



Industrial Internet Innovation Center (Shanghai) Co.,Ltd.

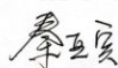
EMC TEST REPORT

PRODUCT	5G CPE
BRAND	ATEL
MODEL	PW550+,PW550, PW550 Plus, PW550 Pro,JW515, PW550-NA
APPLICANT	Asiatelco Technologies Co.
FCC ID	XYO-PW550NA
ISSUE DATE	September 30, 2024
STANDARD(S)	FCC Part 15, Subpart B, ANSI C63.4-2014.

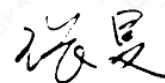
Prepared by: Li Liukai



Reviewed by: Qin Yabin



Approved by: Zhang Min

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1 Summary of Test Report

1.1 Test Standard (s)

No.	Test Standard(s)	Title
1	FCC Part 15, Subpart B	Radio frequency devices
2	ANSI C63.4	Method of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
NOTE: According to customer requirements, test and report using the latest version of the standard.		

1.2 Summary of Test Results

No.	Item(s)	FCC Standard(s)	Verdicts for Single Item	Detailed Results
1	Radiated Emission	15.109(a)	Pass	See section 6.1
2	AC Conducted Emission	15.107(a)	Pass	See section 6.2

NOTE:

The PW550+,PW550, PW550 Plus, PW550 Pro,JW515, PW550-NA, manufactured by Asiatelco Technologies Co. is a new product for testing.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. only performed test cases which identified with Pass/Fail/Inc result in section 1.3.

Industrial Internet Innovation Center (Shanghai) Co., Ltd. has verified that the compliance of the tested device specified in section 4 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 1 of this test report.

2 General Information of The Laboratory

2.1 Testing Laboratory

Lab Name	Industrial Internet Innovation Center (Shanghai) Co.,Ltd.
Address	Building 4, No. 766, Jingang Road, Pudong, Shanghai, China
Telephone	021-68866880
FCC Registration No.	708870
FCC Designation No.	CN1364
IC designation No.	10766A
CAB identifier	CN0067

2.2 Laboratory Environmental Requirements

Temperature	15℃~35℃
Relative Humidity	25%RH~75%RH
Atmospheric Pressure	86kPa~106kPa
Supply Voltage	120V/60Hz

2.3 Project Information

Project Manager	Xu Yuting
Test Date	August 28, 2024 to September 16, 2024

3 General Information of The Customer

3.1 Applicant

Company	Asiatelco Technologies Co.
Address	#68 HuaTuo Road, Building-8, Zhangjiang Hi-Tech Park, Pudong, Shanghai 201204, China
Telephone	N/A

3.2 Manufacturer

Company	Asiatelco Technologies Co.
Address	#68 HuaTuo Road, Building-8, Zhangjiang Hi-Tech Park, Pudong, Shanghai 201204, China
Telephone	N/A

3.3 Factory

Company	N/A
Address	N/A

4 General Information of The Product

4.1 Product Description for Equipment under Test (EUT)

Product	5G CPE
Model	PW550+,PW550, PW550 Plus, PW550 Pro,JW515, PW550-NA
Date of Receipt	August 26, 2024
EUT ID*	S01aa
SN/IMEI	862424050281897
Supported Radio Technology and Bands	WCDMA Band II/ IV/ V LTE Band 2/4/5/7/12/13/14/17/25/26/29/30/41/46/48/66/71 5G NR Band n2/5/7/12/14/25/30/41/66/71/77/78 WLAN 802.11b,g,n,ax WLAN 802.11a,ac,ax BT 5.0
Hardware Version	PW55-P1
Software Version	CPE5_PW550_NO_00_v1.0.2
NOTE1: EUT ID is the internal identification code of the laboratory. NOTE2: Photographs of EUT are shown in ANNEX A of this test report. NOTE3: Samples in the test report are provided by the customer. The test results are only applicable to the samples received by the laboratory.	

4.2 Description for Auxiliary Equipment (AE)

AE ID*	Description	Model	SN/Remark
CA02	Adapter	G024C2401000U	N/A
UA03	LAN Cable	N/A	N/A
EA01	Gigabit PoE	N/A	N/A
NOTE: *AE ID is the internal identification code of the laboratory.			

