

# RF EXPOSURE EVALUATION REPORT

**Product Name:** 4K UHD Streaming Box  
**Trade Mark:** SKYWORTH, SDT, DIRECTV, THOMSON,  
STRONG, Tesla, MECOOL, CoLoVU  
**Model No. :** LEAP-S1  
**Add. Model No.:** OTT-01, HP40A, HP40A3, HP4005,  
SRT401,THA100,THA 100, HP4035,  
XA400, KM2, C1 Plus, Leap-S1  
**Report Number:** 210825002RFC-5  
**Test Standards:** FCC 47 CFR Part 1 Subpart I  
**FCC ID:** WNA-LEAPS1  
**Test Result:** PASS  
**Date of Issue:** November 16, 2022

Prepared for:

**Shenzhen Skyworth Digital Technology Co.,LTD.**  
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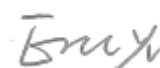
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## Version

| Version No. | Date              | Description |
|-------------|-------------------|-------------|
| V1.0        | November 16, 2022 | Original    |



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## 1. GENERAL INFORMATION

### 1.1 CLIENT INFORMATION

|                                 |                                                                                      |
|---------------------------------|--------------------------------------------------------------------------------------|
| <b>Applicant:</b>               | Shenzhen Skyworth Digital Technology Co.,LTD.                                        |
| <b>Address of Applicant:</b>    | 14/F, Block A, Skyworth Building, Gaoxin Ave.1.S., Nanshan District, Shenzhen, China |
| <b>Manufacturer:</b>            | Shenzhen Skyworth Digital Technology Co.,LTD.                                        |
| <b>Address of Manufacturer:</b> | 14/F, Block A, Skyworth Building, Gaoxin Ave.1.S., Nanshan District, Shenzhen, China |

### 1.2 EUT INFORMATION

|                              |                                                                                            |                        |                   |
|------------------------------|--------------------------------------------------------------------------------------------|------------------------|-------------------|
| <b>Product Name:</b>         | 4K UHD Streaming Box                                                                       |                        |                   |
| <b>Model No.:</b>            | LEAP-S1                                                                                    |                        |                   |
| <b>Add. Model No.:</b>       | OTT-01, HP40A, HP40A3, HP4005, SRT401,THA100,THA 100, HP4035, XA400, KM2, C1 Plus, Leap-S1 |                        |                   |
| <b>Trade Mark:</b>           | SKYWORTH, SDT, DIRECTV, THOMSON, STRONG, Tesla, MECOOL, CoLoVU                             |                        |                   |
| <b>DUT Stage:</b>            | Production Unit                                                                            |                        |                   |
|                              | 2.4 GHz ISM Band:                                                                          | IEEE 802.11b/g/n       |                   |
|                              |                                                                                            | Bluetooth V4.2         |                   |
|                              | 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 |
| <b>Sample Received Date:</b> | September 1, 2021                                                                          |                        |                   |
| <b>Sample Tested Date:</b>   | September 8, 2021 to October 28, 2021                                                      |                        |                   |

### 1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

|                            |                        |
|----------------------------|------------------------|
| <b>For BT_LE</b>           |                        |
| <b>Frequency Band:</b>     | 2400 MHz to 2483.5 MHz |
| <b>Frequency Range:</b>    | 2402 MHz to 2480 MHz   |
| <b>Bluetooth Version:</b>  | Bluetooth V4.2 LE      |
| <b>Type of Modulation:</b> | GFSK                   |
| <b>Number of Channels:</b> | 40                     |
| <b>Channel Separation:</b> | 2 MHz                  |
| <b>Antenna Type:</b>       | PCB Antenna            |
| <b>Antenna Gain:</b>       | 1.87 dBi               |
| <b>Maximum Peak Power:</b> | 7.1 dBm                |

|                              |                                         |
|------------------------------|-----------------------------------------|
| <b>For BT_EDR</b>            |                                         |
| <b>Frequency Band:</b>       | 2400 MHz to 2483.5 MHz                  |
| <b>Frequency Range:</b>      | 2402 MHz to 2480 MHz                    |
| <b>Bluetooth Version:</b>    | Bluetooth BR + EDR                      |
| <b>Modulation Technique:</b> | Frequency Hopping Spread Spectrum(FHSS) |
| <b>Type of Modulation:</b>   | GFSK, $\pi/4$ DQPSK, 8DPSK              |
| <b>Number of Channels:</b>   | 79                                      |
| <b>Channel Separation:</b>   | 1 MHz                                   |
| <b>Antenna Type:</b>         | PCB Antenna                             |

