



# TEST REPORT

REPORT NUMBER: 24B02W000007-005

ON

**Type of Equipment:** IoT Module

**Type of Designation:** L710GM

**Manufacturer:** Shanghai MobileTek Communication Ltd.

**Brand Name:** LYNQ

**FCC ID:** 2AK9D-L710GM

ACCORDING TO

FCC CFR 47 Part 2.1091

FCC CFR 47 Part1.1310

**Chongqing Academy of Information and Communication Technology**

*Month date, year*

Mar.26, 2024

*Signature*

**Jin Zhou**

*Director*

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Academy of Information and Communications Technology.



**Revision Version**

<b>Report Number</b>	<b>Revision</b>	<b>Date</b>
24B02W000007-005	00	2024-03-26



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## 1. Test Laboratory

### 1.1. Testing Location

Company Name:	Chongqing Academy of Information and Communications Technology
Address:	Building C, Technology Innovation Center, No.8, Yuma Road, Chayuan New Area, Nan'an District, Chongqing, People's Republic of China
Postal Code:	401336
Telephone:	0086-23-88069965
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### 1.2. Testing Environment

Normal Temperature:	21.3°C
Relative Humidity:	65.0%

### 1.3. Project Data

Testing Start Date:	2024-03-18
Testing End Date:	2024-03-18

### 1.4. Signature

刘秋萍

2024-03-26

Liu Qiuping  
(Prepared this test report)

Date

喻春

2024-03-26

Yu Chun  
(Reviewed this test report)

Date

周进

2024-03-26

Jin Zhou  
Director of the laboratory  
(Approved this test report)

Date

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## 2. Client Information

### 2.1. Applicant Information

Company Name:	Shanghai MobileTek Communication Ltd.
Address /Post:	Free Trade Zone No. 33, No. 17 building 6H3, Xiya Road China (Shanghai)
Country:	CHINA
Telephone:	15821966417
Fax:	--
Email:	qh.zhang@mobiletek.cn
Contact Person:	Qinghua Zhang

### 2.2. Manufacturer Information

Company Name:	Shanghai MobileTek Communication Ltd.
Address /Post:	Free Trade Zone No. 33, No. 17 building 6H3, Xiya Road China (Shanghai)
Country:	CHINA
Telephone:	15821966417
Fax:	--
Email:	qh.zhang@mobiletek.cn
Contact Person:	Qinghua Zhang

### 3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

#### 3.1. About EUT

EUT Description:	IoT Module
Model name:	L710GM
Brand name:	LYNQ
CAT-M1 Frequency Band:	B2/B4/B5/B12/B13/B26
NB IoT Frequency Band:	B2/B4/B5/B12/B13/B26
Note: Photographs of EUT are shown in ANNEX A of this test report.	

#### 3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
S2	866238067760693	V4	L710v10.06b01GM.00	2024-02-26

\*EUT ID: is used to identify the test sample in the lab internally.

#### 3.3. Internal Identification of AE used during the test

EUT ID*	SN	Description
NA	NA	NA

\*AE ID: is used to identify the test sample in the lab internally.

## 4. Reference Documents

### 4.1. Applicable Standards

The MPE report was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 2.1091.

**FCC CFR 47 Part 2.1091:** Radio frequency radiation exposure evaluation: mobile devices

### 4.2. Test Limits

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

MPE for the upper tier (people in controlled environments)

Frequency Range [MHz]	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100000	--	--	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/f <sup>2</sup> )*	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

For the DUT, the limits for the general public when an RF safety program is unavailable.



## 5. Test Results

### 5.1. Tune Up Power and Antenna Gain

Frequency Band	Highest Averaged Tune Up Power(dBm)	Highest Frame-Averaged Tune Up Power (dBm)	Antenna Gain(dBi)
CAT-M1 Band2	24.5	24.5	2
CAT-M1 Band4	23	23	4
CAT-M1 Band5	23	23	3
CAT-M1 Band12	23	23	4
CAT-M1 Band13	23	23	4
CAT-M1 Band26 (814MHz~824MHz)	23	23	4
CAT-M1 Band26 (824MHz~849MHz)	23	23	3
NB-IoT Band2	22	22	2
NB-IoT Band4	22	22	4
NB-IoT Band5	22	22	3
NB-IoT Band12	22	22	4
NB-IoT Band13	22	22	4
NB-IoT Band26 (814MHz~824MHz)	22	22	4
NB-IoT Band26 (824MHz~849MHz)	22	22	3
Notes:			
1) Disclaimers: The highest tune up power and antenna gain in the above table are provided by the customer			

## 5.2. Calculation Information

For conservative evaluation consideration, only maximum power of each frequency band based on the tighter limits respectively are used to calculate the boundary power density.

