TEST REPORT

Applicant:	Tri Cascade Inc.
EUT Description:	TRITOM 5G IoT Modem
Model:	GX500G
Brand:	TRITOM
FCC ID:	2ACARGX500G
Standards:	FCC 47 CFR Part 2.1091
Date of Receipt:	2025/02/11
Date of Issue:	2025/03/25

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	2025/03/25	Original	Chen Chengfu

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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:	Tri Cascade Inc.
Address:	19200 Von Karman Ave, Ste 400, Irvine, CA 92612

1.2.2 Manufacturer

Manufacturer:	Tri Cascade Inc.
Address:	19200 Von Karman Ave, Ste 400, Irvine, CA 92612

1.3 Product Information

EUT Description:	TRITOM 5G IoT Modem		
Model:	GX500G		
Brand:	TRITOM		
Hardware Version:	V1.0		
Software Version:	V2.1.0		
Antenna Type:	☒ External, ☐ Integrated		
Feature:	UL 2*2 MIMO: NR Band n38; NR Band n41; NR Band n48; NR Band n77; NR Band n78;		
Power Class:	Class 2: NR Band n38; NR Band n41; NR Band n77; NR Band n78; Class 1.5: NR Band n41 MIMO; NR Band 77 MIMO; NR Band 78 MIMO; Class 2: LTE Band 38; LTE Band 41; LTE Band 42; LTE Band 43; Class 3: Other;		
Antenna gain:	Band	Ant0(dBi)	Ant2(dBi)
	WCDMA Band II	2.33	/
	WCDMA Band IV	2.67	/
	WCDMA Band V	1.54	/
	LTE Band 2	2.33	/
	LTE Band 4	2.67	/
	LTE Band 5	1.54	/
	LTE Band 7	2.85	/
	LTE Band 12	0.19	/
	LTE Band 13	0.24	/
	LTE Band 14	0.99	/
	LTE Band 17	0.19	/
	LTE Band 25	2.33	/
	LTE Band 26 (814 to 824 MHz)	1.61	/
	LTE Band 26 (824 to 849 MHz)	1.61	/
	LTE Band 30	-1.02	/
	LTE Band 38	2.84	/
	LTE Band 41	2.85	/
	LTE Band 42	/	0
	LTE Band 43	/	0
	LTE Band 48	/	-2
	LTE Band 66	2.67	/
	LTE Band 71	0.19	/
	NR Band n2	2.33	/
	NR Band n5	1.54	/
	NR Band n7	2.85	/
	NR Band n12	0.19	/
	NR Band n13	0.24	/

