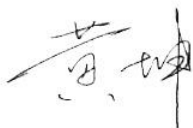


TEST REPORT

Applicant: Fibocom Wireless Inc.
EUT Description: 5G Module
Model Tested: FG180W-NA
Model Covered: FG180-NA
Brand: Fibocom
FCC ID: ZMOFG180WNA
Standards: FCC 47 CFR Part 2.1091
Date of Receipt: 2024/09/05
Date of Issue: 2024/12/16

TOWE. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

the results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of the model are manufactured with identical electrical and mechanical components. All sample tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise. without written approval of TOWE, the test report shall not be reproduced except in full.



Huangkun
Approved By:



ChenChengfu
Reviewed By:

Revision History

Rev.	Issue Date	Description	Revised by
01	2024/10/21	Original	ChenChengfu
02	2024/11/13	Add NR n38 UL MIMO evaluation calculation	ChenChengfu
03	2024/12/16	Typo error	ChenChengfu

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1 General Description

1.1 Lab Information

1.1.1 Testing Location

These measurements tests were conducted at the Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. facility located at F401 and F101, Building E, Hongwei Industrial Zone, Liuxian 3rd Road, Bao'an District, Shenzhen, China. The measurement facility is compliant with the test site requirements specified in ANSI C63.4-2014
Tel.: +86-755-27212361
Contact Email: info@towewireless.com

1.1.2 Test Facility / Accreditations

A2LA (Certificate Number: 7088.01)

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

FCC Designation No.: CN1353

Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized as an accredited testing laboratory. Designation Number: CN1353.

ISED CAB identifier: CN0152

Sushi TOWE Wireless Testing(Shenzhen) Co., Ltd. has been recognized by ISED as an accredited testing laboratory.
CAB identifier: CN0152
Company Number: 31000

1.2 Client Information

1.2.1 Applicant

Applicant:	Fibocom Wireless Inc.
Address:	1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China

1.2.2 Manufacturer

Manufacturer:	Fibocom Wireless Inc.
Address:	1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China

1.3 Product Information

EUT Description:	5G Module				
Model Tested:	FG180W-NA				
Model Covered:	FG180-NA				
Brand:	Fibocom				
Hardware Version:	V1.3				
Software Version:	99111.1000.00.01.01.04				
Antenna Type:	☒ External, ☐ Integrated				
Feature:	UL 2*2 MIMO: NR Band n2; NR Band n25; NR Band n41; NR Band n48; NR Band n66; NR Band n70; NR Band n71; NR Band n77; NR Band n78; NR Band n38;				
Power Class:	Class 2: LTE Band 41; LTE UL CA_41C; Class 2: NR Band n2; NR Band 25; NR Band 66; NR Band 70; NR Band 71 (with SA TXD /UL MIMO); Class 2: NR Band n41; NR Band 77; NR Band 78 (for NSA) Class 1.5: NR Band n41; NR Band 77; NR Band 78 (with SA TXD /UL MIMO); Class 2: n25A-n77A; n30A-n77A; n66A-n77A; n71A-n77A;				
Antenna gain:	Band	Ant1(dBi)	Ant2(dBi)	Ant7(dBi)	Ant8(dBi)
	LTE Band 2:	-1.85	/	/	-1.85
	LTE Band 4:	-2.98	/	/	-2.98
	LTE Band 5:	/	/	/	1.32
	LTE Band 7:	-1.21	/	/	/
	LTE Band 12:	/	/	/	1.61
	LTE Band 13:	/	/	/	1.83
	LTE Band 14:	/	/	/	2.19
	LTE Band 17:	/	/	/	1.61
	LTE Band 25:	-1.85	/	/	-1.85
	LTE Band 26:	/	/	/	1.32
	LTE Band 30:	0.22	/	/	/
	LTE Band 38:	-1.21	/	/	-1.21
	LTE Band 41:	-1.21	/	/	-1.21
	LTE Band 42:	-6.13	-6.13	-6.13	-6.13
	LTE Band 43:	-6.13	-6.13	-6.13	-6.13
	LTE Band 48:	-6.13	-6.13	-6.13	-6.13
	LTE Band 66:	-2.98	/	/	-2.98
	LTE Band 71:	1.61	/	/	1.61
	LTE CA_2C:	-1.85	/	/	-1.85
	LTE CA_5B:	/	/	/	1.32
	LTE CA_7C:	-1.21	/	/	/
	LTE CA_12B:	/	/	/	1.61
	LTE CA_41C:	-1.21	/	/	-1.21
	LTE CA_48C:	-6.13	-6.13	-6.13	-6.13
	LTE CA_66C:	-2.98	/	/	-2.98

