

## 8. RADIATED SPURIOUS EMISSION

### 8.1 DESCRIPTION OF RADIATED SPURIOUS EMISSION

#### 8.1.1 MEASUREMENT METHOD

The radiated spurious emission was measured by substitution method according to ANSI C63.26 2015. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least  $43 + 10 \log (P)$  dB. For Band 7 The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least  $55 + 10 \log (P)$  dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

#### 8.1.2 TEST SETUP

The procedure of radiated spurious emissions is as follows:

a) Pre-calibration With pre-calibration method, the Radiated Spurious Emissions(RSE) is calculated as,  $RSE = Rx \text{ (dBuV)} + CL \text{ (dB)} + SA \text{ (dB)} + Gain \text{ (dBi)} - 107 \text{ (dBuV to dBm)}$  The SA is calibrated using following setup.

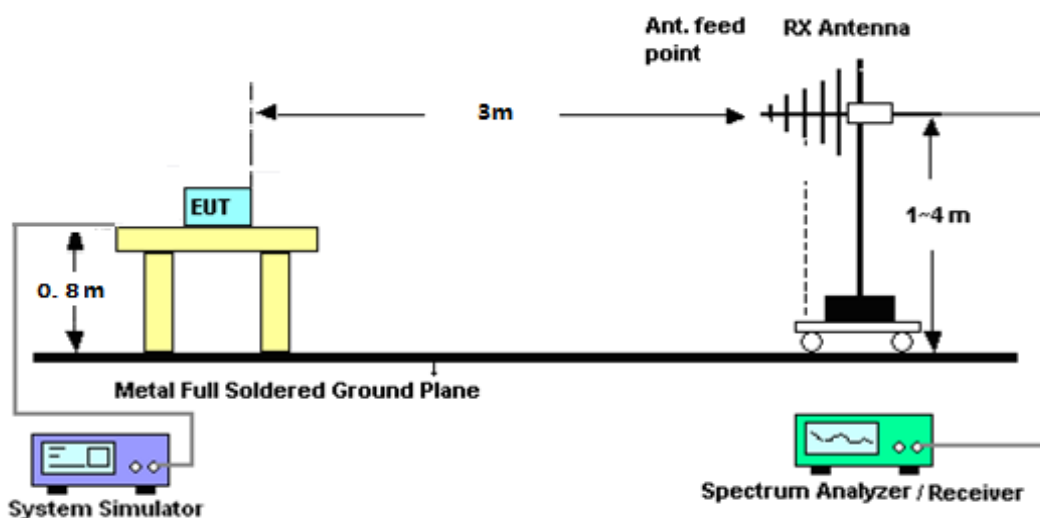
b) EUT was placed on 1.5 m non-conductive stand at a 3 m test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 m from the test item for emission measurements. The height of receiving antenna is 0.8m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the test item and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic measured with peak detector and 1MHz bandwidth.

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of any band into any of the other blocks.

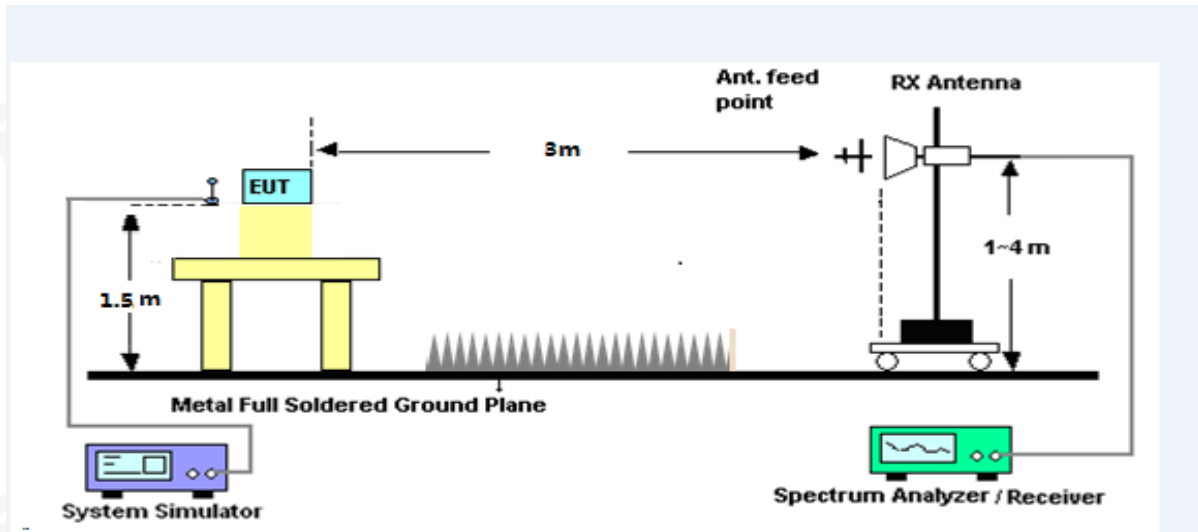
The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established and the ARpl is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable loss and the air loss. The measurement results are obtained as described below:

Power = P<sub>Mea</sub> + AR<sub>pl</sub>

For radiated test from 30MHz to 1GHz



For radiated test from above 1GHz



### 8.1.3 TEST PROCEDURES

1. The testing FCC KDB 971168 D01 Section 7 and ANSI C63.26 2015 Section 5.5.
2. The EUT was placed on a rotatable wooden table with 1.5 meter above ground.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
7. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
8. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
9. Taking the record of output power at antenna port.
10. Repeat step 7 to step 8 for another polarization.
11. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from  $43 + 10\log(P)$  dB below the transmitter power P(Watts)  
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$   
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$   
 $= -13\text{dBm}$

For Band 7:

The limit line is derived from  $55 + 10\log(P)$  dB below the transmitter power P(Watts)  
 $= [30 + 10\log(P)] \text{ (dBm)} - [55 + 10\log(P)] \text{ (dB)}$   
 $= -25\text{dBm}$

EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain

ERP (dBm) = EIRP - 2.15



## 8.1.4 TEST RESULTS

| NB-IoT Band 2 / QPSK / 3.75KHz /1@0/ The Worst Test Results for Lowest  |               |          |       |            |               |              |          |
|-------------------------------------------------------------------------|---------------|----------|-------|------------|---------------|--------------|----------|
| Frequency(MHz)                                                          | S G.Lev (dBm) | Ant(dBi) | Loss  | PMea (dBm) | Limit ( dBm ) | Margin (dBm) | Polarity |
| 3700.28                                                                 | -34.72        | 12.60    | 12.93 | -35.05     | -13.00        | -22.05       | H        |
| 5550.46                                                                 | -34.52        | 13.10    | 17.11 | -38.53     | -13.00        | -25.53       | H        |
| 7400.43                                                                 | -32.36        | 11.50    | 22.20 | -43.06     | -13.00        | -30.06       | H        |
| 3700.28                                                                 | -35.55        | 12.60    | 12.93 | -35.88     | -13.00        | -22.88       | V        |
| 5550.46                                                                 | -34.86        | 13.10    | 17.11 | -38.87     | -13.00        | -25.87       | V        |
| 7400.43                                                                 | -31.90        | 11.50    | 22.20 | -42.60     | -13.00        | -29.60       | V        |
| NB-IoT Band 2 / QPSK / 3.75KHz /1@0/ The Worst Test Results for Middle  |               |          |       |            |               |              |          |
| Frequency(MHz)                                                          | S G.Lev (dBm) | Ant(dBi) | Loss  | PMea (dBm) | Limit ( dBm ) | Margin (dBm) | Polarity |
| 3759.85                                                                 | -34.77        | 12.60    | 12.93 | -35.10     | -13.00        | -22.10       | H        |
| 5639.96                                                                 | -34.61        | 13.10    | 17.11 | -38.62     | -13.00        | -25.62       | H        |
| 7520.11                                                                 | -33.22        | 11.50    | 22.20 | -43.92     | -13.00        | -30.92       | H        |
| 3759.85                                                                 | -34.68        | 12.60    | 12.93 | -35.01     | -13.00        | -22.01       | V        |
| 5639.96                                                                 | -34.70        | 13.10    | 17.11 | -38.71     | -13.00        | -25.71       | V        |
| 7520.11                                                                 | -32.43        | 11.50    | 22.20 | -43.13     | -13.00        | -30.13       | V        |
| NB-IoT Band 2 / QPSK / 3.75KHz /1@0/ The Worst Test Results for Highest |               |          |       |            |               |              |          |
| Frequency(MHz)                                                          | S G.Lev (dBm) | Ant(dBi) | Loss  | PMea (dBm) | Limit ( dBm ) | Margin (dBm) | Polarity |
| 3819.53                                                                 | -34.18        | 12.60    | 12.93 | -34.51     | -13.00        | -21.51       | H        |
| 5729.76                                                                 | -34.12        | 13.10    | 17.11 | -38.13     | -13.00        | -25.13       | H        |
| 7639.25                                                                 | -33.62        | 11.50    | 22.20 | -44.32     | -13.00        | -31.32       | H        |
| 3819.53                                                                 | -35.36        | 12.60    | 12.93 | -35.69     | -13.00        | -22.69       | V        |
| 5729.76                                                                 | -34.69        | 13.10    | 17.11 | -38.70     | -13.00        | -25.70       | V        |
| 7639.25                                                                 | -32.04        | 11.50    | 22.20 | -42.74     | -13.00        | -29.74       | V        |



| NB-IoT Band 2 / BPSK / 3.75KHz /1@0/ The Worst Test Results for Lowest  |                |          |       |               |                  |                 |          |
|-------------------------------------------------------------------------|----------------|----------|-------|---------------|------------------|-----------------|----------|
| Frequency(MHz)                                                          | Frequency(MHz) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3700.31                                                                 | -33.96         | 12.60    | 12.93 | -34.29        | -13.00           | -21.29          | H        |
| 5550.40                                                                 | -35.38         | 13.10    | 17.11 | -39.39        | -13.00           | -26.39          | H        |
| 7400.35                                                                 | -33.27         | 11.50    | 22.20 | -43.97        | -13.00           | -30.97          | H        |
| 3700.31                                                                 | -35.24         | 12.60    | 12.93 | -35.57        | -13.00           | -22.57          | V        |
| 5550.40                                                                 | -34.47         | 13.10    | 17.11 | -38.48        | -13.00           | -25.48          | V        |
| 7400.35                                                                 | -32.30         | 11.50    | 22.20 | -43.00        | -13.00           | -30.00          | V        |
| NB-IoT Band 2 / BPSK / 3.75KHz /1@0/ The Worst Test Results for Middle  |                |          |       |               |                  |                 |          |
| Frequency(MHz)                                                          | Frequency(MHz) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3760.09                                                                 | -34.63         | 12.60    | 12.93 | -34.96        | -13.00           | -21.96          | H        |
| 5639.97                                                                 | -35.42         | 13.10    | 17.11 | -39.43        | -13.00           | -26.43          | H        |
| 7519.97                                                                 | -32.62         | 11.50    | 22.20 | -43.32        | -13.00           | -30.32          | H        |
| 3760.09                                                                 | -35.15         | 12.60    | 12.93 | -35.48        | -13.00           | -22.48          | V        |
| 5639.97                                                                 | -35.04         | 13.10    | 17.11 | -39.05        | -13.00           | -26.05          | V        |
| 7519.97                                                                 | -32.06         | 11.50    | 22.20 | -42.76        | -13.00           | -29.76          | V        |
| NB-IoT Band 2 / BPSK / 3.75KHz /1@0/ The Worst Test Results for Highest |                |          |       |               |                  |                 |          |
| Frequency(MHz)                                                          | Frequency(MHz) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3819.37                                                                 | -34.73         | 12.60    | 12.93 | -35.06        | -13.00           | -22.06          | H        |
| 5729.63                                                                 | -34.32         | 13.10    | 17.11 | -38.33        | -13.00           | -25.33          | H        |
| 7639.33                                                                 | -33.39         | 11.50    | 22.20 | -44.09        | -13.00           | -31.09          | H        |
| 3819.37                                                                 | -35.95         | 12.60    | 12.93 | -36.28        | -13.00           | -23.28          | V        |
| 5729.63                                                                 | -33.76         | 13.10    | 17.11 | -37.77        | -13.00           | -24.77          | V        |
| 7639.33                                                                 | -32.56         | 11.50    | 22.20 | -43.26        | -13.00           | -30.26          | V        |



