

Report No.: SEWM2211000265RG05

Rev.: 01

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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

**Standard(s):** FCC 47 CFR Part 15, Subpart B

**Date of Receipt:** 2022/11/22

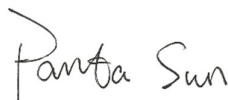
**Date of Test:** 2022/12/28 to 2022/12/29

**Date of Issue:** 2023/01/05

**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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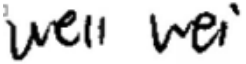


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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2023/01/05		Original

Prepared By	 (King-p Li) / Test Engineer
Checked By	 (Well Wei) / Reviewer



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## Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (150kHz-30MHz)	FCC 47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (30MHz-1GHz)	FCC 47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (above 1GHz)	FCC 47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass

Internal Source	Upper Frequency
Below 1.705MHz	30MHz
1.705MHz to 108MHz	1GHz
108MHz to 500MHz	2GHz
500MHz to 1GHz	5GHz
Above 1GHz	5th harmonic of the highest frequency or 40GHz, whichever is lower



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## 1 General Information

EUT Description:	5G CPE		
Model No.:	WB550-NA/WB550-EU		
Trade Mark:	ATEL		
Hardware Version:	P1		
Software Version:	CPE_WB550_NA00_VZW_v1.0.8.1		
IMEI:	862424050036655		
Frequency Bands:	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 Band 2	1850~1910	1930~1990
	LTE Band 4	1710~1755	2110~2155
	LTE Band 5	824~849	869~894
	LTE Band 7	2500~2570	2620~2690
	LTE Band 12	699~716	729~746
	LTE Band 13	777~787	746~756
	LTE Band 14	788~798	746~756
	LTE Band 17	704~716	734~746
	LTE Band 25	1850~1915	1930~1995
	LTE Band 26 (814 to 824 MHz)	814~824	859~869
	LTE Band 26 (824 to 849 MHz)	824~849	869~894
	LTE Band 30	2305 ~ 2315	2350 ~ 2360
	LTE Band 41	2496~2690	2496~2690
	LTE Band 48	3550~3700	3550~3700
	LTE Band 66	1710~1780	2110~2200
	LTE Band 71	663~698	617~652
	NR Band n2	1850~1910	1930~1990
	NR Band n5	824~849	869~894
	NR Band n7	2500~2570	2620~2690
	NR Band n12	699~716	729~746
	NR Band n14	788~798	758~768



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	NR Band n25	1850~1915	1930~1995
	NR Band n30	2305 ~ 2315	2350 ~ 2360
	NR Band n41	2496~2690	2496~2690
	NR Band n66	1710~1780	2110~2180
	NR Band n71	663~698	617~652
	NR Band n77	3450-3550	3450-3550
		3700-3980	3700-3980
	NR Band n78	3450-3550	3450-3550
		3700-3800	3700-3800
	Wi-Fi 2.4G	2412~2462	2412~2462
	Wi-Fi 5G	5150 ~ 5250	5150 ~ 5250
		5725 ~ 5850	5725 ~ 5850
	LTE CA: LTE UL CA_41C; LTE UL CA_2A-12A; LTE UL CA_12A-66A ENDC: 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: CA_n41A-n71A; CA_n25A-n71A; CA_n25A-n41A; CA_n66A-n41A; CA_n66A-n71A		

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## 1.1 Description of Support Units

Description	Manufacturer	Model No.	Inventory No.
Router	Smauwave Technology Co.,Ltd	SRT 421	SUWI-04-34-01
Computer	Lenovo	T14	SUWI-03-33-04
Mouse	Lenovo	3D optical Mouse	SUWI-03-33-05
Adaptor	Huawei	HW-050200C02	SUWI-03-33-06

## 1.2 Test Location

All tests were performed at:

Company:	SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.
Address:	South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone
Post code:	215000
Test engineer:	King-p Li

## 1.3 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

## 1.4 Deviation from Standards

None

## 1.5 Abnormalities from Standard Conditions

None



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## 2 Emission Test Results

### 2.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement:	47 CFR Part 15, Subpart B		
Test Method:	ANSI C63.4:2014		
Frequency Range:	150kHz to 30MHz		
Receiver Setup:	RBW = 9kHz, VBW = 30kHz		
Limit:	Frequency Range (MHz)	Limit(dBμV)	
		Quasi-peak	average
	0.15M-0.5MHz	66 ~ 56*	56 ~ 46*
	0.5M-5MHz	56	46
	5M-30MHz	60	50
*Decreases with the logarithm of the frequency			
Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz			

