



MAX Testing Co.,Ltd.Report No.: MAX260806110P02-R02RF

## RF TEST REPORT

Report Reference No. ....: MAX260806110P02-R02RF

FCC ID.....: 2BD24-R001

Compiled by  
( position+printed name+signature)...: Engineer/ Cindy Zheng

*Cindy Zheng*

Supervised by  
( position+printed name+signature)...: Manager/Haley Wen

*Haley Wen*

Approved by  
( position+printed name+signature)...: RF Manager/ Vivian Jiang

*Vivian Jiang*

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Testing Laboratory Name .....: MAXLAB Testing Co.,Ltd.

Address.....: 1/F, Building B, Xinshidai GR Park,Shiyan Street, Bao'an District,  
Shenzhen,Guangdong, 518052, People's Republic of China

Applicant's name .....: Shenzhen Nanyang Network Technology Co., Ltd.

Address.....: A308, Jinbolong Industrial Factory, Huayun Road Longhua  
Street, Longhua District, Shenzhen, China

Test specification.....:

Standard .....: KDB 447498 D01 General RF Exposure Guidance v06

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Test item description.....: Wifi Repeater

Trade Mark.....: N/A

Manufacturer.....: Shenzhen Nanyang Network Technology Co., Ltd.

Model/Type reference.....: R001

Listed Models .....: T001, L001

Modulation .....: OFDM

Frequency.....: From 2412 - 2462MHz

Rating .....: Input: DC 5.0V/1.0A

Result.....: PASS

## RF Exposure Evaluation

### Limits

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

According to KDB 447498 D01 General RF Exposure Guidance v06, Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition(s), listed below, is (are) satisfied.

Limits for Maximum Permissible Exposure (MPE)

| Frequency range (MHz)                                   | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm <sup>2</sup> ) | Averaging time (minutes) |
|---------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (A) Limits for Occupational/Controlled Exposures        |                               |                               |                                     |                          |
| 0.3–3.0                                                 | 614                           | 1.63                          | *(100)                              | 6                        |
| 3.0–30                                                  | 1842/f                        | 4.89/f                        | *(900/f <sup>2</sup> )              | 6                        |
| 30–300                                                  | 61.4                          | 0.163                         | 1.0                                 | 6                        |
| 300–1500                                                |                               |                               | f/300                               | 6                        |
| 1500–100,000                                            |                               |                               | 5                                   | 6                        |
| (B) Limits for General Population/Uncontrolled Exposure |                               |                               |                                     |                          |
| 0.3–1.34                                                | 614                           | 1.63                          | *(100)                              | 30                       |
| 1.34–30                                                 | 824/f                         | 2.19/f                        | *(180/f <sup>2</sup> )              | 30                       |
| 30–300                                                  | 27.5                          | 0.073                         | 0.2                                 | 30                       |
| 300–1500                                                |                               |                               | f/1500                              | 30                       |
| 1500–100,000                                            |                               |                               | 1.0                                 | 30                       |

f = frequency in MHz

Friis transmission formula:  $Pd = (P_{out} * G) / (4 * \pi * r^2)$

Where

**Pd** = power density in mW/cm<sup>2</sup>, **P<sub>out</sub>** = output power to antenna in mW;

**G** = gain of antenna in linear scale, **Pi** = 3.1416;

**R** = distance between observation point and center of the radiator in cm

Pd is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

### Test Procedure

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

## EUT Specification

|                                   |                                                                                                                                                                                                                                |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Frequency band (Operating)</b> | <input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz<br><input type="checkbox"/> WLAN: 5.150GHz ~ 5.250GHz<br><input type="checkbox"/> WLAN: 5.725GHz ~ 5.850GHz<br><input type="checkbox"/> Others BT:2402-2480MHz   |
| <b>Device category</b>            | <input type="checkbox"/> Portable (<20cm separation)<br><input checked="" type="checkbox"/> Mobile (>20cm separation)<br><input type="checkbox"/> Others                                                                       |
| <b>Antenna diversity</b>          | <input type="checkbox"/> Single antenna<br><input checked="" type="checkbox"/> Multiple antennas<br><input type="checkbox"/> Tx diversity<br><input type="checkbox"/> Rx diversity<br><input type="checkbox"/> Tx/Rx diversity |
| <b>Antenna gain (Max)</b>         | ANT1 used for WIFI TX/RX, 2.00 dBi(Max.) for 2.4G Band<br>ANT2 used for WIFI TX/RX, 2.00 dBi(Max.) for 2.4G Band.<br>ANT3 used for WIFI TX/RX, 2.00 dBi(Max.) for 2.4G Band                                                    |
| <b>Evaluation applied</b>         | <input checked="" type="checkbox"/> MPE Evaluation<br><input type="checkbox"/> SAR Evaluation                                                                                                                                  |

Maximum measured transmitter power.

WIFI 2.4G(ANT 1)

