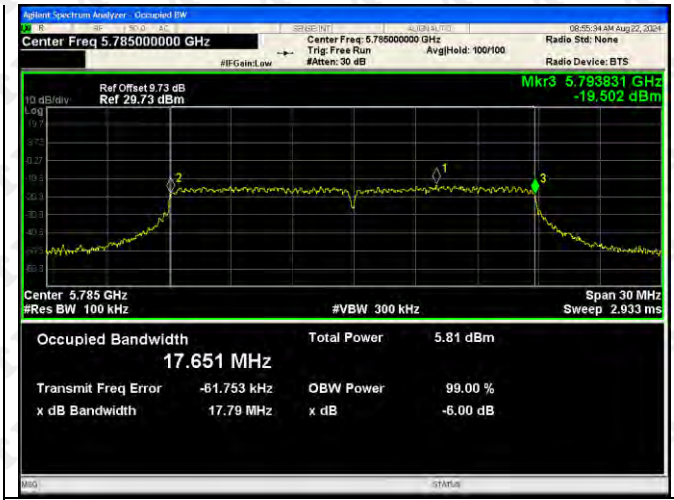
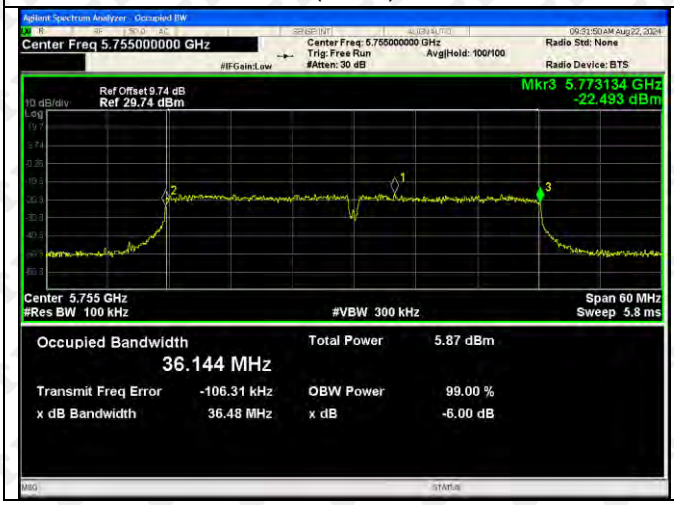
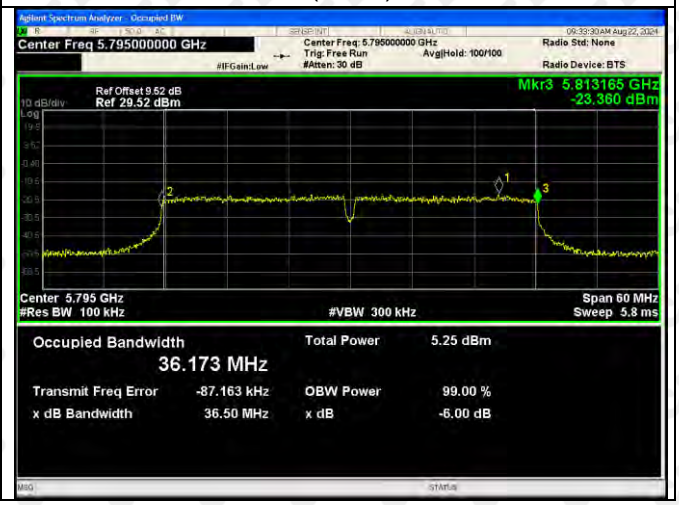


802.11n(HT40)-5795

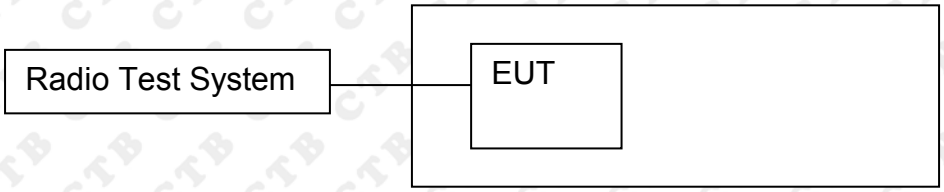
802.11n(HT40)-5825





11. POWER SPECTRAL DENSITY

11.1 Block Diagram Of Test Setup



11.2 Limit

(1) For the band 5.15-5.25 GHz.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

11.3 Test procedure

According to KDB789033 D02v02r01 sectionE, the following is the measurement procedure.

For devices operating in the bands 5.15−5.25 GHz, 5.25−5.35 GHz, and 5.47−5.725 GHz, the preceding procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in Section 15.407(a)(5). For devices operating in the band 5.725−5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:
a) Set RBW ≥ 1/*T*, where *T* is defined in II.B.I.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the

measured result, whereas RBW (<500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10 log (1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.
Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the II.F.5.c) and II.F.5.d), since RBW=100 kHz is available on nearly all spectrum analyzers.

11.4 Test Result

5150-5250MHz:MHz
ANT1+ANT2

Test mode	Test Channel (MHz)	PSD [dBm/MHz] ANT 1	PSD [dBm/MHz] ANT 2	PSD [dBm/MHz] Total	Limit (dBm)	Result
802.11a	5180	-11.091	-11.093	/	11	Pass
	5200	-11.076	-10.902	/	11	Pass
	5240	-8.978	-10.393	/	11	Pass
802.11n(HT20)	5180	-11.127	-11.461	-8.280	11	Pass
	5200	-12.417	-11.632	-8.996	11	Pass
	5240	-10.636	-10.871	-7.742	11	Pass
802.11n(HT40)	5190	-15.700	-15.559	-12.619	11	Pass
	5230	-15.565	-15.132	-12.333	11	Pass
802.11ac(VH20)	5210	-17.830	-18.352	-15.073	11	Pass
	5180	-12.657	-11.450	-9.001	11	Pass
	5200	-10.592	-11.509	-8.016	11	Pass
802.11ac(VH40)	5240	-9.358	-11.008	-7.095	11	Pass
	5190	-15.470	-15.597	-12.523	11	Pass
802.11ac(VH80)	5230	-13.526	-15.339	-11.328	11	Pass

