RF
TEST REPORT

Report No. : **201207054SZN-002**

Model No.: **ECH-REFL01-5G, ECH-REFL02-5G, ECH-REFL03, ECH-REFL03-SPT**

FCC ID: **2ATAP-ECHELON**

Issued Date: **June 17, 2021**

Applicant: **DONGGUAN TYSTART GLASS TECHNOLOGY CO., LTD**
Room 201, Building 3rd, No. 43 of Gangjian RD. Changping town, Dongguan City, Guangdong Province, China

Test Method/ Standard: **FCC Part 15 Subpart E;**
KDB 789033 D02 v02r01;
KDB 662911 D01 v02r01;
ANSI C63.10-2013

Test By: **Intertek Testing Services Shenzhen Ltd. Longhua Branch**
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The test report was reviewed by:

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Summary of Tests

FCC Parts	Test	Section	Results
15.203	Antenna Requirement	1.3	Pass
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15.407 a (1)/(3)	Power Spectrum Density test	4	Pass
15.407 e	6dB Bandwidth	5	Pass
15.407 b, 15.205, 15.209	Radiated spurious emission test	6	Pass
15.207	AC line conducted emission test	7	Pass
15.407 g	Frequency Stability	8	Pass

1. General information

1.1 Identification of the EUT

Product:	REFLECT MIRROR, REFLECT TOUCH SPORT
Model No.:	ECH-REFL01-5G, ECH-REFL02-5G, ECH-REFL03, ECH-REFL03-SPT
Type of Device:	Master device (with “hotspot” capabilities)
Nominal Channel Bandwidth:	802.11a/n-HT20 (20 MHz), 802.11n-HT40 (40MHz), 802.11ac (20/40/80MHz)
Operating Frequency:	5150 MHz ~ 5250 MHz, 5725~5850MHz
Channel Number:	4 channels for 5180 MHz ~ 5240 MHz (802.11a/n/ac-HT20); 2 channels for 5190 MHz ~ 5230 MHz (802.11n/ac-HT40); 1 channel for 5210 MHz (802.11ac-HT80); 5 channels for 5745 MHz ~ 5825 MHz (802.11a/n/ac-HT20); 2 channels for 5755 MHz ~ 5795 MHz (802.11n/ac-HT40); 1 channel for 5775 MHz (802.11ac-HT80);
Rated Power:	AC 120V, 60Hz
Test Date(s):	December 08, 2020 to January 29, 2021
Note 1:	This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.
Note 2:	When determining the test conclusion, the Measurement Uncertainty of test has been considered.

1.2 Additional information about the EUT

The Equipment Under Test (EUT) is an Echelon Reflect with BT5.0 (dual-mode) operating in 2402-2480MHz, 2.4G Wi-Fi function operating in 2412-2462MHz and 5G Wi-Fi function operating in 5180-5240&5745-5825MHz. The EUT is powered by A.C. 120V, 60Hz. Bluetooth and WIFI transmitters are share one antenna and can transmit simultaneously, but 2.4G WIFI and 5G WIFI cannot transmit simultaneously. User cannot access USB/SD card ports in normal use. For more detailed features description, please refer to the user's manual.

The model: ECH-REFL03 is the same as the model: ECH-REFL03-SPT in hardware aspect. Their difference in product name, model number and with/without support touch screen function for marketing purpose. Details as below:

Product name	Model Number	Description
REFLECT MIRROR	ECH-REFL03	Not support touch screen function
REFLECT TOUCH SPORT	ECH-REFL03-SPT	Support touch screen function

There are 4 replaceable touch screen function board be used in model ECH-REFL03-SPT, all independently installed in the product for testing.

Product name	Model Number	touch screen function board Model
REFLECT TOUCH SPORT	ECH-REFL03-SPT	126
		4101
		8083
		8756

Partial tests are required to both designing schemes after evaluation, but only worst-case is reflected in the report.

The Models: ECH-REFL03, ECH-REFL03-SPT are the same as the certified models: ECH-REFL02-5G, ECH-REFL01-5G which was approved on 2019-11-07, except mentioned as below:

Production Name	Model Number	Description
REFLECT MIRROR	ECH-REFL01-5G	Certified model
REFLECT TOUCH SPORT	ECH-REFL03	Different appearance, power supply board and camera board with model ECH-REFL01-5G
REFLECT MIRROR	ECH-REFL02-5G	Certified model
REFLECT TOUCH SPORT	ECH-REFL03-SPT	Different appearance, power supply board and camera board, touch function board with model ECH-REFL02-5G

This report bases on the previous report with report number 190926001SZN-002 dated October 17, 2019 (original signature by Jeff Liang, Kidd Yang on file), due to added model number, partial tests are required after evaluation.

For more detail features, please refer to User's description as file name "descri.pdf".

Related Submittal(s) Grants

This is an application for certification of U–NII device (5GHz Wi-Fi transmitter portion).

Remaining functions are subjected to the following documents:

For the 2.4G Wi-Fi function was tested and demonstrated in report 201207054SZN-001.
For the BT 5.0 EDR function was tested and demonstrated in report 201207054SZN-003.
For the BT 5.0 BLE function was tested and demonstrated in report 201207054SZN-004.
For other functions were reported in the SDoC report: 201207054SZN-005.

1.3 Antenna description (15.203)

The EUT uses Integral Antenna which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.
Antenna Gain: 2dBi Max for 5G WIFI

1.4 Peripherals equipment

Description	Manufacturer	Model No.
Portable computer (Provided by Intertek)	DELL	Latitude 3480

2. Test specifications

2.1 Test standard

The EUT was performed according to the procedures in FCC Part 15 E, Section15.203, 15.207, 15.209, 15.407 and ANSI C63.10/2013, method of measurement: KDB 789033 D02.

The test of radiated measurements according to FCC Part15 Section 15.33(a) had been conducted and the field strength of this frequency band was all meet limit requirement, thus we evaluate the EUT pass the specified test.

The AC power conducted emissions was invested over the frequency range from 0.15 MHz to 30 MHz using a receiver bandwidth of 9 kHz (15.207 paragraph).

Radiated emissions were invested cover the frequency range from 9KHz to 30MHz using a receiver RBW of 9kHz, from 30 MHz to 1000 MHz using a receiver RBW of 120 kHz record QP reading, and the frequency over 1 GHz using a spectrum analyzer RBW of 1 MHz, VBW of 3MHz, Detector=Peak record for Peak reading, RBW of 1 MHz, VBW of 3MHz, Detector=RMS record for Average reading recorded on the report.

The EUT setup configurations please refer to the photo of radiated setup photos.pdf & conducted setup photos.pdf.

2.2 Operation mode

The EUT was supplied by AC 120V, 60Hz and it was run in TX mode that was controlled by client provided RF testing program.

The EUT was transmitted continuously during the test. Both designing schemes have been considered, the worst-case test result was showed in the report.

With individual verifying, the maximum output power was found at 6 Mbps data rate for 802.11a mode, 6.5 Mbps data rate for 802.11n-HT20 mode, 13.5 Mbps data rate for 802.11n-HT40 mode, 29.3Mbps data rate for 802.11ac. The final tests were executed under these conditions and recorded in this report individually.

Table for Parameters of Test Software Setting

Test Software: Ampak RFTestTool, VER: 5.6

During the test, Channel and power controlling software provided by the applicant was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the application and is going to be fixed on the firmware of the end product.

3. Maximum Output Power test (FCC 15.407)

3.1 Operating environment

Temperature:	24	℃
Relative Humidity:	53	%
Atmospheric Pressure:	1001	hPa

3.2 Test setup & procedure

The power output per FCC §15.407(a) was measured on the EUT using a 50ohm SMA cable connected to spectrum analyzer and the measurement method refer to 789033 D02. Power was read directly and cable loss correction (1.0dB) was added to the reading to obtain power at the EUT antenna terminals.

3.3 Limit

Operating Frequency (MHz)	Max Conducted TX Power	Max EIRP
5150~5250	*1 30dBm (1W) for master device	*2 4W (36dBm) with 6dBi antenna
	24dBm (250mW) for client device	
5725~5850	30dBm (1W)	*2 4W (36dBm) with 6dBi antenna

Remark: *1 The device declared as master device.

*2 Tx Power Reduction (dBm-by-dBi) required when antenna exceeds 6dBi.

1). 5.2G band Antenna gain: 2dBi, so the Power limit is 30dBm for conducted TX power and 36dBm for EIRP.

2). 5.8G band Antenna gain: 2dBi, so the Power limit is 30dBm for conducted TX power and 36dBm for EIRP.

