

RF EXPOSURE EVALUATION REPORT

Product Name: WIFI Module
Trade Mark: GSD
Model No.: WC3XM2001
HVIN: WC3XM2001
Report Number: 180323001RFC-3
Test Standards: FCC 47 CFR Part 1 Subpart I
RSS-102 Issue 5
FCC ID: 2AC23-WC3XM2001
IC: 12290A-WC3XM2001
Test Result: PASS
Date of Issue: May 11, 2018

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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

| | |
|---------------------------------|--|
| Applicant: | Hui Zhou Gaoshengda Technology Co., LTD |
| Address of Applicant: | NO.75 Zhongkai Development Area, Huizhou, Guangdong, China |
| Manufacturer: | Hui Zhou Gaoshengda Technology Co., LTD |
| Address of Manufacturer: | NO.75 Zhongkai Development Area, Huizhou, Guangdong, China |

1.2 EUT INFORMATION

| | | | |
|-------------------------------|---------------------|------------------------|-------------------|
| Product Name: | WIFI Module | | |
| Model No.: | WC3XM2001 | | |
| Add. Model No.: | N/A | | |
| Trade Mark: | GSD | | |
| DUT Stage: | Identical Prototype | | |
| EUT Supports Function: | 2.4 GHz ISM Band: | IEEE 802.11b/g/n | |
| | 5 GHz U-NII Bands: | 5 150 MHz to 5 250 MHz | IEEE 802.11a/n/ac |
| | | 5 250 MHz to 5 350 MHz | IEEE 802.11a/n/ac |
| | | 5 470 MHz to 5 725 MHz | IEEE 802.11a/n/ac |
| | | 5 725 MHz to 5 850 MHz | IEEE 802.11a/n/ac |

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

| For 2.4 GHz ISM Band of Wi-Fi | | |
|-------------------------------|---|--|
| Frequency Range: | 2400 MHz to 2483.5 MHz | |
| Support Standards: | IEEE 802.11b, IEEE 802.11g, IEEE 802.11n-HT20, IEEE 802.11n-HT40 | |
| Type of Modulation: | IEEE 802.11b: DSSS(CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM(64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11n-HT20: OFDM(64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11n-HT40: OFDM(64-QAM, 16-QAM, QPSK, BPSK) | |
| Data Rate: | IEEE 802.11b: Up to 11 Mbps IEEE 802.11g: Up to 54 Mbps IEEE 802.11n-HT20: Up to MCS15 IEEE 802.11n-HT40: Up to MCS15 | |
| Number of Channels: | IEEE 802.11b: 13 IEEE 802.11g: 13 IEEE 802.11n-HT20: 13 IEEE 802.11n-HT40: 9 | |
| Channel Separation: | 5 MHz | |
| Antenna Type: | Chain 0 | PIFA Antenna |
| | Chain 1 | PIFA Antenna |
| Antenna Gain: | Chain 0 | 2.18 dBi |
| | Chain 1 | 2.18 dBi |
| Directional gain: | 5.19 dBi | |
| Maximum Peak Power: | SISO_ Chain 0 | IEEE 802.11b: 17.53 dBm IEEE 802.11g: 21.60 dBm IEEE 802.11n-HT20: 23.25 dBm IEEE 802.11n-HT40: 22.11 dBm |
| | SISO_ Chain 1 | IEEE 802.11b: 17.28 dBm IEEE 802.11g: 21.11 dBm IEEE 802.11n-HT20: 22.45 dBm IEEE 802.11n-HT40: 22.63 dBm |
| | MIMO_ Chain 0+1 | IEEE 802.11n-HT20: 25.86 dBm IEEE 802.11n-HT40: 25.39 dBm |

