



# TEST REPORT

Report Number: C21T00132-SRD09-V00

|              |                                                   |
|--------------|---------------------------------------------------|
| 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 558074, RSS-247, RSS-Gen.

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Approved by 李伟

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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Tel: +86 21 68866880



### Revision Version

| Report Number       | Revision | Date       | Memo                            |
|---------------------|----------|------------|---------------------------------|
| C21T00132-SRD09-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<br>WLAN 802.11b,g,n<br>WLAN 802.11a,n,ac    |
| Hardware Version                     | CT541MB80C 20210430                                |
| Software Version                     | Sunmi-ct541-v3.0.33p033                            |
| WLAN Frequency                       | 2412MHz-2462MHz                                    |
| WLAN Channel                         | Ch1-11                                             |
| WLAN type of modulation              | 802.11b: DSSS<br>802.11g/n: 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<br>(Mainly Supply)    | N/A        | CT541MB80C<br>20210430 | Sunmi-ct541-<br>v3.0.33p033 | 2021/11/17      |
| N02<br>(Thirdly Supply)   | N/A        | CT541MB80C<br>20210430 | Sunmi-ct541-<br>v3.0.33p033 | 2021/11/17      |
| N04<br>(Secondary Supply) | N/A        | CT541MB80C<br>20210430 | Sunmi-ct541-<br>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      | FCC CFR 47, Part 15, Subpart C:<br>15.205 Restricted bands of operation;<br>15.209 Radiated emission limits, general requirements;<br>15.247 Operation within the bands 902-928MHz,<br>2400-2483.5MHz, and 5725-5850MHz. | 2020    |
| ANSI C63.10     | American National Standard of Procedures for<br>Compliance Testing of Unlicensed Wireless Devices                                                                                                                        | 2013    |
| KDB 558074 D01  | Guidance for Performing Compliance Measurements on<br>Frequency Hopping Spread Spectrum systems (DSS)<br>Operating Under §15.247                                                                                         | 2019    |
| RSS-247 Issue 2 | Digital Transmission Systems (DTSSs), Frequency<br>Hopping Systems (FHSs) and Licence-Exempt Local<br>Area Network (LE-LAN) Devices                                                                                      | 2017    |
| RSS-Gen Issue 5 | General Requirements for Compliance of Radio<br>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 Part15C    | Sub-clause of IC    | Verdict |
|-----------------------------------------|--------------------------|---------------------|---------|
| Maximum Peak Output Power               | 15.247(b)                | RSS-247 5.4         | N/A     |
| Peak Power Spectral Density             | 15.247(e)                | RSS-247 5.2         | N/A     |
| Occupied 6dB Bandwidth                  | 15.247(a)                | RSS-247 5.2         | N/A     |
| 99% Occupied Bandwidth                  | N/A                      | RSS-Gen 6.7         | N/A     |
| Band Edges Compliance                   | 15.247(d)                | RSS-247 5.5         | Pass    |
| Transmitter Spurious Emission-Conducted | 15.247(d)                | RSS-247 5.5         | N/A     |
| Transmitter Spurious Emission-Radiated  | 15.247/15.205/1<br>5.209 | RSS-Gen<br>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 | 230 V   |
| 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-SRD03-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-Radiated

### 6.1.1 Measurement Limit:

| Standard                           | Limit                        |
|------------------------------------|------------------------------|
| FCC 47 Part 15.247, 15.205, 15.209 | 20dB below peak output power |

In addition, radiated emissions which fall in the restricted bands, as defined in 25.205(a), must also comply with the radiated emission limits specified in 15.209(a)(see 15.205(c)).

The measurement is according to ANSI C63.10 clause 11.11 and 11.12.

### 6.1.2 Limit in restricted band:

| Frequency of emission (MHz) | Field strength(uV/m) | Field strength(dBuV/m) |
|-----------------------------|----------------------|------------------------|
| 30~88                       | 100                  | 40                     |
| 88~216                      | 150                  | 43.5                   |
| 216~960                     | 200                  | 46                     |
| Above 960                   | 500                  | 54                     |

### 6.1.3 Test procedures

Portable, small, lightweight, or modular devices that may be handheld, worn on the body, or placed on a table during operation shall be positioned on a nonconducting platform, the top of which is 80 cm above the reference ground plane. The preferred area occupied by the EUT arrangement is 1 m by 1.5 m, but it may be larger or smaller to accommodate various sized EUTs. For testing purposes, ceiling- and wall-mounted devices also shall be positioned on a tabletop (see also ANSI C63.4-2013 section 6.3.4 and 6.3.5). In making any tests involving handheld, body-worn, or ceiling-mounted equipment, it is essential to recognize that the measured levels may be dependent on the orientation (attitude) of the three orthogonal axes of the EUT. Thus, exploratory tests as specified in 8.3.1 shall be carried out for various axes orientations to determine the attitude having maximum or near-maximum emission level.

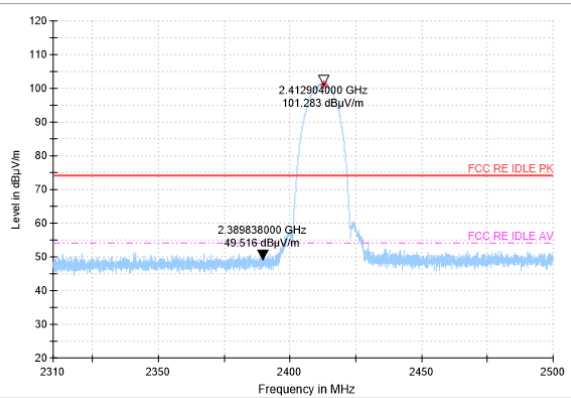
The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During testing, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emission from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

| Frequency of emission (MHz) | RBW/VBW       | Sweep Times (s) |
|-----------------------------|---------------|-----------------|
| 30~1000                     | 100KHz/300KHz | 5               |
| 1000~4000                   | 1MHz/3MHz     | 15              |
| 4000~18000                  | 1MHz/3MHz     | 40              |
| 18000~26500                 | 1MHz/3MHz     | 20              |

