



# TEST REPORT

No. I22Z60463-EMC01

for

**Wingtech Group (Hong Kong) Limited**

**Augusta**

**Model Name: TMAF035G**

**FCC ID: 2APXW-TMAF035G**

with

**Hardware Version: V1.1**

**Software Version: TMAF035G\_0.01.01**

**Issued Date: 2022-07-12**

**Note:**

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The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

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## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I22Z60463-EMC01	Rev.0	1 <sup>st</sup> edition	2022-06-06
I22Z60463-EMC01	Rev.1	Deleted the data of LTE band 17 and add the data of NR band 71	2022-07-11
I22Z60463-EMC01	Rev.2	Adding the WPT results.	2022-07-12

Note: the latest revision of the test report supersedes all previous version.

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## 1. Test Laboratory

### 1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (CN0066). The detail accreditation scope can be found on NVLAP website.

### 1.2. Testing Location

#### CTTL (huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,  
P. R. China100191

### 1.3. Testing Environment

Normal Temperature: 15-35° C  
Relative Humidity: 20-75%

### 1.4. Project data

Testing Start Date: 2022-05-17  
Testing End Date: 2022-05-17

### 1.5. Signature



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Zhang Ying


(Prepared this test report)



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An Hui

(Reviewed this test report)



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Zhang Xia

Deputy Director of the laboratory  
(Approved this test report)



## **2. Client Information**

### **2.1. Applicant Information**

Company Name: Wingtech Group (Hong Kong) Limited  
Address /Post: Flat/RM 1802 18/F, Podium Plaza, 5 Hanoi Road, Tsim Sha Tsui, KL,  
HK  
Contact: sharui  
Email: [sharui@wingtech.com](mailto:sharui@wingtech.com)  
Telephone: +86-21-53529900

### **2.2. Manufacturer Information**

Company Name: Wingtech Group (Hong Kong) Limited  
Address /Post: Flat/RM 1802 18/F, Podium Plaza, 5 Hanoi Road, Tsim Sha Tsui, KL,  
HK  
Contact: sharui  
Email: [sharui@wingtech.com](mailto:sharui@wingtech.com)  
Telephone: +86-21-53529900

### 3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

#### 3.1. About EUT

Description	Augusta
Model Name	TMAF035G
FCC ID	2APXW-TMAF035G
Extreme vol. Limits	3.6VDC to 4.4VDC (nominal: 3.87VDC)

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of CTTL, Telecommunication Technology Labs, CAICT.

#### 3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
UT90a	869589060013135	V1.1	TMAF035G_0.01.01

\*EUT ID: is used to identify the test sample in the lab internally.

#### 3.3. Internal Identification of AE used during the test

AE ID*	Description	SN
AE1	Battery	/
AE2	Charger	/
AE3	USB Cable	/
AE4	Wireless charger package	/

##### AE1

Model	TM001
Manufacturer	Jiade Energy Technology (Zhuhai) Co.,Ltd.
Capacity	5000mAh
Voltage	2.87V

##### AE2

Model	BLJ-QC06HU
Manufacturer	Zhongshan Baolijin Electronic Co., Ltd

##### AE3

Model	A TO C 2.0
Manufacturer	ShenZhen BRL Technology Co., Ltd

##### AE4

Model	WTX11
Manufacturer	/

\*AE ID: is used to identify the test sample in the lab internally.

Note: The USB cables are shielded.

#### 3.4. EUT set-ups

	EUT set-up No.	Combination of EUT and AE	Remarks
Set.1		UT90a + AE1 + AE3 + AE2	Charger
Set.2		UT90a + AE1 + AE3	USB
Set.3		UT90a + AE1 + AE4 + AE2	Wireless charging

### 3.5. Test summary

EUT set-up No.	Test mode	Test result	
		Radiated Emission	Conducted Emission
Set.1	GSM850 idle	Pass	Pass
Set.1	WCDMA 850 idle	Pass	/
Set.1	LTE band 5 idle	Pass	/
Set.1	LTE band 12 idle	Pass	/
Set.1	LTE band 13 idle	Pass	/
Set.1	LTE band 26 idle	Pass	/
Set.1	LTE band 71 idle	Pass	/
Set.1	NR band 71 idle	Pass	/
Set.2	USB	Pass	Pass
Set.3	Wireless charging	Pass	Pass

## **4. Reference Documents**

### **4.1. Reference Documents for testing**

The following documents listed in this section are referred for testing.

<b>Reference</b>	<b>Title</b>	<b>Version</b>
FCC Part 15, Subpart B	Radio frequency devices - Unintentional Radiators	2021
ANSI C63.4	American National Standard for Methods of Measurement of Radio- Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2014

Note: The test methods have no deviation with standards.



## 5. LABORATORY ENVIRONMENT

**Semi-anechoic chamber SAC-1** (23 meters × 17meters × 10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 15 %, Max. = 75 %
Shielding effectiveness	0.014MHz - 1MHz, >60dB; 1MHz - 1000MHz, >90dB.
Electrical insulation	> 2 M
Ground system resistance	< 4
Normalised site attenuation (NSA)	< ± 4 dB, 3m/10m distance, from 30 to 1000 MHz
Site voltage standing-wave ratio ( $S_{VSWR}$ )	Between 0 and 6 dB, from 1GHz to 18GHz

**Shielded room** did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz, >60dB; 1MHz—1000MHz, >90dB.
Electrical insulation	> 2 MΩ
Ground system resistance	< 4 Ω

## 6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:		
Verdict Column	P	Pass
	NA	Not applicable
	F	Fail

Items	Test Name	Clause in FCC rules	Section in this report	Verdict	Test Location
1	Radiated Emission	15.109(a)	B.1	P	CTTL (huayuan North Road)
2	Conducted Emission	15.107(a)	B.2	P	CTTL (huayuan North Road)

## 7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE	CALIBRATION INTERVAL
1	LISN	ENV216	101200	R&S	2022-05-30	1 Year
2	Test Receiver	ESCI 3	100344	R&S	2023-03-21	1 year
3	Test Receiver	ESW44	103023	R&S	2022-10-28	1 year
4	EMI Antenna	VULB 9163	302	Schwarzbeck	2022-12-28	1 Year
5	EMI Antenna	3115	00167250	ETS-Lindgren	2022-07-01	1 year
6	Loop antenna	HFH2-Z2	829324/007	R&S	2022-12-23	1 Year
7	Universal Radio Communication Tester	CMW500	116588	R&S	2022-12-20	1 Year
9	PC	OPTIPLEX 380	2X1YV2X	DELL	N/A	N/A
9	Printer	P1606dn	VNC3L52122	HP	N/A	N/A
10	Keyboard	L100	CN0RH6596589 07ATOI40	DELL	N/A	N/A
11	Mouse	M-UAE119	LZ935220ZRC	Lenovo	N/A	N/A

## **ANNEX A: MEASUREMENT RESULTS**

### **A.1 Radiated Emission**

#### **Reference**

FCC: CFR Part 15.109(a).

#### **A.1.1 Method of measurement**

The field strength of radiated emissions from the unintentional radiator (USB mode of MS and charging mode of MS) at distances of 3/10 meters is tested. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 8.3.

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3/10 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

#### **A.1.2 EUT Operating Mode**

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode.

The EUT was tested while operating in licensed band Rx mode with Camera/MP3. All licensed band receivers that tune in the range of 30MHz-960MHz, as listed in section 3.4, are investigated. Only the worst case emissions are reported.

The model of the PC is M4000E-17, and the serial number of the PC is M706GWXD. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

Note: I/O information: Printer – USB, Mouse – PS/2, Keyboard – USB.

#### **A.1.3 Measurement Limit**

Frequency range (MHz)	Field strength limit ( $\mu\text{V}/\text{m}$ )		
	Quasi-peak	Average	Peak
30-88	100		
88-216	150		
216-960	200		
960-1000	500		
>1000		500	5000

Note: the above limit is for 3 meters test distance. 10 meters' limit is got by converting.

#### **A.1.4 Test Condition**

Frequency range (MHz)	RBW/VBW	Sweep Time (s)	Detector
30-1000	120kHz (IF Bandwidth)	5	Peak/Quasi-peak
Above 1000	1MHz/3MHz	15	Peak, Average

### A.1.5 Measurement Results

A "reference path loss" is established and the  $A_{Rpl}$  is the attenuation of "reference path loss". It includes the antenna factor of receive antenna and the path loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + A_{Rpl} = P_{\text{Mea}} + G_A + G_{PL}$$

Where

$G_A$ : Antenna factor of receive antenna

$G_{PL}$ : Path Loss

$P_{\text{Mea}}$ : Measurement result on receiver.

