

Straddle Channel : U-NII 1/2a Bands (160 MHz)					Test Result				FCC Limit (dBm)
Mode	Frequency (MHz)	Channel	Band	Data Rate	Measured Power (dBm)		Duty Factor (dB)	Total Power (dBm)	
					Chain 0	Chain 1		All Chain	
802.11ac VHT160	5250	50	U-NII 1	MCS0	15.25	15.58	0.31	18.74	30.00
	5250	50	U-NII 2a	MCS0	14.78	15.10	0.31	18.27	23.98
	5250	50	Combined		18.03	18.35	0.31	21.52	-
802.11ax HE160	5250	50	U-NII 1	MCS0	15.44	15.55	0.23	18.74	30.00
	5250	50	U-NII 2a	MCS0	14.85	14.95	0.23	18.14	23.98
	5250	50	Combined		18.16	18.27	0.23	21.46	-

Straddle Channel : U-NII 1/2a Bands (160 MHz)					Test Result				ISED Limit (dBm)
Mode	Frequency (MHz)	Channel	Band	Data Rate	Measured Power (dBm)		Duty Factor (dB)	Total Power (dBm)	
					Chain 0	Chain 1		All Chain	
802.11ac VHT160	5250	50	U-NII 1	MCS0	14.97	14.53	0.31	18.08	18.65
	5250	50	U-NII 2a	MCS0	14.19	14.12	0.31	17.48	23.98
	5250	50	Combined		17.61	17.34	0.31	20.80	-
802.11ax HE160	5250	50	U-NII 1	MCS0	14.12	14.99	0.23	17.82	18.65
	5250	50	U-NII 2a	MCS0	13.61	14.45	0.23	17.29	23.98
	5250	50	Combined		16.88	17.74	0.23	20.58	-

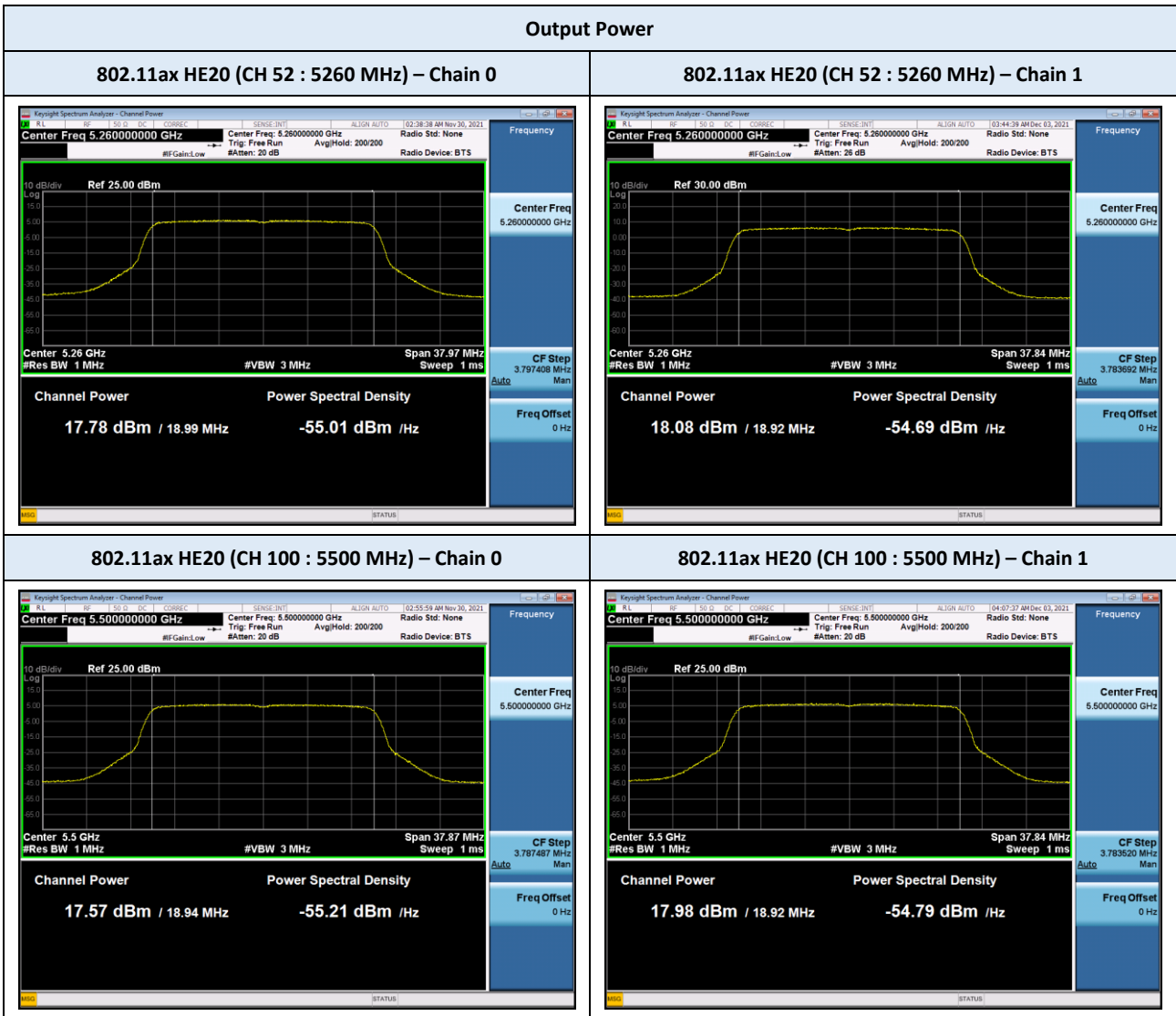
Note :