Based on the FCC KDB 447498 D01 and 47 CFR §2.1091, the DUT is evaluated as a mobile device.

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

Where

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

### 5.3. Results

Frequency Band	Limit(mW/cm <sup>2</sup> )	Results(mW/cm <sup>2</sup> )	Verdict
CAT-M1 Band2	1.00	0.09	PASS
CAT-M1 Band4	1.00	0.10	PASS
CAT-M1 Band5	0.55	0.08	PASS
CAT-M1 Band12	0.47	0.10	PASS
CAT-M1 Band13	0.52	0.10	PASS
CAT-M1 Band26 (814MHz~824MHz)	0.54	0.10	PASS
CAT-M1 Band26 (824MHz~849MHz)	0.55	0.08	PASS
NB-IoT Band2	1.00	0.05	PASS
NB-IoT Band4	1.00	0.08	PASS
NB-IoT Band5	0.55	0.06	PASS
NB-IoT Band12	0.47	0.08	PASS
NB-IoT Band13	0.52	0.08	PASS
NB-IoT Band26 (814MHz~824MHz)	0.54	0.08	PASS
NB-IoT Band26 (824MHz~849MHz)	0.55	0.06	PASS

#### 5.4. Result of CAT-M1 Band 2

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1850.0 MHz ~ 1909.9MHz; The maximum conducted is 24.50 dBm. The maximum gain is 2.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00 mW/cm<sup>2</sup>.

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

P= input power of the antenna (mW)

G = antenna gain (numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.09 mW/cm<sup>2</sup>

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm<sup>2</sup> limit for uncontrolled exposure.

#### 5.5. Result of CAT-M1 Band 4

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1710.0 MHz ~ 1754.9MHz; The maximum conducted is 23.00 dBm. The maximum gain is 4.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00 mW/cm<sup>2</sup>.

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

P= input power of the antenna (mW)

G = antenna gain (numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.10 mW/cm<sup>2</sup>

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm<sup>2</sup> limit for uncontrolled exposure.

#### 5.6. Result of CAT-M1 Band 5

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 824.0 MHz ~ 848.9 MHz; The maximum conducted is 23.00 dBm. The maximum gain is 3.00 dBi. Therefore, maximum limit for general public RF exposure: 824.00/1500=0.55 mW/cm<sup>2</sup>.

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

P= input power of the antenna (mW)

G = antenna gain (numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.08 mW/cm<sup>2</sup>

Therefore, at 20 cm the spectral power density is less than the 0.55 mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.7. Result of CAT-M1 Band 12

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 699.00 MHz~715.90 MHz; The maximum conducted is 23.00 dBm. The maximum gain is 4.00 dBi. Therefore, maximum limit for general public RF exposure:  $699.00/1500=0.47$  mW/cm<sup>2</sup>.

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

P= input power of the antenna (mW)

G = antenna gain (numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.10 mW/cm<sup>2</sup>

Therefore, at 20 cm the spectral power density is less than the 0.47 mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.8. Result of CAT-M1 Band 13

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 777.00 MHz~786.90 MHz; The maximum conducted is 23.00 dBm. The maximum gain is 4.00 dBi. Therefore, maximum limit for general public RF exposure:  $777.00/1500=0.52$  mW/cm<sup>2</sup>.

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

P= input power of the antenna (mW)

G = antenna gain (numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.10 mW/cm<sup>2</sup>

Therefore, at 20 cm the spectral power density is less than the 0.52 mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.9. Result of CAT-M1 Band 26 (814MHz~824MHz)

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 814.00 MHz~824.00 MHz; The maximum conducted is 23.00 dBm. The maximum gain is 4.00 dBi. Therefore, maximum limit for general public RF exposure:  $814.00/1500=0.54$  mW/cm<sup>2</sup>.

