

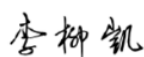


Industrial Internet Innovation Center (Shanghai) Co.,Ltd.

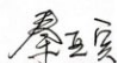
EMC TEST REPORT

PRODUCT	Handheld Wireless Terminal
BRAND	SUNMI
MODEL	T8F1B
APPLICANT	Shanghai Sunmi Technology Co.,Ltd.
FCC ID	2AH25T8F1B
ISSUE DATE	February 14, 2025
STANDARD(S)	FCC Part 15, Subpart B, ANSI C63.4-2014, ICES-003 Issue 7.

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
3	ICES-003	Information Technology Equipment (Including Digital Apparatus)- Limits and Methods of Measurement
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)	IC Standard(s)	Verdicts for Single Item	Detailed Results
1	Radiated Emission	15.109(a)	3.2.2	Pass	See section 6.1
2	AC Conducted Emission	15.107(a)	3.2.1	Pass	See section 6.2
NOTE: The T8F1B, manufactured by Shanghai Sunmi Technology Co.,Ltd. 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	Gao Hongning
Test Date	December 10, 2024 to December 28, 2024

3 General Information of The Customer

3.1 Applicant

Company	Shanghai Sunmi Technology Co.,Ltd.
Address	Room 505,No.388,Song Hu Road,Yang Pu District,Shanghai,China
Telephone	8618501703215

3.2 Manufacturer

Company	Shanghai Sunmi Technology Co.,Ltd.
Address	Room 505,No.388,Song Hu Road,Yang Pu District,Shanghai,China
Telephone	8618501703215

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	Handheld Wireless Terminal
Model	T8F1B
Date of Receipt	December 04, 2024
EUT ID*	S13aa
SN/IMEI	862072070026592/862072070026600
Supported Radio Technology and Bands	GSM 850/900/1800/1900 WCDMA Band I/II/IV/V/VI/VIII/XIX LTE Band 1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/30/34/38/39/40/41/66/71 BT 5.2 BR/EDR/BLE WLAN 802.11b,g,n WLAN 802.11a,n,ac GPS/GLONASS/BDS/Galileo NFC
Hardware Version	V00
Software Version	1.00.00.20241113_186_userdebug
Power Rating	DC 3.87V from battery, DC 5V & 9V from adapter
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
CG01	Adapter	TPA-141A050200UU01	SHENZHEN TIANYIN ELECTRONICS CO., LTD. OUTPUT: 5V 2A
CH01	Adapter	UC13US	Jiangsu Chenyang Electron Co., Ltd. OUTPUT: 5V 2A
CI01	Adapter	TPA-10120150UU	SHENZHEN TIANYIN ELECTRONICS CO., LTD. OUTPUT: 9V 2A
UA10	AC Cable	SSM-A033A	Saibao (Jiangxi) Industry Co., LTD
BA10	Battery	GYPA	HUNAN GAOYUAN BATTERY CO.,LTD. 5000mAh 3.87V
AE1	Notebook PC	Thinkpad	N/A
AE2	Desktop PC	OptiPlex 790 DT	X8RP1 A01 APCC

