

MPE TEST REPORT

Report No.: SHE23060106-02GE

Date: 2023-12-09

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Applicant : SIMCom Wireless Solutions Limited
Address of Applicant : SIMCom Headquarters Building, Building 3, No.289
Linhong Road, Changning District, Shanghai,China

Product Name : LTE Wireless Data Module
Brand Name : SIMCom
Model Name : SIM8918NA
Sample Acquisition Method : Sent by Client

Sample No. : E23060106-02#01
E23060106-02#03
E23060106-02#04

FCC ID : 2AJYU-8XRA002

Standard : FCC Part 2.1091

Date of Receipt : 2023-09-06
Date of Test : 2023-09-06~ 2023-12-07
Date of Issue : 2023-12-09

Remark:

This report details the results of the testing carried out on one sample, the results contained in this report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

Prepared by: Erik Yang
(Erik Yang)

Reviewed by: Jennifer Zhou
(Jennifer Zhou)

Approved by: Echo Mu
(Authorized signatory: Echo Mu)

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1 General Information

1.1 Testing Laboratory

Company Name	ICAS Testing Technology Service (Shanghai) Co., Ltd.
Address	No.1298, Pingan Road, Minhang District, Shanghai, China
Telephone	0086 21-51682999
Fax	0086 21-54711112
Homepage	www.icasiso.com

1.2 Environmental conditions

Temperature (°C)	18-25
Humidity (%RH)	40-65
Barometric Pressure (mbar)	960-1060
Ambient noise & Reflection (W/kg)	< 0.012

1.3 Details of Application

Applicant Company Name	SIMCom Wireless Solutions Limited
Address	SIMCom Headquarters Building, Building 3, No.289 Linhong Road, Changning District, Shanghai,China
Contact Person	Yongsheng Li
Telephone	+86 21 3252 3134
Email	yongsheng.li@simcom.com
Manufacturer Company Name	SIMCom Wireless Solutions Limited
Address	SIMCom Headquarters Building, Building 3, No.289 Linhong Road, Changning District, Shanghai,China
