

# TEST REPORT

**Report No.:** 8334EU011907W4

**Applicant:** FKSYSTEM Co., Ltd

**Address:** 212 MARUSHIN-CHO, KITA-KU NAGOYA, 462-0063  
JAPAN

**Product Name:** WIFI module

**Model No.:** WAP-550 (refer to clause 2.4)

**Trademark:** N/A

**Test Standard(s):** MIC Notice No.88 Appendix No.45  
Ordinance of MPT No.37, 1981:  
Article 2 paragraph 1 item (19)-3

**Test Result:** Pass

**Date of Receipt:** Sep. 19, 2025

**Test Date:** Sep. 19, 2025 – Oct. 13, 2025

**Date of Issue:** Oct. 31, 2025

**ISSUED BY:**

SHENZHEN EU TESTING LABORATORY LIMITED



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|                |               |             |        |
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## 2 General Information

### 2.1 Applicant Information

|           |                                                  |
|-----------|--------------------------------------------------|
| Applicant | FKSYSTEM Co., Ltd                                |
| Address   | 212 MARUSHIN-CHO, KITA-KU NAGOYA, 462-0063 JAPAN |

### 2.2 Manufacturer Information

|              |                                                  |
|--------------|--------------------------------------------------|
| Manufacturer | FKSYSTEM Co., Ltd                                |
| Address      | 212 MARUSHIN-CHO, KITA-KU NAGOYA, 462-0063 JAPAN |

### 2.3 Factory Information

|         |                                                  |
|---------|--------------------------------------------------|
| Factory | FKSYSTEM Co., Ltd                                |
| Address | 212 MARUSHIN-CHO, KITA-KU NAGOYA, 462-0063 JAPAN |

### 2.4 General Description of E.U.T.

|                                      |                                                                                                                                                                                                                                                       |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name                         | WIFI module                                                                                                                                                                                                                                           |
| Model No. Under Test                 | WAP-550                                                                                                                                                                                                                                               |
| List Model No.                       | WAP-101, WAP-156, WAP-215, WAP-240, WAP-320, WAP-430                                                                                                                                                                                                  |
| Description of Model differentiation | All models are same with electrical parameters and internal circuit structure, but only differ in antenna and model name. Only the model "WAP-550" with the highest antenna gain was prepared for the RF test. Refer to the following detailed table. |
| Rating(s)                            | Power Supply: 3.3VDC                                                                                                                                                                                                                                  |
| Product Type                         | <input checked="" type="checkbox"/> Mobile<br><input type="checkbox"/> Portable<br><input type="checkbox"/> Fix Location                                                                                                                              |
| Test Sample No.                      | -1/2(Normal Sample), -2/2(Engineering Sample)                                                                                                                                                                                                         |
| Hardware Version                     | C23365                                                                                                                                                                                                                                                |
| Software Version                     | /                                                                                                                                                                                                                                                     |
| Remark                               | For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.                                                                                                                                     |

Detailed table:

| Model No. | Anetnna Gain (dBi)         |           |           | Anetnna Tyoe  | Anetnna Model No.      |
|-----------|----------------------------|-----------|-----------|---------------|------------------------|
|           | Bluetooth<br>(BDR+EDR+BLE) | 2.4G WiFi | 5.1G WiFi |               |                        |
| WAP-550   | 2.86                       | 2.86      | 2.82      | FPC Anetnna   | LJWF84A                |
| WAP-101   | 2.4                        | 2.4       | 1.22      | FPC Anetnna   | LJRF_WF25A             |
| WAP-156   | 2.47                       | 2.47      | 2.36      | FPC Anetnna   | SLK-YLD-3028A1 WIFI    |
| WAP-215   | 2.57                       | 2.57      | 2.82      | Metal Anetnna | SLK-YLD-3028A-L-320I-B |
| WAP-240   | 1.92                       | 1.92      | 2.16      | FPC Anetnna   | SLK-YLD-3028A WIFI     |
| WAP-320   | 2.08                       | 2.08      | 2.67      | Metal Anetnna | WF3289T(R153)          |
| WAP-430   | 2.90                       | 2.90      | 1.52      | PCB Anetnna   | SLK-YLD-P4113-R-500I-B |

## 2.5 Technical Information of E.U.T.

|                                   |                                                                                                                                                                                        |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Network and Wireless Connectivity | Bluetooth (BDR+EDR+BLE)<br>WiFi 2.4G: 802.11b, 802.11g, 802.11n(HT20/40) and 802.11ax(HEW20/40)<br>WiFi 5G: 802.11a, 802.11n(HT20/40), 802.11ac(VHT20/40/80) and 802.11ax(HEW20/40/80) |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The requirement for the following technical information of the EUT was tested in this report:

|                                          |                                                                                                                                                                                                                                                                                           |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Technology                               | <b>WiFi 5G</b>                                                                                                                                                                                                                                                                            |
| Operation Mode                           | <input checked="" type="checkbox"/> a <input checked="" type="checkbox"/> n(HT20) <input checked="" type="checkbox"/> n(HT40) <input checked="" type="checkbox"/> ac(VHT20)                                                                                                               |
|                                          | <input checked="" type="checkbox"/> ac(VHT40) <input checked="" type="checkbox"/> ac(VHT80) <input type="checkbox"/> ac(VHT160) <input checked="" type="checkbox"/> ax(HEW20)                                                                                                             |
|                                          | <input checked="" type="checkbox"/> ax(HEW40) <input checked="" type="checkbox"/> ax(HEW80) <input type="checkbox"/> ax(HEW160)                                                                                                                                                           |
| Operating Frequency                      | 5150 MHz to 5250 MHz                                                                                                                                                                                                                                                                      |
| Modulation Technology                    | OFDM, OFDMA                                                                                                                                                                                                                                                                               |
| Modulation Type                          | 802.11a/ n: 64QAM, 16QAM, BPSK, QPSK<br>802.11ac: 256QAM, 64QAM, 16QAM, BPSK, QPSK<br>802.11ax: 4096QAM, 1024QAM, 256QAM, 64QAM, 16QAM, BPSK, QPSK                                                                                                                                        |
| Transfer Rate (Mbps)<br>(Single RF path) | <input checked="" type="checkbox"/> 802.11a: 54/ 48/ 36/ 24/ 18/ 12/ 9/ 6 Mbps<br><input checked="" type="checkbox"/> 802.11n: up to 150 Mbps<br><input checked="" type="checkbox"/> 802.11ac: up to VHT-MCS9<br><input checked="" type="checkbox"/> 802.11ax: up to 1201 Mbps            |
| Antenna Type                             | FPC Antenna                                                                                                                                                                                                                                                                               |
| Antenna Gain(Peak)                       | 2.82 dBi                                                                                                                                                                                                                                                                                  |
| Antenna Impedance                        | 50Ω                                                                                                                                                                                                                                                                                       |
| Rated output Power                       | 802.11a: 3.000 mW/MHz<br>802.11n(HT20): 1.300 mW/MHz<br>802.11n(HT40): 1.300 mW/MHz<br>802.11ac(VHT20): 2.900 mW/MHz<br>802.11ac(VHT40): 1.600 mW/MHz<br>802.11ac(VHT80): 0.160 mW/MHz<br>802.11ax(HEW20): 1.000 mW/MHz<br>802.11ax(HEW40): 1.100 mW/MHz<br>802.11ax(HEW80): 0.540 mW/MHz |
| Remark                                   | The above information are declared by the applicant, EU-LAB is not responsible for the information accuracy provided by the applicant.                                                                                                                                                    |

