



**SGS-CSTC Standards Technical Services Ltd.
Shenzhen Branch**

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Report No.: SZEM160500384302
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FCC REPORT

Application No:	SZEM1605003843CR
Applicant:	SmartLabs LLC
Manufacturer:	SmartLabs LLC
Factory:	Sichuan Changhong Network Technologies Co., Ltd. Shenzhen Giec Digital Co., Ltd
Product Name:	IPTV Set-Top Box
Model No.(EUT):	SML-5112W
Trade Mark:	SmartLabs
FCC ID:	2AIBUSML5112W
Standards:	47 CFR Part 15, Subpart E (2015)
Date of Receipt:	2016-06-01
Date of Test:	2016-06-07 to 2016-06-30
Date of Issue:	2016-07-07
Test Result:	PASS *

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

Authorized Signature:



Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2016-07-07		Original

Authorized for issue by:				
Tested By		Hank yan.		2016-06-07
		(Hank Yan) /Project Engineer		Date
Prepared By		Joyce Shi		2016-07-07
		(Joyce Shi) /Clerk		Date
Checked By		Eric Fu		2016-07-07
		(Eric Fu) /Reviewer		Date



3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15 Section 15.203	ANSI C63.10: 2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15 Section 15.407(b)	ANSI C63.10: 2013	PASS
Conducted Output Power	47 CFR Part 15 Section 15.407(a)	ANSI C63.10: 2013	PASS
Equivalent Isotropic Radiated Power (e.i.r.p.)	47 CFR Part 15 Section 15.407(a)	ANSI C63.10: 2013	PASS
6dB Occupied Bandwidth	47 CFR Part 15 Section 15.407(e)	ANSI C63.10: 2013	PASS
26 dB Emission Bandwidth & 99% Occupied Bandwidth	47 CFR Part 15 Section 15.407(a)	ANSI C63.10: 2013	PASS
Power Spectral Density	47 CFR Part 15 Section 15.407(a)	ANSI C63.10: 2013	PASS
Radiated Spurious Emissions	47 CFR Part 15 Section 15.407(b)	ANSI C63.10: 2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15 Section 15.407(b)	ANSI C63.10: 2013	PASS
Frequency Stability	47 CFR Part 15 Section 15.407(g)	ANSI C63.10: 2013	PASS



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5 General Information

5.1 Client Information

Applicant:	SmartLabs LLC
Address of Applicant:	3, Sherbakovskaya str, Moscow, Russia, 105318
Manufacturer:	SmartLabs LLC
Address of Manufacturer:	3, Sherbakovskaya str, Moscow, Russia, 105318
Factory:	Sichuan Changhong Network Technologies Co., Ltd.
	Shenzhen Giec Digital Co., Ltd
Address of Factory:	Science and Technology Park, Mianyang City, Sichuan Province, China
	No.1 Building , Factory, No.7 District, Dayang Development Areas, Fuyong Street, Baoan, Shenzhen, China

5.2 General Description of EUT

Product Name:	IPTV Set-Top Box			
Model No.:	SML-5112W			
Trade Mark:	SmartLabs			
Operation Frequency:	Band	Mode	Frequency Range(MHz)	Number of channels
UNII Band I	IEEE 802.11a IEEE 802.11n 20MHz IEEE 802.11n 40MHz IEEE 802.11ac 20MHz IEEE 802.11ac 40MHz IEEE 802.11ac 80MHz	IEEE 802.11a	5180-5240	4
		IEEE 802.11n 20MHz	5180-5240	4
		IEEE 802.11n 40MHz	5190-5230	2
		IEEE 802.11ac 20MHz	5180-5240	4
		IEEE 802.11ac 40MHz	5190-5230	2
		IEEE 802.11ac 80MHz	5210	1
UNII Band II-A	IEEE 802.11a IEEE 802.11n 20MHz IEEE 802.11n 40MHz IEEE 802.11ac 20MHz IEEE 802.11ac 40MHz IEEE 802.11ac 80MHz	IEEE 802.11a	5260-5320	4
		IEEE 802.11n 20MHz	5260-5320	4
		IEEE 802.11n 40MHz	5270-5310	2
		IEEE 802.11ac 20MHz	5260-5320	4
		IEEE 802.11ac 40MHz	5270-5310	2
		IEEE 802.11ac 80MHz	5290	1
UNII Band II-C	IEEE 802.11a IEEE 802.11n 20MHz IEEE 802.11n 40MHz IEEE 802.11ac 20MHz IEEE 802.11ac 40MHz IEEE 802.11ac 80MHz	IEEE 802.11a	5500-5700	11
		IEEE 802.11n 20MHz	5500-5700	11
		IEEE 802.11n 40MHz	5510-5670	5
		IEEE 802.11ac 20MHz	5500-5700	11
		IEEE 802.11ac 40MHz	5510-5670	5
		IEEE 802.11ac 80MHz	5530-5610	2
UNII Band III	IEEE 802.11a IEEE 802.11n 20MHz	IEEE 802.11a	5745-5825	5
		IEEE 802.11n 20MHz	5745-5825	5

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		IEEE 802.11n 40MHz	5755-5795	2
		IEEE 802.11ac 20MHz	5745-5825	5
		IEEE 802.11ac 40MHz	5755-5795	2
		IEEE 802.11ac 80MHz	5775	1
Type of Modulation:	IEEE 802.11a: OFDM(BPSK/QPSK/16QAM/64QAM) IEEE 802.11n: OFDM(BPSK/QPSK/16QAM/64QAM) IEEE 802.11ac: OFDM (BPSK/QPSK/16QAM/64QAM/256QAM)			
Sample Type:	Mobile Device			
Test software of EUT:	sml_bcm7251s			
Value of Power setting:	19			
Antenna Type and Gain:	Integral: 4dBi MIMO 4x4			
Power Supply:	Model:SAW30-120-2500U Input: AC 100-240V, 50/60Hz, 0.8A Output: DC 12V, 2.5A			

Note:

In FCC 15.31, for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table, and the selected channel to perform the test as below:

Frequency Range of Operation Operating Frequency Range (in each Band)	Number of Measurement Frequencies Required	Location of Measurement Frequency in Band of Operation
1 MHz or less	1	centre
1 MHz to 10 MHz	2	1 near high end, 1 near low end
Greater than 10 MHz	3	1 near high end, 1 near centre

For UNII Band I:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5180
	The Middle channel	5220
	The Highest channel	5240
IEEE 802.11n/ac 40MHz	The Lowest channel	5190
	The Highest channel	5230
IEEE 802.11n/ac 80MHz	The Middle channel	5210

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For UNII Band II-A:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5260
	The Middle channel	5280
	The Highest channel	5320
IEEE 802.11n/ac 40MHz	The Lowest channel	5270
	The Highest channel	5310
IEEE 802.11n/ac 80MHz	The Middle channel	5290

For UNII Band II-C:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5500
	The Middle channel	5580
	The Highest channel	5700
IEEE 802.11n/ac 40MHz	The Lowest channel	5510
	The Middle channel	5550
	The Highest channel	5670
IEEE 802.11n/ac 80MHz	The Lowest channel	5530
	The Highest channel	5610

For UNII Band III:

Mode	Channel	Frequency(MHz)
IEEE 802.11a/n/ac 20MHz	The Lowest channel	5745
	The Middle channel	5785
	The Highest channel	5825
IEEE 802.11n/ac 40MHz	The Lowest channel	5755
	The Highest channel	5795
IEEE 802.11n/ac 80MHz	The Middle channel	5775



5.3 Test Environment and Mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	52 % RH
Atmospheric Pressure:	1008 mbar
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.

5.4 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.
Television	MITSUBISHI	AX025

5.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,
No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China.
518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

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5.6 Test Facility

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

- CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab 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.

- A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

- FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

- Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

5.7 Deviation from Standards

None.

5.8 Abnormalities from Standard Conditions

None.

5.9 Other Information Requested by the Customer

None.



5.10 Equipment List

RE in Chamber						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	3m Semi-Anechoic Chamber	ETS-Lindgren	N/A	SEM001-01	2016-05-13	2017-05-13
2	Spectrum Analyzer	Rohde & Schwarz	FSU43	SEM004-08	2016-04-25	2017-04-25
3	BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-02	2014-11-15	2017-11-15
4	Double-ridged horn (1-18GHz)	ETS-Lindgren	3117	SEM003-11	2015-10-17	2018-10-17
5	Horn Antenna (18-26GHz)	ETS-Lindgren	3160	SEM003-12	2014-11-24	2017-11-24
6	Horn Antenna(26GHz-40GHz)	A.H.Systems, inc.	SAS-573	SEM003-13	2015-02-12	2018-02-12
7	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2016-04-25	2017-04-25
8	Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-10	2015-10-17	2016-10-17
9	Pre-amplifier(26GHz-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2016-02-12	2017-02-12
10	DC Power Supply	Zhao Xin	RXN-305D	SEM011-02	2015-10-09	2016-10-09
11	Loop Antenna	Beijing Daze	ZN30401	SEM003-09	2015-05-13	2018-05-13

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RE in Chamber						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2016-05-13	2017-05-13
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEM004-04	2016-04-25	2017-04-25
3	BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-02	2014-11-15	2017-11-15
4	Amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2015-10-09	2016-10-09
5	Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2015-06-14	2018-06-14
6	Low Noise Amplifier	Black Diamond Series	BDLNA-0118-352810	SEM005-05	2015-10-09	2016-10-09
7	Band filter	Amindeon	Asi 3314	SEM023-01	N/A	N/A

RF connected test						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2015-10-09	2016-10-09
2	Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2015-10-17	2016-10-17
3	Signal Generator	Rohde & Schwarz	SML03	SEM006-02	2016-04-25	2017-04-25
4	Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2015-10-09	2016-10-09



6 Test results and Measurement Data

6.1 Antenna Requirement

Test Requirement:	47 CFR Part 15 Section 15.203
EUT Antenna:	
<p>The antenna is integrated antenna and no consideration of replacement. The best case gain of the antenna is 4dBi. The product uses spatial multiplexing technique. According to KDB 662911, the Directional Gain = $G_{ANT} = 4\text{dBi}$</p>	



6.2 Conducted Emissions

Test Requirement:	47 CFR Part 15 Section 15.407(b)		
Test Method:	ANSI C63.10: 2013		
Test Frequency Range:	150kHz to 30MHz		
Limit:	Frequency range (MHz)		Limit (dBuV)
			Quasi-peak Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
* Decreases with the logarithm of the frequency.			
Test Procedure:	<ol style="list-style-type: none"> 1) The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement. 		

Test Setup:	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate of 802.11a at lowest channel is the worst case. Only the worst case is recorded in the report.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

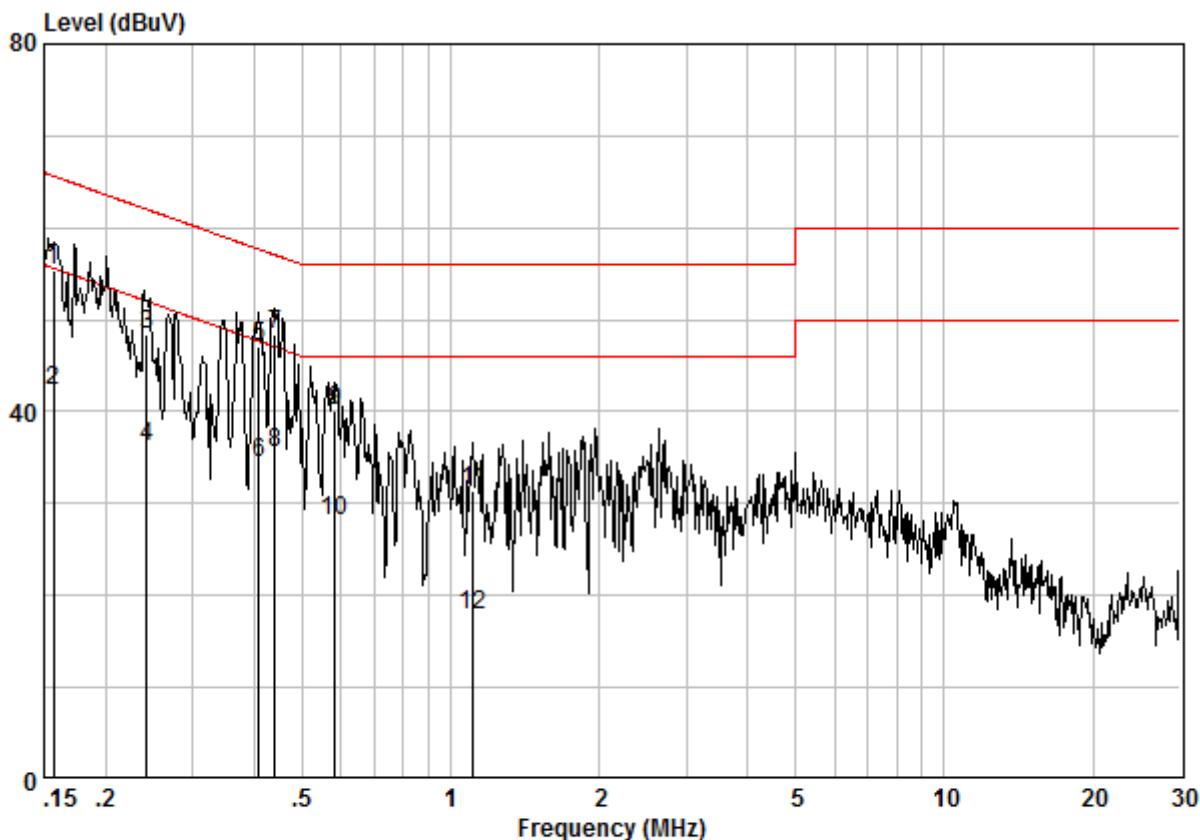
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

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Live Line:



Site : Shielding Room

Condition : CE LINE

Job No. : 3843CR

Test Mode : TX

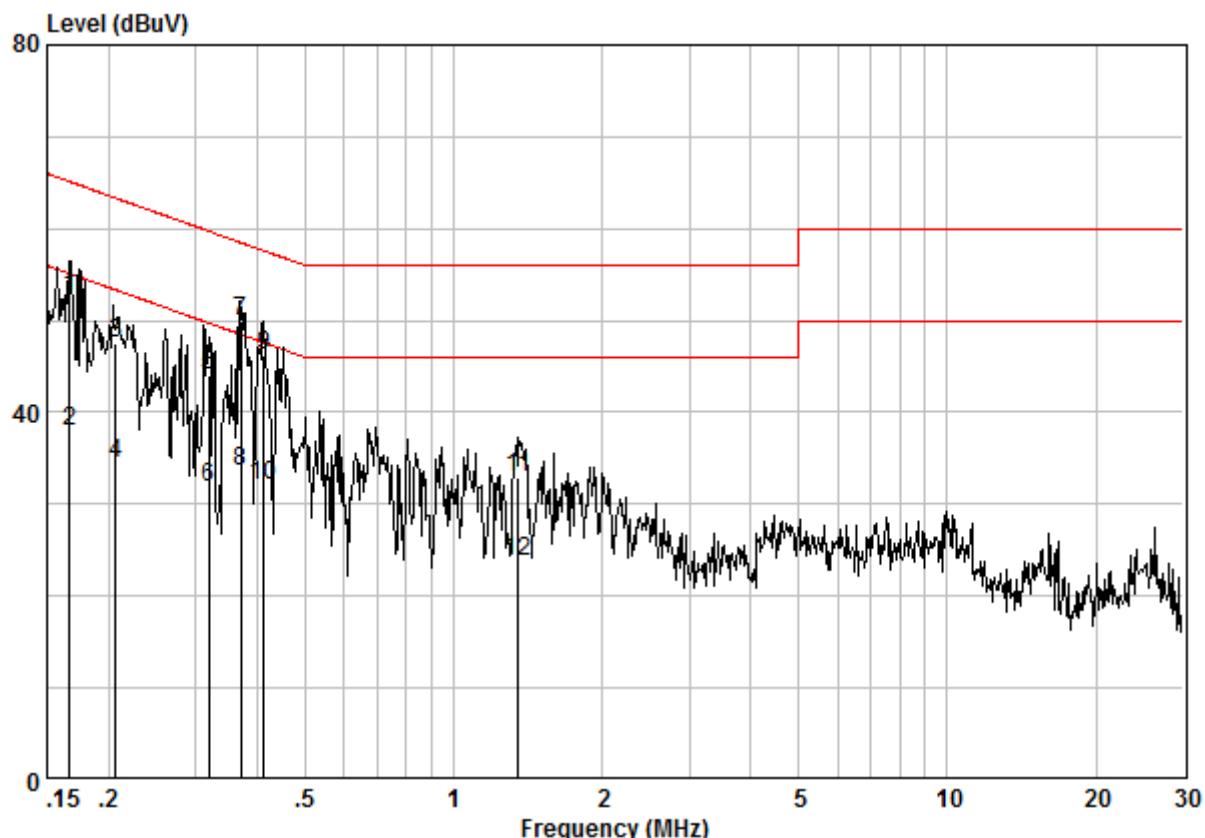
	Freq	Cable	LISN	Read	Limit	Over	Remark
		MHz	Loss	Factor	Level	Level	
1	0.15649	0.02	9.59	45.74	55.35	65.65	-10.30 QP
2	0.15649	0.02	9.59	32.73	42.34	55.65	-13.30 AVERAGE
3	0.24165	0.02	9.60	38.74	48.36	62.04	-13.68 QP
4	0.24165	0.02	9.60	26.62	36.24	52.04	-15.79 AVERAGE
5	0.40831	0.02	9.60	37.46	47.08	57.68	-10.61 QP
6	0.40831	0.02	9.60	24.84	34.46	47.68	-13.22 AVERAGE
7	0.43974	0.02	9.60	38.67	48.29	57.07	-8.78 QP
8	0.43974	0.02	9.60	25.86	35.48	47.07	-11.59 AVERAGE
9	0.58231	0.02	9.61	30.49	40.12	56.00	-15.88 QP
10	0.58231	0.02	9.61	18.60	28.23	46.00	-17.77 AVERAGE
11	1.111	0.03	9.62	21.71	31.35	56.00	-24.65 QP
12	1.111	0.03	9.62	8.13	17.78	46.00	-28.22 AVERAGE

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Neutral Line:



Site : Shielding Room
 Condition : CE NEUTRAL
 Job No. : 3843CR
 Test Mode : TX

	Freq	Cable	LISN	Read	Limit		Over	Remark
		MHz	Loss	Factor	Level	Level	Line	
1	0.16677	0.02	9.60	42.82	52.44	65.12	-12.68	QP
2	0.16677	0.02	9.60	28.35	37.97	55.12	-17.15	AVERAGE
3	0.20614	0.02	9.62	37.89	47.53	63.36	-15.83	QP
4	0.20614	0.02	9.62	24.86	34.50	53.36	-18.86	AVERAGE
5	0.31830	0.02	9.62	34.29	43.93	59.75	-15.83	QP
6	0.31830	0.02	9.62	22.13	31.77	49.75	-17.98	AVERAGE
7 @	0.37117	0.02	9.62	40.24	49.88	58.47	-8.59	QP
8	0.37117	0.02	9.62	23.94	33.58	48.47	-14.89	AVERAGE
9	0.41266	0.02	9.62	36.48	46.12	57.59	-11.47	QP
10	0.41266	0.02	9.62	22.41	32.05	47.59	-15.54	AVERAGE
11	1.352	0.03	9.64	23.19	32.86	56.00	-23.14	QP
12	1.352	0.03	9.64	14.17	23.85	46.00	-22.15	AVERAGE

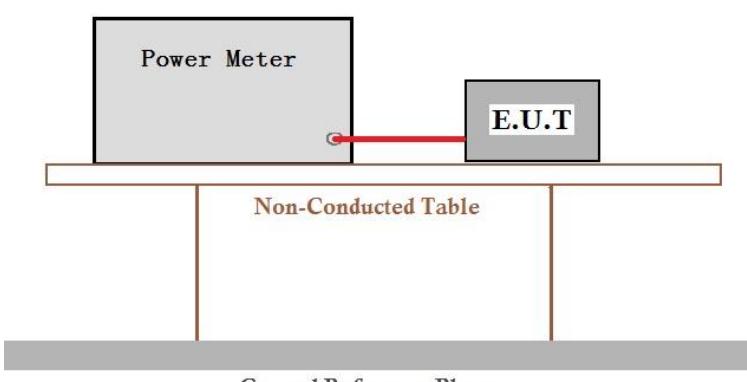
Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level = Receiver Reading + LISN Factor + Cable Loss.

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6.3 Conducted Output Power

Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10: 2013	
Test Setup:	 <p>The diagram shows a Power Meter connected to the E.U.T (Equipment Under Test) via a cable. The entire setup is placed on a Non-Conducted Table, which sits above a Ground Reference Plane.</p>	
<p><i>Remark:</i> <i>Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.</i></p>		
Test Instruments:	Refer to section 5.10 for details	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	<p>Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20); MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ac(HT20); MCS0 of rate is the worst case of 802.11ac(HT40); MCS0 of rate is the worst case of 802.11ac(HT80) Only the worst case is recorded in the report.</p>	
Limit:	Frequency Band	Limit
	5150-5250MHz	Not exceed 250mW(24dBm)
	5250-5350MHz	The lesser of 250mW(24dBm) or $11 + 10\log B$
	5470-5725MHz	The lesser of 250mW(24dBm) or $11 + 10\log B$
	5725-5850MHz	Not exceed 1W(30dBm)
	*Where B is the 26dB emission bandwidth in MHz	
Test Results:	Pass	

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Pre-scan under all rate at lowest channel 1								
Mode	802.11a							
Data Rate (Mbps)	6	9	12	18	24	36	48	54
Power (dBm)	1.57	1.49	1.44	1.32	1.18	1.09	0.95	0.86
Mode	802.11n(HT20)							
Data Rate (Mbps)	6.5	13	19.5	26	39	52	58.5	65
Power (dBm)	1.52	1.39	1.26	1.15	1.07	0.98	0.87	0.76
Mode	802.11n(HT40)							
Data Rate (Mbps)	13.5	27	40.5	54	81	108	121.5	135
Power (dBm)	1.48	1.33	1.26	1.11	0.98	0.87	0.76	0.69
Mode	802.11ac(HT20)							
Data Rate (Mbps)	6.5	13	19.5	26	39	52	58.5	65
Power (dBm)	1.53	1.42	1.28	1.20	1.14	1.01	0.89	0.82
Mode	802.11ac(HT40)							
Data Rate (Mbps)	13.5	27	40.5	54	81	108	121.5	135
Power (dBm)	1.69	1.61	1.46	1.35	1.28	1.19	1.11	0.97
Mode	802.11ac(HT80)							
Data Rate (Mbps)	29.3	58.5	87.8	117	175.5	234	263.3	292.5
Power (dBm)	1.90	1.81	1.70	1.63	1.49	1.40	1.32	1.27
Through Pre-scan, 6Mbps of rate is the worst case of 802.11a; 6.5Mbps of rate is the worst case of 802.11n(HT20) and 802.11ac(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40) and 802.11ac(HT40); 29.3Mbps of rate is the worst case of 802.11ac(HT80).								

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Measurement Data:

6.3.1.1 802.11a mode

Frequency (MHz)	Conducted Output Power (dBm)				Limit (dBm)	Result
	Ant.1	Ant.2	Ant.3	Ant.4		
5180.00	1.57	4.27	4.70	5.81	24.00	Pass
5200.00	1.95	4.32	4.61	5.88	24.00	Pass
5240.00	2.20	4.20	4.36	6.22	24.00	Pass
5260.00	12.60	5.24	4.92	6.63	24.00	Pass
5300.00	12.35	4.66	4.08	5.96	24.00	Pass
5320.00	12.15	4.03	3.65	5.64	24.00	Pass
5500.00	1.00	3.44	3.16	4.04	24.00	Pass
5600.00	1.63	4.99	4.66	4.35	24.00	Pass
5700.00	2.90	6.41	6.20	5.35	24.00	Pass
5745.00	3.17	6.52	6.94	5.32	30.00	Pass
5785.00	2.98	6.24	6.89	5.40	30.00	Pass
5825.00	3.21	6.03	6.74	5.68	30.00	Pass

802.11 n20 mode

Frequency (MHz)	Conducted Output Power (dBm)					Limit (dBm)	Result
	Ant.1	Ant.2	Ant.3	Ant.4	Total		
5180.00	1.52	4.35	4.88	5.83	10.43	24.00	Pass
5200.00	1.67	4.31	4.62	5.94	10.41	24.00	Pass
5240.00	1.96	4.24	4.12	6.22	10.41	24.00	Pass
5260.00	12.48	4.94	4.85	6.43	14.51	24.00	Pass
5300.00	12.21	4.43	3.49	5.88	14.07	24.00	Pass
5320.00	11.98	4.16	3.09	5.56	13.81	24.00	Pass
5500.00	1.25	3.58	3.21	4.28	9.24	24.00	Pass
5600.00	2.01	4.86	3.97	4.40	9.96	24.00	Pass
5700.00	2.97	6.33	5.51	5.77	11.34	24.00	Pass
5745.00	3.01	6.40	6.74	5.30	11.61	30.00	Pass
5785.00	2.87	6.05	6.71	5.64	11.56	30.00	Pass
5825.00	2.83	5.83	6.65	5.64	11.47	30.00	Pass

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802.11ac 20 mode							
Frequency (MHz)	Conducted Output Power (dBm)					Limit (dBm)	Result
	Ant.1	Ant.2	Ant.3	Ant.4	Total		
5180.00	1.53	4.53	4.83	6.05	10.54	24.00	Pass
5200.00	1.64	4.38	4.61	6.14	10.49	24.00	Pass
5240.00	1.95	4.30	4.41	6.39	10.56	24.00	Pass
5260.00	12.27	5.13	4.93	6.47	14.42	24.00	Pass
5300.00	12.13	4.54	3.58	5.98	14.05	24.00	Pass
5320.00	11.93	4.19	3.23	5.67	13.80	24.00	Pass
5500.00	1.40	3.60	3.60	4.24	9.35	24.00	Pass
5600.00	1.90	4.95	4.09	4.49	10.02	24.00	Pass
5700.00	3.11	6.39	5.69	5.74	11.42	24.00	Pass
5745.00	2.81	6.31	6.80	5.49	11.62	30.00	Pass
5785.00	2.66	6.01	6.81	5.38	11.49	30.00	Pass
5825.00	3.01	5.77	6.73	5.71	11.53	30.00	Pass

802.11 n40 mode							
Frequency (MHz)	Conducted Output Power (dBm)					Limit (dBm)	Result
	Ant.1	Ant.2	Ant.3	Ant.4	Total		
5190.00	1.48	4.27	4.46	5.77	10.27	24.00	Pass
5230.00	1.82	4.22	4.24	6.03	10.34	24.00	Pass
5270.00	12.26	4.83	4.49	6.17	14.28	24.00	Pass
5310.00	11.95	4.10	3.14	5.58	13.79	24.00	Pass
5510.00	1.33	3.55	3.22	4.00	9.16	24.00	Pass
5590.00	1.98	4.67	3.74	4.17	9.77	24.00	Pass
5670.00	2.81	5.72	5.60	4.69	10.87	24.00	Pass
5755.00	2.54	6.08	6.41	5.47	11.38	30.00	Pass
5795.00	2.56	5.78	6.42	5.48	11.30	30.00	Pass

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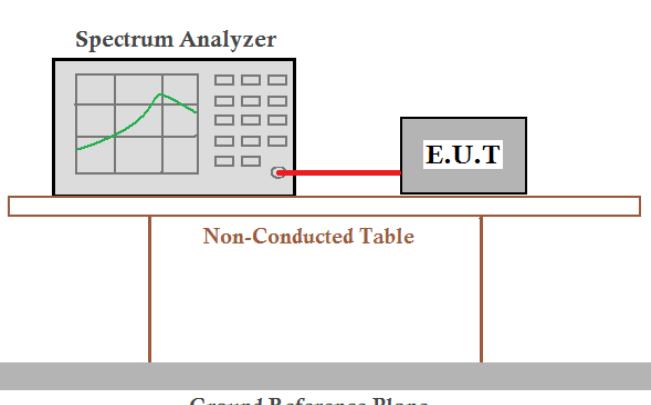
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802.11ac 40 mode							
Frequency (MHz)	Conducted Output Power (dBm)					Limit (dBm)	Result
	Ant.1	Ant.2	Ant.3	Ant.4	Total		
5190.00	1.69	4.27	4.63	5.76	10.34	24.00	Pass
5230.00	1.78	4.21	4.22	6.05	10.34	24.00	Pass
5270.00	12.24	4.76	3.86	6.14	14.20	24.00	Pass
5310.00	11.97	4.10	3.05	5.72	13.81	24.00	Pass
5510.00	1.39	3.57	3.29	4.08	9.21	24.00	Pass
5590.00	2.02	4.69	3.75	4.22	9.80	24.00	Pass
5670.00	2.83	5.74	5.60	4.73	10.89	24.00	Pass
5755.00	3.17	6.07	6.59	5.43	11.51	30.00	Pass
5795.00	3.12	5.80	6.41	5.42	11.37	30.00	Pass

802.11ac 80 mode							
Frequency (MHz)	Conducted Output Power (dBm)					Limit (dBm)	Result
	Ant.1	Ant.2	Ant.3	Ant.4	Total		
5210.00	1.90	4.53	4.27	6.31	10.54	24.00	Pass
5290.00	12.41	7.71	4.39	6.41	14.83	24.00	Pass
5530.00	1.83	3.87	3.75	4.25	9.54	24.00	Pass
5610.00	2.09	5.13	4.74	4.67	10.33	24.00	Pass
5775.00	3.15	6.19	6.97	5.67	11.73	30.00	Pass



6.4 Equivalent Isotropic Radiated Power (e.i.r.p.)

Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10: 2013	
Test Setup:	 <p>Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane</p>	
	<p><i>Remark:</i> <i>Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.</i></p>	
Test Instruments:	Refer to section 5.10 for details	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20); MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ac(HT20); MCS0 of rate is the worst case of 802.11ac(HT40); MCS0 of rate is the worst case of 802.11ac(HT80) Only the worst case is recorded in the report.	
Limit:	Frequency Band	Limit
	5150-5250MHz	1W(30dBm) with 6dBi antenna
	5250-5350MHz	1W(30dBm) with 6dBi antenna
	5470-5725MHz	1W(30dBm) with 6dBi antenna
	5725-5850MHz	4W(36dBm) with 6dBi antenna
	*The limit =the maximum output conducted power limit+ actual antenna gain	
Test Results:	Pass	

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Measurement Data:

Frequency (MHz)	EIRP (dBm)				Limit (dBm)	Result
	Ant.1	Ant.2	Ant.3	Ant.4		
5180.00	5.57	8.27	8.70	9.81	30.00	Pass
5200.00	5.95	8.32	8.61	9.88	30.00	Pass
5240.00	6.20	8.20	8.36	10.22	30.00	Pass
5260.00	16.60	9.24	8.92	10.63	30.00	Pass
5300.00	16.35	8.66	8.08	9.96	30.00	Pass
5320.00	16.15	8.03	7.65	9.64	30.00	Pass
5500.00	5.00	7.44	7.16	8.04	30.00	Pass
5600.00	5.63	8.99	8.66	8.35	30.00	Pass
5700.00	6.90	10.41	10.20	9.35	30.00	Pass
5745.00	7.17	10.52	10.94	9.32	36.00	Pass
5785.00	6.98	10.24	10.89	9.40	36.00	Pass
5825.00	7.21	10.03	10.74	9.68	36.00	Pass

802.11 n20 mode

Frequency (MHz)	EIRP (dBm)					Limit (dBm)	Result
	Ant.1	Ant.2	Ant.3	Ant.4	Total		
5180.00	5.52	8.35	8.88	9.83	14.43	30.00	Pass
5200.00	5.67	8.31	8.62	9.94	14.41	30.00	Pass
5240.00	5.96	8.24	8.12	10.22	14.41	30.00	Pass
5260.00	16.48	8.94	8.85	10.43	18.51	30.00	Pass
5300.00	16.21	8.43	7.49	9.88	18.07	30.00	Pass
5320.00	15.98	8.16	7.09	9.56	17.81	30.00	Pass
5500.00	5.25	7.58	7.21	8.28	13.24	30.00	Pass
5600.00	6.01	8.86	7.97	8.4	13.96	30.00	Pass
5700.00	6.97	10.33	9.51	9.77	15.34	30.00	Pass
5745.00	7.01	10.4	10.74	9.3	15.61	36.00	Pass
5785.00	6.87	10.05	10.71	9.64	15.56	36.00	Pass
5825.00	6.83	9.83	10.65	9.64	15.47	36.00	Pass

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802.11ac 20 mode							
Frequency (MHz)	EIRP (dBm)					Limit (dBm)	Result
	Ant.1	Ant.2	Ant.3	Ant.4	Total		
5180.00	5.53	8.53	8.83	10.05	14.54	30.00	Pass
5200.00	5.64	8.38	8.61	10.14	14.49	30.00	Pass
5240.00	5.95	8.3	8.41	10.39	14.56	30.00	Pass
5260.00	16.27	9.13	8.93	10.47	18.42	30.00	Pass
5300.00	16.13	8.54	7.58	9.98	18.05	30.00	Pass
5320.00	15.93	8.19	7.23	9.67	17.80	30.00	Pass
5500.00	5.4	7.6	7.6	8.24	13.35	30.00	Pass
5600.00	5.9	8.95	8.09	8.49	14.02	30.00	Pass
5700.00	7.11	10.39	9.69	9.74	15.42	30.00	Pass
5745.00	6.81	10.31	10.8	9.49	15.62	36.00	Pass
5785.00	6.66	10.01	10.81	9.38	15.49	36.00	Pass
5825.00	7.01	9.77	10.73	9.71	15.53	36.00	Pass

802.11 n40 mode							
Frequency (MHz)	EIRP (dBm)					Limit (dBm)	Result
	Ant.1	Ant.2	Ant.3	Ant.4	Total		
5190.00	5.48	8.27	8.46	9.77	14.27	30.00	Pass
5230.00	5.82	8.22	8.24	10.03	14.34	30.00	Pass
5270.00	16.26	8.83	8.49	10.17	18.28	30.00	Pass
5310.00	15.95	8.1	7.14	9.58	17.79	30.00	Pass
5510.00	5.33	7.55	7.22	8	13.16	30.00	Pass
5590.00	5.98	8.67	7.74	8.17	13.77	30.00	Pass
5670.00	6.81	9.72	9.6	8.69	14.87	30.00	Pass
5755.00	6.54	10.08	10.41	9.47	15.38	36.00	Pass
5795.00	6.56	9.78	10.42	9.48	15.30	36.00	Pass

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802.11ac 40 mode							
Frequency (MHz)	EIRP (dBm)					Limit (dBm)	Result
	Ant.1	Ant.2	Ant.3	Ant.4	Total		
5190.00	5.69	8.27	8.63	9.76	14.34	30.00	Pass
5230.00	5.78	8.21	8.22	10.05	14.34	30.00	Pass
5270.00	16.24	8.76	7.86	10.14	18.20	30.00	Pass
5310.00	15.97	8.1	7.05	9.72	17.81	30.00	Pass
5510.00	5.39	7.57	7.29	8.08	13.21	30.00	Pass
5590.00	6.02	8.69	7.75	8.22	13.80	30.00	Pass
5670.00	6.83	9.74	9.6	8.73	14.89	30.00	Pass
5755.00	7.17	10.07	10.59	9.43	15.51	36.00	Pass
5795.00	7.12	9.8	10.41	9.42	15.37	36.00	Pass

802.11ac 80 mode							
Frequency (MHz)	EIRP (dBm)					Limit (dBm)	Result
	Ant.1	Ant.2	Ant.3	Ant.4	Total		
5210.00	5.9	8.53	8.27	10.31	14.54	30.00	Pass
5290.00	16.41	11.71	8.39	10.41	18.83	30.00	Pass
5530.00	5.83	7.87	7.75	8.25	13.54	30.00	Pass
5610.00	6.09	9.13	8.74	8.67	14.33	30.00	Pass
5775.00	7.15	10.19	10.97	9.67	15.73	36.00	Pass



6.5 26dB Emission Bandwidth and 99% Occupied Bandwidth

Test Requirement:	47 CFR Part 15 Section 15.407(a)
Test Method:	ANSI C63.10: 2013
Test Setup:	<p style="text-align: center;">Spectrum Analyzer</p> <p style="text-align: center;">Non-Conducted Table</p> <p style="text-align: center;">Ground Reference Plane</p>
Instruments Used:	Refer to section 5.10 for details
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20); MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ac(HT20); MCS0 of rate is the worst case of 802.11ac(HT40); MCS0 of rate is the worst case of 802.11ac(HT80) Only the worst case is recorded in the report.
Limit:	No restriction limits
Test Results:	Pass

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Measurement Data:

802.11a mode		
Frequency (MHz)	26dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5180	23.654	16.920
5200	23.512	16.920
5240	23.462	16.890
5260	24.359	17.100
5300	24.615	17.070
5320	24.295	17.070
5500	24.760	17.100
5600	24.741	17.100
5700	24.532	17.130
5745	--	16.740
5785	--	16.770
5825	--	16.770

802.11n20 mode		
Frequency (MHz)	26dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5180	26.090	18.450
5200	25.705	18.420
5240	25.876	18.420
5260	24.355	18.060
5300	24.227	18.060
5320	24.467	18.060
5500	24.508	18.090
5600	24.560	18.090
5700	24.551	18.060
5745	--	18.150
5785	--	18.150
5825	--	18.120

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802.11ac20 mode		
Frequency (MHz)	26dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5180	26.076	18.390
5200	25.833	18.360
5240	25.909	18.390
5260	24.595	18.060
5300	24.295	18.060
5320	24.636	18.030
5500	24.868	18.060
5600	24.800	18.060
5700	24.668	18.060
5745	--	18.240
5785	--	18.270
5825	--	18.240

802.11n40 mode		
Frequency (MHz)	26dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5190	42.562	36.240
5230	42.690	36.300
5270	42.179	36.240
5310	42.051	36.300
5510	42.658	36.240
5590	42.530	36.240
5670	42.530	36.300
5755	--	36.300
5795	--	36.300

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802.11 ac40 mode		
Frequency (MHz)	26dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5190	42.850	36.300
5230	42.690	36.300
5270	42.320	36.240
5310	42.480	36.300
5510	42.690	36.240
5590	42.480	36.240
5670	42.562	36.300
5755	--	36.300
5795	--	36.300

802.11ac 80 mode		
Frequency (MHz)	26dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
5210.00	83.590	75.360
5290.00	83.077	75.360
5530.00	84.291	75.360
5610.00	83.778	75.360
5775.00	--	75.360

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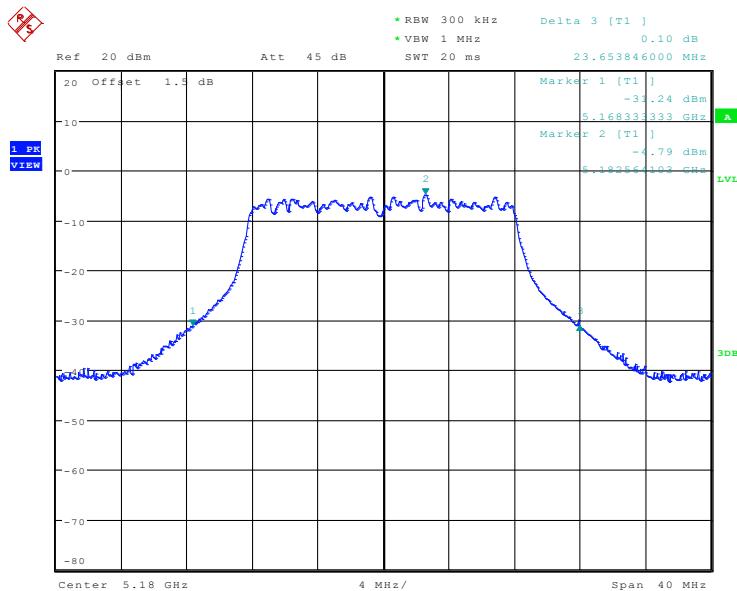


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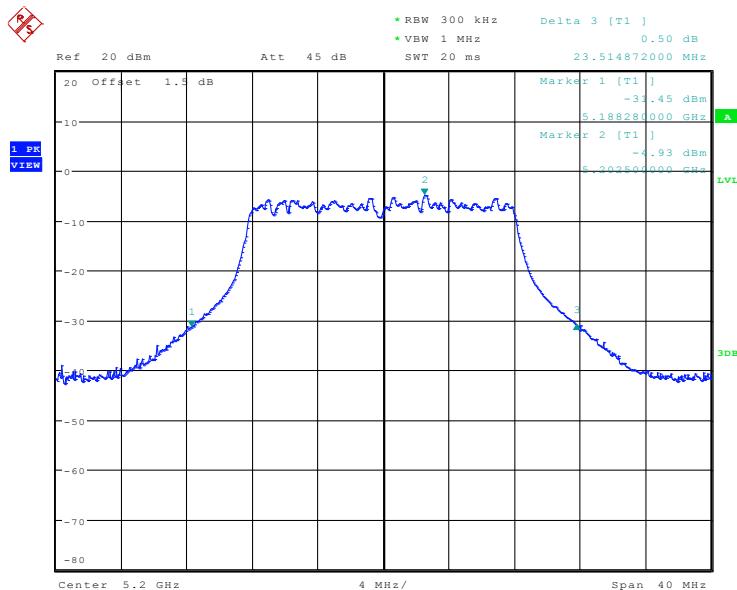
26dB Emission Bandwidth

Test plot as follows:

Test mode:	802.11a	Frequency(MHz):	5180
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Test mode:	802.11a	Frequency(MHz):	5200
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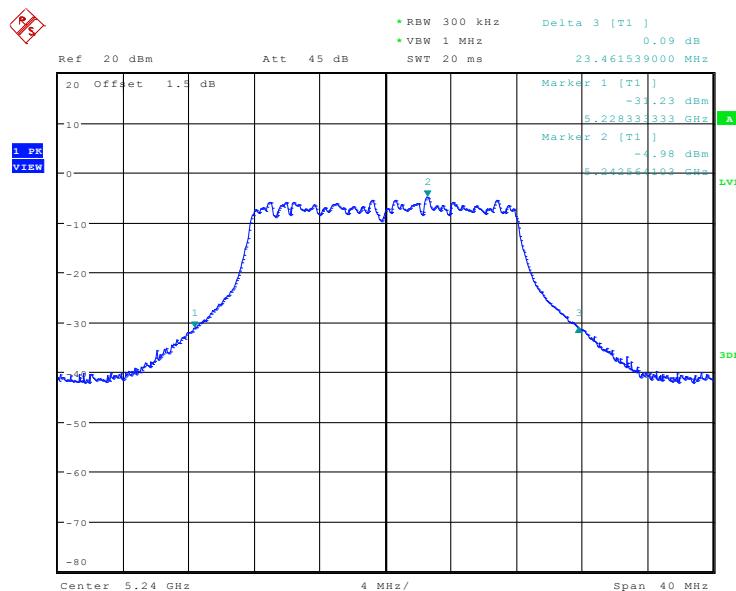


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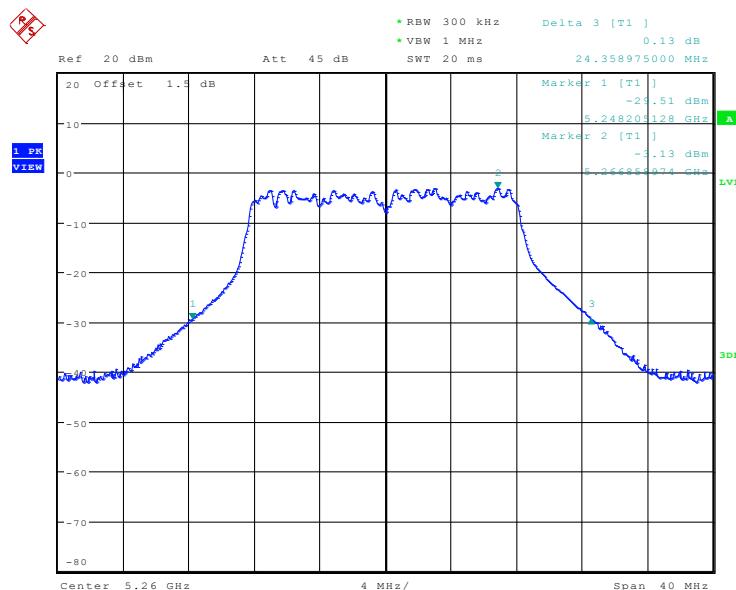


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Test mode:	802.11a	Frequency(MHz):	5240
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Test mode:	802.11a	Frequency(MHz):	5260
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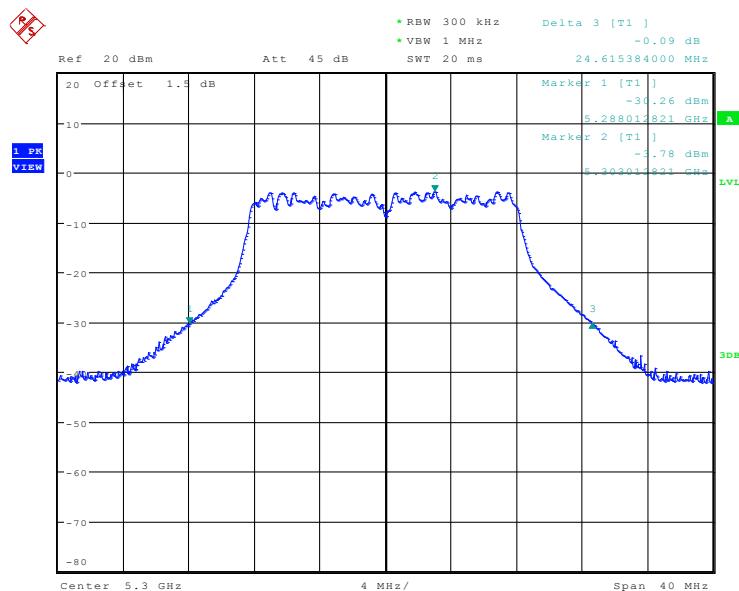


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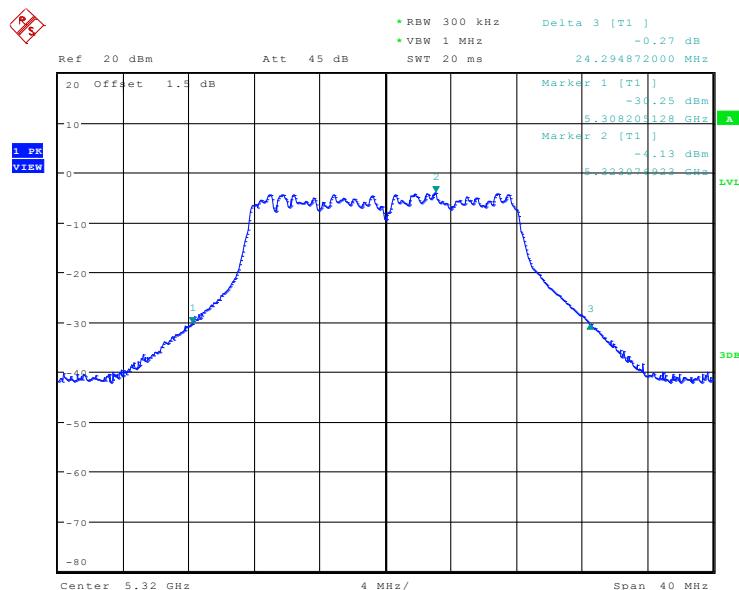


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Test mode:	802.11a	Frequency(MHz):	5300
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Test mode:	802.11a	Frequency(MHz):	5320
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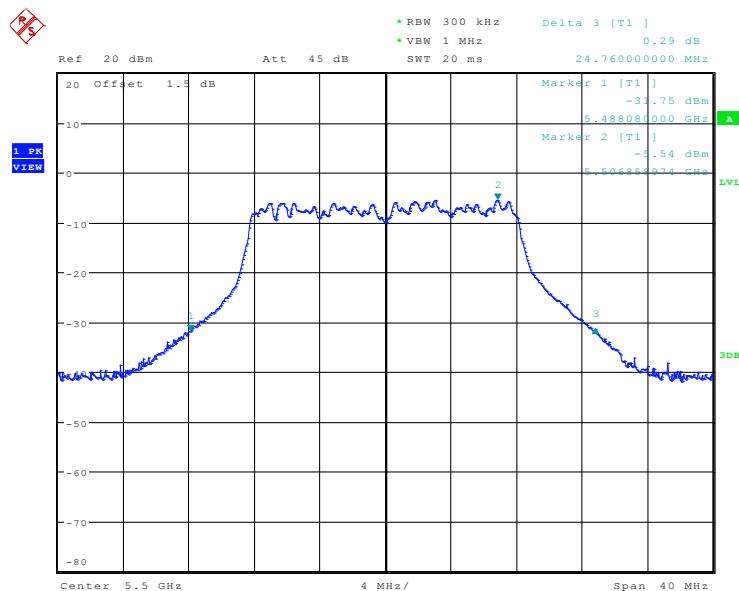


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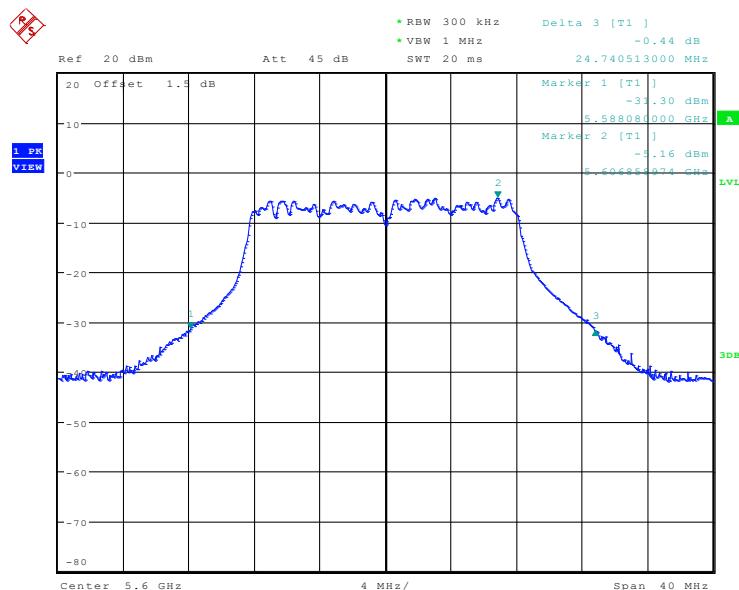


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Test mode:	802.11a	Frequency(MHz):	5500
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Test mode:	802.11a	Frequency(MHz):	5600
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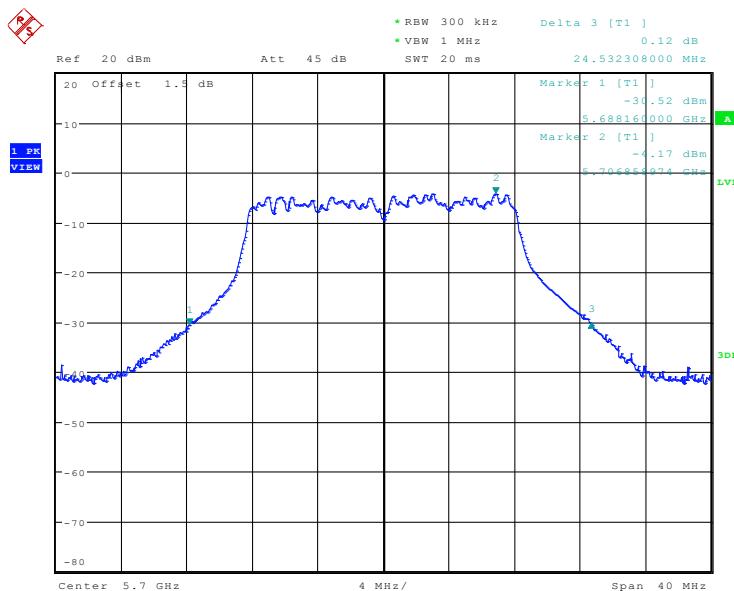


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Test mode:	802.11a	Frequency(MHz):	5700
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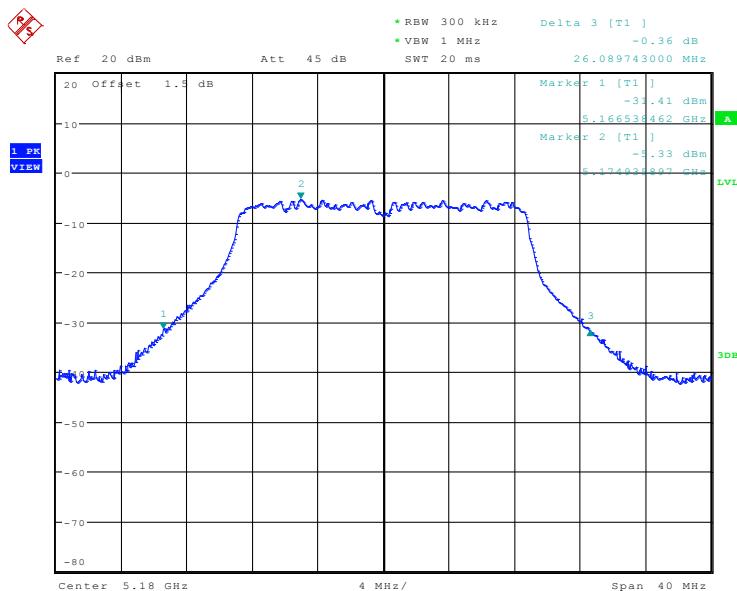
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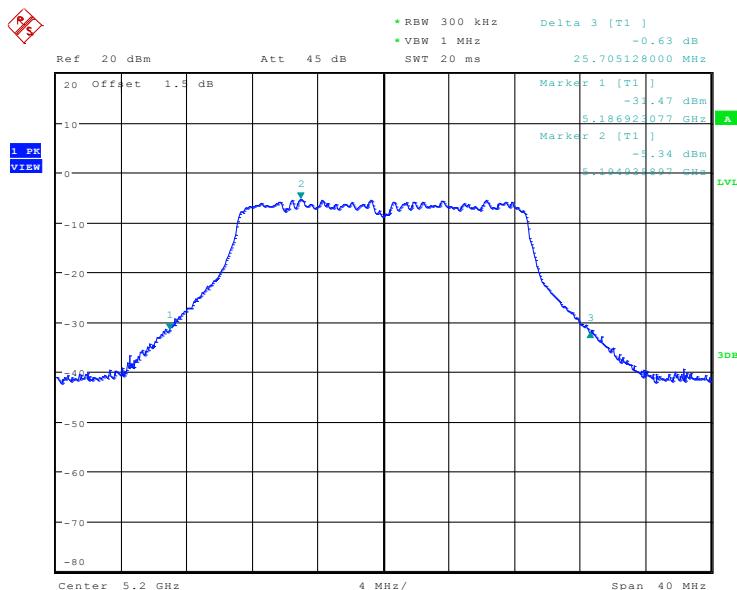


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Test mode:	802.11n(HT20)	Frequency(MHz):	5180
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Test mode:	802.11n(HT20)	Frequency(MHz):	5200
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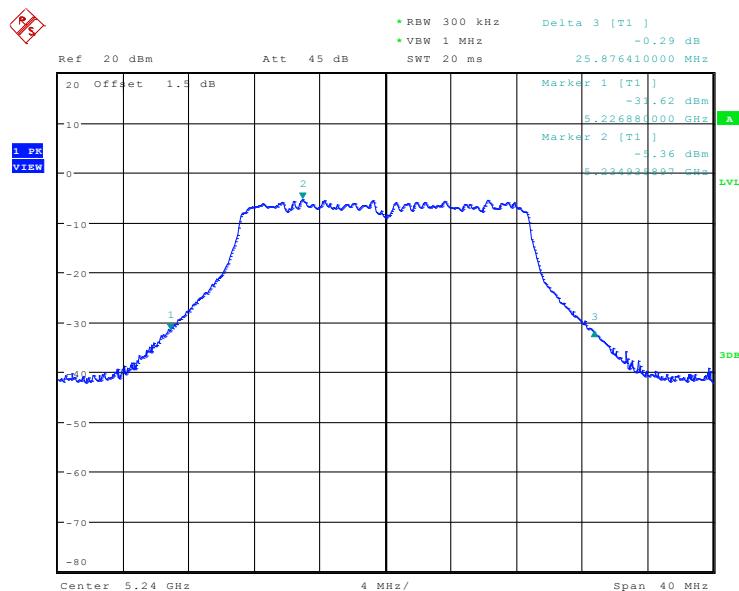


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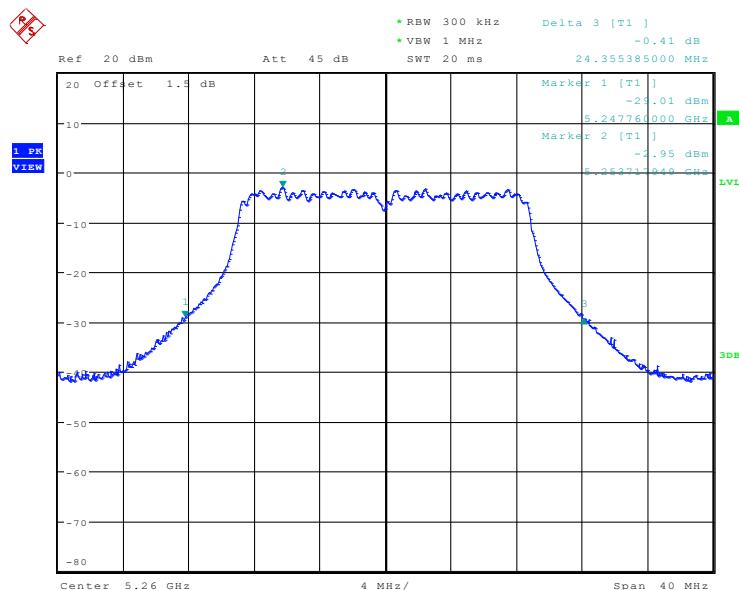


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Test mode:	802.11n(HT20)	Frequency(MHz):	5240
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Test mode:	802.11n(HT20)	Frequency(MHz):	5260
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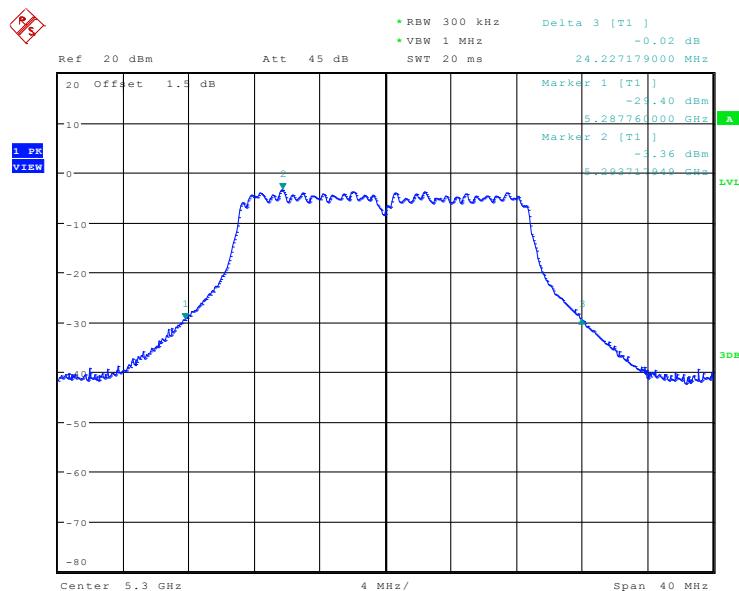


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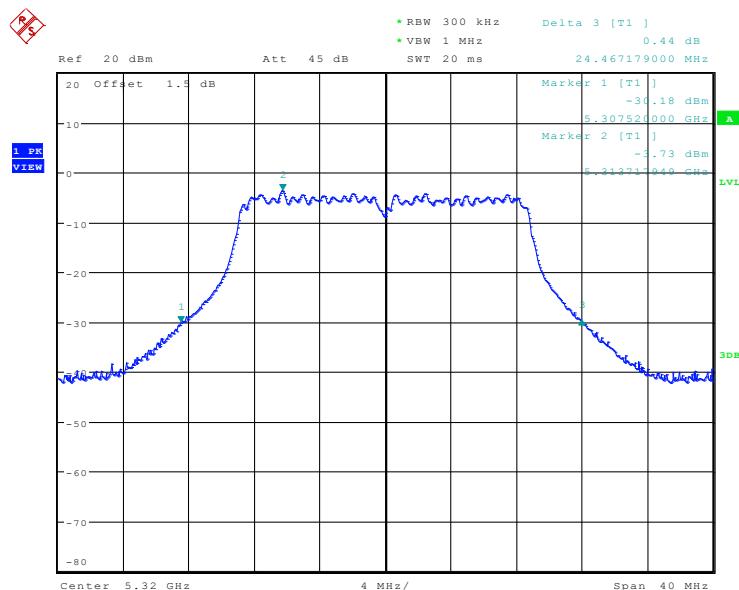


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Test mode:	802.11n(HT20)	Frequency(MHz):	5300
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Test mode:	802.11n(HT20)	Frequency(MHz):	5320
------------	---------------	-----------------	------

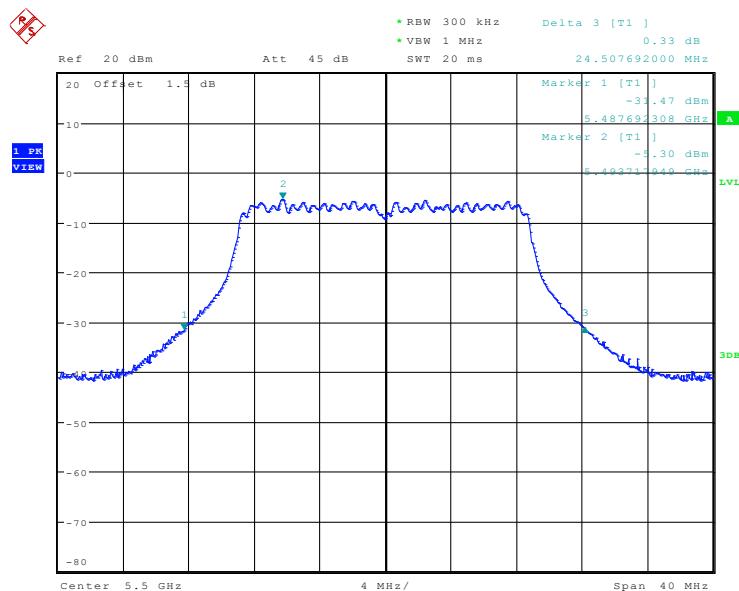


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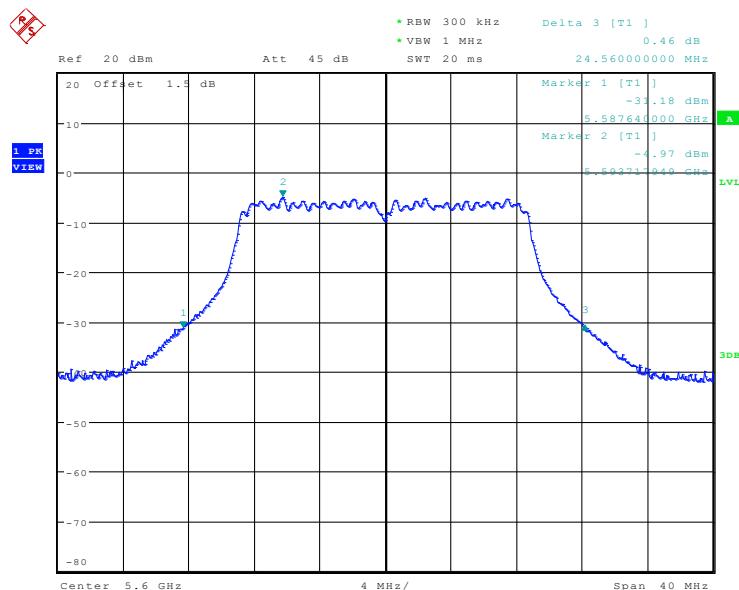


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Test mode:	802.11n(HT20)	Frequency(MHz):	5500
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Test mode:	802.11n(HT20)	Frequency(MHz):	5600
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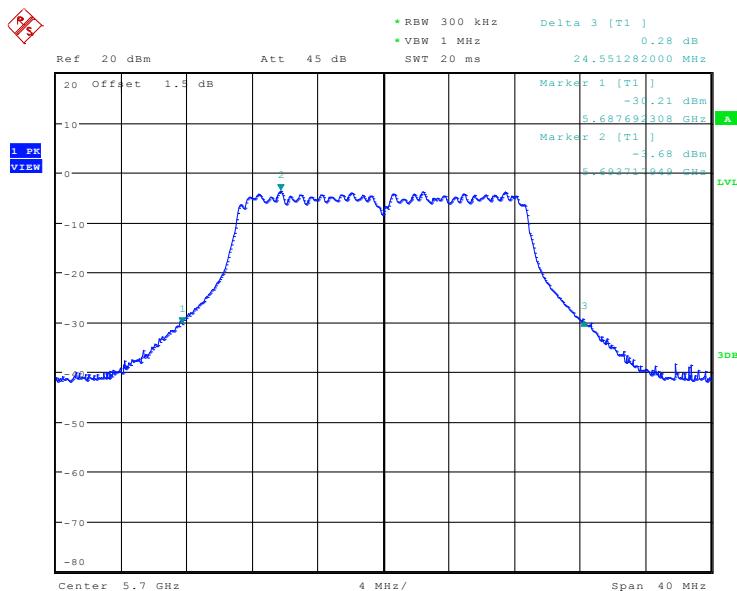


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Test mode:	802.11n(HT20)	Frequency(MHz):	5700
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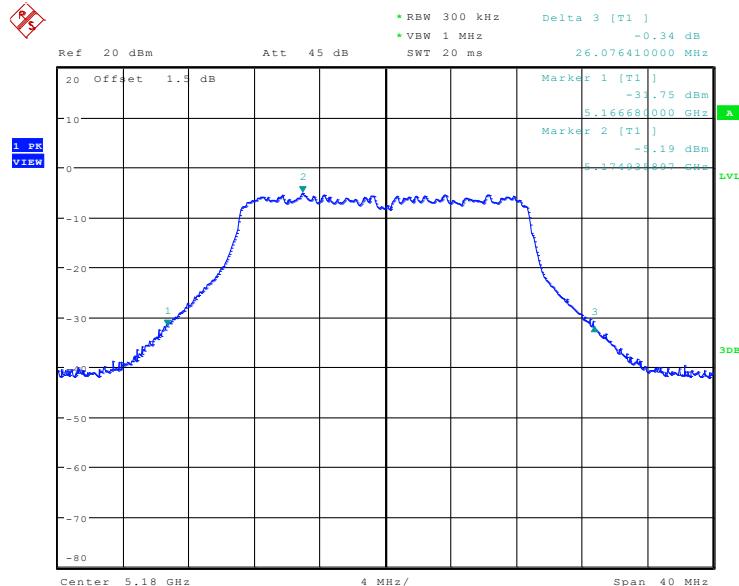


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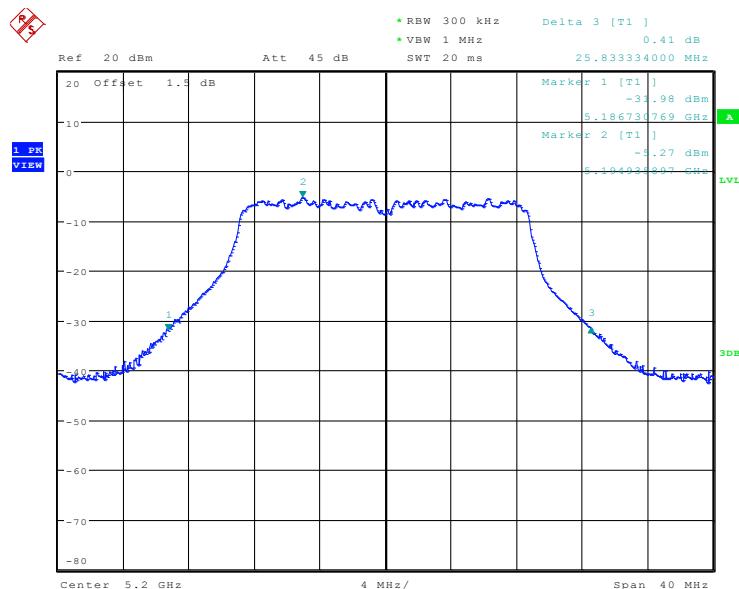


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Test mode:	802.11ac20	Frequency(MHz):	5180
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Test mode:	802.11ac20	Frequency(MHz):	5200
------------	------------	-----------------	------

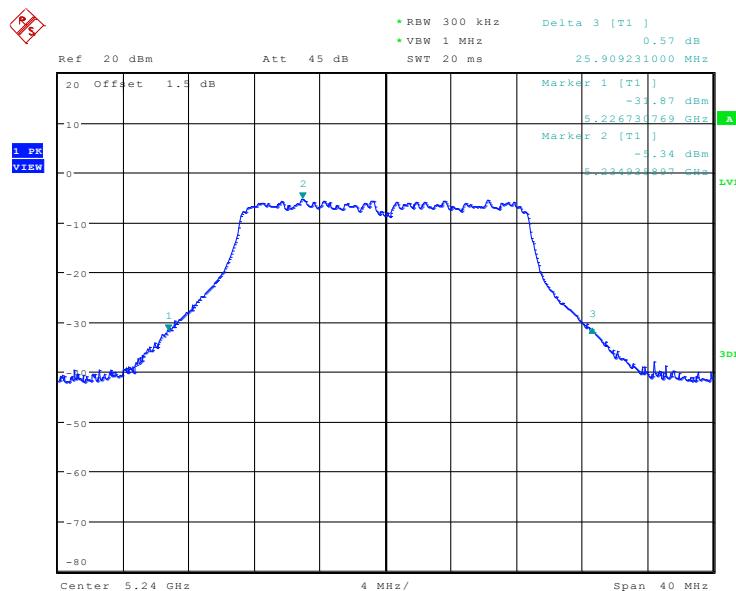


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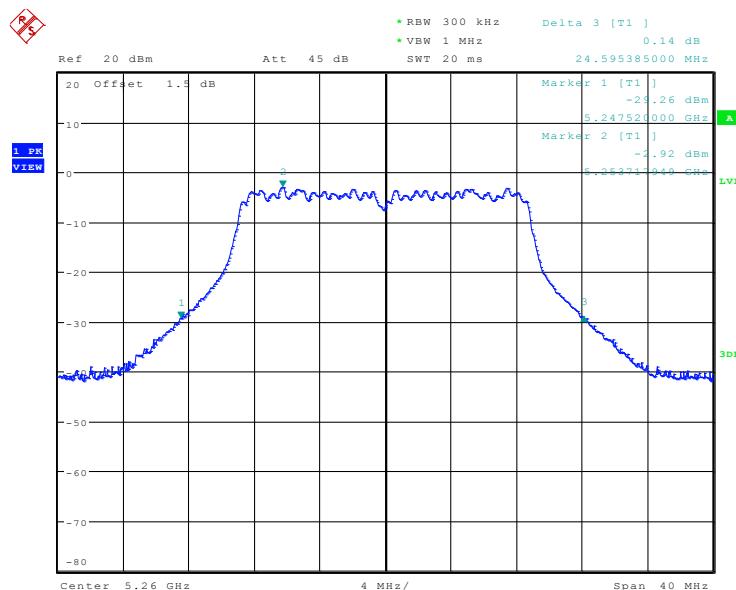


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Test mode:	802.11ac20	Frequency(MHz):	5240
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Test mode:	802.11ac20	Frequency(MHz):	5260
------------	------------	-----------------	------

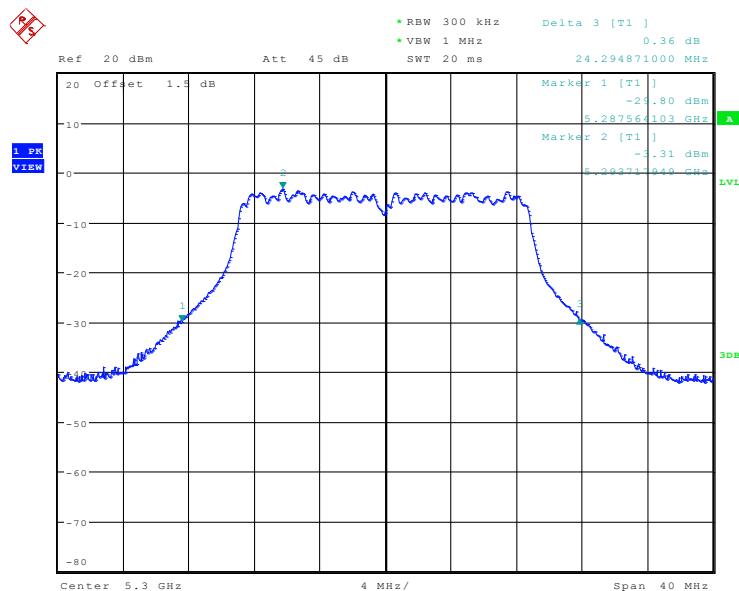


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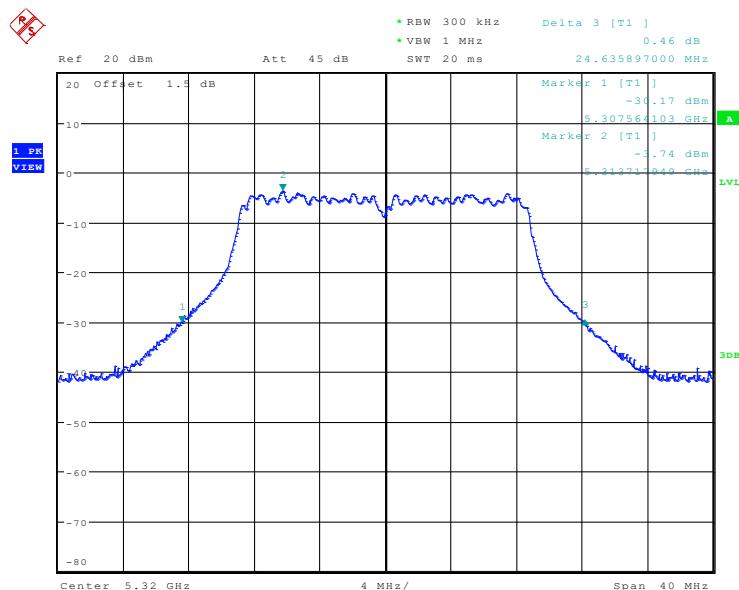


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Test mode:	802.11ac20	Frequency(MHz):	5300
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Test mode:	802.11ac20	Frequency(MHz):	5320
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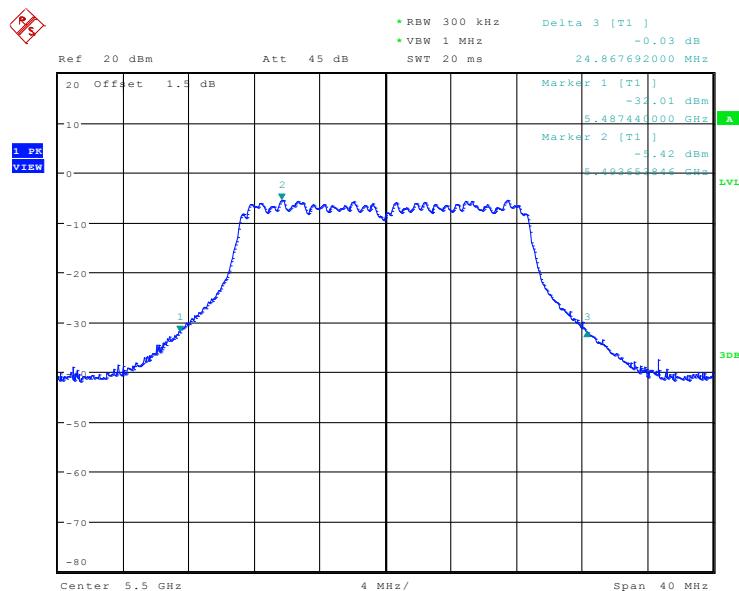


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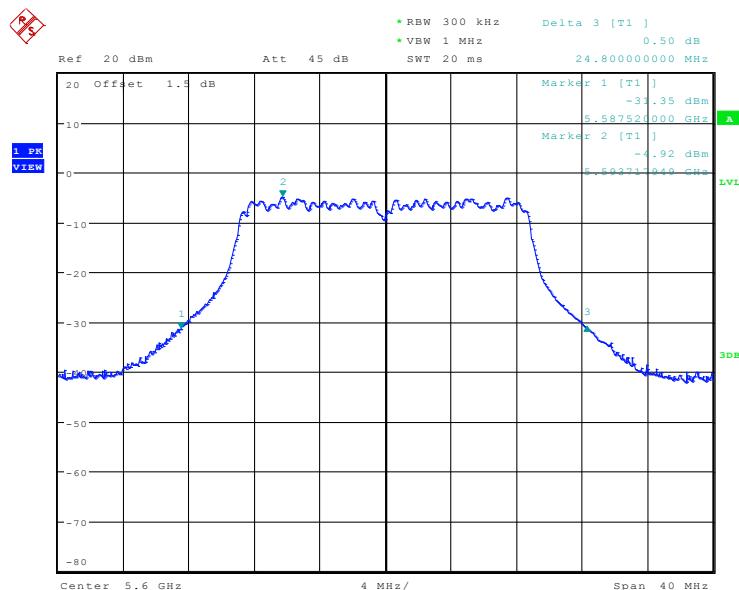


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Test mode:	802.11ac20	Frequency(MHz):	5500
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Test mode:	802.11ac20	Frequency(MHz):	5600
------------	------------	-----------------	------

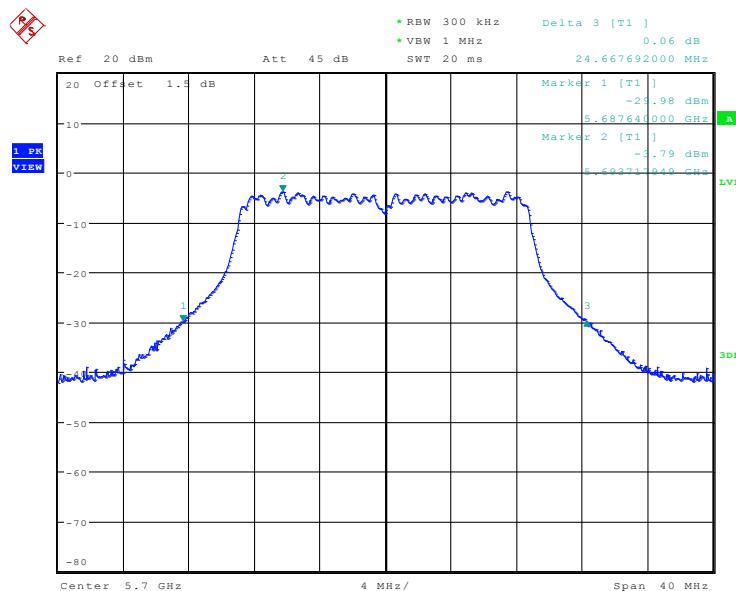


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Test mode:	802.11ac20	Frequency(MHz):	5700
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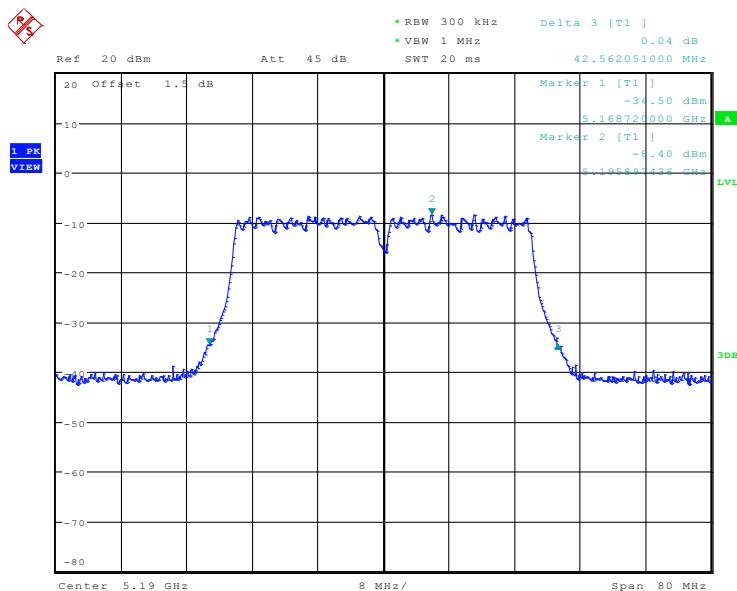


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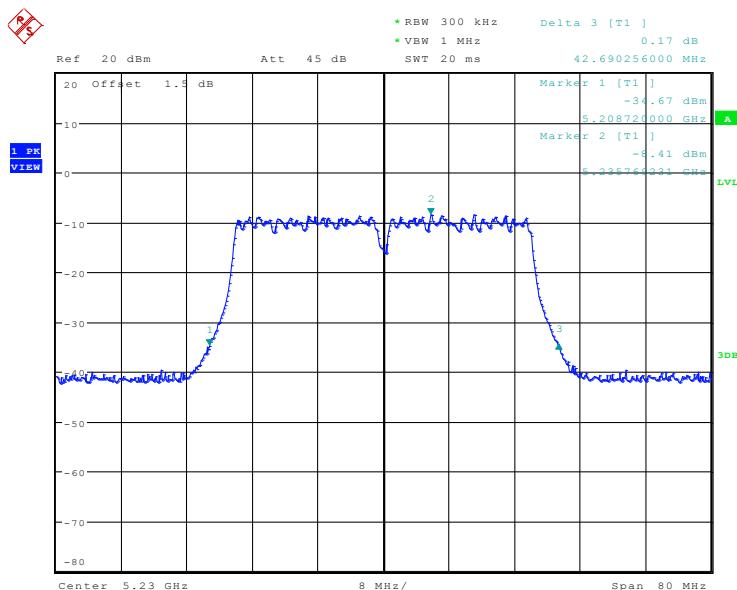


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Test mode:	802.11n(HT40)	Frequency(MHz):	5190
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Test mode:	802.11n(HT40)	Frequency(MHz):	5230
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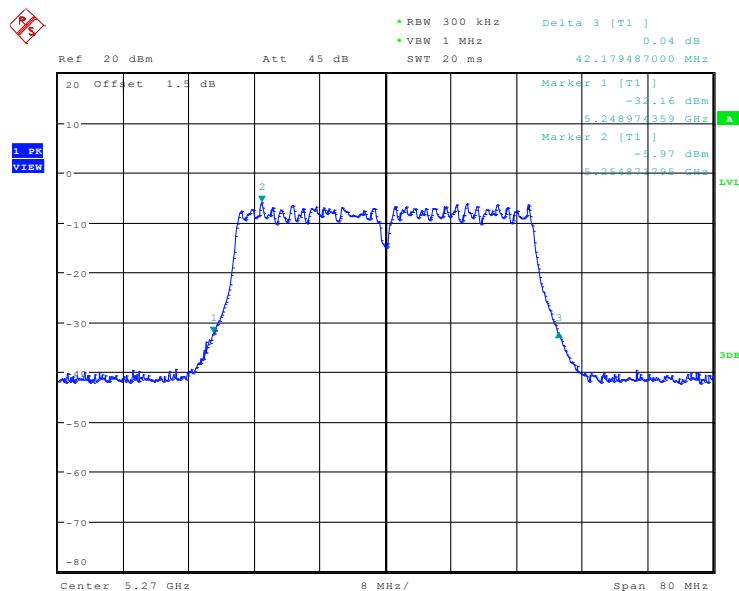


