TEST REPORT

REPORT NUMBER: I22W00078-MPE-Rev1

ON

Type of Equipment:	LTE Cat1 Module
Type of Designation:	L501
Manufacturer:	Shanghai MobileTek Communication Ltd
Brand Name:	LYNQ
FCC ID:	2AK9DL501G

ACCORDING TO

FCC CFR 47 Part 2.1091 《Radiofrequency radiation exposure evaluation: mobile devices》

FCC CFR 47 Part1.1310 《Radiofrequency radiation exposure limits》

Chongqing Academy of Information and Communication Technology

Month date, year

Dec., 5, 2022

Signature

Xiang Luoyong

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

Report Number	Revision	Date	Memo
I22W00078-MPE	00	2022-11-24	Initial creation of test report
I22W00078-MPE-Rev1	01	2022-12-5	First change of test report
Note：This version has updated DCS1900 to GSM1900 in 3.1 section.			

CONTENTS

Chongqing Academy of Information and Communication Technology
Address：No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965   FAX:0086-23-88608777

Chongqing Academy of Information and Communication Technology
Address：No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965   FAX:0086-23-88608777

Page **2**of**15**

1. Test Laboratory

1.1. Testing Location

Company Name:	Chongqing Academy of Information andCommunications 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
Fax:	0086-23-88608777
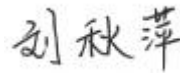
1.2. Testing Environment

Normal Temperature:	21.3°C
Relative Humidity:	65.0%

1.3. Project Data

Testing Start Date:	2022-11-24
Testing End Date:	2022-11-24

1.4. Signature

刘秋萍	**2022-12-5**
Liu Qiuping **(Prepared this test report)**	**Date**
喻春	**2022-12-5**
Yu Chun **(Reviewed this test report)**	**Date**
向罗勇	**2022-12-5**
Xiang Luoyong **Director of the laboratory** **(Approved this test report)**	**Date**

Chongqing Academy of Information and Communication Technology
Address：No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965   FAX:0086-23-88608777

Page **3**of**15**

2. Client Information

2.1. Applicant Information

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

Chongqing Academy of Information and Communication Technology
Address：No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965   FAX:0086-23-88608777

Page **4**of**15**

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

3.1. About EUT

EUT Description:	LTE Cat1 Module
Model name:	L501
GSM Frequency Band:	GSM850/GSM1900
LTE Frequency Band:	Band 2/4/5/7/41/66
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
S1	868070047049113	V3	L501GN_3Sv05.01b01	2022-11-9

*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.

Chongqing Academy of Information and Communication Technology
Address：No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965   FAX:0086-23-88608777

Page **5**of**15**

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: Radiofrequency radiation exposure evaluation: mobile devices

4.2. Test Limits

Systems operating under the provisions of this section shall be operated in a mannerthat ensures that the public is not exposed to radio frequency energy level in excesslimit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2Subpart J, section 2.1091 this device has been defined as a mobile device whereby adistance 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^2)	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^2)*	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^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

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

Chongqing Academy of Information and Communication Technology
Address：No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965   FAX:0086-23-88608777

Page **6**of**15**

5. Test Results

5.1. Tunne Up Power

Frequency Band	Highest Averaged Tunne Up Power (dBm)	Highest Frame-Averaged Tunne Up Power (dBm)	Antenna Gain(dBi)
GSM850	33	23.97	2
GSM1900	30	20.97	2
GPRS850 1TS	33	23.97	2
GPRS1900 1TS	30	20.97	2
GPRS850 2TS	33	26.98	2
GPRS1900 2TS	30	23.98	2
GPRS850 3TS	31	26.74	2
GPRS1900 3TS	28	23.74	2
GPRS850 4TS	29	25.99	2
GPRS1900 4TS	26	22.99	2
EGPRS850 1TS	33	23.97	2
EGPRS1900 1TS	30	20.97	2
EGPRS850 2TS	33	26.98	2
EGPRS1900 2TS	30	23.98	2
EGPRS850 3TS	31	26.74	2
EGPRS1900 3TS	28	23.74	2
EGPRS850 4TS	29	25.99	2
EGPRS1900 4TS	26	22.99	2

Notes:

1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

2) According to the conducted power as above, the measurements are performed with 1Txslots for 850MHz and 1900MHz.