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

P= input power of the antenna (mW)

G = antenna gain (numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.10 mW/cm<sup>2</sup>

Therefore, at 20 cm the spectral power density is less than the 0.54 mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.10. Result of CAT-M1 Band 26 (824MHz~849MHz)

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 824.00 MHz~849.00 MHz; The maximum conducted is 23.00 dBm. The maximum gain is 4.00 dBi. Therefore, maximum limit for general public RF exposure:  $824.00/1500=0.55$  mW/cm<sup>2</sup>.

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

P= input power of the antenna (mW)

G = antenna gain (numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.08 mW/cm<sup>2</sup>

Therefore, at 20 cm the spectral power density is less than the 0.54 mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.11. Result of NB-IoT Band 2

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1850.0 MHz~1909.9MHz; The maximum conducted is 22.00 dBm. The maximum gain is 2.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00 mW/cm<sup>2</sup>.

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

P= input power of the antenna (mW)

G = antenna gain (numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.05 mW/cm<sup>2</sup>

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.12. Result of NB-IoTBand 4

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1710.0 MHz~1754.9MHz; The maximum conducted is 22.00 dBm. The maximum gain is 4.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00 mW/cm<sup>2</sup>.

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

P= input power of the antenna (mW)

G = antenna gain (numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.08 mW/cm<sup>2</sup>

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.13. Result of NB-IoT Band 5

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 824.0 MHz ~ 848.9 MHz; The maximum conducted is 22.00 dBm. The maximum gain is 3.00 dBi. Therefore, maximum limit for general public RF exposure:  $824.00/1500=0.55 \text{ mW/cm}^2$ .

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

P= input power of the antenna (mW)

G = antenna gain (numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.06 mW/cm<sup>2</sup>

Therefore, at 20 cm the spectral power density is less than the 0.55 mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.14. Result of NB-IoT Band 12

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 699.00 MHz ~ 715.90 MHz; The maximum conducted is 22.00 dBm. The maximum gain is 4.00 dBi. Therefore, maximum limit for general public RF exposure:  $699.00/1500=0.47 \text{ mW/cm}^2$ .

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

P= input power of the antenna (mW)

G = antenna gain (numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.08 mW/cm<sup>2</sup>

Therefore, at 20 cm the spectral power density is less than the 0.47 mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.15. Result of NB-IoT Band 13

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 777.0 MHz ~ 786.9MHz; The maximum conducted is 22.00 dBm. The maximum gain is 4.00 dBi. Therefore, maximum limit for general public RF exposure:  $777.00/1500=0.52 \text{ mW/cm}^2$ .

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

P= input power of the antenna (mW)

G = antenna gain (numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.08 mW/cm<sup>2</sup>

Therefore, at 20 cm the spectral power density is less than the 0.52 mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.16. Result of NB-IoT Band 26 (814MHz~824MHz)

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 814.00 MHz~824.00 MHz; The maximum conducted is 22.00 dBm. The maximum gain is 4.00 dBi. Therefore, maximum limit for general public RF exposure:  $814.00/1500=0.54 \text{ mW/cm}^2$ .

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

P= input power of the antenna (mW)

G = antenna gain (numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.08 mW/cm<sup>2</sup>

Therefore, at 20 cm the spectral power density is less than the 0.54 mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.17. Result of NB-IoT Band 26 (824MHz~849MHz)

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 824.00 MHz~849.00 MHz; The maximum conducted is 22.00 dBm. The maximum gain is 3.00 dBi. Therefore, maximum limit for general public RF exposure:  $824.00/1500=0.55 \text{ mW/cm}^2$ .

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

P= input power of the antenna (mW)

G = antenna gain (numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

S=0.06 mW/cm<sup>2</sup>

Therefore, at 20 cm the spectral power density is less than the 0.55 mW/cm<sup>2</sup> limit for uncontrolled exposure.





Report NO.: 24B02W000007-005

ANNEX A: EUT photograph

See the document "IoT Module Photos".

\*\*\*END OF REPORT\*\*\*

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