All channels were listed on the following table:

| 20 MHz         |                 | 40 MHz         |                 | 80 MHz         |                 |
|----------------|-----------------|----------------|-----------------|----------------|-----------------|
| Channel Number | Frequency (MHz) | Channel Number | Frequency (MHz) | Channel Number | Frequency (MHz) |
| 36             | 5180            | 38             | 5190            | 42             | 5210            |
| 40             | 5200            | 46             | 5230            | /              | /               |
| 44             | 5220            | /              | /               | /              | /               |
| 48             | 5240            | /              | /               | /              | /               |

| 802.11ax RU configuration table |              |       |       |        |        |        |        |
|---------------------------------|--------------|-------|-------|--------|--------|--------|--------|
| Mode                            | Full RU (SU) | RU_26 | RU_52 | RU_106 | RU_242 | RU_484 | RU_996 |
| 802.11ax (HEW20)                | --           | --    | --    | --     | √      | --     | --     |
| 802.11ax (HEW40)                | --           | --    | --    | --     | --     | √      | --     |
| 802.11ax (HEW80)                | --           | --    | --    | --     | --     | --     | √      |

Note: The Lowest frequency, the middle frequency and the highest frequency of channel were selected to perform the test, and the selected channel see below:

✧ **For 802.11a/n(HT20)/ac(VHT20)/ax(HEW20)**

| Band I (5150 - 5250 MHz) |         |                 |
|--------------------------|---------|-----------------|
| Channel Number           | Channel | Frequency (MHz) |
| 36                       | Low     | 5180            |
| 44                       | Mid     | 5200            |
| 48                       | High    | 5240            |

✧ **For 802.11n(HT40)/ac(VHT40)/ax(HEW40)**

| Band I (5150 - 5250 MHz) |         |                 |
|--------------------------|---------|-----------------|
| Channel Number           | Channel | Frequency (MHz) |
| 38                       | Low     | 5190            |
| 46                       | High    | 5230            |

✧ **For 802.11 ac(VHT80)/ax(HEW80)**

| U-NII-1 (5150 - 5250 MHz) |         |                 |
|---------------------------|---------|-----------------|
| Channel Number            | Channel | Frequency (MHz) |
| 42                        | Mid     | 5210            |

Note: Preliminary tests were performed in different data rate in above table to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

### 3 Test Summary

#### 3.1 Test Standard

The tests were performed according to following standards:

| No. | Identity                                                                                              | Document Title                                        |
|-----|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| 1   | MIC Notice No.88 Appendix No.45<br>Ordinance of MPT No.37, 1981:<br>Article 2 paragraph 1 item (19)-3 | Low power data communications system in the 5GHz band |

Remark:

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission should be checked to ensure compliance has been maintained.

#### 3.2 Test Verdict

| Part | Test Items                     | Mode            | Data Rate | Modulation Technology | Band I   | Verdict |
|------|--------------------------------|-----------------|-----------|-----------------------|----------|---------|
|      |                                |                 |           |                       | Channel  |         |
| 1    | Frequency Tolerance            | 11a             | 6         | OFDM                  | 48/44/36 | Pass    |
|      |                                | 11n(20 MHz)     | 6.5       | OFDM                  | 48/44/36 | Pass    |
|      |                                | 11n(40 MHz)     | 13.5      | OFDM                  | 46/38    | Pass    |
|      |                                | 11ac(20 MHz)    | 6.5       | OFDM                  | 48/44/36 | Pass    |
|      |                                | 11ac(40 MHz)    | 13.5      | OFDM                  | 46/38    | Pass    |
|      |                                | 11ac(80 MHz)    | 29.3      | OFDM                  | 42       | Pass    |
|      |                                | 802.11ax(HEW20) | 4         | OFDMA                 | 48/44/36 | Pass    |
|      |                                | 802.11ax(HEW40) | 8         | OFDMA                 | 46/38    | Pass    |
|      |                                | 802.11ax(HEW80) | 17        | OFDMA                 | 42       | Pass    |
| 2    | Occupied Bandwidth             | 11a             | 6         | OFDM                  | 48/44/36 | Pass    |
|      |                                | 11n(20 MHz)     | 6.5       | OFDM                  | 48/44/36 | Pass    |
|      |                                | 11n(40 MHz)     | 13.5      | OFDM                  | 46/38    | Pass    |
|      |                                | 11ac(20 MHz)    | 6.5       | OFDM                  | 48/44/36 | Pass    |
|      |                                | 11ac(40 MHz)    | 13.5      | OFDM                  | 46/38    | Pass    |
|      |                                | 11ac(80 MHz)    | 29.3      | OFDM                  | 42       | Pass    |
|      |                                | 802.11ax(HEW20) | 4         | OFDMA                 | 48/44/36 | Pass    |
|      |                                | 802.11ax(HEW40) | 8         | OFDMA                 | 46/38    | Pass    |
|      |                                | 802.11ax(HEW80) | 17        | OFDMA                 | 42       | Pass    |
| 3    | Antenna Power                  | 11a             | 6         | OFDM                  | 48/44/36 | Pass    |
|      |                                | 11n(20 MHz)     | 6.5       | OFDM                  | 48/44/36 | Pass    |
|      |                                | 11n(40 MHz)     | 13.5      | OFDM                  | 46/38    | Pass    |
|      |                                | 11ac(20 MHz)    | 6.5       | OFDM                  | 48/44/36 | Pass    |
|      |                                | 11ac(40 MHz)    | 13.5      | OFDM                  | 46/38    | Pass    |
|      |                                | 11ac(80 MHz)    | 29.3      | OFDM                  | 42       | Pass    |
|      |                                | 802.11ax(HEW20) | 4         | OFDMA                 | 48/44/36 | Pass    |
|      |                                | 802.11ax(HEW40) | 8         | OFDMA                 | 46/38    | Pass    |
|      |                                | 802.11ax(HEW80) | 17        | OFDMA                 | 42       | Pass    |
| 4    | Adjacent Channel Emitted power | 11a             | 6         | OFDM                  | 48/44/36 | Pass    |
|      |                                | 11n(20 MHz)     | 6.5       | OFDM                  | 48/44/36 | Pass    |
|      |                                | 11n(40 MHz)     | 13.5      | OFDM                  | 46/38    | Pass    |
|      |                                | 11ac(20 MHz)    | 6.5       | OFDM                  | 48/44/36 | Pass    |
|      |                                | 11ac(40 MHz)    | 13.5      | OFDM                  | 46/38    | Pass    |

