# TEST REPORT

| | |
|---|---|
| **Application No.:** | SEWM2211000238RG |
| **Applicant:** | Smawave Technology Co. ,Ltd |
| **Address of Applicant:** | 3/F, Building 8, 1001 North Qinzhou Road，Xuhui District, Shanghai, China |
| **Manufacturer:** | Smawave Technology Co. ,Ltd |
| **Address of Manufacturer:** | 3/F, Building 8, 1001 North Qinzhou Road，Xuhui District, Shanghai, China |
| **EUT Description:** | LTE Indoor CPE |
| **Model No.:** | SRT421 |
| **Trade Mark:** | Smawave |
| **FCC ID:** | 2AU8HSRT421-CBRS |
| **Standards:** | FCC 47 CFR Part 2, Subpart J<br>FCC 47 CFR Part 15, Subpart C |
| **Date of Receipt:** | 2022/11/09 |
| **Date of Test:** | 2022/11/24 to 2022/11/29 |
| **Date of Issue:** | 2022/11/29 |
| **Test Result :** | **PASS *** |

* In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Authorized Signature:

Panta Sun

Panta Sun
Wireless Laboratory Manager



South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone 215000 t (86-512) 62992980 www.sgsgroup.com.cn
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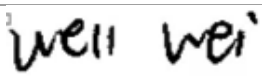
# 1 Version

| Revision Record | | | | |
|---|---|---|---|---|
| **Version** | **Chapter** | **Date** | **Modifier** | **Remark** |
| 01 | | 2022/11/29 | | Original |

| | | |
|---|---|---|
| **Prepared By** | |  **(Ives Cheng) / Test Engineer** |
| **Checked By** | |  **(Well Wei) / Reviewer** |

# 2 Test Summary

| Test Item | FCC Rule No. | Test Method | Test Result | Result |
|---|---|---|---|---|
| Antenna Requirement | 15.203/15.247(b) | -- | Clause 4.1 | PASS |
| AC Power Line Conducted Emission | 15.207 | ANSI C63.10 2013 Section 6.2 | Clause 4.2 | PASS |
| Duty Cycle | -- | -- | Reference report SZCR210402049802 | |
| Conducted Output Power | 15.247 (b)(3) | ANSI C63.10 2013 Section11.9.2.3 | Clause 4.4 | PASS |
| DTS (6 dB) Bandwidth & 99% Occupied Bandwidth | 15.247 (a)(2) | ANSI C63.10 2013 Section 11.8 Option 2 / 6.9.3 | Reference report SZCR210402049802 | |
| Power Spectral Density | 15.247 (e) | ANSI C63.10 2013 Section 11.10.2 | Reference report SZCR210402049802 | |
| Band-edge for RF Conducted Emissions | 15.247(d) | ANSI C63.10 2013 Section 11.11 | Reference report SZCR210402049802 | |
| RF Conducted Spurious Emissions | 15.247(d) | ANSI C63.10 2013 Section 11.11 | Reference report SZCR210402049802 | |
| Radiated Spurious Emissions | 15.247(d);15.205/15.209 | ANSI C63.10 2013 Section 11.12 | Clause 4.9 | PASS |
| Restricted bands around fundamental frequency (Radiated Emission) | 15.247(d);15.205/15.209 | ANSI C63.10 2013 Section 11.12 | Clause 4.10 | PASS |

Remark:

The items of AC Power Line Conducted Emission and Conducted Output Power were fully retested, Radiated Spurious Emissions and Restricted bands around fundamental frequency were checked on 802.11n40_Channel 03, and other items data please refer to the test report SZCR210402049802 issue on 2021/05/18.

# Contents





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# 3 General Information

## 3.1 Details of Client

| | |
|---|---|
| Applicant: | Smawave Technology Co. ,Ltd |
| Address of Applicant: | 3/F, Building 8, 1001 North Qinzhou Road，Xuhui District, Shanghai, China |
| Manufacturer: | Smawave Technology Co. ,Ltd |
| Address of Manufacturer: | 3/F, Building 8, 1001 North Qinzhou Road，Xuhui District, Shanghai, China |

## 3.2 Test Location

| | |
|---|---|
| Company: | SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd. |
| Address: | South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone |
| Post code: | 215000 |
| Test engineer: | Ives Cheng, King-p Li |

## 3.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **A2LA (Certificate No. 6336.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01.

• **Innovation, Science and Economic Development Canada**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0120.

IC#: 27594.

• **FCC –Designation Number: CN1312**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized as an accredited testing laboratory.

Designation Number: CN1312.

Test Firm Registration Number: 717327

## 3.4 General Description of EUT

| | | | |
|---|---|---|---|
| EUT Description: | LTE Indoor CPE | | |
| Model No.: | SRT421 | | |
| Trade Mark: | Smawave | | |
| Hardware Version: | V1.0 | | |
| Software Version: | ST_CBRS_V2.0.0 | | |
| IMEI: | RF Conducted | 862165041541640 | |
| | RSE & AC power line | 862165041541358 | |
| Operation Frequency: | 802.11b/g/n(HT20): | 2412MHz to 2462MHz | |
| | 802.11n(HT40): | 2422MHz to 2452MHz | |
| Modulation Type: | 802.11b: | DSSS (DBPSK, DQPSK, CCK) | |
| | 802.11g/n: | OFDM (BPSK, QPSK, 16QAM, 64QAM) | |
| Number of Channels: | 802.11b/g/n(HT20): 11<br>802.11n(HT40): 7 | | |
| Channel Spacing: | 5MHz | | |
| Smart System: | ☐ SISO | 802.11b/g/n | |
| | ☒ MIMO | 802.11n: 2Tx & 2Rx | |
| | ☒ Diversity | 802.11b/g: 2Tx & 2Rx | |
| Antenna Type: | Internal Antenna | | |
| Antenna Gain: | 2.27dBi(Ant0);1.82dBi(Ant1) | | |
| | Note:<br>The antenna gain are derived from the gain information report provided by the manufacturer. | | |
| RF Cable: | 1dB | | |
| Remark:<br>As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information. | | | |

| Operation Frequency of each channel (802.11b/g/n HT20) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Channel** | **Frequency** | **Channel** | **Frequency** | **Channel** | **Frequency** | **Channel** | **Frequency** |
| 1 | 2412MHz | 4 | 2427MHz | 7 | 2442MHz | 10 | 2457MHz |
| 2 | 2417MHz | 5 | 2432MHz | 8 | 2447MHz | 11 | 2462MHz |
| 3 | 2422MHz | 6 | 2437MHz | 9 | 2452MHz | | |
| **Operation Frequency of each channel (802.11n HT40)** | | | | | | | |
| **Channel** | **Frequency** | **Channel** | **Frequency** | **Channel** | **Frequency** | **Channel** | **Frequency** |
| 3 | 2422MHz | 6 | 2437MHz | 9 | 2452MHz | | |
| 4 | 2427MHz | 7 | 2442MHz | | | | |
| 5 | 2432MHz | 8 | 2447MHz | | | | |

Remark:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

| Channel | Frequency for 802.11 b/g/n (HT20) | Frequency for 802.11n (HT40) |
|---|---|---|
| The Lowest channel | 2412MHz | 2422MHz |
| The Middle channel | 2437MHz | 2437MHz |
| The Highest channel | 2462MHz | 2452MHz |

## 3.5 Test Environment and Mode

| Environment Parameter | 101.0 kPa Selected Values During Tests | |
|---|---|---|
| Relative Humidity | 44-46 % RH Ambient | |
| Value | Temperature(℃) | Voltage(V) |
| NTNV | 22~23 | 12 |
| Remark:<br>NV: Normal Voltage<br>NT: Normal Temperature | | |

## 3.6 Description of Support Units

The EUT has been tested as an independent unit.

