TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 15, Subpart E (Section 15.407)**
Report No.:	RFBICM-WTW-P22110528B-2
FCC ID:	S9E-125500
Product:	Rugged Handheld Computer
Brand:	Trimble SPECTRA
Model No.:	125500
Received Date:	2023/11/13
Test Date:	2024/1/5 ~ 2024/2/5
Issued Date:	2024/2/7
Applicant:	Trimble Inc.
Address:	5475 Kellenburger Road, Dayton, Ohio, 45424
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kewi Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

Approved by: Jeremy . Lin , **Date:** **2024/2/7**

Jeremy Lin / Project Engineer

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Prepared by : Gina Liu / Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFBICM-WTW-P22110528B-2	Original release.	2024/2/7

1 Certificate

Product:	Rugged Handheld Computer
Brand:	Trimble SPECTRA
Test Model:	125500
Sample Status:	Engineering sample
Applicant:	Trimble Inc.
Test Date:	2024/1/5 ~ 2024/2/5
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407)
Measurement procedure:	ANSI C63.10-2013 KDB 789033 D02 General UNII Test Procedure New Rules v02r01 KDB 662911 D01 Multiple Transmitter Output v02r01

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
Clause	Test Item	Result	Remark
15.407(a)(2)	26 dB Bandwidth	N/A	Refer to Note 1
15.407(a)(1) 15.407(a)(2) 15.407(a)(3)	RF Output Power	Pass	Meet the requirement of limit.
15.407(a)(1) 15.407(a)(2) 15.407(a)(3)	Power Spectral Density	N/A	Refer to Note 1
15.407(e)	6 dB Bandwidth	N/A	Refer to Note 1
---	Occupied Bandwidth	N/A	Refer to Note 1
15.407(g)	Frequency Stability	N/A	Refer to Note 1
15.407(b)(9)	AC Power Conducted Emissions	N/A	Refer to Note 1
15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -9.5 dB at 91.11 MHz
15.407(b) (1/10) 15.407(b) (2/10) 15.407(b) (3/10) 15.407(b) (4(i)/10)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -5.4 dB at 10600.00 MHz
15.203	Antenna Requirement	Pass	Antenna connector is shrapnel not a standard connector.

Note:

1. Only RF Output Power and Unwanted Emissions tests were performed for this addendum. Refer to original report for other test data.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Specification	Expanded Uncertainty (k=2) (±)
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.59 dB
	30 MHz ~ 1 GHz	3.6 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	2.29 dB
	18 GHz ~ 40 GHz	2.29 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Rugged Handheld Computer
Brand	Trimble SPECTRA
Test Model	125500
Status of EUT	Engineering sample
Power Supply Rating	Refer to note
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode 1024QAM for OFDMA in 11ax mode
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 300Mbps 802.11ac: up to 1733.3Mbps 802.11ax: up to 2402Mbps
Operating Frequency	5.18 GHz ~ 5.32 GHz 5.5 GHz ~ 5.72 GHz 5.745 GHz ~ 5.825 GHz
Number of Channel	5180 ~ 5320MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 8 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 4 802.11ac (VHT80), 802.11ax (HE80): 2 802.11ac (VHT160), 802.11ax (HE160): 1 5500 ~ 5720MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 12 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 6 802.11ac (VHT80), 802.11ax (HE80): 3 802.11ac (VHT160), 802.11ax (HE160): 1 5745 ~ 5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 5 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 2 802.11ac (VHT80), 802.11ax (HE80): 1
Output Power	5.18 GHz ~ 5.25 GHz : 42.462 mW (16.28 dBm) 5.26 GHz ~ 5.32 GHz : 42.954 mW (16.33 dBm) 5.5 GHz ~ 5.72 GHz : 12.445 mW (10.95 dBm) 5.745 GHz ~ 5.825 GHz : 11.940 mW (10.77 dBm)
EUT Category	Client device

Note:

1. This report is prepared for FCC class II permissive change. This report is issued as a supplementary report to BV CPS report no.: RFBICM-WTW-P22110528-4. The difference compared with original report are disable 802.11b/g/a MIMO and reducing the power. Therefore, only test item of RF Output Power and Unwanted Emissions tests were performed for this report. For unwanted emission test items, select the worst radiated emission mode based on the original report. Other testing data please refer to original report.
2. The EUT uses following accessories.

Battery		
Brand	Model	Specification
LIFUN	1400-900069G	Manufacturer : LIFUN TECHNOLOGY CO.,LTD. Power Rating : 3.85 Vdc 4950mAh
USB Cable		
Brand	Model	Specification
Trimble	121920	Signal Line : 2 meters, shielded cable. w/o ferrite core

3. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna No.	Gain (dBi)				Antenna Type	Connector Type
	5.15~5.25GHz	5.25~5.35GHz	5.47~5.725GHz	5.725~5.85GHz		
2 (Chain1)	-2.56	-3.39	-2.84	-2.30	LDS	shrapnel
3 (Chain0)	-4.89	-2.71	-0.62	0.6	LDS	shrapnel

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

2. The EUT incorporates a MIMO function:

5 GHz Band		
Modulation Mode	**TX & RX Configuration**	
802.11a	1Tx Fixed Chain 0	1Rx
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
802.11ac (VHT20)	2TX	2RX
802.11ac (VHT40)	2TX	2RX
802.11ac (VHT80)	2TX	2RX
802.11ac (VHT160)	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX
802.11ax (HE80)	2TX	2RX
802.11ax (HE160)	2TX	2RX

Note:
1. All of modulation mode support beamforming function except 802.11a modulation mode.
2. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
3. The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz), 802.11ac mode for 20 MHz (40 MHz, 80 MHz, 160 MHz) and 802.11ax mode for 20 MHz (40 MHz, 80 MHz, 160 MHz). Therefore the investigated worst case to the representative mode in test report. (Final test mode refer section 3.4)
4. Partial RU (resource units) and channel puncturing/bandwidth reduction configurations are not supported.

3.3 Channel List

FOR 5180 ~ 5320 MHz

8 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
36	5180 MHz	52	5260 MHz
40	5200 MHz	56	5280 MHz
44	5220 MHz	60	5300 MHz
48	5240 MHz	64	5320 MHz

4 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	54	5270 MHz
46	5230 MHz	62	5310 MHz

2 channels are provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency	Channel	Frequency
42	5210 MHz	58	5290 MHz

1 straddle channel is provided for 802.11ac (VHT160), 802.11ax (HE160):

Channel	Frequency
50	5250 MHz

FOR 5500 ~ 5720 MHz

12 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz	144	5720 MHz

6 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	142	5710 MHz

3 channels are provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	138	5690 MHz
122	5610 MHz		

1 straddle channel is provided for 802.11ac (VHT160), 802.11ax (HE160):

Channel	Frequency
114	5570 MHz

FOR 5745 ~ 5825 MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz		

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency
155	5775 MHz

3.4 Test Mode Applicability and Tested Channel Detail

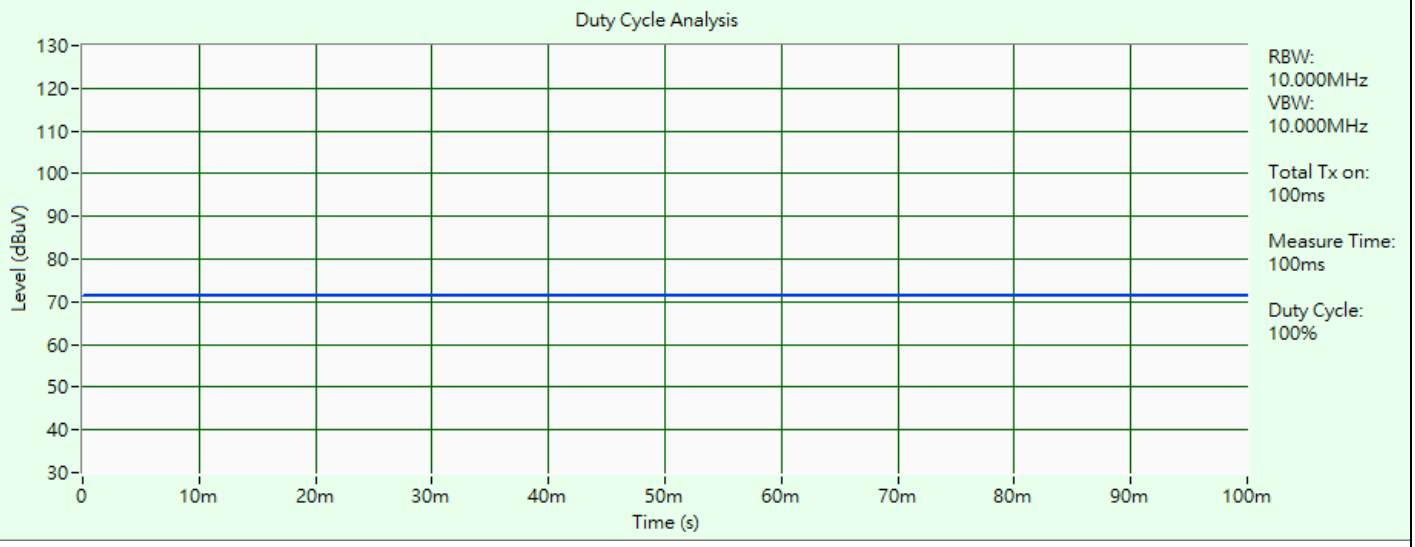
Pre-Scan:	1. EUT can be used in the following ways: X-axis/ Y-axis/ Z-axis. Pre-scan these ways and find the worst case as a representative test condition.
Worst Case:	1. X-axis/ Y-axis/ Z-axis Worst Condition: Y-axis

