Certificate #5505.02

# TEST REPORT FOR WLAN TESTING

Report No.: SRTC2023-9004(F)-23031502(R)

Product Name: Smart Phone

Product ID: APYHRO00324

Applicant: Sharp Corporation

Manufacturer: Sharp Corporation

Specification: FCC Part 15 Subpart E (2022)

ANSI C63.10 (2013)

FCCID：APYHRO00324

The State Radio_monitoring_center Testing Center (SRTC)

15th Building, No.30Shixing Street, Shijingshan District, Beijing, P.R.China

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# 1. GENERAL INFORMATION

## 1.1 Notes of the test report

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## 1.2 Information about the testing laboratory

| | |
|---|---|
| Company: | The State Radio_monitoring_center Testing Center (SRTC) |
| Test Site 1: | 15th Building, No.30 Shixing Street, Shijingshan District |
| Test Site 2: | No.80, Zhaojiachang, Beizang, Daxing District |
| City: | Beijing |
| Country or Region: | P.R.China |
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| Tel: | +86 10 57996183 |
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| Email: | liujiaf@srtc.org.cn |
| Designation Number: | CN1267 |
| Registration number: | 239125 |

## 1.3 Applicant’s details

| | |
|---|---|
| Company: | Sharp Corporation |
| Address: | 1 Takumi-cho, Sakai-ku, Sakai City, Osaka 590-8522, Japan |

## 1.4 Manufacturer’s details

| | |
|---|---|
| Company: | Sharp Corporation |
| Address: | 1 Takumi-cho, Sakai-ku, Sakai City, Osaka 590-8522, Japan |

## 1.5 Test Environment

| | |
|---|---|
| Date of Receipt of test sample at SRTC: | 2023-03-15 |
| Testing Start Date: | 2023-03-16 |
| Testing End Date: | 2023-04-14 |

| Environmental Data: | Temperature (°C) | Humidity (%) |
|---|---|---|
| Ambient | 25 | 40 |
| Maximum Extreme | 55 | --- |
| Minimum Extreme | -10 | --- |

| | |
|---|---|
| Normal Supply Voltage (V d.c.): | 4.0 |
| Maximum Extreme Supply Voltage (V d.c.): | 4.0 |
| Minimum Extreme Supply Voltage (V d.c.): | 3.7 |

# 2. DESCRIPTION OF THE DEVICE UNDER TEST

## 2.1Final Equipment Build Status

| | |
|---|---|
| Frequency Band(s): | U-NII-5:5945MHz-6425MHz |
| Modulation Type: | 802.11a<br>802.11ax (HE20/HE40/HE80/HE160) |
| RU Type | Full RU<br>Partial RU |
| Antenna Type: | PIFA |
| Antenna Gain: | ANT4: 0 dBi<br>ANT8: -1.3 dBi |
| Directional Gain: | 0dBi(for Power)<br>2.38dBi(for PSD) |
| Power Supply: | Battery/DC supply |
| Software Revision: | NA |
| Hardware Revision: | PVT(Remodeled to the equivalent of MP products) |
| IMEI: | 004401231335569 |

## 2.2Wireless Technology and Frequency Range

| Wireless Technology | | Bandwidth | Channel | Frequency(MHz) |
|---|---|---|---|---|
| Wi-Fi | U-NII-5 | 20 | 1 | 5955 |
| | | | 5 | 5975 |
| | | | 9 | 5995 |
| | | | 13 | 6015 |
| | | | 17 | 6035 |
| | | | 21 | 6055 |
| | | | 25 | 6075 |
| | | | 29 | 6095 |
| | | | 33 | 6115 |
| | | | 37 | 6135 |
| | | | 41 | 6155 |
| | | | 45 | 6175 |
| | | | 49 | 6195 |
| | | | 53 | 6215 |
| | | | 57 | 6235 |
| | | | 61 | 6255 |
| | | | 65 | 6275 |
| | | | 69 | 6295 |
| | | | 73 | 6315 |
| | | | 77 | 6335 |
| | | | 81 | 6355 |
| | | | 85 | 6375 |
| | | | 89 | 6395 |
| | | | 93 | 6415 |
| | | 40 | 3 | 5965 |
| | | | 11 | 6005 |
| | | | 19 | 6045 |
| | | | 27 | 6085 |
| | | | 35 | 6125 |
| | | | 43 | 6165 |
| | | | 51 | 6205 |
| | | | 59 | 6245 |
| | | | 67 | 6285 |
| | | | 75 | 6325 |
| | | | 83 | 6365 |
| | | | 91 | 6405 |
| | | 80 | 7 | 5985 |
| | | | 23 | 6065 |
| | | | 39 | 6145 |
| | | | 55 | 6225 |
| | | | 71 | 6305 |
| | | | 87 | 6385 |
| | | 160 | 15 | 6025 |
| | | | 47 | 6185 |
| | | | 79 | 6345 |