Factory Company Name	SIMCom Wireless Solutions Limited
Address	SIMCom Headquarters Building, Building 3, No.289 Linhong Road, Changning District, Shanghai,China

1.4 Details of EUT

Product Name	LTE Wireless Data Module
Brand Name	SIMCom
Test Model Name	SIM8918NA
FCC ID	2AJYU-8XRA002
Mode of Operation	WCDMA/HSDPA/HSUPA Band II/ IV/V LTE FDD Band 2/4/5/7/12/13/17/25/26/66/71 LTE TDD Band 41 WLAN 802.11b/g/n(HT20/40) for 2.4GHz Bluetooth Dual mode BR/EDR/BLE

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	WLAN 802.11a/n(HT20/HT40)/ac(VHT20/VHT40/VHT80) for 5GHz		
Frequency Range	Band	Tx (MHz)	Rx (MHz)
	WCDMA Band II	1850 ~ 1910	1930 ~ 1990
	WCDMA Band IV	1710 ~ 1755	2110 ~ 2155
	WCDMA Band V	824 ~ 849	869 ~ 894
	LTE FDD Band 2	1850 ~ 1910	1930 ~ 1990
	LTE FDD Band 4	1710 ~ 1755	2110 ~ 2155
	LTE FDD Band 5	824 ~ 849	869 ~ 894
	LTE FDD Band 7	2500 ~ 2570	2620 ~ 2690
	LTE FDD Band 12	699 ~ 716	729 ~ 746
	LTE FDD Band 13	777 ~ 787	746 ~ 756
	LTE FDD Band 17	704 ~ 716	734 ~ 746
	LTE FDD Band 25	1850 ~ 1915	1930 ~ 1995
	LTE FDD Band 26	814 ~ 849	859 ~ 894
	LTE TDD Band 41	2496 ~ 2690	2496 ~ 2690
	LTE FDD Band 66	1710 ~ 1780	2110 ~ 2200
	LTE TDD Band 71	663 ~ 698	617 ~ 652
	WLAN 2.4G	2400MHz ~ 2483.5MHz	
	Bluetooth	2400~2483.5	
	U-NII-Band I	5150MHz~5250MHz	
	U-NII-Band II	5250MHz~5350MHz	
U-NII-Band III	5470MHz~5725MHz		
U-NII-Band IV	5725MHz ~ 5850MHz		
Modulation Type	WCDMA	QPSK	
	HSDPA/HSUPA	QPSK	
		16QAM	
	LTE	QPSK	
		16QAM	
	Bluetooth BR/EDR	GFSK, $\pi/4$ -DQPSK, 8-DPSK	
	BLE	GFSK	
	WLAN 2.4G	802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/n(20M/40M): OFDM(64QAM, 16QAM, QPSK, BPSK)	
WLAN 5G	256QAM, 64QAM, 16QAM, BPSK, QPSK, 128QAM, OFDM		
Antenna Type	External Antenna		
Antenna Gain	WCDMA/HSDPA/HSUPA Band II: 2.12 dBi WCDMA/HSDPA/HSUPA Band IV: 2.95 dBi WCDMA/HSDPA/HSUPA Band V: 0.64 dBi LTE FDD Band 2: 2.12 dBi		

