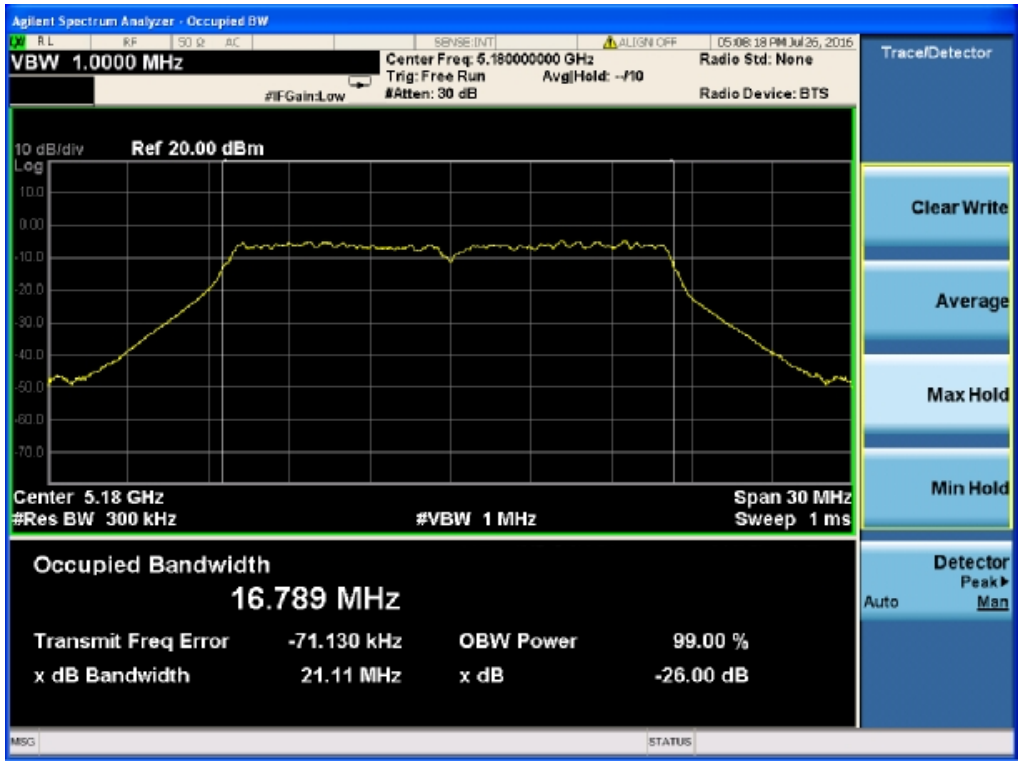
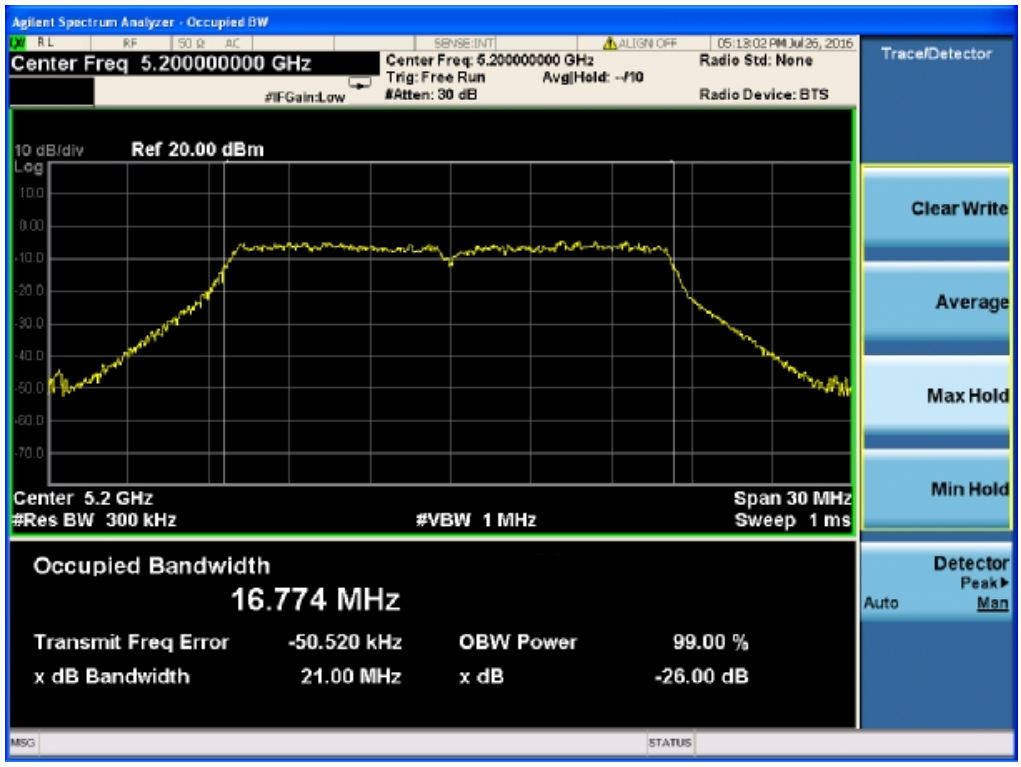
Ant 2

