

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 22
47 CFR FCC Part 24
47 CFR FCC Part 27
47 CFR FCC Part 90
47 CFR FCC Part 2

Report No.: RFBCKS-WTW-P25020597-1

FCC ID: NKR-DLSAWI13WW

Product: WNC LPWA Module

Brand: WNC

Model No.: DLSA-WI13-WW

Received Date: 2025/2/21

Test Date: 2025/2/26 ~ 2025/4/7

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Designation Number (1): 788550 / TW0003

FCC Registration /

Designation Number (2): 281270 / TW0032

Approved by:

Jeremy Lin

Date:

2025/7/21

Jeremy Lin / Project Engineer

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Prepared by : Gina Liu / Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFBCKS-WTW-P25020597-1	Original release.	2025/7/21

1 Certificate

Product: WNC LPWA Module
Brand: WNC
Test Model: DLSA-WI13-WW
Sample Status: Engineering sample
Applicant: WNC Corporation
Test Date: 2025/2/26 ~ 2025/4/7
Standard: 47 CFR FCC Part 22
47 CFR FCC Part 24
47 CFR FCC Part 27
47 CFR FCC Part 90
47 CFR FCC Part 2
Measurement procedure: ANSI/TIA/EIA-603-E 2016
ANSI C63.26-2015
KDB 971168 D01 Power Meas License Digital Systems v03r01
KDB 971168 D02 Misc Rev Approv License Devices v02r02

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

47 CFR FCC Part 22 47 CFR FCC Part 24 47 CFR FCC Part 27 47 CFR FCC Part 90 47 CFR FCC Part 2			
Standard / Clause	Test Item	Result	Remark
FCC 47 CFR Part 2.1046 FCC 47 CFR Part 22.913 (a) FCC 47 CFR Part 24.232 (c) FCC 47 CFR Part 27.50(d) FCC 47 CFR Part 27.50(c) FCC 47 CFR Part 27.50(b) FCC 47 CFR Part 27.1507 FCC 47 CFR Part 90.635(b) FCC 47 CFR Part 90.542(a)	Effective Radiated Power and Equivalent Isotropically Radiated Power	Pass	Meet the requirement of limit.
FCC 47 CFR Part 2.1047	Modulation Characteristics	Pass	Meet the requirement of limit.
FCC 47 CFR Part 22.913 (d) FCC 47 CFR Part 24.232 (d) FCC 47 CFR Part 27.50(d)	Peak to Average Ratio	Pass	Meet the requirement of limit.
FCC 47 CFR Part 2.1049	Bandwidth	Pass	Meet the requirement of limit.
FCC 47 CFR Part 2.1051 FCC 47 CFR Part 22.917 FCC 47 CFR Part 24.238 FCC 47 CFR Part 27.53(h) FCC 47 CFR Part 27.53(g) FCC 47 CFR Part 27.53(c)(f) FCC 47 CFR Part 27.1509 FCC 47 CFR Part 90.691 FCC 47 CFR Part 90.543(e)(f)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
FCC 47 CFR Part 2.1053 FCC 47 CFR Part 22.917 FCC 47 CFR Part 24.238 FCC 47 CFR Part 27.53(h) FCC 47 CFR Part 27.53(g) FCC 47 CFR Part 27.53(c)(f) FCC 47 CFR Part 27.1509 FCC 47 CFR Part 90.691 FCC 47 CFR Part 90.543(e)(f)	Radiated Spurious Emissions below 1GHz	Pass	Minimum passing margin is -36.27dB at 159.01 MHz
FCC 47 CFR Part 2.1053 FCC 47 CFR Part 22.917 FCC 47 CFR Part 24.238 FCC 47 CFR Part 27.53(h) FCC 47 CFR Part 27.53(g) FCC 47 CFR Part 27.53(c)(f) FCC 47 CFR Part 27.1509 FCC 47 CFR Part 90.691 FCC 47 CFR Part 90.543(e)(f)	Radiated Spurious Emissions above 1GHz	Pass	Minimum passing margin is -1.16 dB at 1420.00MHz

47 CFR FCC Part 22 47 CFR FCC Part 24 47 CFR FCC Part 27 47 CFR FCC Part 90 47 CFR FCC Part 2			
Standard / Clause	Test Item	Result	Remark
FCC 47 CFR Part 2.1055 FCC 47 CFR Part 22.355 FCC 47 CFR Part 24.235 FCC 47 CFR Part 27.54 FCC 47 CFR Part 90.213	Frequency Stability	Pass	Meet the requirement of limit.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Specification	Expanded Uncertainty (k=2) (±)
Effective Radiated Power and Equivalent Isotropically Radiated Power	-	1.371 dB
Peak to Average Ratio	-	0.920 dB
Bandwidth	-	960 Hz
Conducted Spurious Emissions	-	2.12 dB
Radiated Spurious Emissions below 1GHz	9 kHz ~ 30 MHz	2.44 dB
	30 MHz ~ 1 GHz	2.02 dB
Radiated Spurious Emissions above 1GHz	1 GHz ~ 18 GHz	1.01 dB
	18 GHz ~ 40 GHz	1.15 dB
Frequency Stability	-	0.176 ppm

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	WNC LPWA Module
Brand	WNC
Test Model	DL5A-WI13-WW
Status of EUT	Engineering sample
Power Supply Rating	3.8Vdc

Note:

1. EUT Overview

Band / Bandwidth	TX Frequency Range (MHz)	Max. EIRP Power		Emission Designator	
		BPSK	QPSK	3.75k	15k
Stand-alone					
NB-IoT Band 2	1850.2-1909.8	368.978 mW (25.67dBm)	367.282 mW (25.65dBm)	109KG7D	189KG7D
NB-IoT Band 4	1710.2-1754.8	365.595 mW (25.63dBm)	360.579 mW (25.57dBm)	107KG7D	189KG7D
NB-IoT Band 25	1850.2-1914.8	366.438 mW (25.64dBm)	362.243 mW (25.59dBm)	108KG7D	189KG7D
NB-IoT Band 66	1710.2-1779.5	378.443 mW (25.78dBm)	375.837 mW (25.75dBm)	109KG7D	190KG7D
In-Band					
NB-IoT Band 2 (Channel Bandwidth 3MHz)	1851.5-1908.5	358.922 mW (25.55dBm)	353.997 mW (25.49dBm)	-	-
NB-IoT Band 2 (Channel Bandwidth 5MHz)	1852.5-1907.5	354.813 mW (25.50dBm)	355.631 mW (25.51dBm)	-	-
NB-IoT Band 2 (Channel Bandwidth 10MHz)	1855.0-1905.0	363.915 mW (25.61dBm)	359.749 mW (25.56dBm)	-	-
NB-IoT Band 2 (Channel Bandwidth 15MHz)	1857.5-1902.5	361.410 mW (25.58dBm)	355.631 mW (25.51dBm)	-	-
NB-IoT Band 2 (Channel Bandwidth 20MHz)	1860.0-1900.0	363.078 mW (25.60dBm)	360.579 mW (25.57dBm)	-	-
NB-IoT Band 4 (Channel Bandwidth 3MHz)	1711.5-1753.5	355.631 mW (25.51dBm)	353.997 mW (25.49dBm)	-	-
NB-IoT Band 4 (Channel Bandwidth 5MHz)	1712.5-1752.5	353.183 mW (25.48dBm)	352.371 mW (25.47dBm)	-	-
NB-IoT Band 4 (Channel Bandwidth 10MHz)	1715.0-1750.0	358.096 mW (25.54dBm)	356.451 mW (25.52dBm)	-	-
NB-IoT Band 4 (Channel Bandwidth 15MHz)	1717.5-1747.5	358.096 mW (25.54dBm)	350.752 mW (25.45dBm)	-	-
NB-IoT Band 4 (Channel Bandwidth 20MHz)	1720.0-1745.0	353.183 mW (25.48dBm)	351.560 mW (25.46dBm)	-	-
NB-IoT Band 25 (Channel Bandwidth 3MHz)	1851.5-1913.5	356.451 mW (25.52dBm)	357.273 mW (25.53dBm)	-	-
NB-IoT Band 25 (Channel Bandwidth 5MHz)	1852.5-1912.5	356.451 mW (25.52dBm)	352.371 mW (25.47dBm)	-	-
NB-IoT Band 25 (Channel Bandwidth 10MHz)	1855.0-1910.0	357.273 mW (25.53dBm)	358.096 mW (25.54dBm)	-	-
NB-IoT Band 25 (Channel Bandwidth 15MHz)	1857.5-1907.5	362.243 mW (25.59dBm)	351.560 mW (25.46dBm)	-	-
NB-IoT Band 25 (Channel Bandwidth 20MHz)	1860.0-1905.0	361.410 mW (25.58dBm)	349.945 mW (25.44dBm)	-	-
NB-IoT Band 66 (Channel Bandwidth 3MHz)	1711.5-1778.5	370.681 mW (25.69dBm)	363.078 mW (25.60dBm)	-	-
NB-IoT Band 66 (Channel Bandwidth 5MHz)	1712.5-1777.5	374.111 mW (25.73dBm)	369.828 mW (25.68dBm)	-	-
NB-IoT Band 66 (Channel Bandwidth 10MHz)	1715.0-1775.0	373.250 mW (25.72dBm)	360.579 mW (25.57dBm)	-	-
NB-IoT Band 66 (Channel Bandwidth 15MHz)	1717.5-1772.5	363.915 mW (25.61dBm)	370.681 mW (25.69dBm)	-	-
NB-IoT Band 66 (Channel Bandwidth 20MHz)	1720.0-1770.0	370.681 mW (25.69dBm)	371.535 mW (25.70dBm)	-	-

