



# **A Test Lab Techno Corp.**

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## **MPE Report**

|                                  |   |                                                                                        |
|----------------------------------|---|----------------------------------------------------------------------------------------|
| Test Report No.                  | : | 1901FS12                                                                               |
| Applicant                        | : | Redpine Signals Inc                                                                    |
| Product Type                     | : | Dual Band 802.11 a/b/g/n, Bluetooth 5.0, ZigBee Module                                 |
| Trade Name                       | : | Redpine Signals Inc                                                                    |
| Model Number                     | : | M7DB6                                                                                  |
| Date of Received                 | : | Oct. 24, 2018                                                                          |
| Test Period                      | : | Dec. 18 ~ Dec. 27, 2018                                                                |
| Date of Issued                   | : | Jan. 14, 2019                                                                          |
| Test Specification               | : | ANSI / IEEE Std.C95.1-1992 / IEEE Std. 1528-2013<br>47 CFR § 2.1091<br>47 CFR § 1.1310 |
| Location of Test Lab.            | : | Chang-an Lab.                                                                          |
| Test Firm MRA designation number | : | TW0010                                                                                 |

1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
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Approved By : Edison Hu  
(Edison Hu)

Tested By : Kris Pan  
(Kris Pan)



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## 1. Description of Equipment under Test (EUT)

|                     |                                                                                                        |                   |             |                 |                       |     |
|---------------------|--------------------------------------------------------------------------------------------------------|-------------------|-------------|-----------------|-----------------------|-----|
| Applicant           | Redpine Signals Inc<br>2107 N.First Street, Suite 680, San Jose, California, 95131-2019, United States |                   |             |                 |                       |     |
| Manufacturer        | Redpine Signals Inc<br>2107 N.First Street, Suite 680, San Jose, California, 95131-2019, United States |                   |             |                 |                       |     |
| Product Type        | Dual Band 802.11 a/b/g/n, Bluetooth 5.0, ZigBee Module                                                 |                   |             |                 |                       |     |
| Trade Name          | Redpine Signals Inc                                                                                    |                   |             |                 |                       |     |
| Model Number        | M7DB6                                                                                                  |                   |             |                 |                       |     |
| FCC ID              | XF6-M7DB6                                                                                              |                   |             |                 |                       |     |
| Frequency Range     | Operate Band                                                                                           |                   |             |                 | Frequency Range (MHz) |     |
|                     | IEEE 802.11b / 802.11g / 802.11n 2.4 GHz 20 MHz                                                        |                   |             |                 | 2412 - 2462           |     |
|                     | IEEE 802.11n 2.4 GHz 40 MHz                                                                            |                   |             |                 | 2422 - 2452           |     |
|                     | IEEE 802.11a U-NII Band I                                                                              |                   |             |                 | 5180 - 5240           |     |
|                     | IEEE 802.11a U-NII Band II-A                                                                           |                   |             |                 | 5260 - 5320           |     |
|                     | IEEE 802.11a U-NII Band II-C                                                                           |                   |             |                 | 5500 - 5700           |     |
|                     | IEEE 802.11a U-NII Band III                                                                            |                   |             |                 | 5745 - 5825           |     |
|                     | IEEE 802.11n 5 GHz 20 MHz U-NII Band I                                                                 |                   |             |                 | 5180 - 5240           |     |
|                     | IEEE 802.11n 5 GHz 20 MHz U-NII Band II-A                                                              |                   |             |                 | 5260 - 5320           |     |
|                     | IEEE 802.11n 5 GHz 20 MHz U-NII Band II-C                                                              |                   |             |                 | 5500 - 5700           |     |
|                     | IEEE 802.11n 5 GHz 20 MHz U-NII Band III                                                               |                   |             |                 | 5745 - 5825           |     |
|                     | IEEE 802.11n 5 GHz 40 MHz U-NII Band I                                                                 |                   |             |                 | 5190 - 5230           |     |
|                     | IEEE 802.11n 5 GHz 40 MHz U-NII Band II-A                                                              |                   |             |                 | 5270 - 5310           |     |
|                     | IEEE 802.11n 5 GHz 40 MHz U-NII Band II-C                                                              |                   |             |                 | 5510 - 5670           |     |
|                     | IEEE 802.11n 5 GHz 40 MHz U-NII Band III                                                               |                   |             |                 | 5755 - 5795           |     |
|                     | Bluetooth BR/EDR                                                                                       |                   |             |                 | 2402 - 2480           |     |
|                     | Bluetooth LE                                                                                           |                   |             |                 | 2402 - 2480           |     |
|                     | Zigbee                                                                                                 |                   |             |                 | 2405 - 2480           |     |
| Antenna Information | Model                                                                                                  | Type              | Connector   | Max. Gain (dBi) |                       |     |
|                     | RSIA7                                                                                                  | PCB Trace Antenna | Internal    | 2402 - 2480     | 0.712                 |     |
|                     |                                                                                                        |                   |             | 5180 - 5825     | 1.250                 |     |
|                     | GW.71.5153                                                                                             | Dipole Antenna    | SMA Reverse | 2402 - 2480     | Straight              | 3.3 |
|                     |                                                                                                        |                   |             |                 | Bent                  | 3.8 |
|                     |                                                                                                        |                   |             | 5180 - 5825     | Straight              | 4.9 |
| Bent                |                                                                                                        |                   |             |                 | 5.5                   |     |
| Antenna Delivery    | 1TX                                                                                                    |                   |             |                 |                       |     |
| RF Evaluation       | 0.030 mW/cm <sup>2</sup>                                                                               |                   |             |                 |                       |     |
| Operate Temp. Range | -40 ~ +85°C                                                                                            |                   |             |                 |                       |     |

The above equipment was tested by A Test Lab Techno Corp. For compliance with the requirements set forth in 47 CFR § 2.1091 / 47 CFR § 1.1310. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties



## 2. Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR § 1.1310 titled "Radiofrequency radiation exposure limits", generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as "a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. " This product is intended to be installed into a vehicle such that the unit is physically secured at one location. In the installation guide supplied with the product,

Client has made the following statement: "IMPORTANT: To meet the FCC's RF Exposure Guidelines, the antenna should be installed so there is at least 20 cm of separation between the body of the user and nearby persons and the antenna". Based on the installation of the transceiver and the antenna, the transmitters radiating structure is more than 20 cm from the user. Thus, this product is a "mobile device" as defined in section § 2.1091 paragraph (b).

Exposure evaluation

$$S = \frac{PG}{4\pi R^2}$$

Where

S: power density

P: power input to the antenna

G: power gain of the antenna in the direction of interest relative to an isotropic radiator.

R: distance to the center of radiation of the antenna.

