



TEST REPORT

REPORT NUMBER: I22W00046-MPE

ON

Type of Equipment: LTE Module
Type of Designation: L508
Manufacturer: Shanghai MobileTek Communication Ltd.
Brand Name: LYNQ
FCC ID: 2AK9DL508

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

Jun,30,2022

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
I22W00046-MPE	00	2022-6-30	Initial creation of test report



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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
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Fax:	0086-23-88608777

1.2. Testing Environment

Normal Temperature:	21.3℃
Relative Humidity:	65.0%

1.3. Project Data

Testing Start Date:	2022-6-28
Testing End Date:	2022-6-30

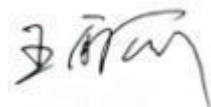
1.4. Signature



2022-6-30

Wang Chengyu
(Prepared this test report)

Date



2022-6-30

Wang Lili
(Reviewed this test report)

Date



2022-6-30

Xiang Luoyong
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:	LTE Module
Model name:	L508
GSM Frequency Band:	GSM850/1900
WCDMA Frequency Band:	Band 2/4/5
LTE Frequency Band:	Band2/4/5/7/66
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
S2	864788050032635	V2	L508v01.01b02.00	2022-6-8

*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: Radiofrequency 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 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.

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5. Test Results

5.1. RF Power Output

Frequency Band	Highest Averaged Power Output(dBm)	Highest Frame-Averaged Output Power (dBm)	Antenna Gain(dBi)
GSM850	35.0	25.97	2
GSM1900	32.0	22.97	2
GPRS850 4TX	35.0	31.99	2
GPR1900 4TX	32.0	28.99	2
EGPRS850 4TX	30.0	26.99	2
EGPR1900 4TX	29.0	25.99	2
WCDMA Band 2	25.00	25.00	5
WCDMA Band 4	25.00	25.00	5
WCDMA Band 5	25.00	25.00	6
LTE Band2	25.70	25.70	5
LTE Band4	25.70	25.70	6
LTE Band5	25.70	25.70	3
LTE Band7	25.70	25.70	5
LTE Band66	25.70	25.70	5

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 Power Output and antenna gain in the above table are provided by the customer

4) These datas for WCDMA B5, LTE B4 are referenced I22W00023 report

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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 range	Limit(mW/cm ²)	Results(mW/cm ²)	Verdict
GSM850	0.55	0.12	PASS
GSM1900	1.00	0.06	PASS
GPRS850	0.55	0.5	PASS
GPRS1900	1.00	0.25	PASS
EGPRS850	0.55	0.16	PASS
EGPRS1900	1.00	0.13	PASS
WCDMA Band 2	1.00	0.20	PASS
WCDMA Band 4	1.00	0.20	PASS
WCDMA Band 5	0.55	0.25	PASS
LTE Band2	1.00	0.23	PASS
LTE Band4	1.00	0.29	PASS
LTE Band5	0.55	0.15	PASS
LTE Band7	1.00	0.23	PASS
LTE Band66	1.00	0.23	PASS

Note: These datas for WCDMA B5, LTE B4 are referenced I22W00023 report

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 25.97 dBm. The maximum gain is 2.0 dBi. Therefore, maximum limit for general public RF exposure: $824.20/1500=0.55 \text{ mW/cm}^2$.

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

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=0.12 mW/cm²

Therefore, at 20 cm the spectral power density is less than the 0.55 mW/cm² 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 22.97 dBm. The maximum gain is 2.0 dBi. Therefore, maximum limit for general public RF exposure: 1.00 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=0.06 mW/cm²

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

5.6. Result of GPRS 850 4TS

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 824.20 MHz~848.80 MHz; The maximum conducted is 31.99 dBm. The maximum gain is 2.0 dBi. Therefore, maximum limit for general public RF exposure: $824.20/1500=0.55 \text{ mW/cm}^2$.

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

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=0.50 mW/cm²

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

5.7. Result of GPRS 1900 4TS

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1850.20 MHz~1909.80MHz; The maximum conducted is 28.99 dBm. The maximum gain is 2.0 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=0.25 mW/cm²

Therefore, at 20 cm the spectral power density is less than the 1.0 mW/cm² limit for uncontrolled exposure.

5.8. Result of EGPRS 850 4TS

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 824.20 MHz~848.80 MHz; The maximum conducted is 26.99 dBm. The maximum gain is 2.0 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 4TS

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1850.20 MHz~1909.80MHz; The maximum conducted is 25.99 dBm. The maximum gain is 2.0 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=0.13 mW/cm²

Therefore, at 20 cm the spectral power density is less than the 1.0 mW/cm² limit for uncontrolled exposure.

5.10. Result of WCDMA Band 2

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1852.40 MHz~1907.60 MHz; The maximum conducted is 25.00 dBm. The maximum gain is 5.0 dBi. Therefore, maximum limit for general public RF exposure: 1.00 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=0.20 mW/cm²

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

5.11. Result of WCDMA Band 4

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1712.4 MHz~1752.6 MHz; The maximum conducted is 25.00 dBm. The maximum gain is 5.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00 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=0.20 mW/cm²

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

5.12. Result of LTE Band 2

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1850.0 MHz~1909.9MHz; The maximum conducted is 25.70 dBm. The maximum gain is 5.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00 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=0.23 mW/cm²

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

5.13. 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 25.70 dBm. The maximum gain is 3.00 dBi. Therefore, maximum limit for general public RF exposure: $824.00/1500=0.55$ 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=0.15 mW/cm²

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

5.14. Result of LTE Band 7

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 2500.00 MHz ~ 2569.9 MHz; The maximum conducted is 25.70 dBm. The maximum gain is 5.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00 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=0.23 mW/cm²

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm² 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 25.70 dBm. The maximum gain is 5.00 dBi. Therefore, maximum limit for general public RF exposure: 1.00 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=0.23 mW/cm²

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



Report NO.: I22W00046-MPE

ANNEX A: EUT photograph
See the document "LTE Module Photos".

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

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