

Report No.: SEWM2211000265RG06

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TEST REPORT

Application No.: SEWM2211000265RG

Applicant: Asiatelco Technologies Co.

Address of Applicant: #289 Bisheng Road, Building-8, 3F, Zhang jiang Hi-Tech Park, Pudong,

Shanghai 201204, China

Manufacturer: Asiatelco Technologies Co.

Address of Manufacturer: #289 Bisheng Road, Building-8, 3F, Zhang jiang Hi-Tech Park, Pudong,

Shanghai 201204, China

EUT Description: 5G CPE

Model No.: WB550-NA/WB550-EU

Trade Mark: ATEL

FCC ID: XYO-WB550

Standards: 47 CFR Part 2.1091

FCC KDB 447498 D01 v06

Date of Receipt: 2022/11/22 **Date of Issue:** 2023/01/05

Test Result: PASS*

Authorized Signature:

Panta Sun Wireless Laboratory Manager



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^{*} In the configuration tested, the EUT complied with the standards specified above.



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Version

Revision Record						
Version Chapter Date Modifier Remark						
01		2023/01/05		Original		

Prepared By	Nick Hu		
	(Nick Hu) / Test Engineer		
Checked By	well wei'		
	(Well Wei) / Reviewer		



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2 **General Information**

2.1 Client Information

Applicant:	Asiatelco Technologies Co.
Address of Applicant:	#289 Bisheng Road, Building-8, 3F, Zhang jiang Hi-Tech Park, Pudong, Shanghai 201204, China
Manufacturer:	Asiatelco Technologies Co.
Address of Manufacturer:	#289 Bisheng Road, Building-8, 3F, Zhang jiang Hi-Tech Park, Pudong, Shanghai 201204, China

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

EUT Description:	5G CPE			Ī				
Model No.:	WB550-NA/WB550-EU							
	ATEL							
Trade Mark:								
Hardware Version:	P1							
Software Version:	CPE_WB550_NA00_VZW_v1.0.8.1							
Antenna Type:	Fixed Internal Antenna							
	WCDMA Band II:	2.63dBi (Ant8)	WCDMA Band IV:	2.86dBi (Ant8)				
	WCDMA Band V:	1.32dBi (Ant8)						
	LTE Band 2:	2.63dBi (Ant8)	LTE Band 4:	2.86dBi (Ant8)				
	LTE Band 5:	1.32dBi (Ant8)	LTE Band 7:	1.52dBi (Ant8)				
	LTE Band 12:	1.61dBi (Ant8)	LTE Band 13:	1.94dBi (Ant8)				
	LTE Band 14:	2.19dBi (Ant8)	LTE Band 17:	1.58dBi (Ant8)				
	LTE Band 25:	1.93dBi (Ant8)	LTE Band 26:	1.32dBi (Ant8)				
	LTE Band 30:	0.22dBi (Ant8)	LTE Band 41:	1.52dBi (Ant8)				
	LTE Band 48:	-0.13dBi (Ant6)	LTE Band 66:	3.76dBi (Ant8)				
	LTE Band 71:	1.39dBi (Ant8)	LTE CA_41C:	1.52dBi (Ant8)				
	NR Band n2:	1.93dBi (Ant8)	NR Band n5:	1.61dBi (Ant8)				
	NR Band n7:	1.07dBi (Ant8)	NR Band n12:	1.58dBi (Ant8)				
	NR Band n14:	2.19dBi (Ant8)	NR Band n25:	1.93dBi (Ant8)				
Antenna Gain:	NR Band n30:	0.22dBi (Ant8)	NR Band n41:	2.49dBi (Ant8)				
				2.49dBi (Ant3)				
	NR Band n66:	3.76dBi (Ant8)	NR Band n71:	1.39dBi (Ant8)				
	NR Band n77:	-2.09dBi (Ant6)	NR Band n78:	-2.09dBi (Ant6)				
		-2.09dBi (Ant1)		-2.09dBi (Ant1)				
	2.4G WIFI:	4.5dBi (Ant1)	5150MHz to 5250MHz:	5.7dBi (Ant1)				
		3.9dBi (Ant2) 4.7dBi (Ant1)		5.2dBi (Ant2)				
	5725MHz to 5850MHz:	3.5dBi (Ant2)						
	•							
	LTE CA: LTE UL CA 41C; LTE UL CA 2A-12A; LTE UL CA 12A-66A							
	ENDC:	-	_ OL OA_12A-00A					
	DC_41A-n41A; DC_2A_n71A; DC_12A_n2A; DC_12A_n66A; DC_66A_n71A;							
	DC_2A_n41A; DC_12A_n25A; DC_66A_n41A							
	NR UL CA:	0, 1, 2 0_00, 1_11-						
	32 3,							



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CA_n41A-n71A; CA_n25A-n71A; CA_n25A-n41A; CA_n66A-n41A; CA_n66A-n71A
Note:
The antenna gain are derived from the gain information report provided by the manufacturer.