### 3. RF Output Power

|                                                 |
|-------------------------------------------------|
| Power setting 1_Antenna Type: PCB Trace Antenna |
|-------------------------------------------------|

| Band                           | Data Rate (Mbps) | Frequency (MHz) | Average Conducted power (dBm) |
|--------------------------------|------------------|-----------------|-------------------------------|
| IEEE 802.11b                   | 1M               | 2412.0          | <b>16.55</b>                  |
|                                |                  | 2437.0          | 16.02                         |
|                                |                  | 2462.0          | 16.14                         |
|                                | 2M               | 2437.0          | 16.00                         |
|                                | 5.5M             | 2437.0          | 15.98                         |
|                                | 11M              | 2437.0          | 15.93                         |
| IEEE 802.11g                   | 6M               | 2412.0          | 14.37                         |
|                                |                  | 2437.0          | <b>17.39</b>                  |
|                                |                  | 2462.0          | 11.29                         |
|                                | 9M               | 2437.0          | 17.37                         |
|                                | 12M              | 2437.0          | 17.35                         |
|                                | 18M              | 2437.0          | 17.31                         |
|                                | 24M              | 2437.0          | 17.26                         |
|                                | 36M              | 2437.0          | 17.23                         |
|                                | 48M              | 2437.0          | 17.20                         |
|                                | 54M              | 2437.0          | 17.15                         |
| IEEE 802.11n<br>2.4 GHz 20 MHz | 6.5M             | 2412.0          | 13.82                         |
|                                |                  | 2437.0          | <b>17.60</b>                  |
|                                |                  | 2462.0          | 10.44                         |
|                                | 14.4M            | 2437.0          | 17.58                         |
|                                | 21.7M            | 2437.0          | 17.55                         |
|                                | 28.9M            | 2437.0          | 17.51                         |
|                                | 43.3M            | 2437.0          | 17.49                         |
|                                | 57.8M            | 2437.0          | 17.45                         |
|                                | 65M              | 2437.0          | 17.43                         |
|                                | 72.2M            | 2437.0          | 17.40                         |
| IEEE 802.11n<br>2.4 GHz 40 MHz | 13.5M            | 2422.0          | 10.36                         |
|                                |                  | 2437.0          | <b>11.76</b>                  |
|                                |                  | 2452.0          | 7.76                          |
|                                | 30M              | 2437.0          | 11.73                         |
|                                | 45M              | 2437.0          | 11.71                         |
|                                | 60M              | 2437.0          | 11.69                         |
|                                | 90M              | 2437.0          | 11.66                         |
|                                | 120M             | 2437.0          | 11.63                         |
|                                | 135M             | 2437.0          | 11.60                         |
|                                | 150M             | 2437.0          | 11.58                         |

Note: The relevant measured result has the offset with cable loss already.

| Band         | Date Rate (Mbps) | Frequency (MHz) | Average Conducted power (dBm) |
|--------------|------------------|-----------------|-------------------------------|
| IEEE 802.11a | 6                | 5180.0          | 11.46                         |
|              |                  | 5200.0          | <b>11.83</b>                  |
|              |                  | 5220.0          | 11.63                         |
|              |                  | 5240.0          | 11.55                         |
|              |                  | 5260.0          | <b>11.63</b>                  |
|              |                  | 5280.0          | 11.36                         |
|              |                  | 5300.0          | 11.08                         |
|              |                  | 5320.0          | 10.82                         |
|              |                  | 5500.0          | 12.42                         |
|              |                  | 5520.0          | 12.84                         |
|              |                  | 5540.0          | 13.19                         |
|              |                  | 5560.0          | 13.48                         |
|              |                  | 5580.0          | 13.60                         |
|              |                  | 5660.0          | 14.16                         |
|              |                  | 5680.0          | <b>14.24</b>                  |
|              |                  | 5700.0          | 13.41                         |
|              |                  | 5745.0          | 14.34                         |
|              |                  | 5765.0          | 14.38                         |
|              |                  | 5785.0          | 14.55                         |
|              |                  | 5805.0          | 14.59                         |
|              |                  | 5825.0          | <b>14.61</b>                  |
|              | 54               | 5180.0          | 11.41                         |
|              |                  | 5200.0          | 11.81                         |
|              |                  | 5220.0          | 11.59                         |
|              |                  | 5240.0          | 11.50                         |
|              |                  | 5260.0          | 11.60                         |
|              |                  | 5280.0          | 11.31                         |
|              |                  | 5300.0          | 11.05                         |
|              |                  | 5320.0          | 10.76                         |
|              |                  | 5500.0          | 12.38                         |
|              |                  | 5520.0          | 12.81                         |
|              |                  | 5540.0          | 13.15                         |
|              |                  | 5560.0          | 13.42                         |
|              |                  | 5580.0          | 13.55                         |
|              |                  | 5660.0          | 14.12                         |
|              |                  | 5680.0          | 14.20                         |
|              |                  | 5700.0          | 13.38                         |
|              |                  | 5745.0          | 14.01                         |
|              |                  | 5765.0          | 14.35                         |
|              |                  | 5785.0          | 14.51                         |
|              |                  | 5805.0          | 14.55                         |
|              |                  | 5825.0          | 14.59                         |

Note: The relevant measured result has the offset with cable loss already.

| Band                         | Date Rate (Mbps) | Frequency (MHz) | Average Conducted power (dBm) |
|------------------------------|------------------|-----------------|-------------------------------|
| IEEE 802.11n<br>5 GHz 20 MHz | 6.5              | 5180.0          | 11.30                         |
|                              |                  | 5200.0          | <b>12.00</b>                  |
|                              |                  | 5220.0          | 11.87                         |
|                              |                  | 5240.0          | 11.75                         |
|                              |                  | 5260.0          | 12.16                         |
|                              |                  | 5280.0          | <b>12.75</b>                  |
|                              |                  | 5300.0          | 11.89                         |
|                              |                  | 5320.0          | 11.10                         |
|                              |                  | 5500.0          | 10.89                         |
|                              |                  | 5520.0          | 13.10                         |
|                              |                  | 5540.0          | 13.48                         |
|                              |                  | 5560.0          | 13.86                         |
|                              |                  | 5580.0          | 13.83                         |
|                              |                  | 5660.0          | 14.34                         |
|                              |                  | 5680.0          | <b>14.38</b>                  |
|                              |                  | 5700.0          | 13.63                         |
|                              |                  | 5745.0          | 14.38                         |
|                              |                  | 5765.0          | 14.57                         |
|                              |                  | 5785.0          | 14.56                         |
|                              |                  | 5805.0          | 14.64                         |
|                              |                  | 5825.0          | <b>14.68</b>                  |
|                              | 72.2             | 5180.0          | 11.25                         |
|                              |                  | 5200.0          | 11.98                         |
|                              |                  | 5220.0          | 11.85                         |
|                              |                  | 5240.0          | 11.70                         |
|                              |                  | 5260.0          | 12.12                         |
|                              |                  | 5280.0          | 12.71                         |
|                              |                  | 5300.0          | 11.84                         |
|                              |                  | 5320.0          | 11.05                         |
|                              |                  | 5500.0          | 10.86                         |
|                              |                  | 5520.0          | 13.07                         |
|                              |                  | 5540.0          | 13.45                         |
|                              |                  | 5560.0          | 13.83                         |
|                              |                  | 5580.0          | 13.80                         |
|                              |                  | 5660.0          | 14.31                         |
|                              |                  | 5680.0          | 14.35                         |
|                              |                  | 5700.0          | 13.60                         |
|                              |                  | 5745.0          | 14.35                         |
|                              |                  | 5765.0          | 14.54                         |
|                              |                  | 5785.0          | 14.53                         |
|                              |                  | 5805.0          | 14.61                         |
|                              |                  | 5825.0          | 14.65                         |