#### 2.1.1 E.U.T. Operation

Operating Environment:

Temperature:	22~23°C
Humidity:	44~46%RH
Atmospheric Pressure:	101.0 kPa
Pretest these modes to find the worst case:	a: USB (adapter input)+2.4GWLAN+WCDMA Band 5 b: USB (adapter input)+5GWLAN+LTE Band 5 c: USB (adapter input)+2.4GWLAN+LTE Band 12 d: USB (adapter input)+5GWLAN+LTE Band 13 e: USB (adapter input)+2.4GWLAN+LTE Band 14 f: USB (adapter input)+5GWLAN+LTE Band 17 g: USB (adapter input)+2.4GWLAN+LTE Band 26 h: USB (adapter input)+5GWLAN+LTE Band 71 i: USB (adapter input)+2.4GWLAN+SA Band 5 j: USB (adapter input)+5GWLAN+SA Band 12 k: USB (adapter input)+2.4GWLAN+SA Band 14 l: USB (adapter input)+5GWLAN+SA Band 71
The worst case for final test:	a: USB (adapter input)+2.4GWLAN+WCDMA Band 5



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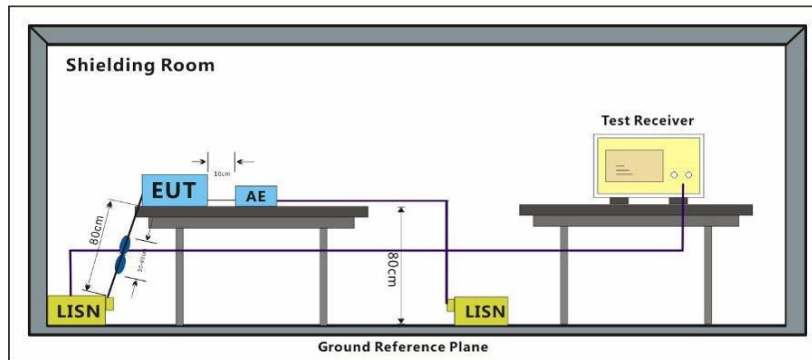
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### 2.1.2 Test Setup Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.



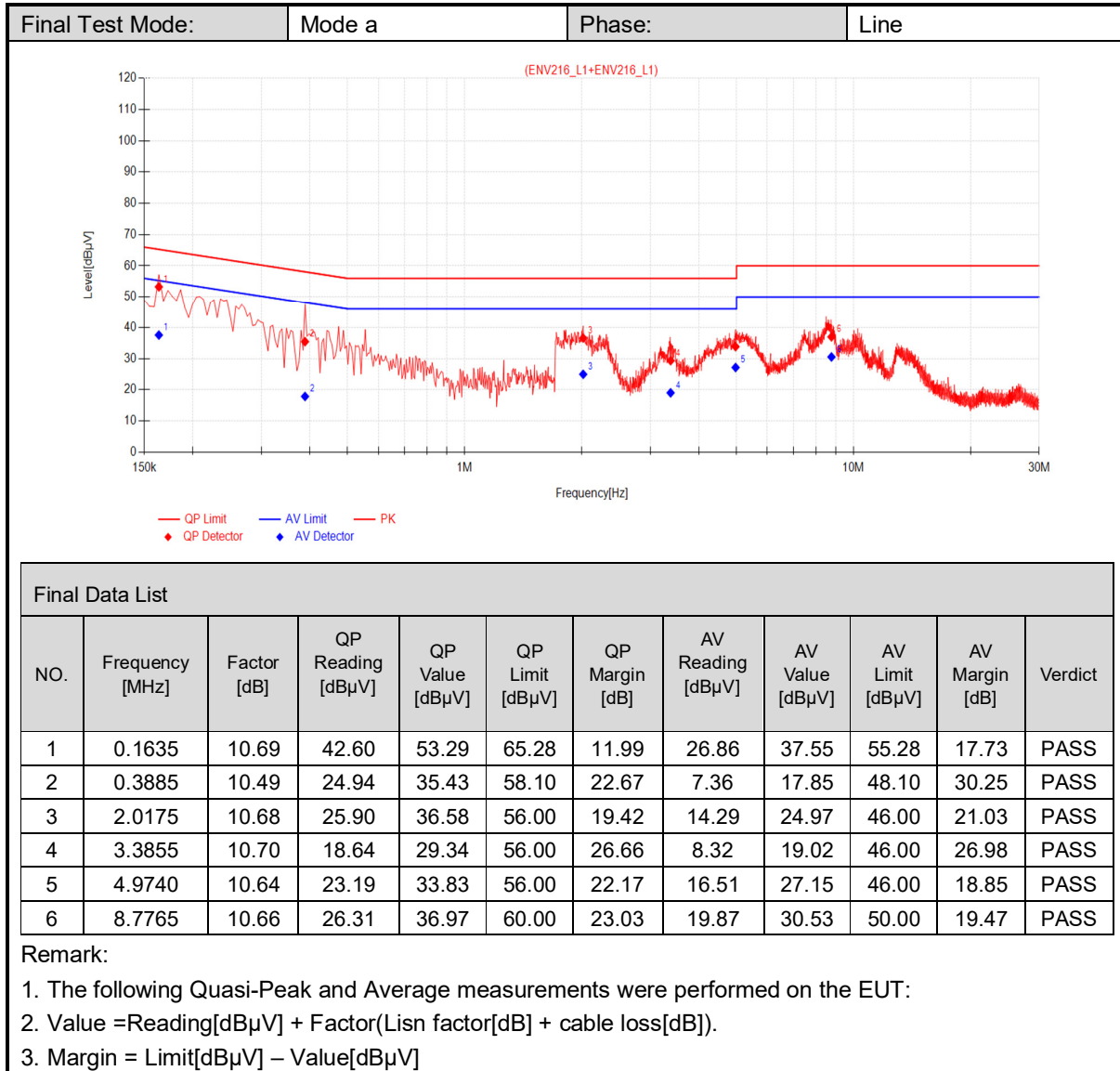
### 2.1.3 Measurement Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

