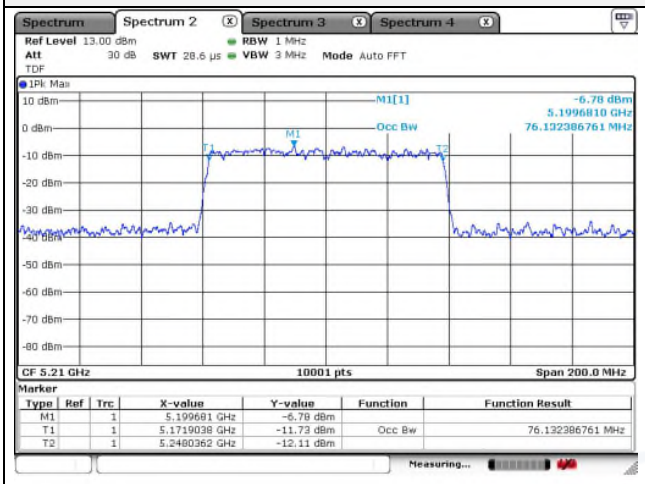
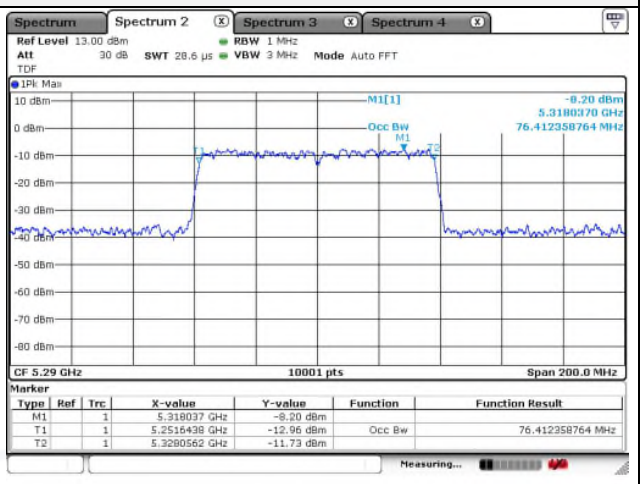
Mode : 802.11ac_VHT80 (MCS0)

UNII-1	UNII-2A
	

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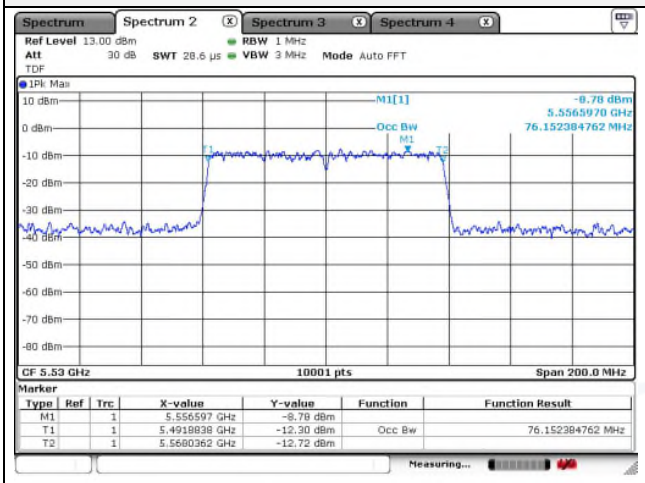
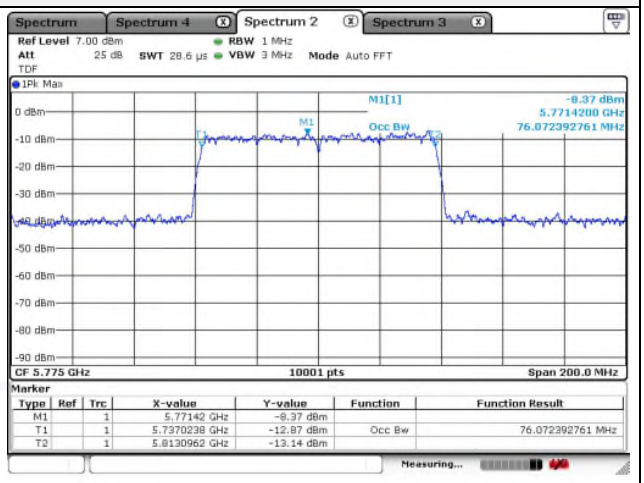
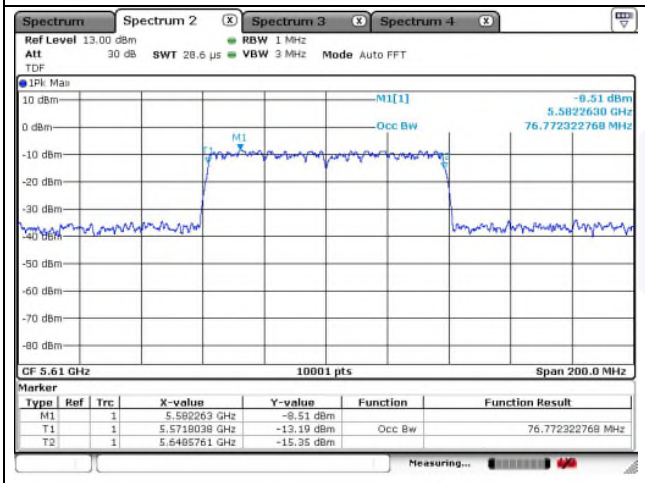
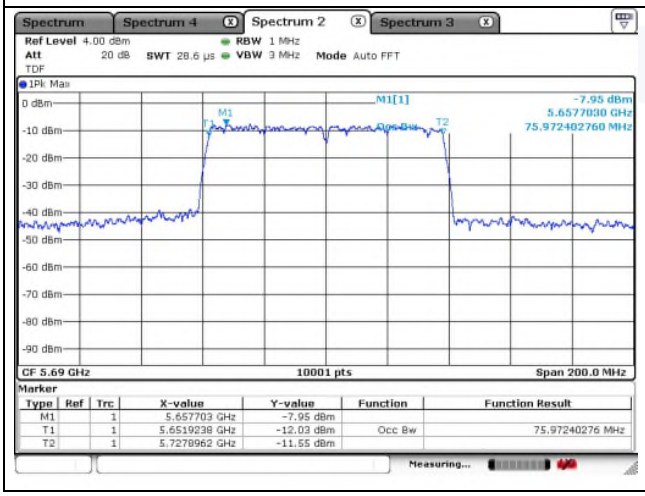
	
	Blank
	Blank

Mode : 802.11ax_HE80 (MCS0)

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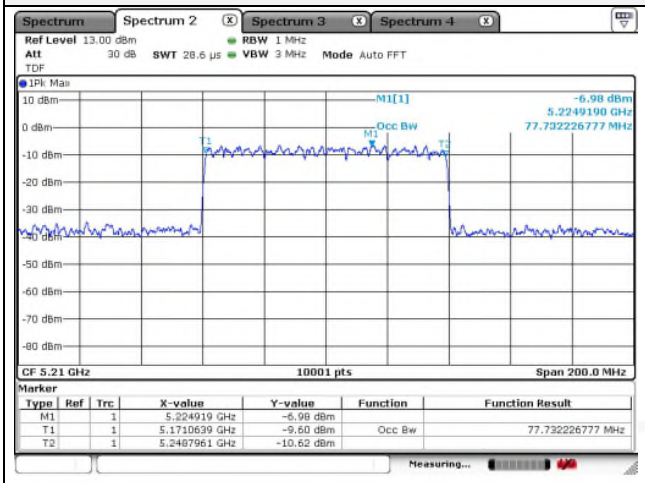
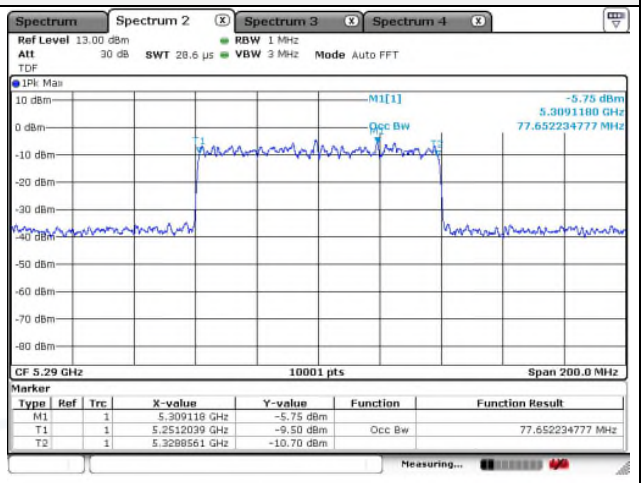
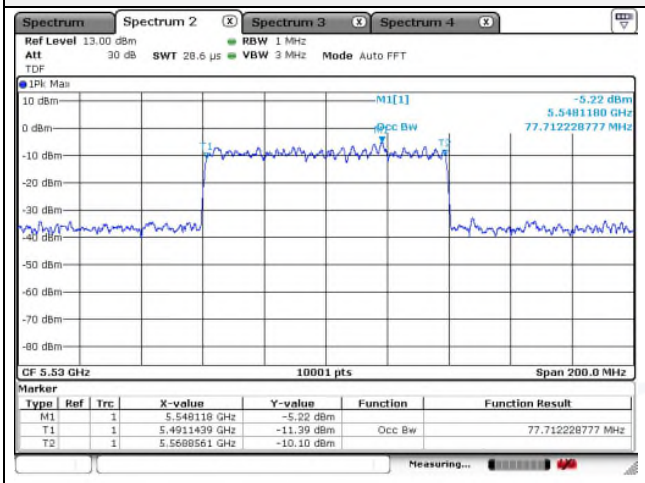
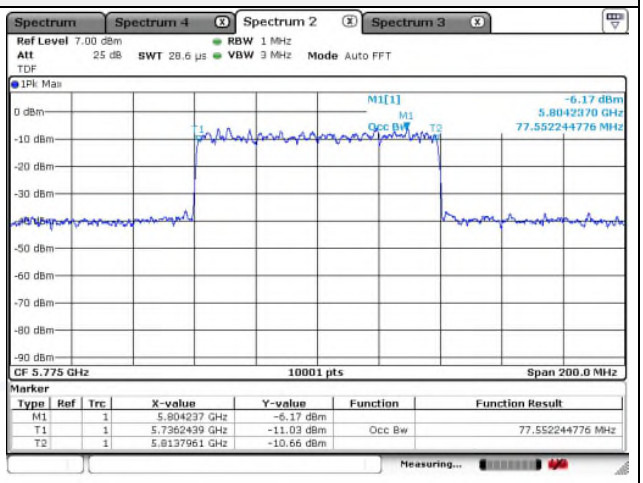
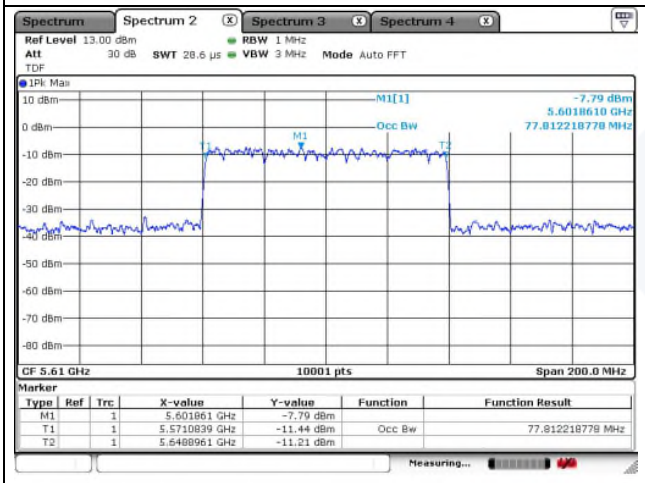
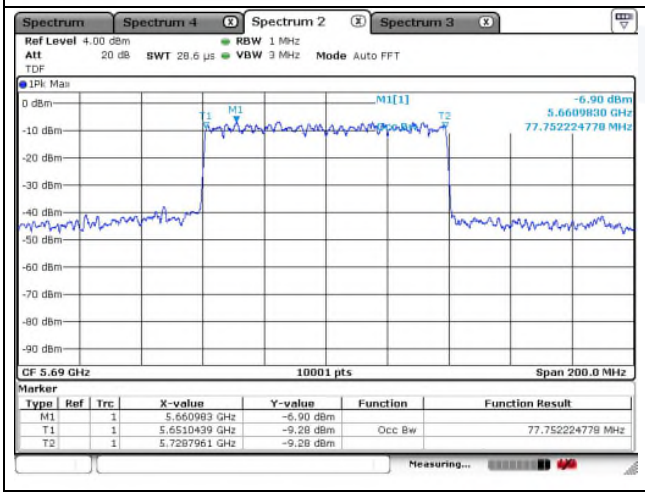
	

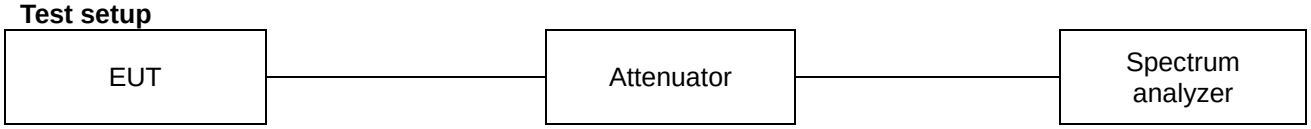
UNII-2C	UNII-3
	
	Blank
	Blank

3.2. 6 dB bandwidth

Test procedure

KDB 789033 D02 v02r01– Section C.2

Test setup



Section C.2

1. Set RBW = 100 ㎑
2. Set the video bandwidth (VBW) ≥ 3 × RBW.
3. Detector = peak.
4. Sweep = auto couple.
5. Allow the trace to stabilize
6. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 ㏈ relative to the maximum level measured in the fundamental emission.

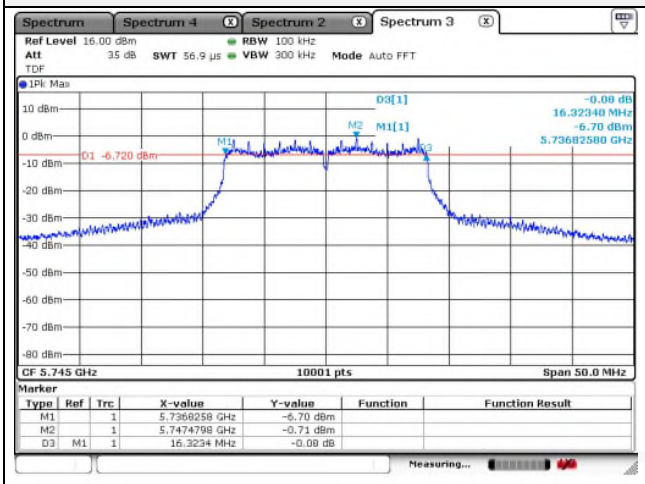
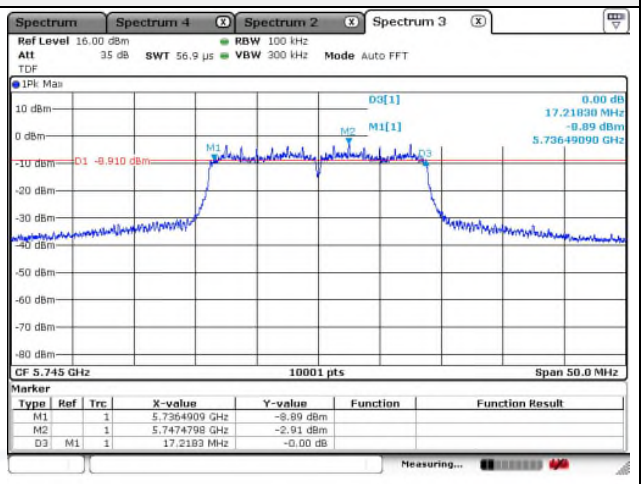
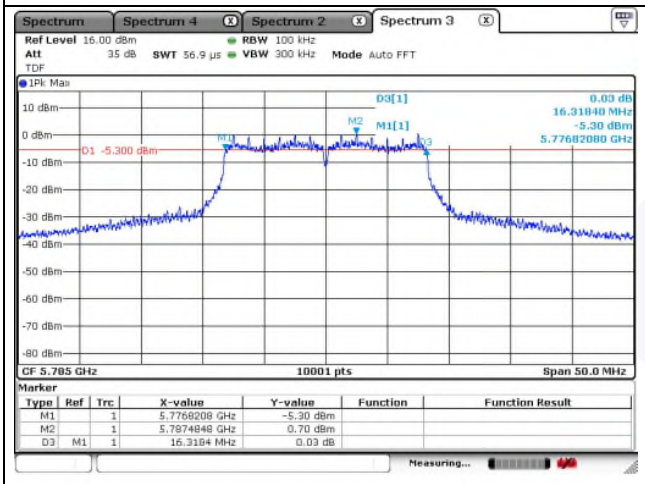
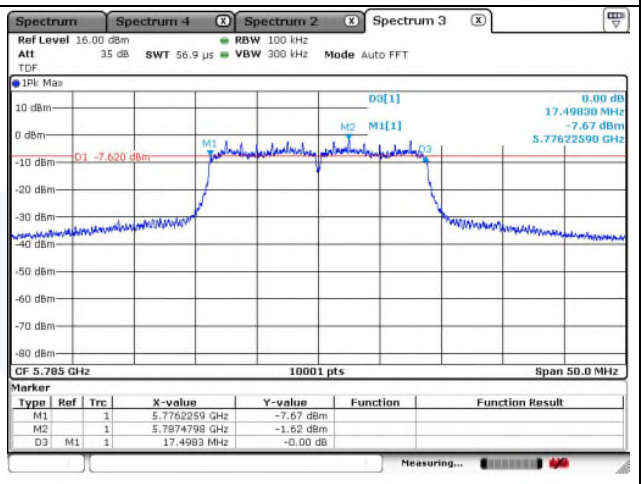
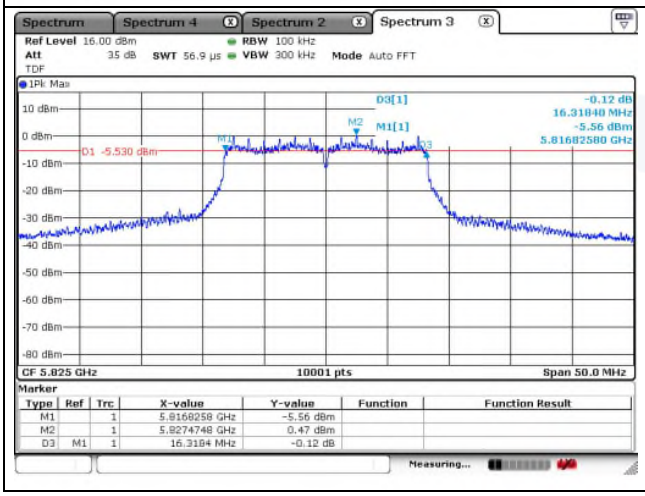
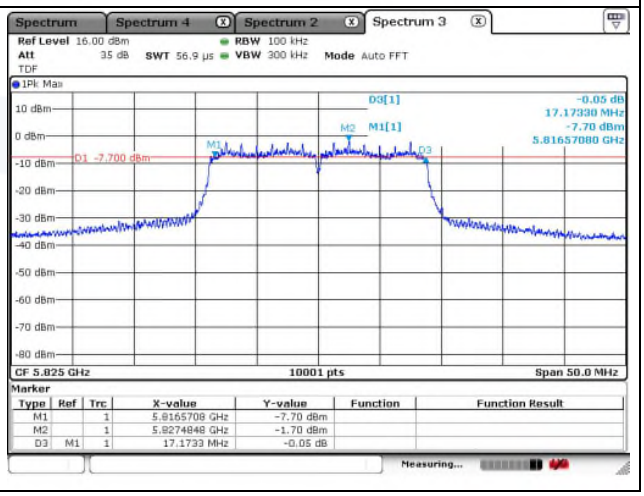
Limit

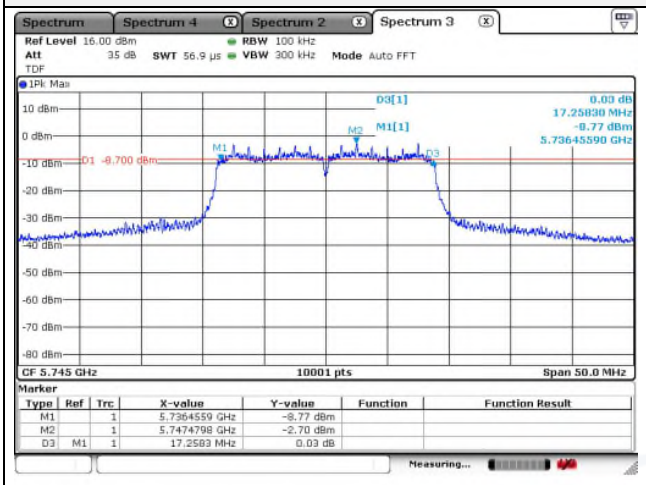
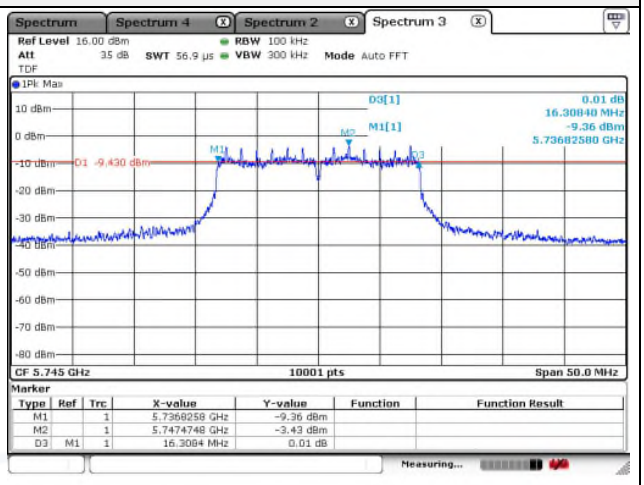
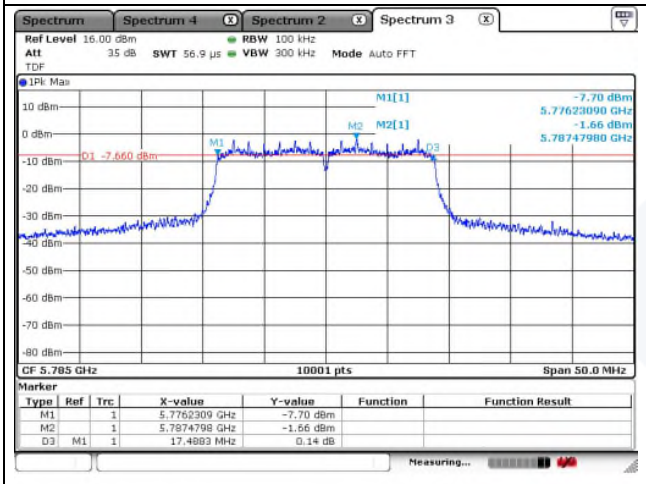
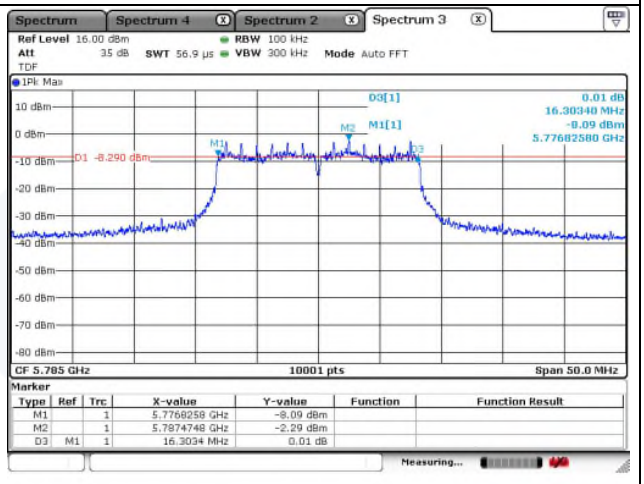
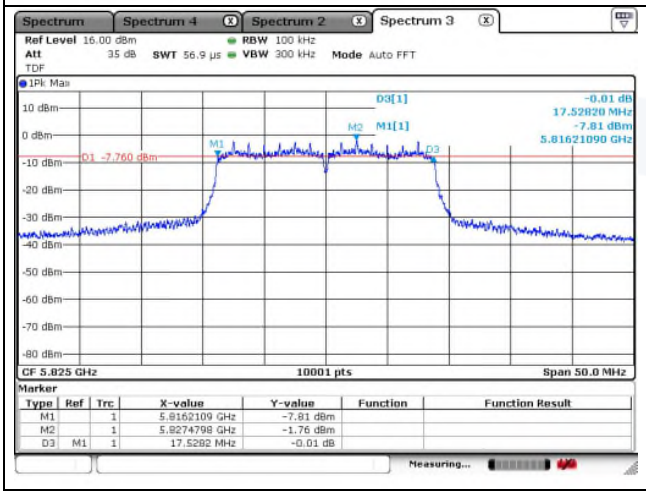
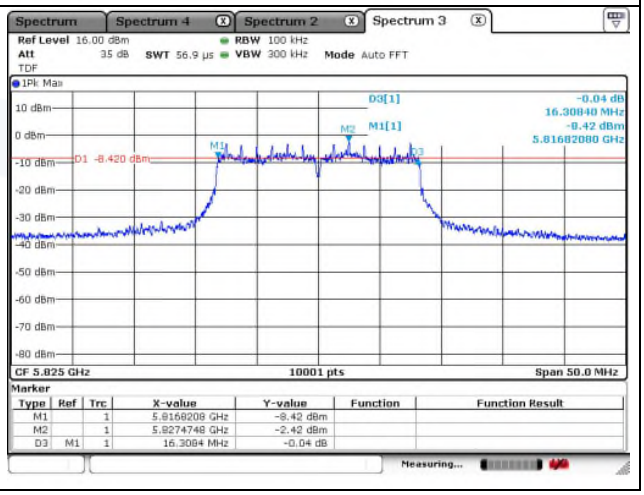
Within the 5.725-5.85 ㎓ band, the minimum 6 ㏈ bandwidth of U-NII devices shall be at least 500 ㎑.