5 Test Configuration Information

5.1 Laboratory Environmental Conditions

5.1.1 Permanent Facilities

Semi-anechoic chamber SAC3-1 (9 m*8m*6.2m) & SAC3-2 (9.8m*6.7m*6.7m)	
Shielding effectiveness	0.014MHz ~1MHz, >60dB; 1MHz~1000MHz, >90dB.
Electrical insulation	> 2MΩ
Ground system resistance	< 4Ω
Normalised site attenuation (NSA)	< ± 4 dB, 3m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio (SVSWR)	Between 0 and 6 dB, from 1GHz to 18GHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

Shielded room	
Shielding effectiveness	0.014MHz~1MHz, >60dB; 1MHz~1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4Ω

5.2 Decision of final test mode

The EUT was tested in conjunction with the accessories in Section 4.2. We tested all of the following test modes and selected the worst mode from the test results and recorded them in the report.

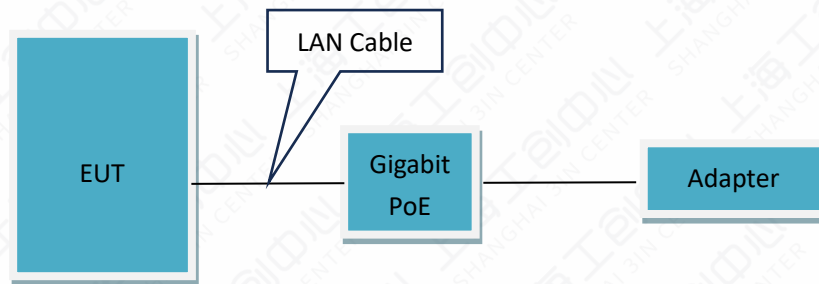
The test configuration modes are as the following:

Test Item	Test setup and operating modes
Radiated emission	30MHz-18GHz frequency range: Mode 1: WCDMA 2 receiver mode+ CA02+ UA03+ EA01 Mode 2: LTE 5 receiver mode+ CA01+ EC01+ UB01+ AE1+ AE2 Mode 3: NR SA n5 receiver mode+ CA01+ EC01+ UB01+ AE1+ AE2 Mode 4: EN DC-66A-n71A receiver mode+ CA01+ EC01+ UB01+ AE1+ AE2
AC Conducted emission	Mode 1: WCDMA 2 receiver mode+ CA02+ UA03+ EA01 Mode 2: LTE 5 receiver mode+ CA01+ EC01+ UB01+ AE1+ AE2 Mode 3: NR SA n5 receiver mode+ CA01+ EC01+ UB01+ AE1+ AE2 Mode 4: EN DC-66A-n71A receiver mode+ CA01+ EC01+ UB01+ AE1+ AE2
Note: - After laboratory verification, WCDMA 2 is the worst mode among all receiving modes of 3G , LTE 5 is the worst mode among all receiving modes of 4G, NR SA n5 is the worst mode among all receiving modes of 5G NR SA, EN DC-66A-n71A is the worst mode among all receiving modes of 5G NSA and recorded in the report. - The worst case of radiated emission for 30MHz-1GHz is Mode 4 and for 1GHz -18GHz is Mode 3. - The worst case for conducted emission is mode 2.	

5.3 EUT System Operation

- Connect the EUT with AE.
- Setup the EUT according to the standard, connect the EUT with Universal Radio Communication.
- Start testing and monitoring the function.

5.4 EUT Connection Diagram of Test System



<Figure 5.5-1> Mode 1~4

5.5 Test Equipment Utilized

No.	Name	Model	S/N	SW Version	HW Version	Manufacturer	Cal. Date	Cal. Interval
1	Test Receiver	ESCI	101235	V5.1-24-3	00	R&S	2023-12-19	1 year
2	Test Receiver	ESR7	102399	1.4	00	R&S	2024-06-07	1 year
3	Test Receiver	FSW43	101943	1.12	00	R&S	2024-08-21	1 year
4	Trilog Antenna	VULB9162	00426	N/A	N/A	Schwarzbeck	2024-08-02	1 year
5	Double Ridged Guide Antenna	ETS-3117	00135885	N/A	N/A	ETS	2024-03-26	1 year
6	2-Line V-Network	ENV216	101380	N/A	N/A	R&S	2023-12-19	1 year
7	EMI Test Software	EMC32 V10.35.02	N/A	N/A	N/A	R&S	N/A	N/A
8	EMI Test Software	EMC32 V10.60.20	N/A	N/A	N/A	R&S	N/A	N/A
9	Preamplifier	SCU08F1	8320024	N/A	N/A	R&S	2023-10-16	1 year
10	Preamplifier	SCU18	10155	N/A	N/A	R&S	2023-10-16	1 year

5.6 Measurement Uncertainty

Item (s)	Uncertainty
Radiated Emission 30MHz-1000MHz	4.86 dB
Radiated Emission 1000MHz-18000MHz	5.58 dB
Conducted Emission	3.30 dB
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.	

