

EMC TEST REPORT

Applicant	Asiatelco Technologies Co.
FCC ID	XYO-AN95
Product	AN95
Brand	ATEL
Model	AN95
Report No.	R2401A0058-E1
Issue Date	March 4, 2024

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC Code CFR47 Part15B (2023)/ ANSI C63.4-2014**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Summary of measurement results

Number	Test Case	Clause in FCC Rules	Conclusion
1	Radiated Emission	FCC Part15.109, ANSI C63.4-2014	PASS
2	Conducted Emission	FCC Part15.107, ANSI C63.4-2014	NA
Date of Testing: January 26, 2024 ~ February 5, 2024			
Date of Sample Received: January 16, 2024			
Note: All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2 Test Facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

1.3 Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China
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2 General Description of Equipment Under Test

2.1 Applicant and Manufacturer Information

Applicant	Asiatelco Technologies Co.
Applicant address	#68 HuaTuo Road, Building-8, Zhangjiang Hi-Tech Park, Pudong, Shanghai 201204, China
Manufacturer	Asiatelco Technologies Co.
Manufacturer address	#68 HuaTuo Road, Building-8, Zhangjiang Hi-Tech Park, Pudong, Shanghai 201204, China

2.2 General Information

EUT Description			
Device Type	Module Device		
Model	AN95		
Lab internal SN	R2404A0058/S01		
HW Version	P2.0		
SW Version	5.6		
Power Rating	AC 4.5V from battery		
Connecting I/O Port(s)	Please refer to the User's Manual.		
Antenna Type	WWAN	PIFA Antenna	
	WLAN	PCB Antenna	
Frequency	Band	Tx (MHz)	Rx (MHz)
	GSM 850	824 ~ 849	869 ~ 894
	GSM 1900	1850 ~ 1910	1930 ~ 1990
	LTE-M Band 2	1850 ~ 1910	1930 ~ 1990
	LTE-M Band 4	1710 ~ 1755	2110 ~ 2155
	LTE-M Band 5	824 ~ 849	869 ~ 894
	LTE-M Band 12	699 ~ 716	729 ~ 746
	LTE-M Band 13	777 ~ 787	746 ~ 756
	LTE-M Band 14	788 ~ 798	758 ~ 768
	LTE-M Band 25	1850 ~ 1915	1930 ~ 1995
	LTE-M Band 26A	814 ~ 824	859 ~ 869
	LTE-M Band 26B	824 ~ 849	869 ~ 894
	LTE-M Band 66	1710 ~ 1780	2110 ~ 2200
	LTE-M Band 85	698 ~ 716	728 ~ 746
	Bluetooth LE	2400 ~ 2483.5	2400 ~ 2483.5
EUT Accessory			
Battery	Manufacturer: Fujian Nanping Nanfu new energy Co., LTD.		

	Model: LR63S1P-2P Input: 4.5V 6400mAh
Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.	

2.3 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards

FCC Code CFR47 Part15B (2023)

ANSI C63.4-2014

2.4 Test Mode

Test Mode	
Mode 1	EUT (with battery) + GSM/LTE/ Bluetooth LE Receiver
Mode 2	EUT (with battery) + GSM/LTE/ Bluetooth LE Standby

Test Type	Test Mode	Worst Mode
Radiated Emission	Mode 1, 2	Mode 1
Conducted Emission	/	/
During the test, the preliminary test was performed in all modes, the test data of the worst-case condition was recorded in this report.		

3 Test Case Results

3.1 Radiated Emission

Ambient Condition

Temperature	Relative humidity
15°C ~ 35°C	30% ~ 60%

Methods of Measurement

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The distance between EUT and receive antenna should be 10 meters below 1GHz; 3 meters for above 1GHz. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier. During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated signal level.

The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. During the test, the EUT is worked at maximum output power.

