



# **TEST REPORT**

# Applicant: JEM ACCESSORIES INC.

Address: 32 Brunswick Avenue, Edison, New Jersey, United States,08817

FCC ID: 2AHAS-XLP71009

Product Name: 5 in 1 Lamp & Wireless charger

Standard(s): 47 CFR Part 15, Subpart C ANSI C63.10-2013

The above device has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

Report Number: CR230953507-00

Date Of Issue: 2024/1/10

**Reviewed By:** Calvin Chen

Calvin Ohen

Title: RF Engineer

Approved By: Sun Zhong

Sun Zhong

Title: Manager

**Test Laboratory:** China Certification ICT Co., Ltd (Dongguan) No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, China Tel: +86-769-82016888

## **Test Facility**

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 442868, the FCC Designation No. : CN1314.

#### **Declarations**

China Certification ICT Co., Ltd (Dongguan) is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol "▲". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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# CONTENTS

DOCUMENT REVISION HISTORY	4
1. GENERAL INFORMATION	5
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	5
1.2 DESCRIPTION OF TEST CONFIGURATION	
1.2.1 EUT Operation Condition:	6
1.2.2 Support Equipment List and Details	6
1.2.3 Support Cable List and Details	
1.2.4 Block Diagram of Test Setup	
1.3 MEASUREMENT UNCERTAINTY	
2. SUMMARY OF TEST RESULTS	
3. REQUIREMENTS AND TEST PROCEDURES	15
3.1 AC LINE CONDUCTED EMISSIONS	15
3.1.1 Applicable Standard	
3.1.2 EUT Setup	16
3.1.3 EMI Test Receiver Setup	16
3.1.4 Test Procedure	
3.1.5 Corrected Amplitude & Margin Calculation	
3.2 RADIATION SPURIOUS EMISSIONS	
3.2.1 Applicable Standard 3.2.2 EUT Setup	
3.2.3 EMI Test Receiver & Spectrum Analyzer Setup	10
3.2.4 Corrected Amplitude & Margin Calculation.	20
3.3 20 DB EMISSION BANDWIDTH:	
3.3.1 Applicable Standard	
3.3.2 EUT Setup	
3.3.3 Test Procedure	
3.4 ANTENNA REQUIREMENT	
3.4.1 Applicable Standard	
3.4.2 Judgment	
4. TEST DATA AND RESULTS	
4.1 AC LINE CONDUCTED EMISSIONS	
4.2 RADIATION SPURIOUS EMISSIONS	
4.3 20 dB Emission Bandwidth	
5 MAXIMUM PERMISSIBLE EXPOSURE (MPE)	
5.1 Applicable Standard	
5.2 BLOCK DIAGRAM OF TEST SETUP	
5.3 TEST PROCEDURES	
5.4 Test Data:	
6. EUT PHOTOGRAPHS	
7. TEST SETUP PHOTOGRAPHS	

# **DOCUMENT REVISION HISTORY**

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	CR230953507-00	Original Report	2024/1/10

Page 4 of 95

# **1. GENERAL INFORMATION**

#### **1.1 Product Description for Equipment under Test (EUT)**

<b>L L</b>		
EUT Name:	5 in 1 Lamp & Wireless charger	
EUT Model:	XLP7-1009-BLK	
Multiple Models:	XLP7-1009-QV1, XLP7-1009	
Operation Frequency: Airpods: 131.32 kHz Phone horizontal: 127.33 kHz		
	Phone vertical: 127.35kHz	
Rated Input Voltage: DC 5V/3A or DC 9V 2.22A or DC 12V 1.67A		
Wireless Output: Airpods: 3Watts Phone: 5/7.5/10/15Watts		
Serial Number:	2B5B-2	
Product Number:	014272	
EUT Received Date: 2023/9/13		
EUT Received Status:	Good	
Note: The Multiple models are electrically identical with the test model. Please refer to the declaration letter for		

more detail, which was provided by manufacturer.

# **Antenna Information Detail**▲:

Antenna	Antenna Type	input impedance (Ohm)	Frequency Range	Antenna Gain	
Phone horizontal	Coil	Unknown	110-205 kHz	Unknown	
Phone vertical	Coil	Unknown	110-205 kHz	Unknown	
Airpods	Coil	Unknown	110-205 kHz	Unknown	
The Method of §15.203 Compliance:					

Antenna was permanently attached to the unit.

Antenna use a unique type of connector to attach to the EUT.

Unit was professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

## **Accessory Information:**

Accessory Description	Manufacturer	Model
Adapter	Unknown	XHC8-1028

# **1.2 Description of Test Configuration**

# **1.2.1 EUT Operation Condition:**

Å	
	The system was configured for testing in normal use Mode, which was provided by the manufacturer. The EUT support max 3 Watts wireless output for Airpods, max 15 Watts wireless output for Phone horizontal or Phone vertical. Airpods and Phone horizontal or Phone vertical can simultaneous transmission. Phone horizontal and Phone vertical cannot simultaneous transmission. Select the following mode to test. Test Mode: M1: Light on+Wireless Charging(Phone horizontal 15W)
EUT Operation Mode:	Test Mode: M1: Light on+Wireless Charging(Phone horizontal 15W) M2: Wireless Charging(Phone horizontal 15W)+Airpods Wireless Charging(3W) M3: Light on+Airpods Wireless Charging(3W)+Type C Charging+USB Charging M4: Wireless Charging(Phone horizontal 15W)+Type C Charging M5: Wireless Charging(Phone horizontal 15W)+Type C Charging M6: Wireless Charging(Phone vertical 15W)+ USB Charging For M6, worst mode from M1, M2, M4, M5 is M4, so select Wireless Charging(Phone vertical 15W)+ Type C Charging to test
Equipment Modifications:	No
EUT Exercise Software:	No

# **1.2.2 Support Equipment List and Details**

Manufacturer Description		Model	Serial Number
Apple	iPhone	iPhone 13	JYK4T4LQNK
Unknown	Load 1	20W	/
Unknown	Load 2	20W	/
NANK	Earphone	A2	/

## **1.2.3 Support Cable List and Details**

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	То
USB Cable	Yes	No	1	EUT	Adapter
USB Cable	No	No	0.8	EUT	Load 1
USB Cable	No	No	0.8	EUT	Load 2

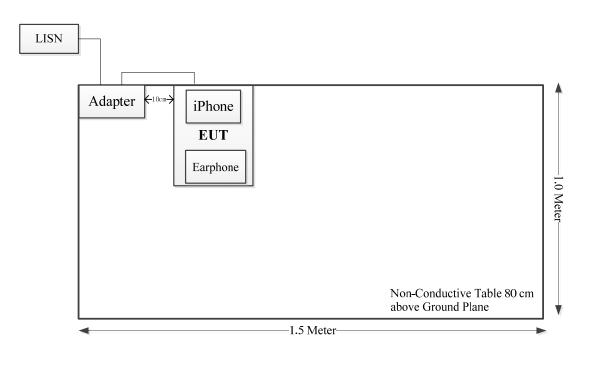
Report No.: CR230953507-00

# 1.2.4 Block Diagram of Test Setup

AC line conducted emissions:

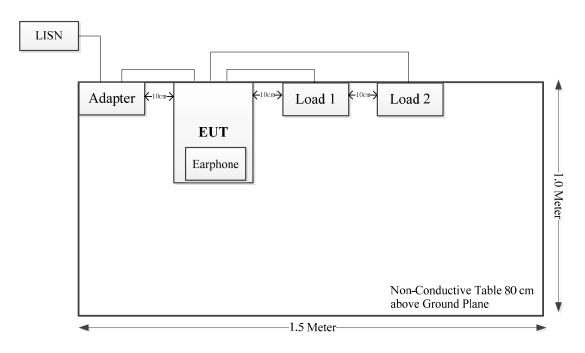
M1: LISN Adapter (10m) iPhone EUT EUT Non-Conductive Table 80 cm above Ground Plane

M2:

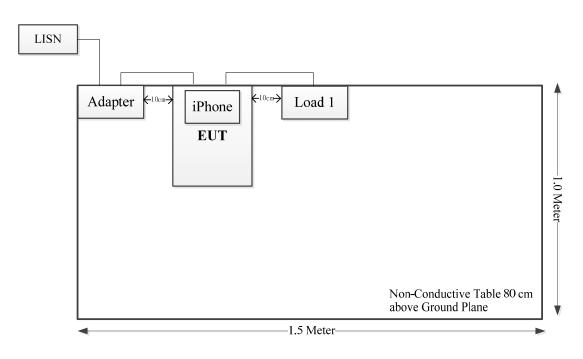


Report No.: CR230953507-00

# M3:

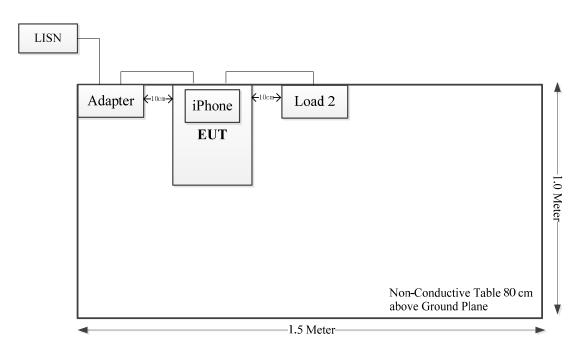


M4:

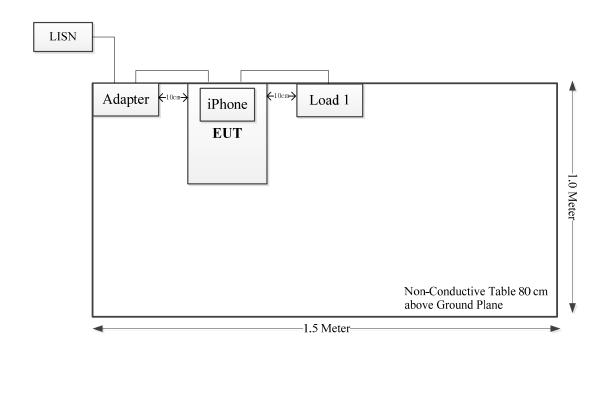


Report No.: CR230953507-00

## M5:



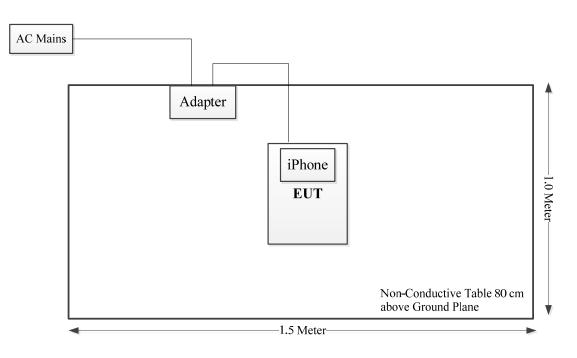
M6:



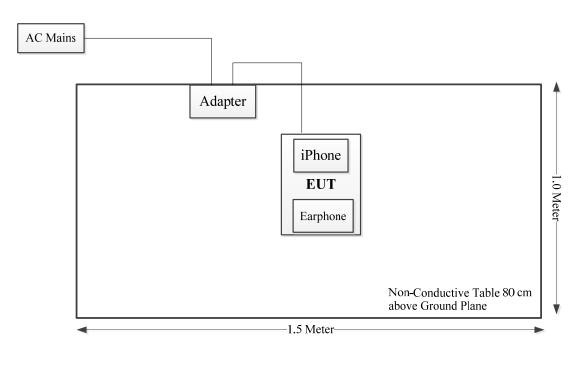
Page 9 of 95

Report No.: CR230953507-00

Radiated Emission: M1:

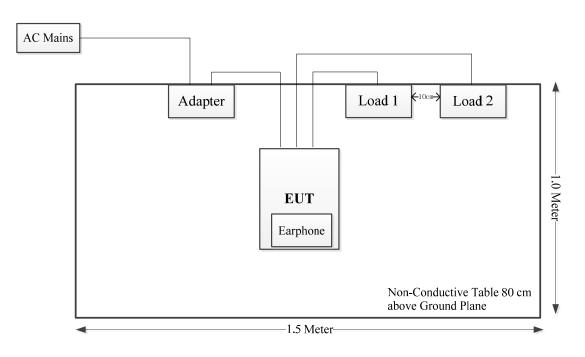


M2:

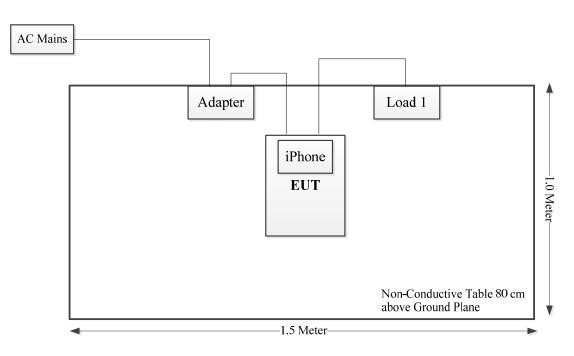


Report No.: CR230953507-00

# M3:

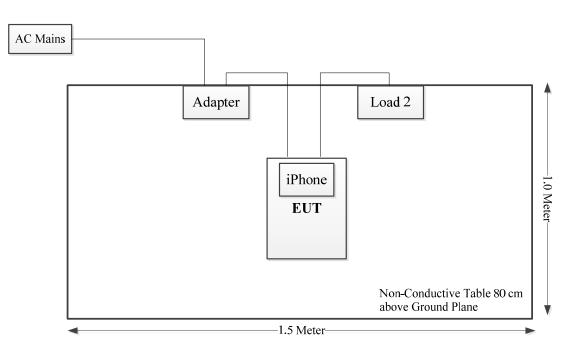


M4:

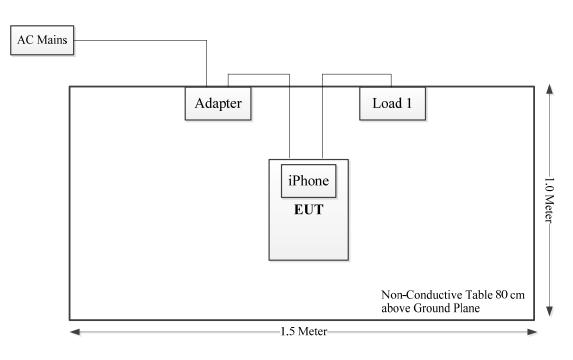


Report No.: CR230953507-00

# M5:



M6:



Page 12 of 95

# **1.3 Measurement Uncertainty**

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Parameter	Measurement Uncertainty
	9kHz~30MHz: 4.12dB
radiated Emissions	30M~200MHz: 4.15 dB,200M~1GHz: 5.61 dB,1G~6GHz: 5.14 dB,
	6G~18GHz: 5.93 dB,18G~26.5G:5.47 dB,26.5G~40G:5.63 dB
Temperature	±1°C
Humidity	$\pm 5\%$
DC and low frequency voltages	$\pm 0.4\%$
Duty Cycle	1%
AC Power Lines Conducted Emission	2.8 dB (150 kHz to 30 MHz)

# 2. SUMMARY OF TEST RESULTS

Standard(s) Section	Description of Test	Result
FCC§15.207	AC Line Conducted Emission	Compliant
FCC§15.209 §15.205	Radiated Emission Test Complia	
FCC§15.215	20 dB Emission Bandwidth Complian	
FCC§15.203	Antenna Requirement Compliant	
FCC§1.1310 §2.1091	Maximum Permissible Exposure (MPE) Compliant	

# **3. REQUIREMENTS AND TEST PROCEDURES**

# **3.1 AC Line Conducted Emissions**

#### 3.1.1 Applicable Standard

#### FCC§15.207(a).

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

	Conducted limit (dBµV)	
Frequency of emission (MHz)	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.

(b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

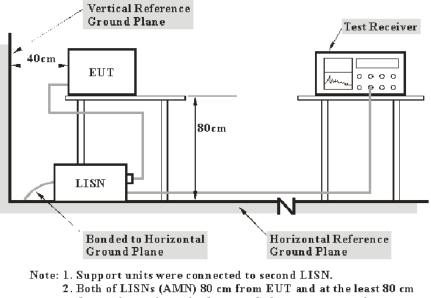
(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000  $\mu$ V within the frequency band 535-1705 kHz, as measured using a 50  $\mu$ H/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.205, §15.209, §15.221, §15.223, or §15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtaining their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

# 3.1.2 EUT Setup



from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

#### 3.1.3 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

#### 3.1.4 Test Procedure

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase ("hot") line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the reported over all the current-carrying conductors.