AE3	LAN Cable	N/A	N/A
AE4	VGA Cable	N/A	N/A
AE5	RS232 Cable	N/A	N/A
AE6	Keyboard	KB212-B	CN-0Y88XT-65890-12I-005Q-A00
AE7	Mouse	MS111-P	CN-011D3V-71581-19J-1A64
AE8	Monitor	Dell E1709Wc	N/A
AE9	Micro SD card	Kingston SDC4/4GB 77	N/A
AE10	Earphone	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: GSM 850 receiver mode+ Front Camera+ CG01+ UA10+ BA10 Mode 2: WCDMA BAND IV receiver mode+ Front Camera+ CH01+ UA10+ BA10 Mode 3: LTE Band 2 receiver mode+ Front Camera+ CI01+ UA10+ BA10 Mode 4: LTE Band 41 receiver mode+ Back Camera+ CI01+ UA10+ BA10 Mode 5: GNSS mode+ CI01+ UA10+ BA10 Mode 6: Full system+ Data Link mode+ UA10+ BA10+ AE
AC Conducted emission	Mode 1: GSM 850 receiver mode+ Front Camera+ CG01+ UA10+ BA10 Mode 2: WCDMA BAND IV receiver mode+ Front Camera+ CH01+ UA10+ BA10 Mode 3: LTE Band 2 receiver mode+ Front Camera+ CI01+ UA10+ BA10 Mode 4: LTE Band 41 receiver mode+ Back Camera+ CI01+ UA10+ BA10 Mode 5: GNSS mode+ CI01+ UA10+ BA10 Mode 6: Full system+ Data Link mode+ UA10+ BA10+ AE
Note: - All test modes are performed, only the worst cases test data are recorded in this report. - After laboratory verification, GSM 850/WCDMA BAND IV/LTE Band 2/41 is the worst mode among all receiving modes of 2G/3G/4G and is recorded in the report. - The worst case of radiated emission for 30MHz-1GHz is Mode 4 and for 1GHz -18GHz is Mode 6. - The worst case for conducted emission is mode 3.	

5.3 EUT System Operation

1. Connect the EUT with AE.
2. Setup the EUT according to the standard.
3. Start testing and monitoring the function.
4. Data Link mode means data application transferred mode between EUT, SD Card and PC.
5. GNSS mode: EUT and GNSS simulator (SMBV100A) connection is established.

