RADIO TEST REPORT

for

Dongguan Meiloon Acoustic Equipments Co., Ltd.

Music Console

Model Number: R610

Prepared for	:	Dongguan Meiloon Acoustic Equipments Co., Ltd.
Address	:	80, Yuanlin Road Fenghuanggang Ind, Estate, Tangxia Town, 523727 Dongguan City, Guangdong Province, PEOPLE'S REPUBLIC OF CHINA.
Prepared by	:	Keyway Testing Technology (Guangdong) Co., Ltd.
Address	:	21st Floor, Building 6, Dongyi Intelligent Equipment New Energy Vehicle Park, No.30 of Tangxia District, Dongshen Road, Tangxia Town, Dongguan City, Guangdong province, China.
		Tel: 86-769-87182258
		Fax: 86-769-87181058

Report No.	:	TR24050566-E-005
Date of Test	:	May 31 ~ Jul. 22, 2024
Date of Report	:	Jul. 23, 2024

Keyway Testing Technology (Guangdong) Co., Ltd.

Applicant: **Address:**	Dongguan Meiloon Acoustic Equipments Co., Ltd. 80, Yuanlin Road Fenghuanggang Ind, Estate, Tangxia Town, 523727 Dongguan City, Guangdong Province, PEOPLE'S REPUBLIC OF CHINA.		
Manufacturer: **Address:**	Ruark Audio Limited 59 Tailors Court,Temple Farm Industrial Estate, Southend on Sea, Essex, SS2 5TH, United Kingdom		
E.U.T:	Music Console		
Model Number:	R610		
Trade Name:	ruark audio	**Sample Number:**	240528005
Date of Receipt:	May. 31, 2024	**Date of Test:**	May 31 ~ Jul. 22, 2024
Test Specification:	ETSI EN 301 893 V2.1.1 (2017-05)		
Test Result:	The equipment under test was found to be compliance with the requirements of the standards applied.		

Issue Date: Jul. 23, 2024

Tested by:	Reviewed by:	Approved by:
Jacob Ouyang/ Engineer	Billy Zeng / Supervisor	Andy Gao / Manager

Other Aspects:

None.

Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested

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1. SUMMARY OF TEST RESULTS

1.1 Test procedures according to the technical standards:

The following essential requirements and test specifications refer to ETSI EN 301 893 V2.1.1 (2017-05)			
Clause	Test Item	Applicable	NOTE
4.2.1	Centre Frequencies	Compliance	
4.2.2	Nominal Channel Bandwidth and Occupied Channel Bandwidth	Compliance	
4.2.3	RF output power	Compliance	
4.2.3	Transmit Power Control (TPC)	Not Applicable	
4.2.3	Power Density	Compliance	
4.2.4.1	Transmitter unwanted emissions outside the 5 GHz RLAN bands	Compliance	
4.2.4.2	Transmitter unwanted emissions within the 5 GHz RLAN bands	Compliance	
4.2.5	Receiver spurious emissions	Compliance	
4.2.6	Dynamic Frequency Selection (DFS)	Not Applicable	
4.2.7	Adaptivity (Channel Access Mechanism)	Compliance	
4.2.8	Receiver Blocking	Compliance	
4.2.9	User Access Protocol	Compliance*	

Note: Compliance*: Please refer to the product information declared by the manufacturer.

1.2 Test Facility

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

●Certificated by CNAS China

Registration No.: CNAS L5783

Date of registration: August 8, 2012

●Certificated by VCCI

Registration No.: R-4045

Date of registration: September 10, 2013

1.3 Measurement Uncertainty

Measurement Uncertainty for a Level of Confidence of 95 %, U=2xUc(y)

RF frequency	1 x 10^{-7}
RF power, conducted	± 1.0 dB
Conducted emission of receivers	± 1 dB
Radiated emission of transmitter	± 6 dB
Radiated emission of receiver	± 6 dB
Temperature	±1 degree
Humidity	± 5 %

2. GENERAL INFORMATION

2.1 General Description Of EUT

Product Name:	Music Console
Test Model No.:	R610
Series Model:	N/A
Operation Frequency:	802.11n(20MHz): 5180~5700MHz 802.11n(40MHz):5190~5670MHz 802.11ac/ax(80MHz):5210~5610MHz
Modulation type:	802.11a(OFDM): BPSK,QPSK,16-QAM,64-QAM 802.11n(OFDM): BPSK,QPSK,16-QAM,64-QAM 802.11ac(OFDM): BPSK,QPSK,16-QAM,64-QAM,256-QAM
Antenna Type:	Internal Antenna
Antenna gain:	ANT 0:3.7dBi, ANT 1:3.7dBi
Power Input:	AC100V-240V 50/60Hz

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

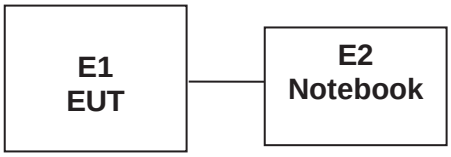
2.

802.11n(20MHz) Carrier Frequency Channel					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	40	5200	44	5220
48	5240	52	5220	56	5280
60	5300	64	5320	100	5500
116	5580	140	5700		
802.11n(40MHz) Carrier Frequency Channel					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230	54	5270
62	5310	102	5510	110	5550
134	5670				
802.11ac/ax(80MHz) Carrier Frequency Channel					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	58	5290	106	5530
122	5610				

2.2 Description Of Test Conditions

(1) EUT was tested in normal configuration (Please See following Block diagram)

1. Block diagram of EUT configuration



2.3 Test Conditions and Channel

	Normal Test Conditions	Extreme Test Conditions
Temperature	15°C - 35°C	0°C ~ 45°C Note: (1)
Relative Humidity	20% - 75%	N/A
Supply Voltage	AC 230V/50Hz	N/A

802.11n(20MHz)

EUT Channel	Test Frequency (MHz)
CH36	5180
CH40	5200
CH48	5240
CH52	5260
CH64	5320
CH100	5500
CH116	5580
CH140	5700

802.11n(40MHz)

EUT Channel	Test Frequency (MHz)
CH38	5190
CH46	5230
CH54	5270
CH62	5310
CH102	5510
CH110	5550
CH134	5670

802.11ac/ax(80MHz)

CH42	5210
CH58	5290
CH106	5530
CH122	5610

Note:
(1) The HT 45°C and LT 0°C was declared by manufacturer, The EUT couldn't be operate normally with higher or lower temperature.
(2) The measurements are performed at the highest, middle, lowest available channels.

2.4 Description Of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Music Console	ruark audio	R610	N/A	EUT
E-2	Notebook	Lenovo	300-15SK	GB14477457	AE

Item	Shielded Type	Ferrite Core	Length	Note

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in m in『Length』column.

2.5 Equipments List for All Test Items

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXG Signal Analyzer	Keysight	N9020A	MY56070279	Apr 13, 24	Apr 12, 25
RF SWITCH BOX	CSKJ	SMU-1003	SMU-1003	Apr 13, 24	Apr 12, 25
MXG Vector Signal Generator	Agilent	N5182A	MY50143410	Apr 12, 24	Apr 11, 25
MXG Analog Signal Generator	Agilent	N5181B	MY53050432	Apr 12, 24	Apr 11, 25
Comprehensive tester	R&S	CMW500	106288	Apr 12, 24	Apr 11, 25
EMI Test Receiver	Rohde&Schwarz	ESCI	101394	Apr 12, 24	Apr 11, 25
Horn Antenna	DAZE	ZN30701	11003	Apr 13, 24	Apr 12, 25
Spectrum Analyzer	Keysight	N9020A	MY56070279	Apr 12, 24	Apr 11, 25
3m anechoic Chamber	YIHENDIANZI	966	YH-KW-966-01	Jan 18, 24	Jan 17, 27
Signal Amplifier	ZHINAN	ZN3380C	11001	Apr 12, 24	Apr 11, 25
RF Cable	EMC Instruments	EMC105-SM-SM-1000	240301	Apr 13, 24	Apr 12, 25
RF Cable	EMC Instruments	EMC105-SM-SM-2000	240302	Apr 13, 24	Apr 12, 25
RF Cable	EMC Instruments	EMC105-SM-SM-9000	240303	Apr 13, 24	Apr 12, 25
MULTI-DEVICE Controller	TUOPU	TPMDC	Q-20240130-3	N/A	N/A
Antenna Holder	TUOPU	TPAM4	Q-20240130-3	N/A	N/A
EMI Test Receiver	Rohde&Schwarz	ESCI	101178	Apr 12, 24	Apr 11, 25
Horn Antenna	DAZE	ZN30701	11003	Apr 13, 24	Apr 12, 25
Spectrum Analyzer	Keysight	N9020A	MY56070279	Apr 12, 24	Apr 11, 25
3m anechoic Chamber	YIHENDIANZI	966	YH-KW-966-02	Jan 18, 24	Jan 17, 27
Signal Amplifier	ZHINAN	ZN3380C	11001	Apr 12, 24	Apr 11, 25
RF Cable	EMC Instruments	EMC105-SM-SM-1000	240301	Apr 13, 24	Apr 12, 25
RF Cable	EMC Instruments	EMC105-SM-SM-2000	240302	Apr 13, 24	Apr 12, 25
RF Cable	EMC Instruments	EMC105-SM-SM-9000	240303	Apr 13, 24	Apr 12, 25
MULTI-DEVICE Controller	TUOPU	TPMDC	Q-20240130-3	N/A	N/A
Antenna Holder	TUOPU	TPAM4	Q-20240130-3	N/A	N/A

3. CENTRE FREQUENCIES

3.1 APPLIED PROCEDURES / LIMIT

LIMIT

The actual centre frequency for any given channel declared by the manufacturer shall be maintained within the range fc ± 20 ppm

3.2 TEST PROCEDURES

Test conditions

These measurements shall be performed under both normal and extreme test conditions (see clause 5.1.3).

The channels on which the conformance requirements in clause 4.2.1 shall be verified are defined in clause 5.3.2.

The UUT shall be configured to operate at a normal RF Output Power level. In addition, the UUT shall be configured to operate on a single channel.

For a UUT with antenna connector(s) and using dedicated external antenna(s), or for a UUT with integral antenna(s) but with a temporary antenna connector(s) provided, conducted measurements shall be used.

In case of conducted measurements on smart antenna systems (devices with multiple transmit chains) the measurements shall be performed on only one of the active transmit chains.

For a UUT with integral antenna(s) and without a temporary antenna connector(s), radiated measurements shall be used

3.3 TEST METHOD

Conducted measurement:

1. Equipment operating without modulation

   This test method requires that the UUT can be operated in an unmodulated test mode.

   The UUT shall be connected to a suitable frequency measuring device (e.g. a frequency counter or a spectrum analyser) and operated in an unmodulated mode.

   The result shallbe recorded.

2. Equipment operating with modulation

   This method is an alternative to the above method in case the UUT cannot be operated in an un-modulated mode. The UUT shall be connected to spectrum analyser.

   Max Hold shall be selected and the centre frequency adjusted to that of the UUT.

   The peak value of the power envelope shall be measured and noted. The span shall be reduced and the marker moved in a positive frequency increment until the upper, (relative to the centre frequency), -10 dBc point is reached. This value shall be noted as f1.

   The marker shall then be moved in a negative frequency increment until the lower, (relative to the centre frequency), -10 dBc point is reached. This value shall be noted as f2.

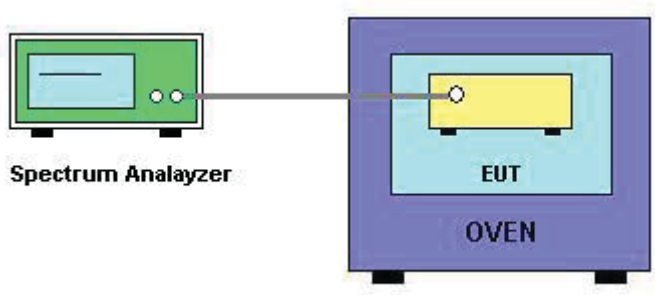
   The centre frequency is calculated as (f1 + f2) / 2.

Radiated measurement:

The test set up as described in annex B shall be used with a spectrum analyser attached to the test antenna.

The test procedure is as described under clause 5.4.2.2.1.

3.4 TEST SETUP LAYOUT

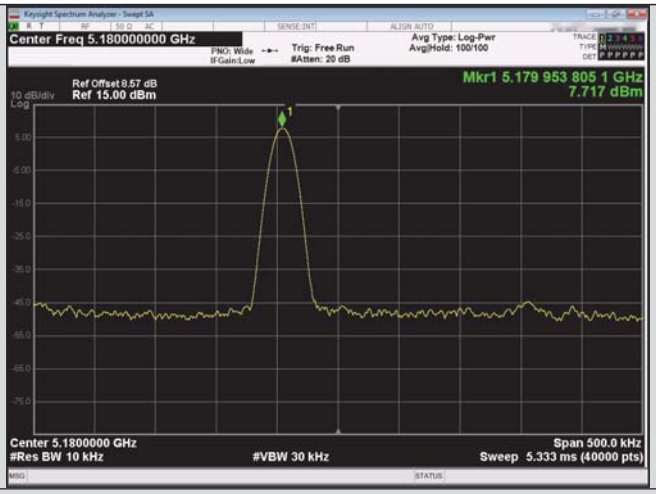


3.5 TEST RESULT

Temperature:	25°C	Relative Humidity:	60 %
Pressure:	1012 hPa	Test Voltage:	AC 230V/50Hz

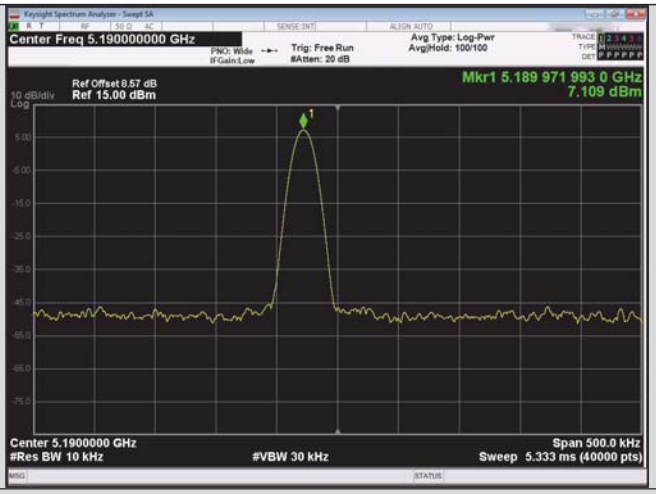
Channel	Freq. (MHz)	RU & Index	Freq. Deviation(ppm) NT / NV	Limit (ppm)	Result
IEEE 802.11n_20(CW Mode)					
36	5180	N/A	-8.92	±20	PASS
40	5200	N/A	-7.29	±20	PASS
48	5240	N/A	-6.79	±20	PASS
52	5260	N/A	-6.39	±20	PASS
56	5280	N/A	-6.07	±20	PASS
64	5320	N/A	-5.63	±20	PASS
100	5500	N/A	-5.28	±20	PASS
116	5580	N/A	-4.97	±20	PASS
140	5700	N/A	-4.44	±20	PASS
IEEE 802.11n_40(CW Mode)					
38	5190	N/A	-5.4	±20	PASS
46	5230	N/A	-5.8	±20	PASS
54	5270	N/A	-5.55	±20	PASS
62	5310	N/A	-5.2	±20	PASS
102	5510	N/A	-4.38	±20	PASS
110	5550	N/A	-9.45	±20	PASS
134	5670	N/A	-10.42	±20	PASS
IEEE 802.11ac_80(CW Mode)					
42	5210	N/A	-6.27	±20	PASS
58	5290	N/A	-7.5	±20	PASS
106	5530	N/A	0.99	±20	PASS
122	5610	N/A	-6.47	±20	PASS
IEEE 802.11ax_80(CW Mode)					
42	5210	SU	-6.96	±20	PASS
58	5290	SU	-6.71	±20	PASS
106	5530	SU	-6.42	±20	PASS
122	5610	SU	-4.45	±20	PASS

Test Graphs



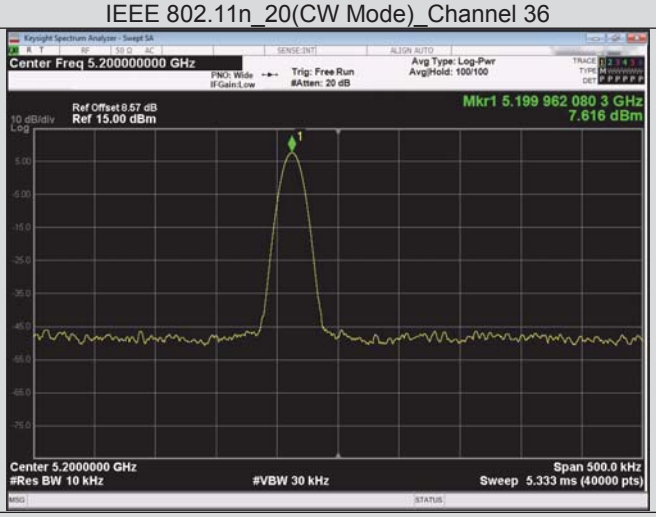
NT/NV

IEEE 802.11n_20(CW Mode)_Channel 36



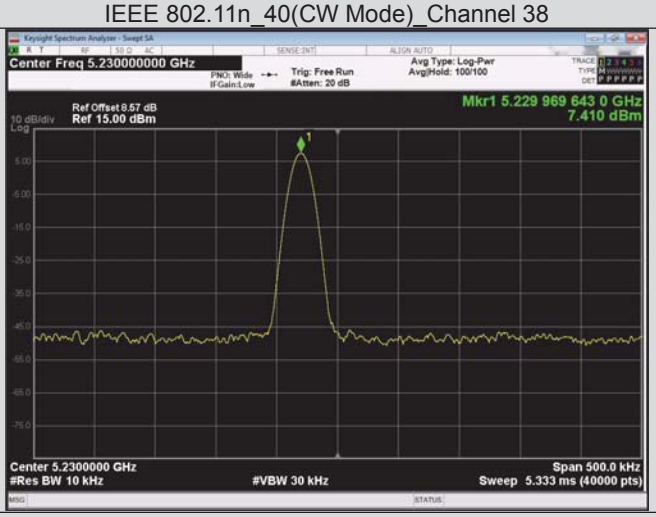
NT/NV

IEEE 802.11n_40(CW Mode)_Channel 38



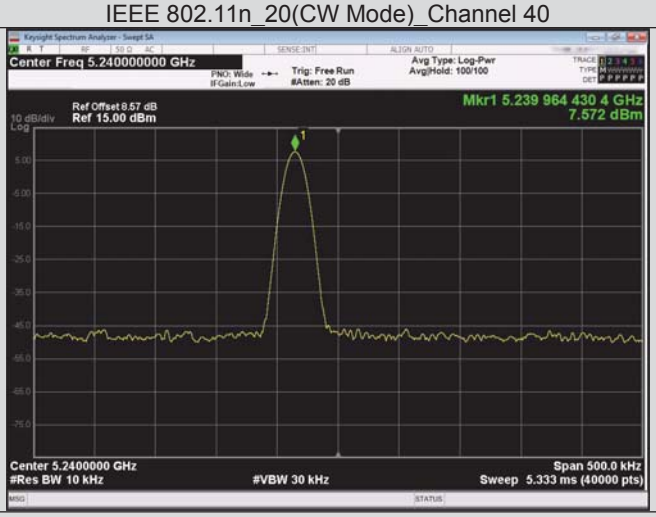
NT/NV

IEEE 802.11n_20(CW Mode)_Channel 40



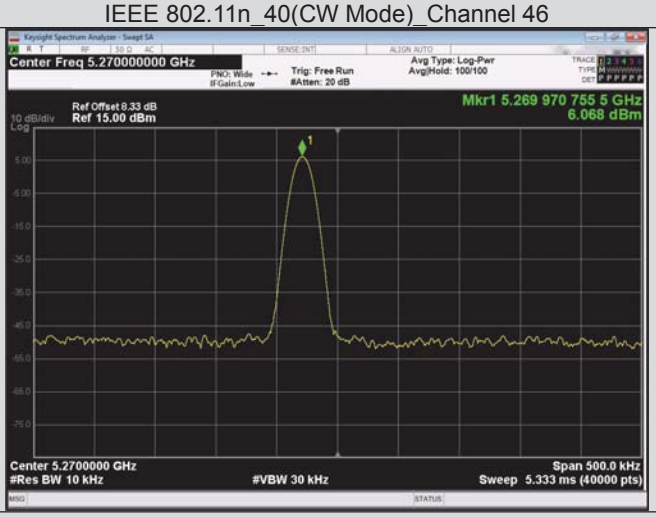
NT/NV

IEEE 802.11n_40(CW Mode)_Channel 46



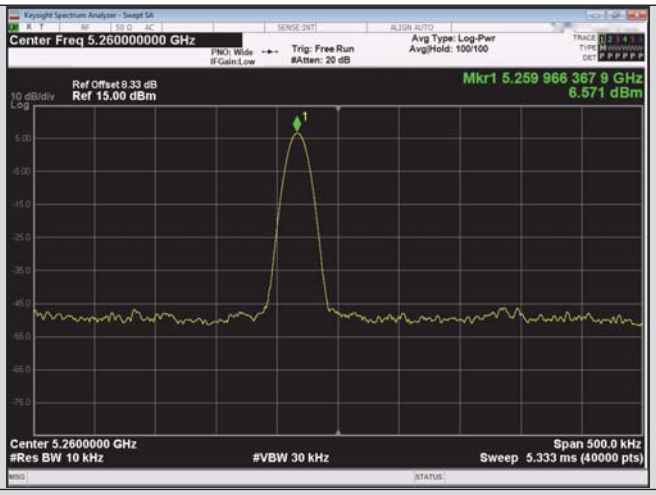
NT/NV

IEEE 802.11n_20(CW Mode)_Channel 48



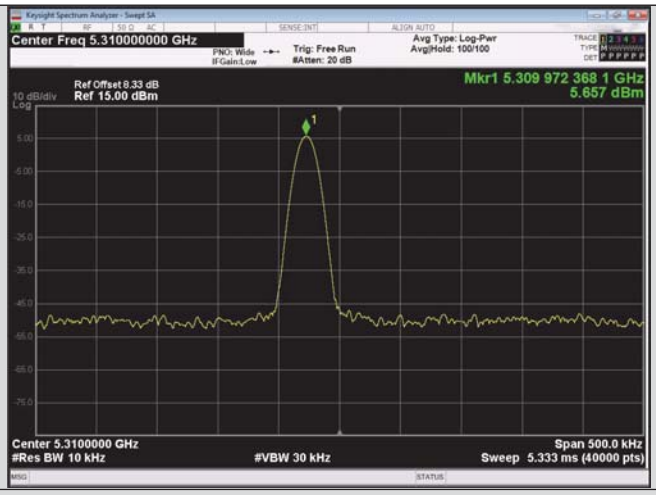
NT/NV

IEEE 802.11n_40(CW Mode)_Channel 54



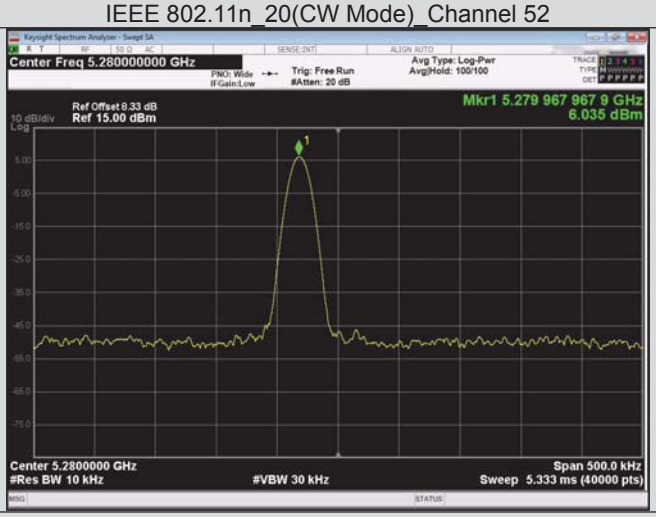
NT/NV

IEEE 802.11n_20(CW Mode)_Channel 52



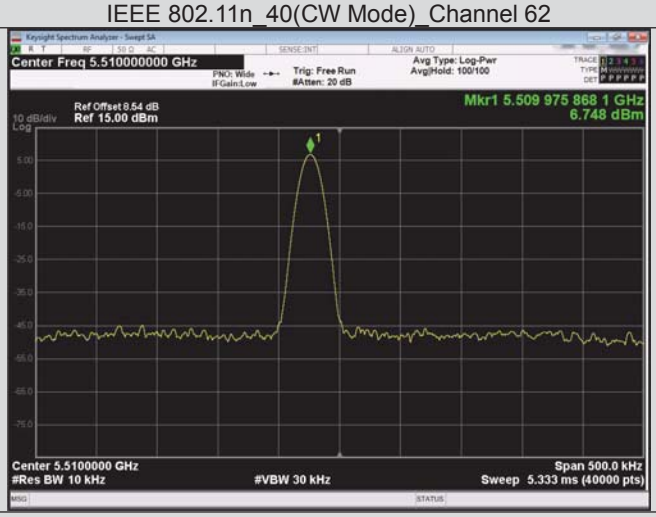
NT/NV

IEEE 802.11n_40(CW Mode)_Channel 62



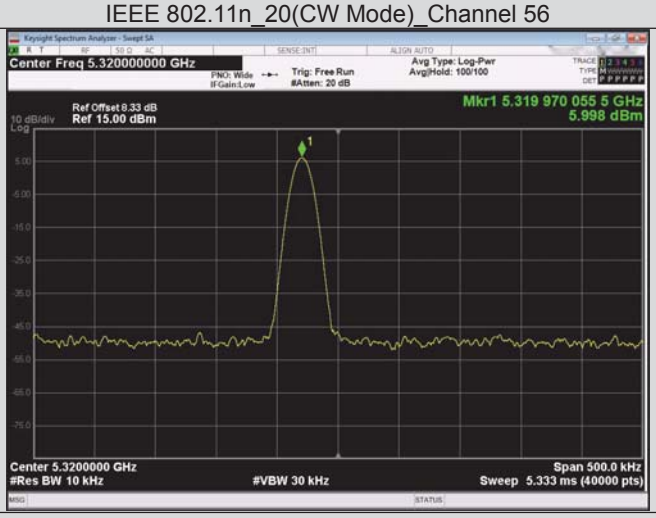
NT/NV

IEEE 802.11n_20(CW Mode)_Channel 56



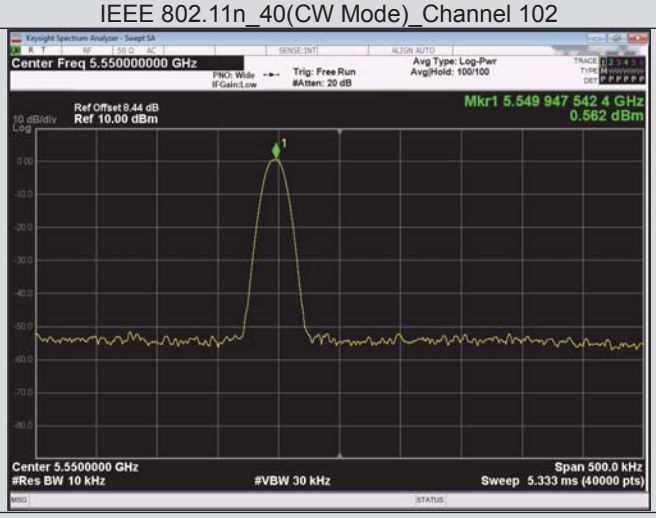
NT/NV

IEEE 802.11n_40(CW Mode)_Channel 102



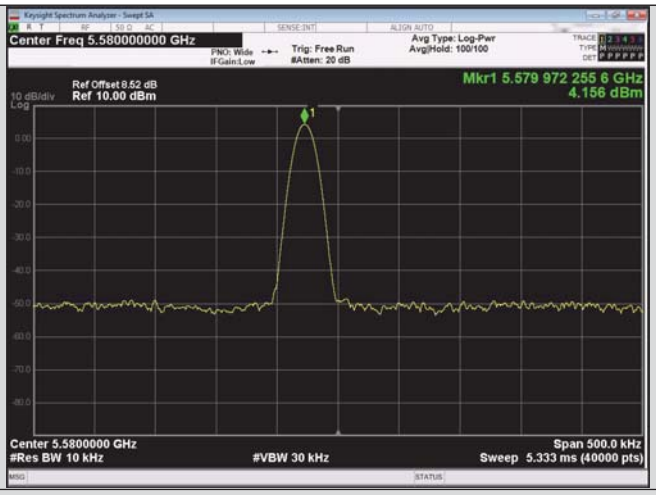
NT/NV

IEEE 802.11n_20(CW Mode)_Channel 64



NT/NV

IEEE 802.11n_40(CW Mode)_Channel 110

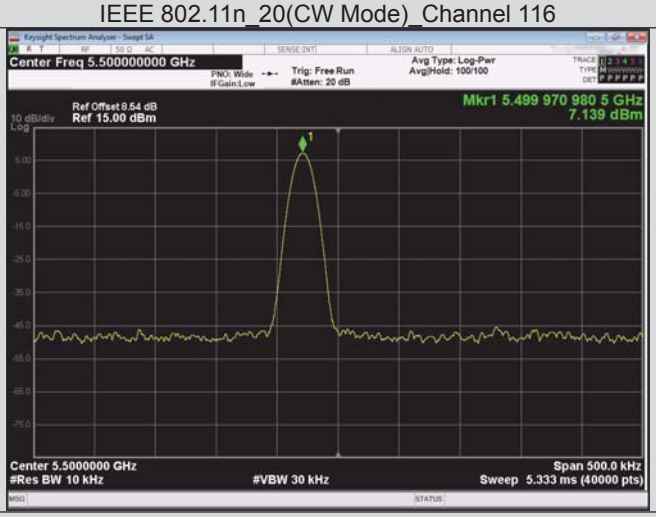


NT/NV

IEEE 802.11n_20(CW Mode)_Channel 116

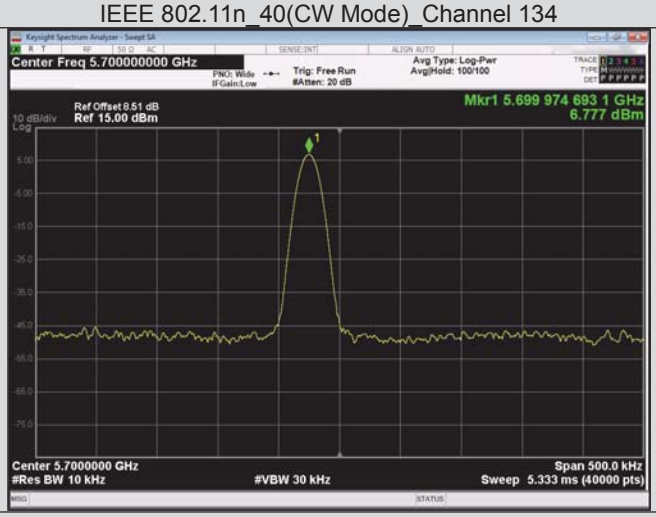
NT/NV

IEEE 802.11n_40(CW Mode)_Channel 134



NT/NV

IEEE 802.11n_20(CW Mode)_Channel 100



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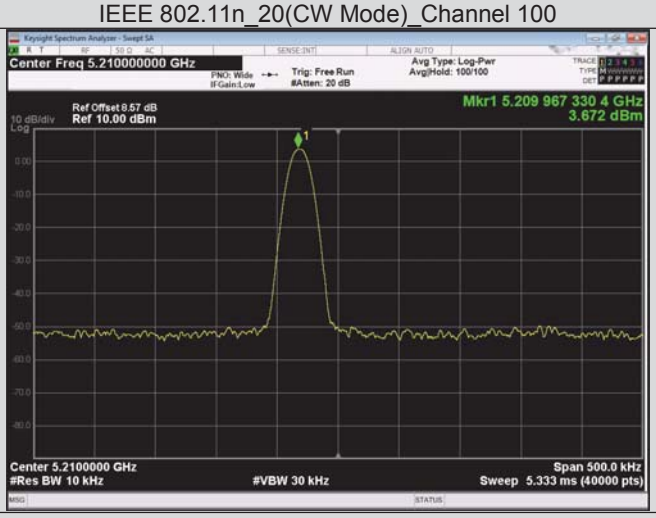
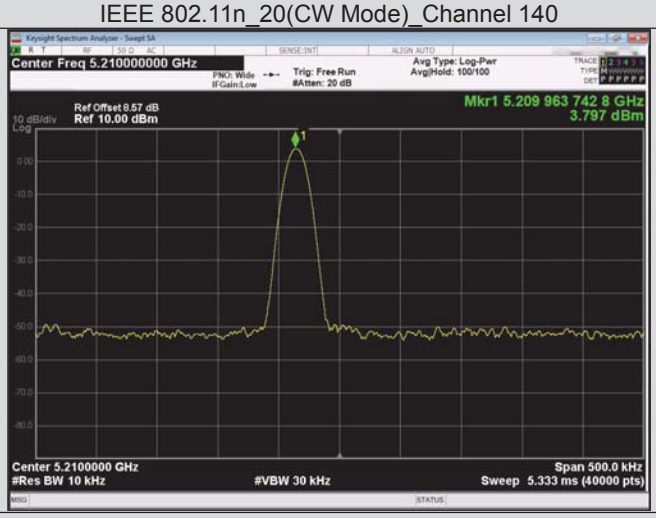
IEEE 802.11n_20(CW Mode)_Channel 140



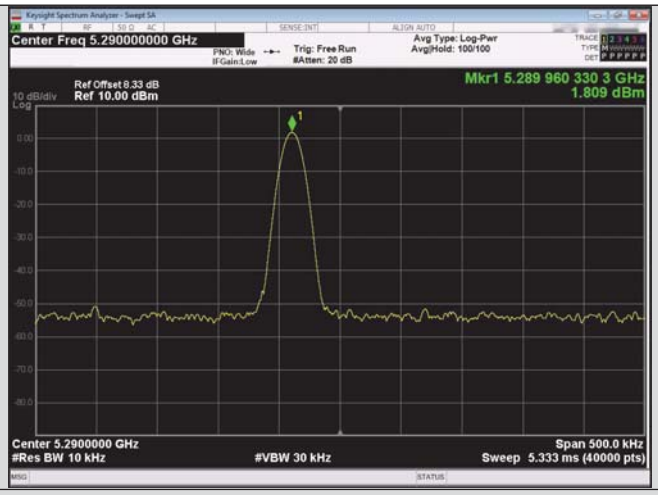
NT/NV

IEEE 802.11ac_80(CW Mode)_Channel 42



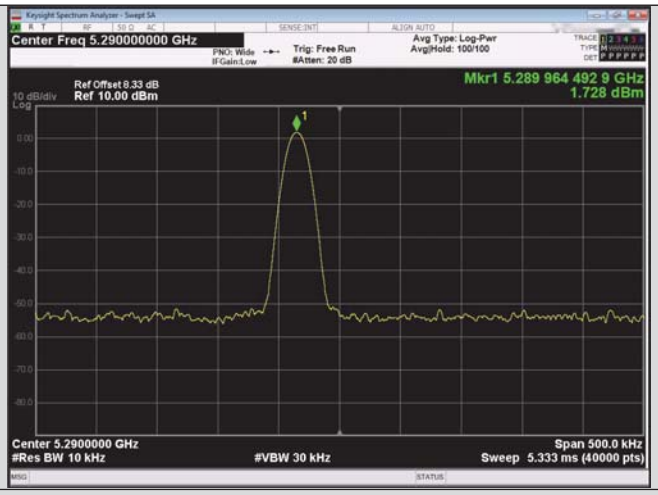
NT/NV

IEEE 802.11ax_80(CW Mode)_Channel 42_SU



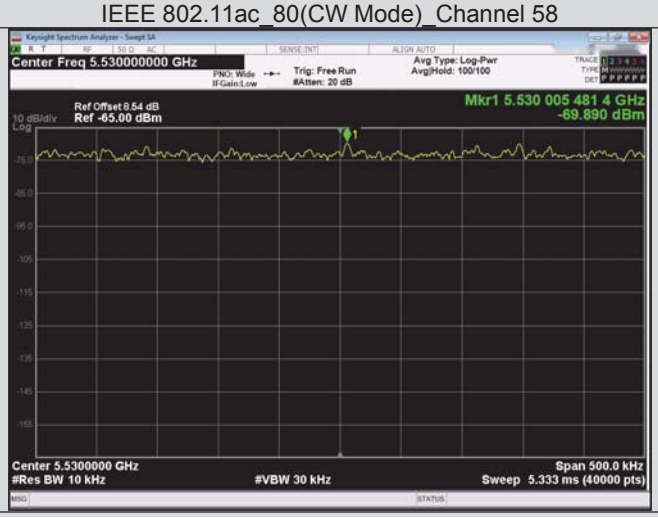
NT/NV

IEEE 802.11ac_80(CW Mode)_Channel 58



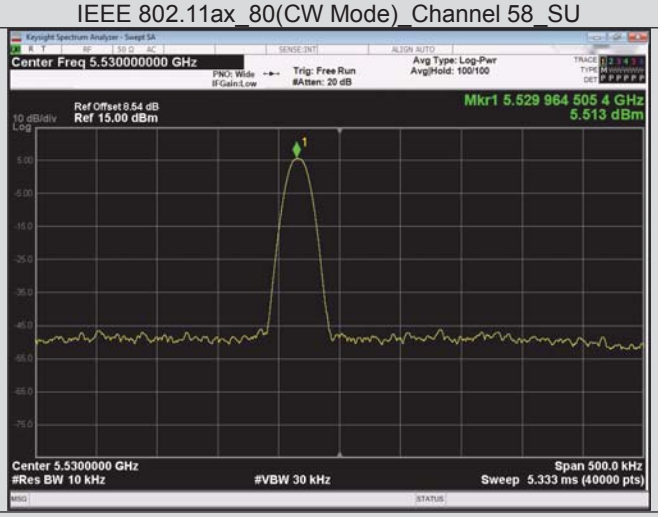
NT/NV

IEEE 802.11ax_80(CW Mode)_Channel 58_SU



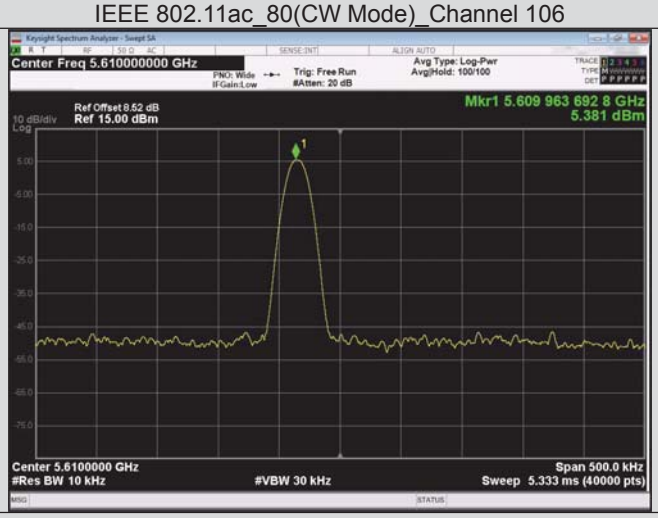
NT/NV

IEEE 802.11ac_80(CW Mode)_Channel 106



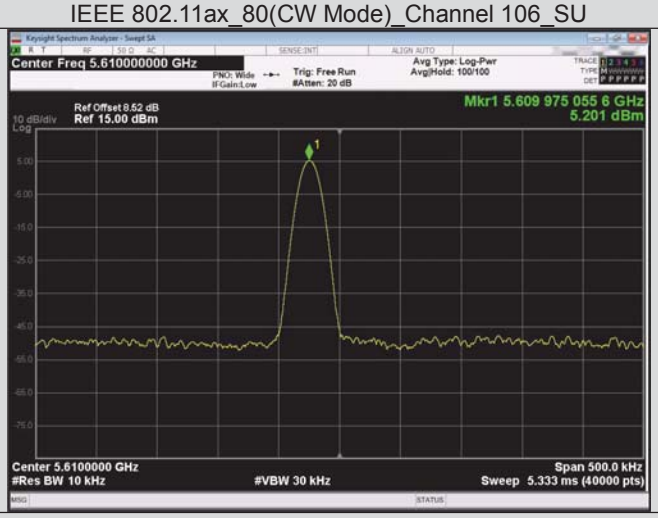
NT/NV

IEEE 802.11ax_80(CW Mode)_Channel 106_SU



NT/NV

IEEE 802.11ac_80(CW Mode)_Channel 122



NT/NV

IEEE 802.11ax_80(CW Mode)_Channel 122_SU

4. NOMINAL CHANNEL BANDWIDTH AND OCCUPIED CHANNEL BANDWIDTH

4.1 APPLIED PROCEDURES / LIMIT

LIMIT

The Nominal Channel Bandwidth shall be at least 5 MHz at all times.
The Occupied Channel Bandwidth shall be between 80 % and 100 % of the declared Nominal Channel Bandwidth. In case of smart antenna systems (devices with multiple transmit chains) each of the transmit chains shall meet this requirement.

NOTE: During an established communication, a device is allowed to operate temporarily in a mode where its Occupied Channel Bandwidth may be reduced to as low as 40 % of its Nominal Channel Bandwidth with a minimum of 4 MHz.

4.2 TEST PROCEDURES

Test conditions

The conformance requirements shall be verified only under normal operating conditions, and on those channels and channel bandwidths defined in clause 5.1.3(ETSI EN 301 893 V2.1.1).
The measurements shall be performed using normal operation of the equipment with the test signal applied.
The UUT shall be configured to operate at a typical RF power output level.
When equipment has simultaneous transmissions in adjacent channels, these transmissions may be considered as one signal with an actual Nominal Channel Bandwidth of 'n' times the individual Nominal Channel Bandwidth where 'n' is the number of adjacent channels. When equipment has simultaneous transmissions in non-adjacent channels, each power envelope shall be considered separately.
For a UUT with antenna connector(s) and using dedicated external antenna(s), or for a UUT with integral antenna(s) but with a temporary antenna connector(s) provided, conducted measurements shall be used.
In case of conducted measurements on smart antenna systems (devices with multiple transmit chains)measurements need only to be performed on one of the active transmit chains (antenna outputs).
For a UUT with integral antenna(s) and without a temporary antenna connector(s), radiated measurements shall be used.

4.3 TEST METHOD

Conducted measurement

The measurement procedure shall be as follows:

Step 1:

Connect the UUT to the spectrum analyser and use the following settings:

- Centre Frequency: The centre frequency of the channel under test
- Resolution BW: 100 kHz
- Video BW: 300 kHz
- Frequency Span: 2 x Nominal Bandwidth (e.g. 40 MHz for a 20 MHz channel)
- Detector Mode: Peak
- Trace Mode: Max Hold

Step 2:

Wait for the trace to stabilize.

Step 3:

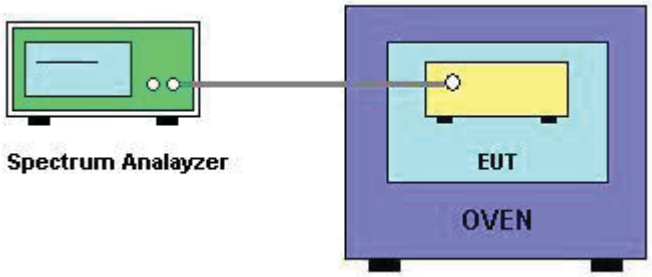
Make sure that the power envelope is sufficiently above the noise floor of the analyser to avoid the noise signals left and right from the power envelope being taken into account by this measurement.

Use the 99 % bandwidth function of the spectrum analyser to measure the Occupied Channel Bandwidth of the UUT. This value shall be recorded.