Note: The relevant measured result has the offset with cable loss already.

| Band                         | Date Rate (Mbps) | Frequency (MHz) | Average Conducted power (dBm) |
|------------------------------|------------------|-----------------|-------------------------------|
| IEEE 802.11n<br>5 GHz 40 MHz | 13.5             | 5190.0          | 6.19                          |
|                              |                  | 5230.0          | <b>9.88</b>                   |
|                              |                  | 5270.0          | <b>9.40</b>                   |
|                              |                  | 5310.0          | 5.36                          |
|                              |                  | 5510.0          | 7.57                          |
|                              |                  | 5550.0          | 11.67                         |
|                              |                  | 5670.0          | <b>12.54</b>                  |
|                              |                  | 5755.0          | 12.50                         |
|                              |                  | 5795.0          | <b>12.67</b>                  |
|                              | 150              | 5190.0          | 6.15                          |
|                              |                  | 5230.0          | 9.85                          |
|                              |                  | 5270.0          | 9.37                          |
|                              |                  | 5310.0          | 5.32                          |
|                              |                  | 5510.0          | 7.54                          |
|                              |                  | 5550.0          | 11.64                         |
|                              |                  | 5670.0          | 12.51                         |
|                              |                  | 5755.0          | 12.46                         |
|                              |                  | 5795.0          | 12.64                         |

Note: The relevant measured result has the offset with cable loss already.

| Operate Band                    | Frequency (MHz) | Packet Type | Average Conducted power (dBm) |
|---------------------------------|-----------------|-------------|-------------------------------|
| Bluetooth BR<br>GFSK            | 2402.0          | DH1         | 9.06                          |
|                                 |                 | DH3         | 9.09                          |
|                                 |                 | DH5         | 9.11                          |
|                                 | 2441.0          | DH1         | 9.14                          |
|                                 |                 | DH3         | 9.16                          |
|                                 |                 | DH5         | 9.19                          |
|                                 | 2480.0          | DH1         | 8.88                          |
|                                 |                 | DH3         | 8.91                          |
|                                 |                 | DH5         | 8.94                          |
| Bluetooth EDR<br>$\pi/4$ -DQPSK | 2402.0          | 2DH1        | 9.87                          |
|                                 |                 | 2DH3        | 9.90                          |
|                                 |                 | 2DH5        | 9.92                          |
|                                 | 2441.0          | 2DH1        | 8.90                          |
|                                 |                 | 2DH3        | 8.93                          |
|                                 |                 | 2DH5        | 8.95                          |
|                                 | 2480.0          | 2DH1        | 8.80                          |
|                                 |                 | 2DH3        | 8.83                          |
|                                 |                 | 2DH5        | 8.85                          |
| Bluetooth EDR<br>8DPSK          | 2402.0          | 3DH1        | 9.88                          |
|                                 |                 | 3DH3        | 9.91                          |
|                                 |                 | 3DH5        | <b>9.94</b>                   |
|                                 | 2441.0          | 3DH1        | 9.05                          |
|                                 |                 | 3DH3        | 9.07                          |
|                                 |                 | 3DH5        | 9.10                          |
|                                 | 2480.0          | 3DH1        | 8.83                          |
|                                 |                 | 3DH3        | 8.85                          |
|                                 |                 | 3DH5        | 8.87                          |
| Bluetooth LE                    | 2402.0          | ---         | 11.32                         |
|                                 | 2440.0          |             | <b>11.56</b>                  |
|                                 | 2480.0          |             | 11.43                         |
| Bluetooth 2LE                   | 2402.0          | ---         | 11.35                         |
|                                 | 2440.0          |             | 10.54                         |
|                                 | 2480.0          |             | 9.19                          |
| Bluetooth BLR C2                | 2402.0          | ---         | 11.29                         |
|                                 | 2440.0          |             | 11.54                         |
|                                 | 2480.0          |             | 11.40                         |
| Bluetooth BLR C8                | 2402.0          | ---         | 11.26                         |
|                                 | 2440.0          |             | 11.50                         |
|                                 | 2480.0          |             | 11.38                         |
| Zigbee                          | 2405.0          | ---         | 6.80                          |
|                                 | 2440.0          |             | <b>10.08</b>                  |
|                                 | 2480.0          |             | 8.77                          |

Note: The relevant measured result has the offset with cable loss already.

Power setting 2\_Antenna Type: Dipole Antenna

| Band                           | Data Rate (Mbps) | Frequency (MHz) | Average Conducted power (dBm) |
|--------------------------------|------------------|-----------------|-------------------------------|
| IEEE 802.11b                   | 1M               | 2412.0          | <b>16.40</b>                  |
|                                |                  | 2437.0          | 15.07                         |
|                                |                  | 2462.0          | 16.10                         |
|                                | 2M               | 2437.0          | 15.04                         |
|                                | 5.5M             | 2437.0          | 15.00                         |
|                                | 11M              | 2437.0          | 14.95                         |
| IEEE 802.11g                   | 6M               | 2412.0          | 12.05                         |
|                                |                  | 2437.0          | <b>17.38</b>                  |
|                                |                  | 2462.0          | 8.28                          |
|                                | 9M               | 2437.0          | 17.35                         |
|                                | 12M              | 2437.0          | 17.33                         |
|                                | 18M              | 2437.0          | 17.26                         |
|                                | 24M              | 2437.0          | 17.23                         |
|                                | 36M              | 2437.0          | 17.20                         |
|                                | 48M              | 2437.0          | 17.15                         |
|                                | 54M              | 2437.0          | 17.10                         |
| IEEE 802.11n<br>2.4 GHz 20 MHz | 6.5M             | 2412.0          | 9.89                          |
|                                |                  | 2437.0          | <b>17.71</b>                  |
|                                |                  | 2462.0          | 7.20                          |
|                                | 14.4M            | 2437.0          | 17.68                         |
|                                | 21.7M            | 2437.0          | 17.65                         |
|                                | 28.9M            | 2437.0          | 17.60                         |
|                                | 43.3M            | 2437.0          | 17.58                         |
|                                | 57.8M            | 2437.0          | 17.55                         |
|                                | 65M              | 2437.0          | 17.53                         |
|                                | 72.2M            | 2437.0          | 17.50                         |
| IEEE 802.11n<br>2.4 GHz 40 MHz | 13.5M            | 2422.0          | 7.51                          |
|                                |                  | 2437.0          | <b>10.50</b>                  |
|                                |                  | 2452.0          | 5.45                          |
|                                | 30M              | 2437.0          | 10.48                         |
|                                | 45M              | 2437.0          | 10.45                         |
|                                | 60M              | 2437.0          | 10.41                         |
|                                | 90M              | 2437.0          | 10.39                         |
|                                | 120M             | 2437.0          | 10.35                         |
|                                | 135M             | 2437.0          | 10.33                         |
|                                | 150M             | 2437.0          | 10.31                         |

