

# TEST REPORT

|           |   |
|-----------|---|
| Applicant | Swann Communications PTY Ltd.   |
| Address   | Unit 5B, 706 Lorimer Street, Port Melbourne, Victoria 3207, Australia |

|                                     |   |
|-------------------------------------|---|
| Manufacturer or Supplier            | Swann Communications PTY Ltd.   |
| Address                             | Unit 5B, 706 Lorimer Street, Port Melbourne, Victoria 3207, Australia |
| Product                             | Xtreem Wire Free Security Camera                                      |
| Brand Name                          | Swann   |
| Model                               | SWIFI-XTRCAMW   |
| Additional Model & Model Difference | N/A   |
| Date of tests                       | Sep. 23, 2021 ~ Nov. 04, 2021   |

The tests have been carried out according to the requirements of the following standard:

**FCC Part 15, Subpart C, Section 15.247**

**CONCLUSION: The submitted sample was found to COMPLY with the test requirement**

Tested by Andy Zhu  
Supervisor / EMC Department

Approved by Glyn He  
Assistant Manager / EMC Department




Date: Dec. 14, 2021

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Test Report No.: RF2109WDG0258

## RELEASE CONTROL RECORD

| ISSUE NO.     | REASON FOR CHANGE   | DATE ISSUED   |
|---------------|---|---------------|
| RF200721N007  | Original release  | Sep. 23, 2020 |
| RF2109WDG0258 | Base the original report RF200721N007 to update:<br>1) Changed the U10 from STM8K6U6 to GD32E230C8T6;<br>2) Changed the U15 from SON250X400X100P40-13 to SH366002R012RE;<br>After evaluated, it needs to be retested bellow items:<br><ul style="list-style-type: none"><li>● Transmitter Spurious Radiation Emissions below 1GHz;</li><li>● AC Power Conducted Emission.</li></ul> | Dec. 14, 2021 |

## 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247) |                             |        |                                |
|---|-----------------------------|--------|--------------------------------|
| STANDARD SECTION  | TEST TYPE AND LIMIT         | RESULT | REMARK                         |
| 15.207  | AC Power Conducted Emission | PASS   | Meet the requirement of limit. |
| 15.247(d)<br>15.209                                       | Radiated Emissions          | PASS   | Meet the requirement of limit. |

Note: This report is prepared for supplementary report.

## 2 MEASUREMENT UNCERTAINTY

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

| MEASUREMENT         | FREQUENCY     | UNCERTAINTY |
|---------------------|---------------|-------------|
| Conducted emissions | 9kHz~30MHz    | 2.70dB      |
| Radiated emissions  | 9KHz ~ 30MHz  | 2.16dB      |
|                     | 30MHz ~ 1GMHz | 3.82dB      |
|                     | 1GHz ~ 18GHz  | 4.82dB      |
|                     | 18GHz ~ 40GHz | 5.00dB      |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k = 2$ .

### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|                              |  |
|------------------------------|--|
| <b>PRODUCT</b>               | Xtreem Wire Free Security Camera   |
| <b>BRAND</b>                 | Swann  |
| <b>MODEL NO.</b>             | SWIFI-XTRCAMW  |
| <b>ADDITIONAL NO.</b>        | N/A  |
| <b>FCC ID</b>                | VMISWIFIXTRCAM   |
| <b>NOMINAL VOLTAGE</b>       | DC 3.6V from Li-ion Battery or DC 5V from Host Unit                            |
| <b>MODULATION TECHNOLOGY</b> | DSSS, OFDM   |
| <b>MODULATION TYPE</b>       | CCK, DQPSK, DBPSK for DSSS<br>64QAM, 16QAM, QPSK, BPSK for OFDM                |
| <b>OPERATING FREQUENCY</b>   | 2412 MHz -2462MHz for 11b/g/n(HT20)  |
| <b>PEAK OUTPUT POWER</b>     | 767.361 mW(MAX.)   |
| <b>ANTENNA TYPE</b>          | ANT 1: FPCB Antenna, with 3.3dBi gain<br>ANT 2: PIFA Antenna, with 2.5dBi gain |
| <b>I/O PORTS</b>             | Refer to user's manual   |
| <b>CABLE SUPPLIED</b>        | USB cable: Shielded, detachable, 1.2m  |

#### NOTES:

1. This is a supplementary report of Report No: RF200721N007. The differences between them are as follows:

- Changed the U10 from STM8K6U6 to GD32E230C8T6.
- Changed the U15 from SON250X400X100P40-13 to SH366002R012RE;

According to the above conditions, AC Power Conducted Emission and Radiated Emission (below 1GHz) test item needs to be performed. And all data was verified to meet the requirements.