5250-5350 MHzMHz
ANT1+ANT2

Test mode	Test Channel (MHz)	PSD [dBm/MHz] ANT 1	PSD [dBm/MHz] ANT 2	PSD [dBm/MHz] Total	Limit (dBm)	Result
802.11a	5260	-11.751	-11.442	/	11	Pass
	5280	-11.185	-11.470	/	11	Pass
	5320	-11.201	-10.703	/	11	Pass
802.11n(HT20)	5260	-12.257	-11.634	-8.924	11	Pass
	5280	-12.313	-11.577	-8.919	11	Pass
	5320	-12.668	-11.139	-8.826	11	Pass
802.11n(HT40)	5270	-14.856	-14.654	-11.744	11	Pass
	5310	-15.413	-14.315	-11.819	11	Pass
802.11ac(VH20)	5260	-17.964	-18.154	-15.048	11	Pass
	5280	-11.537	-11.762	-8.638	11	Pass
	5320	-12.571	-11.475	-8.978	11	Pass
802.11ac(VH40)	5270	-12.186	-11.138	-8.620	11	Pass
	5310	-14.694	-14.743	-11.708	11	Pass
802.11ac(VH80)	5290	-14.368	-14.318	-11.333	11	Pass

5470-5725MHz:
ANT1+ANT2

Test mode	Test Channel (MHz)	PSD [dBm/MHz] ANT 1	PSD [dBm/MHz] ANT 2	PSD [dBm/MHz] Total	Limit (dBm)	Result
802.11a	5500	-11.307	-10.805	/	30	Pass
	5580	-9.541	-10.647	/	30	Pass
	5700	-10.973	-10.563	/	30	Pass
802.11n(HT20)	5500	-10.795	-11.221	-7.992	30	Pass
	5580	-11.183	-11.714	-8.430	30	Pass
	5700	-11.168	-11.114	-8.131	30	Pass
802.11n(HT40)	5510	-15.721	-14.54	-12.080	30	Pass
	5670	-14.756	-14.068	-11.388	30	Pass
802.11ac(VH20)	5530	-17.984	-17.841	-14.902	30	Pass
	5500	-11.619	-10.942	-8.257	30	Pass
	5580	-10.006	-11.094	-7.506	30	Pass
802.11ac(VH40)	5700	-10.855	-10.834	-7.834	30	Pass
	5510	-15.198	-14.496	-11.823	30	Pass
802.11ac(VH80)	5670	-13.059	-12.868	-9.952	30	Pass

5725-5850MHz:
ANT1+ANT2

Test mode	Test Channel (MHz)	PSD [dBm/MHz] ANT 1	PSD [dBm/MHz] ANT 2	PSD [dBm/MHz] Total	Limit (dBm)	Result
802.11a	5745	-13.741	-14.725	/	30	Pass
	5785	-14.527	-15.191	/	30	Pass
	5825	-13.654	-13.793	/	30	Pass
802.11n(HT20)	5745	-14.135	-14.446	-11.277	30	Pass
	5785	-13.882	-14.574	-11.204	30	Pass
	5825	-15.761	-13.771	-11.643	30	Pass
802.11n(HT40)	5755	-17.799	-17.565	-14.670	30	Pass
	5795	-17.700	-18.302	-14.980	30	Pass
802.11ac(VH20)	5745	-20.980	-20.841	-17.900	30	Pass
	5785	-14.229	-14.545	-11.374	30	Pass
	5825	-13.940	-14.697	-11.292	30	Pass
802.11ac(VH40)	5755	-14.293	-14.080	-11.175	30	Pass
	5795	-18.293	-17.586	-14.915	30	Pass
802.11ac(VH80)	5775	-19.172	-18.360	-15.737	30	Pass

