

14.5 Power Spectral Density

LIMITS

Operation Band		Limit
<input checked="" type="checkbox"/> 5180~5240MHz	<input type="checkbox"/> Outdoor access point	17 dBm/MHz
	<input type="checkbox"/> Indoor access point	17 dBm/MHz
	<input type="checkbox"/> Fixed point-to-point access points	17 dBm/MHz
	<input checked="" type="checkbox"/> Client devices	11 dBm/MHz
<input type="checkbox"/> 5260~5320MHz	-	11 dBm/MHz
<input type="checkbox"/> 5500~5700MHz	-	11 dBm/MHz
<input checked="" type="checkbox"/> 5745~5825MHz	-	30 dBm/500kHz

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

The antenna port of the EUT was connected to the input of a spectrum analyzer.

Analyzer was set as below according to FCC KDB789033 (v02r01):

- a. Set analyzer center frequency to center frequency
- b. Set the RBW to: 1MHz
- c. Set the VBW to: 3MHz
- d. Detector = RMS
- e. Sweep time = auto couple
- f. Trace Average = 100 times
- g. If measured bandwidth of Maximum PSD is specified in 500kHz, add $10\log(500\text{kHz}/\text{RBW})$ to the measured result, whereas RBW (<500kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement. Allow trace to fully stabilize.

TEST RESULTS

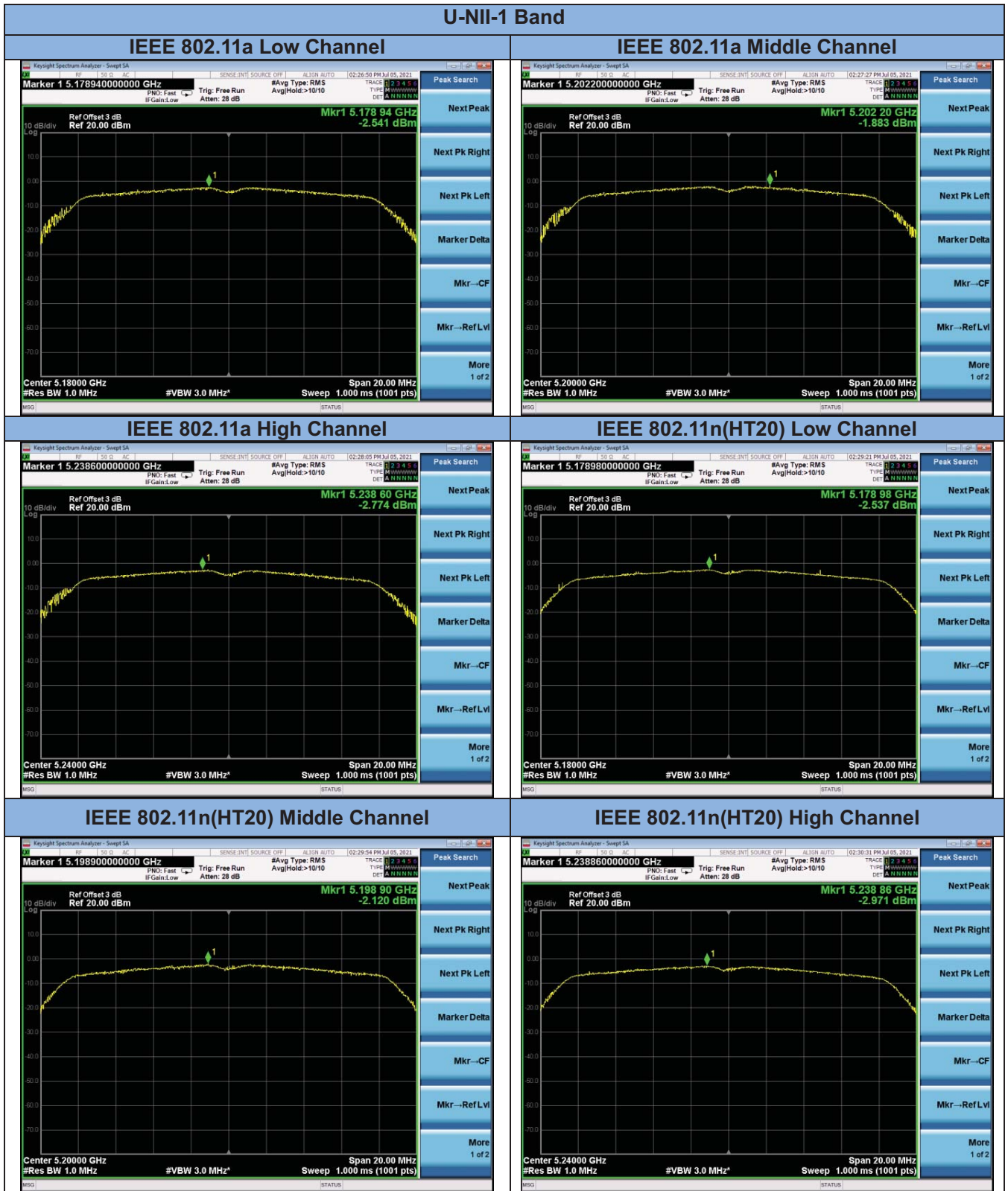
PASS

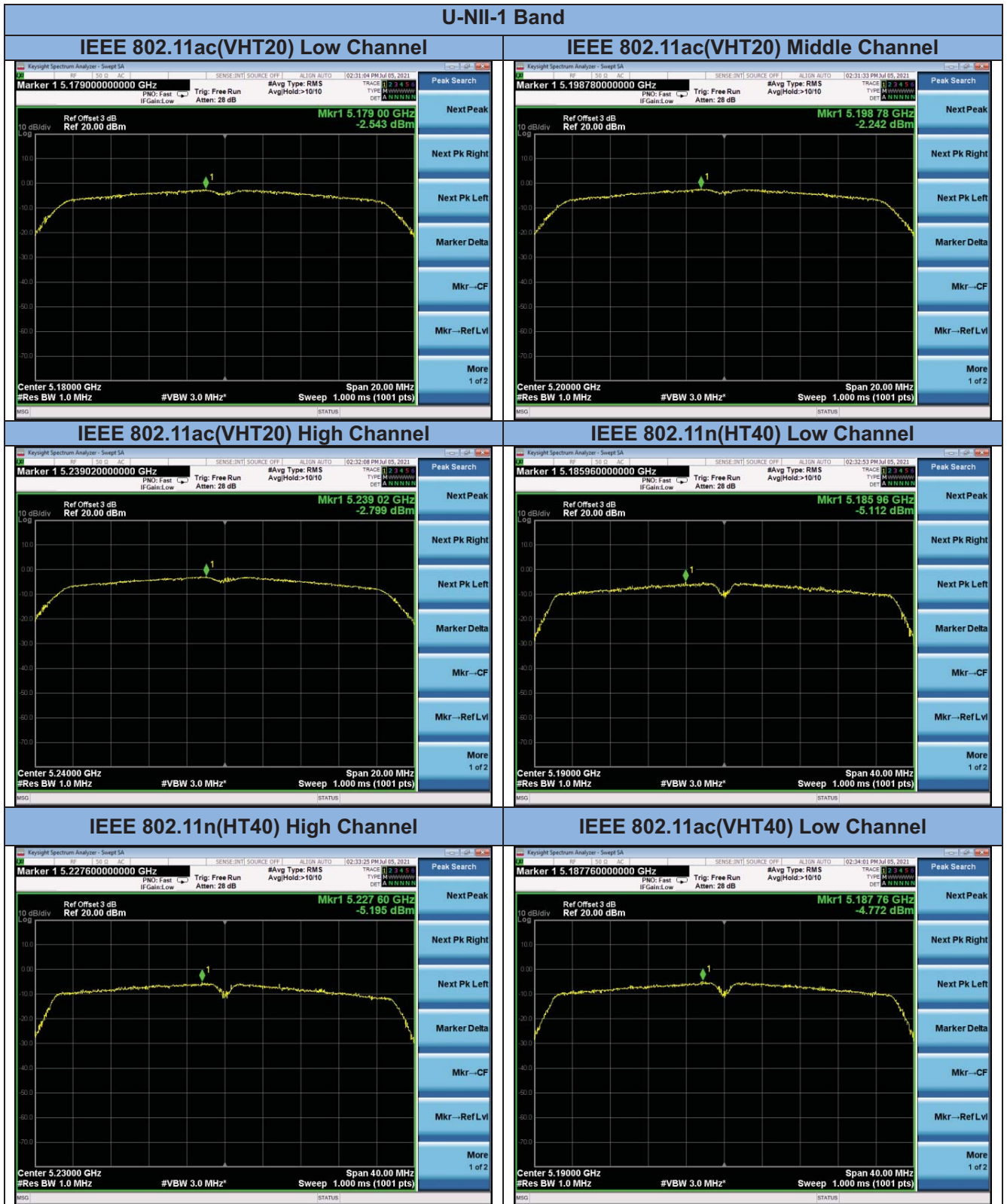
Please refer to the following test plots.