Set the spectrum analyzer in the following:

Below 1GHz:

RBW=100 kHz / VBW=300 kHz / Sweep=AUTO

Above 1GHz:

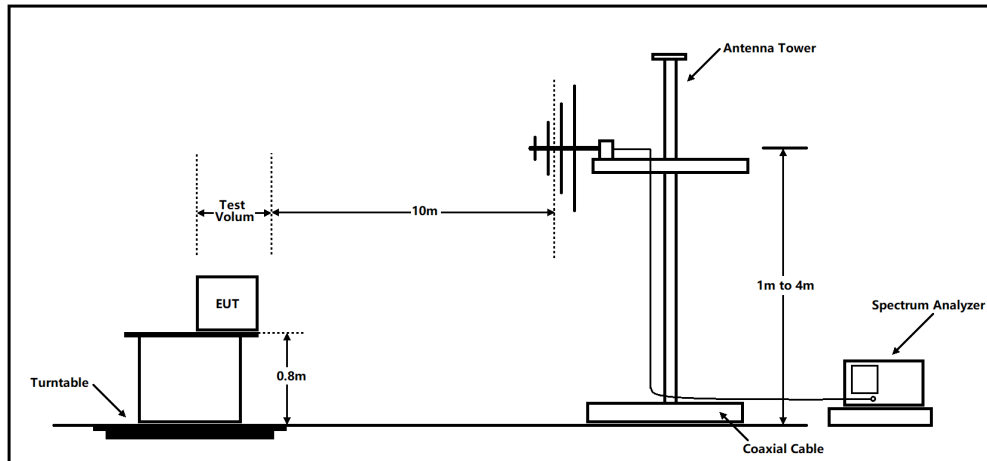
(a) PEAK Detector: RBW=1MHz / VBW=3MHz/ Sweep=AUTO

(b) AVERAGE Detector: RBW=1MHz / VBW=3MHz / Sweep=AUTO

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

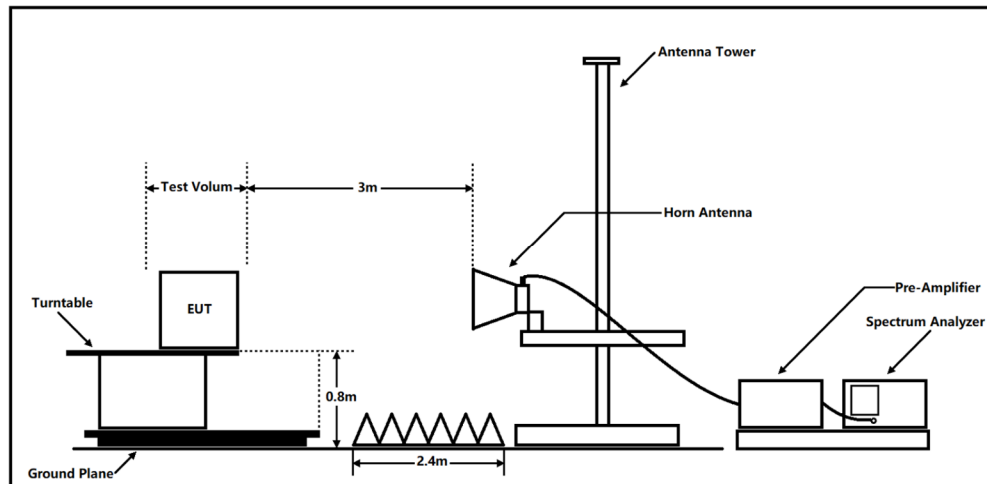
Test Setup

Below 1GHz



Note: Area side: 21m x 12m

Above 1GHz



Note: Area side: 2.4mX3.6m

Antenna Tower meets ANSI C63.4 requirements for measurements above 1 GHz by keeping the antenna aimed at the EUT during the antenna's ascent/ descent along the antenna mast.

Limits

Class B

Frequency (MHz)	Field Strength (dB μ V/m)	Detector
30 -88	30.0	Quasi-peak
88-216	33.5	Quasi-peak
216 – 960	36.0	Quasi-peak
960-1000	44.0	Quasi-peak
1000-5 th harmonic of the highest frequency or 40GHz, which is lower	54 74	Average Peak