Remark:

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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)	Magnetic field strength (A/m)	Power density (mW/cm2)	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 P	opulation/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	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	Frequenc y (MHz)	Antenna Gain (dBi)	Max Conducte d Average Output Power (dBm)	Output Power to Antenna (dBm)	EIRP(ERP) Limit (dBm)	Output Power to Antenna (mw)	Power Density at R = 20 cm (mW/cm2	Limit (mW/cm 2)	conclusio n
WCDMA Bnad II	1852.40	2.63	25.00	27.63	33.00	316.2278	0.1153	1.0000	Pass
WCDMA Bnad IV	1712.40	2.86	25.00	27.86	30.00	316.2278	0.1215	1.0000	Pass
WCDMA Bnad V	826.40	1.32	25.00	26.32	38.45	316.2278	0.0853	0.5509	Pass
LTE B2	1850.70	2.63	25.00	27.63	33.00	316.2278	0.1153	1.0000	Pass
LTE B4	1710.70	2.86	25.00	27.86	30.00	316.2278	0.1215	1.0000	Pass
LTE B5	824.70	1.32	25.00	26.32	38.45	316.2278	0.0853	0.5498	Pass
LTE B7	2502.50	1.52	25.00	26.52	33.00	316.2278	0.0893	1.0000	Pass
LTE B12	699.70	1.61	25.00	26.61	34.77	316.2278	0.0911	0.4665	Pass
LTE B13	779.50	1.94	25.00	26.94	34.77	316.2278	0.0983	0.5197	Pass
LTE B14	790.50	2.19	25.00	27.19	34.77	316.2278	0.1042	0.5270	Pass
LTE B17	706.50	1.58	25.00	26.58	34.77	316.2278	0.0905	0.4710	Pass
LTE B25	1850.70	1.93	25.00	26.93	33.00	316.2278	0.0981	1.0000	Pass
LTE B26(814-824)	814.70	1.32	25.00	26.32	NA	316.2278	0.0853	0.5431	Pass
LTE B26(824-849)	824.70	1.32	25.00	26.32	38.45	316.2278	0.0853	0.5498	Pass
LTE B30	2307.50	0.22	23.00	23.22	23.98	199.5262	0.0418	1.0000	Pass
LTE B41/CA_41C	2498.50	1.52	28.00	29.52	33.00	630.9573	0.1781	1.0000	Pass
LTE B48	3552.50	-0.13	23.00	22.87	23.00	199.5262	0.0385	1.0000	Pass
LTE B66	1710.70	3.76	25.00	28.76	30.00	316.2278	0.1495	1.0000	Pass
LTE B71	665.50	1.39	25.00	26.39	34.77	316.2278	0.0866	0.4437	Pass
NR Band n2	1852.50	1.93	25.00	26.93	33.00	316.2278	0.0981	1.0000	Pass
NR Band n5	826.50	1.61	25.00	26.61	38.45	316.2278	0.0911	0.5510	Pass
NR Band n7	2502.50	1.07	25.00	26.07	33.00	316.2278	0.0805	1.0000	Pass
NR Band n12	701.50	1.58	25.00	26.58	34.77	316.2278	0.0905	0.4677	Pass
NR Band n14	790.50	2.19	25.00	27.19	34.77	316.2278	0.1042	0.5270	Pass
NR Band n25	1852.50	1.93	25.00	26.93	33.00	316.2278	0.0981	1.0000	Pass
NR Band n30	2307.50	0.22	23.00	23.22	23.98	199.5262	0.0418	1.0000	Pass
NR Band n41	2501.01	2.49	28.00	30.49	33.00	630.9573	0.2227	1.0000	Pass
NR Band n66	1712.50	3.76	25.00	28.76	30.00	316.2278	0.1495	1.0000	Pass
NR Band n71	665.50	-1.39	25.00	23.61	34.77	316.2278	0.0457	0.4437	Pass
NR Band n77/n78 (3450-3550)	3455.01	-2.09	28.00	25.91	30.00	630.9573	0.0776	1.0000	Pass
NR Band n77 (3700-3980)	3705.00	-2.09	28.00	25.91	30.00	630.9573	0.0776	1.0000	Pass
NR Band n78 (3700-3800)	3705.00	-2.09	28.00	25.91	30.00	630.9573	0.0776	1.0000	Pass
2.4GWIFI	2412.00	4.50	21.00	25.50	30.00	125.8925	0.0706	1.0000	Pass
5GWIFI	5180.00	5.70	21.00	26.70	30.00	125.8925	0.0931	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(ENDC_41A_n41A) situation is 0.1781+0.2227=0.4008, 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

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

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

Simultaneous Tx Combination	Configuration	
1	WWAN + WiFi 2.4G + WiFi 5G	

No.	Mode	Power Density (mW/cm²)	MPE Limit (mW/cm ²)	Result Ratio	Total Ratio	Limit	Result
	LTE Band 71	0.0866	0.4437	0.1952			
1	WiFi 2.4G	0.0706	1.0000	0.0706	0.3589	1.00	Pass
	WiFi 5G	0.0931	1.0000	0.0931			

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