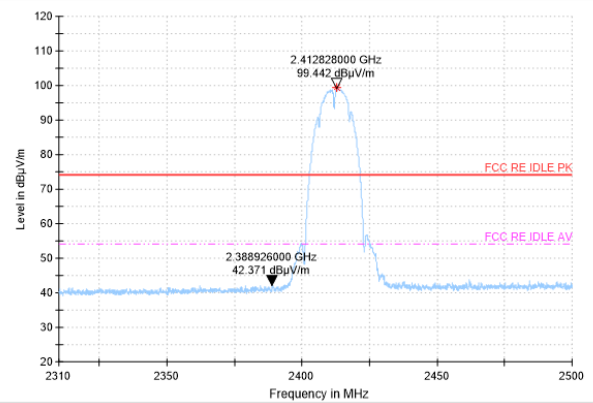
## N01 Mainly Supply

Bandedge: 802.11b, low channel

Peak detector

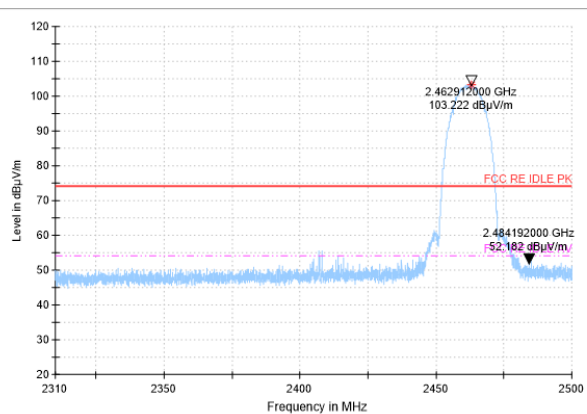


AV detector

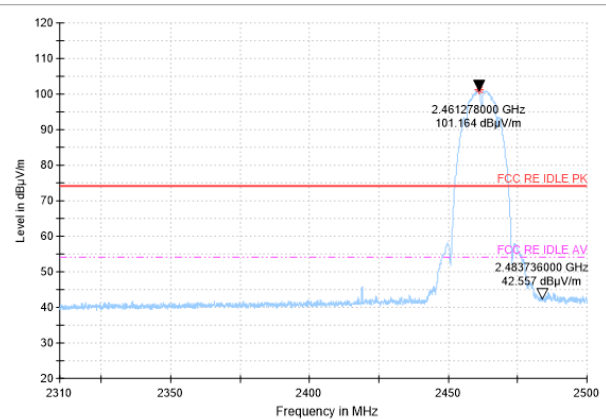


Bandedge: 802.11b, high channel

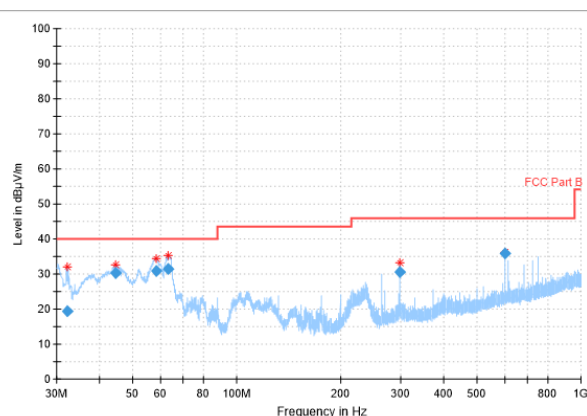
Peak detector



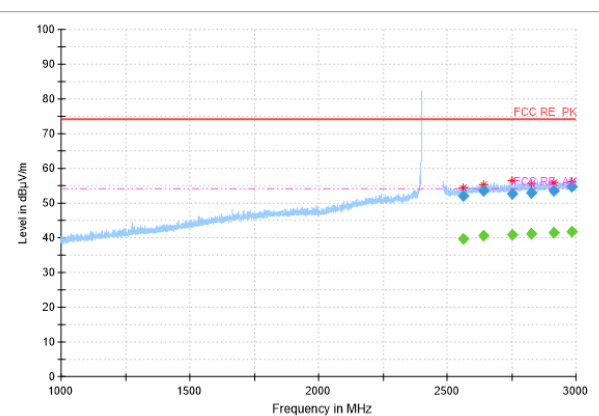
AV detector

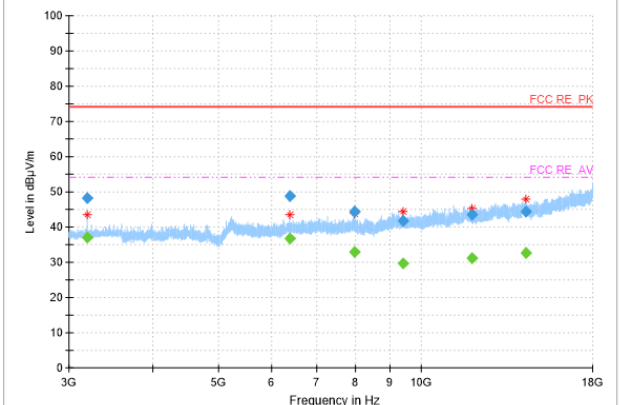


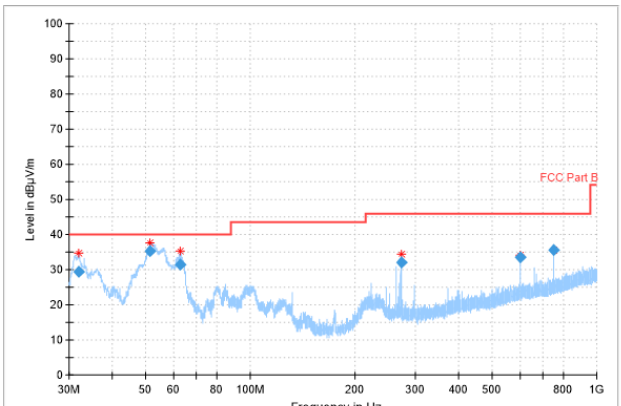
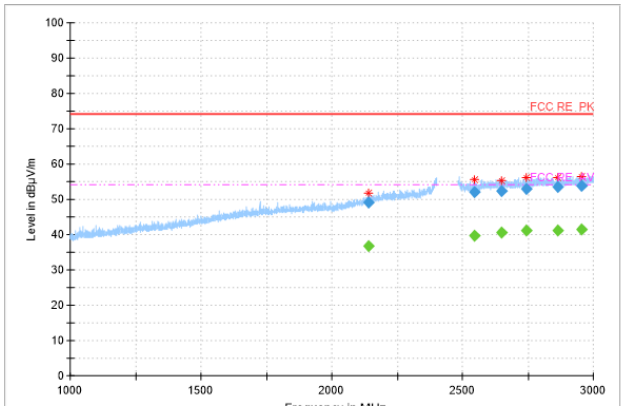
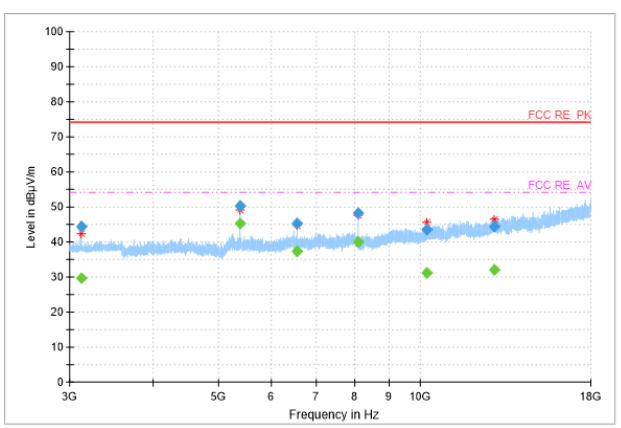
Radiated Spurious Emission  
(802.11b, Ch1, 30MHz~1GHz)



Radiated Spurious Emission  
(802.11b, Ch1, 1GHz~3GHz)



|                                                                                   |          |
|-----------------------------------------------------------------------------------|----------|
| <p>Radiated Spurious Emission<br/>(802.11b, Ch1, 3GHz~18GHz)</p>                  | <p>/</p> |
|  | <p>/</p> |

|                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <p>Radiated Spurious Emission<br/>(802.11b, Ch11, 30MHz~1GHz)</p>                   | <p>Radiated Spurious Emission<br/>(802.11b, Ch11, 1GHz~3GHz)</p>                    |
|   |  |
| <p>Radiated Spurious Emission<br/>(802.11b, Ch11, 3GHz~18GHz)</p>                   | <p>/</p>                                                                            |
|  | <p>/</p>                                                                            |

**Note:**

A "reference path loss" is established and  $A_{Rpi}$  is the attenuation of "reference path loss", and including the gain of receive antenna , the gain of the preamplifier, the cable loss.

$P_{Mea}$  is the field strength recorded from the instrument.

The measurement results are obtained as described below:

$AR_{pi}$  = Cable loss + Antenna Gain-Preamplifier gain

Result =  $P_{Mea}$  + Cable loss + Antenna Gain-Preamplifier gain =  $P_{Mea}$  +  $AR_{pi}$  .