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| | | |
|----------------------|-----------------|--|
| Maximum EIRP: | SISO_ Chain 0 | IEEE 802.11b: 19.56 dBm IEEE 802.11g: 23.78 dBm IEEE 802.11n-HT20: 25.43 dBm IEEE 802.11n-HT40: 24.29 dBm |
| | SISO_ Chain 1 | IEEE 802.11b: 19.34 dBm IEEE 802.11g: 23.29 dBm IEEE 802.11n-HT20: 24.63 dBm IEEE 802.11n-HT40: 24.81 dBm |
| | MIMO_ Chain 0+1 | IEEE 802.11n-HT20: 28.04 dBm IEEE 802.11n-HT40: 27.57 dBm |

| For 5 GHz U-NII Bands of Wi-Fi | | |
|--------------------------------|---|--------------------------------|
| Frequency Range: | 5150 MHz to 5250 MHz | |
| | 5250 MHz to 5350 MHz | |
| | 5470 MHz to 5725 MHz | |
| | 5 725 MHz to 5 850 MHz | |
| Support Standards: | IEEE 802.11a/n/ac | |
| TPC Function: | Not Support | |
| DFS Operational mode: | Slave without radar Interference detection function | |
| Type of Modulation: | IEEE 802.11a: OFDM(64QAM, 16QAM, QPSK, BPSK) | |
| | IEEE 802.11n: OFDM(64QAM, 16QAM, QPSK, BPSK) | |
| | IEEE 802.11ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK) | |
| Channel Spacing: | IEEE 802.11a/n-HT20/ac-VHT20: 20 MHz | |
| | IEEE 802.11n-HT40/ac-VHT40: 40 MHz | |
| | IEEE 802.11ac-VHT80/: 80 MHz | |
| Data Rate: | IEEE 802.11a: Up to 54 Mbps | |
| | IEEE 802.11n-HT20: Up to MCS15 | |
| | IEEE 802.11n-HT40: Up to MCS15 | |
| | IEEE 802.11ac-VHT20: Up to MCS8 | |
| | IEEE 802.11ac-VHT40: Up to MCS9 | |
| Number of Channels: | 5150 MHz to 5250 MHz: 4 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40)/ac-VHT40 1 for IEEE 802.11acVHT80 | |
| | 5250 MHz to 5350 MHz: 4 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40)/ac-VHT40 1 for IEEE 802.11acVHT80 | |
| | 5470 MHz to 5725 MHz: 11 for IEEE 802.11a/n-HT20/ac-VHT20 5 for IEEE 802.11n-HT40/ac-VHT40 2 for IEEE 802.11ac-VHT80 | |
| | 5725 MHz to 5850 MHz: 5 for IEEE 802.11a/n-HT20/ac-VHT20 2 for IEEE 802.11n-HT40/ac-VHT40 1 for IEEE 802.11ac-VHT80 | |
| Antenna Type: | Chain 0 | PIFA Antenna |
| | Chain 1 | PIFA Antenna |
| Antenna Gain: | Chain 0 | 5150 MHz to 5250 MHz: 3.63 dBi |
| | | 5250 MHz to 5350 MHz: 3.63 dBi |