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|                     |            |
|---------------------|------------|
| Antenna Gain:       | 1.87 dBi   |
| Maximum Peak Power: | 10.842 dBm |

| For 2.4 GHz ISM Band of Wi-Fi |                                                                                                                                                                                                       |                                                                                                             |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Frequency Band:               | 2400 MHz to 2483.5 MHz                                                                                                                                                                                |                                                                                                             |
| Frequency Range:              | 2412 MHz to 2462 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)<br>IEEE 802.11g: OFDM(64-QAM, 16-QAM, QPSK, BPSK)<br>IEEE 802.11n-HT20: OFDM(64-QAM, 16-QAM, QPSK, BPSK)<br>IEEE 802.11n-HT40: OFDM(64-QAM, 16-QAM, QPSK, BPSK) |                                                                                                             |
| Data Rate:                    | IEEE 802.11b: Up to 11 Mbps<br>IEEE 802.11g: Up to 54 Mbps<br>IEEE 802.11n-HT20: Up to MCS15<br>IEEE 802.11n-HT40: Up to MCS15                                                                        |                                                                                                             |
| Number of Channels:           | IEEE 802.11b: 11<br>IEEE 802.11g: 11<br>IEEE 802.11n-HT20: 11<br>IEEE 802.11n-HT40: 9                                                                                                                 |                                                                                                             |
| Channel Separation:           | 5 MHz                                                                                                                                                                                                 |                                                                                                             |
| Antenna Type:                 | Chain 0                                                                                                                                                                                               | PIFA Antenna                                                                                                |
|                               | Chain 1                                                                                                                                                                                               | PIFA Antenna                                                                                                |
| Antenna Gain:                 | Chain 0                                                                                                                                                                                               | 3.18 dBi                                                                                                    |
|                               | Chain 1                                                                                                                                                                                               | 3.18 dBi                                                                                                    |
| Directional gain:             | 6.19 dBi                                                                                                                                                                                              |                                                                                                             |
| Maximum Peak Power:           | SISO_ Chain 0                                                                                                                                                                                         | IEEE 802.11b: 11.97dBm<br>IEEE 802.11g: 9.20dBm<br>IEEE 802.11n-HT20: 9.11dBm<br>IEEE 802.11n-HT40: 5.93dBm |
|                               | SISO_ Chain 1                                                                                                                                                                                         | IEEE 802.11b: 11.86dBm<br>IEEE 802.11g: 9.29dBm<br>IEEE 802.11n-HT20: 9.40dBm<br>IEEE 802.11n-HT40: 5.92dBm |
|                               | MIMO_ Chain 0+1                                                                                                                                                                                       | IEEE 802.11n-HT20: 12.27dBm<br>IEEE 802.11n-HT40: 8.93dBm                                                   |

| For 5 GHz U-NII Bands of Wi-Fi |                                                     |
|--------------------------------|-----------------------------------------------------|
| Frequency Bands:               | 5150 MHz to 5250 MHz (U-NII-1)                      |
|                                | 5250 MHz to 5350 MHz (U-NII-2A)                     |
|                                | 5470 MHz to 5725 MHz (U-NII-2C)                     |
|                                | 5 725 MHz to 5 850 MHz (U-NII-3)                    |
| Frequency Ranges:              | 5180 MHz to 5240 MHz                                |
|                                | 5260 MHz to 5320 MHz                                |
|                                | 5500 MHz to 5700 MHz                                |
|                                | 5 745 MHz to 5 825 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)        |