## 802.11b

### Ch1 30MHz~1GHz

| Frequency (MHz) | Result (dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|----------|
| 32.3            | 19.5            | -14.2     | 33.7          | V        |
| 44.5            | 30.28           | -12.4     | 42.68         | V        |
| 58.4            | 31.01           | -12.2     | 43.21         | V        |
| 63.3            | 31.43           | -13.5     | 44.93         | V        |
| 297.0           | 30.67           | -10.9     | 41.57         | H        |
| 600.0           | 35.77           | -3.5      | 39.27         | V        |

### Ch1 1GHz~3GHz

| Frequency (MHz) | Result (dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|----------|
| 2560.4          | 52.13           | 15.2      | 36.93         | V        |
| 2639.8          | 53.4            | 15.8      | 37.6          | H        |
| 2751.3          | 52.66           | 16.2      | 36.46         | V        |
| 2827.8          | 53.07           | 16.6      | 36.47         | H        |
| 2914.8          | 53.54           | 16.8      | 36.74         | V        |
| 2981.7          | 54.69           | 17.2      | 37.49         | H        |

### Ch1 1GHz~3GHz (Average)

| Frequency (MHz) | Result (dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|----------|
| 2981.7          | 41.64           | 17.2      | 24.44         | H        |

### Ch1 3GHz~18GHz

| Frequency (MHz) | Result (dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|----------|
| 4279.5          | 42.5            | -5.3      | 47.8          | V        |
| 5399.6          | 49.76           | -3.3      | 53.06         | H        |
| 6431.9          | 47.01           | -2.6      | 49.61         | V        |
| 8100.0          | 50.81           | -1.5      | 52.31         | V        |
| 11825.5         | 43.12           | 2         | 41.12         | H        |

|         |      |     |      |   |
|---------|------|-----|------|---|
| 16943.2 | 47.3 | 8.8 | 38.5 | V |
|---------|------|-----|------|---|