#### 3.1.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor Factor = attenuation caused by cable loss + voltage division factor of AMN

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit - Result

# **3.2 Radiation Spurious Emissions**

## 3.2.1 Applicable Standard

## FCC §15.209

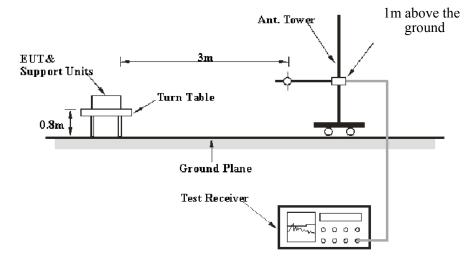
(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

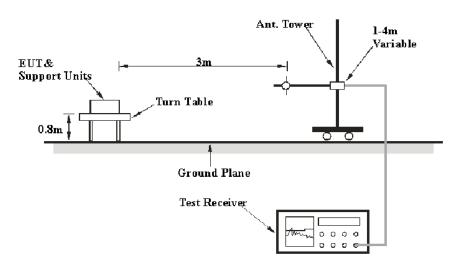
\*\*Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permItted under other sections of this part, e.g., §§15.231 and 15.241.

## 3.2.2 EUT Setup

9kHz-30MHz:



# 30MHz-1GHz:



The radiated emission tests were performed in the 3-meter chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209 limits.

The spacing between the peripherals was 10 cm.

For 9kHz-30MHz test, the lowest height of the magnetic antenna shall be 1 m above the ground and three antenna orientations (parallel, perpendicular, and ground-parallel) shall be measured.

## 3.2.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 1 GHz.

During the radiated emission test, the EMI test Receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
9 kHz – 150 kHz	300 Hz	1 kHz	/	РК
9 кн2 – 130 кн2	/	/	200 Hz	QP/AV
150 kHz – 30 MHz	10 kHz	30 kHz	/	РК
130 KHZ – 30 WHZ	/	/	9 kHz	QP/AV
30 MHz – 1000 MHz	100 kHz	300 kHz	/	РК
30 MITZ - 1000 MITZ			120 kHz	QP

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz, employing an average detector.

If the maximized peak measured value complies with the limit, then it is unnecessary to perform an QP/Average measurement

#### **3.2.4 Corrected Amplitude & Margin Calculation**

The basic equation is as follows: Result = Reading + Factor Factor = Antenna Factor + Cable Loss- Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows: Margin = Limit – Result

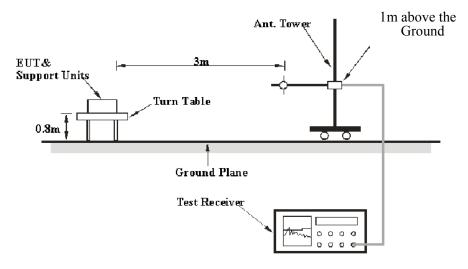
# 3.3 20 dB Emission Bandwidth:

# 3.3.1 Applicable Standard

#### FCC §15.215

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §15.217 through § 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of band operation.

# 3.3.2 EUT Setup



#### 3.3.3 Test Procedure

- 1. Position the EUT on the test table without connection to measurement instrument. Turn on the EUT. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- 2. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
- 3. Measure the 99% Occupied bandwidth use the 99% Occupied bandwidth function of the test equipment.

#### 3.4 Antenna Requirement

## 3.4.1 Applicable Standard

#### FCC §15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§15.211, 15.213, 15.217, 15.219, 15.221, or §15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

#### 3.4.2 Judgment

Compliant. Please refer to the Antenna Information detail in Section 1.

# 4. Test DATA AND RESULTS

# 4.1 AC Line Conducted Emissions

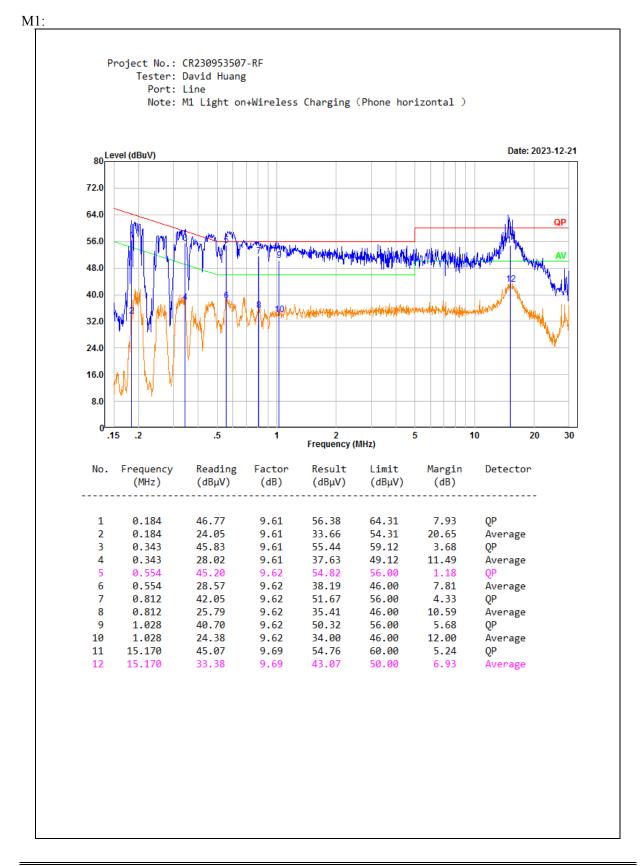
Serial Number:	2B5B-2	Test Date:	2023/11/21-2024/01/09
Test Site:	СЕ	Test Mode:	M1-M6
Tester:	David Huang	Test Result:	Pass

Environmental Conditions:						
Те	emperature: (°C)	25.5-25.8	Relative Humidity: (%)	49-53	ATM Pressure: (kPa)	101.2-101.3

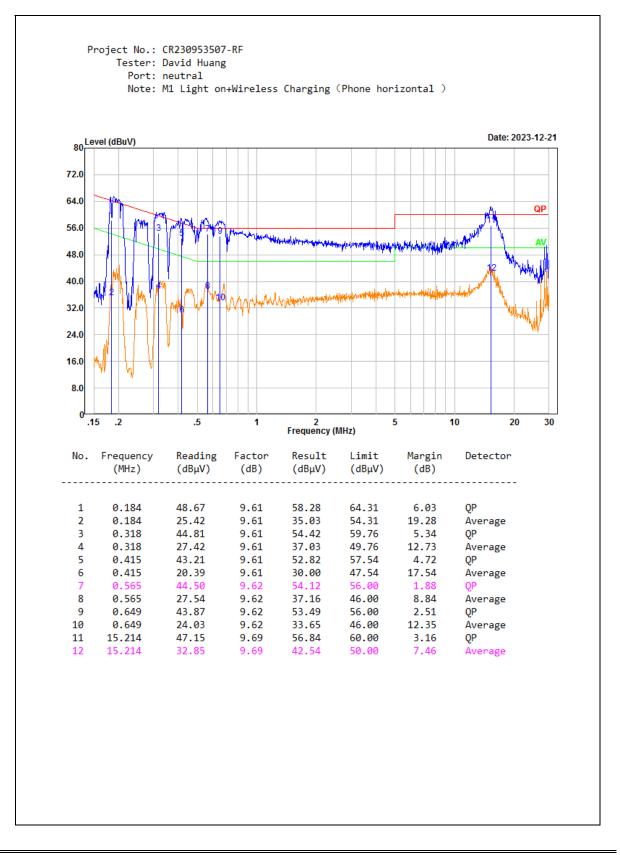
# **Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101134	2023/3/31	2024/3/30
R&S	EMI Test Receiver	ESR3	102726	2023/3/31	2024/3/30
MICRO-COAX	Coaxial Cable	UTIFLEX	C-0200-01	2023/8/6	2024/8/5
Audix	Test Software	E3	190306 (V9)	N/A	N/A

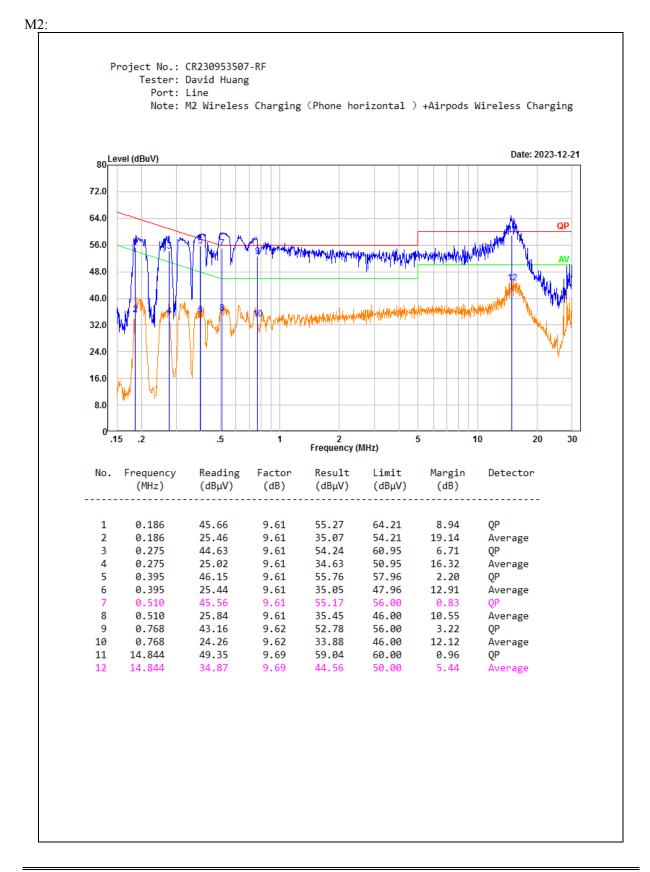
\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).