- The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.
- For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
- Please refer to the EUT photo document (Reference No.: 2109WDG0258) for detailed product photo.
- The EUT have SISO function, provides 2 completed transmitter and 2 receiver. Both of the antenna cannot transmit simultaneously. But only the ANT1 was shown in the report due to the gain of ANT1 is larger than that of ANT2, except the "RF output power and Radiated Emissions test" were shown both antenna.

| MODULATION MODE | TX FUNCTION |
|-----------------|-------------|
| 802.11b         | 2TX/2RX     |
| 802.11g         | 2TX/2RX     |
| 802.11n (HT20)  | 2TX/2RX     |

### 3.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g and 802.11n(HT20):

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 1       | 2412 MHz  | 7       | 2442 MHz  |
| 2       | 2417 MHz  | 8       | 2447 MHz  |
| 3       | 2422 MHz  | 9       | 2452 MHz  |
| 4       | 2427 MHz  | 10      | 2457 MHz  |
| 5       | 2432 MHz  | 11      | 2462 MHz  |
| 6       | 2437 MHz  |         |           |

#### 3.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photographs of the test configuration for reference.

#### 3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.

The worst case was found when positioned on X axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

| EUT<br>CONFIGURE<br>MODE | APPLICABLE TO |       |     |      | MODE   |
|--------------------------|---------------|-------|-----|------|--|
|                          | RE<1G         | RE≥1G | PLC | APCM |  |
| A                        | √             | -     | √   | -    | <b>Powered by Adapter with WIFI function</b> |

Where **RE<1G**: Radiated Emission below 1GHz      **RE≥1G**: Radiated Emission above 1GHz  
**PLC**: Power Line Conducted Emission      **APCM**: Antenna Port Conducted Measurement

#### **POWER LINE CONDUCTED EMISSION TEST:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| EUT CONFIGURE MODE | TESTED CONDITION |
|--------------------|------------------|
| A                  | WIFI (2.4G) Link |

**RADIATED EMISSION TEST (BELOW 1GHz):**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| EUT CONFIGURE MODE | MODE    | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|--------------------|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| A                  | 802.11b | 1 to 11           | 1              | DSSS                  | DBPSK           | 1.0              |

For the test results, only the worst case was shown in test report.

**TEST CONDITION:**

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | INPUT POWER(POE)   | TESTED BY |
|---------------|--------------------------|--------------------|-----------|
| RE<1G         | 25deg. C, 53%RH          | DC 5V from Adapter | Jelly     |
| PLC           | 20deg. C, 56%RH          | DC 5V from Adapter | Ming Bai  |



### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

- FCC Part 15, Subpart C, Section 15.247**
- KDB 558074 D01 15.247 Meas Guidance v05r02**
- ANSI C63.10-2013**

All test items have been performed and recorded as per the above standards.

### 3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| NO. | PRODUCT | BRAND   | MODEL NO. | SERIAL NO. | FCC ID |
|-----|---------|---------|-----------|------------|--------|
| 1   | Adapter | NETGEAR | AD2037M20 | NA         | NA     |

| NO. | DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|-----|--|
| 1   | NA                                     |



## 4 TEST TYPES AND RESULTS

### 4.1. CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

| FREQUENCY OF EMISSION (MHz) | CONDUCTED LIMIT (dB $\mu$ V) |          |
|-----------------------------|------------------------------|----------|
|                             | Quasi-peak                   | Average  |
| 0.15 ~ 0.5                  | 66 to 56                     | 56 to 46 |
| 0.5 ~ 5                     | 56                           | 46       |
| 5 ~ 30                      | 60                           | 50       |

- NOTES:**
1. The lower limit shall apply at the transition frequencies.
  2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
  3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 4.1.2 TEST INSTRUMENTS

| Equipment                   | Manufacturer  | Model No.       | Serial No.  | Next Cal.  |
|-----------------------------|---------------|-----------------|-------------|------------|
| EMI Test Receiver           | Rohde&Schwarz | ESR7            | 101494      | Mar. 07,22 |
| Artificial Mains Network    | Rohde&Schwarz | ENV216          | 101173      | Mar. 07,22 |
| Artificial Mains Network    | Rohde&Schwarz | ESH3-Z5         | 100317      | Mar. 07,22 |
| Voltage probe               | SCHWARZBECK   | TK 9421         | TK 9421-176 | Aug. 05,22 |
| Coaxial RF Cable ( 553 CE ) | /             | /               | /           | Jul. 27,22 |
| Test software               | ADT           | ADT_Cond_V7.3.7 | N/A         | N/A        |

- NOTES:**
1. The test was performed in shielded room 553.
  2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