Test results

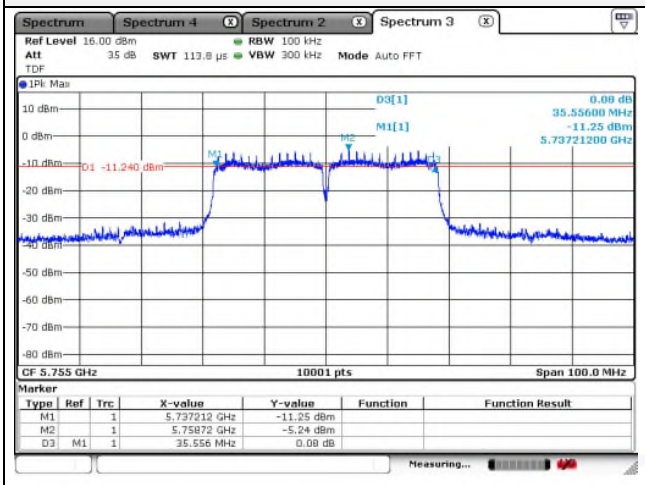
Band	Frequency(㎒)	Mode	6 ㏈ bandwidth(㎒)
UNII-3	5 745	802.11a (6 Mbps)	16.32
	5 785		16.32
	5 825		16.32
	5 745	802.11n_HT20 (MCS0)	17.22
	5 785		17.50
	5 825		17.17
	5 745	802.11ac_VHT20 (MCS0)	17.26
	5 785		17.49
	5 825		17.53
	5 745	802.11ax_HE20 (MCS0)	16.31
	5 785		16.30
	5 825		16.31
	5 755	802.11n_HT40 (MCS0)	35.56
	5 795		35.65
	5 755	802.11ac_VHT40 (MCS0)	35.55
	5 795		35.68
	5 755	802.11ax_HE40 (MCS0)	37.18
	5 795		37.29
	5 775	802.11ac_VHT80 (MCS0)	76.16
	5 775	802.11ax_HE80 (MCS0)	77.88

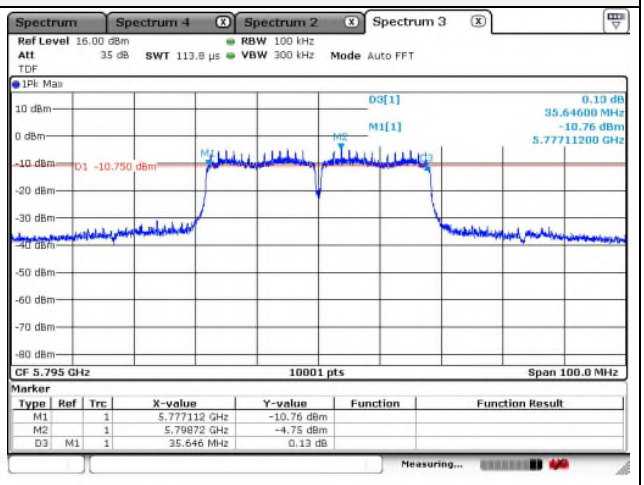
Band	Frequency(㎒)	Mode	6 ㏈ bandwidth(㎒)
UNII-3 (Band-Crossing channels)	5 720	802.11a (6 Mbps)	3.07
		802.11n_HT20 (MCS0)	3.74
		802.11ac_VHT20 (MCS0)	3.73
		802.11ax_HE20 (MCS0)	3.13
	5 710	802.11n_HT40 (MCS0)	2.86
		802.11ac_VHT40 (MCS0)	2.88
		802.11ax_HE40 (MCS0)	3.54
	5 690	802.11ac_VHT80 (MCS0)	3.00
		802.11ax_HE80 (MCS0)	3.98

UNII-3_802.11a (6 Mbps)	UNII-3_802.11n_HT20 (MCS0)
	
	
	

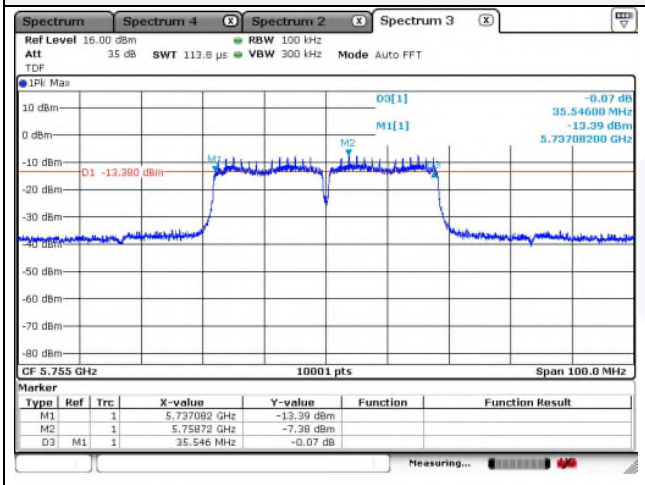
UNII-3_802.11ac_VHT20 (MCS0)	UNII-3_802.11ax_HE20 (MCS0)
	
	
	

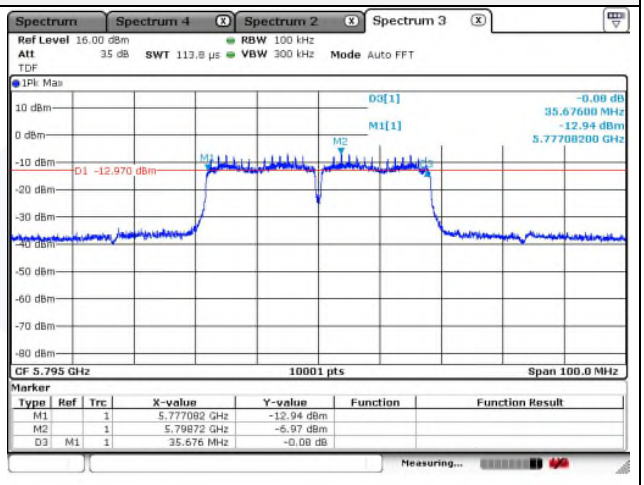
UNII-3_802.11n_HT40 (MCS0)



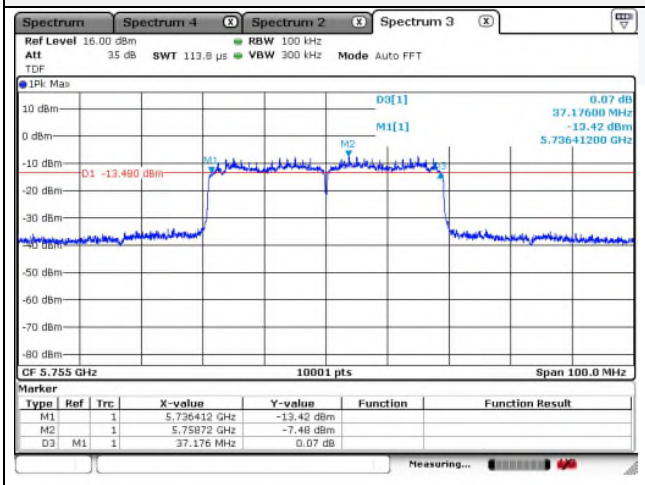


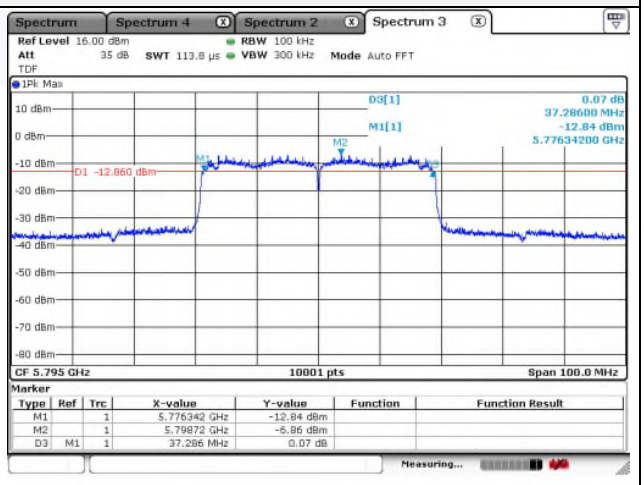
UNII-3_802.11ac_VHT40 (MCS0)

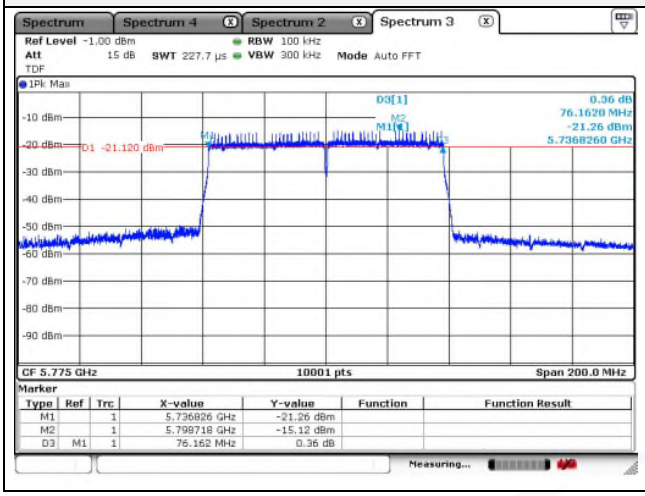
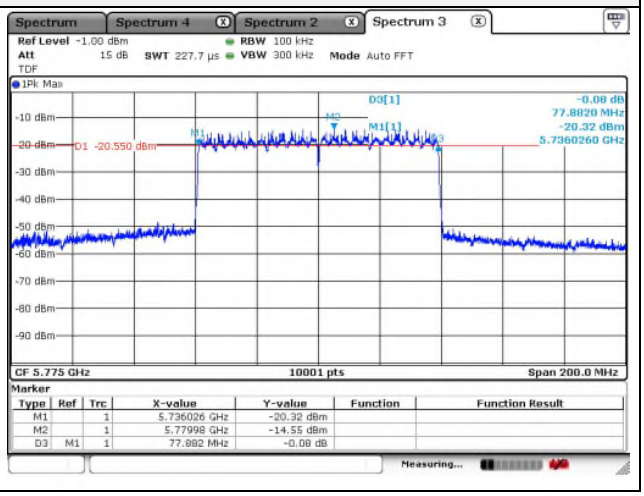




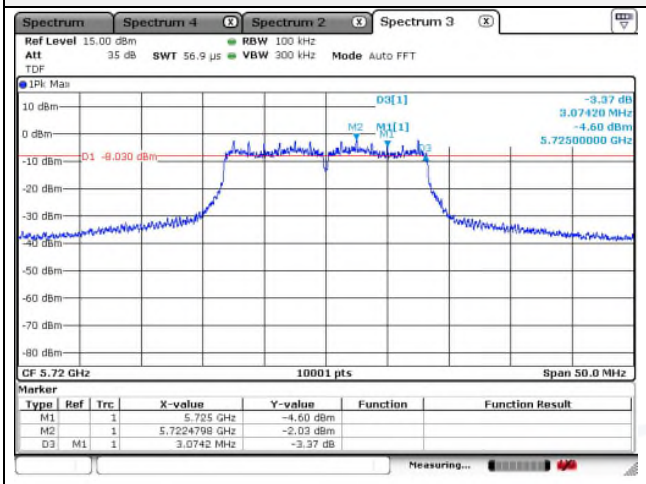
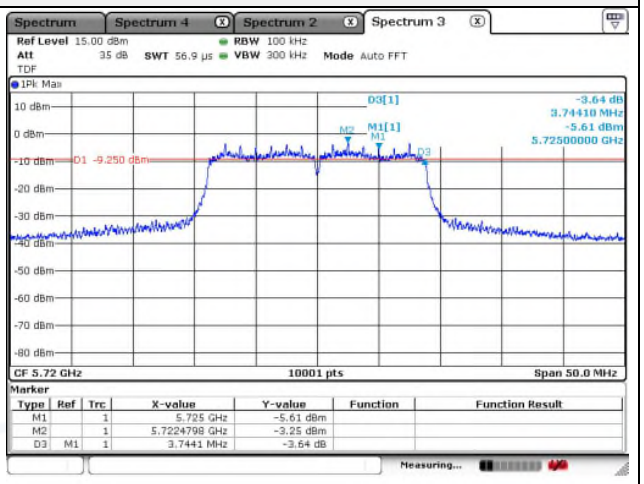
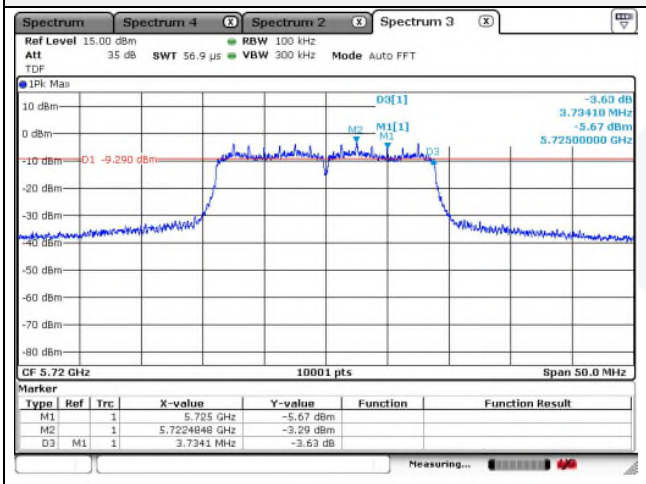
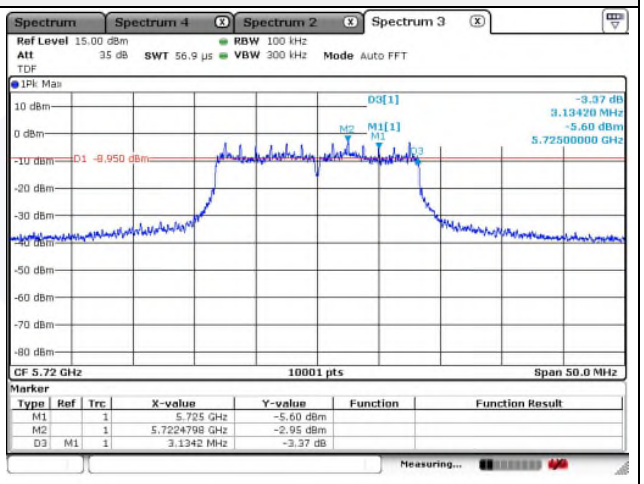
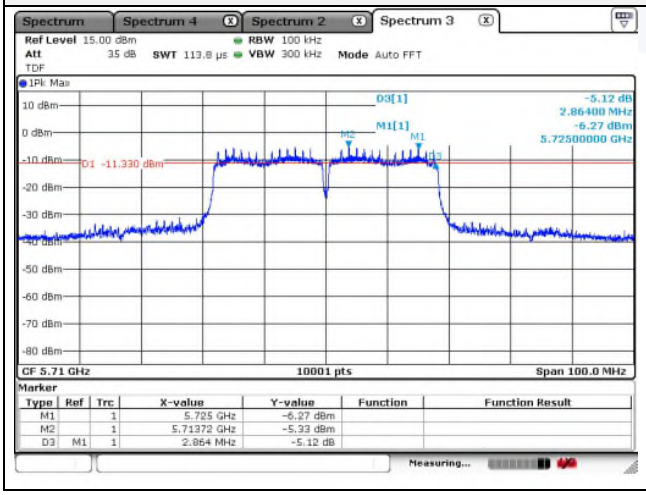
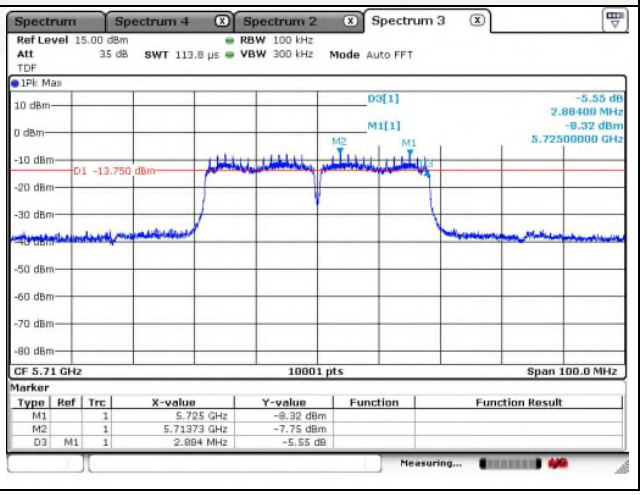
UNII-3_802.11ax_HE40 (MCS0)

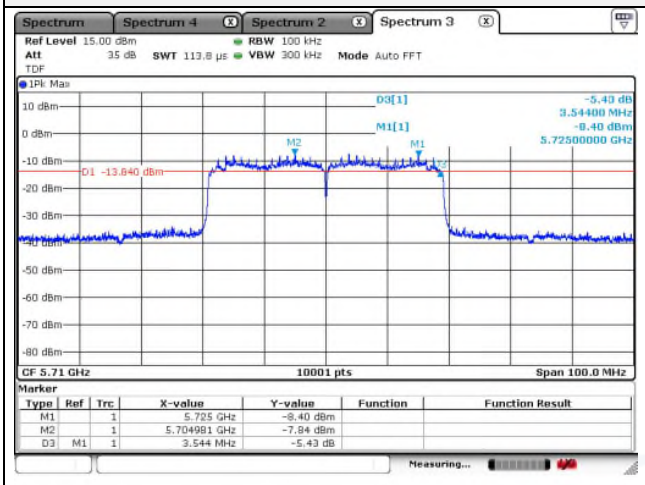
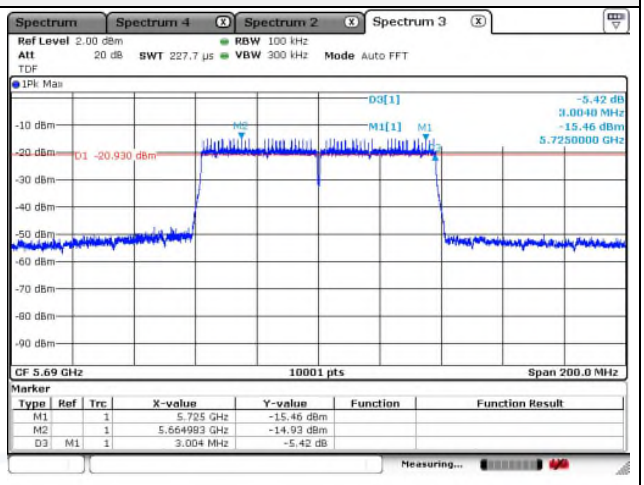
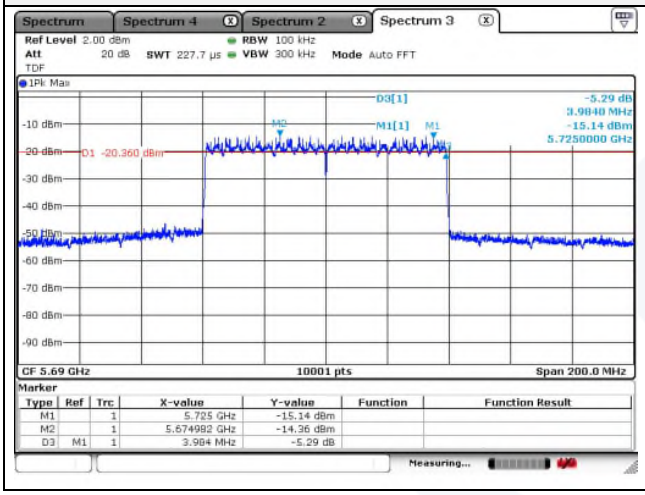




UNII-3_802.11ac_VHT80 (MCS0)	UNII-3_802.11ax_HE80 (MCS0)
	

Band-crossing channels

802.11a (6 Mbps)	802.11n_HT20 (MCS0)
	
802.11ac_VHT20 (MCS0)	**802.11ax_HE20 (MCS0)**
	
802.11n_HT40 (MCS0)	**802.11ac_VHT40 (MCS0)**
	

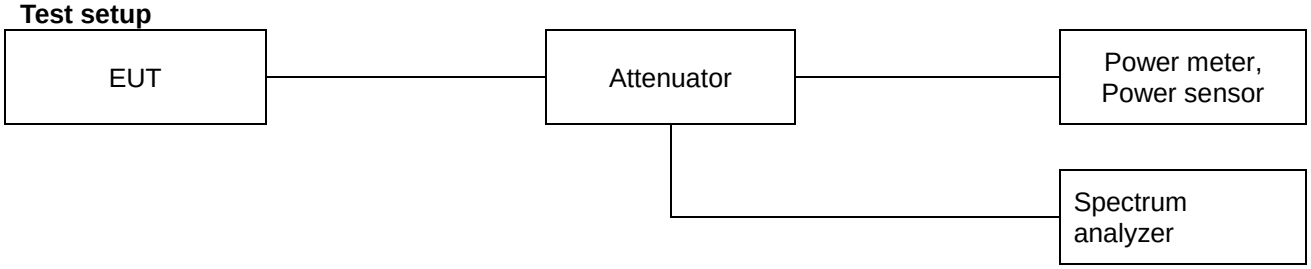
802.11ax_HE40 (MCS0)	802.11ac_VHT80 (MCS0)
	
802.11ax_HE80 (MCS0)	**-**
	Blank

3.3. Maximum conducted output power

Test procedure

KDB 789033 D02 v02r01– Section E.3.a) or b)
Used test method is Section E.3.b)

Test setup



Section E.3.a)

Method PM (Measurement using an RF average power meter):

i. Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied.
   - The EUT is configured to transmit continuously or to transmit with a constant duty cycle.
   - At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
   - The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

ii. If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section II.B.

iii. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

iv. Adjust the measurement in dBm by adding 10 log (1/x) where x is the duty cycle (e.g., 10 log (1/0.25) if the duty cycle is 25 %).

Section E.3.b)

Method PM-G (Measurement using a gated RF average power meter):

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

Limit

Band	EUT Category		Limit
UNII-1		Outdoor access point	1 W (30 dBm)
		Indoor access point	
		Fixed point-to-point access point	
	✔	Mobile and portable client device	250 mW(23.97 dBm)
UNII-2A	✔		250 mW or 11 dBm + 10logB*
UNII-2C	✔		250 mW or 11 dBm + 10logB*
UNII-3	✔		1 W (30 dBm)

Note.
1. Limit B is the 26 dB emission bandwidth.

Test results

Band	Frequency (㎒)	Mode	Detector mode	Ant Gain (dBi)	Output power (㏈m)	Limit (㏈m)
UNII-1	5 180	802.11a (6 Mbps)	AV	-2.18	13.73	23.97
	5 220		AV		13.71	
	5 240		AV		13.58	
UNII-2A	5 260		AV		13.45	23.92
	5 280		AV		13.36	
	5 320		AV		13.24	
UNII-2C	5 500		AV		12.48	23.97
	5 600		AV		11.97	
	5 700		AV		10.51	
	5 720		AV		10.55	
UNII-3	5 745		AV		13.28	30.00
	5 785		AV		13.37	
	5 825		AV		13.39	

Band	Frequency (㎒)	Mode	Detector mode	Ant Gain (dBi)	Output power (㏈m)	Limit (㏈m)
UNII-1	5 180	802.11n_ HT20 (MCS0)	AV	-2.18	11.95	23.97
	5 220		AV		11.92	
	5 240		AV		11.84	
UNII-2A	5 260		AV		11.65	23.98
	5 280		AV		11.46	
	5 320		AV		11.36	
UNII-2C	5 500		AV		10.37	23.97
	5 600		AV		10.03	
	5 700		AV		9.67	
	5 720		AV		9.61	
UNII-3	5 745		AV		11.23	30.00
	5 785		AV		11.27	
	5 825		AV		11.26	

Band	Frequency (㎒)	Mode	Detector mode	Ant Gain (dBi)	Output power (㏈m)	Limit (㏈m)
UNII-1	5 180	802.11ac_ VHT20 (MCS0)	AV	-2.18	12.00	23.97
	5 220		AV		11.98	
	5 240		AV		11.88	
UNII-2A	5 260		AV		11.68	23.97
	5 280		AV		11.54	
	5 320		AV		11.35	
UNII-2C	5 500		AV		10.37	23.97
	5 600		AV		10.01	
	5 700		AV		9.50	
	5 720		AV		9.52	
UNII-3	5 745		AV		11.21	30.00
	5 785		AV		11.22	
	5 825		AV		11.26	

Band	Frequency (㎒)	Mode	Detector mode	Ant Gain (dBi)	Output power (㏈m)	Limit (㏈m)
UNII-1	5 180	802.11ax_ HE20 (MCS0)	AV	-2.18	10.89	23.97
	5 220		AV		10.88	
	5 240		AV		10.74	
UNII-2A	5 260		AV		10.62	23.80
	5 280		AV		10.41	
	5 320		AV		10.28	
UNII-2C	5 500		AV		10.24	23.90
	5 600		AV		9.68	
	5 700		AV		9.21	
	5 720		AV		9.48	
UNII-3	5 745		AV		9.74	30.00
	5 785		AV		9.82	
	5 825		AV		9.83	

Band	Frequency (㎒)	Mode	Detector mode	Ant Gain (dBi)	Output power (㏈m)	Limit (㏈m)
UNII-1	5 190	802.11n_ HT40 (MCS0)	AV	-2.18	11.66	23.97
	5 230		AV		11.59	
UNII-2A	5 270		AV		11.24	23.97
	5 310		AV		11.01	
UNII-2C	5 510		AV		11.01	23.97
	5 590		AV		10.58	
	5 670		AV		10.04	
	5 710		AV		10.32	
UNII-3	5 755		AV		10.69	30.00
	5 795		AV		10.71	

Band	Frequency (㎒)	Mode	Detector mode	Ant Gain (dBi)	Output power (㏈m)	Limit (㏈m)
UNII-1	5 190	802.11ac_ VHT40 (MCS0)	AV	-2.18	9.55	23.97
	5 230		AV		9.46	
UNII-2A	5 270		AV		9.06	23.97
	5 310		AV		8.87	
UNII-2C	5 510		AV		8.85	23.97
	5 590		AV		8.41	
	5 670		AV		7.72	
	5 710		AV		7.98	
UNII-3	5 755		AV		8.50	30.00
	5 795		AV		8.51	