1. Conducted Output Power Limit :

- U-NII 1 (ISED) : $\text{Min} [10 \log(200\text{mW}), 10+10 \log(99\% \text{OBW})] - G_{\text{ANT, Directional}} = 23.01 \text{ dBm} - 4.36 \text{ dBi} = 18.65 \text{ dBm}$
- U-NII 2a (160 MHz) : $10 \log(250\text{mW}) = 23.98 \text{ dBm}$

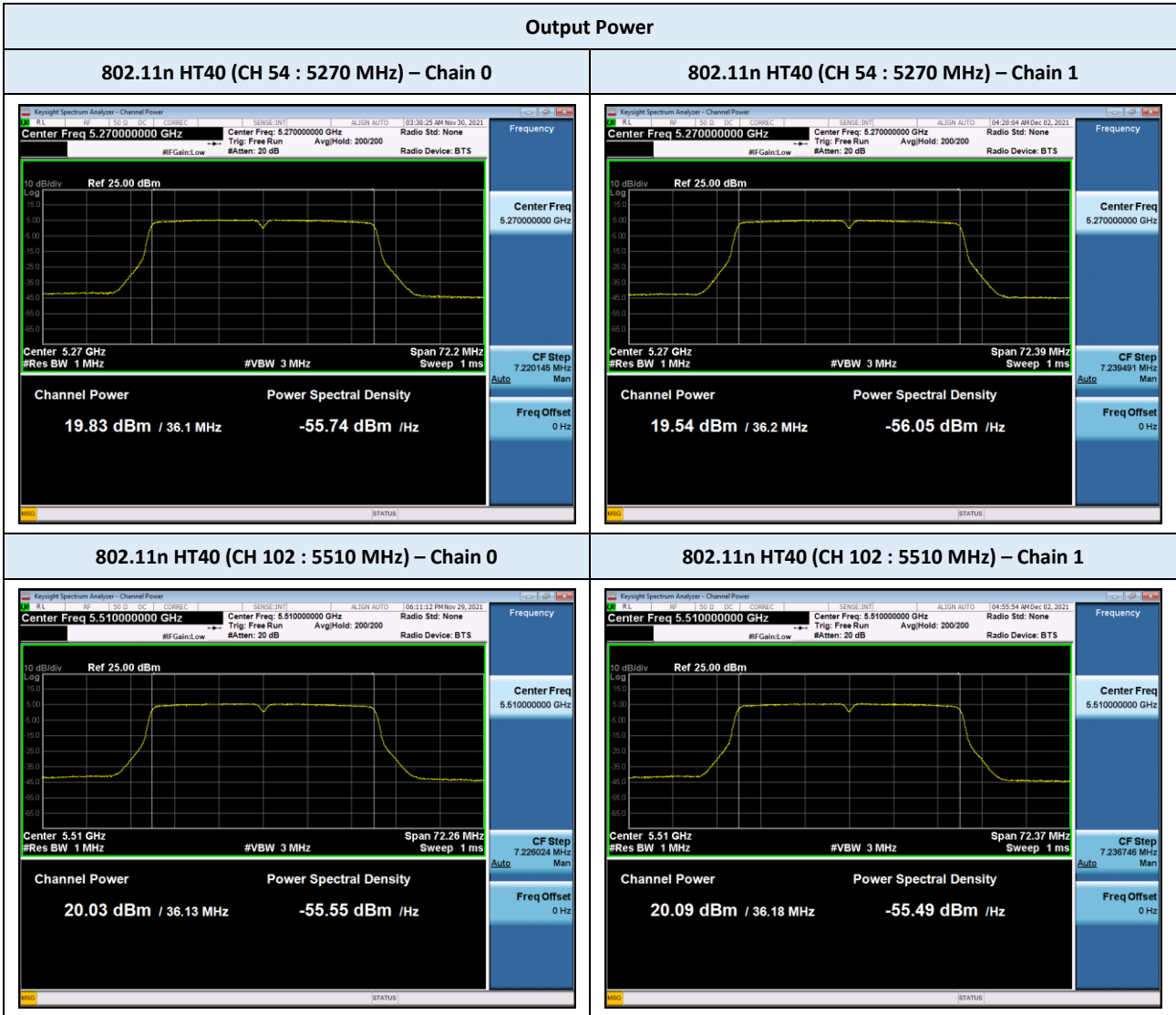
2. The output power results in the table include the spectrum offset, which is a combination loss of the attenuator and the cable used for testing.