#### Ch11 30MHz~1GHz

| Frequency (MHz) | Result (dB $\mu$ V/m) | ARpl (dB) | PMea (dB $\mu$ V/m) | Polarity |
|-----------------|-----------------------|-----------|---------------------|----------|
| 32.0            | 29.33                 | -14.3     | 43.63               | V        |
| 51.4            | 35.3                  | -12       | 47.3                | V        |
| 62.8            | 31.42                 | -13.3     | 44.72               | V        |
| 272.2           | 32.04                 | -11.1     | 43.14               | H        |
| 600.0           | 33.59                 | -3.5      | 37.09               | V        |
| 750.0           | 35.51                 | -2.1      | 37.61               | H        |

#### Ch11 1GHz~3GHz

| Frequency (MHz) | Result (dB $\mu$ V/m) | ARpl (dB) | PMea (dB $\mu$ V/m) | Polarity |
|-----------------|-----------------------|-----------|---------------------|----------|
| 2140.6          | 49.03                 | 11.8      | 37.23               | V        |
| 2545.1          | 52.05                 | 15        | 37.05               | V        |
| 2650.8          | 52.5                  | 15.9      | 36.6                | V        |
| 2742.3          | 52.87                 | 16.2      | 36.67               | V        |
| 2864.1          | 53.44                 | 16.7      | 36.74               | H        |
| 2953.3          | 53.78                 | 16.8      | 36.98               | V        |

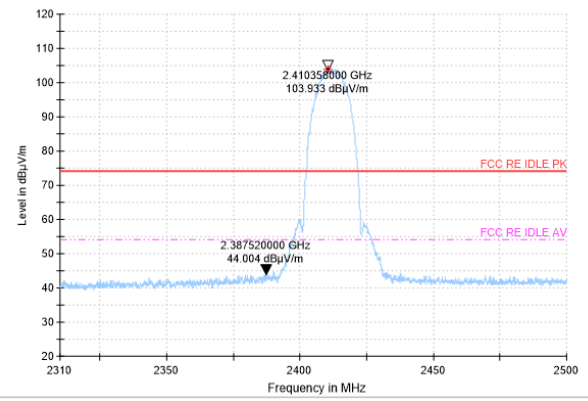
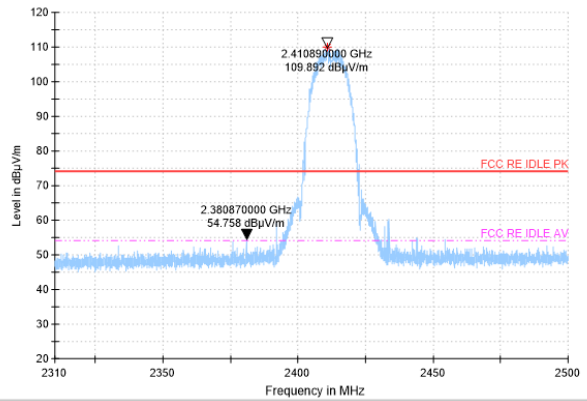
#### Ch11 3GHz~18GHz

| Frequency (MHz) | Result (dB $\mu$ V/m) | ARpl (dB) | PMea (dB $\mu$ V/m) | Polarity |
|-----------------|-----------------------|-----------|---------------------|----------|
| 3118.8          | 44.35                 | -7.5      | 51.85               | V        |
| 5400.1          | 50.21                 | -3.3      | 53.51               | H        |
| 6564.8          | 45.21                 | -2.5      | 47.71               | H        |
| 8100.3          | 48.34                 | -1.5      | 49.84               | H        |
| 10244.4         | 43.58                 | 0.1       | 43.48               | H        |
| 12921.0         | 44.39                 | 3.3       | 41.09               | H        |

**Note: Only the worst case is written in the report.**

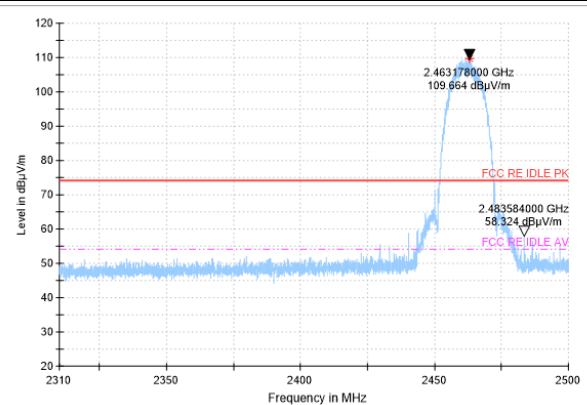
#### N04 Secondary Supply

|                                |             |
|--------------------------------|-------------|
| Bandedge: 802.11b, low channel |             |
| Peak detector                  | AV detector |