	LTE CA_66B:	-2.98	/	/	-2.98
	NR Band n2:	-1.85	/	/	-1.85
	NR Band n5:	/	/	/	1.32
	NR Band n7:	-1.21	/	/	/
	NR Band n12:	/	/	/	1.61
	NR Band n13:	/	/	/	1.83
	NR Band n14:	/	/	/	2.19
	NR Band n25:	-1.85	/	/	-1.85
	NR Band n26:	/	/	/	1.32
	NR Band n30:	0.22	/	/	0.22
	NR Band n38:	-1.21	/	/	-1.21
	NR Band n41:	-1.21	/	/	-1.21
	NR Band n48:	-6.13	-6.13	-6.13	-6.13
	NR Band n66:	-2.98	/	/	-2.98
	NR Band n70:	-2.86	/	/	-2.86
	NR Band n71:	1.61	/	/	1.61
	NR Band n77:	-6.13	-6.13	-6.13	-6.13
	NR Band n78:	-6.13	-6.13	-6.13	-6.13
LTE/NR Mode:	LTE UL CA: CA_12B; CA_2C; CA_41C; CA_48C; CA_5B; CA_66B; CA_66C; CA_7C; UL CA_12A-25A; UL CA_12A-30A; UL CA_12A-66A; UL CA_13A-66A; UL CA_14A-30A; UL CA_14A-66A; UL CA_25A-26A; UL CA_2A-12A; UL CA_2A-13A; UL CA_2A-14A; UL CA_2A-17A; UL CA_2A-30A; UL CA_2A-4A; UL CA_2A-5A; UL CA_2A-66A; UL CA_2A-71A; UL CA_2A-7A; UL CA_30A-66A; UL CA_4A-12A; UL CA_4A-17A; UL CA_4A-30A; UL CA_4A-5A; UL CA_4A-71A; UL CA_4A-7A; UL CA_5A-25A; UL CA_5A-30A; UL CA_5A-66A; UL CA_5A-7A; UL CA_66A-71A; UL CA_7A-12A; UL CA_7A-13A; UL CA_7A-26A; UL CA_7A-66A; UL CA_2A-26A; UL CA_7A-71A; UL CA_25A-66A; UL CA_7A-25A;				
	NSA: DC 4A/5A/7A/12A/13A/14A/30A/48A/66A/71A _n2A DC 2A/7A/12A/14A/30A/48A/66A/71A _n5A DC 2A/4A/12A/13A/66A/71A _n7A DC_2A/5A/7A/48A/66A/71A _n12A DC 5A/7A/12A/13A/26A/66A/71A _n25A DC 2A/5A/12A/14A/66A _n30A DC 2A/4A/5A/12A/66A/71A _n38A DC 2A/4A/5A/12A/25A/26A/66A/71A _n41A DC 2A/5A/7A/12A/13A/14A/30A/48A/71A _n66A DC 2A/5A/7A/12A/13A/48A/66A _n71A DC 2A/5A/7A/12A/13A/14A/25A/30A/41A/66A/71A _n77A DC 2A/4A/5A/7A/12A/13A/25A/38A/41A/66A/71A _n78A NR CA: n12A-n77A; n13A-n77A; n14A-n77A; n25A-n38A n25A-n41A; n25A-n48A; n25A-n78A; n26A-n66A n26A-n70A; n2A-n41A; n2A-n48A; n2A-n77A				

	n2A-n78A; n38A-n66A; n41A-n66A; n41A-n71A n48A-n66A; n48A-n70A; n48A-n71A; n5A-n48A n5A-n77A; n5A-n78A; n66A-n71A; n66A-n78A n70A-n71A; n71A-n78A; n7A-n77A; n7A-n78A n25A-n77A; n30A-n77A; n66A-n77A; n71A-n77A;
Remark: 1. The above EUT's information was declared by applicant, please refer to the specifications or user manual for more detailed description. 2. Reference applicant Product Equality Declaration: The model FG180-NA is the variant of the initial certified product FG180W-NA. The difference between them are that the model FG180W-NA with RF interface while FG180-NA without only.	

