RF Exposure Evaluation Report

Application No.:	DNT2507230530R7952-09821
Applicant:	FJ Dynamics Technology Academy (chang zhou) Co.,Ltd.
Address of Applicant:	No.202 Donghai Road, Xinbei District, Changzhou City
EUT Description:	GNSS Reference Receiver
Model No.:	N10
FCC ID:	2BAPG-N10
Power supply	DC 3.7V From Battery; DC 12V From Adapter and Adapter Input AC 100-240V,50/60Hz
Trade Mark:	/
Standards:	47 CFR Part 2.1091 FCC KDB 447498 D01 v06
Date of Receipt:	2025/7/23
Date of Test:	2025/7/24 to 2025/8/15
Date of Issue:	2025/8/28
Test Result:	**PASS**

Prepared By: Wayne.Lin (Testing Engineer)

Reviewed By: Pencils.Chen (Project Engineer)

Approved By: Yoise Zhou (Manager)

Note: If there is any objection to the results in this report, please submit a written inquiry to the company within 15 days from the date of receiving the report. The test report is effective only with both signature and specialized stamp, and is issued by the company in accordance with the requirements of the "Conditions of Issuance of Test Reports" printed in the attached page. Unless otherwise stated, the results presented in this report only apply to the samples tested this time. Partial reproduction of this report is not allowed unless approved by the company in writing.

Dongguan DN Testing Co., Ltd.

Add: No. 1, West Fourth Street, Xingfa South Road, Wusha Community, Chang 'an Town, Dongguan City, Guangdong P.R.China

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	August 28, 2025	Valid	Original Report

Contents

1 General Information

1.1 Test Location

Company:	Dongguan DN Testing Co., Ltd
Address:	No. 1, West Fourth Street, South Xinfa Road, Wusha Liwu, Chang ' an Town, Dongguan City, Guangdong P.R.China
Test engineer:	Wayne Lin

1.2 General Description of EUT

Manufacturer:	FJ Dynamics Technology Academy (chang zhou) Co.,Ltd.
Address of Manufacturer:	No.202 Donghai Road, Xinbei District, Changzhou City
EUT Description::	GNSS Reference Receiver
Test Model No.:	N10
Additional Model(s):	/
Chip Type:	CW2438 44
Serial Number	PR2507230530R7952
Power Supply	DC 3.7V From Battery; DC 12V From Adapter and Adapter Input AC 100-240V,50/60Hz
Trade Mark:	N/A
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	2.4GWIFI:2412-2462MHz 2G/3G/4G:

BAND	TX	RX
GSM850	824 to 849 MHz	869 to 894 MHz
GSM1900	1850 to 1910 MHz	1930 to 1990 MHz
UMTS BAND II	1850 to 1910 MHz	1930 to 1990 MHz
UMTS BAND IV	1710 to 1755 MHz	2110 to 2155 MHz
UMTS BAND V	824 to 849 MHz	869 to 894 MHz
LTE BAND 2	1850 to 1910 MHz	1930 to 1990 MHz
LTE BAND 4	1710 to 1755 MHz	2110 to 2155 MHz
LTE BAND 5	824 to 849 MHz	869 to 894 MHz
LTE BAND 7	2500 to 2570 MHz	2620 to 2690 MHz
LTE BAND 12	699 to 716 MHz	729 to 746 MHz

	LTE BAND 13	777 to 787 MHz	746 to 756 MHz
	LTE BAND 25	1850 to 1915MHz	1930 to 1995 MHz
	LTE BAND 26 (814 to 824 MHz)	814 to 824MHz	859 to 869 MHz
	LTE BAND 26 (824 to 849 MHz)	824 to 849 MHz	869 to 894 MHz
	LTE BAND 38	2570 to 2620MHz	2570 to 2620MHz
	LTE BAND 41	2496 to 2690MHz	2496 to 2690MHz
Type of Modulation:	DSSS/OFDM		
Sample Type:	☐ Portable Device, ☐ Module, ☒ Mobile Device		
Antenna Type:	☐ External, ☒ Integrated		
Antenna Gain:	☒ Provided by applicant 2.4GWIFI:-13.31dBi; LTE: GSM850: 2.29dBi; GSM1900:1.59dBi WCDMA BAND II:1.59dBi WCDMA BAND VI:2dBi WCDMA BAND V:2.29dBi LTE BAND 2:1.59dBi; LTE BAND 4:2dBi; LTE BAND 5:2.29dBi; LTE BAND 7: 3dBi; LTE BAND 12: 3.26dBi; LTE BAND 13: 4.45dBi; LTE BAND 25: 1.59dBi; LTE BAND 26: 2.53dBi; LTE BAND 38: 2.06dBi; LTE BAND 41: 3dBi;		

Remark:

*All models are just name differences, motherboard, PCB circuit board, chip, electronic components, appearance is all the same.

*Since the above data and/or information is provided by the applicant relevant results or conclusions of this report are only made for these data and/or information , DNT is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.

1.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

Lab A:

• FCC, USA

Designation Number: CN1348

• A2LA (Certificate No. 7050.01)

DONGGUAN DN TESTING CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 7050.01.

