

**FCC - TEST REPORT**Report Number : **709502301742-00A** Date of Issue: July 26, 2023

Model : Fotric P9, Fotric P8, Fotric P7, Fotric P6, Fotric P5, Fotric P4

Product Type : Infrared Thermal Camera

Applicant : FOTRIC INC.

Address : No. 14, Lane 2500, Xiupu Road, Pudong, 201201 Shanghai,  
PEOPLE'S REPUBLIC OF CHINA

Manufacturer : FOTRIC INC.

Address : No. 14, Lane 2500, Xiupu Road, Pudong, 201201 Shanghai,  
PEOPLE'S REPUBLIC OF CHINATest Result : ☒ Positive ☐ NegativeTotal pages including  
Appendices : 50

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch is a subcontractor to TÜV SÜD Product Service GmbH according to the principles outlined in ISO 17025.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch reports apply only to the specific samples tested under stated test conditions. Construction of the actual test samples has been documented. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. The manufacturer/importer is responsible to the Competent Authorities in Europe for any modifications made to the production units which result in non-compliance to the relevant regulations. TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval.

## 1 Table of Contents

|     |                                              |    |
|-----|----------------------------------------------|----|
| 1   | Table of Contents.....                       | 2  |
| 2   | Details about the Test Laboratory .....      | 3  |
| 3   | Description of the Equipment under Test..... | 4  |
| 4   | Summary of Test Standards.....               | 6  |
| 5   | Summary of Test Results .....                | 7  |
| 6   | General Remarks.....                         | 8  |
| 7   | Test Setups.....                             | 9  |
| 8   | Systems test configuration .....             | 12 |
| 9   | Technical Requirement .....                  | 14 |
| 9.1 | Conducted Emission.....                      | 14 |
| 9.2 | Emission bandwidth .....                     | 19 |
| 9.3 | Maximum conducted output power .....         | 21 |
| 9.4 | Maximum power spectral density.....          | 24 |
| 9.5 | Frequencies Stability.....                   | 26 |
| 9.6 | Unwanted emissions .....                     | 37 |
| 10  | Test Equipment List .....                    | 47 |
| 11  | System Measurement Uncertainty.....          | 48 |
| 12  | Photographs of Test Set-ups.....             | 49 |
| 13  | Photographs of EUT.....                      | 50 |



## 2 Details about the Test Laboratory

### Details about the Test Laboratory

#### Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch  
No.16 Lane, 1951 Du Hui Road,  
Shanghai 201108,  
P.R. China

Test Firm FCC  
Registration  
Number: 820234

Designation  
number: CN1183

IC Company  
Number: 25988

CAB identifier: CN0101

Telephone: +86 21 6141 0123  
Fax: +86 21 6140 8600

### 3 Description of the Equipment under Test

|                            |                                                                                                                                                                                                                                                                                                                                        |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product:                   | Infrared Thermal Camera                                                                                                                                                                                                                                                                                                                |
| Model no.:                 | Fotric P9, Fotric P8, Fotric P7, Fotric P6, Fotric P5, Fotric P4                                                                                                                                                                                                                                                                       |
| FCC ID:                    | 2AZTCJAGUAR                                                                                                                                                                                                                                                                                                                            |
| Options and accessories:   | Test harness                                                                                                                                                                                                                                                                                                                           |
| Rating:                    | DC 3.6V Li-ion Battery                                                                                                                                                                                                                                                                                                                 |
| RF Transmission Frequency: | 2402~2480MHz for Bluetooth<br>For 2.4G & 5G Wi-Fi<br>For 802.11b/g/n-HT20: 2412~2462 MHz<br>For 802.11n-HT40: 2422~2452 MHz<br>5180~5240 MHz (U-NII-1)<br>5260~5320 MHz (U-NII-2A)<br>5500~5720 MHz (U-NII-2C)<br>5745~5825 MHz (U-NII-3)                                                                                              |
| No. of Operated Channel:   | 79 channels for Bluetooth 4.2+EDR<br>40 channels for Bluetooth 4.2 BLE<br>2.4GHz WIFI: 11 for 802.11b/802.11g/802.11(H20);<br>7 for 802.11n(HT40)<br>5180~5240 MHz (U-NII-1): Channel 36 - 48<br>5260~5320 MHz (U-NII-2A): Channel 52 - 64<br>5500~5720 MHz (U-NII-2C): Channel 100 -144<br>5745~5825 MHz (U-NII-3): Channel 149 - 165 |
| Modulation:                | Bluetooth 4.2+EDR FHSS: GFSK, $\pi/4$ DQPSK, 8DPSK<br>Bluetooth 4.2+BLE DHSS: GFSK<br>For Wi-Fi: Direct Sequence Spread Spectrum (DSSS) for 802.11b<br>Orthogonal Frequency Division Multiplexing (OFDM) for 802.11a/b/g/n/ac                                                                                                          |
| Hardware Version:          | 0.6.2.4                                                                                                                                                                                                                                                                                                                                |
| Software Version:          | V3.0.0                                                                                                                                                                                                                                                                                                                                 |
| Data speed:                | 1. Bluetooth 4.2+EDR FHSS: 1Mbps, 2Mbps, 3Mbps<br>2. Bluetooth 4.2+BLE DHSS: 1Mbps<br>3. Wi-Fi: 11b 1 ~ 11Mbps,<br>11g/a 6 ~ 54Mbps, 11n HT20 6.5 ~ 72.2Mbps,<br>11n HT 40 13.5 ~ 150Mbps,<br>11ac VHT40 13.5 ~ 200Mbps,<br>11ac VHT80 29.3 ~ 433.3Mbps                                                                                |



China

Antenna Type: PIFA Antenna

Antenna Gain: 1.79dBi for 2.4GHz; 7.19dBi for 5GHz

Description of the EUT: The Equipment Under Test (EUT) is an Infrared Thermal Camera with Bluetooth and Wi-Fi Module. The EUT support Bluetooth 4.2+EDR and support BLE function and Wi-Fi operated at 5GHz and 2.4GHz. Only 5G Wi-Fi included in this report.

Test sample no.: SHA-716542-2

The sample's mentioned in this report is/are submitted/ supplied/ manufactured by client. The laboratory therefore assumes no responsibility for accuracy of information on the brand name, model number, origin of manufacture, consignment, antenna gain or any information supplied.



China

## 4 Summary of Test Standards

| Test Standards                      |                                                                                                         |
|-------------------------------------|---------------------------------------------------------------------------------------------------------|
| FCC Part 15 Subpart E, 2021 Edition | PART 15 - RADIO FREQUENCY DEVICES<br>Subpart E - Unlicensed National Information Infrastructure Devices |

Test Method:

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

KDB 789033 D02 General UNII Test Procedures New Rules v02r01

ANSI C63.10-2013, American National Standard for Testing Unlicensed Wireless Devices

## 5 Summary of Test Results

| Technical Requirements                                                                                                      |                                  |            |           |                                     |                          |                          |
|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------|-----------|-------------------------------------|--------------------------|--------------------------|
| FCC Part 15 Subpart C                                                                                                       |                                  |            |           |                                     |                          |                          |
| Test Condition                                                                                                              |                                  | Pages      | Test Site | Test Result                         |                          |                          |
|                                                                                                                             |                                  |            |           | Pass                                | Fail                     | N/A                      |
| §15.207                                                                                                                     | Conducted emission AC power port | 14-18      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.407(e)                                                                                                                  | Emission bandwidth               | 19-20      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15.407(a)(i)                                                                                                                | Maximum Conducted Output Power   | 21-22      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15.407(a)(i)                                                                                                                | Maximum Power Spectral Density   | 23-24      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.407(g)                                                                                                                  | Frequencies Stability            | 25-34      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.407(b)(1),<br>15.407(b)(2),<br>15.407(b)(3),<br>15.407(b)(4),<br>15.407(b)(5),<br>15.407(b)(6),<br>15.407(b)(7), 15.209 | Unwanted Emissions               | 35-43      | Site 1    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| §15.203                                                                                                                     | Antenna requirement              | See note 1 |           | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Remark 1: The EUT only operation at 5G Wi-Fi UNII Band (5180MHz-5240MHz, 5260MHz-5320MHz, 5500MHz-5720MHz, 5745MHz-5825MHz). The EUT operate as Clients Device without Radar Detection.

Note 1: The EUT uses a PIFA antenna, which gain is 7.19dBi for 5GHz. In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.

15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

## 6 General Remarks

### Remarks

This submittal(s) (test report) is intended for FCC ID: 2AZTCJAGUAR complies with Section 15.207, 15.209, 15.407 of the FCC Part 15, Subpart E Rules.

This report is only for 5GHz Wi-Fi. The TX and RX range is 5180MHz-5240MHz, 5260MHz-5320MHz, 5500MHz-5720MHz, 5745MHz-5825MHz.

According to the client's declaration, all the models have the same electrical circuit board and mechanical structure, except schematic and hardware circuit, except pixel, lens or physical size differences., so we chose the Fotric P7 to perform all the tests.

### SUMMARY:

All tests according to the regulations cited on page 6 were

■ - Performed

□ - **Not** Performed

The Equipment under Test

■ - **Fulfills** the general approval requirements.

□ - **Does not** fulfill the general approval requirements.

Sample Received Date: March 24, 2023

Testing Start Date: March 27, 2023

Testing End Date: July 25, 2023

- TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

Reviewed by:

Prepared by:

Tested by:


Hui TONG  
Review Engineer



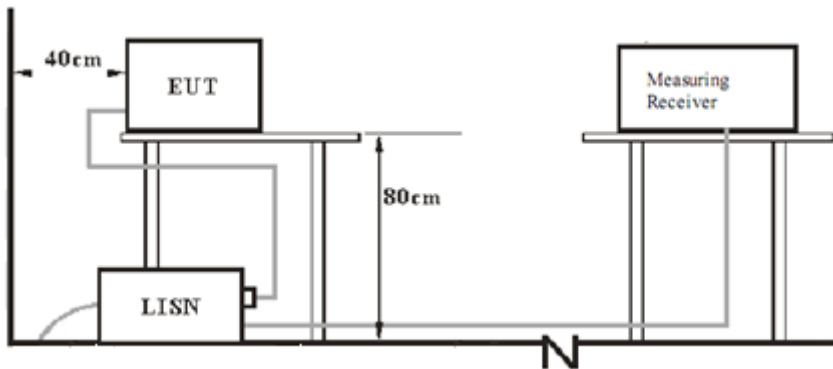
Jiaxi XU  
Project Engineer



Wang Yiquan  
Test Engineer

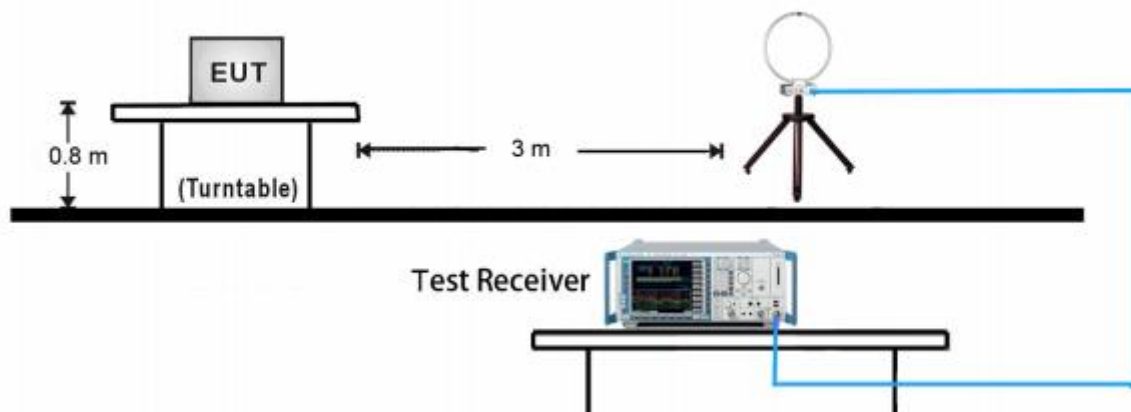
## 7 Test Setups

### 7.1 AC Power Line Conducted Emission test setups

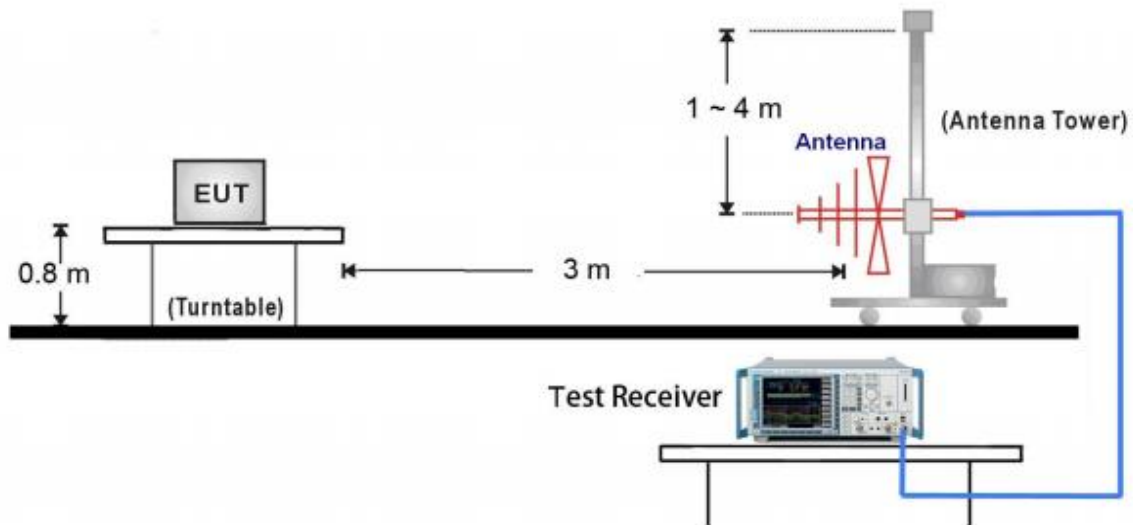


### 7.2 Radiated test setups

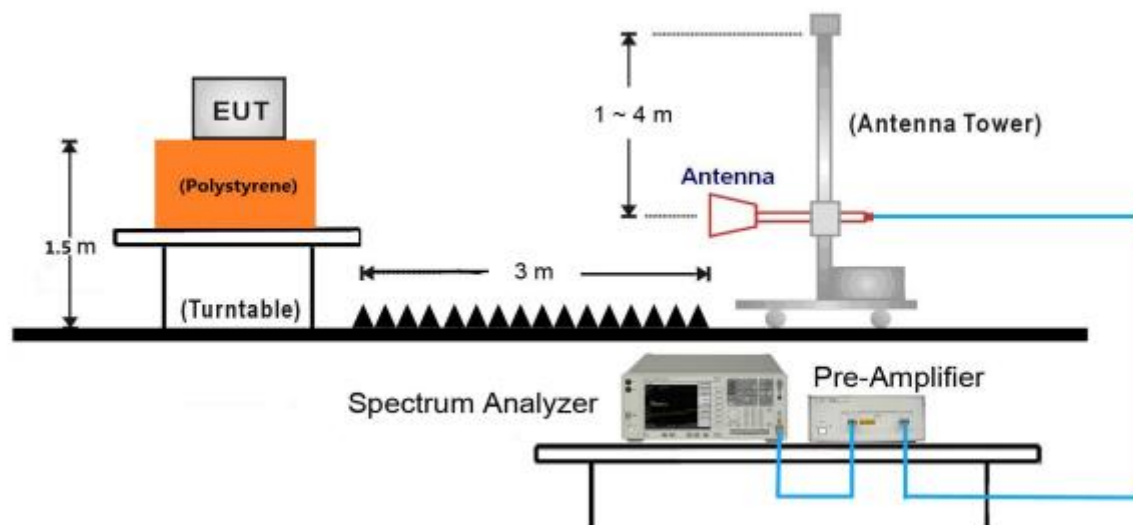
#### 9kHz ~ 30MHz Test Setup:



### 30MHz ~ 1GHz Test Setup:



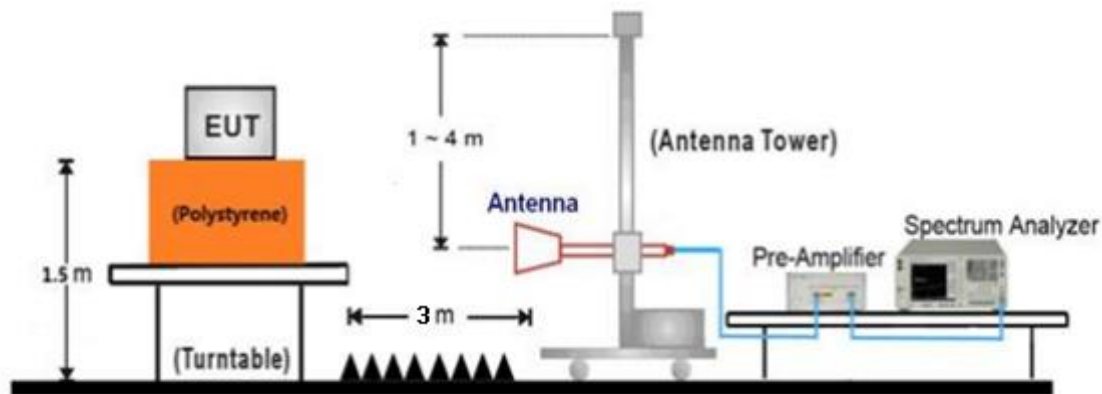
### 1GHz ~ 18GHz Test Setup:



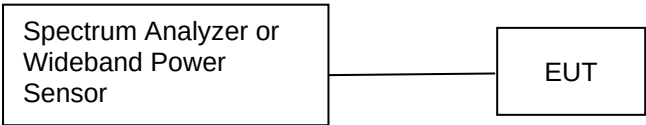


China

18GHz ~ 40GHz Test Setup:



7.3 Conducted RF test setups



## 8 Systems test configuration

Auxiliary Equipment Used during Test:

| DESCRIPTION | MANUFACTURER | MODEL NO.(SHIELD) | S/N(LENGTH) |
|-------------|--------------|-------------------|-------------|
| Notebook    | Lenovo       | X240              | --          |

Test software: QRCT.exe, which used to control the EUT in continues transmitting mode.

The system was configured to channel:

| Test Mode                                  | Channel (MHz)    |                 |                 |
|--------------------------------------------|------------------|-----------------|-----------------|
| 802.11a,<br>802.11n HT20<br>802.11ac VHT20 | 5G WIFI-Band 1   |                 |                 |
|                                            | CH36 (5180MHz)   | CH40 (5200MHz)  | CH48 (5240MHz)  |
|                                            | 5G WIFI-Band 2   |                 |                 |
|                                            | CH52 (5260MHz)   | CH56 (5280MHz)  | CH64 (5320MHz)  |
|                                            | 5G WIFI-Band 3   |                 |                 |
|                                            | CH100 (5500MHz)  | CH116 (5600MHz) | CH140 (5700MHz) |
|                                            | CH144 (5720MHz)  |                 |                 |
|                                            | 5G WIFI-Band 4   |                 |                 |
|                                            | CH149 (5745MHz), | CH157 (5785MHz) | CH165 (5825MHz) |

| Test Mode                      | Channel (MHz)   |                 |                 |
|--------------------------------|-----------------|-----------------|-----------------|
| 802.11n HT40<br>802.11ac VHT40 | 5G WIFI-Band 1  |                 |                 |
|                                | CH38 (5190MHz)  | CH46 (5230MHz)  |                 |
|                                | 5G WIFI-Band 2  |                 |                 |
|                                | CH54 (5270MHz)  | CH62 (5310MHz)  |                 |
|                                | 5G WIFI-Band 3  |                 |                 |
|                                | CH102 (5510MHz) | CH118 (5590MHz) | CH134 (5670MHz) |
|                                | CH142 (5710MHz) |                 |                 |
|                                | 5G WIFI-Band 4  |                 |                 |
|                                | CH151 (5755MHz) | CH159 (5795MHz) |                 |

| Test Mode      | Channel (MHz)   |                 |                 |
|----------------|-----------------|-----------------|-----------------|
| 802.11ac VHT80 | 5G WIFI-Band 1  |                 |                 |
|                | CH42 (5210MHz)  |                 |                 |
|                | 5G WIFI-Band 2  |                 |                 |
|                | CH58 (5290MHz)  |                 |                 |
|                | 5G WIFI-Band 3  |                 |                 |
|                | CH106 (5530MHz) | CH123 (5610MHz) | CH138 (5690MHz) |
|                | 5G WIFI-Band 4  |                 |                 |
|                | CH155 (5775MHz) |                 |                 |

Note: According to FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01, Channels: CH 142 (5710MHz) and CH 144 (5720MHz) were chose to perform Conducted output power and emission bandwidth testing.

The pre-test has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates.

| Modulation Type        | Data Rate             |
|------------------------|-----------------------|
| 802.11a OFDM           | 6Mbps                 |
| 802.11n (HT20): OFDM   | MCS0 (6.5Mbps)        |
| 802.11n (HT40): OFDM   | MCS0 (13.5Mbps)       |
| 802.11ac (VHT20): OFDM | 11ac 6.5Mbps (20MHz)  |
| 802.11ac (VHT40): OFDM | 11ac 13.5Mbps (40MHz) |
| 802.11ac (VHT80): OFDM | 11ac 29.3Mbps (80MHz) |

### Device Capabilities

Duty Cycle: 100%

**Note:** 2.4GHz WLAN (DTS) operation is possible in 20MHz, and 40MHz channel bandwidths.  
5GHz WLAN (DTS) operation is possible in 20MHz, 40MHz and 80MHz channel bandwidths.

## 9 Technical Requirement

### 9.1 Conducted Emission

#### Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

#### Limit

| Frequency<br>MHz | QP Limit<br>dB $\mu$ V | AV Limit<br>dB $\mu$ V |
|------------------|------------------------|------------------------|
| 0.150-0.500      | 66-56*                 | 56-46*                 |
| 0.500-5          | 56                     | 46                     |
| 5-30             | 60                     | 50                     |

Decreasing linearly with logarithm of the frequency

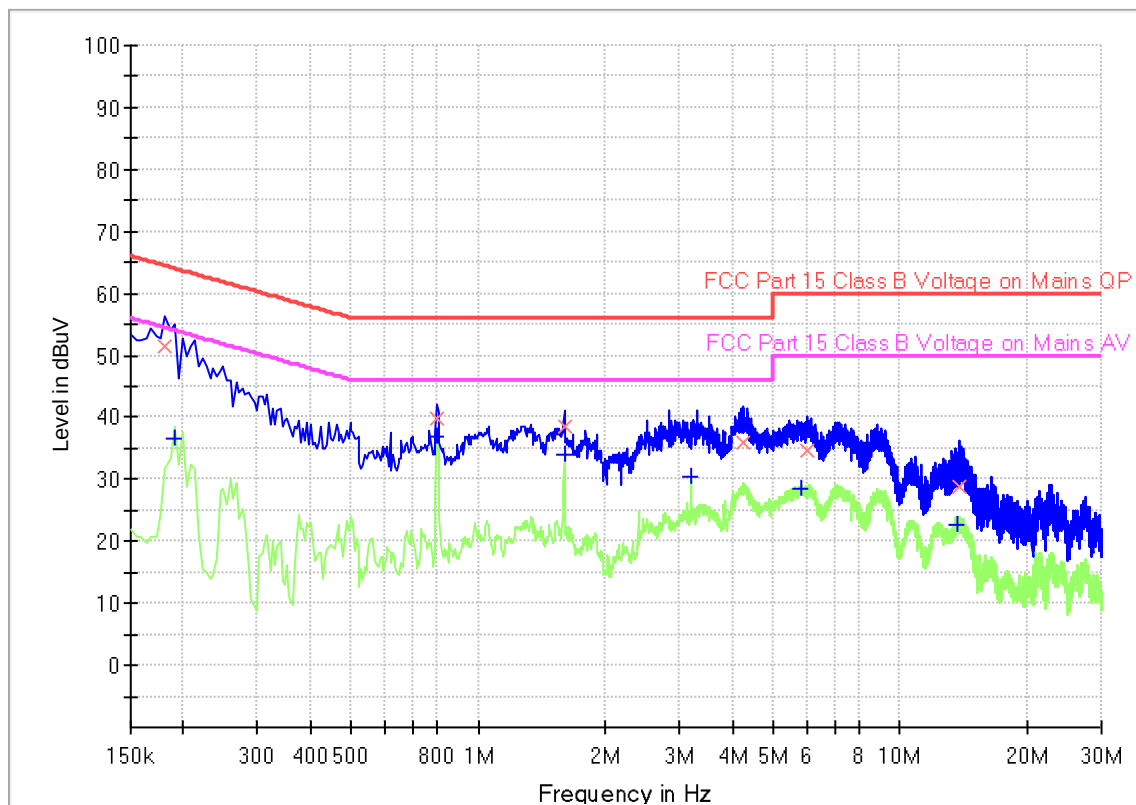
**Conducted Emission****150k-30MHz Conducted Emission Test****EUT Information**

EUT Name: Infrared Thermal Camera  
 Model: Fotric P7  
 Client: FOTRIC INC.  
 Op Cond: Power on, TX\_5190MHz AC 230V, 50Hz, T21.3, H56.3%, P100.6kPa  
 Operator: Wang Yiquan  
 Standard: FCC part 15.209(a)  
 Comment: Phase L  
 Sample No.: SHA-716542-2

**Scan Setup: Voltage with 2-Line-LISN pre [EMI conducted]**

Hardware Setup: Voltage with 2-Line-LISN  
 Receiver: [ESR 3]  
 Level Unit: dBuV

| Subrange         | Step Size | Detectors | IF BW  | Meas. Time | Preamplifier |
|------------------|-----------|-----------|--------|------------|--------------|
| 9 kHz - 150 kHz  | 100 Hz    | PK+       | 200 Hz | 0.02 s     | 0 dB         |
| 150 kHz - 30 MHz | 4.5 kHz   | PK+; AVG  | 9 kHz  | 0.01 s     | 0 dB         |





## Final Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.181500        | 51.43            | ---             | 64.42        | 12.99       | 1000.0          | 9.000           | L1   | 19.6       |
| 0.190500        | ---              | 36.47           | 54.01        | 17.54       | 1000.0          | 9.000           | L1   | 19.6       |
| 0.798000        | ---              | 36.88           | 46.00        | 9.12        | 1000.0          | 9.000           | L1   | 19.6       |
| 0.798000        | 39.77            | ---             | 56.00        | 16.23       | 1000.0          | 9.000           | L1   | 19.6       |
| 1.599000        | 38.58            | ---             | 56.00        | 17.42       | 1000.0          | 9.000           | L1   | 19.6       |
| 1.599000        | ---              | 34.01           | 46.00        | 11.99       | 1000.0          | 9.000           | L1   | 19.6       |
| 3.201000        | ---              | 30.33           | 46.00        | 15.67       | 1000.0          | 9.000           | L1   | 19.6       |
| 4.240500        | 35.91            | ---             | 56.00        | 20.09       | 1000.0          | 9.000           | L1   | 19.6       |
| 5.851500        | ---              | 28.34           | 50.00        | 21.66       | 1000.0          | 9.000           | L1   | 19.6       |
| 6.009000        | 34.52            | ---             | 60.00        | 25.48       | 1000.0          | 9.000           | L1   | 19.6       |
| 13.690500       | ---              | 22.60           | 50.00        | 27.40       | 1000.0          | 9.000           | L1   | 19.8       |
| 13.771500       | 28.86            | ---             | 60.00        | 31.14       | 1000.0          | 9.000           | L1   | 19.8       |

