



TEST REPORT

Report Number: C21T00132-SRD11-V01

Applicant	Toast, Incorporated
Product Name	Data Processing machine
Model Name	TT204W, T204, TT202W, TT203, TK200, TT203W, TK300
Brand Name	Toast
FCC ID	2AMNG-TT200B
IC	23177-TT200B

Industrial Internet Innovation Center (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in FCC Part15, ANSI C63.10, KDB 789033, KDB 905462, RSS-247, RSS-Gen.

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Approved by 范宇航

Issue Date 2021-12-30

Industrial Internet Innovation Center (Shanghai) Co., Ltd.

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Test Laboratory:

Industrial Internet Innovation Center (Shanghai) Co., Ltd.

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Revision Version

Report Number	Revision	Date	Memo
C21T00132-SRD11-V00	00	2021-12-30	Initial creation of test report

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1. Test Laboratory

1.1. Testing Location

Company Name	Industrial Internet Innovation Center (Shanghai) Co., Ltd.
Address	Building 4, No. 766 Jingang Rd, Pudong, Shanghai, China
FCC Registration No.	CN1177

1.2. Testing Environment

Normal Temperature	15°C~35°C
Relative Humidity	25%RH~75%RH
Supply Voltage	230V/50Hz

1.3. Project Information

Project Leader	Wang Wenwen
Testing Start Date	2021-11-17
Testing End Date	2021-12-28

2. Client Information

2.1. Applicant Information

Company Name	Toast, Incorporated
Address	401 Park Drive, Suite 801, Boston, MA 02215, USA
Telephone	5625462272

2.2. Manufacturer Information

Company Name	Toast, Incorporated
Address	401 Park Drive, Suite 801, Boston, MA 02215, USA
Telephone	5625462272

3. Equipment under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Product Name	Data Processing machine
Model name	TT204W, TT204, TT202W, TT203, TK200, TT203W, TK300
Supported Radio Technology and Bands	BT 4.2 WLAN 802.11b,g,n WLAN 802.11a,n,ac
Hardware Version	CT541MB80C 20210430
Software Version	Sunmi-ct541-v3.0.33p033
WLAN Frequency	UNII 3: 5725MHz-5850MHz
WLAN type of modulation	OFDM
FCC ID	2AMNG-TT200B
IC	23177-TT200B
Nominal Voltage	230V
Extreme High Voltage	253V
Extreme Low Voltage	207V

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of Receipt
N01 (Mainly Supply)	N/A	CT541MB80C 20210430	Sunmi-ct541- v3.0.33p033	2021/11/17
N02 (Thirdly Supply)	N/A	CT541MB80C 20210430	Sunmi-ct541- v3.0.33p033	2021/11/17
N04 (Secondary Supply)	N/A	CT541MB80C 20210430	Sunmi-ct541- v3.0.33p033	2021/11/17

*EUT ID: is internally used to identify the test sample in the lab.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Model	SN/Remark
AE1	RF cable	N/A	N/A

*AE ID: is internally used to identify the test sample in the lab.

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices	2020
ANSI 63.10	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2013
KDB 789033	Information Infrastructure (U-NII) Devices - Part 15, Subpart E	2017
KDB 905462 D02	COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION	2016
RSS-247 Issue 2	Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices	2017
RSS-Gen Issue 5	General Requirements for Compliance of Radio Apparatus	2019

4.2. Reference Information from client

Information of the test sample provided by the client.

5. Test Summary

5.1. Summary of Test Results

Measurement Items	Sub-clause of Part15	Sub-clause of IC	Verdict
Maximum Output Power	15.407(a)	RSS-247 6.2	N/A
Power Spectral Density	15.407(a)	RSS-247 6.2	N/A
6dB Occupied Bandwidth	15.407(e)	RSS-247 6.2	N/A
99% Occupied Bandwidth	N/A	RSS-GEN 6.7	N/A
Band edge compliance	15.407(b)	RSS-247 6.2	Pass
Transmitter Spurious Emission-Conducted	15.407	RSS-247 6.2	N/A
Transmitter Spurious Emission - Radiated	15.407,15.205,15.209	RSS-247 6.2 RSS-Gen 8.9,8.10	Pass

Note:All the test data for each data were verified, but only the worst case was reported.

Test Conditions

Tnom	Normal Temperature
Tmin	Low Temperature
Tmax	High Temperature
Vnom	Normal Voltage
Vmin	Low Voltage
Vmax	High Voltage
Hnom	Norm Humidity
Anom	Norm Air Pressure

For this report, all the test case listed above are tested under Normal Temperature and Normal Voltage, and also under norm humidity, the specific conditions as following:

Temperature	Tnom	25℃
Voltage	Vnom	230V
Humidity	Hnom	48%
Air Pressure	Anom	1010hPa

5.2. Statements

The TT204W, TT204, TT202W, TT203, TK200, TT203W, TK300 supporting BT/WLAN, manufactured by Toast, Incorporated are variant products for testing.

