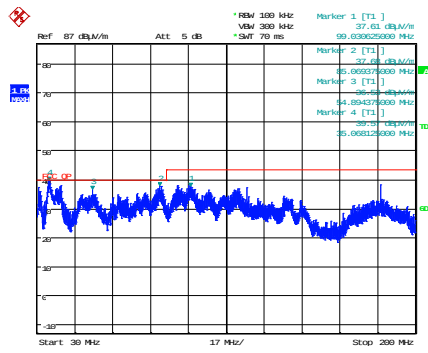


26.5 GHz – 40 GHz

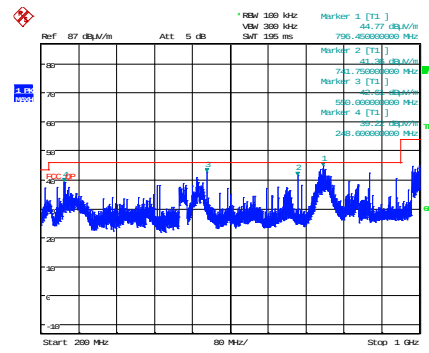
Bandedge

802.11ac VHT80 - Ch 58



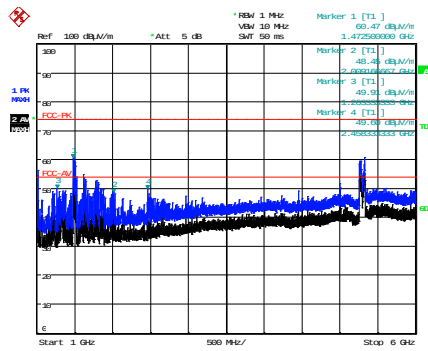
Date: 4.JUL.2016 10:20:21

30 MHz – 200 MHz



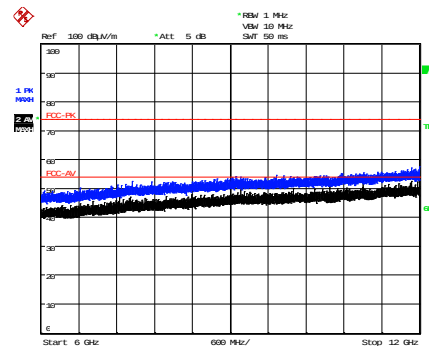
Date: 4.JUL.2016 17:52:52

200 MHz – 1 GHz



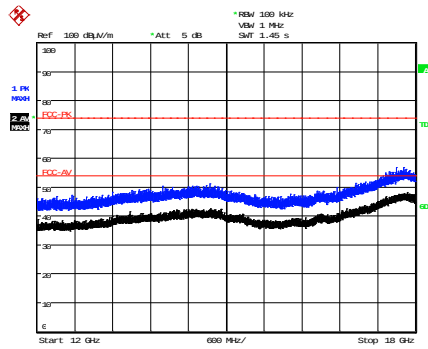
Date: 6.JUL.2016 15:17:20

1 GHz – 6 GHz



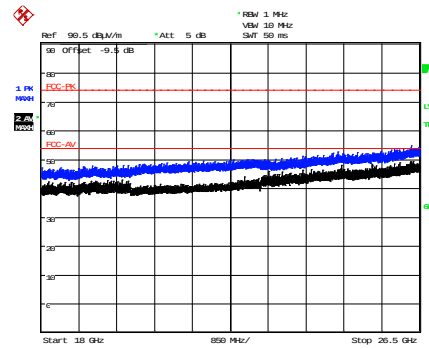
Date: 6.JUL.2016 15:19:09

6 GHz – 12 GHz



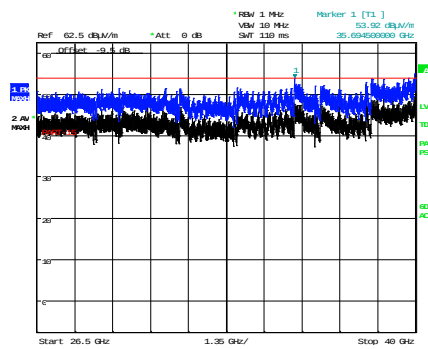
Date: 6.JUL.2016 15:20:52

12 GHz – 18 GHz

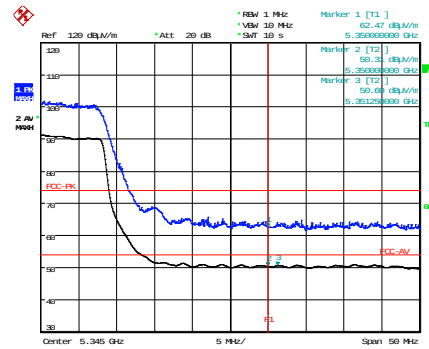


Date: 6.JUL.2016 16:17:00

18 GHz – 26.5 GHz



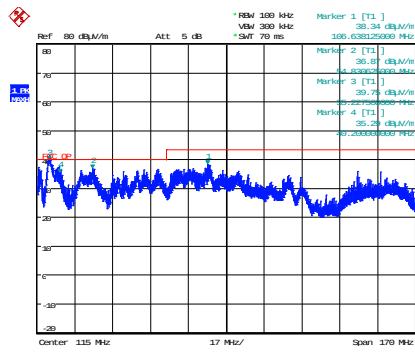
Date: 24.JUL.2003 05:56:34



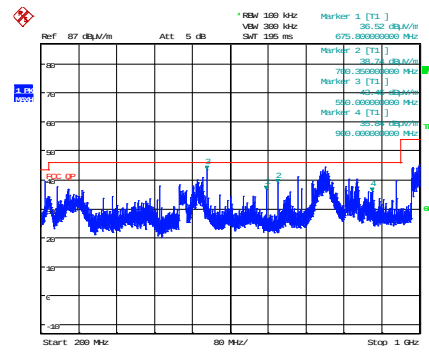
Date: 25.MAY.2016 13:41:05

26.5 GHz – 40 GHz

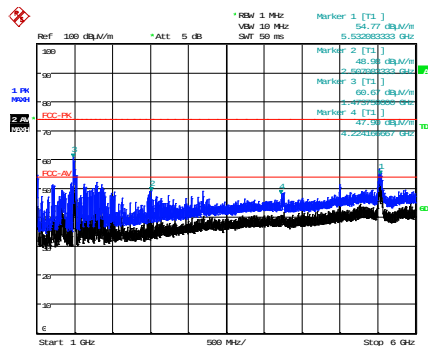
Bandedge

802.11ac VHT80 - Ch 106

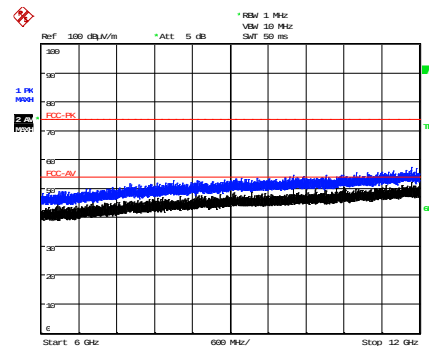
Date: 4.JUL.2016 11:57:38

30 MHz – 200 MHz

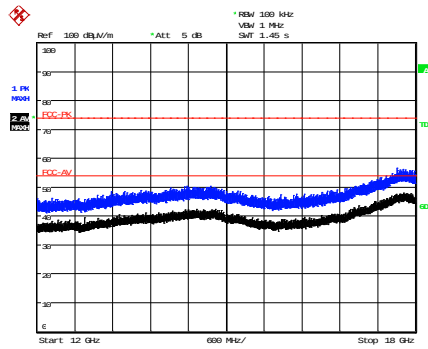
Date: 5.JUL.2016 10:45:48

200 MHz – 1 GHz

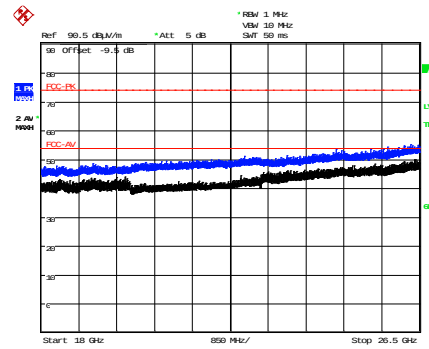
Date: 5.JUL.2016 16:59:28

1 GHz – 6 GHz

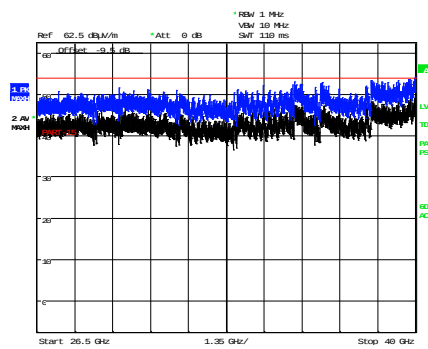
Date: 5.JUL.2016 16:48:25

6 GHz – 12 GHz

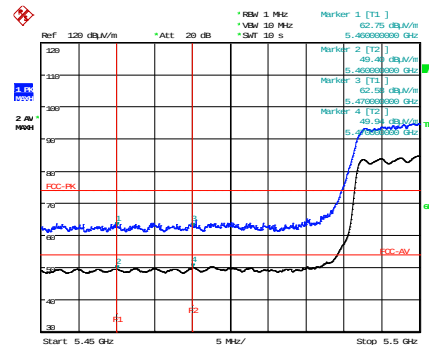
Date: 5.JUL.2016 16:44:56

12 GHz – 18 GHz

Date: 6.JUL.2016 17:28:46

18 GHz – 26.5 GHz

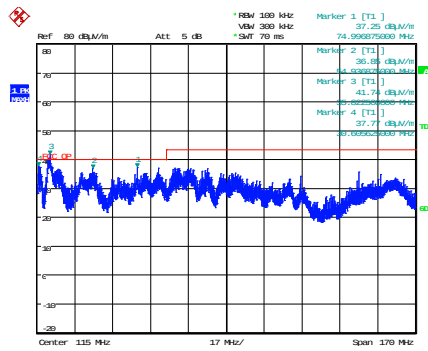
Date: 24.JUL.2003 04:14:16



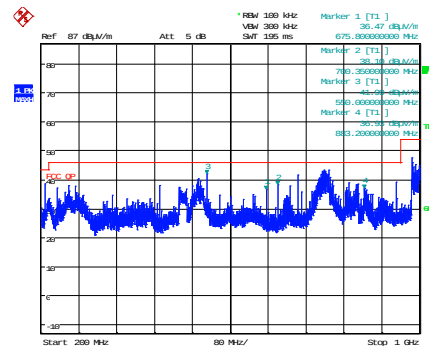
Date: 26.MAY.2016 18:07:12

26.5 GHz – 40 GHz

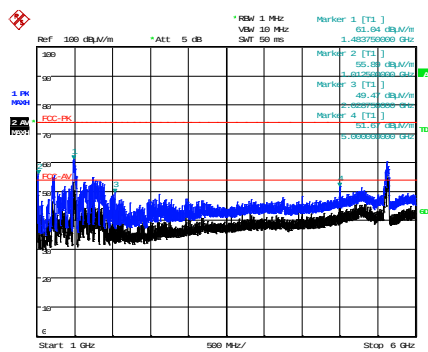
Bandedge

802.11ac VHT80 - Ch 122

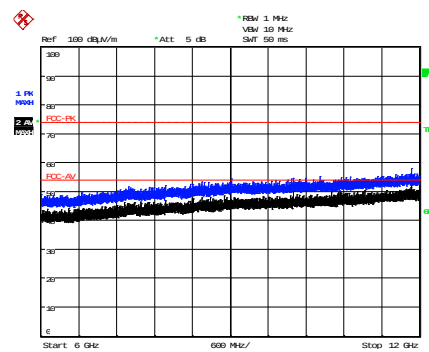
Date: 4.JUL.2016 12:01:53

30 MHz – 200 MHz

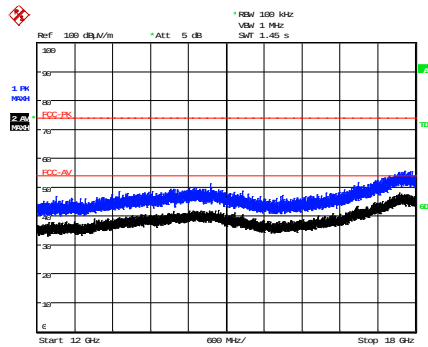
Date: 5.JUL.2016 10:48:10