# 150k-30MHz Conducted Emission Test

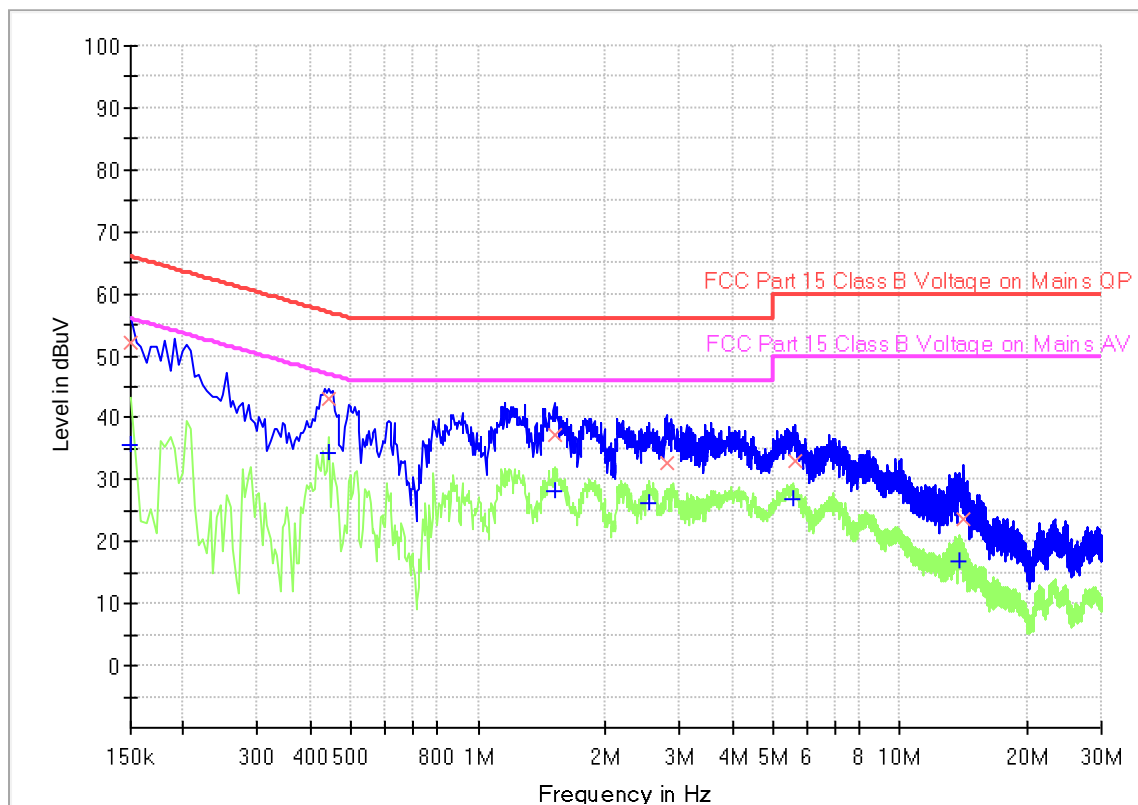
## EUT Information

EUT Name: Infrared Thermal Camera  
 Model: Fotric P7  
 Client: FOTRIC INC.  
 Op Cond: Power on, TX\_5190MHz AC 230V, 50Hz, T21.3, H56.3%, P100.6kPa  
 Operator: Wang Yiquan  
 Standard: FCC part 15.209(a)  
 Comment: Phase N  
 Sample No.: SHA-716542-2

## Scan Setup: Voltage with 2-Line-LISN pre [EMI conducted]

Hardware Setup: Voltage with 2-Line-LISN  
 Receiver: [ESR 3]  
 Level Unit: dBuV

| Subrange         | Step Size | Detectors | IF BW  | Meas. Time | Preamplifier |
|------------------|-----------|-----------|--------|------------|--------------|
| 9 kHz - 150 kHz  | 100 Hz    | PK+       | 200 Hz | 0.02 s     | 0 dB         |
| 150 kHz - 30 MHz | 4.5 kHz   | PK+; AVG  | 9 kHz  | 0.01 s     | 0 dB         |





## Final Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Line | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|-----------------|-----------------|------|------------|
| 0.150000        | ---              | 35.46           | 56.00        | 20.54       | 1000.0          | 9.000           | N    | 19.6       |
| 0.150000        | 52.18            | ---             | 66.00        | 13.82       | 1000.0          | 9.000           | N    | 19.6       |
| 0.442500        | ---              | 34.25           | 47.01        | 12.76       | 1000.0          | 9.000           | N    | 19.6       |
| 0.442500        | 42.97            | ---             | 57.01        | 14.04       | 1000.0          | 9.000           | N    | 19.6       |
| 1.513500        | 37.21            | ---             | 56.00        | 18.79       | 1000.0          | 9.000           | N    | 19.6       |
| 1.513500        | ---              | 28.17           | 46.00        | 17.83       | 1000.0          | 9.000           | N    | 19.6       |
| 2.535000        | ---              | 26.24           | 46.00        | 19.76       | 1000.0          | 9.000           | N    | 19.6       |
| 2.791500        | 32.82            | ---             | 56.00        | 23.18       | 1000.0          | 9.000           | N    | 19.6       |
| 5.550000        | ---              | 26.80           | 50.00        | 23.20       | 1000.0          | 9.000           | N    | 19.7       |
| 5.644500        | 32.90            | ---             | 60.00        | 27.10       | 1000.0          | 9.000           | N    | 19.7       |
| 13.762500       | ---              | 16.78           | 50.00        | 33.22       | 1000.0          | 9.000           | N    | 19.9       |
| 14.131500       | 23.50            | ---             | 60.00        | 36.50       | 1000.0          | 9.000           | N    | 19.9       |

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)  
 Factor (dB) = Cable Loss (dB) + LISN Factor (dB) + 10dB Attenuator

## 9.2 Emission bandwidth

### 1、 Test Method of 26dB Bandwidth

According to KDB789033 D02

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

**Limit:** No limit

### 2、 Test Method of 6dB Bandwidth

According to KDB789033 D02

- a) Set RBW = 100KHz
- b) Set the video bandwidth (VBW)  $\geq 3 \times \text{RBW}$
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

**Limit:**  $\geq 500\text{KHz}$

### 3、 Test Method of 99% Bandwidth

According to KDB789033 D02

- a) Set center frequency to the nominal EUT channel center frequency
- b) Set span = 1.5 times to 5.0 times the OBW.
- c) Set RBW = 1 % to 5 % of the OBW
- d) Set VBW  $\geq 3 \cdot \text{RBW}$
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f) Use the 99 % power bandwidth function of the instrument (if available).
- g) If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

**Limit:** No limit

Test result as below table:

**26dB Bandwidth Test Result:**

Test data should be referred to Appendix A for 709502301742-00A.

**99% Bandwidth Test Result**

Test data should be referred to Appendix A for 709502301742-00A.

**6dB Bandwidth Test Result**

Test data should be referred to Appendix A for 709502301742-00A.

### 9.3 Maximum conducted output power

#### Test Method

According to C63.10, the EUT was placed on 0.8m height table, the RF output of EUT was connected to the test power meter by RF cable. The path loss was compensated to the results for each measurement.

(1) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the following conditions are satisfied:

The EUT is configured to transmit continuously or to transmit with a constant duty cycle.

At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.

The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

(2) If the transmitter does not transmit continuously, measure the duty cycle,  $x$ , of the transmitter output signal as described in II.B.

(3) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

(4) Adjust the measurement in dBm by adding  $10 \log (1/x)$  where  $x$  is the duty cycle (e.g.,  $10 \log (1/0.25)$  if the duty cycle is 25%).

#### Limits:

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10 \log B$ , where  $B$  is the 26dB emission bandwidth in megahertz.

For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

For client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10 \log B$ , where  $B$  is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

## Test result as below table

| Test Mode  | Channel | Conducted Power (dBm) | Duty Factor (dB) | Total Power (dBm) | Limit[dBm]              | Verdict |
|------------|---------|-----------------------|------------------|-------------------|-------------------------|---------|
| 11A        | 5180    | 3.34                  | 0.58             | 3.92              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5200    | 2.73                  | 0.59             | 3.32              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5240    | 2.4                   | 0.59             | 2.99              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5260    | 3.13                  | 0.59             | 3.72              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5280    | 3.6                   | 0.59             | 4.19              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5320    | 3.93                  | 0.59             | 4.52              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5500    | 2.58                  | 0.59             | 3.17              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5600    | 2.22                  | 0.59             | 2.81              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5700    | 0.47                  | 0.59             | 1.06              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5720    | 0.01                  | 0.59             | 0.6               | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5745    | -1.08                 | 0.58             | -0.5              | $\leq 30$               | PASS    |
|            | 5785    | -1.85                 | 0.58             | -1.27             | $\leq 30$               | PASS    |
|            | 5825    | -1.82                 | 0.58             | -1.24             | $\leq 30$               | PASS    |
| 11N20SISO  | 5180    | 3.24                  | 0.62             | 3.86              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5200    | 2.32                  | 0.63             | 2.95              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5240    | 1.89                  | 0.63             | 2.52              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5260    | 3.06                  | 0.62             | 3.68              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5280    | 3.44                  | 0.62             | 4.06              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5320    | 3.87                  | 0.62             | 4.49              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5500    | 2.38                  | 0.62             | 3.00              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5600    | 2.03                  | 0.63             | 2.66              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5700    | 0.56                  | 0.62             | 1.18              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5720    | -0.42                 | 0.63             | 0.21              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5745    | -0.97                 | 0.63             | -0.34             | $\leq 30$               | PASS    |
|            | 5785    | -2.36                 | 0.62             | -1.74             | $\leq 30$               | PASS    |
|            | 5825    | -2.33                 | 0.62             | -1.71             | $\leq 30$               | PASS    |
| 11N40SISO  | 5190    | 3.53                  | 1.17             | 4.70              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5230    | 3.34                  | 1.16             | 4.50              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5270    | 3.6                   | 1.17             | 4.77              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5310    | 4.29                  | 1.17             | 5.46              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5510    | 2.92                  | 1.17             | 4.09              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5590    | 2.6                   | 1.17             | 3.77              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5670    | 0.92                  | 1.16             | 2.08              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5710    | 0.28                  | 1.46             | 1.74              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5755    | -0.62                 | 1.17             | 0.55              | $\leq 30$               | PASS    |
|            | 5795    | -0.8                  | 1.17             | 0.37              | $\leq 30$               | PASS    |
| 11AC20SISO | 5180    | 3.18                  | 0.62             | 3.80              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5200    | 2.6                   | 0.62             | 3.22              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5240    | 2.58                  | 0.62             | 3.20              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5260    | 3.24                  | 0.62             | 3.86              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5280    | 3.67                  | 0.62             | 4.29              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5320    | 3.8                   | 0.62             | 4.42              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5500    | 2.13                  | 0.63             | 2.76              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5600    | 1.83                  | 0.63             | 2.46              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5700    | 0.07                  | 0.63             | 0.70              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5720    | -0.49                 | 0.62             | 0.13              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5745    | -1.01                 | 0.63             | -0.38             | $\leq 30$               | PASS    |
|            | 5785    | -2.08                 | 0.62             | -1.46             | $\leq 30$               | PASS    |
|            | 5825    | -1.77                 | 0.62             | -1.15             | $\leq 30$               | PASS    |
| 11AC40SISO | 5190    | 3.46                  | 1.46             | 4.92              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5230    | 2.48                  | 1.45             | 3.93              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5270    | 3.61                  | 1.46             | 5.07              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5310    | 4.03                  | 1.46             | 5.49              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5510    | 2.77                  | 1.46             | 4.23              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5590    | 2.79                  | 1.46             | 4.25              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5670    | 0.69                  | 1.46             | 2.15              | $\leq 23.98-1.19=22.79$ | PASS    |
|            | 5710    | 0.44                  | 1.46             | 1.90              | $\leq 23.98-1.19=22.79$ | PASS    |



China

|            |      |       |      |             |                    |      |
|------------|------|-------|------|-------------|--------------------|------|
|            | 5755 | -0.86 | 1.45 | 0.59        | <=30               | PASS |
|            | 5795 | -1.24 | 1.46 | 0.22        | <=30               | PASS |
| 11AC80SISO | 5210 | 1.97  | 2.52 | 4.49        | <=23.98-1.19=22.79 | PASS |
|            | 5290 | 3.00  | 2.52 | <b>5.52</b> | <=23.98-1.19=22.79 | PASS |
|            | 5530 | 1.84  | 2.53 | 4.37        | <=23.98-1.19=22.79 | PASS |
|            | 5610 | 0.67  | 2.52 | 3.19        | <=23.98-1.19=22.79 | PASS |
|            | 5690 | -0.57 | 2.53 | 1.96        | <=23.98-1.19=22.79 | PASS |
|            | 5775 | -1.88 | 2.52 | 0.64        | <=30               | PASS |

## 9.4 Maximum power spectral density

### Test Method

According to C63.10, the EUT was placed on 0.8m height table, the RF output of EUT was connected to the test power meter by RF cable. The path loss was compensated to the results for each measurement.