Test Graph:
5150-5250MHz
ANT1

802.11a-5180

802.11a-5200

802.11a-5240

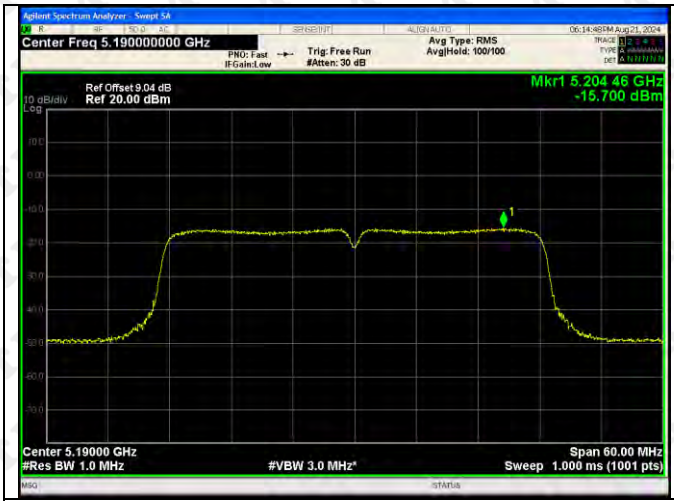
802.11ac(VH20)-5180

802.11ac(VH20)-5200

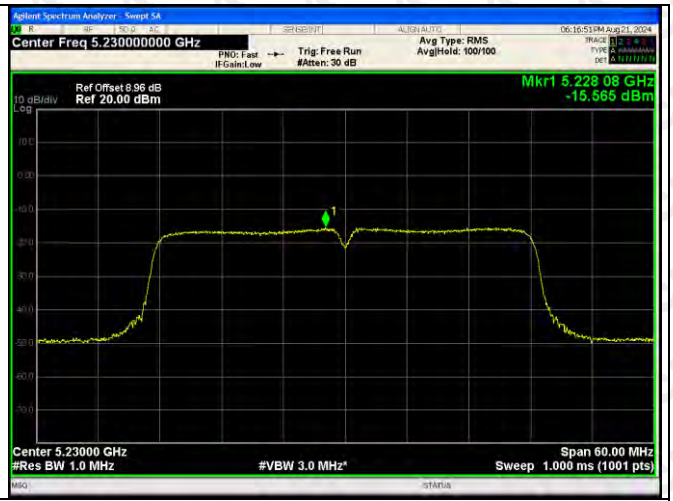
802.11ac(VH20)-5240

802.11ac(VH40)-5190

802.11ac(VH40)-5230



802.11ac(VH80)-5210



802.11n(HT20)-5180

802.11n(HT20)-5200

802.11n(HT20)-5240

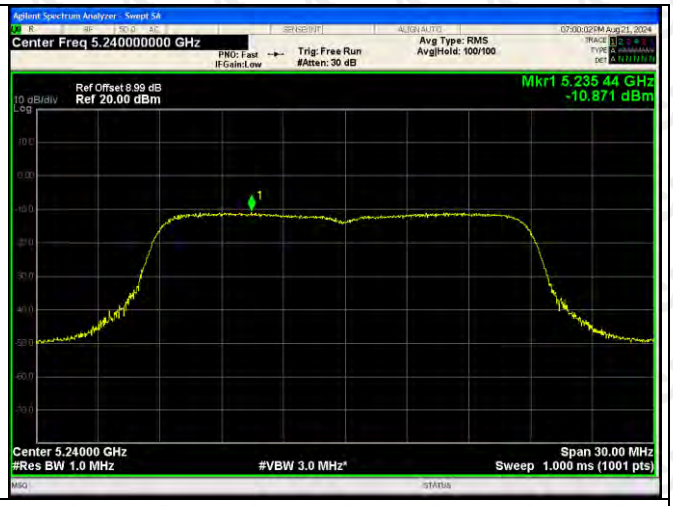
802.11n(HT40)-5190

802.11n(HT40)-5230

ANT2

802.11a-5180	802.11a-5200
	
802.11a-5240	802.11ac(VH20)-5180
	
802.11ac(VH20)-5200	802.11ac(VH20)-5240

802.11ac(VH40)-5190



802.11ac(VH40)-5230

802.11ac(VH80)-5210

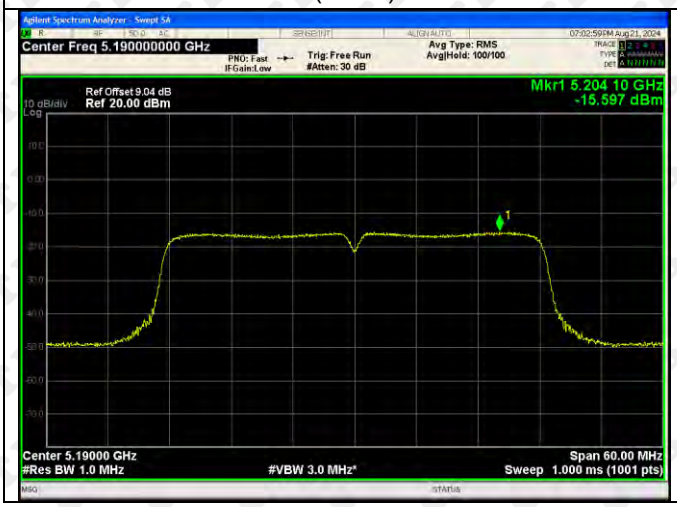
802.11n(HT20)-5180

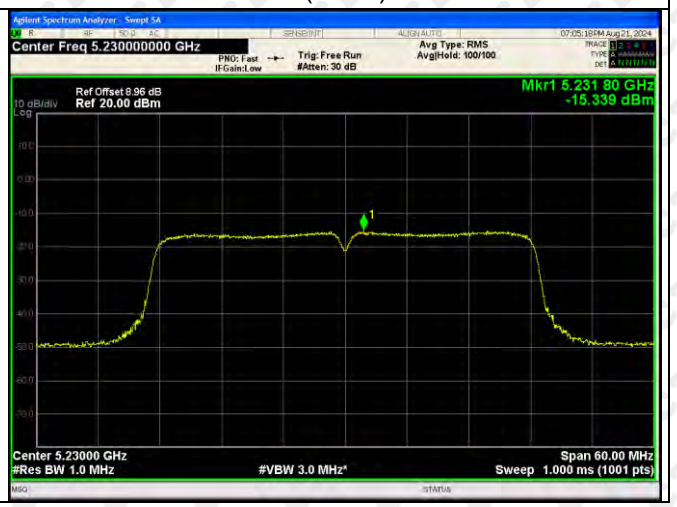
802.11n(HT20)-5200

802.11n(HT20)-5240

802.11n(HT40)-5190

802.11n(HT40)-5230

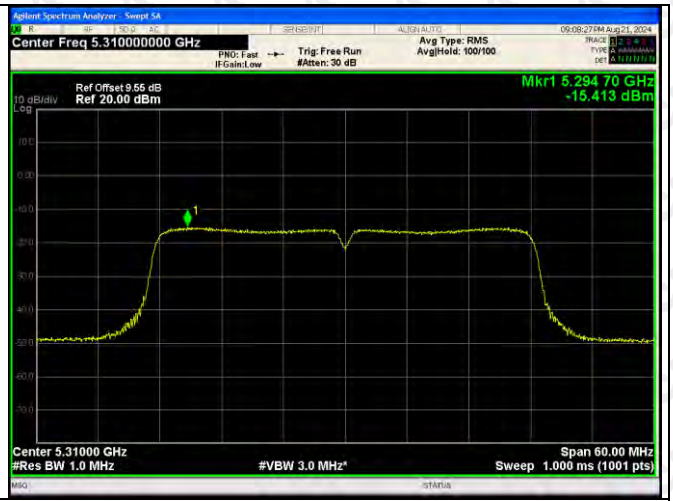




5250-5350MHz
ANT1

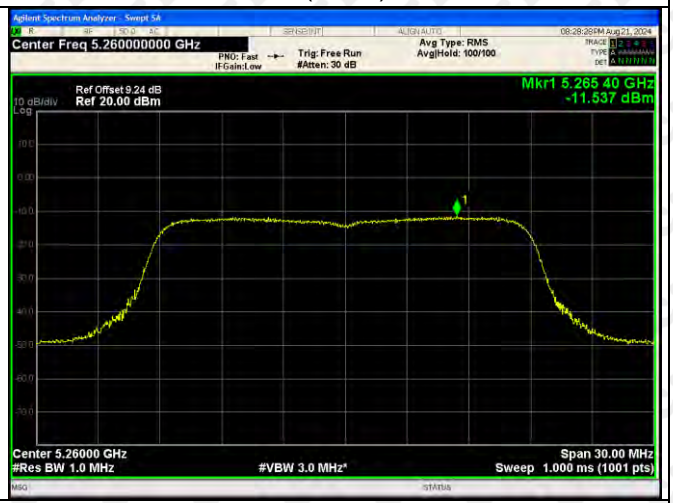
802.11a-5260	802.11a-5280
	
802.11a-5320	802.11ac(VH20)-5260
	
802.11ac(VH20)-5280	802.11ac(VH20)-5320
	
802.11ac(VH40)-5270	802.11ac(VH40)-5310

802.11ac(VH80)-5290



802.11n(HT20)-5260

802.11n(HT20)-5280



802.11n(HT20)-5320

802.11n(HT40)-5270

802.11n(HT40)-5310

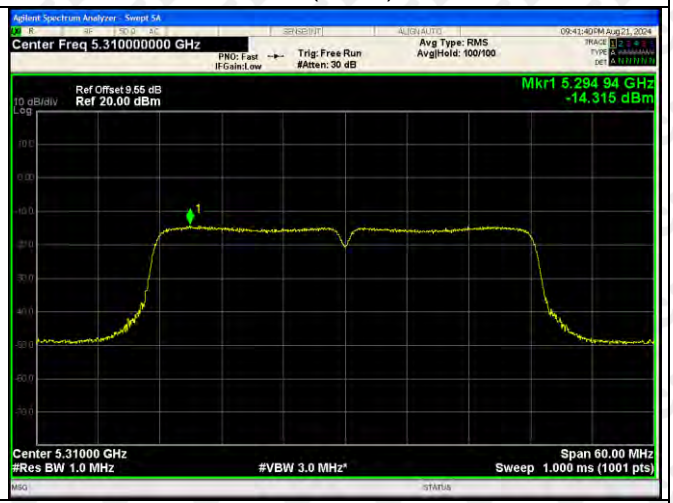
ANT2

802.11a-5260	802.11a-5280
	
802.11a-5320	802.11ac(VH20)-5260
	
802.11ac(VH20)-5280	802.11ac(VH20)-5320

802.11ac(VH40)-5270

802.11ac(VH40)-5310

802.11ac(VH80)-5290



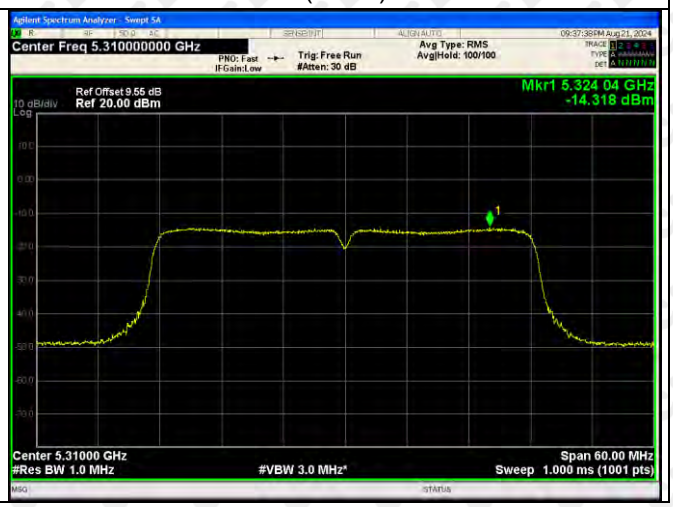
802.11n(HT20)-5260

802.11n(HT20)-5280

802.11n(HT20)-5320

802.11n(HT40)-5270

802.11n(HT40)-5310



5470-5725MHzANT1

802.11a-5500

802.11a-5580

802.11a-5700

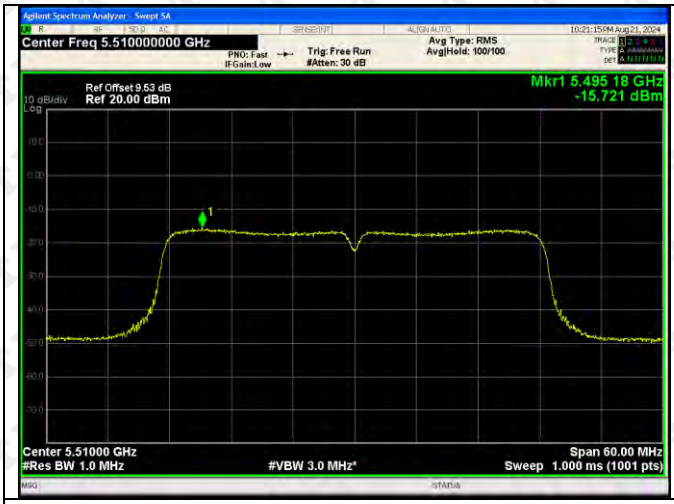
802.11ac(VH20)-5500

802.11ac(VH20)-5580

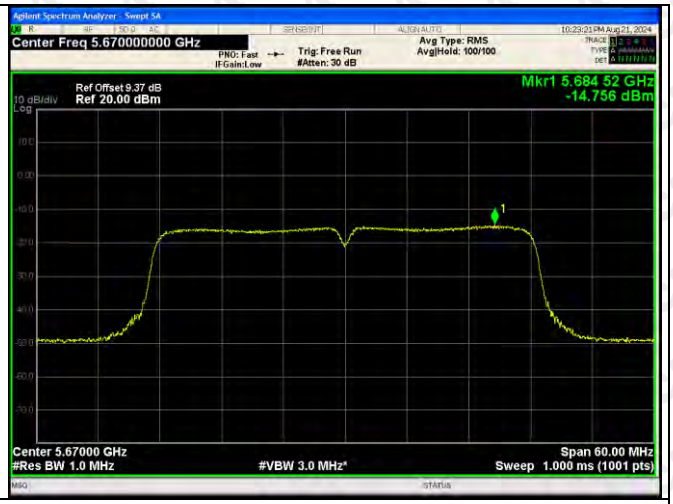
802.11ac(VH20)-5700

802.11ac(VH40)-5510

802.11ac(VH40)-5670



802.11ac(VH80)-5530



802.11n(HT20)-5500

802.11n(HT20)-5580

802.11n(HT20)-5700

802.11n(HT40)-5510

802.11n(HT40)-5670

ANT2

802.11a-5500	802.11a-5580

802.11a-5700	802.11ac(VH20)-5500

802.11ac(VH20)-5580	802.11ac(VH20)-5700

802.11ac(VH40)-5510

802.11ac(VH40)-5670

802.11ac(VH80)-5530

802.11n(HT20)-5500