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	LTE FDD Band 4: 2.95 dBi LTE FDD Band 5: 0.64 dBi LTE FDD Band 7: 2.90 dBi LTE FDD Band 12: 1.57 dBi LTE FDD Band 13: 2.23 dBi LTE FDD Band 17: 1.57 dBi LTE FDD Band 25: 1.87 dBi LTE FDD Band 26: 1.40 dBi LTE TDD Band 41: 2.90 dBi LTE FDD Band 66: 2.95 dBi LTE FDD Band 71: 0.22 dBi WLAN 2.4G&Bluetooth: 4.01 dBi WLAN 5G: 4.32 dBi
Extreme Temperature Range	-35°C ~ +75°C
Hardware version	8XR000-SIM8918_V1.03
Software version	SIM8918B01V01

2 Maximum Permissible Exposure (MPE)

2.1 Limits

According to FCC Part 1.1307, 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 of the commission's guidelines.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

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
300-1,500			f/300	6
1,500-100,000			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
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

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2.2 Assessment methods

Calculation Formula from FCC OET 65:

$$S = \frac{P * G}{4 * \pi * R^2}$$

Where:

S = Power Density (mW/cm²)

P = Input Power of the Antenna (mW)

G = Antenna Gain Relative to an Isotropic Antenna

R = Distance from the Antenna to the Point of Investigation (cm)

2.3 Test Result

Operation Mode	Frequency Range (MHz)	Max Conducted Power (dBm)	Antenna Gain (dBi)	Max EIRP (mW)	Power Density at R = 20 cm (mW/cm ²)	Power Density / Limit	Limit (mW/cm ²)
WCDMA Band II	1850 ~ 1910	24.00	2.12	409.26	0.0814	0.0814	1.0
WCDMA Band IV	1710 ~ 1755	23.50	2.95	441.57	0.0878	0.0878	1.0
WCDMA Band V	824 ~ 849	23.50	0.64	259.42	0.0516	0.0938	0.55
LTE Band 2	1850 ~ 1910	23.50	2.12	364.75	0.0726	0.0726	1.0
LTE Band 4	1710 ~ 1755	23.00	2.95	393.55	0.0783	0.0783	1.0
LTE Band 5	824 ~ 849	23.50	0.64	259.42	0.0516	0.0938	0.55
LTE Band 7	2500 ~ 2570	24.00	2.90	489.78	0.0974	0.0974	1.0
LTE Band 12	699 ~ 716	24.00	1.57	360.58	0.0717	0.1526	0.47
LTE Band 13	777 ~ 787	23.50	2.23	374.11	0.0744	0.1431	0.52
LTE Band 17	704 ~ 716	24.00	1.57	360.58	0.0717	0.1526	0.47
LTE Band 25	1850 ~ 1915	23.00	1.87	306.90	0.0611	0.0611	1.0
LTE Band 26(Part90)	814 ~ 824	24.50	1.40	389.05	0.0774	0.1407	0.55
LTE Band 26(Part22)	824 ~ 849	24.50	1.40	389.05	0.0774	0.1407	0.55
LTE Band 41	2496 ~ 2690	23.50	2.90	436.52	0.0868	0.0868	1.0
LTE Band 66	1710 ~ 1780	23.50	2.95	441.57	0.0878	0.0878	1.0
LTE Band 71	663 ~ 698	23.50	0.22	235.50	0.0468	0.1064	0.44
WLAN 2.4GHz	2400~2483.5	16.00	4.01	100.23	0.0199	0.0199	1.0
BR/EDR	2400~2483.5	11.00	4.01	31.70	0.0063	0.0063	1.0
BLE	2400~2483.5	7.00	4.01	12.62	0.0025	0.0025	1.0
WLAN 5GHz	5150~5250	11.50	4.32	38.19	0.0076	0.0076	1.0
	5250~5350	10.50	4.32	30.34	0.0060	0.0060	1.0
	5470~5725	9.50	4.32	24.10	0.0048	0.0048	1.0
	5725~5850	17.50	4.32	152.06	0.0302	0.0302	1.0

