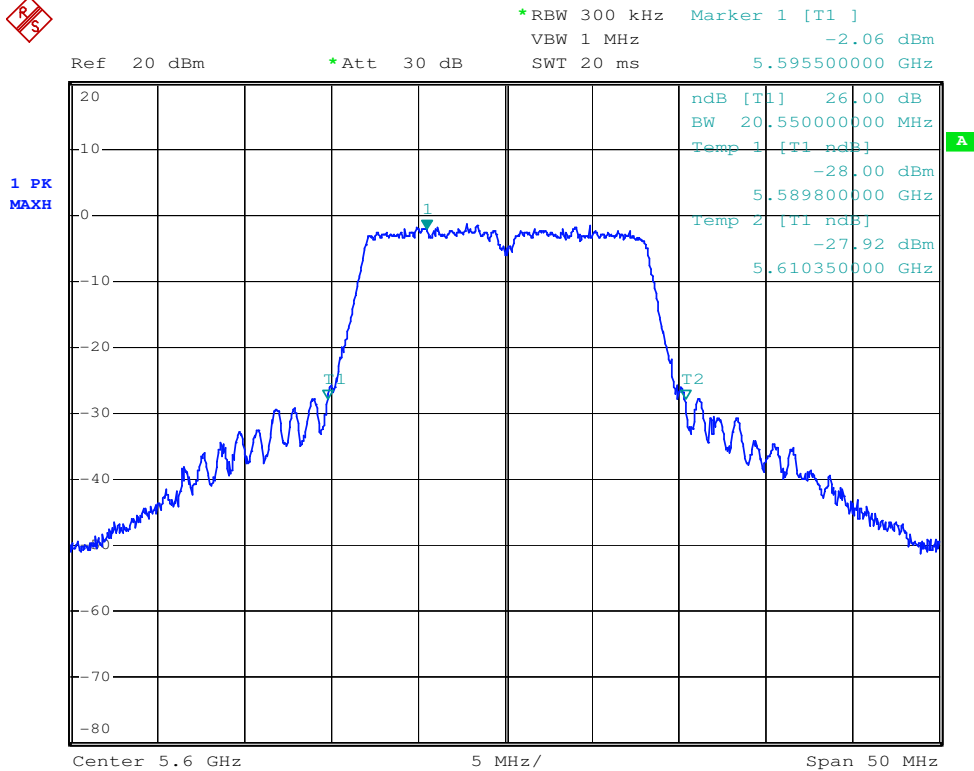
Operated in 5470MHz ~ 57250MHz

The test was performed with 802.11a, the data was shown the worst case 802.11a 6.5Mbps.

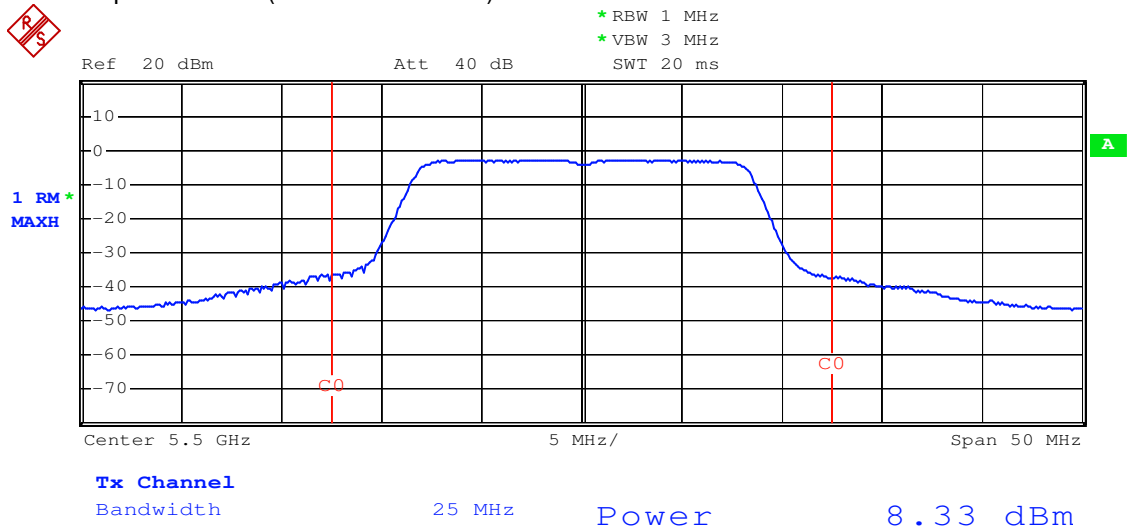
Peak Power Output Data Plot 802.11a 6.5Mbps (Chain 100)

26dB Bandwidth

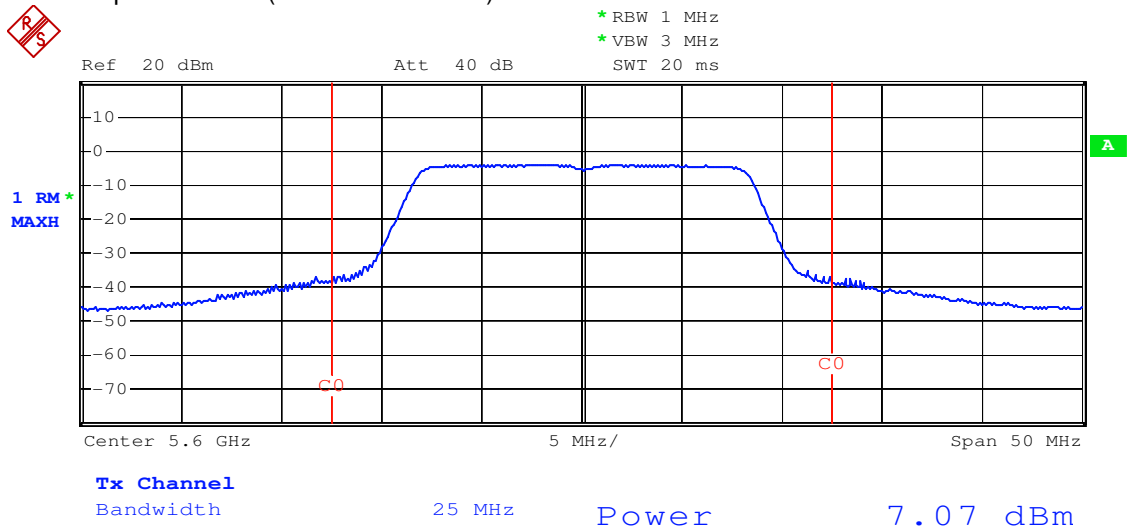




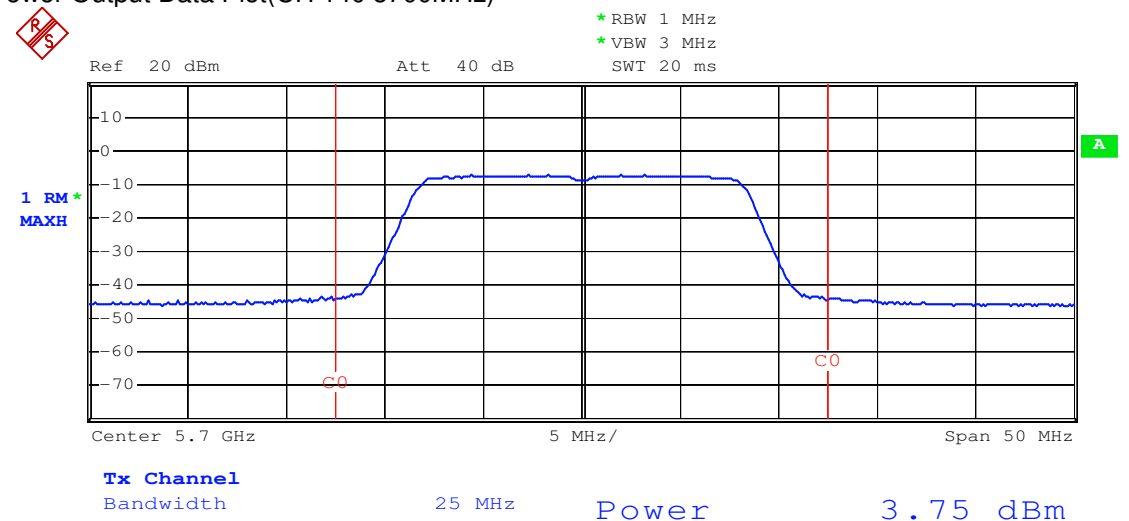
Peak Power Output Data Plot(CH 100 5500MHz)



Peak Power Output Data Plot(CH 120 5600MHz)



Peak Power Output Data Plot(CH 140 5700MHz)

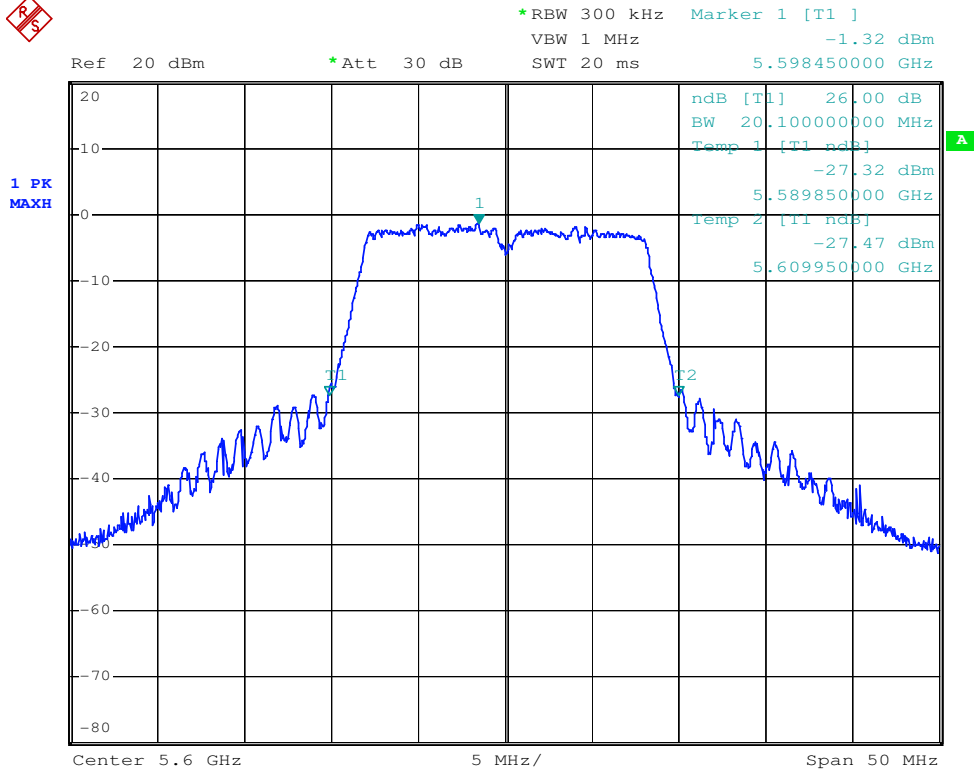
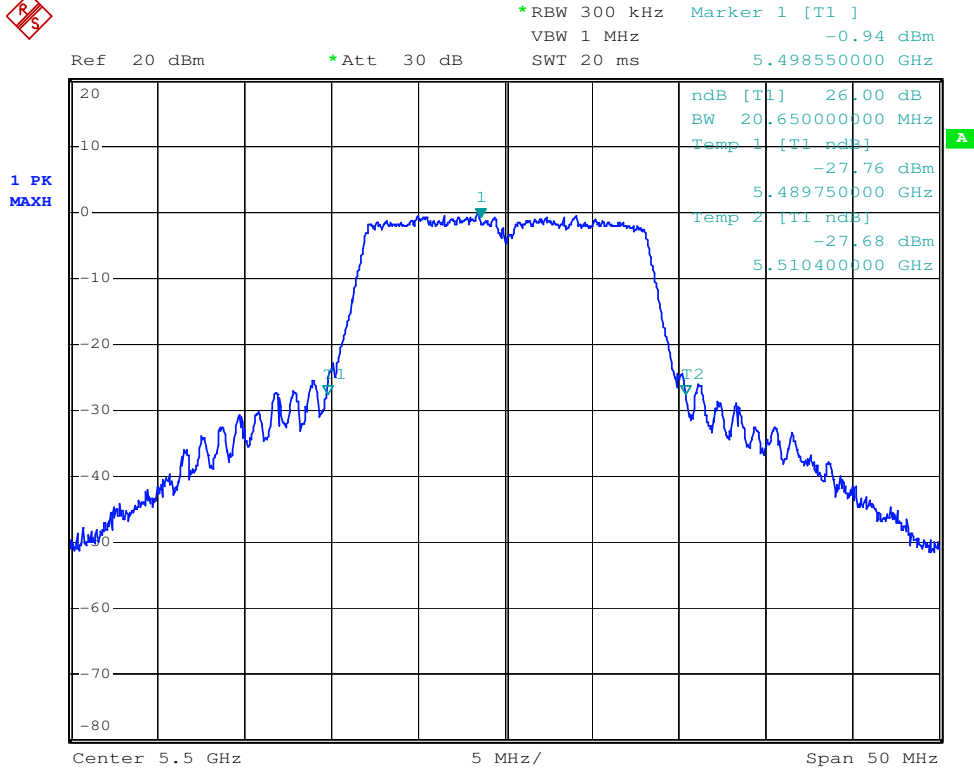


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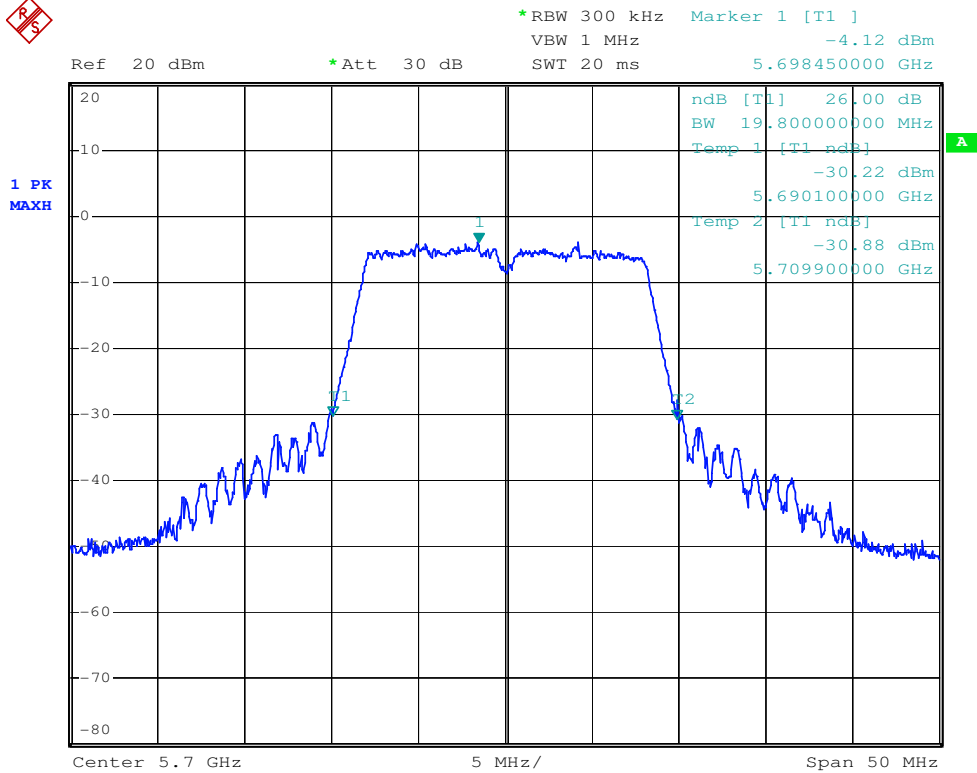


Peak Power Output Data Plot 802.11a 6.5Mbps (Chain 010)

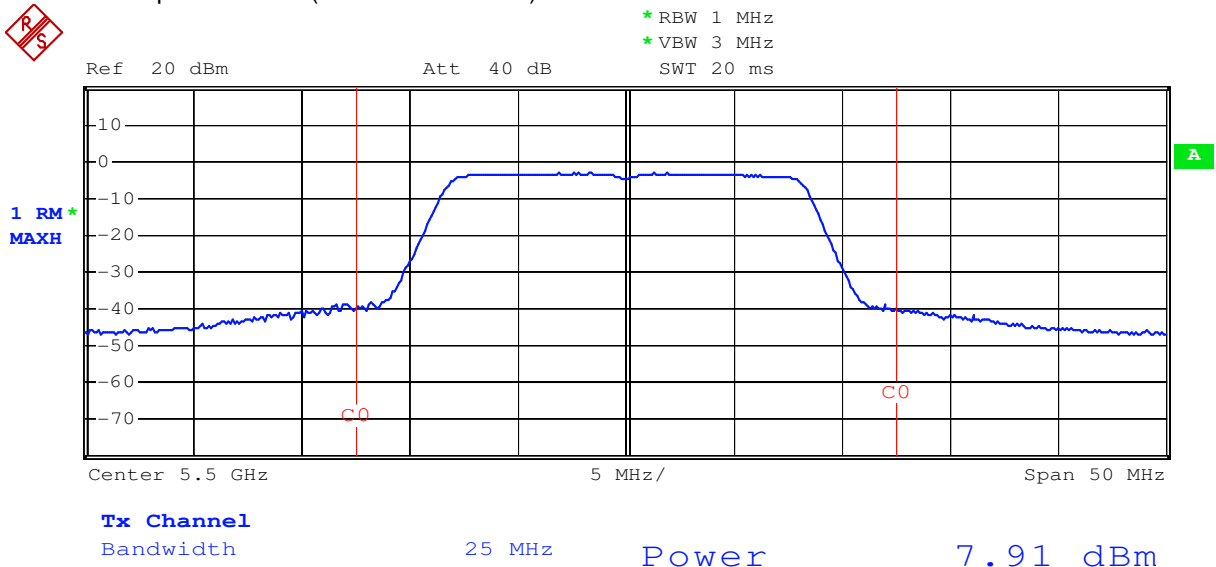
26dB Bandwidth



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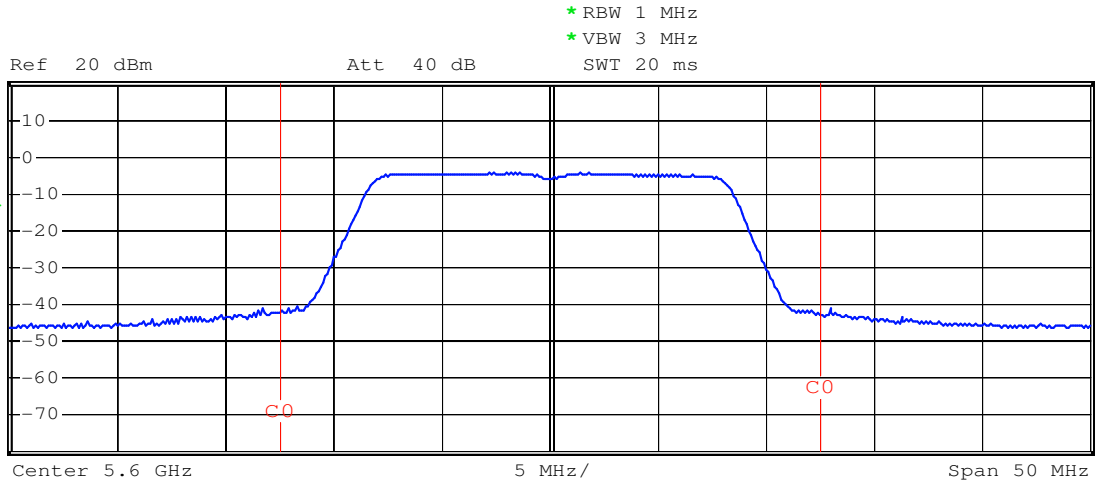


Peak Power Output Data Plot(CH 100 5500MHz)



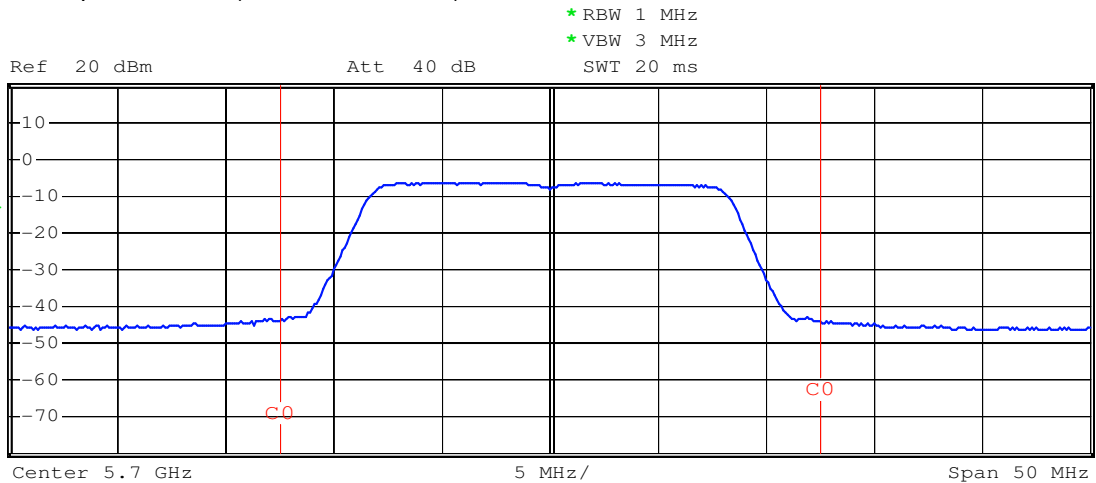


Peak Power Output Data Plot(CH 120 5600MHz)



Tx Channel
Bandwidth 25 MHz Power 6.69 dBm

Peak Power Output Data Plot(CH 140 5700MHz)

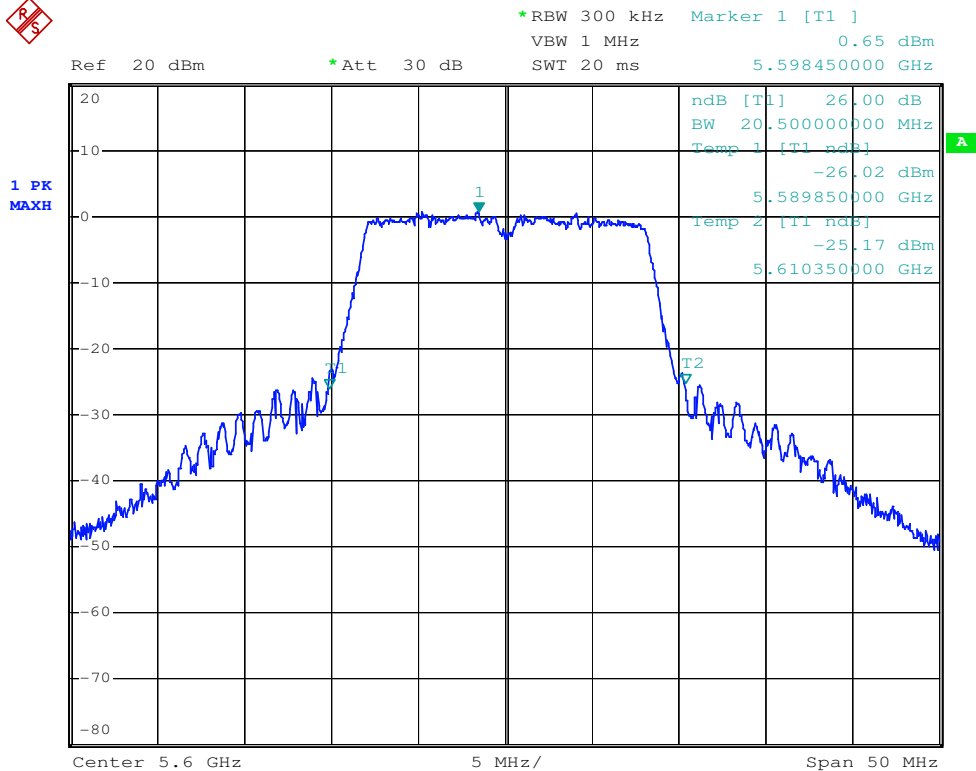
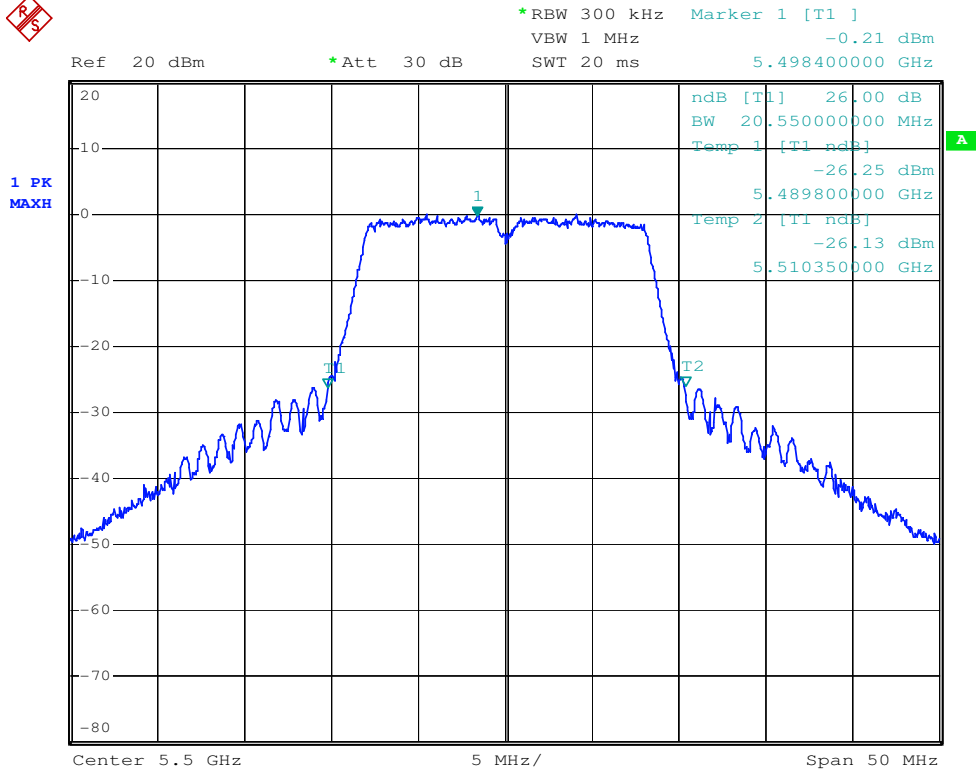


Tx Channel
Bandwidth 25 MHz Power 4.67 dBm

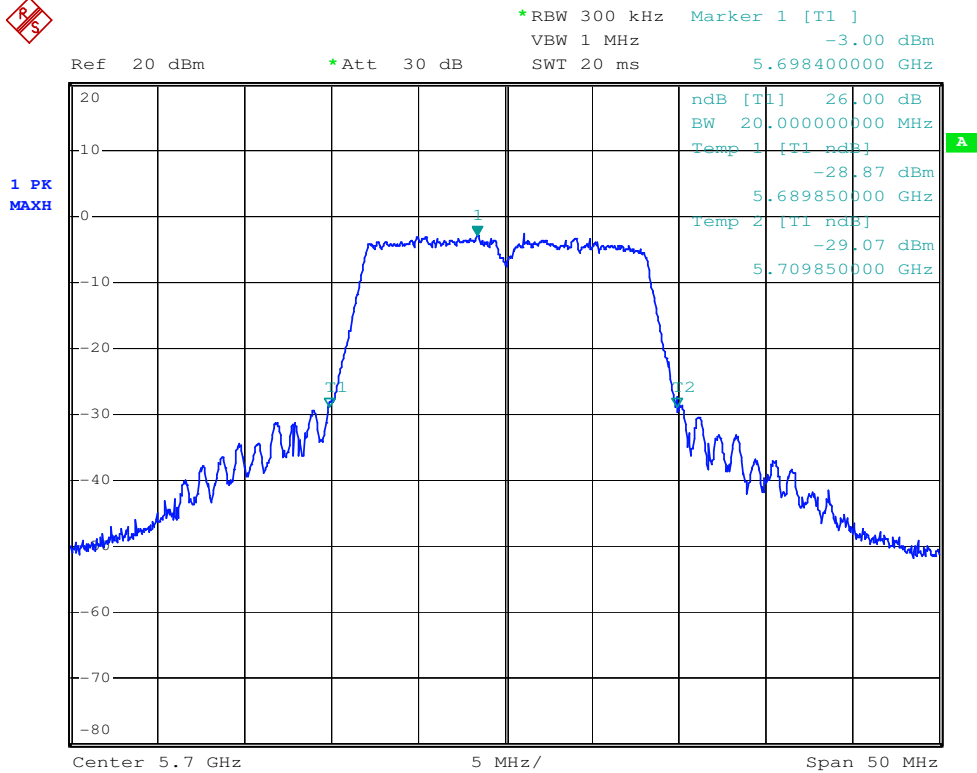


Peak Power Output Data Plot 802.11a 6.5Mbps (Chain 001)

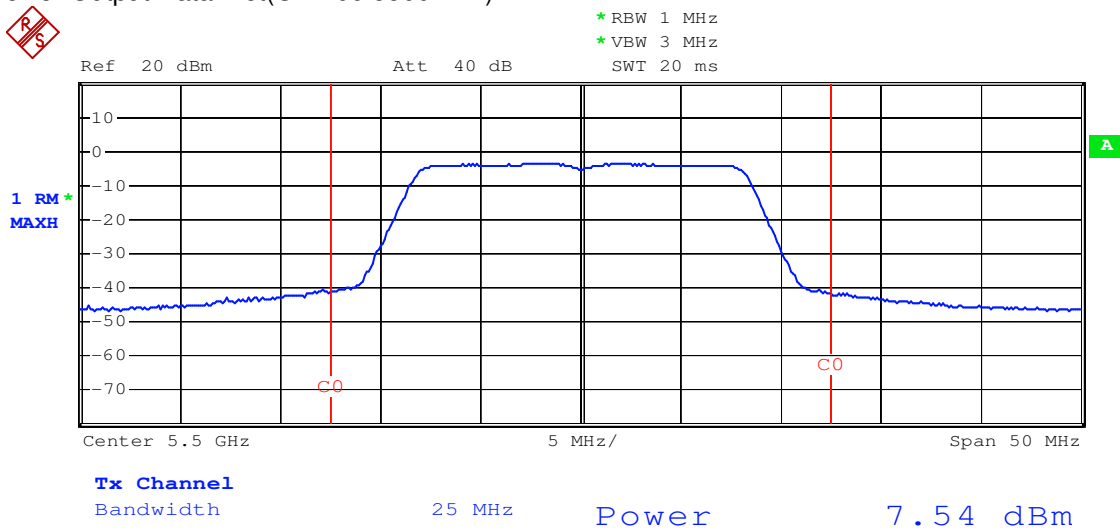
26dB Bandwidth



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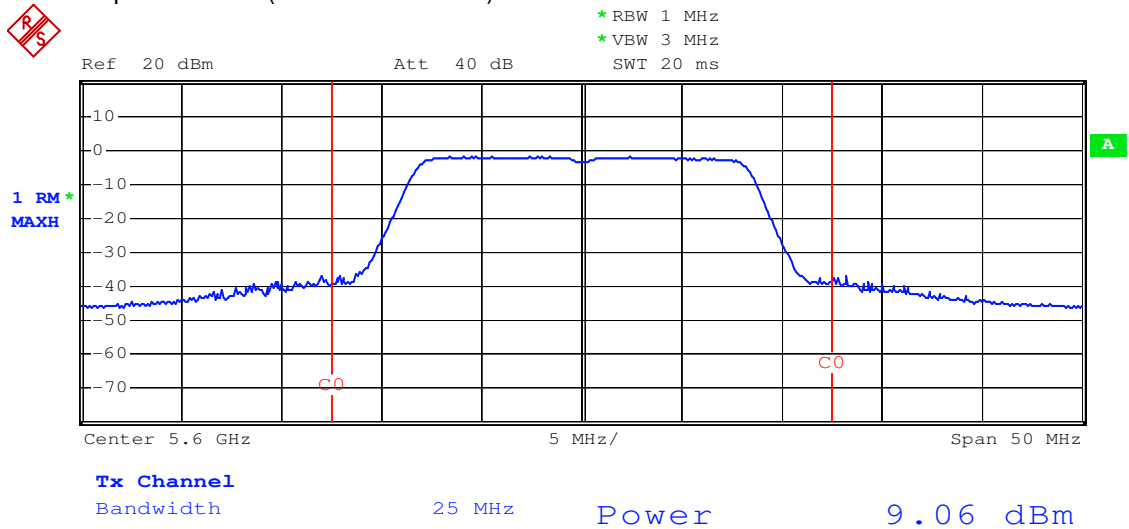


Peak Power Output Data Plot(CH 100 5500MHz)

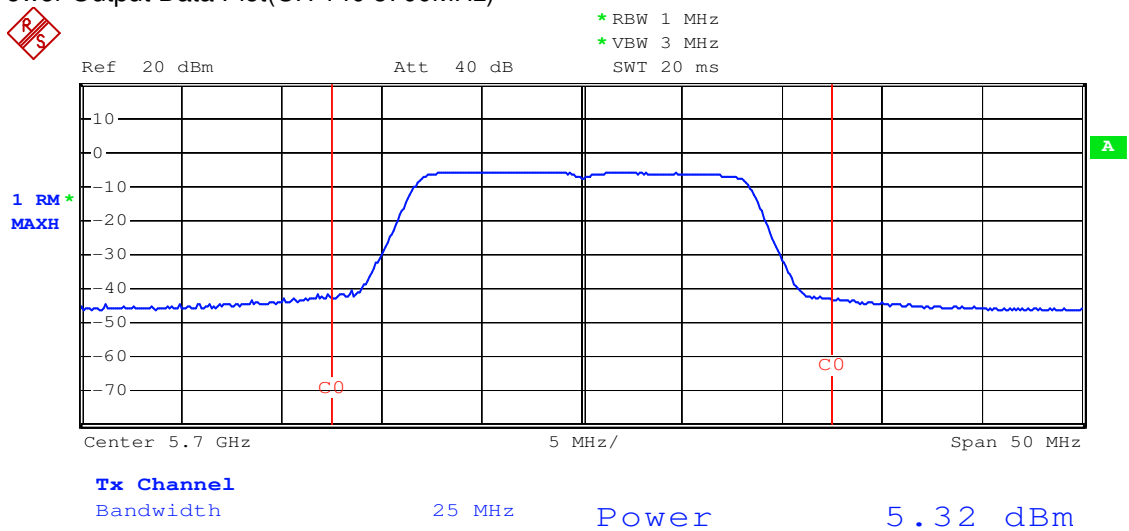




Peak Power Output Data Plot(CH 120 5600MHz)



Peak Power Output Data Plot(CH 140 5700MHz)

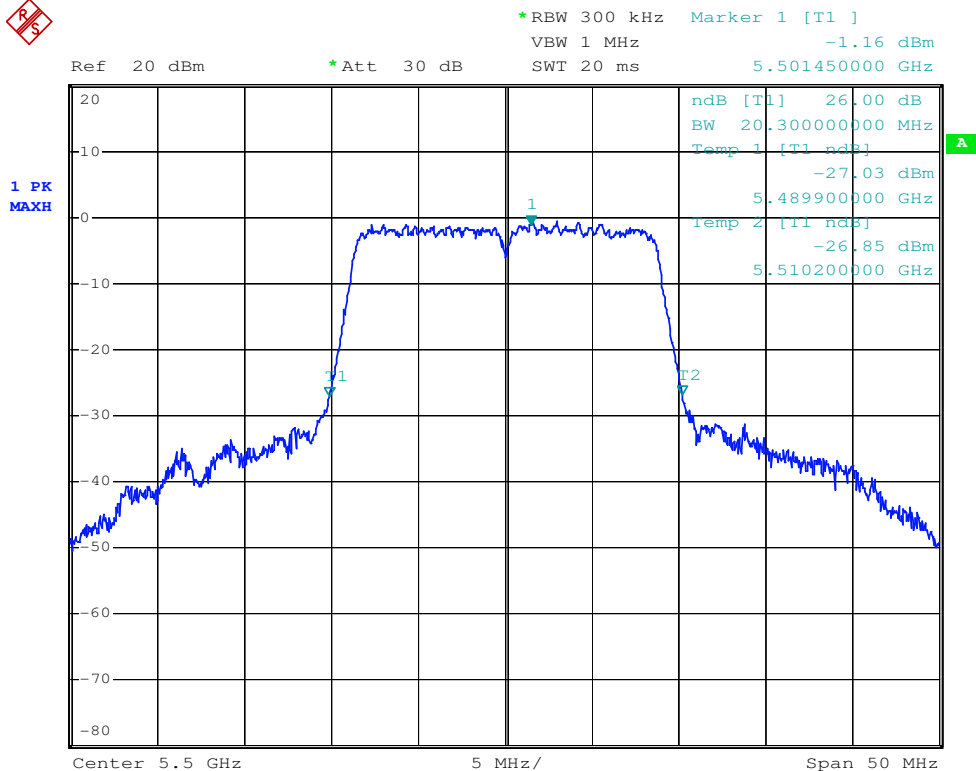


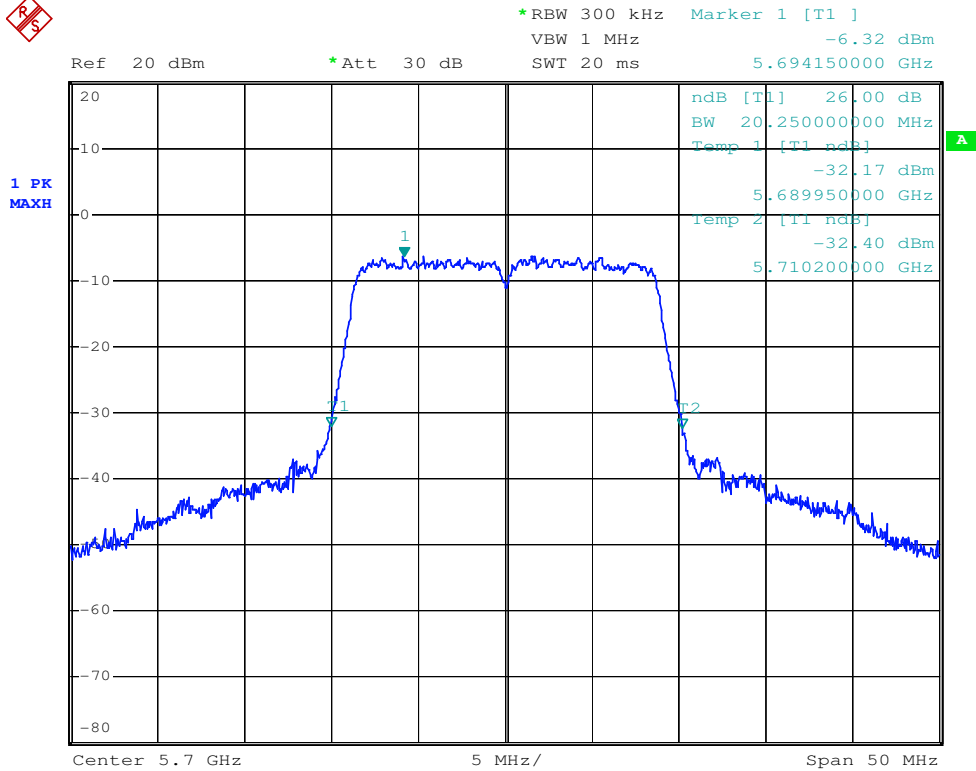
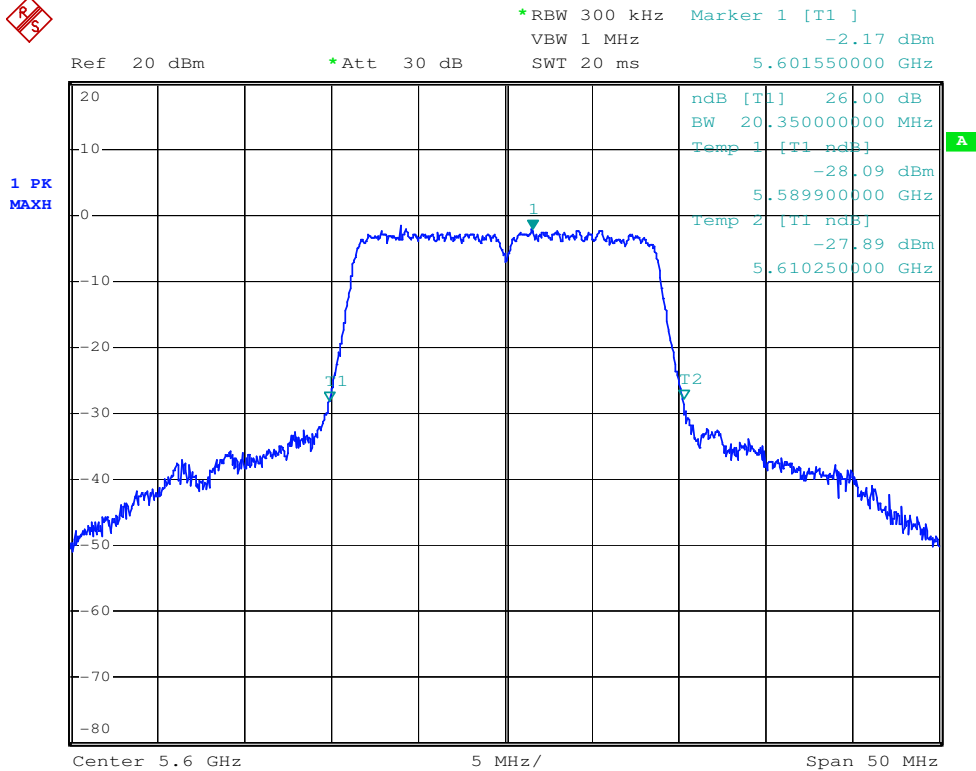


The test was performed with 802.11n (20MHz), the data was shown the worst case 802.11n 6.5Mbps.

Peak Power Output Data Plot 802.11n 20MHz 6.5Mbps (Chain 100)

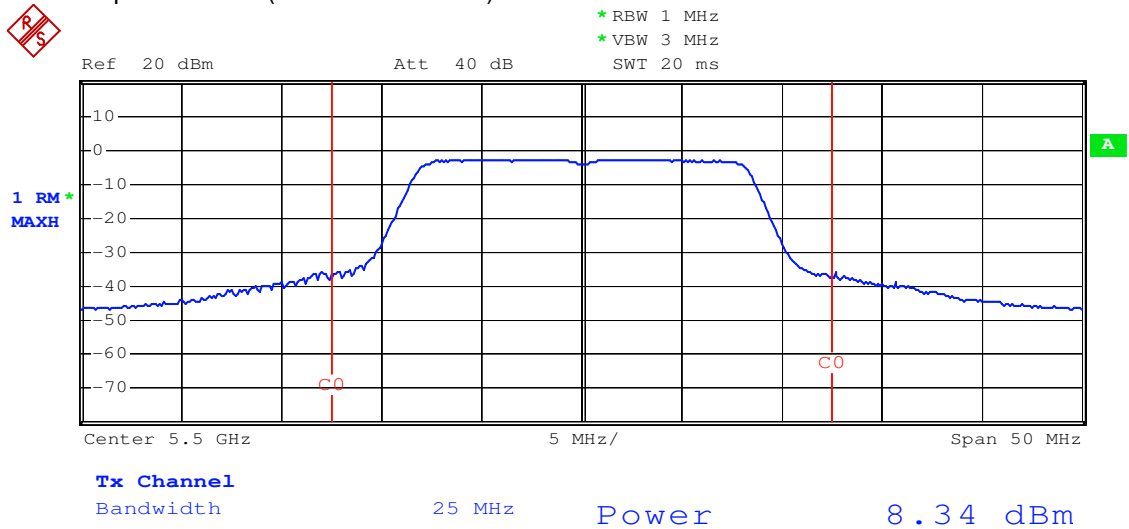
26dB Bandwidth



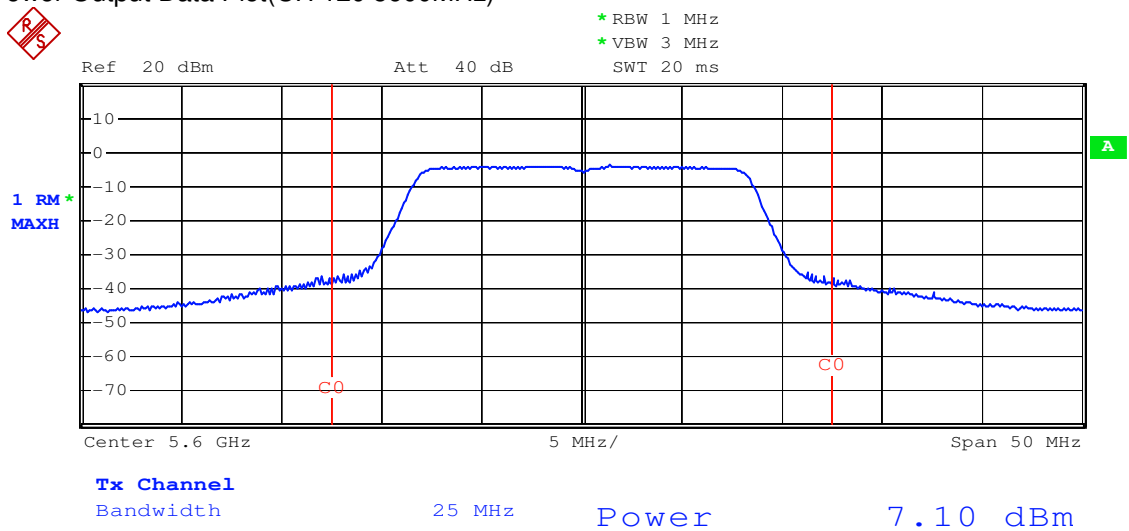




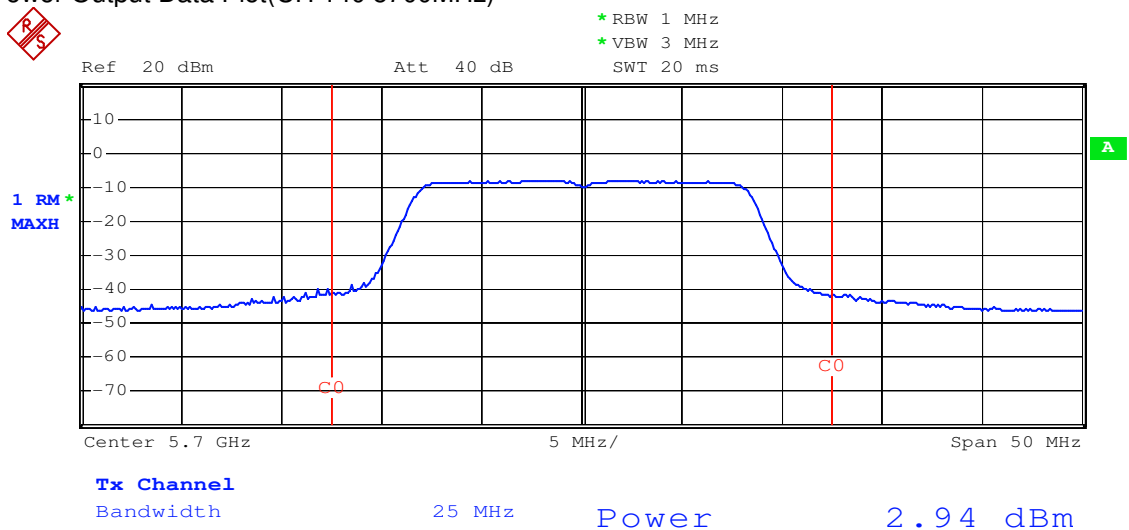
Peak Power Output Data Plot(CH 100 5500MHz)



Peak Power Output Data Plot(CH 120 5600MHz)



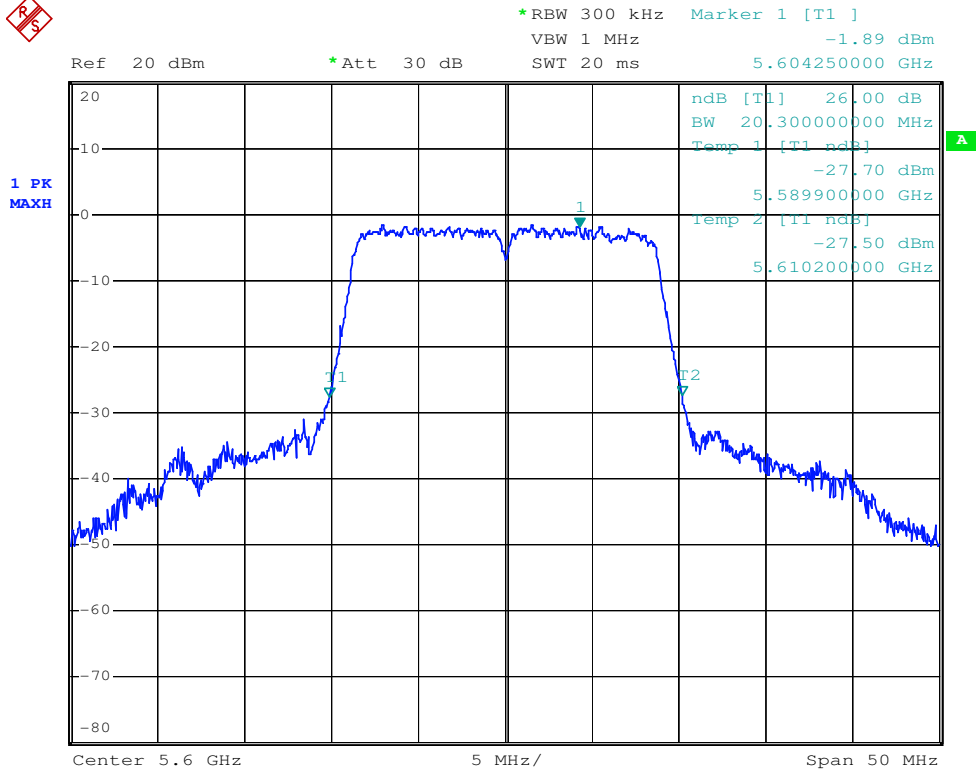
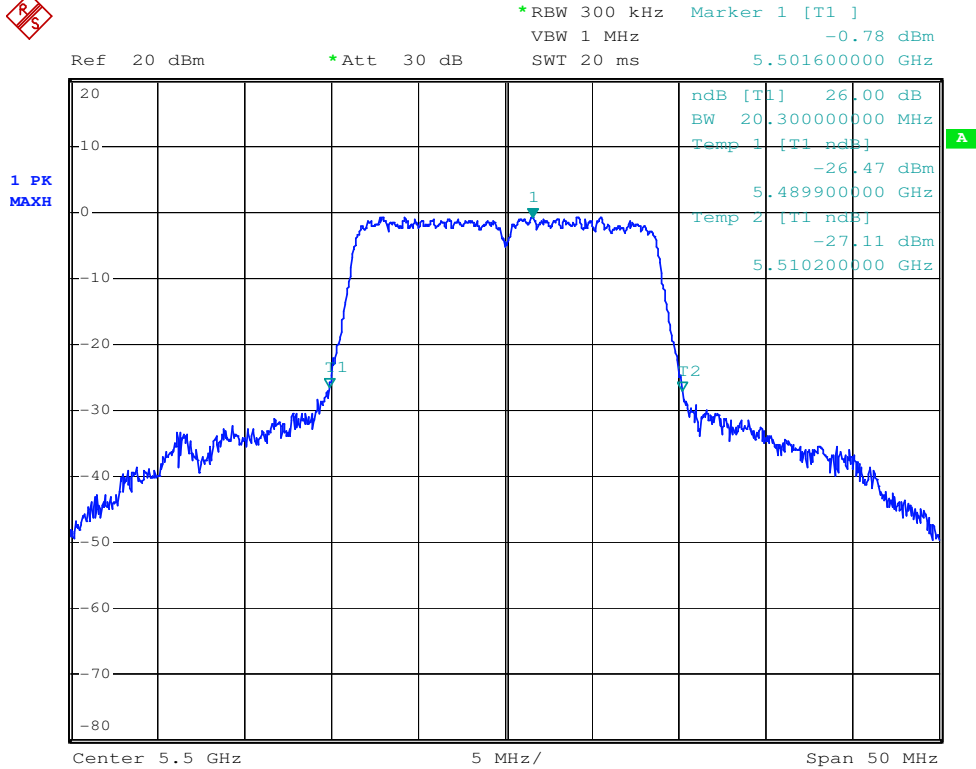
Peak Power Output Data Plot(CH 140 5700MHz)

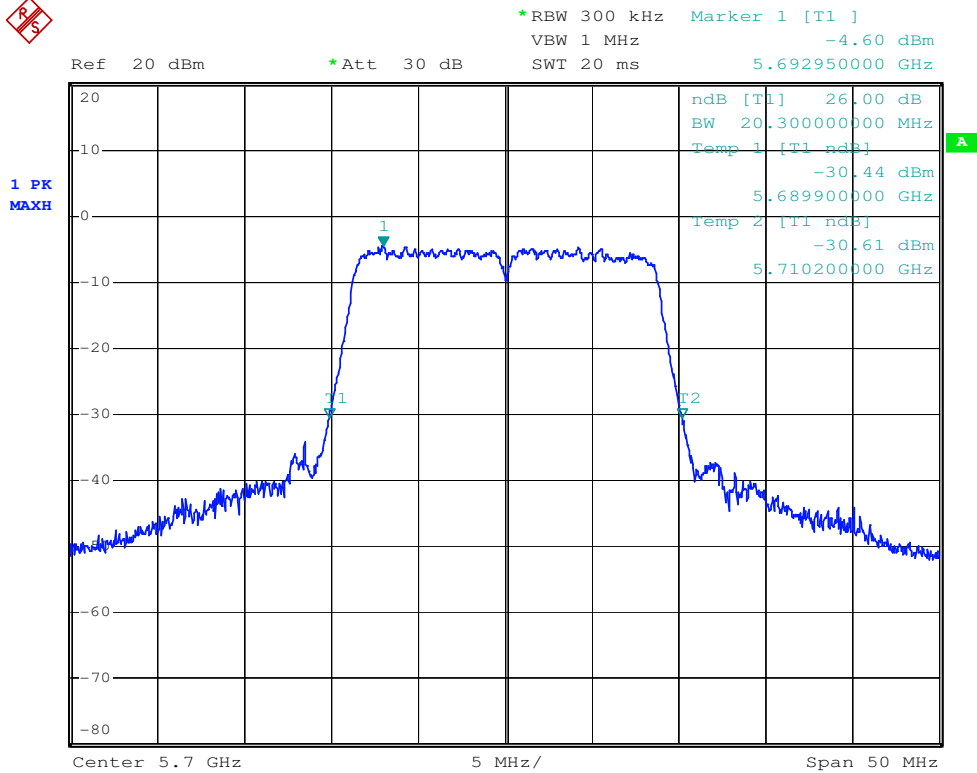




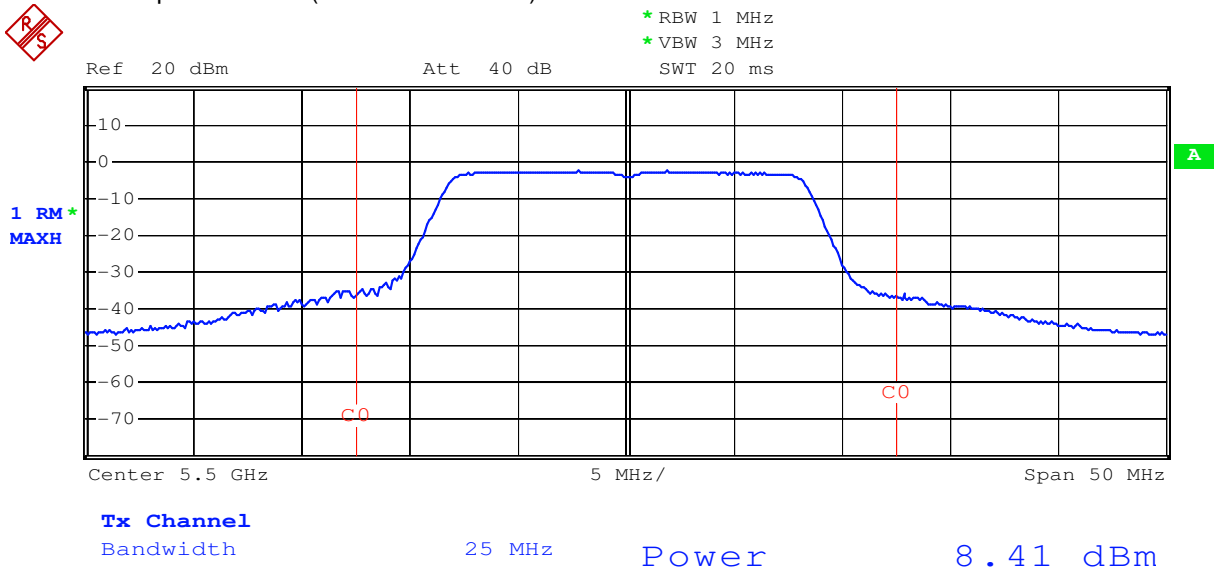
Peak Power Output Data Plot 802.11n 20MHz 6.5Mbps (Chain 010)

26dB Bandwidth

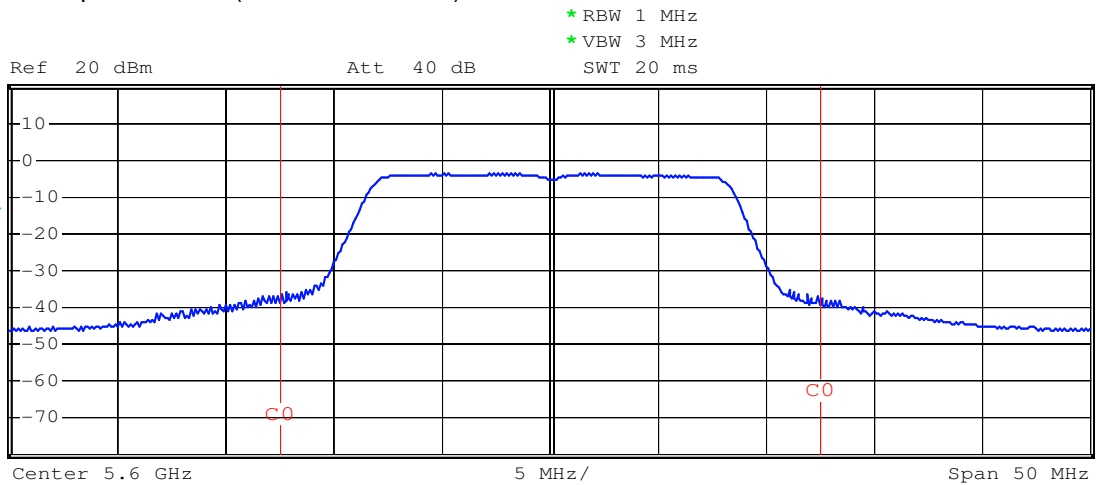




Peak Power Output Data Plot(CH 100 5500MHz)



Peak Power Output Data Plot(CH 120 5600MHz)



Tx Channel

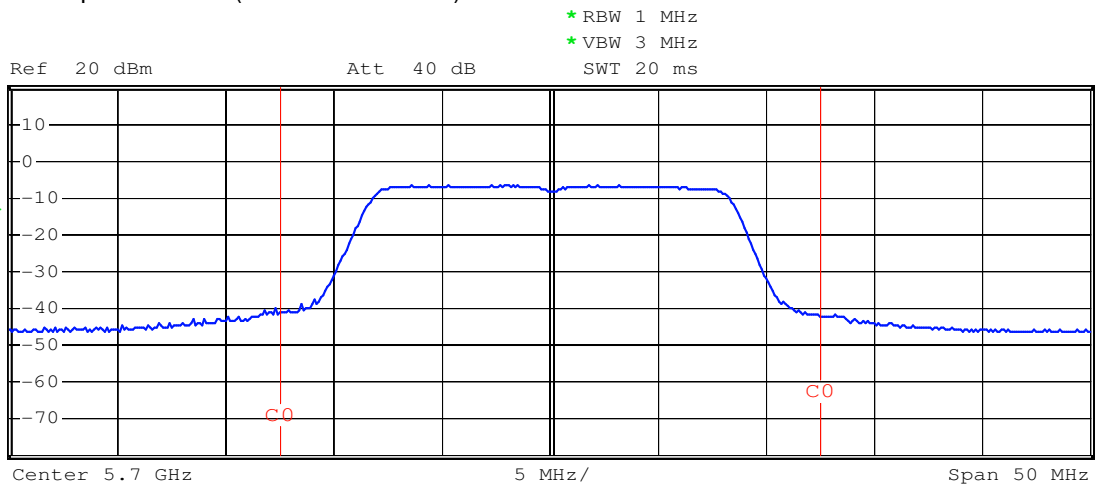
Bandwidth

25 MHz

Power

7.33 dBm

Peak Power Output Data Plot(CH 140 5700MHz)



Tx Channel

Bandwidth

25 MHz

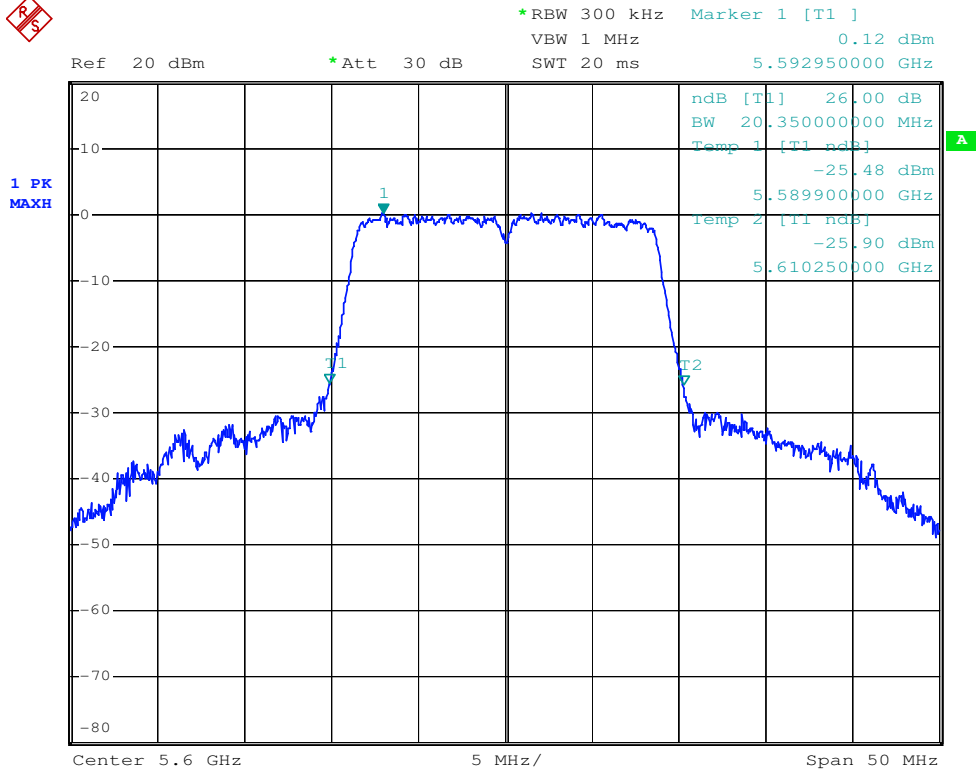
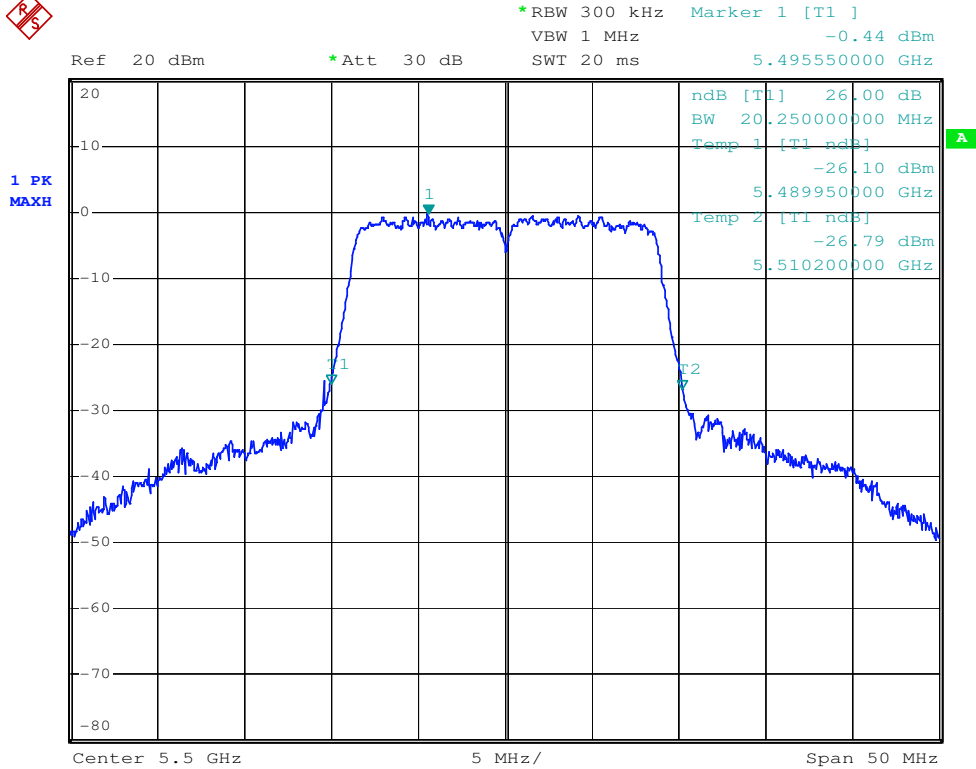
Power

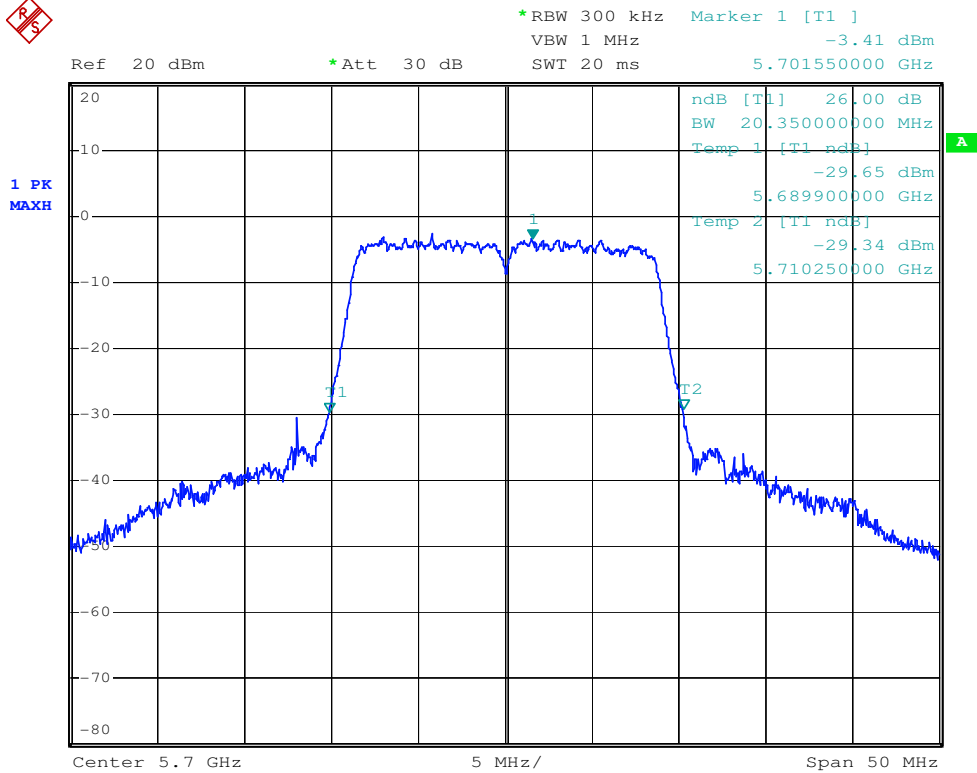
4.44 dBm



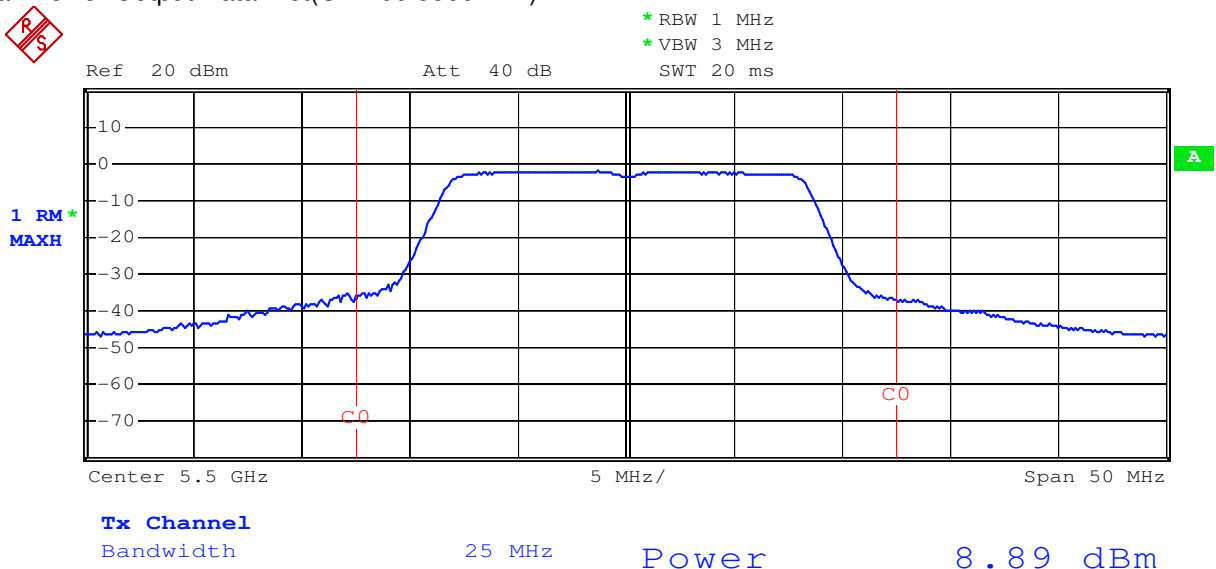
Peak Power Output Data Plot 802.11n 20MHz 6.5Mbps (Chain 001)

26dB Bandwidth



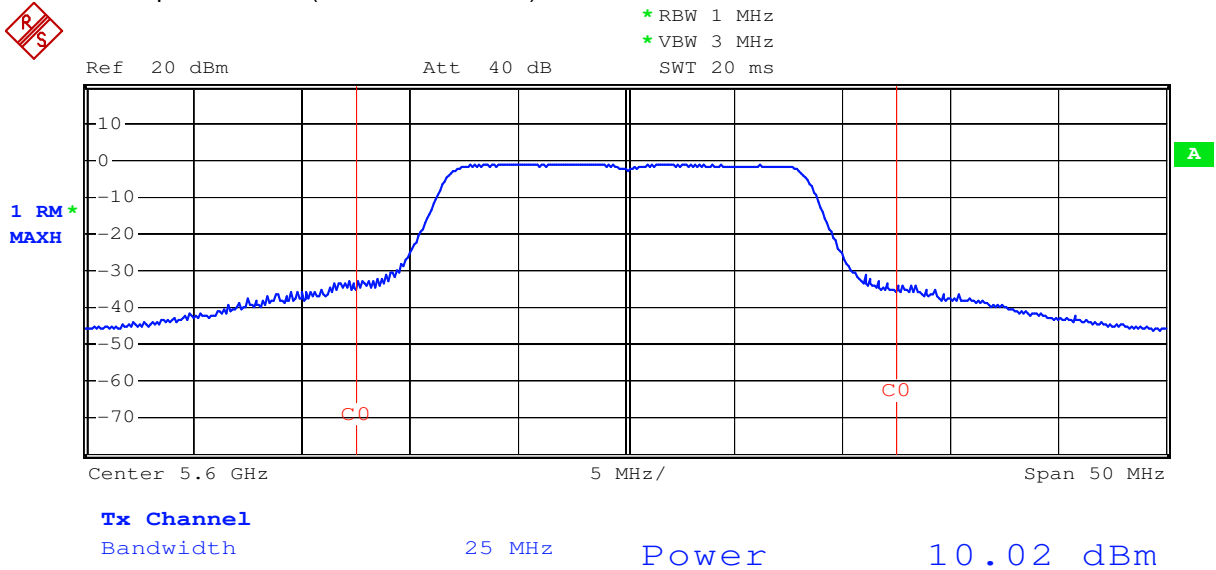


Peak Power Output Data Plot(CH 100 5500MHz)

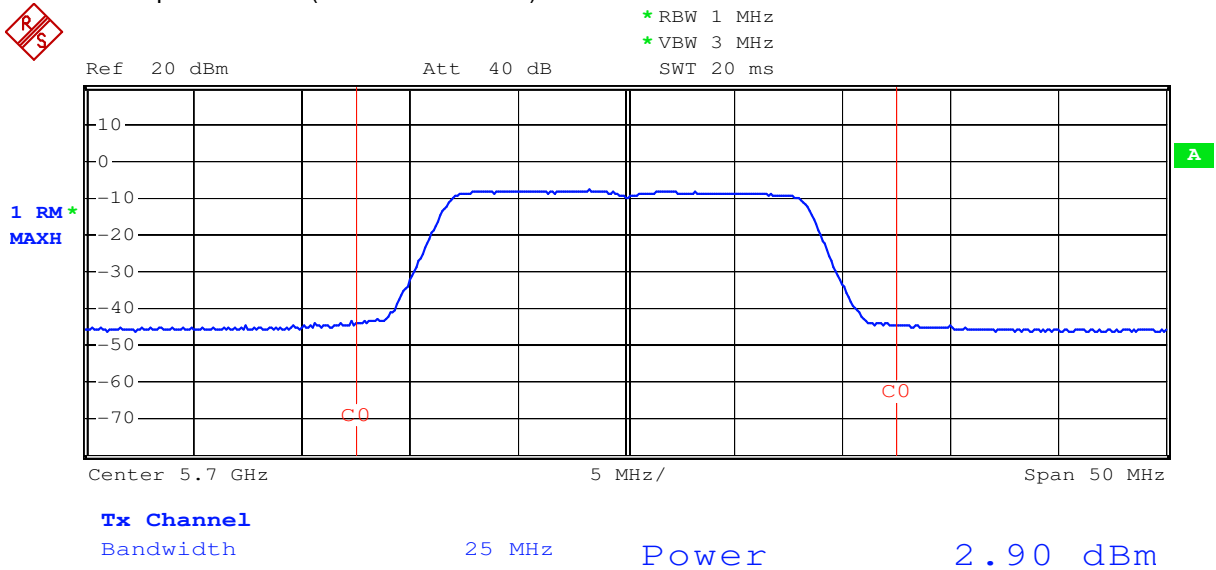




Peak Power Output Data Plot(CH 120 5600MHz)



Peak Power Output Data Plot(CH 140 5700MHz)

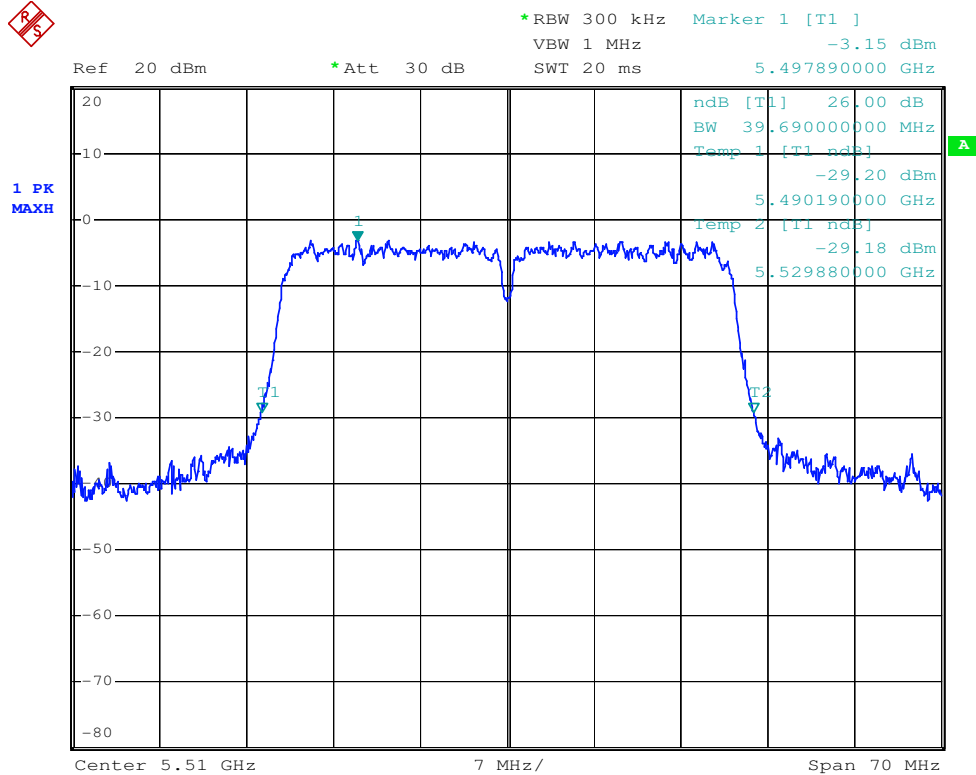


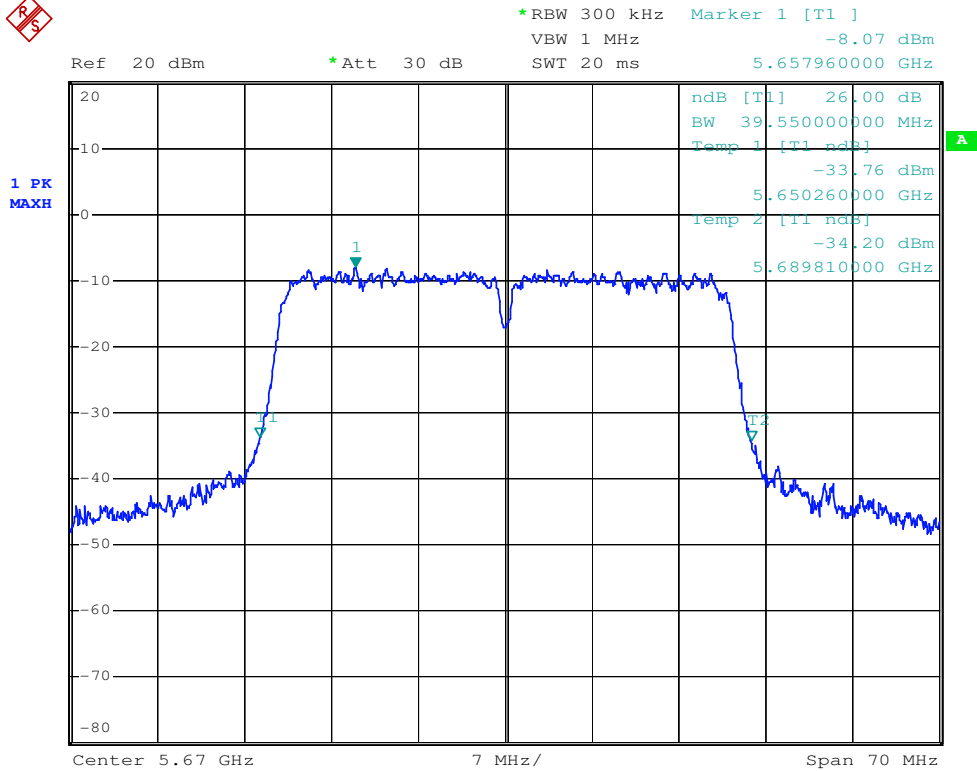
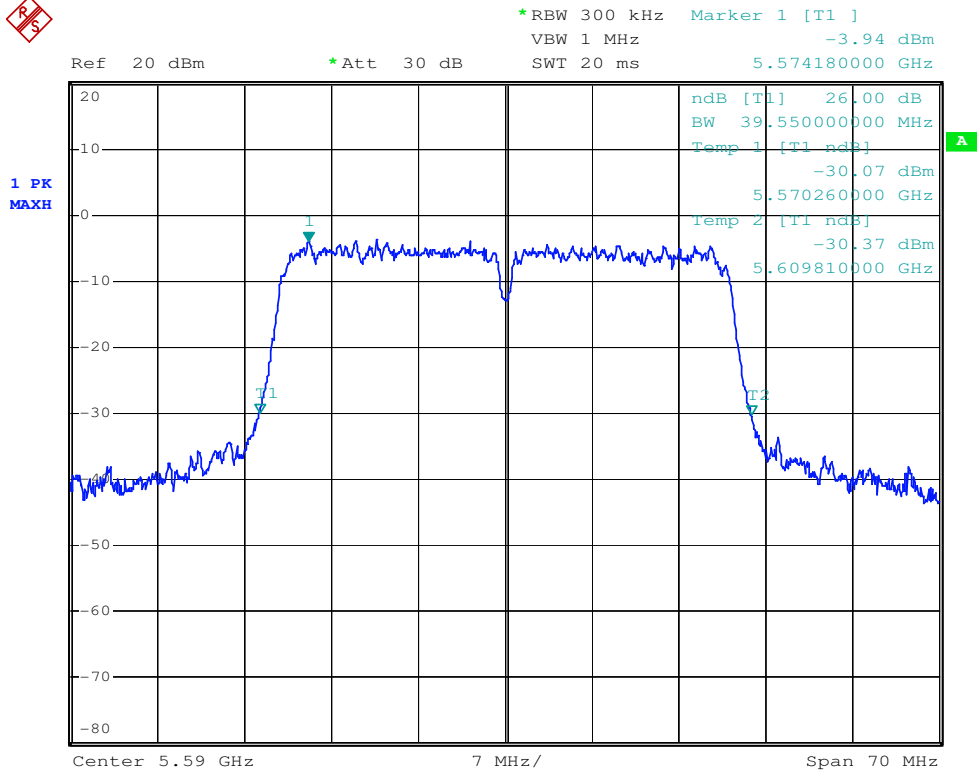


The test was performed with 802.11n (40MHz), the data was shown the worst case 802.11n 6.5Mbps.