802.11n(HT20)-5580

802.11n(HT20)-5700

802.11n(HT40)-5510

802.11n(HT40)-5670

5725-5850MHz:
ANT1

802.11a-5745

802.11a-5785

802.11a-5825

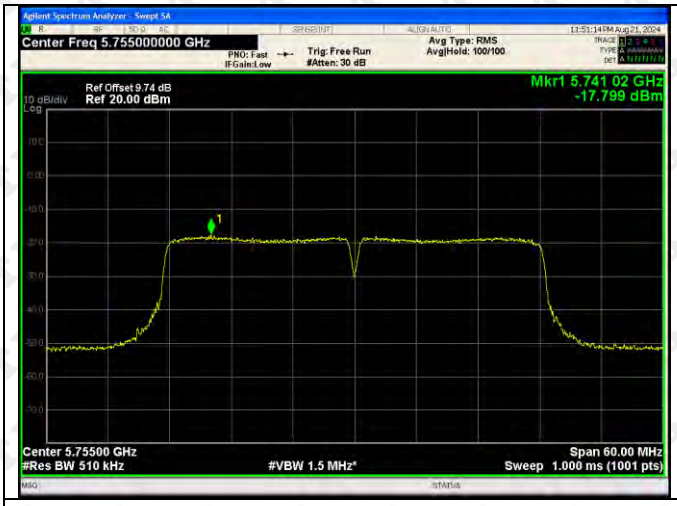
802.11ac(VH20)-5745

802.11ac(VH20)-5785

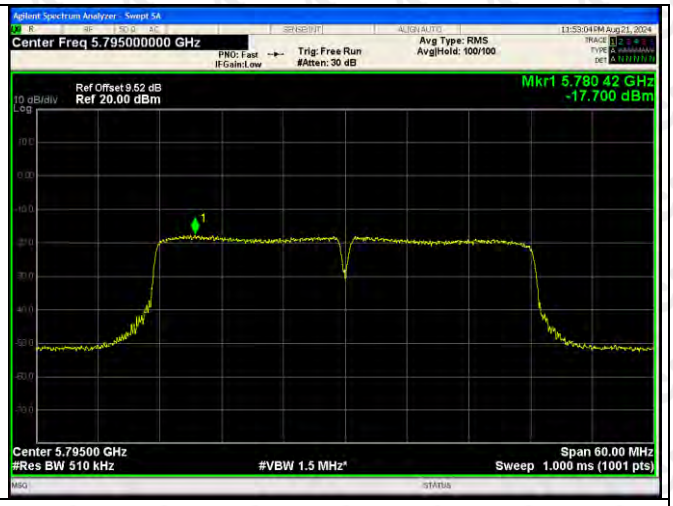
802.11ac(VH20)-5825

802.11ac(VH40)-5755

802.11ac(VH40)-5795



802.11ac(VH80)-5775



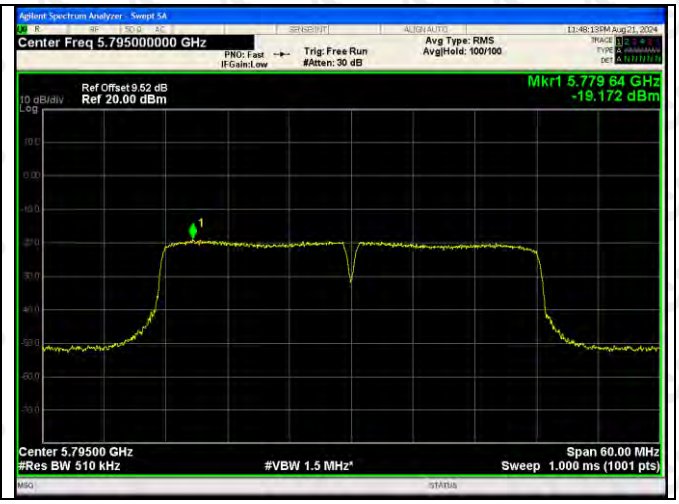
802.11n(HT20)-5745

802.11n(HT20)-5785

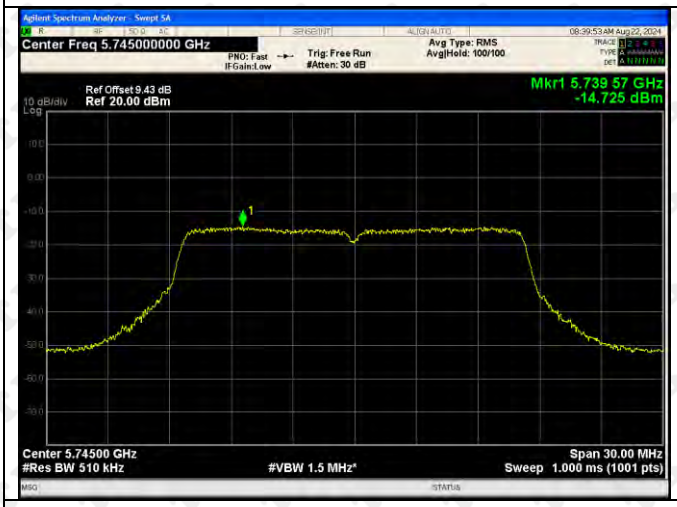
802.11n(HT20)-5825

802.11n(HT40)-5755

802.11n(HT40)-5795



ANT2

802.11a-5745	802.11a-5785
	
802.11a-5825	802.11ac(VH20)-5745
	
802.11ac(VH20)-5785	802.11ac(VH20)-5825

802.11ac(VH40)-5755

802.11ac(VH40)-5795

802.11ac(VH80)-5775

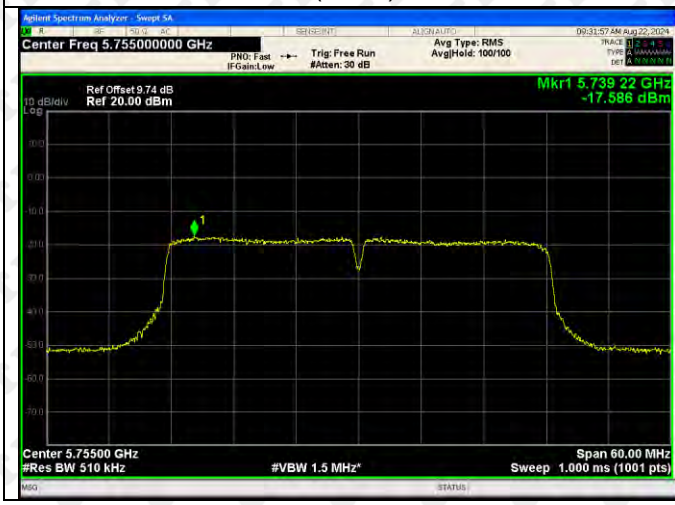
802.11n(HT20)-5745

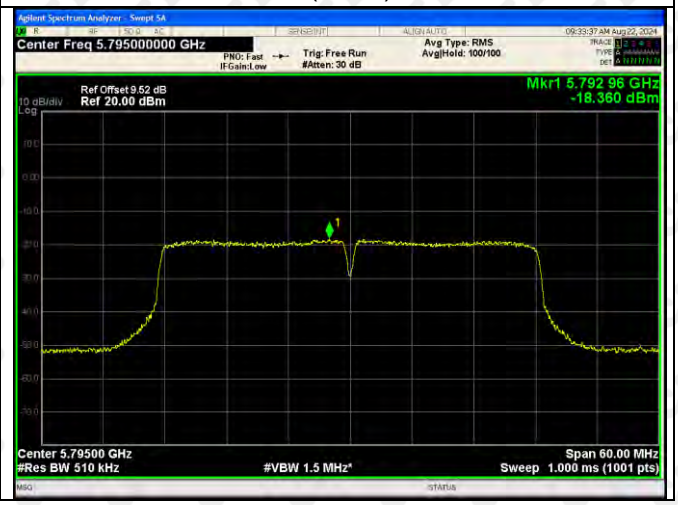
802.11n(HT20)-5785

802.11n(HT20)-5825

802.11n(HT40)-5755

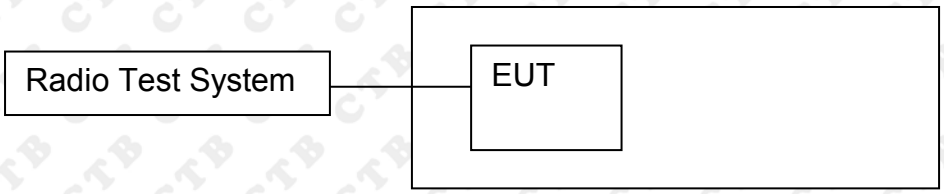
802.11n(HT40)-5795





12. FREQUENCY STABILITY

12.1 Block Diagram Of Test Setup



12.2 Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

12.3 Test procedure

1. The EUT was placed inside temperature chamber and powered and powered by nominal DC voltage.

2. Set EUT as normal operation.

3. Turn the EUT on and couple its output to spectrum.

4. Turn the EUT off and set the chamber to the highest temperature specified.

5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT and measure the operating frequency.

6. Repeat step with the temperature chamber set to the lowest temperature.

12.4 Test Result

TX Frequency (5150-5250MHz)

ANT1

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5180.0138	5180	0.0138	2.6722
		V max (V)	132	5180.0271	5180	0.0271	5.2262
		V min (V)	108	5180.0809	5180	0.0809	15.6146
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5180.0534	5180	0.0534	10.3063
		T (°C)	10	5180.0187	5180	0.0187	3.6040
		T (°C)	20	5180.0290	5180	0.0290	5.5981
		T (°C)	30	5180.0508	5180	0.0508	9.8134
		T (°C)	40	5180.0422	5180	0.0422	8.1524
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5200.0170	5200	0.0170	3.2641