## 3.7 Worst-case configuration and mode

Low data rate was used to test on antenna port conducted tests and radiated spurious emissions since it has the highest maximum power. Following are the worst-case data rates set for test:

| Modulation Type | SISO - Data Rate | CDD/MIMO - Data Rate |
|---|---|---|
| 802.11b | / | 2 Mbps |
| 802.11g | / | 12 Mbps |
| 802.11n (HT 20) | / | MCS0 (13 Mbps) |
| 802.11n (HT 40) | / | MCS0 (27 Mbps) |

# 4 Test results and Measurement Data

## 4.1 Antenna Requirement

| **Standard requirement:** | 47 CFR Part 15C Section 15.203 /247(b) |
|---|---|

15.203 requirement:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.
15.247(b) (4) requirement:
The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The antenna is Internal Antenna and no consideration of replacement.
The best case gain of the antenna is 2.27dBi(Ant0);1.82dBi(Ant1).*

**Note:*
*The antenna gain are derived from the gain information report provided by the manufacturer.*
*Remark:*
*As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.*

**Cyclic Delay Diversity (CDD) System:**

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

If all antennas have the same gain, $G_{ANT}$, Directional gain = $G_{ANT}$ + Array Gain, where Array Gain is as follows.

- For power measurements on IEEE 802.11 devices:
  *Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;*
  *Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any $N_{ANT}$;*
  *Array Gain = 5 log($N_{ANT}/N_{SS}$=1) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.*

Unequal antenna gains, with equal transmit powers. For antenna gains given by G1, G2, …, GN dBi

- If transmit signals are correlated, then
  *Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] dBi [Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]*
- If all transmit signals are completely uncorrelated, then
  *Directional gain = 10 log[$(10^{G1/10} + 10^{G2/10} + \ldots + 10^{GN/10})/N_{ANT}$] dBi*

**The Power and PSD limit should be modified if the directional gain of eut is over 6dBi.**

Power Limit Reduction =

The EUT supports CDD System.

Unequal antenna gain:

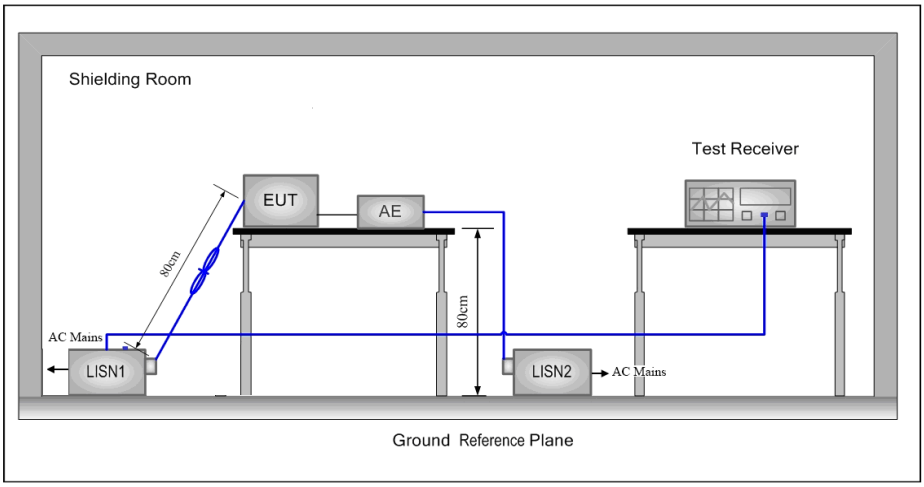
| ANT Gain0 (dBi) | ANT Gain1 (dBi) | Power DG (dBi) | PSD DG (dBi) | Power Limit Reduction(dB) | PSD Limit Reduction(dB) |
|---|---|---|---|---|---|
| 2.27 | 1.82 | 2.05 | 5.06 | 0 | 0 |

Power Limit Reduction = Directional gain – 6dBi, (Directional gain < 6dBi ) =0

PSD Limit Reduction = Directional gain – 6dBi, (Directional gain < 6dBi ) =0

## 4.2 AC Power Line Conducted Emissions

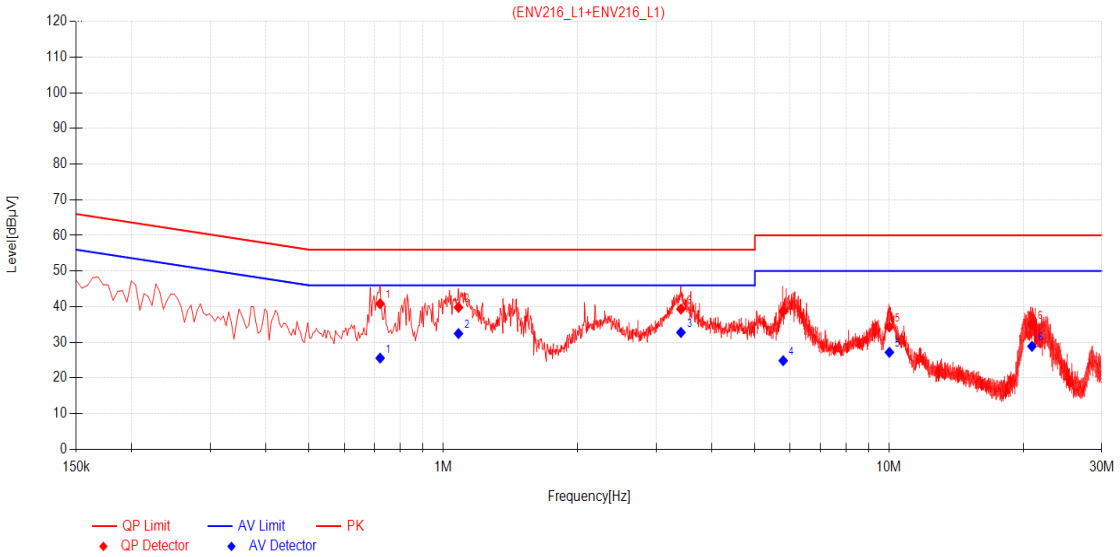
| | | | |
|---|---|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.207 | | |
| Test Method: | ANSI C63.10: 2013 Section 6.2 | | |
| Test Frequency Range: | 150kHz to 30MHz | | |
| Receiver Setup: | RBW = 9kHz, VBW = 30kHz | | |
| Limit: | Frequency range (MHz) | Limit (dBuV) | |
| | | Quasi-peak | 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. | | |
| Test Procedure: | 1) The mains terminal disturbance voltage test was conducted in a shielded room.<br>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.<br>3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,<br>4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement. | | |

| | |
|---|---|
| Test Setup: |  |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.<br>Charge + Transmitting mode. |
| Final Test Mode: | Refer to section 3.7 for details.<br>Only the worst case is recorded in the report. |
| Instruments Used: | Refer to section 6 for details. |
| Test Results: | Pass |

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

| Phase: | Line |
|---|---|




Final Data List

| NO. | Frequency [MHz] | Factor [dB] | QP Reading [dBµV] | QP Value [dBµV] | QP Limit [dBµV] | QP Margin [dB] | AV Reading [dBµV] | AV Value [dBµV] | AV Limit [dBµV] | AV Margin [dB] | Verdict |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.7215 | 10.56 | 30.27 | 40.83 | 56.00 | 15.17 | 15.03 | 25.59 | 46.00 | 20.41 | PASS |
| 2 | 1.0815 | 10.61 | 29.20 | 39.81 | 56.00 | 16.19 | 21.85 | 32.46 | 46.00 | 13.54 | PASS |
| 3 | 3.4125 | 10.70 | 28.63 | 39.33 | 56.00 | 16.67 | 22.08 | 32.78 | 46.00 | 13.22 | PASS |
| 4 | 5.7885 | 10.67 | 28.03 | 38.70 | 60.00 | 21.30 | 14.18 | 24.85 | 50.00 | 25.15 | PASS |
| 5 | 10.0185 | 10.63 | 23.69 | 34.32 | 60.00 | 25.68 | 16.57 | 27.20 | 50.00 | 22.80 | PASS |
| 6 | 20.9220 | 10.39 | 24.71 | 35.10 | 60.00 | 24.90 | 18.49 | 28.88 | 50.00 | 21.12 | PASS |