Peak Power Output Data Plot 802.11n 40MHz 6.5Mbps (Chain 100)

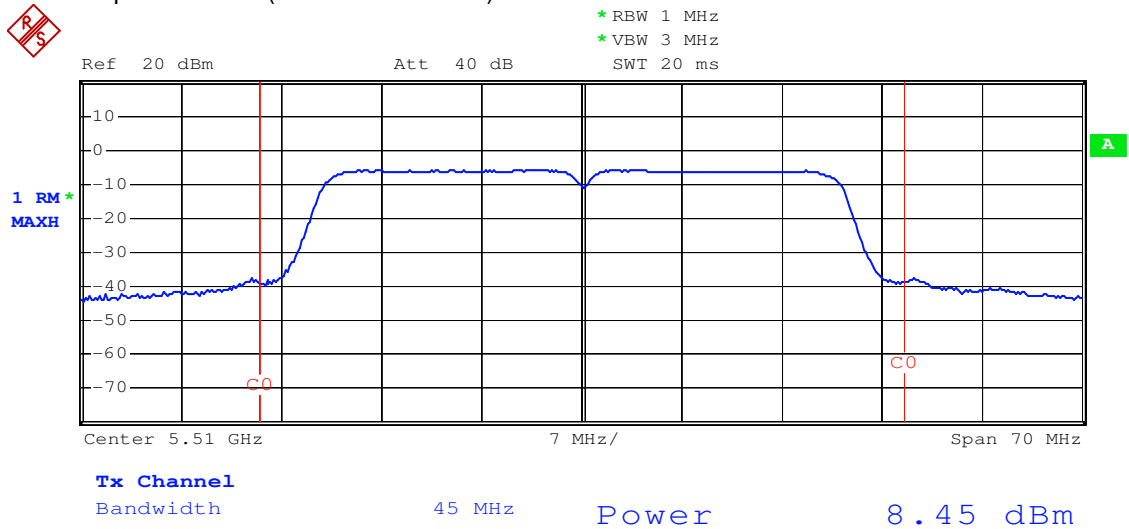
26dB Bandwidth



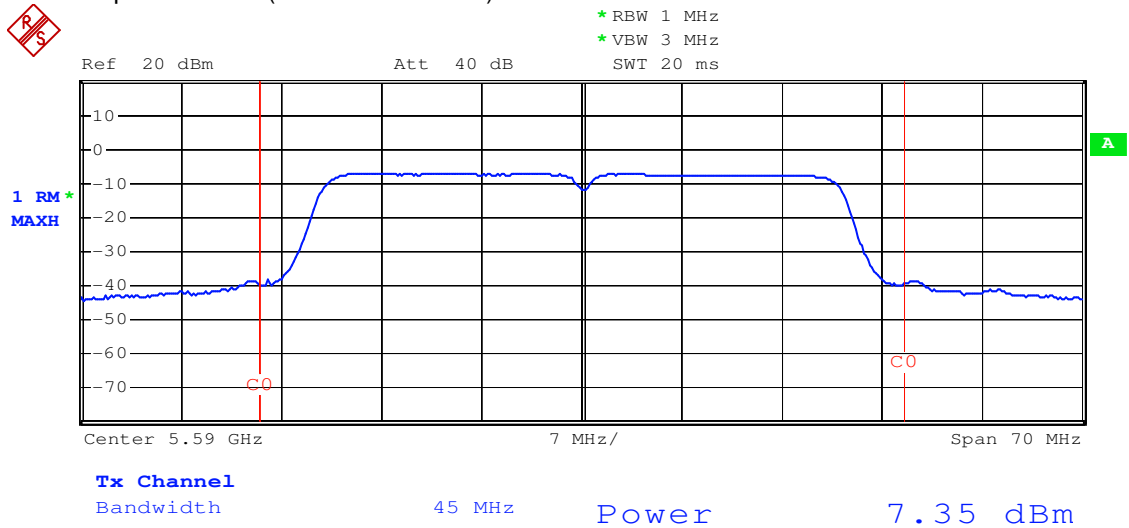




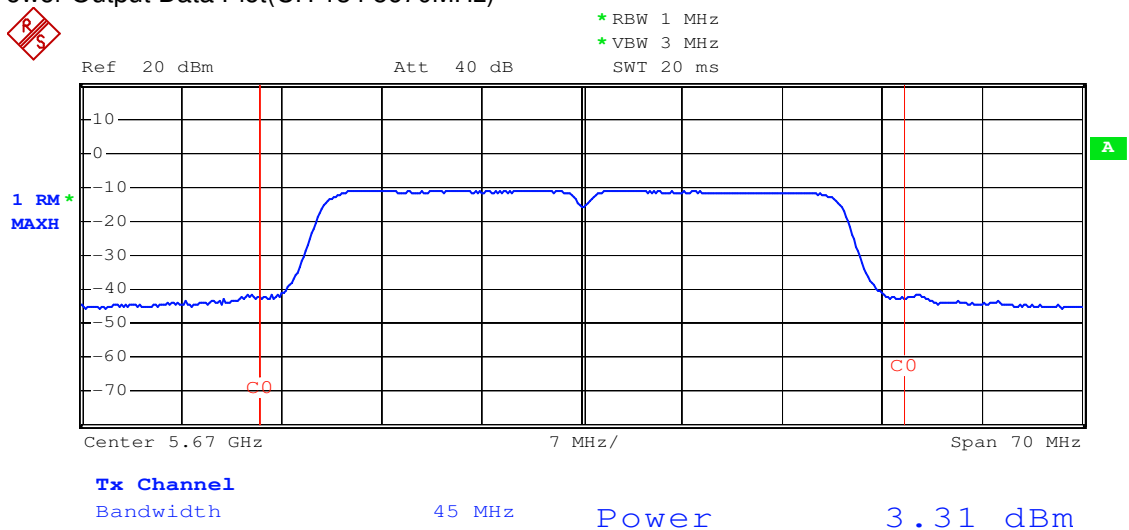
Peak Power Output Data Plot(CH 102 5510MHz)



Peak Power Output Data Plot(CH 118 5590MHz)



Peak Power Output Data Plot(CH 134 5670MHz)

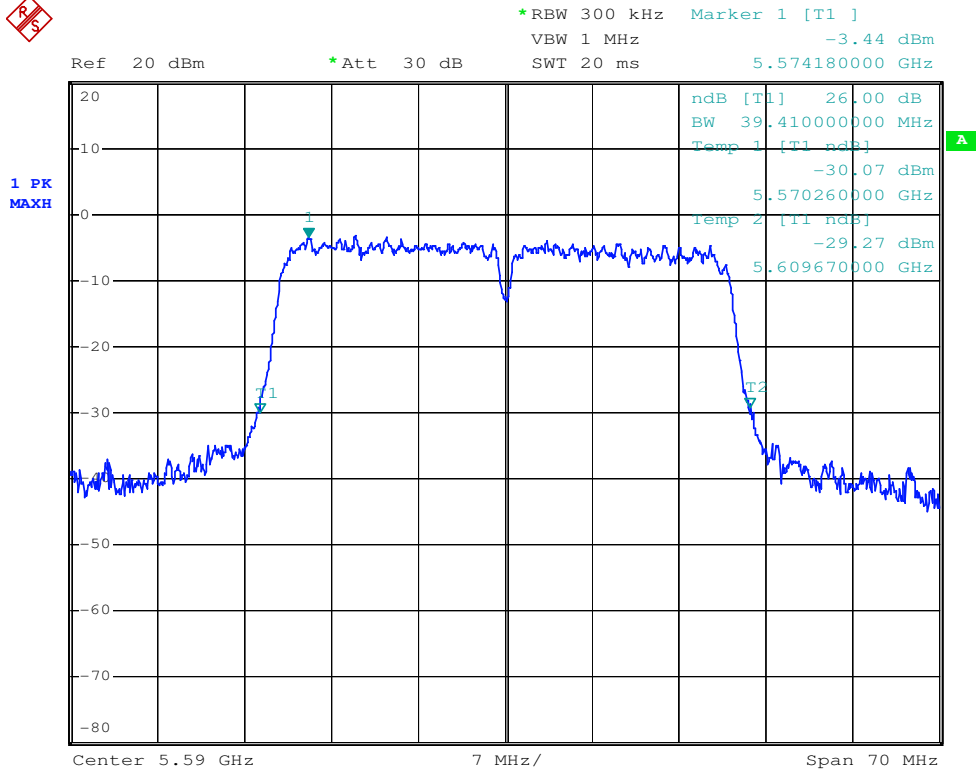
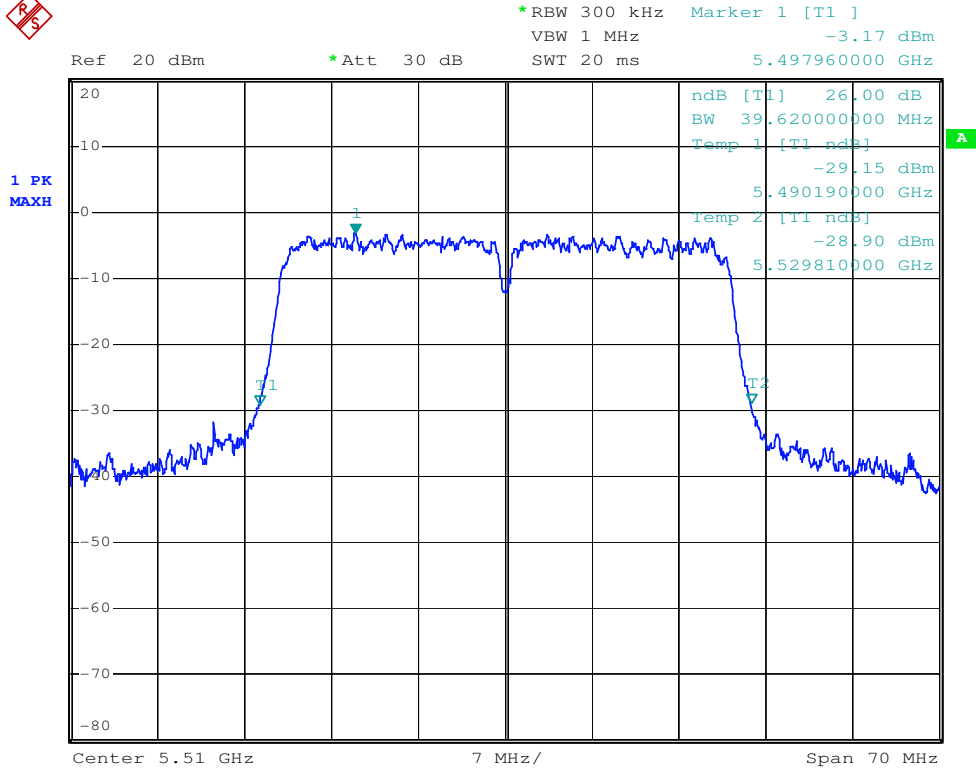


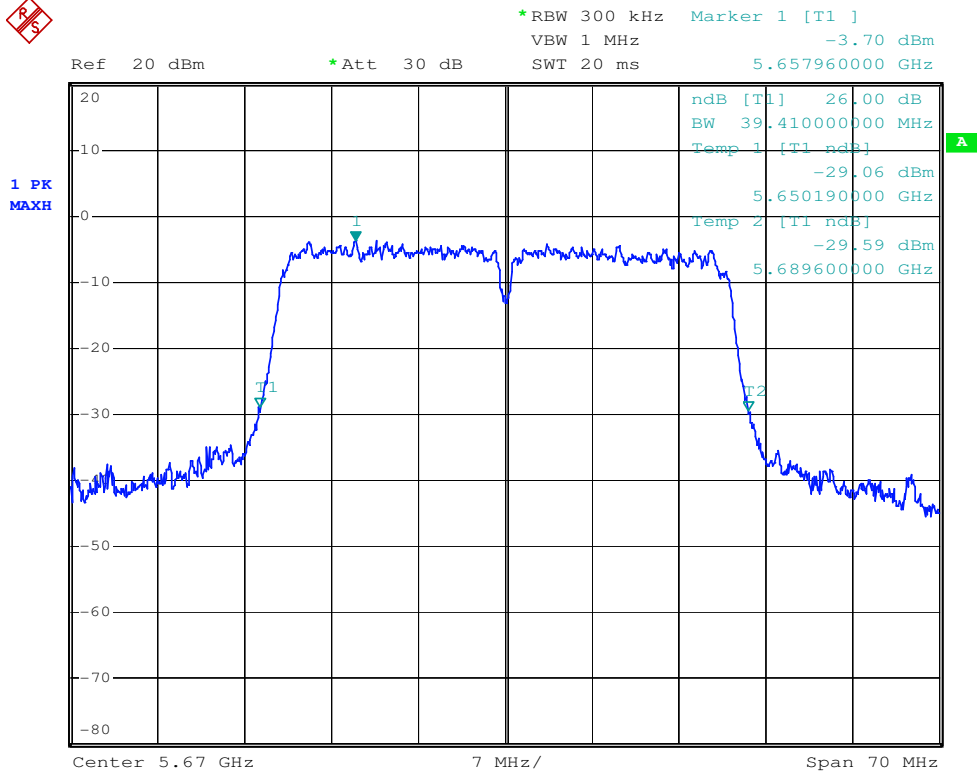
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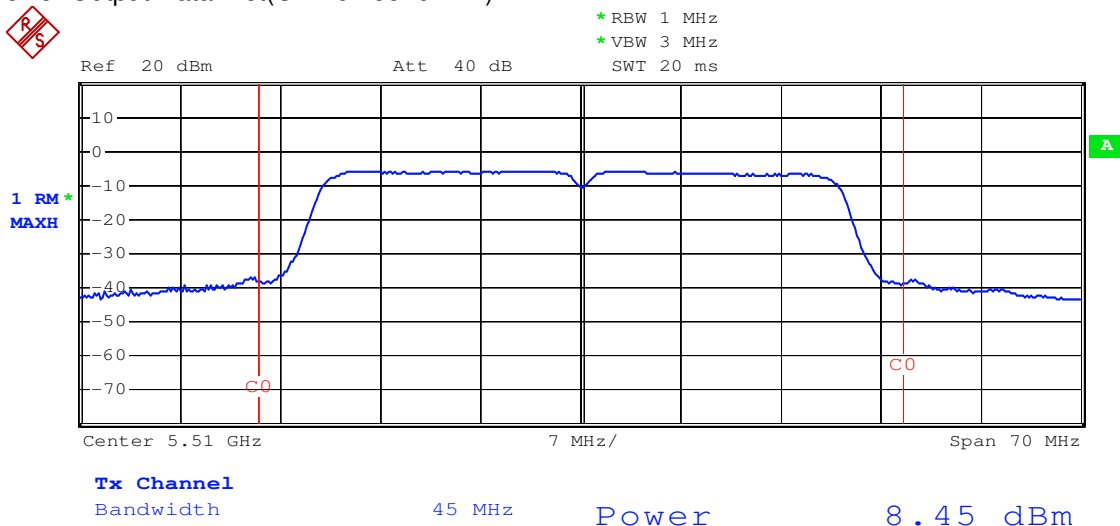
Peak Power Output Data Plot 802.11n 40MHz 6.5Mbps (Chain 010)

26dB Bandwidth



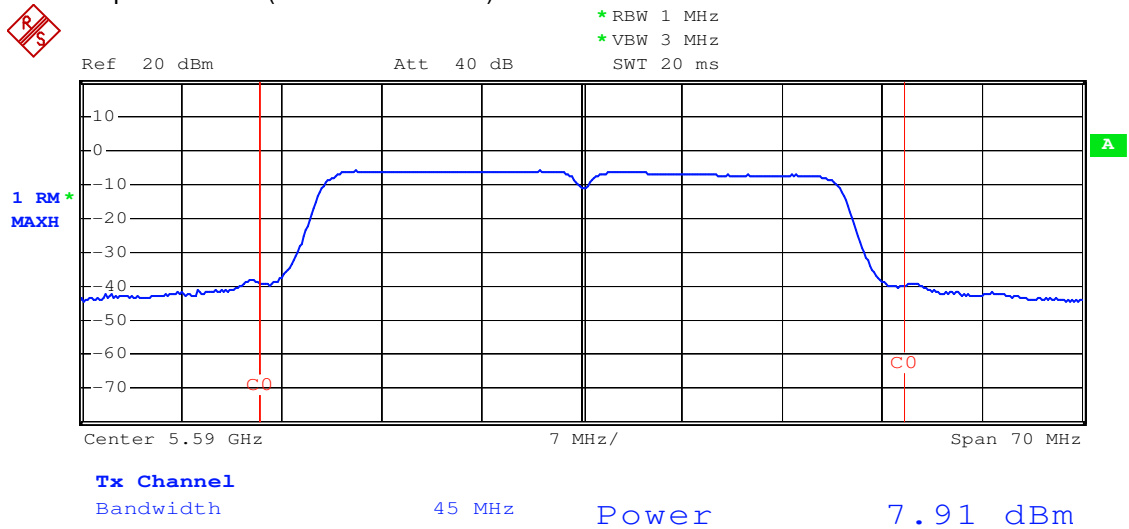


Peak Power Output Data Plot(CH 102 5510MHz)

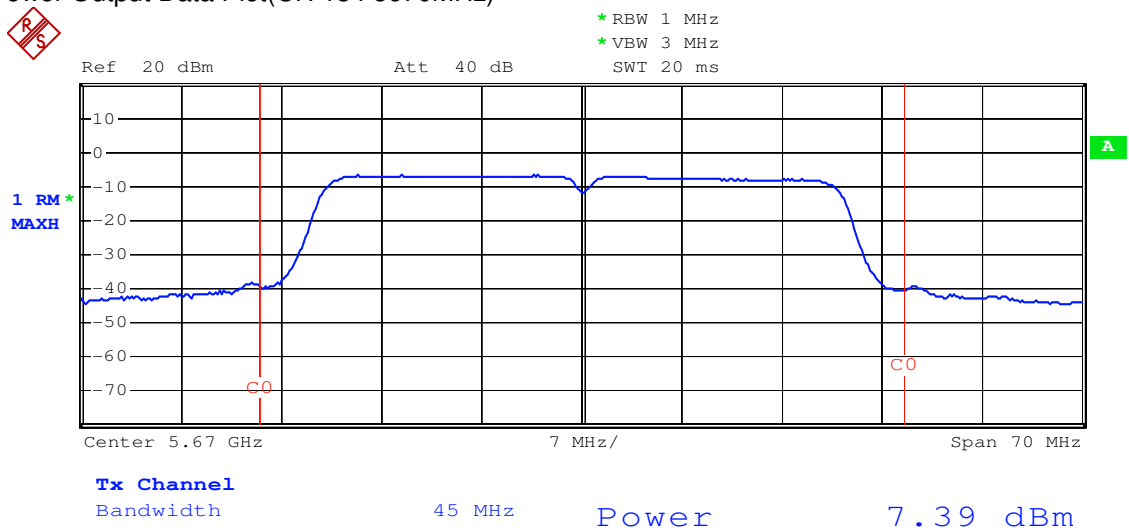




Peak Power Output Data Plot(CH 118 5590MHz)



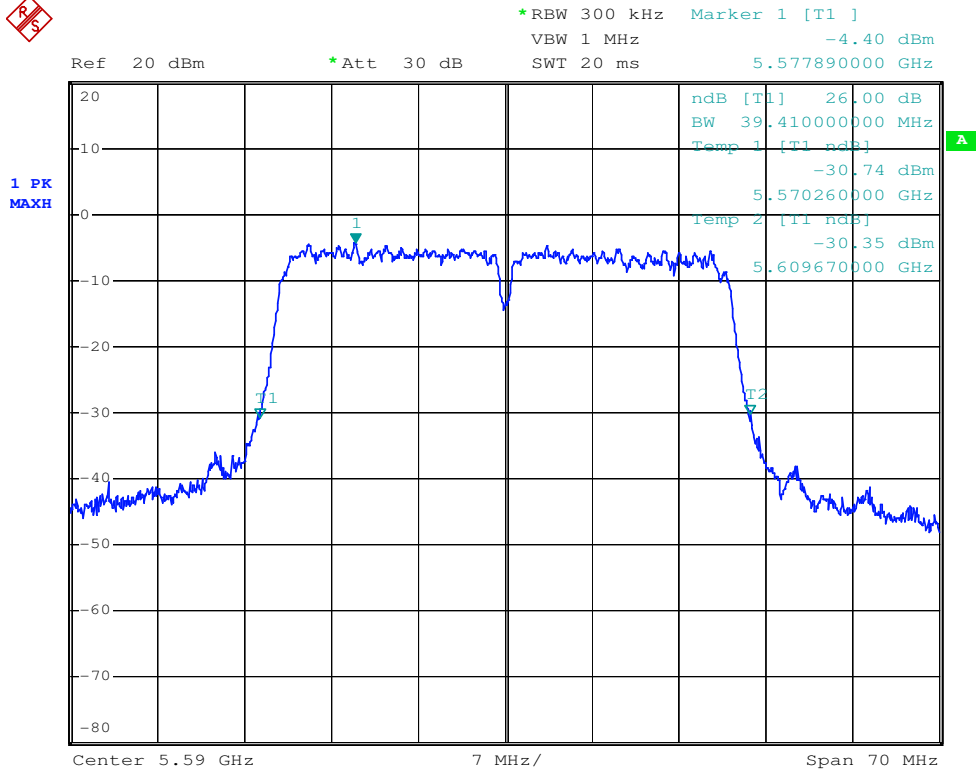
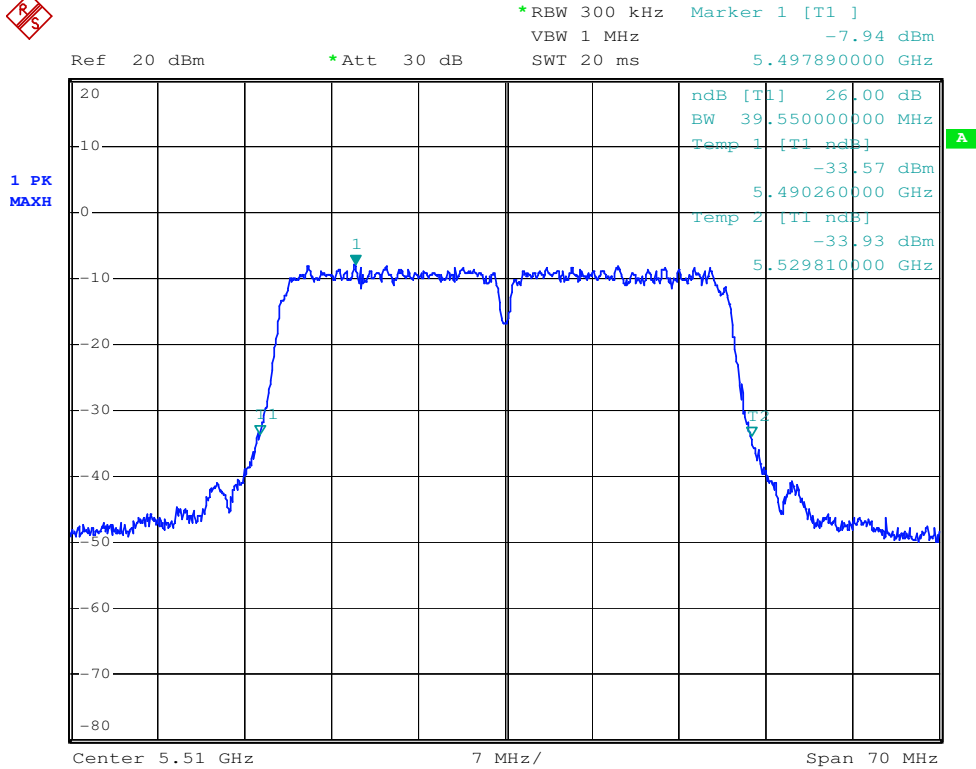
Peak Power Output Data Plot(CH 134 5670MHz)

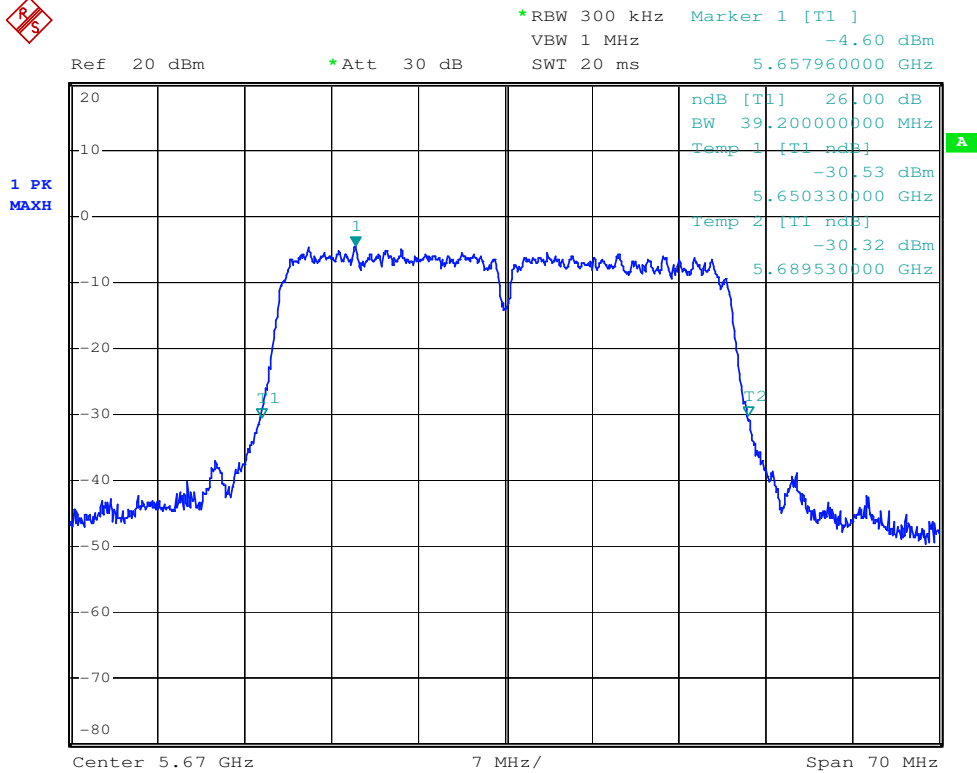




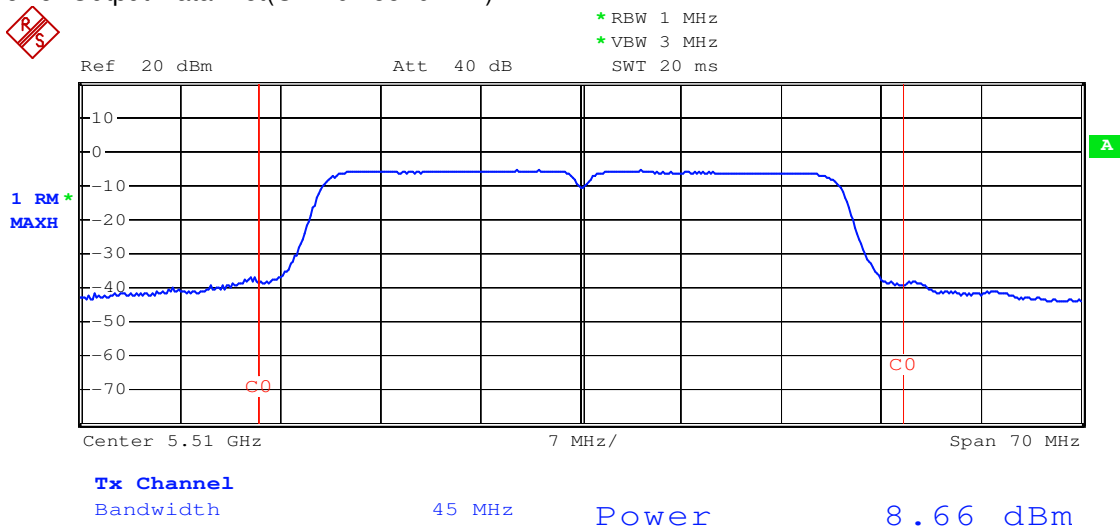
Peak Power Output Data Plot 802.11n 40MHz 6.5Mbps (Chain 001)

26dB Bandwidth



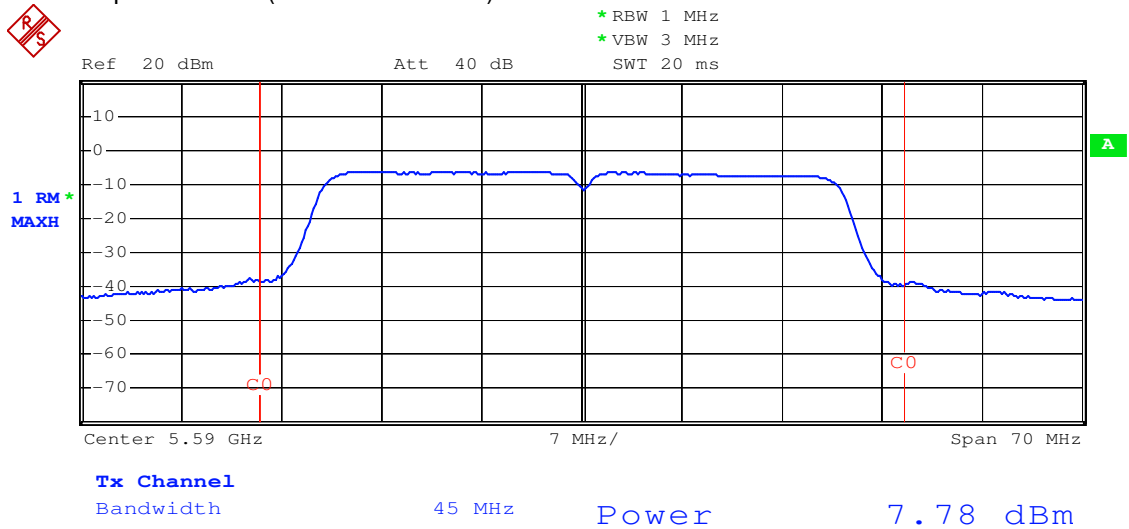


Peak Power Output Data Plot(CH 102 5510MHz)

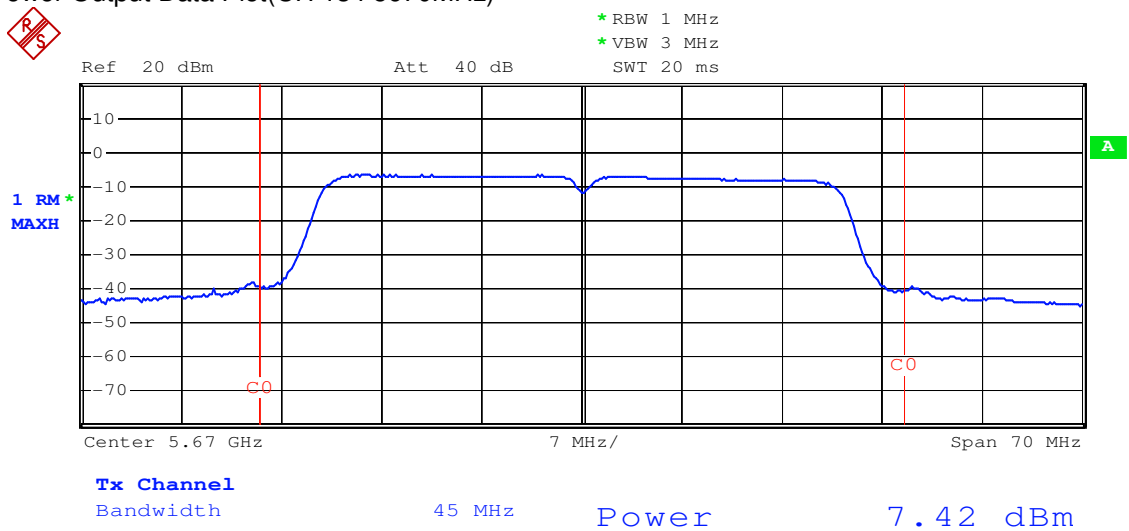




Peak Power Output Data Plot(CH 118 5590MHz)



Peak Power Output Data Plot(CH 134 5670MHz)





4.2.3 Peak Power Excursion

Test Requirement: FCC Part 15 15.407(a)(6)

Test date April 6,2012

LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Frequency Band	Limit
5.15-5.25GHz	13dB
5.25-5.35GHz	13dB
5.47-5.725GHz	13dB
5.725-5.825GHz	13dB

Measurement Procedure

Following the ANSI 63.10,2009 section 6.10.4.2 Test setup:

The following procedure shall be used for measuring peak excursion:

- a) Connect the cable from the spectrum analyzer to the EUT antenna port using an appropriate RF attenuator.
- b) Verify the antenna port selected is the active one if the system has more than one antenna.
- c) Verify the unlicensed wireless device is set to operate at 100 % duty cycle at the maximum allowed power for operation.
- d) Testing shall be done on the center frequency of each U-NII band.
- e) Set the spectrum analyzer span to view the entire emission bandwidth. The largest difference between the following two traces must be 13 dB for all frequencies across the emission bandwidth.
 - 1) First trace: set RBW = 1 MHz, VBW >=3 MHz with peak detector and max hold settings.
 - 2) Second trace:
 - i) If Method 1 was used for the peak conducted transmit output power test (see 6.10.3.1), create the second trace using the settings described in Method 1.
 - ii) If Method 2 or Method 3 was used for the peak conducted transmit power test (see 6.10.3.2 and 6.10.3.3), create the second trace using the settings described in Method 3.
- f) Submit a plot of the data with the test report.

**802.11a OFDM MODULATION
(Chain 100)**

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
36	5180	9.64	13	PASS
40	5200	9.56	13	PASS
48	5240	9.63	13	PASS
52	5260	9.48	13	PASS
60	5300	9.71	13	PASS
64	5320	9.36	13	PASS
100	5500	9.59	13	PASS
120	5600	9.29	13	PASS
140	5700	9.62	13	PASS

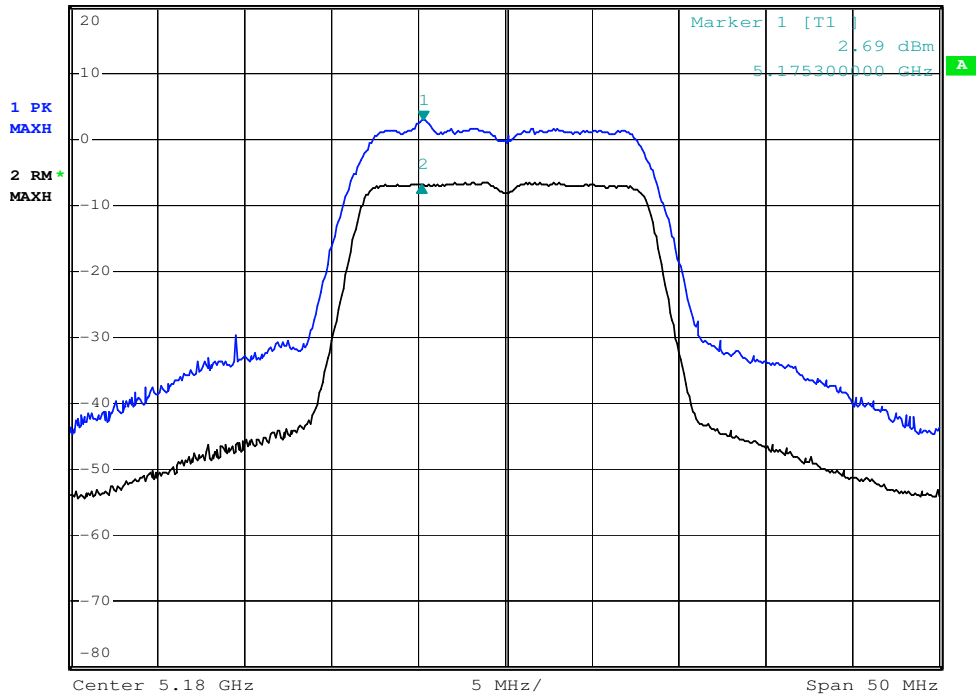
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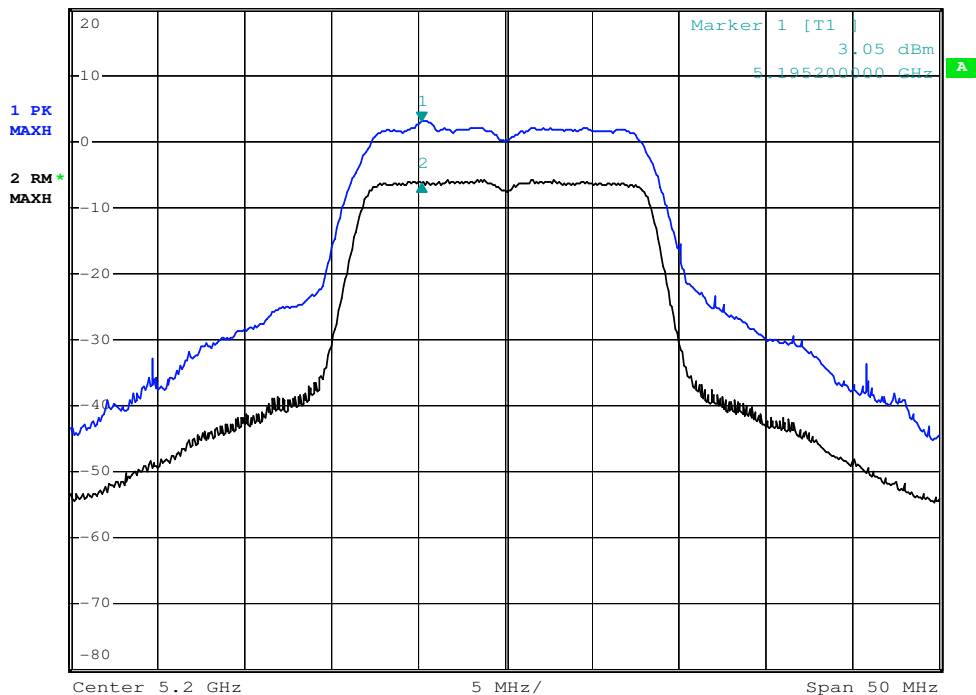
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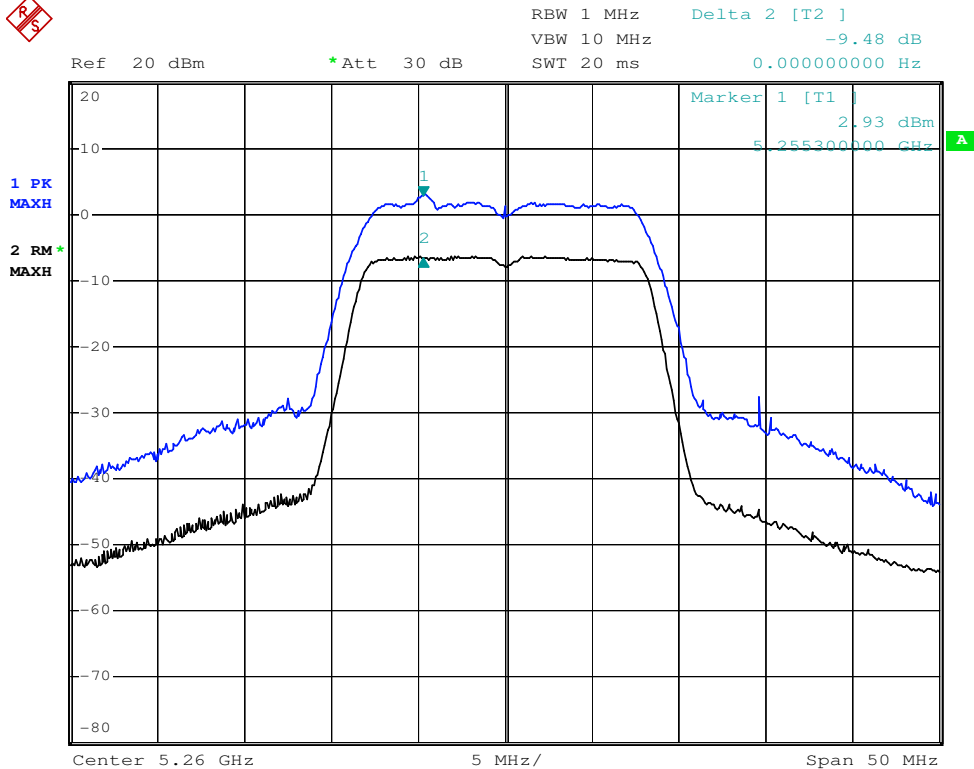
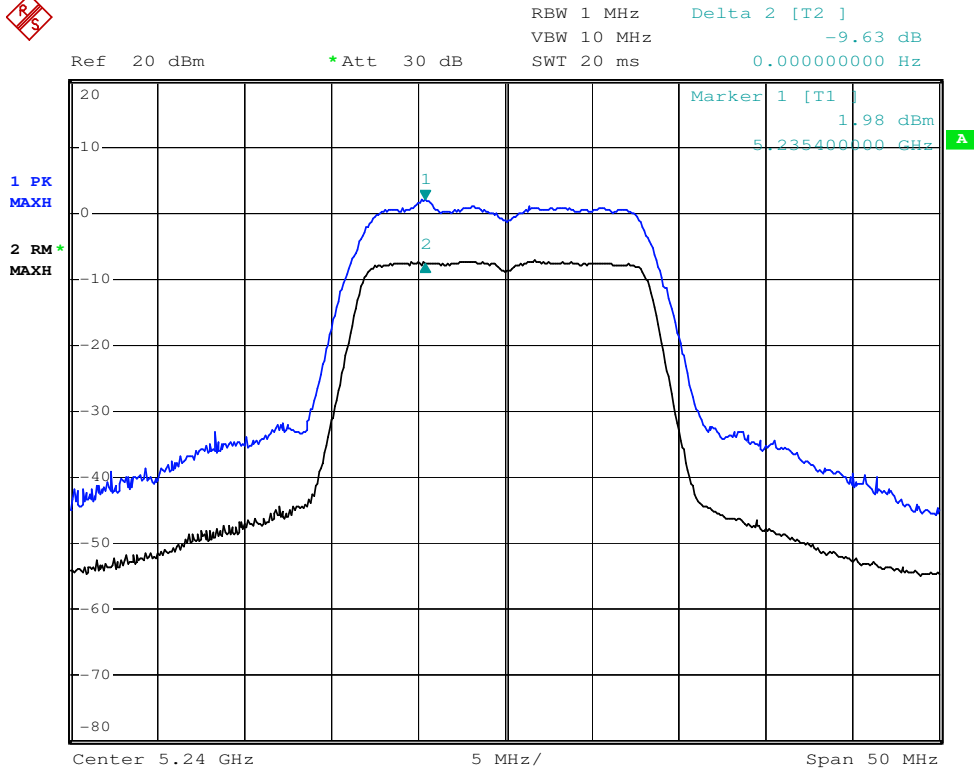


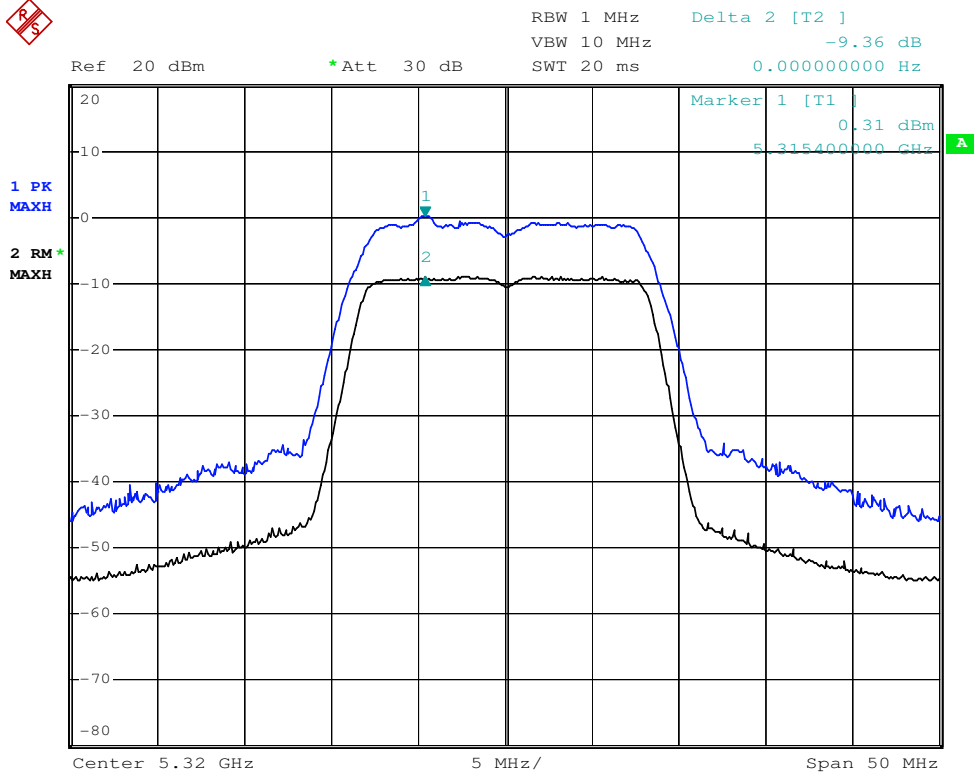
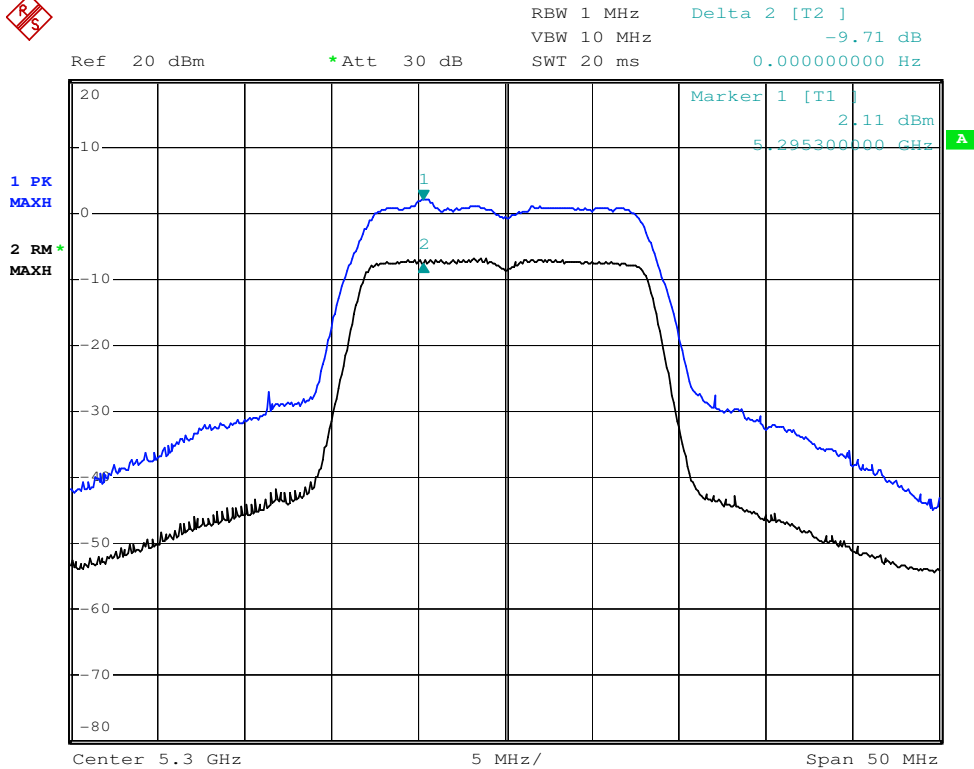
Ref 20 dBm *Att 30 dB RBW 1 MHz Delta 2 [T2] -9.64 dB
VBW 10 MHz -100.00000000 kHz
SWT 20 ms

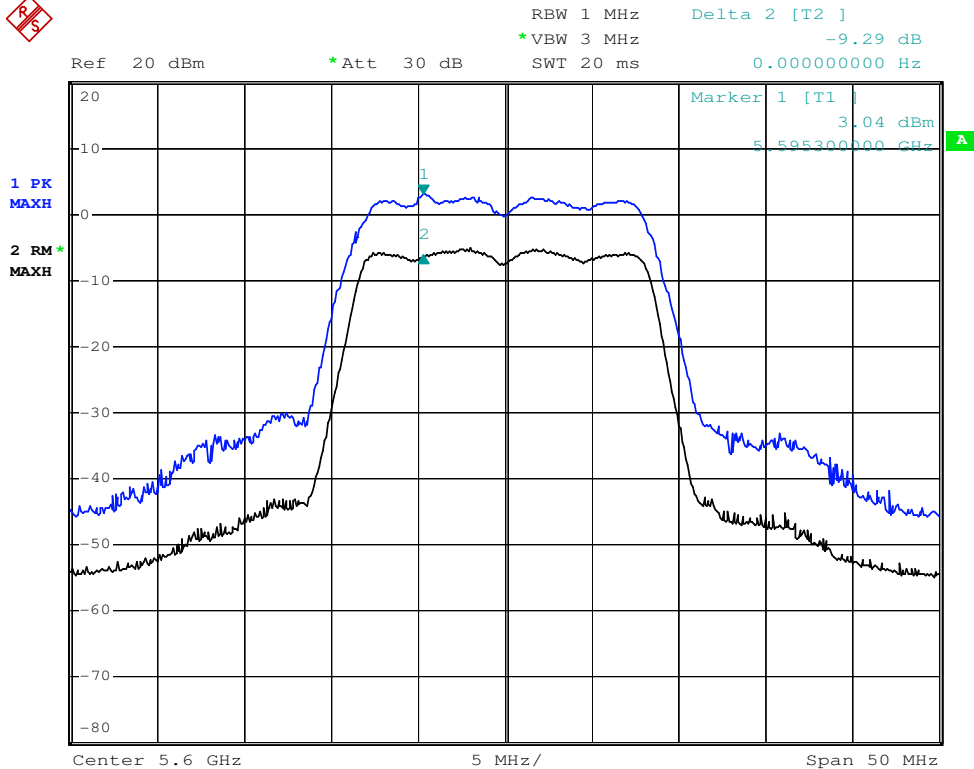
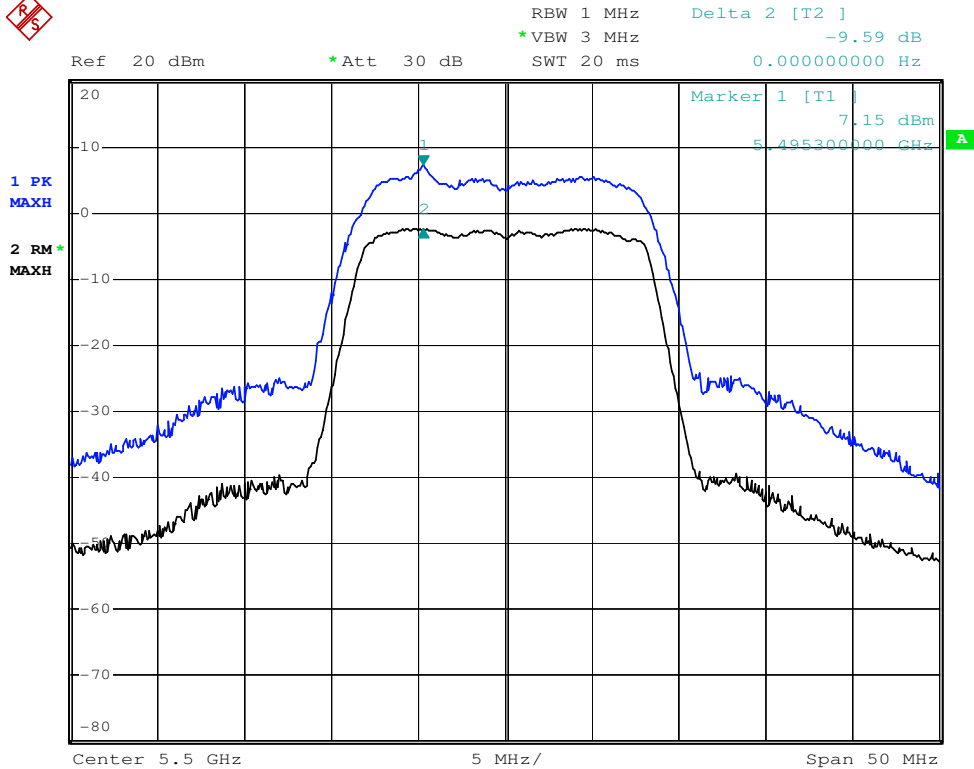


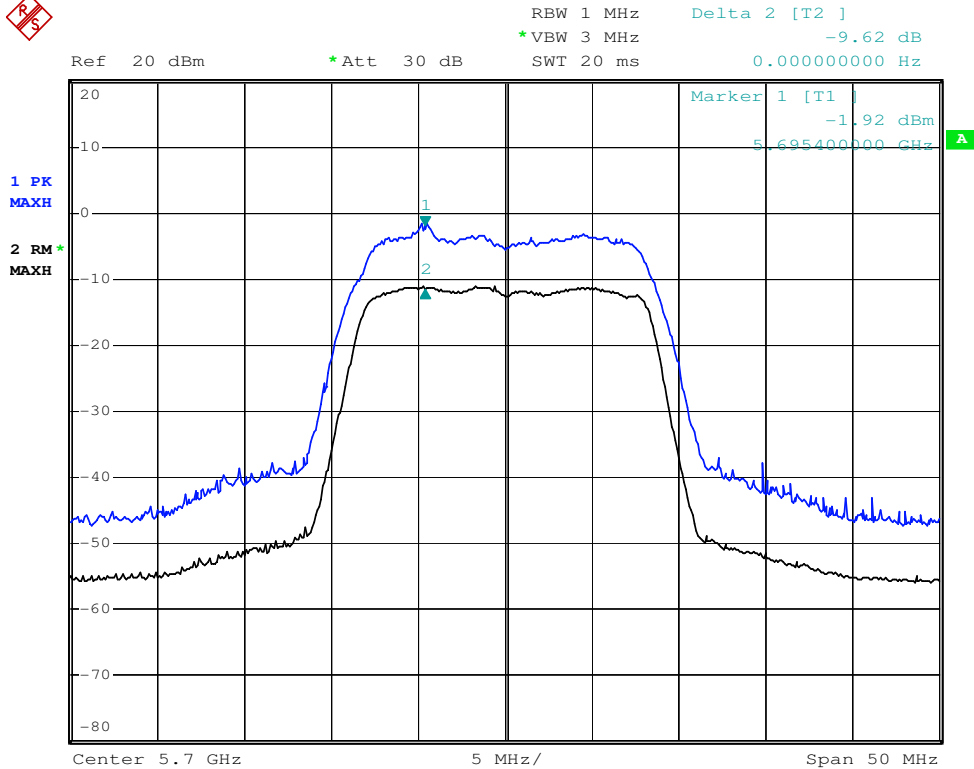
Ref 20 dBm *Att 30 dB RBW 1 MHz Delta 2 [T2] -9.56 dB
VBW 10 MHz 0.000000000 Hz
SWT 20 ms











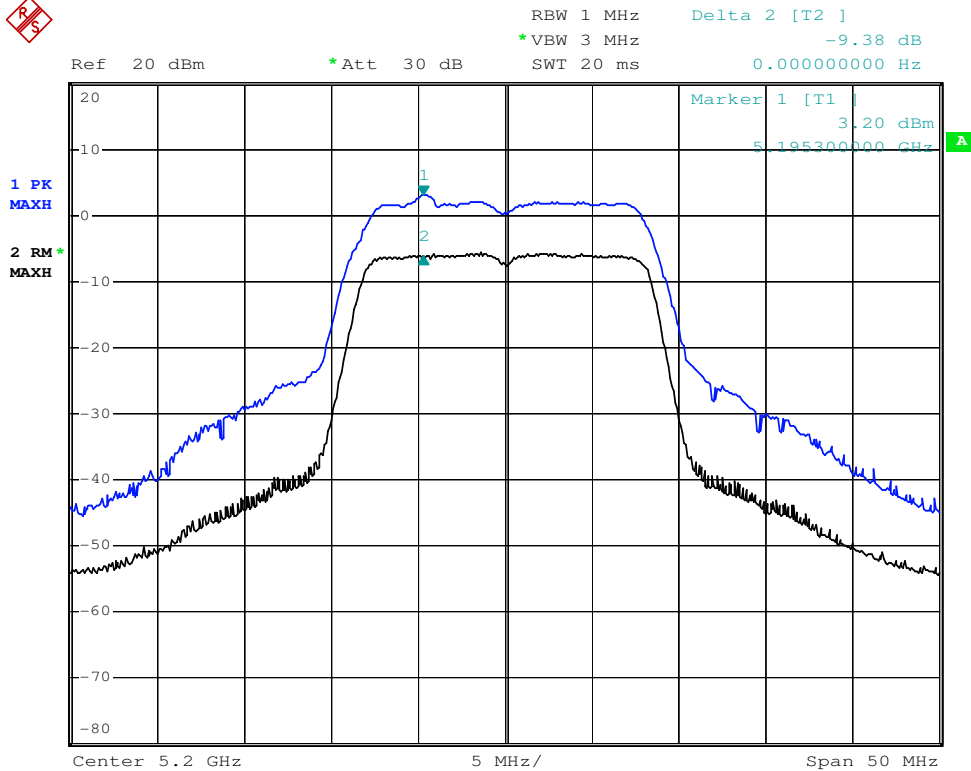
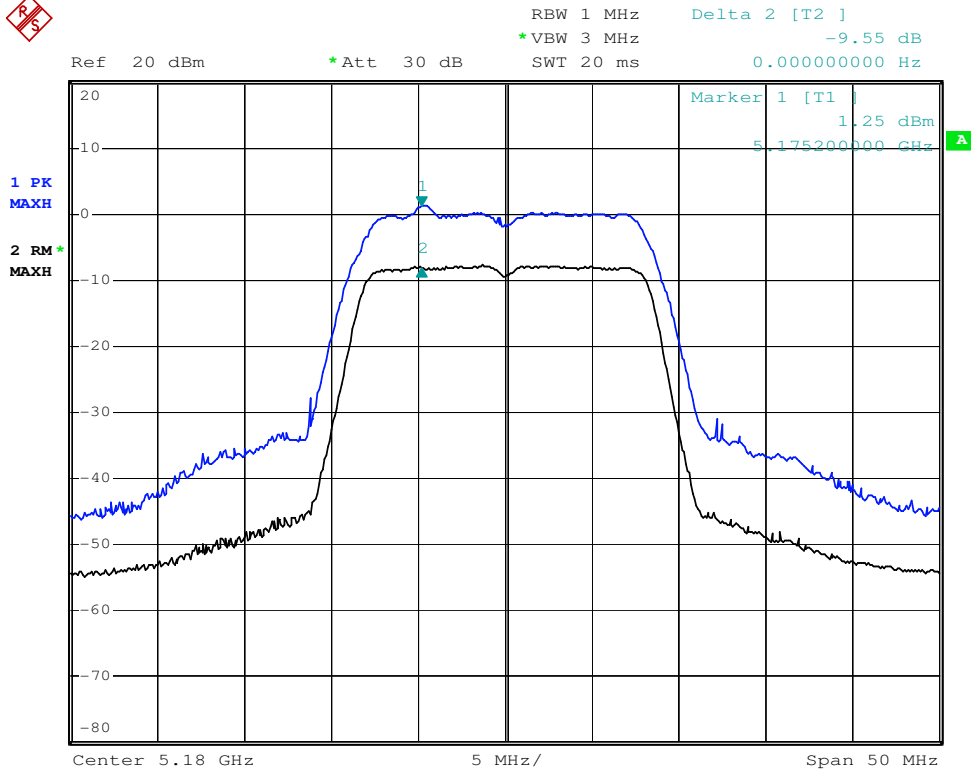
(Chain 010)

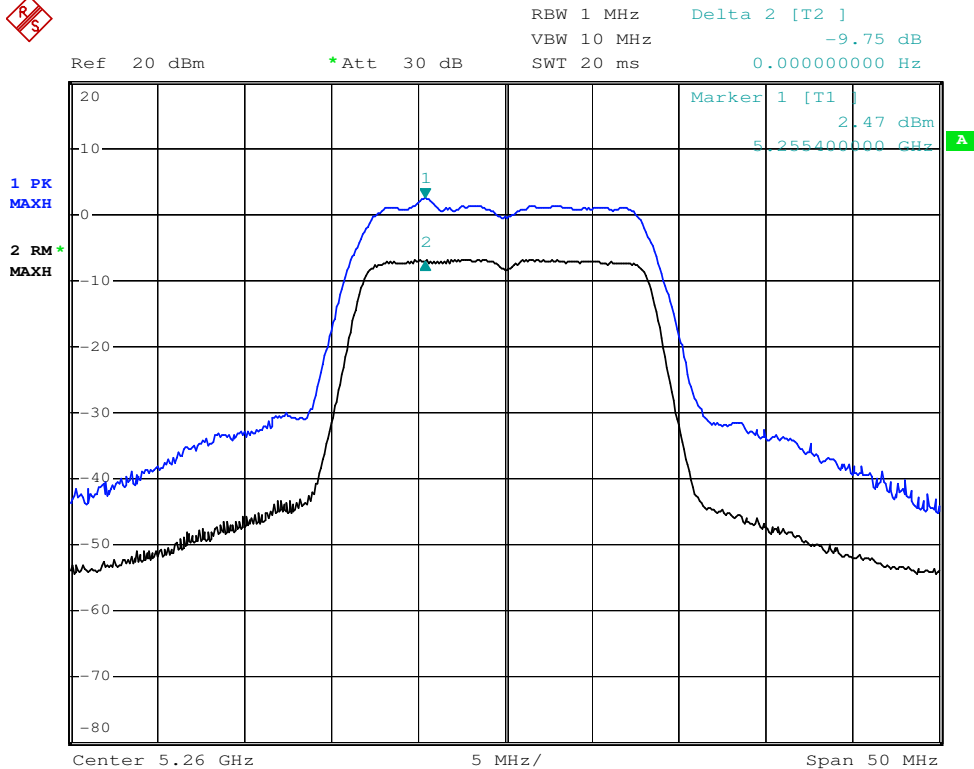
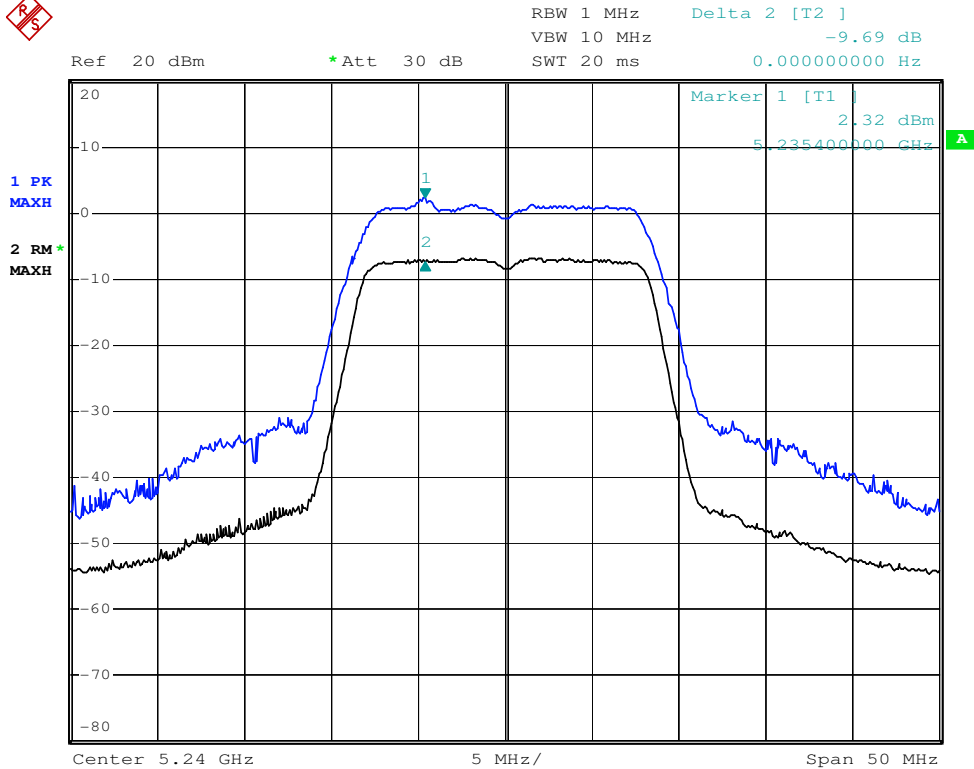
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
36	5180	9.55	13	PASS
40	5200	9.38	13	PASS
48	5240	9.69	13	PASS
52	5260	9.75	13	PASS
60	5300	9.58	13	PASS
64	5320	9.36	13	PASS
100	5500	9.35	13	PASS
120	5600	9.72	13	PASS
140	5700	9.47	13	PASS

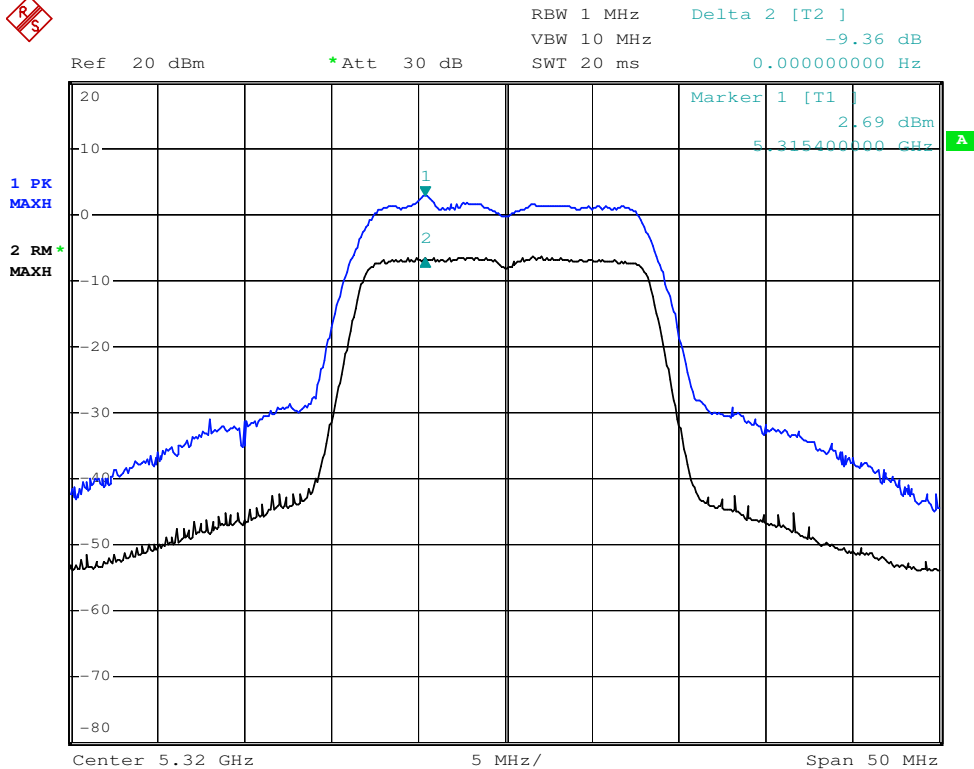
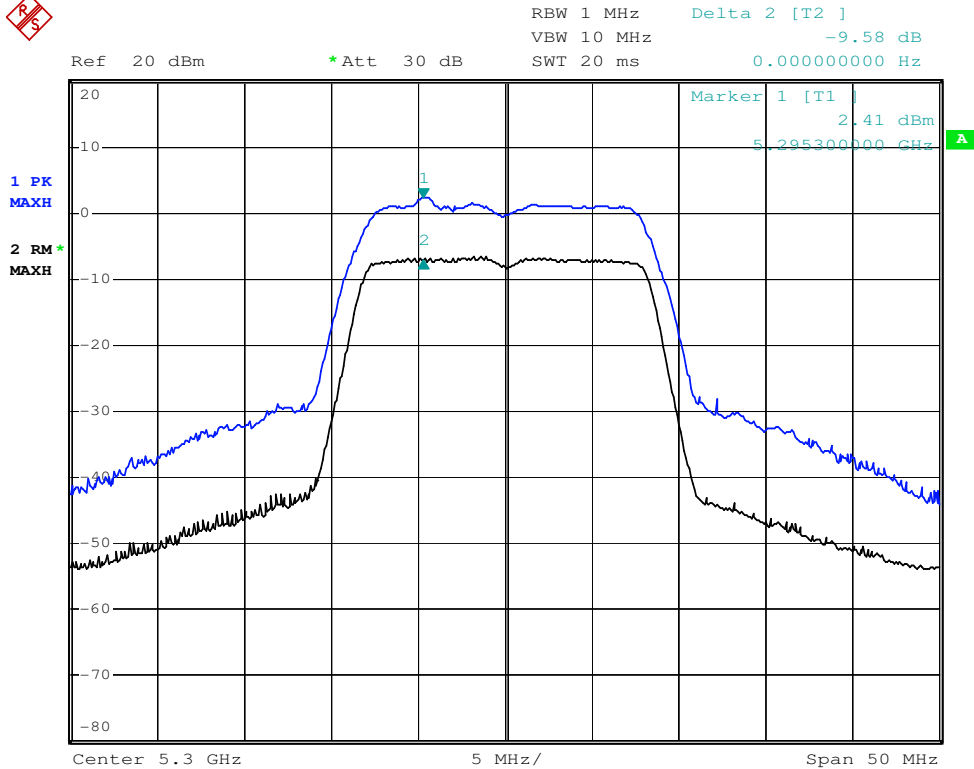
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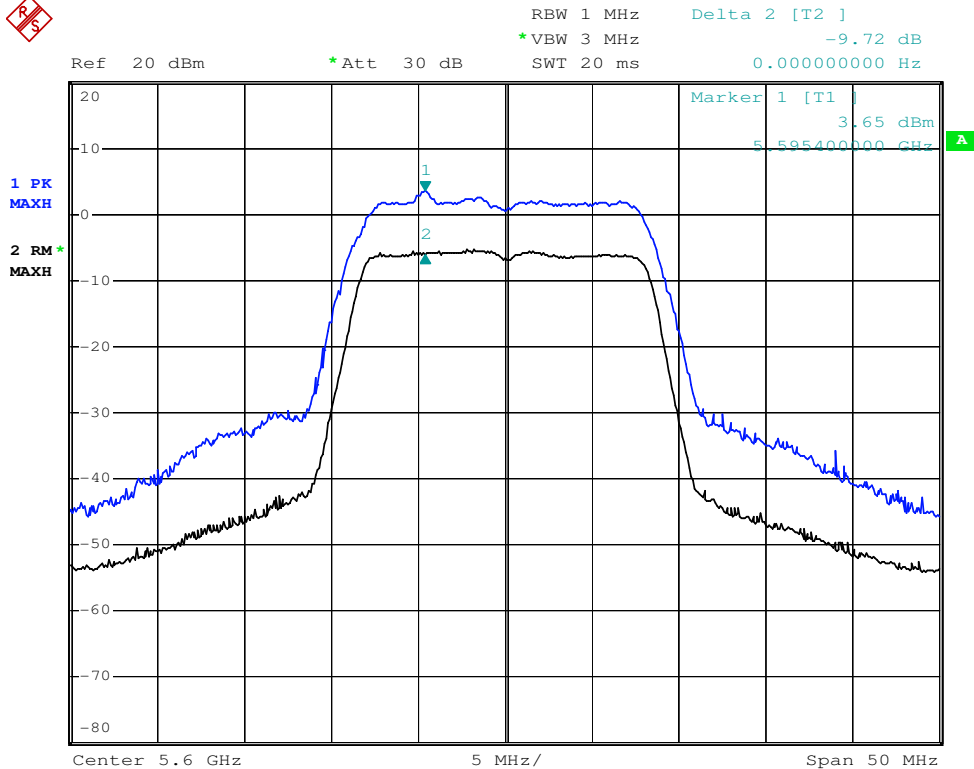
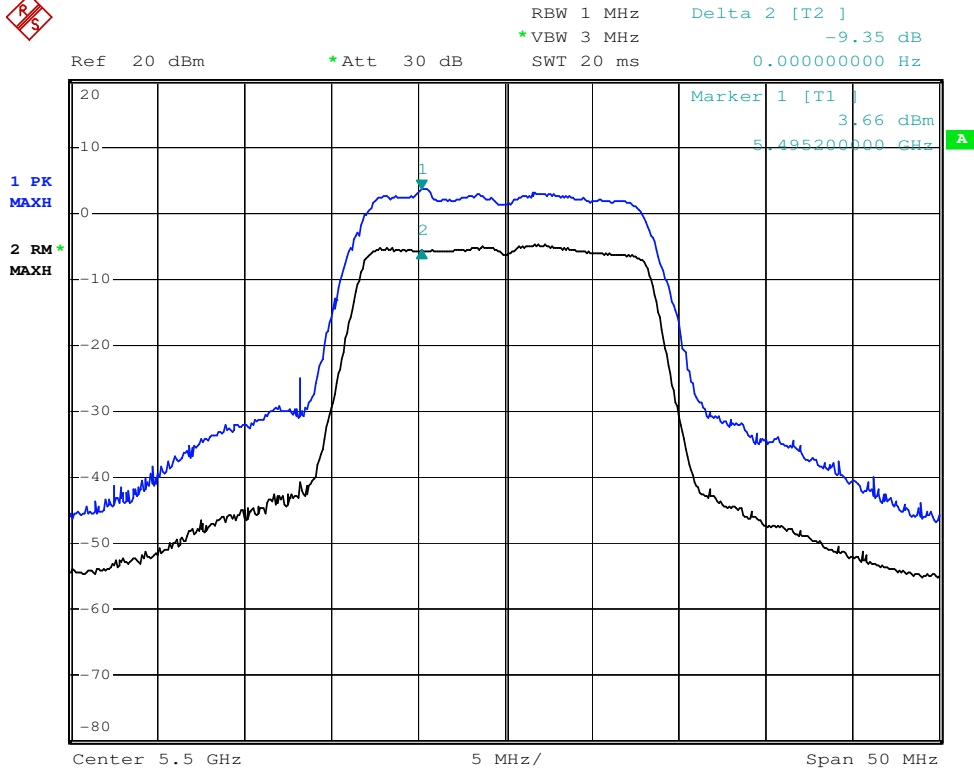