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|                                             |                                                                                                                               |                                |                 |                 |                |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------------|-----------------|----------------|
|                                             | IEEE 802.11ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK)                                                                         |                                |                 |                 |                |
| <b>Channel Spacing:</b>                     | IEEE 802.11a/n-HT20/ac-VHT20: 20 MHz                                                                                          |                                |                 |                 |                |
|                                             | IEEE 802.11n-HT40/ac-VHT40: 40 MHz                                                                                            |                                |                 |                 |                |
|                                             | IEEE 802.11ac-VHT80: 80 MHz                                                                                                   |                                |                 |                 |                |
|                                             |                                                                                                                               |                                |                 |                 |                |
| <b>Data Rate:</b>                           | 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                                                                                               |                                |                 |                 |                |
|                                             | IEEE 802.11ac-VHT80: Up to MCS9                                                                                               |                                |                 |                 |                |
| <b>Number of Channels:</b>                  | 5150 MHz to 5250 MHz:<br>4 for IEEE 802.11a/n-HT20/ac-VHT20<br>2 for IEEE 802.11n-HT40/ac-VHT40<br>1 for IEEE 802.11acVHT80   |                                |                 |                 |                |
|                                             | 5250 MHz to 5350 MHz:<br>4 for IEEE 802.11a/n-HT20/ac-VHT20<br>2 for IEEE 802.11n-HT40/ac-VHT40<br>1 for IEEE 802.11acVHT80   |                                |                 |                 |                |
|                                             | 5470 MHz to 5725 MHz:<br>11 for IEEE 802.11a/n-HT20/ac-VHT20<br>5 for IEEE 802.11n-HT40/ac-VHT40<br>2 for IEEE 802.11ac-VHT80 |                                |                 |                 |                |
|                                             | 5725 MHz to 5850 MHz:<br>5 for IEEE 802.11a/n-HT20/ac-VHT20<br>2 for IEEE 802.11n-HT40/ac-VHT40<br>1 for IEEE 802.11ac-VHT80  |                                |                 |                 |                |
| <b>Antenna Type:</b>                        | Chain 0                                                                                                                       | PIFA Antenna                   |                 |                 |                |
|                                             | Chain 1                                                                                                                       | PIFA Antenna                   |                 |                 |                |
| <b>Antenna Gain:</b>                        | Chain 0                                                                                                                       | 5150 MHz to 5250 MHz: 1.3 dBi  |                 |                 |                |
|                                             |                                                                                                                               | 5250 MHz to 5350 MHz: 1.72 dBi |                 |                 |                |
|                                             |                                                                                                                               | 5470 MHz to 5725 MHz: 3.48 dBi |                 |                 |                |
|                                             |                                                                                                                               | 5725 MHz to 5850 MHz: 3.54 dBi |                 |                 |                |
|                                             | Chain 1                                                                                                                       | 5150 MHz to 5250 MHz: 1.3 dBi  |                 |                 |                |
|                                             |                                                                                                                               | 5250 MHz to 5350 MHz: 1.72 dBi |                 |                 |                |
|                                             |                                                                                                                               | 5470 MHz to 5725 MHz: 3.48 dBi |                 |                 |                |
|                                             |                                                                                                                               | 5725 MHz to 5850 MHz: 3.54 dBi |                 |                 |                |
| <b>Maximum Conducted Output Power(dBm):</b> | <b>SISO_Chain 0</b>                                                                                                           | <b>U-NII-1</b>                 | <b>U-NII-2A</b> | <b>U-NII-2C</b> | <b>U-NII-3</b> |
|                                             | IEEE 802.11a:                                                                                                                 | 14.45                          | 14.92           | 15.82           | 12.53          |
|                                             | <b>SISO_Chain 1</b>                                                                                                           | <b>U-NII-1</b>                 | <b>U-NII-2A</b> | <b>U-NII-2C</b> | <b>U-NII-3</b> |
|                                             | IEEE 802.11a:                                                                                                                 | 14.17                          | 14.62           | 15.64           | 9.73           |
|                                             | <b>MIMO_Chain 0+1</b>                                                                                                         | <b>U-NII-1</b>                 | <b>U-NII-2A</b> | <b>U-NII-2C</b> | <b>U-NII-3</b> |
|                                             | IEEE 802.11n-HT20:                                                                                                            | 15.39                          | 15.85           | 16.46           | 13.60          |
|                                             | IEEE 802.11n-HT40:                                                                                                            | 15.25                          | 15.82           | 16.83           | 15.23          |
|                                             | IEEE802.11ac-VHT20:                                                                                                           | 15.39                          | 15.79           | 16.36           | 13.68          |
|                                             | IEEE802.11ac-VHT40:                                                                                                           | 15.37                          | 15.88           | 16.83           | 13.45          |
|                                             | IEEE802.11ac-VHT80:                                                                                                           | 15.44                          | 15.91           | 16.96           | 13.45          |