This project is a variant project based on the original report C21T00056-SRD05-V02, We tested the worst case radiation data, and the test data of the worst mode was recorded in the report. The rest of the data are reference prototype report data.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. only performed test cases which identified with Pass/Fail/Inc result in section 5.1.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. has verified that the compliance of the tested device specified in section 3 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 4 of this test report.

The description of the differences between the models is updated as follows:

Mainly Supply	TT204	Main LCD panel Terminal + Sub LCD panel Terminal + Attached base support
	TT204W	The same with TT204, just the color is White
Secondary Supply	TT203	Main LCD panel Terminal + Attached base support
	TT202W, TT203W	The same with TT203, just the color is White
Thirdly Supply	TK200	Main LCD panel Terminal + Add POE module + Add one speaker
Fourth Supply	TK300	Main LCD panel Terminal + Add POE module + Add one speaker + Add one bracket

6. Measurement Results

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

Fully-anechoic chamber1 (6.9 meters×10.9 meters×5.4 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
VSWR	Between 0 and 6 dB, from 1GHz to 18GHz
Site Attenuation Deviation	Between -4 and 4 dB, 30MHz to 1GHz
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

6.1. Transmitter Spurious Emission

Measurement Limit:

Standard	Frequency (MHz)	Limit (dBm/MHz)
FCC 47 CFR Part 15.407	5725MHz~5850MHz	< -27

The measurement is made according to ANSI C63.10.

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) (see § 15.205(c)).

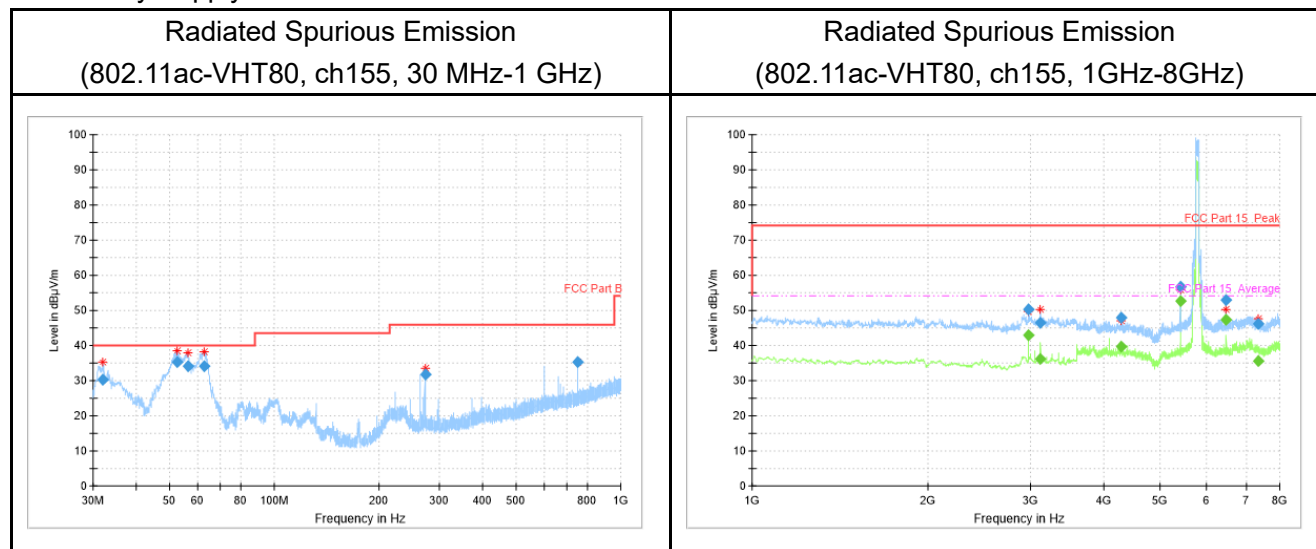
Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
0.009-0.490	2400/F(kHz)	/
0.490-1.705	24000/F(kHz)	/
1.705-30	30	/
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

6.1.1 Transmitter Spurious Emission - Radiated

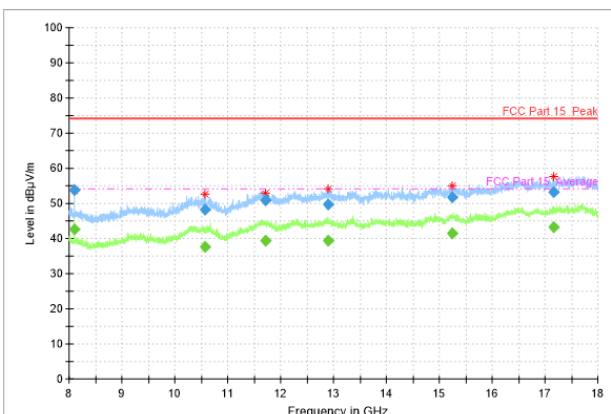
Modulation type and data rate tested (Only worst case result is given below):