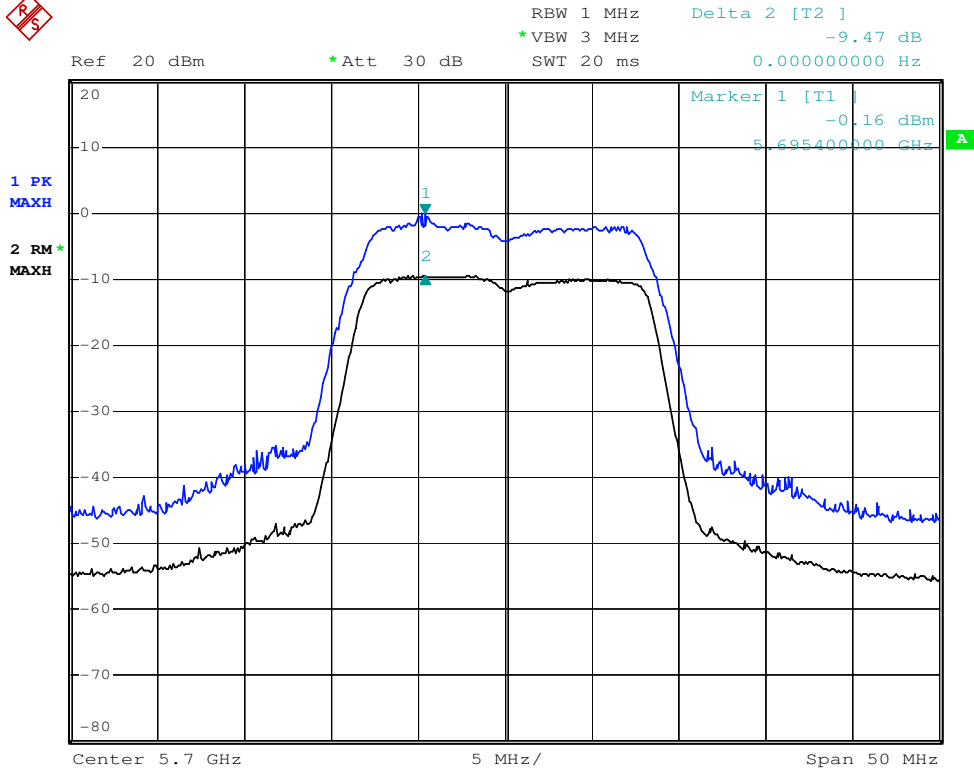
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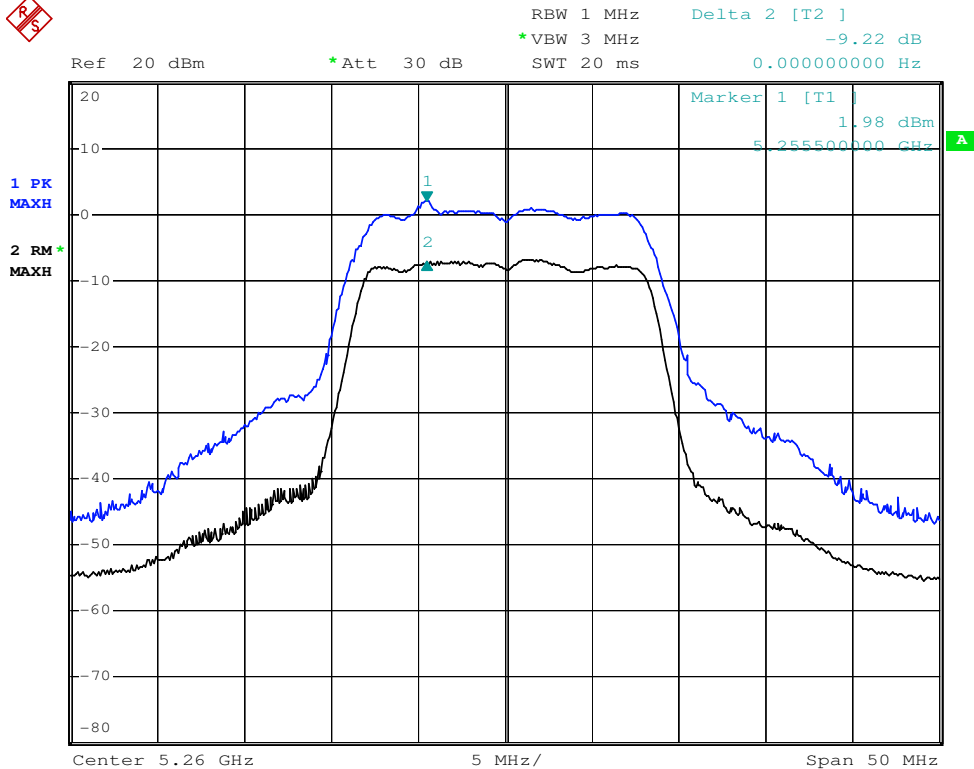
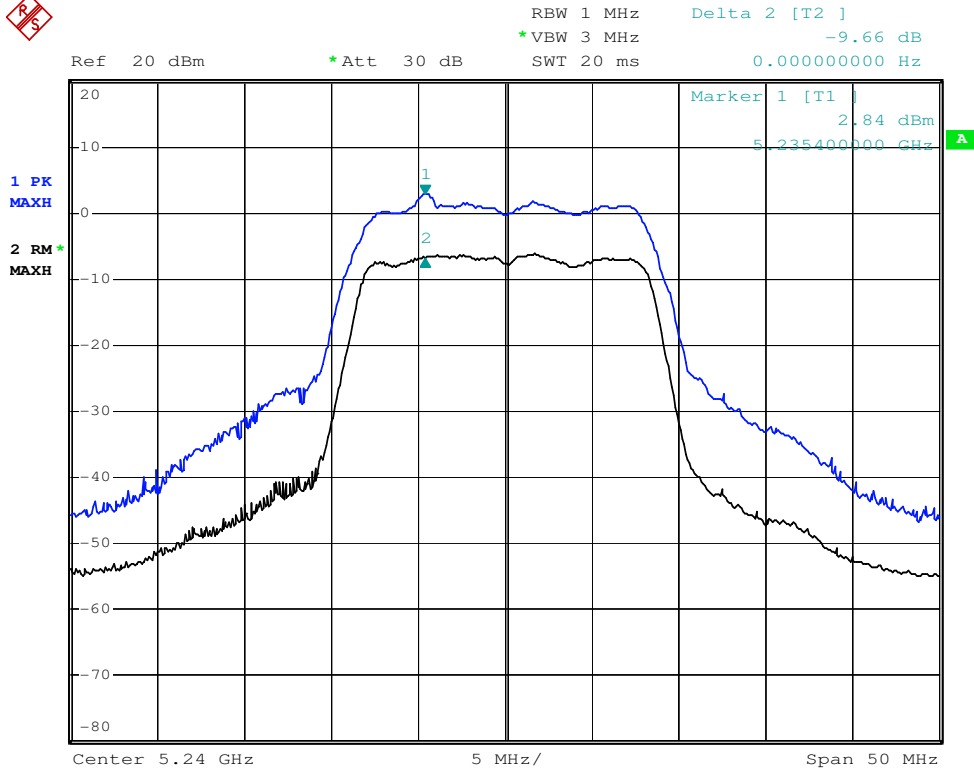


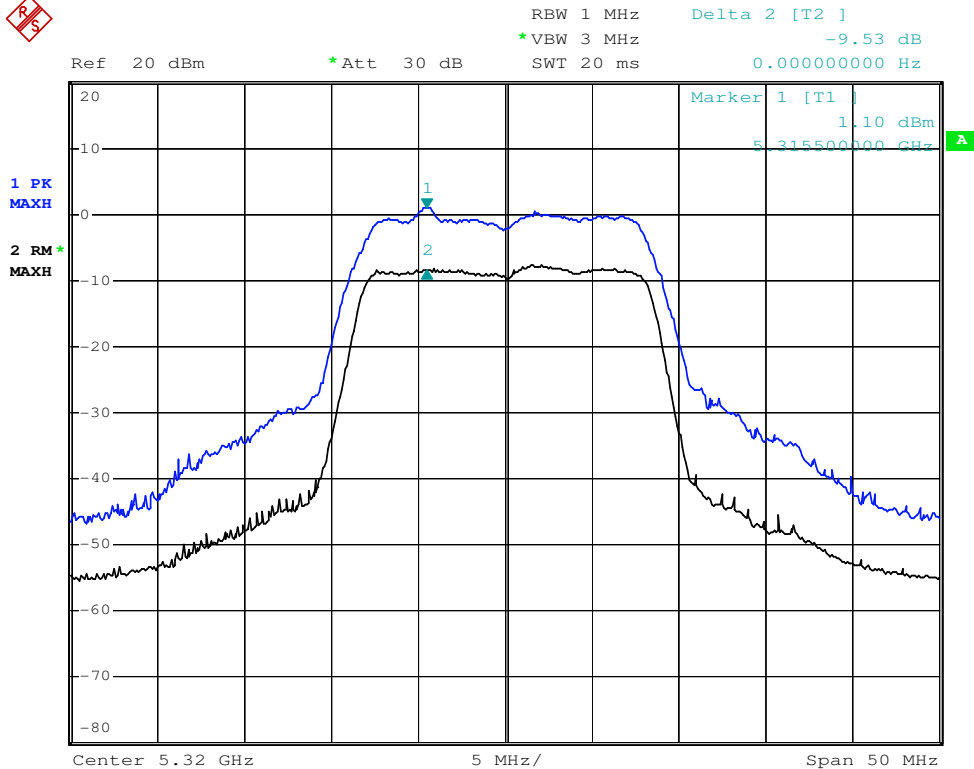
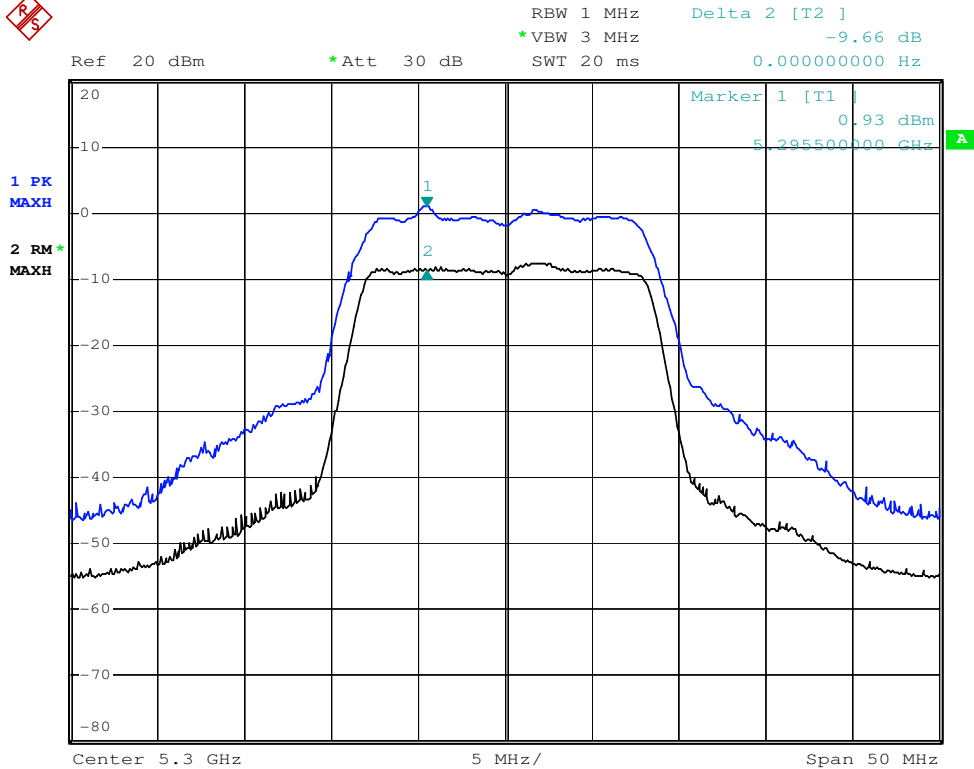


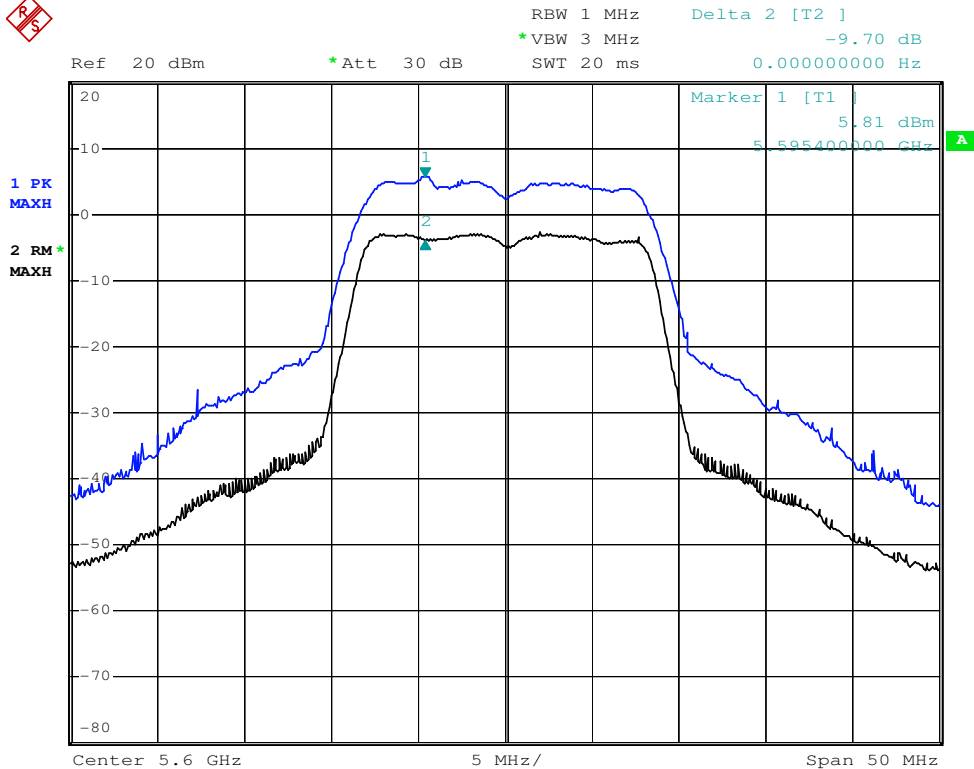
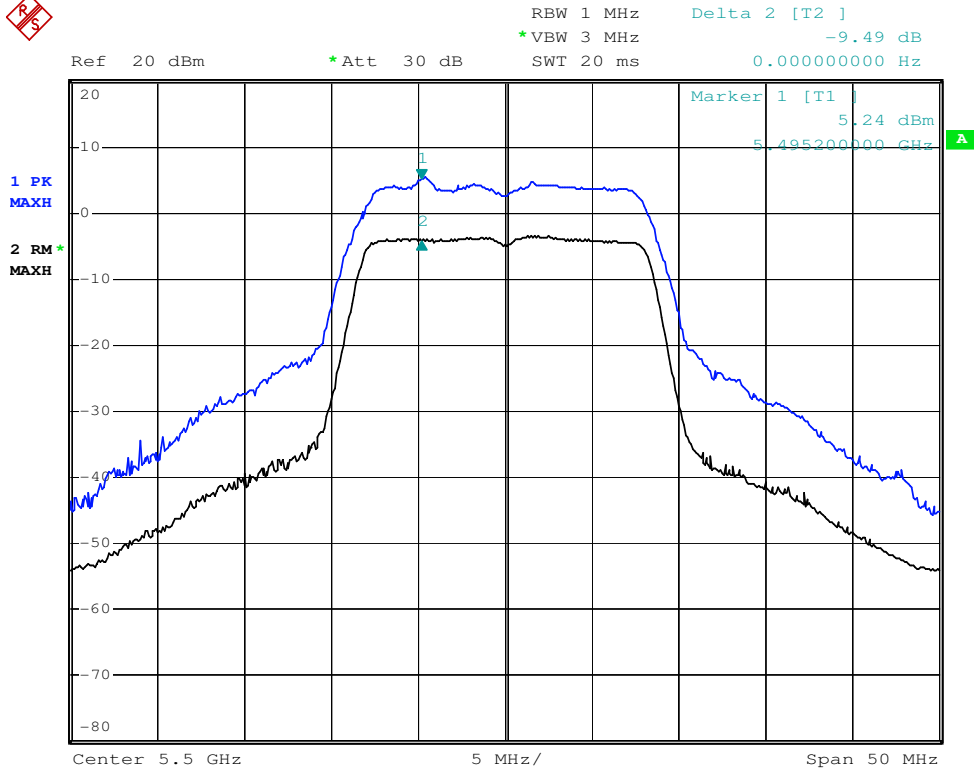
(Chain 001)

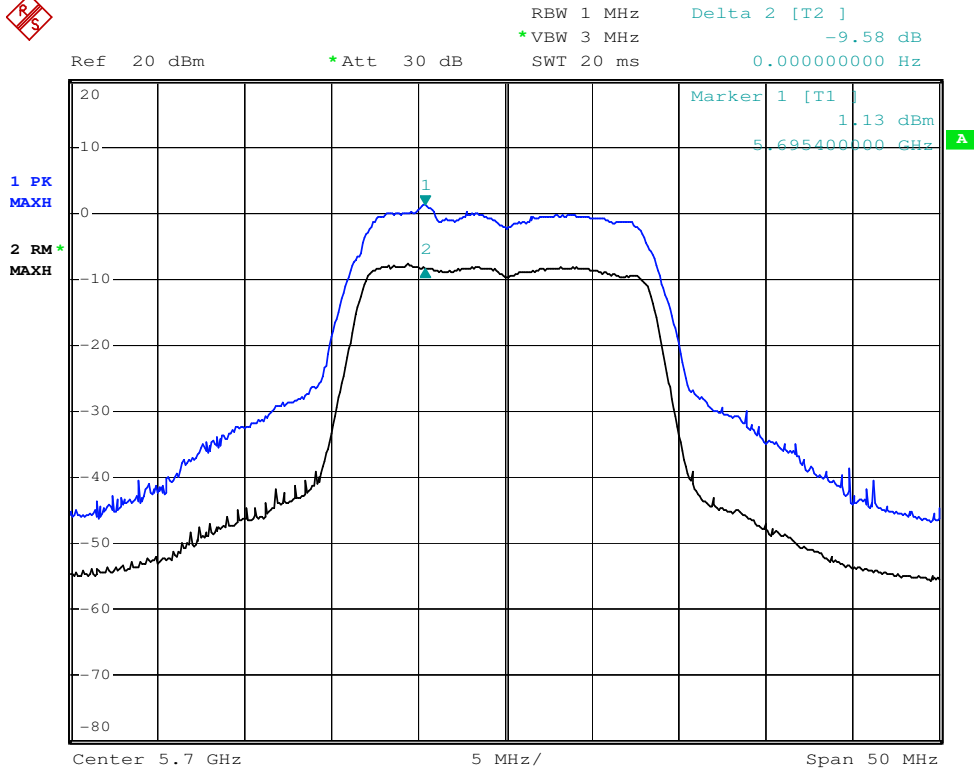
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
36	5180	9.38	13	PASS
40	5200	9.33	13	PASS
48	5240	9.66	13	PASS
52	5260	9.22	13	PASS
60	5300	9.66	13	PASS
64	5320	9.53	13	PASS
100	5500	9.49	13	PASS
120	5600	9.70	13	PASS
140	5700	9.58	13	PASS

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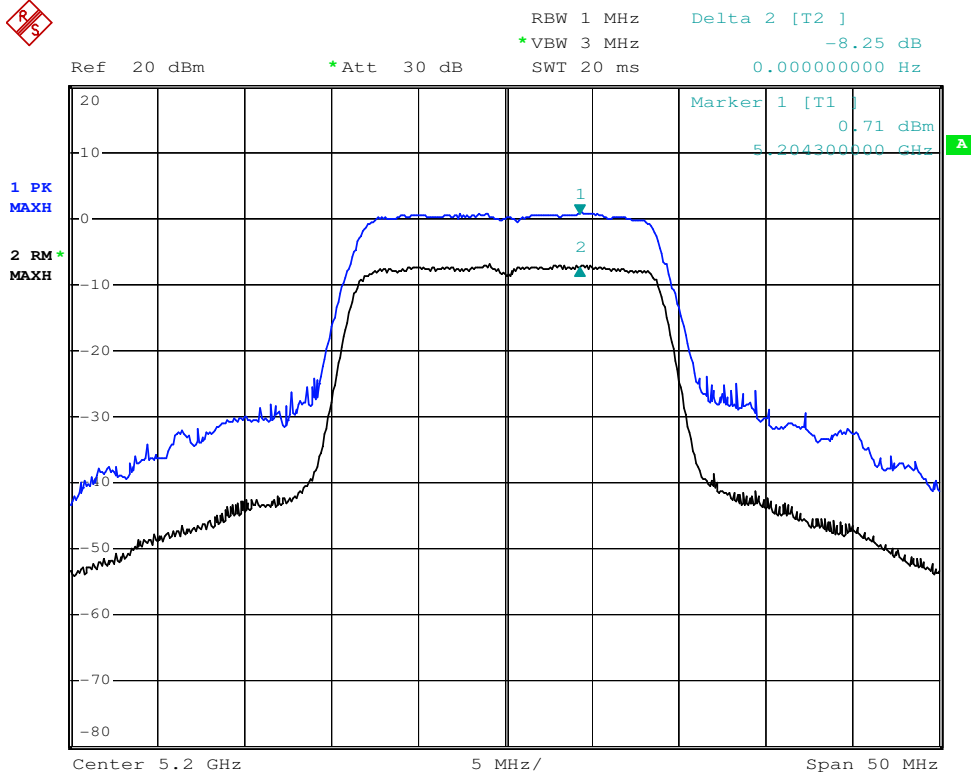
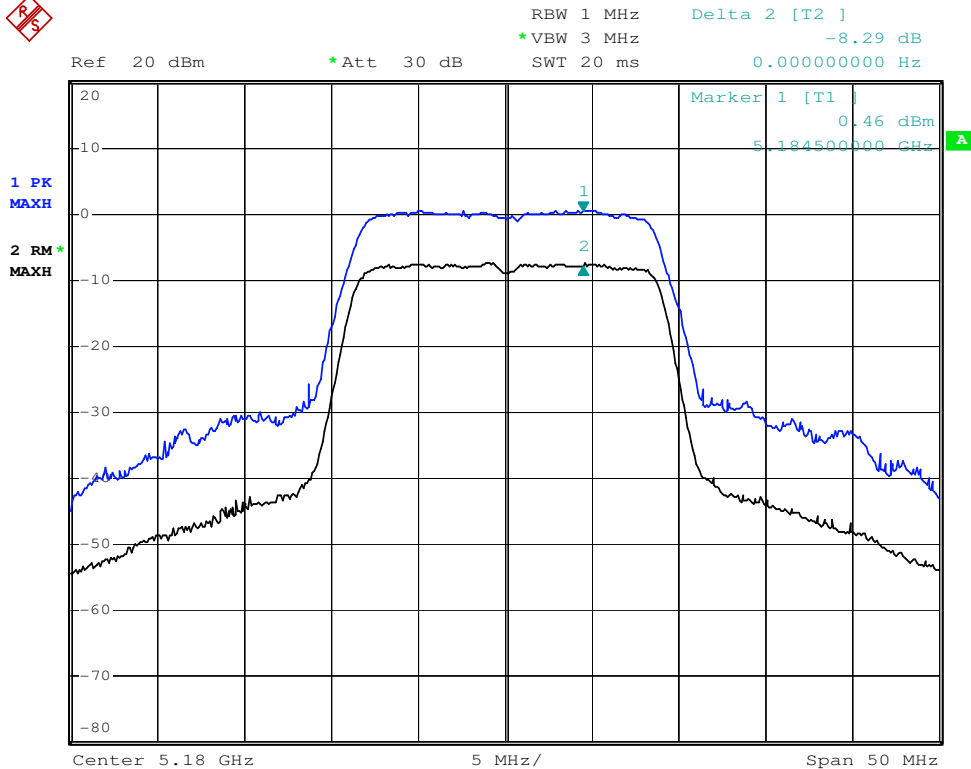
**802.11n (20MHz) OFDM MODULATION:
(Chain 100)**

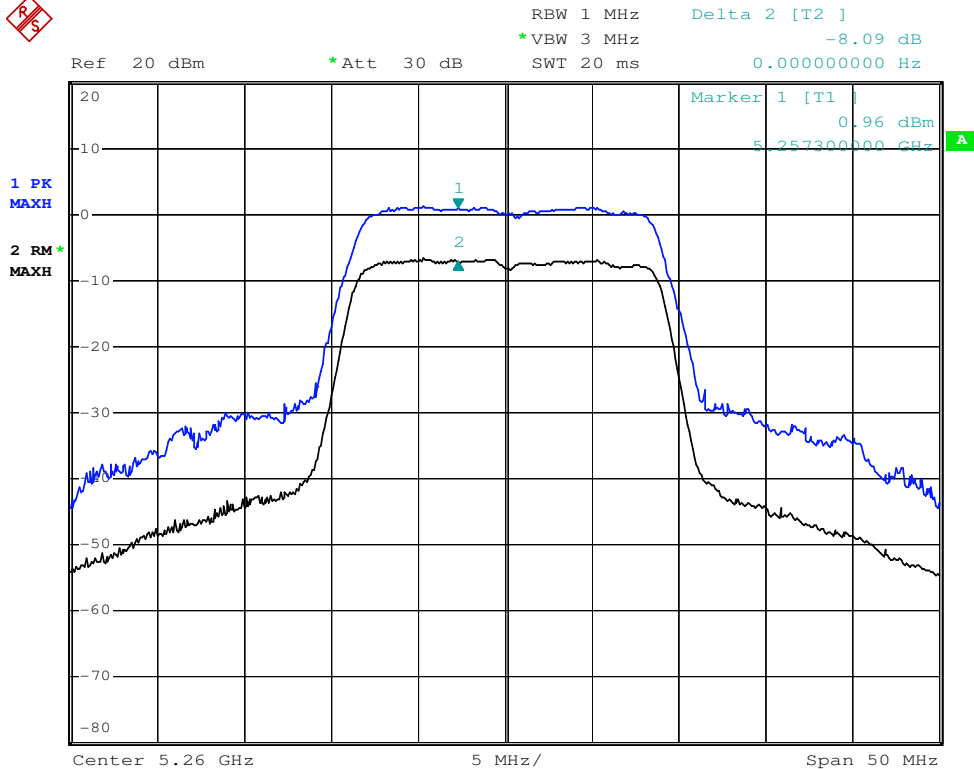
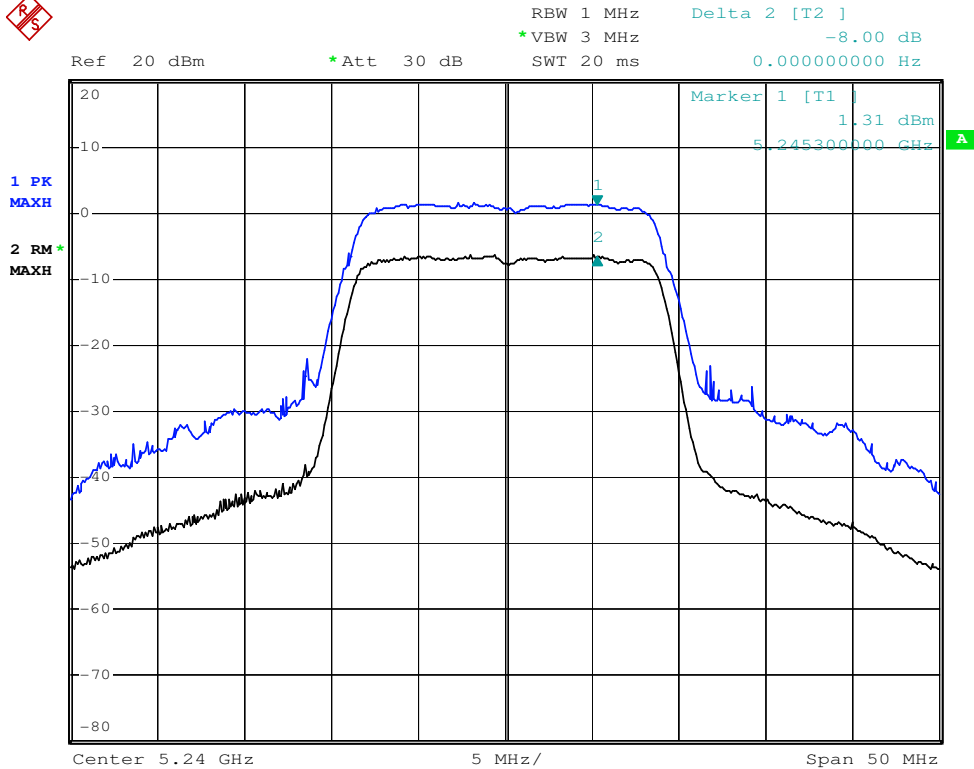
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
36	5180	8.29	13	PASS
40	5200	8.25	13	PASS
48	5240	8.00	13	PASS
52	5260	8.09	13	PASS
60	5300	8.00	13	PASS
64	5320	7.85	13	PASS
100	5500	8.10	13	PASS
120	5600	8.19	13	PASS
140	5700	8.10	13	PASS

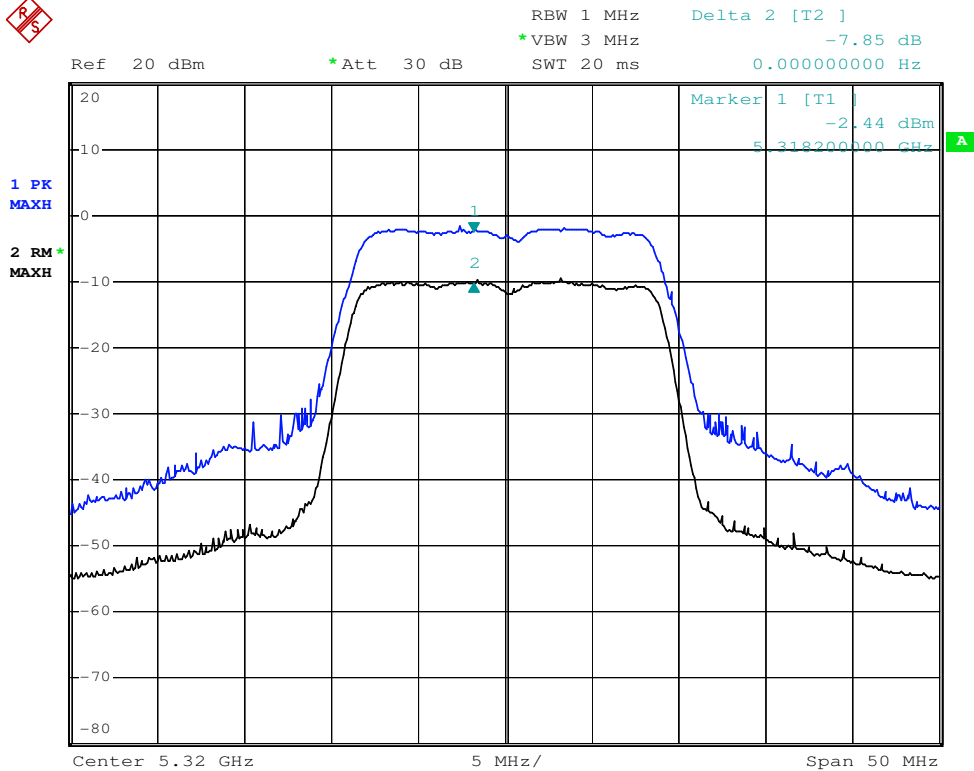
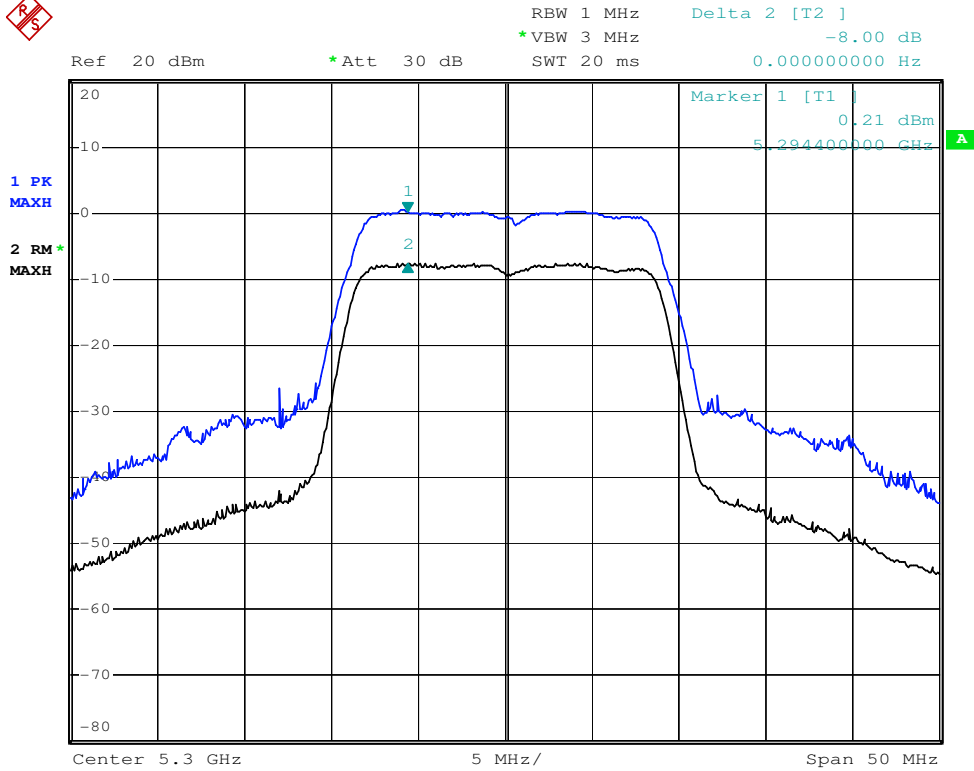
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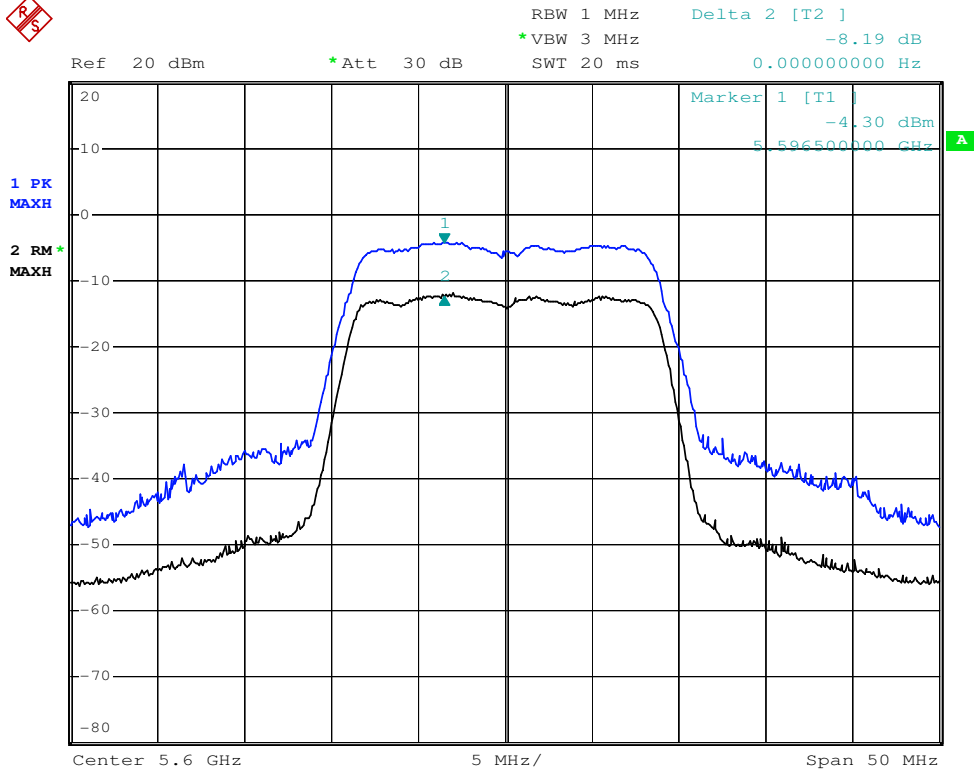
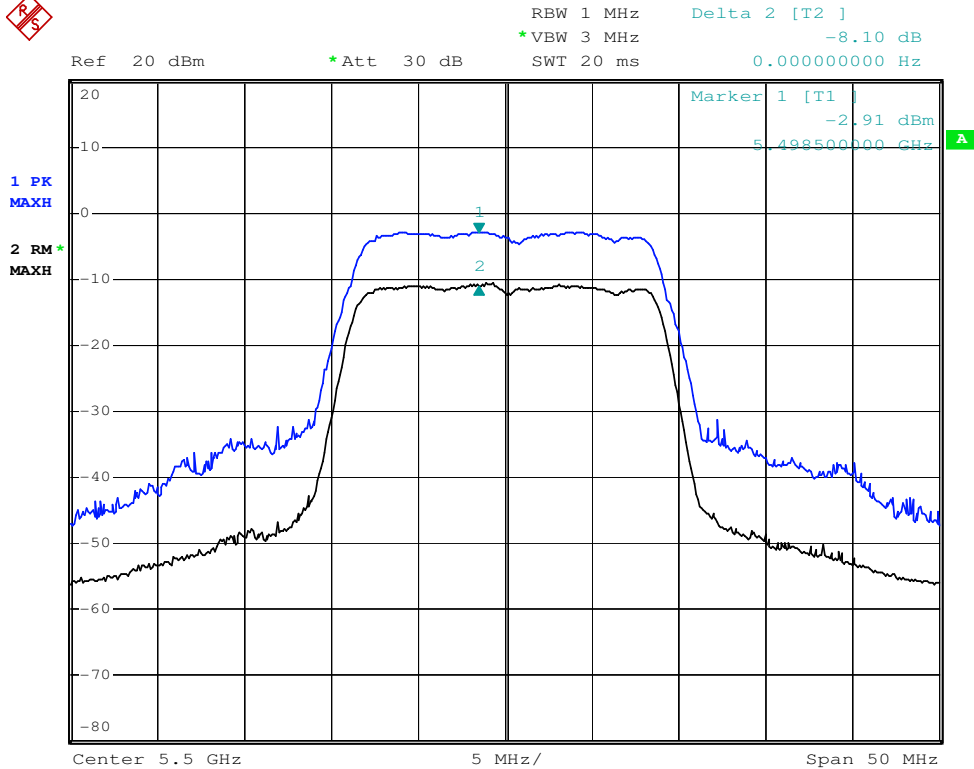


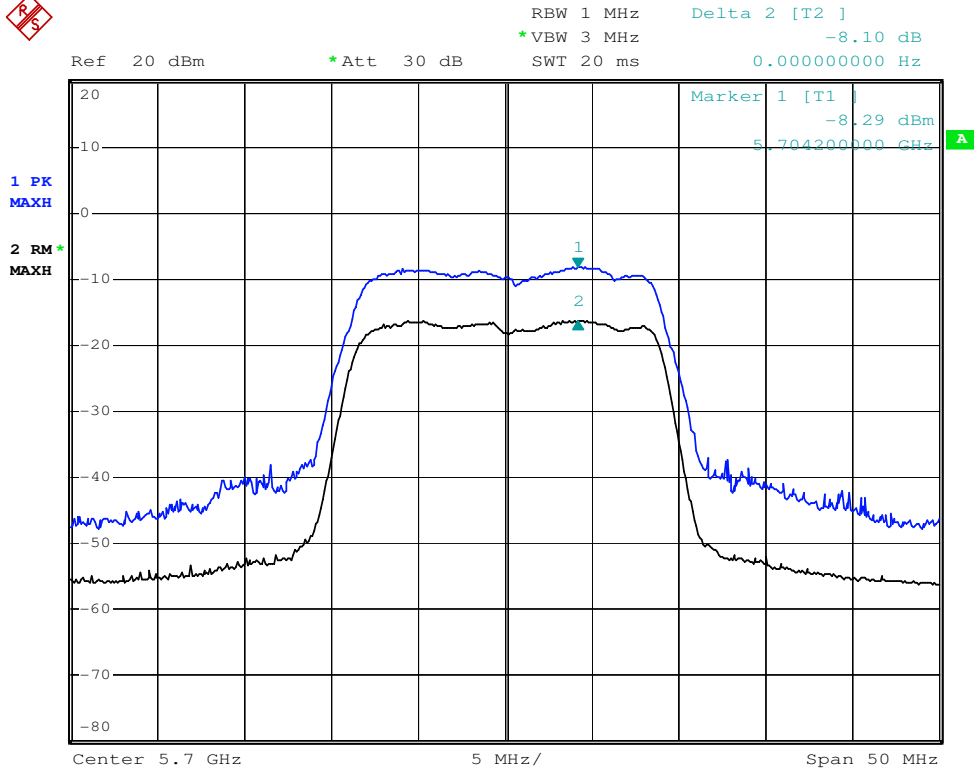
Test Data:







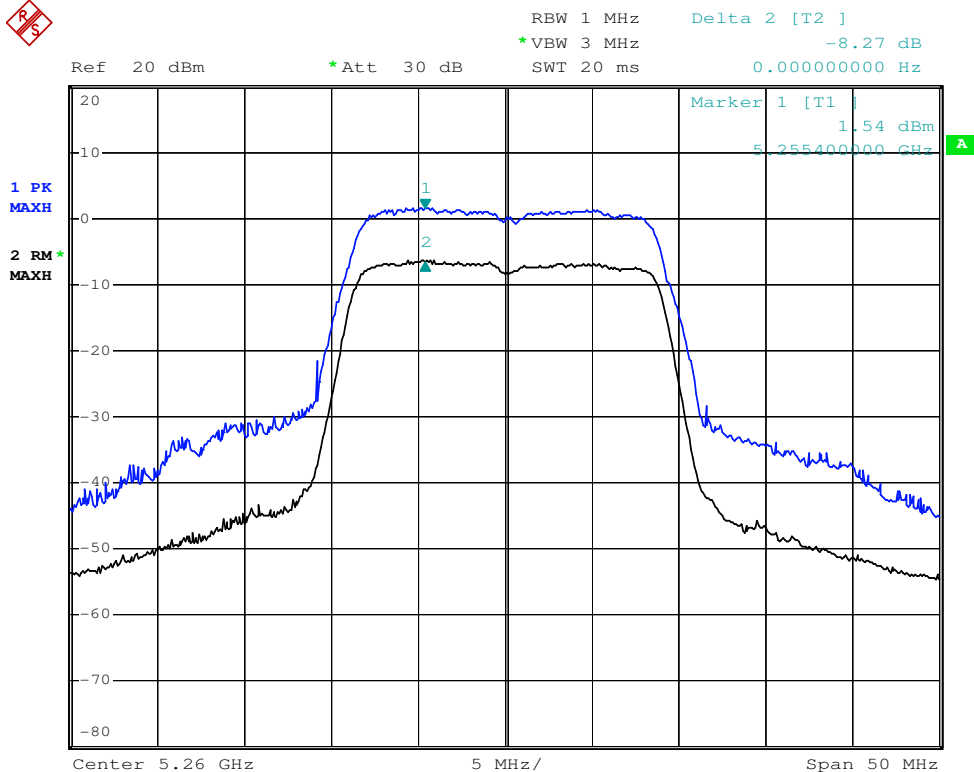
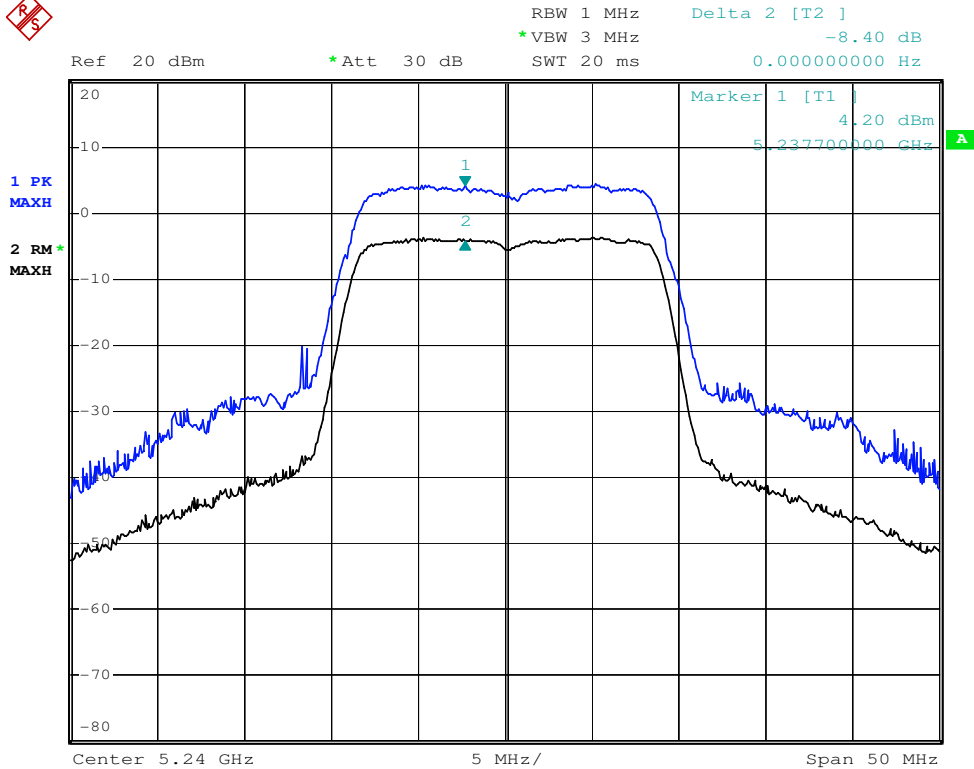


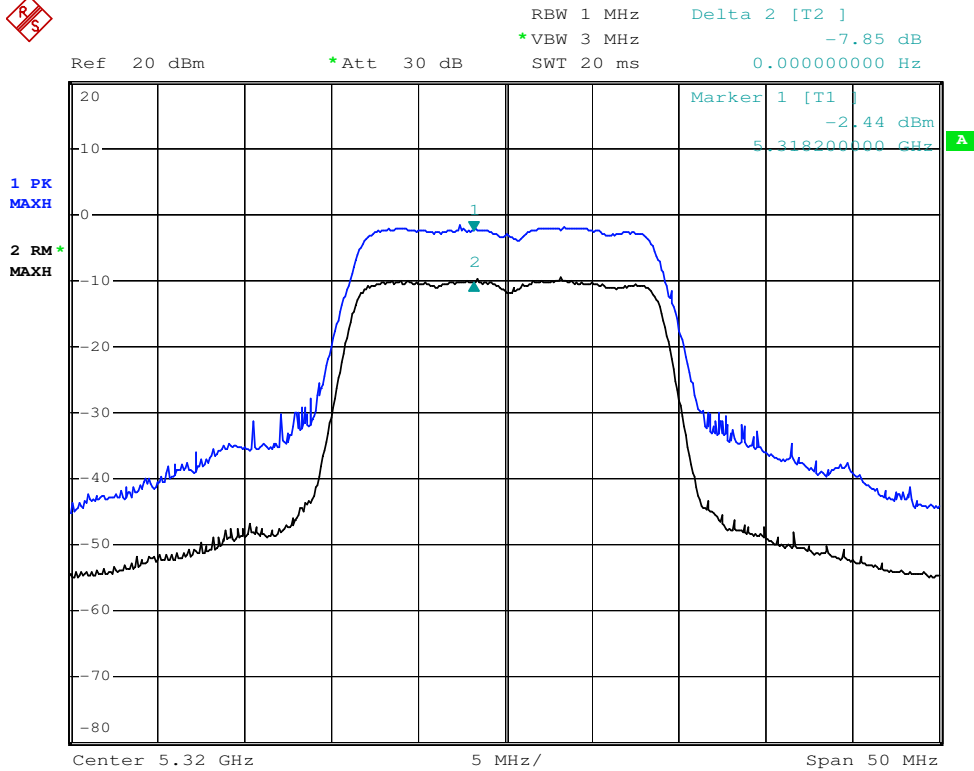
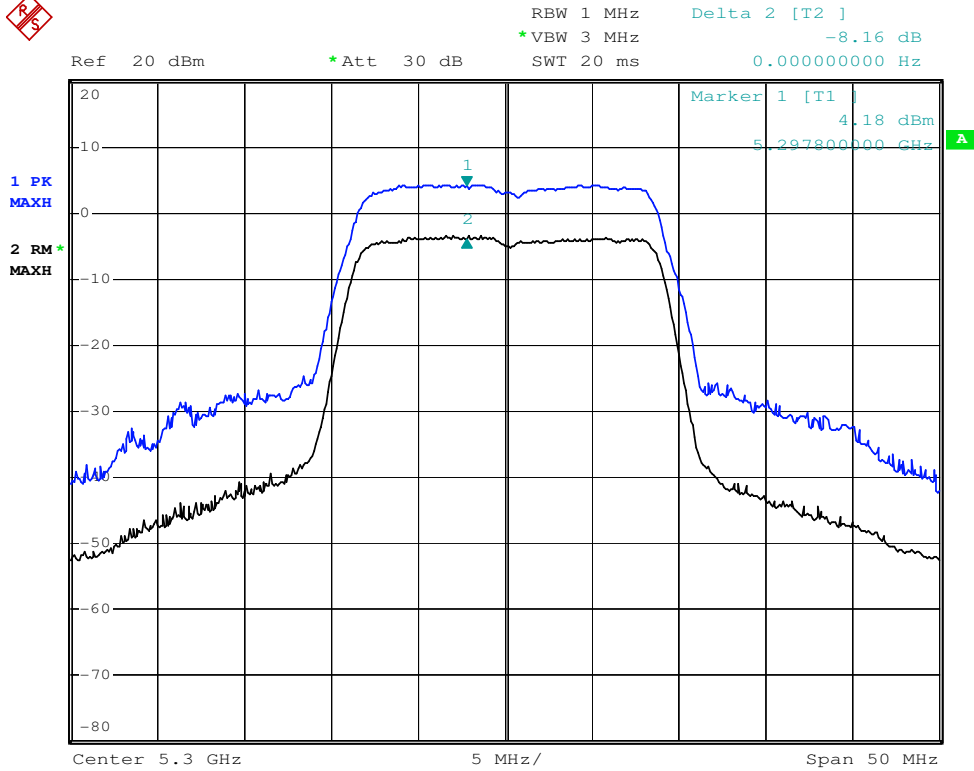


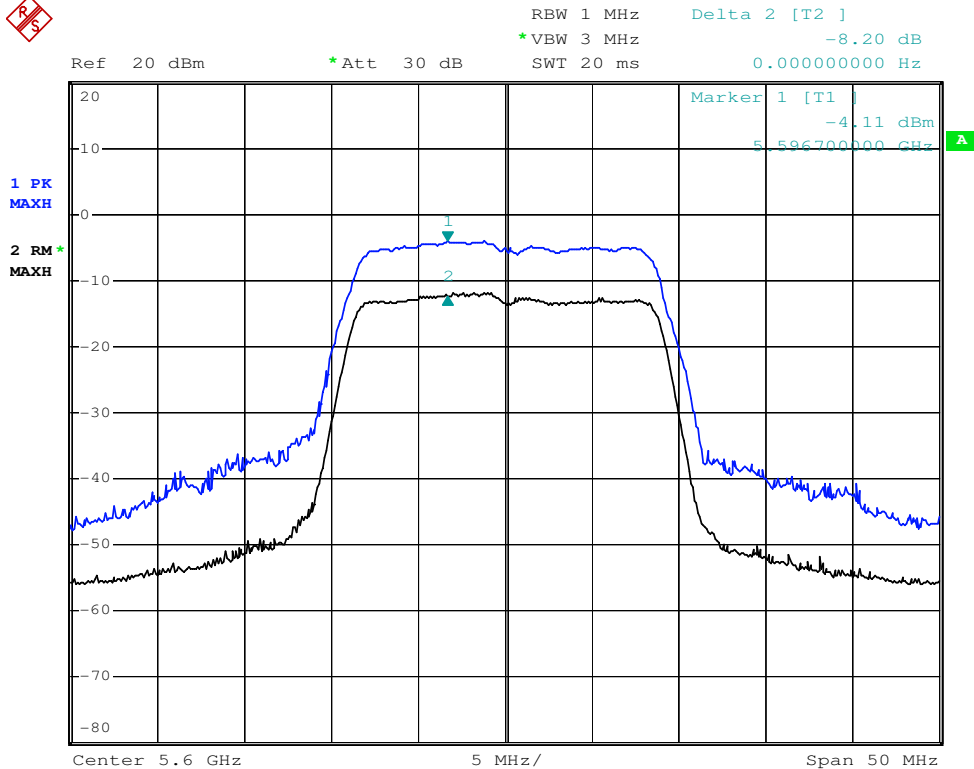
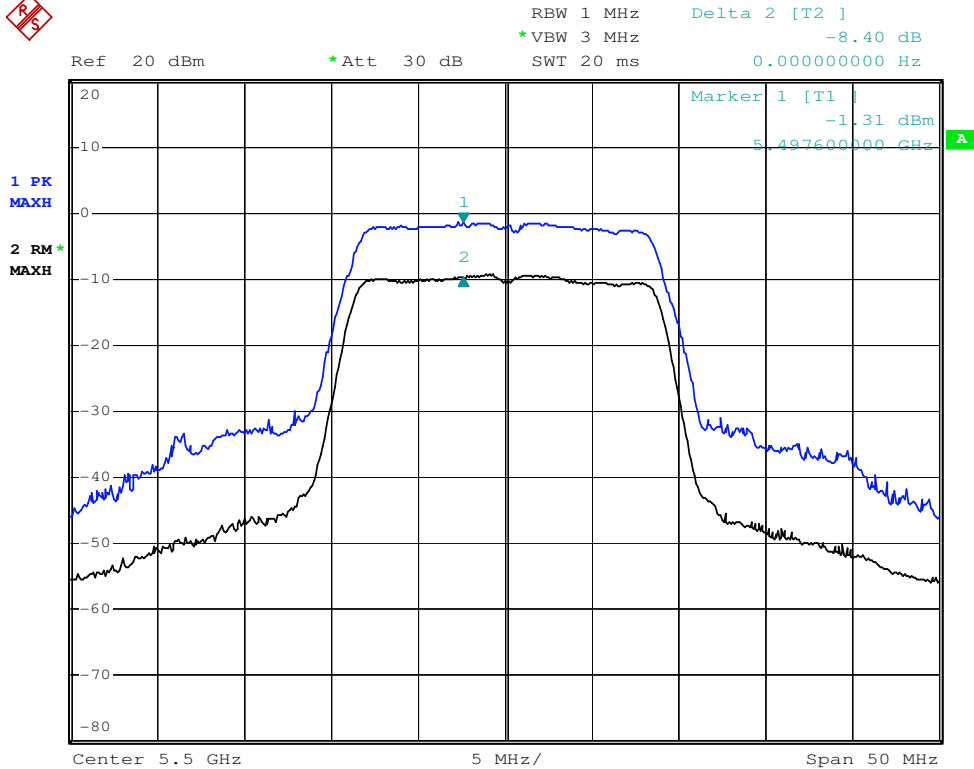
(Chain 010)

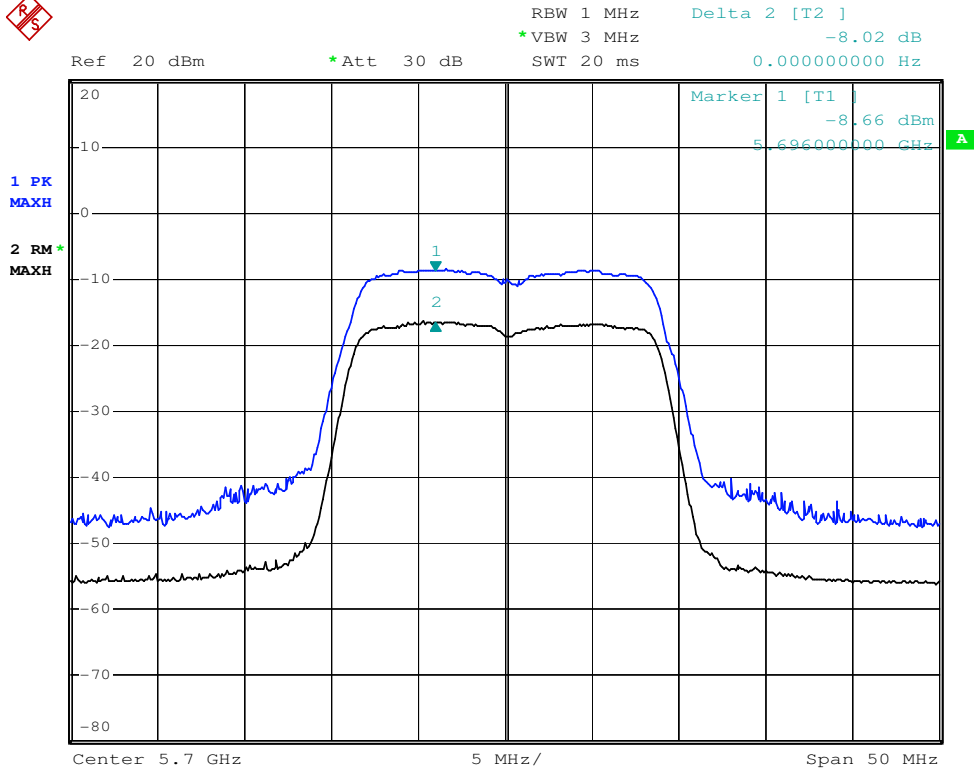
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
36	5180	8.33	13	PASS
40	5200	7.90	13	PASS
48	5240	8.40	13	PASS
52	5260	8.27	13	PASS
60	5300	8.16	13	PASS
64	5320	7.85	13	PASS
100	5500	8.40	13	PASS
120	5600	8.20	13	PASS
140	5700	8.02	13	PASS

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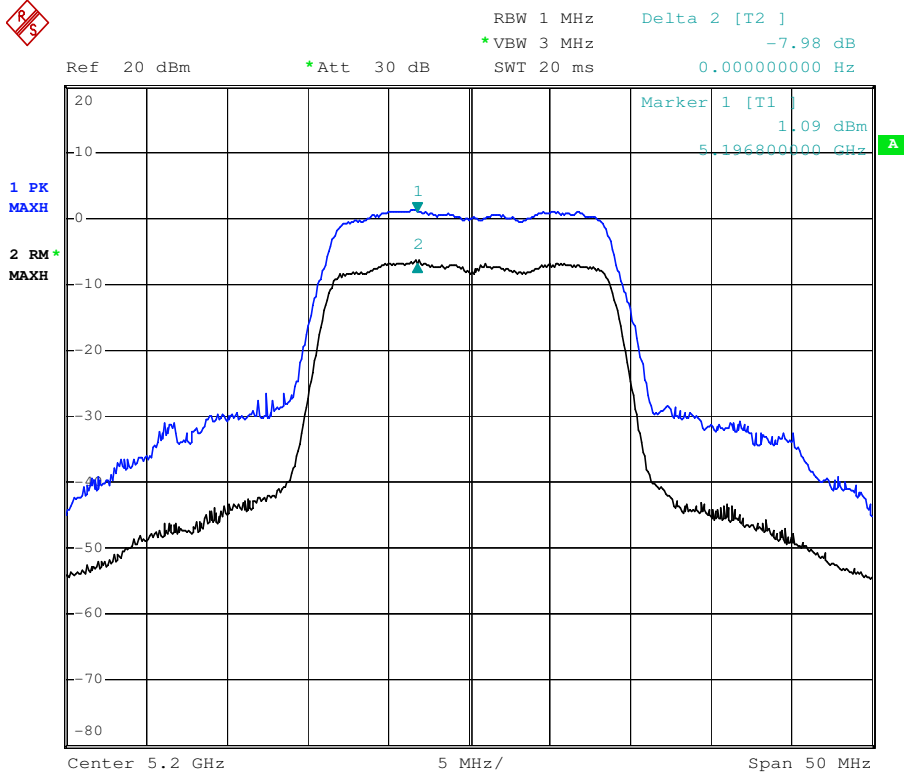
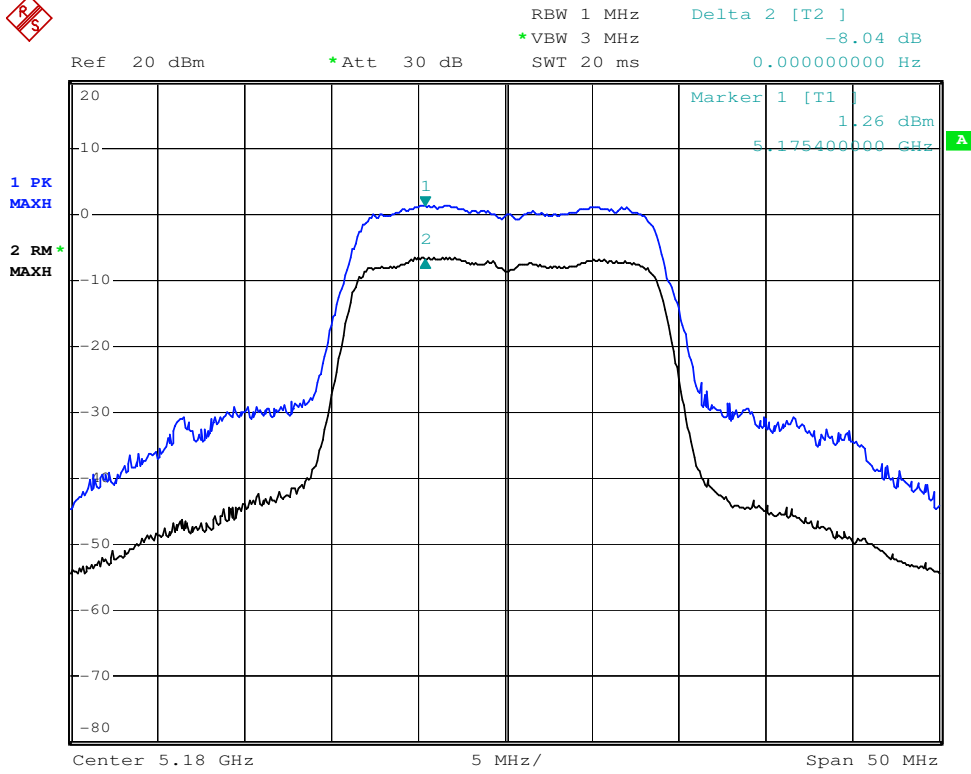
(Chain 001)

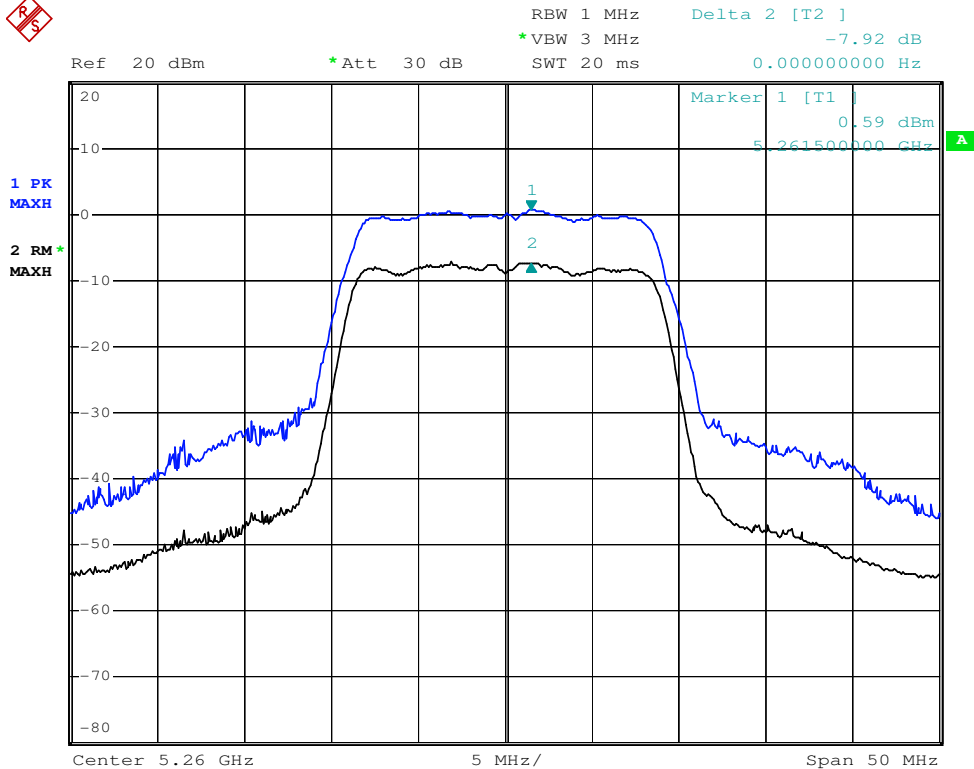
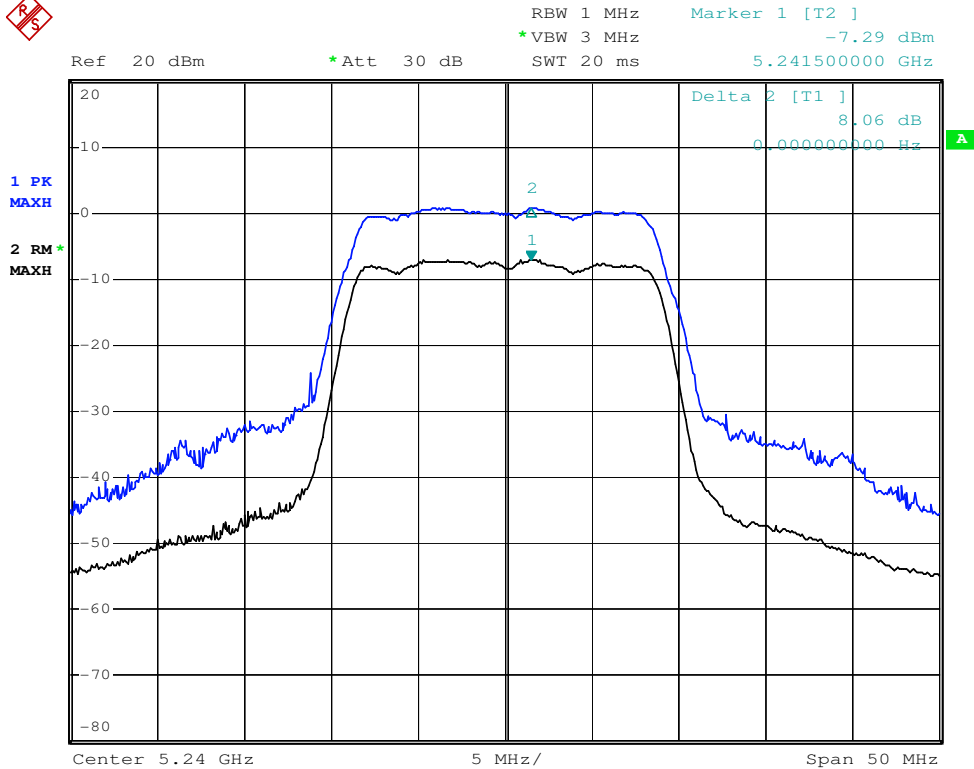
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
36	5180	8.04	13	PASS
40	5200	7.98	13	PASS
48	5240	7.29	13	PASS
52	5260	7.92	13	PASS
60	5300	8.08	13	PASS
64	5320	8.23	13	PASS
100	5500	7.95	13	PASS
120	5600	8.29	13	PASS
140	5700	8.50	13	PASS

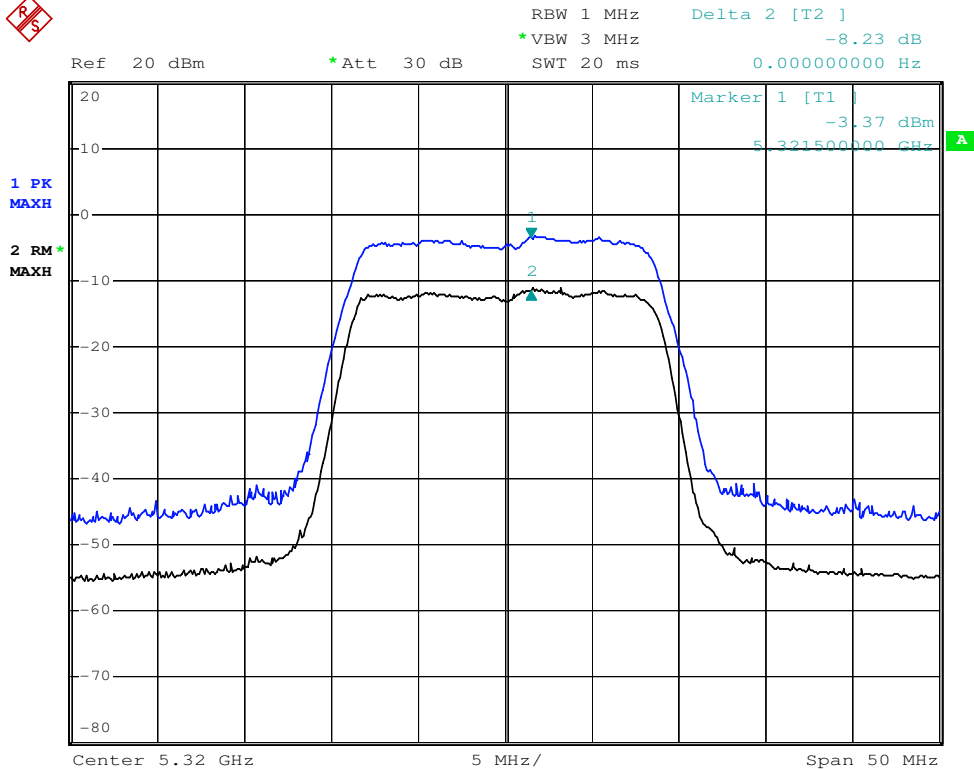
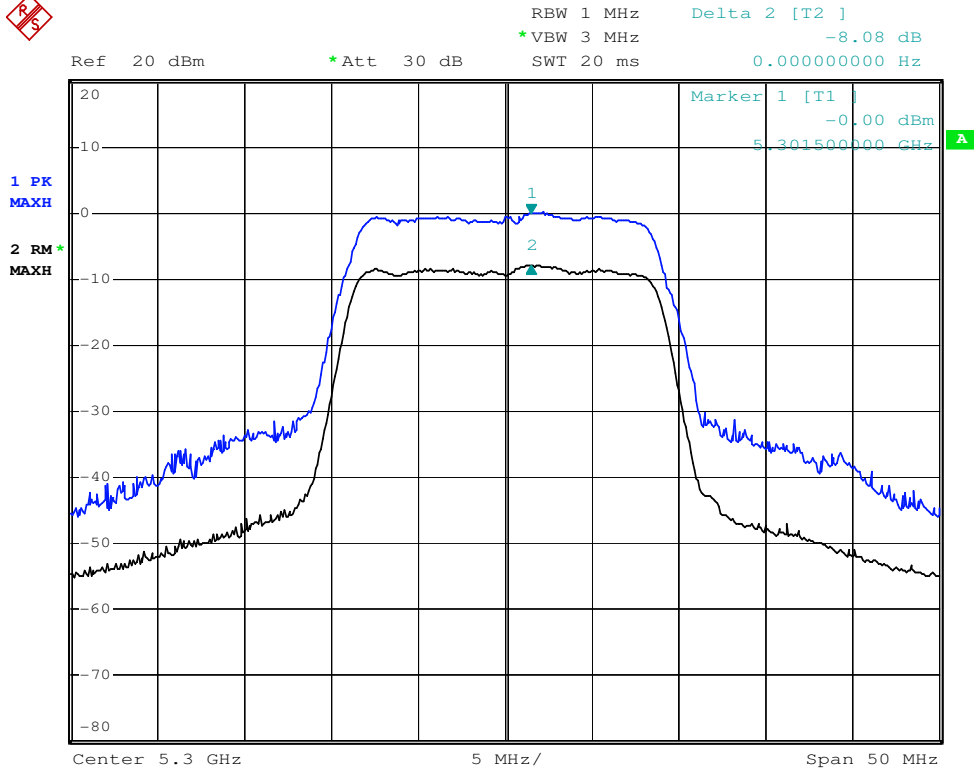
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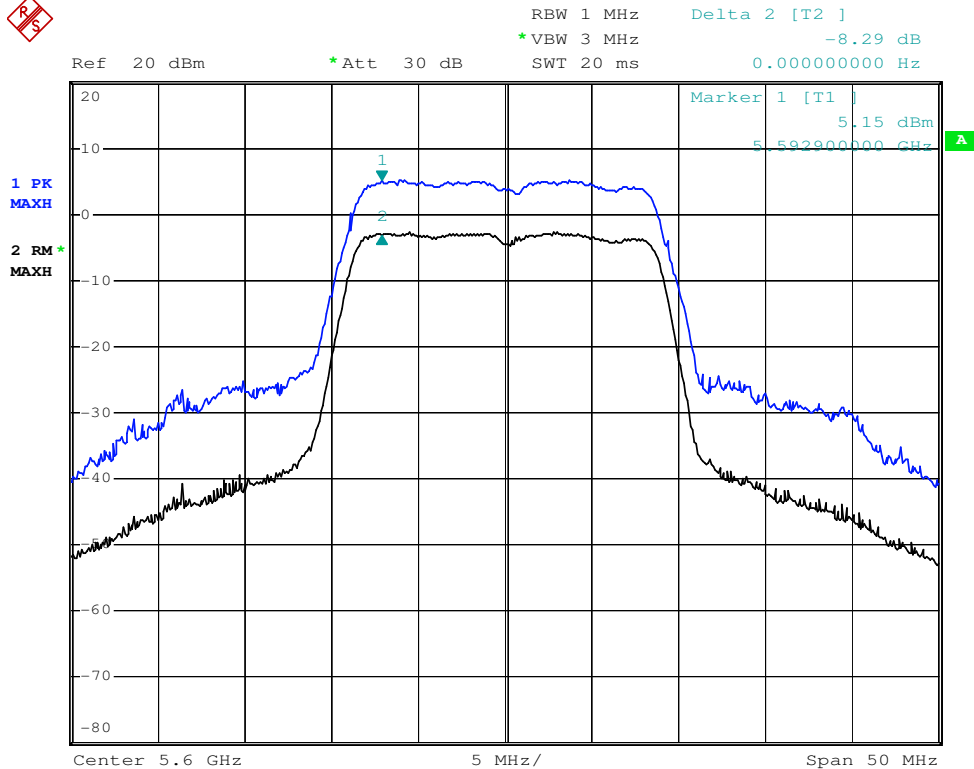
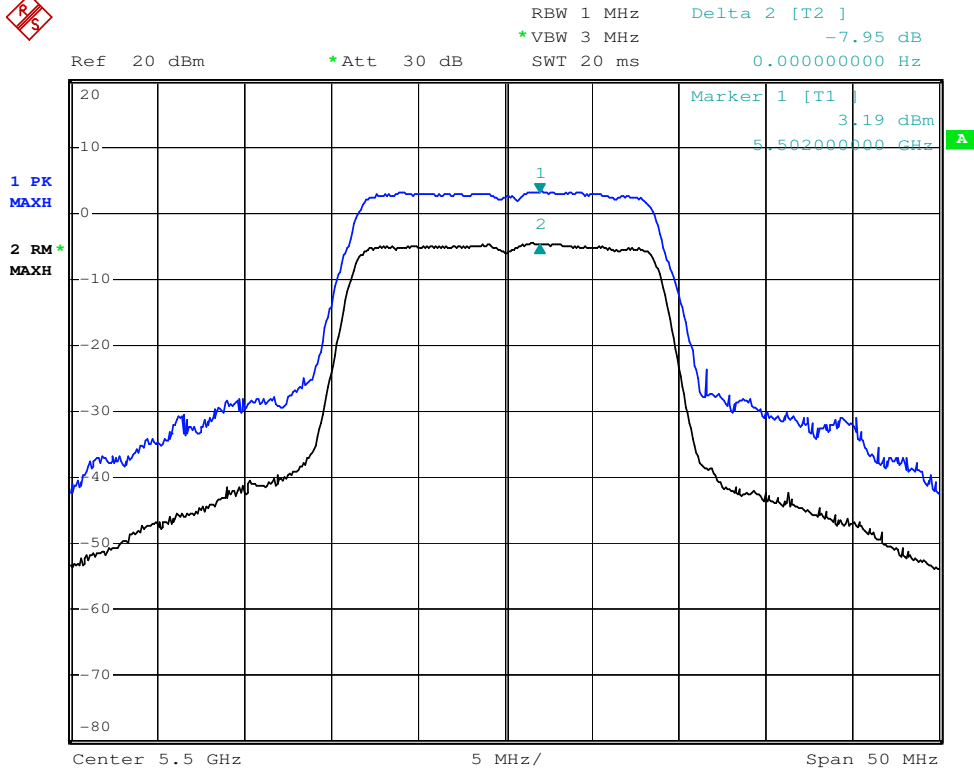


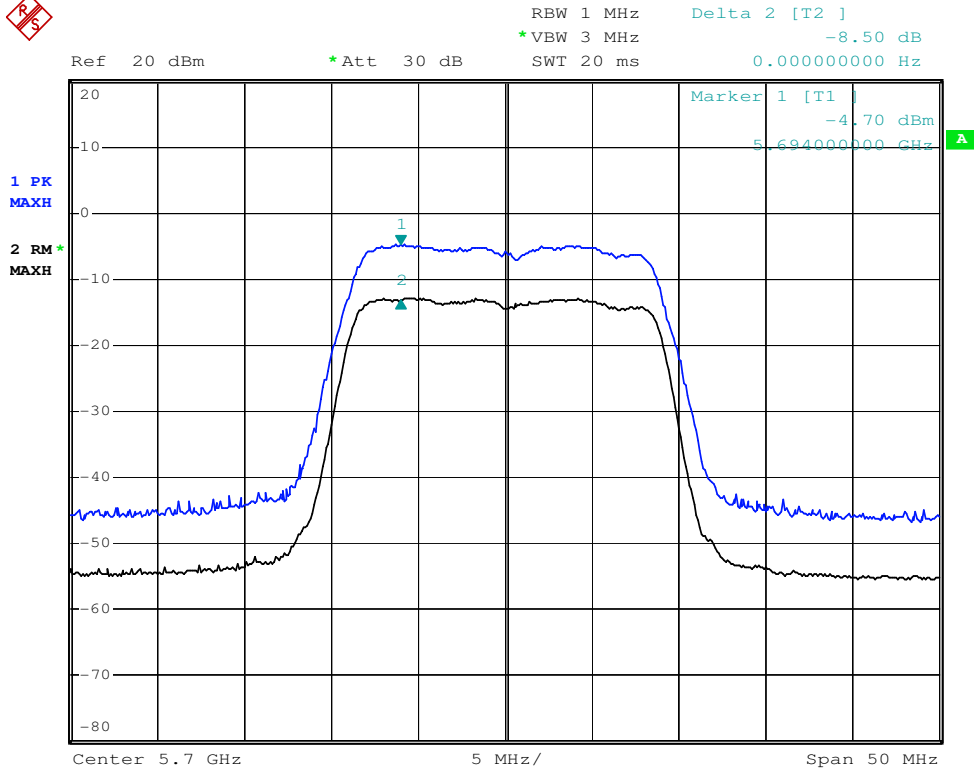
Test Data:











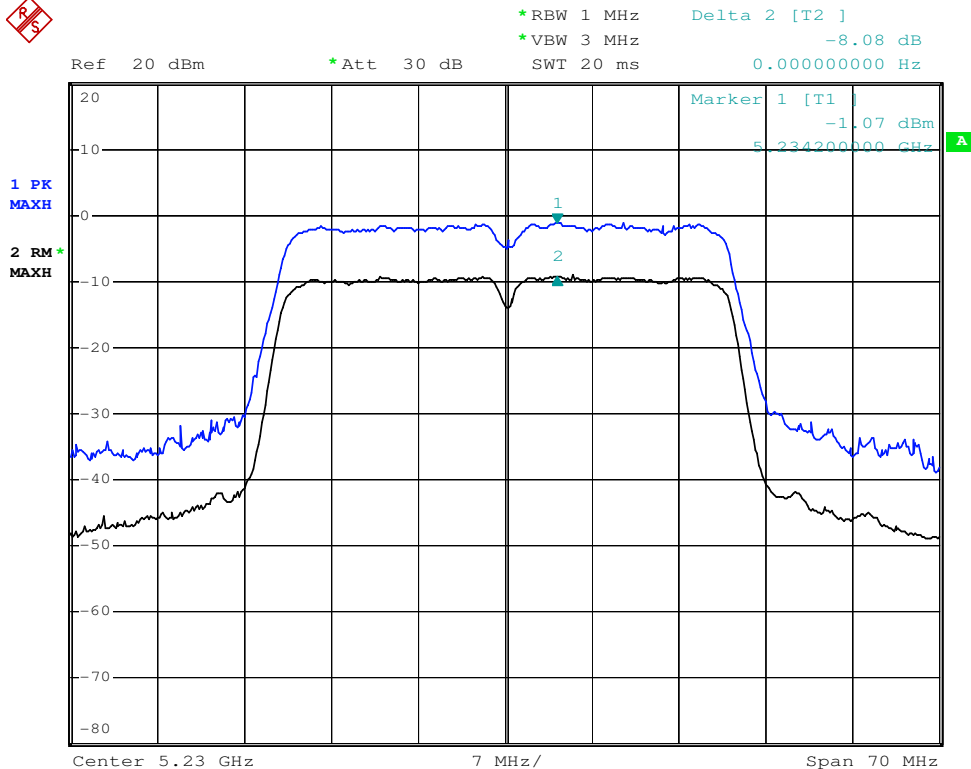
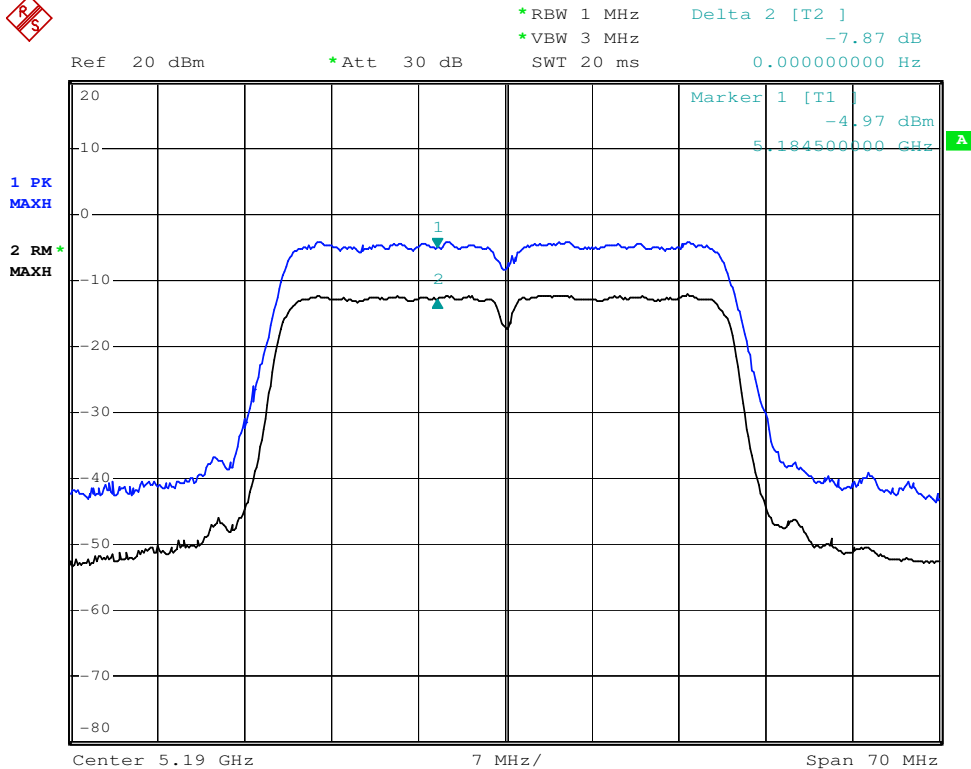
**802.11n (40MHz) OFDM MODULATION:
(Chain 100)**

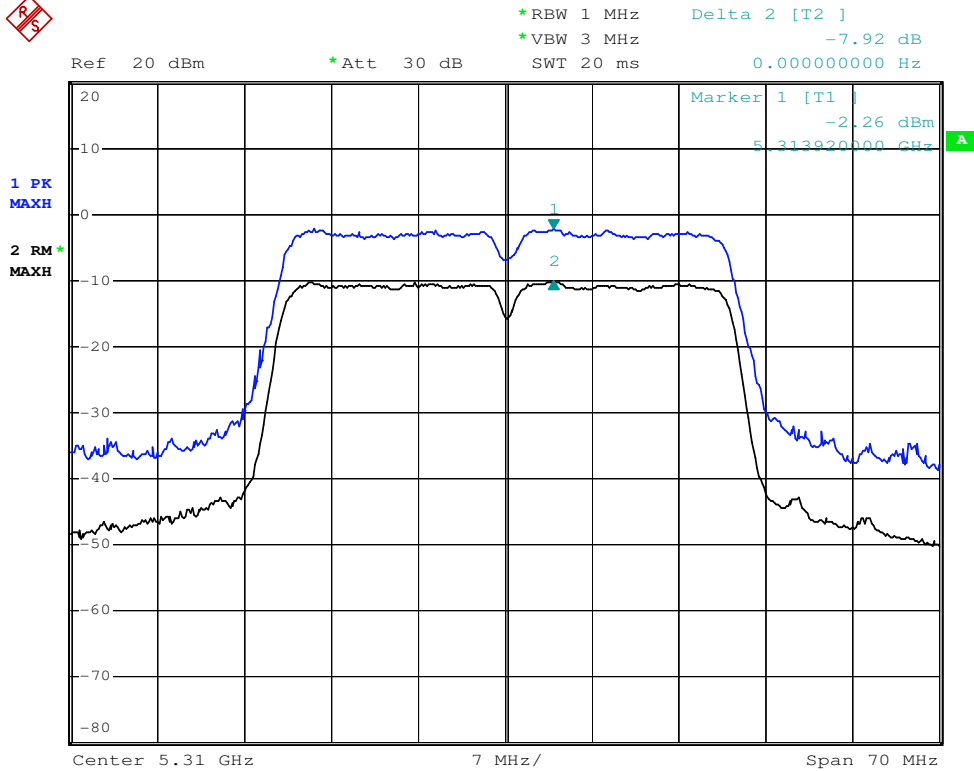
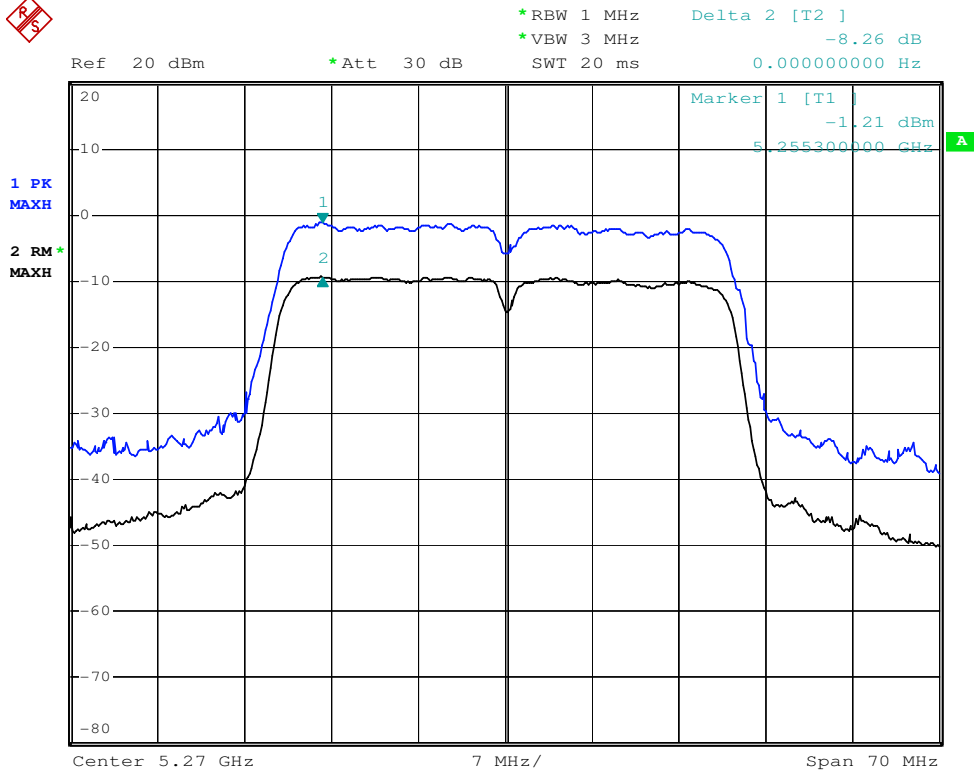
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
38	5190	7.87	13	PASS
46	5230	8.08	13	PASS
54	5270	8.26	13	PASS
62	5310	7.92	13	PASS
100	5510	8.01	13	PASS
120	5590	8.19	13	PASS
140	5670	7.88	13	PASS

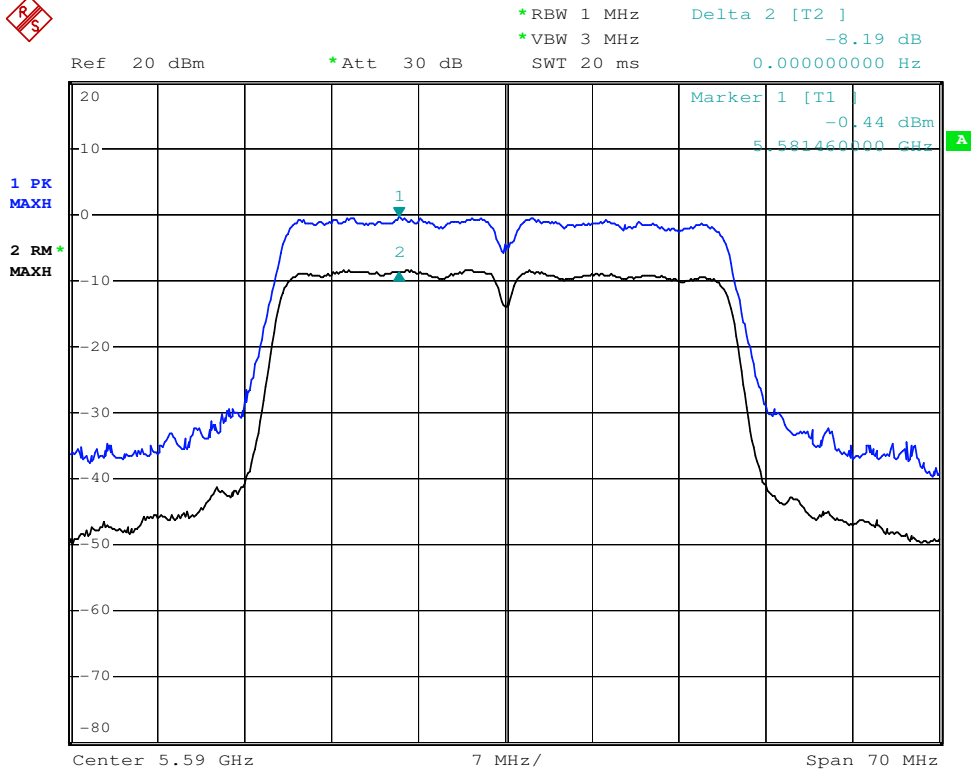
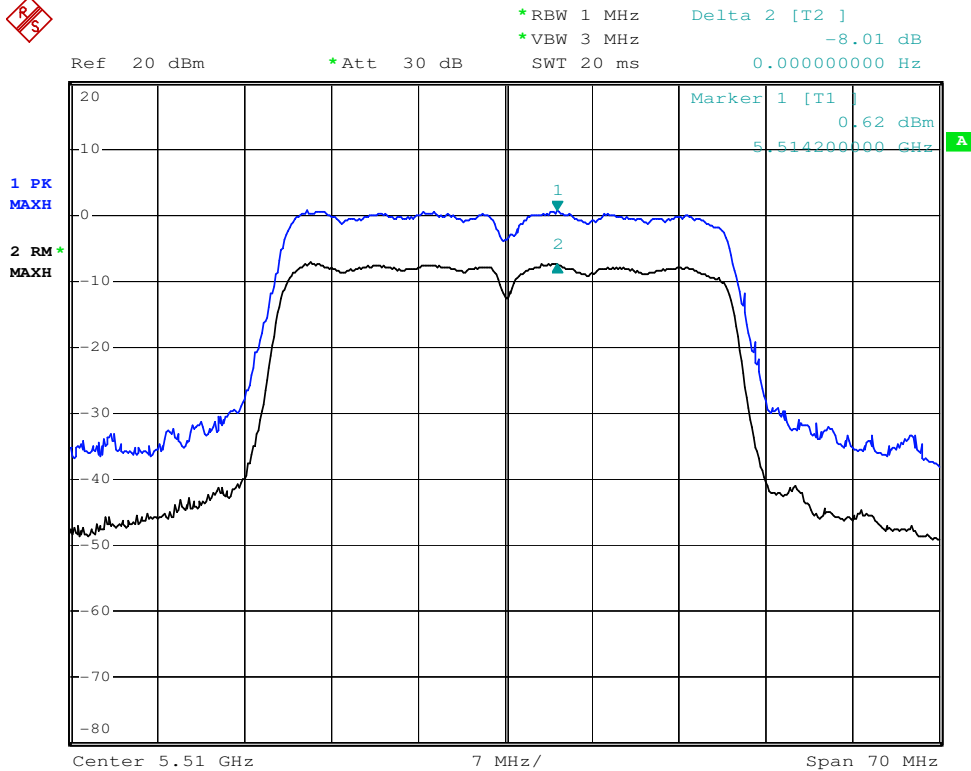
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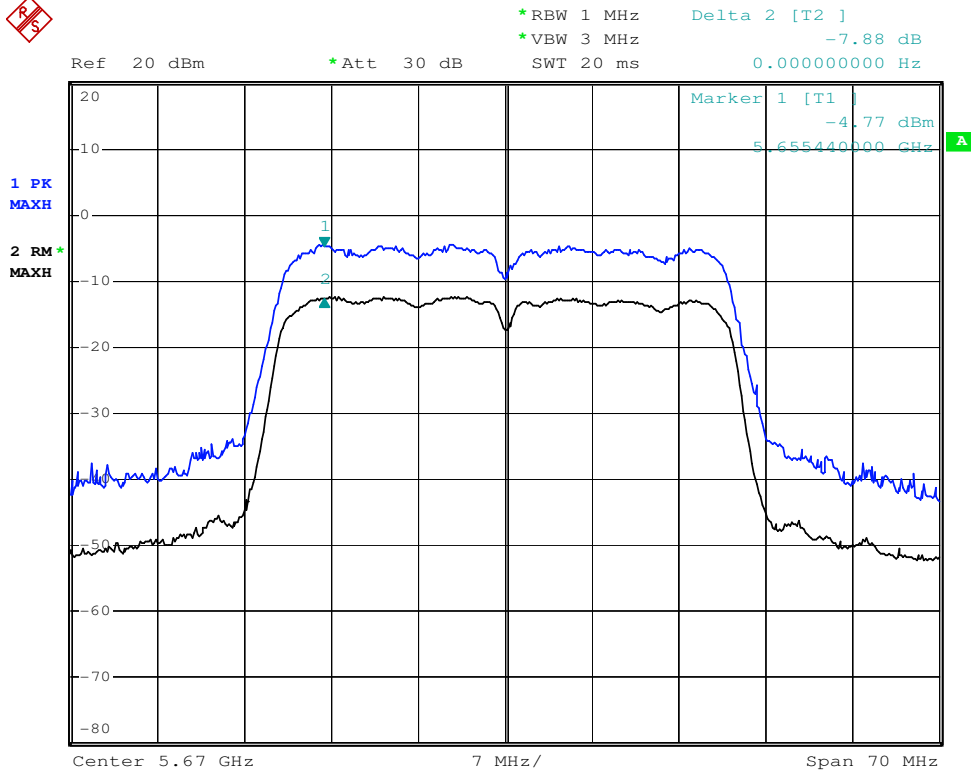


Test Data:









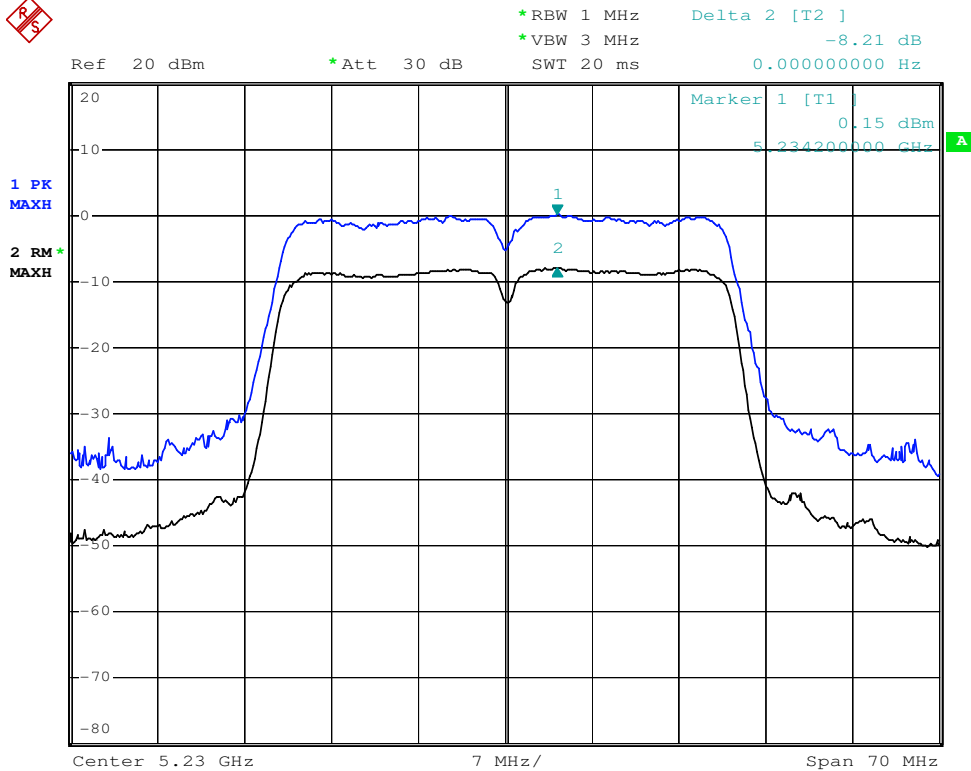
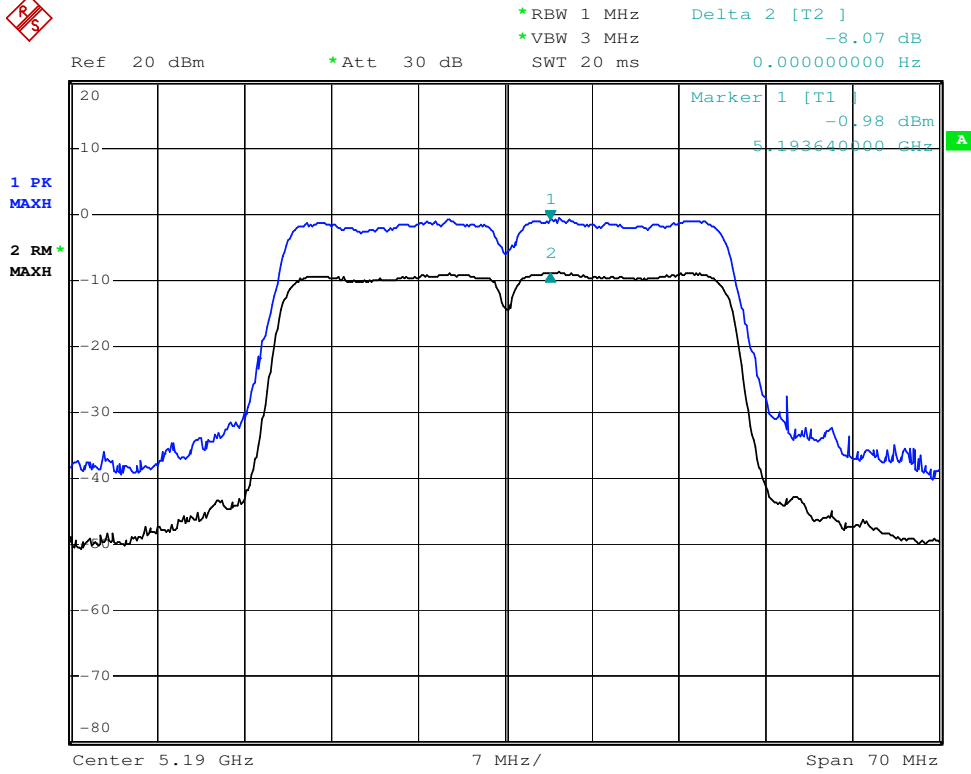
(Chain 010)

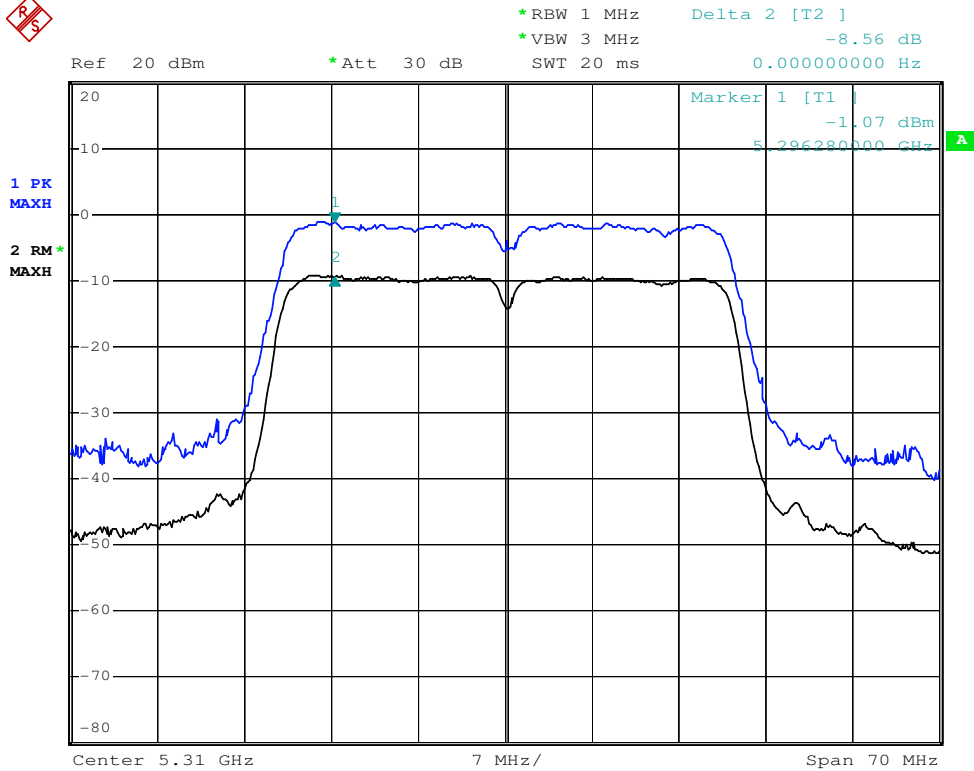
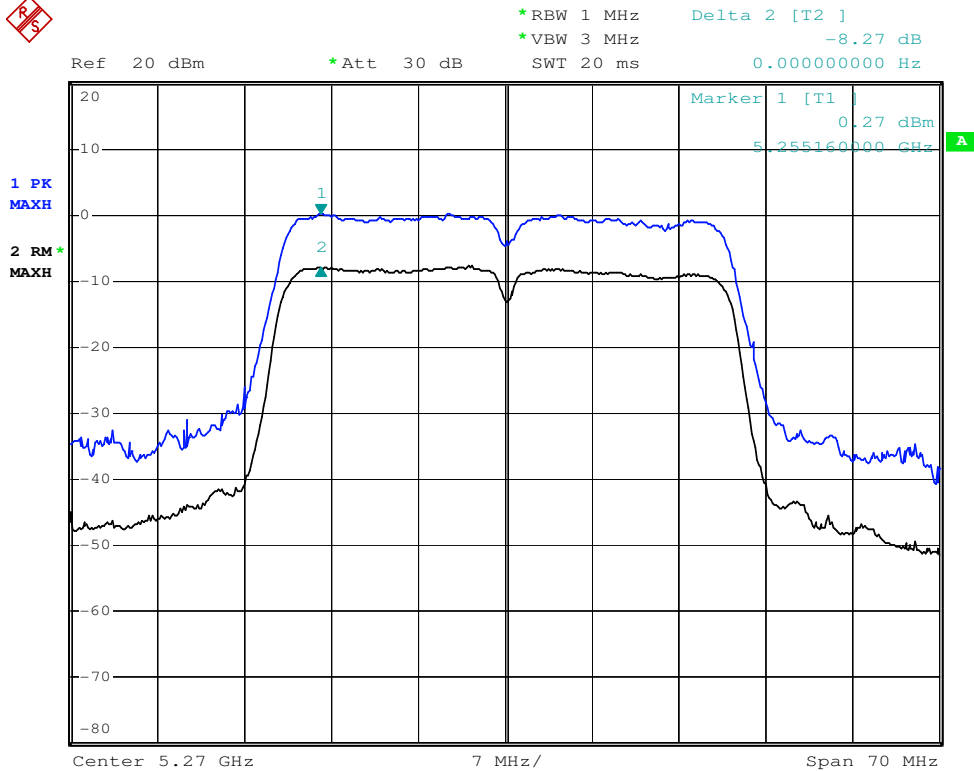
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
38	5190	8.07	13	PASS
46	5230	8.21	13	PASS
54	5270	8.27	13	PASS
62	5310	8.56	13	PASS
100	5510	8.44	13	PASS
120	5590	8.35	13	PASS
140	5670	7.95	13	PASS

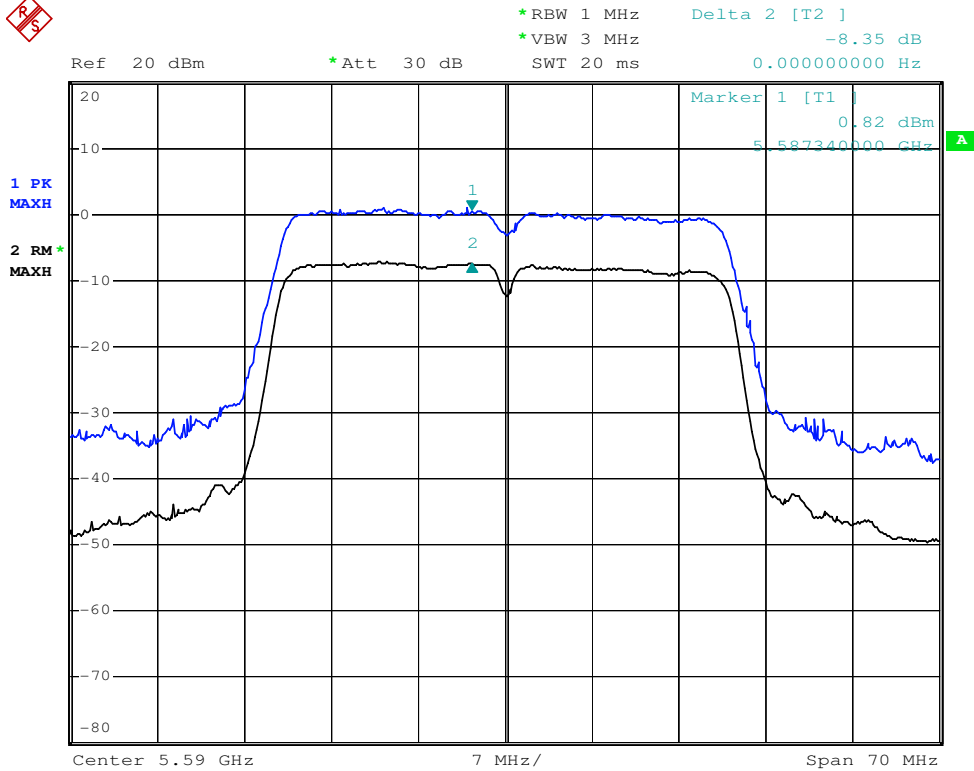
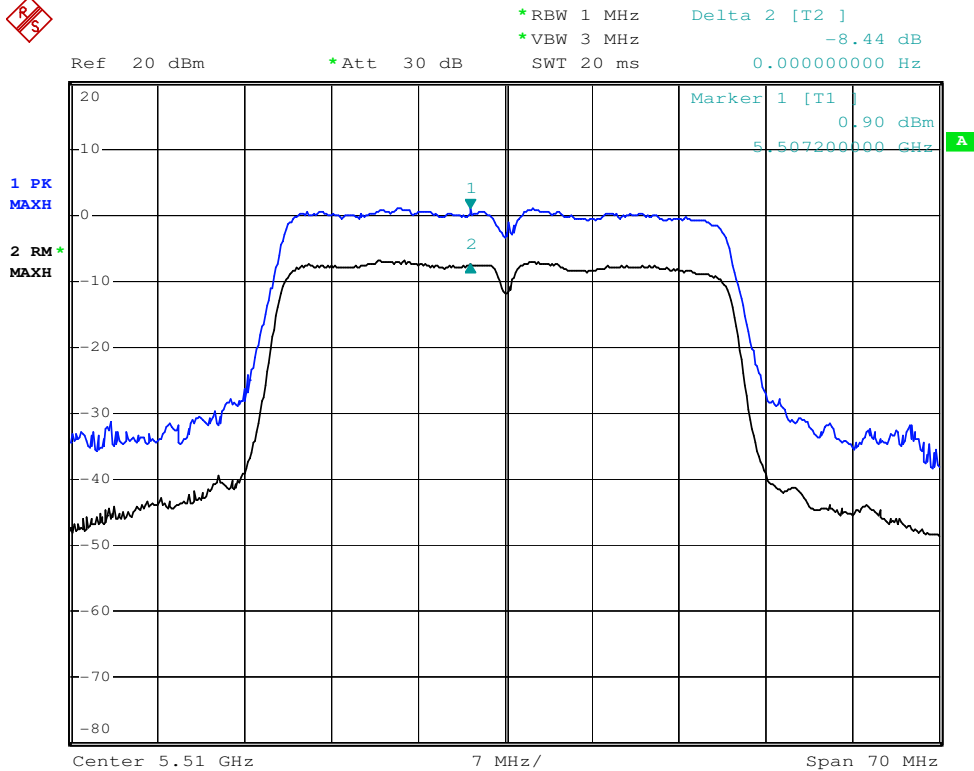
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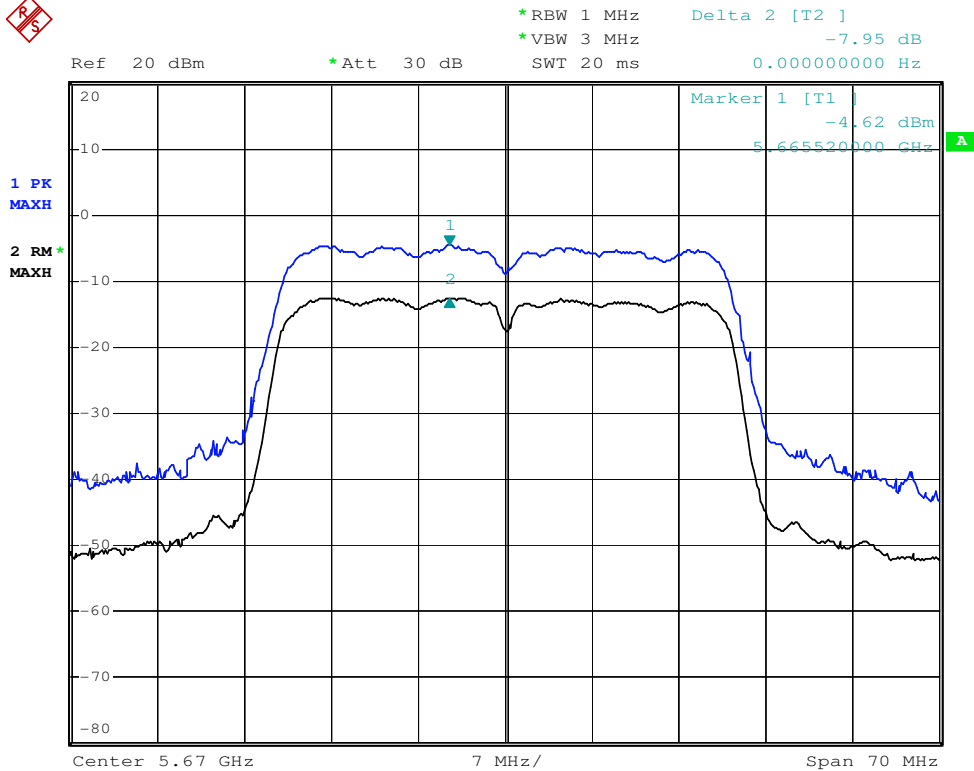


Test Data:









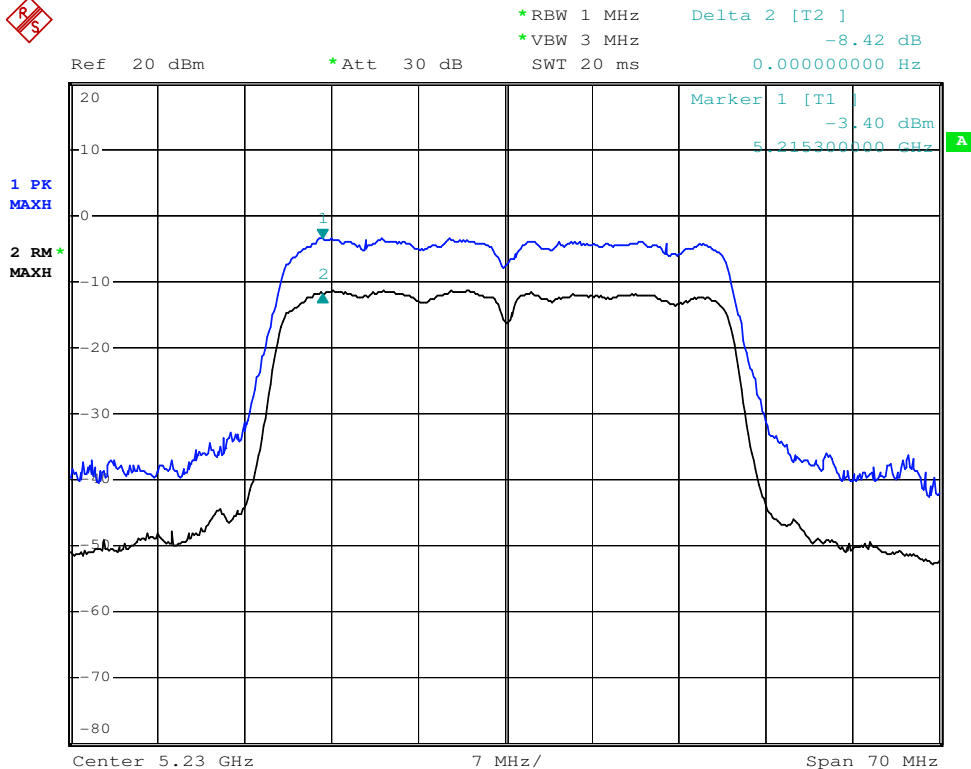
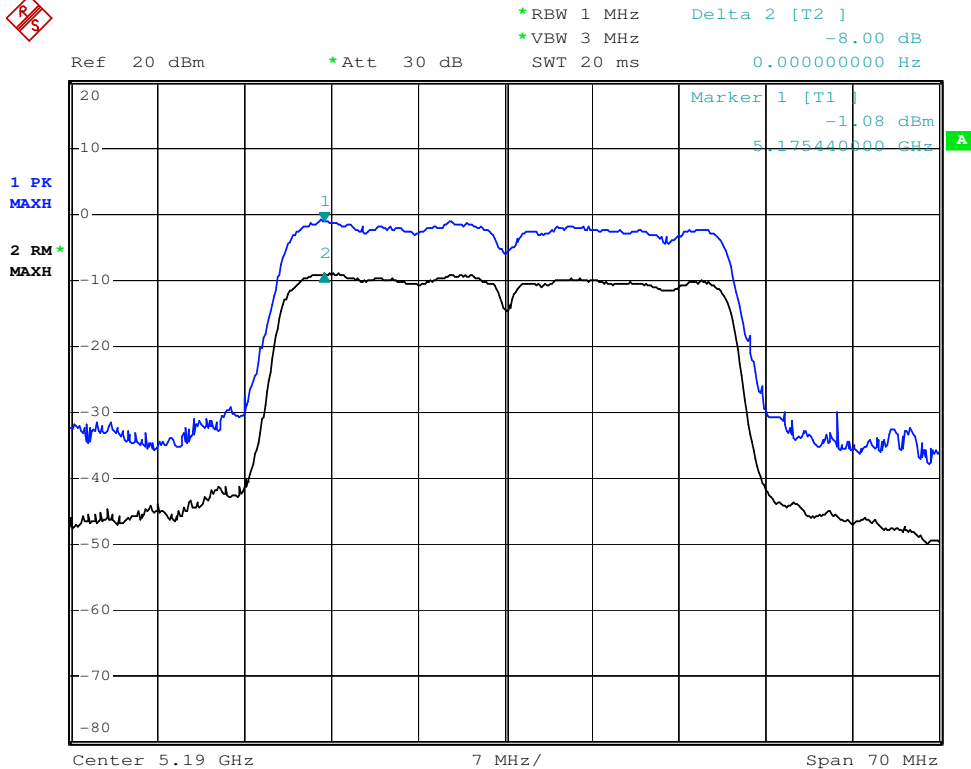
(Chain 001)

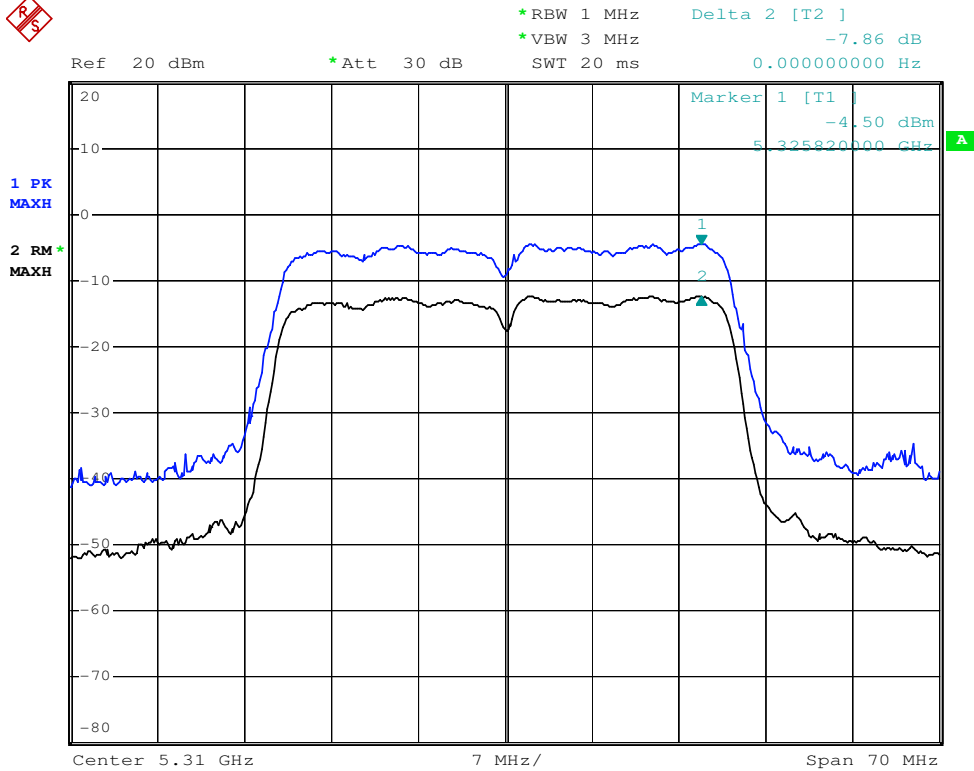
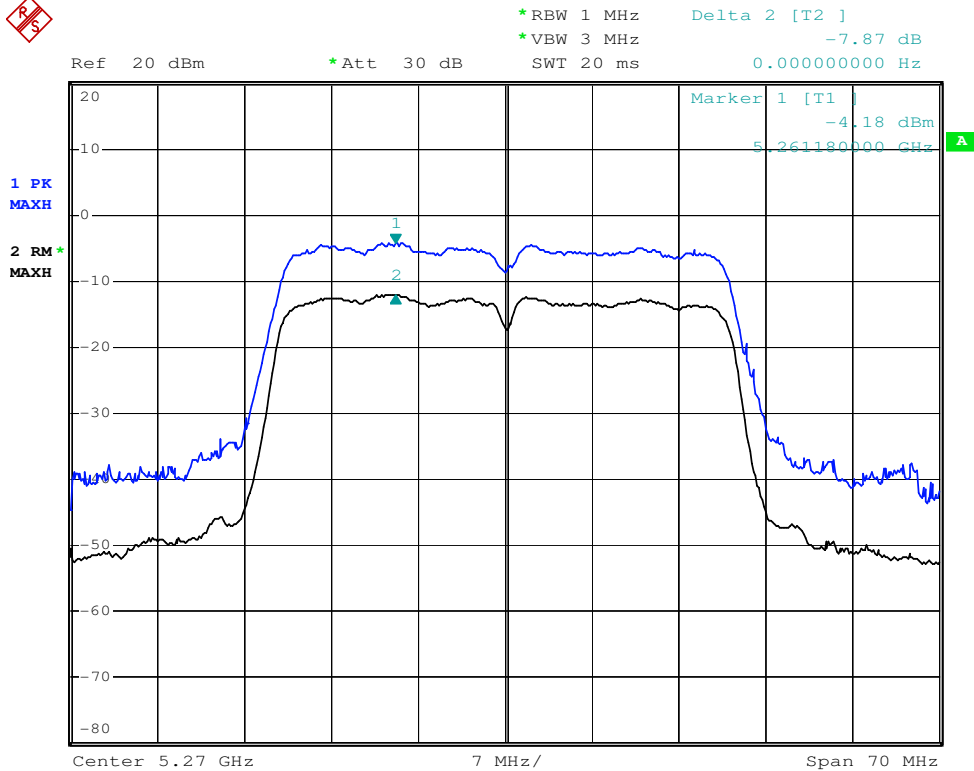
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
38	5190	8.00	13	PASS
46	5230	8.42	13	PASS
54	5270	7.87	13	PASS
62	5310	7.86	13	PASS
100	5510	7.97	13	PASS
120	5590	8.07	13	PASS
140	5670	8.12	13	PASS

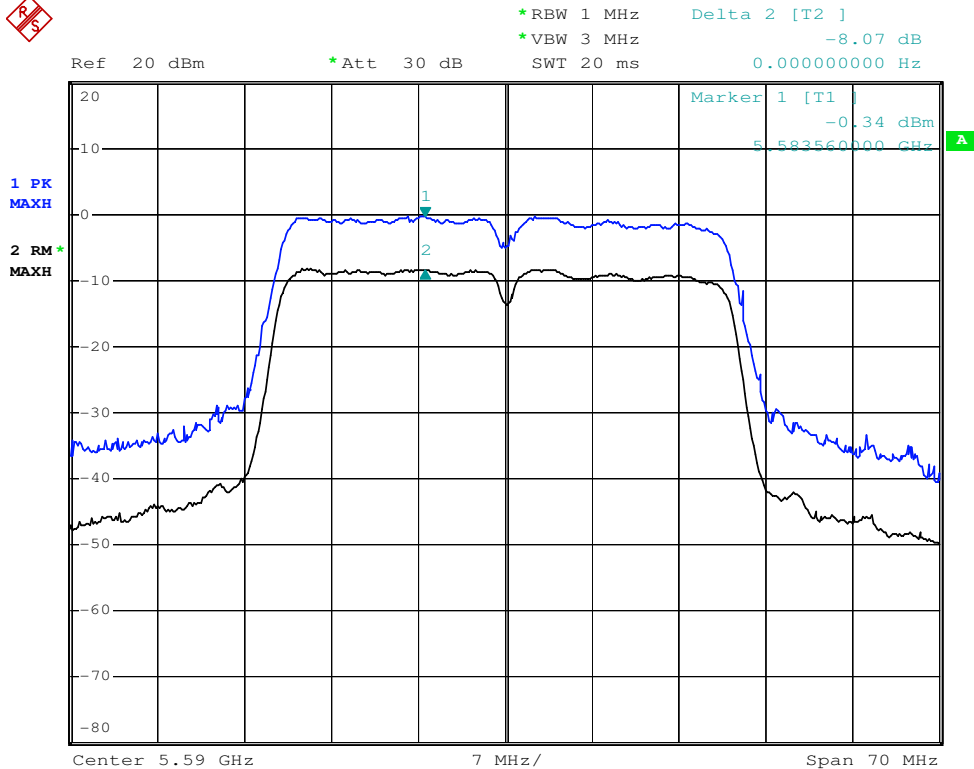
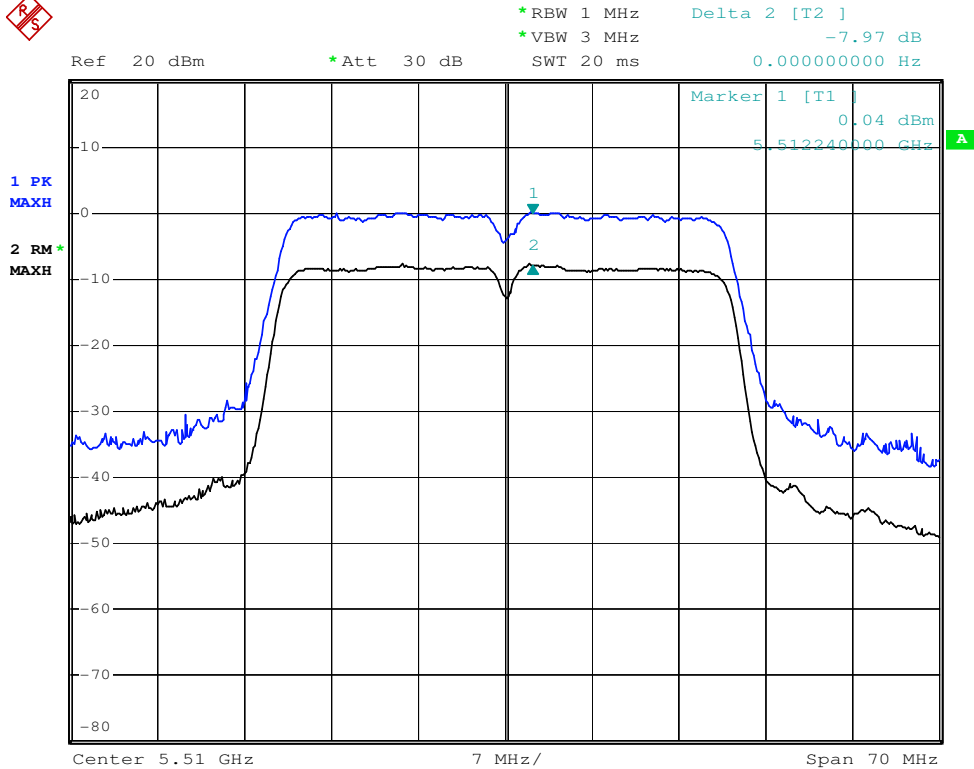
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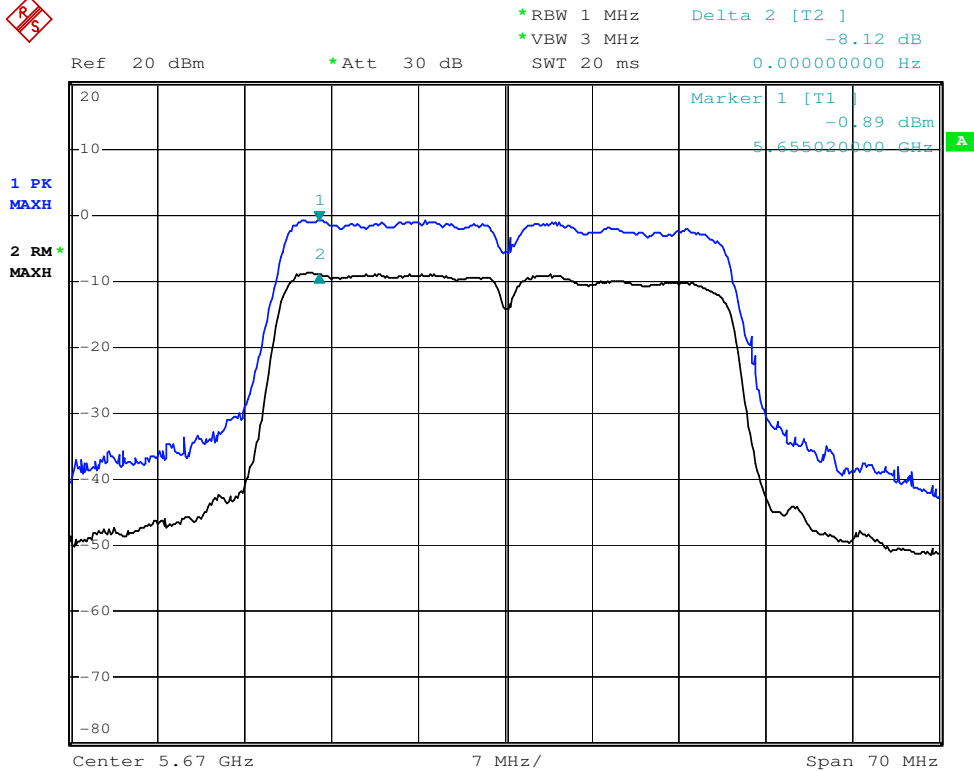


Test Data:











4.2.4 PEAK POWER SPECTRAL DENSITY

Test Requirement: FCC Part 15 15.407(a/1/2/3)

Test date April 16,2012

LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Frequency Band	Limit
5.15-5.25GHz	4dBm
5.25-5.35GHz	11dBm
5.47-5.725GHz	11dBm
5.725-5.825GHz	17dBm

Measuremet Produce

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - 2) Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
 - 3) Sweep time = auto, trigger set to “free run”.
 - 4) Trace average at least 100 traces in power averaging mode.
- FOR Multiple Output in the Same Band following the KDB:662911;**
Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer

**802.11 a OFDM MODULATION:
(Chain 111)**

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW CHANNEL (dBm)			TOTAL OUTPUT POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
		Chain 100	Chian 010	Chain 001			
36	5180	-2.74	-3.4	-4.02	2.92	4	PASS
40	5200	-4.32	-2.85	-3.00	2.93	4	PASS
48	5240	-1.75	-2.62	-3.65	3.67	4	PASS
52	5260	-4.54	-4.15	-4.34	1.93	11	PASS
60	5300	-4.71	-3.99	-4.36	1.93	11	PASS
64	5320	-2.06	-2.11	-5.23	3.37	11	PASS
100	5500	-5.96	-5.97	-6.21	0.23	11	PASS
120	5600	-7.37	-7.01	-7.66	-1.07	11	PASS
140	5700	-11.95	-10.92	-11.08	-5.02	11	PASS

Remark: Cable loss=1.50dB

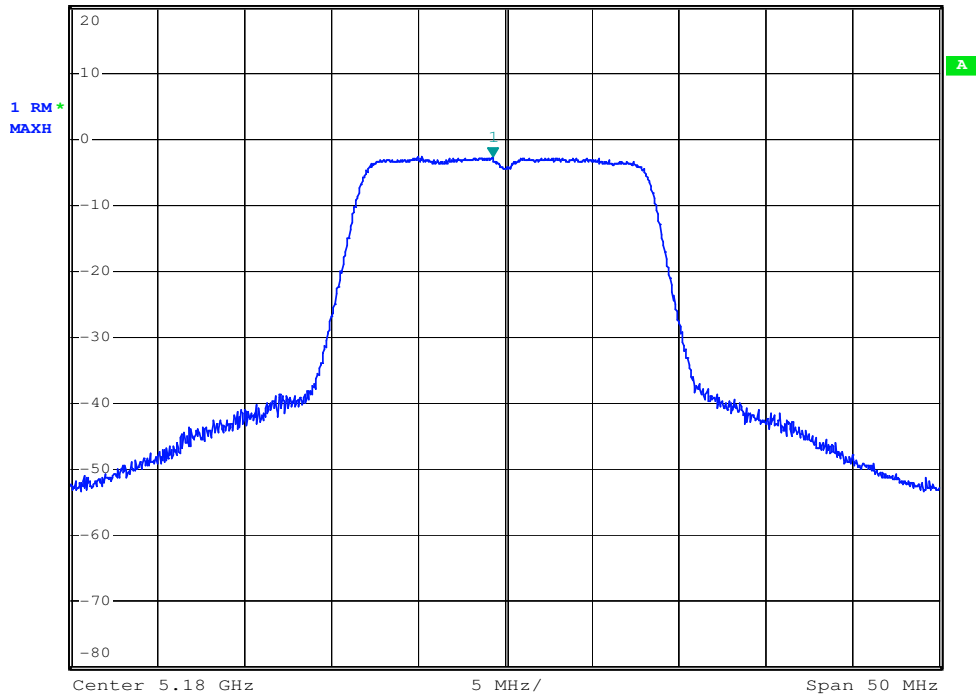
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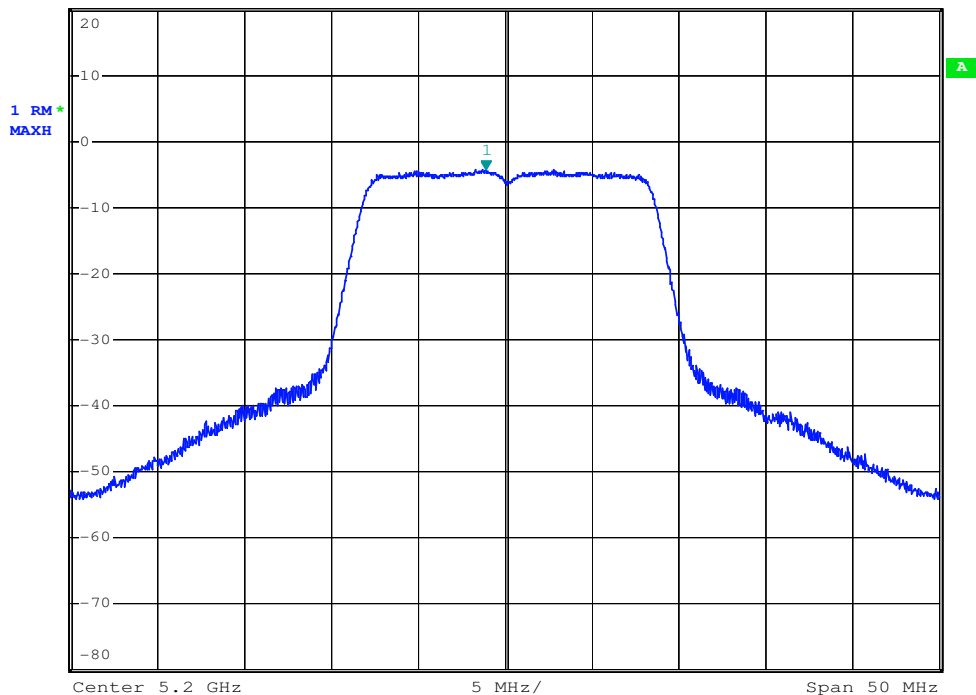
(Chain 100)

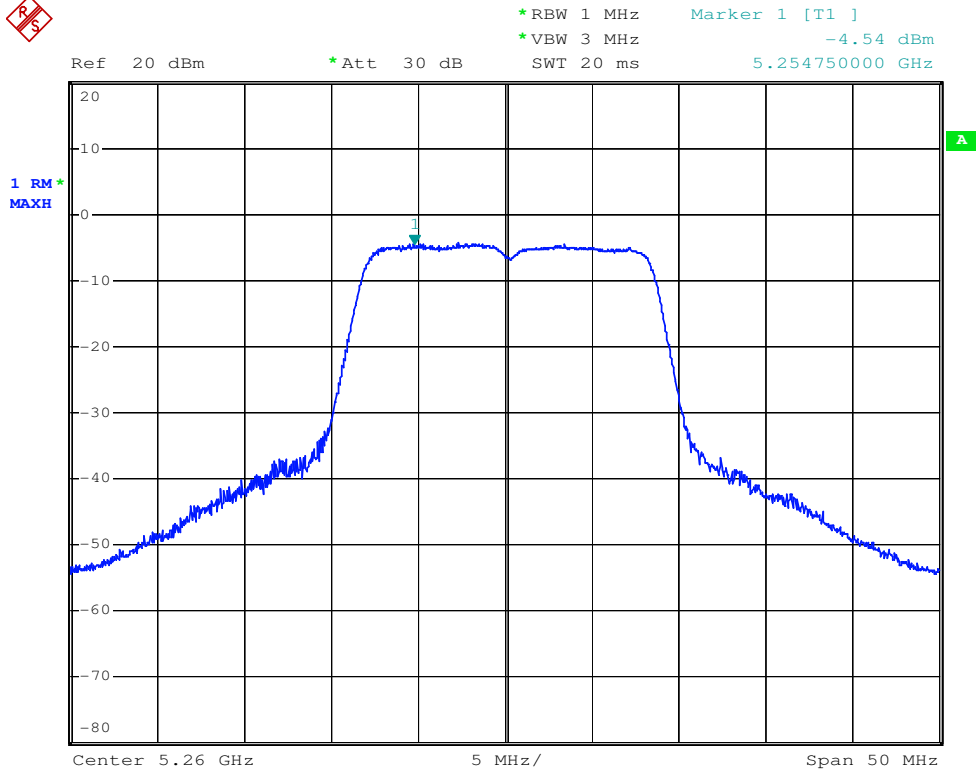
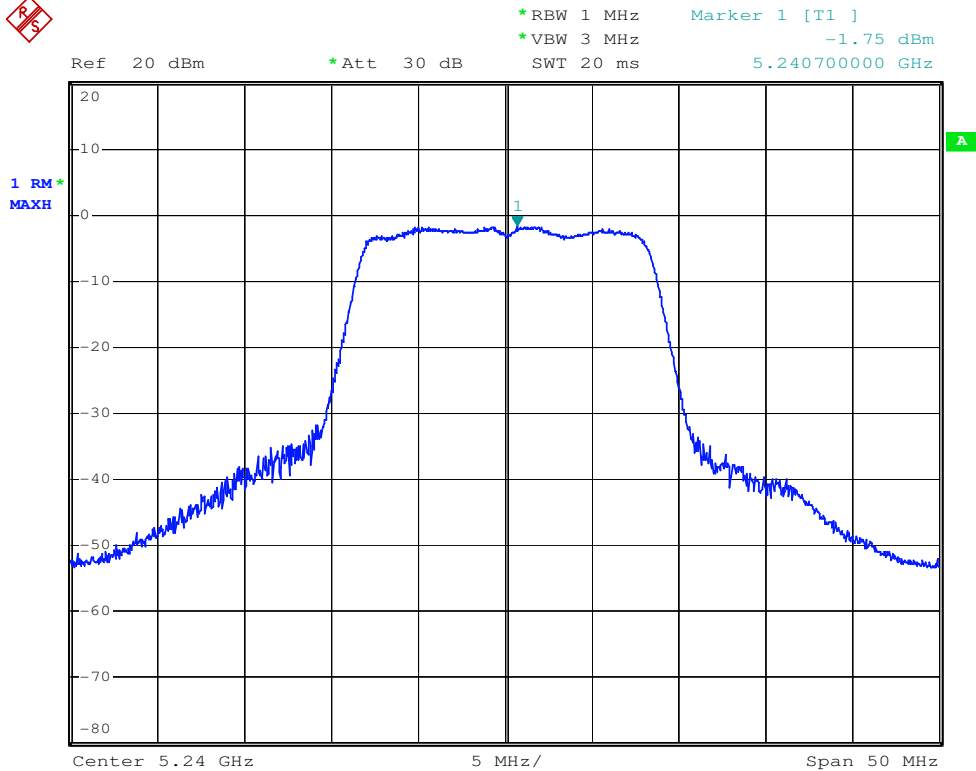


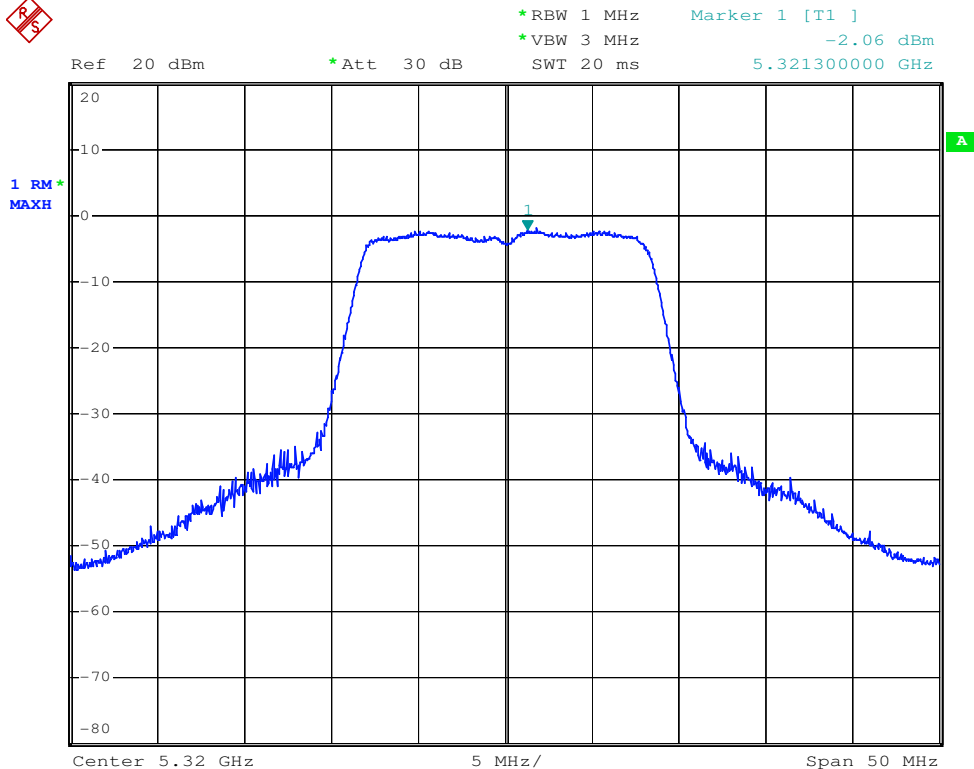
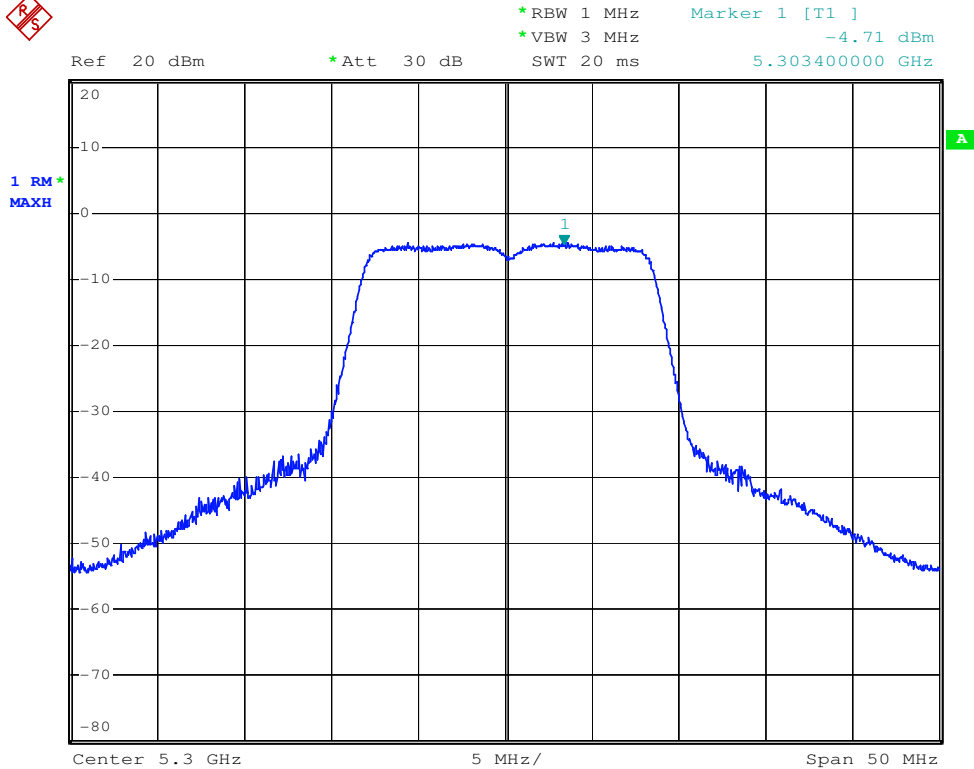
Ref 20 dBm *Att 30 dB *RBW 1 MHz *VBW 3 MHz SWT 20 ms Marker 1 [T1] -2.74 dBm 5.179300000 GHz



Ref 20 dBm *Att 30 dB *RBW 1 MHz *VBW 3 MHz SWT 20 ms Marker 1 [T1] -4.32 dBm 5.198900000 GHz

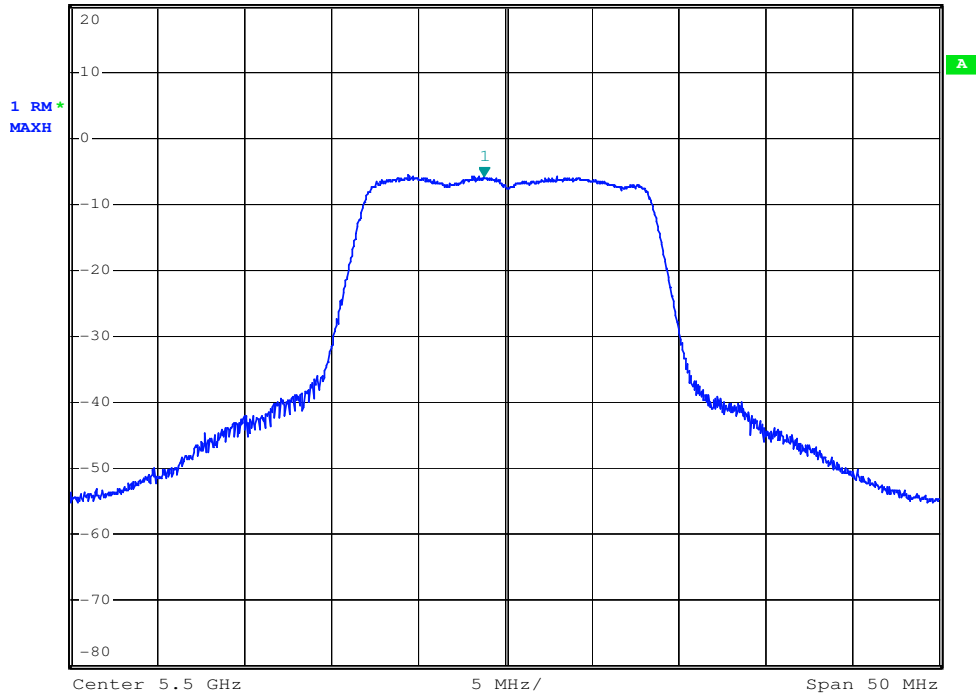




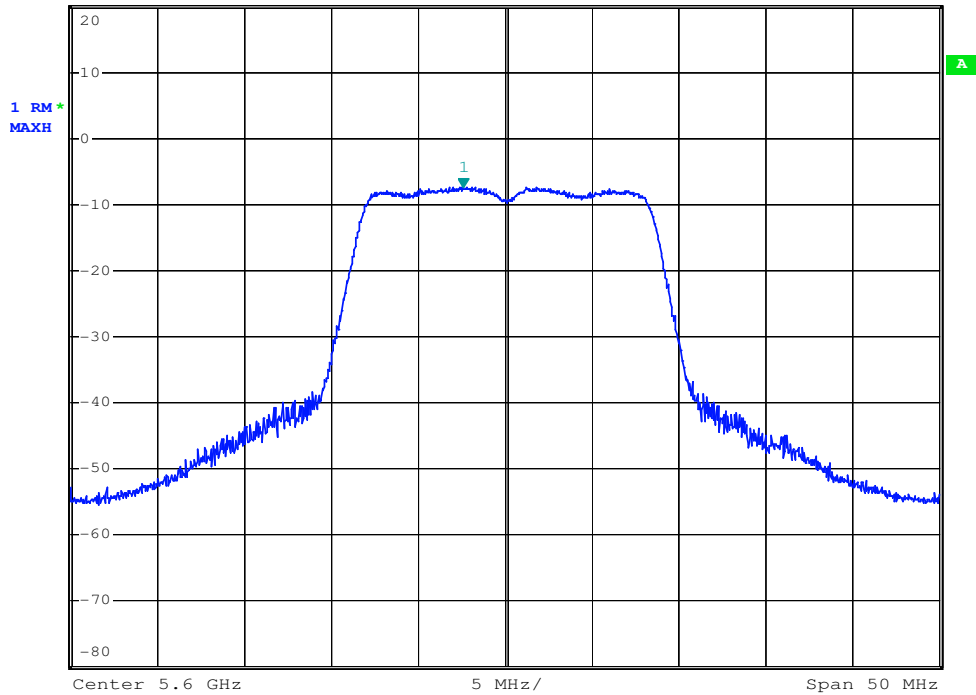




Ref 20 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz -5.96 dBm
SWT 20 ms 5.498800000 GHz

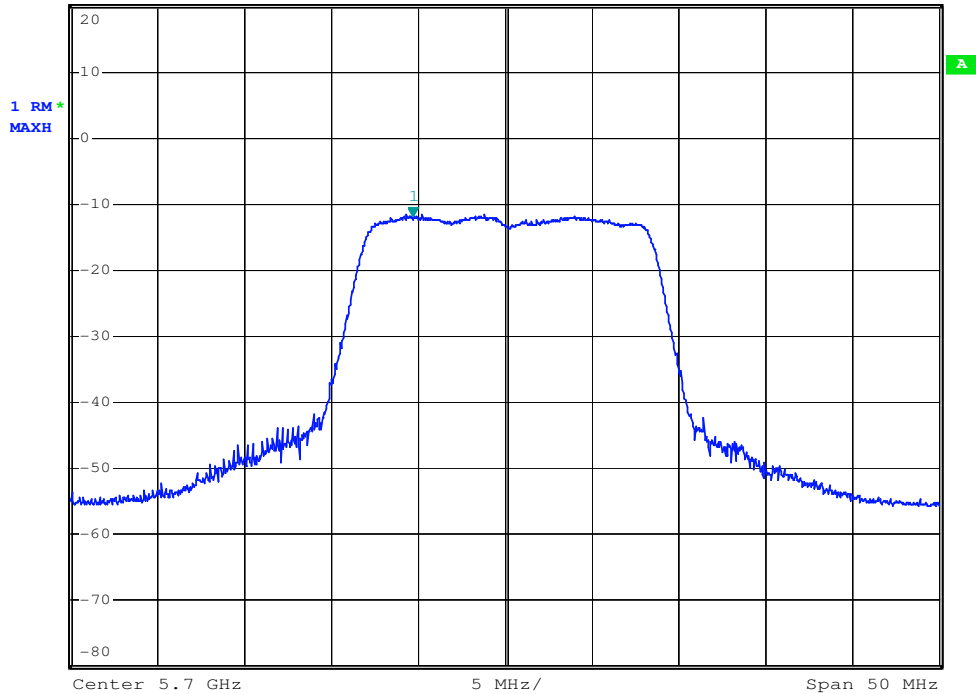


Ref 20 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1]
*VBW 3 MHz -7.37 dBm
SWT 20 ms 5.597600000 GHz





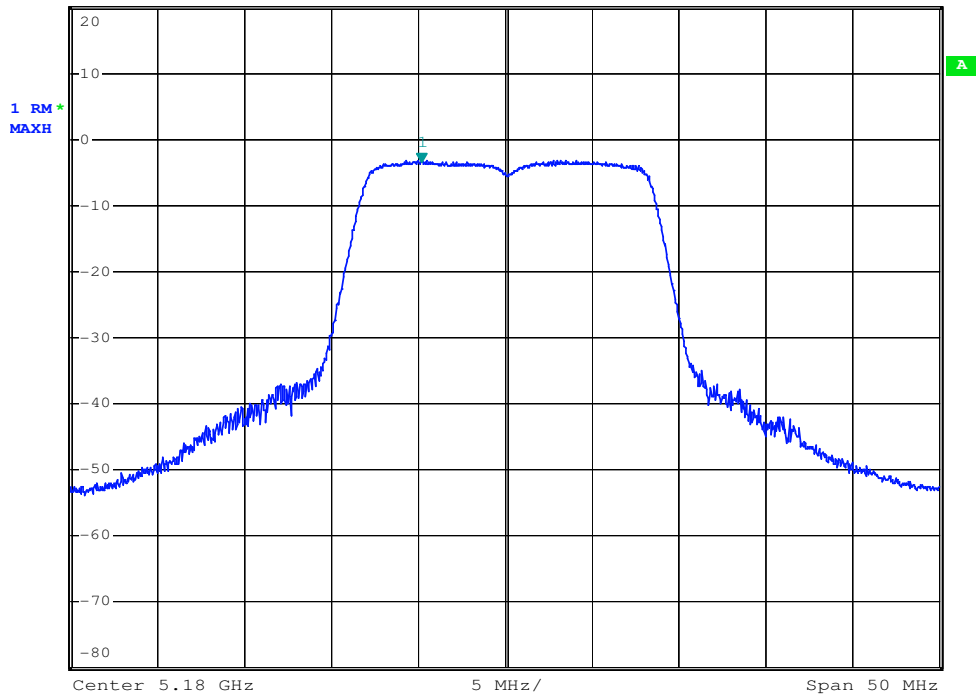
Ref 20 dBm *Att 30 dB SWT 20 ms *RBW 1 MHz *VBW 3 MHz Marker 1 [T1]
-11.95 dBm
5.694650000 GHz

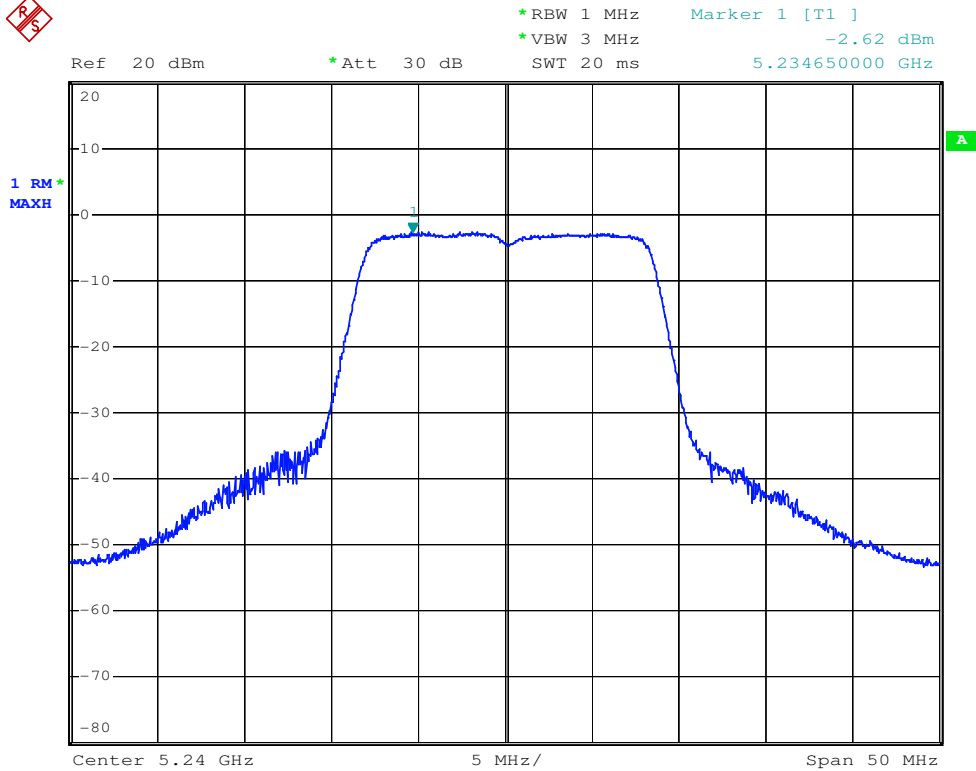
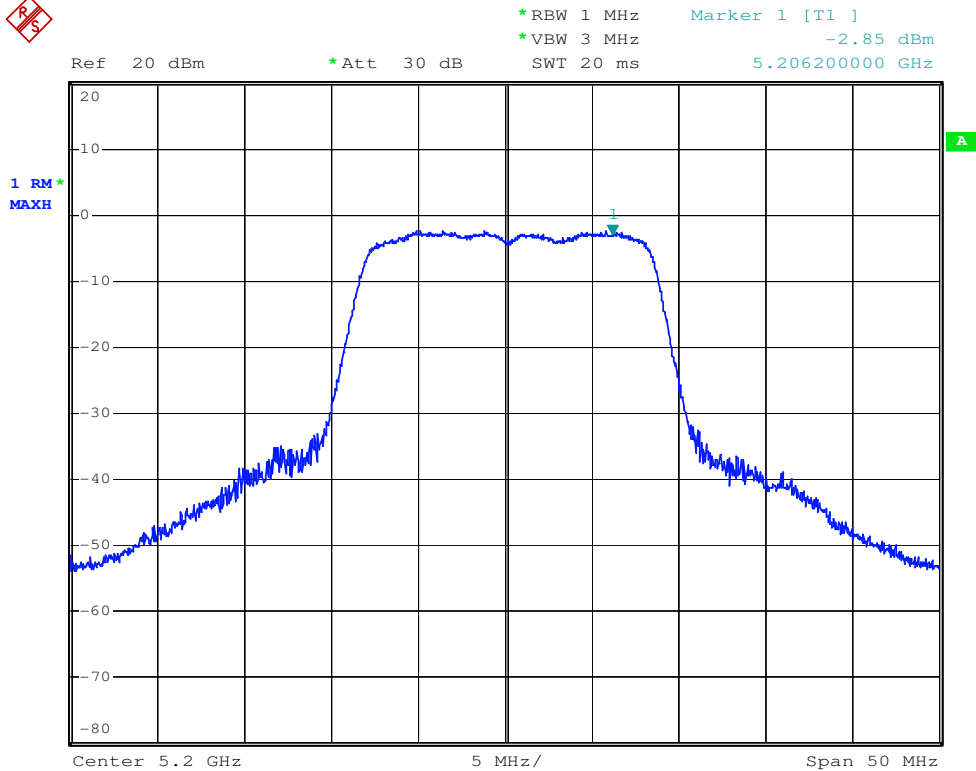