200 MHz – 1 GHz

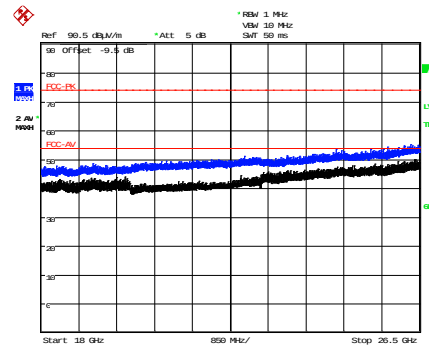
Date: 5.JUL.2016 16:36:44

1 GHz – 6 GHz

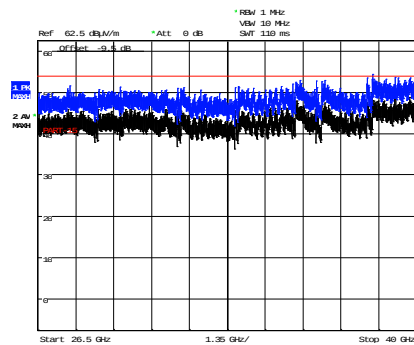
Date: 5.JUL.2016 16:37:48

6 GHz – 12 GHz

Date: 5.JUL.2016 16:39:18

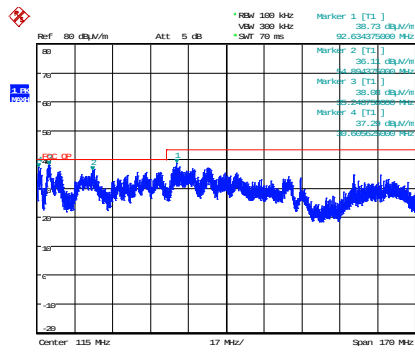
12 GHz – 18 GHz

Date: 6.JUL.2016 17:29:49

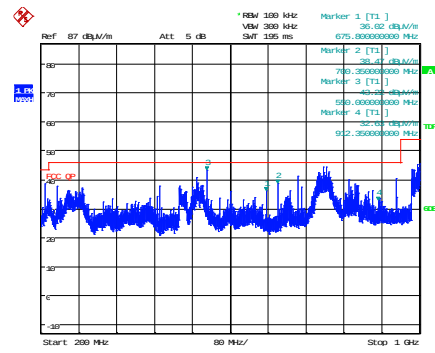
18 GHz – 26.5 GHz

Date: 24.JUL.2003 04:11:54

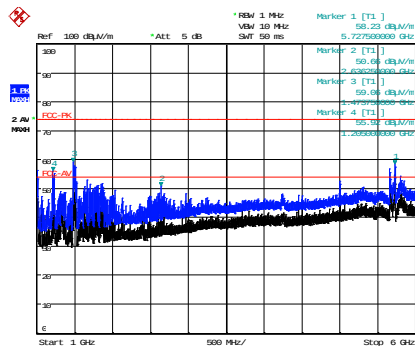
26.5 GHz – 40 GHz

802.11ac VHT80 - Ch 138

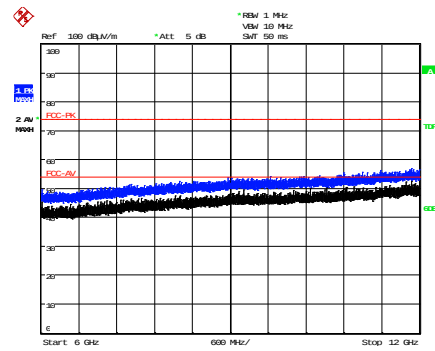
Date: 4.JUL.2016 12:06:38

30 MHz – 200 MHz

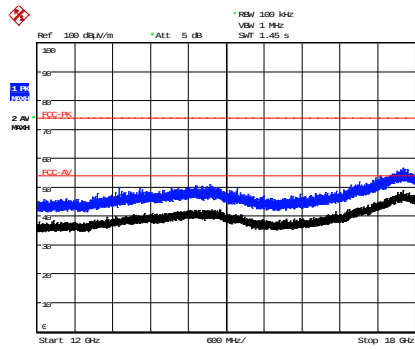
Date: 5.JUL.2016 10:51:58

200 MHz – 1 GHz

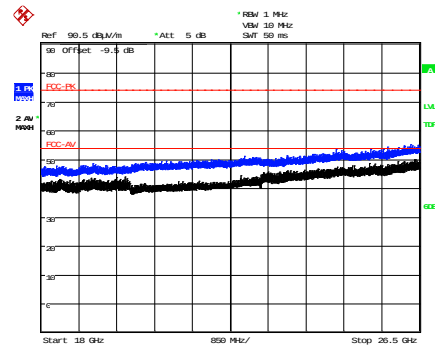
Date: 5.JUL.2016 16:17:24

1 GHz – 6 GHz

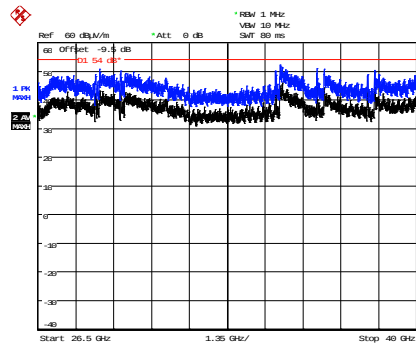
Date: 5.JUL.2016 16:19:31

6 GHz – 12 GHz

Date: 5.JUL.2016 16:28:58

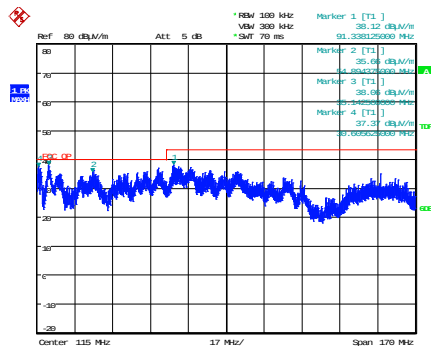
12 GHz – 18 GHz

Date: 6.JUL.2016 17:31:18

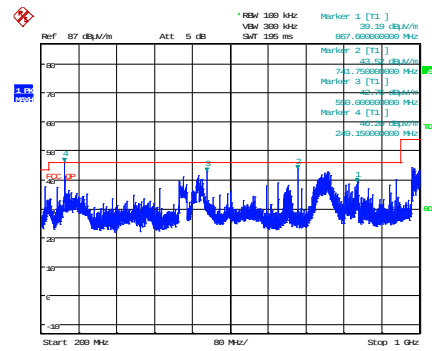
18 GHz – 26.5 GHz

Date: 13.SEP.2016 17:12:04

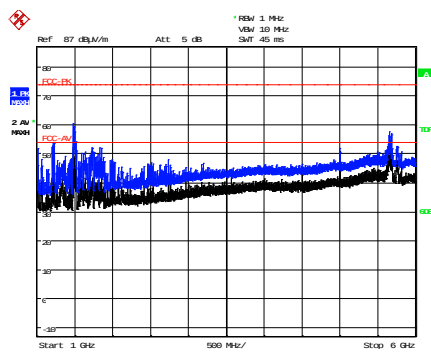
26.5 GHz – 40 GHz

802.11ac VHT80 - Ch 155

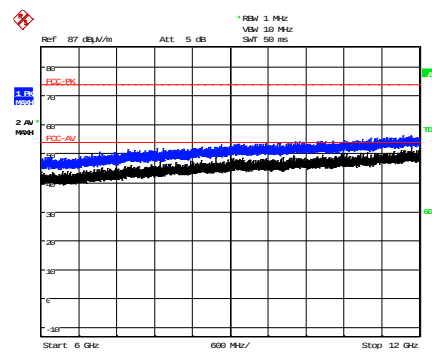
Date: 4.JUL.2016 12:09:58

30 MHz – 200 MHz

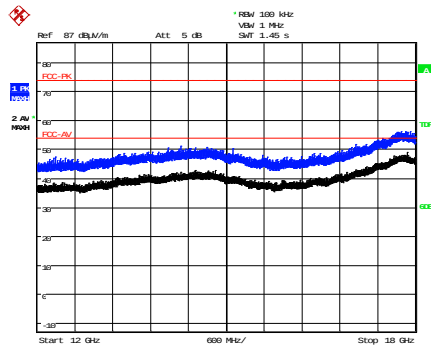
Date: 4.JUL.2016 17:11:37

200 MHz – 1 GHz

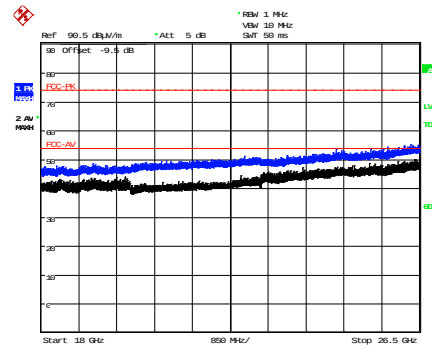
Date: 5.JUL.2016 12:05:27

1 GHz – 6 GHz

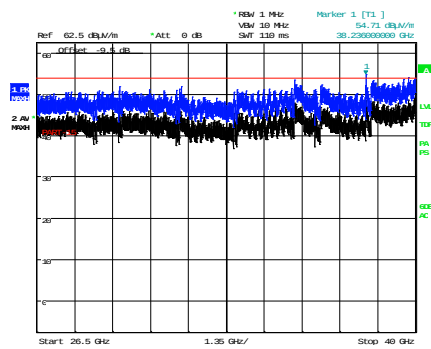
Date: 5.JUL.2016 12:27:43

6 GHz – 12 GHz

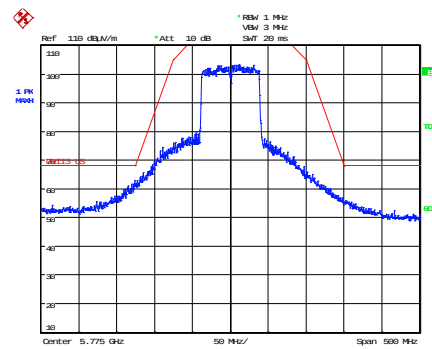
Date: 5.JUL.2016 12:31:08

12 GHz – 18 GHz

Date: 6.JUL.2016 17:32:13

18 GHz – 26.5 GHz

Date: 24.JUL.2003 04:09:08



Date: 12.SEP.2016 15:17:20

26.5 GHz – 40 GHz

Bandedge

12 Occupied Bandwidth

12.1 Definition