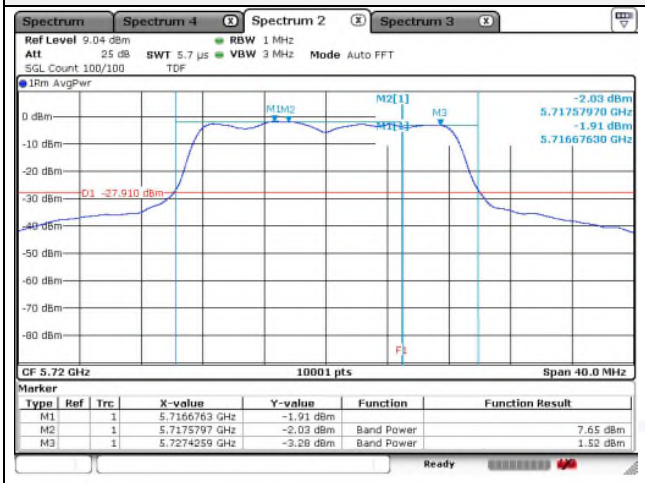
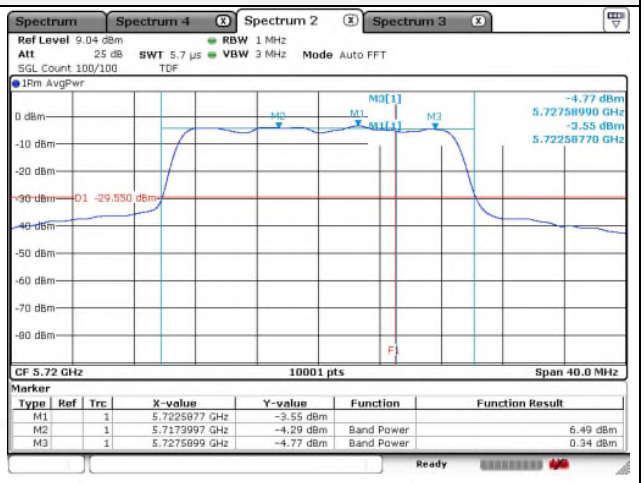
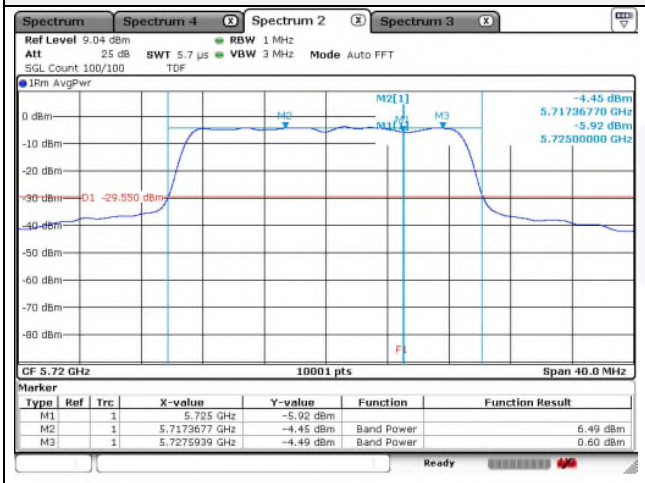
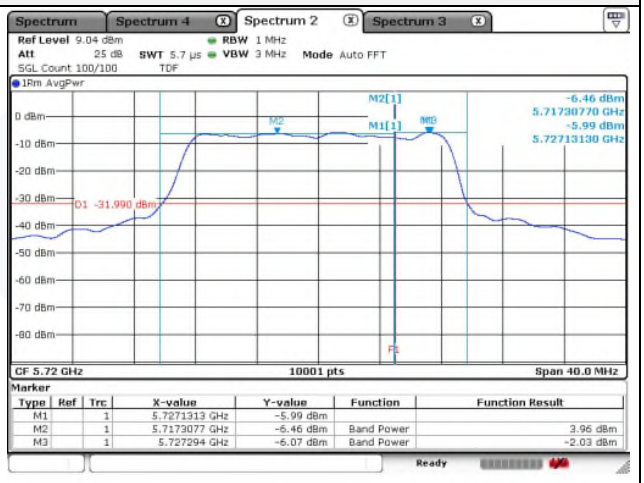
Band	Frequency (㎒)	Mode	Detector mode	Ant Gain (dBi)	Output power (㏈m)	Limit (㏈m)
UNII-1	5 190	802.11ax_ HE40 (MCS0)	AV	-2.18	9.91	23.97
	5 230		AV		9.79	
UNII-2A	5 270		AV		9.44	23.97
	5 310		AV		9.27	
UNII-2C	5 510		AV		9.20	23.97
	5 590		AV		8.72	
	5 670		AV		8.14	
	5 710		AV		8.45	
UNII-3	5 755		AV		8.84	30.00
	5 795		AV		8.86	

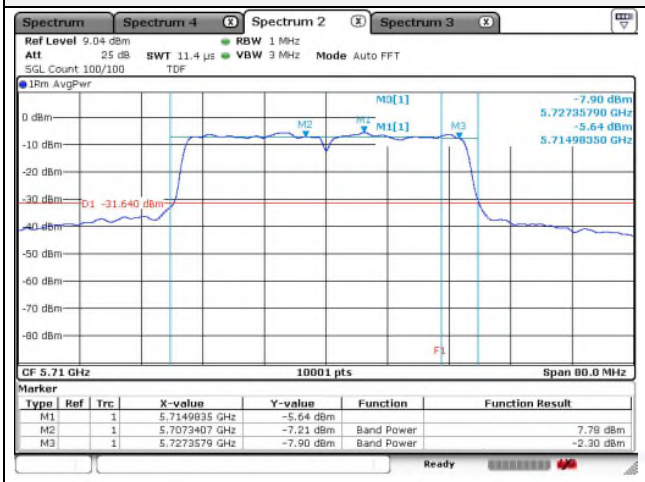
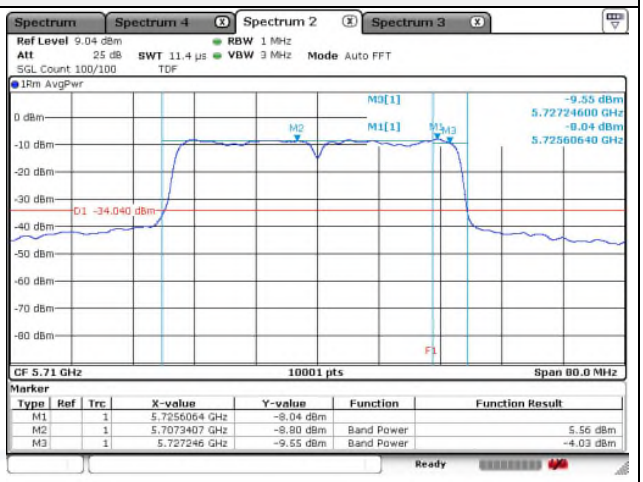
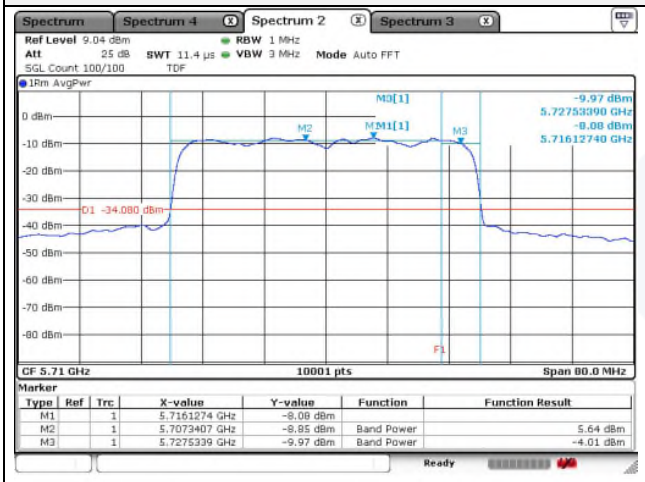
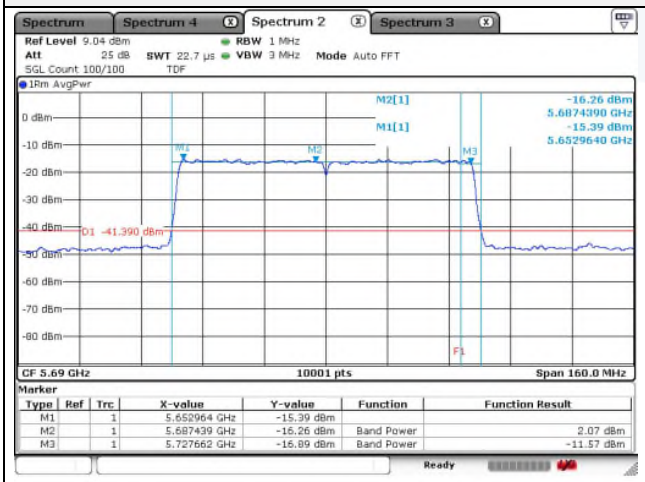
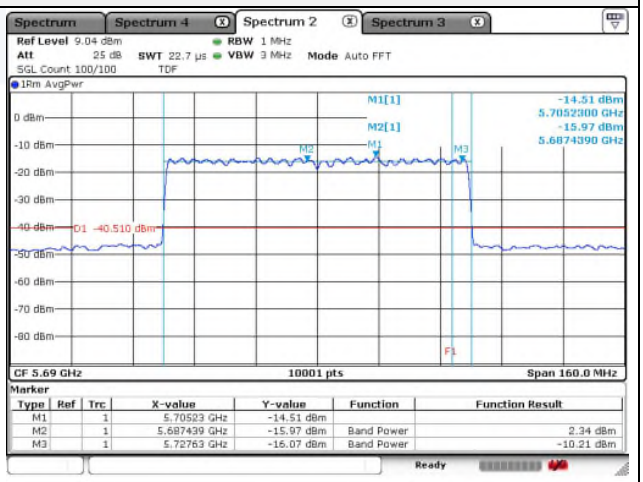
Band	Frequency (㎒)	Mode	Detector mode	Ant Gain (dBi)	Output power (㏈m)	Limit (㏈m)
UNII-1	5 190	802.11ac_ VHT80 (MCS0)	AV	-2.18	4.98	23.97
UNII-2A	5 210		AV		4.53	23.97
UNII-2C	5 530		AV		4.14	23.97
	5 610		AV		3.94	
	5 690		AV		4.55	
UNII-3	5 775		AV		4.06	30.00

Band	Frequency (㎒)	Mode	Detector mode	Ant Gain (dBi)	Output power (㏈m)	Limit (㏈m)
UNII-1	5 190	802.11ax_ HE80 (MCS0)	AV	-2.18	5.16	23.97
UNII-2A	5 210		AV		4.75	23.97
UNII-2C	5 530		AV		4.33	23.97
	5 610		AV		4.17	
	5 690		AV		4.78	
UNII-3	5 775		AV		4.26	30.00

Band	Frequency (㎒)	Mode	Detector mode	Ant Gain (dBi)	Output power (㏈m)	Limit (㏈m)
UNII-2C (Band-crossing channels)	5 720	802.11a (6 Mbps)	AV	-2.18	7.65	22.79
	5 720	802.11n_HT20 (MCS0)	AV		6.49	22.83
	5 720	802.11ac_VHT20 (MCS0)	AV		6.49	22.84
	5 720	802.11ax_HE20 (MCS0)	AV		3.96	22.76
	5 710	802.11n_HT40 (MCS0)	AV		7.78	23.97
	5 710	802.11ac_VHT40 (MCS0)	AV		5.56	23.97
	5 710	802.11ax_HE40 (MCS0)	AV		5.64	23.97
	5 690	802.11ac_VHT80 (MCS0)	AV		2.07	23.97
	5 690	802.11ax_HE80 (MCS0)	AV		2.34	23.97
UNII-3 (Band-crossing channels)	5 720	802.11a (6 Mbps)	AV	-2.18	1.52	30.00
	5 720	802.11n_HT20 (MCS0)	AV		0.34	
	5 720	802.11ac_VHT20 (MCS0)	AV		0.60	
	5 720	802.11ax_HE20 (MCS0)	AV		-2.03	
	5 710	802.11n_HT40 (MCS0)	AV		-2.30	
	5 710	802.11ac_VHT40 (MCS0)	AV		-4.03	
	5 710	802.11ax_HE40 (MCS0)	AV		-4.01	
	5 690	802.11ac_VHT80 (MCS0)	AV		-11.57	
	5 690	802.11ax_HE80 (MCS0)	AV		-10.21	

Band-crossing channels

UNII-2C & UNII-3_802.11a (6 Mbps)	UNII-2C & UNII-3_802.11n_HT20 (MCS0)
	
UNII-2C & UNII-3_802.11ac_VHT20 (MCS0)	**UNII-2C & UNII-3_802.11ax_HE20 (MCS0)**
	

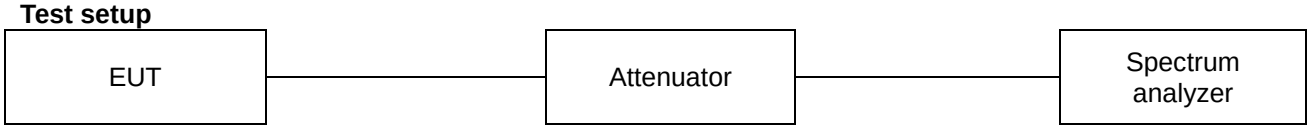
UNII-2C & UNII-3_802.11n_HT40 (MCS0)	UNII-2C & UNII-3_802.11ac_VHT40 (MCS0)
	
UNII-2C & UNII-3_802.11ax_HE40 (MCS0)	**-**
	Blank
UNII-2C & UNII-3_802.11ac_VHT80 (MCS0)	**UNII-2C & UNII-3_802.11ax_HE80 (MCS0)**
	

3.4. Power spectral density

Test procedure

KDB 789033 D02 v02r01 – Section F

Test setup



Section F

1. Create an average power spectrum for the EUT operating mode being tested by following the instructions in section II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power….” (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)
2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
3. Make the following adjustments to the peak value of the spectrum, if applicable:
   a) If Method SA-2 or SA-2 Alternative was used, add 10 log (1/x), where x is the duty cycle, to the peak of the spectrum.
   b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 ㏈ to the final result to compensate for the difference between linear averaging and power averaging.
4. The result is the Maximum PSD over 1 ㎒ reference bandwidth.
5. For devices operating in the bands 5.15-5.25 ㎓, 5.25-5.35 ㎓, and 5.47-5.725 ㎓, the above procedures make use of 1 ㎒ RBW to satisfy directly the 1 ㎒ reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 ㎓, the rules specify a measurement bandwidth of 500 ㎑. Many spectrum analyzers do not have 500 ㎑ RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 ㎒, or 500 ㎑, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 ㎒, or 500 ㎑). If measurements are performed using a reduced resolution bandwidth (< 1 ㎒, or < 500 ㎑) and integrated over 1 ㎒, or 500 ㎑bandwidth, the following adjustments to the procedures apply:

   a) Set RBW ≥ 1/T, where T is defined in section II.B.l.a)
   b) Set VBW ≥ 3 RBW.
   c) If measurement bandwidth of Maximum PSD is specified in 500 ㎑, add 10 log (500 ㎑/RBW) to the measured result, whereas RBW (< 500 ㎑) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
   d) If measurement bandwidth of Maximum PSD is specified in 1 ㎒, add 10 log (1 ㎒/RBW) to the measured result, whereas RBW (< 1 ㎒) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
   e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note.

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

Limit

Band	EUT Category		Limit
UNII-1		Outdoor access point	17 dBm/㎒
		Indoor access point	
		Fixed point-to-point access point	
	✔	Mobile and portable client device	11 dBm/㎒
UNII-2A	✔		11 dBm/㎒
UNII-2C	✔		11 dBm/㎒
UNII-3	✔		30 dBm/500 ㎑

Note.

1. If transmitting antennas of directional gain greater than 6 dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceed 6 dBi.

Test results

Mode	Frequency (㎒)	Band	PSD (dBm/㎒)	RBWF Note1	DCF Note2	Ant Gain	Sum Note3	Limit
802.11a (6 Mbps)	5 180	UNII-1	1.91	-	-	-2.18	1.91	11.00 (dB m/㎒)
	5 220		1.62				1.62	
	5 240		1.56				1.56	
	5 260	UNII-2A	1.09		-		1.09	11.00 (dB m/㎒)
	5 280		1.09				1.09	
	5 320		1.09				1.09	
	5 500	UNII-2C	0.05		-		0.05	
	5 600		-0.43				-0.43	
	5 720		-1.86				-1.86	
	5 745	UNII-3	-0.21		-		-0.21	30.00 (dBm/500 ㎑)
	5 785		0.81				0.81	
	5 825		0.54				0.54	

Mode	Frequency (㎒)	Band	PSD (dBm/㎒)	RBWF Note1	DCF Note2	Ant Gain	Sum Note3	Limit
802.11n_ HT20 (MCS0)	5 180	UNII-1	-0.25	-	-	-2.18	-0.25	11.00 (dB m/㎒)
	5 220		-0.66				-0.66	
	5 240		-0.71				-0.71	
	5 260	UNII-2A	-1.03		-		-1.03	11.00 (dB m/㎒)
	5 280		-1.14				-1.14	
	5 320		-1.25				-1.25	
	5 500	UNII-2C	-2.15		-		-2.15	
	5 600		-2.90				-2.90	
	5 720		-3.15				-3.15	
	5 745	UNII-3	-2.80		-		-2.80	30.00 (dBm/500 ㎑)
	5 785		-1.52				-1.52	
	5 825		-1.78				-1.78	

Mode	Frequency (㎒)	Band	PSD (dBm/㎒)	RBWF Note1	DCF Note2	Ant Gain	Sum Note3	Limit
802.11ac_ VHT20 (MCS0)	5 180	UNII-1	-0.38	-	-	-2.18	-0.38	11.00 (dB m/㎒)
	5 220		-0.67				-0.67	
	5 240		-1.03				-1.03	
	5 260	UNII-2A	-1.05		-		-1.05	11.00 (dB m/㎒)
	5 280		-1.16				-1.16	
	5 320		-1.30				-1.30	
	5 500	UNII-2C	-1.96		-		-1.96	
	5 600		-2.62				-2.62	
	5 720		-3.26				-3.26	
	5 745	UNII-3	-2.58		-		-2.58	30.00 (dBm/500 ㎑)
	5 785		-1.43				-1.43	
	5 825		-1.55				-1.55	

Mode	Frequency (㎒)	Band	PSD (dBm/㎒)	RBWF Note1	DCF Note2	Ant Gain	Sum Note3	Limit
802.11ax_ HE20 (MCS0)	5 180	UNII-1	-2.92	-	2.15	-2.18	-0.77	11.00 (dB m/㎒)
	5 220		-3.49				-1.34	
	5 240		-3.03				-0.88	
	5 260	UNII-2A	-3.86		2.15		-1.71	11.00 (dB m/㎒)
	5 280		-3.90				-1.75	
	5 320		-3.31				-1.16	
	5 500	UNII-2C	-3.51		2.15		-1.36	
	5 600		-4.52				-2.37	
	5 720		-4.90				-2.75	
	5 745	UNII-3	-4.43		2.15		-2.28	30.00 (dBm/500 ㎑)
	5 785		-3.50				-1.35	
	5 825		-3.69				-1.54	

Mode	Frequency (㎒)	Band	PSD (dBm/㎒)	RBWF Note1	DCF Note2	Ant Gain	Sum Note3	Limit
802.11n_HT40 (MCS0)	5 190	UNII-1	-3.75	-	-	-2.18	-3.75	11.00 (dB m/㎒)
	5 230		-4.36				-4.36	
	5 270	UNII-2A	-4.54		-		-4.54	11.00 (dB m/㎒)
	5 310		-4.42				-4.42	
	5 510	UNII-2C	-4.47		-		-4.47	
	5 590		-4.67				-4.67	
	5 710		-5.12				-5.12	
	5 755	UNII-3	-5.42		-		-5.42	30.00 (dBm/500 ㎑)
	5 795		-5.03				-5.03	

Mode	Frequency (㎒)	Band	PSD (dBm/㎒)	RBWF Note1	DCF Note2	Ant Gain	Sum Note3	Limit
802.11ac_VHT40 (MCS0)	5 190	UNII-1	-5.97	-	0.13	-2.18	-5.84	11.00 (dB m/㎒)
	5 230		-6.39				-6.26	
	5 270	UNII-2A	-6.68		0.13		-6.55	11.00 (dB m/㎒)
	5 310		-6.77				-6.64	
	5 510	UNII-2C	-6.78		0.13		-6.65	
	5 590		-7.09				-6.96	
	5 710		-7.38				-7.25	
	5 755	UNII-3	-7.55		-		-7.55	30.00 (dBm/500 ㎑)
	5 795		-7.07				-7.07	

Mode	Frequency (㎒)	Band	PSD (dBm/㎒)	RBWF Note1	DCF Note2	Ant Gain	Sum Note3	Limit
802.11ax_HE40 (MCS0)	5 190	UNII-1	-5.83	-	0.18	-2.18	-5.65	11.00 (dB m/㎒)
	5 230		-6.08				-5.90	
	5 270	UNII-2A	-6.00		0.18		-5.82	11.00 (dB m/㎒)
	5 310		-6.44				-6.26	
	5 510	UNII-2C	-6.57		-		-6.57	
	5 590		-6.84				-6.84	
	5 710		-7.11				-7.11	
	5 755	UNII-3	-7.09		-		-7.09	30.00 (dBm/500 ㎑)
	5 795		-6.83				-6.83	

Mode	Frequency (㎒)	Band	PSD (dBm/㎒)	RBWF Note1	DCF Note2	Ant Gain	Sum Note3	Limit
802.11ac_VHT80 (MCS0)	5 210	UNII-1	-14.93	-	0.27	-2.18	-14.66	11.00 (dB m/㎒)
	5 290	UNII-2A	-15.09		0.13		-14.96	11.00 (dBm/㎒)
	5 530	UNII-2C	-15.29		0.13		-15.16	
	5 610		-15.68				-15.55	
	5 690		-1556				-15.43	
	5 775	UNII-3	-15.32		0.27		-15.05	30.00 (dBm/500 ㎑)

Mode	Frequency (㎒)	Band	PSD (dBm/㎒)	RBWF Note1	DCF Note2	Ant Gain	Sum Note3	Limit
802.11ax_HE80 (MCS0)	5 210	UNII-1	-13.90	-	0.13	-2.18	-13.77	11.00 (dB m/㎒)
	5 290	UNII-2A	-14.45		0.13		-14.32	11.00 (dBm/㎒)
	5 530	UNII-2C	-14.68		0.18		-14.50	
	5 610		-15.08				-14.90	
	5 690		-14.95				-14.77	
	5 775	UNII-3	-14.71		0.27		-14.44	30.00 (dBm/500 ㎑)

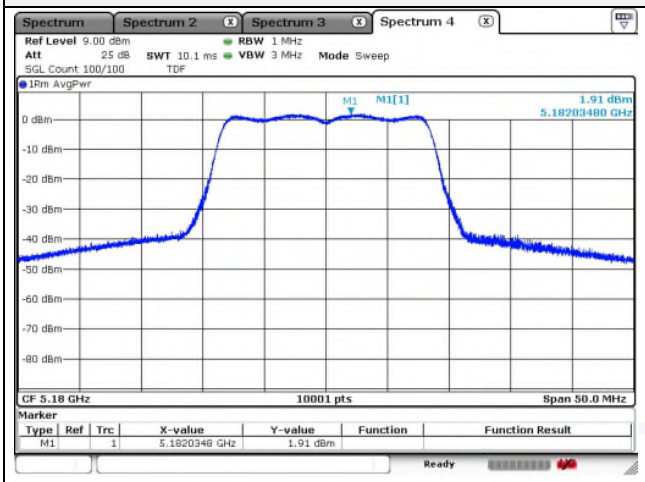
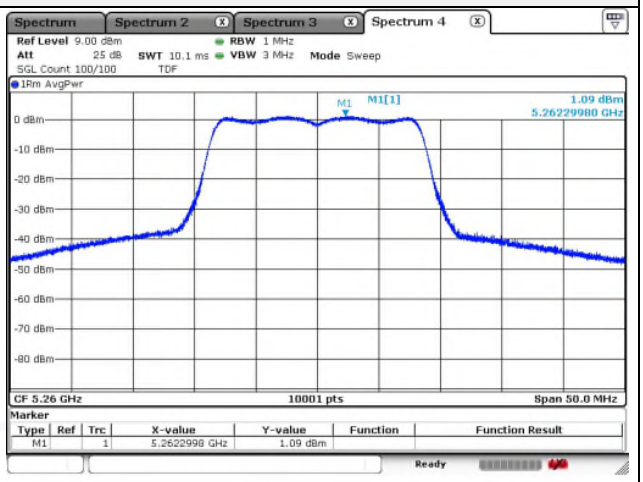
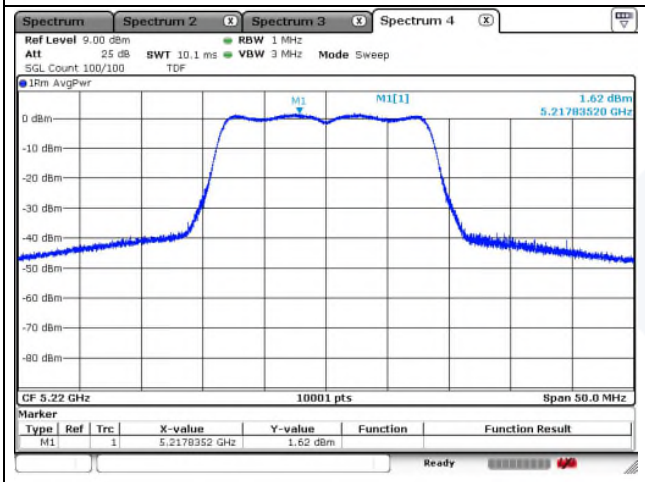
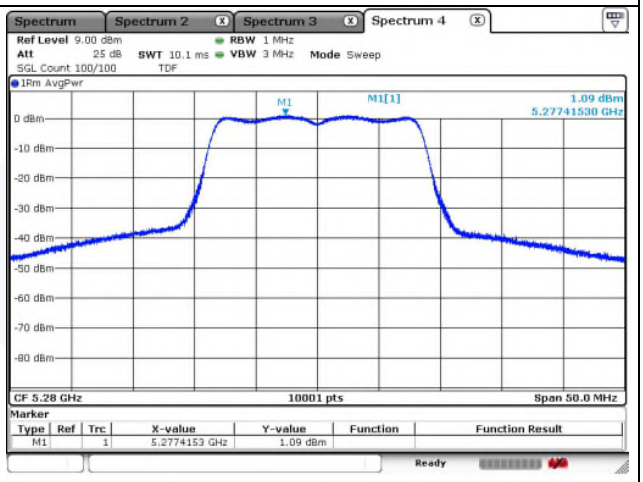
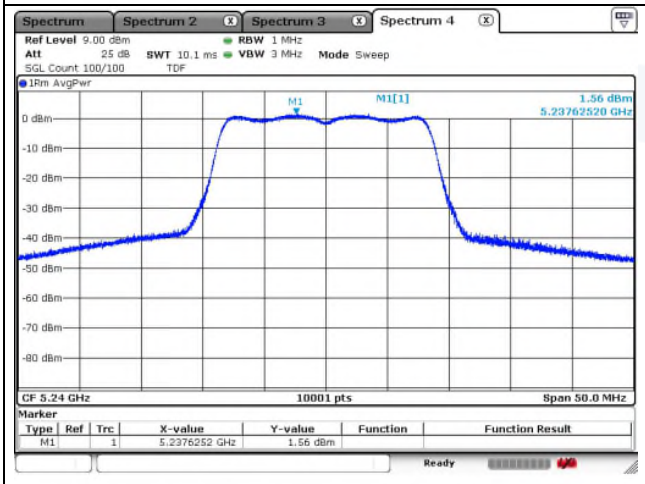
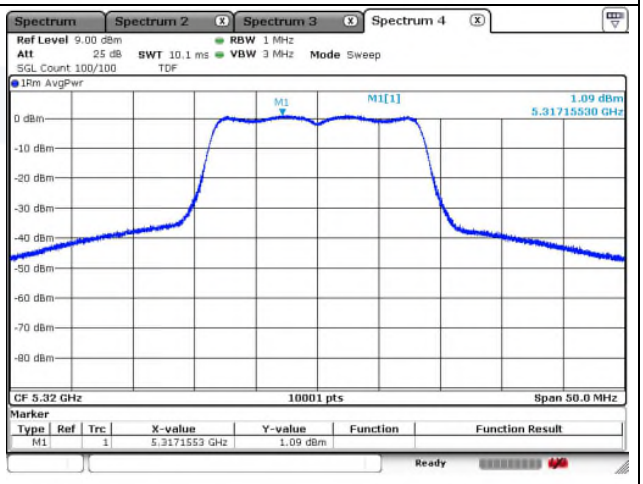
Band-crossing channels

Mode	Frequency (㎒)	Band	PSD (dBm/㎒)	RBWF Note1	DCF Note2	Ant Gain	Sum Note3	Limit
802.11a (6 Mbps)	5 720	UNII-2C	-2.08	-	-	-2.18	-2.08	11.00 (dB m/㎒)
802.11n_ HT20 (MCS0)			-3.64		-		-3.64	
802.11ac_ VHT20 (MCS0)			-3.55		-		-3.55	
802.11ax_ HE20 (MCS0)			-4.14		2.15		-1.99	
802.11n_ HT40 (MCS0)	5 710		-5.76		-		-5.76	
802.11ac_ VHT40 (MCS0)			-8.12		0.13		-7.99	
802.11ax_ HE40 (MCS0)			-7.65		-		-7.65	
802.11ac_ VHT80 (MCS0)	5 690		-15.15		0.13		-15.02	
802.11ax_ HE80 (MCS0)	5 690		-14.46		0.18		-14.28	
802.11a (6 Mbps)	5 720	UNII-3	-5.36		-		-5.36	30.00 (dBm/500 ㎑)
802.11n_ HT20 (MCS0)			-7.11		-		-7.11	
802.11ac_ VHT20 (MCS0)			-7.12		-		-7.12	
802.11ax_ HE20 (MCS0)			-8.98		2.15		-6.83	
802.11n_ HT40 (MCS0)	5 710		-9.27		-		-9.27	
802.11ac_ VHT40 (MCS0)			-11.60		-		-11.60	
802.11ax_ HE40 (MCS0)			-11.34		-		-11.34	
802.11ac_ VHT80 (MCS0)	5 690		-19.08		0.27		-18.81	
802.11ax_ HE80 (MCS0)	5 690		-18.09		0.27		-17.82	

Note.