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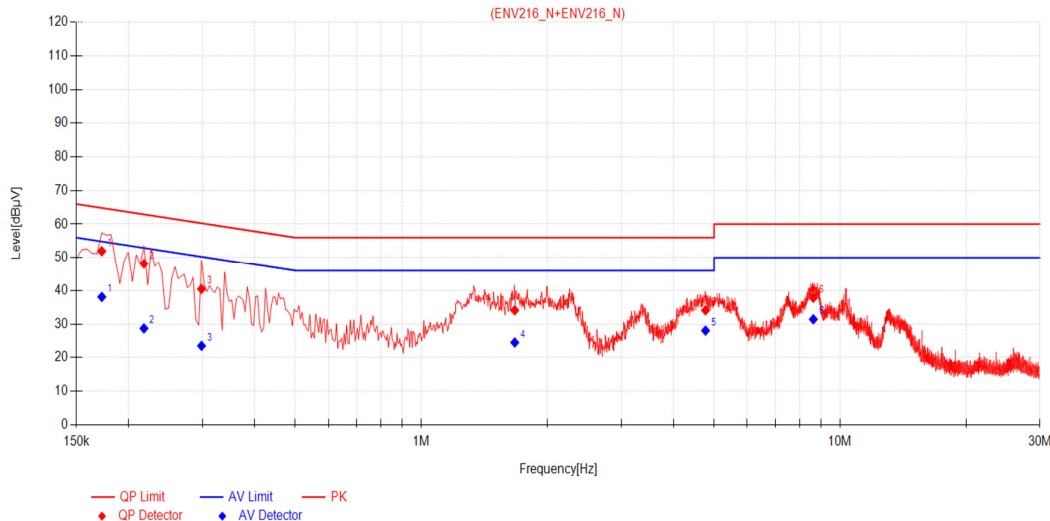
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Final Test Mode: Mode a Phase: Neutral



### Final Data List

NO.	Frequency [MHz]	Factor [dB]	QP Reading [dBμV]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.1725	10.71	41.25	51.96	64.84	12.88	27.39	38.10	54.84	16.74	PASS
2	0.2175	10.68	37.42	48.10	62.91	14.81	18.02	28.70	52.91	24.21	PASS
3	0.2985	10.76	29.72	40.48	60.28	19.80	12.74	23.50	50.28	26.78	PASS
4	1.6710	10.77	23.34	34.11	56.00	21.89	13.74	24.51	46.00	21.49	PASS
5	4.7715	10.66	23.46	34.12	56.00	21.88	17.40	28.06	46.00	17.94	PASS
6	8.6325	10.60	27.25	37.85	60.00	22.15	20.82	31.42	50.00	18.58	PASS

### Remark:

- The following Quasi-Peak and Average measurements were performed on the EUT:
- Value = Reading[dBμV] + Factor(Lisn factor[dB] + cable loss[dB]).
- Margin = Limit[dBμV] – Value[dBμV]



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## 2.2 Radiated Emissions (30MHz-1GHz)