The emission bandwidth (x dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated x dB below the maximum in-band spectral density of the modulated signal.

12.2 Test Parameters

Test Location:	Element Hull
Test Chamber:	Wireless Lab 1
Test Standard and Clause:	ANSI C63.10-2013, Clause 6.9, KDB 789033 D02
EUT Channels / Frequencies Measured:	36, 38, 42, 52, 54, 58, 62, 64, 100, 102, 106, 110, 116, 122, 138, 142, 144, 149, 151, 155, 157, 159, 165
EUT Channel Bandwidths:	20 MHz / 40 MHz / 80 MHz
Deviations From Standard:	None
Measurement BW:	1% of the emission bandwidth for 26 dB BW, 100 kHz for 6 dB BW
Spectrum Analyzer Video BW:	> RBW for 26 dB BW, $\geq 3 \times$ RBW for 6 dB BW
Measurement Detector:	Peak

Environmental Conditions (Normal Environment)

Temperature:	21 °C	+15 °C to +35 °C (as declared)
Humidity:	48 %RH	20%RH to 75%RH (as declared)
Supply:	110 Vac	

Test Limits

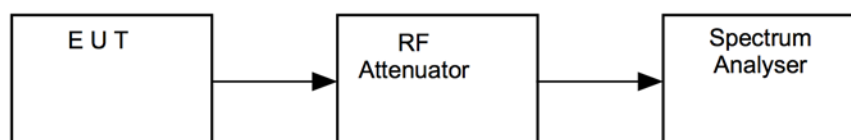
Within the 5.725–5.85 GHz band, the minimum 6 dB bandwidth of U–NII devices shall be at least 500 kHz.

12.3 Test Method

With the EUT setup as per section 9 of this report and connected as per Figure iii, the bandwidth of the EUT was measured on a spectrum analyser.

The measurements were performed with EUT set at its maximum duty. All modulation schemes, data rates and power settings were used to observe the worst-case configuration in each bandwidth.

Figure iii Test Setup



12.4 Test Equipment

<i>Equipment Description</i>	<i>Manufacturer</i>	<i>Equipment Type</i>	<i>Element No</i>	<i>Last Cal Calibration</i>	<i>Calibration Period</i>	<i>Due For Calibration</i>
Spectrum Analyser	R&S	FSU50	U544	30/05/2016	12	29/05/2017

12.5 Test Results

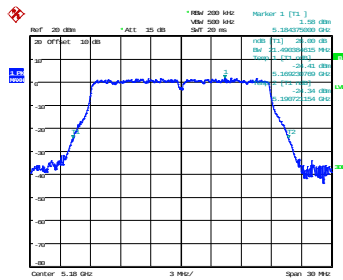
<i>Modulation: 802.11a</i>				
<i>Channel Frequency (MHz)</i>	<i>F_L (MHz)</i>	<i>F_H (MHz)</i>	<i>26dB Bandwidth (MHz)</i>	<i>Result</i>