		V max (V)	132	5200.0364	5200	0.0364	7.0026
		V min (V)	108	5200.0314	5200	0.0314	6.0426
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5200.0092	5200	0.0092	1.7631
		T (°C)	10	5200.0224	5200	0.0224	4.3061
		T (°C)	20	5200.0050	5200	0.0050	0.9601
		T (°C)	30	5200.0411	5200	0.0411	7.9066
		T (°C)	40	5200.0379	5200	0.0379	7.2962
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5240.0522	5240	0.0522	9.9595
		V max (V)	132	5240.0439	5240	0.0439	8.3696
		V min (V)	108	5240.0238	5240	0.0238	4.5444
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5240.0067	5240	0.0067	1.2718
		T (°C)	10	5240.0241	5240	0.0241	4.5950
		T (°C)	20	5240.0535	5240	0.0535	10.2025
		T (°C)	30	5240.0195	5240	0.0195	3.7277
		T (°C)	40	5240.0274	5240	0.0274	5.2374
Limits				±20ppm			
Result				Complies			

TX Frequency (5250-5350MHz)

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5260MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5260.0225	5260	0.0225	4.2765
		V max (V)	132	5260.0472	5260	0.0472	8.9807
		V min (V)	108	5260.0097	5260	0.0097	1.8463
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5260MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5260.0071	5260	0.0071	1.3449
		T (°C)	10	5260.0666	5260	0.0666	12.6629
		T (°C)	20	5260.0470	5260	0.0470	8.9342
		T (°C)	30	5260.0730	5260	0.0730	13.8844
		T (°C)	40	5260.0068	5260	0.0068	1.2945
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5280MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5280.0595	5280	0.0595	11.2769
		V max (V)	132	5280.0588	5280	0.0588	11.1396
		V min (V)	108	5280.0663	5280	0.0663	12.5648
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5280MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5280.0464	5280	0.0464	8.7844
		T (°C)	10	5280.0331	5280	0.0331	6.2750
		T (°C)	20	5280.0667	5280	0.0667	12.6377
		T (°C)	30	5280.0409	5280	0.0409	7.7476
		T (°C)	40	5280.0840	5280	0.0840	15.9116
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5320MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5320.0171	5320	0.0171	3.2165
		V max (V)	132	5320.0115	5320	0.0115	2.1570