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## 1.4 OTHER INFORMATION

| Test channels for BT_LE |                      |                       |            |            |
|-------------------------|----------------------|-----------------------|------------|------------|
| Type of Modulation      | Tx/Rx Frequency      | Test RF Channel Lists |            |            |
| GFSK                    | 2402 MHz to 2480 MHz | Lowest(L)             | Middle(M)  | Highest(H) |
|                         |                      | Channel 0             | Channel 19 | Channel 39 |
|                         |                      | 2402 MHz              | 2440 MHz   | 2480 MHz   |

| Test channels for BT_EDR         |                      |                       |            |            |
|----------------------------------|----------------------|-----------------------|------------|------------|
| Mode                             | Tx/Rx Frequency      | Test RF Channel Lists |            |            |
| GFSK<br>(DH1, DH3, DH5)          | 2402 MHz to 2480 MHz | Lowest(L)             | Middle(M)  | Highest(H) |
|                                  |                      | Channel 0             | Channel 39 | Channel 78 |
| $\pi$ /4DQPSK<br>(DH1, DH3, DH5) | 2402 MHz to 2480 MHz | 2402 MHz              | 2441 MHz   | 2480 MHz   |
|                                  |                      | Channel 0             | Channel 39 | Channel 78 |
| 8DPSK<br>(DH1, DH3, DH5)         | 2402 MHz to 2480 MHz | 2402 MHz              | 2441 MHz   | 2480 MHz   |
|                                  |                      | Channel 0             | Channel 39 | Channel 78 |

| Test channels for 2.4 GHz ISM Band of Wi-Fi |                      |                       |           |            |
|---------------------------------------------|----------------------|-----------------------|-----------|------------|
| Mode                                        | Tx/Rx Frequency      | Test RF Channel Lists |           |            |
| IEEE 802.11b                                | 2412 MHz to 2462 MHz | Lowest(L)             | Middle(M) | Highest(H) |
|                                             |                      | Channel 1             | Channel 6 | Channel 11 |
| IEEE 802.11g                                | 2412 MHz to 2462 MHz | 2412 MHz              | 2437 MHz  | 2462 MHz   |
|                                             |                      | Channel 1             | Channel 6 | Channel 11 |
| IEEE 802.11n-HT20                           | 2412 MHz to 2462 MHz | 2412 MHz              | 2437 MHz  | 2462 MHz   |
|                                             |                      | Channel 1             | Channel 6 | Channel 11 |
| IEEE 802.11n-HT40                           | 2422 MHz to 2452 MHz | 2412 MHz              | 2437 MHz  | 2462 MHz   |
|                                             |                      | Channel 3             | Channel 6 | Channel 9  |