Frequency range of radiated measurements

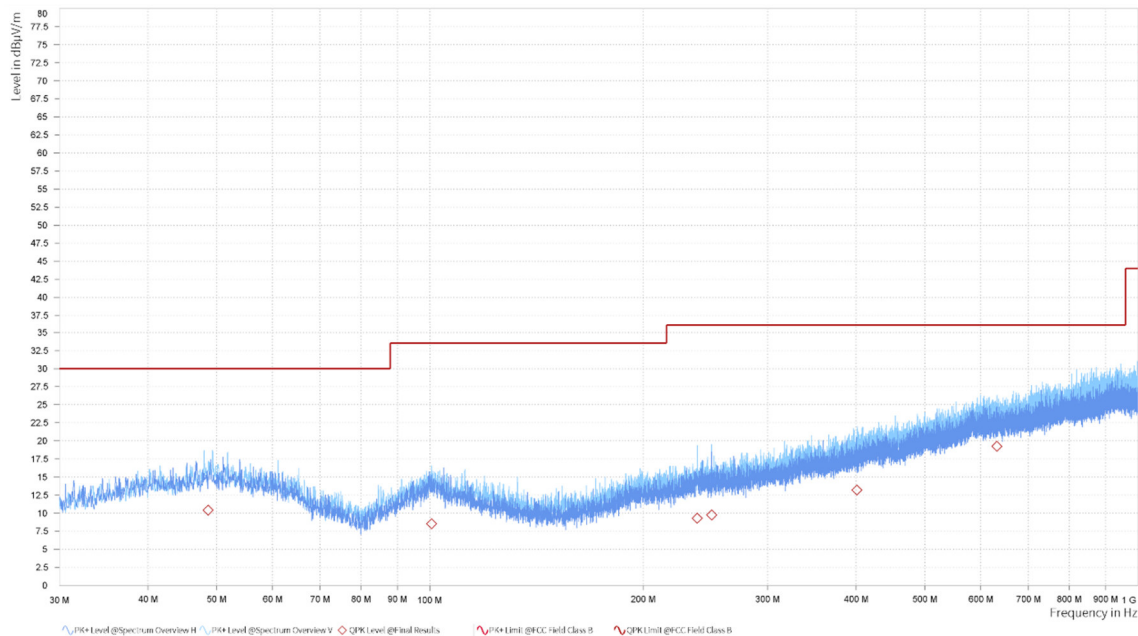
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

Test Results

Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier.

The following graphs display the maximum values of horizontal and vertical by software.

For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

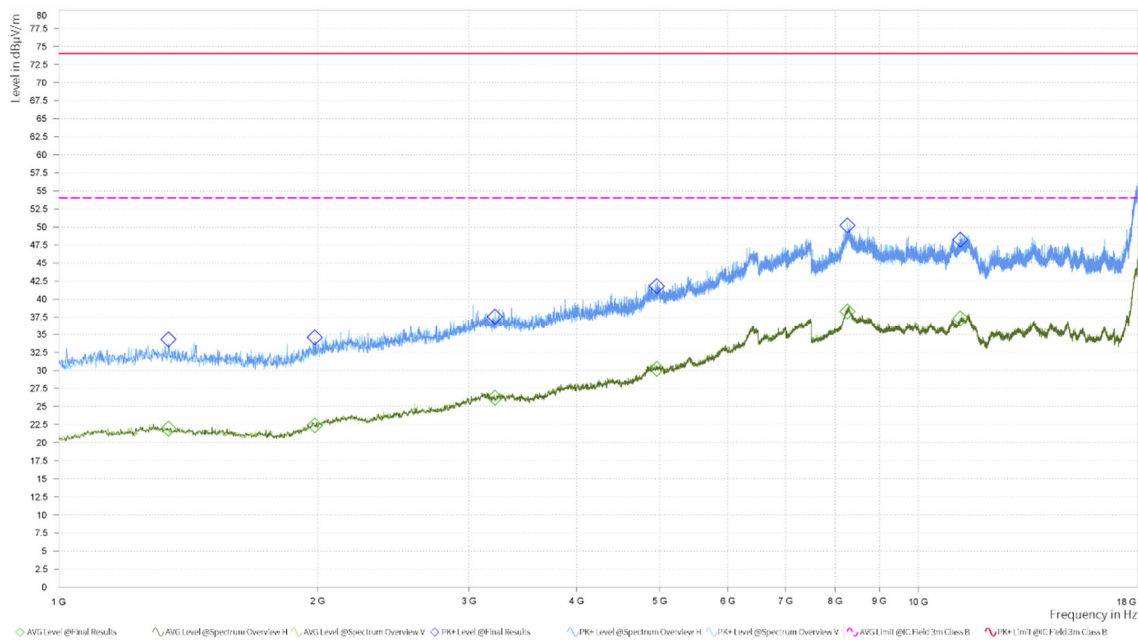


Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (m)	Polarization	Azimuth (deg)	Correct Factor (dB)
48.653	10.40	30.00	19.60	1.05	V	168	-8.47
100.607	8.54	33.50	24.96	2.25	V	79.2	-9.63
238.526	9.28	36.00	26.72	1.21	V	258.1	-8.69
250.154	9.75	36.00	26.25	1.86	V	182.7	-8.50
400.953	13.19	36.00	22.81	1.25	V	61.7	-4.58
631.657	19.25	36.00	16.75	1.11	V	105.3	-0.68