|   |                                   |                 |      |       |          |      |
|---|-----------------------------------|-----------------|------|-------|----------|------|
|   |                                   | 11ac(80 MHz)    | 29.3 | OFDM  | 42       | Pass |
|   |                                   | 802.11ax(HEW20) | 4    | OFDMA | 48/44/36 | Pass |
|   |                                   | 802.11ax(HEW40) | 8    | OFDMA | 46/38    | Pass |
|   |                                   | 802.11ax(HEW80) | 17   | OFDMA | 42       | Pass |
| 5 | Transmission burst length         | 11a             | 6    | OFDM  | 48/44/36 | Pass |
|   |                                   | 11n(20 MHz)     | 6.5  | OFDM  | 48/44/36 | Pass |
|   |                                   | 11n(40 MHz)     | 13.5 | OFDM  | 46/38    | Pass |
|   |                                   | 11ac(20 MHz)    | 6.5  | OFDM  | 48/44/36 | Pass |
|   |                                   | 11ac(40 MHz)    | 13.5 | OFDM  | 46/38    | Pass |
|   |                                   | 11ac(80 MHz)    | 29.3 | OFDM  | 42       | Pass |
|   |                                   | 802.11ax(HEW20) | 4    | OFDMA | 48/44/36 | Pass |
|   |                                   | 802.11ax(HEW40) | 8    | OFDMA | 46/38    | Pass |
|   |                                   | 802.11ax(HEW80) | 17   | OFDMA | 42       | Pass |
| 6 | Unwanted Emission Strength        | 11a             | 6    | OFDM  | 48/44/36 | Pass |
|   |                                   | 11n(20 MHz)     | 6.5  | OFDM  | 48/44/36 | Pass |
|   |                                   | 11n(40 MHz)     | 13.5 | OFDM  | 46/38    | Pass |
|   |                                   | 11ac(20 MHz)    | 6.5  | OFDM  | 48/44/36 | Pass |
|   |                                   | 11ac(40 MHz)    | 13.5 | OFDM  | 46/38    | Pass |
|   |                                   | 11ac(80 MHz)    | 29.3 | OFDM  | 42       | Pass |
|   |                                   | 802.11ax(HEW20) | 4    | OFDMA | 48/44/36 | Pass |
|   |                                   | 802.11ax(HEW40) | 8    | OFDMA | 46/38    | Pass |
|   |                                   | 802.11ax(HEW80) | 17   | OFDMA | 42       | Pass |
| 7 | Interference prevention function  | 11a             | 6    | OFDM  | 48/44/36 | Pass |
|   |                                   | 11n(20 MHz)     | 6.5  | OFDM  | 48/44/36 | Pass |
|   |                                   | 11n(40 MHz)     | 13.5 | OFDM  | 46/38    | Pass |
|   |                                   | 11ac(20 MHz)    | 6.5  | OFDM  | 48/44/36 | Pass |
|   |                                   | 11ac(40 MHz)    | 13.5 | OFDM  | 46/38    | Pass |
|   |                                   | 11ac(80 MHz)    | 29.3 | OFDM  | 42       | Pass |
|   |                                   | 802.11ax(HEW20) | 4    | OFDMA | 48/44/36 | Pass |
|   |                                   | 802.11ax(HEW40) | 8    | OFDMA | 46/38    | Pass |
|   |                                   | 802.11ax(HEW80) | 17   | OFDMA | 42       | Pass |
| 8 | Secondary Radiated Emissions Test | 11a             | 6    | OFDM  | 48/44/36 | Pass |
|   |                                   | 11n(20 MHz)     | 6.5  | OFDM  | 48/44/36 | Pass |
|   |                                   | 11n(40 MHz)     | 13.5 | OFDM  | 46/38    | Pass |
|   |                                   | 11ac(20 MHz)    | 6.5  | OFDM  | 48/44/36 | Pass |
|   |                                   | 11ac(40 MHz)    | 13.5 | OFDM  | 46/38    | Pass |
|   |                                   | 11ac(80 MHz)    | 29.3 | OFDM  | 42       | Pass |
|   |                                   | 802.11ax(HEW20) | 4    | OFDMA | 48/44/36 | Pass |
|   |                                   | 802.11ax(HEW40) | 8    | OFDMA | 46/38    | Pass |
|   |                                   | 802.11ax(HEW80) | 17   | OFDMA | 42       | Pass |
| 9 | Carrier sensing function          | 11a             | 6    | OFDM  | 48/44/36 | Pass |
|   |                                   | 11n(20 MHz)     | 6.5  | OFDM  | 48/44/36 | Pass |
|   |                                   | 11n(40 MHz)     | 13.5 | OFDM  | 46/38    | Pass |
|   |                                   | 11ac(20 MHz)    | 6.5  | OFDM  | 48/44/36 | Pass |
|   |                                   | 11ac(40 MHz)    | 13.5 | OFDM  | 46/38    | Pass |
|   |                                   | 11ac(80 MHz)    | 29.3 | OFDM  | 42       | Pass |

|  |                 |    |       |          |      |
|--|-----------------|----|-------|----------|------|
|  | 802.11ax(HEW20) | 4  | OFDMA | 48/44/36 | Pass |
|  | 802.11ax(HEW40) | 8  | OFDMA | 46/38    | Pass |
|  | 802.11ax(HEW80) | 17 | OFDMA | 42       | Pass |

Note 1: The tests were performed according to the method of measurements prescribed in MIC Ordinance Regulating Radio Equipment Section 4.17 of Article 49.20.

### 3.3 Test Laboratory

|                 |                                                                                                                        |
|-----------------|------------------------------------------------------------------------------------------------------------------------|
| Test Laboratory | Shenzhen EU Testing Laboratory Limited                                                                                 |
| Address         | 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China |

## 4 Test Configuration

### 4.1 Test Environment

During the measurement, the normal environmental conditions were within the listed ranges:

|                            |                         |         |
|----------------------------|-------------------------|---------|
| Relative Humidity          | 55 %                    |         |
| Atmospheric Pressure       | 101 kPa                 |         |
| Temperature                | NT (Normal Temperature) | +26°C   |
| Working Voltage of the EUT | NV (Normal Voltage)     | 3.30VDC |
|                            | LV (Low Voltage)        | 2.97VDC |
|                            | HV (High Voltage)       | 3.63VDC |

#### Power Supply Voltage Fluctuation Test

| Voltage Fluctuation Test | Normal Voltage | High Voltage +10% of Normal Voltage | Low Voltage -10% of Normal Voltage |
|--------------------------|----------------|-------------------------------------|------------------------------------|
| Input To EUT             | 3.30VDC        | 3.63VDC                             | 2.97VDC                            |
| Output To RF Module      | DC 3.3V        | DC 3.3V                             | DC 3.3V                            |
| Voltage Variation (%)    | --             | 0.00%                               | 0.00%                              |

Note:

Voltage Variation (%)=(Output high or Low Voltage - Output Normal Voltage)/ Output Normal Voltage\* 100%

For extreme voltage test, we have tested the relationship between the external power supply and RF IC power supply. Base on the test results, only the normal voltage was selected to perform all items.

## 4.2 Test Equipment

| Radiated Emission and RF Test                                                                                                                                                                                                                          |                 |              |           |            |              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------|-----------|------------|--------------|
| Equipment                                                                                                                                                                                                                                              | Manufacturer    | Model No     | Serial No | Cal Date   | Cal Due Date |
| EMI Test Receiver                                                                                                                                                                                                                                      | ROHDE & SCHWARZ | ESPI         | EE-006    | 2025/01/08 | 2026/01/07   |
| Bilog Broadband Antenna                                                                                                                                                                                                                                | SCHWARZBECK     | VULB 9163    | EE-007    | 2023/01/14 | 2026/01/13   |
| Double Ridged Horn Antenna                                                                                                                                                                                                                             | A-INFOMW        | LB-10180-NF  | EE-008    | 2023/01/12 | 2026/01/11   |
| Pre-amplifier                                                                                                                                                                                                                                          | Agilent         | 8447D        | EE-009    | 2025/01/08 | 2026/01/07   |
| Pre-amplifier                                                                                                                                                                                                                                          | Agilent         | 8449B        | EE-010    | 2025/01/08 | 2026/01/07   |
| MXA Signal Analyzer                                                                                                                                                                                                                                    | Agilent         | N9020A       | EE-011    | 2025/01/08 | 2026/01/07   |
| MXG RF Vector Signal Generator                                                                                                                                                                                                                         | Agilent         | N5182A       | EE-012    | 2025/01/08 | 2026/01/07   |
| Test Software                                                                                                                                                                                                                                          | Farad           | EZ-EMC       | EE-015    | N.C.R      | N.C.R        |
| MIMO Power Measurement Module                                                                                                                                                                                                                          | TSTPASS         | TSPS 2023R   | EE-016    | 2025/01/08 | 2026/01/07   |
| RF Test Software                                                                                                                                                                                                                                       | TSTPASS         | TS32893 V2.0 | EE-017    | N.C.R      | N.C.R        |
| Wideband Radio Communication Tester                                                                                                                                                                                                                    | ROHDE & SCHWARZ | CMW500       | EE-402    | 2025/02/14 | 2026/02/13   |
| Loop Antenna                                                                                                                                                                                                                                           | TESEQ           | HLA6121      | EE-403    | 2025/02/14 | 2026/02/13   |
| MXG RF Analog Signal Generator                                                                                                                                                                                                                         | Agilent         | N5181A       | EE-406    | 2025/02/14 | 2026/02/13   |
| Constant Temperature Humidity Chamber                                                                                                                                                                                                                  | Guangxin        | GXP-401      | ES-002    | 2025/02/14 | 2026/02/13   |
| Power Sensor                                                                                                                                                                                                                                           | ROHDE&SCHWA RZN | NRP18S       | ES-052    | 2025/02/14 | 2026/02/13   |
| DC Power Source                                                                                                                                                                                                                                        | QJE             | QJ3020E      | ES-037    | 2025/07/29 | 2026/07/28   |
| Note <sup>1</sup> : Calibration Company: Shenzhen Academy Of Metrology& Quality inspection.                                                                                                                                                            |                 |              |           |            |              |
| Note <sup>2</sup> : Calibration method: Calibration conducted in foreign countries, which is equivalent to calibration conducted by the NICT or a designated calibration agency under Article 102-18-1 and Article 24-2, Paragraph 4 of the Radio Act. |                 |              |           |            |              |