| Channel        | Frequency (MHz) | Output power to antenna (dBm) | Output power to antenna (mW) | Antenna Gain (dBi) | Power Density at R=20cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) | Result |
|----------------|-----------------|-------------------------------|------------------------------|--------------------|-----------------------------------------------|-----------------------------|--------|
| 802.11b        | 2412            | 12.93                         | 19.6336                      | 2.00               | 0.0062                                        | 1.0                         | PASS   |
|                | 2437            | 14.21                         | 26.3633                      | 2.00               | 0.0083                                        | 1.0                         | PASS   |
|                | 2462            | 15.05                         | 31.9890                      | 2.00               | 0.0101                                        | 1.0                         | PASS   |
| 802.11g        | 2412            | 16.26                         | 42.2669                      | 2.00               | 0.0133                                        | 1.0                         | PASS   |
|                | 2437            | 17.54                         | 56.7545                      | 2.00               | 0.0179                                        | 1.0                         | PASS   |
|                | 2462            | 18.14                         | 65.1628                      | 2.00               | 0.0205                                        | 1.0                         | PASS   |
| 802.11n (HT20) | 2412            | 15.18                         | 32.9610                      | 2.00               | 0.0104                                        | 1.0                         | PASS   |
|                | 2437            | 18.29                         | 67.4528                      | 2.00               | 0.0213                                        | 1.0                         | PASS   |
|                | 2462            | 18.04                         | 63.6796                      | 2.00               | 0.0201                                        | 1.0                         | PASS   |
| 802.11n (HT40) | 2422            | 15.12                         | 32.5087                      | 2.00               | 0.0103                                        | 1.0                         | PASS   |
|                | 2437            | 17.59                         | 57.4116                      | 2.00               | 0.0181                                        | 1.0                         | PASS   |
|                | 2452            | 16.70                         | 46.7735                      | 2.00               | 0.0147                                        | 1.0                         | PASS   |

WIFI 2.4G(ANT 2)

| Channel        | Frequency (MHz) | Output power to antenna (dBm) | Output power to antenna (mW) | Antenna Gain (dBi) | Power Density at R=20cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) | Result |
|----------------|-----------------|-------------------------------|------------------------------|--------------------|-----------------------------------------------|-----------------------------|--------|
| 802.11b        | 2412            | 12.88                         | 19.4089                      | 2.00               | 0.0061                                        | 1.0                         | PASS   |
|                | 2437            | 14.07                         | 25.5270                      | 2.00               | 0.0080                                        | 1.0                         | PASS   |
|                | 2462            | 14.92                         | 31.0456                      | 2.00               | 0.0098                                        | 1.0                         | PASS   |
| 802.11g        | 2412            | 16.15                         | 41.2098                      | 2.00               | 0.0130                                        | 1.0                         | PASS   |
|                | 2437            | 17.35                         | 54.3250                      | 2.00               | 0.0171                                        | 1.0                         | PASS   |
|                | 2462            | 17.98                         | 62.8058                      | 2.00               | 0.0198                                        | 1.0                         | PASS   |
| 802.11n (HT20) | 2412            | 15.11                         | 32.4340                      | 2.00               | 0.0102                                        | 1.0                         | PASS   |
|                | 2437            | 18.18                         | 65.7658                      | 2.00               | 0.0207                                        | 1.0                         | PASS   |
|                | 2462            | 17.95                         | 62.3735                      | 2.00               | 0.0197                                        | 1.0                         | PASS   |
| 802.11n (HT40) | 2422            | 15.04                         | 31.9154                      | 2.00               | 0.0101                                        | 1.0                         | PASS   |
|                | 2437            | 17.46                         | 55.7186                      | 2.00               | 0.0176                                        | 1.0                         | PASS   |
|                | 2452            | 16.48                         | 44.4631                      | 2.00               | 0.0140                                        | 1.0                         | PASS   |

**WIFI 2.4G(ANT 3)**

| Channel        | Frequency (MHz) | Output power to antenna (dBm) | Output power to antenna (mW) | Antenna Gain (dBi) | Power Density at R=20cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) | Result |
|----------------|-----------------|-------------------------------|------------------------------|--------------------|-----------------------------------------------|-----------------------------|--------|
| 802.11b        | 2412            | 12.98                         | 19.8609                      | 2.00               | 0.0063                                        | 1.0                         | PASS   |
|                | 2437            | 14.08                         | 25.5859                      | 2.00               | 0.0081                                        | 1.0                         | PASS   |
|                | 2462            | 14.91                         | 30.9742                      | 2.00               | 0.0098                                        | 1.0                         | PASS   |
| 802.11g        | 2412            | 16.05                         | 40.2717                      | 2.00               | 0.0127                                        | 1.0                         | PASS   |
|                | 2437            | 17.40                         | 54.9541                      | 2.00               | 0.0173                                        | 1.0                         | PASS   |
|                | 2462            | 18.08                         | 64.2688                      | 2.00               | 0.0203                                        | 1.0                         | PASS   |
| 802.11n (HT20) | 2412            | 15.05                         | 31.9890                      | 2.00               | 0.0101                                        | 1.0                         | PASS   |
|                | 2437            | 18.07                         | 64.1210                      | 2.00               | 0.0202                                        | 1.0                         | PASS   |
|                | 2462            | 17.86                         | 61.0942                      | 2.00               | 0.0193                                        | 1.0                         | PASS   |
| 802.11n (HT40) | 2422            | 14.94                         | 31.1889                      | 2.00               | 0.0098                                        | 1.0                         | PASS   |
|                | 2437            | 17.45                         | 55.5904                      | 2.00               | 0.0175                                        | 1.0                         | PASS   |
|                | 2452            | 16.58                         | 45.4988                      | 2.00               | 0.0143                                        | 1.0                         | PASS   |

**Summary simultaneous transmission results**

Maximum Simultaneous transmission MPE Ratios for 2.4GWLAN(ANT 1),  
2.4GWLAN(ANT 2),2.4GWLAN(ANT 3)

| Maximum MPE ratio 2.4GWLAN (ANT 1) | Maximum MPE ratio 2.4GWLAN (ANT 2) | Maximum MPE ratio 2.4GWLAN (ANT 3) | ΣMPE ratios | Limit | Results |
|------------------------------------|------------------------------------|------------------------------------|-------------|-------|---------|
| 0.0213                             | 0.0207                             | 0.0203                             | 0.0623      | 1.0   | PASS    |

**Conclusion: No SAR is required.**