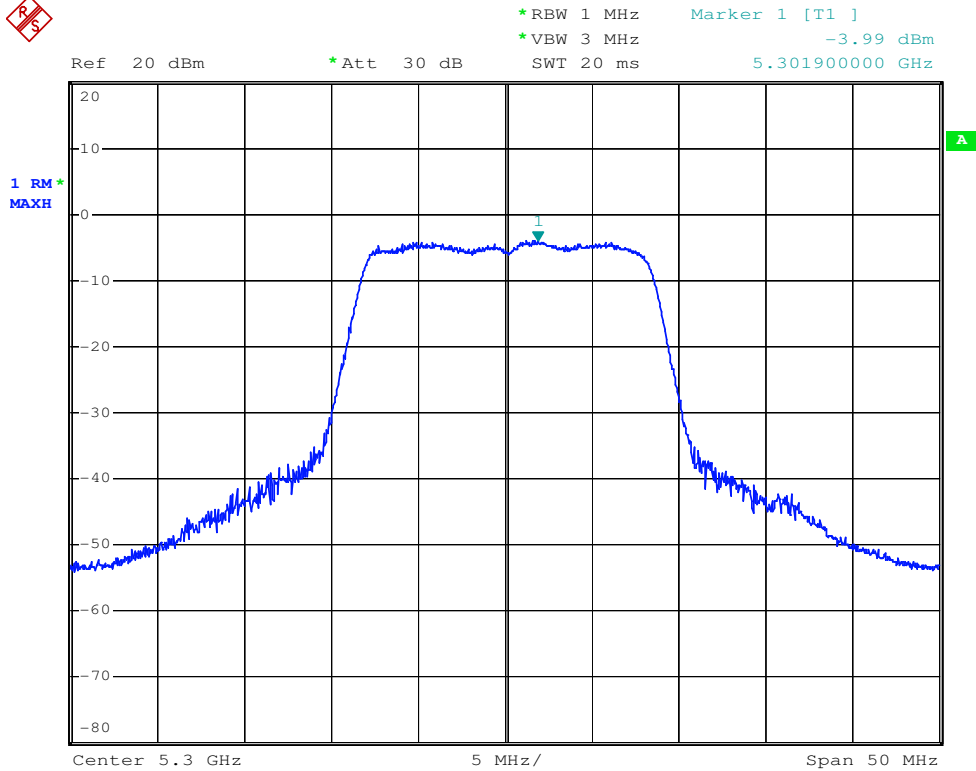
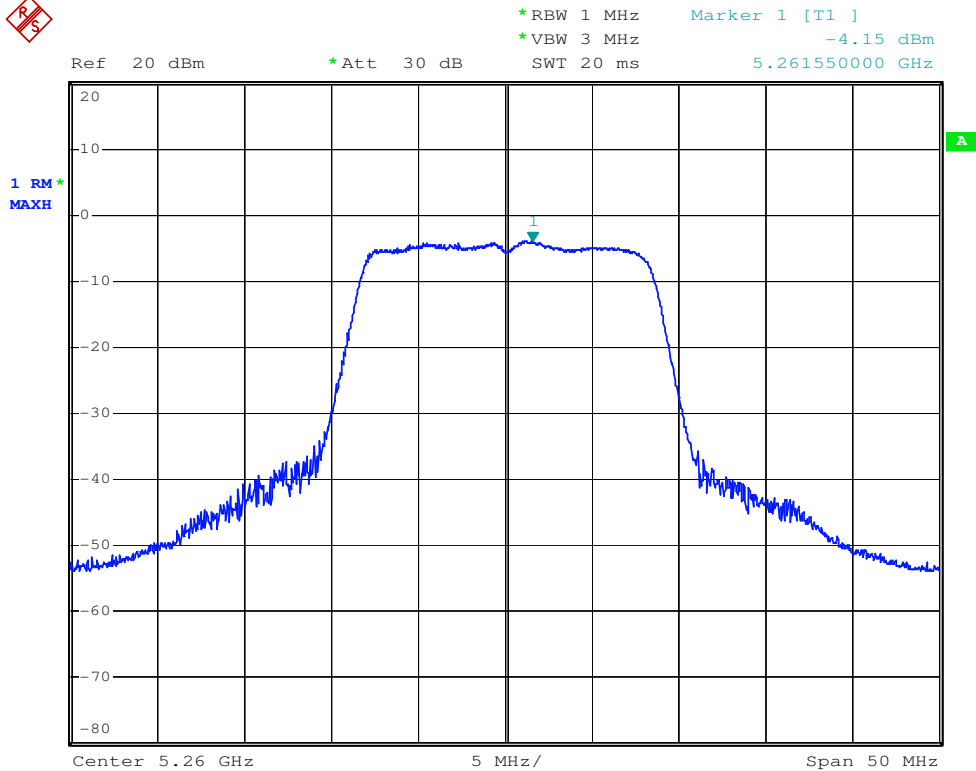
(Chain 010)

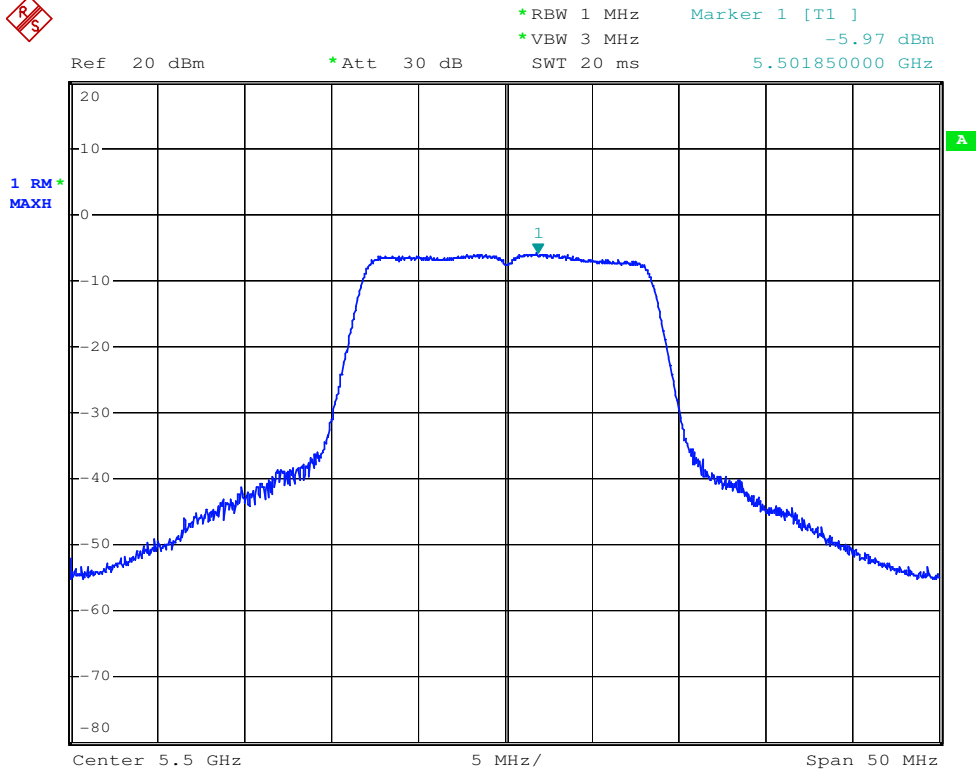
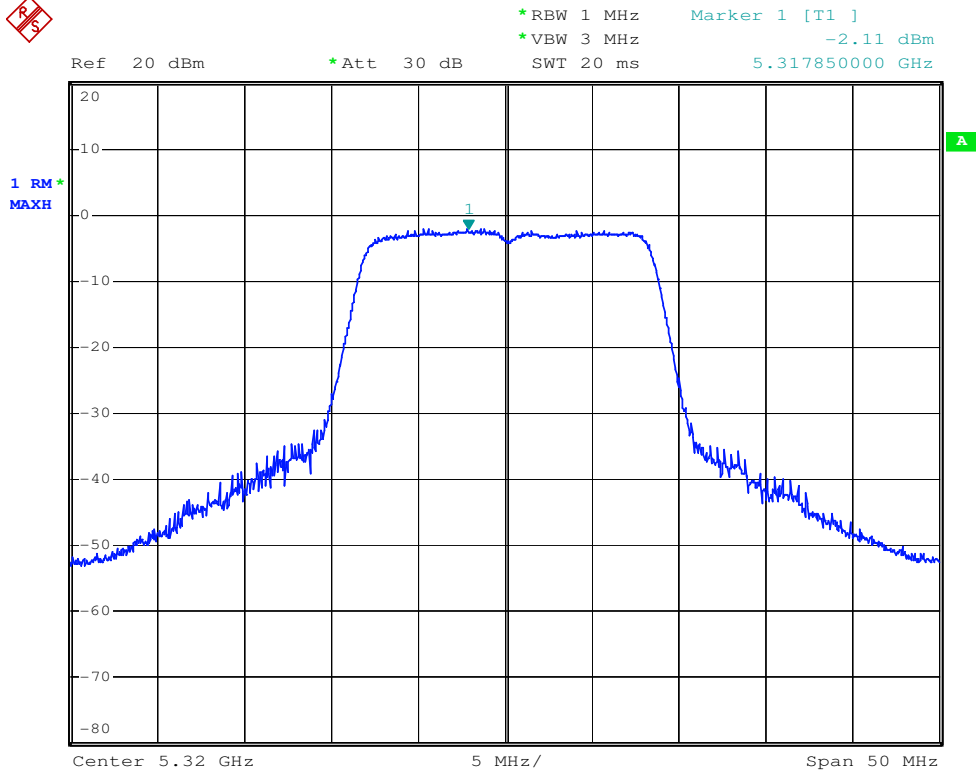


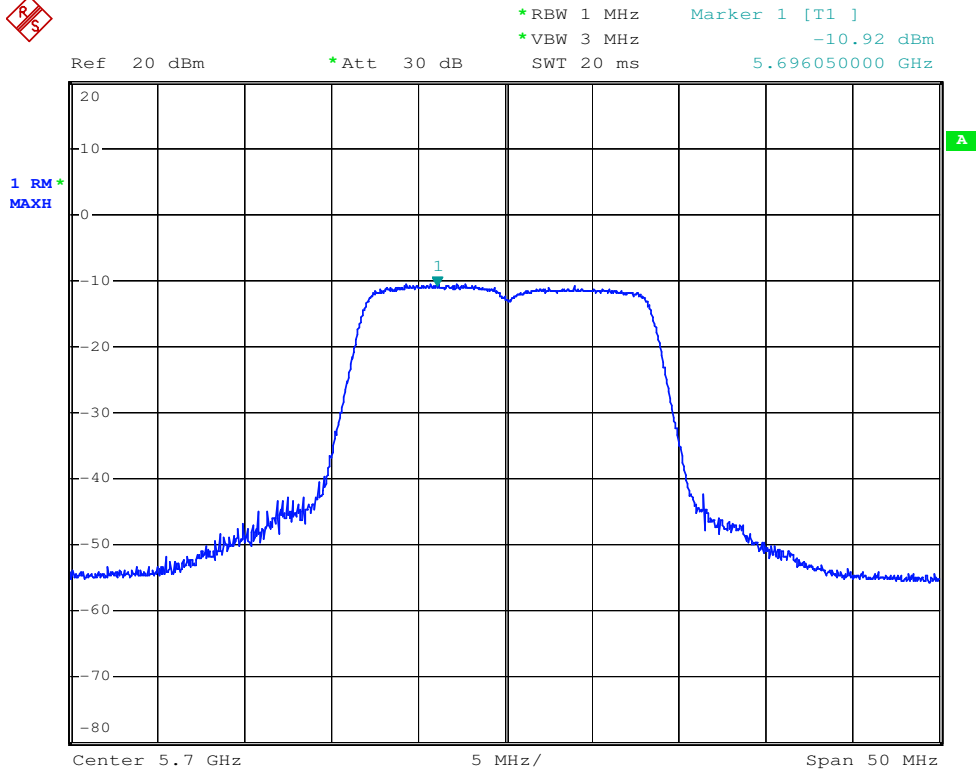
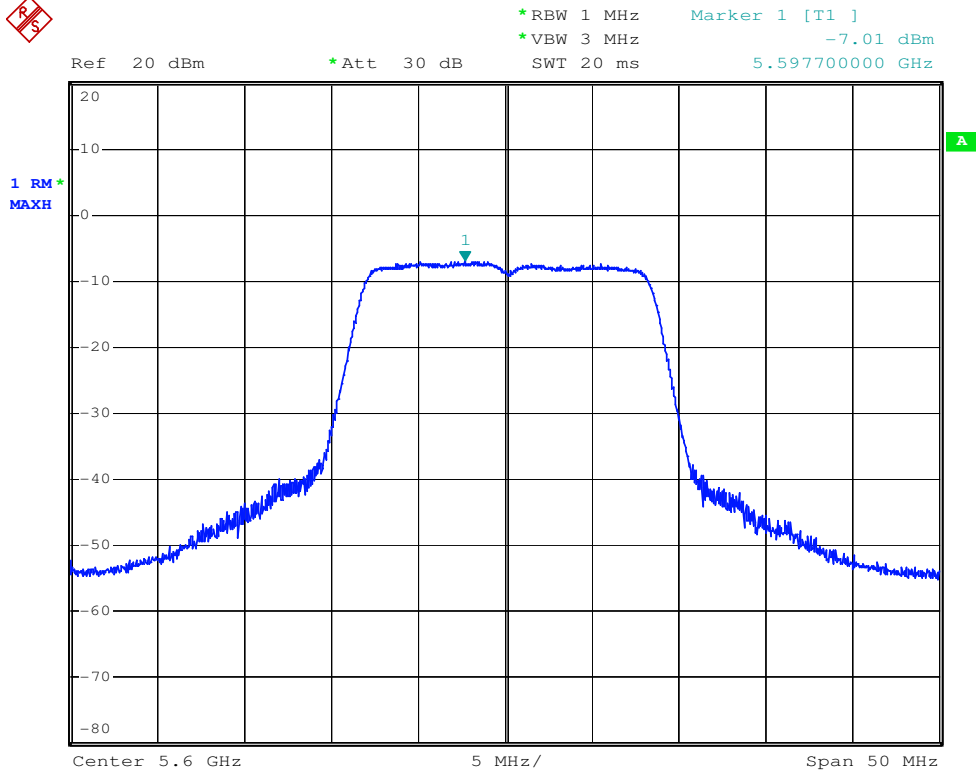
Ref 20 dBm *Att 30 dB SWT 20 ms *RBW 1 MHz *VBW 3 MHz Marker 1 [T1]
-3.40 dBm
5.175150000 GHz









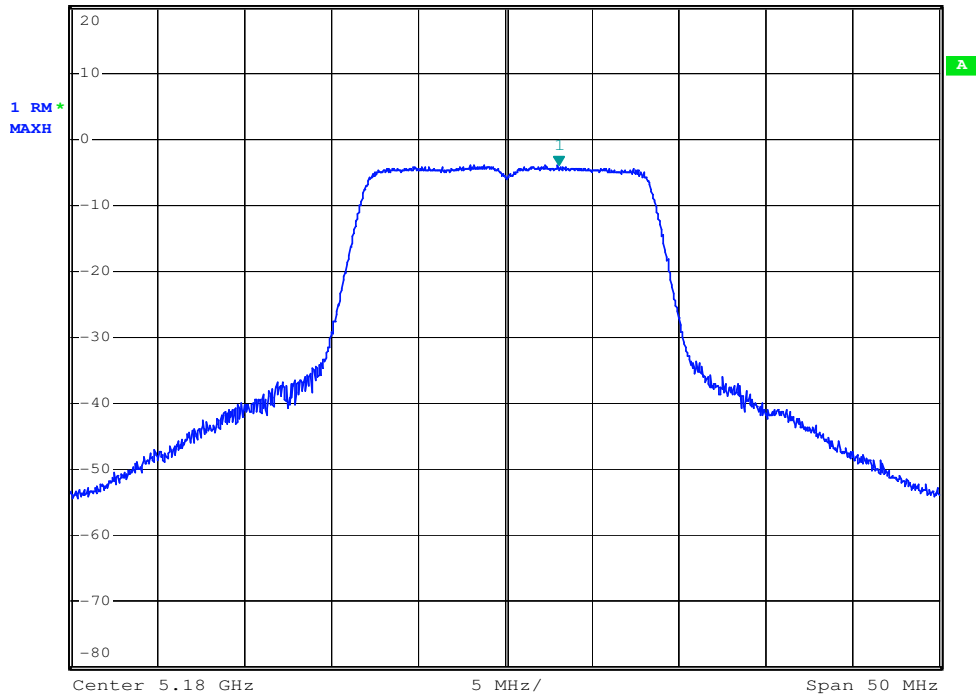




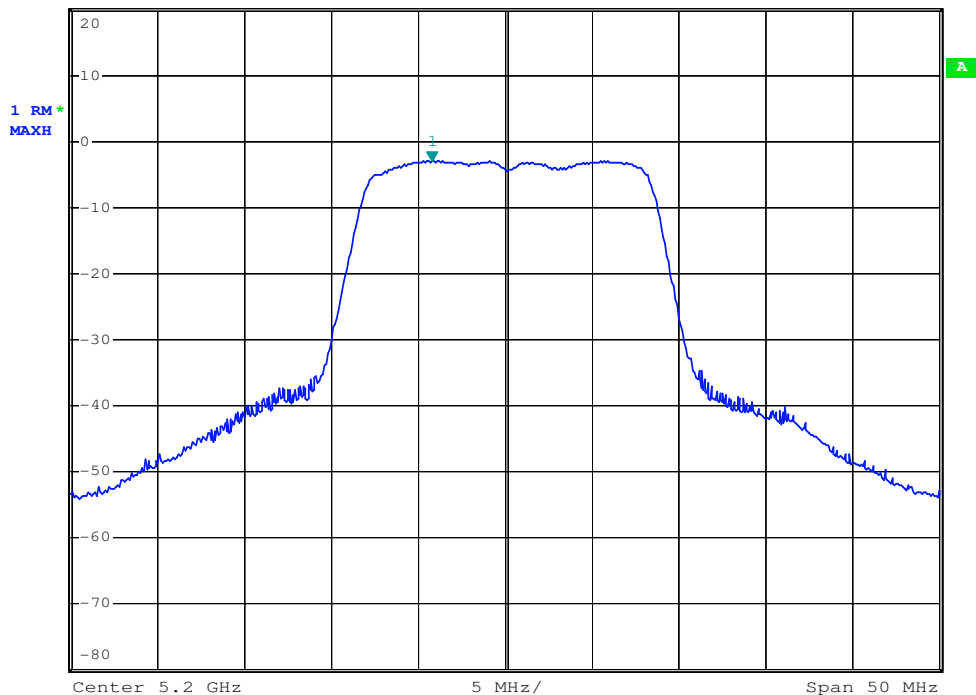
(Chain 001)



Ref 20 dBm *Att 30 dB *RBW 1 MHz *VBW 3 MHz SWT 20 ms Marker 1 [T1]
-4.02 dBm
5.183050000 GHz

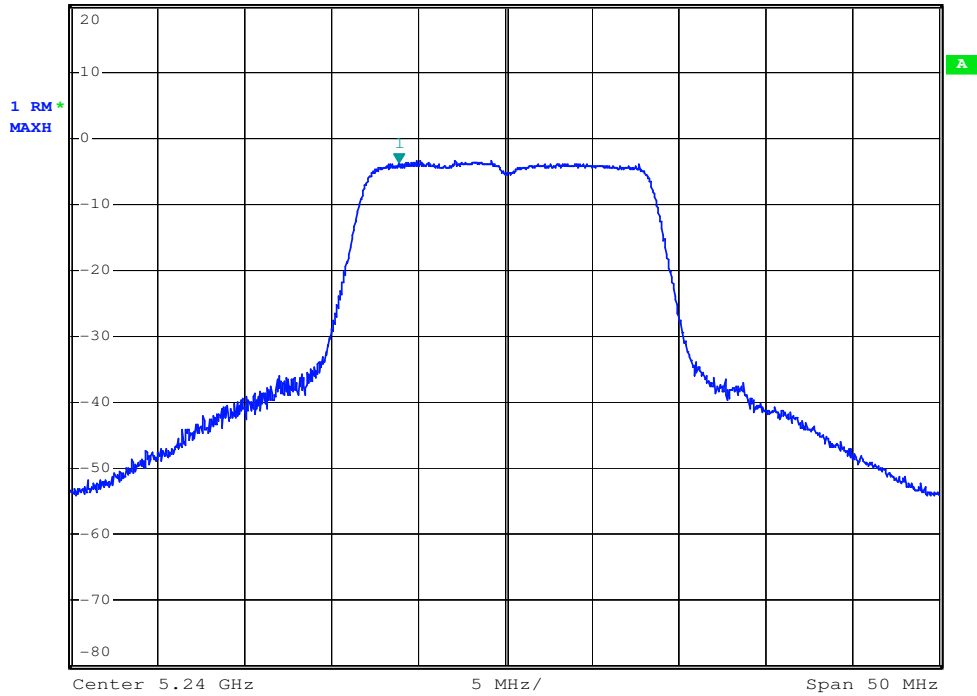


Ref 20 dBm *Att 30 dB *RBW 1 MHz *VBW 3 MHz SWT 20 ms Marker 1 [T1]
-3.00 dBm
5.195800000 GHz

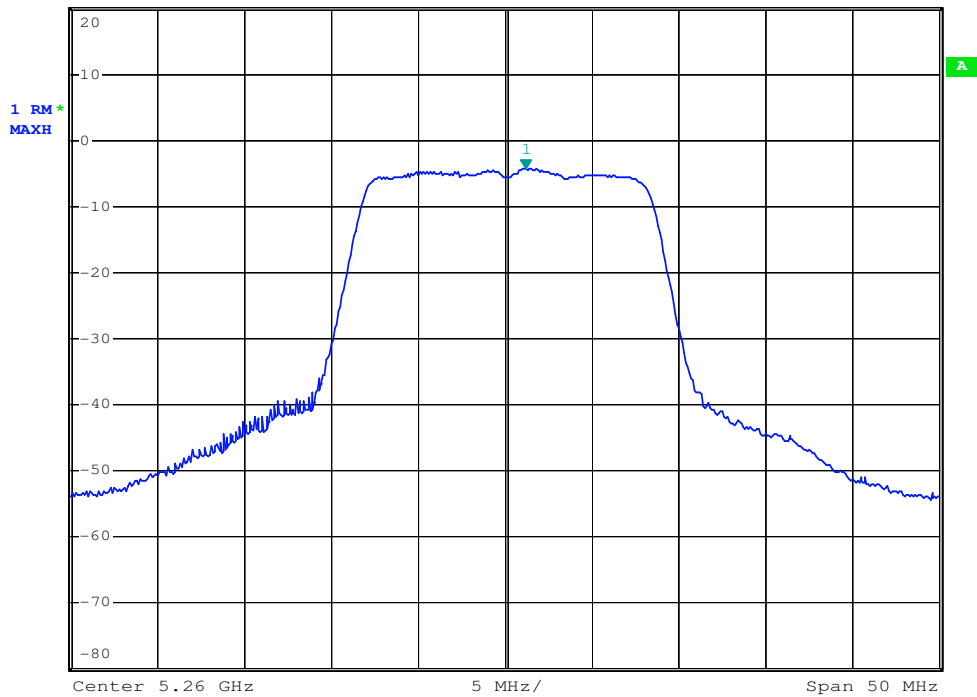




Ref 20 dBm *Att 30 dB *RBW 1 MHz *VBW 3 MHz SWT 20 ms Marker 1 [T1]
-3.65 dBm
5.233900000 GHz

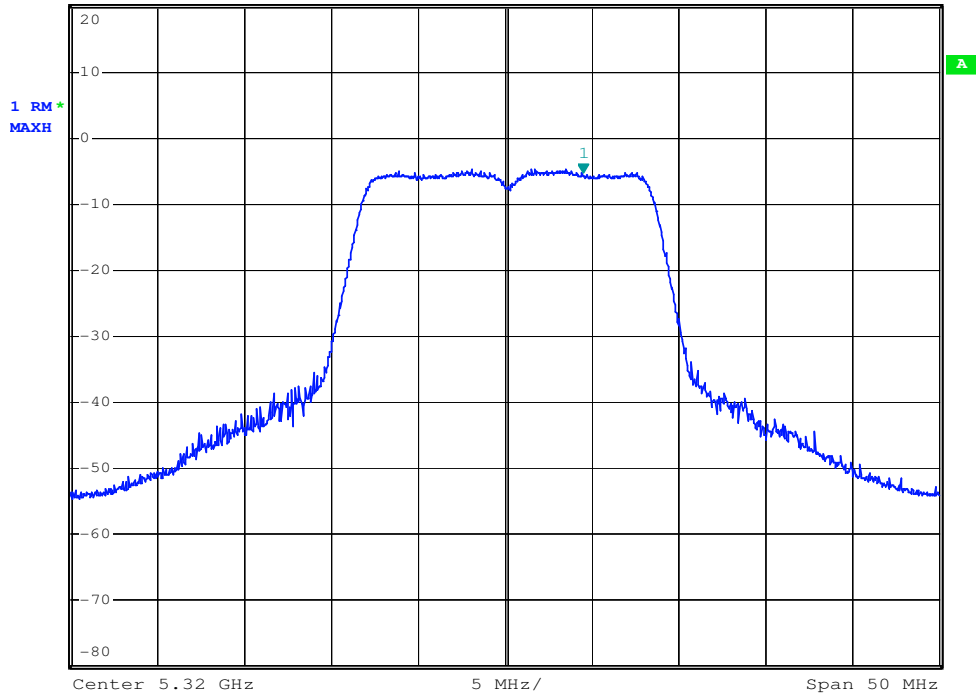


Ref 20 dBm *Att 30 dB *RBW 1 MHz *VBW 3 MHz SWT 20 ms Marker 1 [T1]
-4.34 dBm
5.261200000 GHz

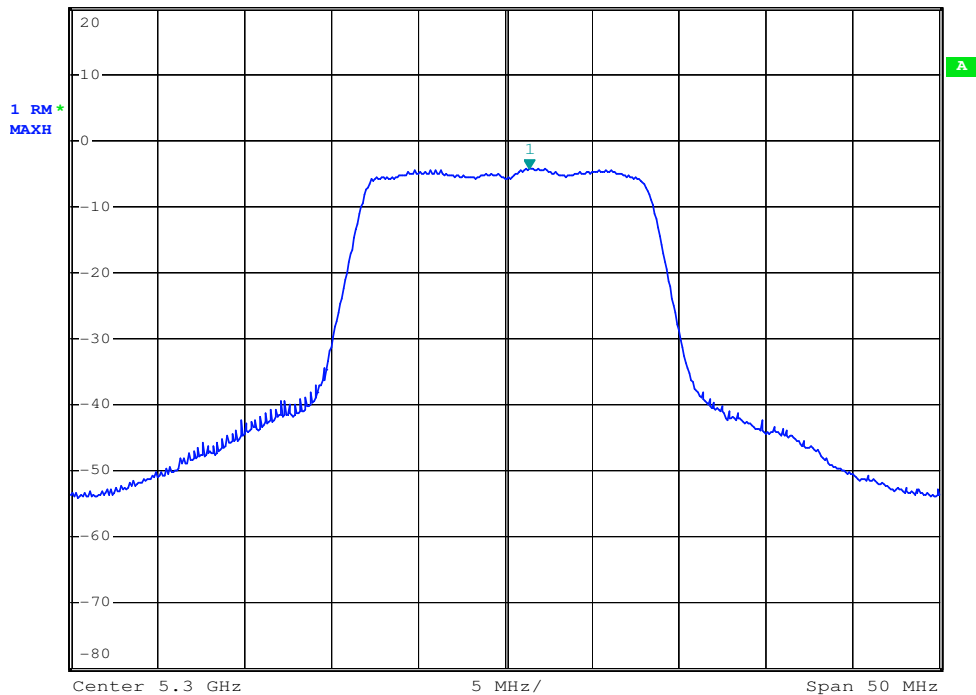


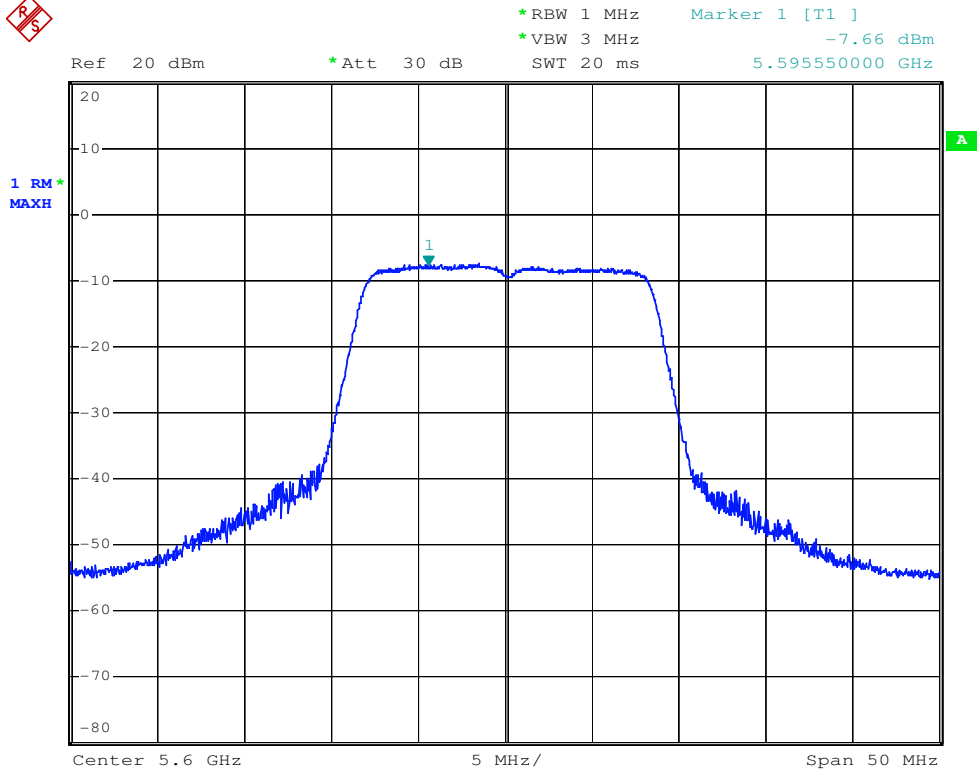
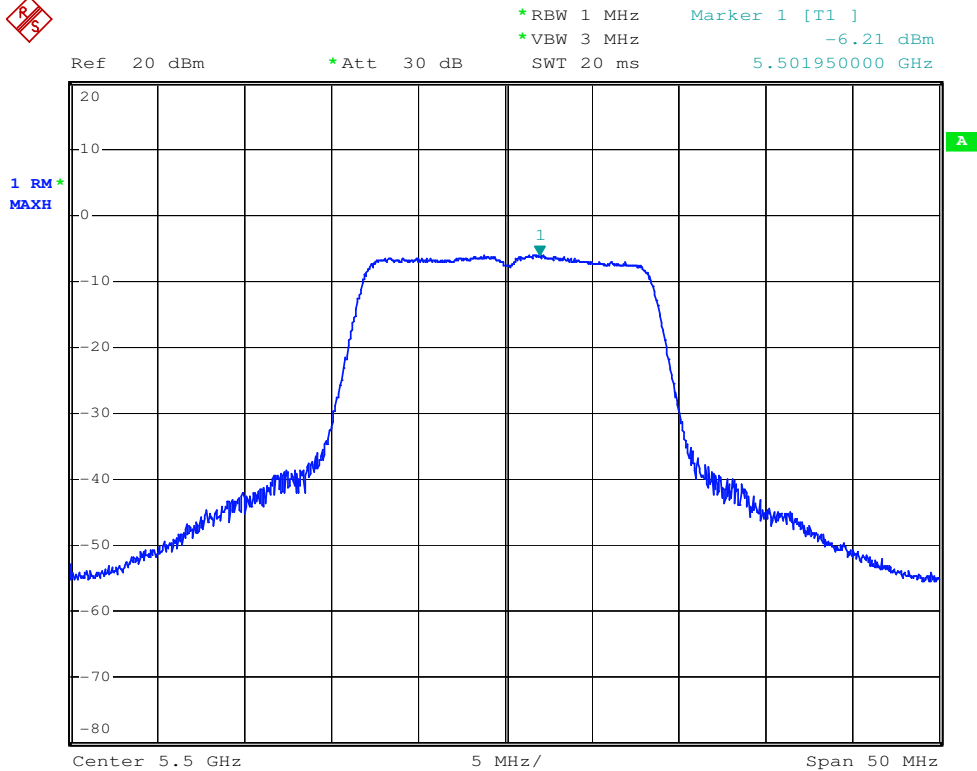


Ref 20 dBm *Att 30 dB SWT 20 ms *RBW 1 MHz *VBW 3 MHz Marker 1 [T1] -5.23 dBm 5.324450000 GHz



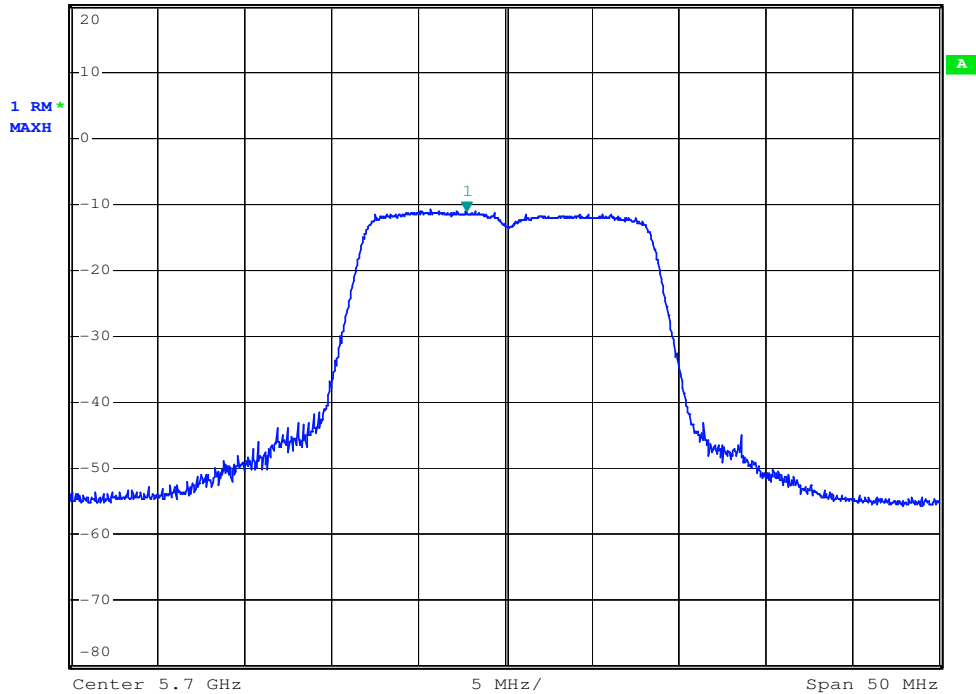
Ref 20 dBm *Att 30 dB SWT 20 ms *RBW 1 MHz *VBW 3 MHz Marker 1 [T1] -4.36 dBm 5.301400000 GHz







Ref 20 dBm *Att 30 dB SWT 20 ms
 *RBW 1 MHz Marker 1 [T1] -11.08 dBm
 *VBW 3 MHz 5.697750000 GHz



**802.11n (20MHz) OFDM MODULATION:
(Chain 111)**

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW CHANNEL (dBm)			TOTAL OUTPUT POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
		Chain 100	Chian 010	Chain 001			
36	5180	-4.57	-3.47	-2.29	2.93	4	PASS
40	5200	-5.06	-4.56	-3.15	2.09	4	PASS
48	5240	-3.63	-3.27	-3.59	2.78	4	PASS
52	5260	-5.06	-4.19	-4.62	1.66	11	PASS
60	5300	-5.03	-4.09	-4.59	1.72	11	PASS
64	5320	-8.75	-3.17	-3.63	1.71	11	PASS
100	5500	-5.54	-3.20	-3.98	2.14	11	PASS
120	5600	-6.63	-4.53	0.10	3.52	11	PASS
140	5700	-11.59	-13.69	-10.18	-5.32	11	PASS

Remark: Cable loss=1.50dB

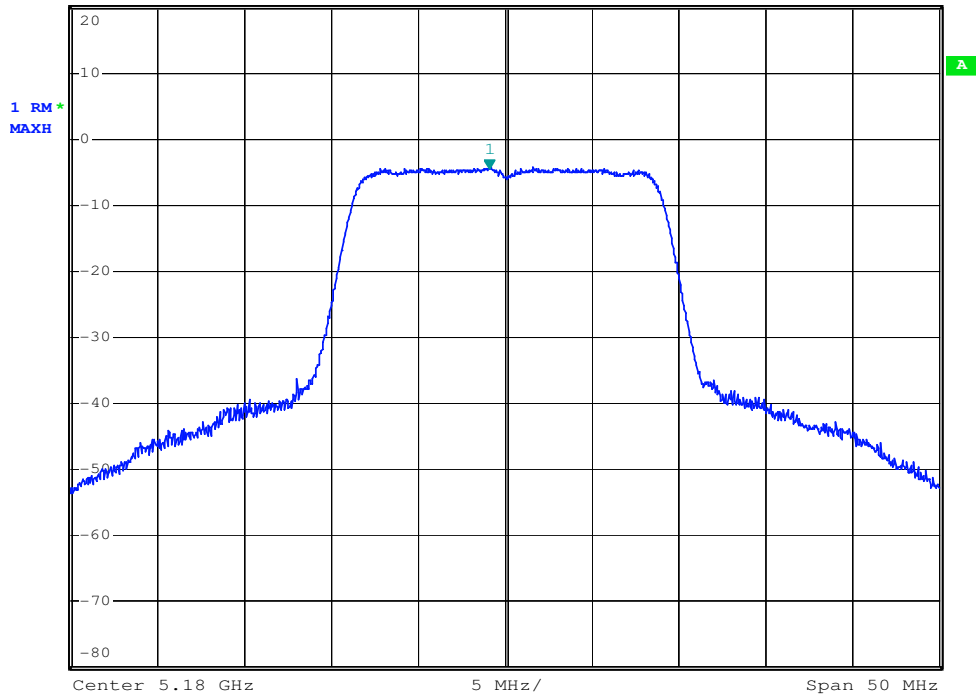
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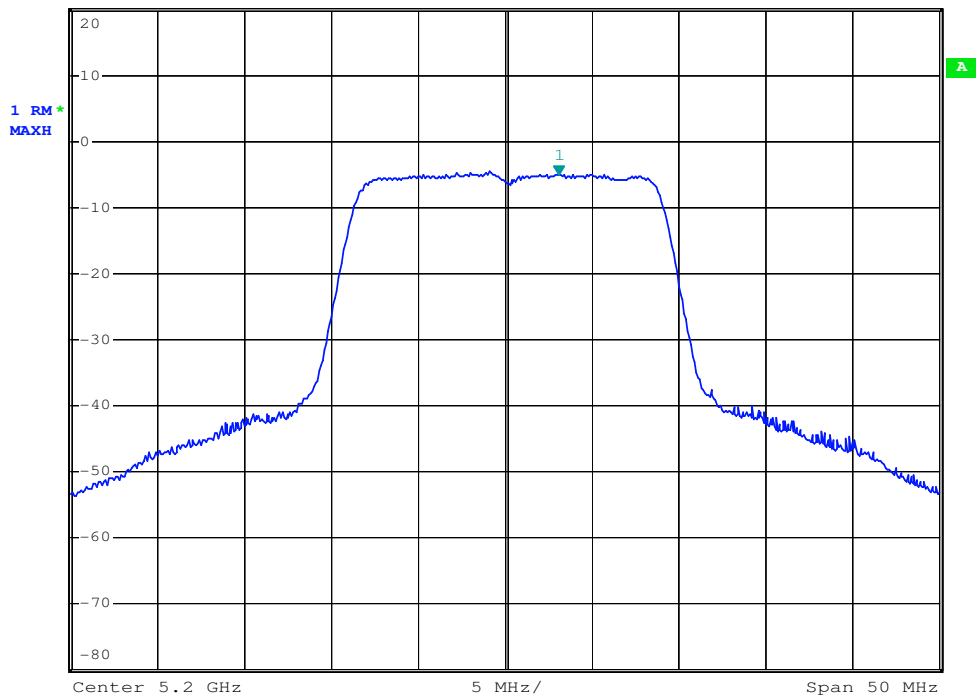
(Chain 100)

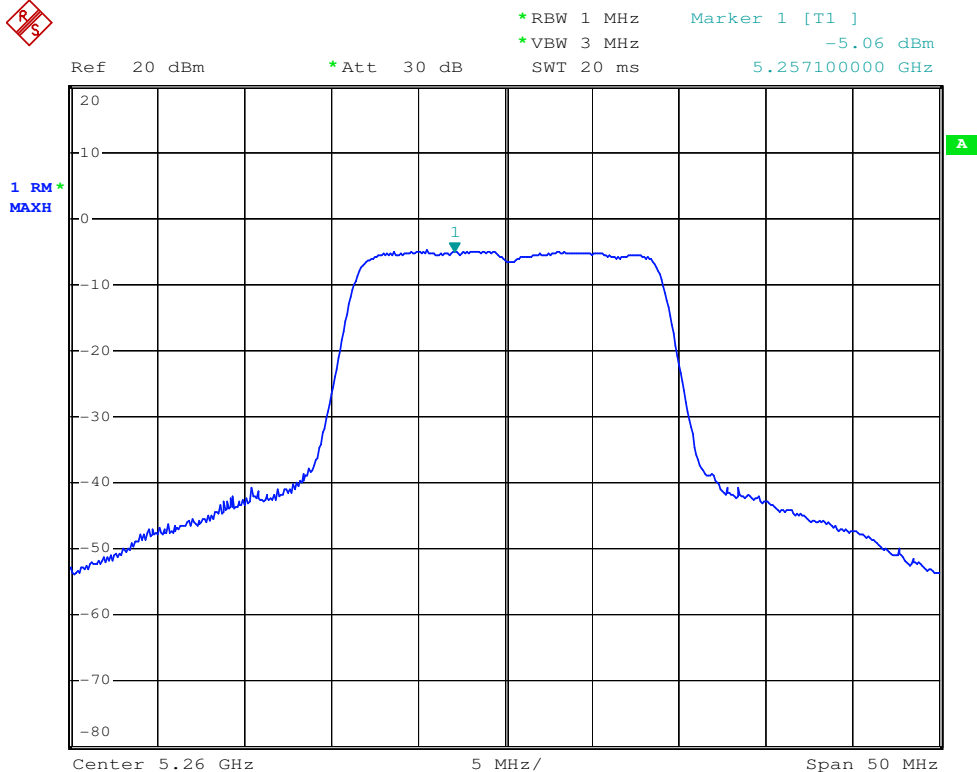
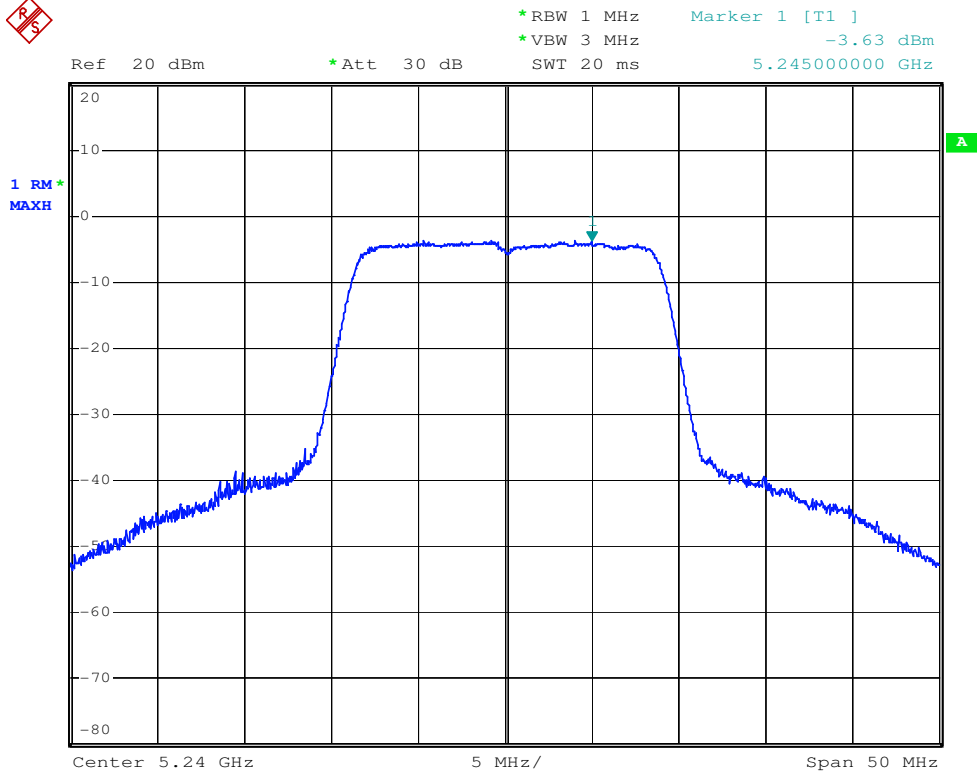


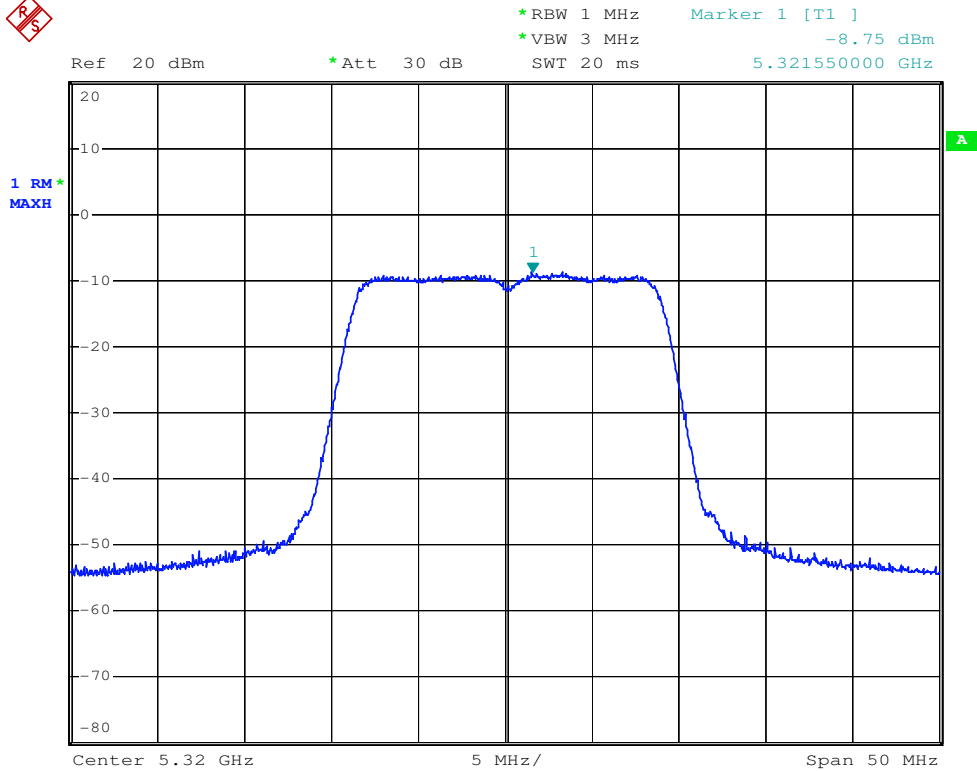
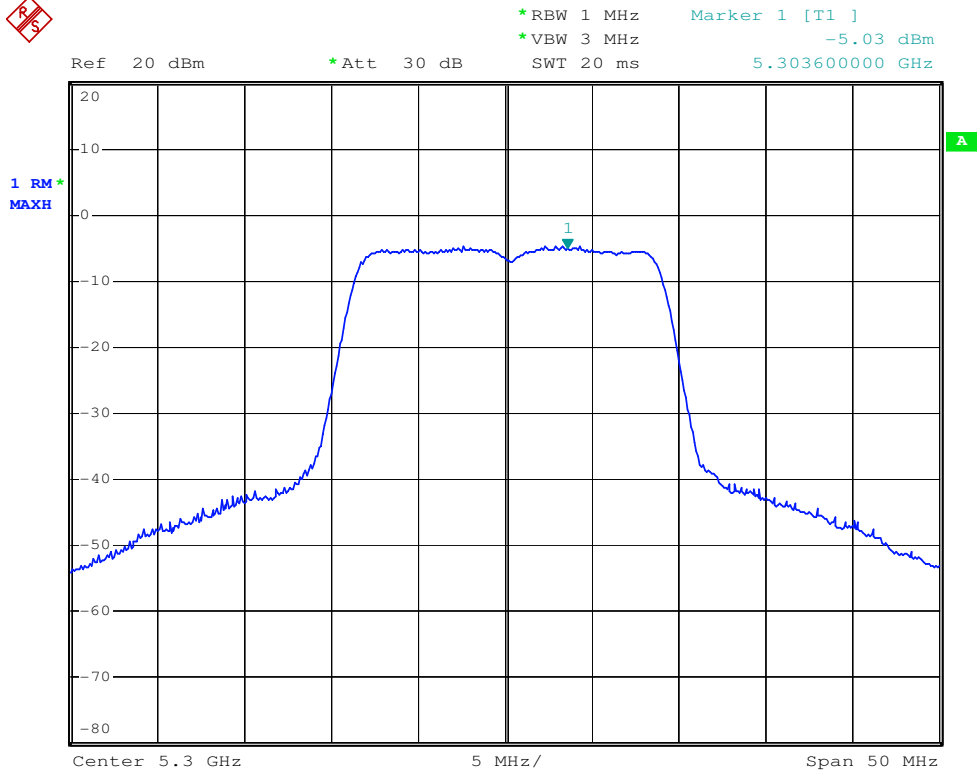
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SWT 20 ms -4.57 dBm
5.179100000 GHz

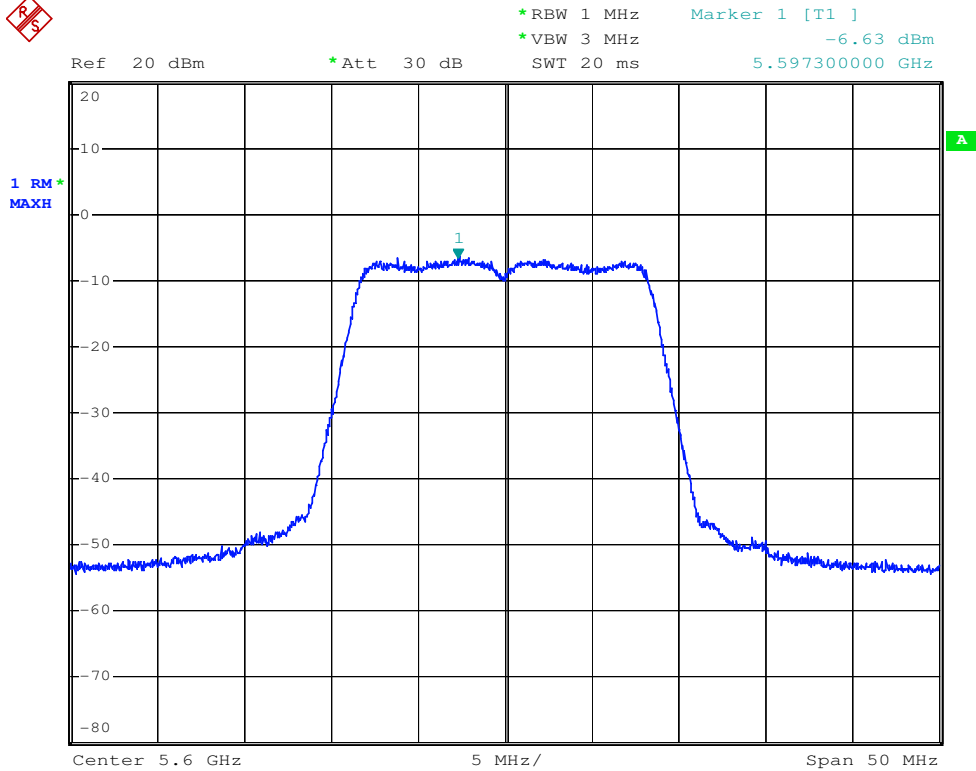
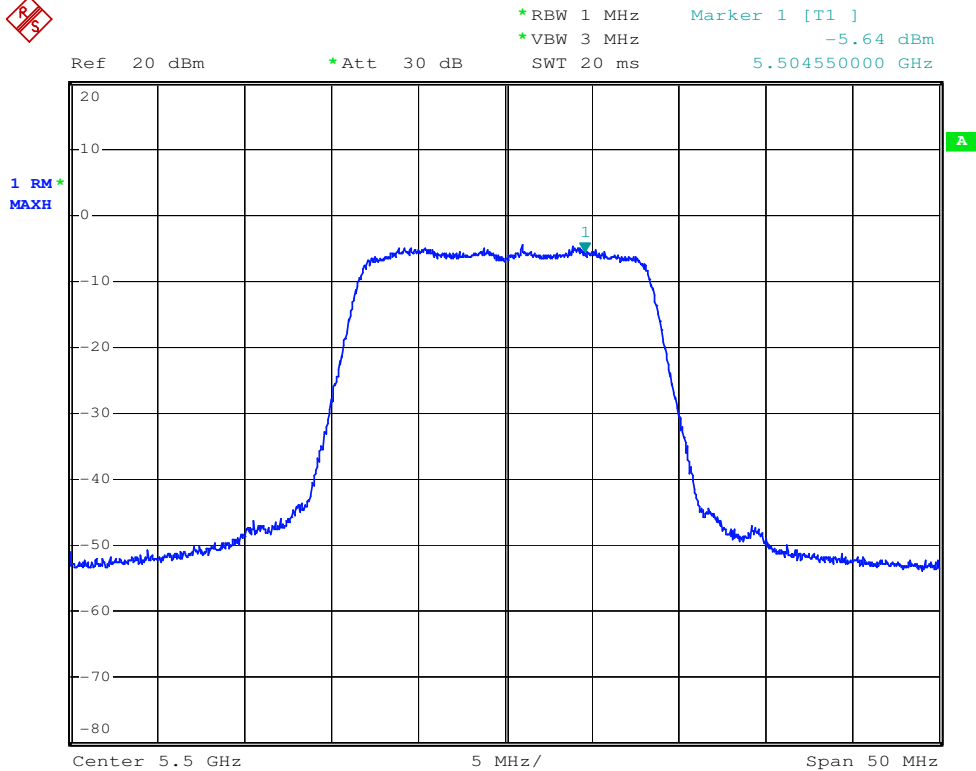


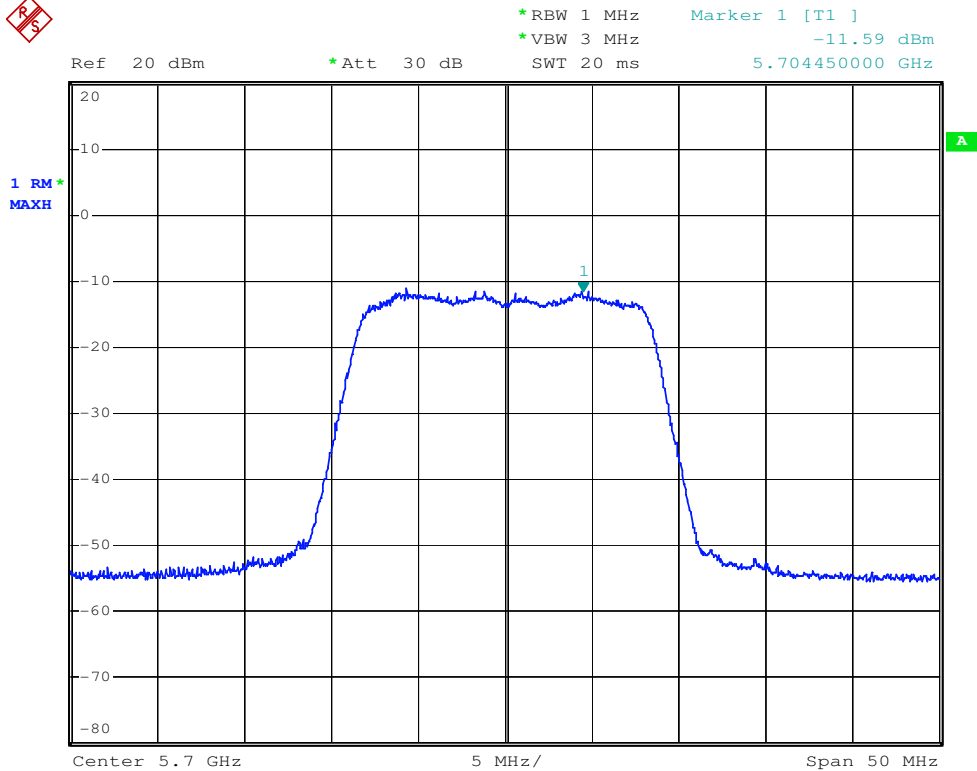
Ref 20 dBm *Att 30 dB *RBW 1 MHz *VBW 3 MHz Marker 1 [T1]
SWT 20 ms -5.06 dBm
5.203100000 GHz



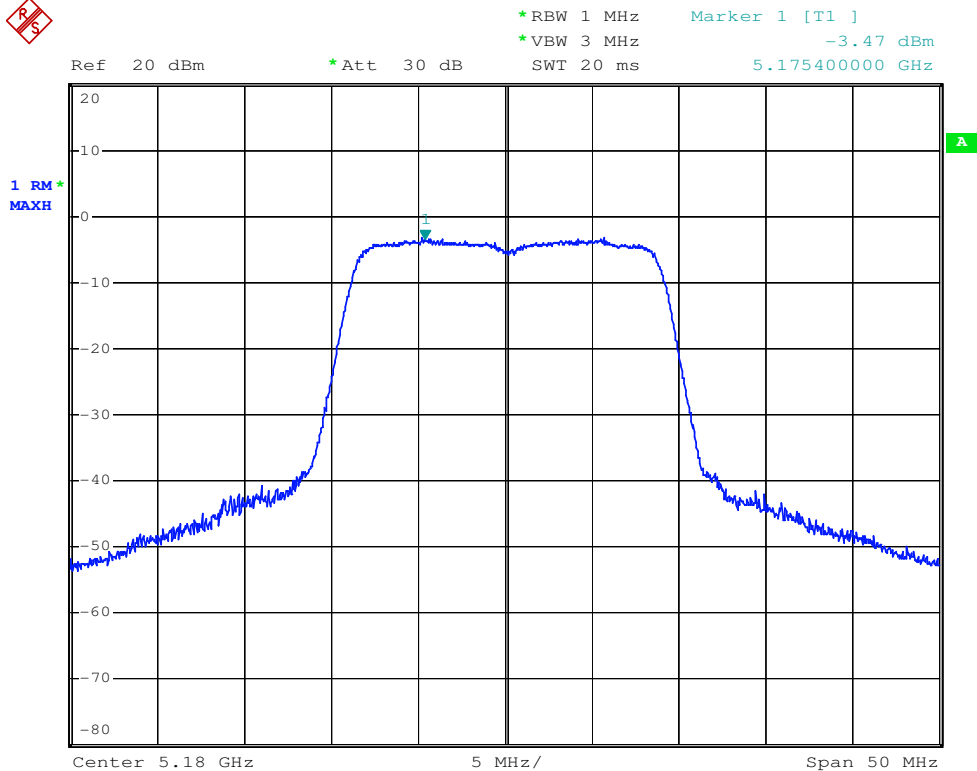


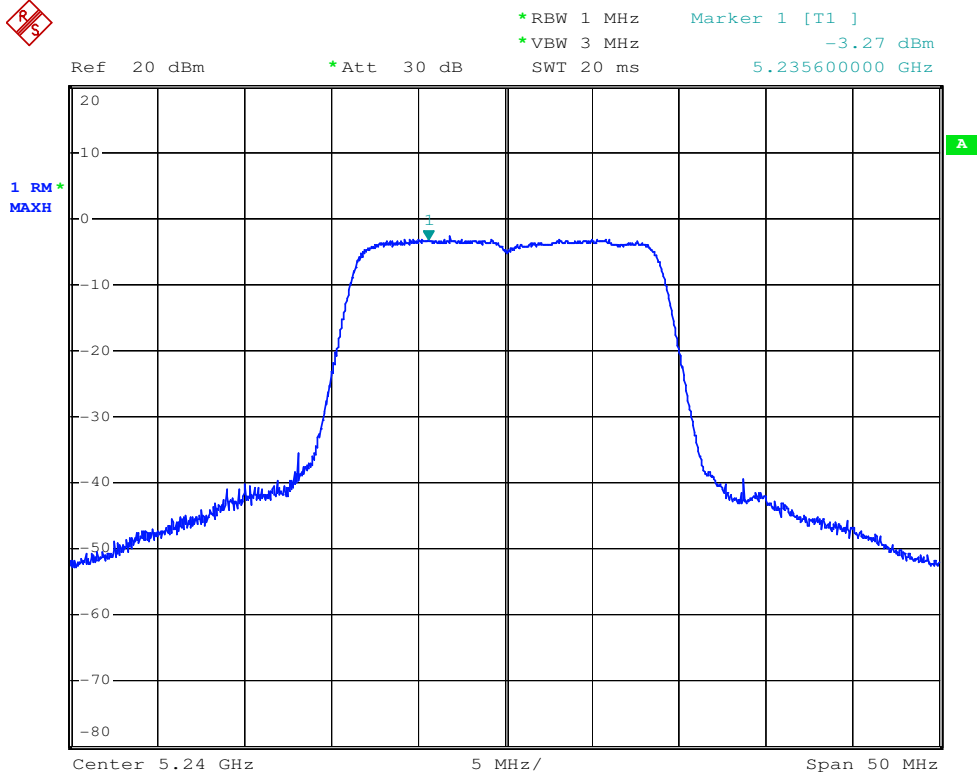
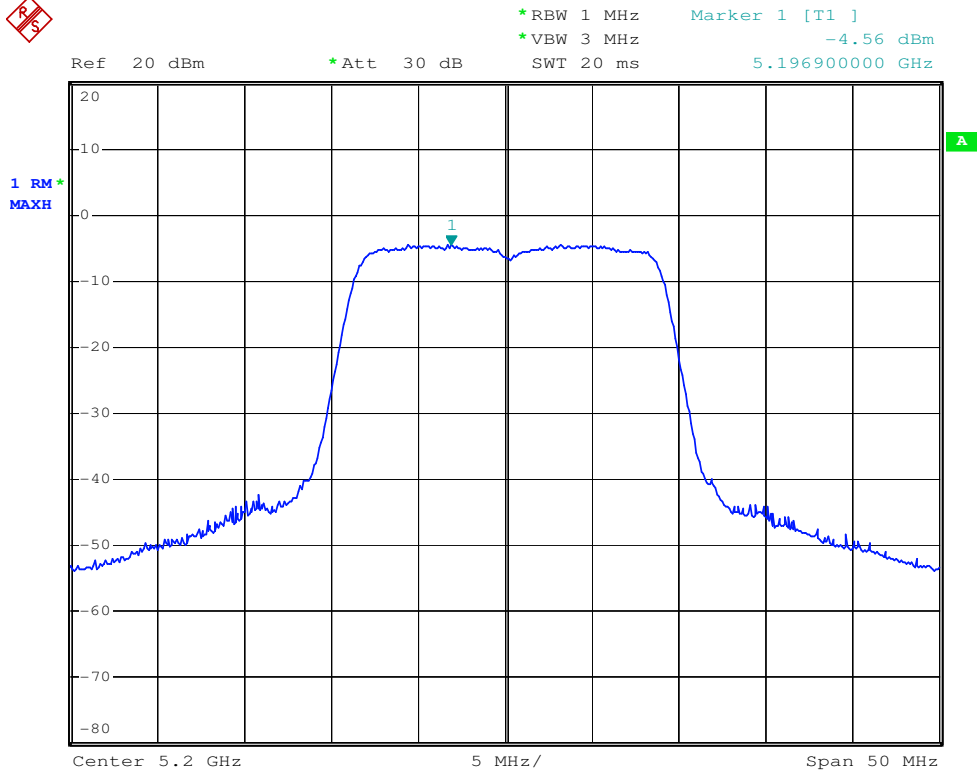


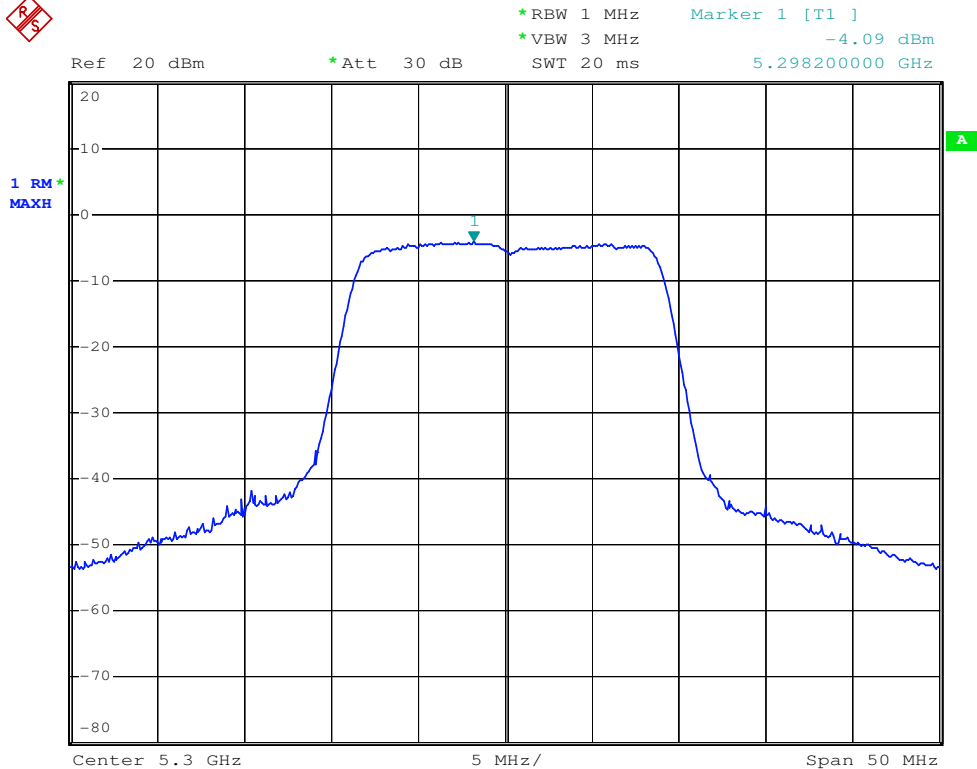
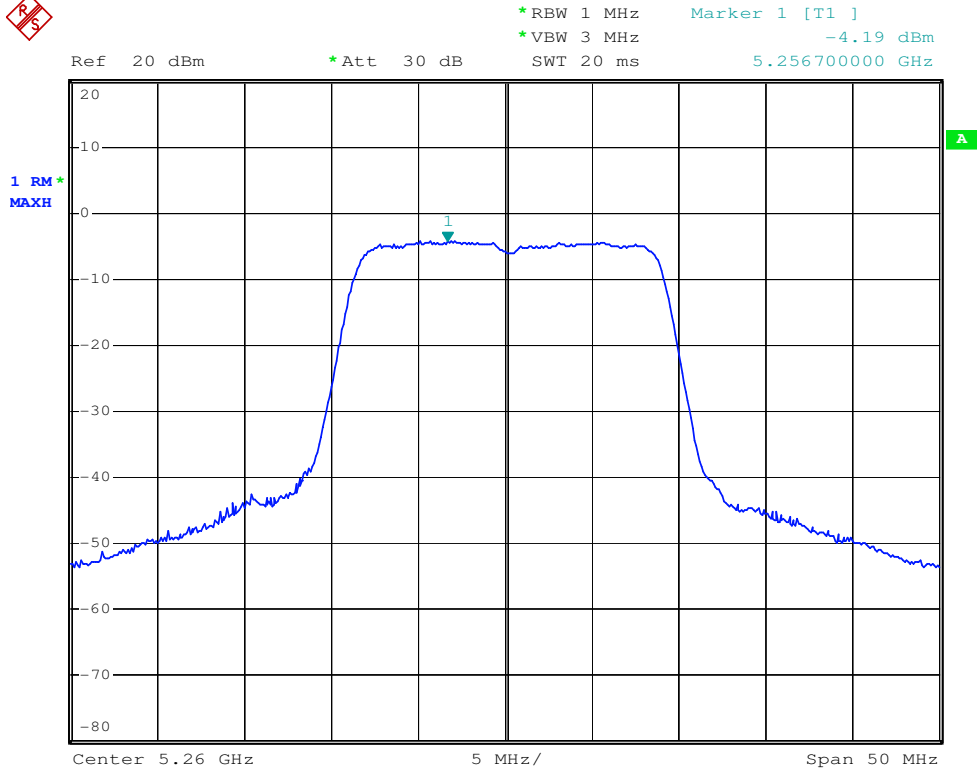


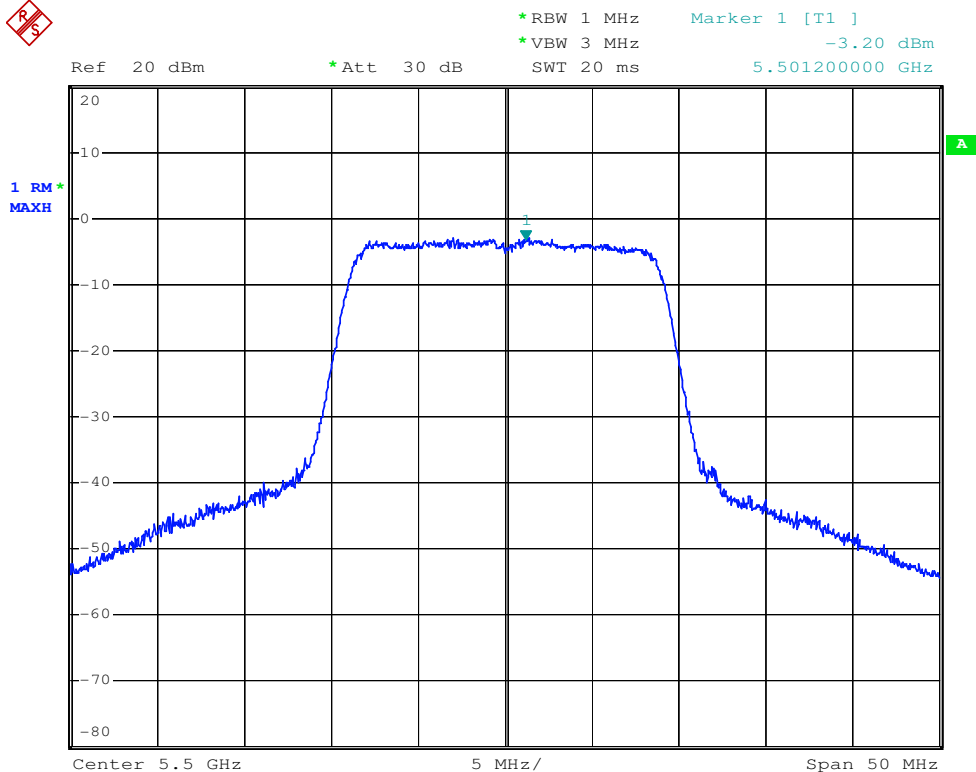
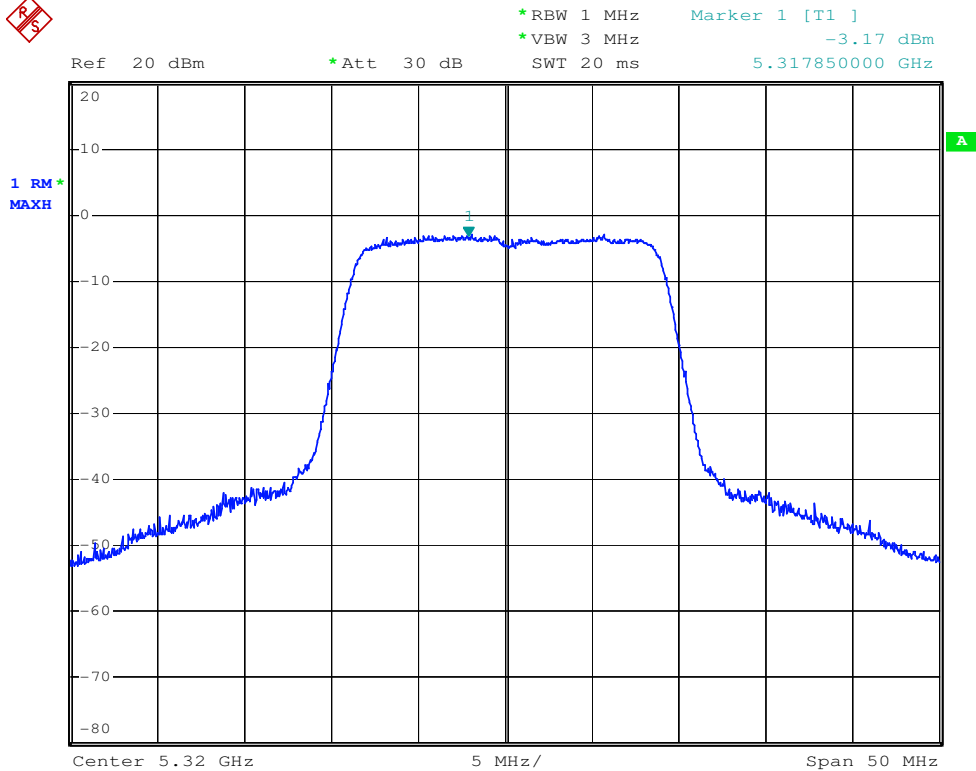


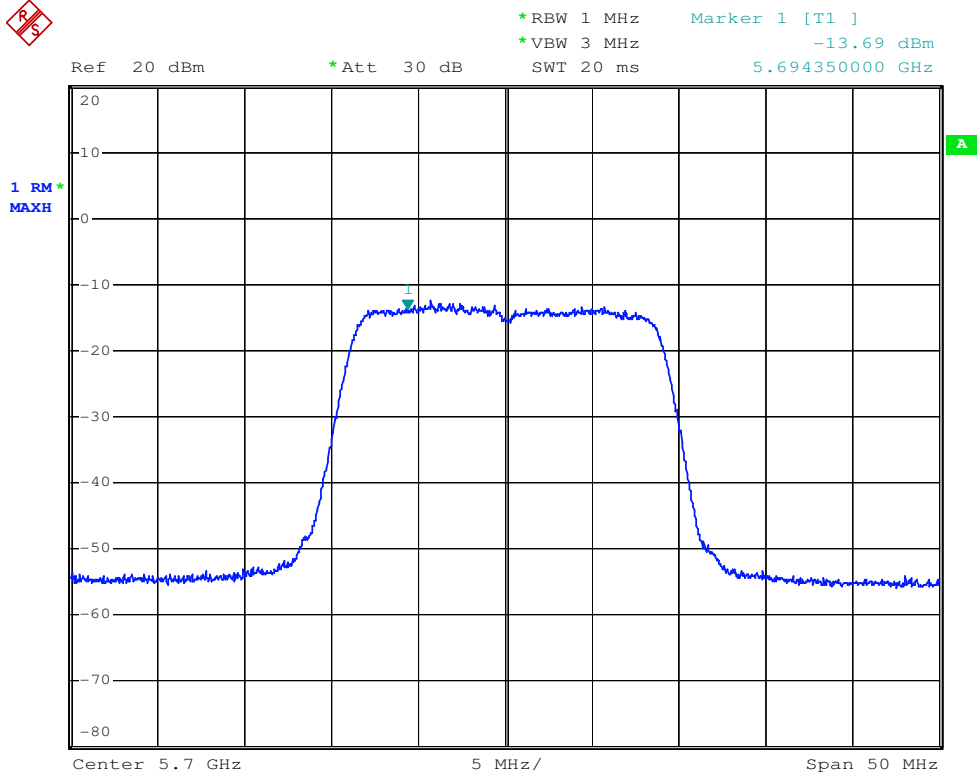
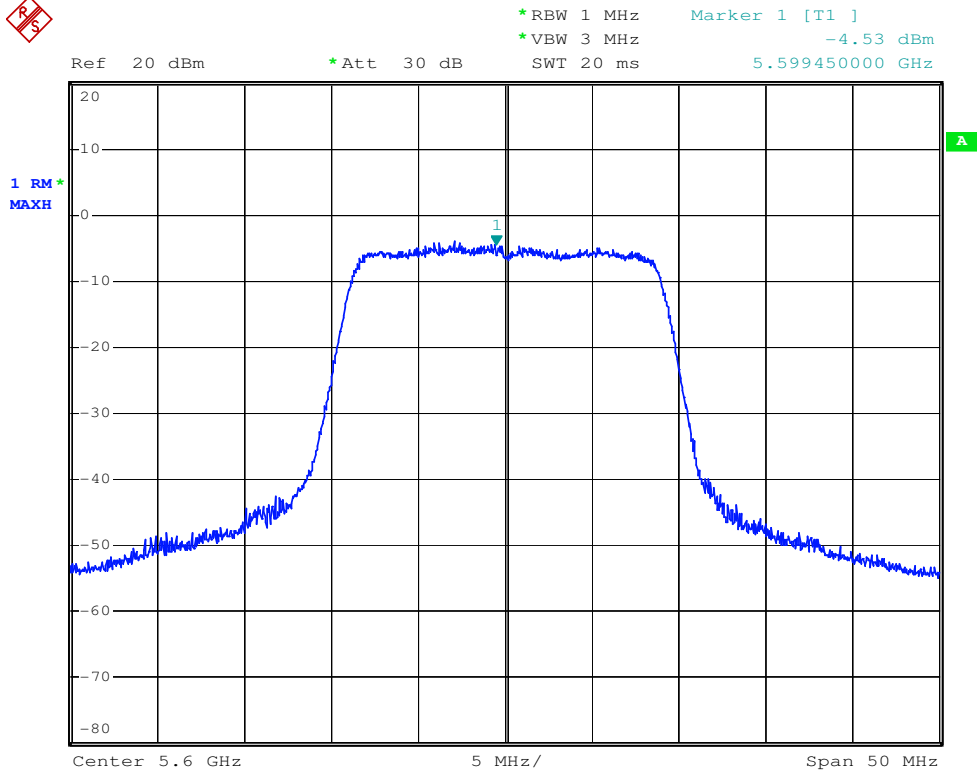
(Chain 010)









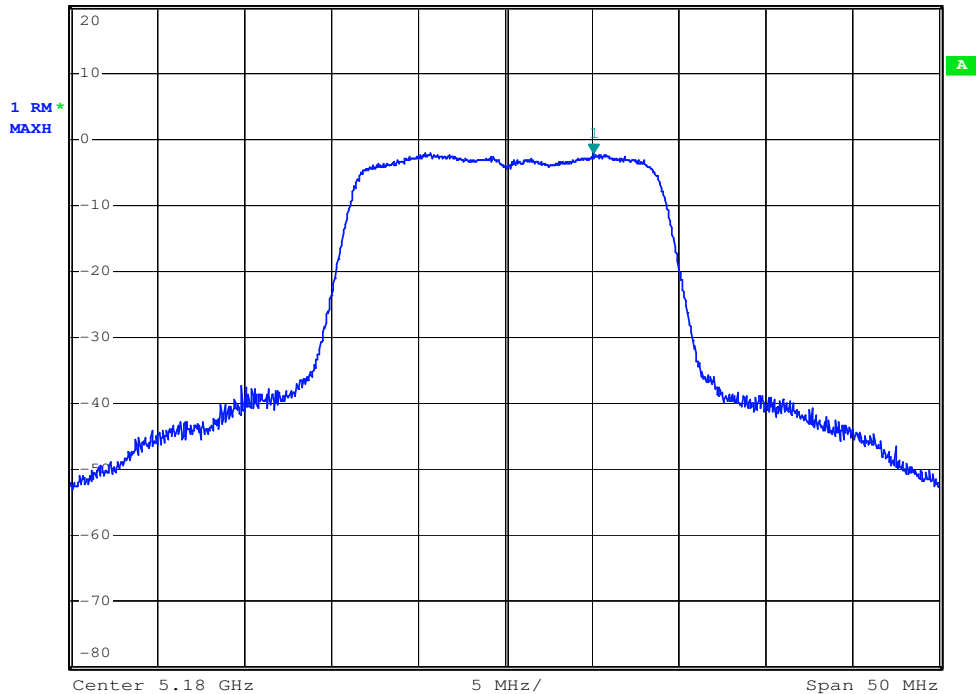




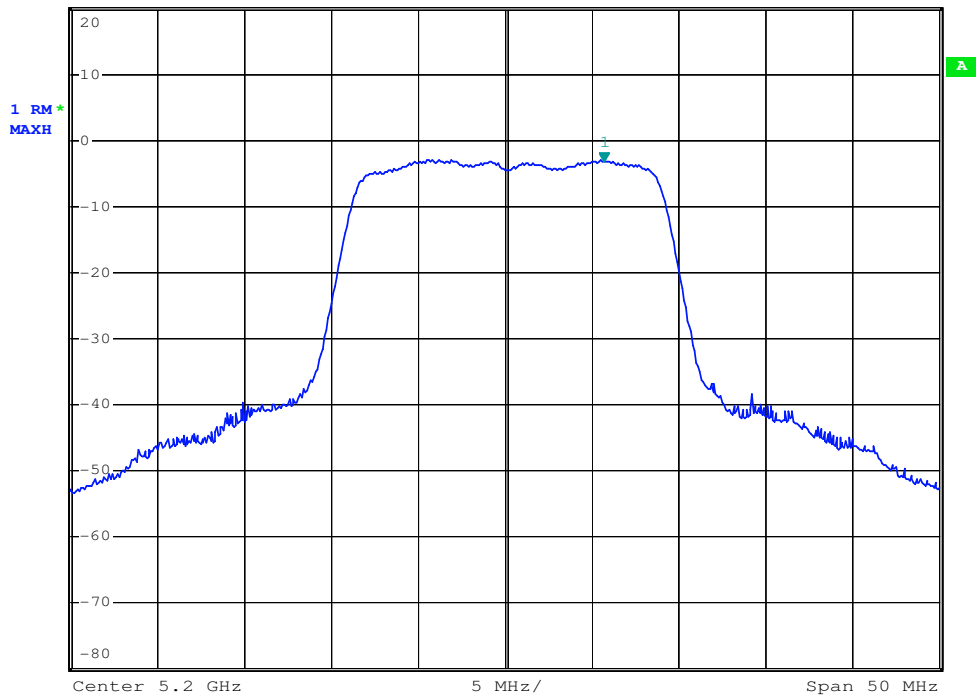
(Chain 001)