| NB-IoT Band 2 / QPSK / 15KHz /1@0/ The Worst Test Results for Lowest  |               |          |       |            |               |              |          |
|-----------------------------------------------------------------------|---------------|----------|-------|------------|---------------|--------------|----------|
| Frequency(MHz)                                                        | S G.Lev (dBm) | Ant(dBi) | Loss  | PMea (dBm) | Limit ( dBm ) | Margin (dBm) | Polarity |
| 3700.53                                                               | -33.91        | 12.60    | 12.93 | -34.24     | -13.00        | -21.24       | H        |
| 5550.65                                                               | -34.81        | 13.10    | 17.11 | -38.82     | -13.00        | -25.82       | H        |
| 7400.37                                                               | -33.53        | 11.50    | 22.20 | -44.23     | -13.00        | -31.23       | H        |
| 3700.53                                                               | -35.77        | 12.60    | 12.93 | -36.10     | -13.00        | -23.10       | V        |
| 5550.65                                                               | -33.84        | 13.10    | 17.11 | -37.85     | -13.00        | -24.85       | V        |
| 7400.37                                                               | -32.44        | 11.50    | 22.20 | -43.14     | -13.00        | -30.14       | V        |
| NB-IoT Band 2 / QPSK / 15KHz /1@0/ The Worst Test Results for Middle  |               |          |       |            |               |              |          |
| Frequency(MHz)                                                        | S G.Lev (dBm) | Ant(dBi) | Loss  | PMea (dBm) | Limit ( dBm ) | Margin (dBm) | Polarity |
| 3760.04                                                               | -34.36        | 12.60    | 12.93 | -34.69     | -13.00        | -21.69       | H        |
| 5639.96                                                               | -35.47        | 13.10    | 17.11 | -39.48     | -13.00        | -26.48       | H        |
| 7520.05                                                               | -33.44        | 11.50    | 22.20 | -44.14     | -13.00        | -31.14       | H        |
| 3760.04                                                               | -35.87        | 12.60    | 12.93 | -36.20     | -13.00        | -23.20       | V        |
| 5639.96                                                               | -34.34        | 13.10    | 17.11 | -38.35     | -13.00        | -25.35       | V        |
| 7520.05                                                               | -32.02        | 11.50    | 22.20 | -42.72     | -13.00        | -29.72       | V        |
| NB-IoT Band 2 / QPSK / 15KHz /1@0/ The Worst Test Results for Highest |               |          |       |            |               |              |          |
| Frequency(MHz)                                                        | S G.Lev (dBm) | Ant(dBi) | Loss  | PMea (dBm) | Limit ( dBm ) | Margin (dBm) | Polarity |
| 3819.50                                                               | -34.86        | 12.60    | 12.93 | -35.19     | -13.00        | -22.19       | H        |
| 5729.76                                                               | -35.16        | 13.10    | 17.11 | -39.17     | -13.00        | -26.17       | H        |
| 7639.36                                                               | -32.37        | 11.50    | 22.20 | -43.07     | -13.00        | -30.07       | H        |
| 3819.50                                                               | -35.95        | 12.60    | 12.93 | -36.28     | -13.00        | -23.28       | V        |
| 5729.76                                                               | -33.87        | 13.10    | 17.11 | -37.88     | -13.00        | -24.88       | V        |
| 7639.36                                                               | -32.17        | 11.50    | 22.20 | -42.87     | -13.00        | -29.87       | V        |



| NB-IoT Band 2 / BPSK / 15KHz /1@0/ The Worst Test Results for Lowest  |                |          |       |               |                  |                 |          |
|-----------------------------------------------------------------------|----------------|----------|-------|---------------|------------------|-----------------|----------|
| Frequency(MHz)                                                        | Frequency(MHz) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3700.52                                                               | -34.00         | 12.60    | 12.93 | -34.33        | -13.00           | -21.33          | H        |
| 5550.28                                                               | -34.91         | 13.10    | 17.11 | -38.92        | -13.00           | -25.92          | H        |
| 7400.41                                                               | -33.48         | 11.50    | 22.20 | -44.18        | -13.00           | -31.18          | H        |
| 3700.52                                                               | -35.99         | 12.60    | 12.93 | -36.32        | -13.00           | -23.32          | V        |
| 5550.28                                                               | -34.67         | 13.10    | 17.11 | -38.68        | -13.00           | -25.68          | V        |
| 7400.41                                                               | -32.60         | 11.50    | 22.20 | -43.30        | -13.00           | -30.30          | V        |
| NB-IoT Band 2 / BPSK / 15KHz /1@0/ The Worst Test Results for Middle  |                |          |       |               |                  |                 |          |
| Frequency(MHz)                                                        | Frequency(MHz) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3759.75                                                               | -33.69         | 12.60    | 12.93 | -34.02        | -13.00           | -21.02          | H        |
| 5640.28                                                               | -34.02         | 13.10    | 17.11 | -38.03        | -13.00           | -25.03          | H        |
| 7520.21                                                               | -32.58         | 11.50    | 22.20 | -43.28        | -13.00           | -30.28          | H        |
| 3759.75                                                               | -35.14         | 12.60    | 12.93 | -35.47        | -13.00           | -22.47          | V        |
| 5640.28                                                               | -35.24         | 13.10    | 17.11 | -39.25        | -13.00           | -26.25          | V        |
| 7520.21                                                               | -32.57         | 11.50    | 22.20 | -43.27        | -13.00           | -30.27          | V        |
| NB-IoT Band 2 / BPSK / 15KHz /1@0/ The Worst Test Results for Highest |                |          |       |               |                  |                 |          |
| Frequency(MHz)                                                        | Frequency(MHz) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3819.49                                                               | -34.65         | 12.60    | 12.93 | -34.98        | -13.00           | -21.98          | H        |
| 5729.59                                                               | -34.03         | 13.10    | 17.11 | -38.04        | -13.00           | -25.04          | H        |
| 7639.54                                                               | -33.47         | 11.50    | 22.20 | -44.17        | -13.00           | -31.17          | H        |
| 3819.49                                                               | -35.81         | 12.60    | 12.93 | -36.14        | -13.00           | -23.14          | V        |
| 5729.59                                                               | -33.84         | 13.10    | 17.11 | -37.85        | -13.00           | -24.85          | V        |
| 7639.54                                                               | -32.52         | 11.50    | 22.20 | -43.22        | -13.00           | -30.22          | V        |