## 2.3 Support Equipment

The following support equipment was used to exercise the DUT during testing:
N/A

## 2.4 Note

| Automatically Discontinue Transmission | |
|---|---|
| **Description** | The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met. |
| **Result** | While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission. |

**Antenna requirement (FCC part 15.203)**

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 shall be considered sufficient to comply with the provisions of this section.

•The antenna(s) of the EUT are permanently attached.

•There are no provisions for connection to an external antenna.

Note: The antenna provides to the EUT, please refer to the following table:

| Brand | Model | Antenna gain | Frequency Bands | Antenna type | Connecter Type |
|---|---|---|---|---|---|
| N/A | N/A | ANT4: 0 dBi<br>ANT8: -1.3dBi | U-NII-5:5945MHz-6425MHz | PIFA | N/A |

Note1: Manufacturers ensure that their designs will not be modified by the user or third party's arbitrary antenna parameters and performance. The EUT complies with the requirement of §15.203.

Note2: The antenna gain is provided by the customer and involved in the calculation and influence of the test results. Our laboratory takes the value declared by the customer as the criterion, and the customer is responsible for the antenna gain value. Manufacturers ensure that their designs will not be modified by the user or third party's arbitrary antenna parameters and performance.

NOTE3： Refer to section F of 662911 D01, Categorization as Correlated or Completely Uncorrelated:

*Correlated* signals include, but are not limited to, signals transmitted in any of the following modes:

- *Any transmit beamforming mode*, whether fixed or adaptive (*e.g.,* phased array modes, closed loop MIMO modes, Transmitter Adaptive Antenna modes, Maximum Ratio Transmission (MRT) modes, and Statistical Eigen Beamforming (EBF) modes).
- *Cyclic Delay Diversity (CDD) modes, also known as Cyclic Shift Diversity (CSD)* (including modes for 802.11n and later devices to communicate with legacy 802.11 devices). In CDD modes, the same digital data is carried by each transmit antenna, but with different cyclic delays. The signals are highly correlated at any one frequency, though not necessarily at zero time delay. In particular, correlations tend to be high over the bandwidths specified for in-band PSD measurements in FCC rule parts that require reductions in PSD when directional gain exceeds a threshold.

*Completely uncorrelated* signals include those transmitted in the following modes, if they are not combined with any correlated modes, such as beamforming:

- Space Time Block Codes (STBC) or Space Time Codes (STC) for which different digital data is carried by each transmit antenna during any symbol period (*e.g.,* WiMAX Matrix A [Alamouti coding]).
- Spatial Multiplexing MIMO (SM-MIMO), for which independent data streams are sent to each transmit antenna (*e.g.,* WiMAX Matrix B). WiMAX Matrix C, which adds diversity, also produces uncorrelated transmit signals.

EUT is CDD MODE。the output signals are Correlated。

For CDD transmissions directional gain is calculated as：

a) For power, the directional gain GANT is set equal to the antenna having the highest gain, i.e..

Directional gain = GANT MAX (Ant.1 Gain, Ant.2 Gain. ...) + Array Gain, where Array Gain = 0 dB (i.e., no array gain) for NANT < 4

b) For PSD, the directional gain calculation is following.

Directional gain = 10 log[$(10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10})^2/N_{ANT}$] dBi

# 3 REFERENCE SPECIFICATION

| Specification | Version | Title |
|---|---|---|
| FCC part 15 Subpart E | 2022 | Unlicensed national information infrastructure devices |
| ANSI C63.10 | 2013 | Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices |
| KDB 644545 D03 | August 14, 2014 | Guidance for IEEE std 802.11actm devices emission testing |
| KDB 905462 D03 | August 22, 2016 | U-NII client devices without radar detection capability |
| KDB 905462 D02 | April 8, 2016 | Compliance measurement procedures for unlicensed-national information infrastructure devices operating in the 5250-5350 MHz and 5470-5725 MHz bands incorporating dynamic frequency selection |
| KDB 662911 D01 | October 31, 2013 | Emissions testing of transmitters with multiple outputs in the same band |
| KDB 789033 D02 | December 14, 2017 | Guidelines for compliance testing of unlicensed national information infrastructure (U-NII) devices part 15, subpart e |
| KDB 987594 D02 | February 04, 2021 | Guidelines for compliance testing of unlicensed national information infrastructure 6 Ghz (U-Nii) devices Part 15, Subpart E. |