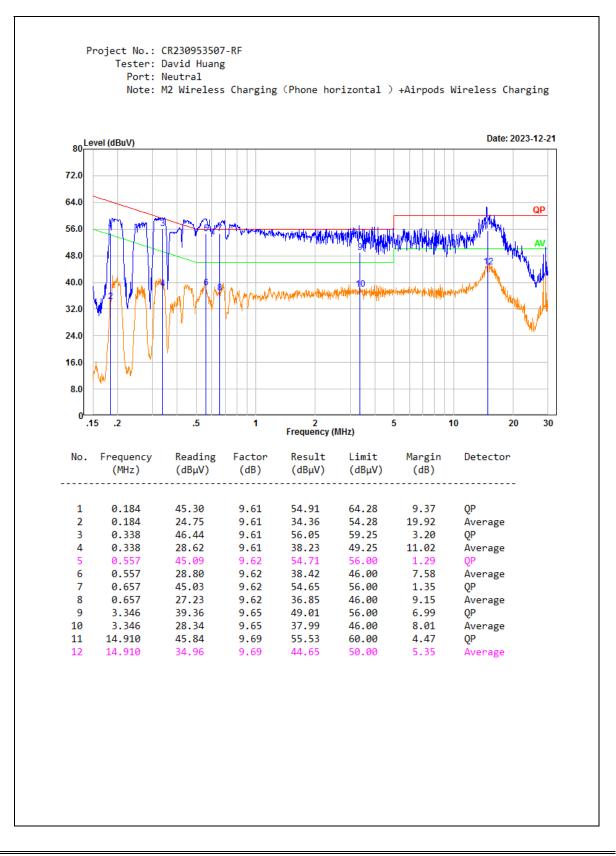
Page 24 of 95



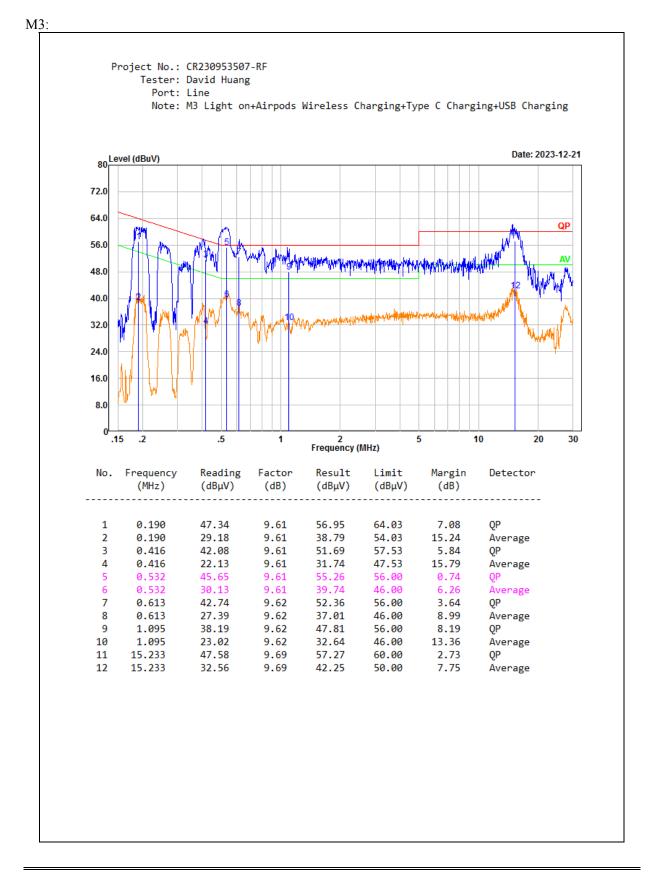
Page 25 of 95



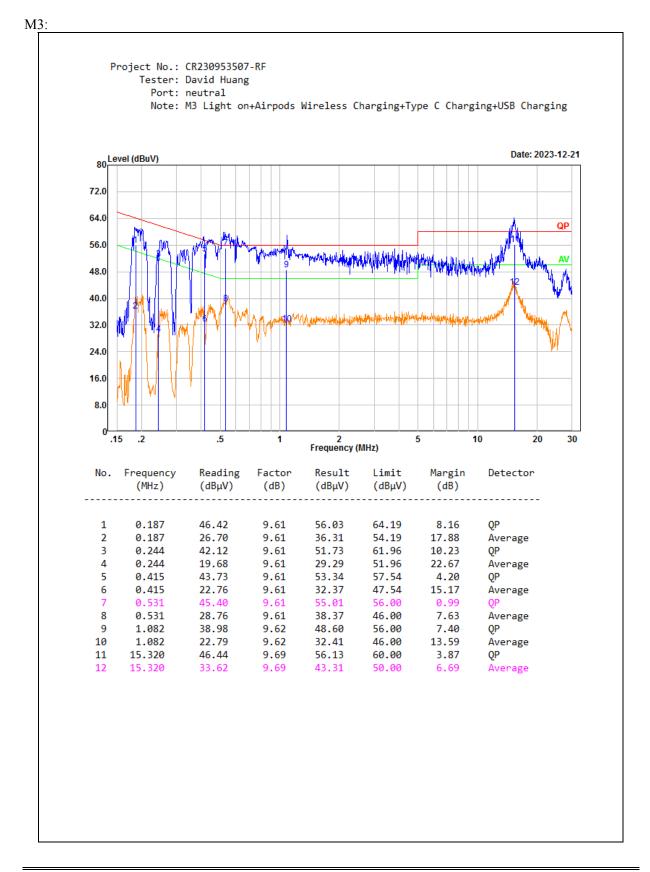
Page 26 of 95



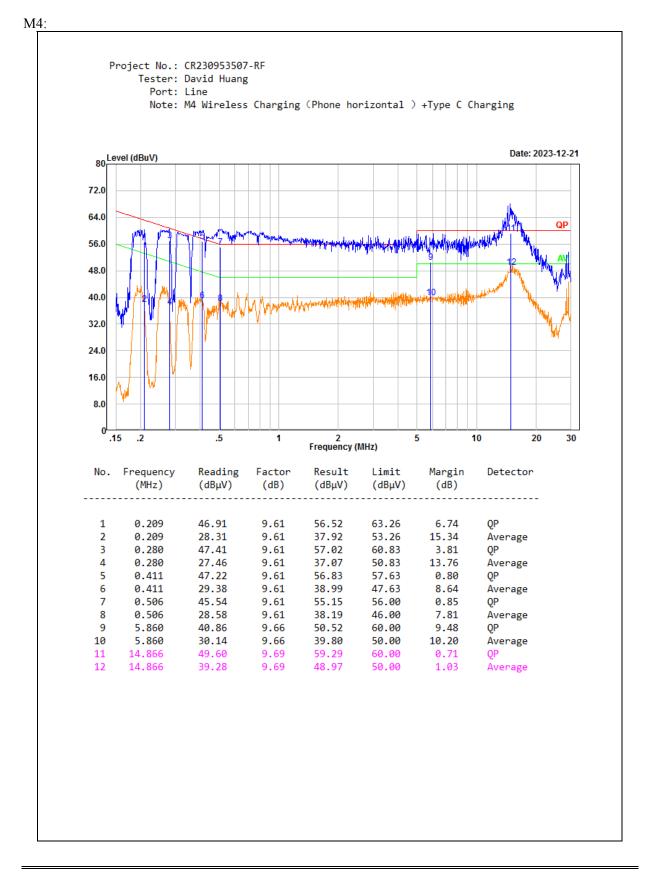
Page 27 of 95



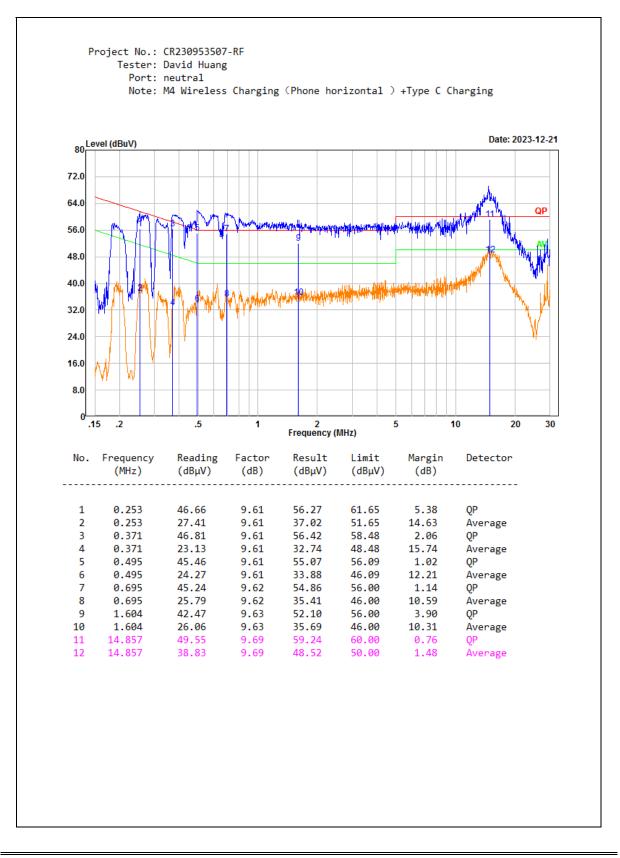
Page 28 of 95

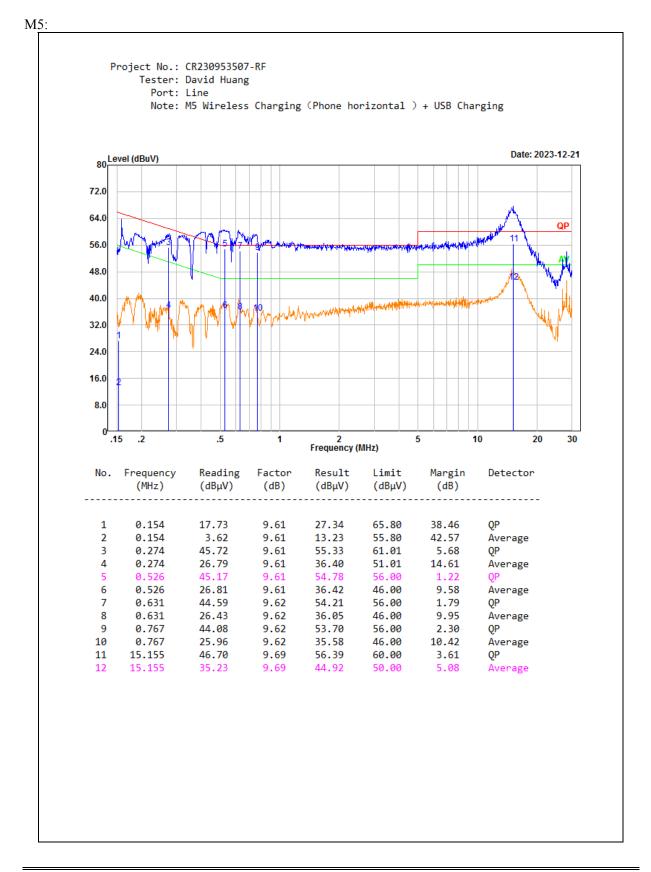


Page 29 of 95

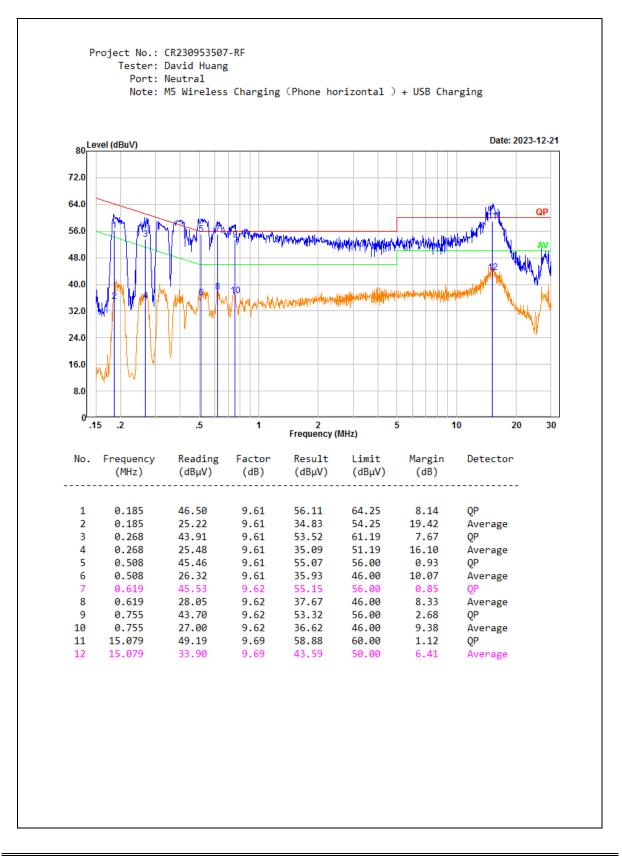


Page 30 of 95

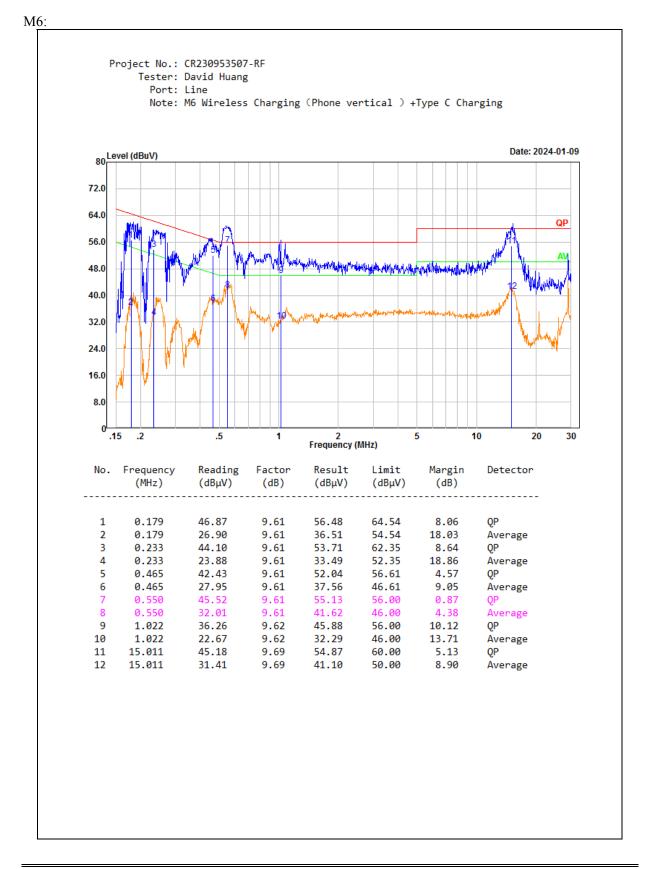




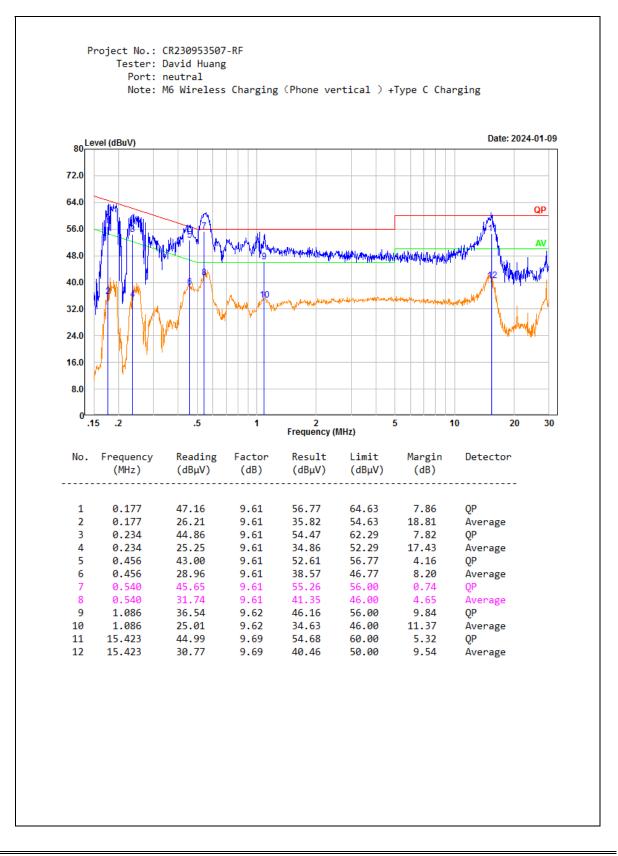
Page 32 of 95



Page 33 of 95



Page 34 of 95



#### Report No.: CR230953507-00

# **4.2 Radiation Spurious Emissions**

Serial Number:	2B5B-2	Test Date:	2023/12/8-2023/12/9
Test Site:	966-2	Test Mode:	M1-M6
Tester:	Carl Xue	Test Result:	Pass

Environmental Conditions:						
Temperature: (°C)	25.3-26.3	Relative Humidity: (%)	45-47	ATM Pressure: (kPa)	100.9-101.1	

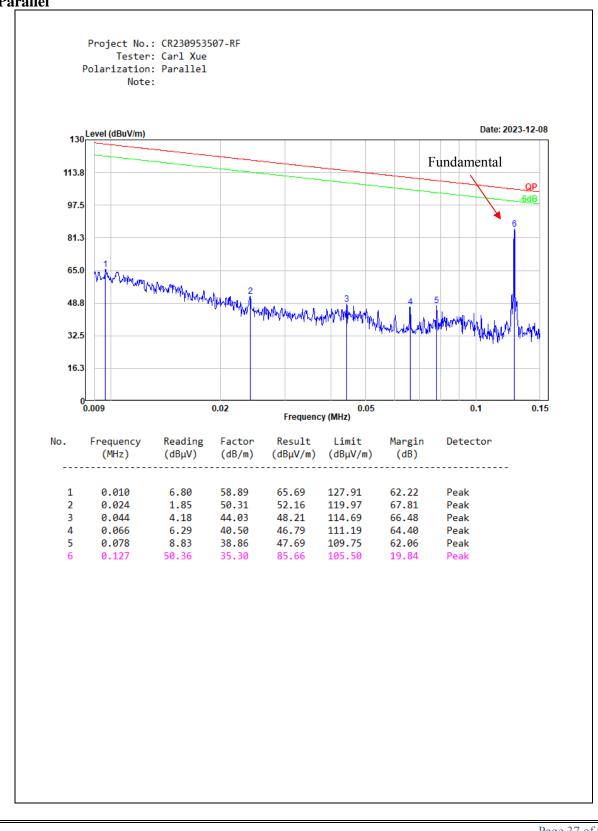
## **Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
BACL	Loop Antenna	1313-1P	3092721	2023/10/20	2026/10/19
Sunol Sciences	Antenna	JB6	A082520-5	2023/12/1	2026/11/30
R&S	EMI Test Receiver	ESR3	102724	2023/3/31	2024/3/30
TIMES MICROWAVE	Coaxial Cable	LMR-600- UltraFlex	C-0470-02	2023/7/16	2024/7/15
TIMES MICROWAVE	Coaxial Cable	LMR-600- UltraFlex	C-0780-01	2023/7/16	2024/7/15
Sonoma	Amplifier	310N	186165	2023/7/16	2024/7/15
Audix	Test Software	E3	201021 (V9)	N/A	N/A