TEST PLOTS



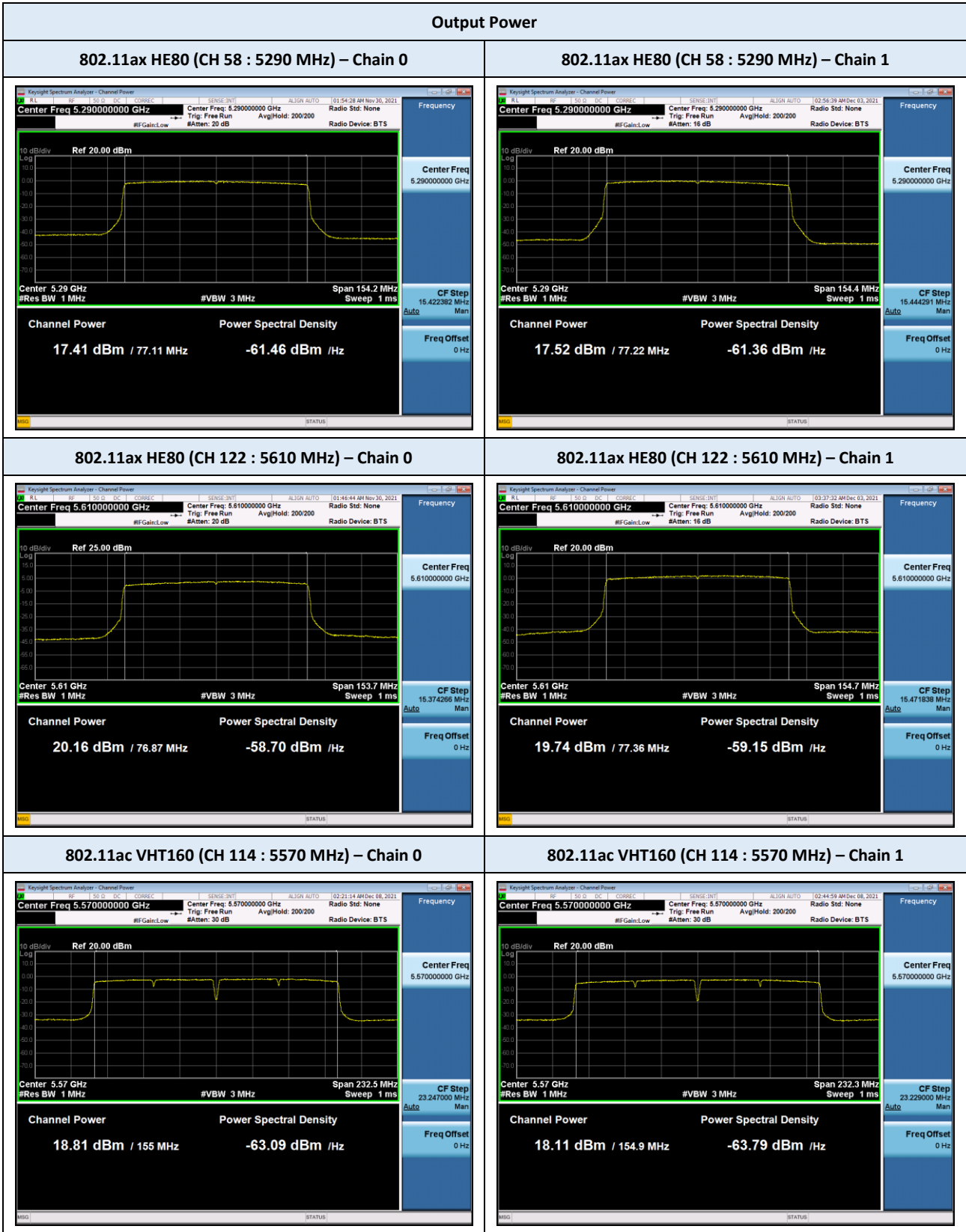
Note :
 The worst plots are reported for each bandwidth mode.

TEST PLOTS



Note :
 The worst plots are reported for each bandwidth mode.

TEST PLOTS

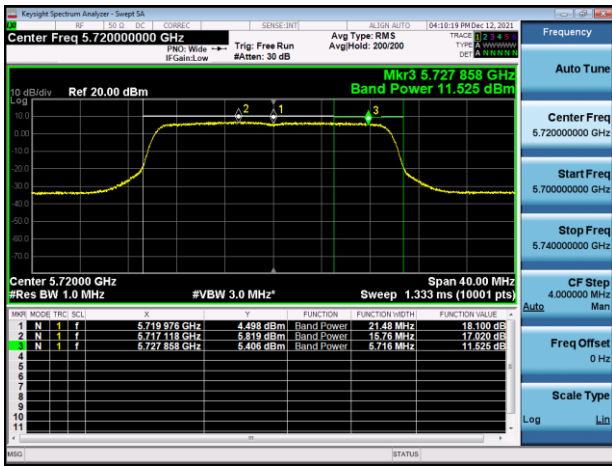


Note :
 The worst plots are reported for each bandwidth mode.

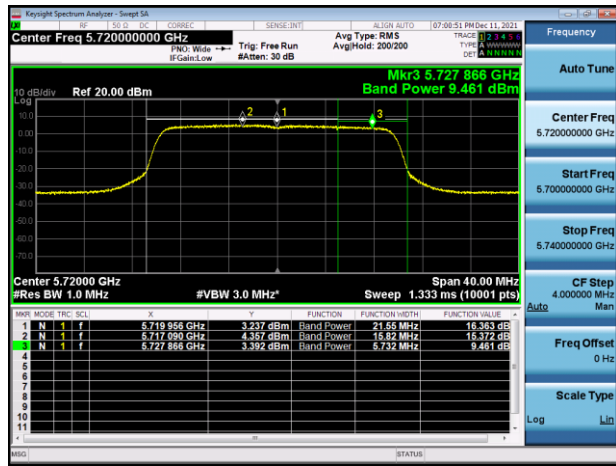
TEST PLOTS

Output Power (Straddle Channels)

802.11ax HE20 (CH 144 : 5720 MHz) – Chain 0



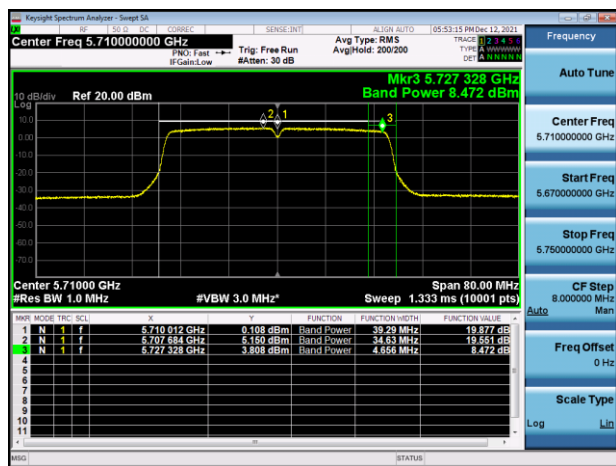
802.11ax HE20 (CH144 : 5720 MHz) – Chain 1