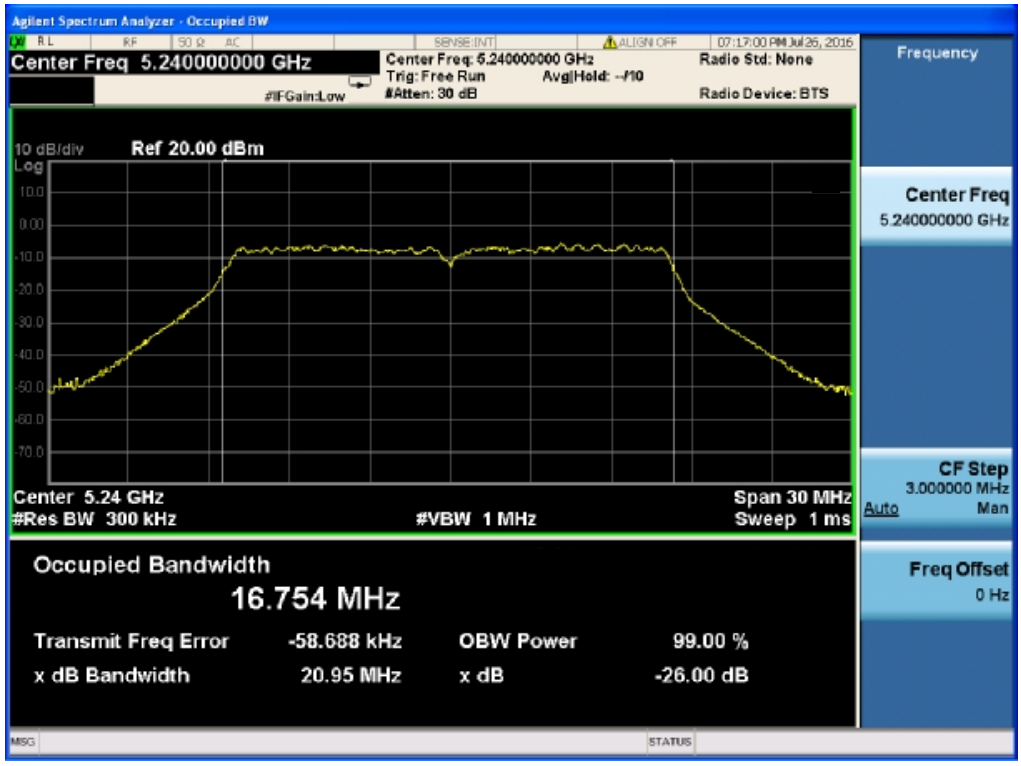
802.11a 5180MHz



802.11a 5200MHz

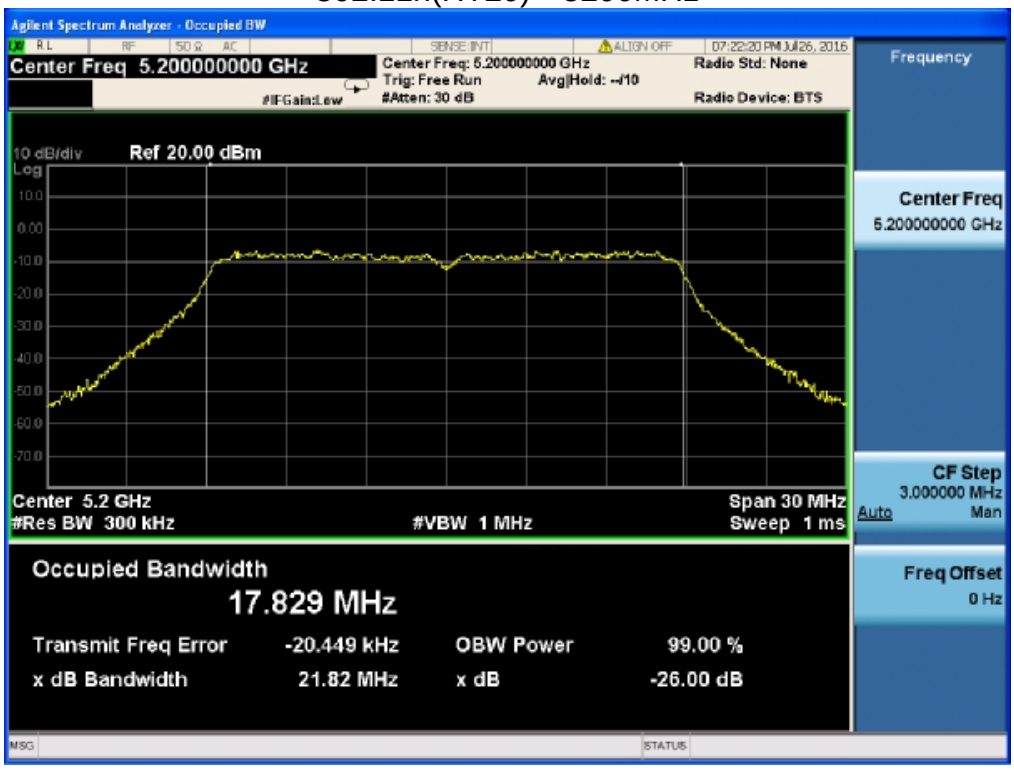


802.11a 5240MHz

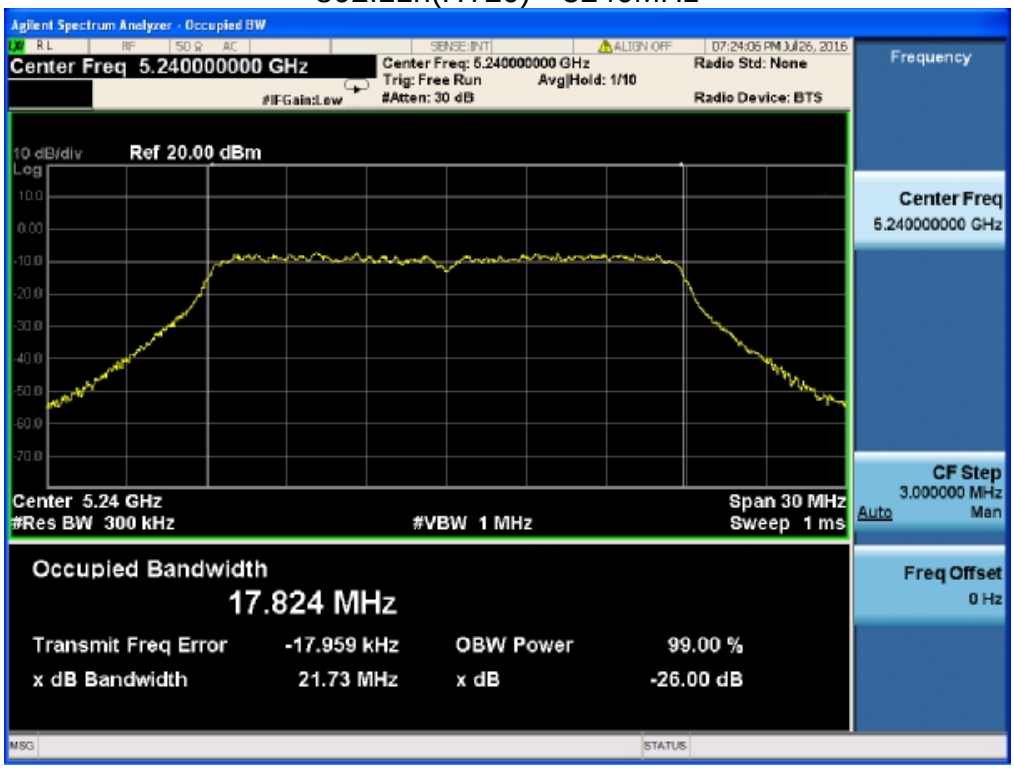


802.11n(HT20) 5180MHz

802.11n(HT20) 5200MHz



802.11n(HT20) 5240MHz



7. MINIMUM 6 DB BANDWIDTH

7.1. Applied procedures / limit

According to FCC §15.407(e)
(e) Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

7.2. TEST PROCEDURE

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.715-5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) 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 dB relative to the maximum level measured in the fundamental emission.

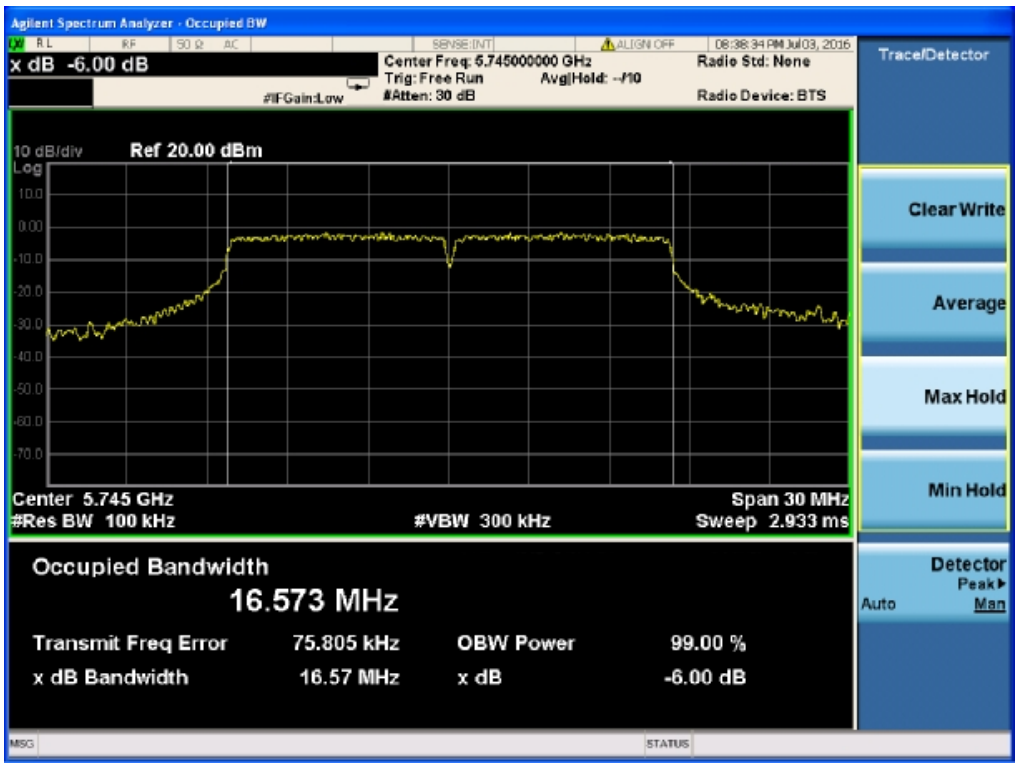
we test all antennas, the antenna 1 was worst mode and the data recording in the report.

7.3Test result

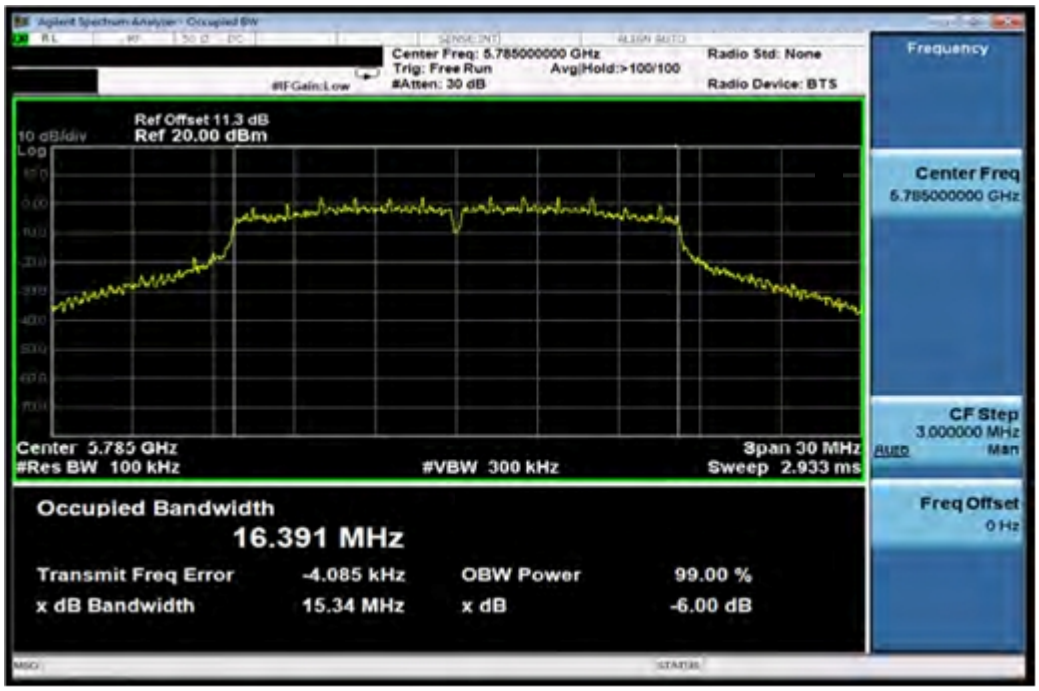
	Frequency (MHz)	-6dB Bandwidth (MHz)		99% Bandwidth (MHz)		Limit (MHz)
		Ant 1	Ant 2	Ant 1	Ant 2	
802.11a	5745	16.57	16.58	16.57	16.53	>0.5
	5785	15.34	16.55	16.39	16.52	>0.5
	5825	16.57	17.56	16.57	16.54	>0.5
802.11n (HT20)	5745	17.78	17.81	17.75	17.75	>0.5
	5785	17.76	17.76	17.74	17.74	>0.5
	5825	17.80	17.79	17.74	17.76	>0.5

