EMC TEST REPORT for UNII device

No. 150101832SHA-004

Applicant	:	Aruba Networks, Inc
		1344 Crossman Ave. Sunnyvale, CA,94089
Manufacturer	:	Aruba Networks, Inc
		1344 Crossman Ave. Sunnyvale, CA,94089
Product Name	:	Wireless Sensor
Type/Model	:	LSIN0100

SUMMARY

The equipment complies with the requirements according to the following standard(s):

47CFR Part 15 (2014): Radio Frequency Devices (Subpart E)

ANSI C63.4 (2009): American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

Date of issue: January 15, 2015

Prepared by: Reviewed by:

Nemo Li (*Project Engineer*) Daniel Zhao (*Reviewer*)

Description of Test Facility

Name: Intertek Testing Services Limited Shanghai
Address: Building 86, No. 1198 Qinzhou Rd., North, Shanghai 200233, P.R. China

FCC Registration Number: 236597
IC Assigned Code: 2042B-1

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Content

1. General Information

1.1 Applicant Information

Applicant	:	Aruba Networks, Inc
		1344 Crossman Ave. Sunnyvale, CA,94089
Name of contact	:	Robert Hastings
Tel	:	(408) 990 2557
Fax	:	/
Email	:	rhastings@arubanetworks.com
Manufacturer	:	Aruba Networks, Inc
		1344 Crossman Ave. Sunnyvale, CA,94089

1.2 Identification of the EUT

Product Name	:	Wireless Sensor
Type/model	:	LSIN0100
FCC ID	:	Q9DLSIN0100
IC	:	4675A-LSIN0100

1.3 Technical specification

Operation Frequency Band	:	5150 ~ 5250 MHz; 5250 ~ 5350 MHz; 5470 ~ 5725MHz; 5725 ~ 5850 MHz
Type of Modulation	:	OFDM(BPSK,QPSK,16QAM,64QAM)
EUT Modes of Modulation	:	802.11a; 802.11n HT20, 802.11n HT40
Channel Number	:	For 5150 ~ 5250 MHz band: Channel 36 – 48 For 5250 ~ 5350MHz Band: Channel 52 – 64; For 5470 ~ 5725MHz Band: Channel 100 – 140 For 5725 ~ 5850 MHz band: Channel 149 - 165
Description of EUT	:	The EUT is a Wireless Sensor and has only one model.
Port identification	:	power port 1; USB port 1
Antenna	:	N2425DM-T10L-PK1-G23UR3: Integral, 2.3dBi for 2.4GHz band, 3.7dBi for 5GHz band
Rating	:	100-240Vac, 50/60Hz, 0.3A or 5Vdc, 0.5A (USB)
Declared Temperature range	:	0°C ~ 50°C
Category of EUT	:	Class B
EUT type	:	☒ Table top ☐ Floor standing
Sample received date	:	December 14, 2014
Sample Identification No	:	/
Date of test	:	December 15, 2014 – January 15, 2014

2. Test Specification

2.1 Instrument list

Equipment	Type	Manu.	Internal no.	Cal. Date	Due date
Test Receiver	ESCS 30	R&S	EC 2107	2014-10-21	2015-10-20
Test Receiver	ESIB 26	R&S	EC 3045	2014-10-20	2015-10-19
Test Receiver	ESCI 7	R&S	EC4501	2014-12-29	2015-12-28
Spectrum Analyzer	N9010	Agilent	EC4890	2014-10-21	2015-10-20
Spectrum Analyzer	E4446	Agilent	/	2014-10-21	2015-10-20
Power meter	ML 2495A	Anritsu	EC 4895	2014-10-21	2015-10-20
A.M.N.	ESH2-Z5	R&S	EC 3119	2015-1-9	2016-1-8
Bilog Antenna	CBL 6112D	TESEQ	EC 4206	2014-5-15	2015-5-14
Horn antenna	HF 906	R&S	EC 3049	2014-5-12	2015-5-11
Pre-amplifier	Pre-amp 18	R&S	EC 3222	2014-4-11	2015-4-10
Pre-amplifier	Tpa0118-40	R&S	EC 4792-2	2014-4-11	2015-4-10
Log-period antenna	AT 1080	AR	EC 3044-7	2014-5-21	2015-5-20
Biconical antenna	3109PX	ETS	EC3564	2014-8-25	2015-8-24
Semi-anechoic chamber	-	Albatross project	EC 3048	2014-5-20	2015-5-19
Shielded room	-	Zhongyu	EC 2838	2015-1-12	2016-1-11
Shielded room	-	Zhongyu	EC 2839	2015-1-12	2016-1-11
High Pass Filter	WHKX 1.0/15G-10SS	Wainwright	EC4297-1	2014-2-1	2015-1-31
High Pass Filter	WHKX 2.8/18G-12SS	Wainwright	EC4297-2	2014-2-1	2015-1-31
High Pass Filter	WHKX 7.0/1.8G-8SS	Wainwright	EC4297-3	2014-2-1	2015-1-31
Band Reject Filter	WRCGV 2400/2483-2390/2493-35/10SS	Wainwright	EC4297-4	2014-2-1	2015-1-31
MXG Analog Signal Generator	N5181A	KEYSIGHT	EC5338-2	2014-11-7	2015-11-6
MXG Vector Signal Generator	N51812B	KEYSIGHT	EC5175	2014-12-30	2015-12-29
Power sensor	U2021XA	KEYSIGHT	EC5338-1	2014-10-2	2015-10-1
PXA Signal Analyzer	N9030A	KEYSIGHT	EC5338	2014-11-18	2015-11-17

2.2 Test Standard

47CFR Part 15:2014
ANSI C63.4: 2009
KDB 789033D02 (v01)

2.3 Mode of operation during the test / Test peripherals used

While testing transmitting mode of EUT, the engineering mode was applied and continuously transmission was applied.

EUT was tested with AC powered and USB powered and the worst data was recorded and listed in the report.

The lowest, middle and highest channel were tested as representatives.

Freq. Band	Modulation	Lowest(MHz)	Middle(MHz)	Highest(MHz)
5150~5250MHz	802.11a	5180	5200	5240
	802.11n HT20	5180	5200	5240
	802.11n HT40	5190	/	5230
5250~5350MHz	802.11a	5260	5300	5320
	802.11n HT20	5260	5300	5320
	802.11n HT40	5270	/	5310
5470~5725 MHz	802.11a	5500	5580	5700
	802.11n HT20	5500	5580	5700
	802.11n HT40	5510	5550	5670
5725~5850MHz	802.11a	5745	5785	5825
	802.11n HT20	5745	5785	5825
	802.11n HT40	5755	/	5795

Test peripherals used:

Item No	Name	Band and Model	Description	S/No
1	Laptop computer	HP ProBook 6470b	100-240V AC 50/60Hz	NA

Test software setting:
The power level setting for 802.11a/n is used with ART software offered by the manufactory.

Freq. Band	Mode 1	Frequency (MHz)	ART Setting	Note
5150~5250MHz	802.11a	5180	13.0	-
		5200	13.0	
		5240	13.0	
	802.11n HT20	5180	13.0	
		5200	13.0	
		5240	13.0	
	802.11n HT40	5190	13.0	
		5230	13.0	
5250~5350MHz	802.11a	5260	13.0	-
		5300	13.0	
		5320	13.0	
	802.11n HT20	5260	13.0	
		5300	14.5	
		5320	14.5	
	802.11n HT40	5270	13.0	
		5310	14.5	
5470~5725MHz	802.11a	5500	13.0	-
		5580	14.5	
		5700	13.0	
	802.11n HT20	5500	13.0	
		5580	14.5	
		5700	13.0	
	802.11n HT40	5510	13.0	
		5550	13.0	
		5670	13.0	
5725~5850MHz	802.11a	5745	13.0	-
		5785	13.0	
		5825	13.0	
	802.11n HT20	5745	13.0	
		5785	13.0	
		5825	14.0	
	802.11n HT40	5755	14.5	
		5795	14.0	

Data rate VS Power

The pre-scan for the conducted power with all rates in each modulation and bands was used, and the worst case was found and used in all test cases.

After this pre-scan, we choose the following table of the data rata as the worst case.

Freq. Band	Modulation	Worst case data rate
5150~5250MHz 5250~5350MHz; 5470-5725MHz; 5725-5850MHz	802.11a	6Mbps
	802.11n HT20	MCS0
	802.11n HT40	MCS0

Duty cycle:

Duty cycle	Duty cycle(x)	Duty cycle factor（dB）
802.11a	1.00	0.00
802.11n20	1.00	0.00
802.11n40	1.00	0.00

2.4 Test Summary

This report applies to tested sample only. This report shall not be reproduced in part without written approval of Intertek Testing Service Shanghai Limited.

TEST ITEM	FCC REFERANCE	RESULT
Maximum Conducted Output Power	15.407(a)	Pass
Power spectral density	15.407(a)	Pass
Minimum 6dB Bandwidth	15.407(e)	Pass
Radiated emission	15.407 (b) 15.205, 15.209	Pass
Power line conducted emission	15.207	Pass
26 dB Bandwidth & Emission Bandwidth (99%)	15.403(i)	Tested

3. Maximum Conducted Output Power

Test result: Pass

3.1 Test limit

☐ For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.

☒ For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.

☐ For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

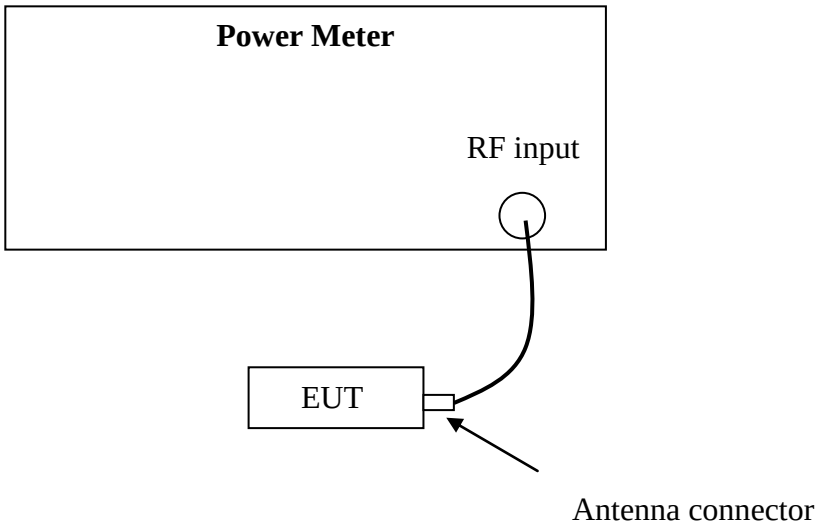
☐ For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

☒ For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz.

☒ For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

3.2 Test Configuration



3.3 Test procedure and test setup

The power output per FCC §15.407(a) was measured from the antenna port of the EUT according to the measurement method refer to KDB 789033D02 v01: Method PM.

3.4 Test protocol

Temperature : 25 °C
Relative Humidity : 55 %

U-NII-1 Band:

Mode	Frequency (MHz)	Reading (dBm)	Duty cycle factor	Total Power (dBm)	Limit (dBm)	Margin (dB)
802.11a	5180	9.40	0.00	9.40	30.00	20.60
	5200	9.71	0.00	9.71	30.00	20.29
	5240	9.71	0.00	9.71	30.00	20.29
802.11n20	5180	9.00	0.00	9.00	30.00	21.00
	5200	9.77	0.00	9.77	30.00	20.23
	5240	9.88	0.00	9.88	30.00	20.12
802.11n40	5190	9.45	0.00	9.45	30.00	20.55
	5230	9.67	0.00	9.67	30.00	20.33

U-NII-2A Band:

Power limit calculation:

Frequency range (MHz)	Mode	26dB bandwidth (MHz)	11+10log B (dBm)	Power Limit (dBm)
5250 - 5350	802.11a	22.80	24.58	24.00
	802.11n20	23.94	24.79	24.00
	802.11n40	50.52	28.03	24.00

Mode	Frequency (MHz)	Reading (dBm)	Duty cycle factor	Total Power (dBm)	Limit (dBm)	Margin (dB)
802.11a	5260	9.65	0.00	9.65	24.00	14.35
	5300	9.33	0.00	9.33	24.00	14.67
	5320	9.17	0.00	9.17	24.00	14.83
802.11n20	5260	9.49	0.00	9.49	24.00	14.51
	5300	9.25	0.00	9.25	24.00	14.75
	5320	9.59	0.00	9.59	24.00	14.41
802.11n40	5270	9.41	0.00	9.41	24.00	14.59
	5310	9.39	0.00	9.39	24.00	14.61

U-NII-2C Band:

Power limit calculation:

Frequency range (MHz)	Mode	26dB bandwidth (MHz)	11 + 10log B (dBm)	Power Limit (dBm)
5470 - 5725	802.11a	23.04	24.62	24.00
	802.11n20	23.58	24.73	24.00
	802.11n40	49.56	27.95	24.00

Mode	Frequency (MHz)	Reading (dBm)	Duty cycle factor	Total Power (dBm)	Limit (dBm)	Margin (dB)
802.11a	5500	9.40	0.00	9.40	24.00	14.60
	5580	9.17	0.00	9.17	24.00	14.83
	5700	9.53	0.00	9.53	24.00	14.47
802.11n20	5500	9.74	0.00	9.74	24.00	14.26
	5580	9.49	0.00	9.49	24.00	14.51
	5700	9.75	0.00	9.75	24.00	14.25
802.11n40	5510	9.68	0.00	9.68	24.00	14.32
	5550	9.27	0.00	9.27	24.00	14.73
	5670	9.21	0.00	9.21	24.00	14.79

U-NII-3 Band:

Mode	Frequency (MHz)	Reading (dBm)	Duty cycle factor	Total Power (dBm)	Limit (dBm)	Margin (dB)
802.11a	5745	9.29	0.00	9.29	30.00	20.71
	5785	9.65	0.00	9.65	30.00	20.35
	5825	9.30	0.00	9.30	30.00	20.70
802.11n20	5745	9.33	0.00	9.33	30.00	20.67
	5785	9.10	0.00	9.10	30.00	20.90
	5825	9.67	0.00	9.67	30.00	20.33
802.11n40	5755	9.81	0.00	9.81	30.00	20.19
	5795	9.86	0.00	9.86	30.00	20.14

4. Power spectral density

Test result: **Pass**

4.1 Test limit

☐ For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

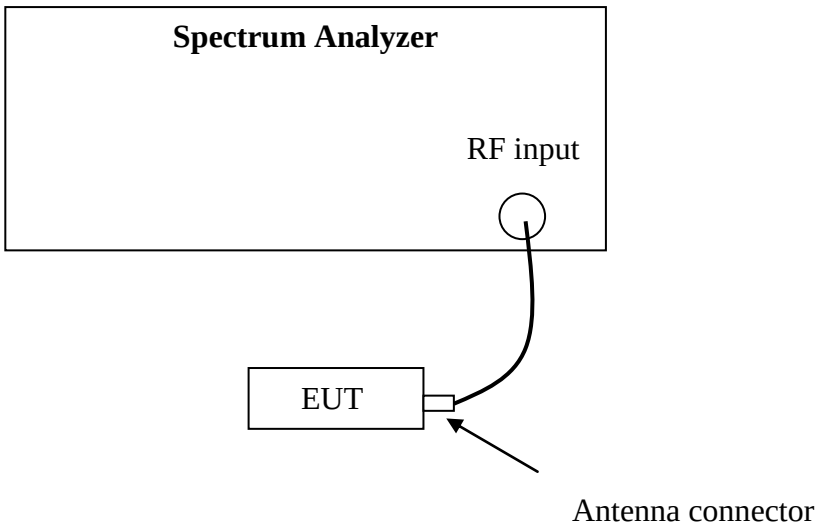
☒ For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

☐ For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

☒ For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

☒ For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

4.2 Test Configuration



4.3 Test procedure and test setup

The power spectral density per FCC §15.407(a) was measured from the antenna port of the EUT according to the measurement method refer to KDB 789033D02 v01: section F.

1. Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power…". (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)

2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.

3. Make the following adjustments to the peak value of the spectrum, if applicable: a) If Method SA-2 or SA-2 Alternative was used, add 10 log(1/x), where x is the duty cycle, to the peak of the spectrum.
b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.

4. The result is the Maximum PSD over 1 MHz reference bandwidth.

5. For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (*i.e.*, 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply: a) Set RBW ≥ 1/*T*, where *T* is defined in section II.B.l.a).
b) Set VBW ≥ 3 RBW.
c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10log(1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the sections 5.c) and 5.d) above, since RBW=100 kHZ is available on nearly all spectrum analyzers.

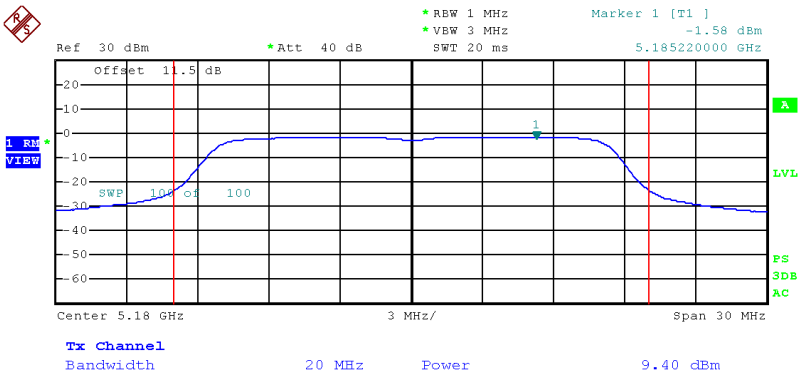
4.4 Test Protocol

Temperature : 25 °C
Relative Humidity : 55 %

U-NII-1 Band:

Mode	Frequency (MHz)	PSD Reading (dBm)	Duty cycle factor	Total PSD (dBm)	Limit (dBm)	Margin (dB)
802.11a	5180	-1.58	0.00	-1.58	17.00	18.58
	5200	-1.19	0.00	-1.19	17.00	18.19
	5240	-1.41	0.00	-1.41	17.00	18.41
802.11n20	5180	-2.04	0.00	-2.04	17.00	19.04
	5200	-1.30	0.00	-1.30	17.00	18.30
	5240	-1.46	0.00	-1.46	17.00	18.46
802.11n40	5190	-4.34	0.00	-4.34	17.00	21.34
	5230	-4.53	0.00	-4.53	17.00	21.53

Frequency L – 802.11a



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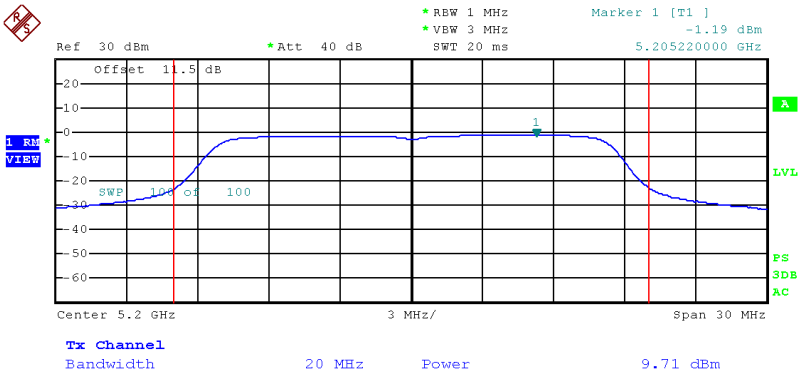
Frequency M – 802.11a



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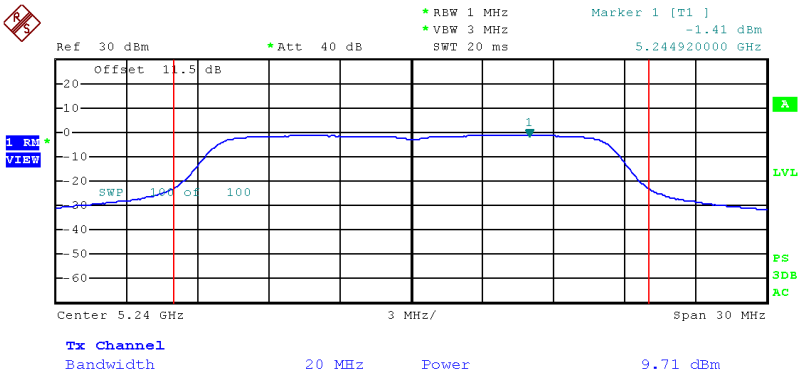
Frequency H – 802.11a



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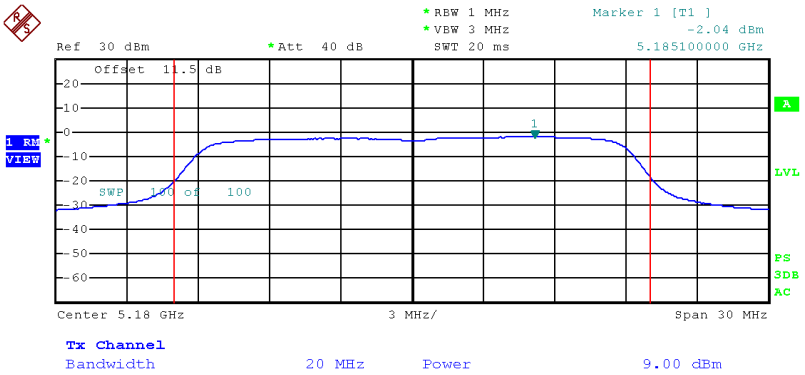
Frequency L – 802.11n20



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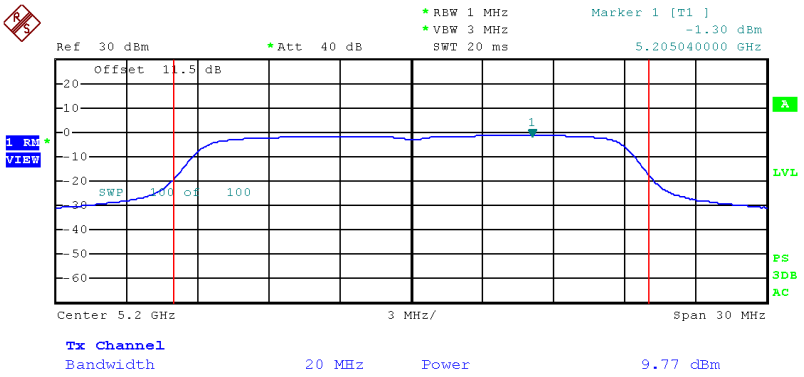
Frequency M – 802.11n20



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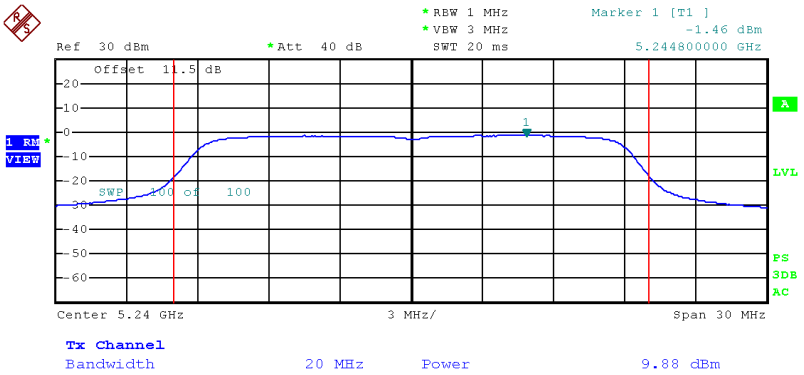
Frequency H – 802.11n20



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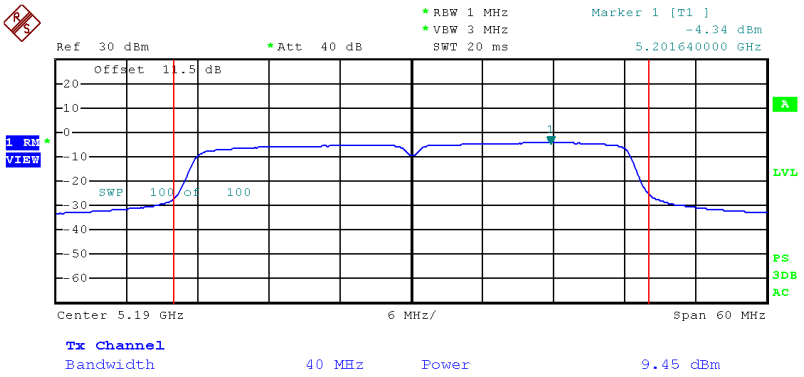
Frequency L – 802.11n40



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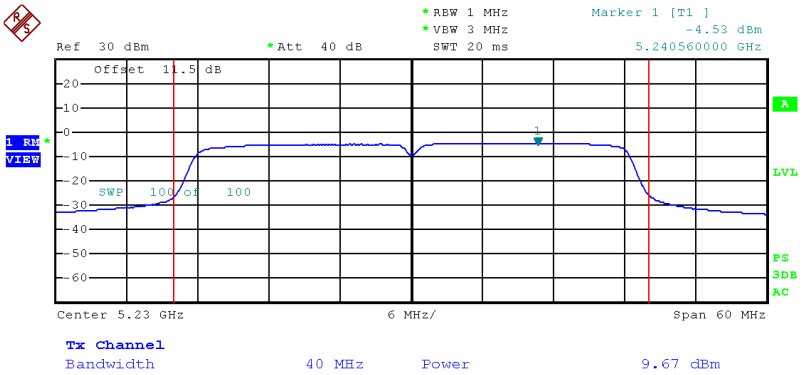
Frequency H – 802.11n40

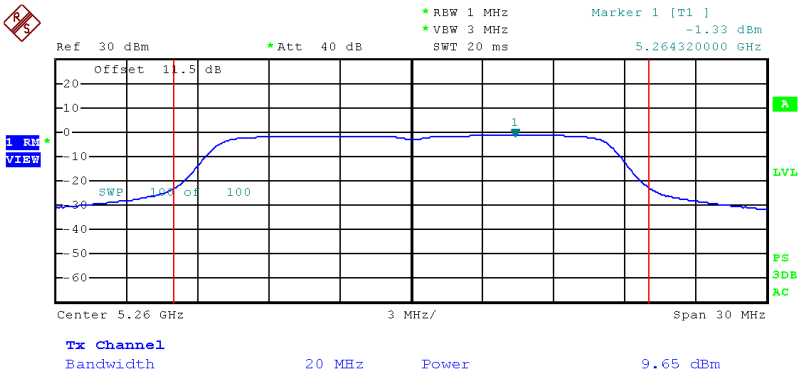


Date: 23.DEC.2014 12:18:49

U-NII-2A Band:

Mode	Frequency (MHz)	PSD Reading (dBm)	Duty cycle factor	Total PSD (dBm)	Limit (dBm)	Margin (dB)
802.11a	5260	-1.33	0.00	-1.33	11.00	12.33
	5300	-1.72	0.00	-1.72	11.00	12.72
	5320	-1.87	0.00	-1.87	11.00	12.87
802.11n20	5260	-1.80	0.00	-1.80	11.00	12.80
	5300	-2.09	0.00	-2.09	11.00	13.09
	5320	-1.61	0.00	-1.61	11.00	12.61
802.11n40	5270	-5.03	0.00	-5.03	11.00	16.03
	5310	-4.81	0.00	-4.81	11.00	15.81

Frequency L – 802.11a



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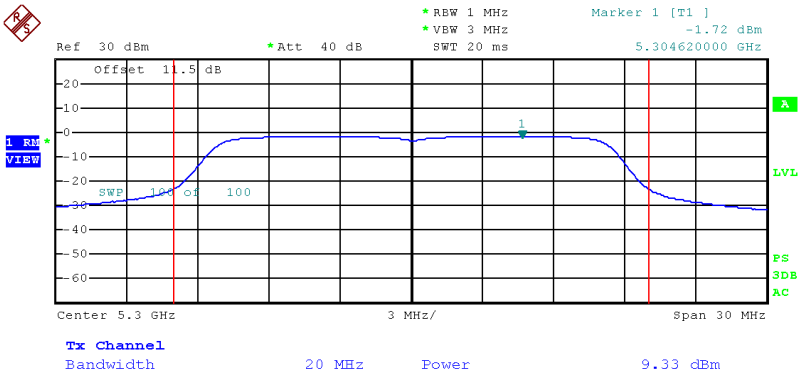
Frequency M – 802.11a



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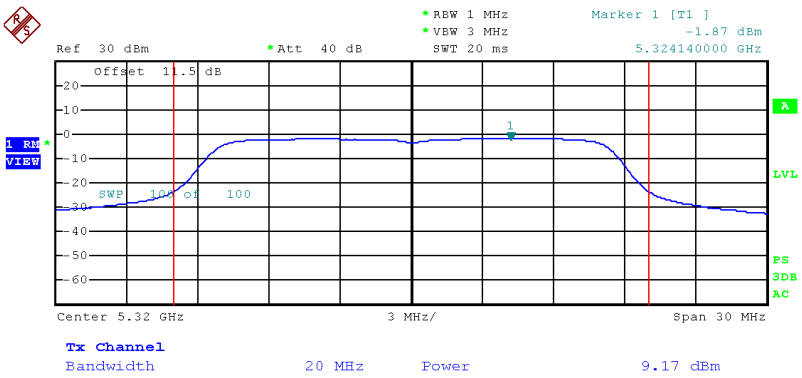
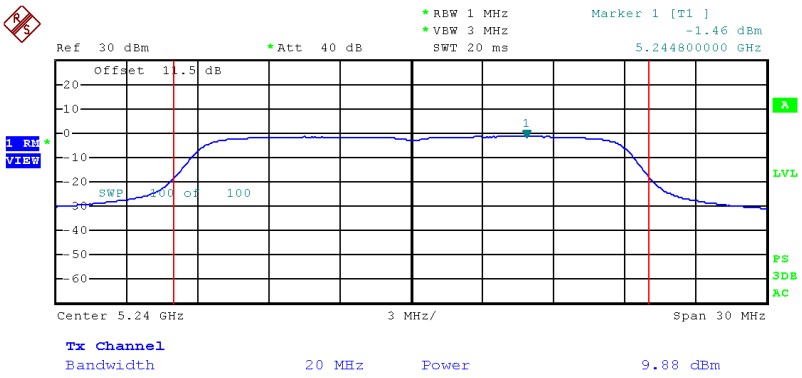
Frequency H – 802.11a



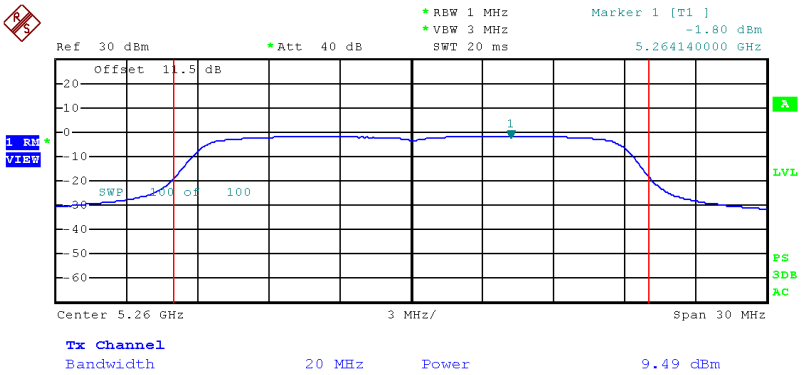
Date: 23.DEC.2014 09:50:20

Frequency L – 802.11n20



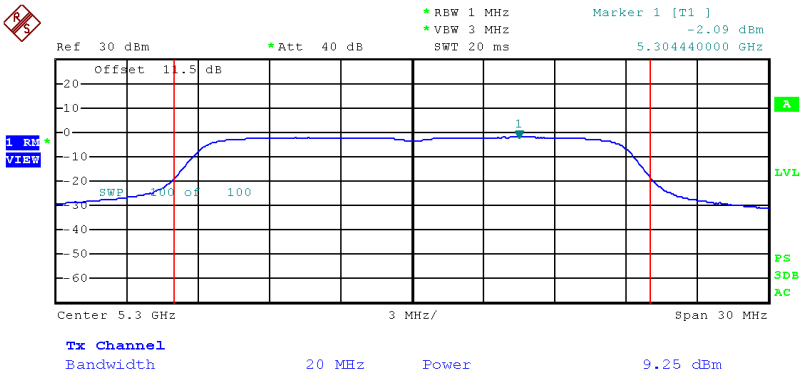
Date: 23.DEC.2014 11:58:11

Frequency M – 802.11n20



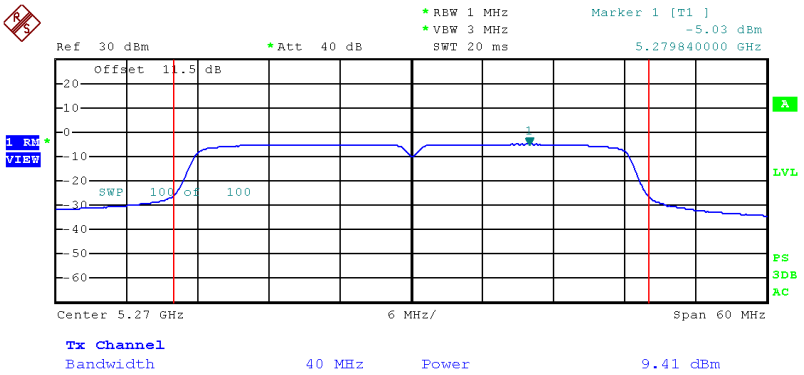
Date: 23.DEC.2014 11:58:59

Frequency H – 802.11n20



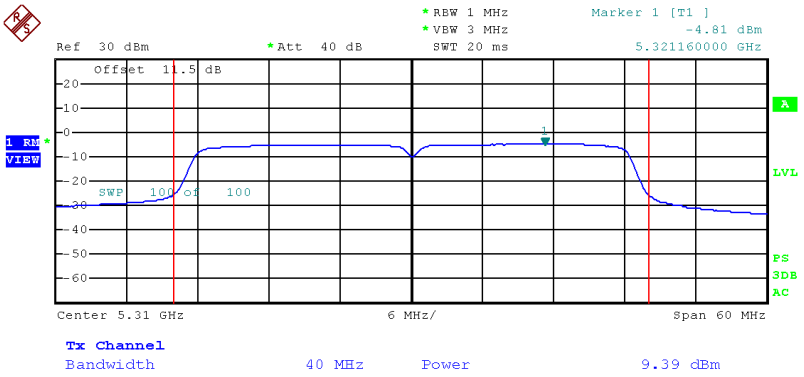
Date: 23.DEC.2014 12:00:42

Frequency L – 802.11n40



Date: 23.DEC.2014 12:20:24

Frequency H – 802.11n40

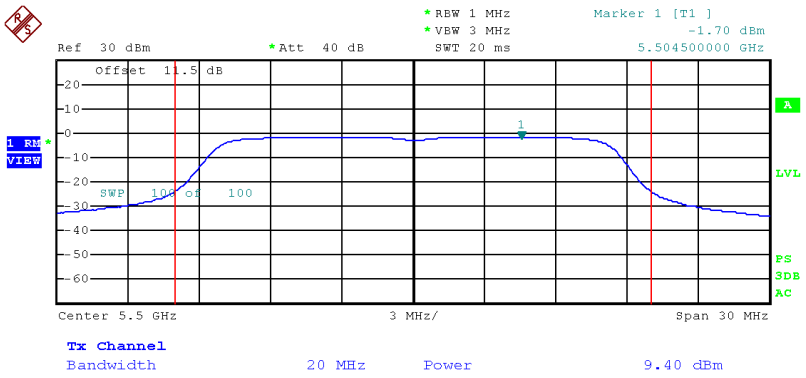


Date: 23.DEC.2014 12:21:36

U-NII-2C Band:

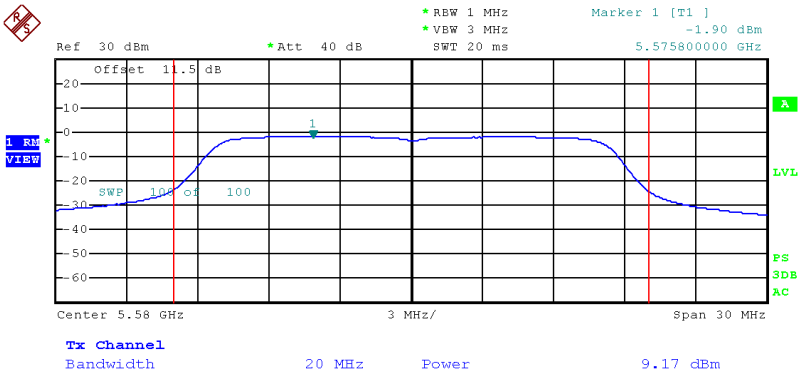
Mode	Frequency (MHz)	PSD Reading (dBm)	Duty cycle factor	Total PSD (dBm)	Limit (dBm)	Margin (dB)
802.11a	5500	-1.70	0.00	-1.70	11.00	12.70
	5580	-1.90	0.00	-1.90	11.00	12.90
	5700	-1.61	0.00	-1.61	11.00	12.61
802.11n20	5500	-1.57	0.00	-1.57	11.00	12.57
	5580	-1.79	0.00	-1.79	11.00	12.79
	5700	-1.60	0.00	-1.60	11.00	12.60
802.11n40	5510	-4.50	0.00	-4.50	11.00	15.50
	5550	-4.78	0.00	-4.78	11.00	15.78
	5670	-5.23	0.00	-5.23	11.00	16.23

Frequency L – 802.11a



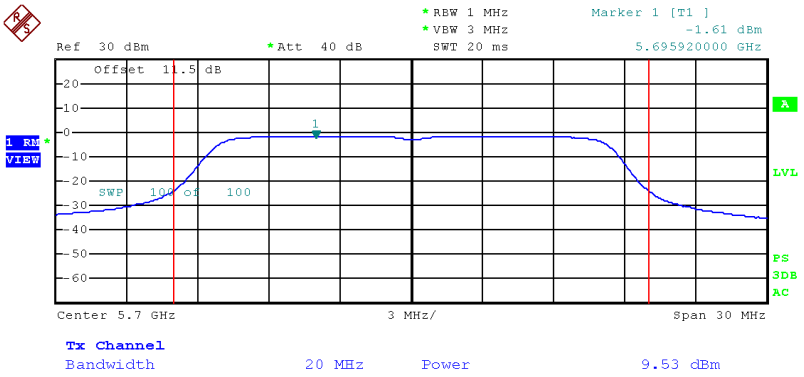
Date: 23.DEC.2014 09:51:17

Frequency M – 802.11a



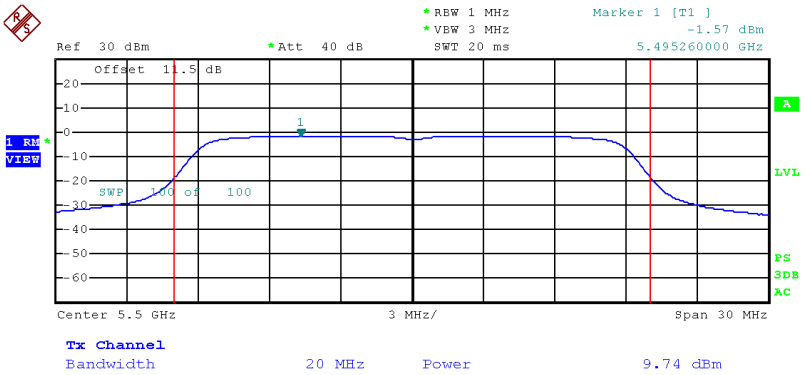
Date: 23.DEC.2014 09:54:17

Frequency H – 802.11a



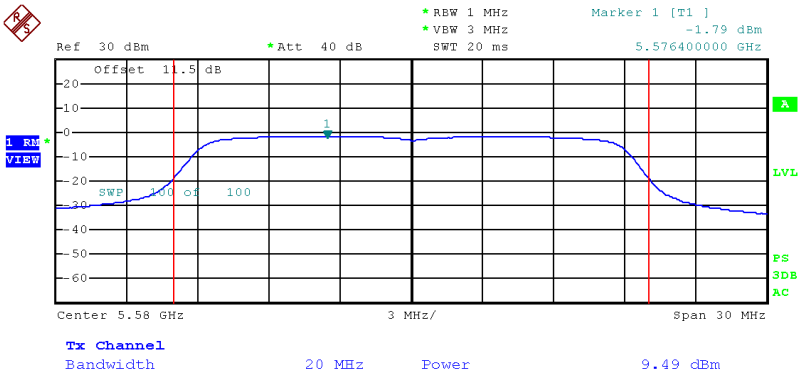
Date: 23.DEC.2014 09:55:36

Frequency L – 802.11n20



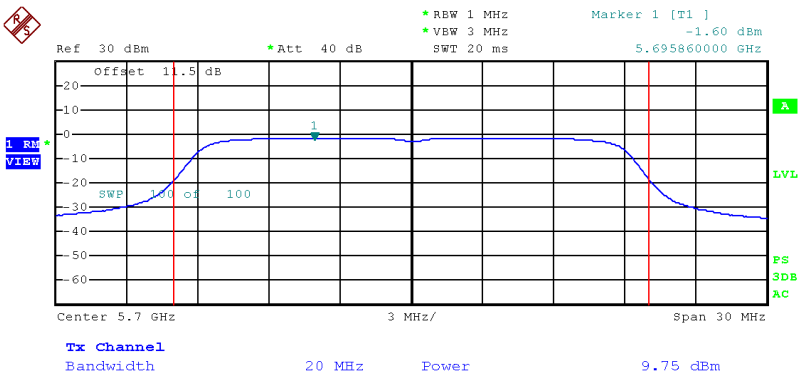
Date: 23.DEC.2014 12:04:36

Frequency M – 802.11n20



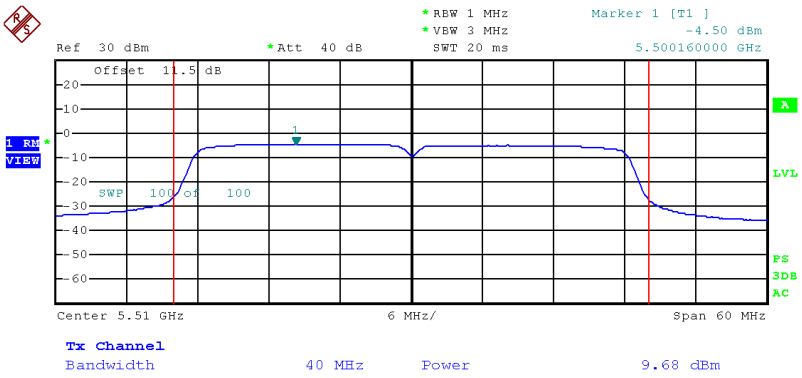
Date: 23.DEC.2014 12:07:16

Frequency H – 802.11n20



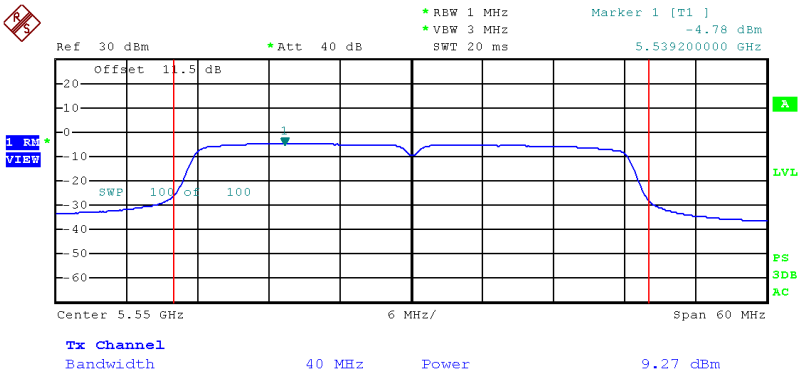
Date: 23.DEC.2014 12:08:23

Frequency L – 802.11n40



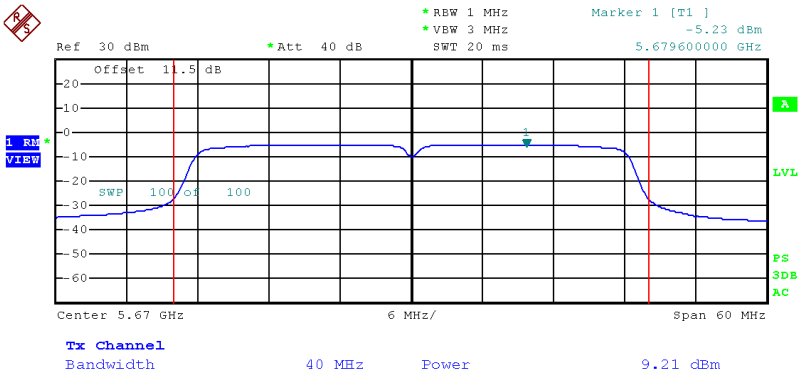
Date: 23.DEC.2014 12:22:48

Frequency M – 802.11n40



Date: 23.DEC.2014 12:23:42

Frequency H – 802.11n40



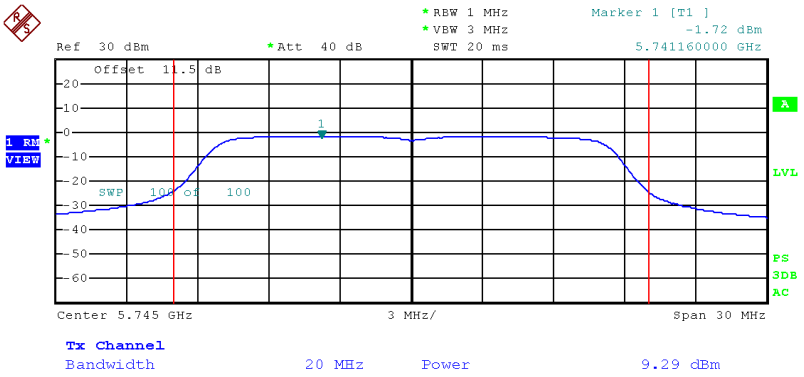
Date: 23.DEC.2014 12:24:52

U-NII-3 Band:

Mode	Frequency (MHz)	PSD Reading (dBm/ 1MHz)	Duty cycle factor	Correct factor	Total PSD (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Margin (dB)
802.11a	5745	-1.72	0.00	-3.01	-4.73	30.00	34.73
	5785	-1.50	0.00	-3.01	-4.51	30.00	34.51
	5825	-1.76	0.00	-3.01	-4.77	30.00	34.77
802.11n20	5745	-1.93	0.00	-3.01	-4.94	30.00	34.94
	5785	-2.24	0.00	-3.01	-5.25	30.00	35.25
	5825	-1.61	0.00	-3.01	-4.62	30.00	34.62
802.11n40	5755	-4.40	0.00	-3.01	-7.41	30.00	37.41
	5795	-4.44	0.00	-3.01	-7.45	30.00	37.45

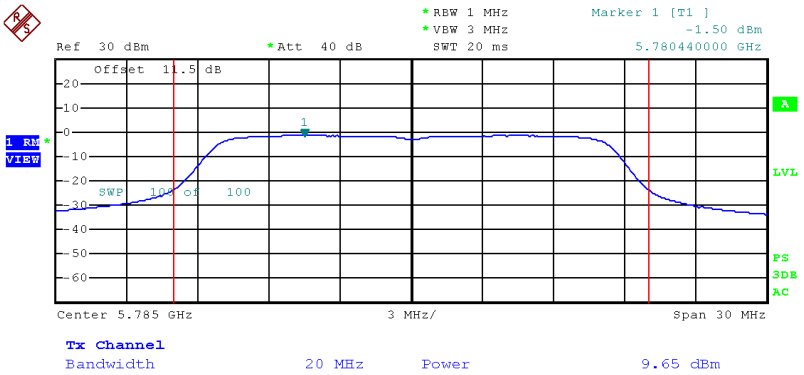
Note: Correct factor = 10log (500kHz/1MHz)

Frequency L – 802.11a



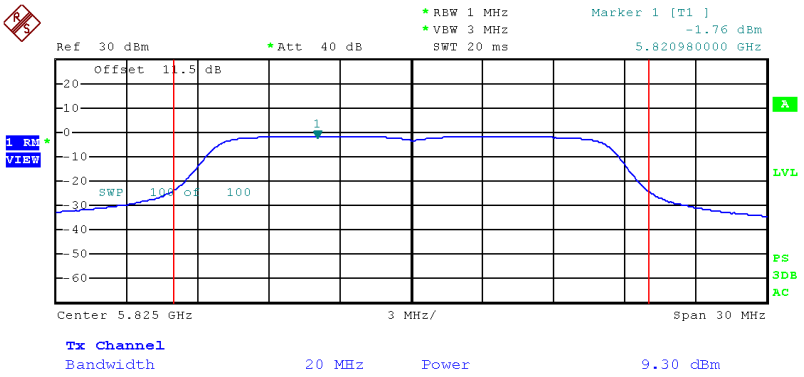
Date: 23.DEC.2014 09:57:21

Frequency M – 802.11a



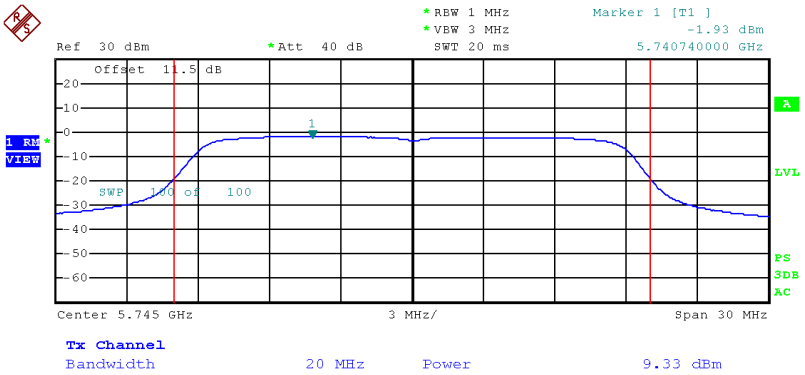
Date: 23.DEC.2014 11:53:35

Frequency H – 802.11a



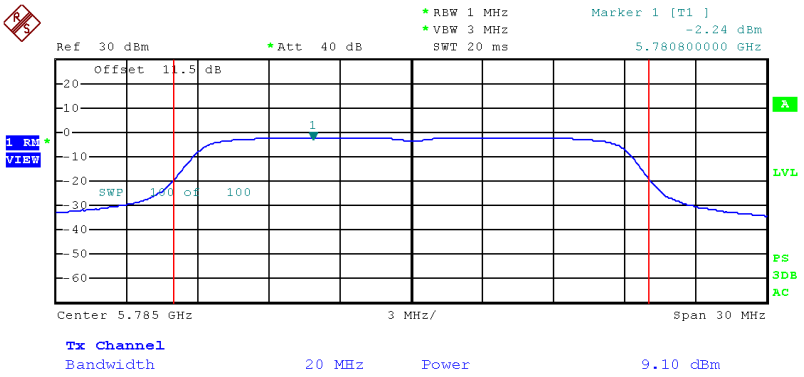
Date: 23.DEC.2014 11:54:32

Frequency L – 802.11n20



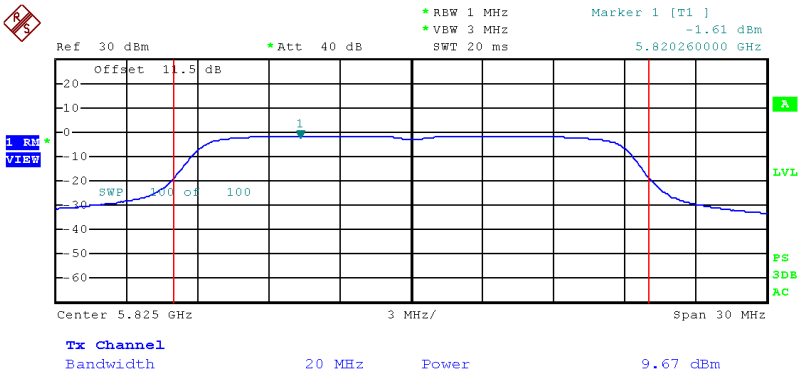
Date: 23.DEC.2014 12:09:22

Frequency M – 802.11n20



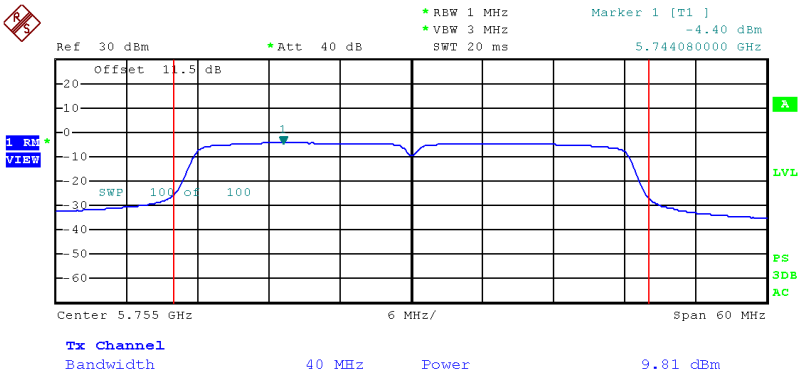
Date: 23.DEC.2014 12:10:16

Frequency H – 802.11n20



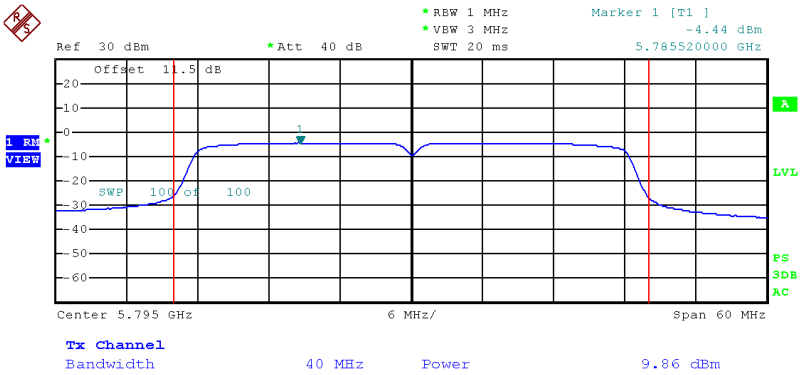
Date: 23.DEC.2014 12:11:28

Frequency L – 802.11n40



Date: 23.DEC.2014 12:30:49

Frequency H – 802.11n40



Date: 23.DEC.2014 12:34:25

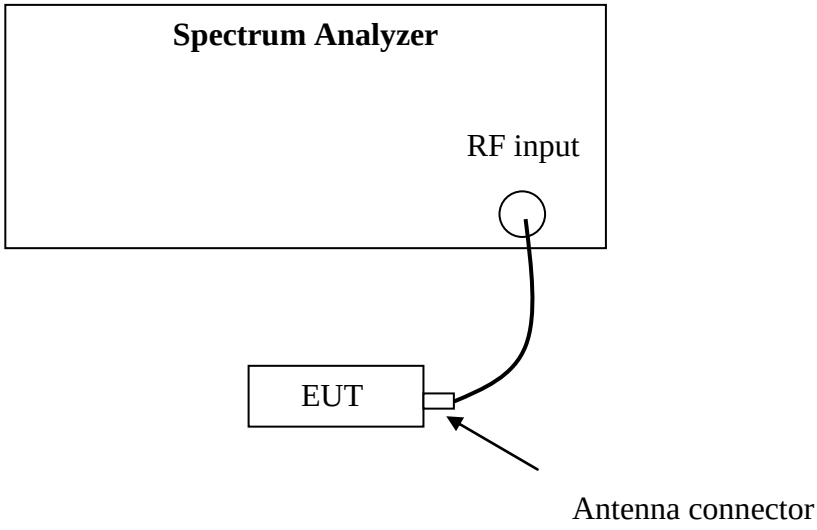
5. Minimum 6dB Bandwidth

Test result: PASS

5.1 Limit

For systems using digital modulation techniques that may operate in the 5725 - 5850 MHz band, the minimum 6 dB bandwidth shall be at least 500 kHz.