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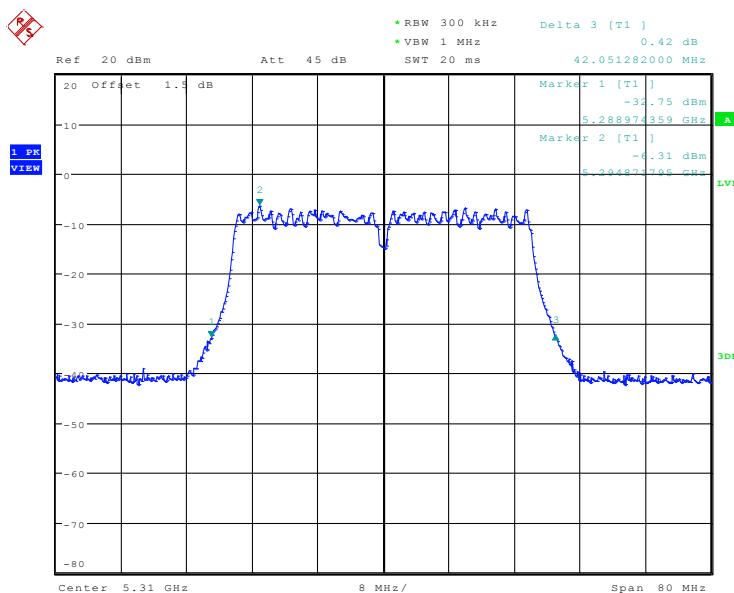


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Test mode:	802.11n(HT40)	Frequency(MHz):	5270
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Test mode:	802.11n(HT40)	Frequency(MHz):	5310
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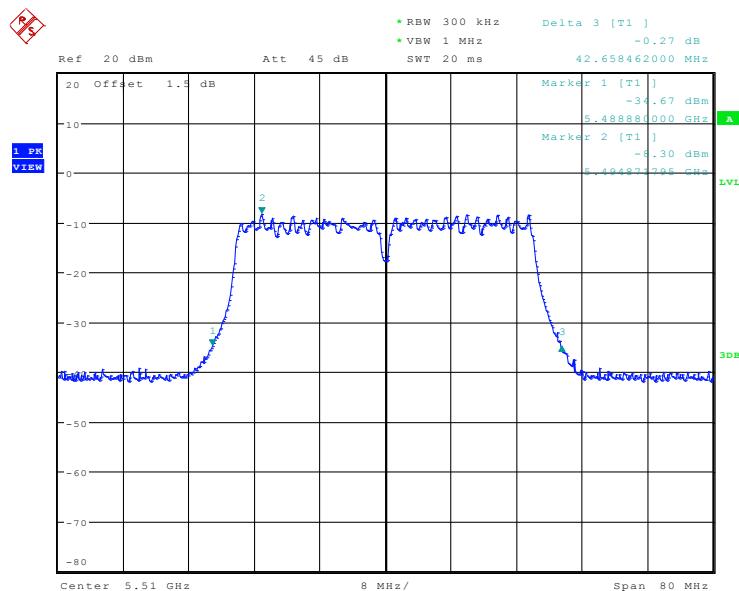


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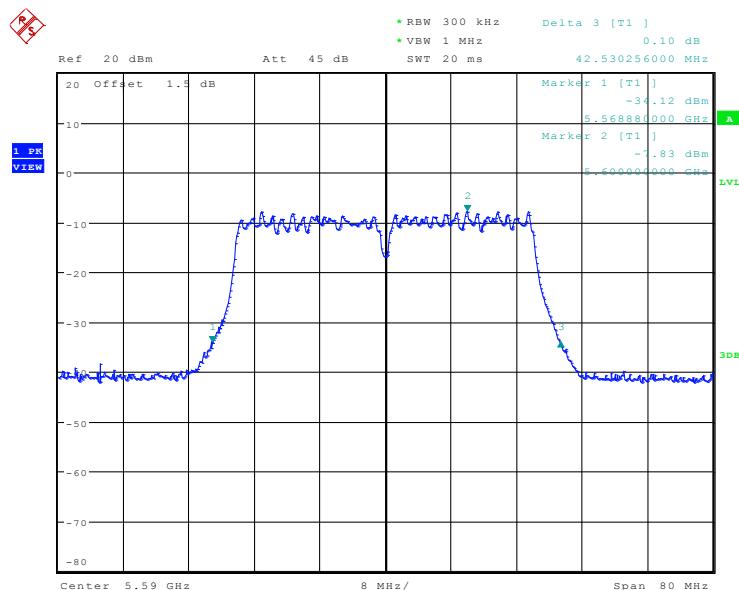


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Test mode:	802.11n(HT40)	Frequency(MHz):	5510
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Test mode:	802.11n(HT40)	Frequency(MHz):	5590
------------	---------------	-----------------	------

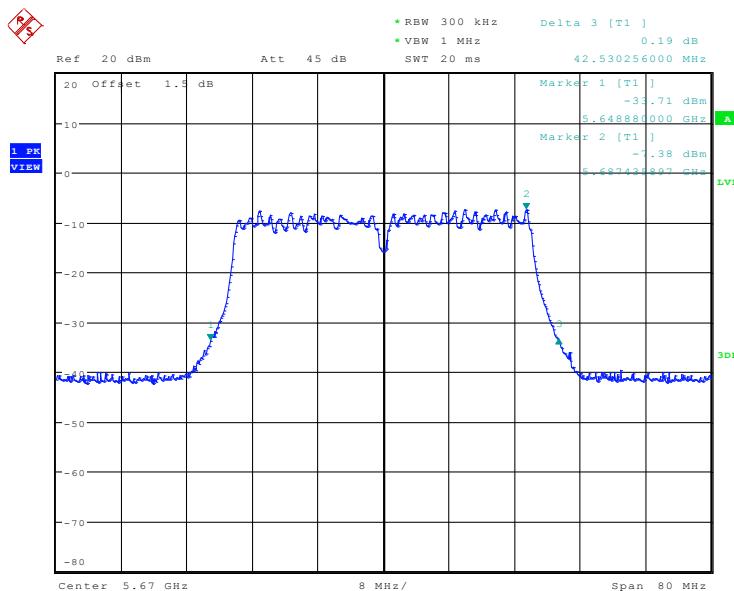


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Test mode:	802.11n(HT40)	Frequency(MHz):	5670
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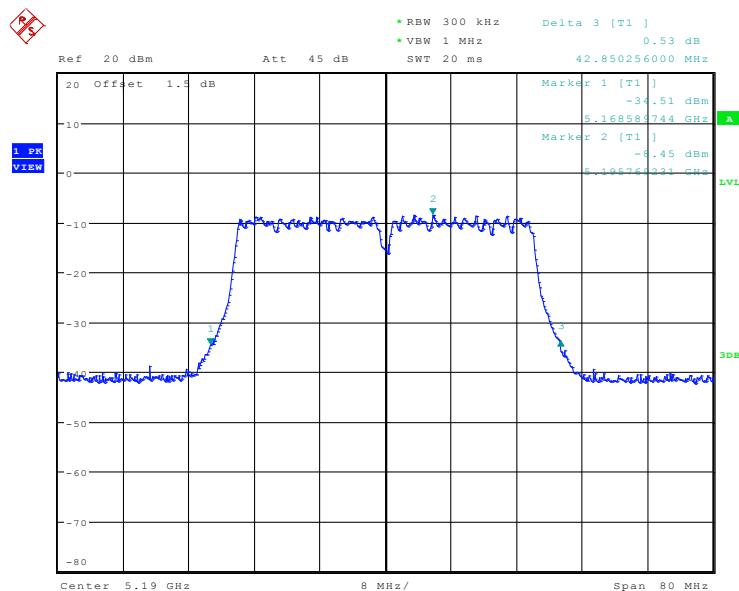
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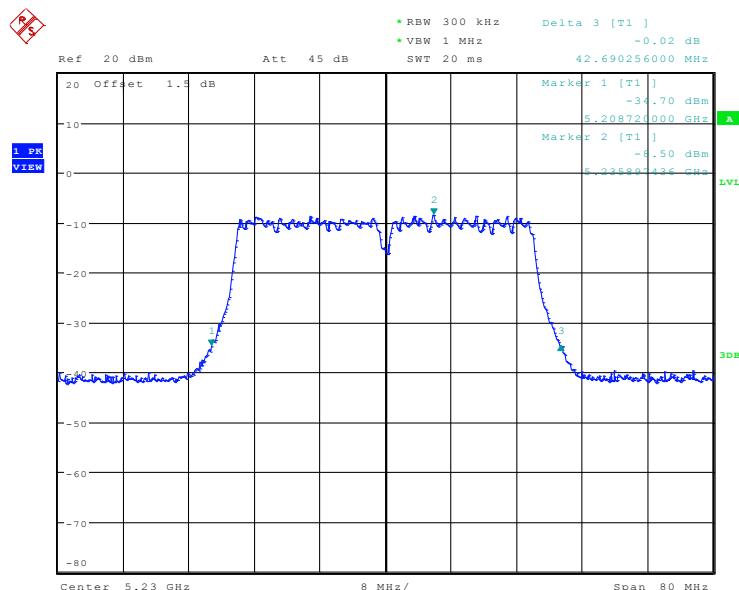


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Test mode:	802.11ac40	Frequency(MHz):	5190
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Test mode:	802.11ac40	Frequency(MHz):	5230
------------	------------	-----------------	------

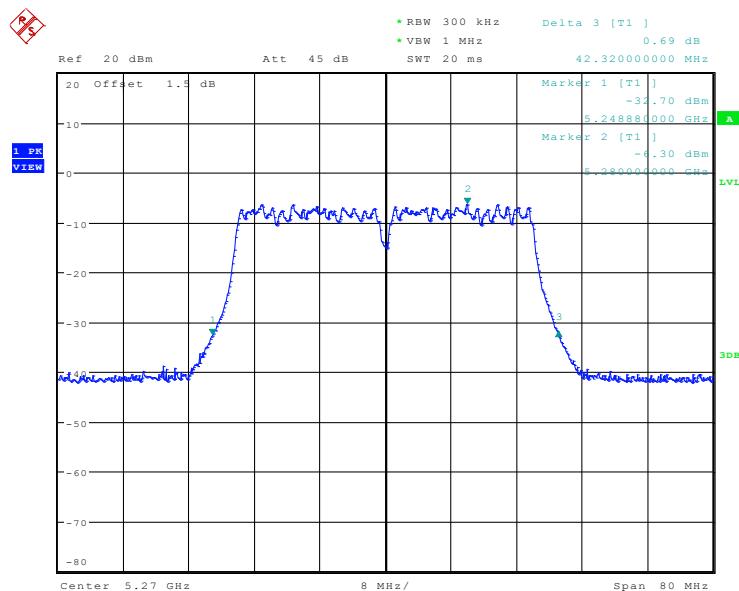


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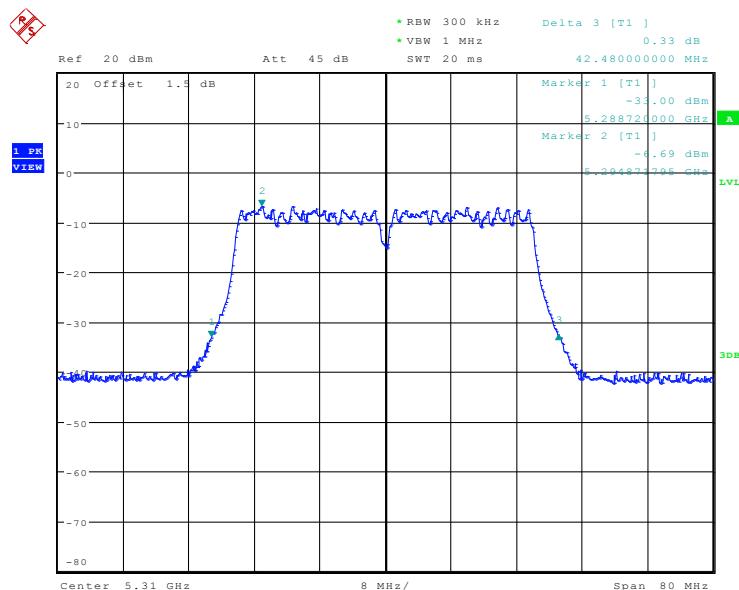


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Test mode:	802.11ac40	Frequency(MHz):	5270
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Test mode:	802.11ac40	Frequency(MHz):	5310
------------	------------	-----------------	------

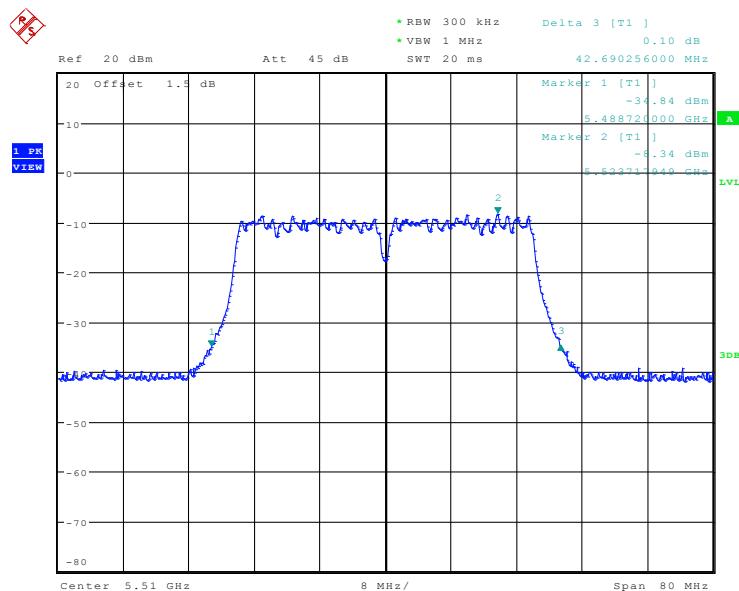


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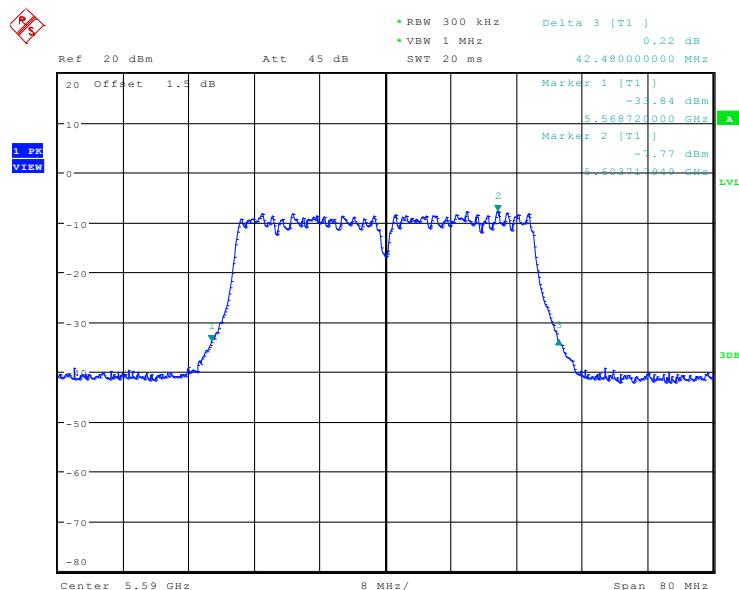


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Test mode:	802.11ac40	Frequency(MHz):	5510
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Test mode:	802.11ac40	Frequency(MHz):	5590
------------	------------	-----------------	------

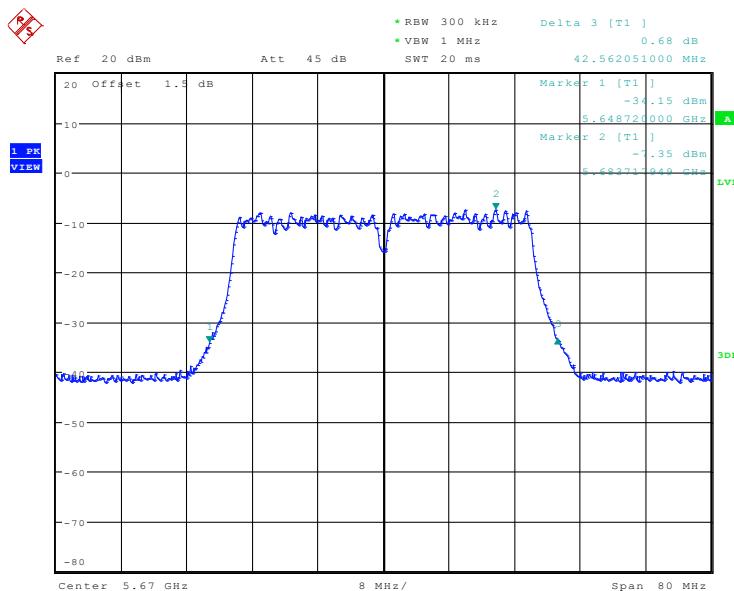


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Test mode:	802.11ac40	Frequency(MHz):	5670
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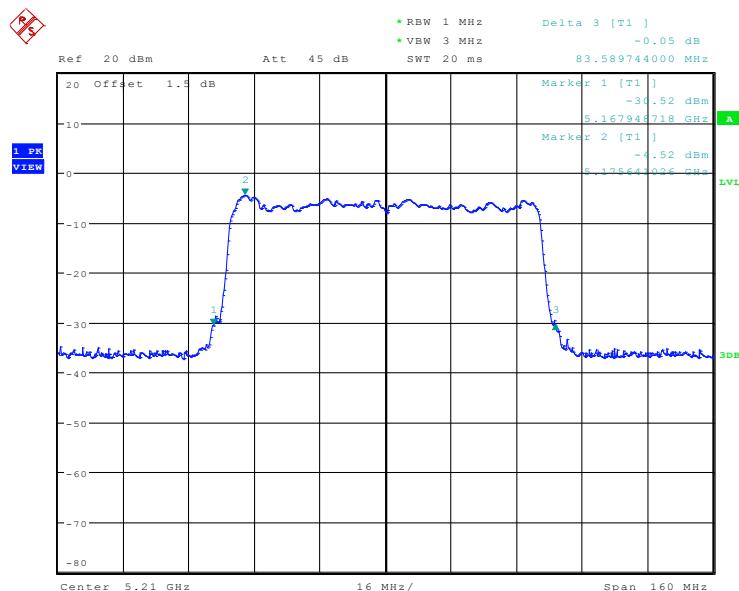
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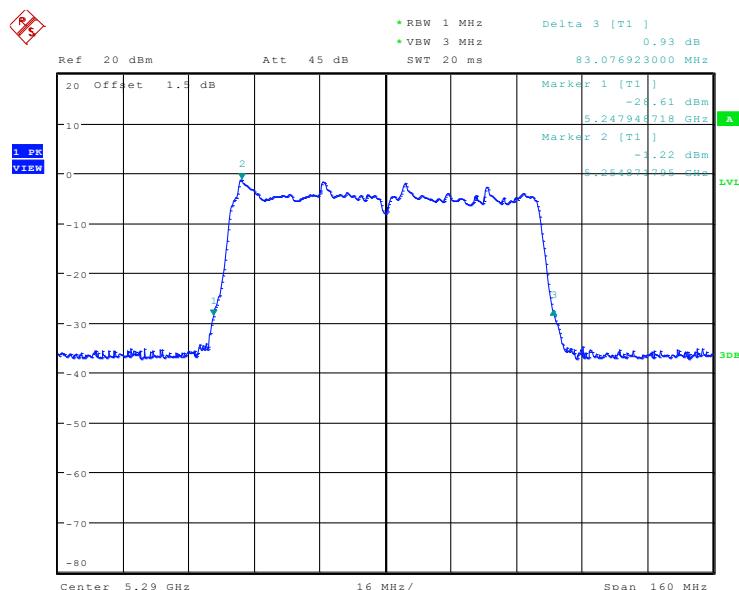


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Test mode:	802.11ac80	Frequency(MHz):	5210
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Test mode:	802.11ac80	Frequency(MHz):	5290
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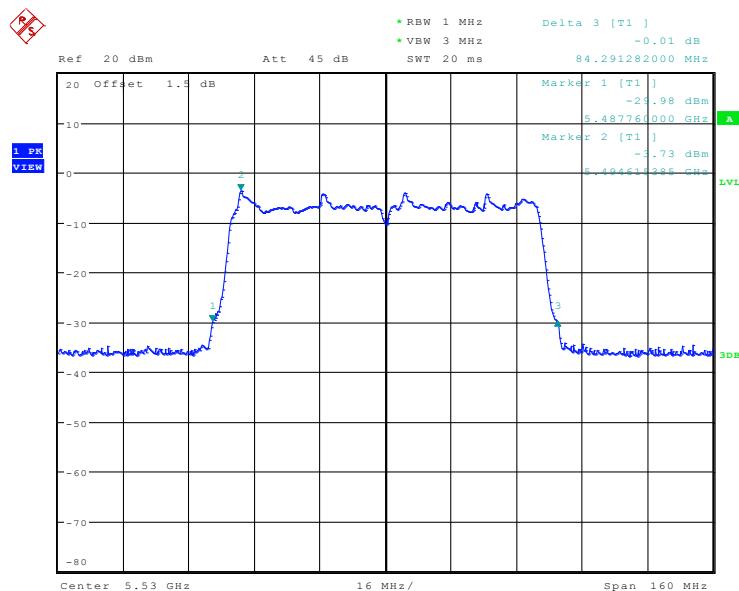


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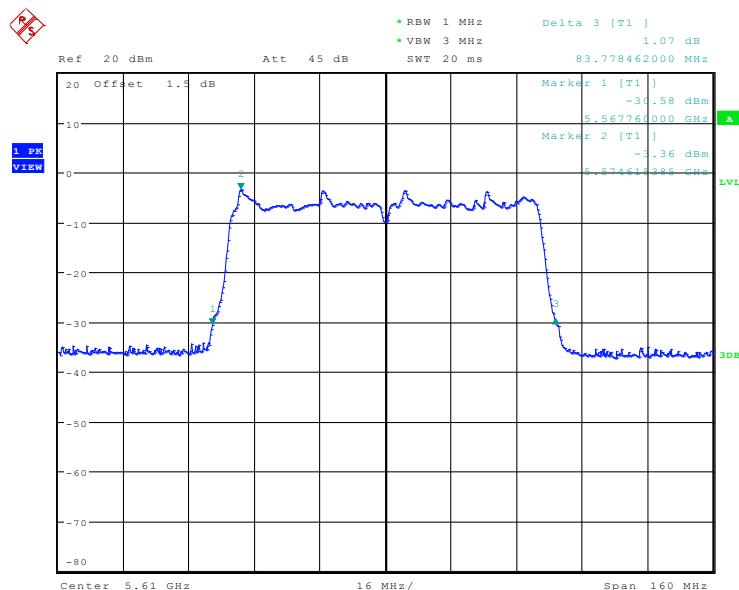


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Test mode:	802.11ac80	Frequency(MHz):	5530
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Test mode:	802.11ac80	Frequency(MHz):	5610
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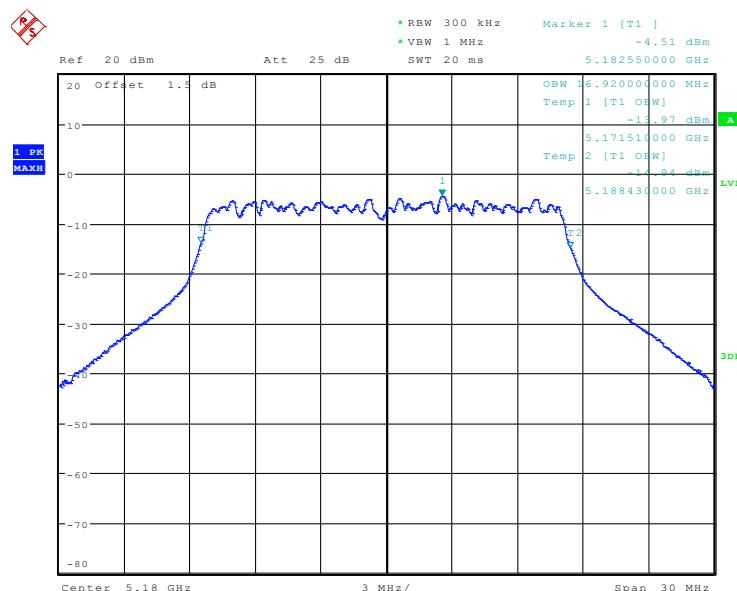


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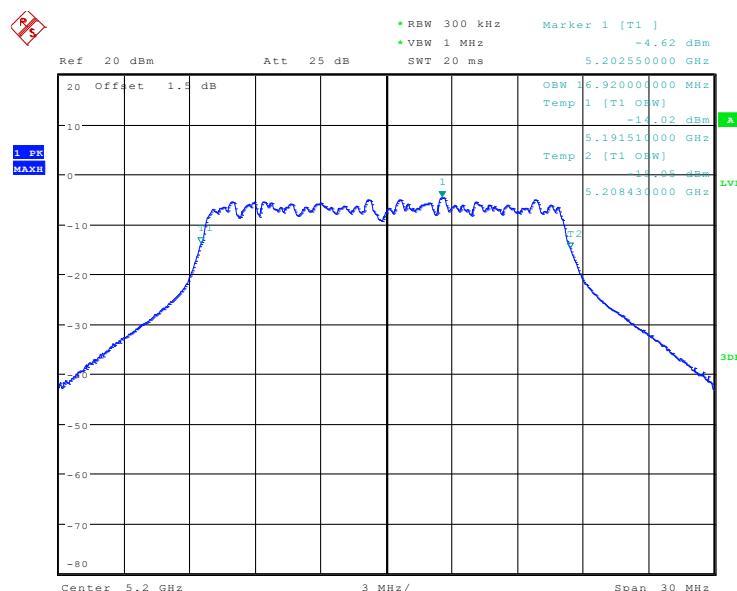
99% occupied bandwidth

Test plot as follows:

Test mode:	802.11a	Frequency(MHz):	5180
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Test mode:	802.11a	Frequency(MHz):	5200
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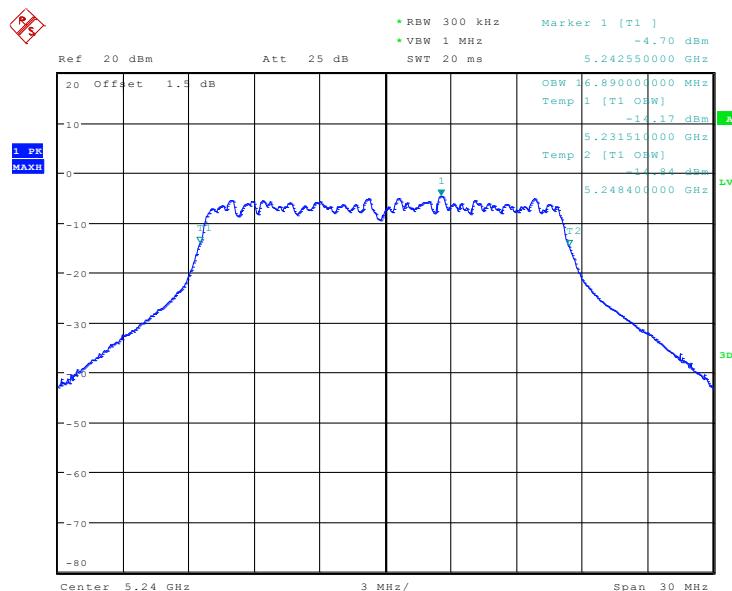


SGS-CSTC Standards Technical Services Ltd. Shenzhen Branch

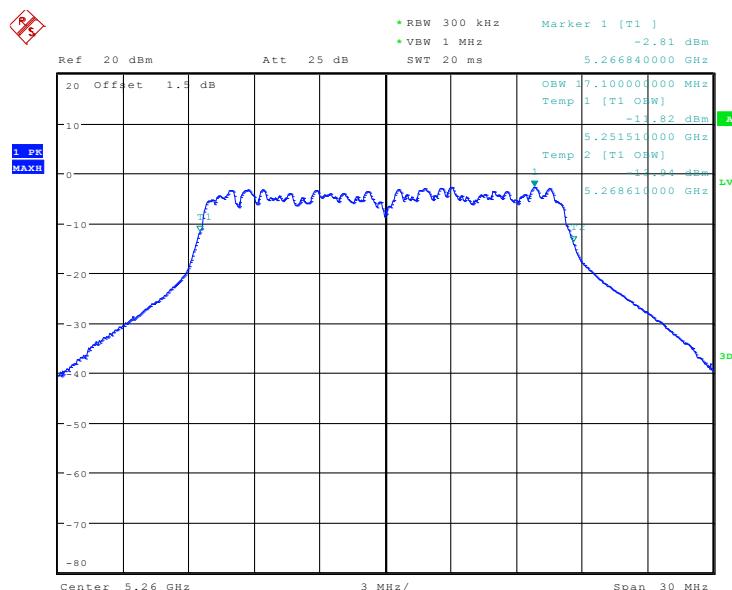


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Test mode:	802.11a	Frequency(MHz):	5240
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Test mode:	802.11a	Frequency(MHz):	5260
------------	---------	-----------------	------

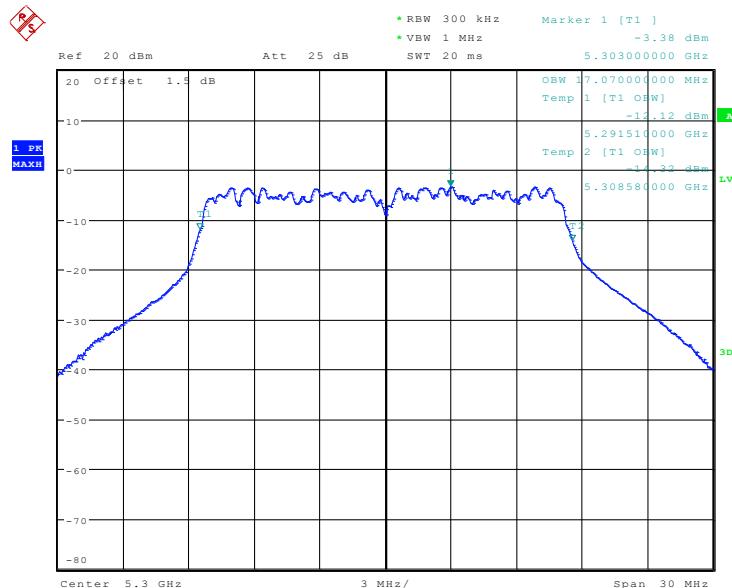


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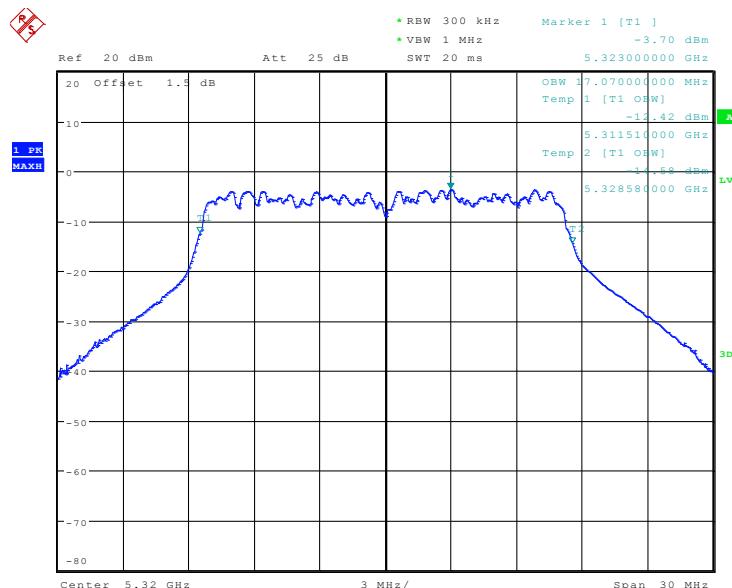


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Test mode:	802.11a	Frequency(MHz):	5300
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Test mode:	802.11a	Frequency(MHz):	5320
------------	---------	-----------------	------

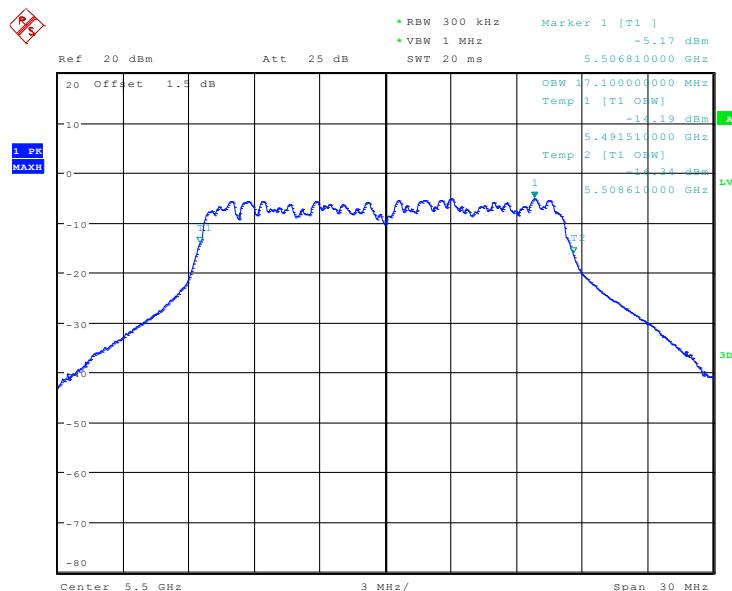


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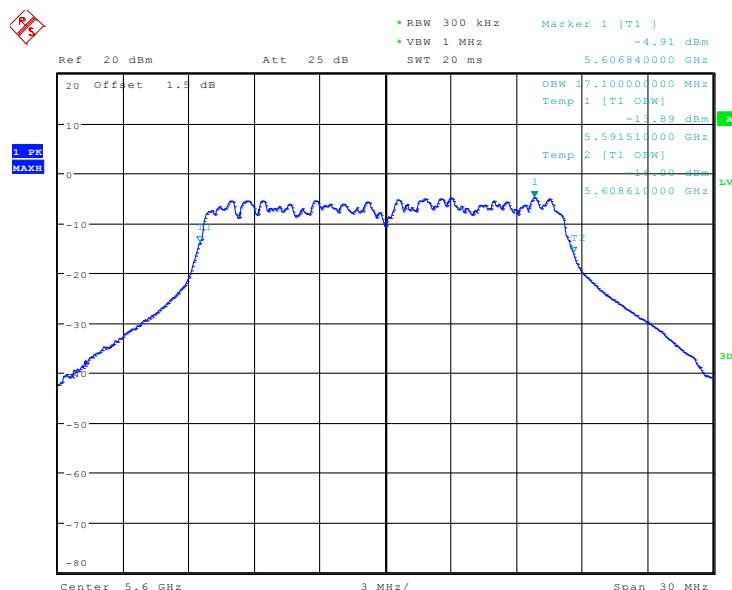


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Test mode:	802.11a	Frequency(MHz):	5500
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Test mode:	802.11a	Frequency(MHz):	5600
------------	---------	-----------------	------

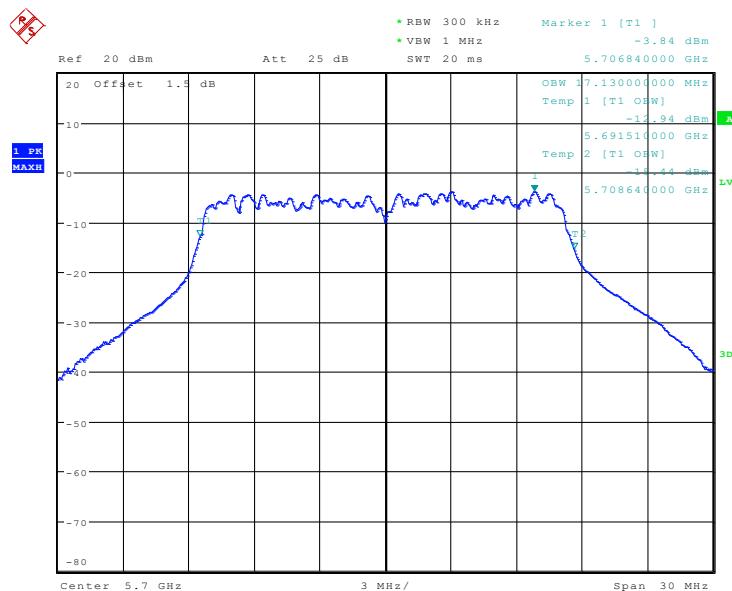


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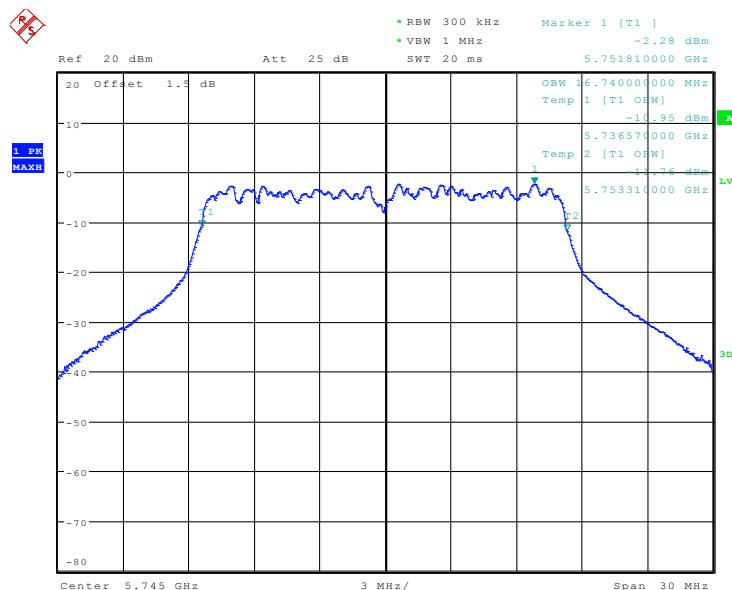


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Test mode:	802.11a	Frequency(MHz):	5700
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Test mode:	802.11a	Frequency(MHz):	5745
------------	---------	-----------------	------

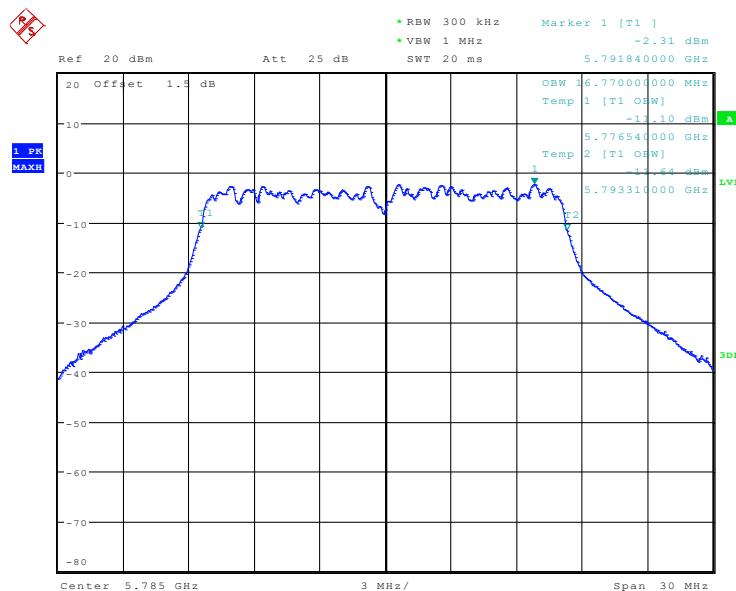


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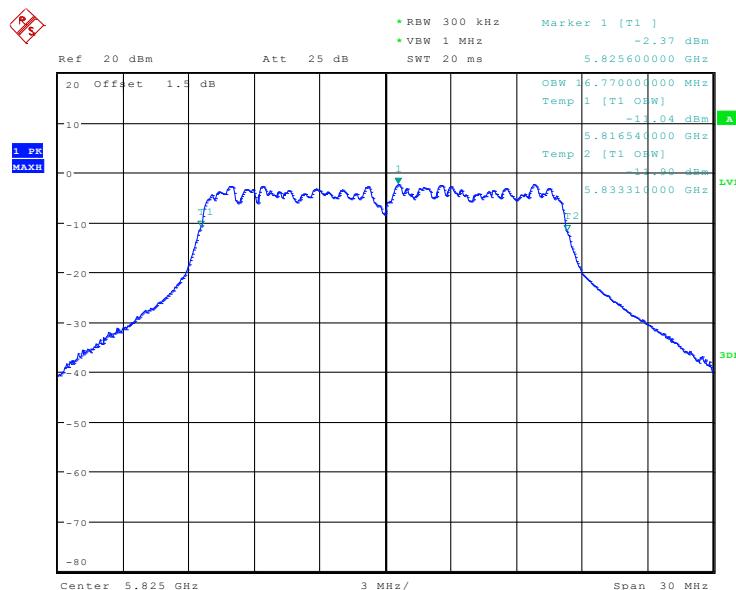