1. UNII-1 = 10log(1 ㎒/1 ㎒)
   UNII-2A = 10log(1 ㎒/1 ㎒)
   UNII-2C = 10log(1 ㎒/1 ㎒)
   UNII-3 = 10log(500 ㎑ /500 ㎑)
2. Refer to the page 109, 110 on this report.
3. Sum(dBm) = PSD(dBm) + RBWF + Duty correction factor (dB)

Test Plot

UNII-1_802.11a (6 Mbps)	UNII-2A_802.11a (6 Mbps)
	
	
	

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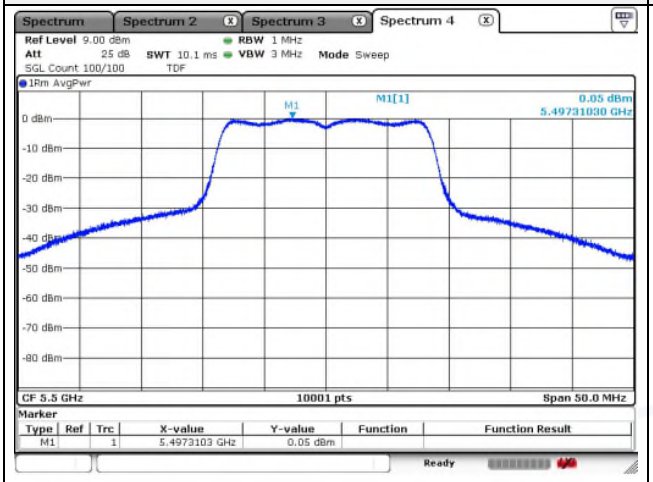
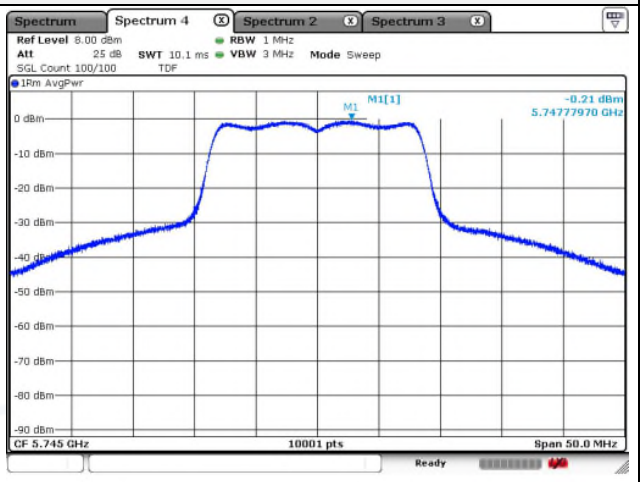
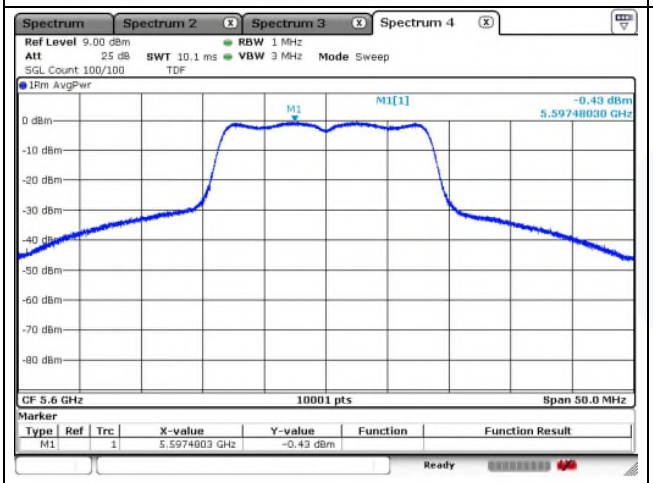
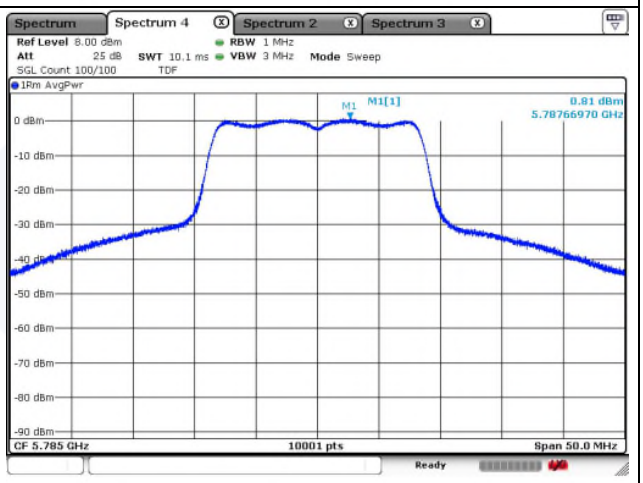
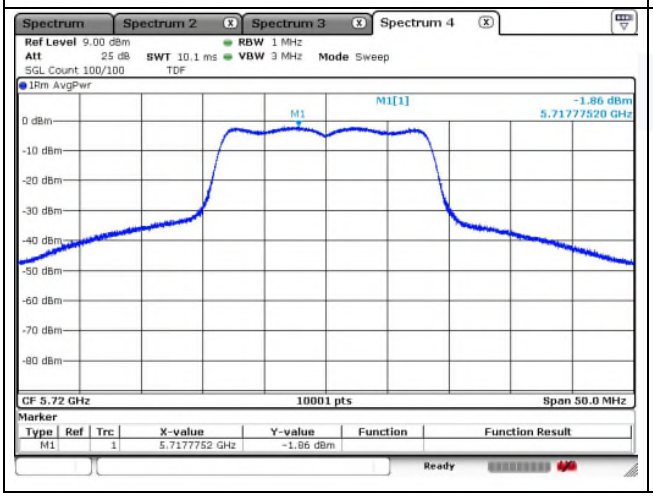
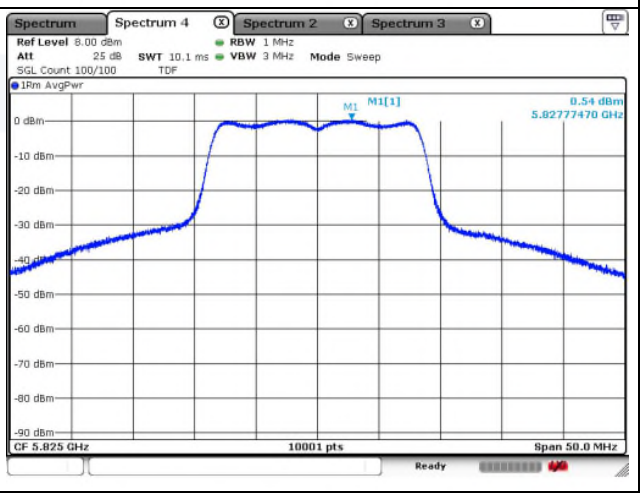
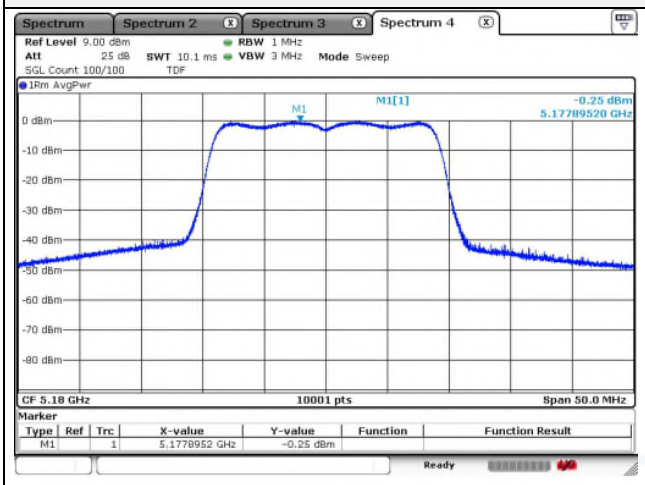
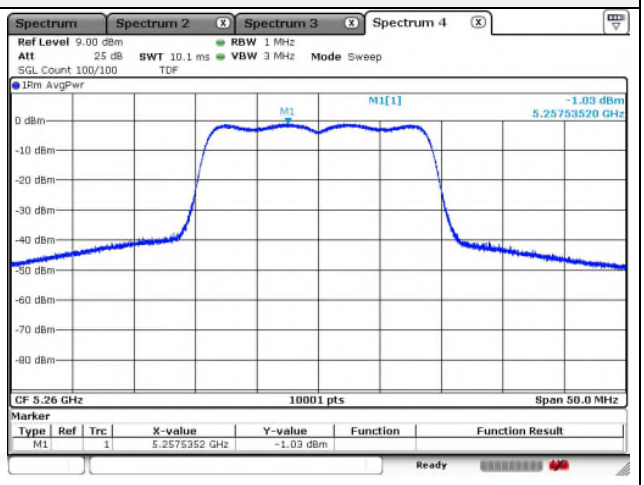
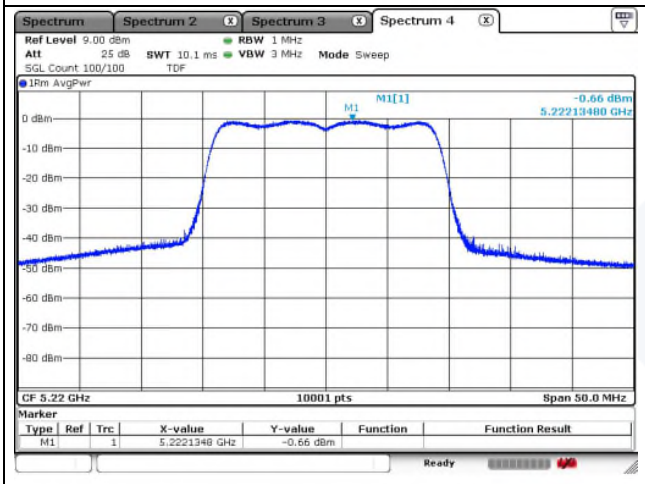
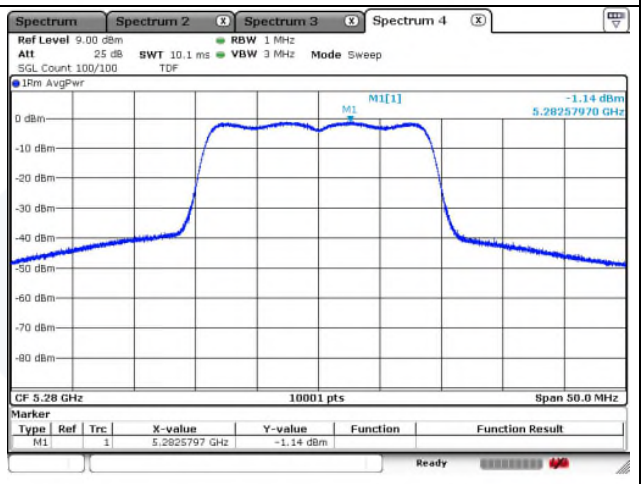
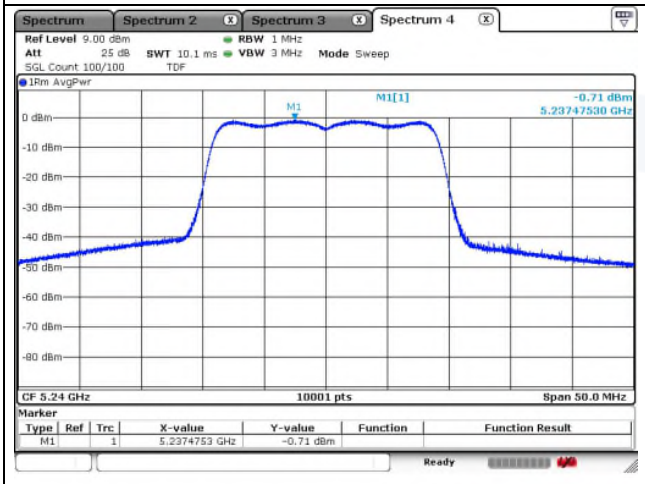
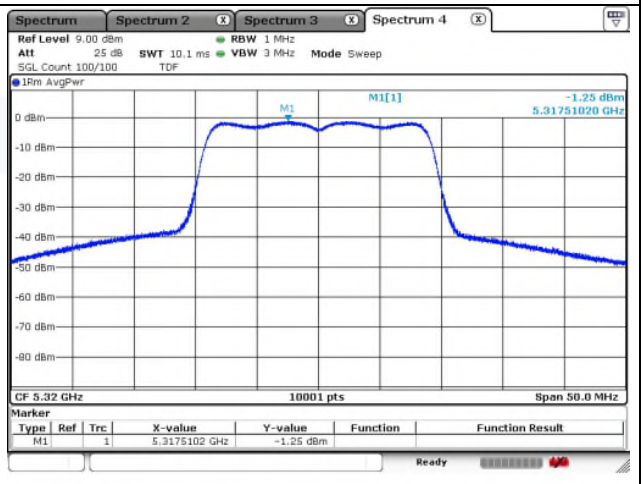
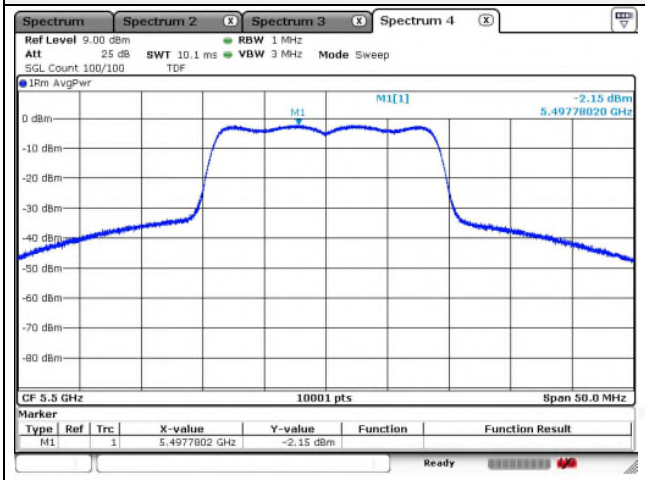
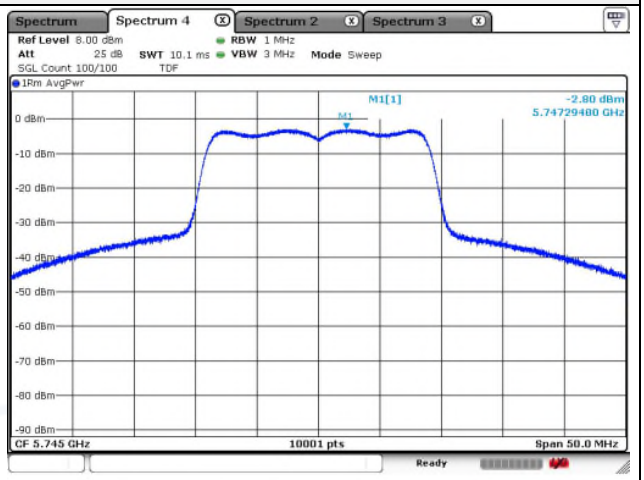
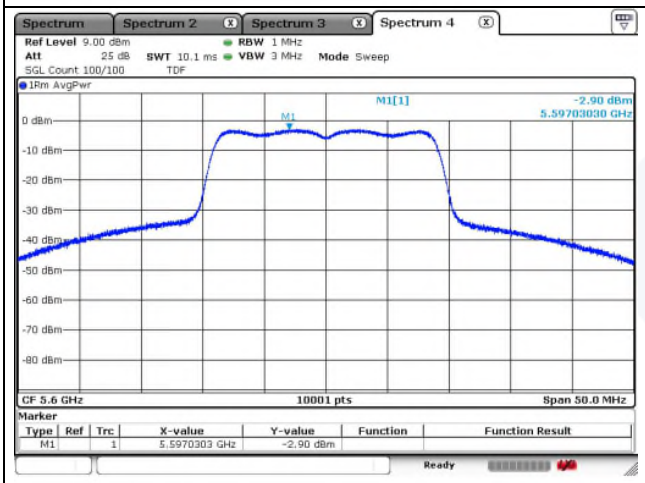
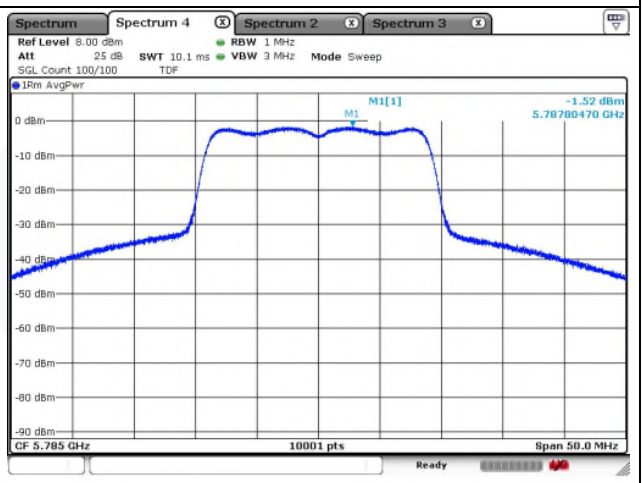
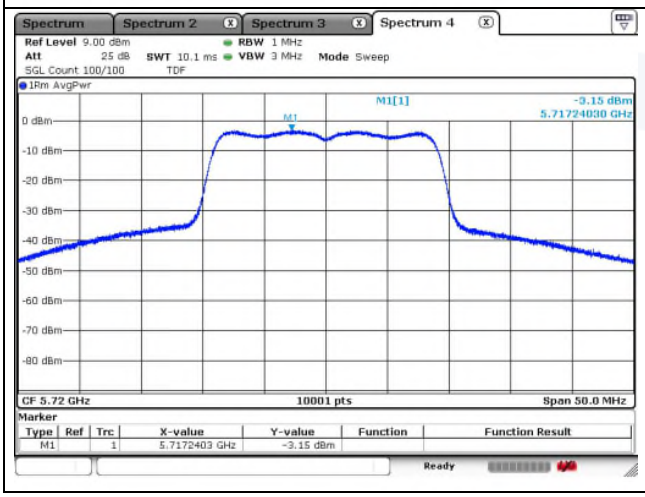
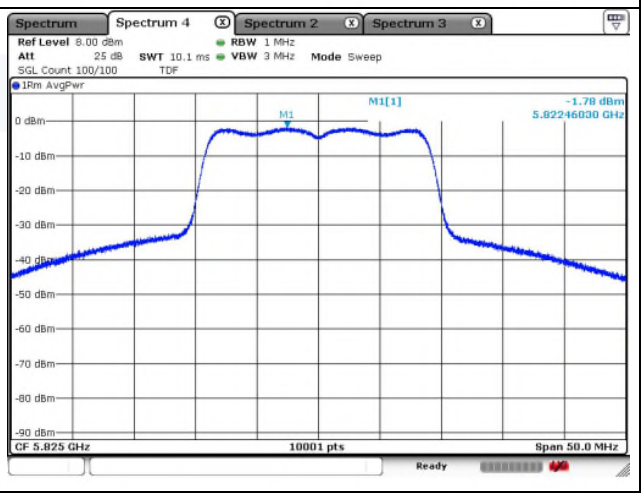
	
	
	

UNII-1_802.11n_HT20 (MCS0)	UNII-2A_802.11n_HT20 (MCS0)
	
	
	

UNII-2C_802.11n_HT20 (MCS0)	UNII-3_802.11n_HT20 (MCS0)
	
	
	