| | | | | | |
|--|-----------------------|--------------------------------|---------------------|-----------------------|----------------|
| | Chain 1 | 5470 MHz to 5725 MHz: 3.63 dBi | | | |
| | | 5725 MHz to 5850 MHz: 3.63 dBi | | | |
| | | 5150 MHz to 5250 MHz: 3.63 dBi | | | |
| | | 5250 MHz to 5350 MHz: 3.63 dBi | | | |
| | | 5470 MHz to 5725 MHz: 3.63 dBi | | | |
| | | 5725 MHz to 5850 MHz: 3.63 dBi | | | |
| Directional gain: | 5150 MHz to 5850 MHz: | | 6.64 dBi | | |
| | 5250 MHz to 5350 MHz: | | 6.64 dBi | | |
| | 5470 MHz to 5725 MHz: | | 6.64 dBi | | |
| | 5725 MHz to 5850 MHz: | | 6.64 dBi | | |
| Maximum conducted output power (dBm): | SISO_Chain 0 | U-NII-1 | U-NII-2A | U-NII-2C | U-NII-3 |
| | IEEE 802.11a: | 14.53 | 14.54 | 14.92 | 16.03 |
| | IEEE 802.11n-HT20: | 11.79 | 12.18 | 12.25 | 13.49 |
| | IEEE 802.11n-HT40: | 12.51 | 12.70 | 12.51 | 13.78 |
| | IEEE 802.11ac-VHT80: | 12.57 | 12.88 | 12.51 | 14.03 |
| | SISO_Chain 1 | U-NII-1 | U-NII-2A | U-NII-2C | U-NII-3 |
| | IEEE 802.11a: | 14.43 | 14.40 | 14.70 | 15.03 |
| | IEEE 802.11n-HT20: | 11.74 | 11.65 | 11.96 | 12.16 |
| | IEEE 802.11n-HT40: | 12.44 | 12.59 | 12.49 | 13.80 |
| | IEEE 802.11ac-VHT80: | 12.66 | 12.80 | 12.50 | 14.00 |
| | MIMO_Chain 0+1 | U-NII-1 | U-NII-2A | U-NII-2C | U-NII-3 |
| | IEEE 802.11n-HT20: | 14.76 | 14.93 | 15.12 | 15.83 |
| | IEEE 802.11n-HT40: | 15.49 | 15.66 | 15.51 | 16.80 |
| | IEEE 802.11ac-VHT80: | 15.63 | 15.85 | 15.52 | 17.03 |
| Maximum EIRP (dBm): | U-NII-1 | | | | |
| | | SISO_Chain 0 | SISO_Chain 1 | MIMO_Chain 0+1 | |
| | IEEE 802.11a: | 18.16 | 18.06 | N/A | |
| | IEEE 802.11n-HT20: | 15.42 | 15.37 | 18.39 | |
| | IEEE 802.11n-HT40: | 16.14 | 16.07 | 19.12 | |
| | IEEE 802.11ac-VHT80: | 16.20 | 16.29 | 19.26 | |

1.4 OTHER INFORMATION

| Mode | Tx/Rx Frequency | Test RF Channel Lists | | | | |
|-------------------|----------------------|-----------------------|-----------|--------------|--------------|--------------|
| | | Lowest(L) | Middle(M) | Highest(H11) | Highest(H12) | Highest(H13) |
| IEEE 802.11b | 2412 MHz to 2472 MHz | Channel 1 | Channel 7 | Channel 11 | Channel 12 | Channel 13 |
| | | 2412 MHz | 2437 MHz | 2462 MHz | 2467 MHz | 2472 MHz |
| IEEE 802.11g | 2412 MHz to 2472 MHz | Channel 1 | Channel 7 | Channel 11 | Channel 12 | Channel 13 |
| | | 2412 MHz | 2437 MHz | 2462 MHz | 2467 MHz | 2472 MHz |
| IEEE 802.11n-HT20 | 2412 MHz to 2472 MHz | Channel 1 | Channel 7 | Channel 11 | Channel 12 | Channel 13 |
| | | 2412 MHz | 2437 MHz | 2462 MHz | 2467 MHz | 2472 MHz |
| Mode | Tx/Rx Frequency | Test RF Channel Lists | | | | |
| IEEE 802.11n-HT40 | 2422 MHz to 2462 MHz | Lowest(L) | Middle(M) | Highest(H9) | Highest(H10) | Highest(H11) |
| | | Channel 3 | Channel 7 | Channel 9 | Channel 10 | Channel 11 |
| | | 2422 MHz | 2437 MHz | 2452 MHz | 2457 MHz | 2462 MHz |