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Test mode:	802.11a	Frequency(MHz):	5785
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Test mode:	802.11a	Frequency(MHz):	5825
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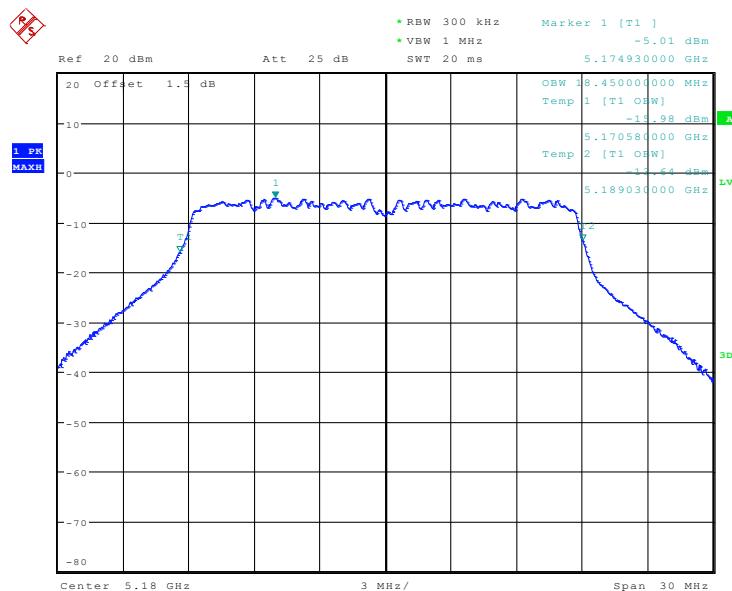


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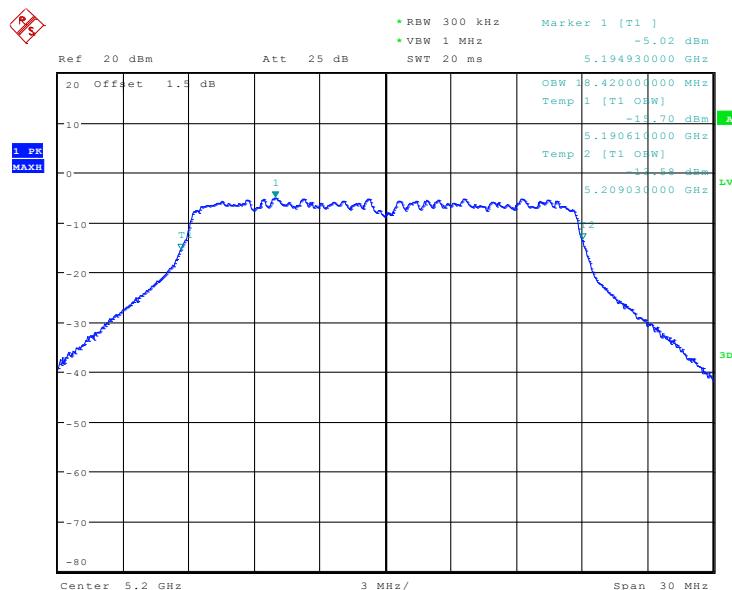


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Test mode:	802.11n(HT20)	Frequency(MHz):	5180
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Test mode:	802.11n(HT20)	Frequency(MHz):	5200
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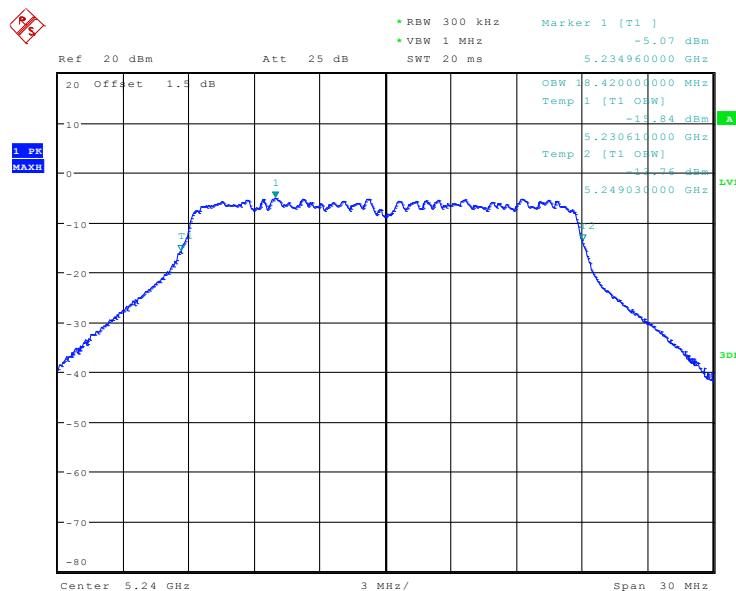


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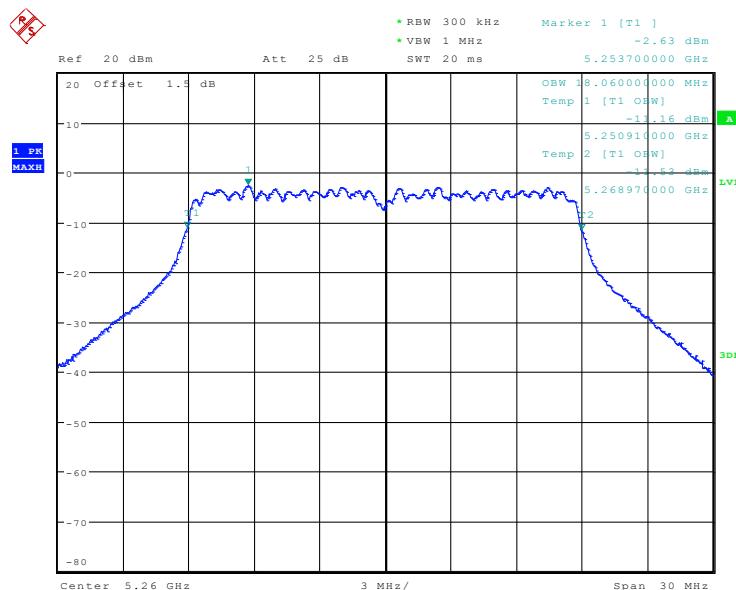


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Test mode:	802.11n(HT20)	Frequency(MHz):	5240
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Test mode:	802.11n(HT20)	Frequency(MHz):	5260
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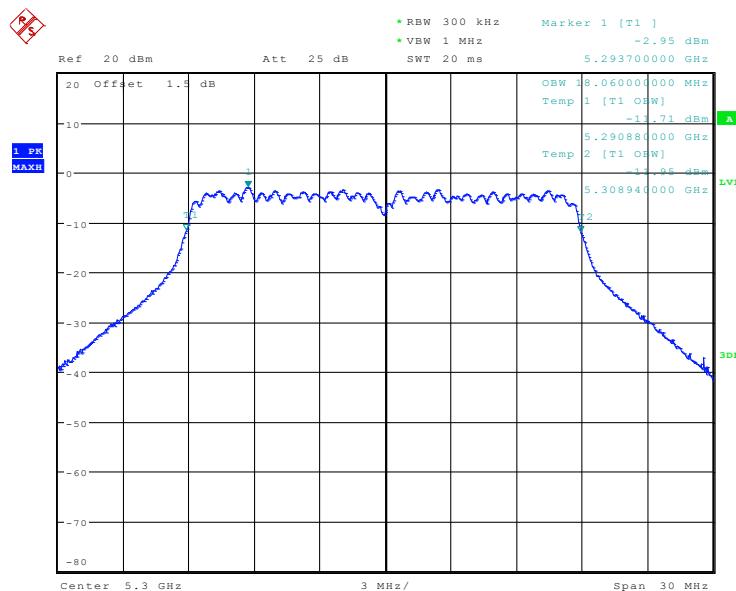


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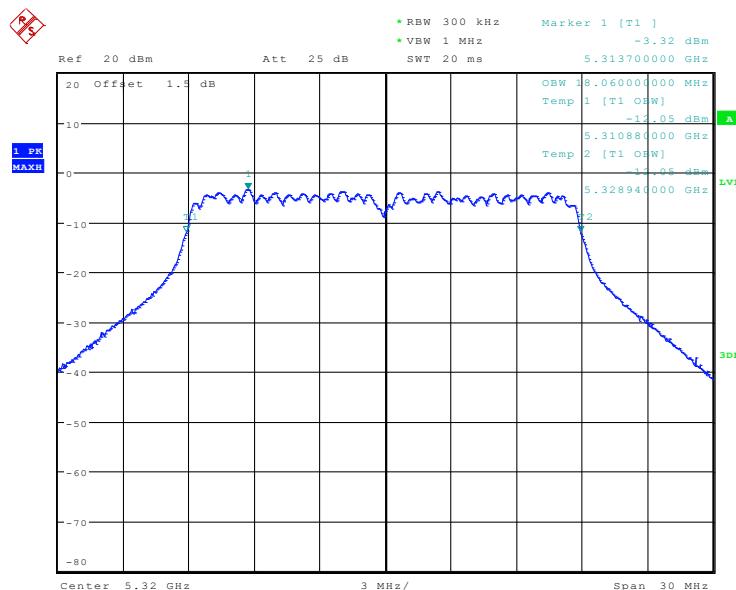


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Test mode:	802.11n(HT20)	Frequency(MHz):	5300
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Test mode:	802.11n(HT20)	Frequency(MHz):	5320
------------	---------------	-----------------	------

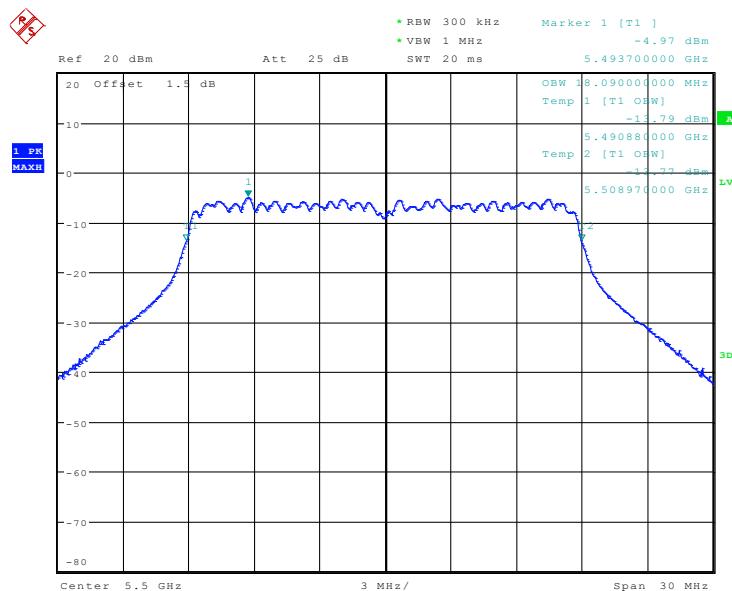


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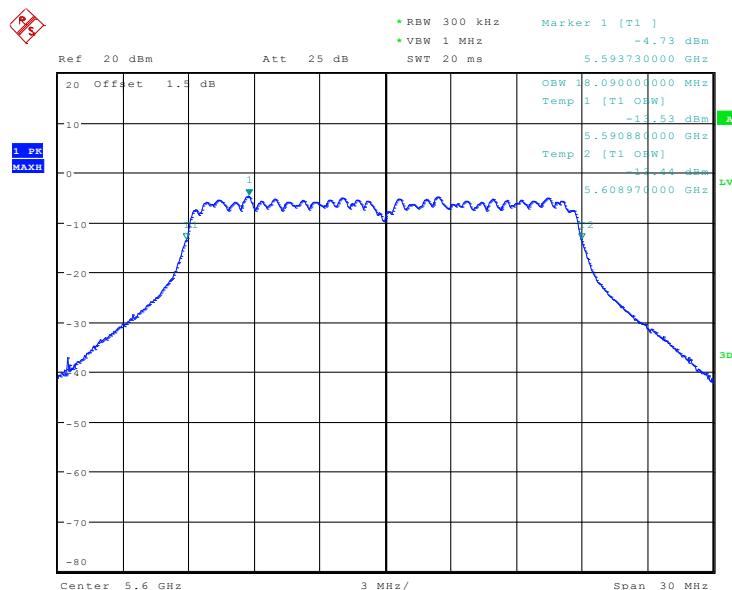


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Test mode:	802.11n(HT20)	Frequency(MHz):	5500
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Test mode:	802.11n(HT20)	Frequency(MHz):	5600
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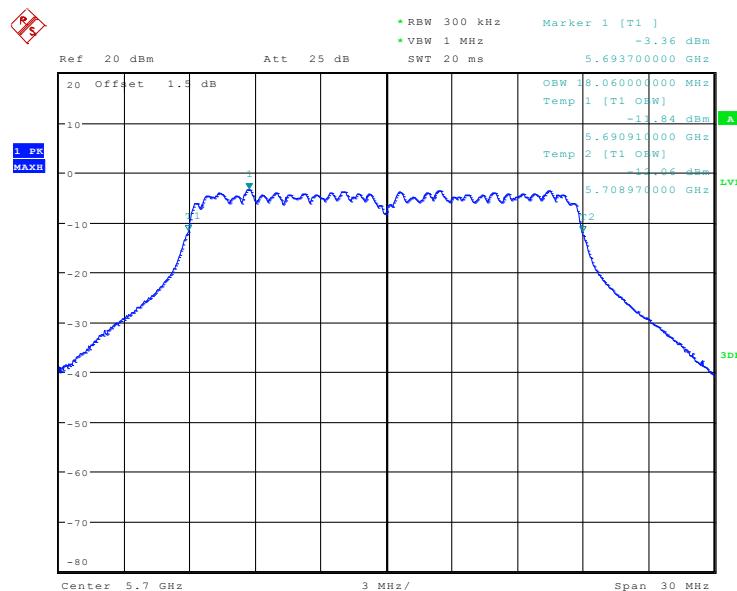


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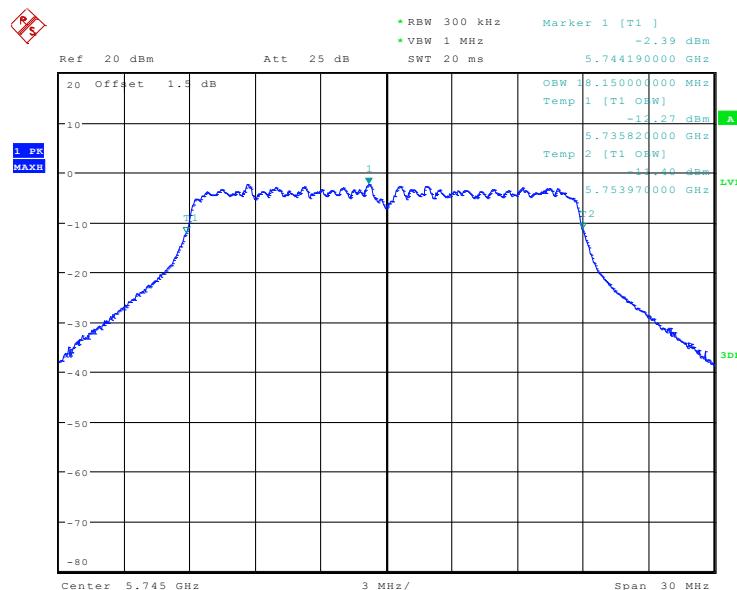


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Test mode:	802.11n(HT20)	Frequency(MHz):	5700
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Test mode:	802.11n(HT20)	Frequency(MHz):	5745
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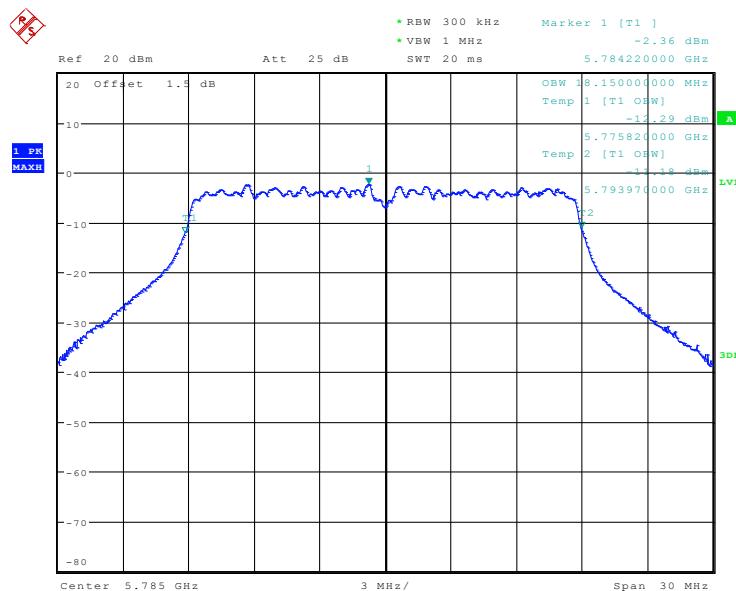


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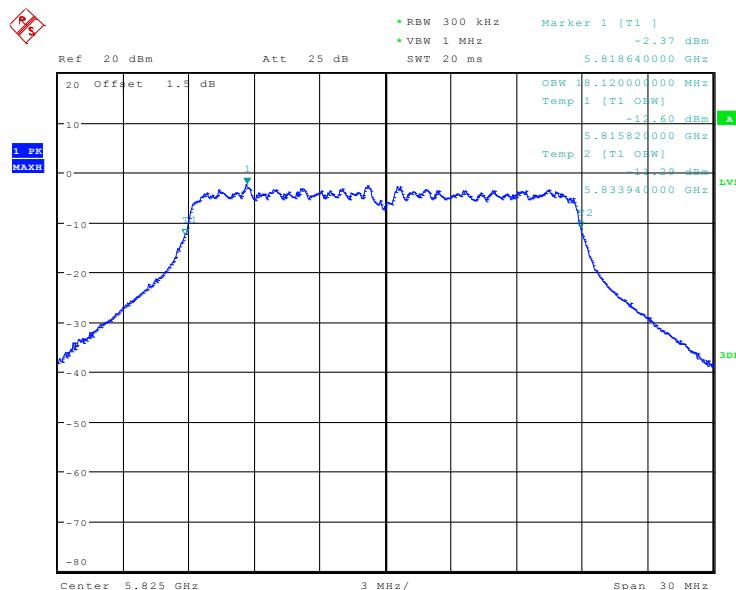


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Test mode:	802.11n(HT20)	Frequency(MHz):	5785
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Test mode:	802.11n(HT20)	Frequency(MHz):	5825
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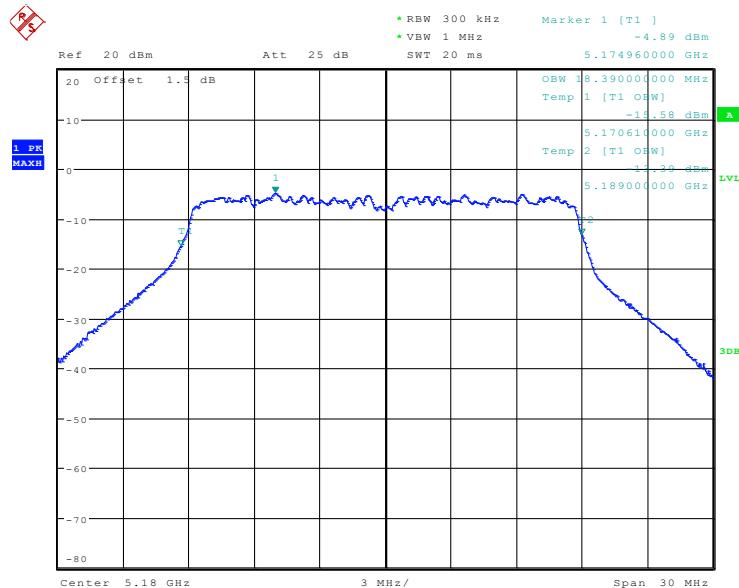


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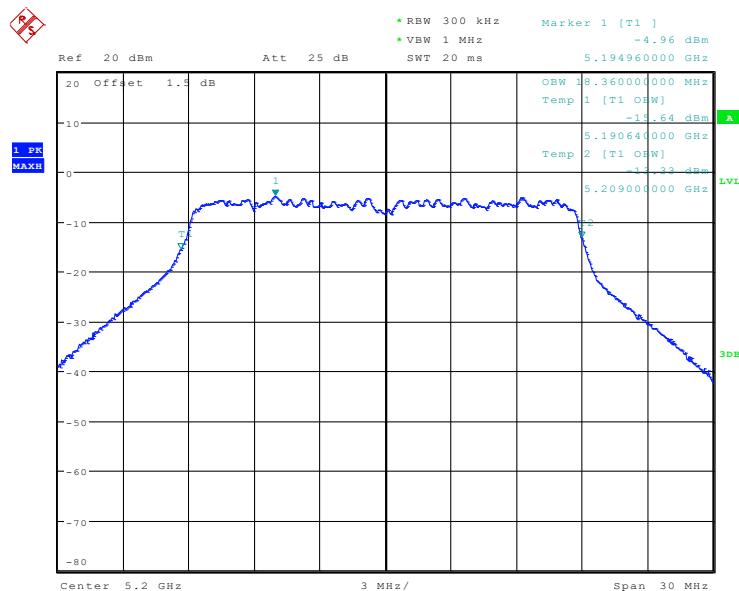


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Test mode:	802.11ac20	Frequency(MHz):	5180
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Test mode:	802.11ac20	Frequency(MHz):	5200
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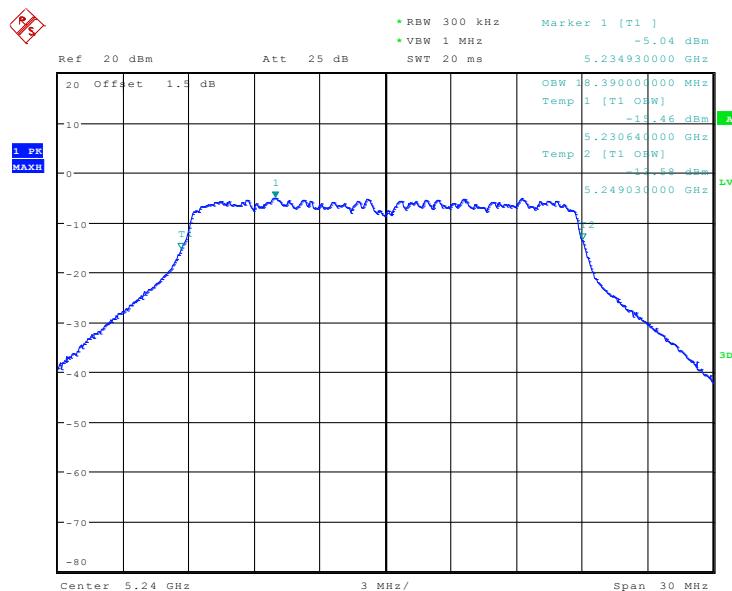


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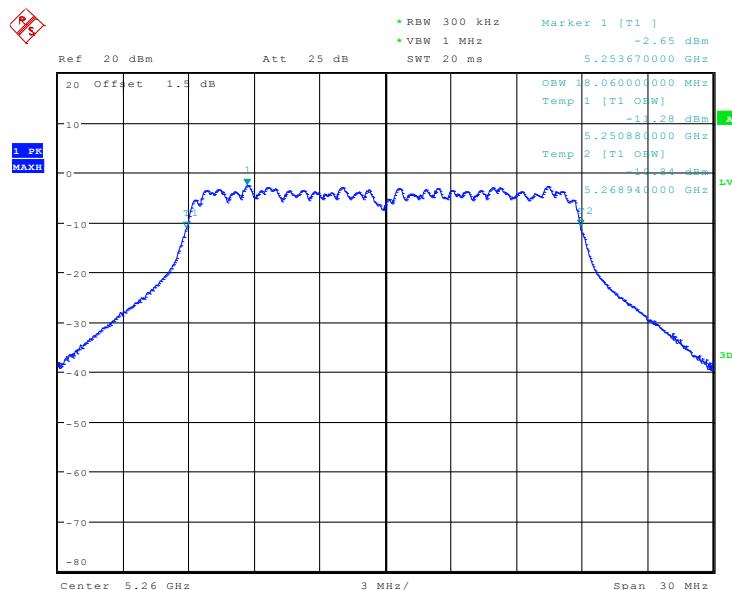


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Test mode:	802.11ac20	Frequency(MHz):	5240
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Test mode:	802.11ac20	Frequency(MHz):	5260
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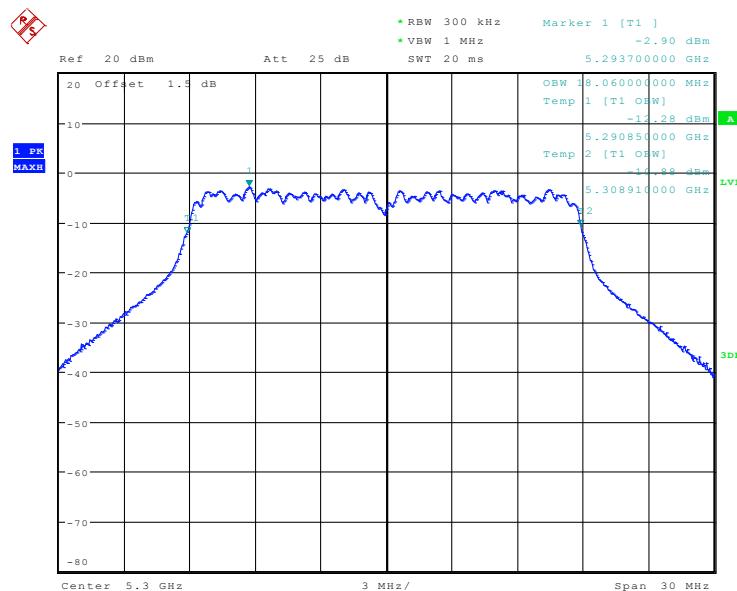


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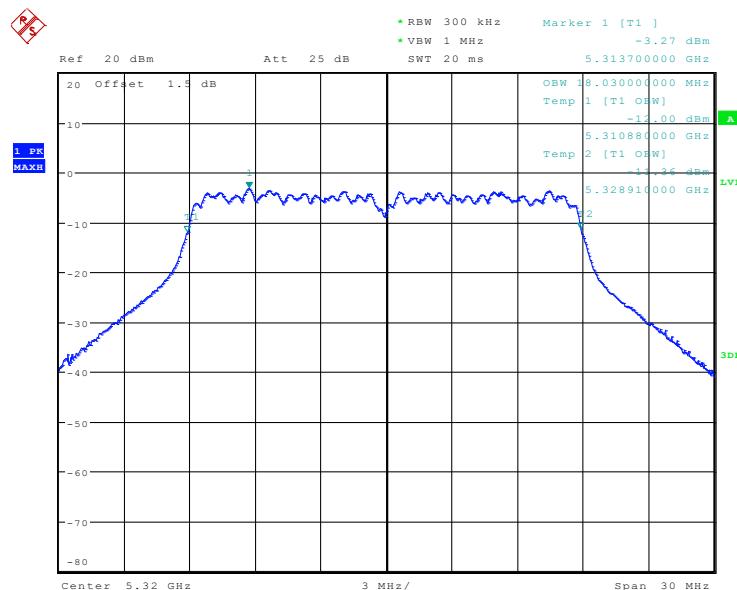


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Test mode:	802.11ac20	Frequency(MHz):	5300
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Test mode:	802.11ac20	Frequency(MHz):	5320
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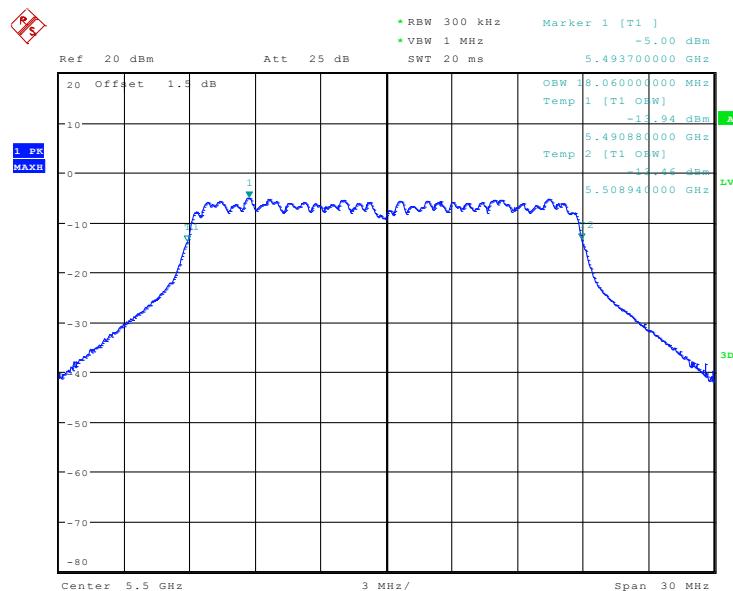


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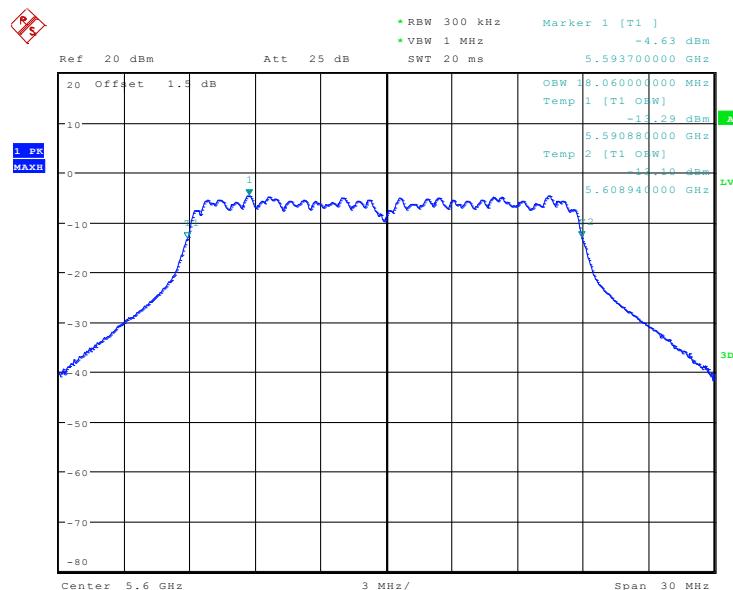


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Test mode:	802.11ac20	Frequency(MHz):	5500
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Test mode:	802.11ac20	Frequency(MHz):	5600
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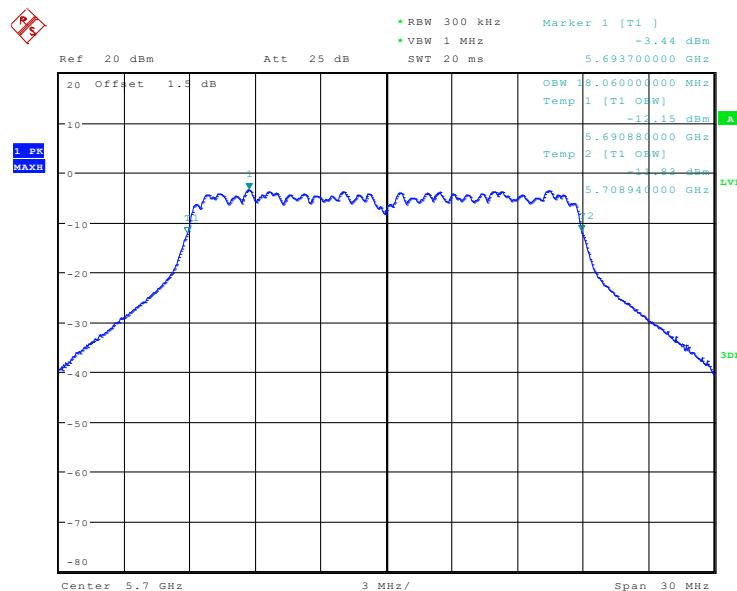


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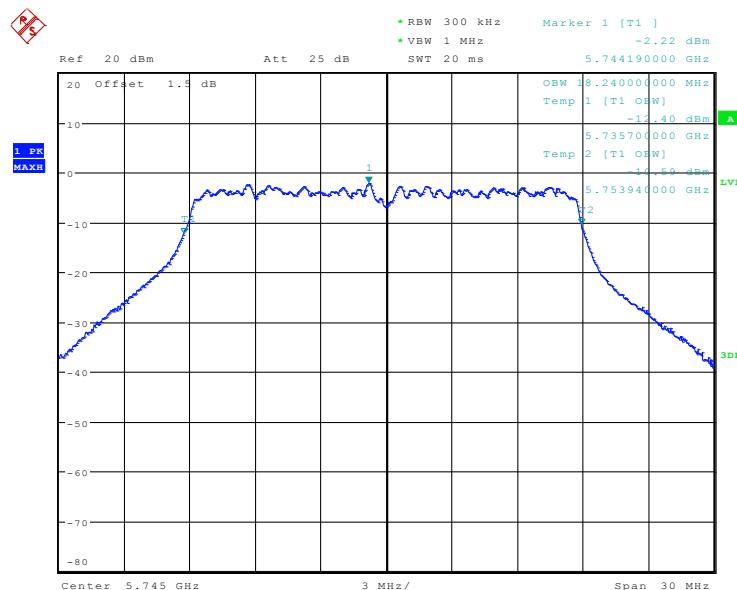


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Test mode:	802.11ac20	Frequency(MHz):	5700
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Test mode:	802.11ac20	Frequency(MHz):	5745
------------	------------	-----------------	------

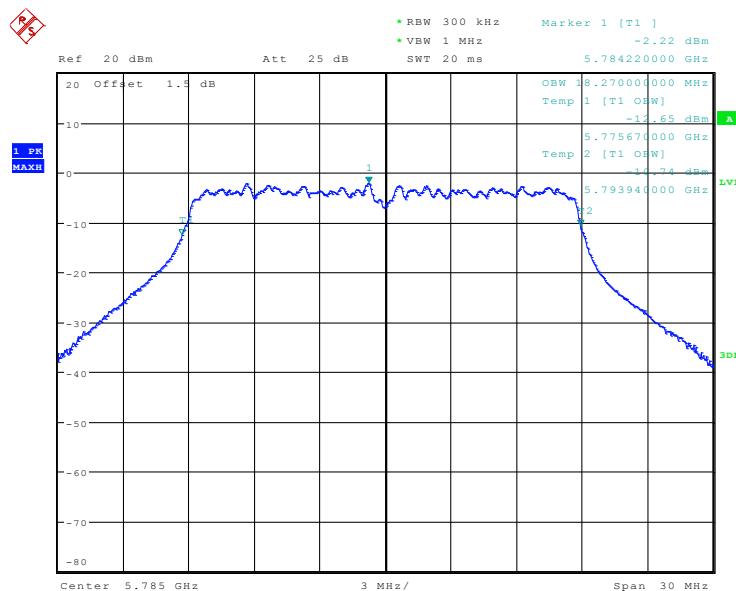


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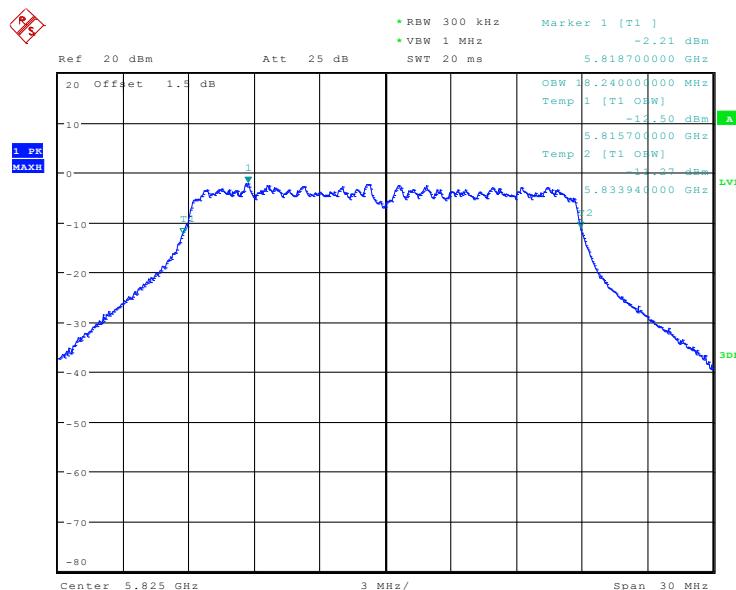


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Test mode:	802.11ac20	Frequency(MHz):	5785
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Test mode:	802.11ac20	Frequency(MHz):	5825
------------	------------	-----------------	------

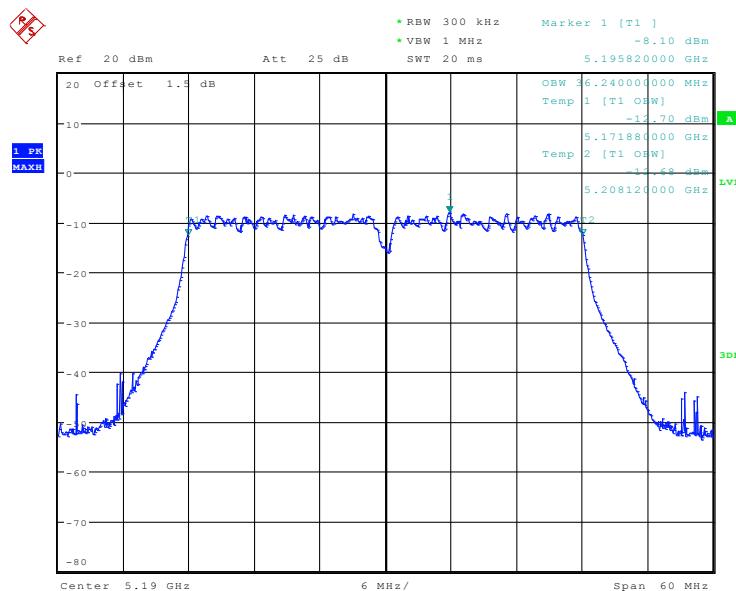


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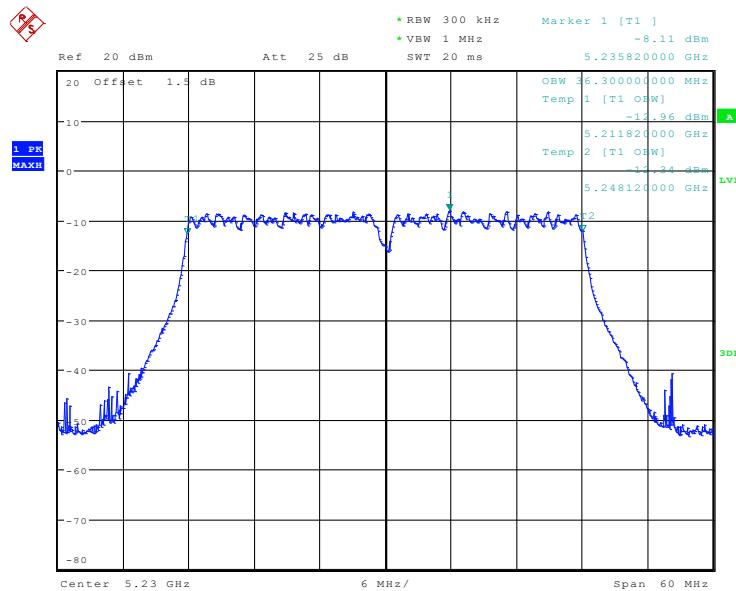


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Test mode:	802.11n(HT40)	Frequency(MHz):	5190
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Test mode:	802.11n(HT40)	Frequency(MHz):	5230
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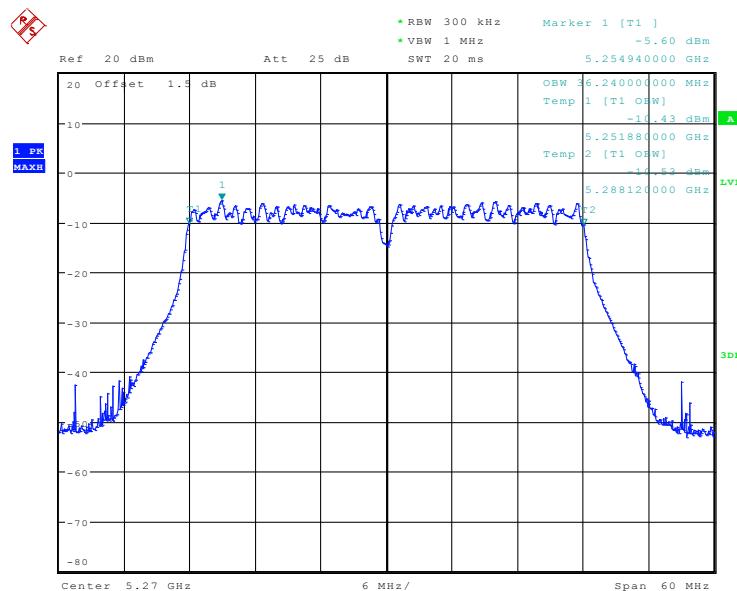


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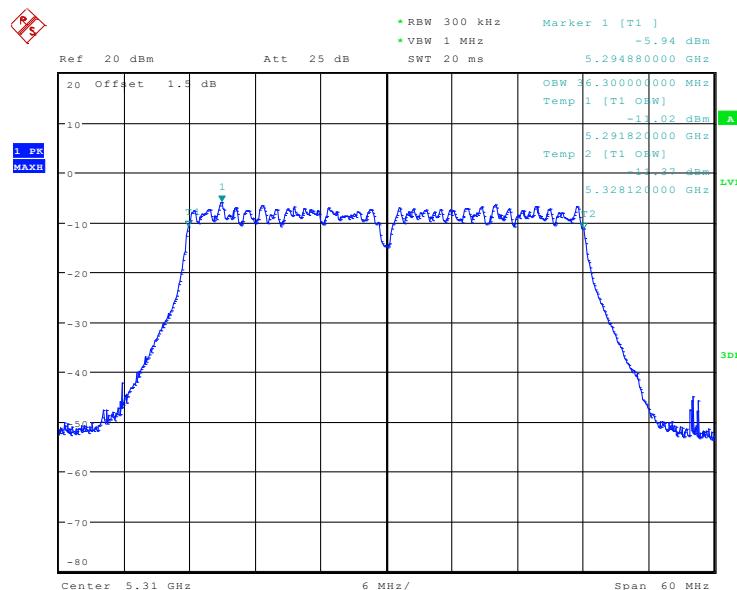