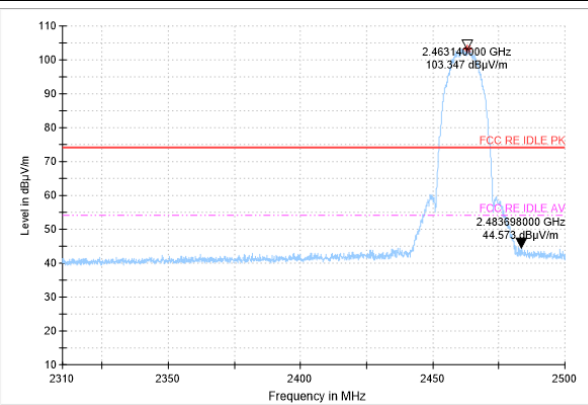


Bandedge: 802.11b, high channel

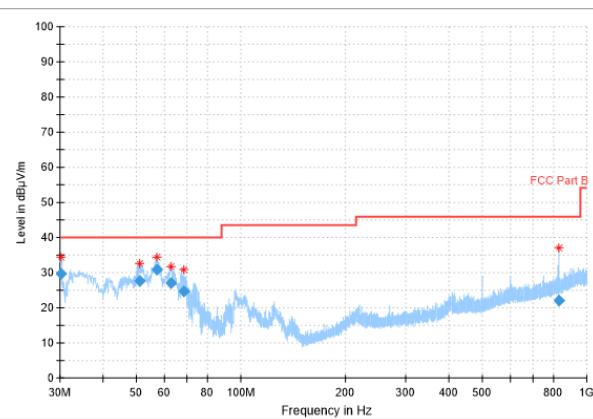
Peak detector



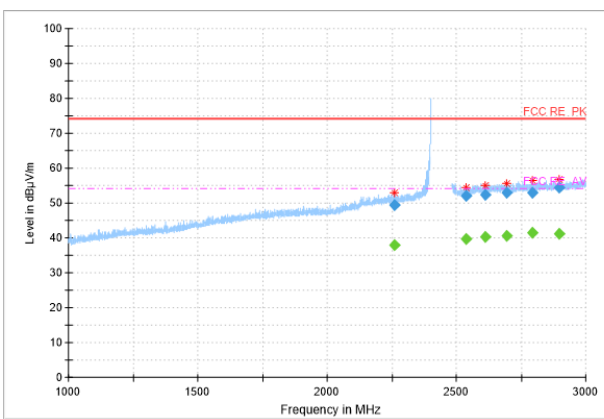
AV detector



Radiated Spurious Emission  
(802.11b, Ch1, 30MHz~1GHz)

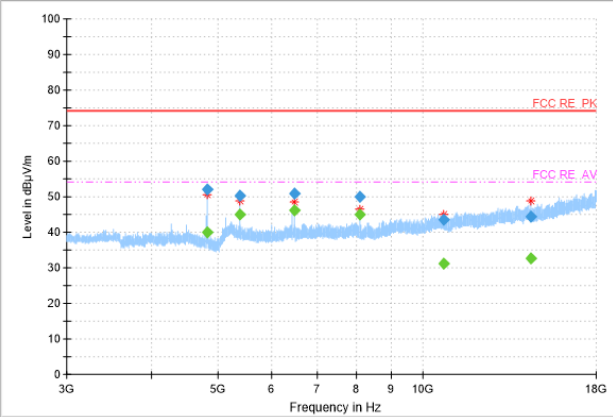


Radiated Spurious Emission  
(802.11b, Ch1, 1GHz~3GHz)



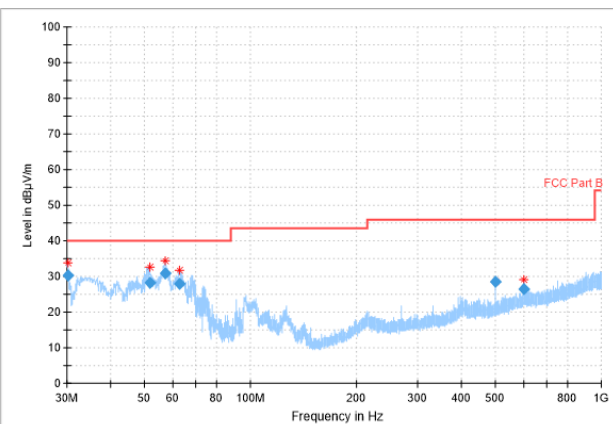
Radiated Spurious Emission  
(802.11b, Ch1, 3GHz~18GHz)

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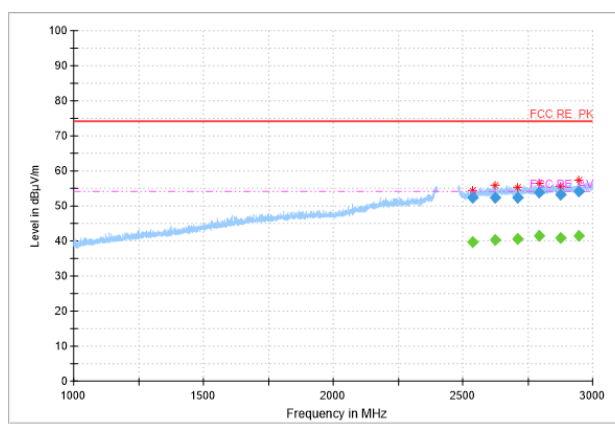


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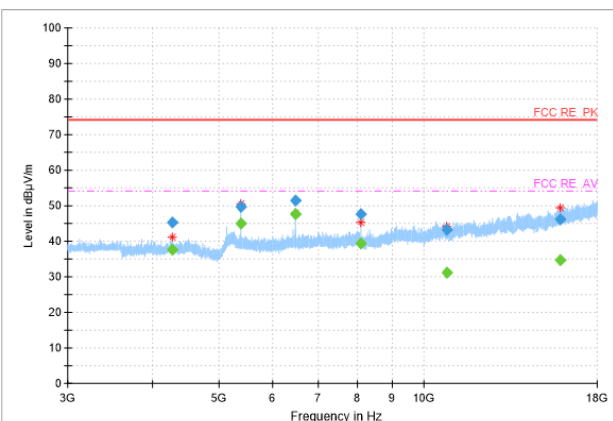
Radiated Spurious Emission  
(802.11b, Ch11, 30MHz~1GHz)



Radiated Spurious Emission  
(802.11b, Ch11, 1GHz~3GHz)



Radiated Spurious Emission  
(802.11b, Ch11, 3GHz~18GHz)



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#### Note:

A "reference path loss" is established and  $A_{Rpi}$  is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

$P_{Mea}$  is the field strength recorded from the instrument.

The measurement results are obtained as described below:

ARpi = Cable loss + Antenna Gain-Preamplifier gain

Result = P<sub>Mea</sub> + Cable loss + Antenna Gain-Preamplifier gain = P<sub>Mea</sub> + ARpi .