5180	5169.567308	5190.432692	20.865	PASS
5260	5249.375000	5270.480769	21.106	PASS
5320	5309.375000	5330.480769	21.106	PASS
5500	5489.375000	5510.528846	21.154	PASS
5580	5569.375000	5590.576923	21.202	PASS
5720	5709.375000	5730.528846	21.154	PASS
5745	5734.375000	5755.528846	21.154	PASS
5785	5774.326923	5795.528846	21.202	PASS
5825	5814.326923	5835.528846	21.202	PASS

<i>Modulation: 802.11ac-VHT20</i>				
<i>Channel Frequency (MHz)</i>	<i>F_L (MHz)</i>	<i>F_H (MHz)</i>	<i>26dB Bandwidth (MHz)</i>	<i>Result</i>
5180	5169.230769	5190.721154	21.490	PASS
5260	5249.230769	5270.721154	21.490	PASS
5320	5309.230769	5330.721154	21.490	PASS
5500	5489.182692	5510.769231	21.587	PASS
5580	5569.134615	5590.721154	21.587	PASS
5720	5709.182692	5730.721154	21.538	PASS
5745	5734.230769	5755.721154	21.490	PASS
5785	5774.134615	5795.673077	21.538	PASS
5825	5814.134615	5835.721154	21.587	PASS

Modulation: 802.11ac-VHT40				
Channel Frequency (MHz)	F_L (MHz)	F_H (MHz)	26dB Bandwidth (MHz)	Result
5190	5169.903846	5210.096154	40.192	PASS
5270	5249.807692	5290.192308	40.385	PASS
5310	5289.807692	5330.192308	40.385	PASS
5510	5489.807692	5530.192308	40.385	PASS
5550	5529.807692	5570.096154	40.288	PASS
5710	5689.807692	5730.096154	40.288	PASS
5755	5734.903846	5775.096154	40.192	PASS
5795	5774.807692	5815.096154	40.288	PASS

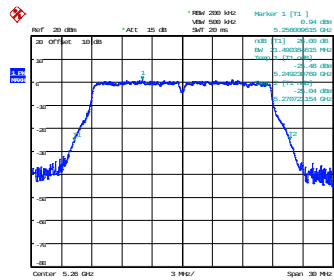
Modulation: 802.11ac-VHT80				
Channel Frequency (MHz)	F_L (MHz)	F_H (MHz)	26dB Bandwidth (MHz)	Result
5210	5168.814103	5251.346154	82.532	PASS
5290	5248.814103	5331.506410	82.692	PASS
5530	5488.814103	5571.025641	82.212	PASS
5610	5568.653846	5651.506410	82.853	PASS
5690	5648.814103	5731.346154	82.532	PASS
5775	5733.814103	5816.346154	82.532	PASS