2 Maximum Permissible RF Exposure

2.1 RF Exposure Limit Introduction

§1.1310 the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to RF radiation as specified in §1.1307(b).

- (1) Table 1 to § 1.1310(e)(1) sets forth limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields.

Table 1 to § 1.1310(e)(1) - Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3~3.0	614	1.63	*(100)	≤6
3.0~30	1842/f	4.89/f	*(900/f ²)	<6
30~300	61.4	0.163	1.0	<6
300~1500			f/300	<6
1500~100000			5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3~1.34	614	1.63	*(100)	<30
1.34~30	824/f	2.19/f	*(180/f ²)	<30
30~300	27.5	0.073	0.2	<30
300~1500			f/1500	<30
1500~100000			1.0	<30

Note: f = frequency in MHz. * = Plane-wave equivalent power density.

- (2) Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. The phrase *fully aware* in the context of applying these exposure limits means that an exposed person has received written and/or verbal information fully explaining the potential for RF exposure resulting from his or her employment. With the exception of transient persons, this phrase also means that an exposed person has received appropriate training regarding work practices relating to controlling or mitigating his or her exposure. In situations when an untrained person is transient through a location where occupational/controlled limits apply, he or she must be made aware of the potential for exposure and be supervised by trained personnel pursuant to § 1.1307(b)(2) of this part where use of time averaging is required to ensure compliance with the general population exposure limit. The phrase exercise control means that an exposed person is allowed and also knows how to reduce or avoid exposure by administrative or engineering work practices, such as use of personal protective equipment or time averaging of exposure.
- (3) General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure. For example, RF sources intended for consumer use shall be subject to the limits for general population/uncontrolled exposure in this section.

The MPE was calculated at 20cm to show compliance with the power density limit.

2.2 Equations

Power Density is given by:

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

Where:

S = Power density in mW/cm²

EIRP= Equivalent isotropic Radiated power in mW

R = Distance from transmitting antenna in cm

Power density in units of mW/cm² is converted to units of W/m² by multiplying by 10.

Distance:

$$R = \sqrt{\frac{\text{EIRP}}{4\pi S}}$$

Where:

S = Power density in mW/cm²

EIRP= Equivalent isotropic Radiated power in mW

R = Distance from transmitting antenna in cm

EIRP:

$$\text{EIRP} = P + G$$

Where:

EIRP = Equivalent isotropic Radiated power in Mw

P = Output power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

Source-Based Duty Cycle:

Where applicable (for example, multi-slot cell phone applications) a duty cycle factor may be applied.

Source-based time-averaged EIRP = (DC / 100)* EIRP

Where:

DC = Duty Cycle in %, as applicable

EIRP= Equivalent isotropic Radiated power in mW

MIMO and colocated transmitters (identical limit for all transmitters):

For multiple chain devices, and colocated transmitters operating simultaneously in frequency bands where the limit is identical, the total power density is calculated using the total EIRP obtained by summing the PG (in linear units) of each transmitter.

Total EIRP = (EIRP 1) + (EIRP 2) + ... + (EIRP n)

MIMO and colocated transmitters:

For multiple colocated transmitters operating simultaneously in frequency bands where different limit apply:

The power density at the specified separation distance is calculated for each transmitter chain or transmitter.

The fraction of the exposure limit is calculated for each chain or transmitter as

Power density of chain or transmitter / limit applicable to the chain or transmitter.

The fractions are summed.

Compliance is established if the sum of the fractions is less than or equal to one.

3 RF Exposure Results

3.1 Standalone Exposure Calculations

For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.

The manufacturing configures output power so that the maximum power, after accounting for manufacturing tolerances, will never exceed the maximum power level measured.

The antenna gain in the tables below is the maximum antenna gain among various channels within the specified band.

