

<b>Product Name: LTE Module</b>	<b>Report No: FCC022022-05502RF13</b>
<b>Product Model: TOBY-L3414</b>	<b>Security Classification: Open</b>
<b>Version: V1.0</b>	<b>Total Page: 8</b>

# TIRT Testing Report



<b>Prepared By:</b>	<b>Checked By:</b>	<b>Approved By:</b>	A circular blue stamp for TIRT Shenzhen, containing the text "Beijing TIRT Technology Service Co., Ltd" and "TIRT Shenzhen".
Stone Tang	Randy Lv	Daniel Chen	
<i>Stone Tang</i>	<i>Randy Lv</i>	<i>Daniel chen</i>	

# FCC RF EXPOSURE REPORT

## FCC ID: 2A3Z6TOBYL3414

**Equipment** : LTE Module  
**Brand Name** : TASHANG  
**Test Model** : TOBY-L3414  
**Series Model** : N/A  
**Applicant** : Tashang Semiconductor(Shanghai) Co., Ltd.  
**Address** : Room 818, Building 4, No.89, Sanshahong Road, Chengqiao Town,  
Chongming District, Shanghai  
**Manufacturer** : Tashang Semiconductor(Shanghai) Co., Ltd.  
**Address** : Room 818, Building 4, No.89, Sanshahong Road, Chengqiao Town,  
Chongming District, Shanghai  
**Date of Receipt** : 2022.08.21  
**Date of Test** : 2022.09.06-2022.09.30  
**Issued Date** : 2022.10.20  
**Report Version** : V1.0  
**Test Sample** : Engineering Sample No.: 20220820018527  
**Standard(s)** : FCC Title 47 Part 2. 1091  
KDB 447498 001 General RF exposure guidance v06

- The test result referred exclusively to the presented test model /sample.
- Without written approval of TIRT Inc. the test report shall not reproduced except in full.

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**REPORT ISSUED HISTORY**

Report No.	Version	Description	Issued Date	Note
FCC022022-05502RF13	V1.0	Original Report	2022.10.20	Valid
FCC022022-05502RF13	V1.0	Revised issue	2022.11.03	Valid

## 1. TEST FACILITY

Company:	Beijing TIRT Technology Service Co.,Ltd Shenzhen
Address:	101, 3 # Factory Building, Gongjin Electronics, Shatin Community, KengziStreet, Pingshan District, Shenzhen City, Guangdong province, China
CNAS Registration Number:	CNAS L14158
A2LA Registration Number	6049.01
Telephone:	+86-0755-27087573

## 2. MPE CALCULATION METHOD

Calculation Method of RF Safety Distance:

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

where:

S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

## Antenna Specification:

For 2G-PCS1900 &amp;3G-Band II&amp;LTE-BAND2 :

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	N/A	N/A	0.43

For 3G BANDIV&amp;LTE-BAND4&amp;LTE-BAND66:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	N/A	N/A	3.05

For LTE-BAND7:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	N/A	N/A	1.48

For LTE-BAND12&amp;BAND71:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	N/A	N/A	0.73

For LTE-BAND13:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	N/A	N/A	0.22

For LTE-BAND41:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	N/A	N/A	1.58

Note: The antenna gain is provided by the manufacturer.

### 3. TEST RESULTS

For PCS1900:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
0.43	1.10	30.05	1011.579454	0.222	1	Complies

Directional Gain (dBi)	Directional Gain (numeric)	Tune-up (dBm)	Tune-up (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
0.43	1.10	32	1584.893192	0.348	1	Complies

For 3G-BAND II:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
0.43	1.10	23.03	200.9092813	0.044	1	Complies

Directional Gain (dBi)	Directional Gain (numeric)	Tune-up (dBm)	Tune-up (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
0.43	1.10	25	316.227766	0.0695	1	Complies

For 3G-BAND IV:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
3.05	2.02	24.01	251.77	0.101	1	Complies

Directional Gain (dBi)	Directional Gain (numeric)	Tune-up (dBm)	Tune-up (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
3.05	2.02	25	316.227766	0.127	1	Complies

For LTE-BAND2:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
0.43	1.10	24.33	271.0191632	0.060	1	Complies

Directional Gain (dBi)	Directional Gain (numeric)	Tune-up (dBm)	Tune-up (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
0.43	1.10	25	316.227766	0.0695	1	Complies

## For LTE-BAND4:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
3.05	2.02	24.41	276.0577856	0.111	1	Complies

Directional Gain (dBi)	Directional Gain (numeric)	Tune-up (dBm)	Tune-up (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
3.05	2.02	25	316.227766	0.127	1	Complies

## For LTE-BAND7:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
1.48	1.41	24.30	269.1520543	0.075	1	Complies

Directional Gain (dBi)	Directional Gain (numeric)	Tune-up (dBm)	Tune-up (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
1.48	1.41	25	316.227766	0.0885	1	Complies

## For LTE-BAND12:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
0.73	1.18	24.85	305.4921113	0.072	0.47	Complies

Directional Gain (dBi)	Directional Gain (numeric)	Tune-up (dBm)	Tune-up (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
0.73	1.18	25	316.227766	0.074	0.47	Complies

## For LTE-BAND13:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
0.22	1.05	24.90	309.0295433	0.065	0.52	Complies

Directional Gain (dBi)	Directional Gain (numeric)	Tune-up (dBm)	Tune-up (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
0.22	1.05	25	316.227766	0.0662	0.52	Complies

## For LTE-BAND41:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
1.58	1.44	23.73	236.0478233	0.068	1	Complies

Directional Gain (dBi)	Directional Gain (numeric)	Tune-up (dBm)	Tune-up (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
1.58	1.44	25	316.227766	0.091	1	Complies

## For LTE-BAND66:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
3.05	2.02	24.32	270.3958364	0.109	1	Complies

Directional Gain (dBi)	Directional Gain (numeric)	Tune-up (dBm)	Tune-up (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
3.05	2.02	25	316.227766	0.127	1	Complies

## For LTE-BAND71:

Directional Gain (dBi)	Directional Gain (numeric)	Max. Output Power (dBm)	Max. Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
0.73	1.18	24.39	274.789415	0.065	0.452	Complies

Directional Gain (dBi)	Directional Gain (numeric)	Tune-up (dBm)	Tune-up (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
0.73	1.18	25	316.227766	0.074	0.452	Complies

## Note:

1. Output power including tune up tolerance.
2. The calculated distance is 20 cm.

**End of Test Report**