Radiated measurement

The test set up as described in annex B and the applicable measurement procedures described in annex C shall be used. The test procedure is as described under clause 5.4.3.2.1

4.4 TEST SETUP LAYOUT

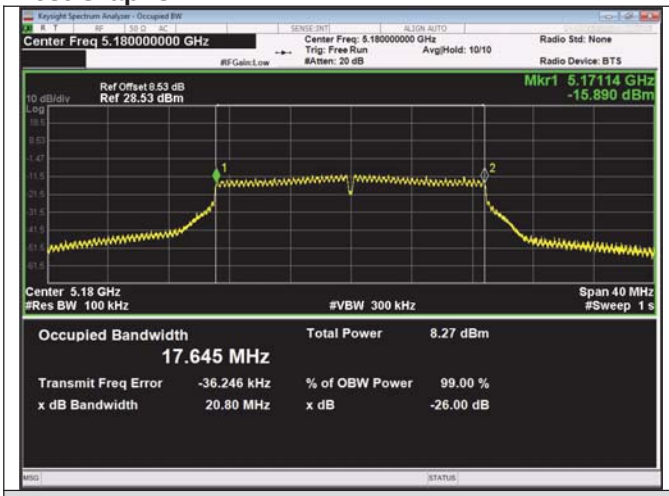


4.5 TEST RESULTS

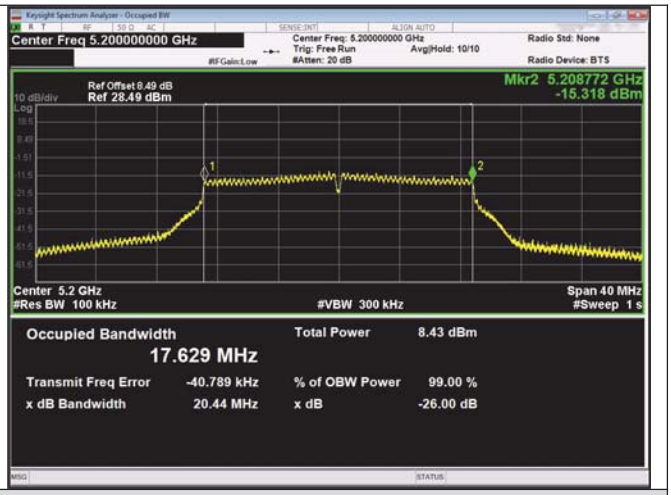
Mode	Ch.	RU & Index	Ant.	Frequency (MHz)	OBW (MHz)	Lower Edge (MHz)	Upper Edge (MHz)	Limit OBW (MHz)	Result
IEEE 802.11n_20	36	N/A	0	5180	17.645	5171.14	5188.784	16-20	PASS
	40			5200	17.629	5191.144	5208.772		PASS
	48			5240	17.635	5231.136	5248.772		PASS
	52			5260	17.630	5251.144	5268.772		PASS
	56			5280	17.631	5271.144	5288.772		PASS
	64			5320	17.633	5311.132	5328.764		PASS
	100			5500	17.640	5491.124	5508.76		PASS
	116			5580	17.631	5571.14	5588.768		PASS
	140			5700	17.632	5691.136	5708.764		PASS
IEEE 802.11n_20	36		1	5180	17.637	5171.152	5188.788		PASS
	40			5200	17.628	5191.152	5208.78		PASS
	48			5240	17.632	5231.14	5248.772		PASS
	52			5260	17.639	5251.136	5268.772		PASS
	56			5280	17.628	5271.148	5288.772		PASS
	64			5320	17.630	5311.116	5328.744		PASS
	100			5500	17.636	5491.148	5508.78		PASS
	116			5580	17.639	5571.136	5588.776		PASS
	140			5700	17.622	5691.112	5708.732		PASS
IEEE 802.11n_40	38		0	5190	36.240	5171.848	5208.088	32-40	PASS
			1		36.232	5171.864			PASS
	46		0	5230	36.233	5211.848	5248.072		PASS
			1		36.248	5211.84	5248.088		PASS
	54		0	5270	36.237	5251.848	5288.08		PASS
			1		36.248	5251.84	5288.088		PASS
	62		0	5310	36.237	5291.824	5328.064		PASS
			1		36.201	5291.808	5328.008		PASS
	102		0	5510	36.254	5491.816	5528.064		PASS
			1		36.236	5491.848	5528.088		PASS
	110		0	5550	36.255	5531.832	5568.088		PASS
			1		36.252	5531.824	5568.072		PASS
	134		0	5670	36.257	5651.84	5688.088		PASS
			1		36.285	5651.792	5688.072		PASS
IEEE 802.11ac_80	42		0	5210	75.689	5172.176	5247.856	64-80	PASS
			1		75.636	5172.224			PASS
	58		0	5290	75.694	5252.144	5327.824		PASS

			1		75.528	5252.096	5327.616		PASS
	106		0	5530	75.743	5492.096	5567.84		PASS
			1		75.614	5492.176	5567.792		PASS
	122		0	5610	75.745	5572.144	5647.888		PASS
			1		75.629	5572.224	5647.84		PASS
IEEE 802.11ax_80	42	SU	0	5210	76.999	5171.472	5248.464		PASS
			1		76.997	5171.552	5248.528		PASS
	58		0	5290	77.177	5251.328	5328.496		PASS
			1		76.794	5251.44	5328.24		PASS
	106		0	5530	76.953	5491.28	5568.224		PASS
			1		76.911	5491.568	5568.464		PASS
	122		0	5610	76.898	5571.6	5648.496		PASS
			1		76.887	5571.584	5648.464		PASS

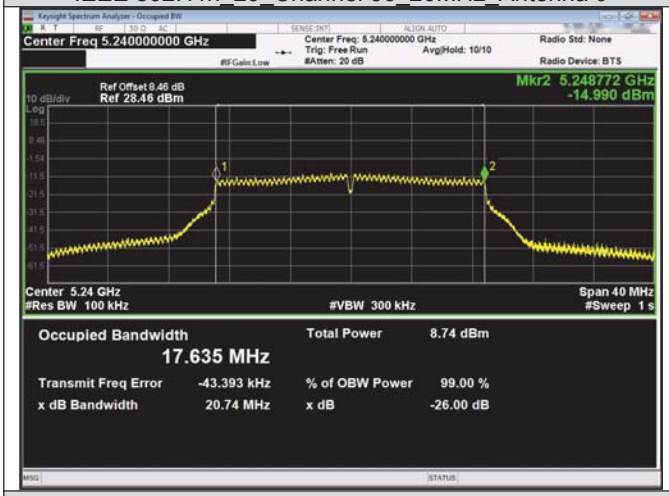
Test Graphs



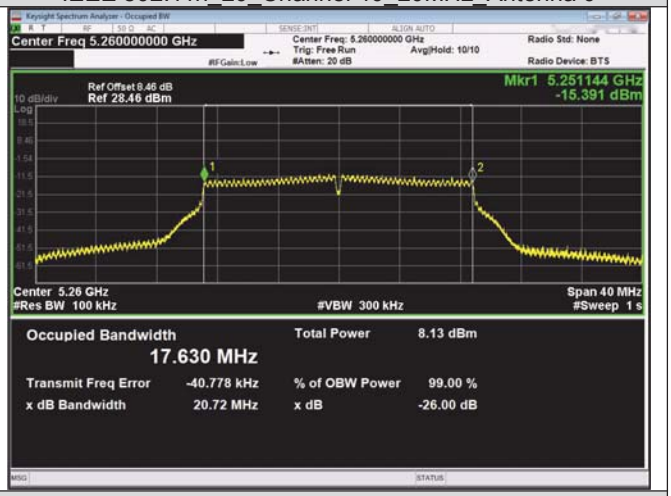
IEEE 802.11n_20_Channel 36_20MHz_Antenna 0



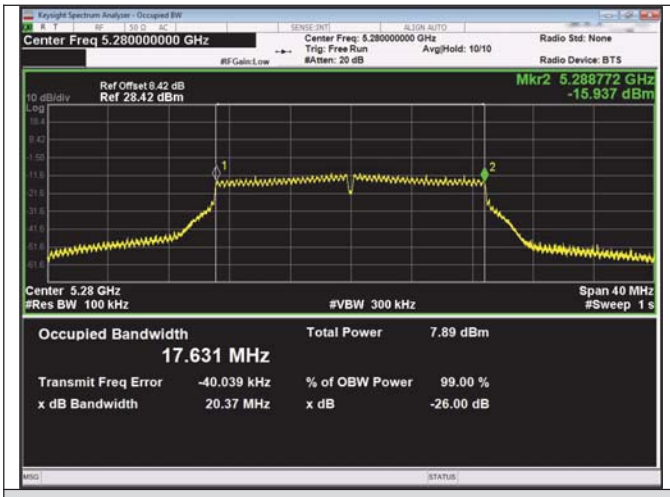
IEEE 802.11n_20_Channel 40_20MHz_Antenna 0



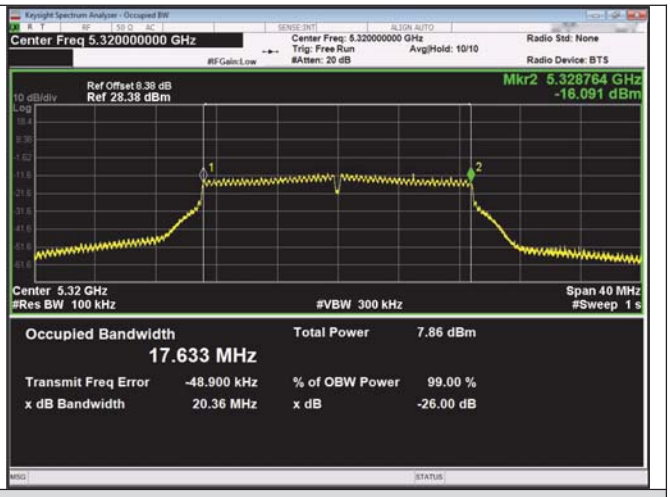
IEEE 802.11n_20_Channel 48_20MHz_Antenna 0



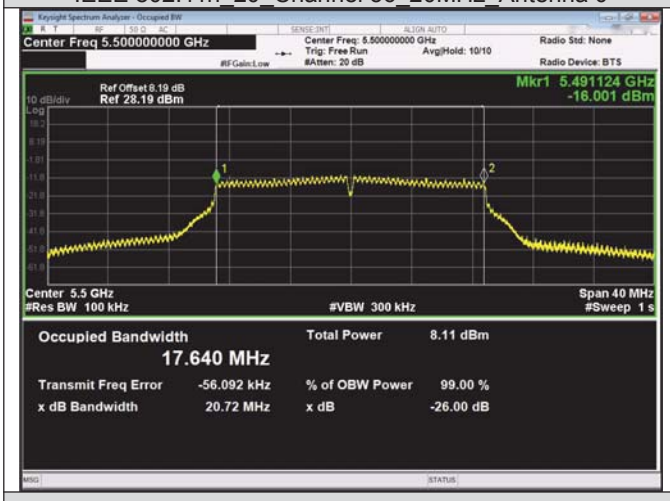
IEEE 802.11n_20_Channel 52_20MHz_Antenna 0



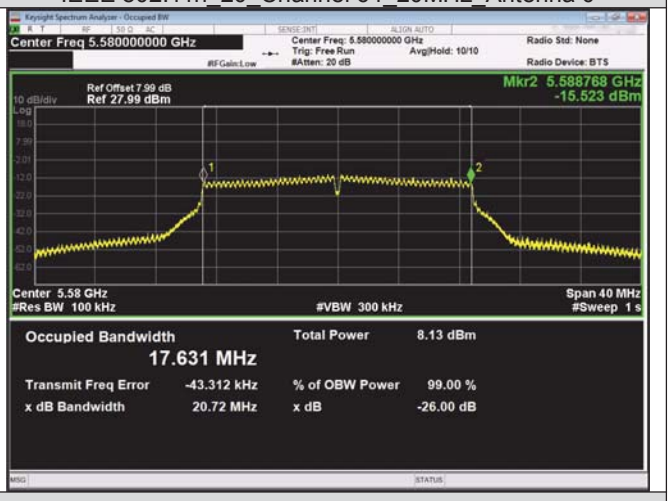
IEEE 802.11n_20_Channel 56_20MHz_Antenna 0



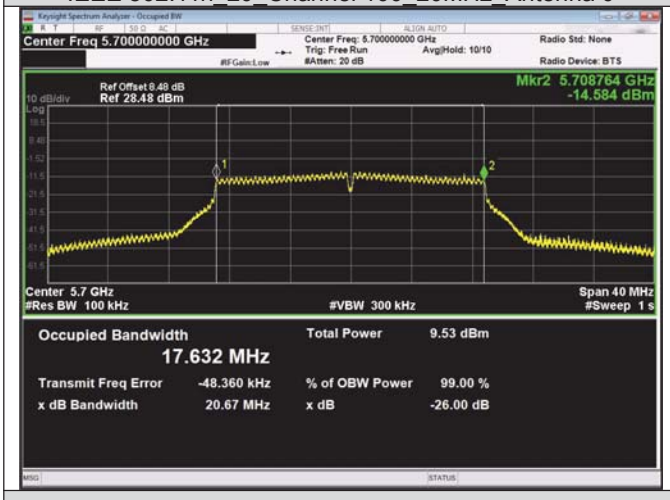
IEEE 802.11n_20_Channel 64_20MHz_Antenna 0



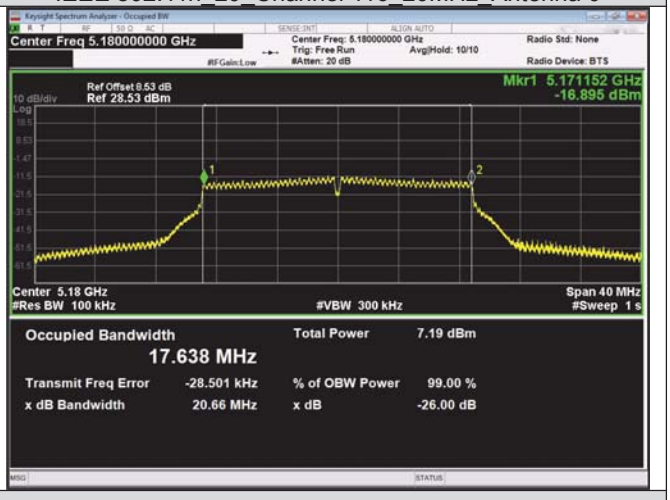
IEEE 802.11n_20_Channel 100_20MHz_Antenna 0



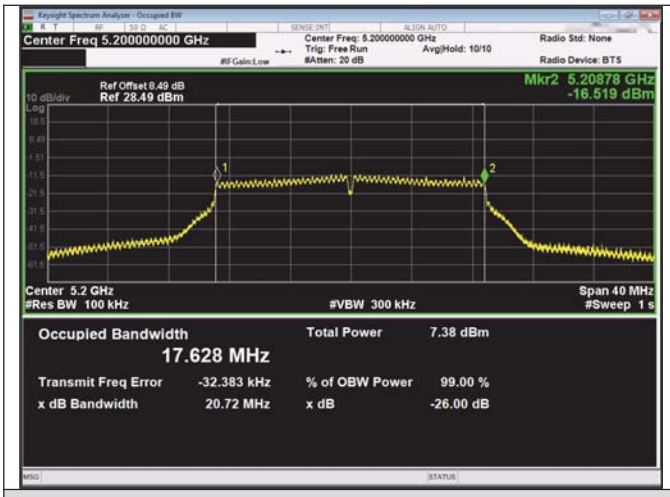
IEEE 802.11n_20_Channel 116_20MHz_Antenna 0



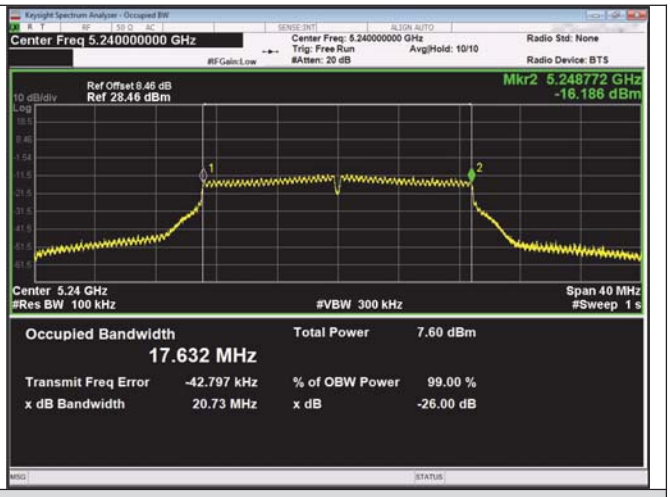
IEEE 802.11n_20_Channel 140_20MHz_Antenna 0



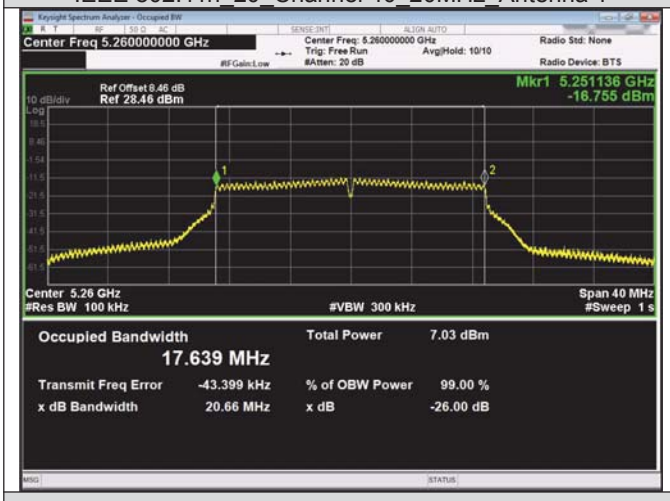
IEEE 802.11n_20_Channel 36_20MHz_Antenna 1



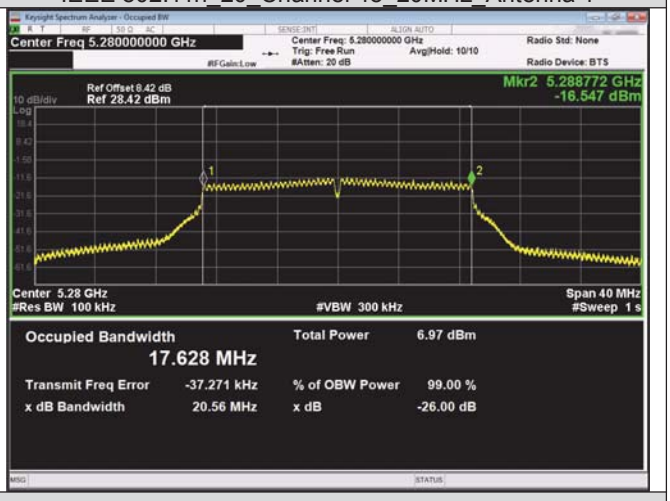
IEEE 802.11n_20_Channel 40_20MHz_Antenna 1



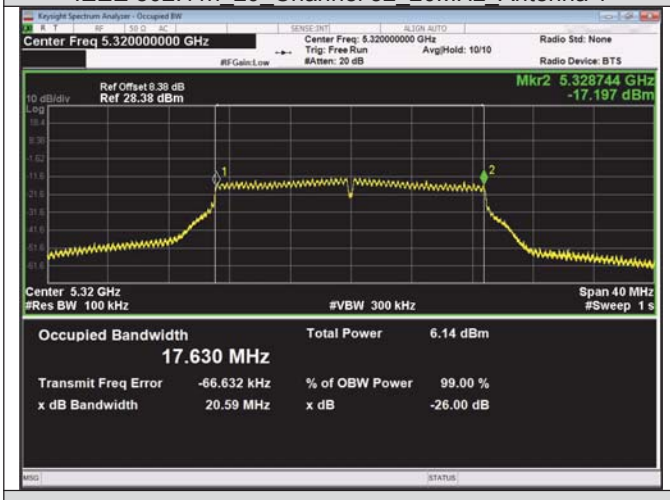
IEEE 802.11n_20_Channel 48_20MHz_Antenna 1



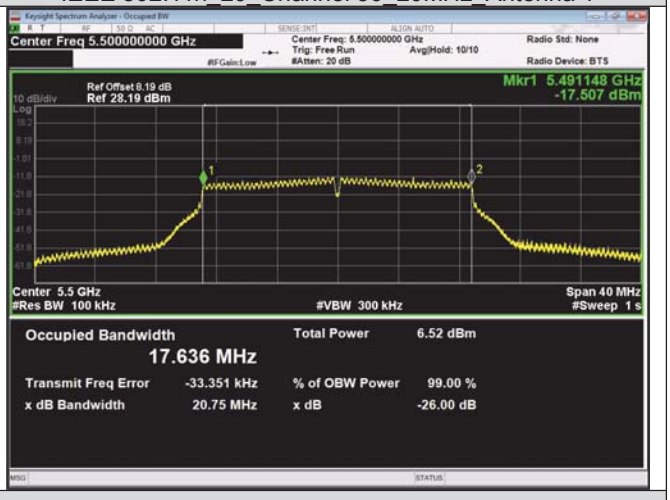
IEEE 802.11n_20_Channel 52_20MHz_Antenna 1



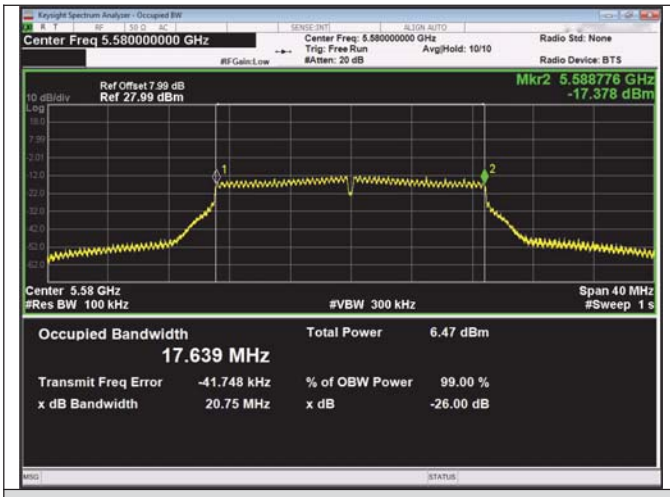
IEEE 802.11n_20_Channel 56_20MHz_Antenna 1



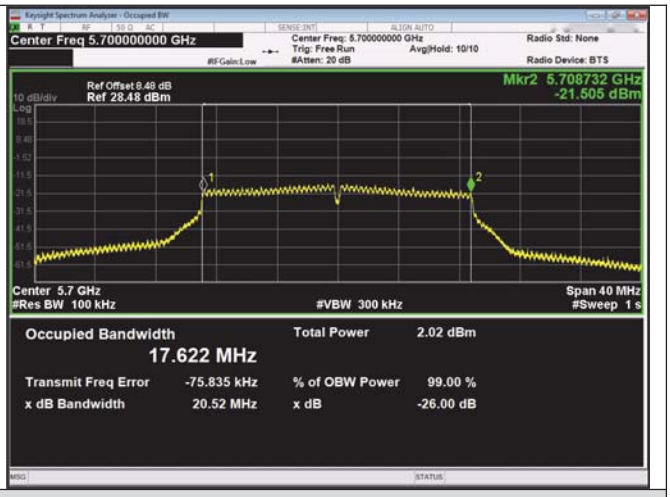
IEEE 802.11n_20_Channel 64_20MHz_Antenna 1



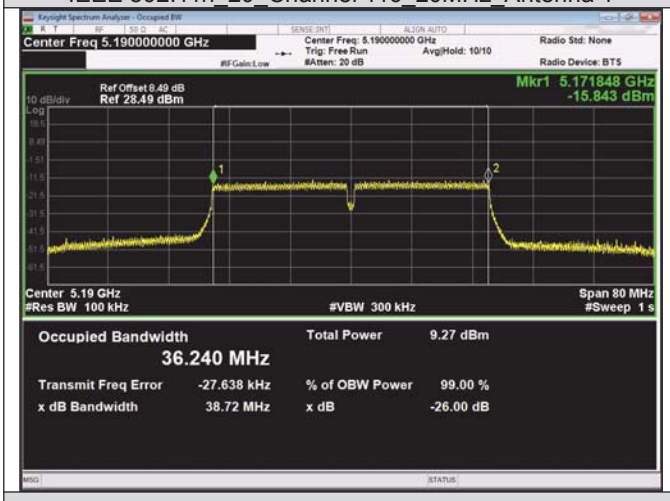
IEEE 802.11n_20_Channel 100_20MHz_Antenna 1



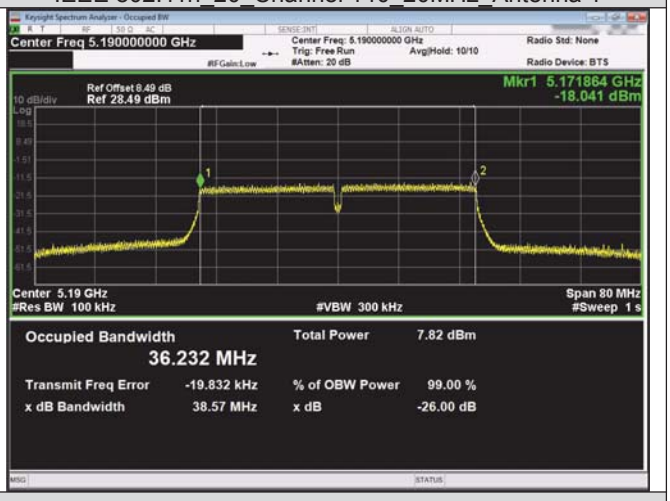
IEEE 802.11n_20_Channel 116_20MHz_Antenna 1



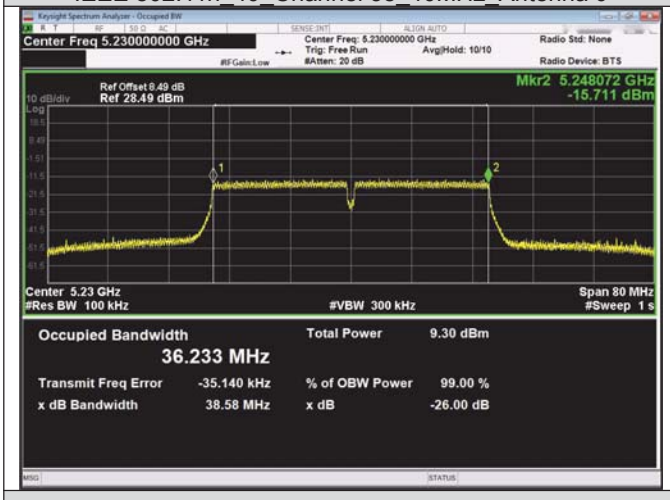
IEEE 802.11n_20_Channel 140_20MHz_Antenna 1



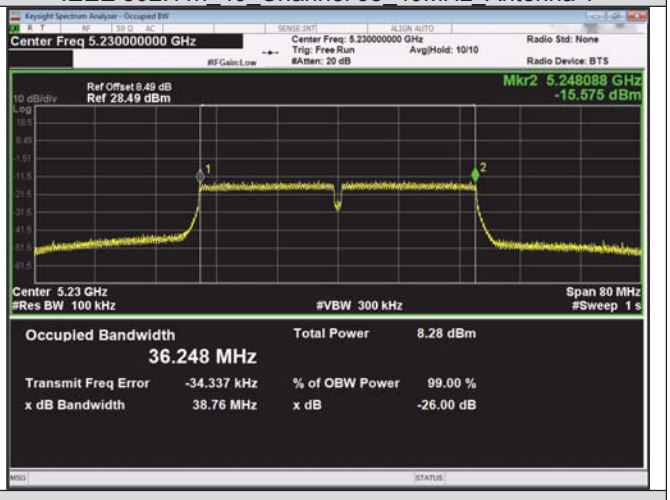
IEEE 802.11n_40_Channel 38_40MHz_Antenna 0



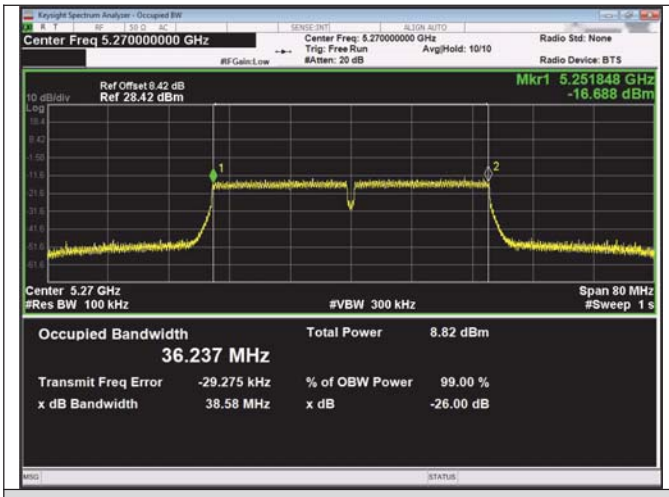
IEEE 802.11n_40_Channel 38_40MHz_Antenna 1



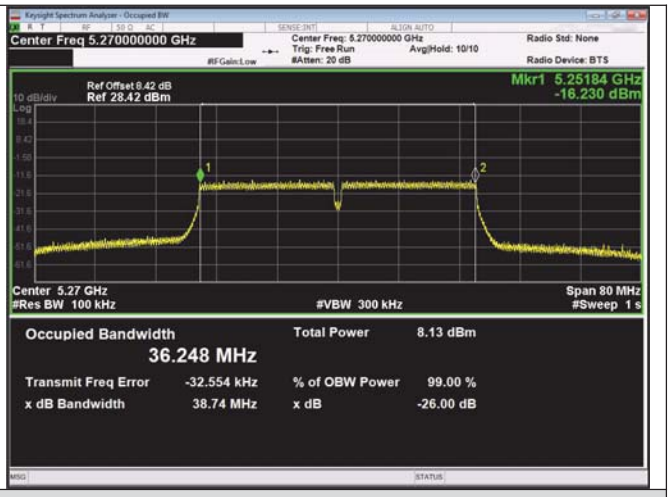
IEEE 802.11n_40_Channel 46_40MHz_Antenna 0



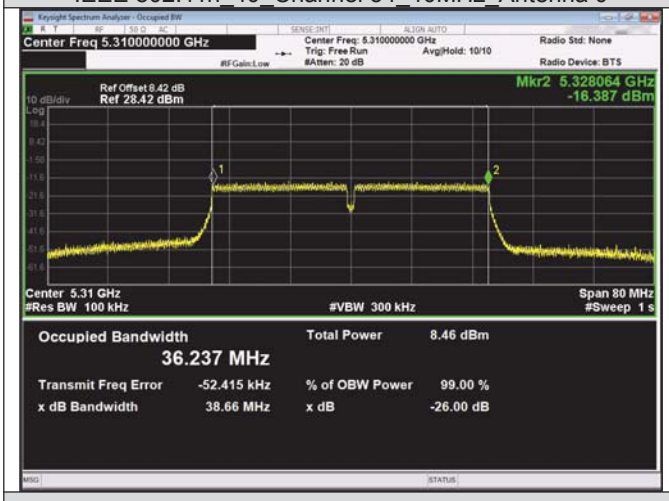
IEEE 802.11n_40_Channel 46_40MHz_Antenna 1



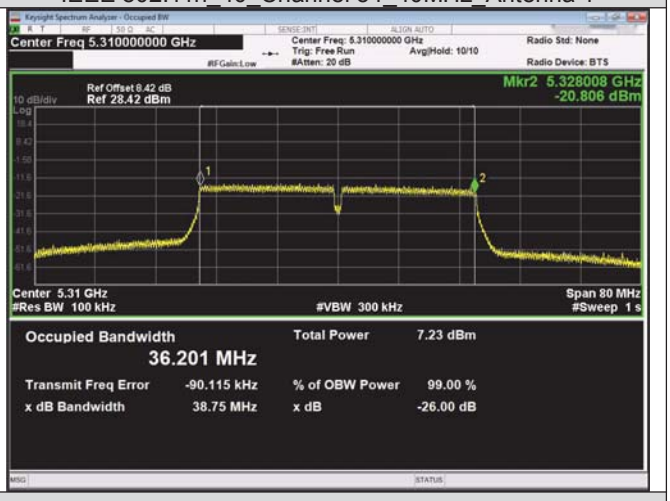
IEEE 802.11n_40_Channel 54_40MHz_Antenna 0



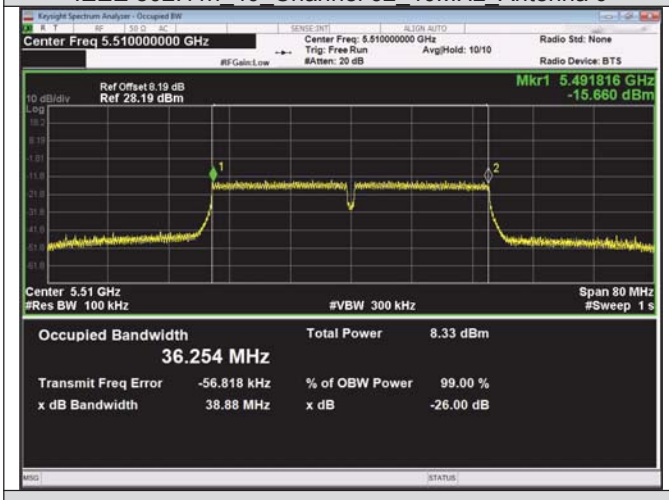
IEEE 802.11n_40_Channel 54_40MHz_Antenna 1



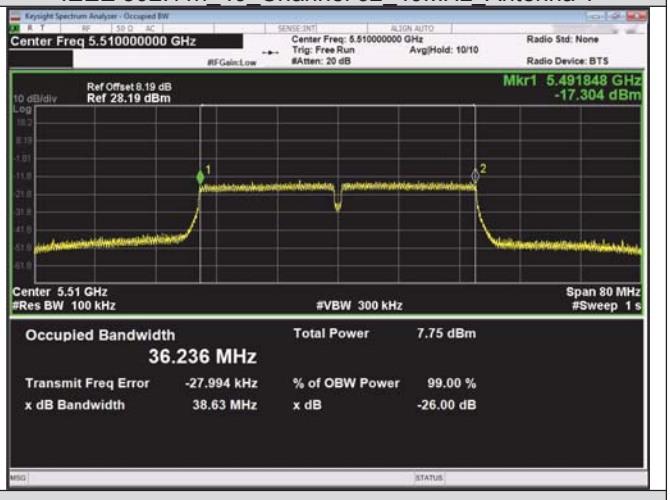
IEEE 802.11n_40_Channel 62_40MHz_Antenna 0



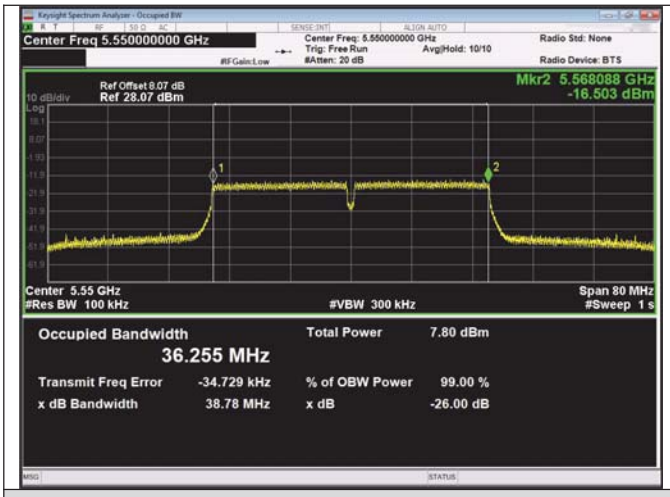
IEEE 802.11n_40_Channel 62_40MHz_Antenna 1



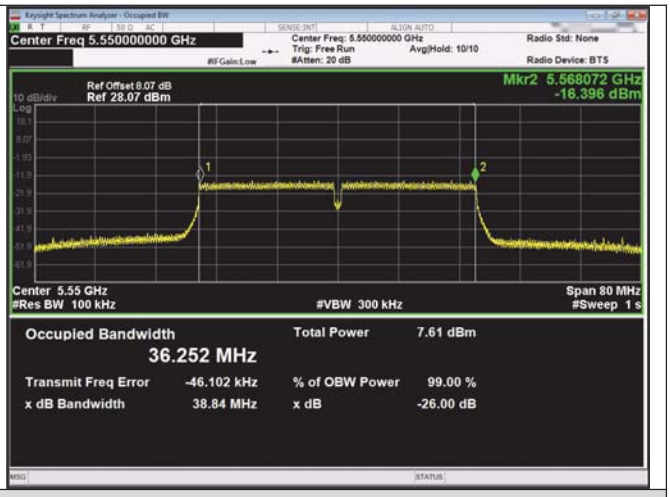
IEEE 802.11n_40_Channel 102_40MHz_Antenna 0



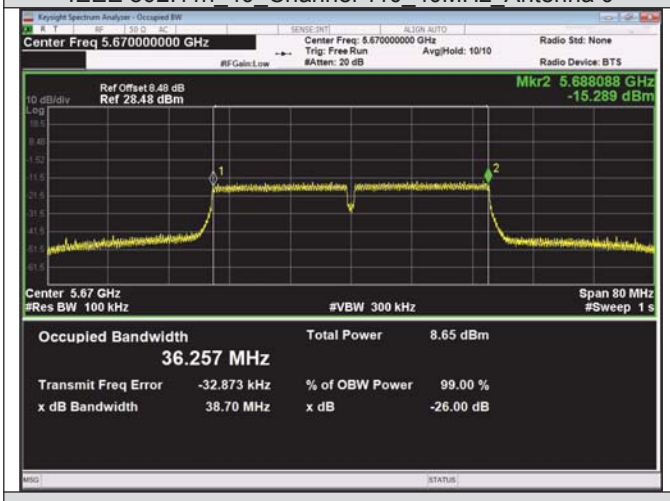
IEEE 802.11n_40_Channel 102_40MHz_Antenna 1



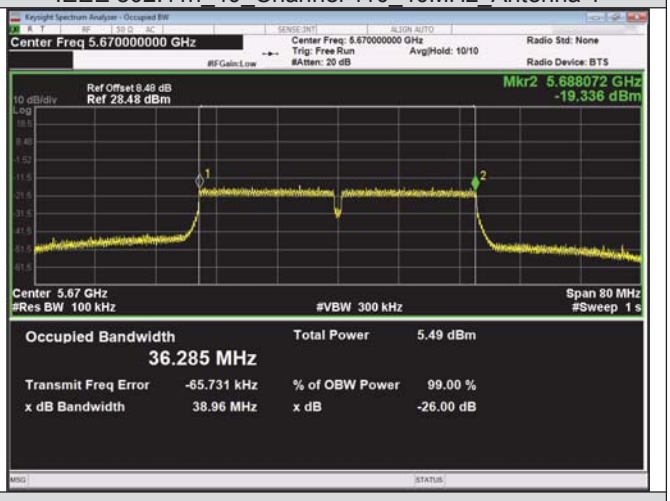
IEEE 802.11n_40_Channel 110_40MHz_Antenna 0



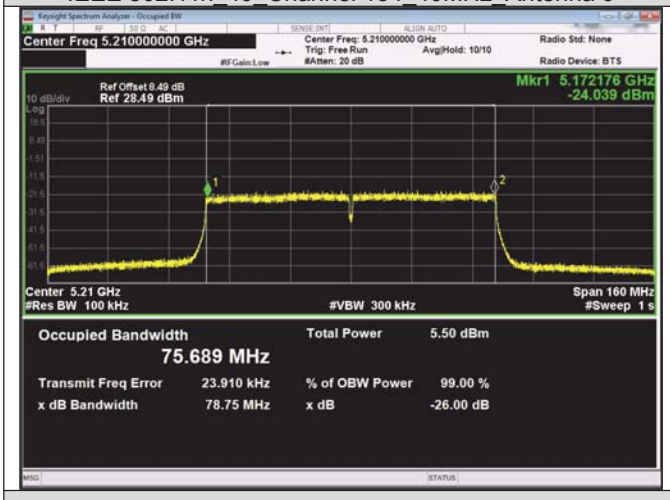
IEEE 802.11n_40_Channel 110_40MHz_Antenna 1



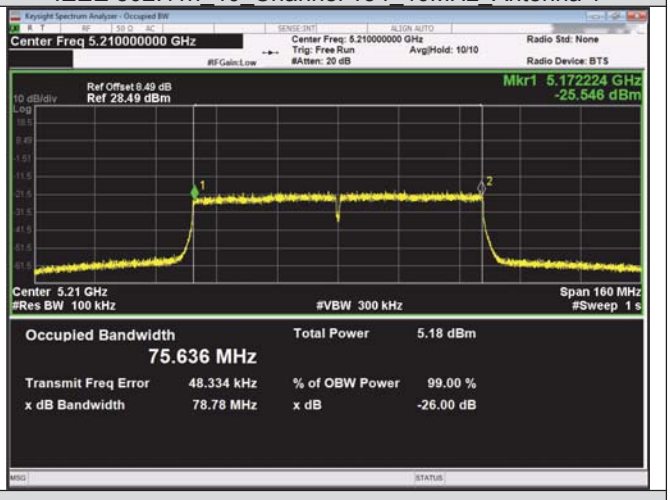
IEEE 802.11n_40_Channel 134_40MHz_Antenna 0



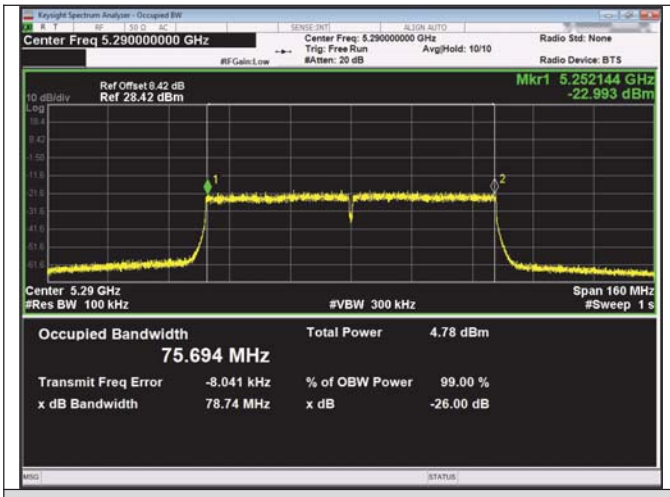
IEEE 802.11n_40_Channel 134_40MHz_Antenna 1



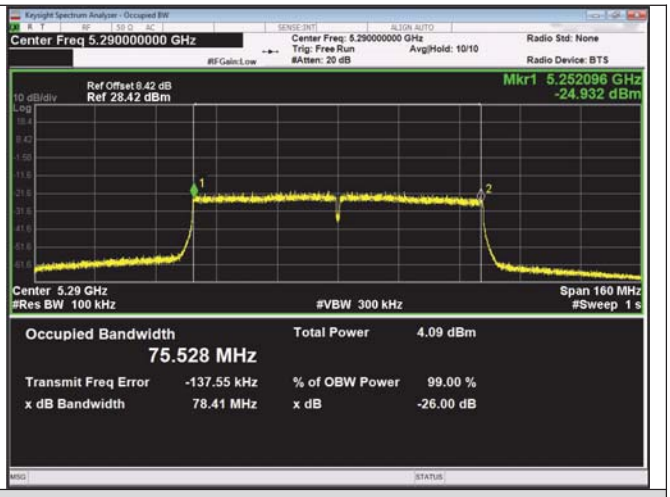
IEEE 802.11ac_80_Channel 42_80MHz_Antenna 0



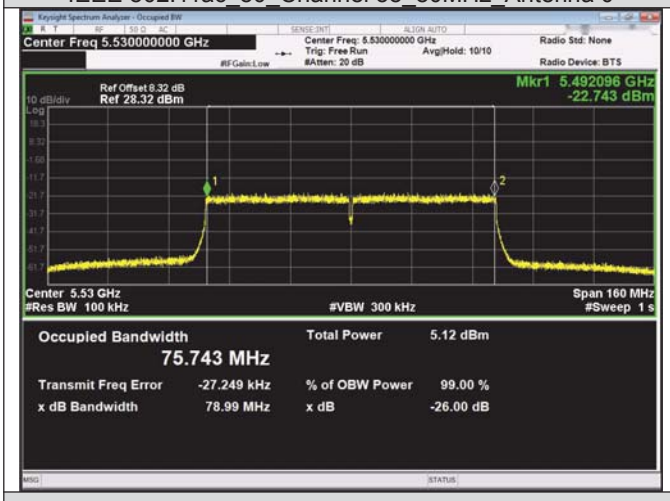
IEEE 802.11ac_80_Channel 42_80MHz_Antenna 1



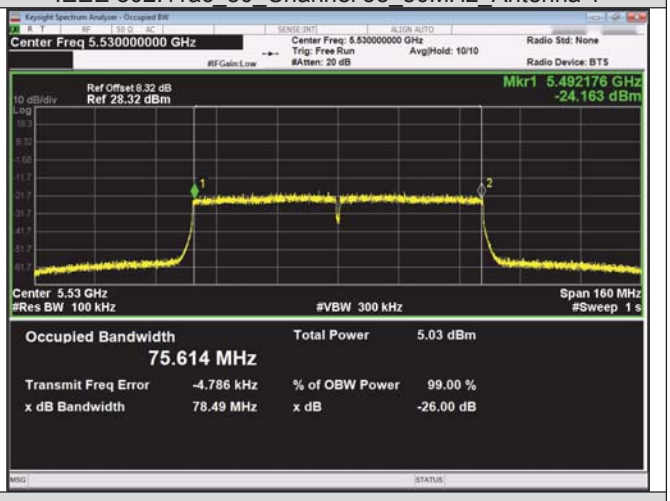
IEEE 802.11ac_80_Channel 58_80MHz_Antenna 0



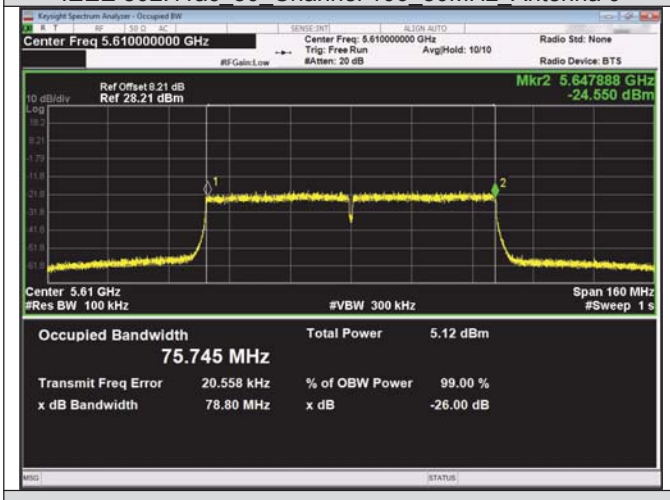
IEEE 802.11ac_80_Channel 58_80MHz_Antenna 1



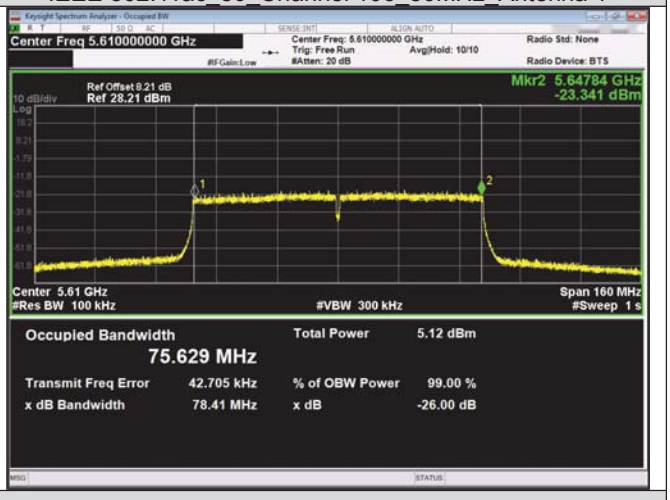
IEEE 802.11ac_80_Channel 106_80MHz_Antenna 0



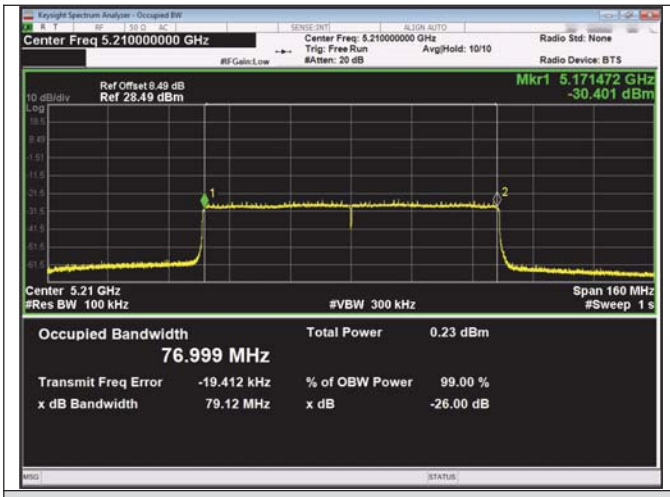
IEEE 802.11ac_80_Channel 106_80MHz_Antenna 1



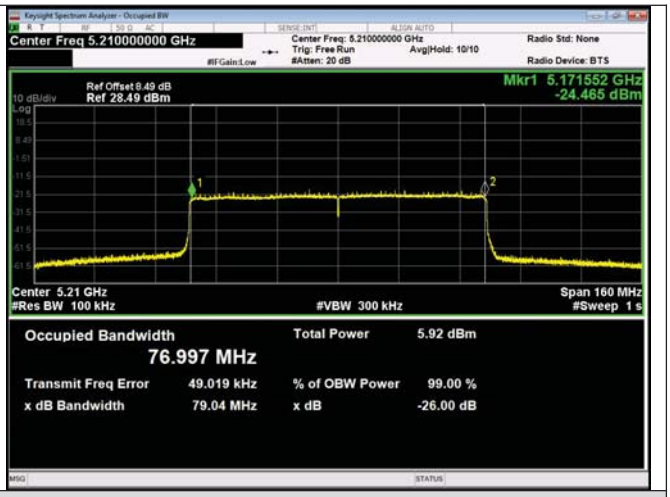
IEEE 802.11ac_80_Channel 122_80MHz_Antenna 0