Measurement uncertainty:

Frequency range	Measurement uncertainty
30MHz-1GHz	5.18dB, k=2
1GHz-18GHz	5.54dB, k=2

**Measurement results for Set.1, GSM 850MHz idle(worst case):**
**Charging Mode/QP detector**

Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
59.294000	22.07	29.54	7.47	98.0	V	227.0
75.978000	14.76	29.54	14.78	225.0	V	70.0
85.484000	14.97	29.54	14.57	175.0	V	278.0
127.388000	14.24	33.06	18.82	325.0	V	227.0
145.236000	14.78	33.06	18.28	275.0	V	137.0
170.068000	23.40	33.06	9.66	100.0	V	0.0

**Measurement results for Set.1, WCDMA band 5 idle(worst case):**
**Charging Mode/Average detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17957.500	41.2	-28.9	46.7	23.483	54.0	12.8	V
17749.080	40.8	-29.6	46.0	24.456	54.0	13.2	H
17955.460	40.7	-28.9	46.7	22.983	54.0	13.3	V
17946.280	40.7	-28.9	46.7	22.983	54.0	13.3	V
17936.080	40.7	-29.4	46.7	23.439	54.0	13.3	H
17932.340	40.6	-29.4	46.7	23.339	54.0	13.4	V

**Measurement results for Set.1, GSM 850MHz idle(worst case):**
**Charging Mode/Peak detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17610.360	52.9	-29.5	45.2	37.2	74.0	21.1	17610.360
17966.680	52.4	-29.1	46.7	34.8	74.0	21.6	17966.680
16599.540	52.3	-29.8	39.8	42.3	74.0	21.7	16599.540
17629.400	52.3	-29.4	45.2	36.5	74.0	21.7	17629.400
17978.920	52.2	-29.1	46.7	34.6	74.0	21.8	17978.920
17911.940	52.1	-29.3	46.0	35.5	74.0	21.9	17911.940

**Measurement results for Set.2, USB,:**
**Charging Mode/QP detector**

Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
39.894000	24.58	29.54	4.96	225.0	V	225.0
137.767000	26.96	33.06	6.10	325.0	H	136.0
144.654000	23.34	33.06	9.72	98.0	V	0.0
215.949000	19.97	33.06	13.09	325.0	H	251.0
450.010000	31.56	35.56	4.00	175.0	H	187.0
594.249000	28.73	35.56	6.83	225.0	V	0.0

**Charging Mode/Average detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
6051.720	44.6	-37.8	34.4	48.017	54.0	9.4	H
6052.060	43.8	-37.8	34.4	47.217	54.0	10.2	H
17604.240	41.7	-29.5	45.2	25.972	54.0	12.3	H
17954.780	41.5	-28.9	46.7	23.783	54.0	12.5	H
17139.800	41.5	-29.7	42.4	28.792	54.0	12.5	H
17953.420	41.4	-28.9	46.7	23.683	54.0	12.6	H

**Charging Mode/Peak detector**

Frequency (MHz)	Measurement Result (dB $\mu$ V/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Limit (dB $\mu$ V/m)	Margin (dB)	Antenna Pol. (H/V)
17155.100	53.0	-29.9	42.4	40.5	74.0	21.0	H
17579.420	52.9	-29.8	45.2	37.4	74.0	21.1	H
17615.120	52.8	-29.5	45.2	37.1	74.0	21.2	H
17610.360	52.8	-29.5	45.2	37.1	74.0	21.2	H
17144.220	52.8	-29.9	42.4	40.3	74.0	21.2	V
17247.920	52.8	-30.0	43.4	39.5	74.0	21.2	V

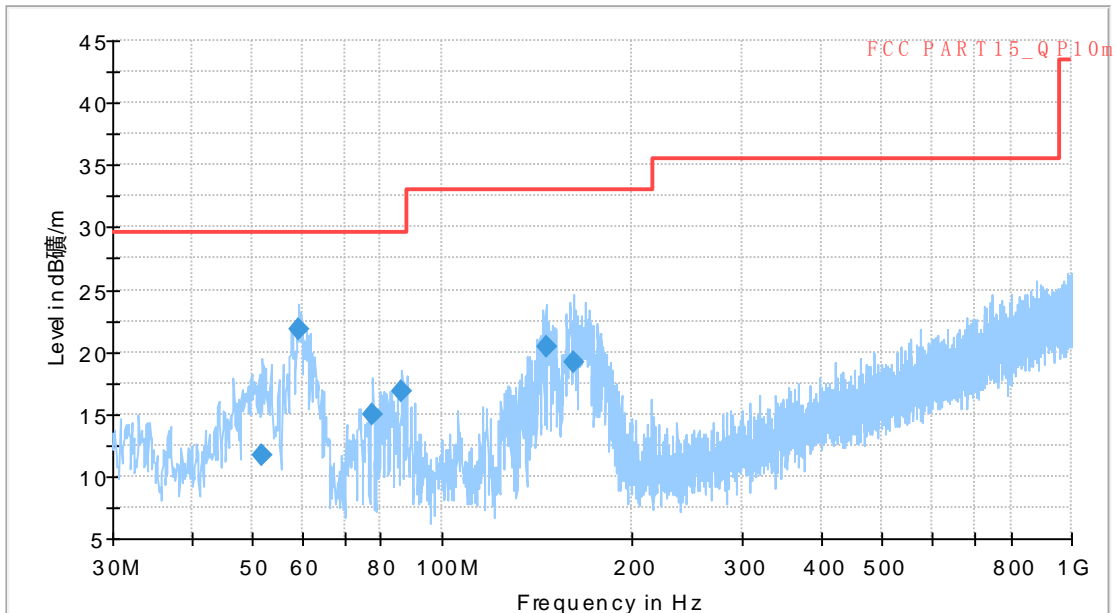
**Measurement results for Set.3, wireless charging:****Charging Mode/QP detector**

Frequency (MHz)	QuasiPeak (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
56.384000	19.05	29.54	10.49	106.0	V	266.0
59.973000	19.56	29.54	9.98	225.0	V	266.0
89.655000	22.58	33.06	10.48	125.0	V	315.0
123.120000	21.57	33.06	11.49	125.0	V	166.0
159.495000	20.73	33.06	12.33	106.0	V	15.0
201.108000	14.26	33.06	18.80	100.0	V	126.0



**Measurement results for Set.1, GSM850 idle:**

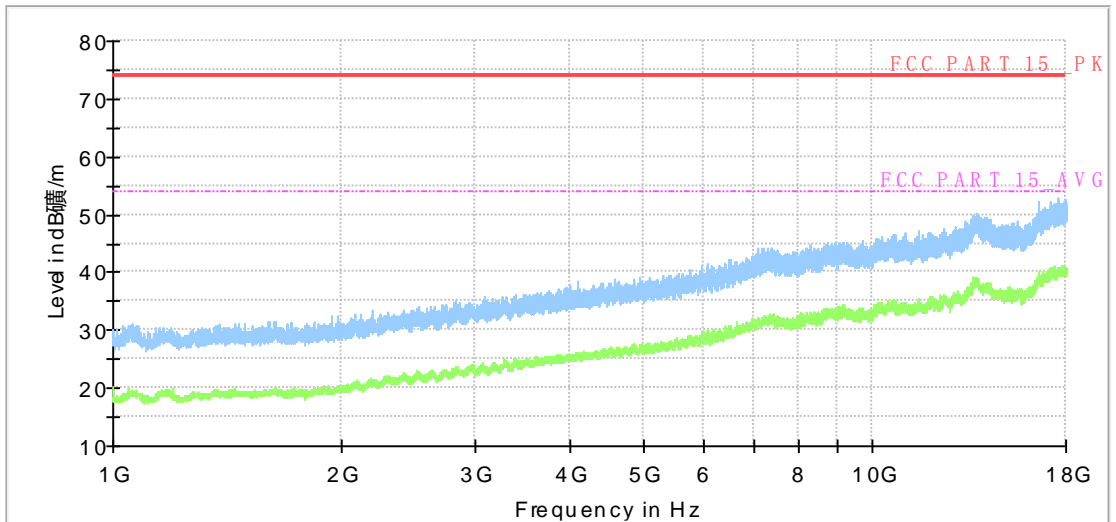
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_QP10m [.\]
- ◆ Final\_Result QPK [Final\_Result.Result:4]