## 4.3 Description of Support Unit

| No. | Title           | Manufacturer | Model No.              | Serial No. |
|-----|-----------------|--------------|------------------------|------------|
| 1   | Lenovo Notebook | Lenovo       | Xiaoxin Air 14ALC 2021 | EMC-PJ-052 |

#### 4.4 Measurement Uncertainty

| Parameters                                       | Uncertainty                        |
|--------------------------------------------------|------------------------------------|
| Frequency Error / 99% Bandwidth                  | $(3.2 \times f \times 10^{-6})$ Hz |
| Antenna Power                                    | 1.82 dB                            |
| TX-RX Spurious Emissions                         | 1.84 dB                            |
| Transmission Antenna Gain                        | 5.36 dB                            |
| Temperature                                      | 0.82 °C                            |
| Humidity                                         | 4.1%                               |
| DC / AC Power Source                             | 0.04%                              |
| Duty Cycle                                       | 0.05%                              |
| Noet: "f" is the nominal signal frequency in Hz. |                                    |

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

## 5 Test Items

### 5.1 Frequency Tolerance Test

#### 5.1.1 Test Requirement

| Item                | Limits            |
|---------------------|-------------------|
| Frequency Tolerance | $\leq \pm 20$ ppm |

#### 5.1.2 Test Setup Diagram



#### 5.1.3 Test Procedure

Test Frequency= test channel  
RBW=VBW=100KHz  
Span=40/80MHz  
Sweep time=Auto  
Detector mode=Positive peak  
Indication mode=Max hold  
EUT have transmitted unmodulated signal and fixed channelize. f is using the mark cursor to mark the peak frequency value, fc is declaring of channel frequency.

#### 5.1.4 Test Deviation

There is no deviation with the original standard.

#### 5.1.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, modulated waveform mode (computing).

#### 5.1.6 Test Data

PASS.

Please refer to Annex E for details.

## 5.2 Occupied Bandwidth and Spread-spectrum Bandwidth / Factor

### 5.2.1 Test Requirement

| Test Mode    | Limits   |        |          |          |          |                                    |           |
|--------------|----------|--------|----------|----------|----------|------------------------------------|-----------|
|              | DSSS     |        | OFDM     |          |          |                                    |           |
|              | 20 MHz   | 40 MHz | 20 MHz   | 40 MHz   | 80 MHz   | 80MHz+80MHz<br>(Not adjacent band) | 160MHz    |
| 5.2 GHz Band | 18.0 MHz | --     | 20.0 MHz | 40.0 MHz | 80.0 MHz | 80.0 MHz                           | 160.0 MHz |
| 5.3 GHz Band | 18.0 MHz | --     | 20.0 MHz | 40.0 MHz | 80.0 MHz | 80.0 MHz                           | 160.0 MHz |
| 5.6 GHz Band | 18.0 MHz | --     | 20.0 MHz | 40.0 MHz | 80.0 MHz | 80.0 MHz                           | 160.0 MHz |

### 5.2.2 Test Setup Diagram



### 5.2.3 Test Procedure

Set the spectrum analyzer as follows:

Center frequency: Test frequency (e.g. 5180 MHz);

Frequency sweep width: 2 to 3.5 times wider than the tolerance (e.g. 40 MHz);

Resolution bandwidth: 3% or less of the tolerance (e.g. 300 kHz);

Video bandwidth: Approximately same as the resolution bandwidth;

Y-axis scale: 10 dB / div;

Input level: Carrier level shall be enough higher than noise level of the spectrum analyzer;

Sweep time: Minimum time to ensure the measuring accuracy (In case of burst wave, one burst shall be included in one sample at least.);

Number of data points: 400 points or more (e.g. 1001 points);

Sweep mode: Continuous sweep;

Number of times for averaging: 10 times or more;

Detection mode: Sample (Positive peak for burst wave).

Values measured with a spectrum analyzer shall be processed using an external or a built-in computer.

### 5.2.4 Test Deviation

There is no deviation with the original standard.

### 5.2.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-selected mode.

### 5.2.6 Test Data

PASS.

Please refer to Annex E for details.

### 5.3 Antenna Power Test

#### 5.3.1 Test Requirement

| Test Mode    | Limits (Antenna Power) |           |          |            |                                    |             | Antenna Power Tolerance |
|--------------|------------------------|-----------|----------|------------|------------------------------------|-------------|-------------------------|
|              | DSSS                   | OFDM      |          |            |                                    |             |                         |
|              | 20 MHz                 | 20 MHz    | 40 MHz   | 80 MHz     | 80MHz+80MHz<br>(Not adjacent band) | 160MHz      |                         |
| 5.2 GHz Band | 10 mW/MHz              | 10 mW/MHz | 5 mW/MHz | 2.5 mW/MHz | 1.25 mW/MHz                        | 1.25 mW/MHz | +20%~-80%               |
| 5.3 GHz Band | 10 mW/MHz              | 10 mW/MHz | 5 mW/MHz | 2.5 mW/MHz | 1.25 mW/MHz                        | 1.25 mW/MHz |                         |
| 5.6 GHz Band | 10 mW/MHz              | 10 mW/MHz | 5 mW/MHz | 2.5 mW/MHz | 1.25 mW/MHz                        | 1.25 mW/MHz | +50%~-50%               |

| Test Mode    | Limits (E.I.R.P)       |                        |                          |                          |                                 |                           |
|--------------|------------------------|------------------------|--------------------------|--------------------------|---------------------------------|---------------------------|
|              | DSSS                   | OFDM                   |                          |                          |                                 |                           |
|              | 20 MHz                 | 20 MHz                 | 40 MHz                   | 80 MHz                   | 80MHz+80MHz (Not adjacent band) | 160MHz                    |
| 5.2 GHz Band | 10 mW/MHz              | 10 mW/MHz              | 5 mW/MHz                 | 2.5 mW/MHz               | 1.25 mW/MHz                     | 1.25 mW/MHz               |
| 5.3 GHz Band | 10 mW/MHz: with TPC    | 10 mW/MHz: with TPC    | 5 mW/MHz: with TPC       | 2.5 mW/MHz: with TPC     | 1.25 mW/MHz: with TPC           | 1.25 mW/MHz: with TPC     |
|              | 5 mW/MHz: without TPC  | 5 mW/MHz: without TPC  | 2.5 mW/MHz: without TPC  | 1.25 mW/MHz: without TPC | 0.625 mW/MHz: without TPC       | 0.625 mW/MHz: without TPC |
| 5.6 GHz Band | 50 mW/MHz: with TPC    | 50 mW/MHz: with TPC    | 25 mW/MHz: with TPC      | 12.5 mW/MHz: with TPC    | 1.25 mW/MHz: with TPC           | 6.25 mW/MHz: with TPC     |
|              | 25 mW/MHz: without TPC | 25 mW/MHz: without TPC | 12.5 mW/MHz: without TPC | 6.25 mW/MHz: without TPC | 0.625 mW/MHz: without TPC       | 3.125 mW/MHz: without TPC |

#### 5.3.2 Test Setup Diagram



#### 5.3.3 Test Procedure

|                                               |                                            |
|-----------------------------------------------|--------------------------------------------|
| [Setting 1] – Search for peak power frequency |                                            |
| Center Frequency:                             | Test frequency                             |
| Span:                                         | Approximately twice the occupied bandwidth |
| RBW:                                          | 1MHz                                       |
| VBW:                                          | Approximately three times the RBW          |
| Sweep time:                                   | Auto                                       |
| Sweep data points:                            | 1001 or greater                            |
| Detector mode:                                | Positive peak                              |
| Indication mode:                              | Max hold                                   |

|                                                                         |                                                                                                |
|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| [Setting 2] – Measurement of average antenna power for FHSS, DSSS, OFDM |                                                                                                |
| Frequency:                                                              | Frequency of peak power found using [Setting 1]                                                |
| Span:                                                                   | 0 Hz                                                                                           |
| RBW:                                                                    | 3 MHz (FHSS in 7.4.1.1)<br>1MHz (DSSS, OFDM, FHSS in 7.4.1.2)                                  |
| Detector mode:                                                          | Sample                                                                                         |
| Sweep:                                                                  | Minimum time required to make an accurate measurement.                                         |
|                                                                         | For burst type (intermittent) transmission sweep time shall be greater than one burst interval |
| Sweep data points:                                                      | 1001 or greater                                                                                |

- (1) After configuring the spectrum analyzer to [Setting 1], find the frequency of maximum transmitted power
- (2) After configuring the spectrum analyzer to [Setting 2], measure the Average Burst Power of the frequency found in (1)

Antenna Power (W/MHz) = Average Burst Power

- (3) If the EUT has an 80+80MHz bandwidth system then antenna power shall be measured separately, on each channel, but with both 80MHz transmitters simultaneously enabled.