Remark:
1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Value =Reading[dBµV] + Factor(Lisn factor[dB] + cable loss[dB]).
3. Margin = Limit[dBµV] – Value[dBµV]



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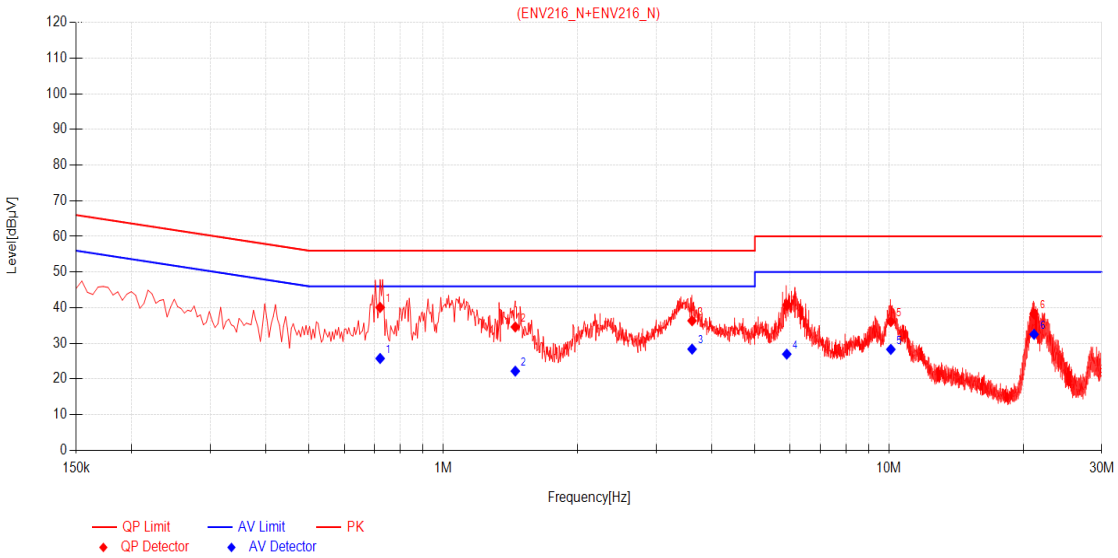
| Phase: | Neutral |
|---|---|




Final Data List

| NO. | Frequency [MHz] | Factor [dB] | QP Reading [dBµV] | QP Value [dBµV] | QP Limit [dBµV] | QP Margin [dB] | AV Reading [dBµV] | AV Value [dBµV] | AV Limit [dBµV] | AV Margin [dB] | Verdict |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.7215 | 10.81 | 29.27 | 40.08 | 56.00 | 15.92 | 14.95 | 25.76 | 46.00 | 20.24 | PASS |
| 2 | 1.4505 | 10.77 | 23.83 | 34.60 | 56.00 | 21.40 | 11.43 | 22.20 | 46.00 | 23.80 | PASS |
| 3 | 3.6150 | 10.68 | 25.66 | 36.34 | 56.00 | 19.66 | 17.70 | 28.38 | 46.00 | 17.62 | PASS |
| 4 | 5.8965 | 10.58 | 30.17 | 40.75 | 60.00 | 19.25 | 16.40 | 26.98 | 50.00 | 23.02 | PASS |
| 5 | 10.0950 | 10.67 | 25.44 | 36.11 | 60.00 | 23.89 | 17.64 | 28.31 | 50.00 | 21.69 | PASS |
| 6 | 21.1560 | 10.41 | 27.84 | 38.25 | 60.00 | 21.75 | 22.12 | 32.53 | 50.00 | 17.47 | PASS |

Remark:
1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Value =Reading[dBµV] + Factor(Lisn factor[dB] + cable loss[dB]).
3. Margin = Limit[dBµV] – Value[dBµV]



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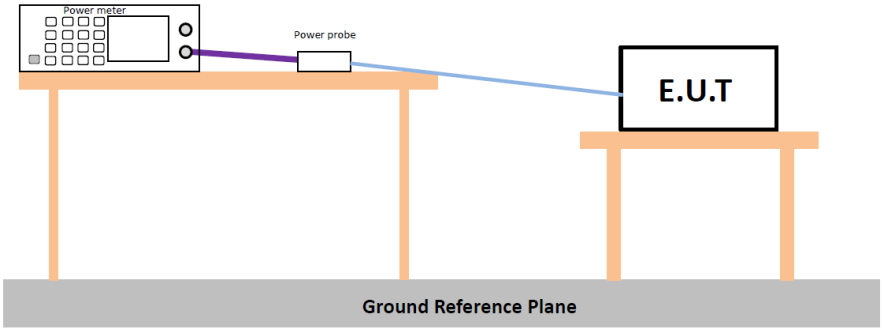
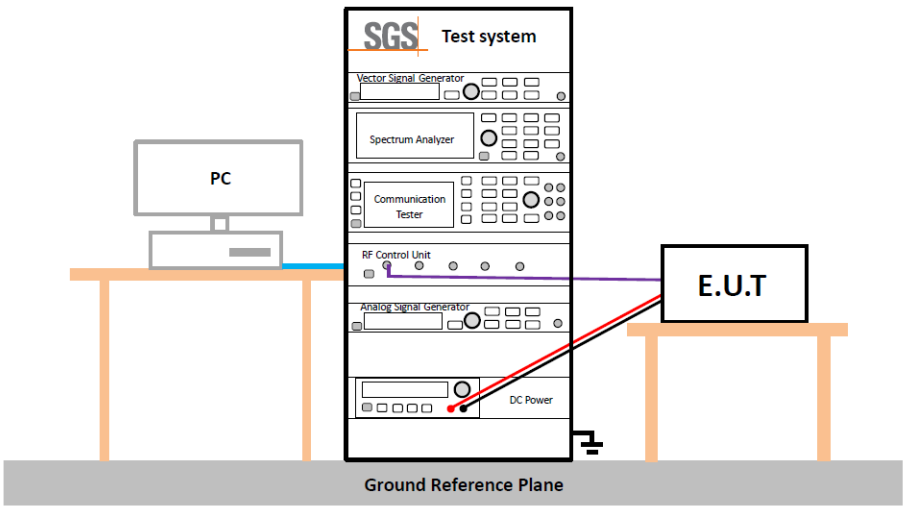
## 4.3 Duty Cycle

The detailed test data see: **Reference report SZCR210402049802**

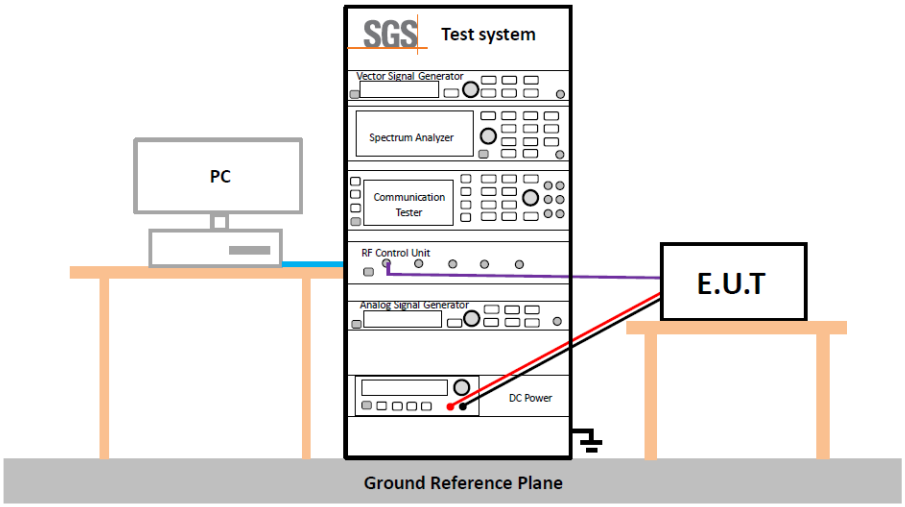
## 4.4 Conducted Output Power

| | |
|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.247 (b)(3) |
| Test Method: | ANSI C63.10 :2013 Section11.9.2.3 |
| Test Setup: |  <br>* Test with power meter (Detector function: Peak) |
| Test Instruments: | Refer to section 6 for details. |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates |
| Final Test Mode: | Refer to section 3.7 for details. |
| Limit: | 30dBm |
| Test Results: | Pass |
| The detailed test data see: **Appendix** | |