3.4 Measured data of Maximum Output Power test results

Operating Mode: Standalone transmission (5G WIFI)

5150 MHz ~ 5250 MHz, 5725 MHz ~ 5850 MHz

Max Conducted TX Power

Mode	Channel	Data Rate (Mbps)	Output Power (dBm)	Limit (dBm)
802.11a	36	6	14.63	30
	40		14.36	30
	48		13.93	30
	149		15.26	30
	157		13.32	30
	165		11.66	30
802.11n-HT20	36	6.5	15.61	30
	40		15.45	30
	48		14.84	30
	149		16.44	30
	157		15.39	30
	165		14.03	30
802.11n-HT40	38	13.5	15.63	30
	46		14.99	30
	151		16.64	30
	159		15.80	30
802.11ac-HT20	36	6.5	15.62	30
	40		15.55	30
	48		15.00	30
	149		16.61	30
	157		15.58	30
	165		14.14	30
802.11ac-HT40	38	13.5	15.71	30
	46		15.00	30
	151		16.92	30
	159		15.87	30
802.11ac-HT80	42	29.3	14.73	30
	155		15.29	30

Max EIRP

Mode	Channel	Data Rate (Mbps)	Duty cycle	Output Power (dBm)	Gain (dBi)	E.I.R.P (dBm)	Limit (dBm)
802.11a	36	6	99%	14.63	2	16.63	36
	40			14.36	2	16.36	36
	48			13.93	2	15.93	36
	149			15.26	2	17.26	36
	157			13.32	2	15.32	36
	165			11.66	2	13.66	36
802.11n-HT20	36	6.5	99%	15.61	2	17.61	36
	40			15.45	2	17.45	36
	48			14.84	2	16.84	36
	149			16.44	2	18.44	36
	157			15.39	2	17.39	36
	165			14.03	2	16.03	36
802.11n-HT40	38	13.5	99%	15.63	2	17.63	36
	46			14.99	2	16.99	36
	151			16.64	2	18.64	36
	159			15.80	2	17.80	36
802.11ac-HT20	36	6.5	99%	15.62	2	17.62	36
	40			15.55	2	17.55	36
	48			15.00	2	17.00	36
	149			16.61	2	18.61	36
	157			15.58	2	17.58	36
	165			14.14	2	16.14	36
802.11ac-HT40	38	13.5	99%	15.71	2	17.71	36
	46			15.00	2	17.00	36
	151			16.92	2	18.92	36
	159			15.87	2	17.87	36
802.11ac-HT80	42	29.3	99%	14.73	2	16.73	36
	155			15.29	2	17.29	36

Operating Mode: Simultaneous transmission (BT+5G WIFI)

5150 MHz ~ 5250 MHz, 5725 MHz ~ 5850 MHz

Max Conducted TX Power

Mode	Channel	Data Rate (Mbps)	Output Power (dBm)	Limit (dBm)
802.11a	36	6	15.54	30
	40		15.15	30
	48		14.66	30
	149		15.07	30
	157		14.70	30
	165		14.11	30
802.11n-HT20	36	6.5	15.32	30
	40		15.04	30
	48		14.66	30
	149		15.20	30
	157		14.77	30
	165		14.10	30
802.11n-HT40	38	13.5	15.47	30
	46		14.66	30
	151		15.55	30
	159		15.43	30
802.11ac-HT20	36	6.5	15.39	30
	40		15.17	30
	48		14.71	30
	149		15.14	30
	157		14.80	30
	165		14.30	30
802.11ac-HT40	38	13.5	15.21	30
	46		14.61	30
	151		15.42	30
	159		15.20	30
802.11ac-HT80	42	29.3	14.46	30
	155		14.84	30

Max EIRP

Mode	Channel	Data Rate (Mbps)	Duty cycle	Output Power (dBm)	Gain (dBi)	E.I.R.P (dBm)	Limit (dBm)
802.11a	36	6	99%	15.54	2	17.54	36
	40			15.15	2	17.15	36
	48			14.66	2	16.66	36
	149			15.07	2	17.07	36
	157			14.70	2	16.70	36
	165			14.11	2	16.11	36
802.11n-HT20	36	6.5	99%	15.32	2	17.32	36
	40			15.04	2	17.04	36
	48			14.66	2	16.66	36
	149			15.20	2	17.20	36
	157			14.77	2	16.77	36
	165			14.10	2	16.10	36
802.11n-HT40	38	13.5	99%	15.47	2	17.47	36
	46			14.66	2	16.66	36
	151			15.55	2	17.55	36
	159			15.43	2	17.43	36
802.11ac-HT20	36	6.5	99%	15.39	2	17.39	36
	40			15.17	2	17.17	36
	48			14.71	2	16.71	36
	149			15.14	2	17.14	36
	157			14.80	2	16.80	36
	165			14.30	2	16.30	36
802.11ac-HT40	38	13.5	99%	15.21	2	17.21	36
	46			14.61	2	16.61	36
	151			15.42	2	17.42	36
	159			15.20	2	17.20	36
802.11ac-HT80	42	29.3	99%	14.46	2	16.46	36
	155			14.84	2	16.84	36

4. Power Spectrum Density test (FCC 15.407)

4.1 Operating environment

Temperature:	23	℃
Relative Humidity:	53	%
Atmospheric Pressure:	1003	hPa

4.2 Test setup & procedure

Method of Measurement:

The power spectrum density per FCC §15.407(a) was measured from the antenna port of the EUT using a 50ohm spectrum analyzer with the resolution bandwidth set at 1MHz/500KHz, the video bandwidth set at 3 MHz/2MHz (measurement method refers to KDB 789033 D02). Power spectrum density was read directly and cable loss (1.0 dB) reading to obtain power at the EUT antenna terminals.

4.3 Limit

Operating Frequency (MHz)	Max Conducted Power Spectral Density
5150~5250	*1 17dBm/MHz for master device
	11dBm/MHz for mobile/portable client device
5725~5850	30dBm/500KHz

Remark: *1 The device declared as master device.

*2 Tx Power Reduction (dBm-by-dBi) required when antenna exceeds 6dBi.

1). 5.2G band Antenna Gain: 2dBi, so the PSD limit is 17dBm/MHz for Conducted Power Spectral Density.

1). 5.8G band Antenna Gain: 2dBi, so the PSD limit is 30dBm/500KHz for Conducted Power Spectral Density.

4.4 Measured data of Power Spectrum Density test results

Operating Mode: Standalone transmission (5G WIFI)

5150 MHz ~ 5250 MHz, 5725 MHz ~ 5850 MHz

Mode	Channel	Data Rate (Mbps)	PSD (dBm/MHz or 500KHz) (See remark)	Limit (dBm/MHz or 500KHz) (See remark)
802.11a	36	6	4.39	17
	40		4.51	17
	48		3.96	17
	149		3.89	30
	157		1.71	30
	165		0.43	30
802.11n-HT20	36	6.5	5.75	17
	40		5.08	17
	48		4.31	17
	149		5.2	30
	157		4.92	30
	165		2.77	30
802.11n-HT40	38	13.5	2.32	17
	46		2.38	17
	151		2.1	30
	159		1.87	30
802.11ac-HT20	36	6.5	5.17	17
	40		5.21	17
	48		4.48	17
	149		5.39	30
	157		3.96	30
	165		2.42	30
802.11ac-HT40	38	13.5	2.95	17
	46		1.88	17
	151		2.37	30
	159		1.5	30
802.11ac-HT80	42	29.3	-1.43	17
	155		-2.22	30

Remark: dBm/MHz is for the band of 5150 MHz ~ 5250 MHz, and dBm/500kHz is for the band of 5725 MHz ~ 5850 MHz.

Operating Mode: Simultaneous transmission (BT+5G WIFI)

5150 MHz ~ 5250 MHz, 5725 MHz ~ 5850 MHz

Mode	Channel	Data Rate (Mbps)	PSD (dBm/MHz or 500KHz) (See remark)	Limit (dBm/MHz or 500KHz) (See remark)
802.11a	36	6	5.49	17
	40		5.06	17
	48		4.46	17
	149		3.66	30
	157		3.25	30
	165		2.75	30
802.11n-HT20	36	6.5	5.13	17
	40		5.27	17
	48		4.67	17
	149		4.13	30
	157		4.1	30
	165		2.74	30
802.11n-HT40	38	13.5	2.56	17
	46		1.99	17
	151		1.3	30
	159		0.77	30
802.11ac-HT20	36	6.5	5.03	17
	40		4.96	17
	48		4.32	17
	149		3.58	30
	157		3.24	30
	165		2.6	30
802.11ac-HT40	38	13.5	2.1	17
	46		1.39	17
	151		0.64	30
	159		0.59	30
802.11ac-HT80	42	29.3	-1.25	17
	155		-2.8	30

Remark: dBm/MHz is for the band of 5150 MHz ~ 5250 MHz, and dBm/500kHz is for the band of 5725 MHz ~ 5850 MHz.

5. Minimum 6 dB RF Bandwidth (FCC 15.407)

5.1 Operating environment

Temperature:	25	℃
Relative Humidity:	49	%
Atmospheric Pressure:	1001	hPa

5.2 Test setup & procedure

The Minimum 6 dB RF Bandwidth per 789033 D02 was measured from the antenna port of the EUT using a 50ohm spectrum analyzer with the resolution bandwidth set at 100KHz, and set the video bandwidth (VBW) ≥ 3 x RBW. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

For 26dB down Emission Bandwidth

The 26dB down Emission Bandwidth per 789033 D02 was measured from the antenna port of the EUT using a 50ohm spectrum analyzer with the resolution bandwidth set RBW = approximately 1% of the emission bandwidth. Set the VBW > RBW, Detector = Peak, Trace mode = max hold (Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%).