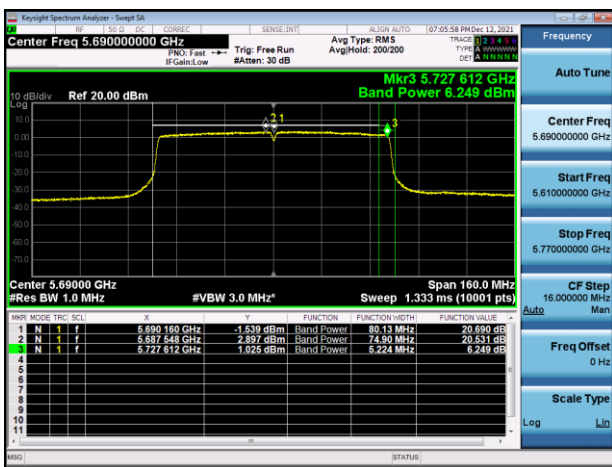
802.11n HT40 (CH 142 : 5710 MHz) – Chain 0



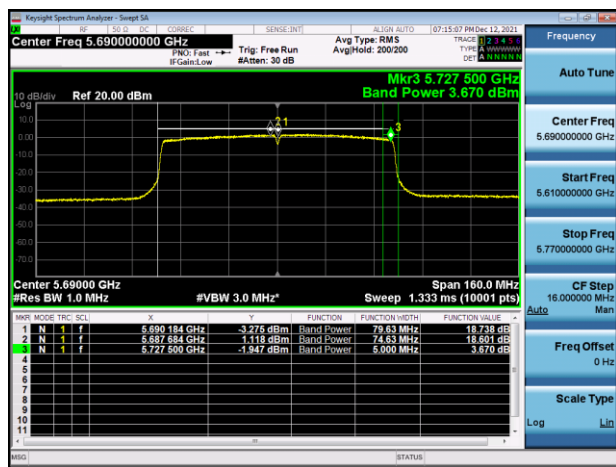
802.11n HT40 (CH 142 : 5710 MHz) – Chain 1



802.11ac VHT80 (CH 138 : 5690 MHz) – Chain 0



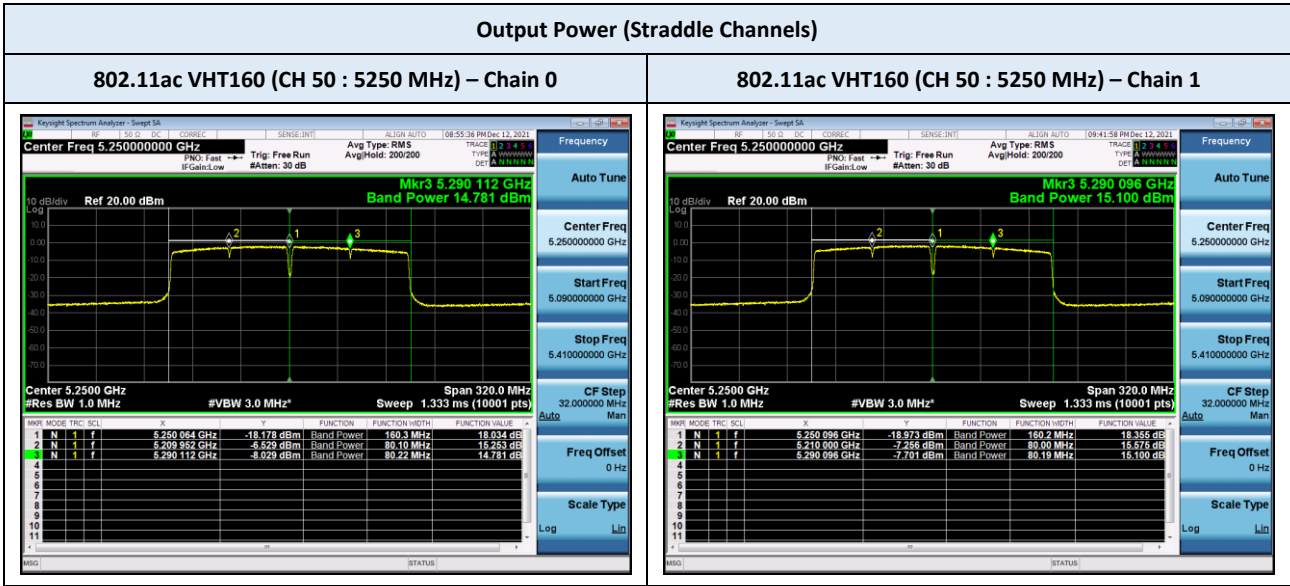
802.11ac VHT80 (CH 138 : 5690 MHz) – Chain 1



Note :

The worst plots are reported for each bandwidth mode.

TEST PLOTS



Note :

The worst plots are reported for each bandwidth mode.