	NR Band n14	0.99	/
	NR Band n25	2.33	/
	NR Band n26 (814 to 824 MHz)	1.61	/
	NR Band n26 (824 to 849 MHz)	1.61	/
	NR Band n30	-1.02	/
	NR Band n38	2.84	2.84
	NR Band n41	2.85	2.85
	NR Band n48	-2	-2
	NR Band n66	2.67	/
	NR Band n70	/	2.47
	NR Band n71	0.19	/
	NR Band n77	0	0
	NR Band n78	0	0
LTE/NR Mode:	LTE UL CA: CA_2C; CA_5B; CA_66B; CA_66C; CA_7C; CA_42C; CA_38C; CA_41C; CA_43C; CA_48C; UL CA_2A-4A; UL CA_2A-5A; UL CA_2A-7A; UL CA_2A-12A; UL CA_2A-13A; UL CA_2A-30A; UL CA_2A-66A; UL CA_4A-5A; UL CA_4A-7A; UL CA_4A-12A; UL CA_4A-13A; UL CA_4A-30A; UL CA_5A-30A; UL CA_5A-66A; UL CA_5A-7A; UL CA_12A-30A; UL CA_12A-66A; UL CA_13A-66A; UL CA_14A-30A; NSA: DC_5A_n2A; DC_12A_n2A; DC_14A_n2A; DC_71A_n2A; DC_13A_n2A; DC_30A_n2A; DC_66A_n2A; DC_7A_n2A; DC_4A_n2A; DC_2A_n5A; DC_30A_n5A; DC_48A_n5A; DC_66A_n5A; DC_7A_n5A; DC_5A_n7A; DC_12A_n7A; DC_66A_n7A; DC_13A_n7A; DC_2A_n7A; DC_71A_n7A; DC_4A_n7A; DC_30A_n12A; DC_48A_n12A; DC_2A_n12A; DC_66A_n12A; DC_7A_n12A; DC_2A_n14A; DC_30A_n14A; DC_66A_n14A; DC_12A_n25A; DC_66A_n25A; DC_48A_n25A; DC_7A_n25A; DC_71A_n25A; DC_5A_n25A; DC_26A_n25A; DC_13A_n25A; DC_5A_n30A; DC_12A_n30A; DC_14A_n30A; DC_66A_n30A; DC_2A_n30A; DC_66A_n38A; DC_2A_n38A; DC_12A_n38A; DC_4A_n38A; DC_5A_n38A; DC_71A_n38A; DC_25A_n41A; DC_12A_n41A; DC_26A_n41A; DC_2A_n41A; DC_4A_n41A; DC_5A_n41A; DC_66A_n41A; DC_71A_n41A; DC_2A_n48A; DC_5A_n48A; DC_13A_n48A; DC_66A_n48A; DC_13A_n66A; DC_5A_n66A; DC_12A_n66A; DC_14A_n66A; DC_48A_n66A; DC_2A_n66A; DC_30A_n66A; DC_71A_n66A; DC_7A_n66A; DC_48A_n71A; DC_2A_n71A; DC_66A_n71A; DC_7A_n71A; DC_41A_n78A; DC_12A_n78A; DC_13A_n78A; DC_25A_n78A; DC_26A_n78A; DC_2A_n78A; DC_4A_n78A; DC_5A_n78A; DC_66A_n78A; DC_71A_n78A; DC_7A_n78A; DC_41A_n77A; DC_12A_n77A; DC_13A_n77A; DC_14A_n77A; DC_25A_n77A; DC_2A_n77A; DC_30A_n77A; DC_5A_n77A; DC_66A_n77A; DC_71A_n77A; DC_7A_n77A;		
Remark: The above EUT's information was declared by applicant, please refer to the specifications or user manual for more detailed description.			

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 fi elds.

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

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strengtl (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:

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

Where:
S = Power density in mW/cm^2
EIRP= Equivalent isotropic Radiated power in mW
R = Distance from transmitting antenna in cm

Power density in units of mW/cm^2 is converted to units of W/m^2 by multiplying by 10.

Distance:

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

Where:
S = Power density in mW/cm^2
EIRP= Equivalent isotropic Radiated power in mW
R = Distance from transmitting antenna in cm

EIRP:

$$EIRP = P+G$$

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 collocated transmitters (identical limit for all transmitters):
For multiple chain devices, and collocated 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 collocated transmitters:
For multiple collocated 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/cm2)	Limit (mW/cm2)	Results
WCDMA Band II	1852.4	2.33	25.00	27.33	33.00	540.7543	0.1840	1.0000	Pass
WCDMA Band IV	1712.4	2.67	25.00	27.67	30.00	584.7901	0.2151	1.0000	Pass
WCDMA Band V	826.4	1.54	25.00	24.39	38.45	274.7894	0.0475	0.5509	Pass
LTE Band 2/CA_2C	1850.7	2.33	25.00	27.33	33.00	540.7543	0.1840	1.0000	Pass
LTE Band 4	1710.7	2.67	25.00	27.67	30.00	584.7901	0.2151	1.0000	Pass
LTE Band 5/CA_5B	824.70	1.54	25.00	24.39	38.45	274.7894	0.0475	0.5498	Pass
LTE Band 7/CA_7C	2502.50	2.85	25.00	27.85	33.00	609.5369	0.2337	1.0000	Pass
LTE Band 12	699.7	0.19	25.00	23.04	34.77	201.3724	0.0255	0.4665	Pass
LTE Band 13	779.5	0.24	25.00	23.09	34.77	203.7042	0.0261	0.5197	Pass
LTE Band 14	790.5	0.99	25.00	23.84	34.77	242.1029	0.0369	0.5270	Pass
LTE Band 17	706.5	0.19	25.00	23.04	34.77	201.3724	0.0255	0.4710	Pass
LTE Band 25	1850.7	2.33	25.00	27.33	33.00	540.7543	0.1840	1.0000	Pass
LTE Band 26 (814 to 824 MHz)	814.7	1.61	25.00	24.46	50.00	279.2544	0.0491	0.5431	Pass
LTE Band 26 (824 to 849 MHz)	824.7	1.61	25.00	24.46	38.45	279.2544	0.0491	0.5498	Pass
LTE Band 30	2307.5	-1.02	25.00	23.98	23.98	250.0345	0.0393	1.0000	Pass
LTE Band 38/CA_38C	2572.5	2.84	28.00	30.84	33.00	1213.3889	0.4642	1.0000	Pass
LTE Band 41/CA_41C	2498.5	2.85	28.00	30.85	33.00	1216.1860	0.4664	1.0000	Pass
LTE Band 42/CA_42C	3452.5	0.00	28.00	28.00	30.00	630.9573	0.1255	1.0000	Pass
LTE Band 43/CA_43C	3702.5	0.00	28.00	28.00	30.00	630.9573	0.1255	1.0000	Pass
LTE Band 48/CA_48C	3552.5	-2.00	25.00	23.00	23.00	199.5262	0.0250	1.0000	Pass
LTE Band 66/CA_66B/CA_66C	1710.7	2.67	25.00	27.67	30.00	584.7901	0.2151	1.0000	Pass
LTE Band 71	665.5	0.19	25.00	23.04	34.77	201.3724	0.0255	0.4437	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)	Results
NR Band n2	1852.5	2.33	25.00	27.33	33.00	540.7543	0.1840	1.0000	Pass
NR Band n5	826.5	1.54	25.00	24.39	38.45	274.7894	0.0475	0.5510	Pass
NR Band n7	2502.5	2.85	25.00	27.85	33.00	609.5369	0.2337	1.0000	Pass
NR Band n12	701.5	0.19	25.00	23.04	34.77	201.3724	0.0255	0.4677	Pass
NR Band n13	779.5	0.24	25.00	23.09	34.77	203.7042	0.0261	0.5197	Pass
NR Band n14	790.5	0.99	25.00	23.84	34.77	242.1029	0.0369	0.5270	Pass
NR Band n25	1852.5	2.33	25.00	27.33	33.00	540.7543	0.1840	1.0000	Pass
NR Band n26 (814~824)	816.5	1.61	25.00	24.46	50.00	279.2544	0.0491	0.5443	Pass
NR Band n26 (824~849)	826.5	1.61	25.00	24.46	38.45	279.2544	0.0491	0.5510	Pass
NR Band n30	2307.5	-1.02	25.00	23.98	23.98	250.0345	0.0393	1.0000	Pass
NR Band n38	2575	2.84	28.00	30.84	33.00	1213.3889	0.4642	1.0000	Pass
NR Band n41	2506.02	2.85	28.00	30.85	33.00	1216.1860	0.4664	1.0000	Pass
NR Band n48	3555	-2	25.00	23.00	23.00	199.5262	0.0250	1.0000	Pass
NR Band n66	1712.5	2.67	25.00	27.67	30.00	584.7901	0.2151	1.0000	Pass
NR Band n70	1697.5	2.47	25.00	27.47	30.00	558.4702	0.1962	1.0000	Pass
NR Band n71	665.5	0.19	25.00	23.04	34.77	201.3724	0.0255	0.4437	Pass
NR Band n77 (3450~3550)	3455.01	0	28.00	28.00	30.00	630.9573	0.1255	1.0000	Pass
NR Band n77 (3700~3980)	3705	0	28.00	28.00	30.00	630.9573	0.1255	1.0000	Pass
NR Band n78 (3450~3550)	3455.01	0	28.00	28.00	30.00	630.9573	0.1255	1.0000	Pass
NR Band n78 (3700~3800)	3705	0	28.00	28.00	30.00	630.9573	0.1255	1.0000	Pass
NR Band n38(MIMO)	2575	2.84	28.00	30.84	33.00	1213.3889	0.4642	1.0000	Pass
NR Band n41(MIMO)	2506.02	2.85	28.00	30.85	33.00	1216.1860	0.4664	1.0000	Pass
NR Band n48(MIMO)	3555	-2	25.00	23.00	23.00	199.5262	0.0250	1.0000	Pass
NR Band n77(MIMO) (3450~3550)	3455.01	0	30.00	30.00	30.00	1000.0000	0.1989	1.0000	Pass
NR Band n77(MIMO) (3700~3980)	3705	0	30.00	30.00	30.00	1000.0000	0.1989	1.0000	Pass
NR Band n78(MIMO) (3450~3550)	3455.01	0	30.00	30.00	30.00	1000.0000	0.1989	1.0000	Pass
NR Band n78(MIMO) (3700~3800)	3705	0	30.00	30.00	30.00	1000.0000	0.1989	1.0000	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/cm2)	Limit (mW/cm2)	MEs
WCDMA Band II	1852.4	0.1840	1.0000	0.1840
WCDMA Band IV	1712.4	0.2151	1.0000	0.2151
WCDMA Band V	826.4	0.0475	0.5509	0.0862
LTE Band 2/CA_2C	1850.7	0.1840	1.0000	0.1840
LTE Band 4	1710.7	0.2151	1.0000	0.2151
LTE Band 5/CA_5B	824.70	0.0475	0.5498	0.0864
LTE Band 7/CA_7C	2502.50	0.2337	1.0000	0.2337
LTE Band 12	699.7	0.0255	0.4665	0.0547
LTE Band 13	779.5	0.0261	0.5197	0.0502
LTE Band 14	790.5	0.0369	0.5270	0.0700
LTE Band 17	706.5	0.0255	0.4710	0.0542
LTE Band 25	1850.7	0.1840	1.0000	0.1840
LTE Band 26 (814 to 824 MHz)	814.7	0.0491	0.5431	0.0903
LTE Band 26 (824 to 849 MHz)	824.7	0.0491	0.5498	0.0892
LTE Band 30	2307.5	0.0393	1.0000	0.0393
LTE Band 38/CA_38C	2572.5	0.4642	1.0000	0.4642
LTE Band 41/CA_41C	2498.5	0.4664	1.0000	0.4664
LTE Band 42/CA_42C	3452.5	0.1255	1.0000	0.1255
LTE Band 43/CA_43C	3702.5	0.1255	1.0000	0.1255
LTE Band 48/CA_48C	3552.5	0.0250	1.0000	0.0250
LTE Band 66/CA_66B/CA_66C	1710.7	0.2151	1.0000	0.2151
LTE Band 71	665.5	0.0255	0.4437	0.0575

