

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.

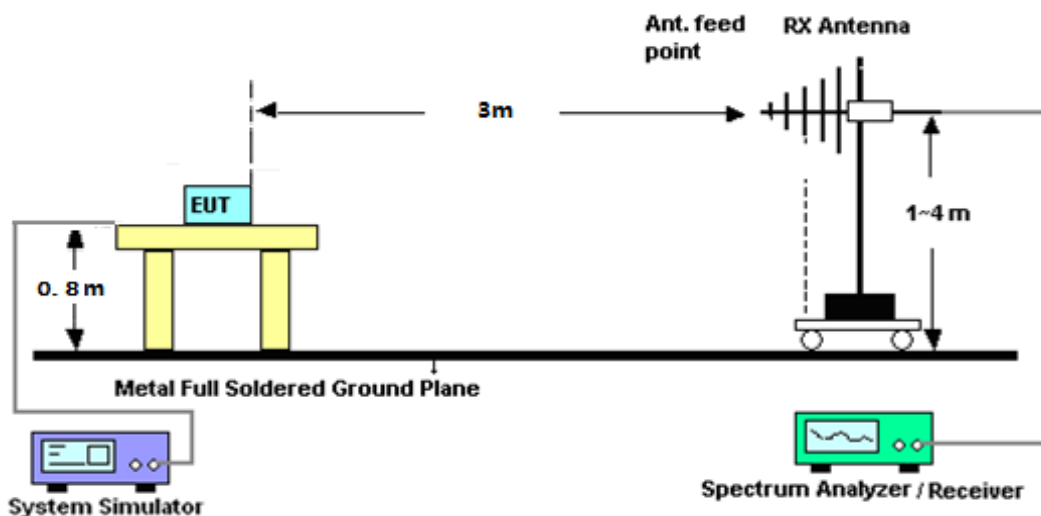
b) EUT was placed on 1.5 m non-conductive stand at a 3 m test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 m from the test item for emission measurements. The height of receiving antenna is 0.8m. The test setup refers to figure below. Detected emissions were 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.

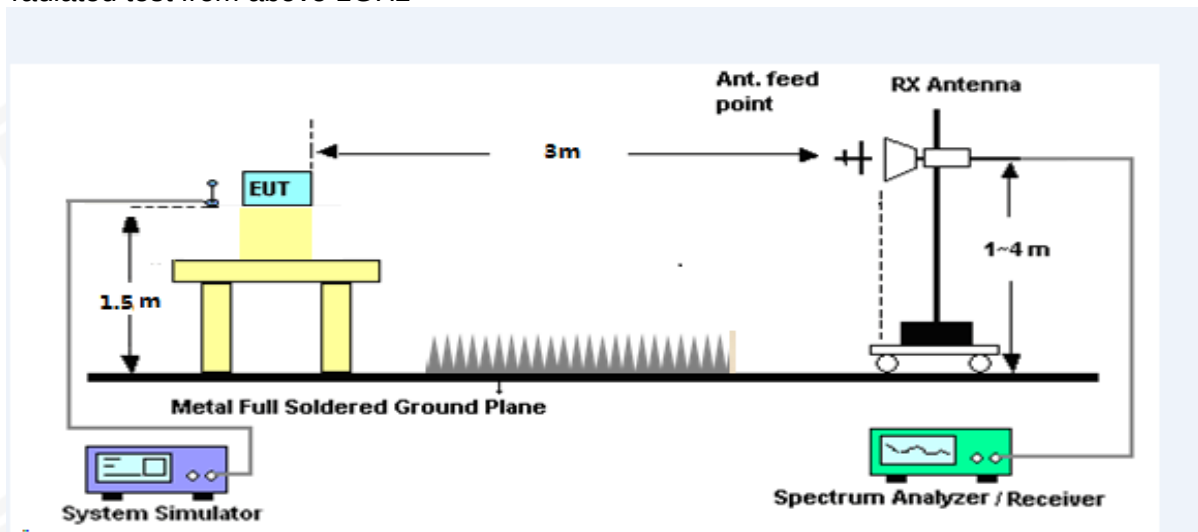
The substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established and the ARpl is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable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

Power = P_{Mea} + AR_{pl}

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

For Band 7:

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

$\text{EIRP (dBm)} = \text{S.G. Power} - \text{Tx Cable Loss} + \text{Tx Antenna Gain}$

$\text{ERP (dBm)} = \text{EIRP} - 2.15$



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 (dBm)	Limit (dBm)	Margin (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 (dBm)	Limit (dBm)	Margin (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 (dBm)	Limit (dBm)	Margin (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 (dBm)	Limit (dBm)	Margin (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 (dBm)	Limit (dBm)	Margin (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 (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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 G.Lev (dBm)	Ant(dBi)	Loss	PMea (dBm)	Limit (dBm)	Margin (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