Test Requirement:	47 CFR Part 15, Subpart B		
Test Method:	ANSI C63.4:2014		
Frequency Range:	30MHz to 1GHz		
Measurement Distance:	3m		
Limit:	Frequency Range (MHz)	Limit(dBμV/m)	Detector
	30MHz -88MHz	40.0	Quasi-peak
	88MHz-216MHz	43.5	Quasi-peak
	216MHz-960MHz	46.0	Quasi-peak
	960MHz-1000MHz	54.0	Quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz		

### 2.2.1 E.U.T. Operation

Temperature:	22~23°C
Humidity:	44~46%RH
Atmospheric Pressure:	101.0 kPa
Pretest these modes to find the worst case:	a: USB (adapter input)+2.4GWLAN+WCDMA Band 5 b: USB (adapter input)+5GWLAN+LTE Band 5 c: USB (adapter input)+2.4GWLAN+LTE Band 12 d: USB (adapter input)+5GWLAN+LTE Band 13 e: USB (adapter input)+2.4GWLAN+LTE Band 14 f: USB (adapter input)+5GWLAN+LTE Band 17 g: USB (adapter input)+2.4GWLAN+LTE Band 26 h: USB (adapter input)+5GWLAN+LTE Band 71 i: USB (adapter input)+2.4GWLAN+SA Band 5 j: USB (adapter input)+5GWLAN+SA Band 12 k: USB (adapter input)+2.4GWLAN+SA Band 14 l: USB (adapter input)+5GWLAN+SA Band 71
The worst case for final test:	f: USB (adapter input)+5GWLAN+LTE Band 17



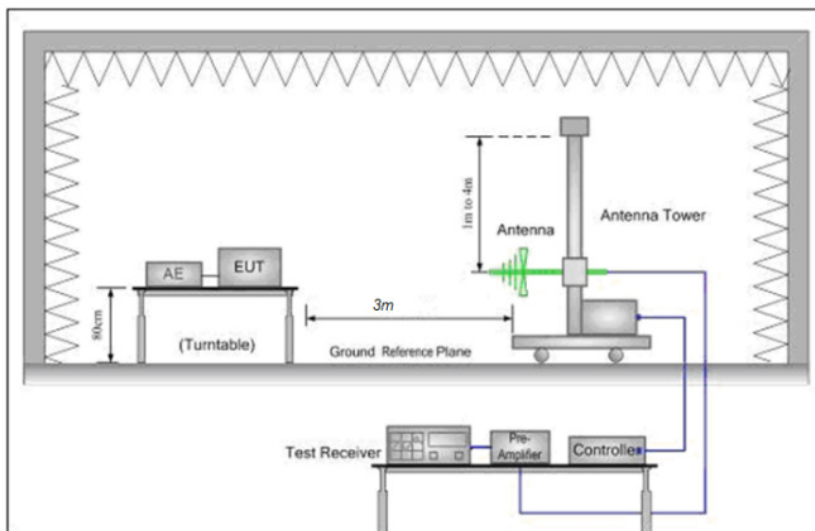
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### 2.2.2 Test Setup Procedures

1. The EUT was placed in a semi Anechoic Chamber as show below
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna height is adjusted between 1 to 4 meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak Detect Function with specified bandwidth with Maximum Hold Mode, and the trace was allowed to stabilize.
7. If the emission level of the EUT in peak mode was 6 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.



### 2.2.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities. The three polarities of X,Y,Z were measured by EUT, but only the worst data had been displayed.

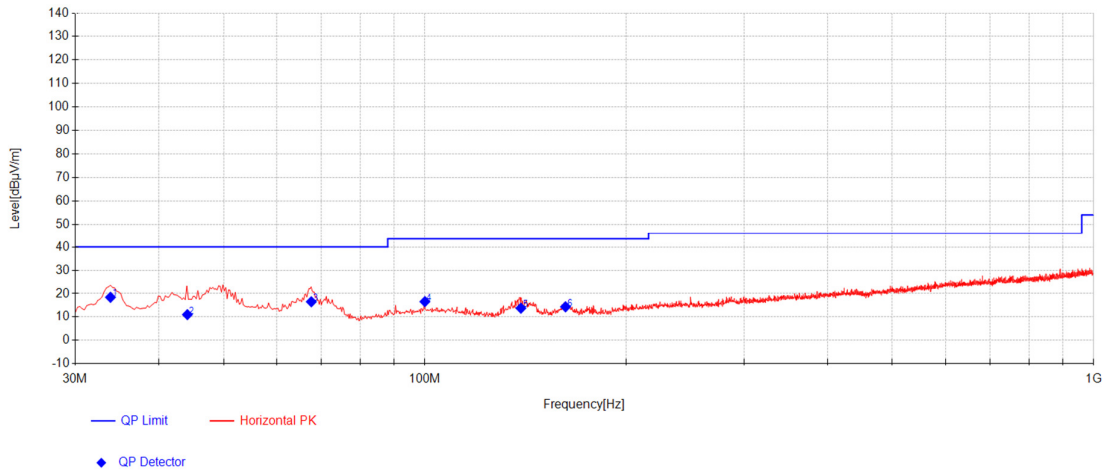


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Final Test Mode:	Mode f	Polarization:	Horizontal
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**Final Data List**

NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	33.8761	36.21	10.61	-28.39	18.43	40.00	21.57	217	335	Horizontal
2	44.1444	26.15	12.91	-28.05	11.01	40.00	28.99	100	263	Horizontal
3	67.6413	34.87	9.35	-27.71	16.51	40.00	23.49	120	9	Horizontal
4	100.0156	33.16	10.78	-27.36	16.58	43.50	26.92	189	189	Horizontal
5	139.1800	33.32	7.58	-27.14	13.76	43.50	29.74	119	270	Horizontal
6	162.3102	33.24	7.82	-26.71	14.35	43.50	29.15	207	107	Horizontal

**Remark:**

1. The Quasi-Peak measurements were performed on the EUT.

2. Value = Reading + AF + Factor:

AF = Antenna Factor(dB/m)

Factor = Cable Factor(dB) - Preamplifier (dB)

Margin = Limit[dBμV/m] -Value[dBμV/m]



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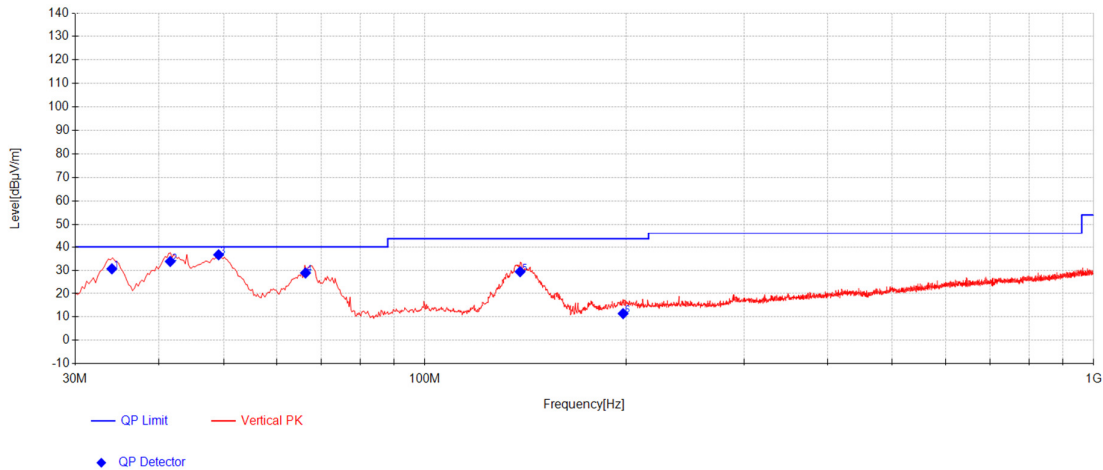


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Final Test Mode: Mode f Polarization: Vertical



#### Final Data List

NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	34.0400	48.35	10.63	-28.37	30.61	40.00	9.39	100	360	Vertical
2	41.6180	49.40	12.43	-28.07	33.76	40.00	6.24	105	133	Vertical
3	49.1554	50.96	13.68	-28.02	36.62	40.00	3.38	107	24	Vertical
4	66.2942	46.81	9.74	-27.70	28.85	40.00	11.15	120	129	Vertical
5	138.8180	48.97	7.56	-27.14	29.39	43.50	14.11	100	196	Vertical
6	197.8859	28.12	10.36	-27.05	11.43	43.50	32.07	112	219	Vertical

#### Remark:

1. The Quasi-Peak measurements were performed on the EUT.

2. Value = Reading + AF + Factor:

AF = Antenna Factor(dB/m)

Factor = Cable Factor(dB) - Preamplifier (dB)

Margin = Limit[dBμV/m] -Value[dBμV/m]



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## 2.3 Radiated Emissions (above 1GHz)

Test Requirement:	47 CFR Part 15, Subpart B		
Test Method:	ANSI C63.4:2014		
Frequency Range:	Above 1GHz		
Measurement Distance:	3m		
Limit:	Frequency (MHz)	Limit (dBμV/m)	Detector
	Above 1GHz	74	Peak
		54	Average
Detector:	Peak for pre-scan (1000kHz resolution bandwidth) 5th harmonic of the highest frequency or 40GHz, whichever is lower.		