Operating Band	Frequency (MHz)	Power Density at R=20cm (mW/cm2)	Limit (mW/cm2)	MEs
NR Band n2	1852.5	0.1840	1.0000	0.1840
NR Band n5	826.5	0.0475	0.5510	0.0862
NR Band n7	2502.5	0.2337	1.0000	0.2337
NR Band n12	701.5	0.0255	0.4677	0.0545
NR Band n13	779.5	0.0261	0.5197	0.0502
NR Band n14	790.5	0.0369	0.5270	0.0700
NR Band n25	1852.5	0.1840	1.0000	0.1840
NR Band n26 (814~824)	816.5	0.0491	0.5443	0.0901
NR Band n26 (824~849)	826.5	0.0491	0.5510	0.0890
NR Band n30	2307.5	0.0393	1.0000	0.0393
NR Band n38	2575	0.4642	1.0000	0.4642
NR Band n41	2506.02	0.4664	1.0000	0.4664
NR Band n48	3555	0.0250	1.0000	0.0250
NR Band n66	1712.5	0.2151	1.0000	0.2151
NR Band n70	1697.5	0.1962	1.0000	0.1962
NR Band n71	665.5	0.0255	0.4437	0.0575
NR Band n77 (3450~3550)	3455.01	0.1255	1.0000	0.1255
NR Band n77 (3700~3980)	3705	0.1255	1.0000	0.1255
NR Band n78 (3450~3550)	3455.01	0.1255	1.0000	0.1255
NR Band n78 (3700~3800)	3705	0.1255	1.0000	0.1255
NR Band n38(MIMO)	2575	0.4642	1.0000	0.4642
NR Band n41(MIMO)	2506.02	0.4664	1.0000	0.4664
NR Band n48(MIMO)	3555	0.0250	1.0000	0.0250
NR Band n77(MIMO) (3450~3550)	3455.01	0.1989	1.0000	0.1989
NR Band n77(MIMO) (3700~3980)	3705	0.1989	1.0000	0.1989
NR Band n78(MIMO) (3450~3550)	3455.01	0.1989	1.0000	0.1989
NR Band n78(MIMO) (3700~3800)	3705	0.1989	1.0000	0.1989

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

LTE inter-band CA, EN_DC, and MIMO

The worst-case combination:

Combination	Total MEs	Limit	Conclusion
LTE UL CA_4A-7A	0.2151 + 0.2337 = 0.4488	<1	PASS
DC_66A_n41A	0.2151 + 0.4664 = 0.6815	<1	PASS
NR Band n41(MIMO)	0.4664	<1	PASS

~The End~