#### 4.1.3 TEST PROCEDURES

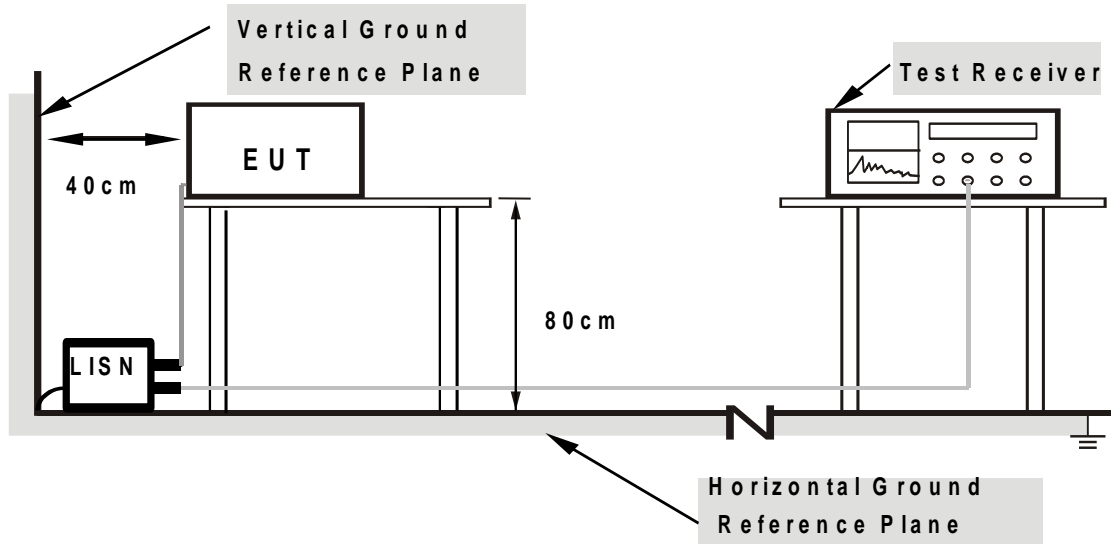
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.1.5 TEST SETUP



- Note: 1.Support units were connected to second LISN.  
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

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

#### 4.1.6 EUT OPERATING CONDITIONS

- Turned on the power and connected of all equipment.
- EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

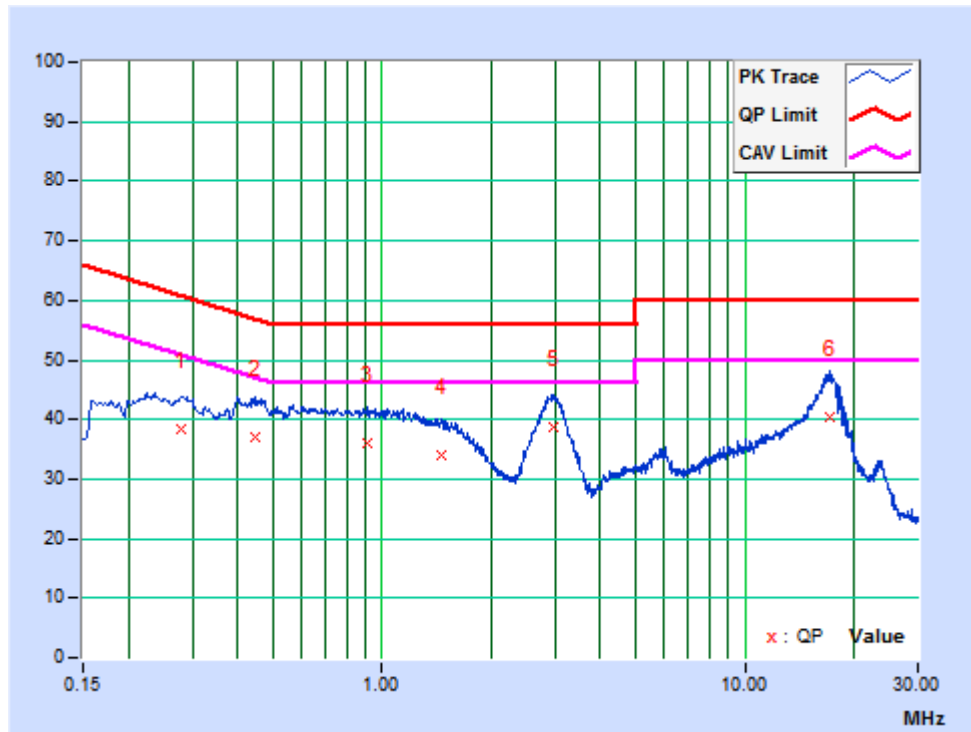
### 4.1.7 TEST RESULTS

#### CONDUCTED WORST-CASE DATA: WIFI

|              |      |                      |      |
|--------------|------|----------------------|------|
| <b>PHASE</b> | Line | <b>6dB BANDWIDTH</b> | 9kHz |
|--------------|------|----------------------|------|