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Test mode:	802.11n(HT40)	Frequency(MHz):	5270
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Test mode:	802.11n(HT40)	Frequency(MHz):	5310
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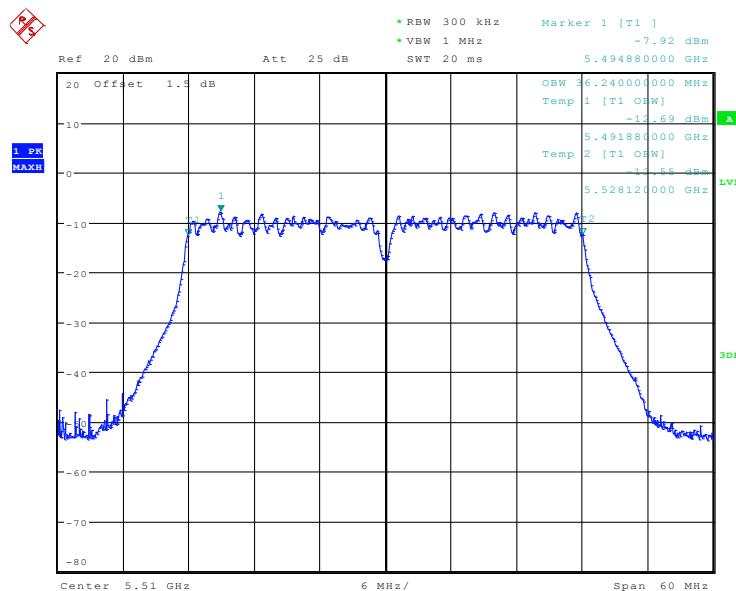


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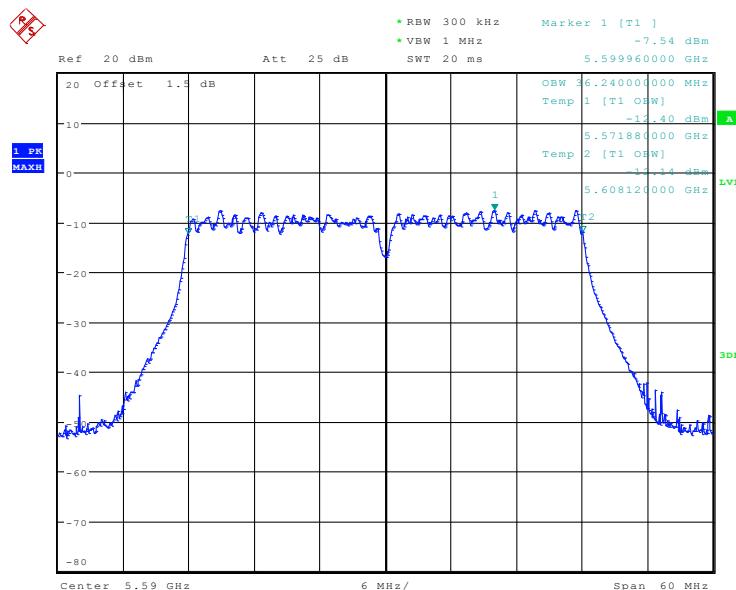


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Test mode:	802.11n(HT40)	Frequency(MHz):	5510
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Test mode:	802.11n(HT40)	Frequency(MHz):	5590
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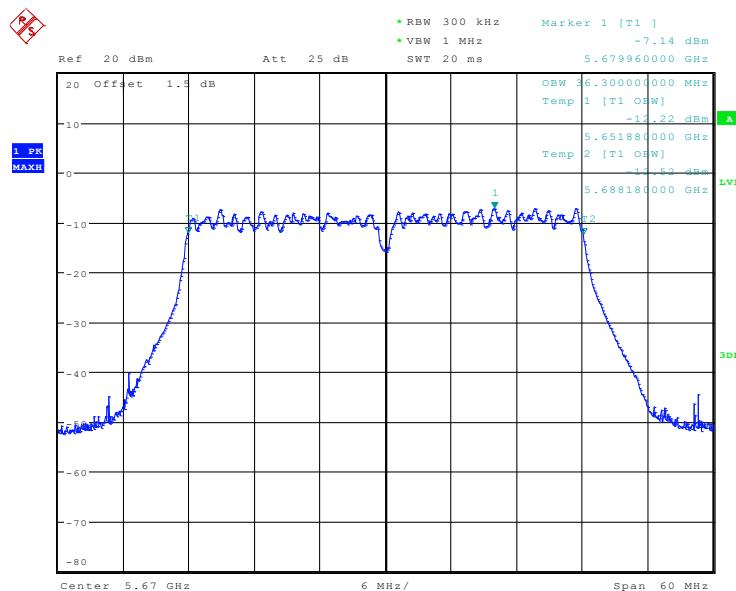


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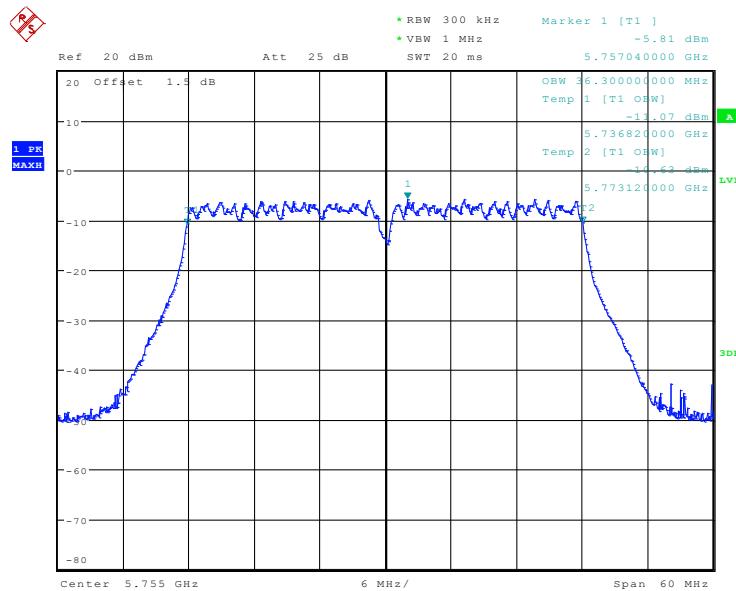


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Test mode:	802.11n(HT40)	Frequency(MHz):	5670
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Test mode:	802.11n(HT40)	Frequency(MHz):	5755
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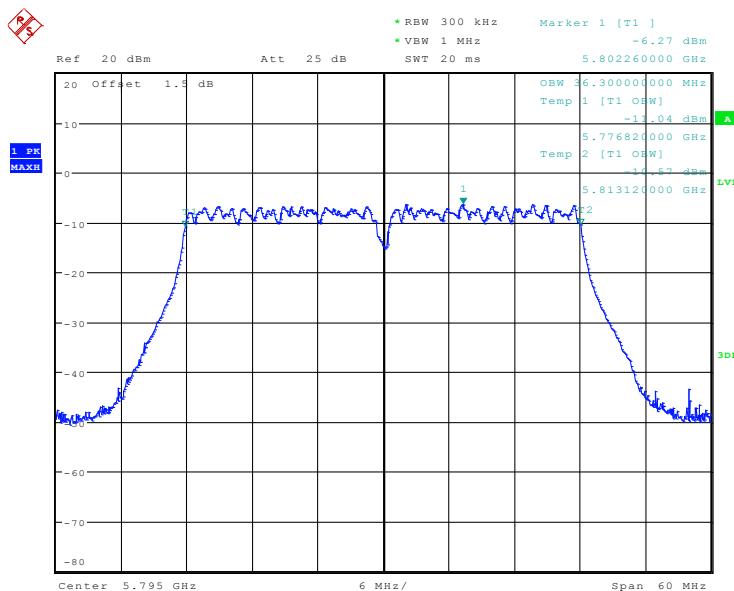


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Test mode:	802.11n(HT40)	Frequency(MHz):	5795
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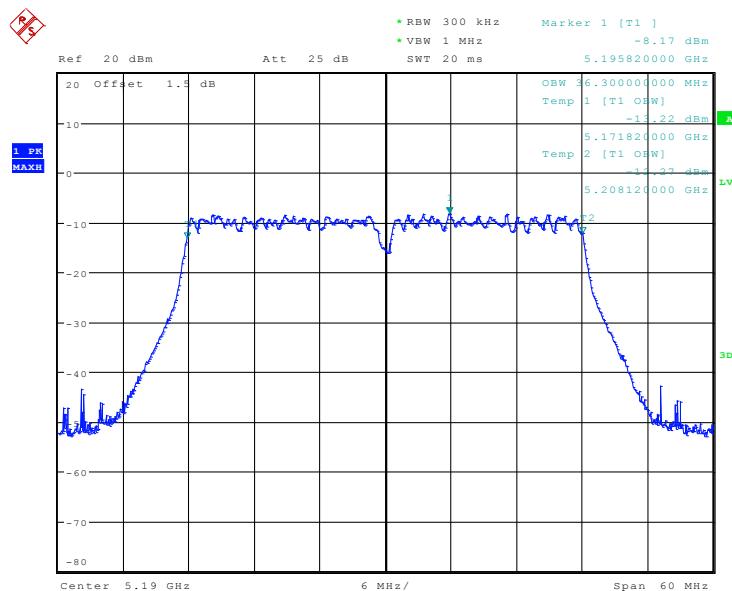


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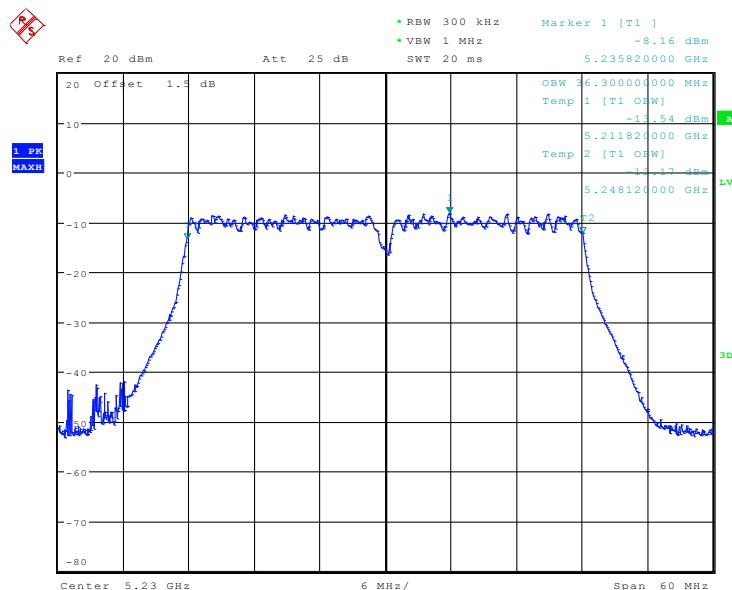


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Test mode:	802.11ac40	Frequency(MHz):	5190
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Test mode:	802.11ac40	Frequency(MHz):	5230
------------	------------	-----------------	------

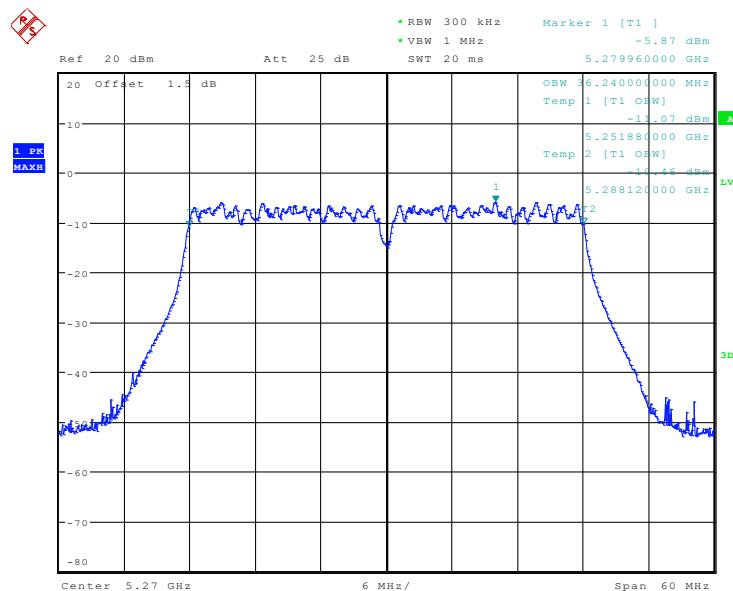


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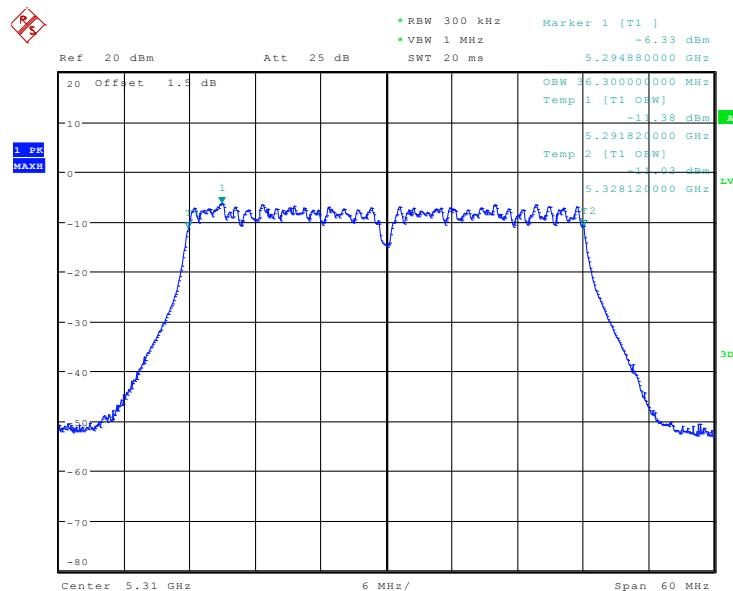


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Test mode:	802.11ac40	Frequency(MHz):	5270
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Test mode:	802.11ac40	Frequency(MHz):	5310
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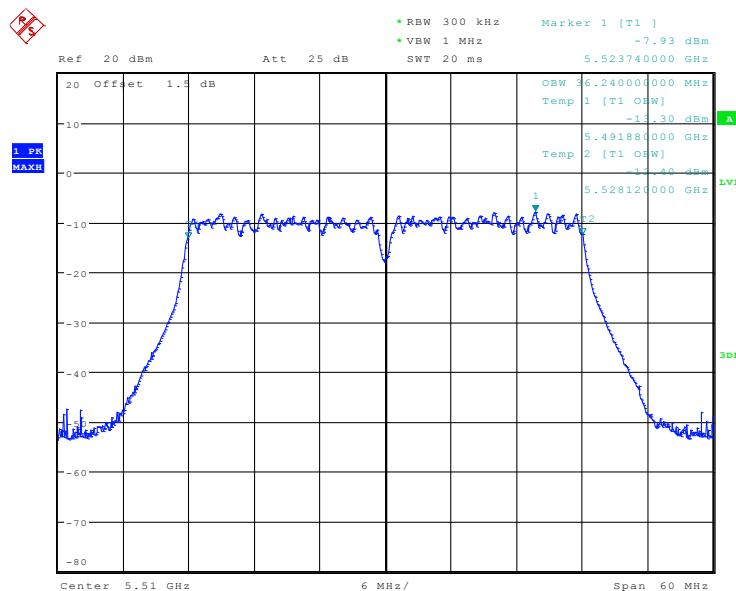
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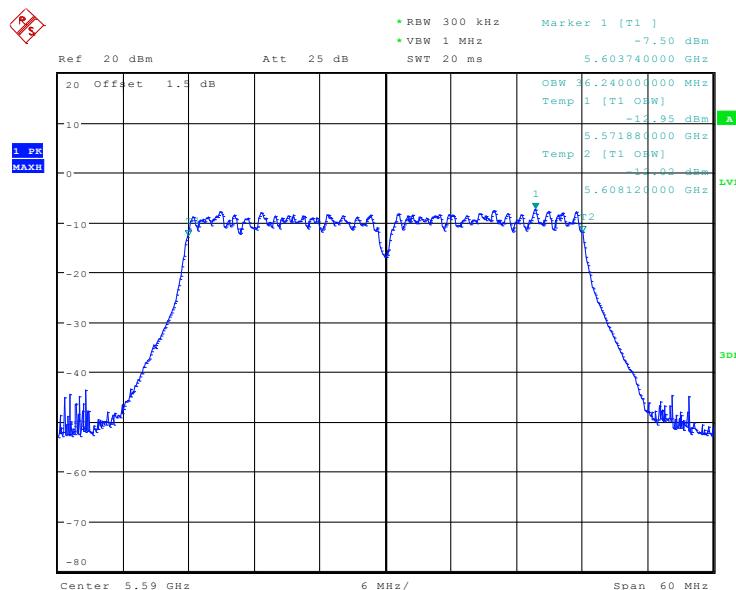


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Test mode:	802.11ac40	Frequency(MHz):	5510
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Test mode:	802.11ac40	Frequency(MHz):	5590
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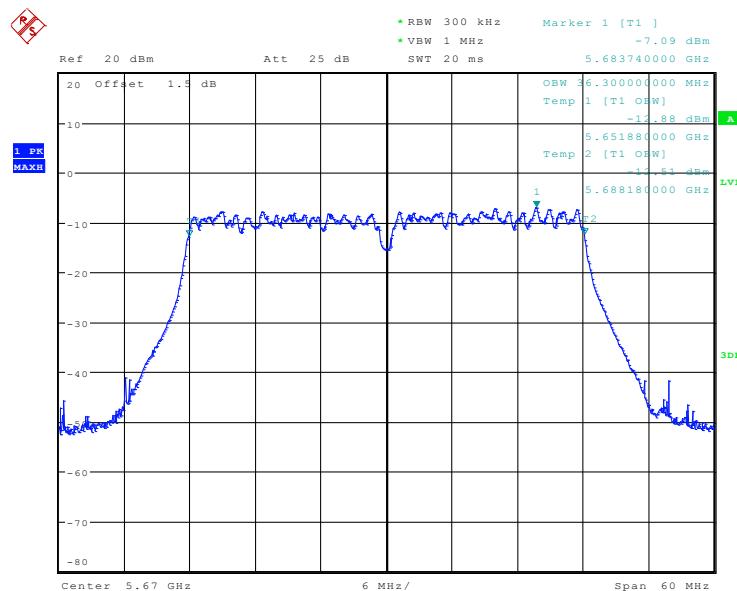


SGS-CSTC Standards Technical Services Ltd. Shenzhen Branch

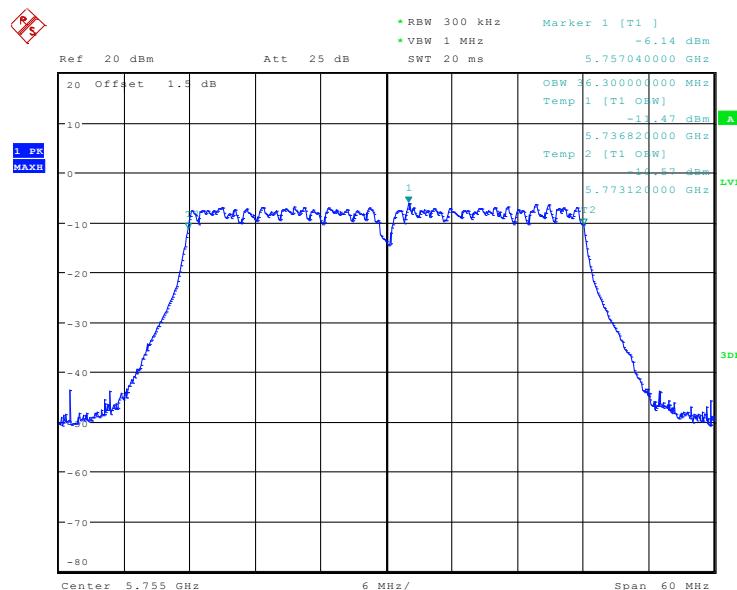


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Test mode:	802.11ac40	Frequency(MHz):	5670
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Test mode:	802.11ac40	Frequency(MHz):	5755
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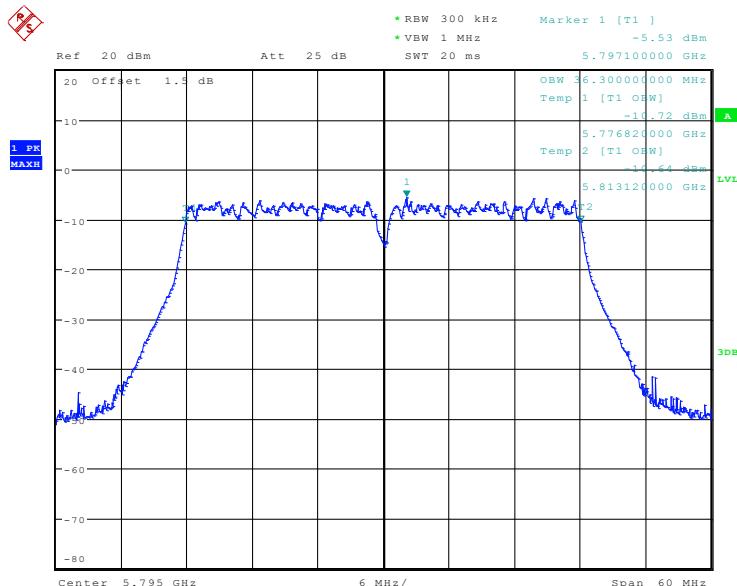


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Test mode:	802.11ac40	Frequency(MHz):	5795
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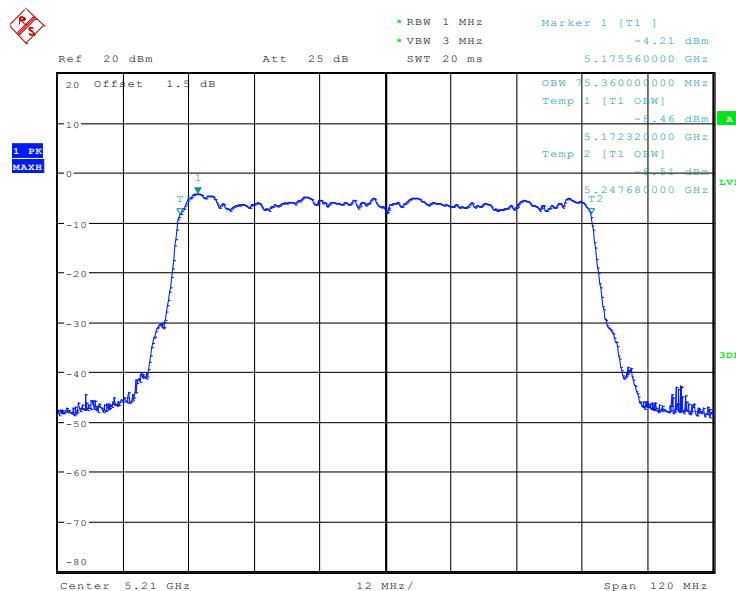


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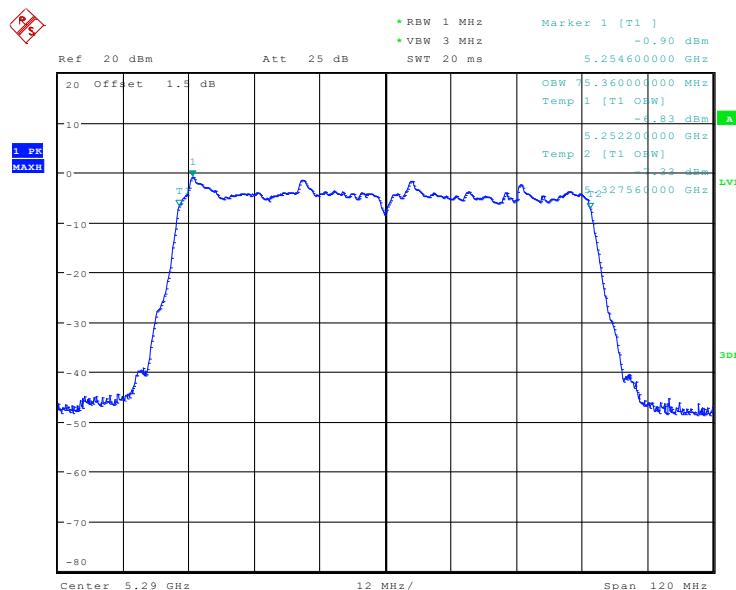


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Test mode:	802.11ac80	Frequency(MHz):	5210
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Test mode:	802.11ac80	Frequency(MHz):	5290
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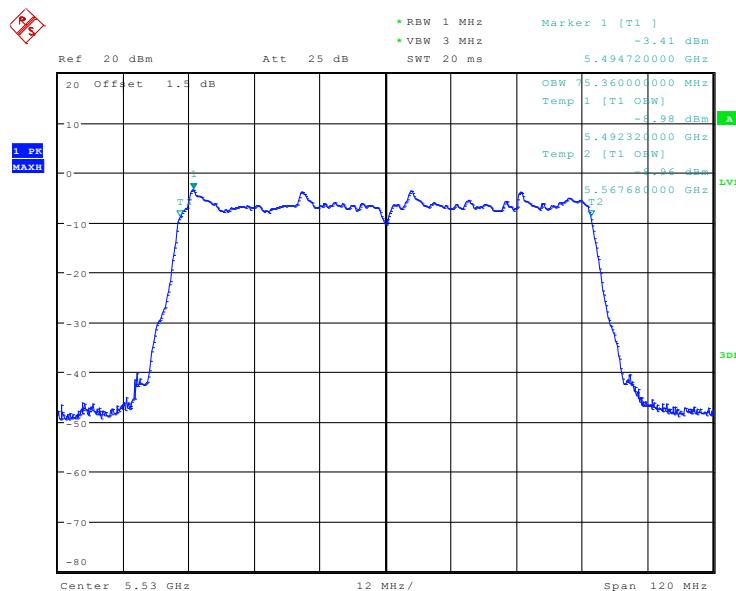


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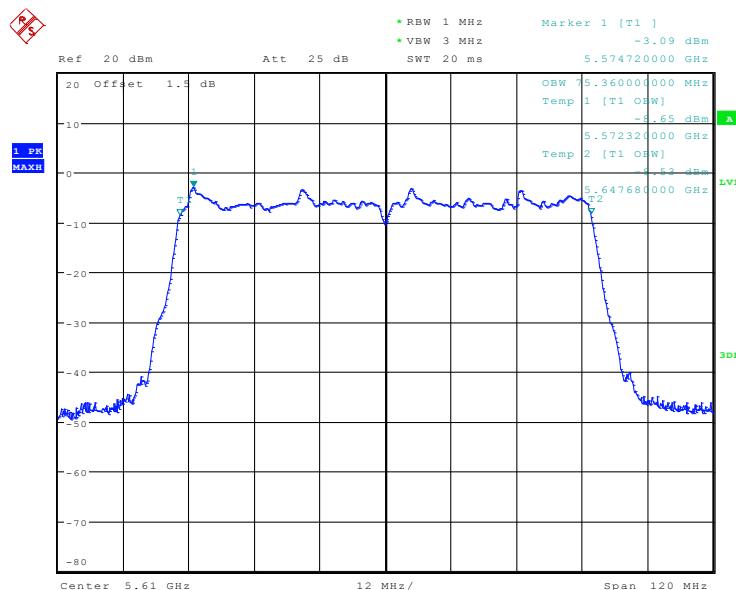


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Test mode:	802.11ac80	Frequency(MHz):	5530
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Test mode:	802.11ac80	Frequency(MHz):	5610
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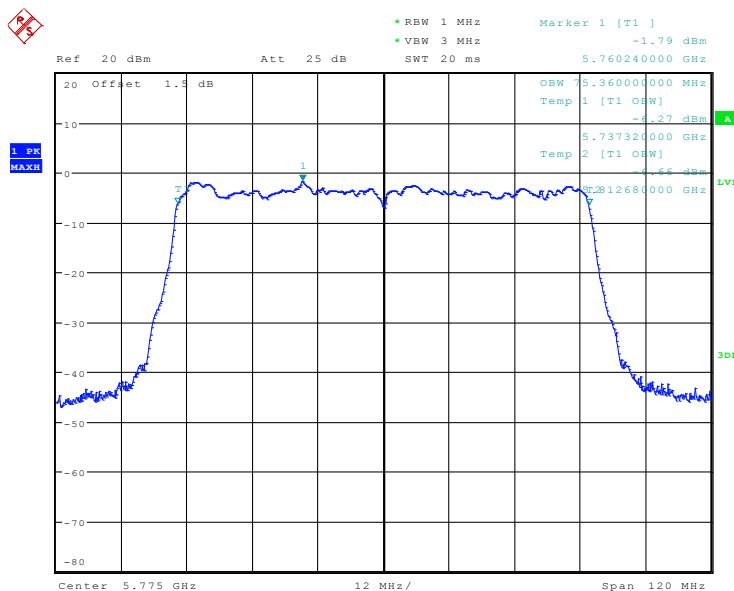


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Test mode:	802.11ac80	Frequency(MHz):	5775
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6.6 6dB Emission Bandwidth

Test Requirement:	47 CFR Part 15 Section 15.407(e)	
Test Method:	ANSI C63.10: 2013	
Test Setup:	<p style="text-align: center;">Spectrum Analyzer</p> <p style="text-align: center;">Non-Conducted Table</p> <p style="text-align: center;">Ground Reference Plane</p>	
Instruments Used:	Refer to section 5.10 for details	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20); MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ac(HT20); MCS0 of rate is the worst case of 802.11ac(HT40); MCS0 of rate is the worst case of 802.11ac(HT80) Only the worst case is recorded in the report.	
Limit:	Frequency Band	Limit
	5725-5850MHz	At lease 500kHz
Test Results:	Pass	

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Measurement Data:

802.11a mode			
Frequency (MHz)	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result
5745	16.410	≥500	Pass
5785	16.410	≥500	Pass
5825	16.410	≥500	Pass

802.11n(HT20) mode			
Frequency (MHz)	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result
5745	17.670	≥500	Pass
5785	17.670	≥500	Pass
5825	17.670	≥500	Pass

802.11ac20 mode			
Frequency (MHz)	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result
5745	17.670	≥500	Pass
5785	17.670	≥500	Pass
5825	17.670	≥500	Pass

802.11n(HT40) mode			
Frequency (MHz)	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result
5755	36.480	≥500	Pass
5795	36.480	≥500	Pass

802.11ac40 mode			
Frequency (MHz)	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result
5755	36.480	≥500	Pass
5795	36.420	≥500	Pass

802.11ac80 mode			
Frequency (MHz)	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result
5755	75.480	≥500	Pass

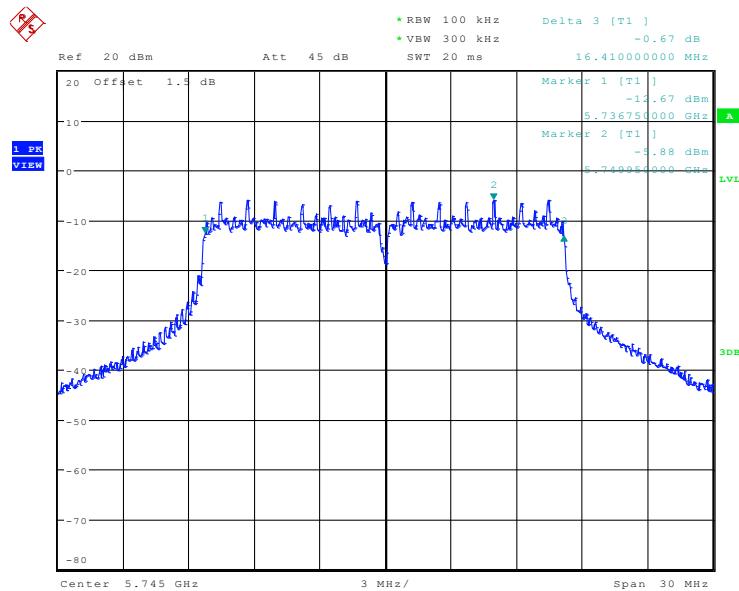
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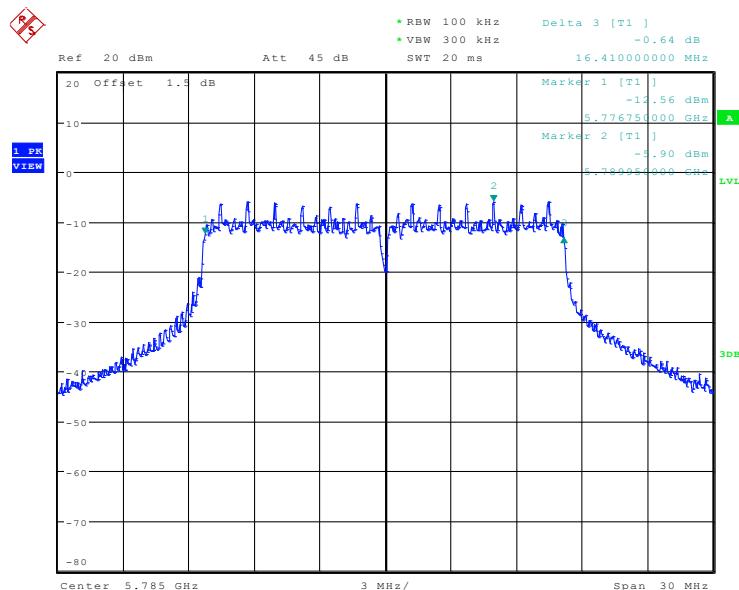
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Test plot as follows:

Test mode:	802.11a	Frequency(MHz):	5745
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Test mode:	802.11a	Frequency(MHz):	5785
------------	---------	-----------------	------

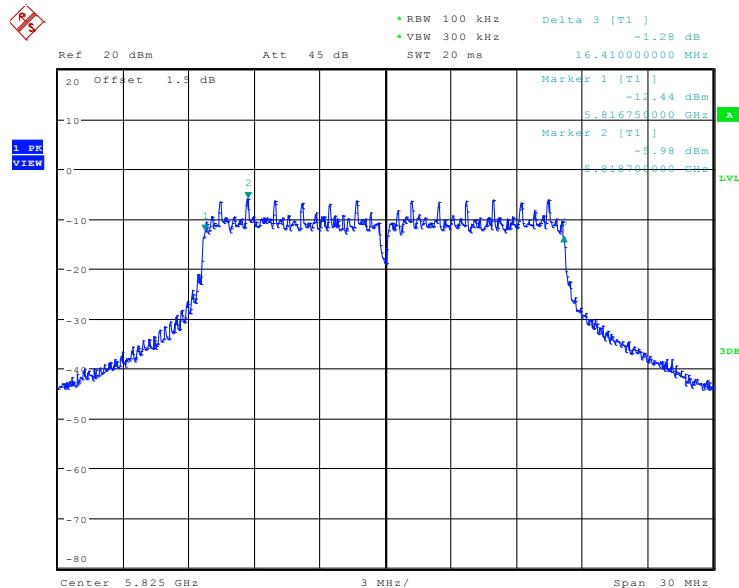


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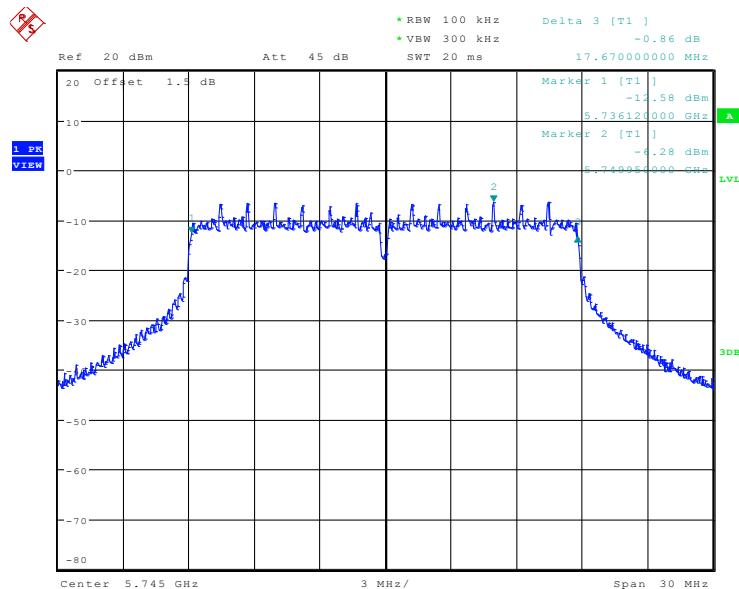


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Test mode:	802.11a	Frequency(MHz):	5825
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Test mode:	802.11n(HT20)	Frequency(MHz):	5745
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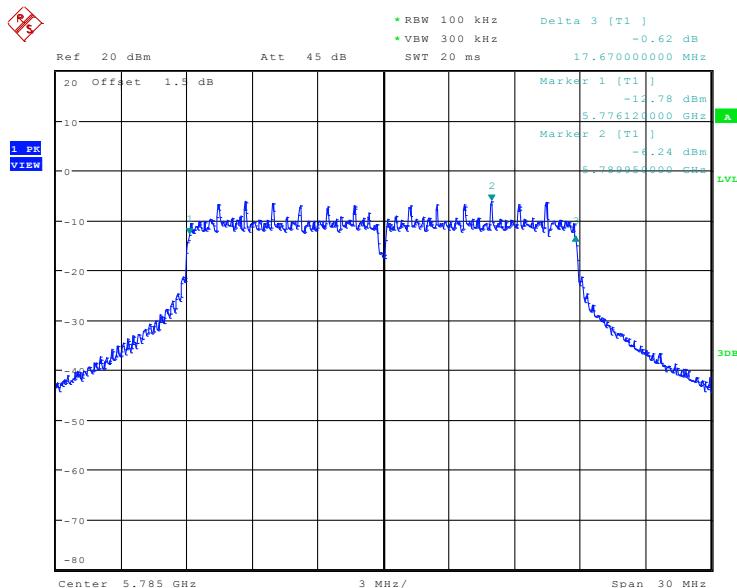


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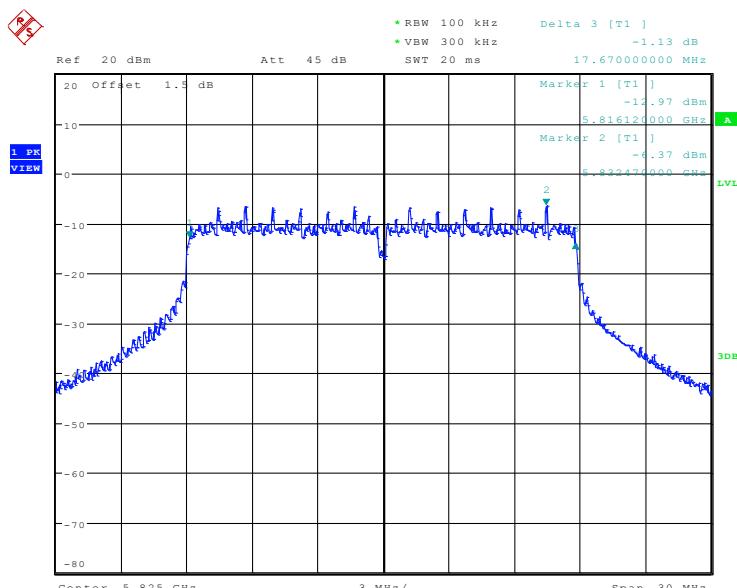


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Test mode:	802.11n(HT20)	Frequency(MHz):	5785
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Test mode:	802.11n(HT20)	Frequency(MHz):	5825
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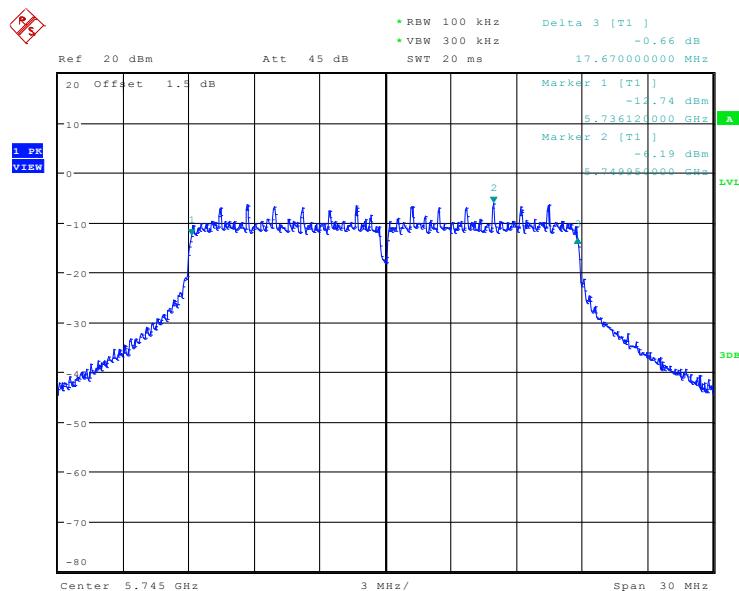