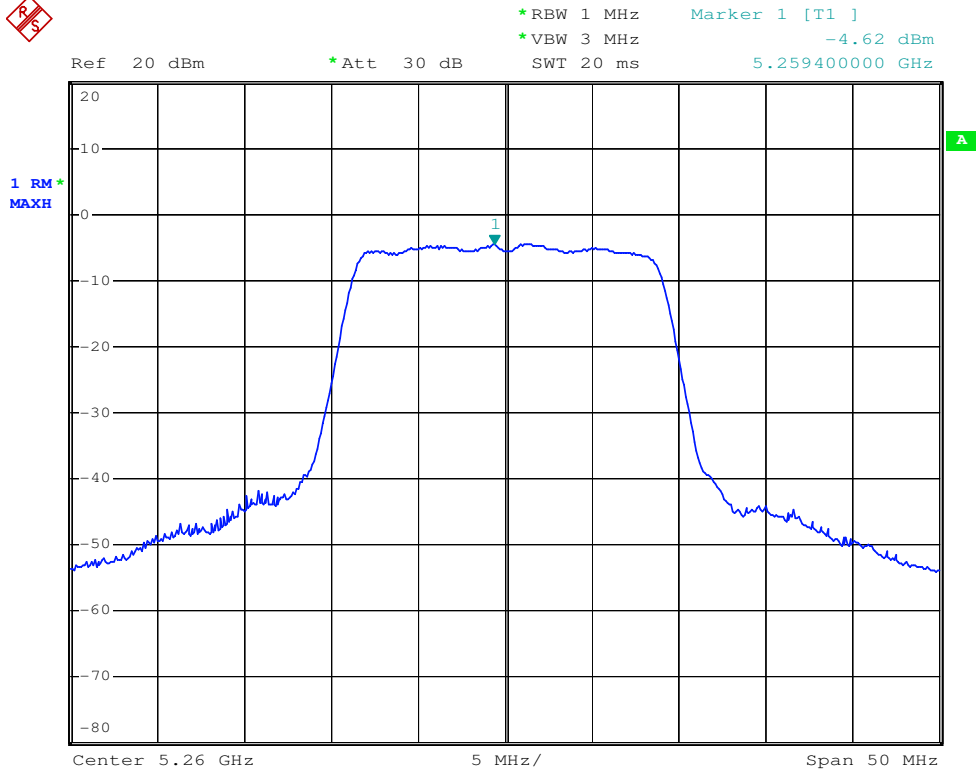
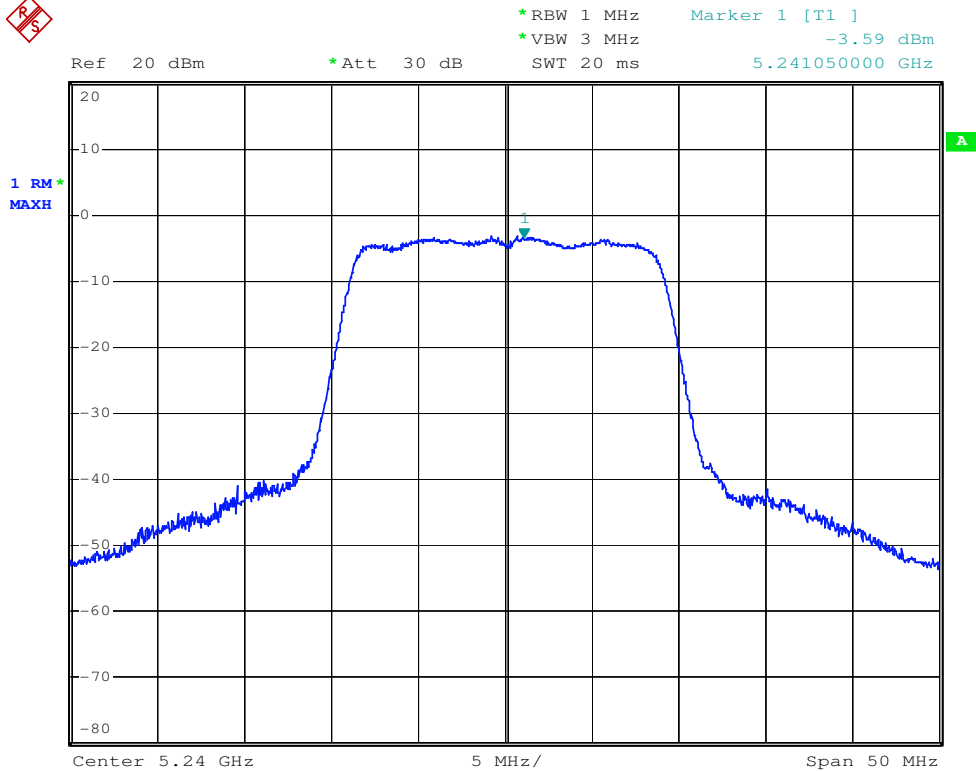


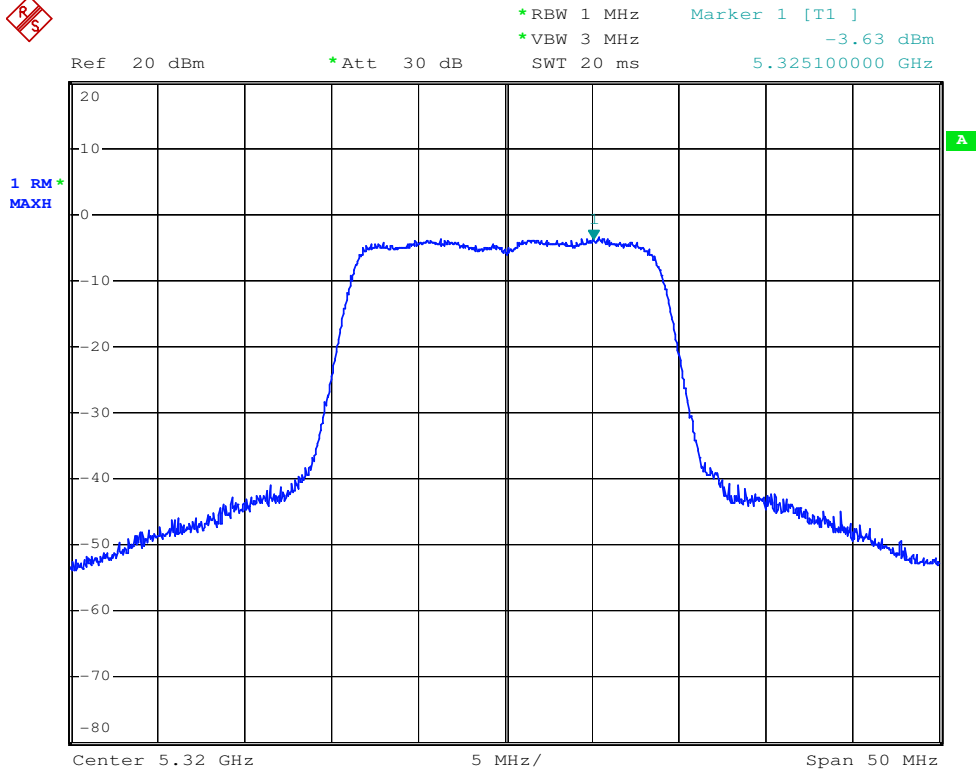
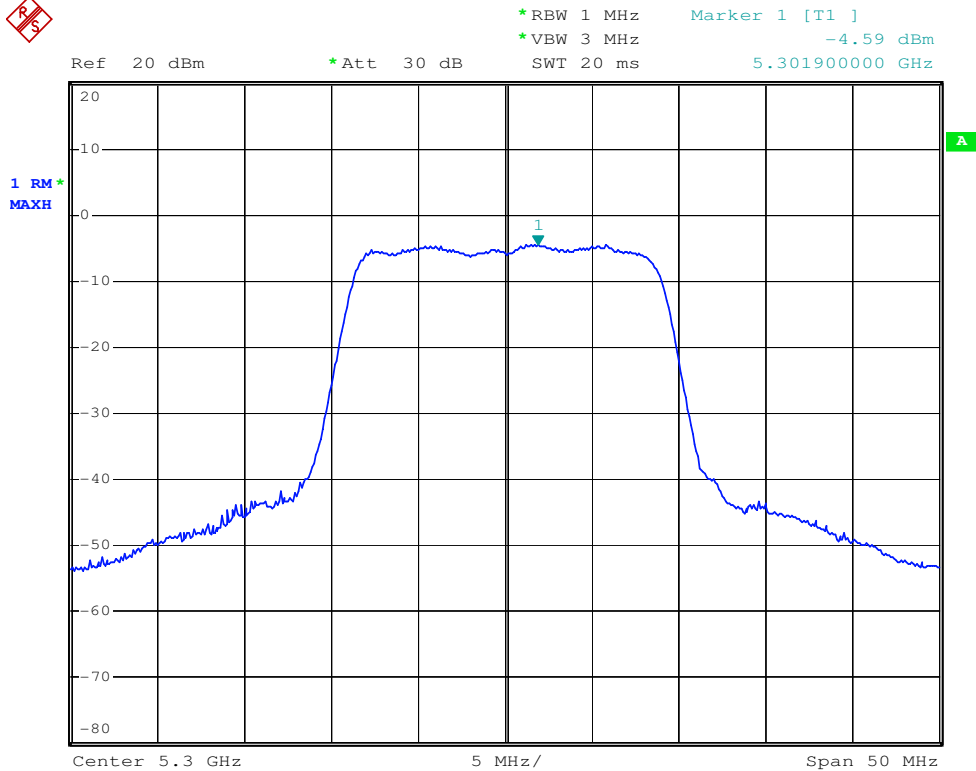
Ref 20 dBm *Att 30 dB *RBW 1 MHz *VBW 3 MHz SWT 20 ms Marker 1 [T1] -2.29 dBm 5.185100000 GHz



Ref 20 dBm *Att 30 dB *RBW 1 MHz *VBW 3 MHz SWT 20 ms Marker 1 [T1] -3.15 dBm 5.205700000 GHz

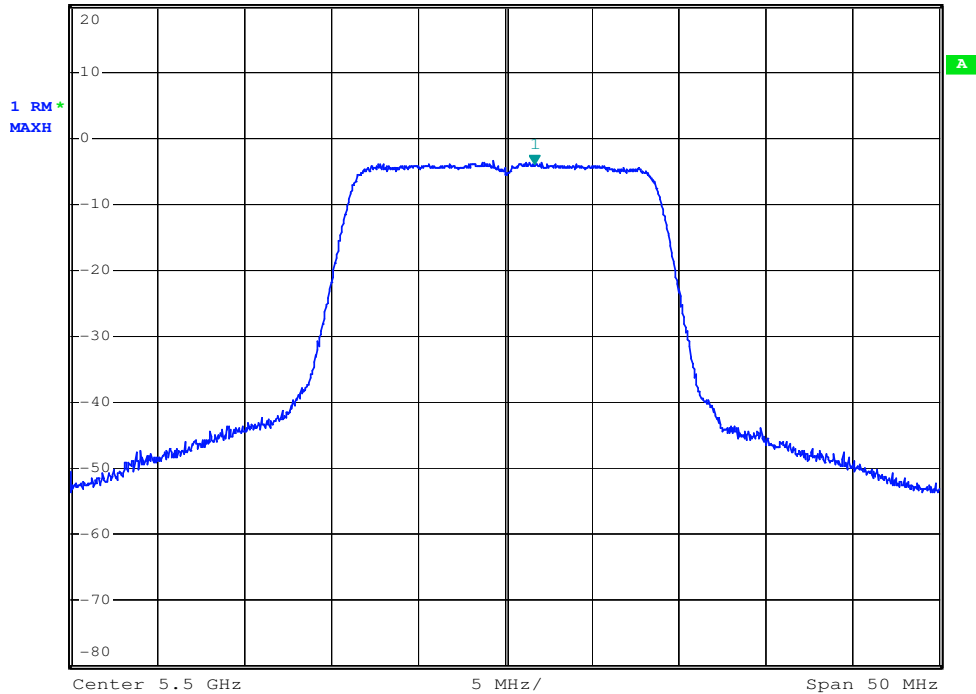




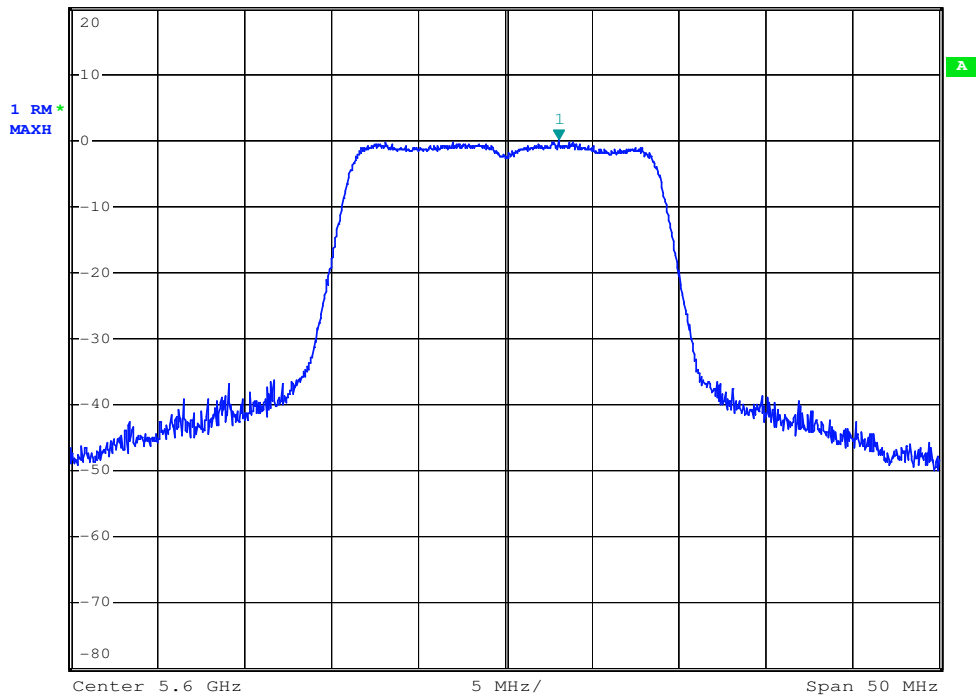


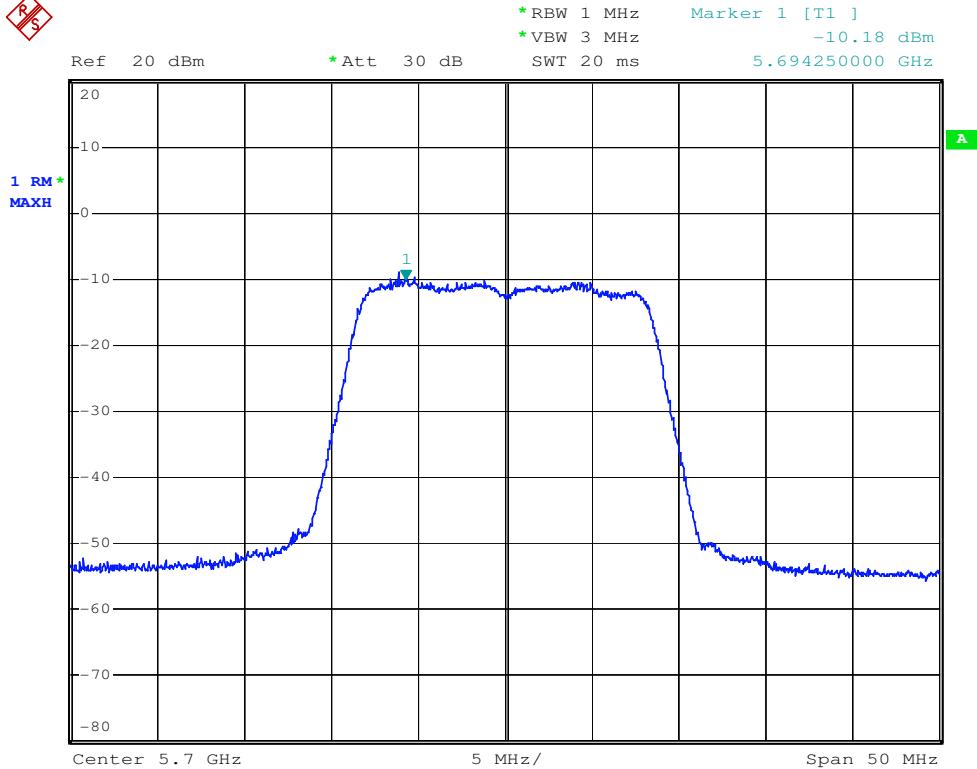


Ref 20 dBm *Att 30 dB SWT 20 ms *RBW 1 MHz *VBW 3 MHz Marker 1 [T1] -3.98 dBm 5.501700000 GHz



Ref 20 dBm *Att 30 dB SWT 20 ms *RBW 1 MHz *VBW 3 MHz Marker 1 [T1] 0.10 dBm 5.603100000 GHz





**802.11n (40MHz) OFDM MODULATION:
(Chain 111)**

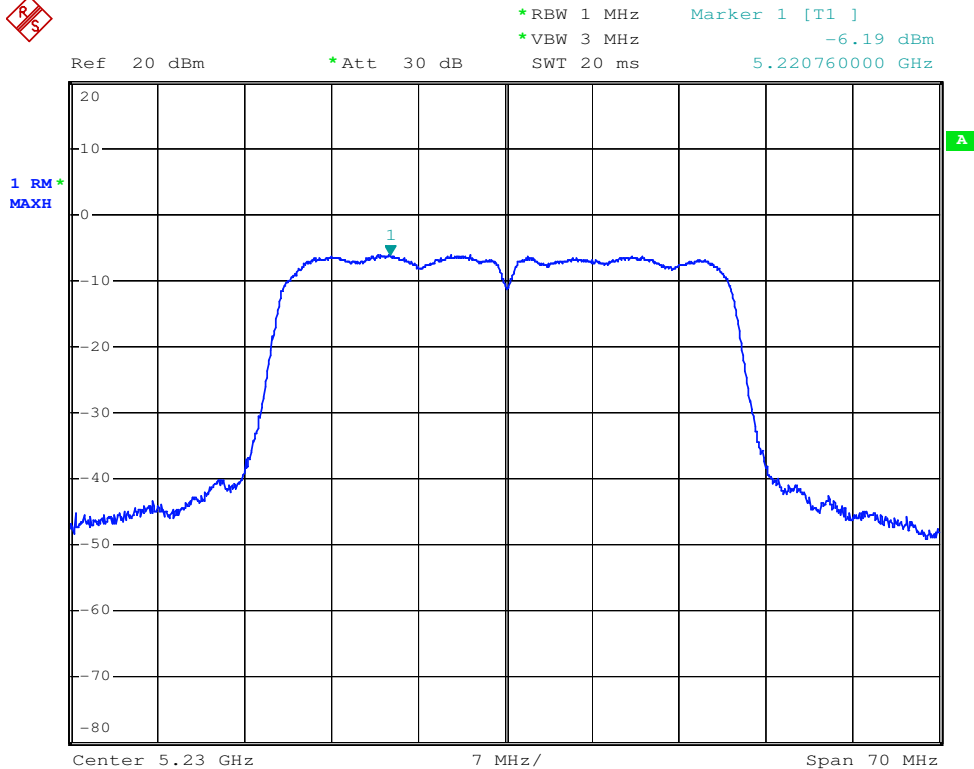
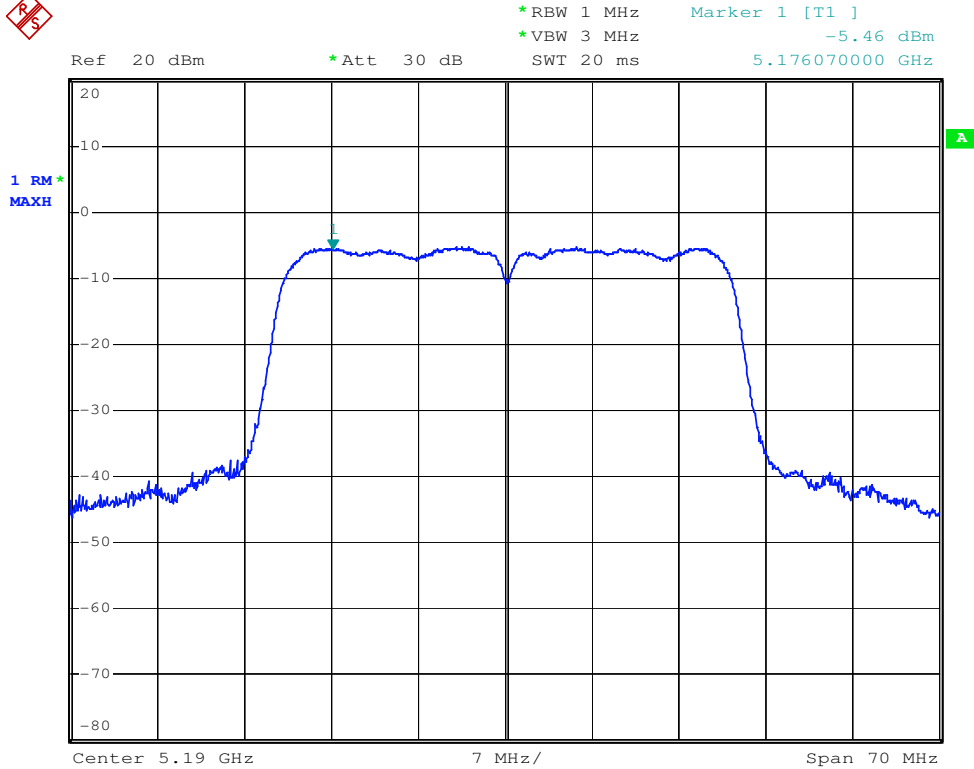
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW CHANNEL (dBm)			TOTAL OUTPUT POWER DENSITY (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
		Chain 100	Chian 010	Chain 001			
38	5190	-5.46	-7.14	-6.08	0.10	4	PASS
46	5230	-6.19	-6.91	-6.05	-0.10	4	PASS
54	5270	-8.74	-9.55	-10.17	-3.18	11	PASS
62	5310	-6.45	-6.47	-5.30	0.23	11	PASS
102	5510	-6.93	-8.37	-8.02	-1.46	11	PASS
118	5590	-7.73	-8.88	-9.44	-2.35	11	PASS
134	5670	-8.70	-9.63	-13.32	-3.87	11	PASS

Remark: Cable loss=1.50dB

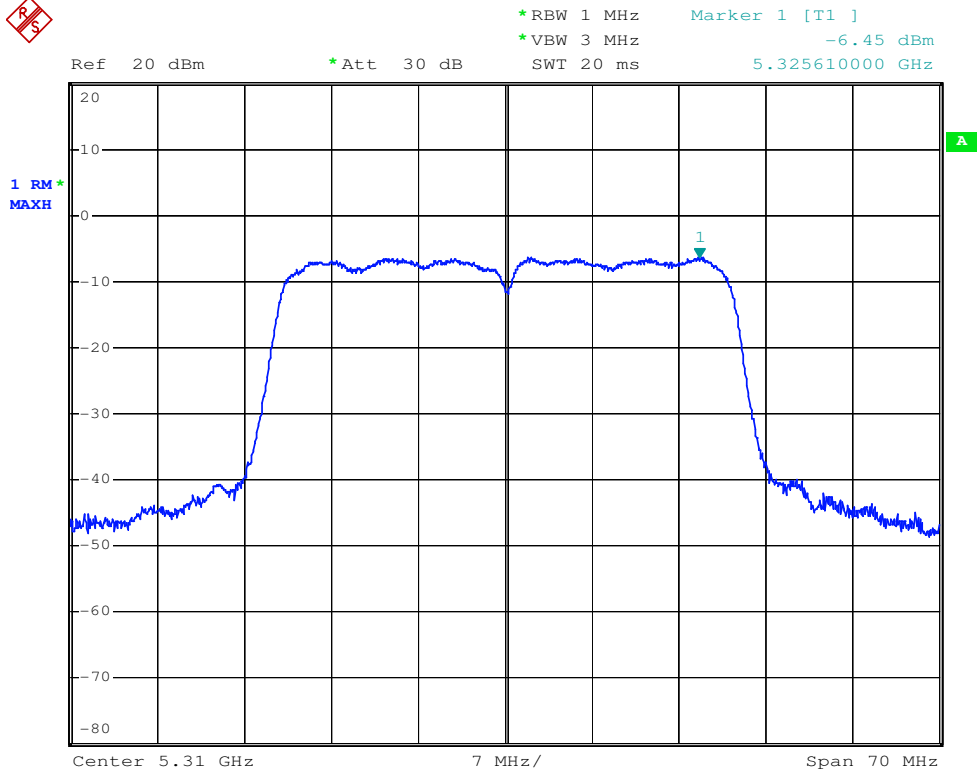
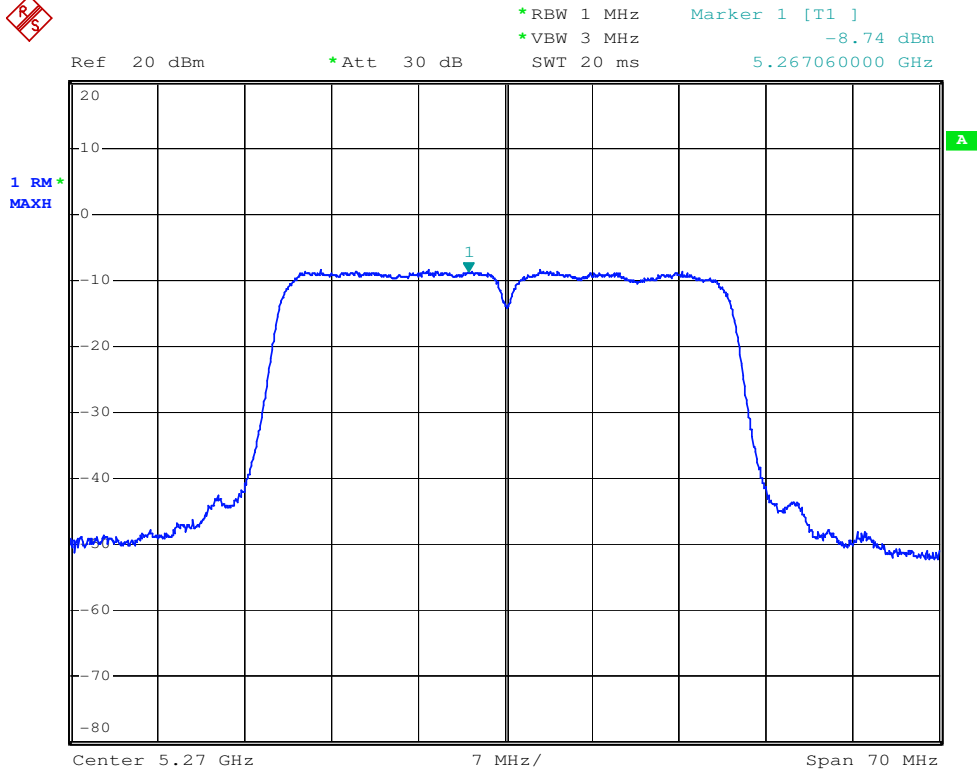
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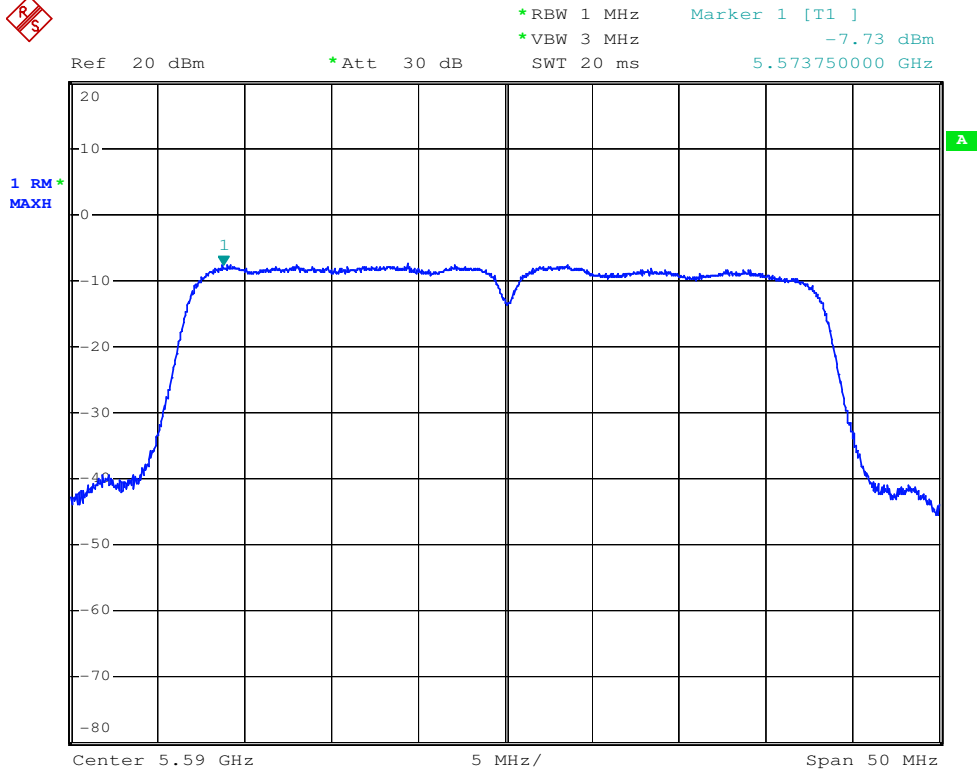
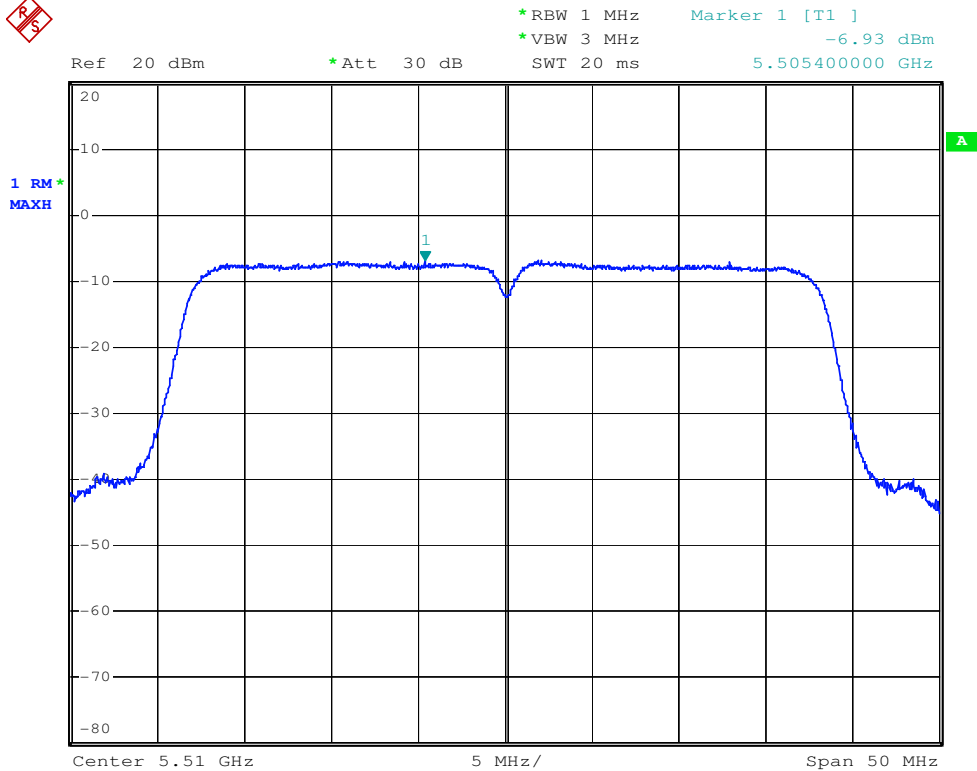


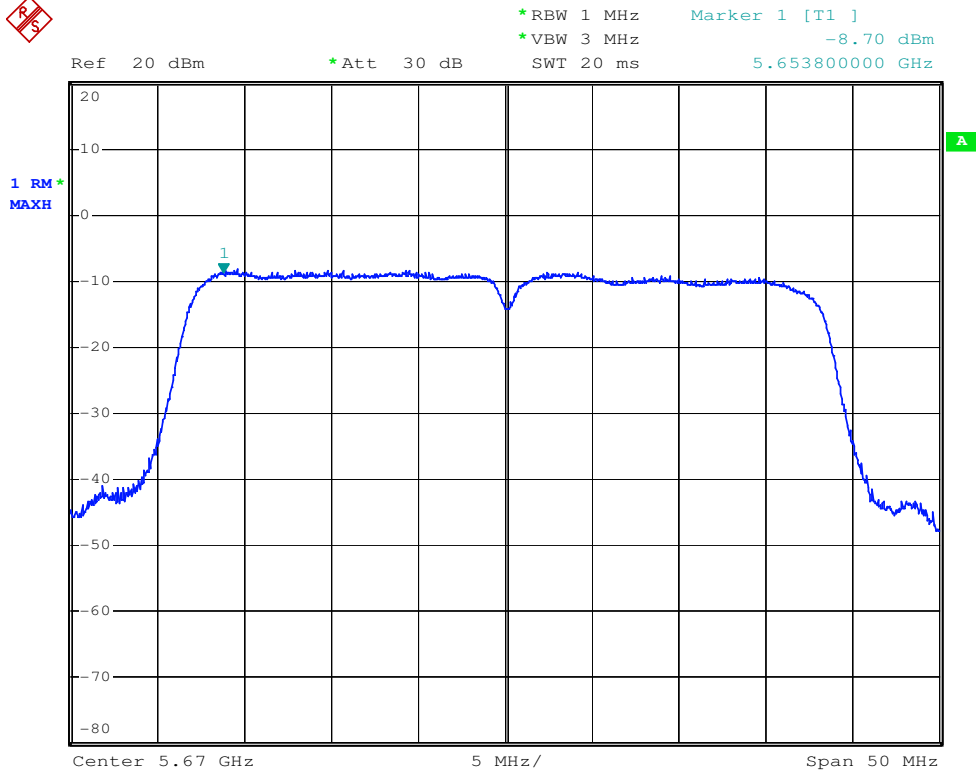
(Chain 100)



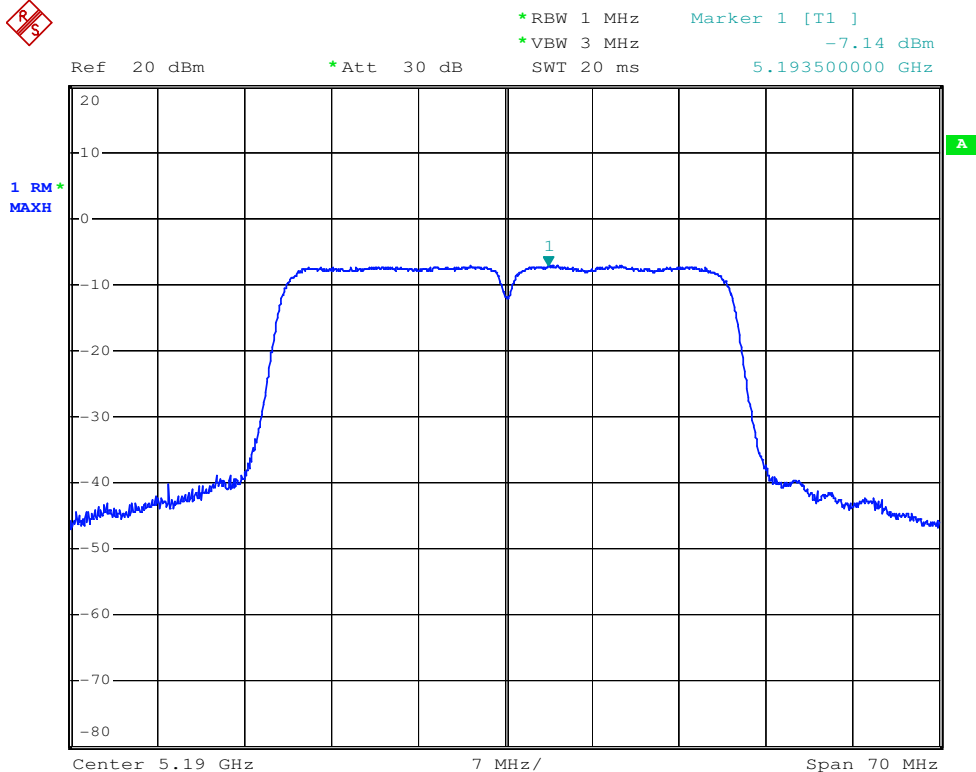
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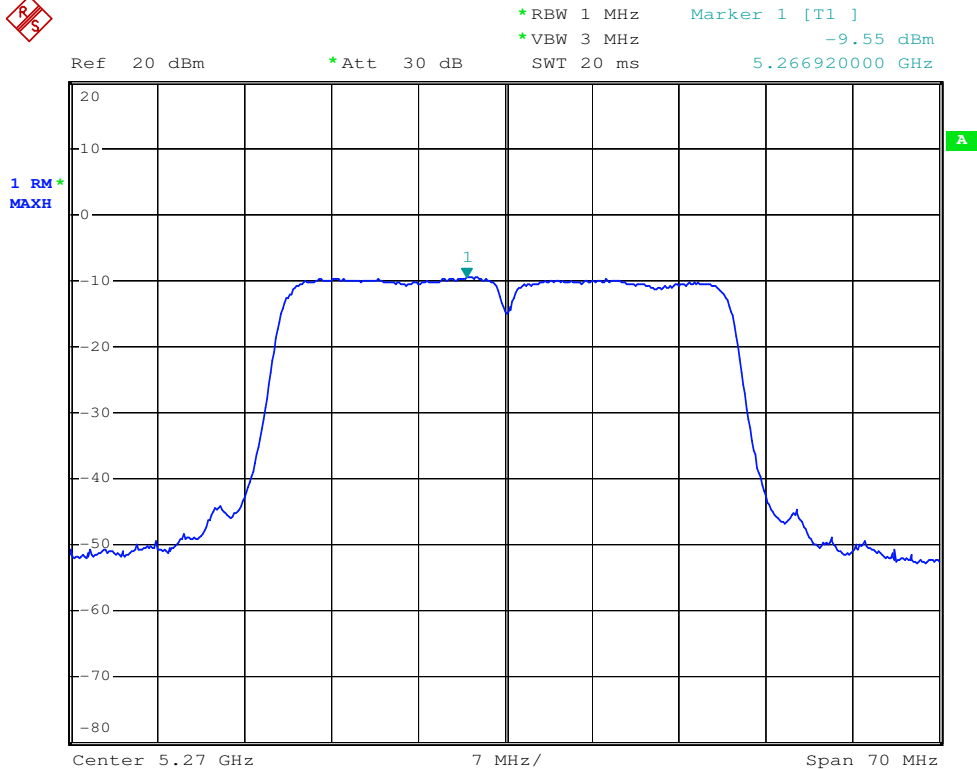
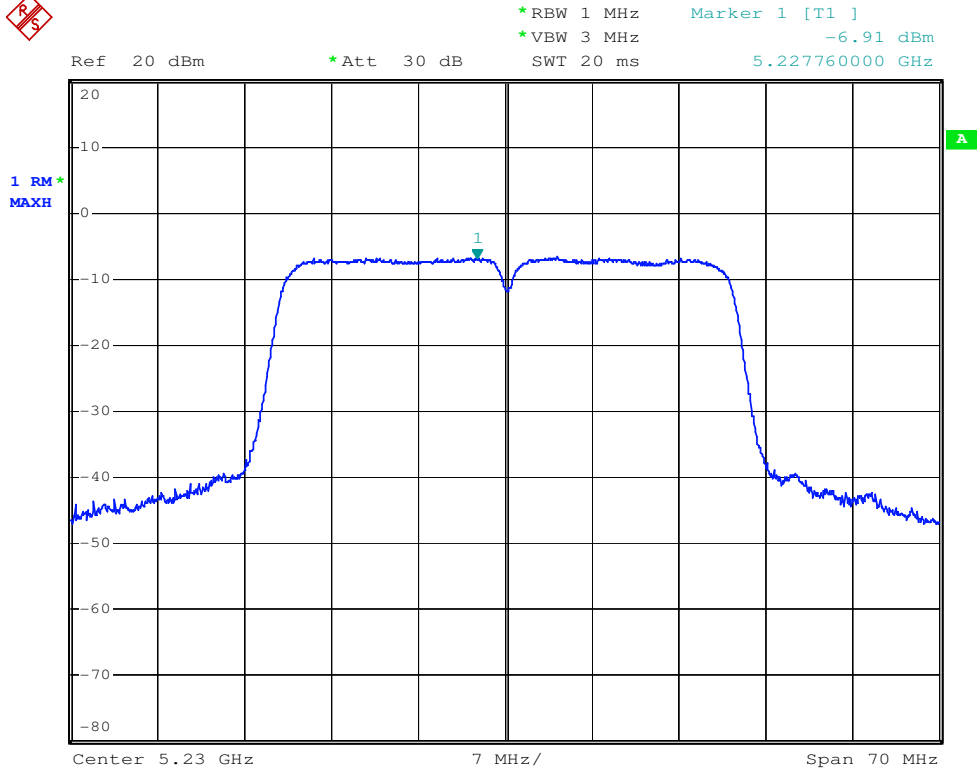


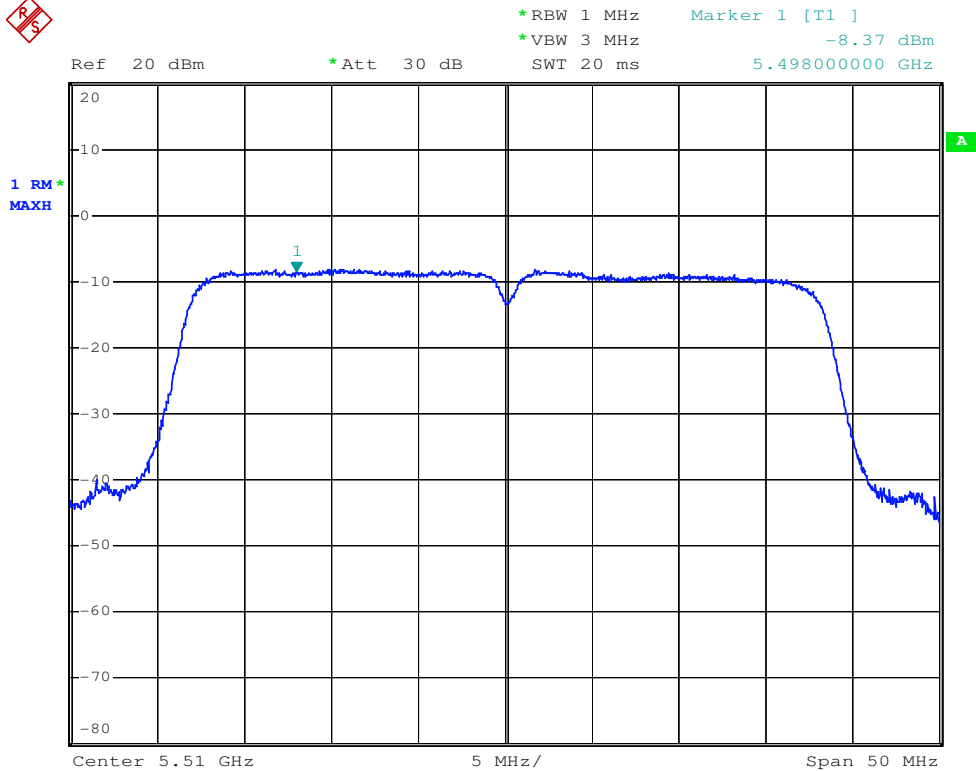
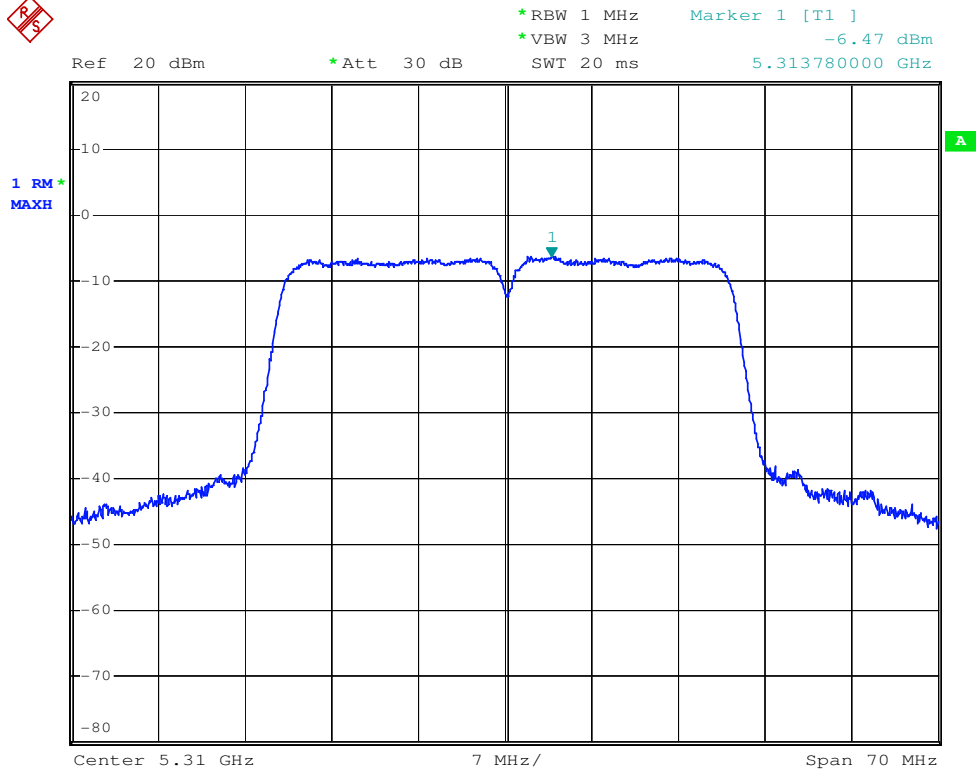




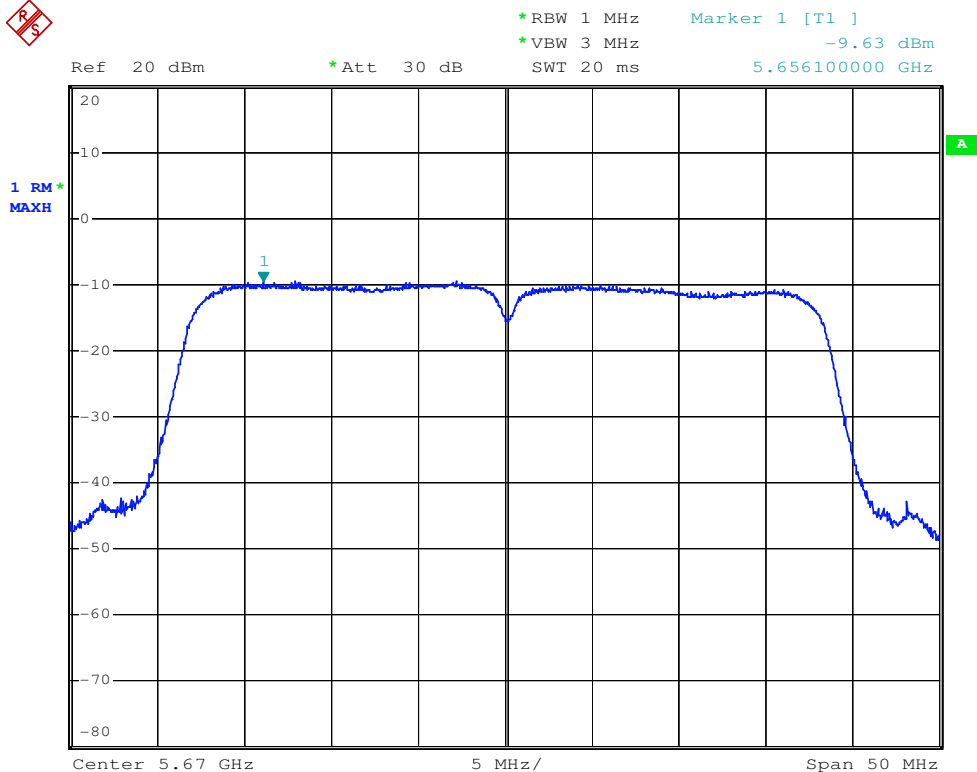
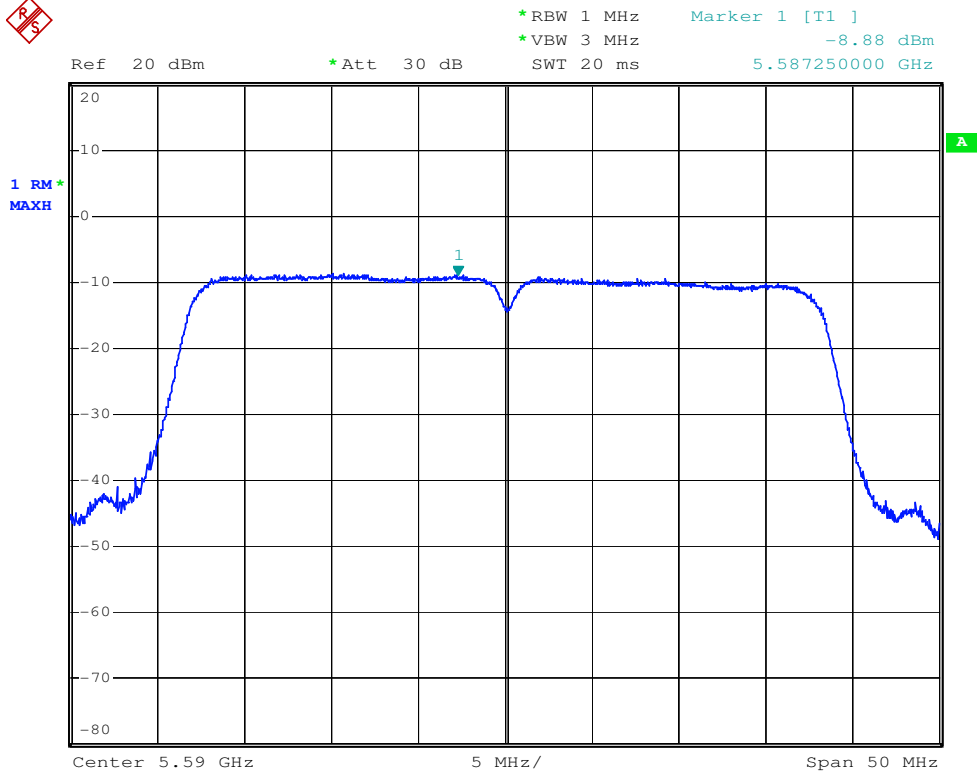
(Chain 010)







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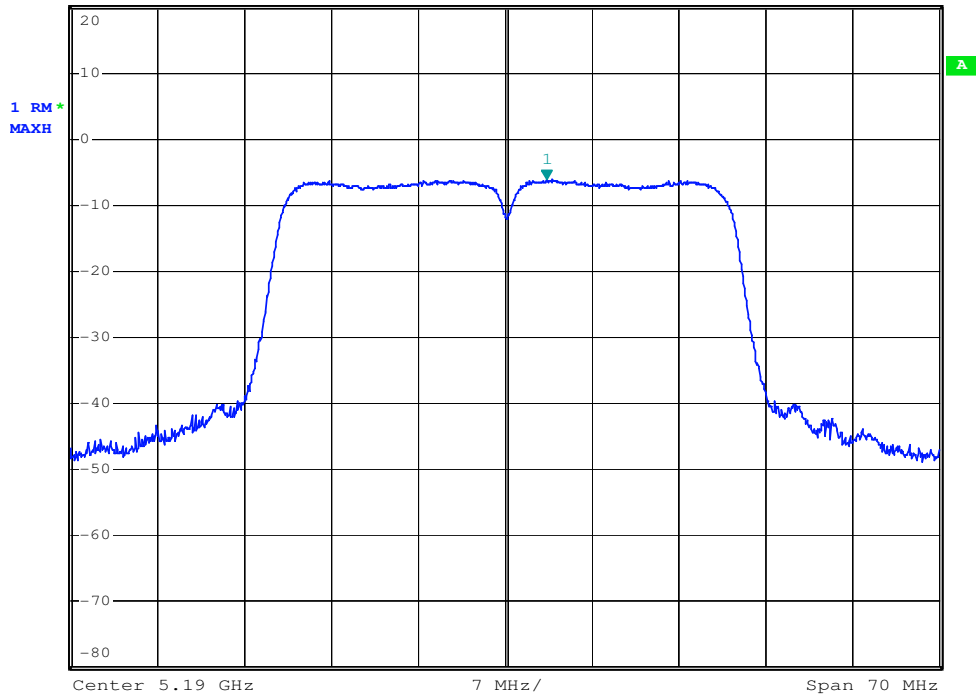




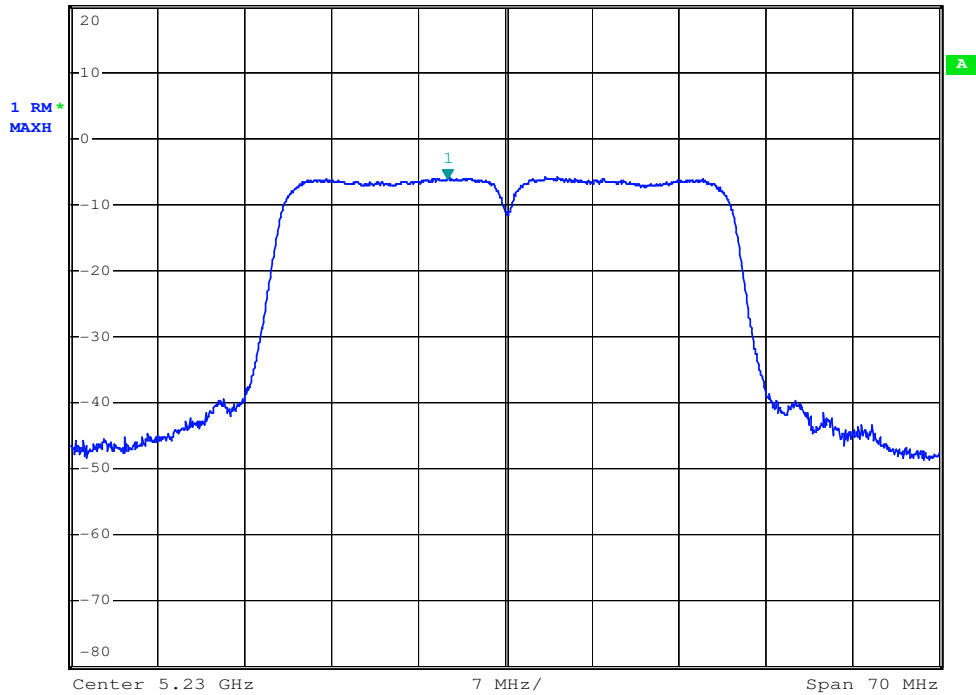
(Chain 001)

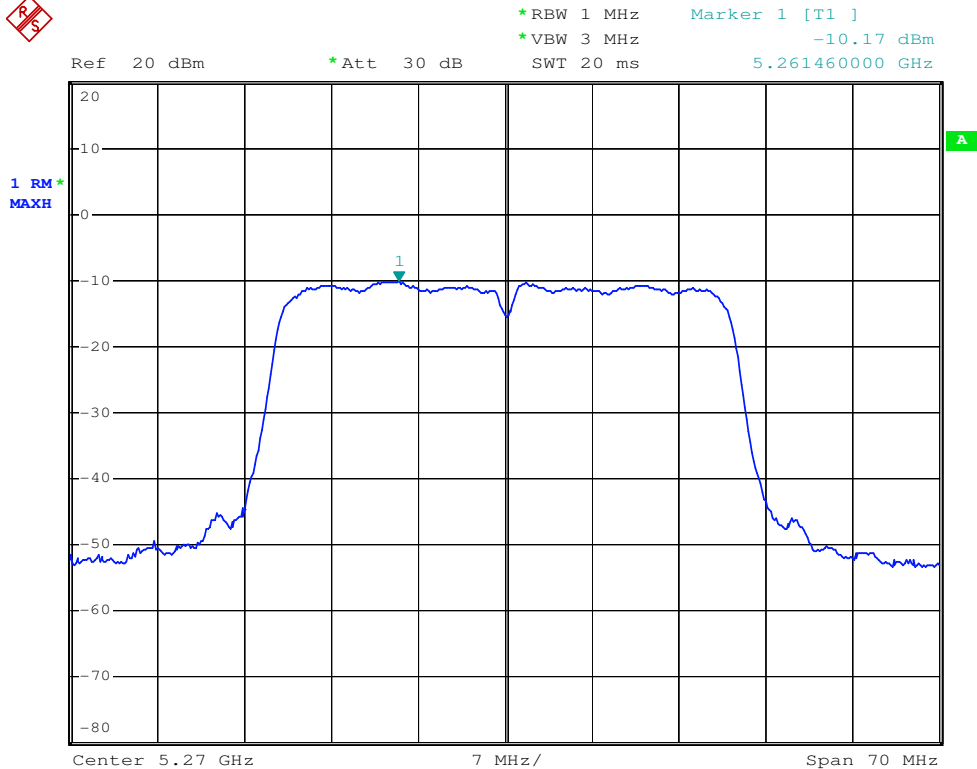
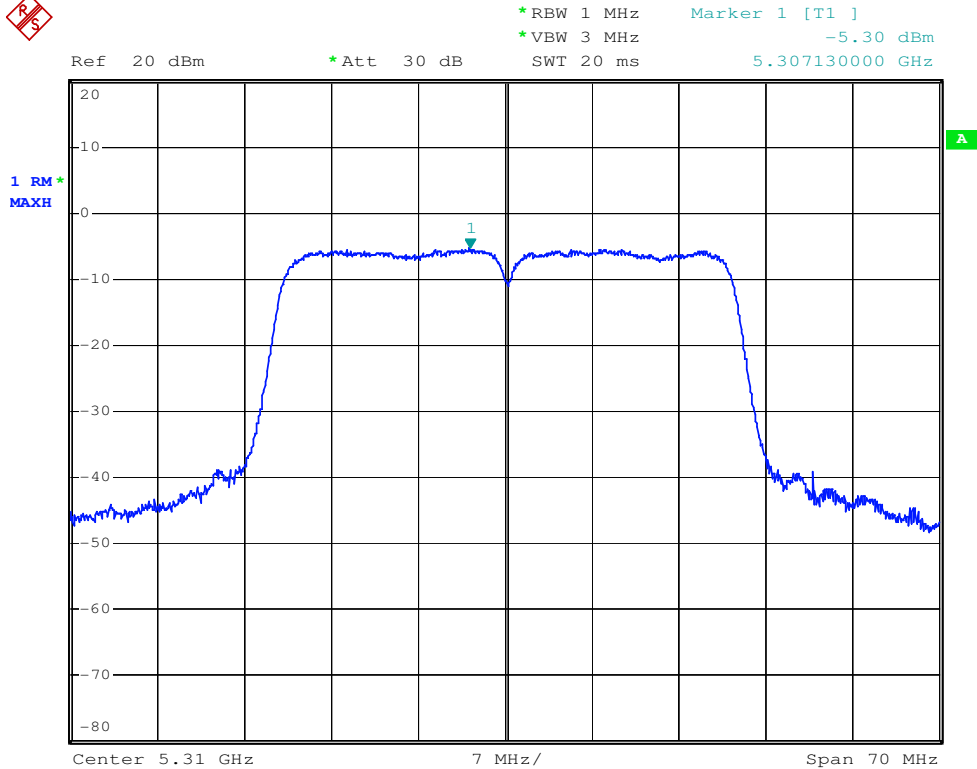


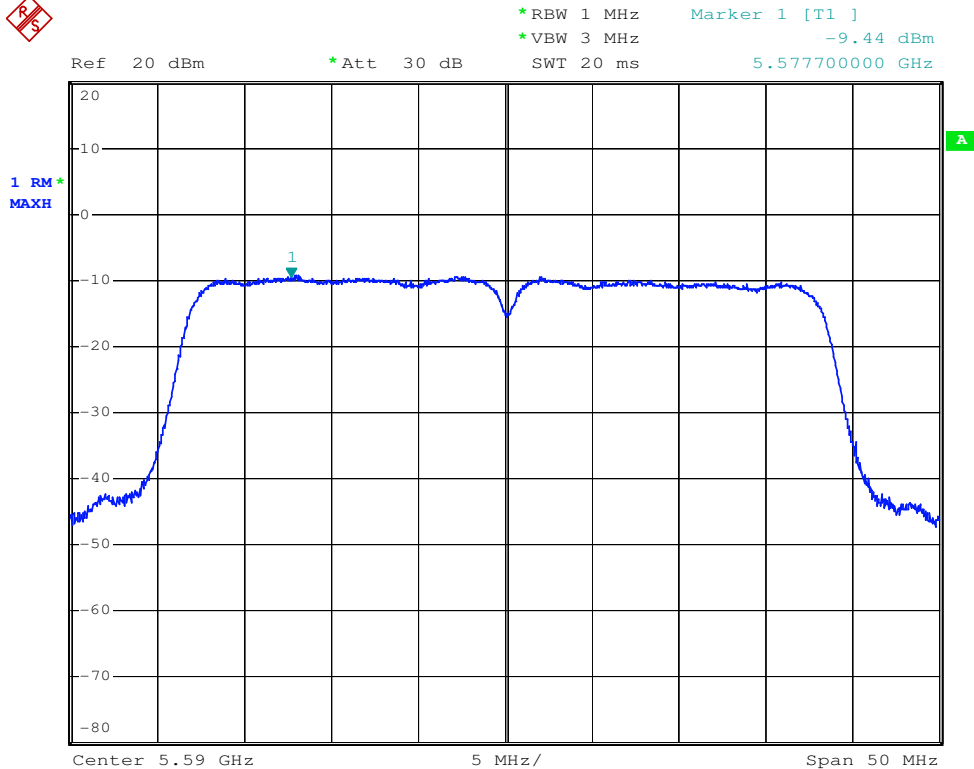
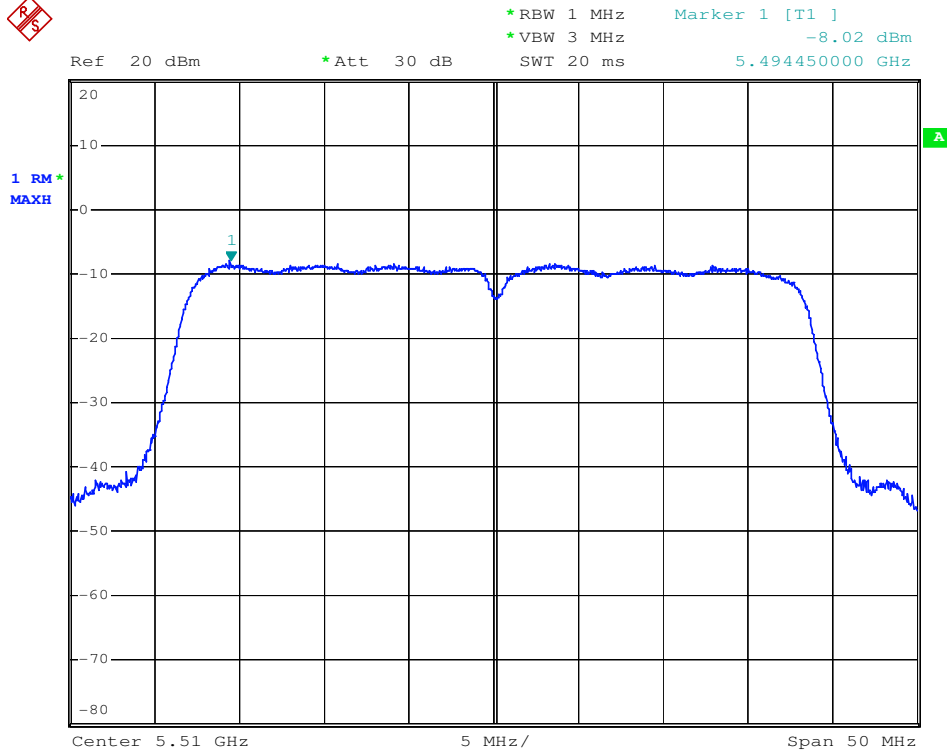
Ref 20 dBm *Att 30 dB *RBW 1 MHz *VBW 3 MHz SWT 20 ms Marker 1 [T1]
-6.08 dBm
5.193360000 GHz

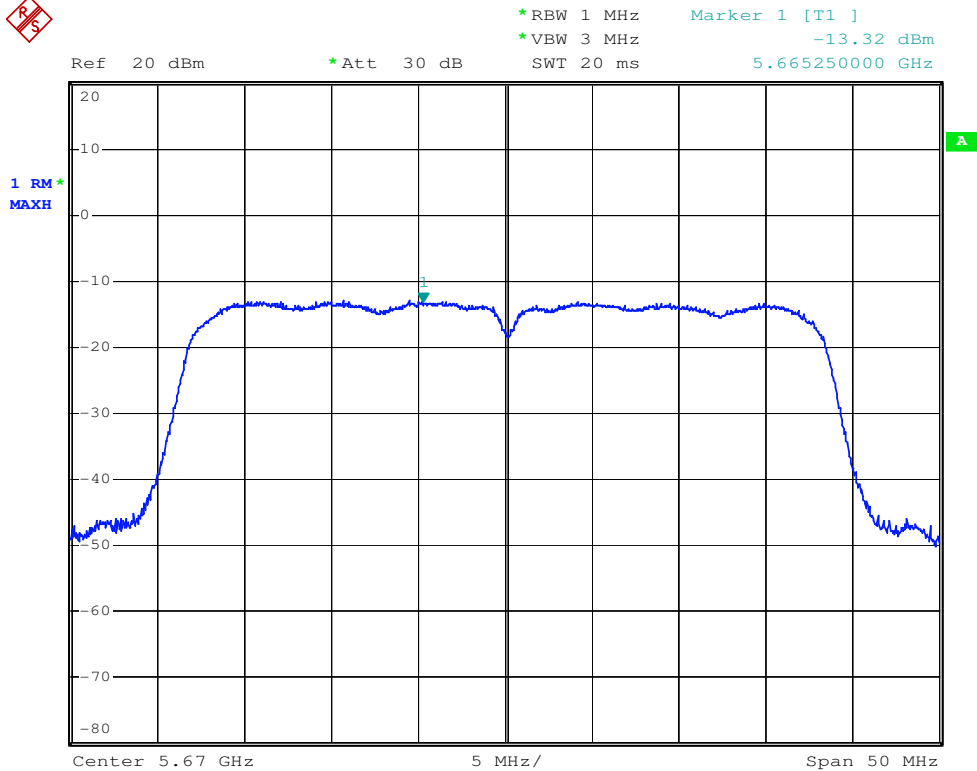


Ref 20 dBm *Att 30 dB *RBW 1 MHz *VBW 3 MHz SWT 20 ms Marker 1 [T1]
-6.05 dBm
5.225380000 GHz









4.2.5 FREQUENCY STABILITY

Test Requirement: FCC Part 15 15.407(g)

Test date April 14,2012

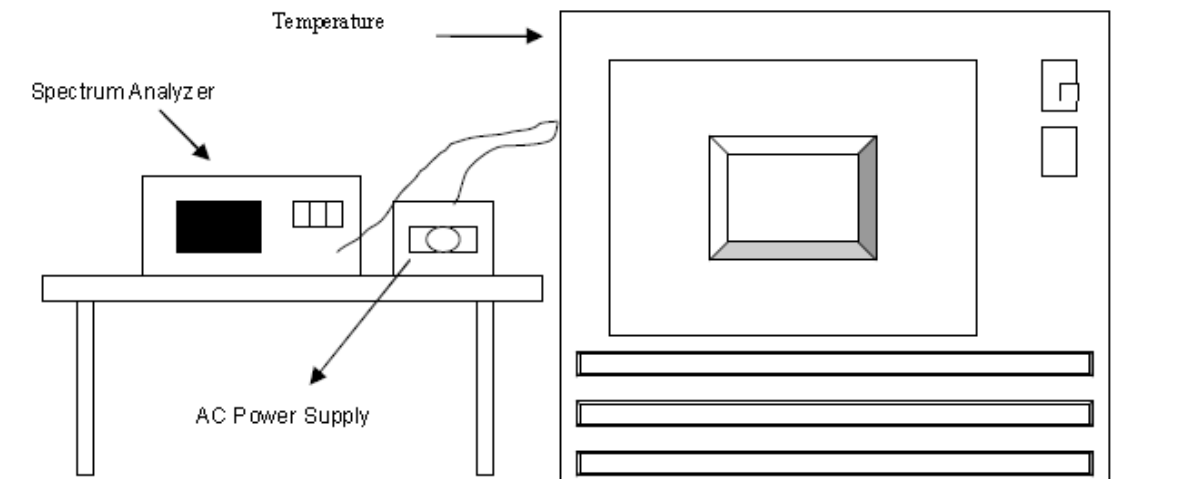
LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within the band of the operating frequency over a temperature variation of -10 degrees to 70 degreesC at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

Measuremet Prodre

1. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

Test Setup





Test Mode : Carrier Wave (for 802.11a/n-20MHz Channel) normal voltage: 110V

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (20) °C	Vnom (110)V	36	5180.00	5180.0100	-0.01
		38	5190.00	5190.0089	-0.01
		44	5220.00	5220.0094	-0.01
		48	5240.00	5240.0085	-0.01
		52	5260.00	5260.0091	-0.01
		54	5270.00	5270.0085	-0.01
		60	5300.00	5300.0078	-0.01
		62	5310.00	5310.0092	-0.01
		64	5320.00	5320.0095	-0.01
		100	5500.00	5500.0098	-0.01
		102	5510.00	5510.0096	-0.01
		118	5590.00	5590.0097	-0.01
		120	5600.00	5600.0085	-0.01
		134	5670.00	5670.0096	-0.01
		140	5700.00	5700.0097	-0.01
Tnom (70) °C	Vnom (110)V	36	5180.00	5180.0100	-0.01
		38	5190.00	5190.0089	-0.01
		44	5220.00	5220.0094	-0.01
		48	5240.00	5240.0085	-0.01
		52	5260.00	5260.0091	-0.01
		54	5270.00	5270.0085	-0.01
		60	5300.00	5300.0078	-0.01
		62	5310.00	5310.0092	-0.01
		64	5320.00	5320.0095	-0.01
		100	5500.00	5500.0098	-0.01
		102	5510.00	5510.0096	-0.01
		118	5590.00	5590.0097	-0.01
		120	5600.00	5600.0085	-0.01
		134	5670.00	5670.0096	-0.01
		140	5700.00	5700.0097	-0.01

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Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (-10) °C	Vnom (110)V	36	5180.00	5180.0095	-0.01
		38	5190.00	5190.0094	-0.01
		44	5220.00	5220.0092	-0.01
		48	5240.00	5240.0099	-0.01
		52	5260.00	5260.0094	-0.01
		54	5270.00	5270.0098	-0.01
		60	5300.00	5300.0091	-0.01
		62	5310.00	5310.0100	-0.01
		64	5320.00	5320.0100	-0.01
		100	5500.00	5500.0089	-0.01
		102	5510.00	5510.0080	-0.01
		118	5590.00	5590.0079	-0.01
		120	5600.00	5600.0090	-0.01
		134	5670.00	5670.0095	-0.01
		140	5700.00	5700.0096	-0.01



Test Mode : Carrier Wave (for 802.11a/n-20MHz Channel) highest voltage: 126.5V

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (20) °C	Vhigh (126.5)V	36	5180.00	5180.0100	-0.01
		38	5190.00	5190.0100	-0.01
		44	5220.00	5220.0095	-0.01
		48	5240.00	5240.0099	-0.01
		52	5260.00	5260.0084	-0.01
		54	5270.00	5270.0096	-0.01
		60	5300.00	5300.0100	-0.01
		62	5310.00	5310.0094	-0.01
		64	5320.00	5320.0097	-0.01
		100	5500.00	5500.0100	-0.01
		102	5510.00	5510.0099	-0.01
		118	5590.00	5590.0096	-0.01
		120	5600.00	5600.0086	-0.01
		134	5670.00	5670.0100	-0.01
		140	5700.00	5700.0085	-0.01
Tnom (70) °C	Vhigh (126.5)V	36	5180.00	5180.0088	-0.01
		38	5190.00	5190.0094	-0.01
		44	5220.00	5220.0100	-0.01
		48	5240.00	5240.0097	-0.01
		52	5260.00	5260.0095	-0.01
		54	5270.00	5270.0089	-0.01
		60	5300.00	5300.0092	-0.01
		62	5310.00	5310.0096	-0.01
		64	5320.00	5320.0097	-0.01
		100	5500.00	5500.0099	-0.01
		102	5510.00	5510.0100	-0.01
		118	5590.00	5590.0100	-0.01
		120	5600.00	5600.0094	-0.01
		134	5670.00	5670.0097	-0.01
		140	5700.00	5700.0092	-0.01

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Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (-10) °C	Vhigh (126.5)V	36	5180.00	5180.0097	-0.01
		38	5190.00	5190.0100	-0.01
		44	5220.00	5220.0096	-0.01
		48	5240.00	5240.0087	-0.01
		52	5260.00	5260.0100	-0.01
		54	5270.00	5270.0100	-0.01
		60	5300.00	5300.0092	-0.01
		62	5310.00	5310.0096	-0.01
		64	5320.00	5320.0089	-0.01
		100	5500.00	5500.0086	-0.01
		102	5510.00	5510.0095	-0.01
		118	5590.00	5590.0092	-0.01
		120	5600.00	5600.0088	-0.01
		134	5670.00	5670.0079	-0.01
		140	5700.00	5700.0096	-0.01



Test Mode : Carrier Wave (for 802.11a/n-20MHz Channel) lowest voltage: 93.5V

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (20) °C	Vlow (93.5)V	36	5180.00	5180.0095	-0.01
		38	5190.00	5190.0096	-0.01
		44	5220.00	5220.0093	-0.01
		48	5240.00	5240.0086	-0.01
		52	5260.00	5260.0079	-0.01
		54	5270.00	5270.0085	-0.01
		60	5300.00	5300.0089	-0.01
		62	5310.00	5310.0098	-0.01
		64	5320.00	5320.0099	-0.01
		100	5500.00	5500.0100	-0.01
		102	5510.00	5510.0088	-0.01
		118	5590.00	5590.0089	-0.01
		120	5600.00	5600.0097	-0.01
		134	5670.00	5670.0092	-0.01
		140	5700.00	5700.0085	-0.01
Tnom (70) °C	Vlow (93.5)V	36	5180.00	5180.0100	-0.01
		38	5190.00	5190.0099	-0.01
		44	5220.00	5220.0094	-0.01
		48	5240.00	5240.0088	-0.01
		52	5260.00	5260.0096	-0.01
		54	5270.00	5270.0095	-0.01
		60	5300.00	5300.0091	-0.01
		62	5310.00	5310.0079	-0.01
		64	5320.00	5320.0089	-0.01
		100	5500.00	5500.0095	-0.01
		102	5510.00	5510.0087	-0.01
		118	5590.00	5590.0094	-0.01
		120	5600.00	5600.0100	-0.01
		134	5670.00	5670.0100	-0.01
		140	5700.00	5700.0097	-0.01

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Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	ΔF (MHz)
Tnom (-10) °C	Vlow (93.5)V	36	5180.00	5180.0100	-0.01
		38	5190.00	5190.0090	-0.01
		44	5220.00	5220.0091	-0.01
		48	5240.00	5240.0082	-0.01
		52	5260.00	5260.0086	-0.01
		54	5270.00	5270.0090	-0.01
		60	5300.00	5300.0076	-0.01
		62	5310.00	5310.0094	-0.01
		64	5320.00	5320.0095	-0.01
		100	5500.00	5500.0095	-0.01
		102	5510.00	5510.0092	-0.01
		118	5590.00	5590.0093	-0.01
		120	5600.00	5600.0095	-0.01
		134	5670.00	5670.0100	-0.01
		140	5700.00	5700.0097	-0.01



4.2.6 Radiated Emission Test

Test Requirement: FCC Part15 407(b/1/2/3/5)
Test date: April 12,2012 to April 16,2012
Standard Applicable: According to section 15.407,all other emissions outside these bands shall not exceed the general radiated emission limits specified in section15.209(a).And according to section 15.33(a)(1),for an intentional radiator operates below 10GHz,the frequency range of measurements:to the tenth harmonic of the highest fundamental frequency or to 40GHz,which is lower.

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Measurement Procedure:

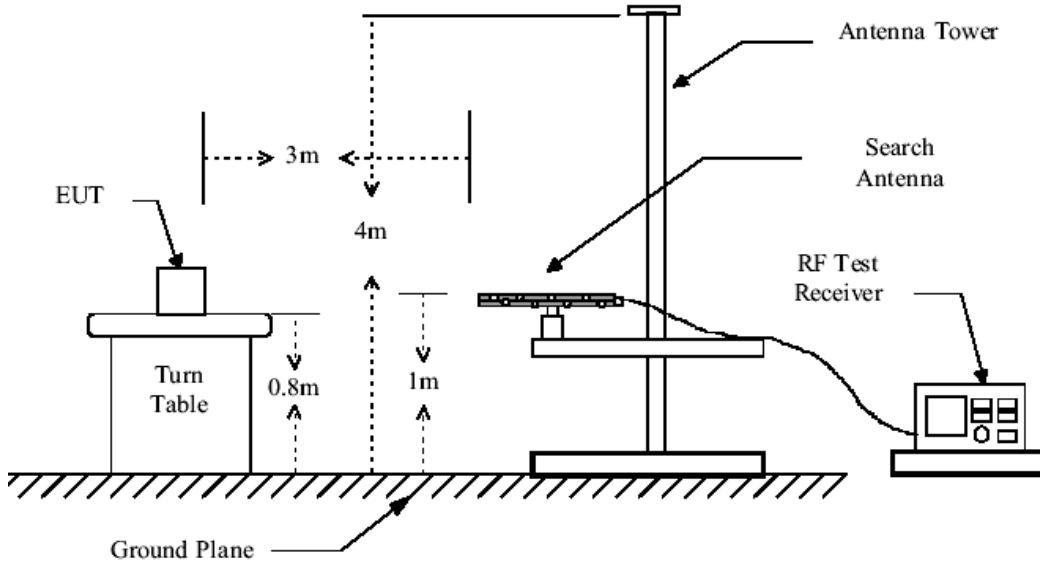
- The EUT was placed on a turn table which is 0.8m above ground plane.
- The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
 Test instrumentation resolution bandwidth 120 kHz and Quasi-Peak detector applies (30 MHz - 1000 MHz). 1MHz resolution bandwidth and Peak detector apply (1000 MHz – 40GHz)
 Above 1GHz
 (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
 (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO.
- Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- Repeat above procedures until all frequency measured were complete.
- The field strength of spurious emission was measured in the following position antenna lie-down position (X, Y axis). The worst emission was found in 802.11b 1Mbps and 802.11g 6Mbps and 802.11a, 802.11n 6.5Mbps and the worst case was recored.