| NB-IoT Band 4 / QPSK / 3.75KHz /1@0/ The Worst Test Results for Lowest  |                     |          |       |               |                  |                 |          |
|-------------------------------------------------------------------------|---------------------|----------|-------|---------------|------------------|-----------------|----------|
| Frequency(MHz)                                                          | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3420.27                                                                 | -33.95              | 12.90    | 12.56 | -33.61        | -13.00           | -20.61          | H        |
| 5130.12                                                                 | -34.78              | 13.10    | 16.32 | -38.00        | -13.00           | -25.00          | H        |
| 6840.21                                                                 | -32.21              | 12.33    | 21.13 | -41.01        | -13.00           | -28.01          | H        |
| 3420.27                                                                 | -35.57              | 12.90    | 12.56 | -35.23        | -13.00           | -22.23          | V        |
| 5130.12                                                                 | -34.36              | 13.10    | 16.32 | -37.58        | -13.00           | -24.58          | V        |
| 6840.21                                                                 | -31.90              | 12.33    | 21.13 | -40.70        | -13.00           | -27.70          | V        |
| NB-IoT Band 4 / QPSK / 3.75KHz /1@0/ The Worst Test Results for Middle  |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                          | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3495.19                                                                 | -34.73              | 12.90    | 12.56 | -34.39        | -13.00           | -21.39          | H        |
| 5242.41                                                                 | -34.23              | 13.10    | 16.32 | -37.45        | -13.00           | -24.45          | H        |
| 6989.99                                                                 | -32.97              | 12.33    | 21.13 | -41.77        | -13.00           | -28.77          | H        |
| 3495.19                                                                 | -35.16              | 12.90    | 12.56 | -34.82        | -13.00           | -21.82          | V        |
| 5242.41                                                                 | -34.52              | 13.10    | 16.32 | -37.74        | -13.00           | -24.74          | V        |
| 6989.99                                                                 | -32.36              | 12.33    | 21.13 | -41.16        | -13.00           | -28.16          | V        |
| NB-IoT Band 4 / QPSK / 3.75KHz /1@0/ The Worst Test Results for Highest |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                          | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3510.04                                                                 | -33.64              | 12.90    | 12.56 | -33.30        | -13.00           | -20.30          | H        |
| 5764.79                                                                 | -34.33              | 13.10    | 16.32 | -37.55        | -13.00           | -24.55          | H        |
| 7019.89                                                                 | -32.73              | 12.33    | 21.13 | -41.53        | -13.00           | -28.53          | H        |
| 3510.04                                                                 | -35.56              | 12.90    | 12.56 | -35.22        | -13.00           | -22.22          | V        |
| 5764.79                                                                 | -34.28              | 13.10    | 16.32 | -37.50        | -13.00           | -24.50          | V        |
| 7019.89                                                                 | -31.98              | 12.33    | 21.13 | -40.78        | -13.00           | -27.78          | V        |





| NB-IoT Band 4 / BPSK / 3.75KHz /1@0/ The Worst Test Results for Lowest  |                     |          |       |               |                  |                 |          |
|-------------------------------------------------------------------------|---------------------|----------|-------|---------------|------------------|-----------------|----------|
| Frequency(MHz)                                                          | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3420.23                                                                 | -33.48              | 12.90    | 12.56 | -33.14        | -13.00           | -20.14          | H        |
| 5130.44                                                                 | -34.21              | 13.10    | 16.32 | -37.43        | -13.00           | -24.43          | H        |
| 6840.61                                                                 | -33.37              | 12.33    | 21.13 | -42.17        | -13.00           | -29.17          | H        |
| 3420.23                                                                 | -35.84              | 12.90    | 12.56 | -35.50        | -13.00           | -22.50          | V        |
| 5130.44                                                                 | -35.07              | 13.10    | 16.32 | -38.29        | -13.00           | -25.29          | V        |
| 6840.61                                                                 | -31.84              | 12.33    | 21.13 | -40.64        | -13.00           | -27.64          | V        |
| NB-IoT Band 4 / BPSK / 3.75KHz /1@0/ The Worst Test Results for Middle  |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                          | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3494.94                                                                 | -33.97              | 12.90    | 12.56 | -33.63        | -13.00           | -20.63          | H        |
| 5242.34                                                                 | -35.43              | 13.10    | 16.32 | -38.65        | -13.00           | -25.65          | H        |
| 6990.02                                                                 | -33.55              | 12.33    | 21.13 | -42.35        | -13.00           | -29.35          | H        |
| 3494.94                                                                 | -34.82              | 12.90    | 12.56 | -34.48        | -13.00           | -21.48          | V        |
| 5242.34                                                                 | -34.62              | 13.10    | 16.32 | -37.84        | -13.00           | -24.84          | V        |
| 6990.02                                                                 | -32.65              | 12.33    | 21.13 | -41.45        | -13.00           | -28.45          | V        |
| NB-IoT Band 4 / BPSK / 3.75KHz /1@0/ The Worst Test Results for Highest |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                          | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3510.06                                                                 | -34.12              | 12.90    | 12.56 | -33.78        | -13.00           | -20.78          | H        |
| 5764.87                                                                 | -34.13              | 13.10    | 16.32 | -37.35        | -13.00           | -24.35          | H        |
| 7019.97                                                                 | -32.95              | 12.33    | 21.13 | -41.75        | -13.00           | -28.75          | H        |
| 3510.06                                                                 | -34.74              | 12.90    | 12.56 | -34.40        | -13.00           | -21.40          | V        |
| 5764.87                                                                 | -34.07              | 13.10    | 16.32 | -37.29        | -13.00           | -24.29          | V        |
| 7019.97                                                                 | -32.19              | 12.33    | 21.13 | -40.99        | -13.00           | -27.99          | V        |





| NB-IoT Band 4 / QPSK / 15KHz /1@0/ The Worst Test Results for Lowest  |                     |          |       |               |                  |                 |          |
|-----------------------------------------------------------------------|---------------------|----------|-------|---------------|------------------|-----------------|----------|
| Frequency(MHz)                                                        | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3420.32                                                               | -34.04              | 12.90    | 12.56 | -33.70        | -13.00           | -20.70          | H        |
| 5130.10                                                               | -35.31              | 13.10    | 16.32 | -38.53        | -13.00           | -25.53          | H        |
| 6840.19                                                               | -33.23              | 12.33    | 21.13 | -42.03        | -13.00           | -29.03          | H        |
| 3420.32                                                               | -35.82              | 12.90    | 12.56 | -35.48        | -13.00           | -22.48          | V        |
| 5130.10                                                               | -34.59              | 13.10    | 16.32 | -37.81        | -13.00           | -24.81          | V        |
| 6840.19                                                               | -31.86              | 12.33    | 21.13 | -40.66        | -13.00           | -27.66          | V        |
| NB-IoT Band 4 / QPSK / 15KHz /1@0/ The Worst Test Results for Middle  |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                        | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3495.26                                                               | -34.61              | 12.90    | 12.56 | -34.27        | -13.00           | -21.27          | H        |
| 5242.47                                                               | -34.75              | 13.10    | 16.32 | -37.97        | -13.00           | -24.97          | H        |
| 6990.04                                                               | -32.29              | 12.33    | 21.13 | -41.09        | -13.00           | -28.09          | H        |
| 3495.26                                                               | -35.48              | 12.90    | 12.56 | -35.14        | -13.00           | -22.14          | V        |
| 5242.47                                                               | -34.59              | 13.10    | 16.32 | -37.81        | -13.00           | -24.81          | V        |
| 6990.04                                                               | -32.66              | 12.33    | 21.13 | -41.46        | -13.00           | -28.46          | V        |
| NB-IoT Band 4 / QPSK / 15KHz /1@0/ The Worst Test Results for Highest |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                        | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3509.85                                                               | -34.48              | 12.90    | 12.56 | -34.14        | -13.00           | -21.14          | H        |
| 5765.21                                                               | -34.53              | 13.10    | 16.32 | -37.75        | -13.00           | -24.75          | H        |
| 7019.83                                                               | -33.07              | 12.33    | 21.13 | -41.87        | -13.00           | -28.87          | H        |
| 3509.85                                                               | -35.18              | 12.90    | 12.56 | -34.84        | -13.00           | -21.84          | V        |
| 5765.21                                                               | -34.69              | 13.10    | 16.32 | -37.91        | -13.00           | -24.91          | V        |
| 7019.83                                                               | -31.73              | 12.33    | 21.13 | -40.53        | -13.00           | -27.53          | V        |