Following channel(s) was (were) selected for the final test as listed below:

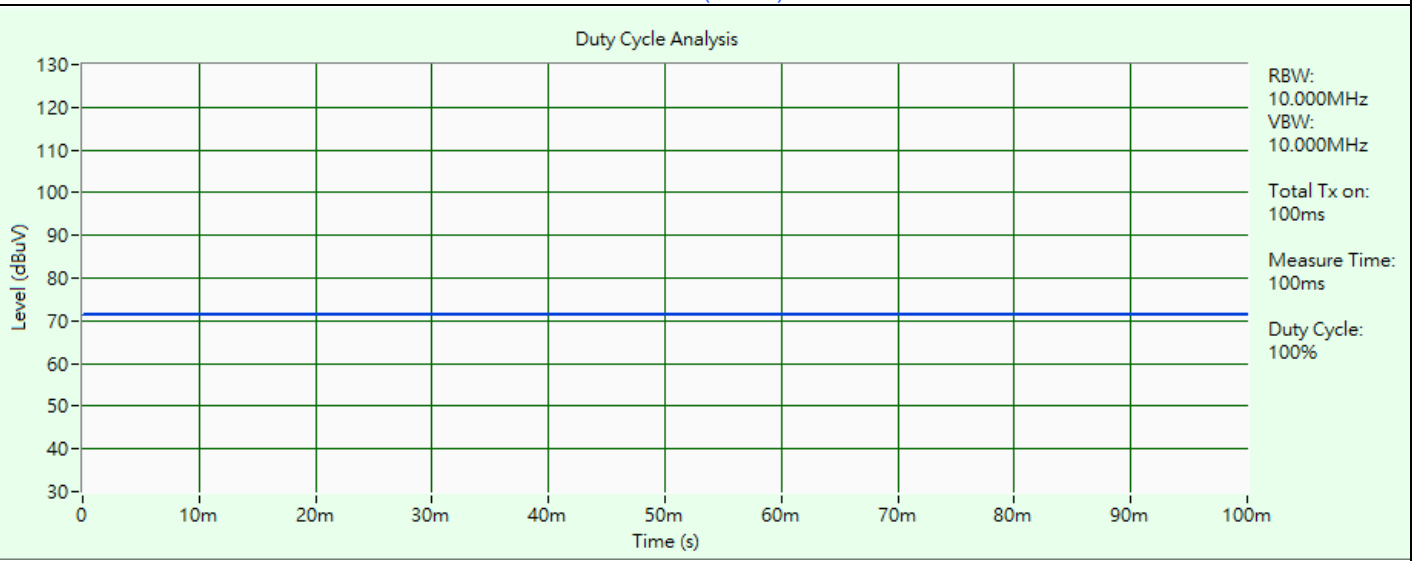
Test Item	EUT Configure Mode	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	A	802.11a	CDD	36, 40, 48, 52, 60, 64, 100, 116, 140, 144, 149, 157, 165	BPSK	6Mb/s
	A, B, C	802.11n (HT20)	CDD & Beamforming	36, 40, 48, 52, 60, 64, 100, 116, 140, 144, 149, 157, 165	BPSK	MCS0
		802.11n (HT40)	CDD & Beamforming	38, 46, 54, 62, 102, 110, 134, 142, 151, 159	BPSK	MCS0
		802.11ac (VHT20)	CDD & Beamforming	36, 40, 48, 52, 60, 64, 100, 116, 140, 144, 149, 157, 165	BPSK	MCS0
		802.11ac (VHT40)	CDD & Beamforming	38, 46, 54, 62, 102, 110, 134, 142, 151, 159	BPSK	MCS0
		802.11ac (VHT80)	CDD & Beamforming	42, 58, 106, 122, 138, 155	BPSK	MCS0
		802.11ac (VHT160)	CDD & Beamforming	50, 114	BPSK	MCS0
		802.11ax (HE20)	CDD & Beamforming	36, 40, 48, 52, 60, 64, 100, 116, 140, 144, 149, 157, 165	BPSK	MCS0
		802.11ax (HE40)	CDD & Beamforming	38, 46, 54, 62, 102, 110, 134, 142, 151, 159	BPSK	MCS0
		802.11ax (HE80)	CDD & Beamforming	42, 58, 106, 122, 138, 155	BPSK	MCS0
		802.11ax (HE160)	CDD & Beamforming	50, 114	BPSK	MCS0
Unwanted Emissions below 1 GHz	B	802.11ax (HE20)	CDD	60	BPSK	MCS0
Unwanted Emissions above 1 GHz	B	802.11n (HT20)	CDD	36	BPSK	MCS0
		802.11ax (HE20)	CDD	60, 140	BPSK	MCS0
		802.11ac (VHT20)	CDD	165	BPSK	MCS0
	C	802.11n (HT40)	CDD	38	BPSK	MCS0
EUT Configure Mode:	A	Antenna Chain 0				
	B	Antenna Chain 1				
	C	Antenna Chain 0+1				

3.5 Duty Cycle of Test Signal

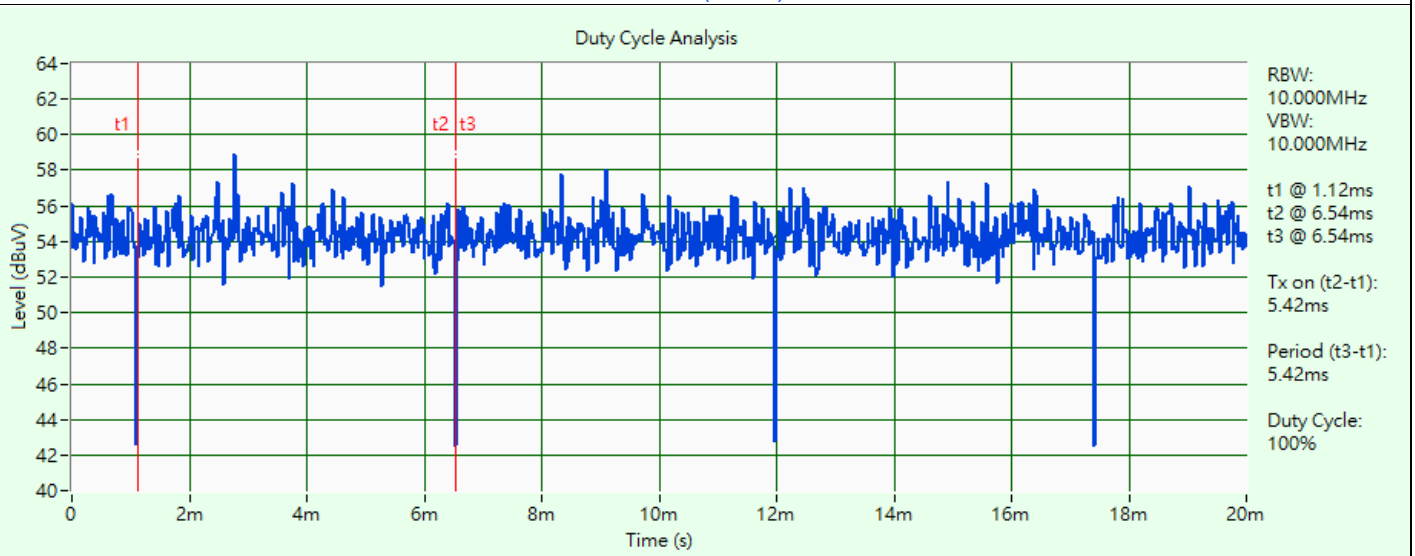
802.11n (HT20): Duty cycle = 100 ms / 100 ms x 100% = 100.0%
802.11n (HT40): Duty cycle = 100 ms / 100 ms x 100% = 100.0%
802.11ax (HE20): Duty cycle = 5.42 ms / 5.42 ms x 100% = 100.0%



802.11n (HT20)



802.11n (HT40)