| Test channels for 5 GHz U-NII Bands of Wi-Fi             |                      |                       |             |             |
|----------------------------------------------------------|----------------------|-----------------------|-------------|-------------|
| Mode                                                     | Tx/Rx Frequency      | Test RF Channel Lists |             |             |
| IEEE 802.11a<br>IEEE 802.11n-HT20<br>IEEE 802.11ac-VHT20 | 5150 MHz to 5250 MHz | Lowest(L)             | Middle(M)   | Highest(H)  |
|                                                          |                      | Channel 36            | Channel 44  | Channel 48  |
|                                                          | 5250 MHz to 5350 MHz | 5180 MHz              | 5220 MHz    | 5240 MHz    |
|                                                          |                      | Channel 52            | Channel 60  | Channel 64  |
|                                                          | 5470 MHz to 5725 MHz | 5260 MHz              | 5300 MHz    | 5320 MHz    |
|                                                          |                      | Channel 100           | Channel 116 | Channel 140 |
|                                                          | 5725 MHz to 5850 MHz | 5500 MHz              | 5580 MHz    | 5700 MHz    |
|                                                          |                      | Channel 149           | Channel 157 | Channel 165 |
|                                                          | 5725 MHz to 5850 MHz | 5745 MHz              | 5785 MHz    | 5825 MHz    |
|                                                          |                      | Channel 149           | Channel 157 | Channel 165 |
| IEEE 802.11n-HT40<br>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 |
|                                                          |                      | Channel 102           | Channel 110 | Channel 134 |

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|---------------------|----------------------|-------------|-------------|-------------|
|                     | 5725 MHz to 5850 MHz | 5510 MHz    | 5550 MHz    | 5670 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

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.

## 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   | 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 <sup>2</sup> ) | Averaging Times   E   <sup>2</sup> ,   H   <sup>2</sup> 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 <sup>2</sup> ) | Averaging Times   E   <sup>2</sup> ,   H   <sup>2</sup> 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.

### 3.2.2 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

### 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/cm<sup>2</sup>)

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)

## 3.4 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 5250 MHz to 5350 MHz for IEEE802.11a/n/ac and  
operating at 5470 MHz to 5725 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: 2412MHz to 2462 MHz: 3.18 dBi  
5150 MHz to 5250 MHz: 1.3 dBi  
5250 MHz to 5350 MHz: 1.72 dBi  
5470 MHz to 5725 MHz: 3.48 dBi  
5725 MHz to 5850 MHz: 3.54 dBi

Chain 1: Same as chain 0

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.

$$\text{The directional gain} = G_{\text{ANT}} + 10 \log(N_{\text{ANT}}) \text{ dBi}$$

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

The antenna gain = Chain 0 or Chain

### 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 | Calculate d maximum EIRP | Declared maximum EIRP | MPE Limit | MPE Value |
|----------------|--------------|-------|-------------------------------------------------|------------------------------------------------|--------------|--------------------------|-----------------------|-----------|-----------|
|                |              | (MHz) | (dBm)                                           |                                                | (dBi)        | (dBm)                    | (mW)                  | (mw/cm²)  |           |
| SISO           | IEEE 802.11b | 2412  | 12                                              | 1                                              | 3.18         | 16.18                    | 41.50                 | 1         | 0.00826   |
|                |              | 2437  | 12                                              | 1                                              | 3.18         | 16.18                    | 41.50                 | 1         | 0.00826   |
|                |              | 2462  | 12                                              | 1                                              | 3.18         | 16.18                    | 41.50                 | 1         | 0.00826   |
|                | IEEE 802.11g | 2412  | 9.5                                             | 1                                              | 3.18         | 13.68                    | 23.33                 | 1         | 0.00464   |
|                |              | 2437  | 9.5                                             | 1                                              | 3.18         | 13.68                    | 23.33                 | 1         | 0.00464   |
|                |              | 2462  | 9.5                                             | 1                                              | 3.18         | 13.68                    | 23.33                 | 1         | 0.00464   |
|                | IEEE 802.11a | 5180  | 14                                              | 1.5                                            | 1.3          | 16.8                     | 47.86                 | 1         | 0.00953   |
|                |              | 5220  | 14                                              | 1.5                                            | 1.3          | 16.8                     | 47.86                 | 1         | 0.00953   |
|                |              | 5240  | 14                                              | 1.5                                            | 1.3          | 16.8                     | 47.86                 | 1         | 0.00953   |
|                |              | 5260  | 14                                              | 1.5                                            | 1.72         | 17.22                    | 52.72                 | 1         | 0.01049   |
|                |              | 5300  | 14                                              | 1.5                                            | 1.72         | 17.22                    | 52.72                 | 1         | 0.01049   |
|                |              | 5320  | 14                                              | 1.5                                            | 1.72         | 17.22                    | 52.72                 | 1         | 0.01049   |
|                |              | 5500  | 15                                              | 1.5                                            | 3.48         | 19.98                    | 99.54                 | 1         | 0.01981   |
|                |              | 5580  | 15                                              | 1.5                                            | 3.48         | 19.98                    | 99.54                 | 1         | 0.01981   |
|                |              | 5700  | 15                                              | 1.5                                            | 3.48         | 19.98                    | 99.54                 | 1         | 0.01981   |
| 5745           |              | 12    | 1.5                                             | 3.54                                           | 17.04        | 50.58                    | 1                     | 0.01007   |           |
| 5785           |              | 12    | 1.5                                             | 3.54                                           | 17.04        | 50.58                    | 1                     | 0.01007   |           |
| 5825           |              | 12    | 1.5                                             | 3.54                                           | 17.04        | 50.58                    | 1                     | 0.01007   |           |