6 Test Results

6.1 Radiated Emission

6.1.1 Method of Measurement

- a. For 30MHz -1000MHz, the EUT was placed on the top of a rotating 0.8m table above the ground at a semi-anechoic chamber. The distance between the EUT and the received antenna was 3 meters. The table was rotated 360 degree and the received antenna mounted on a variable-height antenna tower was varied from 1m to 4m to find the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were set during the measurement.
- b. For 1000MHz -18000MHz, the EUT was placed on the top of a 0.8m table above the ground at a 3m fully anechoic chamber. The maximal emission value was acquired by adjusting the antenna height, The table was rotated 360 degrees to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna were set during the measurement

6.1.2 EUT Connection Diagram of Test System

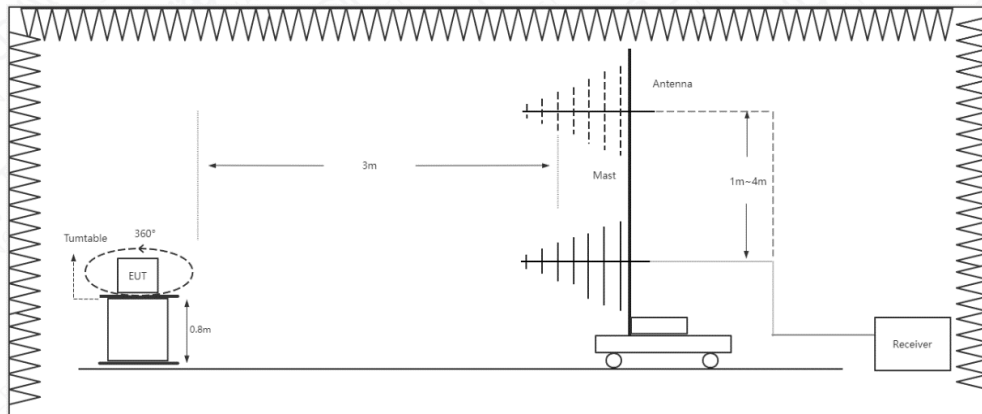


Figure 6.1.2-1 RE 30MHz-1GHz Connection Diagram

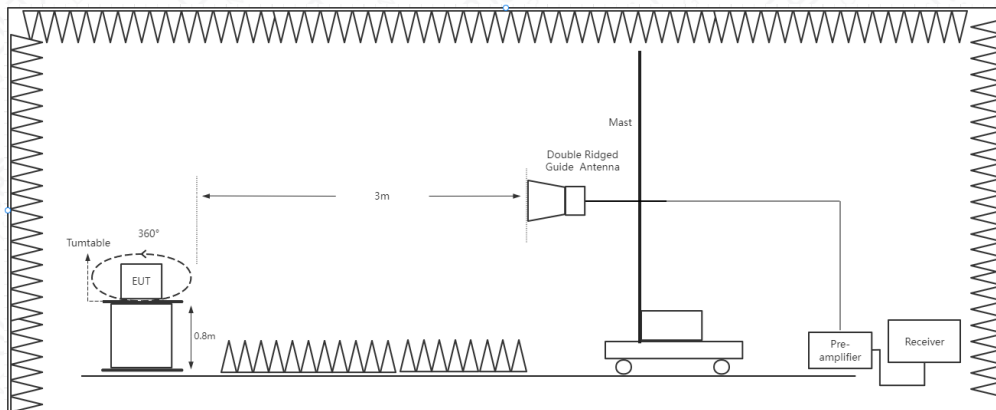


Figure 6.1.2-2 RE Above 1GHz Connection Diagram

6.1.3 Test Condition

Frequency Range (MHz)	RBW/VBW	Sweep Time (s)
30-1000	120kHz/300kHz	AUTO
1000-18000	1MHz/3MHz	AUTO