Operating Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	EIRP/ERP (dBm)	EIRP/ERP Limit (dBm)	EIRP/ERP (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Gain According to EIRP/ERP (dBi)	Gain According to Pd (dBi)	Maximum Gain Allowed (dBi)	Results
LTE Band 2/CA_2C	1850.7	-1.85	25.50	23.65	33.01	231.7395	0.0301	1.0000	7.51	13.36	7.51	Pass
LTE Band 4	1710.7	-2.98	25.50	22.52	30.00	178.6488	0.0179	1.0000	4.50	14.49	4.50	Pass
LTE Band 5/CA_5B	824.7	1.32	25.50	24.67	38.45	293.0893	0.0790	0.5498	15.10	9.74	9.74	Pass
LTE Band 7/CA_7C	2502.5	-1.21	24.50	23.29	33.01	213.3045	0.0321	1.0000	8.51	13.72	8.51	Pass
LTE Band 12/CA_12B	699.7	1.61	25.50	24.96	34.77	313.3286	0.0903	0.4665	11.42	8.74	8.74	Pass
LTE Band 13	779.50	1.83	25.50	25.18	34.77	329.6097	0.0999	0.5197	11.42	8.98	8.98	Pass
LTE Band 14	790.50	2.19	25.50	25.54	34.77	358.0964	0.1180	0.5270	11.42	8.69	8.69	Pass
LTE Band 17	706.5	1.61	25.50	24.96	34.77	313.3286	0.0903	0.4710	11.42	8.78	8.78	Pass
LTE Band 25	1850.7	-1.85	25.50	23.65	33.01	231.7395	0.0301	1.0000	7.51	13.36	7.51	Pass
LTE Band 26 (814-824)	814.7	1.32	25.50	24.67	50.00	293.0893	0.0790	0.5431	26.65	9.69	9.69	Pass
LTE Band 26 (824-849)	824.7	1.32	25.50	24.67	38.45	293.0893	0.0790	0.5498	15.10	9.74	9.74	Pass
LTE Band 30	2307.5	0.22	23.50	23.72	23.98	235.5049	0.0493	1.0000	0.48	13.29	0.48	Pass
LTE Band 38	2572.5	-1.21	25.50	24.29	33.01	268.5344	0.0404	1.0000	7.51	12.72	7.51	Pass
LTE Band 41/CA_41C	2498.5	-1.21	25.50	24.29	33.01	268.5344	0.0404	1.0000	7.51	12.72	7.51	Pass
LTE Band 41/CA_41C (HPUE)	2498.5	-1.21	27.00	25.79	33.01	379.3150	0.0571	1.0000	6.01	11.22	6.01	Pass
LTE Band 42 (3450-3550)	3452.5	-6.13	25.50	19.37	30.00	86.4968	0.0042	1.0000	4.50	17.64	4.50	Pass
LTE Band 42 (3550-3600)	3552.5	-6.13	25.50	19.37	23.00	86.4968	0.0042	1.0000	-2.50	17.64	-2.50	Pass
LTE Band 43 (3600-3700)	3602.5	-6.13	25.50	19.37	23.00	86.4968	0.0042	1.0000	-2.50	17.64	-2.50	Pass
LTE Band 48/CA_48C	3552.5	-6.13	25.50	19.37	23.00	86.4968	0.0042	1.0000	-2.50	17.64	-2.50	Pass
LTE Band 66/CA_66C/CA_66B	1710.7	-2.98	25.50	22.52	30.00	178.6488	0.0179	1.0000	4.50	14.49	4.50	Pass
LTE Band 71	665.5	1.61	25.50	24.96	34.77	313.3286	0.0903	0.4437	11.42	8.52	8.52	Pass