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

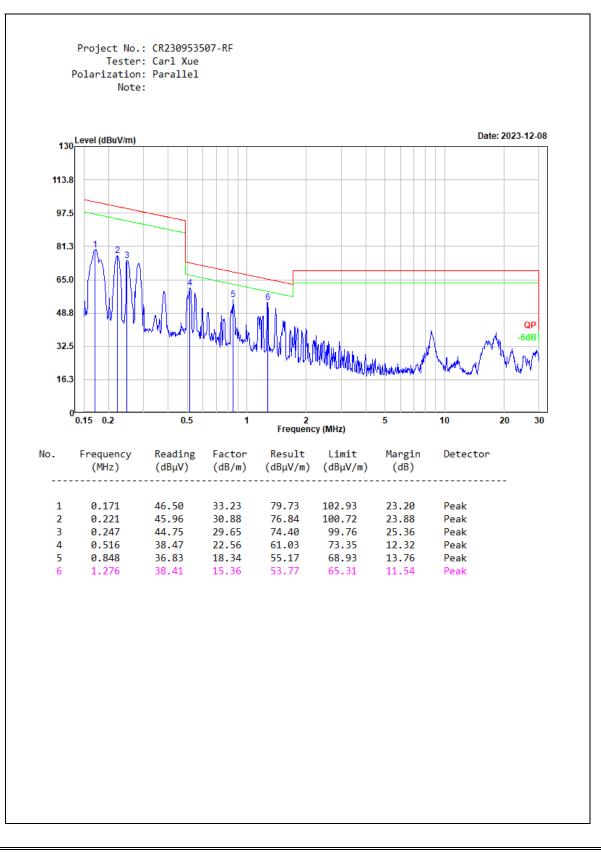
Report No.: CR230953507-00

#### M1: 1)9k-30MHz Parallel



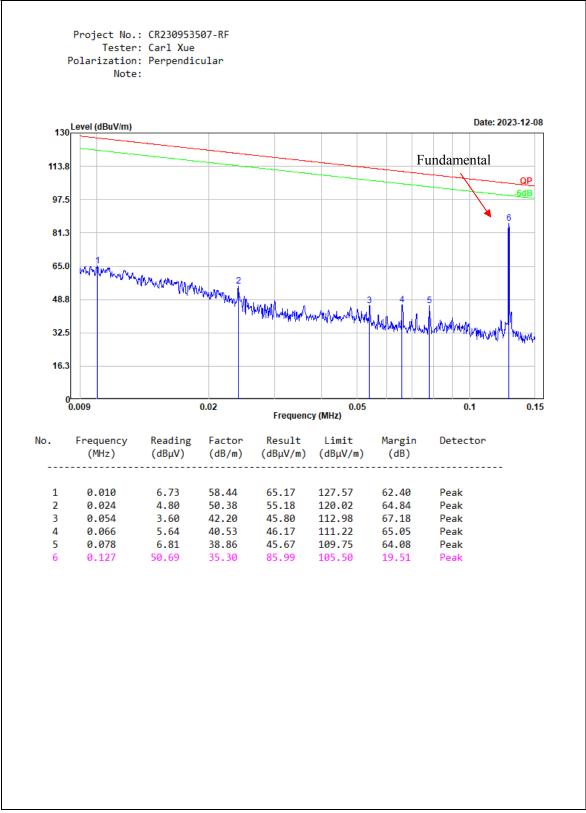
Page 37 of 95

Report No.: CR230953507-00



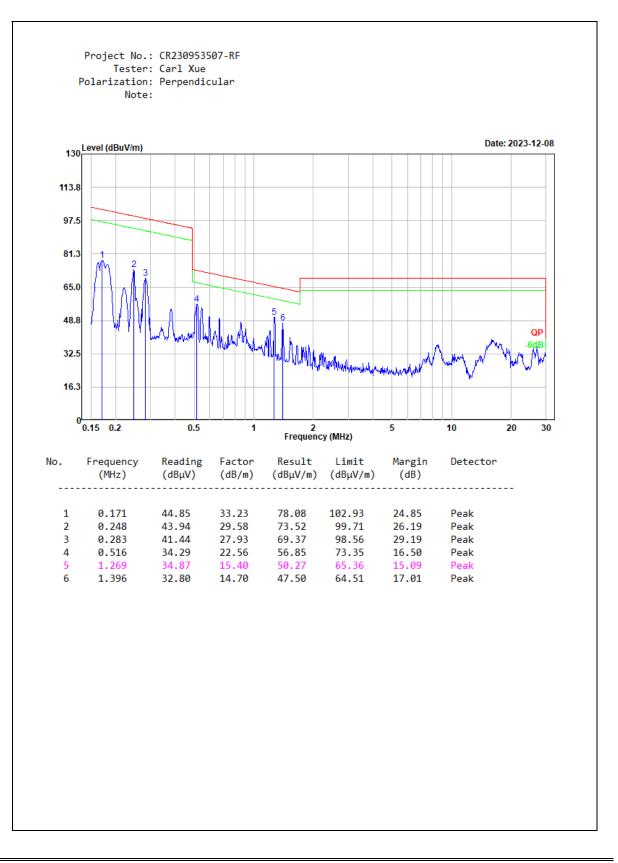
Page 38 of 95

#### Perpendicular



Page 39 of 95

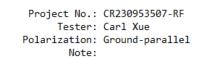
Report No.: CR230953507-00

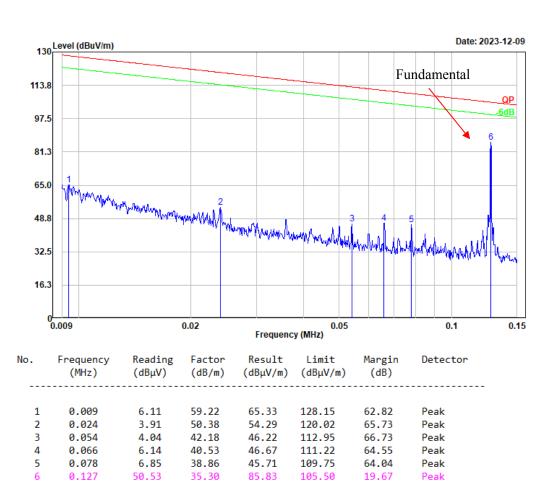


Page 40 of 95

#### Report No.: CR230953507-00

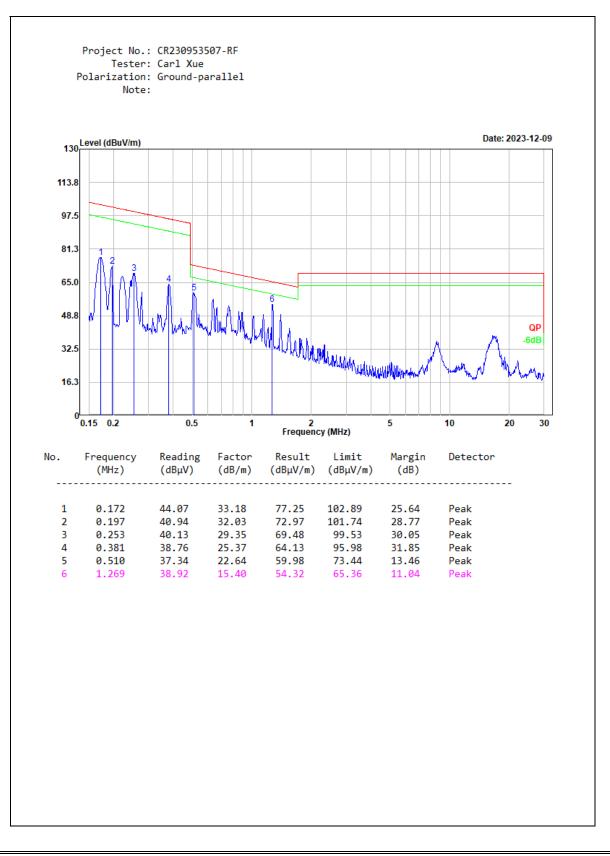
### **Ground-parallel**





Page 41 of 95

Report No.: CR230953507-00

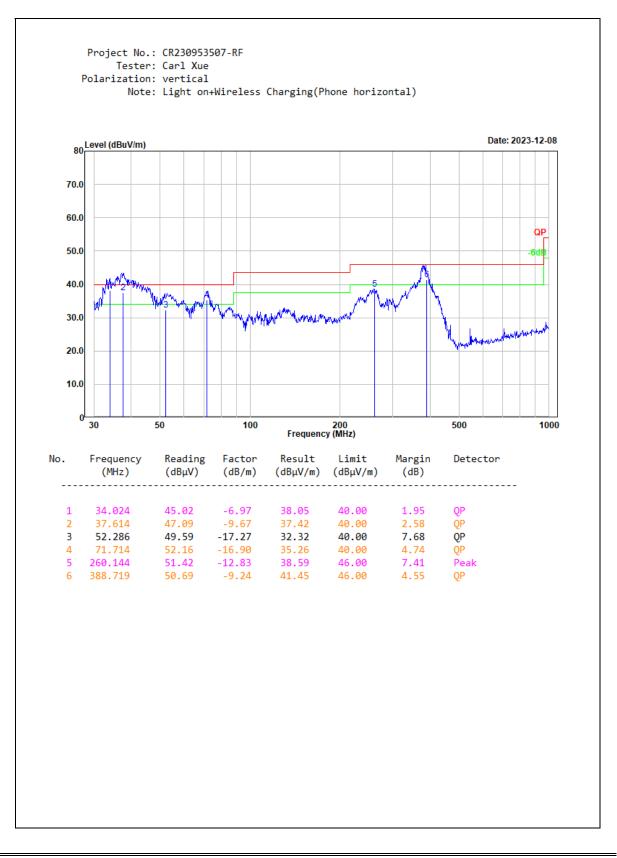


Page 42 of 95

## 2)30MHz-1GHz

```
Project No.: CR230953507-RF
            Tester: Carl Xue
     Polarization: Horizontal
              Note: Light on+Wireless Charging(Phone horizontal)
                                                                               Date: 2023-12-08
    80 Level (dBuV/m)
   70.0
   60.0
                                                                                       QP
   50.0
                                                                                      6d
                                                       MAN
   40.0
           portunation and a second second
   30.0
   20.0
   10.0
     0
       30
                   50
                                  100
                                          200
Frequency (MHz)
                                                                        500
                                                                                        1000
                     Reading
                                         Result
                                                    Limit
No.
       Frequency
                               Factor
                                                              Margin
                                                                        Detector
        (MHz)
                     (dBµV)
                               (dB/m)
                                        (dB\mu V/m) (dB\mu V/m)
                                                               (dB)
  ----
      -----
                              -----
                                         ------
                                                              ------
                    . . . . . . . . .
                                         34.87
                                                    43.50
       131.593
                    46.43
                              -11.56
                                                               8.63
                                                                        QP
   1
                                         33.70
   2
       212.893
                    46.58
                              -12.88
                                                    43.50
                                                               9.80
                                                                        QP
       253.730
                    56.14
                              -13.28
                                         42.86
                                                    46.00
                                                               3.14
                                                                        QP
   3
   4
       293.599
                              -11.20
                                         37.81
                                                    46.00
                                                                        QP
                    49.01
                                                               8.19
   5
       330.681
                    48.18
                              -10.51
                                         37.67
                                                    46.00
                                                               8.33
                                                                        QΡ
                                                    46.00
   6
       378.842
                    53.44
                              -9.49
                                         43.95
                                                               2.05
                                                                        QP
```