Ant 1

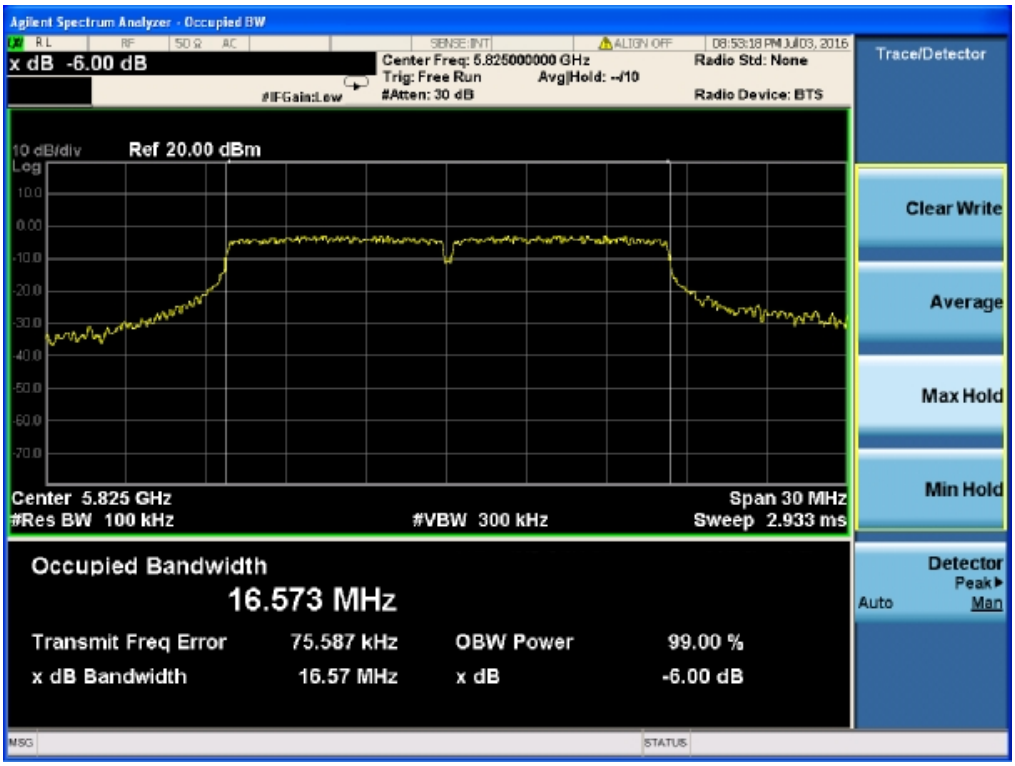
802.11a 5745MHz



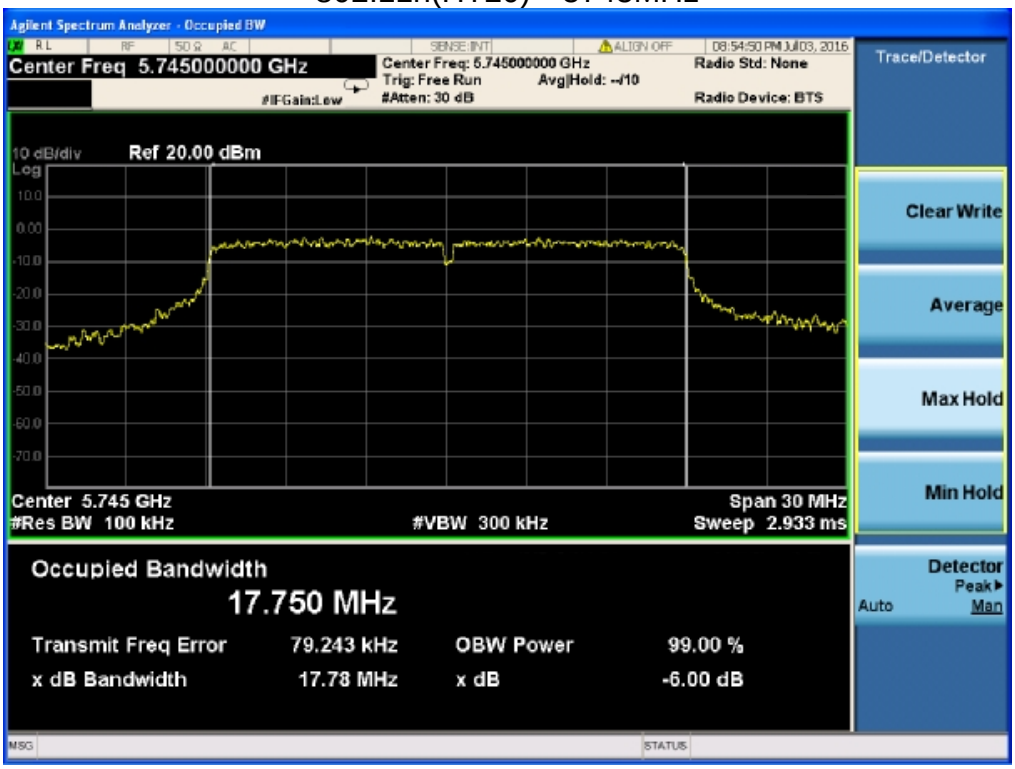
802.11a 5785MHz



802.11a 5825MHz

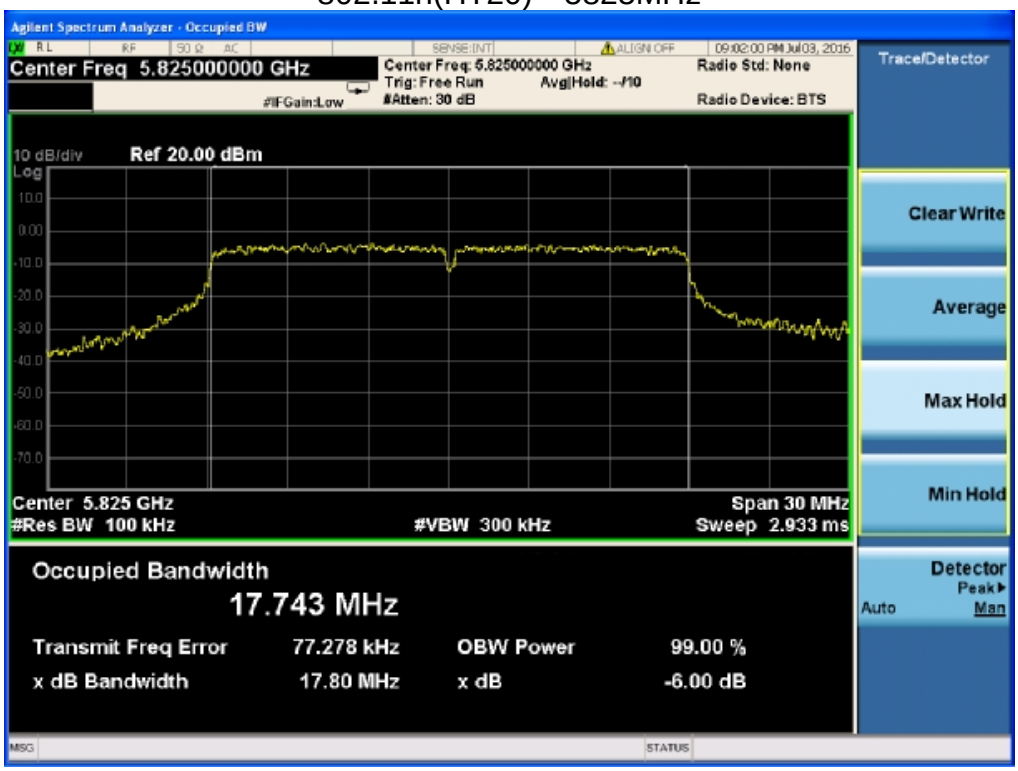


802.11n(HT20) 5745MHz



802.11n(HT20) 5785MHz

802.11n(HT20) 5825MHz

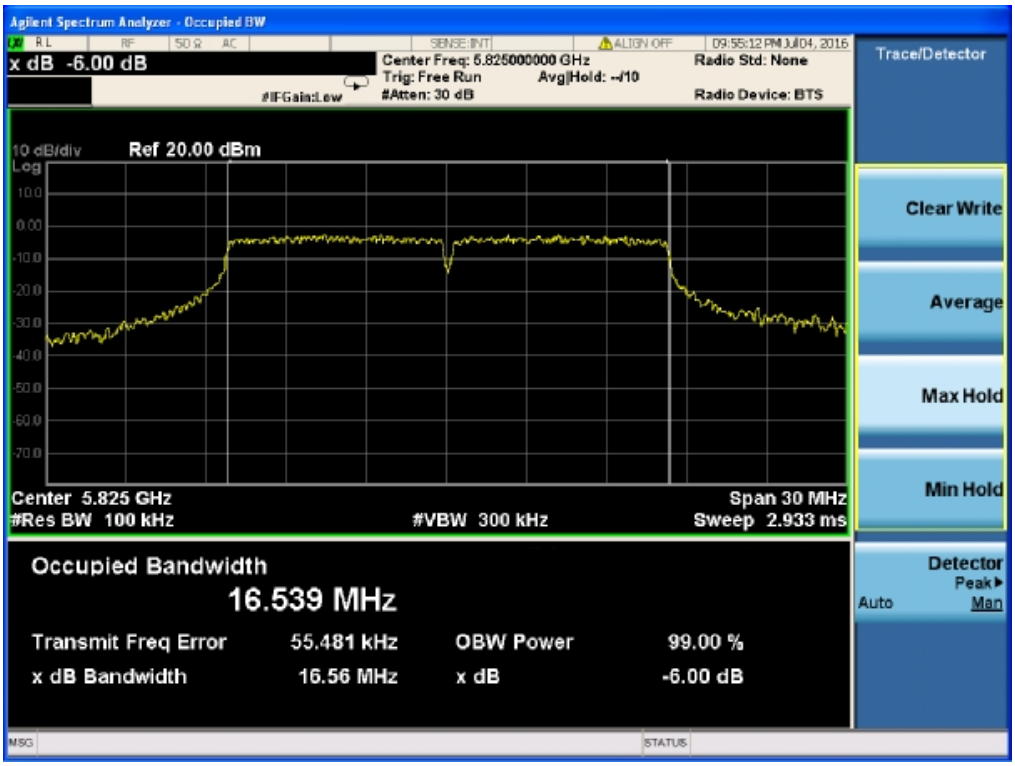


Ant 2

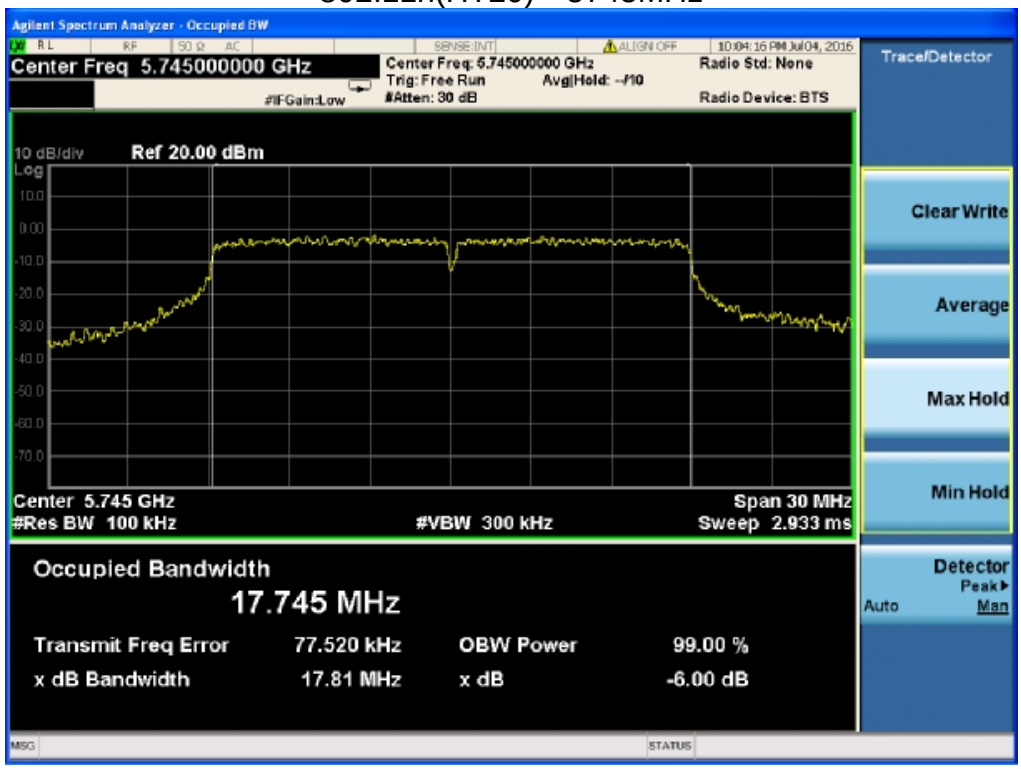
802.11a 5745MHz

802.11a 5785MHz

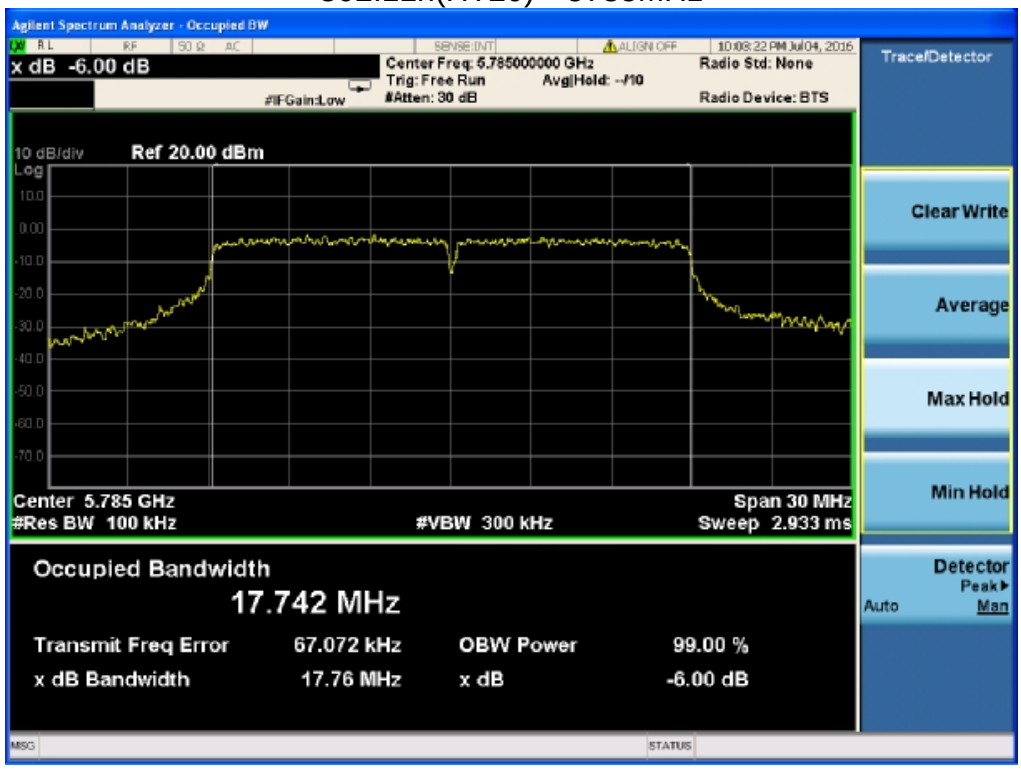
802.11a 5825MHz



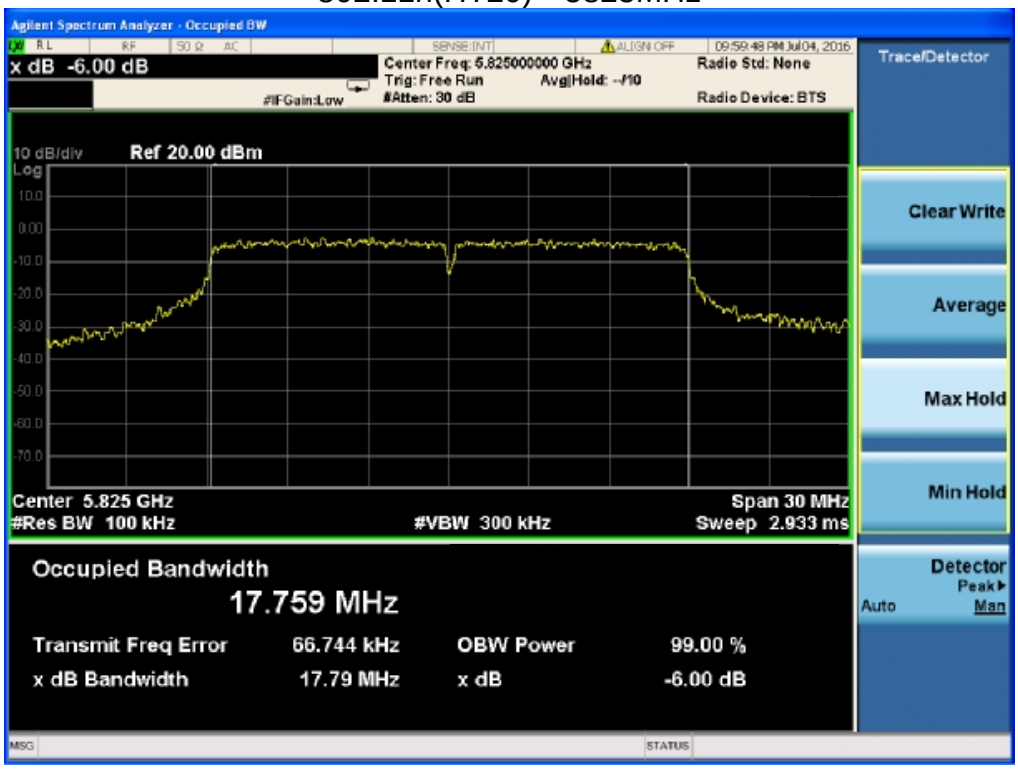
802.11n(HT20) 5745MHz



802.11n(HT20) 5785MHz



802.11n(HT20) 5825MHz



8. OUTPUT POWER TEST

8.1. Limits

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.

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

8.2. Test setup

1. The maximum average conducted output power can be measured using Method PM-G (Measurement using a gated RF average power meter):
2. 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.

a. The Transmitter output (antenna port) was connected to the power meter.

b. Turn on the EUT and power meter and then record the power value.

c. Repeat above procedures on all channels needed to be tested.

3. Note: the Directional Gain=5dBi+10log(2)=8dBi , so the final limit=requirement limit-(8-6)

8.3. Test result

	Frequency	Antenna port	Maximum Conducted Output Power(PK)	Maximum Conducted Output Power(PK)	Total Conducted Output Power(PK)	Total Conducted Output Power(PK)	LIMIT
	(MHz)		(dBm)	(mW)	(mW)	(dBm)	dBm
802.11a	5180	Ant.1	14.75	31.33	N/A	N/A	30
		Ant.2	14.27	28.05			
	5200	Ant.1	14.69	30.90	N/A	N/A	30
		Ant.2	14.12	27.10			
	5240	Ant.1	14.35	28.58	N/A	N/A	30
		Ant.2	14.18	27.48			
	5745	Ant.1	15.15	34.36	N/A	N/A	30
		Ant.2	15.36	36.06			
	5785	Ant.1	15.29	35.48	N/A	N/A	30
		Ant.2	15.11	34.04			
	5825	Ant.1	15.38	36.22	N/A	N/A	30
		Ant.2	15.37	36.14			
802.11n20	5180	Ant.1	13.57	22.75	44.03	16.44	28
		Ant.2	13.28	21.28			
	5200	Ant.1	13.76	23.77	44.53	16.49	28
		Ant.2	13.17	20.75			
