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TEST REPORT

Application No.: SEWM2302000040RG

Applicant: Ningbo Sunvot Technology Co., Ltd

Building 3,NO 55 Longtan Shan Road, Beilun Daqi,Ningbo,Zhejiang Address of Applicant:

Manufacturer: Ningbo Sunvot Technology Co., Ltd

Address of Manufacturer: Building 3,NO 55 Longtan Shan Road, Beilun Daqi, Ningbo, Zhejiang

EUT Description: 5G CPE

Model No.: GC600/GC600C/GC600T/GC600A/GC600B

Trade Mark: Sunvot

FCC ID: 2AZGN-GC600-202303 Standards: 47 CFR Part 2.1091

FCC KDB 447498 D01 v06

Date of Receipt: 2023/02/20 Date of Issue: 2023/03/10

Test Result: PASS*

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

Authorized Signature:

Panta Sun Wireless Laboratory Manager



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Version

Revision Record							
Version Chapter Date Modifier Remark							
01		2023/03/10		Original			

Prepared By	Nick Hu
	(Nick Hu) / Test Engineer
Checked By	men men,
	(Well Wei) / Reviewer



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2 General Information

2.1 Client Information

Applicant:	Ningbo Sunvot Technology Co., Ltd
Address of Applicant:	Building 3,NO 55 Longtan Shan Road, Beilun Daqi,Ningbo,Zhejiang
Manufacturer:	Ningbo Sunvot Technology Co., Ltd
Address of Manufacturer:	Building 3,NO 55 Longtan Shan Road, Beilun Daqi,Ningbo,Zhejiang

2.2 Test Facility

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

• A2LA (Certificate No. 6336.01)

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01.

Innovation, Science and Economic Development Canada

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0120.

IC#: 27594.

• FCC -Designation Number: CN1312

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized as an

accredited testing laboratory. Designation Number: CN1312.

Test Firm Registration Number: 717327





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2.3 General Description of EUT

	ı.							
EUT Description:	5G CPE							
Model No.:	GC600/GC600C/GC600T/GC600A/GC600B							
Trade Mark:	Sunvot							
Hardware Version:	GC600-Main-V1.1							
Software Version:	600.102.1.507							
Antenna Type:	□External, ⊠Integrated	d						
	WCDMA Band II:	1.94dBi (Ant0)	WCDMA Band IV:	0.91dBi (Ant0)				
	WCDMA Band V:	-1.22dBi (Ant0)						
	LTE Band 2:	1.94dBi (Ant0)	LTE Band 4:	0.91dBi (Ant0)				
	LTE Band 5:	-1.22dBi (Ant0)	LTE Band 7:	3.43dBi (Ant0)				
	LTE Band 66:	0.91dBi (Ant0)						
	LTE CA_2C:	1.94dBi (Ant0)	LTE CA_7C:	3.43dBi (Ant0)				
	ND Band n7:	1 0dDi (Ant5)	NR Band n77:	2.0dBi (Ant3)				
	NR Band n7:	1.8dBi (Ant5)	INIT DAILU III I .	2.0dBi (Ant5)				
	NR Band n78:	2.0dBi (Ant3)						
		2.0dBi (Ant5)						
	2.4G WIFI:	3.89dBi (Ant0)						
Antenna Gain:		2.84dBi (Ant1)						
Antenna Gam.	5150MHz to 5250MHz:	4.87dBi (Ant0)	5250MHz to 5350MHz:	4.76dBi (Ant0)				
		5.06dBi (Ant1)		4.28dBi (Ant1)				
	5470MHz to 5725MHz:	3.22dBi (Ant0)	5725MHz to 5850MHz:	2.73dBi (Ant0)				
		4.85dBi (Ant1)		4.54dBi (Ant1)				
	LTE CA:							
	LTE CA_2C; LTE CA_70	C; LTE CA_2A-4A;	LTE CA_2A-7A; LTE CA_	_4A-5A;				
	LTE CA_4A-7A; LTE CA_5A-7A; LTE CA_5A-66A; LTE CA_7A-7A; LTE CA_66A-66A;							
	ENDC:							
	DC_2A_n7A; DC_66A_r	n7A; DC_2A_n78A	; DC_4A_n78A; DC_7A_n	78A;				
	DC_66A_n78A;							
	Note:							
	The antenna gain are de manufacturer.	erived from the gair	n information report provided by the					
Remark:								
	n is provided and confirme		SGS is not liable to the ac	ccuracy,				