#### For MIMO (2TX/2RX) Mode

| Operating Mode |                   | Freq. | Declared maximum conducted average output power | Max. positive tolerance according manufacturer | Antenna Gain | Calculate d maximum EIRP | Declared maximum EIRP | MPE Limit | MPE Value |
|----------------|-------------------|-------|-------------------------------------------------|------------------------------------------------|--------------|--------------------------|-----------------------|-----------|-----------|
|                |                   | (MHz) | (dBm)                                           |                                                | (dBi)        | (dBm)                    | (mW)                  | (mw/cm²)  |           |
| MIMO           | IEEE 802.11n-HT20 | 2412  | 12                                              | 1.5                                            | 3.18         | 16.68                    | 46.56                 | 1         | 0.00927   |
|                |                   | 2437  | 12                                              | 1.5                                            | 3.18         | 16.68                    | 46.56                 | 1         | 0.00927   |
|                |                   | 2462  | 12                                              | 1.5                                            | 3.18         | 16.68                    | 46.56                 | 1         | 0.00927   |
|                | IEEE 802.11n-HT40 | 2422  | 9                                               | 1.0                                            | 3.18         | 13.18                    | 20.80                 | 1         | 0.00414   |
|                |                   | 2437  | 9                                               | 1.0                                            | 3.18         | 13.18                    | 20.80                 | 1         | 0.00414   |
|                |                   | 2452  | 9                                               | 1.0                                            | 3.18         | 13.18                    | 20.80                 | 1         | 0.00414   |
|                | IEEE 802.11n-HT20 | 5180  | 16                                              | 1.0                                            | 1.3          | 18.3                     | 67.61                 | 1         | 0.01346   |
|                |                   | 5220  | 16                                              | 1.0                                            | 1.3          | 18.3                     | 67.61                 | 1         | 0.01346   |
|                |                   | 5240  | 16                                              | 1.0                                            | 1.3          | 18.3                     | 67.61                 | 1         | 0.01346   |
|                |                   | 5260  | 16                                              | 1.0                                            | 1.72         | 18.72                    | 74.47                 | 1         | 0.01482   |
|                |                   | 5300  | 16                                              | 1.0                                            | 1.72         | 18.72                    | 74.47                 | 1         | 0.01482   |
|                |                   | 5320  | 16                                              | 1.0                                            | 1.72         | 18.72                    | 74.47                 | 1         | 0.01482   |
|                |                   | 5500  | 17                                              | 1.0                                            | 3.48         | 21.48                    | 140.60                | 1         | 0.02799   |
|                |                   | 5580  | 17                                              | 1.0                                            | 3.48         | 21.48                    | 140.60                | 1         | 0.02799   |
|                |                   | 5700  | 17                                              | 1.0                                            | 3.48         | 21.48                    | 140.60                | 1         | 0.02799   |
|                |                   | 5745  | 13                                              | 1.5                                            | 3.54         | 18.04                    | 63.68                 | 1         | 0.01268   |
|                |                   | 5785  | 13                                              | 1.5                                            | 3.54         | 18.04                    | 63.68                 | 1         | 0.01268   |
|                |                   | 5850  | 13                                              | 1.5                                            | 3.54         | 18.04                    | 63.68                 | 1         | 0.01268   |