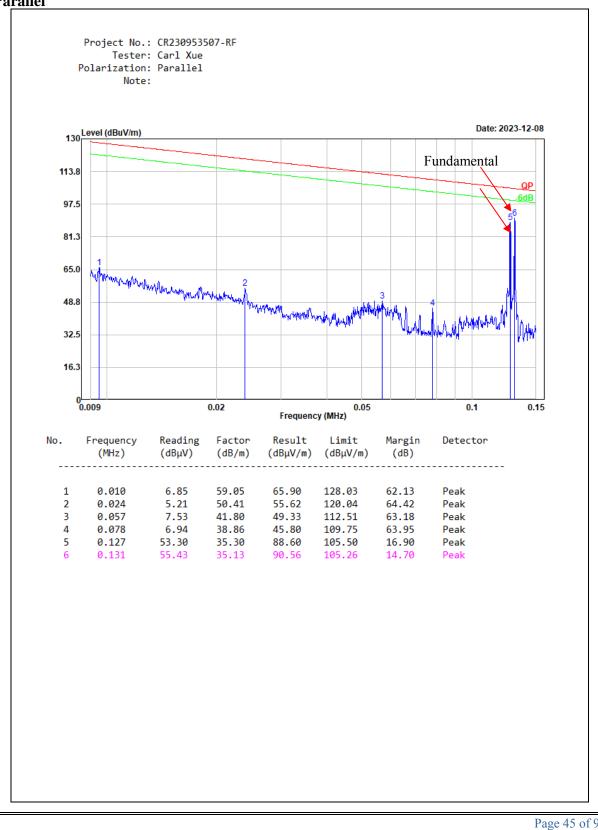
Page 43 of 95



Page 44 of 95

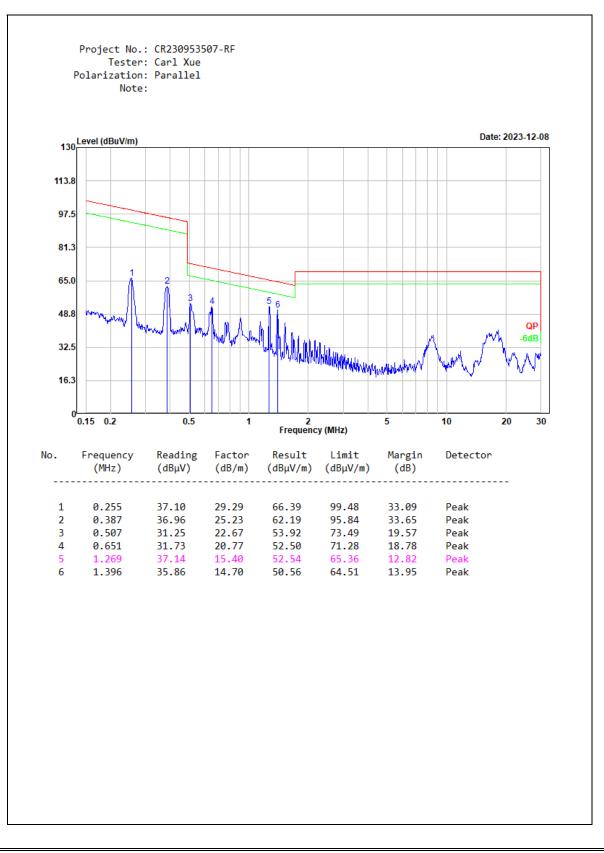
Report No.: CR230953507-00

# M2: 1)9k-30MHz Parallel



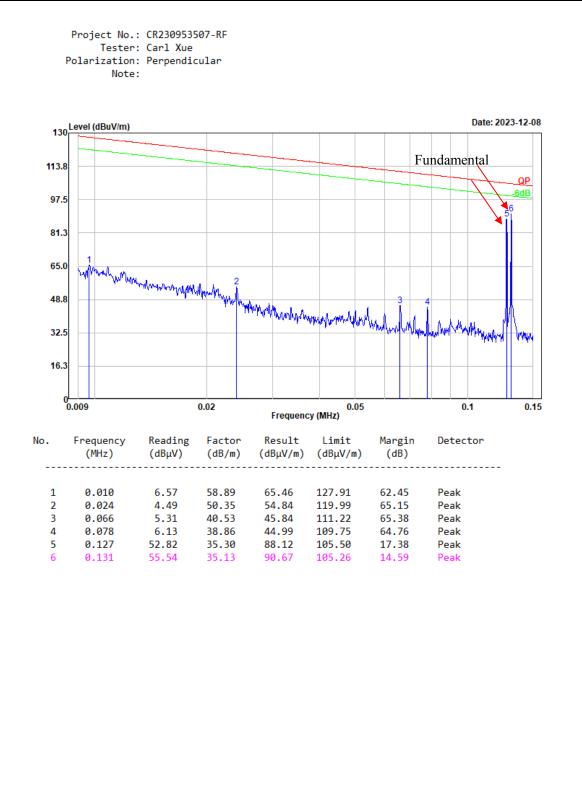
Page 45 of 95

Report No.: CR230953507-00



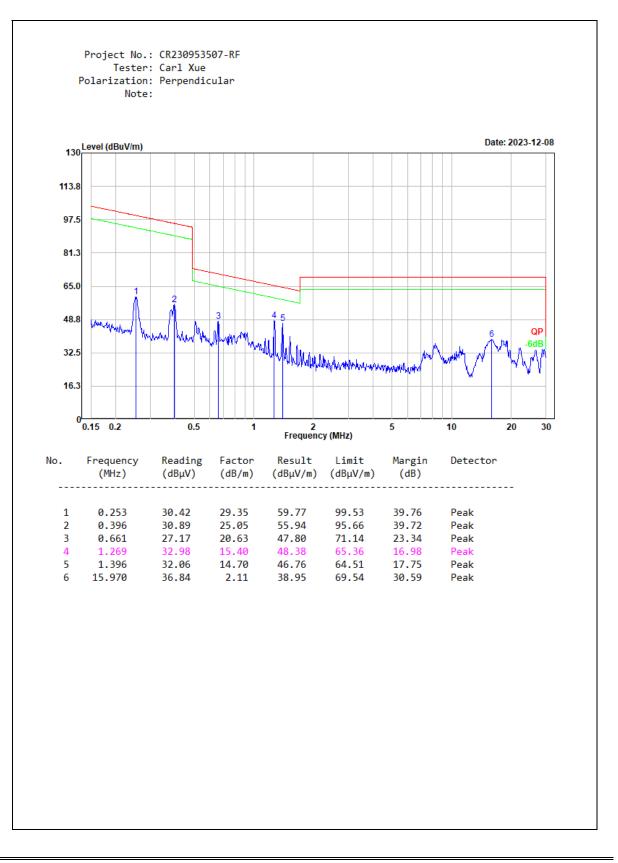
Page 46 of 95

#### Perpendicular

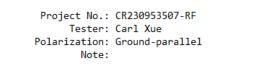


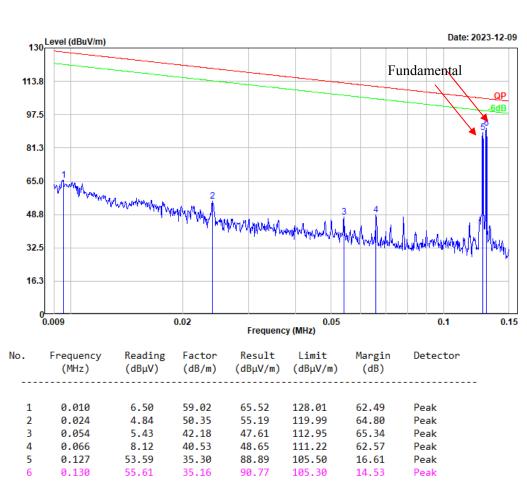
Page 47 of 95

Report No.: CR230953507-00



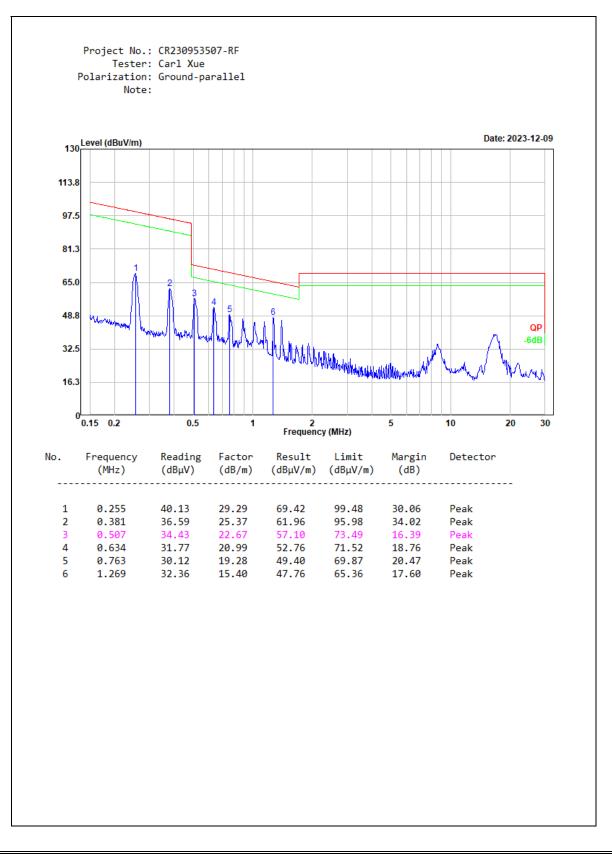
### **Ground-parallel**





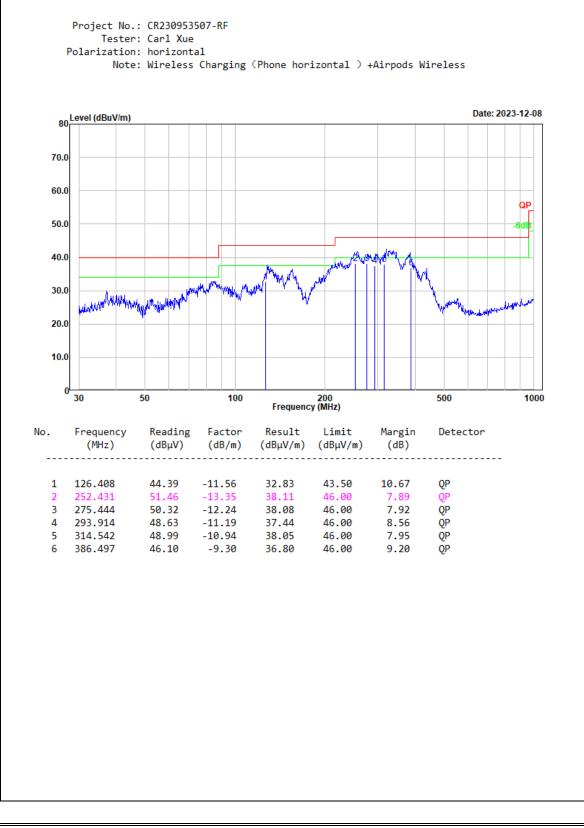
Page 49 of 95

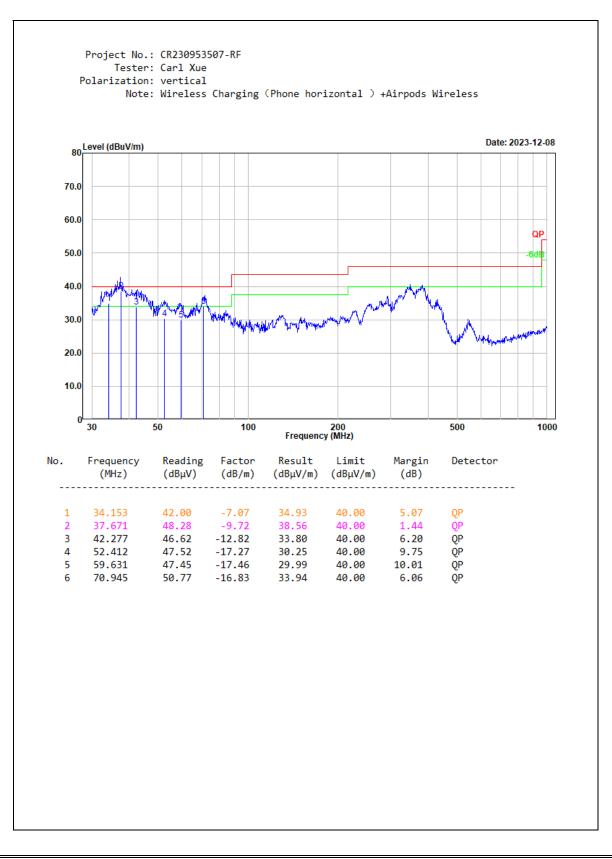
Report No.: CR230953507-00



Page 50 of 95

#### 4)30MHz-1GHz

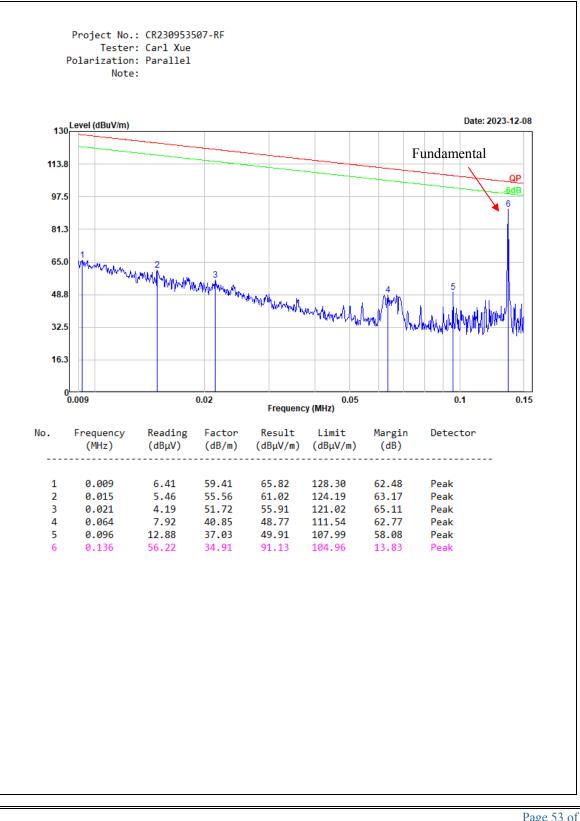




Page 52 of 95

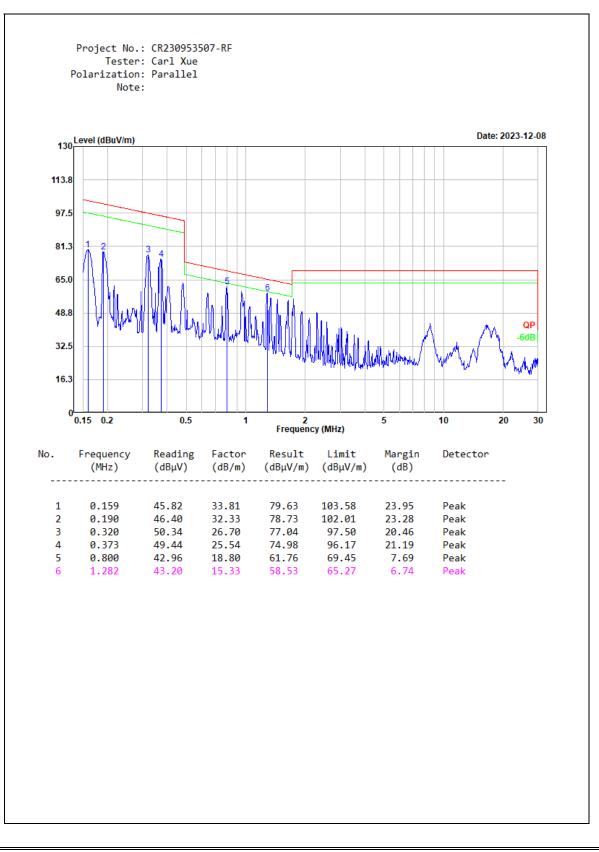
Report No.: CR230953507-00

# **M3** 1)9k-30MHz: Parallel



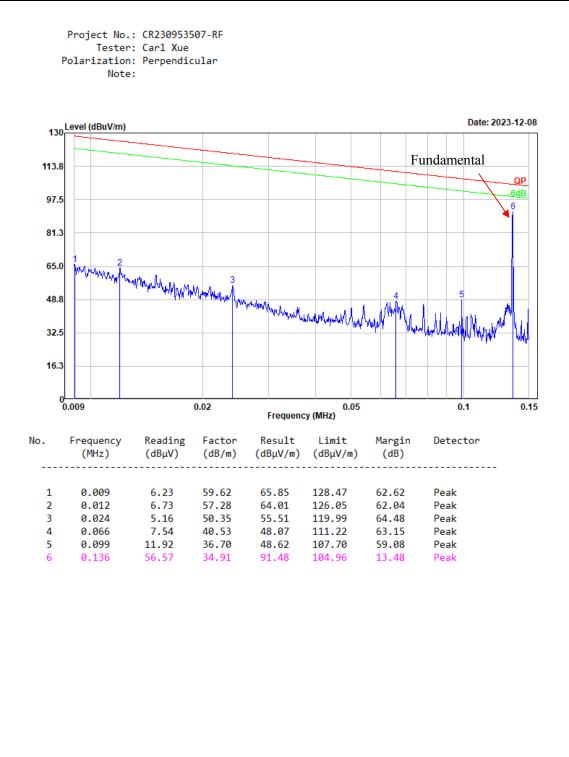
Page 53 of 95

Report No.: CR230953507-00



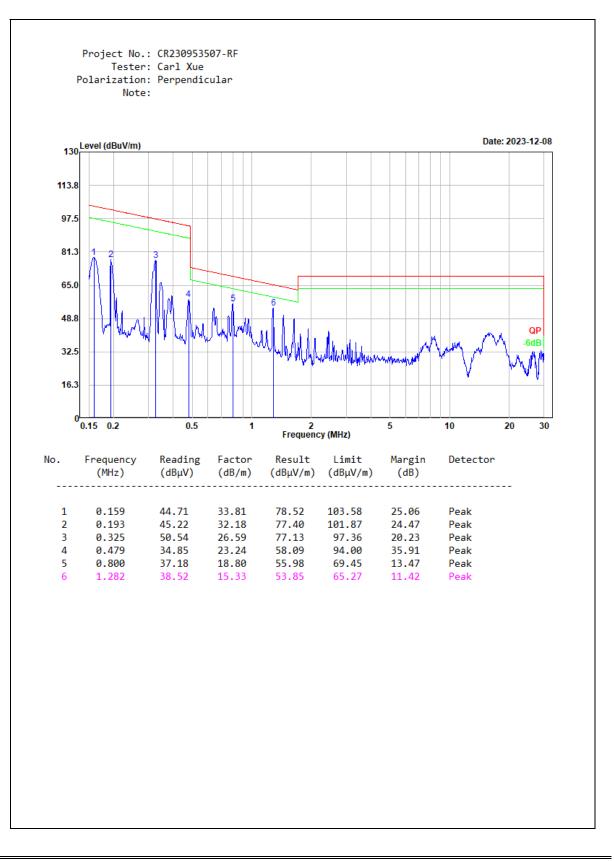
Page 54 of 95

#### Perpendicular



Page 55 of 95

Report No.: CR230953507-00

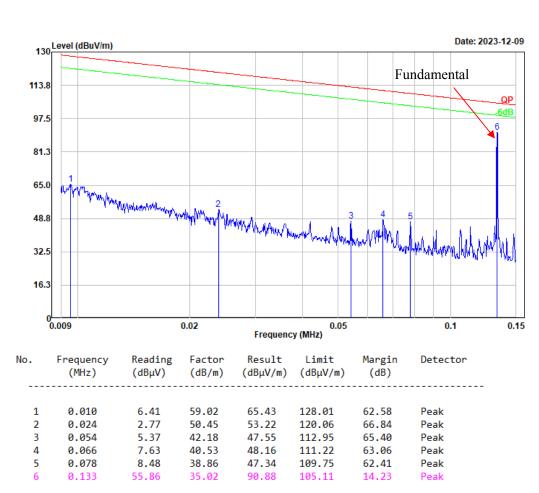


Page 56 of 95

#### Report No.: CR230953507-00

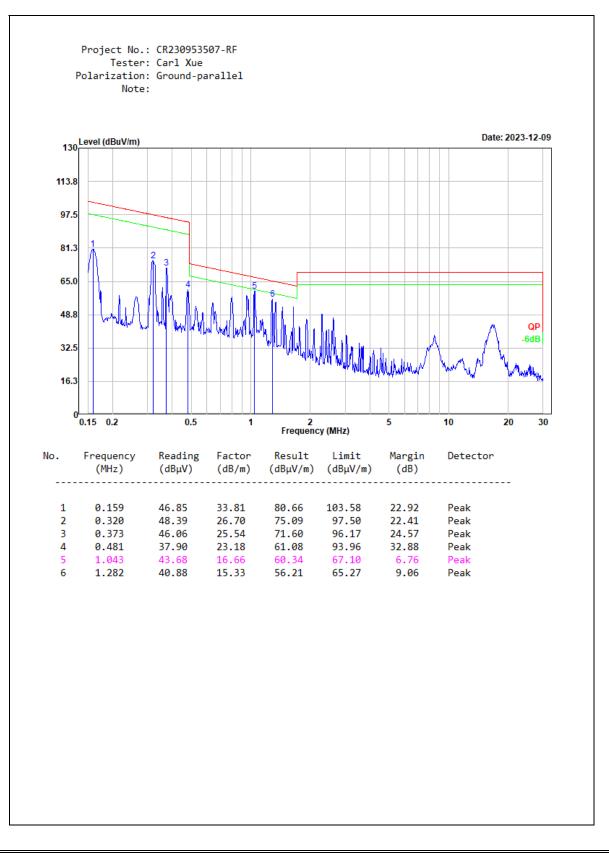
### **Ground-parallel**





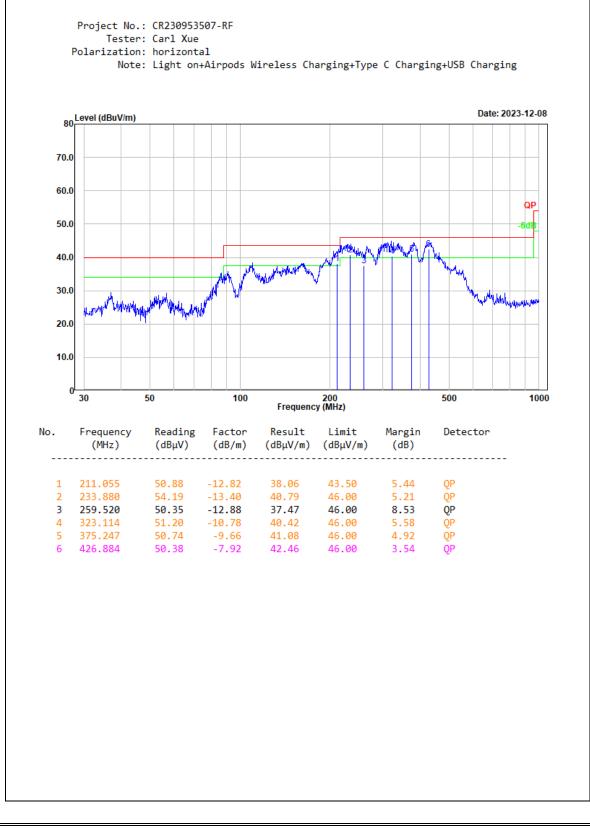
Page 57 of 95

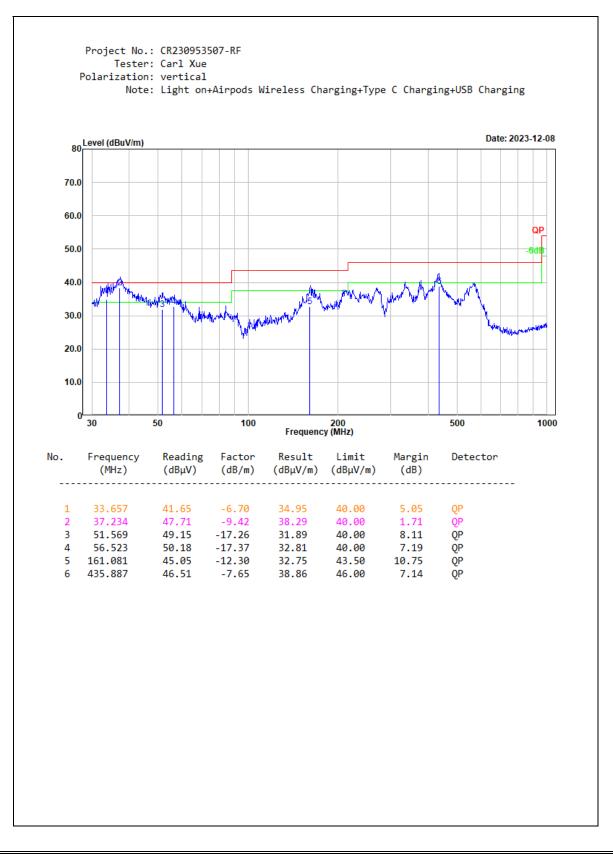
Report No.: CR230953507-00



Page 58 of 95

#### 2)30MHz-1GHz

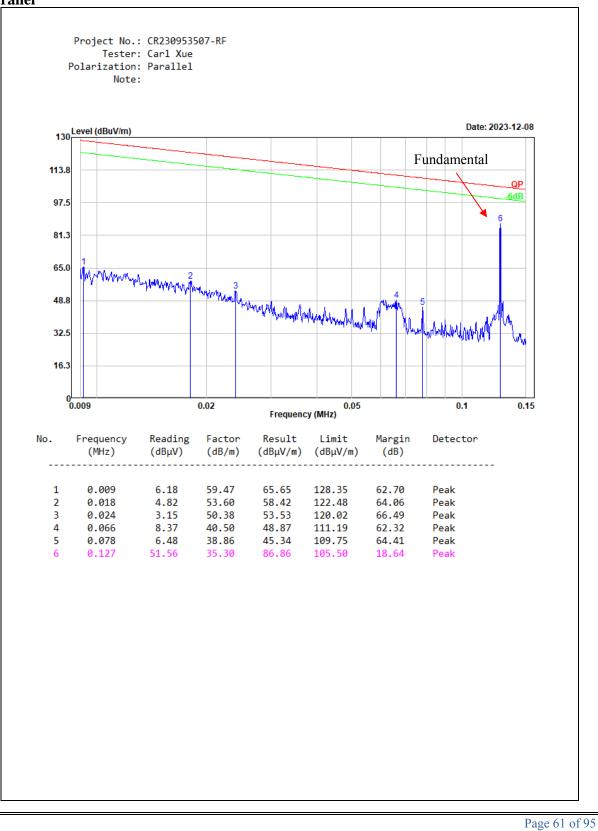




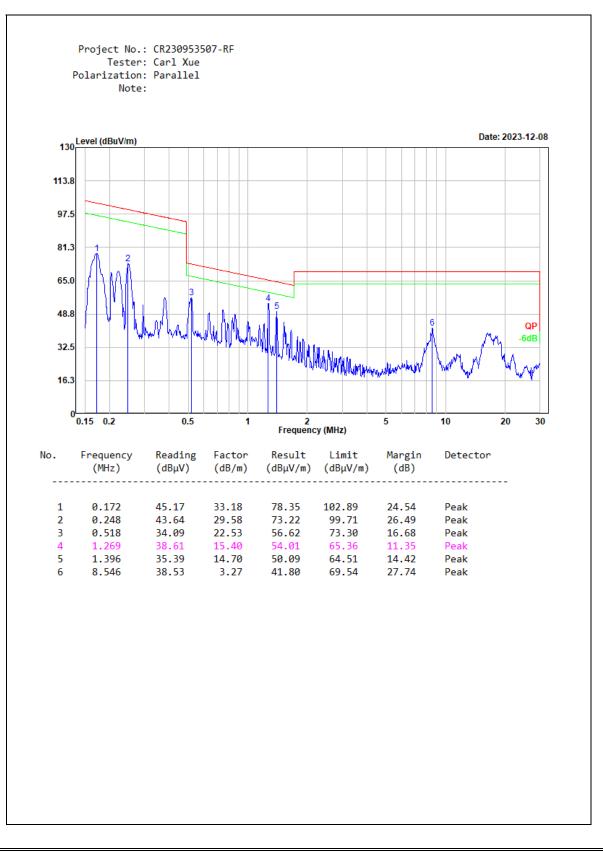