6.1.4 Limit/Criterion

Frequency Range (MHz)	Quasi-Peak (dBμV/m)	Peak (dBμV/m)	Average (dBμV/m)
30-88	40	N/A	N/A
88-216	43.5	N/A	N/A
216-960	46	N/A	N/A
Above 960	54	N/A	N/A
Above 1000	N/A	74	54

6.1.5 Test environmental conditions

Temperature	20.1℃
Relative Humidity	66.4%RH
Atmospheric Pressure	100.6 kPa

6.1.6 Test Results

Mode	Frequency (MHz)	Test Results	Verdicts
Mode 4: EN DC-66A-n71A receiver mode+ CA01+ EC01+ UB01+ AE1+ AE2	30-1000	See Annex A.1-1	Pass
Mode 3: NR SA n5 receiver mode+ CA01+ EC01+ UB01+ AE1+ AE2	1000-18000	See Annex A.1-2 & A.1-3	Pass
NOTE: Abbreviations used in this clause: Pass—P; Fail—F; Not applicable—N/A			

6.2 Conducted Emission

6.2.1 Method of Measurement

The EUT was placed on a 0.8m height table with EUT being connected to the power mains through a line impedance stabilization network (LISN). Both lines of the power mains connected to the EUT were checked for maximum conducted interference. The frequency range from 150 kHz to 30 MHz was searched.

6.2.2 EUT Connection Diagram of Test System

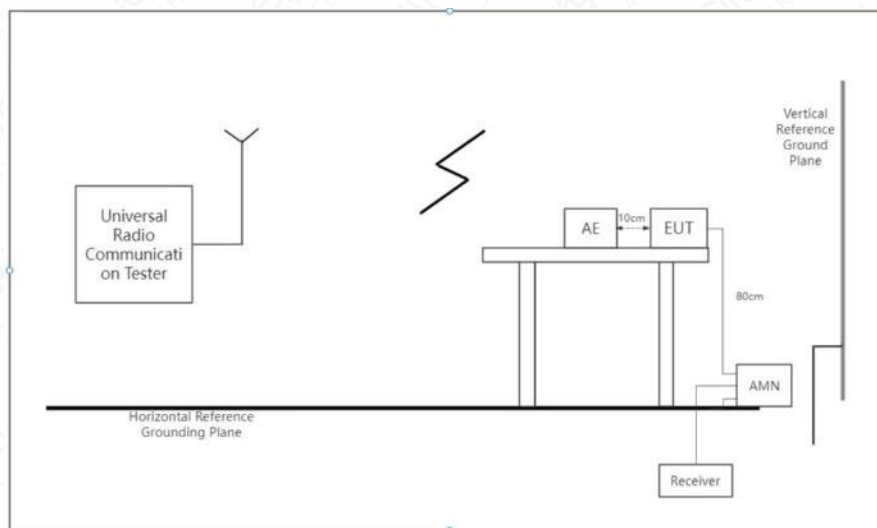


Figure 6.2.2-1 CE Connection Diagram

6.2.3 Test Condition

Test Condition in Charging Mode

Voltage (V)	Frequency (Hz)	RBW	Sweep Time (s)
120	60	9 kHz	AUTO

6.2.4 Limit

Frequency Range (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency		

6.2.5 Testing environmental conditions

Temperature	22.5°C
Relative Humidity	57.1%RH
Atmospheric Pressure	101.4kPa

6.2.6 Test Results

Mode	Frequency (MHz)	Test Results	Verdicts
Mode 2: LTE 5 receiver mode+ CA01+ EC01+ UB01+ AE1+ AE2	0.15-30	See Annex A.2-1	Pass
NOTE: Abbreviations used in this clause: Pass—P; Fail—F; Not applicable—N/A			