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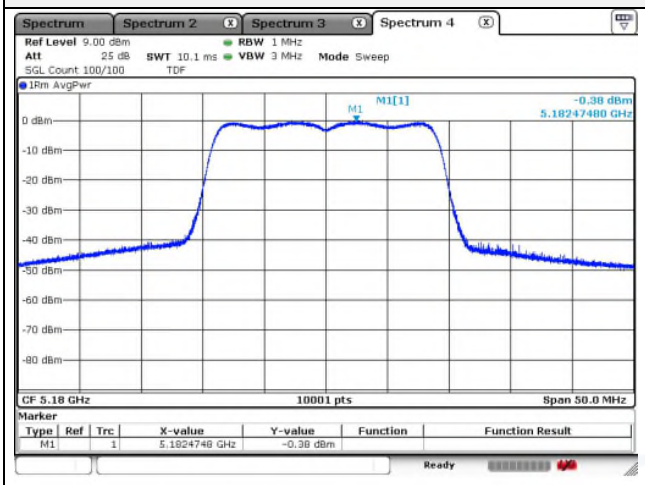
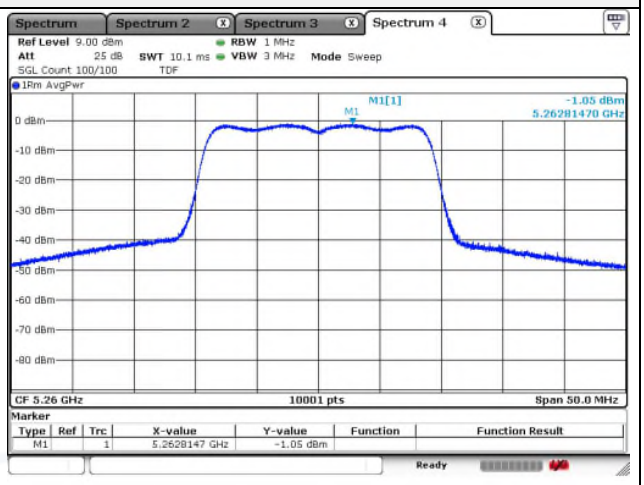
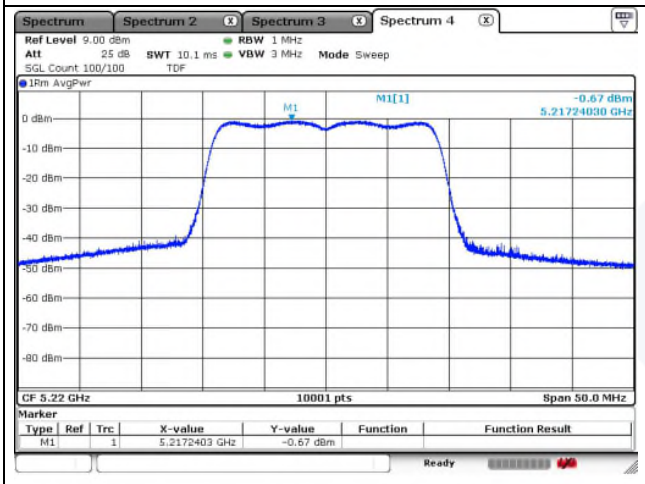
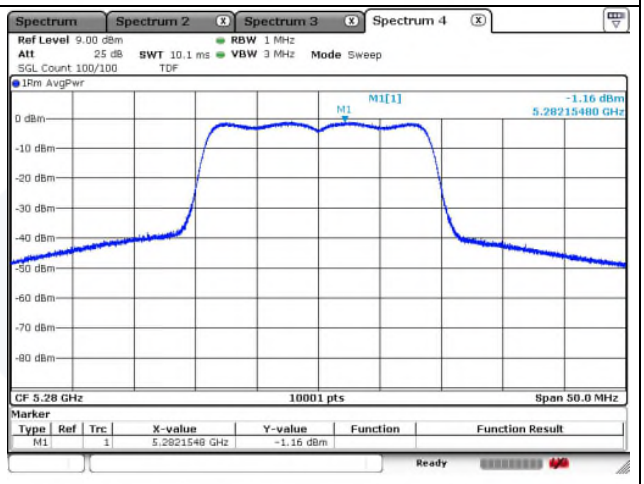
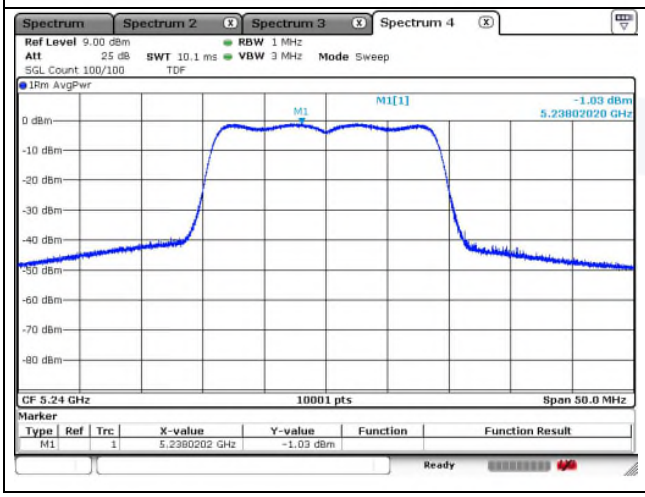
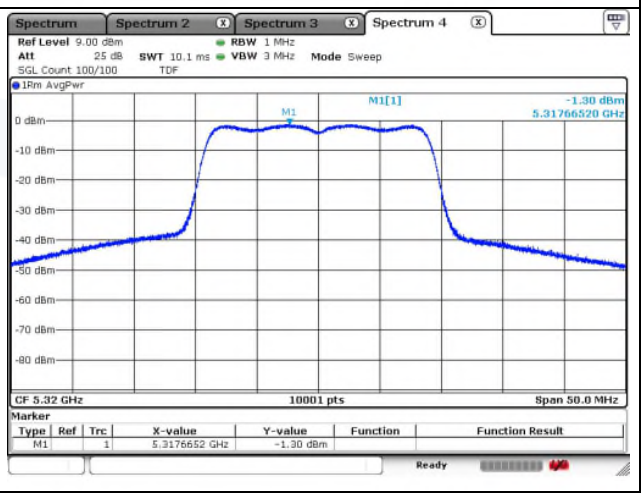
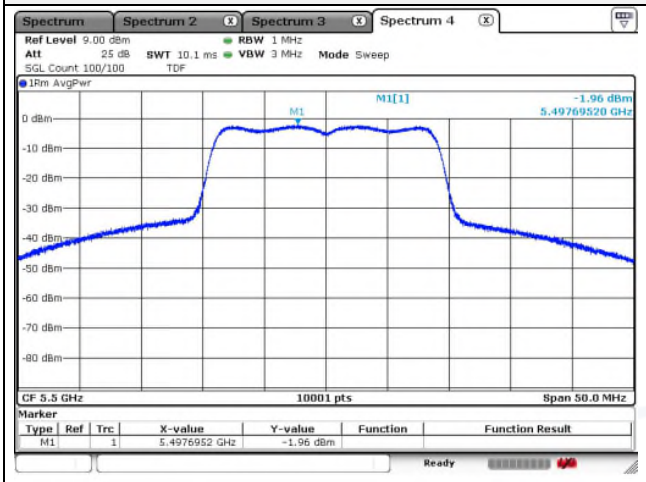
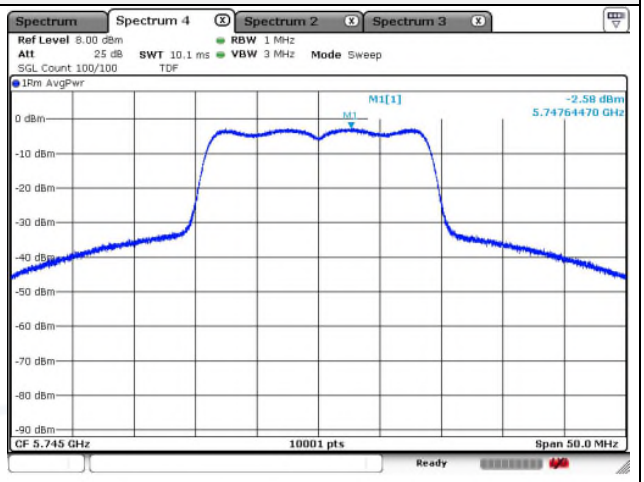
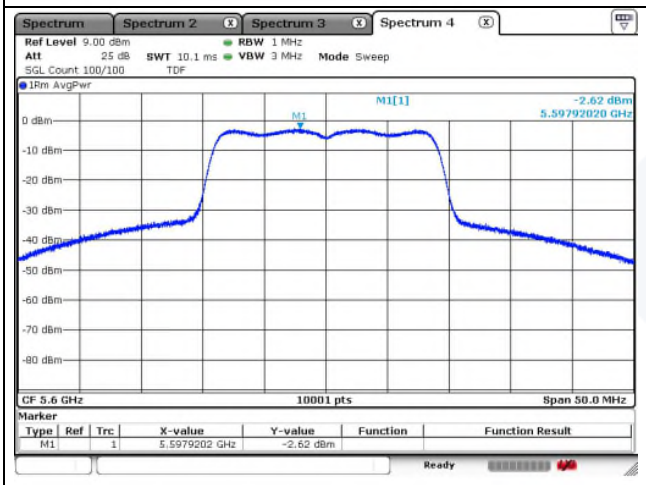
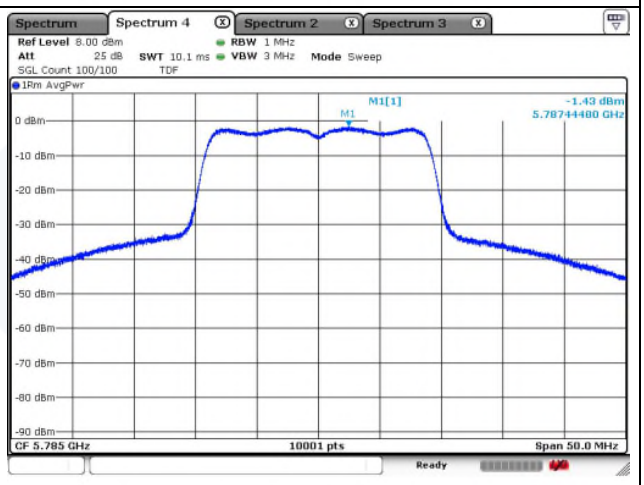
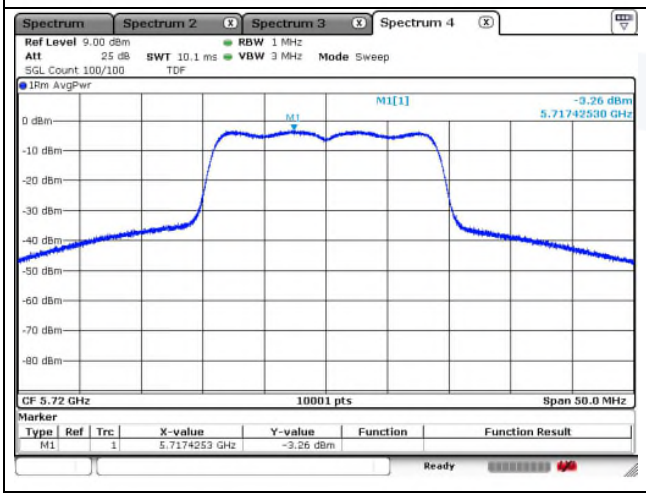
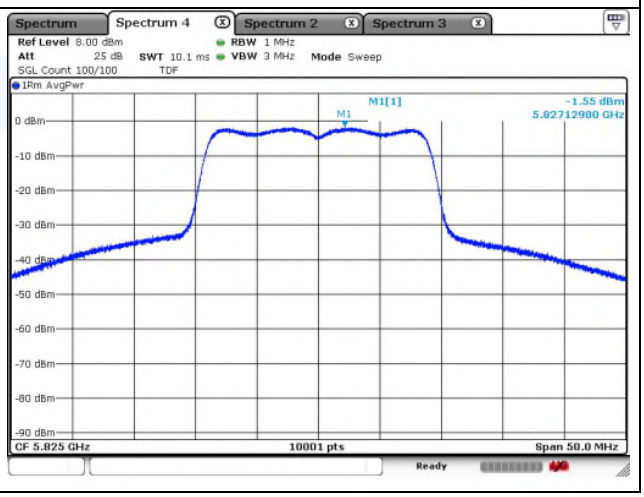
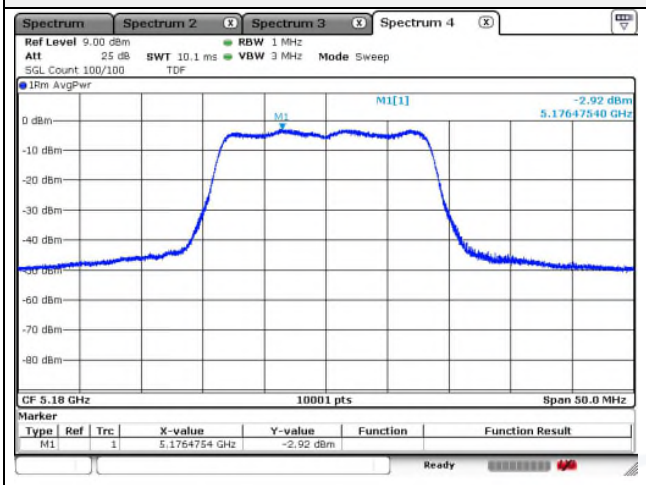
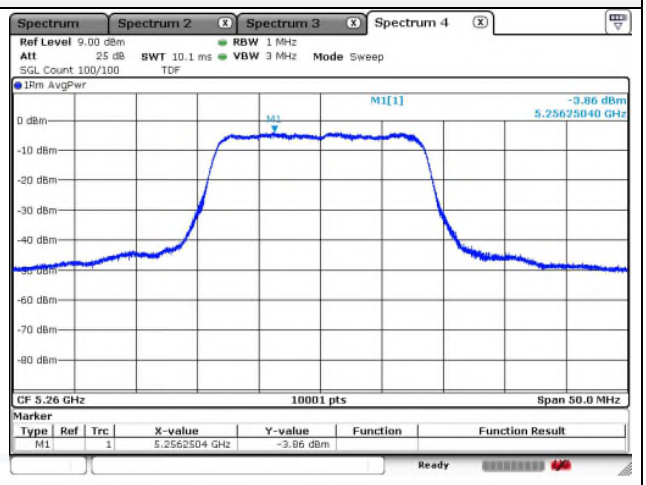
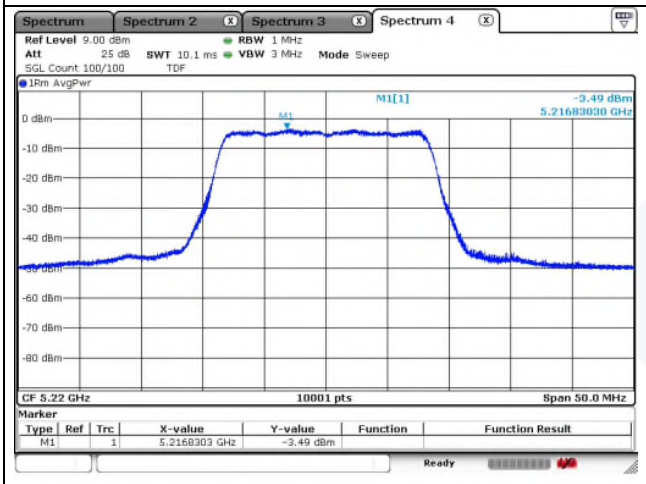
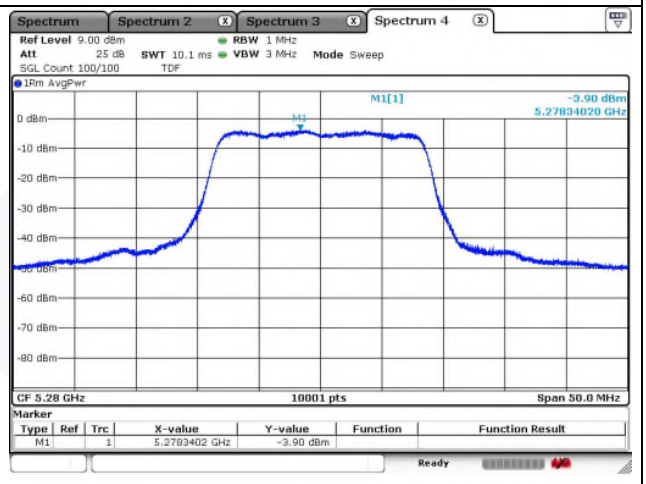
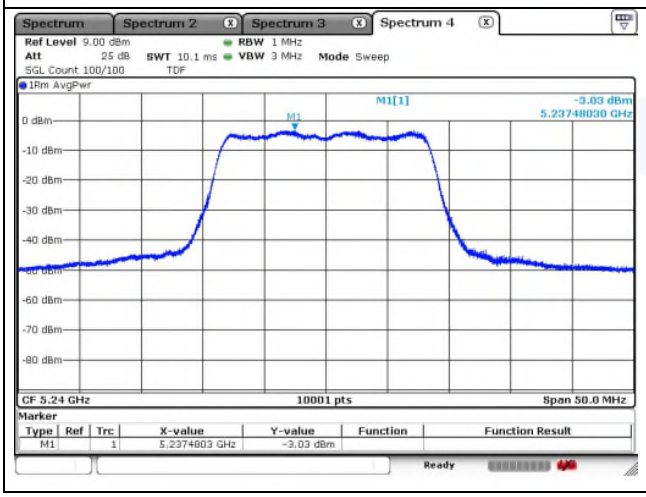
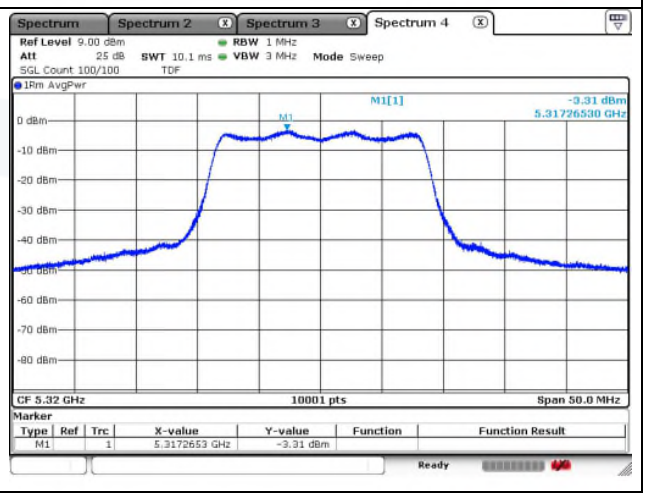
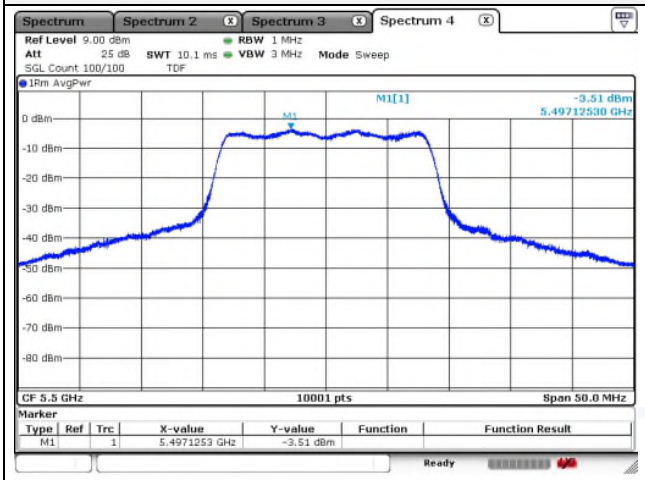
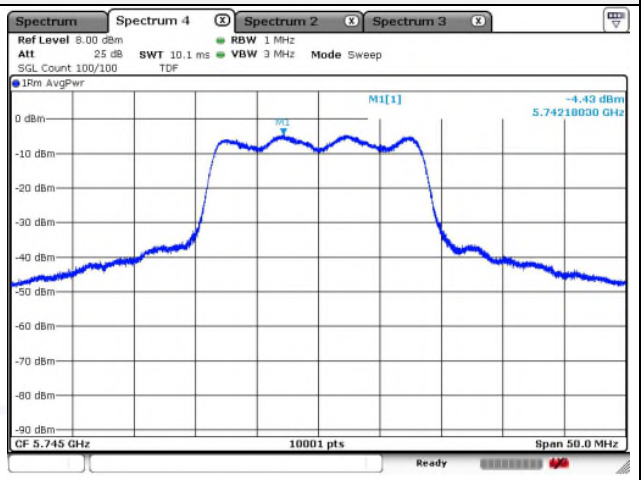
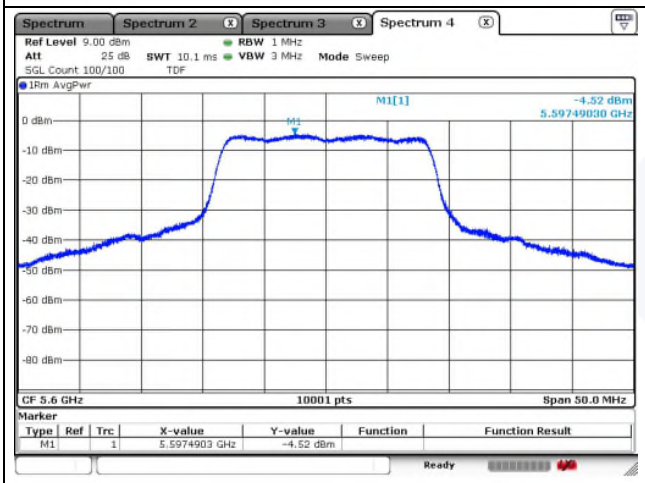
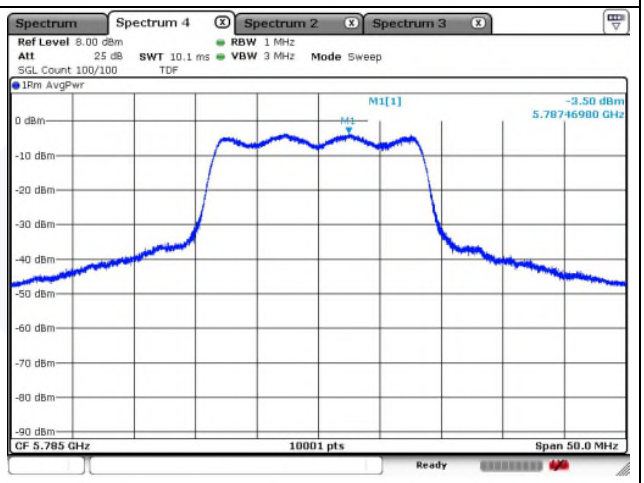
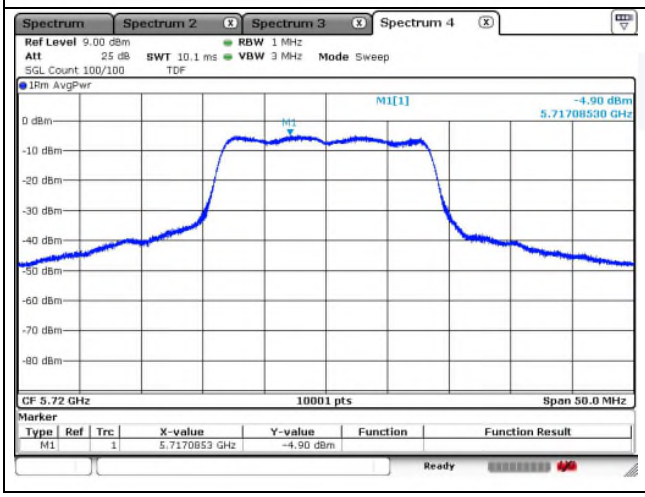
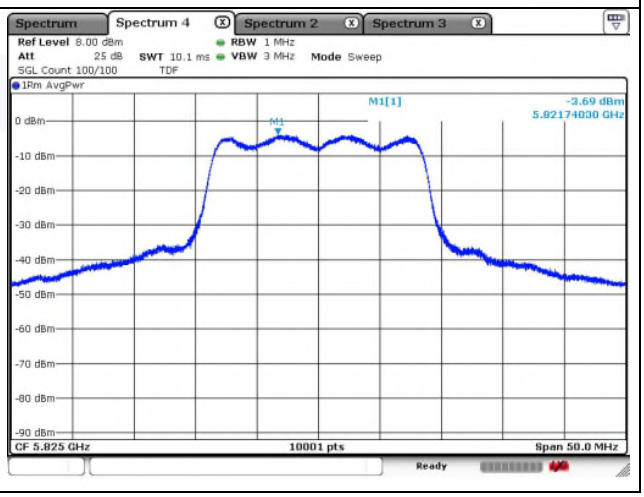
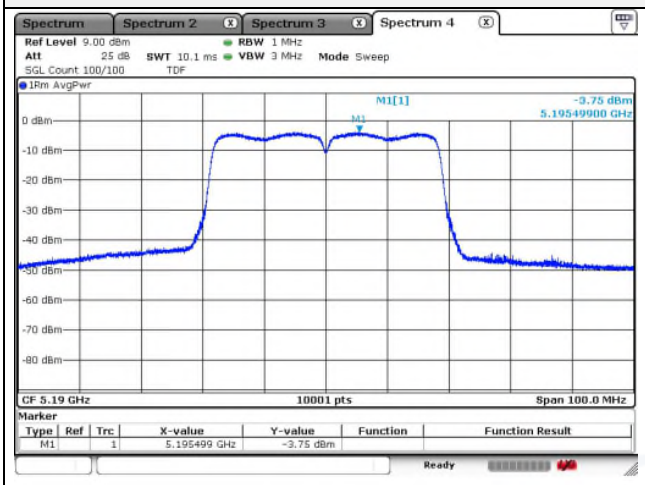
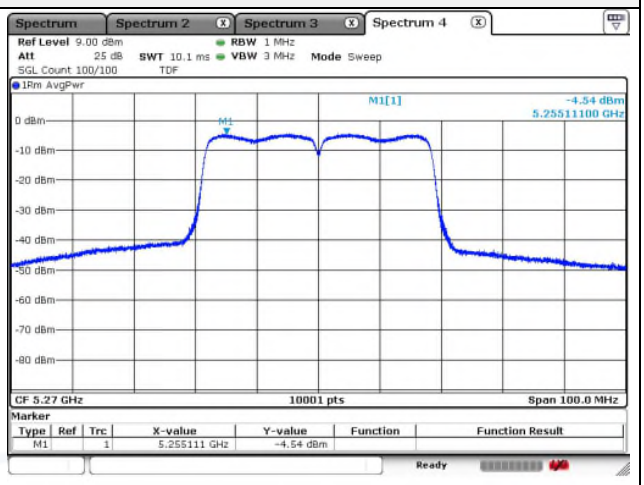
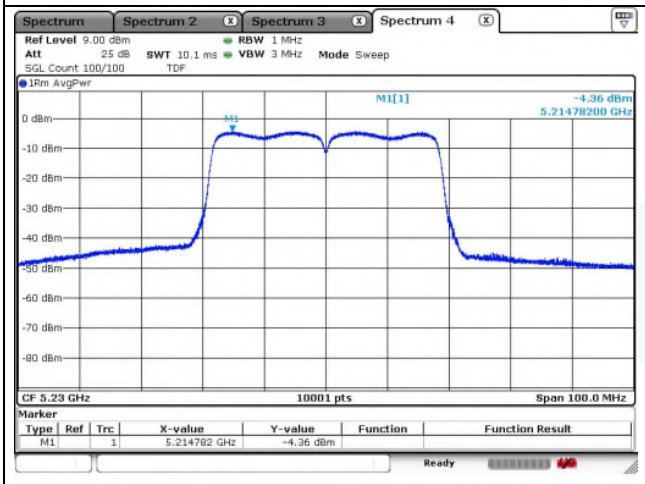
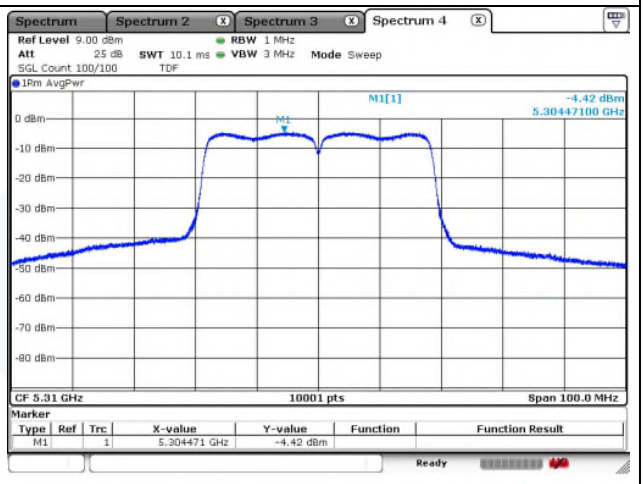
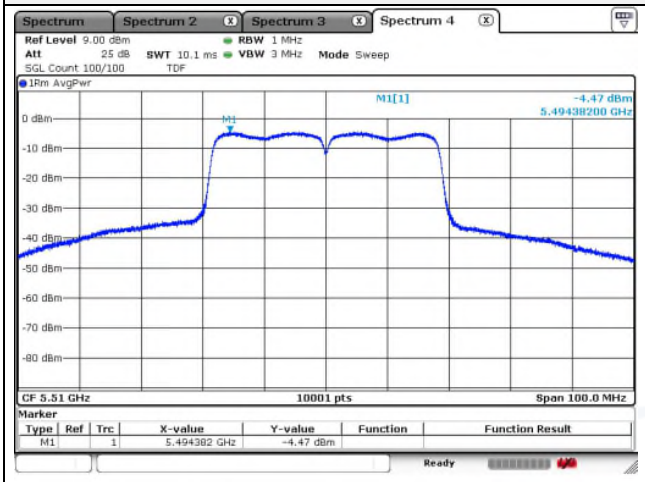
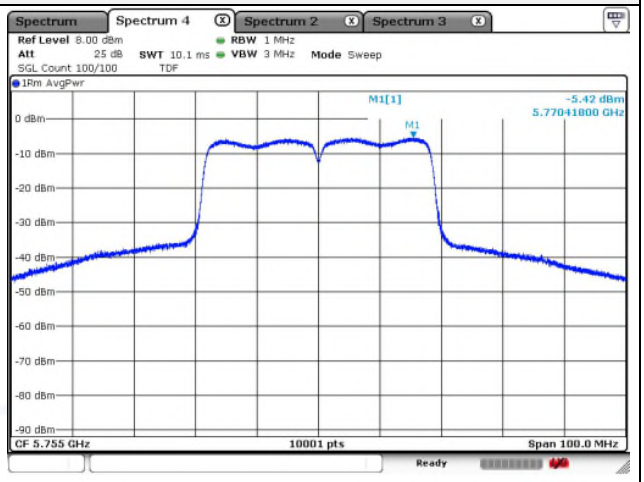
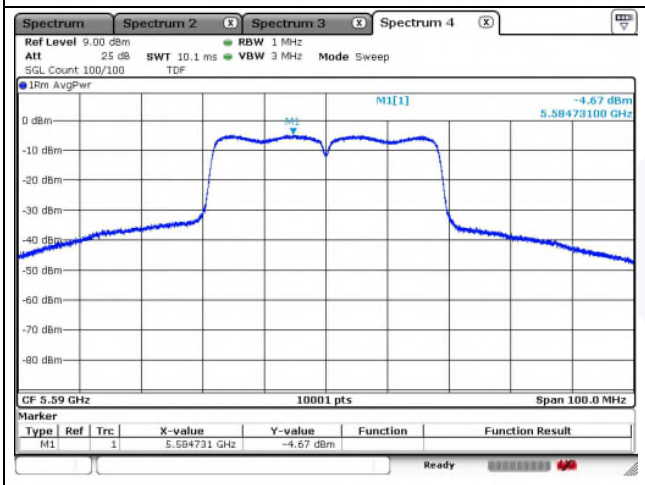
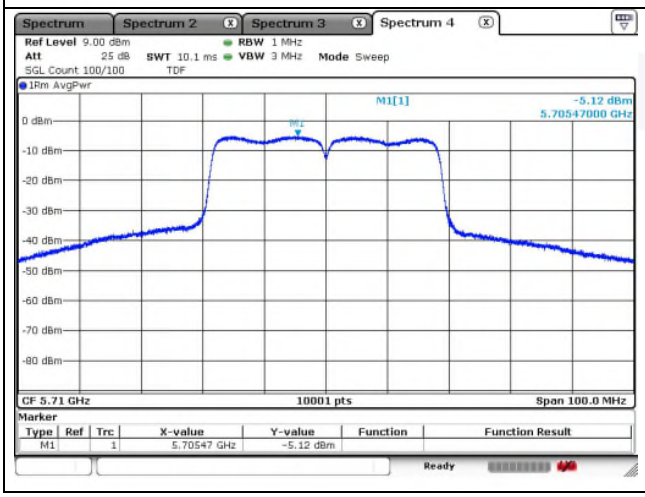
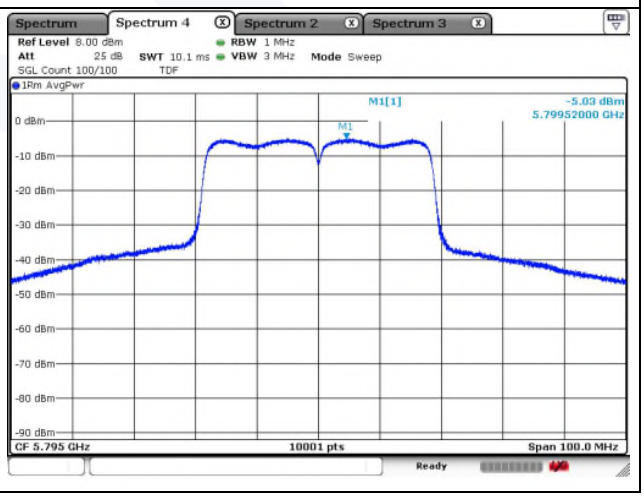
	