### 2.3.1 E.U.T. Operation

Temperature:	22~23°C
Humidity:	44~46%RH
Atmospheric Pressure:	101.0 kPa
Pretest these modes to find the worst case:	a: USB (adapter input)+2.4GWLAN+WCDMA Band 5 b: USB (adapter input)+5GWLAN+LTE Band 5 c: USB (adapter input)+2.4GWLAN+LTE Band 12 d: USB (adapter input)+5GWLAN+LTE Band 13 e: USB (adapter input)+2.4GWLAN+LTE Band 14 f: USB (adapter input)+5GWLAN+LTE Band 17 g: USB (adapter input)+2.4GWLAN+LTE Band 26 h: USB (adapter input)+5GWLAN+LTE Band 71 i: USB (adapter input)+2.4GWLAN+SA Band 5 j: USB (adapter input)+5GWLAN+SA Band 12 k: USB (adapter input)+2.4GWLAN+SA Band 14 l: USB (adapter input)+5GWLAN+SA Band 71
The worst case for final test:	k: USB (adapter input)+2.4GWLAN+SA Band 14



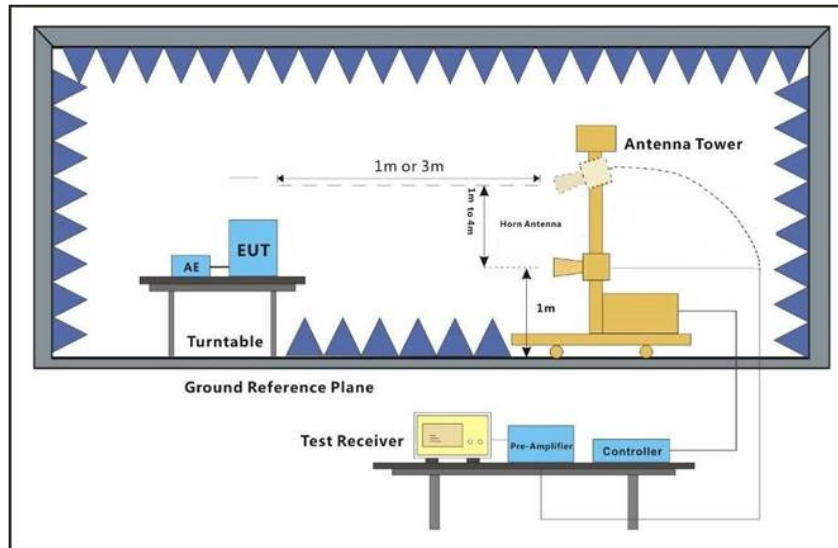
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### 2.3.2 Test Setup Procedures

1. The EUT was placed in a full Anechoic Chamber as show below
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation  
(Distance from antenna to EUT is 1m for measurements >18GHz).
4. The antenna height is adjusted between 1 to 4 meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak and AV Detect Function with specified bandwidth with Maximum Hold Mode, and the trace was allowed to stabilize.
7. At a measurement distance of 1 meter the limit line was increased by  $20 \cdot \log(3/1) = 9.54 \text{ dB}$ .