5.4 EUT Connection Diagram of Test System

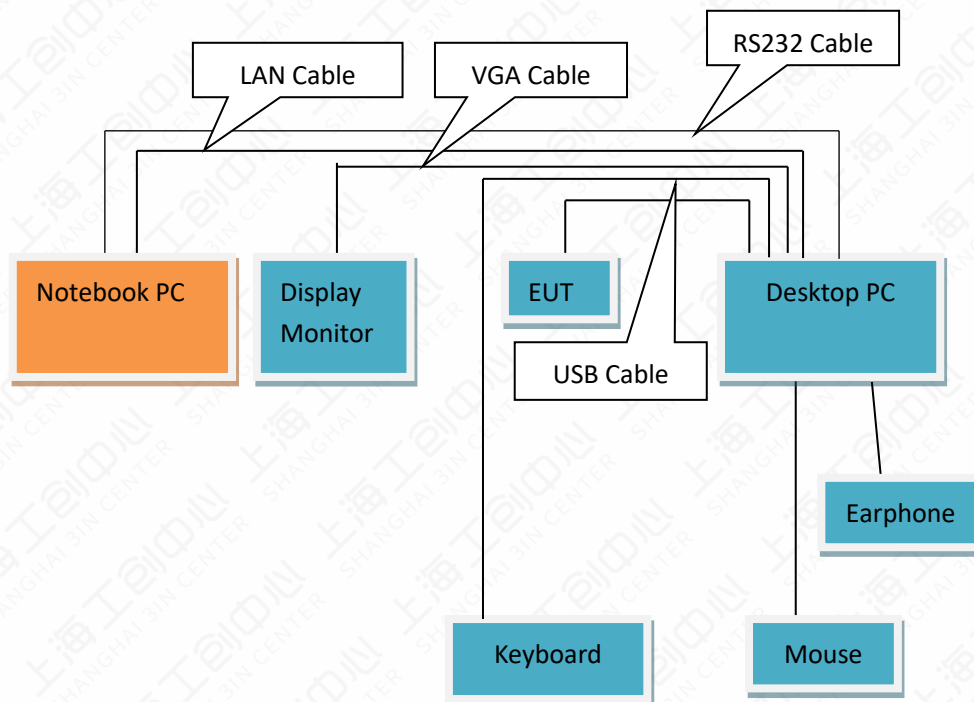


Figure 5.4-1 Mode 6

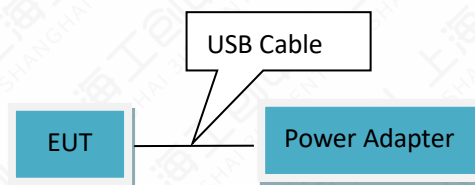


Figure 5.4-2 Mode 1-5

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
							2024-12-13	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
							2024-12-13	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	Universal Radio Communication Tester	CMW500	104178	V3.7.20	1206.0600.00	R&S	2024-10-09	1 year
10	Vector signal generator	SMBV100A	257904	N/A	N/A	R&S	2023-12-19	1 year
							2024-12-13	1 year
11	Preamplifier	SCU08F1	8320024	N/A	N/A	R&S	2024-10-09	1 year
12	Preamplifier	SCU18	10155	N/A	N/A	R&S	2024-10-09	1 year

5.6 Measurement Uncertainty

Item (s)	Uncertainty
Radiated Emission 30MHz-1000MHz	4.92 dB
Radiated Emission 1000MHz-18000MHz	5.66 dB
Conducted Emission	3.52 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

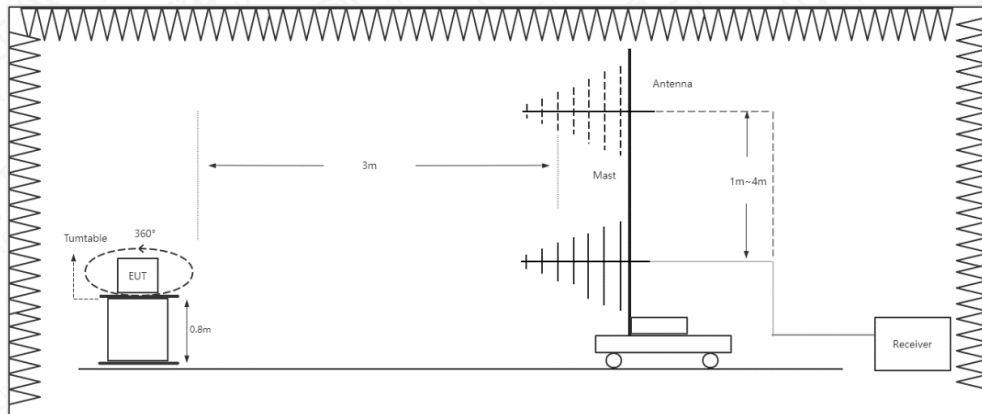


Figure 6.1.2-1 RE 30MHz-1GHz Connection Diagram

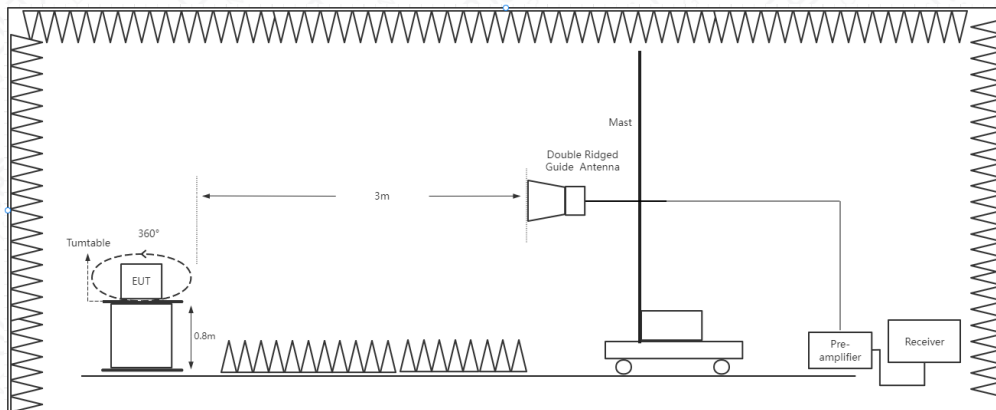


Figure 6.1.2-2 RE Above 1GHz Connection Diagram

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	22.1℃
Relative Humidity	36.8%RH
Atmospheric Pressure	101.1 kPa