For 99% Occupied Bandwidth

The 99% Occupied Bandwidth per 789033 D02 was measured from the antenna port of the EUT using a 50ohm spectrum analyzer with the resolution bandwidth set center frequency to the nominal EUT channel center frequency, set span = 1.5 times to 5.0 times the OBW, set RBW = 1 % to 5 % of the OBW, set VBW ≥ 3x RBW, The 99% occupied bandwidth was determined from where the channel output spectrum intersected the display line.

5.3 Limit

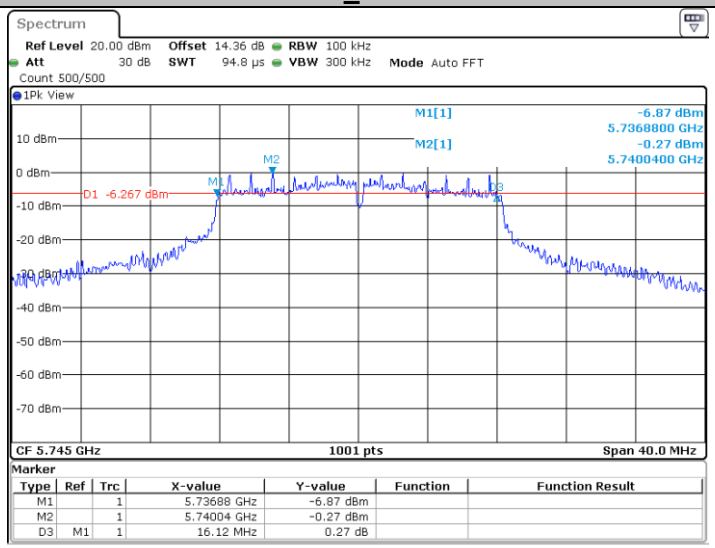
Operating Frequency (MHz)	Minimum 6 dB RF Bandwidth Limit
5150~5250	N/A
5725~ 5850	≥500KHz

5.4 Measured data of 6dB down Emission Bandwidth test results

Test Mode	Test Channel	EBW[MHz]	Limit[MHz]	Verdict
11a	5745	16.120	0.5	PASS
11a	5785	16.120	0.5	PASS
11a	5825	16.360	0.5	PASS
11n-HT20	5745	17.040	0.5	PASS
11n-HT20	5785	17.360	0.5	PASS
11n-HT20	5825	17.240	0.5	PASS
11n-HT40	5755	36.240	0.5	PASS
11n-HT40	5795	35.920	0.5	PASS
11ac-HT20	5745	17.040	0.5	PASS
11ac-HT20	5785	17.240	0.5	PASS
11ac-HT20	5825	17.400	0.5	PASS
11ac-HT40	5755	36.000	0.5	PASS
11ac-HT40	5795	35.920	0.5	PASS
11ac-HT80	5775	75.680	0.5	PASS

The test plots are attached as below.

11A_5745



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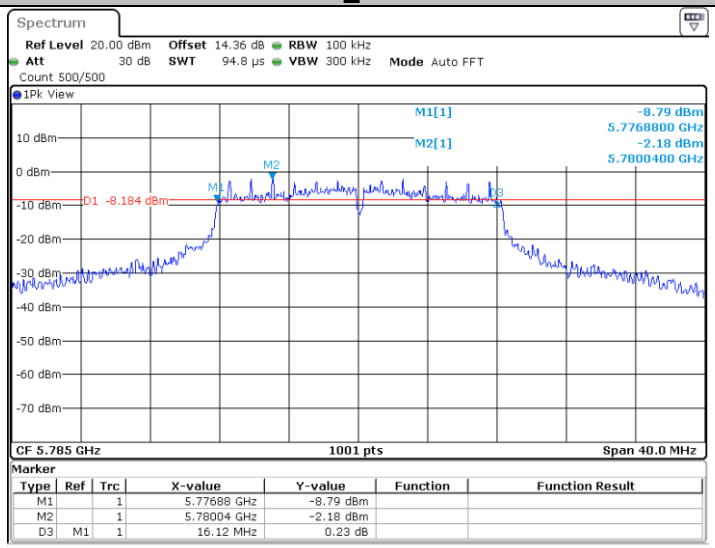
11A_5785



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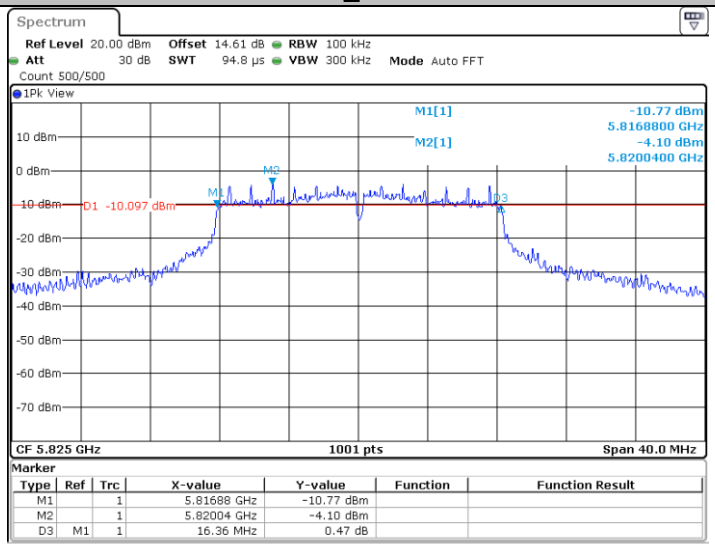
11A_5825



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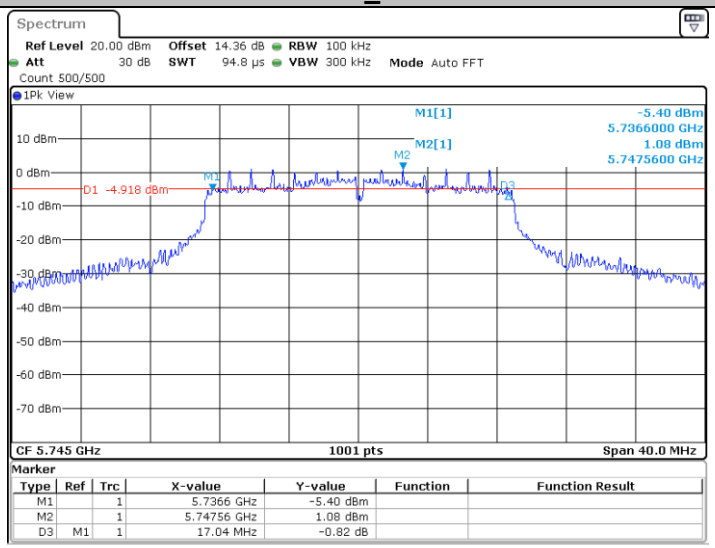
11N20 _5745

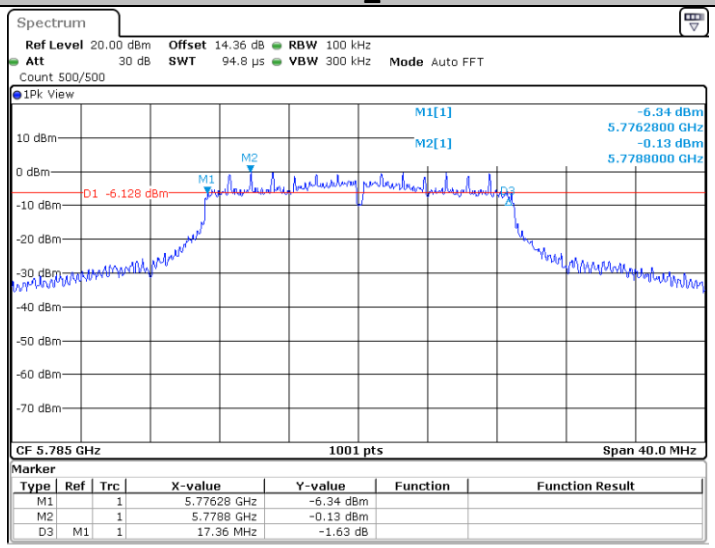


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.7366 GHz	-5.40 dBm		
M2		1	5.74756 GHz	1.08 dBm		
D3	M1	1	17.04 MHz	-0.82 dB		

Date: 14.OCT.2019 10:09:28

11N20 _5785



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Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.77628 GHz	-6.34 dBm		
M2		1	5.7788 GHz	-0.13 dBm		
D3	M1	1	17.36 MHz	-1.63 dB		

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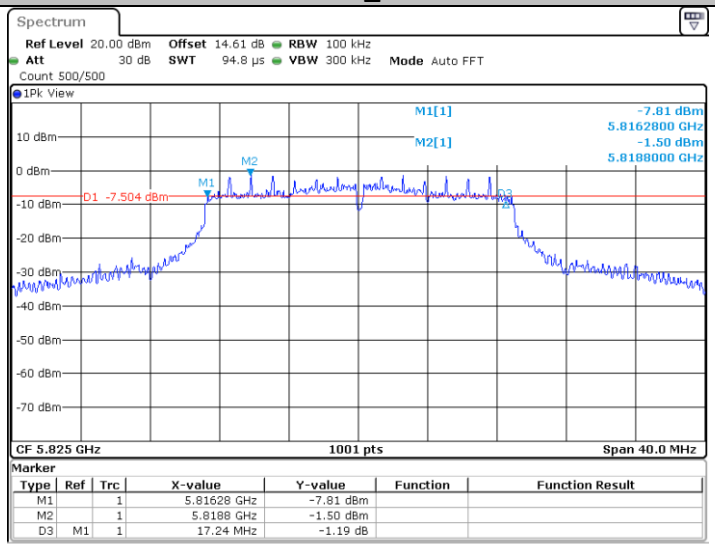
11N20 _5825