| No       | Freq. [MHz]    | Corr. Factor (dB) | Reading Value [dB (uV)] |              | Emission Level [dB (uV)] |              | Limit [dB (uV)] |              | Margin (dB)   |               |
|----------|----------------|-------------------|-------------------------|--------------|--------------------------|--------------|-----------------|--------------|---------------|---------------|
|          |                |                   | Q.P.                    | AV.          | Q.P.                     | AV.          | Q.P.            | AV.          | Q.P.          | AV.           |
| 1        | 0.27797        | 9.94              | 28.32                   | 15.09        | 38.26                    | 25.03        | 60.88           | 50.88        | -22.62        | -25.85        |
| 2        | 0.44474        | 9.95              | 27.23                   | 13.62        | 37.18                    | 23.57        | 56.97           | 46.97        | -19.79        | -23.40        |
| 3        | 0.90600        | 9.99              | 26.02                   | 15.26        | 36.01                    | 25.25        | 56.00           | 46.00        | -19.99        | -20.75        |
| 4        | 1.45152        | 10.01             | 24.01                   | 15.77        | 34.02                    | 25.78        | 56.00           | 46.00        | -21.98        | -20.22        |
| <b>5</b> | <b>2.96925</b> | <b>10.05</b>      | <b>28.59</b>            | <b>22.04</b> | <b>38.64</b>             | <b>32.09</b> | <b>56.00</b>    | <b>46.00</b> | <b>-17.36</b> | <b>-13.91</b> |
| 6        | 17.11275       | 10.27             | 30.13                   | 17.74        | 40.40                    | 28.01        | 60.00           | 50.00        | -19.60        | -21.99        |

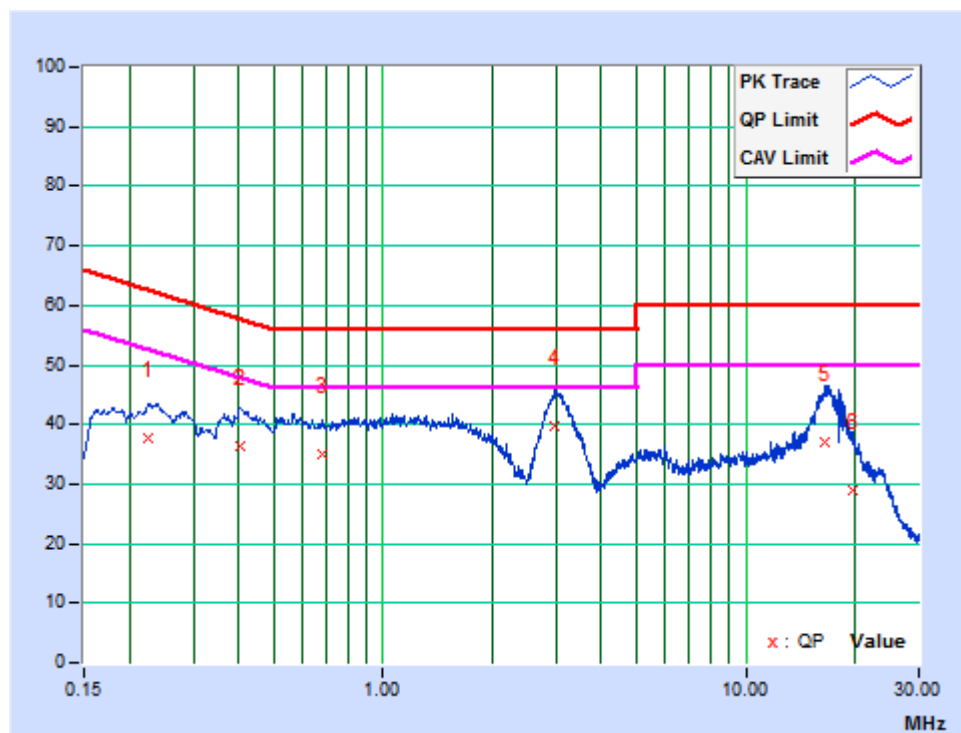
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



|              |         |                      |      |
|--------------|---------|----------------------|------|
| <b>PHASE</b> | Neutral | <b>6dB BANDWIDTH</b> | 9kHz |
|--------------|---------|----------------------|------|