5.2 Test Configuration



5.3 Test Procedure and test setup

The minimum 6dB Bandwidth was measured from the antenna port of the EUT according to the measurement method refers to KDB 789033D02 v01: Section C.

a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

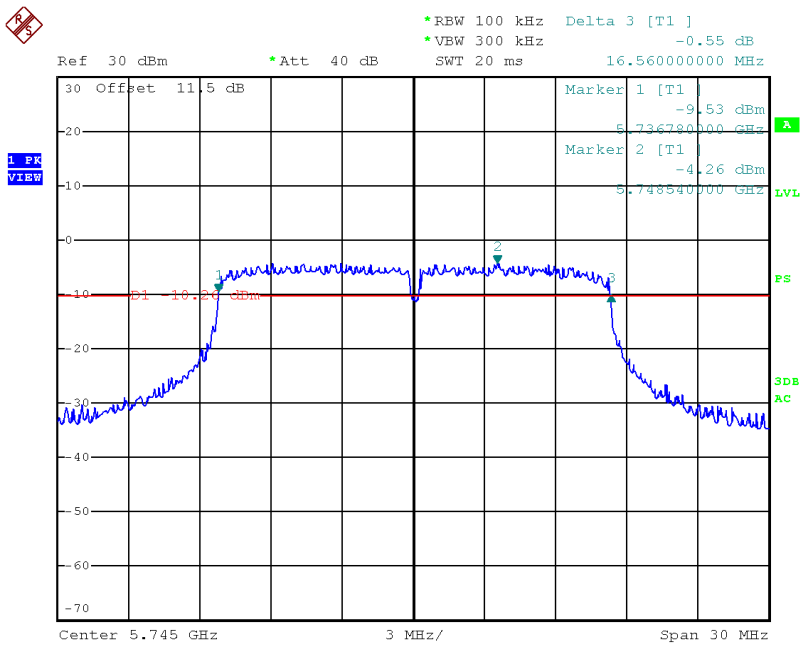
Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver may be employed if it implements the functionality described above.

5.4 Test Protocol

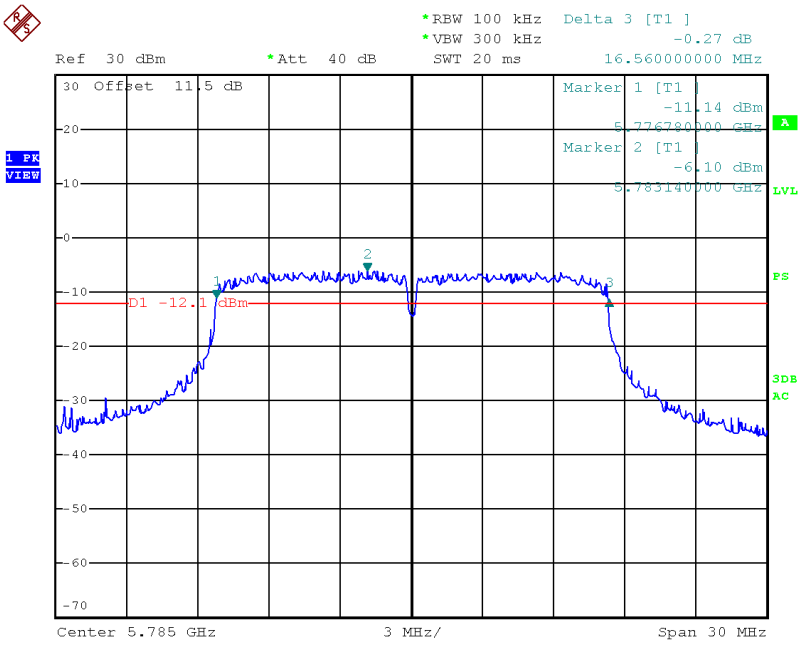
Temperature : 25 °C
Relative Humidity : 55 %

Modulation	Frequency (MHz)	Minimum 6dB Bandwidth (MHz)	Limits (MHz)
802.11a	5745	16.56	≥0.5
	5785	16.56	≥0.5
	5825	16.56	≥0.5
802.11n20	5745	17.64	≥0.5
	5785	17.64	≥0.5
	5825	17.70	≥0.5
802.11n40	5755	36.48	≥0.5
	5795	36.56	≥0.5

Frequency L – 802.11a

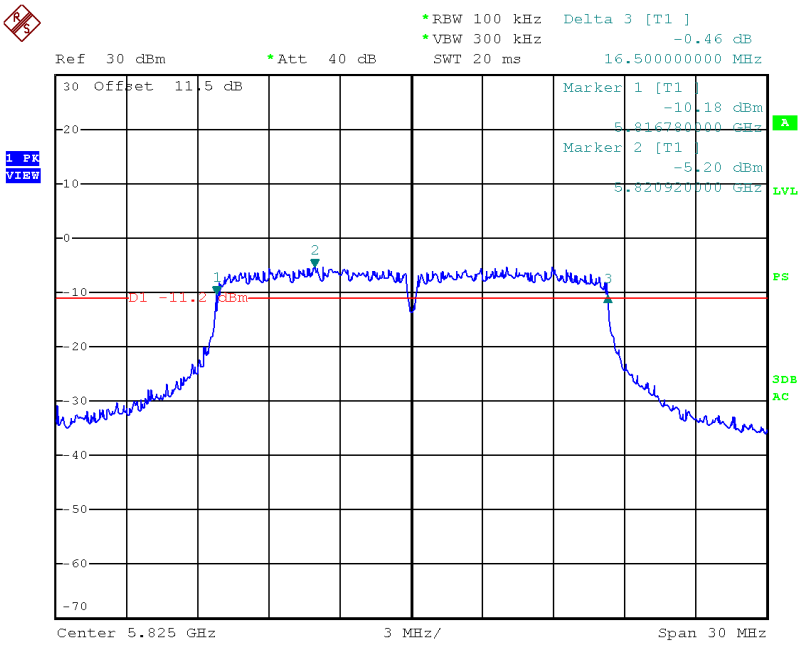


Frequency M – 802.11a



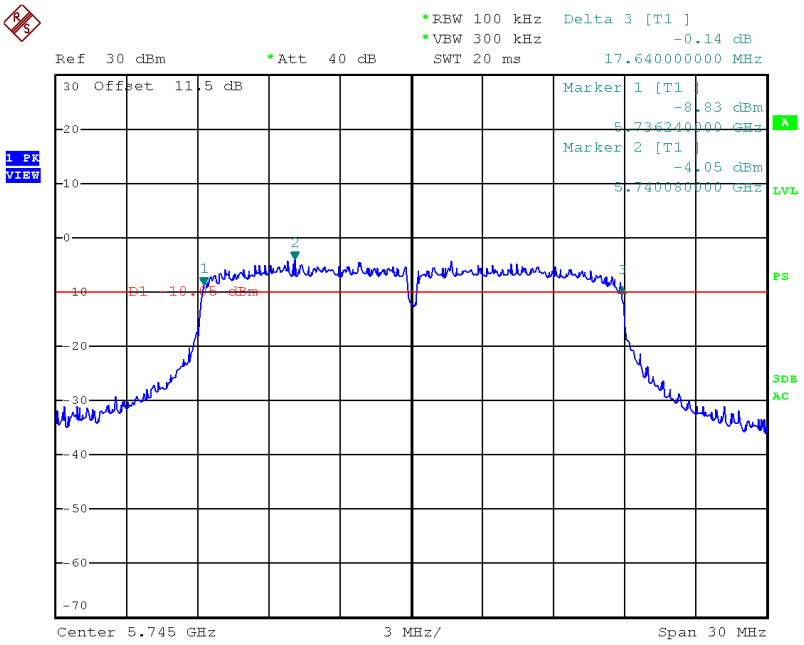
Date: 23.DEC.2014 13:28:18

Frequency H – 802.11a



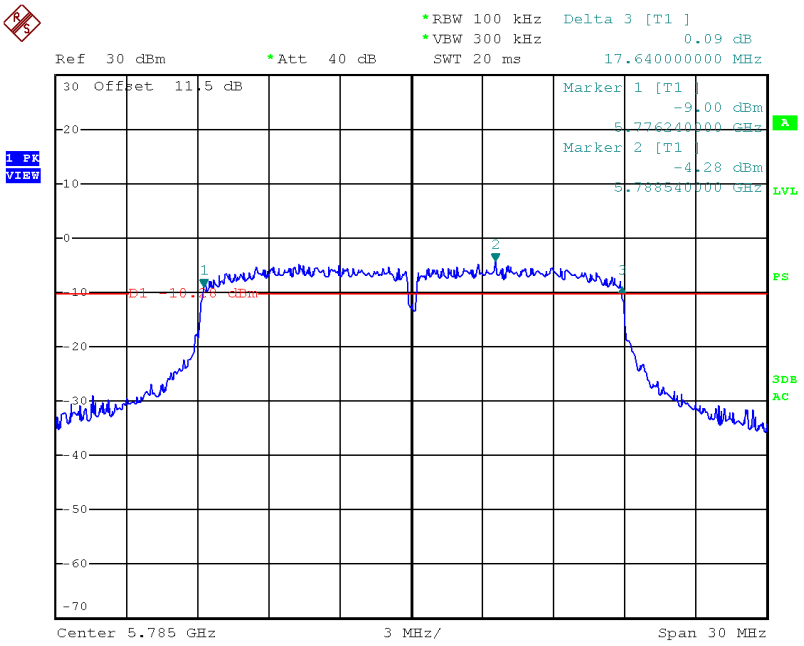
Date: 23.DEC.2014 13:29:44

Frequency L – 802.11n20



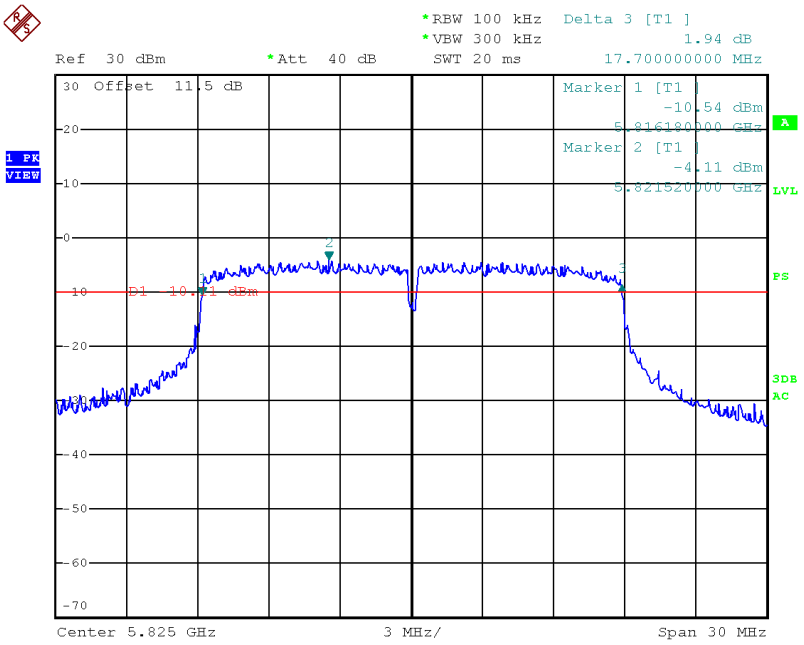
Date: 23.DEC.2014 13:32:44

Frequency M – 802.11n20



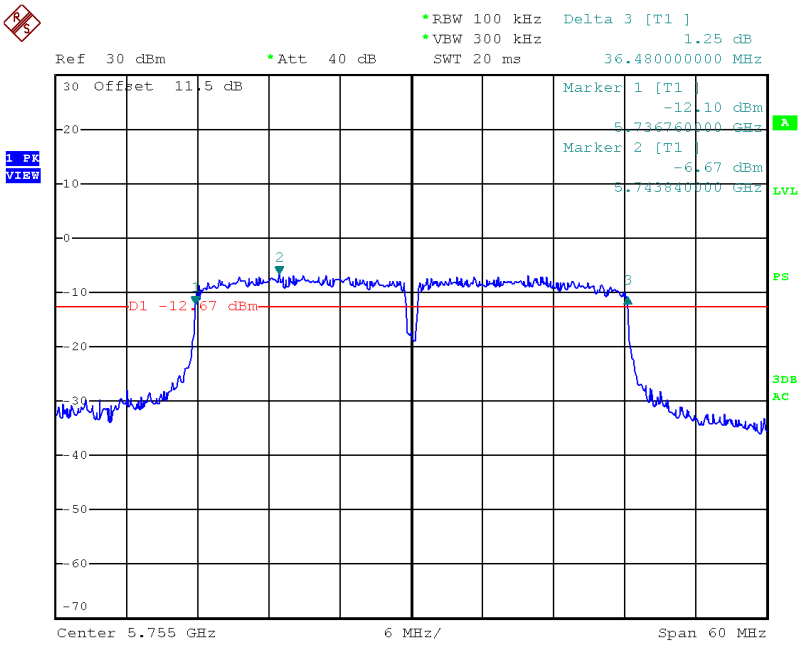
Date: 23.DEC.2014 13:33:57

Frequency H – 802.11n20



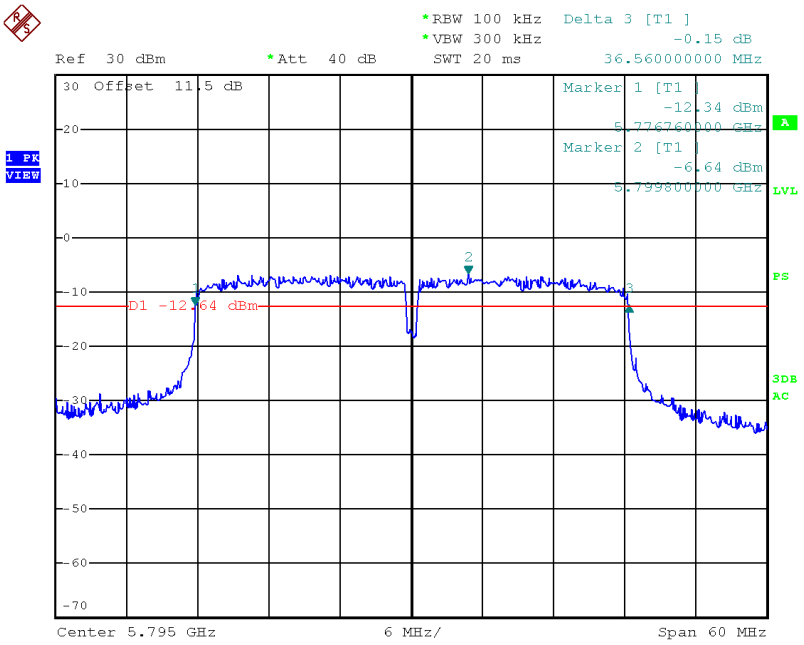
Date: 23.DEC.2014 13:35:20

Frequency L – 802.11n40



Date: 23.DEC.2014 13:37:08

Frequency H – 802.11n40



Date: 23.DEC.2014 13:38:35

6. Radiated emission

Test result: PASS

6.1 Test limit

6.1.1 The radiated emissions which are lower than 1GHz or fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) showed as below:

Frequency (MHz)	Field Strength (dBuV/m)	Measurement Distance (m)
30 - 88	40.0	3
88 - 216	43.5	3
216 - 960	46.0	3
Above 960	54.0	3

6.1.2 The emission which is outside the restrict bands, should comply with the EIRP limit as below:

For transmitters operating in the 5.15–5.25 / 5.25 – 5.35 / 5.47 – 5.725 GHz band: all emissions outside of the 5.15 – 5.35 / 5.47 – 5.725 GHz band shall not exceed an EIRP of -27dBm/MHz.

EIRP Limit (dBm)	Equivalent Field Strength (3m) (dBμV/m)
-27	68.20

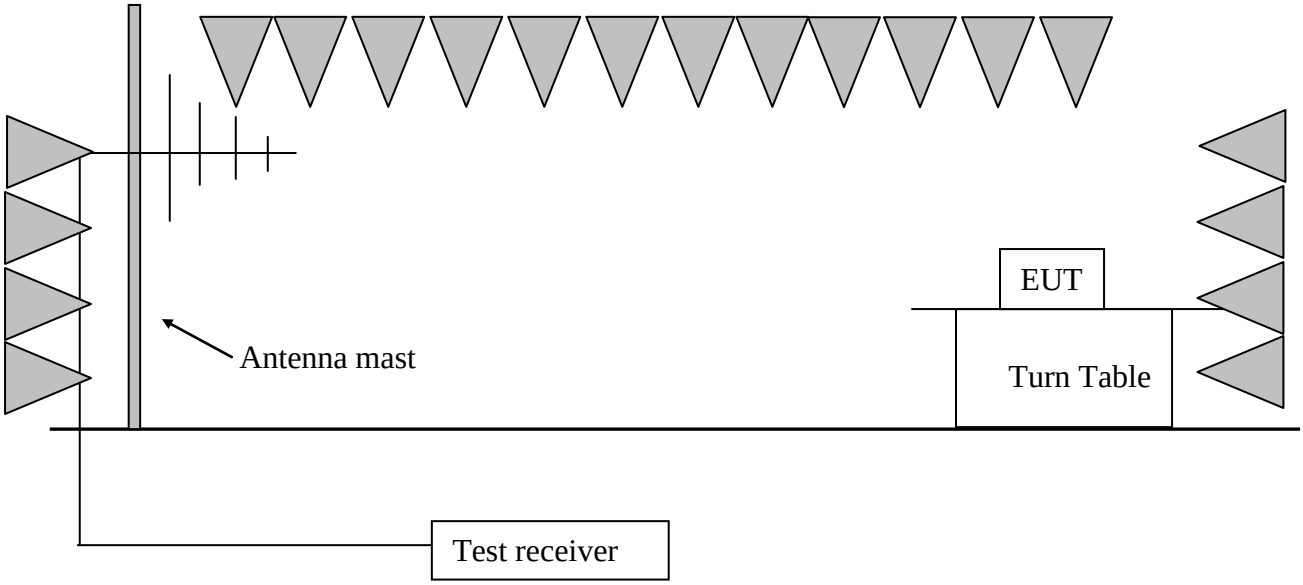
For transmitters operating in the 5.725 – 5.85GHz band: emission among 5.715 – 5.725GHz & 5.85 – 5.86GHz shall not exceed an EIRP of -17dBm/MHz all emissions outside band shall not exceed an EIRP of -27dBm/MHz.

EIRP Limit (dBm)	Equivalent Field Strength (3m) (dBμV/m)
-27	68.20
-17	78.20

Assessed with 15.209(a):

Frequency (MHz)	Field Strength (dBuV/m)	Measurement Distance (m)
30 - 88	40.0	3
88 - 216	43.5	3
216 - 960	46.0	3
Above 960	54.0	3

6.2 Test Configuration



6.3 Test procedure and test setup

The measurement was applied in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, if applied, the pre-amplifier would be equipped just at the output terminal of the antenna.
The EUT and simulators were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mast. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.
The EUT was tested according to KDB 789033D02 v01: Section G.

The radiated emission was measured using the Spectrum Analyzer with the resolutions bandwidth set as:

RBW = 100kHz, VBW = 300kHz (30MHz~1GHz)
RBW = 1MHz, VBW = 3MHz (>1GHz for PK);
RBW = 1MHz, VBW = 10Hz (>1GHz for AV);

6.4 Test protocol

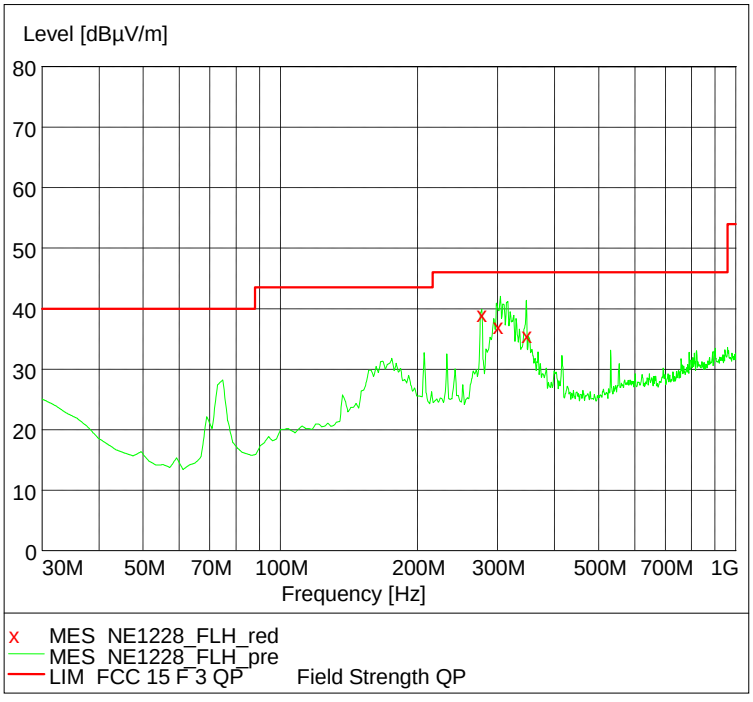
Temperature	:	25 °C
Relative Humidity	:	55 %

Test result below 1GHz:

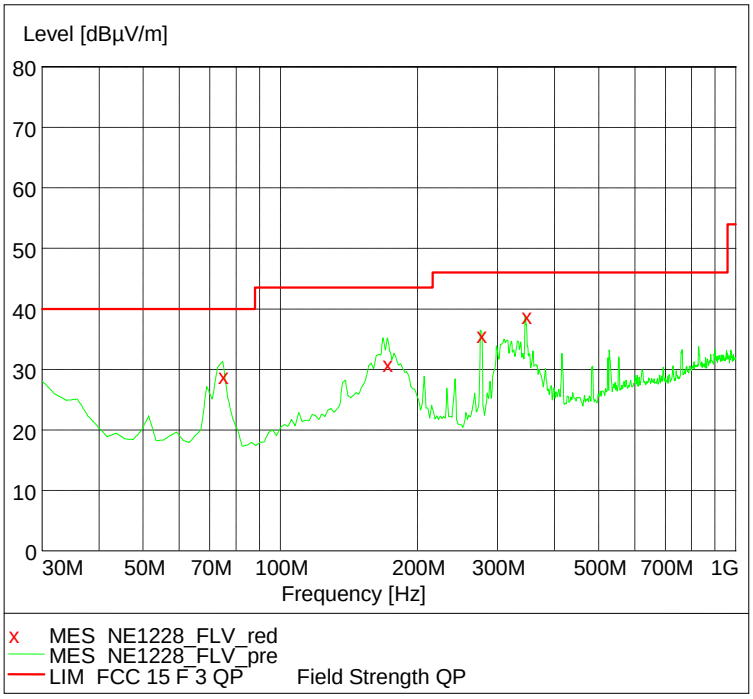
The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

Polarization	Frequency (MHz)	Emission level (dBμV/m)	Limits (dBμV/m)	Margin (dBμV/m)	Detector
V	74.71	29.10	40.00	10.90	QP
	276.01	36.00	43.50	7.50	QP
	346.35	39.00	46.00	7.00	QP
H	276.01	39.40	46.00	6.60	QP
	299.89	37.40	46.00	8.60	QP
	346.35	35.90	46.00	10.10	QP

Horizontal:



Vertical:



Test result above 1GHz:

The emission was conducted from 1GHz to 25GHz.