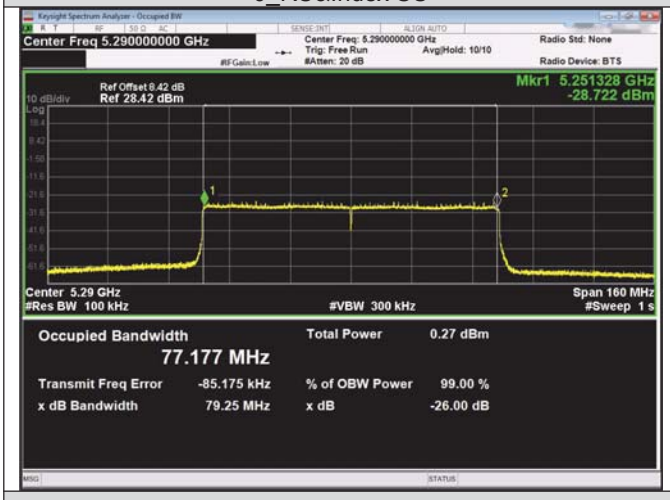
IEEE 802.11ac_80_Channel 122_80MHz_Antenna 1



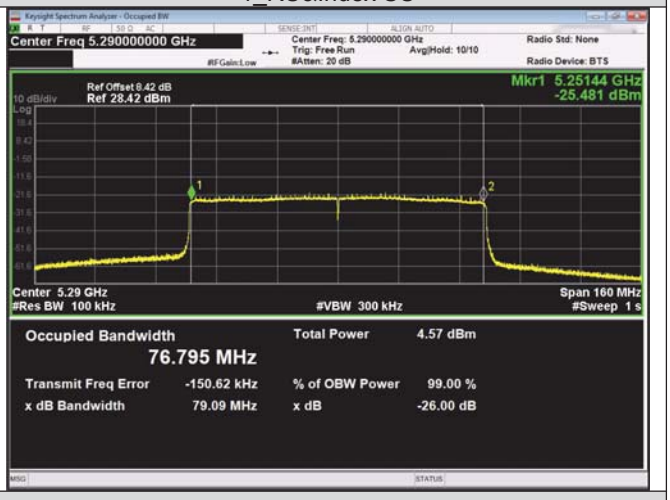
IEEE 802.11ax_80_Channel 42_80MHz_Antenna 0_RU&Index SU



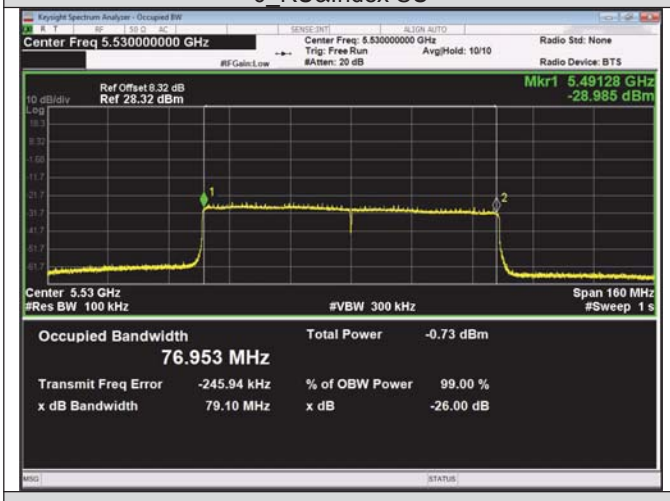
IEEE 802.11ax_80_Channel 42_80MHz_Antenna 1_RU&Index SU



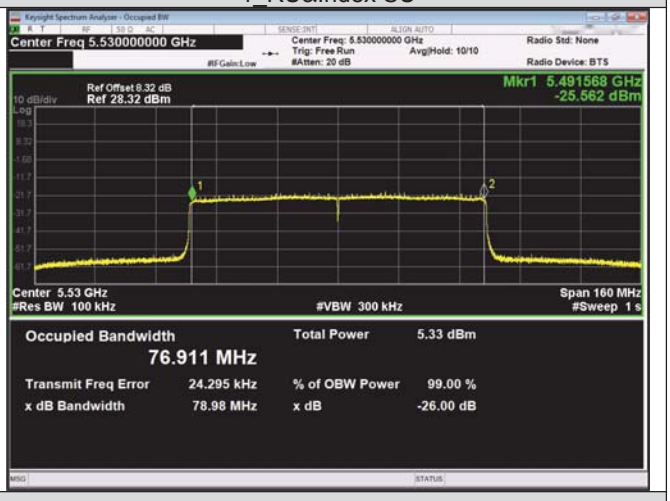
IEEE 802.11ax_80_Channel 58_80MHz_Antenna 0_RU&Index SU



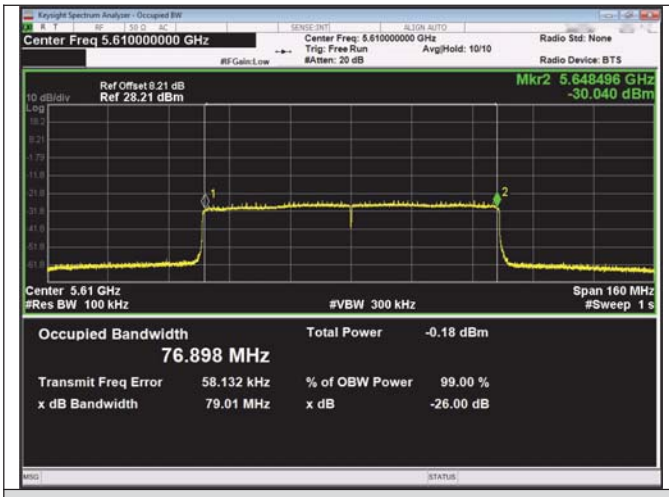
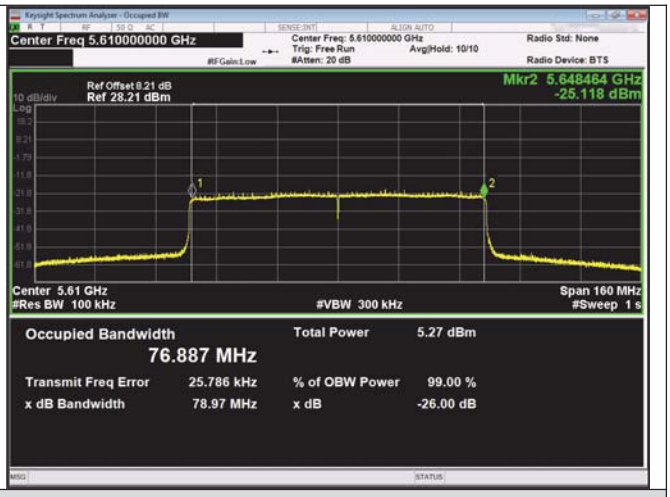
IEEE 802.11ax_80_Channel 58_80MHz_Antenna 1_RU&Index SU



IEEE 802.11ax_80_Channel 106_80MHz_Antenna 0_RU&Index SU



IEEE 802.11ax_80_Channel 106_80MHz_Antenna 1_RU&Index SU

	
IEEE 802.11ax_80_Channel 122_80MHz_Antenna 0_RU&Index SU	IEEE 802.11ax_80_Channel 122_80MHz_Antenna 1_RU&Index SU

5. RF OUTPUT POWER, TPC AND POWER DENSITY

5.1 APPLIED PROCEDURES / LIMIT

LIMIT

TPC is not required for channels whose nominal bandwidth falls completely within the band 5 150MHz to 5 250 MHz. For devices with TPC, the RF output power and the Power Density when configured to operate at the highest stated power level (PH) of the TPC range shall not exceed the levels given in table 2. Devices are allowed to operate without TPC. See table 2 for the applicable limits that shall apply in this case.

Table 2: Mean e.i.r.p. limits for RF output power and Power Density at the highest power level (P_H)

Frequency range (MHz)	Mean e.i.r.p. limit for P_H (dBm)		Mean e.i.r.p. density limit (dBm/MHz)	
	with TPC	without TPC	with TPC	without TPC
5 150 to 5 350	23	20/23 (see note 1)	10	7/10 (see note 2)
5 470 to 5 725	30 (see note 3)	27 (see note 3)	17 (see note 3)	14 (see note 3)
NOTE 1: The applicable limit is 20 dBm, except for transmissions whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz, in which case the applicable limit is 23 dBm.				
NOTE 2: The applicable limit is 7 dBm/MHz, except for transmissions whose nominal bandwidth falls completely within the band 5 150 MHz to 5 250 MHz, in which case the applicable limit is 10 dBm/MHz.				
NOTE 3: Slave devices without a *Radar Interference Detection* function shall comply with the limits for the frequency range 5 250 MHz to 5 350 MHz.				

For devices using TPC, the RF Output Power during a transmission burst when configured to operate at the lowest stated power level (PL) of the TPC range shall not exceed the levels given in table 3. For devices without TPC, the limits in table 3 do not apply.

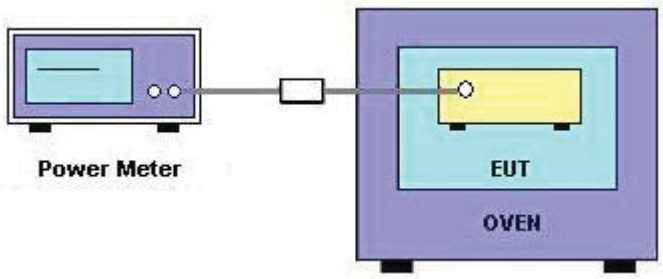
Table 3: Mean e.i.r.p. limits for RF Output Power at the lowest power level of the TPC range

Frequency range	Mean e.i.r.p. (dBm) limit for P_L
5 250 MHz to 5 350 MHz	17
5 470 MHz to 5 725 MHz	24 (see note)
NOTE: Slave devices without a *Radar Interference Detection* function shall comply with the limits for the band 5 250 MHz to 5 350 MHz.	

5.2 TEST PROCEDURES

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.4

5.3 TEST SETUP LAYOUT



5.4 TEST RESULTS

RF Output Power			
Temperature:	25°C	Relative Humidity:	60 %
Pressure:	1012 hPa	Test Voltage:	AC 230V/50Hz

ANT 0

Test Mode: 802.11n(20MHz)					
TEST CONDITIONS			Total e.i.r.p (dBm)		
			CH36	CH40	CH48
Normal voltage	T nom (°C)	25.00	8.23	8.14	8.51
	T min (°C)	0.00	8.06	8.03	8.43
	T max (°C)	45.00	7.96	7.86	8.24
Max RF Power			**8.51**		
Limits			23dBm		
Result			**Complies**		

Test Mode: 802.11n(20MHz)					
TEST CONDITIONS			Total e.i.r.p (dBm)		
			CH52	CH56	CH64
Normal voltage	T nom (°C)	25.00	5.63	5.62	5.57
	T min (°C)	0.00	5.49	5.41	5.39
	T max (°C)	45.00	5.27	5.19	5.14
Max RF Power			**5.63**		
Limits			23dBm		
Result			**Complies**		

Test Mode: 802.11n(20MHz)					
TEST CONDITIONS			Total e.i.r.p (dBm)		
			CH100	CH116	CH140
Normal voltage	T nom (°C)	25.00	5.36	5.36	5.49
	T min (°C)	0.00	5.16	5.23	5.17
	T max (°C)	45.00	5.06	5.12	5.08
Max RF Power			**5.49**		
Limits			23dBm		
Result			**Complies**		

Test Mode: 802.11n(40MHz)					
TEST CONDITIONS			Total e.i.r.p (dBm)		
			CH38	CH46	CH54
Normal voltage	T nom (°C)	25.00	5.53	5.49	5.63
	T min (°C)	0.00	5.41	5.38	5.47
	T max (°C)	45.00	5.29	5.17	5.34
Max RF Power			**5.63**		
Limits			23dBm		
Result			**Complies**		

Test Mode: 802.11n(40MHz)					
TEST CONDITIONS			Total e.i.r.p (dBm)		
			CH62	CH102	CH110
Normal voltage	T nom (°C)	25.00	5.24	5.37	5.12
	T min (°C)	0.00	5.06	5.21	5.06
	T max (°C)	45.00	4.89	5.03	4.86
Max RF Power			**5.37**		
Limits			23dBm		
Result			**Complies**		

Test Mode: 802.11n(40MHz)				
TEST CONDITIONS			Total e.i.r.p (dBm)	
			CH118	CH134
Normal voltage	T nom (°C)	25.00	5.34	5.29
	T min (°C)	0.00	5.19	5.12
	T max (°C)	45.00	5.03	5.04
Max RF Power			**5.34**	
Limits			23dBm	
Result			**Complies**	

Test Mode: 802.11ac(80MHz)				
TEST CONDITIONS			Total e.i.r.p (dBm)	
			CH42	CH58
Normal voltage	T nom (°C)	25.00	4.89	4.03
	T min (°C)	0.00	4.72	3.89
	T max (°C)	45.00	4.53	3.62
Max RF Power			**4.89**	
Limits			23dBm	
Result			**Complies**	

Test Mode: 802.11ac(80MHz)				
TEST CONDITIONS			Total e.i.r.p (dBm)	
			CH106	CH122
Normal voltage	T nom (°C)	25.00	4.56	4.47
	T min (°C)	0.00	4.36	4.28
	T max (°C)	45.00	4.16	4.02
Max RF Power			**4.56**	
Limits			23dBm	
Result			**Complies**	

Test Mode: 802.11ax(80MHz)				
TEST CONDITIONS			Total e.i.r.p (dBm)	
			CH42	CH58
Normal voltage	T nom (°C)	25.00	4.34	4.13
	T min (°C)	0.00	4.06	3.96
	T max (°C)	45.00	3.86	3.78
Max RF Power			**4.34**	
Limits			23dBm	
Result			**Complies**	

Test Mode: 802.11ax(80MHz)				
TEST CONDITIONS			Total e.i.r.p (dBm)	
			CH106	CH122
Normal voltage	T nom (°C)	25.00	4.45	4.52
	T min (°C)	0.00	4.36	4.29
	T max (°C)	45.00	4.17	4.16
Max RF Power			**4.52**	
Limits			23dBm	
Result			**Complies**	

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Test Mode: 802.11n(20MHz)					
TEST CONDITIONS			Total e.i.r.p (dBm)		
			CH36	CH40	CH48
Normal voltage	T nom (°C)	25.00	7.82	7.46	7.96
	T min (°C)	0.00	7.68	7.35	7.84
	T max (°C)	45.00	7.53	7.26	7.64
Max RF Power			**7.96**		
Limits			23dBm		
Result			**Complies**		

Test Mode: 802.11n(20MHz)					
TEST CONDITIONS			Total e.i.r.p (dBm)		
			CH52	CH56	CH64
Normal voltage	T nom (°C)	25.00	5.63	5.57	5.41
	T min (°C)	0.00	5.51	5.49	5.38
	T max (°C)	45.00	5.42	5.36	5.17
Max RF Power			**5.63**		
Limits			23dBm		
Result			**Complies**		

Test Mode: 802.11n(20MHz)					
TEST CONDITIONS			Total e.i.r.p (dBm)		
			CH100	CH116	CH140
Normal voltage	T nom (°C)	25.00	4.96	5.14	4.89
	T min (°C)	0.00	4.83	4.96	4.74
	T max (°C)	45.00	4.73	4.85	4.63
Max RF Power			**5.14**		
Limits			23dBm		
Result			**Complies**		

Test Mode: 802.11n(40MHz)					
TEST CONDITIONS			Total e.i.r.p (dBm)		
			CH38	CH46	CH54
Normal voltage	T nom (°C)	25.00	4.96	4.85	5.24
	T min (°C)	0.00	4.86	4.73	5.13
	T max (°C)	45.00	4.74	4.63	4.96
Max RF Power			**5.24**		
Limits			23dBm		
Result			**Complies**		

Test Mode: 802.11n(40MHz)					
TEST CONDITIONS			Total e.i.r.p (dBm)		
			CH62	CH102	CH110
Normal voltage	T nom (°C)	25.00	5.23	5.36	5.41
	T min (°C)	0.00	5.16	5.21	5.33
	T max (°C)	45.00	5.04	5.12	5.22
Max RF Power			**5.41**		
Limits			23dBm		
Result			**Complies**		

Test Mode: 802.11n(40MHz)				
TEST CONDITIONS			Total e.i.r.p (dBm)	
			CH118	CH134
Normal voltage	T nom (°C)	25.00	5.36	5.27
	T min (°C)	0.00	5.19	5.06
	T max (°C)	45.00	5.01	4.98
Max RF Power			**5.36**	
Limits			23dBm	
Result			**Complies**	

Test Mode: 802.11ac(80MHz)				
TEST CONDITIONS			Total e.i.r.p (dBm)	
			CH42	CH58
Normal voltage	T nom (°C)	25.00	4.86	4.53
	T min (°C)	0.00	4.68	4.39
	T max (°C)	45.00	4.47	4.21
Max RF Power			**4.86**	
Limits			23dBm	
Result			**Complies**	

Test Mode: 802.11ac(80MHz)				
TEST CONDITIONS			Total e.i.r.p (dBm)	
			CH106	CH122
Normal voltage	T nom (°C)	25.00	4.26	4.52
	T min (°C)	0.00	4.13	4.41
	T max (°C)	45.00	3.96	4.25
Max RF Power			**4.52**	
Limits			23dBm	
Result			**Complies**	

Test Mode: 802.11ax(80MHz)				
TEST CONDITIONS			Total e.i.r.p (dBm)	
			CH42	CH58
Normal voltage	T nom (°C)	25.00	4.36	4.17
	T min (°C)	0.00	4.25	4.12
	T max (°C)	45.00	4.11	4.01
Max RF Power			**4.36**	
Limits			23dBm	
Result			**Complies**	

Test Mode: 802.11ax(80MHz)				
TEST CONDITIONS			Total e.i.r.p (dBm)	
			CH106	CH122
Normal voltage	T nom (°C)	25.00	4.36	4.38
	T min (°C)	0.00	4.23	4.24
	T max (°C)	45.00	4.17	4.13
Max RF Power			**4.38**	
Limits			23dBm	
Result			**Complies**	

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Test Mode: 802.11n(20MHz)					
TEST CONDITIONS			Total e.i.r.p (dBm)		
			CH36	CH40	CH48
Normal voltage	T nom (°C)	25.00	11.04	10.99	10.82
	T min (°C)	0.00	10.88	10.87	10.71
	T max (°C)	45.00	10.76	10.71	10.58
Max RF Power			**11.04**		
Limits			23dBm		
Result			**Complies**		

Test Mode: 802.11n(20MHz)					
TEST CONDITIONS			Total e.i.r.p (dBm)		
			CH52	CH56	CH64
Normal voltage	T nom (°C)	25.00	8.64	8.64	8.61
	T min (°C)	0.00	8.51	8.47	8.46
	T max (°C)	45.00	8.36	8.32	8.29
Max RF Power			**8.64**		
Limits			23dBm		
Result			**Complies**		

Test Mode: 802.11n(20MHz)					
TEST CONDITIONS			Total e.i.r.p (dBm)		
			CH100	CH116	CH140
Normal voltage	T nom (°C)	25.00	8.17	8.17	8.26
	T min (°C)	0.00	8.01	8.04	8.11
	T max (°C)	45.00	7.91	7.94	8.00
Max RF Power			**8.26**		
Limits			23dBm		
Result			**Complies**		

Test Mode: 802.11n(40MHz)					
TEST CONDITIONS			Total e.i.r.p (dBm)		
			CH38	CH46	CH54
Normal voltage	T nom (°C)	25.00	8.26	8.24	8.19
	T min (°C)	0.00	8.15	8.14	8.08
	T max (°C)	45.00	8.03	7.97	7.92
Max RF Power			**8.26**		
Limits			23dBm		
Result			**Complies**		

Test Mode: 802.11n(40MHz)					
TEST CONDITIONS			Total e.i.r.p (dBm)		
			CH62	CH102	CH110
Normal voltage	T nom (°C)	25.00	8.25	8.31	8.38
	T min (°C)	0.00	8.12	8.20	8.22
	T max (°C)	45.00	7.98	8.05	8.09
Max RF Power			**8.38**		
Limits			23dBm		
Result			**Complies**		

Test Mode: 802.11n(40MHz)				
TEST CONDITIONS			Total e.i.r.p (dBm)	
			CH118	CH134
Normal voltage	T nom (°C)	25.00	8.36	8.34
	T min (°C)	0.00	8.20	8.17
	T max (°C)	45.00	8.03	8.04
Max RF Power			**8.34**	
Limits			23dBm	
Result			**Complies**	

Test Mode: 802.11ac(80MHz)				
TEST CONDITIONS			Total e.i.r.p (dBm)	
			CH42	CH58
Normal voltage	T nom (°C)	25.00	7.89	7.48
	T min (°C)	0.00	7.71	7.31
	T max (°C)	45.00	7.51	7.08
Max RF Power			**7.89**	
Limits			23dBm	
Result			**Complies**	

Test Mode: 802.11ac(80MHz)				
TEST CONDITIONS			Total e.i.r.p (dBm)	
			CH106	CH122
Normal voltage	T nom (°C)	25.00	7.42	7.38
	T min (°C)	0.00	7.26	7.22
	T max (°C)	45.00	7.07	7.00
Max RF Power			**7.42**	
Limits			23dBm	
Result			**Complies**	

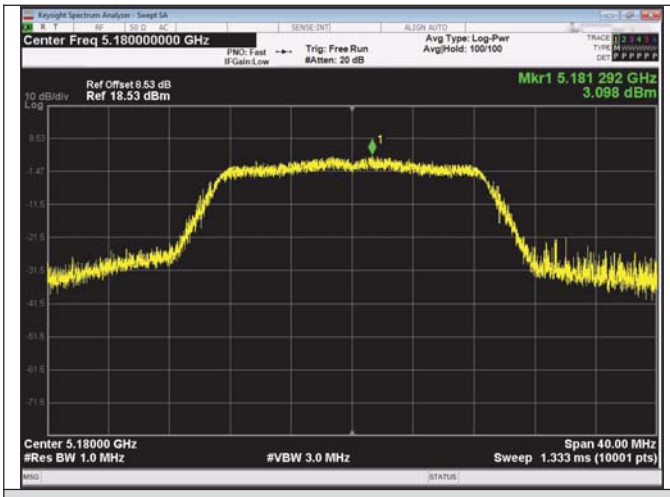
Test Mode: 802.11ax(80MHz)				
TEST CONDITIONS			Total e.i.r.p (dBm)	
			CH42	CH58
Normal voltage	T nom (°C)	25.00	7.36	7.26
	T min (°C)	0.00	7.17	7.12
	T max (°C)	45.00	7.00	6.96
Max RF Power			**7.36**	
Limits			23dBm	
Result			**Complies**	

Test Mode: 802.11ax(80MHz)				
TEST CONDITIONS			Total e.i.r.p (dBm)	
			CH106	CH122
Normal voltage	T nom (°C)	25.00	7.42	7.45
	T min (°C)	0.00	7.31	7.27
	T max (°C)	45.00	7.18	7.18
Max RF Power			7.45	
Limits			23dBm	
Result			**Complies**	

Power Density			
Temperature:	25°C	Relative Humidity:	60 %
Pressure:	1012 hPa	Test Voltage:	AC 230V/50Hz

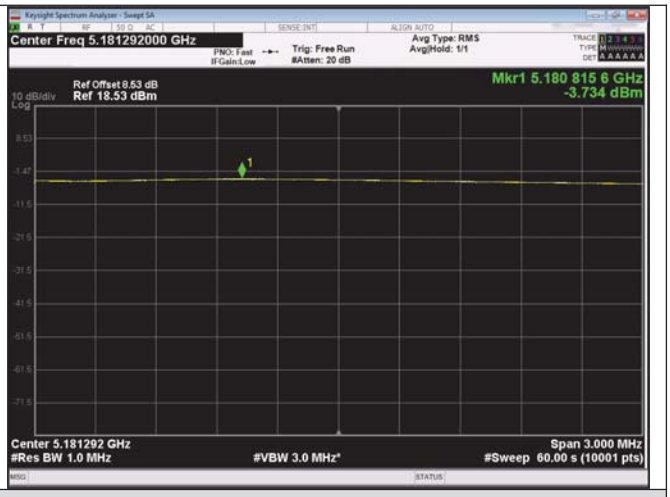
Mode	Ch.	RU & Index	PSD Ant. 0 (dBm/MHz)	PSD Ant. 1 (dBm/MHz)	PSD Total (dBm/MHz)	Limit (dBm/MHz)	Result
IEEE 802.11n_20	36	N/A	0.0960	-0.6280	N/A	10	PASS
	40		0.0890	-0.9630	N/A		PASS
	48		0.1660	-1.6990	N/A		PASS
	52		-0.2140	-2.5050	N/A	7	PASS
	56		-0.5750	-1.1070	N/A		PASS
	64		-1.2020	-2.3800	N/A		PASS
	100		-0.5920	-2.5930	N/A		PASS
	116		-1.2690	-1.8400	N/A		PASS
	140		0.8270	-7.7570	N/A		PASS
IEEE 802.11n_40	38		-2.9220	-4.2950	-0.54	10	PASS
	46		-2.1640	-4.3640	-0.12		PASS
	54		-3.0890	-4.6800	-0.8	7	PASS
	62		-3.9570	-4.7310	-1.32		PASS
	102		-4.0200	-4.9080	-1.43		PASS
	110		-4.0620	-4.5870	-1.31		PASS
	134		-3.2050	-6.7290	-1.61		PASS
IEEE 802.11ac_80	42		-8.6820	-10.3030	-6.41	10	PASS
	58		-9.5400	-10.8930	-7.15	7	PASS
	106		-9.2000	-11.4640	-7.18		PASS
	122		-9.1700	-10.9290	-6.95		PASS
IEEE 802.11ax_80	42	SU	-14.6740	-10.0880	-8.79	10	PASS
	58		-14.5560	-10.5770	-9.12	7	PASS
	106		-15.1870	-9.3850	-8.37		PASS
	122		-14.0160	-9.8670	-8.45		PASS

Test Graphs



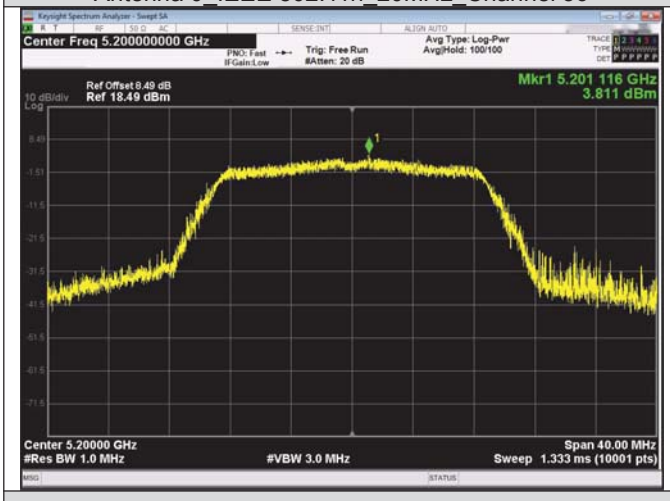
Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_20MHz_Channel 36



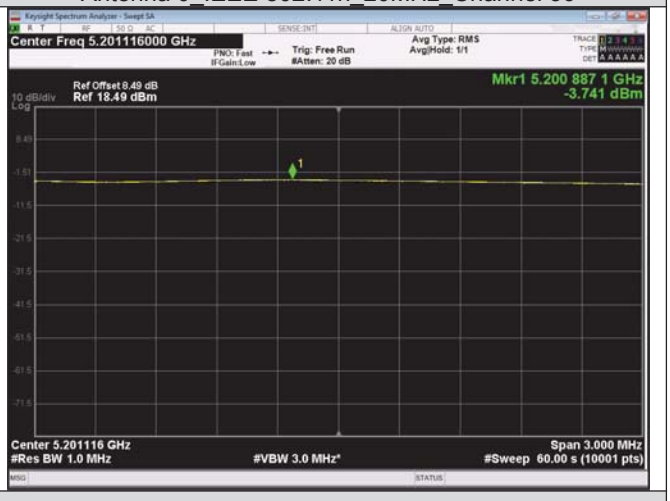
The highest mean power

Antenna 0_IEEE 802.11n_20MHz_Channel 36



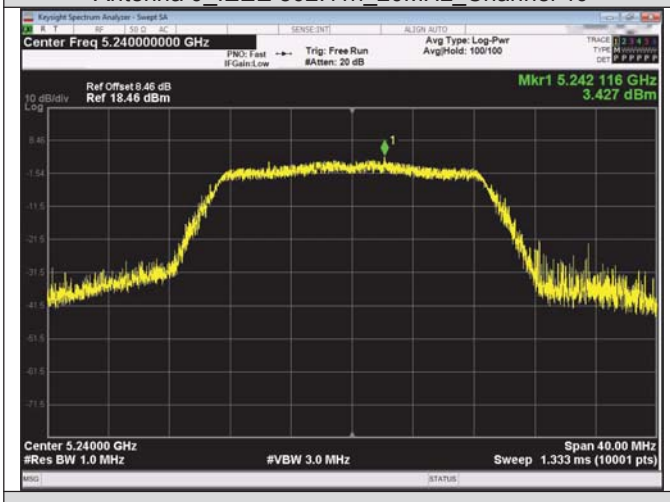
Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_20MHz_Channel 40



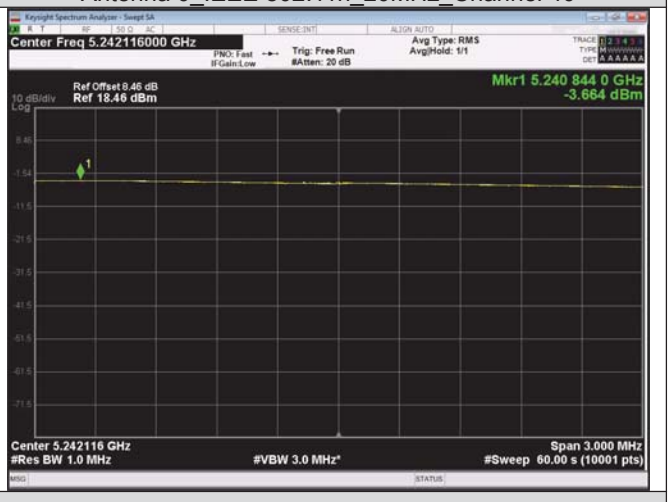
The highest mean power

Antenna 0_IEEE 802.11n_20MHz_Channel 40



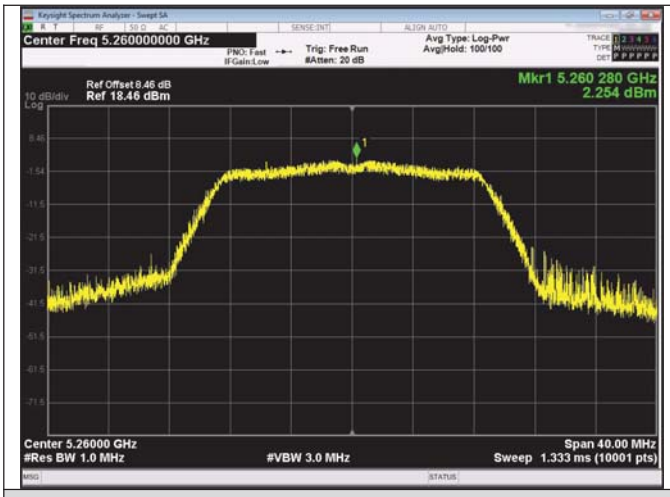
Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_20MHz_Channel 48



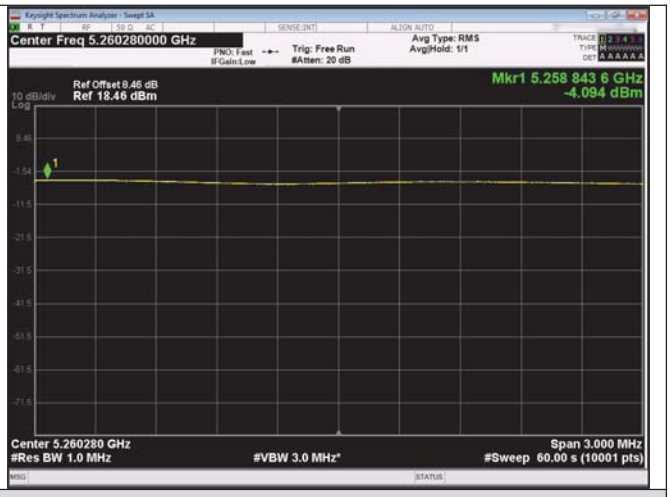
The highest mean power

Antenna 0_IEEE 802.11n_20MHz_Channel 48



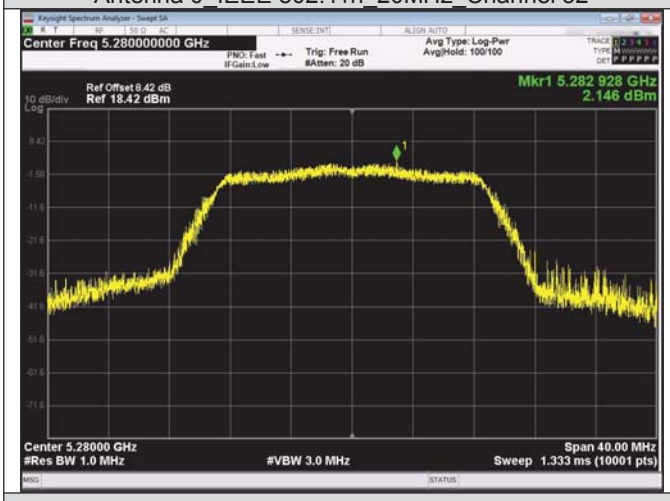
Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_20MHz_Channel 52



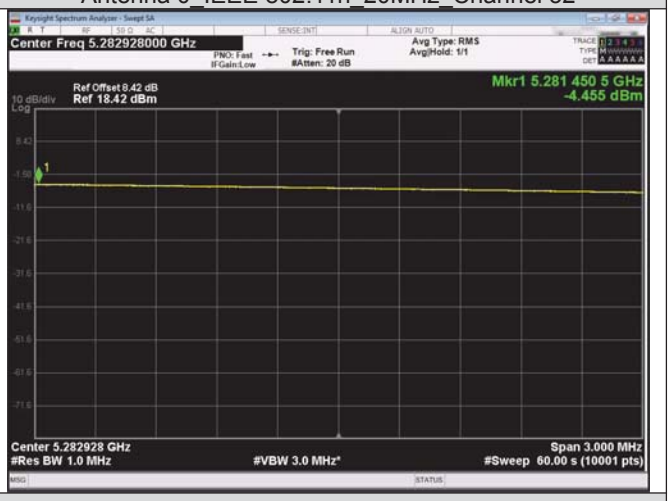
The highest mean power

Antenna 0_IEEE 802.11n_20MHz_Channel 52



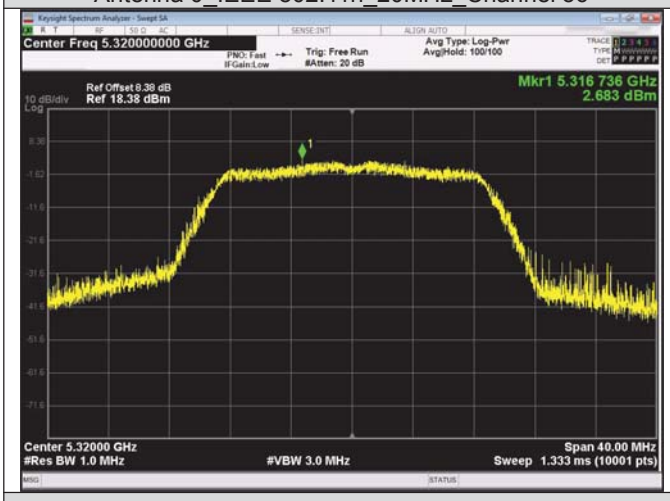
Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_20MHz_Channel 56



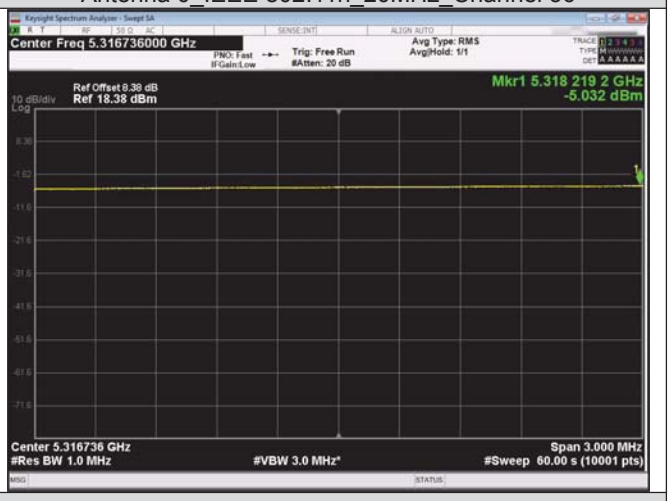
The highest mean power

Antenna 0_IEEE 802.11n_20MHz_Channel 56



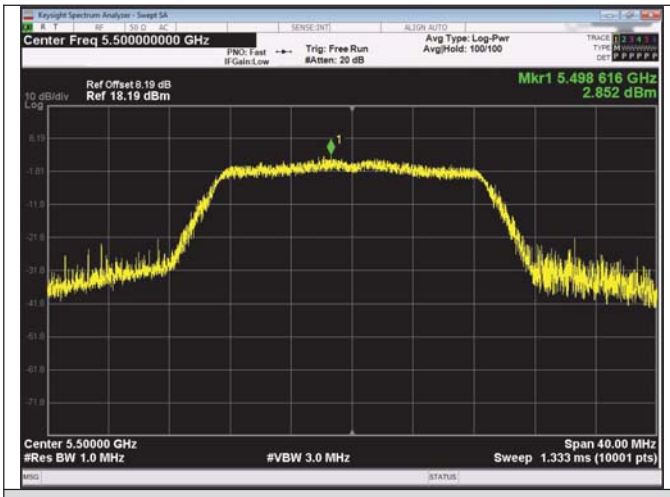
Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_20MHz_Channel 64



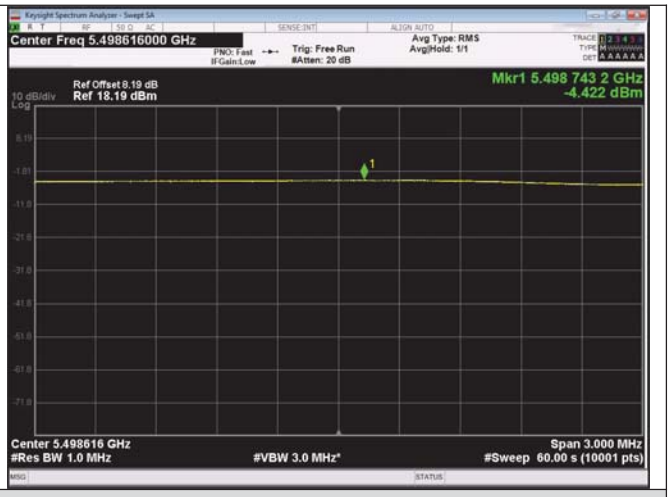
The highest mean power

Antenna 0_IEEE 802.11n_20MHz_Channel 64



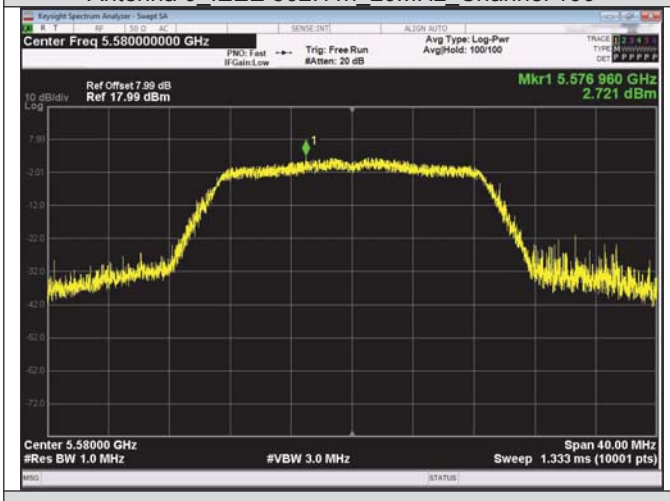
Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_20MHz_Channel 100



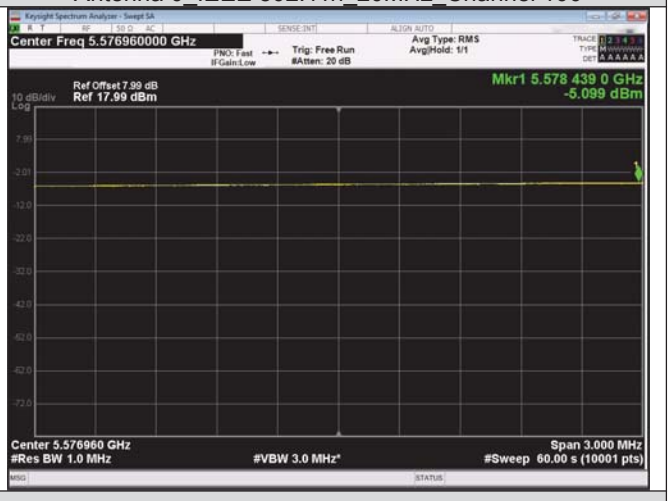
The highest mean power

Antenna 0_IEEE 802.11n_20MHz_Channel 100



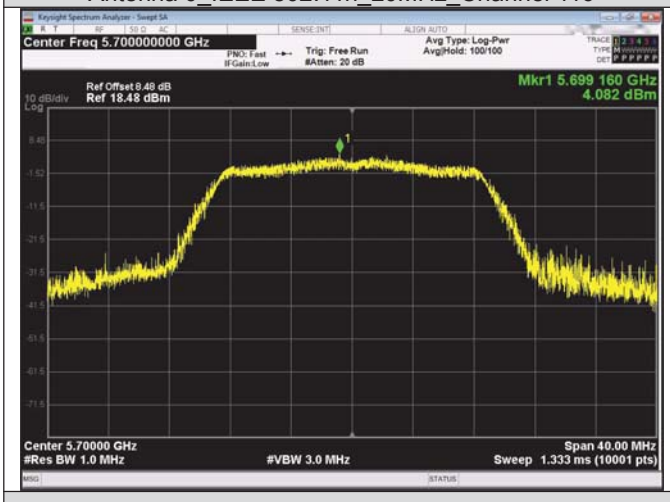
Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_20MHz_Channel 116



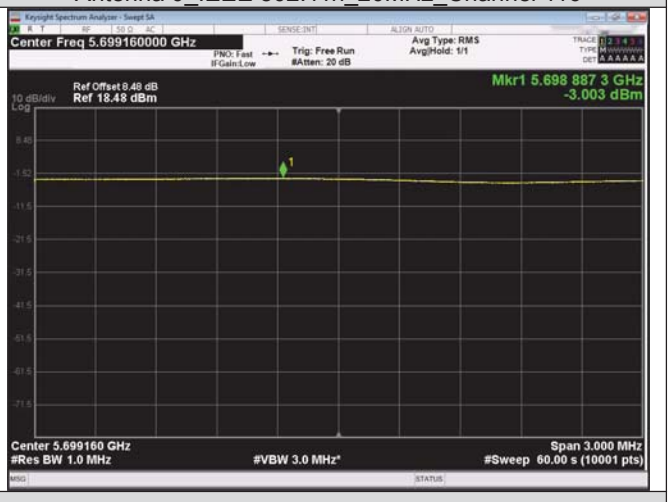
The highest mean power

Antenna 0_IEEE 802.11n_20MHz_Channel 116



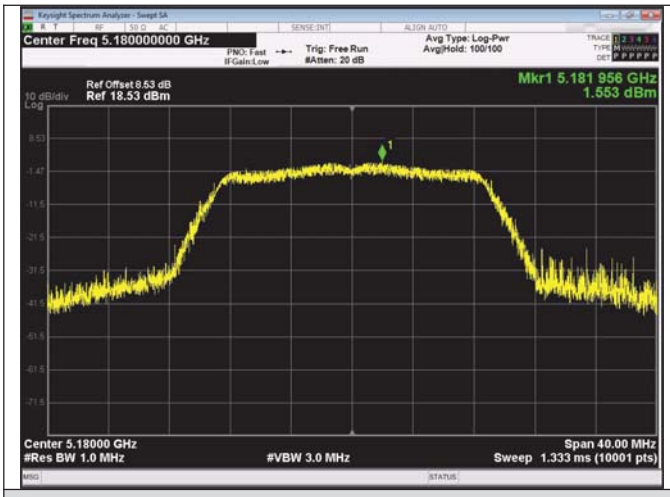
Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_20MHz_Channel 140



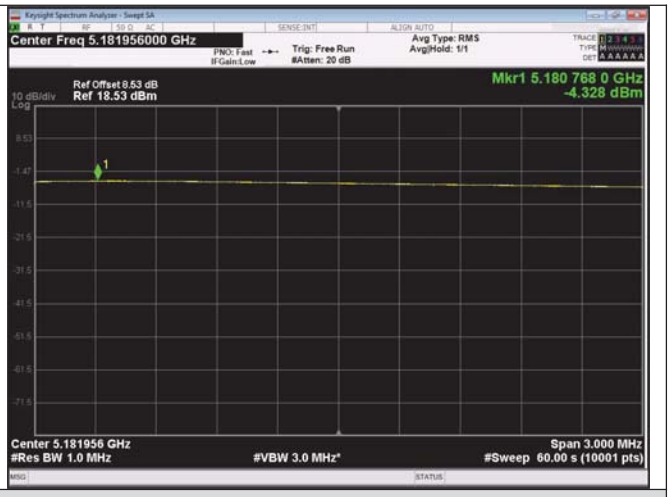
The highest mean power

Antenna 0_IEEE 802.11n_20MHz_Channel 140



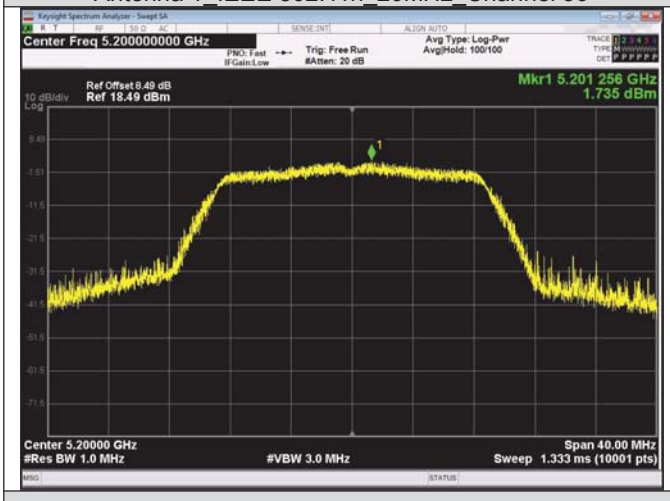
Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_20MHz_Channel 36