**Fig A.1 Radiated Emission from 30MHz to 1GHz**

Full Spectrum

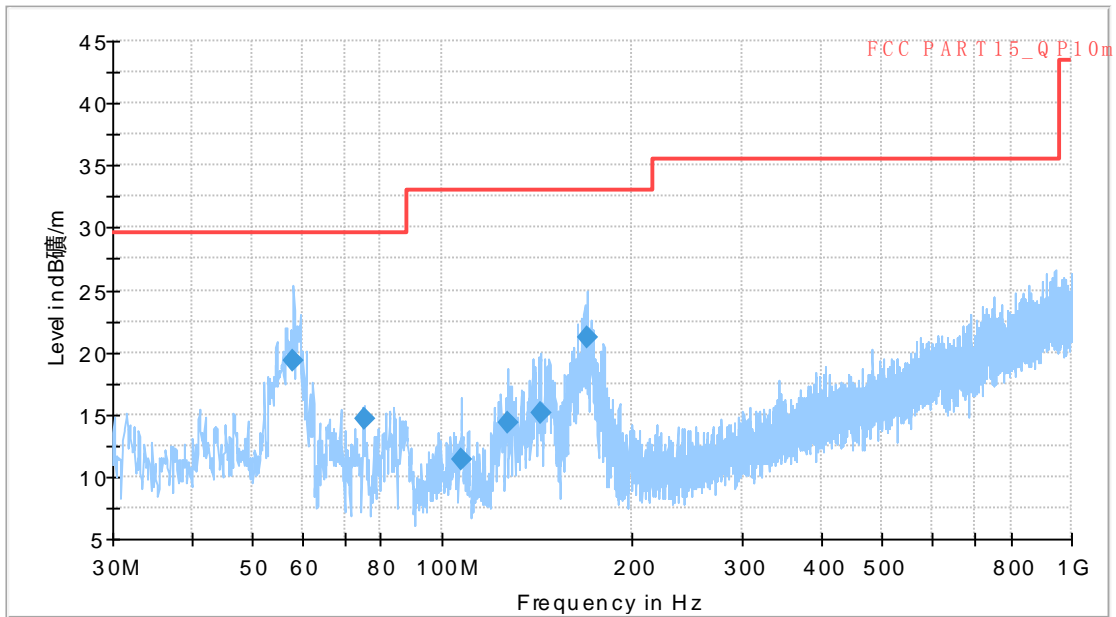


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs AVG [Critical\_Freqs.Result:5]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_PK [.\]
- - - FCC PART 15\_AVG [.\]
- ◆ Final\_Result PK+ [Final\_Result.Result:4]
- ◆ Final\_Result AVG [Final\_Result.Result:5]

**Fig A.2 Radiated Emission from 1GHz to 18GHz**

Measurement results for Set.1, WCDMA 850 idle:

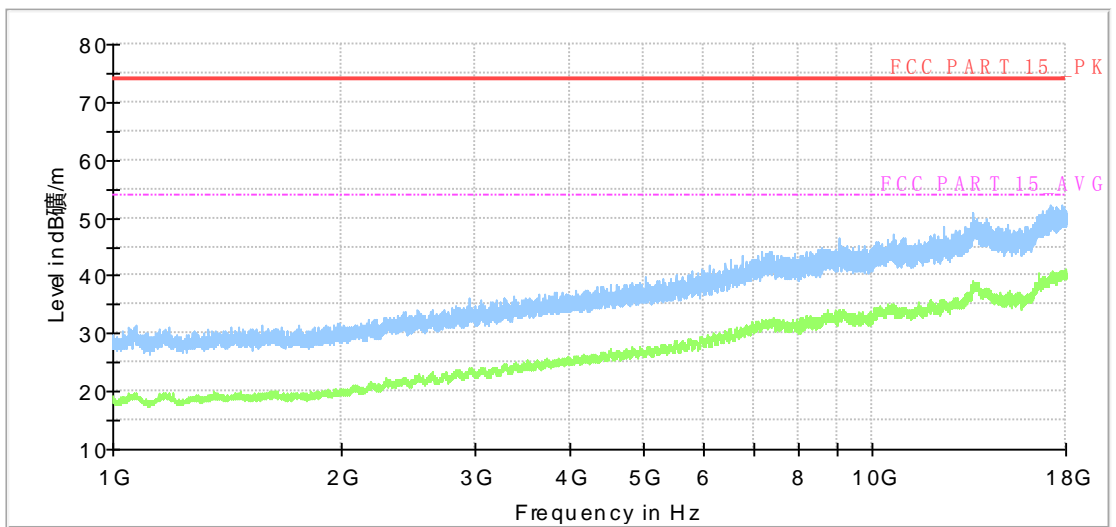
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_QP10m [.\]
- ◆ Final\_Result QPK [Final\_Result.Result:4]

Fig A.3 Radiated Emission from 30MHz to 1GHz

Full Spectrum

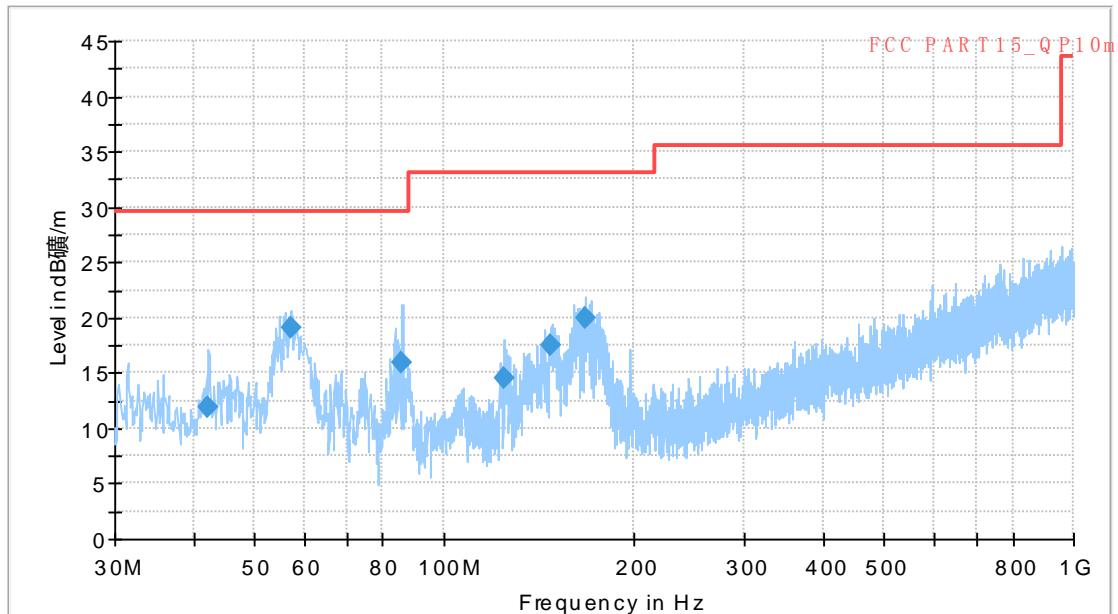


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs AVG [Critical\_Freqs.Result:5]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_PK [.\]
- - - FCC PART 15\_AVG [.\]
- ◆ Final\_Result PK+ [Final\_Result.Result:4]
- ◆ Final\_Result AVG [Final\_Result.Result:5]

Fig A.4 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.1, LTE band 5 idle:

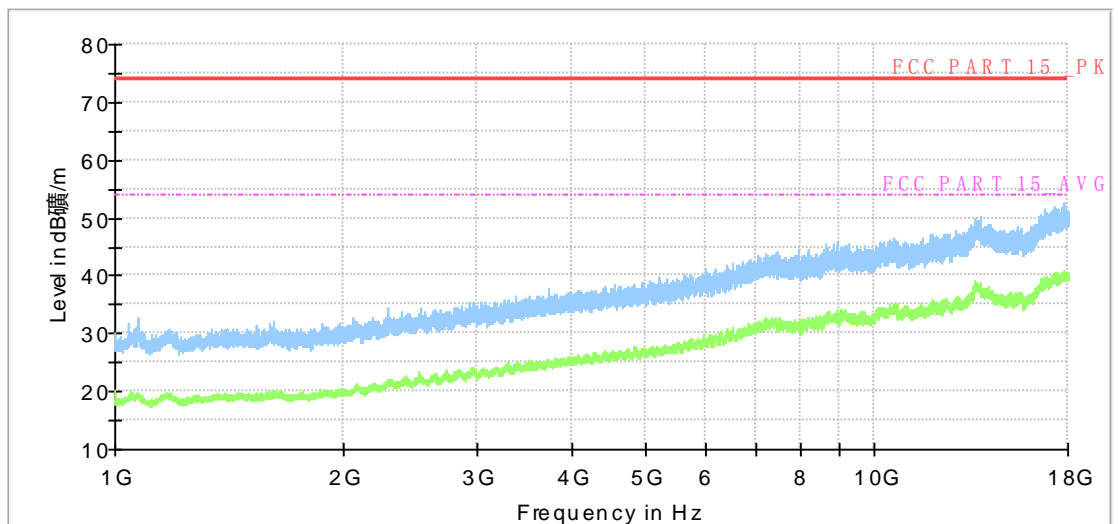
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_QP10m [..]
- ◆ Final\_Result QPK [Final\_Result.Result:4]