Note: Measure the period A-B in the figure below:

A B

Measurement of Average Burst Power (A to B)

#### 5.3.4 Test Deviation

There is no deviation with the original standard.

#### 5.3.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-selected mode.

#### 5.3.6 Test Data

PASS.

Please refer to Annex E for details.

## 5.4 Adjacent channel Emitted power Test

### 5.4.1 Test Requirement

Adjacent channel leakage power limit

| Test Mode | Limits                                     |        |                                            |                                            |                                            |                                         |        |
|-----------|--------------------------------------------|--------|--------------------------------------------|--------------------------------------------|--------------------------------------------|-----------------------------------------|--------|
|           | DSSS                                       |        | OFDM                                       |                                            |                                            |                                         |        |
|           | 20 MHz                                     | 40 MHz | 20 MHz                                     | 40 MHz                                     | 80 MHz                                     | 80MHz+80MHz (Not adjacent band)         | 160MHz |
| 5GHz Band | Fc $\pm$ 20 MHz $\pm$ 10 MHz<br>BW:-25 dBc | --     | Fc $\pm$ 20 MHz $\pm$ 10 MHz<br>BW:-25dBc  | Fc $\pm$ 40 MHz $\pm$ 20 MHz<br>BW:-25dBc  | Fc $\pm$ 80 MHz $\pm$ 40 MHz<br>BW:-25 dBc | Fc $\pm$ 80 MHz $\pm$ 40 MHz BW:-25 dBc | --     |
|           | Fc $\pm$ 40 MHz $\pm$ 10 MHz<br>BW:-40 dBc | --     | Fc $\pm$ 40 MHz $\pm$ 10 MHz<br>BW:-40 dBc | Fc $\pm$ 80 MHz $\pm$ 20 MHz<br>BW:-40 dBc |                                            |                                         |        |

### 5.4.2 Test Setup Diagram



### 5.4.3 Test Procedure

1. Set the spectrum analyzer as follows to measure adjacent channel leakage power:

Center frequency: Frequency shown in " Measuring procedures"

Frequency sweep width: Width shown in "Note 1";

Resolution bandwidth: 300 kHz

Video bandwidth: 300 kHz

T-axis scale: 10 dB / div.

Input level: A level to obtain the maximum dynamic range;

Number of data points: 400 points or more;

Sweep mode: Single sweep;

Detection mode: Sample. However, positive peak for burst wave;

Number of times for averaging amplitude levels: Until spectrum fluctuation is not observed

Note 1: Frequency sweep width shall be as follows:

| Band         | Modulation other than OFDM | bandwidth $\leq$ 20 MHz | 20<bandwidth $\leq$ 40 MHz | 40<bandwidth $\leq$ 80 MHz |
|--------------|----------------------------|-------------------------|----------------------------|----------------------------|
| 5.2 GHz Band | 20 MHz                     | 20 MHz                  | 40 MHz                     | 80 MHz                     |
| 5.3 GHz Band | 20 MHz                     | 20 MHz                  | 40 MHz                     | 80 MHz                     |
| 5.6 GHz Band | 20 MHz                     | 20 MHz                  | 40 MHz                     | 80 MHz                     |

#### Measurement procedures

I) Measurement of adjacent channel leakage power:

1. Set the spectrum analyzer according to spectrum analyzer settings.

2. Measurement of carrier power (Pc)

(a). Sweep by setting the center frequency to the carrier frequency.

(b). Store the values at all data points into the computer array variables.

(c). Convert dB values at all data points into antilogarithm on the power dimension.

(d). Calculate sum total of the power at all data points and store it as "Pc".

3. Measurement of upper adjacent channel leakage power (PU)
  - (a). Sweep by setting the center frequency to "carrier frequency + 20 MHz or 40 MHz (Note 3)".
  - (b). Store the values at all data points into the computer array variables.
  - (c). Convert dB values at all data points into antilogarithm on the power dimension.
  - (d). Calculate sum total of the power at all data points and store it as "Pu".
  - (e). Sweep by setting the center frequency to "carrier frequency + 40 MHz or 80 MHz (Note 3)" and then repeat the procedures of (b) to (d).
4. Measurement of lower adjacent channel leakage power (PL)
  - (a). Sweep by setting the center sequence to "carrier frequency - 20 MHz or 40 MHz (Note 3)".
  - (b). Store the values at all data points into the computer array variables.
  - (c). Convert dB values at all data points into antilogarithm on the power dimension.
  - (d). Calculate sum total of the power at all data points and store it as "PL".
  - (e). Sweep by setting the center frequency to "carrier frequency - 40 MHz or 80 MHz (Note 3)" and then repeat the procedures of (b) to (d).
5. When EUT has plural antenna terminals, above measurement shall be conducted in the state that the terminals are connected through a combiner besides the measurement at each antenna terminal.

#### 5.4.4 Test Deviation

There is no deviation with the original standard.

#### 5.4.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-selected mode.

#### 5.4.6 Test Data

PASS.

Please refer to Annex E for details.

## 5.5 Transmission burst length Test

### 5.5.1 Test Requirement

| Item        | Limits       |
|-------------|--------------|
| All of mode | 8 ms or less |

### 5.5.2 Test Setup Diagram



### 5.5.3 Test Procedure

Set the spectrum analyzer as follows:

Center frequency: Test frequency;

Frequency sweep width: 0 Hz;

Resolution bandwidth: 8 MHz;

Video bandwidth: Approximately same as the resolution bandwidth;

Sweep time: Minimum time to ensure the measuring accuracy;

Y-axis scale: 10 dB / div;

Detection mode: Positive peak;

Trigger condition: Leading edge of level.

#### Measuring procedures

(1) Set the spectrum analyzer according to "2" above. Then set the trigger condition to a leading edge trigger and the EUT to transmission state.

(2) When EUT has plural antenna terminals, combine the output of the antenna terminals referring to "6. Supplementary explanation" and measure the time from start of radio wave transmission by an antenna to termination of radio wave transmission by all antennas.

### 5.5.4 Test Deviation

There is no deviation with the original standard.

### 5.5.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-selected mode.

### 5.5.6 Test Data

PASS.

Please refer to Annex E for details.