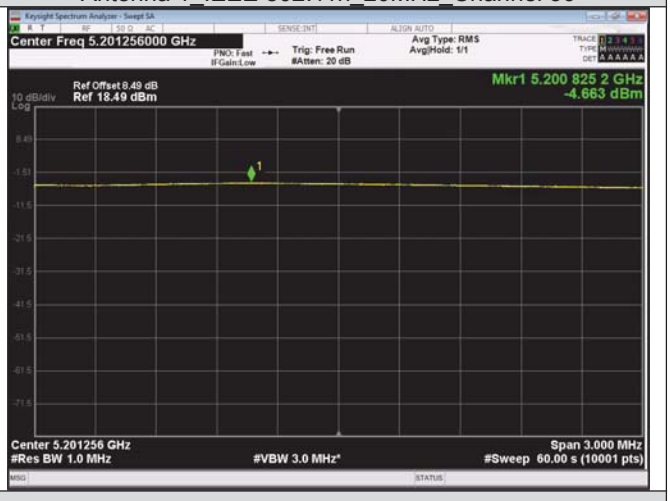
The highest mean power

Antenna 1_IEEE 802.11n_20MHz_Channel 36



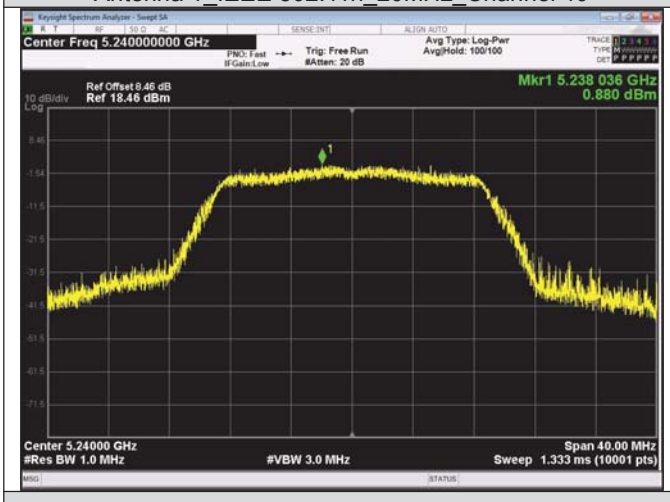
Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_20MHz_Channel 40



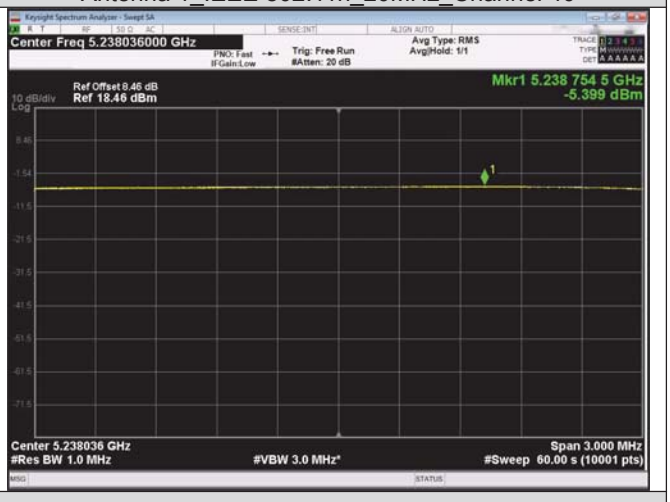
The highest mean power

Antenna 1_IEEE 802.11n_20MHz_Channel 40



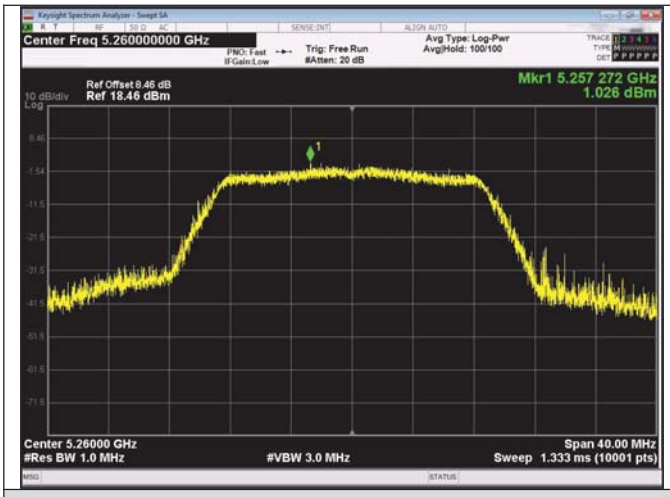
Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_20MHz_Channel 48



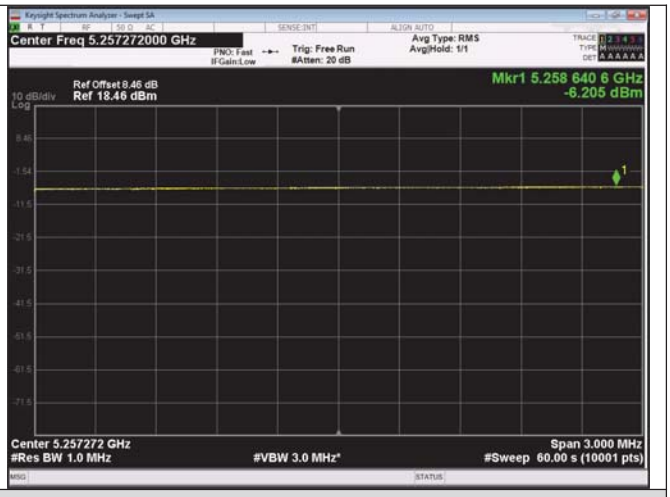
The highest mean power

Antenna 1_IEEE 802.11n_20MHz_Channel 48



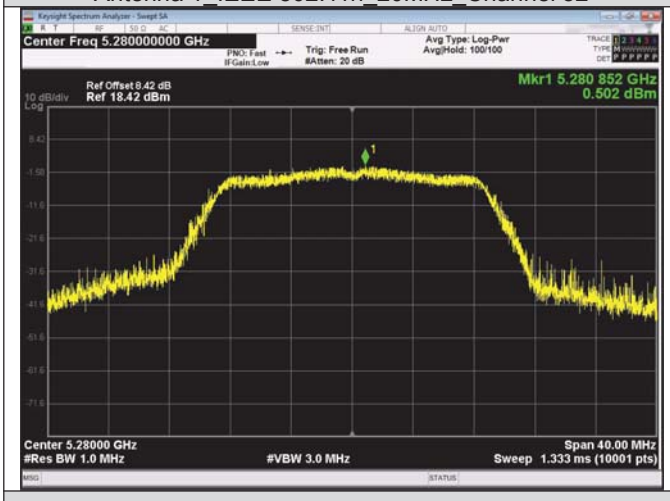
Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_20MHz_Channel 52



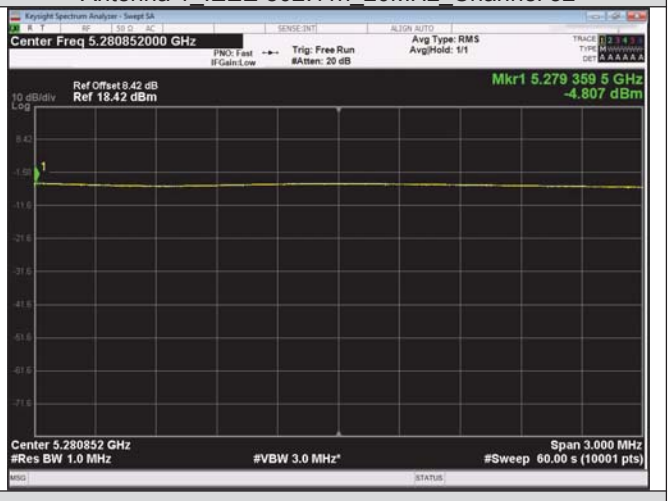
The highest mean power

Antenna 1_IEEE 802.11n_20MHz_Channel 52



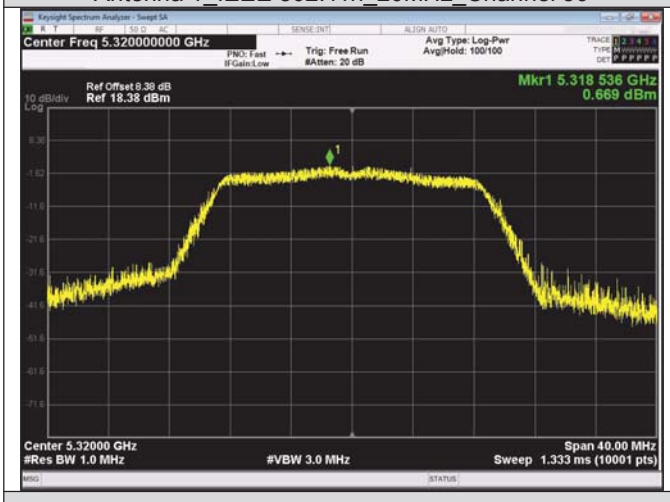
Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_20MHz_Channel 56



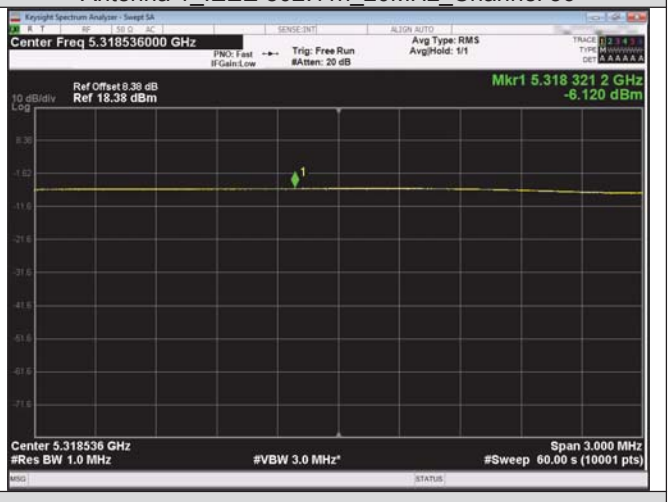
The highest mean power

Antenna 1_IEEE 802.11n_20MHz_Channel 56



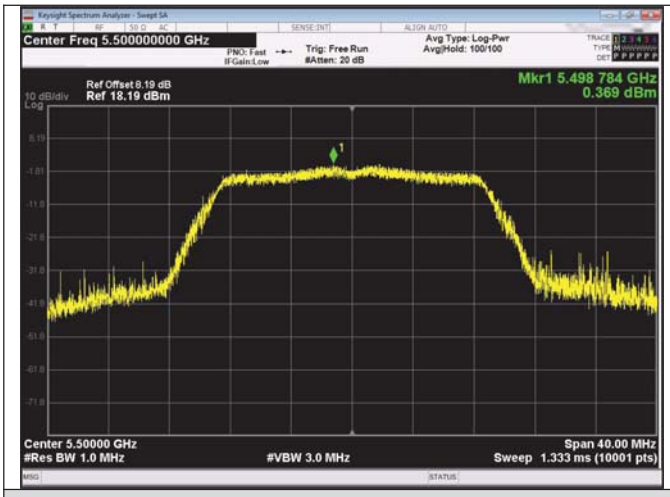
Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_20MHz_Channel 64



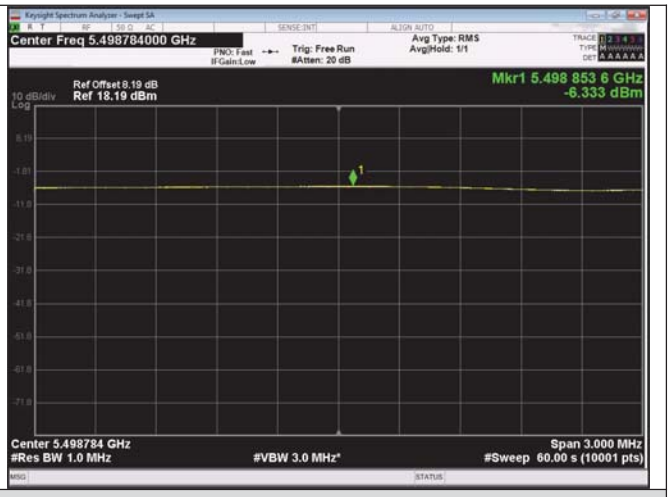
The highest mean power

Antenna 1_IEEE 802.11n_20MHz_Channel 64



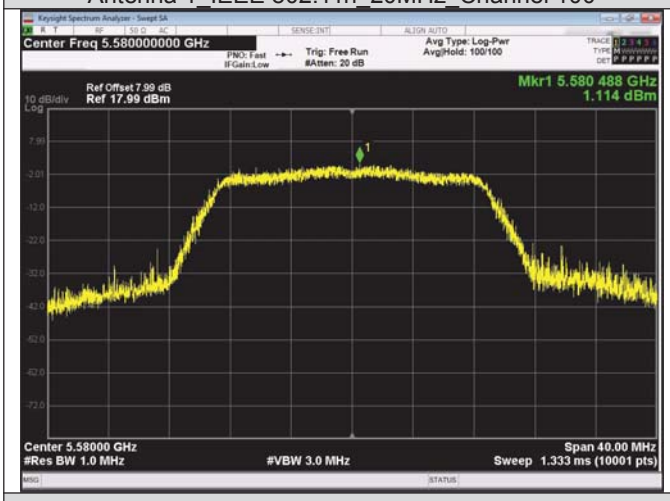
Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_20MHz_Channel 100



The highest mean power

Antenna 1_IEEE 802.11n_20MHz_Channel 100

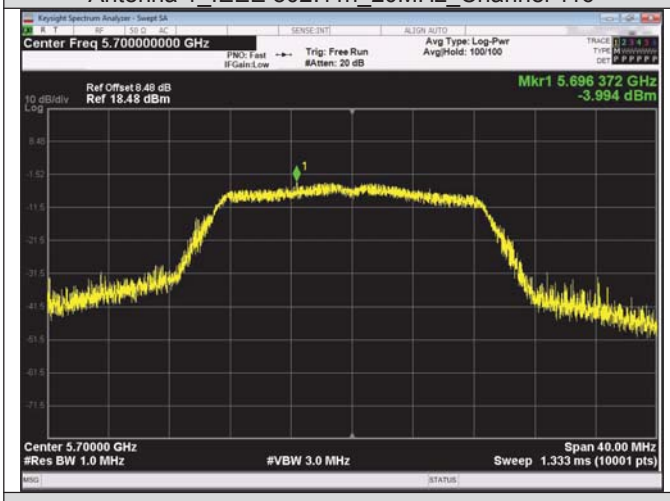


Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_20MHz_Channel 116

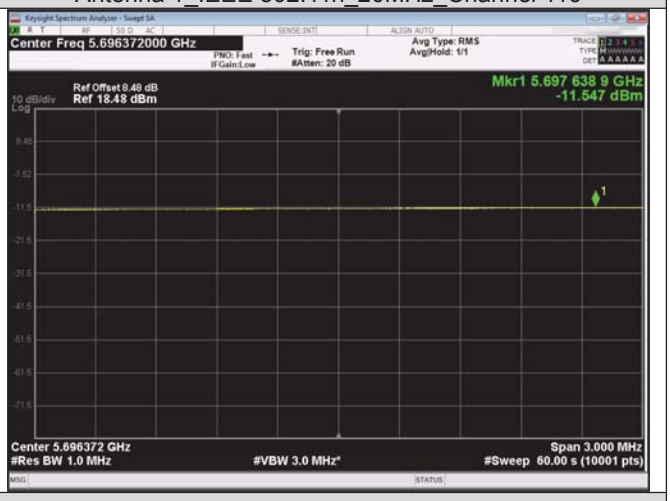
The highest mean power

Antenna 1_IEEE 802.11n_20MHz_Channel 116



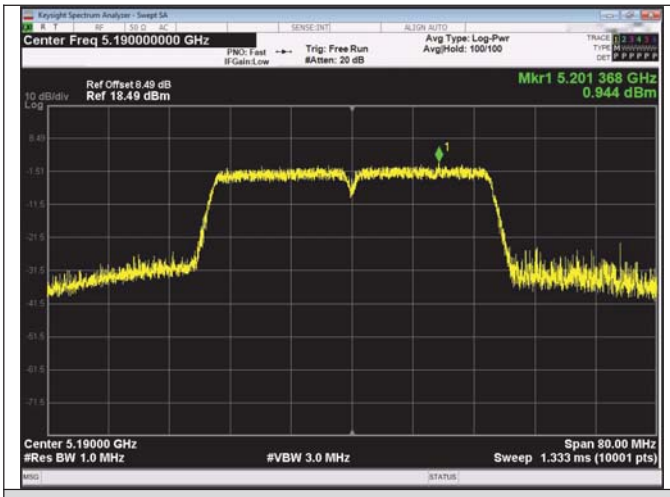
Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_20MHz_Channel 140



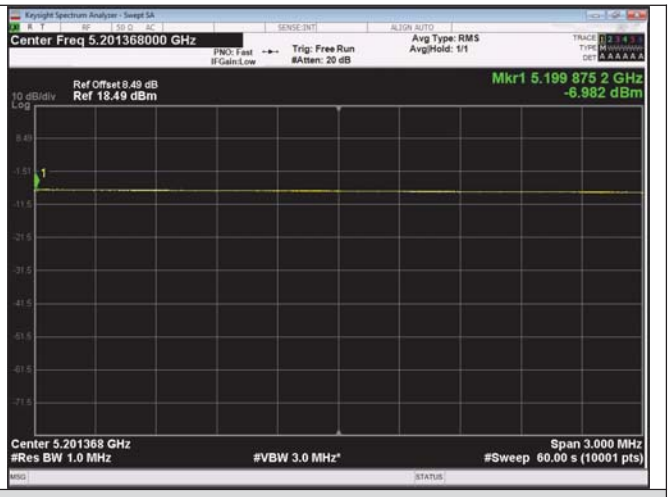
The highest mean power

Antenna 1_IEEE 802.11n_20MHz_Channel 140



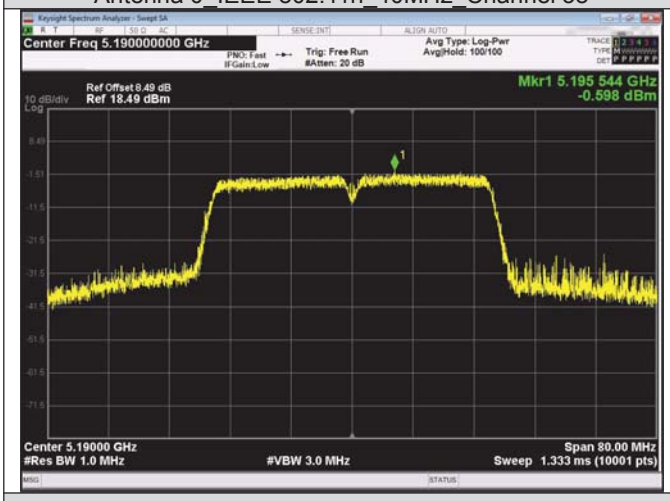
Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_40MHz_Channel 38



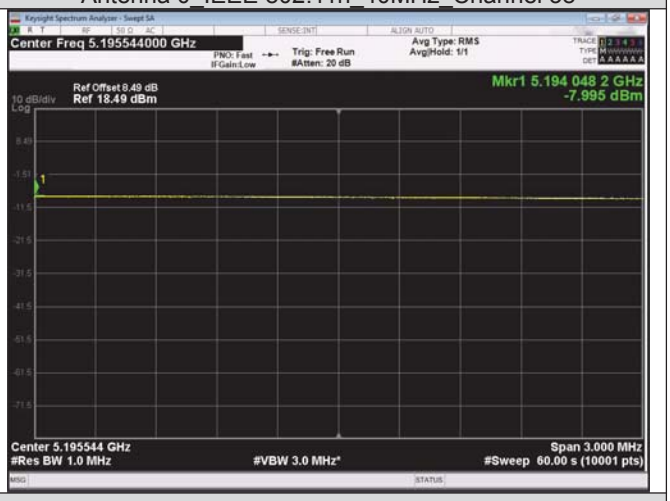
The highest mean power

Antenna 0_IEEE 802.11n_40MHz_Channel 38



Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_40MHz_Channel 38

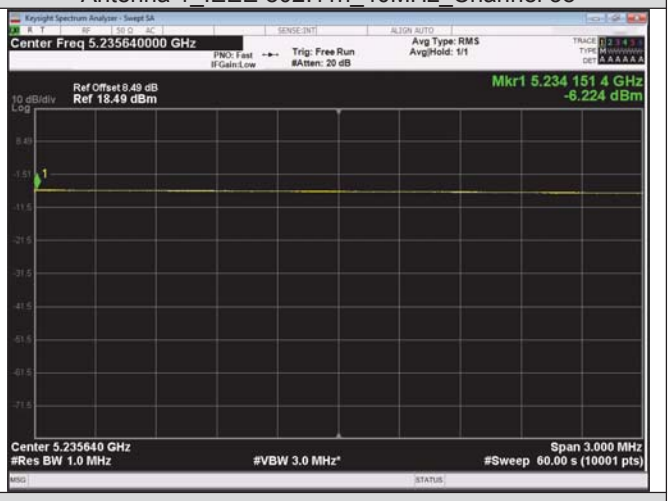


The highest mean power

Antenna 1_IEEE 802.11n_40MHz_Channel 38

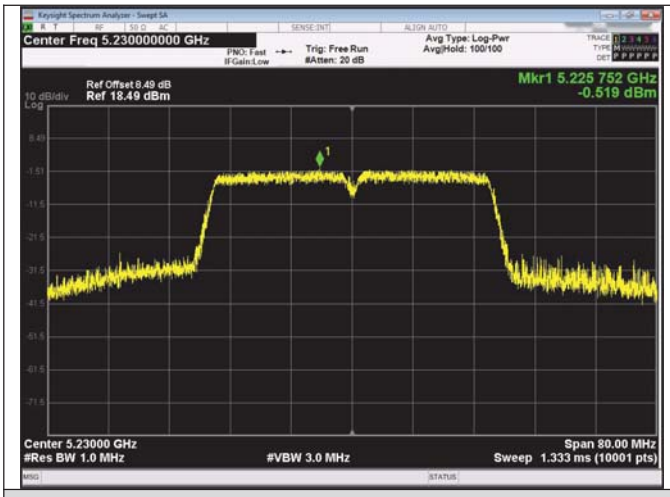
Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_40MHz_Channel 46



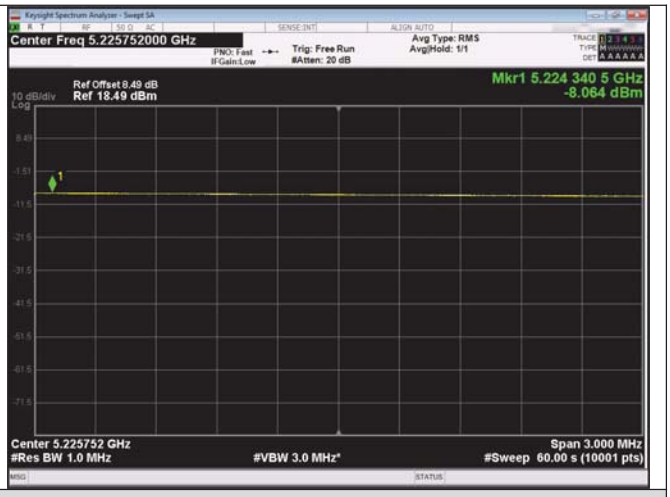
The highest mean power

Antenna 0_IEEE 802.11n_40MHz_Channel 46



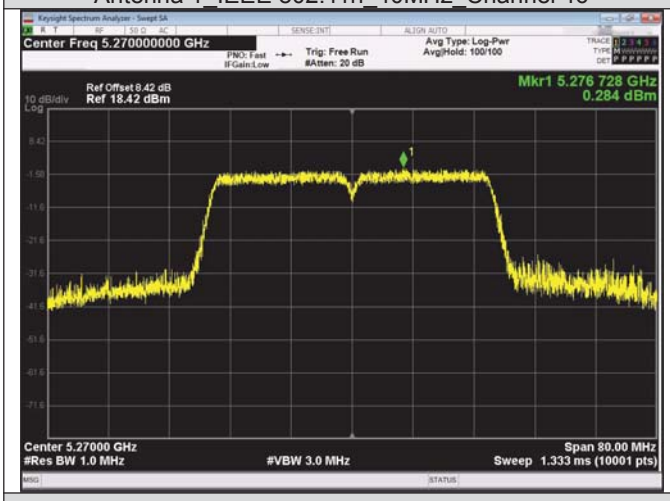
Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_40MHz_Channel 46



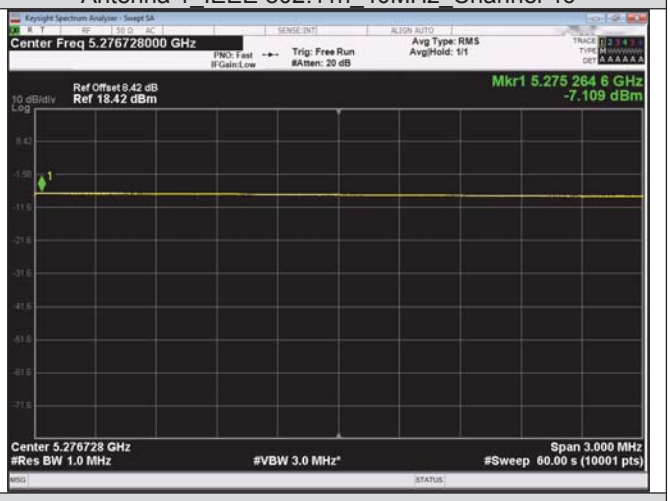
The highest mean power

Antenna 1_IEEE 802.11n_40MHz_Channel 46



Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_40MHz_Channel 54

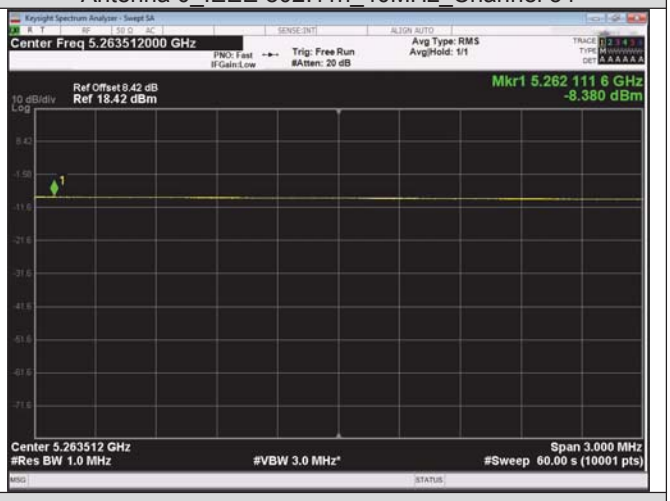


The highest mean power

Antenna 0_IEEE 802.11n_40MHz_Channel 54

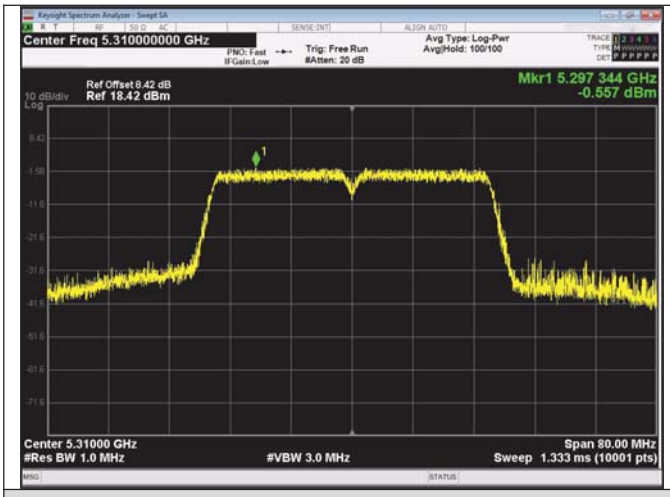
Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_40MHz_Channel 54



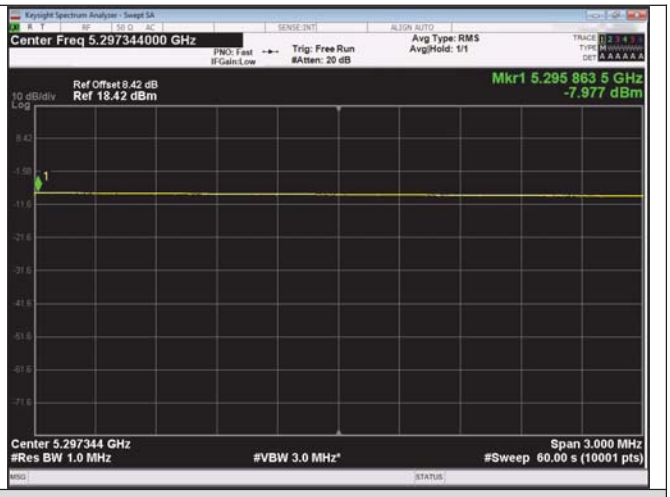
The highest mean power

Antenna 1_IEEE 802.11n_40MHz_Channel 54



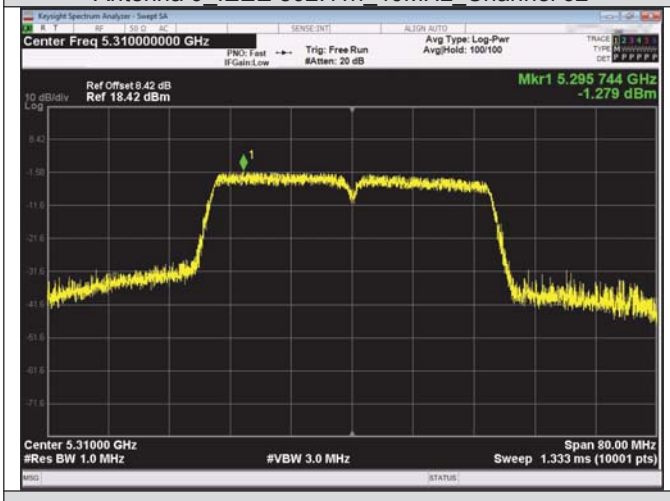
Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_40MHz_Channel 62



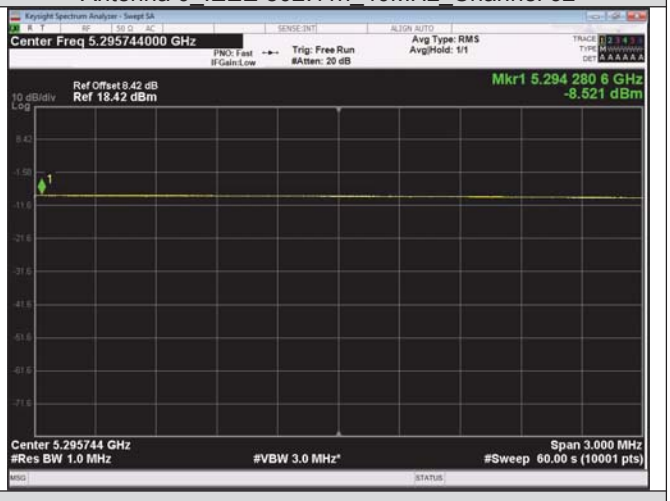
The highest mean power

Antenna 0_IEEE 802.11n_40MHz_Channel 62



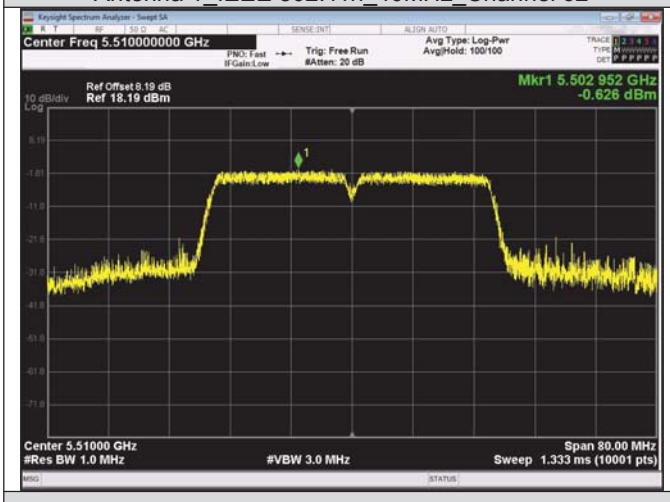
Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_40MHz_Channel 62



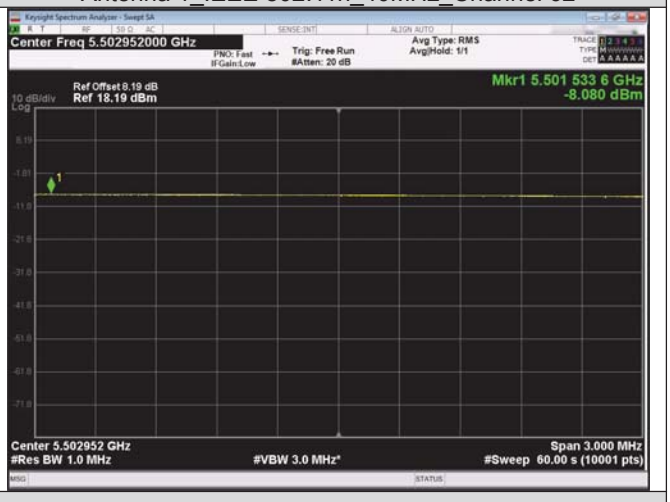
The highest mean power

Antenna 1_IEEE 802.11n_40MHz_Channel 62



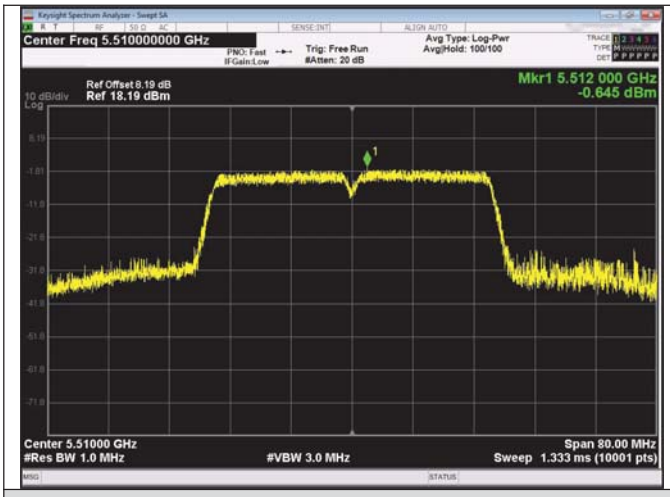
Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_40MHz_Channel 102



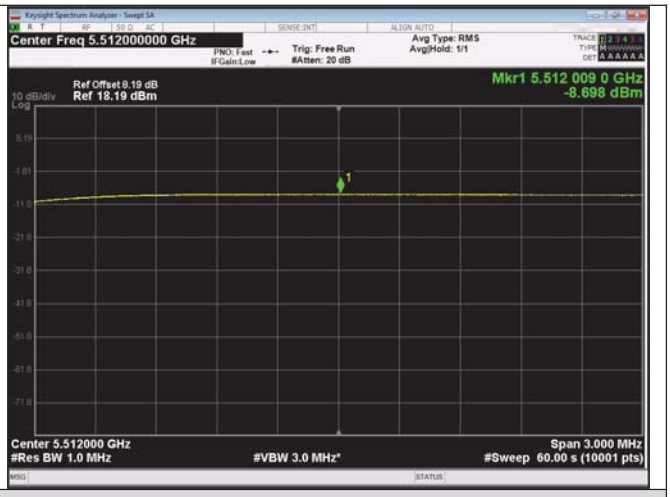
The highest mean power

Antenna 0_IEEE 802.11n_40MHz_Channel 102



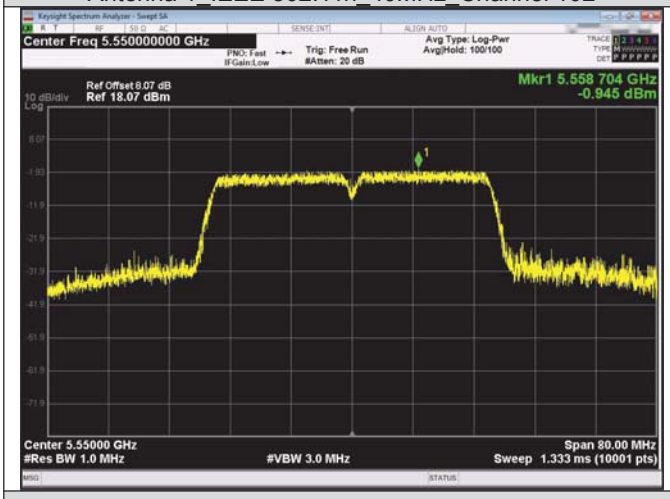
Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_40MHz_Channel 102



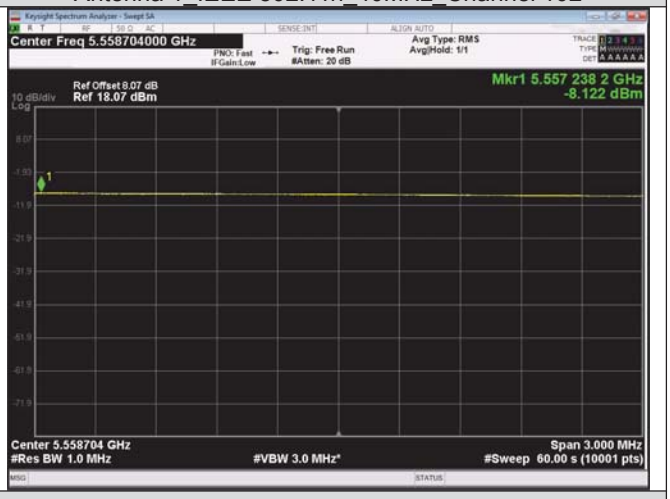
The highest mean power

Antenna 1_IEEE 802.11n_40MHz_Channel 102



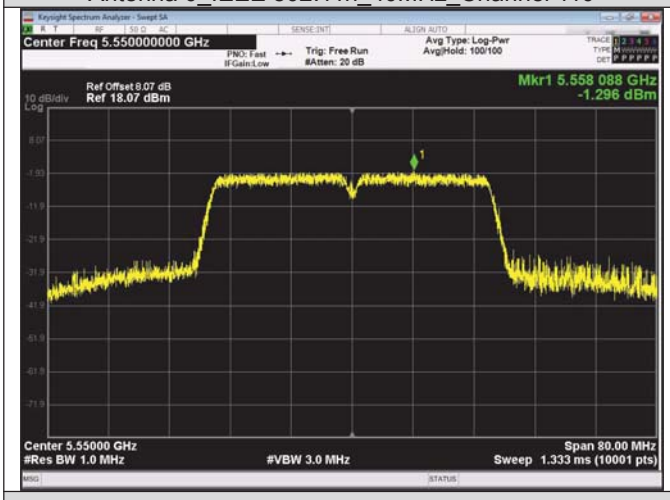
Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_40MHz_Channel 110



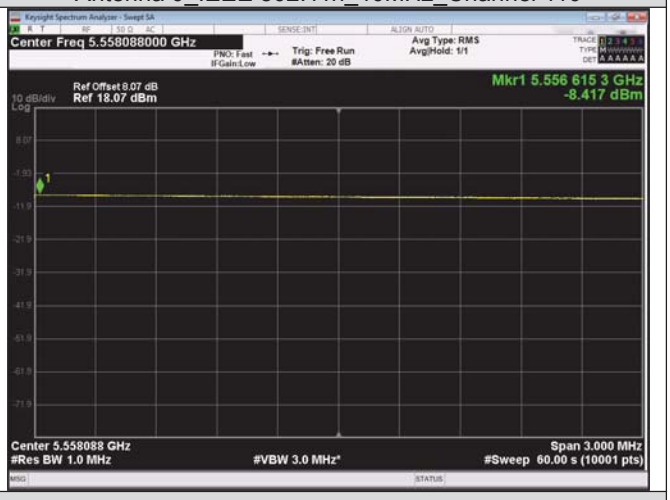
The highest mean power

Antenna 0_IEEE 802.11n_40MHz_Channel 110



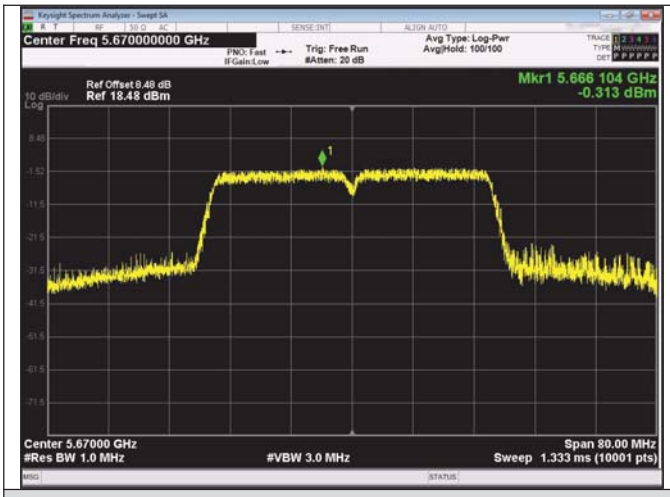
Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_40MHz_Channel 110



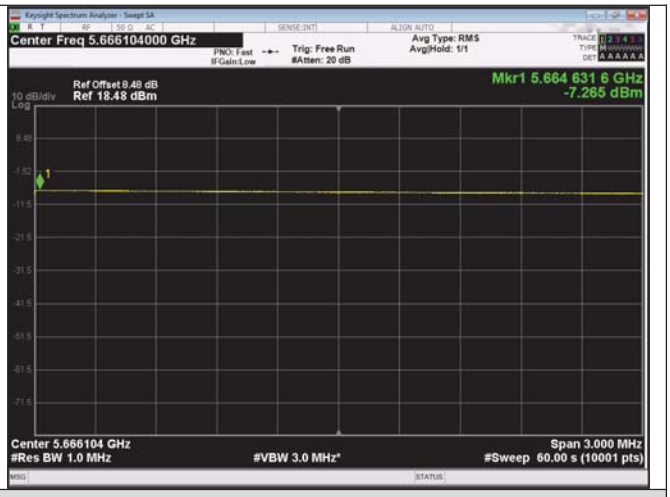
The highest mean power

Antenna 1_IEEE 802.11n_40MHz_Channel 110



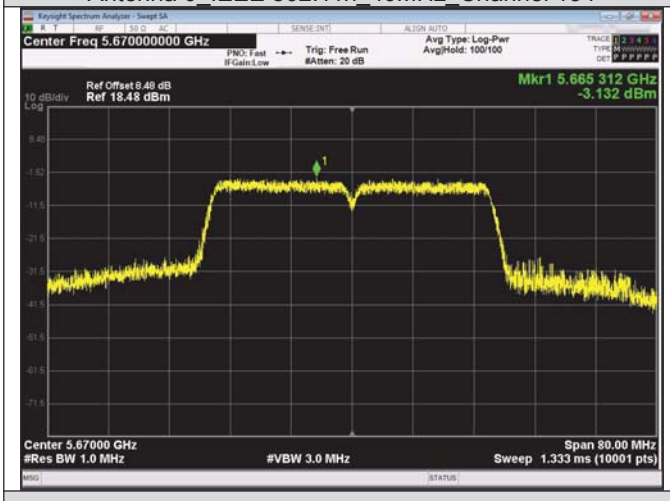
Find the peak value of the power envelope

Antenna 0_IEEE 802.11n_40MHz_Channel 134



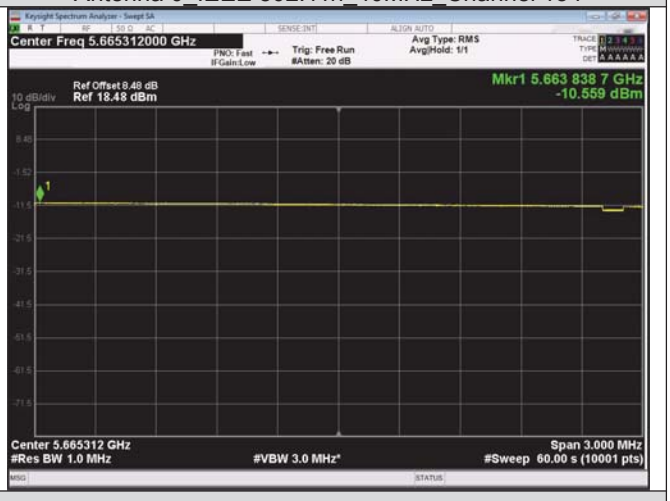
The highest mean power

Antenna 0_IEEE 802.11n_40MHz_Channel 134



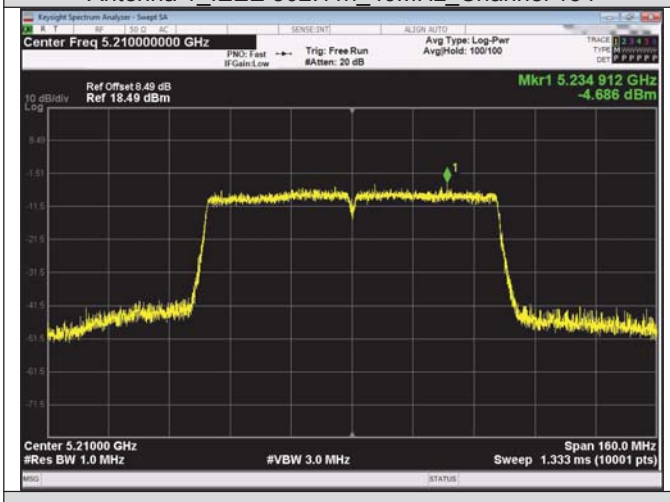
Find the peak value of the power envelope

Antenna 1_IEEE 802.11n_40MHz_Channel 134



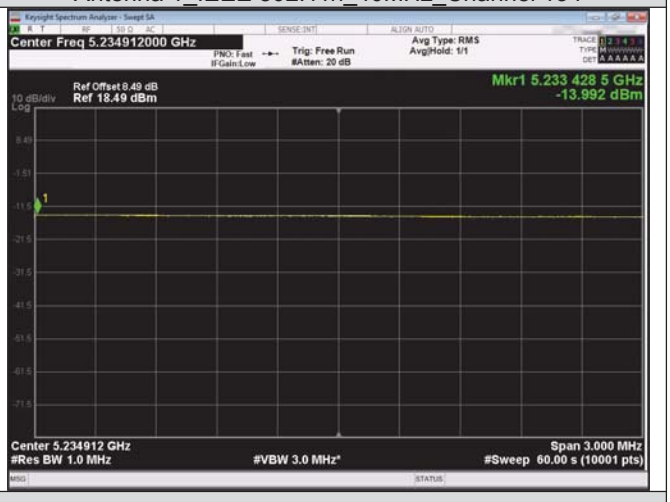
The highest mean power

Antenna 1_IEEE 802.11n_40MHz_Channel 134



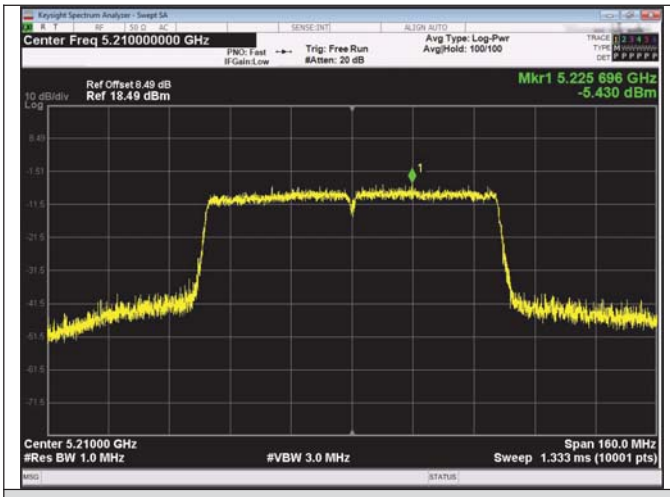
Find the peak value of the power envelope