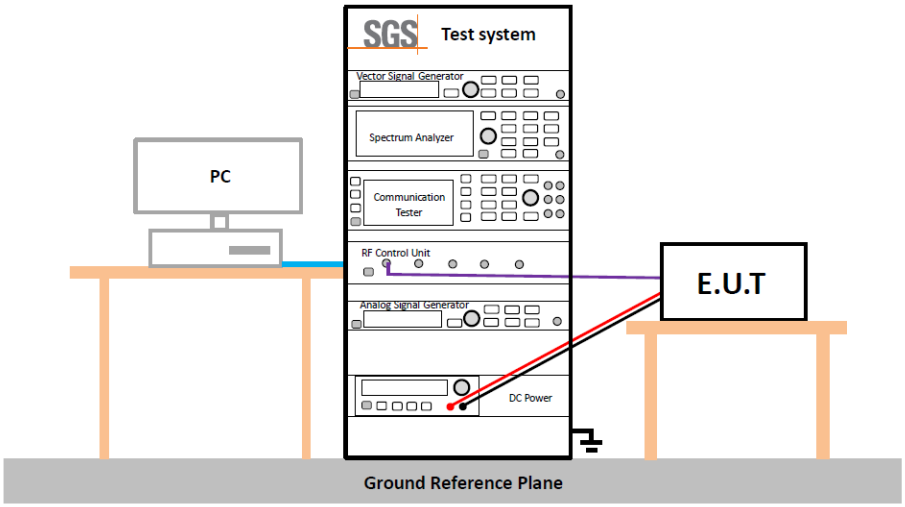
## 4.5 DTS (6 dB) Bandwidth & 99% Occupied Bandwidth

| | |
|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.247 (a)(2) |
| Test Method: | ANSI C63.10: 2013 Section 11.8 Option 2 / 6.9.3 |
| Test Setup: |  |
| Instruments Used: | Refer to section 6 for details. |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates |
| Final Test Mode: | Refer to section 3.7 for details. |
| Limit: | ≥ 500 kHz |
| Test Results: | Pass |
| The detailed test data see: **Reference report SZCR210402049802** | |

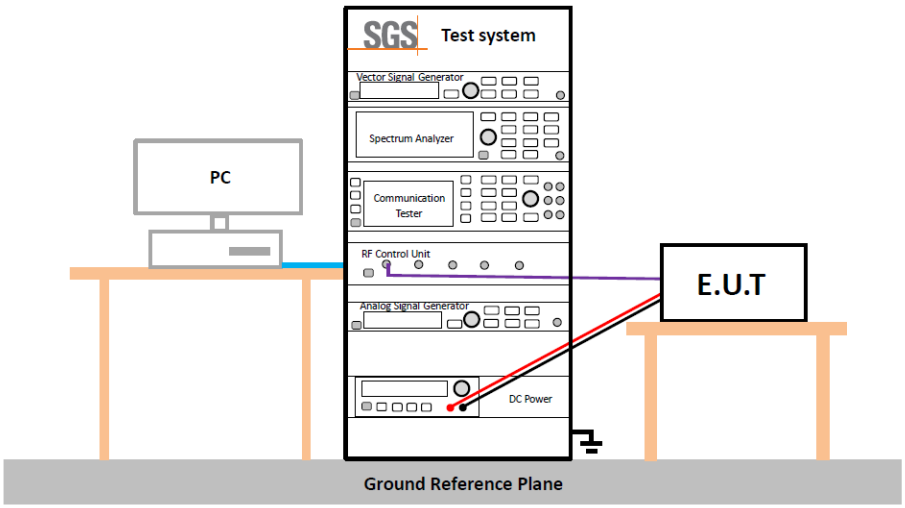
## 4.6 Power Spectral Density

| | |
|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.247 (e) |
| Test Method: | ANSI C63.10 :2013 Section 11.10.2 |
| Test Setup: |  |
| Test Instruments: | Refer to section 6 for details. |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates |
| Final Test Mode: | Refer to section 3.7 for details. |
| Limit: | ≤8.00dBm/3kHz |
| Test Results: | Pass |
| The detailed test data see: **Reference report SZCR210402049802** | |

## 4.7 Band-edge for RF Conducted Emissions

| | |
|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.247 (d) |
| Test Method: | ANSI C63.10: 2013 Section 11.11 |
| Test Setup: |  |
| Instruments Used: | Refer to section 6 for details. |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates |
| Final Test Mode: | Refer to section 3.7 for details. |
| Limit: | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. |
| Test Results: | Pass |
| The detailed test data see: **Reference report SZCR210402049802** | |

## 4.8 RF Conducted Spurious Emissions

| | |
|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.247 (d) |
| Test Method: | ANSI C63.10: 2013 Section 11.11 |
| Test Setup: |  |
| Instruments Used: | Refer to section 6 for details. |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates |
| Final Test Mode: | Refer to section 3.7 for details. |
| Limit: | In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. |
| Test Results: | Pass |
| The detailed test data see: **Reference report SZCR210402049802** | |

## 4.9 Radiated Spurious Emissions

| | | | | | |
|---|---|---|---|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.209 and 15.205 | | | | |
| Test Method: | ANSI C63.10 :2013 Section 11.12 | | | | |
| Test Site: | Measurement Distance: 3m (Semi-Anechoic Chamber) | | | | |
| Test Frequency: | 9kHz ~ 25GHz | | | | |
| Receiver Setup: | Frequency | Detector | RBW | VBW | Remark |
| | 0.009MHz-0.090MHz | Peak | 10kHz | 30kHz | Peak |
| | 0.009MHz-0.090MHz | Average | 10kHz | 30kHz | Average |
| | 0.090MHz-0.110MHz | Quasi-peak | 10kHz | 30kHz | Quasi-peak |
| | 0.110MHz-0.490MHz | Peak | 10kHz | 30kHz | Peak |
| | 0.110MHz-0.490MHz | Average | 10kHz | 30kHz | Average |
| | 0.490MHz -30MHz | Quasi-peak | 10kHz | 30kHz | Quasi-peak |
| | 30MHz-1GHz | Quasi-peak | 120kHz | 300kHz | Quasi-peak |
| | Above 1GHz | Peak | 1MHz | 3MHz | Peak |
| | | Peak | 1MHz | 3MHz | Peak |
| Limit: | Frequency | Field strength (microvolt/meter) | Limit (dBuV/m) | Remark | Measurement distance (m) |
| | 0.009MHz-0.490MHz | 2400/F(kHz) | - | - | 300 |
| | 0.490MHz-1.705MHz | 24000/F(kHz) | - | - | 30 |
| | 1.705MHz-30MHz | 30 | - | - | 30 |
| | 30MHz-88MHz | 100 | 40.0 | Quasi-peak | 3 |
| | 88MHz-216MHz | 150 | 43.5 | Quasi-peak | 3 |
| | 216MHz-960MHz | 200 | 46.0 | Quasi-peak | 3 |
| | 960MHz-1GHz | 500 | 54.0 | Quasi-peak | 3 |
| | Above 1GHz | 500 | 54.0 | Average | 3 |
| | Remark: 15.35(b),Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device. | | | | |