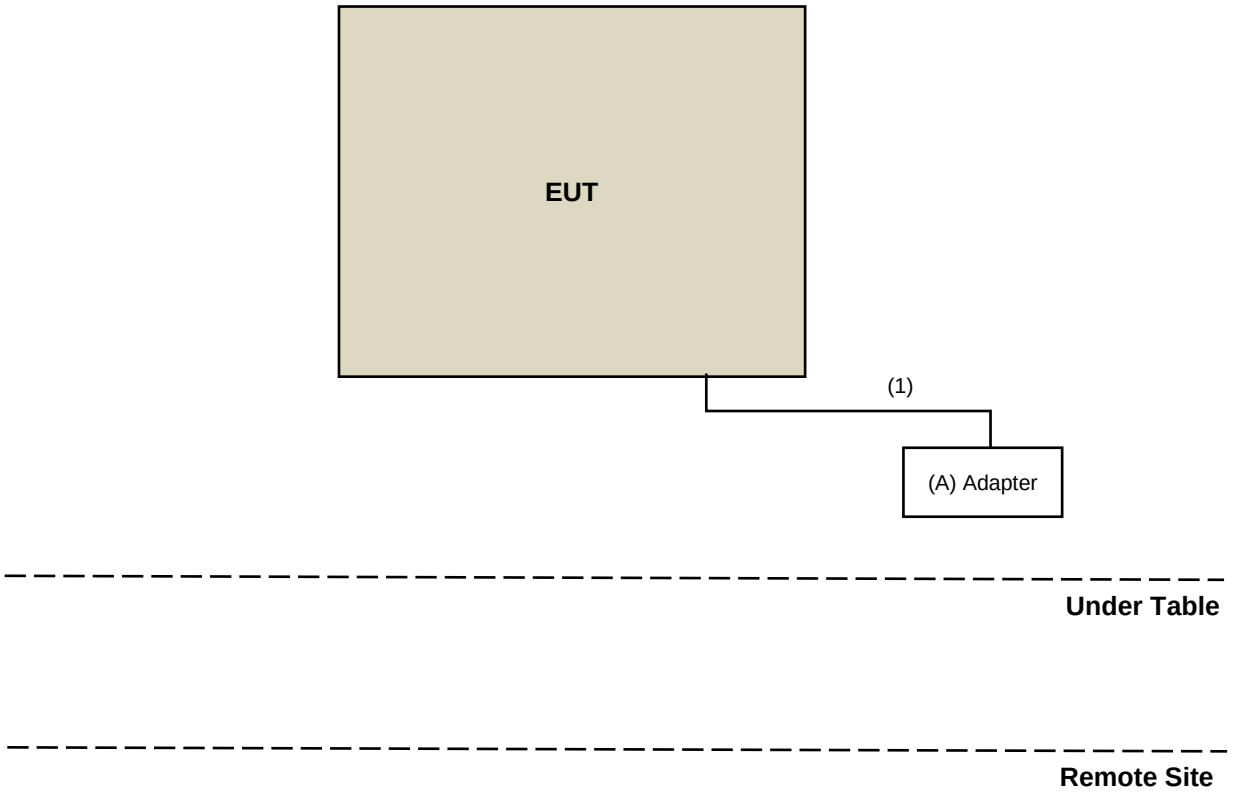


802.11ax (HE20)

3.6 Test Program Used and Operation Descriptions

Controlling software QRCT 4.0 Version 4.0.00166.0 has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Adapter	FULLPOWER	TYPE-C45IC	N/A	N/A	Supplied by applicant

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	Type-C Cable	1	2	Yes	0	Supplied by applicant

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Peak Power Analyzer Keysight	8990B	MY51000485	2023/1/19	2024/1/18
Signal & Spectrum Analyzer R&S	FSV3044	101105	2023/2/22	2024/2/21
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Wideband Power Sensor Keysight	N1923A	MY58020002	2023/1/18	2024/1/17
		MY58140009	2023/1/18	2024/1/17

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2024/1/10

4.2 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower &Turn BV ADT	AT100	AT93021705	N/A	N/A
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer R&S	FSW43	101867	2023/12/29	2024/12/28
Test Receiver KEYSIGHT	N9038A	MY55420137	2023/5/3	2024/5/2
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A
Preamplifier Agilent	8447D	2944A10638	2023/5/7	2024/5/6
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-160	2023/10/17	2024/10/16
RF Coaxial Cable Woken	8D-FB	Cable-CH9-01	2023/5/7	2024/5/6

Notes:

1. The test was performed in HY - 966 chamber 4.
2. Tested Date: 2024/1/23

4.3 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower &Turn BV ADT	AT100	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	5	N/A	N/A
Horn Antenna Schwarzbeck	9120D	9120D-1169	2023/11/12	2024/11/11
	BBHA 9170	9170-480	2023/11/12	2024/11/11
		BBHA9170243	2023/11/12	2024/11/11
Pre-Ammlifier EMCI	EMC 184045	980116	2023/9/27	2024/9/26
Preamplifier Agilent	8449B	3008A02367	2023/2/15	2024/2/14
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2023/7/8	2024/7/7
	EMC102-KM-KM-3000	150929	2023/7/8	2024/7/7
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	2023/1/7	2024/1/6
			2024/1/6	2025/1/5
RF Coaxial Cable HUBER+SUHNER&EMCI	SUCOFLEX 104& EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	2024/1/6	2025/1/5
RF FLITER MICRO-TRONICS	BRM17690	004	2024/1/23	2025/1/22
		011	2023/5/7	2024/5/6
	BRM50716	060	2023/12/25	2024/12/24
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer R&S	FSW43	101867	2023/12/29	2024/12/28
Test Receiver KEYSIGHT	N9038A	MY55420137	2023/5/3	2024/5/2
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 4.
2. Tested Date: 2024/2/5

5 Limits of Test Items

5.1 RF Output Power

Operation Band	EUT Category	Limit
U-NII-1	Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
	Fixed point-to-point Access Point	1 Watt (30 dBm)
	Indoor Access Point	1 Watt (30 dBm)
	Mobile and Portable client device	250mW (24 dBm)

Operation Band	Limit
U-NII-2A	250 mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	250 mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

5.2 Unwanted Emissions below 1 GHz

Radiated emissions up to 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

5.3 Unwanted Emissions above 1 GHz

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, 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 20 dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

Applicable To	Limit	
789033 D02 General UNII Test Procedure New Rules v02r01	Field Strength at 3 m	
	PK: 74 (dBμV/m)	AV: 54 (dBμV/m)

For transmitters operating in the 5.15-5.25 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)

For transmitters operating in the 5.25-5.35 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(2)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)

For transmitters operating in the 5.47-5.725 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(3)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)

For transmitters operating in the 5.725-5.850 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(4)(i)	PK: -27 (dBm/MHz) *1 PK: 10 (dBm/MHz) *2 PK: 15.6 (dBm/MHz) *3 PK: 27 (dBm/MHz) *4	PK: 68.2 (dBμV/m) *1 PK: 105.2 (dBμV/m) *2 PK: 110.8 (dBμV/m) *3 PK: 122.2 (dBμV/m) *4
*1 beyond 75 MHz or more above of the band edge. *2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above. *3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above. *4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.		

Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

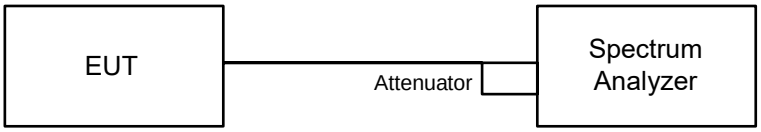
$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts).

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup

For channel straddling:



6.1.2 Test Procedure

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst and set the detector to average. Duty factor is not added to measured value.

For channel straddling:

Method SA-1

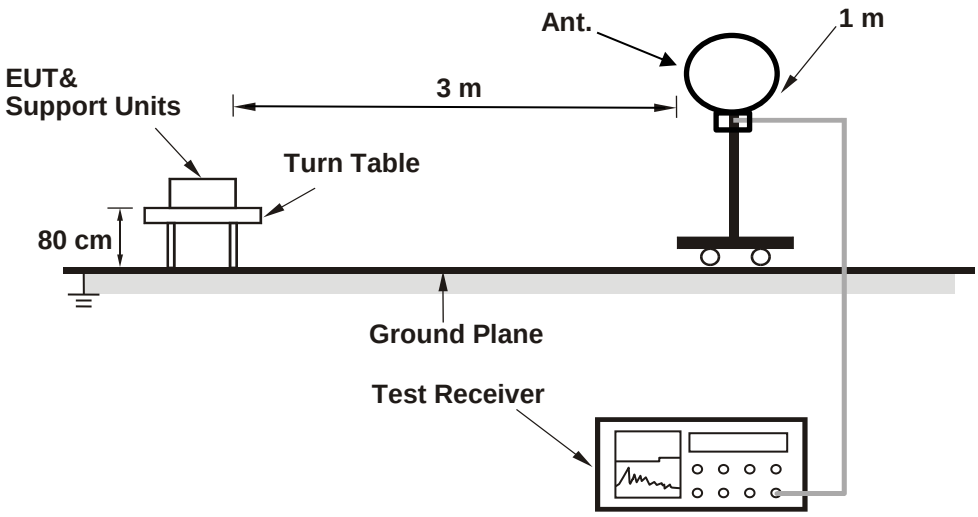
a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
b. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
c. Sweep points ≥ [2 × span / RBW]. (This gives bin-to-bin spacing ≤ RBW / 2, so that narrowband signals are not lost between frequency bins.)
d. Sweep time = auto, trigger set to “free run”.
e. Trace average at least 100 traces in power averaging mode.
f. Record the max value

Note: When measuring straddle channel power, use compute power by integrating the spectrum across the 26 dB EBW or 99% OBW of the signal using the instrument’s band power measurement function, with band limits set equal to the EBW or OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at 1 MHz intervals extending across the 26 dB EBW or 99% OBW of the spectrum.