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2.4 Results for transmit simultaneously

Configurations	Maximum MPE Value(WWAN + WLAN+ BT)					Limit
	WWAN	2.4G WLAN	5G WLAN	Bluetooth	Transmit Simultaneously	
WCDMA + 5G_WLAN	0.0938	0.0199	0.0302	0.0063	0.1240	1.0
LTE+ 5G_WLAN	0.1526	0.0199	0.0302	0.0063	0.1828	1.0

Note(s):

1. For 300 – 1,500MHz: Power Density limit is $f/1500$ mW/cm²
2. For 1,500 – 100,000MHz: Power Density limit is 1.0 mW/cm²
3. MPE Ratios are Calculated as $[(MPE1/Limit) + (MPE2/Limit) + \dots] \leq 1$

2.5 Conclusion

The Power Density at the position which is 20 cm far from the EUT is smaller than the General Population/Uncontrolled Exposure limit.

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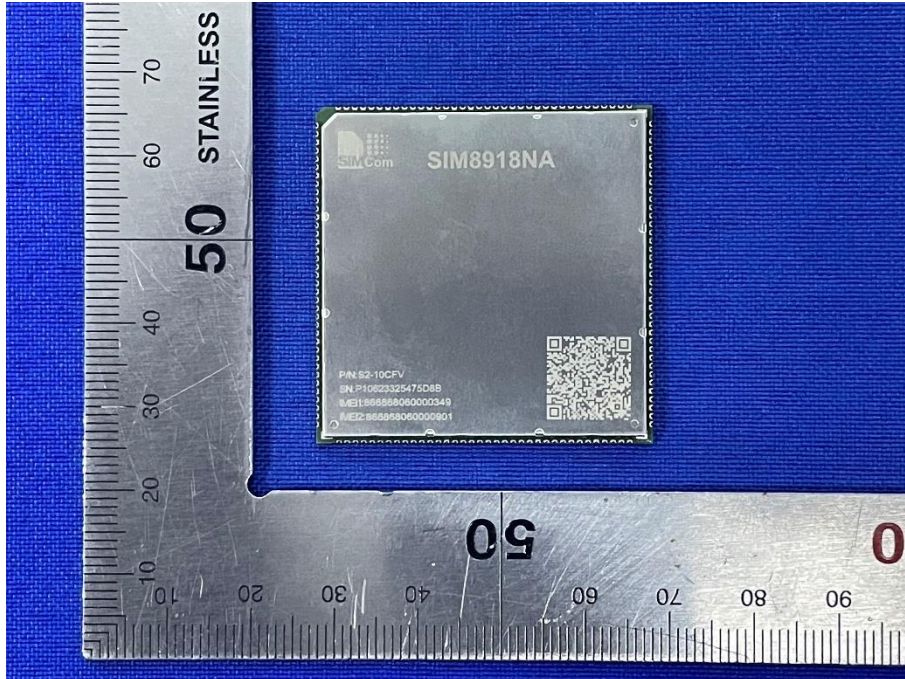
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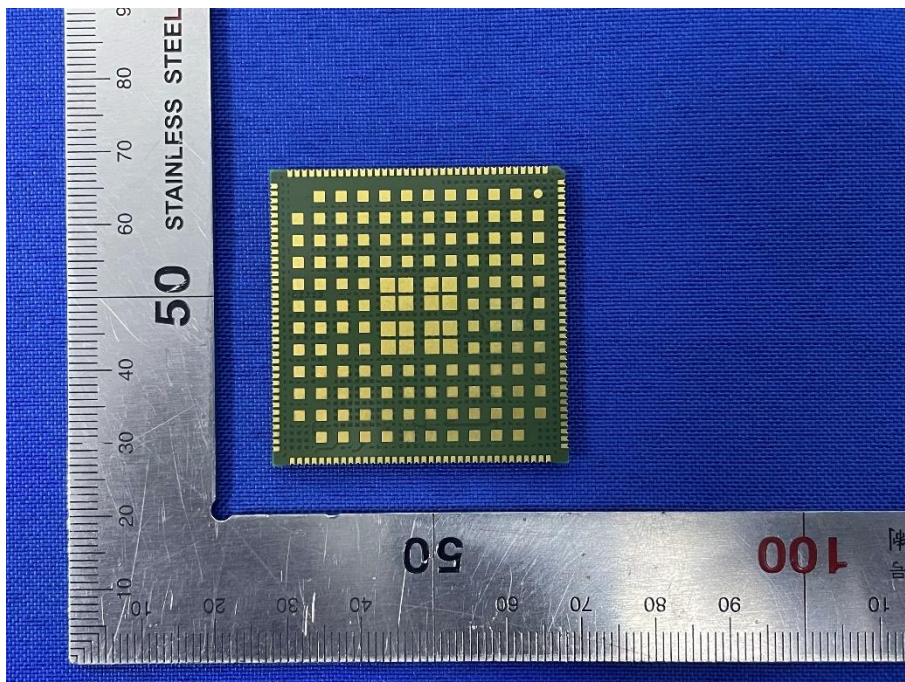
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3 Appendixes