802.11ac VHT20



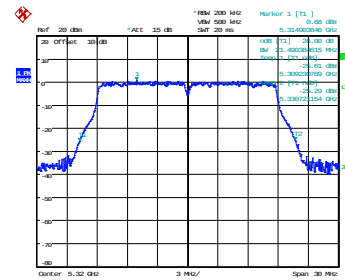
Date: 14 JUN 2016 08:13:25

5180 MHz



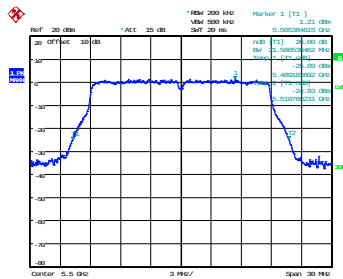
Date: 14 JUN 2016 08:14:46

5260 MHz



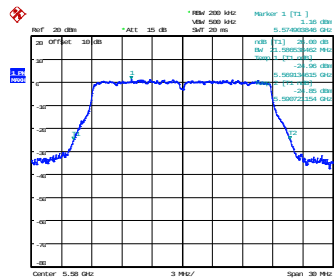
Date: 14 JUN 2016 08:15:59

5320 MHz



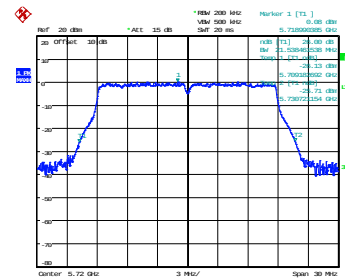
Date: 14 JUN 2016 07:55:48

5500 MHz



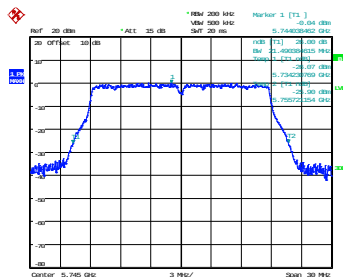
Date: 14 JUN 2016 07:45:59

5580 MHz



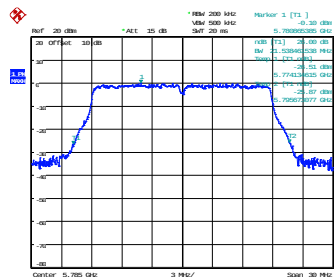
Date: 14 JUN 2016 08:03:18

5720 MHz



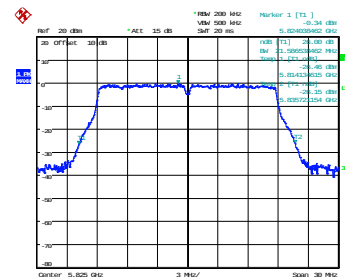
Date: 14 JUN 2016 08:19:06

5745 MHz



Date: 14 JUN 2016 08:17:51

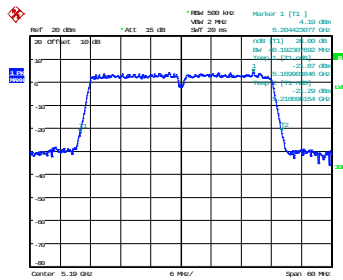
5785 MHz



Date: 14 JUN 2016 08:21:35

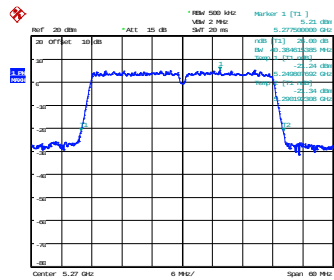
5825 MHz

802.1ac VHT40



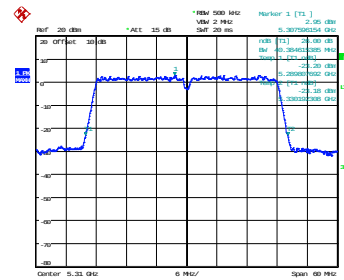
Date: 14 JUN 2016 09:15:33

5190 MHz



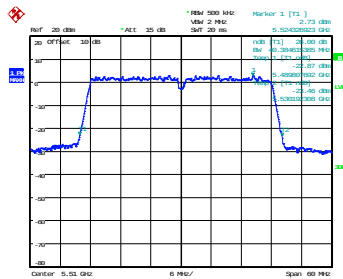
Date: 14 JUN 2016 09:18:22

5270 MHz



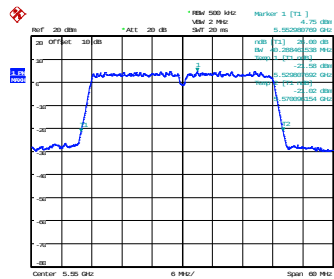
Date: 14 JUN 2016 09:19:18

5310 MHz



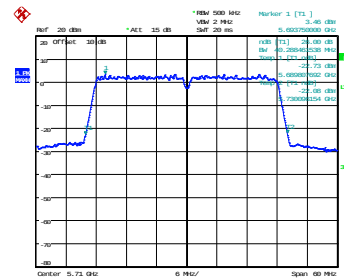
Date: 14 JUN 2016 09:22:44

5510 MHz



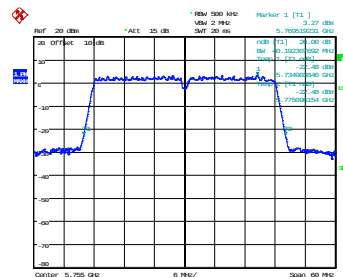
Date: 14 JUN 2016 09:23:42

5550 MHz



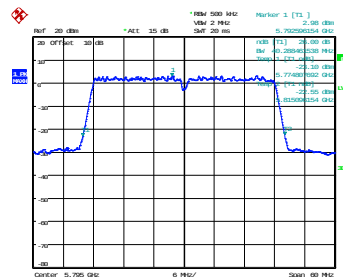
Date: 14 JUN 2016 09:25:39

5710 MHz



Date: 14 JUN 2016 09:27:23

5755 MHz



Date: 14 JUN 2016 09:39:52

5795 MHz

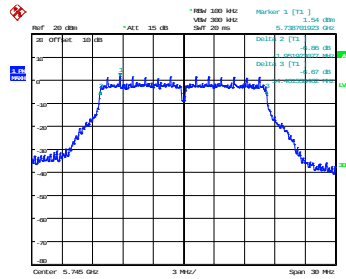
Modulation: 802.11a				
Channel Frequency (MHz)	F_L (MHz)	F_H (MHz)	6dB Bandwidth (kHz)	Result
5745	5736.750000	5753.163461	16413.5	PASS
5785	5776.721154	5793.182692	16461.5	PASS
5825	5816.721154	5833.182692	16461.5	PASS

Modulation: 802.11acVHT20				
Channel Frequency (MHz)	F_L (MHz)	F_H (MHz)	6dB Bandwidth (kHz)	Result
5745	5736.096154	5753.807692	17711.5	PASS
5785	5776.096154	5793.807692	17711.5	PASS
5825	5816.096154	5833.807692	17711.5	PASS

Modulation: 802.11acVHT40				
Channel Frequency (MHz)	F_L (MHz)	F_H (MHz)	6dB Bandwidth (kHz)	Result
5755	5736.737179	5773.166667	36429.5	PASS
5795	5776.762820	5813.166667	36403.8	PASS