1. Create an average power spectrum for the EUT operating mode being tested by following the instructions in II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power...." (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)
  2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
  3. Make the following adjustments to the peak value of the spectrum, if applicable:
    - a) If Method SA-2 or SA-2 Alternative was used, add  $10 \log (1/x)$ , where  $x$  is the duty cycle, to the peak of the spectrum.
    - b) If Method SA-3 Alternative was used and the linear mode was used in II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
  4. The result is the Maximum PSD over 1 MHz reference bandwidth.
  5. For devices operating in the bands 5.15–5.25 GHz, 5.25–5.35 GHz, and 5.47–5.725 GHz, the preceding procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in Section 15.407(a)(5). For devices operating in the band 5.725–5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth ( $< 1$  MHz, or  $< 500$  kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:
    - a) Set  $RBW \geq 1/T$ , where  $T$  is defined in II.B.I.a).
    - b) Set  $VBW \geq 3$  RBW.
    - c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add  $10 \log (500 \text{ kHz}/RBW)$  to the measured result, whereas RBW ( $< 500$  kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
    - d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add  $10 \log (1\text{MHz}/RBW)$  to the measured result, whereas RBW ( $< 1$  MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.
    - e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.
- Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the II.F.5.c) and II.F.5.d), since RBW=100 kHz is available on nearly all spectrum analyzers.



China

**Limit:** The maximum power spectral density shall not exceed 11dBm for the 5.15-5.25GHz, 5.25-5.35GHz, 5.47-5.725 GHz Band in any 1 megahertz band.  
For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30dBm in any 1 500kHz band.

For client devices in the 5.15–5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25–5.35 GHz and 5.47–5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or  $11 \text{ dBm} + 10 \log B$ , where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### Test Result:

Test data should be referred to Appendix A for 709502301742-00A.

## 9.5 Frequencies Stability

### Test Method

1. Connect the UUT to the spectrum analyzer
2. Set Centre Frequency of the channel under test.
3. Set Detector PEAK
4. Set RBW: 10KHz, VBW: 3RBW
5. Set Span: Encompass the entire emissions bandwidth (EBW) of the signal.
6. Allow the trace to stabilize, find the peak value of the power envelope and record the frequency, then calculated the frequency drift.

The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value.

User manual temperature is -20 to 50 °C.

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

Limit: 20ppm

Test Results (All conditions and all modes were performed, only list Worst-Case in the report)

Remark: NV is normal Voltage: 3.6Vdc, HV is High Voltage: 4.2Vdc, LV is Low Voltage: 3.0Vdc, NT is normal Temperature: +20 °C.

| TestMode | Antenna | Channel | Voltage          |                     |                   |                    |                | Verdict |
|----------|---------|---------|------------------|---------------------|-------------------|--------------------|----------------|---------|
|          |         |         | Voltage<br>[Vdc] | Temperature<br>(°C) | Deviation<br>(Hz) | Deviation<br>(ppm) | Limit<br>(ppm) |         |
| 11A      | Ant1    | 5180    | NV               | NT                  | -35431            | -6.83996139        | 20             | PASS    |
|          |         |         | NV               | LT                  | -20577            | -3.97239382        | 20             | PASS    |
|          |         |         | NV               | HT                  | -25939            | -5.00752896        | 20             | PASS    |
|          |         | 5200    | NV               | NT                  | -32269            | -6.20557692        | 20             | PASS    |
|          |         |         | NV               | LT                  | -25874            | -4.97576923        | 20             | PASS    |
|          |         |         | NV               | HT                  | -26639            | -5.12288462        | 20             | PASS    |
|          |         | 5240    | NV               | NT                  | -27639            | -5.27461832        | 20             | PASS    |
|          |         |         | NV               | LT                  | -24478            | -4.67137405        | 20             | PASS    |
|          |         |         | NV               | HT                  | -31359            | -5.98454198        | 20             | PASS    |
|          |         | 5260    | NV               | NT                  | -28113            | -5.34467681        | 20             | PASS    |
|          |         |         | NV               | LT                  | -30200            | -5.74144487        | 20             | PASS    |
|          |         |         | NV               | HT                  | -27522            | -5.23231939        | 20             | PASS    |
|          |         | 5280    | NV               | NT                  | -23154            | -4.38522727        | 20             | PASS    |
|          |         |         | NV               | LT                  | -27270            | -5.16477273        | 20             | PASS    |
|          |         |         | NV               | HT                  | -30364            | -5.75075758        | 20             | PASS    |
|          |         | 5320    | NV               | NT                  | -21009            | -3.94906015        | 20             | PASS    |
|          |         |         | NV               | LT                  | -37455            | -7.04041353        | 20             | PASS    |
|          |         |         | NV               | HT                  | -23515            | -4.42011278        | 20             | PASS    |
|          |         | 5500    | NV               | NT                  | -26478            | -4.81418182        | 20             | PASS    |
|          |         |         | NV               | LT                  | -21267            | -3.86672727        | 20             | PASS    |
|          |         |         | NV               | HT                  | -39165            | -7.12090909        | 20             | PASS    |
|          |         | 5600    | NV               | NT                  | -20878            | -3.72821429        | 20             | PASS    |
|          |         |         | NV               | LT                  | -28892            | -5.15928571        | 20             | PASS    |
|          |         |         | NV               | HT                  | -28576            | -5.10285714        | 20             | PASS    |
|          |         | 5700    | NV               | NT                  | -25354            | -4.44807018        | 20             | PASS    |
|          |         |         | NV               | LT                  | -26278            | -4.61017544        | 20             | PASS    |
|          |         |         | NV               | HT                  | -35703            | -6.26368421        | 20             | PASS    |
|          |         | 5720    | NV               | NT                  | -35741            | -6.24842657        | 20             | PASS    |
|          |         |         | NV               | LT                  | -27108            | -4.73916084        | 20             | PASS    |
|          |         |         | NV               | HT                  | -27330            | -4.77797203        | 20             | PASS    |
|          |         | 5745    | NV               | NT                  | -31283            | -5.44525674        | 20             | PASS    |
|          |         |         | NV               | LT                  | -26214            | -4.56292428        | 20             | PASS    |
|          |         |         | NV               | HT                  | -38626            | -6.72341166        | 20             | PASS    |
|          |         | 5785    | NV               | NT                  | -34819            | -6.01884183        | 20             | PASS    |
|          |         |         | NV               | LT                  | -39854            | -6.8891962         | 20             | PASS    |
|          |         |         | NV               | HT                  | -31834            | -5.5028522         | 20             | PASS    |
|          |         | 5825    | NV               | NT                  | -22900            | -3.92459297        | 20             | PASS    |
|          |         |         | NV               | LT                  | -38928            | -6.6714653         | 20             | PASS    |
|          |         |         | NV               | HT                  | -21238            | -3.63976007        | 20             | PASS    |

|           |      |      |    |    |        |             |    |      |
|-----------|------|------|----|----|--------|-------------|----|------|
| 11N20SISO | Ant1 | 5180 | NV | NT | -21319 | -4.11563707 | 20 | PASS |
|           |      |      | NV | LT | -29019 | -5.60212355 | 20 | PASS |
|           |      |      | NV | HT | -21095 | -4.07239382 | 20 | PASS |
|           |      | 5200 | NV | NT | -26734 | -5.14115385 | 20 | PASS |
|           |      |      | NV | LT | -24952 | -4.79846154 | 20 | PASS |
|           |      |      | NV | HT | -32719 | -6.29211538 | 20 | PASS |
|           |      | 5240 | NV | NT | -32917 | -6.28187023 | 20 | PASS |
|           |      |      | NV | LT | -24731 | -4.71965649 | 20 | PASS |
|           |      |      | NV | HT | -38427 | -7.33339695 | 20 | PASS |
|           |      | 5260 | NV | NT | -21606 | -4.10760456 | 20 | PASS |
|           |      |      | NV | LT | -38285 | -7.27851711 | 20 | PASS |
|           |      |      | NV | HT | -29182 | -5.54790875 | 20 | PASS |
|           |      | 5280 | NV | NT | -33730 | -6.38825758 | 20 | PASS |
|           |      |      | NV | LT | -23245 | -4.40246212 | 20 | PASS |
|           |      |      | NV | HT | -26565 | -5.03125    | 20 | PASS |
|           |      | 5320 | NV | NT | -37256 | -7.00300752 | 20 | PASS |
|           |      |      | NV | LT | -33254 | -6.25075188 | 20 | PASS |
|           |      |      | NV | HT | -39031 | -7.33665414 | 20 | PASS |
|           |      | 5500 | NV | NT | -25070 | -4.55818182 | 20 | PASS |
|           |      |      | NV | LT | -33393 | -6.07145455 | 20 | PASS |
|           |      |      | NV | HT | -25318 | -4.60327273 | 20 | PASS |
|           |      | 5600 | NV | NT | -26535 | -4.73839286 | 20 | PASS |
|           |      |      | NV | LT | -24475 | -4.37053571 | 20 | PASS |
|           |      |      | NV | HT | -34477 | -6.15660714 | 20 | PASS |
|           |      | 5700 | NV | NT | -24088 | -4.22596491 | 20 | PASS |
|           |      |      | NV | LT | -33071 | -5.80192982 | 20 | PASS |
|           |      |      | NV | HT | -24202 | -4.24596491 | 20 | PASS |
|           |      | 5720 | NV | NT | -24684 | -4.31538462 | 20 | PASS |
|           |      |      | NV | LT | -30575 | -5.34527972 | 20 | PASS |
|           |      |      | NV | HT | -38061 | -6.65402098 | 20 | PASS |
|           |      | 5745 | NV | NT | -22361 | -3.89225413 | 20 | PASS |
|           |      |      | NV | LT | -34236 | -5.95926893 | 20 | PASS |
|           |      |      | NV | HT | -31714 | -5.5202785  | 20 | PASS |
|           |      | 5785 | NV | NT | -20777 | -3.59152982 | 20 | PASS |
|           |      |      | NV | LT | -27703 | -4.78876404 | 20 | PASS |
|           |      |      | NV | HT | -38082 | -6.58288678 | 20 | PASS |
|           |      | 5825 | NV | NT | -30779 | -5.27489289 | 20 | PASS |
|           |      |      | NV | LT | -32822 | -5.62502142 | 20 | PASS |
|           |      |      | NV | HT | -29217 | -5.00719794 | 20 | PASS |

|            |      |      |    |    |        |             |    |      |
|------------|------|------|----|----|--------|-------------|----|------|
| 11AC20SISO | Ant1 | 5180 | NV | NT | -30475 | -5.88320463 | 20 | PASS |
|            |      |      | NV | LT | -25608 | -4.94362934 | 20 | PASS |
|            |      |      | NV | HT | -34004 | -6.56447876 | 20 | PASS |
|            |      | 5200 | NV | NT | -23338 | -4.48807692 | 20 | PASS |
|            |      |      | NV | LT | -31221 | -6.00403846 | 20 | PASS |
|            |      |      | NV | HT | -30110 | -5.79038462 | 20 | PASS |
|            |      | 5240 | NV | NT | -23102 | -4.40877863 | 20 | PASS |
|            |      |      | NV | LT | -22734 | -4.33854962 | 20 | PASS |
|            |      |      | NV | HT | -39953 | -7.62461832 | 20 | PASS |
|            |      | 5260 | NV | NT | -33932 | -6.45095057 | 20 | PASS |
|            |      |      | NV | LT | -39277 | -7.46711027 | 20 | PASS |
|            |      |      | NV | HT | -34172 | -6.49657795 | 20 | PASS |
|            |      | 5280 | NV | NT | -24791 | -4.69526515 | 20 | PASS |
|            |      |      | NV | LT | -39681 | -7.51534091 | 20 | PASS |
|            |      |      | NV | HT | -26506 | -5.02007576 | 20 | PASS |
|            |      | 5320 | NV | NT | -28947 | -5.44116541 | 20 | PASS |
|            |      |      | NV | LT | -33736 | -6.34135338 | 20 | PASS |
|            |      |      | NV | HT | -27123 | -5.09830827 | 20 | PASS |
|            |      | 5500 | NV | NT | -32392 | -5.88945455 | 20 | PASS |
|            |      |      | NV | LT | -33147 | -6.02672727 | 20 | PASS |
|            |      |      | NV | HT | -26336 | -4.78836364 | 20 | PASS |
|            |      | 5600 | NV | NT | -24048 | -4.29428571 | 20 | PASS |
|            |      |      | NV | LT | -24321 | -4.34303571 | 20 | PASS |
|            |      |      | NV | HT | -34241 | -6.11446429 | 20 | PASS |
|            |      | 5700 | NV | NT | -37172 | -6.52140351 | 20 | PASS |
|            |      |      | NV | LT | -32110 | -5.63333333 | 20 | PASS |
|            |      |      | NV | HT | -31665 | -5.55526316 | 20 | PASS |
|            |      | 5720 | NV | NT | -30453 | -5.32395105 | 20 | PASS |
|            |      |      | NV | LT | -23120 | -4.04195804 | 20 | PASS |
|            |      |      | NV | HT | -26181 | -4.5770979  | 20 | PASS |
|            |      | 5745 | NV | NT | -36167 | -6.29538729 | 20 | PASS |
|            |      |      | NV | LT | -21578 | -3.75596171 | 20 | PASS |
|            |      |      | NV | HT | -27999 | -4.87362924 | 20 | PASS |
|            |      | 5785 | NV | NT | -28290 | -4.89023336 | 20 | PASS |
|            |      |      | NV | LT | -21424 | -3.70337079 | 20 | PASS |
|            |      |      | NV | HT | -22708 | -3.92532411 | 20 | PASS |
|            |      | 5825 | NV | NT | -27833 | -4.77000857 | 20 | PASS |
|            |      |      | NV | LT | -24165 | -4.14138817 | 20 | PASS |
|            |      |      | NV | HT | -32010 | -5.48586118 | 20 | PASS |