Note: The relevant measured result has the offset with cable loss already.

| Band         | Date Rate (Mbps) | Frequency (MHz) | Average Conducted power (dBm) |
|--------------|------------------|-----------------|-------------------------------|
| IEEE 802.11a | 6                | 5180.0          | 11.37                         |
|              |                  | 5200.0          | <b>12.05</b>                  |
|              |                  | 5220.0          | 12.00                         |
|              |                  | 5240.0          | 11.95                         |
|              |                  | 5260.0          | 12.11                         |
|              |                  | 5280.0          | 12.08                         |
|              |                  | 5300.0          | 12.00                         |
|              |                  | 5320.0          | <b>12.12</b>                  |
|              |                  | 5500.0          | 12.05                         |
|              |                  | 5520.0          | 12.91                         |
|              |                  | 5540.0          | 12.82                         |
|              |                  | 5560.0          | 12.85                         |
|              |                  | 5580.0          | 12.96                         |
|              |                  | 5660.0          | 13.31                         |
|              |                  | 5680.0          | <b>13.33</b>                  |
|              |                  | 5700.0          | 13.26                         |
|              |                  | 5745.0          | <b>13.65</b>                  |
|              |                  | 5765.0          | 13.41                         |
|              |                  | 5785.0          | 13.40                         |
|              |                  | 5805.0          | 13.55                         |
|              |                  | 5825.0          | 13.54                         |
|              | 54               | 5180.0          | 11.33                         |
|              |                  | 5200.0          | 12.03                         |
|              |                  | 5220.0          | 11.98                         |
|              |                  | 5240.0          | 11.93                         |
|              |                  | 5260.0          | 12.08                         |
|              |                  | 5280.0          | 11.97                         |
|              |                  | 5300.0          | 12.09                         |
|              |                  | 5320.0          | 12.10                         |
|              |                  | 5500.0          | 12.01                         |
|              |                  | 5520.0          | 12.89                         |
|              |                  | 5540.0          | 12.80                         |
|              |                  | 5560.0          | 12.81                         |
|              |                  | 5580.0          | 12.93                         |
|              |                  | 5660.0          | 13.30                         |
|              |                  | 5680.0          | 13.31                         |
|              |                  | 5700.0          | 13.23                         |
|              |                  | 5745.0          | 13.63                         |
|              |                  | 5765.0          | 13.38                         |
|              |                  | 5785.0          | 13.37                         |
|              |                  | 5805.0          | 13.52                         |
|              |                  | 5825.0          | 13.51                         |

Note: The relevant measured result has the offset with cable loss already.

| Band                         | Date Rate (Mbps) | Frequency (MHz) | Average Conducted power (dBm) |
|------------------------------|------------------|-----------------|-------------------------------|
| IEEE 802.11n<br>5 GHz 20 MHz | 6.5              | 5180.0          | 11.15                         |
|                              |                  | 5200.0          | <b>11.81</b>                  |
|                              |                  | 5220.0          | 11.73                         |
|                              |                  | 5240.0          | 11.80                         |
|                              |                  | 5260.0          | 12.08                         |
|                              |                  | 5280.0          | <b>12.38</b>                  |
|                              |                  | 5300.0          | 12.28                         |
|                              |                  | 5320.0          | 12.19                         |
|                              |                  | 5500.0          | 11.18                         |
|                              |                  | 5520.0          | 13.18                         |
|                              |                  | 5540.0          | 13.12                         |
|                              |                  | 5560.0          | <b>13.72</b>                  |
|                              |                  | 5580.0          | 13.64                         |
|                              |                  | 5660.0          | 13.50                         |
|                              |                  | 5680.0          | 13.48                         |
|                              |                  | 5700.0          | 8.87                          |
|                              |                  | 5745.0          | 13.29                         |
|                              |                  | 5765.0          | 13.33                         |
|                              |                  | 5785.0          | 13.37                         |
|                              |                  | 5805.0          | <b>13.48</b>                  |
|                              |                  | 5825.0          | 13.45                         |
|                              | 72.2             | 5180.0          | 11.12                         |
|                              |                  | 5200.0          | 11.79                         |
|                              |                  | 5220.0          | 11.70                         |
|                              |                  | 5240.0          | 11.77                         |
|                              |                  | 5260.0          | 12.05                         |
|                              |                  | 5280.0          | 12.35                         |
|                              |                  | 5300.0          | 12.25                         |
|                              |                  | 5320.0          | 12.16                         |
|                              |                  | 5500.0          | 11.15                         |
|                              |                  | 5520.0          | 13.15                         |
|                              |                  | 5540.0          | 13.10                         |
|                              |                  | 5560.0          | 13.70                         |
|                              |                  | 5580.0          | 13.61                         |
|                              |                  | 5660.0          | 13.47                         |
|                              |                  | 5680.0          | 13.45                         |
|                              |                  | 5700.0          | 8.84                          |
|                              |                  | 5745.0          | 13.26                         |
|                              |                  | 5765.0          | 13.30                         |
|                              |                  | 5785.0          | 13.34                         |
|                              |                  | 5805.0          | 13.45                         |
|                              |                  | 5825.0          | 13.41                         |

Note: The relevant measured result has the offset with cable loss already.

| Band                         | Date Rate (Mbps) | Frequency (MHz) | Average Conducted power (dBm) |
|------------------------------|------------------|-----------------|-------------------------------|
| IEEE 802.11n<br>5 GHz 40 MHz | 13.5             | 5190.0          | 5.64                          |
|                              |                  | 5230.0          | <b>9.52</b>                   |
|                              |                  | 5270.0          | <b>9.72</b>                   |
|                              |                  | 5310.0          | 6.60                          |
|                              |                  | 5510.0          | 7.19                          |
|                              |                  | 5550.0          | 11.20                         |
|                              |                  | 5670.0          | <b>11.14</b>                  |
|                              |                  | 5755.0          | 11.33                         |
|                              |                  | 5795.0          | <b>11.52</b>                  |
|                              | 150              | 5190.0          | 5.61                          |
|                              |                  | 5230.0          | 9.50                          |
|                              |                  | 5270.0          | 9.69                          |
|                              |                  | 5310.0          | 6.57                          |
|                              |                  | 5510.0          | 7.16                          |
|                              |                  | 5550.0          | 11.18                         |
|                              |                  | 5670.0          | 11.11                         |
|                              |                  | 5755.0          | 11.30                         |
|                              |                  | 5795.0          | 11.50                         |

Note: The relevant measured result has the offset with cable loss already.