9.4 POWER SPECTRAL DENSITY

U-NII 2 Band (20 MHz)				Test Result				Limit (dBm/MHz)
Mode	Frequency (MHz)	Channel	Data Rate	Measured PSD (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	
				Chain 0	Chain 1		All Chain	
802.11a	5260	52	6 Mbps	5.68	5.64	0.72	9.40	9.63
	5300	60	6 Mbps	5.53	5.49	0.72	9.24	9.63
	5320	64	6 Mbps	5.82	5.04	0.72	9.18	9.63
	5500	100	6 Mbps	5.29	5.65	0.72	9.21	9.63
	5580	116	6 Mbps	5.70	5.55	0.72	9.36	9.63
	5700	140	6 Mbps	5.63	4.54	0.72	8.85	9.63
802.11n HT20	5260	52	MCS0	6.13	6.22	0.39	9.57	9.63
	5300	60	MCS0	5.56	5.24	0.39	8.80	9.63
	5320	64	MCS0	5.67	5.56	0.39	9.01	9.63
	5500	100	MCS0	6.02	5.87	0.39	9.34	9.63
	5580	116	MCS0	5.80	5.88	0.39	9.24	9.63
	5700	140	MCS0	5.87	5.11	0.39	8.91	9.63
802.11ax HE20	5260	52	MCS0	5.60	5.88	0.20	8.95	9.63
	5300	60	MCS0	5.79	5.78	0.20	8.99	9.63
	5320	64	MCS0	5.69	5.18	0.20	8.65	9.63
	5500	100	MCS0	5.68	6.21	0.20	9.16	9.63
	5580	116	MCS0	5.96	5.56	0.20	8.97	9.63
	5700	140	MCS0	6.04	5.65	0.20	9.05	9.63

U-NII 2 Band (40 MHz)				Test Result				Limit (dBm/MHz)
Mode	Frequency (MHz)	Channel	Data Rate	Measured PSD (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	
				Chain 0	Chain 1		All Chain	
802.11n HT40	5270	54	MCS0	5.58	5.26	0.37	8.81	9.63
	5310	62	MCS0	3.54	3.47	0.37	6.88	9.63
	5510	102	MCS0	5.92	5.81	0.37	9.24	9.63
	5550	110	MCS0	5.74	5.14	0.37	8.83	9.63
	5670	134	MCS0	5.76	4.87	0.37	8.72	9.63
802.11ax HE40	5270	54	MCS0	5.43	5.17	0.20	8.51	9.63
	5310	62	MCS0	3.08	3.21	0.20	6.35	9.63
	5510	102	MCS0	5.22	5.04	0.20	8.34	9.63
	5550	110	MCS0	5.09	4.58	0.20	8.05	9.63
	5670	134	MCS0	5.40	4.87	0.20	8.35	9.63

Note :

1. Conducted PSD limit : 11 dBm/MHz – Δ(G_{ANT} exceeding from 6 dBi) = 11 dBm/MHz – (7.37 – 6) dBi = 9.63 dBm/MHz
2. The power spectral density results in the table include the spectrum offset, which is a combination loss of the attenuator and the cable used for testing.

U-NII 2 Band (80 MHz)				Test Result				Limit (dBm/MHz)
Mode	Frequency (MHz)	Channel	Data Rate	Measured PSD (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	
				Chain 0	Chain 1		All Chain	
802.11ac VHT80	5290	58	MCS0	0.33	-1.67	0.40	2.85	9.63
	5530	106	MCS0	2.20	-0.28	0.40	4.54	9.63
	5610	122	MCS0	2.80	0.43	0.40	5.18	9.63
802.11ax HE80	5290	58	MCS0	-0.27	0.13	0.25	3.20	9.63
	5530	106	MCS0	2.14	1.76	0.25	5.22	9.63
	5610	122	MCS0	2.80	2.40	0.25	5.86	9.63

U-NII 2 Band (160 MHz)				Test Result				Limit (dBm/MHz)
Mode	Frequency (MHz)	Channel	Data Rate	Measured PSD (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	
				Chain 0	Chain 1		All Chain	
802.11ac VHT160	5570	114	MCS0	-1.89	-2.64	0.31	1.08	9.63
802.11ax HE160	5570	114	MCS0	-2.11	-2.22	0.23	1.08	9.63

Note :

1. Conducted PSD limit : $11 \text{ dBm/MHz} - \Delta(G_{\text{ANT}} \text{ exceeding from } 6 \text{ dBi}) = 11 \text{ dBm/MHz} - (7.37 - 6) \text{ dBi} = 9.63 \text{ dBm/MHz}$
2. The power spectral density results in the table include the spectrum offset, which is a combination loss of the attenuator and the cable used for testing.

Straddle Channel : U-NII 2c/3 Bands (20 MHz)					Test Result				Limit (dBm/MHz) (dBm/500kHz)
Mode	Frequency (MHz)	Channel	Data Rate	Band	Measured PSD (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	
					Chain 0	Chain 1		All Chain	
802.11a	5720	144	U-NII 2c	6 Mbps	6.54	4.43	0.72	9.35	9.63
	5720	144	U-NII 3	6 Mbps	2.97	0.77	0.72	5.74	28.63
802.11n HT20	5720	144	U-NII 2c	MCS0	6.49	4.46	0.39	8.99	9.63
	5720	144	U-NII 3	MCS0	2.95	0.93	0.39	5.45	28.63
802.11ax HE20	5720	144	U-NII 2c	MCS0	6.73	5.28	0.20	9.27	9.63
	5720	144	U-NII 3	MCS0	2.89	0.94	0.20	5.23	28.63

Straddle Channel : U-NII 2c/3 Bands (40 MHz)					Test Result				Limit (dBm/MHz) (dBm/500kHz)
Mode	Frequency (MHz)	Channel	Data Rate	Band	Measured PSD (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	
					Chain 0	Chain 1		All Chain	
802.11n HT40	5710	142	U-NII 2c	MCS0	6.11	5.89	0.37	9.38	9.63
	5710	142	U-NII 3	MCS0	1.18	0.38	0.37	4.18	28.63
802.11ax HE40	5710	142	U-NII 2c	MCS0	5.99	5.52	0.20	8.97	9.63
	5710	142	U-NII 3	MCS0	0.58	0.05	0.20	3.53	28.63