| Test channels for 5 GHz U-NII Bands of Wi-Fi | | | | |
|--|----------------------|-----------------------|-------------|-------------|
| Mode | Tx/Rx Frequency | Test RF Channel Lists | | |
| | | Lowest(L) | Middle(M) | Highest(H) |
| IEEE 802.11a IEEE 802.11n-HT20 IEEE 802.11ac-VHT20 | 5150 MHz to 5250 MHz | Channel 36 | Channel 44 | Channel 48 |
| | | 5180 MHz | 5220 MHz | 5240 MHz |
| | 5250 MHz to 5350 MHz | Channel 52 | Channel 60 | Channel 64 |
| | | 5260 MHz | 5300 MHz | 5320 MHz |
| | 5470 MHz to 5725 MHz | Channel 100 | Channel 116 | Channel 140 |
| | | 5500 MHz | 5580 MHz | 5700 MHz |
| | 5725 MHz to 5850 MHz | Channel 149 | Channel 157 | Channel 165 |
| | | 5745 MHz | 5785 MHz | 5825 MHz |
| IEEE 802.11n-HT40 IEEE 802.11ac-VHT40 | 5150 MHz to 5250 MHz | Channel 38 | -- | Channel 46 |
| | | 5190 MHz | -- | 5230 MHz |
| | 5250 MHz to 5350 MHz | Channel 54 | -- | Channel 62 |
| | | 5270 MHz | -- | 5310 MHz |
| | 5470 MHz to 5725 MHz | Channel 102 | Channel 110 | Channel 134 |
| | | 5510 MHz | 5550 MHz | 5670 MHz |
| | 5725 MHz to 5850 MHz | Channel 151 | -- | Channel 159 |
| | | 5755 MHz | -- | 5795 MHz |
| IEEE 802.11ac-VHT80 | 5150 MHz to 5250 MHz | -- | Channel 42 | -- |
| | | -- | 5210 MHz | -- |
| | 5250 MHz to 5350 MHz | -- | Channel 58 | -- |
| | | -- | 5290 MHz | -- |
| | 5470 MHz to 5725 MHz | Channel 106 | -- | -- |
| | | 5530 MHz | -- | -- |
| | 5725 MHz to 5850 MHz | -- | Channel 155 | -- |
| | | -- | 5775 MHz | -- |

1.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC 47 CFR Part 1 Subpart I
RSS-102 Issue 5

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

1.6 DEVIATION FROM STANDARDS

None.

1.7 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

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2. EQUIPMENT LIST

Please refer to the RF test report.



3. MPE EVALUATION

3.1 REFERENCE DOCUMENTS FOR EVALUATION

| No. | Identity | Document Title |
|-----|---|--|
| 1 | FCC 47 CFR Part 1 Subpart I | PROCEDURES IMPLEMENTING THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 |
| 2 | RSS-102 Issue 5 | Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) |
| 3 | KDB 447498 D01 General RF Exposure Guidance v06 | RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES |

3.2 MPE COMPLIANCE REQUIREMENT

3.2.1 Limits

3.2.1.1 FCC 47 CFR Part 1 Subpart I

According to §1.1307(b)(1), system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

Limits for Occupational / Controlled Exposure

| Frequency range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm ²) | Averaging Times E ² , H ² or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|---|--|
| 0.3-3.0 | 614 | 1.63 | (100)* | 6 |
| 3.0-30 | 1842/f | 4.89/f | (900/f)* | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1500 | / | / | F/300 | 6 |
| 1500-100000 | / | / | 5 | 6 |

Limits for General Population / Uncontrolled Exposure

| Frequency range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm ²) | Averaging Times E ² , H ² or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|---|--|
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824/f | 2.19/f | (180/f)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | / | / | F/1500 | 30 |
| 1500-100000 | / | / | 1 | 30 |

Note: f = frequency in MHz; * = Plane-wave equivalents power density.

3.2.1.2 RSS-102 Issue 5

According to RSS-102 Issue 5, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