3.1 Sample Photograph



Front of the sample



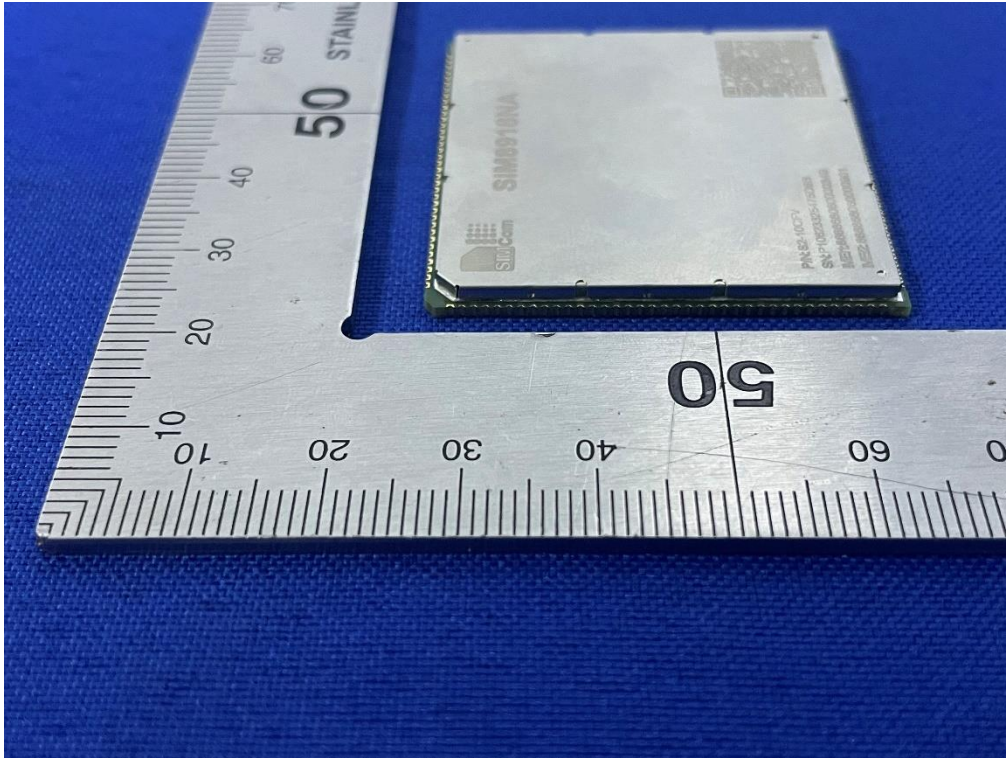
Rear of the sample

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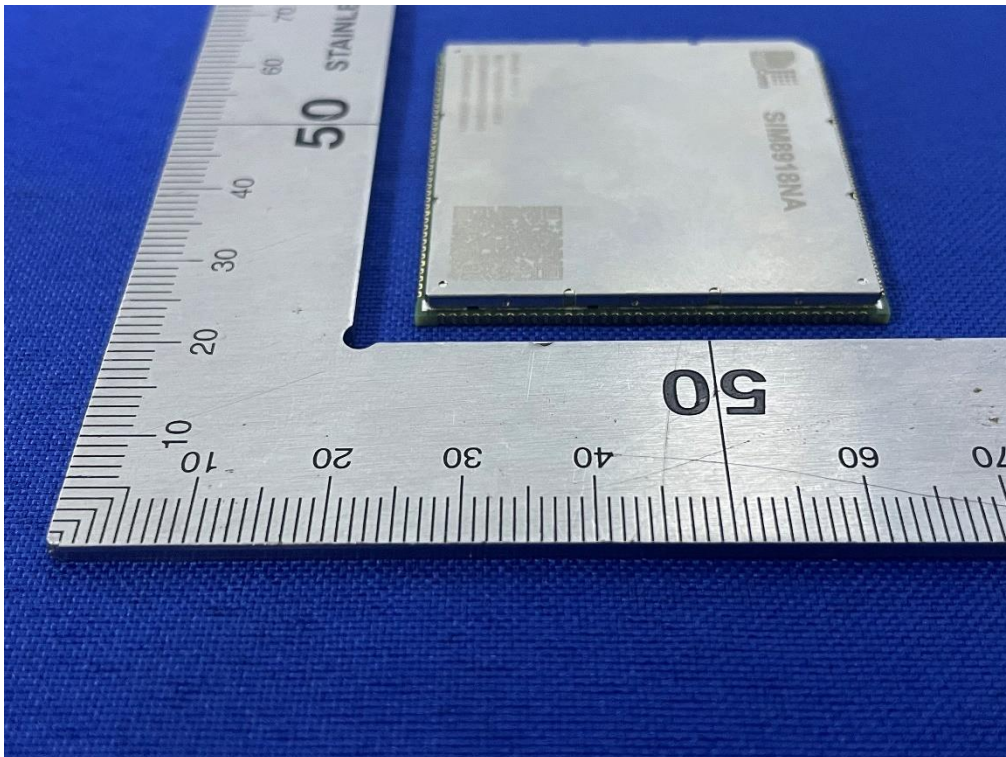
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Left of the sample