Mode	Data rate	Channel
802.11ac-VHT80	MCS0	155(5775MHz)

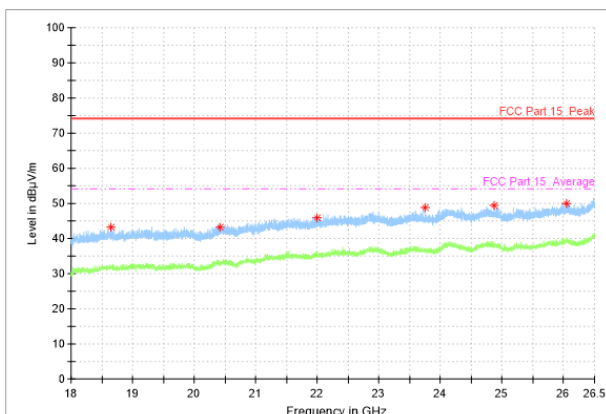
N01 Mainly Supply



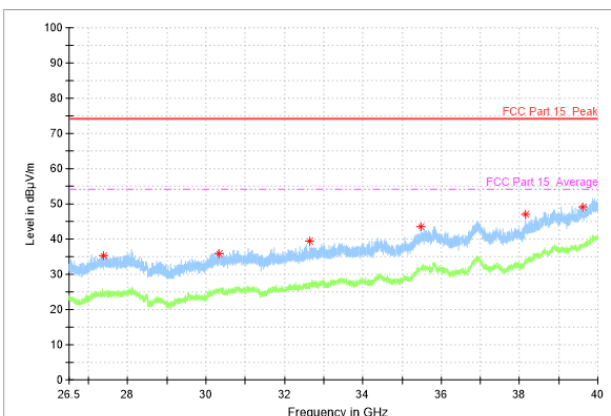
Radiated Spurious Emission
(802.11ac-VHT80, ch155, 8GHz-18GHz)



Radiated Spurious Emission
(802.11ac-VHT80, ch155, 18GHz-26.5GHz)



Radiated Spurious Emission
(802.11ac-VHT80, ch155, 26.5GHz-40GHz)



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RSE-11AC(80M)-CH155-30M-1G

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
32.1	30.39	-14.3	44.69	V
52.3	35.27	-12	47.27	V
56.3	34.26	-12.2	46.46	V
62.9	34.08	-13.3	47.38	V
272.2	31.76	-11.1	42.86	H
750.0	35.39	-2.1	37.49	H

RSE-11AC(80M)-CH155-1G-8G

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
2970.2	50.44	1	49.44	V
3117.8	46.43	1.2	45.23	V

4279.8	47.9	1.1	46.8	V
5400.2	56.73	2	54.73	V
6480.0	53.06	2.9	50.16	H
7347.4	46.18	3.9	42.28	V

RSE-11AC(80M)-CH155-1G-8G(Average)

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
5400.2	52.78	2	50.78	V

RSE-11AC(80M)-CH155-8G-18G

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
8099.0	53.77	4.3	49.47	V
10581.0	48.16	7.6	40.56	V
11713.6	50.79	10	40.79	H
12895.8	49.59	11.2	38.39	V
15245.0	51.85	14.2	37.65	H
17165.6	53.34	17.5	35.84	H