Annex A: Measurement Data

A.1 Radiated Emission

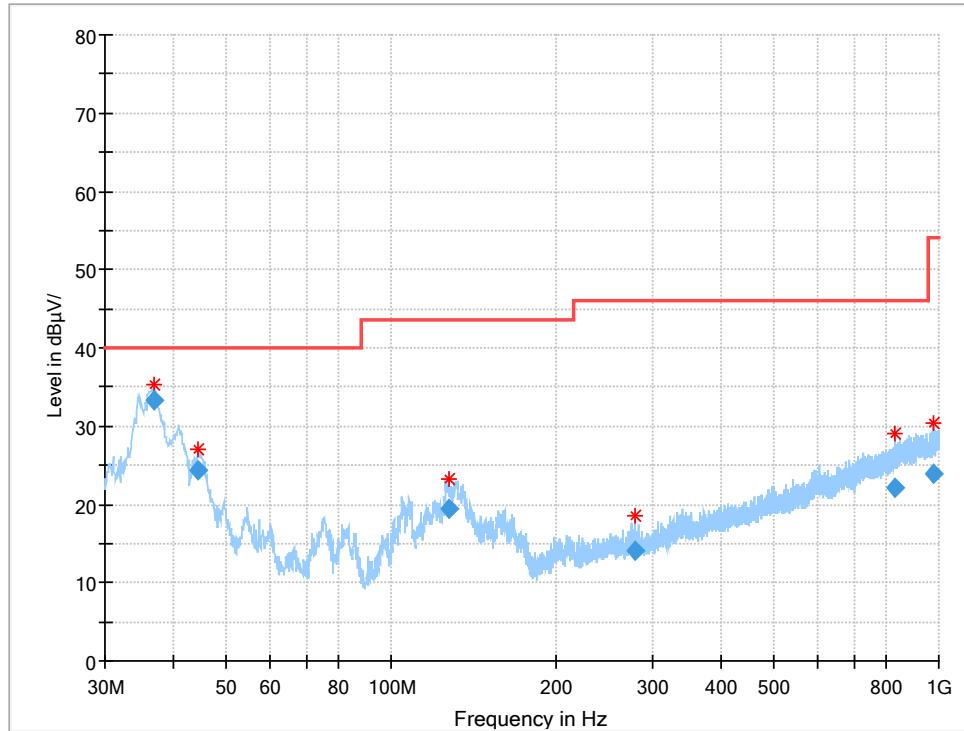


Figure A.1-1 Mode 4 (30M-1GHz)

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
36.760840	33.36	40.00	6.64	100.0	V	359.0	-14.5
44.420240	24.45	40.00	15.55	100.0	V	0.0	-11.7
127.195160	19.47	43.50	24.03	100.0	V	179.0	-15.9
278.131080	13.99	46.00	32.01	100.0	H	129.0	-10.4
829.681640	22.08	46.00	23.92	100.0	H	141.0	1.0
978.578120	23.90	54.00	30.10	200.0	V	194.0	2.8

Note:

1.Horizontal and vertical polarity is all have been tested, the result of them is synthesized in the above data diagram.