|      |                     |      |    |     |      |       |        |   |         |
|------|---------------------|------|----|-----|------|-------|--------|---|---------|
| MIMO | IEEE 802.11n-HT40   | 5190 | 16 | 1.5 | 1.3  | 18.8  | 75.86  | 1 | 0.01510 |
|      |                     | 5230 | 16 | 1.5 | 1.3  | 18.8  | 75.86  | 1 | 0.01510 |
|      |                     | 5270 | 16 | 1.5 | 1.72 | 19.22 | 83.56  | 1 | 0.01663 |
|      |                     | 5310 | 16 | 1.5 | 1.72 | 19.22 | 83.56  | 1 | 0.01663 |
|      |                     | 5510 | 16 | 1.5 | 3.48 | 20.98 | 125.31 | 1 | 0.02494 |
|      |                     | 5550 | 16 | 1.5 | 3.48 | 20.98 | 125.31 | 1 | 0.02494 |
|      |                     | 5670 | 16 | 1.5 | 3.48 | 20.98 | 125.31 | 1 | 0.02494 |
|      |                     | 5755 | 15 | 1   | 3.54 | 19.54 | 89.95  | 1 | 0.01790 |
|      |                     | 5795 | 15 | 1   | 3.54 | 19.54 | 89.95  | 1 | 0.01790 |
|      | IEEE 802.11ac-VHT20 | 5180 | 16 | 1   | 1.3  | 18.3  | 67.61  | 1 | 0.01346 |
|      |                     | 5220 | 16 | 1   | 1.3  | 18.3  | 67.61  | 1 | 0.01346 |
|      |                     | 5240 | 16 | 1   | 1.3  | 18.3  | 67.61  | 1 | 0.01346 |
|      |                     | 5260 | 16 | 1   | 1.72 | 18.72 | 74.47  | 1 | 0.01482 |
|      |                     | 5300 | 16 | 1   | 1.72 | 18.72 | 74.47  | 1 | 0.01482 |
|      |                     | 5320 | 16 | 1   | 1.72 | 18.72 | 74.47  | 1 | 0.01482 |
|      |                     | 5500 | 16 | 1.5 | 3.48 | 20.98 | 125.31 | 1 | 0.02494 |
|      |                     | 5580 | 16 | 1.5 | 3.48 | 20.98 | 125.31 | 1 | 0.02494 |
|      |                     | 5700 | 16 | 1.5 | 3.48 | 20.98 | 125.31 | 1 | 0.02494 |
|      |                     | 5745 | 13 | 1.5 | 3.54 | 18.04 | 63.68  | 1 | 0.01268 |
|      |                     | 5785 | 13 | 1.5 | 3.54 | 18.04 | 63.68  | 1 | 0.01268 |
|      |                     | 5825 | 13 | 1.5 | 3.54 | 18.04 | 63.68  | 1 | 0.01268 |
|      | IEEE 802.11ac-VHT40 | 5190 | 15 | 1.5 | 1.3  | 17.8  | 60.26  | 1 | 0.01199 |
|      |                     | 5230 | 15 | 1.5 | 1.3  | 17.8  | 60.26  | 1 | 0.01199 |
|      |                     | 5270 | 15 | 1.5 | 1.72 | 18.22 | 66.37  | 1 | 0.01321 |
|      |                     | 5310 | 15 | 1.5 | 1.72 | 18.22 | 66.37  | 1 | 0.01321 |
|      |                     | 5510 | 16 | 1.5 | 3.48 | 20.98 | 125.31 | 1 | 0.02494 |
|      |                     | 5550 | 16 | 1.5 | 3.48 | 20.98 | 125.31 | 1 | 0.02494 |
|      |                     | 5670 | 16 | 1.5 | 3.48 | 20.98 | 125.31 | 1 | 0.02494 |
|      |                     | 5755 | 13 | 1.5 | 3.54 | 18.04 | 63.68  | 1 | 0.01268 |
|      |                     | 5795 | 13 | 1.5 | 3.54 | 18.04 | 63.68  | 1 | 0.01268 |
|      | IEEE 802.11ac-VHT80 | 5210 | 16 | 1   | 1.3  | 18.3  | 67.61  | 1 | 0.01346 |
|      |                     | 5290 | 16 | 1   | 1.72 | 18.72 | 74.47  | 1 | 0.01482 |
|      |                     | 5610 | 14 | 1   | 3.48 | 18.48 | 70.47  | 1 | 0.01403 |
|      |                     | 5530 | 14 | 1   | 3.48 | 18.48 | 70.47  | 1 | 0.01403 |
|      |                     | 5775 | 14 | 1   | 3.54 | 18.54 | 71.45  | 1 | 0.01422 |