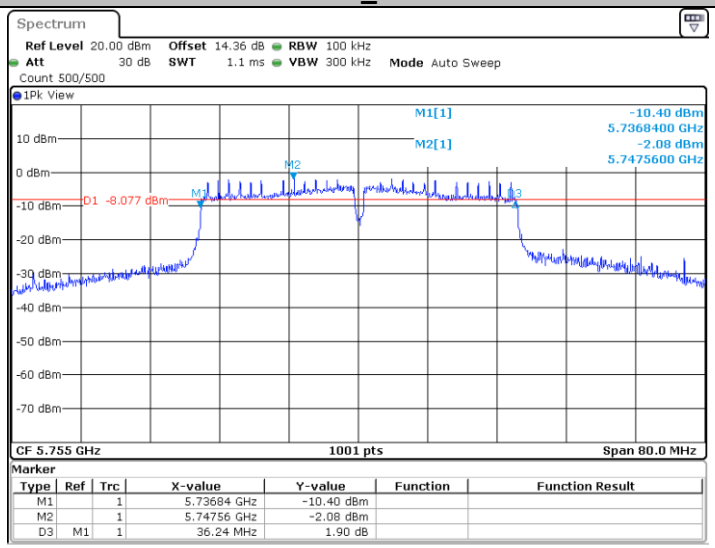


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	5.81628 GHz	-7.81 dBm		
M2		1	5.8188 GHz	-1.50 dBm		
D3	M1	1	17.24 MHz	-1.19 dB		

Date: 14.OCT.2019 10:20:36

11N40_5755



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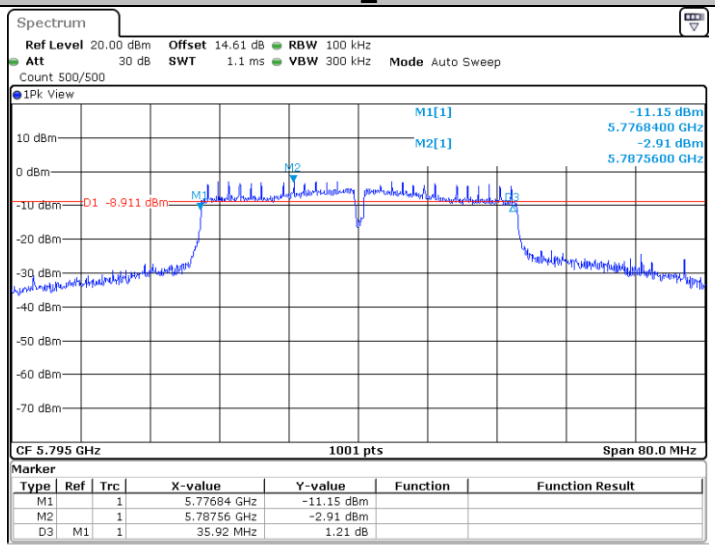
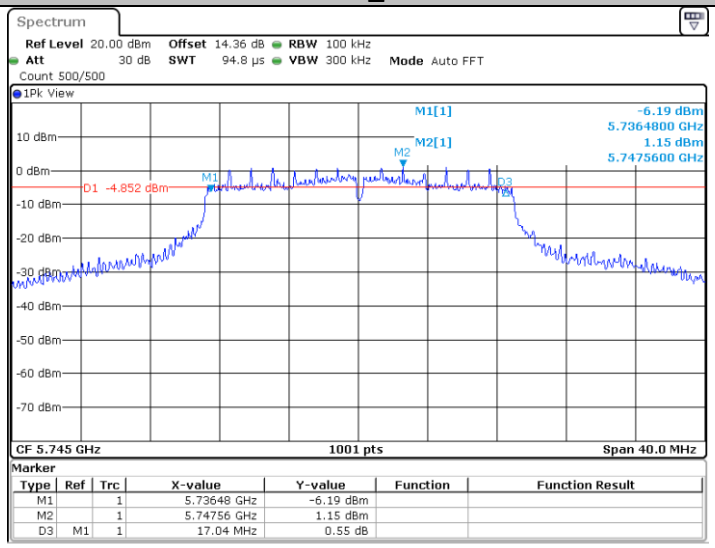


Date: 14.OCT.2019 10:45:05

11AC20_5745



Date: 14.OCT.2019 11:06:25

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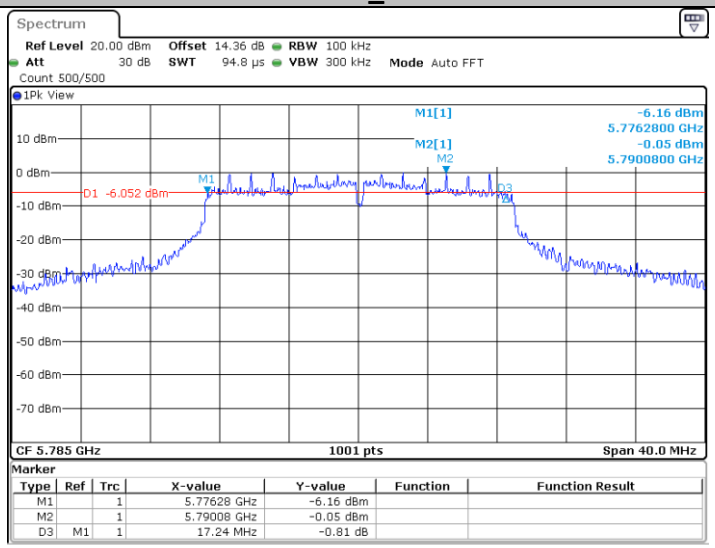
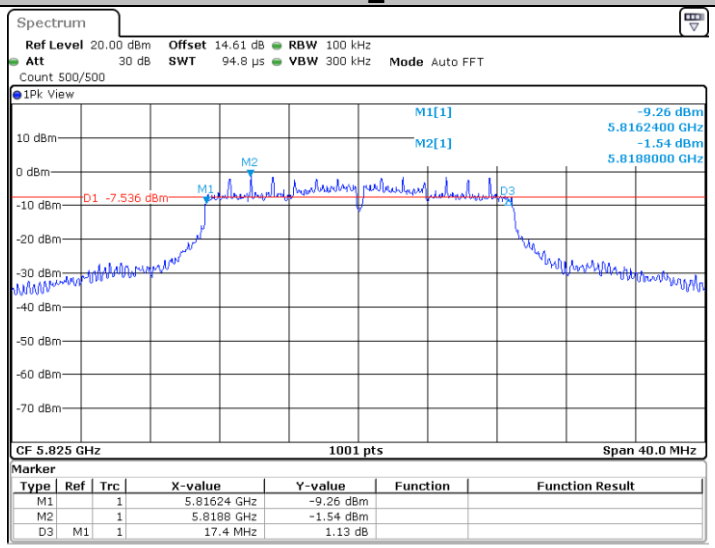


Date: 14.OCT.2019 11:11:42

11AC20_5825



Date: 14.OCT.2019 11:19:54

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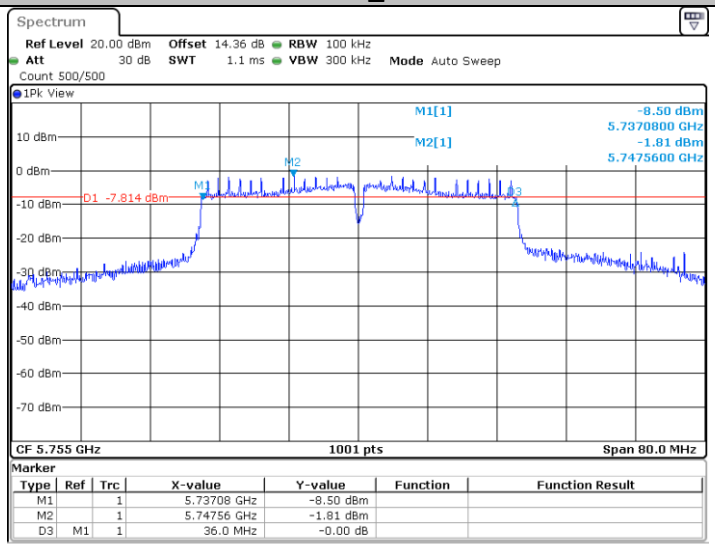