U-NII-1 Band:

802.11a

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H&V	5180	-2.71	93.46	Fundamental	/	PK
	H&V	5150	-2.77	50.27	74.00	23.73	PK
	H&V	10360	5.98	59.57	74.00	14.43	PK
	H&V	10360	5.98	44.91	54.00	9.09	AV
M	H&V	5200	-2.67	93.29	Fundamental	/	PK
	H&V	10400	6.09	59.10	74.00	14.90	PK
	H&V	10400	6.09	44.60	54.00	9.40	AV
H	H&V	5240	-2.60	93.14	Fundamental	/	PK
	H&V	10480	6.30	57.56	74.00	16.44	PK
	H&V	10480	6.30	42.46	54.00	11.54	AV

802.11n20

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H&V	5180	-2.71	93.29	Fundamental	/	PK
	H&V	5150	-2.77	50.39	74.00	23.61	PK
	H&V	10360	5.98	59.85	74.00	14.15	PK
	H&V	10360	5.98	44.65	54.00	9.35	AV
M	H&V	5200	-2.67	93.21	Fundamental	/	PK
	H&V	10400	6.09	58.25	74.00	15.75	PK
	H&V	10400	6.09	43.61	54.00	10.39	AV
H	H&V	5240	-2.60	93.16	Fundamental	/	PK
	H&V	10480	6.30	57.25	74.00	16.75	PK
	H&V	10480	6.30	42.12	54.00	11.88	AV

802.11n40

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H&V	5190	-2.69	91.58	Fundamental	/	PK
	H&V	5150	-2.77	51.29	74.00	22.71	PK
	H&V	10380	6.03	58.25	74.00	15.75	PK
	H&V	10380	6.03	43.65	54.00	10.35	AV
H	H&V	5230	-2.62	91.47	Fundamental	/	PK
	H&V	10460	6.25	57.26	74.00	16.74	PK
	H&V	10460	6.25	42.81	54.00	11.19	AV

U-NII-2A Band:

802.11a

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H&V	5260	-2.56	93.58	Fundamental	/	PK
	H&V	10520	6.35	59.58	74.00	14.42	PK
	H&V	10520	6.35	43.95	54.00	10.05	AV
M	H&V	5300	-2.48	93.47	Fundamental	/	PK
	H&V	10600	6.37	59.26	74.00	14.74	PK
	H&V	10600	6.37	43.36	54.00	10.64	AV
H	H&V	5320	-2.45	93.21	Fundamental	/	PK
	H&V	5350	-2.39	49.29	74.00	24.71	PK
	H&V	10640	6.37	58.21	74.00	15.79	PK
	H&V	10640	6.37	43.12	54.00	10.88	AV

802.11n20

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H&V	5260	-2.56	93.35	Fundamental	/	PK
	H&V	10520	6.35	58.58	74.00	15.42	PK
	H&V	10520	6.35	43.28	54.00	10.72	AV
M	H&V	5300	-2.48	93.42	Fundamental	/	PK
	H&V	10600	6.37	59.02	74.00	14.98	PK
	H&V	10600	6.37	44.01	54.00	9.99	AV
H	H&V	5320	-2.45	93.16	Fundamental	/	PK
	H&V	5350	-2.39	49.58	74.00	24.42	PK
	H&V	10640	6.37	57.68	74.00	16.32	PK
	H&V	10640	6.37	42.85	54.00	11.15	AV

802.11n40

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H&V	5270	-2.54	91.26	Fundamental	/	PK
	H&V	10540	6.36	58.26	74.00	15.74	PK
	H&V	10540	6.36	42.86	54.00	11.14	AV
H	H&V	5310	-2.46	91.58	Fundamental	/	PK
	H&V	5350	-2.39	51.27	74.00	22.73	PK
	H&V	10620	6.37	57.65	74.00	16.35	PK
	H&V	10620	6.37	42.14	54.00	11.86	AV

U-NII-2C Band:

802.11a

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H&V	5500	-2.11	93.21	Fundamental	/	PK
	H&V	5460	-2.18	49.22	74.00	24.78	PK
	H&V	11000	6.43	57.68	74.00	16.32	PK
	H&V	11000	6.43	42.14	54.00	11.86	AV
M	H&V	5580	-1.97	93.26	Fundamental	/	PK
	H&V	11160	7.33	57.68	74.00	16.32	PK
	H&V	11160	7.33	42.63	54.00	11.37	AV
H	H&V	5700	-1.75	93.05	Fundamental	/	PK
	H&V	11400	7.21	56.89	74.00	17.11	PK
	H&V	11400	7.21	41.98	54.00	12.02	AV

802.11n20

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H&V	5500	-2.11	93.21	Fundamental	/	PK
	H&V	5460	-2.18	49.22	74.00	24.78	PK
	H&V	11000	6.43	57.68	74.00	16.32	PK
	H&V	11000	6.43	42.14	54.00	11.86	AV
M	H&V	5580	-1.97	93.26	Fundamental	/	PK
	H&V	11160	7.33	57.68	74.00	16.32	PK
	H&V	11160	7.33	42.63	54.00	11.37	AV
H	H&V	5700	-1.75	93.05	Fundamental	/	PK
	H&V	11400	7.21	56.89	74.00	17.11	PK
	H&V	11400	7.21	41.98	54.00	12.02	AV

802.11n40

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H&V	5510	-2.09	91.68	Fundamental	/	PK
	H&V	5460	-2.18	50.21	74.00	23.79	PK
	H&V	11020	6.47	58.71	74.00	15.29	PK
	H&V	11020	6.47	43.25	54.00	10.75	AV
M	H&V	5550	-2.02	91.65	Fundamental	/	PK
	H&V	11100	6.63	58.79	74.00	15.21	PK
	H&V	11100	6.63	43.62	54.00	10.38	AV
H	H&V	5670	-1.81	91.37	Fundamental	/	PK
	H&V	11340	7.09	57.87	74.00	16.13	PK
	H&V	11340	7.09	42.91	54.00	11.09	AV

U-NII-3 Band:

802.11a

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H&V	5745	-1.67	93.60	Fundamental	/	PK
	H&V	11490	7.38	57.60	74.00	16.40	PK
	H&V	11490	7.38	42.50	54.00	11.50	AV
M	H&V	5785	-1.60	93.30	Fundamental	/	PK
	H&V	11570	7.35	57.10	74.00	16.90	PK
	H&V	11570	7.35	42.30	54.00	11.70	AV
H	H&V	5825	-1.54	93.10	Fundamental	/	PK
	H&V	11650	7.29	57.40	74.00	16.60	PK
	H&V	11650	7.29	42.30	54.00	11.70	AV

802.11n20

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H&V	5745	-1.67	92.80	Fundamental	/	PK
	H&V	11490	7.38	57.40	74.00	16.60	PK
	H&V	11490	7.38	42.30	54.00	11.70	AV
M	H&V	5785	-1.60	92.65	Fundamental	/	PK
	H&V	11570	7.35	57.30	74.00	16.70	PK
	H&V	11570	7.35	42.40	54.00	11.60	AV
H	H&V	5825	-1.54	92.75	Fundamental	/	PK
	H&V	11650	7.29	57.25	74.00	16.75	PK
	H&V	11650	7.29	42.15	54.00	11.85	AV

802.11n40

Channel	Polarity	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
L	H&V	5755	-1.66	91.40	Fundamental	/	PK
	H&V	11510	7.39	57.20	74.00	16.80	PK
	H&V	11510	7.39	42.20	54.00	11.80	AV
H	H&V	5795	-1.59	91.10	Fundamental	/	PK
	H&V	11590	7.33	57.10	74.00	16.90	PK
	H&V	11590	7.33	42.10	54.00	11.90	AV

Remark:
1. For fundamental & restrict emission test, no amplifier is employed.
2. Factor = Antenna Factor + Cable Loss (-Amplifier, is employed);
3. Measure level = Reading Level + Factor;
4. Over Limit = Measure level – limit;
5. If the PK reading is lower than AV limit, the AV test can be elided.

Example:

Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,
Gain of Preamplifier = 32.00dB, Original Receiver Reading level = 10dBuV.
Then Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m;
Measure level = 10dBuV + 0.20dB/m = 10.20dBuV/m
Assuming limit = 54dBuV/m, Measure level = 10.20dBuV/m,
then Over Limit = 10.20 - 54= -43.80dBuV/m

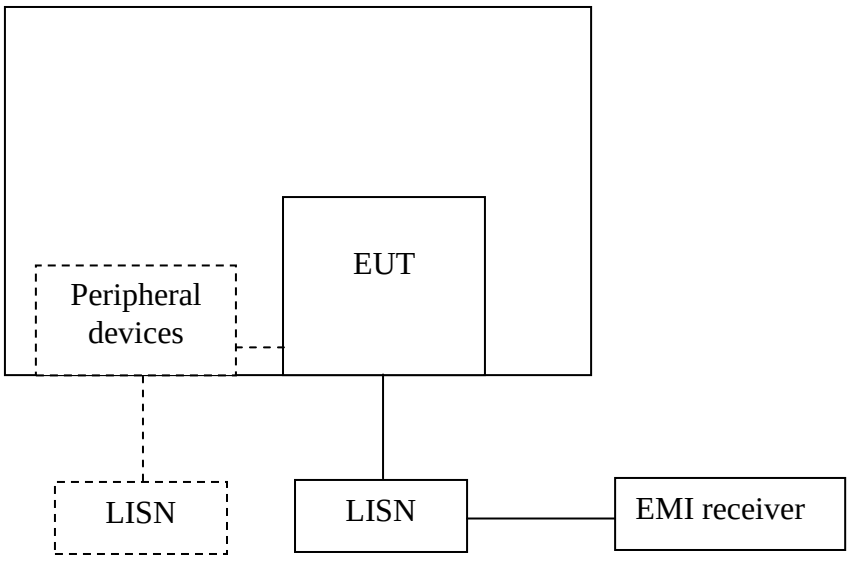
7. Power line conducted emission

Test result: **Pass**

7.1 Limit

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	QP	AV
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.		

7.2 Test configuration



☒ For table top equipment, wooden support is 0.8m height table

☐ For floor standing equipment, wooden support is 0.1m height rack.

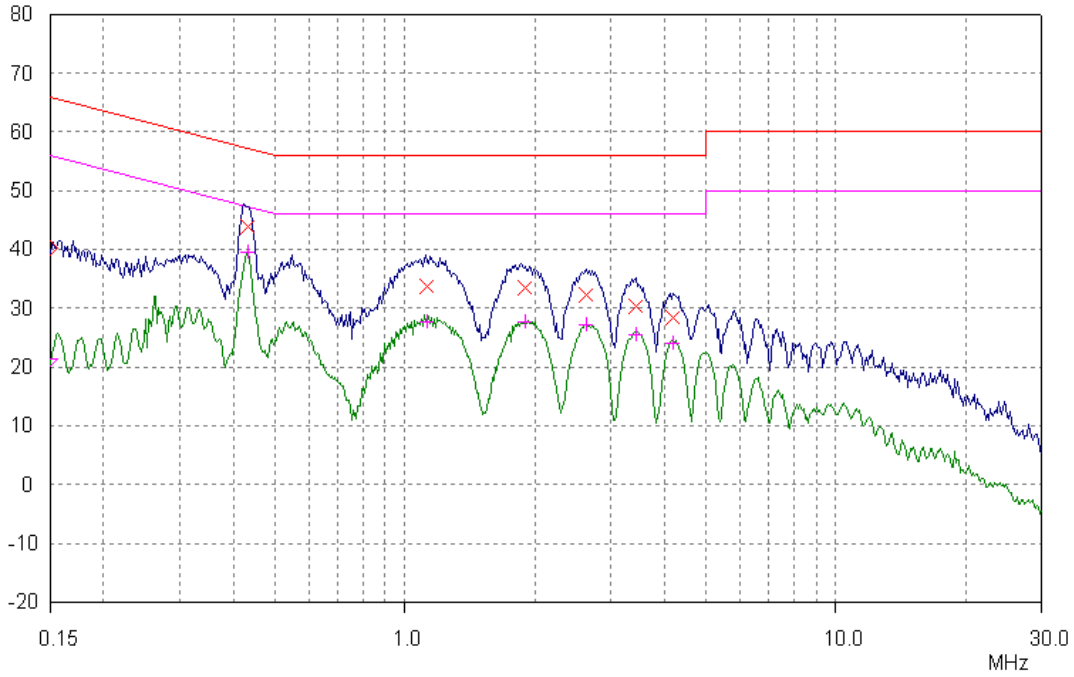
7.3 Test procedure and test set up

The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50Ω/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50Ω/50uH coupling impedance with 50Ω termination.
Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4 on conducted measurement.
The bandwidth of the test receiver is set at 9 kHz.

7.4 Test protocol

Temperature : 25 °C
Relative Humidity : 55 %

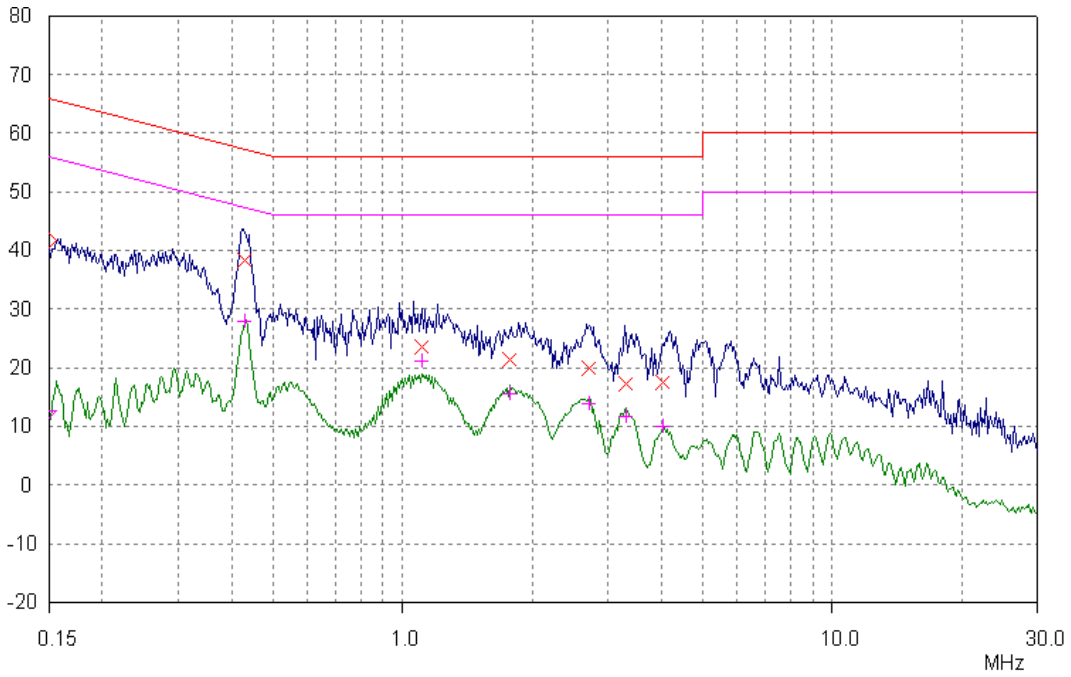
L Line



Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (dB)
0.430	43.98	57.25	13.27	39.49	47.25	7.76
1.122	33.75	56.00	22.25	27.55	46.00	18.45
1.900	33.35	56.00	22.65	27.58	46.00	18.42
2.625	32.29	56.00	23.71	27.11	46.00	18.89
3.417	30.37	56.00	25.63	25.47	46.00	20.53
4.188	28.46	56.00	27.54	24.03	46.00	21.97

N Line



Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (dB)
0.427	38.36	57.31	18.95	27.80	47.31	19.51
1.104	23.59	56.00	32.41	21.00	46.00	25.00
1.761	21.35	56.00	34.65	15.56	46.00	30.44
2.700	19.86	56.00	36.14	13.95	46.00	32.05
3.296	17.28	56.00	38.72	11.59	46.00	34.41
4.024	17.58	56.00	38.42	9.86	46.00	36.14

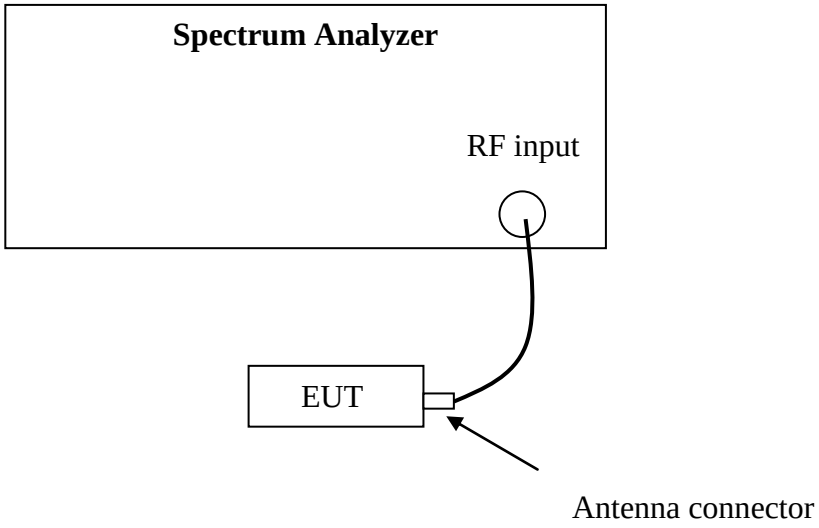
8. 26 dB Bandwidth & Emission Bandwidth (99%)

Test Status: Tested

8.1 Test limit

None

8.2 Test Configuration



8.3 Test procedure and test setup

The bandwidth was measured from the antenna port of the EUT according to the measurement method refer to KDB 789033D02 v01: section C.

Emission Bandwidth (EBW)

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

99 Percent Occupied Bandwidth

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW ≥ 3 · RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

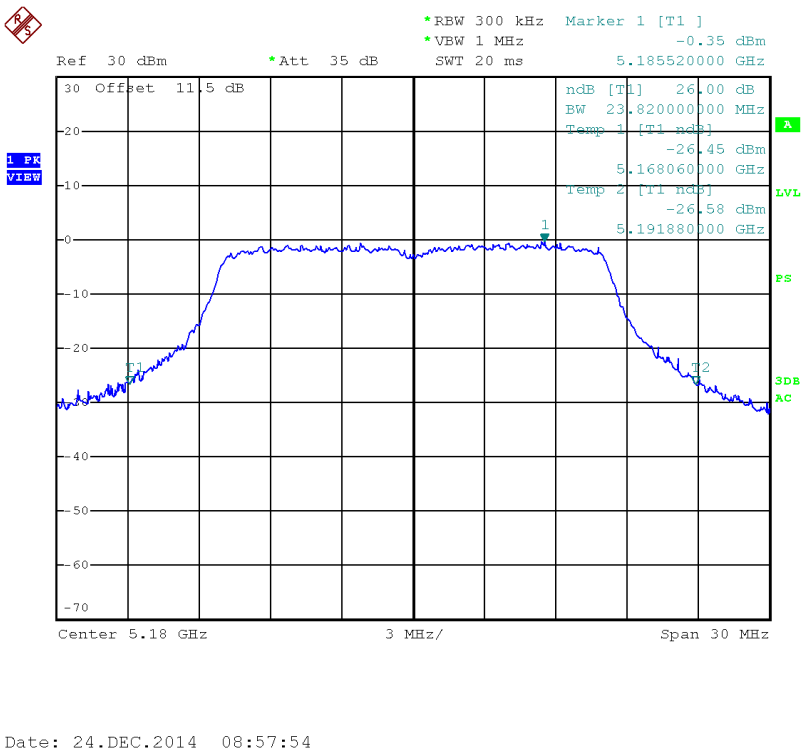
8.4 Test protocol

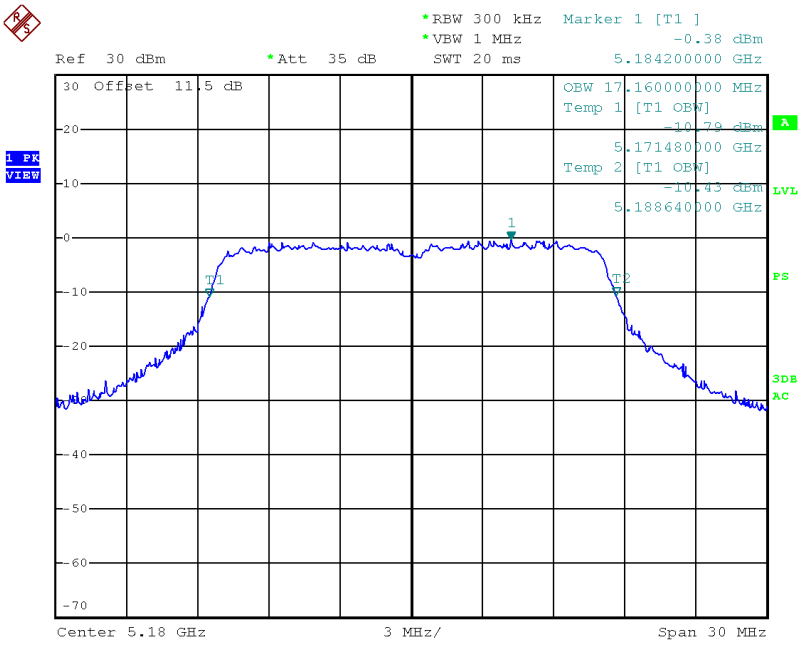
Temperature : 25 °C
Relative Humidity : 55 %

U-NII-1 Band:

Mode	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)	Note
802.11a	5180	23.82	17.16	-
	5200	23.58	17.16	-
	5240	23.04	17.10	-
802.11n20	5180	24.66	18.18	-
	5200	24.84	18.18	-
	5240	24.24	18.12	-
802.11n40	5190	51.36	37.92	-
	5230	50.76	37.92	-

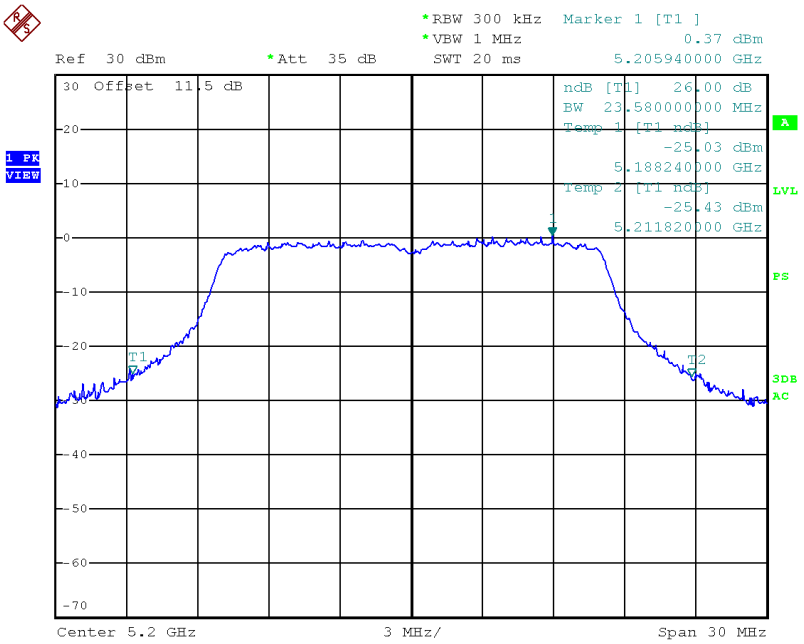
Frequency L – 802.11a





Date: 24.DEC.2014 08:59:05

Frequency M – 802.11a



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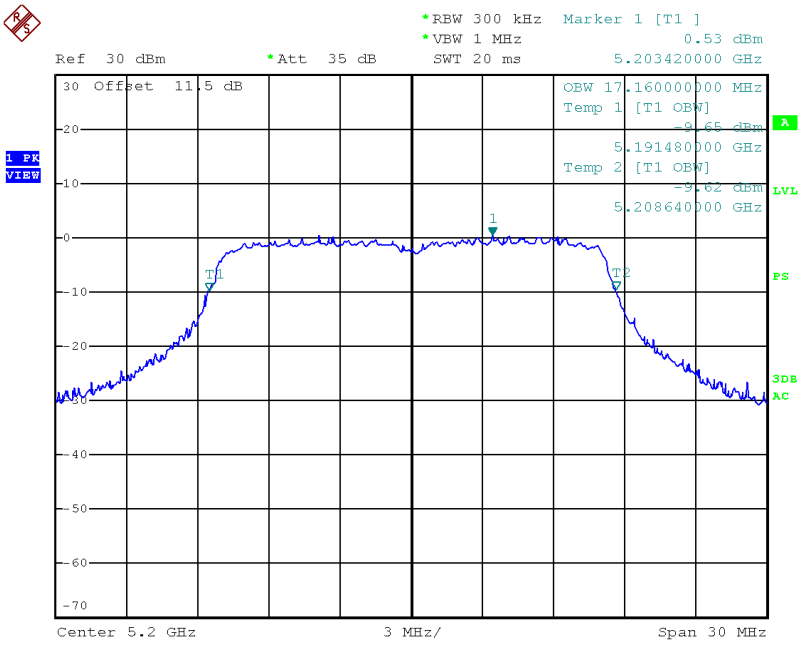

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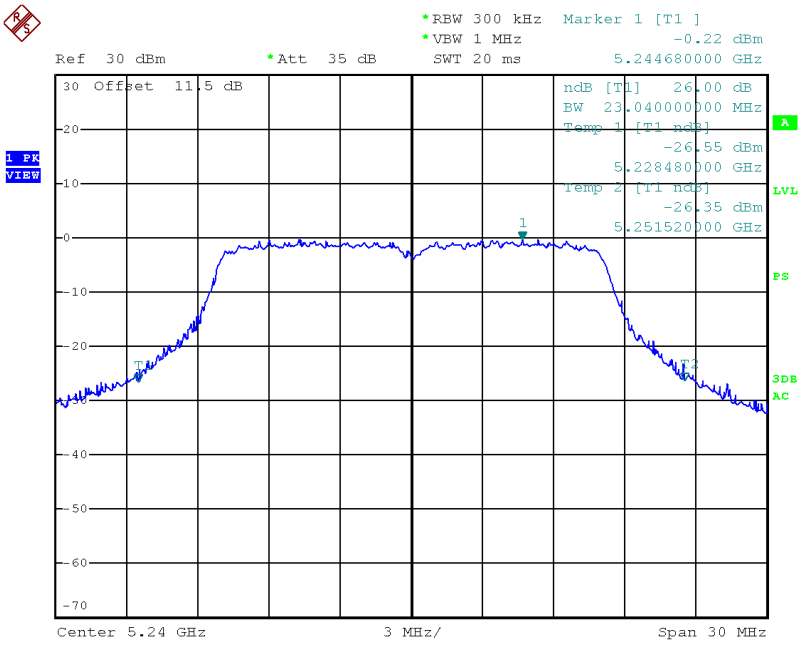
Frequency H – 802.11a