NOTE:

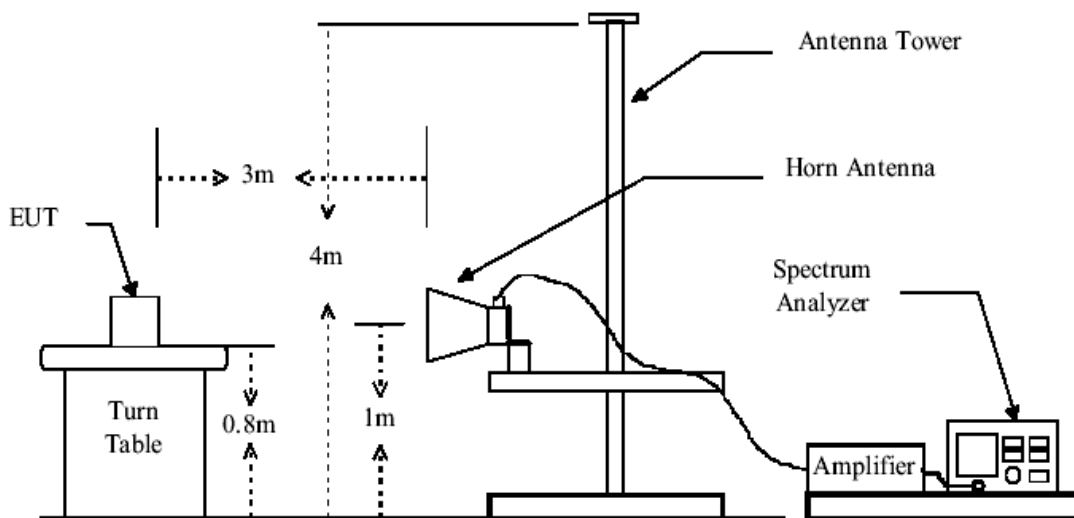
- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

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**Radiated Test Set-up:
Radiated Emission Test Set-up, Frequency Below 1000MHz**



Radiated Emission Test Set-up Frequency Over 1GHz





4.3.6.1 TEST RESULTS (With Dipole Antenna)

BELOW 1GHz WORST-CASE DATA: 802.11n (40MHz) 6.5Mbps 5310MHz OFDM MODULATION

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
60.9984	42.3	-10.2	32.1	40.0	-7.9	Horizontal
79.6192	44.5	-13.2	31.3	40.0	-8.7	Horizontal
85.5408	41.2	-13.2	28.0	40.0	-12.0	Horizontal
200.0141	48.3	-10.0	38.3	43.5	-5.2	Horizontal
294.9186	53.2	-8.8	44.4	46.0	-1.6	Horizontal
899.9864	37.8	2.5	40.3	46.0	-5.7	Horizontal
60.6969	41.2	-10.2	31.0	40.0	-9.0	Vertical
67.6091	36.7	-11.4	25.3	40.0	-14.7	Vertical
112.0840	38.1	-11.1	27.0	43.5	-16.5	Vertical
200.0160	45.9	-12.0	33.9	43.5	-9.6	Vertical
700.0347	41.7	-0.2	41.5	46.0	-4.5	Vertical
900.0190	38.4	2.5	40.9	46.0	-5.1	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

Frequencies (MHz)	EIRP Limit (dBm)	Equivalent Field Strength at 3m (dBμV/m) *note 3
5150~5250	-27	68.3
5250~5350	-27	68.3
5470~5725	-27	68.3
5725~5825	-27 *note 1	68.3
	-17 *note 2	78.3

NOTE:

1. For frequencies 10MHz or greater above or below the band edge.
2. All emissions within the frequency range from the band edge to 10MHz above or below the band edge.

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3. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m}, \text{ where } P \text{ is the eirp (Watts)}$$

**ABOVE 1GHz WORST-CASE DATA
802.11a OFDM MODULATION**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 36 (5180MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
5149.97	56.85	-0.19	56.66 PK	74.0	-17.34	Horizontal
5127.85	44.00	-0.33	43.67 AV	54.0	-10.33	Horizontal
#10360.00	34.7	5.6	40.3 PK	68.3	-28.0	Horizontal
5149.97	57.75	-0.19	57.56 PK	74.0	-16.44	Vertical
5128.61	39.29	-0.30	38.99 AV	54.0	-15.01	Vertical
#10360.00	36.8	5.6	42.4 PK	68.3	-25.9	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 40 (5200MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
#10400.00	35.8	5.7	41.5 PK	68.3	-26.8	Horizontal
#10400.00	37.3	5.7	43.0 PK	68.3	-25.3	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 48 (5240MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
#10480.00	35.7	5.8	41.5 PK	68.3	-26.8	Horizontal
#10480.00	37.1	5.8	42.9 PK	68.3	-25.4	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 52 (5260MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
#10520.00	34.2	5.9	40.1 PK	68.3	-28.2	Horizontal
#10520.00	34.9	5.9	40.8 PK	68.3	-27.5	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

CHANNEL(Frequency)	Channel 60 (5300MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		



Frequency (MHz)	Reading Value (dB μ V)	Correction Factor (dB/m)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Antenna Polarization
10600.00	33.8	6.0	39.8 PK	74.0	-34.2	Horizontal
10600.00	34.2	6.0	40.2 PK	74.0	-33.8	Vertical

REMARKS:

1. Emission level (dB μ V/m) = Reading Value (dB μ V) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 64(5320MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dB μ V)	Correction Factor (dB/m)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Antenna Polarization
5369.34	55.26	0.79	56.05 PK	74.0	-17.95	Horizontal
5372.37	38.44	0.80	39.24 AV	54.0	-14.76	Horizontal
10640.00	34.2	6.1	40.3 PK	74.0	-33.7	Horizontal
5447.51	53.91	1.15	55.06 PK	74.0	-18.94	Vertical
5372.37	45.83	0.80	46.63	54.0	-7.37	Vertical
10640.00	37.1	6.1	43.2 PK	74.0	-30.8	Vertical

REMARKS:

1. Emission level (dB μ V/m) = Reading Value (dB μ V) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
- 5.Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 100(5500MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		



Frequency (MHz)	Reading Value (dB μ V)	Correction Factor (dB/m)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Antenna Polarization
5386.96	47.34	0.88	48.22 PK	54.0 AV	-5.78	Horizontal
11000.00	33.8	6.7	40.5 PK	74.0	-33.5	Horizontal
5447.93	52.24	1.15	53.39 PK	54.0 AV	-0.61	Vertical
11000.00	36.1	6.7	42.8 PK	74.0	-31.2	Vertical

REMARKS:

1. Emission level (dB μ V/m) = Reading Value (dB μ V) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
- 5.Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 120(5600MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

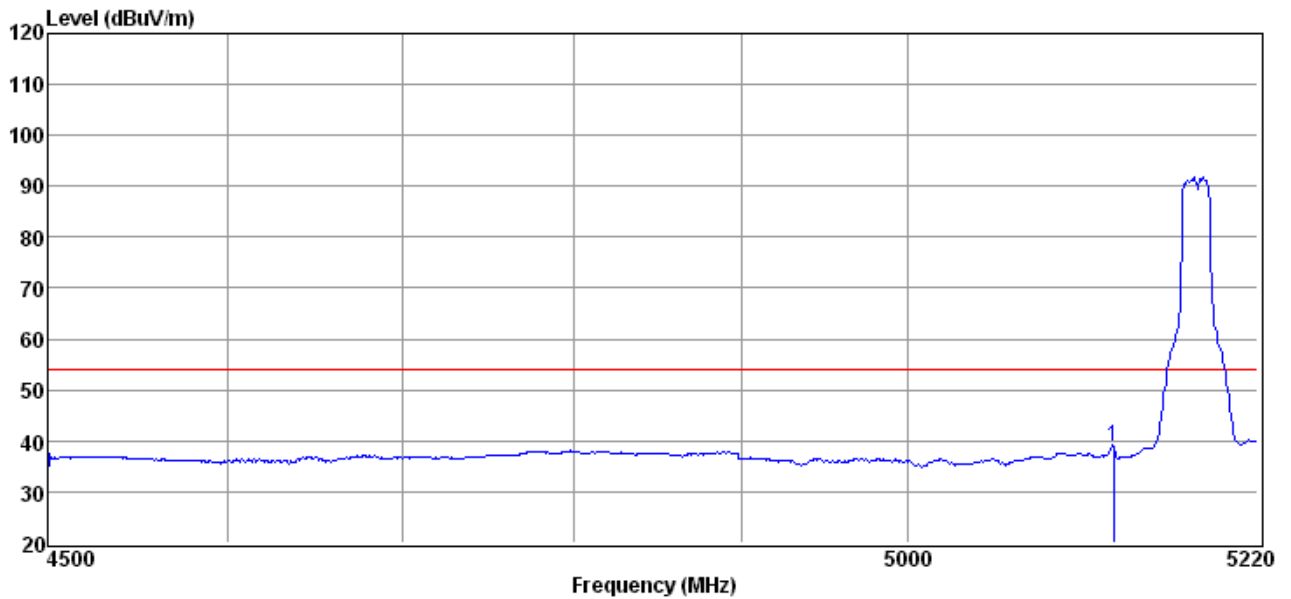
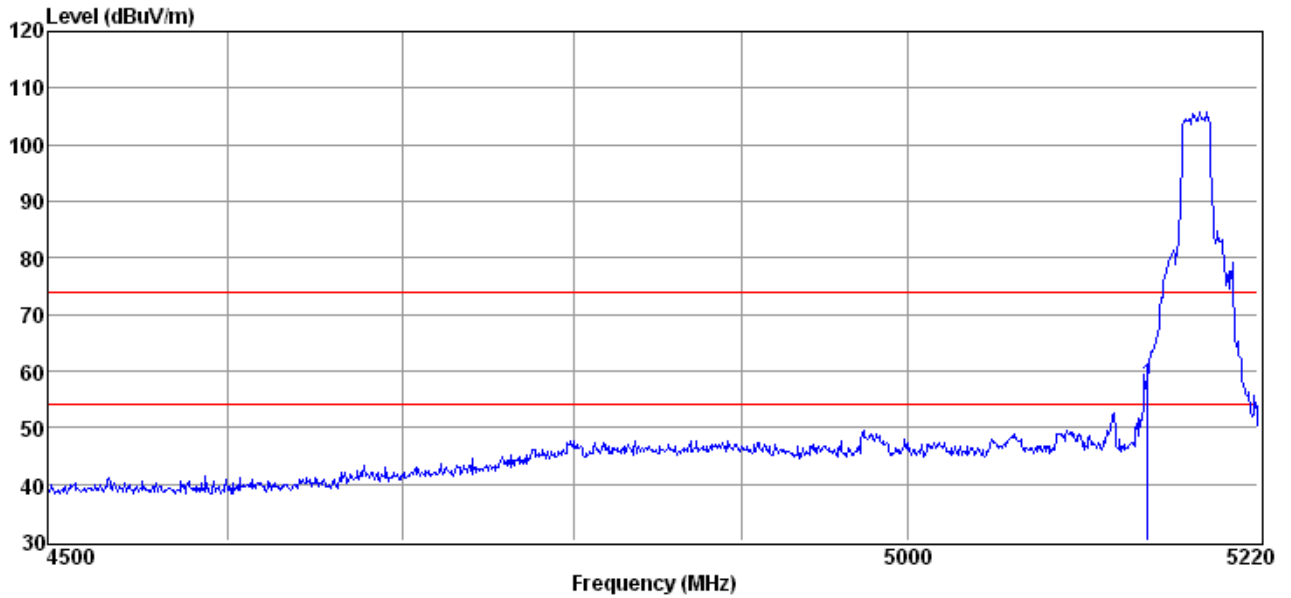
Frequency (MHz)	Reading Value (dB μ V)	Correction Factor (dB/m)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Antenna Polarization
11200.00	36.3	6.8	43.1 PK	74.0	30.9	Horizontal
11200.00	38.0	6.8	44.8 PK	74.0	29.2	Vertical

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 140(5700MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dB μ V)	Correction Factor (dB/m)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Antenna Polarization
11400.00	33.3	6.9	40.2 PK	74.0	-33.8	Horizontal
11400.00	34.1	6.9	41.0 PK	74.0	-33.0	Vertical



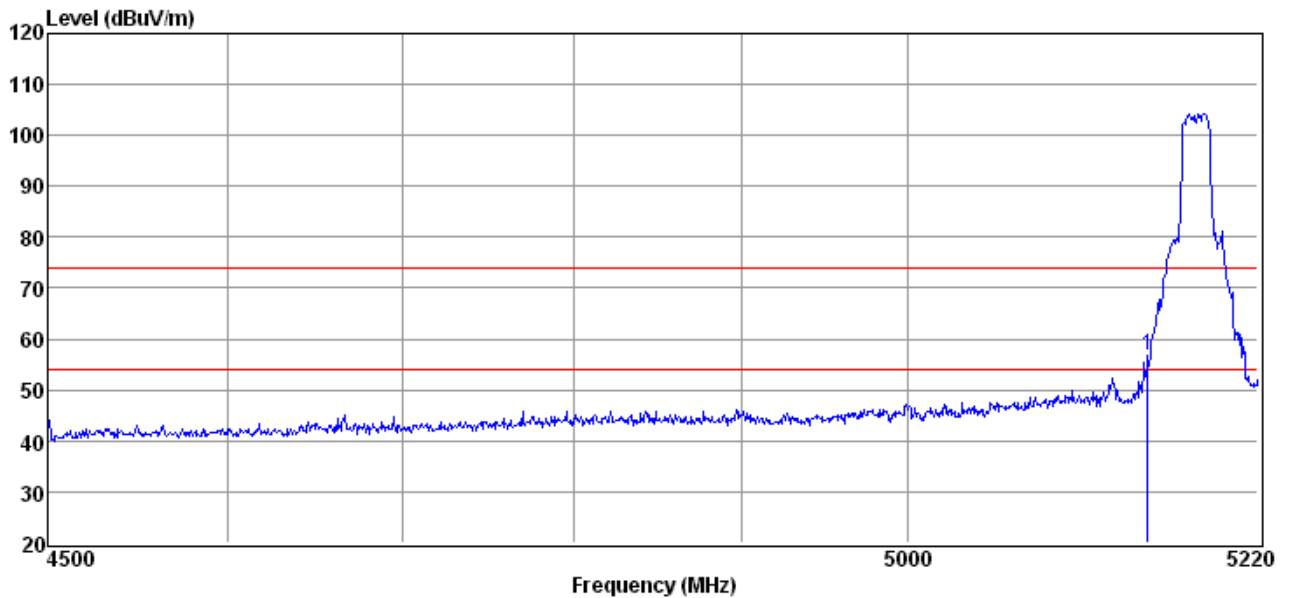
RESTRICTED BANDEDGE (802.11a MODE, CH36, HORIZONTAL)



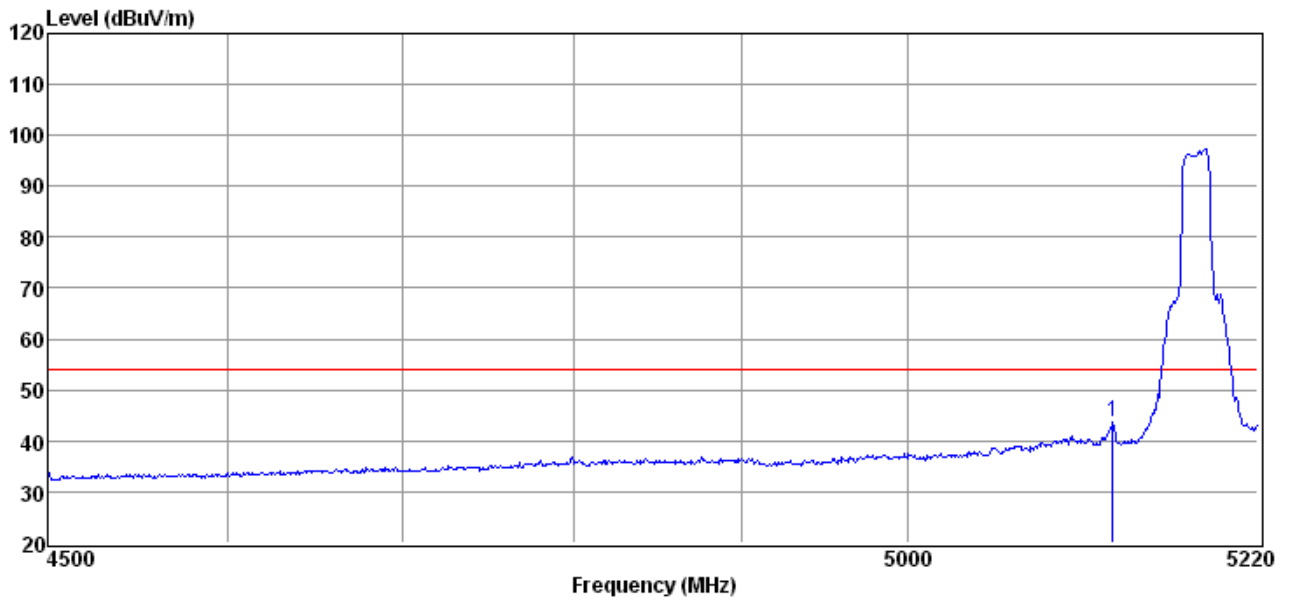


RESTRICTED BANDEDGE (802.11a MODE, CH36, VERTICAL)

Peak Detector

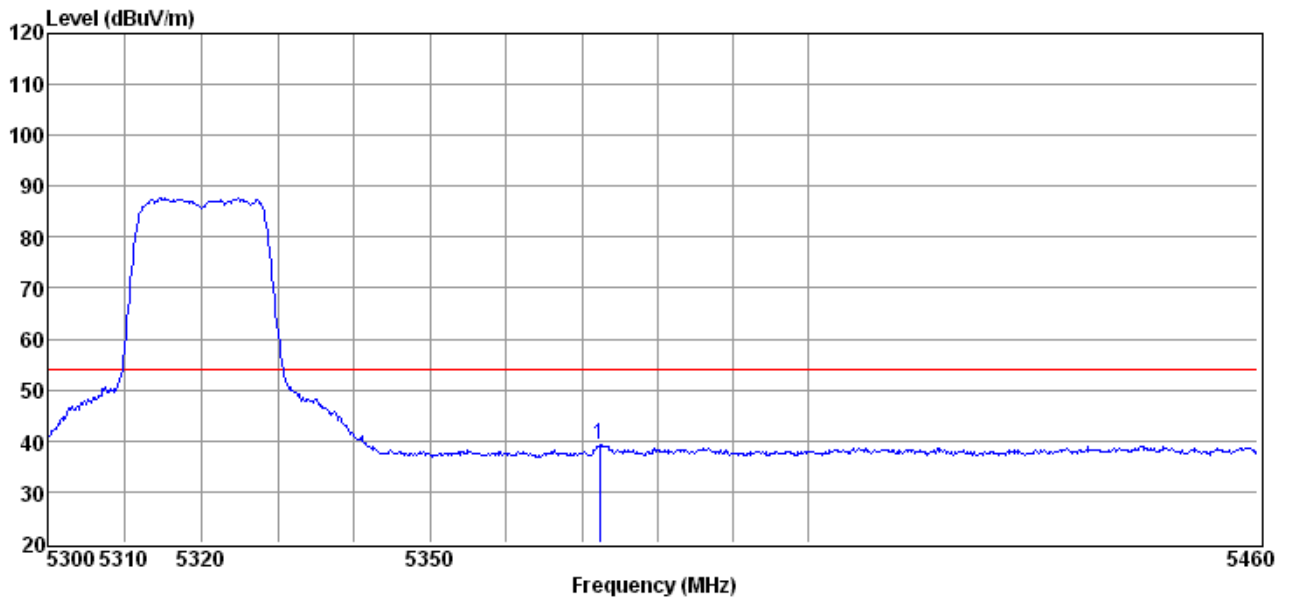
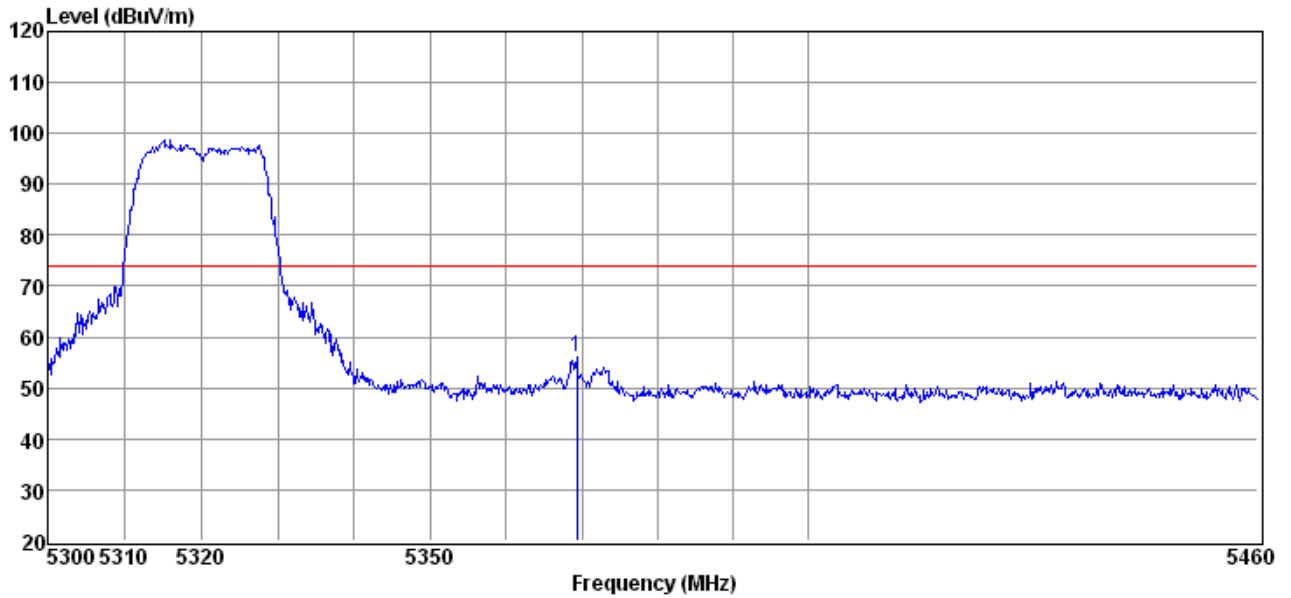


Average Detector



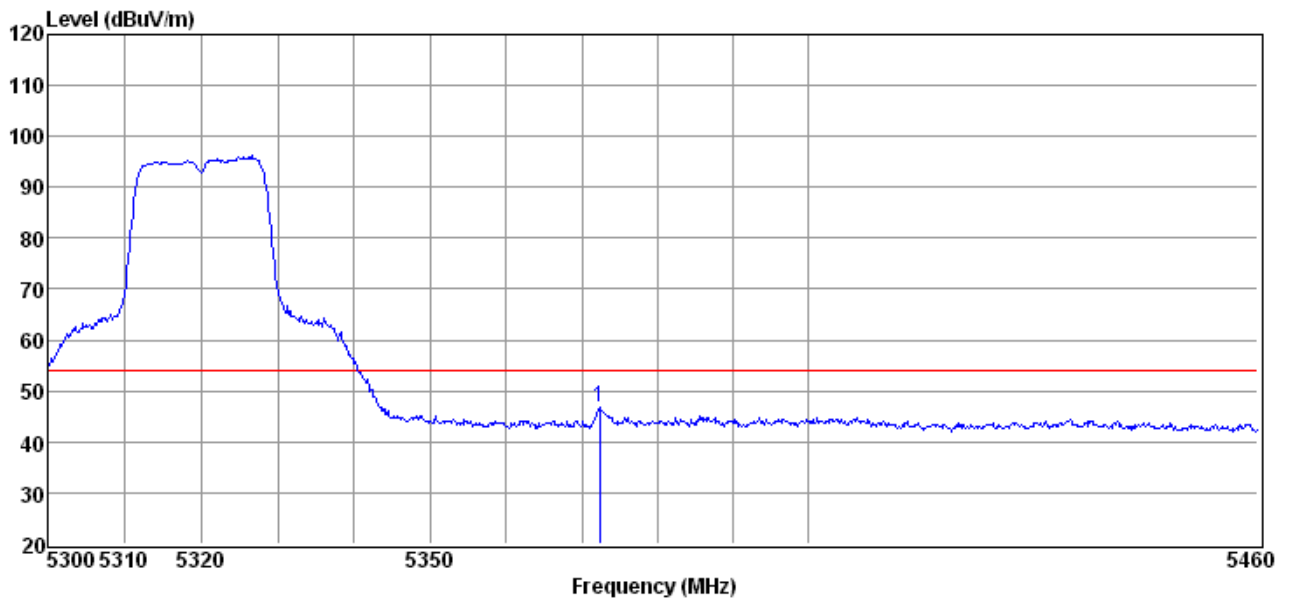
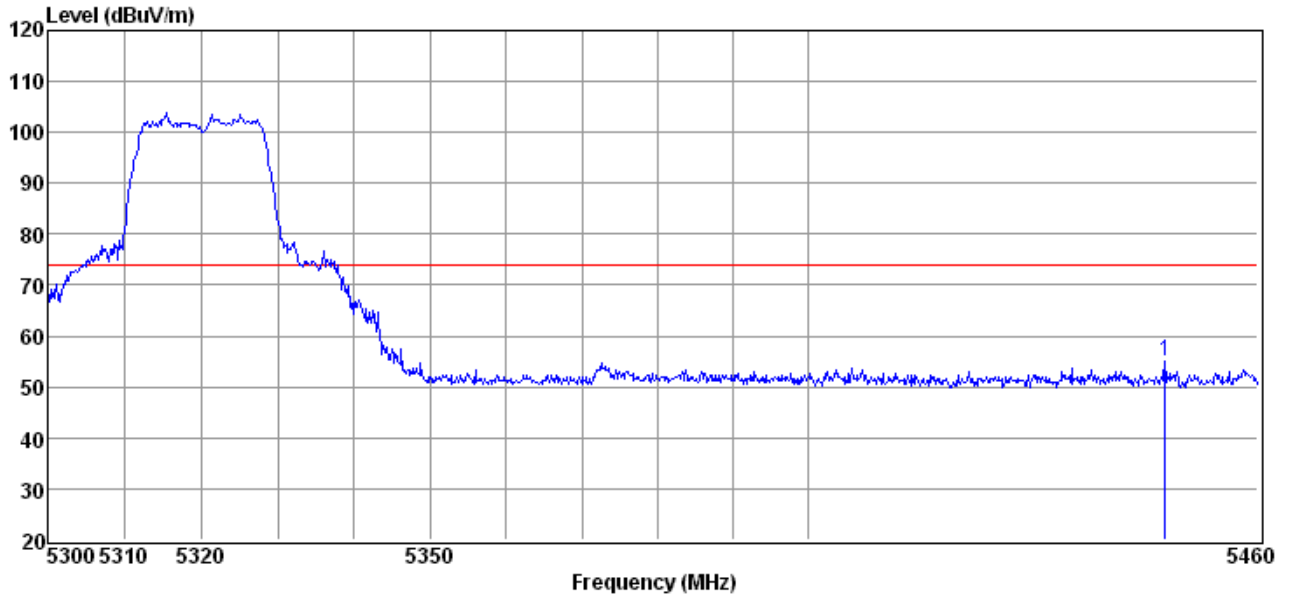


RESTRICTED BANDEDGE (802.11a MODE, CH64, HORIZONTAL)



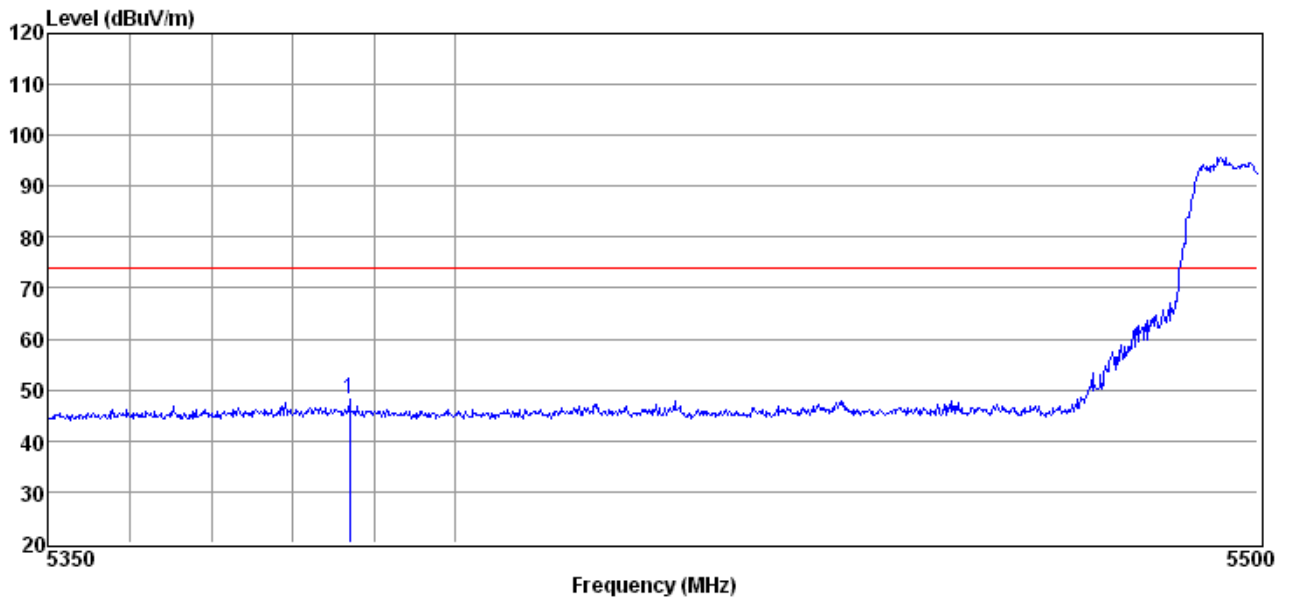


RESTRICTED BANDEDGE (802.11a MODE, CH64, VERTICAL)



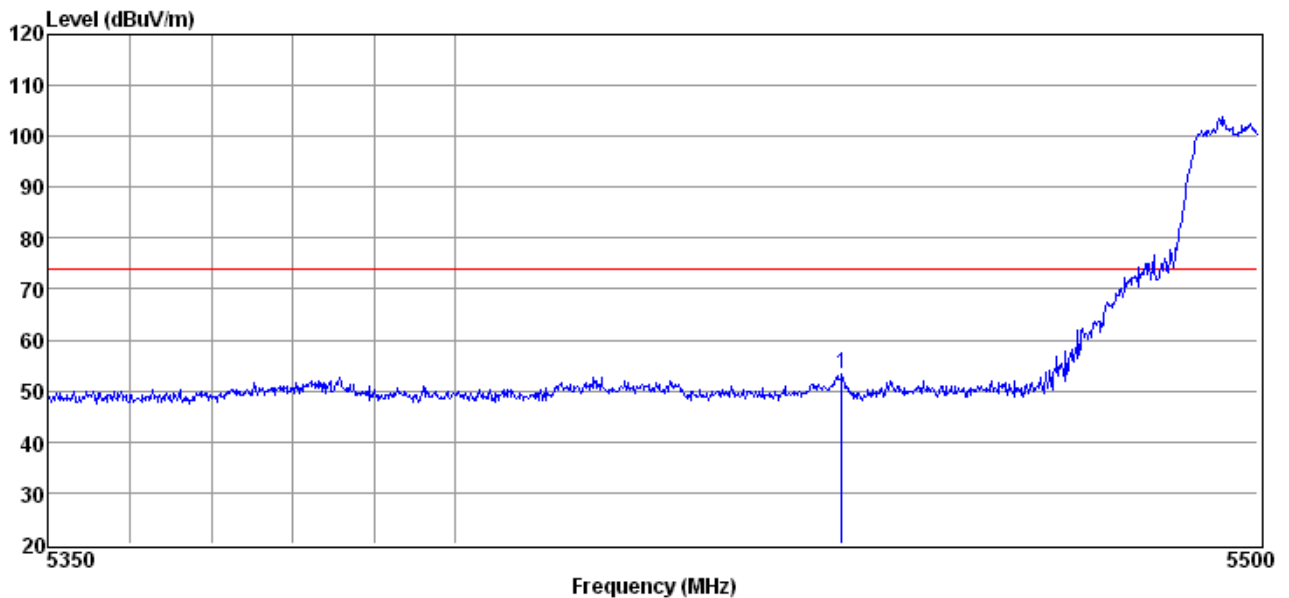


RESTRICTED BANDEDGE (802.11a MODE, CH100, HORIZONTAL)



Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.

RESTRICTED BANDEDGE (802.11a MODE, CH100, VERTICAL)



Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.



802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 36 (5180MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
5127.85	50.95	-0.31	50.64 PK	54.0 AV	-3.36	Horizontal
#10360.00	36.8	5.6	42.4 PK	68.3	-25.9	Horizontal
5146.92	63.67	-0.21	63.46 PK	74.0	-10.54	Vertical
5149.97	43.53	-0.19	43.34 AV	54.0	-18.66	Vertical
#10360.00	38.6	5.6	44.2 PK	68.3	-24.1	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.
6. Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 40 (5200MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
#10400.00	37.5	5.7	43.2 PK	68.3	-25.1	Horizontal
#10400.00	40.1	5.7	45.8 PK	68.3	-23.5	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

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3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 48 (5240MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
#10480.00	37.0	5.8	42.8 PK	68.3	-25.5	Horizontal
#10480.00	38.5	5.8	44.3 PK	68.3	-24.0	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 52 (5260MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
#10520.00	36.4	5.9	42.3 PK	68.3	-26.0	Horizontal
#10520.00	38.6	5.9	44.5 PK	68.3	-23.8	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.



CHANNEL(Frequency)	Channel 60 (5300MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
10600.00	33.5	6.0	39.5 PK	74.0	-34.5	Horizontal
10600.00	35.4	6.0	41.4 PK	74.0	-32.6	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 64(5320MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
5372.85	53.67	0.80	54.47 PK	74.0	-19.53	Horizontal
5372.37	40.92	0.80	41.72 AV	54.0	-12.28	Horizontal
10640.00	34.7	6.1	40.8 PK	74.0	-33.2	Horizontal
5352.43	56.23	0.72	56.95 PK	74.0	-17.05	Vertical
5440.87	.56.05	1.12	57.17 PK	74.0	-16.83	Vertical
5372.05	45.35	0.81	46.16 AV	54.0	-7.84	Vertical
10640.00	36.6	6.1	42.7 PK	74.0	-31.3	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
6. Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.

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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 100(5500MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
5448.08	50.94	1.15	52.09 PK	54.0 AV	-1.91	Horizontal
11000.00	34.1	6.7	40.8 PK	74.0 PK	-33.2	Horizontal
5448.38	52.63	1.15	53.78 PK	54.0 AV	-0.22	Vertical
11000.00	36.4	6.7	43.1 PK	74.0 PK	-30.9	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.
6. Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 120(5600MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
11200.00	35.7	6.8	42.5 PK	74.0	-31.5	Horizontal
11200.00	36.8	6.8	43.6 PK	74.0	-30.4	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



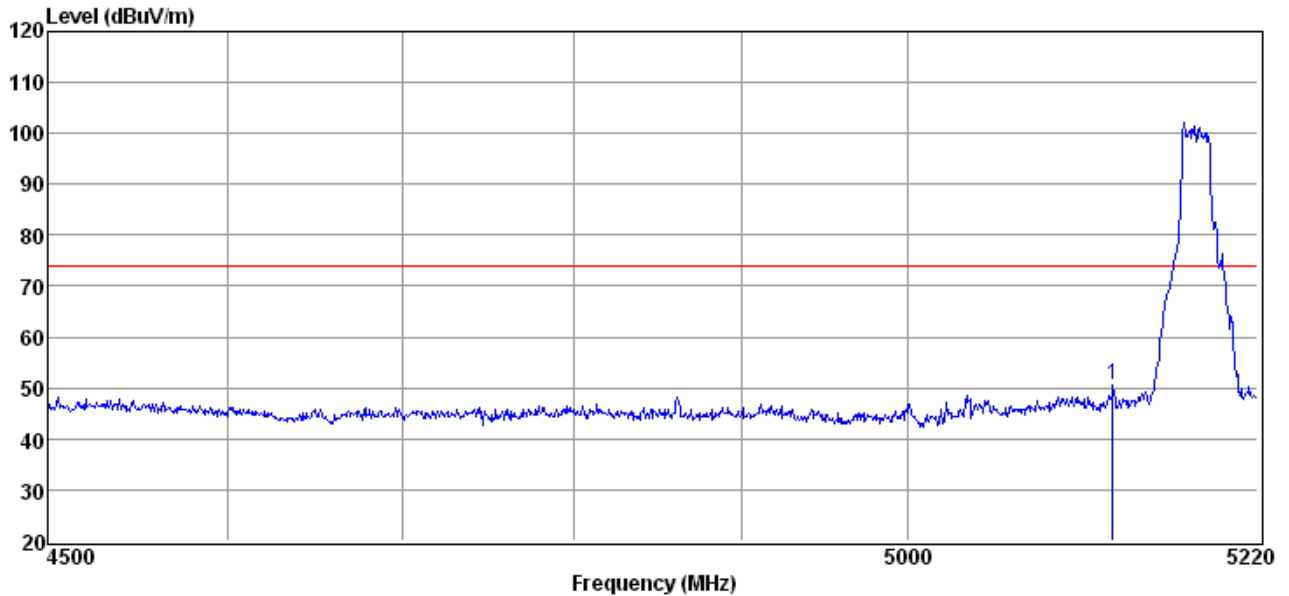
EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 140(5700MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dB μ V)	Correction Factor (dB/m)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Antenna Polarization
11400.00	35.2	6.9	42.1 PK	74.0	32.5	Horizontal
11400.00	37.7	6.9	44.6 PK	74.0	30.8	Vertical

REMARKS:

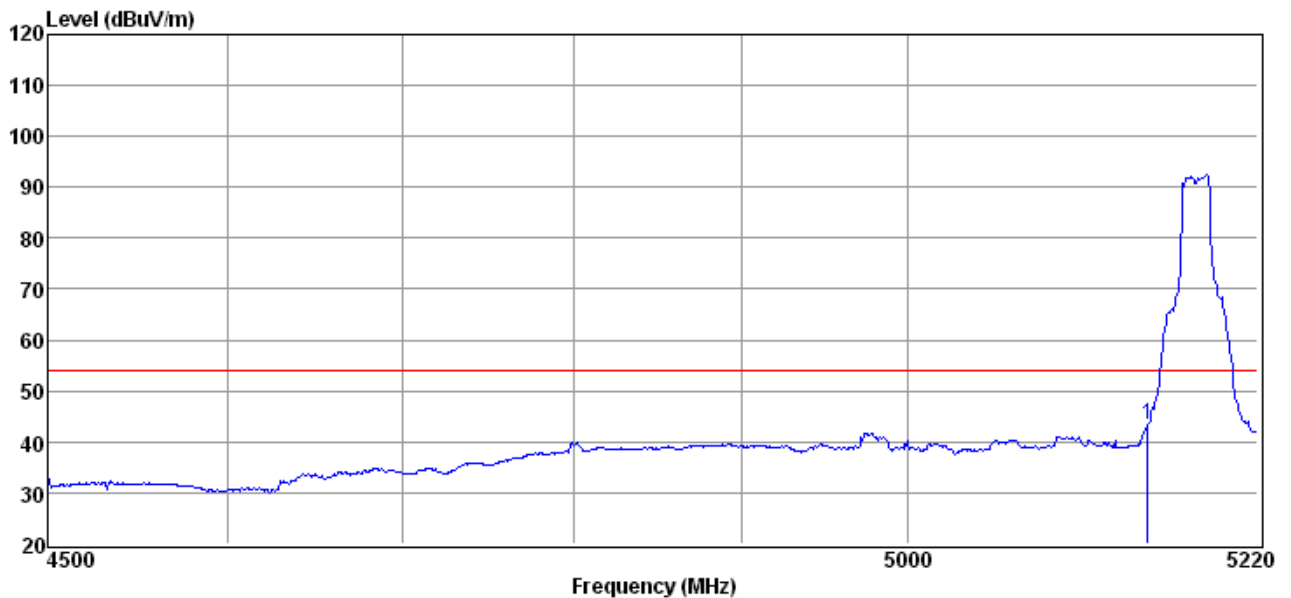
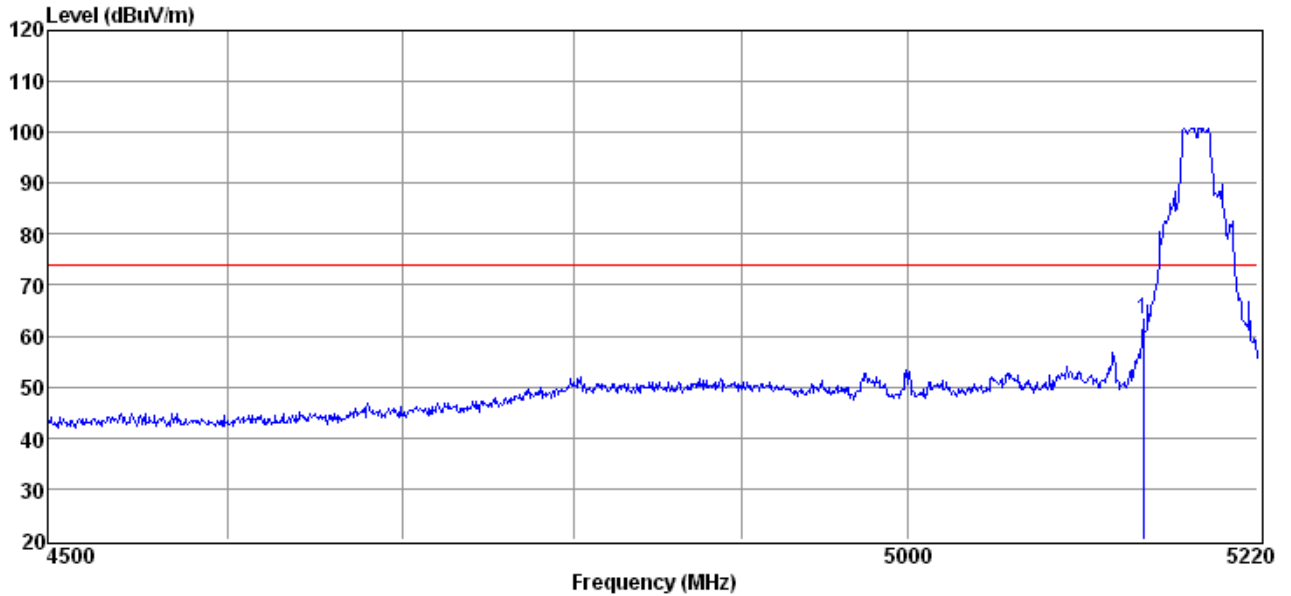
1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH36, HORIZONTAL)



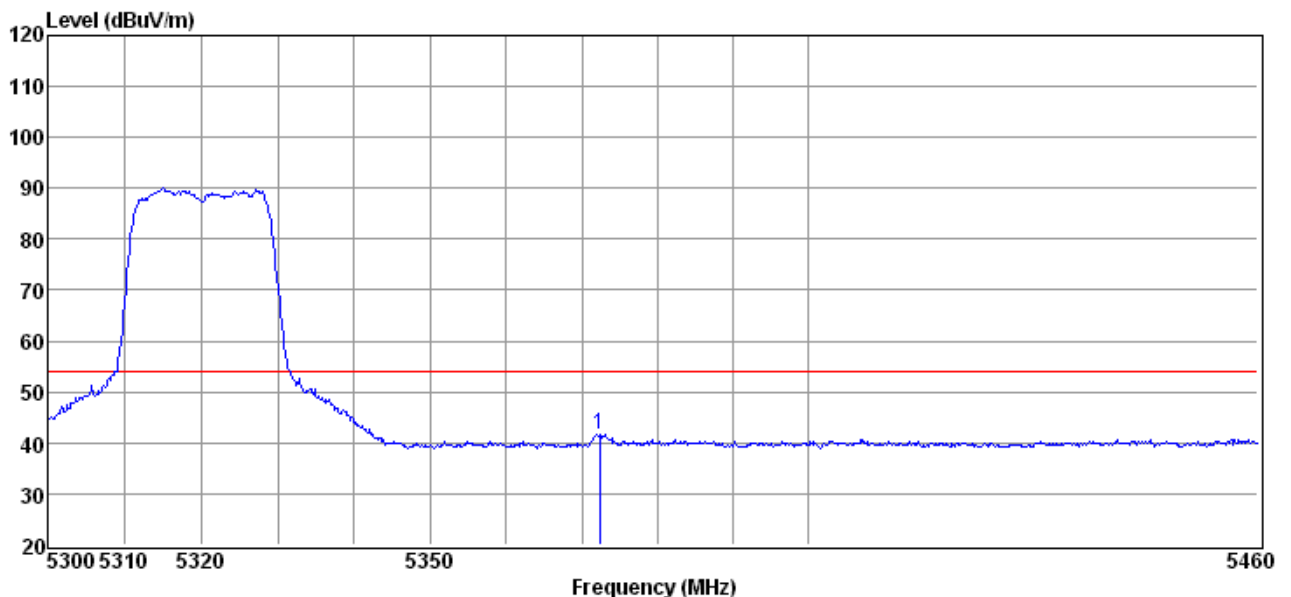
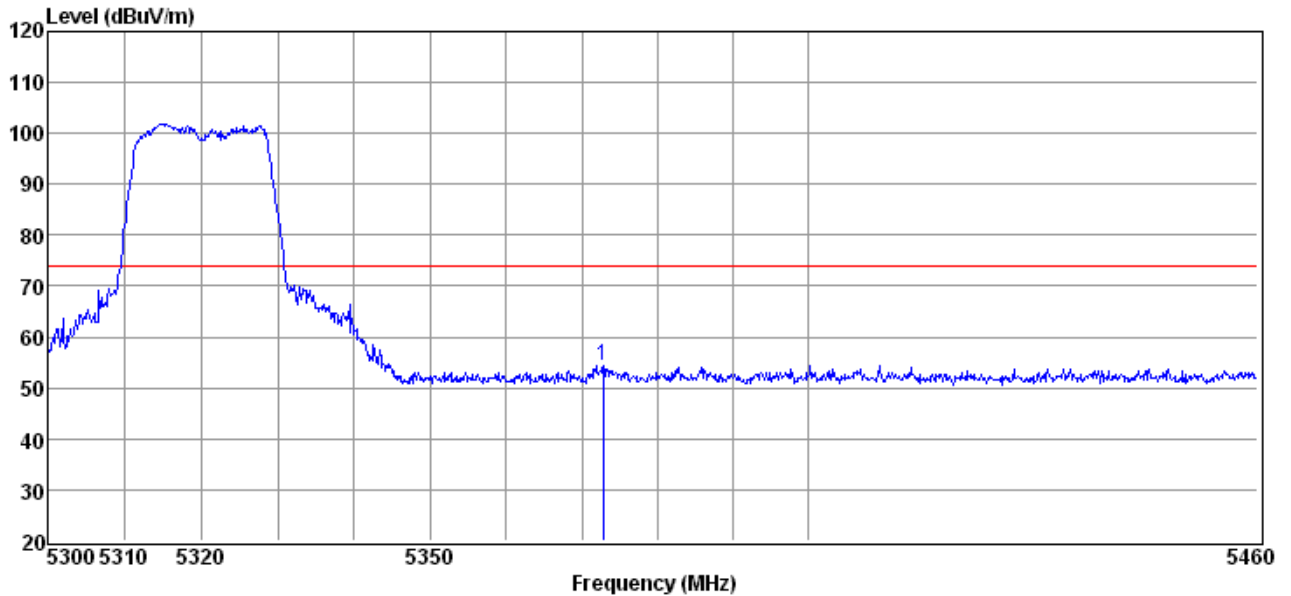


RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH36, VERTICAL)



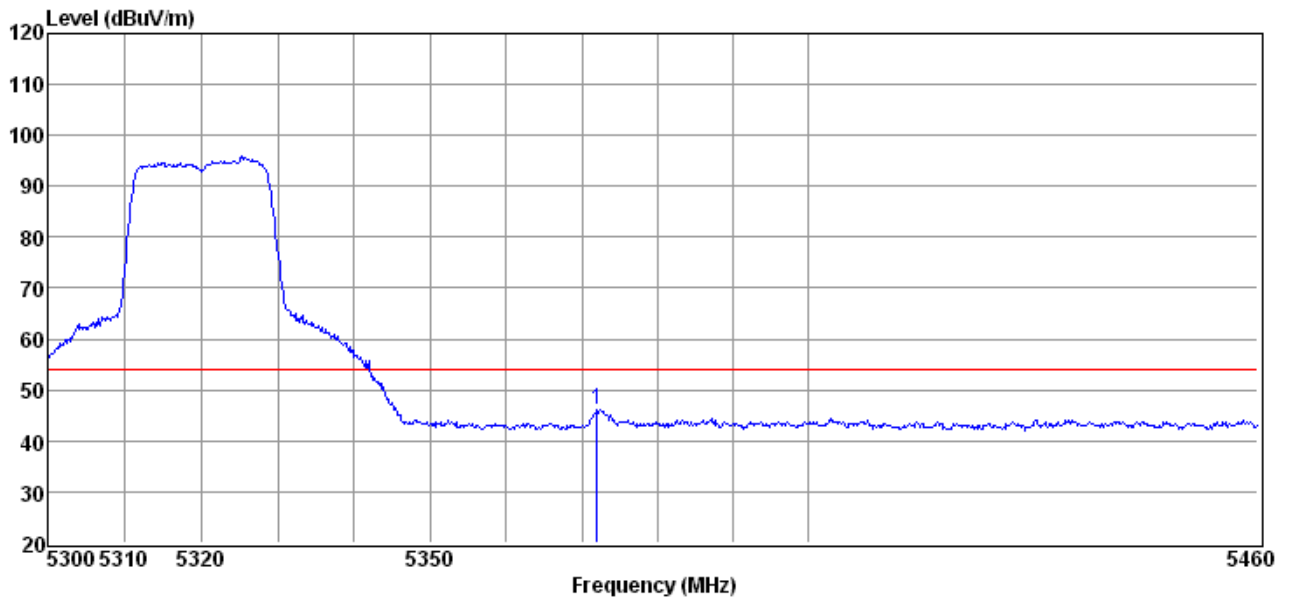
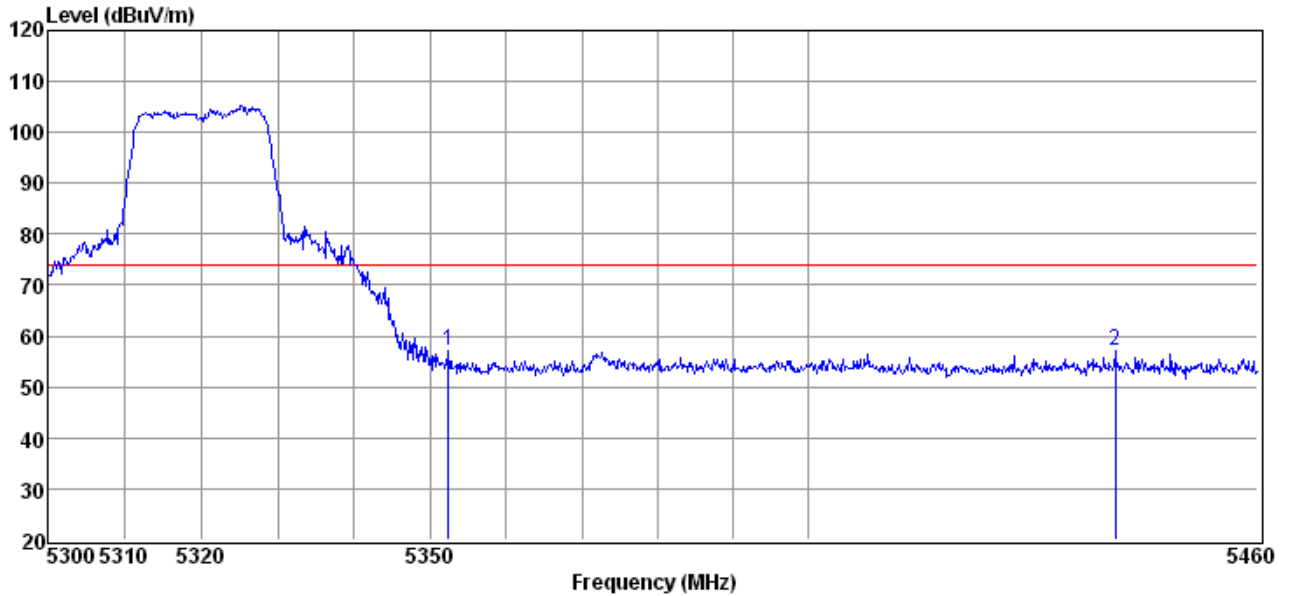


RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH64, HORIZONTAL)



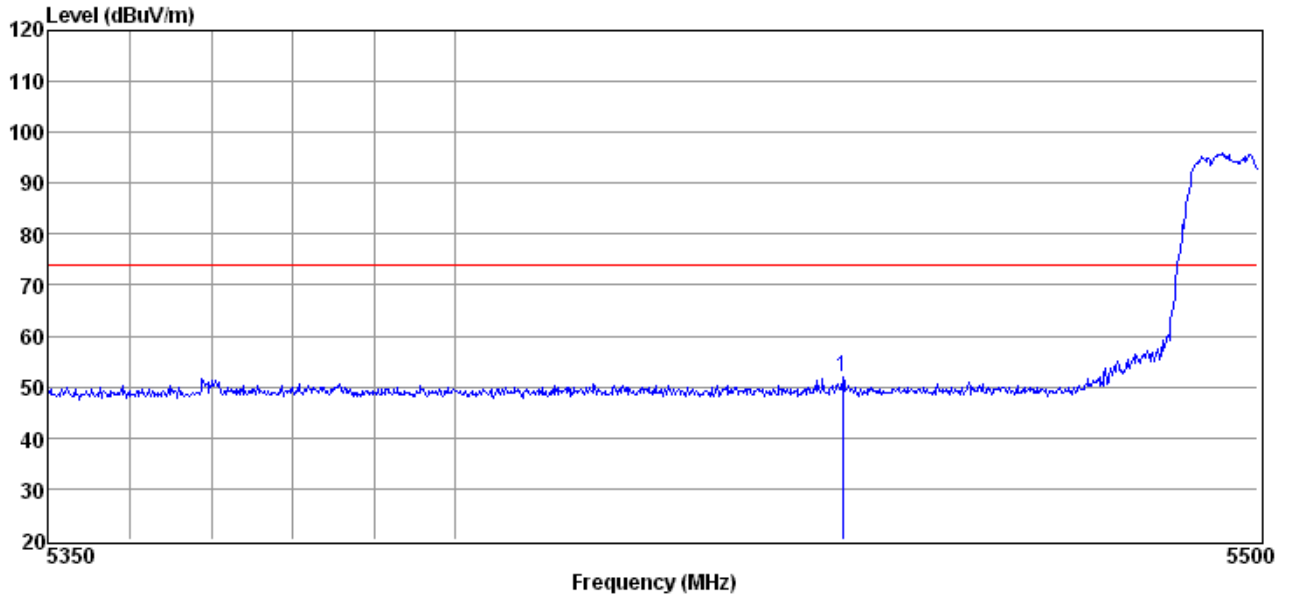


RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH64, VERTICAL)

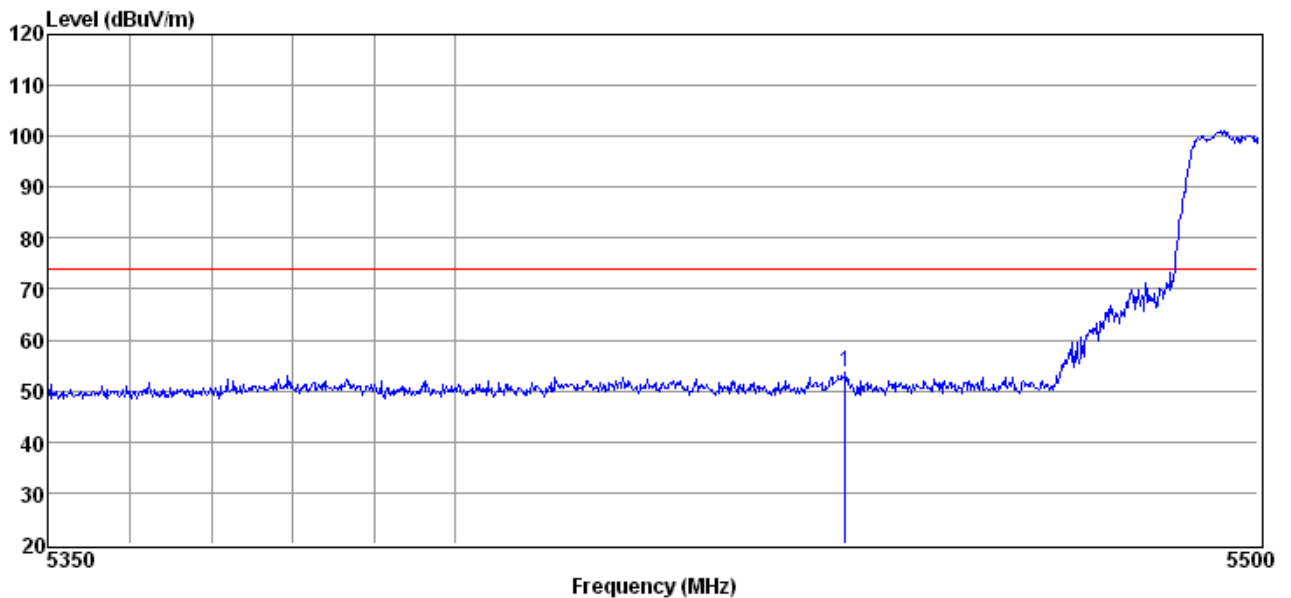




RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH100, HORIZONTAL)



RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH100, VERTICAL)





802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 38 (5190MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
5149.97	66.61	-0.22	66.39 PK	74.0	-7.61	Horizontal
5149.97	48.32	-0.22	48.10 AV	54.0	-5.90	Horizontal
#10380.00	36.8	5.6	42.4 PK	68.3	-25.9	Horizontal
5148.44	72.43	-0.22	72.21	74.0	-1.79	Vertical
5149.97	52.28	-0.22	52.06	54.0	-1.94	Vertical
#10380.00	38.6	5.6	44.2 PK	68.3	-24.1	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.
6. Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 46 (5230MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
#10460.00	38.3	5.8	44.1 PK	68.3	-24.2	Horizontal
#10460.00	40.6	5.8	46.4 PK	68.3	-21.9	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

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5. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 54 (5270MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
#10540.00	37.3	6.0	43.3 PK	68.3	-25	Horizontal
#10540.00	39.7	6.0	45.7 PK	68.3	-22.6	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 62(5310MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
5350.84	60.95	0.70	61.65 PK	74.0	-12.35	Horizontal
5350.84	52.72	0.70	53.42 AV	54.0	-0.58	Horizontal
11620.00	34.5	6.3	40.8 PK	74.0	-33.2	Horizontal
5350.68	71.49	0.70	72.19 PK	74.0	-1.81	Vertical
5350.37	46.47	0.77	47.24 AV	54.0	-6.76	Vertical
11620.00	37.2	6.3	43.5 PK	74.0	-30.5	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 102(5510MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
5429.58	49.70	1.06	50.76 PK	54.0 AV	-3.24	Horizontal
11020.00	33.6	6.7	40.3 PK	74.0	-33.7	Horizontal
5459.69	55.93	1.21	57.14 PK	74.0	-16.86	Vertical
5460.90	37.05	1.31	38.36 AV	54.0	-15.64	Vertical
11020.00	36.2	6.7	42.9 PK	74.0	-31.1	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.
6. Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 118(5590MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
11180.00	35.2	6.8	42.0 PK	74.0	-32.0	Horizontal
11180.00	36.4	6.8	43.2 PK	74.0	-30.8	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
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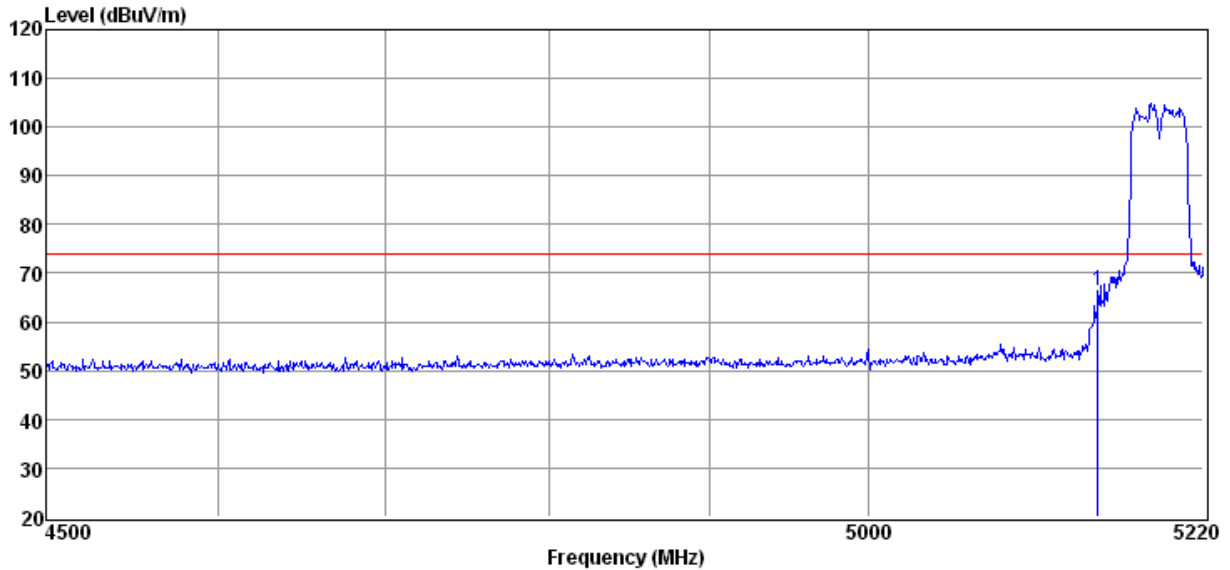
CHANNEL(Frequency)	Channel 134(5670MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With Dipole Antena Chain (111)		

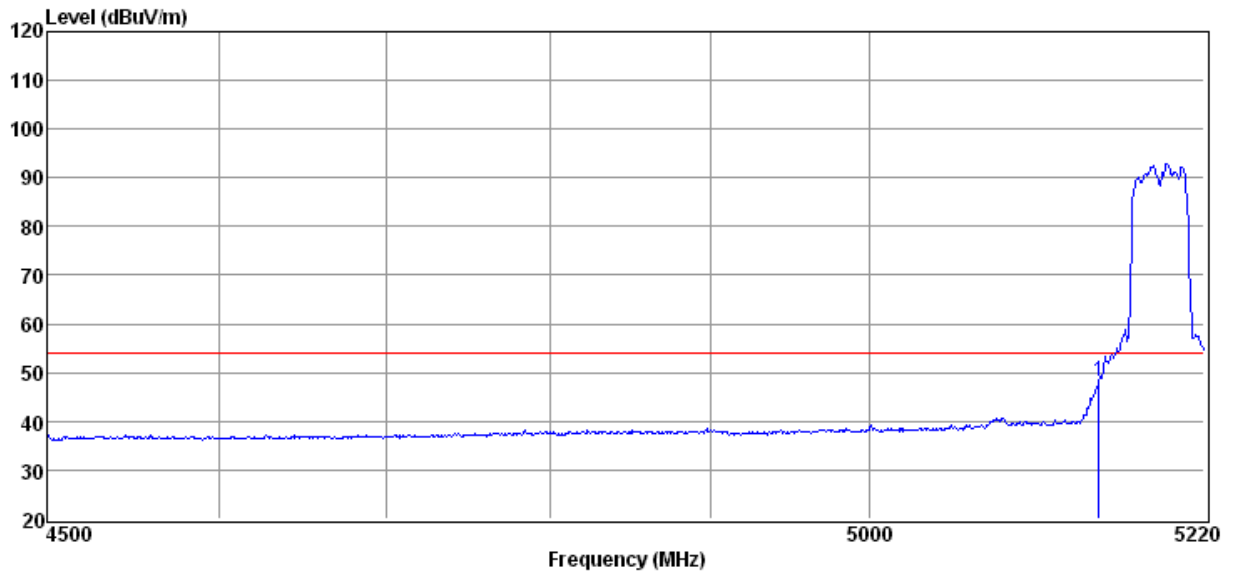
Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
11340.00	34.8	6.9	41.7 PK	74.0	32.3	Horizontal
11340.00	36.3	6.9	43.2 PK	74.0	30.8	Vertical

REMARKS:

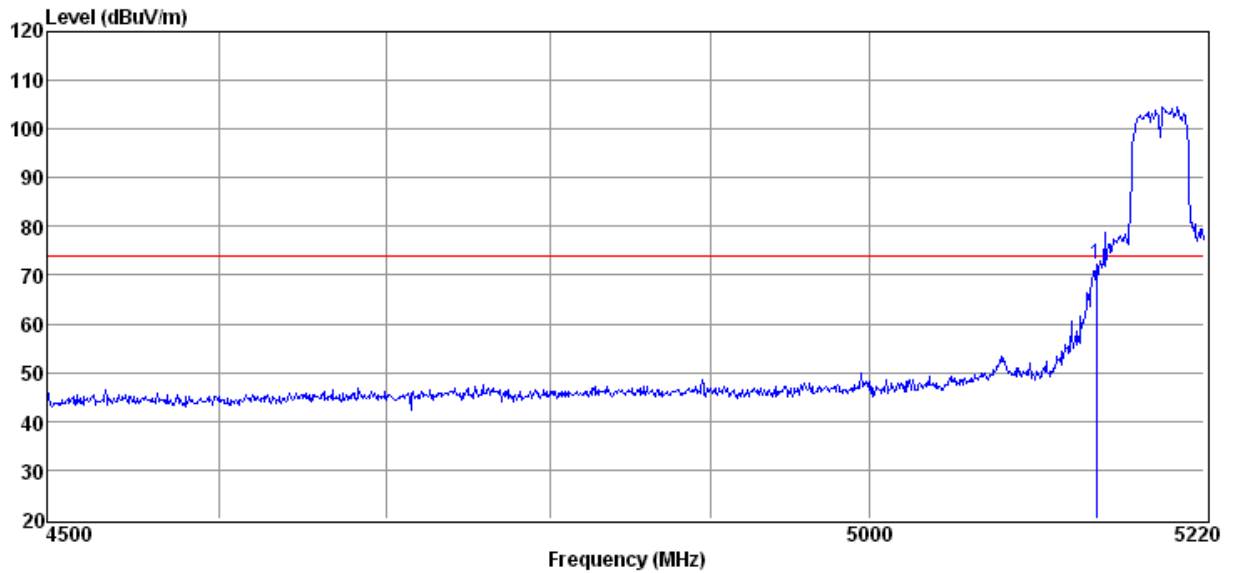
1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

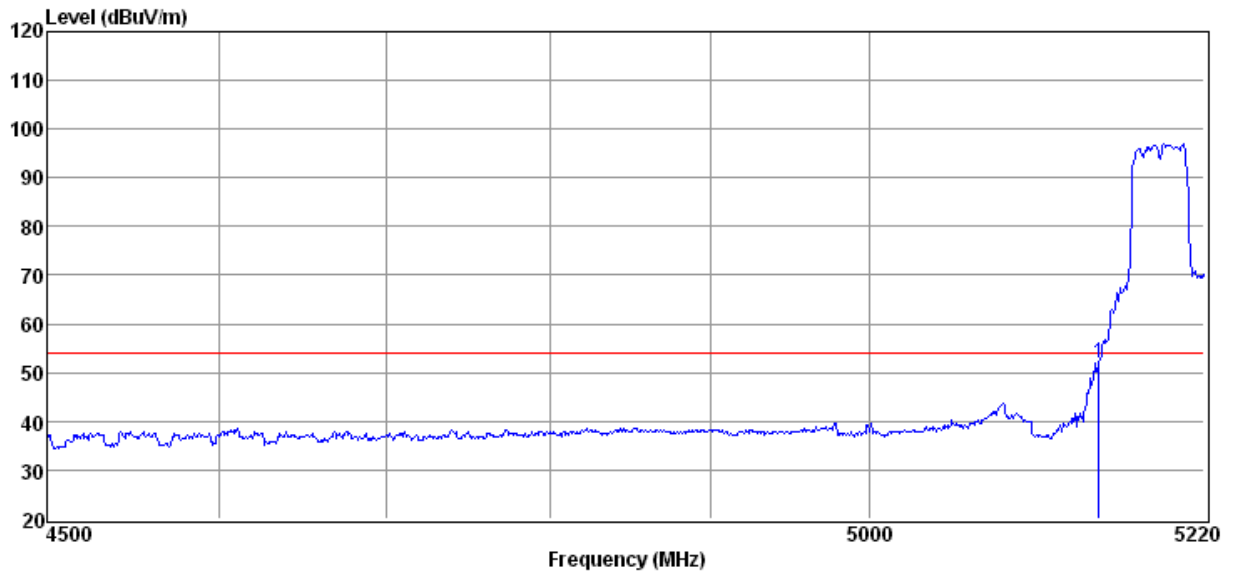
RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH38, HORIZONTAL)



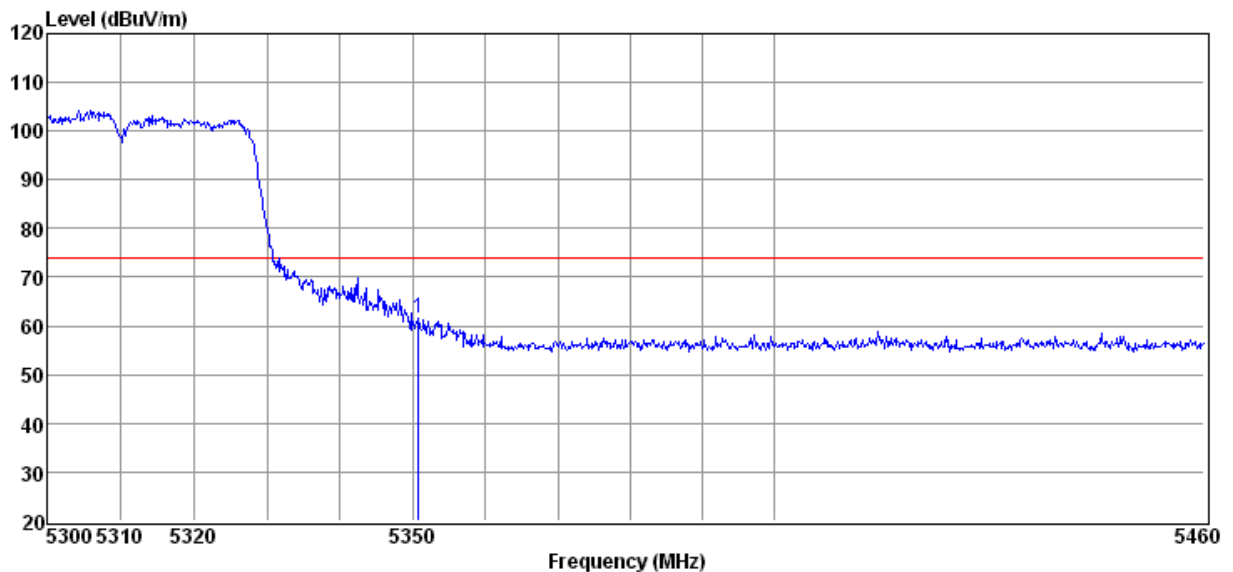


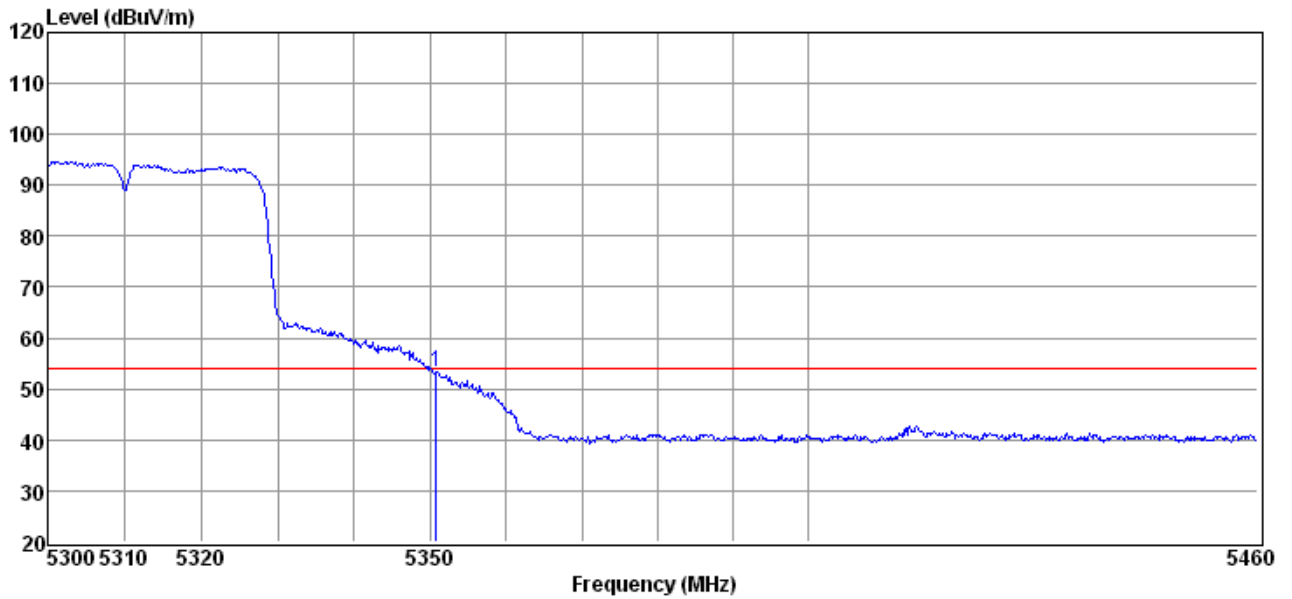
RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH38, VERTICAL)



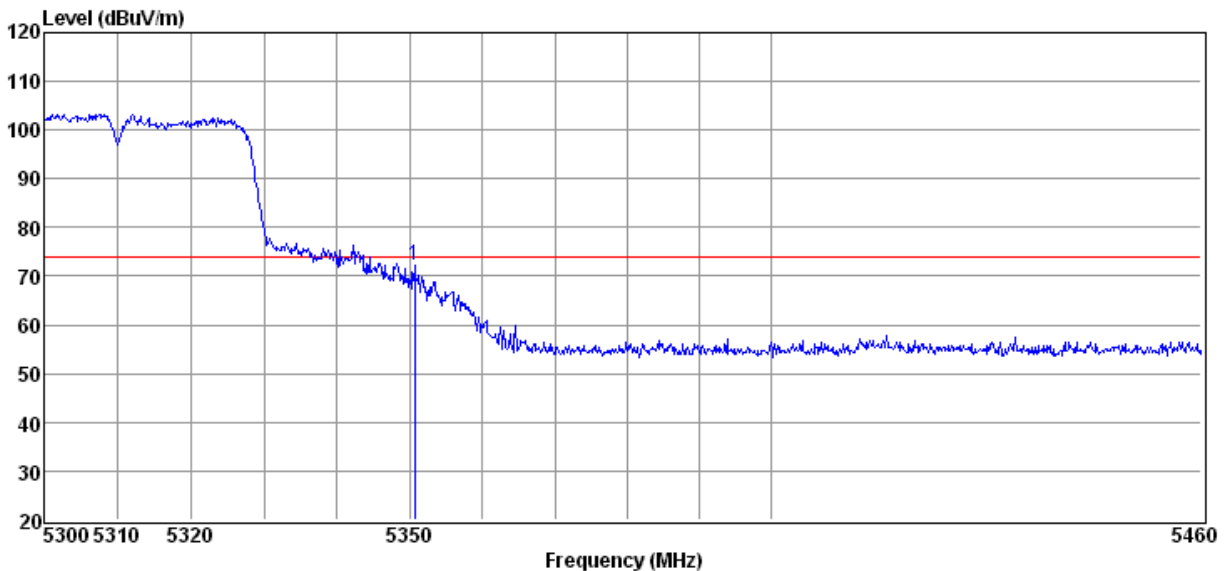


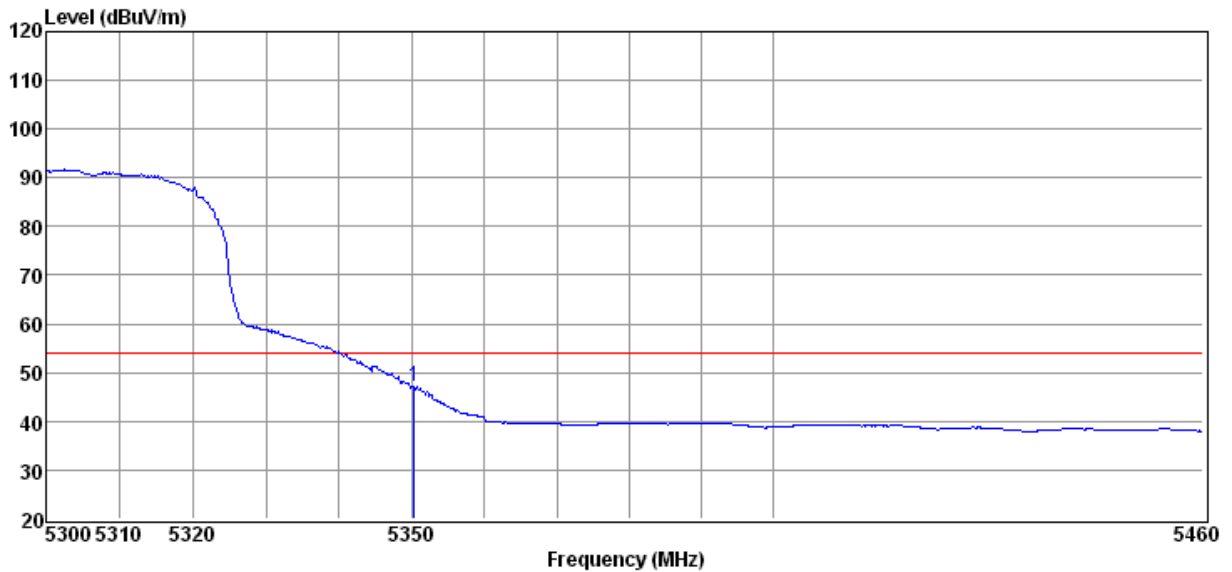
RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH62, HORIZONTAL)



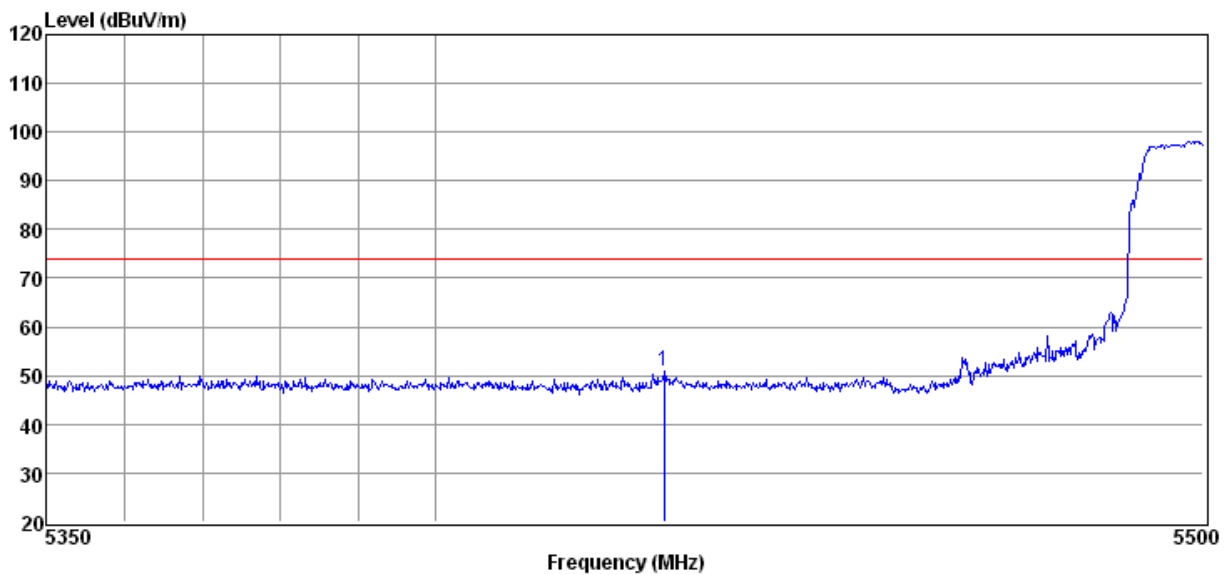


RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH62, VERTICAL)



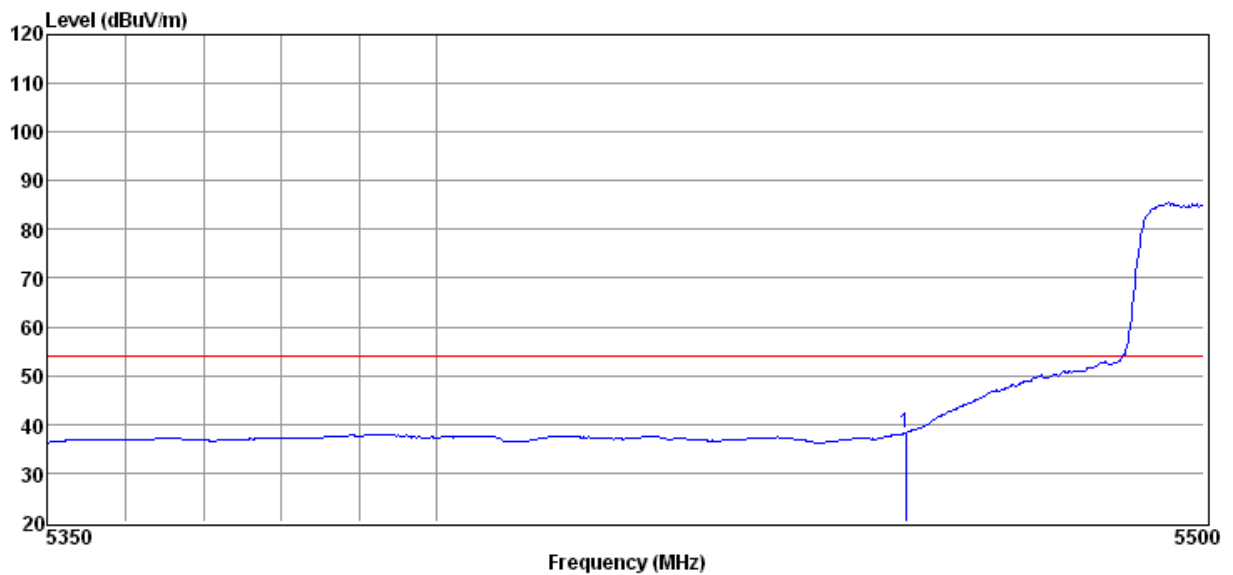
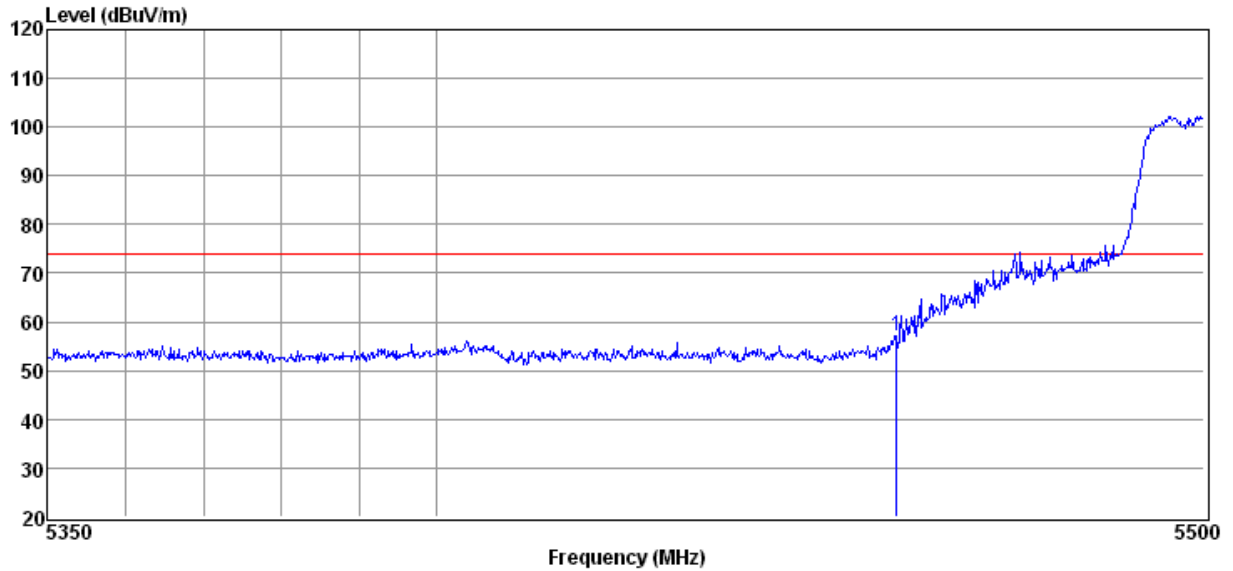


RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH102, HORIZONTAL)





RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH102, VERTICAL)





4.3.6.2 TEST RESULTS (With PCB Antenna)

BELOW 1GHz WORST-CASE DATA: 802.11n (40MHz) 6.5Mbps 5310MHz OFDM MODULATION

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
61.2354	42.7	-10.2	32.5	40.0	-7.5	Horizontal
81.2354	45.6	-13.2	32.4	40.0	-7.6	Horizontal
85.2681	43.0	-13.2	29.8	40.0	-10.2	Horizontal
201.0289	48.3	-10.0	39.1	43.5	-5.2	Horizontal
294.9186	51.1	-8.8	42.3	46.0	-2.7	Horizontal
899.9864	36.7	2.5	39.2	46.0	-6.8	Horizontal
60.7641	42.5	-10.2	32.3	40.0	-7.7	Vertical
69.1257	39.5	-11.4	28.1	40.0	-11.9	Vertical
112.2963	38.1	-11.1	27.0	43.5	-16.5	Vertical
202.2350	47.4	-12.0	35.4	43.5	-8.1	Vertical
700.0347	41.0	-0.2	40.8	46.0	-5.2	Vertical
900.0190	37.6	2.5	40.1	46.0	-5.9	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

Frequencies (MHz)	EIRP Limit (dBm)	Equivalent Field Strength at 3m (dBμV/m) *note 3
5150~5250	-27	68.3
5250~5350	-27	68.3
5470~5725	-27	68.3
5725~5825	-27 *note 1	68.3
	-17 *note 2	78.3

NOTE:

1. For frequencies 10MHz or greater above or below the band edge.
2. All emissions within the frequency range from the band edge to 10MHz above or below the band edge.