Test Setup:

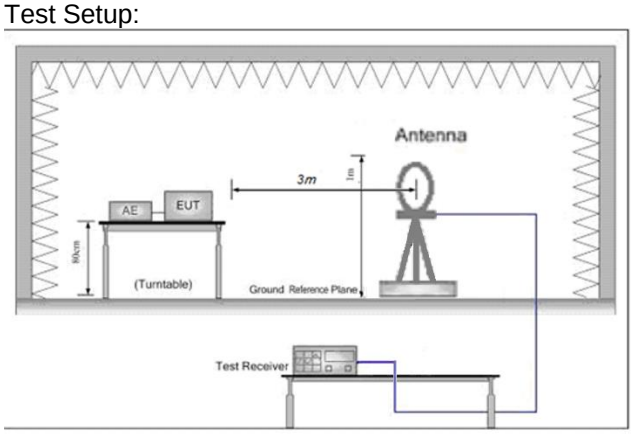



Figure 1. Below 30MHz

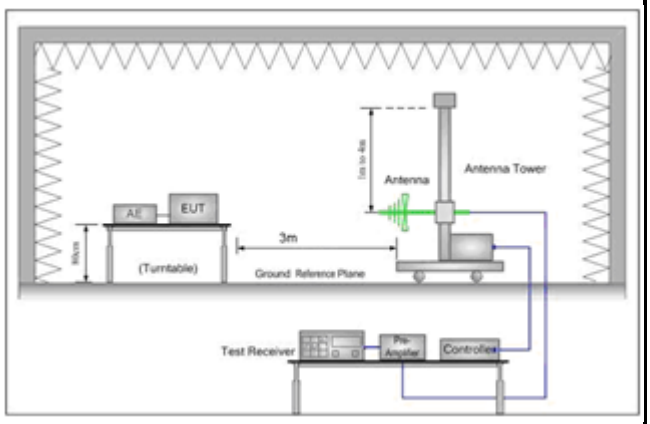



Figure 2. 30MHz to 1GHz

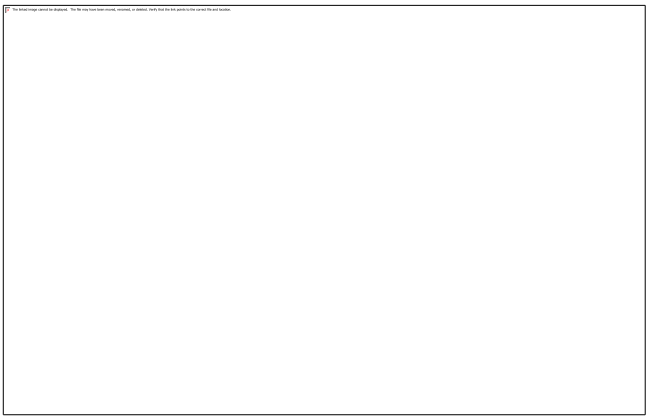


Figure 3. Above 1 GHz

| | |
|---|---|
| Test Procedure: | a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.<br>b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation<br>(Distance from antenna to EUT is 1m for measurements >18GHz).<br>c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.<br>d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.<br>e. 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(for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the |

| | |
|---|---|
| | maximum reading.<br>f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.<br>g. Test the EUT in the lowest channel, the middle channel ,the Highest channel.<br>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.<br>i. Repeat above procedures until all frequencies measured was complete.<br>j. The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported<br>k. The disturbance above 18GHz was very low, and the harmonics were the highest point could be found when testing, so only the harmonics had been displayed.<br>l. At a measurement distance of 1 meter the limit line was increased by 20*LOG(3/1) = 9.54 dB. |
| Test Configuration: | Measurements Below 1000MHz<br>• RBW = 120 kHz<br>• VBW = 300 kHz<br>• Detector = Peak<br>• Trace mode = max hold<br>Peak Measurements Above 1000 MHz<br>• RBW = 1 MHz<br>• VBW ≥ 3 MHz<br>• Detector = Peak<br>• Sweep time = auto<br>• Trace mode = max hold<br>Average Measurements Above 1000MHz<br>• RBW = 1 MHz<br>• VBW ≥ [3 *RBW]<br>• Detector = RMS (power averaging), if span / (# of points in sweep) ≤ (RBW / 2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.<br>• Sweep time = auto<br>• Perform a trace average of at least 100 traces. |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates.<br>Charge + Transmitting mode. |
| Final Test Mode: | Refer to section 3.7 for details. |
| Instruments Used: | Refer to section 6 for details. |
| Test Results: | Pass |
| The detailed test data see: **Appendix** | |

## 4.10 Restricted bands around fundamental frequency

| | | | |
|---|---|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.209 and 15.205 | | |
| Test Method: | ANSI C63.10: 2013 Section 11.12 | | |
| Test Site: | Measurement Distance: 3m (Semi-Anechoic Chamber) | | |
| Limit: | Frequency | Limit (dBuV/m) | Remark |
| | 30MHz-88MHz | 40.0 | Quasi-peak |
| | 88MHz-216MHz | 43.5 | Quasi-peak |
| | 216MHz-960MHz | 46.0 | Quasi-peak |
| | 960MHz-1GHz | 54.0 | Quasi-peak |
| | Above 1GHz | 54.0 | Average Value |
| | | 74.0 | Peak Value |

Test Setup:

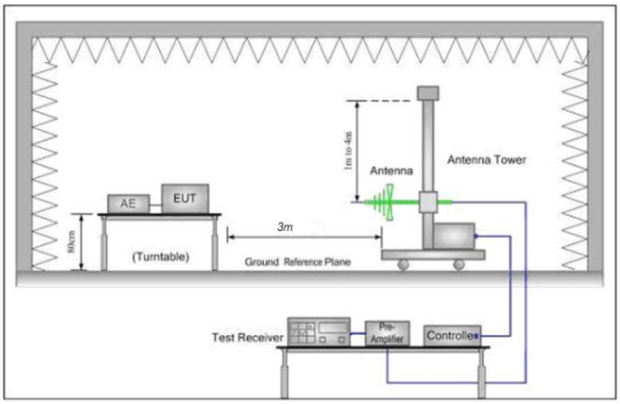



Figure 1. 30MHz to 1GHz

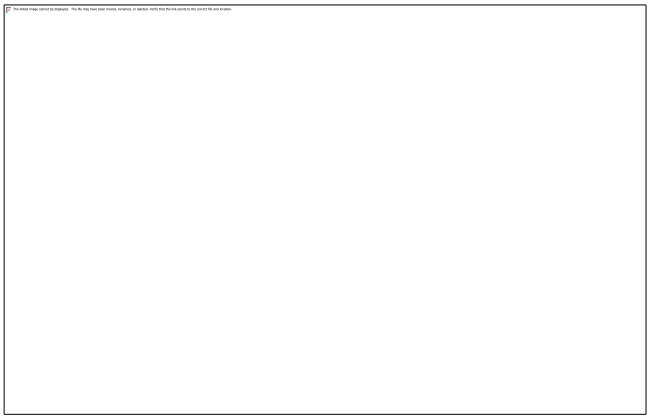


Figure 2. Above 1 GHz

| | |
|---|---|
| Test Procedure: | a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.<br>b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.<br>c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.<br>d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.<br>e. 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.<br>f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.<br>g. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel<br>h. Test the EUT in the lowest channel , the Highest channel<br>i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode,And found the X axis positioning which it is worse case.<br>j. Repeat above procedures until all frequencies measured was complete. |
| Test Configuration: | Measurements Below 1000MHz<br>• RBW = 120 kHz<br>• VBW = 300 kHz<br>• Detector = Peak<br>• Trace mode = max hold<br>Peak Measurements Above 1000 MHz<br>• RBW = 1 MHz<br>• VBW ≥ 3 MHz<br>• Detector = Peak<br>• Sweep time = auto<br>• Trace mode = max hold<br>Average Measurements Above 1000MHz<br>• RBW = 1 MHz<br>• VBW ≥ [3 *RBW]<br>• Detector = RMS (power averaging), if span / (# of points in sweep) ≤ (RBW / 2). Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.<br>• Sweep time = auto<br>• Perform a trace average of at least 100 traces. |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates.<br>Charge + Transmitting mode. |

| | |
|---|---|
| Final Test Mode: | Refer to section 3.7 for details. |
| Instruments Used: | Refer to section 6 for details. |
| Test Results: | Pass |
| The detailed test data see: **Appendix** | |