		V min (V)	108	5320.0517	5320	0.0517	9.7105
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5320MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5320.0709	5320	0.0709	13.3252
		T (°C)	10	5320.0027	5320	0.0027	0.5008
		T (°C)	20	5320.0703	5320	0.0703	13.2170
		T (°C)	30	5320.0418	5320	0.0418	7.8550
		T (°C)	40	5320.0631	5320	0.0631	11.8519
Limits				±20ppm			
Result				Complies			

TX Frequency (5470-5725MHz)

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5500MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5500.0290	5500	0.0290	5.2772
		V max (V)	132	5500.0910	5500	0.0910	16.5434
		V min (V)	108	5500.0163	5500	0.0163	2.9630
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5500MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5500.0608	5500	0.0608	11.0511
		T (°C)	10	5500.0497	5500	0.0497	9.0329
		T (°C)	20	5500.0821	5500	0.0821	14.9291
		T (°C)	30	5500.0824	5500	0.0824	14.9875
		T (°C)	40	5500.0336	5500	0.0336	6.1063
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5580MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5580.0131	5580	0.0131	2.3438
		V max (V)	132	5580.0177	5580	0.0177	3.1757
		V min (V)	108	5580.0061	5580	0.0061	1.0974
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5580MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5580.0910	5580	0.0910	16.3014
		T (°C)	10	5580.0665	5580	0.0665	11.9167
		T (°C)	20	5580.0671	5580	0.0671	12.0308
		T (°C)	30	5580.0861	5580	0.0861	15.4246
		T (°C)	40	5580.0728	5580	0.0728	13.0420
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5700MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5700.0225	5700	0.0225	3.9501
		V max (V)	132	5700.0646	5700	0.0646	11.3388
		V min (V)	108	5700.0684	5700	0.0684	12.0028
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5700MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5700.0685	5700	0.0685	12.0168
		T (°C)	10	5700.0414	5700	0.0414	7.2691
		T (°C)	20	5700.0279	5700	0.0279	4.8908
		T (°C)	30	5700.0510	5700	0.0510	8.9495
		T (°C)	40	5700.0164	5700	0.0164	2.8842
Limits				±20ppm			
Result				Complies			