| Operate Band                    | Frequency (MHz) | Packet Type | Average Conducted power (dBm) |
|---------------------------------|-----------------|-------------|-------------------------------|
| Bluetooth BR<br>GFSK            | 2402.0          | DH1         | 8.59                          |
|                                 |                 | DH3         | 8.61                          |
|                                 |                 | DH5         | <b>8.64</b>                   |
|                                 | 2441.0          | DH1         | 8.46                          |
|                                 |                 | DH3         | 8.49                          |
|                                 |                 | DH5         | 8.51                          |
|                                 | 2480.0          | DH1         | 8.03                          |
|                                 |                 | DH3         | 8.06                          |
|                                 |                 | DH5         | 8.09                          |
| Bluetooth EDR<br>$\pi/4$ -DQPSK | 2402.0          | 2DH1        | 8.27                          |
|                                 |                 | 2DH3        | 8.30                          |
|                                 |                 | 2DH5        | 8.32                          |
|                                 | 2441.0          | 2DH1        | 8.51                          |
|                                 |                 | 2DH3        | 8.53                          |
|                                 |                 | 2DH5        | 8.55                          |
|                                 | 2480.0          | 2DH1        | 7.93                          |
|                                 |                 | 2DH3        | 7.95                          |
|                                 |                 | 2DH5        | 7.98                          |
| Bluetooth EDR<br>8DPSK          | 2402.0          | 3DH1        | 8.51                          |
|                                 |                 | 3DH3        | 8.53                          |
|                                 |                 | 3DH5        | 8.56                          |
|                                 | 2441.0          | 3DH1        | 8.49                          |
|                                 |                 | 3DH3        | 8.51                          |
|                                 |                 | 3DH5        | 8.54                          |
|                                 | 2480.0          | 3DH1        | 8.02                          |
|                                 |                 | 3DH3        | 8.04                          |
|                                 |                 | 3DH5        | 8.06                          |
| Bluetooth LE                    | 2402.0          | ---         | 9.61                          |
|                                 | 2440.0          |             | 9.86                          |
|                                 | 2480.0          |             | 9.68                          |
| Bluetooth 2LE                   | 2402.0          | ---         | 9.66                          |
|                                 | 2440.0          |             | <b>9.94</b>                   |
|                                 | 2480.0          |             | 7.39                          |
| Bluetooth BLR C2                | 2402.0          | ---         | 9.58                          |
|                                 | 2440.0          |             | 9.84                          |
|                                 | 2480.0          |             | 9.65                          |
| Bluetooth BLR C8                | 2402.0          | ---         | 9.55                          |
|                                 | 2440.0          |             | 9.82                          |
|                                 | 2480.0          |             | 9.63                          |
| Zigbee                          | 2405.0          | ---         | 6.40                          |
|                                 | 2440.0          |             | 5.32                          |
|                                 | 2480.0          |             | <b>8.53</b>                   |

Note: The relevant measured result has the offset with cable loss already.

#### 4. Test Result

Power setting 1\_Antenna Type: PCB Trace Antenna

| Band                           | Test mode/<br>RB/Data<br>rate | Frequency<br>(MHz) | Limit<br>(mw)/cm <sup>2</sup> | Distance<br>[R]<br>(cm) | Max<br>Tune-up<br>Power<br>[P]<br>(dBm) | ANT<br>Gain<br>(dBi) | Numeric<br>Gain<br>[G] | Duty<br>Cycle | Power with<br>Duty cycle<br>[TP]<br>(mW) | Power<br>Density<br>[S]<br>(mw)/cm <sup>2</sup> |
|--------------------------------|-------------------------------|--------------------|-------------------------------|-------------------------|-----------------------------------------|----------------------|------------------------|---------------|------------------------------------------|-------------------------------------------------|
| Bluetooth<br>BR/EDR            | 3M_DH5                        | 2402.0             | 1                             | 20                      | 10.50                                   | 0.712                | 1.18                   | 1             | 13.24                                    | 0.003                                           |
|                                |                               | 2441.0             | 1                             | 20                      | 10.50                                   | 0.712                | 1.18                   | 1             | 13.24                                    | 0.003                                           |
|                                |                               | 2480.0             | 1                             | 20                      | 10.50                                   | 0.712                | 1.18                   | 1             | 13.24                                    | 0.003                                           |
| Bluetooth LE                   | 1M                            | 2402.0             | 1                             | 20                      | 12.00                                   | 0.712                | 1.18                   | 1             | 18.7                                     | 0.004                                           |
|                                |                               | 2440.0             | 1                             | 20                      | 12.00                                   | 0.712                | 1.18                   | 1             | 18.7                                     | 0.004                                           |
|                                |                               | 2480.0             | 1                             | 20                      | 12.00                                   | 0.712                | 1.18                   | 1             | 18.7                                     | 0.004                                           |
| Zigbee                         | ---                           | 2405.0             | 1                             | 20                      | 10.50                                   | 0.712                | 1.18                   | 1             | 13.24                                    | 0.003                                           |
|                                |                               | 2440.0             | 1                             | 20                      | 10.50                                   | 0.712                | 1.18                   | 1             | 13.24                                    | 0.003                                           |
|                                |                               | 2480.0             | 1                             | 20                      | 10.50                                   | 0.712                | 1.18                   | 1             | 13.24                                    | 0.003                                           |
| IEEE 802.11b                   | 1M                            | 2412.0             | 1                             | 20                      | 17.00                                   | 0.712                | 1.18                   | 1             | 59.14                                    | 0.012                                           |
|                                |                               | 2437.0             | 1                             | 20                      | 17.00                                   | 0.712                | 1.18                   | 1             | 59.14                                    | 0.012                                           |
|                                |                               | 2462.0             | 1                             | 20                      | 17.00                                   | 0.712                | 1.18                   | 1             | 59.14                                    | 0.012                                           |
| IEEE 802.11g                   | 6M                            | 2412.0             | 1                             | 20                      | 17.50                                   | 0.712                | 1.18                   | 1             | 66.36                                    | 0.013                                           |
|                                |                               | 2437.0             | 1                             | 20                      | 17.50                                   | 0.712                | 1.18                   | 1             | 66.36                                    | 0.013                                           |
|                                |                               | 2462.0             | 1                             | 20                      | 17.50                                   | 0.712                | 1.18                   | 1             | 66.36                                    | 0.013                                           |
| IEEE 802.11n<br>2.4 GHz 20 MHz | 6.5M                          | 2412.0             | 1                             | 20                      | 18.00                                   | 0.712                | 1.18                   | 1             | 74.45                                    | 0.015                                           |
|                                |                               | 2437.0             | 1                             | 20                      | 18.00                                   | 0.712                | 1.18                   | 1             | 74.45                                    | 0.015                                           |
|                                |                               | 2462.0             | 1                             | 20                      | 18.00                                   | 0.712                | 1.18                   | 1             | 74.45                                    | 0.015                                           |
| IEEE 802.11n<br>2.4 GHz 40 MHz | 13.5M                         | 2422.0             | 1                             | 20                      | 12.00                                   | 0.712                | 1.18                   | 1             | 18.7                                     | 0.004                                           |
|                                |                               | 2437.0             | 1                             | 20                      | 12.00                                   | 0.712                | 1.18                   | 1             | 18.7                                     | 0.004                                           |
|                                |                               | 2452.0             | 1                             | 20                      | 12.00                                   | 0.712                | 1.18                   | 1             | 18.7                                     | 0.004                                           |