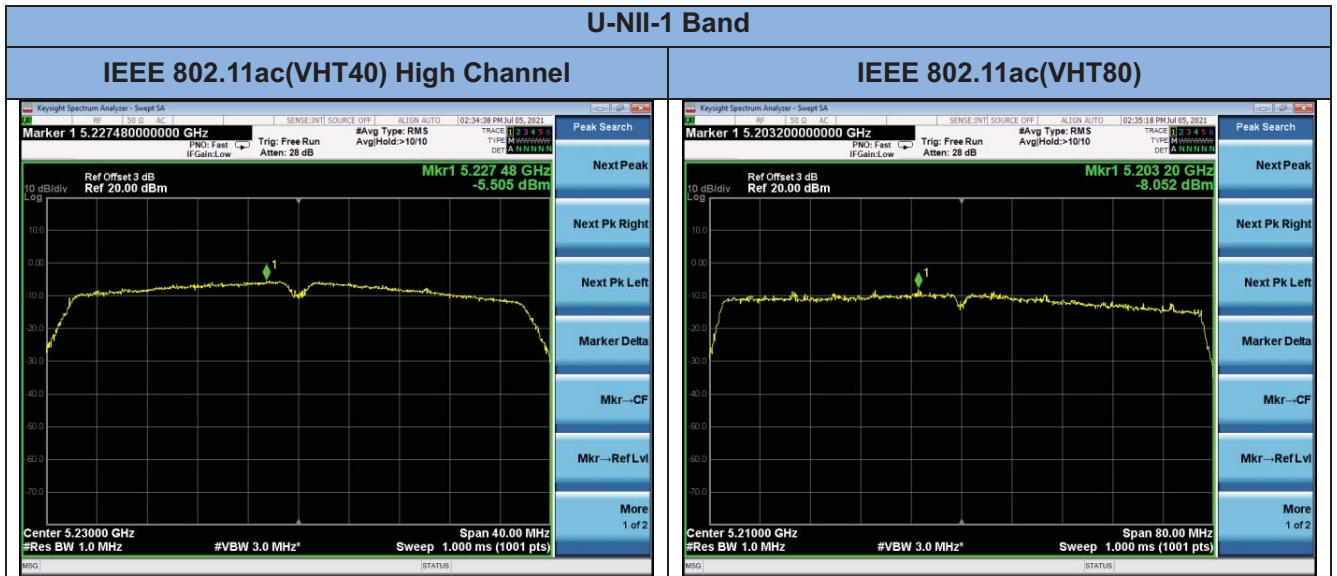
U-NII-1 Band			
Frequency MHz	Data Rate Mbps	PSD dBm/MHz	Limit dBm/ MHz
IEEE 802.11a Mode (OFDM, Antenna Gain=1.8dBi)			
Channel: 5180	6	-2.541	11
Channel: 5200	6	-1.883	11
Channel: 5240	6	-2.774	11
IEEE 802.11n(HT20)Mode (OFDM, Antenna Gain=1.8dBi)			
Channel: 5180	MCS0	-2.537	11
Channel: 5200	MCS0	-2.120	11
Channel: 5240	MCS0	-2.971	11
IEEE 802.11n(HT40) Mode (OFDM, Antenna Gain=1.8Bi)			
Channel: 5190	MCS0	-5.112	11
Channel: 5230	MCS0	-5.195	11
IEEE 802.11ac (VHT20) Mode (OFDM, Antenna Gain=1.8dBi)			
Channel: 5180	MCS0	-2.543	11
Channel: 5200	MCS0	-2.242	11
Channel: 5240	MCS0	-2.799	11
IEEE 802.11ac (VHT40) Mode (OFDM, Antenna Gain=1.8dBi)			
Channel: 5190	MCS0	-4.772	11
Channel: 5230	MCS0	-5.505	11
IEEE 802.11ac (VHT80) Mode (OFDM, Antenna Gain=1.8dBi)			
Channel: 5210	MCS0	-8.052	11

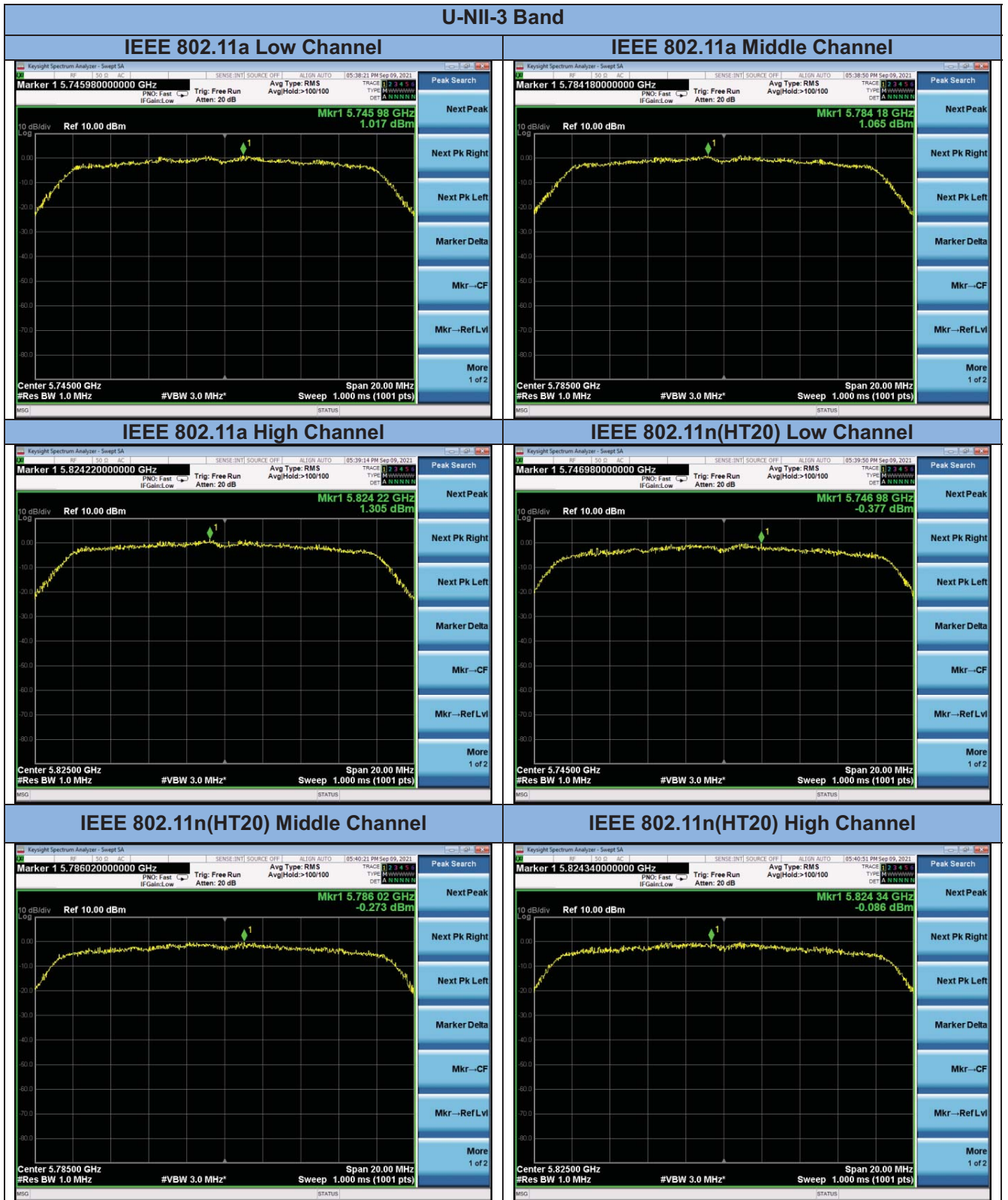
U-NII-3 Band				
Frequency MHz	Data Rate Mbps	PSD dBm/MHz	PSD dBm/500kHz	Limit dBm/ 500KHz
IEEE 802.11a Mode (OFDM, Antenna Gain=1.8dBi)				
Channel: 5745	6	1.017	-1.99	30
Channel: 5785	6	1.065	-1.95	30
Channel: 5825	6	1.305	-1.71	30
IEEE 802.11n(HT20)Mode (OFDM, Antenna Gain=1.8dBi)				
Channel: 5745	MCS0	-0.377	-3.39	30
Channel: 5785	MCS0	-0.273	-3.28	30
Channel: 5825	MCS0	--0.086	-2.92	30
IEEE 802.11n(HT40) Mode (OFDM, Antenna Gain=1.8Bi)				
Channel: 5755	MCS0	-3.159	-6.17	30
Channel: 5795	MCS0	-3.664	-6.67	30
IEEE 802.11ac (VHT20) Mode (OFDM, Antenna Gain=1.8dBi)				
Channel: 5745	MCS0	-0.711	-3.72	30
Channel: 5785	MCS0	-0.614	-3.62	30
Channel: 5825	MCS0	-0.339	-3.35	30
IEEE 802.11ac (VHT40) Mode (OFDM, Antenna Gain=1.8dBi)				
Channel: 5755	MCS0	-3.863	-6.87	30
Channel: 5795	MCS0	-3.975	-6.99	30
IEEE 802.11ac (VHT80) Mode (OFDM, Antenna Gain=1.8dBi)				
Channel: 5775	MCS0	-6.890	-9.90	30

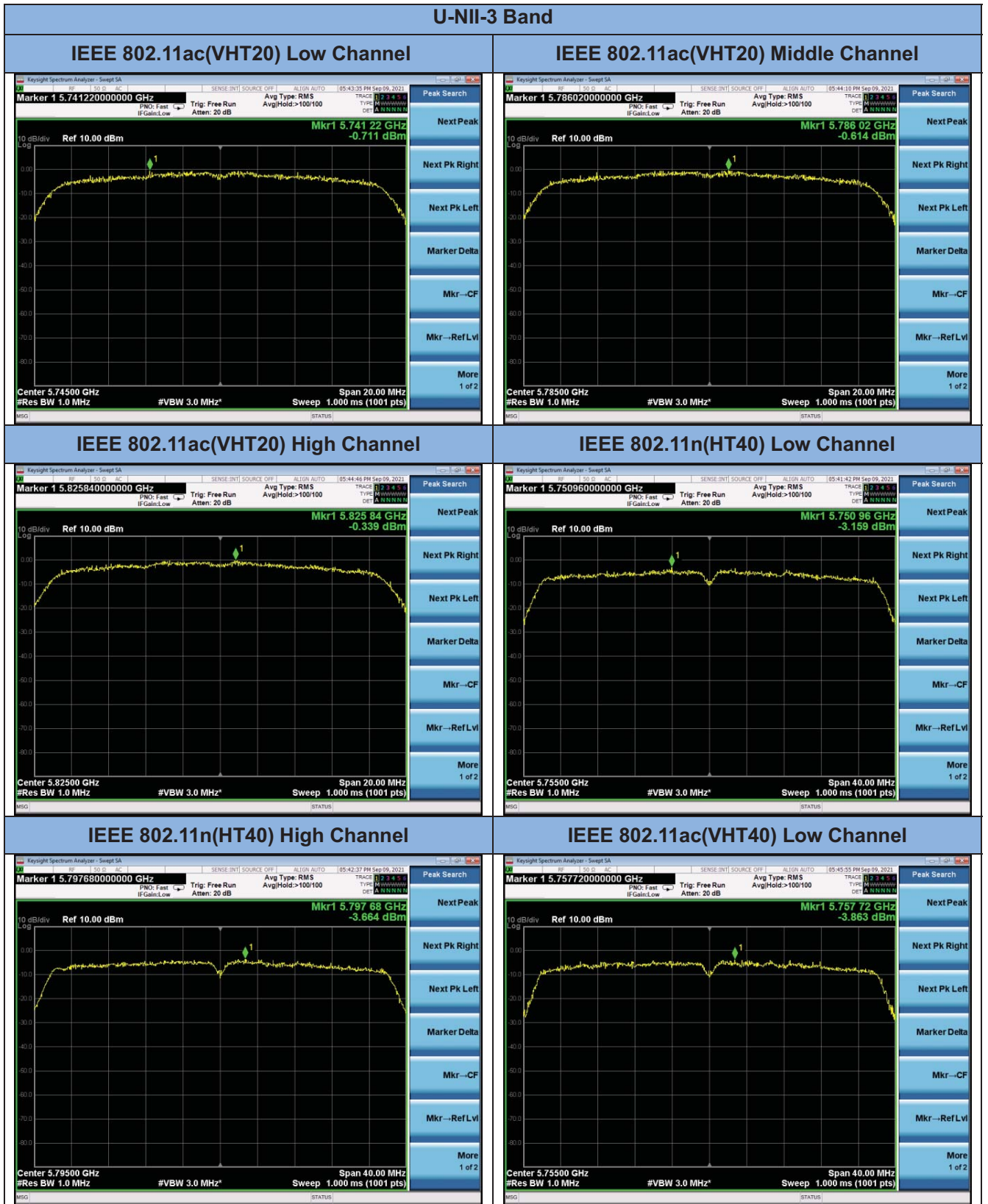
Note: PSD dBm/500kHz= PSD dBm/MHz+Factor, Factor=10log(500kHz/RBW)=-3.01dB,