# 5 Measurement Uncertainty (95% confidence levels, k=2)

| No. | Item | Measurement Uncertainty |
|---|---|---|
| 1 | Total RF power, conducted | ±0.54dB |
| 2 | Conduction Emission | ± 2.90dB (150kHz to 30MHz) |
| 3 | Radiated Emission | ± 3.13dB (9k -30MHz) |
| | | ± 4.80dB (30M -1GHz) |
| | | ± 4.80dB (1GHz to 18GHz) |
| | | ± 4.80dB (Above 18GHz) |

Remark:
The $U_{lab}$ (lab Uncertainty) is less than $U_{cispr/ETSI}$ (CISPR/ETSI Uncertainty), so the test results
– compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
– non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

# 6 Equipment List

| RF Test Equipment | | | | | |
|---|---|---|---|---|---|
| **Test Equipment** | **Manufacturer** | **Model No.** | **Inventory No.** | **Cal. date (yyyy/mm/dd)** | **Cal.Due date (yyyy/mm/dd)** |
| Shielding Room | Brilliant-emc | N/A | SUWI-04-01-06 | 2021/05/08 | 2024/05/07 |
| Temperature and humidity meter | MingGao | TH101B | SUWI-01-01-07 | 2022/02/16 | 2023/02/15 |
| Signal Analyzer | ROHDE& SCHWARZ | FSV3030 | SUWI-01-02-02 | 2022/05/17 | 2023/05/16 |
| Measurement Software | Tonscend | JS1120-3 Test System V3.1.55 | SUWI-02-09-09 | NCR | NCR |
| Signal Analyzer | ROHDE& SCHWARZ | FSW43 | SUWI-01-02-04 | 2022/05/28 | 2023/05/27 |
| Wideband Radio Communication Tester | ROHDE& SCHWARZ | CMW500 | SUWI-01-16-05 | 2022/02/14 | 2023/02/13 |
| DC Power Supply | HYELEC | HY3005B | SUWI-01-18-01 | 2022/02/15 | 2023/02/14 |
| Power meter | Anritsu | ML2495A | SUWI-01-31-01 | 2021/12/04 | 2022/12/03 |
| Pulse power sensor | Anritsu | MA2411B | SUWI-01-32-01 | 2021/12/04 | 2022/12/03 |
| MXG Vector signal genitor | KEYSIGHT | N5182B | SUWI-01-38-01 | 2022/02/14 | 2023/02/13 |
| Temperature Chamber | ESPEC | SU-242 | SUWI-01-13-01 | 2022/02/15 | 2023/02/14 |

| CE Test System | | | | | |
|---|---|---|---|---|---|
| **Test Equipment** | **Manufacturer** | **Model No.** | **Inventory No.** | **Cal. date (yyyy/mm/dd)** | **Cal.Due date (yyyy/mm/dd)** |
| Shielding Room | Brilliant-emc | N/A | SUWI-04-03-01 | 2021/05/08 | 2024/05/07 |
| Test receiver | ROHDE&SCHWARZ | ESR7 | SUWI-01-10-01 | 2022/02/19 | 2023/02/18 |
| Temperature and humidity meter | MingGao | TH101B | SUWI-01-01-06 | 2022/02/16 | 2023/02/15 |
| Artificial network | ROHDE&SCHWARZ | ENV216 | SUWI-01-19-01 | 2022/02/19 | 2023/02/18 |
| Artificial network | ROHDE&SCHWARZ | ENV216 | SUWI-01-19-02 | 2022/02/19 | 2023/02/18 |
| Measurement Software | Tonscend | JS32-CE 4.0.0.2 | SUWI-02-09-05 | NCR | NCR |

| RSE Test System | | | | | |
|---|---|---|---|---|---|
| **Test Equipment** | **Manufacturer** | **Model No.** | **Inventory No.** | **Cal. date (yyyy/mm/dd)** | **Cal.Due date (yyyy/mm/dd)** |
| Semi-Anechoic Chamber | Brilliant-emc | N/A | SUWI-04-02-01 | 2021/05/08 | 2024/05/07 |
| Temperature and humidity meter | MingGao | TH101B | SUWI-01-01-05 | 2022/02/16 | 2023/02/15 |
| Signal Analyzer | ROHDE&SCHWARZ | FSW43 | SUWI-01-02-04 | 2022/05/28 | 2023/05/27 |
| Signal Analyzer | KEYSIGHT | N9020A | SUWI-01-02-05 | 2021/12/04 | 2022/12/03 |
| Test receiver | ROHDE&SCHWARZ | ESR7 | SUWI-01-10-01 | 2022/02/19 | 2023/02/18 |
| Receiving antenna | SCHWRZBECK MESS-ELEKTRONIK | VULB 9163 | SUWI-01-11-01 | 2021/05/16 | 2023/05/15 |
| Receiving antenna | SCHWRZBECK MESS-ELEKTRONIK | BBHA 9120D | SUWI-01-11-02 | 2021/05/16 | 2023/05/15 |
| Receiving antenna | SCHWRZBECK MESS-ELEKTRONIK | BBHA 9170 | SUWI-01-11-03 | 2021/05/14 | 2023/05/13 |
| Amplifier | Tonscend | TAP9K3G40 | SUWI-01-14-01 | 2022/02/14 | 2023/02/13 |
| Amplifier | Tonscend | TAP01018050 | SUWI-01-14-02 | 2022/02/14 | 2023/02/13 |
| Amplifier | Tonscend | TAP18040048 | SUWI-01-14-03 | 2022/02/19 | 2023/02/18 |
| Active Loop Antenna | SCHWRZBECK MESS-ELEKTRONIK | FMZB 1519B | SUWI-01-21-01 | 2021/06/10 | 2023/06/09 |
| Measurement Software | Tonscend | JS32-RE 4.0.0.0 | SUWI-02-09-04 | NCR | NCR |



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# 7 Photographs - Setup Photos

Refer to Appendix A.2 WLAN Setup Photos.

# Appendix

## Conducted Output Power

**For new report:**

| Test Mode | Frequency (MHz) | Tx Type | Measured Output Power (dBm) | | | Limit (dBm) | Verdict |
|---|---|---|---|---|---|---|---|
| | | | Ant 1 | Ant 2 | Total | | |
| 802.11b | 2412 | MIMO | 14.21 | 14.71 | 17.48 | 30 | PASS |
| | 2437 | MIMO | 14.8 | 14.67 | 17.75 | 30 | PASS |
| | 2462 | MIMO | 14.00 | 14.32 | 17.17 | 30 | PASS |
| 802.11g | 2412 | MIMO | 12.21 | 12.9 | 15.58 | 30 | PASS |
| | 2437 | MIMO | 13.12 | 12.84 | 15.99 | 30 | PASS |
| | 2462 | MIMO | 12.25 | 12.32 | 15.30 | 30 | PASS |
| 802.11n(HT20) | 2412 | MIMO | 12.00 | 12.66 | 15.35 | 30 | PASS |
| | 2437 | MIMO | 12.80 | 12.62 | 15.72 | 30 | PASS |
| | 2462 | MIMO | 11.98 | 12.21 | 15.11 | 30 | PASS |
| 802.11n(HT40) | 2422 | MIMO | 11.74 | 10.73 | 14.27 | 30 | PASS |
| | 2437 | MIMO | 12.06 | 11.42 | 14.76 | 30 | PASS |
| | 2452 | MIMO | 12.51 | 13.01 | 15.78 | 30 | PASS |