| Frequency range (MHz) | Electric Field (E) (V/m rms) | Magnetic Field (H) (A/m rms) | Power Density (S) (W/m ²) | Reference Period H ² or S (minutes) |
|------------------------|----------------------------------|---|---|--|
| 0.003-10 ²¹ | 83 | 90 | - | Instantaneous* |
| 0.1-10 | - | 0.73/ <i>f</i> | - | 6** |
| 1.1-10 | 87/ <i>f</i> ^{0.5} | - | - | 6** |
| 10-20 | 27.46 | 0.0728 | 2 | 6 |
| 20-48 | 58.07/ <i>f</i> ^{0.25} | 0.1540/ <i>f</i> ^{0.25} | 8.944/ <i>f</i> ^{0.5} | 6 |
| 48-300 | 22.06 | 0.05852 | 1.291 | 6 |
| 300-6000 | 3.142 <i>f</i> ^{0.3417} | 0.008335 <i>f</i> ^{0.3417} | 0.02619 <i>f</i> ^{0.6834} | 6 |
| 6000-15000 | 61.4 | 0.163 | 10 | 6 |
| 15000-150000 | 61.4 | 0.163 | 10 | 616000/ <i>f</i> ^{1.2} |
| 150000-300000 | 0.158 <i>f</i> ^{0.5} | 4.21 x 10 ⁻⁴ <i>f</i> ^{0.5} | 6.67 x 10 ⁻⁵ <i>f</i> | 616000/ <i>f</i> ^{1.2} |

Note: *f* is frequency in MHz.
 *Based on nerve stimulation (NS).
 ** Based on specific absorption rate (SAR).

RF Field Strength Limits for Controlled Use Devices (Controlled Environment)

| Frequency range (MHz) | Electric Field (E) (V/m rms) | Magnetic Field (H) (A/m rms) | Power Density (S) (W/m ²) | Reference Period H ² or S (minutes) |
|------------------------|---------------------------------|---|---------------------------------------|--|
| 0.003-10 ²³ | 170 | 180 | - | Instantaneous* |
| 1-10 | - | 1.6/ <i>f</i> | - | 6** |
| 1.29-10 | 193/ <i>f</i> ^{0.5} | - | - | 6** |
| 10-20 | 61.4 | 0.163 | 10 | 6 |
| 20-48 | 129.8/ <i>f</i> ^{0.25} | 0.3444/ <i>f</i> ^{0.25} | 44.72/ <i>f</i> ^{0.5} | 6 |
| 48-100 | 49.33 | 0.1309 | 6.455 | 6 |
| 100-6000 | 15.60 <i>f</i> ^{0.25} | 0.04138 <i>f</i> ^{0.25} | 0.6455 <i>f</i> ^{0.5} | 6 |
| 6000-15000 | 137 | 0.364 | 50 | 6 |
| 15000-150000 | 137 | 0.364 | 50 | 616000/ <i>f</i> ^{1.2} |
| 150000-300000 | 0.354 <i>f</i> ^{0.5} | 9.40 x 10 ⁻⁴ <i>f</i> ^{0.5} | 3.33 x 10 ⁻⁴ <i>f</i> | 616000/ <i>f</i> ^{1.2} |

Note: *f* is frequency in MHz.
 *Based on nerve stimulation (NS).
 ** Based on specific absorption rate (SAR).

3.2.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3.3 MPE CALCULATION METHOD

3.3.1 FCC 47 CFR Part 1 Subpart I

$$S = PG/4\pi R^2 = EIRP/4\pi R^2$$

S = power density (in appropriate units, e.g., mw/cm²)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

3.3.2 RSS-102 Issue 5

$$S = PG/4\pi R^2 = EIRP/4\pi R^2$$

S = power density (in appropriate units, e.g., w/m²)

P = power input to the antenna (in appropriate units, e.g., w)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., m)

3.4 MPE CALCULATION RESULTS

Note: For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

3.4.1 For WLAN

For Wi-Fi function, operating at 2412MHz to 2462 MHz for IEEE802.11b/g/n and
 operating at 5150 MHz to 5250 MHz for IEEE802.11a/n/ac and
 operating at 5725 MHz to 5850 MHz for IEEE802.11a/n/ac.