Antenna 0_IEEE 802.11ac_80MHz_Channel 42



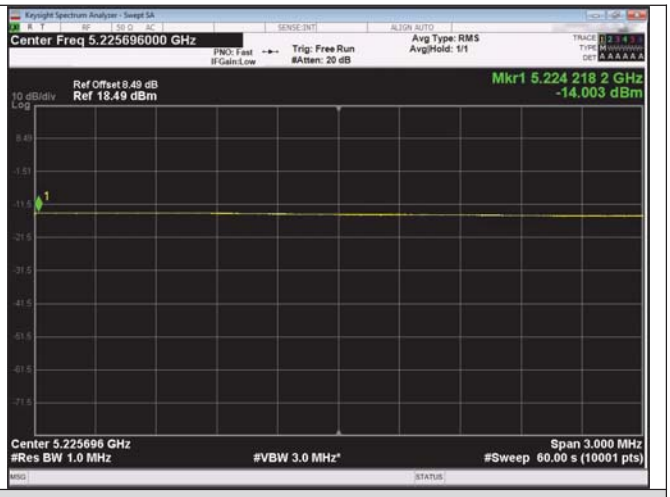
The highest mean power

Antenna 0_IEEE 802.11ac_80MHz_Channel 42



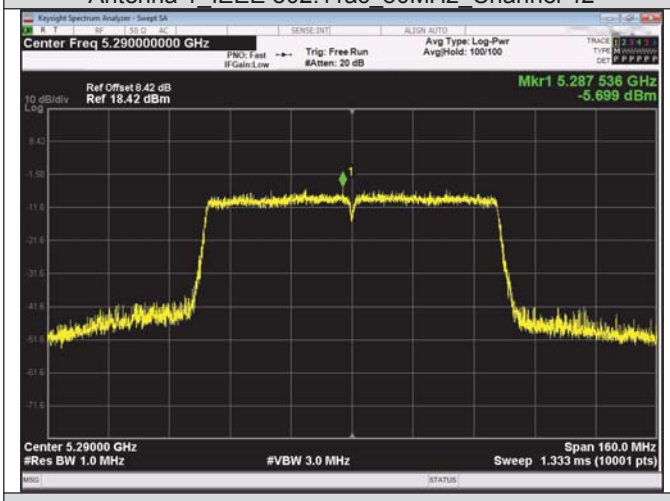
Find the peak value of the power envelope

Antenna 1_IEEE 802.11ac_80MHz_Channel 42



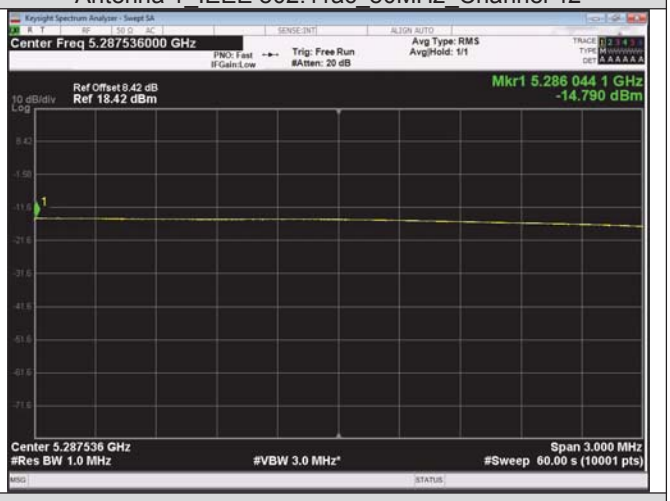
The highest mean power

Antenna 1_IEEE 802.11ac_80MHz_Channel 42



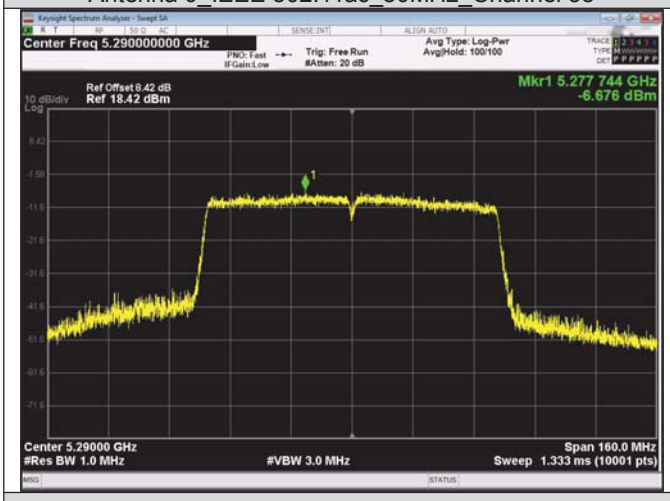
Find the peak value of the power envelope

Antenna 0_IEEE 802.11ac_80MHz_Channel 58



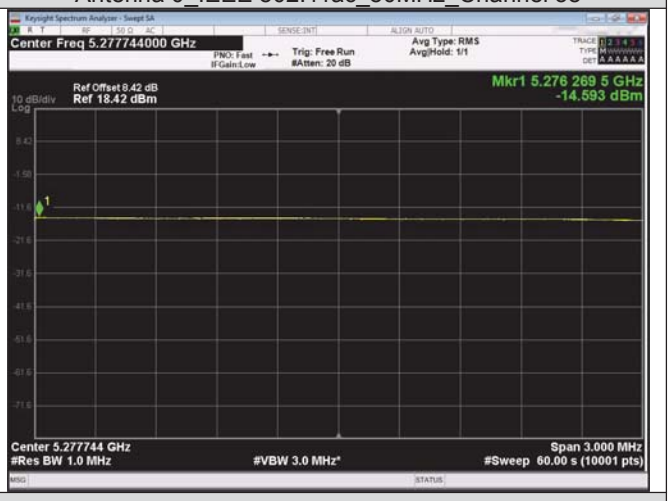
The highest mean power

Antenna 0_IEEE 802.11ac_80MHz_Channel 58



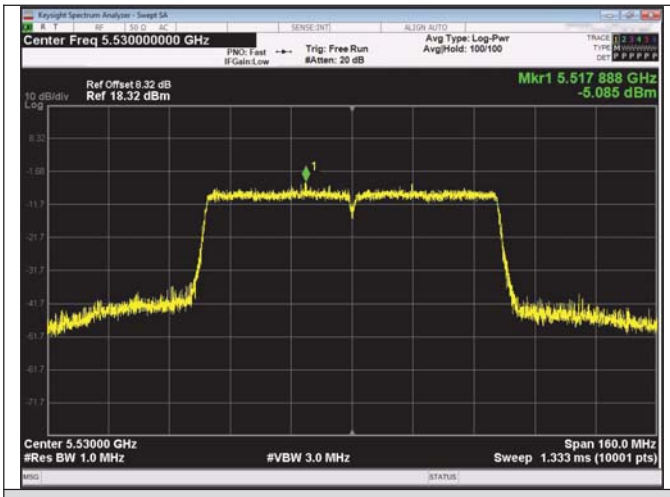
Find the peak value of the power envelope

Antenna 1_IEEE 802.11ac_80MHz_Channel 58



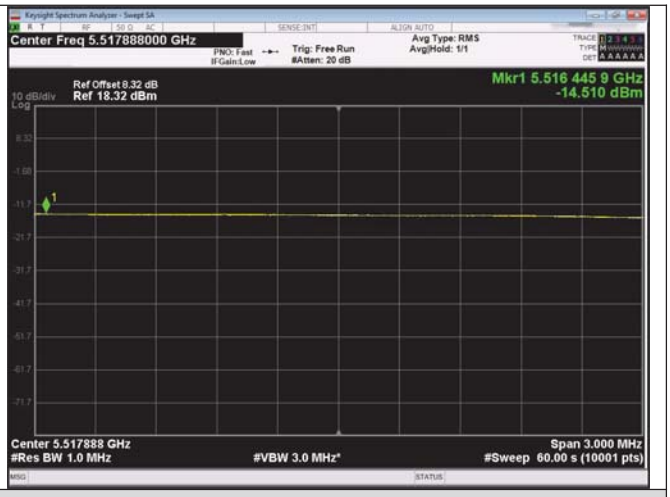
The highest mean power

Antenna 1_IEEE 802.11ac_80MHz_Channel 58



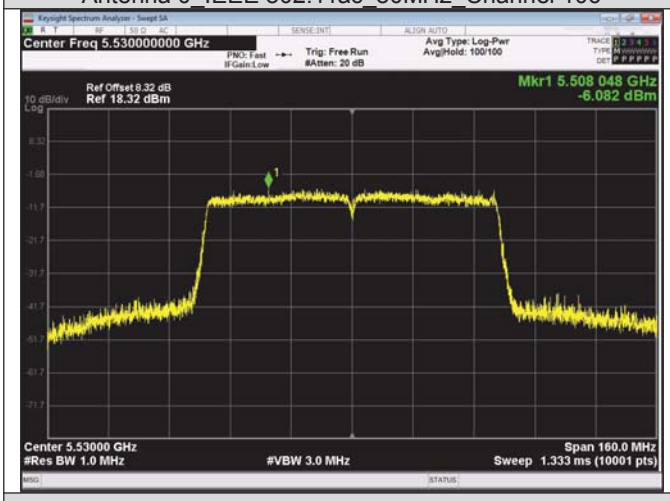
Find the peak value of the power envelope

Antenna 0_IEEE 802.11ac_80MHz_Channel 106



The highest mean power

Antenna 0_IEEE 802.11ac_80MHz_Channel 106

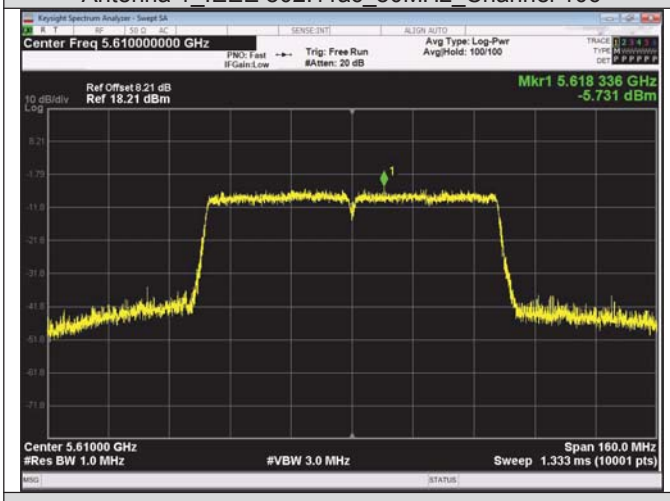


Find the peak value of the power envelope

Antenna 1_IEEE 802.11ac_80MHz_Channel 106

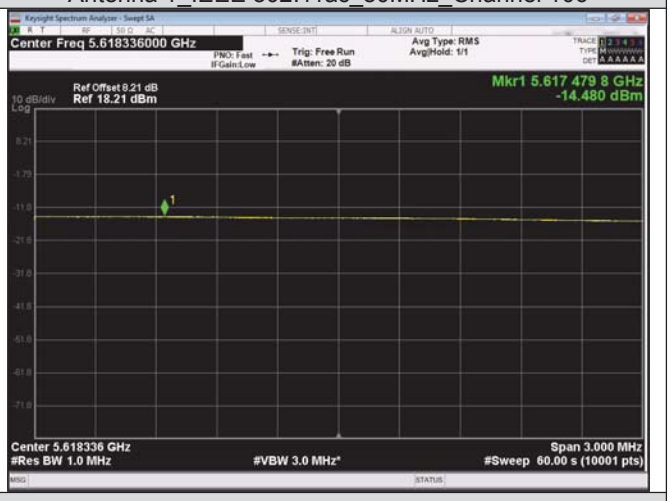
The highest mean power

Antenna 1_IEEE 802.11ac_80MHz_Channel 106



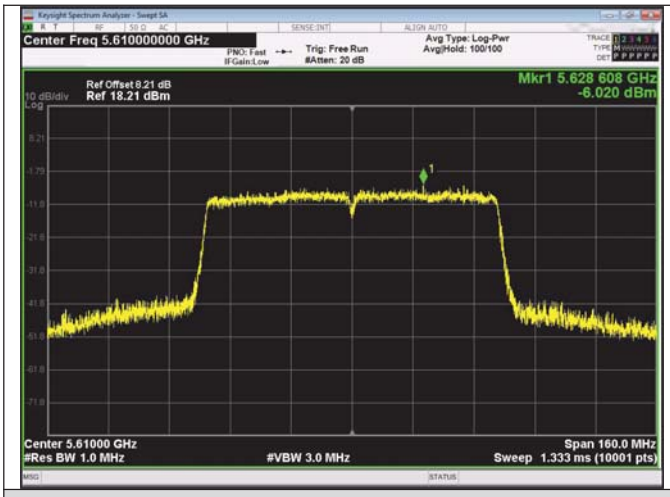
Find the peak value of the power envelope

Antenna 0_IEEE 802.11ac_80MHz_Channel 122



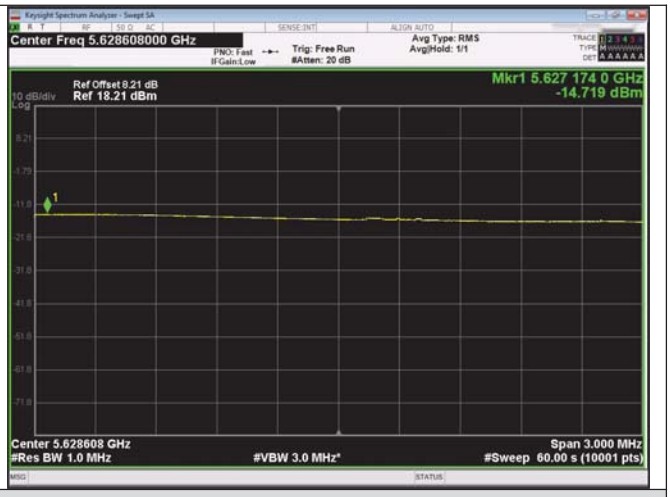
The highest mean power

Antenna 0_IEEE 802.11ac_80MHz_Channel 122



Find the peak value of the power envelope

Antenna 1_IEEE 802.11ac_80MHz_Channel 122

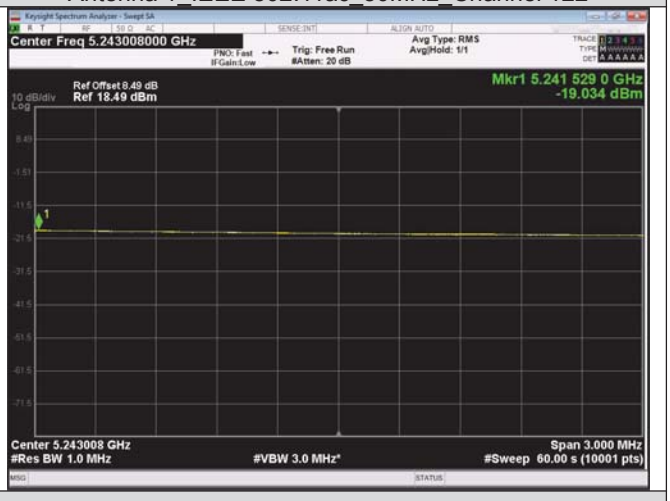


The highest mean power

Antenna 1_IEEE 802.11ac_80MHz_Channel 122

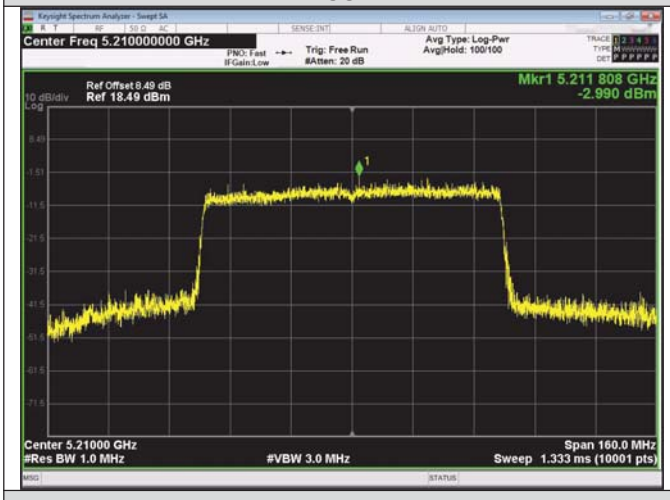
Find the peak value of the power envelope

Antenna 0_IEEE 802.11ax_80MHz_Channel 42_RU&Index SU



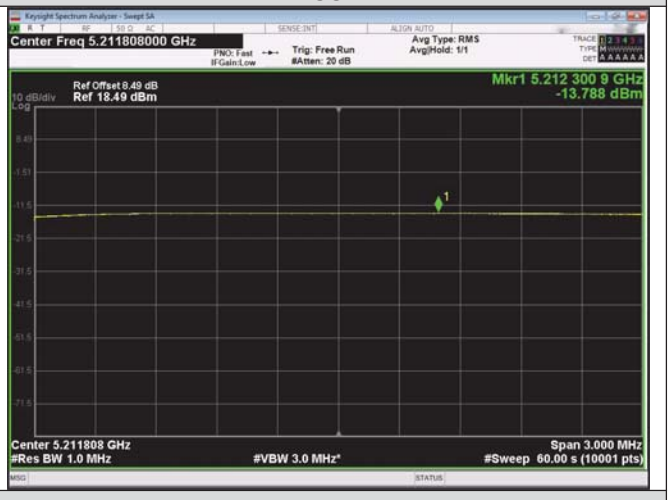
The highest mean power

Antenna 0_IEEE 802.11ax_80MHz_Channel 42_RU&Index SU



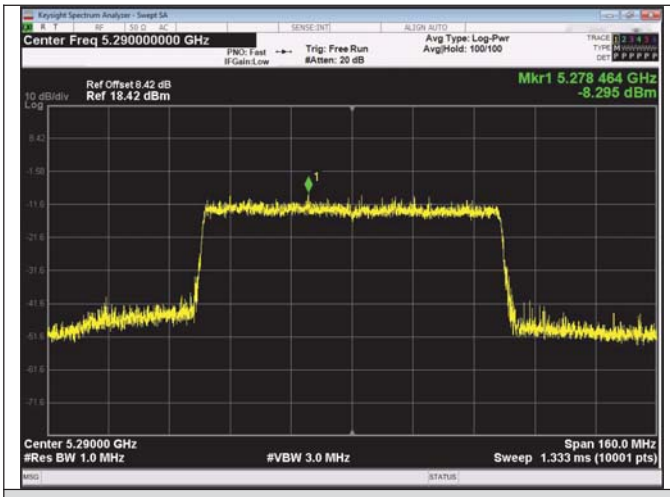
Find the peak value of the power envelope

Antenna 1_IEEE 802.11ax_80MHz_Channel 42_RU&Index SU



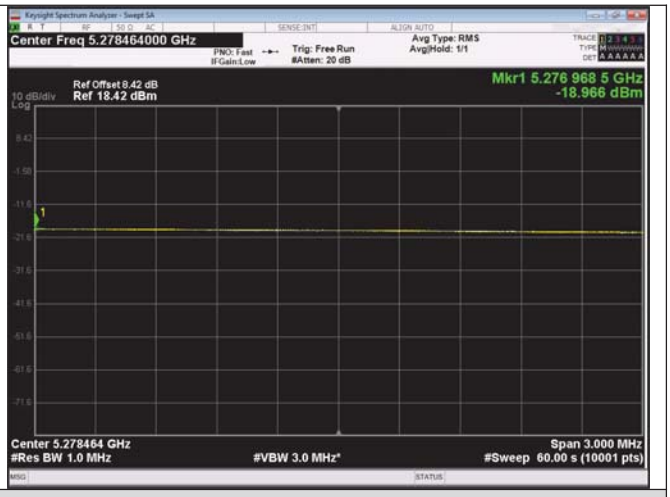
The highest mean power

Antenna 1_IEEE 802.11ax_80MHz_Channel 42_RU&Index SU



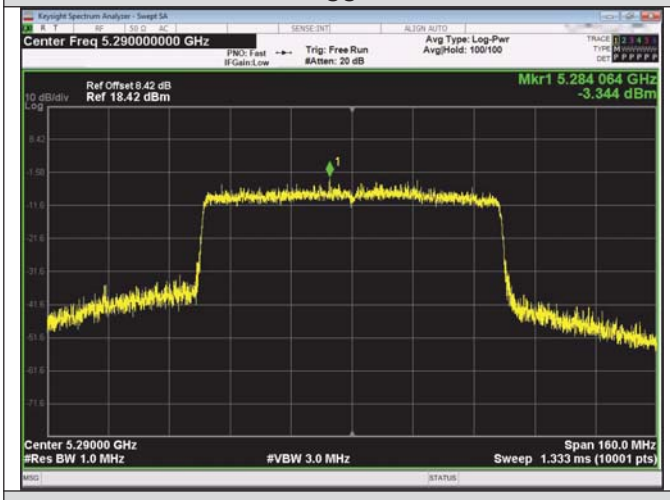
Find the peak value of the power envelope

Antenna 0_IEEE 802.11ax_80MHz_Channel 58_RU&Index SU



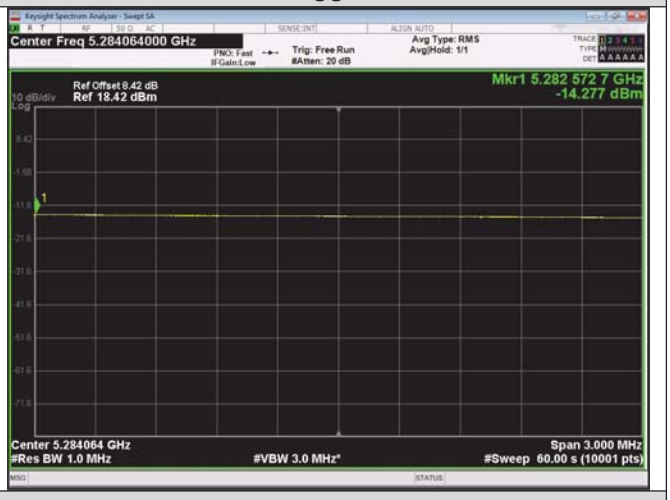
The highest mean power

Antenna 0_IEEE 802.11ax_80MHz_Channel 58_RU&Index SU



Find the peak value of the power envelope

Antenna 1_IEEE 802.11ax_80MHz_Channel 58_RU&Index SU

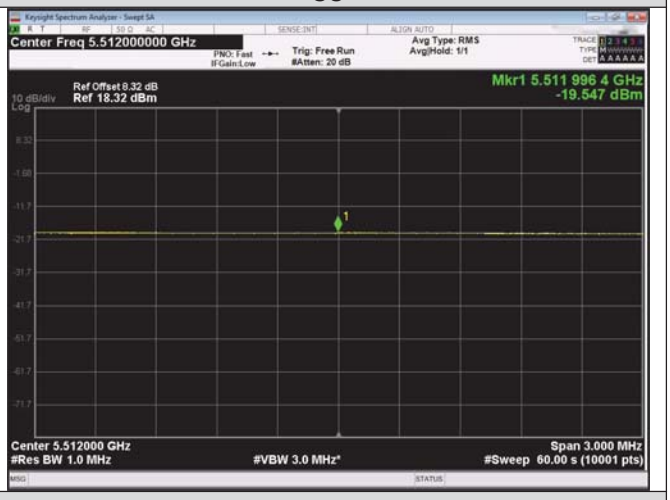


The highest mean power

Antenna 1_IEEE 802.11ax_80MHz_Channel 58_RU&Index SU

Find the peak value of the power envelope

Antenna 0_IEEE 802.11ax_80MHz_Channel 106_RU&Index SU

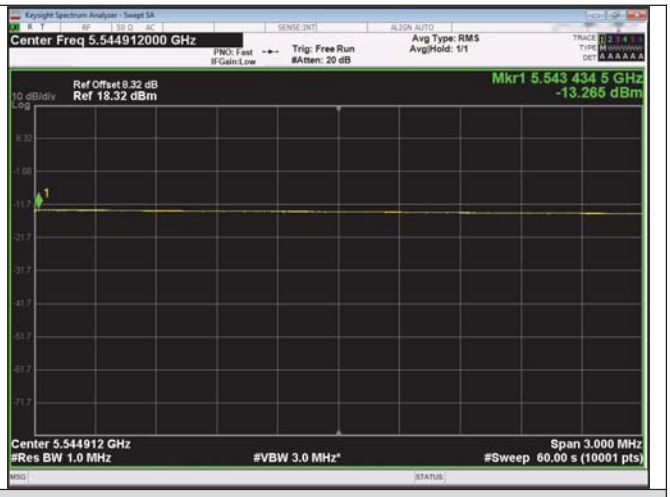


The highest mean power

Antenna 0_IEEE 802.11ax_80MHz_Channel 106_RU&Index SU

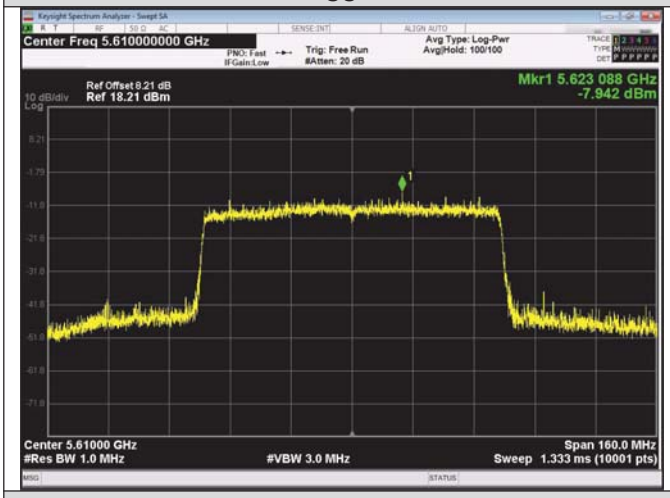
Find the peak value of the power envelope

Antenna 1_IEEE 802.11ax_80MHz_Channel 106_RU&Index SU



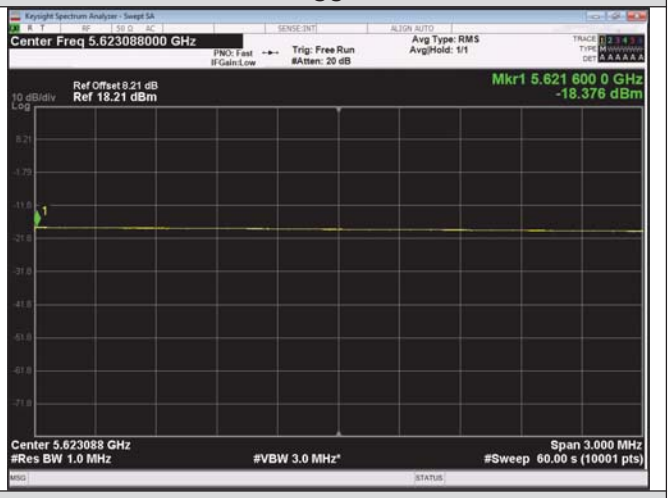
The highest mean power

Antenna 1_IEEE 802.11ax_80MHz_Channel 106_RU&Index SU



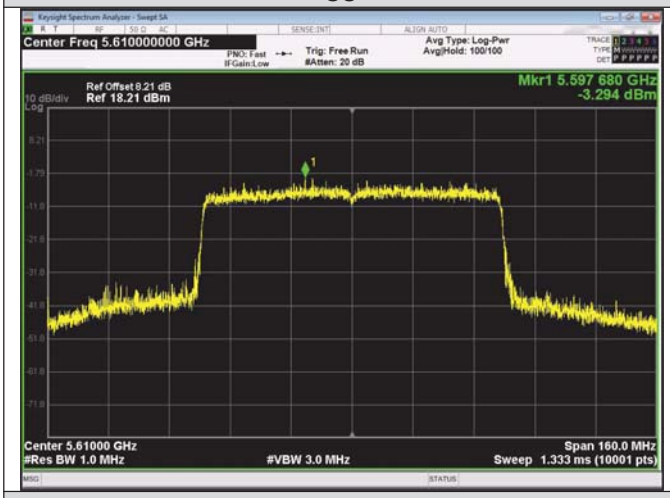
Find the peak value of the power envelope

Antenna 0_IEEE 802.11ax_80MHz_Channel 122_RU&Index SU



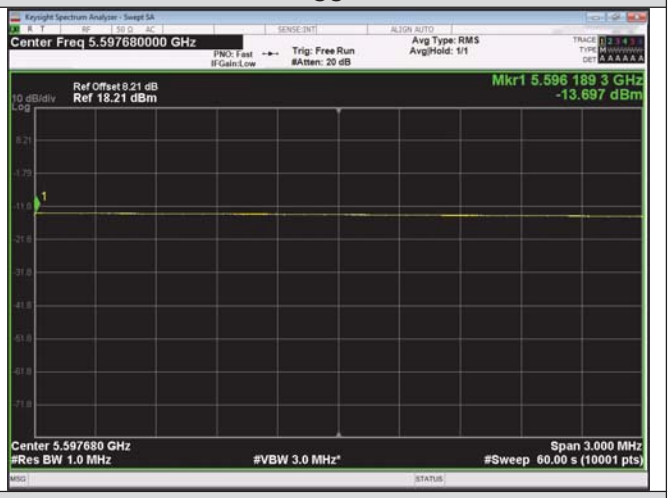
The highest mean power

Antenna 0_IEEE 802.11ax_80MHz_Channel 122_RU&Index SU



Find the peak value of the power envelope

Antenna 1_IEEE 802.11ax_80MHz_Channel 122_RU&Index SU



The highest mean power

Antenna 1_IEEE 802.11ax_80MHz_Channel 122_RU&Index SU

6. TRANSMITTER UNWANTED EMISSIONS OUTSIDE THE 5 GHZ RLAN BANDS

6.1 APPLIED PROCEDURES / LIMIT

LIMIT

The level of transmitter unwanted emissions outside the 5 GHz RLAN bands shall not exceed the limits given in table 4.

In case of equipment with antenna connectors, these limits apply to emissions at the antenna port (conducted). For emissions radiated by the cabinet or emissions radiated by integral antenna equipment (without antenna connectors), these limits are e.r.p. for emissions up to 1 GHz and e.i.r.p. for emissions above 1 GHz.

Table 4: Transmitter unwanted emission limits outside the 5 GHz RLAN bands

Frequency range	Maximum power	Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36 dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 862 MHz	-54 dBm	100 kHz
862 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 5,15 GHz	-30 dBm	1 MHz
5,35 GHz to 5,47 GHz	-30 dBm	1 MHz
5,725 GHz to 26 GHz	-30 dBm	1 MHz

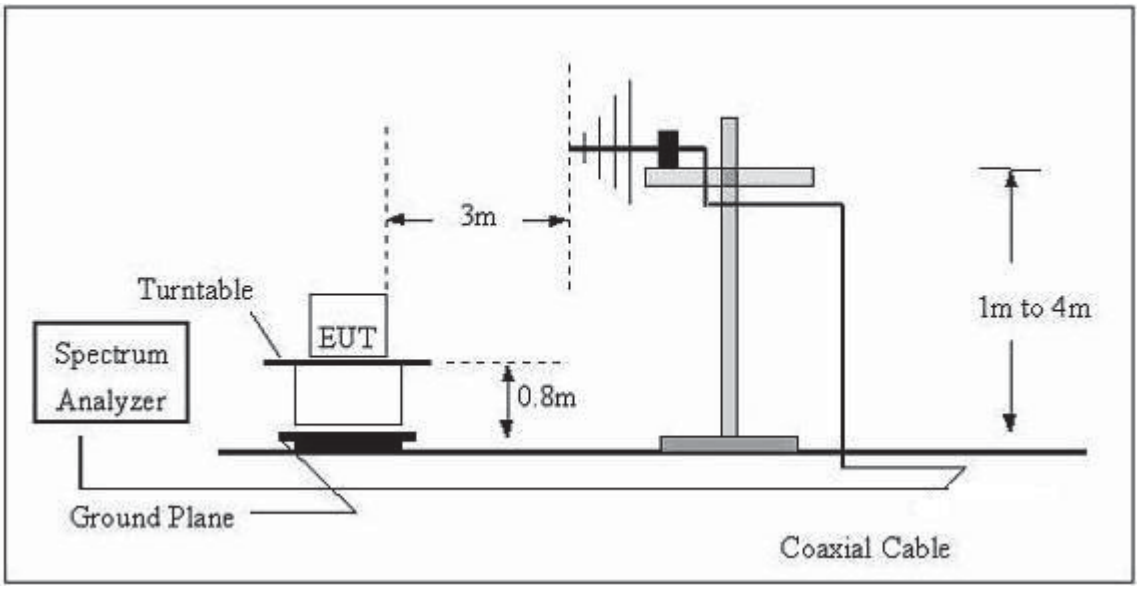
6.2 CONFORMANCE

Conformance tests as defined in clause 5.4.5 shall be carried out.

6.3 TEST METHOD

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.4

6.4 TEST SETUP LAYOUT



6.5 TEST RESULTS

Below 1GHz

Test Mode:802.11n20 mode-Low			
Temperature:	25°C	Relative Humidity:	60 %
Pressure:	1012 hPa	Test Voltage:	AC 230V/50Hz

Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Polarization
129.376	-49.03	2.37	-46.66	-36	-10.66	peak	Horizontal
248.206	-49.53	3.56	-45.97	-36	-9.97	peak	Horizontal
356.682	-49.61	3.64	-45.97	-36	-9.97	peak	Horizontal
532.831	-67.00	4.05	-62.95	-54	-8.95	peak	Horizontal
713.857	-68.37	4.65	-63.72	-54	-9.72	peak	Horizontal
831.285	-69.25	5.58	-63.67	-54	-9.67	peak	Horizontal
97.265	-66.30	2.21	-64.09	-54	-10.09	peak	Vertical
240.005	-49.21	3.55	-45.66	-36	-9.66	peak	Vertical
403.065	-49.20	3.64	-45.56	-36	-9.56	peak	Vertical
527.626	-68.71	4.05	-64.66	-54	-10.66	peak	Vertical
652.967	-67.43	4.65	-62.78	-54	-8.78	peak	Vertical
816.645	-67.50	5.58	-61.92	-54	-7.92	peak	Vertical

Test Mode:802.11n20 mode-High			
Temperature:	25°C	Relative Humidity:	60 %
Pressure:	1012 hPa	Test Voltage:	AC 230V/50Hz

Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Polarization
130.632	-48.76	2.35	-46.41	-36	-10.41	peak	Horizontal
260.248	-49.13	3.54	-45.59	-36	-9.59	peak	Horizontal
389.210	-49.29	3.63	-45.66	-36	-9.66	peak	Horizontal
542.521	-67.98	4.04	-63.94	-54	-9.94	peak	Horizontal
729.983	-67.06	4.63	-62.43	-54	-8.43	peak	Horizontal
847.359	-69.23	5.57	-63.66	-54	-9.66	peak	Horizontal
110.206	-67.30	2.22	-65.08	-54	-11.08	peak	Vertical
246.789	-49.68	3.56	-46.12	-36	-10.12	peak	Vertical
442.710	-49.81	3.63	-46.18	-36	-10.18	peak	Vertical
549.695	-68.87	4.04	-64.83	-54	-10.83	peak	Vertical
673.998	-69.10	4.64	-64.46	-54	-10.46	peak	Vertical
811.755	-69.17	5.57	-63.60	-54	-9.60	peak	Vertical

Note:
1. The emission behaviour belongs to narrowband spurious emission.
2. Calculation of result is: Result (dBm)= Reading (dBm)+ Correct Factor (dB).
3. Recored the worst data 802.11n20 mode for 5150-5250MHz in report.

Above 1GHz

Test Mode:802.11n20 mode-Low			
Temperature:	25°C	Relative Humidity:	60 %
Pressure:	1012 hPa	Test Voltage:	AC 230V/50Hz

Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Polarization
5439.598	-53.32	14.25	-39.07	-30	-9.07	peak	Horizontal
7254.403	-55.45	16.54	-38.91	-30	-8.91	peak	Horizontal
11366.393	-58.29	18.66	-39.63	-30	-9.63	peak	Horizontal
13246.632	-60.02	20.39	-39.63	-30	-9.63	peak	Horizontal
16852.905	-60.11	23.22	-36.89	-30	-6.89	peak	Horizontal
22003.339	-61.18	24.25	-36.93	-30	-6.93	peak	Horizontal
5487.463	-54.95	14.25	-40.70	-30	-10.70	peak	Vertical
7452.202	-58.12	16.54	-41.58	-30	-11.58	peak	Vertical
10245.410	-60.66	18.66	-42.00	-30	-12.00	peak	Vertical
13684.604	-60.20	20.39	-39.81	-30	-9.81	peak	Vertical
16952.626	-62.34	23.22	-39.12	-30	-9.12	peak	Vertical
20327.133	-62.72	24.25	-38.47	-30	-8.47	peak	Vertical

Test Mode: Band I 802.11n20 mode-High			
Temperature:	25°C	Relative Humidity:	60 %
Pressure:	1012 hPa	Test Voltage:	AC 230V/50Hz

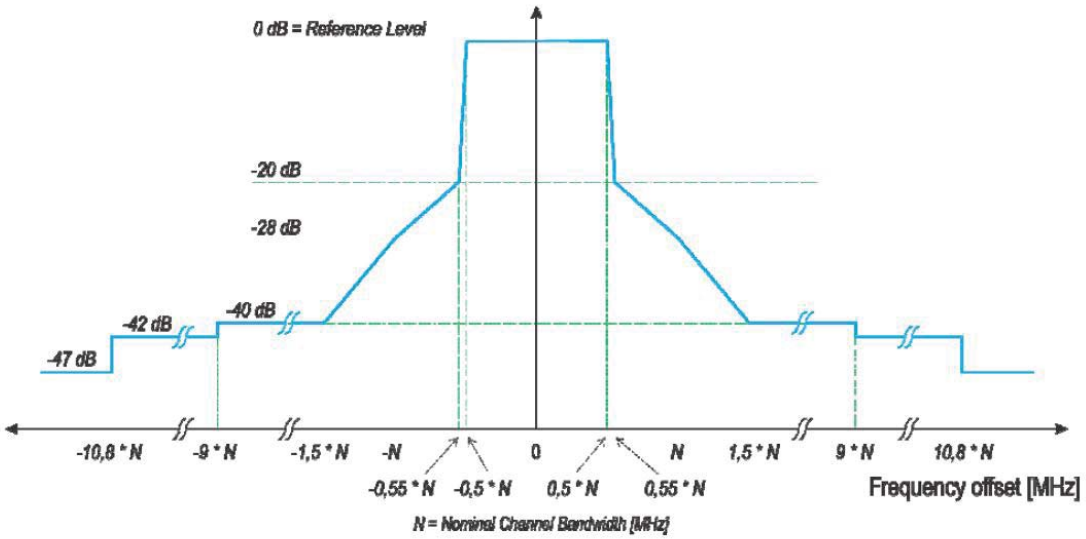
Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Polarization
5325.065	-56.28	14.25	-42.03	-30	-12.03	peak	Horizontal
7412.543	-59.29	16.54	-42.75	-30	-12.75	peak	Horizontal
11032.640	-58.73	18.66	-40.07	-30	-10.07	peak	Horizontal
14536.067	-60.83	20.39	-40.44	-30	-10.44	peak	Horizontal
17962.429	-63.48	23.22	-40.26	-30	-10.26	peak	Horizontal
20541.620	-62.92	24.25	-38.67	-30	-8.67	peak	Horizontal
5481.727	-54.69	14.25	-40.44	-30	-10.44	peak	Vertical
7684.576	-57.77	16.54	-41.23	-30	-11.23	peak	Vertical
11032.075	-59.87	18.66	-41.21	-30	-11.21	peak	Vertical
12435.462	-59.27	20.39	-38.88	-30	-8.88	peak	Vertical
15245.982	-61.32	23.22	-38.10	-30	-8.10	peak	Vertical
20535.652	-63.90	24.25	-39.65	-30	-9.65	peak	Vertical

Note:
1. The emission behaviour belongs to narrowband spurious emission.
2. Calculation of result is: Result (dBm)= Reading (dBm)+ Correct Factor (dB).
3. Recored the worst data 802.11n20 mode for 5150-5250MHz in report.

7. TRANSMITTER UNWANTED EMISSIONS WITHIN THE 5 GHZ RLAN BANDS

7.1 APPLIED PROCEDURES / LIMIT

LIMIT



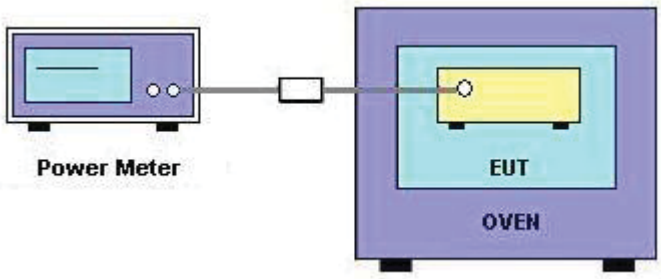
NOTE: dBc is the spectral density relative to the maximum spectral power density of the transmitted signal.