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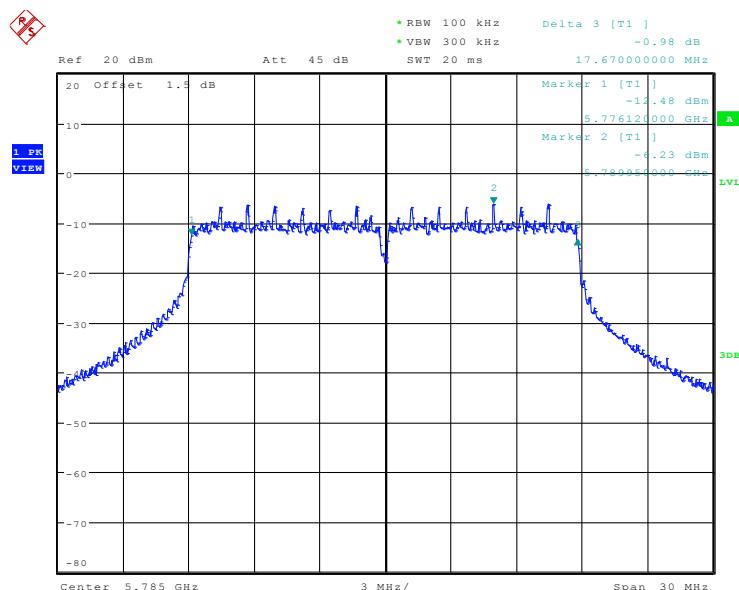


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Test mode:	802.11ac20	Frequency(MHz):	5745
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Test mode:	802.11ac20	Frequency(MHz):	5785
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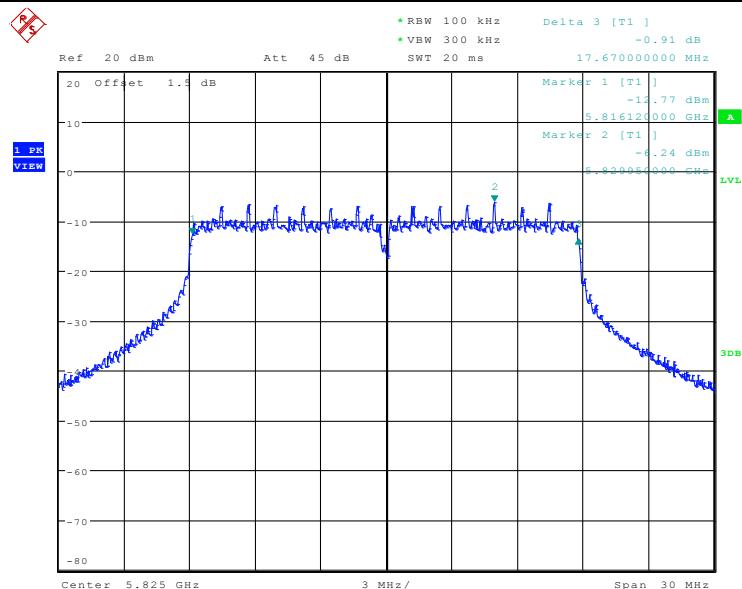


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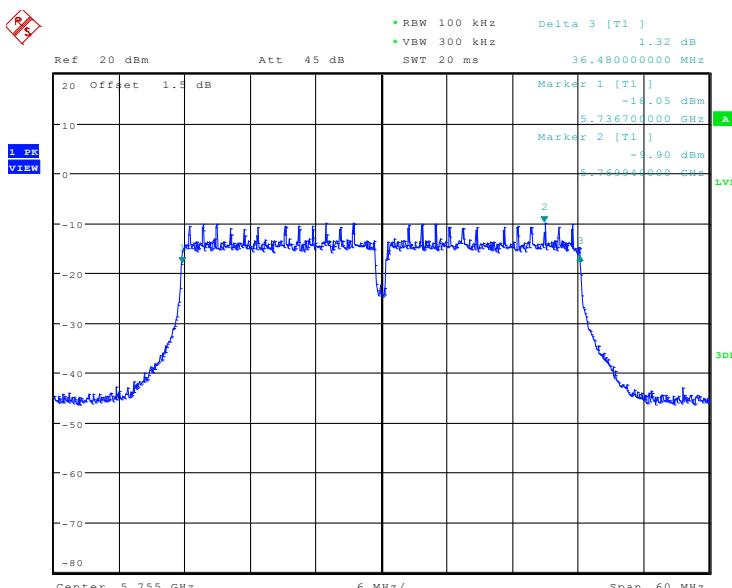


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Test mode:	802.11ac20	Frequency(MHz):	5825
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Test mode:	802.11n(HT40)	Frequency(MHz):	5755
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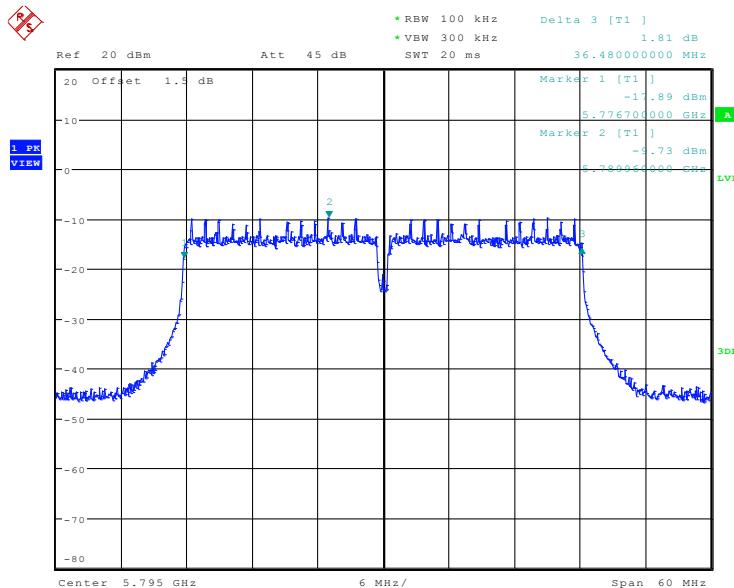


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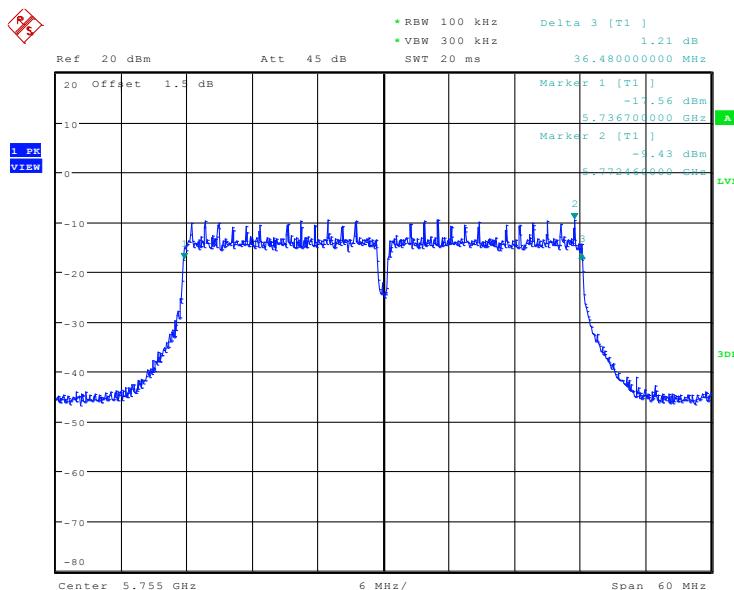


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Test mode:	802.11n(HT40)	Frequency(MHz):	5795
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Test mode:	802.11ac40	Frequency(MHz):	5755
------------	------------	-----------------	------

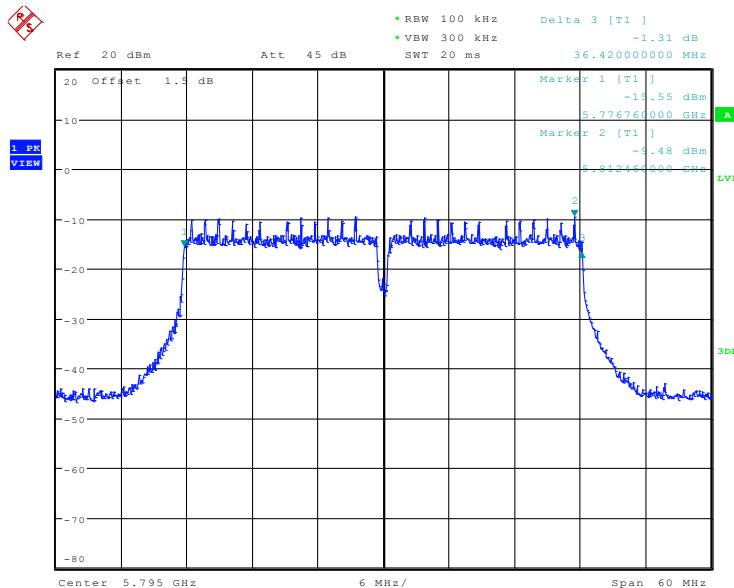


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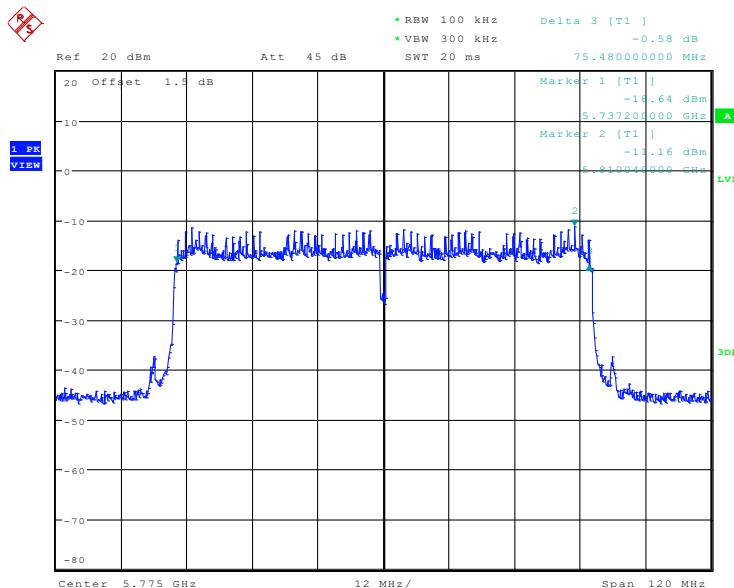


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Test mode:	802.11ac40	Frequency(MHz):	5795
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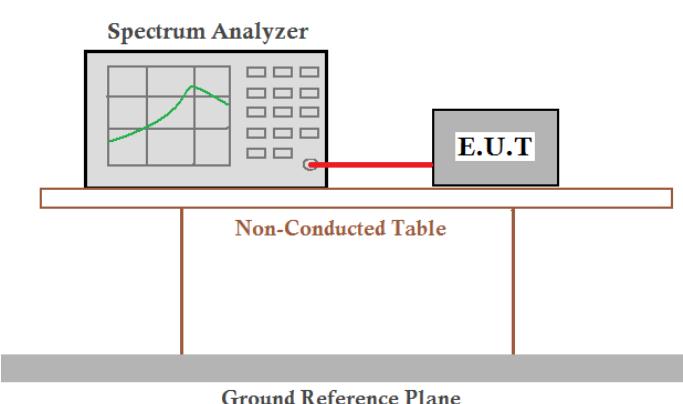


Test mode:	802.11ac80	Frequency(MHz):	5775
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6.7 Power Spectral Density

Test Requirement:	47 CFR Part 15 Section 15.407(a)	
Test Method:	ANSI C63.10: 2013	
Test Setup:	 <p>Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane</p> <p><i>Remark:</i> <i>Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.</i></p>	
Test Instruments:	Refer to section 5.10 for details	
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates	
Final Test Mode:	Through Pre-scan, find the 6Mbps of rate is the worst case of 802.11a; MCS0 of rate is the worst case of 802.11n(HT20); MCS0 of rate is the worst case of 802.11n(HT40); MCS0 of rate is the worst case of 802.11ac(HT20); MCS0 of rate is the worst case of 802.11ac(HT40); MCS0 of rate is the worst case of 802.11ac(HT80) Only the worst case is recorded in the report.	
Limit:	Frequency Band	Limit
	5150-5250MHz	The power spectral density less than 11dBm/1MHz
	5250-5350MHz	The power spectral density less than 11dBm/1MHz
	5470-5725MHz	The power spectral density less than 11dBm/1MHz
	5725-5850MHz	The power spectral density less than 30dBm/500kHz
Test Results:	Pass	

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Measurement Data:

Frequency (MHz)	Power Spectral Density				Limit	Result
	Ant.1	Ant.2	Ant.3	Ant.4		
5180.00	-9.55	-7.14	-6.68	-5.54	11.00 dBm/1MHz	Pass
5200.00	-9.37	-7.28	-6.82	-5.45	11.00 dBm/1MHz	Pass
5240.00	-8.90	-7.30	-6.95	-5.12	11.00 dBm/1MHz	Pass
5260.00	1.20	-6.25	-6.67	-4.98	11.00 dBm/1MHz	Pass
5300.00	0.94	-6.77	-7.27	-5.38	11.00 dBm/1MHz	Pass
5320.00	0.69	-7.41	-8.43	-5.73	11.00 dBm/1MHz	Pass
5500.00	-10.36	-8.03	-8.03	-7.24	11.00 dBm/1MHz	Pass
5600.00	-9.67	-6.39	-6.63	-7.12	11.00 dBm/1MHz	Pass
5700.00	-8.46	-4.87	-5.01	-5.93	11.00 dBm/1MHz	Pass
5745.00	-10.20	-6.51	-6.47	-7.82	30.00 dBm/500kHz	Pass
5785.00	-10.01	-6.85	-6.35	-7.64	30.00 dBm/500kHz	Pass
5825.00	-10.05	-6.99	-6.37	-7.33	30.00 dBm/500kHz	Pass

Frequency (MHz)	Power Spectral Density					Limit	Result
	Ant.1	Ant.2	Ant.3	Ant.4	Total		
5180.00	-9.95	-7.46	-6.85	-5.85	-1.27	11.00 dBm/1MHz	Pass
5200.00	-9.82	-7.44	-7.01	-5.70	-1.23	11.00 dBm/1MHz	Pass
5240.00	-9.34	-7.50	-7.37	-5.55	-1.21	11.00 dBm/1MHz	Pass
5260.00	0.39	-6.79	-6.87	-5.48	2.53	11.00 dBm/1MHz	Pass
5300.00	0.34	-7.29	-8.35	-5.83	2.24	11.00 dBm/1MHz	Pass
5320.00	0.06	-7.41	-8.54	-6.24	1.97	11.00 dBm/1MHz	Pass
5500.00	-10.65	-8.30	-8.64	-7.82	-2.71	11.00 dBm/1MHz	Pass
5600.00	-9.79	-6.70	-7.71	-7.43	-1.75	11.00 dBm/1MHz	Pass
5700.00	-8.91	-5.32	-6.22	-6.00	-0.40	11.00 dBm/1MHz	Pass
5745.00	-10.74	-7.35	-6.87	-8.07	-2.01	30.00 dBm/500kHz	Pass
5785.00	-10.80	-7.49	-7.16	-8.08	-2.15	30.00 dBm/500kHz	Pass
5825.00	-10.75	-7.56	-7.32	-8.07	-2.21	30.00 dBm/500kHz	Pass

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802.11ac 20 mode							
Frequency (MHz)	Power Spectral Density					Limit	Result
	Ant.1	Ant.2	Ant.3	Ant.4	Total		
5180.00	-10.14	-7.23	-6.64	-5.43	-1.03	11.00 dBm/1MHz	Pass
5200.00	-9.86	-7.29	-6.79	-5.29	-1.00	11.00 dBm/1MHz	Pass
5240.00	-9.28	-7.33	-6.97	-5.00	-0.86	11.00 dBm/1MHz	Pass
5260.00	0.40	-6.40	-6.70	-5.02	2.68	11.00 dBm/1MHz	Pass
5300.00	0.37	-7.08	-7.96	-5.47	2.38	11.00 dBm/1MHz	Pass
5320.00	0.16	-7.33	-8.32	-5.75	2.14	11.00 dBm/1MHz	Pass
5500.00	-10.49	-8.18	-8.19	-7.51	-2.44	11.00 dBm/1MHz	Pass
5600.00	-9.69	-6.68	-7.50	-6.90	-1.52	11.00 dBm/1MHz	Pass
5700.00	-8.68	-5.14	-5.80	-5.81	-0.14	11.00 dBm/1MHz	Pass
5745.00	-10.91	-7.36	-7.02	-8.11	-2.09	30.00 dBm/500kHz	Pass
5785.00	-10.89	-7.75	-7.01	-8.16	-2.21	30.00 dBm/500kHz	Pass
5825.00	-10.56	-8.09	-7.24	-7.92	-2.27	30.00 dBm/500kHz	Pass

802.11 n40 mode							
Frequency (MHz)	Power Spectral Density					Limit	Result
	Ant.1	Ant.2	Ant.3	Ant.4	Total		
5190.00	-13.27	-10.57	-10.35	-8.95	-4.50	11.00 dBm/1MHz	Pass
5230.00	-12.64	-10.66	-10.55	-8.66	-4.38	11.00 dBm/1MHz	Pass
5270.00	-2.71	-10.16	-10.95	-8.43	-0.67	11.00 dBm/1MHz	Pass
5310.00	-3.00	-10.60	-11.63	-8.78	-1.03	11.00 dBm/1MHz	Pass
5510.00	-13.60	-11.13	-11.57	-10.91	-5.66	11.00 dBm/1MHz	Pass
5590.00	-12.89	-10.10	-11.05	-10.34	-4.95	11.00 dBm/1MHz	Pass
5670.00	-11.84	-8.88	-9.00	-9.86	-3.73	11.00 dBm/1MHz	Pass
5755.00	-14.26	-10.57	-10.19	-11.15	-5.26	30.00 dBm/500kHz	Pass
5795.00	-14.08	-10.89	-10.67	-11.19	-5.49	30.00 dBm/500kHz	Pass

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802.11ac 40 mode							
Frequency (MHz)	Power Spectral Density					Limit	Result
	Ant.1	Ant.2	Ant.3	Ant.4	Total		
5190.00	-13.04	-10.52	-10.13	-8.75	-4.33	11.00 dBm/1MHz	Pass
5230.00	-12.69	-10.55	-10.41	-8.52	-4.28	11.00 dBm/1MHz	Pass
5270.00	-2.61	-9.89	-10.96	-8.75	-0.63	11.00 dBm/1MHz	Pass
5310.00	-2.72	-10.42	-11.47	-8.88	-0.83	11.00 dBm/1MHz	Pass
5510.00	-13.34	-11.09	-11.46	-10.72	-5.52	11.00 dBm/1MHz	Pass
5590.00	-12.71	-9.92	-10.92	-10.08	-4.76	11.00 dBm/1MHz	Pass
5670.00	-11.86	-8.69	-8.93	-9.84	-3.64	11.00 dBm/1MHz	Pass
5755.00	-13.47	-10.42	-10.55	-10.98	-5.18	30.00 dBm/500kHz	Pass
5795.00	-13.59	-10.75	-10.82	-11.08	-5.40	30.00 dBm/500kHz	Pass

802.11ac 80 mode							
Frequency (MHz)	Power Spectral Density					Limit	Result
	Ant.1	Ant.2	Ant.3	Ant.4	Total		
5210.00	-13.57	-12.61	-12.15	-10.48	-6.03	11.00 dBm/1MHz	Pass
5290.00	-4.81	-12.01	-11.85	-9.82	-2.50	11.00 dBm/1MHz	Pass
5530.00	-15.21	-12.98	-13.21	-12.41	-7.31	11.00 dBm/1MHz	Pass
5610.00	-14.92	-11.67	-12.15	-12.02	-6.50	11.00 dBm/1MHz	Pass
5775.00	-14.15	-10.68	-9.80	-11.04	-5.12	30.00 dBm/500kHz	Pass

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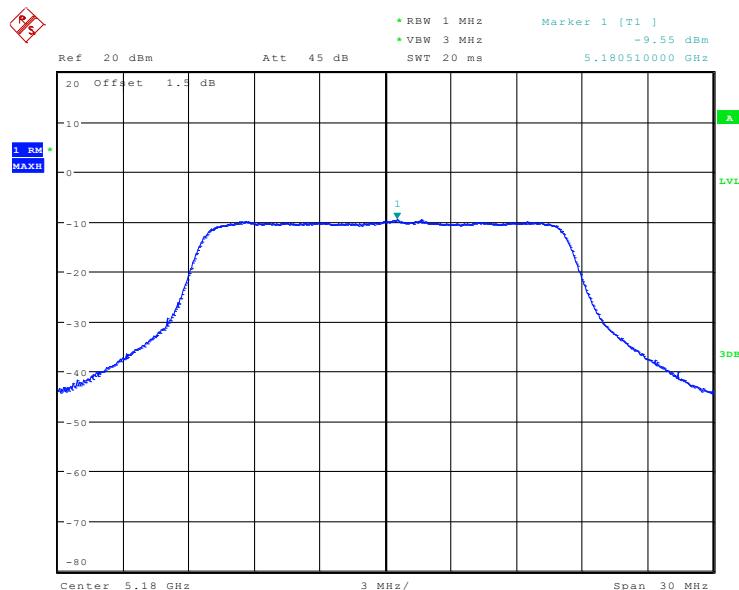


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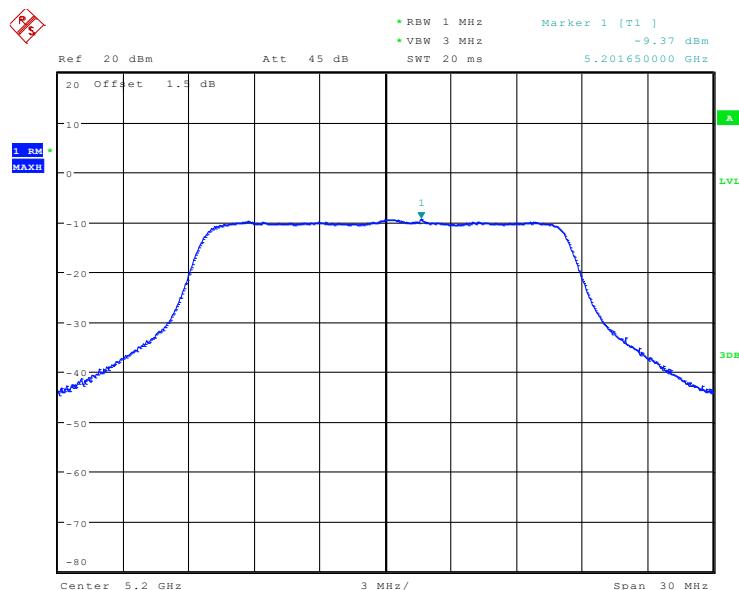
Test plot as follows:

Antenna 1

Test mode:	802.11a	Frequency(MHz):	5180
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Test mode:	802.11a	Frequency(MHz):	5200
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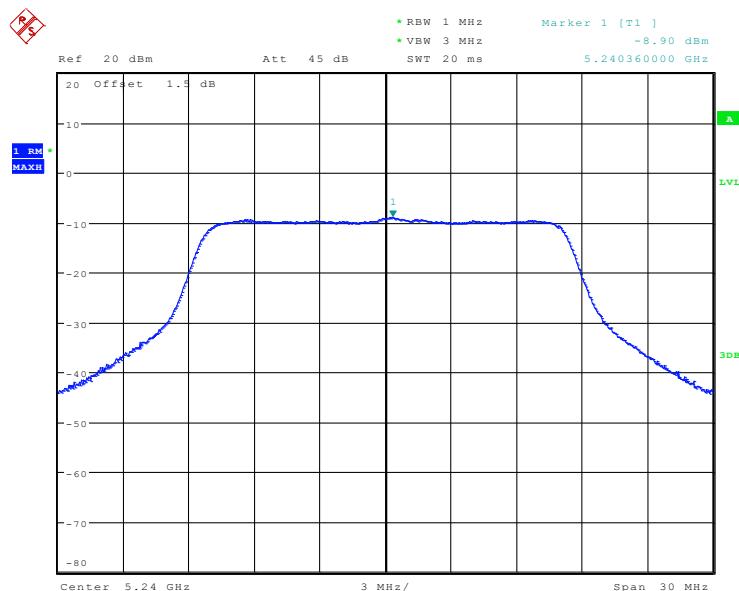


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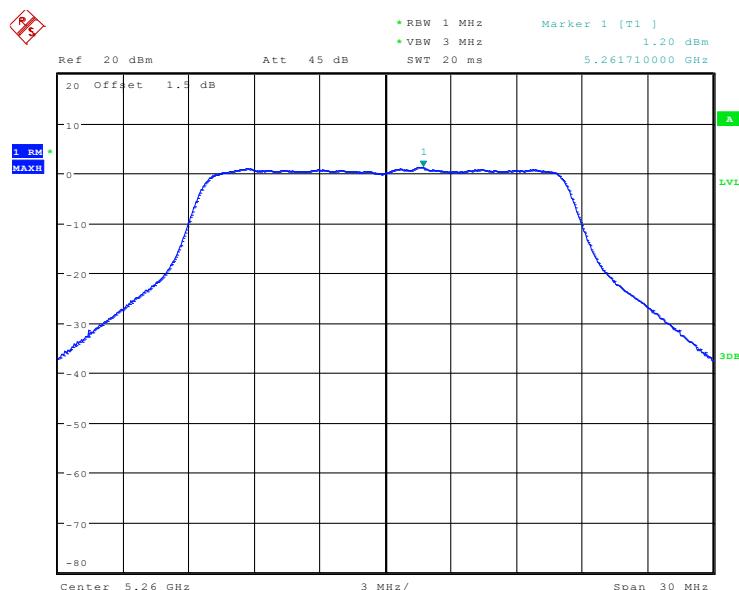


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Test mode:	802.11a	Frequency(MHz):	5240
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Test mode:	802.11a	Frequency(MHz):	5260
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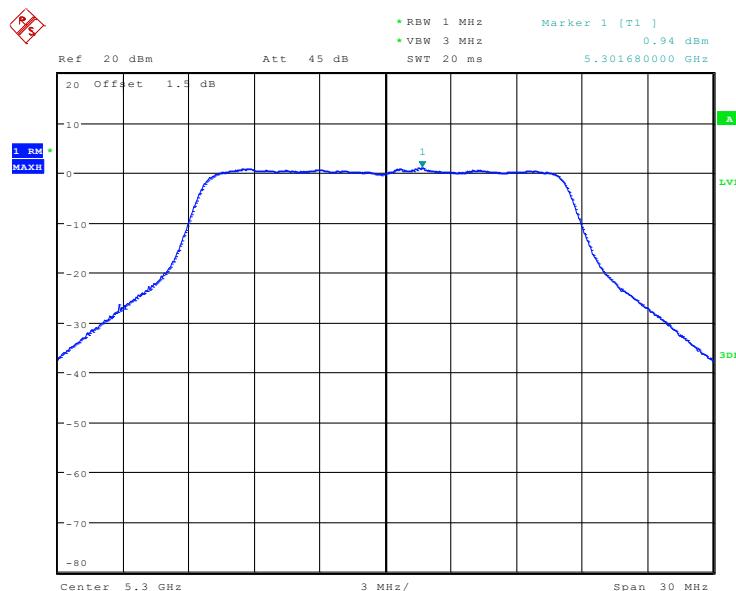


SGS-CSTC Standards Technical Services Ltd. Shenzhen Branch

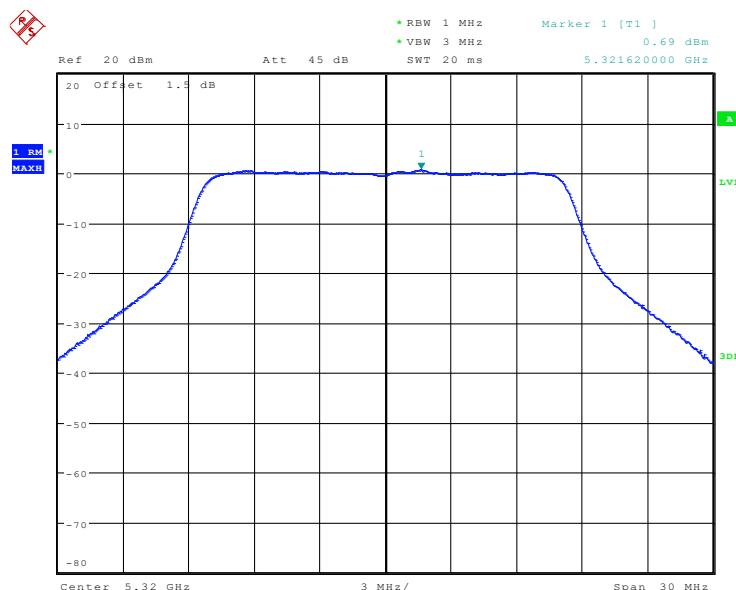


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Test mode:	802.11a	Frequency(MHz):	5300
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Test mode:	802.11a	Frequency(MHz):	5320
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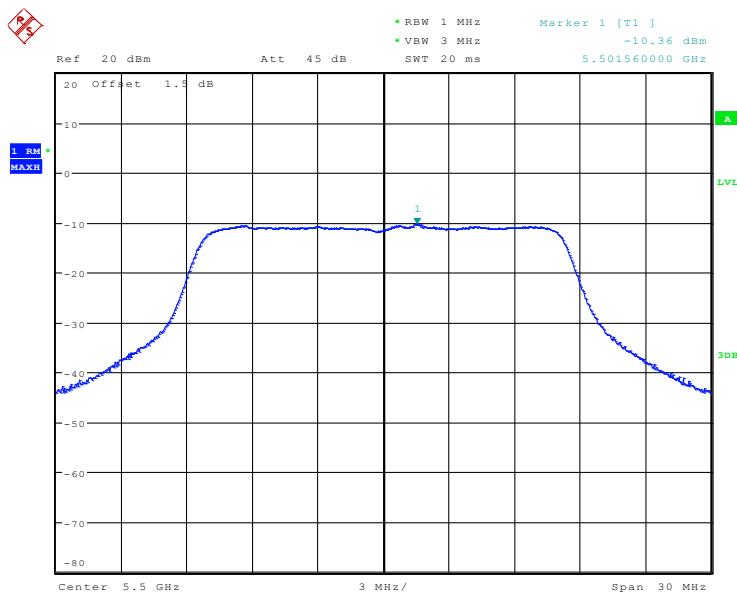


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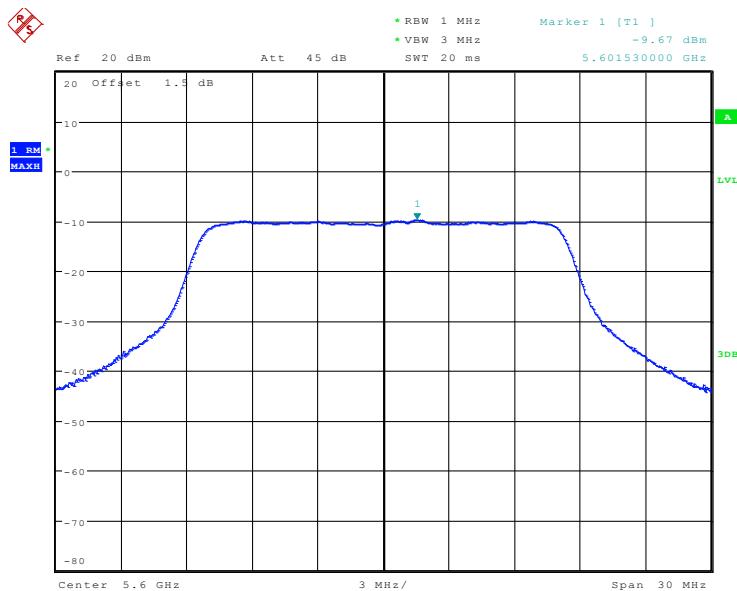


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Test mode:	802.11a	Frequency(MHz):	5500
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Test mode:	802.11a	Frequency(MHz):	5600
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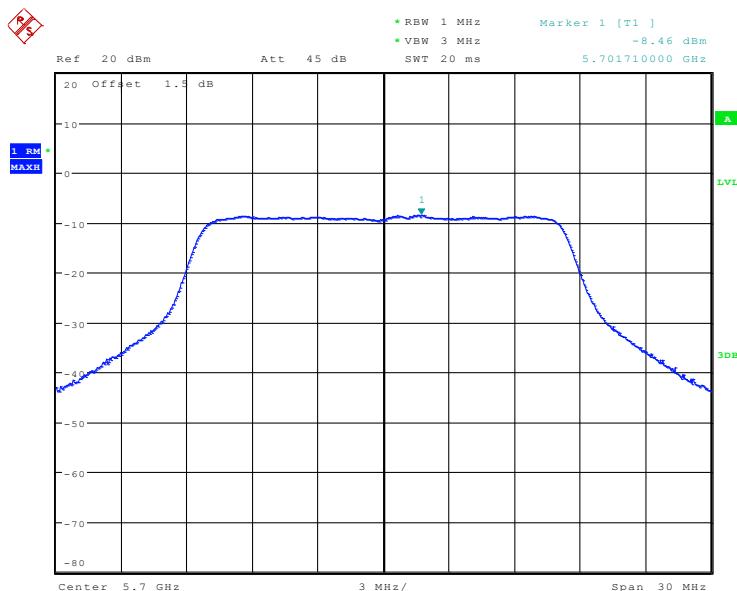


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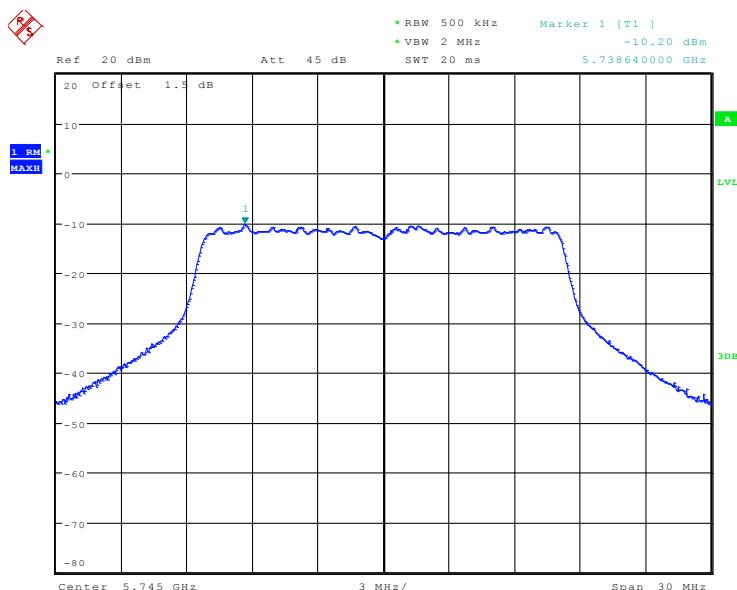


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Test mode:	802.11a	Frequency(MHz):	5700
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Test mode:	802.11a	Frequency(MHz):	5745
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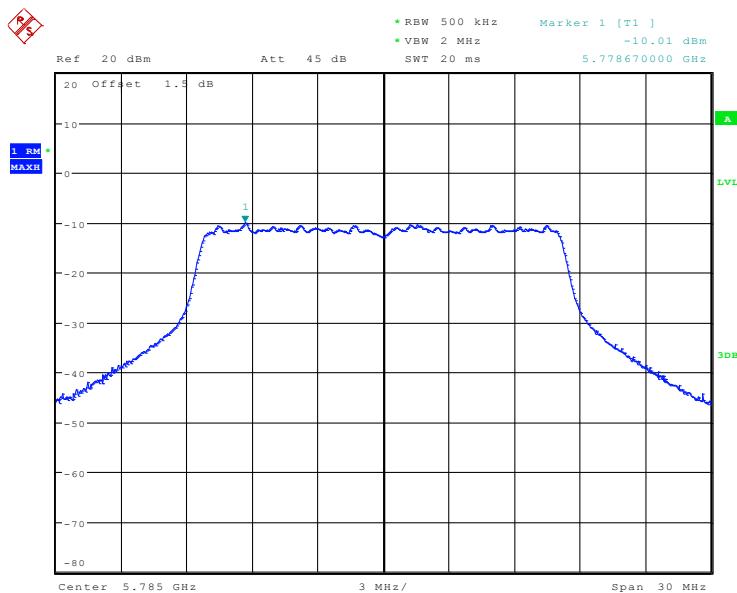


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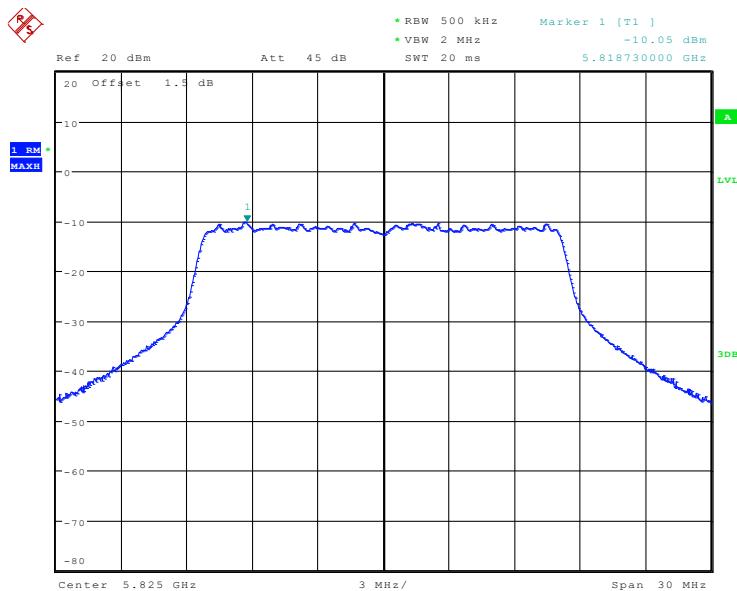


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Test mode:	802.11a	Frequency(MHz):	5785
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Test mode:	802.11a	Frequency(MHz):	5825
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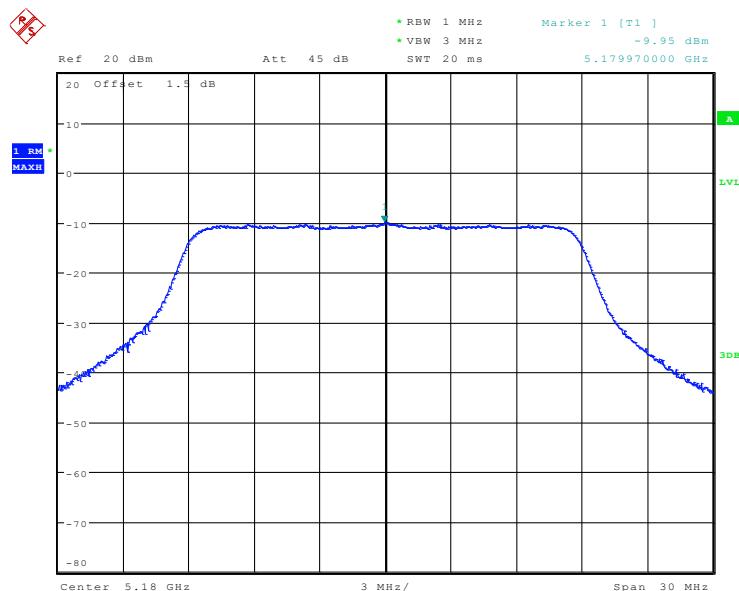


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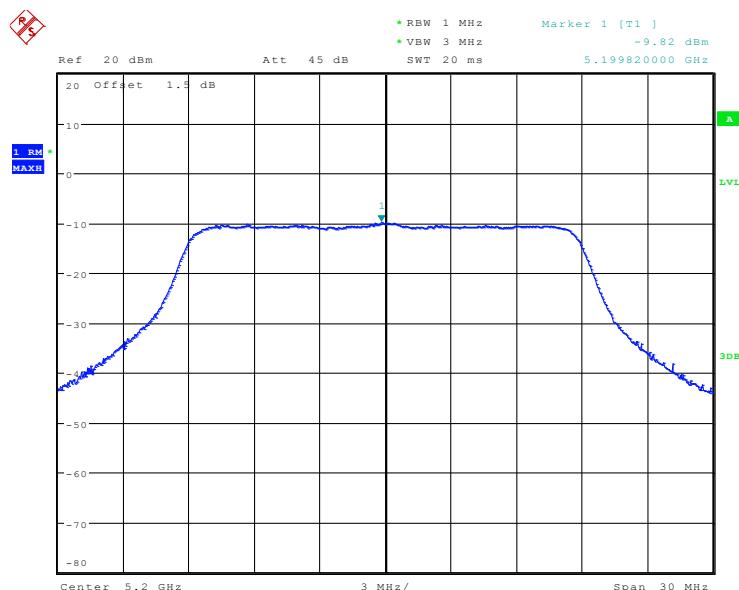


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Test mode:	802.11n(HT20)	Frequency(MHz):	5180
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Test mode:	802.11n(HT20)	Frequency(MHz):	5200
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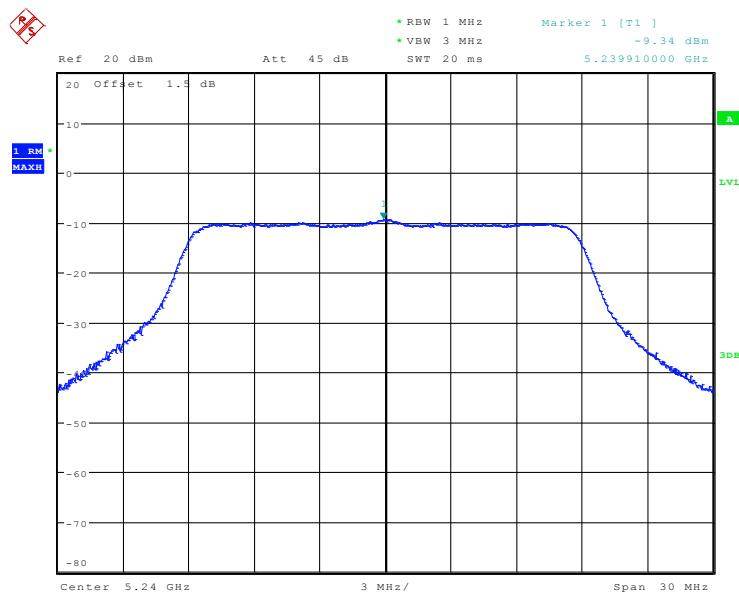