3.4.1.1 Antenna Type:

Chain 0: PIFA Antenna

Chain 1: PIFA Antenna

3.4.1.2 Antenna Gain:

| Chain 0: | Chain 1: |
|--------------------------------|--------------------------------|
| 2412MHz to 2472 MHz: 2.18 dBi | 2412MHz to 2472 MHz: 2.18 dBi |
| 5150 MHz to 5250 MHz: 3.63 dBi | 5150 MHz to 5250 MHz: 3.63 dBi |
| 5250 MHz to 5350 MHz: 3.63 dBi | 5250 MHz to 5350 MHz: 3.63 dBi |
| 5470 MHz to 5725 MHz: 3.63 dBi | 5470 MHz to 5725 MHz: 3.63 dBi |
| 5725 MHz to 5850 MHz: 3.63 dBi | 5725 MHz to 5850 MHz: 3.63 dBi |

For MIMO mode (2Tx/2Rx), there are two transmission antennas. Both Chain 0 and Chain 1 used at the same time and antenna ports have uniform output powers. The Chain 0 and Chain 1 antenna ports can be used alone. The transmit signals are correlated with each other.

For 2.4 GHz WIFI & 5 GHz WIFI

$$Directional\ gain = 10\ log\ [(10^{G1}/20 + 10^{G2}/20 + \dots + 10^{GN}/20)^2 / NANT]\ dBi$$

[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.]

For SISO mode (1Tx/1Rx), there are two transmission antennas. Both Chain 0 and Chain 1 used at the same time and antenna ports have uniform output powers. The Chain 0 and Chain 1 antenna ports cannot be used alone

For 2.4 GHz WIFI & 5 GHz WIFI

The antenna gain = Chain 0 or Chain 1

3.4.1.3 Results for FCC 47 CFR Part 1 Subpart I

For SISO (1TX/1RX) Mode

| Operating Mode | Freq. | Declared maximum conducted average output power | Max. positive tolerance according manufacturer | Antenna Gain | Calculated maximum EIRP | Declared maximum EIRP | MPE Limit | MPE Value | |
|-------------------|--------------|---|--|--------------|-------------------------|-----------------------|-----------|-----------|--------|
| | (MHz) | | | | | | | | (dBm) |
| SISO Chain 0 or 1 | IEEE 802.11b | 2412-2462 | 17 | 2 | 2.18 | 21.18 | 131.2200 | 1 | 0.0261 |
| | IEEE 802.11b | 2467-2472 | 15 | 2 | 2.18 | 19.18 | 82.7942 | 1 | 0.0165 |
| | IEEE 802.11g | 2412-2462 | 14 | 2 | 2.18 | 18.18 | 65.7658 | 1 | 0.0131 |
| | IEEE 802.11g | 2467-2472 | 12 | 2 | 2.18 | 16.18 | 41.4954 | 1 | 0.0083 |
| | IEEE 802.11a | 5180-5240 | 14 | 2 | 3.63 | 19.63 | 91.8333 | 1 | 0.0183 |
| | | 5260-5320 | 14 | 2 | 3.63 | 19.63 | 91.8333 | 1 | 0.0183 |
| | | 5500-5700 | 14 | 2 | 3.63 | 19.63 | 91.8333 | 1 | 0.0183 |
| | | 5745-5825 | 14 | 2 | 3.63 | 19.63 | 91.8333 | 1 | 0.0183 |