	
	

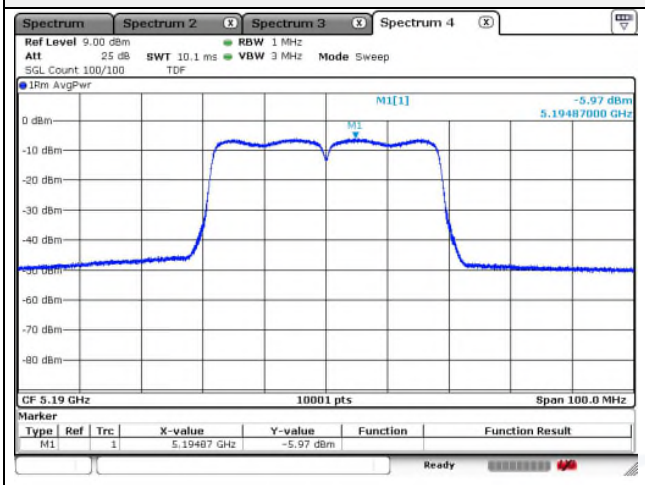
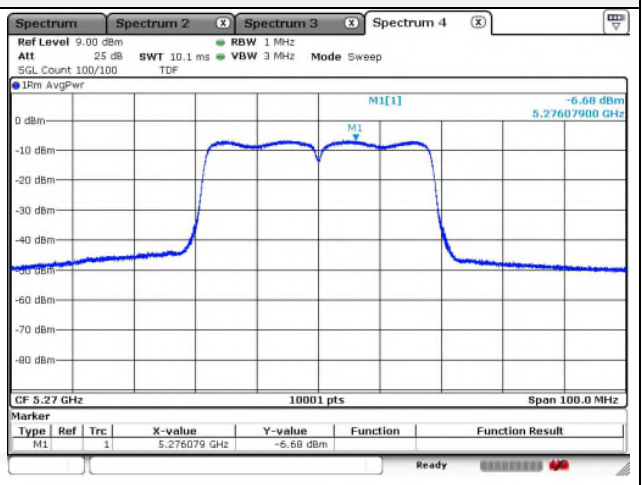
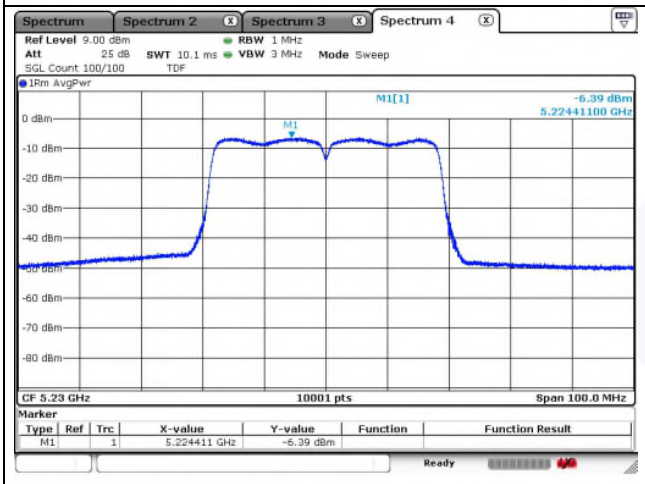
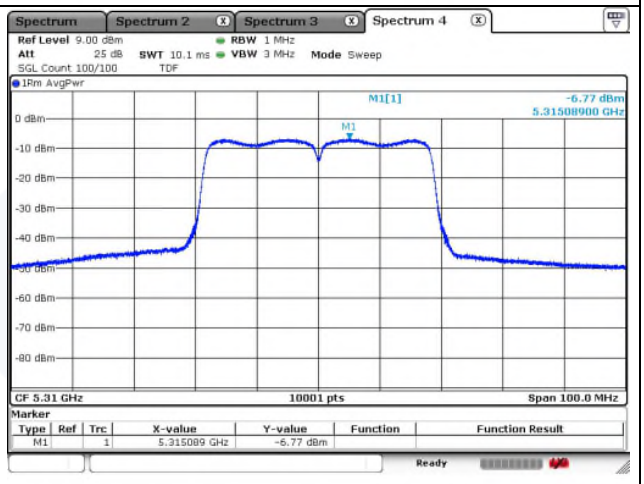
UNII-2C_802.11ac_VHT20 (MCS0)	UNII-3_802.11ac_VHT20 (MCS0)
	
	
	

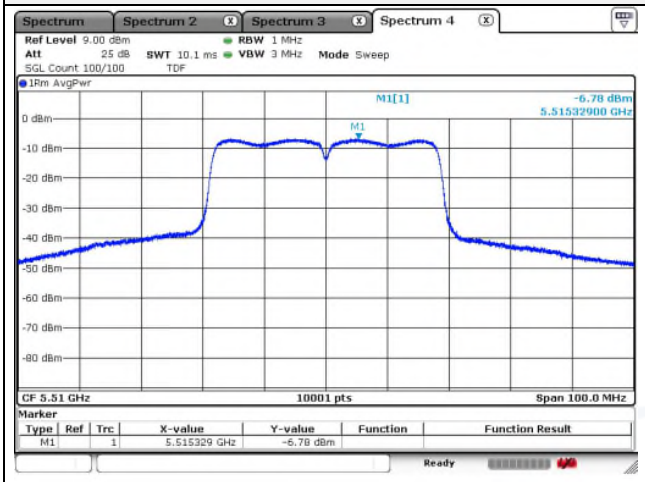
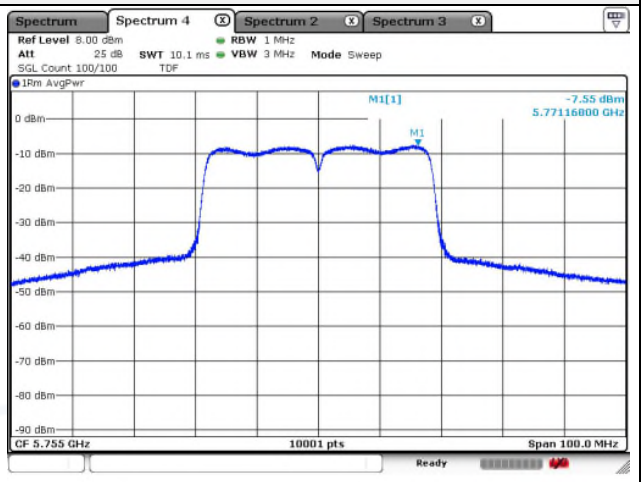
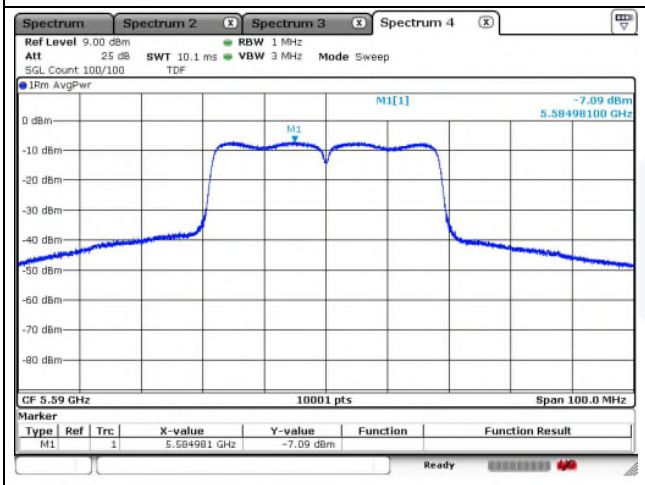
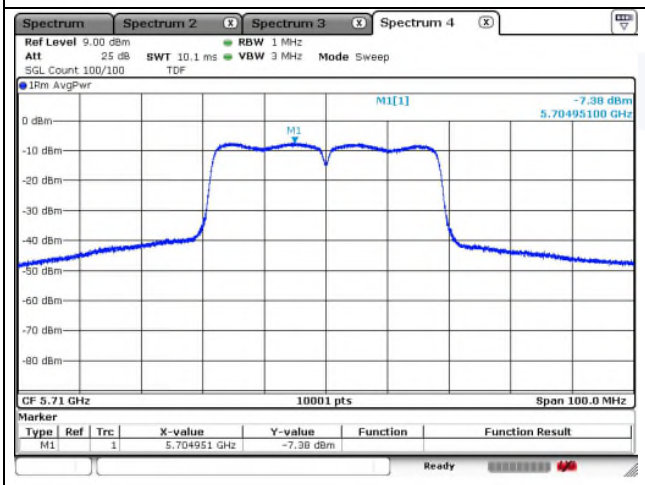
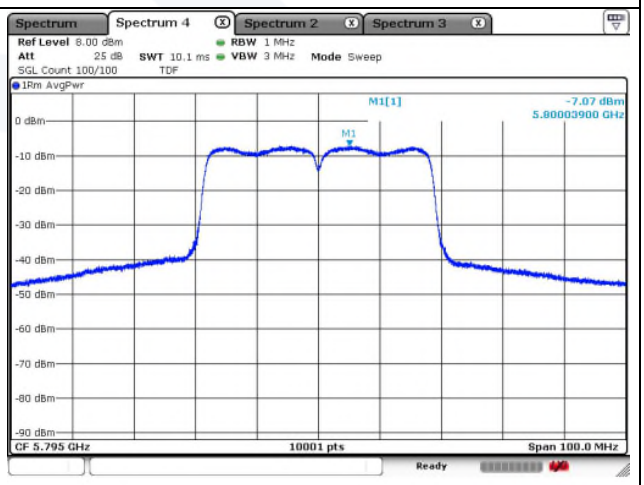
UNII-1_802.11ax_HE20 (MCS0)	UNII-2A_802.11ax_HE20 (MCS0)
	
	
	

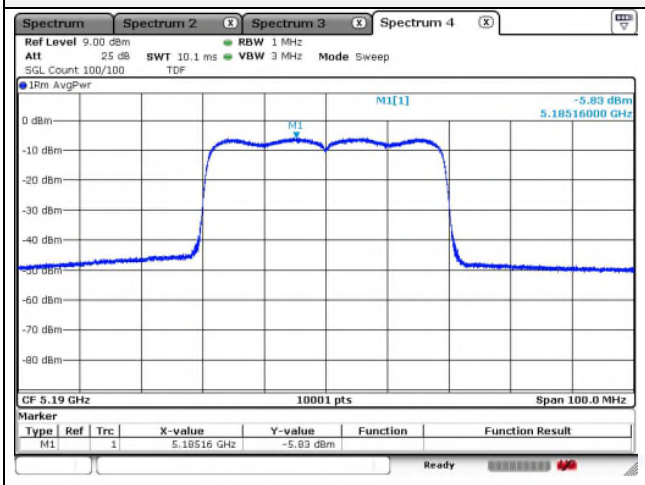
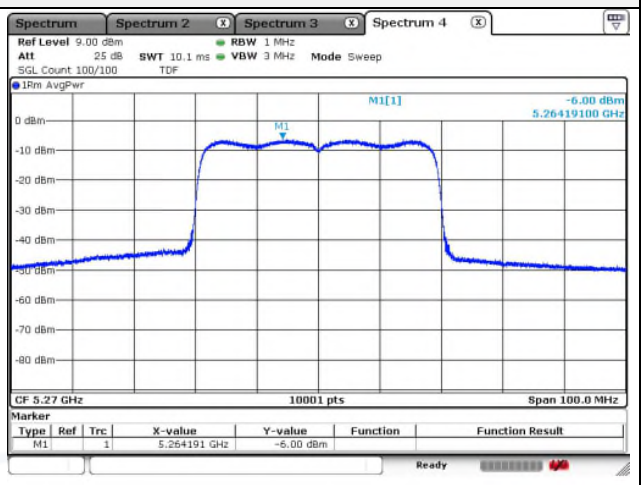
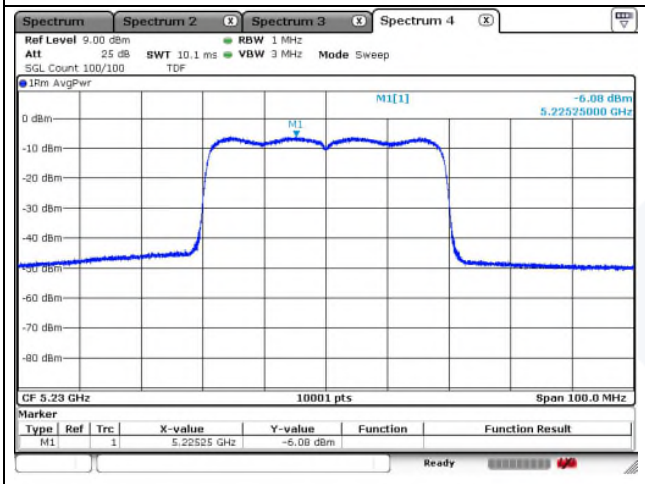
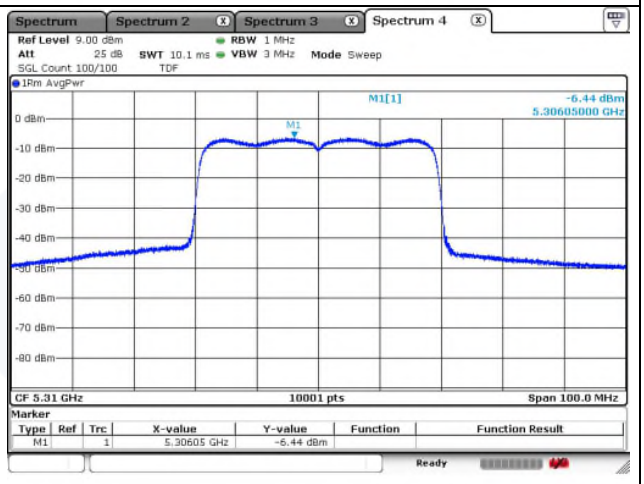
UNII-2C_802.11ax_HE20 (MCS0)	UNII-3_802.11ax_HE20 (MCS0)
	
	
	

UNII-1_802.11n_HT40 (MCS0)	UNII-2A_802.11n_HT40 (MCS0)
	
	

UNII-2C_802.11n_HT40 (MCS0)	UNII-3_802.11n_HT40 (MCS0)
	
	Blank
	

UNII-1_802.11ac_VHT40 (MCS0)	UNII-2A_802.11ac_VHT40 (MCS0)
	
	

UNII-2C_802.11ac_VHT40 (MCS0)	UNII-3_802.11ac_VHT40 (MCS0)
	
	Blank
	

UNII-1_802.11ax_HE40 (MCS0)	UNII-2A_802.11ax_HE40 (MCS0)
	
	

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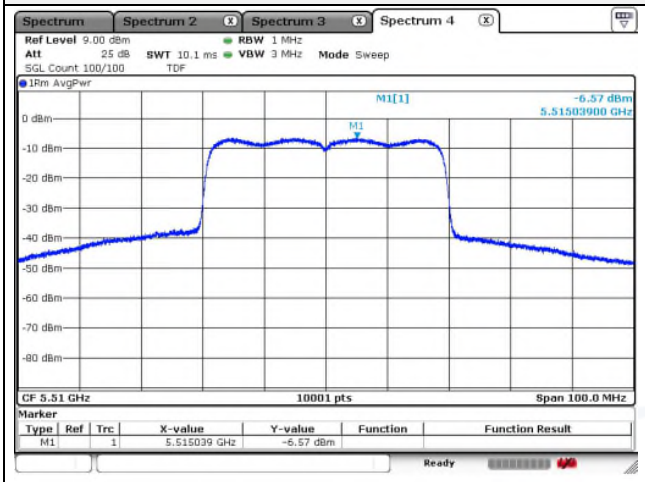
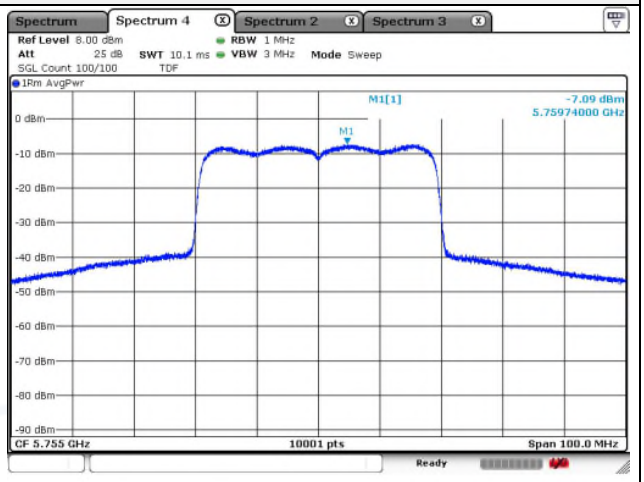
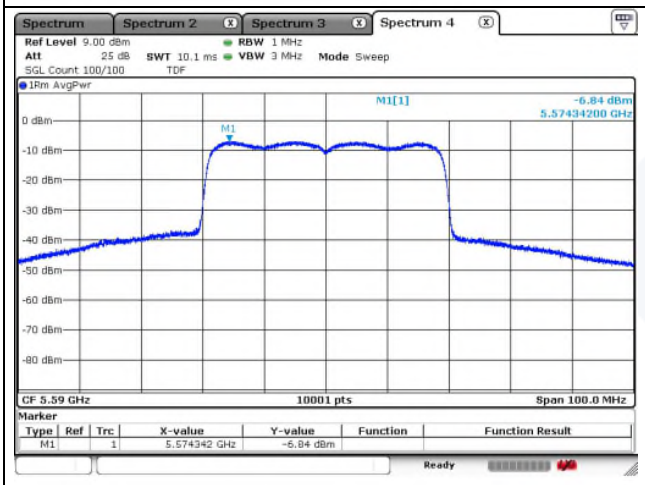
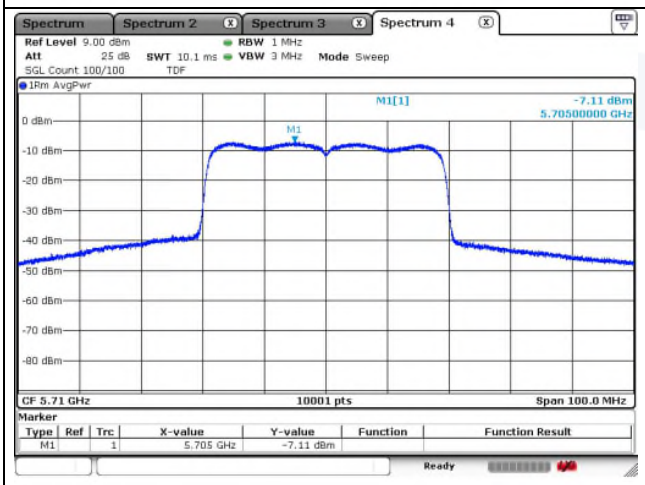
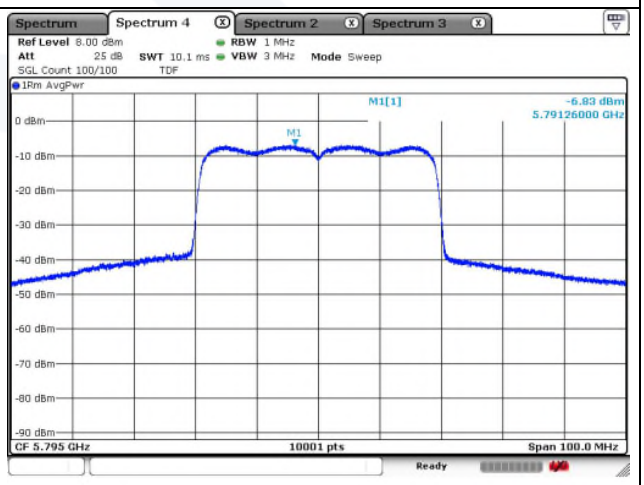
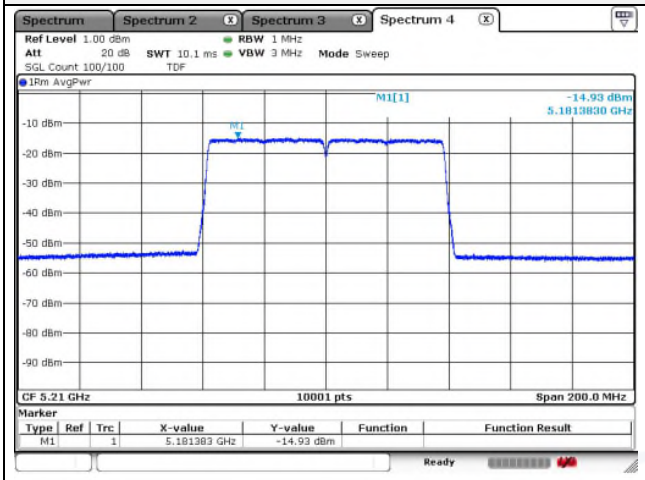
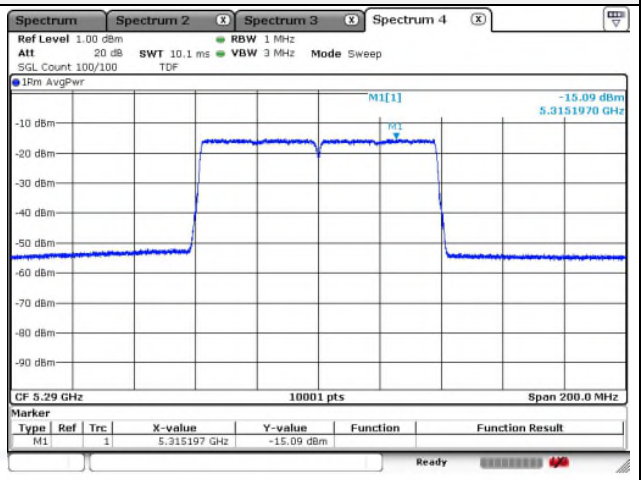
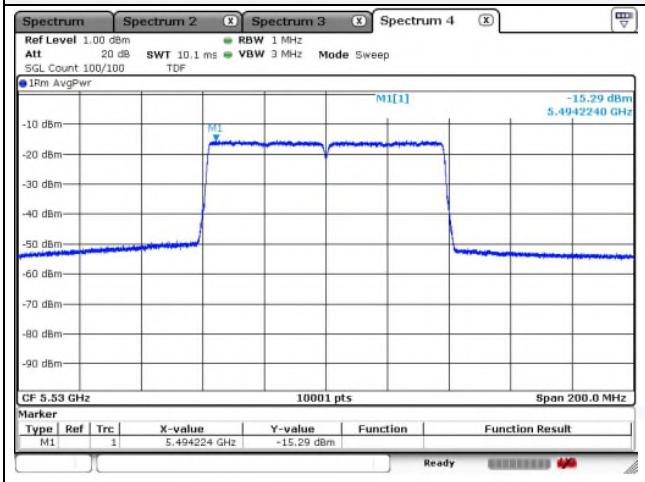
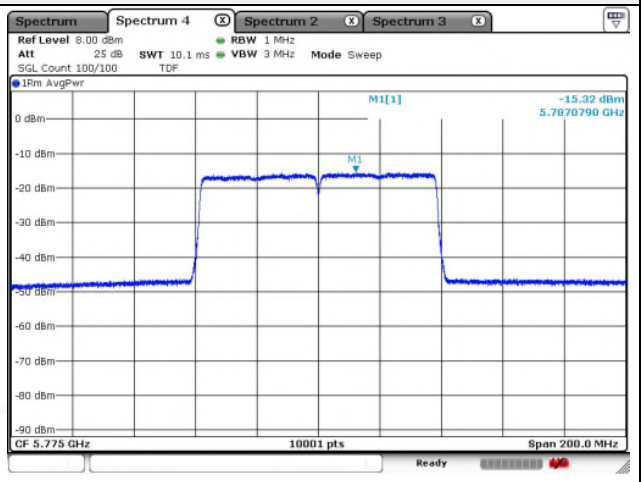
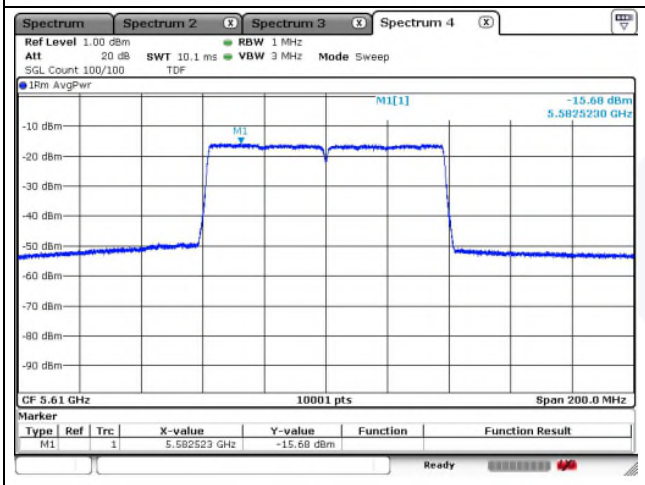
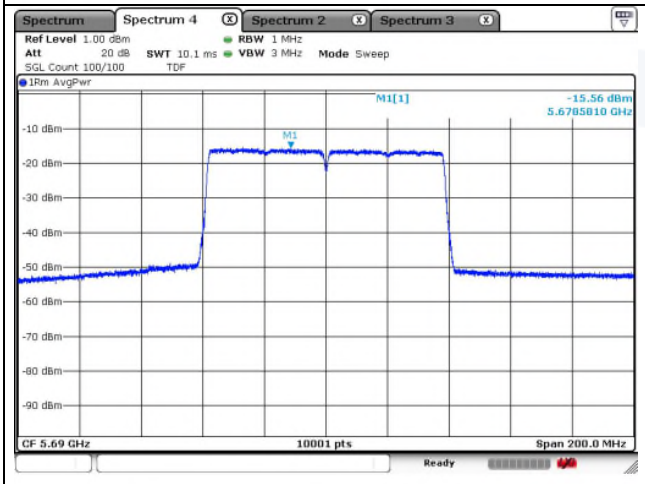
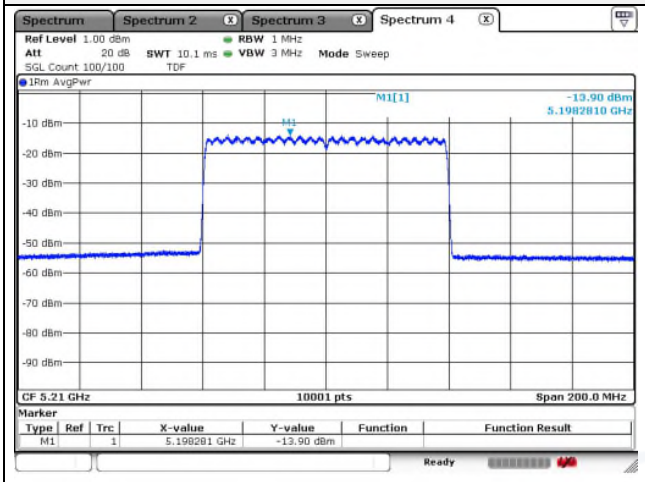
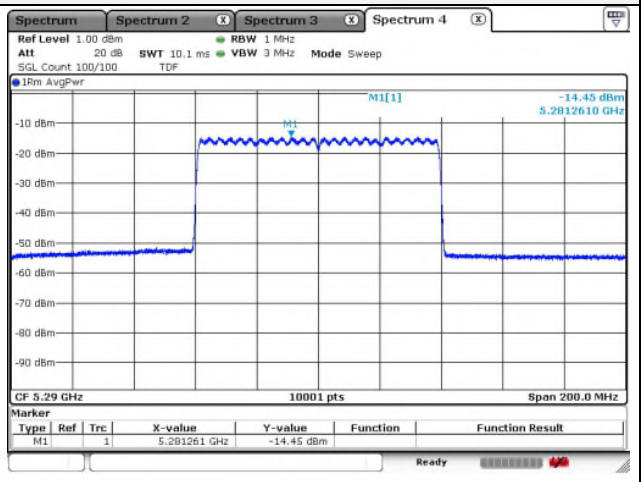
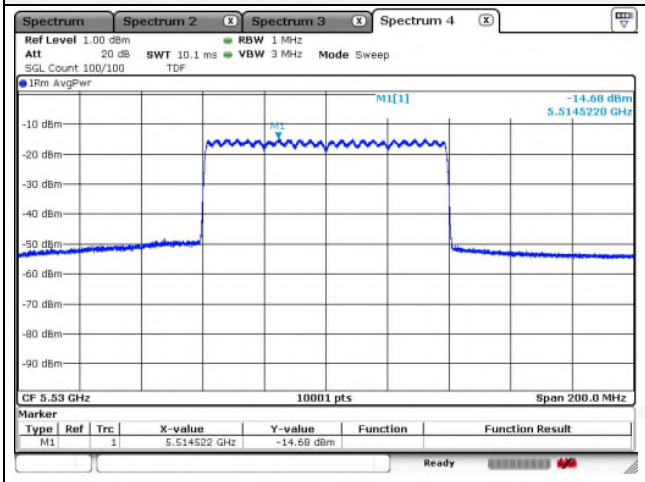
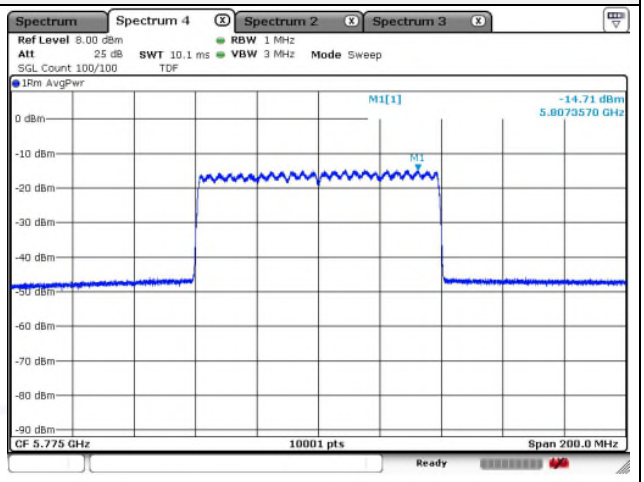
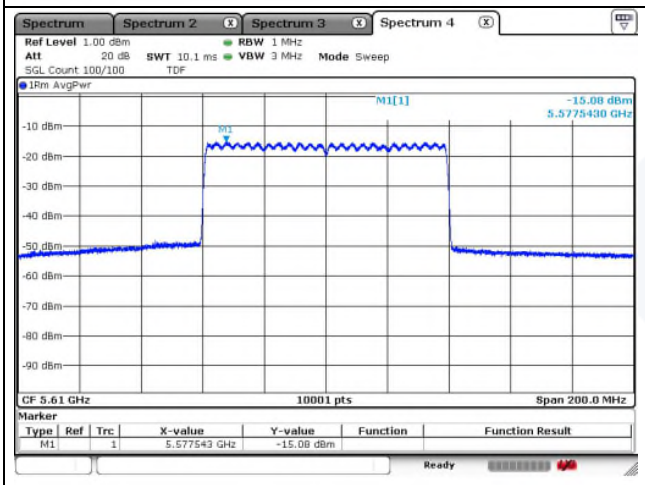
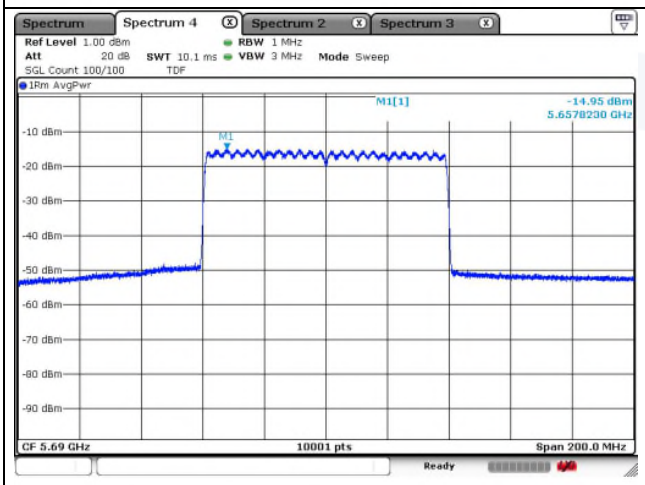
	
