

RF Exposure Evaluation Report

APPLICANT : MeiG Smart Technology Co., Ltd
EQUIPMENT : Smart Module
BRAND NAME : MEIGLink
MODEL NAME : SLM920
FCC ID : 2APJ4-SLM920
STANDARD : 47 CFR Part 2.1091
FCC KDB 447498 D01 V06

The product evaluation date was started from Aug. 21, 2023 and completed on Aug. 21, 2023. We, Sporton International Inc. (Kunshan), would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091 and FCC KDB 447498 D01 v06, and pass the limit. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.



Approved by: Si Zhang

Sporton International Inc. (Kunshan)

***No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China***



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**Revision History**

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA372609	Rev. 01	Initial issue of report.	Sep. 06, 2023



1. Administration Data

1.1. Testing Laboratory

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory			
Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR01-KS	CN1257	314309

Applicant	
Company Name	MeiG Smart Technology Co., Ltd
Address	2nd Floor,Office Building,No.5 Lingxia Road,Fenghuang,Fuyong Street,Bao'an District,Shenzhen City.

Manufacturer	
Company Name	MeiG Smart Technology Co., Ltd
Address	2nd Floor,Office Building,No.5 Lingxia Road,Fenghuang,Fuyong Street,Bao'an District,Shenzhen City.



2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Smart Module
Brand Name	MEIGLink
Model Name	SLM920
FCC ID	2APJ4-SLM920
Wireless Technology and Frequency Range	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2 : 1850 MHz ~ 1910 MHz LTE Band 4 : 1710 MHz ~ 1755 MHz LTE Band 5 : 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12 : 699 MHz ~ 716 MHz LTE Band 13 : 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25 : 1850 MHz ~ 1915 MHz LTE Band 26 : 814 MHz ~ 849 MHz LTE Band 66 : 1710 MHz ~ 1780 MHz LTE Band 41: 2496 MHz ~ 2690 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is supported) LTE: QPSK, 16QAM, 64QAM, 256QAM WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE
Antenna Gain	GSM850 : 2.81 dBi GSM1900 : 2.04 dBi WCDMA Band II : 2.04 dBi WCDMA Band IV : 2.92 dBi WCDMA Band V : 2.81 dBi LTE Band 2 : 2.04 dBi LTE Band 4 : 2.92 dBi LTE Band 5 : 2.81 dBi LTE Band 7 : 2.16 dBi LTE Band 12 : 2.59 dBi LTE Band 13 : 3.6 dBi LTE Band 14 : 3.58 dBi LTE Band 17 : 2.59 dBi LTE Band 25 : 2.04 dBi LTE Band 26 : 3.08 dBi LTE Band 66: 2.92 dBi LTE Band 41: 3.36 dBi WLAN2.4GHz/Bluetooth: 0.95 dBi WLAN5.2GHz: 1.06 dBi WLAN5.3GHz: 0.88 dBi



	WLAN5.5GHz: 1.09 dBi WLAN5.8GHz: 1.07 dBi
Antenna Type	WWAN: Glue Stick Antenna WLAN/Bluetooth: Glue Stick Antenna
HW Version	V1.03
SW Version	V01-T02
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Comments and Explanations:

1. The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.
2. The maximum RF output tune up power, antenna gain also the safe distance used for evaluate RF exposure were declared by manufacturer.

3. Maximum RF average output tune up power among production units**<GSM>**

Mode	Burst average power(dBm)	
	GSM850	GSM1900
GSM 1 Tx slot	35.0	32.0
GPRS 1 Tx slot	35.0	32.0
GPRS 2 Tx slots	31.0	28.0
GPRS 3 Tx slots	29.0	27.0
GPRS 4 Tx slots	28.0	25.0
EDGE 1 Tx slot	30.0	29.0
EDGE 2 Tx slots	29.0	28.0
EDGE 3 Tx slots	27.0	27.0
EDGE 4 Tx slots	25.0	25.0

**<WCDMA>**

Mode		Maximum Average power(dBm)
WCDMA	Band II	25.0
	Band IV	25.0
	Band II	25.0

<LTE>

Mode		Maximum Average power(dBm)
LTE	Band 2	25.0
	Band 4	25.0
	Band 5	25.0
	Band 7	25.0
	Band 12	25.0
	Band 13	25.0
	Band 14	25.0
	Band 17	25.0
	Band 25	25.0
	Band 26	25.0
	Band 41	25.0
	Band 66	25.0

**<2.4GHz WLAN >**

Mode		Maximum Average Power (dBm)
2.4GHz	802.11b	19.0
	802.11g	17.0
	802.11n-HT20	16.0
	802.11n-HT40	16.0

<Bluetooth>

Mode		Maximum Average power(dBm)
Bluetooth	BR/EDR	14.0
	LE	10.0

<5GHz WLAN >

Mode		Maximum Average Power (dBm)
5.2GHz	802.11a	16.0
	802.11n-HT20	15.0
	802.11n-HT40	14.0
	802.11ac-VHT20	16.0
	802.11ac-VHT40	16.0
	802.11ac-VHT80	14.0
5.3GHz	802.11a	16.0
	802.11n-HT20	15.0
	802.11n-HT40	15.0
	802.11ac-VHT20	16.0
	802.11ac-VHT40	16.0
	802.11ac-VHT80	14.0
5.5GHz	802.11a	15.0
	802.11n-HT20	15.0
	802.11n-HT40	14.0
	802.11ac-VHT20	16.0
	802.11ac-VHT40	16.0
	802.11ac-VHT80	13.0
5.8GHz	802.11a	16.0
	802.11n-HT20	15.0
	802.11n-HT40	14.0
	802.11ac-VHT20	16.0
	802.11ac-VHT40	15.0
	802.11ac-VHT80	13.0



4. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

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 Exposures				
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
1500-100,000			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/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

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

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna



5. Radio Frequency Radiation Exposure Evaluation

5.1. Standalone Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
GSM 850 (1 Tx slot)	824.2	2.81	35.00	37.810	760.326	0.151	0.549	0.275
GPRS 850 (1 Tx slot)	824.2	2.81	35.00	37.810	760.326	0.151	0.549	0.275
GPRS 850 (2 Tx slots)	824.2	2.81	31.00	33.810	603.949	0.120	0.549	0.219
GPRS 850 (3 Tx slots)	824.2	2.81	29.00	31.810	568.853	0.113	0.549	0.206
GPRS 850 (4 Tx slots)	824.2	2.81	28.00	30.810	603.949	0.120	0.549	0.219
EGPRS 850 (1 Tx slot)	824.2	2.81	30.00	32.810	240.436	0.048	0.549	0.087
EGPRS 850 (2 Tx slots)	824.2	2.81	29.00	31.810	381.066	0.076	0.549	0.138
EGPRS 850 (3 Tx slots)	824.2	2.81	27.00	29.810	358.922	0.071	0.549	0.130
EGPRS 850 (4 Tx slots)	824.2	2.81	25.00	27.810	302.691	0.060	0.549	0.110
GSM 1900 (1 Tx slot)	1850.2	2.04	32.00	34.040	319.154	0.064	1.000	0.064
GPRS 1900 (1 Tx slot)	1850.2	2.04	32.00	34.040	319.154	0.064	1.000	0.064
GPRS 1900 (2 Tx slots)	1850.2	2.04	28.00	30.040	253.513	0.050	1.000	0.050
GPRS 1900 (3 Tx slots)	1850.2	2.04	27.00	29.040	300.608	0.060	1.000	0.060
GPRS 1900 (4 Tx slots)	1850.2	2.04	25.00	27.040	253.513	0.050	1.000	0.050
EGPRS 1900 (1 Tx slot)	1850.2	2.04	29.00	31.040	159.956	0.032	1.000	0.032
EGPRS 1900 (2 Tx slots)	1850.2	2.04	28.00	30.040	253.513	0.050	1.000	0.050
EGPRS 1900 (3 Tx slots)	1850.2	2.04	27.00	29.040	300.608	0.060	1.000	0.060
EGPRS 1900 (4 Tx slots)	1850.2	2.04	25.00	27.040	253.513	0.050	1.000	0.050
WCDMA Band 2	1852.4	2.04	25.00	27.040	505.825	0.101	1.000	0.101
WCDMA Band 4	1712.4	2.92	25.00	27.920	619.441	0.123	1.000	0.123
WCDMA Band 5	826.4	2.81	25.00	27.810	603.949	0.120	0.551	0.218
LTE Band 2	1850.7	2.04	25.00	27.040	505.825	0.101	1.000	0.101
LTE Band 4	1710.7	2.92	25.00	27.920	619.441	0.123	1.000	0.123
LTE Band 5	824.7	2.81	25.00	27.810	603.949	0.120	0.550	0.219
LTE Band 7	2502.5	2.16	25.00	27.160	519.996	0.104	1.000	0.104
LTE Band 12	699.7	2.59	25.00	27.590	574.116	0.114	0.466	0.245
LTE Band 13	779.5	3.60	25.00	28.600	724.436	0.144	0.520	0.277
LTE Band 14	790.5	3.58	25.00	28.580	721.107	0.144	0.527	0.272
LTE Band 17	706.5	2.59	25.00	27.590	574.116	0.114	0.471	0.243
LTE Band 26	814.7	3.08	25.00	28.080	642.688	0.128	0.543	0.236
LTE Band 25	1850.7	2.04	25.00	27.040	505.825	0.101	1.000	0.101
LTE Band 41	2498.5	3.36	25.00	28.360	685.488	0.136	1.000	0.136
LTE Band 66	1710.7	2.92	25.00	27.920	619.441	0.123	1.000	0.123
Bluetooth	2402.0	0.95	14.00	14.950	31.261	0.006	1.000	0.006
2.4GHz WLAN	2412.0	0.95	19.00	19.950	98.855	0.020	1.000	0.020
5.2GHz WLAN	5180.0	1.06	16.00	17.060	50.816	0.010	1.000	0.010
5.3GHz WLAN	5260.0	0.88	16.00	16.880	48.753	0.010	1.000	0.010
5.5GHz WLAN	5500.0	1.09	16.00	17.090	51.168	0.010	1.000	0.010
5.8GHz WLAN	5745.0	1.07	16.00	17.070	50.933	0.010	1.000	0.010

Note:

1. For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.
2. Chose the maximum power to do MPE analysis.

**5.2. Collocated Power Density Calculation**

WWAN Power Density / Limit	Bluetooth Power Density / Limit	Σ (Power Density / Limit) of WWAN + Bluetooth
0.277	0.006	0.283

WWAN Power Density / Limit	WLAN 2.4GHz Power Density / Limit	Σ (Power Density / Limit) of WWAN + WLAN 2.4GHz
0.277	0.020	0.297
WWAN Power Density / Limit	WLAN 5GHz Power Density / Limit	Σ (Power Density / Limit) of WWAN + WLAN 5GHz
0.277	0.010	0.287

Note:

1. For colocation analysis, LTE Band13 is chosen for summation due to the highest (power density/limit) among all WWAN wireless modes.
2. Chose the worst power density among WLAN2.4/5GHz to do co-located.
3. Σ (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)].
4. Considering the WWAN module collocation with the WLAN/Bluetooth transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 2 collocated transmitters is compliant.

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.

-----THE END-----