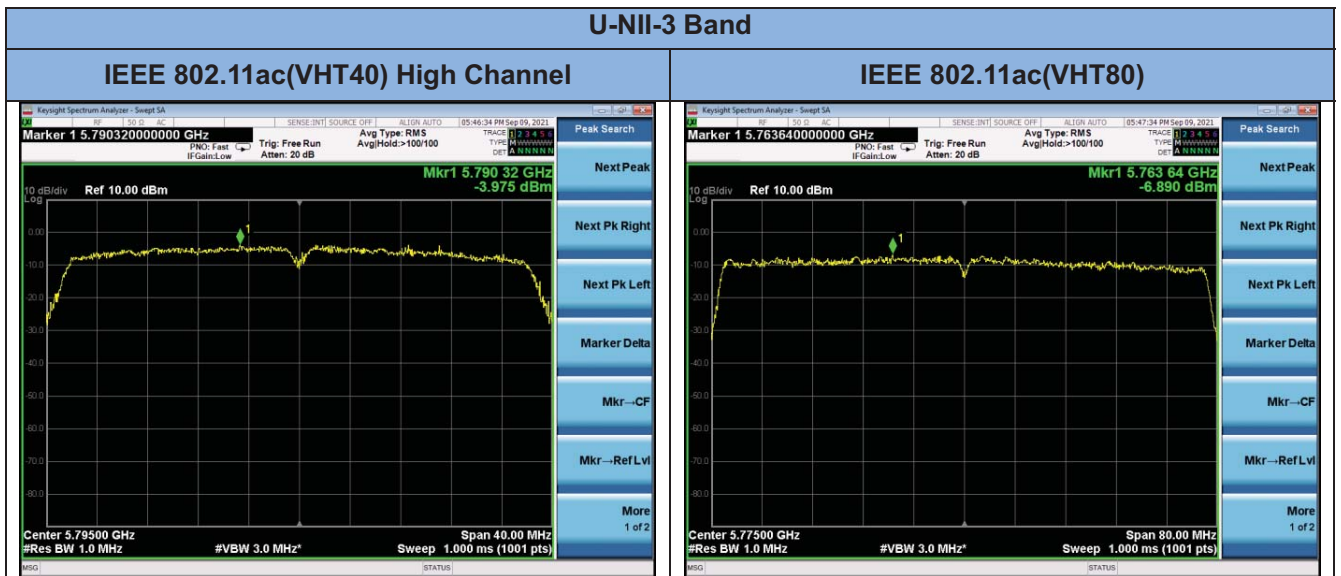












14.6 Band Edge

LIMITS

For transmitters operating in the 5.15-5.25 GHz band:

All emissions outside of the 5.15-5.35GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band:

All emissions outside of the 5.15-5.35GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

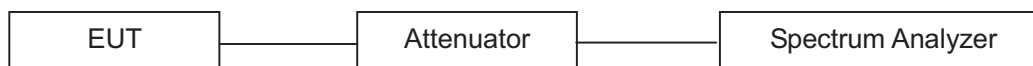
For transmitters operating in the 5.47-5.725 GHz band:

All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band:

All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27dBm/MHz at the band edge.