# 4 KEY TO NOTES AND RESULT CODES

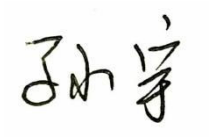
The following are the definition of the test result.

| Code | Meaning |
|---|---|
| PASS | Test result shows that the requirements of the relevant specification have been met. |
| FAIL | Test result shows that the requirements of the relevant specification have not been met. |
| NT | Normal Temperature |
| NV | Nominal voltage |
| HV | High voltage |
| LV | Low voltage |

# 5. RESULT SUMMARY

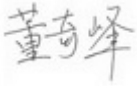
| No. | Test case | FCC reference | Verdict | Test Site |
|---|---|---|---|---|
| (1) | 26dB Bandwidth and 99% Bandwidth | 15.407(a)(10) | Pass | 1 |
| (2) | Maximum Conducted Output Power | 15.407(a)(10) | Pass | 1 |
| (3) | Maximum Power Spectral Density | 15.407(a)(10) | Pass | 1 |
| (4) | In-Band Emissions | 15.407(b)(6) | Pass | 1 |
| (5) | Contention Based Protocol | 15.407(d)(6) | Pass | 1 |

Test Site 1: 15th Building, No.30 Shixing Street, Shijingshan District

| | |
|---|---|
| This Test Report Is Approved by:<br>Mr. Peng Zhen  | Review by:<br>Mr. Li Bin  |
| Tested and Issued by:<br>Mr. Sun Yu  | Approved date:<br>20230608 |

| No. | Test case | FCC reference | Verdict | Test Site |
|---|---|---|---|---|
| (6) | Undesirable Emissions and Unwanted Radiated Emission Measurement | 15.205<br>15.407(b)(5)<br>15.407(b)(7),(8) | Pass | 2 |
| (7) | AC Power line Conducted Emission | 15.407(b)(8) | Pass | 2 |

Test Site 2: No.80, Zhaojiachang, Beizang, Daxing District

| | |
|---|---|
| This Test Report Is Approved by:<br>Mr. Liu Wei  | Review by:<br>Mr. Guo Yu  |
| Tested and Issued by:<br>Mr. Dong Qifeng  | Approved date:<br>20230608 |

# 6 TEST RESULT

## 6.1 26dB Bandwidth and 99% Bandwidth

### 6.1.1Test limit

The maximum transmitter channel 26 dB bandwidth for U-NII devices in the5.925-7.125 GHz band is 320MHz. 99% of the occupied bandwidth of any channel must be contained with in each of its respective U-NII sub bands.

### 6.1.2 Test Procedure Used

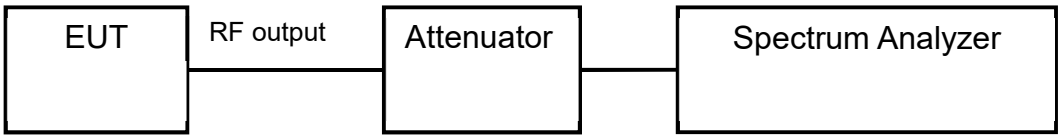
ANSI C63.10-2013 – Section 12.4
KDB 789033 D02 v02r01 – Section C
KDB 987594 D02

### 6.1.3 Test Settings

1. The signal analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 26. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = approximately 1% of the emission bandwidth
3. VBW > 3 x RBW
4. Detector = Peak
5. Trace mode = max hold

### 6.1.4Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.




### 6.1.5 Test result

The test results are shown in Appendix A.

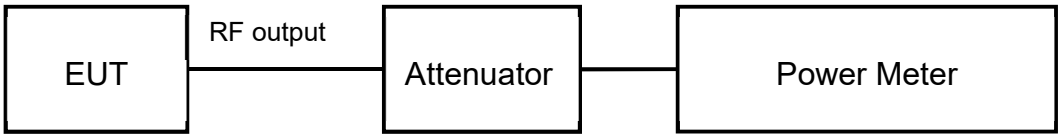
## 6.2 Maximum Conducted Output Power

### 6.2.1Test limit
In the 5.925 – 7.125GHz band, the maximum e.i.r.p. is 24 dBm.

### 6.2.2Test Procedure Used
KDB 987594 -Section E
KDB 789033 - Section E.3.b
ANSI C63.10-2013 – Section 12.3.3
KDB 662911 D01，D02 (Multiple Transmitter Output)

### 6.2.3 Test Settings
Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

### 6.2.4 Test Setup
The EUT and measurement equipment were set up as shown in the diagram below.




### 6.2.5 Test result
The test results are shown in Appendix A.

## 6.3 Maximum Power Spectral Density

### 6.3.1Test limit

In the 5.925 – 7.125GHz band, the maximum power spectral density must not exceed -1 dBm e.i.r.p. in any 1 MHz band.