Page 60 of 95

Report No.: CR230953507-00

# M4: 1)9k-30MHz: Parallel

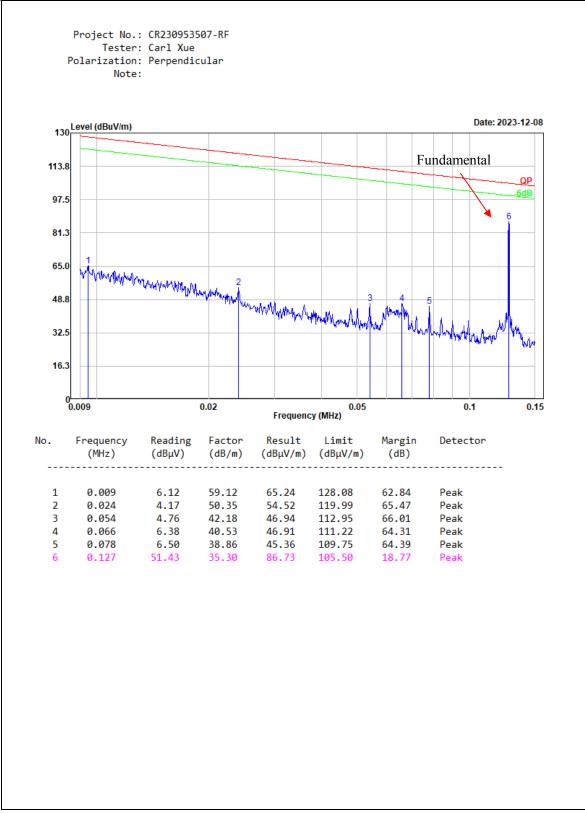


Report No.: CR230953507-00



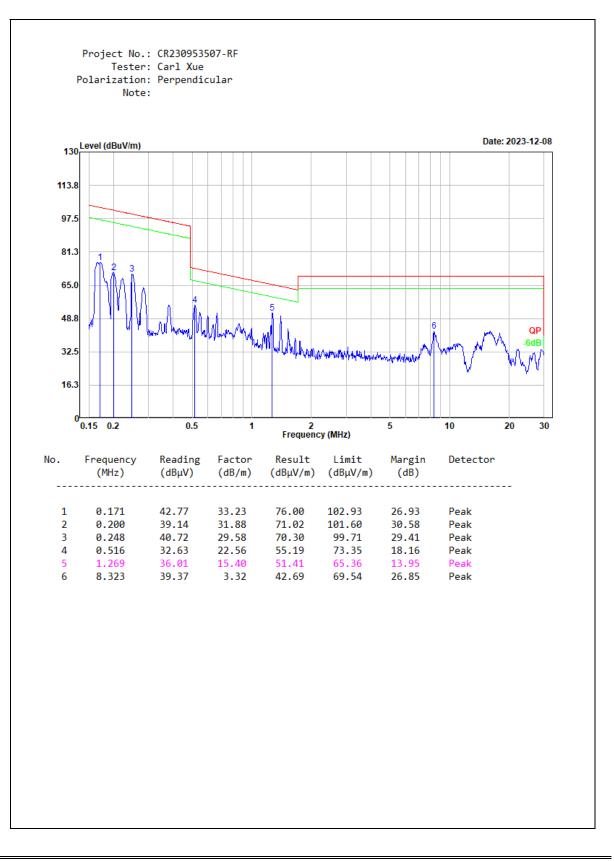
Page 62 of 95

### Perpendicular



Page 63 of 95

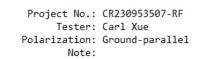
Report No.: CR230953507-00

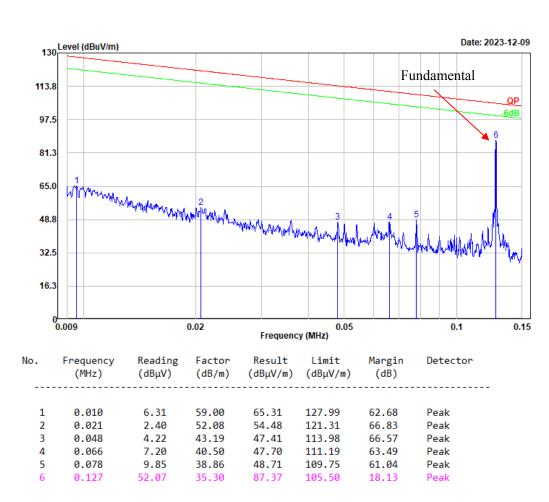


Page 64 of 95

#### Report No.: CR230953507-00

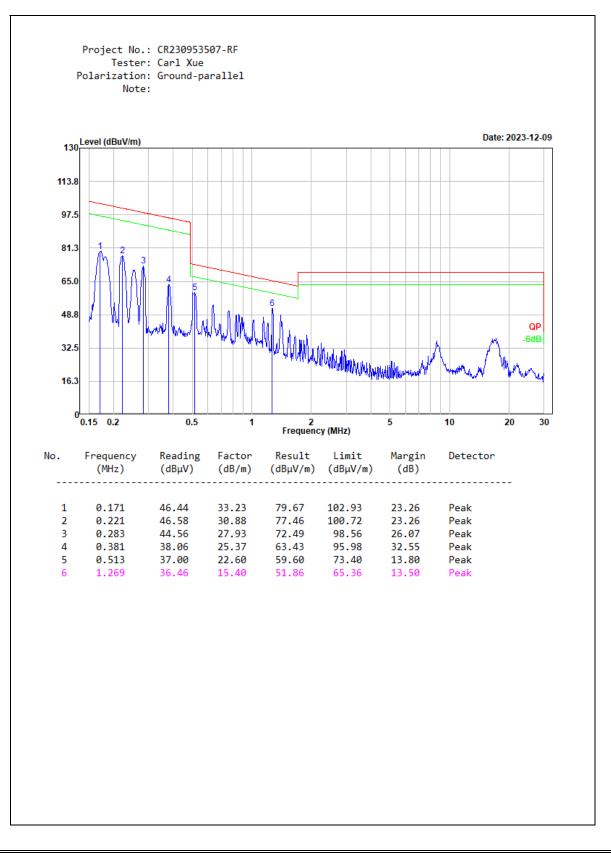
### **Ground-parallel**





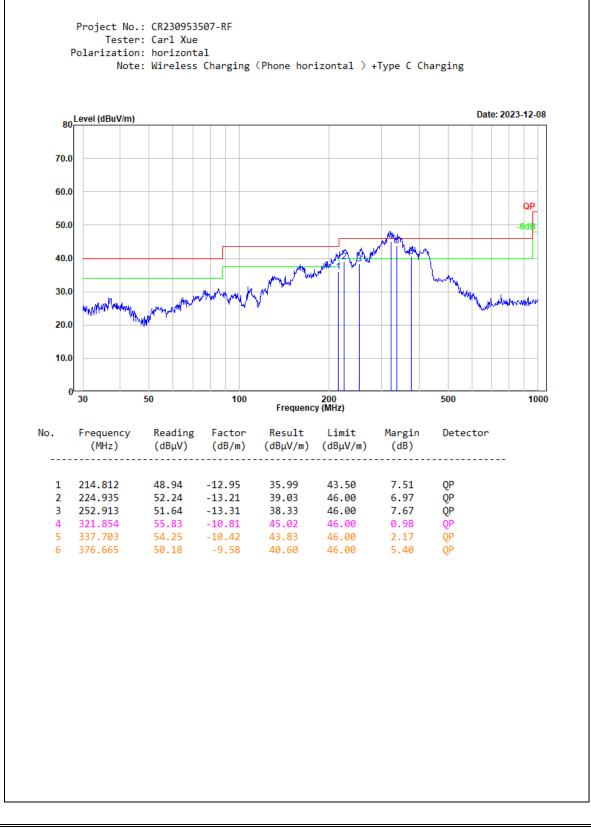
Page 65 of 95

Report No.: CR230953507-00

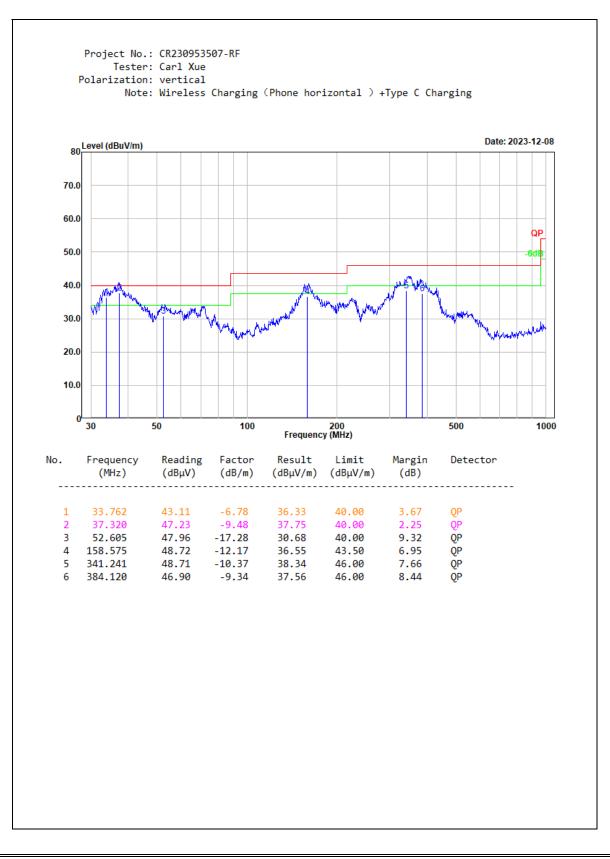


Page 66 of 95

#### 2)30MHz-1GHz



Page 67 of 95



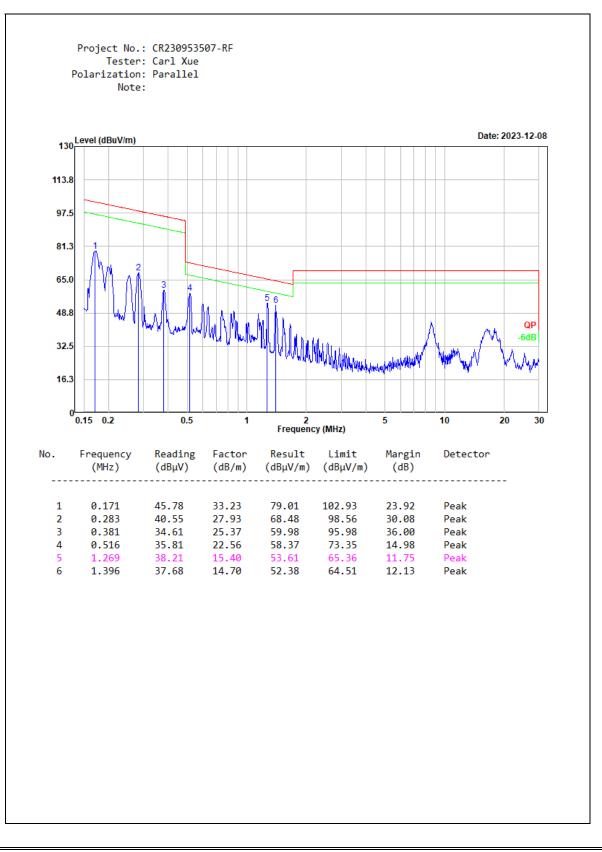
Page 68 of 95

Report No.: CR230953507-00

#### **M5** 1)9k-30MHz: Parallel Project No.: CR230953507-RF Tester: Carl Xue Polarization: Parallel Note: Date: 2023-12-08 130 Level (dBuV/m) 113.8 Fundamental QP <u>-6</u>dB 97.5 6 81.3 when here we we we we want the second 65.0 many many many many many many 48.8 MAMM Het William 32.5 Myho 16.3 0.009 0.02 0.05 0.1 0.15 Frequency (MHz) Reading No. Frequency Factor Result Limit Margin Detector (MHz) (dBµV) (dB/m) $(dB\mu V/m)$ $(dB\mu V/m)$ (dB) -----1 0.010 7.50 58.23 65.73 127.27 61.54 Peak 2 0.024 6.58 50.31 56.89 119.97 63.08 Peak 0.054 42.20 50.31 112.98 3 8.11 62.67 Peak 4 0.066 6.31 40.53 46.84 111.22 64.38 Peak 5 0.078 7.59 38.86 46.45 109.75 63.30 Peak 51.08 6 0.127 35.30 86.38 105.50 19.12 Peak

