8.3.Test Results

5180-5240MHz Band:

EUT: Notebook PC		
M/N:RZ09-0239		
Test date: 2017-09-01~10-17	Pressure: 102.1±1.0 kpa	Humidity: 51.1±3.0%
Tested by: Kebo	Test site: RF site	Temperature:22.8±0.6 ℃

Test Mode	Frequency (MHz)	Maximum Conducted output power （dBm）			Limit (dBm)
		ANT0	ANT1	Total	
11a	5180	14.81	15.38	N/A	23.98
	5200	14.51	15.06	N/A	23.98
	5240	14.34	14.36	N/A	23.98
11n HT20	5180	10.80	11.24	14.04	23.98
	5200	10.53	10.89	13.72	23.98
	5240	10.19	10.40	13.31	23.98
11n HT40	5190	10.83	10.77	13.81	23.98
	5230	10.67	10.33	13.51	23.98
11ac VHT20	5180	8.55	8.98	11.78	23.98
	5200	8.18	8.74	11.48	23.98
	5240	8.26	8.25	11.27	23.98
11ac VHT40	5190	8.57	9.00	11.80	23.98
	5230	8.55	8.38	11.48	23.98
11ac VHT80	5210	8.52	9.07	11.81	23.98
Conclusion: PASS					

Note: 1. 11n/ac Mode

Directional Gain= $10\log[(10^{2.91/20}+10^{2.96/20})^2/2]$dBi

= 5.95dBi＜6dBi.

2. The transmit signals are correlated.

5260-5320MHz Band:

EUT: Notebook PC		
M/N:RZ09-0239		
Test date: 2017-09-01~10-17	Pressure: 102.1±1.0 kpa	Humidity: 51.1±3.0%
Tested by: Kebo	Test site: RF site	Temperature:22.8±0.6 ℃

For 15.407:

Test Mode	Frequency (MHz)	Maximum Conducted output power (dBm)			Limit (dBm)
		ANT0	ANT1	Total	
11a	5260	15.00	14.89	N/A	23.57
	5300	14.19	14.08	N/A	23.57
	5320	14.24	14.06	N/A	23.57
11n HT20	5260	10.89	11.01	13.96	23.71
	5300	10.38	10.38	13.39	23.71
	5320	10.44	10.37	13.42	23.71
11n HT40	5270	10.68	11.18	13.95	23.95
	5310	10.36	10.72	13.55	23.95
11ac VHT20	5260	8.52	8.95	11.75	23.72
	5300	8.40	8.31	11.37	23.72
	5320	8.45	8.44	11.46	23.72
11ac VHT40	5270	8.67	9.23	11.97	23.95
	5310	8.38	8.63	11.52	23.95
11ac VHT80	5290	8.51	9.09	11.82	23.95
Conclusion: PASS					

Note: 1. 11n/ac Mode

Directional Gain= $10\log[(10^{3.08/20}+10^{2.96/20})^2/2]$dBi

= 6.03dBi>6dBi.

2. The transmit signals are correlated.

3. For 11a/11n HT20/11ac VHT20 Mode

Limit=11 dBm + 10 log B -(Directional Gain -6)

where B is the 26 dB emission bandwidth in megahertz.

For 11n HT40/11ac VHT40/ 11ac VHT80Mode

Limit=23.98 dBm -(Directional Gain -6)

For RSS-247:

Test Mode	Frequency (MHz)	Maximum Conducted output power (dBm)			Limit (dBm)
		ANT0	ANT1	Total	
11a	5260	15.00	14.89	N/A	23.10
	5300	14.19	14.08	N/A	23.10
	5320	14.24	14.06	N/A	23.10
11n HT20	5260	10.89	11.01	13.96	23.39
	5300	10.38	10.38	13.39	23.39
	5320	10.44	10.37	13.42	23.39
11n HT40	5270	10.68	11.18	13.95	23.98
	5310	10.36	10.72	13.55	23.98
11ac VHT20	5260	8.52	8.95	11.75	23.39
	5300	8.40	8.31	11.37	23.39
	5320	8.45	8.44	11.46	23.39
11ac VHT40	5270	8.67	9.23	11.97	23.98
	5310	8.38	8.63	11.52	23.98
11ac VHT80	5290	8.51	9.09	11.82	23.98
Conclusion: PASS					

Note: For 11a/11n HT20/11ac VHT20 Mode
Limit=11 dBm + 10 log B
where B is the 99% emission bandwidth in megahertz.

For 11n HT40/11ac VHT40/ 11ac VHT80Mode
Limit=23.98 dBm

5500-5700MHz Band:

EUT: Notebook PC		
M/N:RZ09-0239		
Test date: 2017-09-01~10-17	Pressure: 102.1±1.0 kpa	Humidity: 51.1±3.0%
Tested by: Kebo	Test site: RF site	Temperature:22.8±0.6 ℃

For 15.407:

Test Mode	Frequency (MHz)	Maximum Conducted output power (dBm)			Limit (dBm)
		ANT0	ANT1	Total	
11a	5500	15.12	14.27	N/A	23.59
	5600	15.21	14.98	N/A	23.59
	5700	14.47	14.61	N/A	23.59
11n HT20	5500	10.54	10.30	13.43	23.75
	5600	10.87	10.91	13.90	23.75
	5700	10.86	10.81	13.85	23.75
11n HT40	5510	10.67	10.85	13.77	23.98
	5590	10.83	11.31	14.09	23.98
	5670	10.61	11.40	14.03	23.98
11ac VHT20	5500	8.57	8.40	11.50	23.74
	5600	8.92	8.99	11.97	23.74
	5700	8.57	8.90	11.75	23.74
11ac VHT40	5510	8.50	8.60	11.56	23.98
	5590	8.98	9.35	12.18	23.98
	5670	8.53	9.51	12.06	23.98
11ac VHT80	5530	8.74	9.33	12.06	23.98
	5610	8.97	9.44	12.22	23.98
Conclusion: PASS					

Note: 1. 11n/ac Mode

Directional Gain= $10\log[(10^{1.61/20}+10^{2.99/20})^2/2]$dBi

= 5.34dBi<6dBi.

2. The transmit signals are correlated.

3. For 11a/11n HT20/11ac VHT20 Mode

Limit=11 dBm + 10 log B

where B is the 26 dB emission bandwidth in megahertz.

For 11n HT40/11ac VHT40/ 11ac VHT80Mode

Limit=23.98 dBm

For RSS-247:

Test Mode	Frequency （MHz）	Maximum Conducted output power （dBm）			Limit (dBm)
		ANT0	ANT1	Total	
11a	5500	15.12	14.27	N/A	23.10
	5700	14.47	14.61	N/A	23.10
11n HT20	5500	10.54	10.30	13.43	23.40
	5700	10.86	10.81	13.85	23.40
11n HT40	5510	10.67	10.85	13.77	23.98
	5670	10.61	11.40	14.03	23.98
11ac VHT20	5500	8.57	8.40	11.50	23.40
	5700	8.57	8.90	11.75	23.40
11ac VHT40	5510	8.50	8.60	11.56	23.98
	5670	8.53	9.51	12.06	23.98
11ac VHT80	5530	8.74	9.33	12.06	23.98
Conclusion: PASS					

Note: For 11a/11n HT20/11ac VHT20 Mode
Limit=11 dBm + 10 log B
where B is the 99% emission bandwidth in megahertz.

For 11n HT40/11ac VHT40/ 11ac VHT80Mode
Limit=23.98 dBm

5745-5825MHz Band:

EUT: Notebook PC		
M/N:RZ09-0239		
Test date: 2017-09-01~10-17	Pressure: 102.1±1.0 kpa	Humidity: 51.1±3.0%
Tested by: Kebo	Test site: RF site	Temperature:22.8±0.6 ℃

Test Mode	Frequency （MHz）	Maximum Conducted output power （dBm）			Limit (dBm)
		ANT0	ANT1	Total	
11a	5745	15.03	15.10	N/A	29.97
	5785	14.79	14.75	N/A	29.97
	5825	14.22	14.02	N/A	29.97
11n HT20	5745	10.49	11.15	13.84	29.97
	5785	10.17	10.59	13.40	29.97
	5825	9.56	9.91	12.75	29.97
11n HT40	5755	10.42	10.97	13.71	29.97
	5795	10.56	10.53	13.56	29.97
11ac VHT20	5745	8.56	8.74	11.66	29.97
	5785	8.26	8.15	11.22	29.97
	5825	7.63	7.48	10.57	29.97
11ac VHT40	5755	8.48	8.82	11.66	29.97
	5795	8.14	8.26	11.21	29.97
11ac VHT80	5775	8.32	8.80	11.58	29.97
Conclusion: PASS					

Note: 1. 11n/ac Mode

Directional Gain= $10\log[(10^{3.16/20}+10^{2.88/20})^2/2]$dBi

= 6.03dBi>6dBi.

2. The transmit signals are correlated.

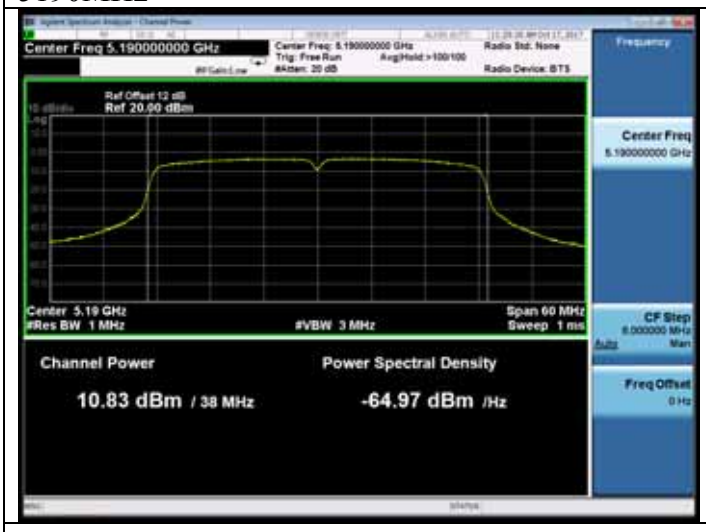
3. Limit=30 dBm-(Directional Gain -6)

5180-5240MHz Band:

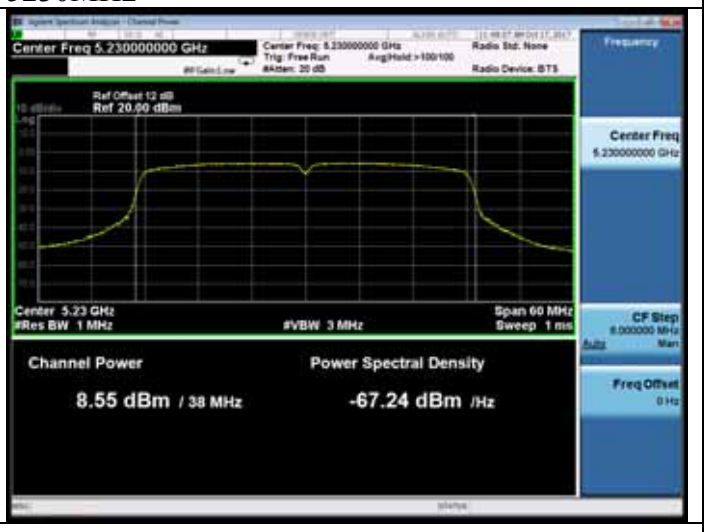
ANT 0

11n HT40

5190MHz

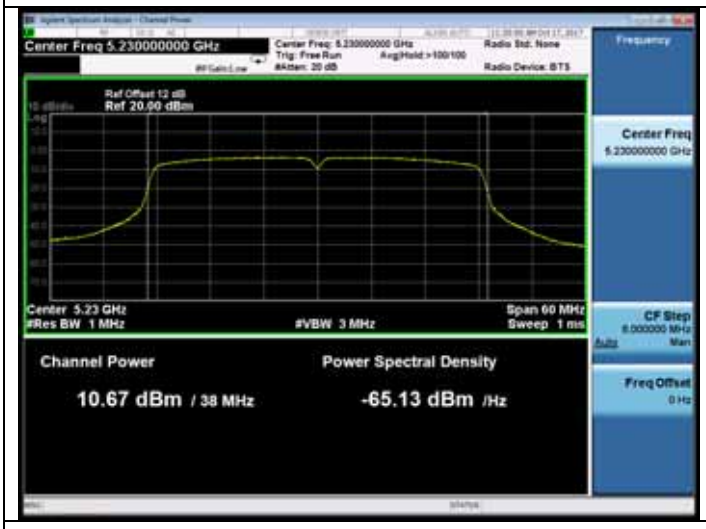


5230MHz



11ac VHT80

5230MHz



5210MHz

11acVHT40

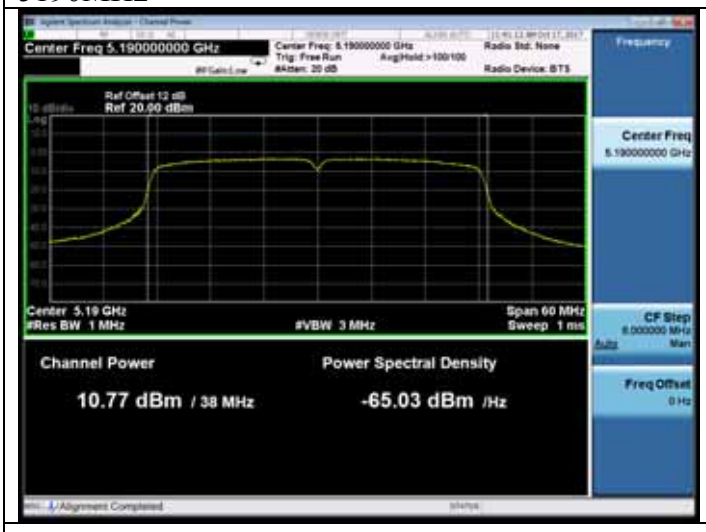
5190MHz

5180-5240MHz Band:

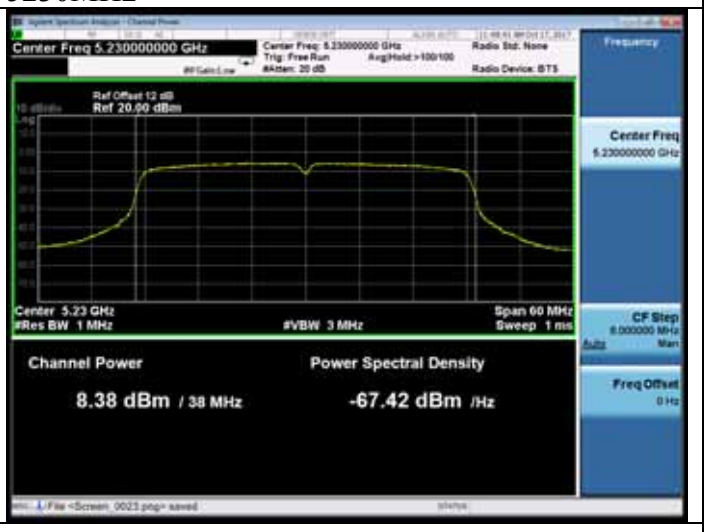
ANT 1

11n HT40

5190MHz

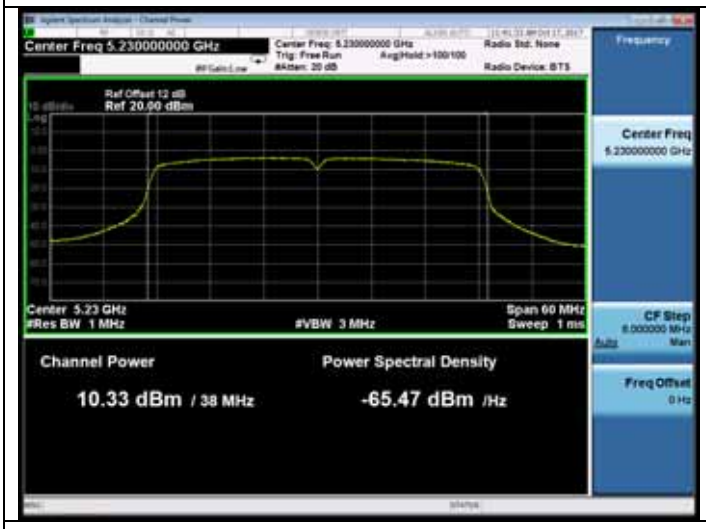


5230MHz



11ac VHT80

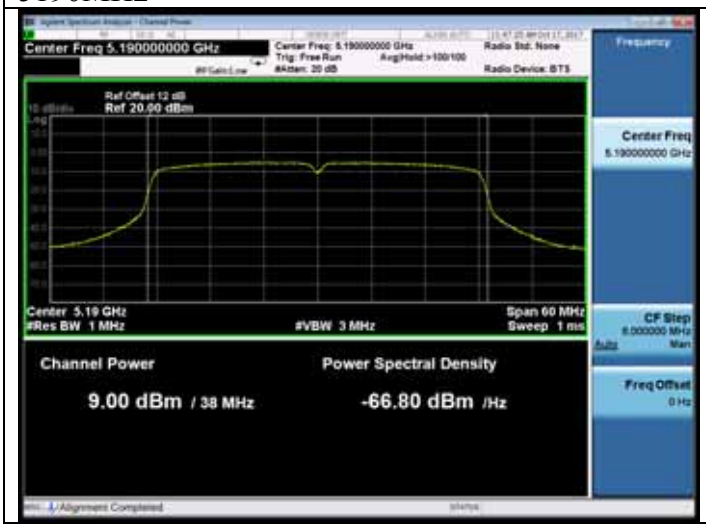
5230MHz



5210MHz

11acVHT40

5190MHz



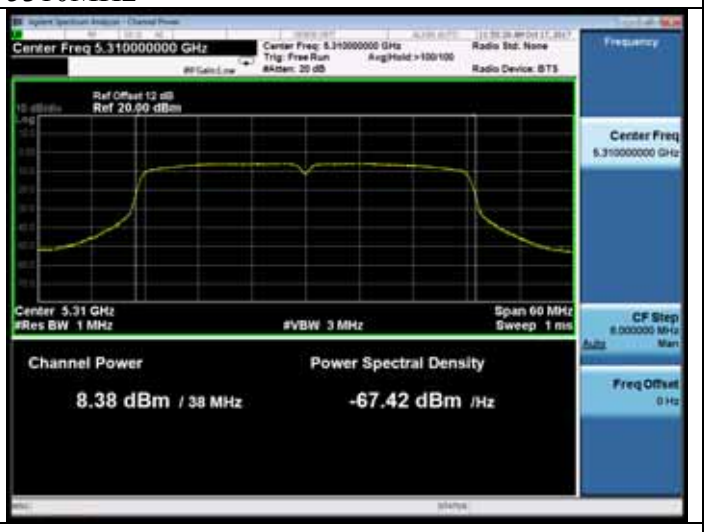
5260-5320MHz Band:

ANT 0

11n HT40

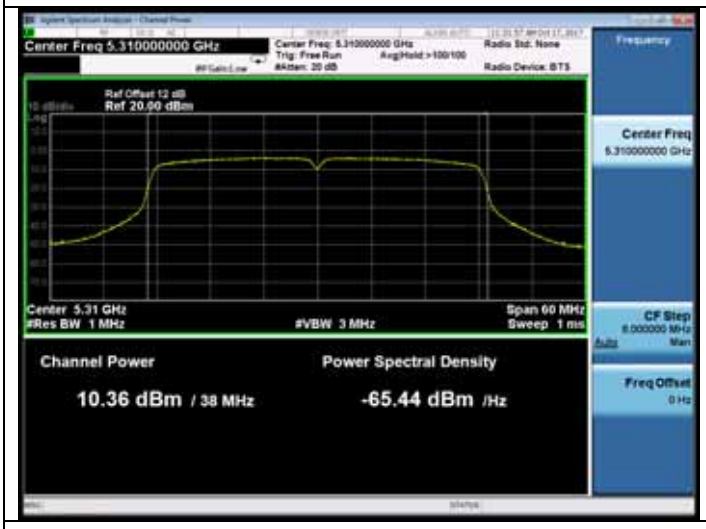
5270MHz

5310MHz



11ac VHT80

5310MHz



5290MHz

11acVHT40

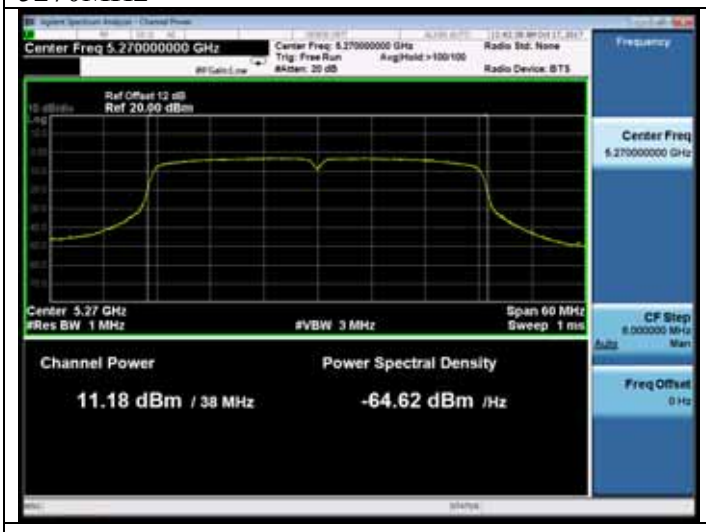
5270MHz

5260-5320MHz Band:

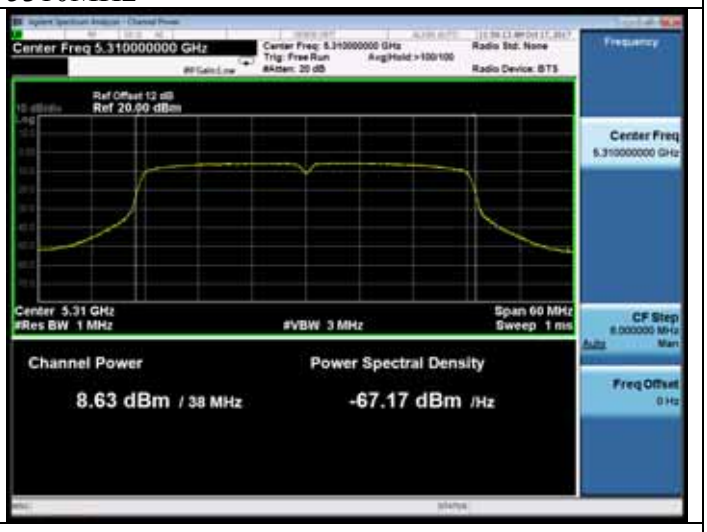
ANT 1

11n HT40

5270MHz

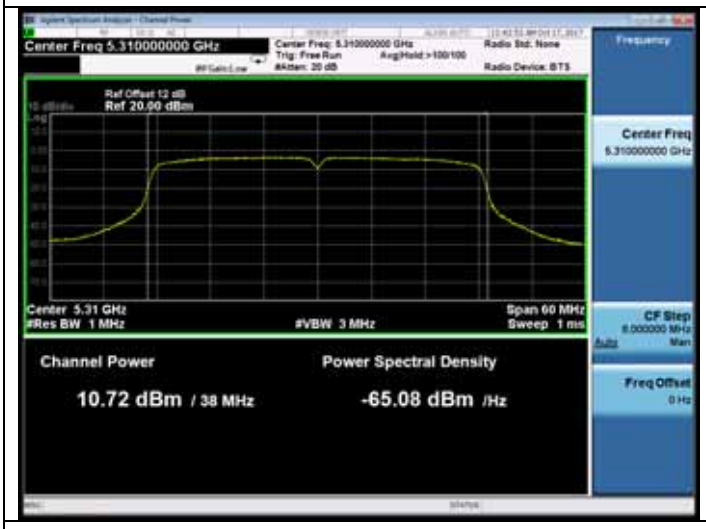


5310MHz



11ac VHT80

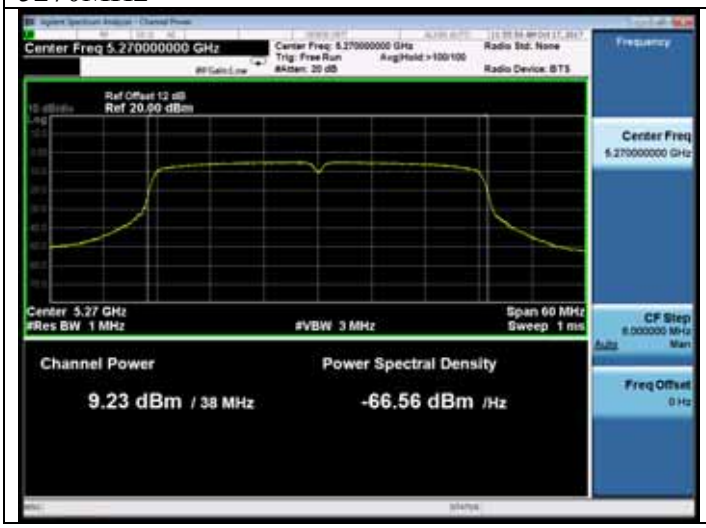
5310MHz

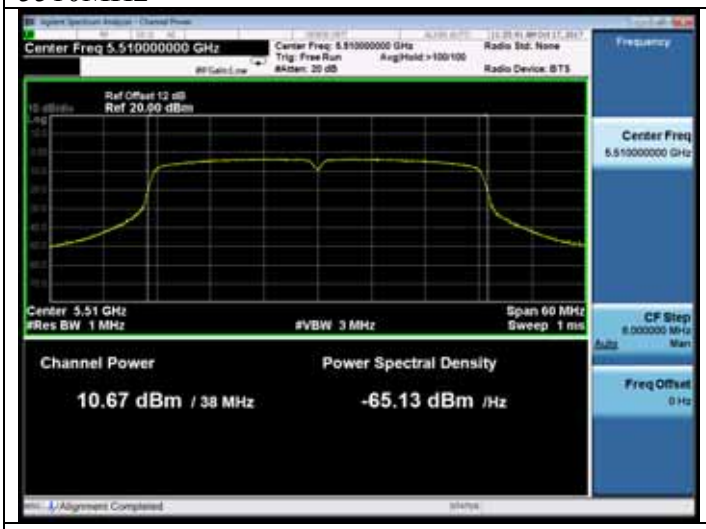
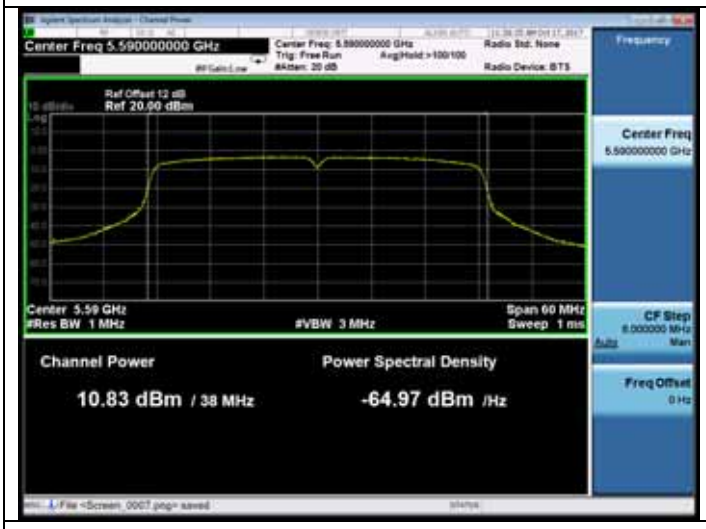
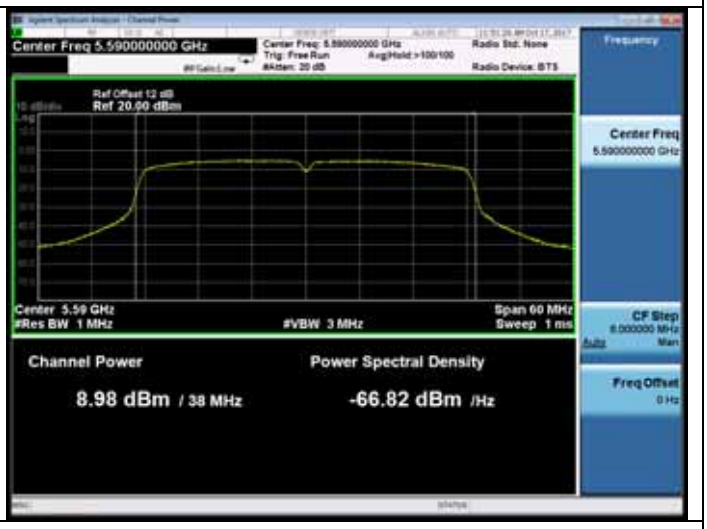
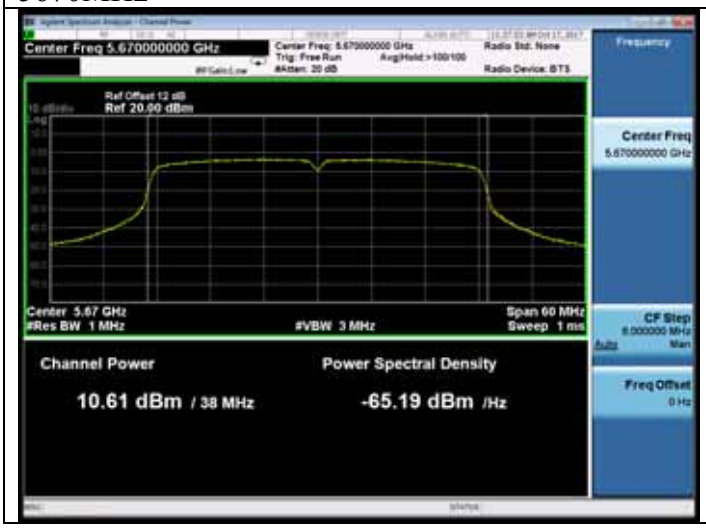


5290MHz

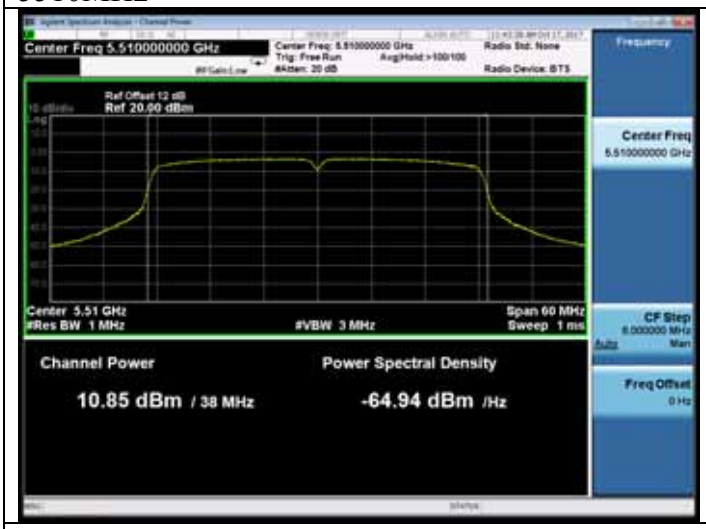
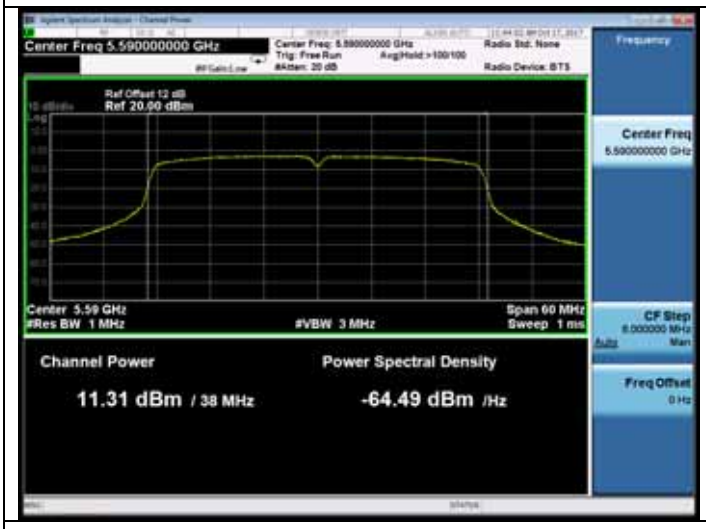
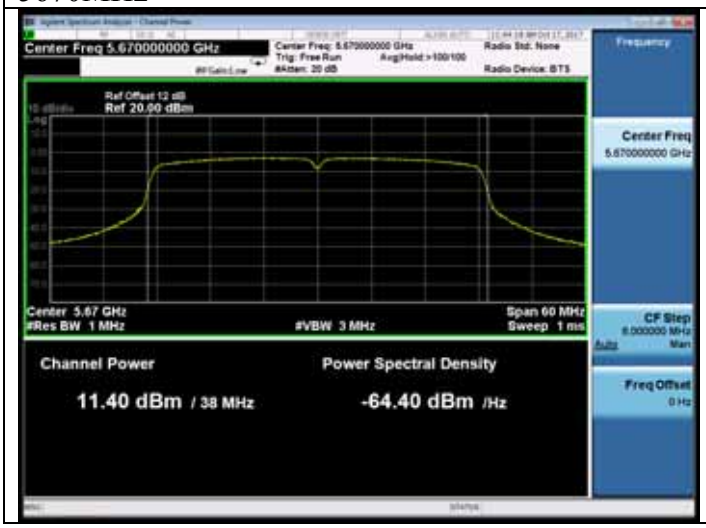
11acVHT40

5270MHz



5500-5700MHz Band:	
ANT 0	
11n HT40	**11acVHT40**
5510MHz	5510MHz
	
5590MHz	5590MHz
	
5670MHz	5670MHz
	

11ac VHT80	
5530MHz	5610MHz
	

5500-5700MHz Band:	
ANT 1	
11n HT40	**11acVHT40**
5510MHz	5510MHz
	
5590MHz	5590MHz
	
5670MHz	5670MHz
	

11ac VHT80	
5530MHz	5610MHz
	

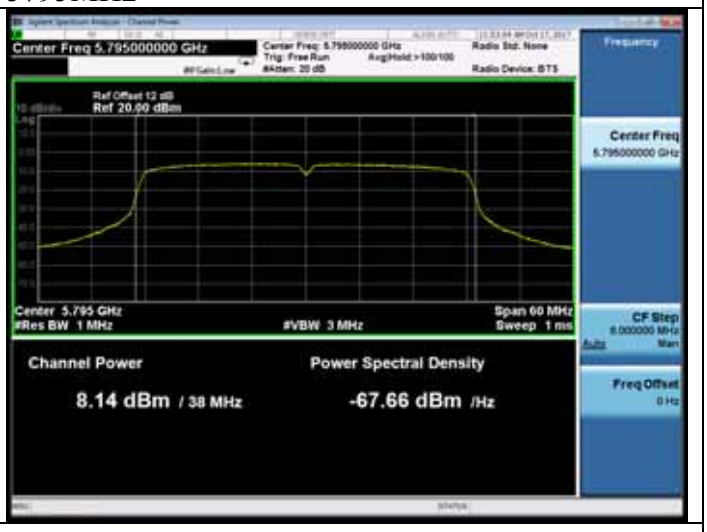
5745-5825MHz Band:

ANT 0

11n HT40

5755MHz

5795MHz



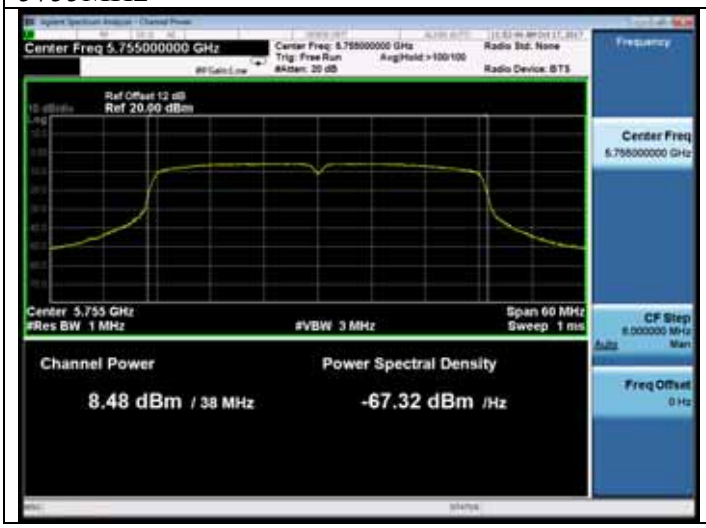
11ac VHT80

5795MHz

5775MHz

11acVHT40

5755MHz

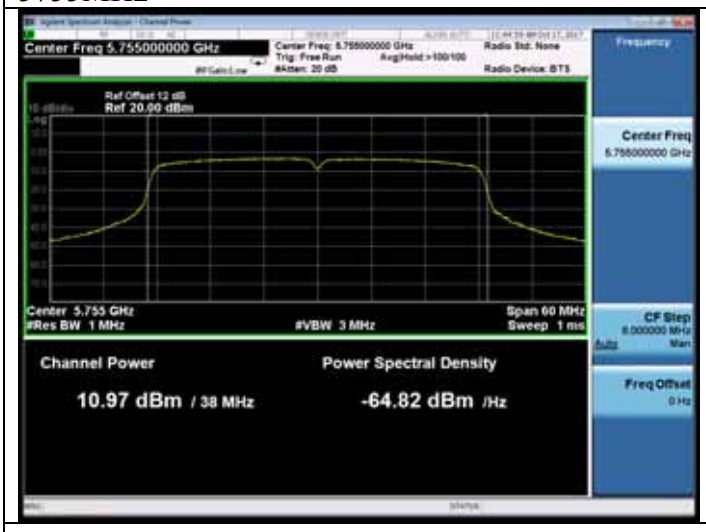


5745-5825MHz Band:

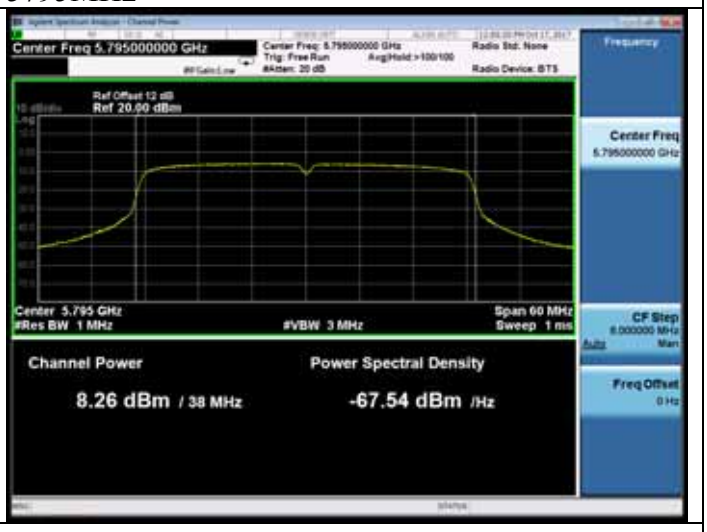
ANT 1

11n HT40

5755MHz



5795MHz



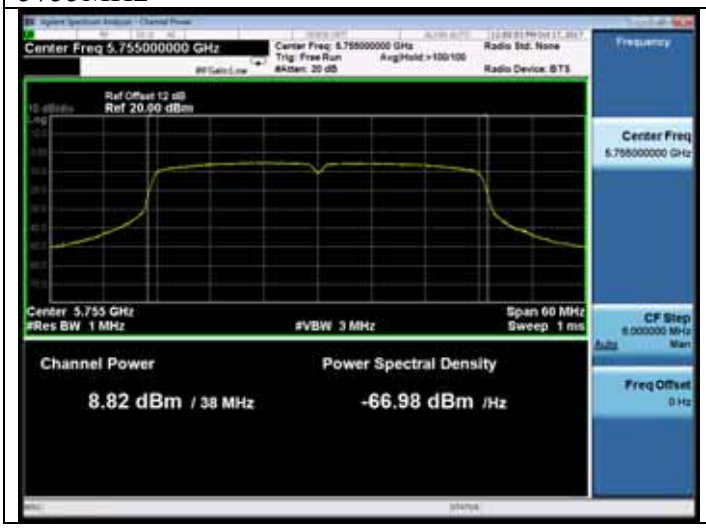
11ac VHT80

5795MHz

5775MHz

11acVHT40

5755MHz



9. EQUIVALENT ISOTROPIC RADIATED POWER TEST

9.1. Limit

Band 5150-5250 MHz:
The maximum e.i.r.p. shall not exceed 200 mW(23.01dBm) or 10 + 10 log10B, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz.
Band 5250-5350 Hz:
The maximum e.i.r.p. shall not exceed 1.0 W(30dBm) or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz.
Band 5470-5725MHz:
The maximum e.i.r.p. shall not exceed 1.0 W(30dBm) or 17 + 10 log10B, dBm, whichever is less. B is the 99% emission bandwidth in megahertz.

9.2. Test Method

(1) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator ,set the Spectrum Analyzer as below:

Span: Zero
RBW:100KHz
VBW:100KHz

Read out the duty cycle(X) of the transmitter and record as X

(2)For IEEE 802.11a and IEEE802.11n HT20 and 802.11ac VHT20 mode connected the antenna port to the Power Meter via a 20dB Attenuator, read out average output power of the transmitter.

(3)For IEEE802.11n HT40 and IEEE802.11ac VHT40 and 802.11ac VHT80 mode, because the signal's EBW is about 40MHz and 80MHz and above 20MHz bandwidth of power sensor . So the channel power measure function of spectrum Analyzer was used to measure out average output power of transmitter.

(4)Calculated e.i.r.p according to the formula: Read + Cable loss + Atten loss + Antenna Gain + 10log(1/x)

(5)Repeated test at the lowest, the middle, and the highest frequency of the stated frequency range.

9.3.Test Results

5180-5240MHz Band:

EUT: Notebook PC		
M/N:RZ09-0239		
Test date: 2017-09-01~10-17	Pressure: 102.1±1.0 kpa	Humidity: 51.1±3.0%
Tested by: Kebo	Test site: RF site	Temperature:22.8±0.6 ℃

Test Mode	Frequency （MHz）	EIRP (dBm)			Limit (dBm)
		ANT0	ANT1	Total	
11a	5180	17.72	18.34	N/A	22.10
	5200	17.42	18.02	N/A	22.10
	5240	17.25	17.32	N/A	22.10
11n HT20	5180	13.71	14.2	16.97	22.40
	5200	13.44	13.85	16.66	22.40
	5240	13.1	13.36	16.24	22.40
11n HT40	5190	13.74	13.73	16.75	23.01
	5230	13.58	13.29	16.45	23.01
11ac VHT20	5180	11.46	11.94	14.72	22.40
	5200	11.09	11.7	14.42	22.40
	5240	11.17	11.21	14.20	22.40
11ac VHT40	5190	11.48	11.96	14.74	23.01
	5230	11.46	11.34	14.41	23.01
11ac VHT80	5210	11.43	12.03	14.75	23.01
Conclusion: PASS					

Note: For 11a/11n HT20/11ac VHT20 Mode
Limit=11 dBm + 10 log B
where B is the 99% emission bandwidth in megahertz.

For 11n HT40/11ac VHT40/ 11ac VHT80Mode
Limit=23.01 dBm

5260-5320MHz Band:

EUT: Notebook PC		
M/N: RZ09-0239		
Test date: 2017-09-01~10-17	Pressure: 102.1±1.0 kpa	Humidity: 51.1±3.0%
Tested by: Kebo	Test site: RF site	Temperature:22.8±0.6 ℃

Test Mode	Frequency （MHz）	EIRP (dBm)			Limit (dBm)
		ANT0	ANT1	Total	
11a	5260	18.08	17.85	N/A	29.10
	5300	17.27	17.04	N/A	29.10
	5320	17.32	17.02	N/A	29.10
11n HT20	5260	13.97	13.97	16.98	29.39
	5300	13.46	13.34	16.41	29.39
	5320	13.52	13.33	16.44	29.39
11n HT40	5270	13.76	14.14	16.96	30
	5310	13.44	13.68	16.57	30
11ac VHT20	5260	11.6	11.91	14.77	29.39
	5300	11.48	11.27	14.39	29.39
	5320	11.53	11.4	14.48	29.39
11ac VHT40	5270	11.75	12.19	14.99	30
	5310	11.46	11.59	14.54	30
11ac VHT80	5290	11.59	12.05	14.84	30
Conclusion: PASS					

Note: For 11a/11n HT20/11ac VHT20 Mode
Limit=11 dBm + 10 log B
where B is the 99% emission bandwidth in megahertz.

For 11n HT40/11ac VHT40/ 11ac VHT80Mode
Limit=30dBm

5500-5700MHz Band:

EUT: Notebook PC		
M/N:RZ09-0239		
Test date: 2017-09-01~10-17	Pressure: 102.1±1.0 kpa	Humidity: 51.1±3.0%
Tested by: Kebo	Test site: RF site	Temperature:22.8±0.6 ℃

Test Mode	Frequency （MHz）	EIRP（dBm）			Limit (dBm)
		ANT0	ANT1	Total	
11a	5500	16.73	17.26	N/A	29.10
	5700	16.08	17.57	N/A	29.10
11n HT20	5500	12.15	13.26	15.75	29.40
	5700	12.47	13.77	16.18	29.40
11n HT40	5510	12.28	13.81	16.12	30
	5670	12.22	14.36	16.43	30
11ac VHT20	5500	10.18	11.36	13.82	29.40
	5700	10.18	11.86	14.11	29.40
11ac VHT40	5510	10.11	11.56	13.91	30
	5670	10.14	12.47	14.47	30
11ac VHT80	5530	10.35	12.29	14.44	30
Conclusion: PASS					

Note: For 11a/11n HT20/11ac VHT20 Mode
Limit=11 dBm + 10 log B
where B is the 99% emission bandwidth in megahertz.

For 11n HT40/11ac VHT40/ 11ac VHT80Mode
Limit=30dBm

10. SPECTRAL DENSITY TEST

10.1. Limit

For 15.407:
Band 5150-5250 MHz:
The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
Band 5250-5350 MHz:
The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
Band 5470-5725 MHz:
The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
Band 5725-5850 MHz:
The power spectral density shall not exceed 30 dBm in any 500 KHz band.

For RSS-247:
Band 5150-5250 MHz:
The e.i.r.p spectral density shall not exceed 10 dBm in any 1.0 MHz band.
Band 5250-5350 MHz:
The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
Band 5470-5725 MHz:
The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.
Band 5725-5850 MHz:
The power spectral density shall not exceed 30 dBm in any 500 KHz band.

10.2. Test Procedure

For the Band 5.15-5.35GHz; 5.47-5.725 GHz:
The transmitter output was connected to a spectrum analyzer. Power density was measured by spectrum analyzer with 1MHz RBW and 3MHz VBW; Detector: RMS mode.

For the band 5.725-5.85 GHz:
The transmitter output was connected to a spectrum analyzer. Power density was measured by spectrum analyzer with 1MHz RBW and 3MHz VBW,RMS Detector.
So use the test method described in KDB789033 clause E

1) Set the RBW=100kHz and VBW =3MHz
2) Number of points in sweep ≥ 2 Span / RBW.(This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
3) Sweep time = auto
4) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
5) Use the “peak search” function of spectrum analyzer find the max value, then add 10log (500kHz/RBW) to the measured result.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

10.3.Test Results

5180-5240MHz Band:

EUT: Notebook PC		
M/N: RZ09-0239		
Test date: 2017-09-08	Pressure: 102.5±1.0 kpa	Humidity: 53.1±3.0%
Tested by: Kebo	Test site: RF site	Temperature:22.6±0.6 ℃

For 15.407:

Test Mode	Frequency (MHz)	Power density (dBm/MHz)			Limit (dBm/MHz)
		ANT0	ANT1	Total	
11a	5180	3.974	4.470	N/A	11
	5200	3.678	4.434	N/A	11
	5240	3.513	3.510	N/A	11
11n HT20	5180	-0.162	0.137	3.000	11
	5200	-0.366	0.019	2.841	11
	5240	-0.823	-0.641	2.279	11
11n HT40	5190	-3.084	-3.152	-0.108	11
	5230	-3.846	-3.560	-0.690	11
11ac VHT20	5180	-2.293	-2.278	0.725	11
	5200	-2.877	-2.240	0.463	11
	5240	-3.251	-2.819	-0.019	11
11ac VHT40	5190	-5.086	-4.866	-1.964	11
	5230	-5.530	-5.395	-2.452	11
11ac VHT80	5210	-8.192	-8.285	-5.228	11
Conclusion: PASS					

Note: 1. 11n/ac Mode

Directional Gain= $10\log[(10^{2.91/20}+10^{2.96/20})^2/2]$dBi

= 5.95dBi＜6dBi.