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3 RF Exposure Evaluation

3.1 RF Exposure Compliance Requirement

3.1.1 Limits

Frequency range (MHz)				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/f2)	6							
30-300	61.4	0.163	1.0	6							
300-1500	1	1	f/300	6							
1500-100,000	1	1	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	1	f/1500	30							
1500-100,000	/	1	1.0	30							

F=frequency in MHz

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 * R²)

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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^{*=}Plane-wave equivalent power density



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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

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.0 / 2.0 in linear scale. Output Power Into Antenna & RF Exposure Evaluation Distance:

This confirmed that the device comply with MPE limit.

Operating Band	Frequency (MHz)	Antenna Gain (dBi)	MIMO Directional gain	Max Conducte d Average Output 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)	conclusio n
WCDMA Band II	1852.4	1.94	NA	25.00	26.94	33.01	0.0983	1.0000	8.01	12.01	8.01	Pass
WCDMA Band IV	1712.4	0.91	NA	25.00	25.91	30.00	0.0776	1.0000	5.00	12.01	5.00	Pass
WCDMA Band V	826.4	-1.22	NA	25.00	21.63	38.45	0.0475	0.5509	15.60	9.42	9.42	Pass
LTE Band 2/LTE CA_2C	1850.7	1.94	NA	25.00	26.94	33.00	0.0983	1.0000	8.00	12.01	8.00	Pass
LTE Band 4	1710.7	0.91	NA	25.00	25.91	30.00	0.0776	1.0000	5.00	12.01	5.00	Pass
LTE Band 5	824.7	-1.22	NA	25.00	21.63	38.45	0.0475	0.5498	15.60	9.41	9.41	Pass
LTE Band 7/LTE CA_7C	2502.5	3.43	NA	25.00	28.43	33.00	0.1386	1.0000	8.00	12.01	8.00	Pass
LTE Band 66	1710.7	0.91	NA	25.00	25.91	30.00	0.0776	1.0000	5.00	12.01	5.00	Pass
NR Band n7	2502.5	1.80	NA	25.00	26.80	33.00	0.0952	1.0000	8.00	12.01	8.00	Pass
NR Band n77 (3450-3550)	3455.0	2.00	NA	25.00	27.00	30.00	0.0997	1.0000	5.00	12.01	5.00	Pass
NR Band n77 (3450-3550)(HPUE)	3455.0	2.00	NA	28.00	30.00	30.00	0.1989	1.0000	2.00	9.01	2.00	Pass
NR Band n77 (3450-3550)(MIMO)	3455.0	2.00	2.00	28.00	30.00	30.00	0.1989	1.0000	2.00	9.01	2.00	Pass
NR Band n77 (3700-3980)	3707.5	2.00	NA	25.00	27.00	30.00	0.0997	1.0000	5.00	12.01	5.00	Pass
NR Band n77 (3700-3980)(HPUE)	3707.5	2.00	NA	28.00	30.00	30.00	0.1989	1.0000	2.00	9.01	2.00	Pass
NR Band n77 (3700-3980)(MIMO)	3707.5	2.00	2.00	28.00	30.00	30.00	0.1989	1.0000	2.00	9.01	2.00	Pass
NR Band n78 (3450-3550)	3455.0	2.00	NA	25.00	27.00	30.00	0.0997	1.0000	5.00	12.01	5.00	Pass
NR Band n78 (3450-3550)(HPUE)	3455.0	2.00	NA	28.00	30.00	30.00	0.1989	1.0000	2.00	9.01	2.00	Pass
NR Band n78 (3450-3550)(MIMO)	3455.0	2.00	2.00	28.00	30.00	30.00	0.1989	1.0000	2.00	9.01	2.00	Pass
NR Band n78 (3700-3800)	3705.0	2.00	NA	25.00	27.00	30.00	0.0997	1.0000	5.00	12.01	5.00	Pass
NR Band n78 (3700-3800)(HPUE)	3705.0	2.00	NA	28.00	30.00	30.00	0.1989	1.0000	2.00	9.01	2.00	Pass
NR Band n78 (3700-3800)(MIMO)	3705.0	2.00	2.00	28.00	30.00	30.00	0.1989	1.0000	2.00	9.01	2.00	Pass
2.4G WLAN Ant0	2412.0	3.89	NA	14.00	17.89	30.00	0.0122	1.0000				Pass
2.4G WLAN Ant1	2412.0	2.84	NA	14.00	16.84	30.00	0.0096	1.0000				Pass
2.4G WLAN (MIMO)	2412.0	NA	6.39	18.00	24.39	30.00	0.0547	1.0000		NIA		Pass
5G WLAN Ant0	5180.0	4.87	NA	17.00	21.87	30.00	0.0306	1.0000		NA		Pass
5G WLAN Ant1	5180.0	5.06	NA	17.00	22.06	30.00	0.0320	1.0000				Pass
5G WLAN (MIMO)	5180.0	NA	7.98	20.00	27.98	30.00	0.1248	1.0000				Pass