	Blank
	

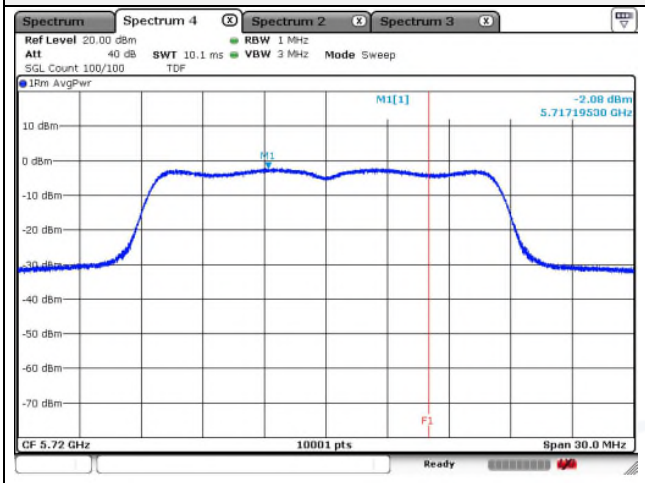
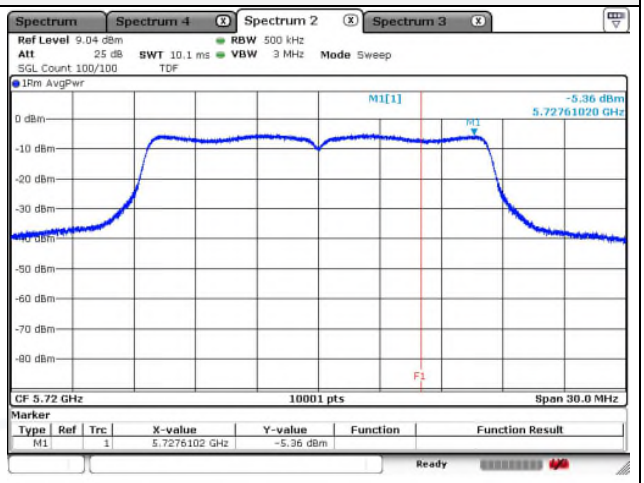
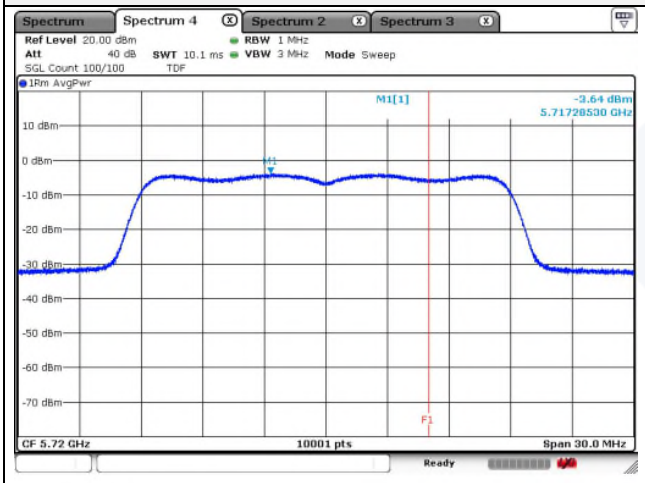
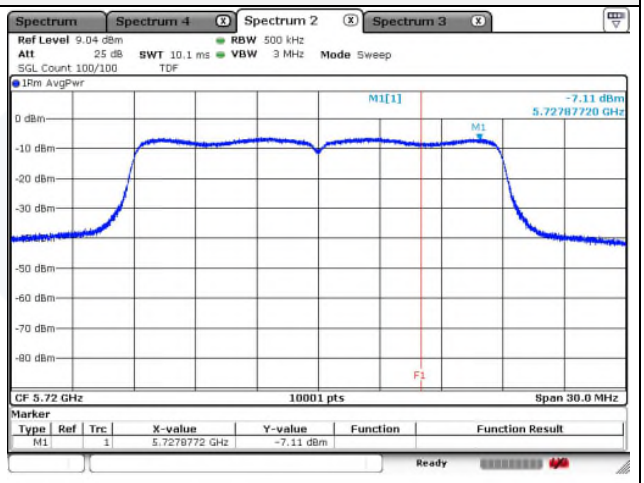
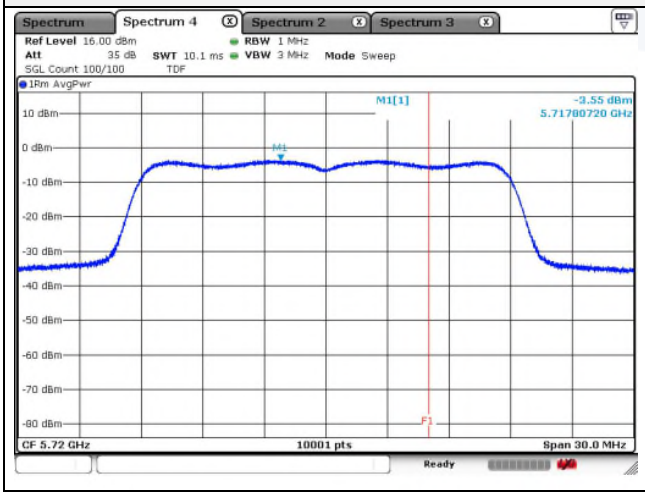
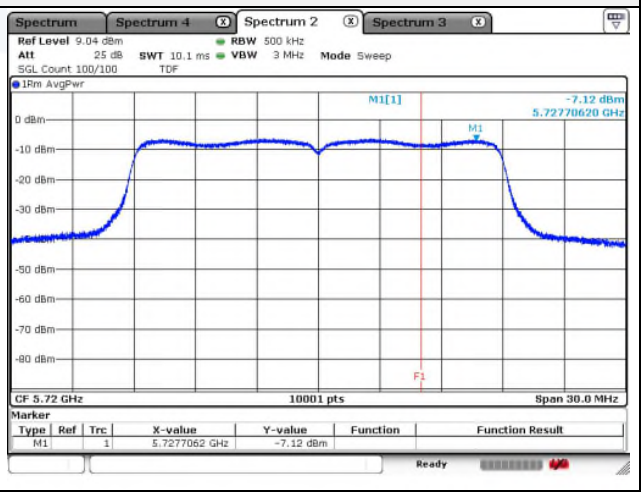
UNII-1_802.11ac_VHT80 (MCS0)	UNII-2A_802.11ac_VHT80 (MCS0)
	

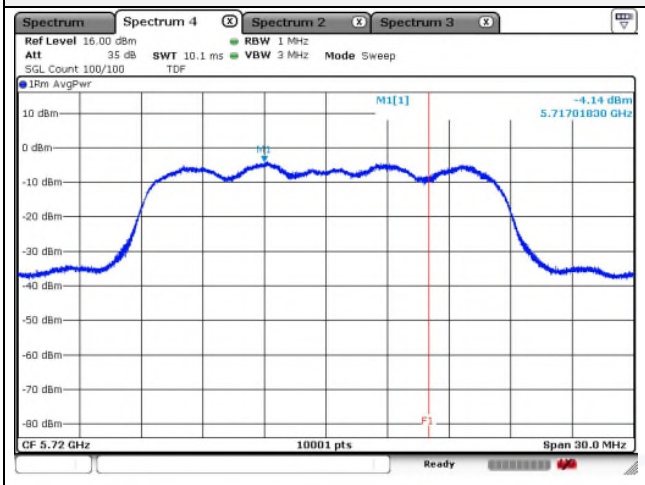
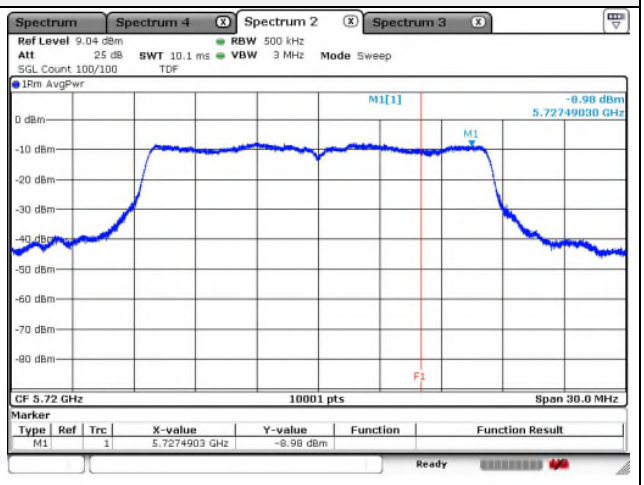
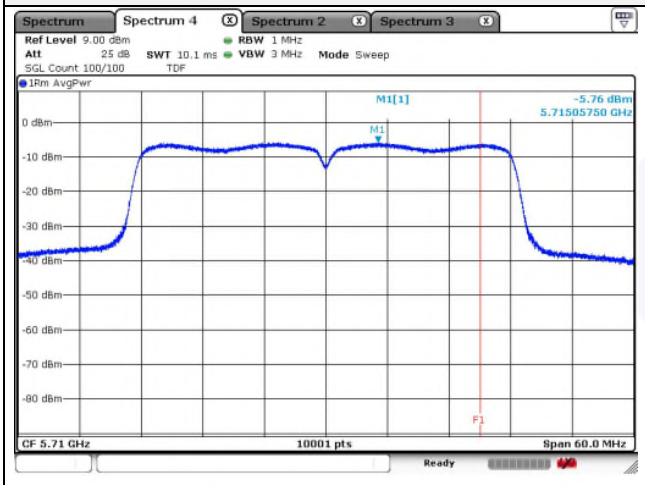
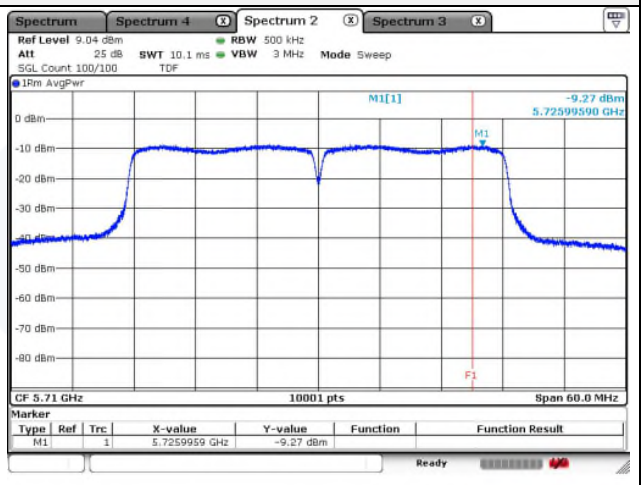
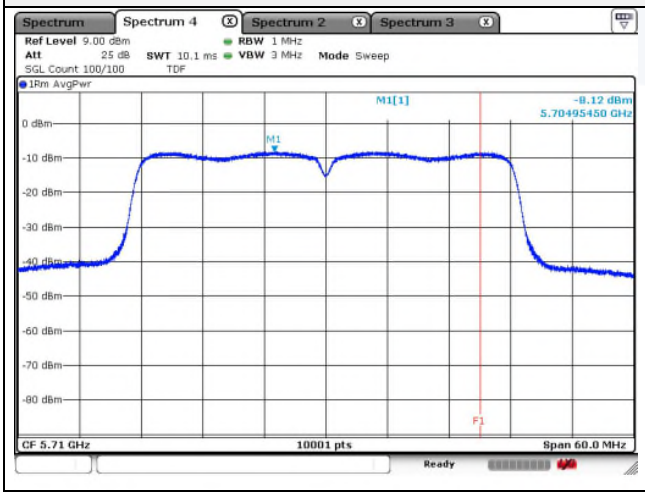
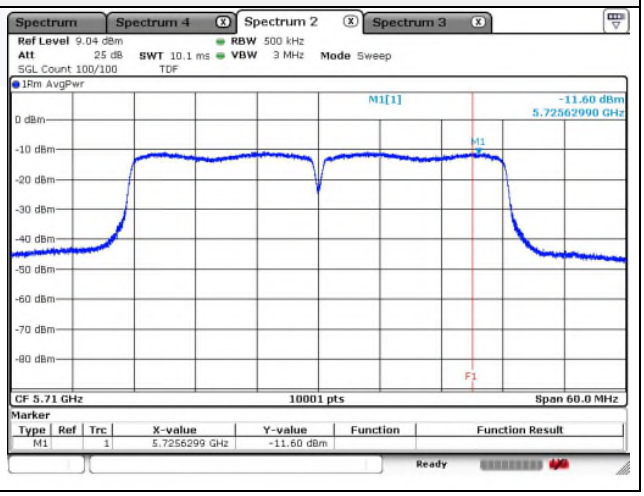
UNII-2C_802.11ac_VHT80 (MCS0)	UNII-3_802.11ac_VHT80 (MCS0)
	
	Blank
	Blank

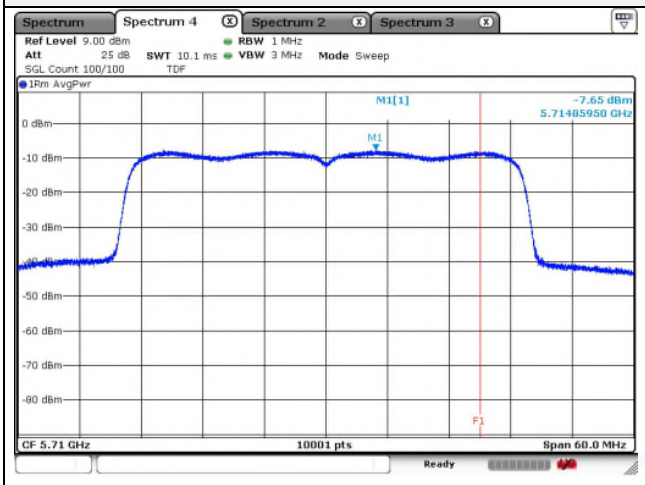
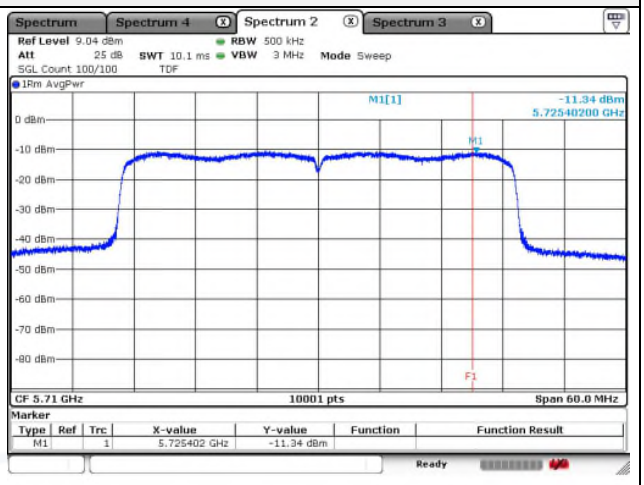
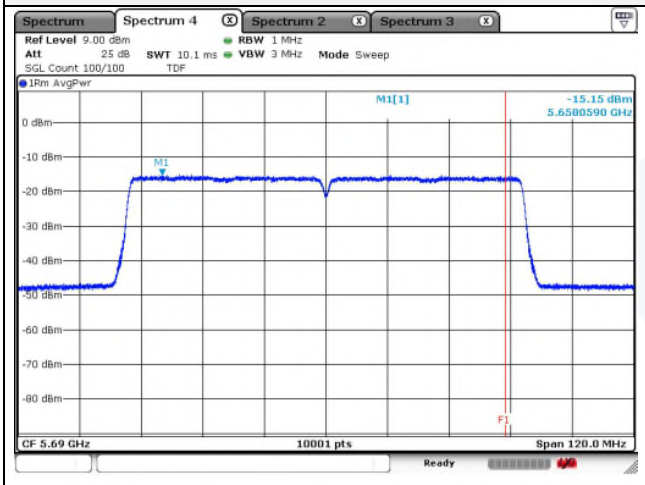
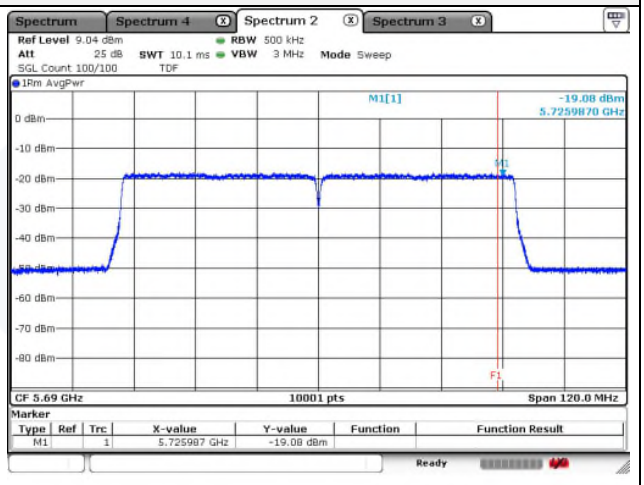
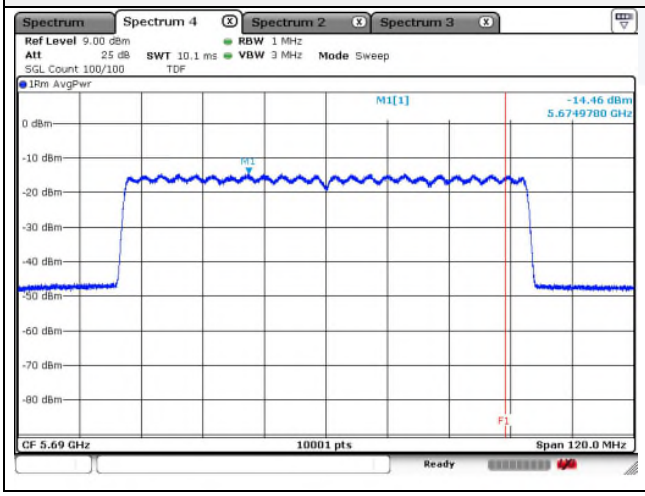
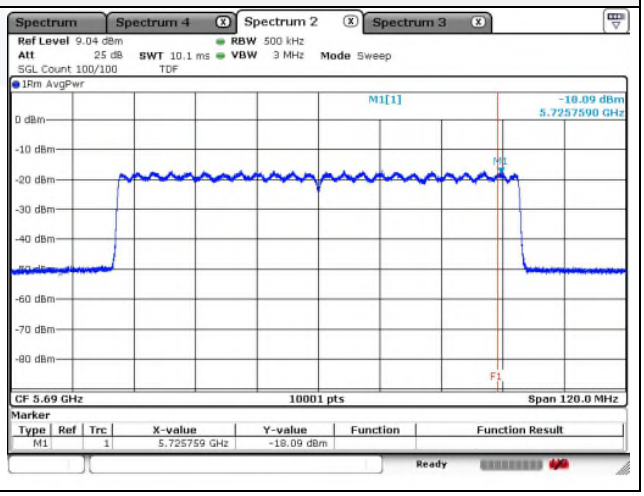
UNII-1_802.11ax_HE80 (MCS0)	UNII-2A_802.11ax_HE80 (MCS0)
	

UNII-2C_802.11ax_HE80 (MCS0)	UNII-3_802.11ax_HE80 (MCS0)
	
	Blank
	Blank

Band-crossing channels

UNII-2C_802.11a (6 Mbps) (Ch. 144)	UNII-3_802.11a (6 Mbps) (Ch. 144)
	
UNII-2C_802.11n_HT20 (MCS0) (Ch. 144)	**UNII-3_802.11n_HT20 (MCS0) (Ch. 144)**
	
UNII-2C_802.11ac_VHT20 (MCS0) (Ch. 144)	**UNII-3_802.11ac_VHT20 (MCS0) (Ch. 144)**
	

UNII-2C_802.11ax_HE20 (MCS0) (Ch. 144)	UNII-3_802.11ax_HE20 (MCS0) (Ch. 144)
	
UNII-2C_802.11n_HT40 (MCS0) (Ch. 142)	**UNII-3_802.11n_HT40 (MCS0) (Ch. 142)**
	
UNII-2C_802.11ac_VHT40 (MCS0) (Ch. 142)	**UNII-3_802.11ac_VHT40 (MCS0) (Ch. 142)**
	

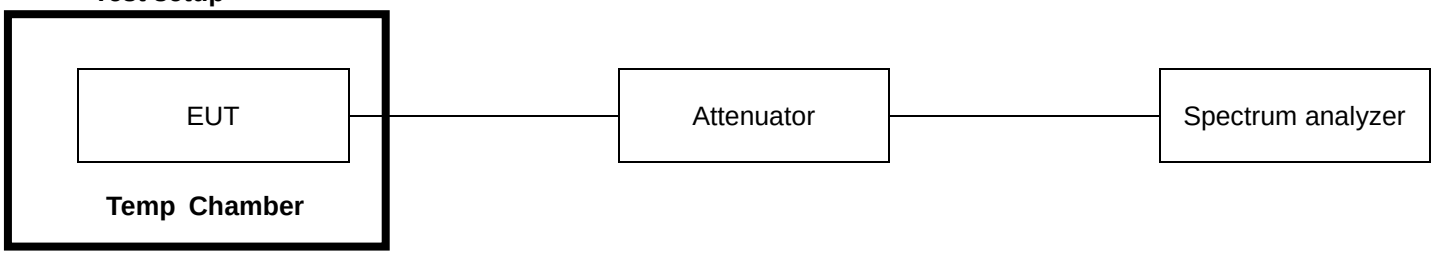
UNII-2C_802.11ax_HE40 (MCS0) (Ch. 142)	UNII-3_802.11ax_HE40 (MCS0) (Ch. 142)
	
UNII-2C_802.11ac_VHT80 (MCS0) (Ch. 138)	**UNII-3_802.11ac_VHT80 (MCS0) (Ch. 138)**
	