| NB-IoT Band 4 / BPSK / 15KHz /1@0/ The Worst Test Results for Lowest  |                     |          |       |               |                  |                 |          |
|-----------------------------------------------------------------------|---------------------|----------|-------|---------------|------------------|-----------------|----------|
| Frequency(MHz)                                                        | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3420.05                                                               | -34.10              | 12.90    | 12.56 | -33.76        | -13.00           | -20.76          | H        |
| 5130.21                                                               | -34.15              | 13.10    | 16.32 | -37.37        | -13.00           | -24.37          | H        |
| 6840.13                                                               | -32.68              | 12.33    | 21.13 | -41.48        | -13.00           | -28.48          | H        |
| 3420.05                                                               | -35.68              | 12.90    | 12.56 | -35.34        | -13.00           | -22.34          | V        |
| 5130.21                                                               | -34.95              | 13.10    | 16.32 | -38.17        | -13.00           | -25.17          | V        |
| 6840.13                                                               | -31.88              | 12.33    | 21.13 | -40.68        | -13.00           | -27.68          | V        |
| NB-IoT Band 4 / BPSK / 15KHz /1@0/ The Worst Test Results for Middle  |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                        | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3495.06                                                               | -33.55              | 12.90    | 12.56 | -33.21        | -13.00           | -20.21          | H        |
| 5242.50                                                               | -34.84              | 13.10    | 16.32 | -38.06        | -13.00           | -25.06          | H        |
| 6989.99                                                               | -32.46              | 12.33    | 21.13 | -41.26        | -13.00           | -28.26          | H        |
| 3495.06                                                               | -35.45              | 12.90    | 12.56 | -35.11        | -13.00           | -22.11          | V        |
| 5242.50                                                               | -34.89              | 13.10    | 16.32 | -38.11        | -13.00           | -25.11          | V        |
| 6989.99                                                               | -32.85              | 12.33    | 21.13 | -41.65        | -13.00           | -28.65          | V        |
| NB-IoT Band 4 / BPSK / 15KHz /1@0/ The Worst Test Results for Highest |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                        | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 3509.77                                                               | -34.53              | 12.90    | 12.56 | -34.19        | -13.00           | -21.19          | H        |
| 5764.75                                                               | -34.17              | 13.10    | 16.32 | -37.39        | -13.00           | -24.39          | H        |
| 7019.79                                                               | -32.89              | 12.33    | 21.13 | -41.69        | -13.00           | -28.69          | H        |
| 3509.77                                                               | -34.94              | 12.90    | 12.56 | -34.60        | -13.00           | -21.60          | V        |
| 5764.75                                                               | -34.79              | 13.10    | 16.32 | -38.01        | -13.00           | -25.01          | V        |
| 7019.79                                                               | -33.06              | 12.33    | 21.13 | -41.86        | -13.00           | -28.86          | V        |



| NB-IoT Band 5 / QPSK / 3.75KHz /1@0/ The Worst Test Results for Lowest  |                     |          |       |               |                  |                 |          |
|-------------------------------------------------------------------------|---------------------|----------|-------|---------------|------------------|-----------------|----------|
| Frequency(MHz)                                                          | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1648.03                                                                 | -34.23              | 9.56     | 9.72  | -34.39        | -13.00           | -21.39          | H        |
| 2472.14                                                                 | -34.41              | 10.50    | 10.86 | -34.77        | -13.00           | -21.77          | H        |
| 3296.68                                                                 | -32.88              | 12.78    | 11.57 | -31.67        | -13.00           | -18.67          | H        |
| 1648.03                                                                 | -34.84              | 9.56     | 9.72  | -35.00        | -13.00           | -22.00          | V        |
| 2472.14                                                                 | -35.20              | 10.50    | 10.86 | -35.56        | -13.00           | -22.56          | V        |
| 3296.68                                                                 | -32.85              | 12.78    | 11.57 | -31.64        | -13.00           | -18.64          | V        |
| NB-IoT Band 5 / QPSK / 3.75KHz /1@0/ The Worst Test Results for Middle  |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                          | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1673.18                                                                 | -33.83              | 9.56     | 9.72  | -33.99        | -13.00           | -20.99          | H        |
| 2509.25                                                                 | -35.22              | 10.50    | 10.86 | -35.58        | -13.00           | -22.58          | H        |
| 3345.79                                                                 | -33.35              | 12.78    | 11.57 | -32.14        | -13.00           | -19.14          | H        |
| 1673.18                                                                 | -35.60              | 9.56     | 9.72  | -35.76        | -13.00           | -22.76          | V        |
| 2509.25                                                                 | -34.94              | 10.50    | 10.86 | -35.30        | -13.00           | -22.30          | V        |
| 3345.79                                                                 | -31.84              | 12.78    | 11.57 | -30.63        | -13.00           | -17.63          | V        |
| NB-IoT Band 5 / QPSK / 3.75KHz /1@0/ The Worst Test Results for Highest |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                          | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1697.62                                                                 | -34.78              | 9.56     | 9.72  | -34.94        | -13.00           | -21.94          | H        |
| 2546.84                                                                 | -35.26              | 10.50    | 10.86 | -35.62        | -13.00           | -22.62          | H        |
| 3395.39                                                                 | -33.45              | 12.78    | 11.57 | -32.24        | -13.00           | -19.24          | H        |
| 1697.62                                                                 | -35.48              | 9.56     | 9.72  | -35.64        | -13.00           | -22.64          | V        |
| 2546.84                                                                 | -34.48              | 10.50    | 10.86 | -34.84        | -13.00           | -21.84          | V        |
| 3395.39                                                                 | -32.26              | 12.78    | 11.57 | -31.05        | -13.00           | -18.05          | V        |