	5240	Ant.1	13.08	20.32	40.60	16.09	28
		Ant.2	13.07	20.28			
	5745	Ant.1	14.31	26.98	52.86	17.22	28
		Ant.2	14.13	25.88			
	5785	Ant.1	14.37	27.35	53.84	17.31	28
		Ant.2	14.23	26.49			
	5825	Ant.1	14.22	26.42	54.22	17.34	28
		Ant.2	14.44	27.80			

9. PEAK POWER SPECTRAL DENSITY TEST

9.1. Limits

In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.

In addition, the maximum power spectral density shall not exceed 30 dBm in any 500 kHz band.

9.2. Test setup

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to

Spectrum.

4. For U-NII1, U-NII-2A, U-NII-2C Band:

Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)

For U-NII-3 Band:

Set RBW=510 kHz, VBW=3*RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)

5. User the cursor on spectrum to peak search the highest level of trace
6. Record the max. reading and add 10 log(1/duty cycle).
7. the Directional Gain=5dBi+10log(2)=8dBi , so the final limit=requirement limit-(8-6)

we test all antennas, the antenna 1 was worst mode and the data recording in the report.

9.3. Test data

Test data as below

	Frequency	Antenna port	Maximum Conducted Output Power(PK)	Duty factor	Duty factor 10 log (1MHz/RBW)	Total PPSD	LIMIT
	(MHz)		(dBm)	(dB)		(dBm)	dBm
802.11a	5180	Ant.1	1.532	0.0	0.0	N/A	11
		Ant.2	1.162	0.0	0.0		
	5200	Ant.1	1.500	0.0	0.0	N/A	11
		Ant.2	1.215	0.0	0.0		
	5240	Ant.1	1.935	0.0	0.0	N/A	11
		Ant.2	1.622	0.0	0.0		
	5745	Ant.1	1.662	0.0	0.0	N/A	30
		Ant.2	1.562	0.0	0.0		
	5785	Ant.1	0.727	0.0	0.0	N/A	30
		Ant.2	1.250	0.0	0.0		
	5825	Ant.1	-0.121	0.0	0.0	N/A	30
		Ant.2	-0.226	0.0	0.0		
802.11n20	5180	Ant.1	1.235	0.0	0.0	2.28	9
		Ant.2	1.034	0.0	0.0		
	5200	Ant.1	1.178	0.0	0.0	2.33	9
		Ant.2	1.151	0.0	0.0		
	5240	Ant.1	1.778	0.0	0.0	3.05	9
		Ant.2	1.268	0.0	0.0		
	5745	Ant.1	1.568	0.0	0.0	2.88	28
		Ant.2	1.316	0.0	0.0		
	5785	Ant.1	1.029	0.0	0.0	2.04	28
		Ant.2	1.006	0.0	0.0		
	5825	Ant.1	0.071	0.0	0.0	1.11	28
		Ant.2	1.032	0.0	0.0		