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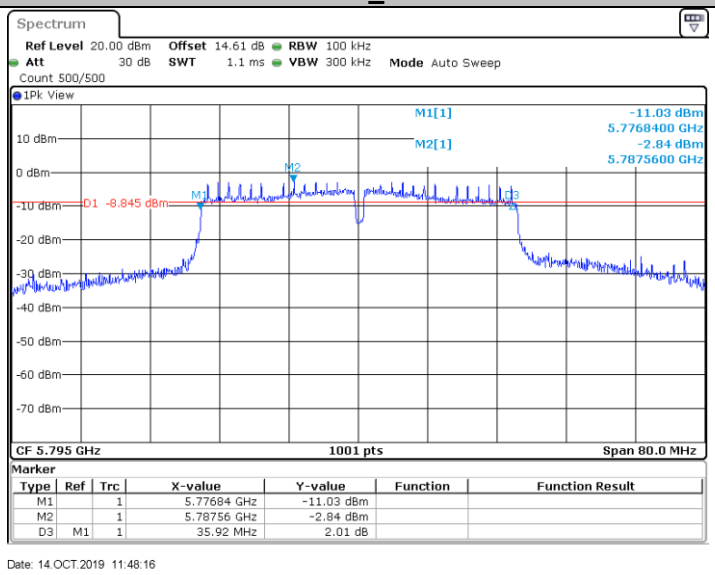

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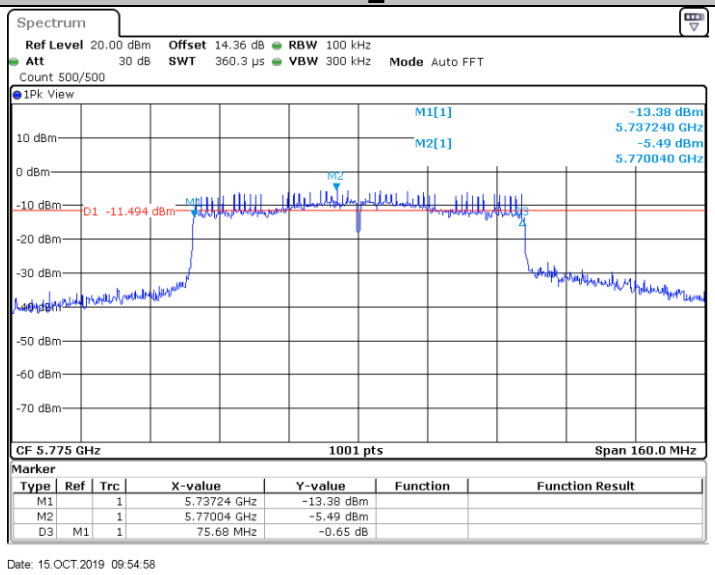


Note: 99% Occupied Bandwidth within the U-NII-1 band and 26dB Emission Bandwidth for reference. The plots are saved with filename: “26dB OBW” and “99% OBW”

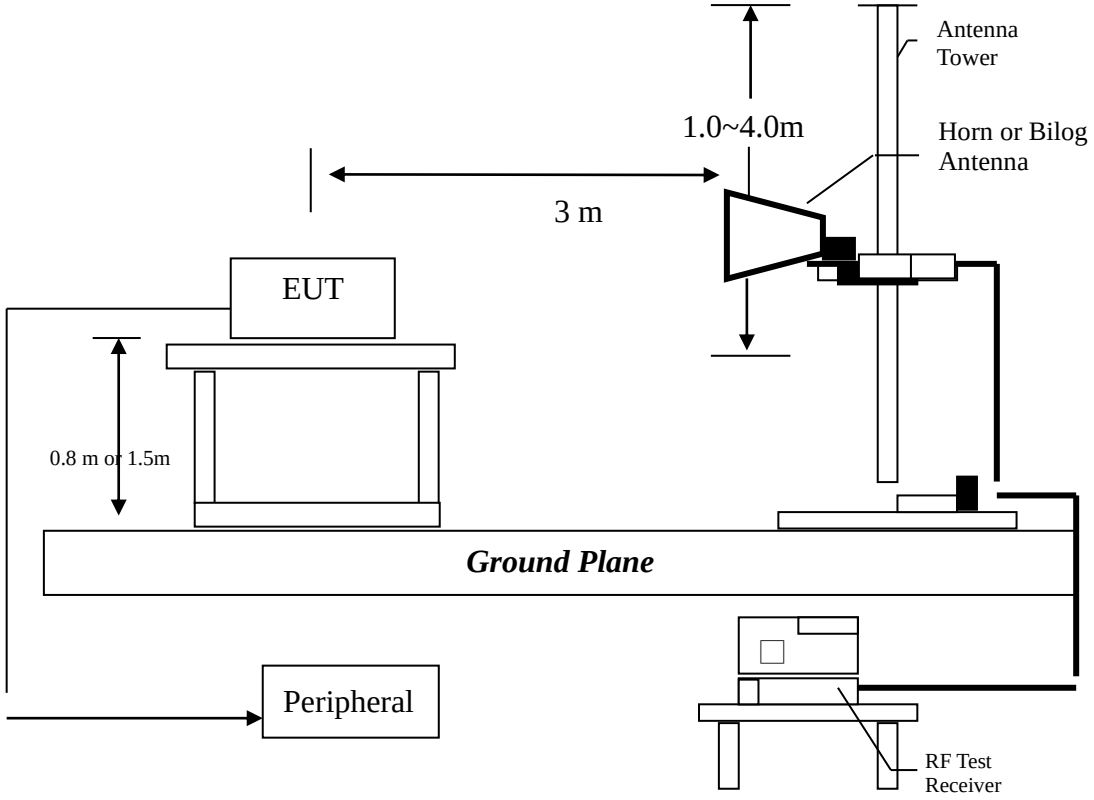
6. Radiated Emission test (FCC 15.205 & 15.209 & 15.407)

6.1 Operating environment

Temperature:	24	℃
Relative Humidity:	55	%
Atmospheric Pressure	1007	hPa

6.2 Test setup & procedure

The Diagram below shows the test setup, which is utilized to make these measurements.



Radiated emission measurements were performed from 9KHz to tenth harmonic or 40GHz.
The EUT for testing is arranged on a styrene turntable with the height of 0.8m up to 1GHz and 1.5m above 1GHz. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter.

The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent three meters reading using inverse scaling with distance.

Testing settings (refer to KDB 789033 D02)
Peak Measurements below 1GHz
1, Analyzer center frequency was set to the frequency of the radiated spurious emission.
2, Span=encompass the entire emission
3, RBW=120KHz
4, Detector=Quasi-Peak
5, Trace was allowed to stabilize

Peak Measurements above 1GHz
1, Analyzer center frequency was set to the frequency of the radiated spurious emission.
2, Span=encompass the entire emission
3, RBW=1MHz
4, VBW=3MHz
4, Detector= Peak (Max-hold)
5, Trace was allowed to stabilize

Average Measurements above 1GHz
1, Analyzer center frequency was set to the frequency of the radiated spurious emission.
2, Span=encompass the entire emission
3, RBW=1MHz
4, VBW=3MHz
4, Detector= RMS (Max-hold)
5, Trace was allowed to stabilize

6.3 Limit

The spurious Emission shall test through the 10th harmonic or 40GHz (whichever is lower). In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

Notes:

1, All emission out-side of the 5.15-5.35GHz & 5.47-5.725GHz band shall not exceed an EIRP of -27dBm/MHz (68.2dBuV/m, test distance: 3 meter); for band 5.725-5.85GHz, 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 25 MHz 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 27 dBm/MHz at the band edge.

2, The spectrum is measured from 9KHz to the 10^{th} harmonic of the fundamental frequency of the transmitter using QP detector below 1GHz, above 1GHz, average & peak measurements were taken using for test. The worst-case emission is reported however emission whose levels were not within 20dB of the respective limited were not reported.

3, The test was performed on EUT under 802.11a/n-HT20/40/ac-HT20/40/80 continuously transmitting mode. All mode had been tested, but only the worst-case is recorded in the following graph and table. Simultaneous transmission was considered during the testing.

Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

FS = RA + AF + CF - AG + PD

Where FS = Field Strength in dBμV/m
RA = Receiver Amplitude (including preamplifier) in dBμV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB
PD = Pulse Desensitization in dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

FS = RA + AF + CF - AG + PD

Example
Assume a receiver reading of 62.0 dBμV is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB. The net field strength for comparison to the appropriate emission limit is 32 dBμV/m. This value in dBμV/m was converted to its corresponding level in μV/m.