RSE-11AC(80M)-CH155-18G-26.5G

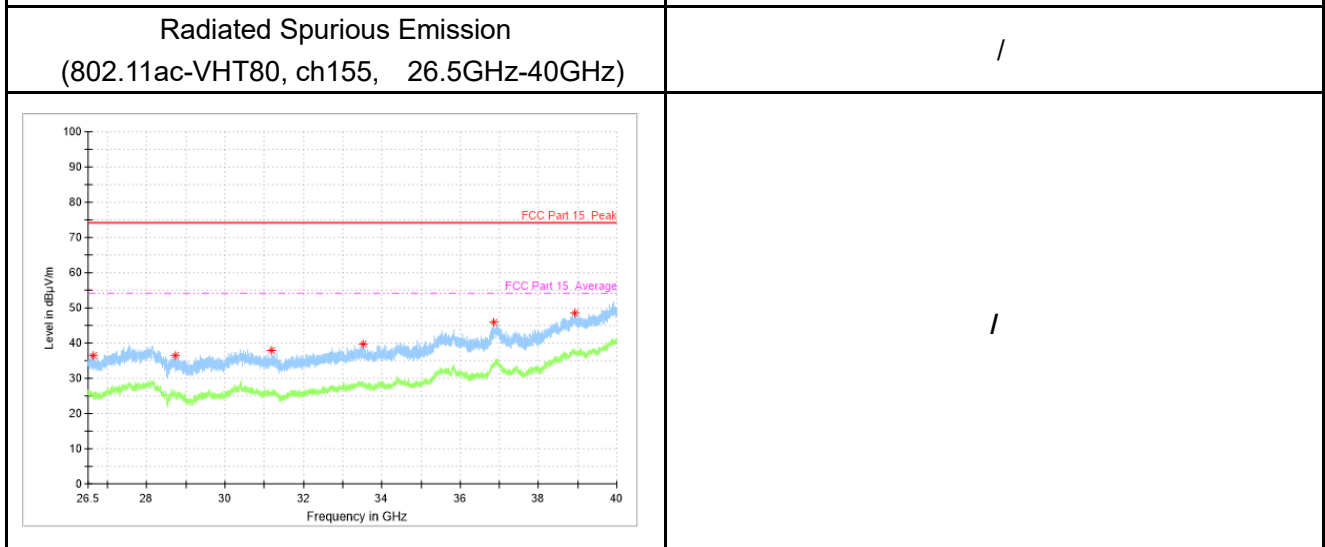
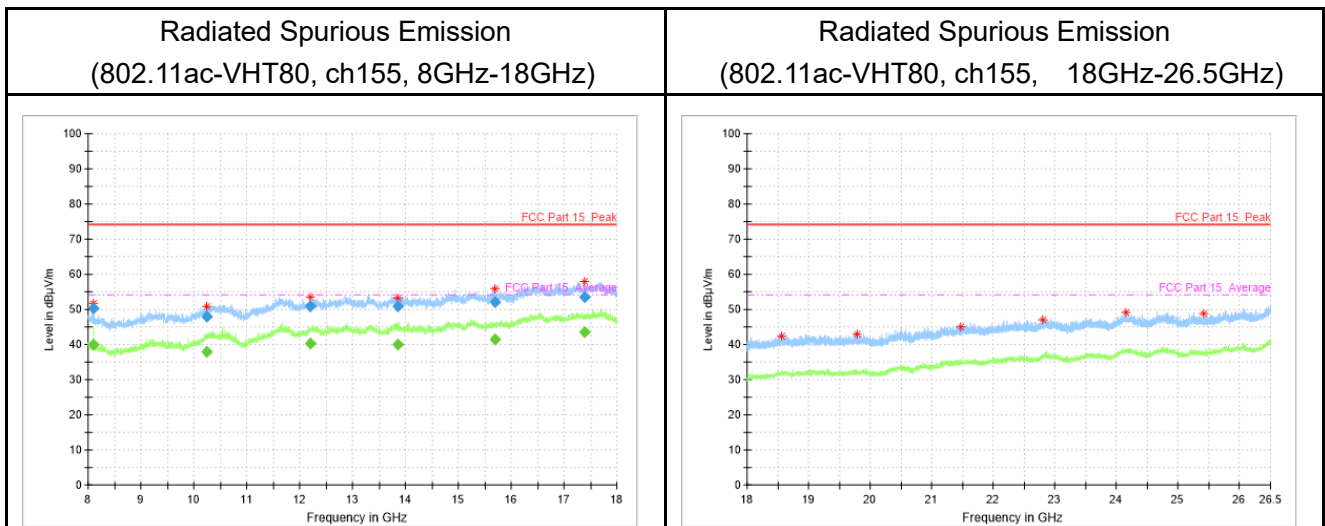
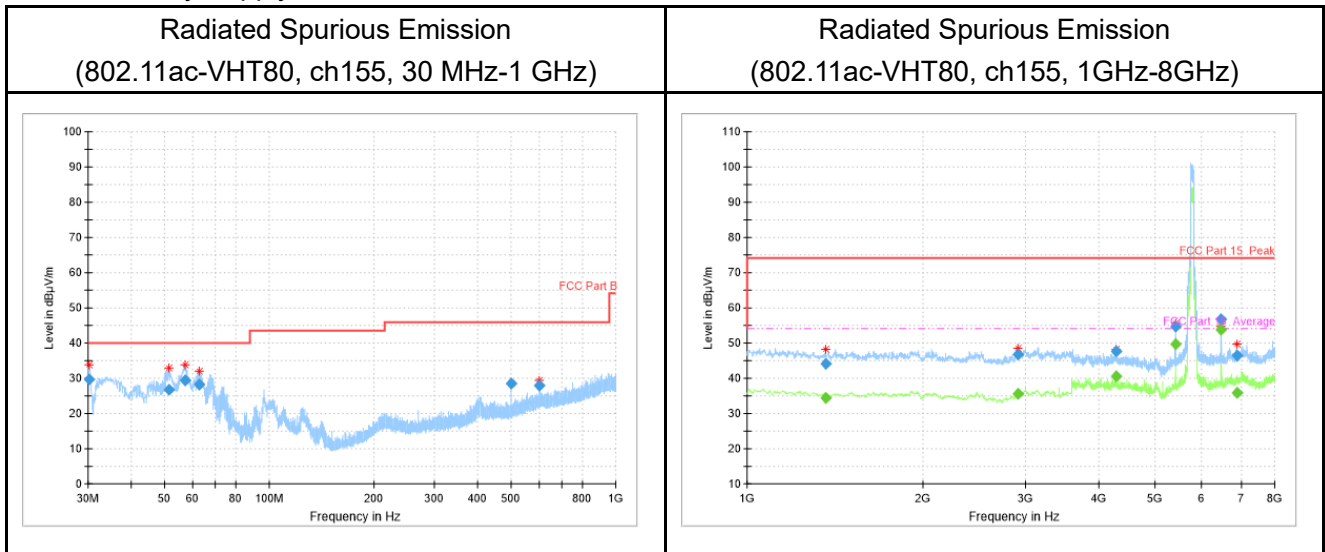
Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
18652.0	43.25	-4.9	48.15	V
20414.8	43.13	-3.4	46.53	V
22001.8	45.85	-2.1	47.95	H
23744.3	48.92	-0.5	49.42	H
24869.7	49.41	-0.1	49.51	H
26047.8	50.11	-0.8	50.91	H