## 802.11b

### Ch1 30MHz~1GHz

| Frequency (MHz) | Result (dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|----------|
| 30.1            | 29.58           | -14.4     | 43.98         | V        |
| 51.0            | 27.52           | -11.9     | 39.42         | V        |
| 57.3            | 30.78           | -12.2     | 42.98         | V        |
| 62.9            | 27.11           | -13.3     | 40.41         | V        |
| 68.3            | 24.74           | -15.1     | 39.84         | V        |
| 831.0           | 21.98           | -1        | 22.98         | V        |

### Ch1 1GHz~3GHz

| Frequency (MHz) | Result (dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|----------|
| 2262.2          | 49.42           | 12.9      | 36.52         | H        |
| 2537.9          | 52.17           | 14.9      | 37.27         | H        |
| 2610.8          | 52.24           | 15.6      | 36.64         | H        |
| 2694.7          | 52.98           | 15.9      | 37.08         | V        |
| 2791.8          | 52.83           | 16.5      | 36.33         | H        |
| 2896.9          | 54.4            | 16.7      | 37.7          | H        |

### Ch1 1GHz~3GHz (Average)

| Frequency (MHz) | Result (dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|----------|
| 2896.9          | 41.29           | 16.7      | 24.59         | H        |

### Ch1 3GHz~18GHz

| Frequency (MHz) | Result (dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|----------|
| 4823.9          | 51.94           | -4.8      | 56.74         | H        |
| 5399.6          | 50.23           | -3.3      | 53.53         | V        |
| 6479.7          | 50.75           | -2.6      | 53.35         | V        |
| 8099.8          | 50.07           | -1.5      | 51.57         | V        |
| 10731.9         | 43.6            | 0.9       | 42.7          | V        |
| 14413.3         | 44.54           | 5.1       | 39.44         | V        |

### Ch11 30MHz~1GHz

| Frequency (MHz) | Result (dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|----------|
| 30.3            | 30.39           | -14.4     | 44.79         | V        |
| 51.6            | 28.31           | -12       | 40.31         | V        |
| 57.4            | 30.77           | -12.2     | 42.97         | V        |
| 62.7            | 27.9            | -13.3     | 41.2          | V        |
| 500.0           | 28.57           | -6.4      | 34.97         | H        |
| 600.0           | 26.43           | -3.5      | 29.93         | V        |

### Ch11 1GHz~3GHz

| Frequency (MHz) | Result (dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|----------|
| 2538.9          | 52.38           | 14.9      | 37.48         | V        |
| 2625.7          | 52.22           | 15.7      | 36.52         | H        |
| 2711.0          | 52.4            | 16        | 36.4          | H        |
| 2794.4          | 53.71           | 16.5      | 37.21         | H        |
| 2876.4          | 53.23           | 16.7      | 36.53         | H        |
| 2947.8          | 54.12           | 16.8      | 37.32         | V        |

### Ch11 1GHz~3GHz(Average)

| Frequency (MHz) | Result (dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|----------|
| 2947.8          | 41.58           | 16.8      | 24.78         | V        |

### Ch11 3GHz~18GHz

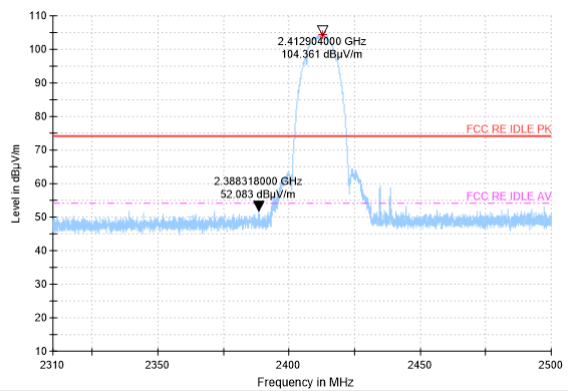
| Frequency (MHz) | Result (dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|----------|
| 4280.1          | 45.32           | -5.3      | 50.62         | V        |
| 5400.0          | 49.66           | -3.3      | 52.96         | H        |
| 6479.8          | 51.5            | -2.6      | 54.17         | V        |
| 8099.5          | 47.53           | -1.5      | 49.03         | H        |
| 10841.6         | 43.14           | 1.1       | 42.04         | H        |
| 15884.8         | 46.21           | 7.7       | 38.51         | H        |