Remark: 1. Correction Factor = Antenna factor + Insertion loss(cable loss+amplifier gain)

2. Margin = Limit – Quasi-Peak



Radiated Emission from 1GHz to 18GHz

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Height (m)	Pol	Azimuth (deg)	Corr. (dB/m)
1,341.490	34.26	-	74.00	39.74	1.000	2.22	H	50.4	-13.30
1,984.053	34.55	-	74.00	39.45	1.000	2.08	H	167.4	-10.92
3,215.173	37.53	-	74.00	36.47	1.000	2.12	V	189.9	-6.58
4,961.380	41.79	-	74.00	32.21	1.000	1.79	H	322.9	-1.44
8,265.001	50.18	-	74.00	23.82	1.000	1.75	V	14.4	8.35
11,183.074	48.20	-	74.00	25.80	1.000	2.21	H	294.1	7.23
1,341.490	-	21.90	54.00	32.10	1.000	2.22	H	50.4	-13.30
1,984.053	-	22.37	54.00	31.63	1.000	2.08	H	167.4	-10.92
3,215.173	-	26.18	54.00	27.82	1.000	2.12	V	189.9	-6.58
4,961.380	-	30.20	54.00	23.80	1.000	1.79	H	322.9	-1.44
8,265.001	-	38.26	54.00	15.74	1.000	1.75	V	14.4	8.35
11,183.074	-	37.28	54.00	16.72	1.000	2.21	H	294.1	7.23

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

2. Peak Margin = Limit –MAX Peak/ Average

3.2 Conducted Emission

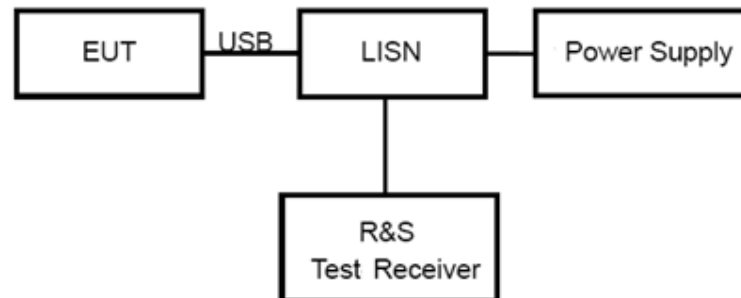
Ambient Condition

Temperature	Relative humidity
15°C ~ 35°C	30% ~ 60%

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line.

Test Setup



Note: Power Supply is AC Power source and it is used to change the voltage 120V/60Hz.

Limits

Frequency (MHz)	Class A (dB μ V)		Class B (dB μ V)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 to 56 *	56 to 46*
0.5 - 5	73	60	56	46
5 - 30	73	60	60	50

*: Decreases with the logarithm of the frequency.

Note: The EUT should meet CLASS B limit.

Test Results

The equipment doesn't connected to public network, therefore this requirement do not apply.

4 Uncertainty Measurement

Case	Uncertainty	Factor k
Radiated Emission 30MHz – 200MHz	3.39 dB	1.96
Radiated Emission 200MHz – 1GHz	3.82 dB	1.96
Radiated Emission 1GHz – 18GHz	6.51 dB	1.96

5 Main Test Instruments

Name of Equipment	Manufacturer	Type/Model	Serial Number	Calibration Date	Expiration Time
Radiated Emission					
EMI Test Receiver	R&S	ESR	102389	2023-05-12	2024-05-11
Signal Analyzer	R&S	FSV40	101186	2023-05-12	2024-05-11
Signal Analyzer	R&S	FSV3044	103495	2023-09-19	2024-09-18
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	1023	2023-07-14	2026-07-13
Horn Antenna	ETS-Lindgren	3160-09	00102643	2021-10-10	2024-10-09
Amplifier	MicroWave	KLNA-18040050	220826001	2023-05-12	2024-05-11
Horn Antenna	R&S	BBHA9120D	02728	2023-09-19	2026-09-18
Software	R&S	EMC32	9.26.01	/	/

ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.

ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.

***** END OF REPORT *****