**For original report:**

| Test Mode | Frequency (MHz) | Tx Type | Measured Output Power (dBm) | | | Limit (dBm) | Verdict |
|---|---|---|---|---|---|---|---|
| | | | Ant 1 | Ant 2 | Total | | |
| 802.11b | 2412 | MIMO | 14.27 | 14.77 | 17.54 | 30 | PASS |
| | 2437 | MIMO | 14.88 | 14.67 | 17.79 | 30 | PASS |
| | 2462 | MIMO | 14.10 | 14.34 | 17.23 | 30 | PASS |
| 802.11g | 2412 | MIMO | 12.30 | 12.93 | 15.64 | 30 | PASS |
| | 2437 | MIMO | 13.12 | 12.84 | 15.99 | 30 | PASS |
| | 2462 | MIMO | 12.32 | 12.38 | 15.36 | 30 | PASS |
| 802.11n(HT20) | 2412 | MIMO | 12.06 | 12.66 | 15.38 | 30 | PASS |
| | 2437 | MIMO | 12.83 | 12.70 | 15.78 | 30 | PASS |
| | 2462 | MIMO | 12.04 | 12.23 | 15.15 | 30 | PASS |
| 802.11n(HT40) | 2422 | MIMO | 11.76 | 10.79 | 14.31 | 30 | PASS |
| | 2437 | MIMO | 12.08 | 11.49 | 14.81 | 30 | PASS |
| | 2452 | MIMO | 12.59 | 13.07 | 15.85 | 30 | PASS |

Remark:

Since there is no obvious difference between the above data and the previous data, all the data refer to the original report.

# Radiated Spurious Emissions

## Radiated emission below 1GHz

### Worst case Mode: 802.11n40_Channel 03

**For new report:**

| Final Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Reading [dBµV] | Factor [dB] | AF [dB/m] | QP Value [dBµV/m] | QP Limit [dBµV/m] | QP Margin [dB] | Height [cm] | Angle [°] | Polarity |
| 1 | 38.245 | 48.86 | -28.17 | 11.61 | 32.30 | 40.00 | 7.70 | 102 | 17 | Horizontal |
| 2 | 42.125 | 46.02 | -28.07 | 12.53 | 30.48 | 40.00 | 9.52 | 174 | 309 | Horizontal |
| 3 | 50.855 | 39.86 | -27.98 | 13.59 | 25.48 | 40.00 | 14.52 | 142 | 270 | Horizontal |
| 4 | 66.6175 | 38.96 | -27.70 | 9.61 | 20.87 | 40.00 | 19.13 | 256 | 21 | Horizontal |
| 5 | 99.84 | 31.24 | -27.36 | 10.78 | 14.65 | 43.50 | 28.85 | 235 | 249 | Horizontal |
| 6 | 249.9475 | 30.27 | -26.00 | 11.90 | 16.17 | 46.00 | 29.83 | 214 | 60 | Horizontal |

| Final Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Reading [dBµV] | Factor [dB] | AF [dB/m] | QP Value [dBµV/m] | QP Limit [dBµV/m] | QP Margin [dB] | Height [cm] | Angle [°] | Polarity |
| 1 | 44.065 | 49.62 | -28.05 | 12.91 | 34.48 | 40.00 | 5.52 | 102 | 360 | Vertical |
| 2 | 50.37 | 45.75 | -28.00 | 13.71 | 31.47 | 40.00 | 8.53 | 185 | 21 | Vertical |
| 3 | 75.105 | 47.26 | -27.84 | 7.83 | 27.25 | 40.00 | 12.75 | 263 | 101 | Vertical |
| 4 | 129.91 | 32.65 | -27.16 | 8.21 | 13.70 | 43.50 | 29.80 | 254 | 21 | Vertical |
| 5 | 160.7075 | 34.04 | -26.75 | 7.81 | 15.10 | 43.50 | 28.40 | 142 | 21 | Vertical |
| 6 | 249.9475 | 30.28 | -26.00 | 11.90 | 16.18 | 46.00 | 29.82 | 232 | 0 | Vertical |

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier gain.
The basic equation with a sample calculation is as follows:
Value = Reading(dBµV) + AF(dB/m) + Factor(dB):
AF = Antenna Factor(dB/m)
Factor = Cable Factor(dB) - Preamplifier gain(dB)
Margin = Limit(dBµV/m) – Value(dBµV/m)

**For original report:**

| Data List | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Cable Loss [dB] | AF [dB/m] | Factor [dB] | Reading [dBμV] | Level [dBμV/m] | Limit [dBμV/m] | Over Limit [dB] | Polarity |
| 1 | 33.33 | 0.64 | 21.10 | 27.72 | 24.88 | 18.90 | 40.00 | -21.10 | Horizontal |
| 2 | 60.28 | 0.80 | 12.83 | 27.66 | 32.73 | 18.70 | 40.00 | -21.30 | Horizontal |
| 3 | 87.42 | 1.28 | 12.78 | 27.62 | 27.59 | 14.03 | 40.00 | -25.97 | Horizontal |
| 4 | 196.51 | 1.20 | 15.70 | 27.15 | 32.59 | 22.34 | 43.50 | -21.16 | Horizontal |
| 5 | 250.30 | 1.64 | 18.20 | 26.99 | 32.86 | 25.71 | 46.00 | -20.29 | Horizontal |
| 6 | 993.01 | 3.59 | 29.70 | 26.69 | 25.41 | 32.01 | 54.00 | -21.99 | Horizontal |

| Data List | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Cable Loss [dB] | AF [dB/m] | Factor [dB] | Reading [dBμV] | Level [dBμV/m] | Limit [dBμV/m] | Over Limit [dB] | Polarity |
| 1 | 48.67 | 0.70 | 14.43 | 27.69 | 36.89 | 24.33 | 40.00 | -15.67 | Vertical |
| 2 | 86.50 | 1.27 | 12.60 | 27.63 | 38.60 | 24.84 | 40.00 | -15.16 | Vertical |
| 3 | 181.92 | 1.19 | 15.42 | 27.21 | 30.28 | 19.68 | 43.50 | -23.82 | Vertical |
| 4 | 472.18 | 2.45 | 23.75 | 27.69 | 26.13 | 24.64 | 46.00 | -21.36 | Vertical |
| 5 | 627.27 | 2.76 | 26.55 | 28.07 | 25.08 | 26.32 | 46.00 | -19.68 | Vertical |
| 6 | 982.62 | 3.58 | 29.54 | 26.74 | 26.59 | 32.97 | 54.00 | -21.03 | Vertical |

Remark:

Since there is no obvious difference between the above data and the previous data, all the data refer to the original report.