• Innovation, Science and Economic Development Canada

DONGGUAN DN TESTING CO., LTD. EMC Laboratory has been recognized by ISED as an accredited testing laboratory. CAB identifier is CN0149.

IC#: 30755.

1.4 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	DTS Bandwidth	±0.0196%
2	Maximum Conducted Output Power	±0.686 dB
3	Maximum Power Spectral Density Level	±0.743 dB
4	Band-edge Compliance	±1.328 dB
5	Unwanted Emissions In Non-restricted Freq Bands	9KHz-1GHz:±0.746dB 1GHz-26GHz: ±1.328dB

No.	Item	Measurement Uncertainty
1	Conduction Emission	± 3.0dB (150kHz to 30MHz)
2	Radiated Emission	± 4.8dB (Below 1GHz)
		± 4.8dB (1GHz to 6GHz)
		± 4.5dB (6GHz to 18GHz)
		± 5.02dB (Above 18GHz)

2 RF Exposure Evaluation

2.1 RF Exposure Compliance Requirement

2.1.1 Limits

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f2)	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30
F=frequency in MHz *=Plane-wave equivalent power density RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).				

Friis Formula

Friis transmission formula: Pd = (Pout*G)/(4* Pi * R 2)

Where

Pd = power density in mW/cm2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Pd id the limit of MPE, 1 mW/cm2 . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

2.1.2 Test Procedure

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually

2.1.3 EUT RF Exposure Evaluation

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.0 / 2.0 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

This confirmed that the device comply with MPE limit.

WIFI

Test Mode	Antenna	Freq(MHz)	Power [dBm]
11B	Ant1	2412	20.57
		2437	21.12
		2462	21.41
11G	Ant1	2412	23.52
		2437	24.01
		2462	24.03
11N20SISO	Ant1	2412	21.88
		2437	22.28
		2462	22.24

The Worst Mode	Antenna	Peak output power (dBm)	Target power (dBm)	MAX Target power (dBm)	Antenna gain		Power Density (S) (mW /cm^2)	Limited of Power Density (S) (mW /cm^2)	Test Result	Distance (cm)
					(dBi)	(Linear)				
2.4G Band										
802.11g	Ant1	24.03	24±1	25	-13.310.0029	0.047	0.0029	1	Complies	20

2G/3G/4G:

Operating Band	Frequency (MHz)	Antenna Gain (dBi)	Max Conducted Average Output Power (dBm)	Output Power to Antenna (dBm)	EIRP(ERP) Limit (dBm)	Output Power to Antenna (mw)	Power Density at R = 20 cm (mW/cm2)	Limit (mW/cm2)	Gain according to EIRP (dBi)	Gain according to Pd (dBi)	Max Gain Allowed (dBi)	conclusion
GSM850	824.2	2.29	25.81	25.95	38.45	381.0658	0.1284	0.5495	14.79	8.60	8.60	Pass
GSM1900	1850.2	1.59	22.81	24.40	33.00	190.9853	0.0548	1.0000	10.19	14.20	10.19	Pass
WCDMA B2	1852.4	1.59	25.00	26.59	33.00	316.2278	0.0907	1.0000	8.00	12.01	8.00	Pass
WCDMA B4	1712.4	2.00	25.00	27.00	30.00	316.2278	0.0997	1.0000	5.00	12.01	5.00	Pass
WCDMA B5	826.4	2.29	25.00	25.14	38.45	316.2278	0.1066	0.5509	15.60	9.42	9.42	Pass
LTE B2	1850.7	1.59	25.00	26.59	33.00	316.2278	0.0907	1.0000	8.00	12.01	8.00	Pass
LTE B4	1710.7	2.00	25.00	27.00	30.00	316.2278	0.0997	1.0000	5.00	12.01	5.00	Pass
LTE B5	824.70	2.29	25.00	25.14	38.45	316.2278	0.1066	0.5498	15.60	9.41	9.41	Pass
LTE B7	2502.50	3.00	25.00	28.00	33.00	316.2278	0.1255	1.0000	8.00	12.01	8.00	Pass
LTE B12	699.70	3.26	25.00	26.11	34.77	316.2278	0.1333	0.4665	11.92	8.70	8.70	Pass
LTE B13	779.50	4.45	25.00	27.30	34.77	316.2278	0.1753	0.5197	11.92	9.16	9.16	Pass
LTE B25	1850.7	1.59	25.00	26.59	33.00	316.2278	0.0907	1.0000	8.00	12.01	8.00	Pass
LTE B26(814-824)	814.7	2.53	25.00	25.38	50.00	316.2278	0.1126	0.5431	27.15	9.36	9.36	Pass
LTE B26(824-849)	824.7	2.53	25.00	25.38	38.45	316.2278	0.1126	0.5498	15.60	9.41	9.41	Pass
LTE B38	2572.5	2.06	25.00	27.06	33.00	316.2278	0.1011	1.0000	8.00	12.01	8.00	Pass
LTE B41	2498.5	3.00	25.00	28.00	33.00	316.2278	0.1255	1.0000	8.00	12.01	8.00	Pass

WIFI+LTE

MAX.Power Density Radio WIFI	MAX.Power Density Radio LTE	Total Radio	Limit	Test Result
0.0029	0.3373	0.3402	1	Complies

The End Report