3) Disclaimers：The highest tunne up power and antenna gain in the above table are provided by the customer

Chongqing Academy of Information and Communication Technology
Address：No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965   FAX:0086-23-88608777

Page **7**of**15**

Frequency Band	Highest Averaged Tunne Up Power (dBm)	Highest Frame-Averaged Tunne Up Power (dBm)	Antenna Gain(dBi)
LTE Band2	23.2	23.2	2
LTE Band4	23.5	23.5	2
LTE Band5	22.8	22.8	2
LTE Band7	23.2	23.2	2
LTE Band41	22.2	22.2	2
LTE Band66	23.8	23.8	2

Chongqing Academy of Information and Communication Technology
Address：No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965   FAX:0086-23-88608777

Page **8**of**15**

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

Chongqing Academy of Information and Communication Technology
Address：No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965   FAX:0086-23-88608777

Page **9**of**15**

5.3. Results

Frequency range	Limit(mW/cm²)	Results(mW/cm²)	Verdict
GSM850	0.55	0.08	PASS
GSM1900	1.00	0.04	PASS
GPRS850 2TS	0.55	0.16	PASS
GPRS1900 2TS	1.00	0.08	PASS
EGPRS850 2TS	0.55	0.16	PASS
EGPRS1900 2TS	1.00	0.08	PASS
LTE Band2	1.00	0.07	PASS
LTE Band4	1.00	0.07	PASS
LTE Band5	0.55	0.06	PASS
LTE Band7	1.00	0.07	PASS
LTE Band41	1.00	0.05	PASS
LTE Band66	1.00	0.08	PASS

Chongqing Academy of Information and Communication Technology
Address：No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965   FAX:0086-23-88608777

Page **10**of**15**

5.4. Result of GSM 850

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 824.20 MHz～848.80 MHz; The maximum conducted is 23.97 dBm. The maximum gain is 2.00 dBi. Therefore, maximum limit for general public RF exposure: 824.20/1500=0.55 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^2

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

5.5. Result of GSM 1900

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1850.20 MHz～1909.80MHz; The maximum conducted is 20.97 dBm. The maximum gain is 2.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00 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=0.04 mW/cm^2

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

5.6. Result of GPRS 850 2TS

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 824.20 MHz～848.80 MHz; The maximum conducted is 26.98 dBm. The maximum gain is 2.00 dBi. Therefore, maximum limit for general public RF exposure: 824.20/1500=0.55 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=0.16 mW/cm^2

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

Chongqing Academy of Information and Communication Technology
Address：No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965   FAX:0086-23-88608777

Page **11**of**15**

5.7. Result of GPRS 1900 2TS

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1850.20 MHz～1909.80MHz; The maximum conducted is 23.98 dBm. The maximum gain is 2.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00mW/cm².

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

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/cm²

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm² limit for uncontrolled exposure.

5.8. Result of EGPRS 850 2TS

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 824.20 MHz～848.80 MHz; The maximum conducted is 26.98 dBm. The maximum gain is 2.00 dBi. Therefore, maximum limit for general public RF exposure: 824.20/1500=0.55 mW/cm².

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

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=0.16 mW/cm²

Therefore, at 20 cm the spectral power density is less than the 0.55mW/cm² limit for uncontrolled exposure.

5.9. Result of EGPRS 1900 2TS

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1850.20 MHz～1909.80MHz; The maximum conducted is 23.98 dBm. The maximum gain is 2.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00mW/cm².

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

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/cm²

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm² limit for uncontrolled exposure.

Chongqing Academy of Information and Communication Technology
Address：No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965   FAX:0086-23-88608777

Page **12**of**15**

5.10. Result of LTE Band 2

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1850.0 MHz～1909.9MHz; The maximum conducted is 23.20 dBm. The maximum gain is 2.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00 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=0.07 mW/cm^2

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

5.11. Result of LTE Band 4

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1710.0 MHz～1754.9MHz; The maximum conducted is 23.50 dBm. The maximum gain is 2.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00 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=0.07 mW/cm^2

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

5.12. Result of LTE Band 5

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 824.0 MHz～848.9 MHz; The maximum conducted is 22.80 dBm. The maximum gain is 2.00 dBi. Therefore, maximum limit for general public RF exposure: 824.00/1500=0.55 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^2

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

Chongqing Academy of Information and Communication Technology
Address：No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965   FAX:0086-23-88608777

Page **13**of**15**

5.13. Result of LTE Band 7

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 2500.00 MHz～2569.90 MHz; The maximum conducted is 23.20 dBm. The maximum gain is 2.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00 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=0.07 mW/cm^2

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

5.14. Result of LTE Band 41

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 2496.0 MHz～2689.9MHz; The maximum conducted is 22.20 dBm. The maximum gain is 2.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00mW/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=0.05 mW/cm^2

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

5.15. Result of LTE Band 66

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1710.0 MHz～1779.9MHz; The maximum conducted is 23.80 dBm. The maximum gain is 2.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00 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^2

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

Chongqing Academy of Information and Communication Technology
Address：No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965   FAX:0086-23-88608777

Page **14**of**15**

ANNEX A: EUT photograph

See the document" LTE Cat1 Module Photos".

END OF REPORT

Chongqing Academy of Information and Communication Technology
Address：No. 8,Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China,401336
Tel: 0086-23-88069965   FAX:0086-23-88608777

Page **15**of**15**