Straddle Channel : U-NII 2c/3 Bands (80 MHz)					Test Result				Limit (dBm/MHz) (dBm/500kHz)
Mode	Frequency (MHz)	Channel	Data Rate	Band	Measured PSD (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	
					Chain 0	Chain 1		All Chain	
802.11ac VHT80	5690	138	U-NII 2c	MCS0	3.49	2.00	0.40	6.21	9.63
	5690	138	U-NII 3	MCS0	-1.96	-4.38	0.40	0.40	28.63
802.11ax HE80	5690	138	U-NII 2c	MCS0	3.32	2.20	0.25	6.06	9.63
	5690	138	U-NII 3	MCS0	-2.33	-4.42	0.25	0.02	28.63

Note :

1. Conducted PSD limit :

- U-NII 2c : $11 \text{ dBm/MHz} - \Delta(G_{\text{ANT}} \text{ exceeding from } 6 \text{ dBi}) = 11 \text{ dBm/MHz} - (7.37 - 6) \text{ dBi} = 9.63 \text{ dBm/MHz}$
- U-NII 3 : $30 \text{ dBm/500kHz} - \Delta(G_{\text{ANT}} \text{ exceeding from } 6 \text{ dBi}) = 30 \text{ dBm/500kHz} - (7.37 - 6) \text{ dBi} = 28.63 \text{ dBm/500kHz}$

2. The power spectral density results in the table include the spectrum offset, which is a combination loss of the attenuator and the cable used for testing.

Straddle Channel : U-NII 1/2a Bands (160 MHz)					Test Result				FCC Limit (dBm/MHz)
Mode	Frequency (MHz)	Channel	Data Rate	Band	Measured PSD (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	
					Chain 0	Chain 1		All Chain	
802.11ac VHT160	5250	50	U-NII 1	MCS0	-1.27	-1.29	0.40	2.13	15.63
	5250	50	U-NII 2a	MCS0	-1.16	-0.85	0.40	2.40	9.63
802.11ax HE160	5250	50	U-NII 1	MCS0	-1.48	-1.10	0.25	1.98	15.63
	5250	50	U-NII 2a	MCS0	-1.35	-0.64	0.25	2.29	9.63

Straddle Channel : U-NII 1/2a Bands (160 MHz)					Test Result				ISED Limit (dBm/MHz)
Mode	Frequency (MHz)	Channel	Data Rate	Band	Measured PSD (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	
					Chain 0	Chain 1		All Chain	
802.11ac VHT160	5250	50	U-NII 1	MCS0	-1.84	-1.94	0.40	1.52	2.63
	5250	50	U-NII 2a	MCS0	-1.74	-1.95	0.40	1.57	9.63
802.11ax HE160	5250	50	U-NII 1	MCS0	-2.65	-1.71	0.25	1.11	2.63
	5250	50	U-NII 2a	MCS0	-2.68	-1.71	0.25	1.10	9.63

Note :

1. Conducted PSD limit (FCC) :
 - U-NII 1 : $17 \text{ dBm/MHz} - \Delta(G_{\text{ANT}} \text{ exceeding from } 6 \text{ dBi}) = 17 \text{ dBm/MHz} - (7.37 - 6) \text{ dBi} = 15.63 \text{ dBm/MHz}$
 - U-NII 2a : $11 \text{ dBm/MHz} - \Delta(G_{\text{ANT}} \text{ exceeding from } 6 \text{ dBi}) = 11 \text{ dBm/MHz} - (7.37 - 6) \text{ dBi} = 9.63 \text{ dBm/MHz}$
2. Conducted PSD limit (ISED) : Indoor use
 - U-NII 1 : $10 \text{ dBm/MHz} - G_{\text{ANT}} = 10 \text{ dBm/MHz} - 7.37 \text{ dBi} = 2.63 \text{ dBm/MHz}$
 - U-NII 2a : $11 \text{ dBm/MHz} - \Delta(G_{\text{ANT}} \text{ exceeding from } 6 \text{ dBi}) = 11 \text{ dBm/MHz} - (7.37 - 6) \text{ dBi} = 9.63 \text{ dBm/MHz}$
3. The power spectral density results in the table include the spectrum offset, which is a combination loss of the attenuator and the cable used for testing.