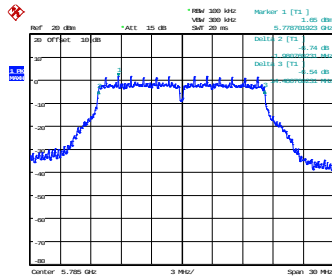
Modulation: 802.11acVHT80				
Channel Frequency (MHz)	F_L (MHz)	F_H (MHz)	6dB Bandwidth (kHz)	Result
5775	5736.692308	5812.734308	76042.0	PASS

802.11a



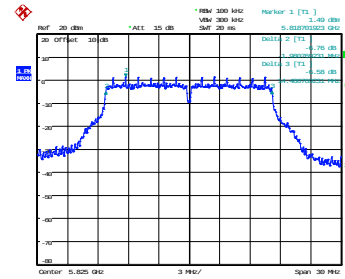
Date: 13 JUN 2016 08:51:04

5745 MHz



Date: 13 JUN 2016 08:53:13

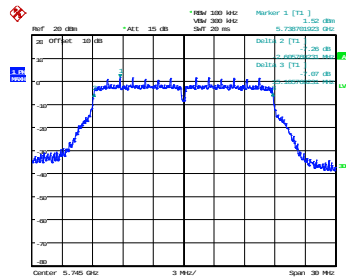
5785 MHz



Date: 13 JUN 2016 09:03:22

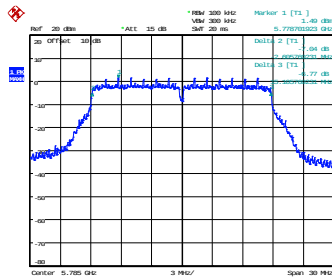
5825 MHz

802.11ac VHT20



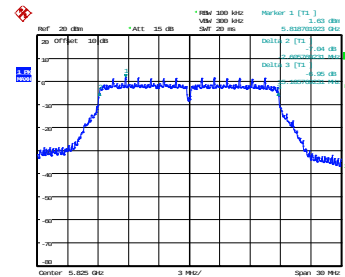
Date: 13 JUN 2016 09:08:47

5745 MHz



Date: 13 JUN 2016 09:09:01

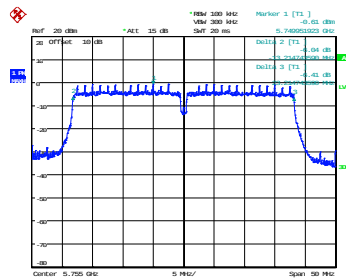
5785 MHz



Date: 13 JUN 2016 09:09:57

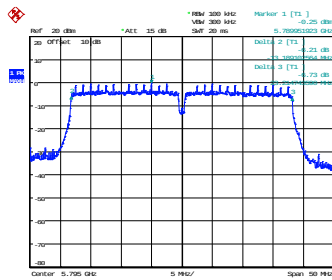
5825 MHz

802.11ac VHT40/80



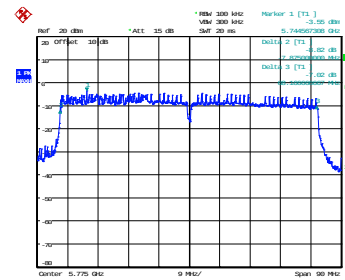
Date: 13 JUN 2016 09:13:55

5755 MHz – VHT40



Date: 13 JUN 2016 09:15:42

5795 MHz - VHT40



Date: 13 JUN 2016 09:16:16

5775 MHz – VHT80

13 Maximum conducted output power

13.1 Definition

The maximum conducted output power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level.

13.2 Test Parameters

Test Location:	Element Hull
Test Chamber:	Wireless Lab 1
Test Standard and Clause:	ANSI C63.10-2013, Clause 12.3, KDB 789033 D02, KDB 662911 D01
EUT Channels / Frequencies Measured:	36, 38, 42, 52, 54, 58, 62, 64, 100, 102, 106, 110, 116, 122, 138, 142, 144, 149, 151, 155, 157, 159, 165
EUT Channel Bandwidths:	20 MHz / 40 MHz / 80 MHz
Deviations From Standard:	None
Measurement Detector:	RMS
Voltage Extreme Environment Test Range:	Mains Power = 85% and 115% of Nominal (FCC only requirement);

Environmental Conditions (Normal Environment)

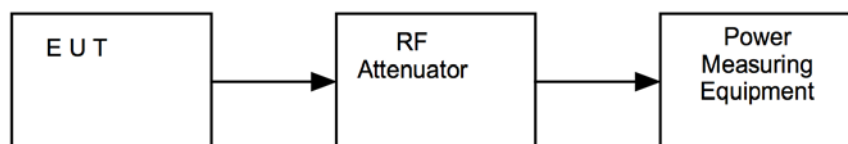
Temperature: 22 °C	+15 °C to +35 °C (as declared)
Humidity: 44%RH	20%RH to 75%RH (as declared)

13.3 Test Method

The EUT was setup as per section 9 of this report and, as per Figure iv, the power meter was used to measure each antenna output in turn, having taken account of all path losses. The results were summed as in the tables below.

The measurements were performed with EUT set at its maximum duty. All modulation schemes, data rates and power settings were used to observe the worst case configuration in each bandwidth.

Figure iv Test Setup



13.4 Test Equipment

<i>Equipment Description</i>	<i>Manufacturer</i>	<i>Equipment Type</i>	<i>Element No</i>	<i>Last Cal Calibration</i>	<i>Calibration Period</i>	<i>Due For Calibration</i>
Power Meter	Dare	RPR3006W	REF2111	09/03/2016	12	09/03/2017

13.5 Test Limits

For client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW.

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

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

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

802.11n/ac 20 MHz									
Frequency (MHz)	5180	5260	5320	5500	5580	5720	5745	5785	5825
Gain	4.2	4.0	3.8	4.3	4.3	4.1	4.6	4.6	4.9
Array Gain	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Direction Gain of Antenna*	4.2	4.0	3.8	4.3	4.3	4.1	4.6	4.6	4.9
Exceeds 6 dBi?	No	No	No	No	No	No	No	No	No
Spec limit (dBm)	24	24	24	24	24	24	30	30	30
Number Of Antennas	2	2	2	2	2	2	2	2	2

802.11n/ac 40 MHz								
Frequency (MHz)	5190	5270	5310	5510	5550	5710	5755	5795
Gain	4.2	4.0	4.0	4.3	4.3	4.1	4.6	4.9
Array Gain	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Direction Gain of Antenna*	4.2	4.0	4.0	4.3	4.3	4.1	4.6	4.9
Exceeds 6 dBi?	No	No	No	No	No	No	No	No
Spec limit (dBm)	24	24	24	24	24	24	30	30
Number Of Antennas	2	2	2	2	2	2	2	2

802.11ac 80 MHz						
Frequency (MHz)	5210	5290	5530	5610	5690	5775
Gain	4.2	4.0	4.3	4.3	4.1	4.9
Array Gain	0.0	0.0	0.0	0.0	0.0	0.0
Direction Gain of Antenna*	4.2	4.0	4.3	4.3	4.1	4.9
Exceeds 6 dBi?	No	No	No	No	No	No
Spec limit (dBm)	24	24	24	24	24	30
Number Of Antennas	2	2	2	2	2	2

* Directional Gain of antenna Calculated as per KDB 662911 D01 Multiple Transmitter Output v02r01