802.11a 5180MHz

802.11a 5200MHz

802.11a 5240MHz

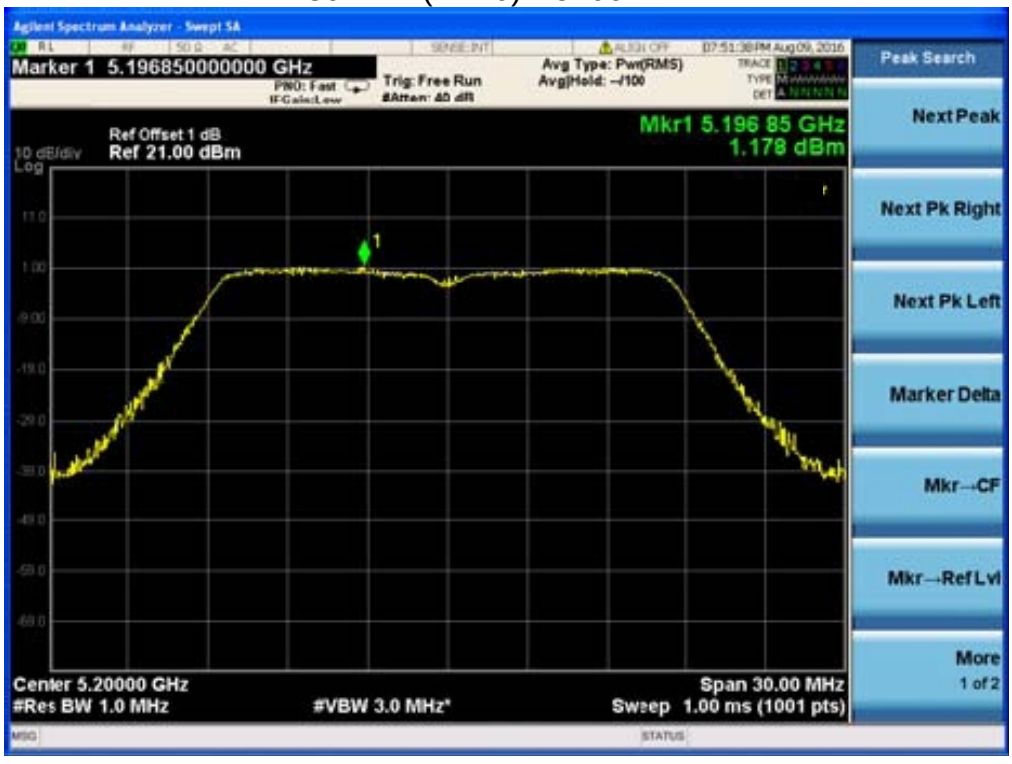
802.11a 5745MHz

802.11a 5785MHz

802.11a 5825MHz

802.11n(HT20) 5180MHz

802.11n(HT20) 5200MHz



802.11n(HT20) 5240MHz

802.11n(HT20) 5745MHz

802.11n(HT20) 5785MHz

802.11n(HT20) 5825MHz

10. DUTY CYCLE TEST SIGNAL

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

Formula:

Duty Cycle = Ton / (Ton+Toff)

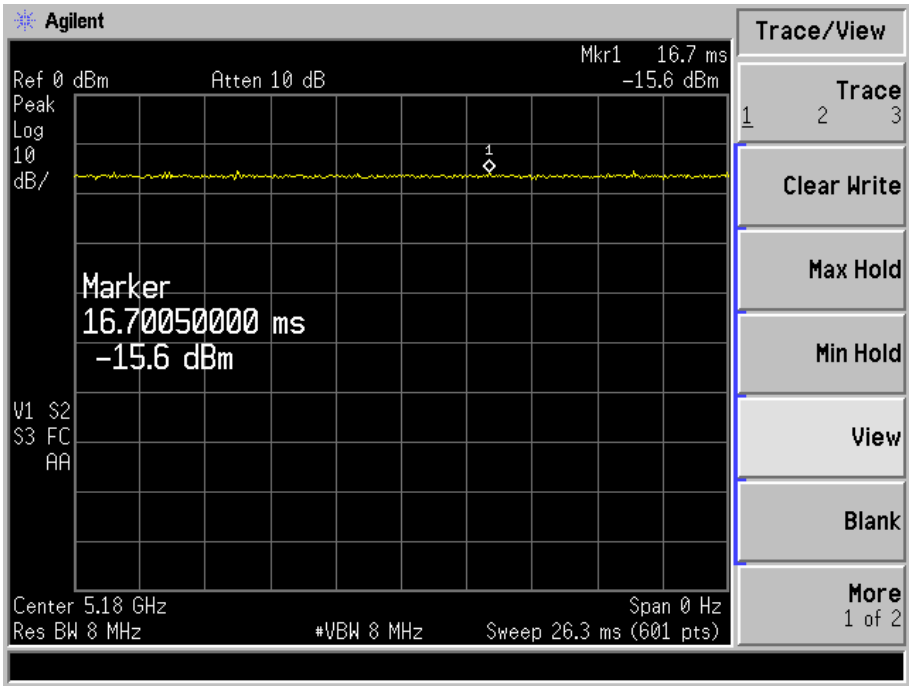
Measurement Procedure:

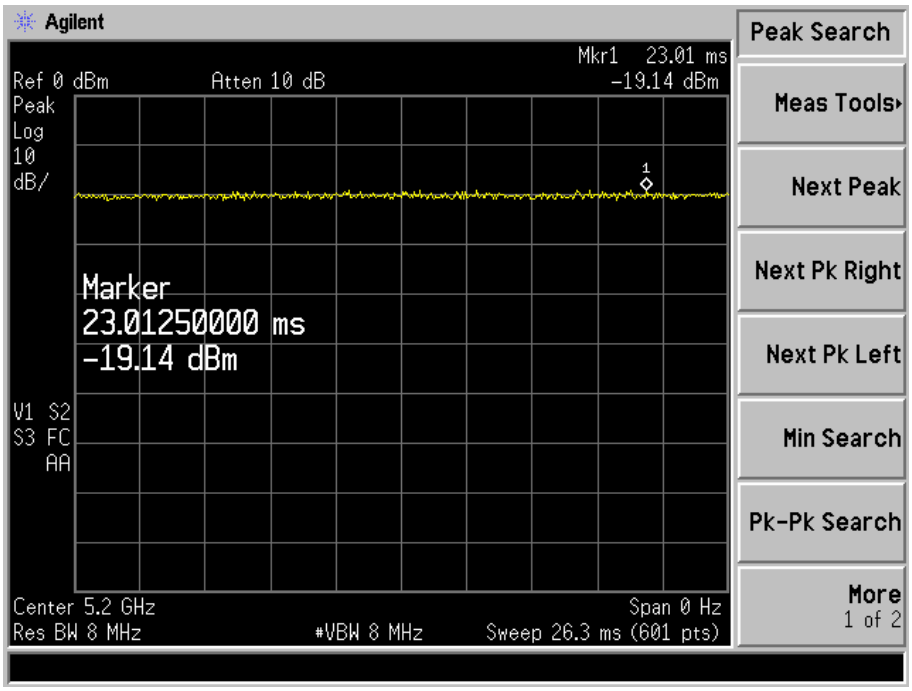
1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

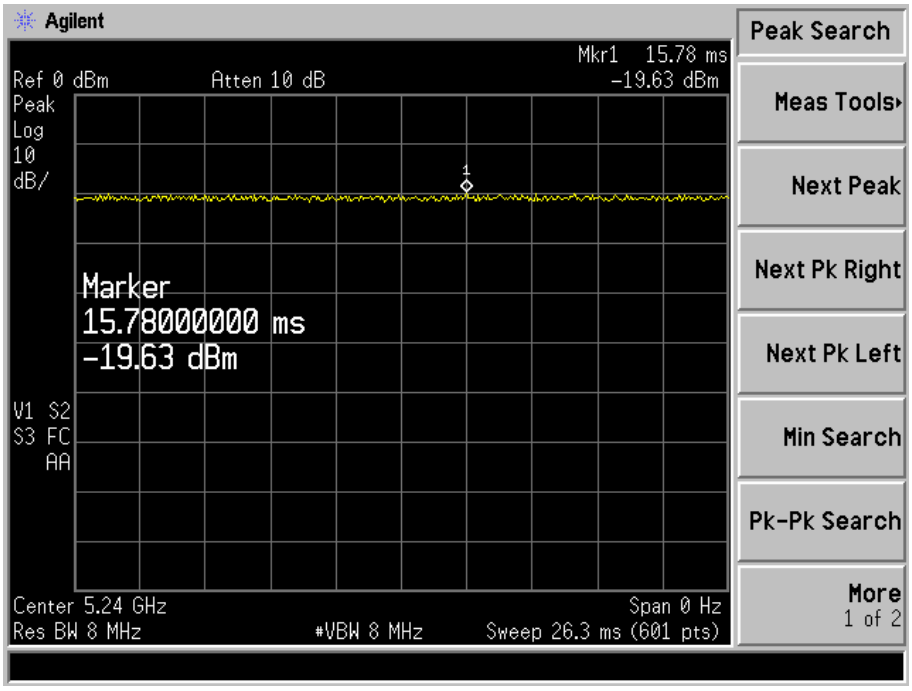
Duty Cycle:

Operation Mode	Duty Cycle	Duty Fator (dB) 10 * log (1/ Duty cycle)
802.11a	100%	0
802.11n(HT20)	100%	0