Fig A.5 Radiated Emission from 30MHz to 1GHz

Full Spectrum

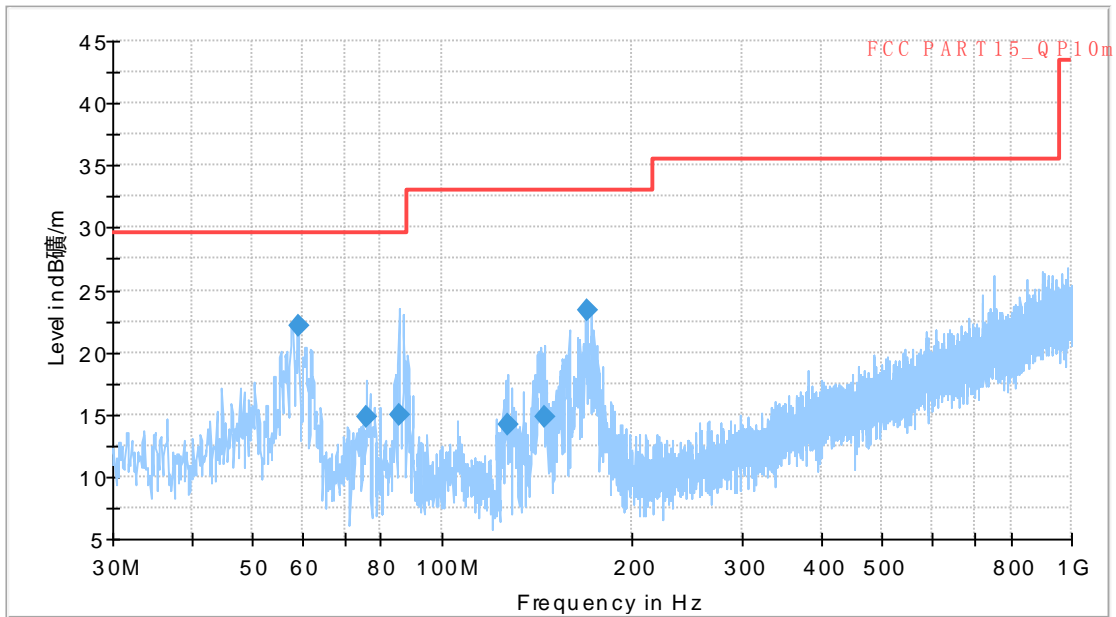


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs AVG [Critical\_Freqs.Result:5]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_PK [..]
- - - FCC PART 15\_AVG [..]
- ◆ Final\_Result PK+ [Final\_Result.Result:4]
- ◆ Final\_Result AVG [Final\_Result.Result:5]

Fig A.6 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.1, LTE band 12 idle:

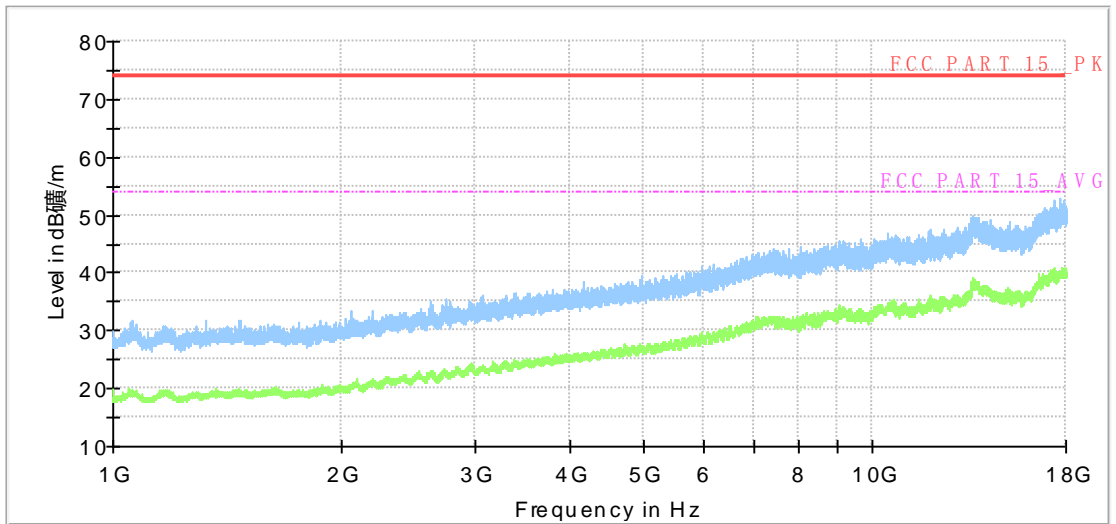
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_QP10m [.\]
- ◆ Final\_Result QPK [Final\_Result.Result:4]

Fig A.7 Radiated Emission from 30MHz to 1GHz

Full Spectrum

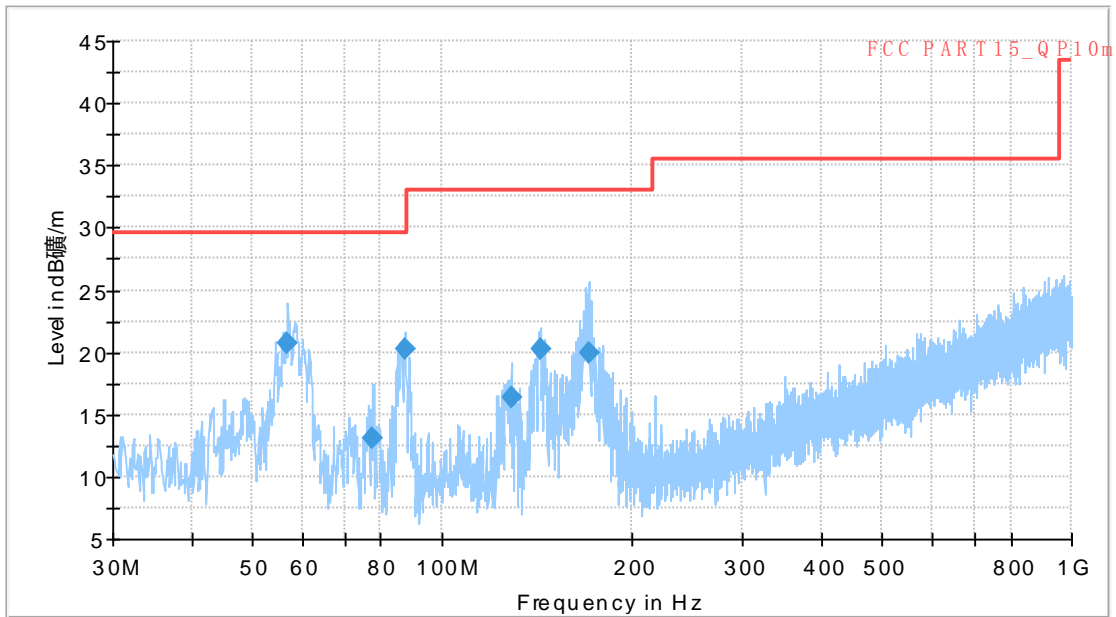


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs AVG [Critical\_Freqs.Result:5]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_PK [.\]
- - - FCC PART 15\_AVG [.\]
- ◆ Final\_Result PK+ [Final\_Result.Result:4]
- ◆ Final\_Result AVG [Final\_Result.Result:5]

Fig A.8 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.1, LTE band 13 idle:

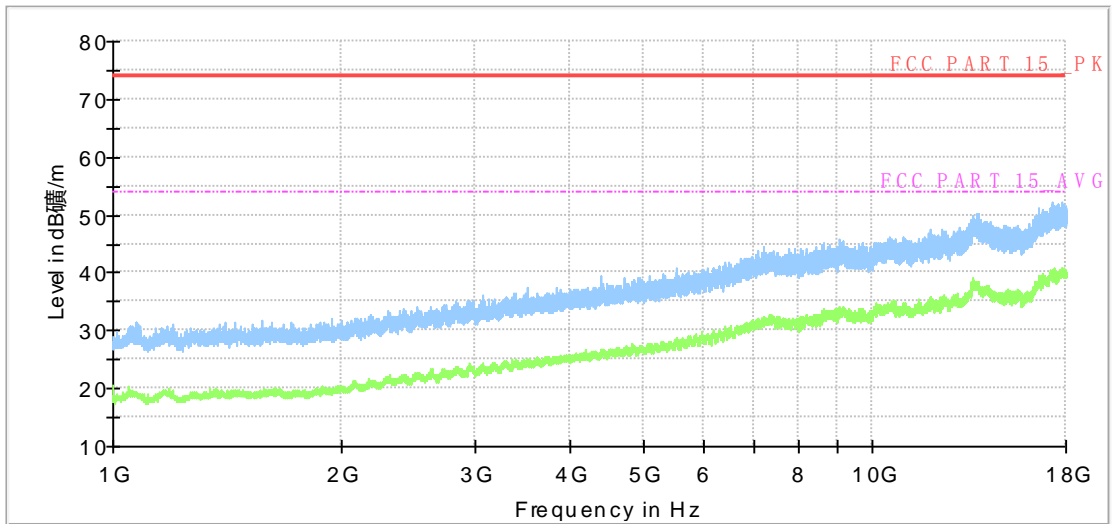
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_QP10m [.\]
- ◆ Final\_Result QPK [Final\_Result.Result:4]

Fig A.9 Radiated Emission from 30MHz to 1GHz

Full Spectrum

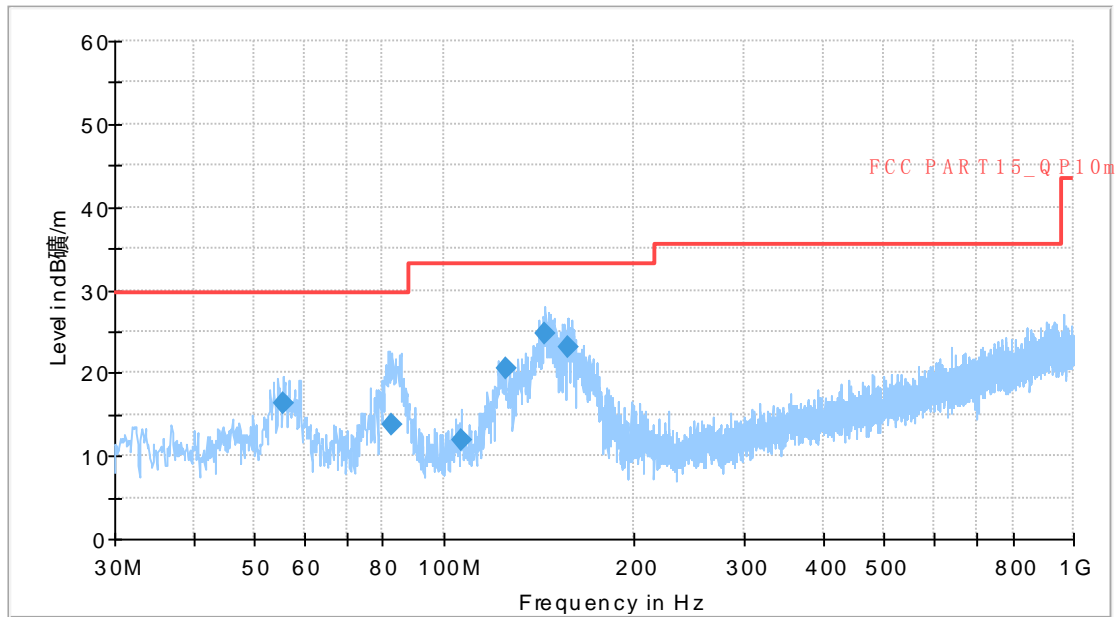


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs AVG [Critical\_Freqs.Result:5]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_PK [.\]
- - - FCC PART 15\_AVG [.\]
- ◆ Final\_Result PK+ [Final\_Result.Result:4]
- ◆ Final\_Result AVG [Final\_Result.Result:5]

Fig A.10 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.1, LTE band 26 idle:

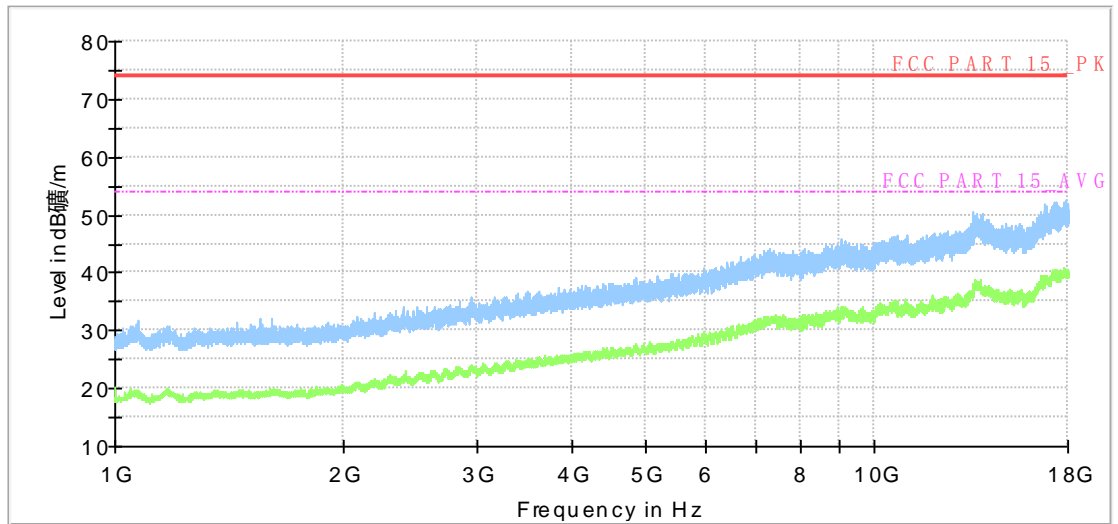
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_QP10m [.\]
- ◆ Final\_Result QPK [Final\_Result.Result:4]

Fig A.11 Radiated Emission from 30MHz to 1GHz

Full Spectrum

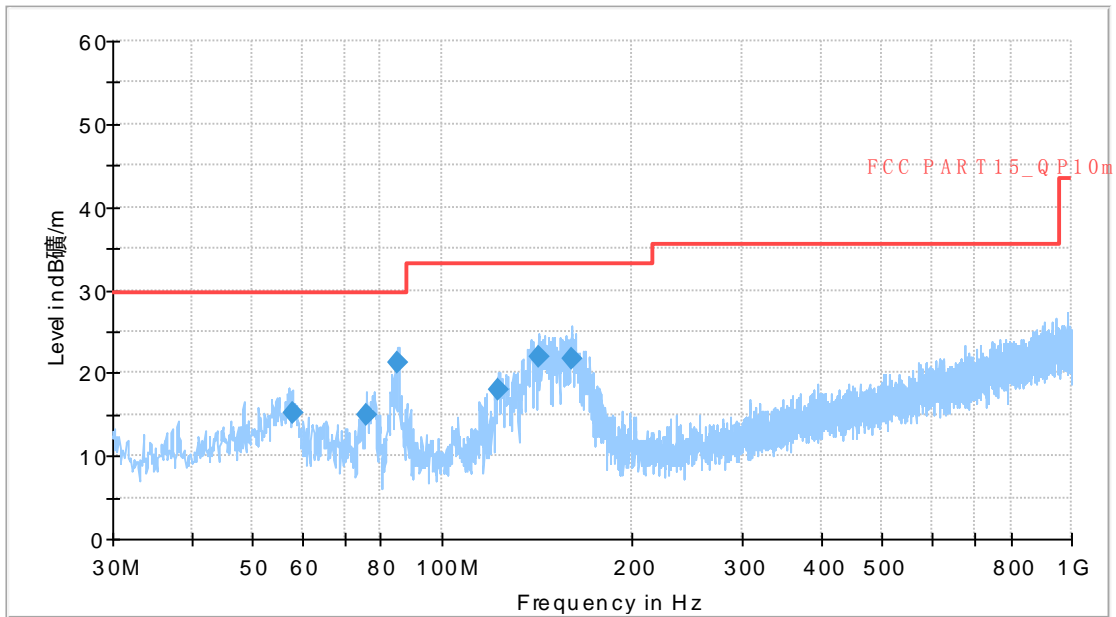


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs AVG [Critical\_Freqs.Result:5]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_PK [.\]
- - - FCC PART 15\_AVG [.\]
- ◆ Final\_Result PK+ [Final\_Result.Result:4]
- ◆ Final\_Result AVG [Final\_Result.Result:5]