RSE-11AC(80M)-CH155-26.5G-40G

Frequency (MHz)	Result (dB μ V/m)	ARpl (dB)	PMea (dB μ V/m)	Polarity
27373.4	35.41	-0.4	35.81	H
30323.2	35.91	1.1	34.81	V
32654.6	39.55	3.8	35.75	V
35489.6	43.58	6.2	37.38	V
38150.5	46.96	9	37.96	H

39622.0	49.1	12.9	36.2	H
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N04 Secondary Supply



RSE-11AC(80M)-CH155-30M-1G

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
30.2	29.71	-14.4	44.11	V
51.2	26.82	-12	38.82	V
57.0	29.34	-12.2	41.54	V
63.0	28.21	-13.4	41.61	V
500.0	28.5	-6.4	34.9	H
600.0	27.94	-3.5	31.44	V

RSE-11AC(80M)-CH155-1G-8G

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
1365.6	44.11	2.3	41.81	V
2903.6	46.68	1.5	45.18	H
4279.8	47.54	1.1	46.44	V
5400.2	54.82	2	52.82	V
6480.0	56.83	2.9	53.93	V
6899.0	46.57	4	42.57	H

RSE-11AC(80M)-CH155-1G-8G(Average)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
5400.2	49.79	2	47.79	V
6480.0	53.82	2.9	50.92	V

RSE-11AC(80M)-CH155-8G-18G

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
8099.0	50.4	4.3	46.1	V
10240.8	47.97	7.3	40.67	V
12211.2	51	10.7	40.3	V
13850.0	50.99	11.9	39.09	H
15686.6	51.97	14.6	37.37	H
17383.4	53.45	17.8	35.65	V

RSE-11AC(80M)-CH155-18G-26.5G

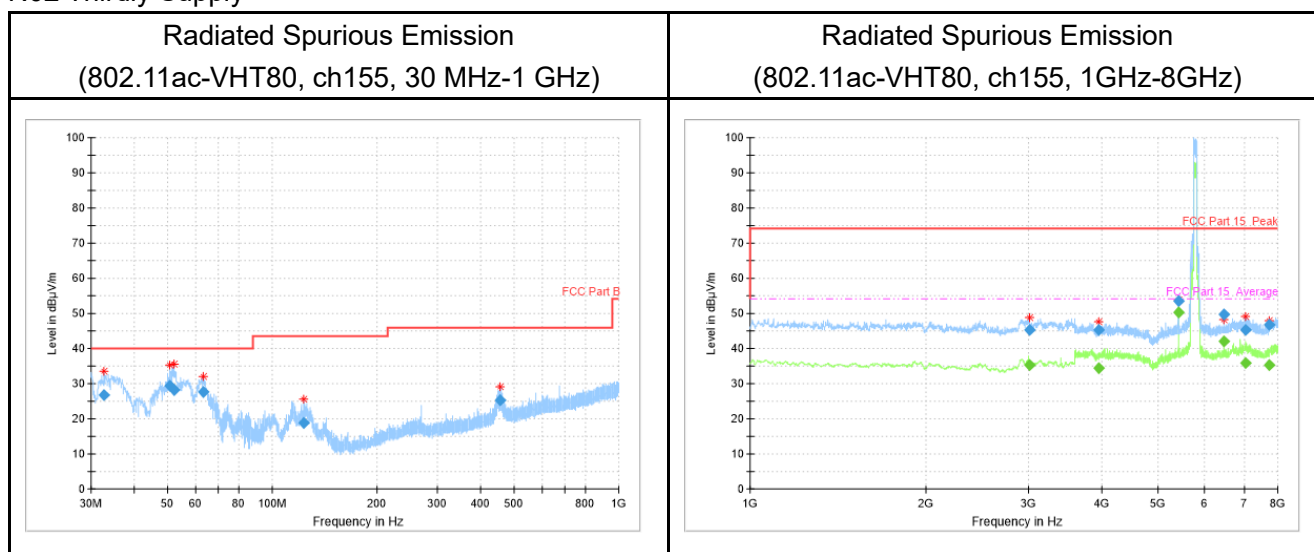
Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
18559.3	42.44	-4.5	46.94	V