### 6.3.2 Test Procedure Used

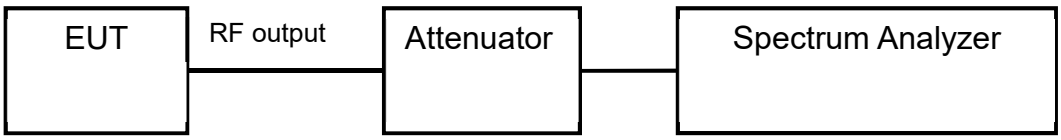
ANSI C63.10-2013 – Section 12.3.2.2
KDB 789033 D02 v02r01 – Section F
ANSI C63.10-2013 – Section 14.3.2.2 Measure-and-Sum Technique
KDB 662911 v02r01 – Section E)2) Measure-and-Sum Technique.

### 6.3.3 Test Settings

(1) Analyzer was set to the center frequency of the UNII channel under investigation
(2) Span was set to encompass the entire emission bandwidth of the signal
(3) Set RBW = 1 MHz, VBW =3MHz
(4) Number of sweep points > 2 x (span/RBW)
(5) Sweep time = auto
(6) Detector = power averaging (RMS)
(7) Trigger was set to free run for all modes
(8) Trace was averaged over 100 sweeps
(9) The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

### 6.3.4Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.




### 6.3.5 Test result

The test results are shown in Appendix A.

## 6.4 In-Band Emissions

### 6.4.1Test limit

Suppressed by 20 dB at 1 MHz outside of the channel edge. (The channel edge is defined as the 26-dB point on either side of the carrier center frequency.)
Suppressed by 28 dB at one channel bandwidth from the channel center.
Suppressed by 40 dB at one- and one-half times the channel bandwidth from the channel center.

### 6.2.2Test Procedure Used

KDB 987594 -Section J

### 6.2.3 Test Settings

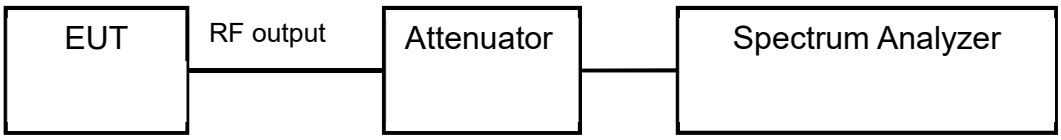
(1) Measure the power spectral density (which will be used for emissions mask reference) using the following procedure:

a Set the span to encompass the entire 26 dB EBW of the signal.
b Set RBW = same RBW used for 26 dB EBW measurement.
c Set VBW ≥ 3X RBW
d Number of points in sweep ≥ [2 X span / RBW].
e Sweep time = auto.
f Detector = RMS (i.e., power averaging)
g Trace average at least 100 traces in power averaging (rms) mode.
h Use the peak search function on the instrument to find the peak of the spectrum.

(2) For the purposes of developing the emission mask, the channel bandwidth is defined as the 26 dB EBW.
(3) Clear trace.
(4) Trace average at least 100 traces in power averaging (rms) mode.
(5) Adjust the reference level as necessary so that the crest of the channel touches the top of the emission mask.

### 6.2.4 Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.




### 6.2.5 Test result

The test results are shown in Appendix A.