## 5.6 Unwanted Emission Strength

### 5.6.1 Test Requirement

#### Unwanted Emission Strength Limit

| W52                                                  |                                                      |                                                                   |                                                                    |
|------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------|
| 20MHz system                                         |                                                      | 40MHz system                                                      | 80MHz system                                                       |
| OBW : 18MHz or less                                  | OBW : 18 - 20 MHz                                    |                                                                   |                                                                    |
| 5,142 MHz or less : 2.5 $\mu$ W/MHz                  | 5,142 MHz or less : 2.5 $\mu$ W/MHz                  | 5,141.6 MHz or less : 2.5 $\mu$ W/MHz                             | 5,123.2 MHz or less : 2.5 $\mu$ W/MHz                              |
| 5,142 - 5,150 MHz : 15 $\mu$ W/MHz                   | 5,142 - 5,150 MHz : 15 $\mu$ W/MHz                   | 5,141.6 - 5,150 MHz : 15 $\mu$ W/MHz                              | 5,123.2 - 5,150 MHz : 15 $\mu$ W/MHz                               |
|                                                      | 5,250 - 5,250.2 MHz : $10^{1-(9/3)(f-5250)}$ mW/MHz  |                                                                   |                                                                    |
| 5,250 - 5,251 MHz : $10^{1-(f-5250)}$ mW/MHz         | 5,250.2 - 5,251 MHz : $10^{1-(f-5250)}$ mW/MHz       | 5,250 - 5,251 MHz : $10^{-(f-5250)+\log(1/2)}$ mW/MHz             | 5,250 - 5,251 MHz : $10^{-(f-5250)+\log(1/4)}$ mW/MHz              |
| 5,251 - 5,260 MHz : $10^{1-(8/90)(f-5251)}$ mW/MHz   | 5,251 - 5,260 MHz : $10^{1-(8/90)(f-5251)}$ mW/MHz   | 5,251 - 5,270 MHz : $10^{-(8/190)(f-5251)-1+\log(1/2)}$ mW/MHz    | 5,251 - 5,290 MHz : $10^{-(8/390)(f-5251)-1+\log(1/4)}$ mW/MHz     |
| 5,260 - 5,266.7 MHz : $10^{1-(6/50)(f-5260)}$ mW/MHz | 5,260 - 5,266.7 MHz : $10^{1-(6/50)(f-5260)}$ mW/MHz | 5,270 - 5,278.4 MHz : $10^{-(3/50)(f-5270)-1.8+\log(1/2)}$ mW/MHz | 5,290 - 5,296.7 MHz : $10^{-(3/100)(f-5290)-1.8+\log(1/4)}$ mW/MHz |
| 5,266.7 MHz or more : 2.5 $\mu$ W/MHz                | 5,266.7 MHz or more : 2.5 $\mu$ W/MHz                | 5,278.4 MHz or more : 2.5 $\mu$ W/MHz                             | 5,296.7 MHz or more : 2.5 $\mu$ W/MHz                              |
| f = MHz, Difference from 5240 (MHz)                  | f = MHz, Difference from 5240 (MHz)                  | f = MHz, Difference from 5230 (MHz)                               | f = MHz, Difference from 5210 (MHz)                                |

| W53                                                  |                                                      |                                                                   |                                                                    |
|------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------|
| 20MHz system                                         |                                                      | 40MHz system                                                      | 80MHz system                                                       |
| OBW : 18MHz or less                                  | OBW : 18 - 20 MHz                                    |                                                                   |                                                                    |
| 5,233.3 MHz or less : 2.5 $\mu$ W/MHz                | 5,233.3 MHz or less : 2.5 $\mu$ W/MHz                | 5,221.6 MHz or less : 2.5 $\mu$ W/MHz                             | 5,203.3 MHz or less : 2.5 $\mu$ W/MHz                              |
| 5,233.3 - 5,240 MHz : $10^{1-(8/50)(f-5233)}$ mW/MHz | 5,233.3 - 5,240 MHz : $10^{1-(8/50)(f-5233)}$ mW/MHz | 5,221.6 - 5,230 MHz : $10^{-(3/50)(f-5221)-1.8+\log(1/2)}$ mW/MHz | 5,203.3 - 5,210 MHz : $10^{-(3/100)(f-5203)-1.8+\log(1/4)}$ mW/MHz |
| 5,240 - 5,249 MHz : $10^{1-(8/90)(f-5240)}$ mW/MHz   | 5,240 - 5,249 MHz : $10^{1-(8/90)(f-5240)}$ mW/MHz   | 5,230 - 5,249 MHz : $10^{-(8/190)(f-5230)-1+\log(1/2)}$ mW/MHz    | 5,210 - 5,249 MHz : $10^{-(8/390)(f-5210)-1+\log(1/4)}$ mW/MHz     |
| 5,249 - 5,250 MHz : $10^{1-(f-5249)}$ mW/MHz         | 5,249 - 5,249.8 MHz : $10^{1-(f-5249)}$ mW/MHz       | 5,249 - 5,250 MHz : $10^{-(f-5249)+\log(1/2)}$ mW/MHz             | 5,249 - 5,250 MHz : $10^{-(f-5249)+\log(1/4)}$ mW/MHz              |
| 5,350 MHz or more : 2.5 $\mu$ W/MHz                  | 5,249.8 - 5,250 MHz : $10^{1-(8/3)(f-5249)}$ mW/MHz  | 5,350 - 5,358.4 MHz : 15 $\mu$ W/MHz                              | 5,350 - 5,376.8 MHz : 15 $\mu$ W/MHz                               |
|                                                      | 5,350 MHz or more : 2.5 $\mu$ W/MHz                  | 5,358.4 MHz or more : 2.5 $\mu$ W/MHz                             | 5,376.8 MHz or more : 2.5 $\mu$ W/MHz                              |
| f = MHz, Difference from 5260 (MHz)                  | f = MHz, Difference from 5260 (MHz)                  | f = MHz, Difference from 5270 (MHz)                               | f = MHz, Difference from 5290 (MHz)                                |

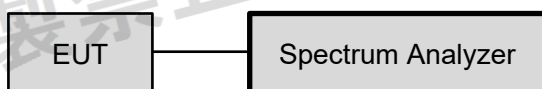
| W56                                  |                                      |                                      |                                        |
|--------------------------------------|--------------------------------------|--------------------------------------|----------------------------------------|
| 20MHz system                         |                                      | 40MHz system                         | 80MHz system                           |
| DSSS, etc.                           | OFDM                                 |                                      |                                        |
| 5,470 MHz or less : 12.5 $\mu$ W/MHz | 5,460 MHz or less : 2.5 $\mu$ W/MHz  | 5,460 MHz or less : 12.5 $\mu$ W/MHz | 5,460 MHz or less : 12.5 $\mu$ W/MHz   |
|                                      | 5,460 - 5,470 MHz : 12.5 $\mu$ W/MHz | 5,460 - 5,470 MHz : 50 $\mu$ W/MHz   | 5,460 - 5,469.5 MHz : 50 $\mu$ W/MHz   |
| 5,730 MHz or more : 12.5 $\mu$ W/MHz | 5,745 - 5,765 MHz : 12.5 $\mu$ W/MHz | 5,770 MHz or more : 12.5 $\mu$ W/MHz | 5,469.5 - 5,470 MHz : 51.2 $\mu$ W/MHz |
|                                      | Over 5,765 MHz : 2.5 $\mu$ W/MHz     |                                      | 5,770 MHz or more : 12.5 $\mu$ W/MHz   |

| W52 + W53                             | W56                                    |
|---------------------------------------|----------------------------------------|
| 160MHz system                         |                                        |
| 5,099.6 MHz or less : 2.5 $\mu$ W/MHz | 5,419.6 MHz or less : 12.5 $\mu$ W/MHz |
| 5,099.6 - 5,150 MHz : 15 $\mu$ W/MHz  | 5,419.6 - 5,470 MHz : 50 $\mu$ W/MHz   |
| 5,350 - 5,400.4 MHz : 15 $\mu$ W/MHz  | 5,725 MHz or more : 12.5 $\mu$ W/MHz   |
| 5,400.4 MHz or more : 2.5 $\mu$ W/MHz |                                        |