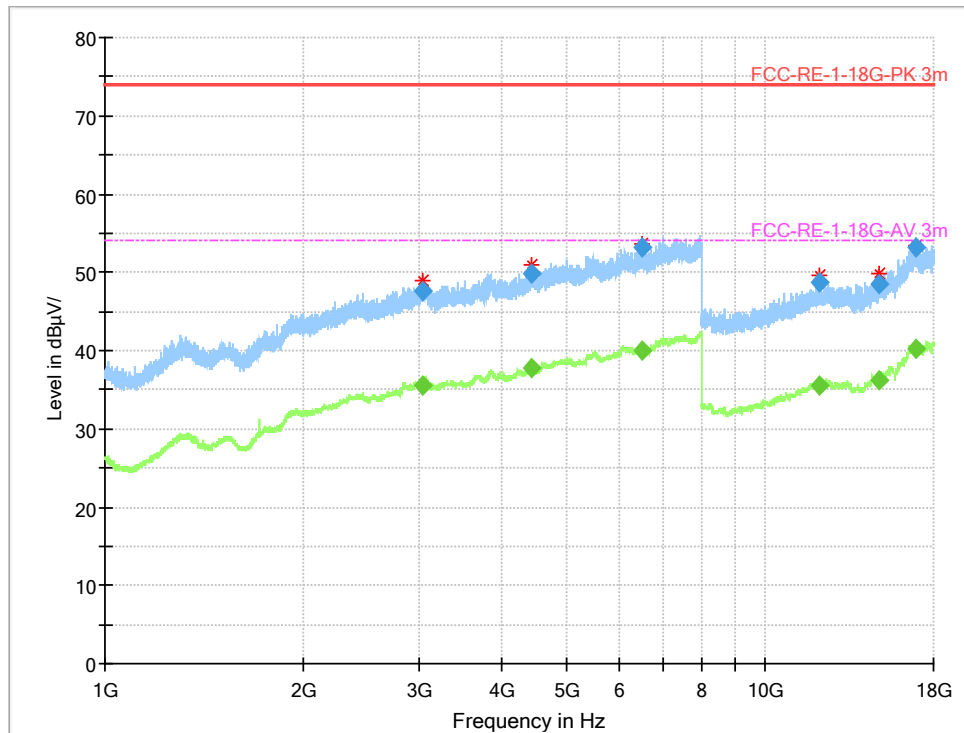


Figure A.1-2 Mode 3 (1GHz-18GHz)-H

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
3029.607500	---	35.60	54.00	18.40	215.0	H	3.0	12.3
3029.607500	47.49	---	74.00	26.51	215.0	H	3.0	12.3
4430.883750	---	37.67	54.00	16.33	115.0	H	234.0	14.4
4430.883750	49.75	---	74.00	24.25	115.0	H	234.0	14.4
6508.510000	---	40.07	54.00	13.93	215.0	H	156.0	18.8
6508.510000	53.21	---	74.00	20.79	215.0	H	156.0	18.8
12123.225000	---	35.57	54.00	18.43	215.0	H	0.0	14.6
12123.225000	48.69	---	74.00	25.31	215.0	H	0.0	14.6
14858.386250	---	36.17	54.00	17.83	115.0	H	17.0	17.2
14858.386250	48.49	---	74.00	25.51	115.0	H	17.0	17.2
16935.518750	---	40.22	54.00	13.78	188.0	H	355.0	21.9
16935.518750	53.28	---	74.00	20.72	188.0	H	355.0	21.9

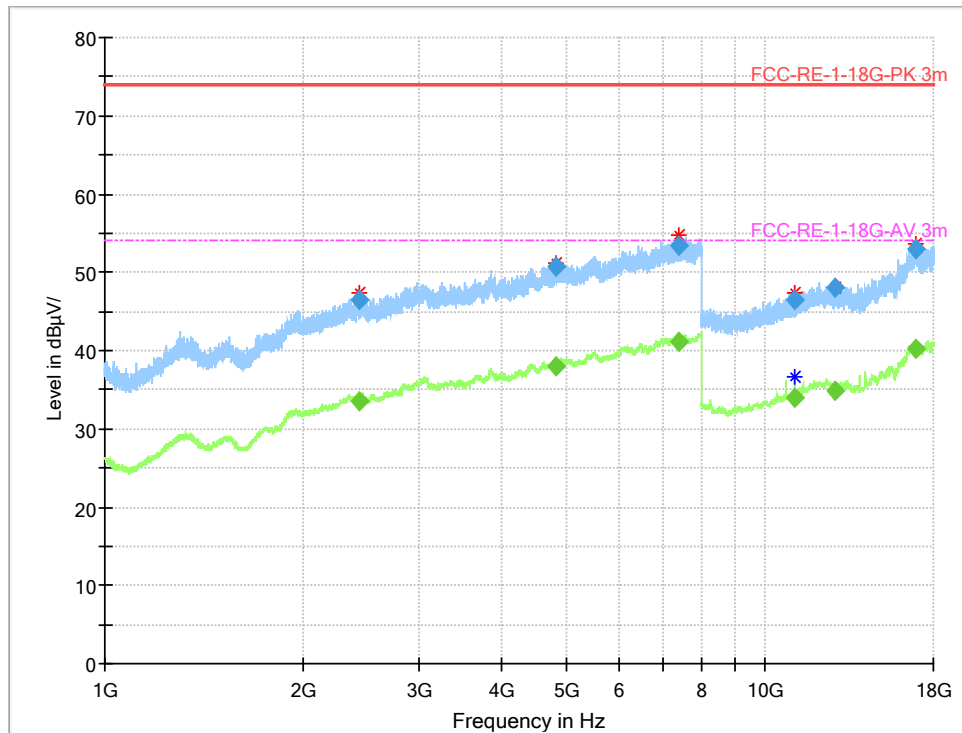


Figure A.1-3 Mode 3 (1GHz-18GHz)-V

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
2426.748750	---	33.62	54.00	20.38	204.0	V	354.0	8.8
2426.748750	46.38	---	74.00	27.62	204.0	V	354.0	8.8
4834.636250	50.68	---	74.00	23.32	200.0	V	4.0	15.1
4834.636250	---	38.10	54.00	15.90	200.0	V	4.0	15.1
7417.231250	---	41.16	54.00	12.84	115.0	V	219.0	20.5
7417.231250	53.51	---	74.00	20.49	115.0	V	219.0	20.5
11094.386250	---	34.00	54.00	20.00	115.0	V	96.0	11.2
11094.386250	46.42	---	74.00	27.58	115.0	V	96.0	11.2
12758.312500	47.98	---	74.00	26.02	115.0	V	328.0	15.3
12758.312500	---	34.94	54.00	19.06	115.0	V	328.0	15.3
16909.792500	---	40.21	54.00	13.79	185.0	V	317.0	21.8
16909.792500	52.91	---	74.00	21.09	185.0	V	317.0	21.8