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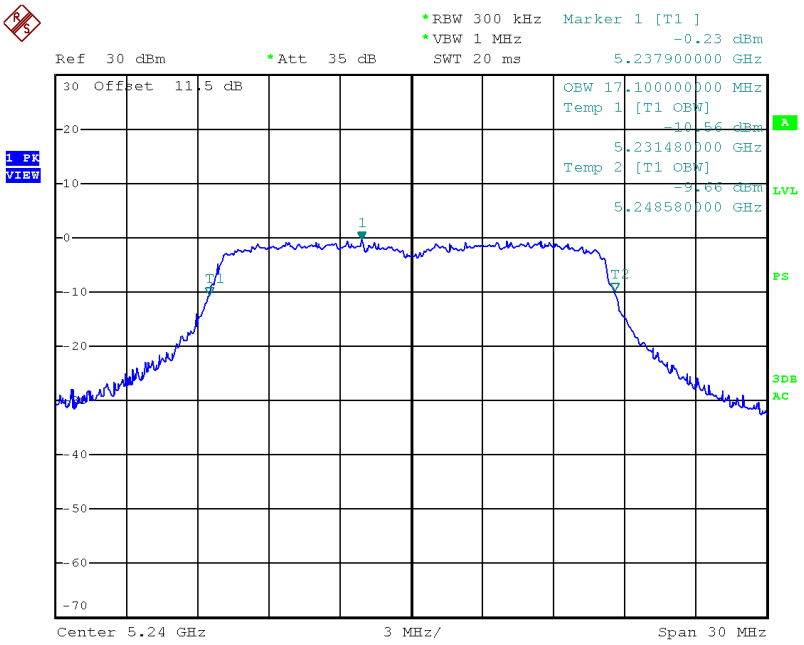

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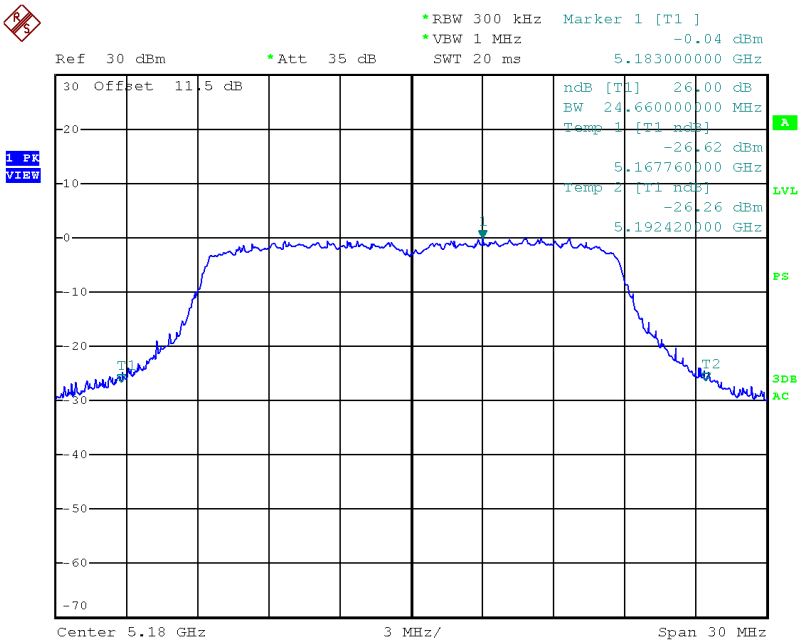
Frequency L – 802.11n20



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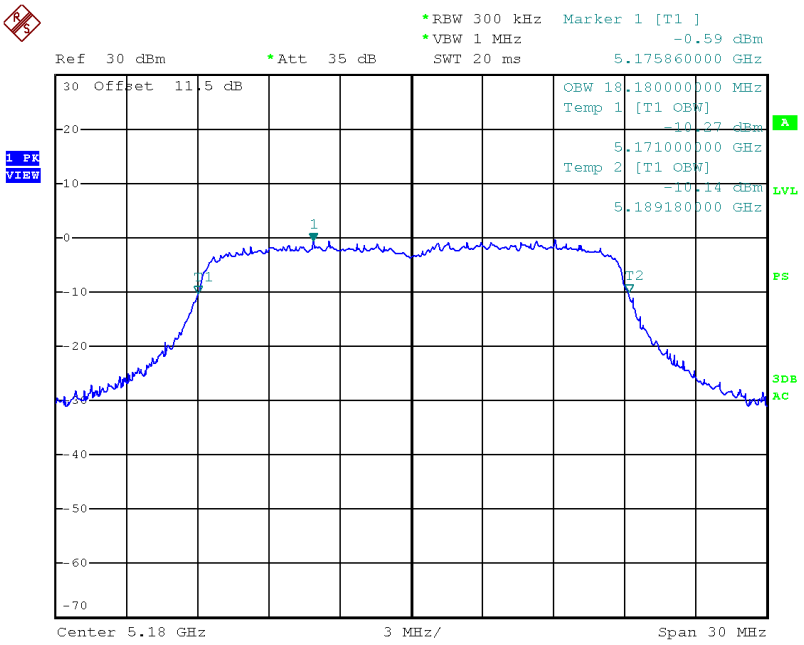

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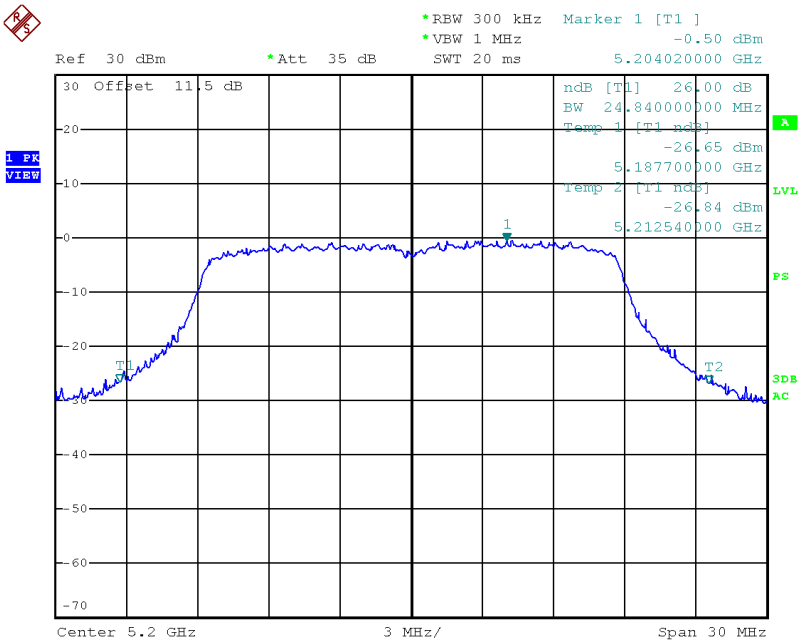
Frequency M – 802.11n20



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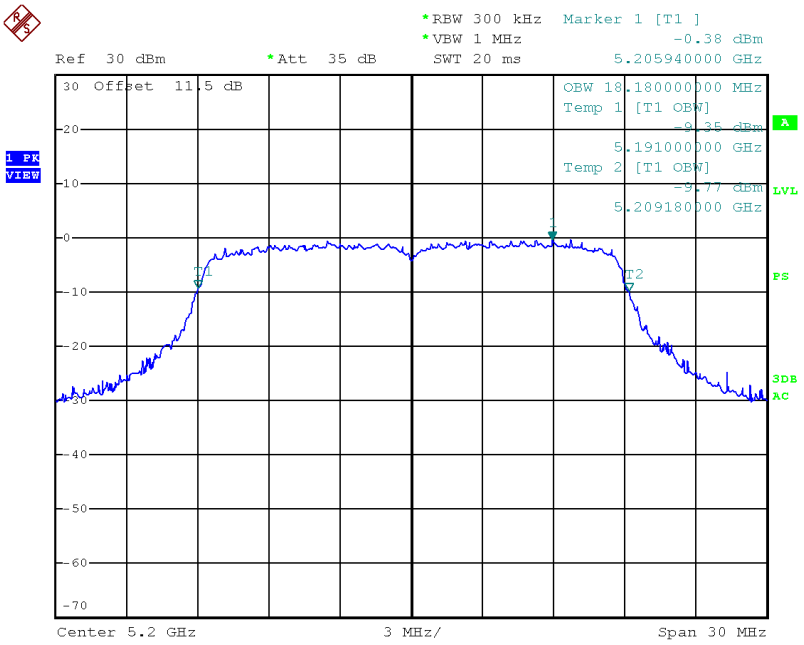

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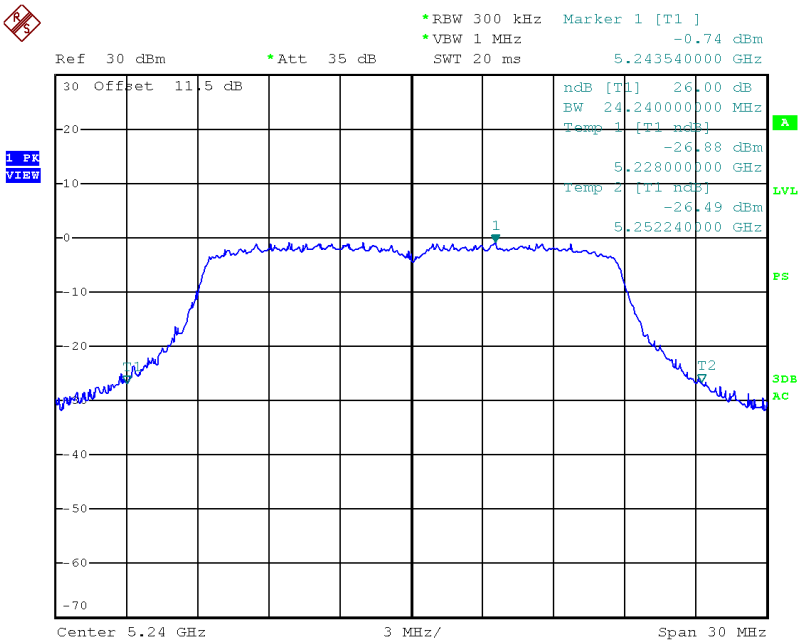
Frequency H – 802.11n20



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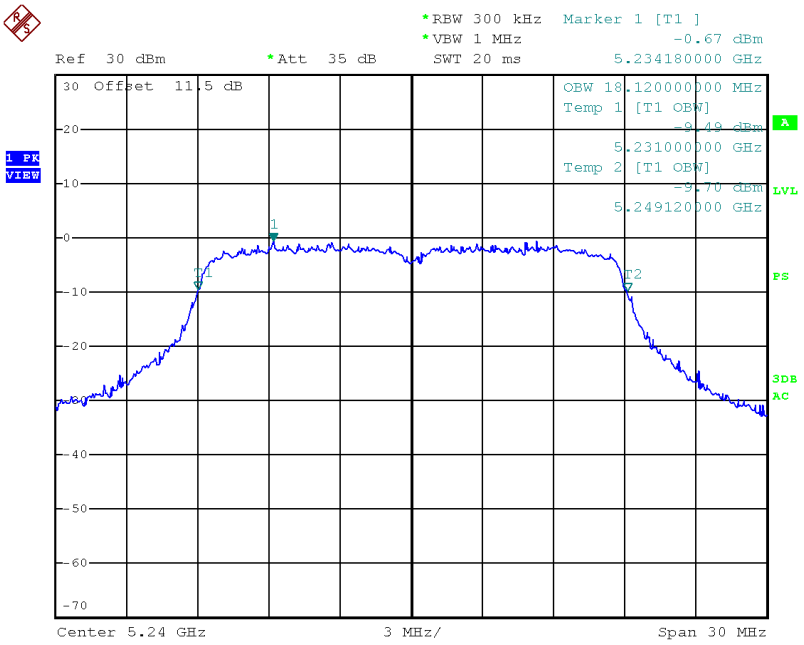

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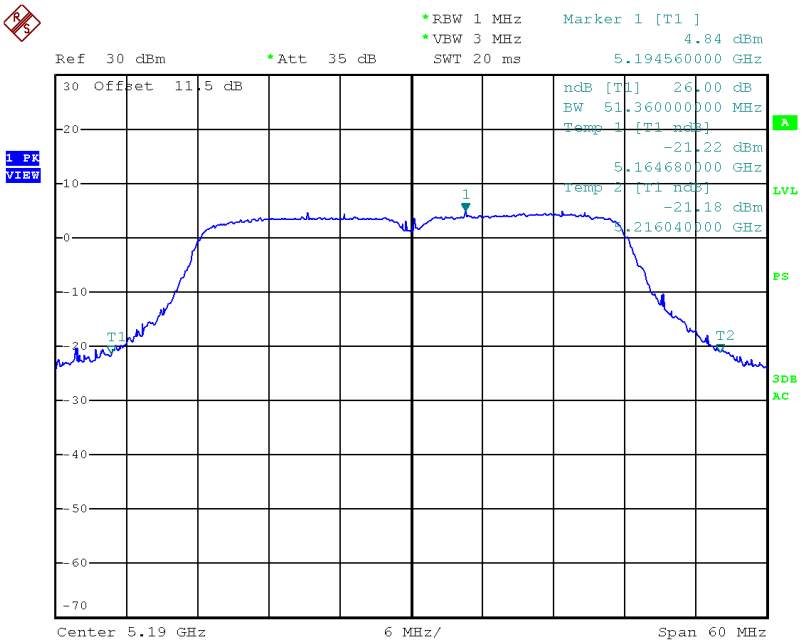
Frequency L – 802.11n40



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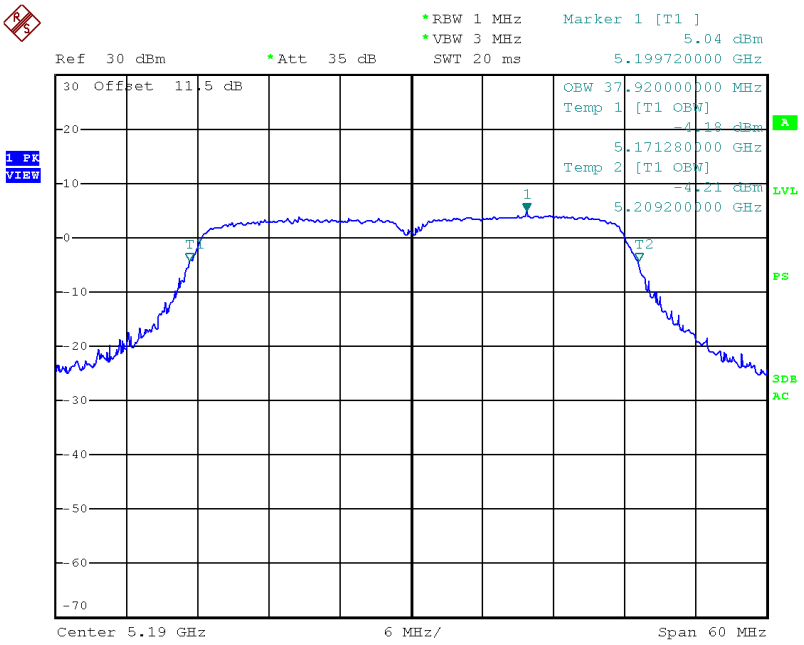

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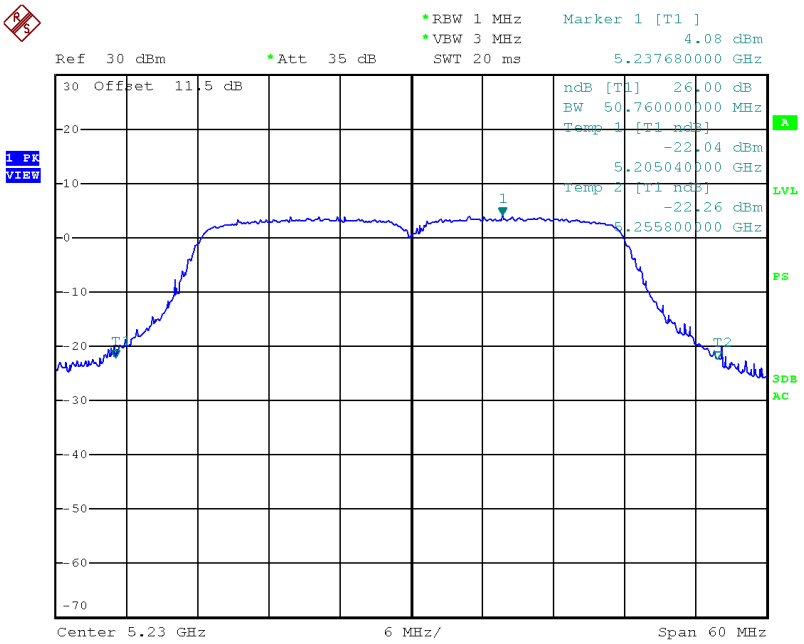
Frequency H – 802.11n40



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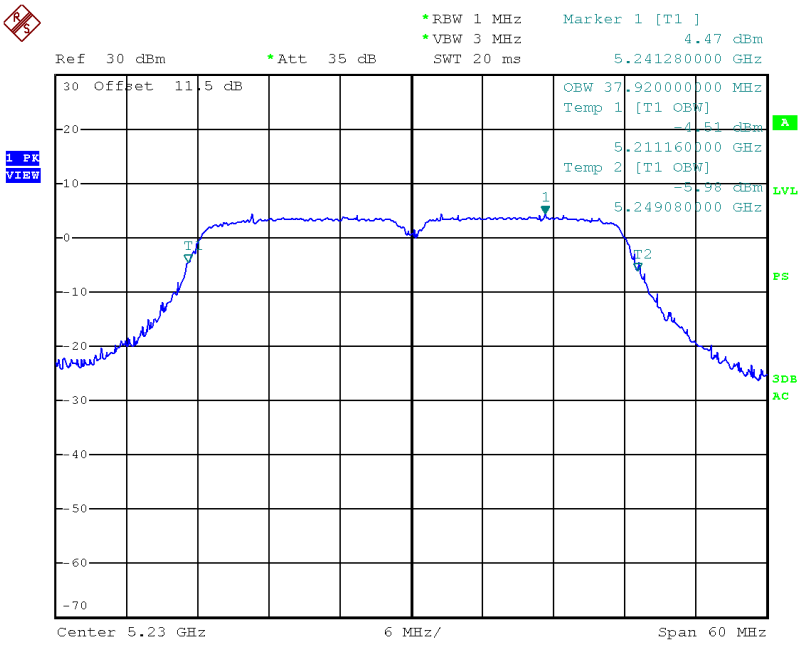
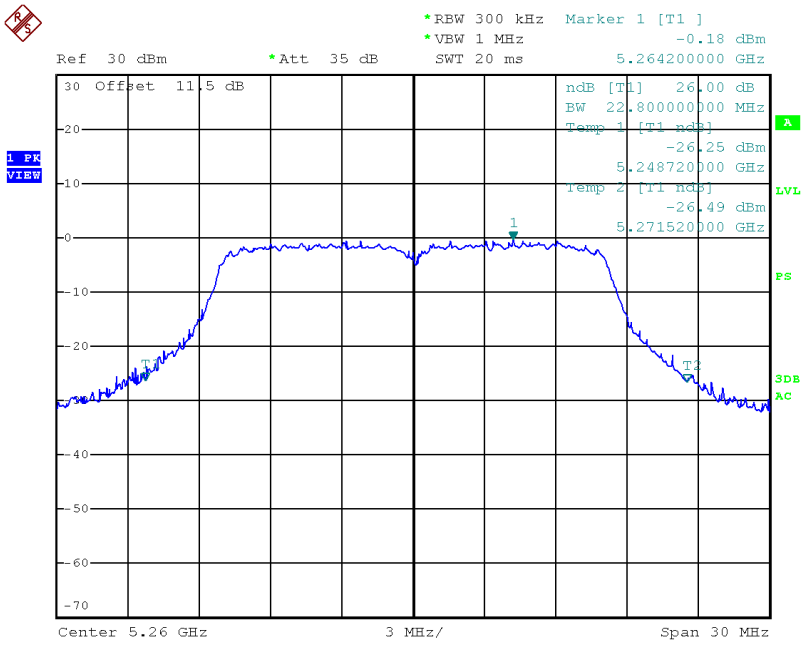


U-NII-2A Band:

Mode	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)	Note
802.11a	5260	22.80	17.16	-
	5300	23.70	17.10	-
	5320	24.42	17.10	-
802.11n20	5260	24.00	18.18	-
	5300	24.18	18.18	-
	5320	23.94	18.12	-
802.11n40	5270	50.76	38.04	-
	5310	50.52	37.92	-

Frequency L – 802.11a



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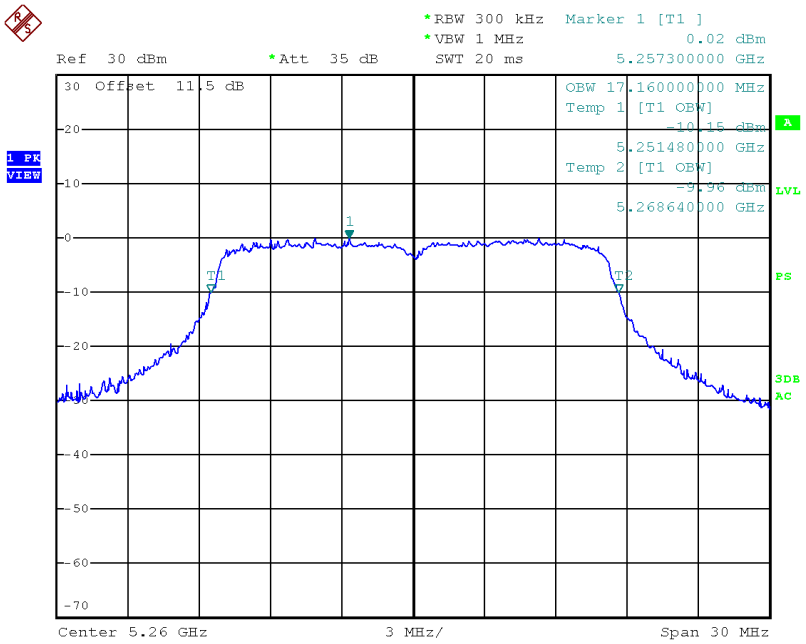

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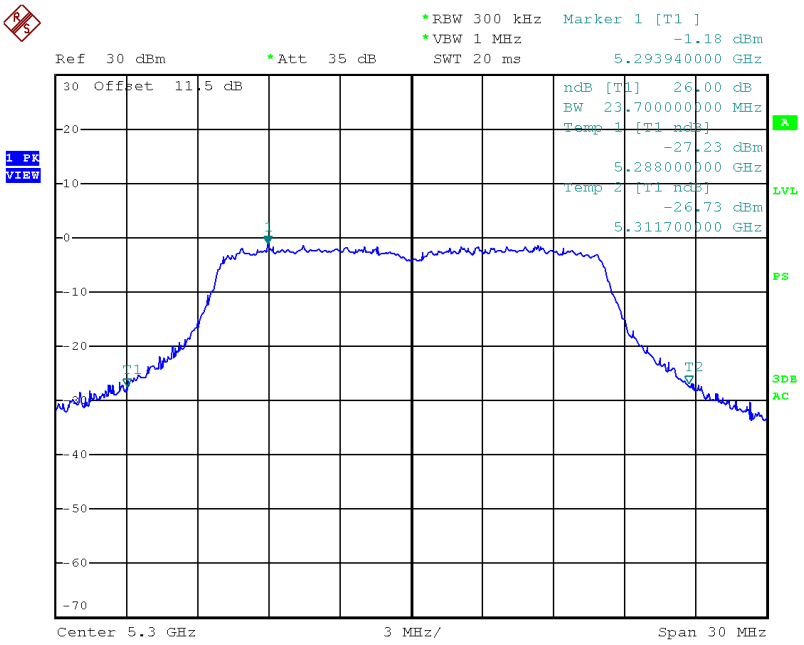
Frequency M – 802.11a



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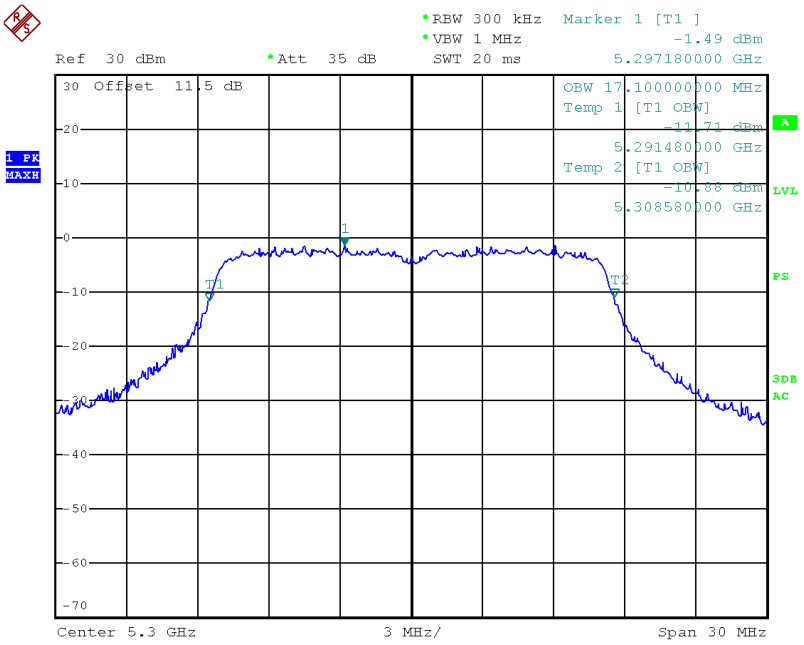