TEST PLOTS



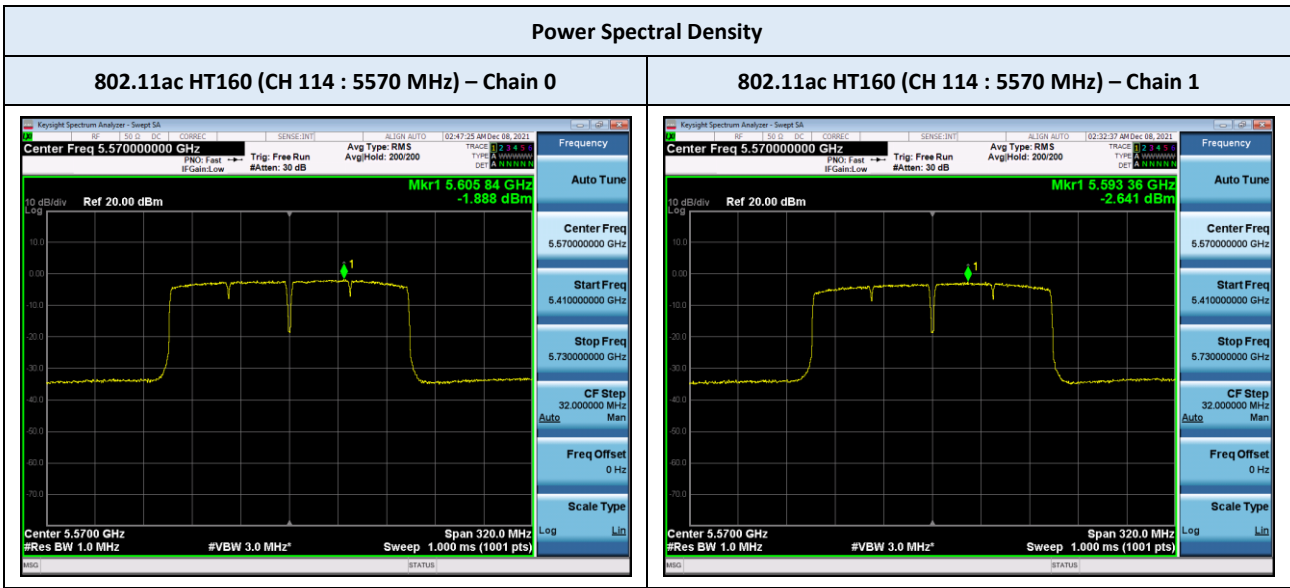
Note :
The worst plots are reported for each bandwidth mode.

TEST PLOTS



Note :
The worst plots are reported for each bandwidth mode.

TEST PLOTS



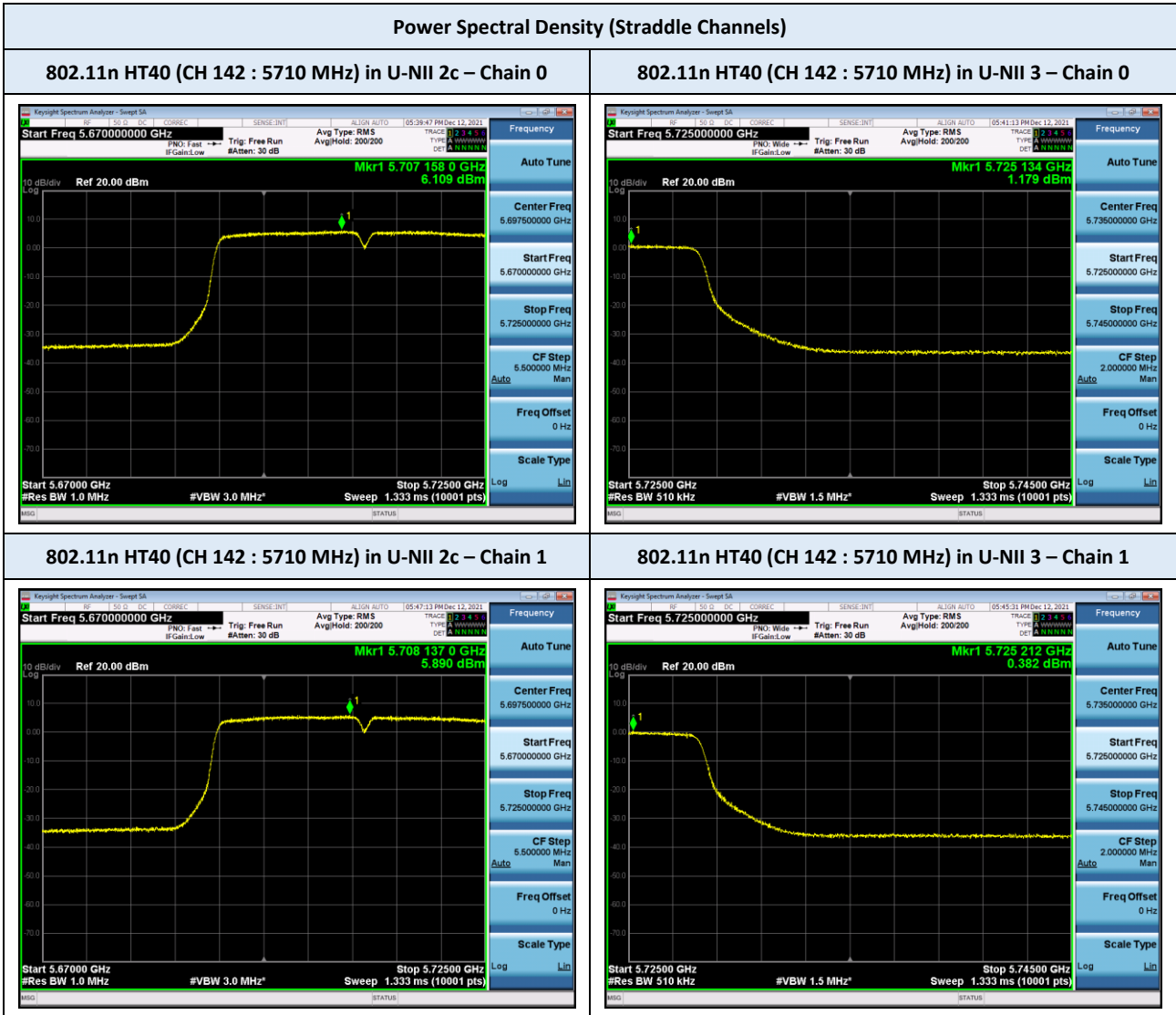
Note :
The worst plots are reported for each bandwidth mode.

TEST PLOTS



Note :
The worst plots are reported for each bandwidth mode.