For MIMO (2TX/2RX) Mode

| Operating Mode | Freq. | Declared maximum conducted average output power | Max. positive Tolerance according manufacturer | Directional Gain | Calculated maximum EIRP | Declared maximum EIRP | MPE Limit | MPE Value | |
|----------------|---------------------|---|--|------------------|-------------------------|-----------------------|-----------|-----------|--------|
| | (MHz) | | | | | | | | (dBm) |
| MIMO (2TX/2RX) | IEEE 802.11n-HT20 | 2412-2462 | 13 | 2 | 5.19 | 20.19 | 104.4720 | 1 | 0.0208 |
| | | 2467-2472 | 11 | 2 | 5.19 | 18.19 | 65.9174 | 1 | 0.0131 |
| | IEEE 802.11n-HT40 | 2422-2452 | 13 | 2 | 5.19 | 20.19 | 104.4720 | 1 | 0.0208 |
| | | 2457-2462 | 11 | 2 | 5.19 | 18.19 | 65.9174 | 1 | 0.0131 |
| | IEEE 802.11n-HT20 | 5180-5240 | 12 | 2 | 6.64 | 20.64 | 115.8777 | 1 | 0.0231 |
| | | 5260-5320 | 12 | 2 | 6.64 | 20.64 | 115.8777 | 1 | 0.0231 |
| | | 5500-5700 | 12 | 2 | 6.64 | 20.64 | 115.8777 | 1 | 0.0231 |
| | | 5745-5825 | 12 | 2 | 6.64 | 20.64 | 115.8777 | 1 | 0.0231 |
| | IEEE 802.11n-HT40 | 5190-5230 | 12 | 2 | 6.64 | 20.64 | 115.8777 | 1 | 0.0231 |
| | | 5270-5310 | 12 | 2 | 6.64 | 20.64 | 115.8777 | 1 | 0.0231 |
| | | 5510-5670 | 12 | 2 | 6.64 | 20.64 | 115.8777 | 1 | 0.0231 |
| | IEEE 802.11ac-VHT20 | 5755-5795 | 12 | 2 | 6.64 | 20.64 | 115.8777 | 1 | 0.0231 |
| | | 5180-5240 | 12 | 2 | 6.64 | 20.64 | 115.8777 | 1 | 0.0231 |
| | | 5260-5320 | 12 | 2 | 6.64 | 20.64 | 115.8777 | 1 | 0.0231 |
| | IEEE 802.11ac-VHT40 | 5500-5700 | 12 | 2 | 6.64 | 20.64 | 115.8777 | 1 | 0.0231 |
| | | 5745-5825 | 12 | 2 | 6.64 | 20.64 | 115.8777 | 1 | 0.0231 |
| | | 5190-5230 | 11 | 2 | 6.64 | 19.64 | 92.0450 | 1 | 0.0183 |
| | | 5270-5310 | 11 | 2 | 6.64 | 19.64 | 92.0450 | 1 | 0.0183 |
| | IEEE 802.11ac-VHT80 | 5510-5670 | 11 | 2 | 6.64 | 19.64 | 92.0450 | 1 | 0.0183 |
| | | 5755-5795 | 11 | 2 | 6.64 | 19.64 | 92.0450 | 1 | 0.0183 |
| 5210 | | 11 | 2 | 6.64 | 19.64 | 92.0450 | 1 | 0.0183 | |
| 5290 | | 11 | 2 | 6.64 | 19.64 | 92.0450 | 1 | 0.0183 | |
| | 5530 | 11 | 2 | 6.64 | 19.64 | 92.0450 | 1 | 0.0183 | |
| | 5775 | 11 | 2 | 6.64 | 19.64 | 92.0450 | 1 | 0.0183 | |

3.4.1.4 Results for RSS-102 Issue 5

For SISO (1TX/1RX) Mode

| Operating Mode | Freq. | Declared maximum conducted average output power | Max. positive tolerance according manufacturer | Antenna Gain | Calculated maximum EIRP | Declared maximum EIRP | MPE Limit | MPE Value | |
|-------------------|--------------|---|--|--------------|-------------------------|-----------------------|-----------|-----------|--------|
| | (MHz) | | | | | | | | (dBm) |
| SISO Chain 0 or 1 | IEEE 802.11b | 2412-2462 | 17 | 2 | 2.18 | 21.18 | 0.1312 | 5.35 | 0.2610 |
| | IEEE 802.11b | 2467-2472 | 15 | 2 | 2.18 | 19.18 | 0.0828 | 5.35 | 0.1647 |
| | IEEE 802.11g | 2412-2462 | 14 | 2 | 2.18 | 18.18 | 0.0658 | 5.35 | 0.1308 |
| | IEEE 802.11g | 2467-2472 | 12 | 2 | 2.18 | 16.18 | 0.0415 | 5.35 | 0.0826 |
| | IEEE 802.11a | 5180-5240 | 14 | 2 | 3.63 | 19.63 | 0.0918 | 9.01 | 0.1827 |
| | | 5260-5320 | 14 | 2 | 3.63 | 19.63 | 0.0918 | 9.01 | 0.1827 |
| | | 5500-5700 | 14 | 2 | 3.63 | 19.63 | 0.0918 | 9.01 | 0.1827 |
| | | 5745-5825 | 14 | 2 | 3.63 | 19.63 | 0.0918 | 9.01 | 0.1827 |