19789.2	42.83	-4.4	47.23	H
21468.8	44.99	-2.2	47.19	V
22797.4	47.1	-0.9	48	V
24151.4	49.22	-0.1	49.32	H
25408.6	48.94	-0.7	49.64	V

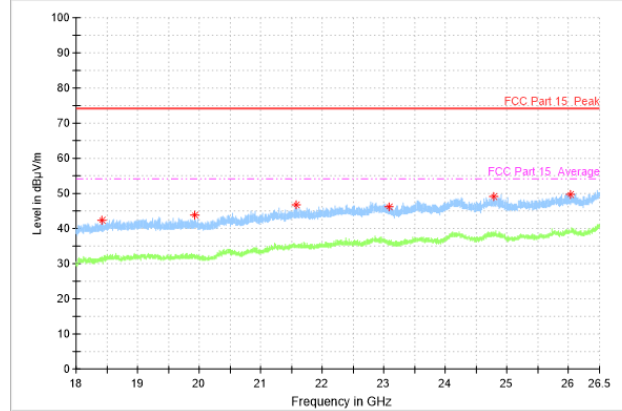
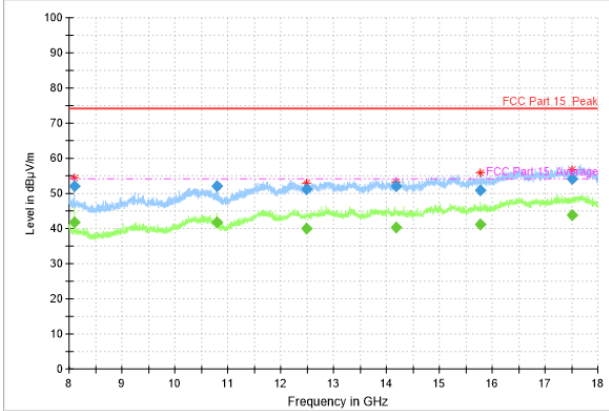
RSE-11AC(80M)-CH155-26.5G-40G

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
26626.9	36.35	-0.7	37.05	V
28719.4	36.4	1	35.4	V
31173.7	37.81	1.7	36.11	H
33520.0	39.63	4.6	35.03	H
36847.8	45.82	8.5	37.32	V
38916.0	48.42	11.7	36.72	H

N02 Thirdly Supply

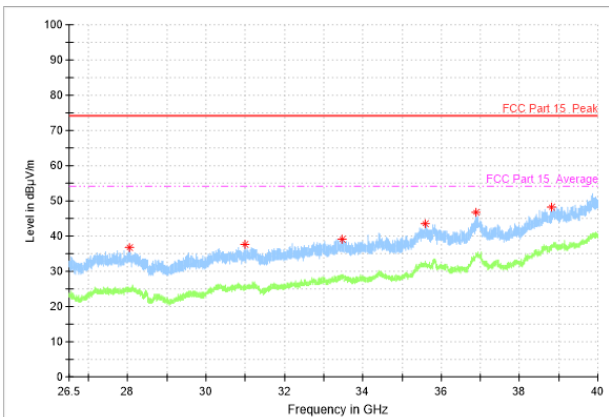


Radiated Spurious Emission (802.11ac-VHT80, ch155, 8GHz-18GHz)	Radiated Spurious Emission (802.11ac-VHT80, ch155, 18GHz-26.5GHz)
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Radiated Spurious Emission
(802.11ac-VHT80, ch155, 26.5GHz-40GHz)

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RSE-11AC(80M)-CH155-30M-1G

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
32.8	26.67	-14.2	40.87	V
50.8	29.31	-11.9	41.21	V
51.9	28.35	-12	40.35	V
63.1	27.78	-13.4	41.18	V
123.5	18.97	-15.4	34.37	H
453.0	25.34	-7.2	32.54	H

RSE-11AC(80M)-CH155-1G-8G

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3003.8	45.17	1.5	43.67	V
3944.6	45.2	1.2	44	H
5400.0	53.6	2	51.6	V
6480.0	49.76	2.9	46.86	V

7054.2	45.23	4.4	40.83	V
7741.0	46.89	3.9	42.99	V

RSE-11AC(80M)-CH155-8G-18G

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
8099.0	52.02	4.3	47.72	V
10799.0	52.17	7.2	44.97	V
12482.4	51.09	10.3	40.79	H
14176.6	52.01	12.4	39.61	H
15785.0	51.01	14.8	36.21	V
17509.4	54.1	17.7	36.4	V