6.1.6 Test Results

Mode	Frequency (MHz)	Test Results	Verdicts
Mode 4: LTE Band 41 receiver mode+ Back Camera+ CI01+ UA10+ BA10	30-1000	See Annex A.1-1	Pass
Mode 6: Full system+ Data Link mode+ UA10+ BA10+ AE	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

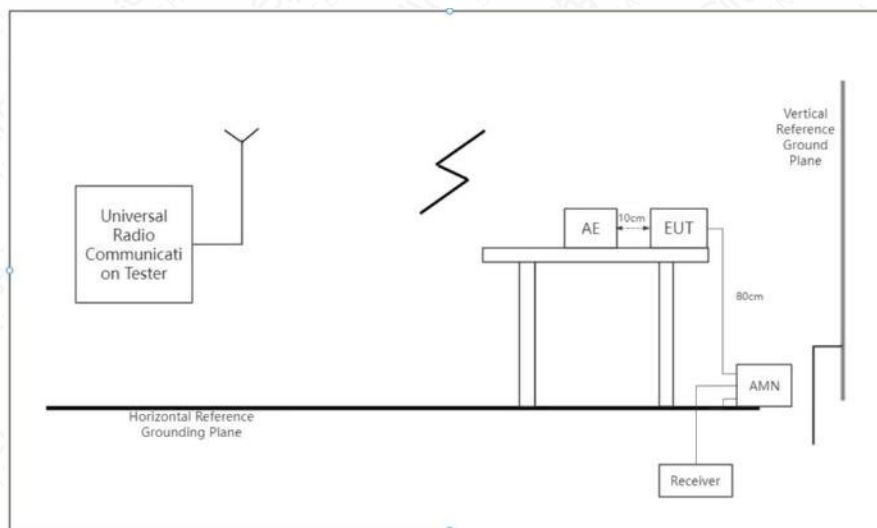


Figure 6.2.2-1 CE Connection Diagram

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	21.4°C
Relative Humidity	42.3%RH
Atmospheric Pressure	100.3kPa

6.2.6 Test Results

Mode	Frequency (MHz)	Test Results	Verdicts
Mode 3: LTE Band 2 receiver mode+ Front Camera+ CI01+ UA10+ BA10	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