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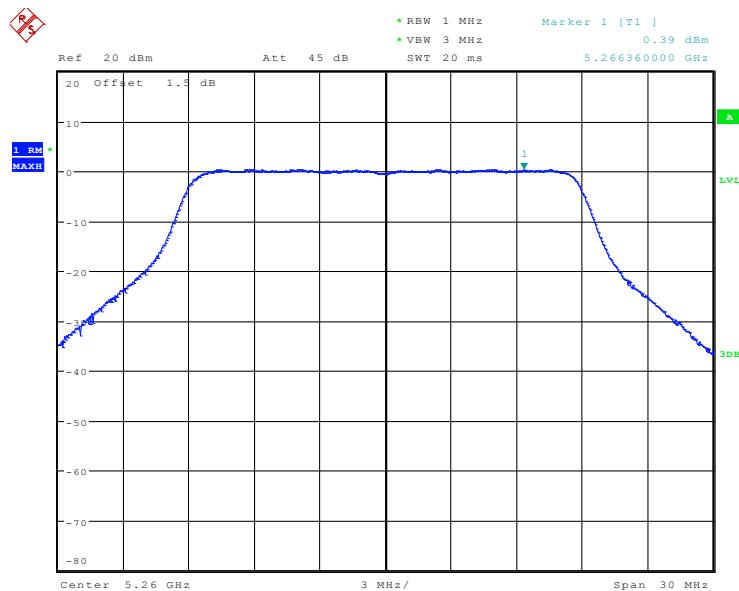


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Test mode:	802.11n(HT20)	Frequency(MHz):	5240
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Test mode:	802.11n(HT20)	Frequency(MHz):	5260
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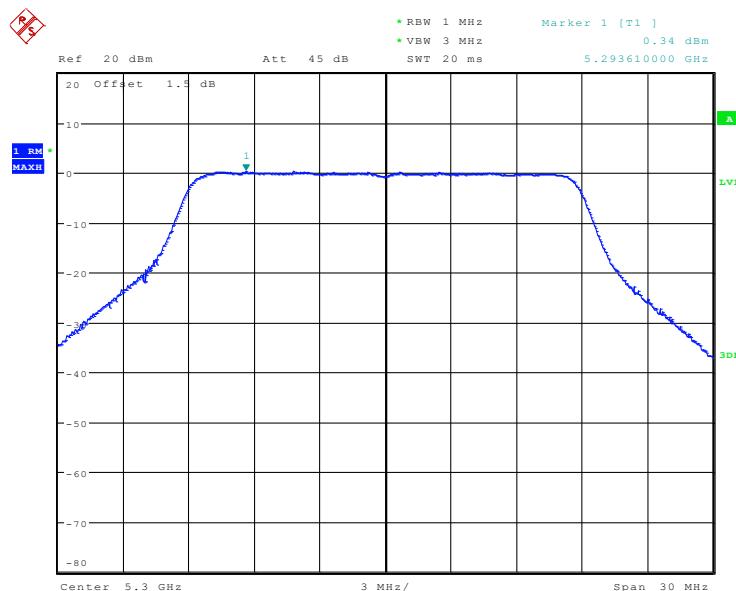


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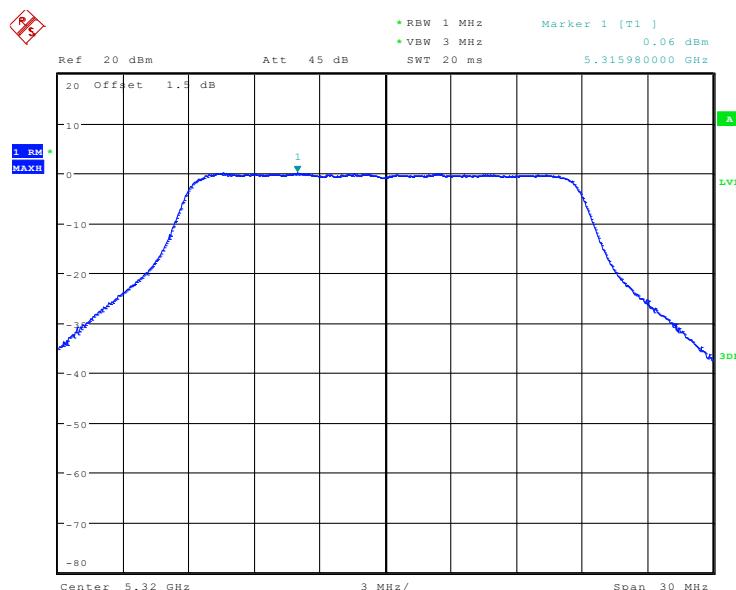


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Test mode:	802.11n(HT20)	Frequency(MHz):	5300
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Test mode:	802.11n(HT20)	Frequency(MHz):	5320
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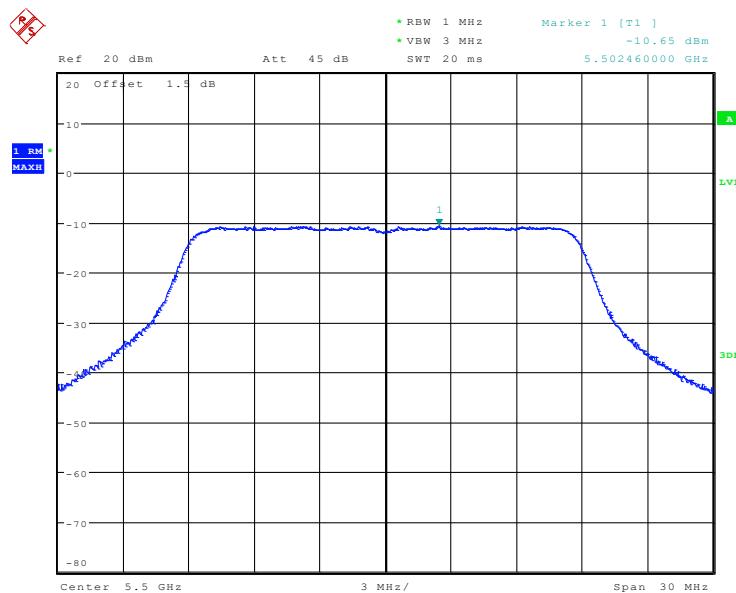


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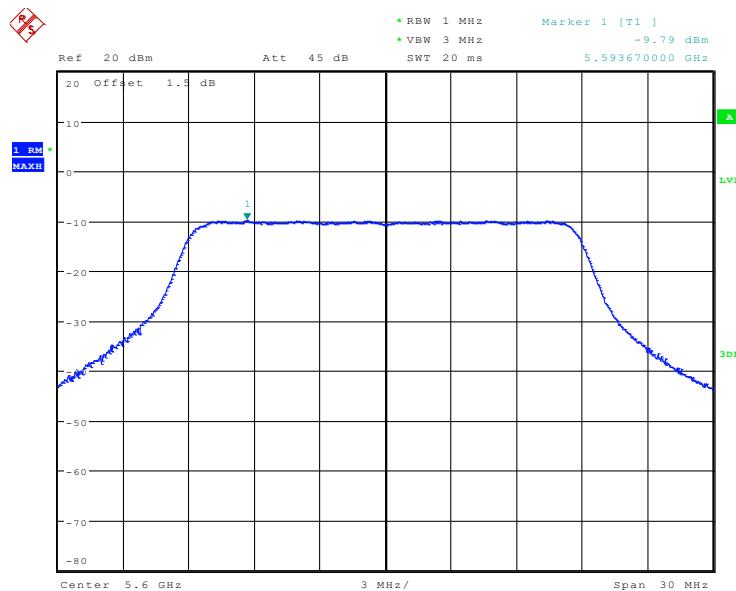


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Test mode:	802.11n(HT20)	Frequency(MHz):	5500
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Test mode:	802.11n(HT20)	Frequency(MHz):	5600
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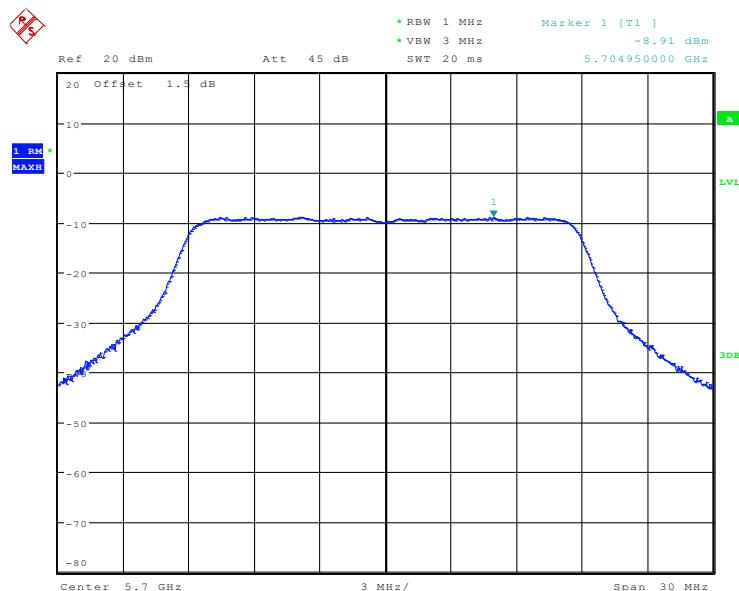


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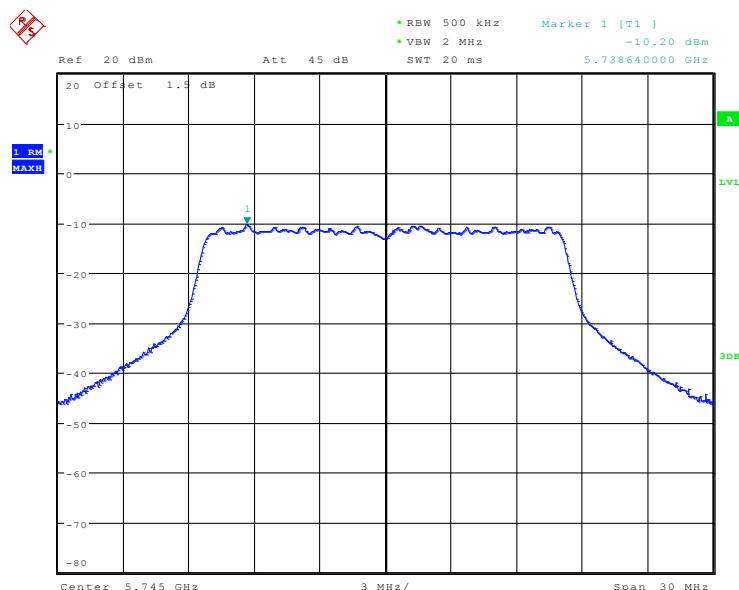


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Test mode:	802.11n(HT20)	Frequency(MHz):	5700
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Test mode:	802.11n(HT20)	Frequency(MHz):	5745
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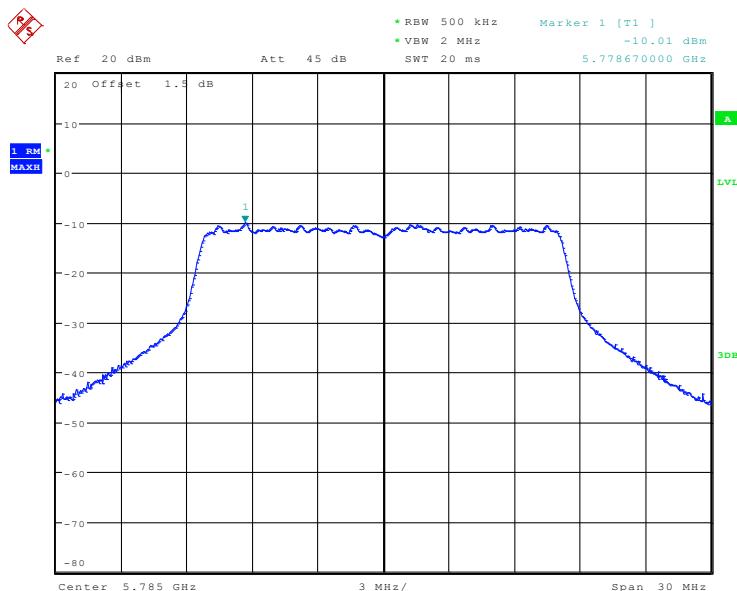


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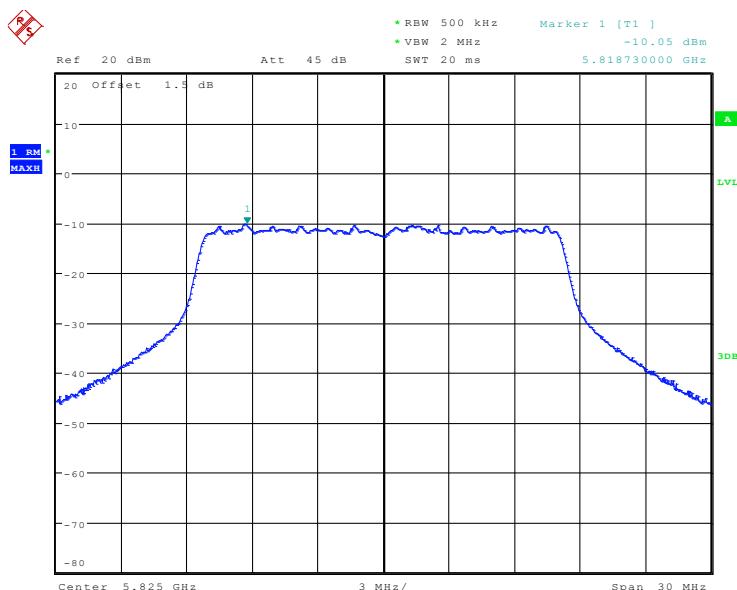


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Test mode:	802.11n(HT20)	Frequency(MHz):	5785
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Test mode:	802.11n(HT20)	Frequency(MHz):	5825
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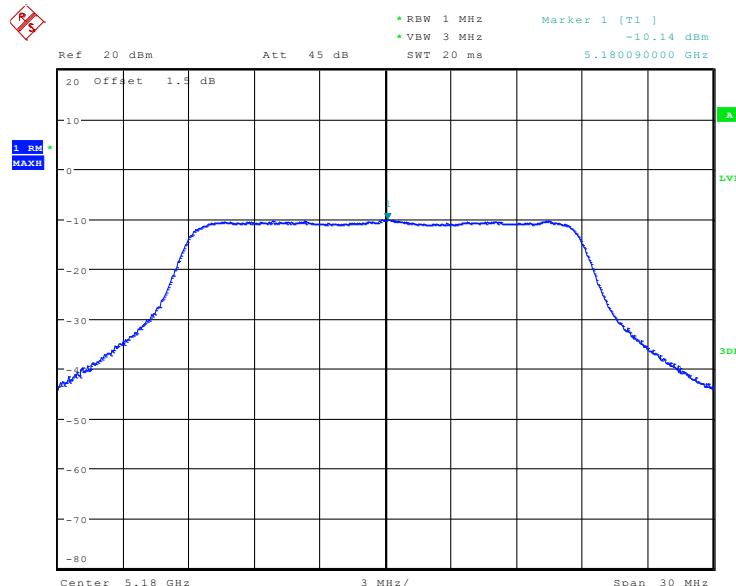


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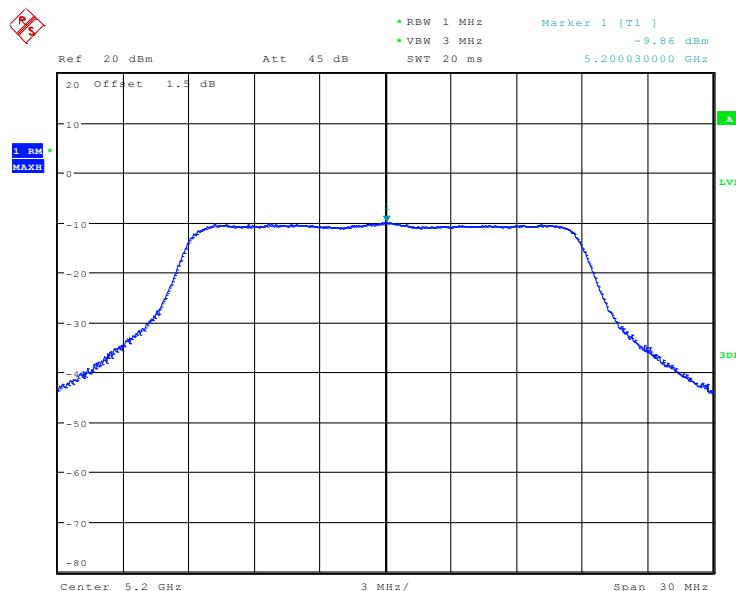


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Test mode:	802.11ac20	Frequency(MHz):	5180
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Test mode:	802.11ac20	Frequency(MHz):	5200
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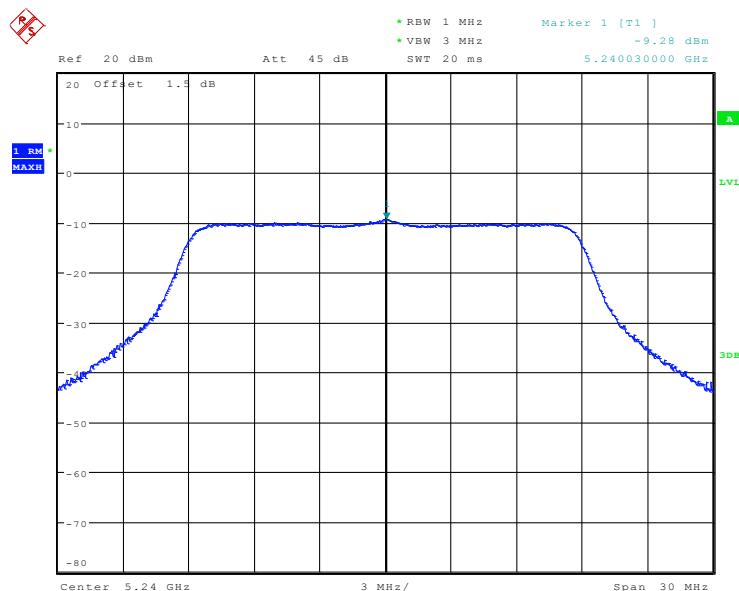


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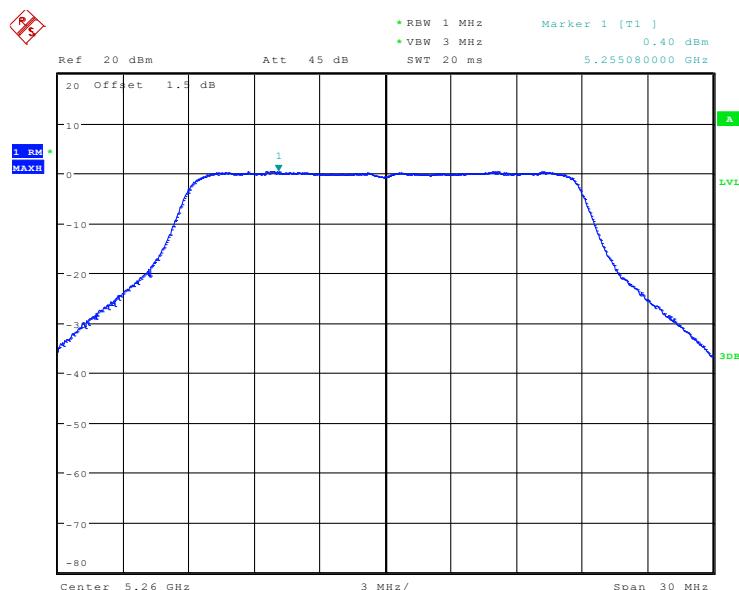


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Test mode:	802.11ac20	Frequency(MHz):	5240
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Test mode:	802.11ac20	Frequency(MHz):	5260
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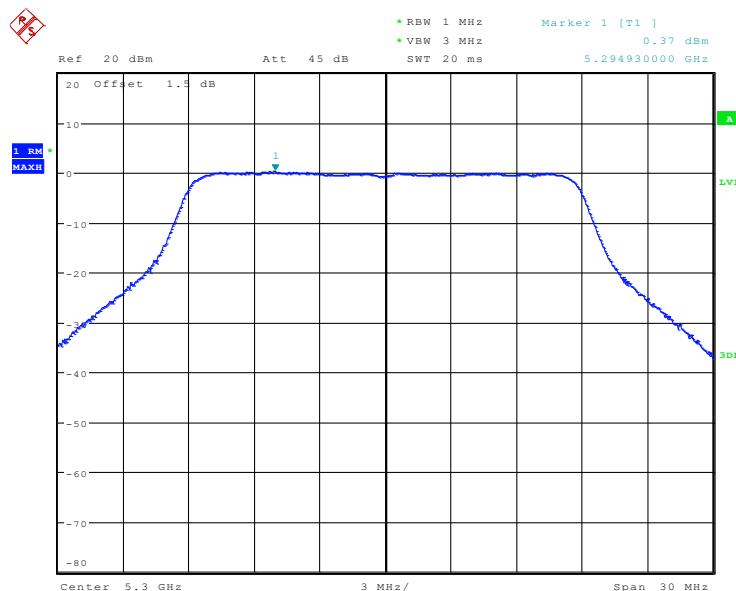


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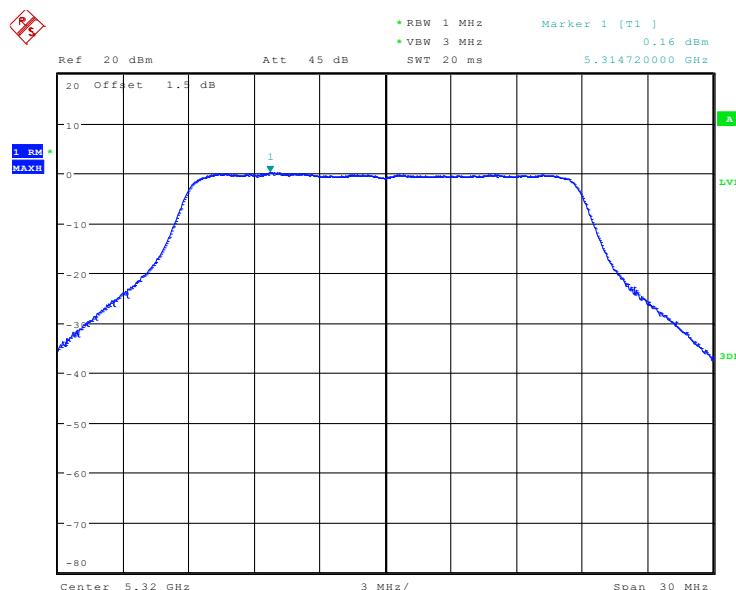


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Test mode:	802.11ac20	Frequency(MHz):	5300
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Test mode:	802.11ac20	Frequency(MHz):	5320
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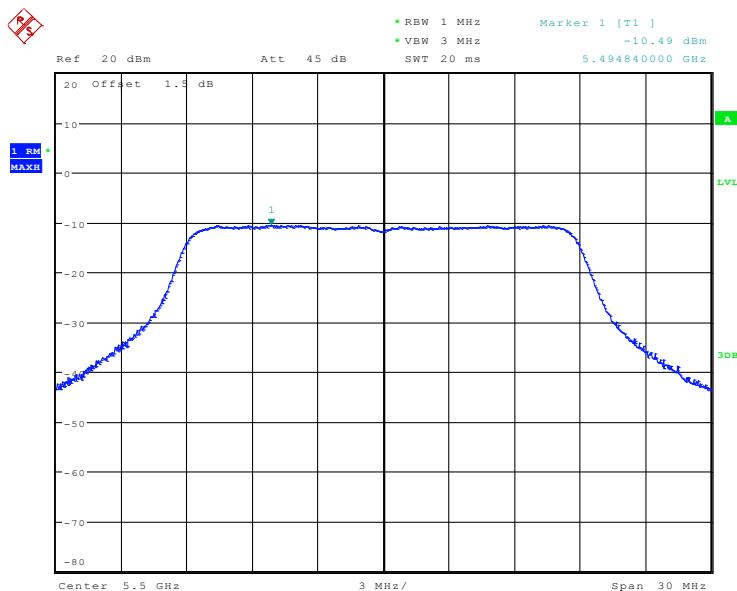


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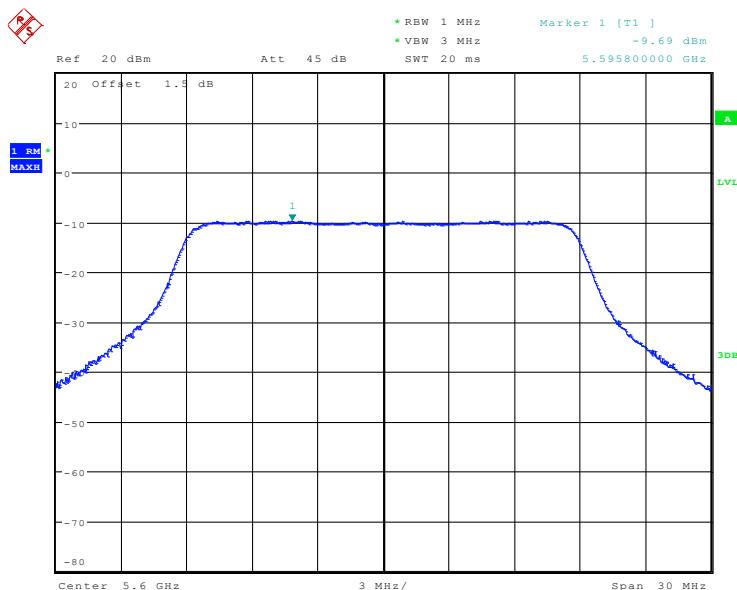


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Test mode:	802.11ac20	Frequency(MHz):	5500
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Test mode:	802.11ac20	Frequency(MHz):	5600
------------	------------	-----------------	------

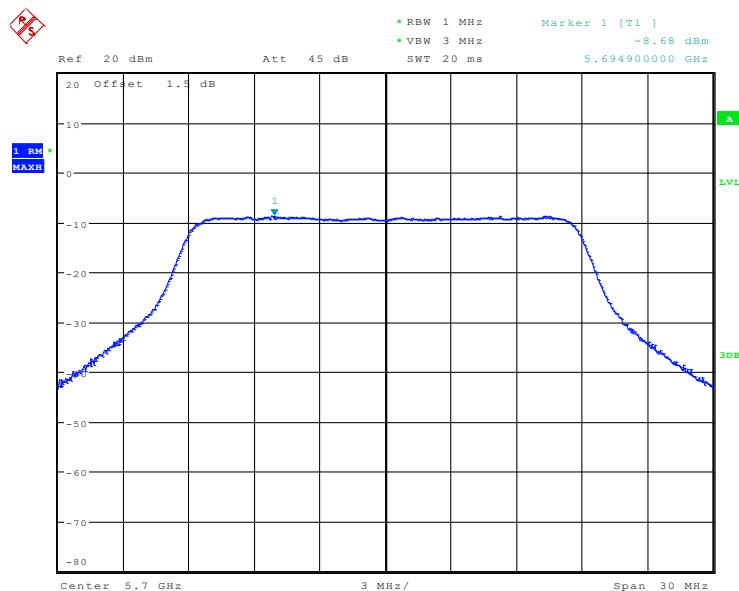


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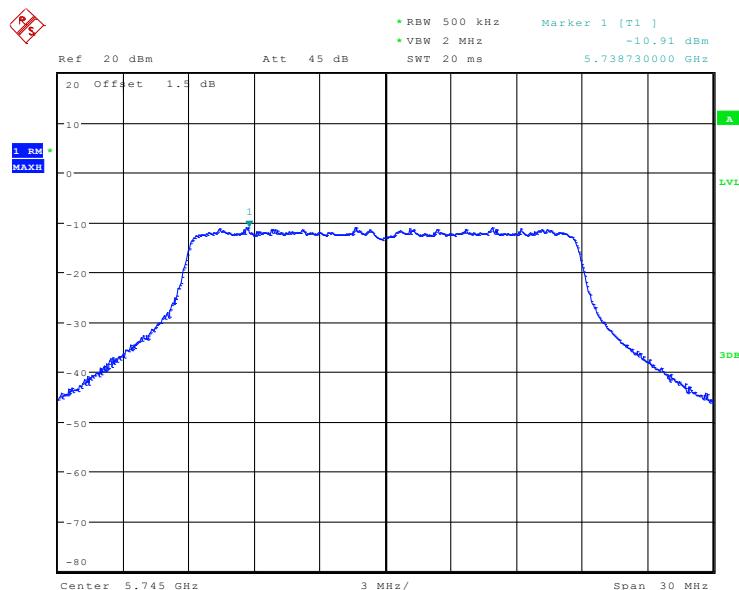


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Test mode:	802.11ac20	Frequency(MHz):	5700
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Test mode:	802.11ac20	Frequency(MHz):	5745
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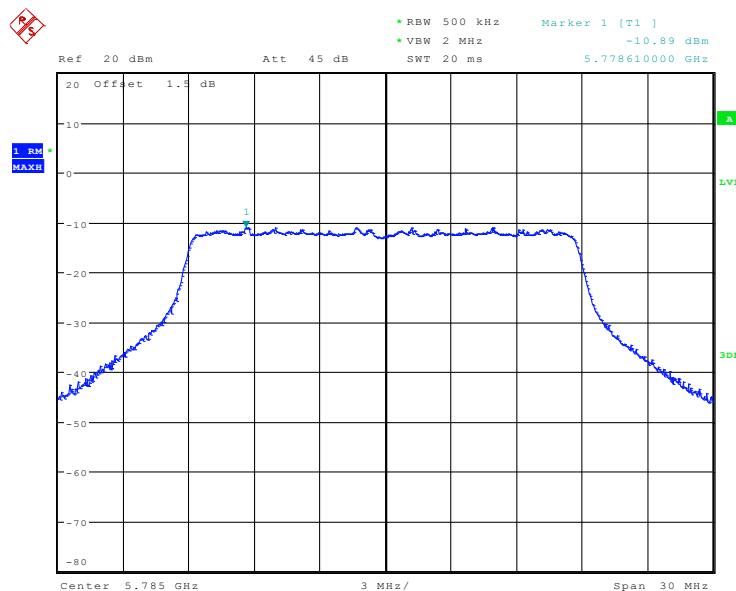


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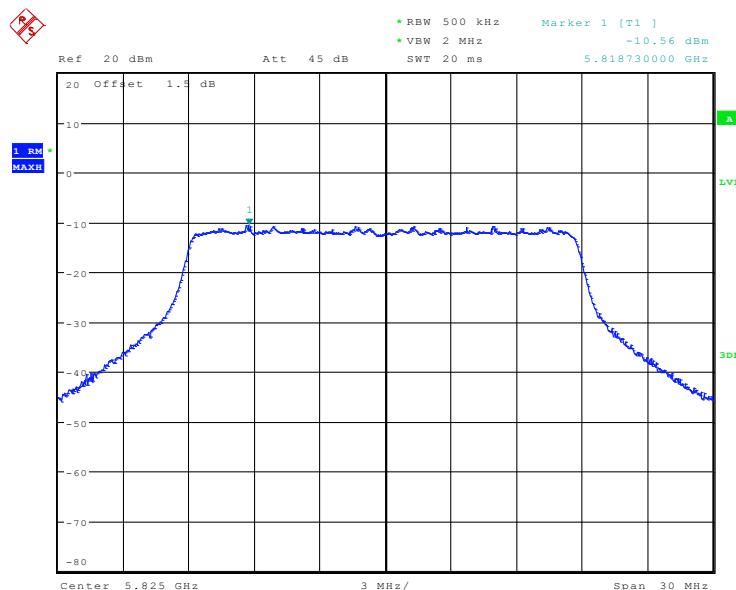


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Test mode:	802.11ac20	Frequency(MHz):	5785
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Test mode:	802.11ac20	Frequency(MHz):	5825
------------	------------	-----------------	------

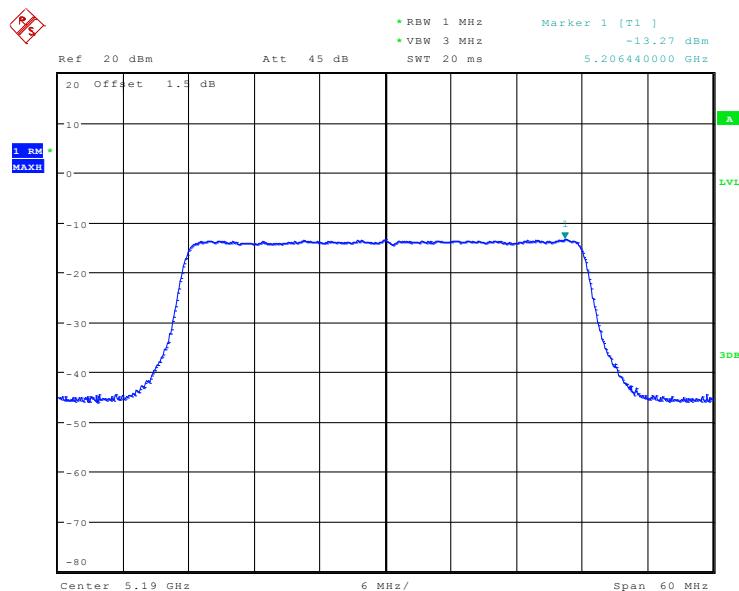


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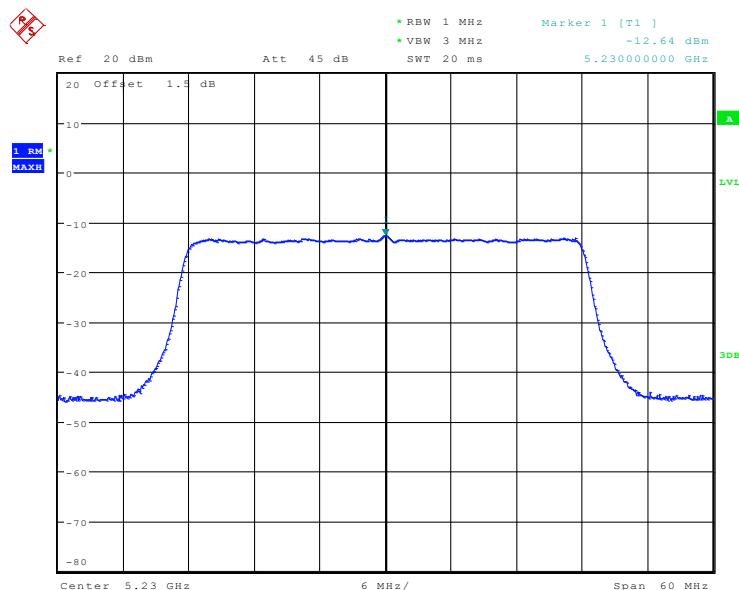


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Test mode:	802.11n(HT40)	Frequency(MHz):	5190
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Test mode:	802.11n(HT40)	Frequency(MHz):	5230
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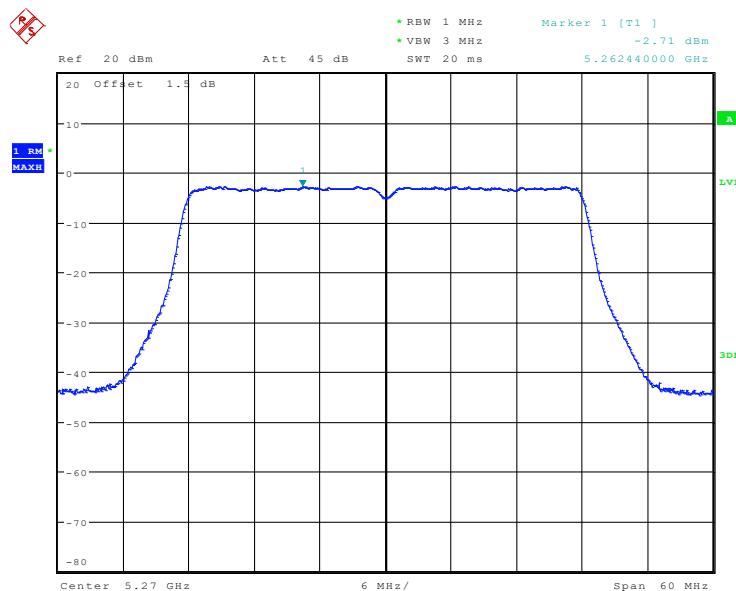


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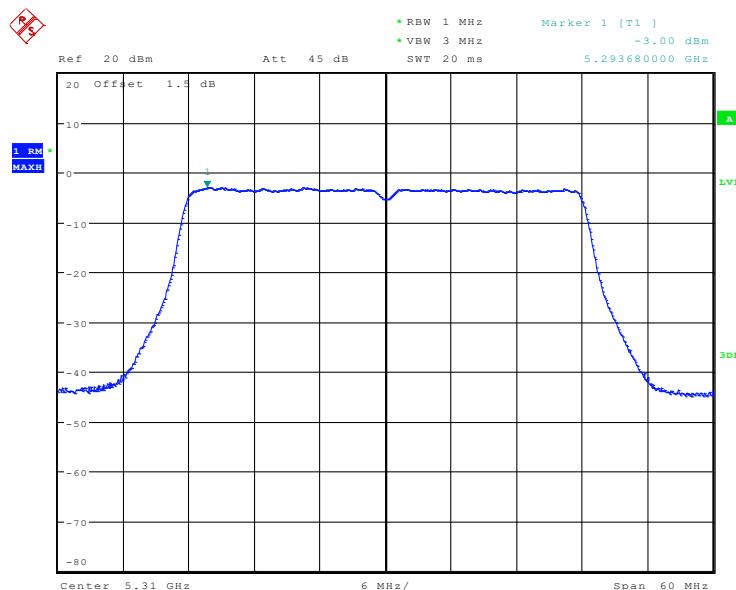


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Test mode:	802.11n(HT40)	Frequency(MHz):	5270
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Test mode:	802.11n(HT40)	Frequency(MHz):	5310
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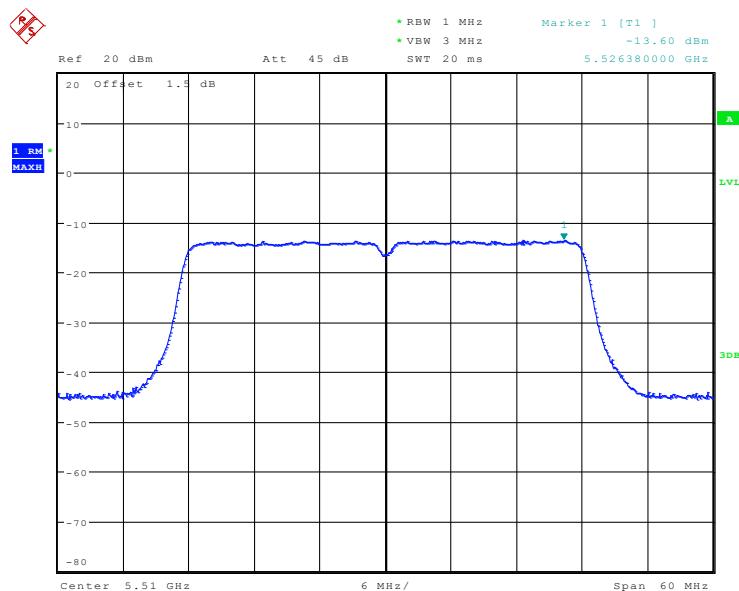


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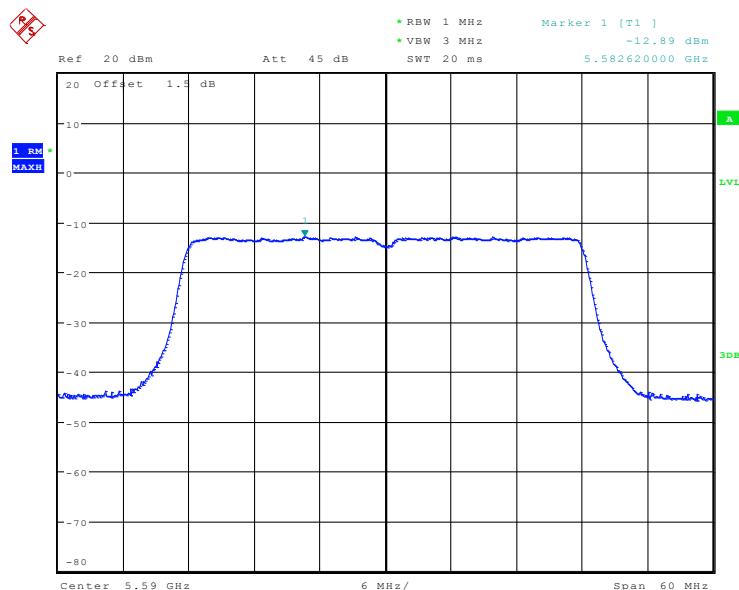