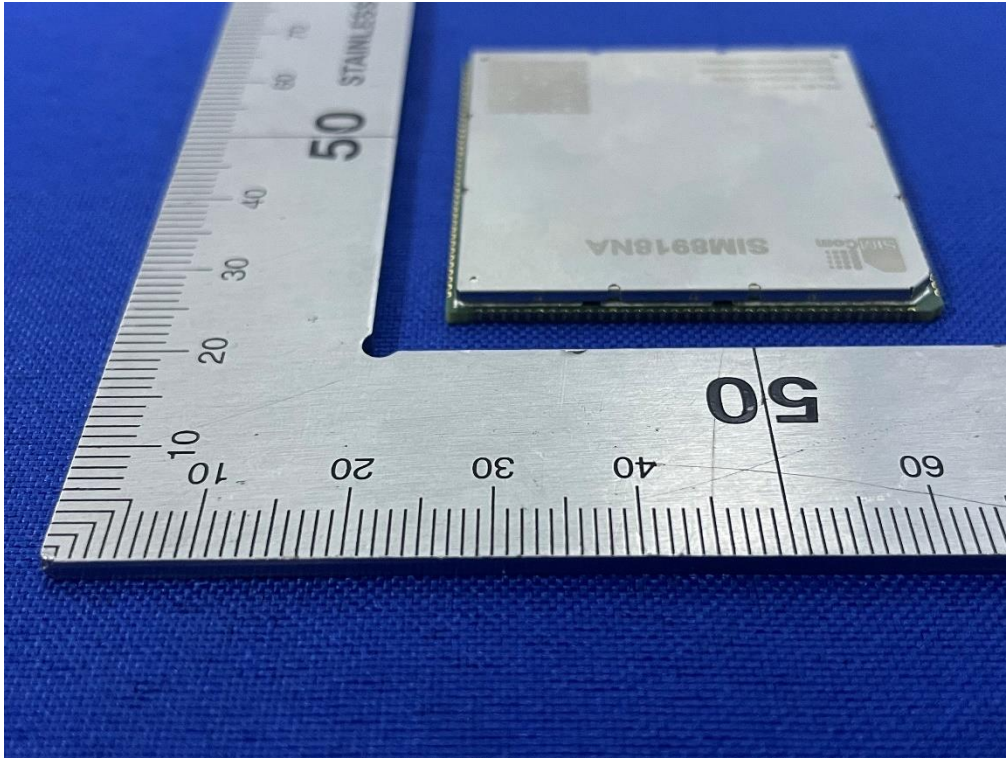
Right of the sample

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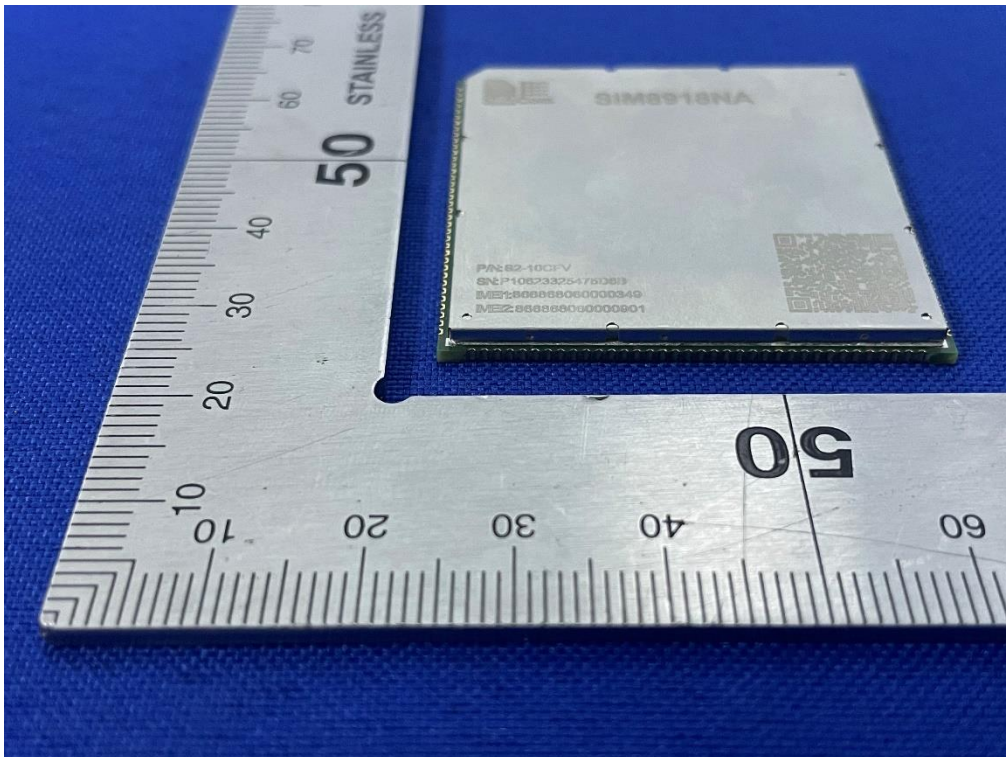
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Top of the sample