TX Frequency (5725-5850MHz)

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5745.0193	5745	0.0193	3.3646
		V max (V)	132	5745.0873	5745	0.0873	15.1877
		V min (V)	108	5745.0193	5745	0.0193	3.3646
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5745.0483	5745	0.0483	8.3993
		T (°C)	10	5745.0624	5745	0.0624	10.8640
		T (°C)	20	5745.0340	5745	0.0340	5.9147
		T (°C)	30	5745.0186	5745	0.0186	3.2345
		T (°C)	40	5745.0767	5745	0.0767	13.3556
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5785.0796	5785	0.0796	13.7514
		V max (V)	132	5785.0029	5785	0.0029	0.5055
		V min (V)	108	5785.0774	5785	0.0774	13.3786
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5785.0895	5785	0.0895	15.4697
		T (°C)	10	5785.0572	5785	0.0572	9.8867
		T (°C)	20	5785.0263	5785	0.0263	4.5461
		T (°C)	30	5785.0573	5785	0.0573	9.9110
		T (°C)	40	5785.0117	5785	0.0117	2.0151
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5825.0623	5825	0.0623	10.6918
		V max (V)	132	5825.0729	5825	0.0729	12.5076
		V min (V)	108	5825.0622	5825	0.0622	10.6785
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5825.0907	5825	0.0907	15.5758
		T (°C)	10	5825.0380	5825	0.0380	6.5238
		T (°C)	20	5825.0181	5825	0.0181	3.1077
		T (°C)	30	5825.0815	5825	0.0815	13.9987
		T (°C)	40	5825.0595	5825	0.0595	10.2074
Limits				±20ppm			
Result				Complies			

ANT2:

TX Frequency (5150-5250MHz)

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5180.0728	5180	0.0728	14.0582
		V max (V)	132	5180.0661	5180	0.0661	12.7550
		V min (V)	108	5180.0876	5180	0.0876	16.9184
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5180.0857	5180	0.0857	16.5517
		T (°C)	10	5180.0299	5180	0.0299	5.7802
		T (°C)	20	5180.0686	5180	0.0686	13.2483
		T (°C)	30	5180.0560	5180	0.0560	10.8068
		T (°C)	40	5180.0276	5180	0.0276	5.3334
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5200.0126	5200	0.0126	2.4311
		V max (V)	132	5200.0669	5200	0.0669	12.8588
		V min (V)	108	5200.0075	5200	0.0075	1.4451
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5200.0853	5200	0.0853	16.4130
		T (°C)	10	5200.0399	5200	0.0399	7.6672
		T (°C)	20	5200.0483	5200	0.0483	9.2790
		T (°C)	30	5200.0098	5200	0.0098	1.8914
		T (°C)	40	5200.0380	5200	0.0380	7.3137
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5240.0507	5240	0.0507	9.6784
		V max (V)	132	5240.0140	5240	0.0140	2.6669
		V min (V)	108	5240.0700	5240	0.0700	13.3601
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5240.0879	5240	0.0879	16.7657
		T (°C)	10	5240.0309	5240	0.0309	5.8985
		T (°C)	20	5240.0868	5240	0.0868	16.5554
		T (°C)	30	5240.0098	5240	0.0098	1.8611
		T (°C)	40	5240.0592	5240	0.0592	11.2916
Limits				±20ppm			
Result				Complies			

TX Frequency (5250-5350MHz)

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5260MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5260.0385	5260	0.0385	7.3120
		V max (V)	132	5260.0076	5260	0.0076	1.4464
		V min (V)	108	5260.0177	5260	0.0177	3.3653
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5260MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5260.0370	5260	0.0370	7.0376
		T (°C)	10	5260.0258	5260	0.0258	4.8991
		T (°C)	20	5260.0395	5260	0.0395	7.5107
		T (°C)	30	5260.0142	5260	0.0142	2.6913
		T (°C)	40	5260.0793	5260	0.0793	15.0708
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5280MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5280.0661	5280	0.0661	12.5205
		V max (V)	132	5280.0405	5280	0.0405	7.6771
		V min (V)	108	5280.0256	5280	0.0256	4.8536
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5280MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5280.0172	5280	0.0172	3.2555
		T (°C)	10	5280.0864	5280	0.0864	16.3547
		T (°C)	20	5280.0032	5280	0.0032	0.6031
		T (°C)	30	5280.0043	5280	0.0043	0.8143
		T (°C)	40	5280.0844	5280	0.0844	15.9865
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5320MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5320.0763	5320	0.0763	14.3390
		V max (V)	132	5320.0910	5320	0.0910	17.0992
		V min (V)	108	5320.0355	5320	0.0355	6.6720
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5320MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	-20	5320.0858	5320	0.0858	16.1261
		T (°C)	-10	5320.0079	5320	0.0079	1.4898
		T (°C)	0	5320.0067	5320	0.0067	1.2567
		T (°C)	10	5320.0870	5320	0.0870	16.3558
		T (°C)	20	5320.0290	5320	0.0290	5.4579
		T (°C)	30	5320.0921	5320	0.0921	17.3097
		T (°C)	40	5320.0715	5320	0.0715	13.4491
		T (°C)	50	5320.0397	5320	0.0397	7.4712
		T (°C)	60	5320.0585	5320	0.0585	10.9937
		T (°C)	70	5320.0846	5320	0.0846	15.9105
Limits				±20ppm			
Result				Complies			

TX Frequency (5470-5725MHz)