\* A rated value is defined by the E.I.R.P.  
\* Measurement range: 30MHz to 26GHz

| 5.21GHz & (5.53GHz, 5.61GHz or 5.69GHz)                                                                                         | 5.29GHz & (5.53GHz, 5.61GHz or 5.69GHz)                          | 5.53GHz & 5.69GHz                      |
|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------|
| 80MHz + 80MHz system (Not adjacent radio)                                                                                       |                                                                  |                                        |
| 5,134.8 MHz or less : 2.5 $\mu$ W/MHz                                                                                           | 5,214.8 MHz or less : 2.5 $\mu$ W/MHz                            | 5,419.6 MHz or less : 12.5 $\mu$ W/MHz |
| 5,134.8 - 5,150 MHz : 162.5 $\mu$ W/MHz                                                                                         | 5,214.8 - 5,249 MHz : $10^{-(8/390)(f-5214)-1+\log(1/8)}$ mW/MHz | 5,419.6 - 5,470 MHz : 50 $\mu$ W/MHz   |
| 5,250 - 5,251 MHz : $10^{-(f-5250)+\log(1/8)}$ mW/MHz                                                                           | 5,249 - 5,250 MHz : $10^{-(f-5249)+\log(1/8)}$ mW/MHz            |                                        |
| 5,251 - 5,285.2 MHz : $10^{-(8/390)(f-5251)-1+\log(1/8)}$ mW/MHz                                                                | 5,350 - 5,365.2 MHz : 15 $\mu$ W/MHz                             | 5,770 MHz or more : 12.5 $\mu$ W/MHz   |
| 5,285.2 - 5,370 MHz : 2.5 $\mu$ W/MHz                                                                                           | 5,365.2 - 5,410 MHz : 2.5 $\mu$ W/MHz                            |                                        |
| 5,370 - 5,454.8 MHz : 2.5 $\mu$ W/MHz (When used simultaneously with a 5.2GHz band high-power radio station : 12.5 $\mu$ W/MHz) | 5,410 - 5,454.8 MHz : 2.5 $\mu$ W/MHz                            |                                        |
| 5,454.8 - 5,470 MHz : 15 $\mu$ W/MHz (When used simultaneously with a 5.2GHz band high-power radio station : 50 $\mu$ W/MHz)    | 5,454.8 - 5,470 MHz : 15 $\mu$ W/MHz                             |                                        |
| 5,730 MHz or more : 15 $\mu$ W/MHz                                                                                              | 5,730 MHz or more : 15 $\mu$ W/MHz                               |                                        |
| (*When used 5690MHz)                                                                                                            | (*When used 5690MHz)                                             |                                        |
| 5,770 MHz or more : 15 $\mu$ W/MHz                                                                                              | 5,770 MHz or more : 15 $\mu$ W/MHz                               |                                        |
| f = MHz, Difference from 5210 (MHz)                                                                                             | f = MHz, Difference from 5290 (MHz)                              |                                        |

### 5.6.2 Test Setup Diagram



### 5.6.3 Test Procedure

1. Set the spectrum analyzer as follows to search for unwanted emissions:  
 Frequency sweep width: (See Note 1);  
 Resolution bandwidth: 1 MHz;  
 Video bandwidth: Approximately same as the resolution bandwidth;  
 Y-axis scale: 10 dB / div;  
 Input level: A level to obtain the maximum dynamic range;  
 Sweep time: Minimum time to ensure the measuring accuracy (See Note 2);  
 Number of data points: 400 points or more (e.g. 1001 points);  
 Sweep mode: Single sweep;  
 Detection mode: Positive peak.
2. Set the spectrum analyzer as follows to measure unwanted emission level:  
 Center frequency: Unwanted emission frequency (searched frequency);  
 Frequency sweep width: 0 Hz;  
 Resolution bandwidth: 1 MHz;  
 Video bandwidth: Approximately same as the resolution bandwidth;  
 Y-axis scale: 10 dB / div;  
 Input level: A level to obtain the maximum dynamic range;  
 Sweep time: Minimum time to ensure the measuring accuracy. However, for burst wave, the time shall be longer than duration of one burst.  
 Number of data points: 400 points or more (e.g. 1001 points);  
 Sweep mode: Single sweep;  
 Detection mode: Sample.

Note 1: Search for unwanted emissions from 30 MHz to 26 GHz excluding the following frequency range:

| Band         | Bandwidth 18≤MHz              | Bandwidth >18MHz and ≤19 MHz | Bandwidth >19 MHz and ≤38 MHz |
|--------------|-------------------------------|------------------------------|-------------------------------|
| 5.2 GHz Band | 5140 MHz to 5360 MHz          | 5135 MHz to 5365 MHz         | 5100 MHz to 5400 MHz          |
| 5.3 GHz Band | 5140 MHz to 5360 MHz          | 5135 MHz to 5365 MHz         | 5100 MHz to 5400 MHz          |
| 5.6 GHz Band | 5460 MHz to 5740 MHz          | 5455 MHz to 5745 MHz         | 5420 MHz to 5760 MHz          |
| Band         | Bandwidth >38 MHz and ≤78 MHz | Bandwidth >78 MHz            |                               |
| 5.2 GHz Band | 5020 MHz to 5480 MHz          | 4916 MHz to 5584 MHz         |                               |
| 5.3 GHz Band | 5020 MHz to 5480 MHz          | 4916 MHz to 5584 MHz         |                               |
| 5.6 GHz Band | 5340 MHz to 5800 MHz          | 5236 MHz to 5904 MHz         |                               |

Note 2: In case of burst wave, sweep time can be set in accordance with the following formula to shorten the sweep time:

Sweep time (s)  $\geq$  (frequency sweep width (MHz) / resolution bandwidth (MHz)) x burst repetition period (sec).  
 However detected signal level may be observed as lower than the actual level by 3 dB at the maximum and therefore careful measurement is required.

#### Measuring procedures

(1) Set the spectrum analyzer according to spectrum analyzer settings and search for unwanted emissions by sweeping. When amplitude level of the searched emission is within the tolerance ("tolerance - 3 dB" in case of Note 3 in analyzer settings), the amplitude level is used as the measured value and the measurement in spectrum analyzer settings is not necessary.

- (2) When amplitude level of the searched emission exceeds the tolerance ("tolerance - 3 dB" in case of Note 3 in analyzer settings), narrow down the frequency sweep width sequentially from 100 MHz in order to raise frequency accuracy of the spectrum analyzer and measure frequency of the unwanted emission precisely. Set the spectrum analyzer according to spectrum analyzer settings and obtain the mean value of amplitude levels of the unwanted emission. In case of burst wave, obtain the mean value within each burst.
- (3) When EUT has plural antenna terminals, perform above measurement for each antenna terminal.

#### 5.6.4 Test Deviation

There is no deviation with the original standard.

#### 5.6.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-selected mode.

#### 5.6.6 Test Data

PASS.

Please refer to Annex E for details.

## 5.7 Secondary Radiated Emissions Test

### 5.7.1 Test Requirement

| Item                 | Limits                                      |
|----------------------|---------------------------------------------|
| RX Spurious Emission | $\leq 4\text{nW}$ ( $f < 1\text{GHz}$ )     |
|                      | $\leq 20\text{nW}$ ( $1\text{GHz} \leq f$ ) |

### 5.7.2 Test Setup Diagram



### 5.7.3 Test Procedure

- (1) Set the dummy load attenuation to a range as low as possible (20 dB or less) because of low level measurement.
- (2) Set the spectrum analyzer as follows to search for secondary radiated emissions;
  - Frequency sweep width: (See Note 2.)
  - Resolution bandwidth: 100 kHz for frequency of below 1 GHz; 1 MHz for frequency of 1 GHz or higher.
  - Video bandwidth: Approximately same as the resolution bandwidth
  - Sweep time: Minimum time to ensure the measuring accuracy
  - Y-axis scale: 10 dB / div
  - Number of data points: 400 points or more (e.g. 1001 points)
  - Sweep mode: Single sweep
  - Detection mode: Positive peak

Note 2: Search for secondary radiated emissions from 30 MHz to 26 GHz.