RSE-11AC(80M)-CH155-8G-18G(Average)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
17509.4	43.73	17.7	26.03	V

RSE-11AC(80M)-CH155-18G-26.5G

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
18425.8	42.25	-5.1	47.35	H
19921.8	43.74	-4.5	48.24	H
21575.1	46.78	-2.2	48.98	V
23089.8	46.15	-2	48.15	H
24784.7	49.15	0.4	48.75	V
26030.8	49.74	-0.9	50.64	V

RSE-11AC(80M)-CH155-26.5G-40G

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
28056.6	36.67	0.6	36.07	H
30996.8	37.58	1.7	35.88	H
33479.5	39.05	4.6	34.45	H
35601.7	43.47	6.4	37.07	V
36873.4	46.65	8.4	38.25	V
38805.2	48.2	11.3	36.9	H

6.2. Band Edges Compliance

Band Edges - Radiated

Measurement Limit:

- (1) 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) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (3) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (5) 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) (see § 15.205(c)).

Frequency (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

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

Set the spectrum analyzer in the following:

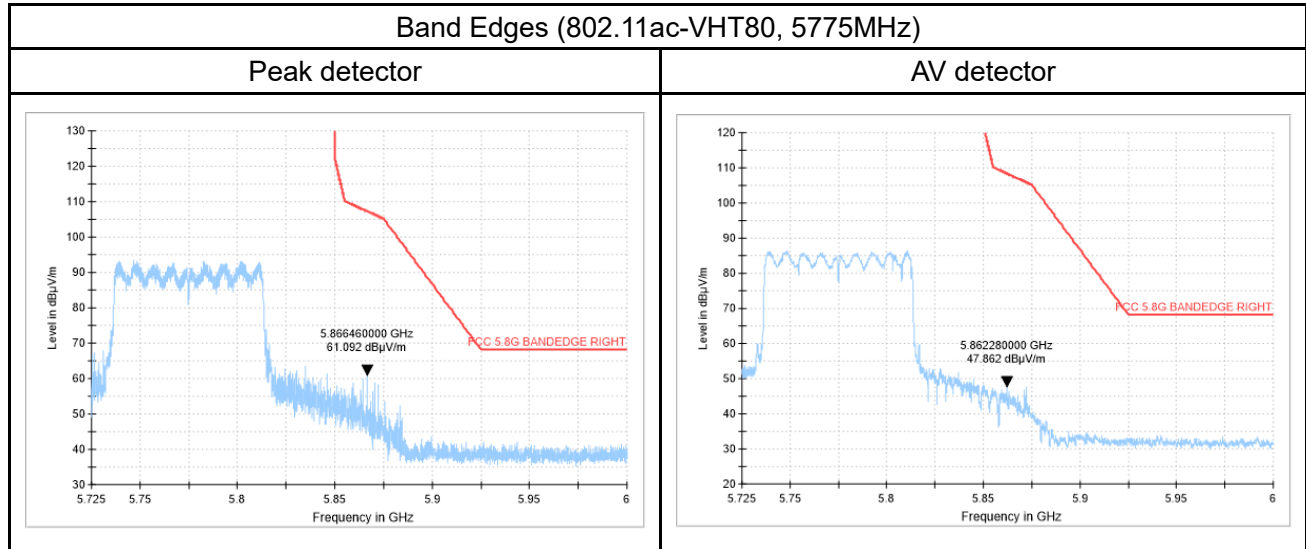
(a) Sweep mode: SweepAnalyzer6db.

(b) PEAK: RBW=1MHz / VBW=3MHz / Sweep=2.5ms, Sweep point;5001

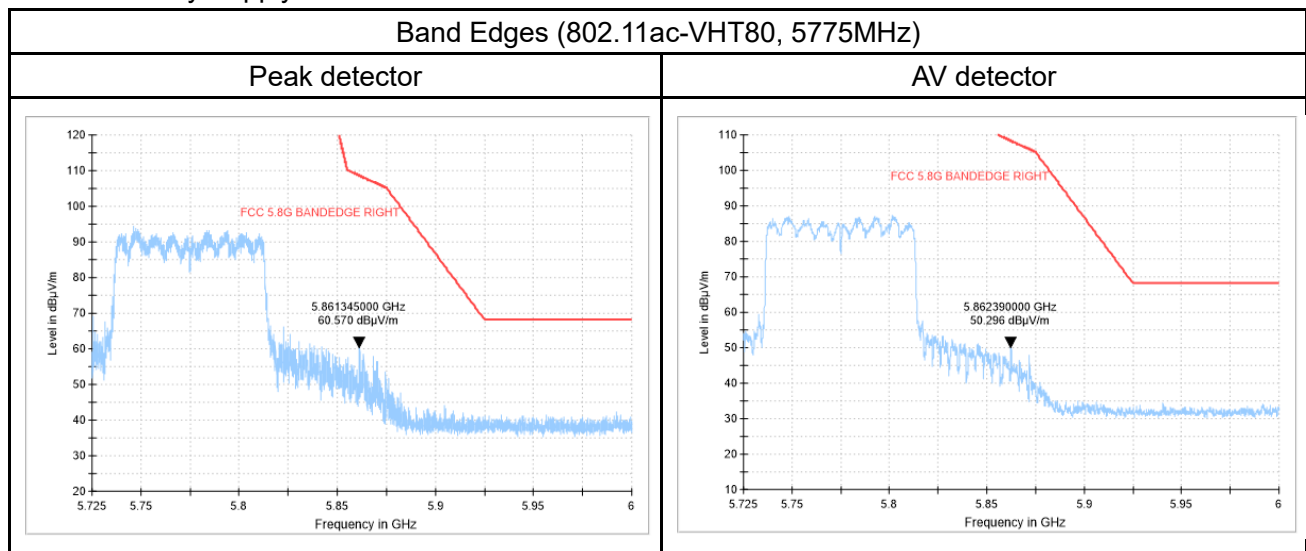
(c) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=2.5ms, Sweep point;5001