UNII-2C_802.11ax_HE80 (MCS0) (Ch. 138)	**UNII-3_802.11ax_HE80 (MCS0) (Ch. 138)**
	

3.5. Frequency Stability

Test procedure

ANSI C63.10-2013, clause 6.8.1

Test setup



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

Limit

N/A

Test results

Mode: UNII-1

Operating frequency: 5 180 ㎒

Test voltage (%)	Test voltage (V)	Temperature (℃)	Maintaining time	Measure frequency (㎒)	Frequency deviation (㎐)	Deviation (%)
100 %	DC 3.30 & DC 1.80	-30.0	Startup	5 180.028 000	28 000	0.000 54
			2 minutes	5 180.031 000	31 000	0.000 60
			5 minutes	5 180.029 000	29 000	0.000 56
			10 minutes	5 180.027 500	27 500	0.000 53
100 %		-20.0	Startup	5 180.022 000	22 000	0.000 42
			2 minutes	5 180.023 000	23 000	0.000 44
			5 minutes	5 180.022 500	22 500	0.000 43
			10 minutes	5 180.024 000	24 000	0.000 46
100 %		-10.0	Startup	5 180.007 500	7 500	0.000 14
			2 minutes	5 180.011 000	11 000	0.000 21
			5 minutes	5 180.013 500	13 500	0.000 26
			10 minutes	5 180.009 500	9 500	0.000 18
100 %		0.0	Startup	5 180.001 500	1 500	0.000 03
			2 minutes	5 180.003 000	3 000	0.000 06
			5 minutes	5 179.998 500	-1 500	-0.000 03
			10 minutes	5 180.006 000	6 000	0.000 12
100 %		10.0	Startup	5 179.985 000	-15 000	-0.000 29
			2 minutes	5 179.987 000	-13 000	-0.000 25
			5 minutes	5 179.983 500	-16 500	-0.000 32
			10 minutes	5 179.985 000	-15 000	-0.000 29
100 %		20.0	Startup	5 179.978 000	-22 000	-0.000 42
			2 minutes	5 179.981 500	-18 500	-0.000 36
			5 minutes	5 179.982 000	-18 000	-0.000 35
			10 minutes	5 179.977 000	-23 000	-0.000 44
100 %		25.4	Startup	5 179.976 000	-24 000	-0.000 46
			2 minutes	5 179.977 500	-22 500	-0.000 43
			5 minutes	5 179.978 500	-21 500	-0.000 42
			10 minutes	5 179.977 000	-23 000	-0.000 44
100 %		30.0	Startup	5 179.984 000	-16 000	-0.000 31
			2 minutes	5 179.983 500	-16 500	-0.000 32
			5 minutes	5 179.985 000	-15 000	-0.000 29
			10 minutes	5 179.985 500	-14 500	-0.000 28
100 %		40.0	Startup	5 179.985 000	-15 000	-0.000 29
			2 minutes	5 179.983 500	-16 500	-0.000 32
			5 minutes	5 179.985 000	-15 000	-0.000 29
			10 minutes	5 179.985 500	-14 500	-0.000 28
100 %		50.0	Startup	5 179.989 000	-11 000	-0.000 21
			2 minutes	5 179.988 000	-12 000	-0.000 23
			5 minutes	5 179.987 500	-12 500	-0.000 24
			10 minutes	5 179.988 500	-11 500	-0.000 22
100 %		60.0	Startup	5 179.996 000	-4 000	-0.000 08
			2 minutes	5 179.994 000	-6 000	-0.000 12
			5 minutes	5 179.996 500	-3 500	-0.000 07
			10 minutes	5 179.995 000	-5 000	-0.000 10
85 %	DC 2.805 & DC 1.530	25.4	Startup	5 179.978 000	-22 000	-0.000 42
			2 minutes	5 179.982 500	-17 500	-0.000 34
			5 minutes	5 179.979 000	-21 000	-0.000 41
			10 minutes	5 179.980 500	-19 500	-0.000 38
115 %	DC 3.795 & DC 2.070	25.4	Startup	5 179.974 500	-25 500	-0.000 49
			2 minutes	5 179.976 500	-23 500	-0.000 45
			5 minutes	5 179.979 000	-21 000	-0.000 41
			10 minutes	5 179.976 000	-24 000	-0.000 46

Mode: UNII-2A

Operating frequency: 5 260 ㎒

Test voltage (%)	Test voltage (V)	Temperature (℃)	Maintaining time	Measure frequency (㎒)	Frequency deviation (㎐)	Deviation (%)
100 %	DC 3.30 & DC 1.80	-30.0	Startup	5 260.036 500	36 500	0.000 69
			2 minutes	5 260.037 500	37 500	0.000 71
			5 minutes	5 260.033 500	33 500	0.000 64
			10 minutes	5 260.035 000	35 000	0.000 67
100 %		-20.0	Startup	5 260.032 000	32 000	0.000 61
			2 minutes	5 260.031 000	31 000	0.000 59
			5 minutes	5 260.029 500	29 500	0.000 56
			10 minutes	5 260.029 000	29 000	0.000 55
100 %		-10.0	Startup	5 260.013 000	13 000	0.000 25
			2 minutes	5 260.012 500	12 500	0.000 24
			5 minutes	5 260.015 000	15 000	0.000 29
			10 minutes	5 260.013 500	13 500	0.000 26
100 %		0.0	Startup	5 259.996 500	-3 500	-0.000 07
			2 minutes	5 259.996 000	-4 000	-0.000 08
			5 minutes	5 259.995 500	-4 500	-0.000 09
			10 minutes	5 259.994 500	-5 500	-0.000 10
100 %		10.0	Startup	5 259.989 000	-11 000	-0.000 21
			2 minutes	5 259.987 000	-13 000	-0.000 25
			5 minutes	5 259.987 500	-12 500	-0.000 24
			10 minutes	5 259.988 500	-11 500	-0.000 22
100 %		20.0	Startup	5 259.983 500	-16 500	-0.000 31
			2 minutes	5 259.985 000	-15 000	-0.000 29
			5 minutes	5 259.986 500	-13 500	-0.000 26
			10 minutes	5 259.988 000	-12 000	-0.000 23
100 %		25.4	Startup	5 259.980 000	-20 000	-0.000 38
			2 minutes	5 259.982 000	-18 000	-0.000 34
			5 minutes	5 259.985 000	-15 000	-0.000 29
			10 minutes	5 259.982 500	-17 500	-0.000 33
100 %		30.0	Startup	5 259.987 000	-13 000	-0.000 25
			2 minutes	5 259.988 000	-12 000	-0.000 23
			5 minutes	5 259.985 500	-14 500	-0.000 28
			10 minutes	5 259.988 500	-11 500	-0.000 22
100 %		40.0	Startup	5 259.991 000	-9 000	-0.000 17
			2 minutes	5 259.991 000	-9 000	-0.000 17
			5 minutes	5 259.993 500	-6 500	-0.000 12
			10 minutes	5 259.990 000	-10 000	-0.000 19
100 %		50.0	Startup	5 259.995 500	-4 500	-0.000 09
			2 minutes	5 259.997 500	-2 500	-0.000 05
			5 minutes	5 259.996 500	-3 500	-0.000 07
			10 minutes	5 259.994 000	-6 000	-0.000 11
100 %		60.0	Startup	5 259.994 000	-6 000	-0.000 11
			2 minutes	5 259.996 000	-4 000	-0.000 08
			5 minutes	5 259.996 500	-3 500	-0.000 07
			10 minutes	5 259.998 000	-2 000	-0.000 04
85 %	DC 2.805 & DC 1.530	25.4	Startup	5 259.985 000	-15 000	-0.000 29
			2 minutes	5 259.982 000	-18 000	-0.000 34
			5 minutes	5 259.979 000	-21 000	-0.000 40
			10 minutes	5 259.981 000	-19 000	-0.000 36
115 %	DC 3.795 & DC 2.070	25.4	Startup	5 259.979 000	-21 000	-0.000 40
			2 minutes	5 259.977 000	-23 000	-0.000 44
			5 minutes	5 259.985 000	-15 000	-0.000 29
			10 minutes	5 259.982 500	-17 500	-0.000 33

Mode: UNII-2C

Operating frequency: 5500 ㎒

Test voltage (%)	Test voltage (V)	Temperature (℃)	Maintaining time	Measure frequency (㎒)	Frequency deviation (㎐)	Deviation (%)
100 %	DC 3.30 & DC 1.80	-30.0	Startup	5 500.043 950	43 950	0.000 80
			2 minutes	5 500.038 500	38 500	0.000 70
			5 minutes	5 500.035 000	35 000	0.000 64
			10 minutes	5 500.036 500	36 500	0.000 66
100 %		-20.0	Startup	5 500.036 000	36 000	0.000 65
			2 minutes	5 500.034 000	34 000	0.000 62
			5 minutes	5 500.032 500	32 500	0.000 59
			10 minutes	5 500.033 000	33 000	0.000 60
100 %		-10.0	Startup	5 500.011 500	11 500	0.000 21
			2 minutes	5 500.013 000	13 000	0.000 24
			5 minutes	5 500.009 500	9 500	0.000 17
			10 minutes	5 500.012 000	12 000	0.000 22
100 %		0.0	Startup	5 500.002 500	2 500	0.000 05
			2 minutes	5 500.006 000	6 000	0.000 11
			5 minutes	5 500.005 500	5 500	0.000 10
			10 minutes	5 500.006 000	6 000	0.000 11
100 %		10.0	Startup	5 499.992 000	-8 000	-0.000 15
			2 minutes	5 499.995 500	-4 500	-0.000 08
			5 minutes	5 499.994 000	-6 000	-0.000 11
			10 minutes	5 499.993 500	-6 500	-0.000 12
100 %		20.0	Startup	5 499.985 000	-15 000	-0.000 27
			2 minutes	5 499.987 500	-12 500	-0.000 23
			5 minutes	5 499.985 000	-15 000	-0.000 27
			10 minutes	5 499.986 000	-14 000	-0.000 25
100 %		25.4	Startup	5 499.984 000	-16 000	-0.000 29
			2 minutes	5 499.982 000	-18 000	-0.000 33
			5 minutes	5 499.982 000	-18 000	-0.000 33
			10 minutes	5 499.985 000	-15 000	-0.000 27
100 %		30.0	Startup	5 499.989 000	-11 000	-0.000 20
			2 minutes	5 499.986 500	-13 500	-0.000 25
			5 minutes	5 499.987 500	-12 500	-0.000 23
			10 minutes	5 499.986 000	-14 000	-0.000 25
100 %		40.0	Startup	5 499.991 500	-8 500	-0.000 15
			2 minutes	5 499.995 000	-5 000	-0.000 09
			5 minutes	5 499.994 500	-5 500	-0.000 10
			10 minutes	5 499.994 000	-6 000	-0.000 11
100 %		50.0	Startup	5 499.994 000	-6 000	-0.000 11
			2 minutes	5 499.993 500	-6 500	-0.000 12
			5 minutes	5 499.992 000	-8 000	-0.000 15
			10 minutes	5 499.990 500	-9 500	-0.000 17
100 %		60.0	Startup	5 499.996 000	-4 000	-0.000 07
			2 minutes	5 499.993 000	-7 000	-0.000 13
			5 minutes	5 499.993 500	-6 500	-0.000 12
			10 minutes	5 499.992 000	-8 000	-0.000 15
85 %	DC 2.805 & DC 1.530	25.4	Startup	5 499.981 000	-19 000	-0.000 35
			2 minutes	5 499.985 000	-15 000	-0.000 27
			5 minutes	5 499.983 500	-16 500	-0.000 30
			10 minutes	5 499.982 000	-18 000	-0.000 33
115 %	DC 3.795 & DC 2.070	25.4	Startup	5 499.984 000	-16 000	-0.000 29
			2 minutes	5 499.983 500	-16 500	-0.000 30
			5 minutes	5 499.983 500	-16 500	-0.000 30
			10 minutes	5 499.982 000	-18 000	-0.000 33

Mode: UNII-3

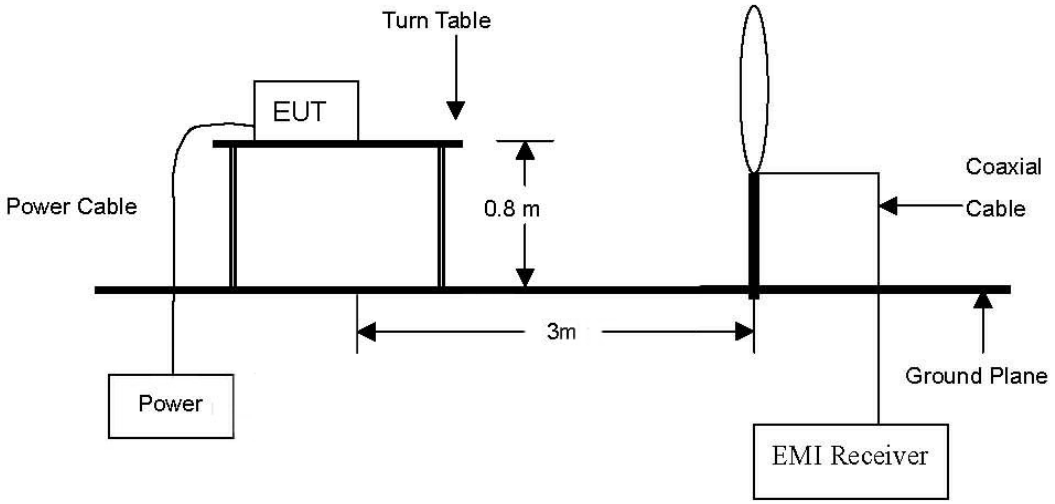
Operating frequency: 5 745 ㎒

Test voltage (%)	Test voltage (V)	Temperature (℃)	Maintaining time	Measure frequency (㎒)	Frequency deviation (㎐)	Deviation (%)
100 %	DC 3.30 & DC 1.80	-30.0	Startup	5 745.038 000	38 000	0.000 66
			2 minutes	5 745.036 000	36 000	0.000 63
			5 minutes	5 745.035 000	35 000	0.000 61
			10 minutes	5 745.034 000	34 000	0.000 59
100 %		-20.0	Startup	5 745.029 000	29 000	0.000 50
			2 minutes	5 745.025 500	25 500	0.000 44
			5 minutes	5 745.026 500	26 500	0.000 46
			10 minutes	5 745.028 500	28 500	0.000 50
100 %		-10.0	Startup	5 745.010 000	10 000	0.000 17
			2 minutes	5 745.013 500	13 500	0.000 23
			5 minutes	5 745.014 000	14 000	0.000 24
			10 minutes	5 745.010 000	10 000	0.000 17
100 %		0.0	Startup	5 745.003 000	3 000	0.000 05
			2 minutes	5 745.006 000	6 000	0.000 10
			5 minutes	5 745.005 500	5 500	0.000 10
			10 minutes	5 745.007 500	7 500	0.000 13
100 %		10.0	Startup	5 744.993 000	-7 000	-0.000 12
			2 minutes	5 744.996 000	-4 000	-0.000 07
			5 minutes	5 744.997 500	-2 500	-0.000 04
			10 minutes	5 744.995 000	-5 000	-0.000 09
100 %		20.0	Startup	5 744.986 500	-13 500	-0.000 23
			2 minutes	5 744.987 500	-12 500	-0.000 22
			5 minutes	5 744.985 000	-15 000	-0.000 26
			10 minutes	5 744.989 000	-11 000	-0.000 19
100 %		25.4	Startup	5 744.978 000	-22 000	-0.000 38
			2 minutes	5 744.983 000	-17 000	-0.000 30
			5 minutes	5 744.980 500	-19 500	-0.000 34
			10 minutes	5 744.978 500	-21 500	-0.000 37
100 %		30.0	Startup	5 744.985 500	-14 500	-0.000 25
			2 minutes	5 744.987 000	-13 000	-0.000 23
			5 minutes	5 744.986 500	-13 500	-0.000 23
			10 minutes	5 744.986 000	-14 000	-0.000 24
100 %		40.0	Startup	5 744.991 000	-9 000	-0.000 16
			2 minutes	5 744.994 000	-6 000	-0.000 10
			5 minutes	5 744.995 500	-4 500	-0.000 08
			10 minutes	5 744.992 000	-8 000	-0.000 14
100 %		50.0	Startup	5 744.995 000	-5 000	-0.000 09
			2 minutes	5 744.991 500	-8 500	-0.000 15
			5 minutes	5 744.993 000	-7 000	-0.000 12
			10 minutes	5 744.996 500	-3 500	-0.000 06
100 %		60.0	Startup	5 744.993 000	-7 000	-0.000 12
			2 minutes	5 744.989 000	-11 000	-0.000 19
			5 minutes	5 744.990 000	-10 000	-0.000 17
			10 minutes	5 744.991 000	-9 000	-0.000 16
85 %	DC 2.805 & DC 1.530	25.4	Startup	5 744.979 000	-21 000	-0.000 37
			2 minutes	5 744.981 500	-18 500	-0.000 32
			5 minutes	5 744.983 000	-17 000	-0.000 30
			10 minutes	5 744.984 000	-16 000	-0.000 28
115 %	DC 3.795 & DC 2.070	25.4	Startup	5 744.981 000	-19 000	-0.000 33
			2 minutes	5 744.982 500	-17 500	-0.000 30
			5 minutes	5 744.983 500	-16 500	-0.000 29
			10 minutes	5 744.979 000	-21 000	-0.000 37

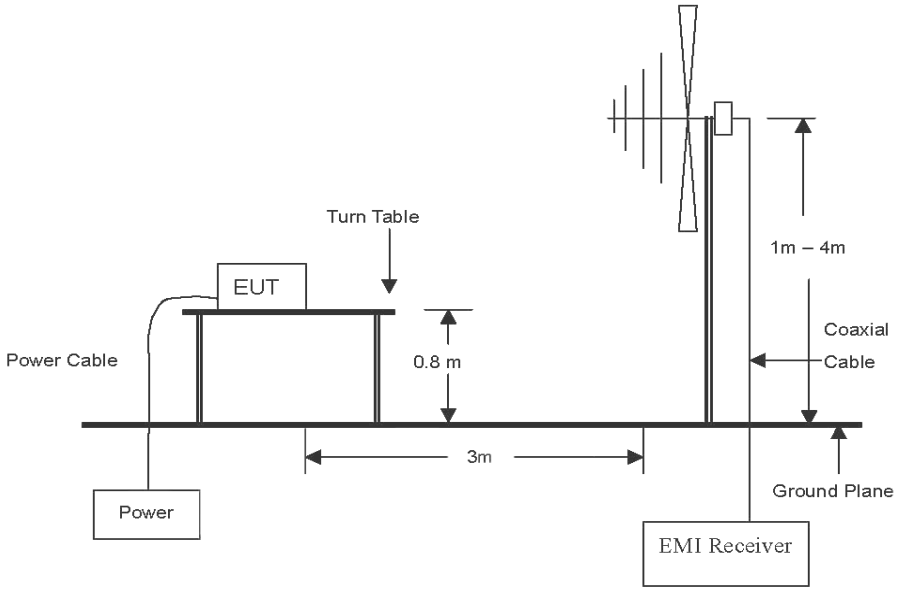
3.6. Radiated restricted band and emissions

Test setup

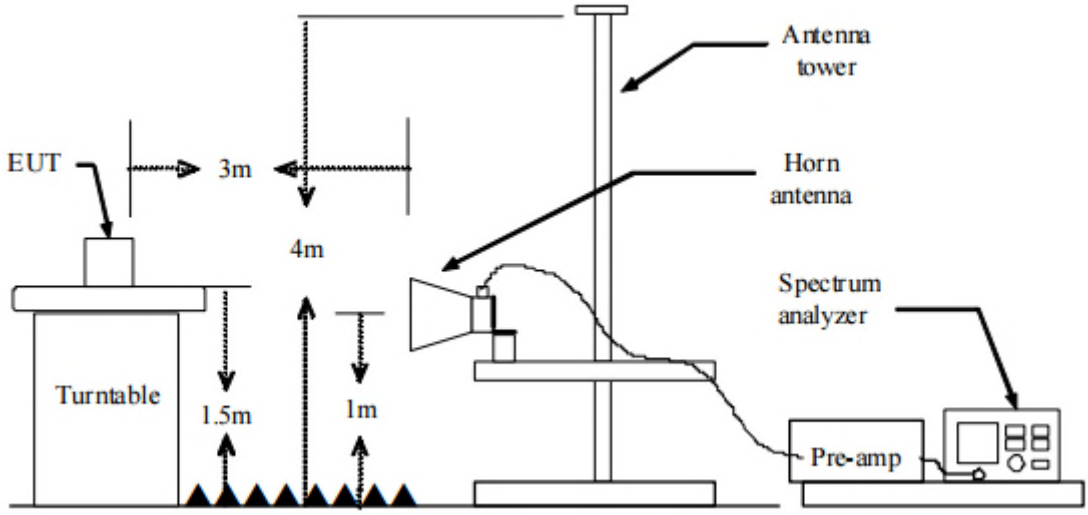
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒ Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 ㎒ to 1 ㎓ emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 ㎓ to the tenth harmonic of the highest fundamental frequency or to 40 ㎓ emissions, whichever is lower.



Test procedure

Radiated emissions from the EUT were measured according to the dictates in section 11.11 & 11.12 of ANSI C63.10-2013.

Test procedure below 30 ㎒

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
2. Then antenna is a loop antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both parallel, ground parallel and perpendicular of the antenna are set to make the measurement. It was determined that **parallel** was worst-case orientation; therefore, all final radiated testing was performed with the EUT in **parallel.**
3. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 degrees to find the maximum reading.
4. The test-receiver system was set to average or quasi peak detect function and Specified Bandwidth with Maximum hold mode.

Test procedure above 30 ㎒

1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The antenna is a bi-log antenna, a horn antenna ,and its height are varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
4. The test receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

5. Spectrum analyzer settings for f < 1 ㎓:
   ① Span = wide enough to fully capture the emission being measured
   ② RBW = 100 ㎑
   ③ VBW ≥ RBW
   ④ Detector = quasi peak
   ⑤ Sweep time = auto
   ⑥ Trace = max hold

6. Spectrum analyzer settings for *f* ≥1 ㎓: Peak
   ① Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
   ② RBW = 1 ㎒
   ③ VBW ≥ 3 ㎒
   ④ Detector = peak
   ⑤ Sweep time = auto
   ⑥ Trace = max hold
   ⑦ Trace was allowed to stabilize

7. Spectrum analyzer settings for *f* ≥1 ㎓: Average
   ① Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
   ② RBW = 1 ㎒
   ③ VBW ≥ 3 × RBW
   ④ Detector = RMS, if span/(# of points in sweep) ≤ (RBW/2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.
   ⑤ Averaging type = power(i.e., RMS)
      1) As an alternative, the detector and averaging type may be set for linear voltage averaging.
      2) Some instruments require linear display mode in order to use linear voltage averaging. Log or ㏈ averaging shall not be used.
   ⑥ Sweep = auto
   ⑦ Trace = max hold
   ⑧ Perform a trace average of at least 100 traces.
   ⑨ A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:
      1) If power averaging (RMS) mode was used in step ⑤, then the applicable correction factor is 10 log(1/x), where x is the duty cycle.
      2) If linear voltage averaging mode was used in step ⑤, then the applicable correction factor is 20 log(1/x), where x is the duty cycle.
      3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

Note.

1. *f* <30 ㎒, extrapolation factor of 40 ㏈/decade of distance. $F_d = 40\log(D_m/Ds)$
   f ≥30 ㎒, extrapolation factor of 20 ㏈/decade of distance. $F_d = 20\log(D_m/Ds)$
   Where:
   F_d = Distance factor in ㏈
   D_m = Measurement distance in meters
   D_s = Specification distance in meters
2. Field strength(㏈㎶/m) = Level(㏈㎶) + CF (㏈) + or DCF(㏈)
3. Margin(㏈) = Limit(㏈㎶/m) - Field strength(㏈㎶/m)
4. Emissions below 18 ㎓ were measured at a 3 meter test distance while emissions above 18 ㎓ were measured at a 1 meter test distance with the application of a distance correction factor.
5. The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z, it was determined that **X orientation** was worst-case orientation; therefore, all final radiated testing was performed with the EUT in **X orientation.**
6. The worst-case emissions are reported however emissions whose levels were not within 20 ㏈ of respective limits were not reported.
7. According to exploratory test no any obvious emission were detected from 9 ㎑ to 30 ㎒. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30 m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

Limit

According to 15.209(a), for an intentional radiator devices, the general required of field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values :

Frequency (㎒)	Distance (Meters)	Radiated (㎶/m)
0.009 ~ 0.490	300	2400/F(㎑)
0.490 ~ 1.705	30	24000/F(㎑)
1.705 ~ 30.0	30	30
30 ~ 88	3	100**
88 ~ 216	3	150**
216 ~ 960	3	200**
Above 960	3	500

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54 ~ 72 ㎒, 76 ~ 88 ㎒, 174 ~ 216 ㎒ or 470 ~ 806 ㎒. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

According to 15.407(b), (b) Undesirable emission limits: Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15–5.25 ㎓ band: all emissions outside of the 5.15–5.35 ㎓ band shall not exceed an e.i.r.p of –27 ㏈m/㎒.
(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band:
i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.
(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 ㎒.
A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 ㎒.
(6) Unwanted emissions below 1 ㎓ must comply with the general field strength limits set forth in § 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in § 15.207.
(7) The provisions of §15.205 apply to intentional radiators operating under this section.
(8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency band edges as the design of the equipment permits.

Duty cycle

Regarding to KDB 789033 D02 v02r01, B)2)b), the maximum duty cycles of all modes were investigated and set the spectrum analyzer as below.

Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T, where T is defined in II.B.1.a), and the number of sweep points across duration T exceeds 100.

For the band 5.150-5.250 ㎓

Test mode	T_{on} time (㎳)	Period (㎳)	Duty cycle (Linear)	Duty cycle (%)	Duty cycle correction factor (㏈)
802.11a	1.44	1.45	0.99	99.31	-
802.11n_HT20	1.34	1.36	0.99	98.53	-
802.11ac_VHT20	1.35	1.36	0.99	99.26	-
802.11ax_HE20	0.68	1.11	0.61	61.26	2.15
802.11n_HT40	0.67	0.68	0.99	98.53	-
802.11ac_VHT40	0.67	0.69	0.97	97.10	0.13
802.11ax_HE40	0.55	0.57	0.96	96.49	0.18
802.11ac_VHT80	0.33	0.35	0.94	94.29	0.27
802.11ax_HE80	0.30	0.31	0.97	96.77	0.13

For the band 5.250-5.350 ㎓

Test mode	T_{on} time (㎳)	Period (㎳)	Duty cycle (Linear)	Duty cycle (%)	Duty cycle correction factor (㏈)
802.11a	1.43	1.45	0.99	98.62	-
802.11n_HT20	1.44	1.45	0.99	99.31	-
802.11ac_VHT20	1.35	1.37	0.99	98.54	-
802.11ax_HE20	0.68	1.11	0.61	61.26	2.15
802.11n_HT40	0.67	0.68	0.99	98.53	-
802.11ac_VHT40	0.67	0.69	0.97	97.10	0.13
802.11ax_HE40	0.55	0.57	0.96	96.49	0.18
802.11ac_VHT80	0.34	0.35	0.97	97.14	0.13
802.11ax_HE80	0.30	0.31	0.97	96.77	0.13