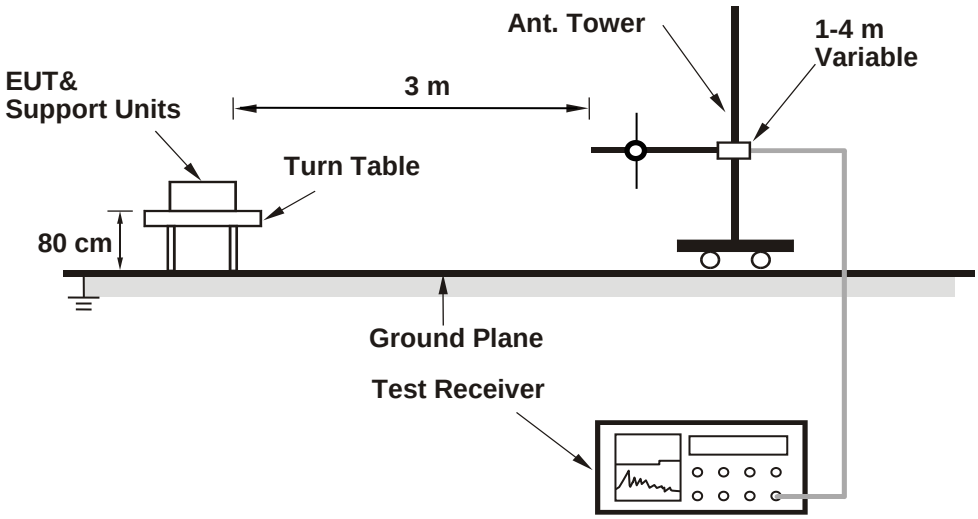
6.2 Unwanted Emissions below 1 GHz

6.2.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.2.2 Test Procedure

For Radiated emission below 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. 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.

d. 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.

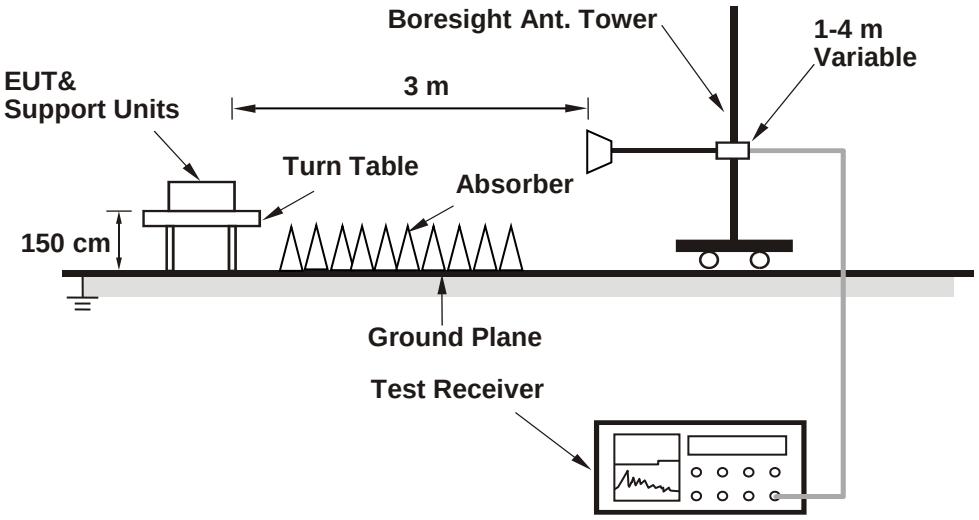
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

6.3 Unwanted Emissions above 1 GHz

6.3.1 Test Setup



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.3.2 Test Procedure

a. The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. 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.

d. 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.

e. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Notes:

1. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
2. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10 Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1 GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	3.85 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Chris Lin

Mode A

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
36	5180	10.257	10.11	24	Pass
40	5200	11.117	10.46	24	Pass
48	5240	10.495	10.21	24	Pass
52	5260	10.914	10.38	24	Pass
60	5300	11.066	10.44	24	Pass
64	5320	11.169	10.48	24	Pass
100	5500	4.315	6.35	24	Pass
116	5580	4.227	6.26	24	Pass
140	5700	4.395	6.43	24	Pass
144	5720	4.325	6.36	24	Pass
149	5745	5.916	7.72	30	Pass
157	5785	5.702	7.56	30	Pass
165	5825	5.662	7.53	30	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
36	5180	10.280	10.12	24	Pass
40	5200	10.423	10.18	24	Pass
48	5240	10.889	10.37	24	Pass
52	5260	10.940	10.39	24	Pass
60	5300	10.839	10.35	24	Pass
64	5320	10.990	10.41	24	Pass
100	5500	4.285	6.32	24	Pass
116	5580	4.188	6.22	24	Pass
140	5700	4.355	6.39	24	Pass
144	5720	4.276	6.31	24	Pass
149	5745	5.875	7.69	30	Pass
157	5785	5.636	7.51	30	Pass
165	5825	5.623	7.50	30	Pass

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
38	5190	9.162	9.62	24	Pass
46	5230	9.290	9.68	24	Pass
54	5270	9.817	9.92	24	Pass
62	5310	9.661	9.85	24	Pass
102	5510	3.819	5.82	24	Pass
110	5550	3.733	5.72	24	Pass
134	5670	3.936	5.95	24	Pass
142	5710	3.882	5.89	24	Pass
151	5755	5.224	7.18	30	Pass
159	5795	5.058	7.04	30	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
36	5180	10.209	10.09	24	Pass
40	5200	10.375	10.16	24	Pass
48	5240	11.041	10.43	24	Pass
52	5260	11.092	10.45	24	Pass
60	5300	10.715	10.30	24	Pass
64	5320	10.889	10.37	24	Pass
100	5500	4.256	6.29	24	Pass
116	5580	4.198	6.23	24	Pass
140	5700	4.315	6.35	24	Pass
144	5720	4.236	6.27	24	Pass
149	5745	5.861	7.68	30	Pass
157	5785	5.623	7.50	30	Pass
165	5825	5.610	7.49	30	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
38	5190	9.840	9.93	24	Pass
46	5230	9.099	9.59	24	Pass
54	5270	9.683	9.86	24	Pass
62	5310	9.705	9.87	24	Pass
102	5510	3.811	5.81	24	Pass
110	5550	3.793	5.79	24	Pass
134	5670	3.606	5.57	24	Pass
142	5710	3.936	5.95	24	Pass
151	5755	5.236	7.19	30	Pass
159	5795	5.070	7.05	30	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
42	5210	9.247	9.66	24	Pass
58	5290	9.886	9.95	24	Pass
106	5530	3.846	5.85	24	Pass
122	5610	3.776	5.77	24	Pass
138	5690	3.784	5.78	30	Pass
155	5775	5.023	7.01	30	Pass

802.11ac (VHT160)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
50	5250	9.638	9.84	24	Pass
114	5570	3.741	5.73	24	Pass

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
36	5180	10.351	10.15	24	Pass
40	5200	10.186	10.08	24	Pass
48	5240	10.186	10.08	24	Pass
52	5260	11.092	10.45	24	Pass
60	5300	10.965	10.40	24	Pass
64	5320	10.914	10.38	24	Pass
100	5500	4.246	6.28	24	Pass
116	5580	4.198	6.23	24	Pass
140	5700	4.365	6.40	24	Pass
144	5720	4.285	6.32	24	Pass
149	5745	5.902	7.71	30	Pass
157	5785	5.649	7.52	30	Pass
165	5825	5.702	7.56	30	Pass

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
38	5190	9.840	9.93	24	Pass
46	5230	9.099	9.59	24	Pass
54	5270	9.727	9.88	24	Pass
62	5310	9.886	9.95	24	Pass
102	5510	3.606	5.57	24	Pass
110	5550	3.573	5.53	24	Pass
134	5670	3.819	5.82	24	Pass
142	5710	3.837	5.84	24	Pass
151	5755	5.105	7.08	30	Pass
159	5795	5.047	7.03	30	Pass

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
42	5210	9.333	9.70	24	Pass
58	5290	9.638	9.84	24	Pass
106	5530	3.741	5.73	24	Pass
122	5610	3.573	5.53	24	Pass
138	5690	3.589	5.55	24	Pass
155	5775	5.047	7.03	30	Pass

802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
50	5250	9.863	9.94	24	Pass
114	5570	3.926	5.94	24	Pass

Mode B

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
36	5180	42.462	16.28	24	Pass
40	5200	42.170	16.25	24	Pass
48	5240	42.267	16.26	24	Pass
52	5260	40.644	16.09	24	Pass
60	5300	41.210	16.15	24	Pass
64	5320	42.658	16.30	24	Pass
100	5500	11.803	10.72	24	Pass
116	5580	11.482	10.60	24	Pass
140	5700	12.445	10.95	24	Pass
144	5720	12.445	10.95	24	Pass
149	5745	7.311	8.64	30	Pass
157	5785	7.447	8.72	30	Pass
165	5825	7.852	8.95	30	Pass

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
38	5190	38.282	15.83	24	Pass
46	5230	36.475	15.62	24	Pass
54	5270	36.728	15.65	24	Pass
62	5310	38.019	15.80	24	Pass
102	5510	10.839	10.35	24	Pass
110	5550	10.304	10.13	24	Pass
134	5670	11.092	10.45	24	Pass
142	5710	10.423	10.18	24	Pass
151	5755	6.998	8.45	30	Pass
159	5795	6.501	8.13	30	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
36	5180	39.174	15.93	24	Pass
40	5200	37.844	15.78	24	Pass
48	5240	36.475	15.62	24	Pass
52	5260	42.170	16.25	24	Pass
60	5300	40.738	16.10	24	Pass
64	5320	41.115	16.14	24	Pass
100	5500	11.695	10.68	24	Pass
116	5580	11.376	10.56	24	Pass
140	5700	12.359	10.92	24	Pass
144	5720	12.388	10.93	24	Pass
149	5745	7.295	8.63	30	Pass
157	5785	7.499	8.75	30	Pass
165	5825	7.907	8.98	30	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
38	5190	36.058	15.57	24	Pass
46	5230	39.084	15.92	24	Pass
54	5270	36.058	15.57	24	Pass
62	5310	36.308	15.60	24	Pass
102	5510	10.139	10.06	24	Pass
110	5550	10.209	10.09	24	Pass
134	5670	11.041	10.43	24	Pass
142	5710	10.471	10.20	24	Pass
151	5755	6.776	8.31	30	Pass
159	5795	7.047	8.48	30	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
42	5210	30.832	14.89	24	Pass
58	5290	29.923	14.76	24	Pass
106	5530	10.280	10.12	24	Pass
122	5610	10.889	10.37	24	Pass
138	5690	10.351	10.15	30	Pass
155	5775	6.531	8.15	30	Pass