|            |      |      |    |    |        |             |    |      |
|------------|------|------|----|----|--------|-------------|----|------|
| 11AC40SISO | Ant1 | 5190 | NV | NT | -31405 | -6.05105973 | 20 | PASS |
|            |      |      | NV | LT | -34346 | -6.6177264  | 20 | PASS |
|            |      |      | NV | HT | -21365 | -4.11657033 | 20 | PASS |
|            |      | 5230 | NV | NT | -36174 | -6.9166348  | 20 | PASS |
|            |      |      | NV | LT | -38392 | -7.34072658 | 20 | PASS |
|            |      |      | NV | HT | -22416 | -4.28604207 | 20 | PASS |
|            |      | 5270 | NV | NT | -20912 | -3.96812144 | 20 | PASS |
|            |      |      | NV | LT | -31607 | -5.99753321 | 20 | PASS |
|            |      |      | NV | HT | -30224 | -5.73510436 | 20 | PASS |
|            |      | 5310 | NV | NT | -22101 | -4.16214689 | 20 | PASS |
|            |      |      | NV | LT | -39978 | -7.52881356 | 20 | PASS |
|            |      |      | NV | HT | -23982 | -4.51638418 | 20 | PASS |
|            |      | 5510 | NV | NT | -22298 | -4.04682396 | 20 | PASS |
|            |      |      | NV | LT | -21921 | -3.9784029  | 20 | PASS |
|            |      |      | NV | HT | -28147 | -5.10834846 | 20 | PASS |
|            |      | 5590 | NV | NT | -26390 | -4.72093023 | 20 | PASS |
|            |      |      | NV | LT | -27529 | -4.92468694 | 20 | PASS |
|            |      |      | NV | HT | -31225 | -5.58586762 | 20 | PASS |
|            |      | 5670 | NV | NT | -36324 | -6.40634921 | 20 | PASS |
|            |      |      | NV | LT | -27671 | -4.88024691 | 20 | PASS |
|            |      |      | NV | HT | -38093 | -6.71834215 | 20 | PASS |
|            |      | 5710 | NV | NT | -26344 | -4.61366025 | 20 | PASS |
|            |      |      | NV | LT | -27880 | -4.882662   | 20 | PASS |
|            |      |      | NV | HT | -31775 | -5.5647986  | 20 | PASS |
|            |      | 5755 | NV | NT | -21723 | -3.77463076 | 20 | PASS |
|            |      |      | NV | LT | -21121 | -3.67002606 | 20 | PASS |
|            |      |      | NV | HT | -22835 | -3.96785404 | 20 | PASS |
|            |      | 5795 | NV | NT | -23933 | -4.1299396  | 20 | PASS |
|            |      |      | NV | LT | -34154 | -5.89370147 | 20 | PASS |
|            |      |      | NV | HT | -36192 | -6.24538395 | 20 | PASS |
| 11N40SISO  | Ant1 | 5190 | NV | NT | -32059 | -6.17707129 | 20 | PASS |
|            |      |      | NV | LT | -37097 | -7.1477842  | 20 | PASS |
|            |      |      | NV | HT | -28785 | -5.54624277 | 20 | PASS |
|            |      | 5230 | NV | NT | -31969 | -6.1126195  | 20 | PASS |
|            |      |      | NV | LT | -28269 | -5.40516252 | 20 | PASS |
|            |      |      | NV | HT | -25552 | -4.88565966 | 20 | PASS |
|            |      | 5270 | NV | NT | -20926 | -3.97077799 | 20 | PASS |
|            |      |      | NV | LT | -34560 | -6.55787476 | 20 | PASS |
|            |      |      | NV | HT | -36154 | -6.86034156 | 20 | PASS |
|            |      | 5310 | NV | NT | -31570 | -5.94538606 | 20 | PASS |
|            |      |      | NV | LT | -31814 | -5.9913371  | 20 | PASS |
|            |      |      | NV | HT | -22841 | -4.30150659 | 20 | PASS |

|            |      |      |    |    |        |             |    |      |
|------------|------|------|----|----|--------|-------------|----|------|
| 11AC80SISO | Ant1 | 5510 | NV | NT | -37139 | -6.74029038 | 20 | PASS |
|            |      |      | NV | LT | -28351 | -5.14537205 | 20 | PASS |
|            |      |      | NV | HT | -39545 | -7.176951   | 20 | PASS |
|            |      | 5590 | NV | NT | -36589 | -6.54543828 | 20 | PASS |
|            |      |      | NV | LT | -22114 | -3.95599284 | 20 | PASS |
|            |      |      | NV | HT | -29820 | -5.33452594 | 20 | PASS |
|            |      | 5670 | NV | NT | -32683 | -5.76419753 | 20 | PASS |
|            |      |      | NV | LT | -35469 | -6.25555556 | 20 | PASS |
|            |      |      | NV | HT | -38737 | -6.8319224  | 20 | PASS |
|            |      | 5710 | NV | NT | -33058 | -5.78949212 | 20 | PASS |
|            |      |      | NV | LT | -23564 | -4.1267951  | 20 | PASS |
|            |      |      | NV | HT | -20550 | -3.59894921 | 20 | PASS |
|            |      | 5755 | NV | NT | -33506 | -5.82206777 | 20 | PASS |
|            |      |      | NV | LT | -24418 | -4.2429192  | 20 | PASS |
|            |      |      | NV | HT | -31605 | -5.49174631 | 20 | PASS |
|            |      | 5795 | NV | NT | -32264 | -5.56755824 | 20 | PASS |
|            |      |      | NV | LT | -39869 | -6.87989646 | 20 | PASS |
|            |      |      | NV | HT | -33598 | -5.79775669 | 20 | PASS |
|            |      | 5210 | NV | NT | -23530 | -4.51631478 | 20 | PASS |
|            |      |      | NV | LT | -37146 | -7.12975048 | 20 | PASS |
|            |      |      | NV | HT | -25179 | -4.8328215  | 20 | PASS |
|            |      | 5290 | NV | NT | -27084 | -5.11984877 | 20 | PASS |
|            |      |      | NV | LT | -22381 | -4.23081285 | 20 | PASS |
|            |      |      | NV | HT | -21892 | -4.13837429 | 20 | PASS |
|            |      | 5530 | NV | NT | -31534 | -5.70235081 | 20 | PASS |
|            |      |      | NV | LT | -38183 | -6.90470163 | 20 | PASS |
|            |      |      | NV | HT | -31355 | -5.66998192 | 20 | PASS |
|            |      | 5610 | NV | HT | -38192 | -6.80784314 | 20 | PASS |
|            |      |      | NV | HT | -26998 | -4.81247772 | 20 | PASS |
|            |      |      | NV | HT | -30228 | -5.38823529 | 20 | PASS |
|            |      | 5690 | NV | HT | -26952 | -4.73673111 | 20 | PASS |
|            |      |      | NV | HT | -26016 | -4.57223199 | 20 | PASS |
|            |      |      | NV | HT | -25142 | -4.41862917 | 20 | PASS |
|            |      | 5775 | NV | NT | -27498 | -4.76155844 | 20 | PASS |
|            |      |      | NV | LT | -27767 | -4.80813853 | 20 | PASS |
|            |      |      | NV | HT | -23068 | -3.99445887 | 20 | PASS |

| Voltage  |         |         |         |             |           |             |       |         |
|----------|---------|---------|---------|-------------|-----------|-------------|-------|---------|
| TestMode | Antenna | Channel | Voltage | Temperature | Deviation | Deviation   | Limit | Verdict |
|          |         |         | [Vdc]   | (°C)        | (Hz)      | (ppm)       | (ppm) |         |
| 11A      | Ant1    | 5180    | NV      | NT          | -22166    | -4.27915058 | 20    | PASS    |
|          |         |         | LV      | NT          | -22634    | -4.36949807 | 20    | PASS    |
|          |         |         | HV      | NT          | -22664    | -4.37528958 | 20    | PASS    |
|          |         | 5200    | NV      | NT          | -24609    | -4.7325     | 20    | PASS    |
|          |         |         | LV      | NT          | -33938    | -6.52653846 | 20    | PASS    |
|          |         |         | HV      | NT          | -26389    | -5.07480769 | 20    | PASS    |
|          |         | 5240    | NV      | NT          | -25563    | -4.87843511 | 20    | PASS    |
|          |         |         | LV      | NT          | -23566    | -4.49732824 | 20    | PASS    |
|          |         |         | HV      | NT          | -33908    | -6.47099237 | 20    | PASS    |
|          |         | 5260    | NV      | NT          | -23945    | -4.55228137 | 20    | PASS    |
|          |         |         | LV      | NT          | -30172    | -5.73612167 | 20    | PASS    |
|          |         |         | HV      | NT          | -33860    | -6.43726236 | 20    | PASS    |
|          |         | 5280    | NV      | NT          | -37096    | -7.02575758 | 20    | PASS    |
|          |         |         | LV      | NT          | -20235    | -3.83238636 | 20    | PASS    |
|          |         |         | HV      | NT          | -35967    | -6.81193182 | 20    | PASS    |
|          |         | 5320    | NV      | NT          | -26642    | -5.00789474 | 20    | PASS    |
|          |         |         | LV      | NT          | -36426    | -6.84699248 | 20    | PASS    |
|          |         |         | HV      | NT          | -34799    | -6.54116541 | 20    | PASS    |
|          |         | 5500    | NV      | NT          | -37790    | -6.87090909 | 20    | PASS    |
|          |         |         | LV      | NT          | -20043    | -3.64418182 | 20    | PASS    |
|          |         |         | HV      | NT          | -27927    | -5.07763636 | 20    | PASS    |
|          |         | 5600    | NV      | NT          | -34261    | -6.11803571 | 20    | PASS    |
|          |         |         | LV      | NT          | -32485    | -5.80089286 | 20    | PASS    |
|          |         |         | HV      | NT          | -25495    | -4.55267857 | 20    | PASS    |
|          |         | 5700    | NV      | NT          | -33088    | -5.80491228 | 20    | PASS    |
|          |         |         | LV      | NT          | -26519    | -4.65245614 | 20    | PASS    |
|          |         |         | HV      | NT          | -28416    | -4.98526316 | 20    | PASS    |
|          |         | 5720    | NV      | NT          | -39023    | -6.8222028  | 20    | PASS    |
|          |         |         | LV      | NT          | -37120    | -6.48951049 | 20    | PASS    |
|          |         |         | HV      | NT          | -23980    | -4.19230769 | 20    | PASS    |
|          |         | 5745    | NV      | NT          | -31192    | -5.42941688 | 20    | PASS    |
|          |         |         | LV      | NT          | -26704    | -4.64821584 | 20    | PASS    |
|          |         |         | HV      | NT          | -37993    | -6.61322889 | 20    | PASS    |
|          |         | 5785    | NV      | NT          | -34892    | -6.03146067 | 20    | PASS    |
|          |         |         | LV      | NT          | -38687    | -6.68746759 | 20    | PASS    |
|          |         |         | HV      | NT          | -31690    | -5.47796024 | 20    | PASS    |
|          |         | 5825    | NV      | NT          | -36518    | -6.25844045 | 20    | PASS    |
|          |         |         | LV      | NT          | -20666    | -3.54173093 | 20    | PASS    |
|          |         |         | HV      | NT          | -27405    | -4.6966581  | 20    | PASS    |

|            |      |      |    |    |        |             |    |      |
|------------|------|------|----|----|--------|-------------|----|------|
| 11N20SISO  | Ant1 | 5180 | NV | NT | -27536 | -5.31583012 | 20 | PASS |
|            |      |      | LV | NT | -36530 | -7.05212355 | 20 | PASS |
|            |      |      | HV | NT | -33923 | -6.5488417  | 20 | PASS |
|            |      | 5200 | NV | NT | -27733 | -5.33326923 | 20 | PASS |
|            |      |      | LV | NT | -37789 | -7.26711538 | 20 | PASS |
|            |      |      | HV | NT | -26210 | -5.04038462 | 20 | PASS |
|            |      | 5240 | NV | NT | -28118 | -5.36603053 | 20 | PASS |
|            |      |      | LV | NT | -32146 | -6.13473282 | 20 | PASS |
|            |      |      | HV | NT | -26051 | -4.97156489 | 20 | PASS |
|            |      | 5260 | NV | NT | -32438 | -6.16692015 | 20 | PASS |
|            |      |      | LV | NT | -21059 | -4.00361217 | 20 | PASS |
|            |      |      | HV | NT | -31187 | -5.92908745 | 20 | PASS |
|            |      | 5280 | NV | NT | -31429 | -5.95246212 | 20 | PASS |
|            |      |      | LV | NT | -28308 | -5.36136364 | 20 | PASS |
|            |      |      | HV | NT | -33172 | -6.28257576 | 20 | PASS |
|            |      | 5320 | NV | NT | -31707 | -5.95996241 | 20 | PASS |
|            |      |      | LV | NT | -25392 | -4.77293233 | 20 | PASS |
|            |      |      | HV | NT | -32270 | -6.06578947 | 20 | PASS |
|            |      | 5500 | NV | NT | -22416 | -4.07563636 | 20 | PASS |
|            |      |      | LV | NT | -29442 | -5.35309091 | 20 | PASS |
|            |      |      | HV | NT | -30823 | -5.60418182 | 20 | PASS |
|            |      | 5600 | NV | NT | -25639 | -4.57839286 | 20 | PASS |
|            |      |      | LV | NT | -21653 | -3.86660714 | 20 | PASS |
|            |      |      | HV | NT | -36816 | -6.57428571 | 20 | PASS |
|            |      | 5700 | NV | NT | -24481 | -4.29491228 | 20 | PASS |
|            |      |      | LV | NT | -36880 | -6.47017544 | 20 | PASS |
|            |      |      | HV | NT | -24730 | -4.33859649 | 20 | PASS |
|            |      | 5720 | NV | NT | -21616 | -3.77902098 | 20 | PASS |
|            |      |      | LV | NT | -32187 | -5.6270979  | 20 | PASS |
|            |      |      | HV | NT | -39743 | -6.94807692 | 20 | PASS |
|            |      | 5745 | NV | NT | -22105 | -3.84769365 | 20 | PASS |
|            |      |      | LV | NT | -21913 | -3.81427328 | 20 | PASS |
|            |      |      | HV | NT | -31109 | -5.41496954 | 20 | PASS |
|            |      | 5785 | NV | NT | -28624 | -4.94796889 | 20 | PASS |
|            |      |      | LV | NT | -30271 | -5.2326707  | 20 | PASS |
|            |      |      | HV | NT | -24595 | -4.25151253 | 20 | PASS |
|            |      | 5825 | NV | NT | -29445 | -5.04627249 | 20 | PASS |
|            |      |      | LV | NT | -24184 | -4.14464439 | 20 | PASS |
|            |      |      | HV | NT | -23908 | -4.09734362 | 20 | PASS |
| 11AC20SISO | Ant1 | 5180 | NV | NT | -30444 | -5.87722008 | 20 | PASS |
|            |      |      | LV | NT | -30034 | -5.7980695  | 20 | PASS |
|            |      |      | HV | NT | -36907 | -7.12490347 | 20 | PASS |
|            |      | 5200 | NV | NT | -29420 | -5.65769231 | 20 | PASS |
|            |      |      | LV | NT | -26288 | -5.05538462 | 20 | PASS |