| No | Freq. [MHz] | Corr. Factor (dB) | Reading Value [dB (uV)] |       | Emission Level [dB (uV)] |       | Limit [dB (uV)] |       | Margin (dB) |        |
|----|-------------|-------------------|-------------------------|-------|--------------------------|-------|-----------------|-------|-------------|--------|
|    |             |                   | Q.P.                    | AV.   | Q.P.                     | AV.   | Q.P.            | AV.   | Q.P.        | AV.    |
| 1  | 0.22504     | 9.94              | 27.82                   | 12.84 | 37.76                    | 22.78 | 62.63           | 52.63 | -24.87      | -29.85 |
| 2  | 0.40229     | 9.95              | 26.47                   | 12.27 | 36.42                    | 22.22 | 57.81           | 47.81 | -21.39      | -25.59 |
| 3  | 0.68100     | 9.98              | 24.93                   | 13.47 | 34.91                    | 23.45 | 56.00           | 46.00 | -21.09      | -22.55 |
| 4  | 2.98500     | 10.06             | 29.81                   | 20.48 | 39.87                    | 30.54 | 56.00           | 46.00 | -16.13      | -15.46 |
| 5  | 16.45125    | 10.26             | 26.62                   | 15.71 | 36.88                    | 25.97 | 60.00           | 50.00 | -23.12      | -24.03 |
| 6  | 19.72050    | 10.34             | 18.53                   | 8.58  | 28.87                    | 18.92 | 60.00           | 50.00 | -31.13      | -31.08 |

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



## 4.2. RADIATED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

| FREQUENCIES<br>(MHz) | FIELD STRENGTH<br>(microvolts/meter) | MEASUREMENT DISTANCE<br>(meters) |
|----------------------|--------------------------------------|----------------------------------|
| 0.009 ~ 0.490        | 2400/F(kHz)                          | 300                              |
| 0.490 ~ 1.705        | 24000/F(kHz)                         | 30                               |
| 1.705 ~ 30.0         | 30                                   | 30                               |
| 30 ~ 88              | 100                                  | 3                                |
| 88 ~ 216             | 150                                  | 3                                |
| 216 ~ 960            | 200                                  | 3                                |
| Above 960            | 500                                  | 3                                |

#### NOTES:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

**4.2.2 TEST INSTRUMENTS**

| <b>Equipment</b>                    | <b>Manufacturer</b> | <b>Model No.</b>         | <b>Serial No.</b> | <b>Next Cal.</b> |
|-------------------------------------|---------------------|--------------------------|-------------------|------------------|
| EMI Test Receiver                   | Rohde&Schwarz       | ESU40                    | 100449            | Mar. 07,22       |
| Signal and Spectrum Analyzer        | Rohde&Schwarz       | FSV7                     | 102331            | May 09, 22       |
| Active Loop Antenna (9KHz -30MHz)   | SCHWARZBECK         | FMZB 1519B               | 1519B-045         | May 20,22        |
| Amplifier (9KHz -1GHz)              | Burgeon             | BPA-530                  | 100210            | Mar. 13,22       |
| Bilog Antenna (20MHz -2GHz)         | Teseq               | CBL 6111D                | 30643             | May 21,22        |
| Horn Antenna (1GHz -18GHz)          | ETS -Lindgren       | 3117                     | 00062558          | May 21,22        |
| Horn Antenna (18GHz -40GHz)         | SCHWARZBECK         | BBHA 9170                | BBHA9170147       | May 14,22        |
| 3m Semi-anechoic Chamber            | ETS-LINDGREN        | 9m*6m*6m                 | NSEMC003          | May 22,22        |
| Test Software                       | ADT                 | ADT_Radiated_V7.6.15.9.2 | N/A               | N/A              |
| Broadband Preamplifier (1GHz~18GHz) | SCHWARZBECK         | BBV9718                  | 305               | May 12,22        |
| Pre-Amplifier (18GHz-40GHz)         | EMCI                | EMC 184045               | 980102            | Mar. 13,22       |
| Test Software                       | ADT                 | ADT_Radiated_V7.6.15.9.2 | N/A               | N/A              |
| BLUETOOTH TESTER                    | Rohde&Schwarz       | CBT32                    | 100811            | N/A              |

**NOTES:**

1. The test was performed in 966 Chamber.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 749762.

### 4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. For below 1GHz was used bilog antenna, and above 1GHz was used horn antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.
- g. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

#### NOTES:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes, the worst-case test configuration was reported on the file test setup photo.