802.11ac (VHT160)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
50	5250	24.434	13.88	24	Pass
114	5570	10.593	10.25	24	Pass

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
36	5180	38.194	15.82	24	Pass
40	5200	36.728	15.65	24	Pass
48	5240	38.815	15.89	24	Pass
52	5260	40.738	16.10	24	Pass
60	5300	42.954	16.33	24	Pass
64	5320	40.832	16.11	24	Pass
100	5500	11.535	10.62	24	Pass
116	5580	12.218	10.87	24	Pass
140	5700	12.445	10.95	24	Pass
144	5720	12.359	10.92	24	Pass
149	5745	7.396	8.69	30	Pass
157	5785	7.870	8.96	30	Pass
165	5825	7.396	8.69	30	Pass

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
38	5190	38.994	15.91	24	Pass
46	5230	38.107	15.81	24	Pass
54	5270	38.459	15.85	24	Pass
62	5310	37.670	15.76	24	Pass
102	5510	10.914	10.38	24	Pass
110	5550	10.280	10.12	24	Pass
134	5670	11.092	10.45	24	Pass
142	5710	10.914	10.38	24	Pass
151	5755	6.592	8.19	30	Pass
159	5795	6.730	8.28	30	Pass

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
42	5210	30.761	14.88	24	Pass
58	5290	31.189	14.94	24	Pass
106	5530	11.092	10.45	24	Pass
122	5610	11.015	10.42	24	Pass
138	5690	11.143	10.47	24	Pass
155	5775	7.015	8.46	30	Pass

802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Power Limit (dBm)	Test Result
50	5250	24.604	13.91	24	Pass
114	5570	10.544	10.23	24	Pass

Mode C

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
36	5180	8.19	8.19	13.183	11.20	24	Pass
40	5200	8.33	8.45	13.804	11.40	24	Pass
48	5240	8.44	8.44	13.964	11.45	24	Pass
52	5260	8.32	8.12	13.274	11.23	24	Pass
60	5300	8.41	8.18	13.521	11.31	24	Pass
64	5320	8.42	8.45	13.964	11.45	24	Pass
100	5500	6.32	6.40	8.650	9.37	24	Pass
116	5580	6.22	6.20	8.356	9.22	24	Pass
140	5700	6.39	6.21	8.531	9.31	24	Pass
144	5720	6.31	6.44	8.690	9.39	24	Pass
149	5745	7.69	7.83	11.940	10.77	30	Pass
157	5785	7.51	7.57	11.350	10.55	30	Pass
165	5825	7.50	7.92	11.830	10.73	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is -2.56 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is -2.71 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is -0.62 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 0.6 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
38	5190	7.73	7.64	11.749	10.70	24	Pass
46	5230	7.86	7.94	12.331	10.91	24	Pass
54	5270	7.82	7.68	11.912	10.76	24	Pass
62	5310	7.89	7.91	12.331	10.91	24	Pass
102	5510	5.82	5.90	7.709	8.87	24	Pass
110	5550	5.72	5.70	7.447	8.72	24	Pass
134	5670	5.95	5.95	7.870	8.96	24	Pass
142	5710	5.89	5.71	7.603	8.81	24	Pass
151	5755	7.18	7.30	10.593	10.25	30	Pass
159	5795	7.04	7.39	10.544	10.23	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is -2.56 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is -2.71 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is -0.62 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 0.6 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
36	5180	8.17	8.40	13.490	11.30	24	Pass
40	5200	8.36	8.14	13.366	11.26	24	Pass
48	5240	8.43	8.18	13.552	11.32	24	Pass
52	5260	8.39	8.39	13.804	11.40	24	Pass
60	5300	8.42	8.43	13.932	11.44	24	Pass
64	5320	8.32	8.17	13.366	11.26	24	Pass
100	5500	6.29	6.37	8.590	9.34	24	Pass
116	5580	6.23	6.21	8.375	9.23	24	Pass
140	5700	6.35	6.17	8.453	9.27	24	Pass
144	5720	6.27	6.40	8.610	9.35	24	Pass
149	5745	7.68	7.82	11.912	10.76	30	Pass
157	5785	7.50	7.59	11.376	10.56	30	Pass
165	5825	7.49	7.86	11.722	10.69	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is -2.56 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is -2.71 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is -0.62 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 0.6 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
38	5190	7.89	7.65	11.967	10.78	24	Pass
46	5230	7.67	7.94	12.078	10.82	24	Pass
54	5270	7.95	7.65	12.050	10.81	24	Pass
62	5310	7.77	7.89	12.134	10.84	24	Pass
102	5510	5.81	5.94	7.745	8.89	24	Pass
110	5550	5.79	5.87	7.656	8.84	24	Pass
134	5670	5.57	5.96	7.551	8.78	24	Pass
142	5710	5.95	5.95	7.870	8.96	24	Pass
151	5755	7.19	7.42	10.765	10.32	30	Pass
159	5795	7.05	7.32	10.471	10.20	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is -2.56 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is -2.71 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is -0.62 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 0.6 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
42	5210	7.86	7.68	11.967	10.78	24	Pass
58	5290	7.84	7.63	11.885	10.75	24	Pass
106	5530	5.85	5.67	7.534	8.77	24	Pass
122	5610	5.77	5.90	7.674	8.85	24	Pass
138	5690	5.78	5.86	7.638	8.83	24	Pass
155	5775	7.01	7.48	10.617	10.26	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is -2.56 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is -2.71 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is -0.62 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 0.6 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT160)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
50	5250	7.89	7.89	12.303	10.90	24	Pass
114	5570	5.73	5.71	7.464	8.73	24	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is -2.9 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is -2.71 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is -0.62 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
36	5180	8.36	8.15	13.397	11.27	24	Pass
40	5200	8.32	8.44	13.772	11.39	24	Pass
48	5240	8.21	8.48	13.677	11.36	24	Pass
52	5260	8.34	8.15	13.366	11.26	24	Pass
60	5300	8.45	8.21	13.614	11.34	24	Pass
64	5320	8.31	8.43	13.740	11.38	24	Pass
100	5500	6.28	6.36	8.570	9.33	24	Pass
116	5580	6.23	6.21	8.375	9.23	24	Pass
140	5700	6.40	6.22	8.551	9.32	24	Pass
144	5720	6.32	6.45	8.710	9.40	24	Pass
149	5745	7.71	7.79	11.912	10.76	30	Pass
157	5785	7.52	7.58	11.376	10.56	30	Pass
165	5825	7.56	7.89	11.858	10.74	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is -2.56 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is -2.71 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is -0.62 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 0.6 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
38	5190	7.82	7.98	12.331	10.91	24	Pass
46	5230	7.93	7.68	12.078	10.82	24	Pass
54	5270	7.95	7.65	12.050	10.81	24	Pass
62	5310	7.81	7.93	12.246	10.88	24	Pass
102	5510	5.57	5.80	7.413	8.70	24	Pass
110	5550	5.53	5.92	7.482	8.74	24	Pass
134	5670	5.82	5.95	7.762	8.90	24	Pass
142	5710	5.84	5.92	7.745	8.89	24	Pass
151	5755	7.18	7.29	10.593	10.25	30	Pass
159	5795	7.08	7.46	10.666	10.28	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is -2.56 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is -2.71 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is -0.62 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 0.6 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
42	5210	7.68	7.89	12.023	10.80	24	Pass
58	5290	7.88	7.67	11.995	10.79	24	Pass
106	5530	5.73	5.71	7.464	8.73	24	Pass
122	5610	5.53	5.76	7.345	8.66	24	Pass
138	5690	5.55	5.94	7.516	8.76	24	Pass
155	5775	7.03	7.08	10.162	10.07	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is -2.56 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is -2.71 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is -0.62 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the maximum gain is 0.6 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE160)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
50	5250	7.90	7.90	12.331	10.91	24	Pass
114	5570	5.94	5.94	7.852	8.95	24	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain is the maximum gain of antennas.
3. For U-NII-1, the maximum gain is -2.56 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the maximum gain is -2.71 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the maximum gain is -0.62 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT20) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
36	5180	5.18	5.17	6.592	8.19	24	Pass
40	5200	5.32	5.43	6.902	8.39	24	Pass
48	5240	5.43	5.42	6.982	8.44	24	Pass
52	5260	5.31	5.10	6.637	8.22	24	Pass
60	5300	5.40	5.16	6.745	8.29	24	Pass
64	5320	5.41	5.43	6.966	8.43	24	Pass
100	5500	3.31	3.38	4.325	6.36	24	Pass
116	5580	3.21	3.18	4.178	6.21	24	Pass
140	5700	3.38	3.19	4.266	6.30	24	Pass
144	5720	3.30	3.42	4.335	6.37	22.88	Pass
149	5745	4.68	4.81	5.970	7.76	30	Pass
157	5785	4.50	4.55	5.675	7.54	30	Pass
165	5825	4.49	4.90	5.902	7.71	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-1, the directional gain is -0.64 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the directional gain is -0.03 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the directional gain is 1.35 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the directional gain is 2.28 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT40) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
38	5190	4.72	4.62	5.861	7.68	24	Pass
46	5230	4.85	4.92	6.166	7.90	24	Pass
54	5270	4.81	4.66	5.957	7.75	24	Pass
62	5310	4.88	4.89	6.166	7.90	24	Pass
102	5510	2.81	2.88	3.855	5.86	24	Pass
110	5550	2.71	2.68	3.724	5.71	24	Pass
134	5670	2.94	2.93	3.936	5.95	24	Pass
142	5710	2.88	2.69	3.802	5.80	24	Pass
151	5755	4.17	4.28	5.297	7.24	30	Pass
159	5795	4.03	4.37	5.260	7.21	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-1, the directional gain is -0.64 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the directional gain is -0.03 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the directional gain is 1.35 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the directional gain is 2.28 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT20) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
36	5180	5.16	5.38	6.730	8.28	24	Pass
40	5200	5.35	5.12	6.683	8.25	24	Pass
48	5240	5.42	5.16	6.761	8.30	24	Pass
52	5260	5.38	5.37	6.902	8.39	24	Pass
60	5300	5.41	5.41	6.950	8.42	24	Pass
64	5320	5.31	5.15	6.668	8.24	24	Pass
100	5500	3.28	3.35	4.295	6.33	24	Pass
116	5580	3.22	3.19	4.188	6.22	24	Pass
140	5700	3.34	3.15	4.227	6.26	24	Pass
144	5720	3.26	3.38	4.295	6.33	24	Pass
149	5745	4.67	4.80	5.957	7.75	30	Pass
157	5785	4.49	4.57	5.675	7.54	30	Pass
165	5825	4.48	4.84	5.848	7.67	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-1, the directional gain is -0.64 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the directional gain is -0.03 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the directional gain is 1.35 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the directional gain is 2.28 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT40) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
38	5190	4.88	4.63	5.984	7.77	24	Pass
46	5230	4.66	4.92	6.026	7.80	24	Pass
54	5270	4.94	4.63	6.026	7.80	24	Pass
62	5310	4.76	4.87	6.067	7.83	24	Pass
102	5510	2.80	2.92	3.864	5.87	24	Pass
110	5550	2.78	2.85	3.828	5.83	24	Pass
134	5670	2.56	2.94	3.767	5.76	24	Pass
142	5710	2.94	2.93	3.936	5.95	24	Pass
151	5755	4.18	4.40	5.370	7.30	30	Pass
159	5795	4.04	4.30	5.224	7.18	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain = 10 log[(10$^{Chain0/20}$ + 10$^{Chain1/20}$)^2 / 2]
3. For U-NII-1, the directional gain is -0.64 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the directional gain is -0.03 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the directional gain is 1.35 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the directional gain is 2.28 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT80) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
42	5210	4.85	4.66	5.984	7.77	24	Pass
58	5290	4.83	4.61	5.929	7.73	24	Pass
106	5530	2.84	2.65	3.767	5.76	24	Pass
122	5610	2.76	2.88	3.828	5.83	24	Pass
138	5690	2.77	2.84	3.819	5.82	24	Pass
155	5775	4.00	4.46	5.309	7.25	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain = 10 log[(10$^{Chain0/20}$ + 10$^{Chain1/20}$)^2 / 2]
3. For U-NII-1, the directional gain is -0.64 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the directional gain is -0.03 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the directional gain is 1.35 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the directional gain is 2.28 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT160) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
50	5250	4.88	4.87	6.152	7.89	24	Pass
114	5570	2.72	2.69	3.733	5.72	24	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-1, the directional gain is -0.83 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the directional gain is -0.03 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the directional gain is 1.35 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
36	5180	5.35	5.13	6.683	8.25	24	Pass
40	5200	5.31	5.42	6.887	8.38	24	Pass
48	5240	5.20	5.46	6.823	8.34	24	Pass
52	5260	5.33	5.13	6.668	8.24	24	Pass
60	5300	5.44	5.19	6.808	8.33	24	Pass
64	5320	5.30	5.41	6.871	8.37	24	Pass
100	5500	3.27	3.34	4.285	6.32	24	Pass
116	5580	3.22	3.19	4.188	6.22	24	Pass
140	5700	3.39	3.20	4.276	6.31	24	Pass
144	5720	3.31	3.43	4.345	6.38	24	Pass
149	5745	4.70	4.77	5.957	7.75	30	Pass
157	5785	4.51	4.56	5.689	7.55	30	Pass
165	5825	4.55	4.87	5.916	7.72	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-1, the directional gain is -0.64 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the directional gain is -0.03 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the directional gain is 1.35 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the directional gain is 2.28 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE40) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
38	5190	4.81	4.96	6.166	7.90	24	Pass
46	5230	4.92	4.66	6.026	7.80	24	Pass
54	5270	4.94	4.63	6.026	7.80	24	Pass
62	5310	4.80	4.91	6.124	7.87	24	Pass
102	5510	2.56	2.78	3.698	5.68	24	Pass
110	5550	2.52	2.90	3.733	5.72	24	Pass
134	5670	2.81	2.93	3.873	5.88	24	Pass
142	5710	2.83	2.90	3.873	5.88	24	Pass
151	5755	4.17	4.27	5.284	7.23	30	Pass
159	5795	4.07	4.44	5.333	7.27	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-1, the directional gain is -0.64 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the directional gain is -0.03 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the directional gain is 1.35 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the directional gain is 2.28 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE80) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
42	5210	4.67	4.87	5.998	7.78	24	Pass
58	5290	4.87	4.65	5.984	7.77	24	Pass
106	5530	2.72	2.69	3.733	5.72	24	Pass
122	5610	2.52	2.74	3.664	5.64	24	Pass
138	5690	2.54	2.92	3.750	5.74	24	Pass
155	5775	4.02	4.06	5.070	7.05	30	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-1, the directional gain is -0.64 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the directional gain is -0.03 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the directional gain is 1.35 dBi < 6 dBi, so the output power limit shall not be reduced.
6. For U-NII-3, the directional gain is 2.28 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE160) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
50	5250	4.89	4.88	6.166	7.90	24	Pass
114	5570	2.93	2.92	3.926	5.94	24	Pass