Band / Bandwidth	TX Frequency Range (MHz)	Max. EIRP Power		Emission Designator	
		BPSK	QPSK	3.75k	15k
Guard-Band					
NB-IoT Band 2 (Channel Bandwidth 3MHz)	1851.5-1908.5	356.451 mW (25.52dBm)	357.273 mW (25.53dBm)	-	-
NB-IoT Band 2 (Channel Bandwidth 5MHz)	1852.5-1907.5	360.579 mW (25.57dBm)	356.451 mW (25.52dBm)	-	-
NB-IoT Band 2 (Channel Bandwidth 10MHz)	1855.0-1905.0	356.451 mW (25.52dBm)	356.451 mW (25.52dBm)	-	-
NB-IoT Band 2 (Channel Bandwidth 15MHz)	1857.5-1902.5	362.243 mW (25.59dBm)	353.997 mW (25.49dBm)	-	-
NB-IoT Band 2 (Channel Bandwidth 20MHz)	1860.0-1900.0	364.754 mW (25.62dBm)	353.183 mW (25.48dBm)	-	-
NB-IoT Band 4 (Channel Bandwidth 3MHz)	1711.5-1753.5	352.371 mW (25.47dBm)	351.560 mW (25.46dBm)	-	-
NB-IoT Band 4 (Channel Bandwidth 5MHz)	1712.5-1752.5	361.410 mW (25.58dBm)	354.813 mW (25.50dBm)	-	-
NB-IoT Band 4 (Channel Bandwidth 10MHz)	1715.0-1750.0	353.997 mW (25.49dBm)	354.813 mW (25.50dBm)	-	-
NB-IoT Band 4 (Channel Bandwidth 15MHz)	1717.5-1747.5	358.096 mW (25.54dBm)	350.752 mW (25.45dBm)	-	-
NB-IoT Band 4 (Channel Bandwidth 20MHz)	1720.0-1745.0	353.183 mW (25.48dBm)	353.183 mW (25.48dBm)	-	-
NB-IoT Band 25 (Channel Bandwidth 3MHz)	1851.5-1913.5	358.096 mW (25.54dBm)	355.631 mW (25.51dBm)	-	-
NB-IoT Band 25 (Channel Bandwidth 5MHz)	1852.5-1912.5	362.243 mW (25.59dBm)	355.631 mW (25.51dBm)	-	-
NB-IoT Band 25 (Channel Bandwidth 10MHz)	1855.0-1910.0	358.096 mW (25.54dBm)	351.560 mW (25.46dBm)	-	-
NB-IoT Band 25 (Channel Bandwidth 15MHz)	1857.5-1907.5	358.922 mW (25.55dBm)	350.752 mW (25.45dBm)	-	-
NB-IoT Band 25 (Channel Bandwidth 20MHz)	1860.0-1905.0	361.410 mW (25.58dBm)	355.631 mW (25.51dBm)	-	-
NB-IoT Band 66 (Channel Bandwidth 3MHz)	1711.5-1778.5	372.392 mW (25.71dBm)	368.129 mW (25.66dBm)	-	-
NB-IoT Band 66 (Channel Bandwidth 5MHz)	1712.5-1777.5	370.681 mW (25.69dBm)	367.282 mW (25.65dBm)	-	-
NB-IoT Band 66 (Channel Bandwidth 10MHz)	1715.0-1775.0	368.978 mW (25.67dBm)	369.828 mW (25.68dBm)	-	-
NB-IoT Band 66 (Channel Bandwidth 15MHz)	1717.5-1772.5	374.111 mW (25.73dBm)	369.828 mW (25.68dBm)	-	-
NB-IoT Band 66 (Channel Bandwidth 20MHz)	1720.0-1770.0	370.681 mW (25.69dBm)	368.129 mW (25.66dBm)	-	-