|            |      |      |    |    |        |             |    |      |
|------------|------|------|----|----|--------|-------------|----|------|
|            |      |      | HV | NT | -29563 | -5.68519231 | 20 | PASS |
|            |      | 5240 | NV | NT | -37632 | -7.18167939 | 20 | PASS |
|            |      |      | LV | NT | -24842 | -4.74083969 | 20 | PASS |
|            |      |      | HV | NT | -28433 | -5.42614504 | 20 | PASS |
|            |      | 5260 | NV | NT | -21526 | -4.09239544 | 20 | PASS |
|            |      |      | LV | NT | -23282 | -4.42623574 | 20 | PASS |
|            |      |      | HV | NT | -38715 | -7.36026616 | 20 | PASS |
|            |      | 5280 | NV | NT | -33865 | -6.41382576 | 20 | PASS |
|            |      |      | LV | NT | -30867 | -5.84602273 | 20 | PASS |
|            |      |      | HV | NT | -23703 | -4.48920455 | 20 | PASS |
|            |      | 5320 | NV | NT | -23175 | -4.35620301 | 20 | PASS |
|            |      |      | LV | NT | -20756 | -3.90150376 | 20 | PASS |
|            |      |      | HV | NT | -37252 | -7.00225564 | 20 | PASS |
|            |      | 5500 | NV | NT | -26081 | -4.7427854  | 20 | PASS |
|            |      |      | LV | NT | -23558 | -4.28327273 | 20 | PASS |
|            |      |      | HV | NT | -25822 | -4.69490909 | 20 | PASS |
|            |      | 5600 | NV | NT | -38810 | -6.93035714 | 20 | PASS |
|            |      |      | LV | NT | -31080 | -5.5598547  | 20 | PASS |
|            |      |      | HV | NT | -21997 | -3.92803571 | 20 | PASS |
|            |      | 5700 | NV | NT | -31062 | -5.44947368 | 20 | PASS |
|            |      |      | LV | NT | -25595 | -4.49035088 | 20 | PASS |
|            |      |      | HV | NT | -32930 | -5.77719298 | 20 | PASS |
|            |      | 5720 | NV | NT | -26091 | -4.56136364 | 20 | PASS |
|            |      |      | LV | NT | -23028 | -4.02587413 | 20 | PASS |
|            |      |      | HV | NT | -22777 | -3.98199301 | 20 | PASS |
|            |      | 5745 | NV | NT | -38566 | -6.7129678  | 20 | PASS |
|            |      |      | LV | NT | -27930 | -4.8616188  | 20 | PASS |
|            |      |      | HV | NT | -37334 | -6.49852045 | 20 | PASS |
|            |      | 5785 | NV | NT | -36882 | -6.37545376 | 20 | PASS |
|            |      |      | LV | NT | -22739 | -3.9306828  | 20 | PASS |
|            |      |      | HV | NT | -22366 | -3.8662057  | 20 | PASS |
|            |      | 5825 | NV | NT | -36329 | -6.2260497  | 20 | PASS |
|            |      |      | LV | NT | -39149 | -6.70934019 | 20 | PASS |
|            |      |      | HV | NT | -35434 | -6.07266495 | 20 | PASS |
| 11AC40SISO | Ant1 | 5190 | NV | NT | -34097 | -6.56974952 | 20 | PASS |
|            |      |      | LV | NT | -29920 | -5.76493256 | 20 | PASS |
|            |      |      | HV | NT | -30697 | -5.91464355 | 20 | PASS |
|            |      | 5230 | NV | NT | -35121 | -6.71529637 | 20 | PASS |
|            |      |      | LV | NT | -32891 | -6.28891013 | 20 | PASS |
|            |      |      | HV | NT | -34009 | -6.50267686 | 20 | PASS |
|            |      | 5270 | NV | NT | -25312 | -4.80303605 | 20 | PASS |
|            |      |      | LV | NT | -26436 | -5.01631879 | 20 | PASS |
|            |      |      | HV | NT | -31567 | -5.98994307 | 20 | PASS |
|            |      | 5310 | NV | NT | -28676 | -5.40037665 | 20 | PASS |

|           |      |      |    |    |        |             |    |      |
|-----------|------|------|----|----|--------|-------------|----|------|
|           |      |      | LV | NT | -26150 | -4.92467043 | 20 | PASS |
|           |      |      | HV | NT | -20218 | -3.80753296 | 20 | PASS |
|           |      | 5510 | NV | NT | -27468 | -4.98511797 | 20 | PASS |
|           |      |      | LV | NT | -25801 | -4.68257713 | 20 | PASS |
|           |      |      | HV | NT | -20850 | -3.78402904 | 20 | PASS |
|           |      | 5590 | NV | NT | -35798 | -6.4039356  | 20 | PASS |
|           |      |      | LV | NT | -24536 | -4.38926655 | 20 | PASS |
|           |      |      | HV | NT | -25416 | -4.54669052 | 20 | PASS |
|           |      | 5670 | NV | NT | -37868 | -6.67865961 | 20 | PASS |
|           |      |      | LV | NT | -28057 | -4.94832451 | 20 | PASS |
|           |      |      | HV | NT | -36281 | -6.39876543 | 20 | PASS |
|           |      | 5710 | NV | NT | -28002 | -4.90402802 | 20 | PASS |
|           |      |      | LV | NT | -29654 | -5.19334501 | 20 | PASS |
|           |      |      | HV | NT | -27143 | -4.75359019 | 20 | PASS |
|           |      | 5755 | NV | NT | -30195 | -5.24674196 | 20 | PASS |
|           |      |      | LV | NT | -30130 | -5.23544744 | 20 | PASS |
|           |      |      | HV | NT | -24857 | -4.3192007  | 20 | PASS |
|           |      | 5795 | NV | NT | -21094 | -3.64003451 | 20 | PASS |
|           |      |      | LV | NT | -33056 | -5.70422778 | 20 | PASS |
|           |      |      | HV | NT | -37676 | -6.50146678 | 20 | PASS |
| 11N40SISO | Ant1 | 5190 | NV | NT | -33172 | -6.39152216 | 20 | PASS |
|           |      |      | LV | NT | -27678 | -5.33294798 | 20 | PASS |
|           |      |      | HV | NT | -27942 | -5.38381503 | 20 | PASS |
|           |      | 5230 | NV | NT | -38597 | -7.37992352 | 20 | PASS |
|           |      |      | LV | NT | -24789 | -4.73977055 | 20 | PASS |
|           |      |      | HV | NT | -36282 | -6.93728489 | 20 | PASS |
|           |      | 5270 | NV | NT | -36137 | -6.85711575 | 20 | PASS |
|           |      |      | LV | NT | -30418 | -5.77191651 | 20 | PASS |
|           |      |      | HV | NT | -34227 | -6.49468691 | 20 | PASS |
|           |      | 5310 | NV | NT | -24313 | -4.5787194  | 20 | PASS |
|           |      |      | LV | NT | -35601 | -6.70451977 | 20 | PASS |
|           |      |      | HV | NT | -23965 | -4.51318267 | 20 | PASS |
|           |      | 5510 | NV | NT | -35040 | -6.35934664 | 20 | PASS |
|           |      |      | LV | NT | -22823 | -4.14210526 | 20 | PASS |
|           |      |      | HV | NT | -23471 | -4.25970962 | 20 | PASS |
|           |      | 5590 | NV | NT | -30020 | -5.37030411 | 20 | PASS |
|           |      |      | LV | NT | -25617 | -4.58264758 | 20 | PASS |
|           |      |      | HV | NT | -38083 | -6.81270125 | 20 | PASS |
|           |      | 5670 | NV | NT | -25335 | -4.46825397 | 20 | PASS |
|           |      |      | LV | NT | -34762 | -6.1308642  | 20 | PASS |
|           |      |      | HV | NT | -38561 | -6.80088183 | 20 | PASS |
|           |      | 5710 | NV | NT | -20368 | -3.56707531 | 20 | PASS |
|           |      |      | LV | NT | -38960 | -6.82311734 | 20 | PASS |
|           |      |      | HV | NT | -24730 | -4.33099825 | 20 | PASS |

|            |      |      |    |    |        |             |    |      |
|------------|------|------|----|----|--------|-------------|----|------|
|            |      | 5755 | NV | NT | -33516 | -5.82380539 | 20 | PASS |
|            |      |      | LV | NT | -38830 | -6.74717637 | 20 | PASS |
|            |      |      | HV | NT | -20171 | -3.50495222 | 20 | PASS |
|            |      | 5795 | NV | NT | -25815 | -4.45470233 | 20 | PASS |
|            |      |      | LV | NT | -23095 | -3.98533218 | 20 | PASS |
|            |      |      | HV | NT | -33003 | -5.69508197 | 20 | PASS |
| 11AC80SISO | Ant1 | 5210 | NV | NT | -36508 | -7.00729367 | 20 | PASS |
|            |      |      | LV | NT | -35764 | -6.86449136 | 20 | PASS |
|            |      |      | HV | NT | -39171 | -7.5184261  | 20 | PASS |
|            |      | 5290 | NV | NT | -36062 | -6.81701323 | 20 | PASS |
|            |      |      | LV | NT | -27301 | -5.16086957 | 20 | PASS |
|            |      |      | HV | NT | -21076 | -3.98412098 | 20 | PASS |
|            |      | 5530 | NV | NT | -23918 | -4.32513562 | 20 | PASS |
|            |      |      | LV | NT | -32557 | -5.88734177 | 20 | PASS |
|            |      |      | HV | NT | -39151 | -7.07974684 | 20 | PASS |
|            |      | 5610 | NV | NT | -21235 | -3.78520499 | 20 | PASS |
|            |      |      | LV | NT | -21719 | -3.8714795  | 20 | PASS |
|            |      |      | HV | NT | -32739 | -5.83582888 | 20 | PASS |
|            |      | 5690 | NV | NT | -24159 | -4.24586995 | 20 | PASS |
|            |      |      | LV | NT | -32697 | -5.74639719 | 20 | PASS |
|            |      |      | HV | NT | -30967 | -5.44235501 | 20 | PASS |
|            |      | 5775 | NV | NT | -21537 | -3.72935065 | 20 | PASS |
|            |      |      | LV | NT | -31861 | -5.51705628 | 20 | PASS |
|            |      |      | HV | NT | -23519 | -4.07255411 | 20 | PASS |

## 9.6 Unwanted emissions

### Transmitting spurious emission test result as below:

#### Test Method

##### Radiated Mode:

1. The EUT was placed on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.
3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. 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
5. Use the following spectrum analyzer settings According to C63.10:  
For Above 1GHz  
Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 1MHz, VBW $\geq$ RBW for peak measurement and VBW = 10Hz for average measurement, Sweep = auto, Detector function = peak, Trace = max hold.  
For Below 1GHz  
Use the following spectrum analyzer settings:  
Span = wide enough to capture the peak level of the in-band emission and all spurious  
RBW = 100 KHz, VBW $\geq$ RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.

##### Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 KHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average ((duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor (20log(1/duty cycle)).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.

#### Limit

(1) 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.

(2) 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.

(3) 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.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) 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.

According to part 15.407(b), the radio emission outside the operating frequency band shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Radiated emissions which fall in the restricted bands, as defined in section 15.205, must comply with the radiated emission limits specified in section 15.209.

| Frequency<br>MHz | Field Strength<br>uV/m | Field Strength<br>dBμV/m | Detector |
|------------------|------------------------|--------------------------|----------|
| 30-88            | 100                    | 40                       | QP       |
| 88-216           | 150                    | 43.5                     | QP       |
| 216-960          | 200                    | 46                       | QP       |
| 960-1000         | 500                    | 54                       | QP       |
| Above 1000       | 500                    | 54                       | AV       |
| Above 1000       | 5000                   | 74                       | PK       |

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

The only worse case (which is subject to the maximum EIRP, (11ac VHT40 and 11ac VHT80 mode) listed in the report.