### 2.3.3 Measurement Data

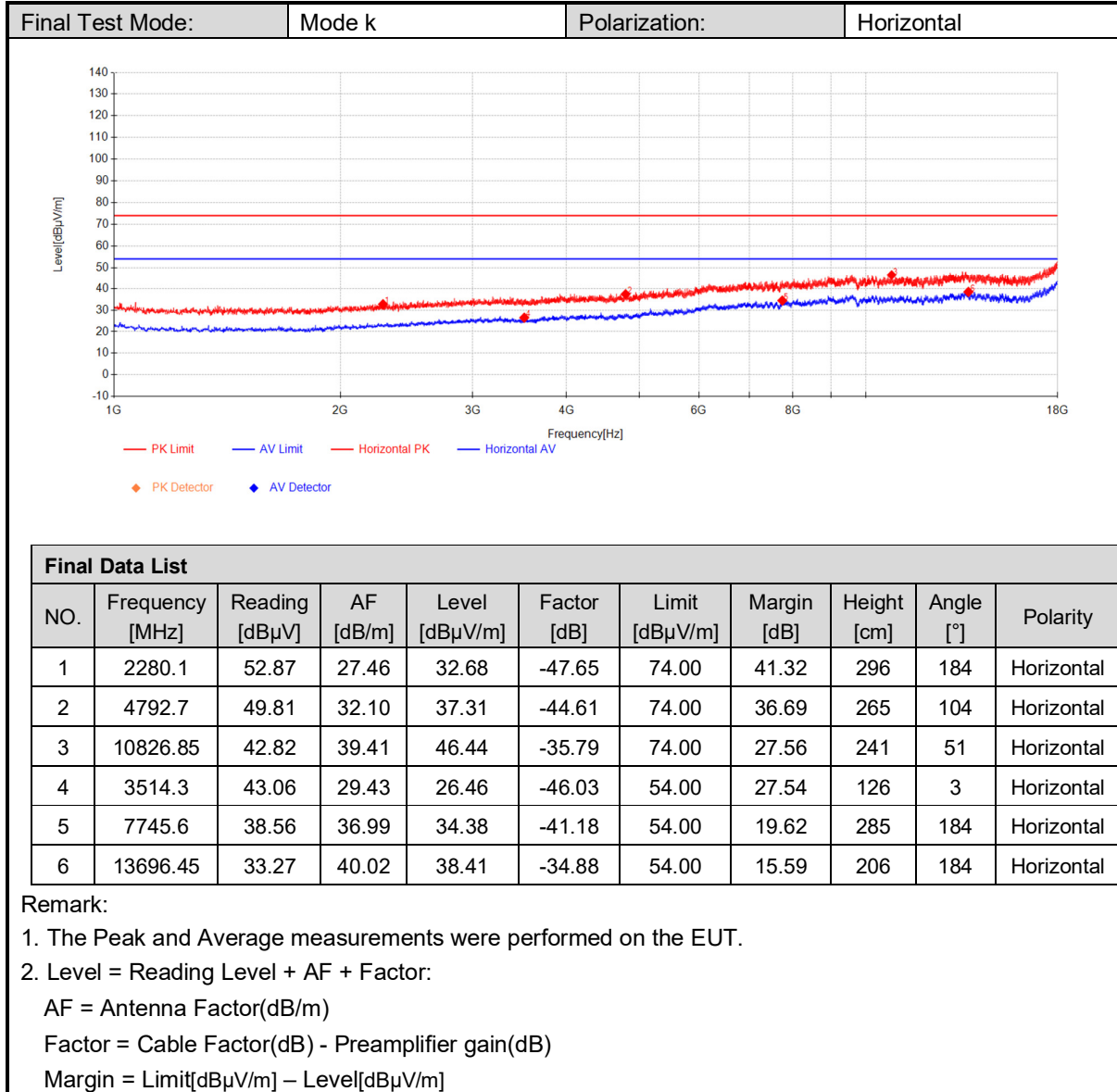
An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.

The three polarities of X, Y, Z were measured by EUT, but only the worst data had been displayed. Scan from 5th harmonic of the highest frequency or 40GHz, whichever is lower, the disturbance above 18GHz was very low. The points marked on below plots are the highest emissions could be found when testing, so only below points had been displayed.

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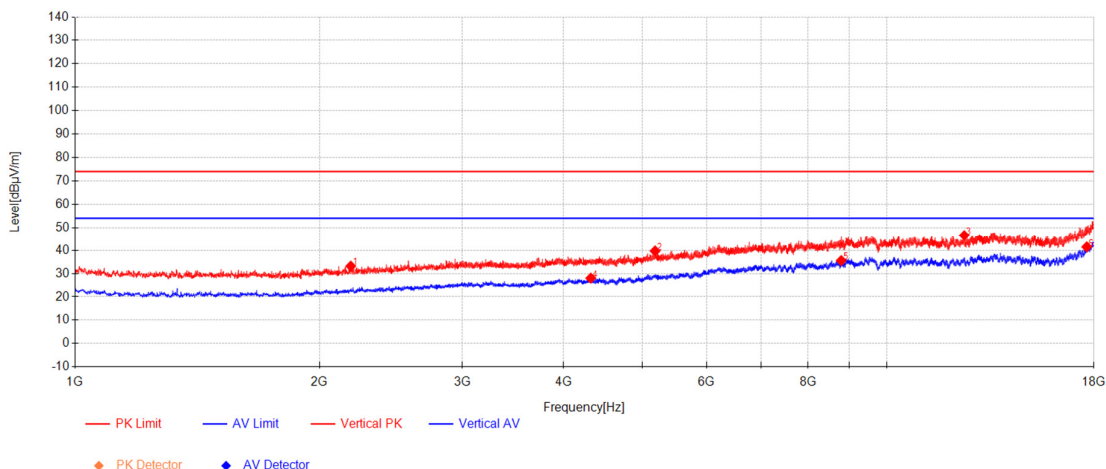
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Final Test Mode: Mode k Polarization: Vertical