| NB-IoT Band 5 / BPSK / 3.75KHz /1@0/ The Worst Test Results for Lowest  |                     |          |       |               |                  |                 |          |
|-------------------------------------------------------------------------|---------------------|----------|-------|---------------|------------------|-----------------|----------|
| Frequency(MHz)                                                          | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1647.96                                                                 | -34.46              | 9.56     | 9.72  | -34.62        | -13.00           | -21.62          | H        |
| 2471.99                                                                 | -34.92              | 10.50    | 10.86 | -35.28        | -13.00           | -22.28          | H        |
| 3296.53                                                                 | -32.94              | 12.78    | 11.57 | -31.73        | -13.00           | -18.73          | H        |
| 1647.96                                                                 | -34.63              | 9.56     | 9.72  | -34.79        | -13.00           | -21.79          | V        |
| 2471.99                                                                 | -35.15              | 10.50    | 10.86 | -35.51        | -13.00           | -22.51          | V        |
| 3296.53                                                                 | -32.83              | 12.78    | 11.57 | -31.62        | -13.00           | -18.62          | V        |
| NB-IoT Band 5 / BPSK / 3.75KHz /1@0/ The Worst Test Results for Middle  |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                          | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1673.07                                                                 | -34.55              | 9.56     | 9.72  | -34.71        | -13.00           | -21.71          | H        |
| 2509.43                                                                 | -34.77              | 10.50    | 10.86 | -35.13        | -13.00           | -22.13          | H        |
| 3346.17                                                                 | -32.36              | 12.78    | 11.57 | -31.15        | -13.00           | -18.15          | H        |
| 1673.07                                                                 | -34.99              | 9.56     | 9.72  | -35.15        | -13.00           | -22.15          | V        |
| 2509.43                                                                 | -34.98              | 10.50    | 10.86 | -35.34        | -13.00           | -22.34          | V        |
| 3346.17                                                                 | -33.01              | 12.78    | 11.57 | -31.80        | -13.00           | -18.80          | V        |
| NB-IoT Band 5 / BPSK / 3.75KHz /1@0/ The Worst Test Results for Highest |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                          | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1697.60                                                                 | -33.59              | 9.56     | 9.72  | -33.75        | -13.00           | -20.75          | H        |
| 2546.85                                                                 | -35.13              | 10.50    | 10.86 | -35.49        | -13.00           | -22.49          | H        |
| 3395.61                                                                 | -33.00              | 12.78    | 11.57 | -31.79        | -13.00           | -18.79          | H        |
| 1697.60                                                                 | -34.56              | 9.56     | 9.72  | -34.72        | -13.00           | -21.72          | V        |
| 2546.85                                                                 | -34.28              | 10.50    | 10.86 | -34.64        | -13.00           | -21.64          | V        |
| 3395.61                                                                 | -31.76              | 12.78    | 11.57 | -30.55        | -13.00           | -17.55          | V        |



| NB-IoT Band 5 / QPSK / 15KHz /1@0/ The Worst Test Results for Lowest  |                     |          |       |               |                  |                 |          |
|-----------------------------------------------------------------------|---------------------|----------|-------|---------------|------------------|-----------------|----------|
| Frequency(MHz)                                                        | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1647.94                                                               | -33.71              | 9.56     | 9.72  | -33.87        | -13.00           | -20.87          | H        |
| 2471.93                                                               | -34.61              | 10.50    | 10.86 | -34.97        | -13.00           | -21.97          | H        |
| 3296.28                                                               | -32.94              | 12.78    | 11.57 | -31.73        | -13.00           | -18.73          | H        |
| 1647.94                                                               | -35.60              | 9.56     | 9.72  | -35.76        | -13.00           | -22.76          | V        |
| 2471.93                                                               | -34.79              | 10.50    | 10.86 | -35.15        | -13.00           | -22.15          | V        |
| 3296.28                                                               | -32.45              | 12.78    | 11.57 | -31.24        | -13.00           | -18.24          | V        |
| NB-IoT Band 5 / QPSK / 15KHz /1@0/ The Worst Test Results for Middle  |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                        | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1672.76                                                               | -34.19              | 12.90    | 12.56 | -33.85        | -13.00           | -20.85          | H        |
| 2509.36                                                               | -34.40              | 13.10    | 16.32 | -37.62        | -13.00           | -24.62          | H        |
| 3346.23                                                               | -33.50              | 12.33    | 21.13 | -42.30        | -13.00           | -29.30          | H        |
| 1672.76                                                               | -35.70              | 12.90    | 12.56 | -35.36        | -13.00           | -22.36          | V        |
| 2509.36                                                               | -34.47              | 13.10    | 16.32 | -37.69        | -13.00           | -24.69          | V        |
| 3346.23                                                               | -32.65              | 12.33    | 21.13 | -41.45        | -13.00           | -28.45          | V        |
| NB-IoT Band 5 / QPSK / 15KHz /1@0/ The Worst Test Results for Highest |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                        | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1697.65                                                               | -34.13              | 9.56     | 9.72  | -34.29        | -13.00           | -21.29          | H        |
| 2546.67                                                               | -34.17              | 10.50    | 10.86 | -34.53        | -13.00           | -21.53          | H        |
| 3395.63                                                               | -32.73              | 12.78    | 11.57 | -31.52        | -13.00           | -18.52          | H        |
| 1697.65                                                               | -35.69              | 9.56     | 9.72  | -35.85        | -13.00           | -22.85          | V        |
| 2546.67                                                               | -34.99              | 10.50    | 10.86 | -35.35        | -13.00           | -22.35          | V        |
| 3395.63                                                               | -31.84              | 12.78    | 11.57 | -30.63        | -13.00           | -17.63          | V        |