BLOCK DIAGRAM OF TEST SETUP



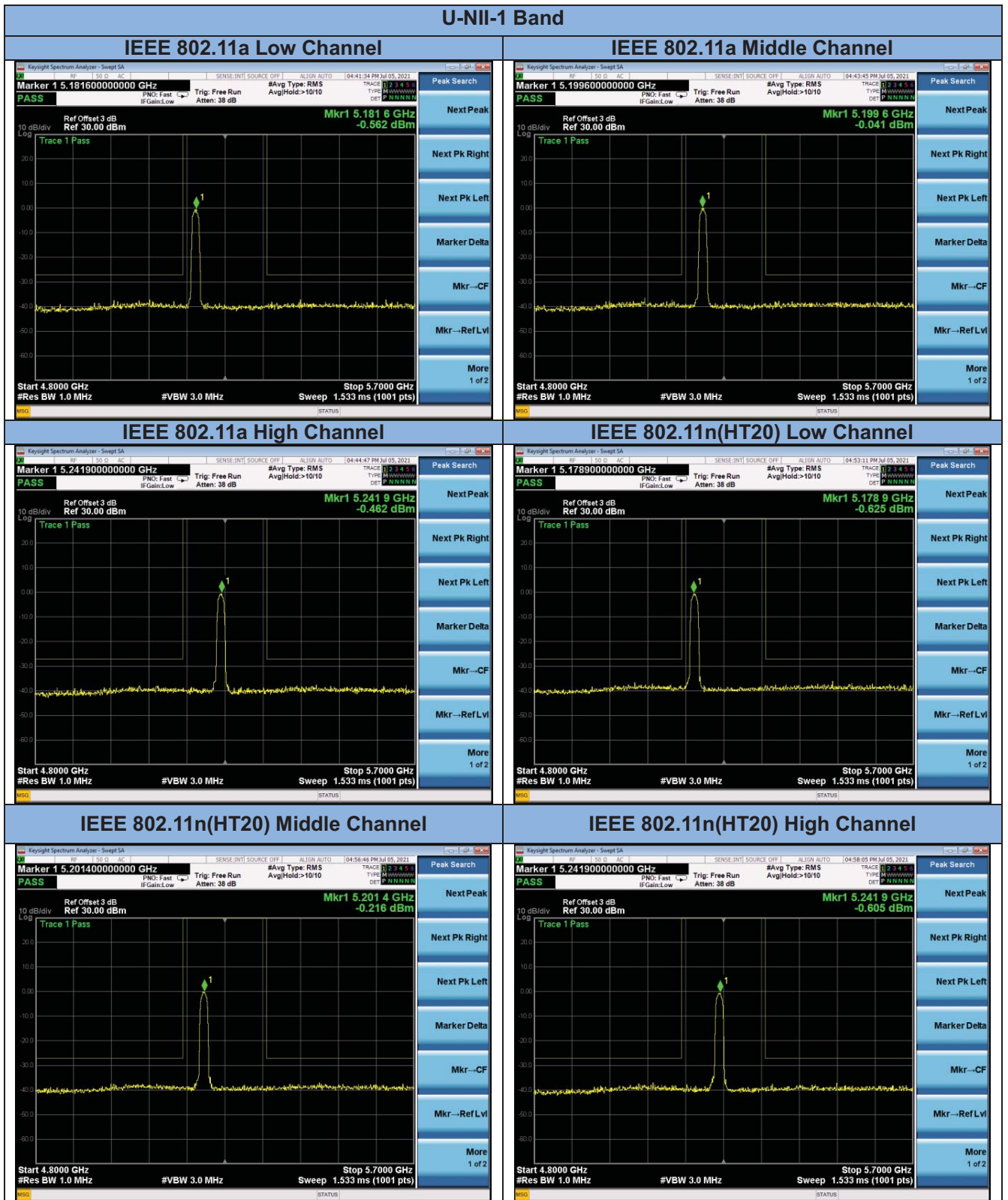
TEST PROCEDURES

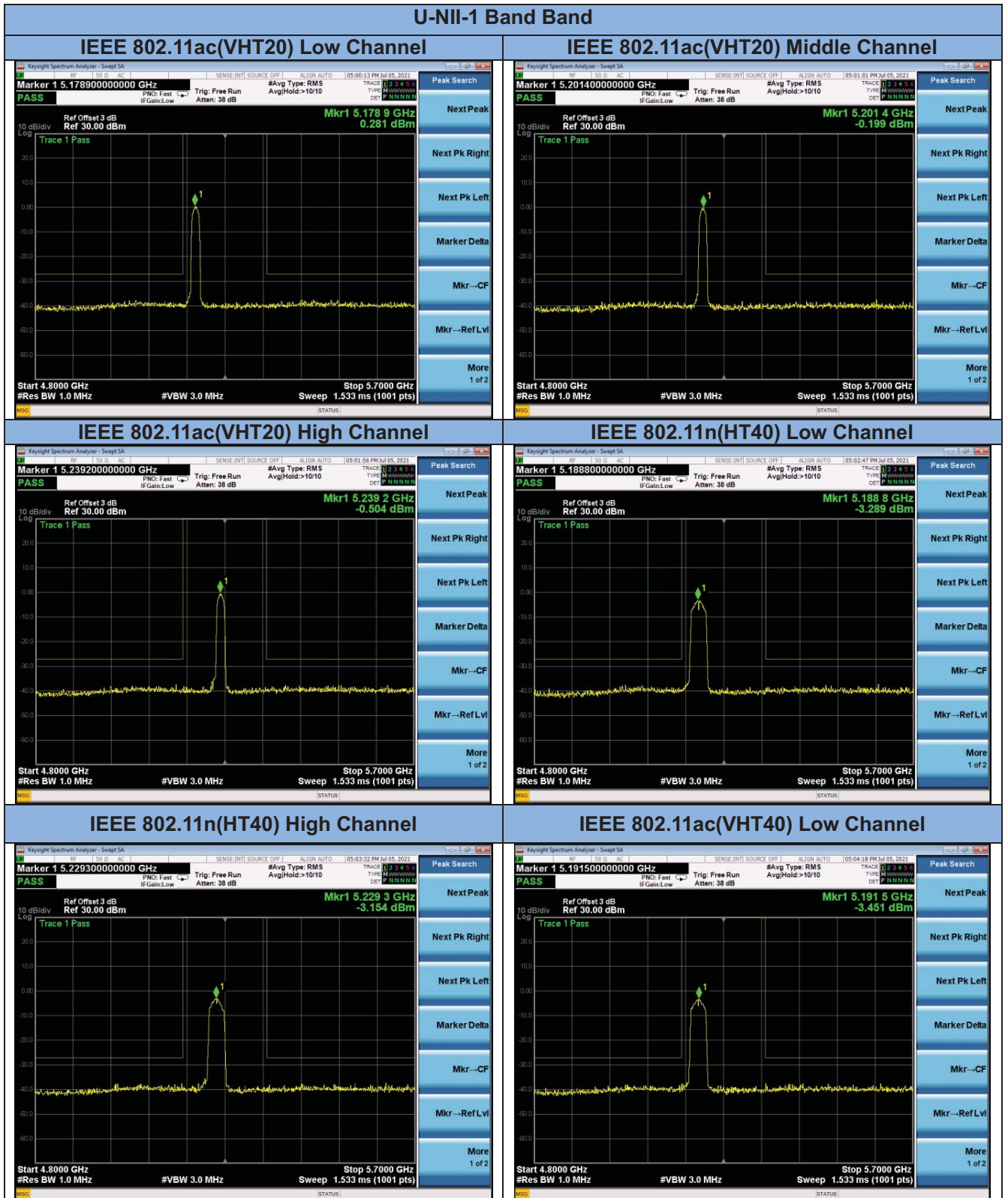
- a. Check the calibration of the measuring instrument using either an internal calibration or a known signal from an external generator.
- b. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- c. Set RBW to 1MHz and VBW to 3MHz of spectrum analyzer.
- d. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- e. Repeat above procedures until all measured frequencies were complete.

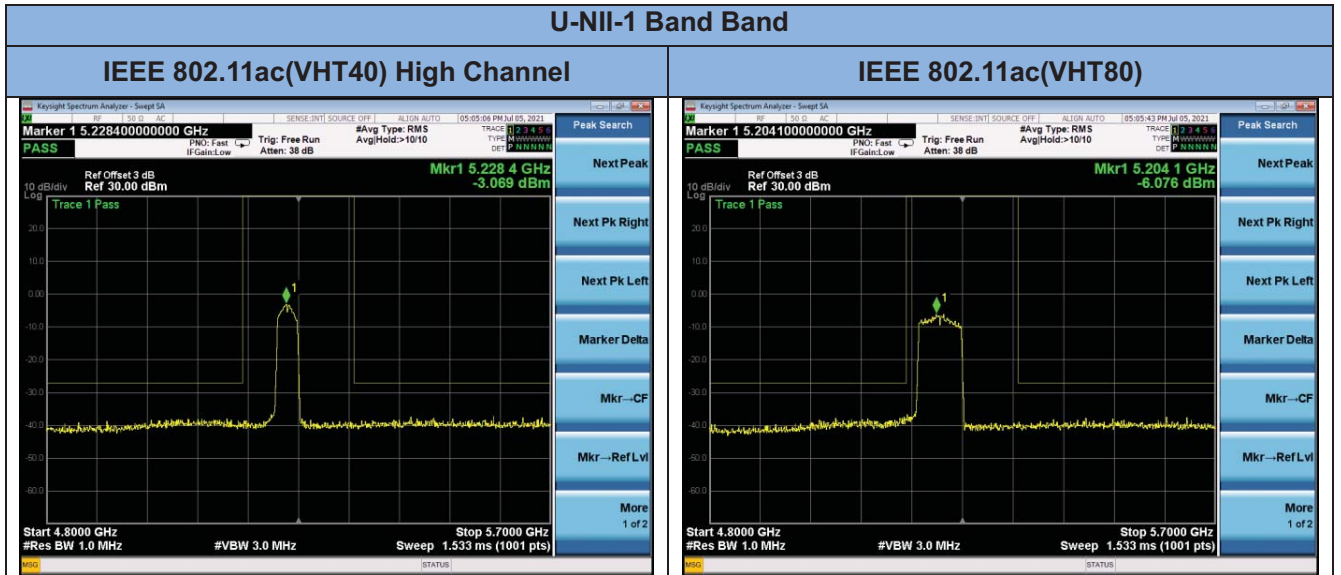
TEST RESULTS

PASS

Please refer to the following pages of the worst case.