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5500MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5500.0866	5500	0.0866	15.7485
		V max (V)	132	5500.0641	5500	0.0641	11.6474
		V min (V)	108	5500.0486	5500	0.0486	8.8424
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5500MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5500.0509	5500	0.0509	9.2608
		T (°C)	10	5500.0331	5500	0.0331	6.0270
		T (°C)	20	5500.0162	5500	0.0162	2.9520
		T (°C)	30	5500.0708	5500	0.0708	12.8784
		T (°C)	40	5500.0806	5500	0.0806	14.6577
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5580MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5580.0904	5580	0.0904	16.2095
		V max (V)	132	5580.0648	5580	0.0648	11.6195
		V min (V)	108	5580.0775	5580	0.0775	13.8842
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5580MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5580.0728	5580	0.0728	13.0435
		T (°C)	10	5580.0095	5580	0.0095	1.7056
		T (°C)	20	5580.0701	5580	0.0701	12.5664
		T (°C)	30	5580.0574	5580	0.0574	10.2810
		T (°C)	40	5580.0914	5580	0.0914	16.3726
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5700MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5700.0691	5700	0.0691	12.1146
		V max (V)	132	5700.0410	5700	0.0410	7.1878
		V min (V)	108	5700.0710	5700	0.0710	12.4604
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5700MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5700.0536	5700	0.0536	9.4070
		T (°C)	10	5700.0476	5700	0.0476	8.3596
		T (°C)	20	5700.0496	5700	0.0496	8.6998
		T (°C)	30	5700.0289	5700	0.0289	5.0704
		T (°C)	40	5700.0339	5700	0.0339	5.9524
Limits				±20ppm			
Result				Complies			

TX Frequency (5725-5850MHz)

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5745.0266	5745	0.0266	4.6234
		V max (V)	132	5745.0696	5745	0.0696	12.1168
		V min (V)	108	5745.0030	5745	0.0030	0.5187
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5745.0788	5745	0.0788	13.7197
		T (°C)	10	5745.0311	5745	0.0311	5.4177
		T (°C)	20	5745.0605	5745	0.0605	10.5378
		T (°C)	30	5745.0517	5745	0.0517	8.9977
		T (°C)	40	5745.0722	5745	0.0722	12.5617
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5785.0591	5785	0.0591	10.2135
		V max (V)	132	5785.0877	5785	0.0877	15.1564
		V min (V)	108	5785.0170	5785	0.0170	2.9410
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5785.0641	5785	0.0641	11.0815
		T (°C)	10	5785.0204	5785	0.0204	3.5269
		T (°C)	20	5785.0569	5785	0.0569	9.8422
		T (°C)	30	5785.0030	5785	0.0030	0.5238
		T (°C)	40	5785.0895	5785	0.0895	15.4789
		T (°C)	50	5785.0406	5785	0.0406	7.0202
Limits				±20ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	120	5825.0190	5825	0.0190	3.2653
		V max (V)	132	5825.0826	5825	0.0826	14.1856
		V min (V)	108	5825.0316	5825	0.0316	5.4284
Limits				±20ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	120	T (°C)	0	5825.0868	5825	0.0868	14.9031
		T (°C)	10	5825.0123	5825	0.0123	2.1041
		T (°C)	20	5825.0297	5825	0.0297	5.1020
		T (°C)	30	5825.0255	5825	0.0255	4.3770
		T (°C)	40	5825.0118	5825	0.0118	2.0191
Limits				±20ppm			
Result				Complies			

13. OPERATION IN THE ABSENCE OF INFORMATION TO THE TRANSMIT

13.1 Requirement

15.407(c) requirement:
The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signal ling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

13.2 Test Results

Operation in the absence of information to the transmit:

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling
signal of ASK message transmitting from remote device and verify whether it shall resend or
discontinue transmission. (manufacturer declare)

14. ANTENNA REQUIREMENT

15.203 requirement:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.
15.247(b) (4) requirement:
The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is internal antenna and no consideration of replacement. The best case gain of the antenna is

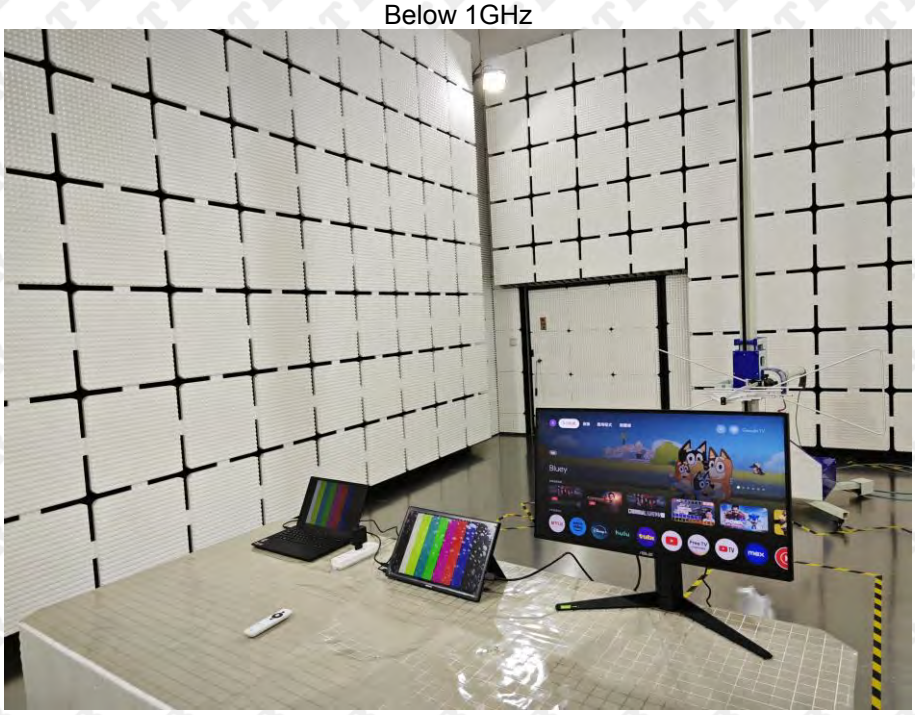
WiFi (5.2G): ANT1: 1.90dBi, ANT2: 1.90dBi, WiFi (5.3G): ANT1: 2.13dBi, ANT2: 2.13dBi

WiFi (5.6G): ANT1: 0.71dBi, ANT2: 0.71dBi, WiFi (5.8G): ANT1: -1.65dBi, ANT2: -1.65dBi

15. EUT TEST SETUP PHOTOGRAPHS

Spurious emissions

Below 1GHz



Above 1GHz

Conducted Emission

※※※※※ END OF REPORT ※※※※※