| NB-IoT Band 5 / BPSK / 15KHz /1@0/ The Worst Test Results for Lowest  |                     |          |       |               |                  |                 |          |
|-----------------------------------------------------------------------|---------------------|----------|-------|---------------|------------------|-----------------|----------|
| Frequency(MHz)                                                        | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1648.38                                                               | -34.60              | 9.56     | 9.72  | -34.76        | -13.00           | -21.76          | H        |
| 2472.14                                                               | -34.74              | 10.50    | 10.86 | -35.10        | -13.00           | -22.10          | H        |
| 3296.38                                                               | -33.08              | 12.78    | 11.57 | -31.87        | -13.00           | -18.87          | H        |
| 1648.38                                                               | -34.76              | 9.56     | 9.72  | -34.92        | -13.00           | -21.92          | V        |
| 2472.14                                                               | -34.14              | 10.50    | 10.86 | -34.50        | -13.00           | -21.50          | V        |
| 3296.38                                                               | -32.67              | 12.78    | 11.57 | -31.46        | -13.00           | -18.46          | V        |
| NB-IoT Band 5 / BPSK / 15KHz /1@0/ The Worst Test Results for Middle  |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                        | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1673.07                                                               | -33.94              | 9.56     | 9.72  | -34.10        | -13.00           | -21.10          | H        |
| 2509.59                                                               | -34.27              | 10.50    | 10.86 | -34.63        | -13.00           | -21.63          | H        |
| 3345.78                                                               | -32.69              | 12.78    | 11.57 | -31.48        | -13.00           | -18.48          | H        |
| 1673.07                                                               | -35.23              | 9.56     | 9.72  | -35.39        | -13.00           | -22.39          | V        |
| 2509.59                                                               | -34.79              | 10.50    | 10.86 | -35.15        | -13.00           | -22.15          | V        |
| 3345.78                                                               | -32.42              | 12.78    | 11.57 | -31.21        | -13.00           | -18.21          | V        |
| NB-IoT Band 5 / BPSK / 15KHz /1@0/ The Worst Test Results for Highest |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                        | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1697.96                                                               | -33.69              | 9.56     | 9.72  | -33.85        | -13.00           | -20.85          | H        |
| 2546.64                                                               | -35.03              | 10.50    | 10.86 | -35.39        | -13.00           | -22.39          | H        |
| 3395.78                                                               | -33.62              | 12.78    | 11.57 | -32.41        | -13.00           | -19.41          | H        |
| 1697.96                                                               | -34.63              | 9.56     | 9.72  | -34.79        | -13.00           | -21.79          | V        |
| 2546.64                                                               | -34.98              | 10.50    | 10.86 | -35.34        | -13.00           | -22.34          | V        |
| 3395.78                                                               | -32.83              | 12.78    | 11.57 | -31.62        | -13.00           | -18.62          | V        |



| NB-IoT Band 12 / QPSK / 3.75KHz /1@0/ The Worst Test Results for Lowest  |                     |          |       |               |                  |                 |          |
|--------------------------------------------------------------------------|---------------------|----------|-------|---------------|------------------|-----------------|----------|
| Frequency(MHz)                                                           | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1398.22                                                                  | -33.73              | 8.17     | 9.34  | -34.90        | -13.00           | -21.90          | H        |
| 2097.04                                                                  | -34.68              | 9.53     | 10.42 | -35.57        | -13.00           | -22.57          | H        |
| 2796.16                                                                  | -32.94              | 11.27    | 11.12 | -32.79        | -13.00           | -19.79          | H        |
| 1398.22                                                                  | -34.77              | 8.17     | 9.34  | -35.94        | -13.00           | -22.94          | V        |
| 2097.04                                                                  | -34.14              | 9.53     | 10.42 | -35.03        | -13.00           | -22.03          | V        |
| 2796.16                                                                  | -32.27              | 11.27    | 11.12 | -32.12        | -13.00           | -19.12          | V        |
| NB-IoT Band 12 / QPSK / 3.75KHz /1@0/ The Worst Test Results for Middle  |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                           | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1414.95                                                                  | -34.59              | 8.17     | 9.34  | -35.76        | -13.00           | -22.76          | H        |
| 2122.36                                                                  | -34.55              | 9.53     | 10.42 | -35.44        | -13.00           | -22.44          | H        |
| 2830.04                                                                  | -32.86              | 11.27    | 11.12 | -32.71        | -13.00           | -19.71          | H        |
| 1414.95                                                                  | -35.39              | 8.17     | 9.34  | -36.56        | -13.00           | -23.56          | V        |
| 2122.36                                                                  | -34.30              | 9.53     | 10.42 | -35.19        | -13.00           | -22.19          | V        |
| 2830.04                                                                  | -31.85              | 11.27    | 11.12 | -31.70        | -13.00           | -18.70          | V        |
| NB-IoT Band 12 / QPSK / 3.75KHz /1@0/ The Worst Test Results for Highest |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                           | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1431.56                                                                  | -34.30              | 8.17     | 9.34  | -35.47        | -13.00           | -22.47          | H        |
| 2147.60                                                                  | -35.02              | 9.53     | 10.42 | -35.91        | -13.00           | -22.91          | H        |
| 2863.72                                                                  | -33.08              | 11.27    | 11.12 | -32.93        | -13.00           | -19.93          | H        |
| 1431.56                                                                  | -34.77              | 8.17     | 9.34  | -35.94        | -13.00           | -22.94          | V        |
| 2147.60                                                                  | -34.84              | 9.53     | 10.42 | -35.73        | -13.00           | -22.73          | V        |
| 2863.72                                                                  | -32.64              | 11.27    | 11.12 | -32.49        | -13.00           | -19.49          | V        |





| NB-IoT Band 12 / BPSK / 3.75KHz /1@0/ The Worst Test Results for Lowest  |                     |          |       |               |                  |                 |          |
|--------------------------------------------------------------------------|---------------------|----------|-------|---------------|------------------|-----------------|----------|
| Frequency(MHz)                                                           | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1398.31                                                                  | -33.68              | 8.17     | 9.34  | -34.85        | -13.00           | -21.85          | H        |
| 2097.36                                                                  | -35.25              | 9.53     | 10.42 | -36.14        | -13.00           | -23.14          | H        |
| 2796.38                                                                  | -33.29              | 11.27    | 11.12 | -33.14        | -13.00           | -20.14          | H        |
| 1398.31                                                                  | -35.42              | 8.17     | 9.34  | -36.59        | -13.00           | -23.59          | V        |
| 2097.36                                                                  | -34.58              | 9.53     | 10.42 | -35.47        | -13.00           | -22.47          | V        |
| 2796.38                                                                  | -32.68              | 11.27    | 11.12 | -32.53        | -13.00           | -19.53          | V        |
| NB-IoT Band 12 / BPSK / 3.75KHz /1@0/ The Worst Test Results for Middle  |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                           | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1415.00                                                                  | -34.72              | 8.17     | 9.34  | -35.89        | -13.00           | -22.89          | H        |
| 2122.29                                                                  | -34.49              | 9.53     | 10.42 | -35.38        | -13.00           | -22.38          | H        |
| 2829.93                                                                  | -33.13              | 11.27    | 11.12 | -32.98        | -13.00           | -19.98          | H        |
| 1415.00                                                                  | -34.66              | 8.17     | 9.34  | -35.83        | -13.00           | -22.83          | V        |
| 2122.29                                                                  | -34.79              | 9.53     | 10.42 | -35.68        | -13.00           | -22.68          | V        |
| 2829.93                                                                  | -32.26              | 11.27    | 11.12 | -32.11        | -13.00           | -19.11          | V        |
| NB-IoT Band 12 / BPSK / 3.75KHz /1@0/ The Worst Test Results for Highest |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                           | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1431.95                                                                  | -33.96              | 8.17     | 9.34  | -35.13        | -13.00           | -22.13          | H        |
| 2147.67                                                                  | -34.61              | 9.53     | 10.42 | -35.50        | -13.00           | -22.50          | H        |
| 2863.57                                                                  | -32.65              | 11.27    | 11.12 | -32.50        | -13.00           | -19.50          | H        |
| 1431.95                                                                  | -35.12              | 8.17     | 9.34  | -36.29        | -13.00           | -23.29          | V        |
| 2147.67                                                                  | -33.96              | 9.53     | 10.42 | -34.85        | -13.00           | -21.85          | V        |
| 2863.57                                                                  | -32.02              | 11.27    | 11.12 | -31.87        | -13.00           | -18.87          | V        |