#### Final Data List

NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2186.6	53.64	27.27	33.15	-47.76	74.00	40.85	196	206	Vertical
2	5183.7	51.09	32.60	39.65	-44.04	74.00	34.35	265	156	Vertical
3	12459.7	42.74	39.06	46.56	-35.24	74.00	27.44	284	182	Vertical
4	4319.25	41.93	31.11	28.00	-45.04	54.00	26.00	142	49	Vertical
5	8790.25	36.37	38.37	35.52	-39.22	54.00	18.48	226	130	Vertical
6	17640.45	31.02	41.16	41.40	-30.78	54.00	12.60	324	0	Vertical

#### Remark:

1. The Peak and Average measurements were performed on the EUT.

2. Level = Reading Level + AF + Factor:

AF = Antenna Factor(dB/m)

Factor = Cable Factor(dB) - Preamplifier gain(dB)

Margin = Limit[dBμV/m] – Level[dBμV/m]



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### 3 Equipment List

CE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date (yyyy/mm/dd)	Cal Due Date (yyyy/mm/dd)
UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	SUWI-01-04-01	2022/02/20	2023/02/19
Wideband Radio Communication Tester	Anritsu	MT8820C	SUWI-01-16-08	2022/02/14	2023/02/13
Wideband Radio Communication Tester	Anritsu	MT8821C	SUWI-01-26-03	2022/11/23	2023/11/22
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-06	2022/02/16	2023/02/15
Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	2022/02/19	2023/02/18
Artificial network	ROHDE&SCHWARZ	ENV216	SUWI-01-19-01	2022/02/19	2023/02/18
Artificial network	ROHDE&SCHWARZ	ENV216	SUWI-01-19-02	2022/02/19	2023/02/18
Measurement Software CE	Tonsend	JS32-CE V4.0.0.2	SUWI-02-09-05	NCR	NCR



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RE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date (yyyy/mm/dd)	Cal Due Date (yyyy/mm/dd)
Semi-Anechoic Chamber	Brilliant-emc	N/A	SUWI-04-02-01	2021/05/08	2024/05/07
Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-05	2022/02/16	2023/02/15
Signal Analyzer	ROHDE&SCHWARZ	FSW43	SUWI-01-02-04	2022/05/28	2023/05/27
Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	2022/02/19	2023/02/18
Receiving antenna	SCHWRZBECK MESS- ELEKTRONIK	VULB 9163	SUWI-01-11-01	2021/05/16	2023/05/15
Receiving antenna	SCHWRZBECK MESS- ELEKTRONIK	BBHA 9120D	SUWI-01-11-02	2021/05/16	2023/05/15
Receiving antenna	SCHWRZBECK MESS- ELEKTRONIK	BBHA 9170	SUWI-01-11-03	2021/05/14	2023/05/13
Amplifier	Tonscend	TAP9K3G40	SUWI-01-14-01	2022/02/14	2023/02/13
Amplifier	Tonscend	TAP01018050	SUWI-01-14-02	2022/02/14	2023/02/13
Amplifier	Tonscend	TAP18040048	SUWI-01-14-03	2022/02/19	2023/02/18
Active Loop Antenna	SCHWRZBECK MESS- ELEKTRONIK	FMZB 1519B	SUWI-01-21-01	2021/06/10	2023/06/09
UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	SUWI-01-04-01	2022/02/20	2023/02/19
Wideband Radio Communication Tester	Anritsu	MT8820C	SUWI-01-16-08	2022/02/14	2023/02/13
Wideband Radio Communication Tester	Anritsu	MT8821C	SUWI-01-26-03	2022/11/23	2023/11/22
Measurement Software	Tonscend	JS32-RE 4.0.0.0	SUWI-02-09-04	NCR	NCR



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## 4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction Emission	± 2.9dB (150kHz to 30MHz)
2	Radiated Emission	± 4.8dB (Below 1GHz)
		± 4.8dB (1GHz to 18GHz)
		± 4.8dB (Above 18GHz)
Remark: The U <sub>lab</sub> (lab Uncertainty) is less than U <sub>cispr/ETSI</sub> (CISPR/ETSI Uncertainty), so the test results – compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit; – non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.		



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## 5 Photographs

### 5.1 Test Setup

Refer to Appendix A.1 15B Setup Photos.

---End of Report---



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