Figure 1: Transmit spectral power mask

7.2 TEST PROCEDURES

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.6.2

7.3 TEST SETUP LAYOUT



7.4 TEST RESULTS

Mode	Ch.	RU & Index	Ant.	Frequency offset start(MHz)	Frequency offset end(MHz)	Start (MHz)	Stop (MHz)	Peak (MHz)	Emission (dBm)	Over Limit (dBm)	Limit (dBm)	Result
IEEE 802.11n_20	36	N/A	0	-1.5 * N	-N	5150.0	5160	5160.0	-40.927	-8.919	-32.01	PASS
				-N	-0.55 * N	5160	5169.0	5169.0	-30.435	-6.434	-24.0	PASS
				-0.55 * N	-0.5 * N	5169.0	5170.0	5170.0	-23.966	-19.693	-4.27	PASS
				-0.5 * N	0.5 * N	5170.0	5190.0	5180.8	-4.063	-0.078	-3.98	PASS
				0.5 * N	0.55 * N	5190.0	5191.0	5190.0	-24.744	-20.679	-4.07	PASS
				0.55 * N	N	5191.0	5200	5191.0	-32.225	-8.236	-23.99	PASS
				N	1.5 * N	5200	5210.0	5200.1	-42.679	-10.568	-32.11	PASS
				1.5 * N	9 * N	5210.0	5360	5210.3	-50.450	-6.465	-43.98	PASS
				10.8 * N	+∞	5396.0	7396.0	5724.0	-60.398	-9.413	-50.98	PASS
	40			-9 * N	-1.5 * N	5020	5170.0	5169.9	-56.514	-12.654	-43.86	PASS
				-1.5 * N	-N	5170.0	5180	5180.0	-46.498	-14.618	-31.88	PASS
				-N	-0.55 * N	5180	5189.0	5189.0	-32.742	-8.868	-23.87	PASS
				-0.55 * N	-0.5 * N	5189.0	5190.0	5190.0	-24.575	-20.457	-4.12	PASS
				-0.5 * N	0.5 * N	5190.0	5210.0	5201.0	-3.958	-0.098	-3.86	PASS
				0.5 * N	0.55 * N	5210.0	5211.0	5210.0	-25.221	-20.841	-4.38	PASS
				0.55 * N	N	5211.0	5220	5211.0	-34.082	-10.217	-23.87	PASS
				N	1.5 * N	5220	5230.0	5220.0	-49.429	-17.561	-31.87	PASS
				1.5 * N	9 * N	5230.	5380	5230.	-56.321	-12.46	-43.86	PASS

						0		1		1		
				10.8 * N	+∞	5416.0	7416.0	5723.7	-60.478	-9.618	-50.86	PASS
	48			-9 * N	-1.5 * N	5060	5210.0	5209.9	-55.434	-11.993	-43.44	PASS
				-1.5 * N	-N	5210.0	5220	5219.8	-45.406	-13.782	-31.62	PASS
				-N	-0.55 * N	5220	5229.0	5229.0	-32.110	-8.641	-23.47	PASS
				-0.55 * N	-0.5 * N	5229.0	5230.0	5230.0	-23.713	-20.073	-3.64	PASS
				-0.5 * N	0.5 * N	5230.0	5250.0	5239.1	-3.577	-0.136	-3.44	PASS
				0.5 * N	0.55 * N	5250.0	5251.0	5250.0	-24.740	-21.099	-3.64	PASS
				0.55 * N	N	5251.0	5260	5251.0	-33.660	-10.210	-23.45	PASS
				N	1.5 * N	5260	5270.0	5260.0	-48.178	-16.700	-31.48	PASS
				1.5 * N	9 * N	5270.0	5420	5270.0	-55.798	-12.357	-43.44	PASS
				10.8 * N	+∞	5456.0	7456.0	5712.7	-60.451	-10.010	-50.44	PASS
	52			-9 * N	-1.5 * N	5080	5230.0	5229.7	-57.209	-13.396	-43.81	PASS
				-1.5 * N	-N	5230.0	5240	5240.0	-48.203	-16.377	-31.83	PASS
				-N	-0.55 * N	5240	5249.0	5249.0	-33.252	-9.430	-23.82	PASS
				-0.55 * N	-0.5 * N	5249.0	5250.0	5250.0	-24.429	-20.454	-3.97	PASS
				-0.5 * N	0.5 * N	5250.0	5270.0	5261.0	-4.029	-0.216	-3.81	PASS
				0.5 * N	0.55 * N	5270.0	5271.0	5270.0	-25.242	-21.189	-4.05	PASS
				0.55 * N	N	5271.0	5280	5271.0	-34.573	-10.749	-23.82	PASS
				N	1.5 * N	5280	5290.0	5280.1	-50.738	-18.813	-31.92	PASS
				1.5 * N	9 * N	5290.	5440	5290.	-56.944	-13.13	-43.81	PASS

						0		1		1		
				9 * N	10.8 * N	5440	5476.0	5471.9	-61.471	-15.658	-45.81	PASS
				10.8 * N	+∞	5476.0	7476.0	5718.9	-60.494	-9.681	-50.81	PASS
	56			-9 * N	-1.5 * N	5100	5250.0	5249.9	-57.283	-12.496	-44.79	PASS
				-1.5 * N	-N	5250.0	5260	5260.0	-48.170	-15.324	-32.85	PASS
				-N	-0.55 * N	5260	5269.0	5269.0	-34.033	-9.221	-24.81	PASS
				-0.55 * N	-0.5 * N	5269.0	5270.0	5270.0	-25.160	-20.251	-4.91	PASS
				-0.5 * N	0.5 * N	5270.0	5290.0	5280.9	-4.876	-0.089	-4.79	PASS
				0.5 * N	0.55 * N	5290.0	5291.0	5290.0	-26.205	-21.138	-5.07	PASS
				0.55 * N	N	5291.0	5300	5291.0	-35.158	-10.341	-24.82	PASS
				N	1.5 * N	5300	5310.0	5300.1	-50.947	-18.094	-32.85	PASS
				1.5 * N	9 * N	5310.0	5460	5310.1	-57.078	-12.291	-44.79	PASS
				9 * N	10.8 * N	5460	5496.0	5470.7	-61.557	-14.770	-46.79	PASS
				10.8 * N	+∞	5496.0	7496.0	5723.5	-60.499	-8.712	-51.79	PASS
	64			-9 * N	-1.5 * N	5140	5290.0	5289.9	-56.779	-12.389	-44.39	PASS
				-1.5 * N	-N	5290.0	5300	5300.0	-47.799	-15.403	-32.4	PASS
				-N	-0.55 * N	5300	5309.0	5309.0	-33.234	-8.840	-24.39	PASS
				-0.55 * N	-0.5 * N	5309.0	5310.0	5310.0	-24.642	-20.190	-4.45	PASS
				-0.5 * N	0.5 * N	5310.0	5330.0	5318.9	-4.561	-0.171	-4.39	PASS
				0.5 * N	0.55 * N	5330.0	5331.0	5330.0	-26.106	-21.356	-4.75	PASS
				0.55 * N	N	5331.	5340	5331.	-35.028	-10.62	-24.41	PASS

						0		0		2		
				N	1.5 * N	5340	5350.0	5340.0	-51.111	-18.698	-32.41	PASS
				1.5 * N	9 * N	5350.0	5500	5350.0	-57.307	-12.917	-44.39	PASS
				9 * N	10.8 * N	5500	5536.0	5506.5	-61.468	-15.078	-46.39	PASS
				10.8 * N	+∞	5536.0	7536.0	5722.3	-60.541	-9.151	-51.39	PASS
				0	-10.8 * N	1	5284.0	5275.3	-60.923	-9.361	-51.56	PASS
				-10.8 * N	-9 * N	5284.0	5320	5303.7	-60.892	-14.330	-46.56	PASS
				-9 * N	-1.5 * N	5320	5470.0	5323.0	-60.927	-16.365	-44.56	PASS
				-1.5 * N	-N	5470.0	5480	5480.0	-44.478	-11.882	-32.6	PASS
				-N	-0.55 * N	5480	5489.0	5489.0	-32.252	-7.689	-24.56	PASS
				-0.55 * N	-0.5 * N	5489.0	5490.0	5490.0	-24.237	-19.582	-4.65	PASS
	100			-0.5 * N	0.5 * N	5490.0	5510.0	5500.9	-4.568	-0.006	-4.56	PASS
				0.5 * N	0.55 * N	5510.0	5511.0	5510.0	-26.028	-21.196	-4.83	PASS
				0.55 * N	N	5511.0	5520	5511.0	-34.705	-10.136	-24.57	PASS
				N	1.5 * N	5520	5530.0	5520.1	-47.484	-14.756	-32.73	PASS
				1.5 * N	9 * N	5530.0	5680	5530.0	-55.987	-11.425	-44.56	PASS
				9 * N	10.8 * N	5680	5716.0	5711.4	-60.587	-14.025	-46.56	PASS
				10.8 * N	+∞	5716.0	7716.0	5721.2	-60.560	-8.998	-51.56	PASS
				0	-10.8 * N	1	5364.0	5303.4	-61.161	-9.672	-51.49	PASS
	116			-9 * N	-1.5 * N	5400	5550.0	5550.0	-55.882	-11.393	-44.49	PASS
				-1.5 * N	-N	5550.	5560	5559.	-45.686	-13.04	-32.64	PASS

						0		9		2		
				-N	-0.55 * N	5560	5569.0	5569.0	-33.049	-8.538	-24.51	PASS
				-0.55 * N	-0.5 * N	5569.0	5570.0	5570.0	-24.728	-20.169	-4.56	PASS
				-0.5 * N	0.5 * N	5570.0	5590.0	5580.8	-4.569	-0.080	-4.49	PASS
				0.5 * N	0.55 * N	5590.0	5591.0	5590.0	-25.979	-21.190	-4.79	PASS
				0.55 * N	N	5591.0	5600	5591.0	-34.643	-10.146	-24.5	PASS
				N	1.5 * N	5600	5610.0	5600.0	-47.174	-14.670	-32.5	PASS
				1.5 * N	9 * N	5610.0	5760	5610.1	-56.419	-11.930	-44.49	PASS
				0	-10.8 * N	1	5484.0	5267.7	-60.723	-10.553	-50.17	PASS
				-10.8 * N	-9 * N	5484.0	5520	5518.9	-61.522	-16.352	-45.17	PASS
				-9 * N	-1.5 * N	5520	5670.0	5669.7	-54.669	-11.499	-43.17	PASS
				-1.5 * N	-N	5670.0	5680	5680.0	-44.472	-13.288	-31.18	PASS
				-N	-0.55 * N	5680	5689.0	5689.0	-31.722	-8.543	-23.18	PASS
				-0.55 * N	-0.5 * N	5689.0	5690.0	5690.0	-23.402	-19.980	-3.42	PASS
				-0.5 * N	0.5 * N	5690.0	5710.0	5699.0	-3.293	-0.123	-3.17	PASS
				0.5 * N	0.55 * N	5710.0	5711.0	5710.0	-24.769	-21.509	-3.26	PASS
				0.55 * N	N	5711.0	5720	5711.0	-33.648	-10.456	-23.19	PASS
				N	1.5 * N	5720	5730.0	5720.0	-46.226	-15.054	-31.17	PASS
IEEE 802.11n_20	36		1	-1.5 * N	-N	5150.0	5160	5160.0	-48.934	-15.988	-32.95	PASS
				-N	-0.55 * N	5160	5169.0	5169.0	-34.618	-9.678	-24.94	PASS
				-0.55 * N	-0.5 * N	5169.	5170.	5170.	-25.817	-20.62	-5.2	PASS

						0	0	0		1		
				-0.5 * N	0.5 * N	5170.0	5190.0	5180.9	-5.075	-0.151	-4.92	PASS
				0.5 * N	0.55 * N	5190.0	5191.0	5190.0	-25.866	-20.862	-5.0	PASS
				0.55 * N	N	5191.0	5200	5191.0	-34.857	-9.929	-24.93	PASS
				N	1.5 * N	5200	5210.0	5200.1	-49.362	-16.288	-33.07	PASS
				1.5 * N	9 * N	5210.0	5360	5210.3	-57.410	-12.486	-44.92	PASS
				10.8 * N	+∞	5396.0	7396.0	5723.3	-60.399	-8.475	-51.92	PASS
				-9 * N	-1.5 * N	5020	5170.0	5170.0	-57.374	-12.463	-44.91	PASS
				-1.5 * N	-N	5170.0	5180	5179.8	-47.543	-14.348	-33.2	PASS
				-N	-0.55 * N	5180	5189.0	5189.0	-34.097	-9.172	-24.93	PASS
				-0.55 * N	-0.5 * N	5189.0	5190.0	5190.0	-25.601	-20.449	-5.15	PASS
				-0.5 * N	0.5 * N	5190.0	5210.0	5200.8	-5.022	-0.111	-4.91	PASS
	40			0.5 * N	0.55 * N	5210.0	5211.0	5210.0	-26.148	-21.116	-5.03	PASS
				0.55 * N	N	5211.0	5220	5211.0	-35.193	-10.276	-24.92	PASS
				N	1.5 * N	5220	5230.0	5220.0	-50.137	-17.217	-32.92	PASS
				1.5 * N	9 * N	5230.0	5380	5230.6	-57.073	-12.162	-44.91	PASS
				10.8 * N	+∞	5416.0	7416.0	5710.2	-60.428	-8.517	-51.91	PASS
				-9 * N	-1.5 * N	5060	5210.0	5209.9	-56.035	-11.422	-44.61	PASS
	48			-1.5 * N	-N	5210.0	5220	5220.0	-46.350	-13.721	-32.63	PASS
				-N	-0.55 * N	5220	5229.0	5229.0	-33.481	-8.856	-24.62	PASS
				-0.55 * N	-0.5 * N	5229.	5230.	5230.	-25.121	-20.32	-4.8	PASS

						0	0	0		2		
				-0.5 * N	0.5 * N	5230.0	5250.0	5240.9	-4.758	-0.144	-4.61	PASS
				0.5 * N	0.55 * N	5250.0	5251.0	5250.0	-25.941	-21.127	-4.81	PASS
				0.55 * N	N	5251.0	5260	5251.0	-34.755	-10.133	-24.62	PASS
				N	1.5 * N	5260	5270.0	5260.0	-49.032	-16.405	-32.63	PASS
				1.5 * N	9 * N	5270.0	5420	5270.0	-56.498	-11.884	-44.61	PASS
				10.8 * N	+∞	5456.0	7456.0	5721.4	-60.439	-8.825	-51.61	PASS
				-9 * N	-1.5 * N	5080	5230.0	5229.8	-57.032	-11.991	-45.04	PASS
				-1.5 * N	-N	5230.0	5240	5239.9	-47.624	-14.426	-33.2	PASS
				-N	-0.55 * N	5240	5249.0	5249.0	-33.819	-8.769	-25.05	PASS
				-0.55 * N	-0.5 * N	5249.0	5250.0	5250.0	-25.405	-20.214	-5.19	PASS
				-0.5 * N	0.5 * N	5250.0	5270.0	5260.9	-5.226	-0.185	-5.04	PASS
				0.5 * N	0.55 * N	5270.0	5271.0	5270.0	-26.457	-21.176	-5.28	PASS
				0.55 * N	N	5271.0	5280	5271.0	-35.498	-10.446	-25.05	PASS
				N	1.5 * N	5280	5290.0	5280.0	-50.353	-17.272	-33.08	PASS
				1.5 * N	9 * N	5290.0	5440	5290.1	-57.246	-12.205	-45.04	PASS
				9 * N	10.8 * N	5440	5476.0	5473.9	-61.466	-14.425	-47.04	PASS
				10.8 * N	+∞	5476.0	7476.0	5718.7	-60.435	-8.394	-52.04	PASS
				-9 * N	-1.5 * N	5100	5250.0	5249.9	-56.695	-11.559	-45.14	PASS
				-1.5 * N	-N	5250.0	5260	5259.9	-46.948	-13.729	-33.22	PASS
				-N	-0.55 * N	5260	5269.	5269.	-33.963	-8.820	-25.14	PASS

							0	0				
				-0.55 * N	-0.5 * N	5269.0	5270.0	5270.0	-25.854	-20.599	-5.25	PASS
				-0.5 * N	0.5 * N	5270.0	5290.0	5280.8	-5.329	-0.193	-5.14	PASS
				0.5 * N	0.55 * N	5290.0	5291.0	5290.0	-26.338	-20.922	-5.42	PASS
				0.55 * N	N	5291.0	5300	5291.0	-35.267	-10.118	-25.15	PASS
				N	1.5 * N	5300	5310.0	5300.0	-50.140	-16.962	-33.18	PASS
				1.5 * N	9 * N	5310.0	5460	5310.1	-57.525	-12.389	-45.14	PASS
				9 * N	10.8 * N	5460	5496.0	5470.2	-61.468	-14.331	-47.14	PASS
				10.8 * N	+∞	5496.0	7496.0	5723.0	-60.510	-8.373	-52.14	PASS
	64			-9 * N	-1.5 * N	5140	5290.0	5289.7	-56.673	-10.545	-46.13	PASS
				-1.5 * N	-N	5290.0	5300	5300.0	-47.078	-12.896	-34.18	PASS
				-N	-0.55 * N	5300	5309.0	5309.0	-34.316	-8.185	-26.13	PASS
				-0.55 * N	-0.5 * N	5309.0	5310.0	5310.0	-25.780	-19.597	-6.18	PASS
				-0.5 * N	0.5 * N	5310.0	5330.0	5319.1	-6.436	-0.308	-6.13	PASS
				0.5 * N	0.55 * N	5330.0	5331.0	5330.0	-28.818	-22.330	-6.49	PASS
				0.55 * N	N	5331.0	5340	5331.0	-37.618	-11.474	-26.14	PASS
				N	1.5 * N	5340	5350.0	5340.2	-53.122	-18.803	-34.32	PASS
				1.5 * N	9 * N	5350.0	5500	5350.0	-59.736	-13.608	-46.13	PASS
				9 * N	10.8 * N	5500	5536.0	5517.0	-61.428	-13.300	-48.13	PASS
				10.8 * N	+∞	5536.0	7536.0	5723.6	-60.541	-7.413	-53.13	PASS
	100			0	-10.8 * N	1	5284.	5280.	-60.882	-8.413	-52.47	PASS

							0	9				
				-10.8 * N	-9 * N	5284.0	5320	5289.2	-60.877	-13.408	-47.47	PASS
				-9 * N	-1.5 * N	5320	5470.0	5322.9	-61.025	-15.556	-45.47	PASS
				-1.5 * N	-N	5470.0	5480	5480.0	-49.542	-16.070	-33.47	PASS
				-N	-0.55 * N	5480	5489.0	5489.0	-35.073	-9.604	-25.47	PASS
				-0.55 * N	-0.5 * N	5489.0	5490.0	5490.0	-26.291	-20.734	-5.56	PASS
				-0.5 * N	0.5 * N	5490.0	5510.0	5500.8	-5.840	-0.371	-5.47	PASS
				0.5 * N	0.55 * N	5510.0	5511.0	5510.0	-26.854	-21.115	-5.74	PASS
				0.55 * N	N	5511.0	5520	5511.0	-35.628	-10.152	-25.48	PASS
				N	1.5 * N	5520	5530.0	5520.0	-49.352	-15.870	-33.48	PASS
				1.5 * N	9 * N	5530.0	5680	5530.2	-58.413	-12.944	-45.47	PASS
				9 * N	10.8 * N	5680	5716.0	5713.1	-60.734	-13.265	-47.47	PASS
				10.8 * N	+∞	5716.0	7716.0	5723.9	-60.735	-8.266	-52.47	PASS
	116			0	-10.8 * N	1	5364.0	5288.8	-61.104	-8.120	-52.98	PASS
				-9 * N	-1.5 * N	5400	5550.0	5549.8	-57.685	-11.701	-45.98	PASS
				-1.5 * N	-N	5550.0	5560	5560.0	-48.998	-15.012	-33.99	PASS
				-N	-0.55 * N	5560	5569.0	5569.0	-35.071	-9.065	-26.01	PASS
				-0.55 * N	-0.5 * N	5569.0	5570.0	5570.0	-26.090	-20.043	-6.05	PASS
				-0.5 * N	0.5 * N	5570.0	5590.0	5580.9	-6.004	-0.020	-5.98	PASS
				0.5 * N	0.55 * N	5590.0	5591.0	5590.0	-27.049	-20.764	-6.28	PASS
				0.55 * N	N	5591.	5600	5591.	-35.696	-9.703	-25.99	PASS

						0		0				
				N	1.5 * N	5600	5610.0	5600.0	-48.291	-14.262	-34.03	PASS
				1.5 * N	9 * N	5610.0	5760	5610.4	-58.965	-12.981	-45.98	PASS
				0	-10.8 * N	1	5484.0	5281.0	-60.660	-3.599	-57.06	PASS
				-10.8 * N	-9 * N	5484.0	5520	5519.0	-61.377	-9.316	-52.06	PASS
				-9 * N	-1.5 * N	5520	5670.0	5669.8	-58.334	-8.273	-50.06	PASS
				-1.5 * N	-N	5670.0	5680	5680.0	-49.031	-10.955	-38.08	PASS
				-N	-0.55 * N	5680	5689.0	5689.0	-37.721	-7.651	-30.07	PASS
	140			-0.55 * N	-0.5 * N	5689.0	5690.0	5690.0	-30.335	-20.125	-10.21	PASS
				-0.5 * N	0.5 * N	5690.0	5710.0	5699.1	-10.597	-0.536	-10.06	PASS
				0.5 * N	0.55 * N	5710.0	5711.0	5710.0	-33.040	-22.889	-10.15	PASS
				0.55 * N	N	5711.0	5720	5711.0	-41.633	-11.550	-30.08	PASS
				N	1.5 * N	5720	5730.0	5720.0	-54.992	-16.930	-38.06	PASS
IEEE 802.11n_40	38		0	-N	-0.55 * N	5150	5168.0	5167.7	-37.678	-10.095	-27.58	PASS
				-0.55 * N	-0.5 * N	5168.0	5170.0	5170.0	-33.851	-26.305	-7.55	PASS
				-0.5 * N	0.5 * N	5170.0	5210.0	5196.2	-7.463	-0.030	-7.43	PASS
				0.5 * N	0.55 * N	5210.0	5212.0	5210.0	-35.577	-28.084	-7.49	PASS
				0.55 * N	N	5212.0	5230	5215.3	-41.043	-12.159	-28.88	PASS
				N	1.5 * N	5230	5250.0	5230.1	-44.831	-9.333	-35.5	PASS
				1.5 * N	9 * N	5250.0	5550	5250.9	-55.284	-7.851	-47.43	PASS
				9 * N	10.8 * N	5550	5622.	5620.	-61.086	-11.65	-49.43	PASS

							0	3		3		
				10.8 * N	+∞	5622.0	7622.0	5719.3	-60.467	-6.034	-54.43	PASS
			1	-N	-0.55 * N	5150	5168.0	5167.8	-39.158	-10.657	-28.5	PASS
				-0.55 * N	-0.5 * N	5168.0	5170.0	5170.0	-35.742	-27.207	-8.53	PASS
				-0.5 * N	0.5 * N	5170.0	5210.0	5203.8	-8.430	-0.023	-8.41	PASS
				0.5 * N	0.55 * N	5210.0	5212.0	5210.0	-36.277	-27.787	-8.49	PASS
				0.55 * N	N	5212.0	5230	5212.0	-42.171	-13.739	-28.43	PASS
				N	1.5 * N	5230	5250.0	5230.1	-46.447	-9.928	-36.52	PASS
				1.5 * N	9 * N	5250.0	5550	5251.4	-55.687	-7.257	-48.43	PASS
				9 * N	10.8 * N	5550	5622.0	5621.5	-61.002	-10.572	-50.43	PASS
				10.8 * N	+∞	5622.0	7622.0	5715.8	-60.417	-4.987	-55.43	PASS
	46		0	-9 * N	-1.5 * N	4870	5170.0	5169.5	-56.134	-9.300	-46.83	PASS
				-1.5 * N	-N	5170.0	5190	5189.8	-44.533	-9.557	-34.98	PASS
				-N	-0.55 * N	5190	5208.0	5207.9	-38.499	-11.606	-26.89	PASS
				-0.55 * N	-0.5 * N	5208.0	5210.0	5210.0	-34.160	-27.234	-6.93	PASS
				-0.5 * N	0.5 * N	5210.0	5250.0	5235.0	-7.016	-0.182	-6.83	PASS
				0.5 * N	0.55 * N	5250.0	5252.0	5250.0	-35.346	-28.412	-6.93	PASS
				0.55 * N	N	5252.0	5270	5252.1	-41.135	-14.243	-26.89	PASS
				N	1.5 * N	5270	5290.0	5270.0	-44.886	-10.044	-34.84	PASS
				1.5 * N	9 * N	5290.0	5590	5292.1	-56.316	-9.482	-46.83	PASS
				9 * N	10.8 * N	5590	5662.	5651.	-60.690	-11.85	-48.83	PASS

							0	7		6		
				10.8 * N	+∞	5662.0	7662.0	5724.2	-60.448	-6.614	-53.83	PASS
			1	-9 * N	-1.5 * N	4870	5170.0	5169.8	-55.754	-7.461	-48.29	PASS
				-1.5 * N	-N	5170.0	5190	5189.7	-44.496	-8.025	-36.47	PASS
				-N	-0.55 * N	5190	5208.0	5207.9	-37.798	-9.472	-28.33	PASS
				-0.55 * N	-0.5 * N	5208.0	5210.0	5210.0	-34.712	-26.338	-8.37	PASS
				-0.5 * N	0.5 * N	5210.0	5250.0	5235.4	-8.317	-0.024	-8.29	PASS
				0.5 * N	0.55 * N	5250.0	5252.0	5250.0	-36.398	-28.005	-8.39	PASS
				0.55 * N	N	5252.0	5270	5252.1	-41.569	-13.245	-28.32	PASS
				N	1.5 * N	5270	5290.0	5270.5	-45.652	-9.088	-36.56	PASS
				1.5 * N	9 * N	5290.0	5590	5290.6	-55.567	-7.274	-48.29	PASS
				9 * N	10.8 * N	5590	5662.0	5653.4	-60.653	-10.360	-50.29	PASS
				10.8 * N	+∞	5662.0	7662.0	5722.7	-60.402	-5.109	-55.29	PASS
	54		0	-9 * N	-1.5 * N	4910	5210.0	5209.9	-56.144	-8.494	-47.65	PASS
				-1.5 * N	-N	5210.0	5230	5229.7	-46.498	-10.697	-35.8	PASS
				-N	-0.55 * N	5230	5248.0	5247.7	-41.186	-13.416	-27.77	PASS
				-0.55 * N	-0.5 * N	5248.0	5250.0	5250.0	-35.598	-27.886	-7.71	PASS
				-0.5 * N	0.5 * N	5250.0	5290.0	5284.0	-7.683	-0.033	-7.65	PASS
				0.5 * N	0.55 * N	5290.0	5292.0	5290.0	-36.363	-28.573	-7.79	PASS
				0.55 * N	N	5292.0	5310	5292.0	-43.217	-15.561	-27.66	PASS
				N	1.5 * N	5310	5330.	5310.	-47.210	-11.26	-35.95	PASS

							0	5		2		
				1.5 * N	9 * N	5330.0	5630	5330.1	-55.468	-7.818	-47.65	PASS
				9 * N	10.8 * N	5630	5702.0	5691.3	-60.733	-11.083	-49.65	PASS
				10.8 * N	+∞	5702.0	7702.0	5720.4	-60.657	-6.007	-54.65	PASS
			1	-9 * N	-1.5 * N	4910	5210.0	5209.4	-57.056	-8.530	-48.53	PASS
				-1.5 * N	-N	5210.0	5230	5229.9	-45.871	-9.314	-36.56	PASS
				-N	-0.55 * N	5230	5248.0	5247.9	-39.819	-11.244	-28.57	PASS
				-0.55 * N	-0.5 * N	5248.0	5250.0	5250.0	-35.736	-27.153	-8.58	PASS
				-0.5 * N	0.5 * N	5250.0	5290.0	5276.2	-8.698	-0.172	-8.53	PASS
				0.5 * N	0.55 * N	5290.0	5292.0	5290.0	-36.999	-28.133	-8.87	PASS
				0.55 * N	N	5292.0	5310	5292.1	-43.641	-15.082	-28.56	PASS
				N	1.5 * N	5310	5330.0	5310.1	-48.900	-12.340	-36.56	PASS
				1.5 * N	9 * N	5330.0	5630	5330.3	-58.679	-10.153	-48.53	PASS
				9 * N	10.8 * N	5630	5702.0	5701.6	-60.555	-10.029	-50.53	PASS
				10.8 * N	+∞	5702.0	7702.0	5719.4	-60.479	-4.953	-55.53	PASS
	62		0	-9 * N	-1.5 * N	4950	5250.0	5249.2	-56.689	-8.470	-48.22	PASS
				-1.5 * N	-N	5250.0	5270	5270.0	-46.380	-10.144	-36.24	PASS
				-N	-0.55 * N	5270	5288.0	5287.9	-39.646	-11.397	-28.25	PASS
				-0.55 * N	-0.5 * N	5288.0	5290.0	5290.0	-35.134	-26.762	-8.37	PASS
				-0.5 * N	0.5 * N	5290.0	5330.0	5315.3	-8.423	-0.204	-8.22	PASS
				0.5 * N	0.55 * N	5330.	5332.	5330.	-37.291	-28.89	-8.4	PASS

						0	0	0		2		
				0.55 * N	N	5332.0	5350	5332.0	-44.398	-16.162	-28.24	PASS
				N	1.5 * N	5350	5370.0	5350.0	-49.273	-13.054	-36.22	PASS
				1.5 * N	9 * N	5370.0	5670	5470.4	-60.692	-12.473	-48.22	PASS
				9 * N	10.8 * N	5670	5742.0	5717.3	-60.585	-10.366	-50.22	PASS
			1	-9 * N	-1.5 * N	4950	5250.0	5249.5	-57.126	-8.319	-48.81	PASS
				-1.5 * N	-N	5250.0	5270	5270.0	-46.006	-9.171	-36.84	PASS
				-N	-0.55 * N	5270	5288.0	5288.0	-39.736	-10.918	-28.82	PASS
				-0.55 * N	-0.5 * N	5288.0	5290.0	5290.0	-35.326	-26.485	-8.84	PASS
				-0.5 * N	0.5 * N	5290.0	5330.0	5295.2	-9.014	-0.207	-8.81	PASS
				0.5 * N	0.55 * N	5330.0	5332.0	5330.0	-39.659	-30.672	-8.99	PASS
				0.55 * N	N	5332.0	5350	5332.1	-46.396	-17.554	-28.84	PASS
				N	1.5 * N	5350	5370.0	5350.0	-51.974	-15.167	-36.81	PASS
				1.5 * N	9 * N	5370.0	5670	5471.6	-60.521	-11.714	-48.81	PASS
				9 * N	10.8 * N	5670	5742.0	5722.1	-60.459	-9.652	-50.81	PASS
	102		0	-9 * N	-1.5 * N	5150	5450.0	5349.0	-60.479	-12.090	-48.39	PASS
				-N	-0.55 * N	5470	5488.0	5487.7	-37.606	-9.106	-28.5	PASS
				-0.55 * N	-0.5 * N	5488.0	5490.0	5490.0	-34.445	-26.021	-8.42	PASS
				-0.5 * N	0.5 * N	5490.0	5530.0	5504.8	-8.718	-0.329	-8.39	PASS
				0.5 * N	0.55 * N	5530.0	5532.0	5530.0	-36.643	-28.179	-8.46	PASS
				0.55 * N	N	5532.	5550	5532.	-40.268	-11.81	-28.46	PASS

						0		1		2		
				N	1.5 * N	5550	5570.0	5550.2	-44.285	-7.803	-36.48	PASS
				1.5 * N	9 * N	5570.0	5870	5570.1	-56.681	-8.292	-48.39	PASS
			1	-9 * N	-1.5 * N	5150	5450.0	5293.8	-60.690	-12.015	-48.67	PASS
				-N	-0.55 * N	5470	5488.0	5487.8	-38.795	-10.032	-28.76	PASS
				-0.55 * N	-0.5 * N	5488.0	5490.0	5490.0	-35.517	-26.808	-8.71	PASS
				-0.5 * N	0.5 * N	5490.0	5530.0	5516.1	-8.943	-0.268	-8.68	PASS
				0.5 * N	0.55 * N	5530.0	5532.0	5530.0	-36.809	-28.059	-8.75	PASS
				0.55 * N	N	5532.0	5550	5532.0	-41.725	-13.040	-28.68	PASS
				N	1.5 * N	5550	5570.0	5550.1	-45.811	-9.089	-36.72	PASS
				1.5 * N	9 * N	5570.0	5870	5570.2	-56.637	-7.962	-48.67	PASS
	110		0	-10.8 * N	-9 * N	5118.0	5190	5188.5	-61.571	-11.107	-50.46	PASS
				-9 * N	-1.5 * N	5190	5490.0	5489.7	-54.113	-5.649	-48.46	PASS
				-1.5 * N	-N	5490.0	5510	5510.0	-43.363	-6.891	-36.47	PASS
				-N	-0.55 * N	5510	5528.0	5527.9	-38.306	-9.793	-28.51	PASS
				-0.55 * N	-0.5 * N	5528.0	5530.0	5530.0	-35.183	-26.615	-8.57	PASS
				-0.5 * N	0.5 * N	5530.0	5570.0	5563.7	-8.600	-0.136	-8.46	PASS
				0.5 * N	0.55 * N	5570.0	5572.0	5570.0	-35.995	-27.321	-8.67	PASS
				0.55 * N	N	5572.0	5590	5572.2	-39.684	-11.114	-28.57	PASS
				N	1.5 * N	5590	5610.0	5590.0	-43.956	-7.483	-36.47	PASS
				1.5 * N	9 * N	5610.	5910	5610.	-57.392	-8.928	-48.46	PASS

						0		2				
			1	-10.8 * N	-9 * N	5118.0	5190	5187.1	-61.522	-10.681	-50.84	PASS
				-9 * N	-1.5 * N	5190	5490.0	5489.9	-55.499	-6.658	-48.84	PASS
				-1.5 * N	-N	5490.0	5510	5509.9	-44.138	-7.213	-36.92	PASS
				-N	-0.55 * N	5510	5528.0	5527.7	-38.556	-9.575	-28.98	PASS
				-0.55 * N	-0.5 * N	5528.0	5530.0	5530.0	-35.092	-26.150	-8.94	PASS
				-0.5 * N	0.5 * N	5530.0	5570.0	5555.9	-9.049	-0.208	-8.84	PASS
				0.5 * N	0.55 * N	5570.0	5572.0	5570.0	-37.300	-28.249	-9.05	PASS
				0.55 * N	N	5572.0	5590	5572.9	-41.695	-12.475	-29.22	PASS
				N	1.5 * N	5590	5610.0	5590.1	-45.458	-8.577	-36.88	PASS
				1.5 * N	9 * N	5610.0	5910	5610.3	-57.511	-8.670	-48.84	PASS
	134		0	0	-10.8 * N	1	5238.0	5237.2	-60.834	-6.333	-54.5	PASS
				-10.8 * N	-9 * N	5238.0	5310	5288.6	-60.692	-11.191	-49.5	PASS
				-9 * N	-1.5 * N	5310	5610.0	5610.0	-53.590	-6.089	-47.5	PASS
				-1.5 * N	-N	5610.0	5630	5629.9	-43.533	-7.988	-35.55	PASS
				-N	-0.55 * N	5630	5648.0	5648.0	-37.356	-9.848	-27.51	PASS
				-0.55 * N	-0.5 * N	5648.0	5650.0	5650.0	-34.060	-26.541	-7.52	PASS
				-0.5 * N	0.5 * N	5650.0	5690.0	5684.2	-7.914	-0.413	-7.5	PASS
				0.5 * N	0.55 * N	5690.0	5692.0	5690.0	-35.162	-27.556	-7.61	PASS
				0.55 * N	N	5692.0	5710	5692.1	-39.236	-11.712	-27.52	PASS
				N	1.5 * N	5710	5730.	5710.	-43.514	-7.995	-35.52	PASS

							0	0				
			1	0	-10.8 * N	1	5238.0	5237.1	-60.813	-2.871	-57.94	PASS
				-10.8 * N	-9 * N	5238.0	5310	5288.2	-60.633	-7.691	-52.94	PASS
				-9 * N	-1.5 * N	5310	5610.0	5609.9	-54.750	-3.808	-50.94	PASS
				-1.5 * N	-N	5610.0	5630	5628.5	-43.870	-4.043	-39.83	PASS
				-N	-0.55 * N	5630	5648.0	5647.1	-38.204	-6.846	-31.36	PASS
				-0.55 * N	-0.5 * N	5648.0	5650.0	5650.0	-35.968	-24.897	-11.07	PASS
				-0.5 * N	0.5 * N	5650.0	5690.0	5656.0	-11.517	-0.575	-10.94	PASS
				0.5 * N	0.55 * N	5690.0	5692.0	5690.0	-39.213	-28.166	-11.05	PASS
				0.55 * N	N	5692.0	5710	5692.2	-42.821	-11.788	-31.03	PASS
				N	1.5 * N	5710	5730.0	5710.0	-48.729	-9.769	-38.96	PASS
IEEE 802.11ac _80	42		0	-N	-0.55 * N	5130	5166.0	5165.9	-50.546	-16.313	-34.23	PASS
				-0.55 * N	-0.5 * N	5166.0	5170.0	5169.9	-41.732	-27.428	-14.3	PASS
				-0.5 * N	0.5 * N	5170.0	5250.0	5221.4	-14.220	-0.014	-14.21	PASS
				0.5 * N	0.55 * N	5250.0	5254.0	5250.0	-40.616	-26.346	-14.27	PASS
				0.55 * N	N	5254.0	5290	5255.0	-52.512	-18.072	-34.44	PASS
				N	1.5 * N	5290	5330.0	5290.0	-56.104	-13.880	-42.22	PASS
				1.5 * N	9 * N	5330.0	5930	5332.1	-58.634	-4.414	-54.22	PASS
			1	-N	-0.55 * N	5130	5166.0	5166.0	-50.630	-16.123	-34.51	PASS
				-0.55 * N	-0.5 * N	5166.0	5170.0	5170.0	-42.671	-28.143	-14.53	PASS
				-0.5 * N	0.5 * N	5170.	5250.	5221.	-14.572	-0.069	-14.5	PASS

						0	0	4				
				0.5 * N	0.55 * N	5250.0	5254.0	5250.0	-41.043	-26.390	-14.65	PASS
				0.55 * N	N	5254.0	5290	5254.7	-51.237	-16.581	-34.66	PASS
				N	1.5 * N	5290	5330.0	5290.0	-55.387	-12.879	-42.51	PASS
				1.5 * N	9 * N	5330.0	5930	5331.6	-59.944	-5.441	-54.5	PASS
			0	-9 * N	-1.5 * N	4570	5170.0	5167.9	-60.404	-5.535	-54.87	PASS
				-1.5 * N	-N	5170.0	5210	5206.3	-56.313	-12.348	-43.97	PASS
				-N	-0.55 * N	5210	5246.0	5245.5	-51.748	-16.770	-34.98	PASS
				-0.55 * N	-0.5 * N	5246.0	5250.0	5250.0	-42.663	-27.781	-14.88	PASS
				-0.5 * N	0.5 * N	5250.0	5330.0	5301.1	-15.007	-0.138	-14.87	PASS
				0.5 * N	0.55 * N	5330.0	5334.0	5330.0	-41.972	-27.013	-14.96	PASS
				0.55 * N	N	5334.0	5370	5334.8	-53.953	-18.907	-35.05	PASS
				1.5 * N	9 * N	5410.0	6010	5472.0	-60.264	-5.395	-54.87	PASS
	58		1	-9 * N	-1.5 * N	4570	5170.0	5167.9	-60.338	-5.349	-54.99	PASS
				-1.5 * N	-N	5170.0	5210	5209.9	-55.289	-12.277	-43.01	PASS
				-N	-0.55 * N	5210	5246.0	5245.9	-49.822	-14.809	-35.01	PASS
				-0.55 * N	-0.5 * N	5246.0	5250.0	5250.0	-41.913	-26.912	-15.0	PASS
				-0.5 * N	0.5 * N	5250.0	5330.0	5282.6	-15.048	-0.059	-14.99	PASS
				0.5 * N	0.55 * N	5330.0	5334.0	5330.0	-44.224	-29.145	-15.08	PASS
				0.55 * N	N	5334.0	5370	5334.8	-54.325	-19.154	-35.17	PASS
				1.5 * N	9 * N	5410.	6010	5475.	-59.767	-4.778	-54.99	PASS

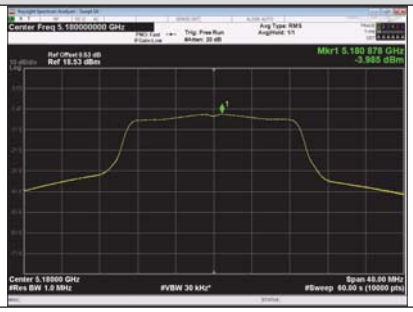
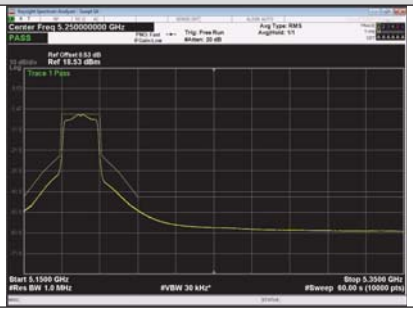
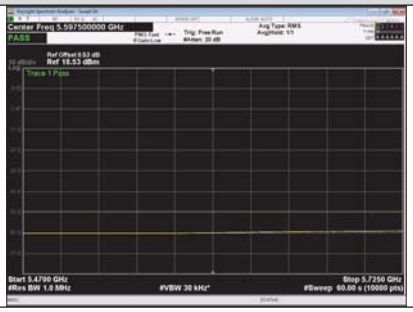
						0		2				
	106		0	-9 * N	-1.5 * N	4810	5410.0	5335.5	-59.381	-4.566	-54.81	PASS
				-N	-0.55 * N	5450	5486.0	5486.0	-49.410	-14.587	-34.82	PASS
				-0.55 * N	-0.5 * N	5486.0	5490.0	5490.0	-41.457	-26.634	-14.82	PASS
				-0.5 * N	0.5 * N	5490.0	5570.0	5518.5	-15.090	-0.275	-14.81	PASS
				0.5 * N	0.55 * N	5570.0	5574.0	5570.0	-41.576	-26.656	-14.92	PASS
				0.55 * N	N	5574.0	5610	5574.6	-52.049	-17.104	-34.95	PASS
				N	1.5 * N	5610	5650.0	5610.1	-56.208	-13.375	-42.83	PASS
				1.5 * N	9 * N	5650.0	6250	5687.7	-58.479	-3.664	-54.81	PASS
			1	-9 * N	-1.5 * N	4810	5410.0	5291.3	-59.741	-5.121	-54.62	PASS
				-N	-0.55 * N	5450	5486.0	5486.0	-50.818	-16.195	-34.62	PASS
				-0.55 * N	-0.5 * N	5486.0	5490.0	5490.0	-42.463	-27.835	-14.63	PASS
				-0.5 * N	0.5 * N	5490.0	5570.0	5518.5	-14.900	-0.280	-14.62	PASS
				0.5 * N	0.55 * N	5570.0	5574.0	5570.0	-42.150	-27.425	-14.73	PASS
				0.55 * N	N	5574.0	5610	5574.8	-51.138	-16.343	-34.8	PASS
				N	1.5 * N	5610	5650.0	5610.0	-55.872	-13.249	-42.62	PASS
				1.5 * N	9 * N	5650.0	6250	5653.1	-59.875	-5.255	-54.62	PASS
	122		0	-9 * N	-1.5 * N	4890	5490.0	5478.9	-60.382	-5.727	-54.66	PASS
				-1.5 * N	-N	5490.0	5530	5527.3	-55.327	-11.871	-43.46	PASS
				-N	-0.55 * N	5530	5566.0	5566.0	-50.462	-15.806	-34.66	PASS
				-0.55 * N	-0.5 * N	5566.	5570.	5570.	-42.242	-27.58	-14.66	PASS

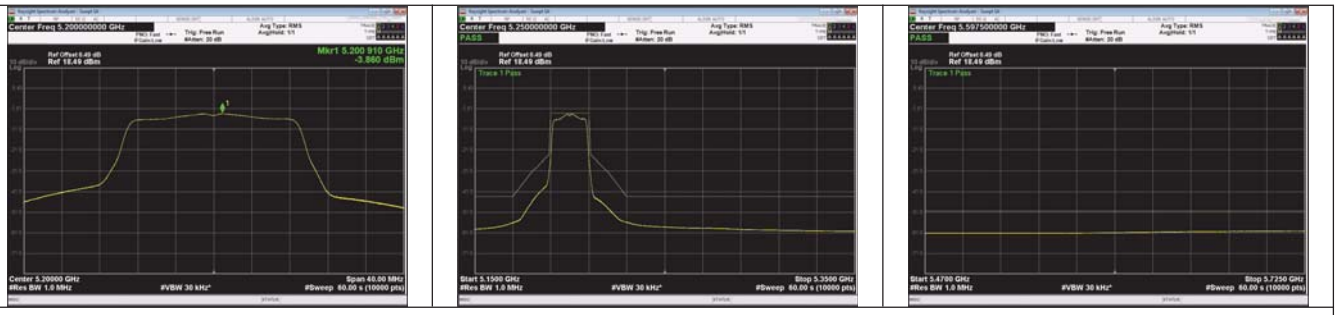
						0	0	0		1		
				-0.5 * N	0.5 * N	5570.0	5650.0	5598.6	-14.908	-0.253	-14.65	PASS
				0.5 * N	0.55 * N	5650.0	5654.0	5650.0	-41.150	-26.383	-14.77	PASS
				0.55 * N	N	5654.0	5690	5654.9	-51.613	-16.765	-34.85	PASS
				N	1.5 * N	5690	5730.0	5690.4	-55.526	-12.753	-42.77	PASS
			1	-9 * N	-1.5 * N	4890	5490.0	5486.7	-60.209	-5.587	-54.62	PASS
				-1.5 * N	-N	5490.0	5530	5529.6	-54.185	-11.450	-42.73	PASS
				-N	-0.55 * N	5530	5566.0	5565.9	-48.986	-14.339	-34.65	PASS
				-0.55 * N	-0.5 * N	5566.0	5570.0	5570.0	-42.176	-27.548	-14.63	PASS
				-0.5 * N	0.5 * N	5570.0	5650.0	5622.6	-14.789	-0.167	-14.62	PASS
				0.5 * N	0.55 * N	5650.0	5654.0	5650.0	-41.920	-27.185	-14.73	PASS
				0.55 * N	N	5654.0	5690	5654.7	-50.830	-16.060	-34.77	PASS
				N	1.5 * N	5690	5730.0	5690.4	-57.110	-14.355	-42.76	PASS
IEEE 802.11ax _80	42	SU	0	-N	-0.55 * N	5130	5166.0	5165.8	-50.454	-11.314	-39.14	PASS
				-0.55 * N	-0.5 * N	5166.0	5170.0	5170.0	-38.728	-19.628	-19.1	PASS
				-0.5 * N	0.5 * N	5170.0	5250.0	5221.4	-19.096	-0.021	-19.075	PASS
				0.5 * N	0.55 * N	5250.0	5254.0	5250.0	-40.776	-21.630	-19.15	PASS
				0.55 * N	N	5254.0	5290	5254.9	-53.190	-13.888	-39.3	PASS
				N	1.5 * N	5290	5330.0	5290.2	-57.556	-10.408	-47.15	PASS
				1.5 * N	9 * N	5330.0	5930	5331.1	-59.777	-0.681	-59.1	PASS
			1	-N	-0.55 * N	5130	5166.	5166.	-48.495	-15.15	-33.34	PASS

							0	0		1		
				-0.55 * N	-0.5 * N	5166.0	5170.0	5170.0	-35.225	-21.856	-13.37	PASS
				-0.5 * N	0.5 * N	5170.0	5250.0	5221.2	-13.462	-0.123	-13.34	PASS
				0.5 * N	0.55 * N	5250.0	5254.0	5250.0	-34.763	-21.374	-13.39	PASS
				0.55 * N	N	5254.0	5290	5255.2	-49.270	-15.671	-33.6	PASS
				N	1.5 * N	5290	5330.0	5290.5	-52.966	-11.479	-41.49	PASS
				1.5 * N	9 * N	5330.0	5930	5331.2	-59.172	-5.833	-53.34	PASS
			0	-9 * N	-1.5 * N	4570	5170.0	5168.8	-60.444	-1.204	-59.24	PASS
				-1.5 * N	-N	5170.0	5210	5207.4	-56.019	-8.007	-48.01	PASS
				-N	-0.55 * N	5210	5246.0	5245.9	-52.873	-13.618	-39.26	PASS
				-0.55 * N	-0.5 * N	5246.0	5250.0	5250.0	-38.188	-18.947	-19.24	PASS
				-0.5 * N	0.5 * N	5250.0	5330.0	5252.7	-19.446	-0.206		PASS
				0.5 * N	0.55 * N	5330.0	5334.0	5330.0	-41.319	-21.989	-19.33	PASS
				0.55 * N	N	5334.0	5370	5334.8	-56.736	-17.327	-39.41	PASS
				1.5 * N	9 * N	5410.0	6010	5720.6	-60.445	-1.205	-59.24	PASS
			1	-9 * N	-1.5 * N	4570	5170.0	5169.6	-60.200	-5.664	-54.54	PASS
				-1.5 * N	-N	5170.0	5210	5207.6	-53.423	-10.175	-43.25	PASS
				-N	-0.55 * N	5210	5246.0	5245.4	-48.029	-13.366	-34.66	PASS
				-0.55 * N	-0.5 * N	5246.0	5250.0	5250.0	-34.790	-20.241	-14.55	PASS
				-0.5 * N	0.5 * N	5250.0	5330.0	5301.3	-14.640	-0.104	-14.54	PASS
				0.5 * N	0.55 * N	5330.	5334.	5330.	-38.528	-23.90	-14.63	PASS

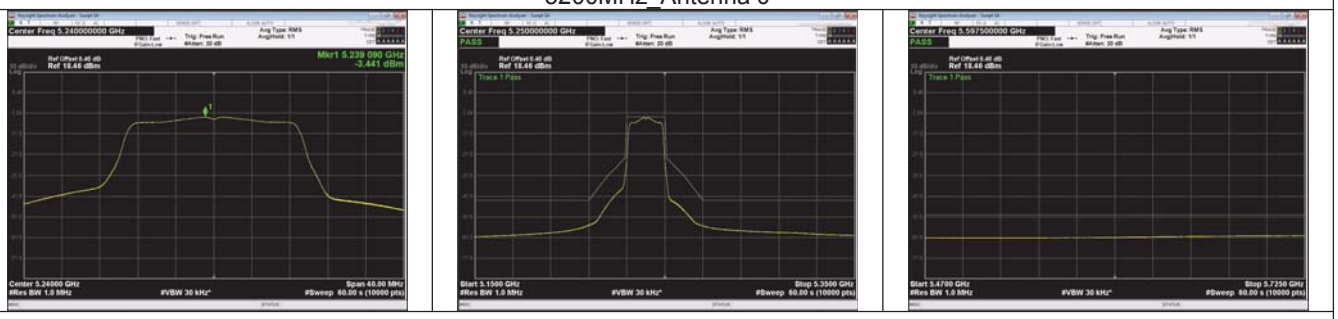
						0	0	0		2		
				0.55 * N	N	5334.0	5370	5334.1	-52.658	-18.100	-34.56	PASS
				1.5 * N	9 * N	5410.0	6010	5470.2	-59.818	-5.282	-54.54	PASS
	106		0	-9 * N	-1.5 * N	4810	5410.0	5343.1	-60.510	-1.376	-59.13	PASS
				-N	-0.55 * N	5450	5486.0	5485.6	-52.616	-13.383	-39.23	PASS
				-0.55 * N	-0.5 * N	5486.0	5490.0	5490.0	-38.169	-19.034	-19.14	PASS
				-0.5 * N	0.5 * N	5490.0	5570.0	5501.3	-19.402	-0.268	-19.13	PASS
				0.5 * N	0.55 * N	5570.0	5574.0	5570.0	-43.919	-24.680	-19.24	PASS
				0.55 * N	N	5574.0	5610	5575.1	-57.410	-18.022	-39.39	PASS
				N	1.5 * N	5610	5650.0	5610.5	-58.994	-11.697	-47.3	PASS
				1.5 * N	9 * N	5650.0	6250	5721.6	-59.767	-0.633	-59.13	PASS
			1	-9 * N	-1.5 * N	4810	5410.0	5306.4	-59.523	-5.593	-53.93	PASS
				-N	-0.55 * N	5450	5486.0	5485.8	-49.390	-15.406	-33.98	PASS
				-0.55 * N	-0.5 * N	5486.0	5490.0	5490.0	-34.979	-21.039	-13.94	PASS
				-0.5 * N	0.5 * N	5490.0	5570.0	5541.3	-14.212	-0.281	-13.93	PASS
				0.5 * N	0.55 * N	5570.0	5574.0	5570.0	-36.548	-22.512	-14.04	PASS
				0.55 * N	N	5574.0	5610	5575.0	-49.772	-15.620	-34.15	PASS
				N	1.5 * N	5610	5650.0	5610.3	-53.303	-11.285	-42.02	PASS
				1.5 * N	9 * N	5650.0	6250	5651.1	-59.070	-5.139	-53.93	PASS
	122		0	-9 * N	-1.5 * N	4890	5490.0	5488.4	-60.605	-1.305	-59.3	PASS
				-1.5 * N	-N	5490.	5530	5528.	-55.513	-7.779	-47.73	PASS