Fig A.12 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.1, LTE band 71 idle:

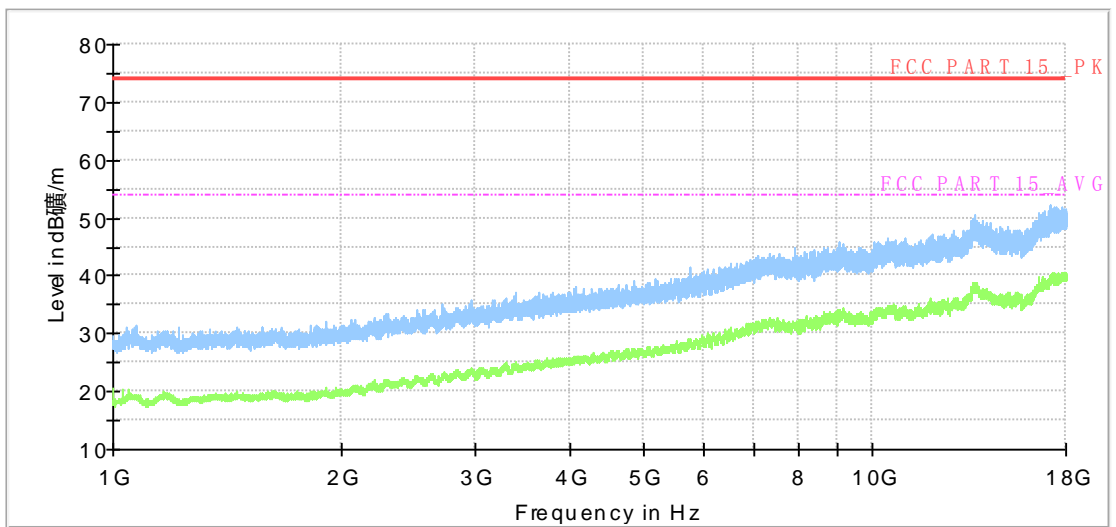
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_QP10m [..]
- ◆ Final\_Result QPK [Final\_Result.Result:4]

Fig A.13 Radiated Emission from 30MHz to 1GHz

Full Spectrum

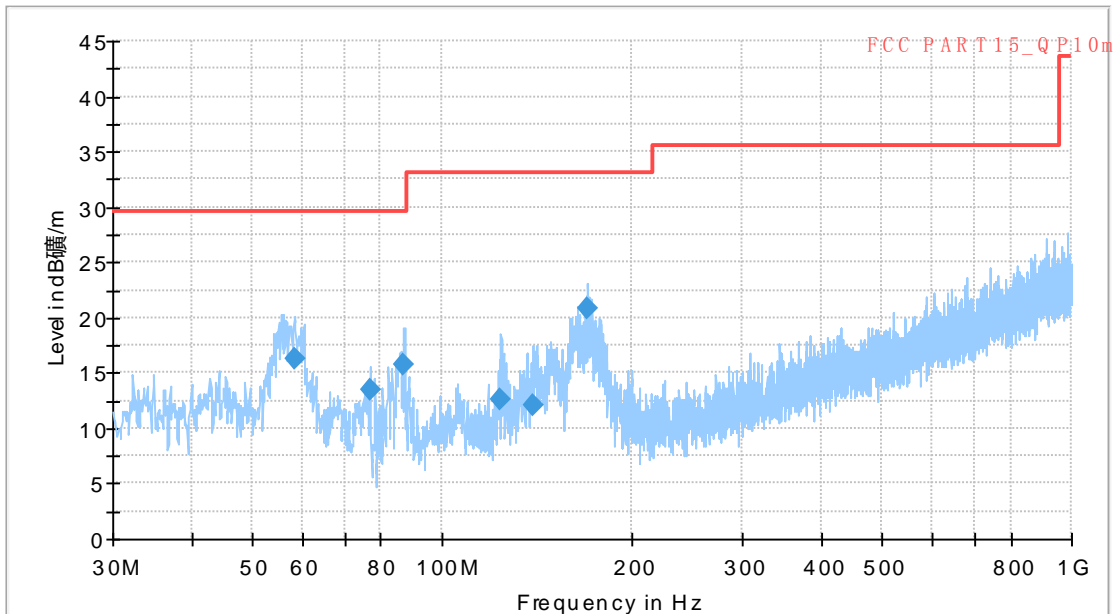


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs AVG [Critical\_Freqs.Result:5]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_PK [..]
- - - - FCC PART 15\_AVG [..]
- ◆ Final\_Result PK+ [Final\_Result.Result:4]
- ◆ Final\_Result AVG [Final\_Result.Result:5]

Fig A.14 Radiated Emission from 1GHz to 18GHz

Measurement results for Set.1, NR band 71 idle:

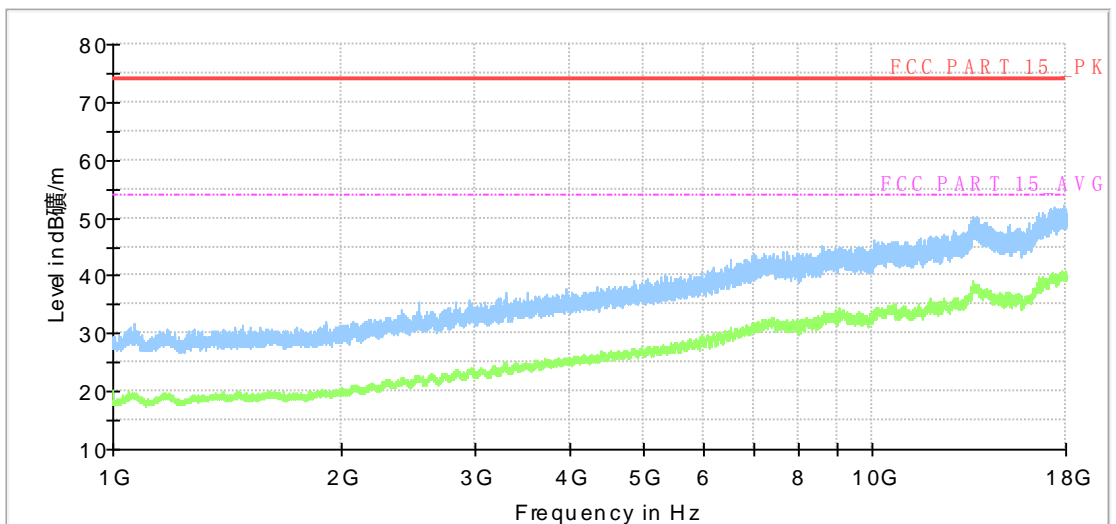
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_QP10m [..]
- ◆ Final\_Result QPK [Final\_Result.Result:4]

Fig A.15 Radiated Emission from 30MHz to 1GHz

Full Spectrum



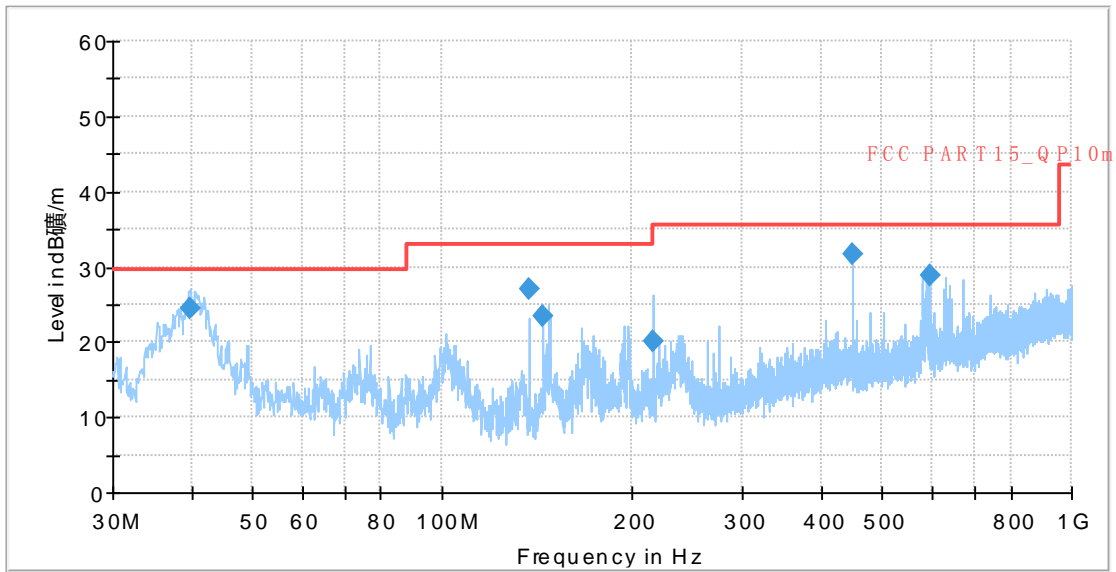
- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs AVG [Critical\_Freqs.Result:5]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_PK [..]
- - - FCC PART 15\_AVG [..]
- ◆ Final\_Result PK+ [Final\_Result.Result:4]
- ◆ Final\_Result AVG [Final\_Result.Result:5]