RA = 62.0 dBμV
AF = 7.4 dB
CF = 1.6 dB
AG = 29.0 dB
PD = 0 dB
FS = 62 + 7.4 + 1.6 - 29 + 0 = 42 dBμV/m

Level in mV/m = Common Antilogarithm [(42 dBμV/m)/20] = 125.9 μV/m

6.4 Radiated spurious emission test data

6.4.1 Measurement results: frequencies equal to or less than 1 GHz

Model: ECH-REFL03-SPT

Worst operating Mode: Simultaneous transmission (BT+5G WIFI)

Worst case operating: 802.11n-HT20

Polarization	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Limit at 3m (dBuV/m)	Margin (dB)
Horizontal	148.461250	27.2	20	31.1	38.3	43.5	-5.2
Horizontal	220.726250	22.6	20	33.7	36.3	46.0	-9.7
Horizontal	445.523750	23.8	20	41.0	44.8	46.0	-1.2
Vertical	220.726250	21.1	20	33.7	34.8	46.0	-11.2
Vertical	296.992500	20.5	20	36.7	37.2	46.0	-8.8
Vertical	445.523750	17.9	20	41.0	38.9	46.0	-7.1

6.4.2 Measurement results: frequency above 1GHz

Model: ECH-REFL03-SPT
Worst operating Mode: Simultaneous transmission (BT+5G WIFI)
Worst case operating: 802.11n-HT20

Channel 36/6.5Mbps

Polarization	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
Horizontal	10360.000	53.1	36.3	38.9	55.7	68.2	-12.5
Horizontal	15540.000	56.1	34.7	41.0	62.4	68.2	-5.8

Polarization	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
Horizontal	10360.000	43.2	36.3	38.9	45.8	54.0	-8.2
Horizontal	15540.000	43.9	34.7	41.0	50.2	54.0	-3.8

Channel 48/6.5Mbps

Polarization	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
Horizontal	10480.000	52.3	36.3	38.9	54.9	68.2	-13.3
Horizontal	15720.000	51.8	34.7	41.0	58.1	68.2	-10.1

Polarization	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
Horizontal	10480.000	43.1	36.3	38.9	45.7	54.0	-8.3
Horizontal	15720.000	42.1	34.7	41.0	48.4	54.0	-5.6

Channel 149/6.5Mbps

Polarization	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
Horizontal	11490.000	53.6	36.3	38.9	56.2	68.2	-12.0
Horizontal	17235.000	52.5	34.7	41.0	58.8	68.2	-9.4

Polarization	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
Horizontal	11490.000	43.9	36.3	38.9	46.5	54.0	-7.5
Horizontal	17235.000	43.0	34.7	41.0	49.3	54.0	-4.7

Channel 165/6.5Mbps

Polarization	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
Horizontal	11650.000	55.8	36.3	38.9	58.4	68.2	-9.8
Horizontal	17475.000	50.3	34.7	41.0	56.6	68.2	-11.6

Polarization	Frequency (MHz)	Reading (dBuV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBuV/m)	Peak Limit at 3m (dBuV/m)	Margin (dB)
Horizontal	11650.000	43.3	36.3	38.9	45.9	54.0	-8.1
Horizontal	17475.000	41.9	34.7	41.0	48.2	54.0	-5.8

Note:

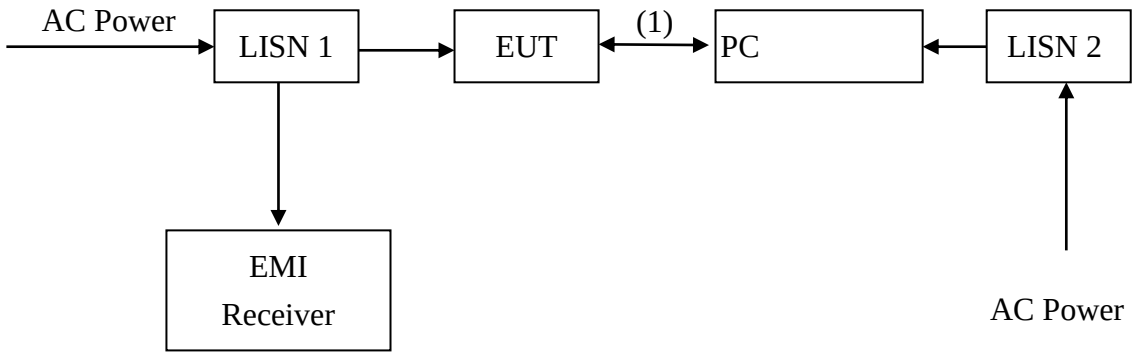
1) Emission within the restricted band meets the requirement of RSS-Gen, Issue 5 Section 8.9. The corresponding limit is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.
2) All unwanted emissions out-side of the 5150-5350MHz &5725-5850 MHz band are complied with the limit.

7. Power Line Conducted Emission test

7.1 Operating environment

Temperature:	24	℃
Relative Humidity:	54	%
Atmospheric Pressure	1005	hPa

7.2 Test setup & procedure



The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50 ohm/50 uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm/50 uH coupling impedance with 50ohm termination.
Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10/2013 on conducted measurement.
The bandwidth of the field strength meter (R & S Test Receiver ESCI 30) is set at 9 kHz.

7.3 Limit

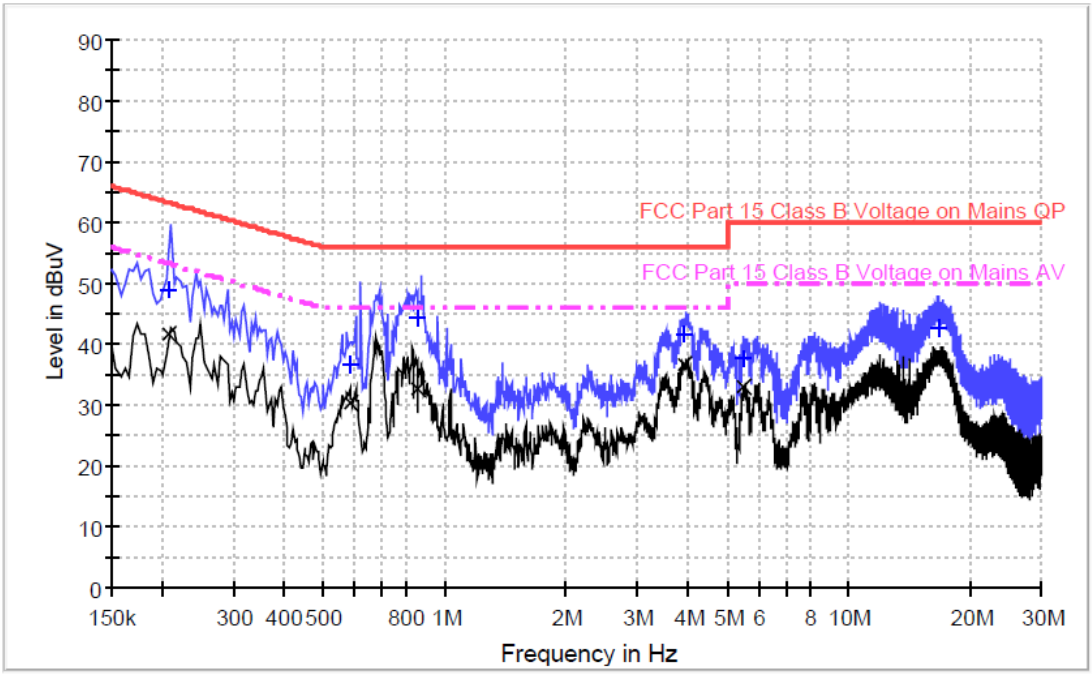
Freq. (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56*	56 – 46*
0.50~5.00	56	46
5.00~30.0	60	50

*Decreases with the logarithm of the frequency.

7.4 Power Line Conducted Emission test data

Model: ECH-REFL03-SPT
Worst operating Mode: Simultaneous transmission (BT+5G WIFI)

Phase: Live



Result Table QP

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.208500	48.9	L1	9.6	14.4	63.3
0.582000	36.7	L1	9.7	19.3	56.0
0.854000	44.4	L1	9.7	11.6	56.0
3.914000	41.6	L1	9.7	14.4	56.0
5.506000	37.8	L1	9.8	22.2	60.0
16.790000	42.6	L1	10.1	17.4	60.0

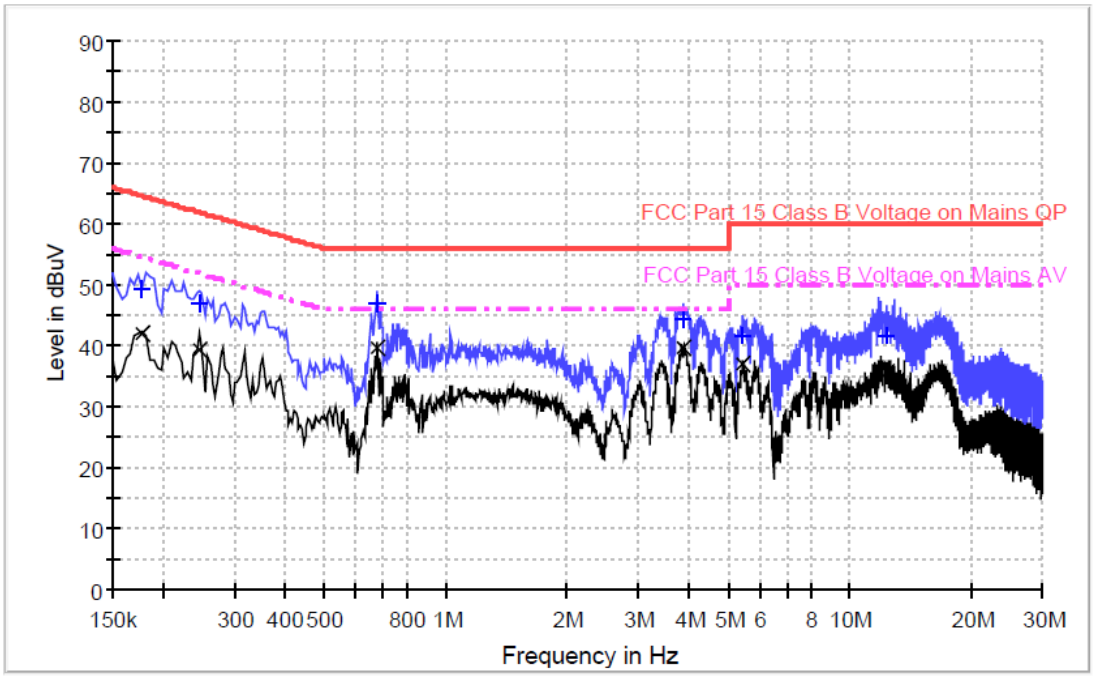
Result Table AV

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.208500	41.5	L1	9.6	11.8	53.3
0.582000	30.3	L1	9.7	15.7	46.0
0.854000	32.7	L1	9.7	13.3	46.0
3.914000	36.8	L1	9.7	9.2	46.0
5.506000	32.9	L1	9.8	17.1	50.0
16.790000	37.5	L1	10.1	12.5	50.0