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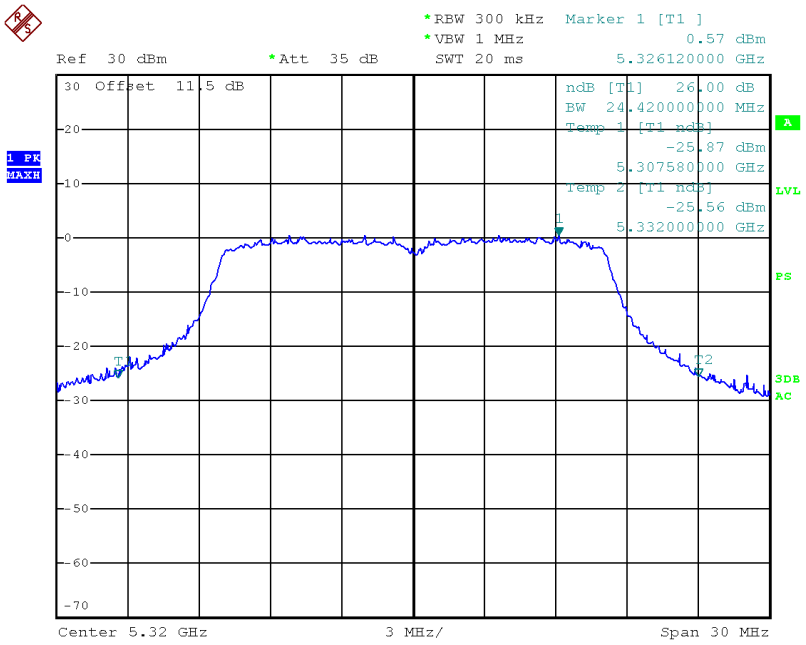
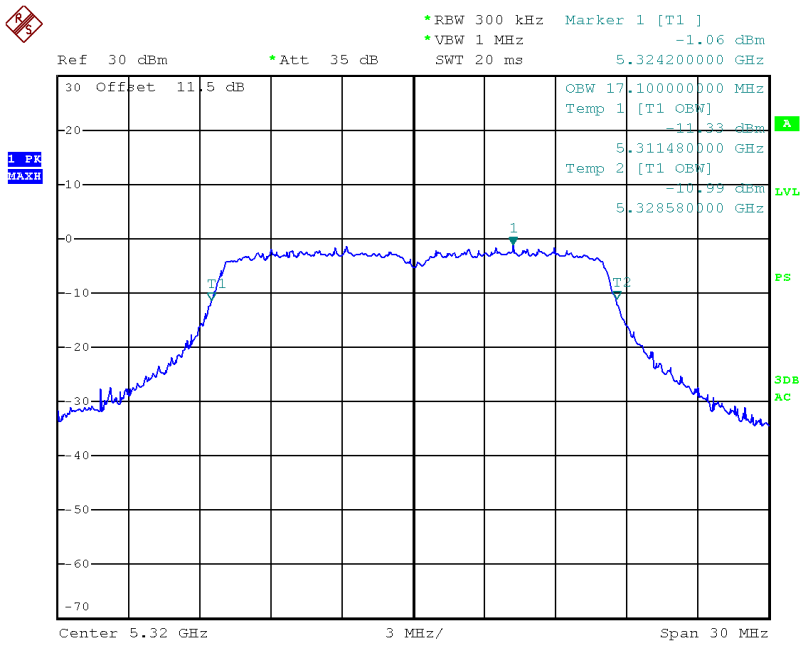
Frequency H – 802.11a

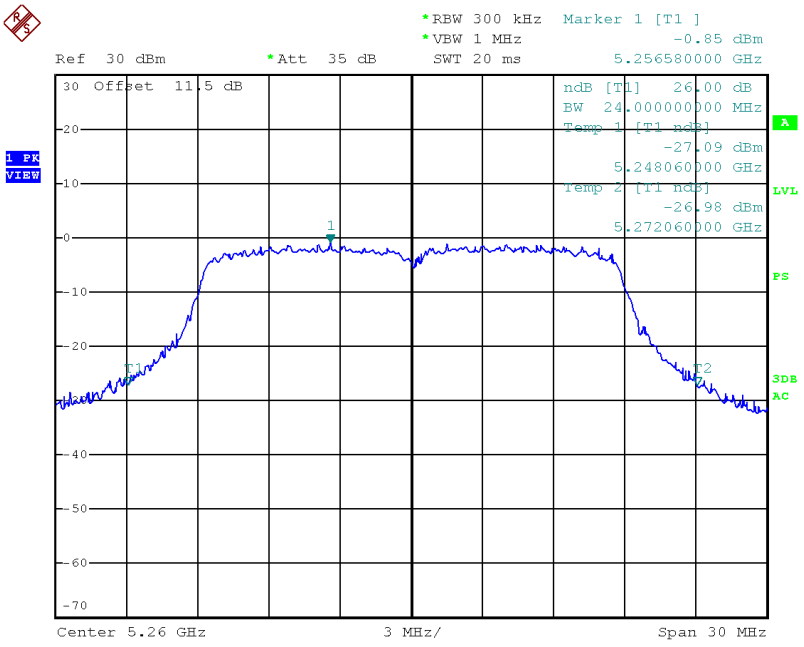


Date: 24.DEC.2014 12:13:50

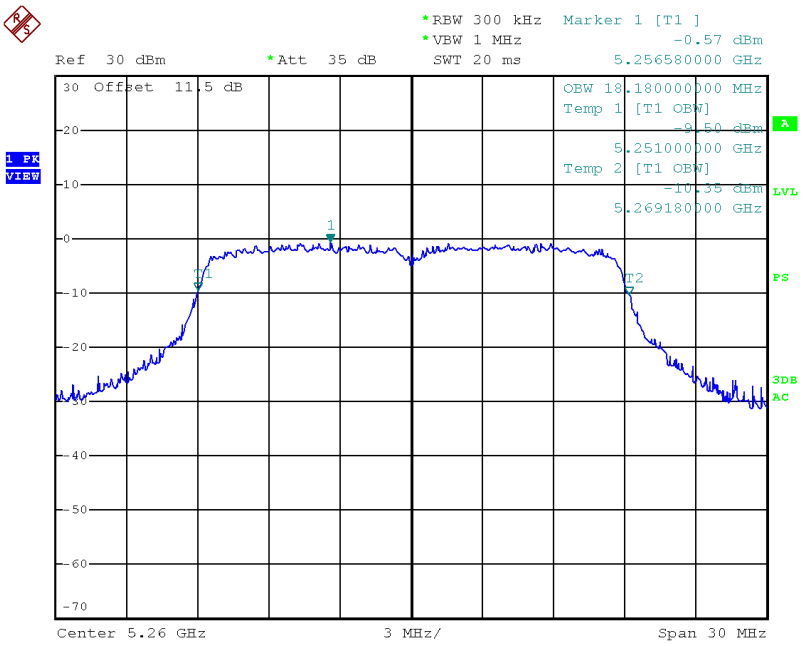


Date: 24.DEC.2014 09:06:21

Frequency L – 802.11n20

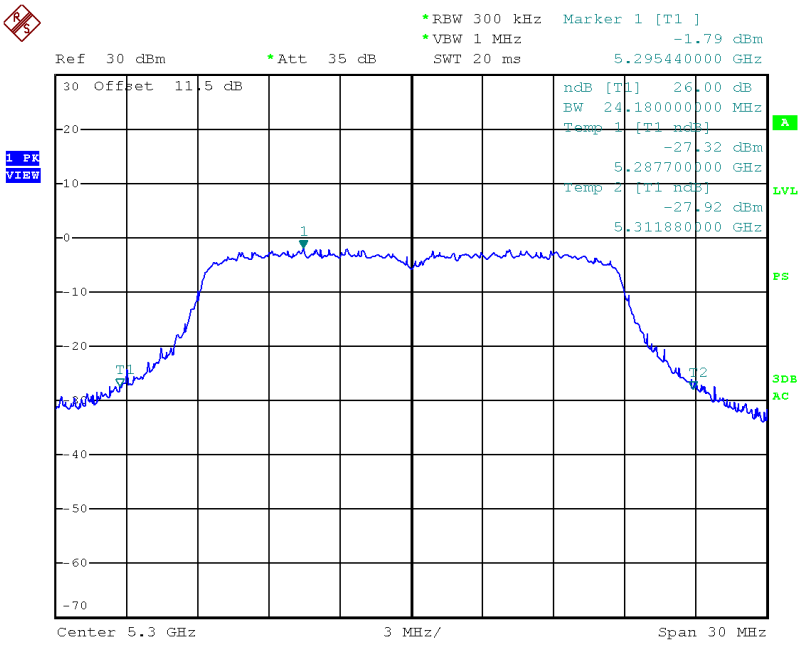


Date: 24.DEC.2014 13:08:41

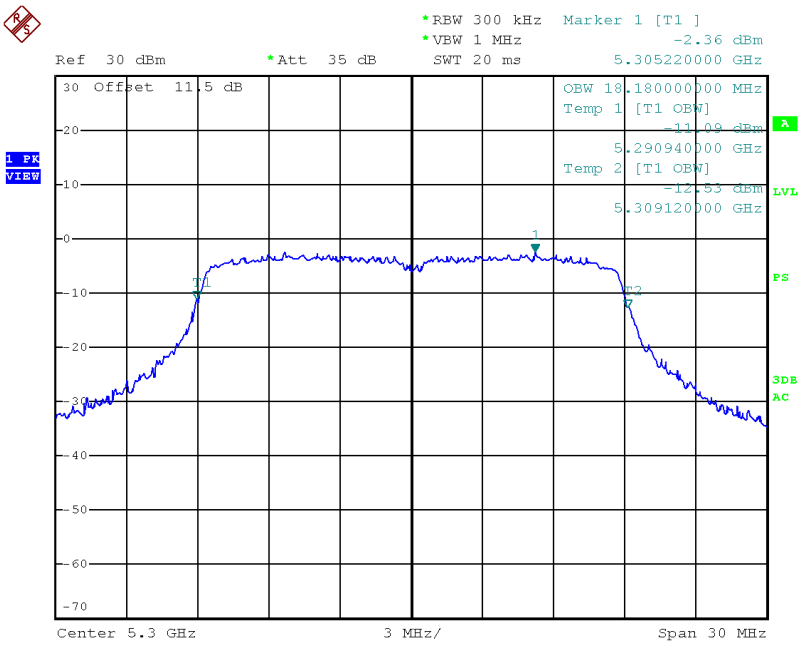


Date: 24.DEC.2014 13:08:06

Frequency M – 802.11n20

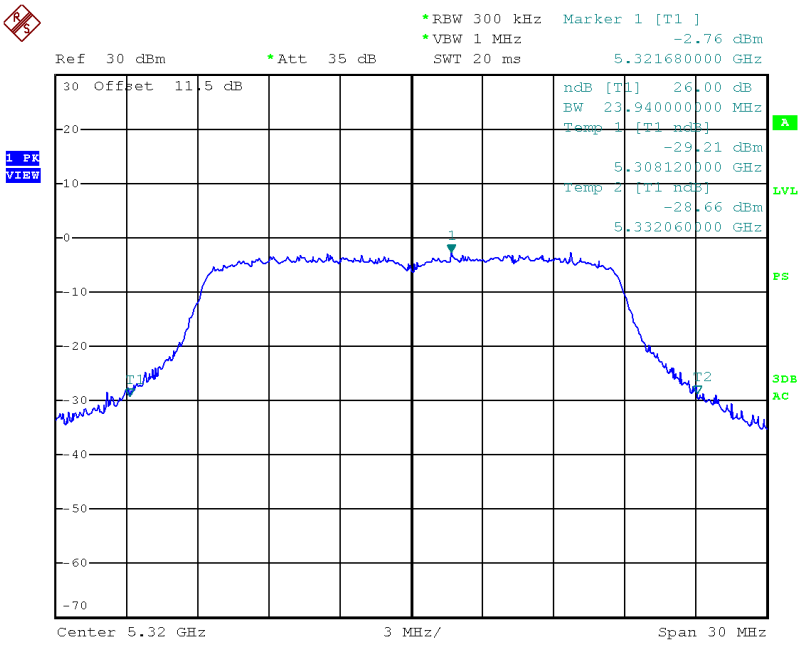


Date: 24.DEC.2014 13:09:31

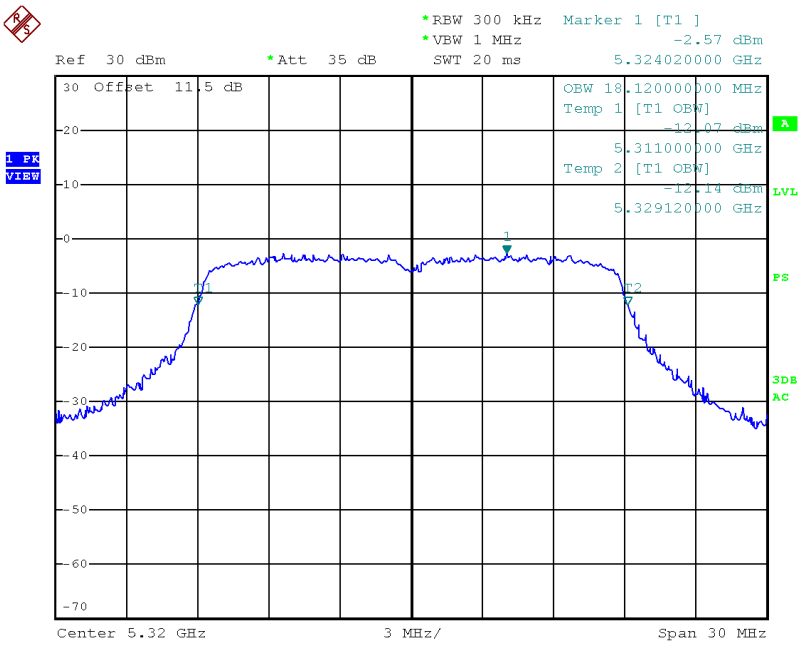


Date: 24.DEC.2014 13:10:06

Frequency H – 802.11n20

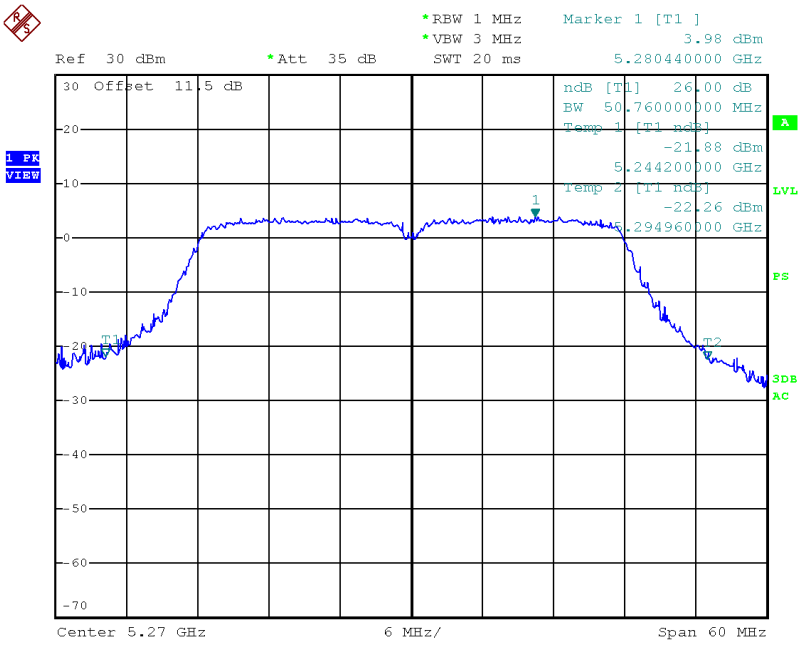


Date: 24.DEC.2014 13:11:09

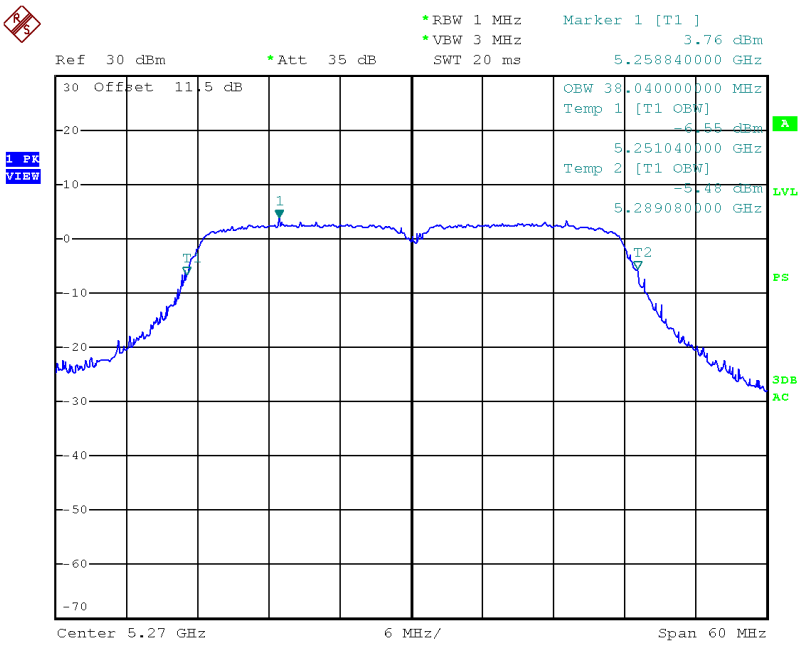


Date: 24.DEC.2014 13:10:43

Frequency L – 802.11n40

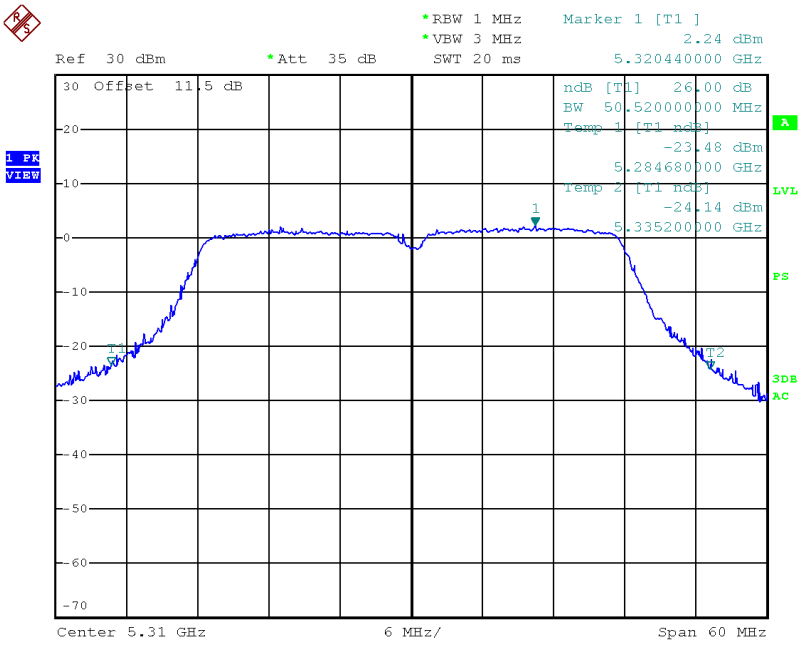


Date: 27.DEC.2014 14:52:10

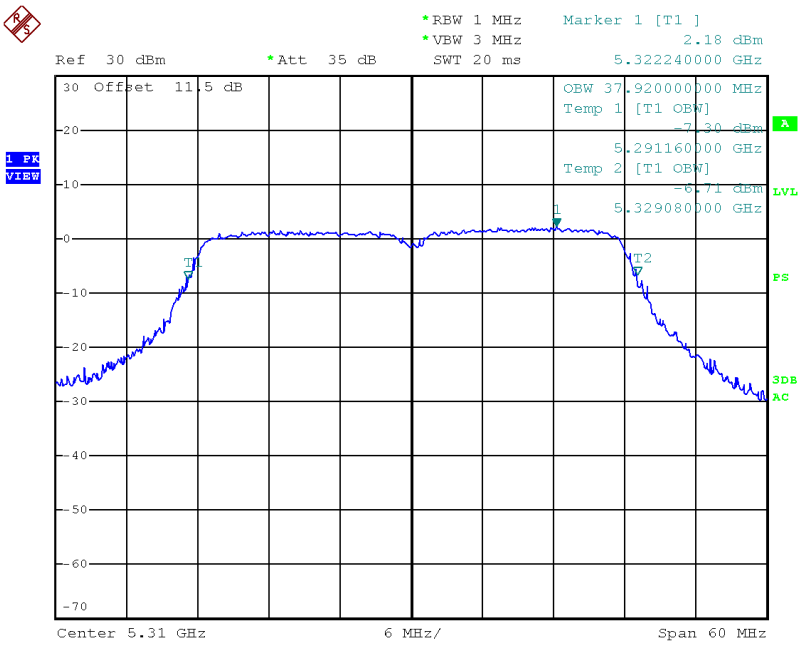


Date: 27.DEC.2014 14:52:45

Frequency H – 802.11n40



Date: 27.DEC.2014 14:53:57

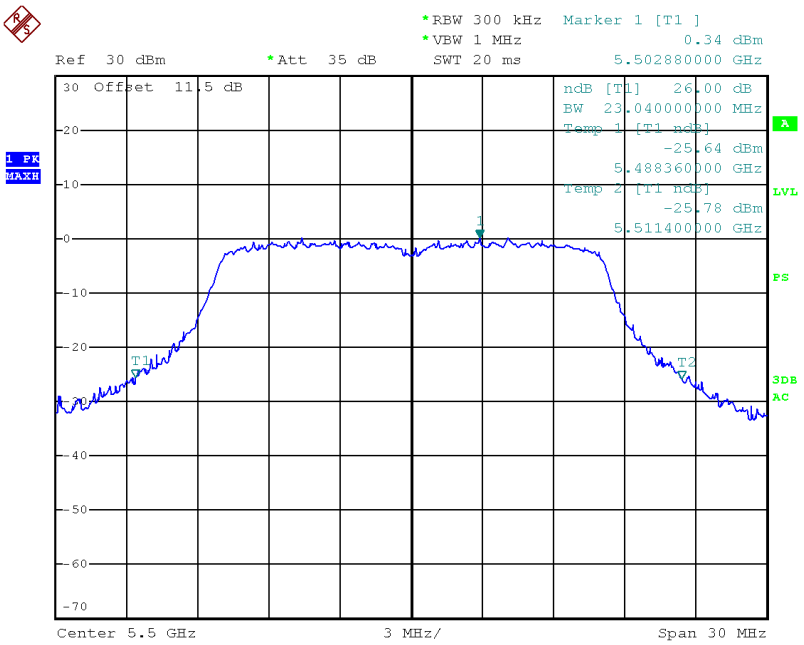


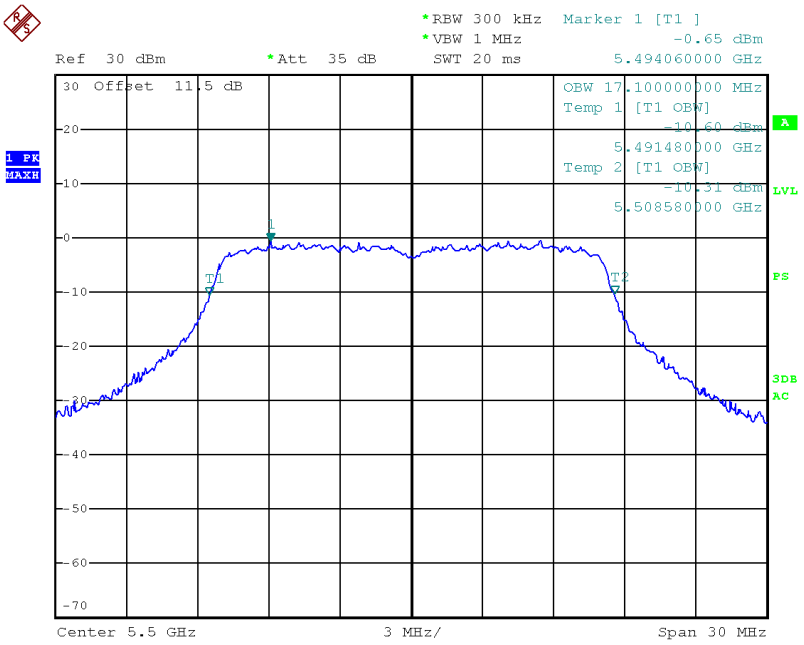
Date: 27.DEC.2014 14:53:22

U-NII-2C Band:

Mode	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)	Note
802.11a	5500	23.04	17.10	-
	5580	23.40	17.10	-
	5700	23.40	17.10	-
802.11n20	5500	23.64	18.12	-
	5580	24.06	18.06	-
	5700	23.58	18.06	-
802.11n40	5510	50.52	37.80	-
	5550	50.40	37.80	
	5670	49.56	37.80	-