| Band         | Test mode/<br>RB/Data<br>rate | Frequency<br>(MHz) | Limit<br>(mw)/cm <sup>2</sup> | Distance<br>[R]<br>(cm) | Max<br>Tune-up<br>Power<br>[P]<br>(dBm) | ANT<br>Gain<br>(dBi) | Numeric<br>Gain<br>[G] | Duty<br>Cycle | Power with<br>Duty cycle<br>[TP]<br>(mW) | Power<br>Density<br>[S]<br>(mw)/cm <sup>2</sup> |
|--------------|-------------------------------|--------------------|-------------------------------|-------------------------|-----------------------------------------|----------------------|------------------------|---------------|------------------------------------------|-------------------------------------------------|
| IEEE 802.11a | 6                             | 5180.0             | 1                             | 20                      | 12.00                                   | 1.25                 | 1.33                   | 1             | 21.08                                    | 0.004                                           |
|              |                               | 5200.0             | 1                             | 20                      | 12.00                                   | 1.25                 | 1.33                   | 1             | 21.08                                    | 0.004                                           |
|              |                               | 5220.0             | 1                             | 20                      | 12.00                                   | 1.25                 | 1.33                   | 1             | 21.08                                    | 0.004                                           |
|              |                               | 5240.0             | 1                             | 20                      | 12.00                                   | 1.25                 | 1.33                   | 1             | 21.08                                    | 0.004                                           |
|              |                               | 5260.0             | 1                             | 20                      | 12.00                                   | 1.25                 | 1.33                   | 1             | 21.08                                    | 0.004                                           |
|              |                               | 5280.0             | 1                             | 20                      | 12.00                                   | 1.25                 | 1.33                   | 1             | 21.08                                    | 0.004                                           |
|              |                               | 5300.0             | 1                             | 20                      | 12.00                                   | 1.25                 | 1.33                   | 1             | 21.08                                    | 0.004                                           |
|              |                               | 5320.0             | 1                             | 20                      | 12.00                                   | 1.25                 | 1.33                   | 1             | 21.08                                    | 0.004                                           |
|              |                               | 5500.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|              |                               | 5520.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|              |                               | 5540.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|              |                               | 5560.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|              |                               | 5580.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|              |                               | 5660.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|              |                               | 5680.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|              |                               | 5700.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|              |                               | 5745.0             | 1                             | 20                      | 15.00                                   | 1.25                 | 1.33                   | 1             | 42.06                                    | 0.008                                           |
|              |                               | 5765.0             | 1                             | 20                      | 15.00                                   | 1.25                 | 1.33                   | 1             | 42.06                                    | 0.008                                           |
|              |                               | 5785.0             | 1                             | 20                      | 15.00                                   | 1.25                 | 1.33                   | 1             | 42.06                                    | 0.008                                           |
|              |                               | 5805.0             | 1                             | 20                      | 15.00                                   | 1.25                 | 1.33                   | 1             | 42.06                                    | 0.008                                           |
|              |                               | 5825.0             | 1                             | 20                      | 15.00                                   | 1.25                 | 1.33                   | 1             | 42.06                                    | 0.008                                           |

| Band                         | Test mode/<br>RB/Data<br>rate | Frequency<br>(MHz) | Limit<br>(mw)/cm <sup>2</sup> | Distance<br>[R]<br>(cm) | Max<br>Tune-up<br>Power<br>[P]<br>(dBm) | ANT<br>Gain<br>(dBi) | Numeric<br>Gain<br>[G] | Duty<br>Cycle | Power with<br>Duty cycle<br>[TP]<br>(mW) | Power<br>Density<br>[S]<br>(mw)/cm <sup>2</sup> |
|------------------------------|-------------------------------|--------------------|-------------------------------|-------------------------|-----------------------------------------|----------------------|------------------------|---------------|------------------------------------------|-------------------------------------------------|
| IEEE 802.11n<br>5 GHz 20 MHz | 6.5                           | 5180.0             | 1                             | 20                      | 12.50                                   | 1.25                 | 1.33                   | 1             | 23.65                                    | 0.005                                           |
|                              |                               | 5200.0             | 1                             | 20                      | 12.50                                   | 1.25                 | 1.33                   | 1             | 23.65                                    | 0.005                                           |
|                              |                               | 5220.0             | 1                             | 20                      | 12.50                                   | 1.25                 | 1.33                   | 1             | 23.65                                    | 0.005                                           |
|                              |                               | 5240.0             | 1                             | 20                      | 12.50                                   | 1.25                 | 1.33                   | 1             | 23.65                                    | 0.005                                           |
|                              |                               | 5260.0             | 1                             | 20                      | 13.00                                   | 1.25                 | 1.33                   | 1             | 26.54                                    | 0.005                                           |
|                              |                               | 5280.0             | 1                             | 20                      | 13.00                                   | 1.25                 | 1.33                   | 1             | 26.54                                    | 0.005                                           |
|                              |                               | 5300.0             | 1                             | 20                      | 13.00                                   | 1.25                 | 1.33                   | 1             | 26.54                                    | 0.005                                           |
|                              |                               | 5320.0             | 1                             | 20                      | 13.00                                   | 1.25                 | 1.33                   | 1             | 26.54                                    | 0.005                                           |
|                              |                               | 5500.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|                              |                               | 5520.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|                              |                               | 5540.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|                              |                               | 5560.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|                              |                               | 5580.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|                              |                               | 5660.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|                              |                               | 5680.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|                              |                               | 5700.0             | 1                             | 20                      | 14.50                                   | 1.25                 | 1.33                   | 1             | 37.48                                    | 0.007                                           |
|                              |                               | 5745.0             | 1                             | 20                      | 15.00                                   | 1.25                 | 1.33                   | 1             | 42.06                                    | 0.008                                           |
|                              |                               | 5765.0             | 1                             | 20                      | 15.00                                   | 1.25                 | 1.33                   | 1             | 42.06                                    | 0.008                                           |
|                              |                               | 5785.0             | 1                             | 20                      | 15.00                                   | 1.25                 | 1.33                   | 1             | 42.06                                    | 0.008                                           |
|                              |                               | 5805.0             | 1                             | 20                      | 15.00                                   | 1.25                 | 1.33                   | 1             | 42.06                                    | 0.008                                           |
|                              |                               | 5825.0             | 1                             | 20                      | 15.00                                   | 1.25                 | 1.33                   | 1             | 42.06                                    | 0.008                                           |
| IEEE 802.11n<br>5 GHz 40 MHz | 13.5                          | 5190.0             | 1                             | 20                      | 10.00                                   | 1.25                 | 1.33                   | 1             | 13.3                                     | 0.003                                           |
|                              |                               | 5230.0             | 1                             | 20                      | 10.00                                   | 1.25                 | 1.33                   | 1             | 13.3                                     | 0.003                                           |
|                              |                               | 5270.0             | 1                             | 20                      | 10.00                                   | 1.25                 | 1.33                   | 1             | 13.3                                     | 0.003                                           |
|                              |                               | 5310.0             | 1                             | 20                      | 10.00                                   | 1.25                 | 1.33                   | 1             | 13.3                                     | 0.003                                           |
|                              |                               | 5510.0             | 1                             | 20                      | 13.00                                   | 1.25                 | 1.33                   | 1             | 26.54                                    | 0.005                                           |
|                              |                               | 5550.0             | 1                             | 20                      | 13.00                                   | 1.25                 | 1.33                   | 1             | 26.54                                    | 0.005                                           |
|                              |                               | 5670.0             | 1                             | 20                      | 13.00                                   | 1.25                 | 1.33                   | 1             | 26.54                                    | 0.005                                           |
|                              |                               | 5755.0             | 1                             | 20                      | 13.00                                   | 1.25                 | 1.33                   | 1             | 26.54                                    | 0.005                                           |
|                              |                               | 5795.0             | 1                             | 20                      | 13.00                                   | 1.25                 | 1.33                   | 1             | 26.54                                    | 0.005                                           |