- (3) Set the spectrum analyzer as follows to measure secondary radiated emission levels;
  - Center frequency: Frequency of secondary radiated emission to be measured (searched frequency)
  - Frequency sweep width: 0 Hz
  - Resolution bandwidth: 100 kHz for frequency of below 1 GHz; 1 MHz for frequency of 1 GHz or higher
  - Video bandwidth: Approximately same as the resolution bandwidth
  - Sweep time: Minimum time to ensure the measuring accuracy
  - Y-axis scale: 10 dB / div;
  - Number of data points: 400 points or more (e.g. 1001 points)
  - Sweep mode: Single sweep
  - Detection mode: Positive peak

#### Measuring procedures

- (1) Set the spectrum analyzer according to spectrum analyzer settings and search for the maximum amplitude level of secondary radiated emissions.
- (2) When the maximum amplitude level of the searched emissions is one tenth (1 / 10) or less of the tolerance, put the level as the measured value.
- (3) When the maximum amplitude level of the searched emissions is over one tenth (1 / 10) of the tolerance, narrow down the frequency sweep width sequentially from 100 MHz up to approximately 10 times the resolution bandwidth in order to raise the center frequency accuracy of the spectrum analyzer and read the frequency. Then set the spectrum analyzer according to spectrum analyzer settings and measure the mean power by averaging the levels.
- (4) When EUT has plural antenna terminals, above measurement shall be conducted for each terminal.

#### 5.7.4 Test Deviation

There is no deviation with the original standard.

#### 5.7.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-selected mode.

#### 5.7.6 Test Data

PASS.

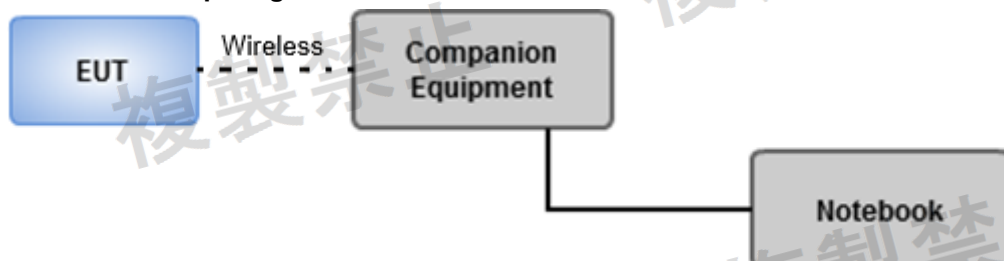
Please refer to Annex E for details.

## 5.8 Interference Prevention Function

### 5.8.1 Test Requirement

|      |                                                                                          |
|------|------------------------------------------------------------------------------------------|
| Item | Limits                                                                                   |
|      | EUT shall have a function of automatic transmission or reception of identification code. |

### 5.8.2 Test Setup Diagram



### 5.8.3 Test Procedure

- (1) The demodulator shall be able to demodulate signals transmitted from the EUT and display description on a received identification code.
- (2) The "equipment to communicate with EUT" shall be able to transmit identification code equivalent to the code transmitted from the EUT.

#### Measuring procedures

- (1) In case that the EUT has a function to transmit identification code automatically;
  - a. Transmit a specified identification code from the EUT.
  - b. Verify the transmitted identification code using the demodulator.
- (2) In case that the EUT has a function to receive identification code automatically;
  - a. Transmit a specified identification code from the "equipment to communicate with EUT".
  - b. Verify that communication is normally conducted.
  - c. Transmit a code other than the specified identification code from the "equipment to communicate with EUT".
  - d. Verify that the EUT stops the transmission or the display indicates message showing wrong identification code.
- (3) If above conditions cannot be achieved, confirm them from the submitted documents.

### 5.8.4 Test Deviation

There is no deviation with the original standard.

### 5.8.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-selected mode.

### 5.8.6 Test Data

PASS.

| Mode    | ID Code           | Test Results |
|---------|-------------------|--------------|
| 5G WiFi | 15:B7:24:39:60:13 | Pass         |

## 5.9 Carrier sensing function

### 5.9.1 Test Requirement

| Item | Limits                                                                                                                                                                                                                                                                                                                                                                                                   |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|      | <p>Field intensity in the direction of the maximum gain of a receiving antenna: 100mV/m</p> <p>Start transmission after performing a carrier sense. However, when transmission and reception are controlled from the radio equipment and when the radio equipment which performed transmission resumes transmission within 8millisecond after a career sense, it can omit performing a career sense.</p> |

### 5.9.2 Test Setup Diagram



### 5.9.3 Test Procedure

- (1) Set the dummy load attenuation to a range as low as possible (20 dB or less) because of low level measurement.
- (2) Set the spectrum analyzer as follows to search for secondary radiated emissions;
  - Frequency sweep width: (See Note 2.)
  - Resolution bandwidth: 100 kHz for frequency of below 1 GHz; 1 MHz for frequency of 1 GHz or higher.
  - Video bandwidth: Approximately same as the resolution bandwidth
  - Sweep time: Minimum time to ensure the measuring accuracy
  - Y-axis scale: 10 dB / div
  - Number of data points: 400 points or more (e.g. 1001 points)
  - Sweep mode: Single sweep
  - Detection mode: Positive peak

Note 2: Search for secondary radiated emissions from 30 MHz to 26 GHz.

- (3) Set the spectrum analyzer as follows to measure secondary radiated emission levels;
  - Center frequency: Frequency of secondary radiated emission to be measured (searched frequency)
  - Frequency sweep width: 0 Hz
  - Resolution bandwidth: 100 kHz for frequency of below 1 G Hz; 1 MHz for frequency of 1 GHz or higher
  - Video bandwidth: Approximately same as the resolution bandwidth
  - Sweep time: Minimum time to ensure the measuring accuracy
  - Y-axis scale: 10 dB / div;
  - Number of data points: 400 points or more (e.g. 1001 points)
  - Sweep mode: Single sweep
  - Detection mode: Positive peak

#### Measuring procedures

- (1) Set the spectrum analyzer according to spectrum analyzer settings and search for the maximum amplitude level of secondary radiated emissions.
- (2) When the maximum amplitude level of the searched emissions is one tenth (1 / 10) or less of the tolerance, put the level as the measured value.
- (3) When the maximum amplitude level of the searched emissions is over one tenth (1 / 10) of the tolerance, narrow down the frequency sweep width sequentially from 100 MHz up to approximately 10 times the resolution bandwidth in order to raise the center frequency accuracy of the spectrum analyzer and read the frequency. Then set the spectrum analyzer according to spectrum analyzer settings and measure the mean power by averaging the levels.
- (4) When EUT has plural antenna terminals, above measurement shall be conducted for each terminal.

#### 5.9.4 Test Deviation

There is no deviation with the original standard.

#### 5.9.5 EUT Operation during Test

The EUT was programmed to be in continuous transmit, channel-selected mode.

#### 5.9.6 Test Data

PASS.

Test Data:

| Mode            | Normal Voltage | High Voltage | Low Voltage | Verdict |
|-----------------|----------------|--------------|-------------|---------|
| 802.11a         | Ok             | N/A          | N/A         | Pass    |
| 802.11n(HT20)   | Ok             | N/A          | N/A         | Pass    |
| 802.11n(HT40)   | Ok             | N/A          | N/A         | Pass    |
| 802.11ac(VHT20) | Ok             | N/A          | N/A         | Pass    |
| 802.11ac(VHT40) | Ok             | N/A          | N/A         | Pass    |
| 802.11ac(VHT80) | Ok             | N/A          | N/A         | Pass    |
| 802.11ax(HEW20) | Ok             | N/A          | N/A         | Pass    |
| 802.11ax(HEW40) | Ok             | N/A          | N/A         | Pass    |
| 802.11ax(HEW80) | Ok             | N/A          | N/A         | Pass    |

Note:

$P_{in} = 22.79 + Gr - 20 \cdot \log(\text{Freq MHz}) [\text{dBm}]$

Limit: 100mw/m eirp

Confirmed at -50dBm

The RF and modulation portions are protected against illegal modification as following method:

Reference Photo



## **ANNEX A TEST SETUP PHOTOS**

Please refer to the document "8334EU011907W-AA.PDF"

## **ANNEX B EXTERNAL PHOTOS**

Please refer to the document "8334EU011907W-AB.PDF"

## **ANNEX C INTERNAL PHOTOS**

Please refer to the document "8334EU011907W-AC.PDF"

## **ANNEX E TEST DATA**

Please refer to the document "8334EU011907W-AE.PDF"

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