Band / Bandwidth	TX Frequency Range (MHz)	Max. ERP Power		Emission Designator	
		BPSK	QPSK	3.75k	15k
Stand-alone					
NB-IoT Band 5	824.2-848.8	258.821 mW (24.13dBm)	258.226 mW (24.12dBm)	105KG7D	189KG7D
NB-IoT Band 8	897.7-900.3	249.459 mW (23.97dBm)	248.886 mW (23.96dBm)	106KG7D	189KG7D
NB-IoT Band 12	699.2-715.8	207.970 mW (23.18dBm)	207.491 mW (23.17dBm)	105KG7D	188KG7D
NB-IoT Band 13	777.2-786.8	206.063 mW (23.14dBm)	204.174 mW (23.10dBm)	106KG7D	188KG7D
NB-IoT Band 14	788.2-797.8	212.814 mW (23.28dBm)	209.411 mW (23.21dBm)	105KG7D	189KG7D
NB-IoT Band 17	704.2-715.8	188.365 mW (22.75dBm)	187.932 mW (22.74dBm)	105KG7D	188KG7D
NB-IoT Band 26 (Part 22)	824.2-848.8	268.534 mW (24.29dBm)	263.633 mW (24.21dBm)	106KG7D	188KG7D
NB-IoT Band 26 (Part 90)	814.7-823.3	263.027 mW (24.20dBm)	264.850 mW (24.23dBm)	106KG7D	188KG7D
NB-IoT Band 85	698.2-715.8	210.378 mW (23.23dBm)	206.063 mW (23.14dBm)	105KG7D	188KG7D
In-Band					
NB-IoT Band 5 (Channel Bandwidth 3MHz)	825.5-847.5	251.768 mW (24.01dBm)	251.768 mW (24.01dBm)	-	-
NB-IoT Band 5 (Channel Bandwidth 5MHz)	826.5-846.5	250.611 mW (23.99dBm)	255.270 mW (24.07dBm)	-	-
NB-IoT Band 5 (Channel Bandwidth 10MHz)	829.0-844.0	255.270 mW (24.07dBm)	253.513 mW (24.04dBm)	-	-
NB-IoT Band 8 (Channel Bandwidth 3MHz)	899.0	240.991 mW (23.82dBm)	237.684 mW (23.76dBm)	-	-
NB-IoT Band 12 (Channel Bandwidth 3MHz)	700.5-714.5	204.174 mW (23.10dBm)	200.909 mW (23.03dBm)	-	-
NB-IoT Band 12 (Channel Bandwidth 5MHz)	701.5-713.5	201.837 mW (23.05dBm)	202.768 mW (23.07dBm)	-	-
NB-IoT Band 12 (Channel Bandwidth 10MHz)	704.0-711.0	203.236 mW (23.08dBm)	203.236 mW (23.08dBm)	-	-
NB-IoT Band 13 (Channel Bandwidth 5MHz)	779.5-784.5	199.526 mW (23.00dBm)	201.837 mW (23.05dBm)	-	-
NB-IoT Band 13 (Channel Bandwidth 10MHz)	782.0	199.986 mW (23.01dBm)	199.986 mW (23.01dBm)	-	-
NB-IoT Band 14 (Channel Bandwidth 5MHz)	790.5-795.5	207.014 mW (23.16dBm)	202.768 mW (23.07dBm)	-	-
NB-IoT Band 14 (Channel Bandwidth 10MHz)	793.0	200.447 mW (23.02dBm)	199.526 mW (23.00dBm)	-	-
NB-IoT Band 17 (Channel Bandwidth 5MHz)	706.5-713.5	184.077 mW (22.65dBm)	183.231 mW (22.63dBm)	-	-
NB-IoT Band 17 (Channel Bandwidth 10MHz)	709.0-711.0	185.353 mW (22.68dBm)	184.077 mW (22.65dBm)	-	-
NB-IoT Band 26 (Part 22) (Channel Bandwidth 3MHz)	825.5-847.5	259.418 mW (24.14dBm)	258.226 mW (24.12dBm)	-	-
NB-IoT Band 26 (Part 22) (Channel Bandwidth 5MHz)	826.5-846.5	263.027 mW (24.20dBm)	260.016 mW (24.15dBm)	-	-
NB-IoT Band 26 (Part 22) (Channel Bandwidth 10MHz)	829-844	259.418 mW (24.14dBm)	256.448 mW (24.09dBm)	-	-
NB-IoT Band 26 (Part 22) (Channel Bandwidth 15MHz)	831.5-841.5	257.040 mW (24.10dBm)	256.448 mW (24.09dBm)	-	-
NB-IoT Band 26 (Part 90) (Channel Bandwidth 3MHz)	815.5-822.5	258.226 mW (24.12dBm)	261.818 mW (24.18dBm)	-	-
NB-IoT Band 26 (Part 90) (Channel Bandwidth 5MHz)	816.5-821.5	257.040 mW (24.10dBm)	257.040 mW (24.10dBm)	-	-
NB-IoT Band 26 (Part 90) (Channel Bandwidth 10MHz)	819.0	257.632 mW (24.11dBm)	254.683 mW (24.06dBm)	-	-

Band / Bandwidth	TX Frequency Range (MHz)	Max. ERP Power		Emission Designator	
		BPSK	QPSK	3.75k	15k
NB-IoT Band 85 (Channel Bandwidth 5MHz)	700.5-713.5	203.236 mW (23.08dBm)	199.986 mW (23.01dBm)	-	-
NB-IoT Band 85 (Channel Bandwidth 10MHz)	703.0-711.0	207.970 mW (23.18dBm)	201.837 mW (23.05dBm)	-	-
Guard-Band					
NB-IoT Band 5 (Channel Bandwidth 3MHz)	825.5-847.5	255.270 mW (24.07dBm)	254.097 mW (24.05dBm)	-	-
NB-IoT Band 5 (Channel Bandwidth 5MHz)	826.5-846.5	252.348 mW (24.02dBm)	251.768 mW (24.01dBm)	-	-
NB-IoT Band 5 (Channel Bandwidth 10MHz)	829.0-844.0	255.270 mW (24.07dBm)	252.348 mW (24.02dBm)	-	-
NB-IoT Band 8 (Channel Bandwidth 3MHz)	899.0	242.103 mW (23.84dBm)	238.232 mW (23.77dBm)	-	-
NB-IoT Band 12 (Channel Bandwidth 3MHz)	700.5-714.5	204.174 mW (23.10dBm)	204.174 mW (23.10dBm)	-	-
NB-IoT Band 12 (Channel Bandwidth 5MHz)	701.5-713.5	203.236 mW (23.08dBm)	204.644 mW (23.11dBm)	-	-
NB-IoT Band 12 (Channel Bandwidth 10MHz)	704.0-711.0	203.236 mW (23.08dBm)	201.837 mW (23.05dBm)	-	-
NB-IoT Band 13 (Channel Bandwidth 5MHz)	779.5-784.5	202.302 mW (23.06dBm)	199.986 mW (23.01dBm)	-	-
NB-IoT Band 13 (Channel Bandwidth 10MHz)	782.0	202.768 mW (23.07dBm)	197.242 mW (22.95dBm)	-	-
NB-IoT Band 14 (Channel Bandwidth 5MHz)	790.5-795.5	207.014 mW (23.16dBm)	200.447 mW (23.02dBm)	-	-
NB-IoT Band 14 (Channel Bandwidth 10MHz)	793.0	198.609 mW (22.98dBm)	203.236 mW (23.08dBm)	-	-
NB-IoT Band 17 (Channel Bandwidth 5MHz)	706.5-713.5	183.231 mW (22.63dBm)	182.810 mW (22.62dBm)	-	-
NB-IoT Band 17 (Channel Bandwidth 10MHz)	709.0-711.0	183.654 mW (22.64dBm)	185.353 mW (22.68dBm)	-	-
NB-IoT Band 26 (Part 22) (Channel Bandwidth 3MHz)	825.5-847.5	263.027 mW (24.20dBm)	257.632 mW (24.11dBm)	-	-
NB-IoT Band 26 (Part 22) (Channel Bandwidth 5MHz)	826.5-846.5	264.241 mW (24.22dBm)	259.418 mW (24.14dBm)	-	-
NB-IoT Band 26 (Part 22) (Channel Bandwidth 10MHz)	829-844	259.418 mW (24.14dBm)	260.615 mW (24.16dBm)	-	-
NB-IoT Band 26 (Part 22) (Channel Bandwidth 15MHz)	831.5-841.5	261.818 mW (24.18dBm)	256.448 mW (24.09dBm)	-	-
NB-IoT Band 26 (Part 90) (Channel Bandwidth 3MHz)	815.5-822.5	256.448 mW (24.15dBm)	259.418 mW (24.14dBm)	-	-
NB-IoT Band 26 (Part 90) (Channel Bandwidth 5MHz)	816.5-821.5	256.448 mW (24.09dBm)	260.615 mW (24.16dBm)	-	-
NB-IoT Band 26 (Part 90) (Channel Bandwidth 10MHz)	819.0	256.448 mW (24.09dBm)	258.821 mW (24.13dBm)	-	-
NB-IoT Band 85 (Channel Bandwidth 5MHz)	700.5-713.5	202.302 mW (23.06dBm)	201.837 mW (23.05dBm)	-	-
NB-IoT Band 85 (Channel Bandwidth 10MHz)	703.0-711.0	203.236 mW (23.08dBm)	201.837 mW (23.05dBm)	-	-

2. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Type		Dipole									
Connector		RP-SMA									
Antenna gain (dBi)											
NB-IoT Band											
2	4	5	8	12	13	14	17	25	26	66	85
2.03	2.03	2.63	2.63	1.63	1.63	1.63	1.63	2.03	2.63	2.03	1.63

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	EUT can be used in the following ways: X-axis/ Y-axis/ Z-axis. Pre-scan these ways and find the worst case as a representative test condition. This device was tested under all bandwidths, RB configurations, operation mode and modulations. The worst case was found in BPSK modulation and stand-alone mode, except in NB-IoT Band 26 (Part 90), where the worst case occurs with QPSK modulation. Therefore, only EIRP/ERP, modulation characteristics, bandwidth and peak to average ratio items had been tested under QPSK and BPSK mode, the other items were performed under worst-case modulation mode only. Therefore, only EIRP/ERP test item had been tested under stand-alone, in-band and guard-band operation modes, the other items were performed under stand-alone mode only. For radiated spurious emissions, choose the maximum EIRP/ERP power and 1RB offset worst case for final test.
Worst Case:	X-axis/ Y-axis/ Z-axis Worst Condition: Z-axis (90 angle)

For NB-IoT Band 2

Test Item	Tested Channel		Channel Bandwidth	Sub-carrier	Modulation	Mode
EIRP	Standalone	18602 (1850.20 MHz)	-	3.75 kHz	BPSK, QPSK	1RB Half RB Full RB
		18900 (1880.00 MHz) 19198 (1909.80 MHz)	-	15 kHz	BPSK, QPSK	1RB Half RB Full RB
	In-Band	18615 (1851.50 MHz) 18900 (1880.00 MHz) 19185 (1908.50 MHz)	3 MHz	3.75 kHz	BPSK, QPSK	1RB Half RB Full RB
				15 kHz	BPSK, QPSK	1RB Half RB Full RB
		18625 (1852.50 MHz) 18900 (1880.00 MHz) 19175 (1907.50 MHz)	5 MHz	3.75 kHz	BPSK, QPSK	1RB Half RB Full RB
				15 kHz	BPSK, QPSK	1RB Half RB Full RB
		18650 (1855.00 MHz) 18900 (1880.00 MHz) 19150 (1905.00 MHz)	10 MHz	3.75 kHz	BPSK, QPSK	1RB Half RB Full RB
				15 kHz	BPSK, QPSK	1RB Half RB Full RB
		18675 (1857.50 MHz) 18900 (1880.00 MHz) 19125 (1902.50 MHz)	15 MHz	3.75 kHz	BPSK, QPSK	1RB Half RB Full RB
				15 kHz	BPSK, QPSK	1RB Half RB Full RB
		18700 (1860.00 MHz) 18900 (1880.00 MHz) 19100 (1900.00 MHz)	20 MHz	3.75 kHz	BPSK, QPSK	1RB Half RB Full RB
				15 kHz	BPSK, QPSK	1RB Half RB Full RB