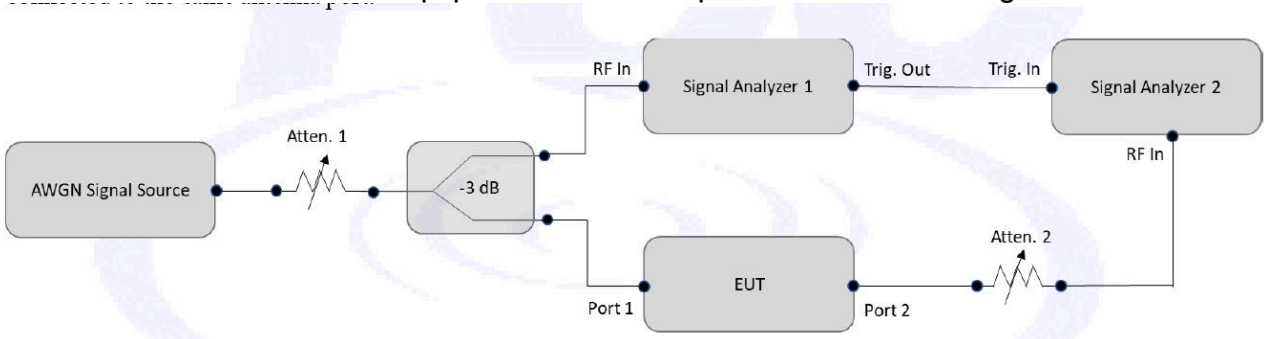
## 6.5 Contention Based Protocol

### 6.5.1 Test limit
Devices must detect co-channel energy with 90% or greater certainty.

### 6.5.2Test Procedure Used
KDB 987594 -Section I

### 6.5.3 Test Settings
(1) Configure the EUT to transmit with a constant duty cycle.
(2) Set the operating parameters of the EUT including power level, operating frequency, modulation and bandwidth.
(3) Set the signal analyzer center frequency to the nominal EEUT channel center frequency. The span range of the signal analyzer shall be between two times and five times the OBW of the EUT.
(4) Monitoring the signal analyzer 2, verify the EUT is operating and transmitting with the parameters set at step two.
(5) Using an AWGN signal source, generate (but do not transmit, i.e., RF OFF) a 10 MHz-wide AWGN signal. Use Table 1 to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.
(6) Set the AWGN signal power to an extremely low level (more than 20 dB below the -62 dBm threshold). Connect the AWGN signal source, via a 3-dB splitter, to the signal analyzer 1 and the EUT as shown in Figure 2.
(7)Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.
(8) Monitor the signal analyzer 2 to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.
(9) (Including all losses in the RF paths) Determine and record the AWGN signal power level (at the EUT's antenna port) at which the EUT ceased transmission. Repeat the procedure at least 10 times to verify the EUT can detect an AWGN signal with 90% (or better) level of certainty.
(10) Refer to Table 1 to determine number of times the detection threshold testing needs to be repeated. If testing is required more than once, then go back to step 5, choose a different center frequency for the AWGN signal and repeat the process.

### 6.5.4 Test Setup
The EUT and measurement equipment were set up as shown in the diagram below.




### 6.5.5 Test result
The test results are shown in Appendix A.

## 6.6 Undesirable Emissions and Unwanted Radiated Emission Measurement

### 6.6.1Test Description

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at maximum power and at the appropriate frequencies. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

### 6.6.2 Test limit

FCC Part15.205, 15.209,;

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in below Table per Section 15.209. The spectrum shall be investigated from the lowest radio frequency signal generated in the device

| Frequency [MHz] | Field strength [ μV/m ] | Measured Distance [meters] |
|---|---|---|
| 0.009~0.490 | 2400/F(kHz) | 300 |
| 0.490~1.705 | 24000/F(kHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30～88 | 100 | 3 |
| 88～216 | 150 | 3 |
| 216～960 | 200 | 3 |
| Above 960 | 500 | 3 |

**Radiated Limits**

FCC Part15.35(b):

There is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit

**Used conversion factor: Limit (dBμV/m) = 20 log (Limit (μV/m)/1μV/m)**

| Frequency [MHz] | Detector | Unit (dBμV/m) |
|---|---|---|
| 30～88 | Quasi-peak | 40.0 |
| 88～216 | Quasi-peak | 43.5 |
| 216～960 | Quasi-peak | 46.0 |
| 960～1000 | Quasi-peak | 54.0 |
| 1000～5th harmonic of the highest frequency or 40GHz, whichever is lower | Average | 54.0 |
| | Peak | 74.0 |

**Conversion Radiated limits**

### 6.6.3Test Procedure Used

KDB 789033 D02 v02r01,Sections G.3, G.4, G.5, and G.6.

**For Radiated emission below 30MHz**

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. Both X and Y axes of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Quasi-Peak Detect Function and recorded the reading with Maximum Hold Mode.

NOTE:
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer complied the following setting:

| Frequency | RBW |
|---|---|
| 9-150kHz | 200-300Hz |
| 0.15-30MHz | 9-10kHz |

Signals below 30MHz are not recorded in the report because they are lower than the limits by more than 20dB.

