

SZEMC-TRF-01 Rev. A/1

Report No.: SZCR240600210306 Page: 1 of 8

TEST REPORT

| Application No.: | SZCR2406002103MO | | | | |
|--------------------------|--|--|--|--|--|
| Applicant: | Shanghai Sunmi Technology Co.,Ltd. | | | | |
| Address of Applicant: | Room 505,No.388,Song Hu Road,Yang Pu District,Shanghai,China | | | | |
| Manufacturer: | Shanghai Sunmi Technology Co.,Ltd. | | | | |
| Address of Manufacturer: | Room 505,No.388,Song Hu Road,Yang Pu District,Shanghai,China | | | | |
| EUT Description: | Smart module | | | | |
| Model No.: | QLB12-20 | | | | |
| Trade Mark: | SUNMI | | | | |
| FCC ID: | 2AH2524QLB1220 | | | | |
| Standards: | FCC 47 CFR Part 2.1091 | | | | |
| | FCC KDB 447498 D01 v06 | | | | |
| Date of Receipt: | 2024-06-04 | | | | |
| Date of Issue: | 2024-08-09 | | | | |
| Test Result: | PASS* | | | | |

In the configuration tested, the EUT complied with the standards specified above.

Ceny. XM

Keny Xu EMC Laboratory Manager



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1 Version

| Revision Record | | | | | | | |
|-----------------|---------|------------|----------|----------|--|--|--|
| Version | Chapter | Date | Modifier | Remark | | | |
| 01 | | 2024-08-09 | | Original | | | |

| Authorized for issue by: | | |
|--------------------------|-------------------------------|--|
| | Dorjon. i Ju ang | |
| | Donjon Huang/Project Engineer | |
| | Eric Fu | |
| | Eric Fu/Reviewer | |



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General Information 2

2.1 Client Information

| Applicant: | Shanghai Sunmi Technology Co.,Ltd. |
|--------------------------|--|
| Address of Applicant: | Room 505,No.388,Song Hu Road,Yang Pu District,Shanghai,China |
| Manufacturer: | Shanghai Sunmi Technology Co.,Ltd. |
| Address of Manufacturer: | Room 505,No.388,Song Hu Road,Yang Pu District,Shanghai,China |

2.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

VCCI (Member No. 1937)

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

FCC –Designation Number: CN1336

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.



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2.3 General Description of EUT

| EUT Description: | Smart module | | | | | |
|---|---|-----------------------------------|--|--|--|--|
| Model No.: | QLB12-20 | QLB12-20 | | | | |
| Trade Mark: | SUNMI | | | | | |
| Hardware Version: | R1.0 | | | | | |
| Software Version: | SG656VWFNUR01A08 | | | | | |
| | Power from the Mainboard: | | | | | |
| Power Supply: | Mainboard Power by DC 12V 3A from DC Port | | | | | |
| | Adapter model: GQ36-120300-AX | | | | | |
| | Input: 100-240V~50/60Hz, 1A Max | | | | | |
| | Output: DC 12V3A | | | | | |
| Antenna Type: | External Antenna | | | | | |
| | BT/BLE/2.4GWIFI: 2dBi | 5GWIFI: 3dBi | | | | |
| Antenna Gain [.] | Note: | | | | | |
| | The antenna gain are derived from the gain information report provided by the manufacturer. | | | | | |
| Remark: | | | | | | |
| As above information is p suitability, reliability or/and | rovided and confirmed by the applicant. So distinct of the information. | GS is not liable to the accuracy, | | | | |



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3 RF Exposure Evaluation

3.1 RF Exposure Compliance Requirement

3.1.1 Limits

| Frequency range (MHz) | Electric field strength (V/m) | ectric field strength Magnetic field strength Power density (V/m) (A/m) (mW/cm2) | | | | | | | |
|---|--|--|-----------|---|--|--|--|--|--|
| | (A) Limits for Occupational/Controlled Exposures | | | | | | | | |
| 0.3-3.0 | 614 | 1.63 | *(100) | 6 | | | | | |
| 3.0-30 | 1842/f | 4.89/f | *(900/f2) | 6 | | | | | |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 | | | | | |
| 300-1500 | / | / | f/300 | 6 | | | | | |
| 1500-100,000 | / | / | 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/f2) | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | / | 1 | f/1500 | 30 |
| 1500-100,000 | / | 1 | 1.0 | 30 |

F=frequency in MHz

*=Plane-wave equivalent power density

RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).

Friis Formula

Friis transmission formula: $Pd = (Pout^{*}G)/(4^{*} Pi^{*} R^{2})$

Where

Pd = power density in mW/cm2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Pd id the limit of MPE, 1 mW/cm2. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.



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3.1.2 Test Procedure

Software provided by client enabled the EUT to transmit data at lowest, middle and highest channel individually

3.1.3 EUT RF Exposure Evaluation

Output Power Into Antenna & RF Exposure Evaluation Distance: This confirmed that the device comply with MPE limit.

| Operating Band | Frequency (MHz) | Antenna Gain (dBi) | Max Conducted Power (dBm) | EIRP(ERP) (dBm) | EIRP(ERP) Limit (dBm) | Power Density at R = 20 cm (mW/cm2) | Limit (mW/cm2) | Gain according to EIRP(ERP) (dBi) | Gain according to Pd (dBi) | Max Gain Allowed (dBi) | conclusion |
|-------------------|--------------------|--------------------------|------------------------------------|--------------------|-----------------------------|---|-------------------|--|----------------------------------|------------------------------|------------|
| BT | 2402.0 | 2.00 | 11.00 | 13.00 | 30.00 | 0.0040 | 1.0000 | - | - | • | Pass |
| 2.4GWIFI | 2412.0 | 2.00 | 19.00 | 21.00 | 30.00 | 0.0250 | 1.0000 | - | - | - | Pass |
| 5GWIFI | 5180.0 | 3.00 | 20.00 | 23.00 | 31.00 | 0.0397 | 1.0000 | - | - | - | Pass |



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3.1.4 Exposure calculations for multiple sources

In order to ensure compliance with the MPE for a controlled environment, the sum of the ratios of the power density to the corresponding MPE should not exceed unity. That is



The product also has multiple transmitters The Simultaneous Transmission Possibilities are as below:

| Simultaneous Tx Combination | Configuration |
|--------------------------------|-------------------------|
| 1 | BT + WLAN 5GHz |
| 2 | WLAN 2.4GHz + WLAN 5GHz |

| No. | Mode | Power Density (mW/cm²) MPE Limit (mW/cm²) Result Ratio | | Total Ratio | Limit | Result | |
|-----|-------------|--|--------|----------------|--------|--------|------|
| 1 | BT | 0.0040 | 1.0000 | 0.0040 | 0.0427 | 1 0000 | Dooo |
| 1 | WLAN 5GHz | 0.0397 | 1.0000 | 0.0397 | 0.0437 | 1.0000 | Pass |
| 2 | WLAN 2.4GHz | 0.0250 | 1.0000 | 0.0250 | 0.0647 | 1 0000 | Dooo |
| 2 | WLAN 5GHz | 0.0397 | 1.0000 | 0.0397 | 0.0047 | 1.0000 | Fa55 |

---End of Report---



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