2. The transmit signals are correlated.

For RSS-247:

Test Mode	Frequency (MHz)	e.i.r.p Power density（dBm/MHz）			Limit (dBm/MHz)
		ANT0	ANT1	Total	
11a	5180	6.884	7.43	N/A	10
	5200	6.588	7.394	N/A	10
	5240	6.423	6.47	N/A	10
11n HT20	5180	2.748	3.097	5.94	10
	5200	2.544	2.979	5.78	10
	5240	2.087	2.319	5.22	10
11n HT40	5190	-0.174	-0.192	2.83	10
	5230	-0.936	-0.6	2.25	10
11ac VHT20	5180	0.617	0.682	3.66	10
	5200	0.033	0.72	3.40	10
	5240	-0.341	0.141	2.92	10
11ac VHT40	5190	-2.176	-1.906	0.97	10
	5230	-2.62	-2.435	0.48	10
11ac VHT80	5210	-5.282	-5.325	-2.29	10
Conclusion: PASS					

Note: 1. 11n/ac Mode

Directional Gain= $10\log[(10^{2.91/20}+10^{2.96/20})^2/2]$dBi

= 5.95dBi＜6dBi.

2. The transmit signals are correlated.

5260-5320MHz Band:

EUT: Notebook PC		
M/N: RZ09-0239		
Test date: 2017-09-11	Pressure: 102.3±1.0 kpa	Humidity: 51.6±3.0%
Tested by: Kebo	Test site: RF site	Temperature:22.5±0.6 ℃

For 15.407:

Test Mode	Frequency (MHz)	Power density (dBm/MHz)			Limit (dBm/MHz)
		ANT0	ANT1	Total	
11a	5260	4.150	4.010	N/A	11
	5300	3.149	3.020	N/A	11
	5320	3.364	3.060	N/A	11
11n HT20	5260	-0.360	0.071	2.871	10.97
	5300	-1.280	-0.418	2.183	10.97
	5320	-1.137	-0.552	2.176	10.97
11n HT40	5270	-3.575	-2.809	-0.165	10.97
	5310	-3.981	-3.155	-0.538	10.97
11ac VHT20	5260	-2.649	-2.169	0.608	10.97
	5300	-3.273	-2.581	0.097	10.97
	5320	-3.214	-2.635	0.095	10.97
11ac VHT40	5270	-5.618	-4.904	-2.236	10.97
	5310	-6.073	-5.334	-2.678	10.97
11ac VHT80	5290	-8.797	-9.094	-5.933	10.97
Conclusion: PASS					

Note: 1. 11n/ac Mode

Directional Gain= $10\log[(10^{3.08/20}+10^{2.96/20})^2/2]$dBi

= 6.03dBi>6dBi.

2. The transmit signals are correlated.

For RSS-247:

Test Mode	Frequency (MHz)	Power density (dBm/MHz)			Limit (dBm/MHz)
		ANT0	ANT1	Total	
11a	5260	4.150	4.010	N/A	11
	5300	3.149	3.020	N/A	11
	5320	3.364	3.060	N/A	11
11n HT20	5260	-0.360	0.071	2.871	11
	5300	-1.280	-0.418	2.183	11
	5320	-1.137	-0.552	2.176	11
11n HT40	5270	-3.575	-2.809	-0.165	11
	5310	-3.981	-3.155	-0.538	11
11ac VHT20	5260	-2.649	-2.169	0.608	11
	5300	-3.273	-2.581	0.097	11
	5320	-3.214	-2.635	0.095	11
11ac VHT40	5270	-5.618	-4.904	-2.236	11
	5310	-6.073	-5.334	-2.678	11
11ac VHT80	5290	-8.797	-9.094	-5.933	11
Conclusion: PASS					

5500-5700MHz Band:

EUT: Notebook PC		
M/N: RZ09-0239		
Test date: 2017-09-13	Pressure: 102.8±1.0 kpa	Humidity: 51.8±3.0%
Tested by: Kebo	Test site: RF site	Temperature:23.2±0.6 ℃

For 15.407:

Test Mode	Frequency (MHz)	Power density (dBm/MHz)			Limit (dBm/MHz)
		ANT0	ANT1	Total	
11a	5500	3.953	3.163	N/A	11
	5600	4.496	3.969	N/A	11
	5700	3.609	3.855	N/A	11
11n HT20	5500	-1.246	-0.567	2.117	11
	5600	-0.517	0.162	2.846	11
	5700	-0.927	-0.240	2.440	11
11n HT40	5510	-3.772	-3.339	-0.540	11
	5590	-3.166	-2.766	0.049	11
	5670	-3.612	-2.671	-0.106	11
11ac VHT20	5500	-3.188	-2.565	0.145	11
	5600	-2.796	-1.864	0.705	11
	5700	-3.096	-2.068	0.459	11
11ac VHT40	5510	-5.968	-5.252	-2.585	11
	5590	-5.412	-4.751	-2.059	11
	5670	-5.796	-4.554	-2.12	11
11ac VHT80	5530	-8.583	-8.926	-5.74	11
	5610	-8.212	-8.220	-5.21	11
Conclusion: PASS					

Note: 1. 11n/ac Mode

Directional Gain= $10\log[(10^{1.61/20}+10^{2.99/20})^2/2]$dBi

= 5.34dBi<6dBi.

2. The transmit signals are correlated.

For RSS-247:

Test Mode	Frequency (MHz)	Power density (dBm/MHz)			Limit (dBm/MHz)
		ANT0	ANT1	Total	
11a	5500	3.953	3.163	N/A	11
	5700	3.609	3.855	N/A	11
11n HT20	5500	-1.246	-0.567	2.117	11
	5700	-0.927	-0.240	2.440	11
11n HT40	5510	-3.772	-3.339	-0.540	11
	5670	-3.612	-2.671	-0.106	11
11ac VHT20	5500	-3.188	-2.565	0.145	11
	5700	-3.096	-2.068	0.459	11
11ac VHT40	5510	-5.968	-5.252	-2.585	11
	5670	-5.796	-4.554	-2.12	11
11ac VHT80	5530	-8.583	-8.926	-5.74	11
Conclusion: PASS					

5745-5825MHz Band:

EUT: Notebook PC		
M/N: RZ09-0239		
Test date: 2017-09-16	Pressure: 102.7±1.0 kpa	Humidity: 54.1±3.0%
Tested by: Kebo	Test site: RF site	Temperature:23.4±0.6 ℃

Test Mode	Frequency (MHz)	Power density (dBm/500KHz)			Limit (dBm/500KHz)
		ANT0	ANT1	Total	
11a	5745	2.210	2.014	N/A	30
	5785	1.697	1.756	N/A	30
	5825	1.207	1.069	N/A	30
11n HT20	5745	-3.180	-1.643	0.666	29.97
	5785	-3.465	-2.510	0.049	29.97
	5825	-4.426	-2.936	-0.607	29.97
11n HT40	5755	-6.215	-5.830	-3.008	29.97
	5795	-6.799	-6.860	-3.819	29.97
11ac VHT20	5745	-5.290	-4.262	-1.736	29.97
	5785	-5.943	-4.759	-2.301	29.97
	5825	-6.513	-5.088	-2.732	29.97
11ac VHT40	5755	-7.732	-7.433	-4.570	29.97
	5795	-8.719	-7.710	-5.175	29.97
11ac VHT80	5775	-11.132	-10.772	-7.938	29.97
Conclusion: PASS					

Note: 1. 11n/ac Mode

Directional Gain= $10\log[(10^{3.16/20}+10^{2.88/20})^2/2]$dBi

= 6.03dBi>6dBi.

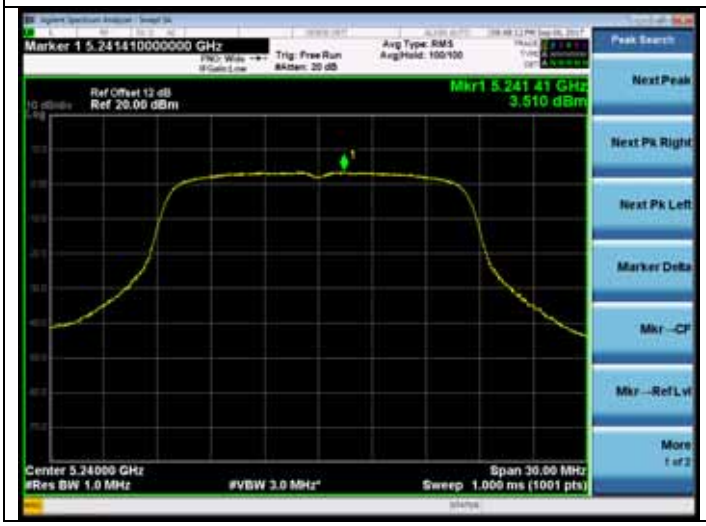
2. The transmit signals are correlated.

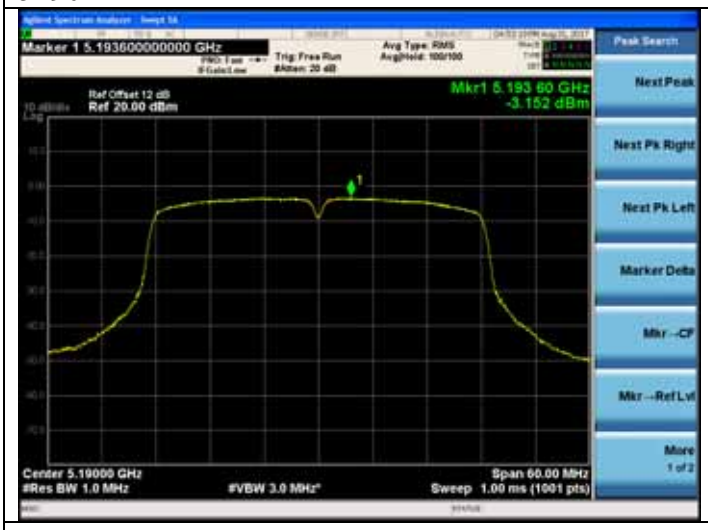
3. The total result = Reading + $10\log$(500kHz/100kHz)

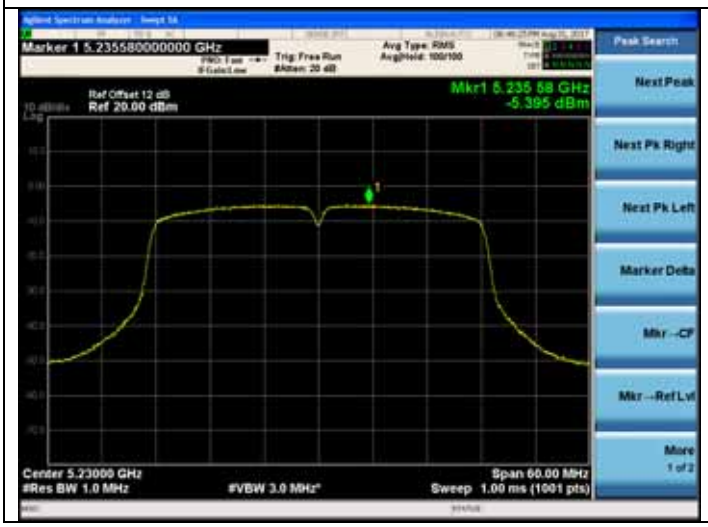
5180-5240MHz Band:	
ANT 0	
11a	**11n HT20**
5180MHz	5180MHz
	