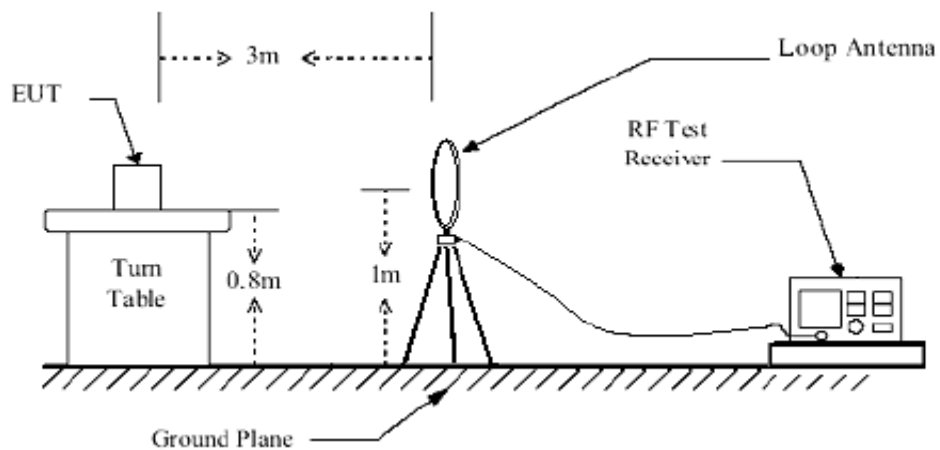


#### 4.2.4 DEVIATION FROM TEST STANDARD

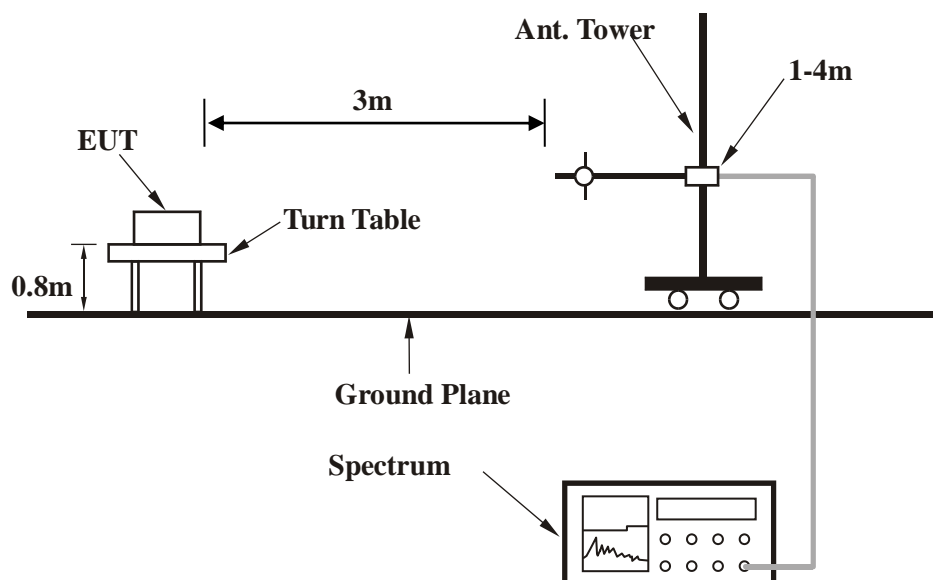
No deviation.

#### 4.2.5 TEST SETUP

##### Below 30MHz test setup



##### Below 1GHz test setup



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

#### 4.2.6 EUT OPERATING CONDITIONS

- Placed the EUT on a testing table.
- Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the EUT in full functions.