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Limit (dBuV) – Level (dBuV)

Model: ECH-REFL03-SPT
Worst operating Mode: Simultaneous transmission (BT+5G WIFI)

Phase: Neutral



Result Table QP

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.177000	49.3	N	9.6	15.3	64.6
0.246000	46.9	N	9.6	15.0	61.9
0.678000	47.0	N	9.7	9.0	56.0
3.854000	44.2	N	9.7	11.8	56.0
5.426000	41.6	N	9.8	18.4	60.0
12.306000	41.7	N	9.9	18.3	60.0

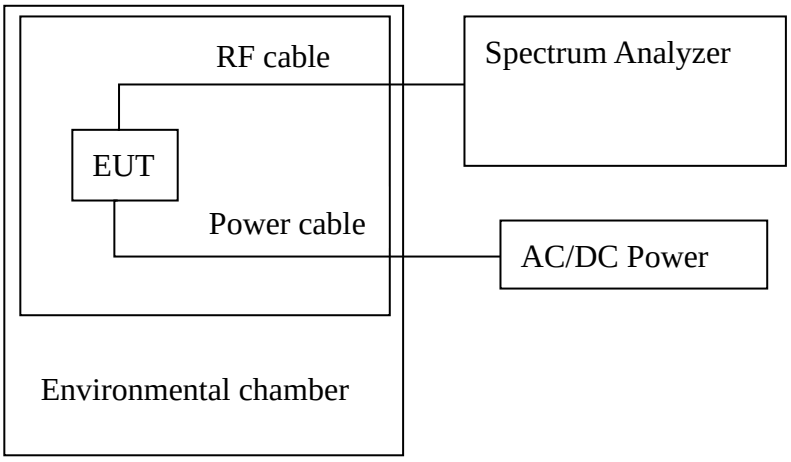
Result Table AV

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.177000	41.9	N	9.6	12.7	54.6
0.246000	39.4	N	9.6	12.5	51.9
0.678000	39.5	N	9.7	6.5	46.0
3.854000	39.5	N	9.7	6.5	46.0
5.426000	36.8	N	9.8	13.2	50.0
12.306000	35.8	N	9.9	14.2	50.0

Remark:
1. Corr. Factor (dB) = LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Limit (dBuV) – Level (dBuV)

8. Frequency Stability Test

8.1 Test setup & procedure



Note1: The frequency stability is measured with the temperature variation range of 0˚C to +40˚C (5˚C increment), and voltage supply variation range of 85% to 115% of nominal DC supply voltage.

2: To ensure emission at the band-edge is maintained within the authorized band, the frequency 802.11a/n-HT20/40/ac-HT20/40/80 channel 36, 48, 38, 46, 42, 149, 165, 151, 159, 155 are selected to test and the worst case was reported.

8.2 Frequency Stability Test Data

20˚C is taken as temperature in normal condition.

Operation Model: 802.11a, Operation frequency: 5180MHz, Channel: 36, Rate: 6Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5180.04	40	Pass
	+5	5180.07	70	Pass
	+10	5180.03	30	Pass
	+15	5180.08	80	Pass
	+20	5180.08	80	Pass
	+25	5180.05	50	Pass
	+30	5180.04	40	Pass
	+35	5180.03	30	Pass
	+40	5180.04	40	Pass
102	+20	5180.08	80	Pass
138	+20	5180.04	40	Pass

Operation Model: 802.11a, Operation frequency: 5240MHz, Channel: 48, Rate: 6Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5240.06	60	Pass
	+5	5240.05	50	Pass
	+10	5240.06	60	Pass
	+15	5240.04	40	Pass
	+20	5240.06	60	Pass
	+25	5240.08	80	Pass
	+30	5240.03	30	Pass
	+35	5240.05	50	Pass
	+40	5240.08	80	Pass
102	+20	5240.07	70	Pass
138	+20	5240.06	60	Pass

Operation Model: 802.11a, Operation frequency: 5745MHz, Channel: 149, Rate: 6Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5745.05	50	Pass
	+5	5745.03	30	Pass
	+10	5745.08	80	Pass
	+15	5745.00	00	Pass
	+20	5745.06	60	Pass
	+25	5745.09	90	Pass
	+30	5745.05	50	Pass
	+35	5745.05	50	Pass
	+40	5745.05	50	Pass
102	+20	5745.03	30	Pass
138	+20	5745.05	50	Pass

Operation Model: 802.11a, Operation frequency: 5825MHz, Channel: 165, Rate: 6Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5825.06	60	Pass
	+5	5825.08	80	Pass
	+10	5825.08	80	Pass
	+15	5825.03	30	Pass
	+20	5825.05	50	Pass
	+25	5825.07	70	Pass
	+30	5825.07	70	Pass
	+35	5825.04	40	Pass
	+40	5825.04	40	Pass
102	+20	5825.03	30	Pass
138	+20	5825.05	50	Pass

Operation Model: 802.11n-HT20, Operation frequency: 5180MHz, Channel: 36, Rate: 6.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5180.06	60	Pass
	+5	5180.05	50	Pass
	+10	5180.08	80	Pass
	+15	5180.08	80	Pass
	+20	5180.06	60	Pass
	+25	5180.04	40	Pass
	+30	5180.04	40	Pass
	+35	5180.03	30	Pass
	+40	5180.04	40	Pass
102	+20	5180.05	50	Pass
138	+20	5180.06	60	Pass

Operation Model: 802.11n-HT20, Operation frequency: 5240MHz, Channel: 48, Rate: 6.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5240.04	40	Pass
	+5	5240.07	70	Pass
	+10	5240.03	30	Pass
	+15	5240.03	30	Pass
	+20	5240.05	50	Pass
	+25	5240.04	40	Pass
	+30	5240.08	80	Pass
	+35	5240.02	20	Pass
	+40	5240.04	40	Pass
102	+20	5240.06	60	Pass
138	+20	5240.03	30	Pass

Operation Model: 802.11n-HT20, Operation frequency: 5745MHz, Channel: 149, Rate: 6.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5745.06	60	Pass
	+5	5745.03	30	Pass
	+10	5745.05	50	Pass
	+15	5745.08	80	Pass
	+20	5745.05	50	Pass
	+25	5745.05	50	Pass
	+30	5745.06	60	Pass
	+35	5745.06	60	Pass
	+40	5745.05	50	Pass
102	+20	5745.04	40	Pass
138	+20	5745.03	30	Pass

Operation Model: 802.11n-HT20, Operation frequency: 5825MHz, Channel: 165, Rate: 6.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5825.06	60	Pass
	+5	5825.03	30	Pass
	+10	5825.07	70	Pass
	+15	5825.04	40	Pass
	+20	5825.08	80	Pass
	+25	5825.03	30	Pass
	+30	5825.05	50	Pass
	+35	5825.06	60	Pass
	+40	5825.05	50	Pass
102	+20	5825.04	40	Pass
138	+20	5825.06	60	Pass

Operation Model: 802.11n-HT40, Operation frequency: 5190MHz, Channel: 38, Rate: 13.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5190.03	30	Pass
	+5	5190.05	50	Pass
	+10	5190.07	70	Pass
	+15	5190.07	70	Pass
	+20	5190.05	50	Pass
	+25	5190.07	70	Pass
	+30	5190.07	70	Pass
	+35	5190.03	30	Pass
	+40	5190.03	30	Pass
102	+20	5190.03	30	Pass
138	+20	5190.00	0	Pass

Operation Model: 802.11n-HT40, Operation frequency: 5230MHz, Channel: 46, Rate: 13.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5230.03	30	Pass
	+5	5230.05	50	Pass
	+10	5230.02	20	Pass
	+15	5230.07	70	Pass
	+20	5230.05	50	Pass
	+25	5230.08	80	Pass
	+30	5230.03	30	Pass
	+35	5230.03	30	Pass
	+40	5230.08	80	Pass
102	+20	5230.05	50	Pass
138	+20	5230.08	80	Pass