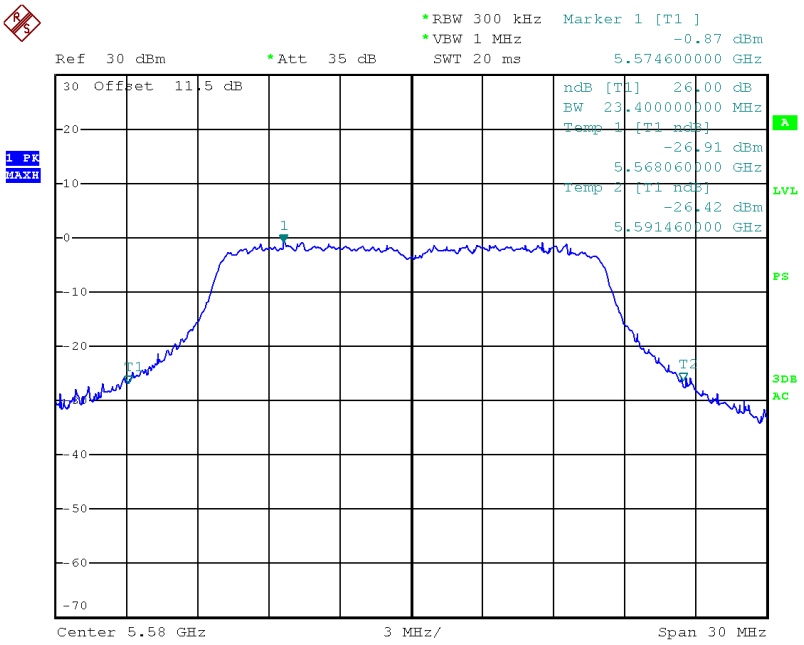
Frequency L – 802.11a



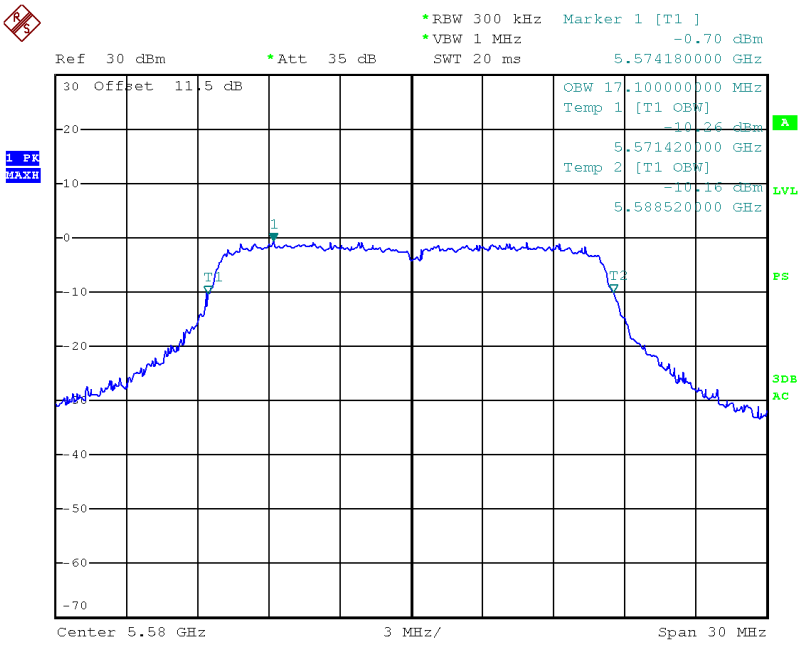


Date: 24.DEC.2014 12:15:50

Frequency M – 802.11a

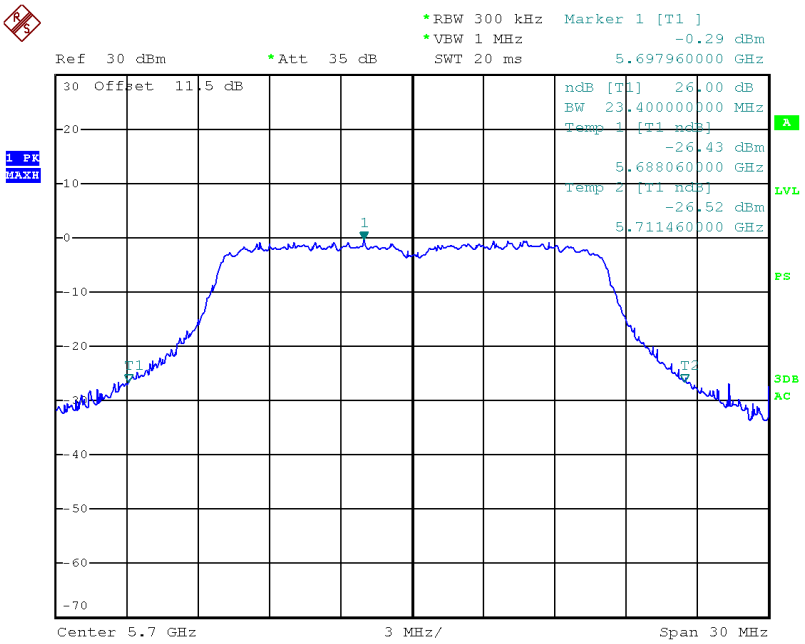


Date: 24.DEC.2014 12:17:27

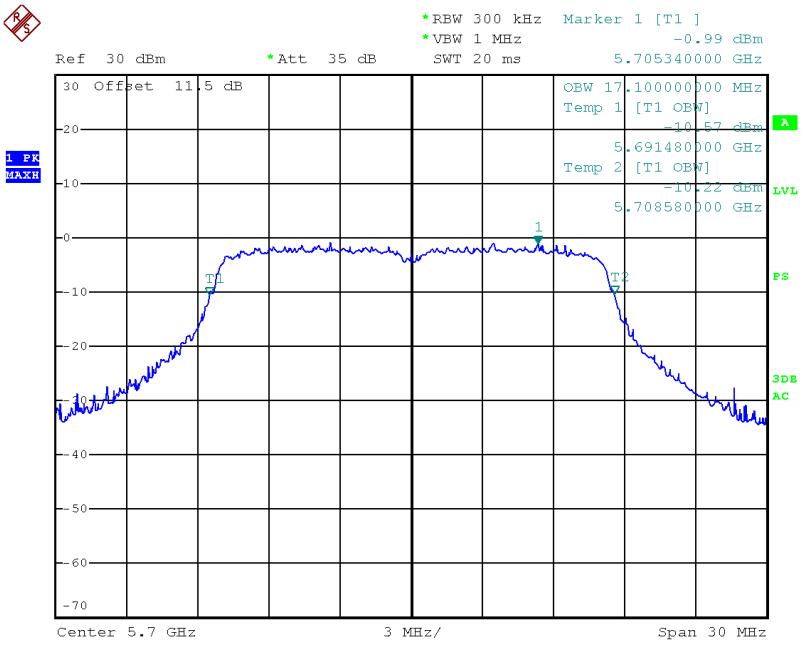


Date: 24.DEC.2014 12:16:33

Frequency H – 802.11a

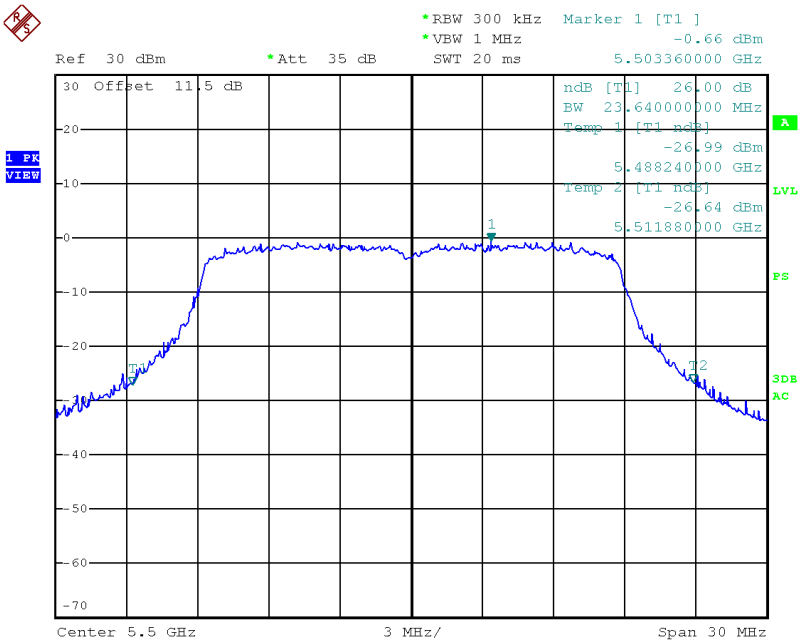


Date: 24.DEC.2014 12:19:11

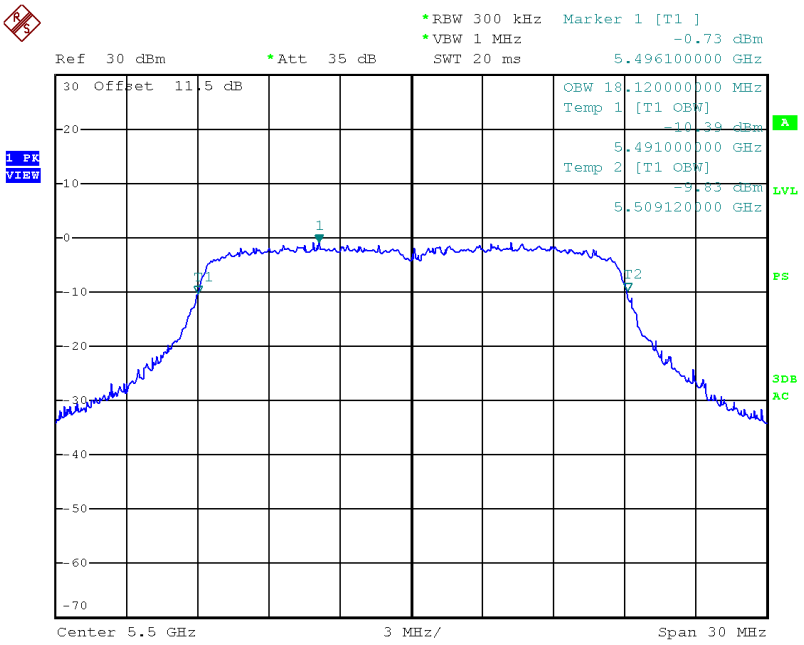


Date: 24.DEC.2014 12:19:42

Frequency L – 802.11n20

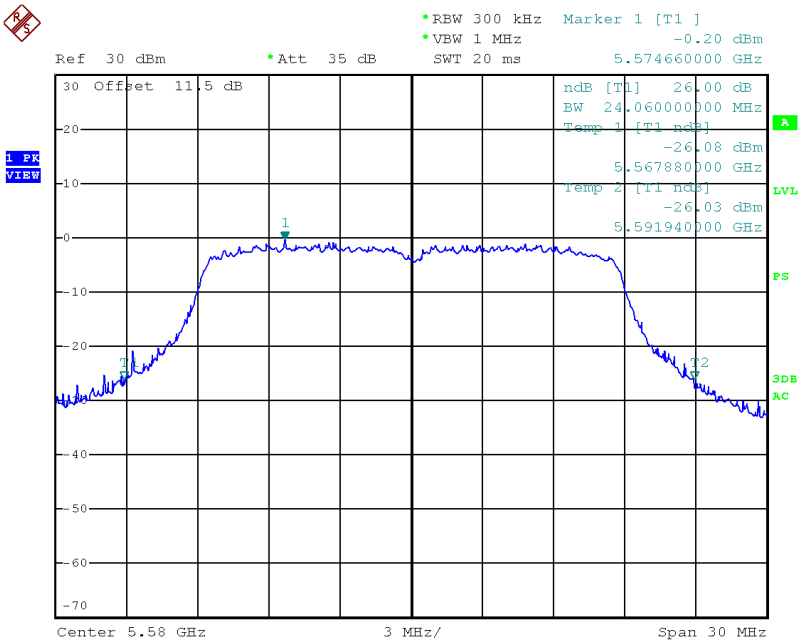


Date: 24.DEC.2014 13:12:07

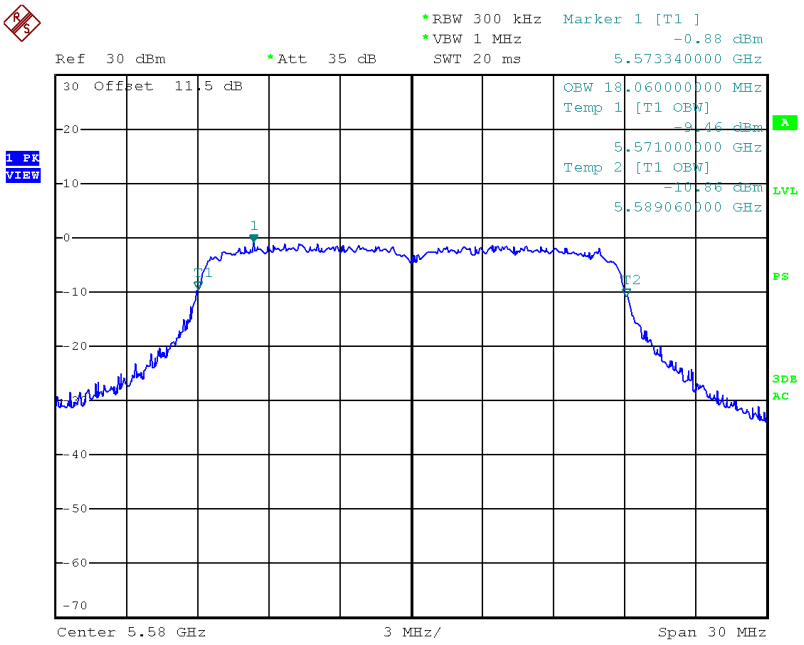


Date: 24.DEC.2014 13:12:37

Frequency M – 802.11n20

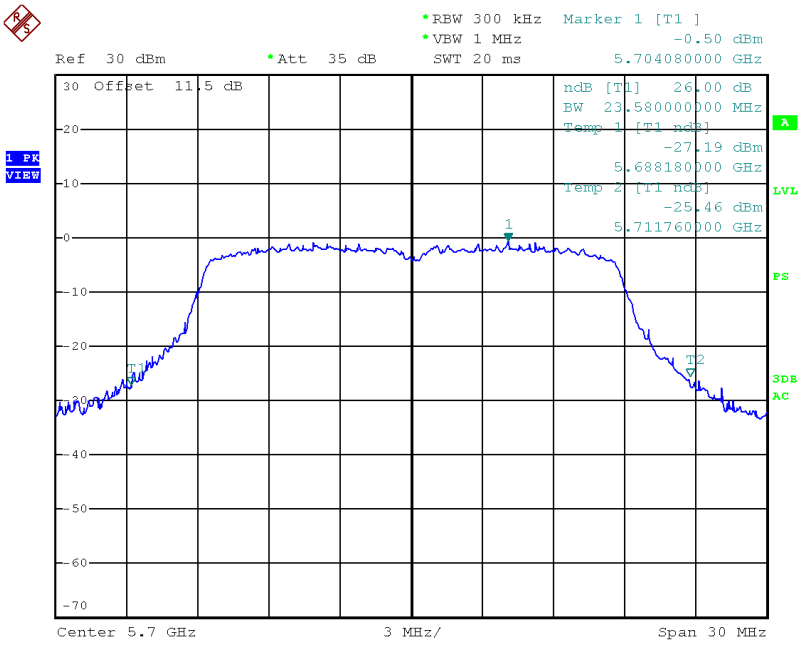


Date: 24.DEC.2014 13:13:43

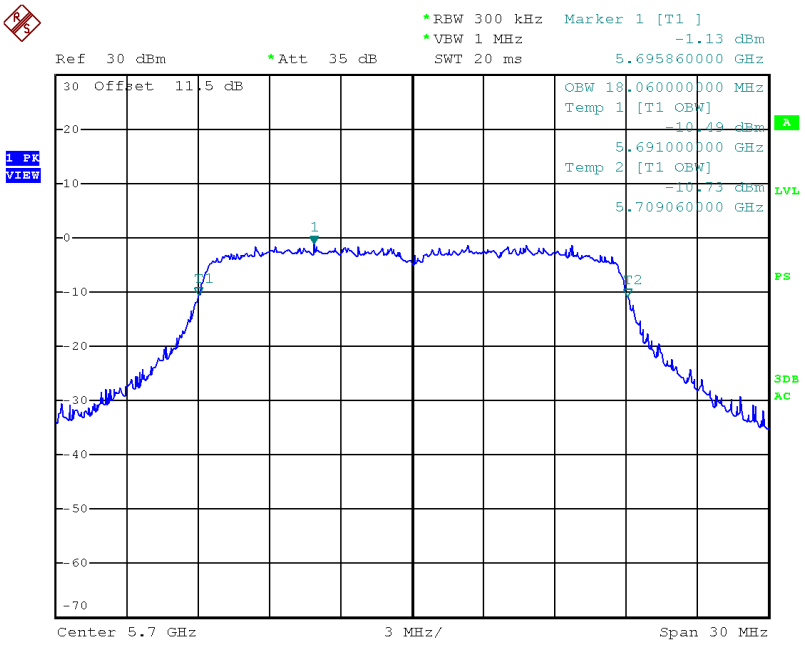


Date: 24.DEC.2014 13:13:12

Frequency H – 802.11n20

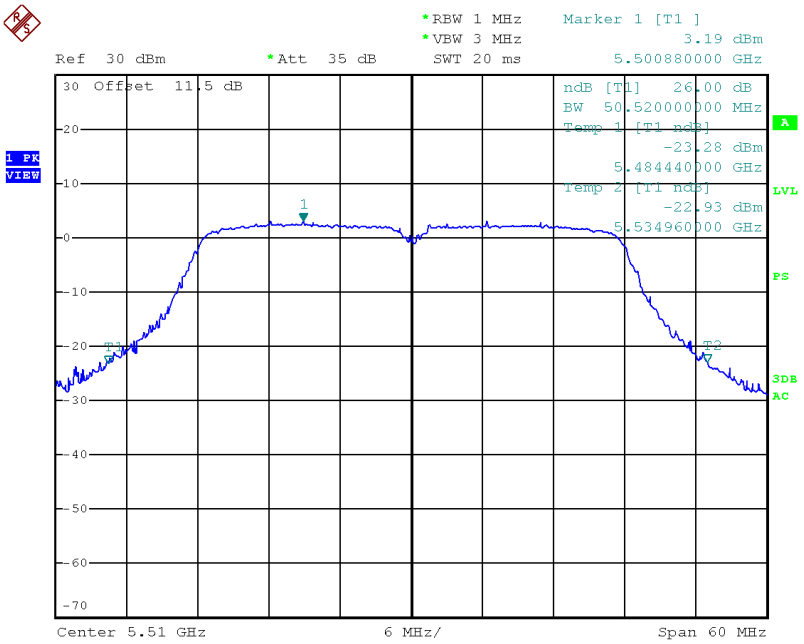


Date: 24.DEC.2014 13:14:44

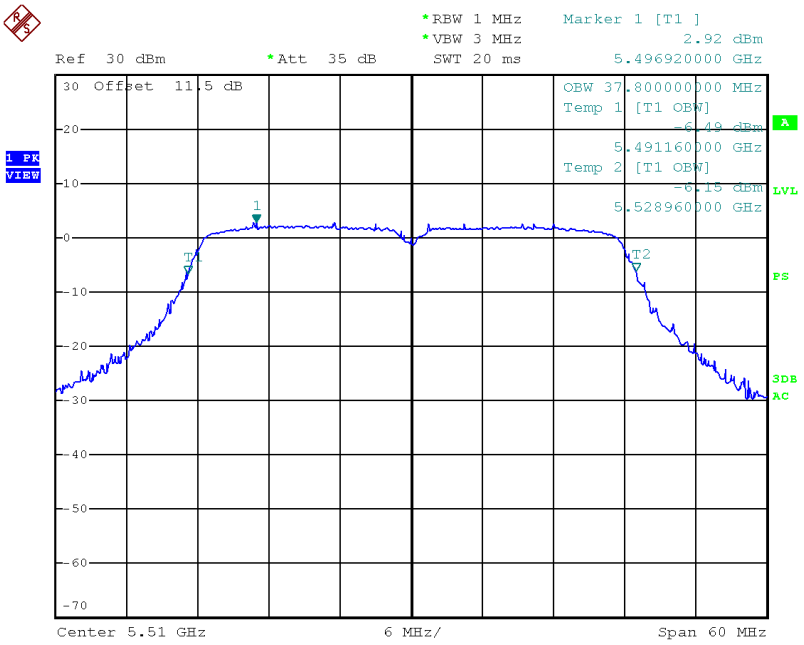


Date: 24.DEC.2014 13:15:06

Frequency L – 802.11n40

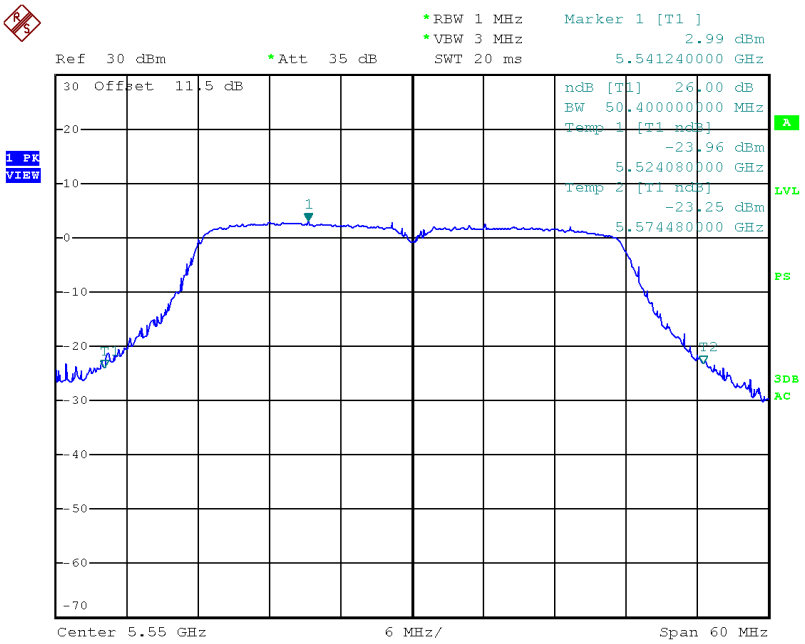


Date: 27.DEC.2014 14:54:43

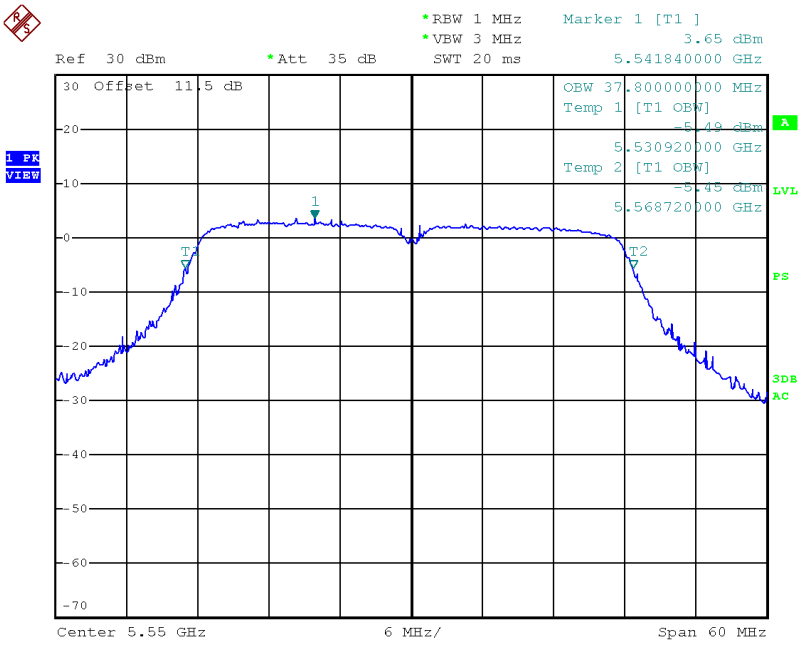


Date: 27.DEC.2014 14:55:09

Frequency M – 802.11n40

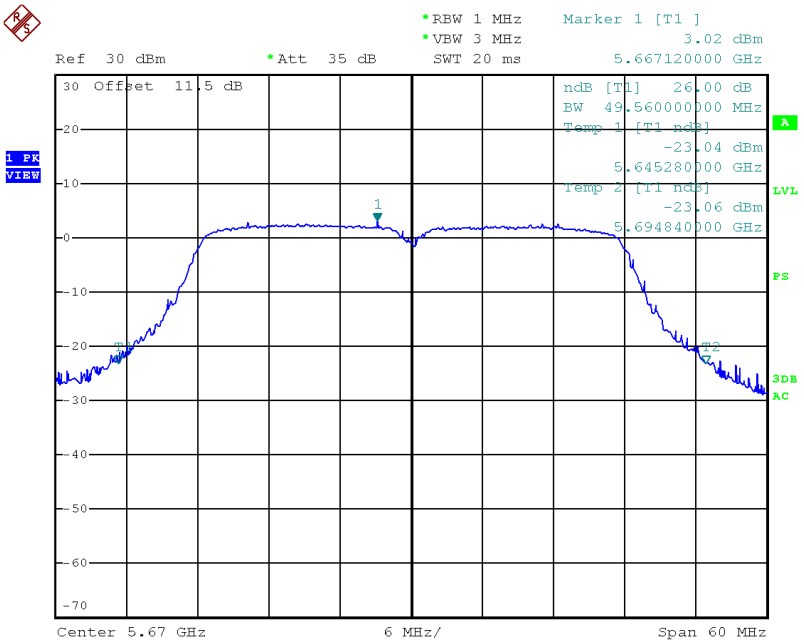


Date: 27.DEC.2014 14:56:26

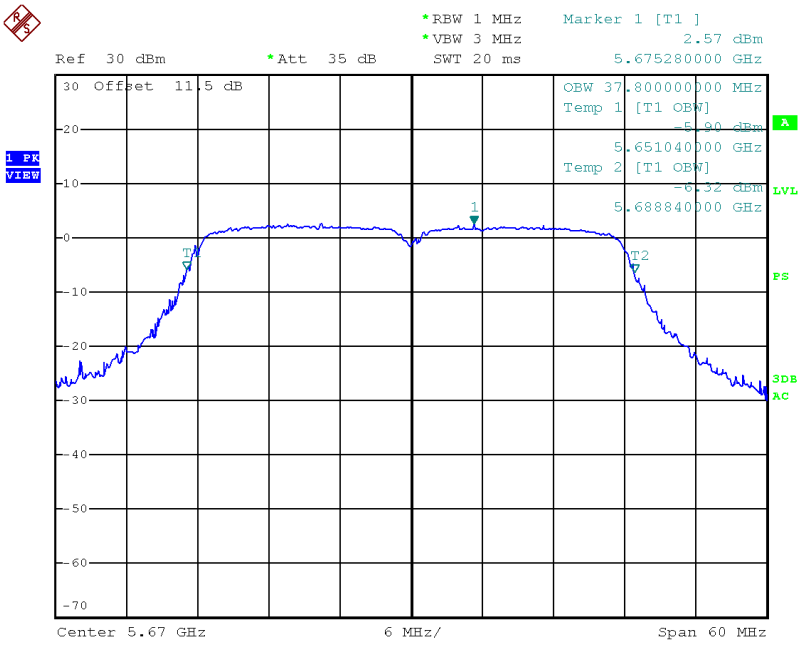


Date: 27.DEC.2014 14:55:51

Frequency H – 802.11n40



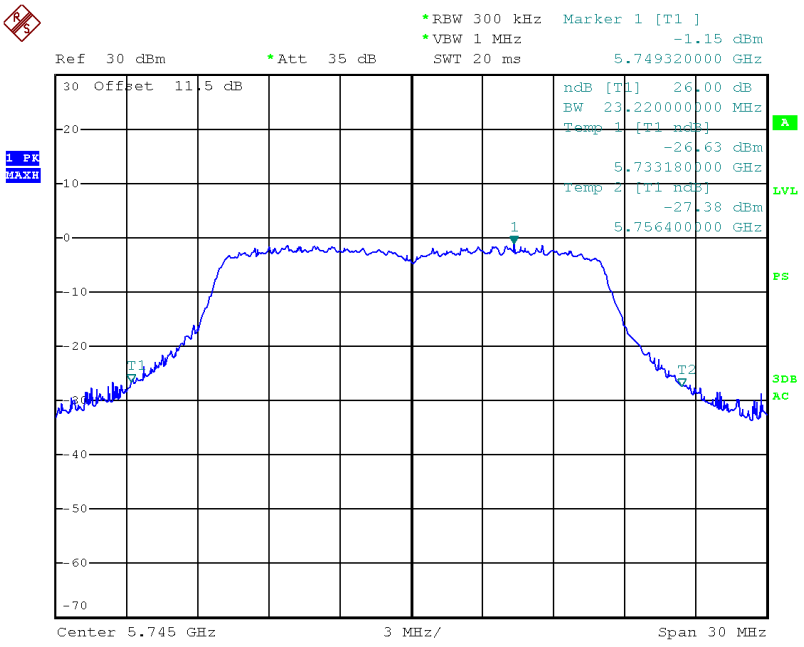
Date: 27.DEC.2014 14:57:22



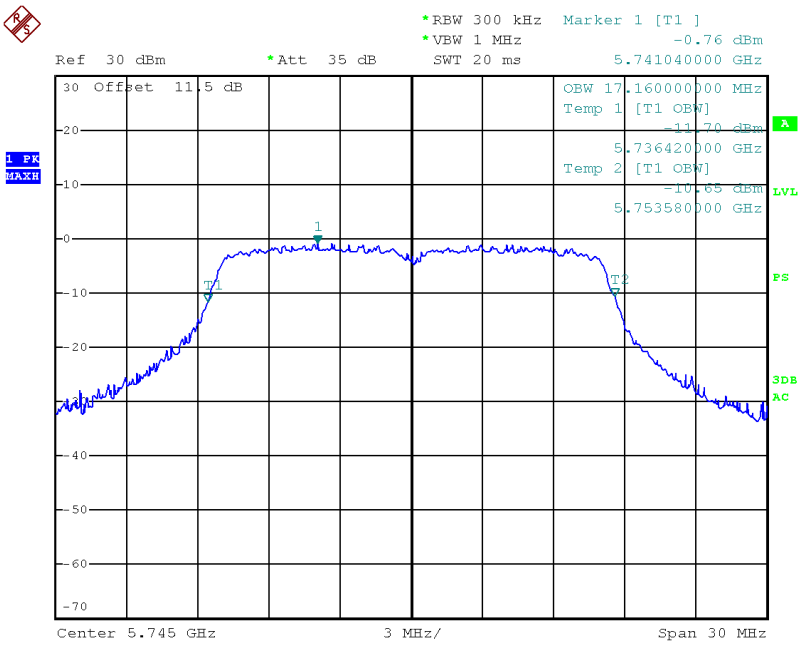
U-NII-3 Band:

Mode	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)	Note
802.11a	5745	23.22	17.16	-
	5785	23.22	17.10	-
	5825	23.64	17.10	-
802.11n20	5745	23.40	18.06	-
	5785	23.58	18.06	-
	5825	23.70	18.06	-
802.11n40	5755	49.80	37.92	-
	5795	49.20	37.92	-

Frequency L – 802.11a

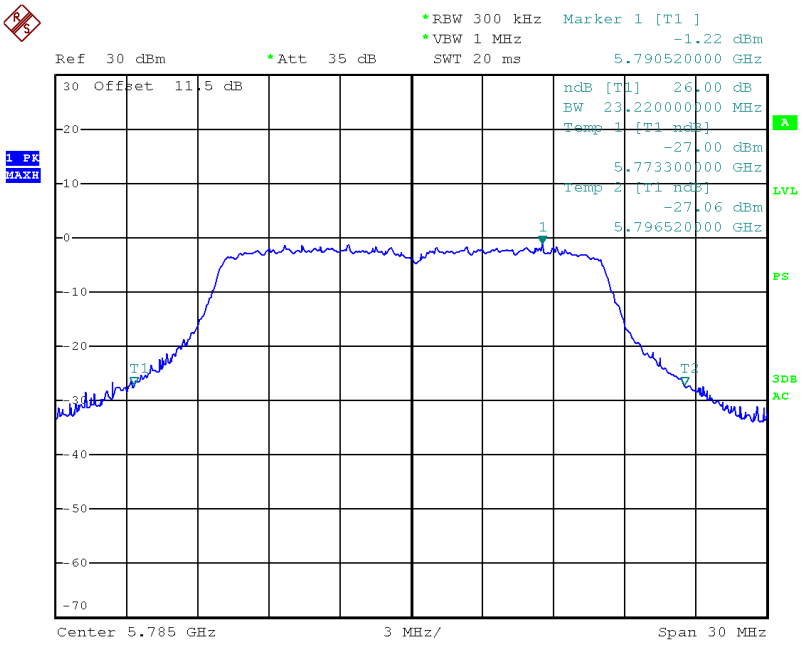


Date: 24.DEC.2014 12:21:49

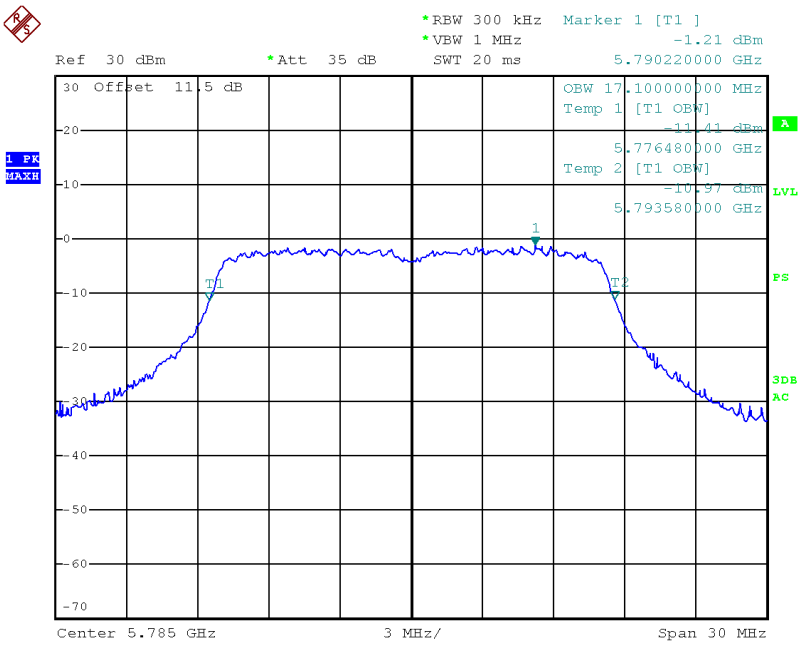


Date: 24.DEC.2014 12:20:42

Frequency M – 802.11a

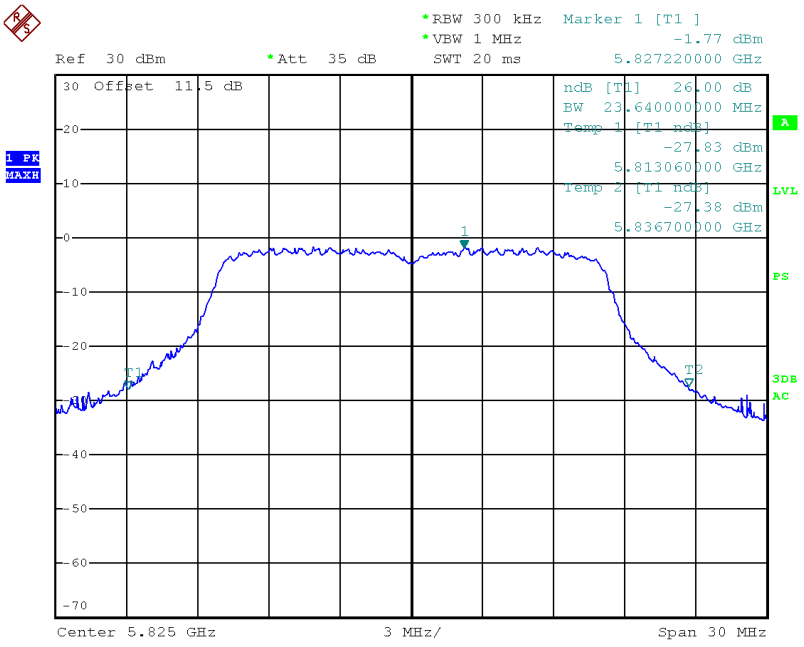


Date: 24.DEC.2014 12:24:01

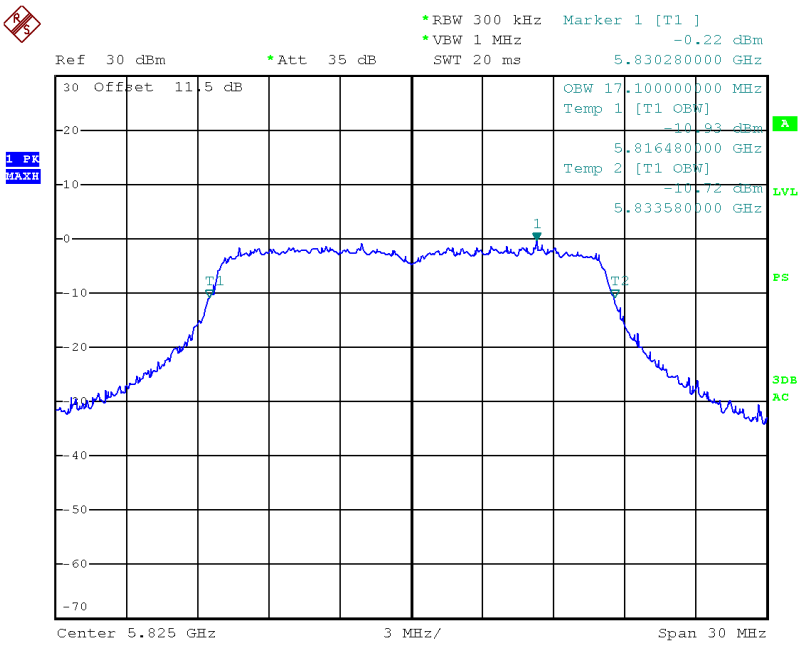


Date: 24.DEC.2014 12:30:41

Frequency H – 802.11a

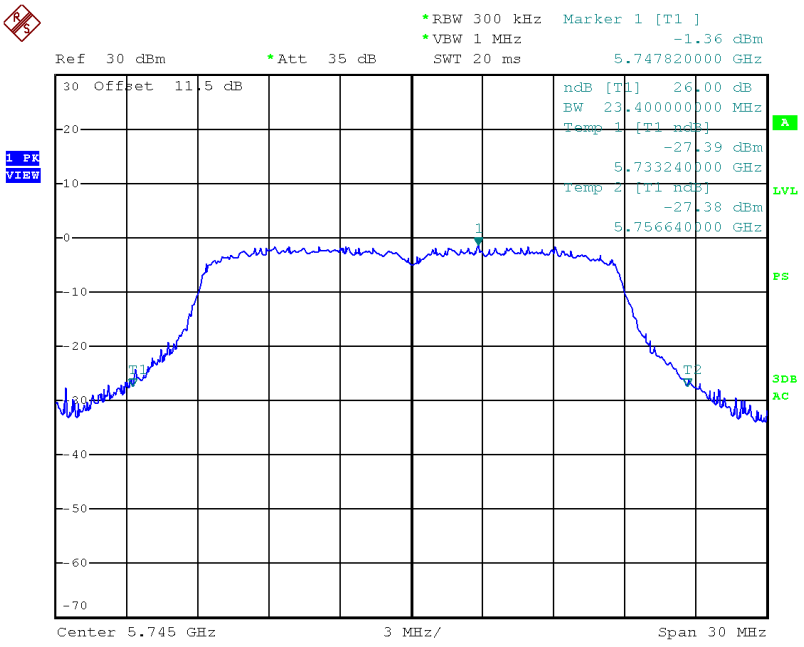


Date: 24.DEC.2014 12:37:52

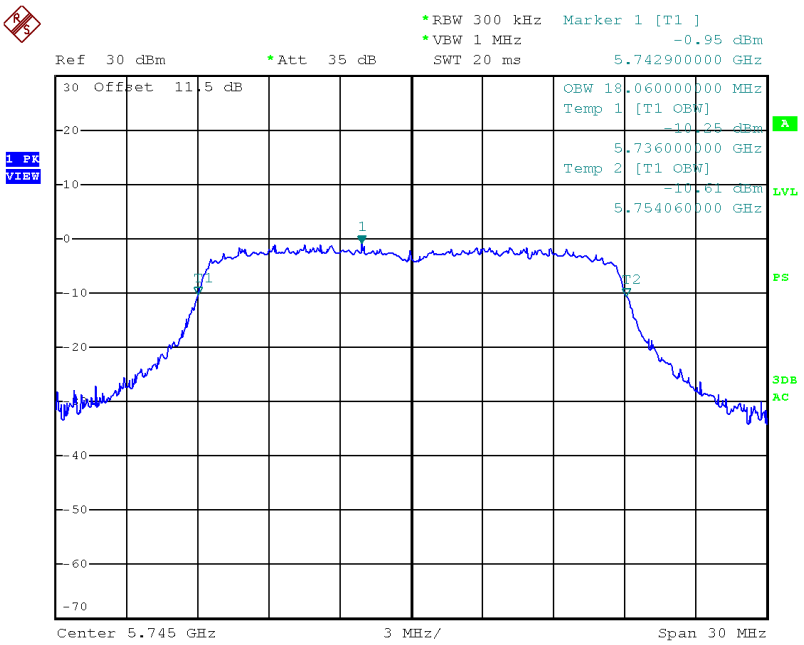


Date: 24.DEC.2014 12:35:00

Frequency L – 802.11n20

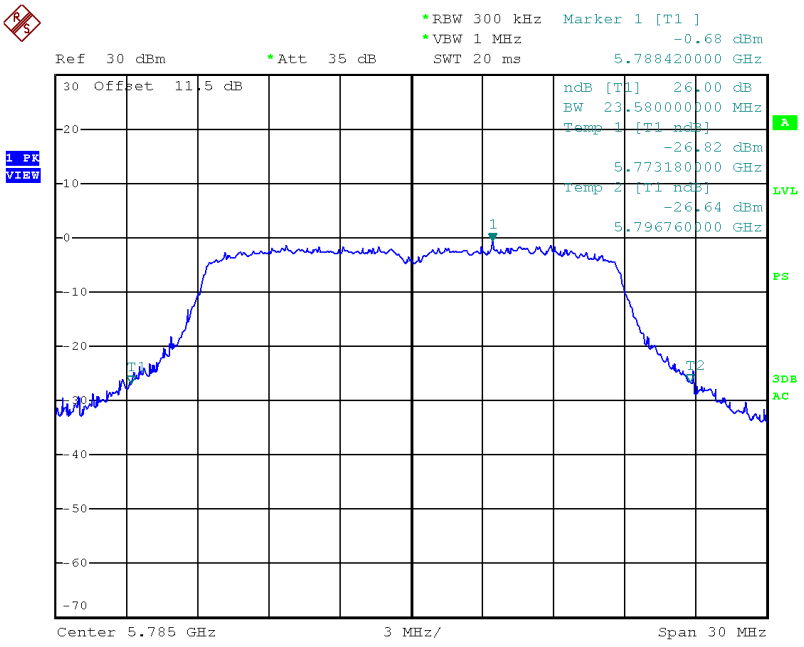


Date: 24.DEC.2014 13:16:04

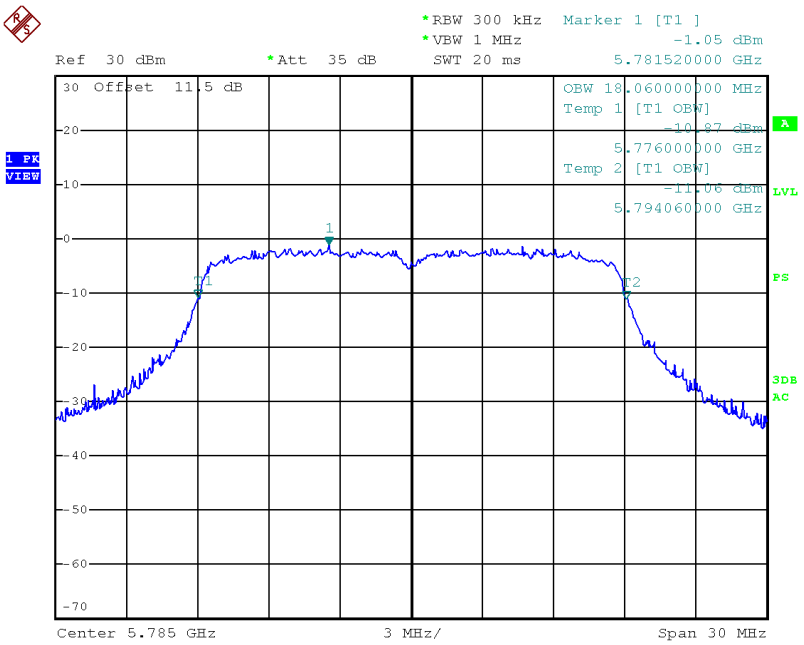


Date: 24.DEC.2014 13:15:39

Frequency M – 802.11n20

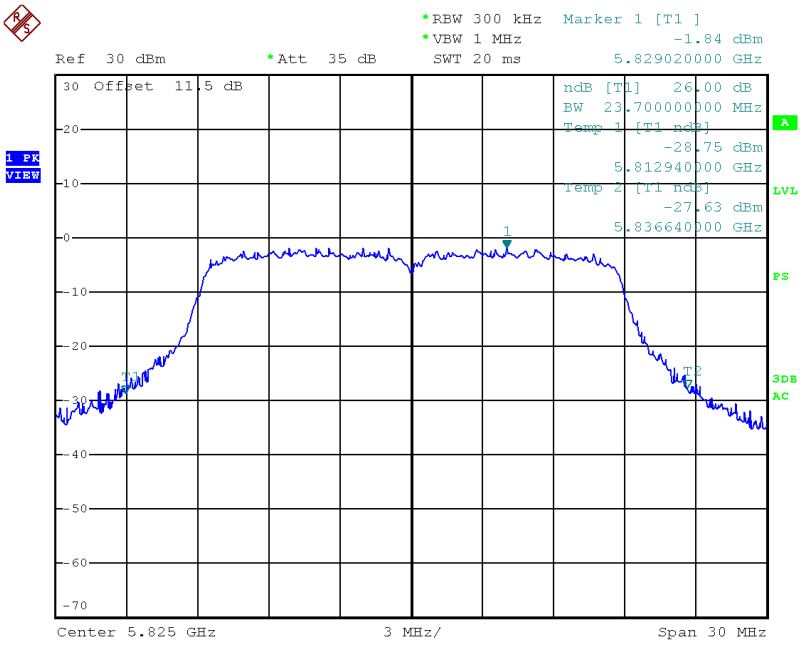


Date: 24.DEC.2014 13:16:42

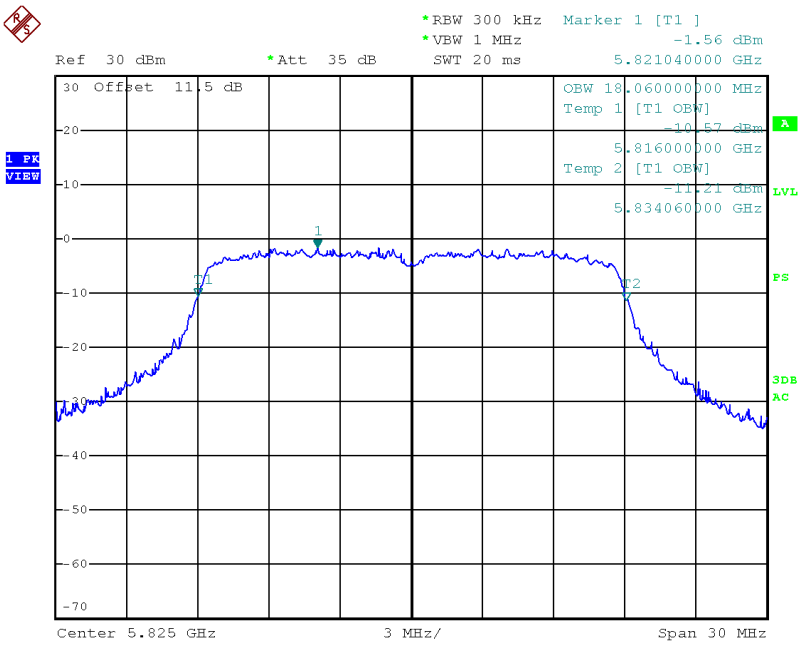


Date: 24.DEC.2014 13:17:04

Frequency H – 802.11n20

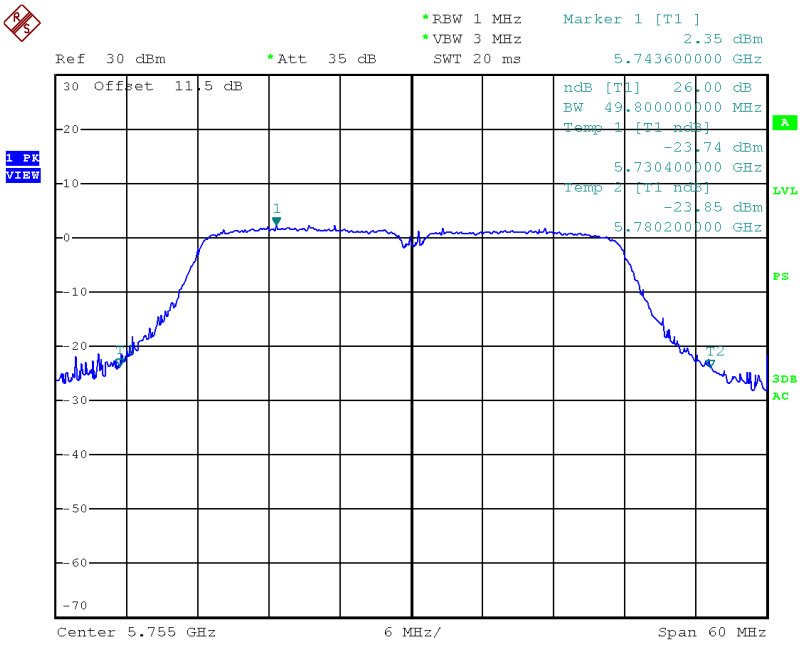


Date: 24.DEC.2014 13:17:59

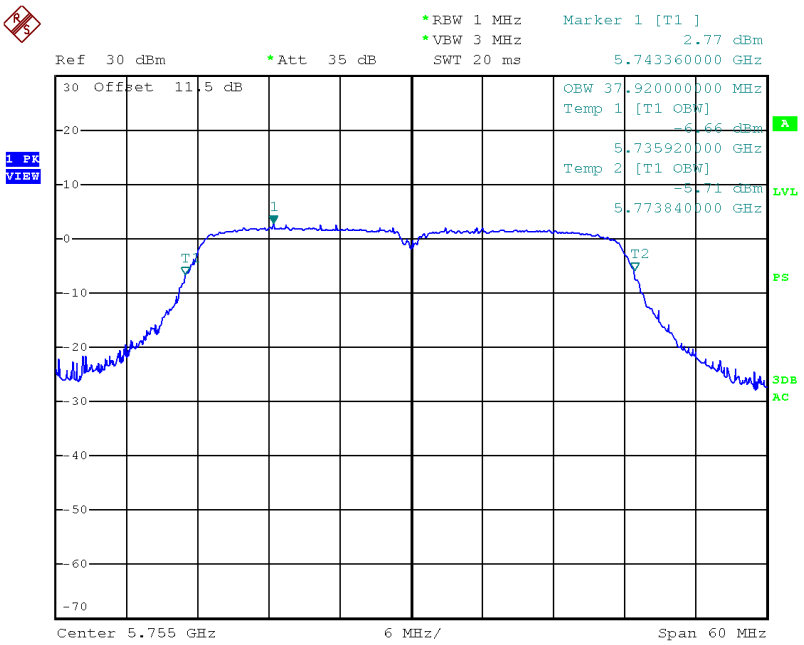


Date: 24.DEC.2014 13:17:37

Frequency L – 802.11n40

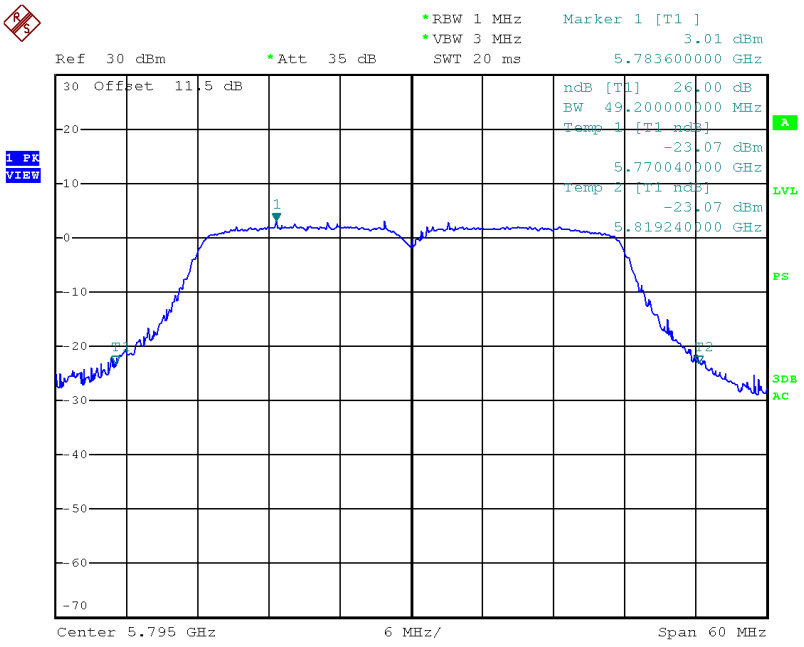


Date: 27.DEC.2014 14:59:15

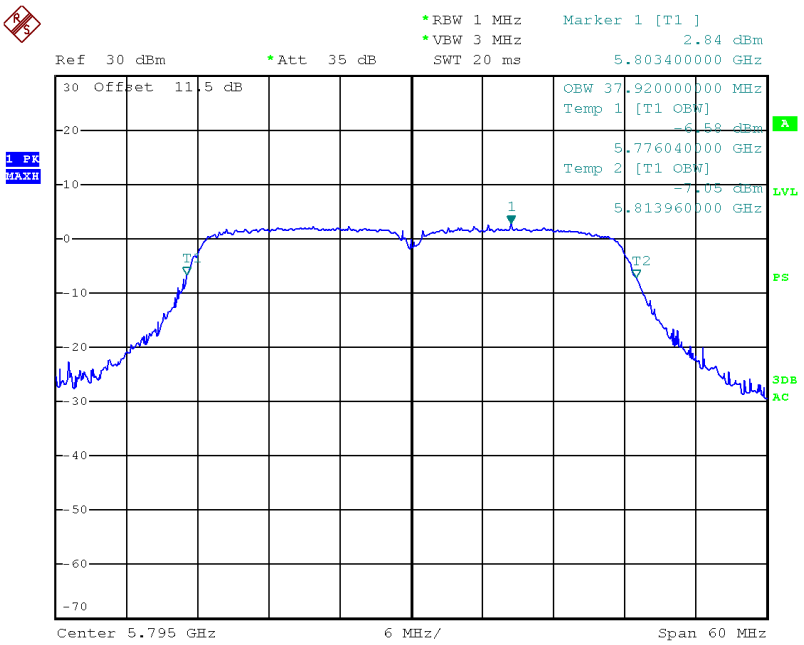


Date: 27.DEC.2014 14:58:37

Frequency H – 802.11n40



Date: 27.DEC.2014 14:59:52



Date: 27.DEC.2014 15:00:20