						0		6				
				-N	-0.55 * N	5530	5566.0	5566.0	-53.377	-14.076	-39.3	PASS
				-0.55 * N	-0.5 * N	5566.0	5570.0	5570.0	-40.776	-21.475	-19.3	PASS
				-0.5 * N	0.5 * N	5570.0	5650.0	5621.2	-19.885	-0.585		PASS
				0.5 * N	0.55 * N	5650.0	5654.0	5650.0	-41.571	-22.159	-19.41	PASS
				0.55 * N	N	5654.0	5690	5655.3	-54.470	-14.892	-39.58	PASS
				N	1.5 * N	5690	5730.0	5691.4	-57.223	-9.491	-47.73	PASS
			1	-9 * N	-1.5 * N	4890	5490.0	5470.7	-60.473	-6.399	-54.07	PASS
				-1.5 * N	-N	5490.0	5530	5527.8	-53.431	-10.686	-42.75	PASS
				-N	-0.55 * N	5530	5566.0	5565.7	-48.654	-14.515	-34.14	PASS
				-0.55 * N	-0.5 * N	5566.0	5570.0	5570.0	-35.141	-21.060	-14.08	PASS
				-0.5 * N	0.5 * N	5570.0	5650.0	5622.4	-14.421	-0.347	-14.07	PASS
				0.5 * N	0.55 * N	5650.0	5654.0	5650.0	-36.564	-22.377	-14.19	PASS
				0.55 * N	N	5654.0	5690	5654.2	-49.931	-15.806	-34.13	PASS
				N	1.5 * N	5690	5730.0	5690.4	-56.324	-14.132	-42.19	PASS

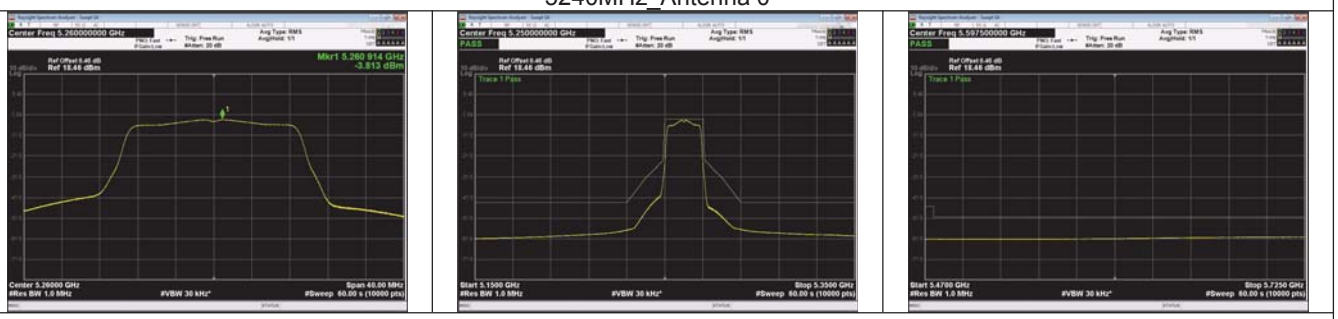
IEEE 802.11a		
		
5180MHz_Antenna 0		



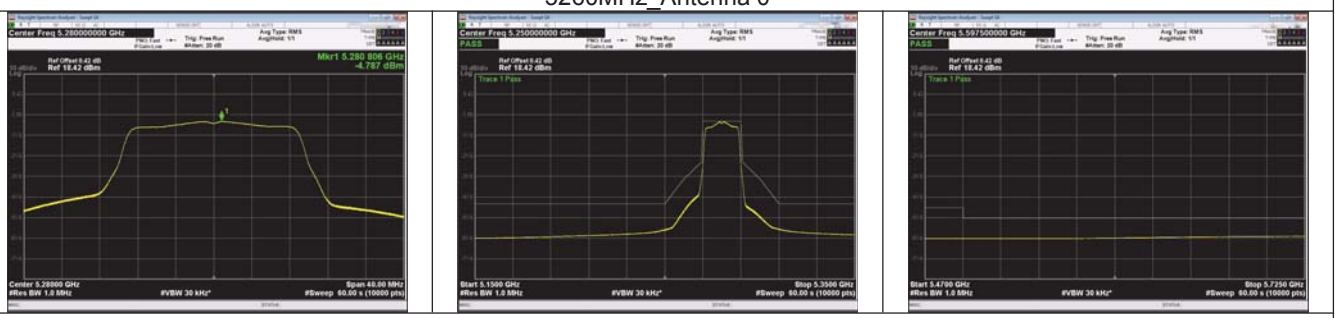
5200MHz_Antenna 0



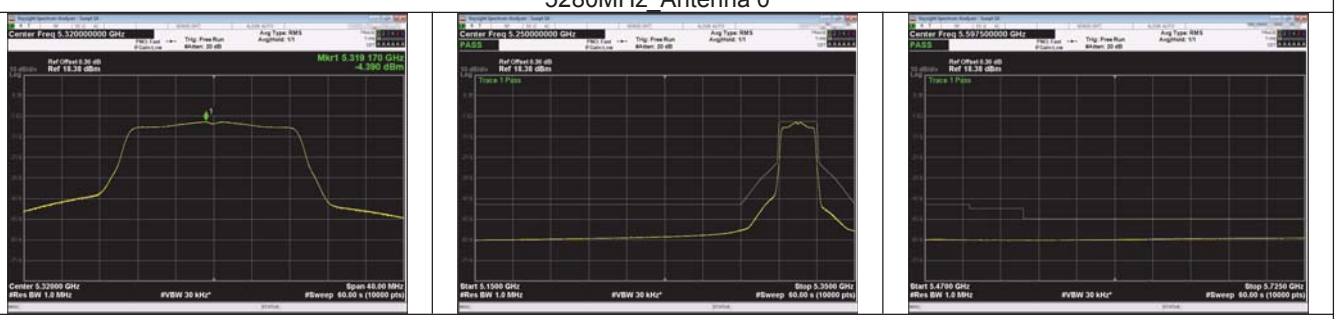
5240MHz_Antenna 0



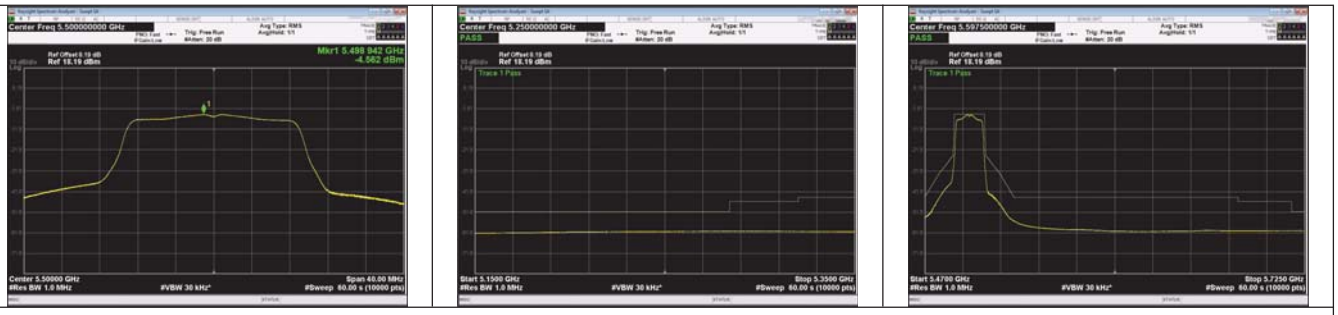
5260MHz_Antenna 0



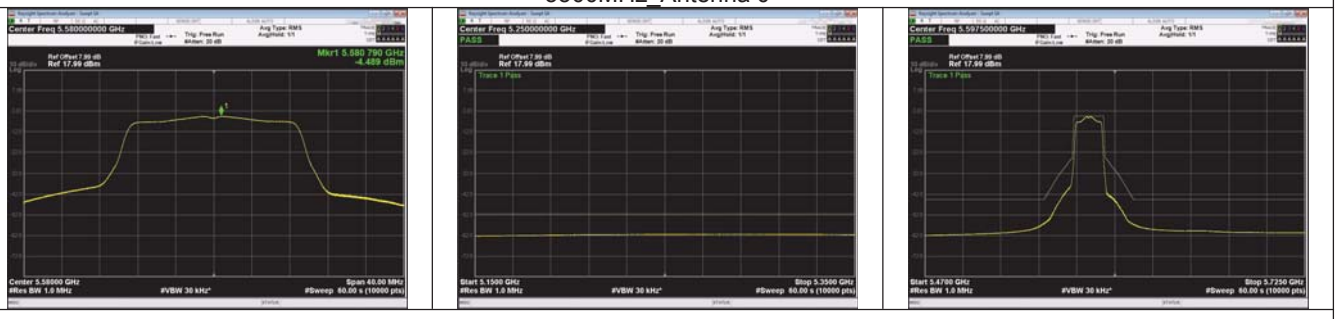
5280MHz_Antenna 0



5320MHz_Antenna 0



5500MHz_Antenna 0

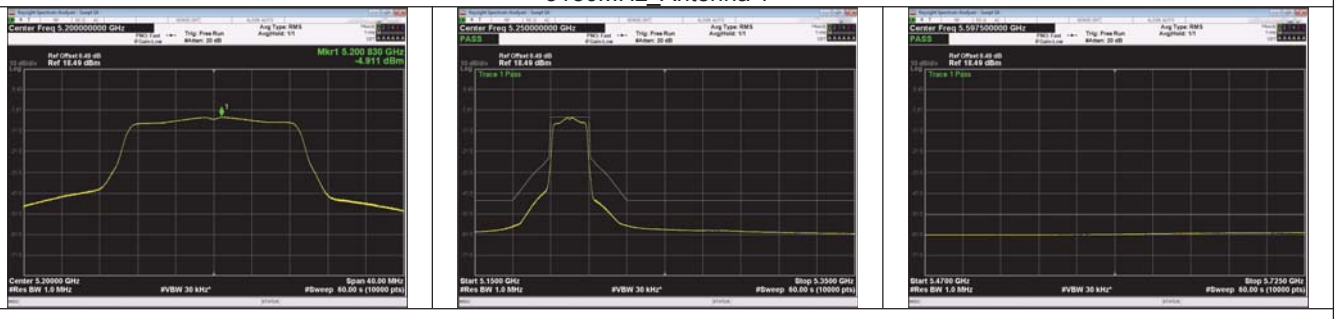


5580MHz_Antenna 0

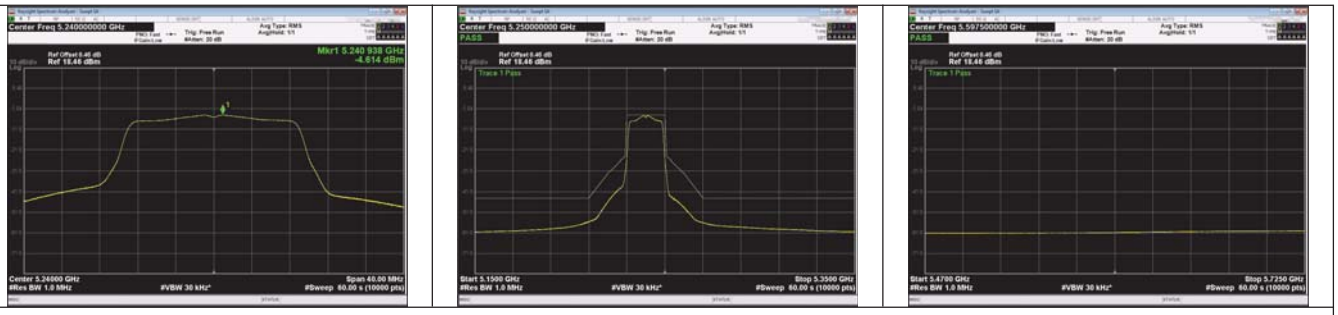
5700MHz_Antenna 0

IEEE 802.11n_20

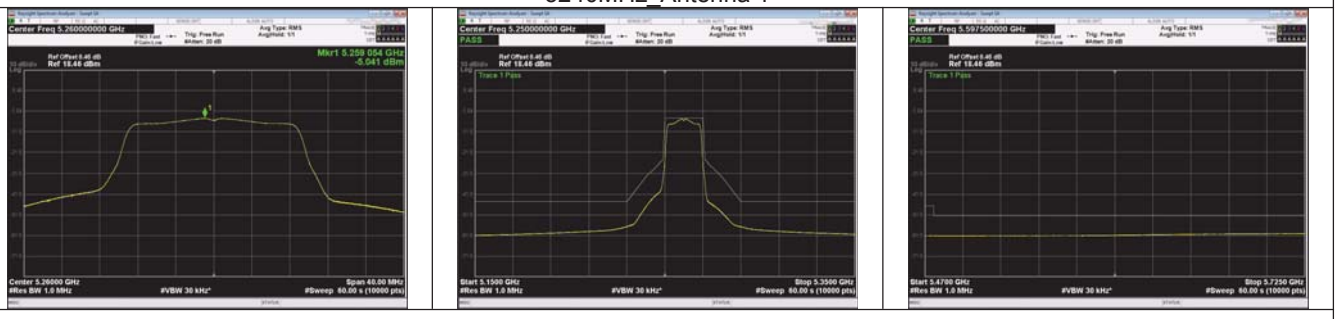
5180MHz_Antenna 1



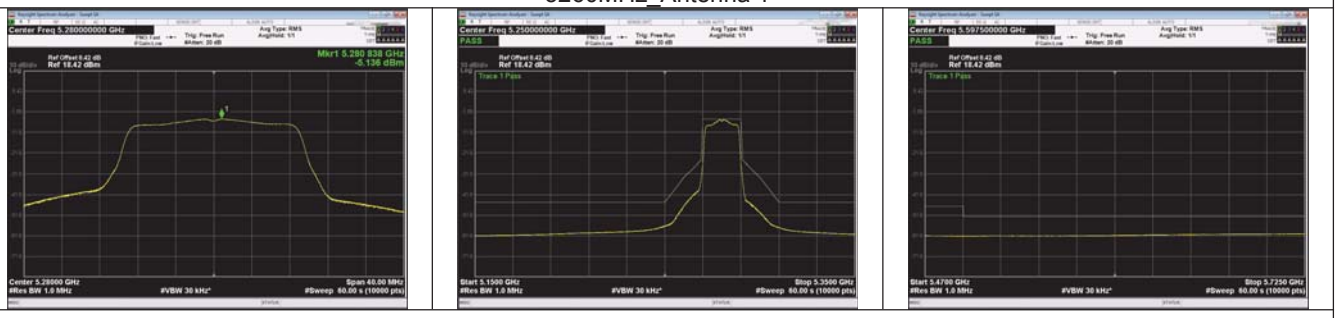
5200MHz_Antenna 1



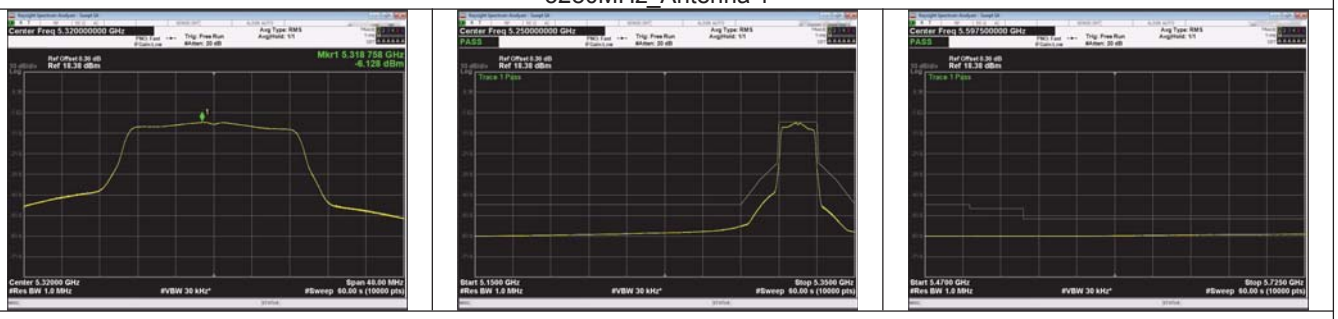
5240MHz_Antenna 1



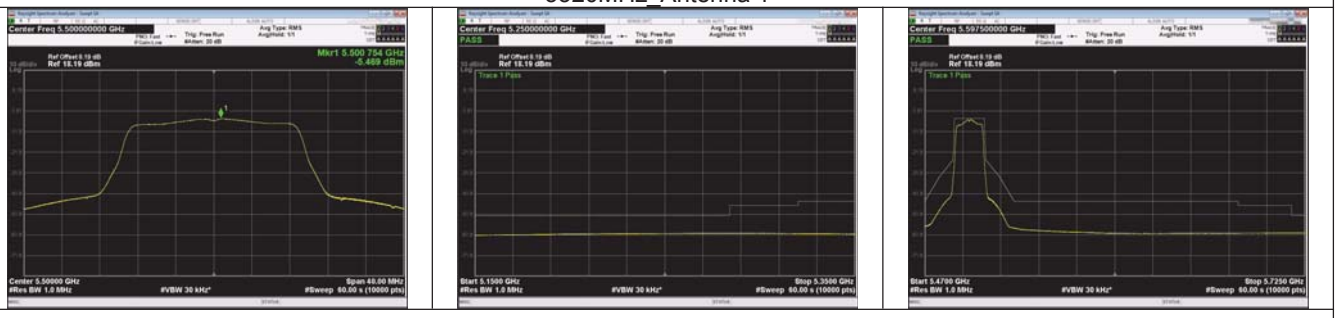
5260MHz_Antenna 1



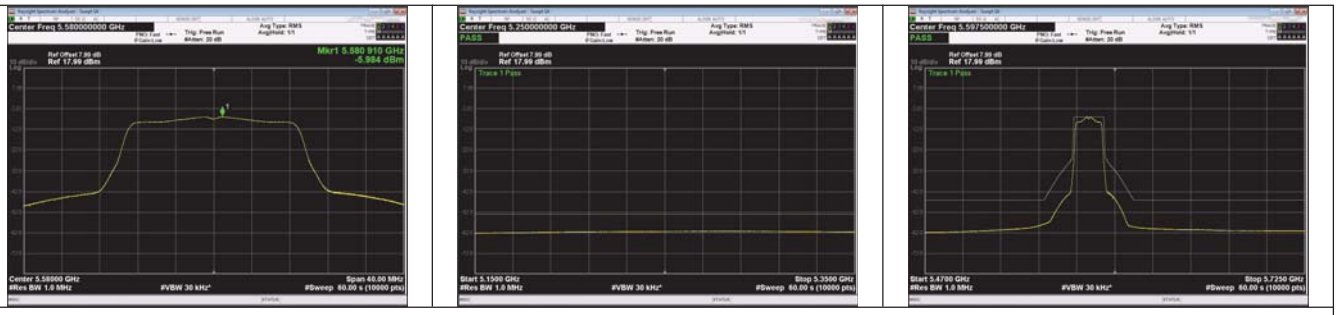
5280MHz_Antenna 1



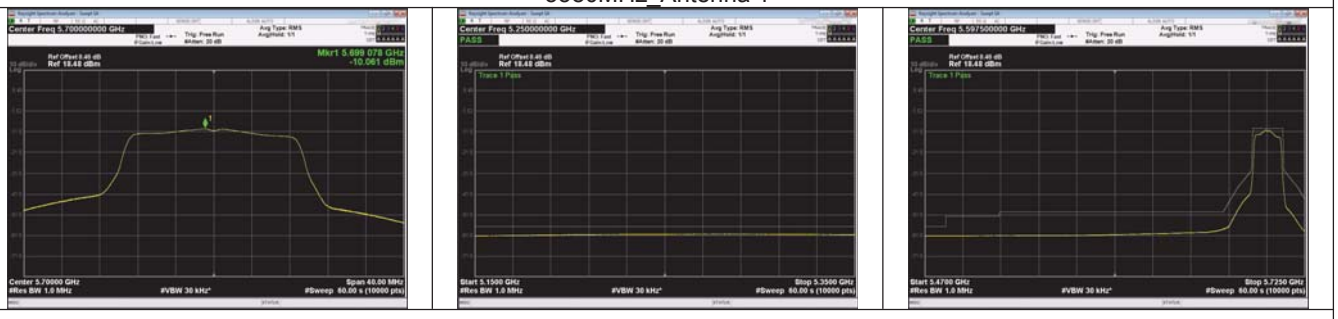
5320MHz_Antenna 1



5500MHz_Antenna 1



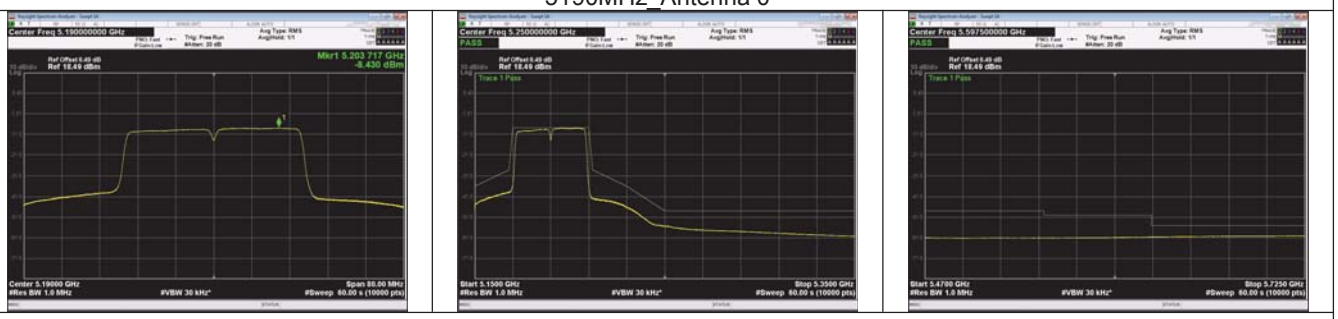
5580MHz_Antenna 1



5700MHz_Antenna 1

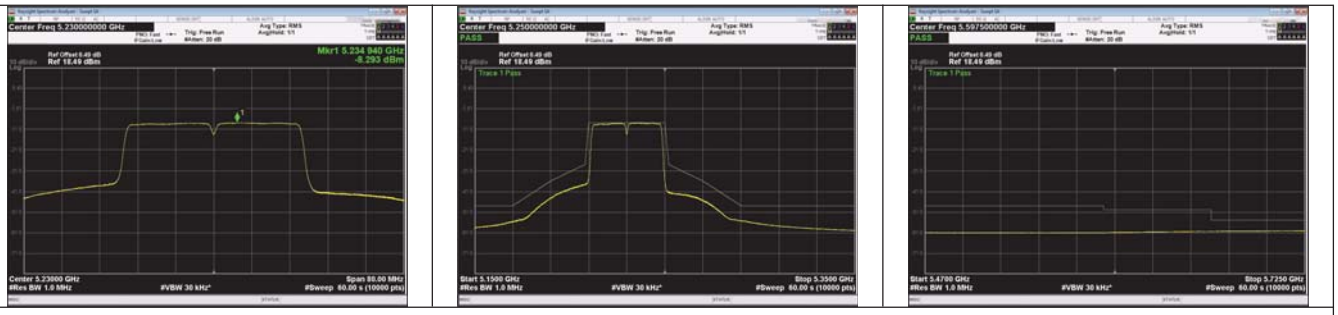
IEEE 802.11n_40

5190MHz_Antenna 0



5190MHz_Antenna 1

5230MHz_Antenna 0

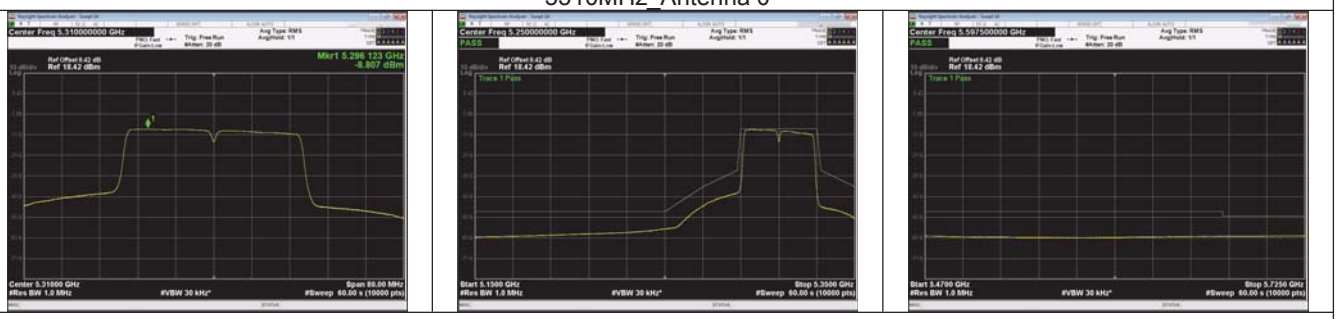


5230MHz_Antenna 1

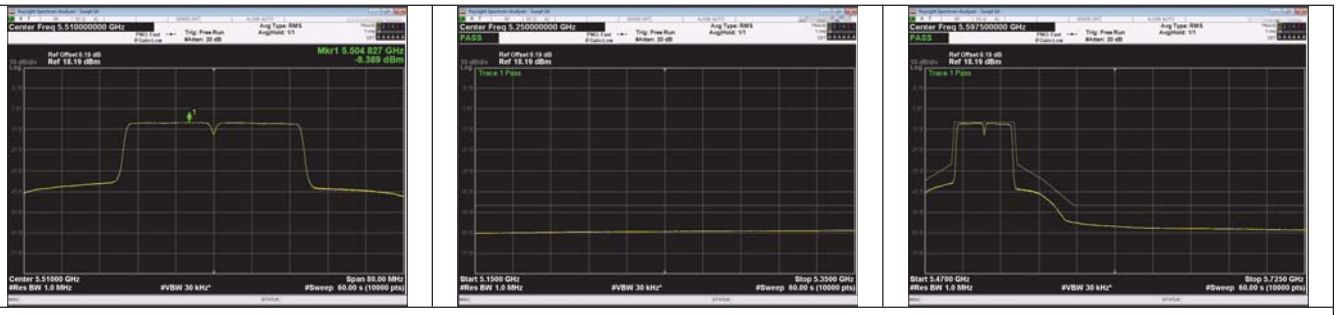
5270MHz_Antenna 0

5270MHz_Antenna 1

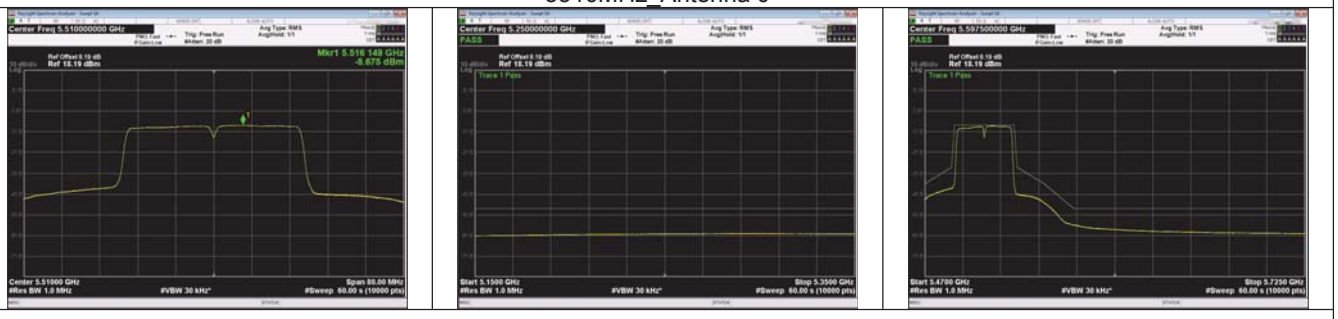
5310MHz_Antenna 0



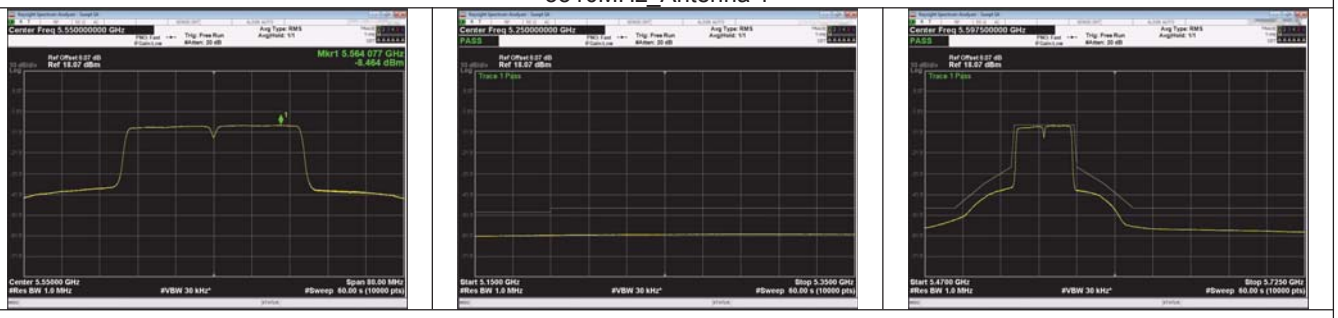
5310MHz_Antenna 1



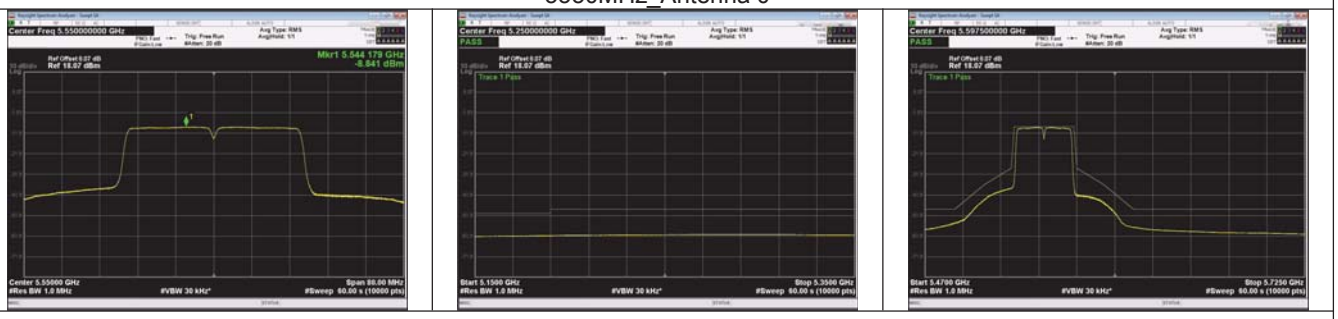
5510MHz_Antenna 0



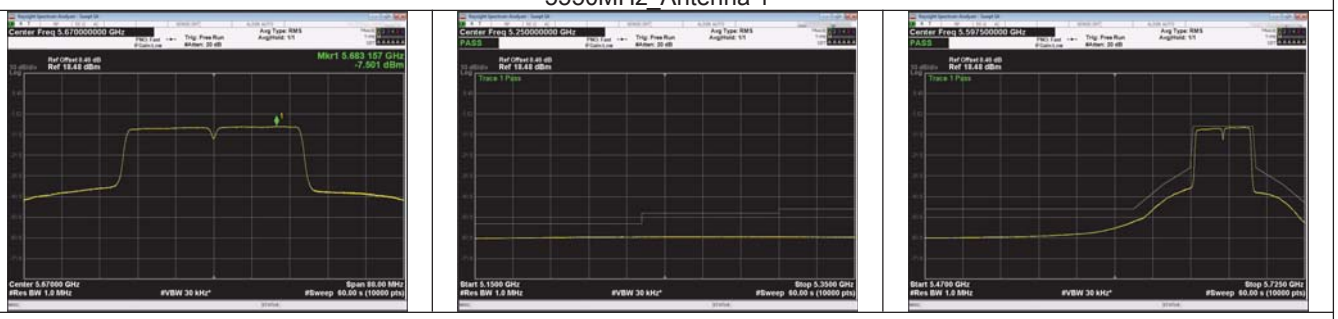
5510MHz_Antenna 1



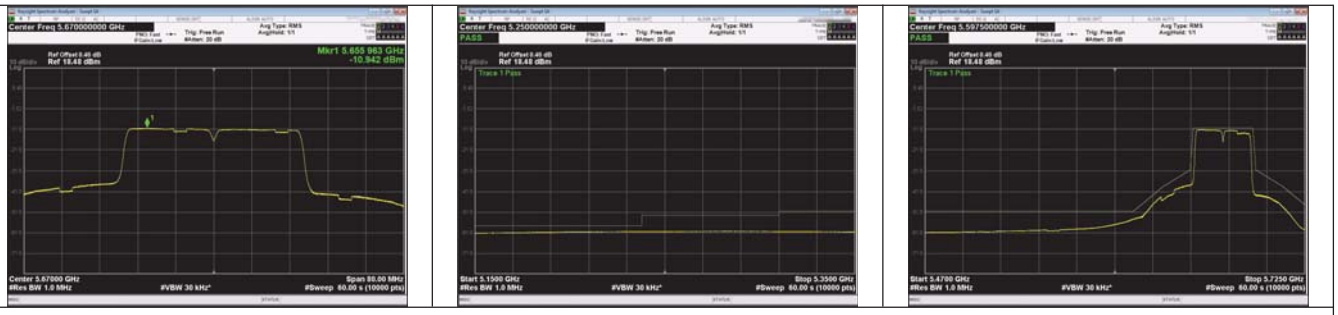
5550MHz_Antenna 0



5550MHz_Antenna 1



5670MHz_Antenna 0

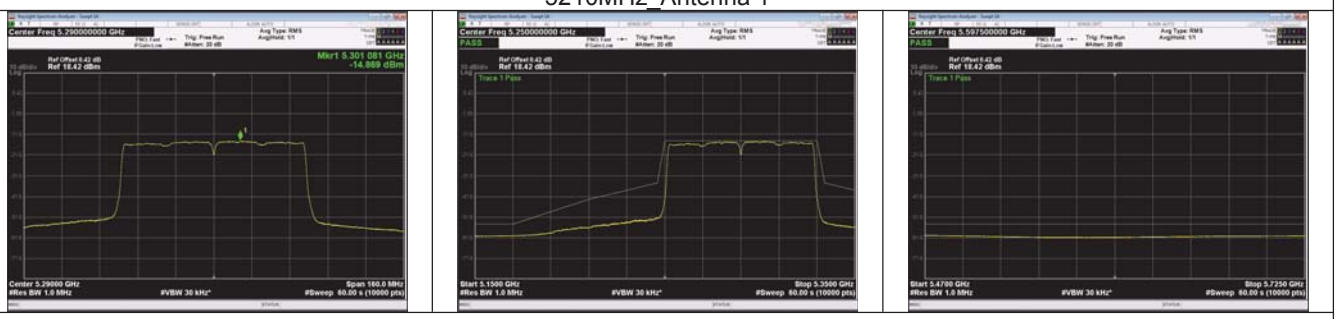


5670MHz_Antenna 1

IEEE 802.11ac_80

5210MHz_Antenna 0

5210MHz_Antenna 1



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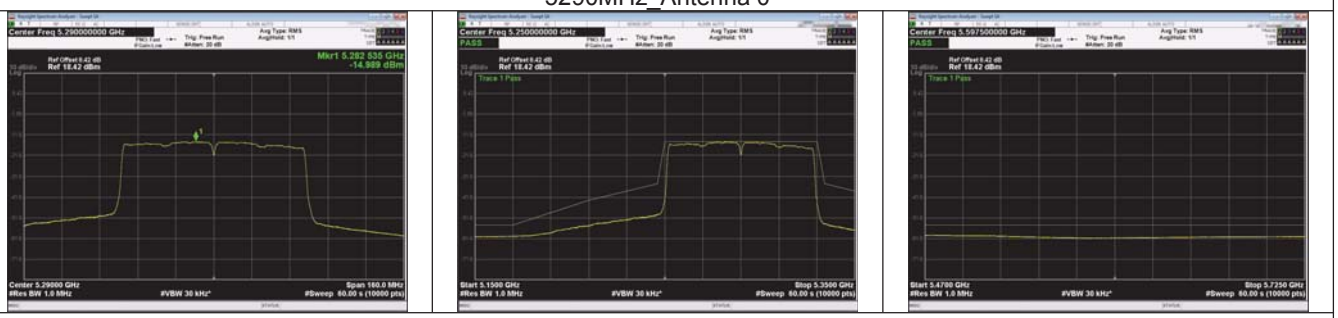

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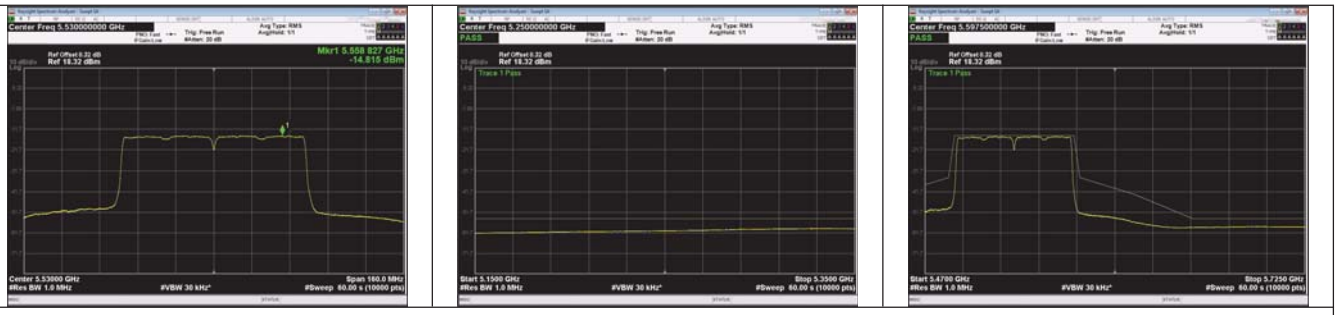

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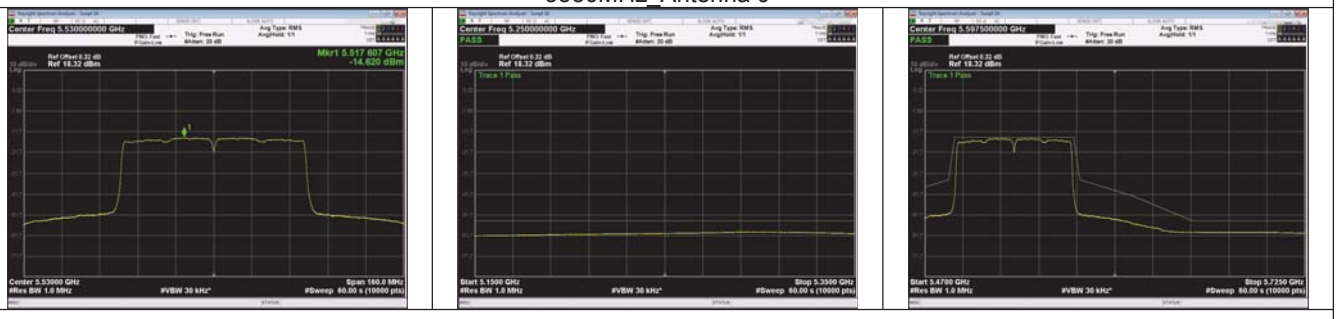

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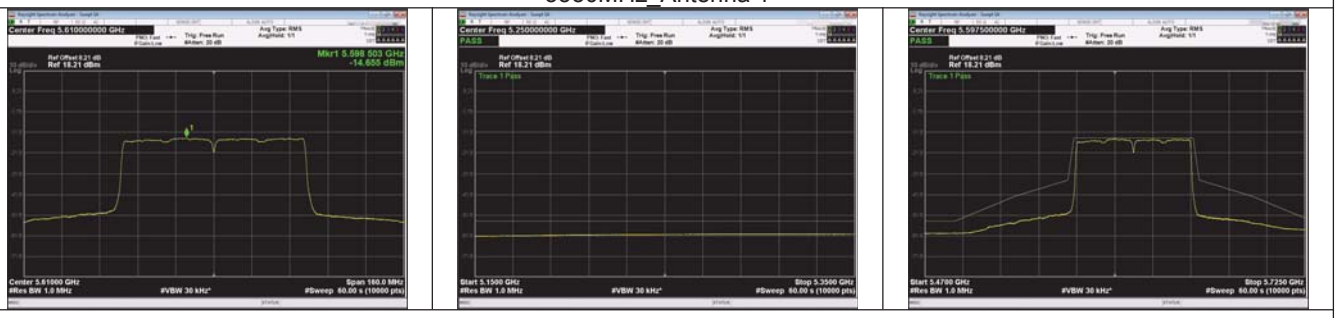

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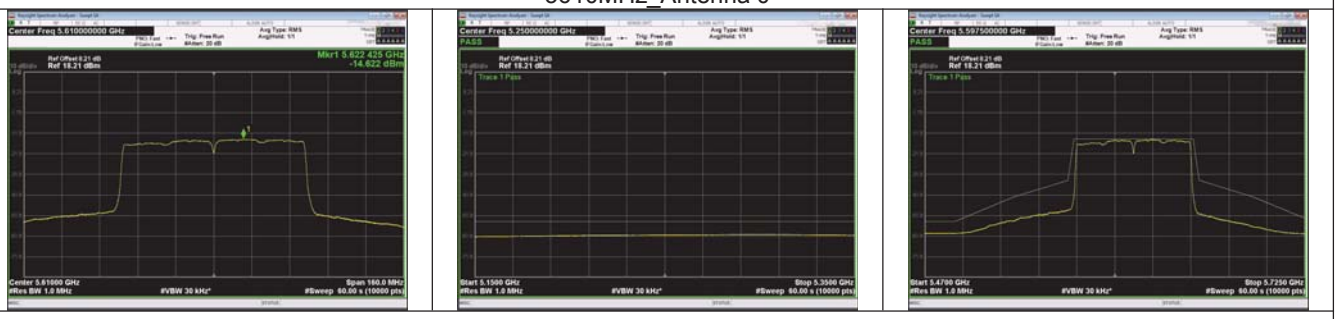
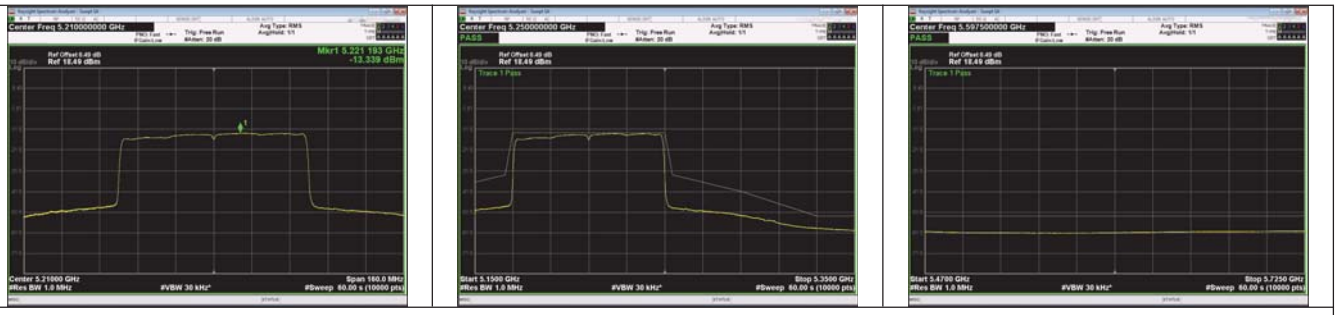


5610MHz_Antenna 1

IEEE 802.11ax_80

5210MHz_RU&Index SU_Antenna 0



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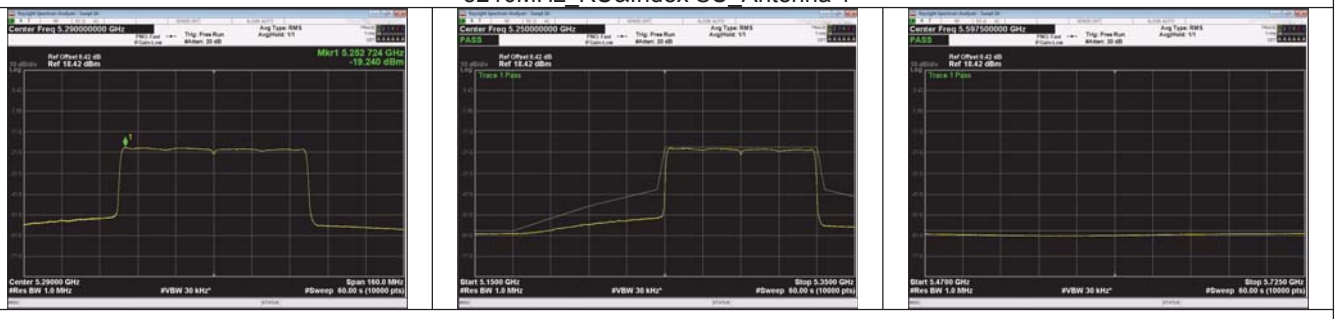

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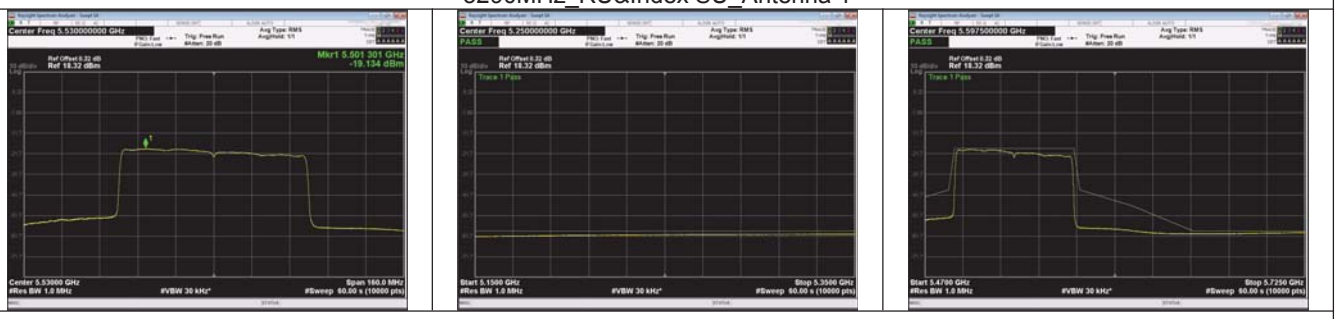
5290MHz_RU&Index SU_Antenna 1



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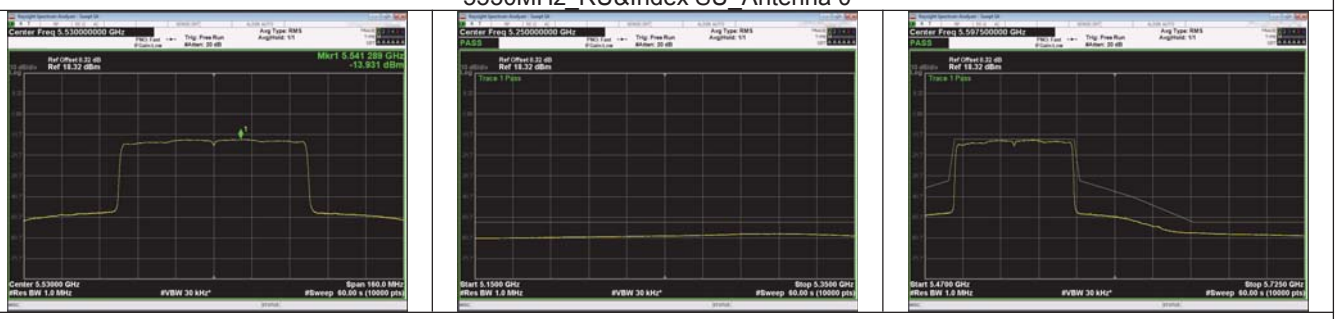

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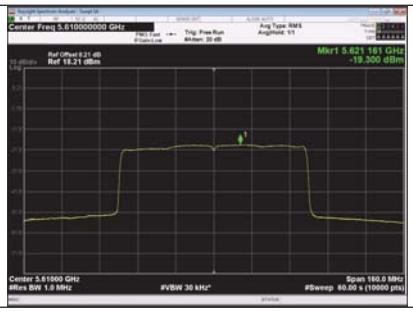

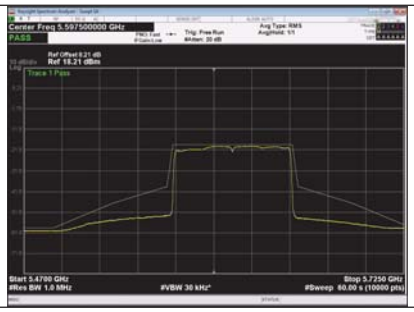

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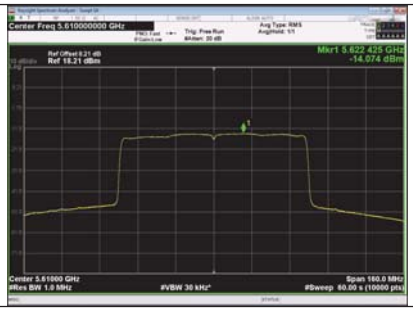


5610MHz_RU&Index SU_Antenna 1

8. RECEIVER SPURIOUS EMISSIONS

8.1 APPLIED PROCEDURES / LIMIT

LIMIT

The spurious emissions of the receiver shall not exceed the limits given in table 5.