A.2 Conducted Emission

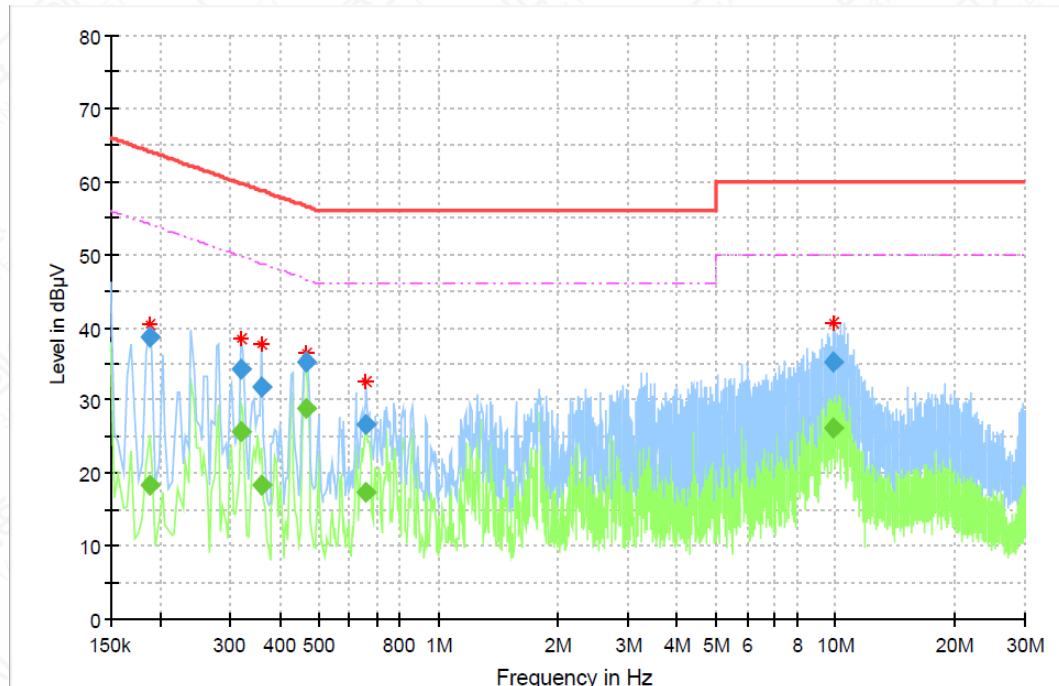


Figure A.2-1 Mode 2 (150kHz-30MHz)

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.187313	---	18.40	54.16	35.76	15000.0	9.000	L1	ON	9.6
0.187313	38.77	---	64.16	25.38	15000.0	9.000	L1	ON	9.6
0.317906	---	25.58	49.76	24.18	15000.0	9.000	L1	ON	9.6
0.317906	34.18	---	59.76	25.58	15000.0	9.000	L1	ON	9.6
0.358950	---	18.40	48.75	30.36	15000.0	9.000	L1	ON	9.6
0.358950	31.73	---	58.75	27.02	15000.0	9.000	L1	ON	9.6
0.463425	---	28.99	46.63	17.65	15000.0	9.000	L1	ON	9.6
0.463425	35.30	---	56.63	21.33	15000.0	9.000	L1	ON	9.6
0.661181	---	17.47	46.00	28.53	15000.0	9.000	L1	ON	9.6
0.661181	26.65	---	56.00	29.35	15000.0	9.000	L1	ON	9.6
9.918413	---	26.26	50.00	23.74	15000.0	9.000	L1	ON	9.8
9.918413	35.30	---	60.00	24.70	15000.0	9.000	L1	ON	9.8

Note: L1 and N line is all have been tested, the result of them is synthesized in the above data diagram.

Annex B: Revised History

Version	Revised Content
V0	Initial

Annex C: Accreditation Certificate