Power setting 2\_Antenna Type: Dipole Antenna

| Band                           | Test mode/<br>RB/Data<br>rate | Frequency<br>(MHz) | Limit<br>(mw)/cm <sup>2</sup> | Distance<br>[R]<br>(cm) | Max<br>Tune-up<br>Power<br>[P]<br>(dBm) | ANT<br>Gain<br>(dBi) | Numeric<br>Gain<br>[G] | Duty<br>Cycle | Power with<br>Duty cycle<br>[TP]<br>(mW) | Power<br>Density<br>[S]<br>(mw)/cm <sup>2</sup> |
|--------------------------------|-------------------------------|--------------------|-------------------------------|-------------------------|-----------------------------------------|----------------------|------------------------|---------------|------------------------------------------|-------------------------------------------------|
| Bluetooth<br>BR/EDR            | 1M_DH5                        | 2402.0             | 1                             | 20                      | 9.00                                    | 3.80                 | 2.4                    | 1             | 19.06                                    | 0.004                                           |
|                                |                               | 2441.0             | 1                             | 20                      | 9.00                                    | 3.80                 | 2.4                    | 1             | 19.06                                    | 0.004                                           |
|                                |                               | 2480.0             | 1                             | 20                      | 9.00                                    | 3.80                 | 2.4                    | 1             | 19.06                                    | 0.004                                           |
| Bluetooth 2LE                  | 2M                            | 2402.0             | 1                             | 20                      | 10.50                                   | 3.80                 | 2.4                    | 1             | 26.93                                    | 0.005                                           |
|                                |                               | 2440.0             | 1                             | 20                      | 10.50                                   | 3.80                 | 2.4                    | 1             | 26.93                                    | 0.005                                           |
|                                |                               | 2480.0             | 1                             | 20                      | 10.50                                   | 3.80                 | 2.4                    | 1             | 26.93                                    | 0.005                                           |
| Zigbee                         | ---                           | 2405.0             | 1                             | 20                      | 9.00                                    | 3.80                 | 2.4                    | 1             | 19.06                                    | 0.004                                           |
|                                |                               | 2440.0             | 1                             | 20                      | 9.00                                    | 3.80                 | 2.4                    | 1             | 19.06                                    | 0.004                                           |
|                                |                               | 2480.0             | 1                             | 20                      | 9.00                                    | 3.80                 | 2.4                    | 1             | 19.06                                    | 0.004                                           |
| IEEE 802.11b                   | 1M                            | 2412.0             | 1                             | 20                      | 17.00                                   | 3.80                 | 2.4                    | 1             | 120.28                                   | 0.024                                           |
|                                |                               | 2437.0             | 1                             | 20                      | 17.00                                   | 3.80                 | 2.4                    | 1             | 120.28                                   | 0.024                                           |
|                                |                               | 2462.0             | 1                             | 20                      | 17.00                                   | 3.80                 | 2.4                    | 1             | 120.28                                   | 0.024                                           |
| IEEE 802.11g                   | 6M                            | 2412.0             | 1                             | 20                      | 17.50                                   | 3.80                 | 2.4                    | 1             | 134.96                                   | 0.027                                           |
|                                |                               | 2437.0             | 1                             | 20                      | 17.50                                   | 3.80                 | 2.4                    | 1             | 134.96                                   | 0.027                                           |
|                                |                               | 2462.0             | 1                             | 20                      | 17.50                                   | 3.80                 | 2.4                    | 1             | 134.96                                   | 0.027                                           |
| IEEE 802.11n<br>2.4 GHz 20 MHz | 6.5M                          | 2412.0             | 1                             | 20                      | 18.00                                   | 3.80                 | 2.4                    | 1             | 151.43                                   | 0.030                                           |
|                                |                               | 2437.0             | 1                             | 20                      | 18.00                                   | 3.80                 | 2.4                    | 1             | 151.43                                   | 0.030                                           |
|                                |                               | 2462.0             | 1                             | 20                      | 18.00                                   | 3.80                 | 2.4                    | 1             | 151.43                                   | 0.030                                           |
| IEEE 802.11n<br>2.4 GHz 40 MHz | 13.5M                         | 2422.0             | 1                             | 20                      | 11.00                                   | 3.80                 | 2.4                    | 1             | 30.21                                    | 0.006                                           |
|                                |                               | 2437.0             | 1                             | 20                      | 11.00                                   | 3.80                 | 2.4                    | 1             | 30.21                                    | 0.006                                           |
|                                |                               | 2452.0             | 1                             | 20                      | 11.00                                   | 3.80                 | 2.4                    | 1             | 30.21                                    | 0.006                                           |