Table 5: Spurious radiated emission limits

Frequency range	Maximum power	Measurement bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 26 GHz	-47 dBm	1 MHz

8.2 TEST PROCEDURES

According to ETSI EN 301 893 V2.1.1 (2017-05) §5.4.7.2

8.3 TEST SETUP LAYOUT

This test setup layout is the same as that shown in section 6.1.4

8.4 TEST RESULTS

Below 1GHz

Test Mode: 802.11n20 mode-Low			
Temperature:	25°C	Relative Humidity:	60 %
Pressure:	1012 hPa	Test Voltage:	AC 230V/50Hz

Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Polarization
134.665	-69.61	2.34	-67.27	-57	-10.27	peak	Horizontal
222.503	-68.34	3.55	-64.79	-57	-7.79	peak	Horizontal
514.604	-70.37	3.65	-66.72	-57	-9.72	peak	Horizontal
642.056	-68.97	4.01	-64.96	-57	-7.96	peak	Horizontal
758.486	-70.66	4.76	-65.90	-57	-8.90	peak	Horizontal
918.622	-70.81	5.68	-65.13	-57	-8.13	peak	Horizontal
141.143	-68.59	2.21	-66.38	-57	-9.38	peak	Vertical
260.410	-70.27	3.56	-66.71	-57	-9.71	peak	Vertical
522.992	-68.19	3.65	-64.54	-57	-7.54	peak	Vertical
625.377	-68.69	4.01	-64.68	-57	-7.68	peak	Vertical
814.613	-68.70	4.72	-63.98	-57	-6.98	peak	Vertical
881.457	-70.66	5.62	-65.04	-57	-8.04	peak	Vertical

Test Mode: 802.11n20 mode-High			
Temperature:	25°C	Relative Humidity:	60 %
Pressure:	1012 hPa	Test Voltage:	AC 230V/50Hz

Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Polarization
215.650	-68.01	3.36	-64.65	-57	-7.65	peak	Horizontal
369.216	70.12	3.58	73.70	-57	130.70	peak	Horizontal
580.379	-69.91	3.85	-66.06	-57	-9.06	peak	Horizontal
635.481	-70.66	3.94	-66.72	-57	-9.72	peak	Horizontal
846.040	-70.66	4.51	-66.15	-57	-9.15	peak	Horizontal
924.499	-70.66	5.51	-65.15	-57	-8.15	peak	Horizontal
253.692	-69.28	3.21	-66.07	-57	-9.07	peak	Vertical
373.406	-69.18	3.52	-65.66	-57	-8.66	peak	Vertical
469.258	-69.03	3.74	-65.29	-57	-8.29	peak	Vertical
573.583	-69.44	3.84	-65.60	-57	-8.60	peak	Vertical
812.569	-71.21	4.59	-66.62	-57	-9.62	peak	Vertical
965.774	-71.20	5.58	-65.62	-57	-8.62	peak	Vertical

Note:
1. The emission behaviour belongs to narrowband spurious emission.
2. Calculation of result is: Result (dBm)= Reading (dBm)+ Correct Factor (dB).
3. Recored the worst data 802.11n20 mode for 5150-5250MHz in report.

Above 1GHz

Test Mode: 802.11n20 mode-Low			
Temperature:	25°C	Relative Humidity:	60 %
Pressure:	1012 hPa	Test Voltage:	AC 230V/50Hz

Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Polarization
4835.118	-69.93	14.29	-55.64	-47	-8.64	peak	Horizontal
8244.115	-74.37	16.54	-57.83	-47	-10.83	peak	Horizontal
10423.909	-76.50	18.15	-58.35	-47	-11.35	peak	Horizontal
13204.231	-74.74	20.21	-54.53	-47	-7.53	peak	Horizontal
16954.091	-79.69	21.99	-57.70	-47	-10.70	peak	Horizontal
20143.857	-77.91	23.57	-54.34	-47	-7.34	peak	Horizontal
4874.150	-72.17	14.29	-57.88	-47	-10.88	peak	Vertical
8327.503	-72.85	16.54	-56.31	-47	-9.31	peak	Vertical
10124.127	-73.25	18.15	-55.10	-47	-8.10	peak	Vertical
14324.587	-74.43	20.21	-54.22	-47	-7.22	peak	Vertical
17865.695	-76.90	21.99	-54.91	-47	-7.91	peak	Vertical
20413.651	-78.88	23.57	-55.31	-47	-8.31	peak	Vertical

Test Mode: 802.11n20 mode-High			
Temperature:	25°C	Relative Humidity:	60 %
Pressure:	1012 hPa	Test Voltage:	AC 230V/50Hz

Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark	Polarization
5532.158	-69.85	14.29	-55.56	-47	-8.56	peak	Horizontal
8237.093	-71.97	16.54	-55.43	-47	-8.43	peak	Horizontal
12036.695	-74.97	18.15	-56.82	-47	-9.82	peak	Horizontal
14356.601	-75.61	20.21	-55.40	-47	-8.40	peak	Horizontal
17844.309	-77.75	21.99	-55.76	-47	-8.76	peak	Horizontal
20351.708	-78.12	23.57	-54.55	-47	-7.55	peak	Horizontal
5563.078	-70.04	14.29	-55.75	-47	-8.75	peak	Vertical
8541.575	-73.30	16.54	-56.76	-47	-9.76	peak	Vertical
11652.274	-73.80	18.15	-55.65	-47	-8.65	peak	Vertical
16841.781	-74.39	20.21	-54.18	-47	-7.18	peak	Vertical
18423.330	-78.33	21.99	-56.34	-47	-9.34	peak	Vertical
20592.761	-79.35	23.57	-55.78	-47	-8.78	peak	Vertical

Note:
1. The emission behaviour belongs to narrowband spurious emission.
2. Calculation of result is: Result (dBm)= Reading (dBm)+ Correct Factor (dB).
3. Recored the worst data 802.11n20 mode for 5150-5250MHz in report.

9. ADAPTIVITY (CHANNEL ACCESS MECHANISM)

9.1 APPLICABILITY OF ADAPTIVE REQUIREMENTS AND LILIT

This requirement applies to equipment, testing shall be performed using the highest nominal channel Bandwidth. The manufacturer shall state whether the UUT is capable of operating as a Frame Based Equipment or Load Based Equipment. See tables for the applicability of adaptive requirements and limit for each of the operational modes.

Applicability of adaptive requirements and limit

Requirement	Operational Mode		
	Frame Based Equipment	Load Based Equipment (CCA using 'energy detect')	Load Based Equipment (CCA not using any of the mechanisms referenced)
Minimum Clear Channel Assessment (CCA) Time	20 us (see note 1)	(see note 2)	20 us (see note 1)
Maximum Channel Occupancy (COT) Time	1ms to 10 ms	(see note 2)	(13/32)*q ms (see note 3)
Minimum Idle Period	5% of COT	(see note 2)	N/A
Extended CCA check	N/A	(see note 2)	N*CCA (see note 4)
Short Control Signalling Transmissions	Maximum duty cycle of 5% within an observation period of 50 ms (see note 5)		
Note 1: The CCA time used by the equipment shall be declared by the manufacturer. Note 2: LBT based spectrum sharing mechanism based on the Clear Channel Assessment (CCA) mode using 'energy detect', as described in IEEE 802.11™-2007[9], clauses 15 and 17, in IEEE 802.11n ™ -2009[10], clauses 20. Note 3: q is selected by the manufacturer in the range [4…32] Note 4: The value of N shall be randomly selected in the range [1…q] Note 5: Adaptive equipment may or may not have Short Control Signaling Transmissions.			

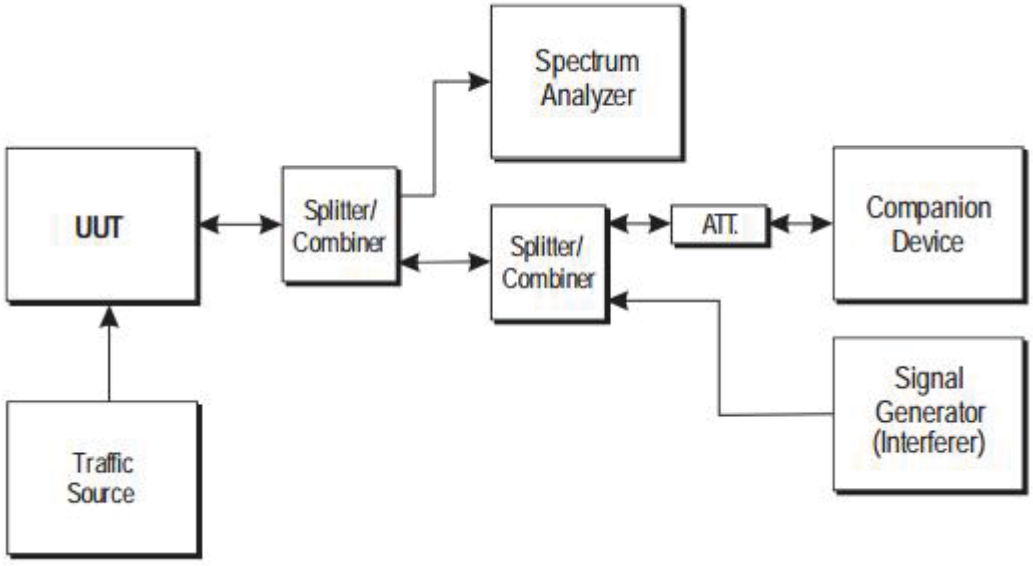
Interference threshold level

Maximum transmit power (P_H) EIRP dBm	Threshold Level (TL) (see note 1 and 2)
23	-73 dBm / MHz
Note 1: TL = -73 dBm / MHz + 23 –PH (assuming a 0 dBi receive antenna and PH specified in dBm e.i.r.p) Note 2: Transmitter the CCA threshold level (TL) shall be equal or lower than -73 dBm / MHz at the input to the receiver (assuming a 0 dBi receive antenna).	

9.2 TEST PROCEDURE

Reference to ETSI EN 301 893 V2.1.1 (2017-05) clause 5.4.9.2

9.3 TEST SETUP CONFIGURATION



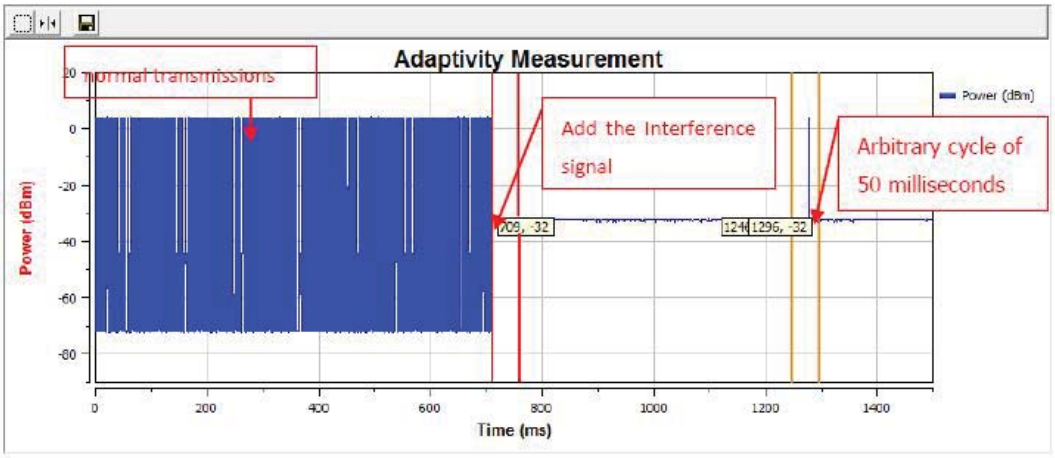
9.4 LIST OF MEASUREMENTS

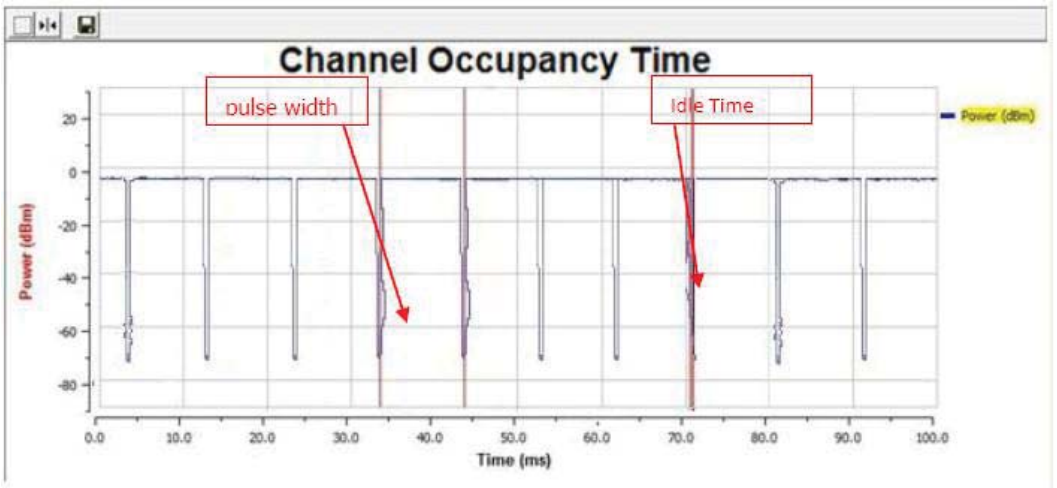
UUT operational Mode		
Frame Based Equipment	Load Based Equipment (CCA using 'energy detect')	Load Based Equipment (CCA not using any of the mechanisms referenced)
	V	

Clause	Test Parameter	Remarks	PASS/FAIL
5.4.9.2.1	Adaptive (Frame Based Equipment)	Not Applicable	N/A
5.4.9.2.2	Adaptive (Load Based Equipment)	Applicable	PASS
5.4.9.2.3	Short Control Signaling Transmissions	Applicable	PASS

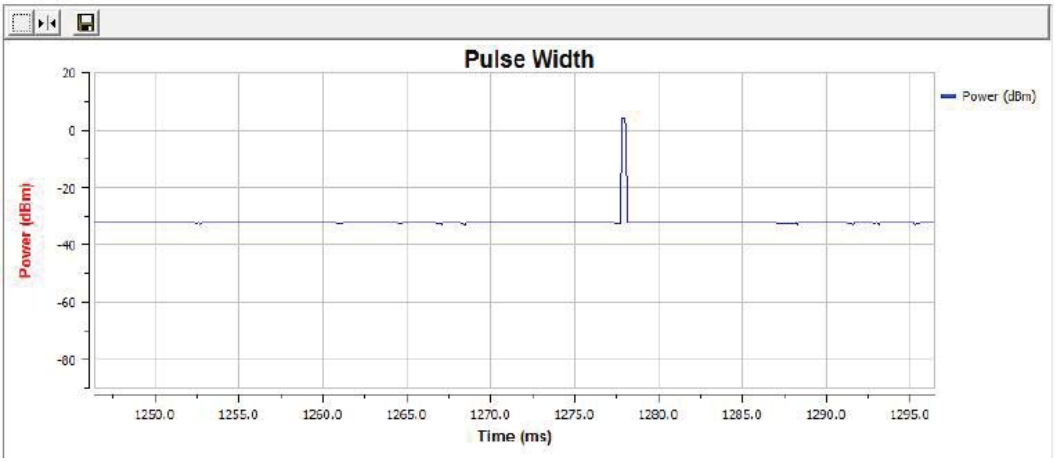
9.5 TEST RESULTS

Test Mode: 802.11n20 Low	
AWGN Interference Level (dBm)	-55.22
Interference Start Time (ms)	710.213
Suggest q Level	0
Max COT (ms)	9.22
Idle Time (ms)	0.20
Duty Cycle (%)	2.12

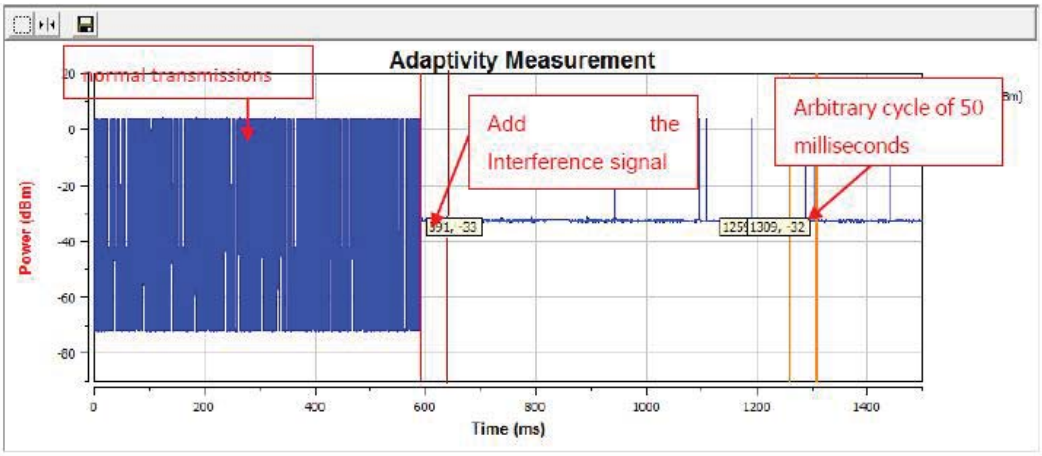


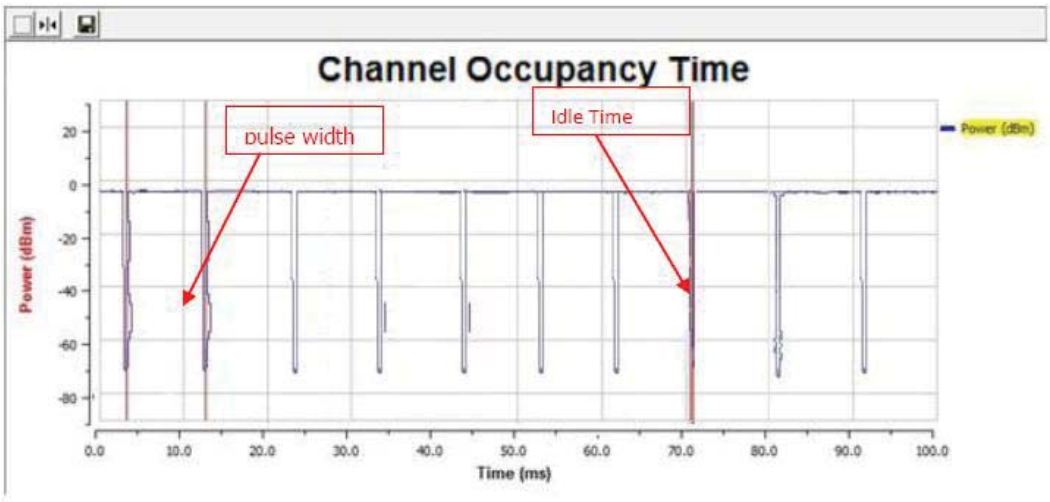


Arbitrary cycle of 50

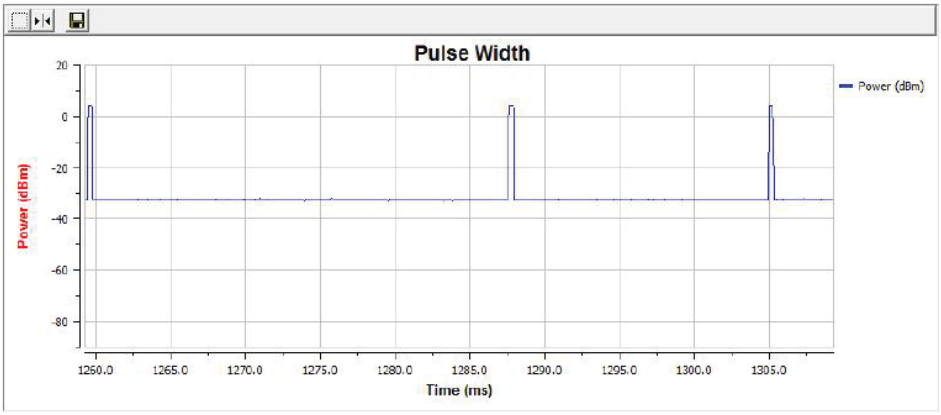


Test Mode: 802.11n20 High	
AWGN Interference Level (dBm)	-55.12
Interference Start Time (ms)	595.26
Suggest q Level	0
Max COT (ms)	9.45
Idle Time (ms)	0.23
Duty Cycle (%)	1.16





Arbitrary cycle of 50



Note: We have tested all modes and found that the data of 802.11n20 mode was the worst; the test data of 802.11n20 mode was recorded in the report.

10. MEDIUM ACCESS PROTOCOL

10.1 APPLIED PROCEDURES / LIMIT

A medium access protocol is a mechanism designed to facilitate spectrum sharing with other devices in a wireless network.

A medium access protocol shall be implemented by the equipment.

10.2 TEST RESULTS

The EUT is accord with medium access protocol.

11. RECEIVER BLOCKING

11.1 LIMITS

While maintaining the minimum performance criteria as defined in clause 4.2.8.3, the blocking levels at specified frequency offsets shall be equal to or greater than the limits defined in table 9.

Table 9: Receiver Blocking parameters

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)		Type of blocking signal
		Master or Slave with radar detection (see table D.2, note 2)	Slave without radar detection (see table D.2, note 2)	
Pmin + 6 dB	5 100	-53	-59	Continuous Wave
Pmin + 6 dB	4 900 5 000 5 975	-47	-53	Continuous Wave
NOTE 1: P_{min} is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined clause 4.2.8.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the same levels should be used at the antenna connector irrespective of antenna gain.				

11.2 TEST PROCEDURE

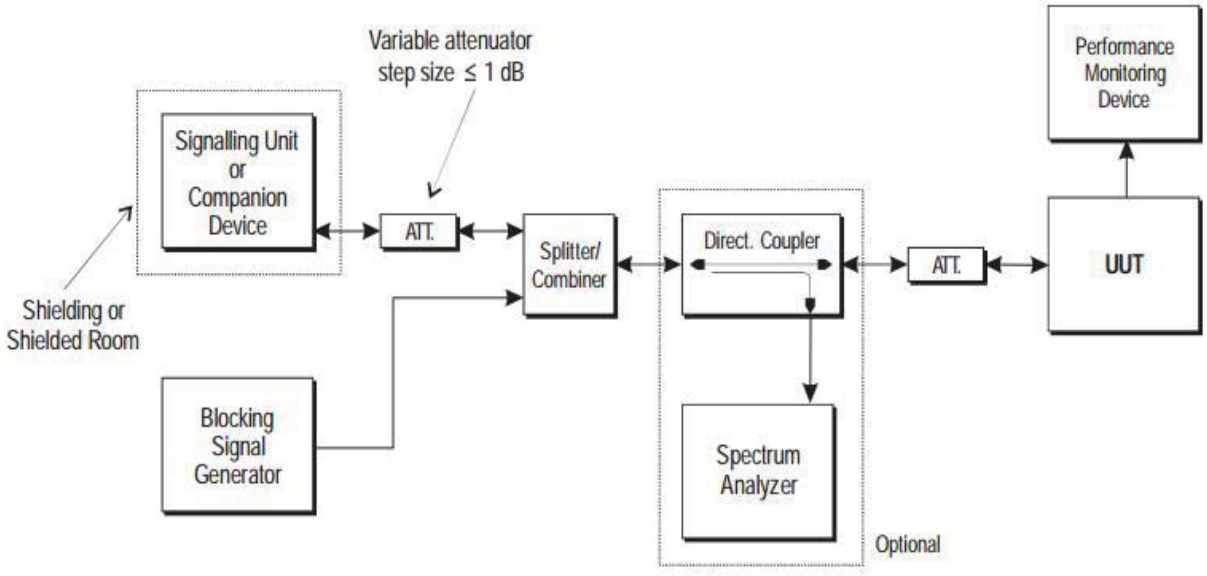
Refer to chapter 5.4.10.2.1 of ETSI EN 301 893 V2.1.1 (2017-05)

Measurement	
☒ Conducted measurement	☐ Radiated measurement

11.3 DEVIATION FROM TEST STANDARD

No deviation

11.4 TEST SETUP



11.5 TEST RESULTS

Test Mode	802.11n20 Low Channel					
Pmin	-79.41dBm					
Wanted signal Mean power From companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal Power (dBm)	Type of blocking signal	PER (%)	PER (%) Limit	Result
Pmin + 6 dB	5100	-59	CW	0.33	≦10	Pass
Pmin + 6 dB	4900	-53	CW	0.24	≦10	Pass
	5000			0.16		Pass
	5975			0.25		Pass

Test Mode	802.11n20 Low Channel					
Pmin	-79.41dBm					
Wanted signal Mean power From companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal Power (dBm)	Type of blocking signal	PER (%)	PER (%) Limit	Result
Pmin + 6 dB	5100	-59	CW	0.16	≦10	Pass
Pmin + 6 dB	4900	-53	CW	0.33	≦10	Pass
	5000			0.22		Pass
	5975			0.22		Pass

Note: We have tested all modes and found that the data of 802.11n20 mode was the worst; the test data of 802.11n20 mode was recorded in the report.

12. DYNAMIC FREQUENCY SELECTION (DFS)

12.1 DFS PARAMETERS

Table D.1: DFS requirement values

Parameter	Value
Channel Availability Check Time	60 s (see note 1)
Minimum Off-Channel CAC Time	6 minutes (see note 2)
Maximum Off-Channel CAC Time	4 hours (see note 2)
Channel Move Time	10 s
Channel Closing Transmission Time	1 s
Non-Occupancy Period	30 minutes
NOTE 1: For channels whose nominal bandwidth falls completely or partly within the band 5 600 MHz to 5 650 MHz, the *Channel Availability Check Time* shall be 10 minutes. NOTE 2: For channels whose nominal bandwidth falls completely or partly within the band 5 600 MHz to 5 650 MHz, the *Off-Channel CAC Time* shall be within the range 1 hour to 24 hours.	

Table D.2: Radar Detection Threshold Levels

e.i.r.p. Spectral Density (dBm/MHz)	Value (see note 1 and note 2)
10	-62 dBm
NOTE 1: This is the level at the input of the receiver of an RLAN device with a maximum e.i.r.p. density of 10 dBm/MHz and assuming a 0 dBi receive antenna. For devices employing different e.i.r.p. spectral density and/or a different receive antenna gain G (dBi) the Radar Detection Threshold Level at the receiver input follows the following relationship: DFS Detection Threshold (dBm) = -62 + 10 - e.i.r.p. Spectral Density (dBm/MHz) + G (dBi); however the Radar Detection Threshold Level shall not be less than -64 dBm assuming a 0 dBi receive antenna gain. NOTE 2: Slave devices with a maximum e.i.r.p. of less than 23 dBm do not have to implement radar detection unless these devices are used in fixed outdoor point to point or fixed outdoor point to multipoint applications (see clause 4.2.6.1.3).	

Table D.3: Parameters of the reference DFS test signal

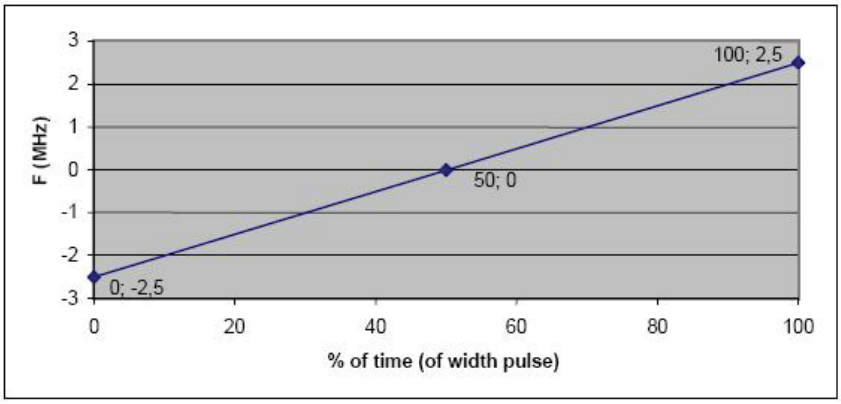
Pulse width W (µs)	Pulse repetition frequency PRF (PPS)	Pulses per burst (PPB)
1	700	18

Table D.4: Parameters of radar test signals

Radar test signal # (see note 1 to note 3)	Pulse width W (µs)		Pulse repetition frequency PRF (PPS)		Number of different PRFs	Pulses per burst for each PRF (PPB) (see note 5)
	Min	Max	Min	Max		
1	0,5	5	200	1 000	1	10 (see note 6)
2	0,5	15	200	1 600	1	15 (see note 6)
3	0,5	15	2 300	4 000	1	25
4	20	30	2 000	4 000	1	20
5	0,5	2	300	400	2/3	10 (see note 6)
6	0,5	2	400	1 200	2/3	15 (see note 6)

NOTE 1: Radar test signals #1 to #4 are constant PRF based signals. See figure D.1. These radar test signals are intended to simulate also radars using a packet based Staggered PRF. See figure D.2.

NOTE 2: Radar test signal #4 is a modulated radar test signal. The modulation to be used is a chirp modulation with a ±2,5 MHz frequency deviation which is described below.



NOTE 3: Radar test signals #5 and #6 are single pulse based Staggered PRF radar test signals using 2 or 3 different PRF values. For radar test signal #5, the difference between the PRF values chosen shall be between 20 PPS and 50 PPS. For radar test signal #6, the difference between the PRF values chosen shall be between 80 PPS and 400 PPS. See figure D.3.

NOTE 4: Apart for the Off-Channel CAC testing, the radar test signals above shall only contain a single burst of pulses. See figure D.1, figure D.3 and figure D.4.
For the Off-Channel CAC testing, repetitive bursts shall be used for the total duration of the test. See figure D.2 and figure D.5. See also clause 4.2.6.2.3, clause 5.4.8.2.1.4.2 and clause 5.4.8.2.1.4.3.

NOTE 5: The total number of pulses in a burst is equal to the number of pulses for a single PRF multiplied by the number of different PRFs used.

NOTE 6: For the CAC and Off-Channel CAC requirements, the minimum number of pulses (for each PRF) for any of the radar test signals to be detected in the band 5 600 MHz to 5 650 MHz shall be 18.

Table D.5: Detection probability

Parameter	Detection Probability (P_d)	
	Channels whose nominal bandwidth falls partly or completely within the 5 600 MHz to 5 650 MHz band	Other channels
CAC, Off-Channel CAC	99,99 %	60 %
In-Service Monitoring	60 %	60 %

NOTE: P_d gives the probability of detection per simulated radar burst and represents a minimum level of detection performance under defined conditions. Therefore P_d does not represent the overall detection probability for any particular radar under real life conditions.

12.2 APPLICABILITY

Table 6 lists the DFS related technical requirements and their applicability for every operational mode. If the RLAN device is capable of operating in more than one operational mode then every operating mode shall be assessed separately.

Table 6: Applicability of DFS requirements

Requirement	DFS Operational mode		
	Master	**Slave without radar detection (see table D.2, note 2)**	**Slave with radar detection (see table D.2, note 2)**
Channel Availability Check	Required	Not required	Required (see note 2)
Off-Channel CAC (see note 1)	Required	Not required	Required (see note 2)
In-Service Monitoring	Required	Not required	Required
Channel Shutdown	Required	Required	Required
Non-Occupancy Period	Required	Not required	Required
Uniform Spreading	Required	Not required	Not required
NOTE 1: Where implemented by the manufacturer. NOTE 2: A slave with radar detection is not required to perform a CAC or *Off-Channel CAC* at initial use of the channel but only after the slave has detected a radar signal on the *Operating Channel* by *In-Service Monitoring* and the *Non-Occupancy Period* resulting from this detection has elapsed.			

12.3 CHANNEL AVAILABILITY CHECK

LIMIT

The Channel Availability Check shall be performed during a continuous period in time (Channel Availability Check Time) which shall not be less than the value defined in table D.1. During the Channel Availability Check, the RLAN device shall be capable of detecting any of the radar test signals that fall within the ranges given by table D.4 with a level above the Radar Detection Threshold Level defined in table D.2. The RLAN device shall comply with the minimum detection probability as defined in table D.5.

12.4 OFF-CHANNEL CAC (OFF-CHANNEL CHANNEL AVAILABILITY CHECK)

LIMIT

Where implemented, the Off-Channel CAC Time shall be declared by the manufacturer. However, the declared Off-Channel CAC Time shall be within the range specified in table D.1.

During the Off-Channel CAC, the RLAN device shall be capable of detecting any of the radar test signals that fall within the ranges given by table D.4 with a level above the Radar Detection Threshold Level defined in table D.2.

The RLAN device shall comply with the minimum detection probability as defined in table D.5.

12.5 IN-SERVICE MONITORING

LIMIT

The In-Service Monitoring shall be used to monitor each Operating Channel.

The In-Service-Monitoring shall start immediately after the RLAN device has started transmissions on a channel.

During the In-Service Monitoring, the RLAN device shall be capable of detecting any of the radar test signals that fall within the ranges given by table D.4 with a level above the Radar Detection Threshold Level defined in table D.2.

The RLAN device shall comply with the minimum detection probability associated with a given radar test signal as defined in table D.5.

12.6 CHANNEL SHUTDOWN

LIMIT

The Channel Move Time shall not exceed the limit defined in table D.1. The Channel Closing Transmission Time shall not exceed the limit defined in table D.1.

12.7 NON-OCCUPANCY

LIMIT

The Non-Occupancy Period shall not be less than the value defined in table D.1.

12.8 UNIFORM SPREADING

LIMIT

Each of the declared Channel Plans (see clause 3.1) shall make use of at least 60 % of the spectrum available in the applicable sub-band(s).

The Uniform Spreading is limited to the usable channels being declared as part of the channel plan. Usable channels do not include channels which are precluded by either:

the intended outdoor usage of the RLAN; or

previous detection of a radar on the channel (Unavailable Channel or Unusable Channel); or national regulations; or

the restriction to only operate in the band 5 150 MHz to 5 250 MHz for RLAN devices without a radar detection capability.

Each of the Usable Channels shall be used with approximately equal probability. RLAN equipment for which the declared channel plan includes channels whose nominal bandwidth falls completely or partly within the band 5 600 MHz to 5 650 MHz may omit these channels from the list of Usable Channels at initial power up or at initial installation. Channels being used by other RLAN equipment may be omitted from the list of Usable Channels.

12.9 TEST PROCEDURE

Refer to chapter 5.4.8.2 of ETSI EN 301 893 V2.1.1 (2017-05)

12.10 TEST SETUP

Set-up A

Set-up A is a set-up whereby the UUT is an RLAN device operating in master mode. Radar test signals are injected into the UUT. This set-up also contains an RLAN device operating in slave mode which is associated with the UUT.

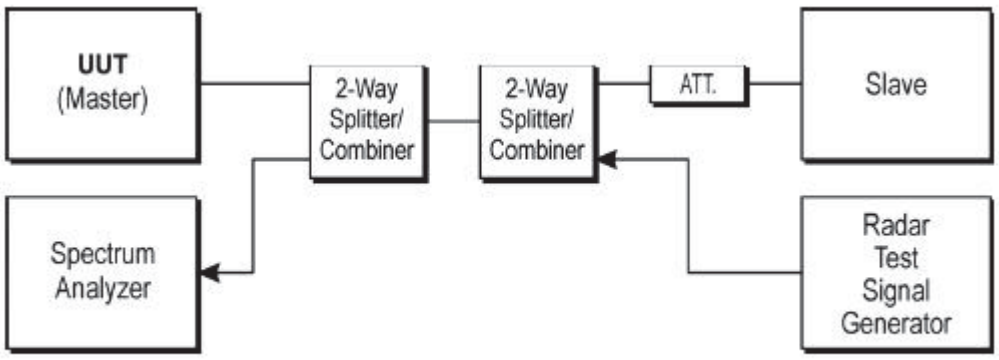


Figure 5: Set-up A

Set-up B
Set-up B is a set-up whereby the UUT is an RLAN device operating in slave mode, with or without Radar Interference Detection function. This set-up also contains an RLAN device operating in master mode. The radar test signals are injected into the master device. The UUT (slave device) is associated with the master device.

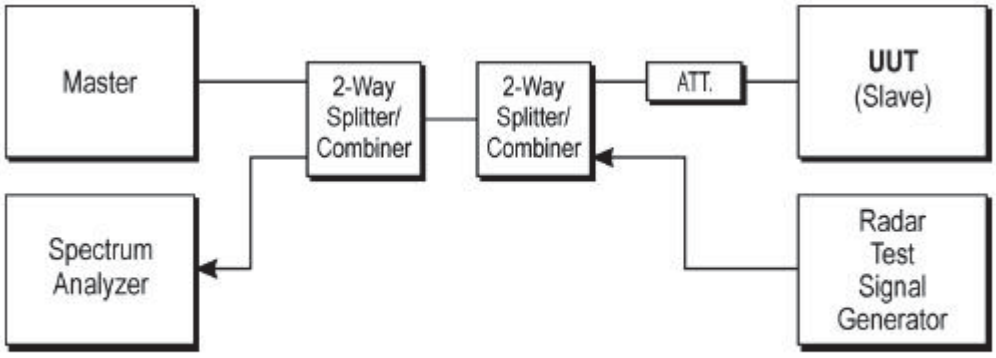


Figure 6: Set-up B

Set-up C
The UUT is an RLAN device operating in slave mode with Radar Interference Detection function. Radar test signals are injected into the slave device. This set-up also contains an RLAN device operating in master mode. The UUT (slave device) is associated with the master device.

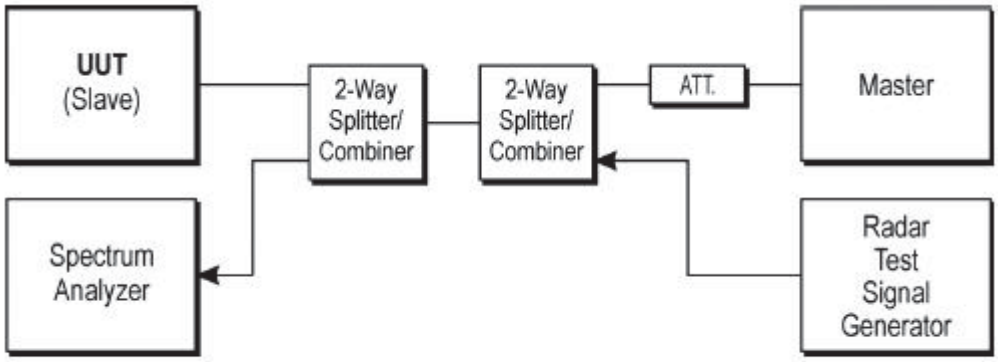


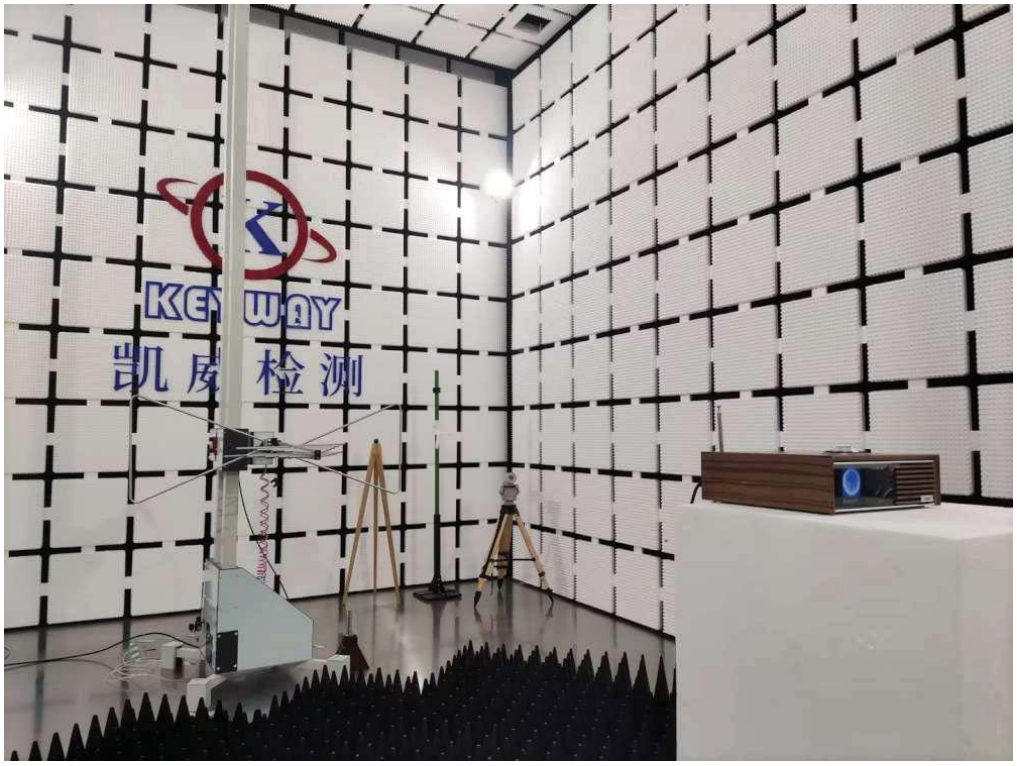
Figure 7: Set-up C

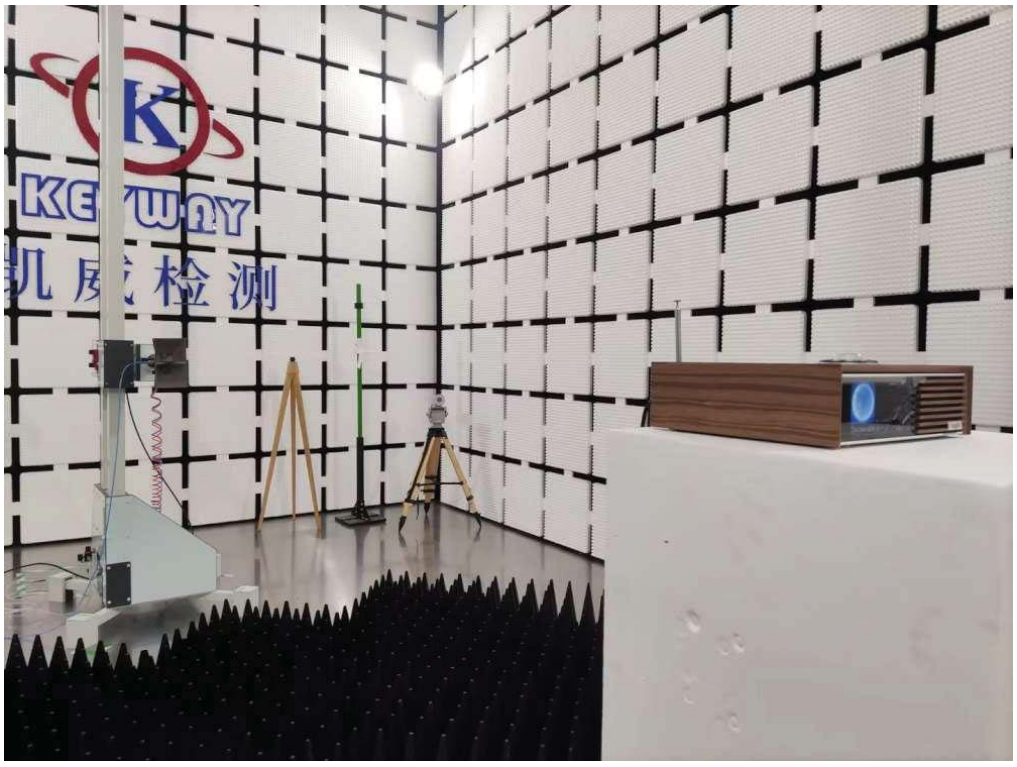
12.11 TEST RESULTS

Not Applicable

13. TEST PHOTOGRAPH

Spurious Emission Test





14. EUT Constructional Details

Reference to the test report No. TR24050566-E-002.

*** the end of report ***