Test Item	Tested Channel		Channel Bandwidth	Sub-carrier	Modulation	Mode
EIRP	Guard-Band	18615 (1851.50 MHz) 18900 (1880.00 MHz) 19185 (1908.50 MHz)	3 MHz	3.75 kHz	BPSK, QPSK	1RB Half RB Full RB
				15 kHz	BPSK, QPSK	1RB Half RB Full RB
		18625 (1852.50 MHz) 18900 (1880.00 MHz) 19175 (1907.50 MHz)	5 MHz	3.75 kHz	BPSK, QPSK	1RB Half RB Full RB
				15 kHz	BPSK, QPSK	1RB Half RB Full RB
		18650 (1855.00 MHz) 18900 (1880.00 MHz) 19150 (1905.00 MHz)	10 MHz	3.75 kHz	BPSK, QPSK	1RB Half RB Full RB
				15 kHz	BPSK, QPSK	1RB Half RB Full RB
		18675 (1857.50 MHz) 18900 (1880.00 MHz) 19125 (1902.50 MHz)	15 MHz	3.75 kHz	BPSK, QPSK	1RB Half RB Full RB
				15 kHz	BPSK, QPSK	1RB Half RB Full RB
		18700 (1860.00 MHz) 18900 (1880.00 MHz) 19100 (1900.00 MHz)	20 MHz	3.75 kHz	BPSK, QPSK	1RB Half RB Full RB
				15 kHz	BPSK, QPSK	1RB Half RB Full RB
Modulation Characteristics	Standalone	18900 (1880.00 MHz)	-	-	BPSK, QPSK	Full RB
Peak to Average Ratio	Standalone	18602 (1850.20 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB
		18900 (1880.00 MHz) 19198 (1909.80 MHz)	-	15 kHz	BPSK, QPSK	1 RB
Occupied Bandwidth	Standalone	18602 (1850.20 MHz)	-	3.75 kHz	BPSK, QPSK	Full RB
		18900 (1880.00 MHz) 19198 (1909.80 MHz)	-	15 kHz	BPSK, QPSK	Full RB
Conducted Spurious Emissions	Standalone	18602 (1850.20 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB Full RB
		18900 (1880.00 MHz) 19198 (1909.80 MHz)	-	15 kHz	BPSK, QPSK	1 RB Full RB
Radiated Spurious Emissions below 1GHz	Standalone	18900 (1880.00 MHz)	-	15 kHz	BPSK	1 RB
Radiated Spurious Emissions above 1GHz	Standalone	18602 (1850.20 MHz) 18900 (1880.00 MHz) 19198 (1909.80 MHz)	-	15 kHz	BPSK	1 RB
Frequency Stability	Standalone	18602 (1850.20 MHz) 19198 (1909.80 MHz)	-	15 kHz	BPSK	Full RB

For NB-IoT Band 4

Test Item	Tested Channel		Channel Bandwidth	Sub-carrier	Modulation	Mode
EIRP	Standalone	19952 (1710.20 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
		20175 (1732.50 MHz) 20398 (1754.80 MHz)	-	15 kHz	BPSK, QPSK	1 RB Half RB Full RB
	In-Band	19965 (1711.50 MHz) 20175 (1732.50 MHz) 20385 (1753.50 MHz)	3 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		19975 (1712.50 MHz) 20175 (1732.50 MHz) 20375 (1752.50 MHz)	5 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		20000 (1715.00 MHz) 20175 (1732.50 MHz) 20350 (1750.00 MHz)	10 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		20025 (1717.50 MHz) 20175 (1732.50 MHz) 20325 (1747.50 MHz)	15 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		20050 (1720.00 MHz) 20175 (1732.50 MHz) 20300 (1745.00 MHz)	20 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB

Test Item	Tested Channel		Channel Bandwidth	Sub-carrier	Modulation	Mode
EIRP	Guard-Band	19965 (1711.50 MHz) 20175 (1732.50 MHz) 20385 (1753.50 MHz)	3 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		19975 (1712.50 MHz) 20175 (1732.50 MHz) 20375 (1752.50 MHz)	5 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		20000 (1715.00 MHz) 20175 (1732.50 MHz) 20350 (1750.00 MHz)	10 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		20025 (1717.50 MHz) 20175 (1732.50 MHz) 20325 (1747.50 MHz)	15 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		20050 (1720.00 MHz) 20175 (1732.50 MHz) 20300 (1745.00 MHz)	20 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
Modulation Characteristics	Standalone	20175 (1732.50 MHz)	-	-	BPSK, QPSK	Full RB
Peak to Average Ratio	Standalone	19952 (1710.20 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB
		20175 (1732.50 MHz)	-	15 kHz	BPSK, QPSK	1 RB
		20398 (1754.80 MHz)	-	15 kHz	BPSK, QPSK	1 RB
Occupied Bandwidth	Standalone	19952 (1710.20 MHz)	-	3.75 kHz	BPSK, QPSK	Full RB
		20175 (1732.50 MHz)	-	15 kHz	BPSK, QPSK	Full RB
		20398 (1754.80 MHz)	-	15 kHz	BPSK, QPSK	Full RB
Conducted Spurious Emissions	Standalone	19952 (1710.20 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB Full RB
		20175 (1732.50 MHz)	-	15 kHz	BPSK, QPSK	1 RB Full RB
Radiated Spurious Emissions below 1GHz	Standalone	20175 (1732.50 MHz)	-	15 kHz	BPSK	1 RB
Radiated Spurious Emissions above 1GHz	Standalone	19952 (1710.20 MHz) 20175 (1732.50 MHz) 20398 (1754.80 MHz)	-	15 kHz	BPSK	1 RB
Frequency Stability	Standalone	19952 (1710.20 MHz) 20398 (1754.80 MHz)	-	15 kHz	BPSK	Full RB