Directional gain = $G_{\text{ANT}} + \text{Array Gain}$

Array Gain = 0 dB (i.e., no array gain) for $N_{\text{ANT}} \leq 4$

13.6 Test Results

Modulation: 802.11a				
Channel (MHz)	Power setting	Power Chain 0 (dBm)	Power Chain 1 (dBm)	Total Power (dBm)
5180	44	10.40	10.80	13.61
5260	62	14.00	14.50	17.27
5320	58	13.10	13.60	16.37
5500	58	13.40	13.70	16.56
5580	62	14.00	14.70	17.37
5720	62	13.40	13.90	16.67
5745	62	13.20	13.80	16.52
5785	62	13.30	13.50	16.41
5825	62	13.40	13.50	16.46

Modulation: 802.11n HT20				
Channel (MHz)	Power setting	Power Chain 0 (dBm)	Power Chain 1 (dBm)	Total Power (dBm)
5180	44	10.50	11.30	13.93
5260	62	14.00	14.50	17.27
5320	58	12.80	13.40	16.12
5500	62	14.10	14.50	17.31
5580	62	13.80	14.30	17.07
5720	62	13.70	13.80	16.76
5745	62	13.30	13.60	16.46
5785	62	13.40	13.50	16.46
5825	62	13.40	13.40	16.41

Modulation: 802.11n HT40				
Channel (MHz)	Power setting	Power Chain 0 (dBm)	Power Chain 1 (dBm)	Total Power (dBm)
5190	44	10.70	11.30	14.02
5270	62	14.50	14.90	17.71
5310	54	12.40	13.00	15.72
5510	48	11.40	11.60	14.51
5550	62	14.50	15.10	17.82
5710	62	14.10	14.20	17.16
5755	62	13.50	14.20	16.87
5795	62	13.60	14.00	16.81

Modulation: 802.11ac VHT80				
Channel (MHz)	Power setting	Power Chain 0 (dBm)	Power Chain 1 (dBm)	Total Power (dBm)
5210	46	10.60	11.60	14.14
5290	52	11.70	12.20	14.97
5530	48	10.70	11.10	13.91
5610	58	12.90	13.40	16.17
5690	58	12.60	13.00	15.81
5775	58	12.50	12.90	15.71

14 Power spectral density

14.1 Definition

The power spectral density is the total energy output per unit bandwidth from a pulse or sequence of pulses for which the transmit power is at its maximum level, divided by the total duration of the pulses.

14.2 Test Parameters

Test Location:	Element Hull
Test Chamber:	Wireless Lab 1
Test Standard and Clause:	ANSI C63.10-2013, Clause 12.5, KDB 789033 D02, KDB 662911 D01
EUT Channels / Frequencies Measured:	36, 38, 42, 52, 54, 58, 62, 64, 100, 102, 106, 110, 116, 122, 138, 142, 144, 149, 151, 155, 157, 159, 165
EUT Channel Bandwidths:	20 MHz / 40 MHz / 80 MHz
Deviations From Standard:	None
Measurement BW:	1 MHz, 500 kHz
Spectrum Analyzer Video BW: (requirement at least 3x RBW)	10 MHz, 5 MHz
Measurement Detector:	RMS

Environmental Conditions (Normal Environment)

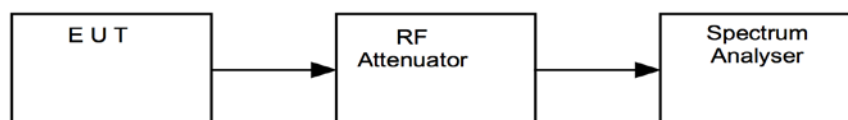
Temperature: 22 °C	+15 °C to +35 °C (as declared)
Humidity: 44%RH	20%RH to 75%RH (as declared)
Supply: 110 Vac	110 Vac +/-10% (as declared)

14.3 Test Method

With the EUT setup as per section 9 of this report and connected as per Figure v, the peak emission of the EUT was measured on a spectrum analyser, with path losses taken into account. The measurements were performed with EUT set at its maximum duty. All modulation schemes, data rates and power settings were used to observe the worst case configuration in each bandwidth.

Measurements were performed as per KDB 662911 D01 Multiple Transmitter Output v02r01 2) In-Band Power Spectral Density (PSD) Measurements b) Measure and sum spectral maxima across the outputs.

Figure v Test Setup



14.4 Test Equipment

<i>Equipment Description</i>	<i>Manufacturer</i>	<i>Equipment Type</i>	<i>Element No</i>	<i>Last Cal Calibration</i>	<i>Calibration Period</i>	<i>Due For Calibration</i>
Spectrum Analyser	R&S	FSU50	U544	30/05/2016	12	29/05/2017

<i>Equipment Description</i>	<i>Manufacturer</i>	<i>Equipment Type</i>	<i>Element No</i>	<i>Last Cal Calibration</i>	<i>Calibration Period</i>	<i>Due For Calibration</i>
Spectrum Analyser	R&S	FSW26	-	01/05/2015	24	01/05/2017
Spectrum Analyser	R&S	FSV13	-	14/07/2015	12	14/07/2016

14.5 Test Limits

For client devices in the 5.15–5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

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

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

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

802.11a/n/ac 20 MHz									
Frequency (MHz)	5180	5260	5320	5500	5580	5720	5745	5785	5825
Gain	4.2	4.0	3.8	4.3	4.3	4.1	4.6	4.6	4.9
Array Gain	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Direction Gain of Antenna*	7.2	7.0	6.8	7.3	7.3	7.1	7.6	7.6	7.9
Exceeds 6 dBi by	1.2	1.0	0.8	1.3	1.3	1.1	1.6	1.6	1.9
Spec limit (dBm/MHz)	11	11	11	11	11	11	30	30	30
Number Of Antennas	2	2	2	2	2	2	2	2	2
Correlated Signals	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Limit (dBm/MHz)	9.8	10.0	10.2	9.7	9.7	9.9	28.4	28.4	28.1

802.11n/ac 40 MHz								
Frequency (MHz)	5190	5270	5310	5510	5550	5710	5755	5795
Gain	4.2	4.0	4.0	4.3	4.3	4.1	4.6	4.9
Array Gain	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Direction Gain of Antenna*	7.2	7.0	7.0	7.3	7.3	7.1	7.6	7.9
Exceeds 6 dBi by	1.2	1.0	1.0	1.3	1.3	1.1	1.6	1.9
Spec limit (dBm/MHz)	11	11	11	11	11	11	30	30
Number Of Antennas	2	2	2	2	2	2	2	2
Correlated Signals	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Limit (dBm/MHz)	9.8	10.0	10.0	9.7	9.7	9.9	28.4	28.1

802.11ac 80 MHz						
Frequency (MHz)	5210	5290	5530	5610	5690	5775
Gain	4.20	4.00	4.30	4.30	4.10	4.90
Array Gain	3.0	3.0	3.0	3.0	3.0	3.0
Direction Gain of Antenna*	7.2	7.0	7.3	7.3	7.1	7.9
Exceeds 6 dBi by	1.2	1.0	1.3	1.3	1.1	1.9
Spec limit (dBm/MHz)	11	11	11	11	11	30
Number Of Antennas	2	2	2	2	2	2
Correlated Signals	Yes	Yes	Yes	Yes	Yes	Yes
Limit (dBm/MHz)	9.8	10.0	9.7	9.7	9.9	28.1