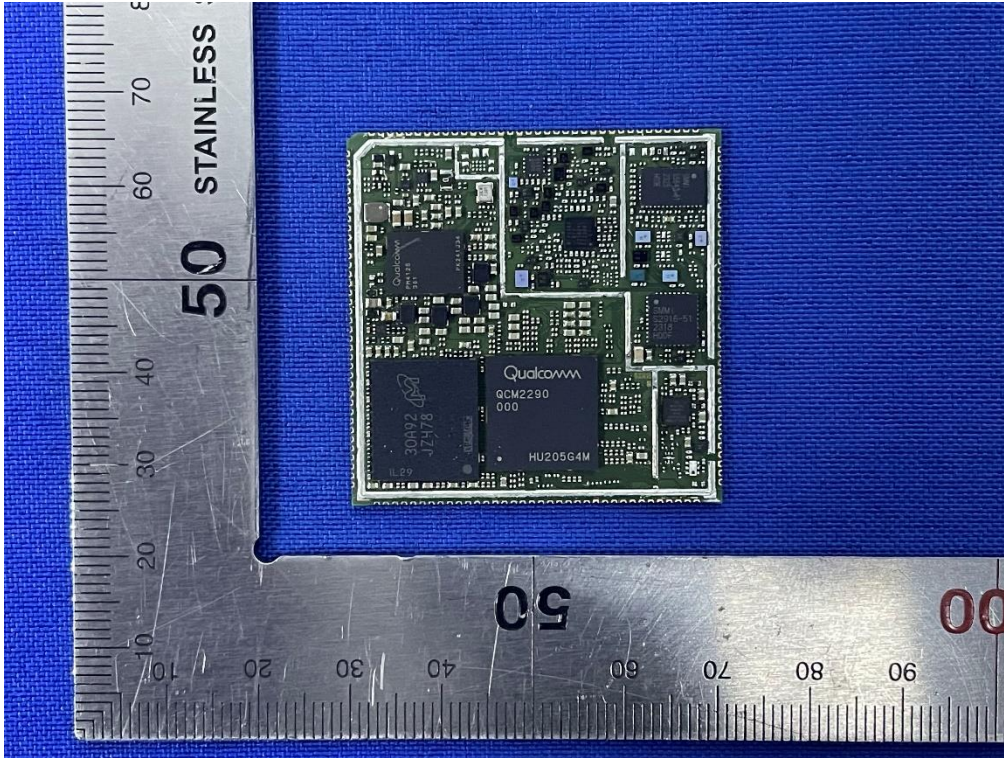
Bottom of the sample

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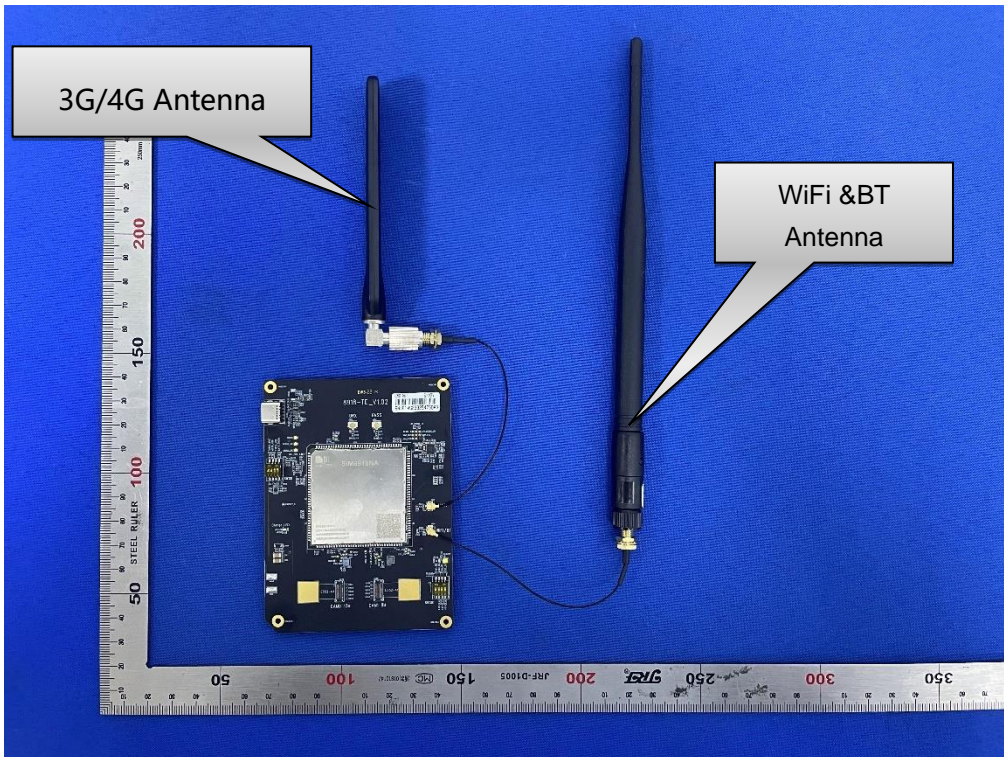
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Internal-1 of the sample



Antenna Photo

End of the report