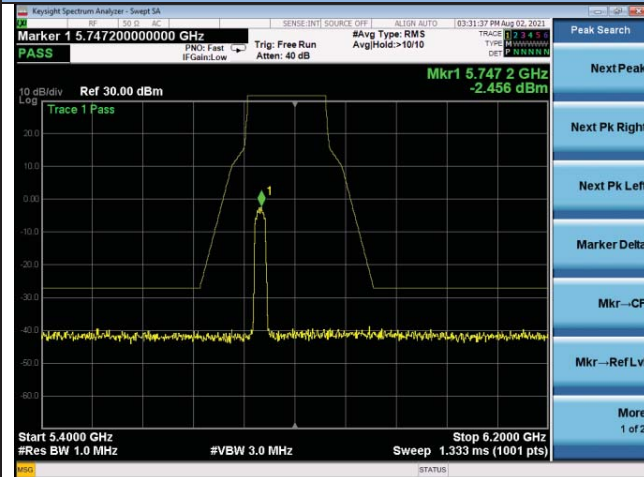




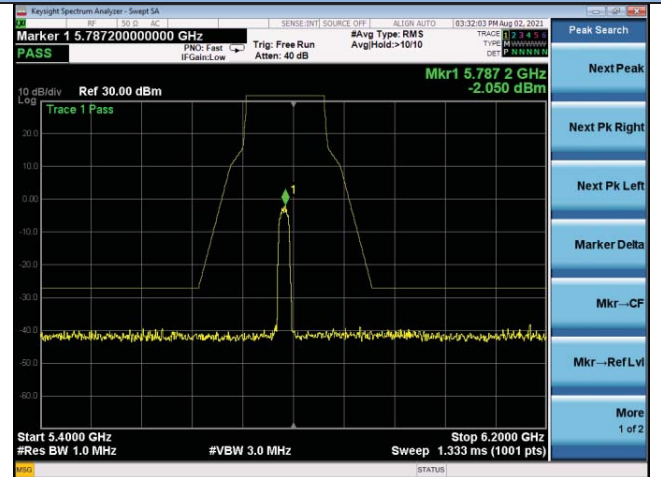


U-NII-3 Band

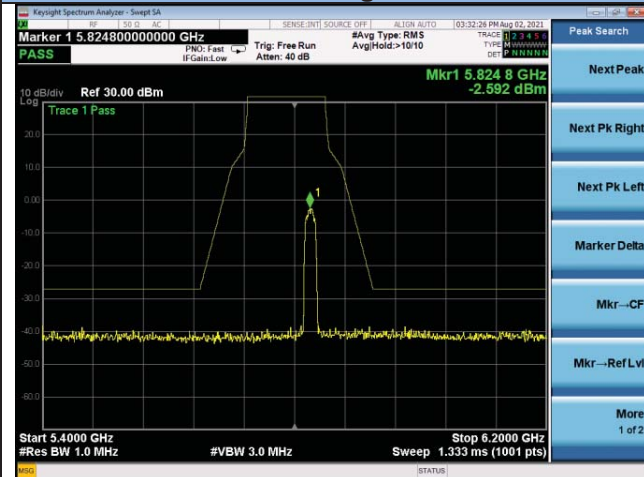
IEEE 802.11a Low Channel



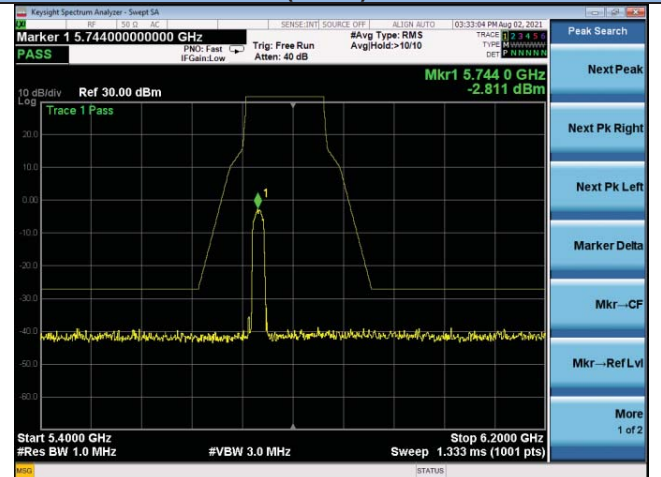
IEEE 802.11a Middle Channel



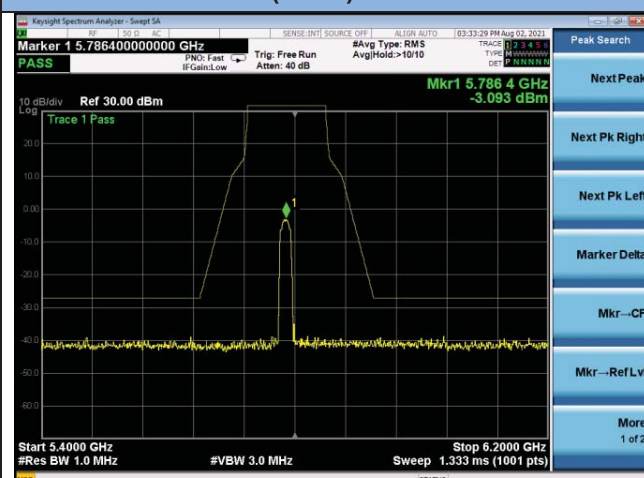
IEEE 802.11a High Channel



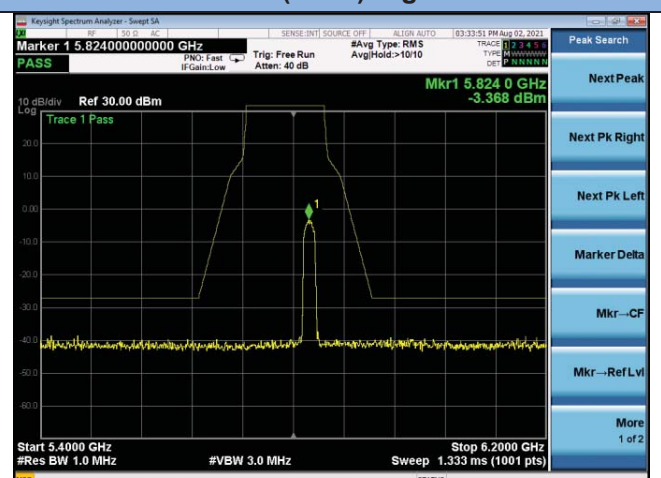
IEEE 802.11n(HT20) Low Channel



IEEE 802.11n(HT20) Middle Channel

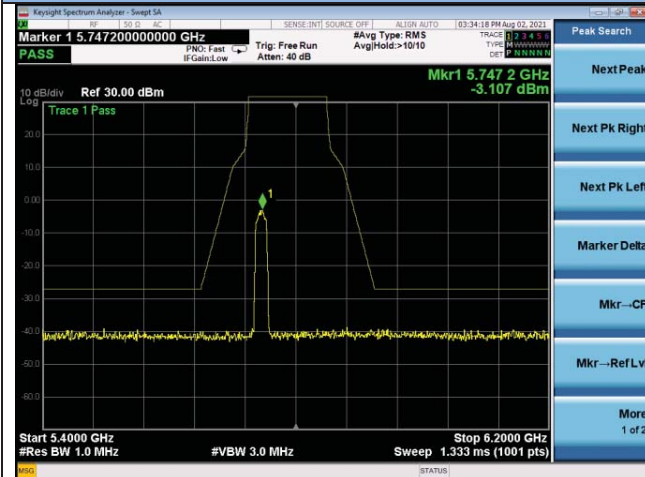


IEEE 802.11n(HT20) High Channel

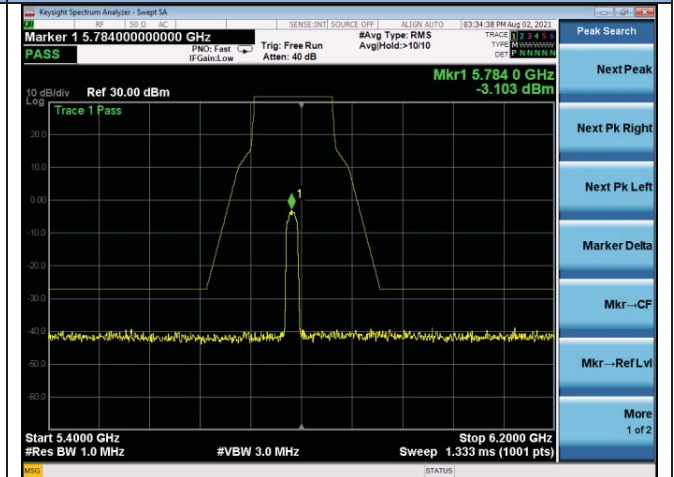


U-NII-3 Band

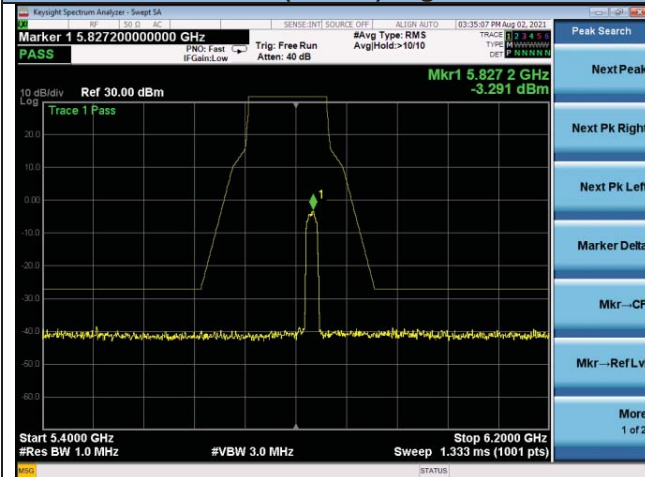
IEEE 802.11ac(VHT20) Low Channel



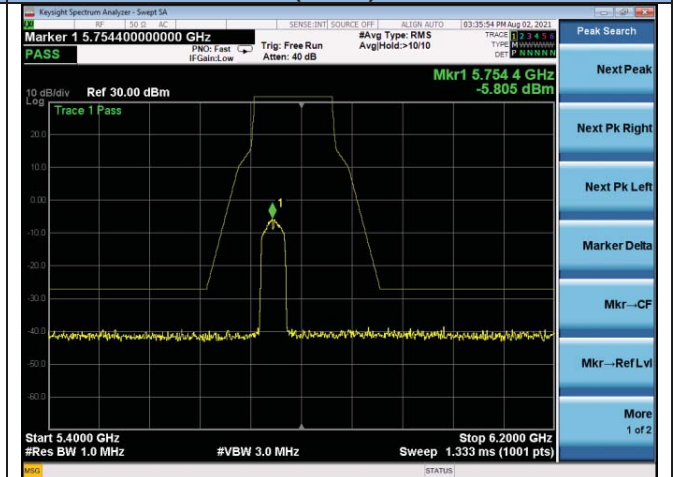
IEEE 802.11ac(VHT20) Middle Channel



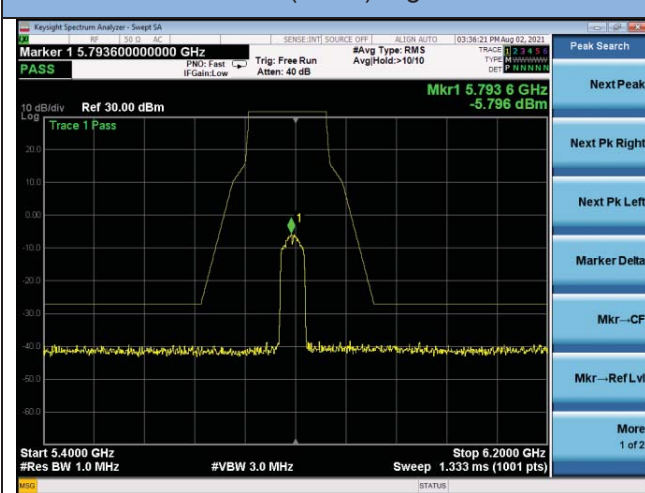
IEEE 802.11ac(VHT20) High Channel



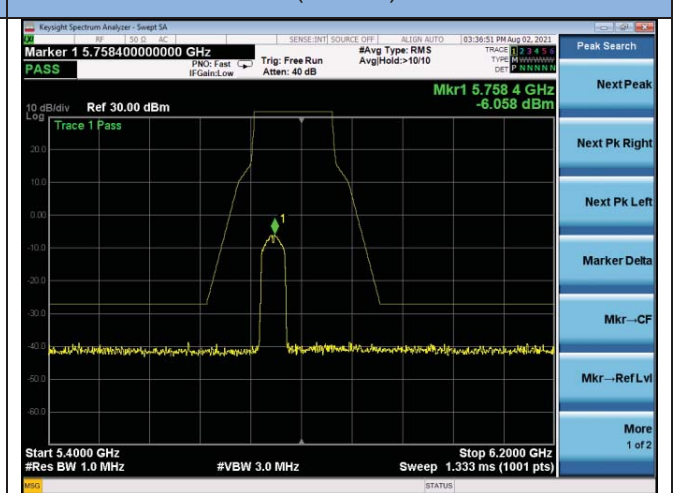
IEEE 802.11n(HT40) Low Channel



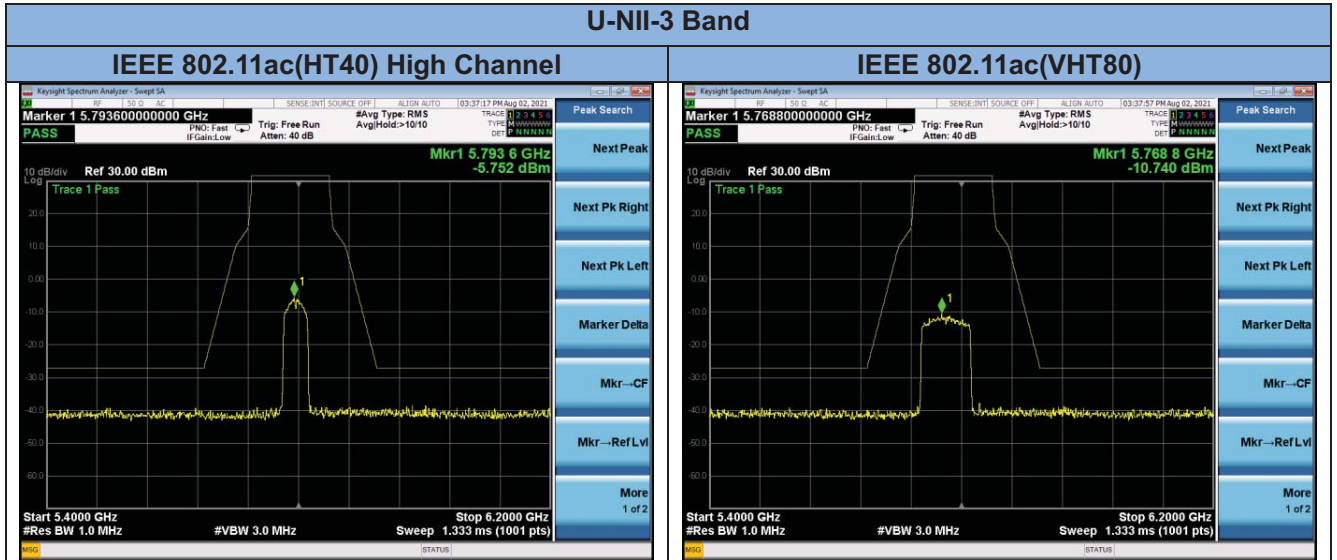
IEEE 802.11n(HT40) High Channel



IEEE 802.11ac(VHT40) Low Channel



U-NII-3 Band

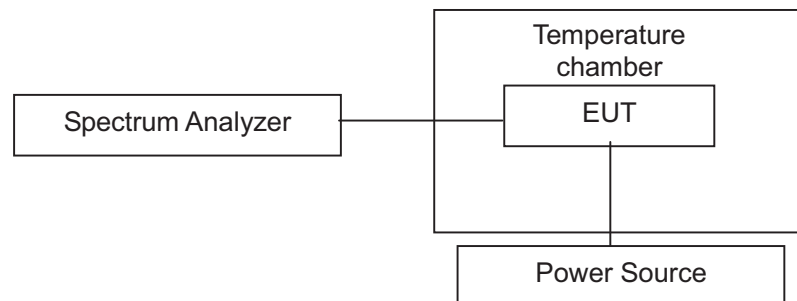


14.7 Frequency Stability

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.

BLOCK DIAGRAM OF TEST SETUP



TEST PROCEDURES

- The EUT was placed inside the environmental test chamber and powered by Power source.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- The chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

Note: The EUT set at un-modulation mode during frequency stability test.

TEST RESULTS

PASS

Please refer to the following pages of the worst case.

5180~5240MHz Band						
Lowest channel 5180MHz						
Temperature (°C)	Power Supplied (AC)	Measured Frequency (MHz)				Test Result
		0 Minute	2 Minute	5 Minute	10 Minute	
0	120.0	5180.0161	5180.0122	5180.0129	5180.0142	Pass
10		5180.0123	5180.0179	5180.0160	5180.0145	Pass
20		5180.0130	5180.0165	5180.0105	5180.0159	Pass
30		5180.0159	5180.0125	5180.0169	5180.0152	Pass
45		5180.0176	5180.0130	5180.0157	5180.0142	Pass
60		5180.0175	5180.0125	5180.0149	5180.0140	Pass
20	138.0	5180.0185	5180.0179	5180.0123	5180.0165	Pass
	102.0	5180.0123	5180.0184	5180.0179	5180.0147	Pass
Highest channel 5240MHz						
Temperature (°C)	Power Supplied (Vdc)	Measured Frequency (MHz)				Test Result
		0 Minute	2 Minute	5 Minute	10 Minute	
0	120.0	5240.0141	5240.0207	5240.0170	5240.0115	Pass
10		5240.0159	5240.0112	5240.0125	5240.0124	Pass
20		5240.0157	5240.0129	5240.0161	5240.0116	Pass
30		5240.0165	5240.0107	5240.0158	5240.0179	Pass
45		5240.0129	5240.0115	5240.0155	5240.0181	Pass
60		5240.0147	5240.0110	5240.0148	5240.0180	Pass
20	138.0	5240.0138	5240.0130	5240.0127	5240.0184	Pass
	102.0	5240.0155	5240.0149	5240.0102	5240.0135	Pass

Note: EUT temperature working range is 0 to 60.