Notes:

1. * : Test was performed in accordance with measurement follow FCC KDB 789033 UNII test procedure Method SA-1 and use spectrum analyzer test.
2. Directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2]
3. For U-NII-1, the directional gain is -0.64 dBi < 6 dBi, so the output power limit shall not be reduced.
4. For U-NII-2A, the directional gain is -0.03 dBi < 6 dBi, so the output power limit shall not be reduced.
5. For U-NII-2C, the directional gain is 1.35 dBi < 6 dBi, so the output power limit shall not be reduced.

7.2 Unwanted Emissions below 1 GHz

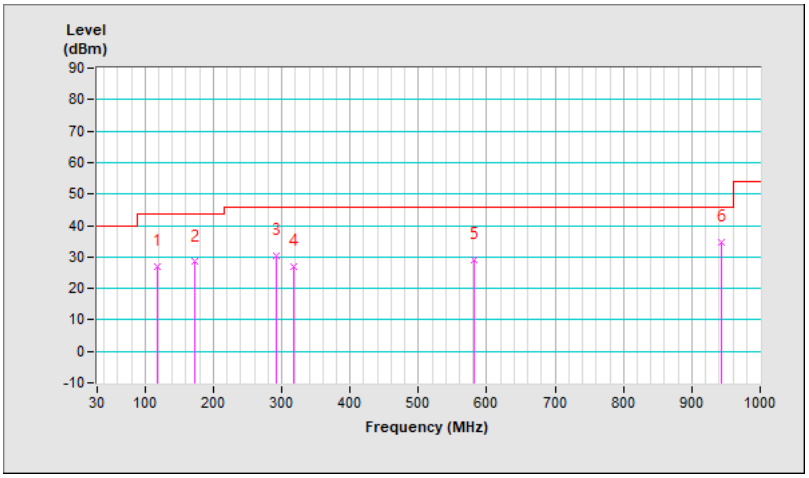
Mode B

RF Mode	802.11ax (HE20)	Channel	CH 60：5300 MHz
Frequency Range	30 MHz ~1000 MHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	20.6°C, 78.3% RH
Tested By	Rex Wang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	117.30	26.7 QP	43.5	-16.8	1.01 H	144	38.2	-11.5
2	173.56	28.4 QP	43.5	-15.1	1.51 H	263	37.9	-9.5
3	291.90	30.4 QP	46.0	-15.6	1.01 H	204	38.3	-7.9
4	318.09	27.1 QP	46.0	-18.9	1.01 H	202	34.3	-7.2
5	580.96	29.1 QP	46.0	-16.9	1.01 H	317	31.2	-2.1
6	943.74	34.5 QP	46.0	-11.5	1.51 H	346	29.3	5.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