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Due to the EUT support NR ENDC and CA

Both LTE and NR/LTE band can transmit simultaneously, the formula of the calculated the MPE is:

$$\sum_{i=1}^{n} \frac{S_{E_{i}}(dutyfactor)}{MPE_{E_{i}}} < 1$$

NOTE The corresponding MEs must be expressed in terms of power density in the above summation Therefore, the worst-case (DC 7A n78A) situation is 0.1386+0.1989=0.3375, which is less than "1", this confirmed that the device comply with MPE limit.



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3.1.4 Exposure calculations for multiple sources

When a number of sources at different frequencies, and/or broadband sources, contribute to the total exposure, it becomes necessary to weigh each contribution relative to the MPE in accordance with the provisions of Table(A) and Table(B). To comply with the MPE, the fraction of the MPE in terms of E2, H2 (or power density) incurred within each frequency interval should be determined and the sum of all such fractions should not exceed unity.

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

$$\sum_{i=1}^{n} \frac{S_i}{MPE_i} \le 1$$

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

Simultaneous Tx Combination	Configuration
1	WWAN + WLAN 2.4GHz Ant0+ WLAN 5GHz Ant0
2	WWAN + WLAN 2.4GHz Ant0+ WLAN 5GHz Ant1
3	WWAN + WLAN 2.4GHz Ant0 + WLAN 5GHz MIMO
4	WWAN + WLAN 2.4GHz Ant1+ WLAN 5GHz Ant0
5	WWAN + WLAN 2.4GHz Ant1+ WLAN 5GHz Ant1
6	WWAN + WLAN 2.4GHz Ant1+ WLAN 5GHz MIMO
7	WWAN + WLAN 2.4GHz MIMO + WLAN 5GHz Ant0
8	WWAN + WLAN 2.4GHz MIMO + WLAN 5GHz Ant1
9	WWAN + WLAN 2.4GHz MIMO + WLAN 5GHz MIMO

No.	Mode	Power Density (mW/cm²)	MPE Limit (mW/cm ²)	Result Ratio	Total Ratio	Limit	Result
	LTE Band 5	0.0475	0.5498	0.0864			
9	WLAN 2.4GHz MIMO	0.0547	1.0000	0.0547	0.2659	1.0000	Pass
	WLAN 5GHz MIMO	0.1248	1.0000	0.1248			

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