| NB-IoT Band 12 / QPSK / 15KHz /1@0/ The Worst Test Results for Lowest  |                     |          |       |               |                  |                 |          |
|------------------------------------------------------------------------|---------------------|----------|-------|---------------|------------------|-----------------|----------|
| Frequency(MHz)                                                         | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1398.12                                                                | -34.44              | 8.17     | 9.34  | -35.61        | -13.00           | -22.61          | H        |
| 2097.05                                                                | -34.60              | 9.53     | 10.42 | -35.49        | -13.00           | -22.49          | H        |
| 2796.46                                                                | -32.82              | 11.27    | 11.12 | -32.67        | -13.00           | -19.67          | H        |
| 1398.12                                                                | -34.73              | 8.17     | 9.34  | -35.90        | -13.00           | -22.90          | V        |
| 2097.05                                                                | -34.96              | 9.53     | 10.42 | -35.85        | -13.00           | -22.85          | V        |
| 2796.46                                                                | -32.41              | 11.27    | 11.12 | -32.26        | -13.00           | -19.26          | V        |
| NB-IoT Band 12 / QPSK / 15KHz /1@0/ The Worst Test Results for Middle  |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                         | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1414.96                                                                | -33.52              | 8.17     | 9.34  | -34.69        | -13.00           | -21.69          | H        |
| 2122.48                                                                | -35.09              | 9.53     | 10.42 | -35.98        | -13.00           | -22.98          | H        |
| 2829.92                                                                | -32.98              | 11.27    | 11.12 | -32.83        | -13.00           | -19.83          | H        |
| 1414.96                                                                | -34.82              | 8.17     | 9.34  | -35.99        | -13.00           | -22.99          | V        |
| 2122.48                                                                | -33.95              | 9.53     | 10.42 | -34.84        | -13.00           | -21.84          | V        |
| 2829.92                                                                | -32.82              | 11.27    | 11.12 | -32.67        | -13.00           | -19.67          | V        |
| NB-IoT Band 12 / QPSK / 15KHz /1@0/ The Worst Test Results for Highest |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                         | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1431.96                                                                | -33.47              | 8.17     | 9.34  | -34.64        | -13.00           | -21.64          | H        |
| 2147.74                                                                | -35.02              | 9.53     | 10.42 | -35.91        | -13.00           | -22.91          | H        |
| 2863.39                                                                | -32.39              | 11.27    | 11.12 | -32.24        | -13.00           | -19.24          | H        |
| 1431.96                                                                | -35.10              | 8.17     | 9.34  | -36.27        | -13.00           | -23.27          | V        |
| 2147.74                                                                | -35.00              | 9.53     | 10.42 | -35.89        | -13.00           | -22.89          | V        |
| 2863.39                                                                | -32.92              | 11.27    | 11.12 | -32.77        | -13.00           | -19.77          | V        |



| NB-IoT Band 12 / BPSK / 15KHz /1@0/ The Worst Test Results for Lowest  |                     |          |       |               |                  |                 |          |
|------------------------------------------------------------------------|---------------------|----------|-------|---------------|------------------|-----------------|----------|
| Frequency(MHz)                                                         | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1397.94                                                                | -34.42              | 8.17     | 9.34  | -35.59        | -13.00           | -22.59          | H        |
| 2097.35                                                                | -34.96              | 9.53     | 10.42 | -35.85        | -13.00           | -22.85          | H        |
| 2796.34                                                                | -32.35              | 11.27    | 11.12 | -32.20        | -13.00           | -19.20          | H        |
| 1397.94                                                                | -34.54              | 8.17     | 9.34  | -35.71        | -13.00           | -22.71          | V        |
| 2097.35                                                                | -35.02              | 9.53     | 10.42 | -35.91        | -13.00           | -22.91          | V        |
| 2796.34                                                                | -31.89              | 11.27    | 11.12 | -31.74        | -13.00           | -18.74          | V        |
| NB-IoT Band 12 / BPSK / 15KHz /1@0/ The Worst Test Results for Middle  |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                         | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1415.15                                                                | -34.18              | 8.17     | 9.34  | -35.35        | -13.00           | -22.35          | H        |
| 2122.58                                                                | -35.00              | 9.53     | 10.42 | -35.89        | -13.00           | -22.89          | H        |
| 2830.07                                                                | -33.64              | 11.27    | 11.12 | -33.49        | -13.00           | -20.49          | H        |
| 1415.15                                                                | -35.66              | 8.17     | 9.34  | -36.83        | -13.00           | -23.83          | V        |
| 2122.58                                                                | -33.82              | 9.53     | 10.42 | -34.71        | -13.00           | -21.71          | V        |
| 2830.07                                                                | -32.65              | 11.27    | 11.12 | -32.50        | -13.00           | -19.50          | V        |
| NB-IoT Band 12 / BPSK / 15KHz /1@0/ The Worst Test Results for Highest |                     |          |       |               |                  |                 |          |
| Frequency(MHz)                                                         | S<br>G.Lev<br>(dBm) | Ant(dBi) | Loss  | PMea<br>(dBm) | Limit<br>( dBm ) | Margin<br>(dBm) | Polarity |
| 1431.66                                                                | -34.59              | 8.17     | 9.34  | -35.76        | -13.00           | -22.76          | H        |
| 2147.81                                                                | -34.23              | 9.53     | 10.42 | -35.12        | -13.00           | -22.12          | H        |
| 2863.49                                                                | -33.11              | 11.27    | 11.12 | -32.96        | -13.00           | -19.96          | H        |
| 1431.66                                                                | -35.21              | 8.17     | 9.34  | -36.38        | -13.00           | -23.38          | V        |
| 2147.81                                                                | -34.40              | 9.53     | 10.42 | -35.29        | -13.00           | -22.29          | V        |
| 2863.49                                                                | -32.39              | 11.27    | 11.12 | -32.24        | -13.00           | -19.24          | V        |