**For Radiated emission above 30MHz**

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground in chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. 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.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to quasi-peak detect function and recorded the reading with Maximum Hold Mode when the test frequency is below 1 GHz.
f. The test-receiver system was set to peak and average detector and recorded the reading with Maximum Hold Mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

**For the radiated emission test above 1GHz:**

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant

emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

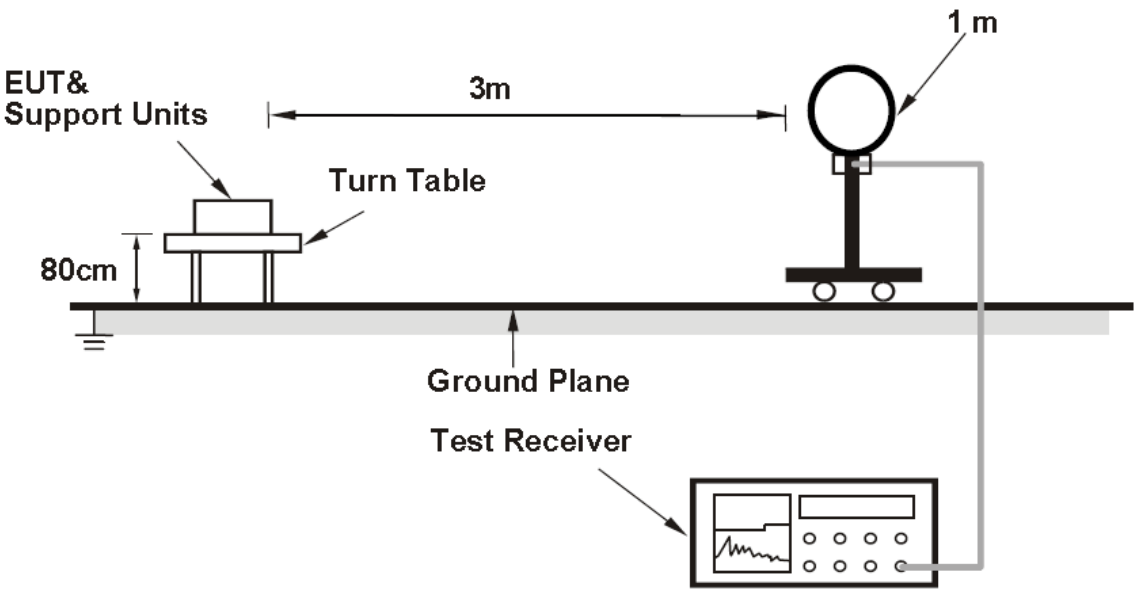
NOTE:
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Average detection (AV) at frequency above 1GHz. If duty cycle of test signal is < 98%, the duty factor need added to measured value.
4. All modes of operation were investigated and the worst-case emissions are reported.

### 6.6.4Test Settings

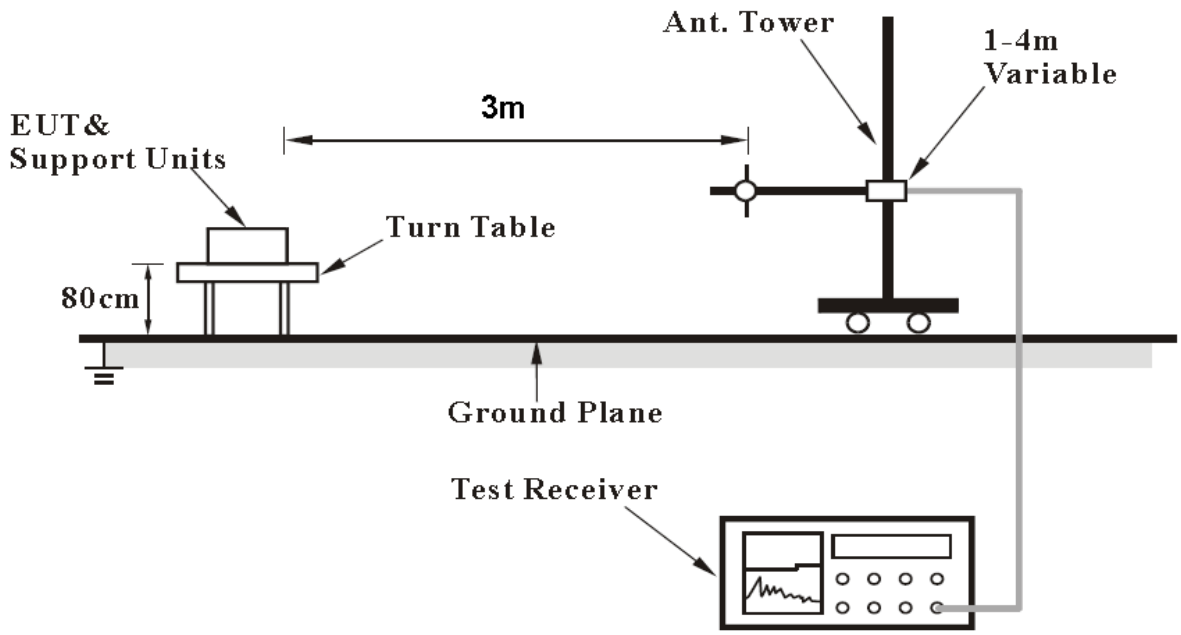
| Frequency | Detector |
|---|---|
| ＜1000MHz | Quasi-peak |
| >1000MHz | Peak and average |