#### 4.2.7 TEST RESULTS

##### BELOW 1GHz WORST-CASE DATA:

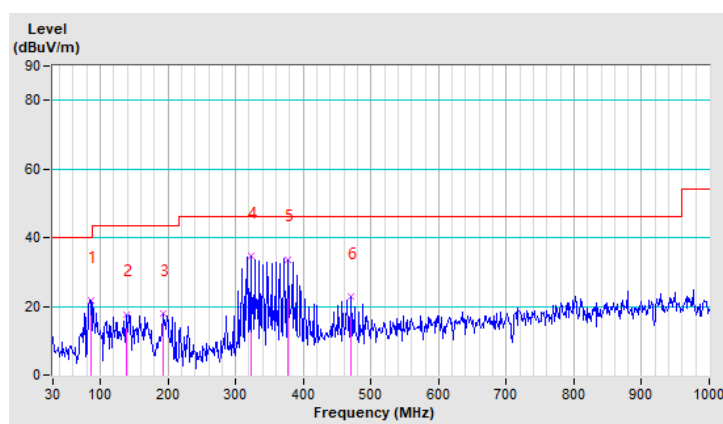
##### ANT 1

|                        |              |                              |                 |
|------------------------|--------------|------------------------------|-----------------|
| <b>CHANNEL</b>         | TX Channel 1 | <b>DETECTOR<br/>FUNCTION</b> | Quasi-Peak (QP) |
| <b>FREQUENCY RANGE</b> | 9KHz ~ 1GHz  |                              |                 |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|---|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.   | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1   | 86.23          | 21.62 QP                      | 40.00             | -18.38         | 1.00 H                   | 102                        | 40.50                  | -18.88                         |
| 2   | 138.25         | 17.72 QP                      | 43.50             | -25.78         | 1.00 H                   | 243                        | 32.71                  | -14.99                         |
| 3   | 193.07         | 18.01 QP                      | 43.50             | -25.49         | 1.00 H                   | 186                        | 34.82                  | -16.81                         |
| 4   | 322.41         | 34.76 QP                      | 46.00             | -11.24         | 1.00 H                   | 256                        | 47.68                  | -12.92                         |
| 5   | 377.23         | 33.72 QP                      | 46.00             | -12.28         | 1.00 H                   | 234                        | 45.64                  | -11.92                         |
| 6   | 470.01         | 22.78 QP                      | 46.00             | -23.22         | 1.00 H                   | 298                        | 32.97                  | -10.19                         |

##### REMARKS:

- Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
- Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- The emission levels of other frequencies were greater than 20dB margin.
- 9KHz~30MHz have been test and test data more than 20dB margin.
- Margin value = Emission level – Limit value.

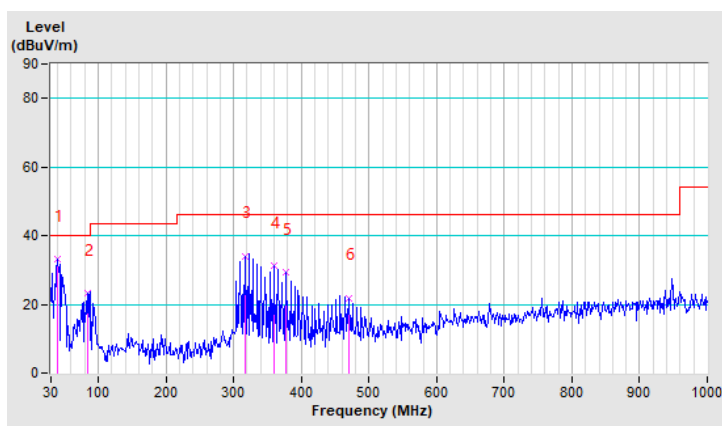


|                        |              |                              |                 |
|------------------------|--------------|------------------------------|-----------------|
| <b>CHANNEL</b>         | TX Channel 1 | <b>DETECTOR<br/>FUNCTION</b> | Quasi-Peak (QP) |
| <b>FREQUENCY RANGE</b> | 9KHz ~ 1GHz  |                              |                 |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|---|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.   | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1   | 39.84          | 33.04 QP                      | 40.00             | -6.96          | 1.00 V                   | 256                        | 47.56                  | -14.52                         |
| 2   | 83.42          | 23.25 QP                      | 40.00             | -16.75         | 1.00 V                   | 146                        | 42.26                  | -19.01                         |
| 3   | 316.78         | 34.11 QP                      | 46.00             | -11.89         | 1.00 V                   | 165                        | 47.18                  | -13.07                         |
| 4   | 358.96         | 31.41 QP                      | 46.00             | -14.59         | 1.00 V                   | 235                        | 43.67                  | -12.26                         |
| 5   | 377.23         | 29.25 QP                      | 46.00             | -16.75         | 1.00 V                   | 203                        | 41.17                  | -11.92                         |
| 6   | 470.01         | 21.92 QP                      | 46.00             | -24.08         | 1.00 V                   | 138                        | 32.11                  | -10.19                         |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value.



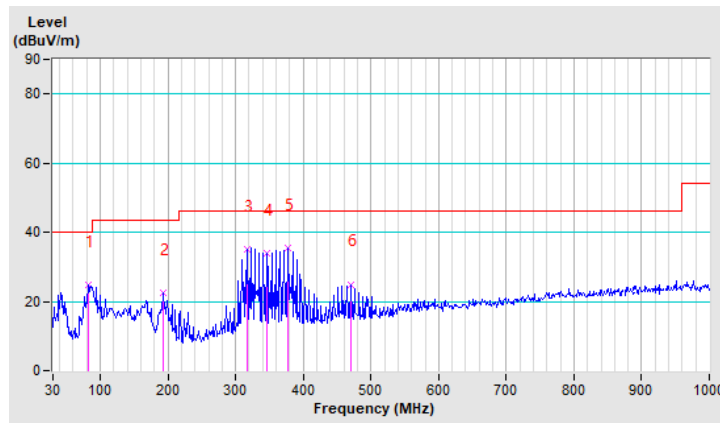
**ANT 2**

|                        |              |                              |                 |
|------------------------|--------------|------------------------------|-----------------|
| <b>CHANNEL</b>         | TX Channel 1 | <b>DETECTOR<br/>FUNCTION</b> | Quasi-Peak (QP) |
| <b>FREQUENCY RANGE</b> | 9KHz ~ 1GHz  |                              |                 |