Operating Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	EIRP/ERP (dBm)	EIRP/ERP Limit (dBm)	EIRP/ERP (mW)	Power Density at R=20cm (mW/cm2)	Limit (mW/cm2)	Gain According to EIRP/ERP (dBi)	Gain According to Pd (dBi)	Maximum Gain Allowed (dBi)	Results
NR Band n2	1852.5	-1.85	25.5	23.65	33.01	231.7395	0.0301	1.0000	7.51	13.36	7.51	Pass
NR Band n5	826.5	1.32	25.5	24.67	38.45	293.0893	0.0790	0.5510	15.10	9.75	9.75	Pass
NR Band n7	2502.5	-1.21	25	23.79	33.01	239.3316	0.0360	1.0000	8.01	13.22	8.01	Pass
NR Band n12	701.5	1.61	25.5	24.96	34.77	313.3286	0.0903	0.4677	11.42	8.75	8.75	Pass
NR Band n13	779.5	1.83	25.5	25.18	34.77	329.6097	0.0999	0.5197	11.42	8.98	8.98	Pass
NR Band n14	790.5	2.19	25.5	25.54	34.77	358.0964	0.1180	0.5270	11.42	8.69	8.69	Pass
NR Band n25	1852.5	-1.85	25.5	23.65	33.01	231.7395	0.0301	1.0000	7.51	13.36	7.51	Pass
NR Band n26 (814~824)	816.5	1.32	25.5	24.67	50.00	293.0893	0.0790	0.5443	26.65	9.70	9.70	Pass
NR Band n26 (824~849)	826.5	1.32	25.5	24.67	38.45	293.0893	0.0790	0.5510	15.10	9.75	9.75	Pass
NR Band n30	2307.5	0.22	23.5	23.72	23.98	235.5049	0.0493	1.0000	0.48	13.29	0.48	Pass
NR Band n38	2575	-1.21	25	23.79	33.01	239.3316	0.0360	1.0000	8.01	13.22	8.01	Pass
NR Band n41	2501.01	-1.21	25.5	24.29	33.01	268.5344	0.0404	1.0000	7.51	12.72	7.51	Pass
NR Band n41(HPUE)	2501.01	-1.21	27	25.79	33.01	379.3150	0.0571	1.0000	6.01	11.22	6.01	Pass
NR Band n48	3555	-6.13	25.5	19.37	23.00	86.4968	0.0042	1.0000	-2.50	17.64	-2.50	Pass
NR Band n66	1712.5	-2.98	25.5	22.52	30.00	178.6488	0.0179	1.0000	4.50	14.49	4.50	Pass
NR Band n70	1697.5	-2.86	25.5	22.64	30.00	183.6538	0.0189	1.0000	4.50	14.37	4.50	Pass
NR Band n71	665.5	1.61	25.5	24.96	34.77	313.3286	0.0903	0.4437	11.42	8.52	8.52	Pass
NR Band n77 (3450~3550)	3455.01	-6.13	25.5	19.37	30.00	86.4968	0.0042	1.0000	4.50	17.64	4.50	Pass
NR Band n77(HPUE) (3450~3550)	3455.01	-6.13	28.5	22.37	30.00	172.5838	0.0084	1.0000	1.50	14.64	1.50	Pass
NR Band n77 (3700~3980)	3705	-6.13	25.5	19.37	30.00	86.4968	0.0042	1.0000	4.50	17.64	4.50	Pass
NR Band n77(HPUE) (3700~3980)	3705	-6.13	28.5	22.37	30.00	172.5838	0.0084	1.0000	1.50	14.64	1.50	Pass
NR Band n78 (3450~3550)	3455.01	-6.13	25.5	19.37	30.00	86.4968	0.0042	1.0000	4.50	17.64	4.50	Pass
NR Band n78(HPUE) (3450~3550)	3455.01	-6.13	28.5	22.37	30.00	172.5838	0.0084	1.0000	1.50	14.64	1.50	Pass
NR Band n78 (3700~3800)	3705	-6.13	25.5	19.37	30.00	86.4968	0.0042	1.0000	4.50	17.64	4.50	Pass
NR Band n78(HPUE) (3700~3800)	3705	-6.13	28.5	22.37	30.00	172.5838	0.0084	1.0000	1.50	14.64	1.50	Pass
NR Band n2(MIMO)	1852.5	-1.85	28.5	26.65	33.01	462.3810	0.0601	1.0000	4.51	10.36	4.51	Pass
NR Band n25(MIMO)	1852.5	-1.85	28.5	26.65	33.01	462.3810	0.0601	1.0000	4.51	10.36	4.51	Pass
NR Band n38(MIMO)	2575	-1.21	28.5	27.29	33.01	535.7967	0.0807	1.0000	4.51	9.72	4.51	Pass
NR Band n41(MIMO)	2501.01	-1.21	28.5	27.29	33.01	535.7967	0.0807	1.0000	4.51	9.72	4.51	Pass
NR Band n41(MIMO)(HPUE)	2501.01	-1.21	30	28.79	33.01	756.8329	0.1140	1.0000	3.01	8.22	3.01	Pass
NR Band n48(MIMO)	3555	-6.13	25.5	19.37	23.00	86.4968	0.0042	1.0000	-2.50	17.64	-2.50	Pass
NR Band n66(MIMO)	1712.5	-2.98	28.5	25.52	30.00	356.4511	0.0357	1.0000	1.50	11.49	1.50	Pass
NR Band n70(MIMO)	1697.5	-2.86	28.5	25.64	30.00	366.4376	0.0377	1.0000	1.50	11.37	1.50	Pass
NR Band n71(MIMO)	665.5	1.61	28.5	27.96	34.77	625.1727	0.1802	0.4437	8.42	5.52	5.52	Pass
NR Band n77(MIMO) (3450~3550)	3455.01	-6.13	28.5	22.37	30.00	172.5838	0.0084	1.0000	1.50	14.64	1.50	Pass
NR Band n77(MIMO)(HPUE) (3450~3550)	3455.01	-6.13	31.5	25.37	30.00	344.3499	0.0167	1.0000	-1.50	11.64	-1.50	Pass
NR Band n77(MIMO) (3700~3980)	3705	-6.13	28.5	22.37	30.00	172.5838	0.0084	1.0000	1.50	14.64	1.50	Pass
NR Band n77(MIMO)(HPUE) (3700~3980)	3705	-6.13	31.5	25.37	30.00	344.3499	0.0167	1.0000	-1.50	11.64	-1.50	Pass
NR Band n78(MIMO) (3450~3550)	3455.01	-6.13	28.5	22.37	30.00	172.5838	0.0084	1.0000	1.50	14.64	1.50	Pass
NR Band n78(MIMO)(HPUE) (3450~3550)	3455.01	-6.13	31.5	25.37	30.00	344.3499	0.0167	1.0000	-1.50	11.64	-1.50	Pass
NR Band n78(MIMO) (3700~3800)	3705	-6.13	28.5	22.37	30.00	172.5838	0.0084	1.0000	1.50	14.64	1.50	Pass
NR Band n78(MIMO)(HPUE) (3700~3800)	3705	-6.13	31.5	25.37	30.00	344.3499	0.0167	1.0000	-1.50	11.64	-1.50	Pass