| Frequency | RBW |
|---|---|
| 9-150kHz | 200-300Hz |
| 0.15-30MHz | 9-10kHz |
| 30-1000MHz | 100-120kHz |
| >1000MHz | 1MHz |

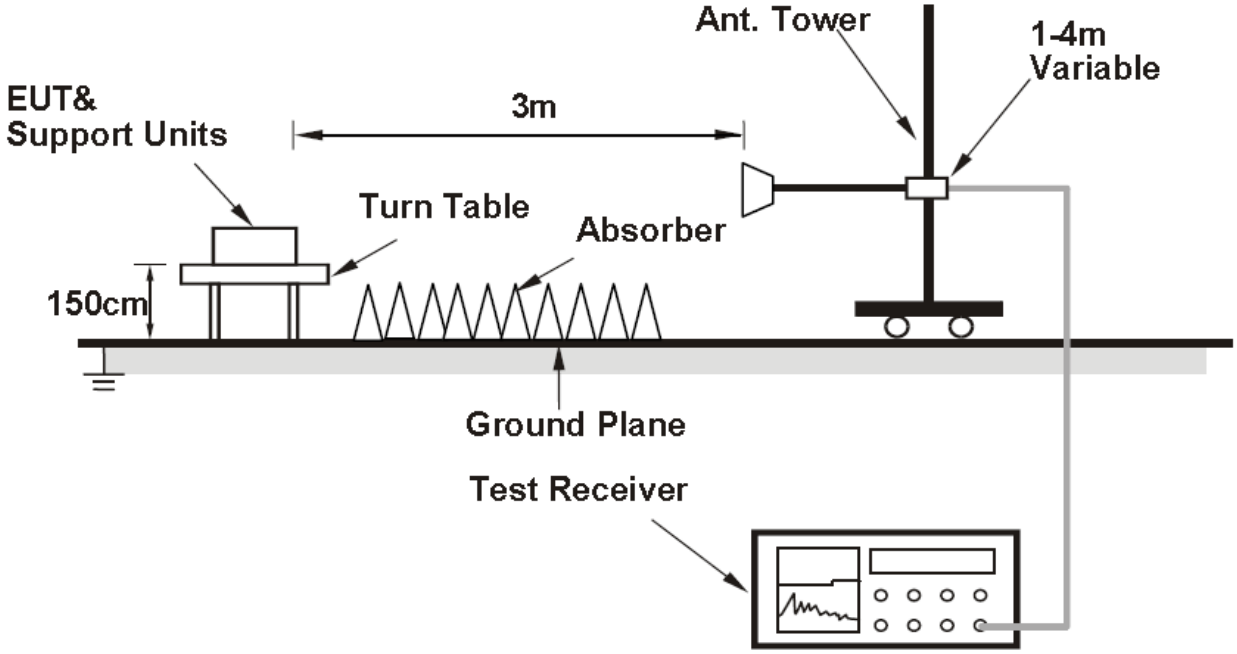
### 6.6.5 Radiated emission below 30MHz



**For Radiated emission 30MHz to 1GHz**




**For Radiated emission above 1GHz**




### 6.6.6 Test result

The test results are shown in Appendix B.

## 6.7 AC Power line Conducted Emission

### 6.7.1 Test limit

FCC Part 15.207(a) ,

| Frequency of Emission (MHz) | Conducted Limit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56 * | 56 to 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

The measurement is made according to ANSI C63.10-2013

### 6.7.2 Test result

The test results are shown in Appendix B.