Operation Model: 802.11n-HT40, Operation frequency: 5755MHz, Channel: 151, Rate: 13.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5755.06	60	Pass
	+5	5755.03	30	Pass
	+10	5755.07	70	Pass
	+15	5755.03	30	Pass
	+20	5755.08	80	Pass
	+25	5755.02	20	Pass
	+30	5755.02	20	Pass
	+35	5755.08	80	Pass
	+40	5755.08	80	Pass
102	+20	5755.09	90	Pass
138	+20	5755.02	20	Pass

Operation Model: 802.11n-HT40, Operation frequency: 5795MHz, Channel: 159, Rate: 13.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5795.03	30	Pass
	+5	5795.04	40	Pass
	+10	5795.08	80	Pass
	+15	5795.05	50	Pass
	+20	5795.02	20	Pass
	+25	5795.07	70	Pass
	+30	5795.05	50	Pass
	+35	5795.08	80	Pass
	+40	5795.02	20	Pass
102	+20	5795.03	30	Pass
138	+20	5795.06	60	Pass

Operation Model: 802.11ac-HT20, Operation frequency: 5180MHz, Channel: 36, Rate: 6.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5180.05	50	Pass
	+5	5180.07	70	Pass
	+10	5180.05	50	Pass
	+15	5180.09	90	Pass
	+20	5180.03	30	Pass
	+25	5180.03	30	Pass
	+30	5180.05	50	Pass
	+35	5180.07	70	Pass
	+40	5180.05	50	Pass
102	+20	5180.07	70	Pass
138	+20	5180.04	40	Pass

Operation Model: 802.11ac-HT20, Operation frequency: 5240MHz, Channel: 48, Rate: 6.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5240.06	60	Pass
	+5	5240.03	30	Pass
	+10	5240.05	50	Pass
	+15	5240.07	70	Pass
	+20	5240.07	70	Pass
	+25	5240.04	40	Pass
	+30	5240.05	50	Pass
	+35	5240.05	50	Pass
	+40	5240.05	50	Pass
102	+20	5240.07	70	Pass
138	+20	5240.06	60	Pass

Operation Model: 802.11ac-HT20, Operation frequency: 5745MHz, Channel: 149, Rate: 6.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5745.06	60	Pass
	+5	5745.04	40	Pass
	+10	5745.07	70	Pass
	+15	5745.07	70	Pass
	+20	5745.03	30	Pass
	+25	5745.05	50	Pass
	+30	5745.09	90	Pass
	+35	5745.02	20	Pass
	+40	5745.02	20	Pass
102	+20	5745.05	50	Pass
138	+20	5745.07	70	Pass

Operation Model: 802.11ac-HT20, Operation frequency: 5825MHz, Channel: 165, Rate: 6.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5825.06	60	Pass
	+5	5825.03	30	Pass
	+10	5825.03	30	Pass
	+15	5825.05	50	Pass
	+20	5825.07	70	Pass
	+25	5825.08	80	Pass
	+30	5825.08	80	Pass
	+35	5825.02	20	Pass
	+40	5825.08	80	Pass
102	+20	5825.07	70	Pass
138	+20	5825.05	50	Pass

Operation Model: 802.11ac-HT40, Operation frequency: 5190MHz, Channel: 38, Rate: 13.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5190.06	60	Pass
	+5	5190.04	40	Pass
	+10	5190.07	70	Pass
	+15	5190.02	20	Pass
	+20	5190.04	40	Pass
	+25	5190.06	60	Pass
	+30	5190.06	60	Pass
	+35	5190.08	80	Pass
	+40	5190.08	80	Pass
102	+20	5190.05	50	Pass
138	+20	5190.02	20	Pass

Operation Model: 802.11ac-HT40, Operation frequency: 5230MHz, Channel: 46, Rate: 13.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5230.09	90	Pass
	+5	5230.07	70	Pass
	+10	5230.03	30	Pass
	+15	5230.05	50	Pass
	+20	5230.05	50	Pass
	+25	5230.09	90	Pass
	+30	5230.02	20	Pass
	+35	5230.07	70	Pass
	+40	5230.02	20	Pass
102	+20	5230.07	70	Pass
138	+20	5230.05	50	Pass

Operation Model: 802.11ac-HT40, Operation frequency: 5755MHz, Channel: 151, Rate: 13.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5755.06	60	Pass
	+5	5755.04	40	Pass
	+10	5755.02	20	Pass
	+15	5755.07	70	Pass
	+20	5755.06	60	Pass
	+25	5755.05	50	Pass
	+30	5755.05	50	Pass
	+35	5755.03	30	Pass
	+40	5755.05	50	Pass
102	+20	5755.01	10	Pass
138	+20	5755.05	50	Pass

Operation Model: 802.11ac-HT40, Operation frequency: 5795MHz, Channel: 159, Rate: 13.5Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5795.06	60	Pass
	+5	5795.03	30	Pass
	+10	5795.07	70	Pass
	+15	5795.05	50	Pass
	+20	5795.08	80	Pass
	+25	5795.02	20	Pass
	+30	5795.02	20	Pass
	+35	5795.07	70	Pass
	+40	5795.08	80	Pass
102	+20	5795.03	30	Pass
138	+20	5795.07	70	Pass

Operation Model: 802.11ac-HT80, Operation frequency: 5210MHz, Channel: 42, Rate: 29.3Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5210.00	0	Pass
	+5	5210.03	30	Pass
	+10	5210.06	60	Pass
	+15	5210.00	0	Pass
	+20	5210.05	50	Pass
	+25	5210.00	0	Pass
	+30	5210.06	60	Pass
	+35	5210.03	30	Pass
	+40	5210.05	50	Pass
102	+20	5210.12	120	Pass
138	+20	5210.06	60	Pass

Operation Model: 802.11ac-HT80, Operation frequency: 5775MHz, Channel: 155, Rate: 29.3Mbps

Input voltage (VAC)	Temperature (˚C)	Measured Frequency (MHz)	Frequency deviation (KHz)	Result
120	0	5775.06	60	Pass
	+5	5775.07	70	Pass
	+10	5775.07	70	Pass
	+15	5775.06	60	Pass
	+20	5775.03	30	Pass
	+25	5775.01	10	Pass
	+30	5775.09	90	Pass
	+35	5775.06	60	Pass
	+40	5775.09	90	Pass
102	+20	5775.06	60	Pass
138	+20	5775.00	0	Pass

Note: All emissions are maintained within the band of operation under all conditions of normal operation as specified in the user manual. It fulfills the requirement of 15.407(g).

Appendix A: Test equipment list

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ182-02	RF Power Meter	Anritsu	ML2496A	1302005	28-May-2019	28-May-2020
					24-May-2020	24-May-2021
SZ182-02-01	Power Sensor	Anritsu	MA2411B	1207429	28-May-2019	28-May-2020
					24-May-2020	24-May-2021
SZ070-24	Open Switch and Control Unit with TS8997 option for power measurement test	R&S	OSP120+B157	--	29-Oct-2018	29-Oct-2019
SZ061-12	BiConiLog Antenna	ETS	3142E	00166158	14-Sep-2018	14-Sep-2021
SZ185-01	EMI Receiver	R&S	ESCI	100547	24-Dec-2019	24-Dec-2020
					22-Dec-2020	22-Dec-2021
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	24-May-2019	24-May-2021
SZ061-08	Horn Antenna	ETS	3115	00092346	7-Sep-2019	7-Sep-2021
SZ061-07	Pyramidal Horn Antenna	ETS	3160-09	00083067	13-Aug-2019	13-Aug-2021
SZ056-03	Spectrum Analyzer	R&S	FSP 30	101148	27-May-2020	27-May-2021
SZ056-06	Signal Analyzer	R&S	FSV 40	101101	27-May-2020	27-May-2021
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	27-May-2020	27-May-2021
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	15-Dec-2018	15-Dec-2021
SZ062-02	RF Cable	RADIALL	RG 213U	--	12-Jun-2020	12-Jun-2021
SZ062-05	RF Cable	RADIALL	0.04-26.5GHz	--	26-Feb-2020	26-Feb-2021
SZ062-12	RF Cable	RADIALL	0.04-26.5GHz	--	26-Feb-2020	26-Feb-2021
SZ067-04	Notch Filter	Micro-Tronics	BRM50702-02	--	27-May-2020	27-May-2021
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	27-Oct-2020	27-Oct-2021
SZ187-01	Two-Line V-Network	R&S	ENV216	100072	27-Oct-2020	27-Oct-2021
SZ187-02	Two-Line V-Network	R&S	ENV216	100072	27-May-2020	27-May-2021
SZ188-03	Shielding Room	ETS	RFD-100	4100	07-Jan-2020	07-Jan-2023
SZ062-16	RF Cable	HUBER+SUHNER	CBL2-BN-1m	110127-2231000	13-Nov-2020	13-Nov-2021
SZ016-12	Programmable Temperature & Humidity Chamber	Taili	MHK-120NK	AB0105	17-Jan-2019	17-Jan-2020
					12-Jan-2020	12-Jan-2021
SZ006-30	DC Power Supply	Guwei	SPS-3610	GEQ920551	15-Jan-2019	15-Jan-2020
					05-Jan-2020	05-Jan-2021

Expanded uncertainty of radiated emission measurement is ±4.9 dB.
Expanded uncertainty of conducted emission measurement is ±3.6 dB.

********** End of Report**********