Remark:

1. "Maximum Power" comes from the largest "Tune-up" provided by the customer.

3.2 Multiple Sources Exposure Calculations

When a number of sources at different frequencies, and/or broadband sources, contribute to the total exposure, it becomes necessary to weigh each contribution relative to the MPE in accordance with the provisions of Table(A) and Table(B). To comply with the MPE, the fraction of the MPE in terms of E2, H2 (or power density) incurred within each frequency interval should be determined and the sum of all such fractions should not exceed unity.

In order to ensure compliance with the MPE for a controlled environment, the sum of the ratios of the power density to the corresponding MPE should not exceed unity.

$$\sum_{i=1}^n \frac{S_i}{MPE_i} \leq 1$$

The product also has multiple transmitters The Simultaneous Transmission Possibilities are as below:

Operating Band	Frequency (MHz)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	MEs
LTE Band 2/CA_2C	1850.7	0.0301	1.0000	0.0009
LTE Band 4	1710.7	0.0179	1.0000	0.0003
LTE Band 5/CA_5B	824.7	0.0790	0.5498	0.0207
LTE Band 7/CA_7C	2502.5	0.0321	1.0000	0.0010
LTE Band 12/CA_12B	699.7	0.0903	0.4665	0.0375
LTE Band 13	779.50	0.0999	0.5197	0.0370
LTE Band 14	790.50	0.1180	0.5270	0.0501
LTE Band 17	706.5	0.0903	0.4710	0.0368
LTE Band 25	1850.7	0.0301	1.0000	0.0009
LTE Band 26 (814~824)	814.7	0.0790	0.5431	0.0212
LTE Band 26 (824~849)	824.7	0.0790	0.5498	0.0207
LTE Band 30	2307.5	0.0493	1.0000	0.0024
LTE Band 38	2572.5	0.0404	1.0000	0.0016
LTE Band 41/CA_41C	2498.5	0.0404	1.0000	0.0016
LTE Band 41/CA_41C (HPUE)	2498.5	0.0571	1.0000	0.0033
LTE Band 42 (3450~3550)	3452.5	0.0042	1.0000	0.0000
LTE Band 42 (3550~3600)	3552.5	0.0042	1.0000	0.0000
LTE Band 43 (3600~3700)	3602.5	0.0042	1.0000	0.0000
LTE Band 48/CA_48C	3552.5	0.0042	1.0000	0.0000
LTE Band 66/CA_66C/CA_66B	1710.7	0.0179	1.0000	0.0003
LTE Band 71	665.5	0.0903	0.4437	0.0414

