



TEST REPORT

REPORT NUMBER: I22W00049-MPE-Rev3

ON

Type of Equipment: LTE Module
Type of Designation: L506
Manufacturer: Shanghai MobileTek Communication Ltd.
Brand Name: LYNQ
FCC ID: 2AK9DL506

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

Jul,7,2022

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
I22W00049-MPE	00	2022-7-1	Initial creation of test report
I22W00049-MPE-Rev1	01	2022-7-4	First change of test report
I22W00049-MPE-Rev2	02	2022-7-5	Second change of test report
I22W00049-MPE-Rev3	03	2022-7-7	Third change 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
Telephone:	0086-23-88069965
Fax:	0086-23-88608777

1.2. Testing Environment

Normal Temperature:	21.3℃
Relative Humidity:	65.0%

1.3. Project Data

Testing Start Date:	2022-7-1
Testing End Date:	2022-7-7

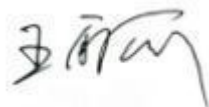
1.4. Signature



2022-7-7

Wang Chengyu
(Prepared this test report)

Date



2022-7-7

Wang Lili
(Reviewed this test report)

Date



2022-7-7

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:	021-54453657
Fax:	--
Email:	b.yang@mobiletek.cn
Contact Person:	yangbin

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:	021-54453657
Fax:	--
Email:	b.yang@mobiletek.cn
Contact Person:	yangbin

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

3.1. About EUT

EUT Description:	LTE Module
Model name:	L506
WCDMA Frequency Band:	Band 2/5
LTE Frequency Band:	Band2/4/5/12/13
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	865699038738798	V1	L506Av07.01b01.00	2022-6-14

*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)
WCDMA Band 2	23.5	23.5	9.5
WCDMA Band 5	24	24	10.42
LTE Band2	23	23	10
LTE Band4	23	23	7
LTE Band5	23	23	11.41
LTE Band12	23	23	3
LTE Band13	22	22	12.18

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

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
WCDMA Band 2	1.000	0.397	PASS
WCDMA Band 5	0.551	0.551	PASS
LTE Band2	1.000	0.397	PASS
LTE Band4	1.000	0.199	PASS
LTE Band5	0.549	0.549	PASS
LTE Band12	0.466	0.079	PASS
LTE Band13	0.518	0.518	PASS

5.4. 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 23.50 dBm. The maximum gain is 9.5 dBi. Therefore, maximum limit for general public RF exposure: 1.000 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=0.397 mW/cm²

Therefore, at 20 cm the spectral power density is less than the 1.000 mW/cm² limit for uncontrolled exposure.

5.5. Result of WCDMA Band 5

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 826.4 MHz ~ 846.6 MHz; The maximum conducted is 24.00 dBm. The maximum gain is 10.42 dBi. Therefore, maximum limit for general public RF exposure: 826.4/1500=0.551 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=0.551 mW/cm²

Therefore, at 20 cm the spectral power density is less than the 0.551 mW/cm² limit for uncontrolled exposure.

5.6. Result of LTE Band 2

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1850.0 MHz ~ 1909.9MHz; The maximum conducted is 23.00 dBm. The maximum gain is 10.00 dBi. Therefore, maximum limit for general public RF exposure: 1.000 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=0.397 mW/cm²

Therefore, at 20 cm the spectral power density is less than the 1.000 mW/cm² limit for uncontrolled exposure.

5.7. Result of LTE Band 4

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 1710.0 MHz ~ 1754.9MHz; The maximum conducted is 23.00 dBm. The maximum gain is 7.00 dBi. Therefore, maximum limit for general public RF exposure: 1.000 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=0.199 mW/cm²

Therefore, at 20 cm the spectral power density is less than the 1.000 mW/cm² limit for uncontrolled exposure.

5.8. 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 23.00 dBm. The maximum gain is 11.41 dBi. Therefore, maximum limit for general public RF exposure: 824.00/1500=0.549 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=0.549 mW/cm²

Therefore, at 20 cm the spectral power density is less than the 0.549 mW/cm² limit for uncontrolled exposure.

5.9. Result of LTE 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 3.00 dBi. Therefore, maximum limit for general public RF exposure: $699.00/1500=0.466 \text{ mW/cm}^2$.

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

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=0.079 mW/cm²

Therefore, at 20 cm the spectral power density is less than the 0.466 mW/cm² limit for uncontrolled exposure.

5.10. Result of LTE Band 13

Test Results: MPE Limit Calculation: the EUT'S operating frequencies @ 777.00 MHz~786.90 MHz; The maximum conducted is 22.00 dBm. The maximum gain is 12.18 dBi. Therefore, maximum limit for general public RF exposure: $777.00/1500=0.518 \text{ mW/cm}^2$.

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

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=0.518 mW/cm²

Therefore, at 20 cm the spectral power density is less than the 0.518 mW/cm² limit for uncontrolled exposure.



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ANNEX A: EUT photograph

See the document “LTE Module Photos”.

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

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