5200MHz	5200MHz
	
5240MHz	5240MHz
	

11n HT40	
5190MHz	5200MHz
	
5230MHz	5240MHz
	
11ac VHT20	**11ac VHT40**
5180MHz	5190MHz
	

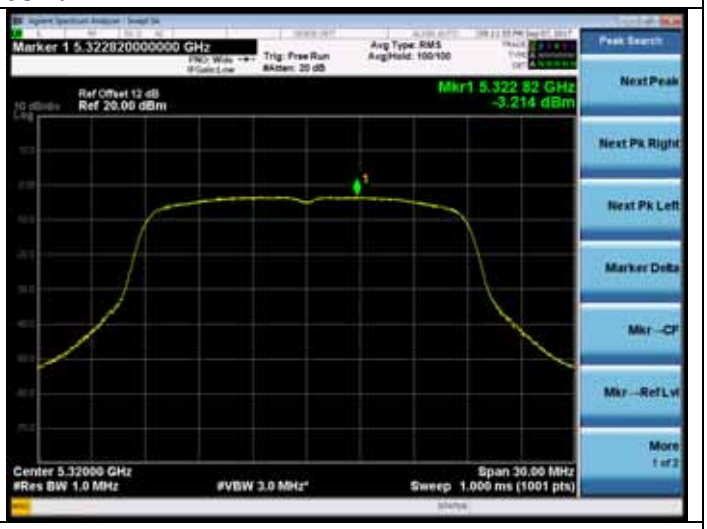
	11ac VHT80
5230MHz	5210MHz
	

5180-5240MHz Band:	
ANT 1	
11a	**11n HT20**
5180MHz	5180MHz
	
5200MHz	5200MHz
	
5240MHz	5240MHz
	

11n HT40	
5190MHz	5200MHz
	
5230MHz	5240MHz
	
11ac VHT20	**11ac VHT40**
5180MHz	5190MHz
	

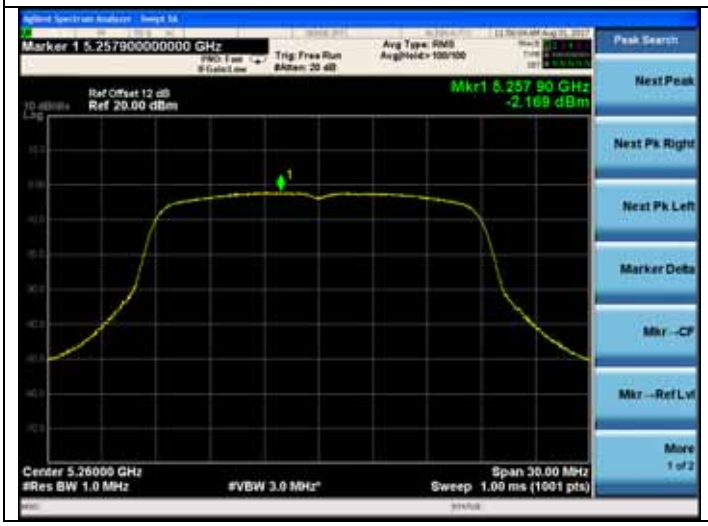
	11ac VHT80
5230MHz	5210MHz
	

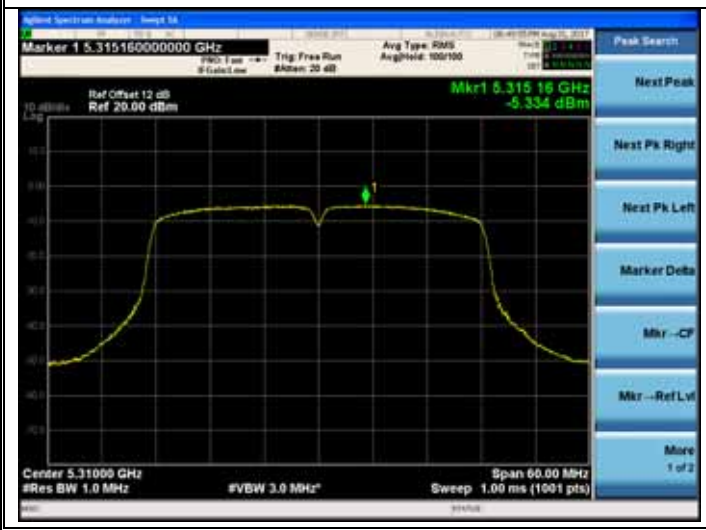
5260-5320MHz Band:	
ANT 0	
11a	**11n HT20**
5260MHz	5260MHz
	
5300MHz	5300MHz
	
5320MHz	5320MHz
	

11n HT40	
5270MHz	5300MHz
	
5310MHz	5320MHz
	
11ac VHT20	**11ac VHT40**
5260MHz	5270MHz
	

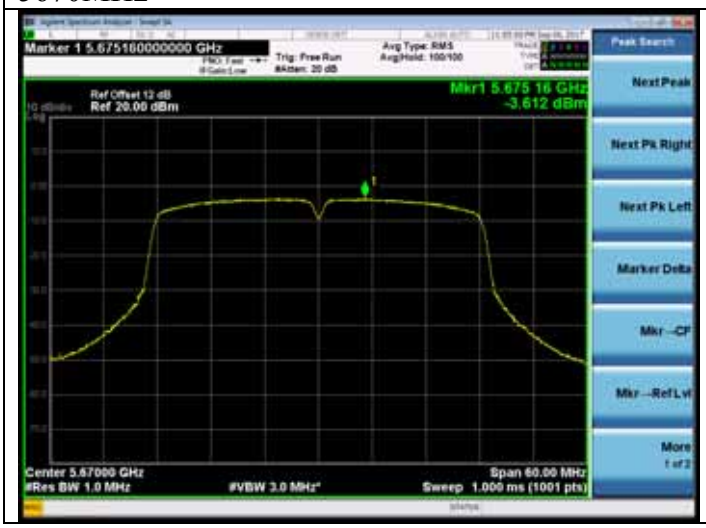
	11ac VHT80
5310MHz	5290MHz
	

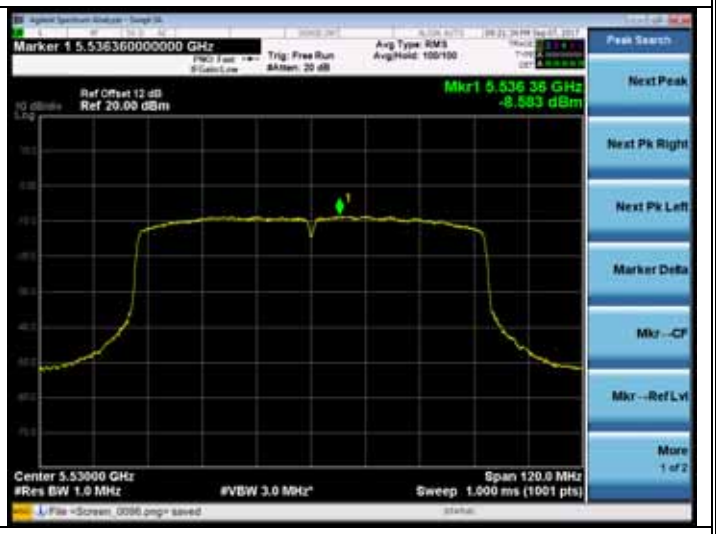
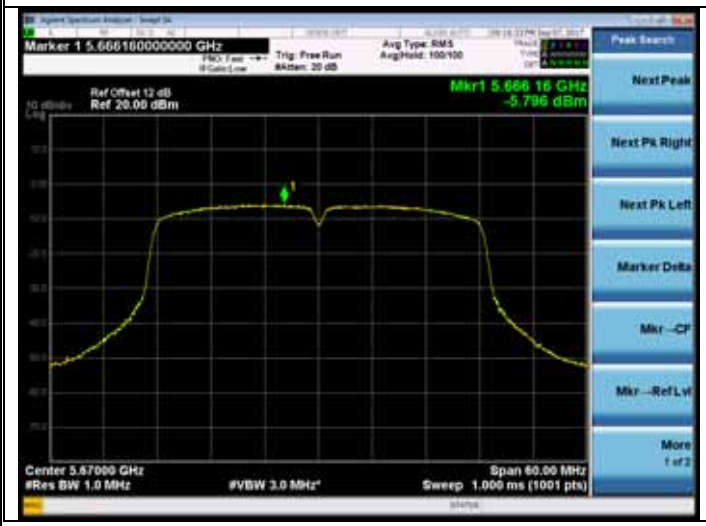
5260-5320MHz Band:	
ANT 1	
11a	**11n HT20**
5260MHz	5260MHz
	