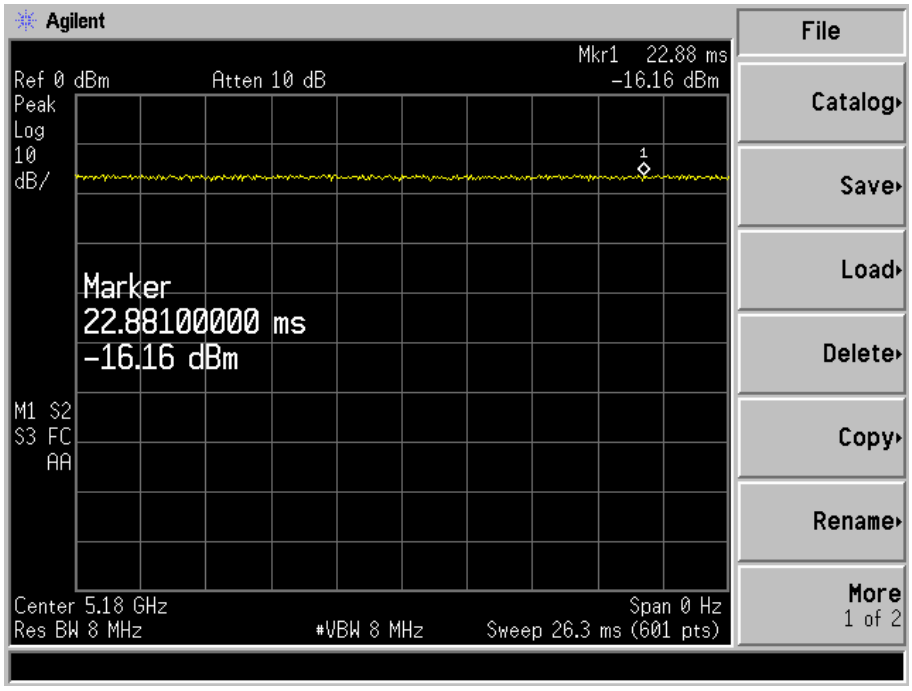
802.11a

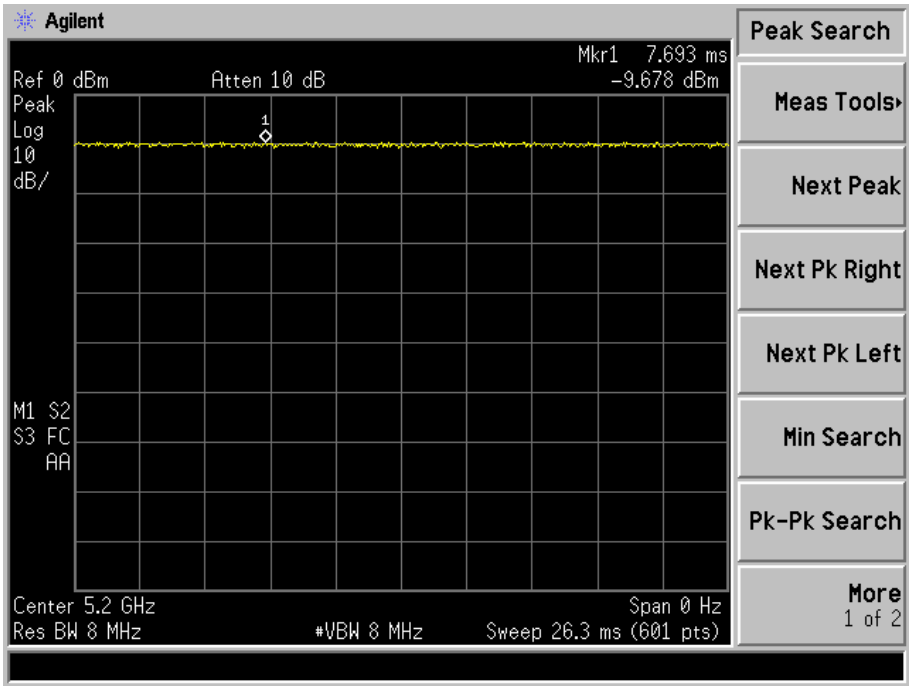

Agilent
Mkr1 16.7 ms
Ref 0 dBm
Atten 10 dB
-15.6 dBm
Peak
Log
10
dB/
Marker
16.70050000 ms
-15.6 dBm
V1 S2
S3 FC
AA
Center 5.18 GHz
Span 0 Hz
Res BW 8 MHz
#VBW 8 MHz
Sweep 26.3 ms (601 pts)
Trace/View
Trace
1 2 3
Clear Write
Max Hold
Min Hold
View
Blank
More
1 of 2

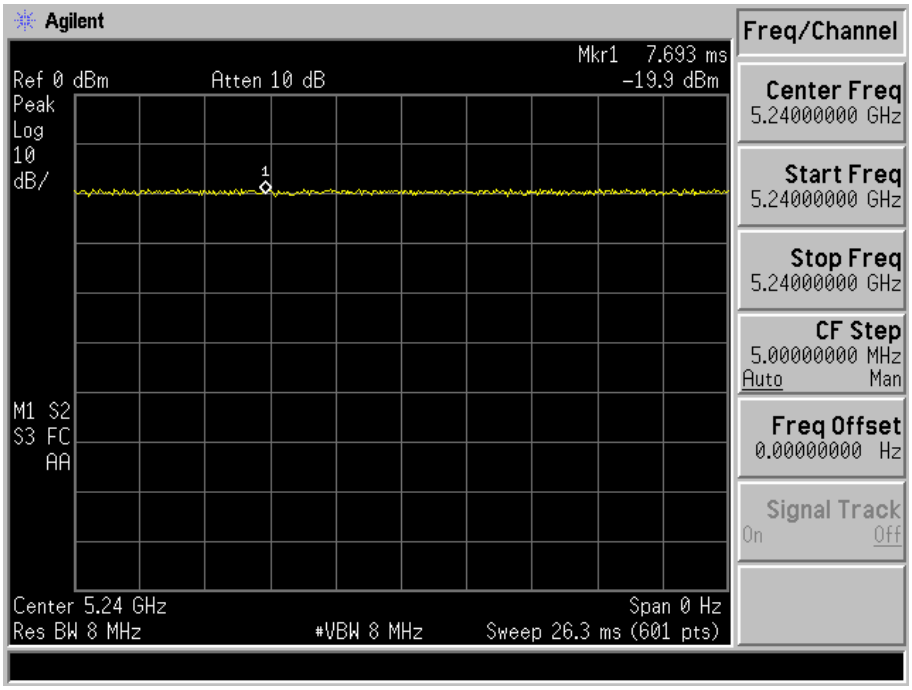

Agilent
Mkr1 23.01 ms
Ref 0 dBm
Atten 10 dB
-19.14 dBm
Peak
Log
10
dB/
Marker
23.01250000 ms
-19.14 dBm
V1 S2
S3 FC
AA
Center 5.2 GHz
Span 0 Hz
Res BW 8 MHz
#VBW 8 MHz
Sweep 26.3 ms (601 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2


Agilent
Mkr1 15.78 ms
Ref 0 dBm
Atten 10 dB
-19.63 dBm
Peak
Log
10
dB/
Marker
15.78000000 ms
-19.63 dBm
V1 S2
S3 FC
AA
Center 5.24 GHz
Span 0 Hz
Res BW 8 MHz
#VBW 8 MHz
Sweep 26.3 ms (601 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

802.11n20


Agilent
Mkr1 22.88 ms
Ref 0 dBm
Atten 10 dB
-16.16 dBm
Peak
Log
10
dB/
Marker
22.88100000 ms
-16.16 dBm
M1 S2
S3 FC
AA
Center 5.18 GHz
Span 0 Hz
Res BW 8 MHz
#VBW 8 MHz
Sweep 26.3 ms (601 pts)
File
Catalog
Save
Load
Delete
Copy
Rename
More
1 of 2


Agilent
Mkr1 7.693 ms
Ref 0 dBm
Atten 10 dB
-9.678 dBm
Peak
Log
10
dB/
M1 S2
S3 FC
AA
Center 5.2 GHz
Span 0 Hz
Res BW 8 MHz
#VBW 8 MHz
Sweep 26.3 ms (601 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2


Agilent
Mkr1 7.693 ms
Ref 0 dBm
Atten 10 dB
-19.9 dBm
Peak
Log
10
dB/
M1 S2
S3 FC
AA
Center 5.24 GHz
Span 0 Hz
Res BW 8 MHz
#VBW 8 MHz
Sweep 26.3 ms (601 pts)
Freq/Channel
Center Freq
5.24000000 GHz
Start Freq
5.24000000 GHz
Stop Freq
5.24000000 GHz
CF Step
5.00000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off

11. FREQUENCY STABILITY

11.1. Limits

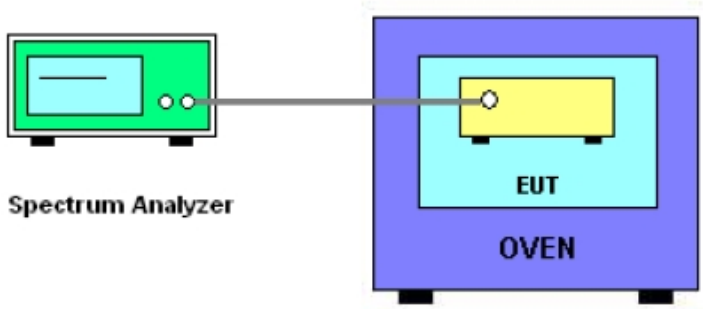
Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band (IEEE802.11n specification).

11.2. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 106 ppm and the limit is less than ±20ppm (IEEE 802.11nspecification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature is -20°C~70°C.

11.3. Test Setup Layout



11.4. EUT Operation during Test

The EUT was programmed to be in continuously un-modulation transmitting mode.