Fig A.16 Radiated Emission from 1GHz to 18GHz



Measurement results for Set.2, USB transfer:

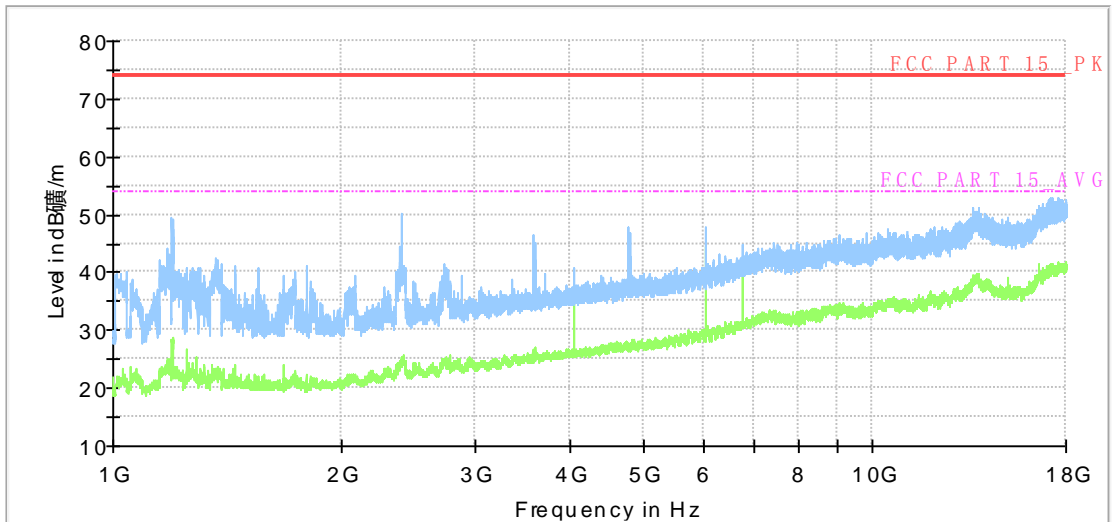
Full Spectrum



- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_QP10m [.\]
- ◆ Final\_Result QPK [Final\_Result.Result:4]
- × MaxPeak-PK+ (Single) [Result Table\_Single.Result:1]
- + QuasiPeak-QPK (Single) [Result Table\_Single.Result:2]

Fig A.17 Radiated Emission from 30MHz to 1GHz

Full Spectrum

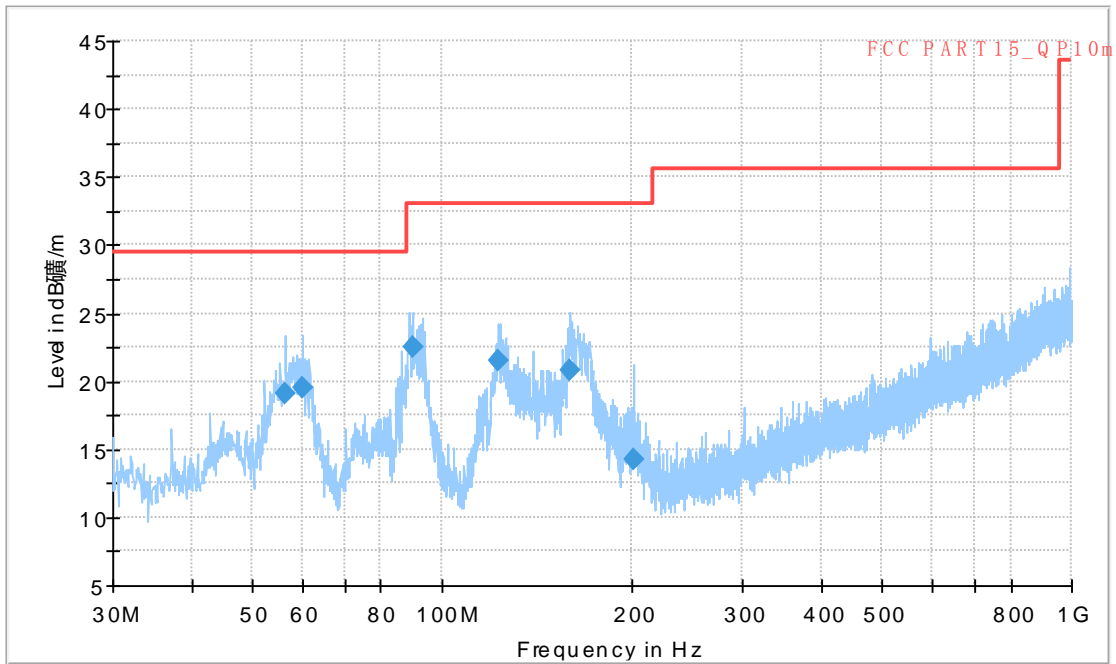


- Preview Result 2-AVG [Preview Result 2.Result:2]
- Preview Result 1-PK+ [Preview Result 1.Result:1]
- \* Critical\_Freqs AVG [Critical\_Freqs.Result:5]
- \* Critical\_Freqs PK+ [Critical\_Freqs.Result:4]
- FCC PART 15\_PK [.\]
- FCC PART 15\_AVG [.\]
- ◆ Final\_Result PK+ [Final\_Result.Result:4]
- ◆ Final\_Result AVG [Final\_Result.Result:5]

Fig A.18 Radiated Emission from 1GHz to 18GHz

**Measurement results for Set.3, wireless charging:**

Full Spectrum



- Preview Result 1-PK+
- FCC PART15\_QP10m
- \* Critical\_Freqs PK+
- ◆ Final\_Result QPK

## A.2 Conducted Emission

### Reference

FCC: CFR Part 15.107(a).

### A.2.1 Method of measurement

For equipment 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. Tested in accordance with the procedures of ANSI C63.4 – 2014, section 7.3.

### A.2.2 EUT Operating Mode

The MS is operating in the USB mode and charging mode. During the test MS is connected to a PC via a USB cable in the case of USB mode and is connected to a charger in the case of charging mode. The model of the PC is DELL M4000E-17, and the serial number of the PC is M706GWXD. The software is used to let the PC keep on copying data to MS, reading and erasing the data after copy action was finished.

Note: I/O information: Printer – USB, Mouse – PS/2, Keyboard – USB.

### A.2.3 Measurement Limit

Frequency of emission (MHz)	Conducted limit (dB $\mu$ V)	
	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

### A.2.4 Test Condition in charging mode

Voltage (V)	Frequency (Hz)
120	60

RBW/IF bandwidth	Sweep Time(s)
9kHz	1

### A.2.5 Measurement Results

Measurement uncertainty:  $U= 3.08$  dB,  $k=2$ .