### Transmitting spurious emission worse case test result as below:

Transmitting spurious emission test result as below:

#### 11ac VHT40 Modulation 5190MHz Test Result

| Frequency Range<br>MHz | Frequency<br>MHz | Emission Level<br>dBμV/m | Polarization | Limit<br>dBμV/m | Margin<br>dB | Detector | Result |
|------------------------|------------------|--------------------------|--------------|-----------------|--------------|----------|--------|
| 1000-7000              | --               | --                       | Horizontal   | 74.00           | --           | PK       | Pass   |
| 1000-7000              | --               | --                       | Vertical     | 74.00           | --           | PK       | Pass   |
| 7000-40000             | 10380*           | 49.65                    | Horizontal   | 68.20           | 18.55        | PK       | Pass   |
| 7000-40000             | 10380*           | 49.53                    | Vertical     | 68.20           | 18.67        | PK       | Pass   |

## 11ac VHT40 Modulation 5230MHz Test Result

| Frequency Range | Frequency | Emission Level | Polarization | Limit  | Margin | Detector | Result |
|-----------------|-----------|----------------|--------------|--------|--------|----------|--------|
| MHz             | MHz       | dBuV/m         |              | dBuV/m | dB     |          |        |
| 1000-7000       | --        | --             | Horizontal   | 74.00  | --     | PK       | Pass   |
| 1000-7000       | --        | --             | Vertical     | 74.00  | --     | PK       | Pass   |
| 7000-40000      | 10460*    | 49.90          | Horizontal   | 68.20  | 18.30  | PK       | Pass   |
| 7000-40000      | 10460*    | 50.18          | Vertical     | 68.20  | 18.02  | PK       | Pass   |

## 11ac VHT40 Modulation 5270MHz Test Result

| Frequency Range | Frequency | Emission Level | Polarization | Limit  | Margin | Detector | Result |
|-----------------|-----------|----------------|--------------|--------|--------|----------|--------|
| MHz             | MHz       | dBuV/m         |              | dBuV/m | dB     |          |        |
| 1000-7000       | --        | --             | Horizontal   | 74.00  | --     | PK       | Pass   |
| 1000-7000       | --        | --             | Vertical     | 74.00  | --     | PK       | Pass   |
| 7000-40000      | 10540*    | 50.06          | Horizontal   | 68.20  | 18.14  | PK       | Pass   |
| 7000-40000      | 10540*    | 49.58          | Vertical     | 68.20  | 18.62  | PK       | Pass   |

## 11ac VHT40 Modulation 5310MHz Test Result

| Frequency Range | Frequency | Emission Level | Polarization | Limit  | Margin | Detector | Result |
|-----------------|-----------|----------------|--------------|--------|--------|----------|--------|
| MHz             | MHz       | dBuV/m         |              | dBuV/m | dB     |          |        |
| 1000-7000       | --        | --             | Horizontal   | 74.00  | --     | PK       | Pass   |
| 1000-7000       | --        | --             | Vertical     | 74.00  | --     | PK       | Pass   |
| 7000-40000      | 10620     | 50.06          | Horizontal   | 74.00  | 23.94  | PK       | Pass   |
| 7000-40000      | 10620     | 49.58          | Vertical     | 74.00  | 24.42  | PK       | Pass   |

## 11ac VHT40 Modulation 5510MHz Test Result

| Frequency Range | Frequency | Emission Level | Polarization | Limit  | Margin | Detector | Result |
|-----------------|-----------|----------------|--------------|--------|--------|----------|--------|
| MHz             | MHz       | dBuV/m         |              | dBuV/m | dB     |          |        |
| 1000-7000       | --        | --             | Horizontal   | 74.00  | --     | PK       | Pass   |
| 1000-7000       | --        | --             | Vertical     | 74.00  | --     | PK       | Pass   |
| 7000-40000      | 11020     | 50.48          | Horizontal   | 74.00  | 23.52  | PK       | Pass   |
| 7000-40000      | 11020     | 50.67          | Vertical     | 74.00  | 23.33  | PK       | Pass   |

## 11ac VHT40 Modulation 5590MHz Test Result

| Frequency Range | Frequency | Emission Level | Polarization | Limit  | Margin | Detector | Result |
|-----------------|-----------|----------------|--------------|--------|--------|----------|--------|
| MHz             | MHz       | dBuV/m         |              | dBuV/m | dB     |          |        |
| 1000-7000       | --        | --             | Horizontal   | 74.00  | --     | PK       | Pass   |
| 1000-7000       | --        | --             | Vertical     | 74.00  | --     | PK       | Pass   |
| 7000-40000      | 11180     | 50.41          | Horizontal   | 74.00  | 23.59  | PK       | Pass   |
| 7000-40000      | 11180     | 51.13          | Vertical     | 74.00  | 22.87  | PK       | Pass   |

## 11ac VHT40 Modulation 5670MHz Test Result

| Frequency Range | Frequency | Emission Level | Polarization | Limit  | Margin | Detector | Result |
|-----------------|-----------|----------------|--------------|--------|--------|----------|--------|
| MHz             | MHz       | dBuV/m         |              | dBuV/m | dB     |          |        |
| 1000-7000       | --        | --             | Horizontal   | 74.00  | --     | PK       | Pass   |
| 1000-7000       | --        | --             | Vertical     | 74.00  | --     | PK       | Pass   |
| 7000-40000      | 11340     | 50.48          | Horizontal   | 74.00  | 23.52  | PK       | Pass   |
| 7000-40000      | 11340     | 50.79          | Vertical     | 74.00  | 23.21  | PK       | Pass   |

## 11ac VHT40 Modulation 5710MHz Test Result

| Frequency Range | Frequency | Emission Level | Polarization | Limit  | Margin | Detector | Result |
|-----------------|-----------|----------------|--------------|--------|--------|----------|--------|
| MHz             | MHz       | dBuV/m         |              | dBuV/m | dB     |          |        |
| 1000-7000       | --        | --             | Horizontal   | 74.00  | --     | PK       | Pass   |
| 1000-7000       | --        | --             | Vertical     | 74.00  | --     | PK       | Pass   |
| 7000-40000      | 11420     | 50.67          | Horizontal   | 74.00  | 23.33  | PK       | Pass   |
| 7000-40000      | 11420     | 50.89          | Vertical     | 74.00  | 23.11  | PK       | Pass   |

## 11ac VHT40 Modulation 5755MHz Test Result

| Frequency Range | Frequency | Emission Level | Polarization | Limit  | Margin | Detector | Result |
|-----------------|-----------|----------------|--------------|--------|--------|----------|--------|
| MHz             | MHz       | dBuV/m         |              | dBuV/m | dB     |          |        |
| 1000-7000       | --        | --             | Horizontal   | 74.00  | --     | PK       | Pass   |
| 1000-7000       | --        | --             | Vertical     | 74.00  | --     | PK       | Pass   |
| 7000-40000      | 11510     | 51.94          | Horizontal   | 74.00  | 22.06  | PK       | Pass   |
| 7000-40000      | 11510     | 51.90          | Vertical     | 74.00  | 22.10  | PK       | Pass   |

## 11ac VHT40 Modulation 5795MHz Test Result

| Frequency Range | Frequency | Emission Level | Polarization | Limit  | Margin | Detector | Result |
|-----------------|-----------|----------------|--------------|--------|--------|----------|--------|
| MHz             | MHz       | dBuV/m         |              | dBuV/m | dB     |          |        |
| 1000-7000       | --        | --             | Horizontal   | 74.00  | --     | PK       | Pass   |
| 1000-7000       | --        | --             | Vertical     | 74.00  | --     | PK       | Pass   |
| 7000-40000      | 11590     | 50.77          | Horizontal   | 74.00  | 23.23  | PK       | Pass   |
| 7000-40000      | 11590     | 50.69          | Vertical     | 74.00  | 23.31  | PK       | Pass   |

## 11ac VHT80 Modulation 5210MHz Test Result

| Frequency Range | Frequency | Emission Level | Polarization | Limit  | Margin | Detector | Result |
|-----------------|-----------|----------------|--------------|--------|--------|----------|--------|
| MHz             | MHz       | dBuV/m         |              | dBuV/m | dB     |          |        |
| 1000-7000       | --        | --             | Horizontal   | 74.00  | --     | PK       | Pass   |
| 1000-7000       | --        | --             | Vertical     | 74.00  | --     | PK       | Pass   |
| 7000-40000      | 10420*    | 49.56          | Horizontal   | 68.20  | 18.64  | PK       | Pass   |
| 7000-40000      | 10420*    | 50.17          | Vertical     | 68.20  | 18.03  | PK       | Pass   |

## 11ac VHT80 Modulation 5290MHz Test Result

| Frequency Range | Frequency | Emission Level | Polarization | Limit  | Margin | Detector | Result |
|-----------------|-----------|----------------|--------------|--------|--------|----------|--------|
| MHz             | MHz       | dBuV/m         |              | dBuV/m | dB     |          |        |
| 1000-7000       | --        | --             | Horizontal   | 74.00  | --     | PK       | Pass   |
| 1000-7000       | --        | --             | Vertical     | 74.00  | --     | PK       | Pass   |
| 7000-40000      | 10580*    | 50.21          | Horizontal   | 68.20  | 17.99  | PK       | Pass   |
| 7000-40000      | 10580*    | 50.38          | Vertical     | 68.20  | 17.82  | PK       | Pass   |

## 11ac VHT80 Modulation 5530MHz Test Result

| Frequency Range | Frequency | Emission Level | Polarization | Limit  | Margin | Detector | Result |
|-----------------|-----------|----------------|--------------|--------|--------|----------|--------|
| MHz             | MHz       | dBuV/m         |              | dBuV/m | dB     |          |        |
| 1000-7000       | --        | --             | Horizontal   | 74.00  | --     | PK       | Pass   |
| 1000-7000       | --        | --             | Vertical     | 74.00  | --     | PK       | Pass   |
| 7000-40000      | 11060     | 50.01          | Horizontal   | 74.00  | 23.99  | PK       | Pass   |
| 7000-40000      | 11060     | 50.78          | Vertical     | 74.00  | 23.22  | PK       | Pass   |

## 11ac VHT80 Modulation 5610MHz Test Result

| Frequency Range | Frequency | Emission Level | Polarization | Limit  | Margin | Detector | Result |
|-----------------|-----------|----------------|--------------|--------|--------|----------|--------|
| MHz             | MHz       | dBuV/m         |              | dBuV/m | dB     |          |        |
| 1000-7000       | --        | --             | Horizontal   | 74.00  | --     | PK       | Pass   |
| 1000-7000       | --        | --             | Vertical     | 74.00  | --     | PK       | Pass   |
| 7000-40000      | 11220     | 49.84          | Horizontal   | 74.00  | 24.16  | PK       | Pass   |
| 7000-40000      | 11220     | 50.23          | Vertical     | 74.00  | 23.77  | PK       | Pass   |

## 11ac VHT80 Modulation 5690MHz Test Result

| Frequency Range | Frequency | Emission Level | Polarization | Limit  | Margin | Detector | Result |
|-----------------|-----------|----------------|--------------|--------|--------|----------|--------|
| MHz             | MHz       | dBuV/m         |              | dBuV/m | dB     |          |        |
| 1000-7000       | --        | --             | Horizontal   | 74.00  | --     | PK       | Pass   |
| 1000-7000       | --        | --             | Vertical     | 74.00  | --     | PK       | Pass   |
| 7000-40000      | 11380     | 50.11          | Horizontal   | 74.00  | 23.89  | PK       | Pass   |
| 7000-40000      | 11380     | 49.69          | Vertical     | 74.00  | 24.31  | PK       | Pass   |

## 11ac VHT80 Modulation 5775MHz Test Result

| Frequency Range | Frequency | Emission Level | Polarization | Limit  | Margin | Detector | Result |
|-----------------|-----------|----------------|--------------|--------|--------|----------|--------|
| MHz             | MHz       | dBuV/m         |              | dBuV/m | dB     |          |        |
| 1000-7000       | --        | --             | Horizontal   | 74.00  | --     | PK       | Pass   |
| 1000-7000       | --        | --             | Vertical     | 74.00  | --     | PK       | Pass   |
| 7000-40000      | 11550     | 50.01          | Horizontal   | 74.00  | 23.99  | PK       | Pass   |
| 7000-40000      | 11550     | 50.23          | Vertical     | 74.00  | 23.77  | PK       | Pass   |

- (1) Above 1GHz Corrector factor= Antenna Factor +Cable Loss - Amp. Factor.
- (2) Below 1GHz Corrector factor= Antenna Factor +Cable Loss.
- (3) “\*” is not in restricted band, its limit is -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBuV/m can be determined by adding a “conversion” factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions.
- (4) We test all modes and only the worst case for each bandwidth recorded in the report.
- (5) Testing is carried out with frequency rang 30MHz to 40GHz, which data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (6) The Low frequency, which start from 9KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

The worst case of Radiated Emission below 1GHz:

## 30-1000MHz Radiated Emission

### EUT Information

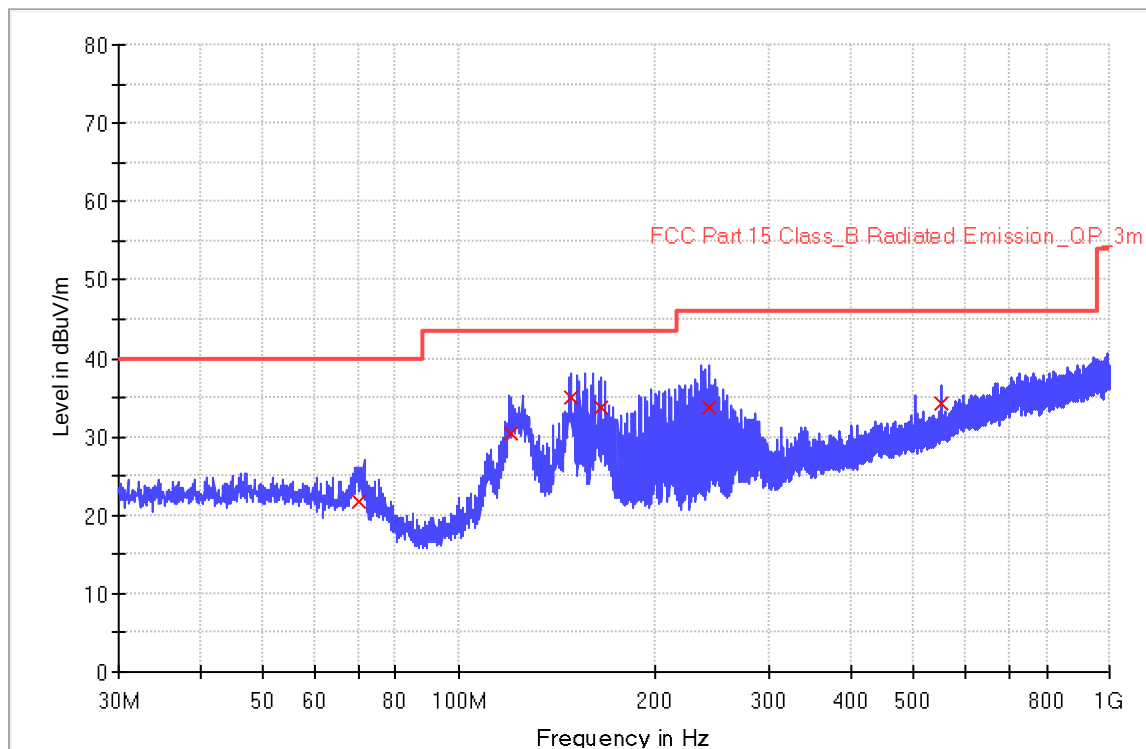
|             |                                                                  |
|-------------|------------------------------------------------------------------|
| EUT Name:   | Infrared Thermal Camera                                          |
| Model       | Fotric P7                                                        |
| Client:     | FOTRIC INC.                                                      |
| Op Cond     | Power on, TX_5190MHz AC 40, DC 3.6V, T21.3, H56.3%,<br>P100.6kPa |
| Operator:   | Wang Yiquan                                                      |
| Standard    | FCC part 15.209(a)                                               |
| Comment:    | Horizontal                                                       |
| Sample No.: | SHA-716542-2                                                     |

### Sweep Setup: RE\_VULB9168\_pre\_Cont\_30-1000 [EMI radiated]

|                 |             |
|-----------------|-------------|
| Hardware Setup: | RE_VULB9168 |
| Receiver:       | [ESR 3]     |
| Level Unit:     | dBuV/m      |

| Subrange       | Step Size | Detectors | Bandwidth | Sweep Time | Preamp |
|----------------|-----------|-----------|-----------|------------|--------|
| 30 MHz - 1 GHz | 48.5 kHz  | PK+       | 120 kHz   | 0.2 s      | 20 dB  |

RE\_VULB9168\_pre\_Cont\_30-1000





## Limit and Margin

| Frequency<br>(MHz) | QuasiPeak<br>(dBuV/m) | Meas. Time<br>(ms) | Bandwidth<br>(kHz) | Height<br>(cm) | Pol | Azimuth<br>(deg) | Corr.<br>(dB/m) | Margin -<br>QPK<br>(dB) | Limit - QPK<br>(dBuV/m) |
|--------------------|-----------------------|--------------------|--------------------|----------------|-----|------------------|-----------------|-------------------------|-------------------------|
| 69.960000          | 21.8                  | 1000.0             | 120.000            | 167.9          | H   | 79.0             | 18.6            | 18.2                    | 40.0                    |
| 120.560000         | 30.3                  | 1000.0             | 120.000            | 245.3          | H   | 339.0            | 18.1            | 13.2                    | 43.5                    |
| 148.880000         | 35.0                  | 1000.0             | 120.000            | 230.6          | H   | 284.0            | 21.0            | 8.5                     | 43.5                    |
| 165.200000         | 33.7                  | 1000.0             | 120.000            | 265.0          | H   | 133.0            | 20.6            | 9.8                     | 43.5                    |
| 242.680000         | 33.7                  | 1000.0             | 120.000            | 133.3          | H   | 230.0            | 19.7            | 12.3                    | 46.0                    |
| 551.960000         | 34.2                  | 1000.0             | 120.000            | 323.4          | H   | 185.0            | 27.5            | 11.8                    | 46.0                    |



# 30-1000MHz Radiated Emission

## EUT Information

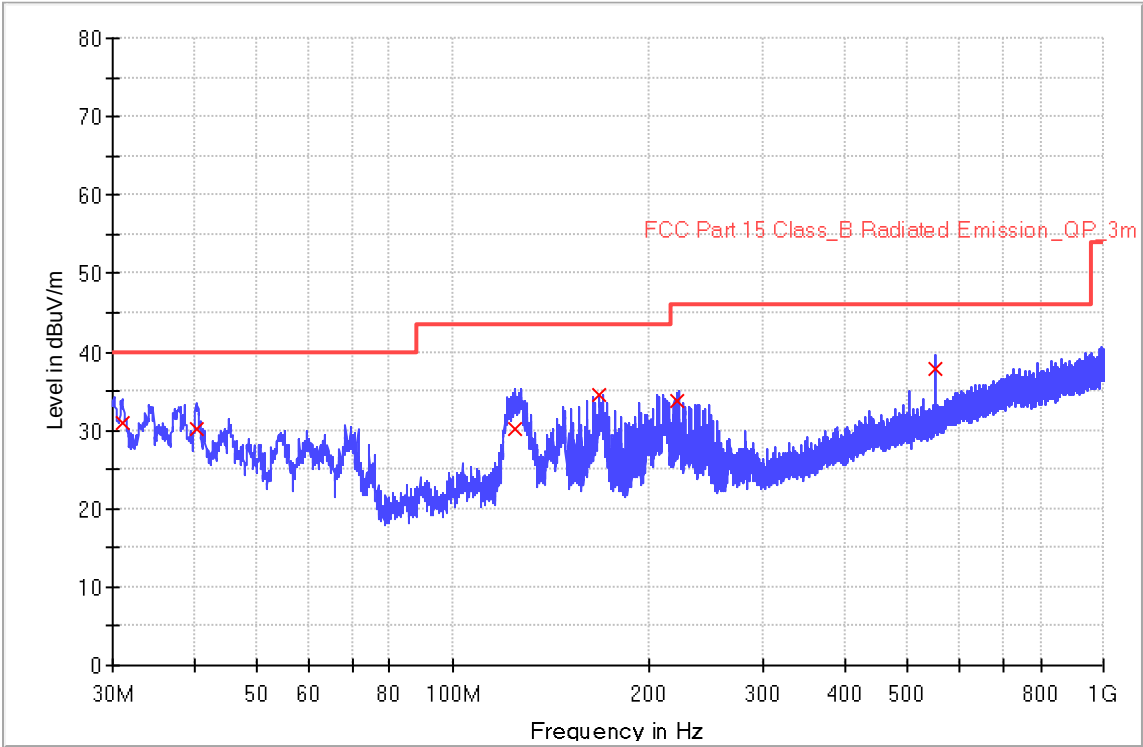
EUT Name: Infrared Thermal Camera  
Model: Fotric P7  
Client: FOTRIC INC.  
Op Cond: Power on, TX\_5190MHz AC 40, DC 3.6V, T21.3, H56.3%, P100.6kPa  
Operator: Wang Yiquan  
Standard: FCC part 15.209(a)  
Comment: Vertical  
Sample No.: SHA-716542-2

## Sweep Setup: RE\_VULB9168\_pre\_Cont\_30-1000 [EMI radiated]

Hardware Setup: RE\_VULB9168  
Receiver: [ESR 3]  
Level Unit: dBuV/m

| Subrange       | Step Size | Detectors | Bandwidth | Sweep Time | Preamp |
|----------------|-----------|-----------|-----------|------------|--------|
| 30 MHz - 1 GHz | 48.5 kHz  | PK+       | 120 kHz   | 0.2 s      | 20 dB  |

RE\_VULB9168\_pre\_Cont\_30-1000



## Limit and Margin

| Frequency (MHz) | QuasiPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Margin - QPK (dB) | Limit - QPK (dBuV/m) |
|-----------------|--------------------|-----------------|-----------------|-------------|-----|---------------|--------------|-------------------|----------------------|
| 31.000000       | 30.9               | 1000.0          | 120.000         | 178.5       | V   | 348.0         | 19.3         | 9.1               | 40.0                 |
| 40.280000       | 30.1               | 1000.0          | 120.000         | 121.7       | V   | 273.0         | 20.0         | 9.9               | 40.0                 |
| 124.680000      | 30.2               | 1000.0          | 120.000         | 289.0       | V   | 249.0         | 18.5         | 13.3              | 43.5                 |
| 168.240000      | 34.5               | 1000.0          | 120.000         | 126.4       | V   | 136.0         | 20.4         | 9.0               | 43.5                 |
| 221.880000      | 33.7               | 1000.0          | 120.000         | 184.9       | V   | 43.0          | 17.5         | 12.3              | 46.0                 |
| 552.000000      | 37.9               | 1000.0          | 120.000         | 367.1       | V   | 195.0         | 27.5         | 8.1               | 46.0                 |

Note 1: Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

### **Conducted Spurious Emission Test Method:**

According to KDB789033 D02

1. The EUT was placed on 0.8m height table, the RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.
2. For transmitters with operation frequencies in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27 dBm/MHz e.i.r.p.

Any unwanted emissions that fall into the band 5250-5350 MHz shall be attenuated below the channel power by at least 26 dB, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth), above 5250 MHz. The 26dB bandwidth may fall into the 5250-5350 MHz band; however, if the occupied bandwidth also falls within the 5250-5350 MHz band; however, if the occupied bandwidth also falls within the 5250-5350 MHz band, the transmission is considered as intentional and the devices shall comply with all requirements in the band 5250-5359 MHz including implementing dynamic frequency selection (DFS) and TPC, on the portion of the emission that resides in the 5250-5350 MHz band.

- a) Set RBW  $\geq$  between 1 and 5% of the occupied bandwidth (i.e. 99% bandwidth)
- b) Set VBW  $\geq$  3 RBW.

### **Limits:**

(1) 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.

(2) 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.

(3) 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.

(4) For transmitters operating in the 5.725-5.85 GHz band: 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.

### **Conducted Spurious Emission**

Test data should be referred to Appendix A for 709502301742-00A.

### **Band edge measurements**

Test data should be referred to Appendix A for 709502301742-00A.

## 10 Test Equipment List

List of Test Instruments  
Test Site1

|    | DESCRIPTION                                                       | MANUFACTURER    | MODEL NO. | SERIAL NO. | CAL. DATE | CAL. DUE DATE |
|----|-------------------------------------------------------------------|-----------------|-----------|------------|-----------|---------------|
| C  | Signal Analyzer                                                   | Rohde & Schwarz | FSV40     | 101091     | 2022-8-1  | 2023-7-31     |
|    | Signal spectrum analyzer                                          | Agilent         | N9020B    | MY59050168 | 2023-2-10 | 2024-2-9      |
| RE | EMI Test Receiver                                                 | Rohde & Schwarz | ESR3      | 101906     | 2022-8-1  | 2023-7-31     |
|    | Signal Analyzer                                                   | Rohde & Schwarz | FSV40     | 101091     | 2022-8-1  | 2023-7-31     |
|    | Trilog Super Broadband Test Antenna                               | Schwarzbeck     | VULB 9168 | 961        | 2019-9-23 | 2024-9-22     |
|    | Horn Antenna                                                      | Rohde & Schwarz | HF907     | 102393     | 2021-3-15 | 2024-3-14     |
|    | Pre-amplifier                                                     | Rohde & Schwarz | SCU-18D   | 19006451   | 2022-8-1  | 2023-7-31     |
|    | Loop antenna                                                      | Rohde & Schwarz | HFH2-Z2   | 100443     | 2022-6-13 | 2023-6-12     |
|    | Loop antenna                                                      | Rohde & Schwarz | HFH2-Z2   | 100443     | 2023-6-12 | 2024-6-11     |
|    | DOUBLE-RIDGED WAVEGUIDE HORN WITH PRE-AMPLIFIER (18 GHZ - 40 GHZ) | ETS-Lindgren    | 3116C-PA  | 002222727  | 2020-9-23 | 2023-9-22     |
|    | 3m Semi-anechoic chamber                                          | TDK             | 9X6X6     | ----       | 2021-5-8  | 2024-5-7      |
| CE | EMI Test Receiver                                                 | Rohde & Schwarz | ESR3      | 101907     | 2022-8-1  | 2023-7-31     |
|    | LISN                                                              | Rohde & Schwarz | ENV216    | 101924     | 2022-8-1  | 2023-7-31     |

| Measurement Software Information |          |                 |           |
|----------------------------------|----------|-----------------|-----------|
| Test Item                        | Software | Manufacturer    | Version   |
| C                                | MTS 8310 | MWRFtest        | 2.0.0.0   |
| RE                               | EMC 32   | Rohde & Schwarz | V10.50.40 |
| CE                               | EMC 32   | Rohde & Schwarz | V9.15.03  |

### C - Conducted RF tests

- Conducted peak output power
- 6dB Occupied Bandwidth
- Power spectral density\*
- Conducted Band Edge and Out-of-Band Emissions

## 11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

| Items                                    | Extended Uncertainty                                                                                                                |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Conducted Disturbance at Mains Terminals | 150kHz to 30MHz, LISN, 3.16dB                                                                                                       |
| Radiated Disturbance                     | 9kHz to 30MHz, 3.52dB<br>30MHz to 1GHz, 5.03dB (Horizontal)<br>5.12dB (Vertical)<br>1GHz to 18GHz, 5.49dB<br>18GHz to 40GHz, 5.63dB |
| RF Conducted Measurement                 | Power related: 1.16dB<br>Frequency related: $6.00 \times 10^{-8}$                                                                   |

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2021, clause 4.4.3 and 4.5.1.



## 12 Photographs of Test Set-ups

Refer to the < Test Setup photos >.



## 13 Photographs of EUT

Refer to the < External Photos > & < Internal Photos >.

-----End of Test Report-----