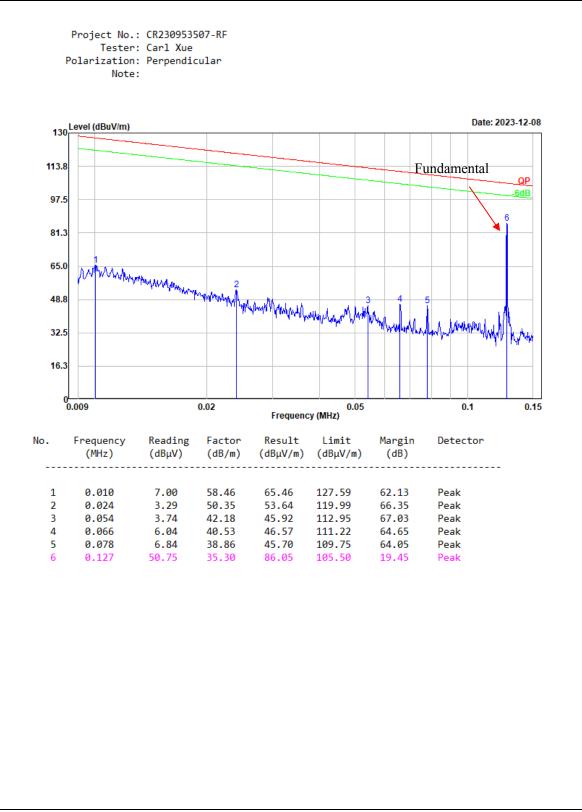
Page 69 of 95

Report No.: CR230953507-00



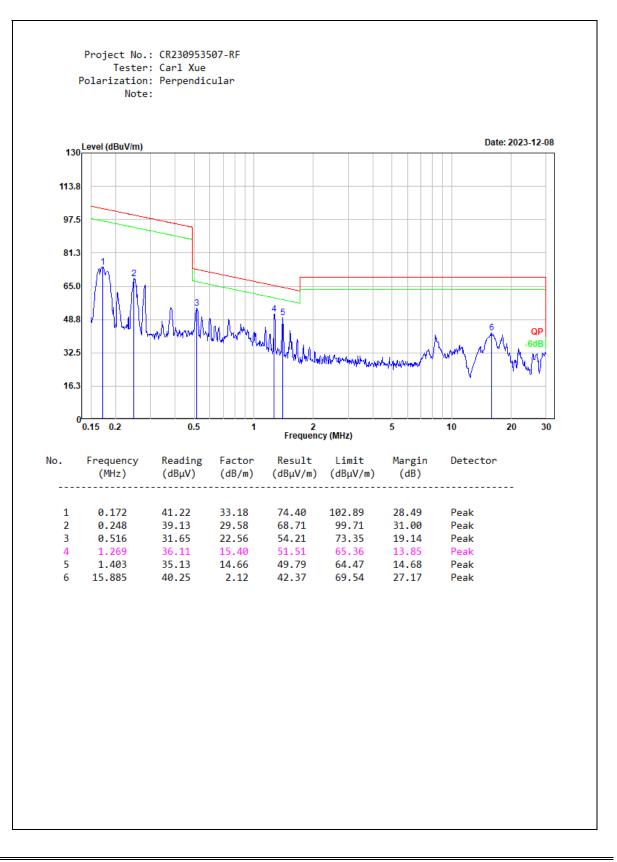
Page 70 of 95

#### Perpendicular



Page 71 of 95

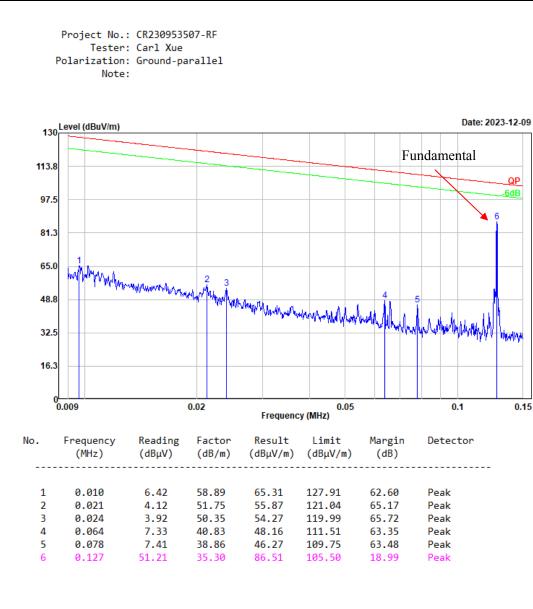
Report No.: CR230953507-00



Page 72 of 95

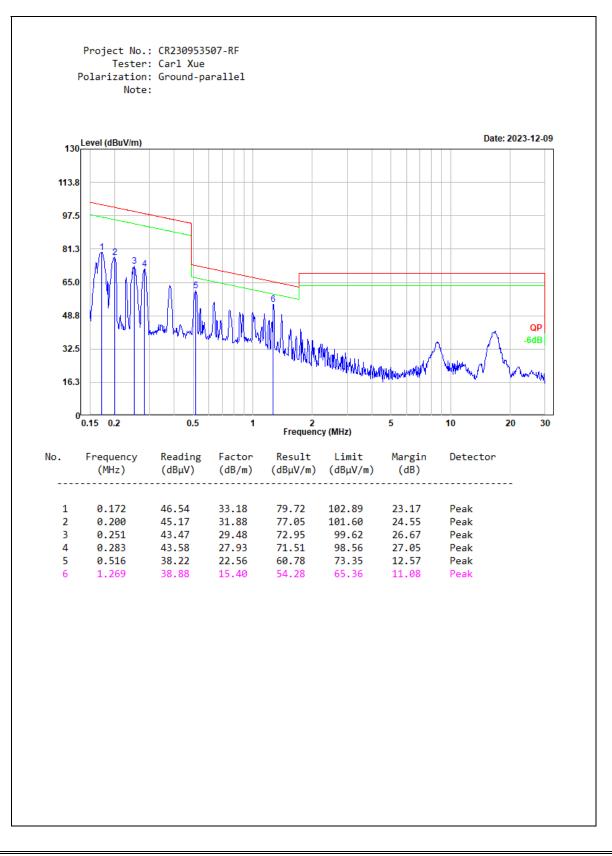
#### Report No.: CR230953507-00

### **Ground-parallel**



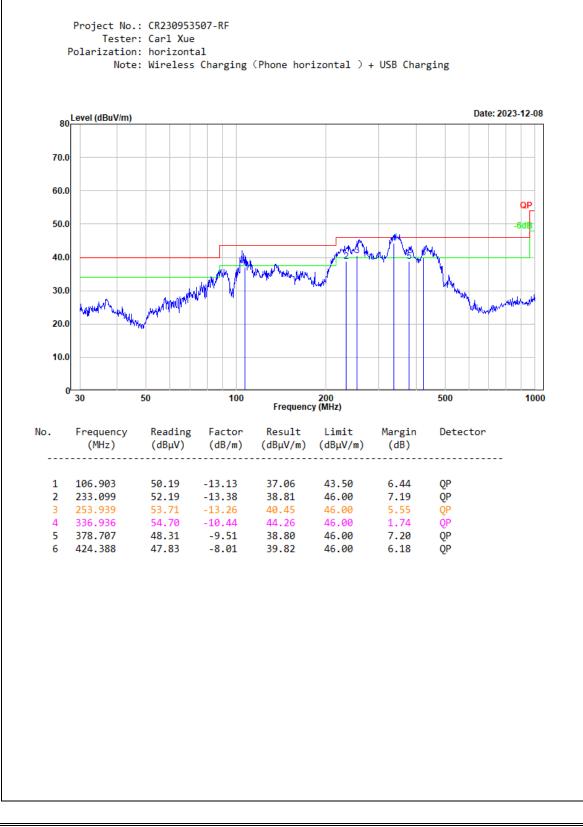
Page 73 of 95

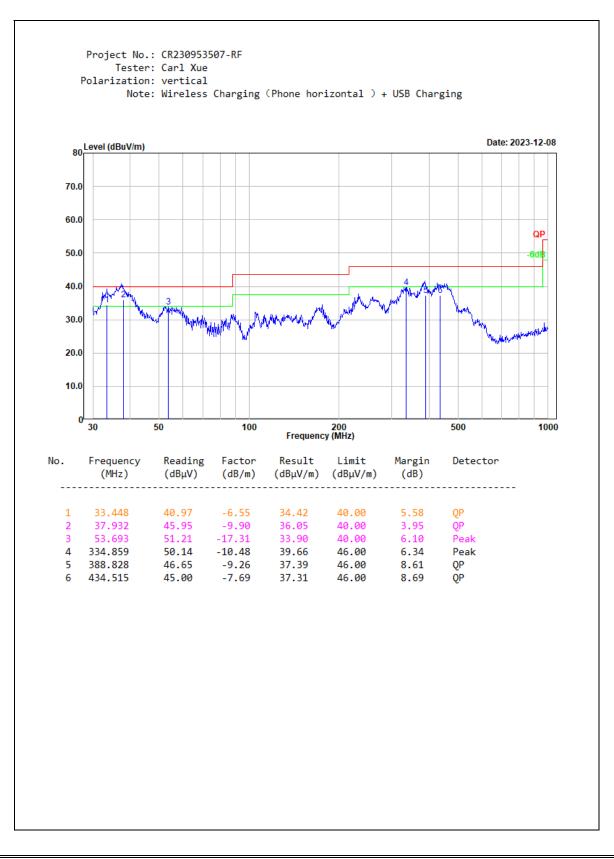
Report No.: CR230953507-00



Page 74 of 95

#### 2)30MHz-1GHz

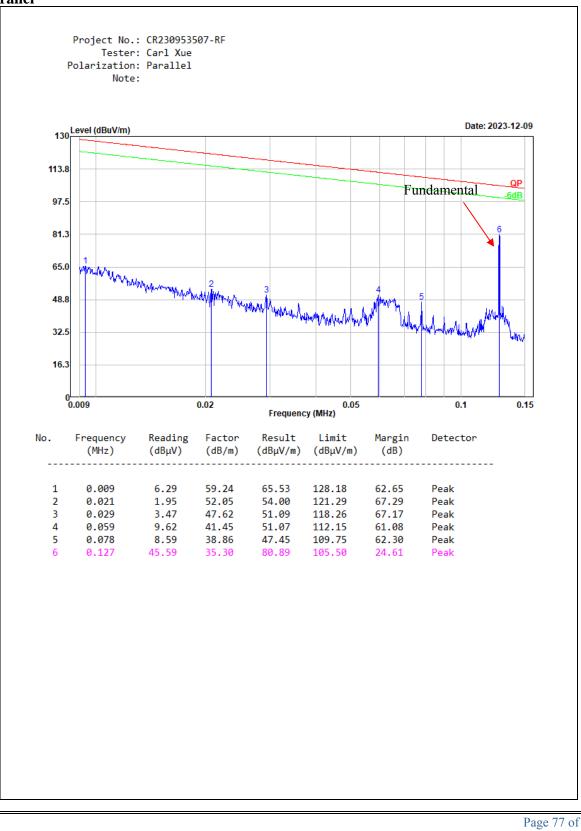




Page 76 of 95

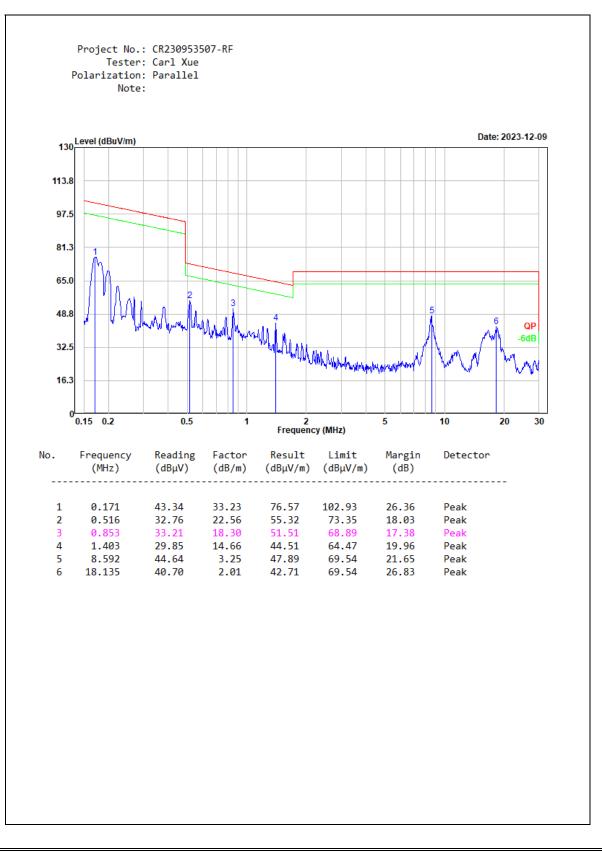
Report No.: CR230953507-00

# **M6**: 1)9k-30MHz: Parallel



Page 77 of 95

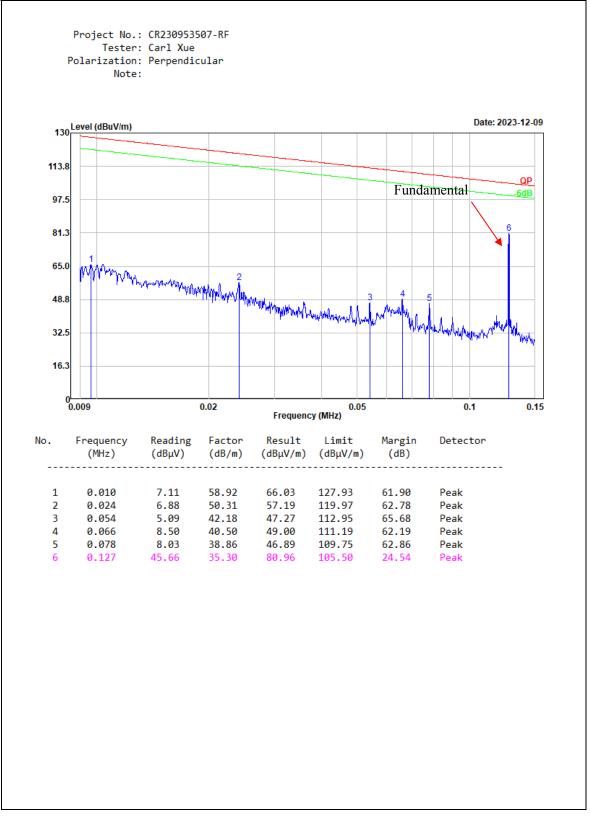
Report No.: CR230953507-00



Page 78 of 95

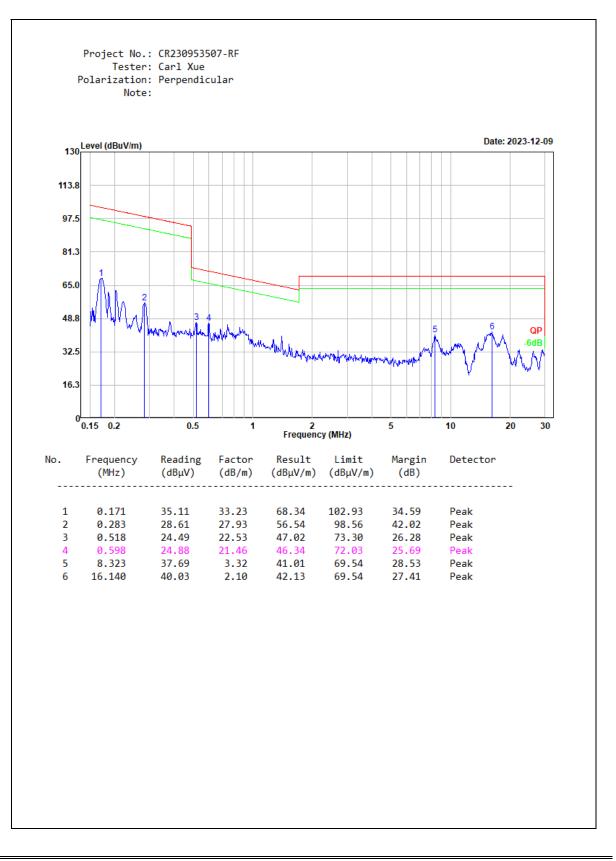
#### Report No.: CR230953507-00

#### Perpendicular



Page 79 of 95

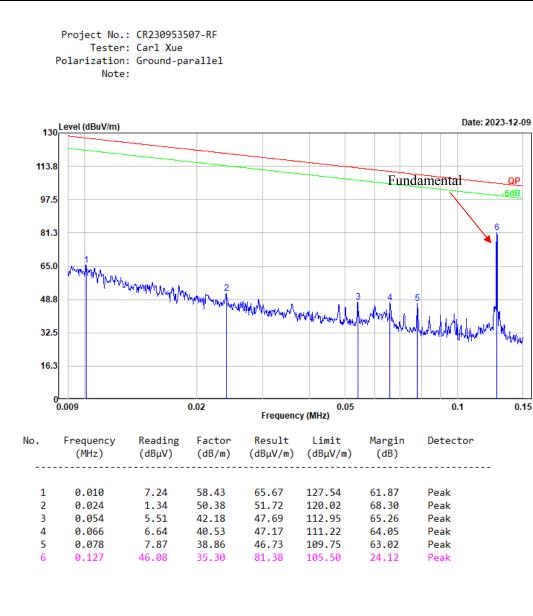
Report No.: CR230953507-00



Page 80 of 95

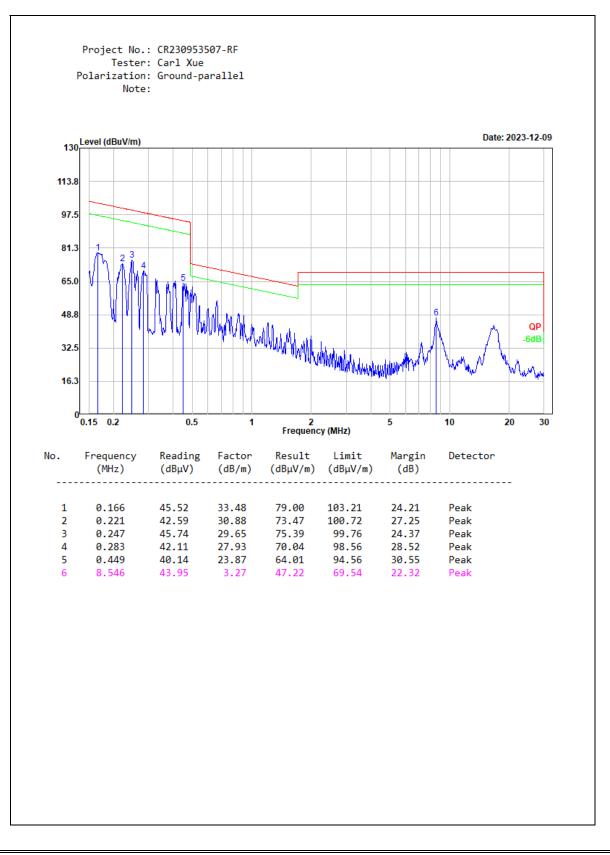
#### Report No.: CR230953507-00

### **Ground-parallel**



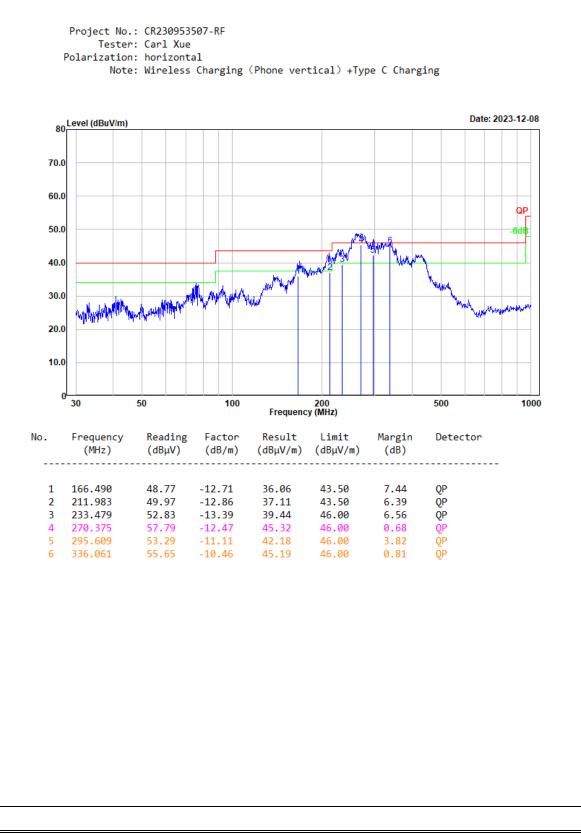
Page 81 of 95

Report No.: CR230953507-00

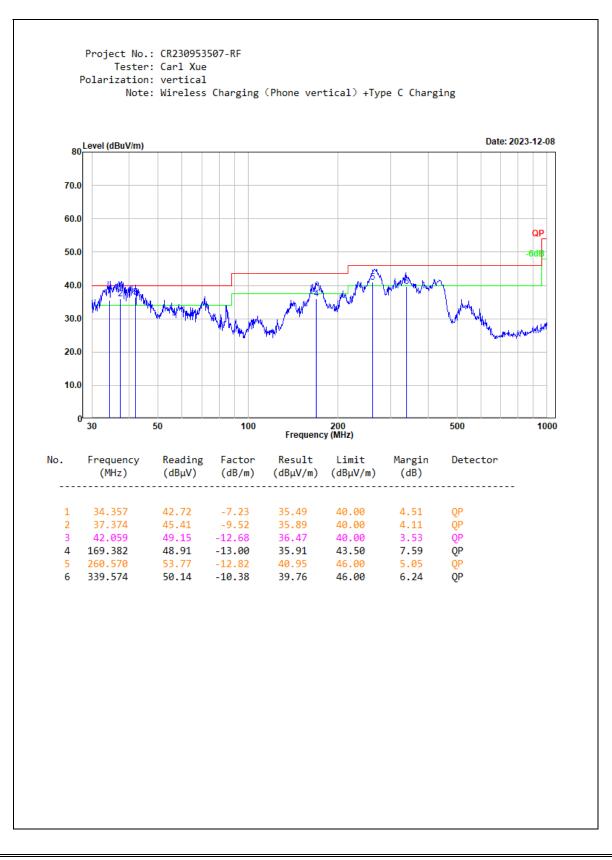


Page 82 of 95

#### 2)30MHz-1GHz



Page 83 of 95



Page 84 of 95

# 4.3 20 dB Emission Bandwidth

Serial Number:	2B5B-2	Test Date:	2023/12/8-2023/12/9
Test Site:	966-2	Test Mode:	Transmitting
Tester:	Carl Xue	Test Result:	Pass

Environmental Conditions:									
Temperature: (°C)	25.3-26.3	Relative Humidity: (%)	45-47	ATM Pressure: (kPa)	100.9-101.1				

# **Test Equipment List and Details:**

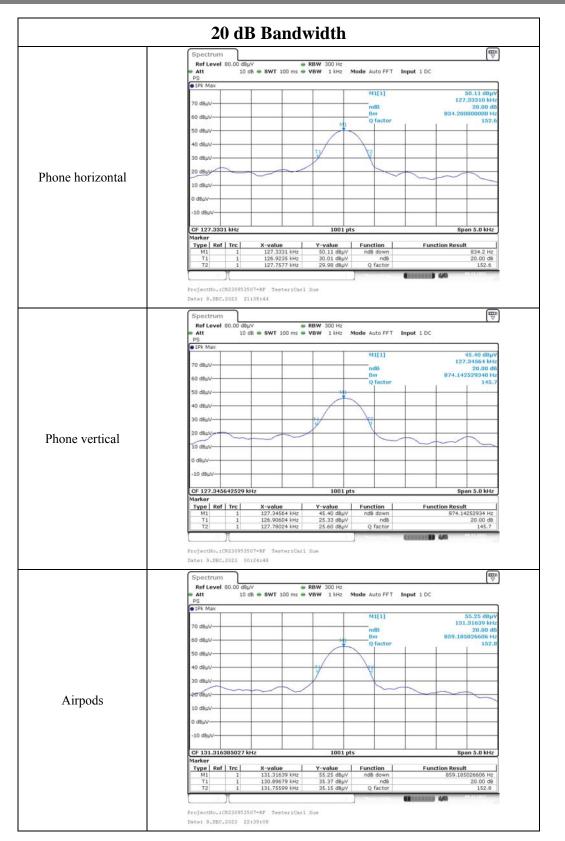
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
BACL	Loop Antenna	1313-1P	3092721	2023/2/15	2026/2/14
R&S	EMI Test Receiver	ESR3	102724	2023/3/31	2024/3/30
TIMES MICROWAVE	Coaxial Cable	LMR-600- UltraFlex	C-0470-02	2023/7/16	2024/7/15
TIMES MICROWAVE	Coaxial Cable	LMR-600- UltraFlex	C-0780-01	2023/7/16	2024/7/15

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

# **Test Data:**

Antenna	Test Frequency (kHz)	20 dB Emission Bandwidth (Hz)
Phone horizontal	127.33	834
Phone vertical	127.35	874
Airpods	131.32	859

#### Report No.: CR230953507-00



# **5 MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

# **5.1 Applicable Standard**

According to subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

(B) Limits for General Population/Uncontrolled Exposure										
ncy RangeElectric FieldMagnetic FieldPower Density(Hz)Strength (V/m)Strength (A/m)(mW/cm²)										
			(minutes) 30							
			30							
\$= :: =			30							
/	0.075		30							
/	/	10	30							
		Electric Field Strength (V/m)Magnetic Field Strength (A/m)6141.63824/f2.19/f	Electric Field Strength (V/m)Magnetic Field Strength (A/m)Power Density (mW/cm²)6141.63*(100)824/f2.19/f*(180/f²)							

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

f = frequency in MHz; \* = Plane-wave equivalent power density;

According with 680106 D01 Wireless Power Transfer v04 clause 3.2

Accordingly, for § 2.1091-Mobile devices, the MPE limits between 100 kHz to 300 kHz are to be considered the same as those at 300 kHz in Table 1 of § 1.1310, that is, 614 V/m and 1.63 A/m, for the electric field and magnetic field, respectively. For § 2.1093-Portable devices below 4 MHz and down to 100 kHz, the MPE limits in § 1.1310 (with the 300 kHz limit applicable all the way down to 100 kHz) can be used for the purpose of equipment authorization in lieu of SAR evaluations.

According to 680106 D01 Wireless Power Transfer v04 clause 5.2

There might be situations where the WPT RF emissions are limited enough that even operations in a "crowded" environment, where many similar WPT devices are present, do not pose significant EMC and RF exposure concerns. In this scenario, and for devices operating within a one-meter distance from the receiver, as defined above, a manufacturer will not have to submit an "Equipment Compliance Review" KDB, and receive FCC concurrence before proceeding with equipment authorization. This exception to the requirement of submitting the ECR to obtain FCC concurrence only applies when all the following criteria (1) through (6) are met:

(1) The power transfer frequency is below 1 MHz.

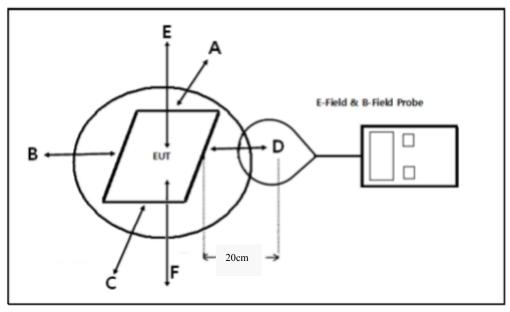
(2) The output power from each transmitting element (e.g., coil) is less than or equal to 15 watts.

(3) A client device providing the maximum permitted load is placed in physical contact with the transmitter (i.e., the surfaces of the transmitter and client device enclosures need to be in physical contact)

(4) Only § 2.1091-*Mobile* exposure conditions apply (i.e., this provision does not cover § 2.1093-*Portable* exposure conditions).

(5) The E-field and H-field strengths, at and beyond 20 cm surrounding the device surface, are demonstrated to be less than 50% of the applicable MPE limit, per KDB 447498, Table 1. These measurements shall be taken along the principal axes of the device, with one axis oriented along the direction of the estimated maximum field strength, and for three points per axis or until a 1/*d* (inverse distance from the emitter structure) field strength decay is observed. Symmetry considerations may be used for test reduction purposes. The device shall be operated in documented worst-case compliance scenarios (i.e., the ones that lead to the maximum field components), and while all the radiating structures (e.g., coils or antennas) that by design can simultaneously transmit are energized at their nominal maximum power.

(6) For systems with more than one radiating structure, the conditions specified in (5) must be met when the system is fully loaded (i.e., clients absorbing maximum power available), and with all the radiating structures operating at maximum power at the same time, as per design conditions. If the design allows one or more radiating structures to be powered at a higher level while other radiating structures are not powered, then those cases must be tested as well. For instance, a device may use three RF coils powered at 5 W, or one coil powered at 15 W: in this case, both scenarios shall be tested.



### 5.2 Block Diagram of Test Setup

# **5.3 Test Procedures**

1) Perform H-field and E-field measurements for each all sides of the EUT at 20cm, along all the principal axes defined with respect to the orientation of the transmitting element(e.g., coil or antenna).

2) The highest emission level was recorded and compared with limit.