**Note: Only the worst case is written in the report.**

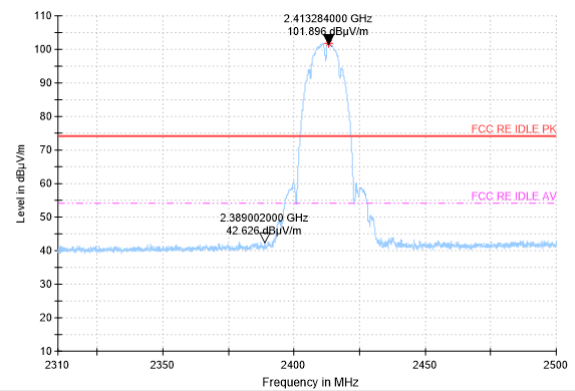
## N02 Thirdly Supply

Bandedge: 802.11b, low channel

Peak detector

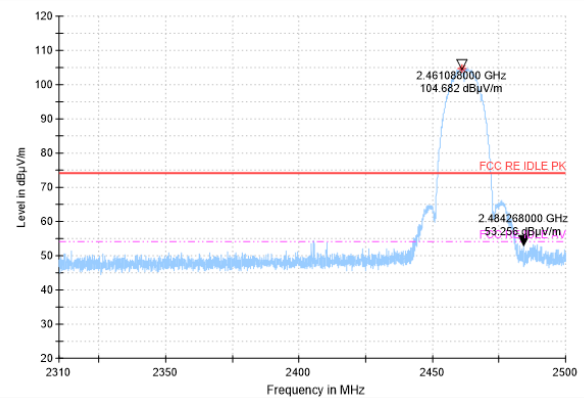


AV detector

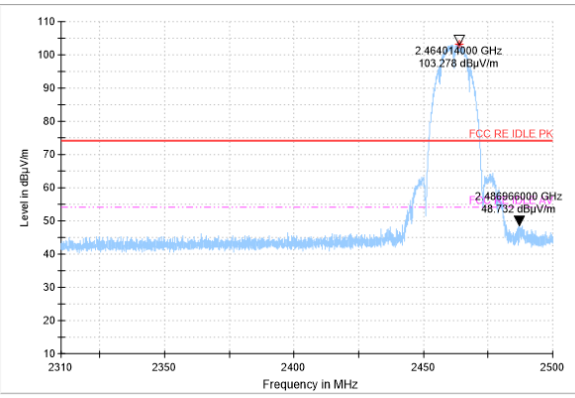


Bandedge: 802.11b, high channel

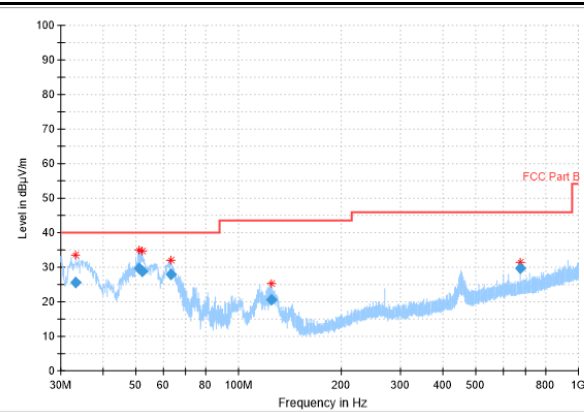
Peak detector



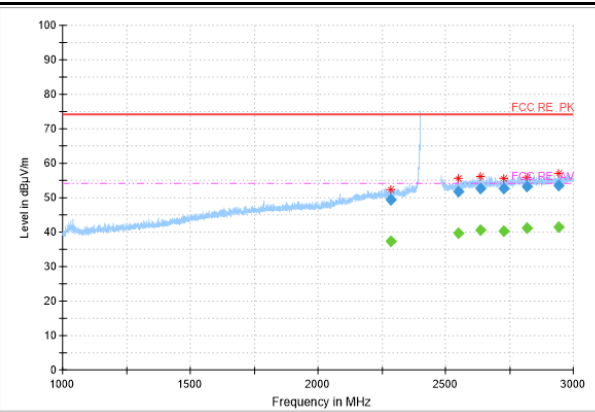
AV detector



Radiated Spurious Emission  
(802.11b, Ch1, 30MHz~1GHz)

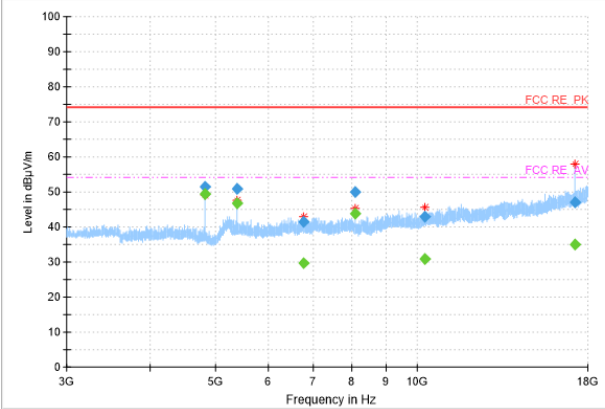


Radiated Spurious Emission  
(802.11b, Ch1, 1GHz~3GHz)



Radiated Spurious Emission  
(802.11b, Ch1, 3GHz~18GHz)

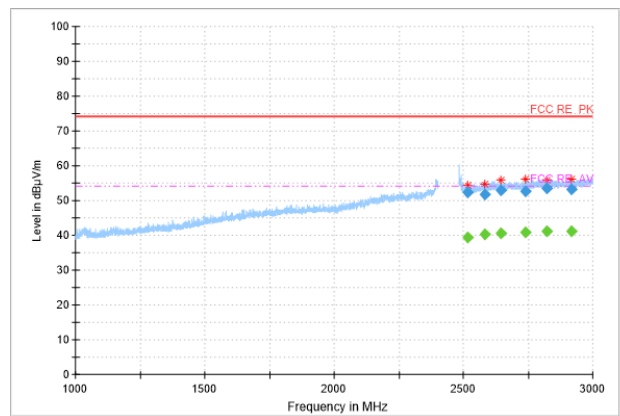
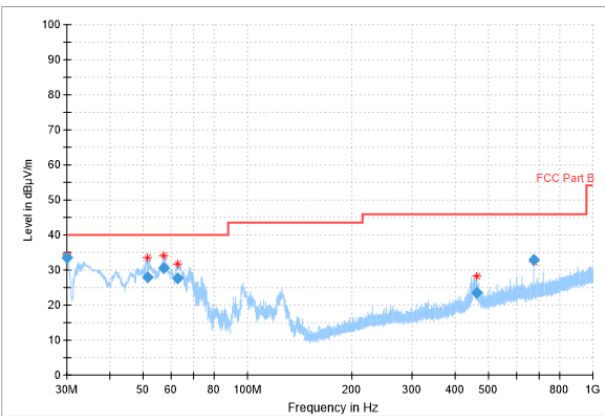
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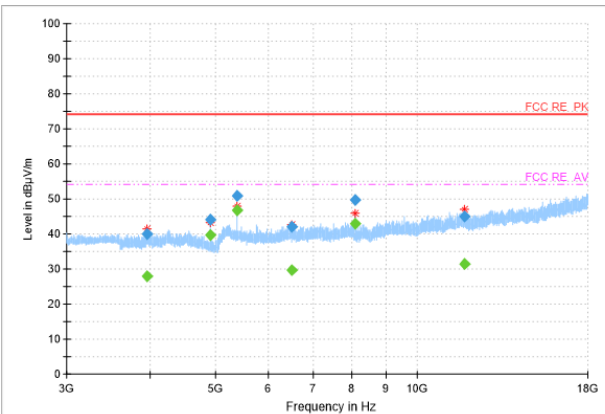
Radiated Spurious Emission  
(802.11b, Ch11, 30MHz~1GHz)

Radiated Spurious Emission  
(802.11b, Ch11, 1GHz~3GHz)



Radiated Spurious Emission  
(802.11b, Ch11, 3GHz~18GHz)

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#### Note:

A "reference path loss" is established and  $A_{Rpi}$  is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

$P_{Mea}$  is the field strength recorded from the instrument.