Measurement Result:

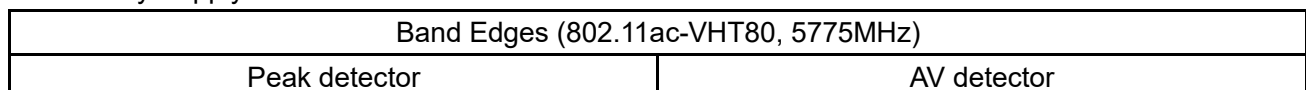
N01 Mainly Supply

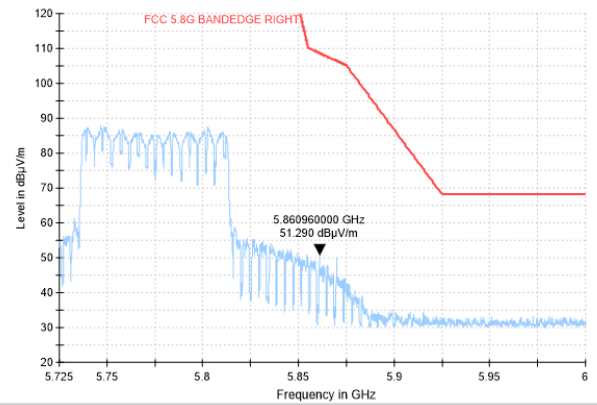
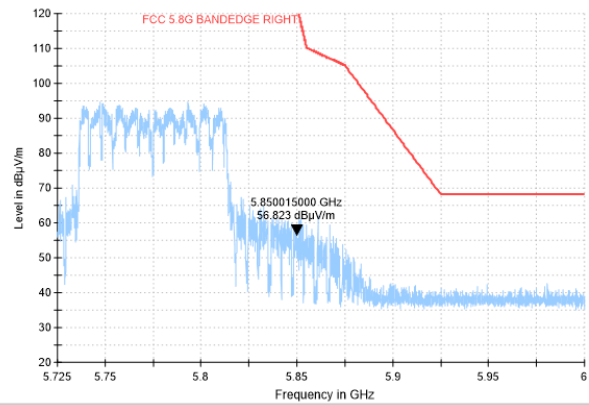


N04 Secondary Supply



N02 Thirdly Supply





7. Test Equipment List

7.1. Radiated Emission Test System

Item	Equipment Name	Type	Serial Number	Manufacturer	Cal. Date	Cal. interval
1	Universal Radio Communication Tester	CMU200	123123	R&S	2021-05-10	1 year
2	EMI Test Receiver	ESU40	100307	R&S	2021-05-10	1 year
3	TRILOG Broadband Antenna	VULB9163	VULB9163-515	Schwarzbeck	2020-02-28	2 years
4	Double- ridged Waveguide Antenna	ETS-3117	00135890	ETS	2020-02-28	2 years
5	2-Line V-Network	ENV216	101380	R&S	2021-05-10	1 year
6	EMI Test Software	EMC32 V 9.15.00	N/A	R&S	N/A	N/A

Anechoic chamber

Fully anechoic chamber by ETS.

Annex A: Measurement Uncertainty

Measurement uncertainty for all the testing in this report are within the limit specified in 3IN documents .
The detailed measurement uncertainty is defined in 3IN documents.

Measurement Items	Range	Confidence Level	Calculated Uncertainty
Transmitter Spurious Emission-Radiated	9KHz-30MHz	95%	5.66dB
Transmitter Spurious Emission-Radiated	30MHz-1000MHz	95%	4.98dB
Transmitter Spurious Emission-Radiated	1000MHz -18000MHz	95%	5.06dB
Transmitter Spurious Emission-Radiated	18000MHz -40000MHz	95%	5.20dB

Annex B: Accreditation Certificate



*****END OF REPORT*****