* Directional Gain of antenna Calculated as per KDB 662911 D01 Multiple Transmitter Output v02r01

Directional gain = $G_{ANT} + \text{Array Gain}$

Array Gain = $10 \log (N_{ANT}/N_{SS})$ dBi, Where $N_{ANT} = 2$ & $N_{SS} = 1$

14.6 Test Results

Modulation: 802.11a				
Channel (MHz)	Power setting	PSD Chain 0 (dBm)	PSD Chain 1 (dBm)	Total PSD (dBm)
5180	44	-1.13	-0.37	2.28
5260	62	3.03	3.27	6.17
5320	58	1.72	2.11	4.93
5500	58	1.98	2.15	5.08
5580	62	2.73	3.23	6.00
5720	62	2.46	2.31	5.40
5745	62	-0.88	-0.30	2.43
5785	62	-0.84	-0.39	2.41
5825	62	-0.66	-0.58	2.40

Modulation: 802.11n HT20				
Channel (MHz)	Power setting	PSD Chain 0 (dBm)	PSD Chain 1 (dBm)	Total PSD (dBm)
5180	44	-1.33	-0.47	2.13
5260	62	2.32	2.76	5.56
5320	58	1.19	1.83	4.53
5500	62	2.42	2.66	5.55
5580	62	2.24	2.74	5.51
5720	62	1.98	2.06	5.03
5745	62	-1.28	-0.70	2.03
5785	62	-1.17	-0.99	1.93
5825	62	-1.10	-0.84	2.04

Modulation: 802.11n HT40				
Channel (MHz)	Power setting	PSD Chain 0 (dBm)	PSD Chain 1 (dBm)	Total PSD (dBm)
5190	44	-3.86	-3.20	-0.51
5270	62	-0.19	0.45	3.15
5310	54	-2.17	-1.69	1.09
5510	48	-3.15	-2.77	0.06
5550	62	0.06	0.62	3.36
5710	62	-0.10	0.05	2.99
5755	62	-3.70	-3.00	-0.32
5795	62	-3.34	-3.12	-0.22

Modulation: 802.11ac VHT80				
Channel (MHz)	Power setting	PSD Chain 0 (dBm)	PSD Chain 1 (dBm)	Total PSD (dBm)
5210	46	-5.19	-4.58	-1.86
5290	52	-5.60	-5.26	-2.42
5530	48	-6.29	-6.10	-3.19
5610	58	-4.15	-3.74	-0.93
5690	58	-4.37	-4.26	-1.31
5775	58	-7.91	-7.65	-4.77

15 Measurement Uncertainty

Calculated Measurement Uncertainties

All statements of uncertainty are expanded standard uncertainty using a coverage factor of 1.96 to give a 95% confidence:

[1] Radiated spurious emissions

Uncertainty in test result (30MHz – 1GHz) = **4.6dB**,

Uncertainty in test result (1GHz – 18GHz) = **4.7dB**

[2] AC power line conducted emissions

Uncertainty in test result = **3.4dB**

[3] Occupied bandwidth

Uncertainty in test result = **15.5%**

[4] Conducted carrier power

Uncertainty in test result (Power Meter) = **1.08dB**

[5] Conducted / radiated RF power out-of-band

Uncertainty in test result – Up to 8.1GHz = **3.31dB**

Uncertainty in test result – 8.1GHz – 15.3GHz = **4.43dB**

Uncertainty in test result (30MHz – 1GHz) = **4.6dB**,

Uncertainty in test result (1GHz – 18GHz) = **4.7dB**

[6] Power spectral density

Uncertainty in test result (Spectrum Analyser) = **2.48dB**

16 RF Exposure

KDB 447498

Prediction of MPE limit at a given distance

Equation from IEEE C95.1

$$S = \frac{EIRP}{4\pi R^2}$$

Where:

S = power density

R = distance to the centre of radiation of the antenna

EIRP = EUT Maximum power

The EIRP was calculated by addition of the maximum conducted carrier power plus the maximum directional antenna gain. The directional gain of antenna was calculated as per KDB 662911 D01 Multiple Transmitter Output v02r01

Directional gain = GANT + Array Gain

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4

Results:

Modulation: 802.11a						
Frequency (MHz)	Maximum Conducted Power (dBm)	Antenna Gain (dBi)	Maximum EIRP (mW)	Minimum Distance (cm)	Power density at distance (mW/cm ²)	Power density limit (S) (mW/cm ²)
5180	13.61	4.2	60.4	20.0	0.012	1
5260	17.27	4.0	134.0	20.0	0.027	1
5320	16.37	3.8	104.0	20.0	0.021	1
5500	16.56	4.3	121.9	20.0	0.024	1
5620	17.37	4.3	146.9	20.0	0.029	1
5720	16.67	4.1	119.4	20.0	0.024	1
5745	16.52	4.6	129.4	20.0	0.026	1
5785	16.41	4.6	126.2	20.0	0.025	1
5825	16.46	4.9	136.8	20.0	0.027	1

Modulation: 802.11n HT20						
Frequency (MHz)	Maximum Conducted Power (dBm)	Antenna Gain (dBi)	Maximum EIRP (mW)	Minimum Distance (cm)	Power density at distance (mW/cm ²)	Power density limit (S) (mW/cm ²)
5180	13.93	4.2	65.0	20.0	0.013	1
5260	17.27	4.0	134.0	20.0	0.027	1
5320	16.12	3.8	98.2	20.0	0.020	1
5500	17.31	4.3	144.9	20.0	0.029	1
5620	17.07	4.3	137.1	20.0	0.027	1
5720	16.76	4.1	121.9	20.0	0.024	1
5745	16.46	4.6	127.6	20.0	0.025	1
5785	16.46	4.6	127.6	20.0	0.025	1
5825	16.41	4.9	135.2	20.0	0.027	1

Modulation: 802.11n HT40						
Frequency (MHz)	Maximum Conducted Power (dBm)	Antenna Gain (dBi)	Maximum EIRP (mW)	Minimum Distance (cm)	Power density at distance (mW/cm ²)	Power density limit (S) (mW/cm ²)
5190	14.02	4.2	66.4	20.0	0.013	1
5270	17.71	4.0	148.3	20.0	0.029	1
5310	15.72	4.0	93.8	20.0	0.019	1
5510	14.51	4.3	76.0	20.0	0.015	1
5630	17.82	4.3	162.9	20.0	0.032	1
5710	17.16	4.1	133.7	20.0	0.027	1
5755	16.87	4.6	140.3	20.0	0.028	1
5795	16.81	4.9	148.3	20.0	0.029	1

Modulation: 802.11ac VHT80						
Frequency (MHz)	Maximum Conducted Power (dBm)	Antenna Gain (dBi)	Maximum EIRP (mW)	Minimum Distance (cm)	Power density at distance (mW/cm ²)	Power density limit (S) (mW/cm ²)
5210	14.14	4.2	68.2	20.0	0.014	1
5290	14.97	4.0	78.9	20.0	0.016	1
5530	13.91	4.3	66.2	20.0	0.013	1
5610	16.17	4.3	111.4	20.0	0.022	1
5690	15.81	4.1	97.9	20.0	0.019	1
5775	15.71	4.9	115.1	20.0	0.023	1