| <b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b> |                        |  |                           |                        |                                   |                                     |                                 |   |
|--|------------------------|--|---------------------------|------------------------|-----------------------------------|-------------------------------------|---------------------------------|---|
| <b>NO.</b>   | <b>FREQ.<br/>(MHz)</b> | <b>EMISSION<br/>LEVEL<br/>(dBuV/m)</b> | <b>LIMIT<br/>(dBuV/m)</b> | <b>MARGIN<br/>(dB)</b> | <b>ANTENNA<br/>HEIGHT<br/>(m)</b> | <b>TABLE<br/>ANGLE<br/>(Degree)</b> | <b>RAW<br/>VALUE<br/>(dBuV)</b> | <b>CORRECTION<br/>FACTOR<br/>(dB/m)</b> |
| 1  | 82.01                  | 24.71 QP                               | 40.00                     | -15.29                 | 1.00 H                            | 102                                 | 43.67                           | -18.96                                  |
| 2  | 193.07                 | 22.52 QP                               | 43.50                     | -20.98                 | 1.00 H                            | 325                                 | 39.33                           | -16.81                                  |
| 3  | 316.78                 | 34.90 QP                               | 46.00                     | -11.10                 | 1.00 H                            | 156                                 | 47.97                           | -13.07                                  |
| 4  | 346.30                 | 33.92 QP                               | 46.00                     | -12.08                 | 1.00 H                            | 256                                 | 46.41                           | -12.49                                  |
| 5  | 377.23                 | 35.33 QP                               | 46.00                     | -10.67                 | 1.00 H                            | 305                                 | 47.25                           | -11.92                                  |
| 6  | 470.01                 | 24.95 QP                               | 46.00                     | -21.05                 | 1.00 H                            | 232                                 | 35.14                           | -10.19                                  |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value.

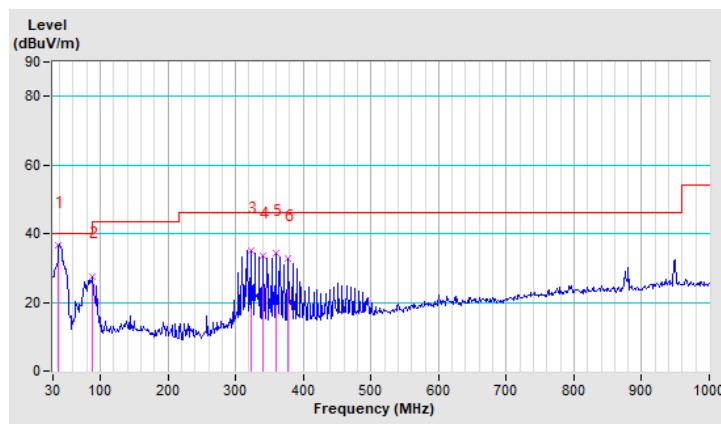


|                        |              |                              |                 |
|------------------------|--------------|------------------------------|-----------------|
| <b>CHANNEL</b>         | TX Channel 1 | <b>DETECTOR<br/>FUNCTION</b> | Quasi-Peak (QP) |
| <b>FREQUENCY RANGE</b> | 9KHz ~ 1GHz  |                              |                 |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|---|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.   | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1   | 38.43          | 36.55 QP                      | 40.00             | -3.45          | 1.00 V                   | 315                        | 51.30                  | -14.75                         |
| 2   | 89.04          | 27.63 QP                      | 43.50             | -15.87         | 1.00 V                   | 253                        | 46.49                  | -18.86                         |
| 3   | 322.41         | 35.17 QP                      | 46.00             | -10.83         | 1.00 V                   | 156                        | 48.09                  | -12.92                         |
| 4   | 340.68         | 33.50 QP                      | 46.00             | -12.50         | 1.00 V                   | 263                        | 46.09                  | -12.59                         |
| 5   | 358.96         | 34.38 QP                      | 46.00             | -11.62         | 1.00 V                   | 253                        | 46.64                  | -12.26                         |
| 6   | 377.23         | 32.90 QP                      | 46.00             | -13.10         | 1.00 V                   | 138                        | 44.82                  | -11.92                         |

**REMARKS:**

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value.





Test Report No.: RF2109WDG0258

## 4 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



Test Report No.: RF2109WDG0258

## 5 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---