5300MHz	5300MHz
	
5320MHz	5320MHz
	

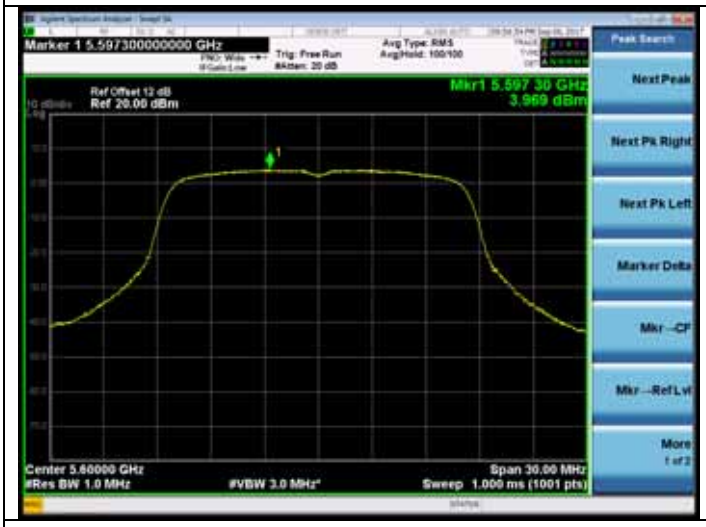
11n HT40	
5270MHz	5300MHz
	
5310MHz	5320MHz
	
11ac VHT20	**11ac VHT40**
5260MHz	5270MHz
	

	11ac VHT80
5310MHz	5290MHz
	

5500-5700MHz Band:	
ANT 0	
11a	11n HT20
5500MHz	5500MHz
	
5600MHz	5600MHz
	
5700MHz	5700MHz
	

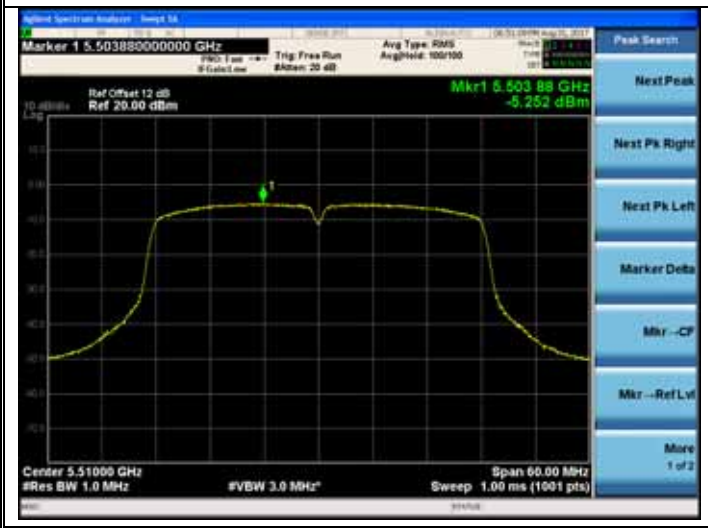
11n HT40	11ac VHT20
5510MHz	5500MHz
	
5590MHz	5600MHz
	
5670MHz	5700MHz
	

11ac VHT40	**11ac VHT80**
5510MHz	5530MHz
	
5590MHz	5610MHz
	
5670MHz	
	

5500-5700MHz Band:	
ANT 1	
11a	11n HT20
5500MHz	5500MHz
	
5600MHz	5600MHz
	
5700MHz	5700MHz
	

11n HT40	11ac VHT20
5510MHz	5500MHz
	
5590MHz	5600MHz
	
5670MHz	5700MHz
	

11ac VHT40
5510MHz

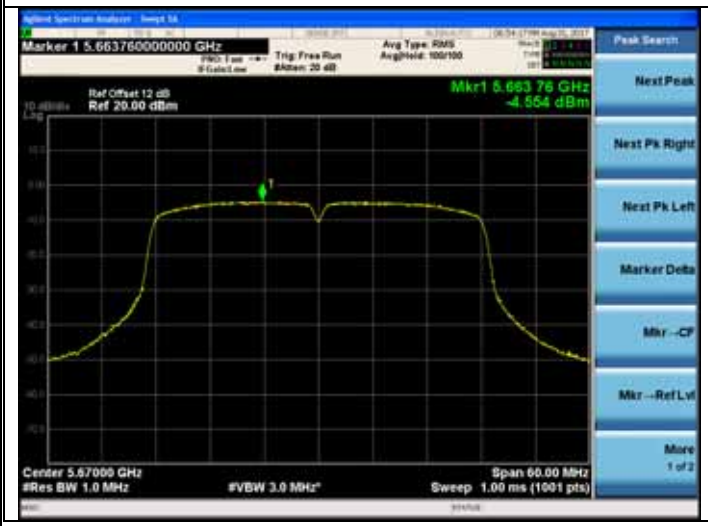


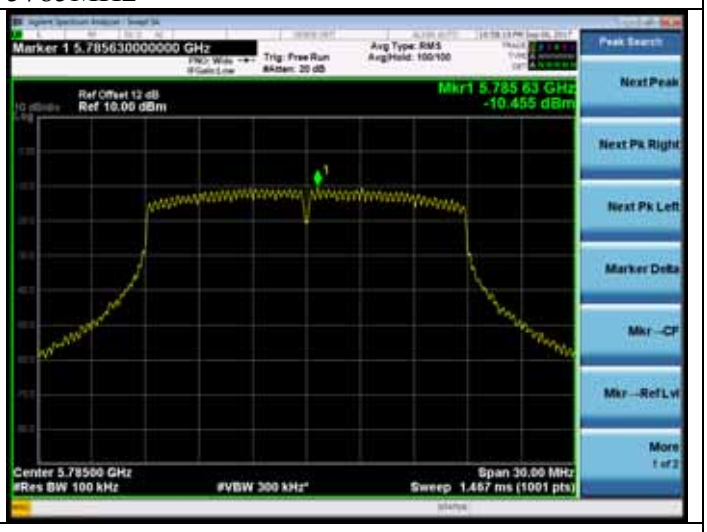
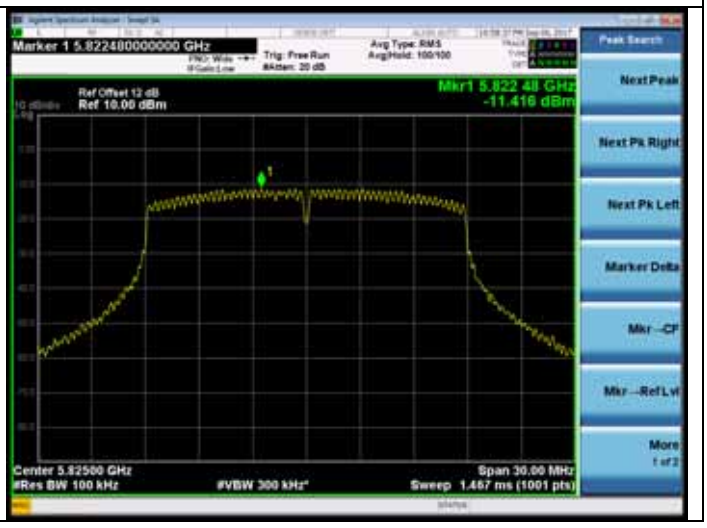
11ac VHT80
5530MHz

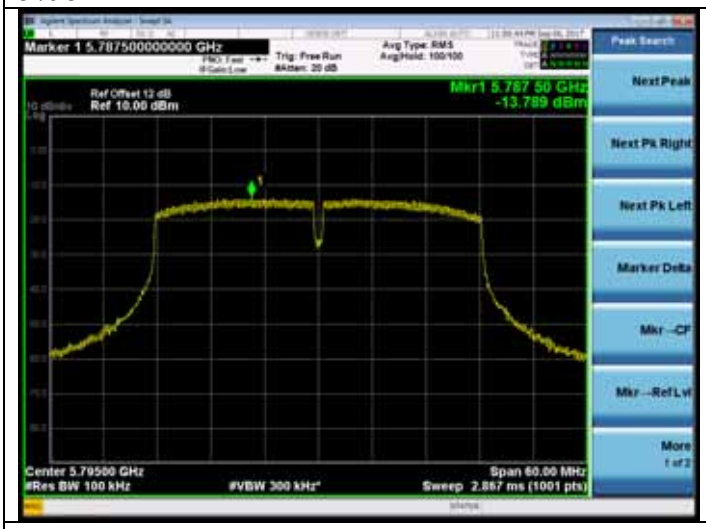
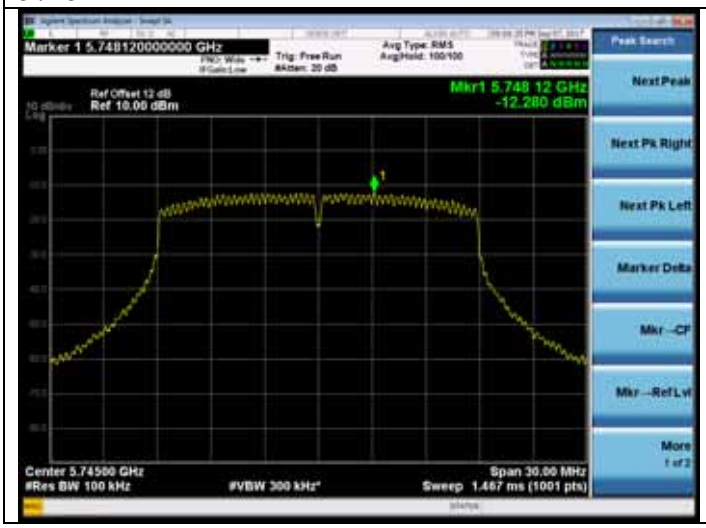
5590MHz

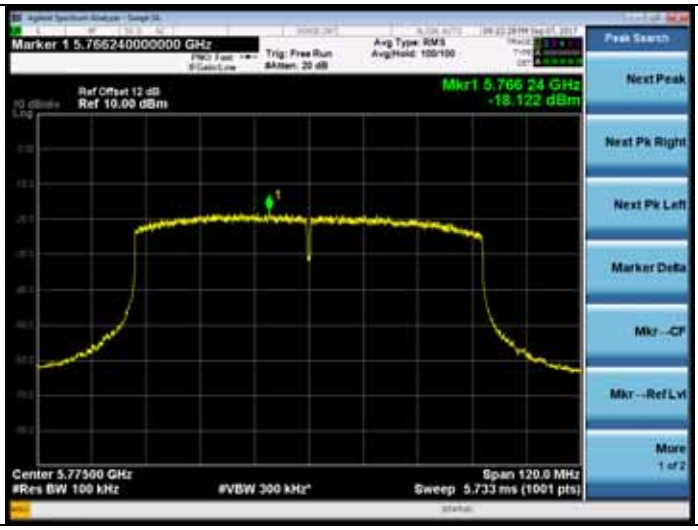
5610MHz

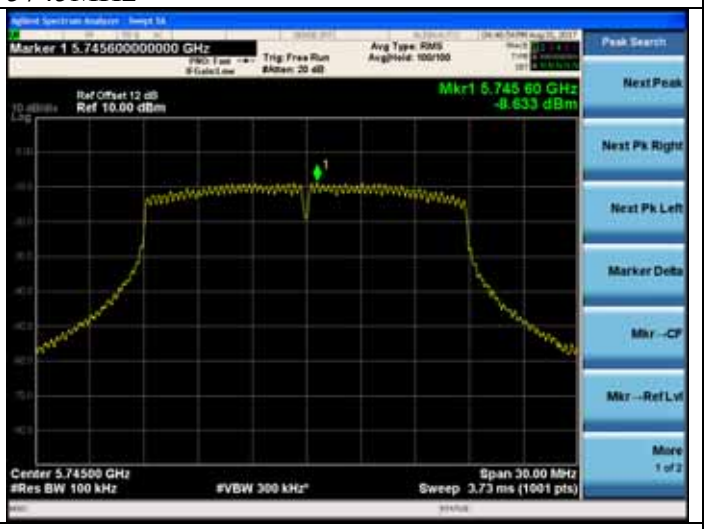
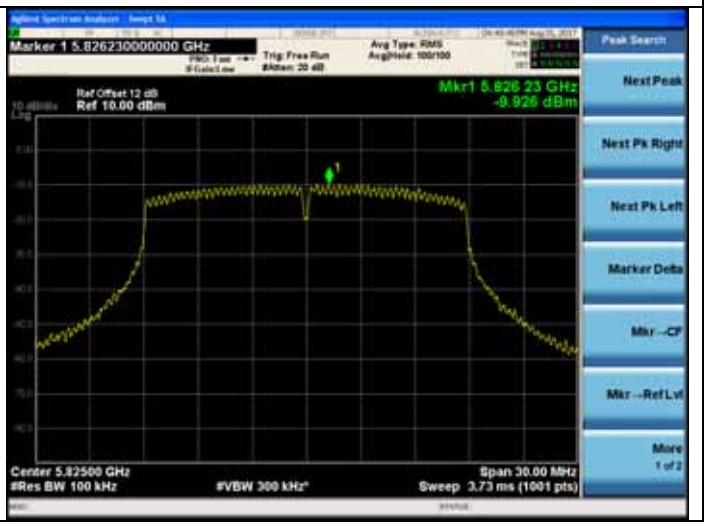
5670MHz

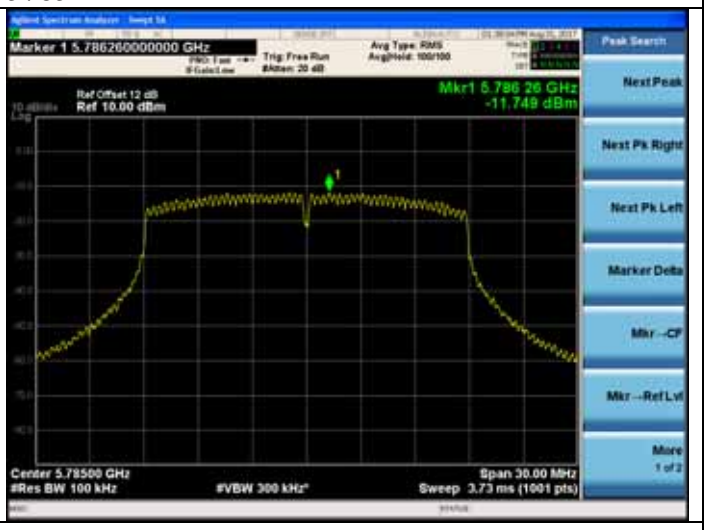
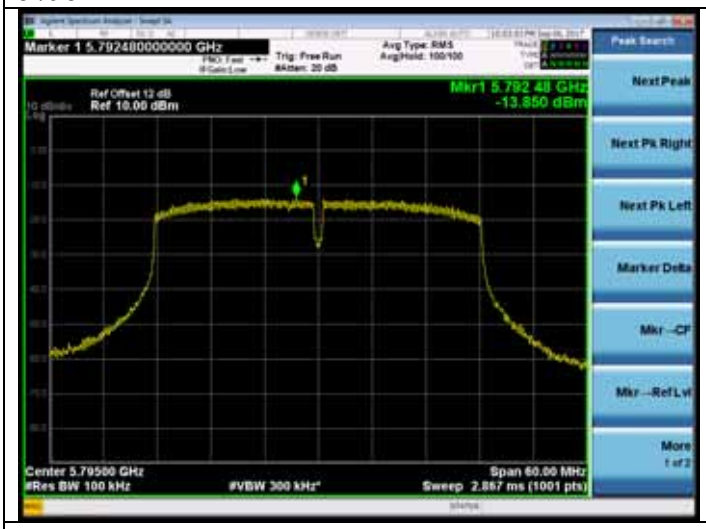
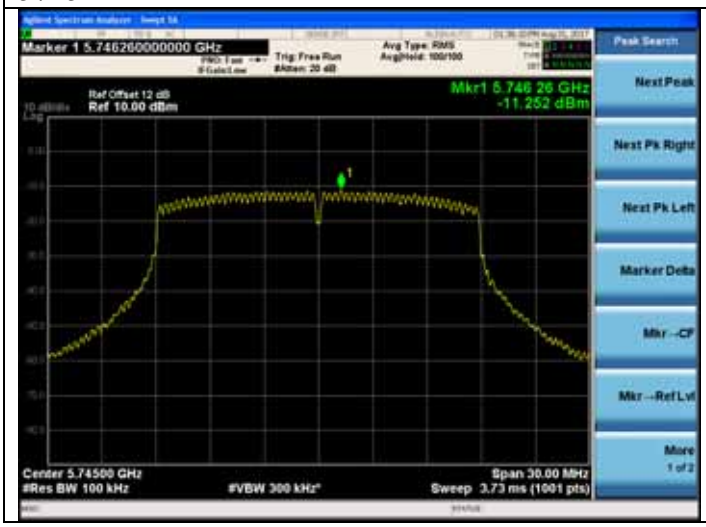


5745-5825MHz Band:	
ANT 0	
11a	**11n HT20**
5745MHz	5745MHz
	
5785MHz	5785MHz
	
5825MHz	5825MHz
	

11n HT40	
5755MHz	5785MHz
	
5795MHz	5825MHz
	
11ac VHT20	**11ac VHT40**
5745MHz	5755MHz
	

	11ac VHT80
5795MHz	5775MHz
	

5745-5825MHz Band:	
ANT 1	
11a	**11n HT20**
5745MHz	5745MHz
	
5785MHz	5785MHz
	
5825MHz	5825MHz
	

11n HT40	
5755MHz	5785MHz
	
5795MHz	5825MHz
	
11ac VHT20	**11ac VHT40**
5745MHz	5755MHz
	

	11ac VHT80
5795MHz	5775MHz
	

11. FREQUENCY STABILITY MEASUREMENT

11.1. 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.