# Transmitter emission Above 1GHz

## 802.11n40_Channel 03

**For new report:**

| Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Reading [dBµV] | AF [dB/m] | Factor [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity |
| 1 | 4904 | 48.82 | 32.37 | -44.88 | 36.31 | 74.00 | 37.69 | 296 | 132 | Horizontal |
| 2 | 7356 | 45.78 | 36.41 | -41.88 | 40.31 | 74.00 | 33.69 | 255 | 166 | Horizontal |
| 3 | 9808 | 42.37 | 38.52 | -37.48 | 43.41 | 74.00 | 30.59 | 241 | 66 | Horizontal |
| 4 | 4904 | 40.45 | 32.37 | -44.88 | 27.94 | 54.00 | 26.06 | 142 | 3 | Horizontal |
| 5 | 7356 | 38.16 | 36.41 | -41.88 | 32.69 | 54.00 | 21.31 | 255 | 66 | Horizontal |
| 6 | 9808 | 34.32 | 38.52 | -37.48 | 35.36 | 54.00 | 18.64 | 286 | 132 | Horizontal |

| Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Reading [dBµV] | AF [dB/m] | Factor [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity |
| 1 | 4904 | 47.98 | 32.37 | -44.88 | 35.47 | 74.00 | 38.53 | 201 | 64 | Vertical |
| 2 | 7356 | 45.60 | 36.41 | -41.88 | 40.13 | 74.00 | 33.87 | 142 | 32 | Vertical |
| 3 | 9808 | 42.54 | 38.52 | -37.48 | 43.58 | 74.00 | 30.42 | 266 | 66 | Vertical |
| 4 | 4904 | 40.74 | 32.37 | -44.88 | 28.23 | 54.00 | 25.77 | 266 | 251 | Vertical |
| 5 | 7356 | 37.68 | 36.41 | -41.88 | 32.21 | 54.00 | 21.79 | 254 | 142 | Vertical |
| 6 | 9808 | 34.47 | 38.52 | -37.48 | 35.51 | 54.00 | 18.49 | 185 | 131 | Vertical |

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier gain.
The basic equation with a sample calculation is as follows:
Level = Reading(dBµV) + AF(dB/m) + Factor(dB):
AF = Antenna Factor(dB/m)
Factor = Cable Factor(dB) - Preamplifier gain(dB)
Margin = Limit(dBµV/m) – Level(dBµV/m)

**For original report:**

| Data List | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Cable Loss [dB] | AF [dB/m] | Factor [dB] | Reading [dBμV] | Level [dBμV/m] | Limit [dBμV/m] | Over Limit [dB] | Polarity |
| 1 | 1653.550 | 3.39 | 26.48 | 40.04 | 46.64 | 36.47 | 74.00 | -37.53 | Horizontal |
| 2 | 4062.629 | 6.34 | 33.60 | 41.46 | 48.08 | 46.56 | 74.00 | -27.44 | Horizontal |
| 3 | 4844.000 | 7.14 | 34.23 | 42.17 | 46.80 | 46.00 | 74.00 | -28.00 | Horizontal |
| 4 | 6995.172 | 8.54 | 36.49 | 41.70 | 47.05 | 50.38 | 74.00 | -23.62 | Horizontal |
| 5 | 7266.000 | 8.79 | 36.39 | 41.45 | 47.86 | 51.59 | 74.00 | -22.41 | Horizontal |
| 6 | 9688.000 | 10.78 | 37.54 | 37.63 | 42.36 | 53.05 | 74.00 | -20.95 | Horizontal |

| Data List | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Cable Loss [dB] | AF [dB/m] | Factor [dB] | Reading [dBμV] | Level [dBμV/m] | Limit [dBμV/m] | Over Limit [dB] | Polarity |
| 1 | 1677.621 | 3.41 | 26.58 | 40.05 | 45.31 | 35.25 | 74.00 | -38.75 | Vertical |
| 2 | 4495.125 | 6.76 | 33.60 | 41.87 | 48.13 | 46.62 | 74.00 | -27.38 | Vertical |
| 3 | 4844.000 | 7.14 | 34.23 | 42.17 | 46.07 | 45.27 | 74.00 | -28.73 | Vertical |
| 4 | 6954.852 | 8.52 | 36.38 | 41.73 | 47.11 | 50.28 | 74.00 | -23.72 | Vertical |
| 5 | 7266.000 | 8.79 | 36.39 | 41.45 | 47.19 | 50.92 | 74.00 | -23.08 | Vertical |
| 6 | 9688.000 | 10.78 | 37.54 | 37.63 | 43.11 | 53.80 | 74.00 | -20.20 | Vertical |

Remark:

Since there is no obvious difference between the above data and the previous data, all the data refer to the original report.

## Restricted bands around fundamental frequency

### 802.11n40_Channel 03

**For new report:**

| Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Reading [dBµV] | AF [dB/m] | Factor [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity |
| 1 | 2389.7599 | 64.83 | 27.68 | -24.42 | 68.09 | 74.00 | 5.91 | 232 | 98 | Horizontal |
| 2 | 2484.76 | 52.93 | 27.87 | -23.95 | 56.85 | 74.00 | 17.15 | 232 | 98 | Horizontal |
| 3 | 2389.3264 | 46.60 | 27.68 | -24.42 | 49.86 | 54.00 | 4.14 | 232 | 98 | Horizontal |
| 4 | 2484.76 | 38.33 | 27.87 | -23.95 | 42.25 | 54.00 | 11.75 | 232 | 98 | Horizontal |

| Data List | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Reading [dBµV] | AF [dB/m] | Factor [dB] | Level [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity |
| 1 | 2389.4565 | 67.86 | 27.68 | -24.42 | 71.12 | 74.00 | 2.88 | 385 | 66 | Vertical |
| 2 | 2484.58 | 49.50 | 27.87 | -23.95 | 53.42 | 74.00 | 20.58 | 385 | 66 | Vertical |
| 3 | 2389.9767 | 49.39 | 27.68 | -24.42 | 52.65 | 54.00 | 1.35 | 385 | 66 | Vertical |
| 4 | 2484.28 | 36.38 | 27.87 | -23.95 | 40.30 | 54.00 | 13.70 | 385 | 66 | Vertical |

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier gain.
The basic equation with a sample calculation is as follows:
Level = Reading(dBµV) + AF(dB/m) + Factor(dB):
AF = Antenna Factor(dB/m)
Factor = Cable Factor(dB) - Preamplifier gain(dB)
Margin = Limit(dBµV/m) – Level(dBµV/m)



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**For original report:**

| Data List | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Cable Loss [dB] | AF [dB/m] | Factor [dB] | Reading [dBμV] | Level [dBμV/m] | Limit [dBμV/m] | Over Limit [dB] | Polarity |
| 1 | 2387.723 | 4.34 | 28.87 | 40.42 | 69.56 | 62.35 | 74.00 | -11.65 | Horizontal |
| 2 | 2390.000 | 4.34 | 28.88 | 40.42 | 68.64 | 61.44 | 74.00 | -12.56 | Horizontal |
| 3 | 2422.000 | 4.40 | 28.94 | 40.44 | 107.15 | 100.05 | 74.00 | 26.05 | Horizontal |
| 4 | 2389.226 | 4.34 | 28.88 | 40.42 | 57.30 | 50.10 | 54.00 | -3.90 | Horizontal |
| 5 | 2390.000 | 4.34 | 28.88 | 40.42 | 57.22 | 50.02 | 54.00 | -3.98 | Horizontal |
| 6 | 2422.000 | 4.40 | 28.94 | 40.44 | 97.76 | 90.66 | 54.00 | 36.66 | Horizontal |

| Data List | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| NO. | Frequency [MHz] | Cable Loss [dB] | AF [dB/m] | Factor [dB] | Reading [dBμV] | Level [dBμV/m] | Limit [dBμV/m] | Over Limit [dB] | Polarity |
| 1 | 2388.925 | 4.34 | 28.88 | 40.42 | 72.89 | 65.69 | 74.00 | -8.31 | Vertical |
| 2 | 2390.000 | 4.34 | 28.88 | 40.42 | 71.54 | 64.34 | 74.00 | -9.66 | Vertical |
| 3 | 2422.000 | 4.40 | 28.94 | 40.44 | 110.10 | 103.00 | 74.00 | 29.00 | Vertical |
| 4 | 2389.526 | 4.34 | 28.88 | 40.42 | 60.13 | 60.13 | 52.93 | 54.00 | Vertical |
| 5 | 2390.000 | 4.34 | 28.88 | 40.42 | 60.38 | 60.38 | 53.18 | 54.00 | Vertical |
| 6 | 2422.000 | 4.40 | 28.94 | 40.44 | 100.46 | 100.46 | 93.36 | 54.00 | Vertical |

Remark:

Since there is no obvious difference between the above data and the previous data, all the data refer to the original report.

---End of Report---



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