### 3.4.2 For BT

For BT\_LE function, operating at 2402MHz to 2480 MHz for GFSK and

For BT\_EDR function, operating at 2402MHz to 2480 MHz for GFSK,  $\pi/4$  DQPSK, 8DPSK

#### 3.4.2.1 Antenna Type:

Chain 0: PCB Antenna

#### 3.4.2.2 Antenna Gain:

Chain 0: 2402MHz to 2480 MHz: 1.5dBi

#### 3.4.2.3 Results for FCC 47 CFR Part 1 Subpart I

| 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)                                           | (dBm)                                          | (dBm)        | (dBm)                   | (mW)                  | (mW/cm <sup>2</sup> ) |           |
| LE             | 2402-2480 | 6                                               | 2                                              | 1.87         | 9.87                    | 9.7051                | 1                     | 0.00193   |
| EDR            | 2402-2480 | 8                                               | 2                                              | 1.87         | 11.87                   | 15.3815               | 1                     | 0.00306   |

### 3.4.3 Simultaneous Multi-band Transmission MPE Analysis

#### 3.4.4.1 List of Mode for Simultaneous Multi-band Transmission

| No. | Configurations | Support/Not Support |
|-----|----------------|---------------------|
| 1   | 2.4G_WLAN + BT | Support             |
| 2   | 5G_WLAN + BT   | Support             |

#### 3.4.4.1 Results for transmit simultaneously

| No. | Configurations      | Maximum MPE Value (mw/cm <sup>2</sup> ) |         |                         | Limits (mw/cm <sup>2</sup> ) |
|-----|---------------------|-----------------------------------------|---------|-------------------------|------------------------------|
|     |                     | WLAN                                    | BT      | Transmit simultaneously |                              |
| 1   | 2.4G_SISO_WLAN + BT | 0.00826                                 | 0.00306 | 0.01132                 | 1                            |
| 2   | 2.4G_MIMO_WLAN + BT | 0.00927                                 | 0.00306 | 0.01233                 | 1                            |
| 3   | 5G_SISO_WLAN + BT   | 0.01981                                 | 0.00306 | 0.02287                 | 1                            |
| 4   | 5G_MIMO_WLAN + BT   | 0.02799                                 | 0.00306 | 0.03105                 | 1                            |

**Note 1:** According to KDB 447498 D01 General RF Exposure Guidance v06, At the transmit simultaneously calculation method is as follows:

$$\text{Transmit simultaneously MPE} = \sum \text{of MPE ratios}$$

$$\text{MPE ratios} = [(MPE1/\text{limit}) + (MPE2/\text{limit}) + \dots] \text{ at the test frequency}$$

## APPENDIX 1 PHOTOS OF TEST SETUP

N/A

## APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal Photos.

\*\*\* End of Report \*\*\*

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