5745~5825MHz Band						
Lowest channel 5745MHz						
Temperature (°C)	Power Supplied (Vdc)	Measured Frequency (MHz)				Test Result
		0 Minute	2 Minute	5 Minute	10 Minute	
0	120.0	5745.0154	5745.0112	5745.0134	5745.0124	Pass
10		5745.0137	5745.0137	5745.0128	5745.0138	Pass
20		5745.0119	5745.0146	5745.0164	5745.0149	Pass
30		5745.0128	5745.0122	5745.0155	5745.0144	Pass
45		5745.0151	5745.0127	5745.0163	5745.0141	Pass
60		5745.0128	5745.0127	5745.0160	5745.0147	Pass
20	138.0	5745.0168	5745.0118	5745.0162	5745.0156	Pass
	102.0	5745.0129	5745.0165	5745.0160	5745.0135	Pass
Highest channel 5825MHz						
Temperature (°C)	Power Supplied (Vdc)	Measured Frequency (MHz)				Test Result
		0 Minute	2 Minute	5 Minute	10 Minute	
0	120.0	5825.0129	5825.0151	5825.0169	5825.0165	Pass
10		5825.0125	5825.0169	5825.0167	5825.0113	Pass
20		5825.0132	5825.0150	5825.0124	5825.0129	Pass
30		5825.0147	5825.0137	5825.0152	5825.0172	Pass
45		5825.0169	5825.0149	5825.0144	5825.0173	Pass
60		5825.0158	5825.0144	5825.0135	5825.0170	Pass
20	138.0	5825.0152	5825.0150	5825.0130	5825.0146	Pass
	102.0	5825.0114	5825.0155	5825.0179	5825.0180	Pass

Note: EUT temperature working range is 0 to 60.

14.8 Radiated Spurious Emissions and Restricted Bands Measurement and Band Edge

LIMITS

Frequency range MHz	Distance Meters	Field Strengths Limit (15.209)
		μV/m
0.009 ~ 0.490	300	2400/F(kHz)
0.490 ~ 1.705	30	24000/F(kHz)
1.705 ~ 30	30	30
30 ~ 88	3	100
88 ~ 216	3	150
216 ~ 960	3	200
Above 960	3	500

Remark: (1) Emission level (dB) μ V = 20 log Emission level μ V/m
(2) The smaller limit shall apply at the cross point between two frequency bands.
(3) As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
(4) The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.
(5) §15.407 specifies that emissions which fall in the restricted bands, as defined in §15.205 comply with radiated emission limits specified in §15.209.

For transmitters operating in the 5.15-5.25 GHz band:

All emissions outside of the 5.15-5.35GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band:

All emissions outside of the 5.15-5.35GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band:

All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

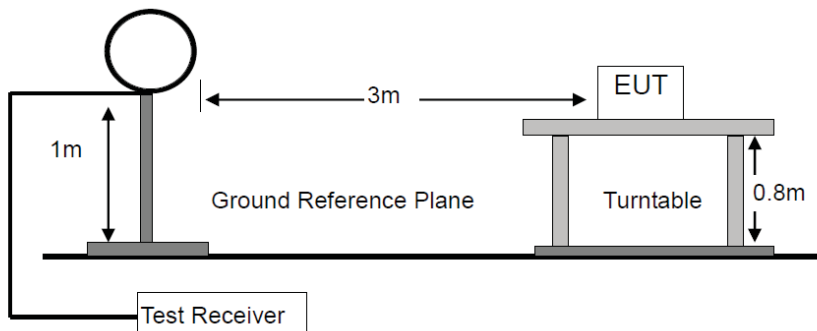
For transmitters operating in the 5.725-5.85 GHz band:

All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge

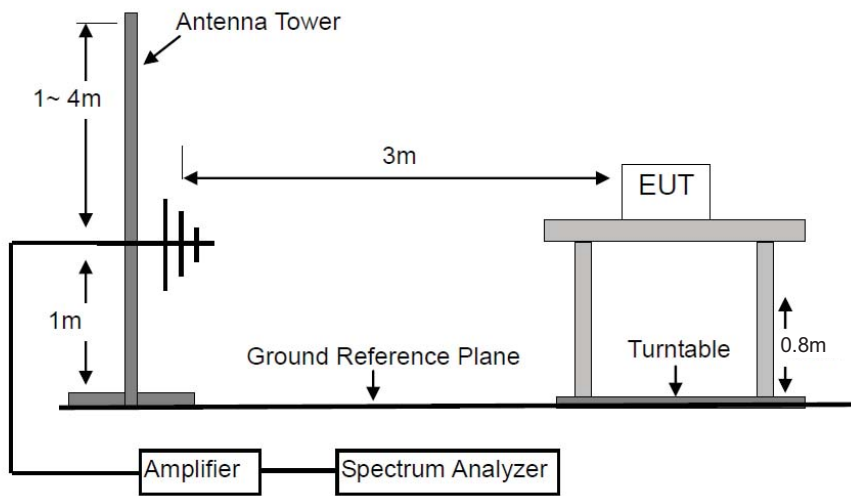
increasing linearly to a level of 27dBm/MHz at the band edge.

BLOCK DIAGRAM OF TEST SETUP

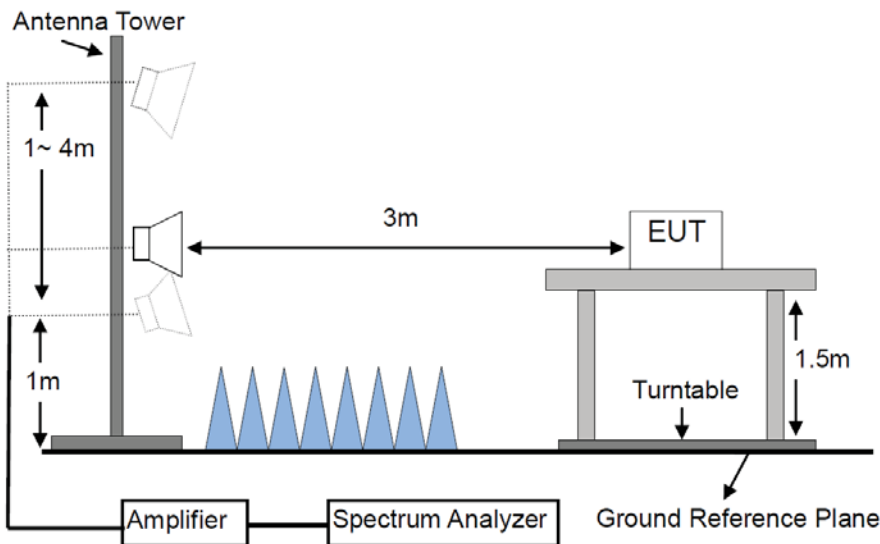
For Radiated Emission below 30MHz



For Radiated Emission 30-1000MHz



For Radiated Emission Above 1000MHz.