11.5. Test Results

Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1015 hPa	Test Voltage ：	DC 5V
Test Mode ：	Ant.1 TX		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5180.01165	5180	0.01165	-2.2490
		V max (V)	5.75	5180.00981	5180	0.00981	-1.8938
		V min (V)	4.25	5180.01171	5180	0.01171	-2.2606
Limits				± 20 ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5180.00268	5180	0.00268	-0.5174
		T (°C)	-10	5180.00165	5180	0.00165	-0.3185
		T (°C)	0	5180.01682	5180	0.01682	-3.2471
		T (°C)	10	5180.01195	5180	0.01195	-2.3069
		T (°C)	20	5180.01172	5180	0.01172	-2.2625
		T (°C)	30	5180.01271	5180	0.01271	-2.4537
		T (°C)	40	5180.01216	5180	0.01216	-2.3475
		T (°C)	50	5180.01224	5180	0.01224	-2.3629
		T (°C)	60	5180.01319	5180	0.01319	-2.5463
		T (°C)	70	5180.01481	5180	0.01481	-2.8591
Limits				± 20 ppm			
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)	5.00	5200.02264	5200	0.02264	-4.3538
		V max (V)	5.75	5200.02165	5200	0.02165	-4.1635
		V min (V)	4.25	5200.02259	5200	0.02259	-4.3442
Limits				± 20 ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5200.00218	5200	0.00218	-0.4192
		T (°C)	-10	5200.00619	5200	0.00619	-1.1904
		T (°C)	0	5200.01658	5200	0.01658	-3.1885
		T (°C)	10	5200.01195	5200	0.01195	-2.2981
		T (°C)	20	5200.01752	5200	0.01752	-3.3692
		T (°C)	30	5200.02116	5200	0.02116	-4.0692
		T (°C)	40	5200.02058	5200	0.02058	-3.9577
		T (°C)	50	5200.02568	5200	0.02568	-4.9385
		T (°C)	60	5200.02273	5200	0.02273	-4.3712
		T (°C)	70	5200.02259	5200	0.02259	-4.3442
Limits				± 20 ppm			
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)	5.00	5240.00165	5240	0.00165	-0.3149
		V max (V)	5.75	5240.00118	5240	0.00118	-0.2252
		V min (V)	4.25	5240.00681	5240	0.00681	-1.2996
Limits				± 20 ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5240.01182	5240	0.01182	-2.2557
		T (°C)	-10	5240.00367	5240	0.00367	-0.7004
		T (°C)	0	5240.01182	5240	0.01182	-2.2557
		T (°C)	10	5240.01219	5240	0.01219	-2.3263
		T (°C)	20	5240.01167	5240	0.01167	-2.2271
		T (°C)	30	5240.01362	5240	0.01362	-2.5992
		T (°C)	40	5240.01229	5240	0.01229	-2.3454
		T (°C)	50	5240.01215	5240	0.01215	-2.3187
		T (°C)	60	5240.00336	5240	0.00336	-0.6412
		T (°C)	70	5240.01216	5240	0.01216	-2.3206
Limits				± 20 ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5745.01125	5745	0.01125	-1.9582
		V max (V)	5.75	5745.00943	5745	0.00943	-1.6414
		V min (V)	4.25	5745.01152	5745	0.01152	-2.0052
Limits				± 20 ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5745.00236	5745	0.00236	-0.4108
		T (°C)	-10	5745.00145	5745	0.00145	-0.2524
		T (°C)	0	5745.01361	5745	0.01361	-2.3690
		T (°C)	10	5745.01025	5745	0.01025	-1.7842
		T (°C)	20	5745.01163	5745	0.01163	-2.0244
		T (°C)	30	5745.01264	5745	0.01264	-2.2002
		T (°C)	40	5745.01312	5745	0.01312	-2.2837
		T (°C)	50	5745.01247	5745	0.01247	-2.1706
		T (°C)	60	5745.01318	5745	0.01318	-2.2942
		T (°C)	70	5745.01451	5745	0.01451	-2.5257
Limits				± 20 ppm			
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)	5.00	5785.02264	5785	0.02264	-3.9136
		V max (V)	5.75	5785.02165	5785	0.02165	-3.7424
		V min (V)	4.25	5785.02259	5785	0.02259	-3.9049
Limits				± 20 ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5785.00169	5785	0.00169	-0.2921
		T (°C)	-10	5785.00412	5785	0.00412	-0.7122
		T (°C)	0	5785.01357	5785	0.01357	-2.3457
		T (°C)	10	5785.01136	5785	0.01136	-1.9637
		T (°C)	20	5785.01157	5785	0.01157	-2.0000
		T (°C)	30	5785.02145	5785	0.02145	-3.7079
		T (°C)	40	5785.02074	5785	0.02074	-3.5851
		T (°C)	50	5785.01568	5785	0.01568	-2.7105
		T (°C)	60	5785.02562	5785	0.02562	-4.4287
		T (°C)	70	5785.02154	5785	0.02154	-3.7234
Limits				± 20 ppm			
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)	5.00	5825.00234	5825	0.00234	-0.4017
		V max (V)	5.75	5825.00188	5825	0.00188	-0.3227
		V min (V)	4.25	5825.00696	5825	0.00696	-1.1948
Limits				± 20 ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5825.01145	5825	0.01145	-1.9657
		T (°C)	-10	5825.00336	5825	0.00336	-0.5768
		T (°C)	0	5825.01171	5825	0.01171	-2.0103
		T (°C)	10	5825.01226	5825	0.01226	-2.1047
		T (°C)	20	5825.01146	5825	0.01146	-1.9674
		T (°C)	30	5825.01325	5825	0.01325	-2.2747
		T (°C)	40	5825.01236	5825	0.01236	-2.1219
		T (°C)	50	5825.01342	5825	0.01342	-2.3039
		T (°C)	60	5825.00334	5825	0.00334	-0.5734
		T (°C)	70	5825.01314	5825	0.01314	-2.2558
Limits				± 20 ppm			
Result				Complies			

Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1015 hPa	Test Voltage ：	DC 5V
Test Mode ：	Ant.2 TX		

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5180.01234	5180	0.01234	-2.3822
		V max (V)	5.75	5180.00756	5180	0.00756	-1.4595
		V min (V)	4.25	5180.01134	5180	0.01134	-2.1892
Limits				± 20 ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5180MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5180.00154	5180	0.00154	-0.2973
		T (°C)	-10	5180.00178	5180	0.00178	-0.3436
		T (°C)	0	5180.01563	5180	0.01563	-3.0174
		T (°C)	10	5180.01142	5180	0.01142	-2.2046
		T (°C)	20	5180.01162	5180	0.01162	-2.2432
		T (°C)	30	5180.01258	5180	0.01258	-2.4286
		T (°C)	40	5180.01212	5180	0.01212	-2.3398
		T (°C)	50	5180.01243	5180	0.01243	-2.3996
		T (°C)	60	5180.01319	5180	0.01319	-2.5463
		T (°C)	70	5180.01424	5180	0.01424	-2.7490
Limits				± 20 ppm			
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)	5.00	5200.02152	5200	0.02152	-4.1385
		V max (V)	5.75	5200.02144	5200	0.02144	-4.1231
		V min (V)	4.25	5200.02251	5200	0.02251	-4.3288
Limits				± 20 ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5200MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5200.00205	5200	0.00205	-0.3942
		T (°C)	-10	5200.00536	5200	0.00536	-1.0308
		T (°C)	0	5200.01652	5200	0.01652	-3.1769
		T (°C)	10	5200.01207	5200	0.01207	-2.3212
		T (°C)	20	5200.01742	5200	0.01742	-3.3500
		T (°C)	30	5200.02311	5200	0.02311	-4.4442
		T (°C)	40	5200.02157	5200	0.02157	-4.1481
		T (°C)	50	5200.02458	5200	0.02458	-4.7269
		T (°C)	60	5200.02233	5200	0.02233	-4.2942
		T (°C)	70	5200.02235	5200	0.02235	-4.2981
Limits				± 20 ppm			
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)	5.00	5240.00142	5240	0.00142	-0.2710
		V max (V)	5.75	5240.00127	5240	0.00127	-0.2424
		V min (V)	4.25	5240.00493	5240	0.00493	-0.9408
Limits				± 20 ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5240MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5240.01234	5240	0.01234	-2.3550
		T (°C)	-10	5240.00349	5240	0.00349	-0.6660
		T (°C)	0	5240.01154	5240	0.01154	-2.2023
		T (°C)	10	5240.01247	5240	0.01247	-2.3798
		T (°C)	20	5240.01136	5240	0.01136	-2.1679
		T (°C)	30	5240.01324	5240	0.01324	-2.5267
		T (°C)	40	5240.01234	5240	0.01234	-2.3550
		T (°C)	50	5240.01147	5240	0.01147	-2.1889
		T (°C)	60	5240.00317	5240	0.00317	-0.6044
		T (°C)	70	5240.01132	5240	0.01132	-2.1603
Limits				± 20 ppm			
Result				Complies			

Voltage vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
T nom (°C)	20	V nom (V)	5.00	5745.01131	5745	0.01131	-1.9687
		V max (V)	5.75	5745.00463	5745	0.00463	-0.8059
		V min (V)	4.25	5745.01290	5745	0.01290	-2.2454
Limits				± 20 ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5745MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5745.00129	5745	0.00129	-0.2245
		T (°C)	-10	5745.00142	5745	0.00142	-0.2472
		T (°C)	0	5745.01344	5745	0.01344	-2.3394
		T (°C)	10	5745.01016	5745	0.01016	-1.7685
		T (°C)	20	5745.01213	5745	0.01213	-2.1114
		T (°C)	30	5745.01306	5745	0.01306	-2.2733
		T (°C)	40	5745.01271	5745	0.01271	-2.2124
		T (°C)	50	5745.01134	5745	0.01134	-1.9739
		T (°C)	60	5745.01463	5745	0.01463	-2.5466
		T (°C)	70	5745.01542	5745	0.01542	-2.6841
Limits				± 20 ppm			
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)	5.00	5785.01286	5785	0.01286	-2.2230
		V max (V)	5.75	5785.02123	5785	0.02123	-3.6698
		V min (V)	4.25	5785.02054	5785	0.02054	-3.5506
Limits				± 20 ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5785MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5785.01075	5785	0.01075	-1.8583
		T (°C)	-10	5785.00648	5785	0.00648	-1.1201
		T (°C)	0	5785.01432	5785	0.01432	-2.4754
		T (°C)	10	5785.01035	5785	0.01035	-1.7891
		T (°C)	20	5785.01141	5785	0.01141	-1.9723
		T (°C)	30	5785.02170	5785	0.02170	-3.7511
		T (°C)	40	5785.01986	5785	0.01986	-3.4330
		T (°C)	50	5785.01736	5785	0.01736	-3.0009
		T (°C)	60	5785.02232	5785	0.02232	-3.8583
		T (°C)	70	5785.02166	5785	0.02166	-3.7442
Limits				± 20 ppm			
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)	5.00	5825.00197	5825	0.00197	-0.3382
		V max (V)	5.75	5825.00139	5825	0.00139	-0.2386
		V min (V)	4.25	5825.00724	5825	0.00724	-1.2429
Limits				± 20 ppm			
Result				Complies			

Temperature vs. Frequency Stability

TEST CONDITIONS				Reference Frequency：5825MHz			
				f	fc	Max. Deviation (MHz)	Max. Deviation (ppm)
V nom (V)	5	T (°C)	-20	5825.02011	5825	0.02011	-3.4524
		T (°C)	-10	5825.00451	5825	0.00451	-0.7742
		T (°C)	0	5825.01085	5825	0.01085	-1.8627
		T (°C)	10	5825.01120	5825	0.01120	-1.9227
		T (°C)	20	5825.02076	5825	0.02076	-3.5639
		T (°C)	30	5825.01527	5825	0.01527	-2.6215
		T (°C)	40	5825.01530	5825	0.01530	-2.6266
		T (°C)	50	5825.01169	5825	0.01169	-2.0069
		T (°C)	60	5825.00427	5825	0.00427	-0.7330
		T (°C)	70	5825.01094	5825	0.01094	-1.8781
Limits				± 20 ppm			
Result				Complies			

12. TRANSMISSION IN THE ABSENCE OF DATA

12.1. Limits

According to §15.407(c)

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 signaling 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.

12.2. Test result

No non-compliance noted:

Refer to the theory of operation.