For NB-IoT Band 5

Test Item	Tested Channel		Channel Bandwidth	Sub-carrier	Modulation	Mode
EIRP	Standalone	20402 (824.20 MHz) 20525 (836.50 MHz) 20648 (848.80 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
			-	15 kHz	BPSK, QPSK	1 RB Half RB Full RB
	In-Band	20415 (825.50 MHz) 20525 (836.50 MHz) 20635 (847.50 MHz)	3 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		20425 (826.50 MHz) 20525 (836.50 MHz) 20625 (846.50 MHz)	5 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		20450 (829.00 MHz) 20525 (836.50 MHz) 20600 (844.00 MHz)	10 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
	Guard-Band	20415 (825.50 MHz) 20525 (836.50 MHz) 20635 (847.50 MHz)	3 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		20425 (826.50 MHz) 20525 (836.50 MHz) 20625 (846.50 MHz)	5 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		20450 (829.00 MHz) 20525 (836.50 MHz) 20600 (844.00 MHz)	10 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
Modulation Characteristics	Standalone	20525 (836.50 MHz)	-	-	BPSK, QPSK	Full RB
Peak to Average Ratio	Standalone	20402 (824.20 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB
		20525 (836.50 MHz) 20648 (848.80 MHz)	-	15 kHz	BPSK, QPSK	1 RB
Occupied Bandwidth	Standalone	20402 (824.20 MHz)	-	3.75 kHz	BPSK, QPSK	Full RB
		20525 (836.50 MHz) 20648 (848.80 MHz)	-	15 kHz	BPSK, QPSK	Full RB

Test Item	Tested Channel		Channel Bandwidth	Sub-carrier	Modulation	Mode
Conducted Spurious Emissions	Standalone	20402 (824.20 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB Full RB
		20525 (836.50 MHz) 20648 (848.80 MHz)	-	15 kHz	BPSK, QPSK	1 RB Full RB
Radiated Spurious Emissions below 1GHz	Standalone	20525 (836.50 MHz)	-	15 kHz	BPSK	1 RB
Radiated Spurious Emissions above 1GHz	Standalone	20402 (824.20 MHz) 20525 (836.50 MHz) 20648 (848.80 MHz)	-	15 kHz	BPSK	1 RB
Frequency Stability	Standalone	20402 (824.20 MHz) 20648 (848.80 MHz)	-	15 kHz	BPSK	Full RB

For NB-IoT Band 8

Test Item	Tested Channel		Channel Bandwidth	Sub-carrier	Modulation	Mode
ERP	Standalone	21627 (897.70 MHz) 21640 (899.00 MHz) 21653 (900.30 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
			-	15 kHz	BPSK, QPSK	1 RB Half RB Full RB
	In-Band	21640 (899.00 MHz)	10 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
	Guard-Band	21640 (899.00 MHz)	10 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
Modulation Characteristics	Standalone	21640 (899.00 MHz)	-	-	BPSK, QPSK	Full RB
Peak to Average Ratio	Standalone	21627 (897.70 MHz) 21640 (899.00 MHz) 21653 (900.30 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB
			-	15 kHz	BPSK, QPSK	1 RB
Occupied Bandwidth	Standalone	21627 (897.70 MHz) 21640 (899.00 MHz) 21653 (900.30 MHz)	-	3.75 kHz	BPSK, QPSK	Full RB
			-	15 kHz	BPSK, QPSK	Full RB
Conducted Spurious Emissions	Standalone	21627 (897.70 MHz) 21640 (899.00 MHz) 21653 (900.30 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB Full RB
			-	15 kHz	BPSK, QPSK	1 RB Full RB
Radiated Spurious Emissions below 1GHz	Standalone	21640 (899.00 MHz)	-	15 kHz	BPSK	1 RB
Radiated Spurious Emissions above 1GHz	Standalone	21627 (897.70 MHz) 21640 (899.00 MHz) 21653 (900.30 MHz)	-	15 kHz	BPSK	1 RB
Frequency Stability	Standalone	21627 (897.70 MHz) 21653 (900.30 MHz)	-	15 kHz	BPSK	Full RB

For NB-IoT Band 12

Test Item	Tested Channel		Channel Bandwidth	Sub-carrier	Modulation	Mode
ERP	Standalone	23012 (699.20 MHz) 23095 (707.50 MHz) 23178 (715.80 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
			-	15 kHz	BPSK, QPSK	1 RB Half RB Full RB
	In-Band	23025 (700.50 MHz) 23095 (707.50 MHz) 23165 (714.50 MHz)	3 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		23035 (701.50 MHz) 23095 (707.50 MHz) 23155 (713.50 MHz)	5 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		23060 (704.00 MHz) 23095 (707.50 MHz) 23130 (711.00 MHz)	10 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
	Guard-Band	23025 (700.50 MHz) 23095 (707.50 MHz) 23165 (714.50 MHz)	3 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		23035 (701.50 MHz) 23095 (707.50 MHz) 23155 (713.50 MHz)	5 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		23060 (704.00 MHz) 23095 (707.50 MHz) 23130 (711.00 MHz)	10 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB

Test Item	Tested Channel		Channel Bandwidth	Sub-carrier	Modulation	Mode
Modulation Characteristics	Standalone	23095 (707.50 MHz)	-	-	BPSK, QPSK	Full RB
Peak to Average Ratio	Standalone	23012 (699.20 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB
		23095 (707.50 MHz)	-	15 kHz	BPSK, QPSK	1 RB
		23178 (715.80 MHz)	-	15 kHz	BPSK, QPSK	1 RB
Occupied Bandwidth	Standalone	23012 (699.20 MHz)	-	3.75 kHz	BPSK, QPSK	Full RB
		23095 (707.50 MHz)	-	15 kHz	BPSK, QPSK	Full RB
		23178 (715.80 MHz)	-	15 kHz	BPSK, QPSK	Full RB
Conducted Spurious Emissions	Standalone	23012 (699.20 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB
		23095 (707.50 MHz)	-	15 kHz	BPSK, QPSK	Full RB
		23178 (715.80 MHz)	-	15 kHz	BPSK, QPSK	1 RB
Radiated Spurious Emissions below 1GHz	Standalone	23095 (707.50 MHz)	-	15 kHz	BPSK	1 RB
Radiated Spurious Emissions above 1GHz	Standalone	23012 (699.20 MHz)	-	15 kHz	BPSK	1 RB
		23095 (707.50 MHz)	-	15 kHz	BPSK	1 RB
		23178 (715.80 MHz)	-	15 kHz	BPSK	1 RB
Frequency Stability	Standalone	23012 (699.20 MHz)	-	15 kHz	BPSK	Full RB
		23178 (715.80 MHz)	-	15 kHz	BPSK	Full RB

For NB-IoT Band 13

Test Item	Tested Channel		Channel Bandwidth	Sub-carrier	Modulation	Mode
ERP	Standalone	23182 (777.20 MHz) 23230 (782.00 MHz) 23278 (786.80 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
			-	15 kHz	BPSK, QPSK	1 RB Half RB Full RB
	In-Band	23205 (779.50 MHz) 23230 (782.00 MHz) 23255 (784.50 MHz)	5 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		23230 (782.00 MHz)	10 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
	Guard-Band	23205 (779.50 MHz) 23230 (782.00 MHz) 23255 (784.50 MHz)	5 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		23230 (782.00 MHz)	10 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
Modulation Characteristics	Standalone	23230 (782.00 MHz)	-	-	BPSK, QPSK	Full RB
Peak to Average Ratio	Standalone	23182 (777.20 MHz) 23230 (782.00 MHz) 23278 (786.80 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB
			-	15 kHz	BPSK, QPSK	1 RB
Occupied Bandwidth	Standalone	23182 (777.20 MHz) 23230 (782.00 MHz) 23278 (786.80 MHz)	-	3.75 kHz	BPSK, QPSK	Full RB
			-	15 kHz	BPSK, QPSK	Full RB
Conducted Spurious Emissions	Standalone	23182 (777.20 MHz) 23230 (782.00 MHz) 23278 (786.80 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB Full RB
			-	15 kHz	BPSK, QPSK	1 RB Full RB
Radiated Spurious Emissions below 1GHz	Standalone	23230 (782.00 MHz)	-	15 kHz	BPSK	1 RB
Radiated Spurious Emissions above 1GHz	Standalone	23182 (777.20 MHz) 23230 (782.00 MHz) 23278 (786.80 MHz)	-	15 kHz	BPSK	1 RB
Frequency Stability	Standalone	23182 (777.20 MHz) 23278 (786.80 MHz)	-	15 kHz	BPSK	Full RB

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Test Item	Tested Channel		Channel Bandwidth	Sub-carrier	Modulation	Mode
ERP	Standalone	23282 (788.20 MHz) 23300 (793.00 MHz) 23378 (797.80 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
			-	15 kHz	BPSK, QPSK	1 RB Half RB Full RB
	In-Band	23305 (790.50 MHz) 23300 (793.00 MHz) 23355 (795.50 MHz)	5 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		23300 (793.00 MHz)	10 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
	Guard-Band	23305 (790.50 MHz) 23300 (793.00 MHz) 23355 (795.50 MHz)	5 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
		23300 (793.00 MHz)	10 MHz	3.75 kHz	BPSK, QPSK	1 RB Half RB Full RB
				15 kHz	BPSK, QPSK	1 RB Half RB Full RB
Modulation Characteristics	Standalone	23300 (793.00 MHz)	-	-	BPSK, QPSK	Full RB
Peak to Average Ratio	Standalone	23282 (788.20 MHz) 23300 (793.00 MHz) 23378 (797.80 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB
			-	15 kHz	BPSK, QPSK	1 RB
Occupied Bandwidth	Standalone	23282 (788.20 MHz) 23300 (793.00 MHz) 23378 (797.80 MHz)	-	3.75 kHz	BPSK, QPSK	Full RB
			-	15 kHz	BPSK, QPSK	Full RB
Conducted Spurious Emissions	Standalone	23282 (788.20 MHz) 23300 (793.00 MHz) 23378 (797.80 MHz)	-	3.75 kHz	BPSK, QPSK	1 RB Full RB
			-	15 kHz	BPSK, QPSK	1 RB Full RB
Radiated Spurious Emissions below 1GHz	Standalone	23300 (793.00 MHz)	-	15 kHz	BPSK	1 RB
Radiated Spurious Emissions above 1GHz	Standalone	23282 (788.20 MHz) 23300 (793.00 MHz) 23378 (797.80 MHz)	-	15 kHz	BPSK	1 RB
Frequency Stability	Standalone	23282 (788.20 MHz) 23378 (797.80 MHz)	-	15 kHz	BPSK	Full RB