TEST PROCEDURES

- a. Below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic chamber room.
- b. For the radiated emission test above 1GHz:
The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter full anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- c. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to peak detect function and specified bandwidth with maximum hold mode.
- f. A Quasi-peak measurement was then made for that frequency point for below 1GHz test. PK and AV for above 1GHz emission test.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

Frequency Band (MHz)	Detector	Resolution Bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	3 MHz
	Average	1 MHz	10 Hz

TEST RESULTS

PASS

Please refer to the following pages of the worst case.

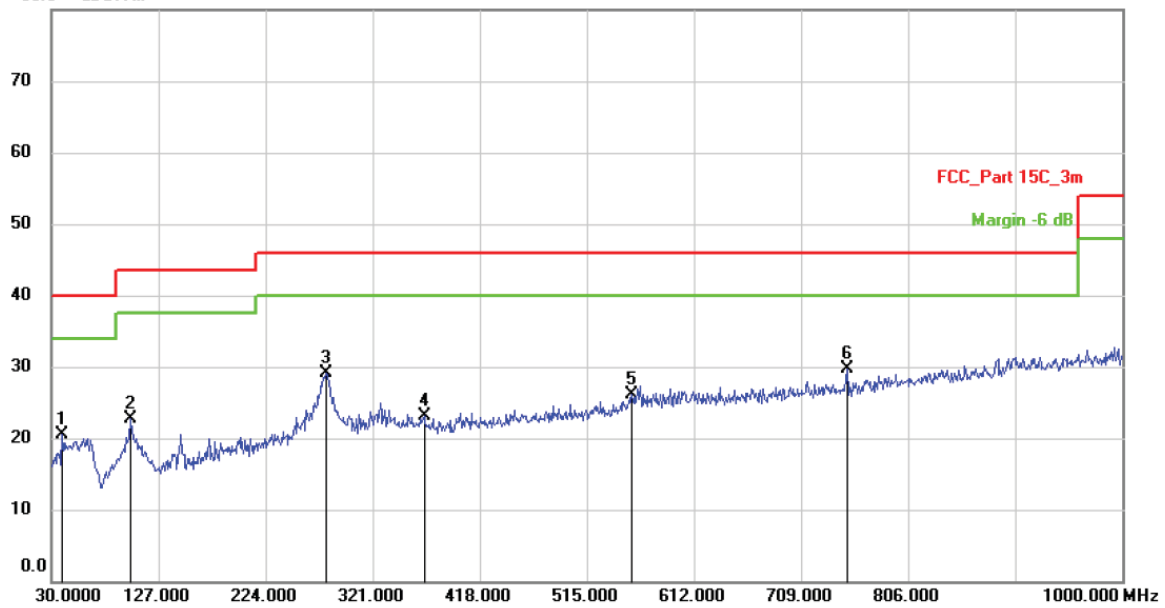
M/N: Retail Eye - Z3	Testing Voltage: AC 120V 60Hz
Polarization: Horizontal	Detector: QP
Test Mode: 1 (N-U11-1 IEEE 802.11ac(HT40) Low channel)	Distance: 3m

Radiated Emission Measurement

Date: 2021/7/31

Time: 13:50:44

80.0 dBuV/m



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1		39.7000	28.60	-8.05	20.55	40.00	-19.45	QP	
2		101.7800	30.14	-7.51	22.63	43.50	-20.87	QP	
3		279.2900	34.97	-5.88	29.09	46.00	-16.91	QP	
4		367.5600	27.06	-3.91	23.15	46.00	-22.85	QP	
5		555.7400	26.70	-0.63	26.07	46.00	-19.93	QP	
6	*	750.7100	26.73	3.04	29.77	46.00	-16.23	QP	

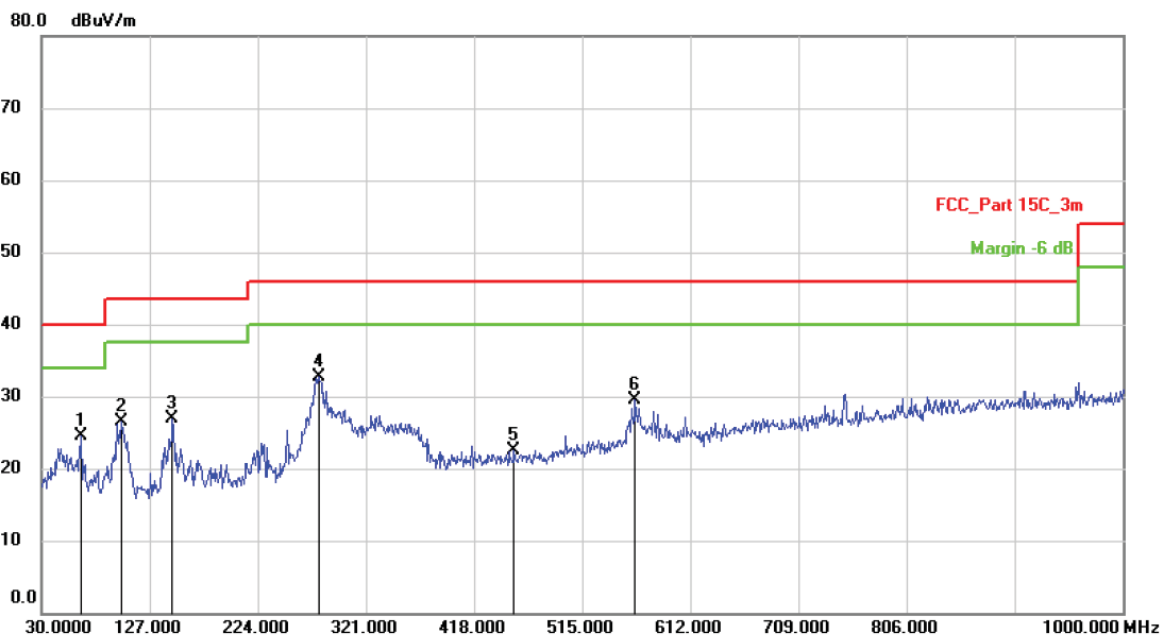
Note: Below 30MHz, the emissions are lower than 20dB below the allowable limit.

M/N: Retail Eye - Z3	Testing Voltage: AC 120V 60Hz
Polarization: Vertical	Detector: QP
Test Mode: 1 (N-U11-1 IEEE 802.11ac(HT40) Low channel)	Distance: 3m

Radiated Emission Measurement

Date: 2021/7/31

Time: 13:43:16



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		65.8900	34.15	-9.63	24.52	40.00	-15.48	QP	
2		101.7800	35.15	-8.72	26.43	43.50	-17.07	QP	
3		147.3700	38.66	-11.75	26.91	43.50	-16.59	QP	
4	*	278.3200	39.64	-6.90	32.74	46.00	-13.26	QP	
5		453.8900	25.94	-3.49	22.45	46.00	-23.55	QP	
6		562.5300	30.89	-1.39	29.50	46.00	-16.50	QP	

Note: Below 30MHz, the emissions are lower than 20dB below the allowable limit.

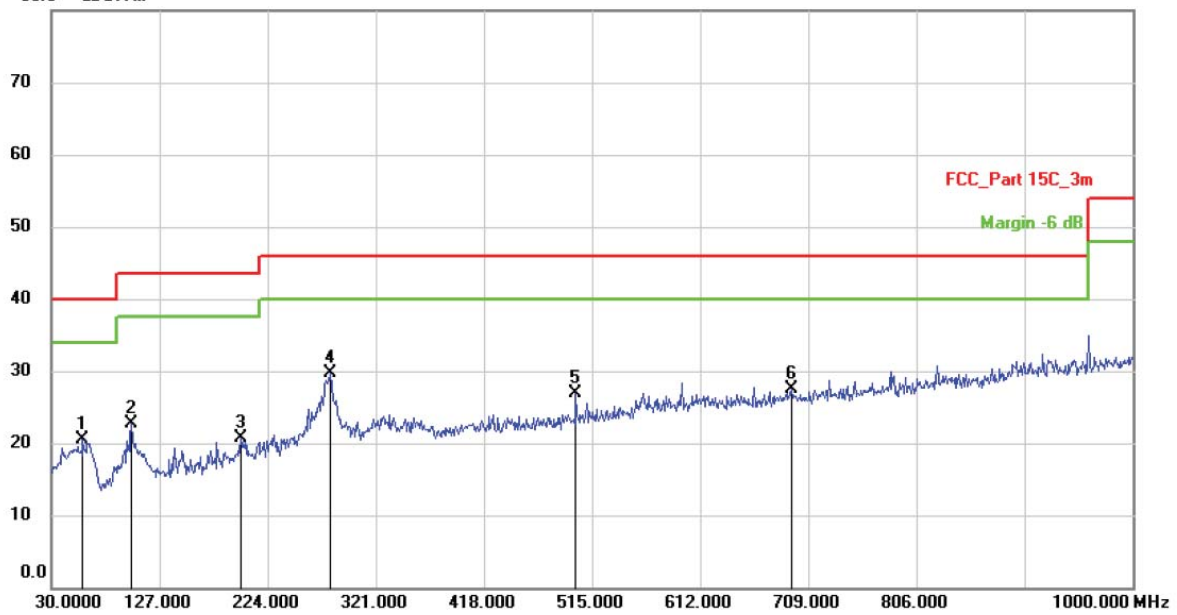
M/N: Retail Eye - Z3	Testing Voltage: AC 120V 60Hz
Polarization: Horizontal	Detector: QP
Test Mode: 1 (N-U1I-3 IEEE 802.11n(HT40) High channel)	Distance: 3m

Radiated Emission Measurement

Date: 2021/7/31

Time: 14:06:13

80.0 dBuV/m



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		58.1300	27.82	-7.33	20.49	40.00	-19.51	QP	
2		101.7800	30.29	-7.51	22.78	43.50	-20.72	QP	
3		199.7500	28.33	-7.72	20.61	43.50	-22.89	QP	
4	*	280.2600	35.57	-5.87	29.70	46.00	-16.30	QP	
5		500.4500	28.60	-1.76	26.84	46.00	-19.16	QP	
6		694.4500	25.41	2.07	27.48	46.00	-18.52	QP	