Operating Band	Frequency (MHz)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	MEs
NR Band n2	1852.5	0.0301	1.0000	0.0009
NR Band n5	826.5	0.0790	0.5510	0.0206
NR Band n7	2502.5	0.0360	1.0000	0.0013
NR Band n12	701.5	0.0903	0.4677	0.0373
NR Band n13	779.5	0.0999	0.5197	0.0370
NR Band n14	790.5	0.1180	0.5270	0.0501
NR Band n25	1852.5	0.0301	1.0000	0.0009
NR Band n26 (814~824)	816.5	0.0790	0.5443	0.0211
NR Band n26 (824~849)	826.5	0.0790	0.5510	0.0206
NR Band n30	2307.5	0.0493	1.0000	0.0024
NR Band n38	2575	0.0360	1.0000	0.0013
NR Band n41	2501.01	0.0404	1.0000	0.0016
NR Band n41(HPUE)	2501.01	0.0571	1.0000	0.0033
NR Band n48	3555	0.0042	1.0000	0.0000
NR Band n66	1712.5	0.0179	1.0000	0.0003
NR Band n70	1697.5	0.0189	1.0000	0.0004
NR Band n71	665.5	0.0903	0.4437	0.0414
NR Band n77 (3450~3550)	3455.01	0.0042	1.0000	0.0000
NR Band n77(HPUE) (3450~3550)	3455.01	0.0084	1.0000	0.0001
NR Band n77 (3700~3980)	3705	0.0042	1.0000	0.0000
NR Band n77(HPUE) (3700~3980)	3705	0.0084	1.0000	0.0001
NR Band n78 (3450~3550)	3455.01	0.0042	1.0000	0.0000
NR Band n78(HPUE) (3450~3550)	3455.01	0.0084	1.0000	0.0001
NR Band n78 (3700~3800)	3705	0.0042	1.0000	0.0000
NR Band n78(HPUE) (3700~3800)	3705	0.0084	1.0000	0.0001
NR Band n2(MIMO)	1852.5	0.0601	1.0000	0.0036
NR Band n25(MIMO)	1852.5	0.0601	1.0000	0.0036
NR Band n38(MIMO)	2575	0.0807	1.0000	0.0065
NR Band n41(MIMO)	2501.01	0.0807	1.0000	0.0065
NR Band n41(MIMO)(HPUE)	2501.01	0.1140	1.0000	0.0130
NR Band n48(MIMO)	3555	0.0042	1.0000	0.0000
NR Band n66(MIMO)	1712.5	0.0357	1.0000	0.0013
NR Band n70(MIMO)	1697.5	0.0377	1.0000	0.0014
NR Band n71(MIMO)	665.5	0.1802	0.4437	0.1649
NR Band n77(MIMO) (3450~3550)	3455.01	0.0084	1.0000	0.0001
NR Band n77(MIMO)(HPUE) (3450~3550)	3455.01	0.0167	1.0000	0.0003
NR Band n77(MIMO) (3700~3980)	3705	0.0084	1.0000	0.0001
NR Band n77(MIMO)(HPUE) (3700~3980)	3705	0.0167	1.0000	0.0003
NR Band n78(MIMO) (3450~3550)	3455.01	0.0084	1.0000	0.0001
NR Band n78(MIMO)(HPUE) (3450~3550)	3455.01	0.0167	1.0000	0.0003
NR Band n78(MIMO) (3700~3800)	3705	0.0084	1.0000	0.0001
NR Band n78(MIMO)(HPUE) (3700~3800)	3705	0.0167	1.0000	0.0003

The product also has multiple transmitters. The Simultaneous Transmission Possibilities are as below:

LTE inter-band CA, EN_DC, NR inter-band CA and MIMO

The worst-case combination:

Combination	Total MEs	Limit	Conclusion
EN-DC 14A_n5A	$0.0501+0.0206=0.0707$	<1	PASS
NR Band n71(MIMO)	0.1649	<1	PASS
LTE CA_12B	0.0375	<1	PASS
n14A-n77A	$0.0501+0.0.0000=0.0501$	<1	PASS

~The End~