For MIMO (2TX/2RX) Mode

| Operating Mode | Freq. | Declared maximum conducted average output power | Max. positive Tolerance according manufacturer | Directional Gain | Calculated maximum EIRP | Declared maximum EIRP | MPE Limit | MPE Value |
|---------------------|-----------|---|--|------------------|-------------------------|-----------------------|-----------|-----------|
| | (MHz) | | | | | | | |
| IEEE 802.11n-HT20 | 2412-2462 | 13 | 2 | 5.19 | 20.19 | 0.1045 | 5.35 | 0.2078 |
| | 2467-2472 | 11 | 2 | 5.19 | 18.19 | 0.0659 | 5.35 | 0.1311 |
| IEEE 802.11n-HT40 | 2422-2452 | 13 | 2 | 5.19 | 20.19 | 0.1045 | 5.35 | 0.2078 |
| | 2457-2462 | 11 | 2 | 5.19 | 18.19 | 0.0659 | 5.35 | 0.1311 |
| IEEE 802.11n-HT20 | 5180-5240 | 12 | 2 | 6.64 | 20.64 | 0.1159 | 9.01 | 0.2305 |
| | 5260-5320 | 12 | 2 | 6.64 | 20.64 | 0.1159 | 9.01 | 0.2305 |
| | 5500-5700 | 12 | 2 | 6.64 | 20.64 | 0.1159 | 9.01 | 0.2305 |
| IEEE 802.11n-HT40 | 5745-5825 | 12 | 2 | 6.64 | 20.64 | 0.1159 | 9.01 | 0.2305 |
| | 5190-5230 | 12 | 2 | 6.64 | 20.64 | 0.1159 | 9.01 | 0.2305 |
| | 5270-5310 | 12 | 2 | 6.64 | 20.64 | 0.1159 | 9.01 | 0.2305 |
| IEEE 802.11ac-VHT20 | 5510-5670 | 12 | 2 | 6.64 | 20.64 | 0.1159 | 9.01 | 0.2305 |
| | 5755-5795 | 12 | 2 | 6.64 | 20.64 | 0.1159 | 9.01 | 0.2305 |
| | 5180-5240 | 12 | 2 | 6.64 | 20.64 | 0.1159 | 9.01 | 0.2305 |
| IEEE 802.11ac-VHT40 | 5260-5320 | 12 | 2 | 6.64 | 20.64 | 0.1159 | 9.01 | 0.2305 |
| | 5500-5700 | 12 | 2 | 6.64 | 20.64 | 0.1159 | 9.01 | 0.2305 |
| | 5745-5825 | 12 | 2 | 6.64 | 20.64 | 0.1159 | 9.01 | 0.2305 |
| IEEE 802.11ac-VHT80 | 5190-5230 | 11 | 2 | 6.64 | 19.64 | 0.0920 | 9.01 | 0.1831 |
| | 5270-5310 | 11 | 2 | 6.64 | 19.64 | 0.0920 | 9.01 | 0.1831 |
| | 5510-5670 | 11 | 2 | 6.64 | 19.64 | 0.0920 | 9.01 | 0.1831 |
| IEEE 802.11ac-VHT80 | 5755-5795 | 11 | 2 | 6.64 | 19.64 | 0.0920 | 9.01 | 0.1831 |
| | 5210 | 11 | 2 | 6.64 | 19.64 | 0.0920 | 9.01 | 0.1831 |
| | 5290 | 11 | 2 | 6.64 | 19.64 | 0.0920 | 9.01 | 0.1831 |
| | 5530 | 11 | 2 | 6.64 | 19.64 | 0.0920 | 9.01 | 0.1831 |
| IEEE 802.11ac-VHT80 | 5775 | 11 | 2 | 6.64 | 19.64 | 0.0920 | 9.01 | 0.1831 |

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

N/A

APPENDIX 2 PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal photographs.

*** End of Report ***

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