TEST PLOTS



Note :
The worst plots are reported for each bandwidth mode.

TEST PLOTS

Power Spectral Density (Straddle Channels)

802.11ac VHT80 (CH 138 : 5690 MHz) in U-NII 2c – Chain 0



802.11ac VHT80 (CH 138 : 5690 MHz) in U-NII 3 – Chain 0



802.11ac VHT80 (CH 138 : 5690 MHz) in U-NII 2c – Chain 1



802.11ac VHT80 (CH 138 : 5690 MHz) in U-NII 3 – Chain 0



Note :
The worst plots are reported for each bandwidth mode.

TEST PLOTS

Power Spectral Density (Straddle Channels)

802.11ac VHT160 (CH 114 : 5570 MHz) in U-NII 1 – Chain 0



802.11ac VHT160 (CH 114 : 5570 MHz) in U-NII 2a – Chain 0



802.11ac VHT160 (CH 114 : 5570 MHz) in U-NII 1 – Chain 1



802.11ac VHT160 (CH 114 : 5570 MHz) in U-NII 2a – Chain 1



Note :
The worst plots are reported for each bandwidth mode.

9.5 FREQUENCY STABILITY

Operating Band : U-NII Band 2a
 Operating Frequency : 5,260,000,000 Hz (CH 52)
 Reference Voltage : 5 V d.c.

Voltage (%)	Power (V d.c.)	Temp (°C)	Frequency error (ppm)			
			0 minutes	2 minutes	5 minutes	10 minutes
100%	5.0	+20 (Ref)	6.02	6.71	7.25	7.56
100%		-30	14.66	14.23	13.98	13.85
100%		-20	15.94	16.23	16.43	16.52
100%		-10	16.93	16.89	16.80	16.73
100%		0	15.90	15.56	15.18	14.92
100%		+10	13.28	12.63	12.07	11.79
100%		+30	5.02	4.45	4.16	3.97
100%		+40	2.05	1.41	0.90	0.53
100%		+50	-0.98	-1.24	-1.48	-1.71
115%	5.8	+20	9.92	9.06	8.35	7.98
85%	4.3	+20	7.94	7.88	7.87	7.74

Operating Band : U-NII Band 2c
 Operating Frequency : 5,500,000,000 Hz (CH 100)
 Reference Voltage : 5 V d.c.

Voltage (%)	Power (V d.c.)	Temp (°C)	Frequency error (ppm)			
			0 minutes	2 minutes	5 minutes	10 minutes
100%	5.0	+20 (Ref)	7.50	7.56	7.64	7.69
100%		-30	14.85	14.43	14.04	13.93
100%		-20	16.01	16.31	16.46	16.53
100%		-10	16.94	16.87	16.80	16.75
100%		0	15.97	15.52	15.22	14.97
100%		+10	13.53	12.81	12.21	11.84
100%		+30	6.85	5.59	4.86	4.25
100%		+40	2.48	1.64	1.04	0.69
100%		+50	-0.79	-1.41	-1.72	-1.82
115%	5.8	+20	7.68	7.70	7.69	7.71
85%	4.3	+20	7.69	7.69	7.70	7.75

Note:

According to the results of the frequency stability test above, the frequency deviation measured are very small. The channels at the band edge should remain in-band when the maximum measured frequency error noted during the frequency stability tests is applied. Therefore, the Radio frequency should remain in-band during operation over the temperature and voltage range as tested.

9.6 RADIATED SPURIOUS EMISSIONS

Frequency Range : Below 1 GHz

Test Mode 802.11a : TX mode
 Operating Frequency 5260 MHz (CH 52)

Frequency (MHz)	Polarization	Reading (dBuV)	Corr. ¹⁾ (dB)	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Measurement Type
38.861	V	38.2	-6.1	32.1	40	7.9	QP
55.403	V	49.9	-13.5	36.4	40	3.6	QP
107.855	V	42.2	-7.6	34.6	43.5	8.9	QP
249.995	V	35.2	-7.9	27.3	46	18.7	QP
250.010	H	35.3	-7.9	27.4	46	18.6	QP

Test Mode 802.11a : TX mode
 Operating Frequency 5300 MHz (CH 60)

Frequency (MHz)	Polarization	Reading (dBuV)	Corr. ¹⁾ (dB)	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Measurement Type
37.884	V	36.0	-5.5	30.5	40	9.5	QP
55.545	V	49.5	-13.4	36.1	40	3.9	QP
106.626	V	41.6	-7.7	33.9	43.5	9.6	QP
161.106	V	36.1	-7.1	29.0	43.5	14.5	QP
250.004	V	34.7	-7.9	26.8	46	19.2	QP
250.007	H	37.0	-7.9	29.1	46	16.9	QP
500.011	H	33.2	-2.2	31.0	46	15.0	QP

Test Mode 802.11a : TX mode
 Operating Frequency 5320 MHz (CH 64)

Frequency (MHz)	Polarization	Reading (dBuV)	Corr. ¹⁾ (dB)	Total (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Measurement Type
39.274	V	37.7	-6.4	31.3	40	8.7	QP
55.628	V	49.2	-13.4	35.8	40	4.2	QP
107.519	V	42.7	-7.6	35.1	43.5	8.4	QP
161.944	V	36.8	-7.2	29.6	43.5	13.9	QP
249.991	H	36.1	-7.9	28.2	46	17.8	QP
249.999	V	35.7	-7.9	27.8	46	18.2	QP
499.998	H	29.7	-2.2	27.5	46	18.5	QP

Note(s) :

1. Correction Factor: Antenna Factor + Cable loss + Pre-amplifier Gain