| Band         | Test mode/<br>RB/Data<br>rate | Frequency<br>(MHz) | Limit<br>(mw)/cm <sup>2</sup> | Distance<br>[R]<br>(cm) | Max<br>Tune-up<br>Power<br>[P]<br>(dBm) | ANT<br>Gain<br>(dBi) | Numeric<br>Gain<br>[G] | Duty<br>Cycle | Power with<br>Duty cycle<br>[TP]<br>(mW) | Power<br>Density<br>[S]<br>(mw)/cm <sup>2</sup> |
|--------------|-------------------------------|--------------------|-------------------------------|-------------------------|-----------------------------------------|----------------------|------------------------|---------------|------------------------------------------|-------------------------------------------------|
| IEEE 802.11a | 6                             | 5180.0             | 1                             | 20                      | 12.50                                   | 5.50                 | 3.55                   | 1             | 63.13                                    | 0.013                                           |
|              |                               | 5200.0             | 1                             | 20                      | 12.50                                   | 5.50                 | 3.55                   | 1             | 63.13                                    | 0.013                                           |
|              |                               | 5220.0             | 1                             | 20                      | 12.50                                   | 5.50                 | 3.55                   | 1             | 63.13                                    | 0.013                                           |
|              |                               | 5240.0             | 1                             | 20                      | 12.50                                   | 5.50                 | 3.55                   | 1             | 63.13                                    | 0.013                                           |
|              |                               | 5260.0             | 1                             | 20                      | 12.50                                   | 5.50                 | 3.55                   | 1             | 63.13                                    | 0.013                                           |
|              |                               | 5280.0             | 1                             | 20                      | 12.50                                   | 5.50                 | 3.55                   | 1             | 63.13                                    | 0.013                                           |
|              |                               | 5300.0             | 1                             | 20                      | 12.50                                   | 5.50                 | 3.55                   | 1             | 63.13                                    | 0.013                                           |
|              |                               | 5320.0             | 1                             | 20                      | 12.50                                   | 5.50                 | 3.55                   | 1             | 63.13                                    | 0.013                                           |
|              |                               | 5500.0             | 1                             | 20                      | 13.50                                   | 5.50                 | 3.55                   | 1             | 79.47                                    | 0.016                                           |
|              |                               | 5520.0             | 1                             | 20                      | 13.50                                   | 5.50                 | 3.55                   | 1             | 79.47                                    | 0.016                                           |
|              |                               | 5540.0             | 1                             | 20                      | 13.50                                   | 5.50                 | 3.55                   | 1             | 79.47                                    | 0.016                                           |
|              |                               | 5560.0             | 1                             | 20                      | 13.50                                   | 5.50                 | 3.55                   | 1             | 79.47                                    | 0.016                                           |
|              |                               | 5580.0             | 1                             | 20                      | 13.50                                   | 5.50                 | 3.55                   | 1             | 79.47                                    | 0.016                                           |
|              |                               | 5660.0             | 1                             | 20                      | 13.50                                   | 5.50                 | 3.55                   | 1             | 79.47                                    | 0.016                                           |
|              |                               | 5680.0             | 1                             | 20                      | 13.50                                   | 5.50                 | 3.55                   | 1             | 79.47                                    | 0.016                                           |
|              |                               | 5700.0             | 1                             | 20                      | 13.50                                   | 5.50                 | 3.55                   | 1             | 79.47                                    | 0.016                                           |
|              |                               | 5745.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|              |                               | 5765.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|              |                               | 5785.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|              |                               | 5805.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|              |                               | 5825.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |

| Band                         | Test mode/<br>RB/Data<br>rate | Frequency<br>(MHz) | Limit<br>(mw)/cm <sup>2</sup> | Distance<br>[R]<br>(cm) | Max<br>Tune-up<br>Power<br>[P]<br>(dBm) | ANT<br>Gain<br>(dBi) | Numeric<br>Gain<br>[G] | Duty<br>Cycle | Power with<br>Duty cycle<br>[TP]<br>(mW) | Power<br>Density<br>[S]<br>(mw)/cm <sup>2</sup> |
|------------------------------|-------------------------------|--------------------|-------------------------------|-------------------------|-----------------------------------------|----------------------|------------------------|---------------|------------------------------------------|-------------------------------------------------|
| IEEE 802.11n<br>5 GHz 20 MHz | 6.5                           | 5180.0             | 1                             | 20                      | 12.00                                   | 5.50                 | 3.55                   | 1             | 56.26                                    | 0.011                                           |
|                              |                               | 5200.0             | 1                             | 20                      | 12.00                                   | 5.50                 | 3.55                   | 1             | 56.26                                    | 0.011                                           |
|                              |                               | 5220.0             | 1                             | 20                      | 12.00                                   | 5.50                 | 3.55                   | 1             | 56.26                                    | 0.011                                           |
|                              |                               | 5240.0             | 1                             | 20                      | 12.00                                   | 5.50                 | 3.55                   | 1             | 56.26                                    | 0.011                                           |
|                              |                               | 5260.0             | 1                             | 20                      | 12.50                                   | 5.50                 | 3.55                   | 1             | 63.13                                    | 0.013                                           |
|                              |                               | 5280.0             | 1                             | 20                      | 12.50                                   | 5.50                 | 3.55                   | 1             | 63.13                                    | 0.013                                           |
|                              |                               | 5300.0             | 1                             | 20                      | 12.50                                   | 5.50                 | 3.55                   | 1             | 63.13                                    | 0.013                                           |
|                              |                               | 5320.0             | 1                             | 20                      | 12.50                                   | 5.50                 | 3.55                   | 1             | 63.13                                    | 0.013                                           |
|                              |                               | 5500.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|                              |                               | 5520.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|                              |                               | 5540.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|                              |                               | 5560.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|                              |                               | 5580.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|                              |                               | 5660.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|                              |                               | 5680.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|                              |                               | 5700.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|                              |                               | 5745.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|                              |                               | 5765.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|                              |                               | 5785.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|                              |                               | 5805.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
|                              |                               | 5825.0             | 1                             | 20                      | 14.00                                   | 5.50                 | 3.55                   | 1             | 89.17                                    | 0.018                                           |
| IEEE 802.11n<br>5 GHz 40 MHz | 13.5                          | 5190.0             | 1                             | 20                      | 10.00                                   | 5.50                 | 3.55                   | 1             | 35.5                                     | 0.007                                           |
|                              |                               | 5230.0             | 1                             | 20                      | 10.00                                   | 5.50                 | 3.55                   | 1             | 35.5                                     | 0.007                                           |
|                              |                               | 5270.0             | 1                             | 20                      | 10.00                                   | 5.50                 | 3.55                   | 1             | 35.5                                     | 0.007                                           |
|                              |                               | 5310.0             | 1                             | 20                      | 10.00                                   | 5.50                 | 3.55                   | 1             | 35.5                                     | 0.007                                           |
|                              |                               | 5510.0             | 1                             | 20                      | 11.50                                   | 5.50                 | 3.55                   | 1             | 50.15                                    | 0.010                                           |
|                              |                               | 5550.0             | 1                             | 20                      | 11.50                                   | 5.50                 | 3.55                   | 1             | 50.15                                    | 0.010                                           |
|                              |                               | 5670.0             | 1                             | 20                      | 11.50                                   | 5.50                 | 3.55                   | 1             | 50.15                                    | 0.010                                           |
|                              |                               | 5755.0             | 1                             | 20                      | 12.00                                   | 5.50                 | 3.55                   | 1             | 56.26                                    | 0.011                                           |
|                              |                               | 5795.0             | 1                             | 20                      | 12.00                                   | 5.50                 | 3.55                   | 1             | 56.26                                    | 0.011                                           |



Note:

1. Mobile or fixed location transmitters, minimum separation distance is 20 cm, even if calculations indicate MPE distance is less.
2. The Numeric Gain calculated by  $10^{(\text{ant. Gain(dBi)} / 10)}$ .
3. Each band max power which perform MPE of any configurations.
4. The MPE results are evaluated by lowest data rate for WLAN.
5. The device operating IEEE 802.11 a/b/g/n mode is 1TX (SISO).
6. The device not support simultaneous transmission.