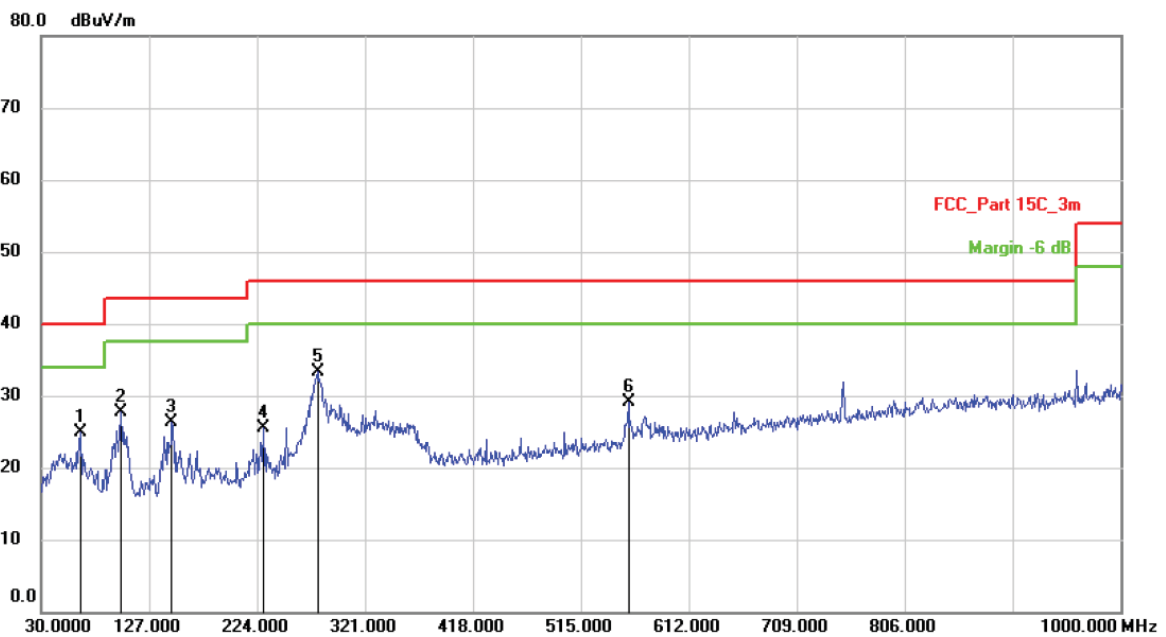
Note: Below 30MHz, the emissions are lower than 20dB below the allowable limit.

M/N: Retail Eye - Z3	Testing Voltage: AC 120V 60Hz
Polarization: Vertical	Detector: QP
Test Mode: 1 (N-U11-3 IEEE 802.11n(HT40) High channel)	Distance: 3m

Radiated Emission Measurement

Date: 2021/7/31

Time: 13:57:14



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		65.8900	34.53	-9.63	24.90	40.00	-15.10	QP	
2		101.7800	36.48	-8.72	27.76	43.50	-15.74	QP	
3		147.3700	38.07	-11.75	26.32	43.50	-17.18	QP	
4		229.8200	33.40	-7.97	25.43	46.00	-20.57	QP	
5	*	278.3200	40.23	-6.90	33.33	46.00	-12.67	QP	
6		557.6800	30.62	-1.57	29.05	46.00	-16.95	QP	

Note: Below 30MHz, the emissions are lower than 20dB below the allowable limit.

Modulation: N-U11-1(5180-5240 MHz) TX (IEEE 802.11ac(HT20) the worst case)				Test Result: PASS			Test frequency range: 1-40GHz			
Freq. (MHz)	Ant. Pol. (H/V)	Reading Level(dBuV)		Factor (dB/m)	Emission Level (dBuV/m)		Limit 3m (dBuV/m)		Margin (dB)	
		PK	AV		PK	AV	PK	AV	PK	AV
Operation Mode: TX Mode (Low)										
10360	V	46.17	---	14.04	60.21	---	68.20	---	-7.99	---
15540	V	47.42	29.24	21.12	68.54	50.36	74.00	54.00	-5.46	-3.64

10360	H	46.14	---	14.04	60.18	---	68.20	---	-8.02	---
15540	H	46.98	29.71	21.12	68.10	50.83	74.00	54.00	-5.90	-3.17

Operation Mode: TX Mode (Mid)										
10400	V	45.31	---	14.12	59.43	---	68.20	---	-8.77	---
15600	V	46.63	30.06	20.82	67.45	50.88	74.00	54.00	-6.55	-3.12

10400	H	45.33	---	14.12	59.45	---	68.20	---	-8.75	---
15600	H	47.13	29.32	20.82	67.95	50.14	74.00	54.00	-6.05	-3.86

Operation Mode: TX Mode (High)										
10480	V	45.81	---	14.29	60.10	---	68.20	---	-8.10	---
15720	V	44.05	30.96	20.20	64.25	51.16	74.00	54.00	-9.75	-2.84

10480	H	45.96	---	14.29	60.25	---	68.20	---	-7.95	---
15720	H	45.22	30.21	20.20	65.42	50.41	74.00	54.00	-8.58	-3.59

Spurious Emission in restricted band:										
5150	V	51.12	37.35	6.80	57.92	44.15	74.00	54.00	-16.08	-9.85
5150	H	52.35	38.43	6.80	59.15	45.23	74.00	54.00	-14.85	-8.77
5350	V	50.29	36.48	7.20	57.92	44.15	74.00	54.00	-16.08	-9.85
5350	H	51.24	35.51	7.20	59.15	45.23	74.00	54.00	-14.85	-8.77

Remark: 1. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits.
 2. Others emissions are attenuated 20dB below the limits, so it does not record in report.

Modulation: N-Ull-3 (5745-5825 MHz) TX (IEEE 802.11n(HT20) the worst case)				Test Result: PASS			Test frequency range: 1-40GHz			
Freq. (MHz)	Ant. Pol. (H/V)	Reading Level(dBuV)		Factor (dB/m)	Emission Level (dBuV/m)		Limit 3m (dBuV/m)		Margin (dB)	
		PK	AV		PK	AV	PK	AV	PK	AV
Operation Mode: TX Mode (Low)										
11490	V	42.97	33.55	16.86	59.83	50.41	74.00	54.00	-14.17	-3.59
17235	V	40.31	---	22.23	62.54	22.23	68.20	---	-5.66	---

11490	H	43.44	33.24	16.81	60.25	50.05	74.00	54.00	-13.75	-3.95
17235	H	41.02	---	22.23	63.25	22.23	68.20	---	-4.95	---

Operation Mode: TX Mode (Mid)										
11570	V	41.15	31.75	17.01	58.16	48.76	74.00	54.00	-15.84	-5.24
17355	V	39.88	---	22.62	62.50	22.62	68.20	---	-5.70	---

11570	H	42.31	32.46	17.01	59.32	49.47	74.00	54.00	-14.68	-4.53
17355	H	40.40	---	22.62	63.02	22.62	68.20	---	-5.18	---

Operation Mode: TX Mode (High)										
11650	V	41.25	32.14	17.16	58.41	49.30	74.00	54.00	-15.59	-4.70
17475	V	39.10	---	23.01	62.11	23.01	68.20	---	-6.09	---

11650	H	41.00	32.35	17.16	58.16	49.51	74.00	54.00	-15.84	-4.49
17475	H	39.76	---	23.01	62.77	23.01	68.20	---	-5.43	---

Spurious Emission in restricted band:										
5460	V	47.35	39.25	7.60	54.95	46.85	74.00	54.00	-19.05	-7.15
5460	H	48.36	38.52	7.60	55.96	46.12	74.00	54.00	-18.04	-7.88

Remark: 1. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits.
2. Others emissions are attenuated 20dB below the limits, so it does not record in report.

14.9 Antenna Requirement

STANDARD APPLICABLE

According to of FCC part 15C section 15.203:

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. The structure and application of the EUT were analyzed to determine compliance with section 15.203 of the rules.

And according to 47 CFR section 15.407(a), if the transmitting antennas of directional gain greater than 6dBi are used, the transmit power and power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

ANTENNA CONNECTED CONSTRUCTION

The antenna is PIFA antenna that no antenna other than furnished by the responsible party shall be used with the device, and the best case gain of the antenna is 1.8dBi, So, the antenna is consider meet the requirement.

15. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI7	100837	Mar. 13, 2021	1 Year
2.	Antenna	Schwarzbeck	VULB9162	9162-010	Mar. 23, 2021	1 Year
3.	Spectrum Analyzer	Rohde & Schwarz	FSU26	200409/026	Mar. 13, 2021	1 Year
4.	Spectrum Analyzer	Keysight	N9020A	MY54200831	Mar. 13, 2021	1 Year
5.	Spectrum Analyzer	Rohde & Schwarz	FSV40	101094	Mar. 13, 2021	1 Year
6.	Horn Antenna	Schwarzbeck	BBHA9170	9170-172	Mar. 23, 2021	2 Year
7.	Power Sensor	DARE	RPR3006W	15I00041SNO 64	Mar. 13, 2021	1 Year
8.	Horn Antenna	COM-Power	AH-118	071078	Mar. 23, 2021	1 Year
9.	Pre-Amplifier	HP	HP 8449B	3008A00964	Mar. 13, 2021	1 Year
10.	Pre-Amplifier	HP	HP 8447D	1145A00203	Mar. 13, 2021	1 Year
11.	Loop Antenna	Schwarzbeck	FMZB 1513	1513-272	Mar. 23, 2021	1 Year
12.	Test Receiver	Rohde & Schwarz	ESCI	101152	Mar. 13, 2021	1 Year
13.	L.I.S.N	Rohde & Schwarz	ENV 216	101317	Mar. 13, 2021	1 Year
14.	RF Switching Unit	Compliance Direction Systems Inc.	RSU-M2	38311	Mar.13, 2021	1 Year
15.	Temporary antenna connector	TESCOM	SS402	N/A	N/A	N/A
16.	Test Software	EZ	EZ_EMCC	N/A	N/A	N/A

Note: For photographs of EUT and measurement, please refer to appendix in separate documents.

---End---