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Test mode:	802.11n(HT40)	Frequency(MHz):	5510
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Test mode:	802.11n(HT40)	Frequency(MHz):	5590
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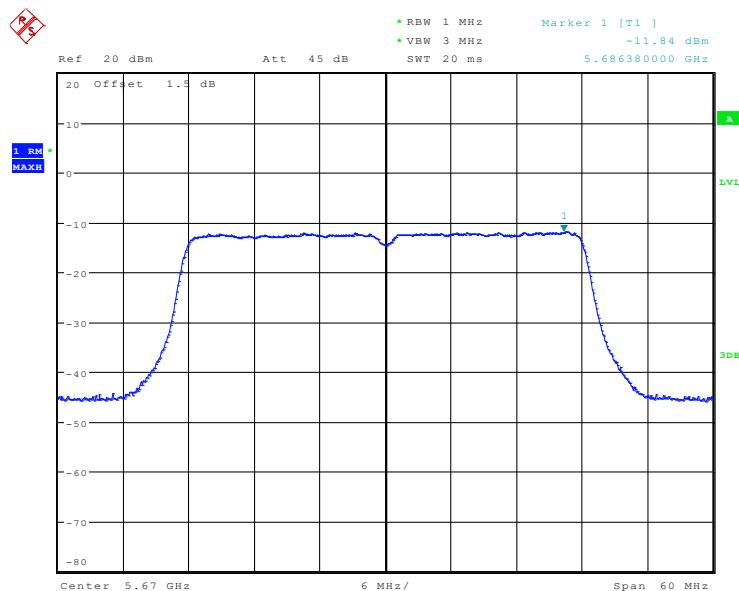


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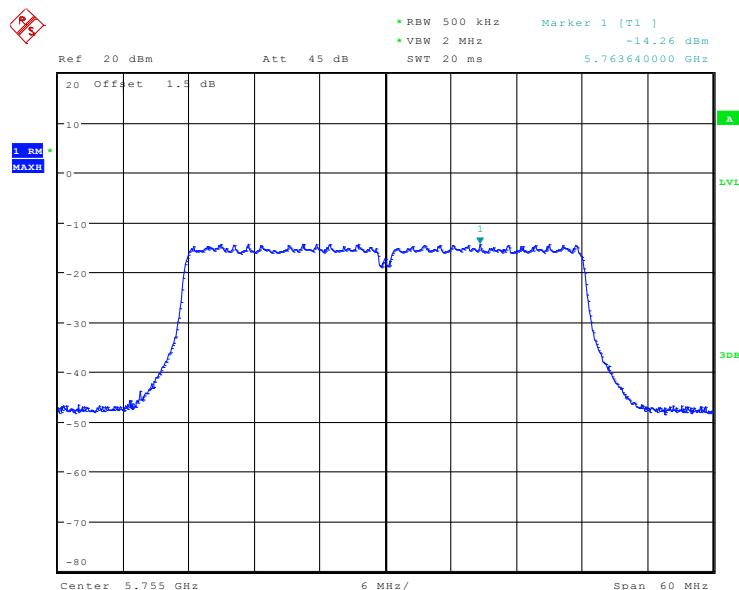


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Test mode:	802.11n(HT40)	Frequency(MHz):	5670
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Test mode:	802.11n(HT40)	Frequency(MHz):	5755
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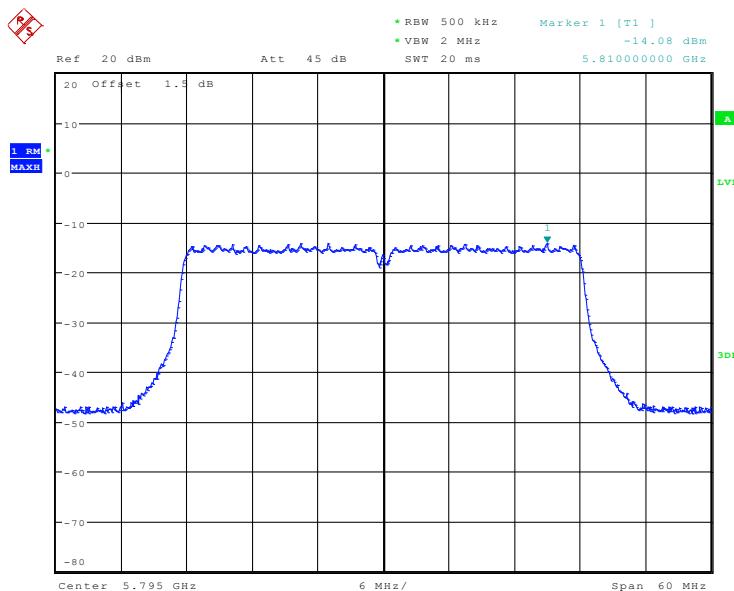


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Test mode:	802.11n(HT40)	Frequency(MHz):	5795
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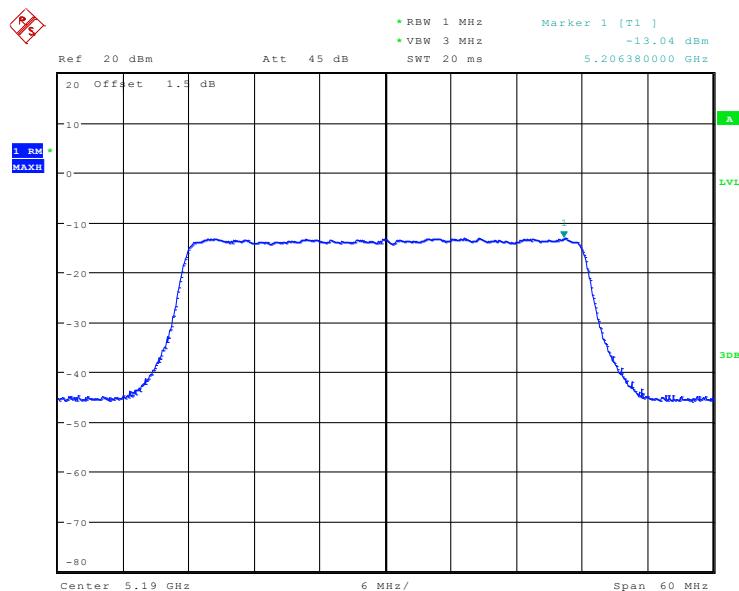


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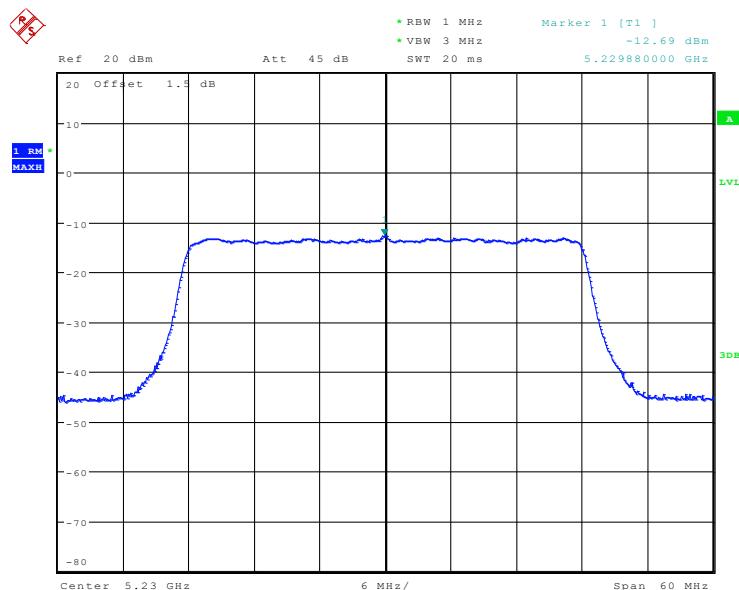


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Test mode:	802.11ac40	Frequency(MHz):	5190
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Test mode:	802.11ac40	Frequency(MHz):	5230
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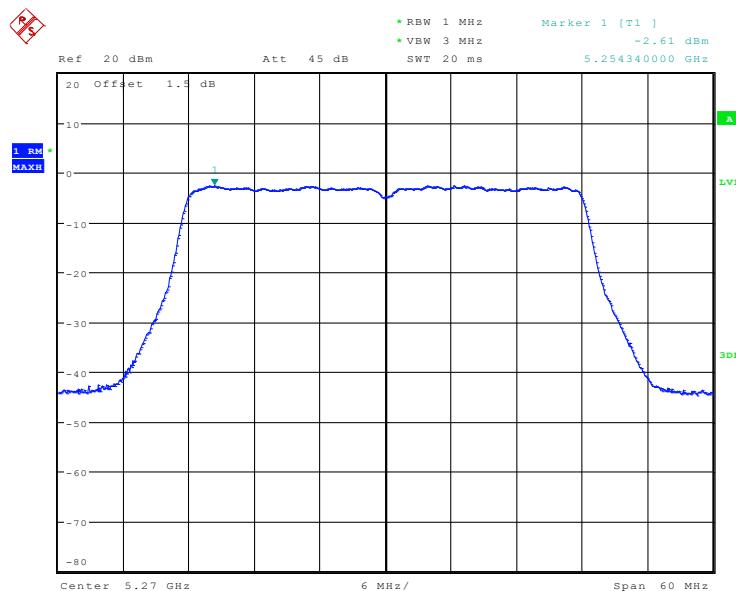


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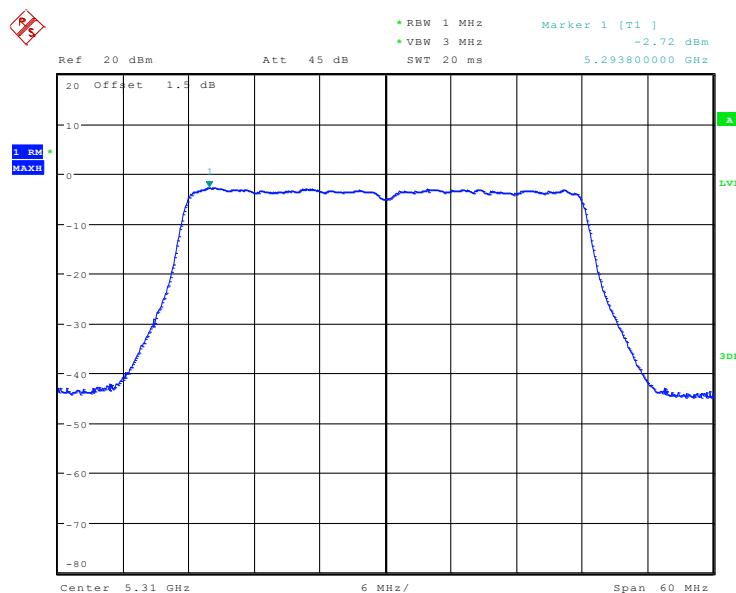


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Test mode:	802.11ac40	Frequency(MHz):	5270
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Test mode:	802.11ac40	Frequency(MHz):	5310
------------	------------	-----------------	------

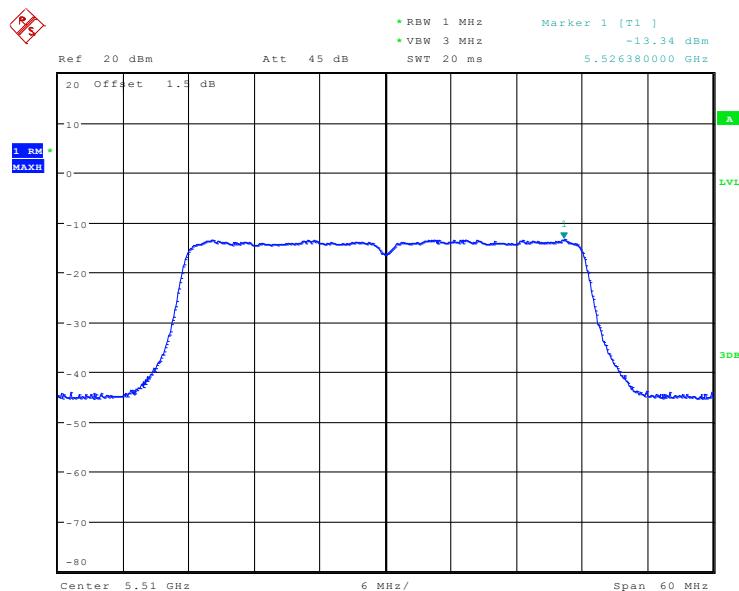


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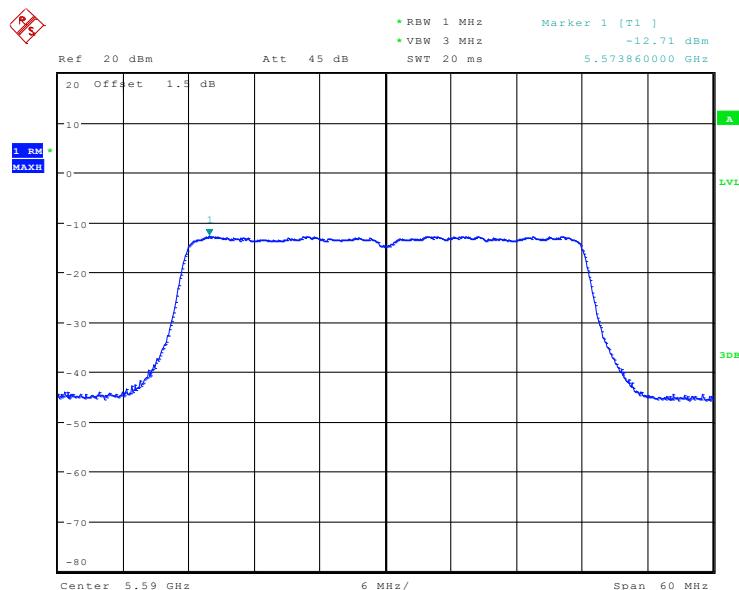


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Test mode:	802.11ac40	Frequency(MHz):	5510
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Test mode:	802.11ac40	Frequency(MHz):	5590
------------	------------	-----------------	------

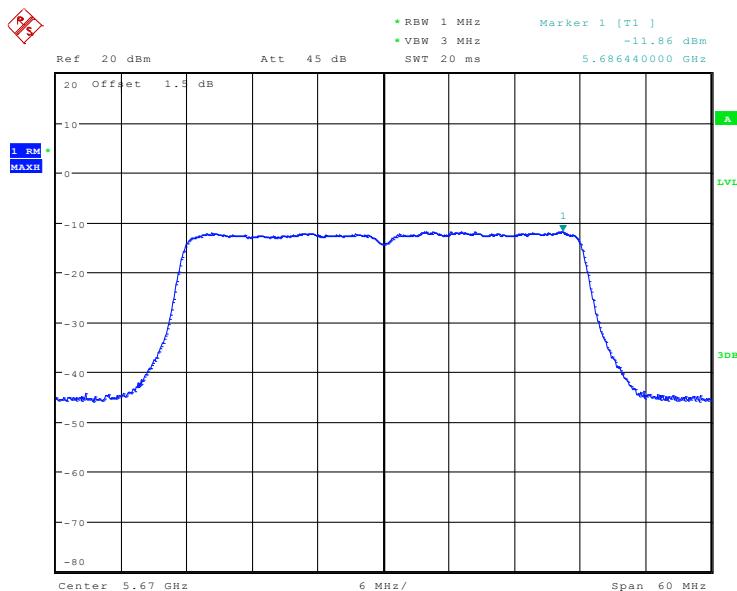


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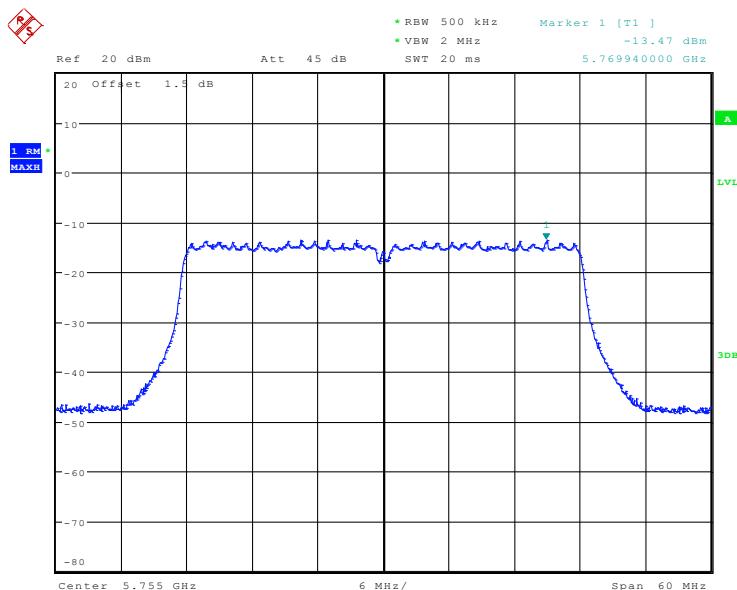


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Test mode:	802.11ac40	Frequency(MHz):	5670
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Test mode:	802.11ac40	Frequency(MHz):	5755
------------	------------	-----------------	------

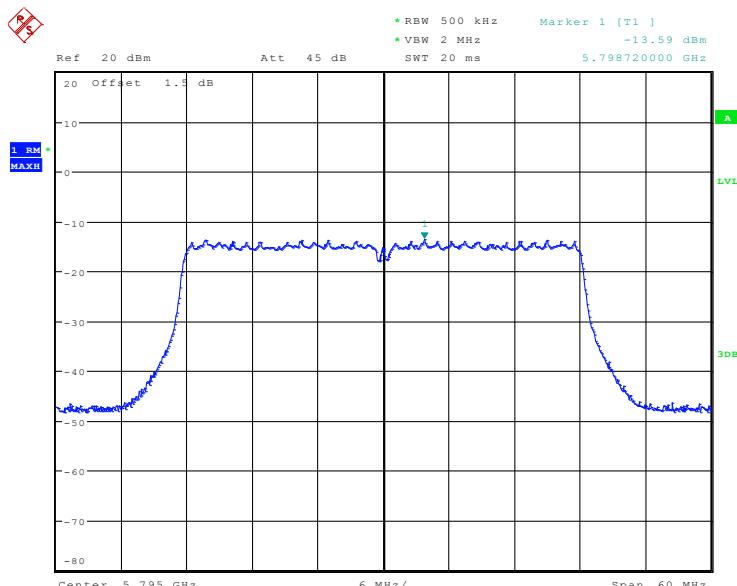


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Test mode:	802.11ac40	Frequency(MHz):	5795
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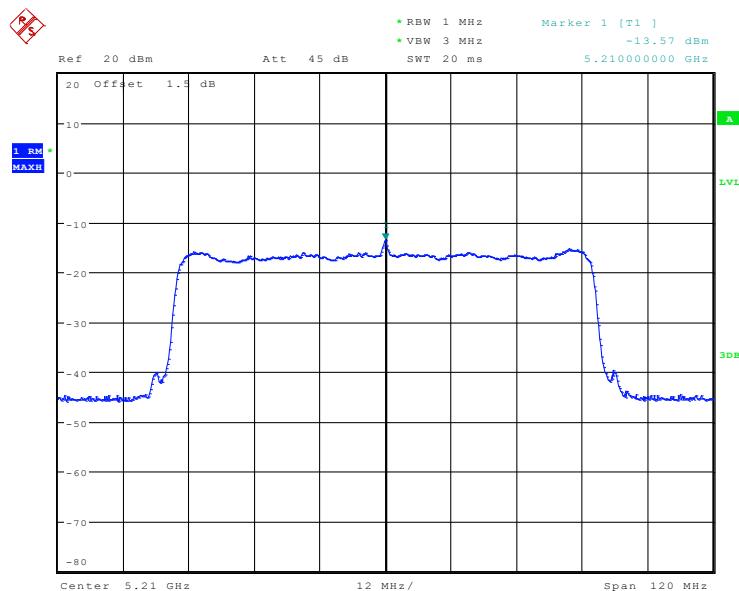
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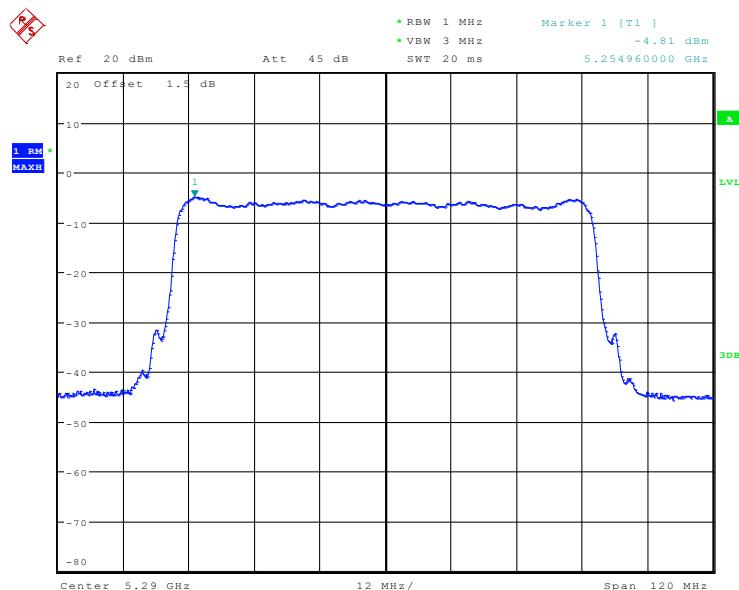


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Test mode:	802.11ac80	Frequency(MHz):	5210
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Test mode:	802.11ac80	Frequency(MHz):	5290
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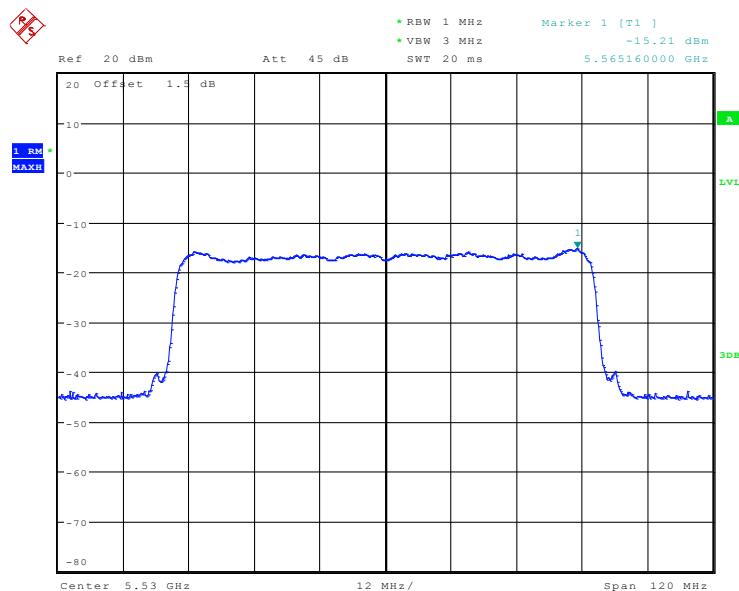


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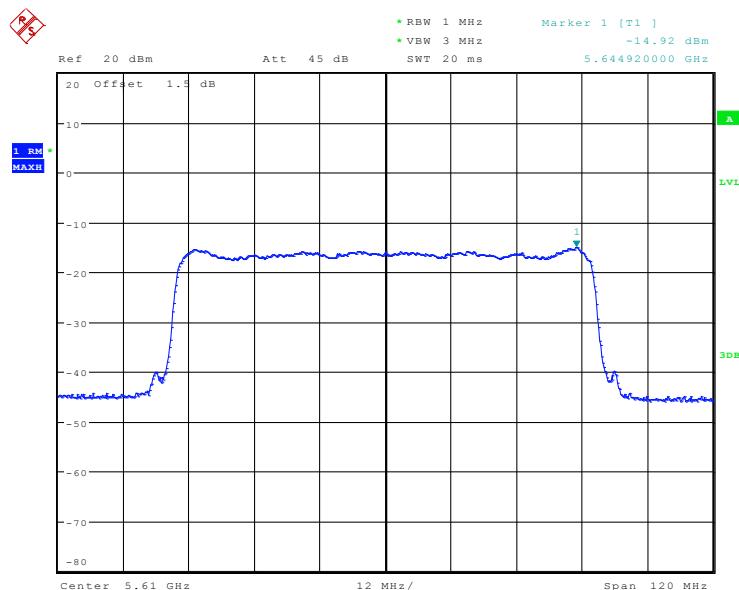


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Test mode:	802.11ac80	Frequency(MHz):	5530
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Test mode:	802.11ac80	Frequency(MHz):	5610
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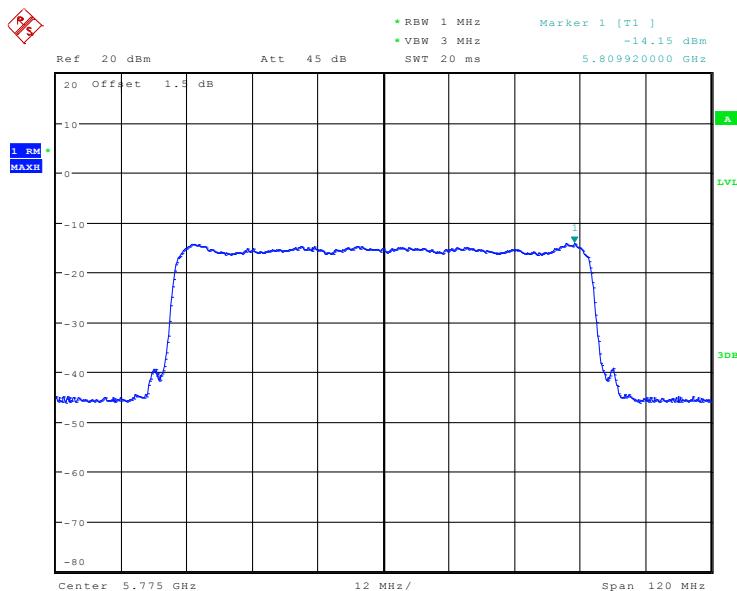


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Test mode:	802.11ac80	Frequency(MHz):	5775
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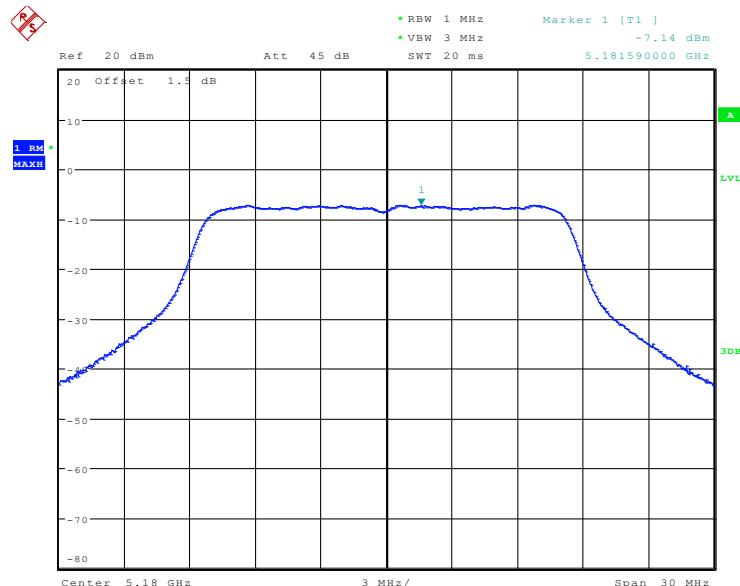
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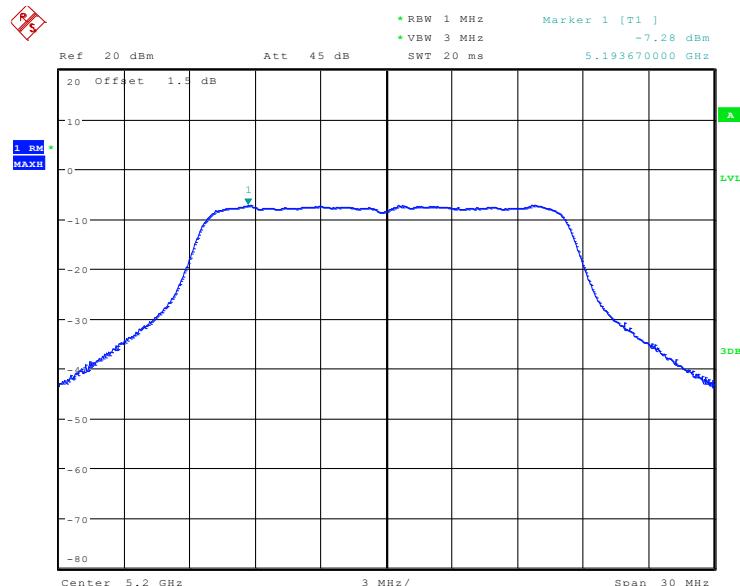
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Antenna 2

Test mode:	802.11a	Frequency(MHz):	5180
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Test mode:	802.11a	Frequency(MHz):	5200
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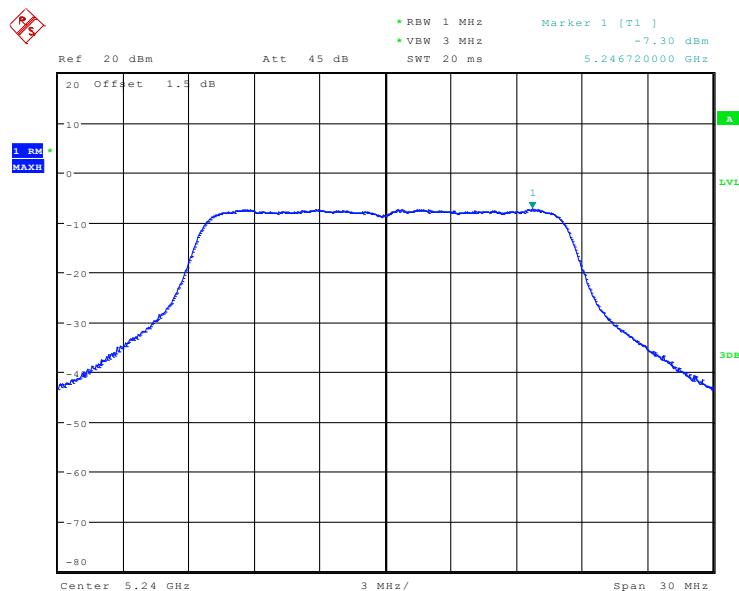


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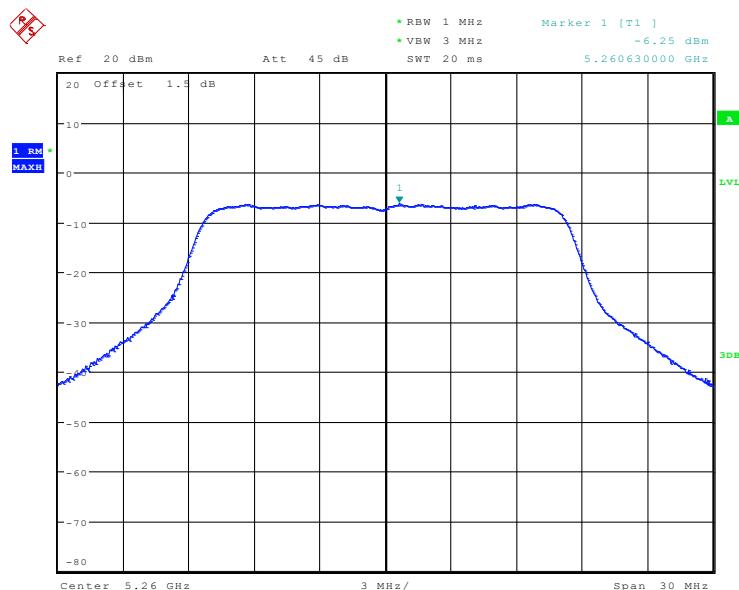


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Test mode:	802.11a	Frequency(MHz):	5240
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Test mode:	802.11a	Frequency(MHz):	5260
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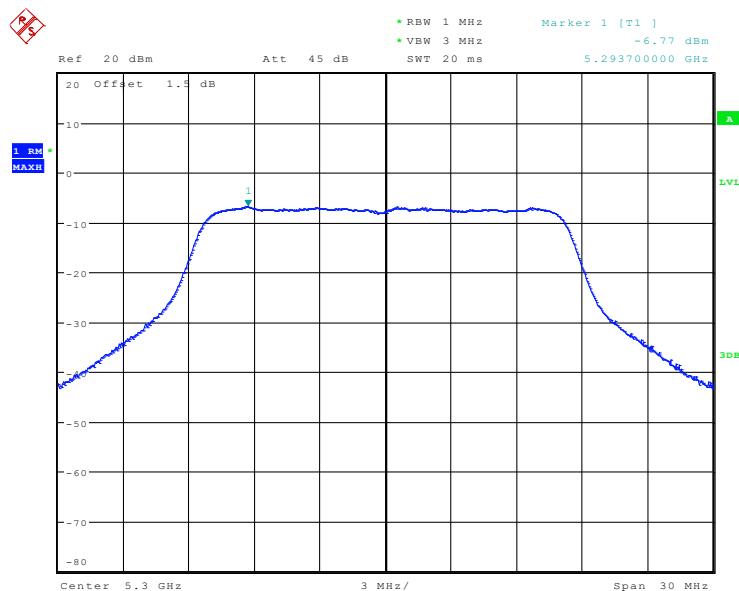


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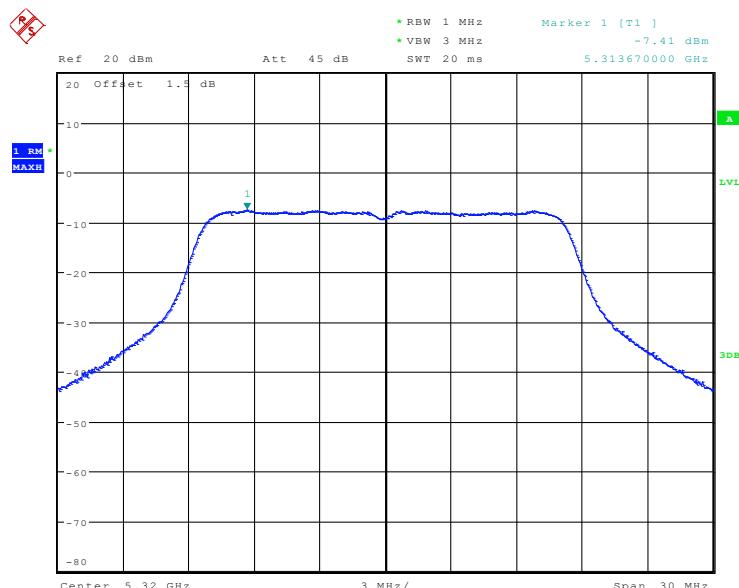


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Test mode:	802.11a	Frequency(MHz):	5300
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Test mode:	802.11a	Frequency(MHz):	5320
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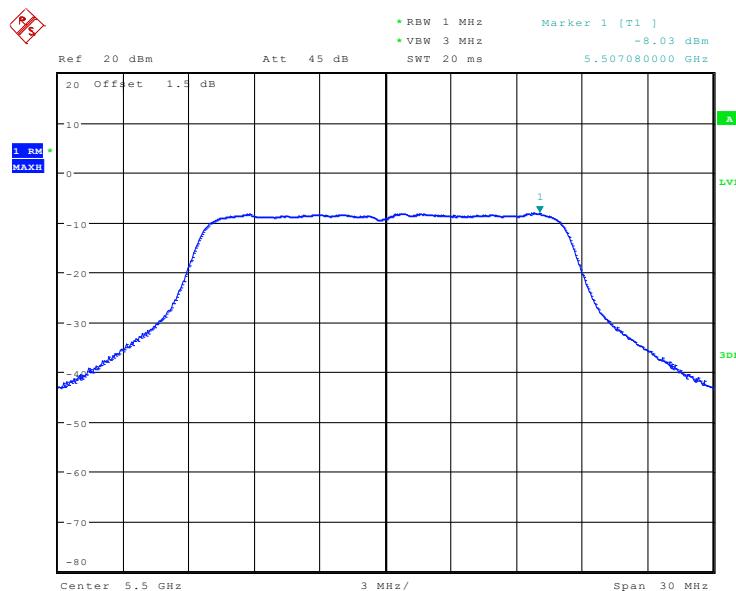


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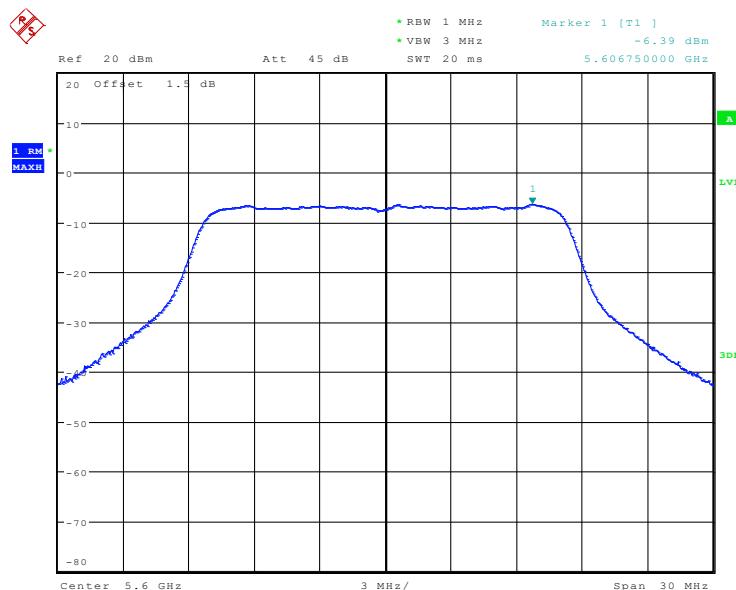


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Test mode:	802.11a	Frequency(MHz):	5500
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Test mode:	802.11a	Frequency(MHz):	5600
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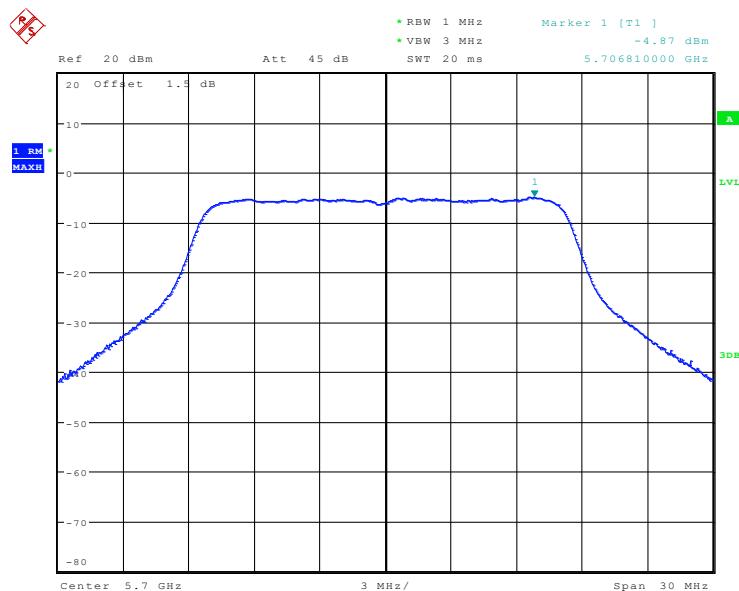


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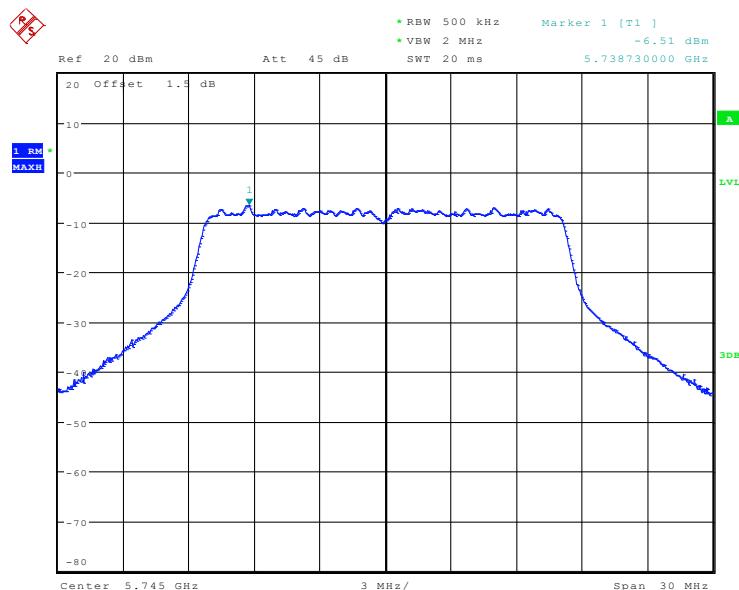


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Test mode:	802.11a	Frequency(MHz):	5700
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Test mode:	802.11a	Frequency(MHz):	5745
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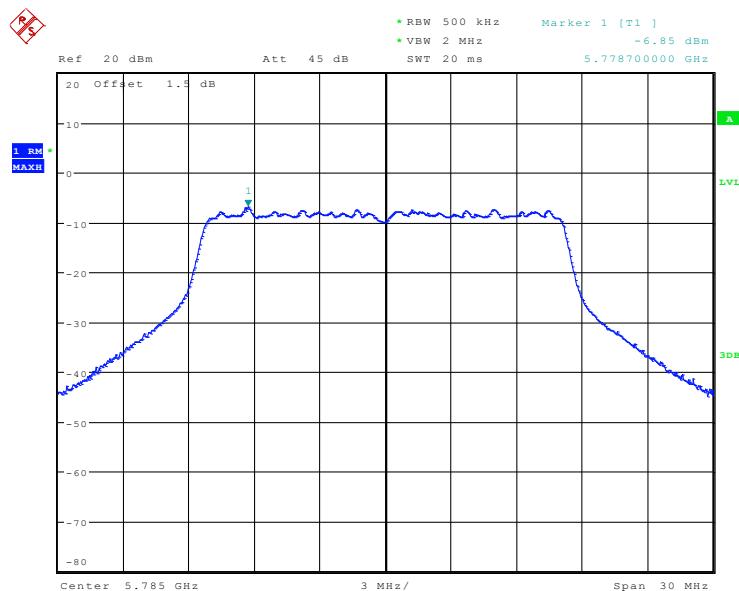


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Test mode:	802.11a	Frequency(MHz):	5785
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Test mode:	802.11a	Frequency(MHz):	5825
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