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3. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m}, \text{ where } P \text{ is the eirp (Watts)}$$

ABOVE 1GHz WORST-CASE DATA

802.11a OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 36 (5180MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
5149.97	57.75	-0.19	57.56 PK	74.0	-16.44	Horizontal
5127.85	40.57	-0.31	40.26 AV	54.0	-13.74	Horizontal
#10360.00	34.1	5.6	39.7 PK	68.3	-28.6	Horizontal
5127.85	52.94	-0.31	52.63 PK	74.0	-21.37	Vertical
#10360.00	36.5	5.6	42.1 PK	68.3	-26.2	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 40 (5200MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
#10400.00	35.1	5.7	40.8 PK	68.3	-27.5	Horizontal
#10400.00	36.7	5.7	42.4 PK	68.3	-25.9	Vertical

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REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 48 (5240MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
#10480.00	34.9	5.8	40.7 PK	68.3	-27.6	Horizontal
#10480.00	37.1	5.8	42.9 PK	68.3	-25.4	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 52 (5260MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
#10520.00	32.5	5.9	38.4 PK	68.3	-27.9	Horizontal
#10520.00	33.7	5.9	39.6 PK	68.3	-27.7	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.



CHANNEL(Frequency)	Channel 60 (5300MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
10600.00	32.4	6.0	38.4 PK	74.0	-35.6	Horizontal
10600.00	34.5	6.0	40.5 PK	74.0	-33.5	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 64(5320MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
5372.85	48.19	0.80	48.99 PK	54.0 AV	-5.01	Horizontal
10640.00	33.6	6.1	39.7 PK	74.0	-34.3	Horizontal
5372.37	50.22	0.80	51.02 PK	54.0 AV	-2.98	Vertical
10640.00	35.7	6.1	41.8 PK	74.0	-32.2	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).

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3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 100(5500MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
5458.19	45.87	1.21	47.08 PK	54.0 AV	-6.92	Horizontal
11000.00	33.0	6.7	39.7 PK	74.0	-34.3	Horizontal
5424.18	50.27	1.31	51.32 PK	54.0 AV	-2.68	Vertical
11000.00	35.2	6.7	41.9 PK	74.0	-32.1	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 120(5600MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
11200.00	35.7	6.8	42.5 PK	74.0	31.5	Horizontal
11200.00	36.8	6.8	43.6 PK	74.0	30.4	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 140(5700MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

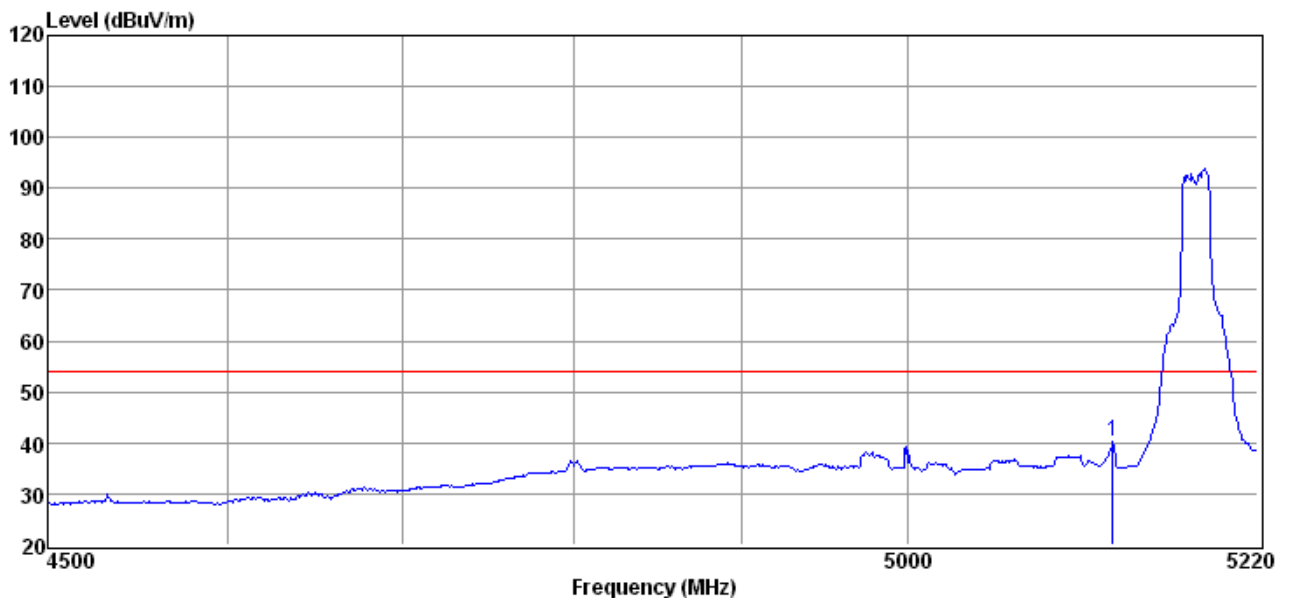
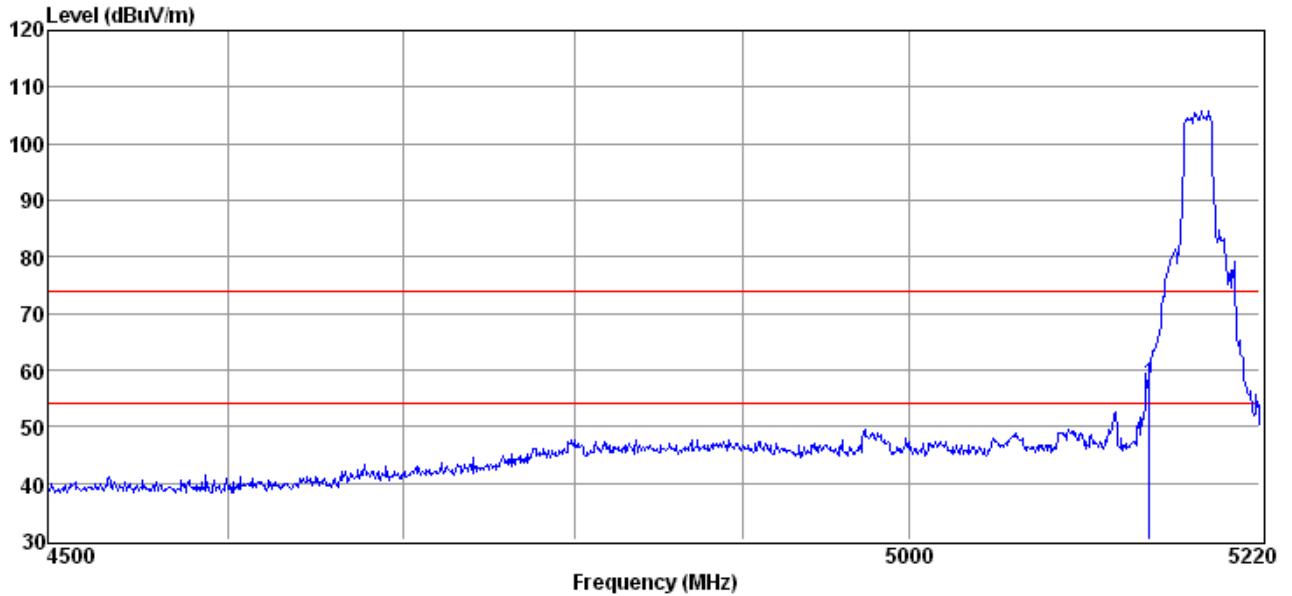
Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
11400.00	32.8	6.9	39.7 PK	74.0	-34.3	Horizontal
11400.00	33.6	6.9	40.5 PK	74.0	-33.5	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

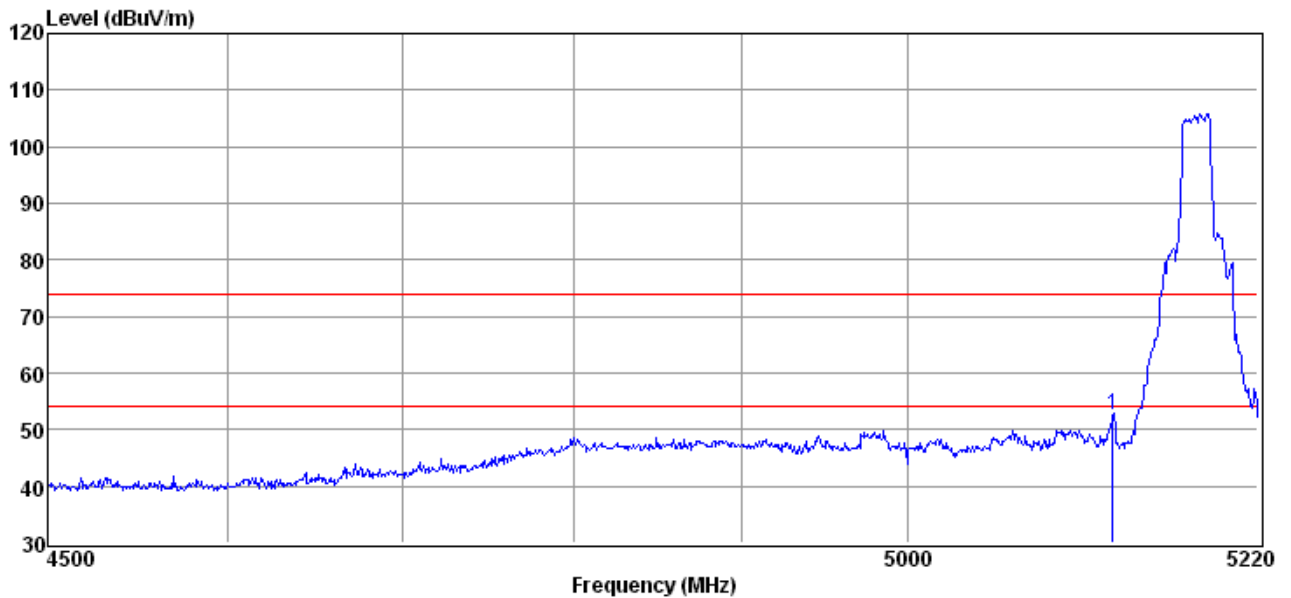


RESTRICTED BANDEDGE (802.11a MODE, CH36, HORIZONTAL)

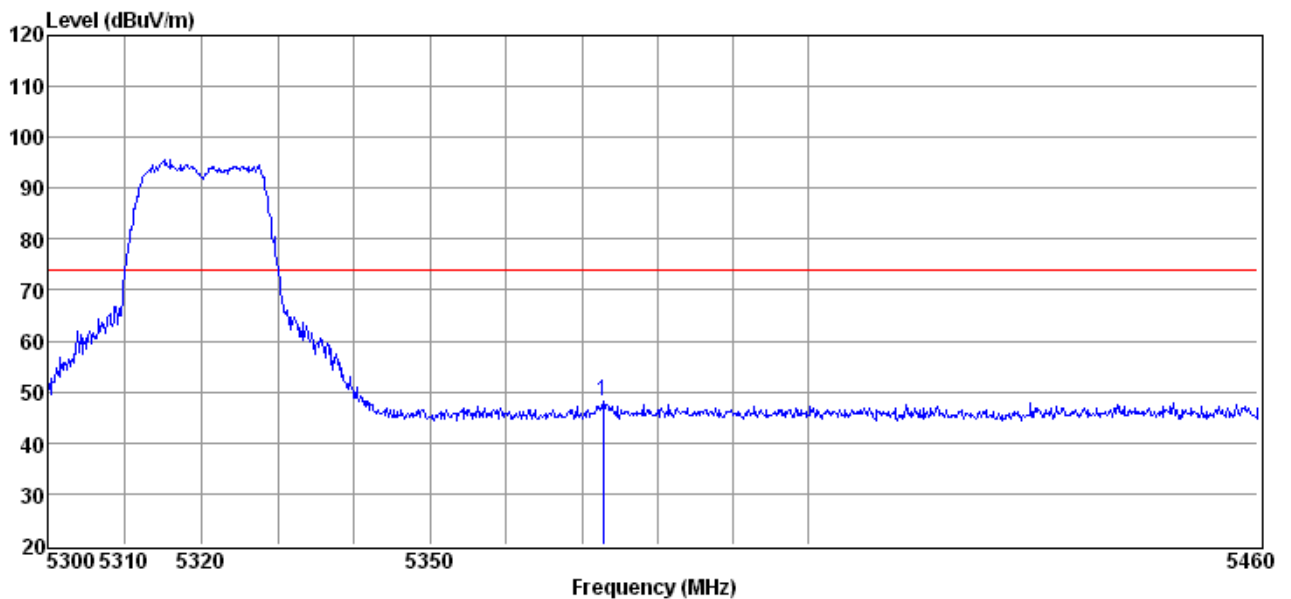




RESTRICTED BANDEDGE (802.11a MODE, CH36, VERTICAL)

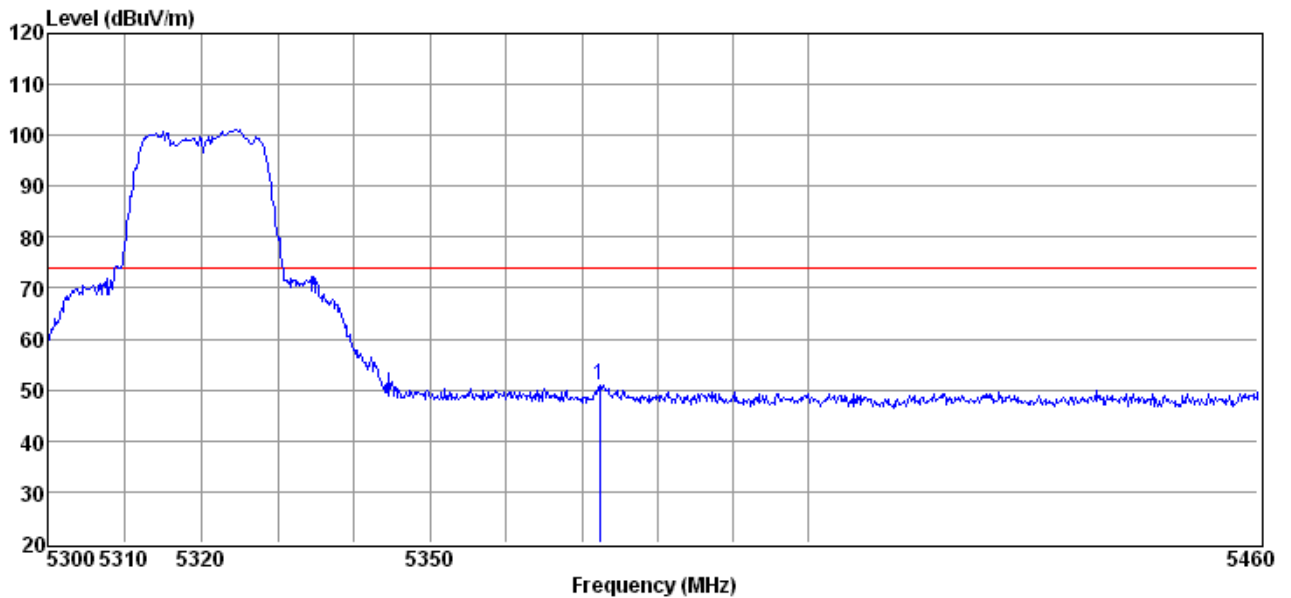


RESTRICTED BANDEDGE (802.11a MODE, CH64, HORIZONTAL)

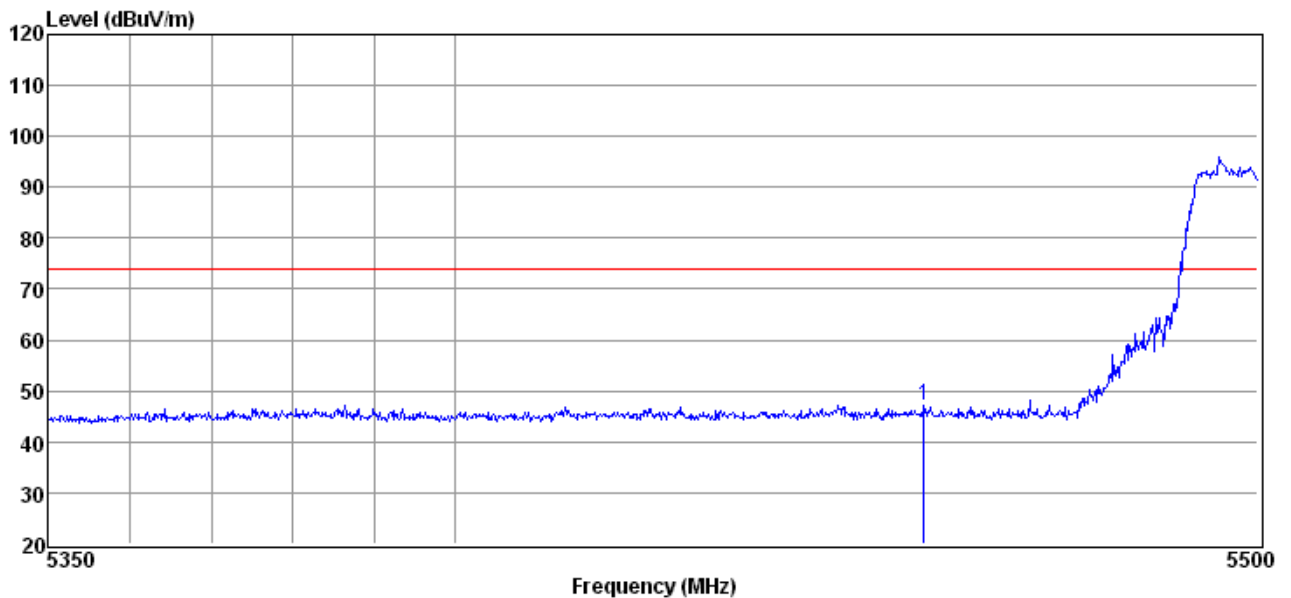




RESTRICTED BANDEDGE (802.11a MODE, CH64, VERTICAL)

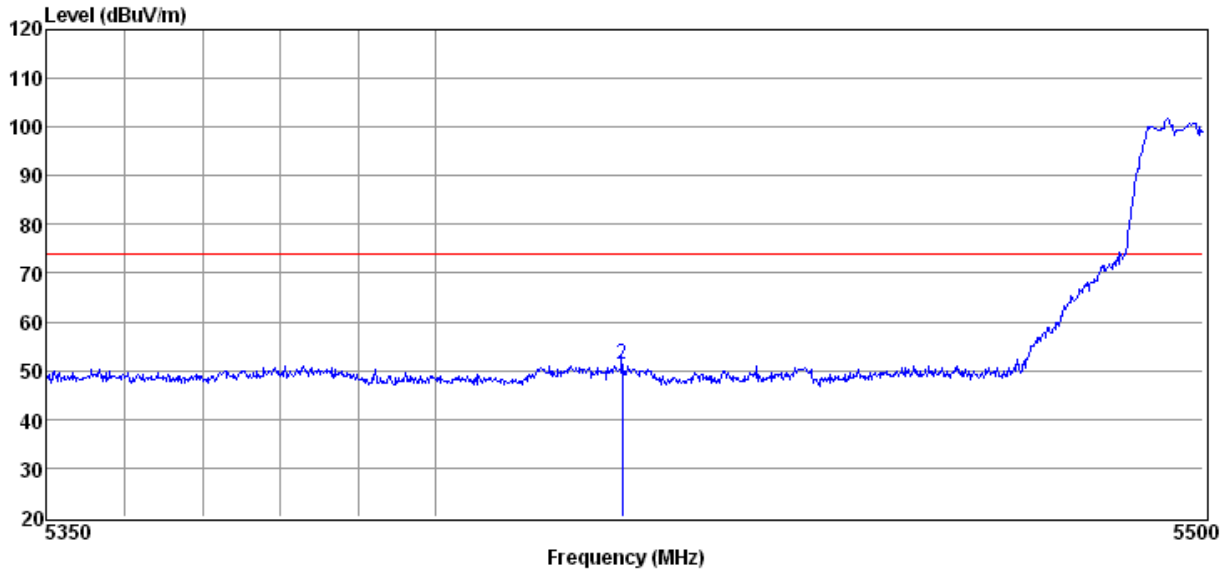


RESTRICTED BANDEDGE (802.11a MODE, CH100, HORIZONTAL)





RESTRICTED BANDEDGE (802.11a MODE, CH100, VERTICAL)



802.11n (20MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 36 (5180MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
5148.44	44.52	-0.21	44.31 PK	54.0 AV	-9.69	Horizontal
#10360.00	36	5.6	41.6 PK	68.3	-26.7	Horizontal
5149.97	62.10	-0.19	61.91 PK	74.0	-12.09	Vertical
5127.85	39.91	-0.31	39.60 AV	54.0	-14.40	Vertical
#10360.00	37.4	5.6	43.0 PK	68.3	-25.3	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.
6. Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 40 (5200MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
#10400.00	37.6	5.7	42.3 PK	68.3	-26.0	Horizontal
#10400.00	38.5	5.7	44.2 PK	68.3	-24.1	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 48 (5240MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
#10480.00	36.4	5.8	42.2 PK	68.3	-26.1	Horizontal
#10480.00	37.9	5.8	43.7 PK	68.3	-24.6	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 52 (5260MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dB μ V)	Correction Factor (dB/m)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Antenna Polarization
#10520.00	35.8	5.9	41.7 PK	68.3	-26.6	Horizontal
#10520.00	37.3	5.9	43.2 PK	68.3	-25.1	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.

CHANNEL(Frequency)	Channel 60 (5300MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dB μ V)	Correction Factor (dB/m)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Antenna Polarization
10600.00	32.6	6.0	38.6 PK	74.0	-35.4	Horizontal
10600.00	34.9	6.0	40.9 PK	74.0	-33.1	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 64(5320MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dB μ V)	Correction Factor (dB/m)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Antenna Polarization
5400.25	51.37	0.94	52.31 PK	54.0 AV	-1.69	Horizontal
10640.00	33.4	6.1	39.5 PK	74.0	-34.5	Horizontal
5350.52	52.69	0.70	53.69 PK	54.0 AV	-0.31	Vertical
10640.00	35.5	6.1	41.6 PK	74.0	-32.4	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 100(5500MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dB μ V)	Correction Factor (dB/m)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Antenna Polarization
5447.63	44.23	1.24	45.47 PK	54.0 AV	-8.53	Horizontal
5460.15	42.14	1.30	43.44 PK	54.0 AV	-10.56	Horizontal
11000.00	33.6	6.7	40.3 PK	74.0	-33.7	Horizontal
5460.00	42.84	1.30	44.14 PK	54.0 AV	-9.86	Vertical
11000.00	35.6	6.7	42.3 PK	74.0	-31.7	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.



4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.
6. Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 120(5600MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
11200.00	35.0	6.8	41.8 PK	74.0	-32.2	Horizontal
11200.00	36.1	6.8	42.9 PK	74.0	-31.1	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 140(5700MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

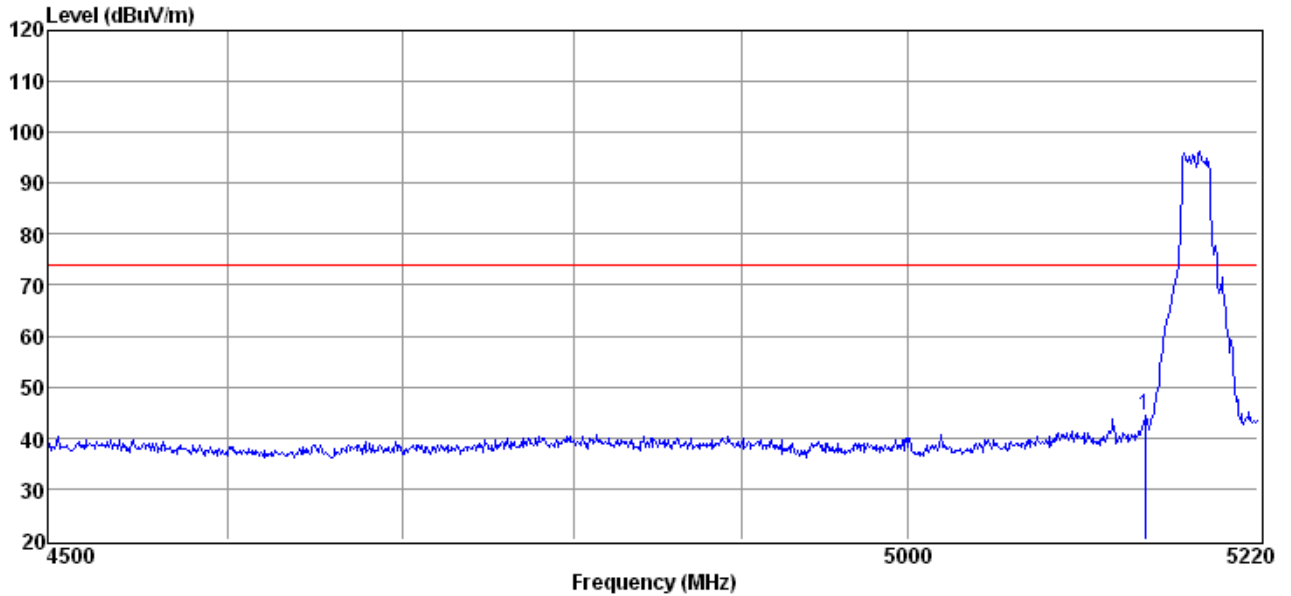
Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
11400.00	34.6	6.9	41.5 PK	74.0	32.5	Horizontal
11400.00	36.9	6.9	43.8 PK	74.0	30.2	Vertical

REMARKS:

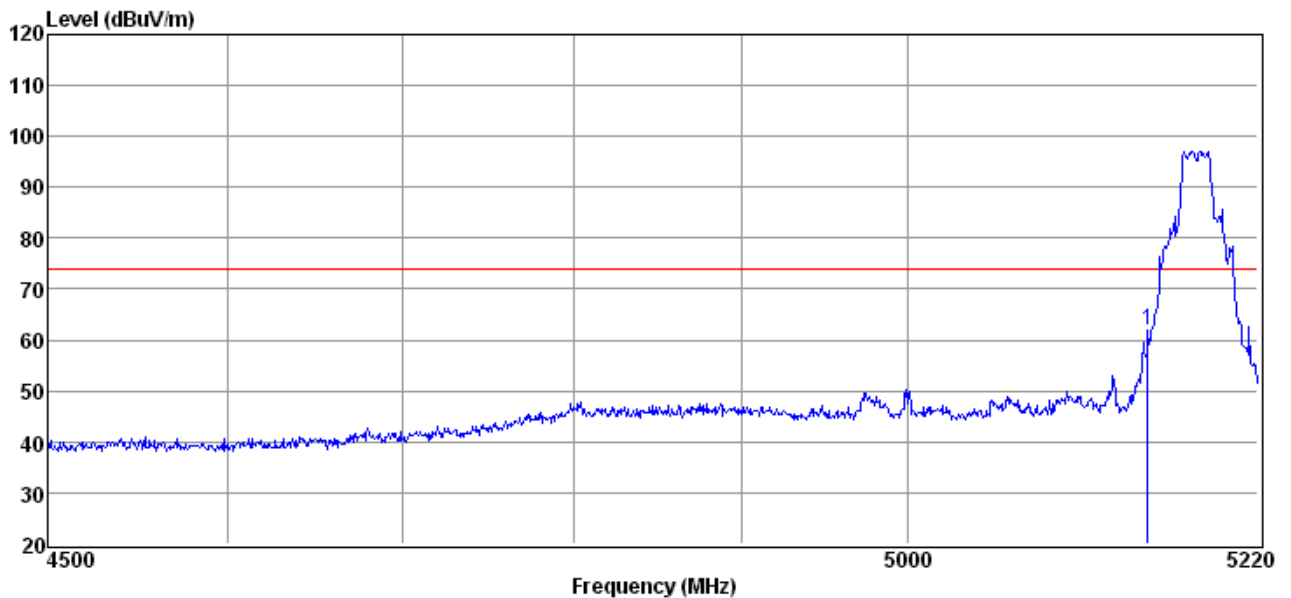
1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

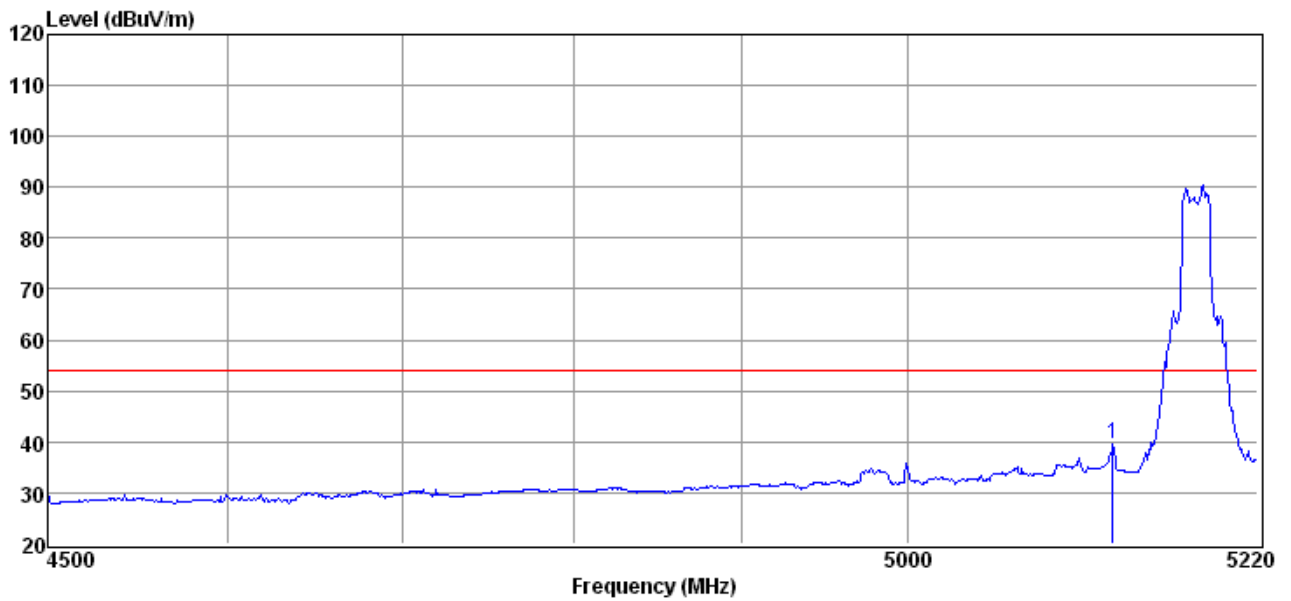


RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH36, HORIZONTAL)

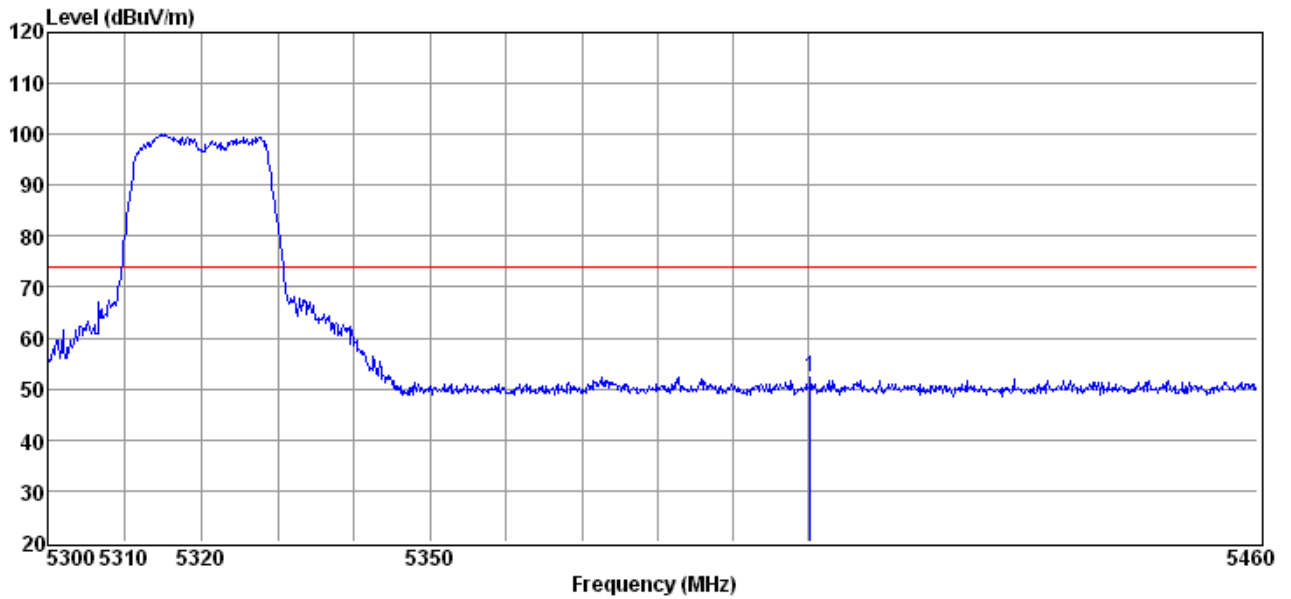


RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH36, VERTICAL)



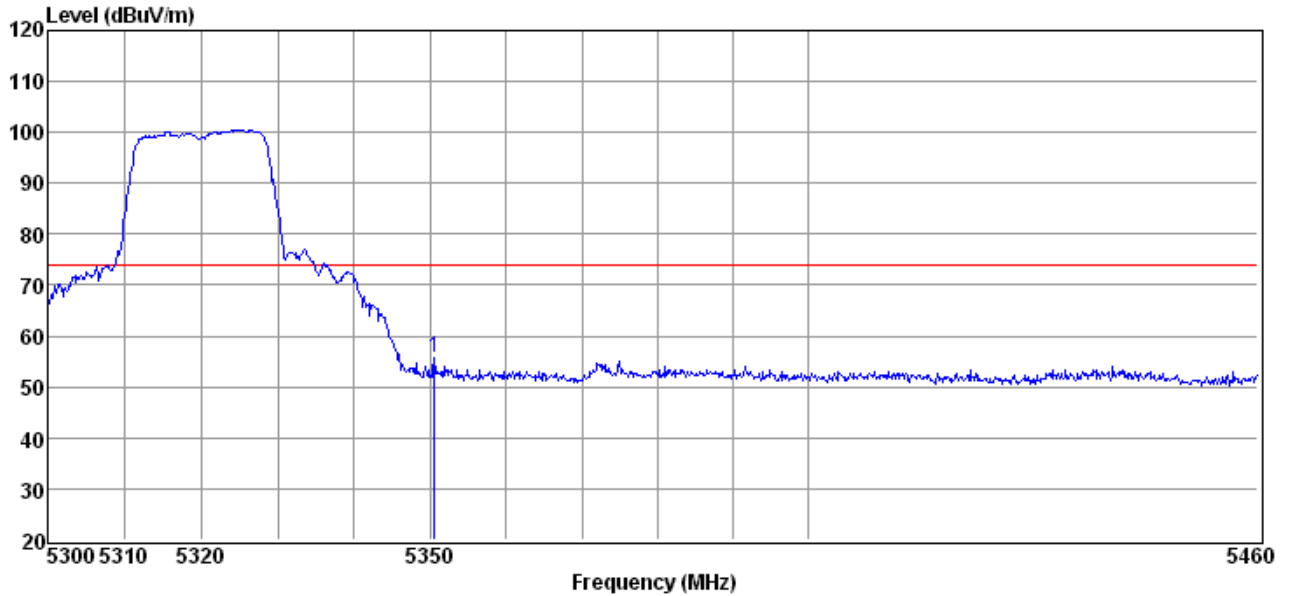


RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH64, HORIZONTAL)

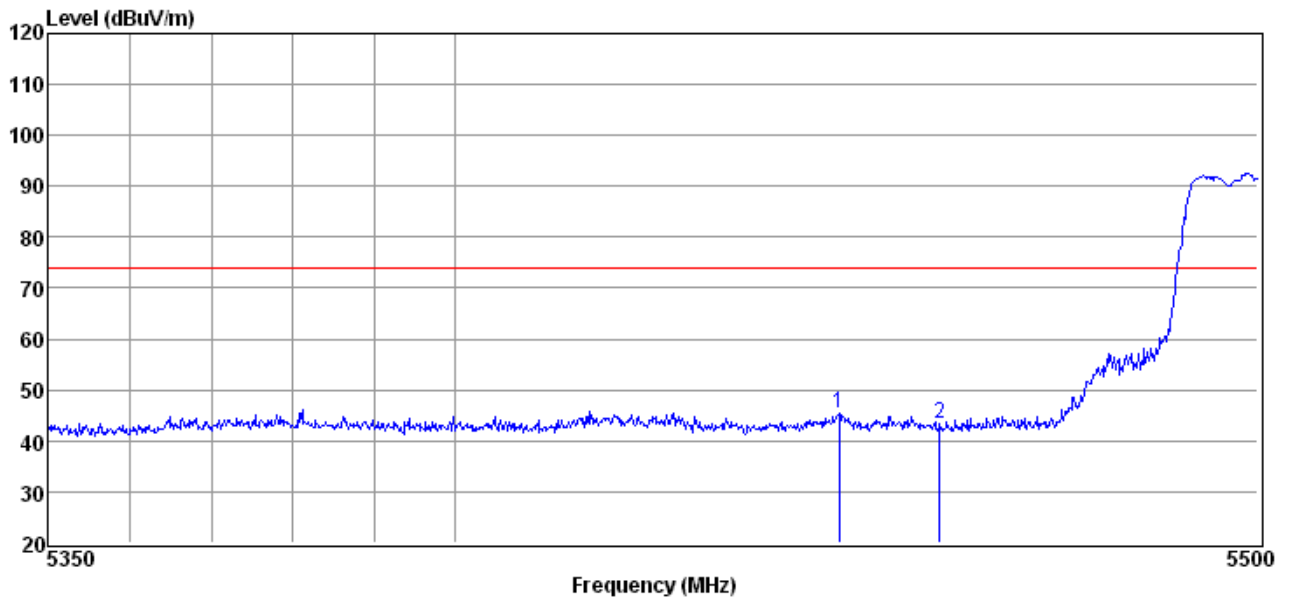




RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH64, VERTICAL)

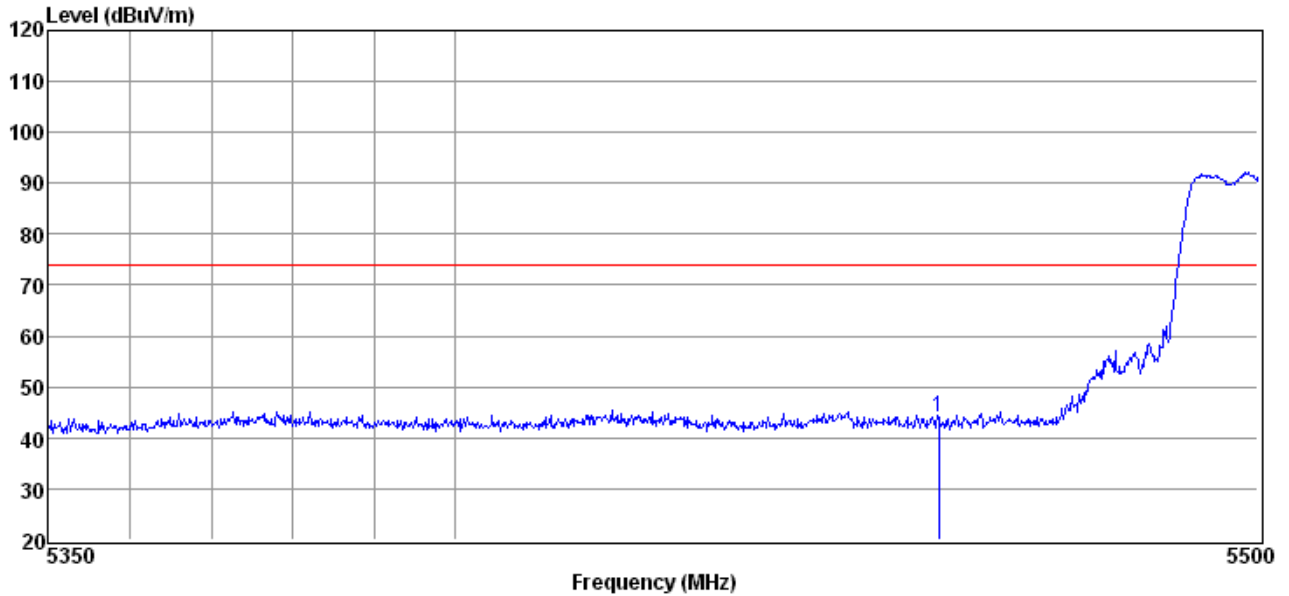


RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH100, HORIZONTAL)





RESTRICTED BANDEDGE (802.11n (20MHz) MODE,CH100, VERTICAL)



802.11n (40MHz) OFDM MODULATION

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 38 (5190MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
5149.97	64.61	-0.22	64.39 PK	74.0	-9.61	Horizontal
5149.97	49.83	-0.22	49.61 AV	54.0	-4.39	Horizontal
#10380.00	36.8	5.6	42.4 PK	68.3	-25.9	Horizontal
5147.68	73.12	-0.24	72.88	74.0	-1.12	Vertical
5149.97	52.21	-0.22	51.99	54.0	-2.01	Vertical
#10380.00	38.6	5.6	44.2 PK	68.3	-24.1	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.
6. Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.

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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 46 (5230MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
#10460.00	37.6	5.8	43.4 PK	68.3	-24.9	Horizontal
#10460.00	39.3	5.8	45.1 PK	68.3	-23.2	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 54 (5270MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
#10540.00	36.7	6.0	42.7 PK	68.3	-25.6	Horizontal
#10540.00	38.5	6.0	44.5 PK	68.3	-23.8	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 62(5310MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
5354.50	68.07	0.72	68.79 PK	74.0	-5.21	Horizontal
5350.05	51.41	0.70	52.11 AV	54.0	-1.89	Horizontal
11620.00	34.5	6.3	40.8 PK	74.0	-33.2	Horizontal
5350.84	67.25	0.70	67.95 PK	74.0	-6.05	Vertical
5350.37	45.47	46.24	46.24 AV	54.0	-7.76	Vertical
11620.00	37.2	6.3	43.5 PK	74.0	-30.5	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 102(5510MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dBμV)	Correction Factor (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna Polarization
5369.56	49.17	0.79	49.96 PK	54.0 AV	-4.04	Horizontal
11020.00	33.6	6.7	40.3 PK	74.0	-33.7	Horizontal
5399.64	54.48	0.94	55.42 PK	74.0	-18.58	Vertical
5406.81	43.77	0.96	44.73 AV	54.0	-9.27	Vertical
11020.00	36.2	6.7	42.9 PK	74.0	-31.1	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).

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2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.
6. Note: If the test result on peak is lower than average limit, then average measurement needn't be performed.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 118(5590MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

Frequency (MHz)	Reading Value (dB μ V)	Correction Factor (dB/m)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Antenna Polarization
11180.00	35.5	6.8	42.3 PK	74.0	-31.7	Horizontal
11180.00	37.0	6.8	43.8 PK	74.0	-30.2	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL(Frequency)	Channel 134(5670MHz)	FREQUENCY RANGE	1 ~ 40GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
TEST MODE	With PCB Antena Chain (111)		

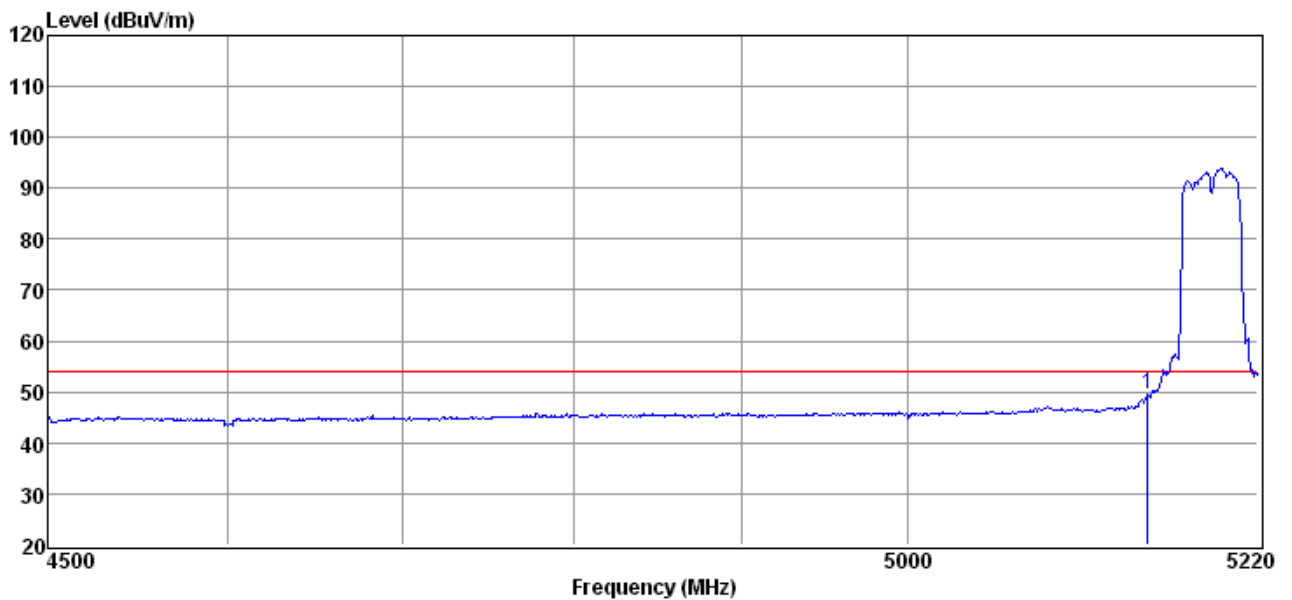
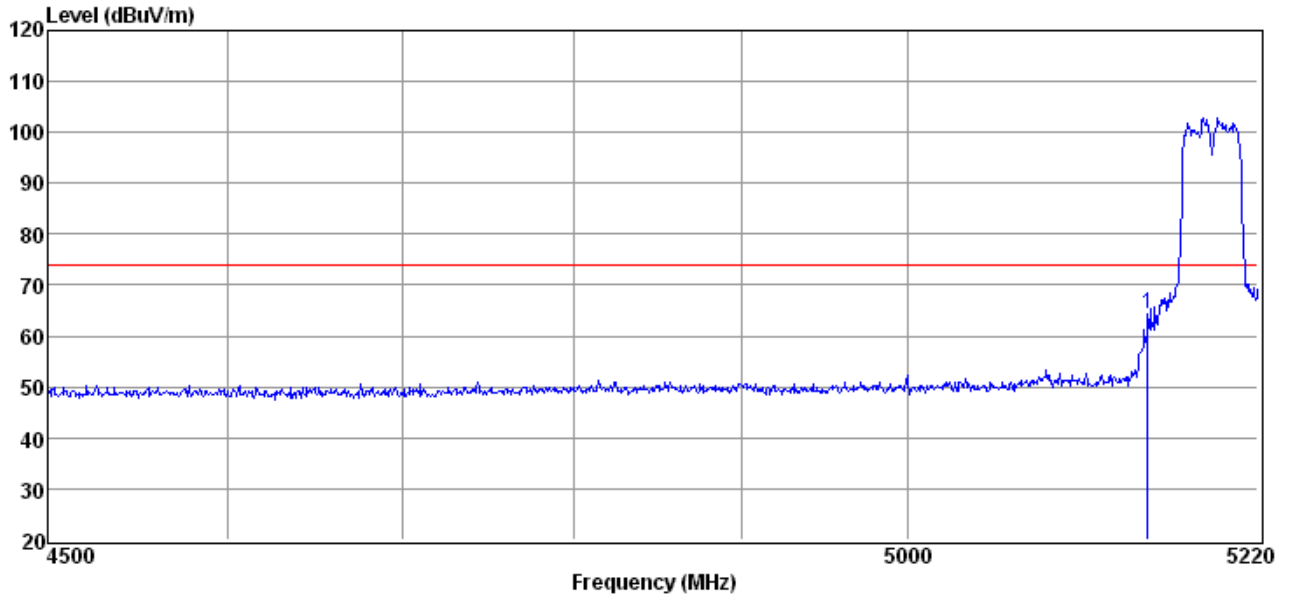
Frequency (MHz)	Reading Value (dB μ V)	Correction Factor (dB/m)	Emission Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Antenna Polarization
11340.00	35.0	6.9	41.9 PK	74.0	32.1	Horizontal
11340.00	36.8	6.9	43.7 PK	74.0	30.3	Vertical

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

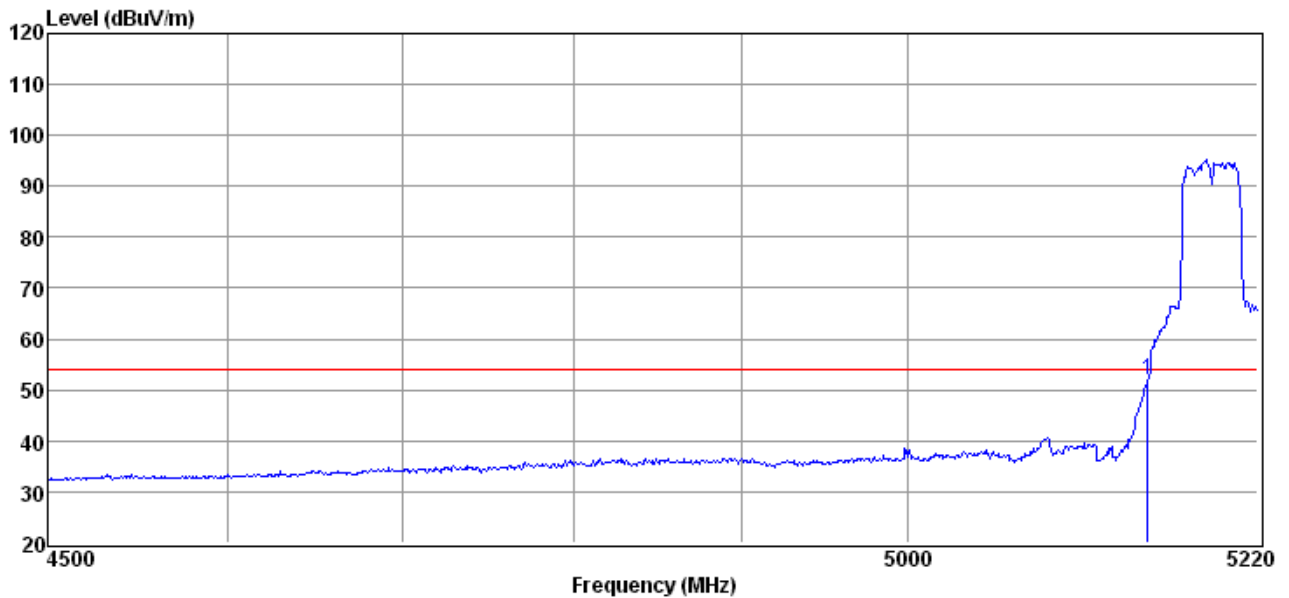
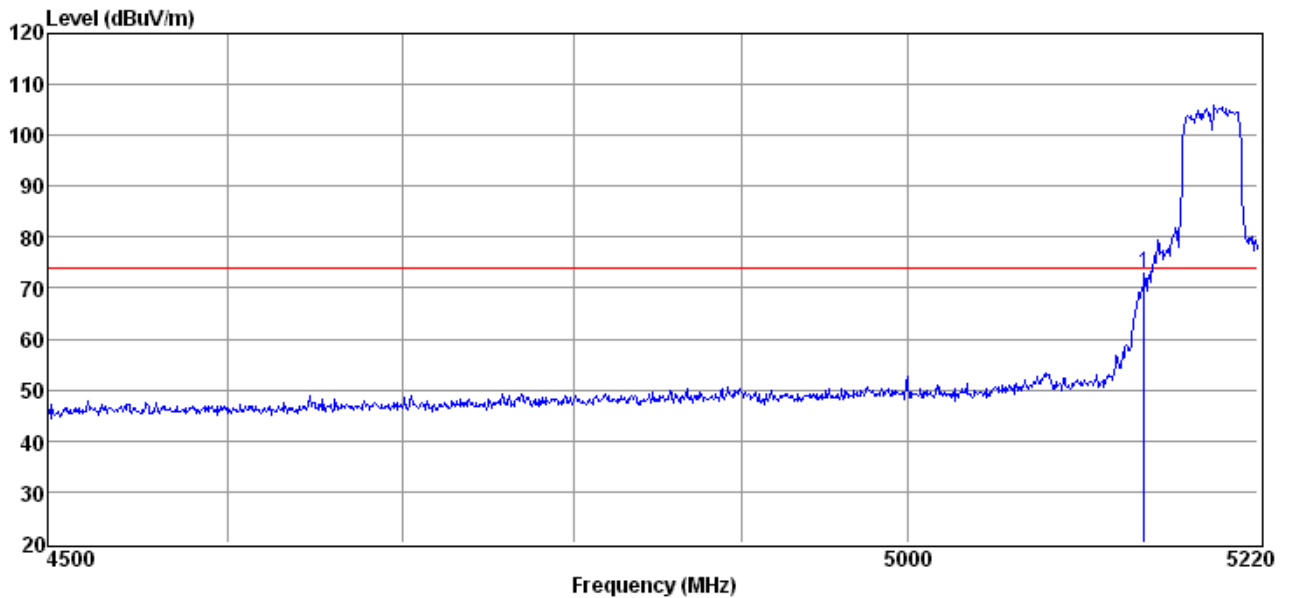


RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH38, HORIZONTAL)



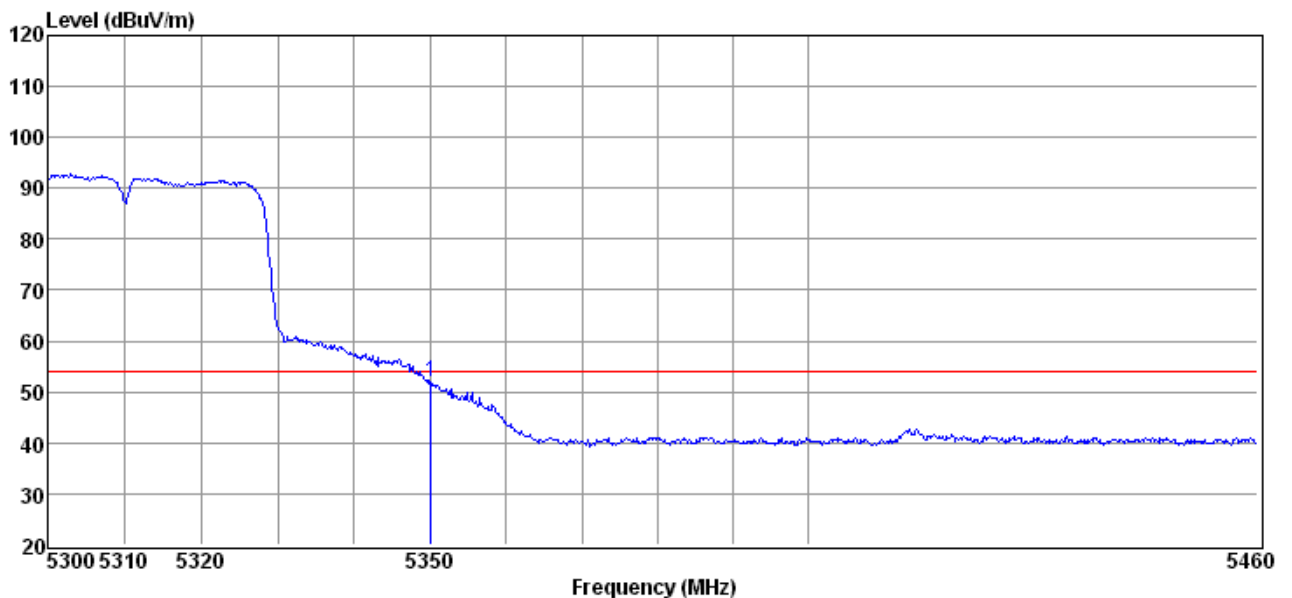
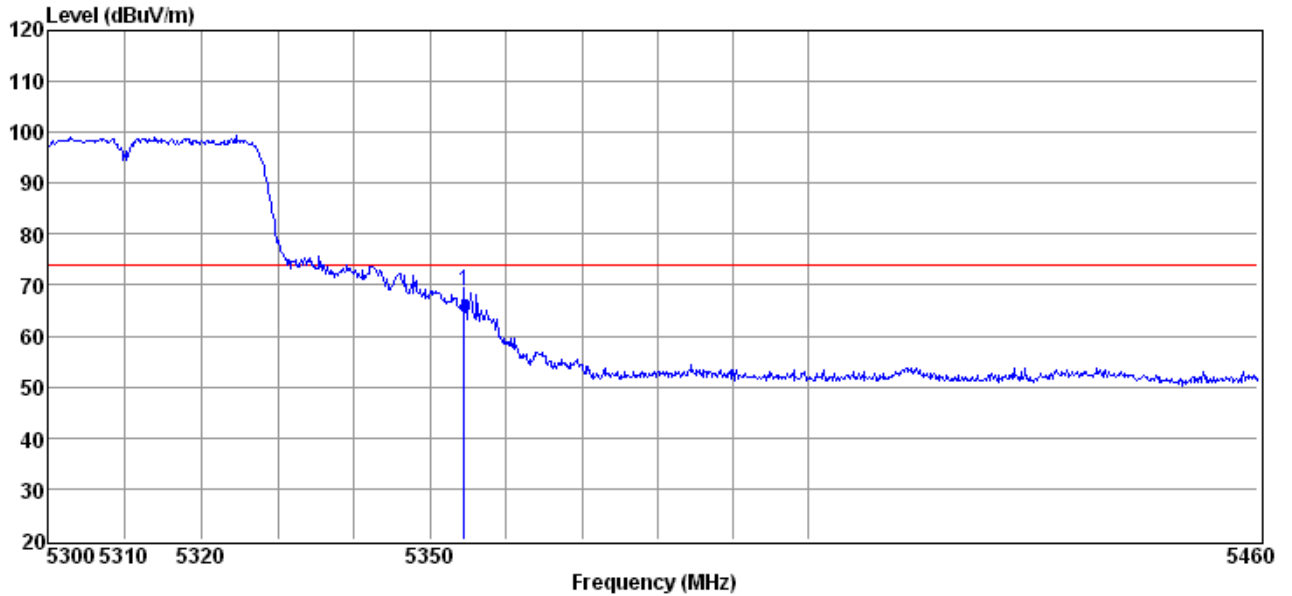


RESTRICTED BANDEDGE (802.11n (40MHz) MODE,CH38, VERTICAL)



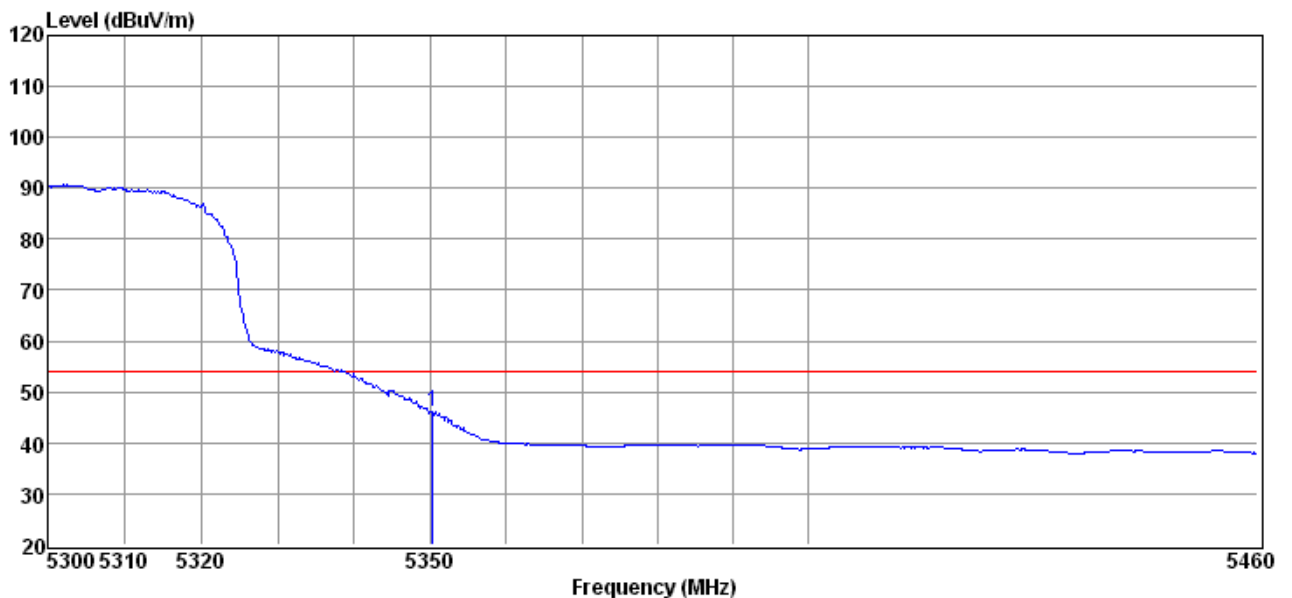
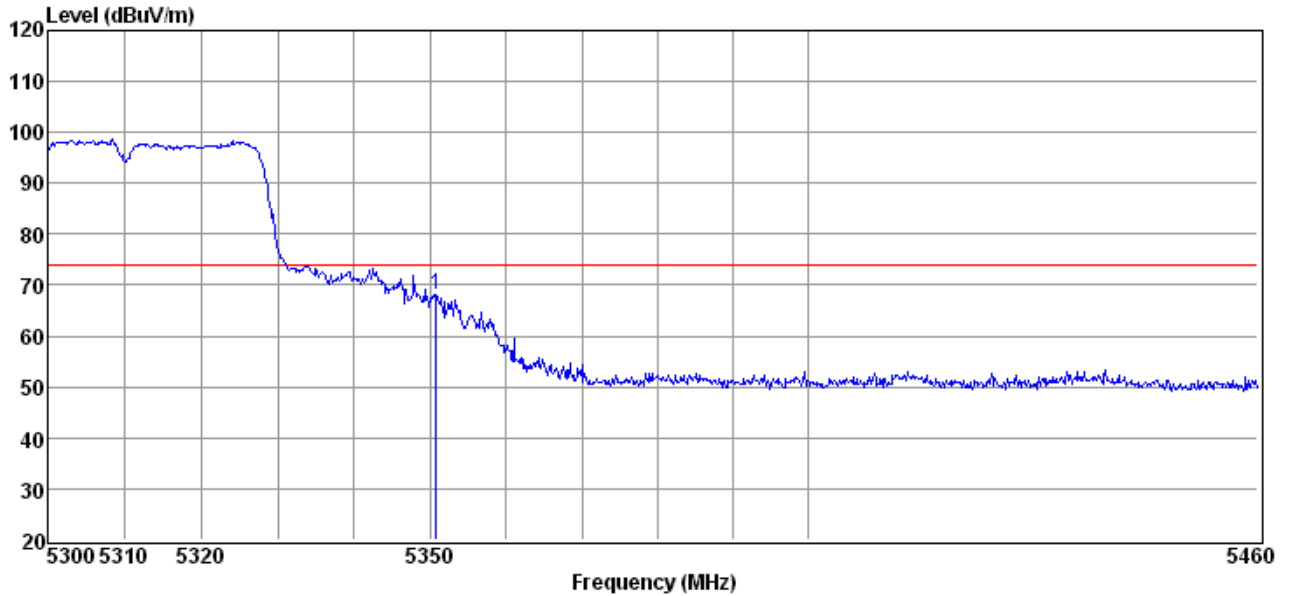


RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH62, HORIZONTAL)



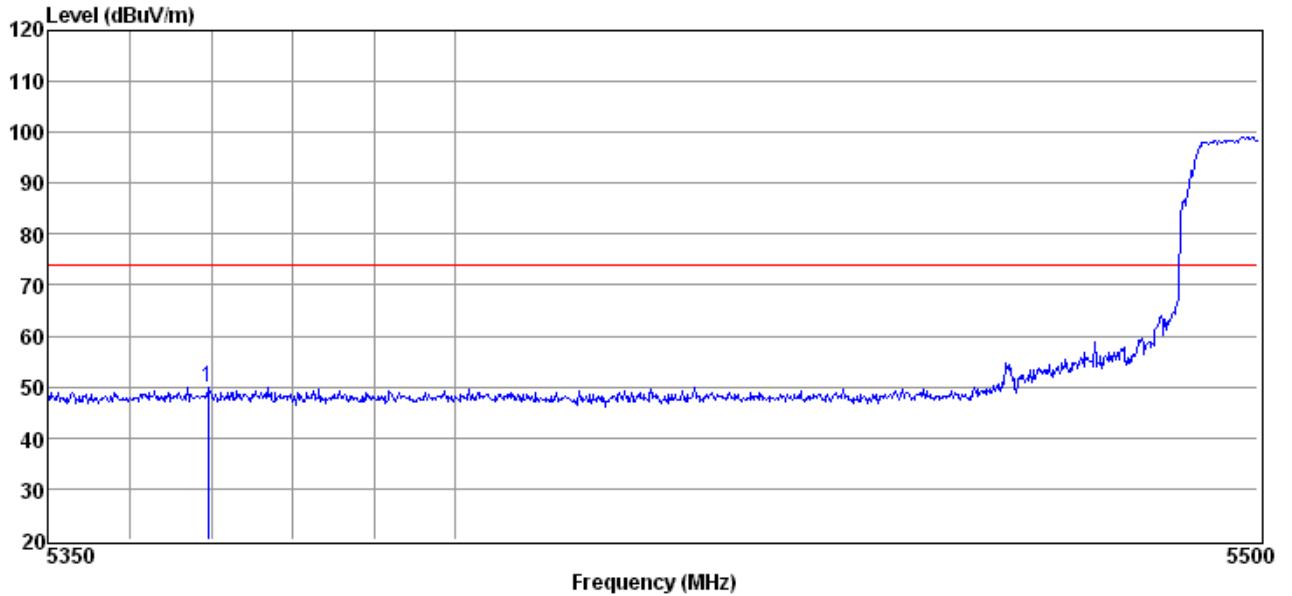


RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH62, VERTICAL)

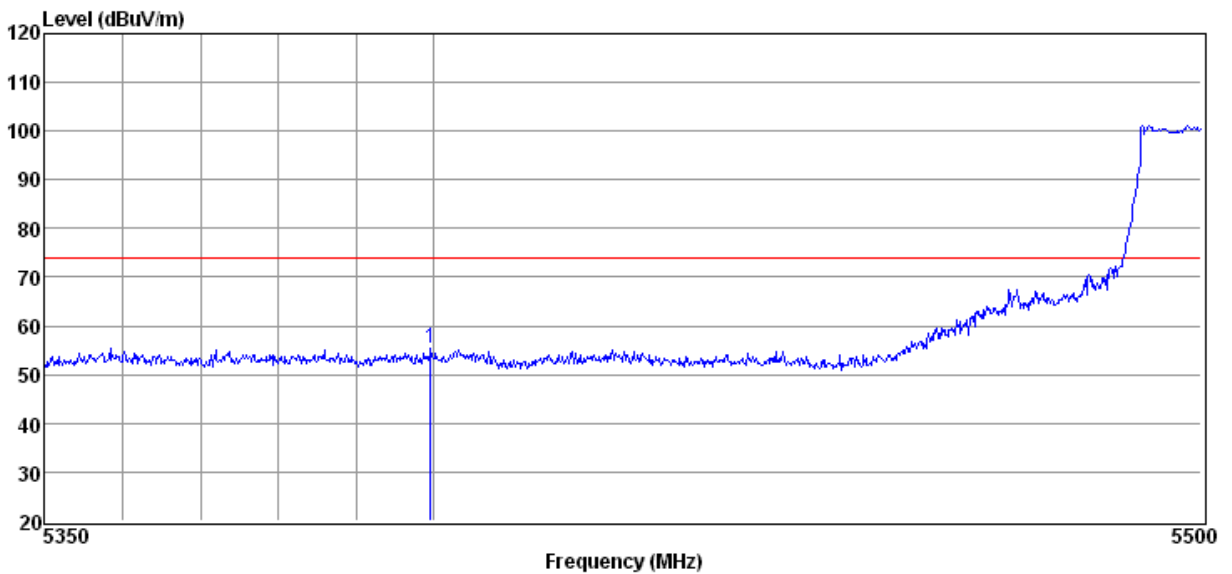


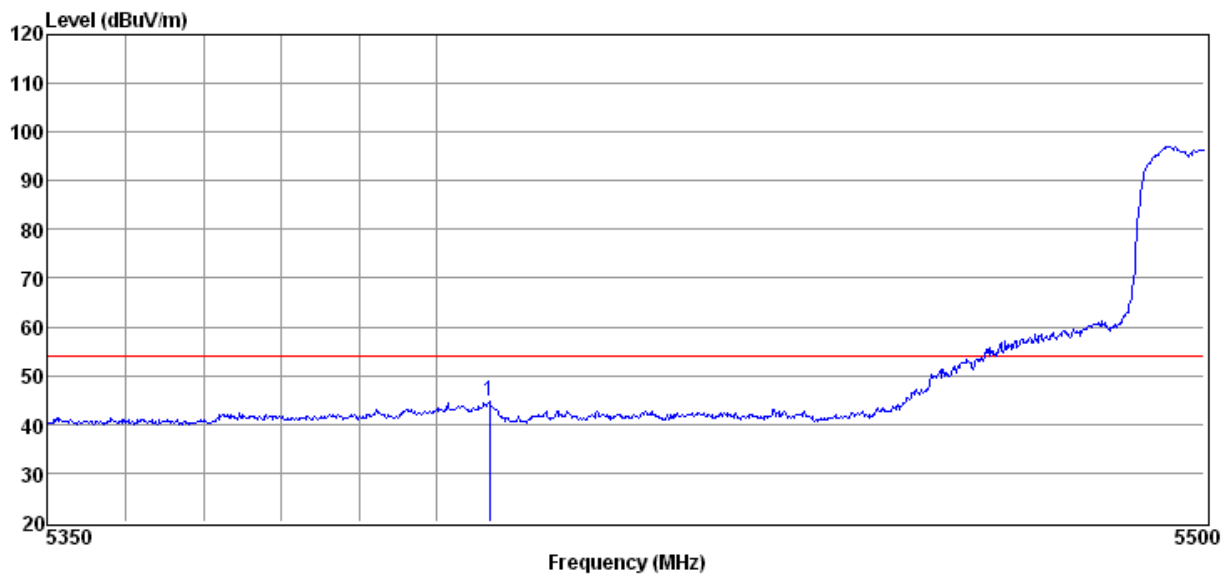


RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH102, HORIZONTAL)



RESTRICTED BANDEDGE (802.11n (40MHz) MODE, CH102, VERTICAL)





4.2.7 Antenna Requirement

Test Requirement: FCC Part15 15.203

5.3.7.1 Standard Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

5.3.7.2 Antenna Connected Construction

Antenna connector is IPEX or Reverse SMA not a standard connector. Please see the EUT photo for details.

5.3.7.3 Result

The EUT antenna is internal Antenna. It comply with the standard requirement.

End of the Report