Charging Mode, Set.1, GSM850 idle:

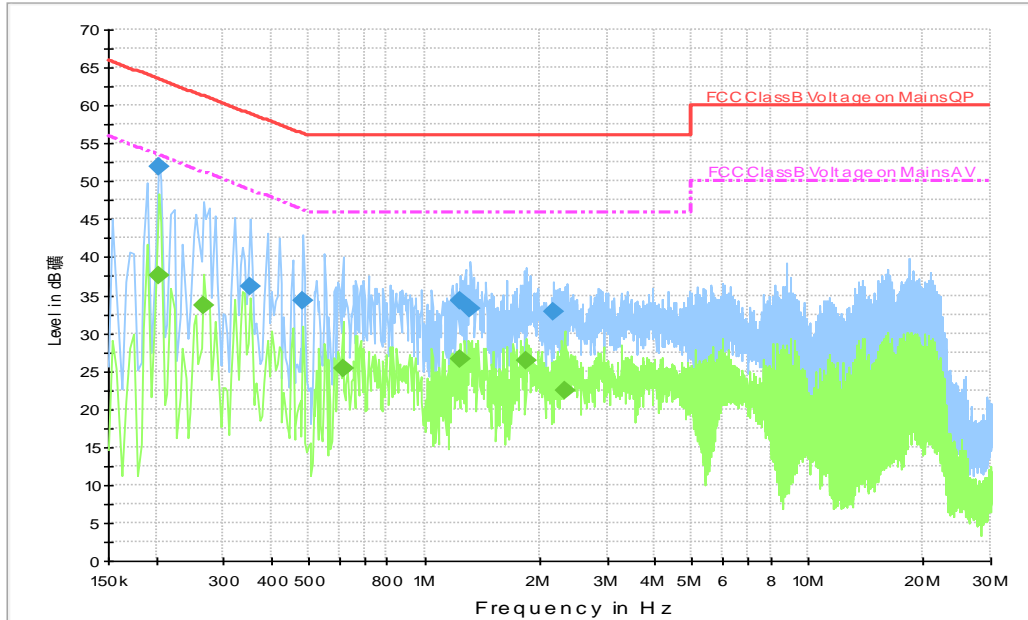


Fig A.19 Conducted Emission

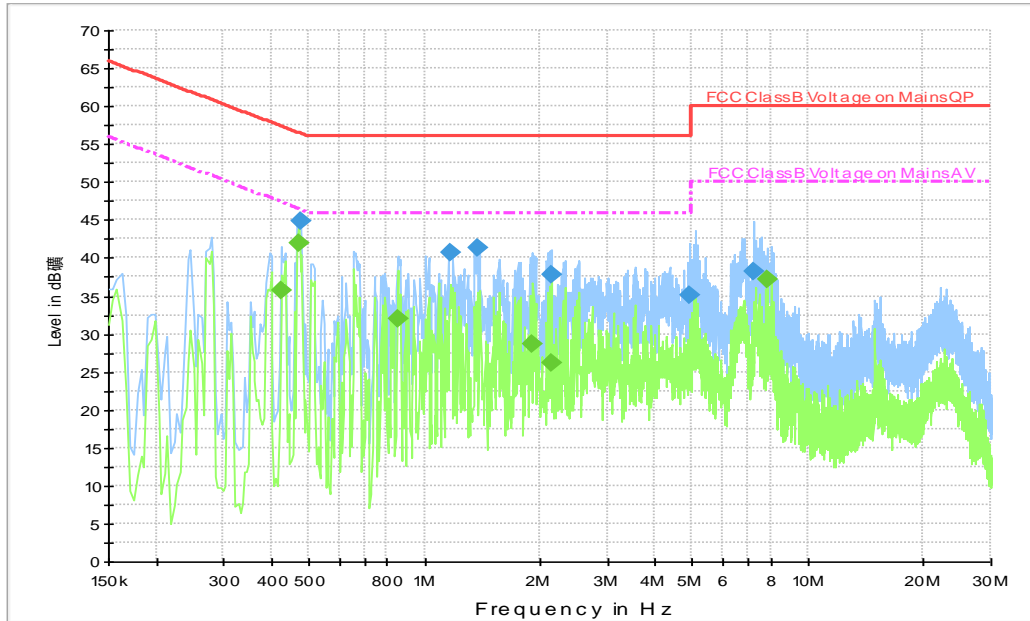
#### Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.202000	51.8	L1	19.8	11.7	63.5
0.350000	36.2	L1	19.8	22.7	59.0
0.482000	34.3	L1	19.8	22.0	56.3
1.238000	34.3	L1	19.7	21.7	56.0
1.322000	33.3	L1	19.7	22.7	56.0
2.166000	32.8	L1	19.6	23.2	56.0

#### Final Result 2

Frequency (MHz)	CAverage (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.202000	37.6	L1	19.8	15.9	53.5
0.266000	33.7	L1	19.8	17.5	51.2
0.614000	25.3	L1	19.6	20.7	46.0
1.242000	26.7	L1	19.7	19.3	46.0
1.850000	26.5	L1	19.6	19.6	46.0
2.318000	22.5	N	19.7	23.5	46.0

**Charging Mode, Set.2, USB:**



**Fig A.20 Conducted Emission**

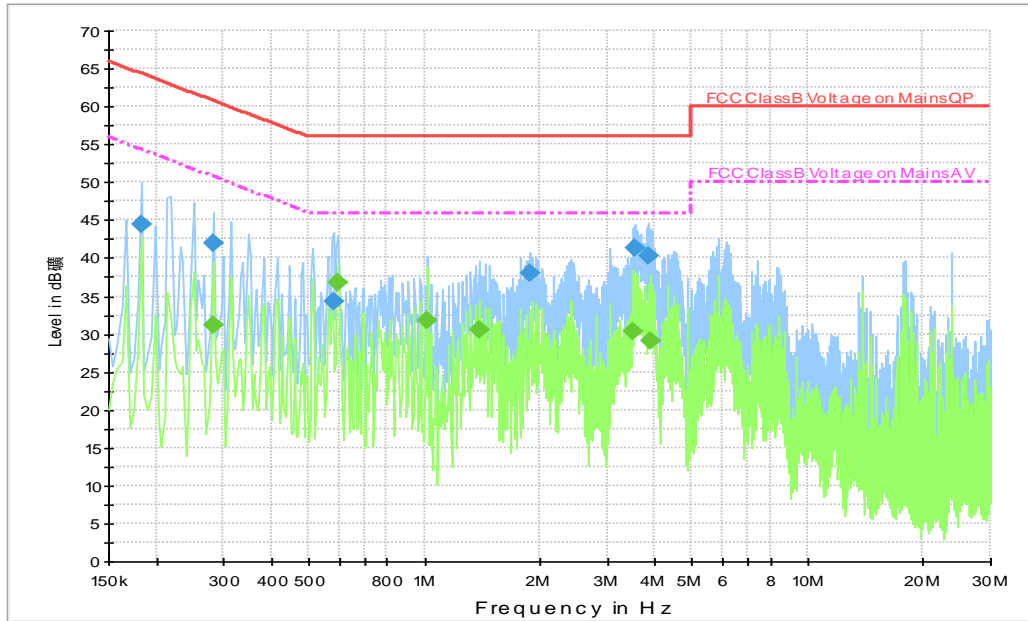
**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.474000	44.9	N	19.8	11.6	56.4
1.170000	40.6	N	19.6	15.4	56.0
1.370000	41.3	L1	19.7	14.7	56.0
2.134000	37.8	N	19.7	18.2	56.0
4.938000	35.0	N	19.6	21.0	56.0
7.242000	38.2	L1	19.8	21.8	60.0

**Final Result 2**

Frequency (MHz)	CAverage (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.426000	35.8	L1	19.7	11.5	47.3
0.470000	42.0	L1	19.8	4.5	46.5
0.850000	32.0	N	19.6	14.0	46.0
1.918000	28.8	N	19.6	17.2	46.0
2.134000	26.2	N	19.7	19.8	46.0
7.818000	37.2	L1	19.8	12.8	50.0

**Charging Mode, Set.3, charging:**



**Fig A.21 Conducted Emission**

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.182000	44.4	N	19.6	20.0	64.4
0.282000	42.0	N	19.8	18.8	60.8
0.578000	34.3	L1	19.7	21.7	56.0
1.882000	38.1	N	19.6	17.9	56.0
3.554000	41.3	L1	19.6	14.7	56.0
3.826000	40.4	L1	19.6	15.6	56.0

**Final Result 2**

Frequency (MHz)	CAverage (dBuV)	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.282000	31.2	N	19.8	19.6	50.8
0.594000	36.9	N	19.7	9.1	46.0
1.022000	31.7	L1	19.8	14.3	46.0
1.386000	30.5	N	19.6	15.5	46.0
3.510000	30.4	L1	19.6	15.6	46.0
3.882000	29.1	L1	19.6	16.9	46.0



## **ANNEX B: PERSONS INVOLVED IN THIS TESTING**

<b>Test Item</b>	<b>Test Software and Version</b>	<b>Software Vendor</b>	<b>Test operator</b>
Conducted Emission	EMC32 V8.52.0	R&S	Chen Tianwei
Radiated Emission	EMC32 V10.60.20	R&S	Ding Zai

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