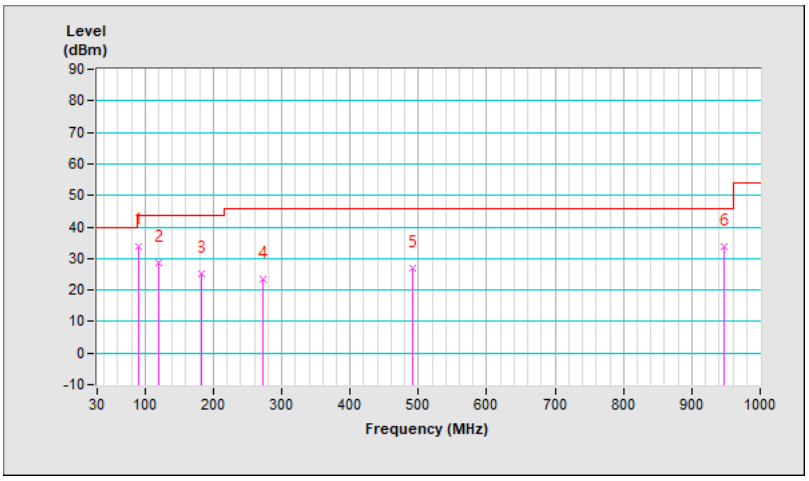


RF Mode	802.11ax (HE20)	Channel	CH 60：5300 MHz
Frequency Range	30 MHz ~1000 MHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	20.6°C, 78.3% RH
Tested By	Rex Wang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	**91.11**	**34.0 QP**	**43.5**	**-9.5**	**1.51 V**	**14**	**48.8**	**-14.8**
2	119.24	28.8 QP	43.5	-14.7	1.51 V	136	40.2	-11.4
3	183.26	25.0 QP	43.5	-18.5	1.01 V	334	35.7	-10.7
4	271.53	23.4 QP	46.0	-22.6	1.51 V	16	31.7	-8.3
5	491.72	27.0 QP	46.0	-19.0	1.51 V	320	31.0	-4.0
6	946.65	33.9 QP	46.0	-12.1	1.51 V	6	28.7	5.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



7.3 Unwanted Emissions above 1 GHz

Mode B

RF Mode	802.11n (HT20)	**Channel**	CH 36：5180 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	60.2 PK	74.0	-13.8	1.21 H	199	39.5	20.7
2	5150.00	46.8 AV	54.0	-7.2	1.21 H	199	26.1	20.7
3	*5180.00	106.0 PK			1.21 H	199	65.4	40.6
4	*5180.00	95.6 AV			1.21 H	199	55.0	40.6
5	#10360.00	62.1 PK	68.2	-6.1	1.87 H	242	38.4	23.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	5150.00	60.0 PK	74.0	-14.0	2.34 V	166	39.3	20.7
2	5150.00	46.7 AV	54.0	-7.3	2.34 V	166	26.0	20.7
3	*5180.00	103.5 PK			2.34 V	166	62.9	40.6
4	*5180.00	93.3 AV			2.34 V	166	52.7	40.6
5	#10360.00	61.6 PK	68.2	-6.6	3.15 V	124	37.9	23.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	802.11ax (HE20)	Channel	CH 60：5300 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m									
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	802.11ax (HE20)	Channel	CH 60
1	*5300.00	110.7 PK			1.19 H	192	70.3	40.4	
2	*5300.00	97.0 AV			1.19 H	192	56.6	40.4	
3	10600.00	63.4 PK	74.0	-10.6	1.90 H	234	38.7	24.7	
4	**10600.00**	**48.6 AV**	**54.0**	**-5.4**	**1.90 H**	**234**	**23.9**	**24.7**	
Antenna Polarity & Test Distance : Vertical at 3 m									
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**	
1	*5300.00	108.6 PK			2.14 V	155	68.2	40.4	
2	*5300.00	95.0 AV			2.14 V	155	54.6	40.4	
3	10600.00	63.2 PK	74.0	-10.8	2.97 V	142	38.5	24.7	
4	10600.00	48.3 AV	54.0	-5.7	2.97 V	142	23.6	24.7	

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	802.11ax (HE20)	**Channel**	CH 140：5700 MHz
Frequency Range	1 GHz ~ 40 GHz	**Detector Function & Bandwidth**	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	*5700.00	107.5 PK			1.42 H	187	66.2	41.3
2	*5700.00	94.2 AV			1.42 H	187	52.9	41.3
3	#5725.00	59.7 PK	68.2	-8.5	1.42 H	187	38.3	21.4
4	11400.00	63.7 PK	74.0	-10.3	2.12 H	229	38.0	25.7
5	11400.00	48.3 AV	54.0	-5.7	2.12 H	229	22.6	25.7
Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	*5700.00	105.2 PK			2.35 V	171	63.9	41.3
2	*5700.00	92.0 AV			2.35 V	171	50.7	41.3
3	#5725.00	59.4 PK	68.2	-8.8	2.35 V	171	38.0	21.4
4	11400.00	63.4 PK	74.0	-10.6	2.97 V	136	37.7	25.7
5	11400.00	48.1 AV	54.0	-5.9	2.97 V	136	22.4	25.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	802.11ac (VHT20)	Channel	CH 165：5825 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5825.00	103.4 PK			1.34 H	182	61.9	41.5
2	*5825.00	92.9 AV			1.34 H	182	51.4	41.5
3	11650.00	63.4 PK	74.0	-10.6	2.19 H	233	38.4	25.0
4	11650.00	47.9 AV	54.0	-6.1	2.19 H	233	22.9	25.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5825.00	101.7 PK			2.22 V	165	60.2	41.5
2	*5825.00	91.0 AV			2.22 V	165	49.5	41.5
3	11650.00	63.1 PK	74.0	-10.9	2.85 V	129	38.1	25.0
4	11650.00	47.6 AV	54.0	-6.4	2.85 V	129	22.6	25.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

Mode C

RF Mode	802.11n (HT40)	Channel	CH 38：5190 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 67% RH
Tested By	Adair Peng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	58.5 PK	74.0	-15.5	2.29 H	197	37.8	20.7
2	5150.00	45.7 AV	54.0	-8.3	2.29 H	197	25.0	20.7
3	*5190.00	101.1 PK			2.29 H	197	60.5	40.6
4	*5190.00	90.9 AV			2.29 H	197	50.3	40.6
5	#10380.00	62.6 PK	68.2	-5.6	2.69 H	209	38.8	23.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	58.3 PK	74.0	-15.7	3.12 V	333	37.6	20.7
2	5150.00	45.6 AV	54.0	-8.4	3.12 V	333	24.9	20.7
3	*5190.00	96.9 PK			3.12 V	333	56.3	40.6
4	*5190.00	86.5 AV			3.12 V	333	45.9	40.6
5	#10380.00	62.4 PK	68.2	-5.8	3.19 V	291	38.6	23.8

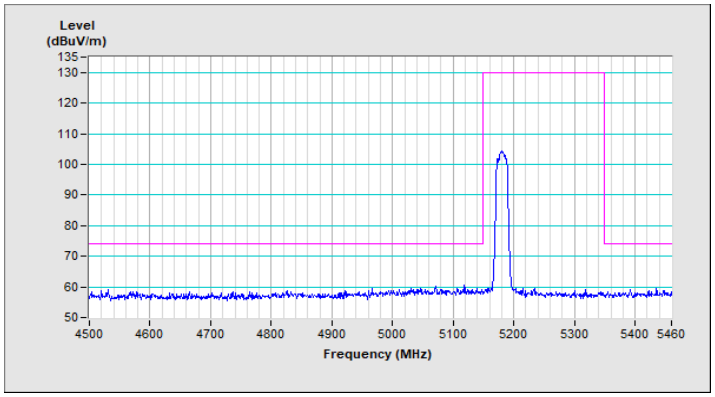
Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

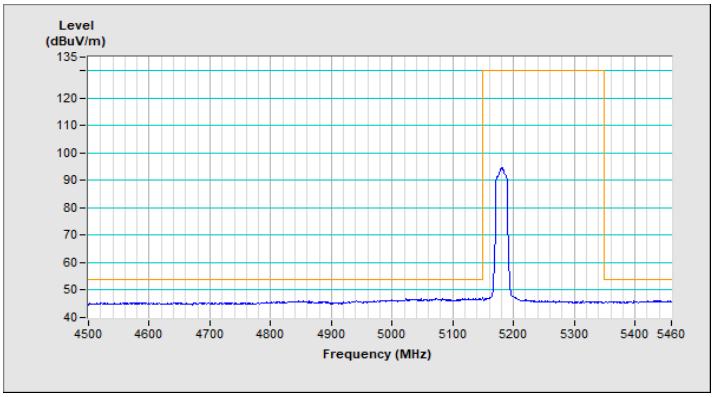
Plot of Band Edge

Frequency Range	4.5 GHz ~ 5.46 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS

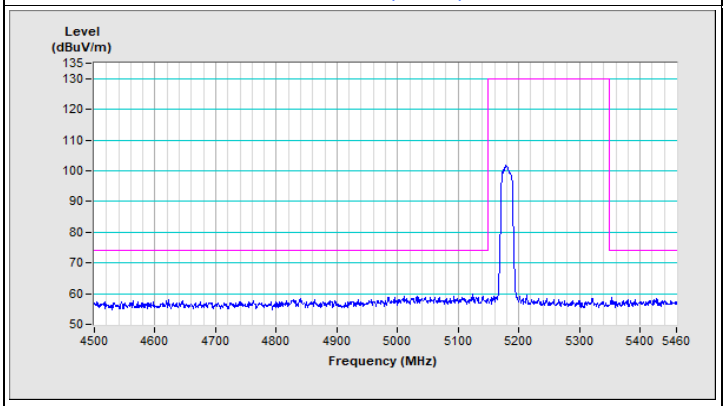
802.11n (HT20) Channel 36



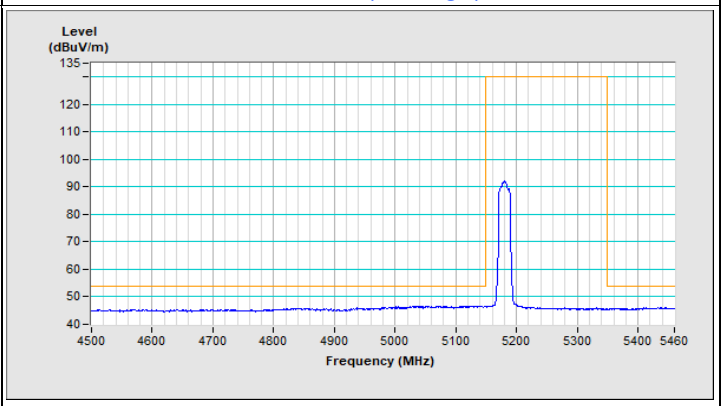
Horizontal (Peak)



Horizontal (Average)



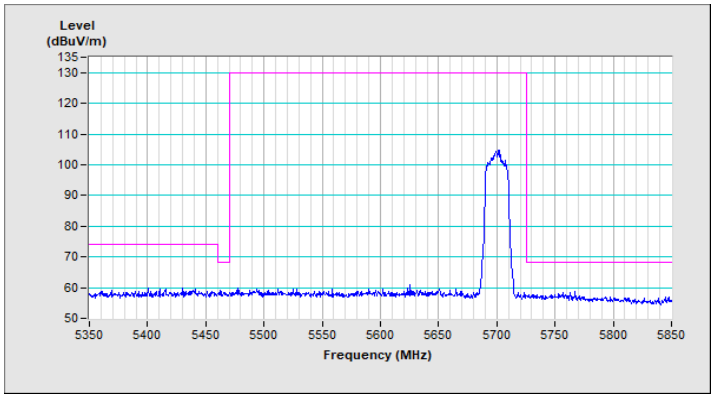
Vertical (Peak)



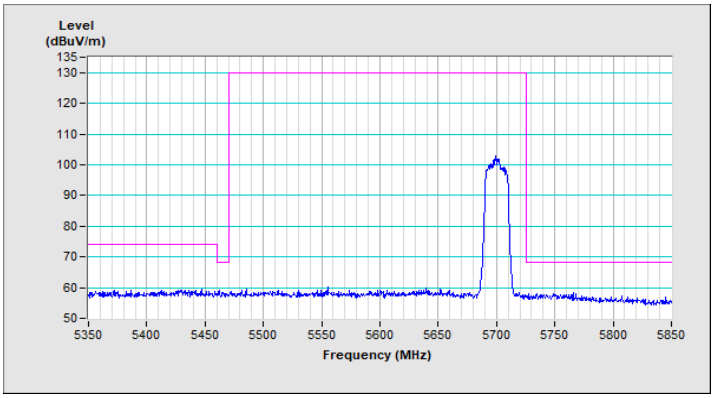
Vertical (Average)

Frequency Range	5.35 GHz ~ 5.85 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak

802.11ax (HE20) Channel 140



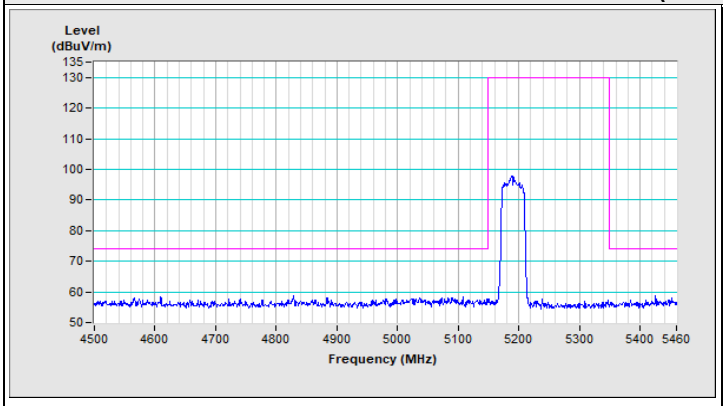
Horizontal (Peak)



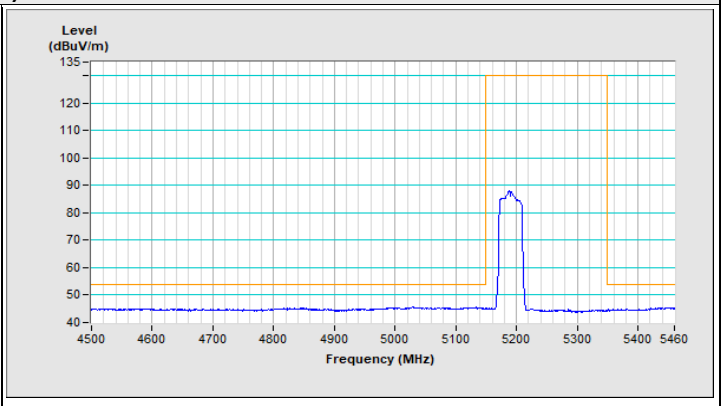
Vertical (Peak)

Frequency Range	4.5 GHz ~ 5.46 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS

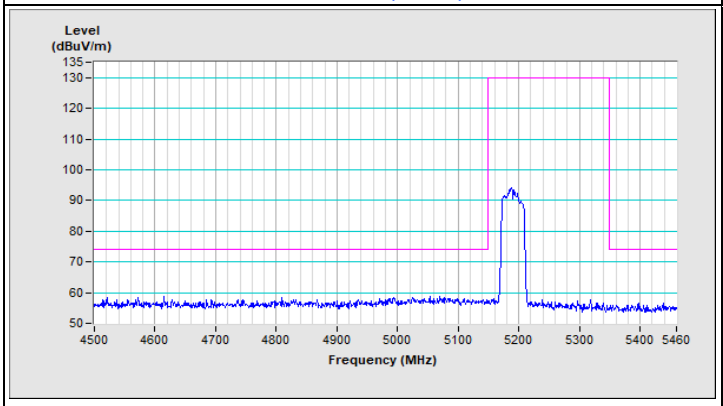
802.11n (HT40) Channel 38



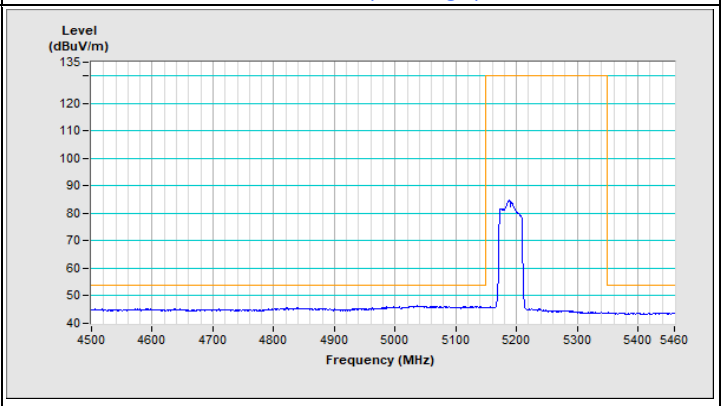
Horizontal (Peak)



Horizontal (Average)



Vertical (Peak)

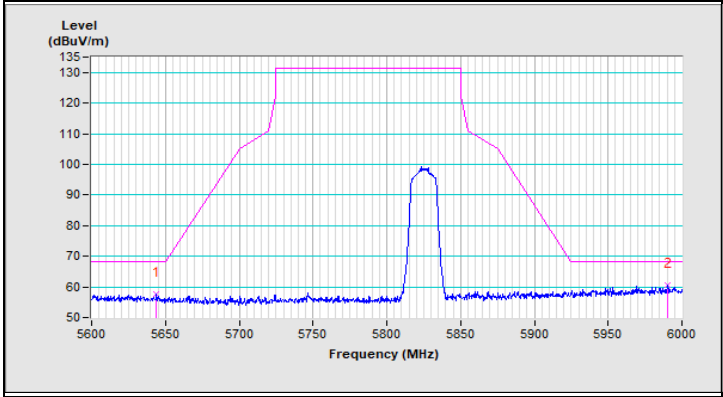


Vertical (Average)

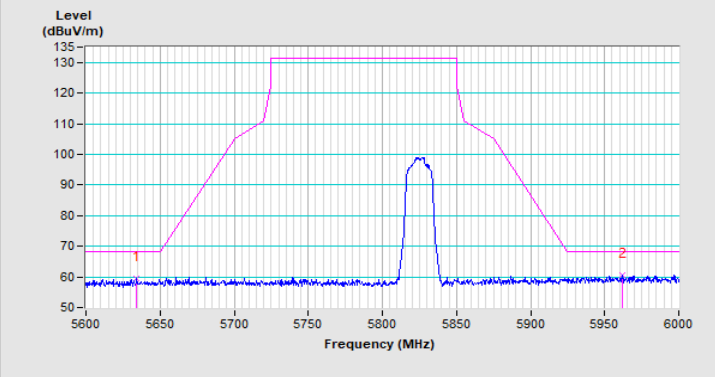
Frequency Range	5.6 GHz ~ 6.0 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak

802.11a Channel 149

Horizontal (Peak)



Vertical (Peak)



8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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