 3) The EUT was measured according to 680106 D01 Wireless Power Transfer v04

Report No.: CR230953507-00

# 5.4 Test Data:

Serial Number:	2B5B-2	Test Date:	2023/12/25
Test Site:	RF	Test Mode:	M1-M6
Tester:	David Huang	Test Result:	Pass

Environmental Conditions:									
Temperature: (°C)	22.5	Relative Humidity: (%)	27	ATM Pressure: (kPa)	102.4				

# **Test Equipment List and Details:**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Narda	Electric and Magnetic Field Probe-Analyzer	EHP-200AC	180ZX10204	2021/6/7	2024/6/6

\* Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

### Test Data: M1:

# **H-Field Strength:**

Frequency Range (kHz)	Position A (A/m)	Position B (A/m)	Position C (A/m)	Position D (A/m)	Position E (A/m)	50% Limit (A/m)	Limit (A/m)
127.33	0.0385	0.0569	0.0518	0.0422	0.0439	0.815	1.63

### **E-Field Strength:**

Frequency Range (kHz)	Position A (V/m)	Position B (V/m)	Position C (V/m)	Position D (V/m)	Position E (V/m)	50% Limit (V/m)	Limit (V/m)
127.33	0.6563	0.75	1.0469	0.6183	0.3978	307	614

# M2

### **H-Field Strength:**

Frequency Range (kHz)	Position A (A/m)	Position B (A/m)	Position C (A/m)	Position D (A/m)	Position E (A/m)	50% Limit (A/m)	Limit (A/m)
127.33	0.0319	0.0516	0.0647	0.0528	0.0197	0.815	1.63
131.32	0.0318	0.0119	0.0336	0.0273	0.0531	0.815	1.63

The Multiple Frequency Summation (worst case at Position C)

Report No.: CR230953507-00

### **E-Field Strength:**

Frequency Range (kHz)	Position A (V/m)	Position B (V/m)	Position C (V/m)	Position D (V/m)	Position E (V/m)	50% Limit (V/m)	Limit (V/m)
127.33	0.5336	0.8207	0.7813	0.937	0.5924	307	614
131.32	0.2954	0.9438	0.8117	0.6357	0.8036	307	614

The Multiple Frequency Summation (worst case at Position B)

 $E_{Phone\ horizontal}/E_{Limit} + E_{Airpods}/E_{Limit} = 0.8207/307 + 0.9438/307 = 0.006 < 1000$ 

# **M3**

# **H-Field Strength:**

FrequencyRange(kHz)	Position A (A/m)	Position B (A/m)	Position C (A/m)	Position D (A/m)	Position E (A/m)	50% Limit (A/m)	Limit (A/m)
131.32	0.0315	0.0117	0.0356	0.02756	0.0545	0.815	1.63

# **E-Field Strength:**

Frequency Range (kHz)	Position A (V/m)	Position B (V/m)	Position C (V/m)	Position D (V/m)	Position E (V/m)	50% Limit (V/m)	Limit (V/m)
131.32	0.2969	0.9504	0.8073	0.6524	0.8111	307	614

### **M4**

# **H-Field Strength:**

Frequency Range (kHz)	Position A (A/m)	Position B (A/m)	Position C (A/m)	Position D (A/m)	Position E (A/m)	50% Limit (A/m)	Limit (A/m)
127.33	0.045	0.0647	0.0853	0.0967	0.035	0.815	1.63

# **E-Field Strength:**

Frequency Range (kHz)	Position A (V/m)	Position B (V/m)	Position C (V/m)	Position D (V/m)	Position E (V/m)	50% Limit (V/m)	Limit (V/m)
127.33	0.5489	0.5547	0.4051	0.5223	0.4083	307	614

# M5

# **H-Field Strength:**

Frequency Range (kHz)	Position A (A/m)	Position B (A/m)	Position C (A/m)	Position D (A/m)	Position E (A/m)	50% Limit (A/m)	Limit (A/m)
127.33	0.0525	0.0713	0.0512	0.0953	0.0506	0.815	1.63

### Report No.: CR230953507-00

# **E-Field Strength:**

Frequency Range (kHz)	Position A (V/m)	Position B (V/m)	Position C (V/m)	Position D (V/m)	Position E (V/m)	50% Limit (V/m)	Limit (V/m)
127.33	0.6025	0.5767	0.5492	0.5055	0.5288	307	614

# **M6**

# **H-Field Strength:**

Frequency Range (kHz)	Position A (A/m)	Position B (A/m)	Position C (A/m)	Position D (A/m)	Position E (A/m)	50% Limit (A/m)	Limit (A/m)
127.35	0.0422	0.0544	0.0497	0.0736	0.0184	0.815	1.63

# **E-Field Strength:**

Frequency Range (kHz)	Position A (V/m)	Position B (V/m)	Position C (V/m)	Position D (V/m)	Position E (V/m)	50% Limit (V/m)	Limit (V/m)
127.35	06040	0.9846	0.3196	0.9947	0.3021	307	614

Note: Test with 20cm distance from the center of the probe(s) to the edge of the device.

#### Considerations of compliance 680106 D01 Wireless Power Transfer v04 clause 5.2:

(1) Power transfer frequency is less than 1 MHz

Yes, the operation frequency is Airpods: 131.32kHz, Phone horizontal: 127.33kHz, Phone vertical: 127.35kHz.

(2) The output power from each transmitting element (e.g., coil) is less than or equal to 15 watts.

Yes, the maximum output power of primary coil is 10 Watts.

(3) A client device providing the maximum permitted load is placed in physical contact with the transmitter (i.e., the surfaces of the transmitter and client device enclosures need to be in physical contact)

Yes, client device is placed directly in contact with the transmitter

(4) Only § 2.1091-Mobile exposure conditions apply (i.e., this provision does not cover § 2.1093-Portable exposure conditions).

Yes, mobile exposure conditions only.

(5) The E-field and H-field strengths, at and beyond 20 cm surrounding the device surface, are demonstrated to be less than 50% of the applicable MPE limit, per KDB 447498, Table 1. These measurements shall be taken along the principal axes of the device, with one axis oriented along the direction of the estimated maximum field strength, and for three points per axis or until a 1/d (inverse distance from the emitter structure) field strength decay is observed. Symmetry considerations may be used for test reduction purposes. The device shall be operated in documented worst-case compliance scenarios (i.e., the ones that lead to the maximum field components), and while all the radiating structures (e.g., coils or antennas) that by design can simultaneously transmit are energized at their nominal maximum power.

Yes, the test result for H and E-field strength less than 50% of the MPE limit.

(6) For systems with more than one radiating structure, the conditions specified in (5) must be met when the system is fully loaded (i.e., clients absorbing maximum power available), and with all the radiating structures operating at maximum power at the same time, as per design conditions. If the design allows one or more radiating structures to be powered at a higher level while other radiating structures are not powered, then those cases must be tested as well. For instance, a device may use three RF coils powered at 5 W, or one coil powered at 15 W: in this case, both scenarios shall be tested.

Yes, all the radiating structures operating at maximum power at the same time.

Report No.: CR230953507-00

6. EUT PHOTOGRAPHS

Please refer to the attachment CR230953507-EXP EUT EXTERNAL PHOTOGRAPHS and CR230953507-INP EUT INTERNAL PHOTOGRAPHS

Report No.: CR230953507-00

# 7. TEST SETUP PHOTOGRAPHS

Please refer to the attachment CR230953507-00-TSP TEST SETUP PHOTOGRAPHS.

# \*\*\*\*\* END OF REPORT \*\*\*\*\*