13. ANTENNA REQUIREMENT

13.1. STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 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.

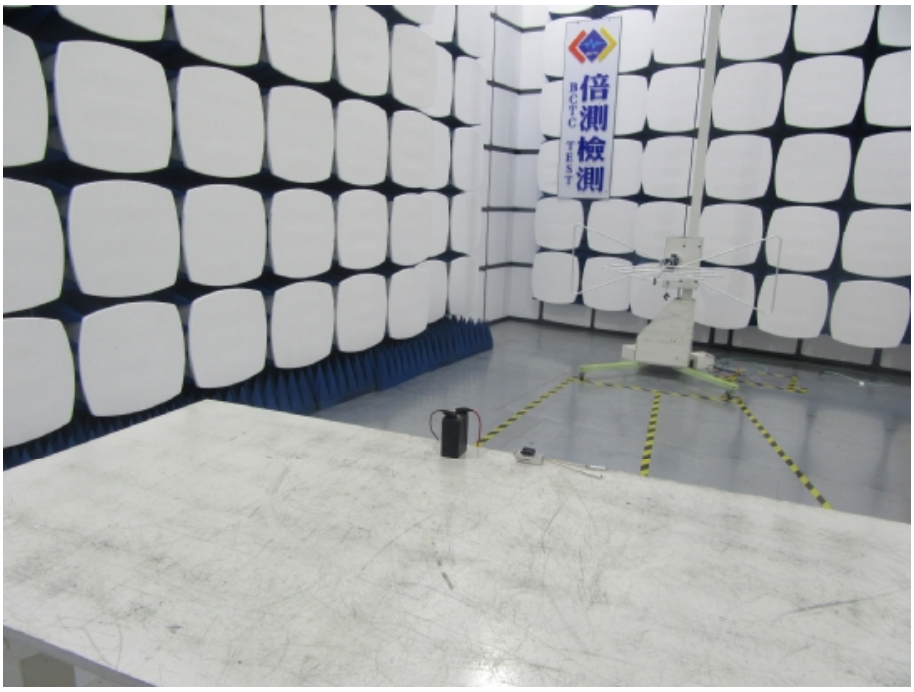
13.2. EUT ANTENNA

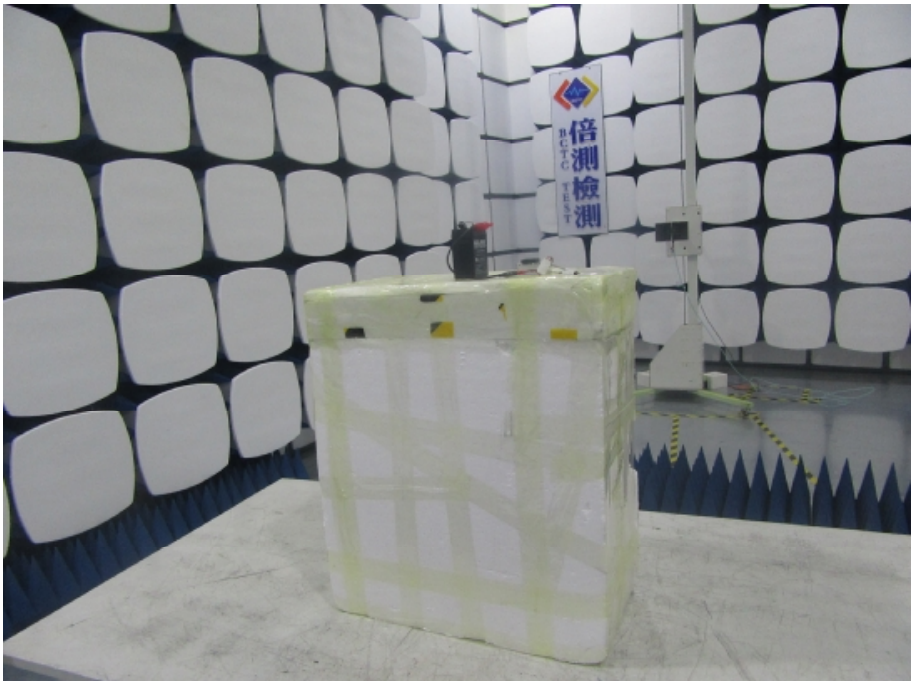
The EUT antenna is Permanent Connection External antenna, It comply with the standard requirement.

14. PHOTOGRAPHS OF TEST SET-UP

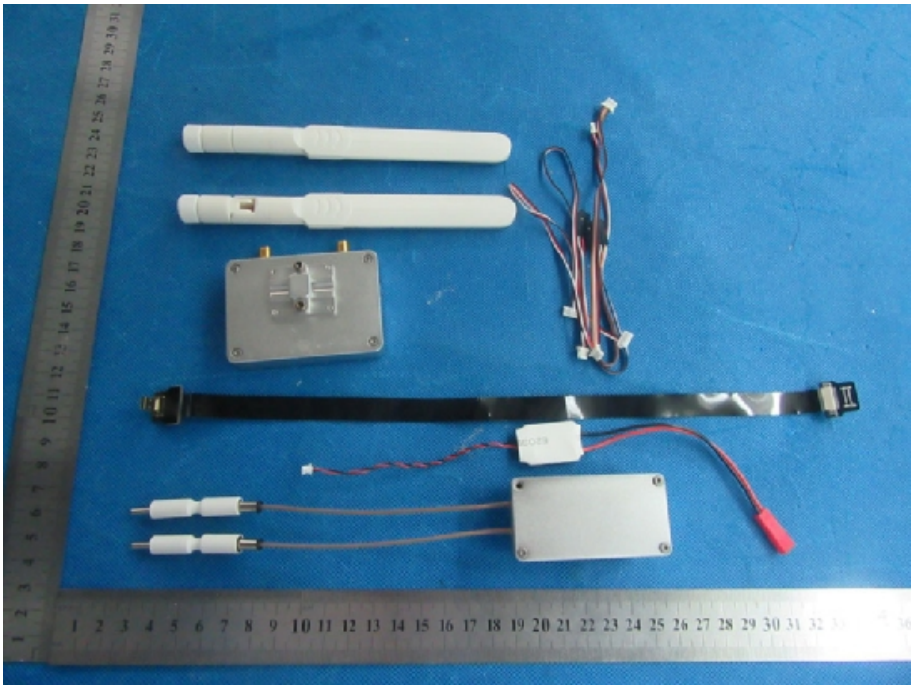
Conducted Emission Photos

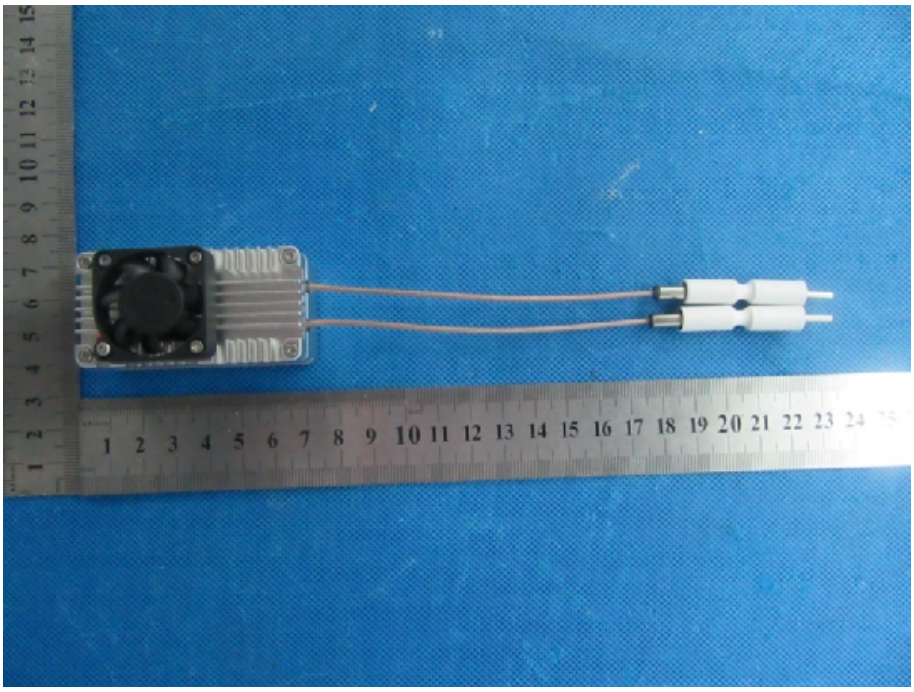
Radiated Emission Test

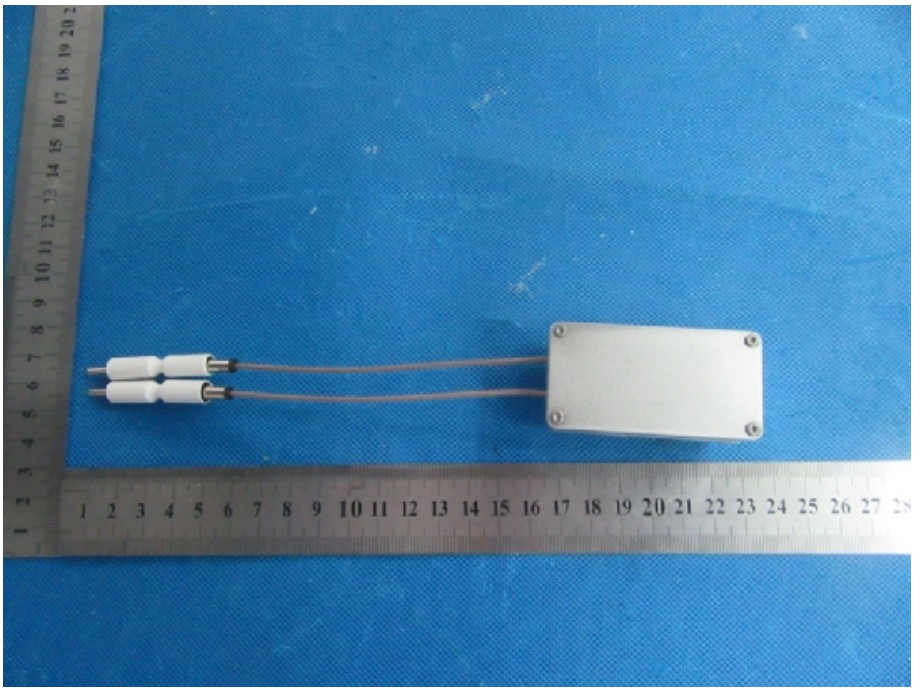




15. PHOTOGRAPHS OF THE EUT







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