The measurement results are obtained as described below:

$AR_{pi} = \text{Cable loss} + \text{Antenna Gain-Preamplifier gain}$

$\text{Result} = P_{Mea} + \text{Cable loss} + \text{Antenna Gain-Preamplifier gain} = P_{Mea} + AR_{pi}$

## 802.11b

### Ch1 30MHz~1GHz

| Frequency (MHz) | Result (dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|----------|
| 33.2            | 25.5            | -14.2     | 39.7          | V        |
| 50.9            | 29.81           | -11.9     | 41.71         | V        |
| 52.1            | 28.8            | -12       | 40.8          | V        |
| 63.2            | 28.04           | -13.4     | 41.44         | V        |
| 125.1           | 20.5            | -15.6     | 36.1          | H        |
| 672.0           | 29.67           | -2.8      | 32.47         | H        |

### Ch1 1GHz~3GHz

| Frequency (MHz) | Result (dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|----------|
| 2284.0          | 49.49           | 13.1      | 36.39         | V        |
| 2549.1          | 51.73           | 15.1      | 36.63         | H        |
| 2637.5          | 52.68           | 15.8      | 36.88         | V        |
| 2726.3          | 52.59           | 16.1      | 36.49         | V        |
| 2819.2          | 53.24           | 16.6      | 36.64         | H        |
| 2942.0          | 53.39           | 16.8      | 36.59         | H        |

### Ch1 3GHz~18GHz

| Frequency (MHz) | Result (dBμV/m) | ARpl (dB) | PMea (dBμV/m) | Polarity |
|-----------------|-----------------|-----------|---------------|----------|
| 4824.0          | 51.51           | -4.8      | 56.31         | H        |
| 5400.0          | 50.83           | -3.3      | 54.13         | V        |
| 6781.7          | 41.41           | -2.7      | 44.11         | H        |
| 8099.9          | 50.05           | -1.5      | 51.55         | V        |
| 10266.0         | 42.94           | 0.2       | 42.74         | H        |
| 17248.6         | 47.04           | 9.3       | 37.74         | H        |

**Ch11 30MHz~1GHz**

| Frequency (MHz) | Result (dB $\mu$ V/m) | ARpl (dB) | PMea (dB $\mu$ V/m) | Polarity |
|-----------------|-----------------------|-----------|---------------------|----------|
| 30.0            | 33.45                 | -14.4     | 47.85               | V        |
| 51.4            | 27.88                 | -12       | 39.88               | V        |
| 57.3            | 30.6                  | -12.2     | 42.8                | V        |
| 62.7            | 27.61                 | -13.2     | 40.81               | V        |
| 460.0           | 23.41                 | -6.8      | 30.21               | H        |
| 672.0           | 32.92                 | -2.8      | 35.72               | H        |

**Ch11 1GHz~3GHz**

| Frequency (MHz) | Result (dB $\mu$ V/m) | ARpl (dB) | PMea (dB $\mu$ V/m) | Polarity |
|-----------------|-----------------------|-----------|---------------------|----------|
| 2518.3          | 52.28                 | 14.7      | 37.58               | H        |
| 2581.0          | 51.78                 | 15.4      | 36.38               | V        |
| 2642.6          | 52.9                  | 15.8      | 37.1                | V        |
| 2739.8          | 52.58                 | 16.2      | 36.38               | V        |
| 2820.6          | 53.49                 | 16.6      | 36.89               | H        |
| 2915.4          | 53.21                 | 16.8      | 36.41               | V        |

**Ch11 3GHz~18GHz**

| Frequency (MHz) | Result (dB $\mu$ V/m) | ARpl (dB) | PMea (dB $\mu$ V/m) | Polarity |
|-----------------|-----------------------|-----------|---------------------|----------|
| 3958.4          | 39.92                 | -5.6      | 45.52               | H        |
| 4924.1          | 44.09                 | -4.5      | 48.59               | H        |
| 5399.8          | 50.85                 | -3.3      | 54.15               | V        |
| 6497.1          | 42.16                 | -2.6      | 44.76               | H        |
| 8099.5          | 49.64                 | -1.5      | 51.14               | V        |
| 11796.6         | 44.98                 | 2         | 42.98               | H        |

**Note: Only the worst case is written in the report.**

## 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           |

CIAnechoic 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 |
|----------------------------------------|--------------------|------------------|------------------------|
| Peak Output Power-Conducted            | 2412MHz-2462MHz    | 95%              | 0.544dB                |
| Peak Power Spectral Density            | 2412MHz-2462MHz    | 95%              | 0.502dB                |
| Conducted Emission                     | 30MHz-2GHz         | 95%              | 0.90dB                 |
| Conducted Emission                     | 2GHz-3.6GHz        | 95%              | 0.88dB                 |
| Conducted Emission                     | 3.6GHz-8GHz        | 95%              | 0.96dB                 |
| Conducted Emission                     | 8GHz-20GHz         | 95%              | 0.94dB                 |
| Conducted Emission                     | 20GHz-22GHz        | 95%              | 0.88dB                 |
| Conducted Emission                     | 22GHz-26GHz        | 95%              | 0.86dB                 |
| 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\*\*\*\*\*