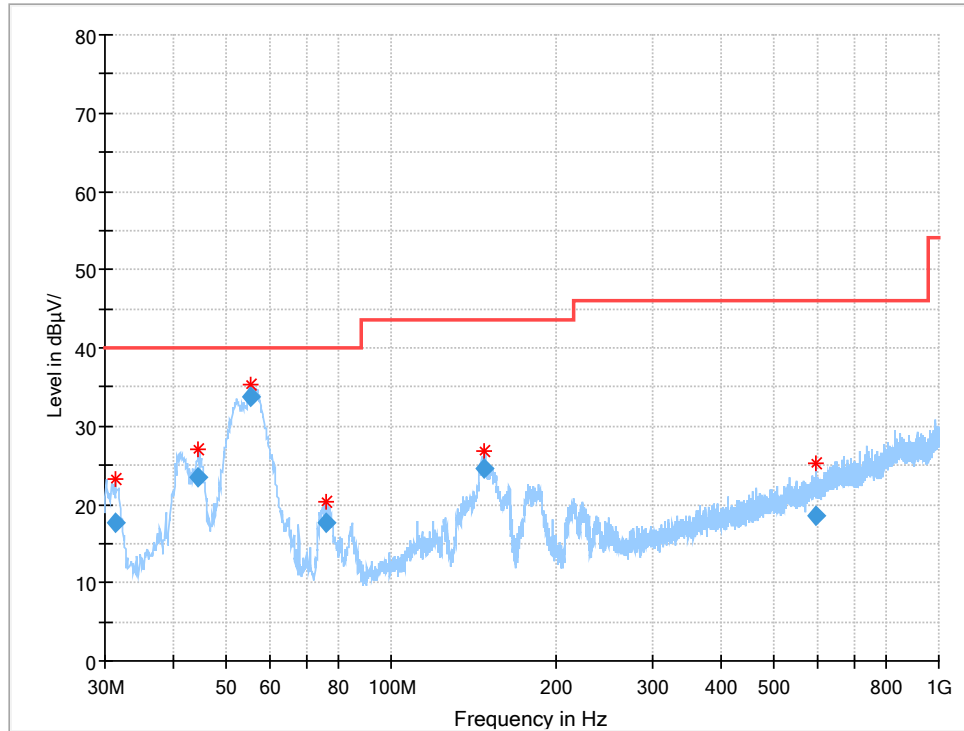


Figure A.1-1 Mode 4 (30M-1GHz)

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
31.450640	17.70	40.00	22.30	100.0	V	358.0	-15.9
44.518960	23.53	40.00	16.47	100.0	V	10.0	-11.7
55.511440	33.83	40.00	6.17	100.0	V	335.0	-12.0
76.070040	17.59	40.00	22.41	100.0	V	243.0	-17.5
147.972520	24.48	43.50	19.02	100.0	V	358.0	-16.2
597.801560	18.46	46.00	27.54	100.0	H	0.0	-3.1

Note:

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

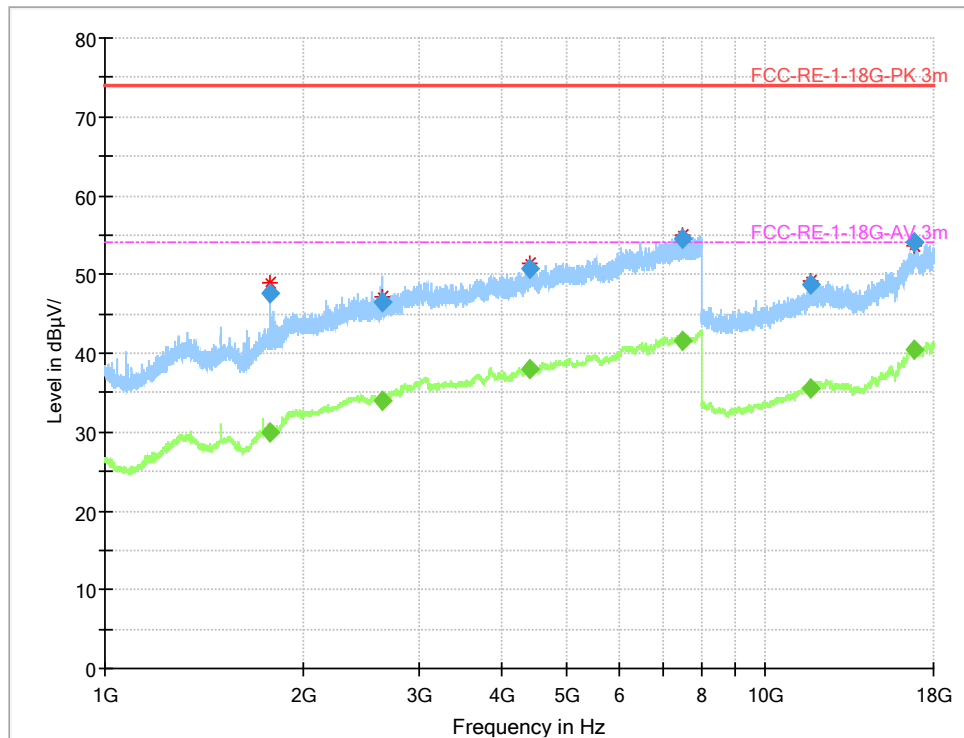


Figure A.1-2 Mode 6 (1GHz-18GHz)-H

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1782.730000	47.57	---	74.00	26.43	115.0	H	278.0	4.3
1782.730000	---	30.02	54.00	23.98	115.0	H	278.0	4.3
2632.396250	---	34.01	54.00	19.99	102.0	H	5.0	9.1
2632.396250	46.44	---	74.00	27.56	102.0	H	5.0	9.1
4411.562500	---	38.09	54.00	15.91	215.0	H	184.0	14.2
4411.562500	50.82	---	74.00	23.18	215.0	H	184.0	14.2
7483.581250	---	41.56	54.00	12.44	211.0	H	13.0	20.6
7483.581250	54.52	---	74.00	19.48	211.0	H	13.0	20.6
11738.995000	48.72	---	74.00	25.28	215.0	H	222.0	13.4
11738.995000	---	35.58	54.00	18.42	215.0	H	222.0	13.4
16874.730000	---	40.55	54.00	13.45	115.0	H	17.0	21.9
16874.730000	54.08	---	74.00	19.92	115.0	H	17.0	21.9

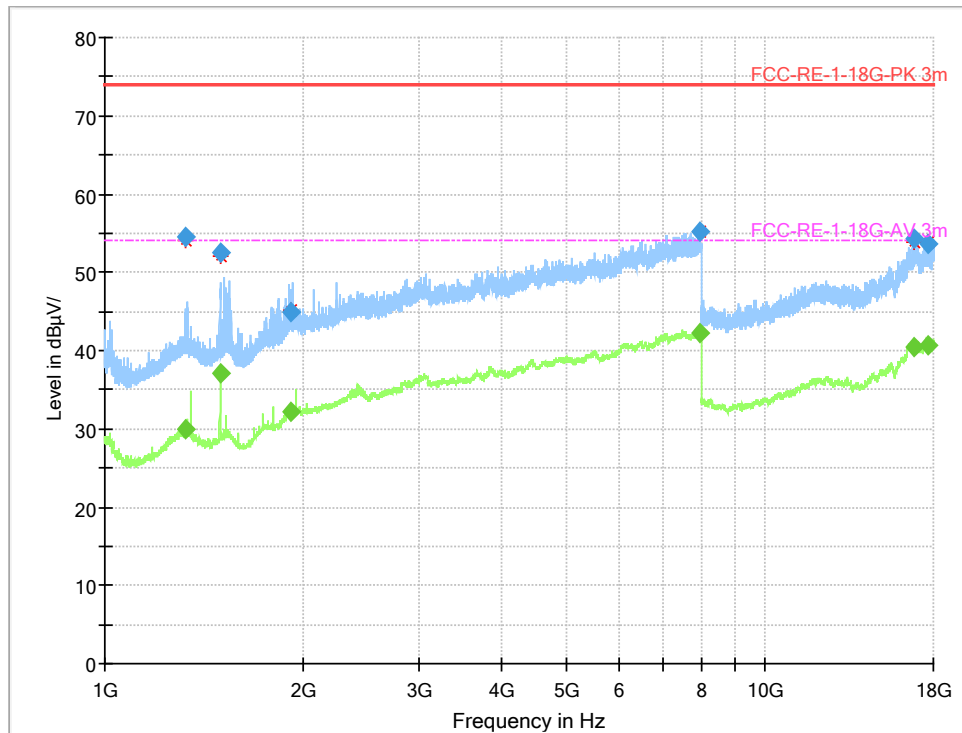


Figure A.1-3 Mode 6 (1GHz-18GHz)-V

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1327.937500	---	29.90	54.00	24.10	100.0	V	242.0	3.1
1327.937500	54.43	---	74.00	19.57	100.0	V	242.0	3.1
1497.695000	52.51	---	74.00	21.49	100.0	V	213.0	2.7
1497.695000	---	37.13	54.00	16.87	100.0	V	213.0	2.7
1918.941250	44.92	---	74.00	29.08	115.0	V	18.0	6.6
1918.941250	---	32.10	54.00	21.90	115.0	V	18.0	6.6
7961.016250	55.26	---	74.00	18.74	115.0	V	343.0	21.2
7961.016250	---	42.19	54.00	11.81	115.0	V	343.0	21.2
16854.336250	---	40.53	54.00	13.47	115.0	V	217.0	21.9
16854.336250	54.25	---	74.00	19.75	115.0	V	217.0	21.9
17697.041250	53.60	---	74.00	20.40	185.0	V	231.0	22.6
17697.041250	---	40.60	54.00	13.40	185.0	V	231.0	22.6