11.2. Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer. EUT have transmitted absence of modulation signal and fixed channelise. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/f × 106ppm. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
2. Extreme temperature rule is -20°C~50°C.

11.3. Test Result

EUT: Notebook PC		
M/N: RZ09-0239		
Test date: 2017-09-08	Pressure: 102.6±1.0 kpa	Humidity: 51.7±3.0%
Tested by: Kebo	Test site: RF site	Temperature:22.3±0.6 ℃

Frequency Stability vs.Voltage:

Test Voltage	Temperature	CH	Max. Reading （MHz）	Target Frequency (MHz)	Result (ppm)
AC 108V	25℃	CH36	5179.9565	5180	-8.40
		CH38	5189.969	5190	-5.97
		CH40	5199.969	5200	-5.96
		CH42	5209.9715	5210	-5.47
		CH46	5229.9705	5230	-5.64
		CH48	5239.9715	5240	-5.44
		CH52	5259.9725	5260	-5.23
		CH54	5269.9725	5270	-5.22
		CH58	5289.9755	5290	-4.63
		CH60	5299.9745	5300	-4.81
		CH62	5309.9755	5310	-4.61
		CH64	5319.9745	5320	-4.79
		CH100	5499.973	5500	-4.91
		CH102	5509.971	5510	-5.26
		CH106	5529.9725	5530	-4.97
		CH118	5589.958	5590	-7.51
		CH120	5599.96	5600	-7.14
		CH122	5609.966	5610	-6.06
		CH134	5669.9705	5670	-5.20
		CH140	5699.971	5700	-5.09
		CH149	5744.9715	5745	-4.96
		CH151	5754.973	5755	-4.69
		CH155	5774.9735	5775	-4.59
		CH157	5784.9755	5785	-4.24
		CH159	5794.9575	5795	-7.33
		CH165	5824.9565	5825	-7.47
Conclusion: PASS					

Test Voltage	Temperature	CH	Max. Reading （MHz）	Target Frequency (MHz)	Result (ppm)
AC 120V	25℃	CH36	5179.9560	5180	-8.49
		CH38	5189.9680	5190	-6.17
		CH40	5199.9690	5200	-5.96
		CH42	5209.9695	5210	-5.85
		CH46	5229.9700	5230	-5.74
		CH48	5239.9715	5240	-5.44
		CH52	5259.9710	5260	-5.51
		CH54	5269.9720	5270	-5.31
		CH58	5289.9740	5290	-4.91
		CH60	5299.9740	5300	-4.91
		CH62	5309.9735	5310	-4.99
		CH64	5319.9730	5320	-5.08
		CH100	5499.9725	5500	-5.00
		CH102	5509.9710	5510	-5.26
		CH106	5529.9715	5530	-5.15
		CH118	5589.9565	5590	-7.78
		CH120	5599.9600	5600	-7.14
		CH122	5609.9655	5610	-6.15
		CH134	5669.9690	5670	-5.47
		CH140	5699.9705	5700	-5.18
		CH149	5744.9715	5745	-4.96
		CH151	5754.9720	5755	-4.87
		CH155	5774.9720	5775	-4.85
		CH157	5784.9735	5785	-4.58
		CH159	5794.9570	5795	-7.42
		CH165	5824.9565	5825	-7.47
Conclusion: PASS					

Test Voltage	Temperature	CH	Max. Reading （MHz）	Target Frequency (MHz)	Result (ppm)
AC 132V	25℃	CH36	5179.957	5180	-8.30
		CH38	5189.97	5190	-5.78
		CH40	5199.969	5200	-5.96
		CH42	5209.9735	5210	-5.09
		CH46	5229.971	5230	-5.54
		CH48	5239.9715	5240	-5.44
		CH52	5259.973	5260	-5.13
		CH54	5269.9735	5270	-5.03
		CH58	5289.9755	5290	-4.63
		CH60	5299.975	5300	-4.72
		CH62	5309.9765	5310	-4.43
		CH64	5319.9745	5320	-4.79
		CH100	5499.975	5500	-4.55
		CH102	5509.9715	5510	-5.17
		CH106	5529.9725	5530	-4.97
		CH118	5589.96	5590	-7.16
		CH120	5599.9605	5600	-7.05
		CH122	5609.966	5610	-6.06
		CH134	5669.972	5670	-4.94
		CH140	5699.971	5700	-5.09
		CH149	5744.9715	5745	-4.96
		CH151	5754.974	5755	-4.52
		CH155	5774.975	5775	-4.33
		CH157	5784.977	5785	-3.98
		CH159	5794.9575	5795	-7.33
		CH165	5824.957	5825	-7.38
Conclusion: PASS					

Frequency Stability vs.Temperature:

Test Voltage	Temperature	CH	Max. Reading （MHz）	Target Frequency (MHz)	Result (ppm)
AC 120V	-20℃	CH36	5179.9565	5180	-8.40
		CH38	5189.969	5190	-5.97
		CH40	5199.9715	5200	-5.48
		CH42	5209.9715	5210	-5.47
		CH46	5229.9705	5230	-5.64
		CH48	5239.972	5240	-5.34
		CH52	5259.971	5260	-5.51
		CH54	5269.973	5270	-5.12
		CH58	5289.974	5290	-4.91
		CH60	5299.9745	5300	-4.81
		CH62	5309.9755	5310	-4.61
		CH64	5319.9735	5320	-4.98
		CH100	5499.9725	5500	-5.00
		CH102	5509.9715	5510	-5.17
		CH106	5529.9715	5530	-5.15
		CH118	5589.9585	5590	-7.42
		CH120	5599.9605	5600	-7.05
		CH122	5609.9655	5610	-6.15
		CH134	5669.971	5670	-5.11
		CH140	5699.971	5700	-5.09
		CH149	5744.972	5745	-4.87
		CH151	5754.972	5755	-4.87
		CH155	5774.9735	5775	-4.59
		CH157	5784.9735	5785	-4.58
		CH159	5794.957	5795	-7.42
		CH165	5824.958	5825	-7.21
Conclusion: PASS					

Test Voltage	Temperature	CH	Max. Reading （MHz）	Target Frequency (MHz)	Result (ppm)
AC 120V	15℃	CH36	5179.9565	5180	-8.40
		CH38	5189.9685	5190	-6.07
		CH40	5199.9695	5200	-5.87
		CH42	5209.9695	5210	-5.85
		CH46	5229.971	5230	-5.54
		CH48	5239.9715	5240	-5.44
		CH52	5259.9715	5260	-5.42
		CH54	5269.974	5270	-4.93
		CH58	5289.974	5290	-4.91
		CH60	5299.9745	5300	-4.81
		CH62	5309.9755	5310	-4.61
		CH64	5319.973	5320	-5.08
		CH100	5499.973	5500	-4.91
		CH102	5509.973	5510	-4.90
		CH106	5529.9715	5530	-5.15
		CH118	5589.957	5590	-7.69
		CH120	5599.9605	5600	-7.05
		CH122	5609.9655	5610	-6.15
		CH134	5669.971	5670	-5.11
		CH140	5699.971	5700	-5.09
		CH149	5744.9715	5745	-4.96
		CH151	5754.974	5755	-4.52
		CH155	5774.9725	5775	-4.76
		CH157	5784.9755	5785	-4.24
		CH159	5794.9575	5795	-7.33
		CH165	5824.957	5825	-7.38
Conclusion: PASS					

Test Voltage	Temperature	CH	Max. Reading （MHz）	Target Frequency (MHz)	Result (ppm)
AC 120V	25℃	CH36	5179.9560	5180	-8.49
		CH38	5189.9680	5190	-6.17
		CH40	5199.9690	5200	-5.96
		CH42	5209.9695	5210	-5.85
		CH46	5229.9700	5230	-5.74
		CH48	5239.9715	5240	-5.44
		CH52	5259.9710	5260	-5.51
		CH54	5269.9720	5270	-5.31
		CH58	5289.9740	5290	-4.91
		CH60	5299.9740	5300	-4.91
		CH62	5309.9735	5310	-4.99
		CH64	5319.9730	5320	-5.08
		CH100	5499.9725	5500	-5.00
		CH102	5509.9710	5510	-5.26
		CH106	5529.9715	5530	-5.15
		CH118	5589.9565	5590	-7.78
		CH120	5599.9600	5600	-7.14
		CH122	5609.9655	5610	-6.15
		CH134	5669.9690	5670	-5.47
		CH140	5699.9705	5700	-5.18
		CH149	5744.9715	5745	-4.96
		CH151	5754.9720	5755	-4.87
		CH155	5774.9720	5775	-4.85
		CH157	5784.9735	5785	-4.58
		CH159	5794.9570	5795	-7.42
		CH165	5824.9565	5825	-7.47
Conclusion: PASS					

Test Voltage	Temperature	CH	Max. Reading（MHz）	Target Frequency (MHz)	Result (ppm)
AC 120V	35℃	CH36	5179.957	5180	-8.30
		CH38	5189.9685	5190	-6.07
		CH40	5199.9705	5200	-5.67
		CH42	5209.97	5210	-5.76
		CH46	5229.973	5230	-5.16
		CH48	5239.972	5240	-5.34
		CH52	5259.9735	5260	-5.04
		CH54	5269.974	5270	-4.93
		CH58	5289.9745	5290	-4.82
		CH60	5299.975	5300	-4.72
		CH62	5309.9775	5310	-4.24
		CH64	5319.973	5320	-5.08
		CH100	5499.9735	5500	-4.82
		CH102	5509.975	5510	-4.54
		CH106	5529.9715	5530	-5.15
		CH118	5589.959	5590	-7.33
		CH120	5599.961	5600	-6.96
		CH122	5609.9655	5610	-6.15
		CH134	5669.9715	5670	-5.03
		CH140	5699.973	5700	-4.74
		CH149	5744.972	5745	-4.87
		CH151	5754.976	5755	-4.17
		CH155	5774.9725	5775	-4.76
		CH157	5784.976	5785	-4.15
		CH159	5794.9595	5795	-6.99
		CH165	5824.9595	5825	-6.95
Conclusion: PASS					

Test Voltage	Temperature	CH	Max. Reading（MHz）	Target Frequency (MHz)	Result (ppm)
AC 120V	50℃	CH36	5179.9575	5180	-8.20
		CH38	5189.9705	5190	-5.68
		CH40	5199.971	5200	-5.58
		CH42	5209.972	5210	-5.37
		CH46	5229.975	5230	-4.78
		CH48	5239.9725	5240	-5.25
		CH52	5259.9755	5260	-4.66
		CH54	5269.974	5270	-4.93
		CH58	5289.975	5290	-4.73
		CH60	5299.977	5300	-4.34
		CH62	5309.9775	5310	-4.24
		CH64	5319.9735	5320	-4.98
		CH100	5499.9735	5500	-4.82
		CH102	5509.9755	5510	-4.45
		CH106	5529.972	5530	-5.06
		CH118	5589.9595	5590	-7.25
		CH120	5599.963	5600	-6.61
		CH122	5609.9655	5610	-6.15
		CH134	5669.972	5670	-4.94
		CH140	5699.975	5700	-4.39
		CH149	5744.972	5745	-4.87
		CH151	5754.9765	5755	-4.08
		CH155	5774.9745	5775	-4.42
		CH157	5784.9785	5785	-3.72
		CH159	5794.9595	5795	-6.99
		CH165	5824.961	5825	-6.70
Conclusion: PASS					

12. ANTENNA REQUIREMENT

12.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, 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. And according to FCC 47 CFR Section 15.407 (a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

12.2. Antenna Connected Construction

The antennas used for this product are PIFA antenna that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is 3.08dBi.

13. DEVIATION TO TEST SPECIFICATIONS

[NONE]