# 7 MEASUREMENT UNCERTAINTIES

| Items | Uncertainty | |
|---|---|---|
| 6dB Bandwidth | 3kHz | |
| Peak power output | 0.67dB | |
| Transmitter Power Spectral Density | 0.75dB | |
| Band edge compliance | 1.20dB | |
| Conducted Out of band emission measurement | 30MHz～1GHz | 2.83dB |
| | 1GHz～12.75GHz | 2.50dB |
| | 12.75GHz～25GHz | 2.75dB |
| Spurious Radiated Emissions | 30MHz～200MHz | 4.88dB |
| | 200MHz～1GHz | 4.87dB |
| | 1GHz～18GHz | 4.58dB |
| | 18GHz~40GHz | 4.35dB |
| AC Power line Conducted Emission | 3.92dB | |

# 8 TEST EQUIPMENTS

| No. | Name/ Model | Manufacturer | S/N | Cal date | Cal Due date |
|---|---|---|---|---|---|
| 1. | Spectrum Analyzer / FSV | ROHDE & SCHWARZ | 101065 | 2022.06.21 | 2023.06.20 |
| 2. | Signal Analyzer / N9020A | Agilent | MY48010771 | 2022.05.18 | 2023.05.17 |
| 3. | Bluetooth Test Set / MT8852B | Anritsu | 1329003 | 2022.06.21 | 2023.06.20 |
| 4. | Power Divider / 11667A | HP | 19632 | 2022.06.21 | 2023.06.20 |
| 5. | Signal Generator / SMBV100A | R&S | 260910 | 2022.06.21 | 2023.06.20 |
| 6. | Temperature chamber / SH241 | ESPEC | 92013758 | 2022.06.21 | 2023.06.20 |
| 7. | Fully-Anechoic Chamber / 12.65m×8.03m×7.50m | FRANKONIA | ----- | ----- | ----- |
| 8. | Semi-Anechoic/Chamber / 23.18m×16.88m×9.60m | FRANKONIA | --- | ----- | ----- |
| 9. | Turn table Diameter:1m | FRANKONIA | ----- | ----- | ----- |
| 10. | Turn table Diameter:5m | FRANKONIA | ----- | ----- | ----- |
| 11. | Antenna master FAC(MA4.0) | MATURO | ----- | ----- | ----- |
| 12. | Antenna master SAC(MA4.0) | MATURO | ----- | ----- | ----- |
| 13. | Shielding room / 9.080m×5.255m×3.525m | FRANKONIA | ----- | ----- | ----- |
| 14. | Double-Ridged Waveguide Horn Antenna / HF 907 | R&S | 100512 | 2022.06.21 | 2023.06.20 |
| 15. | Double-Ridged Waveguide Horn Antenna / HF 907 | R&S | 100513 | 2022.06.21 | 2023.06.20 |
| 16. | Ultra log antenna / HL562 | R&S | 100016 | 2022.06.21 | 2023.06.20 |
| 17. | Receive antenna /3160-09 | SCHWARZ-BECK | 002058-002 | 2022.06.21 | 2023.06.20 |
| 18. | EMI test receiver | R&S | 101574 | 2022.06.21 | 2023.06.20 |
| 19. | ESR3 EMI test receiver | R&S | 102361 | 2023.04.12 | 2024.04.11 |
| 20. | Receive antenna / HL562 | R&S | 100167 | 2022.06.21 | 2023.06.20 |
| 21. | ENV216 AMN | R&S | 101881 | 2022.06.21 | 2023.06.20 |
| 22. | WLAN AP WIA3300-20 (FCC ID: 2AHKT-WIA3300-20) | SKSpruce | 8152017060700339 | --- | --- |
| 23. | Notebook E470c | Lenovo | PF10UZW7 | --- | --- |
| 24. | Horn antenna / SAS-574 | A.H.SYSTEMS | 2581 | 2021.04.22 | 2023.04.21 |
| 25. | Loop antenna / HFH2-Z2 | R&S | 100340 | 2022.08.21 | 2023.08.20 |
| 26. | VULB 9163 Ultra log test antenna | SCHWARZ-BECK | 867 | 2021.05.29 | 2023.05.28 |
| 27. | Loop Antenna | R&S | 100340 | 2022.08.21 | 2023.08.20 |
| 28. | Double Ridge Waveguide Horn Antenna | A.H.SYSTEMS | 2581 | 2021.04,20 | 2023.04.21 |
| 29. | FCC auto test system / RT9200BW-2 | Radiosky | V2.05 | / | / |
| 30. | EMI test software / EMC32 | R&S | V10.20.01 | / | / |
| 31. | Power Meter E4416A | Agilent | MY52370013 | 2023.03.06 | 2024.03.05 |
| 32. | Power Sensor E9323A | Agilent | MY52150008 | 2023.03.06 | 2024.03.05 |

## APPENDIX A – TEST DATA OF CONDUCTED EMISSION

Please refer to the attachment.

## APPENDIX B – TEST DATA OF RADIATED EMISSION

Please refer to the attachment.