A.2 Conducted Emission

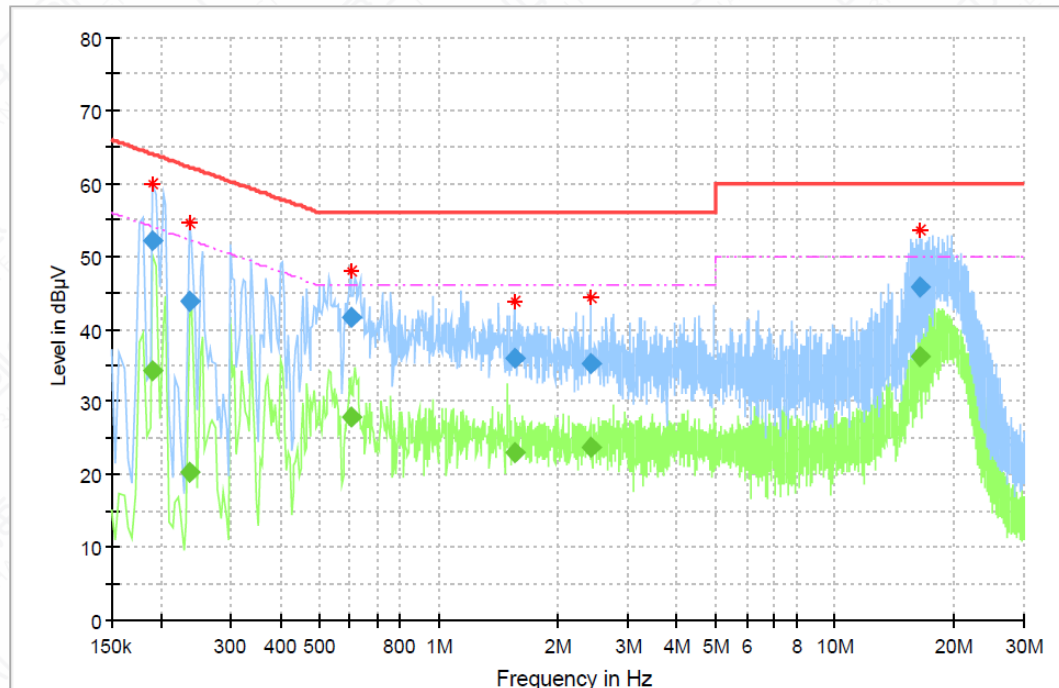


Figure A.2-1 Mode 3 (150kHz-30MHz)

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.191044	52.04	---	63.99	11.95	15000.0	9.000	N	ON	10.0
0.191044	---	34.31	53.99	19.68	15000.0	9.000	N	ON	10.0
0.235819	43.79	---	62.24	18.45	15000.0	9.000	N	ON	10.1
0.235819	---	20.25	52.24	31.99	15000.0	9.000	N	ON	10.1
0.601481	41.63	---	56.00	14.37	15000.0	9.000	N	ON	10.0
0.601481	---	27.97	46.00	18.03	15000.0	9.000	N	ON	10.0
1.552950	35.91	---	56.00	20.09	15000.0	9.000	N	ON	9.9
1.552950	---	22.97	46.00	23.03	15000.0	9.000	N	ON	9.9
2.426063	35.34	---	56.00	20.66	15000.0	9.000	N	ON	9.9
2.426063	---	23.77	46.00	22.23	15000.0	9.000	N	ON	9.9
16.407056	45.73	---	60.00	14.27	15000.0	9.000	N	ON	9.5
16.407056	---	36.11	50.00	13.89	15000.0	9.000	N	ON	9.5

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

